Full wwPDB EM Validation Report ⓘ

Dec 11, 2025 – 12:42 pm GMT

PDB ID	:	5LMO / pdb_00005lmo
EMDB ID	:	EMD-4074
Title	:	Structure of bacterial 30S-IF1-IF3-mRNA translation pre-initiation complex (state-1B)
Authors	:	Hussain, T.; Llacer, J.L.; Wimberly, B.T.; Ramakrishnan, V.
Deposited on	:	2016-08-01
Resolution	:	4.30 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:

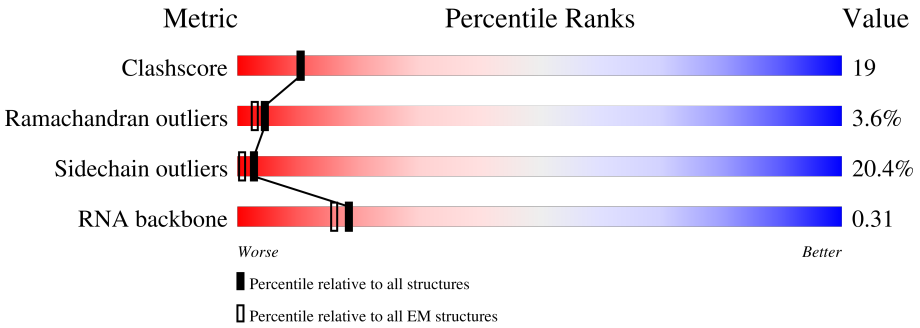
EMDB validation analysis	:	0.0.1.dev129
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.47

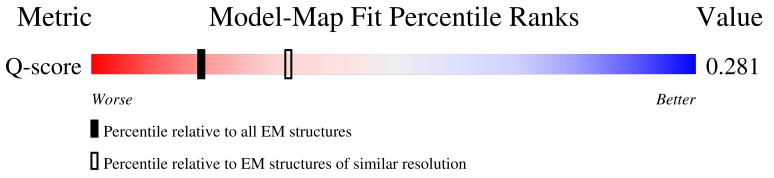
1 Overall quality at a glance

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

The reported resolution of this entry is 4.30 Å.

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





Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	210492	15764	-
Ramachandran outliers	207382	16835	-
Sidechain outliers	206894	16415	-
RNA backbone	6643	2191	-
Q-score	-	25397	4585 (3.80 - 4.80)

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	A	1522	25% 54% 18%
2	B	256	18% 51% 33% 7% 9%
3	C	239	54% 26% 5% 14%

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Mol	Chain	Length	Quality of chain
4	D	209	44% 43% 11%
5	E	162	46% 33% 12% 7%
6	F	101	55% 41%
7	G	156	76% 21%
8	H	138	57% 34% 9%
9	I	128	62% 34%
10	J	105	10% 51% 33% 9% 7%
11	K	129	53% 33% 6% 8%
12	L	132	58% 23% 13% 6%
13	M	126	5% 63% 30% 7%
14	N	61	52% 39% 5%
15	O	89	47% 45% 7%
16	P	88	52% 40% 6%
17	Q	105	65% 26% 6%
18	R	88	6% 36% 40% 7% 17%
19	S	93	10% 52% 33% 14%
20	T	106	54% 33% 6% 7%
21	V	27	74% 15% 11%
22	W	72	49% 65% 28%
23	X	171	23% 67% 29%
24	Y	45	16% 22% 58%

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
26	ZN	D	300	-	-	X	-

2 Entry composition

There are 26 unique types of molecules in this entry. The entry contains 54110 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 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	1514	32525	14481	6019	10514	1511	0	0

- Molecule 2 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	234	1900	1213	341	341	5	0	0

- Molecule 3 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	206	1612	1016	314	281	1	0	0

- Molecule 4 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	208	1703	1066	339	291	7	0	0

- Molecule 5 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	150	1146	724	217	201	4	0	0

- Molecule 6 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	101	843	531	155	154	3	0	0

- Molecule 7 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	155	Total	C	N	O	S	0	0
			1257	781	252	218	6		

- Molecule 8 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	138	Total	C	N	O	S	0	0
			1116	705	215	193	3		

- Molecule 9 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	I	127	Total	C	N	O	0	0
			1010	639	197	174		

- Molecule 10 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	98	Total	C	N	O	S	0	0
			792	498	156	137	1		

- Molecule 11 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	119	Total	C	N	O	S	0	0
			885	549	168	165	3		

- Molecule 12 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	124	Total	C	N	O	S	0	0
			970	611	195	163	1		

- Molecule 13 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	117	Total	C	N	O	S	0	0
			933	577	192	162	2		

- Molecule 14 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	60	Total	C	N	O	S	0	0
			492	312	104	72	4		

- Molecule 15 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	88	Total	C	N	O	S	0	0
			734	459	147	126	2		

- Molecule 16 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	P	83	Total	C	N	O	S	0	0
			700	443	139	117	1		

- Molecule 17 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	99	Total	C	N	O	S	0	0
			823	528	151	142	2		

- Molecule 18 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	R	73	Total	C	N	O	0	0
			598	381	118	99		

- Molecule 19 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	S	80	Total	C	N	O	S	0	0
			647	414	119	112	2		

- Molecule 20 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	99	Total	C	N	O	S	0	0
			763	470	162	129	2		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
21	V	24	Total 208	C 128	N 50	O 30	0	0

- Molecule 22 is a protein called Translation initiation factor IF-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	W	71	Total 570	C 362	N 103	O 103	S 2	0	0

- Molecule 23 is a protein called Translation initiation factor IF-3.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	168	Total 1356	C 853	N 249	O 245	S 9	0	0

- Molecule 24 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	Y	19	Total 417	C 186	N 84	O 128	P 19	0	0

- Molecule 25 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
25	A	107	Total 107	Mg 107	0
25	W	1	Total 1	Mg 1	0

- Molecule 26 is ZINC ION (CCD ID: ZN) (formula: Zn).

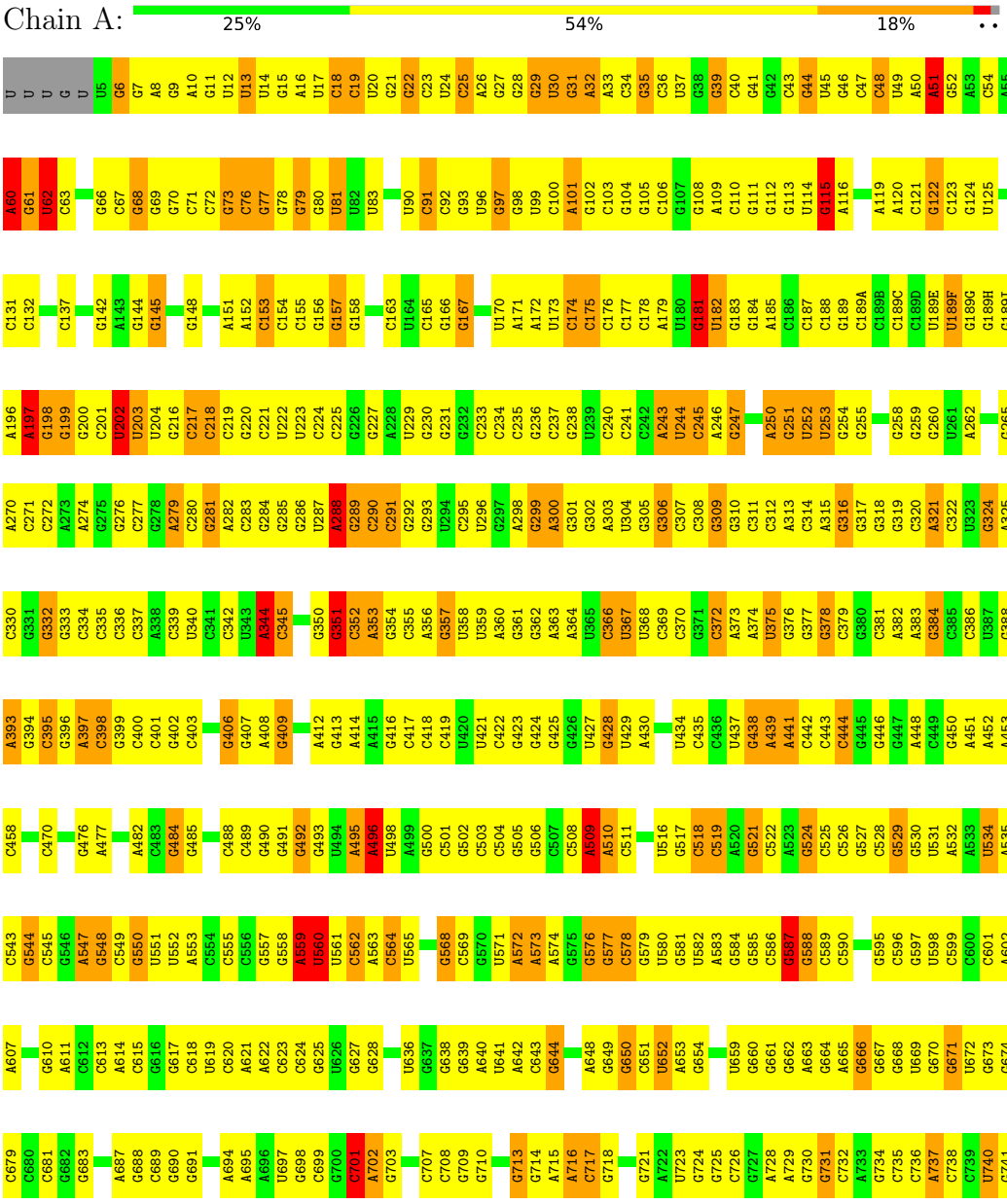
Mol	Chain	Residues	Atoms		AltConf
26	D	1	Total 1	Zn 1	0
26	N	1	Total 1	Zn 1	0

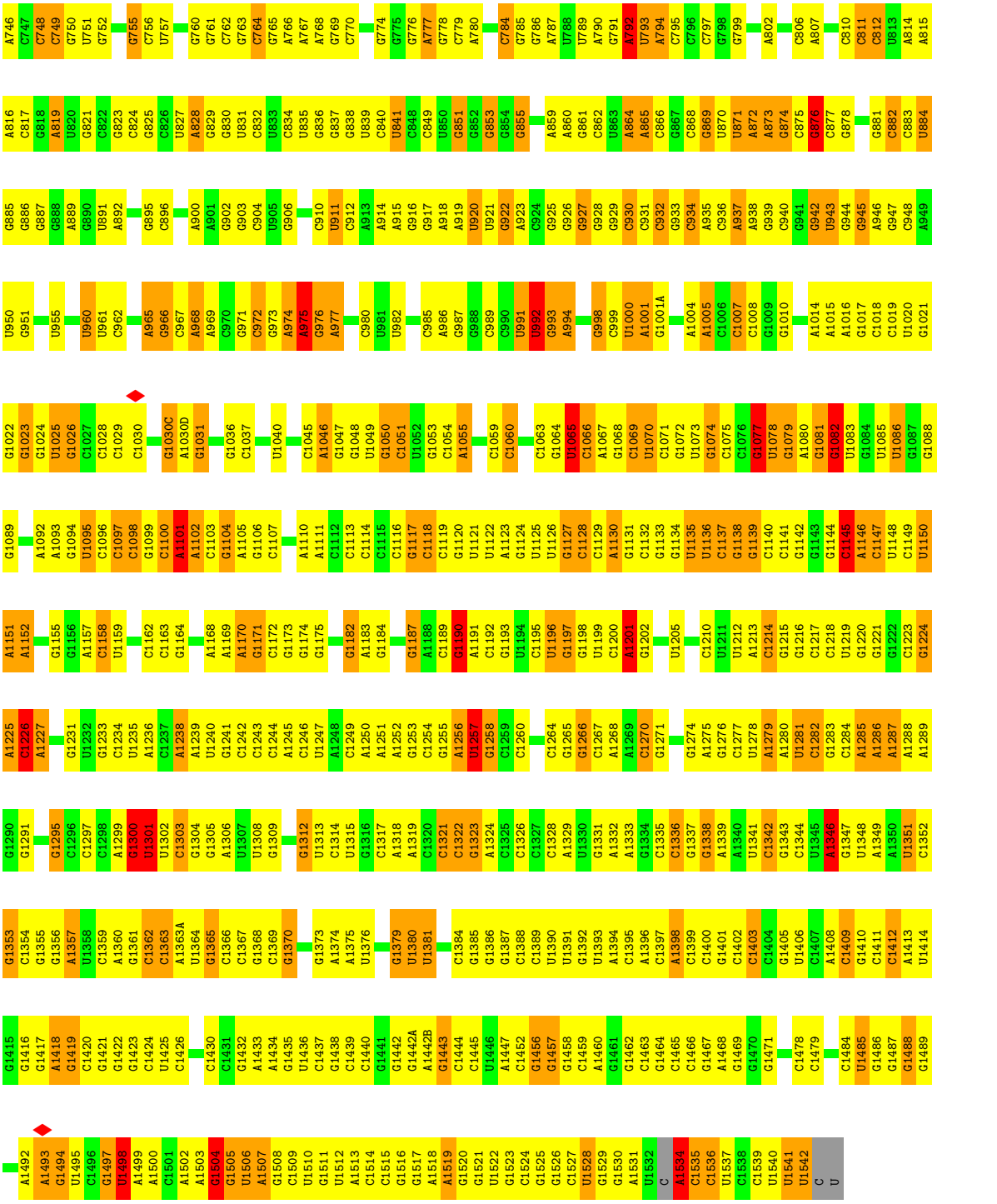
3 Residue-property plots (i)

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: 16S rRNA

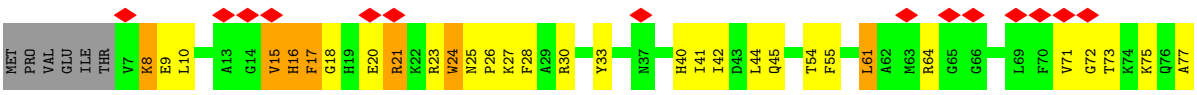
Chain A:

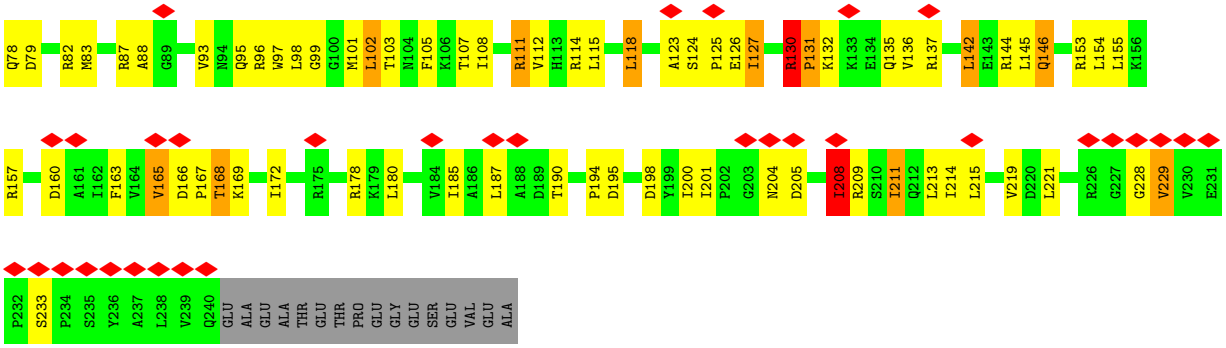




• Molecule 2: 30S ribosomal protein S2

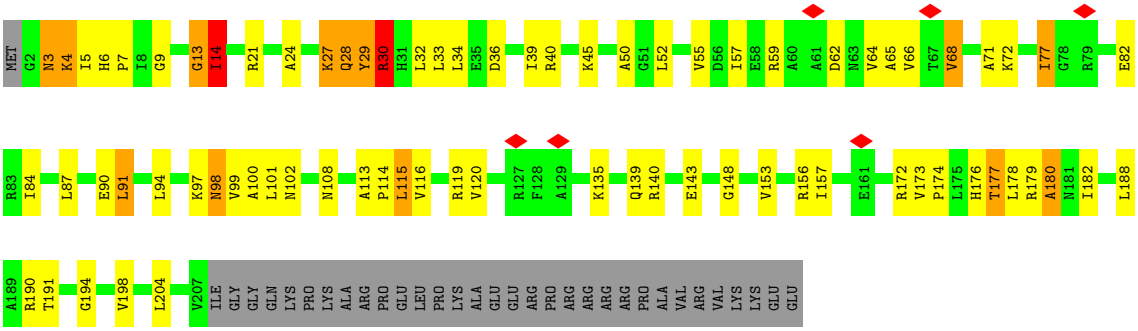
Chain B:





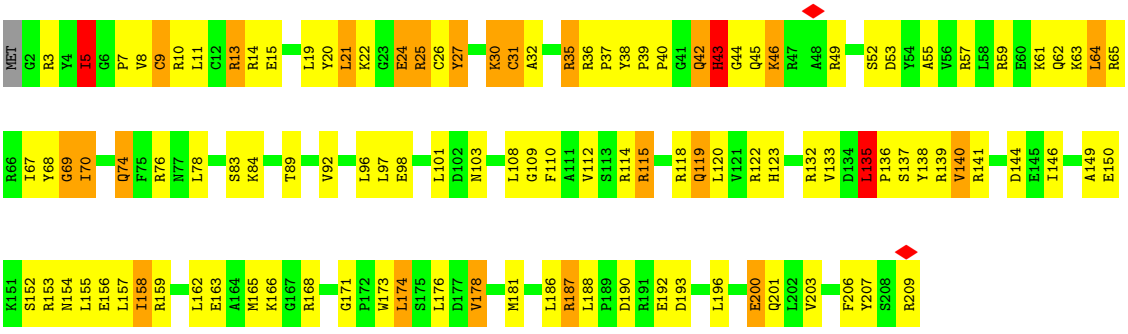
• Molecule 3: 30S ribosomal protein S3

Chain C:



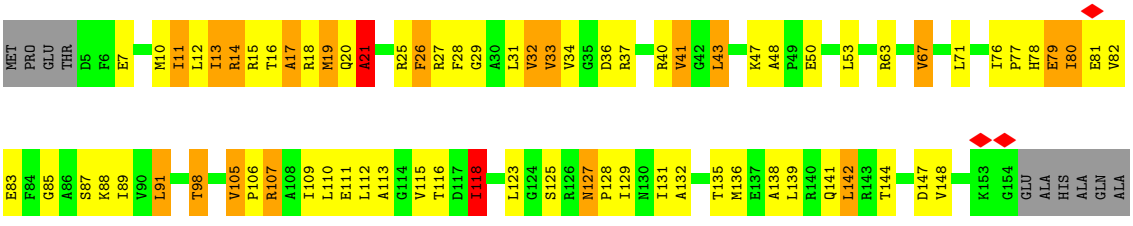
• Molecule 4: 30S ribosomal protein S4

Chain D:



• Molecule 5: 30S ribosomal protein S5

Chain E:

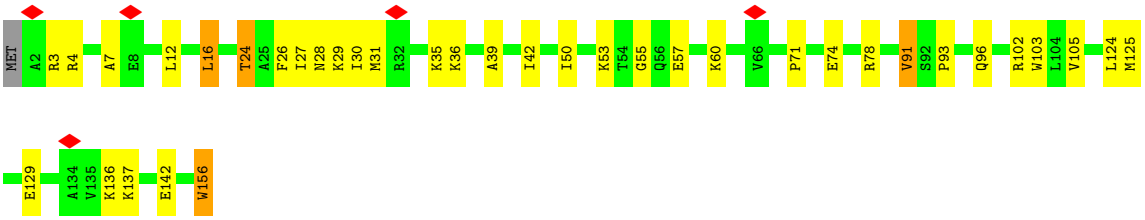


• Molecule 6: 30S ribosomal protein S6

Chain F:

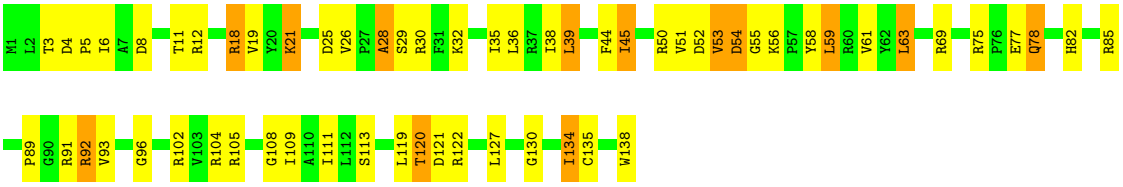
• Molecule 7: 30S ribosomal protein S7

Chain G:



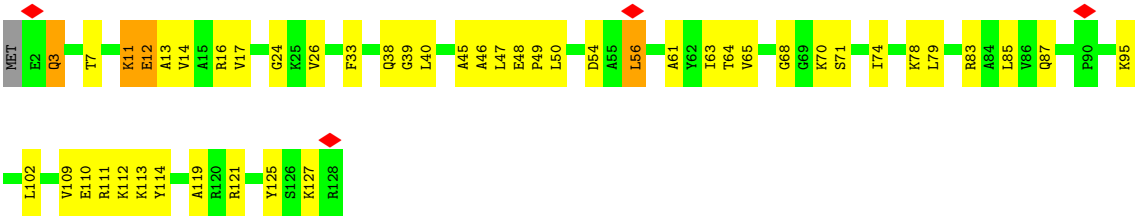
• Molecule 8: 30S ribosomal protein S8

Chain H:



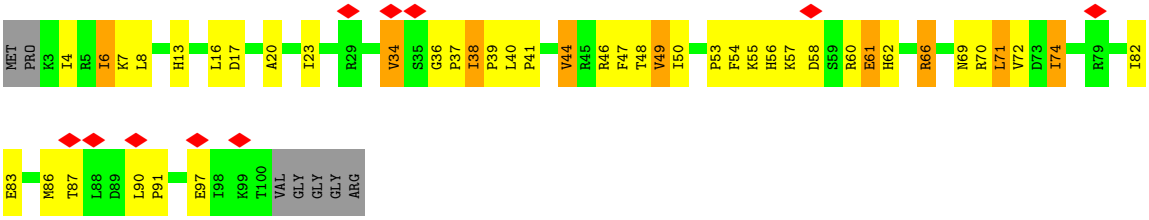
• Molecule 9: 30S ribosomal protein S9

Chain I:



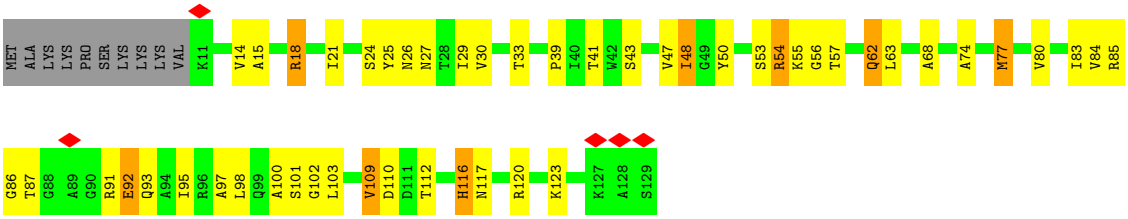
• Molecule 10: 30S ribosomal protein S10

Chain J:



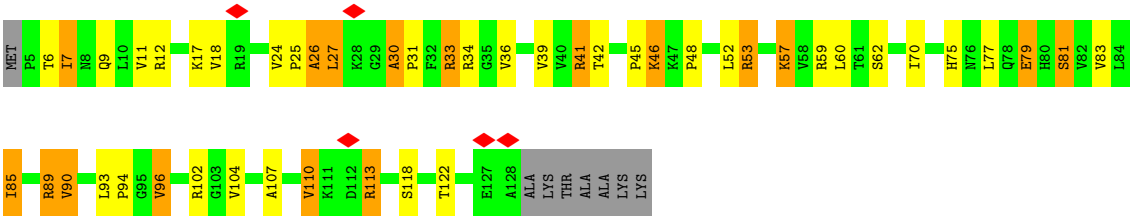
• Molecule 11: 30S ribosomal protein S11

Chain K:



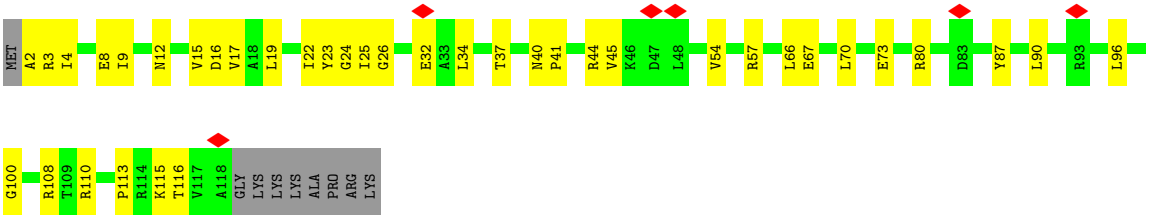
• Molecule 12: 30S ribosomal protein S12

Chain L:



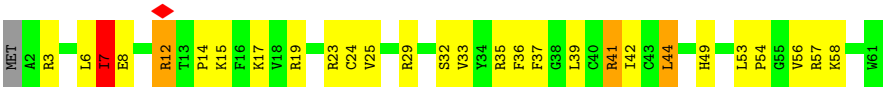
• Molecule 13: 30S ribosomal protein S13

Chain M:



• Molecule 14: 30S ribosomal protein S14 type Z

Chain N:

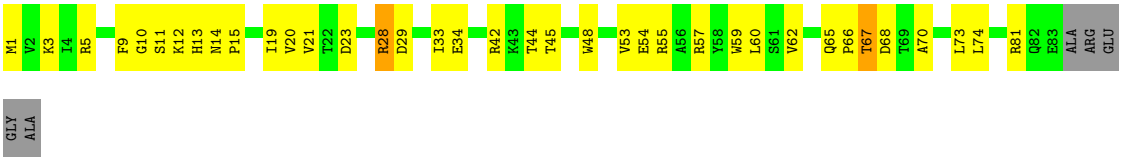


• Molecule 15: 30S ribosomal protein S15

Chain O:

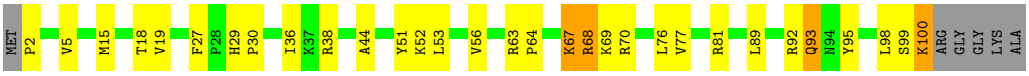
• Molecule 16: 30S ribosomal protein S16

Chain P:



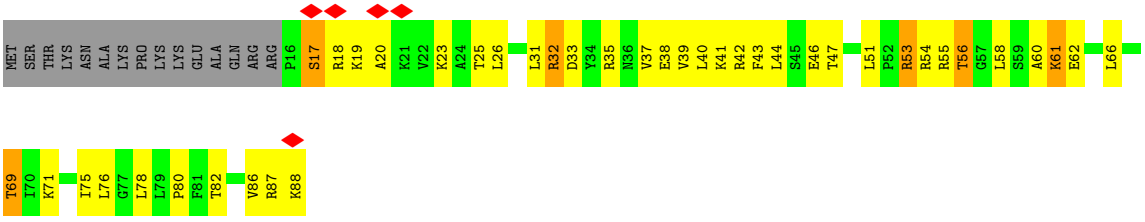
• Molecule 17: 30S ribosomal protein S17

Chain Q:



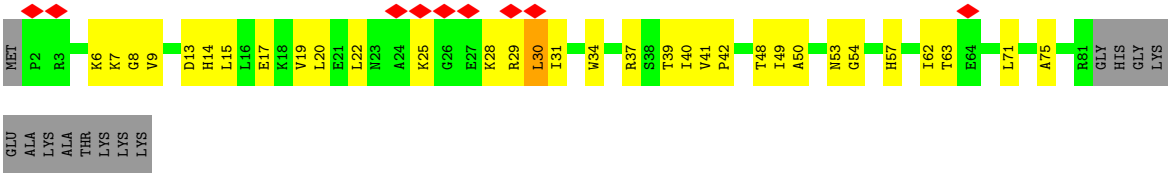
• Molecule 18: 30S ribosomal protein S18

Chain R:



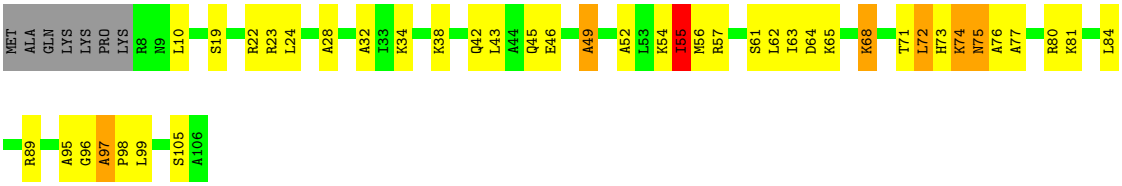
• Molecule 19: 30S ribosomal protein S19

Chain S:

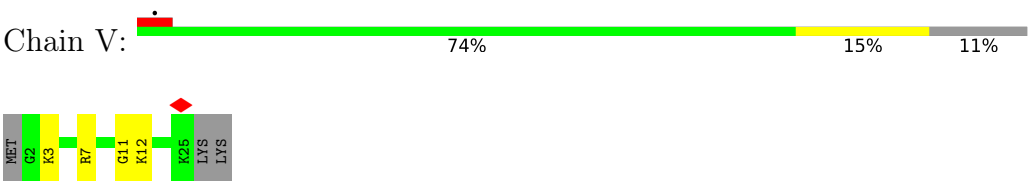


• Molecule 20: 30S ribosomal protein S20

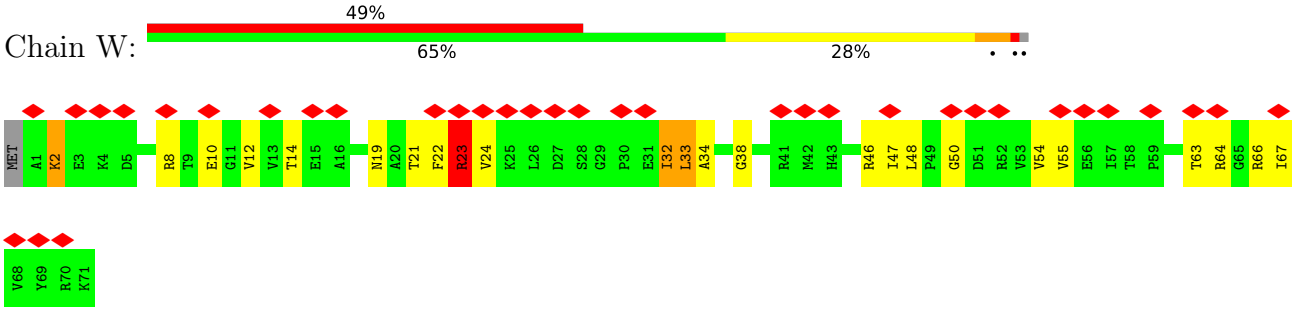
Chain T:



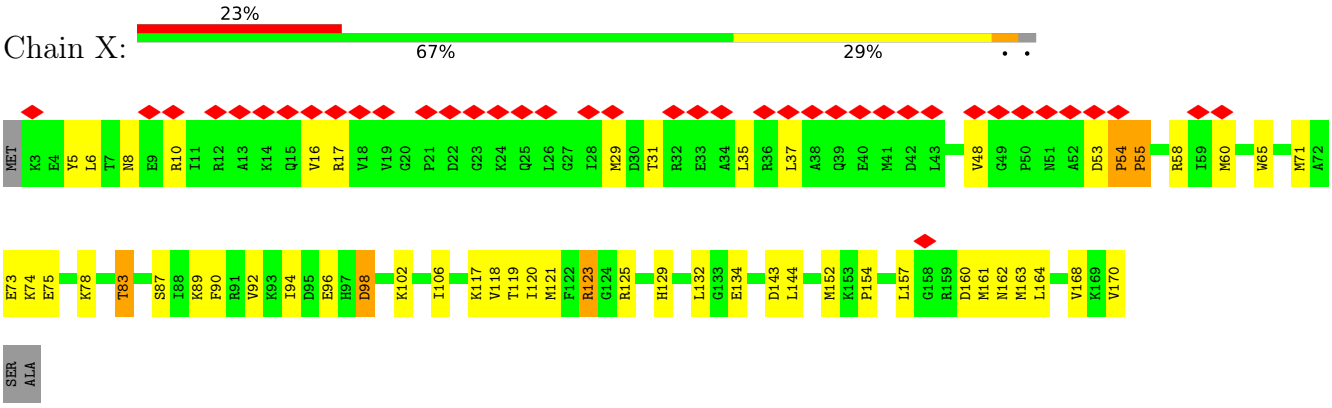
• Molecule 21: 30S ribosomal protein Thx



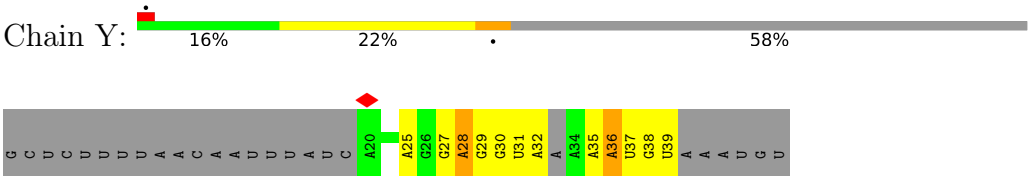
• Molecule 22: Translation initiation factor IF-1



• Molecule 23: Translation initiation factor IF-3



• Molecule 24: mRNA



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	57382	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI POLARA 300	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	30	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	104478	Depositor
Image detector	OTHER	Depositor
Maximum map value	0.377	Depositor
Minimum map value	-0.084	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.017	Depositor
Recommended contour level	0.05	Depositor
Map size (Å)	348.4, 348.4, 348.4	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.34, 1.34, 1.34	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MG

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.46	0/36397	0.86	78/56783 (0.1%)
2	B	0.78	0/1935	1.21	6/2609 (0.2%)
3	C	0.75	0/1636	1.26	6/2205 (0.3%)
4	D	0.62	0/1733	1.20	7/2318 (0.3%)
5	E	0.63	0/1162	1.21	4/1564 (0.3%)
6	F	0.55	0/856	1.18	3/1154 (0.3%)
7	G	0.80	0/1276	1.19	1/1709 (0.1%)
8	H	0.56	0/1136	1.13	3/1527 (0.2%)
9	I	0.70	0/1029	1.26	4/1379 (0.3%)
10	J	0.85	0/805	1.12	1/1082 (0.1%)
11	K	0.74	0/900	1.15	1/1213 (0.1%)
12	L	0.52	0/986	1.09	3/1320 (0.2%)
13	M	0.85	0/943	1.23	4/1265 (0.3%)
14	N	0.66	0/501	1.06	0/664
15	O	0.65	0/745	1.29	1/992 (0.1%)
16	P	0.52	0/716	1.05	0/963
17	Q	0.53	0/836	1.08	0/1117
18	R	0.69	0/604	1.21	1/801 (0.1%)
19	S	0.94	0/661	1.12	2/890 (0.2%)
20	T	0.65	0/765	1.39	6/1007 (0.6%)
21	V	0.61	0/212	0.96	0/277
22	W	0.83	0/580	1.25	2/782 (0.3%)
23	X	0.78	0/1373	1.18	2/1838 (0.1%)
24	Y	0.61	0/468	0.84	0/727
All	All	0.57	0/58255	0.98	135/86186 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
5	E	1	0
12	L	0	1
16	P	0	1
23	X	0	1
All	All	1	3

There are no bond length outliers.

All (135) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	I	11	LYS	CB-CA-C	21.29	152.79	110.42
22	W	23	ARG	N-CA-C	-19.22	79.83	110.20
3	C	14	ILE	N-CA-C	15.16	124.78	110.53
1	A	266	G	C2'-C3'-O3'	14.17	130.75	109.50
3	C	28	GLN	N-CA-C	12.93	125.46	111.36
5	E	21	ALA	CB-CA-C	12.73	135.76	110.42
3	C	29	TYR	N-CA-C	12.29	124.67	111.28
1	A	792	A	C2'-C3'-O3'	12.20	127.80	109.50
9	I	12	GLU	N-CA-C	-12.13	95.46	111.71
1	A	1346	A	C2'-C3'-O3'	10.46	125.19	109.50
1	A	1498	U	C2'-C3'-O3'	10.13	124.69	109.50
1	A	1301	U	C2'-C3'-O3'	9.95	124.43	109.50
12	L	30	ALA	CA-C-N	9.80	129.56	119.56
12	L	30	ALA	C-N-CA	9.80	129.56	119.56
1	A	1145	C	C2'-C3'-O3'	9.67	124.01	109.50
1	A	197	A	C2'-C3'-O3'	9.56	123.84	109.50
1	A	115	G	C4'-C3'-O3'	9.44	123.56	109.40
1	A	181	G	C2'-C3'-O3'	9.36	123.54	109.50
1	A	1182	G	C2'-C3'-O3'	9.28	123.42	109.50
1	A	51	A	C4'-C3'-O3'	9.04	122.96	109.40
9	I	11	LYS	N-CA-C	-8.87	91.91	110.80
1	A	328	C	C2'-C3'-O3'	8.87	122.80	109.50
6	F	95	GLU	CA-C-N	8.83	130.88	119.84
6	F	95	GLU	C-N-CA	8.83	130.88	119.84
1	A	1534	A	C2'-C3'-O3'	8.60	126.60	113.70
1	A	960	U	C2'-C3'-O3'	8.38	122.06	109.50
1	A	1190	G	C2'-C3'-O3'	8.35	126.22	113.70
1	A	748	C	C2'-C3'-O3'	8.33	122.00	109.50
1	A	965	A	C2'-C3'-O3'	8.17	121.76	109.50
1	A	1285	A	C4'-C3'-O3'	7.96	121.34	109.40
20	T	97	ALA	CA-C-N	7.88	129.69	119.84
20	T	97	ALA	C-N-CA	7.88	129.69	119.84
1	A	1257	U	C2'-C3'-O3'	7.74	121.11	109.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	181	G	C4'-C3'-O3'	7.70	120.95	109.40
1	A	496	A	C4'-C3'-O3'	7.60	120.80	109.40
1	A	1380	U	C2'-C3'-O3'	7.52	120.78	109.50
1	A	1101	A	C4'-C3'-O3'	7.49	120.63	109.40
1	A	281	G	C2'-C3'-O3'	7.44	124.86	113.70
1	A	509	A	C4'-C3'-O3'	7.42	124.12	113.00
1	A	1201	A	C4'-C3'-O3'	7.33	120.39	109.40
20	T	71	THR	N-CA-C	7.33	119.27	111.28
11	K	80	VAL	N-CA-C	7.25	118.25	108.11
1	A	372	C	C2'-C3'-O3'	7.14	120.21	109.50
1	A	484	G	C2'-C3'-O3'	7.03	120.05	109.50
1	A	428	G	C2'-C3'-O3'	6.96	119.94	109.50
1	A	202	U	C4'-C3'-O3'	6.93	119.80	109.40
1	A	776	G	C4'-C3'-O3'	-6.92	102.62	113.00
4	D	135	LEU	CA-C-N	6.88	127.45	119.47
4	D	135	LEU	C-N-CA	6.88	127.45	119.47
2	B	24	TRP	N-CA-C	6.78	125.23	110.80
1	A	1214	C	C4'-C3'-O3'	6.74	119.50	109.40
20	T	74	LYS	N-CA-C	6.71	118.25	111.07
3	C	98	ASN	N-CA-C	-6.62	99.62	109.15
6	F	50	TYR	N-CA-C	-6.62	102.17	108.13
1	A	876	G	C4'-C3'-O3'	-6.56	103.16	113.00
1	A	115	G	C2'-C3'-O3'	6.53	119.30	109.50
1	A	560	U	C2'-C3'-O3'	6.53	119.30	109.50
1	A	1300	G	C2'-C3'-O3'	6.45	119.18	109.50
1	A	1403	C	C4'-C3'-O3'	-6.40	103.40	113.00
1	A	587	G	C4'-C3'-O3'	-6.35	103.47	113.00
1	A	1201	A	C2'-C3'-O3'	6.35	119.03	109.50
1	A	243	A	C2'-C3'-O3'	6.32	118.98	109.50
1	A	1065	U	C2'-C3'-O3'	6.28	118.92	109.50
22	W	24	VAL	N-CA-CB	-6.27	104.19	112.34
8	H	54	ASP	N-CA-C	6.24	120.00	111.39
1	A	559	A	C2'-C3'-O3'	6.24	123.06	113.70
1	A	218	C	C4'-C3'-O3'	-6.22	103.67	113.00
1	A	1504	G	C2'-C3'-O3'	6.22	118.83	109.50
1	A	60	A	C2'-C3'-O3'	6.21	118.82	109.50
1	A	484	G	C4'-C3'-O3'	6.19	118.69	109.40
1	A	1147	C	C3'-C2'-O2'	6.18	119.96	110.70
1	A	129(A)	G	C2'-C3'-O3'	6.17	118.75	109.50
1	A	344	A	C2'-C3'-O3'	6.13	118.70	109.50
8	H	119	LEU	N-CA-C	6.13	118.10	108.96
1	A	1380	U	C4'-C3'-O3'	6.12	118.58	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1196	U	C4'-C3'-O3'	6.12	118.57	109.40
1	A	48	C	C4'-C3'-O3'	6.11	118.57	109.40
5	E	118	ILE	N-CA-C	6.06	115.81	108.06
1	A	992	U	C2'-C3'-O3'	6.02	118.53	109.50
1	A	1000	U	C2'-C3'-O3'	6.00	122.70	113.70
10	J	6	ILE	N-CA-C	5.97	116.21	106.72
1	A	1069	C	C2'-C3'-O3'	-5.92	104.81	113.70
15	O	85	LEU	N-CA-C	5.89	120.60	113.41
12	L	26	ALA	N-CA-C	-5.89	106.44	113.21
1	A	62	U	C4'-C3'-O3'	-5.89	104.17	113.00
1	A	960	U	C4'-C3'-O3'	5.85	118.17	109.40
4	D	171	GLY	CA-C-N	5.81	127.10	119.84
4	D	171	GLY	C-N-CA	5.81	127.10	119.84
13	M	66	LEU	N-CA-C	5.80	118.56	108.76
2	B	208	ILE	N-CA-C	5.77	121.35	109.34
1	A	701	C	C2'-C3'-O3'	5.77	118.16	109.50
9	I	70	LYS	N-CA-C	5.76	118.05	111.02
1	A	812	C	C4'-C3'-O3'	-5.71	104.43	113.00
4	D	188	LEU	CA-C-N	5.71	125.72	119.89
4	D	188	LEU	C-N-CA	5.71	125.72	119.89
1	A	428	G	C4'-C3'-O3'	5.70	117.95	109.40
7	G	91	VAL	N-CA-C	5.70	116.09	108.11
1	A	1226	C	C4'-C3'-O3'	5.68	117.92	109.40
3	C	180	ALA	N-CA-C	5.64	117.12	110.97
1	A	25	C	C4'-C3'-O3'	-5.63	104.56	113.00
5	E	142	LEU	N-CA-C	5.52	118.08	110.35
20	T	75	ASN	N-CA-C	5.49	117.07	111.14
1	A	1197	G	C4'-C3'-O3'	-5.47	104.79	113.00
19	S	54	GLY	N-CA-C	-5.46	107.82	114.92
13	M	4	ILE	N-CA-C	5.44	117.85	111.05
1	A	351	G	C2'-C3'-O3'	5.39	117.59	109.50
2	B	130	ARG	CA-C-N	5.38	126.57	119.84
2	B	130	ARG	C-N-CA	5.38	126.57	119.84
1	A	448	A	C4'-C3'-O3'	-5.35	104.98	113.00
2	B	27	LYS	N-CA-C	-5.30	106.66	113.23
1	A	1082	G	C4'-C3'-O3'	-5.29	105.06	113.00
1	A	288	A	C2'-C3'-O3'	5.27	121.61	113.70
1	A	991	U	C4'-C3'-O3'	-5.27	105.10	113.00
4	D	24	GLU	N-CA-C	-5.25	103.59	110.53
1	A	975	A	C2'-C3'-O3'	5.24	117.35	109.50
1	A	6	G	C4'-C3'-O3'	-5.23	105.15	113.00
1	A	1196	U	C2'-C3'-O3'	5.23	117.34	109.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	544	G	C2'-C3'-O3'	-5.21	105.88	113.70
13	M	40	ASN	CA-C-N	5.21	125.28	119.87
13	M	40	ASN	C-N-CA	5.21	125.28	119.87
8	H	28	ALA	N-CA-C	5.20	116.99	108.52
1	A	811	C	C2'-C3'-O3'	-5.19	105.92	113.70
23	X	129	HIS	O-C-N	5.17	125.46	120.55
1	A	1077	G	C3'-C2'-O2'	5.17	118.45	110.70
5	E	26	PHE	N-CA-C	5.16	117.37	110.35
1	A	60	A	C4'-C3'-O3'	5.15	117.12	109.40
1	A	145	G	C4'-C3'-O3'	5.15	120.72	113.00
3	C	30	ARG	N-CA-C	5.15	116.89	111.28
1	A	553	A	C4'-C3'-O3'	-5.14	105.30	113.00
19	S	34	TRP	N-CA-C	-5.13	107.40	113.97
23	X	168	VAL	N-CA-C	5.13	115.27	110.30
2	B	118	LEU	N-CA-C	5.11	117.75	111.82
1	A	508	C	C2'-C3'-O3'	-5.11	101.84	109.50
20	T	55	ILE	CB-CA-C	5.06	118.98	112.14
18	R	17	SER	N-CA-C	5.00	121.45	110.80

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	E	21	ALA	CA

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
12	L	89	ARG	Peptide
16	P	67	THR	Peptide
23	X	53	ASP	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	32525	0	16435	1141	0
2	B	1900	0	1951	39	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	C	1612	0	1677	95	0
4	D	1703	0	1764	83	0
5	E	1146	0	1207	63	0
6	F	843	0	857	20	0
7	G	1257	0	1296	24	0
8	H	1116	0	1177	38	0
9	I	1010	0	1035	25	0
10	J	792	0	832	73	0
11	K	885	0	903	40	0
12	L	970	0	1057	24	0
13	M	933	0	992	15	0
14	N	492	0	533	35	0
15	O	734	0	771	15	0
16	P	700	0	720	22	0
17	Q	823	0	891	32	0
18	R	598	0	670	24	0
19	S	647	0	673	12	0
20	T	763	0	861	35	0
21	V	208	0	221	1	0
22	W	570	0	599	33	0
23	X	1356	0	1399	22	0
24	Y	417	0	208	11	0
25	A	107	0	0	1	0
25	W	1	0	0	0	0
26	D	1	0	0	3	0
26	N	1	0	0	1	0
All	All	54110	0	38729	1712	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 19.

All (1712) 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)
20:T:72:LEU:CD2	20:T:77:ALA:HB2	1.20	1.68
1:A:1080:A:C5'	5:E:16:THR:HG21	1.11	1.57
20:T:72:LEU:HD21	20:T:77:ALA:CA	1.35	1.54
20:T:72:LEU:HD21	20:T:77:ALA:CB	1.33	1.53
1:A:1080:A:C5'	5:E:16:THR:CG2	1.84	1.53
1:A:1080:A:H5"	5:E:16:THR:CG2	1.45	1.44
20:T:72:LEU:CD2	20:T:77:ALA:CB	1.91	1.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:38:ILE:CG2	10:J:71:LEU:O	1.71	1.38
1:A:279:A:C4	17:Q:98:LEU:HD23	1.59	1.35
1:A:279:A:C4	17:Q:98:LEU:CD2	2.12	1.30
3:C:59:ARG:CG	3:C:64:VAL:CG2	2.11	1.29
3:C:57:ILE:CG1	3:C:66:VAL:HG22	1.60	1.28
1:A:247:G:OP2	17:Q:100:LYS:CE	1.85	1.23
10:J:17:ASP:OD1	10:J:70:ARG:NH2	1.68	1.23
3:C:57:ILE:HG12	3:C:66:VAL:CG2	1.69	1.22
1:A:1113:C:H4'	3:C:14:ILE:CD1	1.67	1.22
4:D:36:ARG:HD2	4:D:38:TYR:CZ	1.73	1.21
10:J:38:ILE:HG23	10:J:71:LEU:O	1.05	1.20
1:A:262:A:C5'	20:T:73:HIS:HE1	1.54	1.20
3:C:59:ARG:HG3	3:C:64:VAL:CG2	1.68	1.18
1:A:1080:A:H5'	5:E:16:THR:CG2	1.58	1.18
1:A:262:A:C5'	20:T:73:HIS:CE1	2.27	1.17
1:A:1398:A:N6	5:E:21:ALA:O	1.75	1.17
3:C:59:ARG:CG	3:C:64:VAL:HG23	1.72	1.15
22:W:21:THR:HG21	22:W:33:LEU:CD1	1.76	1.14
1:A:827:U:N3	1:A:872:A:N6	1.96	1.13
1:A:1081:G:H2'	1:A:1082:G:H8	1.08	1.12
14:N:24:CYS:SG	26:N:101:ZN:ZN	1.40	1.10
3:C:59:ARG:HG3	3:C:64:VAL:HG22	1.32	1.10
10:J:20:ALA:HB2	10:J:70:ARG:CD	1.81	1.10
1:A:1079:G:H5'	5:E:14:ARG:HH22	0.97	1.09
1:A:1113:C:C4'	3:C:14:ILE:HD12	1.82	1.09
4:D:36:ARG:CD	4:D:38:TYR:CZ	2.36	1.09
1:A:262:A:H5'	20:T:73:HIS:CE1	1.84	1.08
1:A:1113:C:H4'	3:C:14:ILE:HD12	1.09	1.08
3:C:59:ARG:NE	3:C:64:VAL:CG2	2.15	1.08
3:C:59:ARG:CG	3:C:64:VAL:HG22	1.79	1.08
1:A:1081:G:H2'	1:A:1082:G:C8	1.89	1.08
3:C:59:ARG:HG2	3:C:64:VAL:HG23	1.36	1.08
20:T:72:LEU:HD21	20:T:77:ALA:HA	1.35	1.07
8:H:54:ASP:O	8:H:56:LYS:HE3	1.51	1.07
3:C:59:ARG:CZ	3:C:64:VAL:HG21	1.84	1.07
10:J:20:ALA:CB	10:J:70:ARG:CD	2.32	1.07
10:J:20:ALA:HB2	10:J:70:ARG:HD2	1.31	1.07
1:A:1077:G:N2	1:A:1079:G:H3'	1.69	1.06
1:A:1079:G:C5'	5:E:14:ARG:HH22	1.68	1.06
1:A:279:A:C5	17:Q:98:LEU:HD23	1.90	1.05
1:A:864:A:H2'	1:A:865:A:C8	1.92	1.05

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:W:21:THR:HG21	22:W:33:LEU:HD11	1.38	1.03
10:J:50:ILE:HG12	10:J:60:ARG:HH21	1.24	1.03
1:A:1219:U:H2'	1:A:1220:G:H8	1.24	1.02
1:A:827:U:H3	1:A:872:A:N6	1.52	1.02
3:C:24:ALA:HB1	3:C:28:GLN:HG2	1.38	1.02
1:A:664:G:H22	1:A:741:G:H1	1.05	1.01
10:J:48:THR:HG22	10:J:60:ARG:HG2	1.42	1.01
1:A:920:U:H2'	1:A:921:U:C6	1.95	1.01
20:T:72:LEU:CD2	20:T:77:ALA:CA	2.31	1.01
1:A:279:A:N3	17:Q:98:LEU:CD2	2.24	1.01
3:C:59:ARG:CD	3:C:64:VAL:HG22	1.91	1.00
10:J:50:ILE:HG13	10:J:60:ARG:NE	1.77	1.00
10:J:37:PRO:HA	10:J:72:VAL:HG22	1.42	1.00
1:A:920:U:H2'	1:A:921:U:H6	1.21	1.00
1:A:247:G:OP2	17:Q:100:LYS:HE3	1.58	0.99
1:A:80:G:H3'	1:A:81:U:H5"	1.44	0.99
1:A:1080:A:C5'	5:E:16:THR:HG23	1.91	0.98
1:A:17:U:H2'	1:A:18:C:C6	1.98	0.98
3:C:59:ARG:NE	3:C:64:VAL:HG22	1.78	0.98
10:J:50:ILE:HG13	10:J:60:ARG:HE	1.26	0.98
1:A:1256:A:H3'	3:C:27:LYS:NZ	1.79	0.97
1:A:279:A:N3	17:Q:98:LEU:HD23	1.79	0.97
1:A:1070:U:H2'	1:A:1071:C:C6	1.98	0.97
1:A:1103:C:H2'	1:A:1104:G:O4'	1.64	0.97
1:A:1113:C:C4'	3:C:14:ILE:CD1	2.41	0.97
4:D:9:CYS:SG	26:D:300:ZN:ZN	1.53	0.97
1:A:1322:C:H5"	13:M:100:GLY:HA2	1.45	0.96
1:A:45:U:H2'	1:A:46:G:C8	1.99	0.96
1:A:45:U:H2'	1:A:46:G:H8	1.29	0.96
1:A:745:C:H2'	1:A:746:A:C8	2.01	0.96
5:E:107:ARG:HH11	5:E:107:ARG:HB2	1.28	0.96
16:P:59:TRP:O	16:P:62:VAL:HG22	1.65	0.95
1:A:1219:U:H2'	1:A:1220:G:C8	2.01	0.95
3:C:59:ARG:NE	3:C:64:VAL:HG21	1.81	0.94
1:A:266:G:H3'	17:Q:67:LYS:HB2	1.48	0.94
3:C:64:VAL:O	3:C:99:VAL:HG23	1.67	0.94
1:A:1077:G:H22	1:A:1079:G:H3'	1.26	0.94
1:A:279:A:C2	17:Q:98:LEU:HD23	2.02	0.94
1:A:1080:A:H5'	5:E:16:THR:HG21	1.13	0.93
10:J:20:ALA:CB	10:J:70:ARG:HD3	1.95	0.93
20:T:72:LEU:HD23	20:T:77:ALA:HB2	0.94	0.93

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1079:G:H5'	5:E:14:ARG:NH2	1.82	0.93
3:C:28:GLN:HE21	3:C:32:LEU:HD11	1.29	0.93
1:A:247:G:OP2	17:Q:100:LYS:CD	2.16	0.93
1:A:262:A:H5"	20:T:73:HIS:HE1	1.35	0.92
11:K:91:ARG:NH2	11:K:110:ASP:OD2	2.03	0.92
1:A:1158:C:H4'	2:B:132:LYS:HB2	1.54	0.90
1:A:1356:G:H2'	1:A:1357:A:C8	2.07	0.90
1:A:827:U:O4	1:A:872:A:N1	2.05	0.90
1:A:1101:A:H5"	2:B:99:GLY:HA3	1.54	0.89
10:J:50:ILE:CG1	10:J:60:ARG:HH21	1.85	0.89
10:J:36:GLY:O	10:J:72:VAL:HG13	1.73	0.89
1:A:729:A:H2'	1:A:730:G:H8	1.37	0.89
1:A:1070:U:H2'	1:A:1071:C:H6	1.35	0.88
11:K:91:ARG:HH21	18:R:88:LYS:HZ2	1.16	0.88
1:A:1022:G:H2'	1:A:1023:G:H8	1.38	0.88
22:W:33:LEU:HD21	22:W:64:ARG:NH1	1.89	0.88
1:A:662:G:H2'	1:A:663:A:C8	2.09	0.88
1:A:917:G:H2'	1:A:918:A:C8	2.09	0.87
4:D:35:ARG:HB3	4:D:35:ARG:HH21	1.37	0.87
3:C:30:ARG:NH1	3:C:30:ARG:HB2	1.89	0.87
10:J:50:ILE:CG1	10:J:60:ARG:HE	1.87	0.87
14:N:24:CYS:HB3	14:N:29:ARG:H	1.40	0.86
3:C:30:ARG:HG2	14:N:37:PHE:C	2.00	0.86
10:J:38:ILE:HG22	10:J:71:LEU:O	1.76	0.86
1:A:247:G:OP2	17:Q:100:LYS:NZ	2.08	0.86
1:A:868:C:H2'	1:A:869:G:O4'	1.75	0.86
1:A:1106:G:H5"	3:C:172:ARG:HG3	1.58	0.86
8:H:45:ILE:HG22	8:H:63:LEU:HA	1.57	0.86
4:D:26:CYS:SG	26:D:300:ZN:ZN	1.64	0.85
22:W:21:THR:CG2	22:W:33:LEU:CD1	2.54	0.85
1:A:247:G:OP2	17:Q:100:LYS:HD2	1.74	0.85
3:C:59:ARG:CD	3:C:64:VAL:CG2	2.53	0.85
1:A:1190:G:H5'	3:C:176:HIS:HE1	1.41	0.85
1:A:17:U:O2'	1:A:1079:G:H1'	1.77	0.85
10:J:20:ALA:HB1	10:J:70:ARG:HD3	1.55	0.85
1:A:15:G:H2'	1:A:16:A:H8	1.41	0.84
1:A:745:C:H2'	1:A:746:A:H8	1.40	0.84
1:A:662:G:H2'	1:A:663:A:H8	1.42	0.83
11:K:91:ARG:HH21	18:R:88:LYS:NZ	1.76	0.83
1:A:1099:G:C6	1:A:1100:C:N3	2.47	0.83
22:W:32:ILE:O	22:W:32:ILE:HD13	1.78	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:30:ARG:CD	14:N:35:ARG:O	2.28	0.82
1:A:170:U:H2'	1:A:171:A:H8	1.44	0.82
10:J:38:ILE:HG23	10:J:71:LEU:C	2.05	0.82
1:A:1022:G:H2'	1:A:1023:G:C8	2.14	0.82
4:D:36:ARG:CD	4:D:38:TYR:OH	2.27	0.82
1:A:262:A:C4'	20:T:73:HIS:CE1	2.62	0.82
1:A:269:C:H2'	1:A:270:A:C8	2.14	0.82
1:A:279:A:N3	17:Q:98:LEU:HD21	1.93	0.82
1:A:1101:A:H4'	1:A:1102:A:O5'	1.79	0.81
1:A:777:A:H2'	1:A:778:G:C8	2.14	0.81
1:A:398:C:H2'	1:A:399:G:H8	1.44	0.81
1:A:1256:A:H3'	3:C:27:LYS:CE	2.10	0.81
9:I:13:ALA:HB2	9:I:68:GLY:HA3	1.62	0.81
22:W:33:LEU:CD2	22:W:64:ARG:NH1	2.43	0.81
1:A:124:G:H2'	1:A:125:U:O4'	1.79	0.81
6:F:49:ALA:HB1	18:R:80:PRO:HA	1.62	0.81
1:A:870:U:H4'	1:A:871:U:H5"	1.62	0.81
1:A:16:A:N3	1:A:1080:A:H1'	1.96	0.80
1:A:101:A:H2'	1:A:102:G:H8	1.45	0.80
4:D:26:CYS:HA	4:D:31:CYS:HB2	1.63	0.80
1:A:1096:C:H2'	1:A:1097:C:C6	2.17	0.80
1:A:16:A:C2	1:A:1080:A:H1'	2.18	0.80
1:A:303:A:H2'	1:A:304:U:H6	1.44	0.80
1:A:1073:U:H3	1:A:1102:A:H61	1.30	0.79
1:A:729:A:H2'	1:A:730:G:C8	2.16	0.79
1:A:925:G:H1	1:A:1391:U:H3	1.28	0.79
4:D:36:ARG:HG3	4:D:38:TYR:CE2	2.17	0.79
11:K:87:THR:HG23	11:K:91:ARG:HD3	1.65	0.78
1:A:309:G:H2'	1:A:310:G:H8	1.48	0.78
1:A:299:G:H2'	1:A:300:A:C8	2.18	0.78
1:A:1190:G:H5'	3:C:176:HIS:CE1	2.17	0.78
1:A:1390:U:H2'	1:A:1391:U:C6	2.18	0.78
6:F:49:ALA:CB	18:R:80:PRO:HA	2.13	0.78
1:A:1096:C:H2'	1:A:1097:C:H6	1.49	0.78
1:A:1128:C:H2'	1:A:1139:G:N7	1.99	0.78
11:K:87:THR:HA	11:K:91:ARG:HD2	1.65	0.78
1:A:21:G:H2'	1:A:22:G:C8	2.18	0.78
1:A:1127:G:H21	1:A:1147:C:H41	1.29	0.78
20:T:72:LEU:HD21	20:T:77:ALA:N	1.97	0.77
1:A:1435:G:H2'	1:A:1436:U:C6	2.19	0.77
1:A:728:A:H2'	1:A:729:A:C8	2.19	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:59:ARG:HG3	3:C:64:VAL:HG23	1.46	0.77
5:E:43:LEU:HD11	5:E:132:ALA:HB1	1.67	0.77
1:A:1507:A:H2'	1:A:1508:G:C8	2.19	0.77
16:P:59:TRP:O	16:P:62:VAL:CG2	2.31	0.77
4:D:26:CYS:SG	4:D:31:CYS:SG	2.81	0.77
4:D:35:ARG:HH21	4:D:35:ARG:CB	1.98	0.77
1:A:302:G:H2'	1:A:303:A:C8	2.19	0.77
1:A:914:A:H2'	1:A:915:A:H8	1.48	0.76
8:H:91:ARG:HD3	12:L:7:ILE:HG21	1.67	0.76
1:A:1367:C:H4'	10:J:48:THR:HG21	1.66	0.76
1:A:24:U:H2'	1:A:25:C:C6	2.20	0.76
1:A:279:A:C4	17:Q:98:LEU:HD21	2.18	0.76
1:A:303:A:H2'	1:A:304:U:C6	2.21	0.76
10:J:37:PRO:O	10:J:70:ARG:CG	2.34	0.76
4:D:36:ARG:HD3	4:D:38:TYR:OH	1.85	0.76
5:E:107:ARG:HB2	5:E:107:ARG:NH1	2.01	0.76
1:A:728:A:H2'	1:A:729:A:H8	1.48	0.75
10:J:60:ARG:HB2	10:J:60:ARG:CZ	2.14	0.75
1:A:262:A:H4'	20:T:73:HIS:CE1	2.20	0.75
1:A:1080:A:H5'	5:E:16:THR:CB	2.15	0.75
1:A:1080:A:H5"	5:E:16:THR:HG21	0.77	0.75
1:A:1256:A:H3'	3:C:27:LYS:HZ2	1.49	0.75
1:A:1102:A:H2'	1:A:1103:C:C6	2.21	0.75
1:A:56:U:H2'	1:A:57:G:C8	2.21	0.74
1:A:919:A:C2	1:A:1080:A:H2	2.05	0.74
1:A:701:C:H4'	1:A:702:A:O5'	1.87	0.74
10:J:17:ASP:OD1	10:J:70:ARG:CZ	2.35	0.74
1:A:90:U:H2'	1:A:91:C:C6	2.22	0.74
1:A:224:C:H2'	1:A:225:C:C6	2.21	0.74
1:A:398:C:H2'	1:A:399:G:C8	2.23	0.74
1:A:1080:A:C4'	5:E:16:THR:HG23	2.17	0.74
3:C:30:ARG:HD2	14:N:35:ARG:O	1.87	0.74
10:J:50:ILE:CD1	10:J:60:ARG:HE	2.00	0.74
1:A:313:A:H2'	1:A:314:C:C6	2.22	0.74
8:H:54:ASP:O	8:H:56:LYS:CE	2.35	0.74
4:D:36:ARG:HD2	4:D:38:TYR:CE1	2.23	0.73
1:A:1077:G:H2'	1:A:1078:U:H2'	1.71	0.73
1:A:269:C:H2'	1:A:270:A:H8	1.52	0.73
1:A:1113:C:H4'	3:C:14:ILE:HD13	1.69	0.73
1:A:1521:G:H2'	1:A:1522:U:C6	2.22	0.73
10:J:50:ILE:HG13	10:J:60:ARG:CZ	2.18	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
22:W:23:ARG:HH21	22:W:33:LEU:HB2	1.53	0.73
1:A:439:A:OP2	1:A:493:G:N1	2.19	0.73
1:A:1348:U:H2'	1:A:1349:A:H8	1.52	0.73
1:A:1390:U:H2'	1:A:1391:U:H6	1.54	0.73
3:C:30:ARG:HD3	14:N:35:ARG:O	1.88	0.72
1:A:279:A:C6	17:Q:98:LEU:HD23	2.25	0.72
4:D:36:ARG:CD	4:D:38:TYR:CE2	2.72	0.72
1:A:262:A:C4'	20:T:73:HIS:HE1	1.98	0.72
2:B:15:VAL:HG11	2:B:209:ARG:HB3	1.70	0.72
1:A:1287:A:H2'	1:A:1288:A:C8	2.24	0.72
11:K:54:ARG:H	11:K:54:ARG:HD2	1.55	0.72
1:A:973:G:H3'	1:A:974:A:H5"	1.72	0.72
3:C:30:ARG:HG3	14:N:36:PHE:O	1.90	0.72
1:A:1256:A:C3'	3:C:27:LYS:NZ	2.51	0.72
1:A:1386:G:H2'	1:A:1387:G:H8	1.54	0.72
10:J:50:ILE:CG1	10:J:60:ARG:NH2	2.53	0.72
10:J:53:PRO:HA	14:N:41:ARG:HH21	1.54	0.71
1:A:13:U:N3	1:A:915:A:N6	2.38	0.71
1:A:113:G:H2'	1:A:114:U:C6	2.25	0.71
4:D:9:CYS:HG	26:D:300:ZN:ZN	1.02	0.71
10:J:38:ILE:O	10:J:71:LEU:N	2.23	0.71
10:J:40:LEU:HB2	10:J:69:ASN:HB3	1.73	0.71
1:A:562:C:H41	1:A:884:U:H2'	1.55	0.71
10:J:48:THR:HG22	10:J:60:ARG:CG	2.18	0.71
20:T:72:LEU:CD2	20:T:77:ALA:HA	2.11	0.71
22:W:21:THR:CG2	22:W:33:LEU:HG	2.20	0.71
1:A:1080:A:H4'	5:E:16:THR:HG23	1.70	0.71
1:A:1256:A:C3'	3:C:27:LYS:HZ2	2.03	0.71
1:A:524:G:C6	1:A:525:C:N4	2.58	0.71
1:A:1443:G:C6	1:A:1444:C:N4	2.58	0.71
1:A:403:C:H5"	4:D:136:PRO:HD2	1.71	0.71
1:A:664:G:N2	1:A:741:G:H1	1.87	0.71
1:A:769:G:N2	1:A:770:C:C2	2.59	0.71
1:A:1500:A:H5"	1:A:1508:G:H5"	1.73	0.71
1:A:302:G:H2'	1:A:303:A:H8	1.53	0.70
1:A:316:G:H1	1:A:337:C:H42	1.38	0.70
1:A:1081:G:OP2	5:E:16:THR:HG22	1.91	0.70
1:A:69:G:H1	1:A:100:C:N4	1.89	0.70
10:J:37:PRO:HA	10:J:72:VAL:CG2	2.18	0.70
1:A:69:G:H1	1:A:100:C:H42	1.36	0.70
1:A:18:C:H2'	1:A:19:C:C6	2.27	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:J:17:ASP:CG	10:J:70:ARG:NH2	2.49	0.69
1:A:406:G:H4'	4:D:5:ILE:HD11	1.73	0.69
1:A:24:U:H2'	1:A:25:C:H6	1.56	0.69
1:A:424:G:H2'	1:A:425:G:C8	2.27	0.69
5:E:14:ARG:O	5:E:14:ARG:HG2	1.92	0.69
1:A:10:A:H2'	1:A:11:G:C8	2.27	0.69
1:A:10:A:H2'	1:A:11:G:H8	1.56	0.69
1:A:584:G:H2'	1:A:585:G:H8	1.58	0.69
5:E:105:VAL:HB	5:E:106:PRO:HD3	1.74	0.69
22:W:21:THR:HG21	22:W:33:LEU:HD12	1.71	0.69
22:W:33:LEU:HD23	22:W:64:ARG:HG2	1.72	0.69
1:A:312:C:H2'	1:A:313:A:C8	2.28	0.69
1:A:1095:U:H2'	1:A:1096:C:C6	2.27	0.69
1:A:1445:C:C2	1:A:1458:G:C2	2.81	0.69
1:A:584:G:H2'	1:A:585:G:C8	2.27	0.69
1:A:56:U:H2'	1:A:57:G:H8	1.58	0.68
14:N:41:ARG:HE	14:N:42:ILE:HG13	1.58	0.68
24:Y:28:A:H3'	24:Y:29:G:C8	2.27	0.68
1:A:13:U:H3	1:A:915:A:N6	1.91	0.68
1:A:67:C:H2'	1:A:68:G:H8	1.57	0.68
1:A:543:C:H2'	1:A:544:G:C8	2.28	0.68
1:A:1079:G:H2'	1:A:1080:A:C8	2.28	0.68
10:J:40:LEU:HG	10:J:71:LEU:HB2	1.76	0.68
23:X:48:VAL:HG21	23:X:58:ARG:HE	1.58	0.68
1:A:16:A:C2	1:A:17:U:C6	2.82	0.68
1:A:1536:C:H42	24:Y:29:G:H1	1.41	0.68
1:A:67:C:H2'	1:A:68:G:C8	2.28	0.68
1:A:524:G:C2	1:A:525:C:N3	2.61	0.68
1:A:576:G:H3'	1:A:577:G:H5"	1.75	0.68
1:A:1256:A:H3'	3:C:27:LYS:HE3	1.74	0.68
10:J:37:PRO:CA	10:J:72:VAL:HG22	2.21	0.68
1:A:1410:G:H2'	1:A:1411:C:C6	2.29	0.68
3:C:71:ALA:HB2	3:C:115:LEU:HD11	1.75	0.68
1:A:860:A:H3'	1:A:861:G:H8	1.59	0.68
1:A:1264:C:H2'	1:A:1265:G:H8	1.58	0.68
1:A:279:A:C2	17:Q:98:LEU:CD2	2.74	0.67
1:A:521:G:N2	1:A:522:C:C2	2.62	0.67
1:A:1016:A:H2'	1:A:1017:G:O4'	1.95	0.67
11:K:33:THR:HA	11:K:39:PRO:HA	1.76	0.67
1:A:564:C:O2	1:A:564:C:H2'	1.94	0.67
1:A:588:G:N2	1:A:589:C:C2	2.63	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:234:C:H2'	1:A:235:C:C6	2.29	0.67
1:A:690:G:OP2	11:K:27:ASN:HB3	1.94	0.67
23:X:5:TYR:HE2	23:X:65:TRP:CH2	2.12	0.67
22:W:33:LEU:HD21	22:W:64:ARG:HH11	1.59	0.67
1:A:1132:C:H2'	1:A:1133:G:C8	2.30	0.66
8:H:29:SER:HB3	8:H:32:LYS:HG3	1.78	0.66
15:O:31:LEU:O	15:O:35:ARG:HG3	1.96	0.66
1:A:610:G:H2'	1:A:611:A:H8	1.59	0.66
3:C:57:ILE:CD1	3:C:66:VAL:HG22	2.25	0.66
16:P:67:THR:HG22	16:P:68:ASP:H	1.59	0.66
1:A:16:A:H1'	1:A:1080:A:H4'	1.77	0.66
1:A:568:G:N2	1:A:883:C:C2	2.63	0.66
20:T:72:LEU:HD23	20:T:77:ALA:CB	1.90	0.66
3:C:24:ALA:CB	3:C:28:GLN:HG2	2.22	0.66
1:A:543:C:H2'	1:A:544:G:H8	1.60	0.66
5:E:139:LEU:HA	5:E:142:LEU:HD12	1.77	0.66
4:D:36:ARG:HD3	4:D:38:TYR:CZ	2.26	0.66
1:A:522:C:H41	12:L:53:ARG:HH21	1.44	0.66
1:A:1079:G:C5'	5:E:14:ARG:NH2	2.51	0.66
3:C:66:VAL:HG12	3:C:68:VAL:HG22	1.77	0.65
1:A:955:U:H1'	1:A:1227:A:H61	1.61	0.65
1:A:1244:C:H2'	1:A:1245:A:H8	1.60	0.65
8:H:121:ASP:CG	8:H:122:ARG:H	2.04	0.65
1:A:19:C:H2'	1:A:20:U:C6	2.32	0.65
4:D:63:LYS:O	4:D:67:ILE:HG13	1.97	0.65
1:A:1328:C:H2'	1:A:1329:A:O4'	1.97	0.65
9:I:46:ALA:HB2	9:I:74:ILE:HG23	1.78	0.65
1:A:253:U:H2'	1:A:254:G:H8	1.62	0.65
1:A:1163:C:H2'	1:A:1164:G:H8	1.60	0.65
3:C:39:ILE:HG21	3:C:66:VAL:HG21	1.77	0.65
9:I:114:TYR:HD2	10:J:58:ASP:O	1.80	0.65
10:J:37:PRO:O	10:J:70:ARG:HG3	1.97	0.64
4:D:7:PRO:HB2	4:D:10:ARG:HD2	1.78	0.64
1:A:1020:U:H2'	1:A:1021:G:H8	1.63	0.64
6:F:9:VAL:HB	6:F:87:ARG:HB2	1.79	0.64
1:A:777:A:H2'	1:A:778:G:H8	1.59	0.64
1:A:1504:G:H5"	1:A:1505:G:O4'	1.98	0.64
24:Y:28:A:H3'	24:Y:29:G:H8	1.62	0.64
1:A:930:C:H2'	1:A:931:C:O4'	1.97	0.64
1:A:172:A:H2'	1:A:174:C:H5	1.62	0.64
1:A:587:G:O2'	1:A:588:G:H5'	1.97	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1073:U:H3	1:A:1102:A:N6	1.94	0.64
1:A:1264:C:H2'	1:A:1265:G:C8	2.33	0.64
16:P:65:GLN:HE21	16:P:66:PRO:HD2	1.62	0.64
4:D:30:LYS:C	4:D:32:ALA:H	2.03	0.64
1:A:312:C:H2'	1:A:313:A:H8	1.62	0.63
1:A:1255:G:H2'	1:A:1279:A:N6	2.13	0.63
3:C:30:ARG:HB2	3:C:30:ARG:HH11	1.63	0.63
1:A:335:C:H2'	1:A:336:C:C6	2.33	0.63
1:A:424:G:H2'	1:A:425:G:H8	1.60	0.63
19:S:22:LEU:HD13	19:S:28:LYS:HB3	1.78	0.63
1:A:864:A:O2'	1:A:1078:U:C4	2.52	0.63
1:A:1402:C:H2'	1:A:1403:C:H6	1.62	0.63
12:L:46:LYS:HB3	12:L:48:PRO:HD2	1.80	0.63
1:A:878:G:H5'	8:H:89:PRO:HG2	1.79	0.63
1:A:1071:C:H2'	1:A:1072:G:H8	1.64	0.63
1:A:1536:C:N4	24:Y:29:G:H1	1.96	0.63
1:A:370:C:C2	1:A:392:G:N2	2.66	0.63
1:A:1443:G:C2	1:A:1444:C:N3	2.67	0.63
1:A:914:A:H2'	1:A:915:A:C8	2.32	0.62
3:C:29:TYR:OH	14:N:37:PHE:CE1	2.51	0.62
20:T:34:LYS:HG3	20:T:80:ARG:HH12	1.64	0.62
1:A:1241:G:N2	1:A:1242:C:C2	2.67	0.62
1:A:1515:C:H2'	1:A:1516:G:C8	2.34	0.62
5:E:87:SER:HA	5:E:125:SER:HB3	1.80	0.62
1:A:678:U:H2'	1:A:679:C:C6	2.34	0.62
10:J:37:PRO:O	10:J:70:ARG:HG2	1.98	0.62
15:O:8:LYS:HG2	15:O:31:LEU:HD11	1.80	0.62
1:A:919:A:C2	1:A:1079:G:N2	2.68	0.62
10:J:50:ILE:HG12	10:J:60:ARG:NH2	2.06	0.62
23:X:89:LYS:HD2	24:Y:36:A:H61	1.64	0.62
1:A:946:A:H2'	1:A:947:G:C8	2.35	0.62
1:A:1152:A:H5'	10:J:13:HIS:HB2	1.81	0.62
1:A:110:C:H2'	1:A:111:G:O4'	1.98	0.62
16:P:13:HIS:O	16:P:15:PRO:HD3	1.99	0.62
22:W:21:THR:CG2	22:W:33:LEU:HD12	2.27	0.62
1:A:1342:C:H2'	1:A:1343:G:C8	2.35	0.62
1:A:1387:G:O3'	1:A:1388:C:H5'	1.99	0.62
1:A:1505:G:H4'	1:A:1506:U:H5"	1.81	0.62
1:A:610:G:H2'	1:A:611:A:C8	2.35	0.61
1:A:1313:U:H2'	1:A:1314:C:C6	2.35	0.61
4:D:36:ARG:CG	4:D:38:TYR:CE2	2.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:102:ARG:HG2	12:L:107:ALA:HB1	1.82	0.61
23:X:5:TYR:HE2	23:X:65:TRP:HH2	1.48	0.61
1:A:671:G:N2	1:A:736:C:C2	2.68	0.61
1:A:911:U:H2'	1:A:912:C:C6	2.35	0.61
1:A:112:G:H21	1:A:354:G:H5'	1.64	0.61
1:A:259:G:H2'	1:A:260:G:C8	2.35	0.61
1:A:442:C:H2'	1:A:443:C:C6	2.35	0.61
1:A:725:G:N2	1:A:726:C:C2	2.69	0.61
4:D:36:ARG:HD2	4:D:38:TYR:OH	1.90	0.61
1:A:123:C:H2'	1:A:124:G:H8	1.64	0.61
1:A:974:A:H4'	1:A:975:A:H3'	1.83	0.61
1:A:1098:C:H1'	1:A:1168:A:H2	1.66	0.61
10:J:49:VAL:O	10:J:60:ARG:HG3	2.00	0.61
3:C:57:ILE:HG12	3:C:66:VAL:HG22	0.72	0.61
22:W:32:ILE:HB	22:W:63:THR:O	2.01	0.61
1:A:1080:A:H5'	5:E:16:THR:OG1	2.01	0.61
1:A:1353:G:N2	1:A:1354:C:C2	2.68	0.61
2:B:111:ARG:HD3	2:B:145:LEU:HD21	1.82	0.61
1:A:27:G:H2'	1:A:28:G:C8	2.36	0.61
1:A:827:U:C2	1:A:872:A:N6	2.69	0.61
1:A:1355:G:H2'	1:A:1356:G:H8	1.65	0.61
2:B:71:VAL:HA	2:B:93:VAL:HG12	1.82	0.61
11:K:87:THR:HA	11:K:91:ARG:CD	2.30	0.61
22:W:32:ILE:HD13	22:W:32:ILE:C	2.23	0.61
1:A:1111:A:N1	3:C:177:THR:HB	2.16	0.60
1:A:309:G:H2'	1:A:310:G:C8	2.34	0.60
1:A:1065:U:H4'	1:A:1066:C:O5'	2.01	0.60
1:A:376:G:H2'	1:A:377:G:H8	1.67	0.60
1:A:548:G:H2'	1:A:549:C:C6	2.37	0.60
1:A:683:G:N2	1:A:708:C:C2	2.70	0.60
4:D:20:TYR:HA	4:D:26:CYS:HB3	1.83	0.60
8:H:121:ASP:CG	8:H:122:ARG:N	2.60	0.60
1:A:181:G:H4'	1:A:182:U:H5'	1.82	0.60
1:A:407:G:H1'	4:D:119:GLN:HE22	1.67	0.60
1:A:1255:G:H2'	1:A:1279:A:H62	1.67	0.60
6:F:94:GLN:HB3	18:R:32:ARG:HD3	1.82	0.60
1:A:568:G:C2	1:A:883:C:N3	2.70	0.60
1:A:174:C:H2'	1:A:175:C:C6	2.36	0.60
1:A:895:G:H1	1:A:904:C:H42	1.50	0.60
1:A:1355:G:H1	1:A:1367:C:H42	1.50	0.60
1:A:15:G:C5	1:A:16:A:N7	2.69	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1235:U:H2'	1:A:1236:A:O4'	2.02	0.60
1:A:123:C:H2'	1:A:124:G:C8	2.37	0.60
1:A:255:G:C2	1:A:272:C:C2	2.90	0.60
1:A:279:A:C5	17:Q:98:LEU:CD2	2.67	0.60
1:A:453:A:H2'	1:A:454:C:C6	2.37	0.60
22:W:33:LEU:HD23	22:W:33:LEU:O	2.02	0.60
1:A:266:G:C8	1:A:266:G:H5"	2.37	0.59
22:W:21:THR:CG2	22:W:33:LEU:CG	2.80	0.59
1:A:46:G:H2'	1:A:366:C:C5	2.37	0.59
1:A:1001:A:H2'	1:A:1001(A):G:C8	2.36	0.59
3:C:59:ARG:HG2	3:C:64:VAL:CG2	2.03	0.59
4:D:109:GLY:HA3	4:D:165:MET:HG3	1.84	0.59
1:A:1080:A:C4'	5:E:16:THR:CG2	2.70	0.59
1:A:1507:A:H2'	1:A:1508:G:H8	1.67	0.59
5:E:18:ARG:HB3	5:E:25:ARG:O	2.02	0.59
11:K:62:GLN:HG2	11:K:97:ALA:HB2	1.83	0.59
16:P:48:TRP:CD1	16:P:48:TRP:H	2.21	0.59
23:X:90:PHE:HD1	23:X:94:ILE:HD13	1.67	0.59
1:A:32:A:H2'	1:A:33:A:C8	2.38	0.59
1:A:313:A:H2'	1:A:314:C:H6	1.67	0.59
1:A:521:G:N1	1:A:522:C:C4	2.70	0.59
1:A:1512:U:H2'	1:A:1513:A:C8	2.37	0.59
12:L:24:VAL:HG12	12:L:26:ALA:H	1.67	0.59
1:A:769:G:N1	1:A:770:C:C4	2.71	0.59
1:A:1105:A:H2'	1:A:1106:G:H8	1.68	0.59
10:J:50:ILE:HG13	10:J:60:ARG:NH2	2.18	0.59
1:A:20:U:H2'	1:A:21:G:O4'	2.03	0.59
1:A:183:G:H2'	1:A:184:G:O4'	2.03	0.59
1:A:861:G:O6	1:A:869:G:N2	2.35	0.59
1:A:1416:G:H2'	1:A:1417:G:O4'	2.02	0.59
10:J:50:ILE:CG1	10:J:60:ARG:NE	2.56	0.59
1:A:77:G:H3'	1:A:77:G:C8	2.37	0.59
1:A:170:U:H2'	1:A:171:A:C8	2.33	0.59
1:A:320:C:H2'	1:A:321:A:C8	2.38	0.59
1:A:743:U:H2'	1:A:744:C:C6	2.38	0.59
1:A:1069:C:H42	1:A:1106:G:H1	1.51	0.59
1:A:1162:C:C2	1:A:1175:G:N2	2.70	0.59
1:A:13:U:OP1	25:A:1606:MG:MG	1.45	0.59
1:A:128:G:N2	1:A:234:C:C2	2.71	0.59
4:D:166:LYS:HG3	4:D:178:VAL:HG21	1.85	0.59
7:G:93:PRO:O	7:G:96:GLN:HG2	2.03	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:741:G:H5'	15:O:39:LEU:HD21	1.84	0.59
1:A:920:U:O2'	1:A:1081:G:O2'	2.20	0.59
1:A:1238:A:H5'	1:A:1336:C:H41	1.68	0.59
3:C:66:VAL:CG1	3:C:68:VAL:HG22	2.32	0.59
1:A:926:G:H3'	1:A:1505:G:N2	2.18	0.58
10:J:34:VAL:HG22	10:J:74:ILE:HG23	1.85	0.58
12:L:25:PRO:C	12:L:27:LEU:H	2.11	0.58
1:A:222:U:H2'	1:A:223:U:C6	2.38	0.58
1:A:363:A:C6	12:L:31:PRO:HD2	2.38	0.58
1:A:1074:G:N1	1:A:1075:C:C2	2.72	0.58
1:A:1515:C:H2'	1:A:1516:G:H8	1.68	0.58
1:A:928:G:H2'	1:A:929:G:C8	2.38	0.58
1:A:1099:G:C2	1:A:1100:C:O2	2.56	0.58
1:A:34:C:H2'	1:A:35:G:C8	2.39	0.58
1:A:1128:C:H1'	1:A:1146:A:H61	1.67	0.58
10:J:7:LYS:HB2	10:J:97:GLU:HB2	1.84	0.58
23:X:29:MET:HE2	23:X:37:LEU:HD11	1.86	0.58
1:A:1456:G:N2	1:A:1457:G:C8	2.72	0.58
22:W:23:ARG:NH2	22:W:33:LEU:HB2	2.19	0.58
1:A:392:G:H2'	1:A:393:A:H8	1.67	0.58
6:F:35:ALA:HA	6:F:67:MET:HB3	1.84	0.58
10:J:60:ARG:HB2	10:J:60:ARG:NH1	2.19	0.58
1:A:1464:G:N2	1:A:1465:C:C2	2.72	0.58
1:A:936:C:H2'	1:A:937:A:H8	1.69	0.58
1:A:1118:C:H2'	1:A:1119:C:C6	2.39	0.58
1:A:1172:C:H2'	1:A:1173:G:H8	1.68	0.58
5:E:81:GLU:HA	5:E:89:ILE:O	2.04	0.58
1:A:1369:C:H2'	1:A:1370:G:C8	2.40	0.57
1:A:397:A:H3'	1:A:397:A:N3	2.18	0.57
1:A:648:A:H2'	1:A:649:G:C8	2.39	0.57
1:A:860:A:H3'	1:A:861:G:C8	2.39	0.57
1:A:1059:C:H2'	1:A:1060:C:C6	2.39	0.57
1:A:128:G:C2	1:A:234:C:C2	2.93	0.57
1:A:1097:C:H2'	1:A:1098:C:C6	2.38	0.57
11:K:15:ALA:HA	11:K:77:MET:HA	1.85	0.57
1:A:689:C:H5"	11:K:27:ASN:ND2	2.20	0.57
1:A:1118:C:H4'	9:I:83:ARG:HH22	1.69	0.57
1:A:883:C:H2'	1:A:884:U:C6	2.38	0.57
10:J:37:PRO:HB2	10:J:70:ARG:HH11	1.68	0.57
22:W:21:THR:HG22	22:W:33:LEU:HG	1.86	0.57
1:A:401:C:H2'	1:A:402:G:H8	1.68	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:540:G:H2'	1:A:541:G:C8	2.39	0.57
1:A:1379:G:HO2'	7:G:156:TRP:CD1	2.23	0.57
1:A:837:G:H8	1:A:837:G:O5'	1.88	0.57
4:D:115:ARG:HB3	4:D:115:ARG:HH11	1.69	0.57
1:A:549:C:H2'	1:A:550:G:H8	1.70	0.57
1:A:681:C:C2	1:A:710:G:N2	2.72	0.57
1:A:392:G:H2'	1:A:393:A:C8	2.40	0.57
1:A:590:C:H42	1:A:649:G:H1	1.53	0.57
1:A:864:A:C2	1:A:865:A:C2	2.92	0.57
1:A:877:C:H2'	1:A:878:G:C8	2.40	0.57
1:A:1081:G:H5'	5:E:18:ARG:HD3	1.85	0.57
2:B:97:TRP:HZ2	2:B:102:LEU:HD13	1.70	0.57
8:H:108:GLY:HA3	8:H:138:TRP:HB3	1.87	0.57
14:N:41:ARG:NE	14:N:42:ILE:HG13	2.20	0.57
1:A:78:G:H2'	1:A:79:G:O4'	2.05	0.57
1:A:1132:C:H2'	1:A:1133:G:H8	1.69	0.57
1:A:1225:A:H2'	1:A:1225:A:N3	2.20	0.57
9:I:26:VAL:HG21	9:I:47:LEU:HD21	1.88	0.56
1:A:585:G:H2'	1:A:586:C:O4'	2.04	0.56
1:A:1409:C:H2'	1:A:1410:G:H8	1.70	0.56
1:A:1409:C:H2'	1:A:1410:G:C8	2.40	0.56
1:A:19:C:H2'	1:A:20:U:H6	1.69	0.56
1:A:437:U:H3'	1:A:438:G:C8	2.40	0.56
1:A:1114:C:C2	1:A:1187:G:C2	2.93	0.56
1:A:1300:G:O2'	1:A:1303:C:N4	2.37	0.56
5:E:83:GLU:HA	5:E:87:SER:O	2.04	0.56
19:S:50:ALA:HB1	19:S:57:HIS:HB3	1.87	0.56
22:W:22:PHE:HB2	22:W:67:ILE:HD11	1.87	0.56
1:A:579:G:H2'	1:A:580:U:C6	2.41	0.56
1:A:582:U:H2'	1:A:583:A:C8	2.39	0.56
1:A:1104:G:H5"	1:A:1104:G:H8	1.70	0.56
8:H:113:SER:HB2	8:H:134:ILE:HD11	1.86	0.56
12:L:75:HIS:HD2	12:L:77:LEU:H	1.52	0.56
1:A:184:G:H2'	1:A:185:A:H8	1.70	0.56
1:A:1488:G:H2'	1:A:1489:G:H8	1.70	0.56
22:W:32:ILE:H	22:W:32:ILE:CD1	2.18	0.56
1:A:109:A:H2'	1:A:326:G:N2	2.21	0.56
3:C:28:GLN:NE2	3:C:32:LEU:HD11	2.12	0.56
3:C:66:VAL:HG12	3:C:68:VAL:CG2	2.35	0.56
11:K:91:ARG:NH2	18:R:88:LYS:HZ2	1.95	0.56
23:X:157:LEU:HB2	23:X:160:ASP:HB2	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:919:A:N3	1:A:1080:A:H2	2.03	0.56
1:A:434:U:H2'	1:A:435:C:C6	2.41	0.56
1:A:918:A:C2	1:A:1079:G:N2	2.74	0.56
1:A:1121:U:H2'	1:A:1122:U:C6	2.41	0.56
1:A:153:C:N4	1:A:154:C:N4	2.54	0.56
1:A:967:C:H2'	1:A:968:A:C8	2.40	0.56
1:A:1355:G:H2'	1:A:1356:G:C8	2.40	0.56
2:B:88:ALA:HB2	2:B:219:VAL:HG13	1.86	0.56
1:A:165:C:H2'	1:A:166:G:H8	1.70	0.55
1:A:409:G:OP1	4:D:24:GLU:HB3	2.06	0.55
1:A:671:G:C2	1:A:736:C:N3	2.74	0.55
1:A:834:C:C2	1:A:853:G:C2	2.94	0.55
1:A:1368:G:N2	1:A:1369:C:C2	2.74	0.55
4:D:101:LEU:HB2	4:D:138:TYR:HB3	1.88	0.55
5:E:106:PRO:HA	5:E:109:ILE:HD12	1.87	0.55
10:J:20:ALA:CB	10:J:70:ARG:NE	2.69	0.55
17:Q:56:VAL:HG13	17:Q:77:VAL:HB	1.87	0.55
1:A:1121:U:H2'	1:A:1122:U:H6	1.71	0.55
1:A:1244:C:H2'	1:A:1245:A:C8	2.40	0.55
3:C:178:LEU:C	3:C:180:ALA:H	2.14	0.55
1:A:877:C:H2'	1:A:878:G:H8	1.71	0.55
1:A:1163:C:C2	1:A:1174:G:N2	2.75	0.55
10:J:48:THR:O	10:J:60:ARG:HD3	2.05	0.55
1:A:253:U:H2'	1:A:254:G:C8	2.41	0.55
1:A:1071:C:H2'	1:A:1072:G:C8	2.40	0.55
1:A:1106:G:N2	1:A:1107:C:C2	2.74	0.55
1:A:1323:G:H2'	1:A:1324:A:C8	2.41	0.55
3:C:57:ILE:CG1	3:C:66:VAL:CG2	2.54	0.55
5:E:17:ALA:HA	5:E:26:PHE:HA	1.88	0.55
5:E:20:GLN:O	5:E:21:ALA:C	2.49	0.55
22:W:23:ARG:HH21	22:W:33:LEU:CB	2.18	0.55
1:A:1346:A:C8	1:A:1348:U:C2	2.94	0.55
3:C:30:ARG:HG2	14:N:37:PHE:CA	2.37	0.55
1:A:80:G:H3'	1:A:81:U:C5'	2.26	0.55
1:A:636:U:H5'	17:Q:2:PRO:HG3	1.88	0.55
4:D:32:ALA:O	4:D:36:ARG:N	2.39	0.55
8:H:120:THR:HG22	8:H:121:ASP:H	1.70	0.55
14:N:24:CYS:CB	14:N:29:ARG:H	2.17	0.55
22:W:14:THR:HB	22:W:23:ARG:HB3	1.89	0.55
1:A:558:G:H3'	1:A:559:A:H5"	1.88	0.55
3:C:29:TYR:OH	14:N:37:PHE:HE1	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:59:ARG:CZ	3:C:64:VAL:CG2	2.64	0.55
1:A:318:G:N2	1:A:336:C:C2	2.75	0.55
1:A:671:G:C2	1:A:736:C:C2	2.95	0.55
1:A:939:G:C6	1:A:940:C:N4	2.75	0.55
1:A:1511:G:H2'	1:A:1512:U:O4'	2.07	0.55
1:A:920:U:C2	1:A:1080:A:C2	2.94	0.55
1:A:927:G:O3'	1:A:928:G:P	2.65	0.55
1:A:1025:U:H2'	1:A:1026:G:C8	2.42	0.55
1:A:383:A:C5	1:A:384:G:H1'	2.42	0.55
1:A:652:U:O4	1:A:752:G:O2'	2.25	0.55
1:A:1233:G:C6	1:A:1234:C:N4	2.75	0.55
9:I:40:LEU:CD2	9:I:74:ILE:HD11	2.37	0.55
1:A:266:G:H5"	1:A:266:G:H8	1.70	0.54
1:A:455:C:H2'	1:A:456:C:C6	2.42	0.54
1:A:28:G:H2'	1:A:29:G:O4'	2.06	0.54
1:A:229:U:H2'	1:A:230:G:H8	1.72	0.54
1:A:279:A:N9	17:Q:98:LEU:CD2	2.67	0.54
1:A:659:U:H2'	1:A:660:G:C8	2.42	0.54
1:A:928:G:H2'	1:A:929:G:H8	1.72	0.54
1:A:1512:U:H2'	1:A:1513:A:H8	1.71	0.54
1:A:577:G:N2	1:A:578:C:C2	2.76	0.54
1:A:1020:U:H2'	1:A:1021:G:C8	2.43	0.54
1:A:1162:C:C2	1:A:1175:G:C2	2.96	0.54
1:A:1256:A:H2'	3:C:27:LYS:HZ1	1.72	0.54
6:F:27:GLN:HA	6:F:30:LEU:HD12	1.88	0.54
1:A:761:G:C2	1:A:762:C:C2	2.95	0.54
1:A:1135:U:H4'	1:A:1136:U:H5	1.71	0.54
1:A:1342:C:H2'	1:A:1343:G:H8	1.71	0.54
2:B:61:LEU:HD21	2:B:160:ASP:HB3	1.88	0.54
13:M:34:LEU:HD13	13:M:41:PRO:HG3	1.90	0.54
23:X:6:LEU:HB3	23:X:10:ARG:HB3	1.88	0.54
1:A:333:G:N2	1:A:334:C:C2	2.75	0.54
2:B:61:LEU:HD11	2:B:160:ASP:HB2	1.89	0.54
4:D:24:GLU:HA	4:D:27:TYR:HB2	1.88	0.54
4:D:156:GLU:HA	4:D:159:ARG:HD2	1.90	0.54
11:K:87:THR:HG21	24:Y:29:G:H4'	1.89	0.54
15:O:26:GLU:O	15:O:29:VAL:HG12	2.08	0.54
1:A:101:A:H2'	1:A:102:G:C8	2.34	0.54
1:A:223:U:H5'	20:T:68:LYS:NZ	2.23	0.54
1:A:500:G:C6	1:A:501:C:N4	2.76	0.54
1:A:836:G:H2'	1:A:837:G:C8	2.43	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:O:82:ILE:HA	15:O:87:ILE:HD12	1.90	0.54
1:A:197:A:C6	1:A:221:C:H4'	2.43	0.54
1:A:262:A:H5"	20:T:73:HIS:CE1	2.21	0.54
1:A:568:G:C2	1:A:883:C:C2	2.95	0.54
1:A:588:G:N1	1:A:589:C:C4	2.75	0.54
1:A:756:C:H2'	1:A:757:U:O4'	2.07	0.54
1:A:927:G:OP2	1:A:927:G:H4'	2.08	0.54
2:B:17:PHE:HB2	2:B:41:ILE:HG12	1.89	0.54
1:A:661:G:C2	1:A:745:C:N3	2.76	0.54
1:A:669:U:H2'	1:A:670:G:C8	2.43	0.54
1:A:936:C:H2'	1:A:937:A:C8	2.42	0.54
1:A:1008:C:C2	1:A:1022:G:N2	2.76	0.54
10:J:49:VAL:HG11	14:N:44:LEU:HD12	1.90	0.54
20:T:49:ALA:HB3	20:T:99:LEU:HD12	1.89	0.54
1:A:934:C:C5	1:A:1344:C:H2'	2.43	0.54
1:A:972:C:O3'	10:J:57:LYS:HG3	2.07	0.54
1:A:1077:G:N3	1:A:1079:G:C8	2.75	0.54
23:X:58:ARG:HD2	23:X:60:MET:HE2	1.89	0.54
1:A:166:G:H2'	1:A:167:G:C8	2.43	0.54
1:A:730:G:N2	1:A:765:G:H5"	2.23	0.54
1:A:1098:C:H1'	1:A:1168:A:C2	2.43	0.54
3:C:57:ILE:CD1	3:C:66:VAL:CG2	2.85	0.54
10:J:6:ILE:HG13	10:J:72:VAL:O	2.08	0.54
12:L:33:ARG:HD3	12:L:62:SER:HB3	1.89	0.54
1:A:184:G:H2'	1:A:185:A:C8	2.42	0.53
1:A:279:A:C4	17:Q:98:LEU:HD22	2.31	0.53
1:A:919:A:N3	1:A:1080:A:C2	2.76	0.53
3:C:30:ARG:CB	3:C:30:ARG:CZ	2.86	0.53
5:E:127:ASN:ND2	5:E:129:ILE:H	2.06	0.53
1:A:790:A:O2'	23:X:87:SER:O	2.25	0.53
1:A:994:A:N7	1:A:1216:G:H4'	2.24	0.53
1:A:1513:A:H2'	1:A:1514:C:C6	2.43	0.53
8:H:12:ARG:NH1	8:H:25:ASP:O	2.41	0.53
11:K:84:VAL:CG2	11:K:91:ARG:NH2	2.71	0.53
1:A:504:C:C2	1:A:542:G:N2	2.76	0.53
1:A:589:C:O2	1:A:651:C:O2	2.26	0.53
1:A:872:A:C8	1:A:874:G:C8	2.96	0.53
4:D:43:HIS:HB3	4:D:46:LYS:HD2	1.90	0.53
17:Q:93:GLN:C	17:Q:93:GLN:HE21	2.15	0.53
1:A:114:U:H2'	1:A:115:G:C8	2.43	0.53
1:A:229:U:H2'	1:A:230:G:C8	2.44	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:289:G:N2	1:A:290:C:C2	2.76	0.53
1:A:1118:C:H2'	1:A:1119:C:H6	1.73	0.53
1:A:1526:G:H2'	1:A:1527:C:C6	2.43	0.53
19:S:30:LEU:HD23	19:S:50:ALA:HB2	1.89	0.53
1:A:152:A:OP2	1:A:153:C:N4	2.42	0.53
1:A:939:G:H2'	1:A:940:C:C6	2.44	0.53
1:A:1048:G:H2'	1:A:1050:G:H8	1.73	0.53
1:A:35:G:H2'	1:A:36:C:C6	2.43	0.53
1:A:44:G:H3'	1:A:45:U:C6	2.44	0.53
1:A:509:A:H5'	4:D:55:ALA:HB2	1.89	0.53
1:A:576:G:H3'	1:A:577:G:C5'	2.38	0.53
3:C:77:ILE:HA	3:C:84:ILE:HB	1.91	0.53
1:A:980:C:H1'	14:N:19:ARG:HG2	1.90	0.53
1:A:61:G:H2'	1:A:62:U:O4'	2.08	0.53
1:A:351:G:H4'	1:A:352:C:OP1	2.08	0.53
1:A:669:U:H2'	1:A:670:G:H8	1.74	0.53
1:A:1338:G:H2'	1:A:1339:A:C8	2.44	0.53
1:A:1348:U:H2'	1:A:1349:A:C8	2.41	0.53
1:A:1464:G:N1	1:A:1465:C:C4	2.77	0.53
22:W:21:THR:HG21	22:W:33:LEU:CG	2.37	0.53
1:A:735:C:H5'	18:R:71:LYS:HD3	1.91	0.53
1:A:1088:G:H2'	1:A:1089:G:O4'	2.09	0.53
10:J:48:THR:CG2	10:J:60:ARG:HG2	2.27	0.53
1:A:316:G:H1	1:A:337:C:N4	2.05	0.52
1:A:439:A:C4	1:A:496:A:C2	2.96	0.52
1:A:621:A:H2'	1:A:622:A:C8	2.44	0.52
1:A:1078:U:O2'	1:A:1079:G:O4'	2.27	0.52
1:A:22:G:C6	1:A:23:C:C4	2.96	0.52
1:A:598:U:H2'	1:A:599:C:C6	2.44	0.52
1:A:1321:C:H5'	13:M:87:TYR:CE1	2.45	0.52
4:D:62:GLN:OE1	4:D:62:GLN:HA	2.09	0.52
5:E:110:LEU:HD13	5:E:118:ILE:HG13	1.89	0.52
10:J:17:ASP:HA	10:J:70:ARG:NH2	2.24	0.52
1:A:399:G:C6	1:A:400:C:N4	2.77	0.52
1:A:505:G:H2'	1:A:506:G:H8	1.73	0.52
1:A:643:C:H2'	1:A:644:G:C8	2.43	0.52
1:A:1502:A:H2'	1:A:1504:G:C8	2.44	0.52
2:B:142:LEU:HD23	2:B:146:GLN:HE22	1.74	0.52
3:C:30:ARG:HB2	3:C:30:ARG:CZ	2.37	0.52
1:A:71:C:H2'	1:A:72:C:O4'	2.10	0.52
1:A:122:G:N1	1:A:123:C:C2	2.77	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:598:U:H2'	1:A:599:C:H6	1.74	0.52
1:A:1151:A:O2'	1:A:1152:A:H8	1.92	0.52
1:A:1291:G:O3'	9:I:39:GLY:HA3	2.09	0.52
1:A:1400:C:N3	24:Y:38:G:O6	2.41	0.52
1:A:189:G:C2	1:A:189(A):C:C2	2.98	0.52
1:A:332:G:C2	1:A:333:G:C8	2.98	0.52
1:A:761:G:C6	1:A:762:C:C4	2.98	0.52
1:A:779:C:H2'	1:A:780:A:O4'	2.09	0.52
1:A:832:C:C2	1:A:855:G:C2	2.97	0.52
1:A:872:A:C4	1:A:874:G:N7	2.77	0.52
8:H:91:ARG:O	8:H:91:ARG:HG3	2.08	0.52
8:H:111:ILE:HG22	8:H:134:ILE:HD12	1.91	0.52
1:A:109:A:H5'	1:A:110:C:C5	2.44	0.52
1:A:1163:C:N3	1:A:1174:G:C2	2.78	0.52
3:C:174:PRO:HB2	3:C:177:THR:HG23	1.91	0.52
10:J:17:ASP:CB	10:J:70:ARG:NH2	2.73	0.52
1:A:60:A:H4'	1:A:61:G:O5'	2.10	0.52
1:A:122:G:C2	1:A:123:C:C2	2.97	0.52
1:A:1077:G:N2	1:A:1079:G:C3'	2.59	0.52
1:A:1106:G:C6	1:A:1107:C:N4	2.78	0.52
1:A:1127:G:H21	1:A:1147:C:N4	2.02	0.52
1:A:1217:C:N4	1:A:1218:C:N4	2.57	0.52
4:D:200:GLU:OE1	4:D:201:GLN:HG3	2.09	0.52
1:A:504:C:N3	1:A:542:G:C2	2.78	0.52
1:A:643:C:H2'	1:A:644:G:H8	1.75	0.52
1:A:926:G:H3'	1:A:1505:G:H21	1.74	0.52
1:A:1030:C:H42	1:A:1031:G:H1	1.55	0.52
1:A:1518:A:H2'	1:A:1519:A:C8	2.44	0.52
4:D:98:GLU:HA	4:D:103:ASN:ND2	2.25	0.52
1:A:99:U:H2'	1:A:100:C:C6	2.44	0.52
1:A:360:A:H2'	1:A:361:G:O4'	2.09	0.52
1:A:667:G:H2'	1:A:668:G:H8	1.74	0.52
1:A:834:C:O2	1:A:853:G:C2	2.63	0.52
1:A:1488:G:H2'	1:A:1489:G:C8	2.44	0.52
1:A:505:G:H5'	1:A:534:U:H2'	1.92	0.52
1:A:955:U:H1'	1:A:1227:A:N6	2.24	0.52
1:A:1010:G:H1	1:A:1019:C:H42	1.57	0.52
1:A:1068:G:N2	1:A:1069:C:C2	2.78	0.52
4:D:36:ARG:HG3	4:D:38:TYR:CD2	2.44	0.52
15:O:62:GLN:HA	15:O:65:ARG:HH11	1.75	0.52
16:P:1:MET:HE2	16:P:3:LYS:HE2	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:558:G:H3'	1:A:559:A:C5'	2.40	0.51
1:A:1048:G:H2'	1:A:1050:G:C8	2.45	0.51
1:A:1223:C:H5"	1:A:1224:G:H5"	1.92	0.51
4:D:42:GLN:C	4:D:44:GLY:H	2.18	0.51
1:A:1007:C:H42	1:A:1022:G:H1	1.57	0.51
24:Y:27:G:H2'	24:Y:28:A:O4'	2.10	0.51
1:A:44:G:H3'	1:A:45:U:H6	1.75	0.51
1:A:230:G:H2'	1:A:231:G:O4'	2.10	0.51
1:A:766:A:H2'	1:A:767:A:O4'	2.11	0.51
1:A:1014:A:H5"	19:S:14:HIS:HB3	1.92	0.51
1:A:1379:G:HO2'	7:G:156:TRP:HD1	1.57	0.51
15:O:54:ARG:HH21	15:O:58:MET:HG3	1.74	0.51
1:A:755:G:N2	1:A:756:C:C2	2.79	0.51
11:K:21:ILE:HB	11:K:84:VAL:HG12	1.91	0.51
22:W:10:GLU:HG2	22:W:54:VAL:HG22	1.92	0.51
1:A:258:G:N2	1:A:269:C:C2	2.78	0.51
1:A:1148:U:H5"	9:I:7:THR:HG21	1.91	0.51
1:A:1376:U:H5'	7:G:102:ARG:HH22	1.76	0.51
1:A:1434:A:H3'	1:A:1435:G:C8	2.46	0.51
8:H:18:ARG:HH12	8:H:78:GLN:HG3	1.76	0.51
1:A:92:C:H2'	1:A:93:G:H8	1.76	0.51
1:A:262:A:H4'	20:T:73:HIS:HE1	1.66	0.51
1:A:737:A:H2'	1:A:738:C:C6	2.45	0.51
1:A:881:G:OP2	12:L:12:ARG:NH2	2.41	0.51
1:A:1081:G:OP2	5:E:16:THR:CG2	2.58	0.51
3:C:120:VAL:HB	3:C:198:VAL:HG11	1.92	0.51
12:L:41:ARG:HH12	12:L:57:LYS:HG3	1.74	0.51
16:P:33:ILE:HG22	16:P:34:GLU:HB2	1.92	0.51
1:A:827:U:O2'	8:H:19:VAL:HG11	2.11	0.51
1:A:1359:C:H3'	14:N:35:ARG:HH21	1.76	0.51
13:M:2:ALA:O	13:M:9:ILE:HA	2.10	0.51
1:A:437:U:H3'	1:A:438:G:H8	1.76	0.51
1:A:824:C:H2'	1:A:825:G:H8	1.76	0.51
1:A:1226:C:H3'	13:M:96:LEU:HD21	1.92	0.51
1:A:1312:G:C2	1:A:1326:C:C2	2.98	0.51
1:A:1379:G:O2'	7:G:156:TRP:HD1	1.94	0.51
4:D:35:ARG:CB	4:D:35:ARG:NH2	2.73	0.51
6:F:45:LEU:HG	6:F:59:TYR:HD2	1.75	0.51
10:J:44:VAL:HG13	10:J:66:ARG:HB3	1.93	0.51
16:P:5:ARG:HH21	16:P:28:ARG:HA	1.75	0.51
16:P:48:TRP:H	16:P:48:TRP:HD1	1.57	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:Q:19:VAL:HG23	17:Q:44:ALA:HB3	1.91	0.51
1:A:98:G:H2'	1:A:99:U:C6	2.46	0.51
1:A:694:A:H5'	11:K:53:SER:HB2	1.93	0.51
1:A:914:A:C4	1:A:915:A:N7	2.78	0.51
1:A:919:A:C2	1:A:1080:A:C2	2.92	0.51
1:A:1086:U:O5'	1:A:1086:U:H6	1.93	0.51
1:A:1466:C:H2'	1:A:1467:G:O4'	2.10	0.51
5:E:50:GLU:HB2	5:E:53:LEU:HB3	1.92	0.51
8:H:28:ALA:HA	8:H:59:LEU:HD12	1.93	0.51
1:A:35:G:C6	1:A:36:C:N4	2.79	0.51
1:A:77:G:C8	1:A:77:G:C3'	2.93	0.51
1:A:122:G:C6	1:A:123:C:C4	2.99	0.51
1:A:663:A:H2'	1:A:664:G:O4'	2.11	0.51
1:A:1281:U:H4'	1:A:1282:C:OP2	2.10	0.51
2:B:124:SER:O	2:B:127:ILE:HG13	2.11	0.51
2:B:163:PHE:HA	2:B:185:ILE:HB	1.93	0.51
7:G:27:ILE:HA	7:G:30:ILE:HD12	1.93	0.51
1:A:251:G:C2	1:A:266:G:C6	3.00	0.50
1:A:270:A:H2'	1:A:271:C:C6	2.46	0.50
1:A:827:U:N3	1:A:872:A:C6	2.67	0.50
1:A:1055:A:H2	3:C:194:GLY:CA	2.24	0.50
1:A:1348:U:OP1	9:I:110:GLU:N	2.31	0.50
6:F:78:GLU:HA	6:F:81:ILE:HD12	1.92	0.50
7:G:16:LEU:HD22	9:I:45:ALA:HB2	1.92	0.50
1:A:198:G:H2'	1:A:199:G:C8	2.46	0.50
1:A:769:G:H4'	1:A:1513:A:H4'	1.93	0.50
1:A:1048:G:N2	1:A:1210:C:C2	2.79	0.50
1:A:79:G:H2'	1:A:80:G:H8	1.75	0.50
1:A:661:G:N2	1:A:745:C:C2	2.79	0.50
1:A:1070:U:H2'	1:A:1071:C:C5	2.43	0.50
1:A:1103:C:OP1	2:B:98:LEU:HD22	2.12	0.50
1:A:1323:G:H2'	1:A:1324:A:O4'	2.11	0.50
1:A:1366:C:H2'	1:A:1367:C:C6	2.46	0.50
1:A:1399:C:C2	1:A:1502:A:N6	2.79	0.50
6:F:45:LEU:HG	6:F:59:TYR:CD2	2.46	0.50
6:F:100:ASN:HA	18:R:23:LYS:HE2	1.93	0.50
14:N:24:CYS:HB3	14:N:29:ARG:N	2.19	0.50
1:A:557:G:C6	1:A:558:G:C2	2.99	0.50
1:A:731:G:N2	1:A:732:C:C2	2.79	0.50
1:A:1243:C:C2	1:A:1295:G:N2	2.80	0.50
4:D:24:GLU:O	4:D:25:ARG:HB3	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:26:VAL:HG22	9:I:61:ALA:HB3	1.92	0.50
15:O:41:GLU:O	15:O:44:LYS:HB2	2.11	0.50
22:W:33:LEU:HD22	22:W:64:ARG:NH1	2.24	0.50
1:A:714:G:H2'	1:A:715:A:C8	2.47	0.50
1:A:774:G:N2	1:A:806:C:C2	2.80	0.50
1:A:824:C:H2'	1:A:825:G:C8	2.47	0.50
1:A:932:C:H5'	7:G:3:ARG:CB	2.42	0.50
1:A:13:U:C4	1:A:915:A:N6	2.79	0.50
1:A:90:U:H2'	1:A:91:C:H6	1.71	0.50
1:A:572:A:N1	1:A:864:A:C5	2.80	0.50
1:A:613:C:H2'	1:A:614:A:H8	1.77	0.50
1:A:916:G:C2	1:A:917:G:C5	2.99	0.50
1:A:946:A:H2'	1:A:947:G:H8	1.75	0.50
1:A:1525:G:H2'	1:A:1526:G:H8	1.76	0.50
1:A:30:U:H3'	1:A:31:G:H5"	1.93	0.50
1:A:354:G:N2	1:A:355:C:C2	2.79	0.50
1:A:525:C:H2'	1:A:526:C:C6	2.46	0.50
1:A:864:A:C2'	1:A:865:A:C8	2.83	0.50
12:L:113:ARG:HH11	12:L:113:ARG:HB3	1.75	0.50
1:A:590:C:N4	1:A:649:G:H1	2.10	0.50
1:A:987:G:O5'	1:A:987:G:H8	1.95	0.50
1:A:1018:C:H2'	1:A:1019:C:C6	2.47	0.50
1:A:1059:C:H2'	1:A:1060:C:H6	1.76	0.50
1:A:1356:G:C2	1:A:1367:C:C2	3.00	0.50
20:T:54:LYS:HA	20:T:57:ARG:HH11	1.77	0.50
23:X:5:TYR:CE2	23:X:65:TRP:CH2	2.96	0.50
1:A:22:G:C2	1:A:23:C:C2	3.00	0.50
1:A:681:C:N3	1:A:710:G:C2	2.79	0.50
1:A:827:U:C4	1:A:872:A:N1	2.79	0.49
1:A:920:U:C2'	1:A:921:U:C6	2.83	0.49
4:D:57:ARG:NE	5:E:107:ARG:HE	2.10	0.49
4:D:133:VAL:HG11	4:D:138:TYR:HD2	1.77	0.49
22:W:32:ILE:CD1	22:W:32:ILE:N	2.73	0.49
1:A:500:G:H2'	1:A:501:C:C6	2.47	0.49
1:A:501:C:H2'	1:A:502:G:H8	1.77	0.49
1:A:518:C:O2'	1:A:519:C:OP2	2.28	0.49
1:A:717:C:H2'	1:A:734:G:H5'	1.93	0.49
1:A:876:G:C6	1:A:877:C:N4	2.79	0.49
1:A:1365:G:C2	1:A:1366:C:C2	3.00	0.49
1:A:1459:C:H2'	1:A:1460:A:O4'	2.12	0.49
17:Q:18:THR:HG23	17:Q:69:LYS:HE3	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
19:S:22:LEU:CD1	19:S:31:ILE:HD11	2.43	0.49
23:X:71:MET:O	23:X:75:GLU:HG2	2.11	0.49
1:A:130:A:H8	1:A:130:A:OP1	1.94	0.49
1:A:500:G:C2	1:A:501:C:N3	2.80	0.49
1:A:562:C:H2'	1:A:562:C:OP2	2.12	0.49
1:A:648:A:H2'	1:A:649:G:H8	1.76	0.49
1:A:1007:C:O2	1:A:1023:G:C2	2.65	0.49
1:A:1393:U:H2'	1:A:1395:C:C5	2.46	0.49
2:B:61:LEU:HD11	2:B:160:ASP:CB	2.42	0.49
1:A:861:G:N2	1:A:862:C:C2	2.81	0.49
1:A:1135:U:H4'	1:A:1136:U:C5	2.47	0.49
1:A:366:C:H1'	1:A:394:G:H22	1.78	0.49
1:A:725:G:N1	1:A:726:C:C4	2.81	0.49
1:A:1023:G:H2'	1:A:1023:G:N3	2.28	0.49
4:D:133:VAL:HG11	4:D:138:TYR:CD2	2.46	0.49
1:A:92:C:H2'	1:A:93:G:C8	2.47	0.49
1:A:1014:A:C5'	19:S:14:HIS:HB3	2.42	0.49
1:A:1148:U:O3'	9:I:14:VAL:HG11	2.13	0.49
1:A:1354:C:H42	1:A:1368:G:H1	1.60	0.49
4:D:19:LEU:HB3	4:D:21:LEU:HB2	1.93	0.49
4:D:149:ALA:HB3	4:D:152:SER:HB2	1.95	0.49
5:E:82:VAL:O	5:E:89:ILE:HG22	2.12	0.49
1:A:548:G:C6	1:A:549:C:N4	2.80	0.49
1:A:585:G:C2	1:A:586:C:C2	3.00	0.49
1:A:590:C:OP1	8:H:30:ARG:N	2.45	0.49
1:A:623:C:H2'	1:A:624:C:O4'	2.13	0.49
1:A:1127:G:N2	1:A:1145:C:C2	2.81	0.49
1:A:1436:U:H2'	1:A:1437:C:O4'	2.12	0.49
11:K:24:SER:C	11:K:26:ASN:H	2.20	0.49
11:K:91:ARG:NH2	18:R:88:LYS:NZ	2.55	0.49
1:A:358:U:H2'	1:A:359:U:O4'	2.12	0.49
1:A:1082:G:H2'	1:A:1083:U:O4'	2.13	0.49
9:I:40:LEU:HD21	9:I:74:ILE:HD11	1.95	0.49
1:A:233:C:H2'	1:A:234:C:H6	1.76	0.49
1:A:505:G:H2'	1:A:506:G:C8	2.47	0.49
1:A:549:C:H2'	1:A:550:G:C8	2.48	0.49
4:D:3:ARG:HA	4:D:3:ARG:CZ	2.43	0.49
18:R:26:LEU:HD21	18:R:39:VAL:HG22	1.95	0.49
1:A:582:U:H2'	1:A:583:A:H8	1.78	0.49
1:A:1106:G:C2	1:A:1107:C:C4	3.01	0.49
1:A:17:U:O2	1:A:1079:G:N3	2.46	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:21:G:C2	1:A:22:G:C5	3.01	0.48
1:A:236:G:C2	1:A:237:C:C2	3.01	0.48
18:R:53:ARG:HE	18:R:60:ALA:HA	1.78	0.48
1:A:46:G:H2'	1:A:366:C:H5	1.76	0.48
1:A:148:G:C2	1:A:175:C:C2	3.02	0.48
1:A:590:C:OP1	8:H:30:ARG:HG2	2.12	0.48
3:C:174:PRO:HD2	3:C:182:ILE:HD11	1.95	0.48
11:K:84:VAL:HG23	11:K:91:ARG:HH22	1.78	0.48
18:R:31:LEU:O	18:R:69:THR:HG21	2.11	0.48
1:A:216:G:C6	1:A:217:C:N4	2.81	0.48
1:A:259:G:H2'	1:A:260:G:H8	1.74	0.48
1:A:370:C:N3	1:A:392:G:C2	2.81	0.48
1:A:557:G:N1	1:A:558:G:C2	2.81	0.48
1:A:707:C:H2'	1:A:708:C:C6	2.48	0.48
1:A:1074:G:H4'	2:B:103:THR:O	2.12	0.48
1:A:1365:G:C6	1:A:1366:C:C4	3.01	0.48
4:D:61:LYS:HD3	4:D:206:PHE:CE2	2.48	0.48
5:E:41:VAL:HG13	5:E:113:ALA:HA	1.95	0.48
1:A:29:G:H5"	1:A:30:U:OP2	2.13	0.48
1:A:189:G:C6	1:A:189(A):C:C4	3.01	0.48
1:A:407:G:H2'	1:A:408:A:H8	1.78	0.48
1:A:823:G:H2'	1:A:824:C:C6	2.47	0.48
1:A:972:C:O2	1:A:972:C:H2'	2.12	0.48
1:A:998:G:N2	1:A:999:C:C2	2.80	0.48
1:A:295:C:H2'	1:A:296:U:O4'	2.13	0.48
1:A:1308:U:H2'	1:A:1309:G:C8	2.49	0.48
5:E:80:ILE:HD13	5:E:138:ALA:HB1	1.95	0.48
9:I:17:VAL:HG22	9:I:63:ILE:HG12	1.96	0.48
10:J:37:PRO:C	10:J:72:VAL:HG22	2.38	0.48
1:A:876:G:H2'	1:A:877:C:C6	2.49	0.48
1:A:1148:U:C5'	9:I:7:THR:HG21	2.43	0.48
2:B:118:LEU:HB3	2:B:142:LEU:HD11	1.95	0.48
2:B:166:ASP:C	2:B:168:THR:H	2.21	0.48
9:I:47:LEU:HD22	9:I:50:LEU:HD12	1.96	0.48
1:A:37:U:O2'	1:A:500:G:H4'	2.12	0.48
1:A:165:C:H2'	1:A:166:G:C8	2.48	0.48
1:A:734:G:C2	1:A:735:C:C2	3.01	0.48
1:A:881:G:C2	1:A:882:C:C2	3.02	0.48
1:A:1130:A:H4'	9:I:3:GLN:OE1	2.13	0.48
1:A:1218:C:H2'	1:A:1219:U:C6	2.48	0.48
17:Q:64:PRO:HB3	17:Q:70:ARG:HG3	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:176:C:H2'	1:A:177:C:C6	2.48	0.48
1:A:675:A:N3	11:K:116:HIS:HB2	2.29	0.48
1:A:1149:C:H2'	1:A:1150:U:C6	2.49	0.48
1:A:1256:A:C2'	3:C:27:LYS:NZ	2.77	0.48
1:A:1267:C:H2'	1:A:1268:A:O4'	2.14	0.48
1:A:1353:G:N1	1:A:1354:C:C4	2.81	0.48
8:H:39:LEU:HG	8:H:44:PHE:HB2	1.95	0.48
14:N:7:ILE:O	14:N:7:ILE:HG22	2.14	0.48
20:T:63:ILE:HG21	20:T:81:LYS:HG3	1.96	0.48
23:X:123:ARG:HB2	24:Y:38:G:H4'	1.94	0.48
1:A:15:G:C4	1:A:16:A:N7	2.82	0.48
1:A:153:C:N4	1:A:154:C:H41	2.12	0.48
1:A:362:G:N2	1:A:364:A:H3'	2.28	0.48
1:A:945:G:H2'	1:A:945:G:N3	2.29	0.48
1:A:1312:G:N2	1:A:1326:C:C2	2.82	0.48
4:D:39:PRO:HB2	4:D:44:GLY:HA2	1.95	0.48
1:A:39:G:N7	1:A:547:A:H2'	2.29	0.48
1:A:218:C:H2'	1:A:219:C:C6	2.49	0.48
1:A:962:C:H1'	1:A:1201:A:N6	2.28	0.48
1:A:974:A:H8	1:A:974:A:OP1	1.97	0.48
1:A:985:C:C2	1:A:1221:G:N2	2.82	0.48
2:B:72:GLY:HA2	2:B:165:VAL:HB	1.96	0.48
4:D:68:TYR:HB2	4:D:70:ILE:HD11	1.96	0.48
8:H:55:GLY:O	8:H:56:LYS:HG3	2.14	0.48
14:N:12:ARG:O	14:N:14:PRO:HD3	2.14	0.48
15:O:26:GLU:HB3	15:O:81:LEU:HD21	1.95	0.48
1:A:718:G:H5'	11:K:117:ASN:HB2	1.96	0.47
1:A:992:U:H4'	1:A:993:G:O5'	2.13	0.47
1:A:1257:U:H4'	1:A:1258:G:O5'	2.14	0.47
1:A:1270:C:H2'	1:A:1271:G:H8	1.78	0.47
1:A:18:C:C4	1:A:19:C:N4	2.82	0.47
1:A:96:U:H2'	1:A:97:G:H8	1.77	0.47
1:A:223:U:H5'	20:T:68:LYS:HZ2	1.78	0.47
1:A:504:C:H42	1:A:541:G:H1	1.62	0.47
1:A:585:G:C6	1:A:586:C:C4	3.02	0.47
1:A:1266:G:N2	1:A:1270:C:C2	2.82	0.47
1:A:1504:G:H4'	1:A:1505:G:O5'	2.14	0.47
18:R:43:PHE:HD2	18:R:56:THR:HG22	1.79	0.47
1:A:70:G:C2	1:A:100:C:C2	3.03	0.47
1:A:193:C:H2'	1:A:194:C:C6	2.49	0.47
1:A:262:A:H5"	20:T:76:ALA:HB2	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:530:G:H8	22:W:38:GLY:HA3	1.79	0.47
1:A:874:G:C2	1:A:875:C:C2	3.03	0.47
1:A:1017:G:C2	1:A:1018:C:C2	3.02	0.47
1:A:1396:A:H4'	1:A:1397:C:H5"	1.96	0.47
1:A:1435:G:H2'	1:A:1436:U:H6	1.71	0.47
1:A:1444:C:H2'	1:A:1445:C:C6	2.50	0.47
4:D:30:LYS:C	4:D:32:ALA:N	2.72	0.47
6:F:49:ALA:HB2	18:R:80:PRO:HA	1.91	0.47
10:J:37:PRO:HB2	10:J:70:ARG:NH1	2.27	0.47
23:X:89:LYS:HG3	23:X:119:THR:HB	1.96	0.47
1:A:25:C:H2'	1:A:26:A:H8	1.79	0.47
1:A:240:C:H2'	1:A:241:C:H6	1.80	0.47
1:A:548:G:C2	1:A:549:C:C2	3.03	0.47
1:A:613:C:H2'	1:A:614:A:C8	2.49	0.47
1:A:774:G:C2	1:A:806:C:C2	3.02	0.47
1:A:823:G:N2	1:A:824:C:C2	2.82	0.47
1:A:1255:G:O2'	1:A:1258:G:N3	2.46	0.47
1:A:1373:G:H5"	7:G:36:LYS:HB3	1.96	0.47
1:A:1444:C:H2'	1:A:1445:C:H6	1.80	0.47
1:A:1526:G:C6	1:A:1527:C:N4	2.83	0.47
2:B:146:GLN:HG2	2:B:153:ARG:HH21	1.79	0.47
4:D:108:LEU:HB3	4:D:110:PHE:CE1	2.49	0.47
16:P:11:SER:HB2	16:P:14:ASN:HD22	1.79	0.47
1:A:542:G:C6	1:A:543:C:N4	2.82	0.47
1:A:910:C:O2'	1:A:911:U:H5'	2.13	0.47
1:A:1274:G:H2'	1:A:1275:A:H8	1.79	0.47
2:B:25:ASN:HA	2:B:26:PRO:HD3	1.66	0.47
4:D:133:VAL:HG13	4:D:135:LEU:HD12	1.96	0.47
8:H:104:ARG:O	8:H:105:ARG:HB2	2.13	0.47
11:K:54:ARG:H	11:K:54:ARG:CD	2.24	0.47
1:A:17:U:H1'	1:A:1079:G:O2'	2.14	0.47
1:A:18:C:H2'	1:A:19:C:H6	1.79	0.47
1:A:63:C:H42	1:A:104:G:H1	1.62	0.47
1:A:69:G:C2	1:A:101:A:N1	2.83	0.47
1:A:246:A:C4	1:A:279:A:C6	3.03	0.47
1:A:399:G:N2	1:A:400:C:C2	2.82	0.47
1:A:1443:G:C2	1:A:1444:C:C4	3.02	0.47
12:L:9:GLN:HG2	12:L:12:ARG:HH21	1.80	0.47
1:A:73:G:H5"	1:A:76:C:OP2	2.15	0.47
1:A:827:U:O3'	8:H:19:VAL:HG21	2.15	0.47
1:A:975:A:H4'	1:A:976:G:H5'	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1089:G:N2	1:A:1097:C:C2	2.83	0.47
1:A:1300:G:HO2'	1:A:1301:U:P	2.37	0.47
1:A:1349:A:H5"	9:I:121:ARG:HB2	1.97	0.47
1:A:1365:G:C5	1:A:1366:C:C4	3.03	0.47
1:A:1418:A:H2'	1:A:1418:A:N3	2.29	0.47
1:A:1497:G:H2'	1:A:1498:U:O4'	2.13	0.47
3:C:140:ARG:O	3:C:143:GLU:HB2	2.14	0.47
4:D:25:ARG:CZ	4:D:30:LYS:HB3	2.45	0.47
4:D:64:LEU:HD12	4:D:203:VAL:HG21	1.95	0.47
4:D:150:GLU:HA	4:D:153:ARG:HE	1.79	0.47
11:K:84:VAL:HG21	11:K:91:ARG:NH2	2.30	0.47
12:L:30:ALA:CB	12:L:33:ARG:HE	2.27	0.47
13:M:23:TYR:HE1	13:M:70:LEU:HB3	1.80	0.47
1:A:540:G:H2'	1:A:541:G:H8	1.77	0.47
1:A:838:G:C2	1:A:849:C:C2	3.02	0.47
1:A:944:G:H2'	1:A:945:G:H5'	1.97	0.47
1:A:1008:C:N3	1:A:1022:G:N2	2.63	0.47
1:A:1508:G:C2	1:A:1509:C:C2	3.03	0.47
16:P:53:VAL:O	16:P:57:ARG:HD2	2.15	0.47
1:A:1287:A:H5'	1:A:1287:A:H8	1.80	0.47
2:B:98:LEU:H	2:B:101:MET:HE3	1.79	0.47
7:G:125:MET:O	7:G:129:GLU:HG2	2.14	0.47
10:J:6:ILE:HA	10:J:97:GLU:O	2.14	0.47
1:A:25:C:H2'	1:A:26:A:C8	2.50	0.47
1:A:67:C:O2'	1:A:68:G:O4'	2.30	0.47
1:A:903:G:H2'	1:A:904:C:C6	2.50	0.47
1:A:1106:G:N1	1:A:1107:C:C4	2.83	0.47
1:A:1171:G:N2	1:A:1172:C:C2	2.83	0.47
1:A:1246:C:H2'	1:A:1247:U:C6	2.49	0.47
1:A:1445:C:N3	1:A:1458:G:C2	2.83	0.47
1:A:1527:C:H2'	1:A:1528:U:C6	2.50	0.47
11:K:100:ALA:O	11:K:102:GLY:N	2.47	0.47
13:M:23:TYR:CE1	13:M:70:LEU:HB3	2.50	0.47
1:A:115:G:O2'	1:A:289:G:H5"	2.15	0.46
1:A:132:C:C2	1:A:231:G:N2	2.83	0.46
1:A:172:A:H2'	1:A:174:C:C5	2.46	0.46
1:A:321:A:H61	1:A:332:G:H1	1.63	0.46
1:A:457:C:H2'	1:A:458:C:C6	2.50	0.46
1:A:715:A:H2'	1:A:716:A:C8	2.50	0.46
1:A:948:C:OP1	13:M:108:ARG:N	2.47	0.46
1:A:1070:U:OP1	5:E:20:GLN:HG3	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1103:C:H5”	2:B:98:LEU:HD13	1.97	0.46
1:A:1241:G:N1	1:A:1242:C:C4	2.83	0.46
1:A:861:G:C2	1:A:862:C:C2	3.03	0.46
1:A:881:G:C6	1:A:882:C:C4	3.03	0.46
1:A:895:G:H1	1:A:904:C:N4	2.11	0.46
1:A:1137:C:H4’	1:A:1138:G:C2	2.49	0.46
4:D:140:VAL:HG11	4:D:146:ILE:HD11	1.98	0.46
13:M:19:LEU:HB3	13:M:25:ILE:HG21	1.97	0.46
23:X:16:VAL:HG12	23:X:55:PRO:HB2	1.96	0.46
1:A:109:A:H5’	1:A:110:C:H5	1.79	0.46
1:A:363:A:OP2	12:L:34:ARG:HG2	2.15	0.46
1:A:443:C:C2	1:A:492:G:N2	2.84	0.46
1:A:827:U:H5”	8:H:21:LYS:HE2	1.96	0.46
4:D:9:CYS:SG	4:D:26:CYS:SG	3.13	0.46
6:F:14:LEU:HD13	6:F:18:GLN:HB3	1.97	0.46
7:G:12:LEU:H	7:G:12:LEU:HD12	1.80	0.46
1:A:96:U:H2’	1:A:97:G:C8	2.50	0.46
1:A:251:G:N1	1:A:266:G:C6	2.83	0.46
1:A:377:G:H1	1:A:386:C:H42	1.62	0.46
1:A:789:U:H2’	1:A:791:G:OP2	2.14	0.46
1:A:868:C:H5’	1:A:873:A:N6	2.31	0.46
1:A:1355:G:H1	1:A:1367:C:N4	2.12	0.46
1:A:1384:C:H2’	1:A:1385:G:C8	2.50	0.46
1:A:1432:G:O2’	1:A:1468:A:N6	2.49	0.46
1:A:1464:G:C2	1:A:1465:C:C4	3.03	0.46
9:I:71:SER:HA	9:I:74:ILE:HD12	1.96	0.46
1:A:11:G:H2’	1:A:12:U:O4’	2.15	0.46
1:A:334:C:H2’	1:A:335:C:H6	1.80	0.46
1:A:369:C:H2’	1:A:370:C:C6	2.50	0.46
1:A:1493:A:H4’	1:A:1494:G:OP1	2.15	0.46
9:I:16:ARG:HH21	9:I:64:THR:HG21	1.81	0.46
11:K:83:ILE:HG12	11:K:109:VAL:HG12	1.97	0.46
1:A:778:G:C6	1:A:779:C:C4	3.04	0.46
1:A:1127:G:H5”	1:A:1128:C:OP2	2.16	0.46
9:I:26:VAL:HG13	9:I:63:ILE:HD12	1.97	0.46
1:A:240:C:H2’	1:A:241:C:C6	2.50	0.46
1:A:370:C:O2	1:A:482:A:O2’	2.34	0.46
1:A:542:G:C2	1:A:543:C:C2	3.04	0.46
1:A:564:C:O2	1:A:564:C:C2’	2.61	0.46
1:A:577:G:C2	1:A:578:C:C2	3.03	0.46
1:A:675:A:H2’	1:A:676:A:H8	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:814:A:H2'	1:A:816:A:H5"	1.98	0.46
1:A:1077:G:N3	1:A:1079:G:H8	2.12	0.46
1:A:1537:U:H6	1:A:1537:U:O5'	1.99	0.46
5:E:127:ASN:HD21	5:E:129:ILE:H	1.63	0.46
10:J:17:ASP:CG	10:J:70:ARG:HH22	2.06	0.46
18:R:58:LEU:HB3	18:R:62:GLU:HB3	1.97	0.46
1:A:17:U:C2	1:A:18:C:C4	3.04	0.46
1:A:266:G:C3'	17:Q:67:LYS:HB2	2.34	0.46
4:D:19:LEU:HD13	4:D:21:LEU:HD22	1.98	0.46
4:D:69:GLY:C	4:D:70:ILE:HG13	2.41	0.46
22:W:32:ILE:HD13	22:W:32:ILE:H	1.81	0.46
1:A:244:U:O4	1:A:906:G:H1'	2.16	0.46
1:A:378:G:C6	1:A:379:C:N4	2.83	0.46
1:A:1445:C:C2	1:A:1458:G:N2	2.84	0.46
1:A:1484:C:H2'	1:A:1485:U:O4'	2.16	0.46
4:D:119:GLN:O	4:D:123:HIS:CD2	2.69	0.46
11:K:18:ARG:HB2	11:K:33:THR:HG23	1.97	0.46
16:P:59:TRP:C	16:P:62:VAL:HG22	2.39	0.46
19:S:22:LEU:HD11	19:S:31:ILE:HD11	1.98	0.46
19:S:40:ILE:HG21	19:S:62:ILE:HD11	1.98	0.46
1:A:21:G:C2	1:A:22:G:C6	3.04	0.46
1:A:39:G:C6	1:A:40:C:C4	3.04	0.46
1:A:155:C:H42	1:A:166:G:H1	1.64	0.46
1:A:246:A:O2'	17:Q:99:SER:HA	2.16	0.46
1:A:614:A:H2'	1:A:615:C:C6	2.51	0.46
1:A:938:A:H8	1:A:938:A:O5'	1.99	0.46
1:A:1459:C:OP1	20:T:28:ALA:HA	2.16	0.46
18:R:37:VAL:O	18:R:40:LEU:HB2	2.15	0.46
1:A:132:C:N3	1:A:231:G:C2	2.84	0.45
1:A:639:G:H2'	1:A:640:A:C8	2.51	0.45
1:A:1074:G:H1'	1:A:1102:A:C2	2.51	0.45
1:A:1315:U:O2'	1:A:1360:A:N3	2.48	0.45
6:F:4:TYR:CZ	6:F:72:VAL:HG21	2.50	0.45
13:M:3:ARG:H	13:M:57:ARG:HH22	1.63	0.45
23:X:5:TYR:CE2	23:X:65:TRP:HH2	2.30	0.45
1:A:289:G:C2	1:A:290:C:C2	3.04	0.45
1:A:678:U:H2'	1:A:679:C:H6	1.76	0.45
1:A:708:C:H2'	1:A:709:G:H8	1.82	0.45
1:A:951:G:C6	1:A:1231:G:C6	3.04	0.45
1:A:1102:A:H2'	1:A:1103:C:H6	1.76	0.45
1:A:1386:G:H2'	1:A:1387:G:C8	2.41	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:64:LEU:HA	4:D:67:ILE:HD12	1.98	0.45
5:E:10:MET:HA	5:E:32:VAL:HG23	1.97	0.45
6:F:12:PRO:HD3	6:F:58:GLY:HA2	1.97	0.45
6:F:33:TYR:HD1	6:F:71:ARG:HD2	1.81	0.45
6:F:37:VAL:HA	6:F:65:VAL:HG12	1.98	0.45
1:A:15:G:H2'	1:A:16:A:C8	2.32	0.45
1:A:327:A:N3	1:A:329:A:H1'	2.31	0.45
1:A:524:G:C2	1:A:525:C:C4	3.05	0.45
1:A:974:A:OP2	14:N:32:SER:HB2	2.17	0.45
1:A:1007:C:C2	1:A:1023:G:N1	2.84	0.45
1:A:1220:G:H2'	1:A:1221:G:O4'	2.17	0.45
1:A:1241:G:C6	1:A:1242:C:N4	2.84	0.45
1:A:1493:A:C2	22:W:46:ARG:HA	2.52	0.45
4:D:98:GLU:HA	4:D:103:ASN:HD22	1.80	0.45
8:H:39:LEU:HD23	8:H:45:ILE:HG12	1.99	0.45
11:K:18:ARG:HB2	11:K:33:THR:CG2	2.46	0.45
11:K:43:SER:HB3	11:K:68:ALA:HB2	1.98	0.45
16:P:12:LYS:C	16:P:14:ASN:H	2.24	0.45
23:X:102:LYS:HD3	23:X:102:LYS:HA	1.78	0.45
1:A:15:G:H21	5:E:19:MET:HB2	1.80	0.45
1:A:79:G:H2'	1:A:80:G:C8	2.52	0.45
1:A:1138:G:H2'	1:A:1140:C:H5"	1.98	0.45
1:A:1162:C:N3	1:A:1175:G:C2	2.85	0.45
14:N:6:LEU:C	14:N:8:GLU:H	2.23	0.45
1:A:27:G:H2'	1:A:28:G:O4'	2.17	0.45
1:A:317:G:C2	1:A:337:C:C2	3.04	0.45
1:A:568:G:C6	1:A:569:C:N4	2.85	0.45
1:A:823:G:C6	1:A:824:C:N4	2.84	0.45
1:A:1050:G:C6	1:A:1051:C:N4	2.84	0.45
1:A:1105:A:H2'	1:A:1106:G:C8	2.49	0.45
1:A:1525:G:H2'	1:A:1526:G:C8	2.51	0.45
2:B:131:PRO:HA	2:B:135:GLN:OE1	2.17	0.45
1:A:284:G:H2'	1:A:285:G:H8	1.82	0.45
1:A:501:C:H2'	1:A:502:G:C8	2.51	0.45
1:A:524:G:H2'	1:A:525:C:C6	2.51	0.45
1:A:639:G:H2'	1:A:640:A:H8	1.82	0.45
1:A:1313:U:H2'	1:A:1314:C:H6	1.81	0.45
1:A:1351:U:H2'	1:A:1352:C:H6	1.81	0.45
1:A:1391:U:H2'	1:A:1392:G:C8	2.51	0.45
1:A:1408:A:H2'	1:A:1409:C:C6	2.51	0.45
14:N:37:PHE:HB3	14:N:39:LEU:HG	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
23:X:102:LYS:O	23:X:106:ILE:HG13	2.17	0.45
1:A:287:U:C2'	1:A:288:A:H5'	2.47	0.45
1:A:895:G:C2	1:A:896:C:C2	3.05	0.45
1:A:931:C:H2'	1:A:932:C:O4'	2.17	0.45
1:A:1422:G:H1	1:A:1478:C:H42	1.63	0.45
3:C:29:TYR:CE1	14:N:37:PHE:CD1	3.04	0.45
14:N:49:HIS:HE1	14:N:58:LYS:HE2	1.81	0.45
15:O:7:GLU:O	15:O:11:VAL:HG23	2.16	0.45
20:T:42:GLN:O	20:T:45:GLN:HB2	2.17	0.45
1:A:202:U:OP2	1:A:203:U:H5	2.00	0.45
1:A:285:G:H2'	1:A:286:G:O4'	2.16	0.45
1:A:391:G:H2'	1:A:392:G:O4'	2.17	0.45
1:A:439:A:H3'	1:A:441:A:H5"	1.98	0.45
1:A:544:G:OP1	4:D:62:GLN:HG3	2.17	0.45
1:A:573:A:H2'	1:A:574:A:O4'	2.17	0.45
1:A:916:G:H2'	1:A:917:G:C8	2.52	0.45
1:A:1116:C:H2'	1:A:1117:G:O4'	2.17	0.45
1:A:1420:C:H2'	1:A:1421:G:H8	1.81	0.45
3:C:6:HIS:HD2	3:C:9:GLY:H	1.65	0.45
4:D:138:TYR:CD1	4:D:138:TYR:C	2.95	0.45
7:G:31:MET:HG3	7:G:35:LYS:C	2.42	0.45
9:I:48:GLU:N	9:I:49:PRO:HD2	2.32	0.45
19:S:49:ILE:HD12	19:S:62:ILE:HG21	1.98	0.45
1:A:319:G:C2	1:A:320:C:C2	3.05	0.45
1:A:335:C:H2'	1:A:336:C:H6	1.77	0.45
1:A:613:C:C2	1:A:628:G:N2	2.85	0.45
1:A:985:C:C2	1:A:1221:G:C2	3.05	0.45
1:A:1046:A:H3'	1:A:1047:G:H8	1.82	0.45
7:G:71:PRO:HD2	7:G:96:GLN:HB2	1.99	0.45
10:J:37:PRO:CB	10:J:70:ARG:HH11	2.30	0.45
1:A:233:C:H2'	1:A:234:C:C6	2.52	0.45
1:A:370:C:H42	1:A:391:G:H1	1.65	0.45
1:A:674:G:H2'	1:A:675:A:H8	1.82	0.45
1:A:928:G:H1	1:A:1389:C:N4	2.15	0.45
1:A:1055:A:H2	3:C:194:GLY:HA2	1.81	0.45
1:A:1246:C:H2'	1:A:1247:U:H6	1.82	0.45
1:A:1526:G:C2	1:A:1527:C:C2	3.05	0.45
16:P:67:THR:CG2	16:P:68:ASP:H	2.28	0.45
23:X:117:LYS:HE2	23:X:162:ASN:HB2	1.99	0.45
1:A:79:G:N1	1:A:91:C:C2	2.85	0.44
1:A:189:G:H2'	1:A:189(A):C:C6	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:444:C:H42	1:A:490:G:H1	1.65	0.44
1:A:502:G:OP1	12:L:118:SER:N	2.46	0.44
1:A:516:U:H4'	22:W:2:LYS:HD2	1.99	0.44
1:A:939:G:C2	1:A:940:C:N3	2.85	0.44
2:B:211:ILE:H	2:B:211:ILE:HG13	1.58	0.44
20:T:72:LEU:O	20:T:72:LEU:HG	2.15	0.44
21:V:3:LYS:O	21:V:11:GLY:HA2	2.17	0.44
1:A:33:A:H2'	1:A:34:C:C6	2.52	0.44
1:A:279:A:N1	17:Q:98:LEU:HD23	2.30	0.44
1:A:542:G:H2'	1:A:543:C:C6	2.52	0.44
1:A:1015:A:H2'	1:A:1016:A:C8	2.52	0.44
1:A:1101:A:H61	2:B:103:THR:HG21	1.82	0.44
1:A:1430:C:C2	1:A:1471:G:N2	2.84	0.44
1:A:1487:G:H5"	1:A:1488:G:OP1	2.17	0.44
1:A:1509:C:H2'	1:A:1510:U:O4'	2.18	0.44
3:C:29:TYR:CD1	14:N:36:PHE:CE2	3.06	0.44
11:K:84:VAL:HG11	11:K:95:ILE:HD11	1.98	0.44
1:A:551:U:H2'	1:A:552:U:C6	2.51	0.44
1:A:763:G:C2	1:A:764:C:C2	3.06	0.44
1:A:903:G:C2	1:A:904:C:C2	3.04	0.44
1:A:1064:G:C8	1:A:1066:C:C2	3.06	0.44
1:A:1251:A:H2'	1:A:1252:A:O4'	2.17	0.44
1:A:1283:G:C6	1:A:1284:C:N4	2.85	0.44
1:A:1329:A:H5"	13:M:26:GLY:N	2.31	0.44
1:A:1391:U:H2'	1:A:1392:G:H8	1.81	0.44
1:A:1541:U:O3'	18:R:19:LYS:HB3	2.16	0.44
2:B:18:GLY:HA2	2:B:42:ILE:HD12	1.98	0.44
4:D:13:ARG:HH12	4:D:40:PRO:HA	1.81	0.44
4:D:43:HIS:CD2	4:D:43:HIS:H	2.36	0.44
4:D:158:ILE:H	4:D:158:ILE:HG13	1.55	0.44
19:S:30:LEU:H	19:S:48:THR:HB	1.82	0.44
1:A:625:G:OP1	16:P:9:PHE:HB3	2.18	0.44
1:A:1082:G:C8	1:A:1082:G:O5'	2.69	0.44
1:A:1144:G:N2	1:A:1146:A:H62	2.15	0.44
1:A:1151:A:H5'	10:J:41:PRO:HA	1.99	0.44
3:C:24:ALA:HB2	3:C:32:LEU:HD12	2.00	0.44
4:D:173:TRP:HB2	4:D:187:ARG:O	2.18	0.44
7:G:24:THR:HA	7:G:27:ILE:HD12	1.99	0.44
7:G:29:LYS:HB3	7:G:105:VAL:HG21	1.99	0.44
1:A:51:A:C6	1:A:353:A:C2	3.05	0.44
1:A:188:C:H5'	20:T:89:ARG:HD3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:455:C:H2'	1:A:456:C:H6	1.81	0.44
1:A:571:U:H5"	1:A:819:A:C5	2.53	0.44
1:A:601:C:C2	1:A:638:G:N2	2.85	0.44
1:A:604:G:H2'	1:A:605:U:O4'	2.17	0.44
1:A:827:U:C4	1:A:872:A:N6	2.73	0.44
1:A:942:G:C6	1:A:1342:C:N3	2.84	0.44
1:A:1017:G:C6	1:A:1018:C:C4	3.06	0.44
1:A:1106:G:H2'	1:A:1107:C:C6	2.53	0.44
1:A:1163:C:H2'	1:A:1164:G:C8	2.45	0.44
1:A:1304:G:H21	1:A:1333:A:H62	1.65	0.44
1:A:1374:A:H1'	7:G:31:MET:HE1	1.99	0.44
1:A:1438:G:N2	1:A:1439:C:C2	2.85	0.44
3:C:14:ILE:H	3:C:14:ILE:HG12	1.40	0.44
3:C:116:VAL:O	3:C:120:VAL:HG23	2.18	0.44
4:D:108:LEU:HB3	4:D:110:PHE:HE1	1.83	0.44
5:E:33:VAL:HG12	5:E:112:LEU:HD22	2.00	0.44
1:A:344:A:H4'	1:A:345:C:OP2	2.18	0.44
1:A:624:C:O3'	16:P:10:GLY:HA2	2.18	0.44
1:A:751:U:C5	1:A:752:G:C5	3.05	0.44
1:A:761:G:C5	1:A:762:C:C4	3.05	0.44
1:A:864:A:O2'	1:A:865:A:O4'	2.35	0.44
1:A:920:U:C2	1:A:921:U:C5	3.05	0.44
1:A:1001(A):G:N2	1:A:1040:U:C2	2.86	0.44
1:A:1007:C:N3	1:A:1023:G:C6	2.85	0.44
3:C:50:ALA:HA	3:C:72:LYS:HB2	1.98	0.44
3:C:153:VAL:HG22	3:C:198:VAL:HA	2.00	0.44
8:H:4:ASP:CG	8:H:85:ARG:HH12	2.26	0.44
15:O:54:ARG:HG3	15:O:55:GLY:N	2.32	0.44
1:A:18:C:H4'	1:A:1078:U:H1'	1.99	0.44
1:A:105:G:C2	1:A:106:C:C2	3.06	0.44
1:A:1110:A:H2'	1:A:1111:A:O4'	2.18	0.44
1:A:1276:G:H2'	1:A:1277:C:O4'	2.18	0.44
10:J:7:LYS:HG2	10:J:71:LEU:CD2	2.48	0.44
10:J:61:GLU:CD	10:J:61:GLU:C	2.85	0.44
23:X:17:ARG:HB2	23:X:54:PRO:O	2.18	0.44
1:A:291:C:O2	1:A:310:G:C2	2.71	0.44
1:A:334:C:H2'	1:A:335:C:C6	2.52	0.44
1:A:1419:G:C2	1:A:1420:C:C2	3.05	0.44
2:B:132:LYS:HG2	2:B:135:GLN:CD	2.42	0.44
11:K:50:TYR:CD2	11:K:54:ARG:HB2	2.52	0.44
12:L:75:HIS:HB2	12:L:77:LEU:HD13	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:6:G:N2	5:E:98:THR:OG1	2.51	0.44
1:A:236:G:C6	1:A:237:C:C4	3.06	0.44
1:A:307:C:C6	1:A:308:C:C5	3.05	0.44
1:A:926:G:C8	1:A:926:G:O5'	2.71	0.44
1:A:1518:A:H2'	1:A:1519:A:H8	1.83	0.44
12:L:60:LEU:HD11	12:L:85:ILE:HD13	2.00	0.44
1:A:237:C:H2'	1:A:238:G:H8	1.83	0.43
1:A:836:G:C6	1:A:851:G:C6	3.06	0.43
1:A:1134:G:N2	1:A:1141:C:C2	2.85	0.43
1:A:1401:G:O6	1:A:1504:G:N2	2.51	0.43
1:A:1495:U:O2'	23:X:98:ASP:OD2	2.31	0.43
3:C:55:VAL:HG22	3:C:68:VAL:HG13	1.98	0.43
1:A:674:G:H2'	1:A:675:A:C8	2.53	0.43
1:A:1081:G:C2'	1:A:1082:G:H8	2.00	0.43
1:A:1253:G:C2	1:A:1254:C:C2	3.06	0.43
3:C:91:LEU:HG	3:C:99:VAL:HG11	1.99	0.43
10:J:38:ILE:HA	10:J:39:PRO:HD3	1.87	0.43
16:P:21:VAL:HG12	16:P:34:GLU:HB3	2.00	0.43
1:A:60:A:H8	1:A:60:A:OP1	2.01	0.43
1:A:158:G:H8	1:A:158:G:O5'	2.01	0.43
1:A:276:G:C2	1:A:277:C:C2	3.06	0.43
1:A:792:A:H4'	1:A:793:U:C5'	2.49	0.43
1:A:942:G:C2	1:A:1342:C:O2	2.71	0.43
1:A:1098:C:C1'	1:A:1168:A:H2	2.31	0.43
1:A:1241:G:C2	1:A:1242:C:C4	3.06	0.43
1:A:1462:G:N2	1:A:1463:C:C2	2.87	0.43
16:P:48:TRP:CD1	16:P:48:TRP:N	2.86	0.43
17:Q:92:ARG:O	17:Q:95:TYR:HB2	2.18	0.43
18:R:25:THR:HB	18:R:42:ARG:HH22	1.83	0.43
1:A:767:A:H2'	1:A:768:A:O4'	2.17	0.43
1:A:778:G:C2	1:A:779:C:C2	3.07	0.43
1:A:1343:G:C6	1:A:1344:C:N3	2.87	0.43
1:A:1381:U:H1'	7:G:78:ARG:HE	1.84	0.43
3:C:36:ASP:HA	3:C:39:ILE:HD12	1.99	0.43
4:D:119:GLN:HG2	4:D:120:LEU:N	2.33	0.43
12:L:102:ARG:CZ	12:L:110:VAL:HG22	2.48	0.43
18:R:31:LEU:C	18:R:33:ASP:H	2.27	0.43
1:A:29:G:N2	1:A:555:C:C2	2.86	0.43
1:A:70:G:C2	1:A:100:C:O2	2.71	0.43
1:A:174:C:H2'	1:A:175:C:H6	1.83	0.43
1:A:291:C:H2'	1:A:292:G:C8	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:321:A:H2'	1:A:322:C:C6	2.53	0.43
1:A:457:C:H2'	1:A:458:C:H6	1.84	0.43
1:A:602:A:H2'	1:A:603:U:O4'	2.17	0.43
1:A:667:G:H2'	1:A:668:G:C8	2.51	0.43
1:A:828:A:H2'	1:A:829:G:O4'	2.18	0.43
1:A:886:G:N1	1:A:912:C:C2	2.86	0.43
8:H:53:VAL:HG23	8:H:58:TYR:CD2	2.54	0.43
11:K:84:VAL:CG2	11:K:91:ARG:HH22	2.30	0.43
12:L:90:VAL:HG11	12:L:93:LEU:HD12	2.00	0.43
1:A:245:C:C2	1:A:284:G:C2	3.06	0.43
1:A:662:G:C2	1:A:744:C:O2	2.71	0.43
1:A:734:G:C6	1:A:735:C:C4	3.07	0.43
1:A:794:A:H2'	1:A:795:C:H6	1.84	0.43
1:A:1081:G:OP1	5:E:18:ARG:HA	2.18	0.43
1:A:1373:G:H5"	7:G:36:LYS:CB	2.49	0.43
3:C:29:TYR:HE1	14:N:37:PHE:CD1	2.36	0.43
3:C:30:ARG:HG2	14:N:37:PHE:O	2.17	0.43
12:L:93:LEU:HA	12:L:94:PRO:HD3	1.68	0.43
17:Q:51:TYR:HE2	17:Q:76:LEU:HB2	1.83	0.43
1:A:115:G:C2	1:A:289:G:N7	2.87	0.43
1:A:137:C:C2	1:A:227:G:C2	3.06	0.43
1:A:166:G:H2'	1:A:167:G:H8	1.83	0.43
1:A:407:G:H2'	1:A:408:A:C8	2.53	0.43
1:A:677:U:H3	1:A:713:G:H1	1.66	0.43
5:E:78:HIS:HB2	8:H:104:ARG:HD2	2.01	0.43
5:E:88:LYS:HB3	5:E:123:LEU:HB2	2.00	0.43
7:G:16:LEU:H	7:G:16:LEU:HG	1.54	0.43
10:J:60:ARG:NH1	10:J:60:ARG:CB	2.81	0.43
18:R:26:LEU:HD13	18:R:42:ARG:HE	1.84	0.43
1:A:237:C:H2'	1:A:238:G:C8	2.54	0.43
1:A:250:A:H1'	1:A:252:U:C4	2.54	0.43
1:A:430:A:P	4:D:8:VAL:H	2.41	0.43
1:A:529:G:H5'	1:A:530:G:OP2	2.19	0.43
1:A:651:C:H2'	1:A:652:U:C6	2.53	0.43
1:A:668:G:H2'	1:A:669:U:C6	2.54	0.43
1:A:698:G:C6	1:A:699:C:N4	2.87	0.43
1:A:861:G:C6	1:A:862:C:C4	3.07	0.43
1:A:864:A:O2'	1:A:1078:U:O4	2.28	0.43
1:A:922:G:C2	1:A:923:A:C4	3.06	0.43
1:A:1081:G:P	5:E:18:ARG:HA	2.58	0.43
8:H:89:PRO:HA	8:H:92:ARG:NH1	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:26:VAL:HB	9:I:33:PHE:HB2	2.01	0.43
10:J:57:LYS:HA	10:J:60:ARG:HH22	1.84	0.43
22:W:55:VAL:HG13	22:W:66:ARG:H	1.82	0.43
1:A:39:G:C2	1:A:40:C:C2	3.07	0.43
1:A:444:C:C2	1:A:491:G:N2	2.87	0.43
1:A:502:G:H2'	1:A:503:C:O4'	2.19	0.43
1:A:560:U:H2'	5:E:123:LEU:HD22	2.01	0.43
1:A:740:U:H2'	1:A:741:G:H8	1.84	0.43
1:A:1192:C:H2'	1:A:1193:G:O4'	2.18	0.43
1:A:1419:G:C6	1:A:1420:C:C4	3.07	0.43
1:A:1542:U:O2	1:A:1542:U:H2'	2.18	0.43
14:N:15:LYS:HD3	14:N:19:ARG:HH12	1.83	0.43
1:A:15:G:N1	1:A:921:U:C2	2.87	0.43
1:A:73:G:N1	1:A:76:C:C2	2.87	0.43
1:A:250:A:H4'	1:A:251:G:O5'	2.19	0.43
1:A:276:G:O2'	17:Q:68:ARG:NH2	2.49	0.43
1:A:442:C:H2'	1:A:443:C:H6	1.79	0.43
1:A:476:G:H2'	1:A:477:A:C8	2.54	0.43
1:A:769:G:C2	1:A:770:C:C4	3.07	0.43
1:A:836:G:C6	1:A:837:G:C6	3.07	0.43
1:A:1050:G:N2	1:A:1051:C:C2	2.87	0.43
3:C:6:HIS:HA	3:C:7:PRO:HD3	1.85	0.43
3:C:62:ASP:HA	3:C:97:LYS:HE3	2.00	0.43
4:D:3:ARG:HD2	4:D:118:ARG:HD3	2.01	0.43
5:E:15:ARG:HD3	5:E:28:PHE:CE1	2.54	0.43
1:A:157:G:C6	1:A:165:C:N3	2.87	0.42
1:A:399:G:H2'	1:A:400:C:C6	2.53	0.42
1:A:416:G:C6	1:A:417:C:C4	3.07	0.42
1:A:806:C:H2'	1:A:807:A:C8	2.54	0.42
1:A:1141:C:H2'	1:A:1142:G:H8	1.84	0.42
1:A:1256:A:C2'	3:C:27:LYS:HZ1	2.32	0.42
1:A:1484:C:H6	1:A:1484:C:O5'	2.01	0.42
1:A:1508:G:C6	1:A:1509:C:C4	3.07	0.42
2:B:33:TYR:HB3	2:B:41:ILE:HG22	2.01	0.42
8:H:25:ASP:OD2	8:H:53:VAL:HG21	2.18	0.42
1:A:115:G:C2	1:A:289:G:C5	3.07	0.42
1:A:621:A:H2'	1:A:622:A:H8	1.84	0.42
1:A:1189:C:H5"	3:C:5:ILE:HG12	2.00	0.42
1:A:1393:U:H2'	1:A:1395:C:H5	1.83	0.42
2:B:55:PHE:HD1	2:B:55:PHE:HA	1.74	0.42
8:H:6:ILE:HD12	8:H:35:ILE:HD12	2.00	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:L:79:GLU:C	12:L:81:SER:H	2.27	0.42
1:A:258:G:H2'	1:A:259:G:H8	1.84	0.42
1:A:456:C:C2	1:A:476:G:C2	3.07	0.42
1:A:976:G:N2	1:A:1363:C:H5"	2.34	0.42
1:A:1253:G:C6	1:A:1254:C:C4	3.07	0.42
3:C:135:LYS:O	3:C:139:GLN:HG2	2.19	0.42
4:D:150:GLU:O	4:D:153:ARG:HB2	2.19	0.42
8:H:3:THR:HG23	8:H:4:ASP:H	1.83	0.42
9:I:114:TYR:CD2	10:J:58:ASP:O	2.66	0.42
11:K:21:ILE:HG23	11:K:30:VAL:HG22	2.01	0.42
1:A:104:G:C2	1:A:105:G:C5	3.07	0.42
1:A:333:G:C2	1:A:334:C:C2	3.08	0.42
1:A:502:G:C2	1:A:503:C:C2	3.07	0.42
1:A:786:G:N2	1:A:797:C:C2	2.88	0.42
1:A:895:G:C6	1:A:896:C:C4	3.07	0.42
1:A:1172:C:H2'	1:A:1173:G:C8	2.51	0.42
1:A:1368:G:N1	1:A:1369:C:C4	2.88	0.42
2:B:115:LEU:HD11	2:B:146:GLN:HG3	2.01	0.42
8:H:134:ILE:H	8:H:134:ILE:HG13	1.62	0.42
1:A:27:G:H2'	1:A:28:G:H8	1.83	0.42
1:A:41:G:C6	1:A:402:G:C6	3.07	0.42
1:A:293:G:C4	1:A:305:G:N2	2.88	0.42
1:A:333:G:N1	1:A:334:C:C4	2.87	0.42
1:A:357:G:OP1	1:A:367:U:H5"	2.20	0.42
1:A:399:G:C2	1:A:400:C:C2	3.08	0.42
1:A:402:G:OP1	4:D:74:GLN:HG3	2.19	0.42
1:A:580:U:O4	1:A:581:G:C6	2.73	0.42
1:A:810:C:H2'	1:A:811:C:O4'	2.19	0.42
1:A:1119:C:C2	1:A:1155:G:N2	2.87	0.42
20:T:61:SER:O	20:T:65:LYS:HG2	2.18	0.42
1:A:112:G:C2	1:A:113:G:C8	3.08	0.42
1:A:396:G:O2'	1:A:398:C:OP1	2.24	0.42
1:A:577:G:N1	1:A:578:C:C4	2.87	0.42
1:A:829:G:O4'	2:B:26:PRO:HG2	2.18	0.42
1:A:874:G:C6	1:A:875:C:C4	3.07	0.42
1:A:1030(C):G:H2'	1:A:1030(D):A:C8	2.54	0.42
4:D:36:ARG:HD3	4:D:38:TYR:CE2	2.49	0.42
11:K:92:GLU:HA	11:K:95:ILE:HD12	2.01	0.42
1:A:310:G:C6	1:A:311:C:C4	3.07	0.42
1:A:617:G:C6	1:A:618:C:N4	2.87	0.42
1:A:768:A:C5	1:A:769:G:C8	3.08	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:823:G:C2	1:A:824:C:C2	3.08	0.42
1:A:939:G:H1’	1:A:1375:A:C2	2.54	0.42
1:A:966:G:C6	1:A:967:C:C4	3.07	0.42
1:A:998:G:N1	1:A:999:C:C4	2.88	0.42
1:A:1081:G:OP1	5:E:18:ARG:CA	2.68	0.42
1:A:1095:U:C4	1:A:1096:C:N4	2.87	0.42
1:A:1270:C:H2’	1:A:1271:G:C8	2.54	0.42
1:A:1286:A:H2’	1:A:1287:A:H4’	2.02	0.42
1:A:1361:G:C6	1:A:1362:C:N3	2.87	0.42
4:D:89:THR:HA	4:D:92:VAL:HG12	2.02	0.42
7:G:26:PHE:O	7:G:30:ILE:HG13	2.20	0.42
8:H:29:SER:HB3	8:H:32:LYS:CG	2.48	0.42
1:A:374:A:C6	1:A:375:U:C4	3.08	0.42
1:A:402:G:C2	1:A:403:C:C2	3.08	0.42
1:A:590:C:N3	1:A:650:G:C2	2.87	0.42
1:A:1123:A:H4’	10:J:36:GLY:HA3	2.02	0.42
1:A:1158:C:O2	1:A:1158:C:H2’	2.20	0.42
3:C:29:TYR:CE1	14:N:37:PHE:CE1	3.07	0.42
3:C:34:LEU:HD11	14:N:25:VAL:HG21	2.01	0.42
8:H:51:VAL:HB	8:H:52:ASP:H	1.73	0.42
13:M:22:ILE:HG22	13:M:24:GLY:H	1.85	0.42
1:A:187:C:N3	20:T:105:SER:HB2	2.35	0.42
1:A:189(C):C:C2	1:A:189(I):G:C2	3.08	0.42
1:A:200:G:C2	1:A:218:C:C2	3.08	0.42
1:A:310:G:C2	1:A:311:C:C2	3.08	0.42
1:A:402:G:C6	1:A:403:C:C4	3.08	0.42
1:A:617:G:N1	1:A:618:C:C4	2.88	0.42
1:A:1063:C:O5’	1:A:1064:G:H2’	2.19	0.42
1:A:1356:G:N2	1:A:1367:C:C2	2.88	0.42
3:C:113:ALA:N	3:C:114:PRO:CD	2.83	0.42
5:E:41:VAL:HG23	5:E:67:VAL:HG12	2.02	0.42
6:F:30:LEU:HD22	6:F:65:VAL:HG11	2.01	0.42
16:P:67:THR:HG22	16:P:68:ASP:N	2.29	0.42
1:A:17:U:H2’	1:A:18:C:C5	2.49	0.42
1:A:35:G:C5	1:A:36:C:C4	3.07	0.42
1:A:377:G:H1	1:A:386:C:N4	2.17	0.42
1:A:495:A:H4’	1:A:496:A:OP1	2.19	0.42
1:A:891:U:H2’	1:A:892:A:H8	1.84	0.42
1:A:1405:G:H2’	1:A:1406:U:C6	2.55	0.42
1:A:1411:C:H2’	1:A:1412:C:O4’	2.20	0.42
1:A:1478:C:H2’	1:A:1479:C:C6	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:48:ALA:HB1	5:E:53:LEU:HD23	2.02	0.42
8:H:96:GLY:HA2	8:H:130:GLY:HA3	2.01	0.42
11:K:86:GLY:O	11:K:91:ARG:HD2	2.20	0.42
18:R:51:LEU:HB3	18:R:55:ARG:HB2	2.02	0.42
1:A:90:U:O2'	1:A:91:C:H5'	2.20	0.41
1:A:178:C:H2'	1:A:179:A:H8	1.85	0.41
1:A:306:G:C6	1:A:307:C:C4	3.08	0.41
1:A:488:C:H2'	1:A:489:C:C6	2.55	0.41
1:A:509:A:H4'	1:A:510:A:OP1	2.19	0.41
1:A:942:G:N2	1:A:943:U:H1'	2.35	0.41
1:A:947:G:C2	1:A:948:C:C2	3.08	0.41
1:A:985:C:H2'	1:A:986:A:C8	2.55	0.41
1:A:1050:G:C2	1:A:1051:C:C2	3.07	0.41
1:A:1510:U:H2'	1:A:1511:G:C8	2.55	0.41
1:A:1537:U:H3	24:Y:28:A:H61	1.68	0.41
5:E:11:ILE:HB	5:E:31:LEU:HD12	2.02	0.41
6:F:41:GLU:HB2	6:F:62:TRP:HE3	1.85	0.41
1:A:289:G:C6	1:A:290:C:C4	3.08	0.41
1:A:502:G:C6	1:A:503:C:C4	3.08	0.41
1:A:1198:G:C5	1:A:1199:U:C4	3.08	0.41
4:D:67:ILE:O	4:D:114:ARG:HD2	2.19	0.41
1:A:241:C:C2	1:A:286:G:N2	2.89	0.41
1:A:276:G:H2'	1:A:277:C:C6	2.55	0.41
1:A:613:C:H42	1:A:627:G:H1	1.68	0.41
1:A:673:G:H1	1:A:717:C:H42	1.68	0.41
1:A:874:G:N2	1:A:875:C:C2	2.88	0.41
1:A:942:G:N1	1:A:1342:C:C2	2.88	0.41
1:A:966:G:C2	1:A:967:C:C2	3.08	0.41
1:A:1106:G:C2	1:A:1107:C:C2	3.08	0.41
1:A:1423:G:C2	1:A:1424:C:C2	3.09	0.41
6:F:2:ARG:HB2	6:F:4:TYR:CE2	2.55	0.41
11:K:27:ASN:HA	11:K:56:GLY:HA2	2.02	0.41
15:O:9:GLN:HA	15:O:12:ILE:HD12	2.01	0.41
18:R:25:THR:HB	18:R:42:ARG:NH2	2.35	0.41
1:A:129(A):G:O2'	1:A:189(F):U:H2'	2.20	0.41
1:A:324:G:H8	1:A:324:G:OP2	2.03	0.41
1:A:352:C:N3	1:A:356:A:N6	2.67	0.41
1:A:568:G:N1	1:A:883:C:C4	2.89	0.41
1:A:590:C:C2	1:A:650:G:N2	2.88	0.41
1:A:681:C:H42	1:A:709:G:H1	1.67	0.41
1:A:725:G:C2	1:A:726:C:C2	3.09	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1216:G:N2	1:A:1217:C:C2	2.88	0.41
1:A:1526:G:C6	1:A:1527:C:C4	3.08	0.41
2:B:105:PHE:HA	2:B:108:ILE:HG22	2.03	0.41
3:C:148:GLY:HA3	3:C:172:ARG:O	2.20	0.41
4:D:173:TRP:CD1	4:D:174:LEU:HG	2.56	0.41
5:E:80:ILE:CD1	5:E:138:ALA:HB1	2.49	0.41
7:G:71:PRO:HD3	7:G:103:TRP:HZ3	1.85	0.41
10:J:20:ALA:HB1	10:J:37:PRO:HB3	2.02	0.41
1:A:130:A:OP1	1:A:130:A:C8	2.72	0.41
1:A:197:A:H4'	1:A:198:G:O5'	2.20	0.41
1:A:333:G:C6	1:A:334:C:N4	2.88	0.41
1:A:381:C:H2'	1:A:382:A:O4'	2.20	0.41
1:A:841:U:H6	1:A:841:U:H5"	1.86	0.41
1:A:886:G:C2	1:A:912:C:O2	2.73	0.41
1:A:937:A:H1'	1:A:1379:G:N2	2.36	0.41
1:A:1005:A:O4'	1:A:1036:G:N2	2.53	0.41
1:A:1068:G:C2	1:A:1069:C:C2	3.09	0.41
1:A:1171:G:C2	1:A:1172:C:C2	3.09	0.41
1:A:1464:G:C2	1:A:1465:C:N3	2.88	0.41
1:A:417:C:N4	1:A:418:C:N4	2.69	0.41
1:A:521:G:C2	1:A:522:C:C4	3.08	0.41
1:A:675:A:H2'	1:A:676:A:C8	2.56	0.41
1:A:916:G:H2'	1:A:917:G:H8	1.83	0.41
1:A:1158:C:O2	1:A:1158:C:C2'	2.68	0.41
1:A:1458:G:OP1	20:T:32:ALA:HA	2.21	0.41
1:A:1464:G:C6	1:A:1465:C:N4	2.88	0.41
2:B:77:ALA:HB2	2:B:211:ILE:HG21	2.01	0.41
5:E:79:GLU:HA	5:E:91:LEU:O	2.21	0.41
8:H:36:LEU:HD12	8:H:59:LEU:HD22	2.02	0.41
17:Q:29:HIS:CG	17:Q:30:PRO:HD2	2.55	0.41
1:A:216:G:C2	1:A:217:C:N3	2.88	0.41
1:A:306:G:C2	1:A:307:C:C2	3.08	0.41
1:A:376:G:H2'	1:A:377:G:C8	2.52	0.41
1:A:695:A:OP2	11:K:53:SER:N	2.53	0.41
1:A:830:G:H2'	1:A:831:U:O4'	2.20	0.41
1:A:1004:A:N7	1:A:1037:C:N3	2.68	0.41
1:A:1096:C:C2	1:A:1097:C:C5	3.08	0.41
1:A:1171:G:N1	1:A:1172:C:C4	2.89	0.41
1:A:1413:A:H2'	1:A:1414:U:O4'	2.21	0.41
1:A:1523:G:H2'	1:A:1524:C:C6	2.56	0.41
12:L:93:LEU:O	12:L:96:VAL:HB	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:N:3:ARG:CZ	14:N:6:LEU:HD11	2.51	0.41
19:S:17:GLU:HA	19:S:20:LEU:HG	2.02	0.41
1:A:265:G:H2'	1:A:267:C:H5	1.85	0.41
1:A:427:U:H4'	1:A:541:G:H5"	2.03	0.41
1:A:691:G:C8	11:K:26:ASN:HB3	2.56	0.41
1:A:769:G:N3	1:A:769:G:H2'	2.36	0.41
1:A:903:G:C6	1:A:904:C:C4	3.09	0.41
1:A:1398:A:H61	5:E:21:ALA:C	2.26	0.41
1:A:1468:A:H2'	1:A:1469:G:O4'	2.21	0.41
13:M:16:ASP:HB3	13:M:34:LEU:HD11	2.03	0.41
1:A:197:A:N6	1:A:221:C:H4'	2.35	0.41
1:A:299:G:C6	1:A:300:A:C6	3.09	0.41
1:A:500:G:C2	1:A:501:C:C2	3.09	0.41
1:A:563:A:N3	1:A:563:A:H2'	2.35	0.41
1:A:577:G:C6	1:A:578:C:C4	3.08	0.41
1:A:1048:G:C2	1:A:1210:C:C2	3.08	0.41
1:A:1119:C:H2'	1:A:1120:G:O4'	2.21	0.41
1:A:1283:G:N2	1:A:1284:C:C2	2.89	0.41
1:A:1288:A:H2'	1:A:1289:A:H8	1.86	0.41
1:A:1444:C:H6	1:A:1444:C:O5'	2.04	0.41
2:B:54:THR:HG21	2:B:185:ILE:HG23	2.02	0.41
2:B:215:LEU:O	2:B:219:VAL:HG23	2.21	0.41
3:C:29:TYR:CD2	3:C:29:TYR:O	2.73	0.41
3:C:65:ALA:HA	3:C:100:ALA:O	2.21	0.41
5:E:127:ASN:HA	5:E:128:PRO:HD2	1.83	0.41
10:J:60:ARG:CZ	10:J:60:ARG:CB	2.95	0.41
20:T:43:LEU:HD11	20:T:55:ILE:HD13	2.03	0.41
1:A:666:G:C6	1:A:741:G:C5	3.09	0.41
1:A:716:A:C6	1:A:717:C:C4	3.10	0.41
1:A:763:G:C6	1:A:764:C:C4	3.09	0.41
1:A:794:A:H2'	1:A:795:C:C6	2.55	0.41
1:A:861:G:H2'	1:A:862:C:C6	2.56	0.41
1:A:1106:G:C2	1:A:1107:C:N3	2.89	0.41
1:A:1323:G:H4'	1:A:1363:C:C2	2.56	0.41
1:A:1341:U:H2'	1:A:1342:C:C6	2.55	0.41
1:A:1374:A:O2'	7:G:28:ASN:HB3	2.21	0.41
1:A:1514:C:H2'	1:A:1515:C:C6	2.56	0.41
15:O:67:LEU:HD11	15:O:87:ILE:HG21	2.02	0.41
1:A:673:G:H2'	1:A:674:G:C8	2.56	0.40
1:A:749:C:H2'	1:A:750:G:H8	1.86	0.40
1:A:784:C:C2	1:A:799:G:N2	2.89	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:886:G:C4	1:A:887:G:C8	3.08	0.40
1:A:1423:G:C6	1:A:1424:C:C4	3.09	0.40
1:A:1425:U:H2'	1:A:1426:C:C6	2.56	0.40
1:A:1522:U:H2'	1:A:1523:G:H8	1.85	0.40
1:A:1534:A:H2'	1:A:1535:C:C6	2.56	0.40
3:C:13:GLY:HA2	14:N:57:ARG:HE	1.85	0.40
7:G:39:ALA:HA	7:G:42:ILE:HD12	2.03	0.40
8:H:55:GLY:C	8:H:56:LYS:HG3	2.45	0.40
15:O:75:PRO:O	15:O:78:TYR:HB3	2.22	0.40
1:A:977:A:H1'	1:A:982:U:O4	2.21	0.40
1:A:1274:G:H2'	1:A:1275:A:C8	2.57	0.40
4:D:61:LYS:HD2	4:D:207:TYR:HE1	1.86	0.40
5:E:13:ILE:HA	5:E:29:GLY:O	2.22	0.40
10:J:17:ASP:OD1	10:J:70:ARG:NH1	2.54	0.40
18:R:61:LYS:HG2	18:R:62:GLU:N	2.37	0.40
22:W:55:VAL:HA	22:W:66:ARG:O	2.19	0.40
1:A:289:G:N1	1:A:290:C:C4	2.89	0.40
1:A:394:G:C2	1:A:395:C:C2	3.10	0.40
1:A:832:C:O2	1:A:855:G:C2	2.74	0.40
1:A:1198:G:H2'	1:A:1199:U:C6	2.57	0.40
1:A:1540:U:H3	24:Y:25:A:H61	1.67	0.40
2:B:130:ARG:HD2	2:B:130:ARG:N	2.36	0.40
3:C:30:ARG:NH1	3:C:30:ARG:CB	2.73	0.40
5:E:127:ASN:O	5:E:131:ILE:HG12	2.20	0.40
6:F:3:ARG:HB3	6:F:93:SER:HB2	2.04	0.40
7:G:50:ILE:HD11	7:G:124:LEU:HB3	2.03	0.40
10:J:17:ASP:CA	10:J:70:ARG:NH2	2.85	0.40
10:J:90:LEU:HA	10:J:91:PRO:HD3	1.76	0.40
13:M:16:ASP:HB3	13:M:34:LEU:CD1	2.52	0.40
14:N:53:LEU:HA	14:N:54:PRO:HD2	1.85	0.40
15:O:87:ILE:HG22	15:O:88:ARG:H	1.87	0.40
16:P:70:ALA:O	16:P:74:LEU:HD12	2.21	0.40
19:S:53:ASN:ND2	19:S:75:ALA:HB1	2.37	0.40
20:T:43:LEU:HB3	20:T:52:ALA:HB2	2.03	0.40
1:A:102:G:C2	1:A:103:C:C2	3.09	0.40
1:A:319:G:C6	1:A:320:C:C4	3.09	0.40
1:A:407:G:H1'	4:D:119:GLN:NE2	2.33	0.40
1:A:926:G:O5'	1:A:926:G:H8	2.04	0.40
1:A:975:A:H4'	1:A:976:G:C5'	2.51	0.40
1:A:1099:G:C6	1:A:1100:C:C2	3.08	0.40
1:A:1169:A:H2'	1:A:1170:A:O4'	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1241:G:C2	1:A:1242:C:C2	3.09	0.40
1:A:1342:C:H5"	9:I:125:TYR:CE1	2.57	0.40
2:B:77:ALA:C	2:B:79:ASP:H	2.29	0.40
2:B:201:ILE:HG21	2:B:214:ILE:HG21	2.02	0.40
5:E:18:ARG:H	5:E:25:ARG:H	1.69	0.40
10:J:47:PHE:CZ	14:N:37:PHE:HE2	2.40	0.40
12:L:42:THR:CG2	12:L:52:LEU:HB3	2.51	0.40
18:R:37:VAL:HG21	18:R:78:LEU:HB3	2.03	0.40
23:X:90:PHE:HB2	23:X:120:ILE:HG12	2.03	0.40
1:A:289:G:C6	1:A:290:C:N4	2.90	0.40
1:A:434:U:H2'	1:A:435:C:H6	1.84	0.40
1:A:725:G:C2	1:A:726:C:C4	3.10	0.40
1:A:895:G:H2'	1:A:896:C:C6	2.55	0.40
1:A:948:C:OP2	13:M:108:ARG:HG2	2.22	0.40
1:A:1069:C:N4	1:A:1106:G:H1	2.18	0.40
1:A:1113:C:O4'	3:C:14:ILE:CD1	2.68	0.40
1:A:1356:G:N2	1:A:1357:A:C2	2.90	0.40
1:A:1395:C:H2'	1:A:1396:A:C8	2.57	0.40
4:D:42:GLN:C	4:D:44:GLY:N	2.80	0.40
4:D:52:SER:O	4:D:55:ALA:HB3	2.21	0.40
11:K:86:GLY:HA2	11:K:112:THR:HG23	2.04	0.40
11:K:120:ARG:HH11	11:K:120:ARG:HG3	1.86	0.40
16:P:19:ILE:H	16:P:19:ILE:HG13	1.72	0.40
22:W:32:ILE:HD11	22:W:34:ALA:HB2	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	B	232/256 (91%)	186 (80%)	26 (11%)	20 (9%)	0 9

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
3	C	204/239 (85%)	181 (89%)	17 (8%)	6 (3%)	3 24
4	D	206/209 (99%)	181 (88%)	18 (9%)	7 (3%)	3 21
5	E	148/162 (91%)	130 (88%)	13 (9%)	5 (3%)	3 21
6	F	99/101 (98%)	90 (91%)	6 (6%)	3 (3%)	3 23
7	G	153/156 (98%)	139 (91%)	10 (6%)	4 (3%)	4 26
8	H	136/138 (99%)	124 (91%)	9 (7%)	3 (2%)	5 30
9	I	125/128 (98%)	103 (82%)	17 (14%)	5 (4%)	2 19
10	J	96/105 (91%)	81 (84%)	10 (10%)	5 (5%)	1 16
11	K	117/129 (91%)	98 (84%)	14 (12%)	5 (4%)	2 18
12	L	122/132 (92%)	93 (76%)	26 (21%)	3 (2%)	4 27
13	M	115/126 (91%)	93 (81%)	20 (17%)	2 (2%)	7 36
14	N	58/61 (95%)	45 (78%)	11 (19%)	2 (3%)	3 21
15	O	86/89 (97%)	81 (94%)	5 (6%)	0	100 100
16	P	81/88 (92%)	68 (84%)	13 (16%)	0	100 100
17	Q	97/105 (92%)	82 (84%)	14 (14%)	1 (1%)	13 48
18	R	71/88 (81%)	60 (84%)	7 (10%)	4 (6%)	1 15
19	S	78/93 (84%)	64 (82%)	10 (13%)	4 (5%)	1 16
20	T	97/106 (92%)	87 (90%)	5 (5%)	5 (5%)	1 16
21	V	22/27 (82%)	19 (86%)	3 (14%)	0	100 100
22	W	69/72 (96%)	63 (91%)	4 (6%)	2 (3%)	3 24
23	X	162/171 (95%)	141 (87%)	14 (9%)	7 (4%)	2 18
All	All	2574/2781 (93%)	2209 (86%)	272 (11%)	93 (4%)	4 21

All (93) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	17	PHE
2	B	20	GLU
2	B	24	TRP
2	B	208	ILE
4	D	37	PRO
5	E	17	ALA
5	E	21	ALA
9	I	11	LYS
12	L	27	LEU

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Mol	Chain	Res	Type
12	L	45	PRO
13	M	113	PRO
19	S	71	LEU
23	X	54	PRO
2	B	16	HIS
2	B	21	ARG
2	B	204	ASN
2	B	228	GLY
2	B	229	VAL
3	C	13	GLY
4	D	5	ILE
4	D	42	GLN
6	F	96	PRO
9	I	56	LEU
11	K	101	SER
17	Q	67	LYS
18	R	18	ARG
18	R	20	ALA
18	R	32	ARG
20	T	49	ALA
20	T	95	ALA
20	T	98	PRO
23	X	83	THR
23	X	92	VAL
3	C	4	LYS
4	D	9	CYS
4	D	43	HIS
7	G	4	ARG
7	G	53	LYS
10	J	34	VAL
10	J	38	ILE
10	J	54	PHE
10	J	55	LYS
11	K	55	LYS
13	M	67	GLU
19	S	42	PRO
2	B	9	GLU
2	B	78	GLN
2	B	123	ALA
3	C	108	ASN
4	D	31	CYS
7	G	7	ALA

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Mol	Chain	Res	Type
7	G	55	GLY
8	H	5	PRO
8	H	102	ARG
10	J	56	HIS
11	K	14	VAL
14	N	23	ARG
18	R	17	SER
19	S	9	VAL
20	T	97	ALA
22	W	50	GLY
23	X	8	ASN
23	X	96	GLU
23	X	154	PRO
2	B	8	LYS
2	B	130	ARG
2	B	194	PRO
2	B	233	SER
3	C	156	ARG
3	C	179	ARG
8	H	75	ARG
9	I	54	ASP
11	K	74	ALA
2	B	75	LYS
2	B	125	PRO
3	C	3	ASN
5	E	85	GLY
6	F	15	ASP
6	F	35	ALA
9	I	24	GLY
9	I	119	ALA
12	L	79	GLU
14	N	7	ILE
22	W	2	LYS
2	B	167	PRO
4	D	69	GLY
5	E	77	PRO
19	S	8	GLY
2	B	131	PRO
5	E	105	VAL
11	K	48	ILE
20	T	96	GLY
23	X	55	PRO

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
2	B	202/220 (92%)	150 (74%)	52 (26%)	0 3
3	C	160/188 (85%)	131 (82%)	29 (18%)	1 9
4	D	180/181 (99%)	123 (68%)	57 (32%)	0 2
5	E	115/123 (94%)	79 (69%)	36 (31%)	0 2
6	F	90/90 (100%)	74 (82%)	16 (18%)	1 9
7	G	126/127 (99%)	116 (92%)	10 (8%)	10 30
8	H	119/119 (100%)	95 (80%)	24 (20%)	1 6
9	I	98/99 (99%)	82 (84%)	16 (16%)	2 11
10	J	87/92 (95%)	71 (82%)	16 (18%)	1 9
11	K	90/99 (91%)	71 (79%)	19 (21%)	1 5
12	L	104/109 (95%)	80 (77%)	24 (23%)	0 4
13	M	94/101 (93%)	79 (84%)	15 (16%)	2 12
14	N	49/50 (98%)	42 (86%)	7 (14%)	2 14
15	O	79/80 (99%)	52 (66%)	27 (34%)	0 1
16	P	72/74 (97%)	60 (83%)	12 (17%)	2 11
17	Q	94/97 (97%)	81 (86%)	13 (14%)	3 15
18	R	64/77 (83%)	47 (73%)	17 (27%)	0 3
19	S	71/80 (89%)	59 (83%)	12 (17%)	1 10
20	T	76/82 (93%)	60 (79%)	16 (21%)	1 5
21	V	19/22 (86%)	17 (90%)	2 (10%)	5 21
22	W	62/63 (98%)	54 (87%)	8 (13%)	3 16
23	X	145/150 (97%)	125 (86%)	20 (14%)	3 15
All	All	2196/2323 (94%)	1748 (80%)	448 (20%)	3 6

All (448) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	8	LYS
2	B	10	LEU
2	B	15	VAL
2	B	16	HIS
2	B	21	ARG
2	B	23	ARG
2	B	28	PHE
2	B	30	ARG
2	B	40	HIS
2	B	44	LEU
2	B	45	GLN
2	B	61	LEU
2	B	64	ARG
2	B	73	THR
2	B	82	ARG
2	B	83	MET
2	B	87	ARG
2	B	95	GLN
2	B	96	ARG
2	B	102	LEU
2	B	107	THR
2	B	111	ARG
2	B	112	VAL
2	B	114	ARG
2	B	126	GLU
2	B	127	ILE
2	B	130	ARG
2	B	136	VAL
2	B	137	ARG
2	B	142	LEU
2	B	144	ARG
2	B	146	GLN
2	B	154	LEU
2	B	155	LEU
2	B	157	ARG
2	B	165	VAL
2	B	168	THR
2	B	169	LYS
2	B	172	ILE
2	B	178	ARG
2	B	180	LEU
2	B	187	LEU
2	B	190	THR

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Mol	Chain	Res	Type
2	B	195	ASP
2	B	198	ASP
2	B	200	ILE
2	B	205	ASP
2	B	208	ILE
2	B	211	ILE
2	B	213	LEU
2	B	221	LEU
2	B	229	VAL
3	C	3	ASN
3	C	4	LYS
3	C	14	ILE
3	C	21	ARG
3	C	27	LYS
3	C	30	ARG
3	C	33	LEU
3	C	40	ARG
3	C	45	LYS
3	C	52	LEU
3	C	68	VAL
3	C	77	ILE
3	C	82	GLU
3	C	87	LEU
3	C	90	GLU
3	C	91	LEU
3	C	94	LEU
3	C	98	ASN
3	C	101	LEU
3	C	102	ASN
3	C	115	LEU
3	C	119	ARG
3	C	157	ILE
3	C	173	VAL
3	C	177	THR
3	C	188	LEU
3	C	190	ARG
3	C	191	THR
3	C	204	LEU
4	D	5	ILE
4	D	11	LEU
4	D	13	ARG
4	D	14	ARG

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Mol	Chain	Res	Type
4	D	15	GLU
4	D	21	LEU
4	D	22	LYS
4	D	25	ARG
4	D	27	TYR
4	D	30	LYS
4	D	35	ARG
4	D	43	HIS
4	D	45	GLN
4	D	46	LYS
4	D	49	ARG
4	D	53	ASP
4	D	59	ARG
4	D	64	LEU
4	D	65	ARG
4	D	70	ILE
4	D	74	GLN
4	D	76	ARG
4	D	78	LEU
4	D	83	SER
4	D	84	LYS
4	D	96	LEU
4	D	97	LEU
4	D	112	VAL
4	D	115	ARG
4	D	119	GLN
4	D	122	ARG
4	D	132	ARG
4	D	135	LEU
4	D	137	SER
4	D	139	ARG
4	D	140	VAL
4	D	141	ARG
4	D	144	ASP
4	D	154	ASN
4	D	155	LEU
4	D	157	LEU
4	D	158	ILE
4	D	162	LEU
4	D	163	GLU
4	D	168	ARG
4	D	174	LEU

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Mol	Chain	Res	Type
4	D	176	LEU
4	D	178	VAL
4	D	181	MET
4	D	186	LEU
4	D	187	ARG
4	D	190	ASP
4	D	192	GLU
4	D	193	ASP
4	D	196	LEU
4	D	200	GLU
4	D	209	ARG
5	E	7	GLU
5	E	11	ILE
5	E	12	LEU
5	E	13	ILE
5	E	14	ARG
5	E	19	MET
5	E	27	ARG
5	E	32	VAL
5	E	33	VAL
5	E	34	VAL
5	E	36	ASP
5	E	37	ARG
5	E	40	ARG
5	E	41	VAL
5	E	43	LEU
5	E	47	LYS
5	E	63	ARG
5	E	67	VAL
5	E	71	LEU
5	E	76	ILE
5	E	79	GLU
5	E	80	ILE
5	E	91	LEU
5	E	98	THR
5	E	107	ARG
5	E	111	GLU
5	E	115	VAL
5	E	116	THR
5	E	118	ILE
5	E	127	ASN
5	E	135	THR

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Mol	Chain	Res	Type
5	E	136	MET
5	E	141	GLN
5	E	144	THR
5	E	147	ASP
5	E	148	VAL
6	F	3	ARG
6	F	5	GLU
6	F	10	LEU
6	F	18	GLN
6	F	19	LEU
6	F	27	GLN
6	F	28	ARG
6	F	31	GLU
6	F	40	VAL
6	F	61	LEU
6	F	69	GLU
6	F	75	LEU
6	F	77	ARG
6	F	82	ARG
6	F	86	ARG
6	F	91	VAL
7	G	16	LEU
7	G	24	THR
7	G	57	GLU
7	G	60	LYS
7	G	74	GLU
7	G	91	VAL
7	G	136	LYS
7	G	137	LYS
7	G	142	GLU
7	G	156	TRP
8	H	8	ASP
8	H	11	THR
8	H	18	ARG
8	H	21	LYS
8	H	26	VAL
8	H	38	ILE
8	H	39	LEU
8	H	45	ILE
8	H	50	ARG
8	H	53	VAL
8	H	59	LEU

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Mol	Chain	Res	Type
8	H	61	VAL
8	H	63	LEU
8	H	69	ARG
8	H	77	GLU
8	H	78	GLN
8	H	82	HIS
8	H	92	ARG
8	H	93	VAL
8	H	109	ILE
8	H	120	THR
8	H	127	LEU
8	H	134	ILE
8	H	135	CYS
9	I	3	GLN
9	I	12	GLU
9	I	38	GLN
9	I	56	LEU
9	I	65	VAL
9	I	78	LYS
9	I	79	LEU
9	I	85	LEU
9	I	87	GLN
9	I	95	LYS
9	I	102	LEU
9	I	109	VAL
9	I	111	ARG
9	I	112	LYS
9	I	113	LYS
9	I	127	LYS
10	J	4	ILE
10	J	8	LEU
10	J	16	LEU
10	J	23	ILE
10	J	44	VAL
10	J	46	ARG
10	J	49	VAL
10	J	61	GLU
10	J	62	HIS
10	J	66	ARG
10	J	71	LEU
10	J	74	ILE
10	J	82	ILE

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Mol	Chain	Res	Type
10	J	83	GLU
10	J	86	MET
10	J	87	THR
11	K	18	ARG
11	K	25	TYR
11	K	29	ILE
11	K	41	THR
11	K	47	VAL
11	K	48	ILE
11	K	54	ARG
11	K	57	THR
11	K	62	GLN
11	K	63	LEU
11	K	77	MET
11	K	85	ARG
11	K	92	GLU
11	K	93	GLN
11	K	98	LEU
11	K	103	LEU
11	K	109	VAL
11	K	116	HIS
11	K	123	LYS
12	L	6	THR
12	L	7	ILE
12	L	11	VAL
12	L	17	LYS
12	L	18	VAL
12	L	33	ARG
12	L	36	VAL
12	L	39	VAL
12	L	41	ARG
12	L	46	LYS
12	L	53	ARG
12	L	57	LYS
12	L	59	ARG
12	L	70	ILE
12	L	81	SER
12	L	83	VAL
12	L	85	ILE
12	L	89	ARG
12	L	90	VAL
12	L	96	VAL

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Mol	Chain	Res	Type
12	L	104	VAL
12	L	110	VAL
12	L	113	ARG
12	L	122	THR
13	M	8	GLU
13	M	12	ASN
13	M	15	VAL
13	M	17	VAL
13	M	32	GLU
13	M	37	THR
13	M	44	ARG
13	M	45	VAL
13	M	54	VAL
13	M	73	GLU
13	M	80	ARG
13	M	90	LEU
13	M	110	ARG
13	M	115	LYS
13	M	116	THR
14	N	7	ILE
14	N	12	ARG
14	N	17	LYS
14	N	33	VAL
14	N	41	ARG
14	N	44	LEU
14	N	56	VAL
15	O	10	LYS
15	O	17	ARG
15	O	21	ASP
15	O	22	THR
15	O	25	THR
15	O	27	VAL
15	O	28	GLN
15	O	29	VAL
15	O	39	LEU
15	O	40	SER
15	O	41	GLU
15	O	43	LEU
15	O	45	VAL
15	O	48	LYS
15	O	49	ASP
15	O	52	SER

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Mol	Chain	Res	Type
15	O	54	ARG
15	O	56	LEU
15	O	57	LEU
15	O	64	ARG
15	O	67	LEU
15	O	68	ARG
15	O	70	LEU
15	O	72	ARG
15	O	77	ARG
15	O	84	LYS
15	O	87	ILE
16	P	20	VAL
16	P	23	ASP
16	P	28	ARG
16	P	29	ASP
16	P	42	ARG
16	P	44	THR
16	P	45	THR
16	P	54	GLU
16	P	55	ARG
16	P	60	LEU
16	P	73	LEU
16	P	81	ARG
17	Q	5	VAL
17	Q	15	MET
17	Q	27	PHE
17	Q	36	ILE
17	Q	38	ARG
17	Q	52	LYS
17	Q	53	LEU
17	Q	63	ARG
17	Q	68	ARG
17	Q	81	ARG
17	Q	89	LEU
17	Q	93	GLN
17	Q	100	LYS
18	R	35	ARG
18	R	38	GLU
18	R	41	LYS
18	R	44	LEU
18	R	46	GLU
18	R	47	THR

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Mol	Chain	Res	Type
18	R	53	ARG
18	R	54	ARG
18	R	56	THR
18	R	61	LYS
18	R	66	LEU
18	R	69	THR
18	R	75	ILE
18	R	76	LEU
18	R	82	THR
18	R	86	VAL
18	R	87	ARG
19	S	6	LYS
19	S	7	LYS
19	S	13	ASP
19	S	15	LEU
19	S	19	VAL
19	S	25	LYS
19	S	29	ARG
19	S	30	LEU
19	S	37	ARG
19	S	39	THR
19	S	41	VAL
19	S	63	THR
20	T	10	LEU
20	T	19	SER
20	T	22	ARG
20	T	23	ARG
20	T	24	LEU
20	T	38	LYS
20	T	46	GLU
20	T	55	ILE
20	T	56	MET
20	T	62	LEU
20	T	64	ASP
20	T	68	LYS
20	T	72	LEU
20	T	74	LYS
20	T	75	ASN
20	T	84	LEU
21	V	7	ARG
21	V	12	LYS
22	W	8	ARG

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Mol	Chain	Res	Type
22	W	12	VAL
22	W	19	ASN
22	W	23	ARG
22	W	32	ILE
22	W	33	LEU
22	W	47	ILE
22	W	48	LEU
23	X	31	THR
23	X	35	LEU
23	X	73	GLU
23	X	74	LYS
23	X	78	LYS
23	X	83	THR
23	X	98	ASP
23	X	118	VAL
23	X	121	MET
23	X	123	ARG
23	X	125	ARG
23	X	132	LEU
23	X	134	GLU
23	X	143	ASP
23	X	144	LEU
23	X	152	MET
23	X	161	MET
23	X	163	MET
23	X	164	LEU
23	X	170	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (49) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	16	HIS
2	B	19	HIS
2	B	25	ASN
2	B	95	GLN
2	B	146	GLN
2	B	204	ASN
3	C	3	ASN
3	C	6	HIS
3	C	28	GLN
3	C	63	ASN
3	C	107	GLN

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Mol	Chain	Res	Type
3	C	108	ASN
3	C	123	GLN
3	C	176	HIS
4	D	103	ASN
4	D	119	GLN
4	D	123	HIS
4	D	125	HIS
4	D	129	ASN
6	F	7	ASN
6	F	18	GLN
6	F	64	GLN
6	F	100	ASN
7	G	64	GLN
7	G	86	GLN
7	G	97	GLN
9	I	23	ASN
10	J	68	HIS
10	J	76	ASN
12	L	8	ASN
12	L	49	ASN
12	L	75	HIS
12	L	80	HIS
13	M	106	ASN
15	O	28	GLN
15	O	37	ASN
15	O	46	HIS
15	O	53	HIS
15	O	62	GLN
16	P	14	ASN
16	P	65	GLN
17	Q	93	GLN
18	R	36	ASN
18	R	63	GLN
19	S	14	HIS
19	S	53	ASN
19	S	65	ASN
20	T	73	HIS
23	X	97	HIS

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	1507/1522 (99%)	474 (31%)	114 (7%)
24	Y	17/45 (37%)	8 (47%)	0
All	All	1524/1567 (97%)	482 (31%)	114 (7%)

All (482) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	8	A
1	A	9	G
1	A	13	U
1	A	14	U
1	A	18	C
1	A	19	C
1	A	22	G
1	A	29	G
1	A	30	U
1	A	31	G
1	A	32	A
1	A	35	G
1	A	39	G
1	A	43	C
1	A	44	G
1	A	47	C
1	A	48	C
1	A	49	U
1	A	50	A
1	A	51	A
1	A	52	G
1	A	54	C
1	A	59	A
1	A	60	A
1	A	61	G
1	A	62	U
1	A	66	G
1	A	68	G
1	A	73	G
1	A	76	C
1	A	77	G
1	A	79	G
1	A	81	U
1	A	83	U
1	A	91	C
1	A	97	G

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Mol	Chain	Res	Type
1	A	101	A
1	A	108	G
1	A	115	G
1	A	116	A
1	A	120	A
1	A	121	C
1	A	122	G
1	A	129(A)	G
1	A	130	A
1	A	131	C
1	A	142	G
1	A	144	G
1	A	151	A
1	A	153	C
1	A	157	G
1	A	163	C
1	A	167	G
1	A	173	U
1	A	174	C
1	A	175	C
1	A	181	G
1	A	182	U
1	A	189(E)	U
1	A	189(F)	U
1	A	189(G)	G
1	A	189(H)	G
1	A	195	A
1	A	196	A
1	A	197	A
1	A	198	G
1	A	199	G
1	A	201	C
1	A	203	U
1	A	204	U
1	A	217	C
1	A	220	G
1	A	243	A
1	A	244	U
1	A	245	C
1	A	247	G
1	A	251	G
1	A	252	U

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Mol	Chain	Res	Type
1	A	253	U
1	A	266	G
1	A	267	C
1	A	279	A
1	A	280	C
1	A	281	G
1	A	282	A
1	A	283	C
1	A	288	A
1	A	289	G
1	A	290	C
1	A	291	C
1	A	298	A
1	A	299	G
1	A	300	A
1	A	301	G
1	A	306	G
1	A	309	G
1	A	315	A
1	A	316	G
1	A	321	A
1	A	324	G
1	A	325	A
1	A	327	A
1	A	328	C
1	A	329	A
1	A	330	C
1	A	332	G
1	A	339	C
1	A	340	U
1	A	342	C
1	A	344	A
1	A	345	C
1	A	350	G
1	A	351	G
1	A	352	C
1	A	353	A
1	A	357	G
1	A	366	C
1	A	367	U
1	A	368	U
1	A	372	C

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Mol	Chain	Res	Type
1	A	373	A
1	A	375	U
1	A	378	G
1	A	384	G
1	A	388	G
1	A	389	A
1	A	390	C
1	A	392	G
1	A	393	A
1	A	395	C
1	A	397	A
1	A	398	C
1	A	406	G
1	A	409	G
1	A	412	A
1	A	413	G
1	A	414	A
1	A	419	C
1	A	421	U
1	A	422	C
1	A	423	G
1	A	428	G
1	A	429	U
1	A	438	G
1	A	439	A
1	A	441	A
1	A	444	C
1	A	446	G
1	A	450	G
1	A	451	A
1	A	452	A
1	A	470	C
1	A	484	G
1	A	485	G
1	A	492	G
1	A	495	A
1	A	496	A
1	A	498	U
1	A	510	A
1	A	511	C
1	A	517	G
1	A	518	C

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Mol	Chain	Res	Type
1	A	519	C
1	A	521	G
1	A	524	G
1	A	527	G
1	A	528	C
1	A	529	G
1	A	531	U
1	A	532	A
1	A	534	U
1	A	535	A
1	A	540	G
1	A	545	C
1	A	547	A
1	A	548	G
1	A	550	G
1	A	559	A
1	A	560	U
1	A	561	U
1	A	562	C
1	A	564	C
1	A	565	U
1	A	568	G
1	A	572	A
1	A	573	A
1	A	576	G
1	A	577	G
1	A	578	C
1	A	587	G
1	A	588	G
1	A	595	G
1	A	596	C
1	A	597	G
1	A	607	A
1	A	619	U
1	A	620	C
1	A	641	U
1	A	642	A
1	A	644	G
1	A	650	G
1	A	652	U
1	A	653	A
1	A	654	G

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Mol	Chain	Res	Type
1	A	665	A
1	A	666	G
1	A	671	G
1	A	672	U
1	A	677	U
1	A	687	A
1	A	688	G
1	A	697	U
1	A	701	C
1	A	702	A
1	A	703	G
1	A	713	G
1	A	716	A
1	A	717	C
1	A	721	G
1	A	723	U
1	A	724	G
1	A	731	G
1	A	737	A
1	A	740	U
1	A	748	C
1	A	749	C
1	A	755	G
1	A	760	G
1	A	764	C
1	A	777	A
1	A	784	C
1	A	785	G
1	A	787	A
1	A	792	A
1	A	793	U
1	A	794	A
1	A	802	A
1	A	812	C
1	A	815	A
1	A	817	C
1	A	819	A
1	A	821	G
1	A	828	A
1	A	835	U
1	A	839	U
1	A	840	C

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Mol	Chain	Res	Type
1	A	841	U
1	A	851	G
1	A	853	G
1	A	855	G
1	A	859	A
1	A	864	A
1	A	865	A
1	A	866	C
1	A	869	G
1	A	871	U
1	A	872	A
1	A	873	A
1	A	874	G
1	A	876	G
1	A	882	C
1	A	885	G
1	A	889	A
1	A	900	A
1	A	902	G
1	A	911	U
1	A	920	U
1	A	922	G
1	A	927	G
1	A	930	C
1	A	932	C
1	A	933	G
1	A	934	C
1	A	935	A
1	A	937	A
1	A	942	G
1	A	943	U
1	A	945	G
1	A	950	U
1	A	960	U
1	A	961	U
1	A	965	A
1	A	966	G
1	A	968	A
1	A	969	A
1	A	971	G
1	A	972	C
1	A	974	A

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Mol	Chain	Res	Type
1	A	975	A
1	A	976	G
1	A	977	A
1	A	989	C
1	A	991	U
1	A	992	U
1	A	993	G
1	A	994	A
1	A	998	G
1	A	1000	U
1	A	1001	A
1	A	1005	A
1	A	1007	C
1	A	1023	G
1	A	1024	G
1	A	1025	U
1	A	1026	G
1	A	1028	C
1	A	1029	C
1	A	1030(C)	G
1	A	1031	G
1	A	1045	C
1	A	1046	A
1	A	1049	U
1	A	1050	G
1	A	1051	C
1	A	1053	G
1	A	1054	C
1	A	1055	A
1	A	1060	C
1	A	1065	U
1	A	1066	C
1	A	1067	A
1	A	1070	U
1	A	1074	G
1	A	1078	U
1	A	1079	G
1	A	1081	G
1	A	1085	U
1	A	1086	U
1	A	1092	A
1	A	1093	A

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Mol	Chain	Res	Type
1	A	1094	G
1	A	1095	U
1	A	1097	C
1	A	1098	C
1	A	1100	C
1	A	1101	A
1	A	1102	A
1	A	1104	G
1	A	1117	G
1	A	1118	C
1	A	1124	G
1	A	1125	U
1	A	1126	U
1	A	1127	G
1	A	1128	C
1	A	1129	C
1	A	1130	A
1	A	1131	G
1	A	1135	U
1	A	1136	U
1	A	1137	C
1	A	1138	G
1	A	1139	G
1	A	1145	C
1	A	1146	A
1	A	1150	U
1	A	1151	A
1	A	1152	A
1	A	1157	A
1	A	1158	C
1	A	1159	U
1	A	1170	A
1	A	1171	G
1	A	1183	A
1	A	1184	G
1	A	1187	G
1	A	1190	G
1	A	1191	A
1	A	1195	C
1	A	1196	U
1	A	1197	G
1	A	1200	C

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Mol	Chain	Res	Type
1	A	1201	A
1	A	1202	G
1	A	1205	U
1	A	1212	U
1	A	1213	A
1	A	1215	G
1	A	1224	G
1	A	1225	A
1	A	1226	C
1	A	1227	A
1	A	1238	A
1	A	1239	A
1	A	1240	U
1	A	1249	C
1	A	1250	A
1	A	1256	A
1	A	1257	U
1	A	1258	G
1	A	1260	C
1	A	1266	G
1	A	1270	C
1	A	1278	U
1	A	1279	A
1	A	1280	A
1	A	1281	U
1	A	1282	C
1	A	1285	A
1	A	1286	A
1	A	1287	A
1	A	1295	G
1	A	1297	C
1	A	1300	G
1	A	1301	U
1	A	1302	U
1	A	1303	C
1	A	1305	G
1	A	1306	A
1	A	1312	G
1	A	1317	C
1	A	1318	A
1	A	1319	A
1	A	1321	C

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Mol	Chain	Res	Type
1	A	1322	C
1	A	1323	G
1	A	1331	G
1	A	1332	A
1	A	1336	C
1	A	1338	G
1	A	1342	C
1	A	1346	A
1	A	1347	G
1	A	1351	U
1	A	1353	G
1	A	1357	A
1	A	1362	C
1	A	1363	C
1	A	1363(A)	A
1	A	1364	U
1	A	1365	G
1	A	1370	G
1	A	1379	G
1	A	1380	U
1	A	1381	U
1	A	1394	A
1	A	1398	A
1	A	1409	C
1	A	1412	C
1	A	1418	A
1	A	1419	G
1	A	1433	A
1	A	1440	C
1	A	1442	G
1	A	1442(A)	G
1	A	1443	G
1	A	1447	A
1	A	1452	C
1	A	1456	G
1	A	1457	G
1	A	1485	U
1	A	1486	G
1	A	1488	G
1	A	1492	A
1	A	1494	G
1	A	1497	G

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Mol	Chain	Res	Type
1	A	1499	A
1	A	1503	A
1	A	1504	G
1	A	1505	G
1	A	1506	U
1	A	1507	A
1	A	1517	G
1	A	1519	A
1	A	1520	G
1	A	1528	U
1	A	1529	G
1	A	1530	G
1	A	1531	A
1	A	1535	C
1	A	1536	C
1	A	1539	C
1	A	1541	U
1	A	1542	U
24	Y	28	A
24	Y	30	G
24	Y	31	U
24	Y	32	A
24	Y	35	A
24	Y	36	A
24	Y	37	U
24	Y	39	U

All (114) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	7	G
1	A	8	A
1	A	13	U
1	A	30	U
1	A	31	G
1	A	48	C
1	A	49	U
1	A	51	A
1	A	60	A
1	A	115	G
1	A	119	A
1	A	129(A)	G

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Mol	Chain	Res	Type
1	A	145	G
1	A	156	G
1	A	173	U
1	A	181	G
1	A	195	A
1	A	197	A
1	A	202	U
1	A	243	A
1	A	250	A
1	A	251	G
1	A	266	G
1	A	274	A
1	A	279	A
1	A	281	G
1	A	289	G
1	A	327	A
1	A	328	C
1	A	329	A
1	A	344	A
1	A	350	G
1	A	351	G
1	A	366	C
1	A	372	C
1	A	389	A
1	A	421	U
1	A	428	G
1	A	484	G
1	A	495	A
1	A	496	A
1	A	509	A
1	A	518	C
1	A	535	A
1	A	559	A
1	A	560	U
1	A	561	U
1	A	576	G
1	A	577	G
1	A	595	G
1	A	641	U
1	A	653	A
1	A	687	A
1	A	701	C

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Mol	Chain	Res	Type
1	A	702	A
1	A	748	C
1	A	777	A
1	A	792	A
1	A	840	C
1	A	864	A
1	A	872	A
1	A	884	U
1	A	932	C
1	A	933	G
1	A	960	U
1	A	965	A
1	A	975	A
1	A	992	U
1	A	993	G
1	A	1000	U
1	A	1050	G
1	A	1065	U
1	A	1077	G
1	A	1078	U
1	A	1082	G
1	A	1092	A
1	A	1101	A
1	A	1145	C
1	A	1151	A
1	A	1182	G
1	A	1187	G
1	A	1190	G
1	A	1196	U
1	A	1200	C
1	A	1201	A
1	A	1212	U
1	A	1214	C
1	A	1224	G
1	A	1226	C
1	A	1239	A
1	A	1257	U
1	A	1278	U
1	A	1279	A
1	A	1285	A
1	A	1299	A
1	A	1300	G

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Mol	Chain	Res	Type
1	A	1301	U
1	A	1322	C
1	A	1331	G
1	A	1335	C
1	A	1337	G
1	A	1346	A
1	A	1364	U
1	A	1380	U
1	A	1398	A
1	A	1442(B)	A
1	A	1447	A
1	A	1452	C
1	A	1493	A
1	A	1498	U
1	A	1503	A
1	A	1504	G
1	A	1529	G
1	A	1534	A

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 110 ligands modelled in this entry, 110 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	7
23	X	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	84:U	O3'	88:A	P	5.27
1	A	93:G	O3'	96:U	P	4.63
1	A	204:U	O3'	216:G	P	4.48
1	A	841:U	O3'	848:C	P	4.32
1	A	1442(A):G	O3'	1442(B):A	P	3.82
1	X	81:LYS	C	82:ARG	N	3.73
1	X	79:LYS	C	80:ALA	N	3.54
1	A	1387:G	O3'	1388:C	P	3.33
1	A	927:G	O3'	928:G	P	2.65

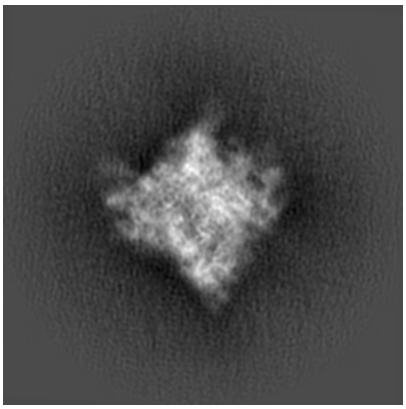
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-4074. These allow visual inspection of the internal detail of the map and identification of artifacts.

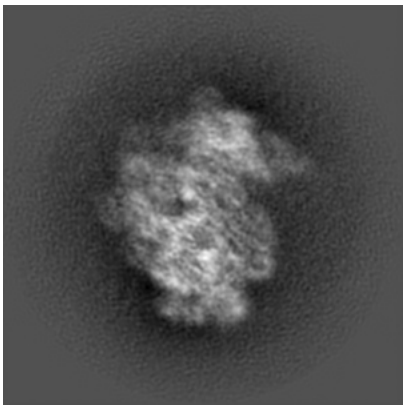
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

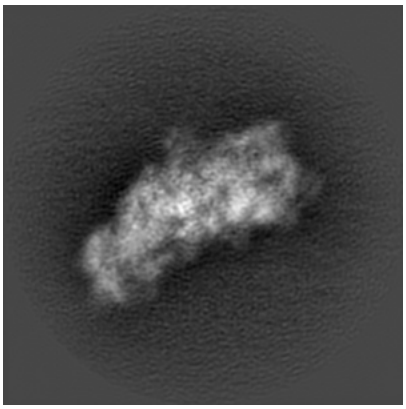
6.1.1 Primary map



X

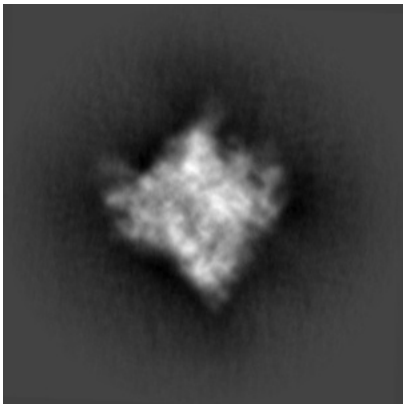


Y

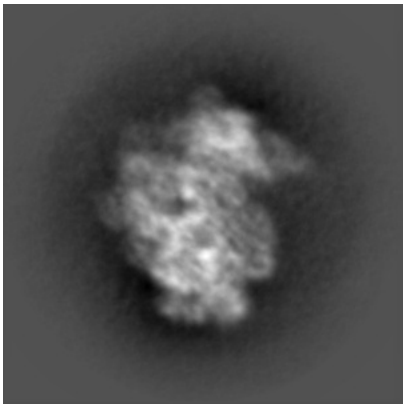


Z

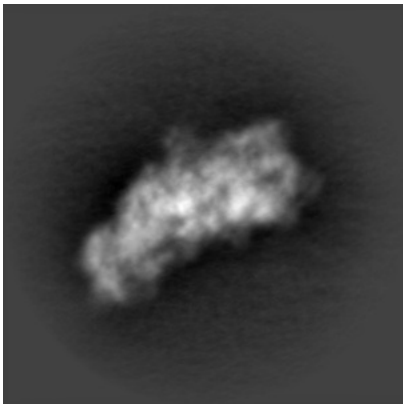
6.1.2 Raw map



X



Y

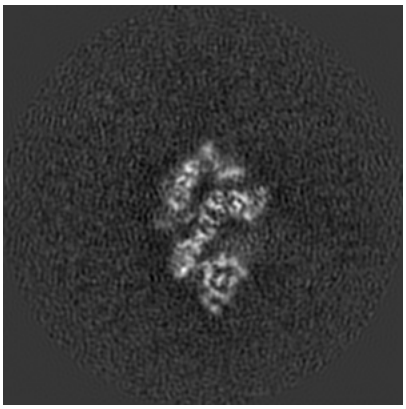


Z

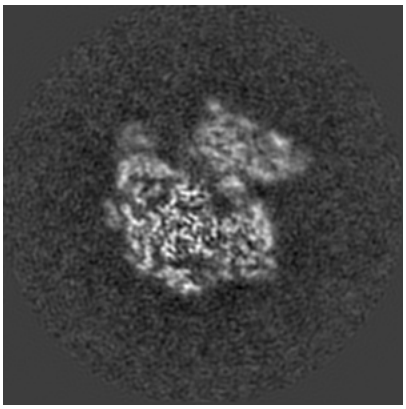
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

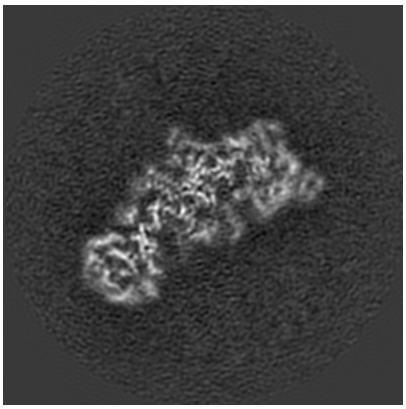
6.2.1 Primary map



X Index: 130

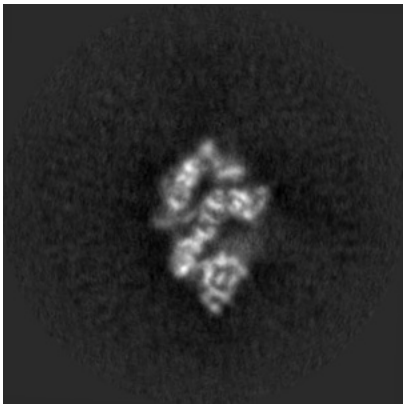


Y Index: 130

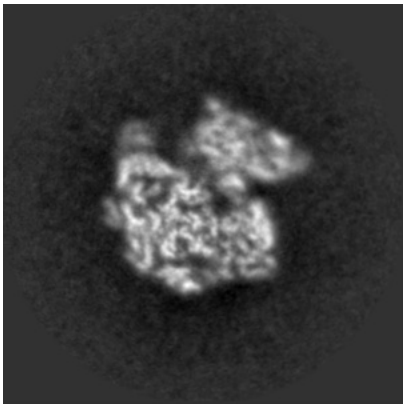


Z Index: 130

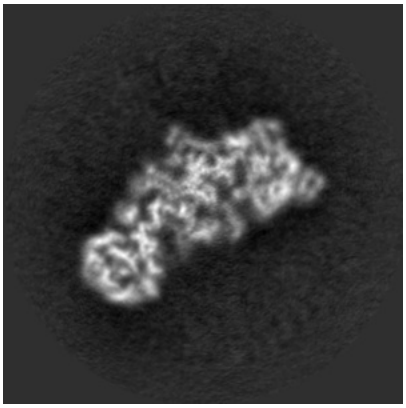
6.2.2 Raw map



X Index: 130



Y Index: 130

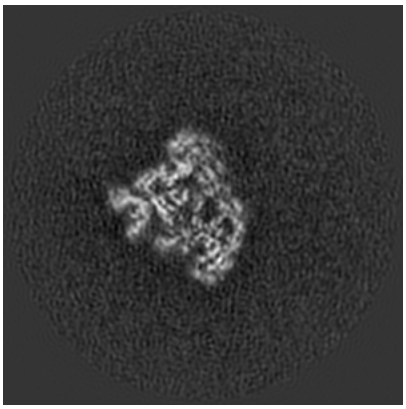


Z Index: 130

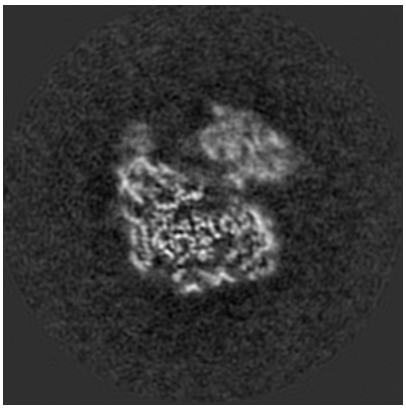
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

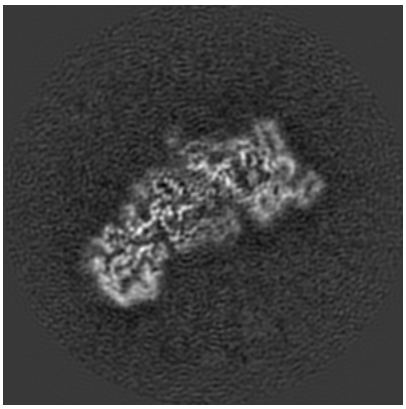
6.3.1 Primary map



X Index: 95

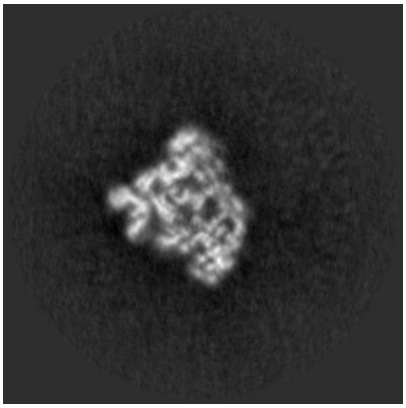


Y Index: 127

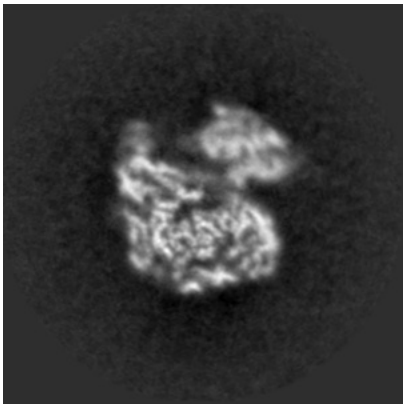


Z Index: 134

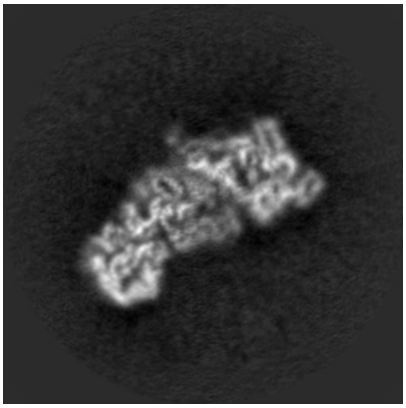
6.3.2 Raw map



X Index: 96



Y Index: 126

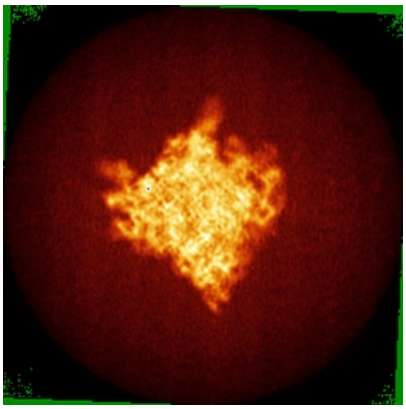


Z Index: 134

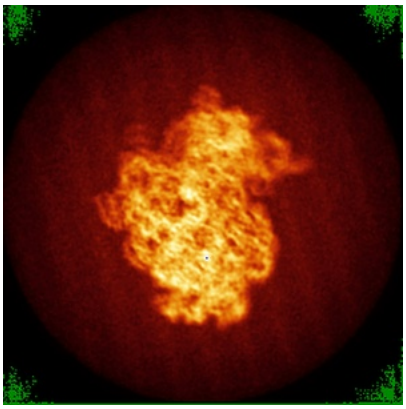
The images above show the largest variance slices of the map in three orthogonal directions.

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

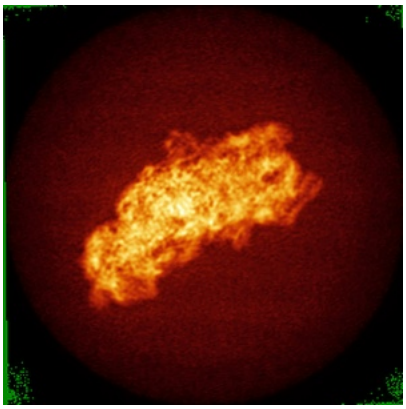
6.4.1 Primary map



X

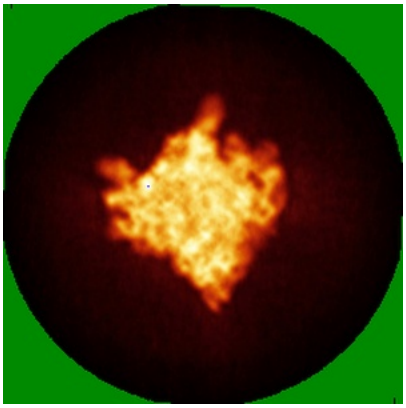


Y

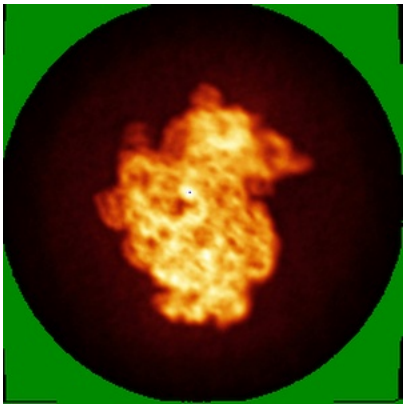


Z

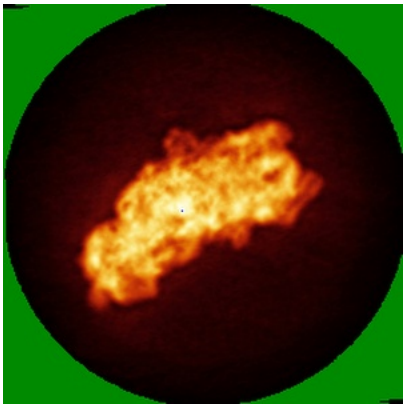
6.4.2 Raw map



X



Y

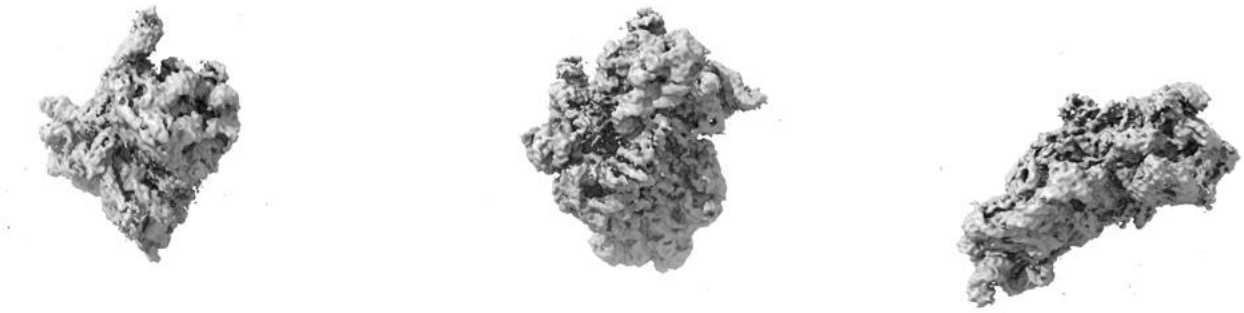


Z

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)

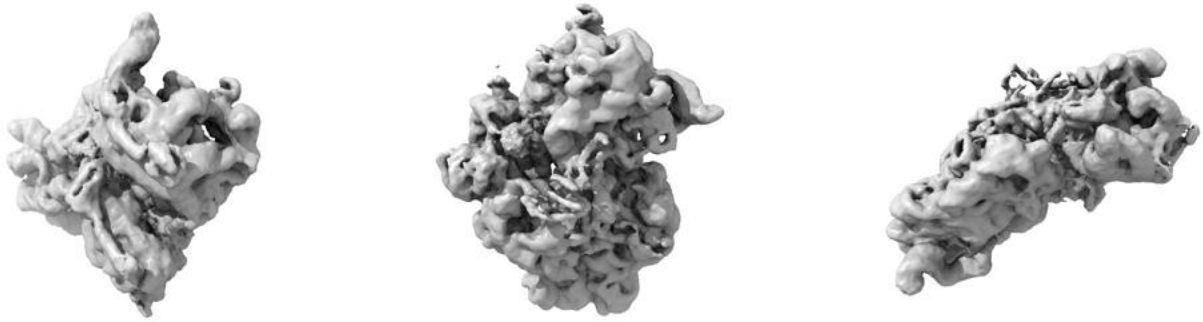
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.05. 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.

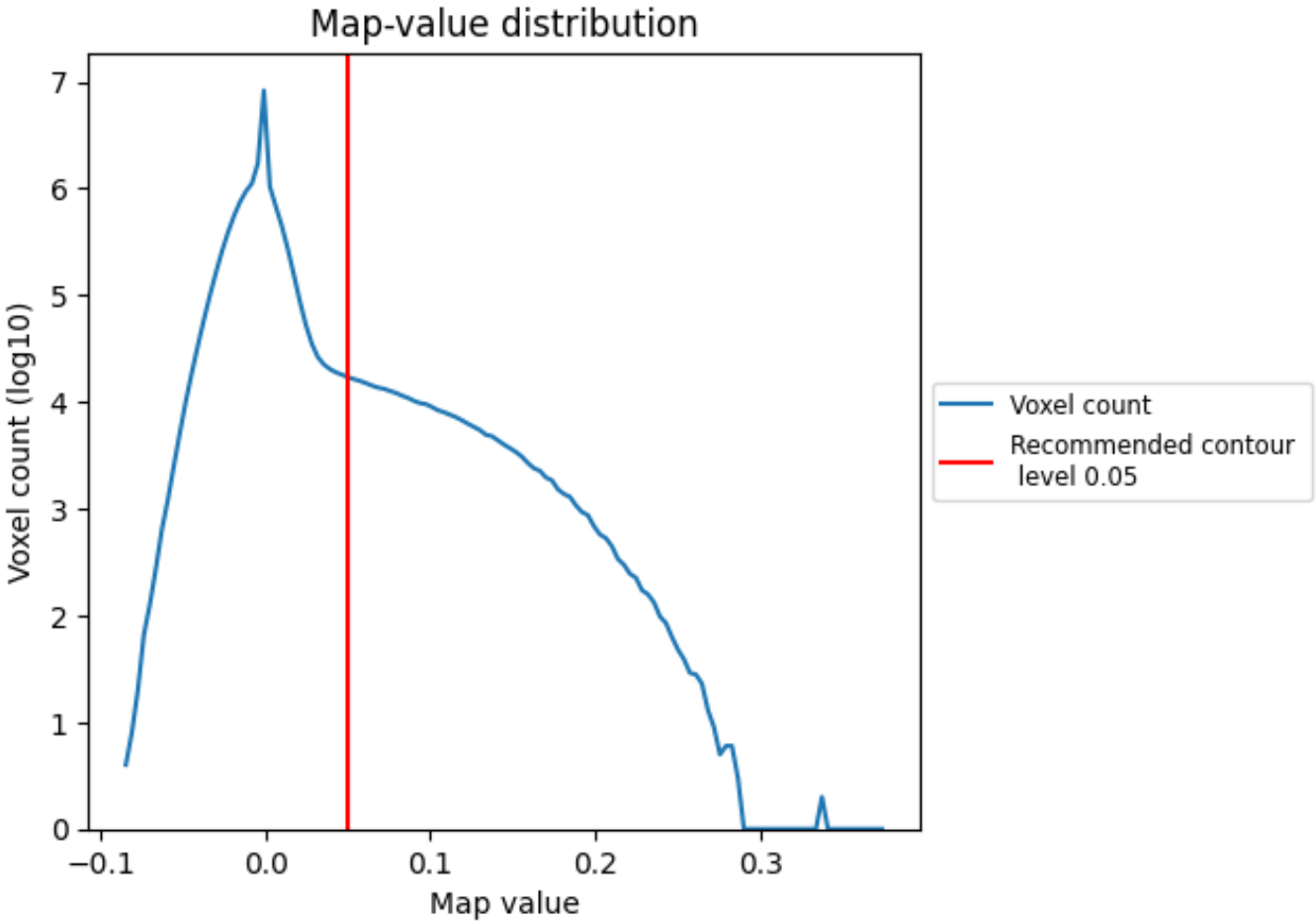
6.6 Mask visualisation (i)

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

7 Map analysis

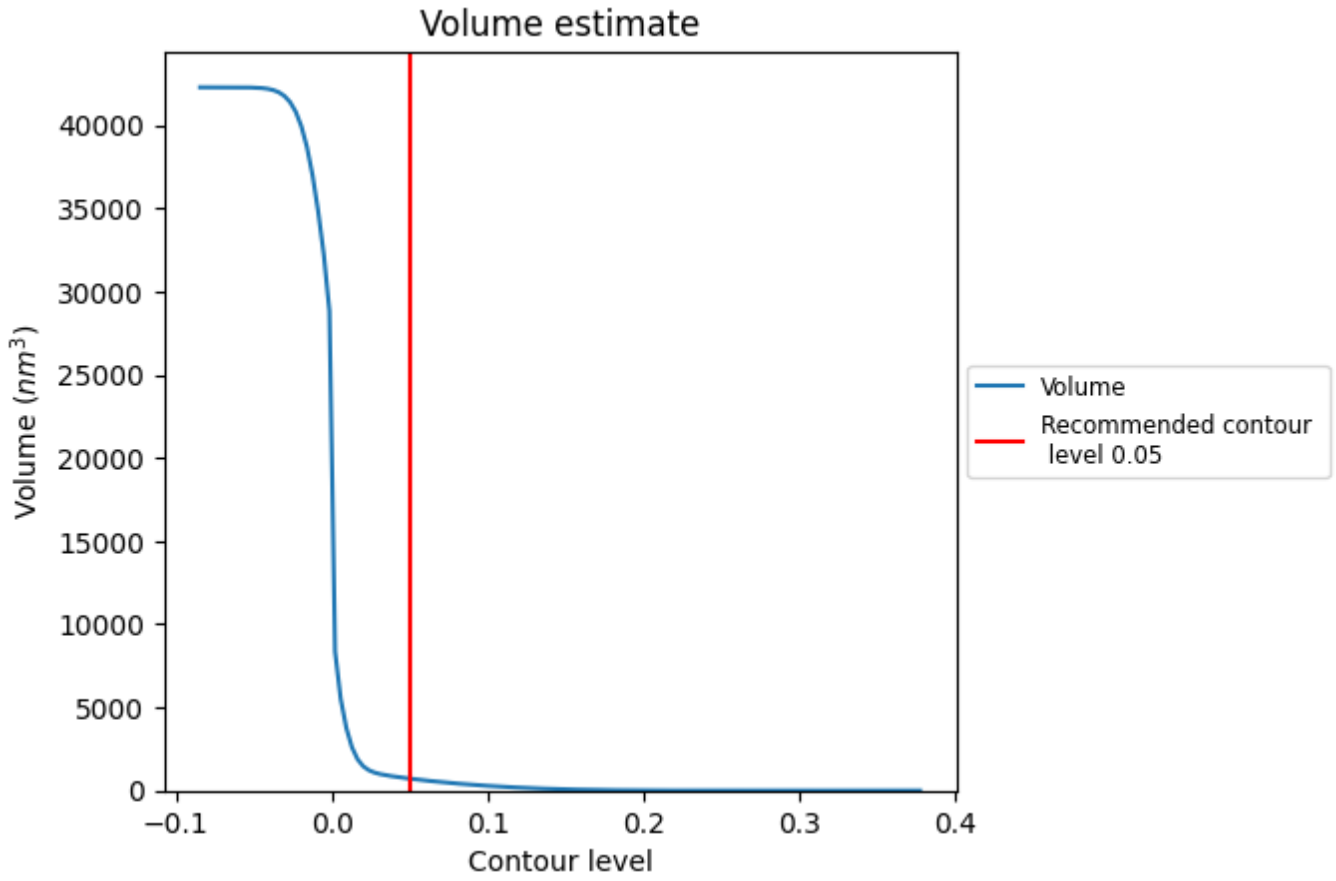
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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

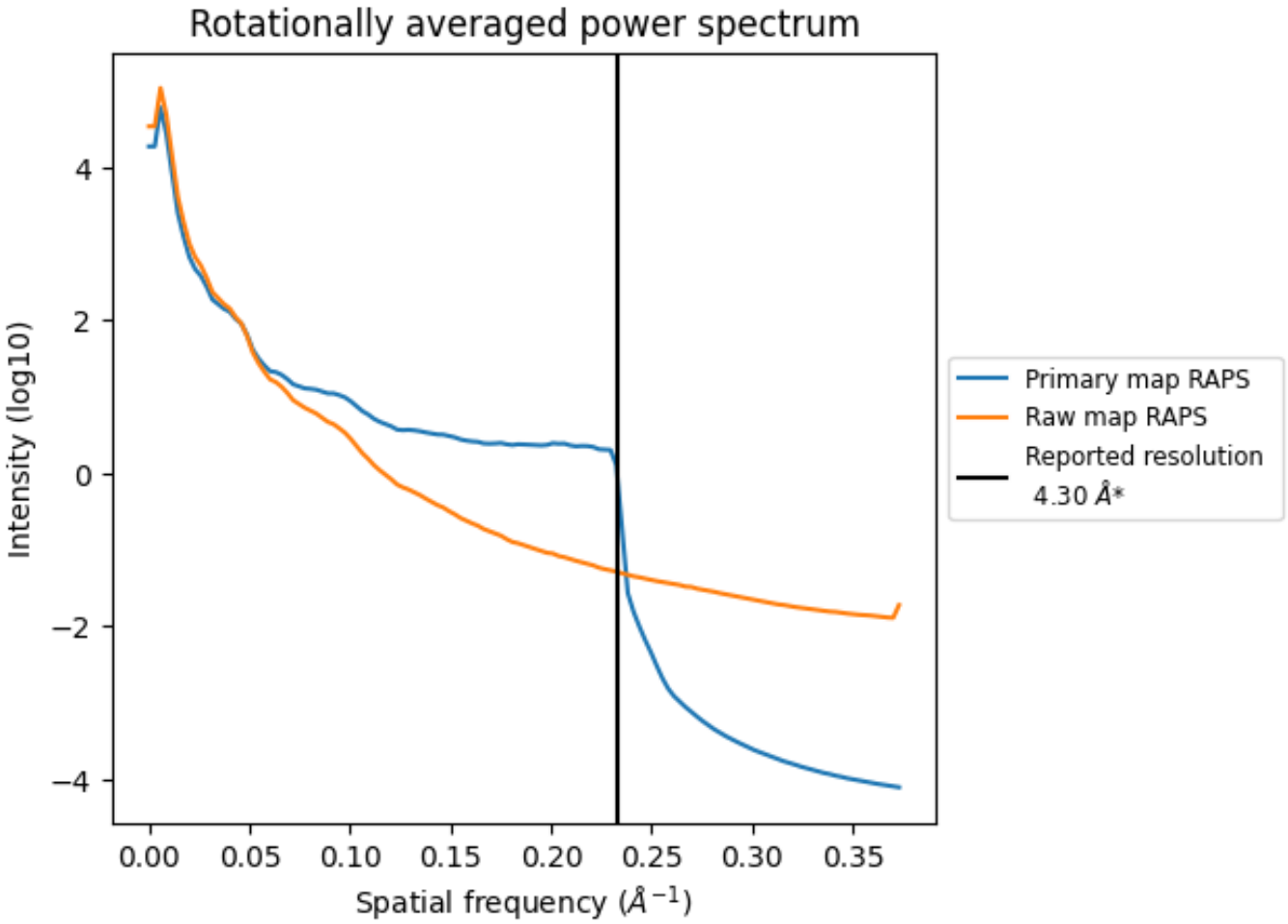
7.2 Volume estimate



The volume at the recommended contour level is 718 nm^3; this corresponds to an approximate mass of 649 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)

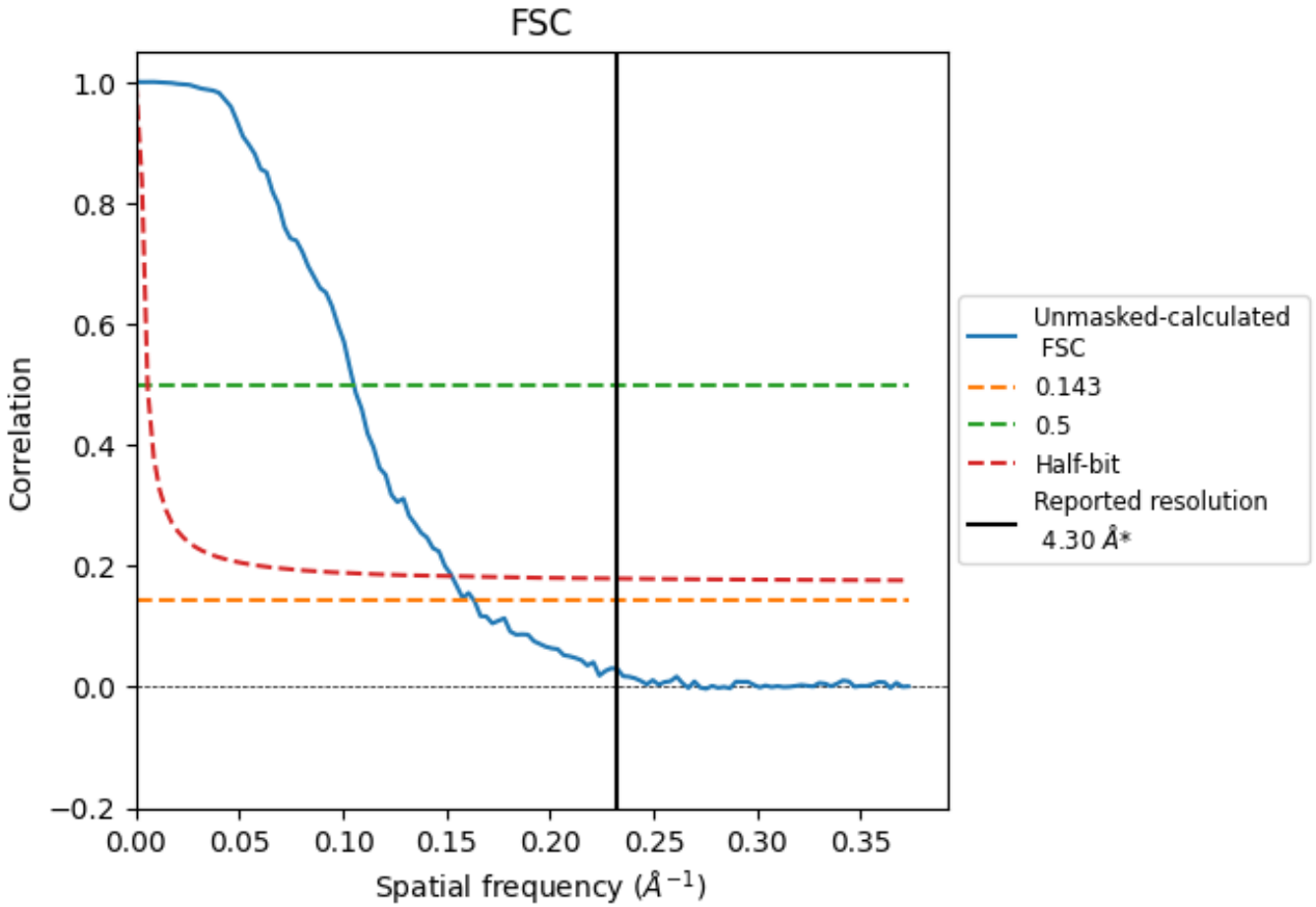


*Reported resolution corresponds to spatial frequency of 0.233 Å^{-1}

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 0.233 Å^{-1}

8.2 Resolution estimates (i)

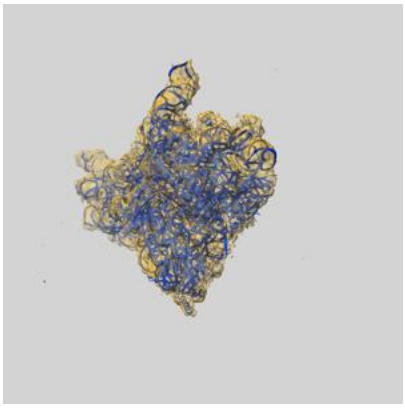
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.30	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.12	9.51	6.55

*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 6.12 differs from the reported value 4.3 by more than 10 %

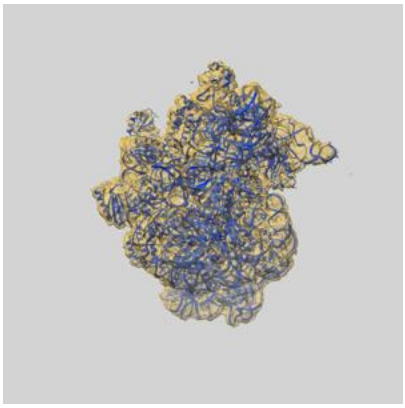
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-4074 and PDB model 5LMO. Per-residue inclusion information can be found in section 3 on page 8.

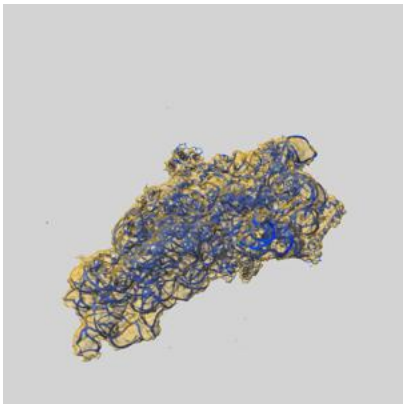
9.1 Map-model overlay



X



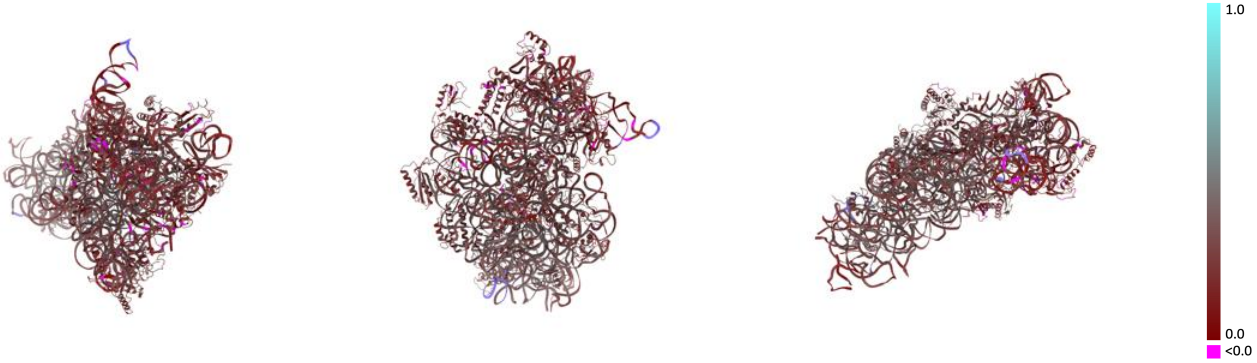
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.05 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

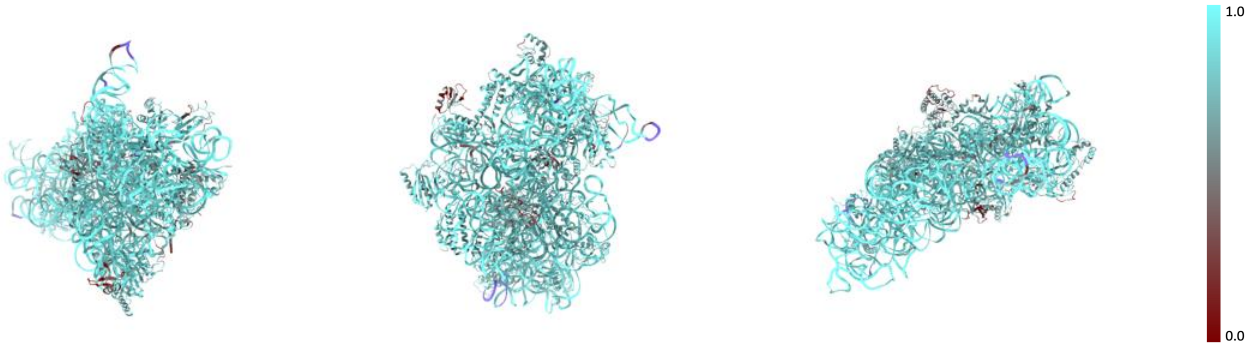
9.2 Q-score mapped to coordinate model



X Y Z

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

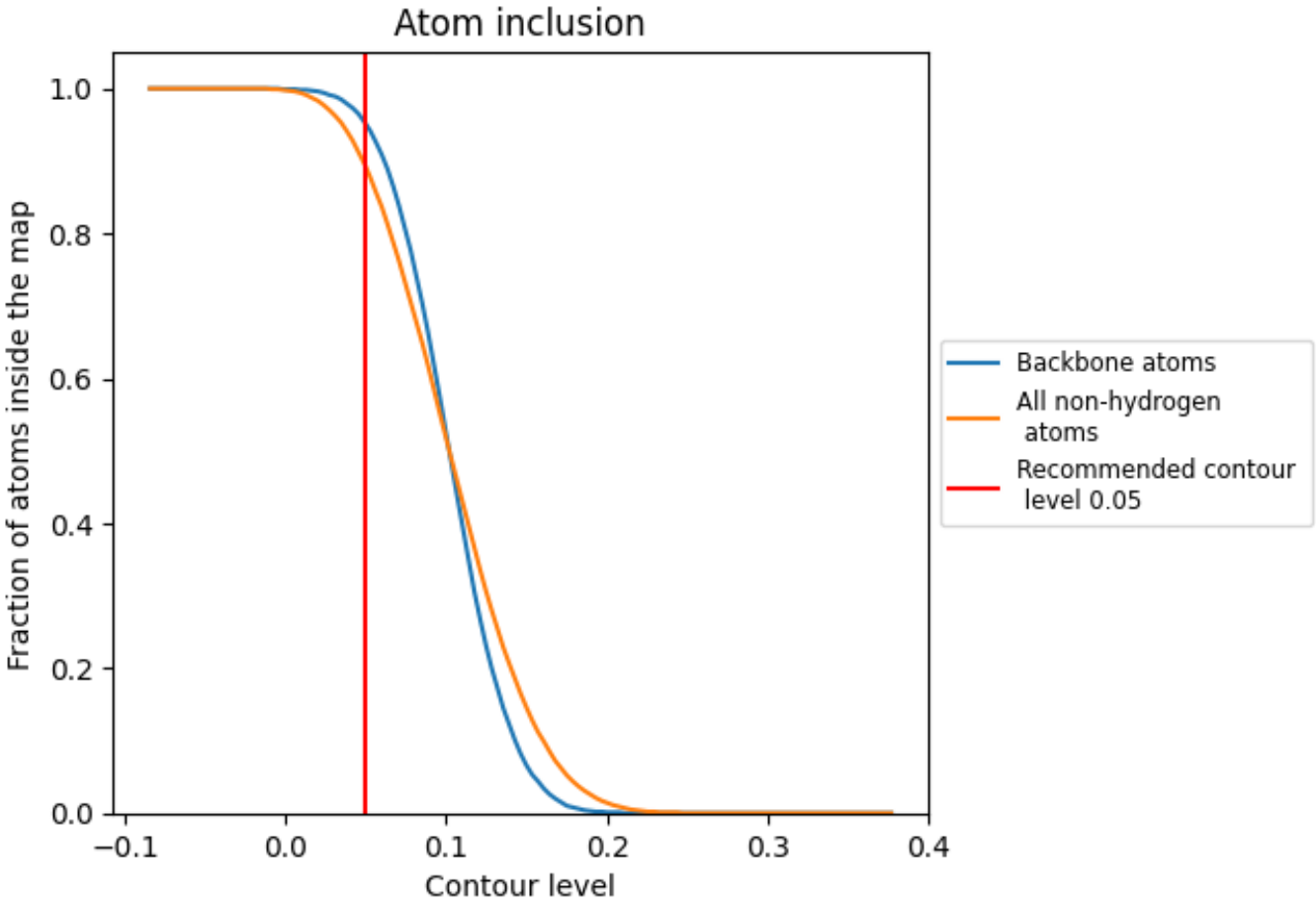
9.3 Atom inclusion mapped to coordinate model



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.05).

9.4 Atom inclusion (i)



At the recommended contour level, 95% of all backbone atoms, 89% 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 (0.05) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8920	0.2810
A	0.9700	0.2960
B	0.5990	0.2470
C	0.8220	0.2530
D	0.8110	0.2790
E	0.8230	0.3090
F	0.8070	0.2710
G	0.8110	0.2100
H	0.8620	0.3350
I	0.7850	0.2350
J	0.7340	0.2470
K	0.8390	0.2620
L	0.8260	0.3450
M	0.7700	0.1780
N	0.7930	0.2400
O	0.8390	0.2900
P	0.8740	0.3290
Q	0.8580	0.3270
R	0.7720	0.2370
S	0.7320	0.1660
T	0.8300	0.2720
V	0.8530	0.2280
W	0.4250	0.2150
X	0.6320	0.2290
Y	0.6980	0.1540