Full wwPDB EM Validation Report ⓘ

Jan 8, 2025 – 12:52 pm GMT

PDB ID	:	9FRL
EMDB ID	:	EMD-50717
Title	:	Cryo-EM structure of Saccharolobus solfataricus 30S initiation complex bound to SD mRNA with h44 in up position
Authors	:	Bourgeois, G.; Coureux, P.D.; Mechulam, Y.; Schmitt, E.
Deposited on	:	2024-06-19
Resolution	:	2.97 Å(reported)

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

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

The 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:

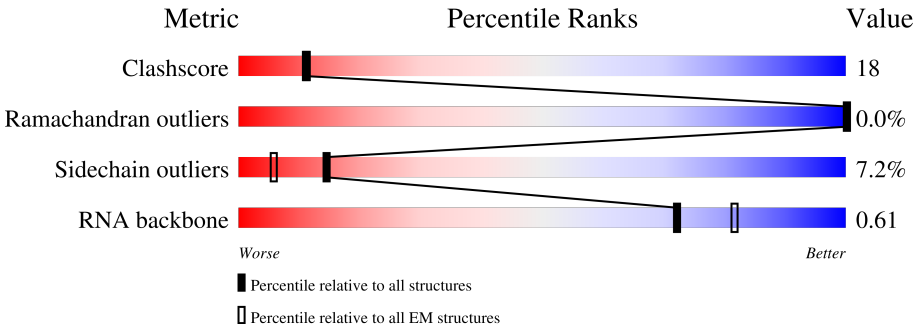
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

1 Overall quality at a glance

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

The reported resolution of this entry is 2.97 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=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	2	1497	46% 41% 9% ·
2	A	208	51% 34% 5% 11%
3	B	231	65% 27% · 7%
4	C	65	· 42% 48% 11%
5	D	181	62% 29% · 8%
6	F	214	69% 27% · ·
7	G	214	· 57% 38% ·

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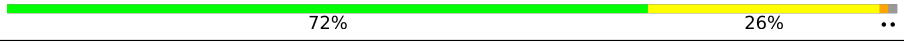
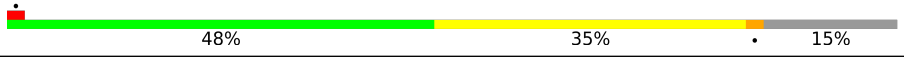
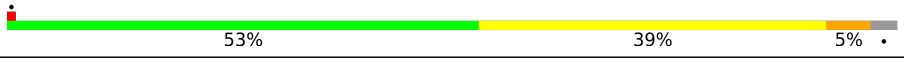
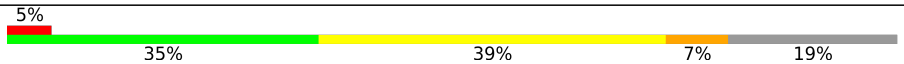
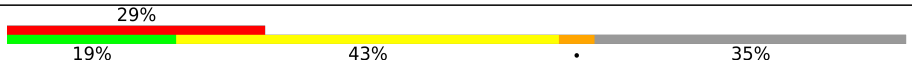
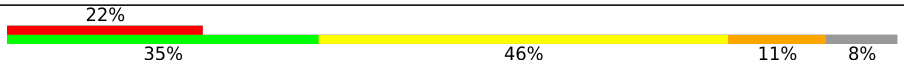
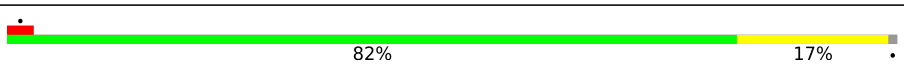
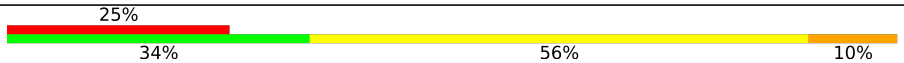
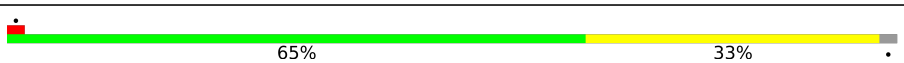
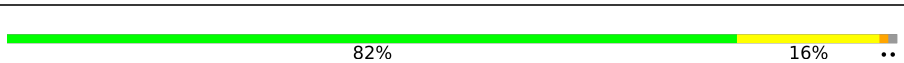
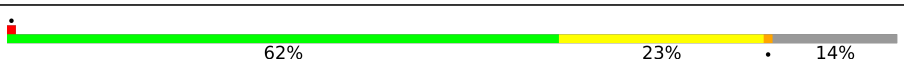
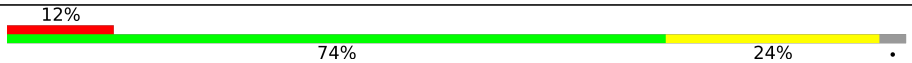
Mol	Chain	Length	Quality of chain
8	H	193	
9	I	133	
10	J	133	
11	K	137	
12	L	102	
13	M	132	
14	N	147	
15	O	165	
16	Q	152	
17	S	79	
18	T	140	
19	U	158	
20	V	120	
21	W	66	
22	X	83	
23	Y	75	
24	3	127	
25	a	72	
26	e	52	
27	4	77	
28	5	28	
29	P	54	
30	R	114	
31	Z	229	
32	d	72	

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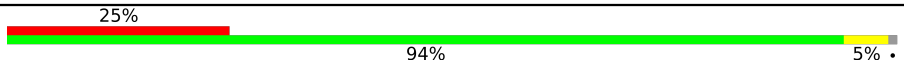
Mol	Chain	Length	Quality of chain
33	c	110	
34	E	239	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
36	SPM	2	1567	-	-	X	-
36	SPM	2	1576	-	-	X	-

2 Entry composition

There are 38 unique types of molecules in this entry. The entry contains 65224 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called rRNA 16S.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	2	1443	31042	13845	5740	10014	1443	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
2	843	4AC	C	conflict	GB AE006641.1
2	930	C4J	U	conflict	GB AE006641.1
2	1466	4AC	C	conflict	GB AE006641.1
2	1467	4AC	C	conflict	GB AE006641.1
2	1477	4AC	C	conflict	GB AE006641.1
2	1478	4AC	C	conflict	GB AE006641.1
2	1496	C	A	conflict	GB AE006641.1

- Molecule 2 is a protein called Small ribosomal subunit protein eS1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	A	186	1515	974	261	278	2	0	0

- Molecule 3 is a protein called Small ribosomal subunit protein uS2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	B	215	1698	1092	291	312	3	0	0

- Molecule 4 is a protein called Small zinc finger protein HVO-2753-like zinc-binding pocket domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	C	58	455	282	84	81	8	0	0

- Molecule 5 is a protein called Small ribosomal subunit protein uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	D	166	Total	C	N	O	S	0	0
			1354	864	249	240	1		

- Molecule 6 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	210	Total	C	N	O	S	0	0
			1625	1041	275	303	6		

- Molecule 7 is a protein called Small ribosomal subunit protein eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	213	Total	C	N	O	S	0	0
			1661	1052	292	315	2		

- Molecule 8 is a protein called Small ribosomal subunit protein uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	192	Total	C	N	O	S	0	0
			1543	983	283	274	3		

- Molecule 9 is a protein called Small ribosomal subunit protein uS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	132	Total	C	N	O	S	0	0
			1050	675	187	182	6		

- Molecule 10 is a protein called Small ribosomal subunit protein eS8.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	J	127	Total	C	N	O	0	0
			982	617	186	179		

- Molecule 11 is a protein called Small ribosomal subunit protein uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	133	Total	C	N	O	S	0	0
			1068	675	201	185	7		

- Molecule 12 is a protein called Small ribosomal subunit protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	101	Total	C	N	O	S	0	0
			840	536	157	142	5		

- Molecule 13 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	127	Total	C	N	O	S	0	0
			944	587	184	170	3		

- Molecule 14 is a protein called Small ribosomal subunit protein uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	146	Total	C	N	O	S	0	0
			1140	723	220	193	4		

- Molecule 15 is a protein called Small ribosomal subunit protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	140	Total	C	N	O	S	0	0
			1124	708	210	202	4		

- Molecule 16 is a protein called Small ribosomal subunit protein uS15.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	145	Total	C	N	O	S	0	0
			1185	753	224	205	3		

- Molecule 17 is a protein called Small ribosomal subunit protein eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	S	66	Total	C	N	O	S	0	0
			571	364	101	105	1		

- Molecule 18 is a protein called Small ribosomal subunit protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	128	Total	C	N	O	S	0	0
			1064	684	192	184	4		

- Molecule 19 is a protein called Small ribosomal subunit protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	154	Total	C	N	O	S	0	0
			1247	805	223	217	2		

- Molecule 20 is a protein called Small ribosomal subunit protein eS24.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	V	107	Total	C	N	O	S	0	0
			836	524	154	156	2		

- Molecule 21 is a protein called Small ribosomal subunit protein eS27.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	W	65	Total	C	N	O	S	0	0
			503	319	93	84	7		

- Molecule 22 is a protein called Small ribosomal subunit protein eS28.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	X	67	Total	C	N	O	0	0
			535	335	103	97		

- Molecule 23 is a protein called Small ribosomal subunit protein eS31.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Y	49	Total	C	N	O	S	0	0
			395	252	73	65	5		

- Molecule 24 is a protein called Large ribosomal subunit protein eL8.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	3	117	Total	C	N	O	S	0	0
			893	567	149	175	2		

- Molecule 25 is a protein called aS34.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	a	71	Total	C	N	O	S	0	0
			562	361	98	96	7		

- Molecule 26 is a protein called LSU ribosomal protein S30E (Rps30E).

Mol	Chain	Residues	Atoms				AltConf	Trace
26	e	43	Total	C	N	O	0	0
			354	220	74	60		

- Molecule 27 is a RNA chain called tRNA Met initiator.

Mol	Chain	Residues	Atoms						AltConf	Trace
27	4	77	Total	C	N	O	P	S	0	0
			1645	734	296	537	77	1		

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
4	1	A	C	engineered mutation	GB 1334604293
4	72	U	A	engineered mutation	GB 1334604293

- Molecule 28 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	5	20	Total	C	N	O	P	0	0
			430	192	78	140	20		

- Molecule 29 is a protein called Small ribosomal subunit protein uS14.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	P	53	Total	C	N	O	S	0	0
			440	282	80	74	4		

- Molecule 30 is a protein called Small ribosomal subunit protein uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	R	113	Total	C	N	O	S	0	0
			901	570	166	161	4		

- Molecule 31 is a protein called Small ribosomal subunit protein uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Z	196	Total	C	N	O	S	0	0
			1561	1009	274	272	6		

- Molecule 32 is a protein called aS33.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	d	70	Total	C	N	O	S	0	0
			570	370	92	105	3		

- Molecule 33 is a protein called Small ribosomal subunit protein eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	c	109	Total	C	N	O	S	0	0
			856	539	152	164	1		

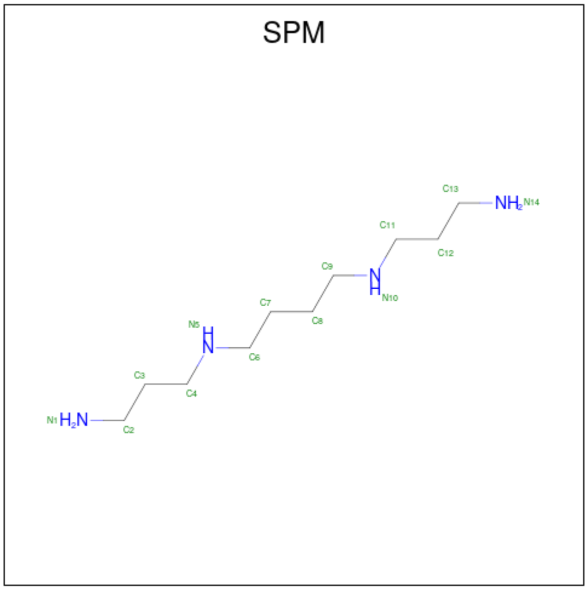
- Molecule 34 is a protein called Small ribosomal subunit protein eS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	E	238	Total	C	N	O	S	0	0
			1930	1238	342	344	6		

- Molecule 35 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
35	2	47	Total	Mg	0
			47	47	
35	F	2	Total	Mg	0
			2	2	
35	K	1	Total	Mg	0
			1	1	
35	5	1	Total	Mg	0
			1	1	
35	P	1	Total	Mg	0
			1	1	
35	R	1	Total	Mg	0
			1	1	

- Molecule 36 is SPERMINE (three-letter code: SPM) (formula: $C_{10}H_{26}N_4$).



Mol	Chain	Residues	Atoms	AltConf
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0

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Mol	Chain	Residues	Atoms	AltConf
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0
36	2	1	Total C N 14 10 4	0

- Molecule 37 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
37	C	2	Total Zn 2 2	0
37	F	1	Total Zn 1 1	0

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Mol	Chain	Residues	Atoms	AltConf
37	W	1	Total Zn 1 1	0
37	a	2	Total Zn 2 2	0
37	P	1	Total Zn 1 1	0
37	R	1	Total Zn 1 1	0

- Molecule 38 is water.

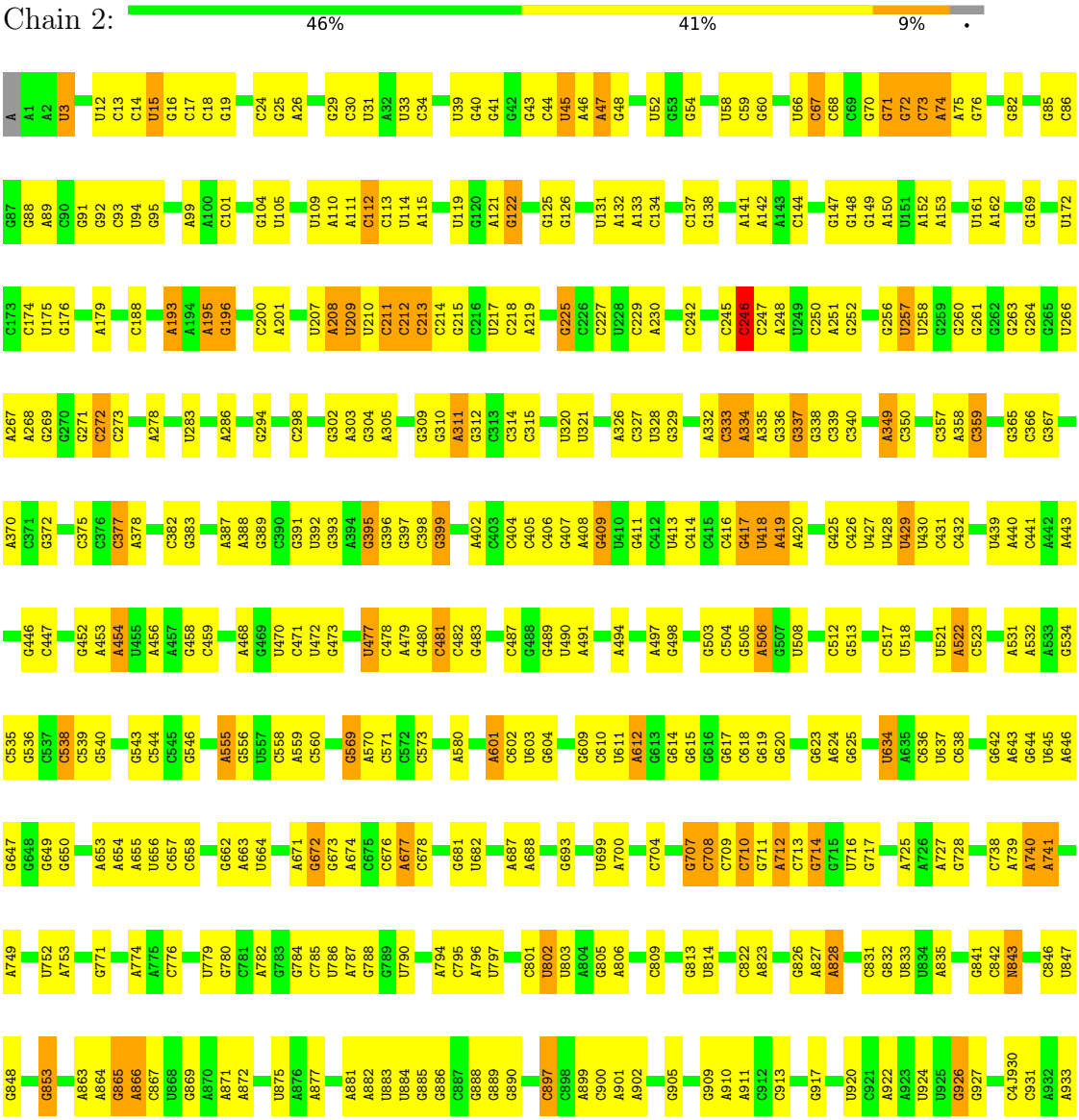
Mol	Chain	Residues	Atoms	AltConf
38	2	192	Total O 192 192	0
38	D	1	Total O 1 1	0
38	H	1	Total O 1 1	0
38	I	2	Total O 2 2	0
38	K	3	Total O 3 3	0
38	4	3	Total O 3 3	0
38	5	4	Total O 4 4	0
38	P	1	Total O 1 1	0
38	R	2	Total O 2 2	0
38	E	1	Total O 1 1	0

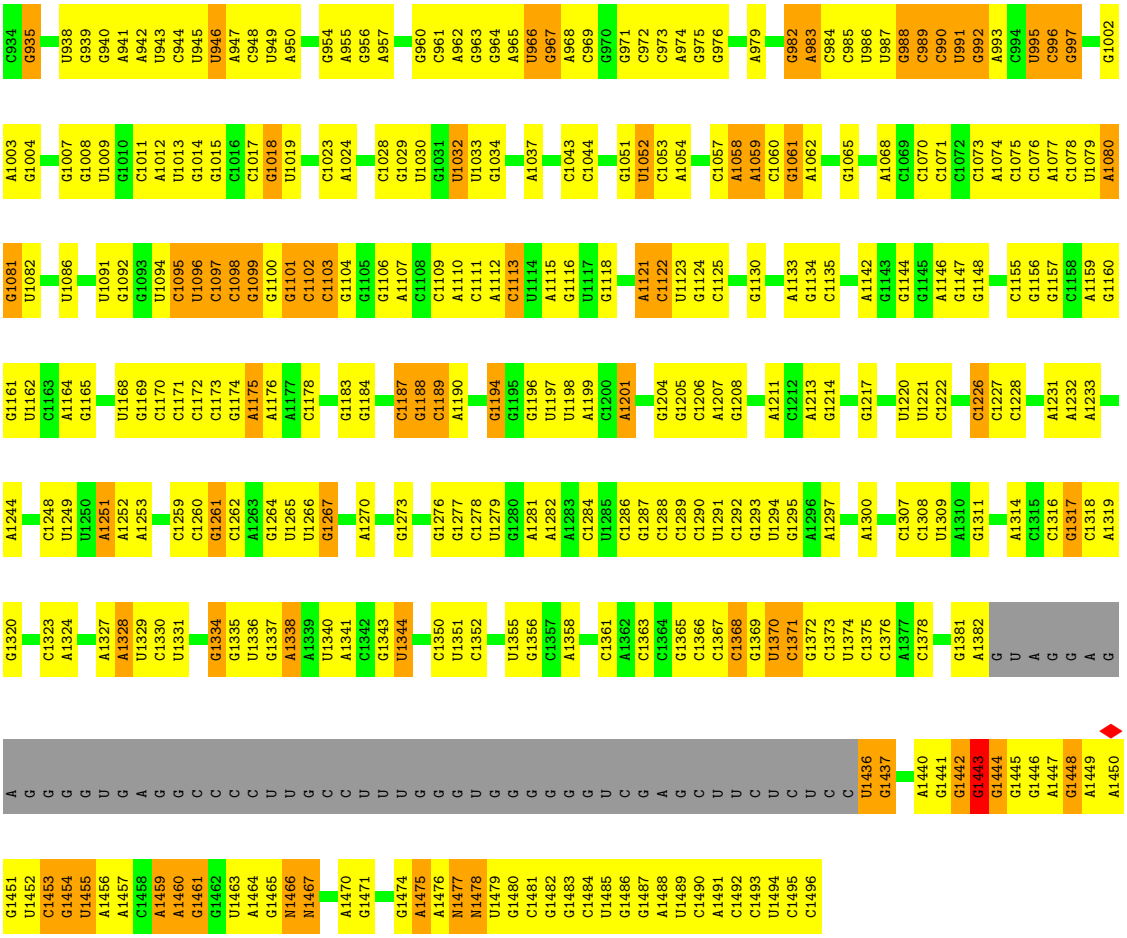
3 Residue-property plots (i)

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: rRNA 16S

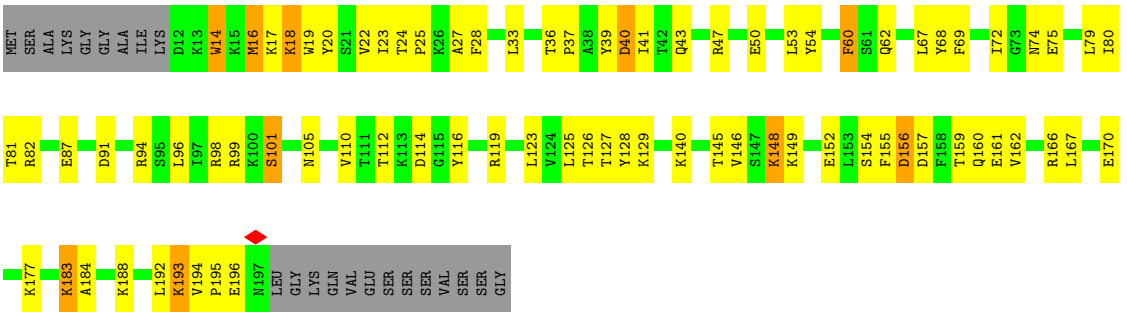
Chain 2:





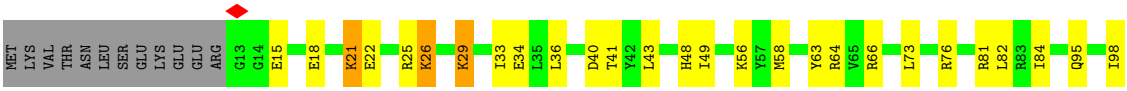
• Molecule 2: Small ribosomal subunit protein eS1

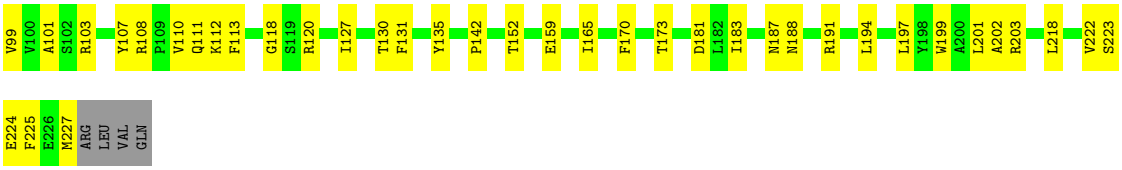
Chain A:



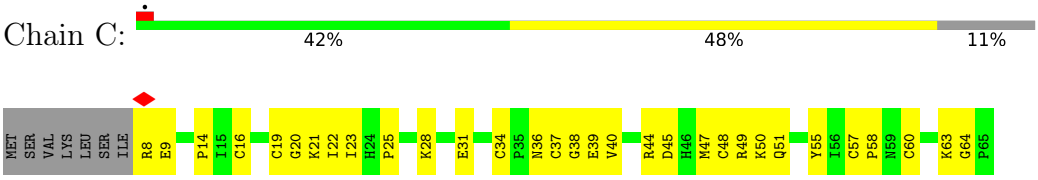
• Molecule 3: Small ribosomal subunit protein uS2

Chain B:

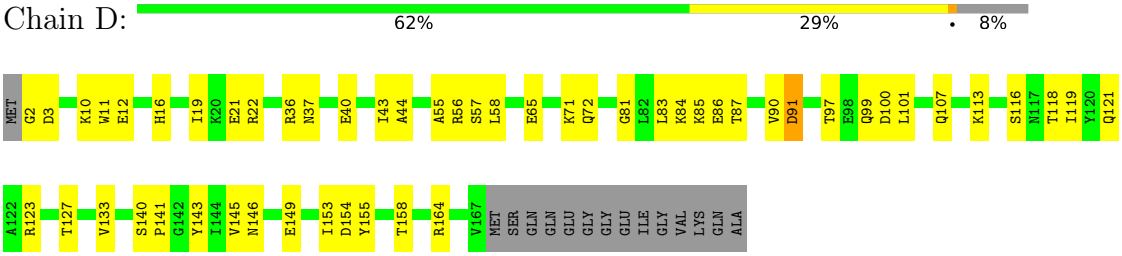




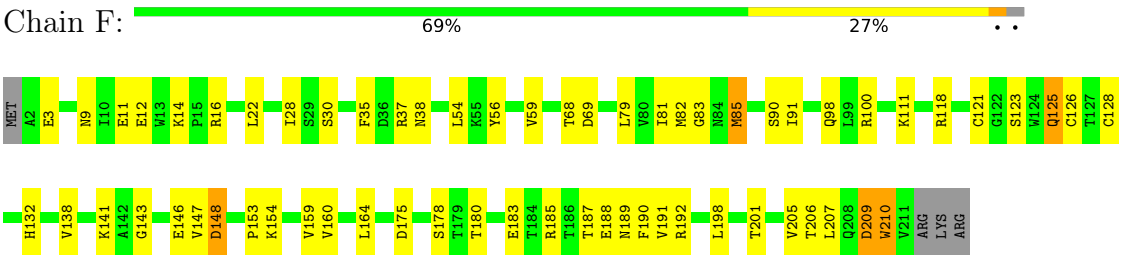
• Molecule 4: Small zinc finger protein HVO-2753-like zinc-binding pocket domain-containing protein



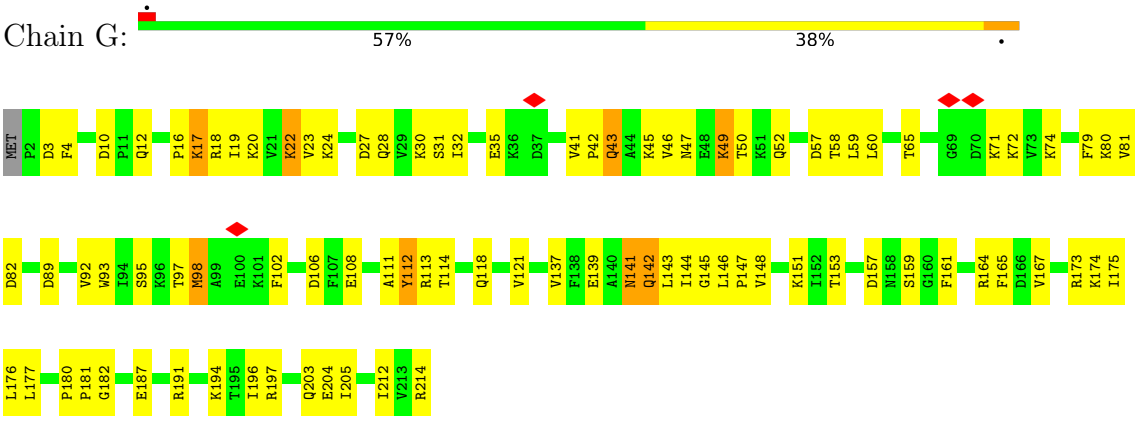
• Molecule 5: Small ribosomal subunit protein uS4



• Molecule 6: Small ribosomal subunit protein uS5

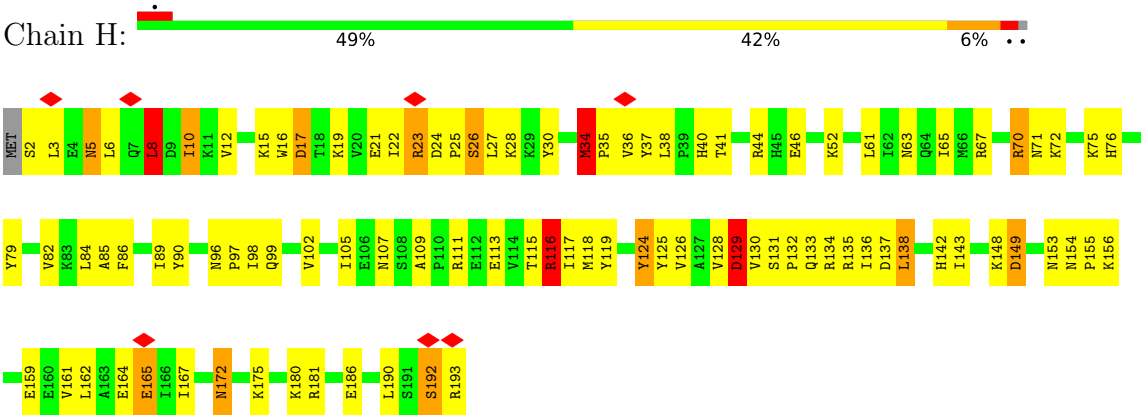


• Molecule 7: Small ribosomal subunit protein eS6



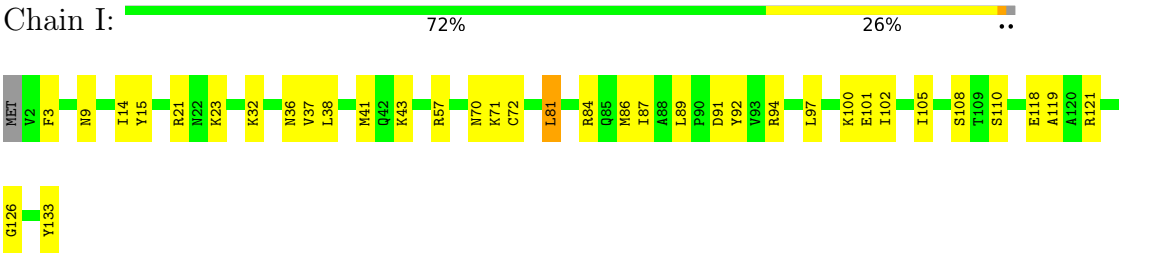
• Molecule 8: Small ribosomal subunit protein uS7

Chain H:



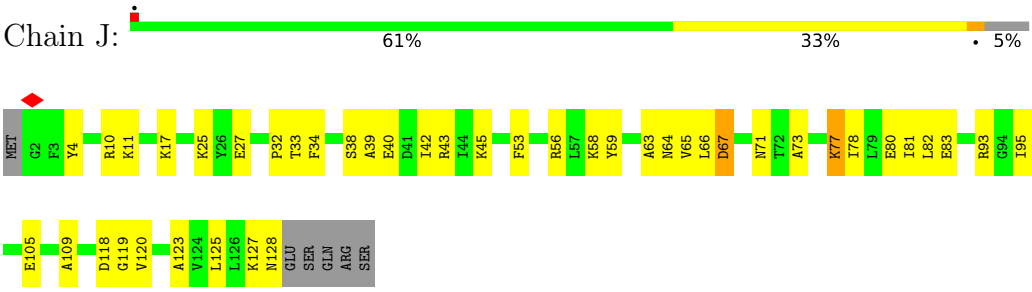
• Molecule 9: Small ribosomal subunit protein uS8

Chain I:



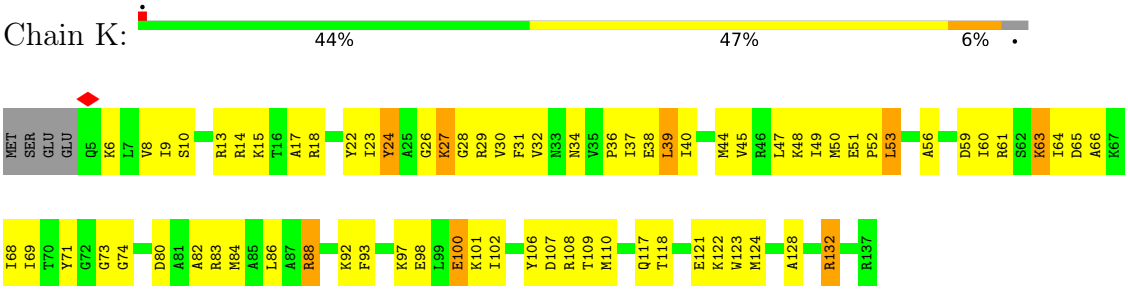
• Molecule 10: Small ribosomal subunit protein eS8

Chain J:



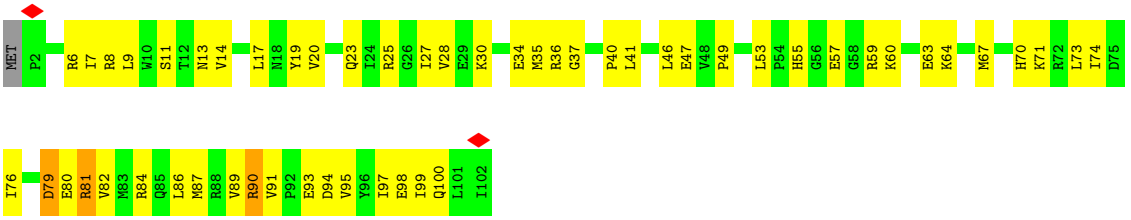
• Molecule 11: Small ribosomal subunit protein uS9

Chain K:



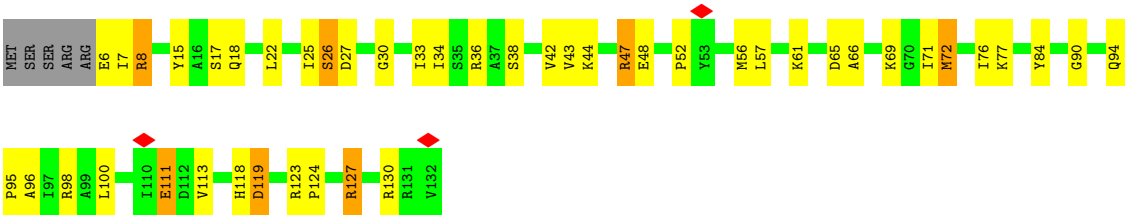
• Molecule 12: Small ribosomal subunit protein uS10

Chain L:



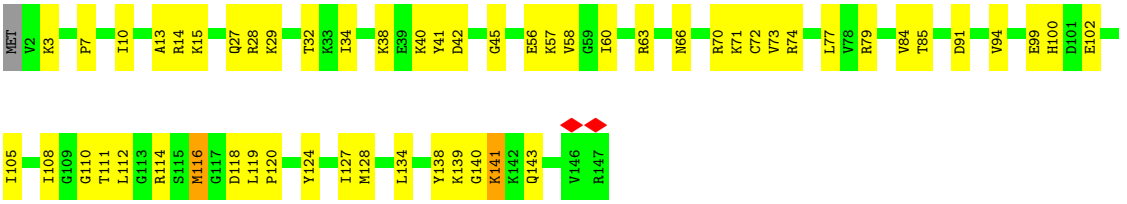
• Molecule 13: Small ribosomal subunit protein uS11

Chain M:



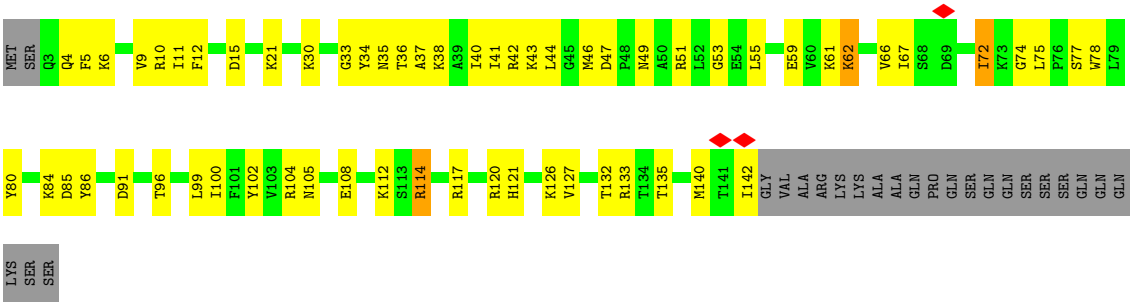
• Molecule 14: Small ribosomal subunit protein uS12

Chain N:



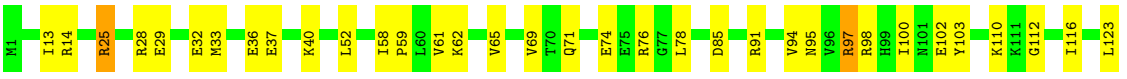
• Molecule 15: Small ribosomal subunit protein uS13

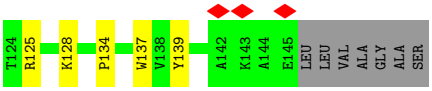
Chain O:



• Molecule 16: Small ribosomal subunit protein uS15

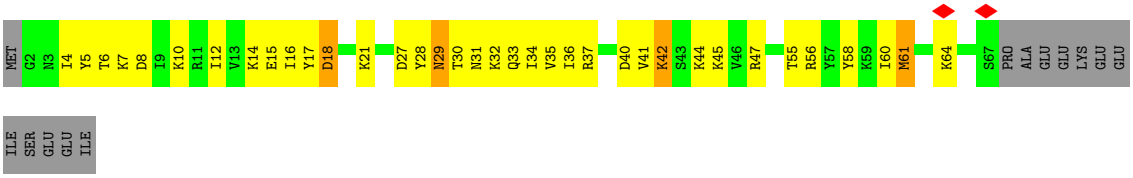
Chain Q:





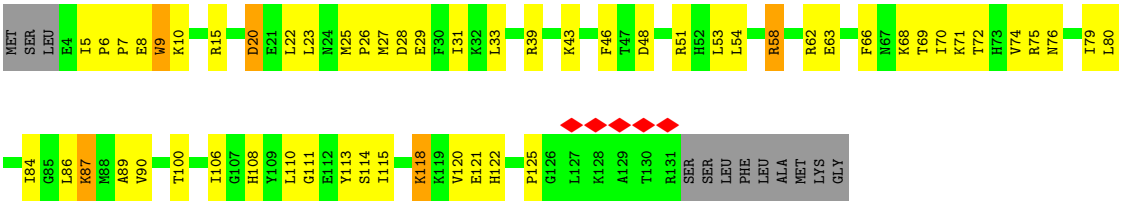
• Molecule 17: Small ribosomal subunit protein eS17

Chain S:



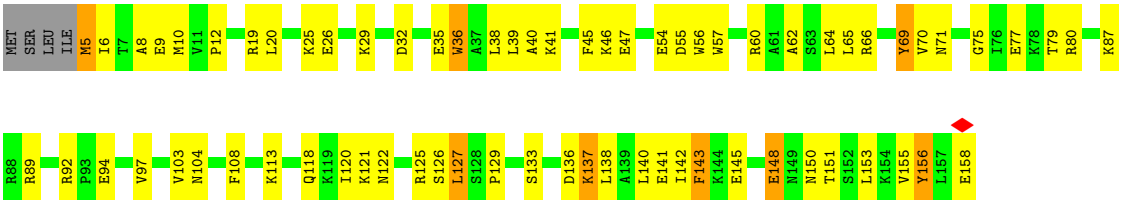
• Molecule 18: Small ribosomal subunit protein uS19

Chain T:



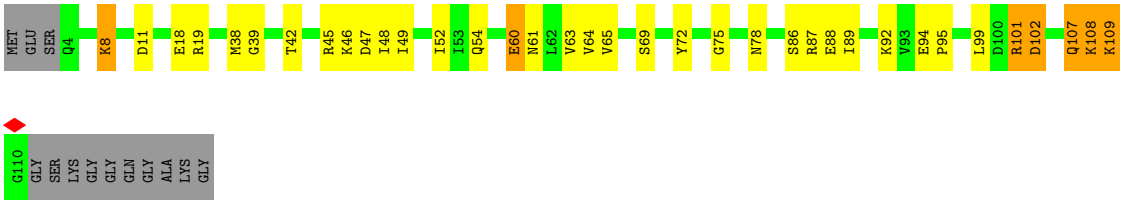
• Molecule 19: Small ribosomal subunit protein eS19

Chain U:



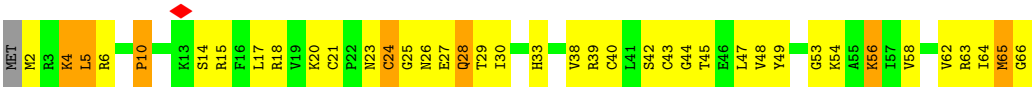
• Molecule 20: Small ribosomal subunit protein eS24

Chain V:

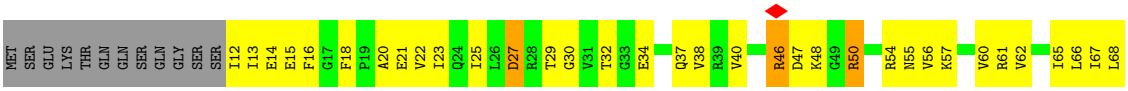


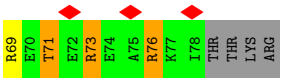
• Molecule 21: Small ribosomal subunit protein eS27

Chain W:

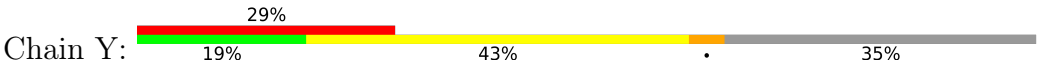


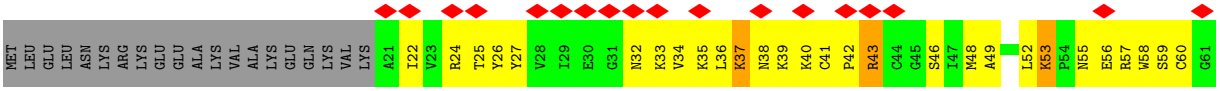
• Molecule 22: Small ribosomal subunit protein eS28

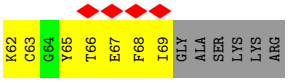




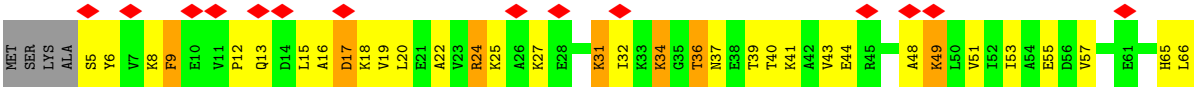
• Molecule 23: Small ribosomal subunit protein eS31

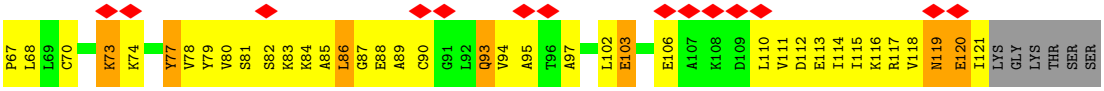




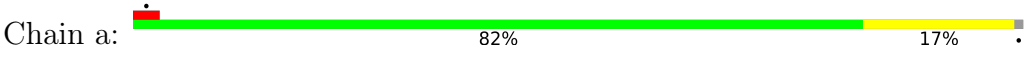


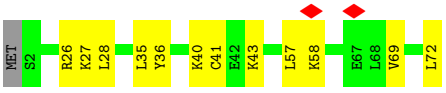
• Molecule 24: Large ribosomal subunit protein eL8



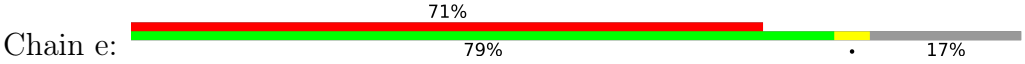


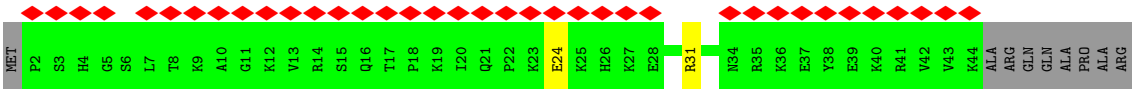
• Molecule 25: aS34



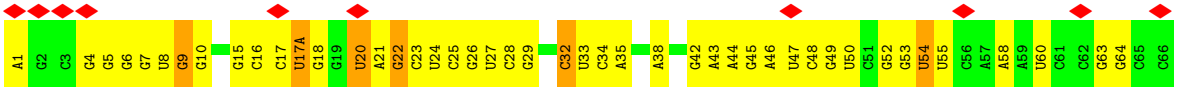


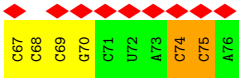
• Molecule 26: LSU ribosomal protein S30E (Rps30E)



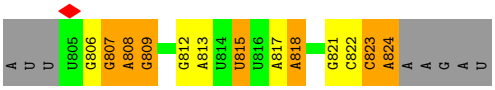


• Molecule 27: tRNA Met initiator

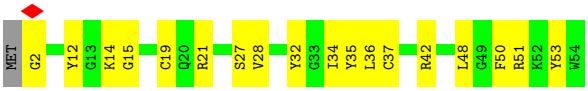




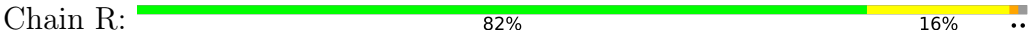
• Molecule 28: mRNA

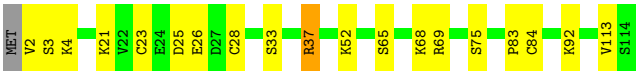


• Molecule 29: Small ribosomal subunit protein uS14

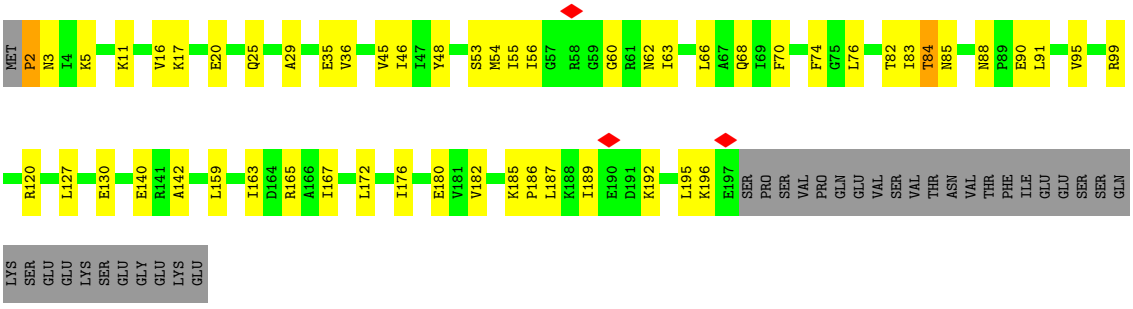


• Molecule 30: Small ribosomal subunit protein uS17



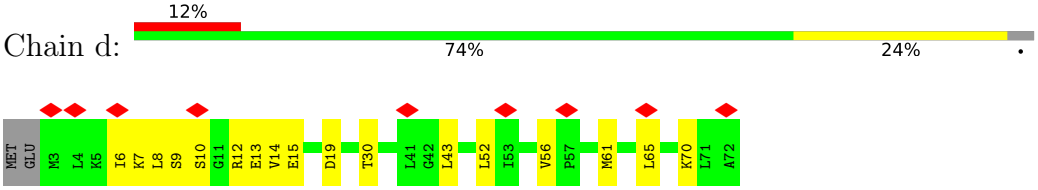


• Molecule 31: Small ribosomal subunit protein uS3



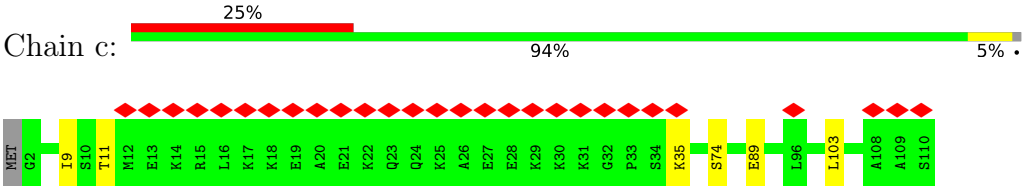
• Molecule 32: aS33

Chain d:



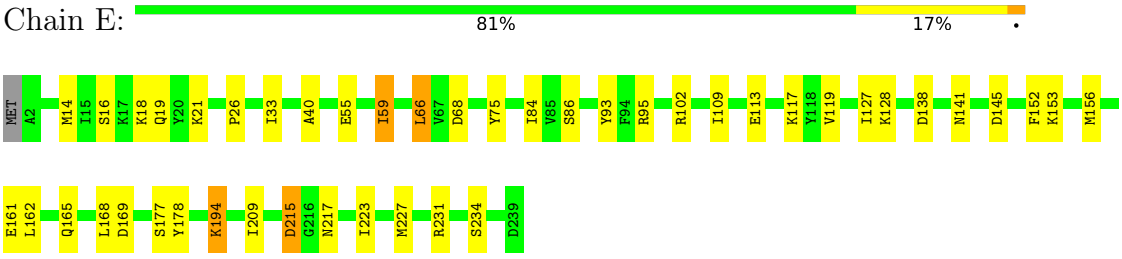
• Molecule 33: Small ribosomal subunit protein eS25

Chain c:



• Molecule 34: Small ribosomal subunit protein eS4

Chain E:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	38561	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)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.047	Depositor
Minimum map value	-0.018	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.007	Depositor
Map size (Å)	366.444, 366.444, 366.444	wwPDB
Map dimensions	348, 348, 348	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.053, 1.053, 1.053	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: PSU, 4AC, C4J, H2U, 5MU, OMC, MA6, MG, ZN, 4SU, OMU, 6MZ, A2M, OMG, SPM, 5MC

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	2	0.39	0/33909	0.82	23/52900 (0.0%)
2	A	0.34	0/1543	0.67	2/2077 (0.1%)
3	B	0.32	0/1731	0.64	0/2349
4	C	0.35	0/466	0.68	0/625
5	D	0.30	0/1380	0.54	0/1859
6	F	0.32	0/1654	0.55	0/2240
7	G	0.31	0/1684	0.59	1/2265 (0.0%)
8	H	0.34	0/1571	0.73	7/2116 (0.3%)
9	I	0.33	0/1070	0.58	0/1444
10	J	0.31	0/994	0.61	0/1337
11	K	0.34	0/1084	0.79	2/1450 (0.1%)
12	L	0.35	0/856	0.73	0/1154
13	M	0.37	0/960	0.80	2/1294 (0.2%)
14	N	0.31	0/1155	0.60	0/1540
15	O	0.33	0/1142	0.75	1/1532 (0.1%)
16	Q	0.31	0/1206	0.58	0/1618
17	S	0.39	0/578	0.75	0/770
18	T	0.32	0/1087	0.62	0/1456
19	U	0.33	0/1270	0.62	0/1710
20	V	0.33	0/843	0.68	2/1124 (0.2%)
21	W	0.38	0/511	0.79	1/684 (0.1%)
22	X	0.37	0/538	0.83	0/722
23	Y	0.45	0/404	0.85	0/540
24	3	0.39	0/902	0.71	0/1216
25	a	0.54	0/574	1.04	3/770 (0.4%)
26	e	0.45	0/360	0.74	1/477 (0.2%)
27	4	0.34	1/1725 (0.1%)	0.74	0/2687
28	5	0.48	0/481	0.97	0/748
29	P	0.36	0/451	0.56	0/600
30	R	0.41	0/918	0.57	0/1236
31	Z	0.33	0/1584	0.56	0/2124
32	d	0.24	0/581	0.48	0/786

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	c	0.32	0/861	0.55	0/1143
34	E	0.37	0/1965	0.55	0/2644
All	All	0.37	1/68038 (0.0%)	0.75	45/99237 (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
8	H	0	1
25	a	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
27	4	1	A	OP3-P	-10.72	1.48	1.61

All (45) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1370	U	P-O3'-C3'	-33.84	79.09	119.70
1	2	1370	U	OP1-P-O3'	-18.61	64.27	105.20
1	2	1370	U	OP2-P-O3'	16.04	140.49	105.20
1	2	1095	C	O4'-C1'-N1	9.56	115.84	108.20
8	H	138	LEU	CA-CB-CG	7.69	132.99	115.30
1	2	1103	C	C2-N1-C1'	7.61	127.17	118.80
1	2	1102	C	C2-N1-C1'	7.46	127.00	118.80
1	2	1095	C	C6-N1-C2	-7.04	117.48	120.30
13	M	119	ASP	CB-CG-OD2	-6.97	112.03	118.30
25	a	69	VAL	CG1-CB-CG2	-6.79	100.04	110.90
15	O	72	ILE	CG1-CB-CG2	-6.77	96.51	111.40
1	2	1095	C	C2-N1-C1'	6.71	126.19	118.80
1	2	1095	C	N1-C2-O2	6.62	122.87	118.90
1	2	942	A	O5'-P-OP2	-6.42	99.92	105.70
1	2	1378	C	N1-C2-O2	6.33	122.69	118.90
13	M	119	ASP	CB-CG-OD1	6.31	123.98	118.30
1	2	1122	C	C2-N1-C1'	6.25	125.68	118.80
8	H	3	LEU	CA-CB-CG	6.24	129.66	115.30
1	2	1102	C	C6-N1-C1'	-6.20	113.36	120.80
8	H	8	LEU	CA-CB-CG	6.16	129.47	115.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1103	C	C6-N1-C1'	-6.13	113.45	120.80
1	2	1095	C	C5-C6-N1	6.11	124.05	121.00
7	G	27	ASP	CB-CG-OD2	5.98	123.69	118.30
1	2	942	A	C2'-C3'-O3'	5.94	123.20	113.70
25	a	72	LEU	CB-CG-CD1	-5.81	101.12	111.00
25	a	28	LEU	CA-CB-CG	5.74	128.50	115.30
26	e	31	ARG	CG-CD-NE	-5.66	99.91	111.80
1	2	1443	G	C4-N9-C1'	5.64	133.84	126.50
11	K	53	LEU	CA-CB-CG	5.59	128.15	115.30
1	2	1095	C	N3-C2-O2	-5.53	118.03	121.90
8	H	10	ILE	CG1-CB-CG2	-5.53	99.23	111.40
2	A	91	ASP	CB-CG-OD1	5.52	123.27	118.30
8	H	129	ASP	CB-CG-OD2	-5.48	113.37	118.30
1	2	713	C	C2-N1-C1'	5.47	124.82	118.80
20	V	11	ASP	CB-CG-OD1	5.42	123.18	118.30
8	H	129	ASP	CB-CG-OD1	5.39	123.15	118.30
21	W	65	MET	CA-CB-CG	5.26	122.24	113.30
1	2	1378	C	N3-C2-O2	-5.25	118.23	121.90
1	2	1443	G	C8-N9-C1'	-5.24	120.19	127.00
20	V	107	GLN	CA-CB-CG	5.12	124.67	113.40
1	2	1122	C	N1-C2-O2	5.11	121.96	118.90
8	H	34	MET	CA-CB-CG	5.10	121.98	113.30
11	K	63	LYS	CA-CB-CG	5.08	124.59	113.40
2	A	40	ASP	CB-CG-OD1	5.03	122.83	118.30
1	2	409	G	O5'-P-OP2	-5.01	101.19	105.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
8	H	116	ARG	Sidechain
25	a	36	TYR	Sidechain

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	2	31042	0	15709	687	0
2	A	1515	0	1565	68	0
3	B	1698	0	1753	56	0
4	C	455	0	437	29	0
5	D	1354	0	1419	36	0
6	F	1625	0	1689	60	0
7	G	1661	0	1737	64	0
8	H	1543	0	1611	95	0
9	I	1050	0	1100	31	0
10	J	982	0	1046	34	0
11	K	1068	0	1125	80	0
12	L	840	0	893	56	0
13	M	944	0	978	39	0
14	N	1140	0	1244	45	0
15	O	1124	0	1162	59	0
16	Q	1185	0	1260	30	0
17	S	571	0	598	44	0
18	T	1064	0	1107	46	0
19	U	1247	0	1329	73	0
20	V	836	0	894	27	0
21	W	503	0	532	31	0
22	X	535	0	572	41	0
23	Y	395	0	405	41	0
24	3	893	0	940	75	0
25	a	562	0	575	0	0
26	e	354	0	386	0	0
27	4	1645	0	840	43	0
28	5	430	0	215	11	0
29	P	440	0	436	28	0
30	R	901	0	935	16	0
31	Z	1561	0	1667	50	0
32	d	570	0	590	0	0
33	c	856	0	941	0	0
34	E	1930	0	2013	29	0
35	2	47	0	0	0	0
35	5	1	0	0	0	0
35	F	2	0	0	0	0
35	K	1	0	0	0	0
35	P	1	0	0	0	0
35	R	1	0	0	0	0
36	2	434	0	805	73	0
37	C	2	0	0	0	0
37	F	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
37	P	1	0	0	0	0
37	R	1	0	0	0	0
37	W	1	0	0	0	0
37	a	2	0	0	0	0
38	2	192	0	0	9	0
38	4	3	0	0	0	0
38	5	4	0	0	0	0
38	D	1	0	0	0	0
38	E	1	0	0	0	0
38	H	1	0	0	1	0
38	I	2	0	0	0	0
38	K	3	0	0	0	0
38	P	1	0	0	0	0
38	R	2	0	0	0	0
All	All	65224	0	50508	1774	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 18.

All (1774) 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)
1:2:927:G:OP1	36:2:1576:SPM:C12	1.67	1.43
1:2:809:C:OP1	36:2:1575:SPM:C9	1.86	1.22
1:2:125:G:OP2	36:2:1567:SPM:C7	1.89	1.19
1:2:125:G:OP2	36:2:1567:SPM:H72	1.02	1.18
1:2:483:G:OP2	36:2:1549:SPM:H132	1.51	1.08
1:2:809:C:OP1	36:2:1575:SPM:H92	1.49	1.07
1:2:1496:C:O2	28:5:806:G:N2	1.87	1.07
4:C:16:CYS:HB3	4:C:19:CYS:SG	1.95	1.07
1:2:1451:G:C5	1:2:1452:U:C5	2.44	1.05
1:2:1451:G:C6	1:2:1452:U:C4	2.45	1.04
1:2:1451:G:C4	1:2:1452:U:C5	2.47	1.02
36:2:1553:SPM:H31	36:2:1553:SPM:H71	1.41	1.01
1:2:1053:C:H5'	17:S:7:LYS:HE3	1.43	0.99
1:2:949:U:H3	1:2:1183:G:H1	1.06	0.99
1:2:920:U:H1'	1:2:1188:G:N2	1.77	0.98
1:2:927:G:P	36:2:1576:SPM:C12	2.51	0.98
8:H:193:ARG:HH12	22:X:73:ARG:HD3	1.28	0.97
11:K:8:VAL:HG22	11:K:23:ILE:HD11	1.44	0.96
6:F:128:CYS:SG	6:F:132:HIS:HD2	1.89	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:T:5:ILE:HD12	18:T:6:PRO:HD2	1.49	0.94
15:O:12:PHE:O	15:O:96:THR:HG21	1.70	0.91
1:2:1495:C:O2	28:5:807:G:N2	2.03	0.91
1:2:927:G:OP1	36:2:1576:SPM:C13	2.19	0.90
1:2:1453:C:H2'	1:2:1454:G:O4'	1.71	0.90
1:2:1495:C:N3	28:5:807:G:N1	2.20	0.90
19:U:5:MET:N	19:U:5:MET:SD	2.46	0.89
1:2:1324:A:C8	29:P:12:TYR:HB3	2.07	0.88
1:2:1453:C:C4	1:2:1454:G:N7	2.41	0.88
24:3:115:ILE:O	24:3:119:ASN:ND2	2.07	0.88
1:2:1009:U:OP2	36:2:1576:SPM:N5	2.07	0.87
36:2:1573:SPM:H42	36:2:1573:SPM:H82	1.57	0.87
6:F:121:CYS:SG	6:F:128:CYS:HB3	2.13	0.84
1:2:809:C:OP1	36:2:1575:SPM:H91	1.76	0.84
7:G:57:ASP:OD2	7:G:58:THR:N	2.12	0.83
16:Q:97:ARG:NH2	16:Q:139:TYR:OH	2.10	0.83
1:2:440:A:H2	20:V:109:LYS:HE3	1.44	0.83
18:T:7:PRO:HA	18:T:10:LYS:HD3	1.59	0.83
1:2:125:G:P	36:2:1567:SPM:H92	2.18	0.83
27:4:50:U:H3	27:4:64:G:H1	0.86	0.83
11:K:30:VAL:HG12	11:K:66:ALA:HB3	1.62	0.82
24:3:19:VAL:HG12	24:3:114:ILE:HG12	1.60	0.82
1:2:309:G:N2	5:D:3:ASP:OD2	2.12	0.82
17:S:36:ILE:HG22	17:S:47:ARG:HD2	1.60	0.81
11:K:27:LYS:NZ	19:U:155:VAL:O	2.14	0.80
8:H:113:GLU:OE1	8:H:113:GLU:N	2.15	0.79
1:2:71:G:N1	1:2:213:C:N3	2.29	0.79
36:2:1553:SPM:H31	36:2:1553:SPM:C7	2.12	0.79
1:2:920:U:H1'	1:2:1188:G:H21	1.44	0.79
13:M:77:LYS:HD2	13:M:111:GLU:OE2	1.83	0.79
36:2:1566:SPM:H31	36:2:1566:SPM:H72	1.63	0.79
2:A:19:TRP:CE2	2:A:37:PRO:HG3	2.18	0.79
1:2:1091:U:H3	1:2:1104:G:H1	1.32	0.78
2:A:16:MET:N	2:A:16:MET:SD	2.57	0.78
1:2:1012:A:O2'	31:Z:140:GLU:O	2.03	0.77
8:H:193:ARG:NH1	22:X:73:ARG:HD3	1.98	0.77
12:L:63:GLU:OE2	29:P:42:ARG:NE	2.18	0.77
1:2:1451:G:C6	1:2:1452:U:O4	2.38	0.76
9:I:97:LEU:HD21	9:I:105:ILE:HG12	1.67	0.76
1:2:1451:G:C4	1:2:1452:U:C6	2.72	0.76
2:A:23:ILE:HD11	2:A:80:ILE:HG22	1.65	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:18:C:H5”	14:N:112:LEU:HD21	1.66	0.76
1:2:920:U:O2	1:2:1188:G:C2	2.38	0.76
24:3:49:LYS:HZ3	24:3:103:GLU:H	1.32	0.76
1:2:310:G:HO2’	5:D:2:GLY:N	1.84	0.76
31:Z:36:VAL:HG12	31:Z:45:VAL:HG22	1.68	0.76
1:2:822:C:O3’	4:C:50:LYS:NZ	2.18	0.76
1:2:71:G:N2	1:2:213:C:O2	2.16	0.75
1:2:17:C:H2’	1:2:18:C:H6	1.51	0.75
1:2:1008:G:OP1	36:2:1576:SPM:H72	1.86	0.75
1:2:1217:G:OP1	29:P:32:TYR:OH	2.02	0.75
3:B:101:ALA:HB2	3:B:110:VAL:HG21	1.69	0.75
8:H:10:ILE:HD12	8:H:37:TYR:CE1	2.22	0.75
16:Q:134:PRO:HG2	16:Q:137:TRP:HB2	1.69	0.75
1:2:39:U:O4	34:E:18:LYS:NZ	2.20	0.75
7:G:23:VAL:HG22	7:G:92:VAL:HB	1.69	0.75
15:O:66:VAL:HG12	15:O:72:ILE:HD12	1.68	0.75
12:L:7:ILE:HD13	12:L:74:ILE:HG22	1.69	0.74
4:C:34:CYS:SG	4:C:57:CYS:HB2	2.26	0.74
1:2:337:OMG:HM22	1:2:338:G:H5’	1.70	0.74
8:H:67:ARG:HG3	8:H:148:LYS:HD3	1.70	0.74
11:K:53:LEU:HB2	11:K:86:LEU:HD11	1.68	0.74
21:W:20:LYS:NZ	21:W:25:GLY:O	2.20	0.74
31:Z:63:ILE:H	31:Z:63:ILE:HD12	1.53	0.73
3:B:224:GLU:OE1	3:B:224:GLU:N	2.21	0.73
8:H:22:ILE:O	8:H:28:LYS:NZ	2.21	0.73
15:O:6:LYS:HE3	15:O:9:VAL:HG22	1.67	0.73
31:Z:70:PHE:HB3	31:Z:76:LEU:HD12	1.71	0.73
29:P:19:CYS:SG	29:P:36:LEU:HA	2.28	0.73
16:Q:36:GLU:OE1	16:Q:76:ARG:NH1	2.20	0.73
5:D:154:ASP:OD1	5:D:155:TYR:N	2.21	0.73
8:H:90:TYR:HB2	8:H:97:PRO:HG3	1.69	0.73
15:O:44:LEU:HD21	15:O:66:VAL:HG21	1.70	0.73
8:H:130:VAL:HG12	8:H:135:ARG:HG3	1.71	0.73
12:L:11:SER:HB3	12:L:17:LEU:HG	1.70	0.72
13:M:25:ILE:HG22	13:M:34:ILE:HB	1.71	0.72
12:L:7:ILE:HD11	12:L:76:ILE:HG12	1.71	0.72
1:2:809:C:OP1	36:2:1575:SPM:C8	2.38	0.72
11:K:84:MET:O	11:K:88:ARG:HD2	1.90	0.72
1:2:1453:C:H2’	1:2:1454:G:C1’	2.19	0.72
7:G:137:VAL:HG12	7:G:151:LYS:HG3	1.71	0.72
1:2:973:C:N4	1:2:982:G:O6	2.18	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1053:C:H5'	17:S:7:LYS:CE	2.18	0.72
17:S:15:GLU:OE1	31:Z:195:LEU:HD11	1.90	0.72
1:2:885:G:H2'	1:2:886:G:C8	2.24	0.72
4:C:9:GLU:N	4:C:9:GLU:OE2	2.22	0.72
5:D:116:SER:HB2	5:D:121:GLN:HG2	1.71	0.72
6:F:126:CYS:SG	6:F:128:CYS:CB	2.78	0.72
1:2:983:A:OP1	29:P:2:GLY:HA2	1.90	0.71
1:2:619:G:H2'	1:2:620:G:C8	2.26	0.71
11:K:27:LYS:HZ2	19:U:155:VAL:HG22	1.55	0.71
12:L:46:LEU:HD22	29:P:32:TYR:CD1	2.25	0.71
24:3:18:LYS:NZ	24:3:110:LEU:O	2.22	0.71
4:C:16:CYS:CB	4:C:19:CYS:SG	2.65	0.71
7:G:45:LYS:HB2	7:G:93:TRP:HB2	1.72	0.71
13:M:44:LYS:HA	13:M:44:LYS:HE3	1.72	0.71
1:2:1032:OMU:HM22	1:2:1033:U:H5'	1.72	0.71
21:W:18:ARG:HB3	21:W:62:VAL:HG22	1.73	0.71
1:2:1253:A:OP1	36:2:1578:SPM:C9	2.38	0.71
1:2:965:A:H2'	24:3:94:VAL:HG11	1.73	0.71
1:2:967:G:N7	24:3:37:ASN:ND2	2.38	0.71
1:2:983:A:OP2	29:P:2:GLY:HA3	1.91	0.71
5:D:40:GLU:OE1	5:D:40:GLU:N	2.23	0.71
22:X:73:ARG:NH1	22:X:73:ARG:HA	2.06	0.71
13:M:48:GLU:OE2	13:M:48:GLU:N	2.21	0.70
1:2:920:U:C1'	1:2:1188:G:N2	2.53	0.70
1:2:1365:G:N7	38:2:1611:HOH:O	2.23	0.70
21:W:15:ARG:HG3	21:W:64:ILE:HD11	1.73	0.70
1:2:1451:G:H2'	1:2:1452:U:H6	1.56	0.70
11:K:107:ASP:OD1	11:K:109:THR:OG1	2.09	0.70
12:L:6:ARG:HD2	12:L:100:GLN:HE21	1.55	0.70
7:G:203:GLN:OE1	7:G:203:GLN:N	2.19	0.70
14:N:102:GLU:N	14:N:102:GLU:OE2	2.25	0.70
22:X:14:GLU:OE2	22:X:14:GLU:N	2.25	0.70
24:3:12:PRO:HG3	24:3:117:ARG:CZ	2.22	0.70
8:H:89:ILE:HD11	8:H:97:PRO:HA	1.73	0.70
1:2:872:A:OP1	14:N:28:ARG:NH2	2.24	0.69
1:2:644:G:N3	13:M:36:ARG:NH2	2.37	0.69
1:2:1352:C:H4'	36:2:1577:SPM:H42	1.74	0.69
5:D:143:TYR:OH	5:D:149:GLU:OE2	2.08	0.69
3:B:34:GLU:N	3:B:34:GLU:OE1	2.24	0.69
27:4:32:OMC:HM22	27:4:33:U:H5'	1.75	0.69
1:2:88:G:N1	7:G:187:GLU:OE2	2.20	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1112:A:O2'	11:K:71:TYR:OH	2.11	0.69
16:Q:95:ASN:OD1	16:Q:98:ARG:NH2	2.22	0.69
1:2:910:A:H2'	1:2:911:A:C8	2.28	0.69
1:2:1253:A:OP1	36:2:1578:SPM:N10	2.25	0.69
4:C:57:CYS:CB	4:C:60:CYS:SG	2.78	0.69
6:F:141:LYS:NZ	6:F:143:GLY:O	2.25	0.69
1:2:1489:U:H2'	1:2:1490:C:H6	1.56	0.69
8:H:134:ARG:O	8:H:138:LEU:HD12	1.92	0.69
19:U:35:GLU:N	19:U:35:GLU:OE1	2.24	0.69
1:2:1198:U:OP1	38:2:1601:HOH:O	2.11	0.69
22:X:34:GLU:OE1	22:X:34:GLU:N	2.24	0.69
1:2:30:C:O3'	14:N:141:LYS:NZ	2.25	0.68
1:2:603:U:OP1	36:2:1574:SPM:H81	1.93	0.68
8:H:23:ARG:H	8:H:23:ARG:HD2	1.58	0.68
12:L:94:ASP:N	12:L:94:ASP:OD1	2.24	0.68
3:B:98:ILE:HG12	3:B:142:PRO:HB3	1.74	0.68
27:4:9:G:O2'	27:4:10:G:N7	2.25	0.68
1:2:1034:G:N2	1:2:1037:A:OP2	2.21	0.68
2:A:161:GLU:OE2	2:A:166:ARG:NH1	2.27	0.68
3:B:49:ILE:O	3:B:187:ASN:ND2	2.26	0.68
8:H:26:SER:HB3	22:X:67:ILE:HD11	1.74	0.68
1:2:983:A:P	29:P:2:GLY:HA3	2.34	0.68
2:A:119:ARG:HB2	2:A:192:LEU:HD21	1.76	0.68
13:M:22:LEU:HD13	13:M:38:SER:HB3	1.76	0.68
6:F:123:SER:O	9:I:100:LYS:NZ	2.23	0.68
20:V:52:ILE:HG21	20:V:63:VAL:HG11	1.75	0.68
23:Y:26:TYR:CE1	23:Y:37:LYS:HB3	2.29	0.68
1:2:672:OMG:H2'	1:2:673:G:C8	2.29	0.68
23:Y:41:CYS:HB3	23:Y:46:SER:H	1.57	0.68
6:F:126:CYS:SG	6:F:128:CYS:HB3	2.33	0.68
16:Q:98:ARG:NH1	16:Q:102:GLU:OE2	2.24	0.68
15:O:72:ILE:HG21	15:O:75:LEU:HD23	1.73	0.67
1:2:71:G:O6	1:2:213:C:N4	2.26	0.67
1:2:1489:U:H2'	1:2:1490:C:C6	2.29	0.67
1:2:714:G:H21	9:I:3:PHE:HZ	1.41	0.67
12:L:46:LEU:HD22	29:P:32:TYR:CE1	2.30	0.67
1:2:634:U:OP1	2:A:188:LYS:NZ	2.28	0.67
1:2:1374:U:C2	1:2:1448:G:N2	2.63	0.67
2:A:116:TYR:CE1	2:A:195:PRO:HD2	2.29	0.67
36:2:1573:SPM:H82	36:2:1573:SPM:C4	2.24	0.67
1:2:900:C:H2'	1:2:901:A:H8	1.59	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:46:LEU:HD22	29:P:32:TYR:CG	2.30	0.67
11:K:32:VAL:HG13	11:K:37:ILE:HG22	1.77	0.67
12:L:90:ARG:NH2	12:L:91:VAL:O	2.23	0.67
18:T:5:ILE:HD11	18:T:9:TRP:HE1	1.60	0.67
1:2:1453:C:C5	1:2:1454:G:N7	2.63	0.67
4:C:21:LYS:HZ1	9:I:21:ARG:HG2	1.58	0.67
22:X:76:ARG:H	22:X:76:ARG:HD3	1.59	0.67
27:4:22:G:H2'	27:4:23:C:H6	1.60	0.67
1:2:481:OMC:HM22	1:2:482:C:H5'	1.77	0.67
1:2:1451:G:N3	1:2:1452:U:C6	2.63	0.67
10:J:63:ALA:HB2	10:J:78:ILE:HG13	1.75	0.67
12:L:41:LEU:HD11	12:L:73:LEU:HB2	1.76	0.67
8:H:41:THR:O	8:H:44:ARG:NH1	2.27	0.66
36:2:1563:SPM:N1	38:2:1621:HOH:O	2.27	0.66
7:G:167:VAL:HG21	7:G:196:ILE:HD11	1.77	0.66
1:2:1292:C:OP1	15:O:35:ASN:ND2	2.28	0.66
19:U:137:LYS:HD3	19:U:137:LYS:N	2.10	0.66
7:G:142:GLN:CD	7:G:142:GLN:H	1.99	0.66
17:S:31:ASN:O	17:S:35:VAL:HG23	1.95	0.66
15:O:84:LYS:O	18:T:15:ARG:NH1	2.29	0.66
15:O:47:ASP:OD1	15:O:49:ASN:ND2	2.28	0.66
6:F:206:THR:OG1	6:F:209:ASP:OD1	2.11	0.66
7:G:49:LYS:HD3	7:G:50:THR:N	2.11	0.66
11:K:60:ILE:O	11:K:64:ILE:HG13	1.96	0.66
19:U:143:PHE:HD2	19:U:143:PHE:O	1.79	0.66
2:A:19:TRP:CZ2	2:A:37:PRO:HG3	2.30	0.66
3:B:112:LYS:NZ	3:B:224:GLU:O	2.29	0.66
1:2:16:G:H2'	1:2:17:C:C6	2.31	0.65
6:F:3:GLU:OE1	6:F:3:GLU:N	2.29	0.65
8:H:138:LEU:HB3	8:H:142:HIS:NE2	2.11	0.65
10:J:81:ILE:HD11	10:J:96:ILE:HG12	1.77	0.65
19:U:94:GLU:N	19:U:94:GLU:OE2	2.27	0.65
1:2:17:C:H2'	1:2:18:C:C6	2.30	0.65
19:U:45:PHE:HB2	19:U:87:LYS:HB2	1.77	0.65
1:2:218:C:H2'	1:2:219:A:H8	1.60	0.65
21:W:49:TYR:HB2	21:W:56:LYS:HG2	1.76	0.65
4:C:21:LYS:NZ	9:I:21:ARG:HG2	2.12	0.65
31:Z:56:ILE:HG23	31:Z:63:ILE:HD11	1.78	0.65
1:2:349:A:H5"	1:2:350:C:H5	1.61	0.65
15:O:11:ILE:HG22	15:O:12:PHE:CD1	2.31	0.65
23:Y:32:ASN:HA	24:3:68:LEU:HB2	1.79	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1081:G:H5”	12:L:36:ARG:HB3	1.79	0.65
21:W:33:HIS:CD2	21:W:54:LYS:HG3	2.32	0.65
1:2:610:C:N4	1:2:712:A:OP2	2.29	0.65
1:2:790:U:O2’	1:2:1496:C:OP1	2.15	0.65
1:2:794:A:OP2	36:2:1575:SPM:H31	1.97	0.65
1:2:1081:G:N2	1:2:1082:U:O4	2.30	0.64
3:B:29:LYS:HA	3:B:29:LYS:HE2	1.78	0.64
21:W:20:LYS:HE2	21:W:20:LYS:HA	1.77	0.64
1:2:375:C:O2’	20:V:109:LYS:NZ	2.28	0.64
10:J:93:ARG:HB2	10:J:95:ILE:HD13	1.78	0.64
18:T:15:ARG:HG3	18:T:33:LEU:HB3	1.79	0.64
22:X:22:VAL:HG23	22:X:62:VAL:HA	1.79	0.64
24:3:112:ASP:O	24:3:115:ILE:HG12	1.97	0.64
7:G:164:ARG:NH1	7:G:181:PRO:O	2.29	0.64
18:T:27:MET:N	18:T:27:MET:SD	2.70	0.64
21:W:26:ASN:OD1	21:W:27:GLU:N	2.31	0.64
31:Z:163:ILE:C	31:Z:163:ILE:HD12	2.17	0.64
1:2:1251:A:H2’	1:2:1252:A:C8	2.32	0.64
1:2:1451:G:N1	1:2:1452:U:C4	2.66	0.64
22:X:23:ILE:HA	22:X:62:VAL:HG23	1.79	0.64
24:3:55:GLU:HB2	24:3:80:VAL:HG21	1.79	0.64
2:A:16:MET:O	2:A:18:LYS:NZ	2.21	0.64
3:B:99:VAL:HG23	3:B:110:VAL:HG13	1.79	0.64
19:U:142:ILE:O	19:U:145:GLU:HG2	1.98	0.64
22:X:22:VAL:HG12	22:X:40:VAL:HG12	1.79	0.64
1:2:487:C:H41	14:N:66:ASN:ND2	1.97	0.63
3:B:188:ASN:HA	3:B:194:LEU:HD13	1.80	0.63
1:2:1034:G:H4’	36:2:1560:SPM:H42	1.81	0.63
18:T:84:ILE:HD11	18:T:106:ILE:HG22	1.79	0.63
1:2:1287:G:H2’	1:2:1288:C:C6	2.33	0.63
1:2:418:U:H1’	1:2:419:A:C5	2.34	0.63
17:S:31:ASN:OD1	17:S:55:THR:OG1	2.14	0.63
19:U:77:GLU:OE1	19:U:77:GLU:N	2.29	0.63
5:D:97:THR:HG23	5:D:99:GLN:H	1.63	0.63
24:3:20:LEU:O	24:3:24:ARG:NH1	2.31	0.63
24:3:27:LYS:HD2	24:3:90:CYS:HB2	1.80	0.63
1:2:506:A:OP2	5:D:37:ASN:ND2	2.32	0.62
14:N:91:ASP:N	14:N:138:TYR:OH	2.28	0.62
1:2:1443:G:H3’	1:2:1444:G:H8	1.64	0.62
24:3:79:TYR:OH	24:3:121:ILE:HG21	1.98	0.62
1:2:885:G:H2’	1:2:886:G:H8	1.64	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:147:G:H4'	7:G:153:THR:OG1	1.99	0.62
23:Y:27:TYR:O	23:Y:37:LYS:NZ	2.32	0.62
7:G:18:ARG:HG2	7:G:112:TYR:HD1	1.64	0.62
11:K:63:LYS:O	11:K:63:LYS:HD2	1.99	0.62
34:E:66:LEU:HB2	34:E:86:SER:HB2	1.81	0.62
1:2:920:U:C2	1:2:1188:G:C2	2.87	0.62
1:2:1054:A:OP2	17:S:7:LYS:NZ	2.27	0.62
1:2:1328:A:OP2	19:U:89:ARG:NH2	2.30	0.62
8:H:115:THR:HG21	22:X:57:LYS:HD2	1.80	0.62
1:2:125:G:OP2	36:2:1567:SPM:C8	2.47	0.62
5:D:158:THR:HG21	20:V:39:GLY:HA3	1.82	0.62
11:K:13:ARG:HG2	11:K:18:ARG:HD3	1.81	0.62
16:Q:28:ARG:HG3	16:Q:65:VAL:HA	1.82	0.62
21:W:14:SER:O	21:W:15:ARG:HD3	1.99	0.62
1:2:962:A:H2'	1:2:963:G:C8	2.34	0.62
24:3:88:GLU:OE2	24:3:94:VAL:N	2.32	0.62
19:U:108:PHE:CD2	19:U:125:ARG:HD3	2.35	0.62
1:2:1318:C:H2'	1:2:1319:A:H8	1.64	0.62
11:K:29:ARG:HH12	19:U:156:TYR:HA	1.64	0.62
14:N:119:LEU:HD12	14:N:120:PRO:HD2	1.82	0.62
1:2:927:G:P	36:2:1576:SPM:H121	2.38	0.61
6:F:79:LEU:HD11	6:F:188:GLU:HA	1.81	0.61
8:H:102:VAL:O	8:H:105:ILE:HG22	2.00	0.61
11:K:123:TRP:HE3	11:K:124:MET:HG3	1.65	0.61
1:2:1015:G:OP1	36:2:1562:SPM:N14	2.33	0.61
2:A:116:TYR:HE1	2:A:194:VAL:HG22	1.64	0.61
21:W:47:LEU:HA	21:W:58:VAL:HG22	1.83	0.61
1:2:1188:G:H2'	1:2:1188:G:N3	2.15	0.61
1:2:1213:A:H2'	1:2:1214:G:C8	2.36	0.61
1:2:1134:G:OP2	17:S:56:ARG:NH2	2.19	0.61
7:G:41:VAL:HG11	7:G:146:LEU:HD21	1.83	0.61
34:E:109:ILE:HB	34:E:113:GLU:HG3	1.83	0.61
4:C:22:ILE:HD11	6:F:209:ASP:HB3	1.81	0.61
1:2:983:A:OP1	29:P:2:GLY:CA	2.49	0.61
8:H:38:LEU:HD22	11:K:47:LEU:HB2	1.82	0.61
19:U:47:GLU:N	19:U:47:GLU:OE2	2.33	0.61
19:U:66:ARG:O	19:U:70:VAL:HG13	2.01	0.61
1:2:1451:G:C5	1:2:1452:U:C4	2.82	0.61
1:2:272:C:H2'	1:2:273:C:H6	1.66	0.61
1:2:1076:C:H2'	1:2:1077:A:H8	1.66	0.60
7:G:28:GLN:OE1	7:G:28:GLN:N	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:749:A:OP1	27:4:38:A:O2'	2.19	0.60
16:Q:25:ARG:HA	16:Q:25:ARG:HE	1.64	0.60
1:2:1004:G:HO2'	1:2:1178:C:HO2'	1.49	0.60
5:D:21:GLU:OE1	5:D:21:GLU:N	2.20	0.60
1:2:272:C:H2'	1:2:273:C:C6	2.36	0.60
11:K:26:GLY:HA3	11:K:65:ASP:HB2	1.83	0.60
11:K:38:GLU:OE2	11:K:38:GLU:N	2.33	0.60
12:L:46:LEU:HD22	29:P:32:TYR:CD2	2.36	0.60
13:M:6:GLU:OE1	13:M:7:ILE:N	2.34	0.60
1:2:655:A:H2'	1:2:656:U:H6	1.66	0.60
8:H:107:ASN:ND2	8:H:172:ASN:OD1	2.35	0.60
31:Z:127:LEU:HG	31:Z:186:PRO:HA	1.84	0.60
1:2:1436:U:H2'	1:2:1437:G:C8	2.37	0.60
7:G:42:PRO:HB2	7:G:79:PHE:HD2	1.65	0.60
18:T:87:LYS:HE2	18:T:100:THR:OG1	2.02	0.60
18:T:121:GLU:OE1	18:T:121:GLU:N	2.28	0.60
20:V:64:VAL:HG21	20:V:94:GLU:HG2	1.84	0.60
1:2:1206:C:H5"	19:U:47:GLU:OE1	2.02	0.60
2:A:183:LYS:HD3	2:A:184:ALA:H	1.67	0.60
18:T:115:ILE:HD12	18:T:115:ILE:O	2.01	0.60
1:2:962:A:H2'	1:2:963:G:H8	1.67	0.60
6:F:126:CYS:SG	6:F:128:CYS:HB2	2.41	0.60
6:F:183:GLU:OE2	6:F:185:ARG:HB2	2.02	0.60
8:H:23:ARG:HD2	8:H:23:ARG:N	2.17	0.60
10:J:40:GLU:N	10:J:40:GLU:OE2	2.31	0.60
12:L:46:LEU:HD22	29:P:32:TYR:CZ	2.37	0.60
13:M:6:GLU:OE1	13:M:7:ILE:HG23	2.02	0.60
18:T:20:ASP:HA	18:T:23:LEU:HD12	1.83	0.60
1:2:1370:U:C2'	1:2:1371:C:H5'	2.31	0.60
15:O:112:LYS:O	15:O:114:ARG:NH1	2.35	0.60
1:2:1444:G:N2	1:2:1445:G:O6	2.34	0.59
13:M:18:GLN:HE22	13:M:90:GLY:HA2	1.67	0.59
27:4:69:C:H2'	27:4:70:G:H8	1.66	0.59
1:2:636:C:H2'	1:2:637:U:C6	2.36	0.59
1:2:886:G:O2'	1:2:1363:C:OP2	2.18	0.59
1:2:1368:5MC:H2'	1:2:1369:G:C8	2.36	0.59
3:B:135:TYR:CE1	6:F:16:ARG:CZ	2.85	0.59
11:K:23:ILE:HG22	11:K:66:ALA:HB2	1.83	0.59
1:2:1443:G:H3'	1:2:1444:G:C8	2.37	0.59
3:B:170:PHE:HE1	3:B:197:LEU:HB3	1.67	0.59
1:2:458:G:H2'	1:2:459:C:C6	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:85:ALA:O	8:H:89:ILE:HG23	2.03	0.59
17:S:21:LYS:HZ1	17:S:58:TYR:HE1	1.50	0.59
19:U:20:LEU:HD21	19:U:65:LEU:HD12	1.84	0.59
19:U:69:TYR:HA	19:U:127:LEU:HD13	1.85	0.59
1:2:534:G:O6	14:N:3:LYS:NZ	2.35	0.59
10:J:42:ILE:HD12	10:J:59:TYR:HD1	1.67	0.59
27:4:24:U:H2'	27:4:25:C:H6	1.66	0.59
16:Q:13:ILE:HG21	21:W:10:PRO:HB2	1.84	0.59
18:T:54:LEU:O	18:T:58:ARG:HD3	2.02	0.59
21:W:38:VAL:H	21:W:48:VAL:HG12	1.67	0.59
34:E:161:GLU:HB2	34:E:168:LEU:HD21	1.85	0.59
1:2:1451:G:H2'	1:2:1452:U:C6	2.37	0.59
8:H:117:ILE:HD13	8:H:126:VAL:HB	1.84	0.59
15:O:42:ARG:NH1	19:U:38:LEU:HB3	2.16	0.59
1:2:573:C:H4'	5:D:72:GLN:HG2	1.83	0.59
1:2:866:A:H2'	1:2:867:C:H6	1.67	0.59
13:M:8:ARG:HG2	13:M:71:ILE:HD13	1.85	0.59
1:2:902:A:N3	1:2:1340:U:O2'	2.31	0.59
5:D:133:VAL:HG22	5:D:153:ILE:HD13	1.84	0.59
16:Q:61:VAL:HG11	16:Q:69:VAL:HG23	1.83	0.59
16:Q:102:GLU:HG3	16:Q:103:TYR:CD1	2.38	0.59
1:2:602:C:OP1	36:2:1574:SPM:H42	2.02	0.59
1:2:12:U:H2'	1:2:13:C:C6	2.38	0.58
1:2:704:C:OP1	1:2:814:U:O2'	2.21	0.58
1:2:875:U:OP1	14:N:63:ARG:NH1	2.36	0.58
19:U:143:PHE:CZ	19:U:156:TYR:HB3	2.37	0.58
19:U:145:GLU:HA	19:U:148:GLU:HG3	1.86	0.58
2:A:68:TYR:OH	2:A:87:GLU:OE1	2.21	0.58
15:O:100:ILE:HG22	15:O:104:ARG:HH22	1.67	0.58
1:2:1446:G:H2'	1:2:1447:A:H8	1.67	0.58
3:B:18:GLU:OE2	3:B:66:ARG:NH2	2.36	0.58
3:B:170:PHE:O	3:B:188:ASN:ND2	2.33	0.58
1:2:611:U:O4	1:2:711:G:O2'	2.21	0.58
1:2:673:G:H2'	1:2:674:A:H8	1.69	0.58
1:2:1374:U:N3	1:2:1448:G:C2	2.71	0.58
8:H:132:PRO:HA	8:H:135:ARG:HD3	1.84	0.58
10:J:38:SER:OG	10:J:39:ALA:N	2.36	0.58
14:N:70:ARG:HG3	14:N:119:LEU:HD13	1.86	0.58
15:O:4:GLN:HE22	15:O:6:LYS:HG2	1.68	0.58
1:2:938:U:H2'	29:P:27:SER:OG	2.03	0.58
1:2:1081:G:N7	1:2:1109:C:O2'	2.35	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:409:G:O2'	1:2:456:A:N1	2.30	0.58
5:D:19:ILE:HG22	5:D:22:ARG:H	1.68	0.58
8:H:30:TYR:OH	22:X:61:ARG:NH1	2.37	0.58
27:4:22:G:H2'	27:4:23:C:C6	2.39	0.58
1:2:16:G:N7	36:2:1548:SPM:N14	2.52	0.58
1:2:1201:A:H2	1:2:1204:G:N3	2.02	0.58
12:L:7:ILE:HD13	12:L:74:ILE:CG2	2.33	0.58
1:2:1204:G:H2'	1:2:1205:G:H8	1.69	0.58
34:E:40:ALA:HB2	34:E:75:TYR:HB2	1.84	0.58
1:2:983:A:P	29:P:2:GLY:CA	2.92	0.57
8:H:96:ASN:OD1	8:H:98:ILE:HD12	2.04	0.57
8:H:116:ARG:HH11	8:H:125:TYR:HD2	1.51	0.57
23:Y:35:LYS:HD3	23:Y:35:LYS:N	2.18	0.57
24:3:86:LEU:HD23	24:3:87:GLY:H	1.69	0.57
27:4:17:C:OP2	27:4:17(A):U:O2'	2.20	0.57
18:T:31:ILE:HG23	18:T:39:ARG:HG2	1.84	0.57
1:2:1282:A:O2'	18:T:76:ASN:ND2	2.35	0.57
2:A:20:TYR:CE2	2:A:41:ILE:HD12	2.39	0.57
13:M:72:MET:SD	13:M:72:MET:N	2.77	0.57
24:3:114:ILE:O	24:3:118:VAL:HG23	2.04	0.57
1:2:1311:G:N2	1:2:1338:A:OP2	2.29	0.57
3:B:95:GLN:OE1	3:B:120:ARG:NH1	2.36	0.57
27:4:43:A:H2'	27:4:44:A:C8	2.39	0.57
1:2:1068:A:N7	38:2:1632:HOH:O	2.32	0.57
1:2:1370:U:H2'	1:2:1371:C:O4'	2.04	0.57
3:B:191:ARG:NH1	3:B:227:MET:SD	2.77	0.57
12:L:30:LYS:HZ3	12:L:82:VAL:HG12	1.70	0.57
17:S:40:ASP:OD1	31:Z:196:LYS:CB	2.53	0.57
19:U:60:ARG:HH11	19:U:104:ASN:HD21	1.51	0.57
20:V:61:ASN:O	20:V:87:ARG:NH1	2.36	0.57
23:Y:24:ARG:HD3	24:3:37:ASN:HB3	1.84	0.57
1:2:425:G:H2'	1:2:426:C:H6	1.69	0.57
1:2:1481:C:H2'	1:2:1482:G:H8	1.70	0.57
8:H:24:ASP:HB2	22:X:16:PHE:HE2	1.70	0.57
11:K:29:ARG:N	11:K:65:ASP:OD1	2.35	0.57
23:Y:36:LEU:HB3	23:Y:38:ASN:O	2.04	0.57
6:F:205:VAL:H	9:I:70:ASN:HD21	1.53	0.57
9:I:92:TYR:CE1	30:R:68:LYS:HD3	2.40	0.57
1:2:263:G:H2'	1:2:264:G:H8	1.70	0.57
1:2:1287:G:H2'	1:2:1288:C:H6	1.69	0.57
3:B:142:PRO:HG2	3:B:165:ILE:HD13	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:37:ALA:O	15:O:41:ILE:HG23	2.05	0.57
23:Y:57:ARG:HB2	23:Y:66:THR:HG22	1.87	0.57
1:2:676:C:H4'	13:M:119:ASP:OD1	2.04	0.57
5:D:81:GLY:O	5:D:84:LYS:NZ	2.38	0.56
17:S:17:TYR:OH	17:S:61:MET:SD	2.62	0.56
19:U:20:LEU:HD22	19:U:62:ALA:HA	1.85	0.56
1:2:1043:C:H2'	1:2:1044:C:H6	1.70	0.56
1:2:1355:U:H2'	1:2:1356:G:C8	2.40	0.56
15:O:85:ASP:OD2	15:O:86:TYR:N	2.38	0.56
1:2:93:C:H1'	1:2:359:C:H5'	1.88	0.56
1:2:809:C:OP1	36:2:1575:SPM:H81	2.04	0.56
1:2:1204:G:H2'	1:2:1205:G:C8	2.41	0.56
1:2:1260:C:H5'	15:O:21:LYS:HZ2	1.70	0.56
1:2:1318:C:H2'	1:2:1319:A:C8	2.40	0.56
7:G:80:LYS:NZ	7:G:145:GLY:O	2.35	0.56
8:H:16:TRP:CZ3	8:H:86:PHE:HB3	2.41	0.56
8:H:76:HIS:CD2	11:K:44:MET:HG3	2.39	0.56
15:O:75:LEU:HD12	19:U:39:LEU:HD13	1.86	0.56
20:V:107:GLN:O	20:V:108:LYS:HD3	2.05	0.56
23:Y:57:ARG:HA	23:Y:68:PHE:HA	1.86	0.56
2:A:155:PHE:O	2:A:159:THR:OG1	2.22	0.56
6:F:160:VAL:HG12	6:F:178:SER:HB3	1.87	0.56
9:I:37:VAL:O	9:I:41:MET:HG3	2.05	0.56
12:L:46:LEU:CD2	29:P:32:TYR:CE1	2.87	0.56
23:Y:38:ASN:HD22	23:Y:58:TRP:HH2	1.52	0.56
23:Y:39:LYS:NZ	23:Y:67:GLU:OE2	2.33	0.56
3:B:40:ASP:OD1	3:B:41:THR:N	2.38	0.56
34:E:117:LYS:HB2	34:E:162:LEU:HD11	1.87	0.56
1:2:975:G:H2'	1:2:976:G:H8	1.70	0.56
3:B:43:LEU:HD13	3:B:48:HIS:CE1	2.40	0.56
12:L:46:LEU:HD22	29:P:32:TYR:CE2	2.41	0.56
15:O:34:TYR:CE1	15:O:38:LYS:HG3	2.41	0.56
17:S:40:ASP:OD1	31:Z:196:LYS:HG2	2.05	0.56
24:3:15:LEU:HD13	24:3:117:ARG:HE	1.70	0.56
13:M:113:VAL:O	13:M:113:VAL:HG12	2.05	0.56
1:2:392:U:O4	36:2:1564:SPM:N14	2.38	0.56
1:2:612:A:H5"	9:I:57:ARG:HE	1.70	0.56
1:2:920:U:C2	1:2:1188:G:N2	2.74	0.56
13:M:98:ARG:N	13:M:98:ARG:HD3	2.21	0.56
15:O:4:GLN:NE2	15:O:4:GLN:O	2.38	0.56
17:S:30:THR:O	17:S:34:ILE:HG12	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:T:5:ILE:HD12	18:T:6:PRO:CD	2.30	0.56
1:2:642:G:H2'	1:2:643:A:C8	2.40	0.56
1:2:917:G:N7	15:O:133:ARG:NH2	2.49	0.56
8:H:142:HIS:CG	8:H:181:ARG:HD2	2.41	0.56
23:Y:22:ILE:HD12	23:Y:22:ILE:O	2.06	0.56
31:Z:185:LYS:HB3	31:Z:187:LEU:HD13	1.88	0.56
1:2:125:G:OP2	36:2:1567:SPM:H92	2.06	0.55
1:2:943:U:H4'	36:2:1561:SPM:H92	1.88	0.55
1:2:1453:C:C4	1:2:1454:G:C5	2.94	0.55
14:N:143:GLN:OE1	14:N:143:GLN:N	2.38	0.55
24:3:12:PRO:HG3	24:3:117:ARG:NH1	2.21	0.55
1:2:95:G:OP2	36:2:1554:SPM:N5	2.38	0.55
1:2:965:A:O4'	1:2:993:A:N6	2.40	0.55
1:2:1054:A:P	17:S:7:LYS:HZ1	2.30	0.55
1:2:1479:U:H2'	1:2:1480:G:H8	1.70	0.55
3:B:63:TYR:CD2	3:B:64:ARG:HG2	2.41	0.55
7:G:80:LYS:HE3	7:G:146:LEU:HD13	1.88	0.55
19:U:120:ILE:HD13	19:U:126:SER:HB3	1.88	0.55
3:B:199:TRP:CD2	3:B:222:VAL:HG22	2.42	0.55
27:4:50:U:O2	27:4:64:G:N2	2.26	0.55
1:2:1343:G:H2'	1:2:1344:OMU:H6	1.88	0.55
12:L:27:ILE:O	12:L:30:LYS:HG2	2.07	0.55
14:N:60:ILE:HG12	14:N:72:CYS:SG	2.47	0.55
17:S:40:ASP:OD1	31:Z:196:LYS:N	2.39	0.55
8:H:113:GLU:OE1	8:H:130:VAL:HG23	2.07	0.55
8:H:193:ARG:HH12	22:X:73:ARG:CD	2.10	0.55
14:N:40:LYS:HG2	14:N:41:TYR:CZ	2.42	0.55
1:2:152:A:H2'	1:2:153:A:C8	2.42	0.55
3:B:81:ARG:O	3:B:84:ILE:HG22	2.07	0.55
8:H:25:PRO:HA	8:H:28:LYS:HE2	1.88	0.55
23:Y:52:LEU:HB2	23:Y:53:LYS:HE2	1.88	0.55
1:2:1116:G:OP1	12:L:70:HIS:ND1	2.40	0.55
7:G:157:ASP:HA	7:G:205:ILE:HA	1.89	0.55
19:U:158:GLU:OE1	19:U:158:GLU:N	2.38	0.55
1:2:1030:U:H4'	3:B:135:TYR:CE2	2.42	0.55
12:L:46:LEU:CD2	29:P:32:TYR:CD1	2.90	0.55
27:4:4:G:H2'	27:4:5:G:H8	1.71	0.55
1:2:1451:G:C6	1:2:1452:U:C5	2.82	0.55
5:D:44:ALA:HA	5:D:101:LEU:HD13	1.88	0.55
15:O:12:PHE:HE2	15:O:67:ILE:HG22	1.72	0.54
1:2:119:U:O2	34:E:141:ASN:ND2	2.36	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:966:U:C4	24:3:57:VAL:HG13	2.42	0.54
4:C:37:CYS:SG	4:C:38:GLY:N	2.80	0.54
7:G:79:PHE:HE2	7:G:98:MET:HG2	1.71	0.54
14:N:7:PRO:HG3	14:N:15:LYS:HB3	1.90	0.54
17:S:40:ASP:CG	31:Z:196:LYS:HB3	2.27	0.54
21:W:40:CYS:HB3	21:W:44:GLY:H	1.72	0.54
31:Z:165:ARG:HB2	31:Z:182:VAL:HG22	1.89	0.54
1:2:521:U:C4	14:N:27:GLN:HG2	2.42	0.54
1:2:1003:A:H2'	1:2:1004:G:C8	2.43	0.54
7:G:98:MET:HE2	7:G:98:MET:H	1.71	0.54
8:H:24:ASP:HB2	22:X:16:PHE:CE2	2.43	0.54
12:L:6:ARG:HD2	12:L:100:GLN:NE2	2.22	0.54
1:2:1194:OMG:OP1	38:2:1602:HOH:O	2.18	0.54
1:2:1451:G:O6	1:2:1452:U:O4	2.25	0.54
2:A:18:LYS:HG3	2:A:20:TYR:CE1	2.42	0.54
3:B:95:GLN:O	3:B:120:ARG:NH2	2.40	0.54
6:F:11:GLU:HG2	6:F:12:GLU:OE1	2.07	0.54
21:W:2:MET:SD	21:W:6:ARG:HB3	2.48	0.54
11:K:29:ARG:NH1	19:U:156:TYR:HA	2.22	0.54
24:3:27:LYS:O	24:3:32:ILE:HD11	2.07	0.54
24:3:51:VAL:HG23	24:3:77:TYR:HB2	1.89	0.54
11:K:23:ILE:HG22	11:K:66:ALA:CB	2.37	0.54
17:S:17:TYR:CZ	17:S:21:LYS:HE2	2.42	0.54
24:3:18:LYS:NZ	24:3:113:GLU:HB3	2.22	0.54
1:2:125:G:P	36:2:1567:SPM:H72	2.33	0.54
1:2:1015:G:H5"	31:Z:167:ILE:HD13	1.90	0.54
6:F:188:GLU:HG3	6:F:189:ASN:N	2.22	0.54
8:H:143:ILE:HA	8:H:165:GLU:OE2	2.08	0.54
11:K:27:LYS:NZ	19:U:155:VAL:HG22	2.22	0.54
12:L:93:GLU:OE1	12:L:93:GLU:N	2.40	0.54
1:2:1453:C:C6	1:2:1454:G:C8	2.95	0.54
4:C:47:MET:HG2	9:I:21:ARG:CZ	2.38	0.54
15:O:62:LYS:O	15:O:66:VAL:HG23	2.06	0.54
23:Y:55:ASN:ND2	23:Y:57:ARG:HG2	2.23	0.54
27:4:52:G:H2'	27:4:53:G:H8	1.73	0.54
27:4:74:C:H4'	27:4:75:C:O5'	2.06	0.54
5:D:16:HIS:HB3	5:D:19:ILE:HD13	1.90	0.54
11:K:45:VAL:O	11:K:49:ILE:HG12	2.07	0.54
24:3:116:LYS:HA	24:3:116:LYS:HE3	1.89	0.54
1:2:979:A:H4'	18:T:72:THR:HA	1.90	0.54
1:2:1095:C:O2'	1:2:1096:U:OP2	2.23	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1481:C:H2'	1:2:1482:G:C8	2.43	0.54
20:V:107:GLN:C	20:V:108:LYS:HD3	2.28	0.54
1:2:263:G:H5"	10:J:98:ARG:HB3	1.90	0.53
1:2:617:G:H2'	1:2:618:C:C6	2.43	0.53
6:F:59:VAL:HG11	6:F:81:ILE:HD12	1.90	0.53
8:H:10:ILE:HA	8:H:37:TYR:CZ	2.43	0.53
10:J:45:LYS:NZ	10:J:53:PHE:HB3	2.23	0.53
13:M:42:VAL:HG23	13:M:43:VAL:HG13	1.89	0.53
20:V:45:ARG:NH1	20:V:65:VAL:O	2.40	0.53
1:2:1495:C:H2'	1:2:1496:C:C6	2.43	0.53
6:F:68:THR:HG22	6:F:69:ASP:H	1.72	0.53
1:2:1095:C:H1'	1:2:1096:U:H5'	1.89	0.53
8:H:26:SER:HA	22:X:65:ILE:HB	1.90	0.53
13:M:65:ASP:O	13:M:69:LYS:HG2	2.09	0.53
1:2:440:A:C2	20:V:109:LYS:HE3	2.33	0.53
1:2:1475:MA6:H2'	1:2:1476:A:C8	2.44	0.53
6:F:147:VAL:HG23	6:F:180:THR:HG22	1.90	0.53
8:H:17:ASP:OD2	8:H:19:LYS:HE2	2.09	0.53
8:H:85:ALA:CB	8:H:162:LEU:HD22	2.38	0.53
8:H:130:VAL:CG1	8:H:135:ARG:HG3	2.38	0.53
9:I:86:MET:HE3	9:I:119:ALA:HB3	1.91	0.53
15:O:72:ILE:CG2	15:O:75:LEU:HD23	2.39	0.53
29:P:21:ARG:NE	31:Z:20:GLU:OE1	2.30	0.53
3:B:181:ASP:OD1	4:C:44:ARG:NH1	2.40	0.53
4:C:45:ASP:OD1	4:C:48:CYS:HB2	2.08	0.53
14:N:140:GLY:O	14:N:141:LYS:HG3	2.09	0.53
20:V:46:LYS:O	20:V:49:ILE:HG13	2.08	0.53
23:Y:41:CYS:SG	23:Y:43:ARG:HD2	2.49	0.53
24:3:27:LYS:HA	24:3:32:ILE:HD11	1.90	0.53
3:B:82:LEU:HD23	3:B:201:LEU:HD23	1.89	0.53
5:D:107:GLN:HE21	5:D:119:ILE:HG13	1.74	0.53
8:H:37:TYR:HB2	11:K:51:GLU:OE1	2.08	0.53
10:J:43:ARG:NE	10:J:119:GLY:O	2.37	0.53
12:L:13:ASN:HB3	12:L:94:ASP:OD2	2.08	0.53
11:K:123:TRP:CE3	11:K:124:MET:HG3	2.43	0.53
22:X:29:THR:OG1	22:X:30:GLY:N	2.42	0.53
22:X:54:ARG:NH1	22:X:73:ARG:HB2	2.23	0.53
1:2:17:C:H4'	1:2:848:G:C8	2.43	0.53
2:A:196:GLU:HA	2:A:196:GLU:OE2	2.08	0.53
6:F:132:HIS:ND1	6:F:175:ASP:OD2	2.42	0.53
12:L:8:ARG:HG2	12:L:73:LEU:HD12	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:X:12:ILE:O	22:X:15:GLU:HG3	2.08	0.53
22:X:66:LEU:HD12	22:X:67:ILE:H	1.74	0.53
23:Y:41:CYS:CB	23:Y:46:SER:H	2.21	0.53
2:A:193:LYS:NZ	2:A:195:PRO:HA	2.24	0.53
6:F:85:MET:N	6:F:85:MET:SD	2.82	0.53
6:F:198:LEU:O	6:F:201:THR:OG1	2.19	0.53
8:H:192:SER:O	8:H:192:SER:OG	2.27	0.53
17:S:40:ASP:OD1	31:Z:196:LYS:HB3	2.09	0.53
21:W:24:CYS:SG	21:W:40:CYS:SG	3.07	0.53
1:2:827:A:H2'	1:2:828:A:C8	2.44	0.53
5:D:86:GLU:OE1	5:D:86:GLU:N	2.21	0.53
8:H:27:LEU:HD21	8:H:135:ARG:HH21	1.74	0.53
17:S:40:ASP:OD2	31:Z:196:LYS:HB3	2.09	0.53
18:T:84:ILE:HD11	18:T:106:ILE:CG2	2.39	0.53
1:2:910:A:H2'	1:2:911:A:H8	1.72	0.52
1:2:1008:G:OP2	36:2:1576:SPM:H21	2.09	0.52
36:2:1573:SPM:C4	36:2:1573:SPM:C8	2.86	0.52
11:K:17:ALA:HB2	11:K:73:GLY:HA3	1.89	0.52
24:3:31:LYS:C	24:3:32:ILE:HD12	2.30	0.52
1:2:25:G:H2'	1:2:26:A:C8	2.45	0.52
1:2:558:C:H2'	1:2:559:A:H8	1.74	0.52
1:2:1070:C:H2'	1:2:1071:C:H6	1.75	0.52
1:2:1453:C:N3	1:2:1454:G:C5	2.78	0.52
14:N:110:GLY:HA3	14:N:114:ARG:O	2.09	0.52
23:Y:27:TYR:HE2	24:3:44:GLU:OE2	1.92	0.52
27:4:15:G:N2	27:4:48:C:O2	2.39	0.52
1:2:257:U:H2'	1:2:258:U:C6	2.45	0.52
1:2:483:G:OP2	36:2:1549:SPM:C13	2.40	0.52
7:G:3:ASP:OD1	7:G:3:ASP:N	2.41	0.52
8:H:190:LEU:HD12	8:H:193:ARG:HD3	1.91	0.52
14:N:108:ILE:HD12	14:N:116:MET:HB3	1.90	0.52
14:N:127:ILE:HD12	14:N:128:MET:HE2	1.91	0.52
17:S:17:TYR:OH	17:S:21:LYS:HE2	2.08	0.52
1:2:1189:C:O2	18:T:122:HIS:CE1	2.62	0.52
7:G:19:ILE:HD12	7:G:20:LYS:H	1.74	0.52
10:J:67:ASP:HB2	10:J:125:LEU:HD12	1.92	0.52
1:2:687:A:H2'	1:2:688:A:C8	2.44	0.52
9:I:81:LEU:O	9:I:81:LEU:HD12	2.10	0.52
1:2:1187:C:H3'	1:2:1188:G:H5"	1.91	0.52
1:2:468:A:H61	36:2:1549:SPM:H22	1.75	0.52
1:2:888:G:C2	1:2:890:G:C8	2.98	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1369:G:O2'	1:2:1370:U:H5'	2.10	0.52
1:2:1491:A:H2'	1:2:1492:C:C6	2.45	0.52
2:A:19:TRP:CD1	2:A:37:PRO:HB3	2.45	0.52
3:B:103:ARG:NH1	3:B:152:THR:HB	2.24	0.52
11:K:23:ILE:HD13	11:K:93:PHE:CD1	2.44	0.52
15:O:10:ARG:NH2	15:O:15:ASP:OD1	2.36	0.52
31:Z:17:LYS:HD2	31:Z:74:PHE:CE1	2.44	0.52
1:2:82:G:O2'	1:2:132:A:N3	2.41	0.52
7:G:22:LYS:HE2	7:G:22:LYS:N	2.24	0.52
9:I:118:GLU:OE2	9:I:121:ARG:NH2	2.28	0.52
24:3:93:GLN:HG2	24:3:93:GLN:O	2.09	0.52
36:2:1562:SPM:N14	31:Z:180:GLU:OE1	2.41	0.52
1:2:479:A:OP1	14:N:71:LYS:NZ	2.43	0.52
1:2:601:A:N7	9:I:110:SER:HA	2.25	0.52
2:A:116:TYR:CD2	2:A:155:PHE:HB2	2.45	0.52
23:Y:65:TYR:O	23:Y:65:TYR:CD1	2.63	0.52
1:2:133:A:OP2	1:2:134:C:N4	2.30	0.51
1:2:1207:A:H2'	1:2:1208:G:H8	1.76	0.51
1:2:1260:C:H5'	15:O:21:LYS:NZ	2.25	0.51
1:2:1334:G:OP2	11:K:118:THR:HG21	2.10	0.51
2:A:27:ALA:HB2	2:A:156:ASP:HB2	1.91	0.51
2:A:145:THR:HG21	2:A:170:GLU:OE1	2.10	0.51
15:O:104:ARG:O	15:O:108:GLU:HG2	2.09	0.51
30:R:25:ASP:OD2	30:R:28:CYS:HB2	2.09	0.51
1:2:93:C:H2'	1:2:94:U:C6	2.45	0.51
1:2:699:U:H2'	1:2:700:A:H8	1.74	0.51
1:2:1028:C:H2'	1:2:1029:G:H8	1.75	0.51
7:G:43:GLN:NE2	7:G:82:ASP:OD2	2.44	0.51
1:2:409:G:H4'	1:2:429:U:O2	2.11	0.51
1:2:1077:A:H2'	1:2:1078:C:C6	2.44	0.51
1:2:1260:C:H4'	1:2:1266:U:O4	2.09	0.51
3:B:223:SER:OG	3:B:224:GLU:OE1	2.25	0.51
15:O:43:LYS:HZ2	15:O:74:GLY:H	1.59	0.51
18:T:22:LEU:HD23	18:T:25:MET:HE1	1.91	0.51
28:5:823:C:O2	28:5:823:C:H2'	2.11	0.51
29:P:50:PHE:O	29:P:51:ARG:NH1	2.41	0.51
1:2:196:G:OP1	36:2:1567:SPM:H22	2.10	0.51
1:2:218:C:H2'	1:2:219:A:C8	2.43	0.51
1:2:263:G:H2'	1:2:264:G:C8	2.46	0.51
1:2:521:U:H4'	1:2:522:A:H5'	1.93	0.51
1:2:784:G:O2'	9:I:9:ASN:OD1	2.26	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:826:G:O6	36:2:1560:SPM:H81	2.11	0.51
1:2:866:A:H2'	1:2:867:C:C6	2.45	0.51
1:2:949:U:H2'	1:2:950:A:C8	2.46	0.51
1:2:1291:U:OP1	19:U:41:LYS:NZ	2.26	0.51
6:F:205:VAL:N	9:I:70:ASN:HD21	2.08	0.51
10:J:109:ALA:HB1	10:J:123:ALA:HB1	1.93	0.51
1:2:302:G:N2	1:2:305:A:OP2	2.39	0.51
1:2:452:G:O2'	1:2:454:A:H1'	2.11	0.51
1:2:1057:C:N4	1:2:1060:OMC:OP2	2.43	0.51
1:2:1253:A:OP1	36:2:1578:SPM:H91	2.09	0.51
2:A:14:TRP:CD1	2:A:17:LYS:HD2	2.45	0.51
7:G:49:LYS:HD3	7:G:50:THR:H	1.74	0.51
8:H:107:ASN:HD22	8:H:172:ASN:CG	2.14	0.51
11:K:23:ILE:HD12	11:K:23:ILE:O	2.11	0.51
24:3:22:ALA:HB1	24:3:111:VAL:HG23	1.92	0.51
27:4:58:A:O2'	27:4:60:U:OP2	2.16	0.51
1:2:406:C:O2'	1:2:580:A:N3	2.37	0.51
1:2:864:A:C5	1:2:865:OMG:H1'	2.45	0.51
3:B:165:ILE:O	4:C:49:ARG:NH2	2.43	0.51
4:C:37:CYS:HB3	4:C:60:CYS:HB3	1.92	0.51
8:H:111:ARG:N	8:H:186:GLU:OE2	2.37	0.51
15:O:9:VAL:HG12	15:O:11:ILE:HD11	1.93	0.51
21:W:33:HIS:HD2	21:W:54:LYS:HG3	1.71	0.51
3:B:113:PHE:HD1	3:B:202:ALA:HB2	1.76	0.51
6:F:14:LYS:HD3	6:F:14:LYS:N	2.26	0.51
8:H:119:TYR:HB2	8:H:124:TYR:CE2	2.46	0.51
9:I:23:LYS:HA	9:I:23:LYS:HE2	1.92	0.51
22:X:46:ARG:NH2	22:X:71:THR:HB	2.25	0.51
31:Z:84:THR:OG1	31:Z:85:ASN:N	2.42	0.51
1:2:1316:C:H2'	1:2:1317:G:C8	2.46	0.51
1:2:71:G:H2'	1:2:72:G:C8	2.46	0.51
1:2:673:G:H2'	1:2:674:A:C8	2.45	0.51
1:2:900:C:C2	1:2:901:A:C8	2.98	0.51
1:2:991:U:H2'	1:2:992:G:C4	2.45	0.51
1:2:1100:G:N3	19:U:5:MET:HE1	2.26	0.51
1:2:1451:G:C5	1:2:1452:U:H5	2.18	0.51
36:2:1563:SPM:N14	11:K:122:LYS:O	2.44	0.51
7:G:142:GLN:HG2	7:G:143:LEU:HD22	1.93	0.51
24:3:31:LYS:NZ	24:3:102:LEU:HB3	2.26	0.51
1:2:614:G:H2'	1:2:615:G:H8	1.75	0.50
1:2:1164:A:OP1	36:2:1576:SPM:N1	2.43	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:91:ASP:OD1	6:F:128:CYS:HA	2.11	0.50
15:O:44:LEU:HB3	15:O:46:MET:HE3	1.92	0.50
1:2:654:A:H2'	1:2:655:A:C8	2.46	0.50
1:2:828:A:OP2	1:2:828:A:H8	1.95	0.50
1:2:1013:U:OP1	31:Z:142:ALA:N	2.33	0.50
1:2:1097:C:O2'	1:2:1099:G:N1	2.40	0.50
1:2:1287:G:OP2	38:2:1604:HOH:O	2.19	0.50
2:A:80:ILE:HD12	2:A:80:ILE:O	2.12	0.50
7:G:49:LYS:NZ	7:G:89:ASP:HA	2.26	0.50
24:3:20:LEU:O	24:3:24:ARG:HD2	2.10	0.50
24:3:24:ARG:HG3	24:3:89:ALA:HB1	1.93	0.50
1:2:25:G:H2'	1:2:26:A:H8	1.76	0.50
1:2:407:G:O3'	5:D:140:SER:OG	2.29	0.50
1:2:1078:C:H2'	1:2:1079:U:C6	2.46	0.50
1:2:1369:G:H2'	1:2:1370:U:H6	1.75	0.50
1:2:1453:C:C2'	1:2:1454:G:O4'	2.54	0.50
17:S:33:GLN:O	17:S:36:ILE:HG13	2.11	0.50
24:3:24:ARG:NH2	24:3:85:ALA:O	2.44	0.50
31:Z:62:ASN:O	31:Z:66:LEU:HG	2.11	0.50
1:2:897:C:O2'	1:2:1308:C:OP2	2.24	0.50
11:K:9:ILE:HD12	11:K:22:TYR:CD2	2.46	0.50
23:Y:37:LYS:HZ2	23:Y:37:LYS:HB2	1.76	0.50
27:4:69:C:H2'	27:4:70:G:C8	2.46	0.50
1:2:260:G:H2'	1:2:261:G:H8	1.76	0.50
1:2:478:C:H2'	1:2:479:A:O4'	2.11	0.50
1:2:871:A:H2'	1:2:872:A:H8	1.77	0.50
1:2:1053:C:OP1	17:S:7:LYS:HG2	2.11	0.50
1:2:1096:U:H2'	1:2:1098:C:C5	2.47	0.50
3:B:36:LEU:O	3:B:203:ARG:NH2	2.43	0.50
27:4:4:G:H2'	27:4:5:G:C8	2.46	0.50
1:2:727:A:H4'	1:2:1480:G:N2	2.27	0.50
1:2:1231:A:H4'	19:U:36:TRP:CE3	2.47	0.50
7:G:60:LEU:HD21	7:G:111:ALA:HB1	1.93	0.50
11:K:52:PRO:HG2	11:K:86:LEU:HD12	1.93	0.50
24:3:13:GLN:OE1	24:3:13:GLN:HA	2.11	0.50
34:E:215:ASP:OD2	34:E:217:ASN:ND2	2.45	0.50
1:2:137:C:O2'	7:G:118:GLN:HB2	2.12	0.50
1:2:973:C:C2	1:2:974:A:C8	2.99	0.50
2:A:14:TRP:NE1	2:A:17:LYS:HD2	2.26	0.50
19:U:45:PHE:HB3	19:U:97:VAL:HB	1.93	0.50
1:2:739:A:OP1	36:2:1559:SPM:N14	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:D:56:ARG:HE	6:F:125:GLN:NE2	2.10	0.50
8:H:115:THR:CG2	22:X:57:LYS:HD2	2.42	0.50
16:Q:33:MET:SD	16:Q:33:MET:N	2.84	0.50
17:S:44:LYS:HG3	17:S:47:ARG:NH2	2.26	0.50
1:2:505:G:OP2	5:D:37:ASN:HB2	2.12	0.50
1:2:1461:G:OP1	1:2:1464:A:H4'	2.12	0.50
8:H:40:HIS:HD2	11:K:48:LYS:HE2	1.77	0.50
9:I:91:ASP:OD1	9:I:94:ARG:NH2	2.45	0.50
21:W:28:GLN:HG3	21:W:29:THR:N	2.27	0.50
24:3:55:GLU:N	24:3:80:VAL:HG21	2.27	0.50
1:2:872:A:P	14:N:28:ARG:HH22	2.34	0.49
1:2:968:A:H62	1:2:992:G:H21	1.59	0.49
1:2:996:C:O2'	1:2:997:G:H8	1.95	0.49
1:2:1043:C:H2'	1:2:1044:C:C6	2.47	0.49
1:2:1314:A:H1'	8:H:72:LYS:HG2	1.94	0.49
1:2:1374:U:C2	1:2:1448:G:C2	3.00	0.49
1:2:1445:G:H2'	1:2:1446:G:H8	1.75	0.49
2:A:110:VAL:HG11	2:A:146:VAL:HG12	1.94	0.49
7:G:47:ASN:O	7:G:50:THR:OG1	2.30	0.49
8:H:111:ARG:HD2	22:X:69:ARG:HD3	1.92	0.49
15:O:30:LYS:HE3	15:O:100:ILE:HD11	1.93	0.49
19:U:64:LEU:HB3	19:U:108:PHE:HE1	1.77	0.49
24:3:16:ALA:O	24:3:19:VAL:HG22	2.11	0.49
1:2:29:G:H2'	1:2:30:C:C6	2.47	0.49
1:2:126:G:OP2	36:2:1567:SPM:H71	2.12	0.49
1:2:417:G:H21	1:2:419:A:H1'	1.77	0.49
1:2:1070:C:H2'	1:2:1071:C:C6	2.47	0.49
1:2:1226:C:H2'	1:2:1227:C:H6	1.77	0.49
2:A:183:LYS:HE3	2:A:183:LYS:HA	1.94	0.49
6:F:98:GLN:HE21	6:F:100:ARG:NH1	2.10	0.49
16:Q:29:GLU:OE1	16:Q:29:GLU:N	2.39	0.49
1:2:47:A:OP2	38:2:1603:HOH:O	2.19	0.49
1:2:251:A:N1	1:2:283:U:O2'	2.40	0.49
1:2:1470:A:H2'	1:2:1471:G:C8	2.47	0.49
2:A:24:THR:OG1	2:A:28:PHE:HB2	2.11	0.49
2:A:99:ARG:HG2	2:A:99:ARG:HH11	1.76	0.49
14:N:28:ARG:O	14:N:32:THR:HG22	2.12	0.49
16:Q:71:GLN:HA	16:Q:74:GLU:OE1	2.12	0.49
21:W:40:CYS:CB	21:W:43:CYS:SG	3.00	0.49
22:X:47:ASP:OD1	22:X:50:ARG:NE	2.45	0.49
22:X:56:VAL:HG21	22:X:60:VAL:HG21	1.92	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:3:53:ILE:HD13	24:3:67:PRO:HD3	1.94	0.49
1:2:899:A:H2'	1:2:900:C:C6	2.47	0.49
1:2:956:G:H22	1:2:1175:A:P	2.35	0.49
6:F:147:VAL:HG21	6:F:164:LEU:HD11	1.95	0.49
19:U:92:ARG:HH11	19:U:92:ARG:HG3	1.76	0.49
21:W:27:GLU:HA	21:W:27:GLU:OE2	2.12	0.49
27:4:23:C:H2'	27:4:24:U:C6	2.47	0.49
1:2:1096:U:O2'	1:2:1099:G:O6	2.25	0.49
1:2:1367:C:N4	28:5:821:G:OP1	2.41	0.49
8:H:52:LYS:NZ	8:H:137:ASP:OD2	2.44	0.49
10:J:80:GLU:OE1	10:J:82:LEU:HD23	2.13	0.49
21:W:23:ASN:HD22	21:W:45:THR:HG21	1.78	0.49
21:W:30:ILE:HD11	21:W:38:VAL:HG11	1.94	0.49
1:2:413:U:H2'	1:2:414:C:C6	2.48	0.49
1:2:1024:A:OP1	36:2:1577:SPM:N14	2.46	0.49
1:2:1077:A:H2'	1:2:1078:C:H6	1.77	0.49
1:2:1370:U:H2'	1:2:1371:C:H5'	1.94	0.49
30:R:23:CYS:HB2	30:R:83:PRO:HG2	1.94	0.49
1:2:408:A:O5'	5:D:141:PRO:HD2	2.12	0.49
1:2:418:U:O2	1:2:419:A:N6	2.46	0.49
1:2:961:C:H2'	1:2:962:A:H8	1.78	0.49
1:2:964:G:N2	1:2:965:A:N1	2.60	0.49
36:2:1562:SPM:C13	31:Z:180:GLU:OE1	2.61	0.49
6:F:141:LYS:HG3	6:F:146:GLU:OE2	2.11	0.49
8:H:24:ASP:OD1	8:H:26:SER:N	2.45	0.49
8:H:84:LEU:HB2	8:H:159:GLU:HG2	1.93	0.49
12:L:79:ASP:O	12:L:82:VAL:HG22	2.13	0.49
19:U:45:PHE:CE1	19:U:46:LYS:HE2	2.47	0.49
19:U:75:GLY:O	19:U:79:THR:HG23	2.12	0.49
19:U:142:ILE:HA	19:U:145:GLU:OE1	2.13	0.49
22:X:25:ILE:HA	22:X:38:VAL:HG23	1.95	0.49
24:3:43:VAL:HG12	24:3:73:LYS:HE3	1.94	0.49
1:2:990:C:H4'	23:Y:62:LYS:HE2	1.95	0.49
1:2:1262:C:C4	8:H:155:PRO:HA	2.47	0.49
17:S:56:ARG:O	17:S:60:ILE:HG13	2.12	0.49
20:V:94:GLU:HG3	20:V:95:PRO:HD2	1.94	0.49
29:P:19:CYS:HA	29:P:35:TYR:O	2.13	0.49
1:2:382:C:H2'	1:2:383:G:H8	1.78	0.49
1:2:1343:G:H2'	1:2:1344:OMU:C6	2.42	0.49
8:H:40:HIS:HD2	11:K:48:LYS:CE	2.25	0.49
8:H:156:LYS:HD3	8:H:161:VAL:HG12	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:U:77:GLU:HA	19:U:80:ARG:HG3	1.94	0.49
1:2:913:C:OP2	15:O:135:THR:HG21	2.13	0.49
8:H:89:ILE:HD11	8:H:97:PRO:CA	2.42	0.49
11:K:24:TYR:HE2	11:K:65:ASP:HB3	1.77	0.49
20:V:86:SER:HB3	20:V:89:ILE:HD12	1.94	0.49
23:Y:60:CYS:HB3	23:Y:63:CYS:HB3	1.95	0.49
24:3:83:LYS:HD3	24:3:95:ALA:HB1	1.94	0.49
1:2:555:A:OP2	1:2:556:G:OP2	2.30	0.48
1:2:1442:G:N3	1:2:1443:G:C8	2.81	0.48
1:2:1460:A:H2	28:5:815:U:C5	2.31	0.48
11:K:39:LEU:HD22	19:U:12:PRO:HD3	1.95	0.48
11:K:49:ILE:HD12	11:K:82:ALA:HB3	1.95	0.48
13:M:26:SER:OG	13:M:30:GLY:HA2	2.13	0.48
18:T:79:ILE:HD11	18:T:110:LEU:HD23	1.95	0.48
1:2:636:C:H2'	1:2:637:U:H6	1.77	0.48
1:2:1011:C:N4	28:5:824:A:C6	2.81	0.48
1:2:1207:A:H2'	1:2:1208:G:C8	2.48	0.48
1:2:1328:A:P	19:U:89:ARG:HH22	2.36	0.48
2:A:14:TRP:HE1	2:A:17:LYS:HD2	1.77	0.48
6:F:12:GLU:OE1	6:F:12:GLU:N	2.44	0.48
7:G:42:PRO:HB2	7:G:79:PHE:CD2	2.47	0.48
11:K:8:VAL:HG21	11:K:92:LYS:HD2	1.94	0.48
1:2:989:C:OP1	23:Y:49:ALA:HA	2.13	0.48
6:F:187:THR:O	6:F:191:VAL:HG23	2.13	0.48
10:J:66:LEU:HA	10:J:73:ALA:HA	1.95	0.48
22:X:37:GLN:OE1	22:X:37:GLN:HA	2.12	0.48
1:2:74:A:N1	1:2:213:C:O2'	2.41	0.48
1:2:504:C:O2'	1:2:508:U:OP1	2.30	0.48
1:2:716:U:H2'	1:2:717:G:O4'	2.13	0.48
1:2:1024:A:N1	1:2:1065:G:O2'	2.36	0.48
1:2:1311:G:O6	11:K:14:ARG:NH2	2.46	0.48
6:F:188:GLU:OE1	6:F:192:ARG:NH2	2.47	0.48
8:H:36:VAL:HG23	11:K:106:TYR:CZ	2.49	0.48
8:H:89:ILE:HB	8:H:167:ILE:HD11	1.95	0.48
12:L:30:LYS:HE3	12:L:81:ARG:CZ	2.43	0.48
13:M:76:ILE:HD12	13:M:76:ILE:N	2.27	0.48
23:Y:38:ASN:HB3	23:Y:58:TRP:HZ3	1.78	0.48
23:Y:53:LYS:HE2	23:Y:53:LYS:N	2.27	0.48
31:Z:55:ILE:HG22	31:Z:83:ILE:HD13	1.95	0.48
1:2:200:C:H2'	1:2:201:A:H8	1.78	0.48
1:2:949:U:H2'	1:2:950:A:H8	1.79	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1165:G:OP2	12:L:55:HIS:ND1	2.42	0.48
1:2:1259:C:O3'	15:O:21:LYS:NZ	2.46	0.48
8:H:109:ALA:HB1	8:H:135:ARG:HB3	1.95	0.48
8:H:131:SER:HB2	22:X:60:VAL:HG22	1.95	0.48
3:B:22:GLU:O	3:B:26:LYS:HD2	2.13	0.48
3:B:58:MET:HE1	3:B:183:ILE:HD13	1.95	0.48
7:G:177:LEU:CD1	7:G:194:LYS:HB2	2.44	0.48
7:G:180:PRO:O	7:G:182:GLY:N	2.47	0.48
10:J:77:LYS:HD2	10:J:78:ILE:N	2.27	0.48
11:K:56:ALA:HB1	11:K:60:ILE:HG21	1.95	0.48
14:N:57:LYS:HD2	14:N:94:VAL:HG22	1.95	0.48
19:U:143:PHE:HE2	19:U:153:LEU:HB3	1.78	0.48
27:4:24:U:H2'	27:4:25:C:C6	2.48	0.48
31:Z:46:ILE:HA	31:Z:82:THR:O	2.13	0.48
1:2:871:A:H2'	1:2:872:A:C8	2.49	0.48
1:2:965:A:H8	24:3:34:LYS:HE2	1.78	0.48
1:2:1053:C:C5'	17:S:7:LYS:HE3	2.28	0.48
1:2:1078:C:H2'	1:2:1079:U:H6	1.79	0.48
1:2:1188:G:H2'	18:T:120:VAL:HG21	1.96	0.48
2:A:112:THR:OG1	2:A:116:TYR:HB2	2.14	0.48
7:G:65:THR:OG1	7:G:72:LYS:HE3	2.14	0.48
14:N:13:ALA:HB2	30:R:69:ARG:HB2	1.95	0.48
1:2:149:G:H2'	1:2:150:A:H8	1.77	0.48
1:2:217:U:H2'	1:2:218:C:H6	1.78	0.48
1:2:229:C:H2'	1:2:230:A:H8	1.78	0.48
1:2:1253:A:N1	1:2:1335:G:O2'	2.37	0.48
15:O:114:ARG:HH11	15:O:114:ARG:HG2	1.79	0.48
18:T:62:ARG:HG2	18:T:63:GLU:OE1	2.13	0.48
19:U:5:MET:O	19:U:6:ILE:HD13	2.13	0.48
1:2:40:G:H2'	1:2:41:G:C8	2.48	0.48
1:2:479:A:H5"	14:N:71:LYS:HZ3	1.79	0.48
11:K:31:PHE:HE1	19:U:156:TYR:CE1	2.31	0.48
17:S:15:GLU:HA	17:S:18:ASP:OD2	2.14	0.48
1:2:397:G:O6	36:2:1555:SPM:N1	2.47	0.48
1:2:413:U:H2'	1:2:414:C:H6	1.79	0.48
1:2:517:C:N3	38:2:1636:HOH:O	2.35	0.48
7:G:22:LYS:HD3	7:G:108:GLU:HG3	1.95	0.48
11:K:36:PRO:HD3	19:U:10:MET:HG2	1.95	0.48
12:L:30:LYS:HE3	12:L:81:ARG:NH1	2.28	0.48
1:2:468:A:N6	36:2:1549:SPM:H22	2.28	0.47
1:2:961:C:C2	1:2:962:A:C8	3.02	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:B:84:ILE:HD11	4:C:36:ASN:HB2	1.96	0.47
3:B:108:ARG:NH1	3:B:227:MET:O	2.47	0.47
3:B:113:PHE:CD1	3:B:202:ALA:HB2	2.49	0.47
10:J:38:SER:OG	10:J:40:GLU:OE2	2.30	0.47
14:N:38:LYS:O	14:N:42:ASP:HB3	2.14	0.47
16:Q:112:GLY:O	16:Q:116:ILE:HD12	2.14	0.47
17:S:42:LYS:N	17:S:42:LYS:HE2	2.29	0.47
18:T:6:PRO:HB2	18:T:8:GLU:OE1	2.13	0.47
20:V:60:GLU:H	20:V:60:GLU:CD	2.16	0.47
1:2:131:U:H2'	1:2:132:A:H8	1.79	0.47
1:2:741:A:H4'	1:2:1471:G:O2'	2.14	0.47
1:2:985:C:C2	1:2:986:U:H5	2.32	0.47
1:2:1282:A:HO2'	18:T:76:ASN:HD22	1.60	0.47
1:2:1371:C:H2'	1:2:1372:G:O4'	2.14	0.47
2:A:94:ARG:CZ	2:A:94:ARG:HB2	2.44	0.47
3:B:21:LYS:C	3:B:21:LYS:HZ2	2.18	0.47
3:B:95:GLN:NE2	3:B:118:GLY:O	2.47	0.47
6:F:121:CYS:SG	6:F:126:CYS:HB3	2.55	0.47
13:M:27:ASP:OD1	13:M:27:ASP:N	2.47	0.47
15:O:10:ARG:O	15:O:11:ILE:HD13	2.14	0.47
18:T:70:ILE:HD12	18:T:87:LYS:O	2.14	0.47
19:U:143:PHE:CE2	19:U:153:LEU:HB3	2.49	0.47
1:2:1445:G:H2'	1:2:1446:G:C8	2.49	0.47
6:F:98:GLN:HE21	6:F:100:ARG:HH12	1.62	0.47
8:H:21:GLU:HB3	8:H:23:ARG:HH12	1.78	0.47
16:Q:33:MET:O	16:Q:37:GLU:HG2	2.15	0.47
1:2:40:G:H2'	1:2:41:G:H8	1.78	0.47
1:2:428:U:O2'	1:2:430:U:O4	2.18	0.47
1:2:439:U:OP2	20:V:101:ARG:NH1	2.38	0.47
1:2:1121:A:OP2	17:S:32:LYS:NZ	2.46	0.47
1:2:1470:A:H2'	1:2:1471:G:H8	1.79	0.47
6:F:28:ILE:HG22	6:F:30:SER:H	1.78	0.47
6:F:82:MET:HG2	6:F:83:GLY:N	2.29	0.47
12:L:23:GLN:O	12:L:27:ILE:HG12	2.14	0.47
21:W:28:GLN:HA	21:W:28:GLN:HE21	1.78	0.47
24:3:27:LYS:HG3	24:3:32:ILE:HG12	1.94	0.47
1:2:398:C:C2	1:2:399:OMG:C8	3.02	0.47
1:2:699:U:H2'	1:2:700:A:C8	2.49	0.47
8:H:125:TYR:O	8:H:192:SER:OG	2.32	0.47
12:L:46:LEU:CD2	31:Z:5:LYS:HD3	2.44	0.47
12:L:47:GLU:OE1	12:L:49:PRO:HD3	2.13	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:S:41:VAL:HG11	17:S:47:ARG:HB2	1.96	0.47
27:4:53:G:N7	27:4:54:5MU:H72	2.29	0.47
1:2:725:A:OP2	1:2:771:G:N2	2.47	0.47
1:2:1171:C:H2'	1:2:1172:C:H6	1.79	0.47
18:T:118:LYS:CD	18:T:118:LYS:H	2.28	0.47
24:3:80:VAL:HG22	24:3:81:SER:O	2.14	0.47
1:2:17:C:C2	1:2:18:C:C5	3.02	0.47
1:2:92:G:OP1	34:E:21:LYS:NZ	2.44	0.47
1:2:176:G:N1	1:2:179:A:OP2	2.46	0.47
1:2:489:G:N3	1:2:489:G:H2'	2.30	0.47
1:2:518:U:OP2	36:2:1548:SPM:N5	2.47	0.47
1:2:1226:C:H2'	1:2:1227:C:C6	2.50	0.47
1:2:1337:G:N7	11:K:15:LYS:NZ	2.63	0.47
1:2:1371:C:C2	1:2:1372:G:C8	3.03	0.47
2:A:183:LYS:HD3	2:A:184:ALA:N	2.28	0.47
3:B:98:ILE:CG1	3:B:142:PRO:HB3	2.44	0.47
6:F:91:ILE:HD11	6:F:192:ARG:HD3	1.96	0.47
8:H:180:LYS:HE2	8:H:180:LYS:HB2	1.66	0.47
11:K:48:LYS:HD3	11:K:83:ARG:NH2	2.30	0.47
11:K:84:MET:HB3	11:K:88:ARG:HE	1.78	0.47
12:L:86:LEU:HD13	12:L:99:ILE:HG13	1.96	0.47
13:M:25:ILE:O	13:M:34:ILE:N	2.33	0.47
14:N:84:VAL:HG21	14:N:124:TYR:CE1	2.50	0.47
14:N:139:LYS:HB3	14:N:139:LYS:HE2	1.65	0.47
19:U:6:ILE:HA	19:U:10:MET:HE2	1.95	0.47
22:X:21:GLU:HG3	22:X:65:ILE:HD12	1.96	0.47
22:X:27:ASP:OD2	22:X:27:ASP:N	2.47	0.47
23:Y:26:TYR:OH	23:Y:38:ASN:OD1	2.31	0.47
31:Z:90:GLU:OE2	31:Z:120:ARG:NH2	2.47	0.47
1:2:188:C:O2'	10:J:64:ASN:OD1	2.29	0.47
1:2:539:C:H2'	1:2:540:G:O4'	2.14	0.47
1:2:954:G:H2'	1:2:955:A:C8	2.50	0.47
1:2:1451:G:C2	1:2:1452:U:C6	3.03	0.47
7:G:57:ASP:HB3	7:G:113:ARG:NH2	2.30	0.47
19:U:118:GLN:OE1	19:U:129:PRO:HD3	2.15	0.47
21:W:63:ARG:NH1	21:W:65:MET:HB2	2.30	0.47
1:2:72:G:N1	1:2:209:U:O2'	2.45	0.47
1:2:212:C:H2'	1:2:213:C:C6	2.50	0.47
1:2:349:A:H5"	1:2:350:C:C5	2.48	0.47
1:2:935:G:OP2	11:K:132:ARG:NH2	2.47	0.47
1:2:1017:C:H2'	1:2:1018:OMG:H8	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1252:A:H2'	1:2:1253:A:C8	2.50	0.47
1:2:1335:G:O3'	11:K:74:GLY:HA3	2.15	0.47
18:T:53:LEU:HD12	18:T:74:VAL:CG1	2.45	0.47
19:U:64:LEU:HD22	19:U:108:PHE:CZ	2.50	0.47
21:W:23:ASN:HD22	21:W:45:THR:CG2	2.28	0.47
27:4:15:G:N2	27:4:48:C:C2	2.80	0.47
1:2:637:U:H2'	1:2:638:C:C6	2.50	0.47
1:2:653:A:H5"	13:M:47:ARG:CG	2.45	0.47
1:2:965:A:C8	24:3:34:LYS:HE2	2.49	0.47
1:2:1491:A:H2'	1:2:1492:C:H6	1.80	0.47
1:2:1496:C:N3	28:5:806:G:N1	2.52	0.47
6:F:91:ILE:HG21	6:F:191:VAL:HG12	1.97	0.47
7:G:4:PHE:HB2	7:G:121:VAL:HG13	1.96	0.47
11:K:30:VAL:O	11:K:37:ILE:HG23	2.15	0.47
13:M:15:TYR:HB3	13:M:22:LEU:HB2	1.97	0.47
1:2:601:A:H2'	1:2:602:C:H6	1.79	0.46
1:2:1329:U:OP1	36:2:1570:SPM:N14	2.48	0.46
8:H:12:VAL:HG12	8:H:16:TRP:O	2.15	0.46
18:T:48:ASP:HA	18:T:51:ARG:NH1	2.30	0.46
1:2:426:C:H2'	1:2:427:U:C6	2.48	0.46
1:2:637:U:H2'	1:2:638:C:H6	1.81	0.46
1:2:863:A:H2'	1:2:864:A:C8	2.50	0.46
1:2:1113:C:OP1	11:K:18:ARG:NE	2.48	0.46
1:2:1350:C:H2'	1:2:1351:U:H6	1.80	0.46
12:L:80:GLU:O	12:L:84:ARG:HG3	2.15	0.46
15:O:59:GLU:O	15:O:62:LYS:HG2	2.14	0.46
22:X:54:ARG:CZ	22:X:68:LEU:HD12	2.46	0.46
30:R:21:LYS:HD2	30:R:84:CYS:HA	1.97	0.46
30:R:92:LYS:HG2	30:R:113:VAL:HG13	1.98	0.46
34:E:177:SER:HA	34:E:231:ARG:O	2.15	0.46
1:2:382:C:H2'	1:2:383:G:C8	2.50	0.46
1:2:809:C:P	36:2:1575:SPM:H81	2.56	0.46
1:2:975:G:H2'	1:2:976:G:C8	2.50	0.46
1:2:1115:A:HO2'	1:2:1116:G:H8	1.62	0.46
2:A:126:THR:OG1	2:A:128:TYR:O	2.23	0.46
3:B:191:ARG:NH2	3:B:227:MET:H	2.13	0.46
4:C:25:PRO:HB3	6:F:35:PHE:CD1	2.50	0.46
12:L:53:LEU:HD11	12:L:60:LYS:HA	1.98	0.46
19:U:9:GLU:OE1	19:U:9:GLU:HA	2.16	0.46
3:B:73:LEU:HD21	3:B:173:THR:HG22	1.98	0.46
10:J:101:LYS:HE3	10:J:101:LYS:HB2	1.78	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:36:THR:O	15:O:40:ILE:HG23	2.16	0.46
19:U:25:LYS:HB3	19:U:26:GLU:OE1	2.14	0.46
19:U:150:ASN:OD1	19:U:153:LEU:HG	2.14	0.46
24:3:66:LEU:O	24:3:70:CYS:N	2.48	0.46
28:5:808:A:H2'	28:5:808:A:N3	2.30	0.46
34:E:14:MET:SD	34:E:102:ARG:HG3	2.54	0.46
34:E:152:PHE:HA	34:E:156:MET:HE1	1.98	0.46
1:2:131:U:H2'	1:2:132:A:C8	2.51	0.46
7:G:72:LYS:HD2	7:G:72:LYS:HA	1.64	0.46
7:G:157:ASP:HB3	7:G:197:ARG:HD3	1.97	0.46
15:O:38:LYS:O	15:O:41:ILE:HG13	2.16	0.46
18:T:10:LYS:N	18:T:10:LYS:HD2	2.31	0.46
21:W:14:SER:HB3	21:W:33:HIS:CE1	2.51	0.46
1:2:614:G:H2'	1:2:615:G:C8	2.51	0.46
1:2:645:U:O4	1:2:662:G:O2'	2.17	0.46
1:2:883:U:H2'	1:2:884:U:C6	2.51	0.46
21:W:4:LYS:HD3	21:W:5:LEU:HD22	1.98	0.46
1:2:266:U:OP1	10:J:56:ARG:NH2	2.49	0.46
1:2:646:A:C2	1:2:663:A:C5	3.03	0.46
1:2:1490:C:C2	1:2:1491:A:C8	3.04	0.46
2:A:25:PRO:HD3	2:A:81:THR:HG23	1.98	0.46
3:B:29:LYS:HB2	3:B:76:ARG:HH11	1.81	0.46
10:J:4:TYR:HE1	10:J:27:GLU:OE2	1.99	0.46
23:Y:25:THR:HG23	24:3:65:HIS:CE1	2.51	0.46
1:2:112:C:H2'	1:2:113:OMC:C6	2.50	0.46
1:2:311:A:O2'	1:2:312:G:H5'	2.16	0.46
1:2:329:G:N1	1:2:332:A:OP2	2.49	0.46
1:2:801:C:H2'	1:2:802:U:O4'	2.16	0.46
1:2:909:G:C2	1:2:910:A:C8	3.04	0.46
2:A:114:ASP:O	2:A:195:PRO:HG3	2.16	0.46
7:G:46:VAL:HG22	7:G:50:THR:OG1	2.16	0.46
17:S:32:LYS:O	17:S:36:ILE:HG23	2.15	0.46
1:2:3:U:H5'	6:F:159:VAL:HG12	1.98	0.46
1:2:602:C:H2'	1:2:603:U:H6	1.81	0.46
1:2:796:A:H2'	1:2:797:U:C6	2.51	0.46
1:2:949:U:C2	1:2:1184:G:N2	2.84	0.46
1:2:1096:U:P	19:U:137:LYS:HZ2	2.39	0.46
1:2:1294:U:H2'	1:2:1295:G:O4'	2.15	0.46
7:G:79:PHE:HZ	7:G:102:PHE:CZ	2.33	0.46
8:H:15:LYS:HG2	8:H:16:TRP:CE2	2.50	0.46
10:J:11:LYS:HG2	10:J:17:LYS:HD3	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:27:LYS:HZ1	11:K:29:ARG:CZ	2.29	0.46
20:V:19:ARG:HG3	20:V:19:ARG:NH1	2.31	0.46
1:2:367:G:N1	1:2:370:A:OP2	2.49	0.46
1:2:910:A:O2'	1:2:1297:A:N3	2.40	0.46
1:2:922:A:N3	1:2:949:U:O2'	2.40	0.46
1:2:927:G:OP1	36:2:1576:SPM:H131	2.11	0.46
2:A:22:VAL:O	2:A:33:LEU:N	2.40	0.46
9:I:14:ILE:HD11	9:I:38:LEU:HD21	1.98	0.46
11:K:37:ILE:HD13	11:K:50:MET:SD	2.56	0.46
16:Q:25:ARG:HA	16:Q:25:ARG:NE	2.30	0.46
20:V:99:LEU:HA	20:V:102:ASP:OD1	2.16	0.46
27:4:34:C:H2'	27:4:35:A:H8	1.80	0.46
30:R:92:LYS:HG2	30:R:113:VAL:CG1	2.46	0.46
1:2:125:G:OP2	36:2:1567:SPM:C9	2.62	0.45
1:2:728:G:H4'	1:2:1470:A:H4'	1.99	0.45
1:2:954:G:H2'	1:2:955:A:H8	1.82	0.45
1:2:1188:G:N3	1:2:1188:G:C2'	2.79	0.45
1:2:1369:G:H2'	1:2:1370:U:C6	2.50	0.45
10:J:58:LYS:HD2	10:J:58:LYS:HA	1.66	0.45
11:K:28:GLY:N	11:K:64:ILE:O	2.49	0.45
14:N:45:GLY:HA3	14:N:79:ARG:NH2	2.31	0.45
22:X:56:VAL:CG2	22:X:60:VAL:HG21	2.46	0.45
23:Y:65:TYR:O	23:Y:65:TYR:HD1	1.99	0.45
24:3:6:TYR:CZ	24:3:8:LYS:HD2	2.50	0.45
1:2:1061:OMG:HM22	1:2:1062:A:H5'	1.98	0.45
1:2:1484:C:H2'	1:2:1485:U:C6	2.51	0.45
2:A:36:THR:OG1	2:A:47:ARG:NH1	2.49	0.45
2:A:41:ILE:HG12	2:A:74:ASN:ND2	2.31	0.45
15:O:38:LYS:HB3	15:O:38:LYS:HE3	1.72	0.45
15:O:44:LEU:HD23	15:O:46:MET:HE1	1.98	0.45
24:3:20:LEU:HG	24:3:24:ARG:NH2	2.31	0.45
1:2:395:G:H2'	1:2:396:G:C8	2.52	0.45
1:2:477:U:H2'	1:2:489:G:C8	2.51	0.45
1:2:617:G:H2'	1:2:618:C:H6	1.80	0.45
1:2:681:G:N7	2:A:129:LYS:NZ	2.65	0.45
1:2:1293:G:H5"	15:O:33:GLY:H	1.81	0.45
1:2:1363:C:O2	1:2:1459:A:N6	2.49	0.45
8:H:124:TYR:HB2	8:H:126:VAL:HG23	1.96	0.45
14:N:56:GLU:HA	14:N:99:GLU:OE2	2.16	0.45
16:Q:128:LYS:NZ	16:Q:137:TRP:O	2.41	0.45
17:S:40:ASP:OD1	31:Z:196:LYS:CG	2.63	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:398:C:O2	1:2:398:C:H2'	2.17	0.45
1:2:458:G:H2'	1:2:459:C:H6	1.81	0.45
1:2:782:A:N6	1:2:841:G:O6	2.49	0.45
1:2:944:C:O2	29:P:15:GLY:N	2.45	0.45
1:2:1013:U:H4'	31:Z:142:ALA:HB2	1.98	0.45
1:2:1095:C:O2'	1:2:1096:U:P	2.75	0.45
1:2:1477:4AC:O7	1:2:1477:4AC:H5	2.16	0.45
2:A:25:PRO:HG3	2:A:81:THR:O	2.16	0.45
11:K:36:PRO:HB3	19:U:156:TYR:CE2	2.50	0.45
12:L:11:SER:HB2	12:L:95:VAL:HG22	1.98	0.45
15:O:72:ILE:O	15:O:80:TYR:OH	2.30	0.45
24:3:36:THR:HB	24:3:97:ALA:HB3	1.97	0.45
24:3:88:GLU:OE2	24:3:93:GLN:HA	2.16	0.45
1:2:91:G:O6	36:2:1552:SPM:N1	2.50	0.45
1:2:425:G:H2'	1:2:426:C:C6	2.50	0.45
1:2:677:A:H5"	1:2:678:C:OP2	2.16	0.45
1:2:926:OMG:HM22	1:2:927:G:H5'	1.97	0.45
2:A:53:LEU:HD13	2:A:67:LEU:HD11	1.99	0.45
3:B:103:ARG:NE	3:B:103:ARG:HA	2.31	0.45
5:D:87:THR:O	5:D:87:THR:OG1	2.32	0.45
6:F:205:VAL:H	9:I:70:ASN:ND2	2.14	0.45
7:G:24:LYS:HE3	7:G:106:ASP:OD2	2.16	0.45
9:I:32:LYS:O	9:I:36:ASN:ND2	2.46	0.45
31:Z:35:GLU:HG3	31:Z:48:TYR:HE1	1.81	0.45
34:E:153:LYS:H	34:E:156:MET:HE2	1.81	0.45
1:2:257:U:H5"	10:J:10:ARG:HG2	1.98	0.45
1:2:1130:G:N2	1:2:1133:A:OP2	2.45	0.45
1:2:1161:G:H2'	1:2:1162:U:C6	2.51	0.45
1:2:1232:A:H2'	1:2:1233:A:C8	2.52	0.45
5:D:83:LEU:HA	5:D:83:LEU:HD13	1.68	0.45
7:G:139:GLU:HB3	7:G:141:ASN:OD1	2.17	0.45
8:H:63:ASN:OD1	8:H:75:LYS:HE3	2.16	0.45
14:N:63:ARG:NH1	14:N:120:PRO:HA	2.31	0.45
15:O:5:PHE:CE2	15:O:53:GLY:HA3	2.52	0.45
17:S:40:ASP:OD1	17:S:40:ASP:N	2.47	0.45
22:X:12:ILE:HD12	22:X:13:ILE:N	2.32	0.45
34:E:194:LYS:HD2	34:E:194:LYS:HA	1.70	0.45
1:2:246:OMC:HM22	1:2:247:C:H5'	1.97	0.45
1:2:1053:C:O2'	17:S:10:LYS:NZ	2.44	0.45
1:2:1277:G:H2'	1:2:1278:C:H6	1.82	0.45
2:A:14:TRP:CH2	13:M:69:LYS:HE3	2.51	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
27:4:25:C:C2	27:4:26:G:C8	3.04	0.45
29:P:48:LEU:HD23	31:Z:16:VAL:HG21	1.99	0.45
31:Z:63:ILE:HD12	31:Z:63:ILE:N	2.28	0.45
34:E:209:ILE:HD11	34:E:223:ILE:HD12	1.98	0.45
1:2:901:A:H4'	22:X:32:THR:HG21	1.99	0.45
2:A:14:TRP:HH2	13:M:69:LYS:O	1.99	0.45
8:H:175:LYS:HE2	8:H:175:LYS:N	2.31	0.45
11:K:29:ARG:HH12	19:U:156:TYR:CA	2.30	0.45
23:Y:34:VAL:C	23:Y:35:LYS:HD3	2.37	0.45
27:4:27:U:H2'	27:4:28:C:C6	2.52	0.45
27:4:44:A:H2'	27:4:45:G:O4'	2.16	0.45
1:2:377:C:O2'	36:2:1564:SPM:N14	2.49	0.45
1:2:426:C:H2'	1:2:427:U:H6	1.82	0.45
1:2:1075:C:H1'	1:2:1142:A:C4	2.52	0.45
1:2:1124:G:C2	1:2:1125:C:C6	3.05	0.45
1:2:1134:G:H2'	1:2:1135:C:C6	2.52	0.45
1:2:1370:U:H2'	1:2:1371:C:C5'	2.46	0.45
10:J:105:GLU:OE2	10:J:105:GLU:N	2.50	0.45
11:K:8:VAL:HG22	11:K:23:ILE:CD1	2.32	0.45
16:Q:100:ILE:HD13	16:Q:110:LYS:HG2	1.98	0.45
19:U:19:ARG:HH12	19:U:141:GLU:CD	2.19	0.45
24:3:41:LYS:HA	24:3:44:GLU:OE1	2.16	0.45
1:2:147:G:H2'	1:2:148:G:H8	1.82	0.45
1:2:217:U:H2'	1:2:218:C:C6	2.52	0.45
1:2:822:C:H2'	1:2:823:A:H8	1.82	0.45
1:2:826:G:N7	36:2:1560:SPM:H111	2.32	0.45
1:2:853:G:O2'	1:2:869:G:O6	2.29	0.45
1:2:949:U:C2	1:2:1184:G:C2	3.04	0.45
5:D:123:ARG:O	5:D:127:THR:HG23	2.17	0.45
6:F:146:GLU:OE2	6:F:146:GLU:HA	2.17	0.45
17:S:33:GLN:O	17:S:37:ARG:HG3	2.16	0.45
18:T:69:THR:HA	18:T:87:LYS:HB3	1.99	0.45
20:V:19:ARG:HG3	20:V:19:ARG:HH11	1.82	0.45
27:4:23:C:H2'	27:4:24:U:H6	1.82	0.45
27:4:53:G:C8	27:4:54:5MU:H72	2.52	0.45
27:4:63:G:H2'	27:4:64:G:H8	1.82	0.45
31:Z:2:PRO:HB2	31:Z:3:ASN:H	1.62	0.45
31:Z:29:ALA:HB2	31:Z:54:MET:HG3	1.98	0.45
1:2:416:C:H2'	1:2:417:G:O4'	2.16	0.44
1:2:446:G:H21	20:V:42:THR:HG21	1.82	0.44
1:2:813:G:H2'	1:2:814:U:C6	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:991:U:H2'	1:2:992:G:C5	2.52	0.44
13:M:94:GLN:O	13:M:98:ARG:HG2	2.17	0.44
1:2:242:C:OP1	30:R:75:SER:HB2	2.15	0.44
1:2:643:A:H2'	1:2:644:G:O4'	2.17	0.44
1:2:657:C:C2	1:2:658:C:C5	3.05	0.44
1:2:710:OMC:HM22	1:2:711:G:H5'	2.00	0.44
1:2:1341:A:N6	8:H:46:GLU:OE2	2.40	0.44
4:C:55:TYR:CZ	4:C:64:GLY:HA3	2.52	0.44
10:J:33:THR:HG21	10:J:56:ARG:HD3	1.99	0.44
11:K:10:SER:OG	11:K:88:ARG:HB2	2.17	0.44
16:Q:85:ASP:OD1	16:Q:85:ASP:N	2.47	0.44
24:3:78:VAL:HG13	24:3:114:ILE:HG21	1.99	0.44
1:2:260:G:H2'	1:2:261:G:C8	2.52	0.44
1:2:366:C:H2'	1:2:367:G:C8	2.52	0.44
1:2:803:U:O4	2:A:127:THR:HG21	2.16	0.44
1:2:971:G:H2'	1:2:972:C:O4'	2.17	0.44
1:2:1074:A:H5'	11:K:117:GLN:HE21	1.83	0.44
1:2:1122:C:OP2	17:S:45:LYS:HG3	2.17	0.44
1:2:1287:G:OP2	38:2:1605:HOH:O	2.21	0.44
1:2:1466:4AC:HM73	1:2:1467:4AC:HM72	1.99	0.44
36:2:1563:SPM:H91	11:K:121:GLU:OE1	2.16	0.44
5:D:55:ALA:HB1	5:D:90:VAL:HG13	1.98	0.44
6:F:118:ARG:NH1	6:F:201:THR:O	2.50	0.44
7:G:197:ARG:HG2	7:G:205:ILE:HD11	1.99	0.44
13:M:94:GLN:HA	13:M:94:GLN:OE1	2.17	0.44
17:S:6:THR:OG1	17:S:8:ASP:OD1	2.26	0.44
18:T:90:VAL:CG2	18:T:114:SER:HB2	2.47	0.44
22:X:25:ILE:HD12	22:X:25:ILE:O	2.17	0.44
23:Y:33:LYS:HA	23:Y:33:LYS:HE3	1.98	0.44
24:3:82:SER:O	24:3:82:SER:OG	2.34	0.44
28:5:817:A:H3'	28:5:818:A:H8	1.82	0.44
1:2:1110:A:H5'	1:2:1111:C:OP2	2.16	0.44
1:2:1293:G:H5"	15:O:33:GLY:N	2.33	0.44
13:M:52:PRO:HB3	13:M:95:PRO:HG2	2.00	0.44
15:O:61:LYS:HD2	15:O:61:LYS:N	2.33	0.44
18:T:90:VAL:HG23	18:T:114:SER:HB2	1.98	0.44
19:U:56:TRP:CH2	19:U:103:VAL:HG11	2.51	0.44
23:Y:58:TRP:N	23:Y:67:GLU:O	2.50	0.44
31:Z:29:ALA:CB	31:Z:55:ILE:HG13	2.48	0.44
1:2:113:OMC:HM22	1:2:114:U:H5'	2.00	0.44
1:2:430:U:C4	1:2:431:C:C5	3.06	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:796:A:O3'	21:W:53:GLY:HA3	2.18	0.44
1:2:813:G:H5"	21:W:2:MET:O	2.18	0.44
1:2:1097:C:C2	19:U:140:LEU:HD13	2.53	0.44
1:2:1121:A:N3	1:2:1144:G:C2	2.85	0.44
1:2:1382:A:P	1:2:1382:A:H8	2.41	0.44
1:2:1453:C:C2	1:2:1454:G:C8	3.05	0.44
2:A:116:TYR:CD1	2:A:195:PRO:CD	3.01	0.44
11:K:36:PRO:HB3	19:U:156:TYR:CZ	2.53	0.44
19:U:54:GLU:OE1	19:U:54:GLU:N	2.37	0.44
1:2:172:U:OP2	30:R:2:VAL:HG12	2.17	0.44
1:2:246:OMC:HM21	14:N:34:ILE:HA	2.00	0.44
2:A:54:TYR:CE2	2:A:60:PHE:HA	2.53	0.44
6:F:54:LEU:HD23	6:F:54:LEU:HA	1.83	0.44
6:F:121:CYS:SG	6:F:126:CYS:CB	3.04	0.44
7:G:148:VAL:HB	7:G:212:ILE:HG23	2.00	0.44
20:V:92:LYS:HE2	20:V:92:LYS:HB2	1.80	0.44
1:2:677:A:C4	1:2:678:C:C5	3.06	0.44
1:2:707:G:C8	16:Q:59:PRO:HB2	2.52	0.44
5:D:55:ALA:O	5:D:58:LEU:HB2	2.17	0.44
8:H:61:LEU:O	8:H:65:ILE:HG12	2.18	0.44
8:H:79:TYR:O	8:H:82:VAL:HG12	2.17	0.44
16:Q:94:VAL:HA	16:Q:97:ARG:NH1	2.32	0.44
21:W:15:ARG:HD2	21:W:66:GLY:HA2	2.00	0.44
21:W:40:CYS:SG	21:W:42:SER:OG	2.75	0.44
24:3:43:VAL:HG22	24:3:48:ALA:HB3	1.99	0.44
29:P:28:VAL:HA	29:P:37:CYS:HA	2.00	0.44
31:Z:25:GLN:HA	31:Z:25:GLN:OE1	2.18	0.44
1:2:200:C:H2'	1:2:201:A:C8	2.53	0.44
1:2:431:C:C2	1:2:432:C:C5	3.05	0.44
1:2:947:A:O2'	1:2:1007:G:OP2	2.22	0.44
1:2:1092:G:C6	1:2:1104:G:C6	3.05	0.44
3:B:131:PHE:HB2	3:B:159:GLU:HB3	2.00	0.44
3:B:194:LEU:HD12	3:B:194:LEU:HA	1.82	0.44
8:H:116:ARG:C	8:H:117:ILE:HD12	2.37	0.44
8:H:128:VAL:HG23	22:X:55:ASN:HB2	1.99	0.44
23:Y:33:LYS:HB3	23:Y:35:LYS:HE3	1.99	0.44
24:3:41:LYS:HE3	24:3:41:LYS:HB3	1.80	0.44
31:Z:95:VAL:O	31:Z:99:ARG:HG3	2.17	0.44
1:2:334:A:OP2	36:2:1556:SPM:N5	2.38	0.44
1:2:708:C:H2'	1:2:709:C:H6	1.83	0.44
1:2:846:C:O2'	1:2:847:U:H5'	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1096:U:OP1	19:U:137:LYS:NZ	2.50	0.44
1:2:1276:G:P	18:T:39:ARG:HH22	2.41	0.44
2:A:50:GLU:HG2	2:A:68:TYR:CE1	2.53	0.44
6:F:56:TYR:HB3	6:F:82:MET:HG3	2.00	0.44
12:L:46:LEU:HB2	12:L:67:MET:HB3	1.99	0.44
13:M:96:ALA:O	13:M:100:LEU:HD12	2.17	0.44
16:Q:52:LEU:HB3	16:Q:58:ILE:HB	1.99	0.44
27:4:22:G:C4	27:4:23:C:C5	3.06	0.44
1:2:479:A:O2'	14:N:91:ASP:OD1	2.24	0.43
1:2:964:G:O2'	1:2:967:G:O2'	2.31	0.43
1:2:988:G:O2'	1:2:989:C:O5'	2.31	0.43
1:2:1019:U:OP1	12:L:59:ARG:NE	2.39	0.43
1:2:1494:U:C2	1:2:1495:C:C5	3.06	0.43
2:A:23:ILE:O	2:A:81:THR:HG22	2.18	0.43
2:A:148:LYS:NZ	2:A:149:LYS:HE2	2.32	0.43
3:B:127:ILE:O	3:B:130:THR:OG1	2.25	0.43
6:F:9:ASN:HB2	6:F:12:GLU:OE1	2.18	0.43
10:J:118:ASP:HB3	10:J:120:VAL:HG22	2.00	0.43
14:N:45:GLY:HA3	14:N:79:ARG:HH22	1.82	0.43
14:N:134:LEU:O	14:N:138:TYR:HB2	2.17	0.43
15:O:55:LEU:HG	15:O:59:GLU:HG3	2.00	0.43
17:S:8:ASP:OD1	17:S:8:ASP:N	2.49	0.43
24:3:17:ASP:HA	24:3:20:LEU:HB2	1.99	0.43
27:4:52:G:H2'	27:4:53:G:C8	2.52	0.43
1:2:207:U:H2'	1:2:208:A:C8	2.53	0.43
1:2:229:C:H2'	1:2:230:A:C8	2.54	0.43
1:2:264:G:O2'	10:J:32:PRO:HB3	2.18	0.43
1:2:268:A:H2'	1:2:269:G:C8	2.53	0.43
8:H:70:ARG:HG2	8:H:71:ASN:N	2.32	0.43
10:J:83:GLU:HG3	10:J:101:LYS:HB3	2.00	0.43
13:M:66:ALA:HA	13:M:69:LYS:HB2	2.00	0.43
16:Q:76:ARG:HB2	16:Q:78:LEU:HD12	2.00	0.43
24:3:70:CYS:SG	24:3:77:TYR:HB3	2.57	0.43
1:2:119:U:O2'	34:E:165:GLN:OE1	2.27	0.43
1:2:298:C:H5'	1:2:569:G:N3	2.33	0.43
1:2:327:C:H2'	1:2:328:U:C6	2.53	0.43
1:2:784:G:H2'	1:2:785:C:H6	1.83	0.43
1:2:1261:G:OP1	15:O:51:ARG:NH2	2.51	0.43
1:2:1307:C:H2'	1:2:1308:C:C6	2.53	0.43
1:2:1336:U:H2'	1:2:1337:G:O4'	2.18	0.43
12:L:9:LEU:HD23	12:L:9:LEU:HA	1.74	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:11:ILE:HD12	15:O:11:ILE:HG23	1.79	0.43
21:W:43:CYS:SG	21:W:45:THR:HG23	2.58	0.43
24:3:27:LYS:NZ	24:3:89:ALA:HB3	2.33	0.43
24:3:119:ASN:HD22	24:3:119:ASN:N	2.16	0.43
27:4:67:C:H2'	27:4:68:C:C6	2.53	0.43
1:2:1340:U:H2'	1:2:1341:A:C8	2.53	0.43
7:G:17:LYS:HZ3	7:G:19:ILE:HG22	1.82	0.43
7:G:139:GLU:O	7:G:142:GLN:NE2	2.51	0.43
9:I:81:LEU:HD11	9:I:86:MET:HE1	2.00	0.43
11:K:40:ILE:HD13	11:K:40:ILE:HA	1.76	0.43
11:K:124:MET:CE	12:L:60:LYS:H	2.32	0.43
14:N:57:LYS:HG2	14:N:73:VAL:HG12	2.00	0.43
24:3:79:TYR:CE1	24:3:118:VAL:HG22	2.54	0.43
1:2:31:U:P	14:N:141:LYS:NZ	2.91	0.43
1:2:339:C:H2'	1:2:340:C:H6	1.83	0.43
1:2:413:U:H5"	5:D:118:THR:HG23	2.00	0.43
1:2:558:C:H2'	1:2:559:A:C8	2.53	0.43
1:2:603:U:C2	1:2:604:G:C8	3.06	0.43
1:2:987:U:H2'	1:2:988:G:C8	2.53	0.43
4:C:34:CYS:SG	4:C:57:CYS:CB	2.96	0.43
6:F:148:ASP:OD1	6:F:148:ASP:N	2.50	0.43
7:G:16:PRO:HB2	7:G:112:TYR:HB2	2.00	0.43
7:G:175:ILE:HD11	7:G:177:LEU:HG	2.00	0.43
8:H:30:TYR:CE2	8:H:132:PRO:HG2	2.52	0.43
13:M:111:GLU:OE1	13:M:113:VAL:HG23	2.17	0.43
16:Q:123:LEU:HD23	16:Q:123:LEU:HA	1.86	0.43
19:U:121:LYS:HD2	19:U:122:ASN:OD1	2.18	0.43
19:U:137:LYS:HD3	19:U:137:LYS:H	1.83	0.43
1:2:24:C:H2'	1:2:25:G:H8	1.84	0.43
1:2:54:G:O2'	1:2:393:G:N7	2.43	0.43
1:2:58:U:H2'	1:2:59:C:C6	2.54	0.43
1:2:655:A:H2'	1:2:656:U:C6	2.50	0.43
1:2:749:A:N6	1:2:1455:U:OP1	2.52	0.43
1:2:1097:C:N3	19:U:140:LEU:HD13	2.34	0.43
1:2:1155:C:H2'	1:2:1156:G:O4'	2.18	0.43
1:2:1289:C:H2'	1:2:1290:C:H6	1.84	0.43
2:A:19:TRP:HA	2:A:37:PRO:HA	2.01	0.43
2:A:116:TYR:HB3	2:A:155:PHE:HD1	1.82	0.43
2:A:123:LEU:HD11	2:A:125:LEU:HD21	1.99	0.43
3:B:191:ARG:NH2	3:B:227:MET:SD	2.89	0.43
3:B:199:TRP:NE1	3:B:218:LEU:HD23	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:25:ARG:HA	12:L:28:VAL:HG12	2.01	0.43
23:Y:43:ARG:HD2	23:Y:43:ARG:H	1.83	0.43
23:Y:56:GLU:HB3	23:Y:69:ILE:HB	2.00	0.43
27:4:23:C:C2	27:4:24:U:C5	3.07	0.43
1:2:310:G:H5"	1:2:311:A:OP1	2.19	0.43
1:2:418:U:H4'	1:2:419:A:H5'	2.00	0.43
1:2:1189:C:O2	18:T:122:HIS:HE1	2.00	0.43
4:C:19:CYS:SG	4:C:20:GLY:N	2.91	0.43
8:H:142:HIS:ND1	8:H:181:ARG:HD2	2.33	0.43
15:O:77:SER:OG	15:O:91:ASP:OD2	2.33	0.43
18:T:72:THR:OG1	18:T:74:VAL:HG12	2.19	0.43
19:U:108:PHE:HD2	19:U:125:ARG:HD3	1.79	0.43
22:X:18:PHE:HB2	22:X:68:LEU:O	2.18	0.43
22:X:73:ARG:HA	22:X:73:ARG:HH11	1.82	0.43
24:3:6:TYR:HH	24:3:77:TYR:HH	1.60	0.43
1:2:18:C:C2	1:2:19:G:C8	3.07	0.43
1:2:91:G:OP1	36:2:1551:SPM:H111	2.19	0.43
1:2:995:U:H2'	1:2:996:C:C5	2.54	0.43
1:2:1366:OMC:HM22	1:2:1367:C:H5'	2.01	0.43
7:G:32:ILE:HG23	7:G:35:GLU:HG3	2.01	0.43
7:G:59:LEU:HB3	7:G:114:THR:HB	1.99	0.43
17:S:16:ILE:HD11	31:Z:195:LEU:HD21	2.01	0.43
18:T:86:LEU:HD13	18:T:86:LEU:HA	1.90	0.43
30:R:37:ARG:HD3	30:R:37:ARG:N	2.33	0.43
31:Z:60:GLY:HA2	31:Z:63:ILE:HD13	2.01	0.43
1:2:45:U:O2'	1:2:46:A:H2'	2.18	0.43
1:2:569:G:C2	1:2:570:A:C8	3.06	0.43
1:2:740:A:OP1	36:2:1559:SPM:H112	2.19	0.43
1:2:779:U:H4'	1:2:780:G:OP2	2.19	0.43
1:2:1350:C:H2'	1:2:1351:U:C6	2.54	0.43
1:2:1478:4AC:O7	1:2:1478:4AC:H5	2.18	0.43
1:2:1488:A:C4	1:2:1489:U:C5	3.06	0.43
3:B:33:ILE:CD1	3:B:76:ARG:HG2	2.49	0.43
4:C:47:MET:HE2	4:C:51:GLN:HG2	2.01	0.43
8:H:5:ASN:N	8:H:5:ASN:OD1	2.50	0.43
9:I:84:ARG:O	9:I:87:ILE:HG22	2.19	0.43
9:I:101:GLU:HG2	9:I:102:ILE:HD12	2.01	0.43
16:Q:91:ARG:HB3	16:Q:91:ARG:HH11	1.84	0.43
1:2:44:C:H3'	1:2:45:U:H5"	2.01	0.43
1:2:195:A:N1	1:2:225:G:O2'	2.40	0.43
1:2:210:U:H5"	1:2:211:C:H5'	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:497:A:H2'	1:2:498:G:H8	1.84	0.43
1:2:676:C:O2'	1:2:693:G:O4'	2.28	0.43
1:2:1057:C:C4	1:2:1059:A:H5"	2.54	0.43
2:A:101:SER:O	2:A:126:THR:OG1	2.37	0.43
8:H:24:ASP:OD1	8:H:27:LEU:N	2.38	0.43
15:O:99:LEU:HD12	15:O:99:LEU:O	2.18	0.43
16:Q:36:GLU:HG2	16:Q:40:LYS:HZ3	1.84	0.43
18:T:53:LEU:O	18:T:53:LEU:HD23	2.19	0.43
23:Y:27:TYR:CE1	23:Y:36:LEU:HA	2.53	0.43
31:Z:88:ASN:HB3	31:Z:91:LEU:HB2	2.00	0.43
34:E:227:MET:HB2	34:E:227:MET:HE3	1.91	0.43
1:2:109:U:H5'	30:R:37:ARG:HG3	2.01	0.42
1:2:125:G:OP1	36:2:1567:SPM:H92	2.19	0.42
1:2:339:C:H2'	1:2:340:C:C6	2.54	0.42
1:2:397:G:H2'	1:2:398:C:O4'	2.19	0.42
1:2:543:G:H2'	1:2:544:C:C6	2.54	0.42
1:2:663:A:C5	1:2:664:U:C5	3.07	0.42
1:2:1115:A:O4'	12:L:40:PRO:HB2	2.18	0.42
1:2:1277:G:H2'	1:2:1278:C:C6	2.54	0.42
2:A:19:TRP:NE1	2:A:37:PRO:HB3	2.34	0.42
6:F:126:CYS:HB2	6:F:153:PRO:HA	2.00	0.42
14:N:40:LYS:HG2	14:N:41:TYR:CE1	2.54	0.42
1:2:913:C:H5'	1:2:1328:A:N6	2.34	0.42
1:2:1116:G:O5'	12:L:14:VAL:HG21	2.19	0.42
1:2:1121:A:C2	1:2:1144:G:C4	3.07	0.42
2:A:39:TYR:N	2:A:43:GLN:OE1	2.51	0.42
16:Q:32:GLU:HB3	16:Q:76:ARG:NH2	2.34	0.42
18:T:28:ASP:OD1	18:T:29:GLU:N	2.51	0.42
18:T:48:ASP:OD2	18:T:51:ARG:NH1	2.52	0.42
20:V:88:GLU:OE2	20:V:88:GLU:N	2.31	0.42
27:4:20:H2U:O2'	27:4:22:G:OP1	2.33	0.42
29:P:34:ILE:H	29:P:34:ILE:HG13	1.65	0.42
30:R:26:GLU:OE1	30:R:33:SER:OG	2.31	0.42
1:2:391:G:OP2	36:2:1564:SPM:H42	2.18	0.42
1:2:946:U:H4'	1:2:947:A:O4'	2.19	0.42
1:2:1329:U:H2'	1:2:1330:C:H6	1.84	0.42
1:2:1464:A:H2'	1:2:1465:G:C8	2.54	0.42
2:A:114:ASP:OD2	2:A:154:SER:OG	2.36	0.42
3:B:29:LYS:HB2	3:B:76:ARG:HD2	2.01	0.42
7:G:173:ARG:HG3	7:G:174:LYS:N	2.33	0.42
10:J:66:LEU:HD12	10:J:73:ALA:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:100:ILE:HG22	15:O:104:ARG:NH2	2.32	0.42
16:Q:62:LYS:HD2	16:Q:62:LYS:O	2.18	0.42
23:Y:59:SER:HB3	23:Y:66:THR:HG23	2.01	0.42
24:3:34:LYS:O	24:3:39:THR:HG23	2.18	0.42
27:4:9:G:H1'	27:4:45:G:H2'	2.01	0.42
1:2:569:G:C4	1:2:570:A:C8	3.07	0.42
1:2:620:G:N2	1:2:795:C:H4'	2.35	0.42
1:2:831:C:H2'	1:2:832:G:O4'	2.19	0.42
1:2:881:A:H2'	1:2:882:A:C8	2.54	0.42
1:2:1122:C:H6	17:S:28:TYR:CZ	2.37	0.42
1:2:1319:A:H2'	1:2:1320:G:H8	1.84	0.42
7:G:157:ASP:OD1	7:G:161:PHE:N	2.51	0.42
27:4:10:G:N2	27:4:26:G:H1'	2.34	0.42
34:E:84:ILE:HD11	34:E:95:ARG:NH1	2.34	0.42
1:2:784:G:H2'	1:2:785:C:C6	2.54	0.42
1:2:965:A:O2'	24:3:34:LYS:HD3	2.20	0.42
1:2:1168:U:H4'	31:Z:176:ILE:HD11	2.00	0.42
1:2:1273:G:OP1	15:O:117:ARG:NH1	2.48	0.42
2:A:53:LEU:HB3	2:A:62:GLN:HB3	2.01	0.42
2:A:116:TYR:CD1	2:A:195:PRO:HD2	2.53	0.42
7:G:10:ASP:OD2	7:G:113:ARG:NH1	2.52	0.42
8:H:154:ASN:HD21	8:H:156:LYS:HB3	1.84	0.42
9:I:15:TYR:CZ	9:I:71:LYS:HD2	2.55	0.42
11:K:36:PRO:HB2	11:K:39:LEU:CD1	2.49	0.42
14:N:56:GLU:HG2	14:N:74:ARG:HG3	2.01	0.42
15:O:142:ILE:HD12	18:T:125:PRO:HG3	2.02	0.42
22:X:76:ARG:HD3	22:X:76:ARG:N	2.29	0.42
24:3:40:THR:HG22	24:3:66:LEU:HD11	2.00	0.42
34:E:68:ASP:HA	34:E:162:LEU:HD13	2.01	0.42
34:E:95:ARG:NH2	34:E:113:GLU:O	2.49	0.42
1:2:326:A:O2'	7:G:191:ARG:NH2	2.53	0.42
1:2:504:C:H2'	1:2:505:G:O4'	2.20	0.42
1:2:644:G:H1'	13:M:33:ILE:HD11	2.02	0.42
1:2:967:G:O6	24:3:37:ASN:HB2	2.20	0.42
1:2:1059:A:H2'	1:2:1060:OMC:C6	2.54	0.42
1:2:1175:A:O2'	1:2:1176:A:OP2	2.33	0.42
2:A:156:ASP:O	2:A:160:GLN:HG2	2.20	0.42
3:B:107:TYR:O	3:B:111:GLN:HG3	2.20	0.42
5:D:145:VAL:HG13	5:D:149:GLU:HG3	2.01	0.42
8:H:34:MET:HA	8:H:35:PRO:HD3	1.93	0.42
1:2:141:A:H2'	1:2:142:A:O4'	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:623:G:C6	36:2:1558:SPM:H22	2.54	0.42
1:2:671:A:H2'	1:2:672:OMG:C8	2.54	0.42
1:2:1073:C:O2'	11:K:117:GLN:HG3	2.20	0.42
1:2:1278:C:H2'	1:2:1279:U:C6	2.55	0.42
1:2:1323:C:H5"	29:P:14:LYS:HA	2.00	0.42
2:A:96:LEU:HB3	2:A:125:LEU:HD11	2.02	0.42
2:A:162:VAL:HG12	2:A:167:LEU:HD23	2.01	0.42
3:B:199:TRP:HD1	3:B:225:PHE:CE1	2.38	0.42
4:C:37:CYS:SG	4:C:39:GLU:HG2	2.60	0.42
7:G:23:VAL:C	7:G:24:LYS:HD2	2.39	0.42
13:M:77:LYS:HE2	13:M:113:VAL:HG21	2.00	0.42
16:Q:13:ILE:CG2	21:W:10:PRO:HB2	2.49	0.42
1:2:121:A:H2'	1:2:122:G:O4'	2.20	0.42
1:2:314:C:H2'	1:2:315:C:H6	1.84	0.42
1:2:333:C:H4'	1:2:334:A:H5"	2.01	0.42
1:2:395:G:H2'	1:2:396:G:H8	1.85	0.42
3:B:84:ILE:HD11	4:C:36:ASN:CB	2.50	0.42
7:G:79:PHE:CE2	7:G:98:MET:HG2	2.53	0.42
12:L:9:LEU:HD11	12:L:20:VAL:CG1	2.49	0.42
18:T:63:GLU:OE1	18:T:63:GLU:N	2.53	0.42
18:T:108:HIS:ND1	18:T:113:TYR:OH	2.51	0.42
27:4:68:C:H2'	27:4:69:C:C6	2.55	0.42
1:2:387:A:H2'	1:2:388:A:C8	2.54	0.42
1:2:899:A:H2'	1:2:900:C:H6	1.85	0.42
1:2:1080:A:H4'	12:L:37:GLY:HA3	2.02	0.42
1:2:1189:C:H2'	15:O:132:THR:HG23	2.01	0.42
2:A:22:VAL:HG12	2:A:79:LEU:HB2	2.02	0.42
8:H:25:PRO:O	8:H:28:LYS:HG3	2.20	0.42
8:H:38:LEU:HD23	11:K:48:LYS:HG2	2.02	0.42
12:L:86:LEU:O	12:L:89:VAL:HG23	2.19	0.42
20:V:47:ASP:OD2	20:V:48:ILE:N	2.53	0.42
24:3:79:TYR:OH	24:3:118:VAL:HG13	2.20	0.42
27:4:27:U:H2'	27:4:28:C:H6	1.83	0.42
31:Z:63:ILE:H	31:Z:63:ILE:CD1	2.27	0.42
34:E:127:ILE:HG13	34:E:128:LYS:H	1.84	0.42
1:2:72:G:H2'	1:2:209:U:O2	2.18	0.42
1:2:1436:U:O2'	1:2:1437:G:OP1	2.36	0.42
3:B:33:ILE:HD11	3:B:76:ARG:HG2	2.01	0.42
6:F:209:ASP:OD1	6:F:209:ASP:N	2.53	0.42
9:I:71:LYS:HB3	9:I:133:TYR:CZ	2.54	0.42
10:J:65:VAL:HG22	10:J:123:ALA:HB3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:127:LYS:HB3	10:J:127:LYS:HE3	1.69	0.42
17:S:12:ILE:HD12	17:S:12:ILE:HA	1.94	0.42
19:U:29:LYS:HA	19:U:29:LYS:HE3	2.01	0.42
31:Z:54:MET:H	31:Z:54:MET:HG2	1.67	0.42
1:2:175:U:H2'	1:2:176:G:O4'	2.20	0.41
1:2:1201:A:N3	1:2:1201:A:H2'	2.35	0.41
1:2:1319:A:H2'	1:2:1320:G:C8	2.55	0.41
1:2:1331:U:OP2	36:2:1563:SPM:H132	2.19	0.41
4:C:28:LYS:HD2	4:C:28:LYS:HA	1.82	0.41
13:M:42:VAL:HG21	13:M:57:LEU:HB2	2.00	0.41
14:N:84:VAL:HG22	14:N:85:THR:N	2.35	0.41
17:S:29:ASN:OD1	17:S:29:ASN:N	2.53	0.41
27:4:6:G:H2'	27:4:7:G:C8	2.55	0.41
27:4:34:C:H2'	27:4:35:A:C8	2.54	0.41
27:4:43:A:H2'	27:4:44:A:H8	1.85	0.41
1:2:66:U:H2'	1:2:67:C:O4'	2.20	0.41
1:2:169:G:H1'	10:J:71:ASN:ND2	2.35	0.41
1:2:404:C:H2'	1:2:405:C:C6	2.55	0.41
1:2:472:U:H2'	1:2:473:G:H8	1.84	0.41
1:2:512:OMC:HM22	1:2:513:G:H5'	2.02	0.41
1:2:1014:G:H2'	1:2:1015:G:O4'	2.20	0.41
1:2:1052:U:O2	17:S:4:ILE:HG13	2.20	0.41
4:C:40:VAL:HG21	4:C:58:PRO:HD2	2.01	0.41
6:F:9:ASN:OD1	6:F:9:ASN:N	2.53	0.41
6:F:82:MET:HE1	6:F:111:LYS:HG3	2.02	0.41
15:O:11:ILE:HG22	15:O:12:PHE:CE1	2.54	0.41
18:T:25:MET:HG3	18:T:26:PRO:HD2	2.02	0.41
24:3:74:LYS:HD2	24:3:74:LYS:HA	1.83	0.41
1:2:12:U:H2'	1:2:13:C:H6	1.84	0.41
1:2:338:G:H2'	1:2:339:C:H6	1.86	0.41
1:2:413:U:C2	1:2:425:G:N2	2.88	0.41
1:2:625:G:OP1	36:2:1558:SPM:N5	2.52	0.41
1:2:1446:G:H2'	1:2:1447:A:C8	2.51	0.41
36:2:1553:SPM:H111	36:2:1553:SPM:H81	1.83	0.41
4:C:8:ARG:NE	4:C:9:GLU:OE2	2.54	0.41
5:D:11:TRP:HB3	5:D:43:ILE:HG13	2.01	0.41
11:K:30:VAL:HA	11:K:66:ALA:O	2.20	0.41
11:K:68:ILE:C	11:K:69:ILE:HD12	2.41	0.41
11:K:107:ASP:O	11:K:110:MET:HG3	2.20	0.41
24:3:55:GLU:HB2	24:3:80:VAL:HG11	2.01	0.41
34:E:55:GLU:O	34:E:59:ILE:HG23	2.19	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:29:G:H2'	1:2:30:C:H6	1.84	0.41
1:2:46:A:H1'	1:2:48:G:C8	2.55	0.41
1:2:193:A:N3	1:2:227:C:O2'	2.42	0.41
1:2:842:C:H2'	1:2:843:4AC:H6	2.02	0.41
2:A:72:ILE:HG21	2:A:82:ARG:HD3	2.02	0.41
2:A:99:ARG:HG2	2:A:99:ARG:NH1	2.35	0.41
7:G:65:THR:HA	7:G:74:LYS:HA	2.02	0.41
7:G:144:ILE:HG22	7:G:146:LEU:HD23	2.01	0.41
12:L:11:SER:HA	12:L:94:ASP:O	2.19	0.41
12:L:74:ILE:HG23	12:L:74:ILE:HD12	1.73	0.41
12:L:93:GLU:N	12:L:93:GLU:CD	2.73	0.41
14:N:10:ILE:O	14:N:10:ILE:HG13	2.20	0.41
15:O:102:TYR:HA	15:O:105:ASN:OD1	2.20	0.41
19:U:133:SER:HA	19:U:136:ASP:OD1	2.20	0.41
19:U:143:PHE:HZ	19:U:156:TYR:HB3	1.85	0.41
23:Y:42:PRO:HD2	23:Y:43:ARG:NE	2.34	0.41
27:4:29:G:C6	27:4:42:G:C6	3.09	0.41
27:4:50:U:O4	27:4:64:G:O6	2.37	0.41
34:E:119:VAL:HG21	34:E:138:ASP:OD1	2.21	0.41
1:2:172:U:P	30:R:2:VAL:HG12	2.60	0.41
1:2:303:A:H2'	1:2:304:G:O4'	2.20	0.41
1:2:649:G:H2'	1:2:650:G:C8	2.55	0.41
1:2:677:A:C5	13:M:118:HIS:CD2	3.09	0.41
1:2:782:A:C6	1:2:841:G:C6	3.09	0.41
3:B:64:ARG:CZ	3:B:64:ARG:HB3	2.50	0.41
4:C:19:CYS:HB2	4:C:21:LYS:HZ1	1.85	0.41
8:H:30:TYR:HE2	8:H:132:PRO:HG2	1.84	0.41
13:M:119:ASP:N	13:M:119:ASP:OD2	2.53	0.41
14:N:84:VAL:HG21	14:N:124:TYR:CD1	2.56	0.41
15:O:121:HIS:CE1	15:O:127:VAL:HG11	2.56	0.41
20:V:8:LYS:HE2	20:V:8:LYS:N	2.36	0.41
22:X:20:ALA:O	22:X:66:LEU:N	2.49	0.41
23:Y:56:GLU:O	23:Y:58:TRP:HD1	2.04	0.41
34:E:169:ASP:OD1	34:E:231:ARG:NH2	2.53	0.41
1:2:569:G:C5	1:2:570:A:N7	2.89	0.41
1:2:1169:G:H2'	1:2:1170:C:C6	2.55	0.41
1:2:1173:C:H2'	1:2:1174:G:O4'	2.20	0.41
6:F:68:THR:HG22	6:F:69:ASP:N	2.36	0.41
8:H:40:HIS:CD2	11:K:48:LYS:HE2	2.55	0.41
11:K:98:GLU:OE1	11:K:102:ILE:HG12	2.21	0.41
12:L:9:LEU:HD11	12:L:20:VAL:HG11	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:U:6:ILE:HA	19:U:10:MET:CE	2.51	0.41
24:3:114:ILE:HD12	24:3:114:ILE:H	1.86	0.41
34:E:178:TYR:CD1	34:E:234:SER:HB2	2.56	0.41
1:2:85:G:H2'	1:2:86:C:C6	2.54	0.41
1:2:261:G:OP1	30:R:52:LYS:NZ	2.54	0.41
1:2:677:A:C5	1:2:678:C:C5	3.09	0.41
1:2:1003:A:H2'	1:2:1004:G:O4'	2.21	0.41
1:2:1101:G:H2'	1:2:1102:C:H6	1.86	0.41
1:2:1365:G:H2'	1:2:1366:OMC:O4'	2.21	0.41
1:2:1490:C:H2'	1:2:1491:A:C8	2.55	0.41
6:F:138:VAL:HG11	6:F:201:THR:HG22	2.02	0.41
8:H:133:GLN:O	8:H:136:ILE:HG13	2.20	0.41
9:I:71:LYS:HG3	9:I:72:CYS:N	2.36	0.41
9:I:81:LEU:HD12	9:I:126:GLY:H	1.86	0.41
13:M:26:SER:HA	13:M:33:ILE:HA	2.03	0.41
14:N:111:THR:O	14:N:114:ARG:HB2	2.21	0.41
20:V:88:GLU:H	20:V:88:GLU:CD	2.18	0.41
24:3:9:PHE:CZ	24:3:121:ILE:HG23	2.56	0.41
1:2:483:G:N2	36:2:1549:SPM:H112	2.36	0.41
1:2:602:C:C2	1:2:603:U:C5	3.09	0.41
1:2:681:G:OP1	2:A:99:ARG:NH1	2.54	0.41
1:2:786:U:H2'	1:2:833:U:O4	2.21	0.41
1:2:974:A:H1'	23:Y:57:ARG:CZ	2.50	0.41
1:2:1442:G:C2	1:2:1443:G:C8	3.09	0.41
6:F:9:ASN:HB2	6:F:12:GLU:CD	2.41	0.41
8:H:85:ALA:HB3	8:H:162:LEU:HD22	2.03	0.41
12:L:93:GLU:O	31:Z:11:LYS:NZ	2.52	0.41
31:Z:189:ILE:HG21	31:Z:192:LYS:HG3	2.03	0.41
34:E:16:SER:HB2	34:E:19:GLN:HB2	2.03	0.41
1:2:431:C:H2'	1:2:432:C:H6	1.85	0.41
1:2:534:G:O2'	1:2:780:G:H5'	2.20	0.41
1:2:538:OMC:HM22	1:2:539:C:O4'	2.21	0.41
1:2:709:C:OP2	16:Q:14:ARG:NH2	2.52	0.41
1:2:1058:A:H4'	1:2:1059:A:H5'	2.03	0.41
1:2:1074:A:C5'	11:K:117:GLN:HE21	2.34	0.41
1:2:1076:C:H2'	1:2:1077:A:C8	2.52	0.41
3:B:15:GLU:HB3	3:B:66:ARG:HG3	2.03	0.41
5:D:10:LYS:HA	5:D:10:LYS:HD2	1.89	0.41
5:D:12:GLU:HA	5:D:12:GLU:OE2	2.20	0.41
6:F:22:LEU:HB3	6:F:28:ILE:HD13	2.02	0.41
6:F:154:LYS:HA	6:F:175:ASP:OD2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:31:SER:OG	7:G:97:THR:HG21	2.20	0.41
8:H:129:ASP:OD1	8:H:130:VAL:N	2.54	0.41
8:H:190:LEU:HD12	8:H:190:LEU:HA	1.93	0.41
10:J:63:ALA:HB2	10:J:78:ILE:CG1	2.47	0.41
11:K:24:TYR:CE2	11:K:65:ASP:HB3	2.55	0.41
11:K:88:ARG:NE	11:K:110:MET:O	2.53	0.41
12:L:46:LEU:HD21	31:Z:5:LYS:HD3	2.03	0.41
13:M:33:ILE:HD12	13:M:33:ILE:O	2.21	0.41
14:N:58:VAL:HG23	14:N:72:CYS:SG	2.61	0.41
15:O:72:ILE:HD12	15:O:72:ILE:HG23	1.81	0.41
18:T:39:ARG:O	18:T:43:LYS:HB2	2.20	0.41
18:T:75:ARG:HB3	18:T:111:GLY:HA3	2.03	0.41
19:U:138:LEU:O	19:U:142:ILE:HG13	2.20	0.41
24:3:84:LYS:HA	24:3:84:LYS:HD3	1.85	0.41
29:P:51:ARG:HB2	29:P:53:TYR:CE1	2.56	0.41
30:R:37:ARG:HD3	30:R:37:ARG:H	1.86	0.41
34:E:102:ARG:HD3	34:E:102:ARG:HA	1.90	0.41
1:2:738:C:H5”	13:M:124:PRO:HB3	2.03	0.41
1:2:1146:A:O2’	1:2:1148:G:OP2	2.28	0.41
1:2:1174:G:H5’	1:2:1176:A:H1’	2.02	0.41
1:2:1196:G:H2’	1:2:1197:U:C6	2.56	0.41
1:2:1288:C:H2’	1:2:1289:C:H6	1.86	0.41
1:2:1372:G:H1’	1:2:1451:G:N2	2.35	0.41
1:2:1483:G:N7	13:M:127:ARG:NH2	2.68	0.41
3:B:56:LYS:HA	3:B:56:LYS:HD3	1.58	0.41
6:F:146:GLU:O	6:F:180:THR:HA	2.21	0.41
7:G:49:LYS:HZ3	7:G:89:ASP:HA	1.84	0.41
8:H:153:ASN:OD1	38:H:201:HOH:O	2.21	0.41
10:J:38:SER:HB3	10:J:59:TYR:HB3	2.02	0.41
11:K:6:LYS:HD3	11:K:93:PHE:CE1	2.55	0.41
11:K:83:ARG:HG2	11:K:84:MET:N	2.36	0.41
14:N:77:LEU:HD21	14:N:105:ILE:HD11	2.03	0.41
31:Z:189:ILE:CG2	31:Z:192:LYS:HG3	2.51	0.41
1:2:44:C:H3’	1:2:45:U:C5’	2.51	0.40
1:2:73:C:OP2	1:2:209:U:N3	2.40	0.40
1:2:161:U:H2’	1:2:162:A:C8	2.56	0.40
1:2:570:A:C5	1:2:571:C:C5	3.09	0.40
1:2:843:4AC:H5	1:2:843:4AC:O7	2.21	0.40
1:2:940:G:H21	1:2:1327:A:H5’	1.86	0.40
2:A:69:PHE:HB3	2:A:81:THR:OG1	2.22	0.40
7:G:141:ASN:ND2	7:G:147:PRO:HA	2.36	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:24:ASP:OD1	8:H:27:LEU:HD22	2.21	0.40
11:K:18:ARG:HB2	11:K:71:TYR:CE1	2.57	0.40
11:K:51:GLU:HA	11:K:51:GLU:OE2	2.19	0.40
15:O:120:ARG:NH1	15:O:126:LYS:O	2.54	0.40
20:V:52:ILE:HD12	20:V:52:ILE:HA	1.92	0.40
24:3:5:SER:O	24:3:5:SER:OG	2.35	0.40
24:3:117:ARG:HA	24:3:120:GLU:OE1	2.21	0.40
28:5:808:A:H3'	28:5:809:G:H8	1.85	0.40
30:R:3:SER:OG	30:R:4:LYS:N	2.55	0.40
1:2:14:C:H2'	1:2:15:OMU:H6	2.03	0.40
1:2:365:G:H2'	1:2:366:C:C6	2.56	0.40
1:2:506:A:P	5:D:36:ARG:HH21	2.44	0.40
1:2:794:A:H2'	1:2:795:C:C6	2.56	0.40
1:2:985:C:C2	1:2:986:U:C5	3.09	0.40
1:2:1070:C:C2	1:2:1071:C:C5	3.08	0.40
1:2:1111:C:H2'	1:2:1112:A:O4'	2.21	0.40
1:2:1290:C:C2	1:2:1291:U:C5	3.09	0.40
4:C:21:LYS:HE3	4:C:21:LYS:HB2	1.80	0.40
5:D:65:GLU:CD	9:I:84:ARG:HH22	2.25	0.40
6:F:207:LEU:HD22	6:F:210:TRP:CZ2	2.56	0.40
9:I:89:LEU:H	9:I:89:LEU:HD12	1.86	0.40
11:K:97:LYS:HA	11:K:100:GLU:HG3	2.02	0.40
18:T:71:LYS:HA	18:T:89:ALA:O	2.22	0.40
23:Y:41:CYS:CB	23:Y:65:TYR:HH	2.33	0.40
34:E:26:PRO:HG2	34:E:33:ILE:HG12	2.03	0.40
1:2:85:G:H2'	1:2:86:C:H6	1.87	0.40
1:2:104:G:H2'	1:2:105:U:C6	2.56	0.40
1:2:441:C:P	20:V:101:ARG:HH21	2.44	0.40
1:2:443:A:OP2	36:2:1565:SPM:N14	2.53	0.40
1:2:447:C:H4'	20:V:75:GLY:HA2	2.03	0.40
1:2:559:A:H2'	1:2:560:C:C6	2.56	0.40
1:2:822:C:H2'	1:2:823:A:C8	2.56	0.40
1:2:1134:G:OP1	17:S:5:TYR:HD1	2.05	0.40
1:2:1228:C:P	19:U:125:ARG:HH12	2.44	0.40
1:2:1253:A:OP1	36:2:1578:SPM:C11	2.70	0.40
7:G:46:VAL:CG1	7:G:81:VAL:HG23	2.52	0.40
8:H:6:LEU:HD21	8:H:8:LEU:HD13	2.03	0.40
12:L:41:LEU:HD12	12:L:71:LYS:HG2	2.04	0.40
12:L:63:GLU:CD	29:P:42:ARG:HE	2.18	0.40
15:O:78:TRP:CH2	19:U:40:ALA:HB2	2.55	0.40
23:Y:26:TYR:HH	23:Y:38:ASN:CG	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
31:Z:163:ILE:C	31:Z:163:ILE:CD1	2.88	0.40
1:2:503:G:H2'	1:2:504:C:C6	2.57	0.40
1:2:569:G:N3	1:2:569:G:H2'	2.36	0.40
1:2:787:A:H2'	1:2:788:G:O4'	2.20	0.40
1:2:945:U:H2'	1:2:946:U:C5	2.57	0.40
1:2:947:A:H5'	1:2:948:C:OP2	2.21	0.40
1:2:984:C:H2'	1:2:985:C:C6	2.57	0.40
1:2:1201:A:C8	1:2:1267:G:H1'	2.56	0.40
1:2:1466:4AC:O7	1:2:1466:4AC:H5	2.22	0.40
2:A:96:LEU:HB3	2:A:125:LEU:CD1	2.51	0.40
5:D:65:GLU:OE1	9:I:84:ARG:NH2	2.54	0.40
7:G:204:GLU:OE1	7:G:204:GLU:N	2.26	0.40
8:H:30:TYR:HH	22:X:61:ARG:NH1	2.18	0.40
8:H:115:THR:HA	8:H:116:ARG:CZ	2.51	0.40
8:H:149:ASP:OD1	8:H:149:ASP:N	2.53	0.40
10:J:34:PHE:HB3	10:J:95:ILE:CG1	2.51	0.40
11:K:121:GLU:HA	11:K:128:ALA:HA	2.03	0.40
12:L:97:ILE:HD12	12:L:98:GLU:H	1.86	0.40
19:U:8:ALA:HB3	19:U:69:TYR:CE2	2.57	0.40
23:Y:40:LYS:HA	23:Y:40:LYS:HD2	1.84	0.40
24:3:27:LYS:CD	24:3:90:CYS:HB2	2.48	0.40
24:3:57:VAL:HG22	24:3:83:LYS:HZ1	1.86	0.40
24:3:65:HIS:CD2	24:3:66:LEU:HD12	2.56	0.40
34:E:93:TYR:HB2	34:E:109:ILE:O	2.22	0.40
1:2:72:G:C2	1:2:209:U:H1'	2.56	0.40
1:2:174:C:H2'	1:2:175:U:C6	2.57	0.40
1:2:822:C:C2	1:2:823:A:C8	3.10	0.40
2:A:140:LYS:HE3	2:A:140:LYS:HB2	1.53	0.40
4:C:14:PRO:HB2	4:C:23:ILE:HD12	2.02	0.40
12:L:7:ILE:HB	12:L:74:ILE:HB	2.02	0.40
17:S:14:LYS:HG3	17:S:15:GLU:N	2.35	0.40
19:U:57:TRP:CZ3	19:U:103:VAL:HG13	2.56	0.40
31:Z:159:LEU:HD22	31:Z:163:ILE:HG12	2.04	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	
2	A	184/208 (88%)	179 (97%)	5 (3%)	0	100	100
3	B	213/231 (92%)	208 (98%)	5 (2%)	0	100	100
4	C	56/65 (86%)	54 (96%)	2 (4%)	0	100	100
5	D	164/181 (91%)	161 (98%)	3 (2%)	0	100	100
6	F	208/214 (97%)	201 (97%)	7 (3%)	0	100	100
7	G	211/214 (99%)	201 (95%)	10 (5%)	0	100	100
8	H	190/193 (98%)	183 (96%)	7 (4%)	0	100	100
9	I	130/133 (98%)	126 (97%)	4 (3%)	0	100	100
10	J	125/133 (94%)	123 (98%)	2 (2%)	0	100	100
11	K	131/137 (96%)	122 (93%)	9 (7%)	0	100	100
12	L	99/102 (97%)	92 (93%)	7 (7%)	0	100	100
13	M	125/132 (95%)	114 (91%)	11 (9%)	0	100	100
14	N	144/147 (98%)	137 (95%)	7 (5%)	0	100	100
15	O	138/165 (84%)	132 (96%)	6 (4%)	0	100	100
16	Q	143/152 (94%)	143 (100%)	0	0	100	100
17	S	64/79 (81%)	62 (97%)	2 (3%)	0	100	100
18	T	126/140 (90%)	126 (100%)	0	0	100	100
19	U	152/158 (96%)	147 (97%)	5 (3%)	0	100	100
20	V	105/120 (88%)	102 (97%)	3 (3%)	0	100	100
21	W	63/66 (96%)	60 (95%)	3 (5%)	0	100	100
22	X	65/83 (78%)	57 (88%)	8 (12%)	0	100	100
23	Y	47/75 (63%)	39 (83%)	8 (17%)	0	100	100
24	3	115/127 (91%)	99 (86%)	16 (14%)	0	100	100
25	a	69/72 (96%)	63 (91%)	5 (7%)	1 (1%)	9	35
26	e	41/52 (79%)	40 (98%)	1 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	P	51/54 (94%)	50 (98%)	1 (2%)	0	100	100
30	R	111/114 (97%)	108 (97%)	3 (3%)	0	100	100
31	Z	194/229 (85%)	189 (97%)	5 (3%)	0	100	100
32	d	68/72 (94%)	64 (94%)	4 (6%)	0	100	100
33	c	107/110 (97%)	99 (92%)	8 (8%)	0	100	100
34	E	236/239 (99%)	228 (97%)	8 (3%)	0	100	100
All	All	3875/4197 (92%)	3709 (96%)	165 (4%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
25	a	58	LYS

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	A	168/184 (91%)	152 (90%)	16 (10%)	7	26
3	B	182/198 (92%)	178 (98%)	4 (2%)	47	74
4	C	51/58 (88%)	49 (96%)	2 (4%)	27	59
5	D	147/158 (93%)	139 (95%)	8 (5%)	18	48
6	F	180/184 (98%)	171 (95%)	9 (5%)	20	51
7	G	186/187 (100%)	169 (91%)	17 (9%)	7	28
8	H	166/167 (99%)	148 (89%)	18 (11%)	5	20
9	I	113/114 (99%)	110 (97%)	3 (3%)	40	69
10	J	104/110 (94%)	100 (96%)	4 (4%)	28	60
11	K	109/113 (96%)	97 (89%)	12 (11%)	5	20
12	L	93/94 (99%)	84 (90%)	9 (10%)	6	25
13	M	93/98 (95%)	81 (87%)	12 (13%)	3	15

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
14	N	122/123 (99%)	116 (95%)	6 (5%)	21 52
15	O	121/142 (85%)	118 (98%)	3 (2%)	42 71
16	Q	125/129 (97%)	122 (98%)	3 (2%)	44 72
17	S	63/75 (84%)	57 (90%)	6 (10%)	7 26
18	T	116/126 (92%)	107 (92%)	9 (8%)	10 34
19	U	134/138 (97%)	121 (90%)	13 (10%)	6 25
20	V	92/99 (93%)	80 (87%)	12 (13%)	3 14
21	W	57/58 (98%)	48 (84%)	9 (16%)	2 9
22	X	58/73 (80%)	51 (88%)	7 (12%)	4 17
23	Y	43/65 (66%)	39 (91%)	4 (9%)	7 27
24	3	97/105 (92%)	81 (84%)	16 (16%)	2 8
25	a	61/62 (98%)	54 (88%)	7 (12%)	4 19
26	e	40/46 (87%)	39 (98%)	1 (2%)	42 71
29	P	45/46 (98%)	45 (100%)	0	100 100
30	R	101/102 (99%)	99 (98%)	2 (2%)	50 76
31	Z	163/195 (84%)	157 (96%)	6 (4%)	29 61
32	d	63/65 (97%)	46 (73%)	17 (27%)	0 1
33	c	95/96 (99%)	89 (94%)	6 (6%)	15 43
34	E	214/215 (100%)	209 (98%)	5 (2%)	45 73
All	All	3402/3625 (94%)	3156 (93%)	246 (7%)	14 38

All (246) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	14	TRP
2	A	16	MET
2	A	18	LYS
2	A	40	ASP
2	A	60	PHE
2	A	75	GLU
2	A	98	ARG
2	A	101	SER
2	A	105	ASN
2	A	148	LYS
2	A	152	GLU

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Mol	Chain	Res	Type
2	A	156	ASP
2	A	157	ASP
2	A	177	LYS
2	A	183	LYS
2	A	193	LYS
3	B	21	LYS
3	B	25	ARG
3	B	26	LYS
3	B	29	LYS
4	C	31	GLU
4	C	63	LYS
5	D	57	SER
5	D	71	LYS
5	D	85	LYS
5	D	91	ASP
5	D	100	ASP
5	D	113	LYS
5	D	146	ASN
5	D	164	ARG
6	F	37	ARG
6	F	38	ASN
6	F	85	MET
6	F	90	SER
6	F	125	GLN
6	F	148	ASP
6	F	190	PHE
6	F	209	ASP
6	F	210	TRP
7	G	12	GLN
7	G	17	LYS
7	G	22	LYS
7	G	30	LYS
7	G	43	GLN
7	G	49	LYS
7	G	52	GLN
7	G	71	LYS
7	G	95	SER
7	G	98	MET
7	G	112	TYR
7	G	141	ASN
7	G	142	GLN
7	G	159	SER

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Mol	Chain	Res	Type
7	G	165	PHE
7	G	176	LEU
7	G	214	ARG
8	H	2	SER
8	H	5	ASN
8	H	8	LEU
8	H	17	ASP
8	H	23	ARG
8	H	26	SER
8	H	34	MET
8	H	70	ARG
8	H	99	GLN
8	H	116	ARG
8	H	118	MET
8	H	124	TYR
8	H	129	ASP
8	H	149	ASP
8	H	164	GLU
8	H	165	GLU
8	H	172	ASN
8	H	192	SER
9	I	43	LYS
9	I	81	LEU
9	I	108	SER
10	J	25	LYS
10	J	67	ASP
10	J	77	LYS
10	J	128	ASN
11	K	24	TYR
11	K	27	LYS
11	K	34	ASN
11	K	39	LEU
11	K	59	ASP
11	K	61	ARG
11	K	80	ASP
11	K	88	ARG
11	K	100	GLU
11	K	101	LYS
11	K	108	ARG
11	K	132	ARG
12	L	19	TYR
12	L	34	GLU

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Mol	Chain	Res	Type
12	L	35	MET
12	L	57	GLU
12	L	64	LYS
12	L	79	ASP
12	L	81	ARG
12	L	87	MET
12	L	90	ARG
13	M	8	ARG
13	M	17	SER
13	M	26	SER
13	M	47	ARG
13	M	56	MET
13	M	61	LYS
13	M	72	MET
13	M	84	TYR
13	M	111	GLU
13	M	123	ARG
13	M	127	ARG
13	M	130	ARG
14	N	14	ARG
14	N	29	LYS
14	N	100	HIS
14	N	116	MET
14	N	118	ASP
14	N	141	LYS
15	O	62	LYS
15	O	114	ARG
15	O	140	MET
16	Q	25	ARG
16	Q	97	ARG
16	Q	125	ARG
17	S	18	ASP
17	S	27	ASP
17	S	29	ASN
17	S	42	LYS
17	S	61	MET
17	S	64	LYS
18	T	9	TRP
18	T	20	ASP
18	T	46	PHE
18	T	58	ARG
18	T	66	PHE

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Mol	Chain	Res	Type
18	T	68	LYS
18	T	80	LEU
18	T	87	LYS
18	T	118	LYS
19	U	5	MET
19	U	32	ASP
19	U	36	TRP
19	U	55	ASP
19	U	69	TYR
19	U	71	ASN
19	U	113	LYS
19	U	127	LEU
19	U	137	LYS
19	U	143	PHE
19	U	148	GLU
19	U	151	THR
19	U	156	TYR
20	V	8	LYS
20	V	18	GLU
20	V	38	MET
20	V	54	GLN
20	V	60	GLU
20	V	69	SER
20	V	72	TYR
20	V	78	ASN
20	V	101	ARG
20	V	102	ASP
20	V	108	LYS
20	V	109	LYS
21	W	4	LYS
21	W	5	LEU
21	W	10	PRO
21	W	17	LEU
21	W	21	CYS
21	W	24	CYS
21	W	28	GLN
21	W	39	ARG
21	W	56	LYS
22	X	27	ASP
22	X	46	ARG
22	X	48	LYS
22	X	50	ARG

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Mol	Chain	Res	Type
22	X	71	THR
22	X	73	ARG
22	X	76	ARG
23	Y	37	LYS
23	Y	43	ARG
23	Y	48	MET
23	Y	53	LYS
24	3	9	PHE
24	3	17	ASP
24	3	24	ARG
24	3	25	LYS
24	3	31	LYS
24	3	34	LYS
24	3	36	THR
24	3	49	LYS
24	3	73	LYS
24	3	77	TYR
24	3	86	LEU
24	3	93	GLN
24	3	103	GLU
24	3	106	GLU
24	3	119	ASN
24	3	120	GLU
25	a	26	ARG
25	a	27	LYS
25	a	35	LEU
25	a	40	LYS
25	a	41	CYS
25	a	43	LYS
25	a	57	LEU
26	e	24	GLU
30	R	37	ARG
30	R	65	SER
31	Z	2	PRO
31	Z	53	SER
31	Z	68	GLN
31	Z	84	THR
31	Z	130	GLU
31	Z	172	LEU
32	d	6	ILE
32	d	7	LYS
32	d	8	LEU

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Mol	Chain	Res	Type
32	d	9	SER
32	d	10	SER
32	d	12	ARG
32	d	13	GLU
32	d	14	VAL
32	d	15	GLU
32	d	19	ASP
32	d	30	THR
32	d	43	LEU
32	d	52	LEU
32	d	56	VAL
32	d	61	MET
32	d	65	LEU
32	d	70	LYS
33	c	9	ILE
33	c	11	THR
33	c	35	LYS
33	c	74	SER
33	c	89	GLU
33	c	103	LEU
34	E	59	ILE
34	E	66	LEU
34	E	145	ASP
34	E	194	LYS
34	E	215	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
2	A	105	ASN
3	B	187	ASN
4	C	36	ASN
5	D	37	ASN
5	D	121	GLN
6	F	98	GLN
6	F	125	GLN
7	G	142	GLN
9	I	70	ASN
11	K	117	GLN
12	L	23	GLN
12	L	100	GLN
13	M	18	GLN

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Mol	Chain	Res	Type
14	N	66	ASN
15	O	4	GLN
20	V	59	GLN
21	W	23	ASN
21	W	33	HIS
22	X	55	ASN
24	3	119	ASN
26	e	26	HIS
32	d	55	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1434/1497 (95%)	224 (15%)	4 (0%)
27	4	76/77 (98%)	13 (17%)	1 (1%)
28	5	19/28 (67%)	10 (52%)	0
All	All	1529/1602 (95%)	247 (16%)	5 (0%)

All (247) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	3	U
1	2	33	U
1	2	34	C
1	2	43	G
1	2	45	U
1	2	47	A
1	2	60	G
1	2	67	C
1	2	68	C
1	2	70	G
1	2	71	G
1	2	72	G
1	2	73	C
1	2	74	A
1	2	75	A
1	2	76	G
1	2	89	A
1	2	99	A
1	2	101	C
1	2	110	A

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Mol	Chain	Res	Type
1	2	111	A
1	2	112	C
1	2	115	A
1	2	122	G
1	2	138	G
1	2	144	C
1	2	193	A
1	2	195	A
1	2	196	G
1	2	208	A
1	2	209	U
1	2	211	C
1	2	212	C
1	2	213	C
1	2	214	C
1	2	215	G
1	2	225	G
1	2	245	C
1	2	246	OMC
1	2	248	A
1	2	250	C
1	2	252	G
1	2	256	G
1	2	257	U
1	2	267	A
1	2	271	G
1	2	272	C
1	2	278	A
1	2	286	A
1	2	294	G
1	2	311	A
1	2	320	U
1	2	321	U
1	2	333	C
1	2	334	A
1	2	335	A
1	2	336	G
1	2	349	A
1	2	357	C
1	2	358	A
1	2	359	C
1	2	372	G

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Mol	Chain	Res	Type
1	2	377	C
1	2	378	A
1	2	389	G
1	2	395	G
1	2	402	A
1	2	411	G
1	2	417	G
1	2	418	U
1	2	419	A
1	2	420	A
1	2	429	U
1	2	453	A
1	2	454	A
1	2	470	U
1	2	471	C
1	2	477	U
1	2	480	G
1	2	490	U
1	2	491	A
1	2	506	A
1	2	522	A
1	2	523	C
1	2	531	A
1	2	532	A
1	2	535	C
1	2	536	G
1	2	555	A
1	2	569	G
1	2	601	A
1	2	609	G
1	2	612	A
1	2	624	A
1	2	634	U
1	2	647	G
1	2	677	A
1	2	682	U
1	2	707	G
1	2	708	C
1	2	712	A
1	2	714	G
1	2	740	A
1	2	741	A

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Mol	Chain	Res	Type
1	2	752	U
1	2	753	A
1	2	774	A
1	2	776	C
1	2	802	U
1	2	805	G
1	2	806	A
1	2	828	A
1	2	835	A
1	2	853	G
1	2	866	A
1	2	877	A
1	2	889	G
1	2	897	C
1	2	924	U
1	2	931	C
1	2	933	A
1	2	935	G
1	2	939	G
1	2	941	A
1	2	946	U
1	2	957	A
1	2	960	G
1	2	966	U
1	2	967	G
1	2	969	C
1	2	982	G
1	2	983	A
1	2	988	G
1	2	989	C
1	2	990	C
1	2	991	U
1	2	992	G
1	2	995	U
1	2	996	C
1	2	997	G
1	2	1002	G
1	2	1023	C
1	2	1051	G
1	2	1052	U
1	2	1058	A
1	2	1059	A

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Mol	Chain	Res	Type
1	2	1080	A
1	2	1081	G
1	2	1086	U
1	2	1094	U
1	2	1096	U
1	2	1097	C
1	2	1098	C
1	2	1099	G
1	2	1101	G
1	2	1103	C
1	2	1106	G
1	2	1107	A
1	2	1113	C
1	2	1118	G
1	2	1121	A
1	2	1123	U
1	2	1147	G
1	2	1157	G
1	2	1159	A
1	2	1160	G
1	2	1175	A
1	2	1187	C
1	2	1188	G
1	2	1189	C
1	2	1190	A
1	2	1199	A
1	2	1201	A
1	2	1211	A
1	2	1220	U
1	2	1221	U
1	2	1222	C
1	2	1226	C
1	2	1244	A
1	2	1248	C
1	2	1249	U
1	2	1251	A
1	2	1261	G
1	2	1264	G
1	2	1265	U
1	2	1267	G
1	2	1270	A
1	2	1281	A

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Mol	Chain	Res	Type
1	2	1284	C
1	2	1286	C
1	2	1300	A
1	2	1309	U
1	2	1317	G
1	2	1328	A
1	2	1334	G
1	2	1338	A
1	2	1358	A
1	2	1361	C
1	2	1371	C
1	2	1373	C
1	2	1375	C
1	2	1376	C
1	2	1381	G
1	2	1437	G
1	2	1440	A
1	2	1441	G
1	2	1442	G
1	2	1443	G
1	2	1444	G
1	2	1448	G
1	2	1449	A
1	2	1450	A
1	2	1453	C
1	2	1454	G
1	2	1455	U
1	2	1456	A
1	2	1459	A
1	2	1460	A
1	2	1461	G
1	2	1463	U
1	2	1474	G
1	2	1486	G
1	2	1487	G
1	2	1493	C
27	4	8	4SU
27	4	9	G
27	4	16	C
27	4	17(A)	U
27	4	18	G
27	4	20	H2U

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Mol	Chain	Res	Type
27	4	21	A
27	4	22	G
27	4	46	A
27	4	47	U
27	4	49	G
27	4	74	C
27	4	75	C
28	5	807	G
28	5	808	A
28	5	809	G
28	5	812	G
28	5	813	A
28	5	815	U
28	5	818	A
28	5	822	C
28	5	823	C
28	5	824	A

All (5) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	256	G
1	2	1187	C
1	2	1188	G
1	2	1436	U
27	4	74	C

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	OMC	2	313	1	19,22,23	0.84	0	26,31,34	0.85	0
1	OMG	2	1194	1	18,26,27	0.92	1 (5%)	19,38,41	1.14	2 (10%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
1	MA6	2	1475	1	18,26,27	0.94	1 (5%)	19,38,41	1.25	3 (15%)
1	4AC	2	843	1	21,24,25	1.05	2 (9%)	29,34,37	1.34	4 (13%)
1	OMC	2	538	1	19,22,23	0.81	0	26,31,34	0.87	1 (3%)
27	5MU	4	54	27	19,22,23	1.37	5 (26%)	28,32,35	2.07	8 (28%)
27	OMC	4	32	27	19,22,23	0.86	0	26,31,34	1.04	2 (7%)
1	OMC	2	1060	1	19,22,23	0.81	0	26,31,34	0.72	0
27	PSU	4	55	27	18,21,22	1.32	2 (11%)	22,30,33	1.87	3 (13%)
1	OMU	2	15	1	19,22,23	1.21	3 (15%)	26,31,34	1.72	4 (15%)
1	OMU	2	1344	1	19,22,23	1.22	3 (15%)	26,31,34	1.70	6 (23%)
1	OMG	2	546	1	18,26,27	0.93	1 (5%)	19,38,41	1.12	2 (10%)
1	OMG	2	399	1	18,26,27	0.97	1 (5%)	19,38,41	1.04	2 (10%)
1	OMG	2	926	1	18,26,27	0.94	1 (5%)	19,38,41	1.09	2 (10%)
1	OMU	2	1032	1	19,22,23	1.24	3 (15%)	26,31,34	1.74	4 (15%)
1	6MZ	2	1457	1,35	18,25,26	0.85	1 (5%)	16,36,39	2.16	3 (18%)
1	OMG	2	337	1	18,26,27	0.95	1 (5%)	19,38,41	1.12	2 (10%)
1	OMU	2	52	1	19,22,23	1.24	3 (15%)	26,31,34	1.72	4 (15%)
1	OMG	2	1061	1	18,26,27	0.95	1 (5%)	19,38,41	1.11	2 (10%)
1	OMC	2	1366	1	19,22,23	0.81	0	26,31,34	0.77	0
1	5MC	2	1368	1	18,22,23	0.91	2 (11%)	26,32,35	1.04	2 (7%)
1	OMC	2	710	1	19,22,23	0.83	0	26,31,34	0.91	1 (3%)
1	OMG	2	865	1	18,26,27	1.02	1 (5%)	19,38,41	1.04	2 (10%)
1	OMG	2	672	1	18,26,27	0.95	1 (5%)	19,38,41	1.06	2 (10%)
1	A2M	2	494	1	18,25,26	0.98	1 (5%)	18,36,39	1.32	2 (11%)
1	OMC	2	113	1	19,22,23	0.83	0	26,31,34	0.84	0
1	C4J	2	930	1	24,29,30	0.67	1 (4%)	29,42,45	0.57	0
1	OMC	2	512	1	19,22,23	0.82	0	26,31,34	0.81	0
27	H2U	4	20	27	18,21,22	0.30	0	21,30,33	0.43	0
1	OMG	2	905	1	18,26,27	0.95	1 (5%)	19,38,41	1.13	2 (10%)
1	4AC	2	1466	1	21,24,25	1.00	2 (9%)	29,34,37	1.29	4 (13%)
27	4SU	4	8	27	18,21,22	0.27	0	26,30,33	0.34	0
1	4AC	2	1478	1	21,24,25	1.00	2 (9%)	29,34,37	1.40	4 (13%)
1	4AC	2	1477	1	21,24,25	1.04	2 (9%)	29,34,37	1.53	5 (17%)
1	OMC	2	246	1	19,22,23	0.84	0	26,31,34	0.99	1 (3%)
1	OMG	2	1018	1	18,26,27	0.95	1 (5%)	19,38,41	1.09	2 (10%)
1	4AC	2	1467	1	21,24,25	1.02	2 (9%)	29,34,37	1.37	4 (13%)
1	OMC	2	481	1	19,22,23	0.88	1 (5%)	26,31,34	0.98	1 (3%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	OMC	2	313	1	-	0/9/27/28	0/2/2/2
1	OMG	2	1194	1	-	0/5/27/28	0/3/3/3
1	MA6	2	1475	1	-	0/7/29/30	0/3/3/3
1	4AC	2	843	1	-	0/11/29/30	0/2/2/2
1	OMC	2	538	1	-	0/9/27/28	0/2/2/2
27	5MU	4	54	27	-	0/7/25/26	0/2/2/2
27	OMC	4	32	27	-	3/9/27/28	0/2/2/2
1	OMC	2	1060	1	-	0/9/27/28	0/2/2/2
27	PSU	4	55	27	-	2/7/25/26	0/2/2/2
1	OMU	2	15	1	-	0/9/27/28	0/2/2/2
1	OMU	2	1344	1	-	0/9/27/28	0/2/2/2
1	OMG	2	546	1	-	0/5/27/28	0/3/3/3
1	OMG	2	399	1	-	0/5/27/28	0/3/3/3
1	OMG	2	926	1	-	0/5/27/28	0/3/3/3
1	OMU	2	1032	1	-	0/9/27/28	0/2/2/2
1	6MZ	2	1457	1,35	-	0/5/27/28	0/3/3/3
1	OMG	2	337	1	-	1/5/27/28	0/3/3/3
1	OMU	2	52	1	-	0/9/27/28	0/2/2/2
1	OMG	2	1061	1	-	0/5/27/28	0/3/3/3
1	OMC	2	1366	1	-	0/9/27/28	0/2/2/2
1	5MC	2	1368	1	-	0/7/25/26	0/2/2/2
1	OMC	2	710	1	-	0/9/27/28	0/2/2/2
1	OMG	2	865	1	-	0/5/27/28	0/3/3/3
1	OMG	2	672	1	-	0/5/27/28	0/3/3/3
1	A2M	2	494	1	-	0/5/27/28	0/3/3/3
1	OMC	2	113	1	-	0/9/27/28	0/2/2/2
1	C4J	2	930	1	-	2/16/34/35	0/2/2/2
1	OMC	2	512	1	-	0/9/27/28	0/2/2/2
27	H2U	4	20	27	-	3/7/38/39	0/2/2/2
1	OMG	2	905	1	-	0/5/27/28	0/3/3/3
1	4AC	2	1466	1	-	0/11/29/30	0/2/2/2
27	4SU	4	8	27	-	0/7/25/26	0/2/2/2
1	4AC	2	1478	1	-	0/11/29/30	0/2/2/2
1	4AC	2	1477	1	-	0/11/29/30	0/2/2/2
1	OMC	2	246	1	-	3/9/27/28	0/2/2/2
1	OMG	2	1018	1	-	0/5/27/28	0/3/3/3
1	4AC	2	1467	1	-	0/11/29/30	0/2/2/2
1	OMC	2	481	1	-	0/9/27/28	0/2/2/2

All (46) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
27	4	55	PSU	C6-C5	3.22	1.39	1.35
1	2	843	4AC	C5-C4	2.91	1.47	1.40
1	2	1477	4AC	C5-C4	2.81	1.46	1.40
1	2	930	C4J	O4'-C1'	-2.80	1.40	1.43
1	2	1466	4AC	C5-C4	2.77	1.46	1.40
1	2	1478	4AC	C5-C4	2.76	1.46	1.40
1	2	1467	4AC	C5-C4	2.75	1.46	1.40
1	2	399	OMG	C6-N1	-2.75	1.33	1.37
1	2	1018	OMG	C6-N1	-2.69	1.33	1.37
1	2	337	OMG	C6-N1	-2.69	1.33	1.37
1	2	672	OMG	C6-N1	-2.65	1.33	1.37
1	2	52	OMU	C4-N3	-2.63	1.33	1.38
27	4	55	PSU	C4-N3	-2.62	1.34	1.38
1	2	1061	OMG	C6-N1	-2.62	1.34	1.37
1	2	905	OMG	C6-N1	-2.61	1.34	1.37
1	2	1344	OMU	C4-N3	-2.61	1.33	1.38
1	2	1032	OMU	C4-N3	-2.60	1.33	1.38
1	2	926	OMG	C6-N1	-2.58	1.34	1.37
27	4	54	5MU	C6-C5	2.54	1.38	1.34
1	2	15	OMU	C4-N3	-2.53	1.34	1.38
1	2	1194	OMG	C6-N1	-2.52	1.34	1.37
27	4	54	5MU	C4-N3	-2.51	1.34	1.38
1	2	1475	MA6	C5-C4	2.50	1.47	1.40
1	2	546	OMG	C6-N1	-2.48	1.34	1.37
1	2	865	OMG	C6-N1	-2.45	1.34	1.37
1	2	1457	6MZ	C5-C4	2.45	1.47	1.40
1	2	843	4AC	C4-N3	-2.44	1.28	1.32
1	2	1368	5MC	C6-C5	2.40	1.38	1.34
27	4	54	5MU	C4-C5	2.40	1.48	1.44
1	2	1467	4AC	C4-N3	-2.39	1.28	1.32
1	2	52	OMU	C2-N3	-2.34	1.33	1.38
1	2	1368	5MC	C6-N1	-2.32	1.34	1.38
1	2	494	A2M	C5-C4	2.31	1.47	1.40
1	2	1032	OMU	C2-N3	-2.29	1.33	1.38
1	2	15	OMU	C2-N3	-2.28	1.33	1.38
27	4	54	5MU	C6-N1	-2.28	1.34	1.38
1	2	1466	4AC	C4-N3	-2.24	1.28	1.32
1	2	1344	OMU	C2-N3	-2.17	1.34	1.38
1	2	15	OMU	C5-C4	-2.16	1.38	1.43
1	2	1344	OMU	C5-C4	-2.15	1.38	1.43
1	2	481	OMC	C6-C5	2.10	1.39	1.35
1	2	1477	4AC	C4-N3	-2.10	1.29	1.32

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
27	4	54	5MU	C2-N1	2.08	1.41	1.38
1	2	1032	OMU	C5-C4	-2.07	1.39	1.43
1	2	1478	4AC	C4-N3	-2.07	1.29	1.32
1	2	52	OMU	C5-C4	-2.05	1.39	1.43

All (86) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1457	6MZ	C2-N1-C6	6.94	122.54	116.59
27	4	55	PSU	N1-C2-N3	5.78	121.68	115.13
27	4	54	5MU	C4-N3-C2	-5.11	120.74	127.35
27	4	54	5MU	N3-C2-N1	4.74	121.18	114.89
1	2	1032	OMU	C4-N3-C2	-4.58	120.54	126.58
1	2	1478	4AC	O7-C7-N4	4.52	129.13	121.82
1	2	1467	4AC	O7-C7-N4	4.51	129.11	121.82
1	2	1477	4AC	O7-C7-N4	4.48	129.08	121.82
1	2	52	OMU	C4-N3-C2	-4.48	120.68	126.58
1	2	15	OMU	C4-N3-C2	-4.48	120.68	126.58
1	2	1466	4AC	O7-C7-N4	4.42	128.97	121.82
27	4	54	5MU	C5-C4-N3	4.35	119.02	115.31
1	2	1344	OMU	C4-N3-C2	-4.33	120.86	126.58
1	2	843	4AC	O7-C7-N4	4.26	128.71	121.82
1	2	1344	OMU	N3-C2-N1	4.13	120.38	114.89
1	2	52	OMU	N3-C2-N1	4.07	120.30	114.89
27	4	55	PSU	C4-N3-C2	-3.98	120.60	126.34
1	2	1032	OMU	N3-C2-N1	3.94	120.12	114.89
1	2	15	OMU	N3-C2-N1	3.82	119.96	114.89
1	2	15	OMU	C5-C4-N3	3.79	120.51	114.84
1	2	1032	OMU	C5-C4-N3	3.78	120.49	114.84
1	2	52	OMU	C5-C4-N3	3.64	120.29	114.84
27	4	54	5MU	O4-C4-C5	-3.64	120.69	124.90
27	4	54	5MU	C5-C6-N1	-3.59	119.65	123.34
1	2	1344	OMU	C5-C4-N3	3.53	120.12	114.84
1	2	1477	4AC	N4-C4-N3	3.51	119.74	113.85
1	2	1457	6MZ	N3-C2-N1	-3.42	123.33	128.68
1	2	1478	4AC	N4-C4-N3	3.41	119.58	113.85
1	2	1457	6MZ	C4-C5-N7	-3.41	105.85	109.40
1	2	1467	4AC	CM7-C7-N4	-3.37	109.47	115.29
1	2	1477	4AC	C5-C4-N4	-3.31	117.17	122.92
1	2	15	OMU	O4-C4-C5	-3.30	119.35	125.16
1	2	1475	MA6	N3-C2-N1	-3.27	123.56	128.68
1	2	1475	MA6	C4-C5-N7	-3.21	106.05	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	494	A2M	N3-C2-N1	-3.20	123.67	128.68
27	4	55	PSU	O2-C2-N1	-3.20	119.27	122.79
1	2	1478	4AC	C5-C4-N4	-3.18	117.39	122.92
1	2	1368	5MC	C5-C6-N1	-3.14	120.11	123.34
1	2	1032	OMU	O4-C4-C5	-3.11	119.70	125.16
1	2	52	OMU	O4-C4-C5	-3.04	119.82	125.16
1	2	1466	4AC	N4-C4-N3	3.03	118.94	113.85
1	2	1344	OMU	O4-C4-C5	-3.00	119.88	125.16
1	2	1467	4AC	C5-C4-N4	-2.93	117.82	122.92
1	2	1467	4AC	N4-C4-N3	2.85	118.64	113.85
27	4	32	OMC	O2-C2-N3	-2.75	117.85	122.33
1	2	1466	4AC	C5-C4-N4	-2.72	118.19	122.92
1	2	843	4AC	C5-C4-N4	-2.70	118.22	122.92
1	2	843	4AC	N4-C4-N3	2.70	118.39	113.85
1	2	843	4AC	CM7-C7-N4	-2.69	110.63	115.29
1	2	1478	4AC	CM7-C7-N4	-2.64	110.73	115.29
1	2	1477	4AC	CM7-C7-N4	-2.62	110.76	115.29
1	2	1466	4AC	CM7-C7-N4	-2.60	110.80	115.29
1	2	494	A2M	C4-C5-N7	-2.58	106.71	109.40
1	2	246	OMC	O2-C2-N3	-2.56	118.17	122.33
27	4	54	5MU	O2-C2-N1	-2.45	119.52	122.79
1	2	1194	OMG	C5-C6-N1	2.45	118.27	113.95
1	2	1368	5MC	C5-C4-N3	-2.42	119.06	121.67
1	2	905	OMG	C8-N7-C5	2.39	107.55	102.99
1	2	1061	OMG	C5-C6-N1	2.38	118.16	113.95
1	2	926	OMG	C5-C6-N1	2.38	118.15	113.95
1	2	865	OMG	C8-N7-C5	2.37	107.50	102.99
1	2	337	OMG	C5-C6-N1	2.36	118.13	113.95
1	2	905	OMG	C5-C6-N1	2.36	118.12	113.95
27	4	54	5MU	C5M-C5-C4	2.34	121.35	118.77
1	2	1018	OMG	C5-C6-N1	2.34	118.09	113.95
1	2	865	OMG	C5-C6-N1	2.33	118.07	113.95
1	2	337	OMG	C8-N7-C5	2.33	107.42	102.99
1	2	1061	OMG	C8-N7-C5	2.32	107.41	102.99
1	2	1018	OMG	C8-N7-C5	2.30	107.38	102.99
1	2	672	OMG	C5-C6-N1	2.29	118.00	113.95
1	2	546	OMG	C5-C6-N1	2.29	117.99	113.95
1	2	672	OMG	C8-N7-C5	2.28	107.33	102.99
1	2	926	OMG	C8-N7-C5	2.27	107.32	102.99
1	2	1194	OMG	C8-N7-C5	2.27	107.32	102.99
1	2	546	OMG	C8-N7-C5	2.27	107.31	102.99
1	2	399	OMG	C5-C6-N1	2.25	117.93	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	2	1477	4AC	C1'-N1-C2	2.21	123.35	118.42
27	4	32	OMC	C1'-N1-C2	2.17	123.27	118.42
1	2	399	OMG	C8-N7-C5	2.15	107.08	102.99
1	2	710	OMC	O2-C2-N3	-2.12	118.89	122.33
1	2	1344	OMU	C1'-N1-C2	2.11	121.38	117.57
1	2	1344	OMU	O2-C2-N1	-2.09	120.01	122.79
27	4	54	5MU	C5M-C5-C6	-2.06	120.10	122.85
1	2	538	OMC	O2-C2-N3	-2.03	119.02	122.33
1	2	1475	MA6	N1-C6-N6	2.03	119.19	117.06
1	2	481	OMC	O2-C2-N3	-2.02	119.05	122.33

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	2	246	OMC	C3'-C4'-C5'-O5'
27	4	20	H2U	O4'-C1'-N1-C6
1	2	930	C4J	C4'-C5'-O5'-P
1	2	246	OMC	O4'-C4'-C5'-O5'
27	4	20	H2U	O4'-C1'-N1-C2
1	2	930	C4J	C3'-C4'-C5'-O5'
27	4	20	H2U	C4'-C5'-O5'-P
1	2	337	OMG	C4'-C5'-O5'-P
27	4	32	OMC	C3'-C2'-O2'-CM2
27	4	32	OMC	C2'-C1'-N1-C6
27	4	55	PSU	O4'-C1'-C5-C4
1	2	246	OMC	C2'-C1'-N1-C2
27	4	55	PSU	O4'-C1'-C5-C6
27	4	32	OMC	C2'-C1'-N1-C2

There are no ring outliers.

29 monomers are involved in 37 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	2	1194	OMG	1	0
1	2	1475	MA6	1	0
1	2	843	4AC	2	0
1	2	538	OMC	1	0
27	4	54	5MU	2	0
27	4	32	OMC	1	0
1	2	1060	OMC	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	2	15	OMU	1	0
1	2	1344	OMU	2	0
1	2	399	OMG	1	0
1	2	926	OMG	1	0
1	2	1032	OMU	1	0
1	2	337	OMG	1	0
1	2	1061	OMG	1	0
1	2	1366	OMC	2	0
1	2	1368	5MC	1	0
1	2	710	OMC	1	0
1	2	865	OMG	1	0
1	2	672	OMG	2	0
1	2	113	OMC	2	0
1	2	512	OMC	1	0
27	4	20	H2U	1	0
1	2	1466	4AC	2	0
1	2	1478	4AC	1	0
1	2	1477	4AC	1	0
1	2	246	OMC	2	0
1	2	1018	OMG	1	0
1	2	1467	4AC	1	0
1	2	481	OMC	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 92 ligands modelled in this entry, 61 are monoatomic - leaving 31 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
36	SPM	2	1557	-	13,13,13	0.10	0	12,12,12	0.09	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
36	SPM	2	1549	-	13,13,13	0.11	0	12,12,12	0.07	0
36	SPM	2	1553	-	13,13,13	0.11	0	12,12,12	0.07	0
36	SPM	2	1575	-	13,13,13	0.11	0	12,12,12	0.06	0
36	SPM	2	1568	-	13,13,13	0.11	0	12,12,12	0.08	0
36	SPM	2	1570	-	13,13,13	0.09	0	12,12,12	0.11	0
36	SPM	2	1561	-	13,13,13	0.12	0	12,12,12	0.09	0
36	SPM	2	1566	-	13,13,13	0.11	0	12,12,12	0.07	0
36	SPM	2	1550	-	13,13,13	0.10	0	12,12,12	0.11	0
36	SPM	2	1555	-	13,13,13	0.12	0	12,12,12	0.09	0
36	SPM	2	1562	-	13,13,13	0.11	0	12,12,12	0.07	0
36	SPM	2	1548	-	13,13,13	0.08	0	12,12,12	0.11	0
36	SPM	2	1552	-	13,13,13	0.07	0	12,12,12	0.12	0
36	SPM	2	1572	-	13,13,13	0.11	0	12,12,12	0.07	0
36	SPM	2	1558	-	13,13,13	0.08	0	12,12,12	0.13	0
36	SPM	2	1573	-	13,13,13	0.12	0	12,12,12	0.06	0
36	SPM	2	1574	-	13,13,13	0.12	0	12,12,12	0.06	0
36	SPM	2	1559	-	13,13,13	0.12	0	12,12,12	0.10	0
36	SPM	2	1554	-	13,13,13	0.07	0	12,12,12	0.15	0
36	SPM	2	1569	-	13,13,13	0.12	0	12,12,12	0.07	0
36	SPM	2	1571	-	13,13,13	0.09	0	12,12,12	0.10	0
36	SPM	2	1576	-	13,13,13	0.12	0	12,12,12	0.07	0
36	SPM	2	1567	-	13,13,13	0.12	0	12,12,12	0.07	0
36	SPM	2	1564	-	13,13,13	0.08	0	12,12,12	0.09	0
36	SPM	2	1563	-	13,13,13	0.08	0	12,12,12	0.12	0
36	SPM	2	1551	-	13,13,13	0.11	0	12,12,12	0.06	0
36	SPM	2	1556	-	13,13,13	0.09	0	12,12,12	0.12	0
36	SPM	2	1577	-	13,13,13	0.14	0	12,12,12	0.10	0
36	SPM	2	1565	-	13,13,13	0.09	0	12,12,12	0.10	0
36	SPM	2	1560	-	13,13,13	0.11	0	12,12,12	0.11	0
36	SPM	2	1578	-	13,13,13	0.11	0	12,12,12	0.07	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
36	SPM	2	1557	-	-	2/11/11/11	-
36	SPM	2	1549	-	-	2/11/11/11	-
36	SPM	2	1553	-	-	4/11/11/11	-
36	SPM	2	1575	-	-	2/11/11/11	-
36	SPM	2	1568	-	-	3/11/11/11	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
36	SPM	2	1570	-	-	3/11/11/11	-
36	SPM	2	1561	-	-	2/11/11/11	-
36	SPM	2	1566	-	-	3/11/11/11	-
36	SPM	2	1550	-	-	3/11/11/11	-
36	SPM	2	1555	-	-	2/11/11/11	-
36	SPM	2	1562	-	-	2/11/11/11	-
36	SPM	2	1548	-	-	2/11/11/11	-
36	SPM	2	1552	-	-	2/11/11/11	-
36	SPM	2	1572	-	-	3/11/11/11	-
36	SPM	2	1558	-	-	2/11/11/11	-
36	SPM	2	1573	-	-	3/11/11/11	-
36	SPM	2	1574	-	-	3/11/11/11	-
36	SPM	2	1559	-	-	4/11/11/11	-
36	SPM	2	1554	-	-	1/11/11/11	-
36	SPM	2	1569	-	-	3/11/11/11	-
36	SPM	2	1571	-	-	2/11/11/11	-
36	SPM	2	1576	-	-	3/11/11/11	-
36	SPM	2	1567	-	-	4/11/11/11	-
36	SPM	2	1564	-	-	5/11/11/11	-
36	SPM	2	1563	-	-	1/11/11/11	-
36	SPM	2	1551	-	-	2/11/11/11	-
36	SPM	2	1556	-	-	2/11/11/11	-
36	SPM	2	1577	-	-	1/11/11/11	-
36	SPM	2	1565	-	-	3/11/11/11	-
36	SPM	2	1560	-	-	1/11/11/11	-
36	SPM	2	1578	-	-	4/11/11/11	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (79) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
36	2	1556	SPM	C12-C11-N10-C9
36	2	1565	SPM	C7-C6-N5-C4
36	2	1569	SPM	C3-C4-N5-C6

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Mol	Chain	Res	Type	Atoms
36	2	1573	SPM	C7-C6-N5-C4
36	2	1575	SPM	C3-C4-N5-C6
36	2	1553	SPM	C12-C11-N10-C9
36	2	1565	SPM	C3-C4-N5-C6
36	2	1566	SPM	C3-C4-N5-C6
36	2	1566	SPM	C7-C6-N5-C4
36	2	1573	SPM	C8-C9-N10-C11
36	2	1574	SPM	C7-C6-N5-C4
36	2	1548	SPM	C8-C9-N10-C11
36	2	1550	SPM	C12-C11-N10-C9
36	2	1551	SPM	C3-C4-N5-C6
36	2	1554	SPM	C12-C11-N10-C9
36	2	1556	SPM	C8-C9-N10-C11
36	2	1557	SPM	C3-C4-N5-C6
36	2	1562	SPM	C12-C11-N10-C9
36	2	1566	SPM	C12-C11-N10-C9
36	2	1568	SPM	C7-C6-N5-C4
36	2	1570	SPM	C12-C11-N10-C9
36	2	1567	SPM	C3-C4-N5-C6
36	2	1571	SPM	C7-C6-N5-C4
36	2	1559	SPM	C7-C6-N5-C4
36	2	1568	SPM	C8-C9-N10-C11
36	2	1576	SPM	C3-C4-N5-C6
36	2	1576	SPM	C12-C11-N10-C9
36	2	1578	SPM	C7-C6-N5-C4
36	2	1553	SPM	C8-C9-N10-C11
36	2	1548	SPM	C12-C11-N10-C9
36	2	1550	SPM	C3-C4-N5-C6
36	2	1550	SPM	C8-C9-N10-C11
36	2	1555	SPM	C7-C6-N5-C4
36	2	1557	SPM	C7-C6-N5-C4
36	2	1558	SPM	C7-C6-N5-C4
36	2	1559	SPM	C3-C4-N5-C6
36	2	1560	SPM	C8-C9-N10-C11
36	2	1564	SPM	C3-C4-N5-C6
36	2	1571	SPM	C8-C9-N10-C11
36	2	1574	SPM	C8-C9-N10-C11
36	2	1561	SPM	C12-C11-N10-C9
36	2	1558	SPM	C3-C4-N5-C6
36	2	1564	SPM	C7-C6-N5-C4
36	2	1559	SPM	C8-C9-N10-C11
36	2	1562	SPM	C7-C6-N5-C4

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Mol	Chain	Res	Type	Atoms
36	2	1567	SPM	C7-C6-N5-C4
36	2	1564	SPM	N10-C11-C12-C13
36	2	1563	SPM	C3-C4-N5-C6
36	2	1570	SPM	C7-C6-N5-C4
36	2	1575	SPM	C7-C6-N5-C4
36	2	1552	SPM	C8-C9-N10-C11
36	2	1551	SPM	C8-C9-N10-C11
36	2	1569	SPM	C12-C11-N10-C9
36	2	1570	SPM	C3-C4-N5-C6
36	2	1549	SPM	C3-C4-N5-C6
36	2	1555	SPM	C3-C4-N5-C6
36	2	1569	SPM	C7-C6-N5-C4
36	2	1559	SPM	C12-C11-N10-C9
36	2	1561	SPM	C7-C6-N5-C4
36	2	1572	SPM	C6-C7-C8-C9
36	2	1564	SPM	C8-C9-N10-C11
36	2	1564	SPM	C12-C11-N10-C9
36	2	1567	SPM	C8-C9-N10-C11
36	2	1577	SPM	C7-C6-N5-C4
36	2	1578	SPM	C3-C4-N5-C6
36	2	1573	SPM	C6-C7-C8-C9
36	2	1578	SPM	C6-C7-C8-C9
36	2	1552	SPM	C7-C6-N5-C4
36	2	1572	SPM	C3-C4-N5-C6
36	2	1553	SPM	C6-C7-C8-C9
36	2	1549	SPM	C8-C9-N10-C11
36	2	1567	SPM	C12-C11-N10-C9
36	2	1568	SPM	C12-C11-N10-C9
36	2	1574	SPM	C12-C11-N10-C9
36	2	1576	SPM	C8-C9-N10-C11
36	2	1578	SPM	C12-C11-N10-C9
36	2	1565	SPM	C6-C7-C8-C9
36	2	1553	SPM	C7-C6-N5-C4
36	2	1572	SPM	C12-C11-N10-C9

There are no ring outliers.

25 monomers are involved in 73 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
36	2	1549	SPM	5	0
36	2	1553	SPM	3	0
36	2	1575	SPM	7	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
36	2	1570	SPM	1	0
36	2	1561	SPM	1	0
36	2	1566	SPM	1	0
36	2	1555	SPM	1	0
36	2	1562	SPM	3	0
36	2	1548	SPM	2	0
36	2	1552	SPM	1	0
36	2	1558	SPM	2	0
36	2	1573	SPM	3	0
36	2	1574	SPM	2	0
36	2	1559	SPM	2	0
36	2	1554	SPM	1	0
36	2	1576	SPM	9	0
36	2	1567	SPM	10	0
36	2	1564	SPM	3	0
36	2	1563	SPM	4	0
36	2	1551	SPM	1	0
36	2	1556	SPM	1	0
36	2	1577	SPM	2	0
36	2	1565	SPM	1	0
36	2	1560	SPM	3	0
36	2	1578	SPM	4	0

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.

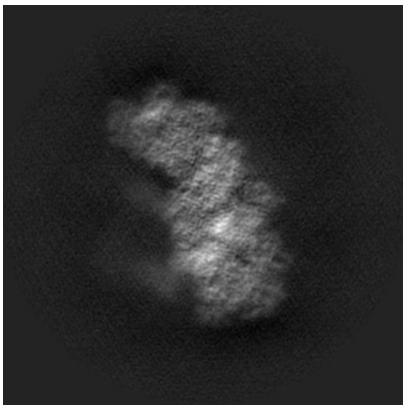
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-50717. These allow visual inspection of the internal detail of the map and identification of artifacts.

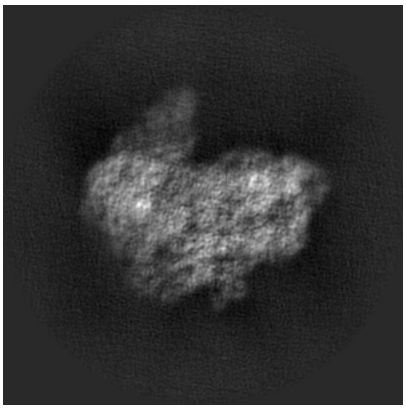
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

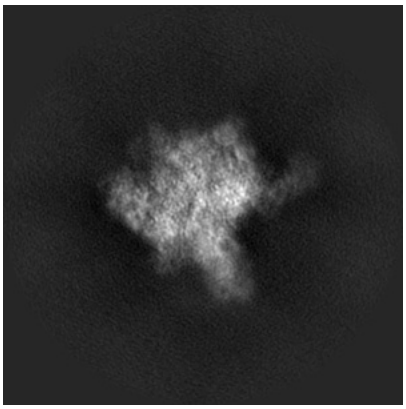
6.1.1 Primary map



X

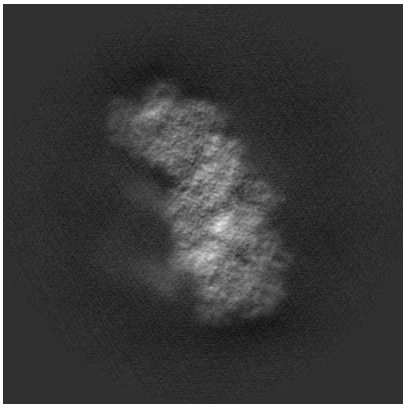


Y

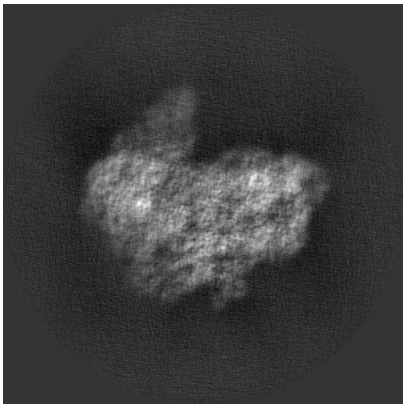


Z

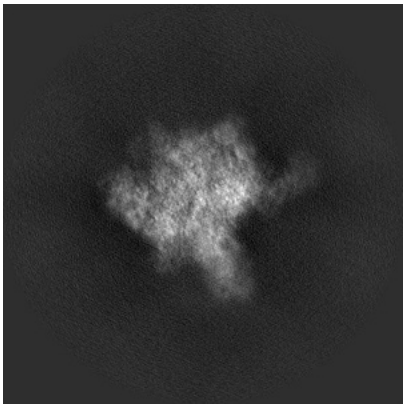
6.1.2 Raw map



X



Y

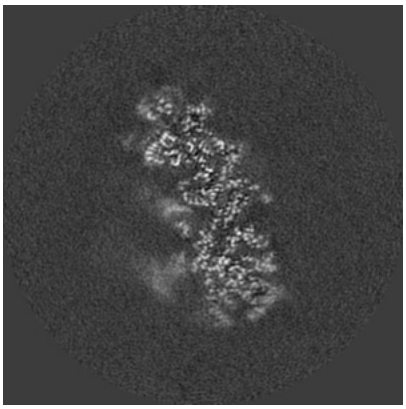


Z

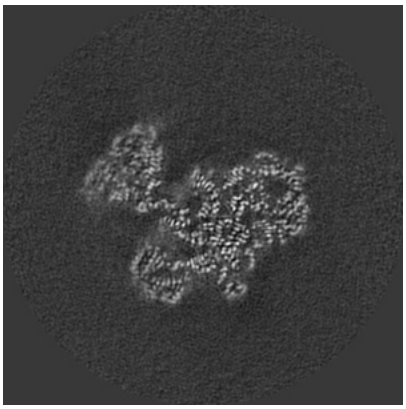
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

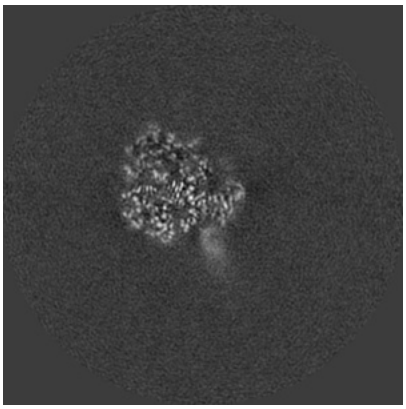
6.2.1 Primary map



X Index: 174

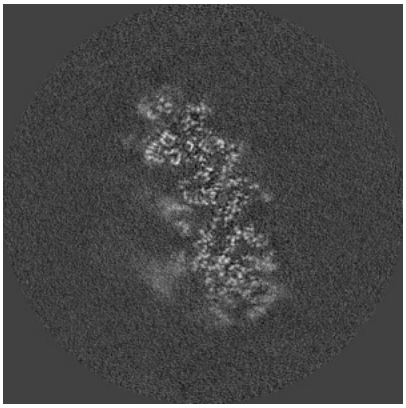


Y Index: 174

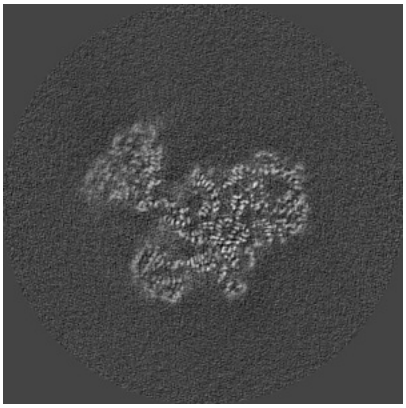


Z Index: 174

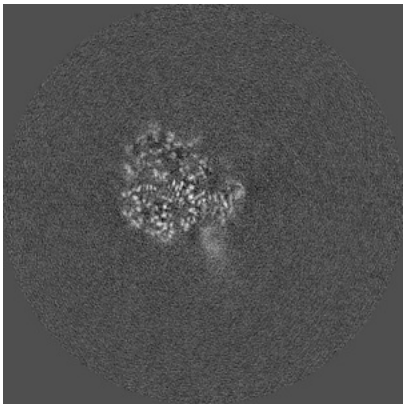
6.2.2 Raw map



X Index: 174



Y Index: 174

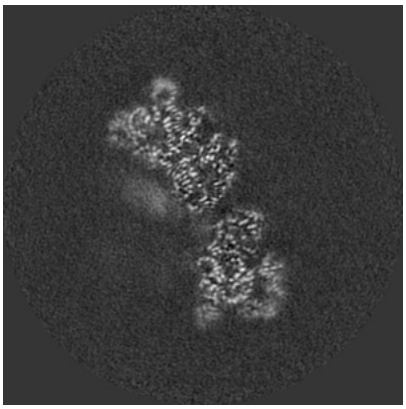


Z Index: 174

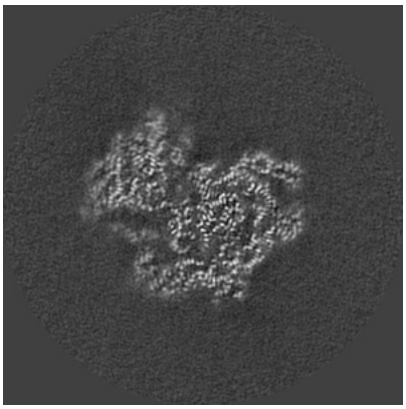
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

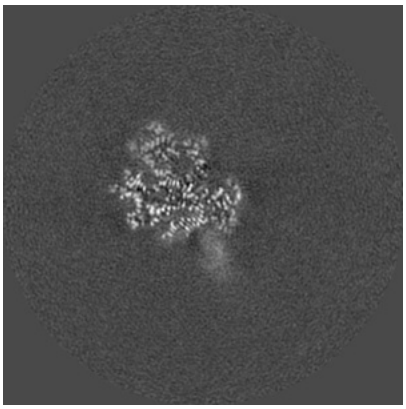
6.3.1 Primary map



X Index: 187

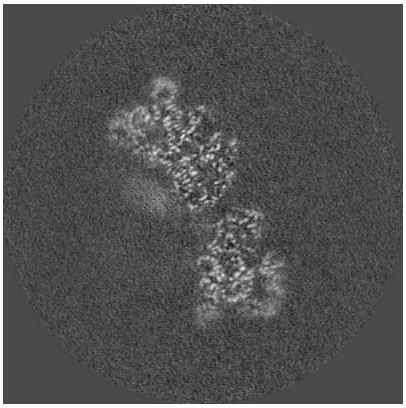


Y Index: 181

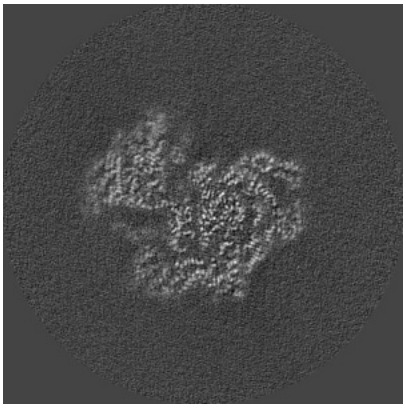


Z Index: 179

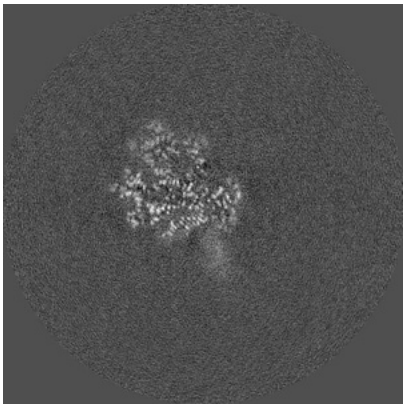
6.3.2 Raw map



X Index: 187



Y Index: 180

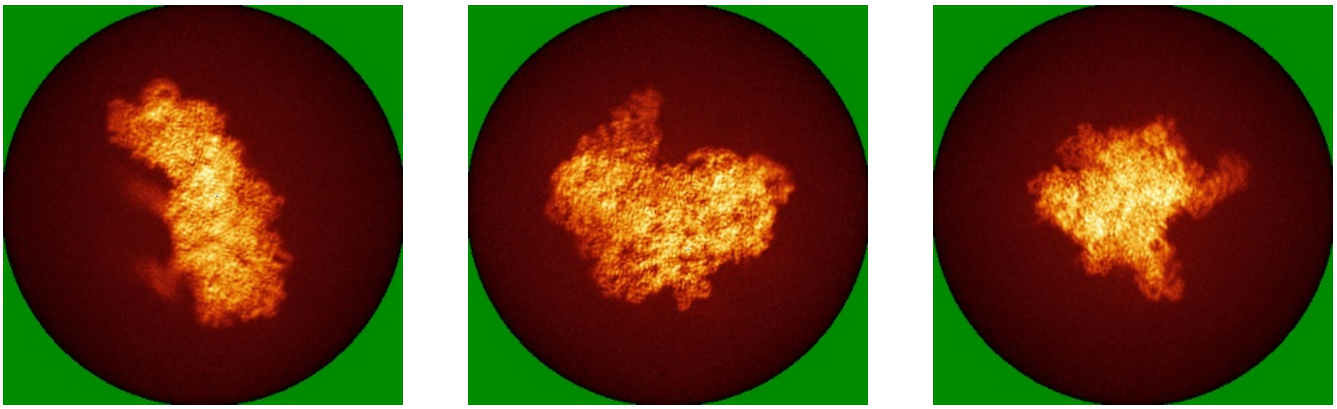


Z Index: 179

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

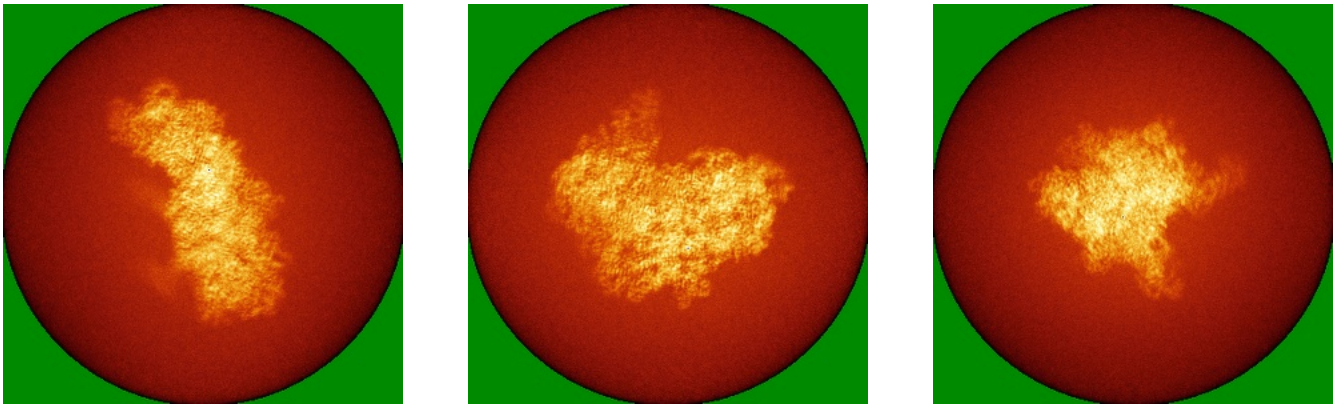
6.4 Orthogonal standard-deviation projections (False-color) (i)

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 0.007. 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.

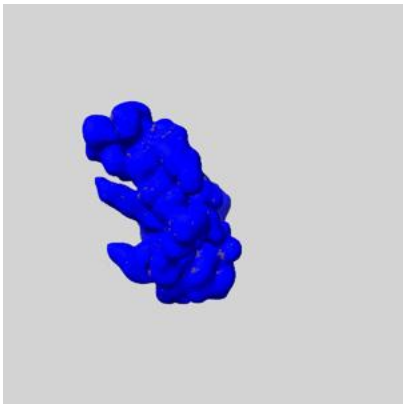
6.6 Mask visualisation (i)

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

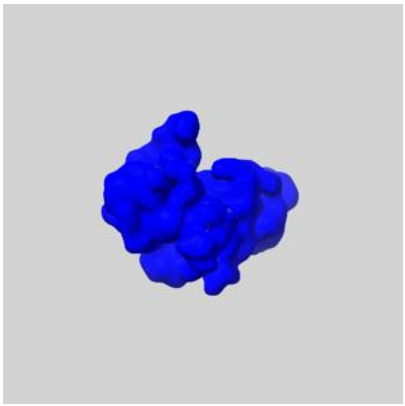
A mask typically either:

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

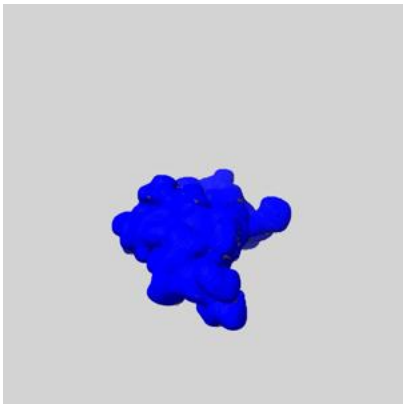
6.6.1 emd_50717_msk_1.map (i)



X



Y

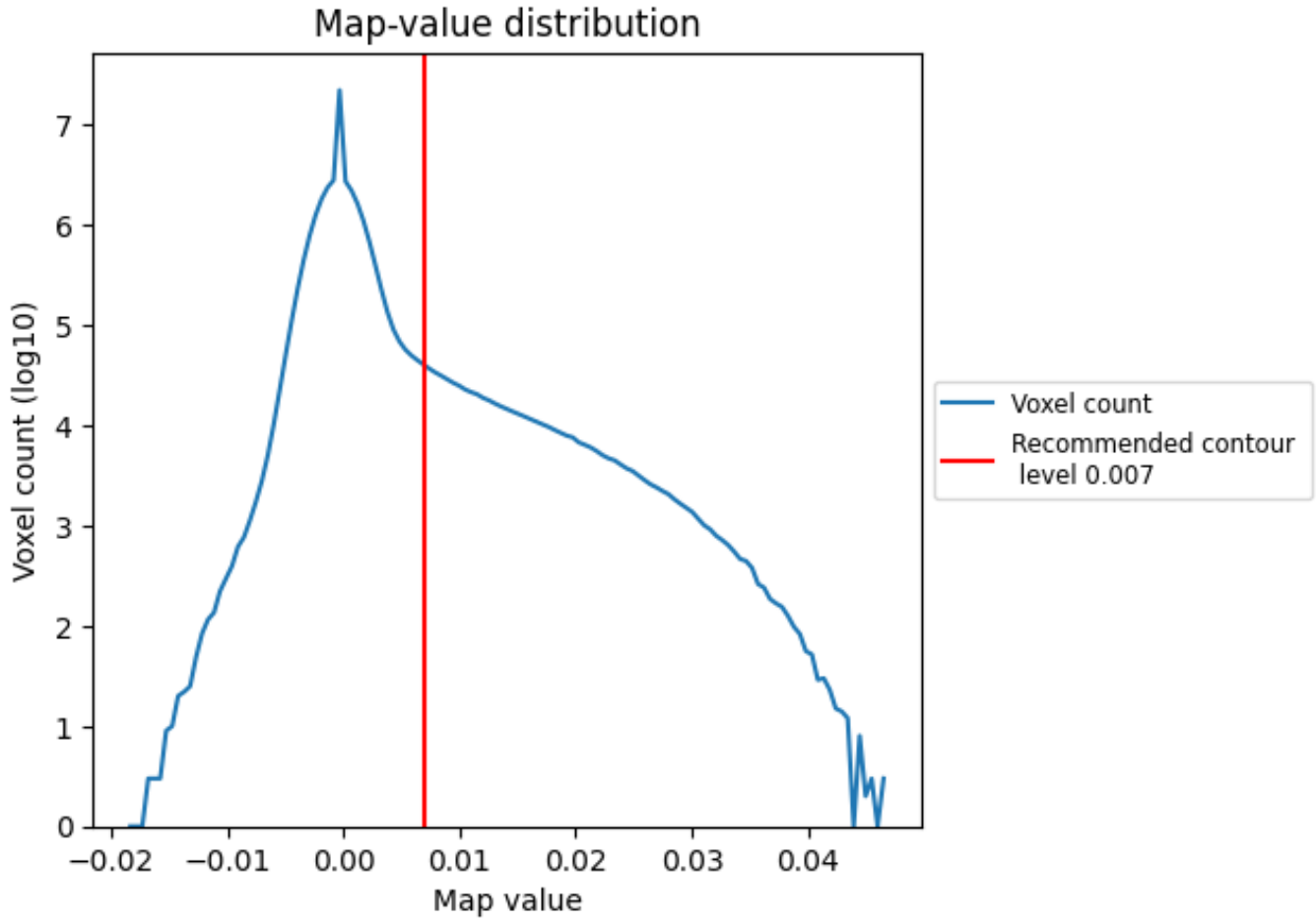


Z

7 Map analysis

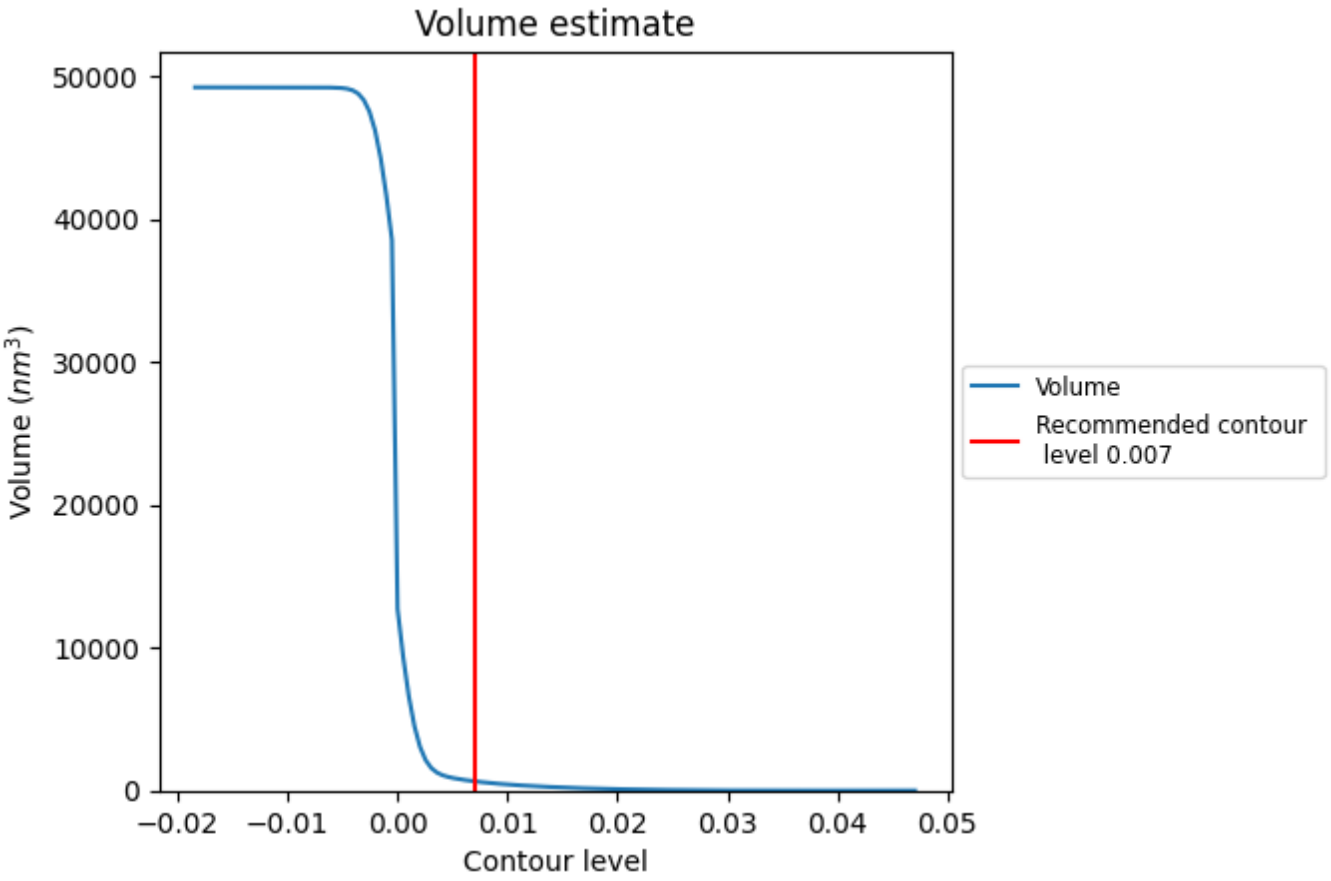
This section contains the results of statistical analysis of the map.

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.

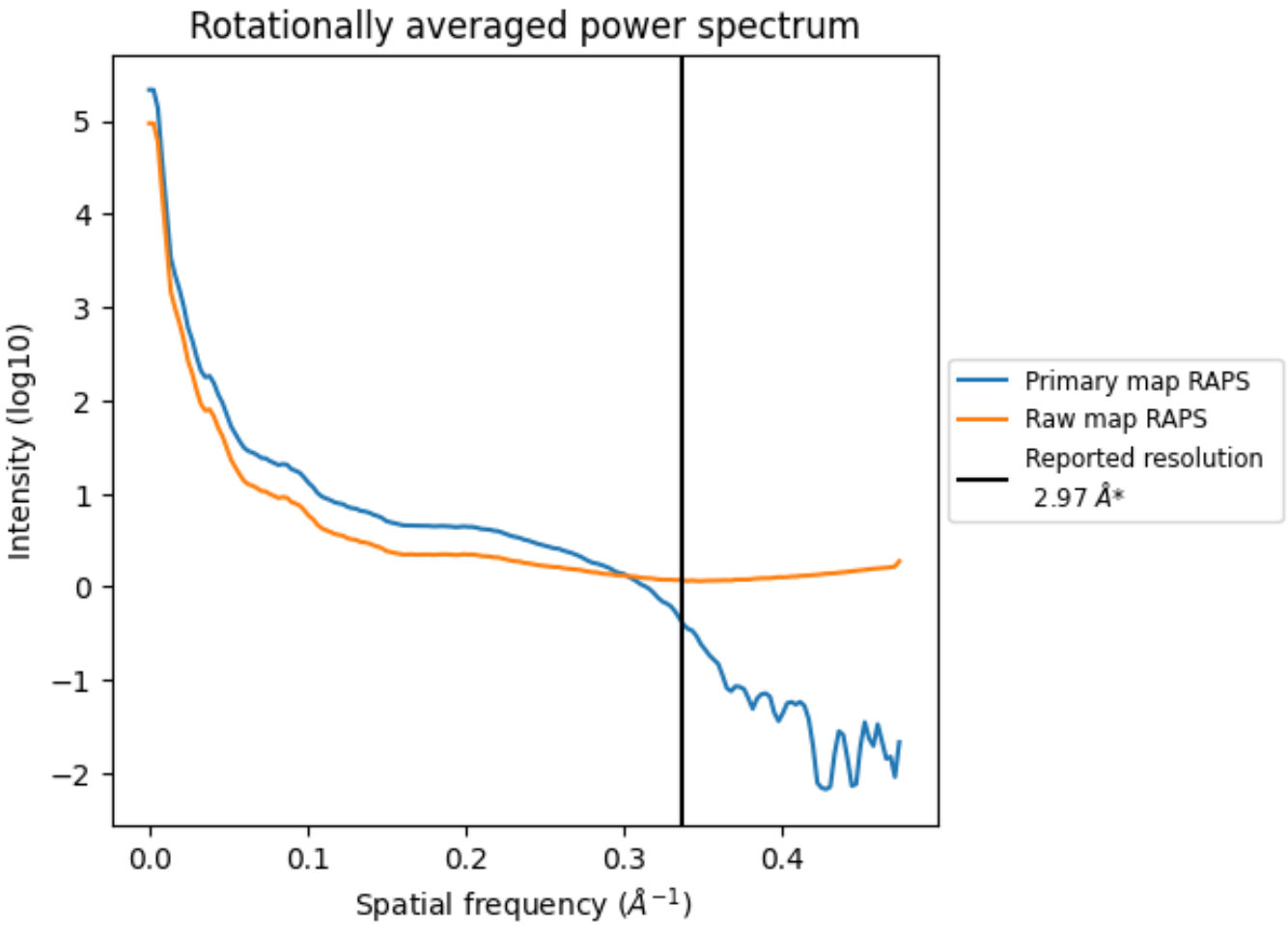
7.2 Volume estimate



The volume at the recommended contour level is 651 nm^3; this corresponds to an approximate mass of 588 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)

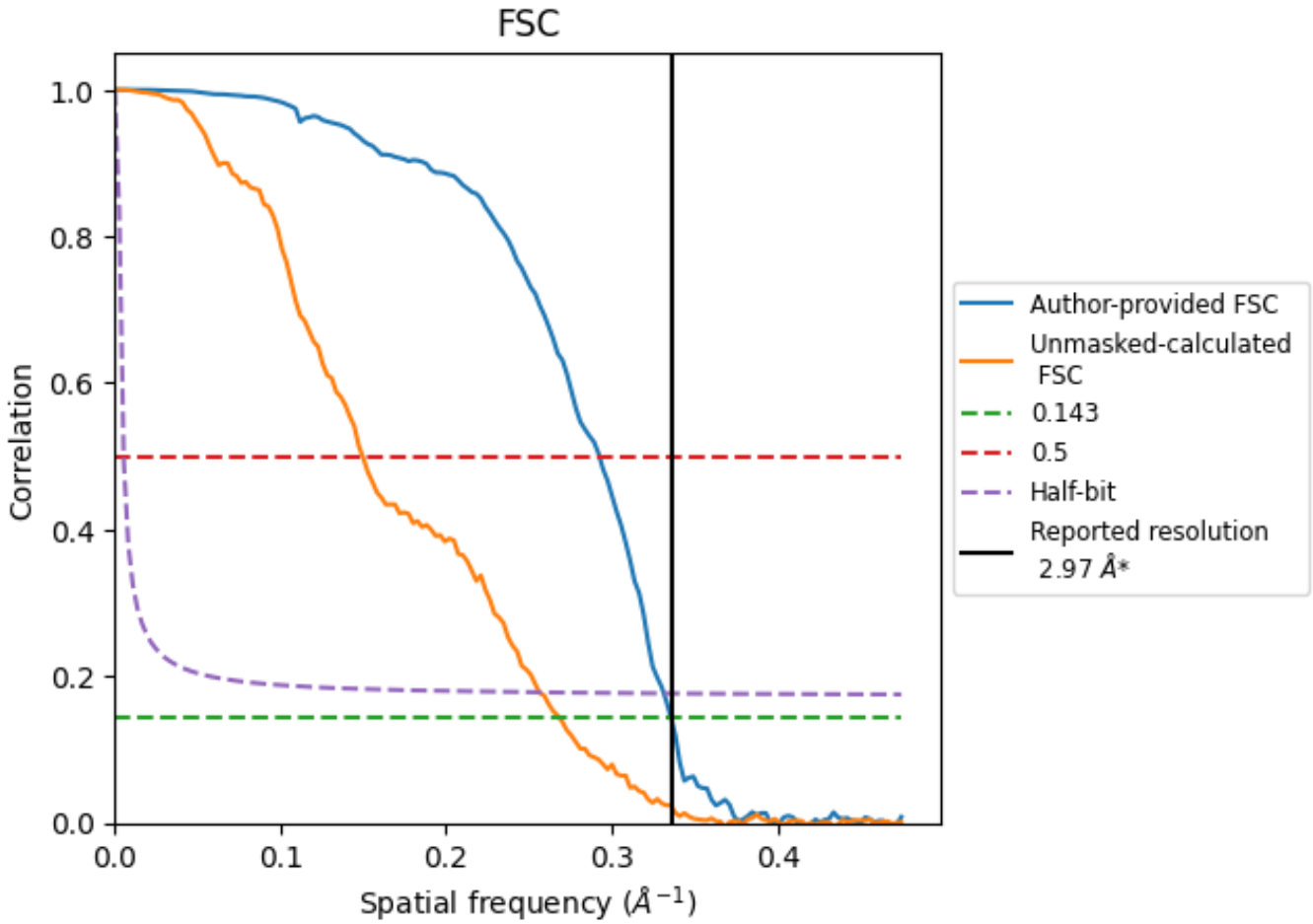


*Reported resolution corresponds to spatial frequency of 0.337 $Å^{-1}$

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 0.337 Å^{-1}

8.2 Resolution estimates (i)

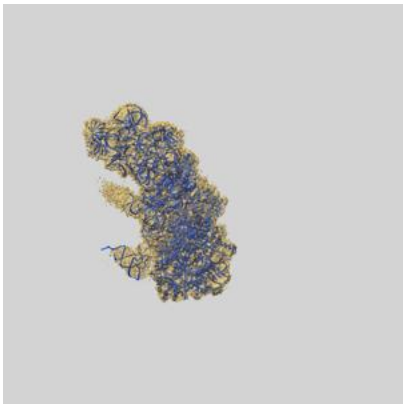
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.97	-	-
Author-provided FSC curve	2.98	3.42	3.02
Unmasked-calculated*	3.73	6.68	3.90

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.73 differs from the reported value 2.97 by more than 10 %

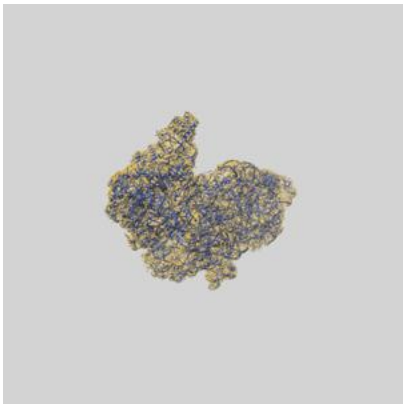
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-50717 and PDB model 9FRL. Per-residue inclusion information can be found in section 3 on page 14.

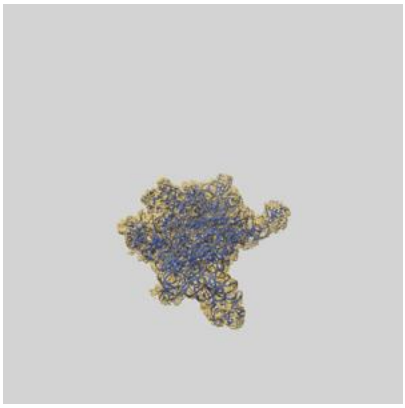
9.1 Map-model overlay



X



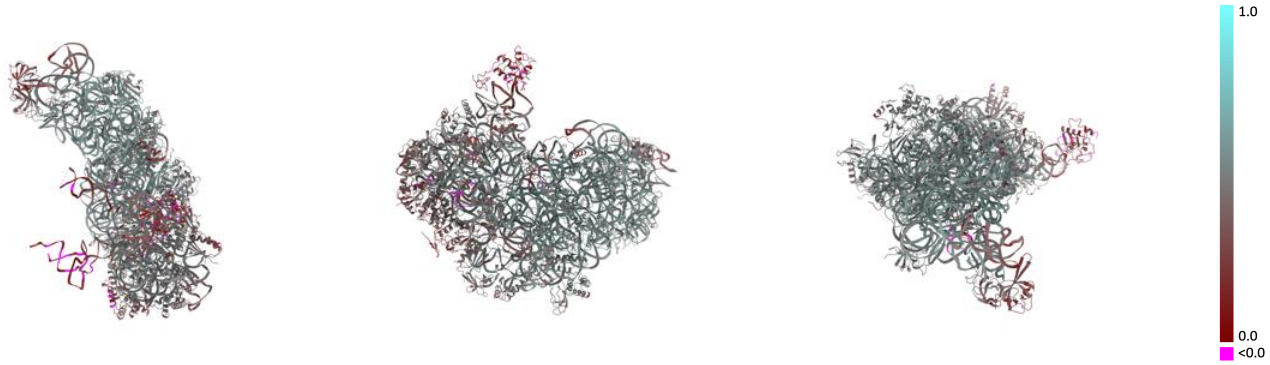
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.007 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

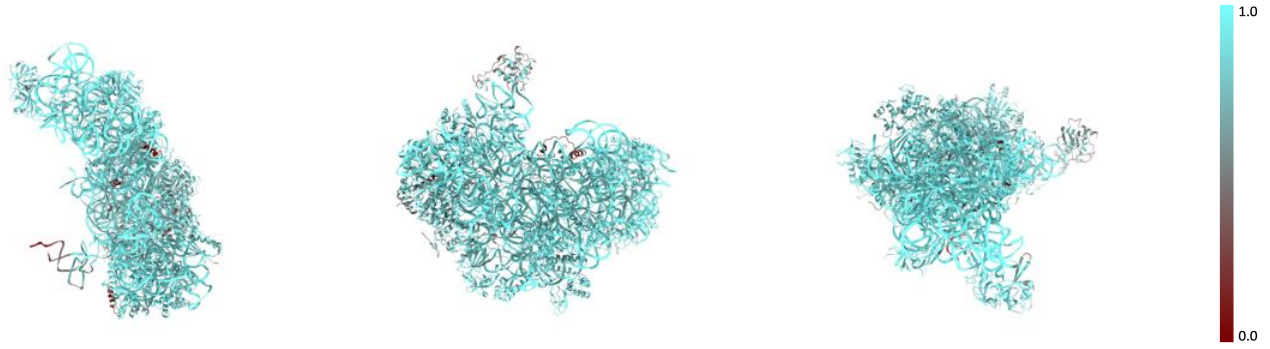
9.2 Q-score mapped to coordinate model (i)



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.

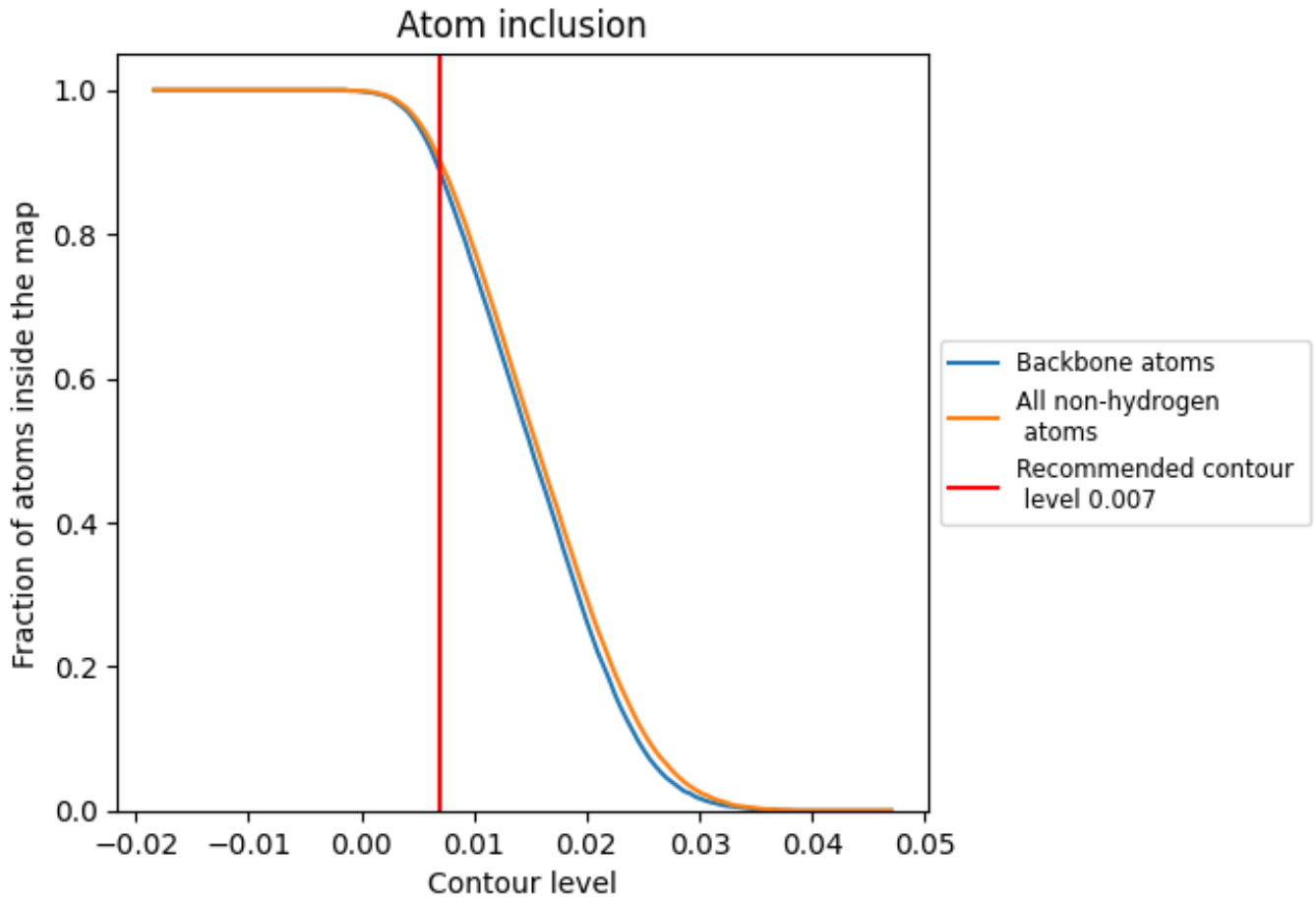
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.007).

9.4 Atom inclusion (i)



At the recommended contour level, 89% of all backbone atoms, 90% 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 (0.007) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9020	0.4710
2	0.9800	0.5140
3	0.5890	0.1590
4	0.6660	0.1740
5	0.8140	0.3810
A	0.8900	0.4550
B	0.8250	0.4780
C	0.8970	0.5090
D	0.9290	0.5260
E	0.9190	0.5220
F	0.8990	0.5330
G	0.8480	0.3680
H	0.8170	0.3990
I	0.9370	0.5410
J	0.9300	0.5150
K	0.8700	0.4510
L	0.8570	0.4080
M	0.8720	0.4630
N	0.8950	0.5180
O	0.8790	0.4400
P	0.8890	0.4940
Q	0.8730	0.4980
R	0.9140	0.5320
S	0.8530	0.4450
T	0.8430	0.4270
U	0.8880	0.4560
V	0.8960	0.4890
W	0.8620	0.4450
X	0.7770	0.3680
Y	0.4340	0.1830
Z	0.8610	0.4540
a	0.8620	0.4140
c	0.5430	0.2660
d	0.6940	0.2830
e	0.1140	0.2440