Full wwPDB EM Validation Report ⓘ

Dec 8, 2025 – 12:04 PM EST

PDB ID	:	9YPT / pdb_00009ypt
EMDB ID	:	EMD-73308
Title	:	GTPBP1*GCP*Phe-tRNA*ribosome in the open state, Structure IIc
Authors	:	Susorov, D.; Korostelev, A.A.
Deposited on	:	2025-10-14
Resolution	:	3.10 Å(reported)
Based on initial model	:	5LZS

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

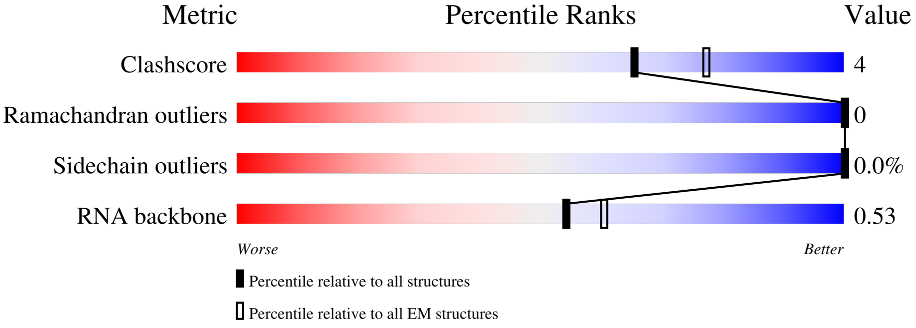
EMDB validation analysis	:	0.0.1.dev129
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive 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

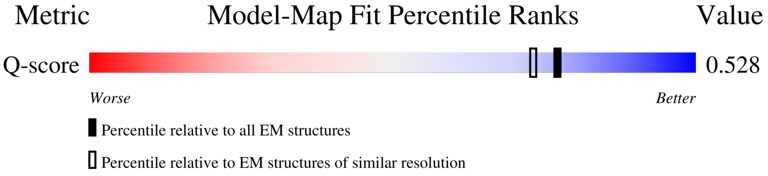
1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.10 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	14724 (2.60 - 3.60)

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	5	3601	
2	7	120	
3	8	156	

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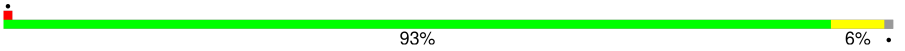
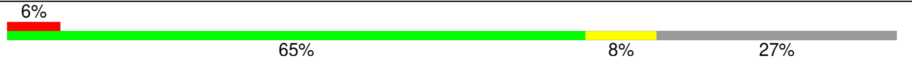
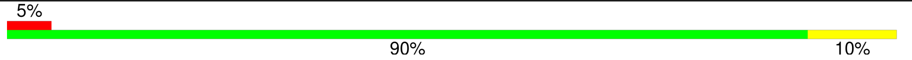
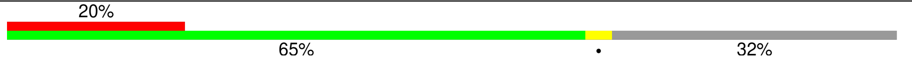
Mol	Chain	Length	Quality of chain
4	9	1869	
5	A	257	
6	B	403	
7	C	425	
8	D	297	
9	E	291	
10	G	319	
11	H	192	
12	I	214	
13	J	178	
14	K	247	
15	L	211	
16	M	218	
17	N	204	
18	O	203	
19	P	184	
20	Q	188	
21	R	196	
22	S	176	
23	T	160	
24	U	128	
25	V	140	
26	W	157	
27	X	156	
28	Y	145	

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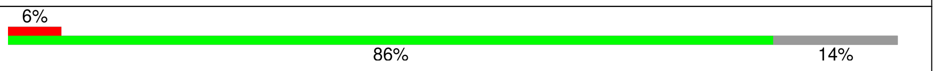
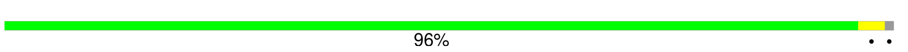
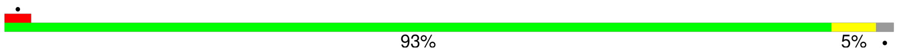
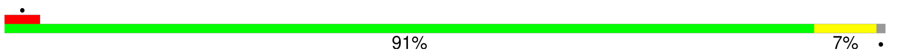
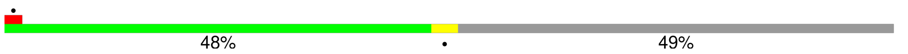
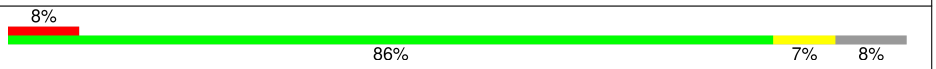
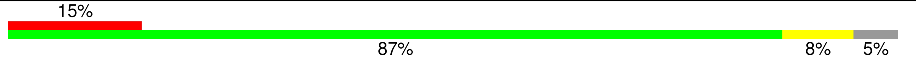
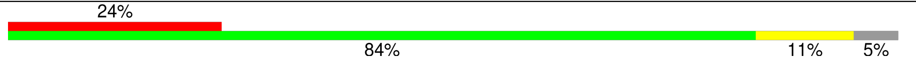
Mol	Chain	Length	Quality of chain
29	Z	136	
30	a	148	
31	b	245	
32	c	115	
33	d	125	
34	e	135	
35	f	110	
36	g	116	
37	h	123	
38	i	105	
39	k	70	
40	l	51	
41	m	102	
42	n	25	
43	o	106	
44	p	92	
45	r	137	
46	AA	295	
47	BB	264	
48	CC	293	
49	DD	243	
50	EE	263	
51	FF	204	
52	GG	249	
53	HH	194	

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Mol	Chain	Length	Quality of chain
54	II	208	7% 87% 8% 5%
55	JJ	194	8% 88% 6% 7%
56	KK	165	• 53% 5% 42%
57	LL	158	• 86% • 9%
58	MM	132	62% 69% 15% • 15%
59	NN	151	• 93% 6% •
60	OO	168	• 76% 5% 19%
61	PP	145	11% 79% 10% 11%
62	QQ	146	• 90% 7% •
63	RR	135	25% 90% 7% •
64	SS	152	6% 84% 8% • 8%
65	TT	145	• 90% 7% •
66	UU	119	14% 79% 5% 16%
67	VV	83	• 93% 7%
68	WW	130	91% 8% •
69	XX	143	• 92% 6% •
70	YY	130	• 91% 5% 5%
71	ZZ	125	6% 52% 8% 40%
72	aa	115	• 78% 9% • 12%
73	bb	84	11% 93% 6% •
74	cc	69	• 81% 9% 10%
75	dd	56	• 88% 11% •
76	ee	133	7% 41% • 57%
77	ff	156	21% 37% 7% 56%
78	gg	317	19% 88% 10% •

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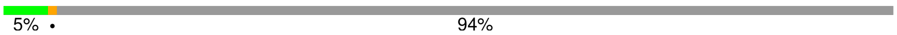
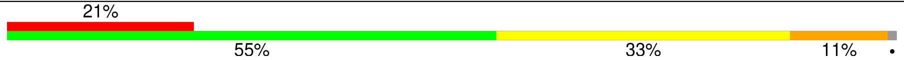
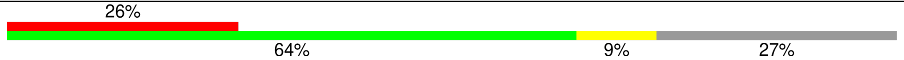
Mol	Chain	Length	Quality of chain
79	10	185	
80	12	76	
81	11	75	
81	13	75	
82	j	97	
83	jj	703	

2 Entry composition ⓘ

There are 92 unique types of molecules in this entry. The entry contains 219555 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 28S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	5	3601	77221	34390	14143	25087	3601	0	0

There are 59 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
5	1	C	N	conflict	GB 5LZS_5
5	3948	C	-	insertion	GB 5LZS_5
5	3949	A	-	insertion	GB 5LZS_5
5	3950	U	-	insertion	GB 5LZS_5
5	3951	G	-	insertion	GB 5LZS_5
5	3952	A	-	insertion	GB 5LZS_5
5	3953	G	-	insertion	GB 5LZS_5
5	3954	A	-	insertion	GB 5LZS_5
5	3955	G	-	insertion	GB 5LZS_5
5	3956	G	-	insertion	GB 5LZS_5
5	3957	U	-	insertion	GB 5LZS_5
5	3958	G	-	insertion	GB 5LZS_5
5	3959	U	-	insertion	GB 5LZS_5
5	3960	A	-	insertion	GB 5LZS_5
5	3961	G	-	insertion	GB 5LZS_5
5	3962	A	-	insertion	GB 5LZS_5
5	3963	A	-	insertion	GB 5LZS_5
5	3964	U	-	insertion	GB 5LZS_5
5	3965	A	-	insertion	GB 5LZS_5
5	3966	A	-	insertion	GB 5LZS_5
5	3967	G	-	insertion	GB 5LZS_5
5	3968	U	-	insertion	GB 5LZS_5
5	3969	G	-	insertion	GB 5LZS_5
5	3970	G	-	insertion	GB 5LZS_5
5	3971	G	-	insertion	GB 5LZS_5
5	3972	A	-	insertion	GB 5LZS_5
5	3973	G	-	insertion	GB 5LZS_5
5	3974	G	-	insertion	GB 5LZS_5

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Chain	Residue	Modelled	Actual	Comment	Reference
5	3975	C	-	insertion	GB 5LZS_5
5	3976	C	-	insertion	GB 5LZS_5
5	4035	G	-	insertion	GB 5LZS_5
5	4036	G	-	insertion	GB 5LZS_5
5	4037	C	-	insertion	GB 5LZS_5
5	4038	C	-	insertion	GB 5LZS_5
5	4039	G	-	insertion	GB 5LZS_5
5	4040	C	-	insertion	GB 5LZS_5
5	4041	C	-	insertion	GB 5LZS_5
5	4042	G	-	insertion	GB 5LZS_5
5	4043	G	-	insertion	GB 5LZS_5
5	4044	U	-	insertion	GB 5LZS_5
5	4045	G	-	insertion	GB 5LZS_5
5	4046	A	-	insertion	GB 5LZS_5
5	4047	A	-	insertion	GB 5LZS_5
5	4048	A	-	insertion	GB 5LZS_5
5	4049	U	-	insertion	GB 5LZS_5
5	4050	A	-	insertion	GB 5LZS_5
5	4051	C	-	insertion	GB 5LZS_5
5	4052	C	-	insertion	GB 5LZS_5
5	4053	A	-	insertion	GB 5LZS_5
5	4054	C	-	insertion	GB 5LZS_5
5	4055	U	-	insertion	GB 5LZS_5
5	4056	A	-	insertion	GB 5LZS_5
5	4057	C	-	insertion	GB 5LZS_5
5	4058	U	-	insertion	GB 5LZS_5
5	4059	C	-	insertion	GB 5LZS_5
5	4060	U	-	insertion	GB 5LZS_5
5	4061	G	-	insertion	GB 5LZS_5
5	4062	A	-	insertion	GB 5LZS_5
5	4063	U	-	insertion	GB 5LZS_5

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	7	119	2538	1132	454	834	118	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
7	120	U	-	insertion	GB XR_011385821

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	8	151	3208	1432	564	1062	150	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
8	1	C	-	insertion	GB XR_011385890
8	155	C	-	insertion	GB XR_011385890
8	156	U	-	insertion	GB XR_011385890

- Molecule 4 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	9	1697	36229	16171	6507	11855	1696	0	0

- Molecule 5 is a protein called Ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	A	248	1898	1189	389	314	6	0	0

- Molecule 6 is a protein called Ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	B	394	3172	2020	597	542	13	0	0

- Molecule 7 is a protein called 60S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	C	362	2883	1812	577	480	14	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	378	LYS	-	insertion	UNP G1SVW5
C	379	VAL	-	insertion	UNP G1SVW5
C	380	LYS	-	insertion	UNP G1SVW5
C	381	LYS	-	insertion	UNP G1SVW5

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Chain	Residue	Modelled	Actual	Comment	Reference
C	382	PRO	-	insertion	UNP G1SVW5
C	383	ARG	-	insertion	UNP G1SVW5
C	384	ALA	-	insertion	UNP G1SVW5
C	385	VAL	-	insertion	UNP G1SVW5
C	386	GLY	-	insertion	UNP G1SVW5
C	387	ILE	-	insertion	UNP G1SVW5
C	388	LYS	-	insertion	UNP G1SVW5
C	389	GLN	-	insertion	UNP G1SVW5

- Molecule 8 is a protein called Large ribosomal subunit protein uL18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	D	293	2391	1512	438	427	14	0	0

- Molecule 9 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	E	216	1729	1115	329	282	3	0	0

- Molecule 10 is a protein called 60S ribosomal protein L7a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	G	233	1879	1199	361	315	4	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	244	GLY	CYS	conflict	UNP G1STW0

- Molecule 11 is a protein called 60S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	H	190	1516	954	284	272	6	0	0

- Molecule 12 is a protein called 60S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	I	205	1664	1056	321	274	13	0	0

- Molecule 13 is a protein called Ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	J	170	1362	861	254	241	6	0	0

- Molecule 14 is a protein called 60S ribosomal protein L7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	K	225	1875	1205	358	303	9	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
K	61	ARG	GLY	conflict	UNP G1TUB1
K	93	ARG	GLY	conflict	UNP G1TUB1
K	131	MET	VAL	conflict	UNP G1TUB1
K	153	ILE	VAL	conflict	UNP G1TUB1

- Molecule 15 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	L	210	1702	1065	354	279	4	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
L	46	ILE	-	insertion	UNP G1TPV0
L	47	ALA	-	insertion	UNP G1TPV0
L	48	PRO	-	insertion	UNP G1TPV0
L	49	ARG	-	insertion	UNP G1TPV0
L	50	PRO	-	insertion	UNP G1TPV0
L	51	ALA	-	insertion	UNP G1TPV0
L	52	ALA	-	insertion	UNP G1TPV0
L	53	GLY	-	insertion	UNP G1TPV0
L	54	PRO	-	insertion	UNP G1TPV0

- Molecule 16 is a protein called 60S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	M	138	1137	727	221	182	7	0	0

- Molecule 17 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	N	203	1701	1072	359	266	4	0	0

- Molecule 18 is a protein called Large ribosomal subunit protein uL13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	O	199	1630	1051	319	255	5	0	0

- Molecule 19 is a protein called Large ribosomal subunit protein uL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	P	153	1242	777	241	215	9	0	0

- Molecule 20 is a protein called Ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	Q	187	1515	946	315	250	4	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
Q	4	ASP	ASN	conflict	UNP G1TFE0
Q	14	ARG	TRP	conflict	UNP G1TFE0
Q	53	MET	LEU	conflict	UNP G1TFE0
Q	58	ARG	TRP	conflict	UNP G1TFE0
Q	75	ARG	GLN	conflict	UNP G1TFE0
Q	80	ALA	PRO	conflict	UNP G1TFE0
Q	86	VAL	ILE	conflict	UNP G1TFE0
Q	104	ARG	HIS	conflict	UNP G1TFE0
Q	110	ARG	CYS	conflict	UNP G1TFE0
Q	137	VAL	GLY	conflict	UNP G1TFE0
Q	157	GLY	ARG	conflict	UNP G1TFE0

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Chain	Residue	Modelled	Actual	Comment	Reference
Q	181	ARG	TRP	conflict	UNP G1TFE0

- Molecule 21 is a protein called Ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	R	180	1508	933	328	238	9	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	38	ARG	CYS	conflict	UNP G1TJR3
R	64	ARG	GLN	conflict	UNP G1TJR3
R	94	THR	LYS	conflict	UNP G1TJR3

- Molecule 22 is a protein called 60S ribosomal protein L18a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	S	176	1462	930	285	236	11	0	0

There are 23 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
S	1	MET	THR	conflict	UNP G1TTY7
S	18	PRO	-	insertion	UNP G1TTY7
S	19	THR	-	insertion	UNP G1TTY7
S	20	PRO	SER	conflict	UNP G1TTY7
S	22	CYS	SER	conflict	UNP G1TTY7
S	23	ARG	PRO	conflict	UNP G1TTY7
S	24	THR	ALA	conflict	UNP G1TTY7
S	49	SER	LEU	conflict	UNP G1TTY7
S	50	GLN	GLU	conflict	UNP G1TTY7
S	95	ARG	HIS	conflict	UNP G1TTY7
S	101	THR	ILE	conflict	UNP G1TTY7
S	102	THR	MET	conflict	UNP G1TTY7
S	104	GLY	SER	conflict	UNP G1TTY7
S	126	ILE	VAL	conflict	UNP G1TTY7
S	132	ILE	MET	conflict	UNP G1TTY7
S	135	SER	ALA	conflict	UNP G1TTY7
S	136	LYS	ARG	conflict	UNP G1TTY7
S	138	ARG	PRO	conflict	UNP G1TTY7

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Chain	Residue	Modelled	Actual	Comment	Reference
S	149	LYS	ARG	conflict	UNP G1TTY7
S	151	LYS	ARG	conflict	UNP G1TTY7
S	168	THR	TYR	conflict	UNP G1TTY7
S	169	THR	ALA	conflict	UNP G1TTY7
S	176	PHE	-	insertion	UNP G1TTY7

- Molecule 23 is a protein called eL21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	T	159	1298	823	252	217	6	0	0

- Molecule 24 is a protein called eL22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	U	99	809	519	141	147	2	0	0

There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
U	18	LEU	VAL	conflict	UNP G1TSG1
U	32	GLY	ARG	conflict	UNP G1TSG1
U	36	ALA	GLU	conflict	UNP G1TSG1
U	39	PHE	SER	conflict	UNP G1TSG1
U	54	GLY	ARG	conflict	UNP G1TSG1
U	60	VAL	ALA	conflict	UNP G1TSG1
U	62	SER	THR	conflict	UNP G1TSG1
U	63	LEU	ILE	conflict	UNP G1TSG1
U	97	ARG	HIS	conflict	UNP G1TSG1
U	106	THR	SER	conflict	UNP G1TSG1
U	126	GLU	ASP	conflict	UNP G1TSG1

- Molecule 25 is a protein called Ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	V	129	969	613	182	169	5	0	0

- Molecule 26 is a protein called eL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	W	106	860	538	174	144	4	0	0

- Molecule 27 is a protein called eL23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	X	118	967	618	181	167	1	0	0

- Molecule 28 is a protein called uL24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	Y	134	1115	700	226	186	3	0	0

- Molecule 29 is a protein called 60S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	Z	135	1107	714	208	182	3	0	0

- Molecule 30 is a protein called 60S ribosomal protein L27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	a	147	1162	734	239	185	4	0	0

- Molecule 31 is a protein called Large ribosomal subunit protein eL29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	b	98	806	498	182	123	3	0	0

- Molecule 32 is a protein called eL30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	c	98	761	481	134	140	6	0	0

- Molecule 33 is a protein called eL31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	d	107	888	560	171	155	2	0	0

- Molecule 34 is a protein called Ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	e	128	1053	667	216	165	5	0	0

- Molecule 35 is a protein called eL33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	f	109	876	555	174	143	4	0	0

- Molecule 36 is a protein called Large ribosomal subunit protein eL34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	g	114	906	566	187	147	6	0	0

- Molecule 37 is a protein called eL35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	h	122	1013	640	204	168	1	0	0

- Molecule 38 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	i	102	830	520	176	129	5	0	0

- Molecule 39 is a protein called eL38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	k	69	569	366	103	99	1	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
k	3	ARG	GLN	conflict	UNP G1U3J0
k	38	CYS	TYR	conflict	UNP G1U3J0
k	48	THR	MET	conflict	UNP G1U3J0
k	66	VAL	MET	conflict	UNP G1U3J0

- Molecule 40 is a protein called eL39.

Mol	Chain	Residues	Atoms	AltConf	Trace
40	l	50	Total C N O S 447 286 96 64 1	0	0

- Molecule 41 is a protein called Ubiquitin-ribosomal protein eL40 fusion protein.

Mol	Chain	Residues	Atoms	AltConf	Trace
41	m	52	Total C N O S 429 266 90 67 6	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
m	1	MET	-	insertion	UNP P0DXC2
m	2	GLY	-	insertion	UNP P0DXC2
m	3	ASP	-	insertion	UNP P0DXC2
m	4	PRO	-	insertion	UNP P0DXC2
m	5	GLU	-	insertion	UNP P0DXC2
m	6	SER	-	insertion	UNP P0DXC2
m	7	GLY	-	insertion	UNP P0DXC2
m	8	GLY	-	insertion	UNP P0DXC2
m	9	CYS	-	insertion	UNP P0DXC2

- Molecule 42 is a protein called eL41.

Mol	Chain	Residues	Atoms	AltConf	Trace
42	n	25	Total C N O S 240 145 64 28 3	0	0

- Molecule 43 is a protein called Large ribosomal subunit protein eL42.

Mol	Chain	Residues	Atoms	AltConf	Trace
43	o	104	Total C N O S 851 533 174 138 6	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
o	101	GLY	-	insertion	UNP G1T040
o	102	GLN	-	insertion	UNP G1T040
o	103	VAL	-	insertion	UNP G1T040
o	104	ILE	-	insertion	UNP G1T040
o	105	GLN	-	insertion	UNP G1T040
o	106	PHE	-	insertion	UNP G1T040

- Molecule 44 is a protein called eL43.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	p	91	Total 708	C 445	N 136	O 120	S 7	0	0

- Molecule 45 is a protein called eL28.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	r	124	Total 994	C 616	N 205	O 167	S 6	0	0

- Molecule 46 is a protein called uS2 (SA).

Mol	Chain	Residues	Atoms					AltConf	Trace
46	AA	217	Total 1710	C 1086	N 300	O 316	S 8	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AA	114	THR	ALA	conflict	UNP G1TLT8

- Molecule 47 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	BB	213	Total 1729	C 1098	N 309	O 308	S 14	0	0

- Molecule 48 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	CC	221	1716	1111	295	301	9	0	0

There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CC	13	ASP	GLY	conflict	UNP G1SWM1
CC	19	ILE	MET	conflict	UNP G1SWM1
CC	33	VAL	ILE	conflict	UNP G1SWM1
CC	97	PHE	CYS	conflict	UNP G1SWM1
CC	101	SER	ALA	conflict	UNP G1SWM1
CC	141	VAL	LEU	conflict	UNP G1SWM1
CC	181	PRO	LEU	conflict	UNP G1SWM1
CC	191	VAL	-	insertion	UNP G1SWM1
CC	215	MET	LEU	conflict	UNP G1SWM1
CC	271	ASP	ASN	conflict	UNP G1SWM1
CC	274	VAL	MET	conflict	UNP G1SWM1

- Molecule 49 is a protein called Ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	DD	224	1739	1108	313	311	7	0	0

- Molecule 50 is a protein called eS4 (S4 X isoform).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	EE	262	2076	1324	386	358	8	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
EE	25	GLY	SER	conflict	UNP G1TK17
EE	51	ARG	LYS	conflict	UNP G1TK17
EE	78	THR	ALA	conflict	UNP G1TK17
EE	156	VAL	MET	conflict	UNP G1TK17

- Molecule 51 is a protein called Ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	FF	184	1460	915	273	265	7	0	0

- Molecule 52 is a protein called 40S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	GG	237	1923	1200	387	329	7	0	0

- Molecule 53 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	HH	185	1489	952	271	265	1	0	0

- Molecule 54 is a protein called 40S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	II	198	1628	1021	322	280	5	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
II	47	ARG	GLY	conflict	UNP G1TJW1

- Molecule 55 is a protein called Ribosomal protein S9 (Predicted).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	JJ	181	1508	960	302	244	2	0	0

- Molecule 56 is a protein called Small ribosomal subunit protein eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	KK	96	810	530	143	131	6	0	0

- Molecule 57 is a protein called Ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	LL	143	1175	749	222	198	6	0	0

- Molecule 58 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	MM	112	871	551	155	158	7	0	0

- Molecule 59 is a protein called Ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	NN	149	1202	770	228	203	1	0	0

- Molecule 60 is a protein called Small ribosomal subunit protein uS11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	OO	136	1016	621	199	190	6	0	0

- Molecule 61 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	PP	129	1058	670	201	180	7	0	0

- Molecule 62 is a protein called uS9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	QQ	142	1128	717	213	195	3	0	0

- Molecule 63 is a protein called eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	RR	132	1068	670	199	195	4	0	0

- Molecule 64 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	SS	140	1157	728	231	197	1	0	0

- Molecule 65 is a protein called eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	TT	141	1097	688	211	195	3	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
TT	119	GLY	TRP	conflict	UNP G1TN62

- Molecule 66 is a protein called uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	UU	100	795	498	152	141	4	0	0

- Molecule 67 is a protein called eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	VV	83	637	393	117	122	5	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
VV	3	ASN	SER	conflict	UNP G1TM82
VV	4	ASP	ASN	conflict	UNP G1TM82
VV	33	GLN	PRO	conflict	UNP G1TM82
VV	50	PHE	SER	conflict	UNP G1TM82
VV	75	ALA	SER	conflict	UNP G1TM82
VV	76	ASP	HIS	conflict	UNP G1TM82
VV	81	LYS	GLN	conflict	UNP G1TM82

- Molecule 68 is a protein called Ribosomal protein S15a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	WW	129	1034	659	193	176	6	0	0

- Molecule 69 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	XX	140	Total 1087	C 687	N 215	O 182	S 3	0	0

- Molecule 70 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	YY	124	Total 1011	C 640	N 198	O 168	S 5	0	0

- Molecule 71 is a protein called eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
71	ZZ	75	Total 598	C 382	N 111	O 104	S 1	0	0

- Molecule 72 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
72	aa	101	Total 814	C 507	N 170	O 132	S 5	0	0

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
aa	28	ARG	CYS	conflict	UNP G1TFE8
aa	56	ALA	VAL	conflict	UNP G1TFE8
aa	109	ARG	PRO	conflict	UNP G1TFE8

- Molecule 73 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
73	bb	83	Total 651	C 408	N 121	O 115	S 7	0	0

- Molecule 74 is a protein called Ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
74	cc	62	Total 488	C 297	N 97	O 92	S 2	0	0

- Molecule 75 is a protein called eS29.

Mol	Chain	Residues	Atoms					AltConf	Trace
75	dd	55	Total 459	C 286	N 94	O 74	S 5	0	0

- Molecule 76 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
76	ee	57	Total 457	C 282	N 101	O 73	S 1	0	0

- Molecule 77 is a protein called Ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
77	ff	68	Total 555	C 351	N 103	O 94	S 7	0	0

- Molecule 78 is a protein called RACK1.

Mol	Chain	Residues	Atoms					AltConf	Trace
78	gg	313	Total 2436	C 1535	N 424	O 465	S 12	0	0

- Molecule 79 is a RNA chain called MF mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
79	10	11	Total 234	C 105	N 41	O 77	P 11	0	0

- Molecule 80 is a RNA chain called Phe-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
80	12	75	Total 1599	C 714	N 286	O 524	P 75	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
12	37	C	G	conflict	GB 176419

- Molecule 81 is a RNA chain called Met-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
81	13	74	1585	707	293	511	74	0	0
			Total	C	N	O	P		
81	11	74	1585	707	293	511	74	0	0

- Molecule 82 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
82	j	86	705	434	155	111	5	0	0

- Molecule 83 is a protein called GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
83	jj	513	3982	2508	702	748	24	0	0

There are 34 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
jj	-33	MET	-	expression tag	UNP O00178
jj	-32	GLY	-	expression tag	UNP O00178
jj	-31	SER	-	expression tag	UNP O00178
jj	-30	SER	-	expression tag	UNP O00178
jj	-29	HIS	-	expression tag	UNP O00178
jj	-28	HIS	-	expression tag	UNP O00178
jj	-27	HIS	-	expression tag	UNP O00178
jj	-26	HIS	-	expression tag	UNP O00178
jj	-25	HIS	-	expression tag	UNP O00178
jj	-24	HIS	-	expression tag	UNP O00178
jj	-23	SER	-	expression tag	UNP O00178
jj	-22	SER	-	expression tag	UNP O00178
jj	-21	GLY	-	expression tag	UNP O00178
jj	-20	LEU	-	expression tag	UNP O00178
jj	-19	VAL	-	expression tag	UNP O00178
jj	-18	PRO	-	expression tag	UNP O00178
jj	-17	ARG	-	expression tag	UNP O00178
jj	-16	GLY	-	expression tag	UNP O00178
jj	-15	SER	-	expression tag	UNP O00178
jj	-14	HIS	-	expression tag	UNP O00178
jj	-13	MET	-	expression tag	UNP O00178
jj	-12	ALA	-	expression tag	UNP O00178
jj	-11	SER	-	expression tag	UNP O00178

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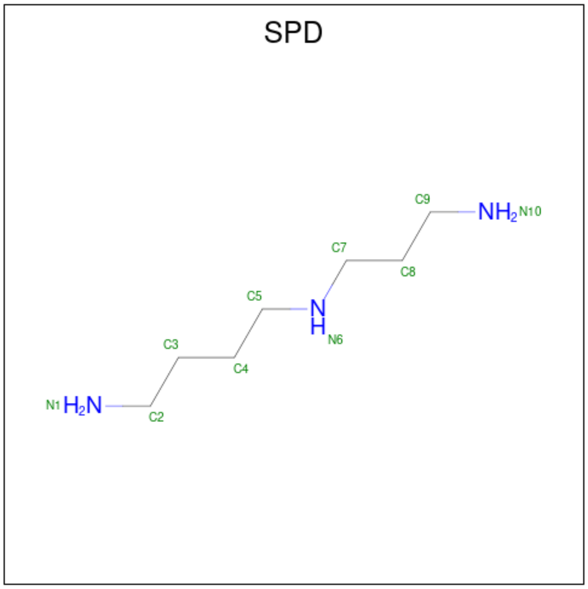
Chain	Residue	Modelled	Actual	Comment	Reference
jj	-10	MET	-	expression tag	UNP O00178
jj	-9	THR	-	expression tag	UNP O00178
jj	-8	GLY	-	expression tag	UNP O00178
jj	-7	GLY	-	expression tag	UNP O00178
jj	-6	GLN	-	expression tag	UNP O00178
jj	-5	GLN	-	expression tag	UNP O00178
jj	-4	MET	-	expression tag	UNP O00178
jj	-3	GLY	-	expression tag	UNP O00178
jj	-2	ARG	-	expression tag	UNP O00178
jj	-1	GLY	-	expression tag	UNP O00178
jj	0	SER	-	expression tag	UNP O00178

- Molecule 84 is SPERMIDINE (CCD ID: SPD) (formula: $C_7H_{19}N_3$).



Mol	Chain	Residues	Atoms	AltConf
84	5	1	Total C N 10 7 3	0

- Molecule 85 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
85	g	1	Total Zn 1 1	0
85	m	1	Total Zn 1 1	0

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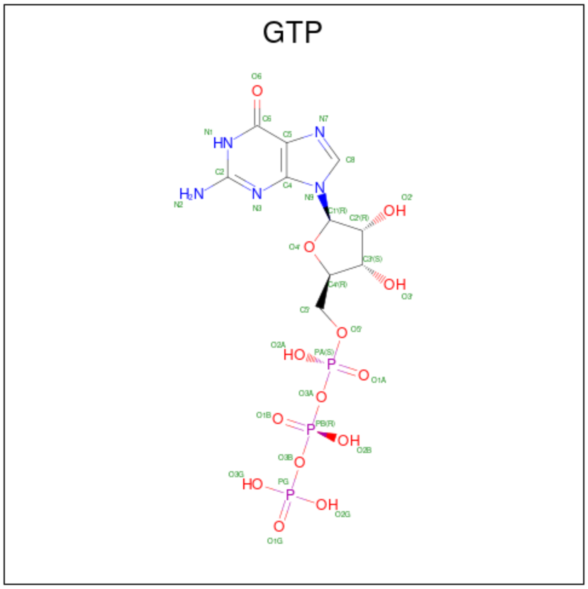
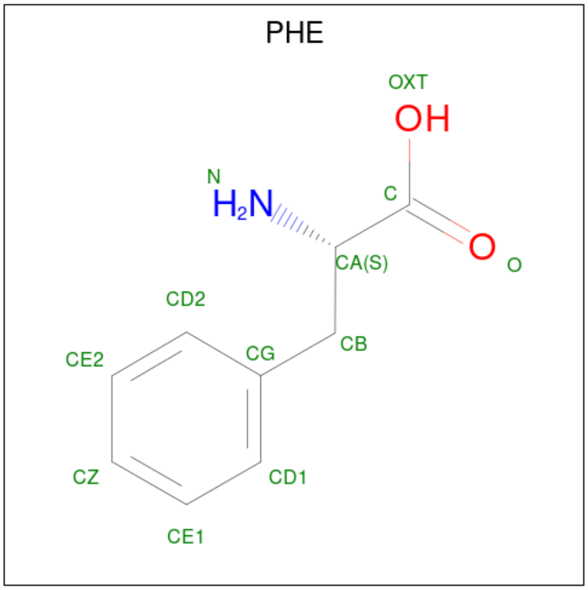
Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
85	o	1	1	1	0
			Total	Zn	
85	p	1	1	1	0
			Total	Zn	
85	dd	1	1	1	0
			Total	Zn	
85	j	1	1	1	0

- Molecule 86 is GUANOSINE-5'-TRIPHOSPHATE (CCD ID: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



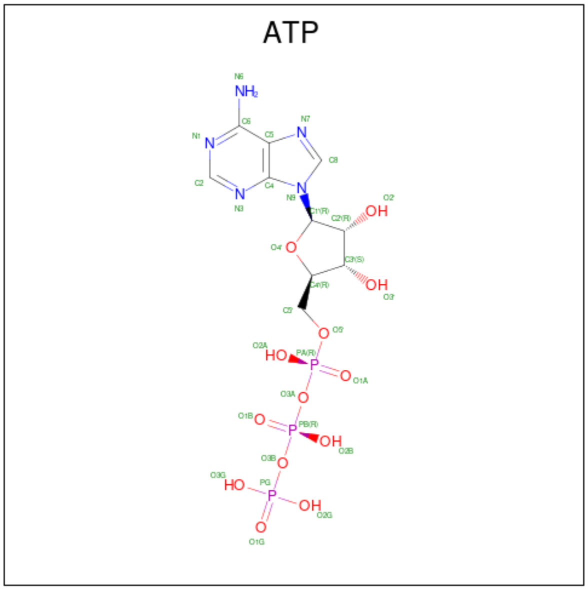
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
86	12	1	32	10	5	14	3	0

- Molecule 87 is PHENYLALANINE (CCD ID: PHE) (formula: $C_9H_{11}NO_2$).



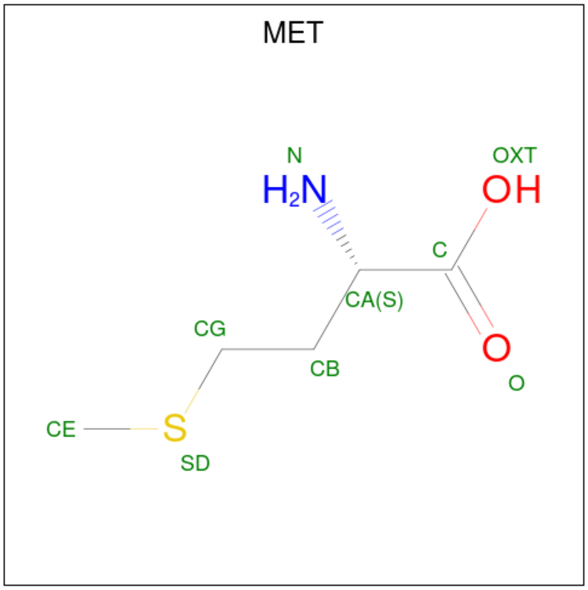
Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
87	12	1	11	9	1	1	0

- Molecule 88 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



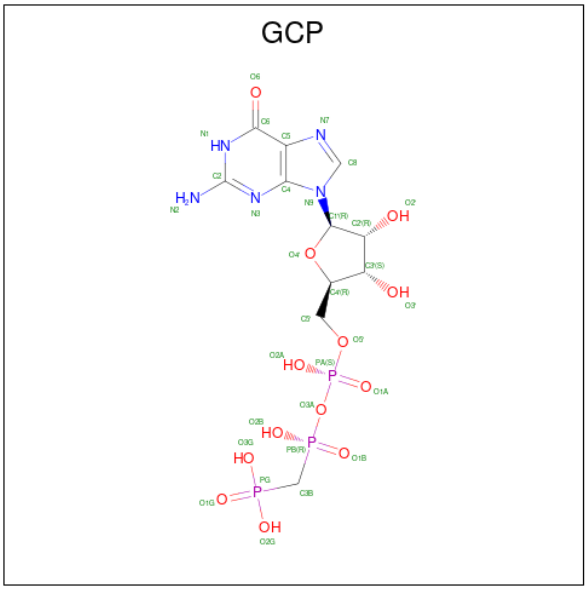
Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
88	13	1	31	10	5	13	3	0
			Total	C	N	O	P	
88	11	1	31	10	5	13	3	0

- Molecule 89 is METHIONINE (CCD ID: MET) (formula: $C_5H_{11}NO_2S$).



Mol	Chain	Residues	Atoms	AltConf
89	13	1	Total C N O S 8 5 1 1 1	0

- Molecule 90 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (CCD ID: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	AltConf
90	jj	1	Total C N O P 32 11 5 13 3	0

- Molecule 91 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
91	jj	1	1	1	0

- Molecule 92 is POTASSIUM ION (CCD ID: K) (formula: K) (labeled as "Ligand of Interest" by depositor).

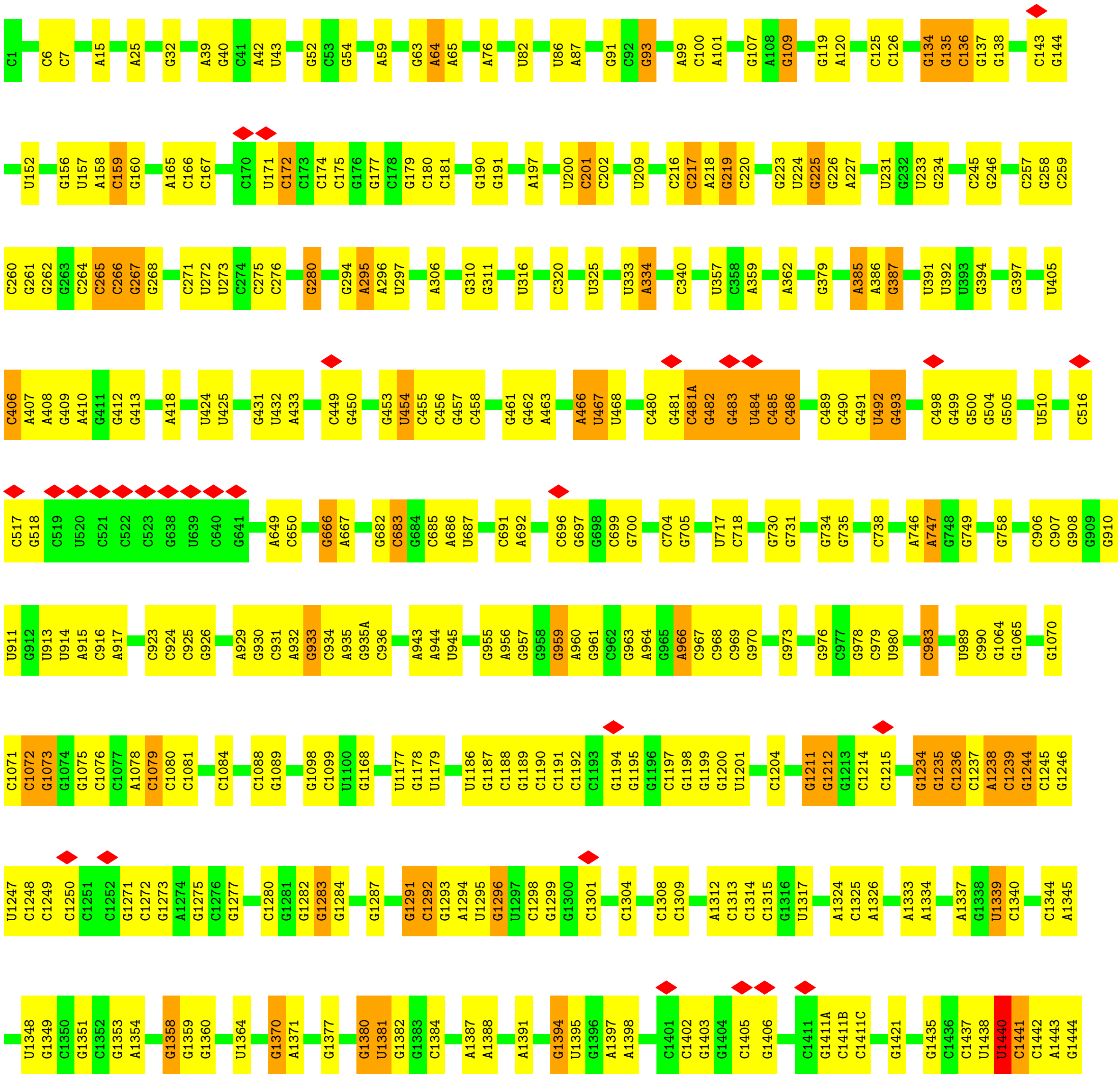
Mol	Chain	Residues	Atoms		AltConf
			Total	K	
92	jj	1	1	1	0

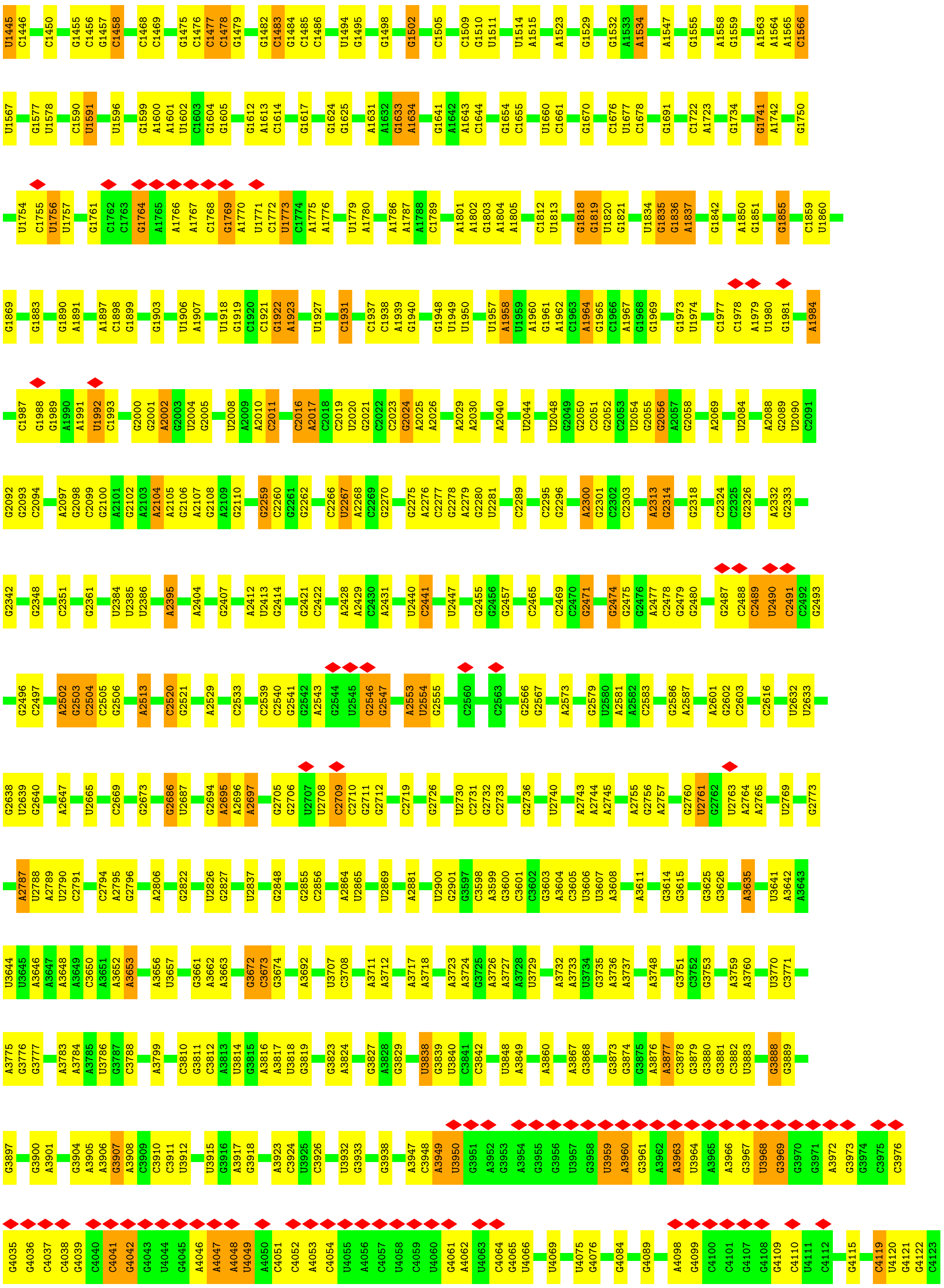
3 Residue-property plots ⓘ

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

- Molecule 1: 28S ribosomal RNA

Chain 5:

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U1567 G1577 U1578 C1590 U1591 U1596 G1599 A1600 A1601 U1602 C1603 G1604 G1605 G1612 A1613 C1614 G1617 G1624 G1625 A1631 A1632 G1633 A1634 G1641 A1642 A1643 C1644 G1654 C1655 U1660 C1661 G1670 C1676 U1677 C1678 G1691 C1722 A1723 G1734 G1741 A1742 G1750
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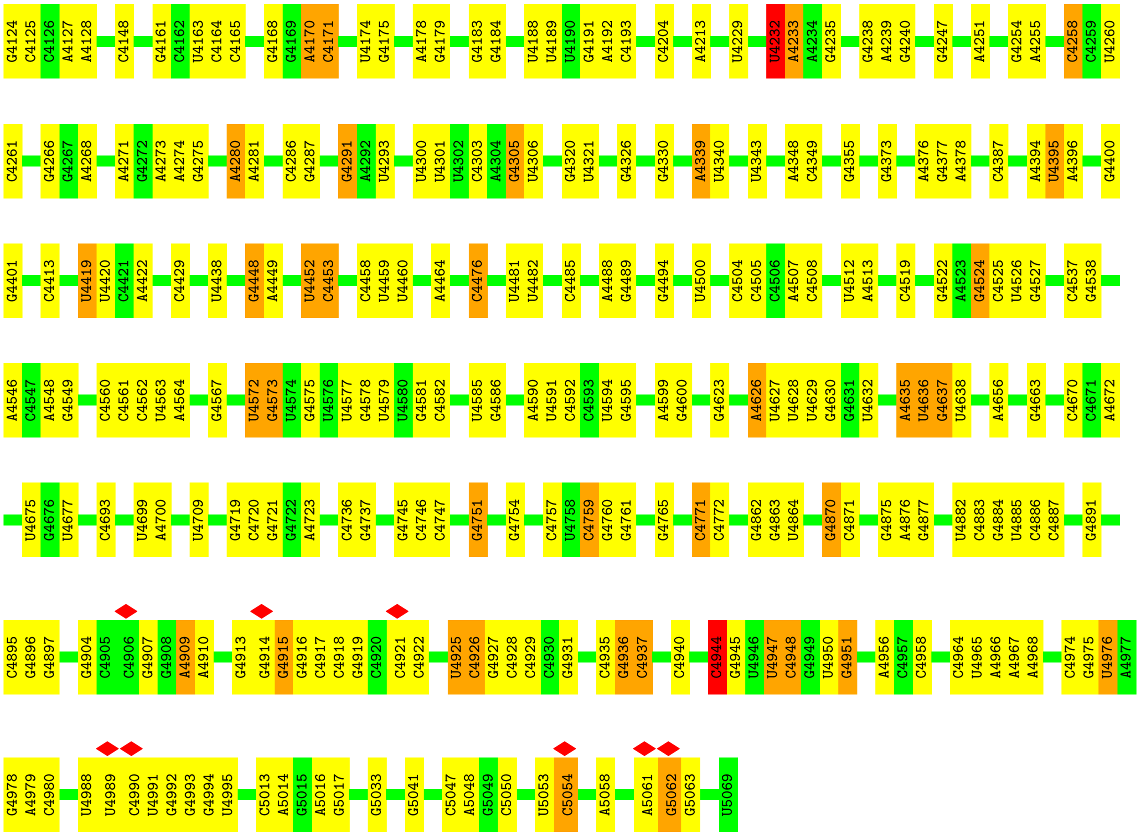
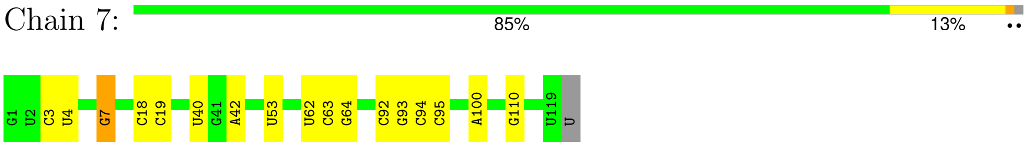


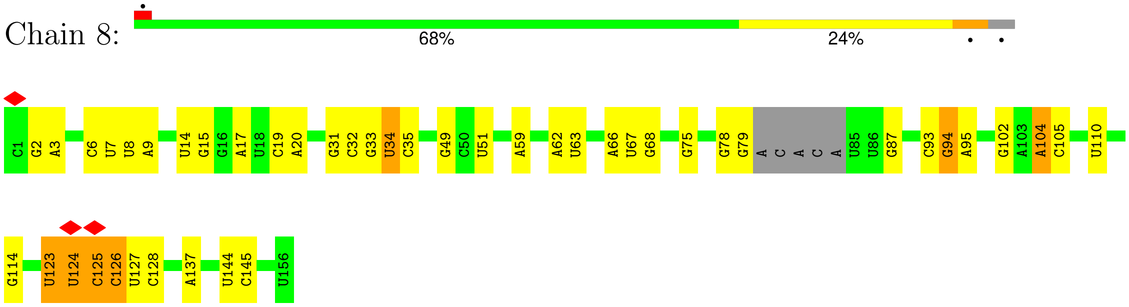
- Molecule 2: 5S ribosomal RNA

Chain 7:



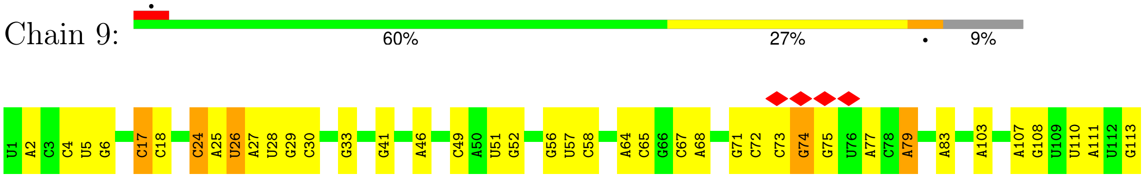
- Molecule 3: 5.8S ribosomal RNA

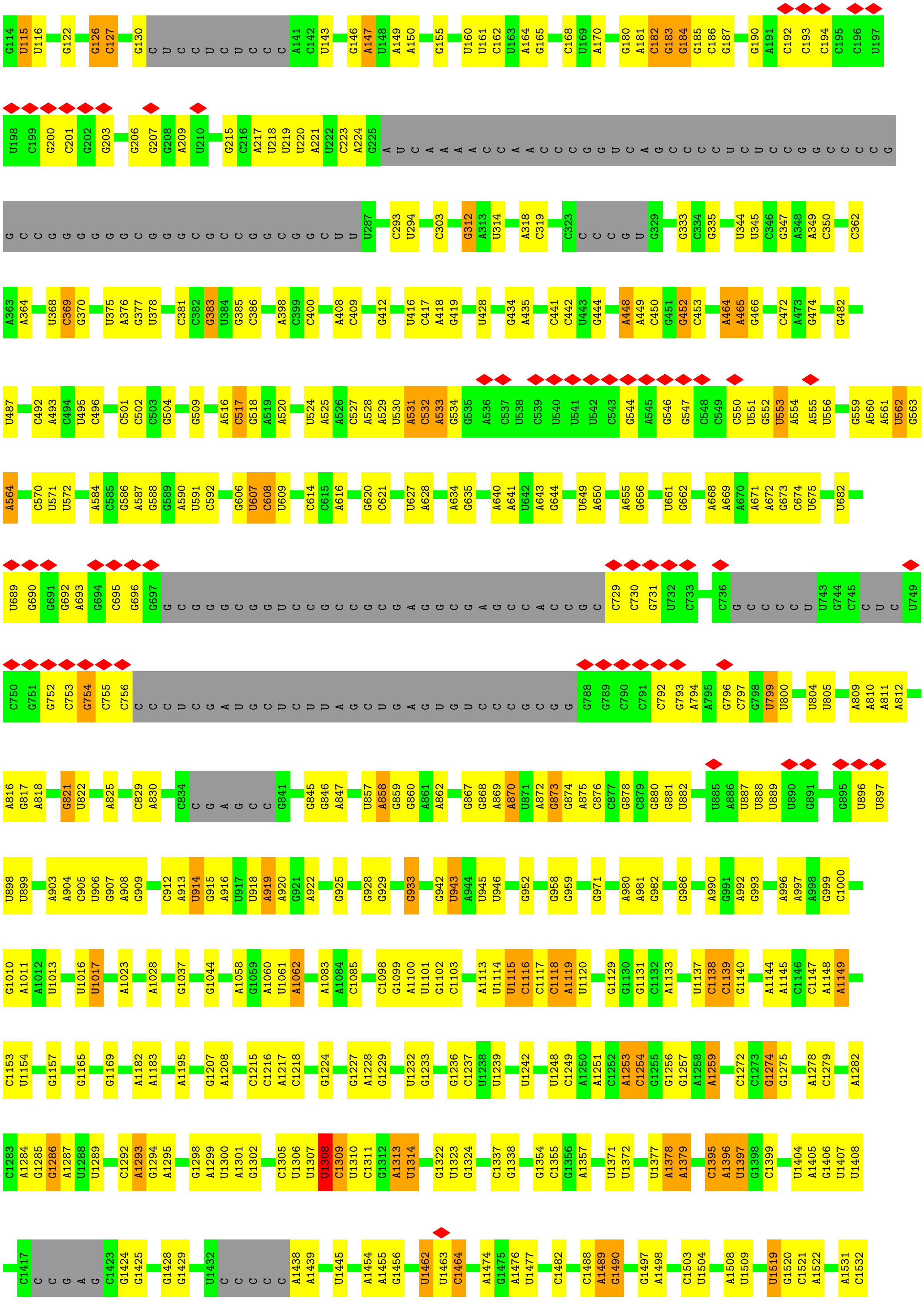
Chain 8:



- Molecule 4: 18S ribosomal RNA

Chain 9:

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U198 C199 G200 C201 G202 G203 G206 G207 G208 A209 U210 G215 C216 A217 U218 U219 U220 A221 U222 C223 A224 G225 A U C A A A C C A A C C C G G U C A G C C C C U C U C C G G G C C C C G
G C C G G G G G C G G G C C C G G C G G C U U U287 C293 U294 C303 G312 A313 U314 A318 C319 C323 C C C G U G329 G333 C334 G335 U344 U345 C346 G347 A348 A349 C350 C362
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U689 G690 G691 G692 A693 G694 C695 C696 G697 G C G G G C G G U C C G C C G C G A G G C G A G C C A C C G C C729 C730 G731 U732 C733 C736 G C C C C U U743 G744 C745 C U C U749
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U898 U899 A903 A904 C905 U906 G907 A908 G909 C912 A913 U914 G915 A916 U917 U918 A919 A920 G921 A922 G925 G928 G929 G933 G942 U943 A944 U945 U946 G952 G958 G959 G971 A980 A981 G982 G986 A990 G991 A992 G993 A996 A997 A998 G999 C1000
G1010 A1011 A1012 U1013 U1016 U1017 A1023 A1028 G1037 G1044 A1058 G1059 A1060 U1061 A1062 A1083 A1084 C1085 C1098 G1099 A1100 U1101 G1102 C1103 A1113 U1114 U1115 C1116 C1117 C1118 A1119 U1120 G1129 G1130 G1131 C1132 A1133 U1137 C1138 C1139 G1140 A1144 A1145 C1146 C1147 A1148 A1149
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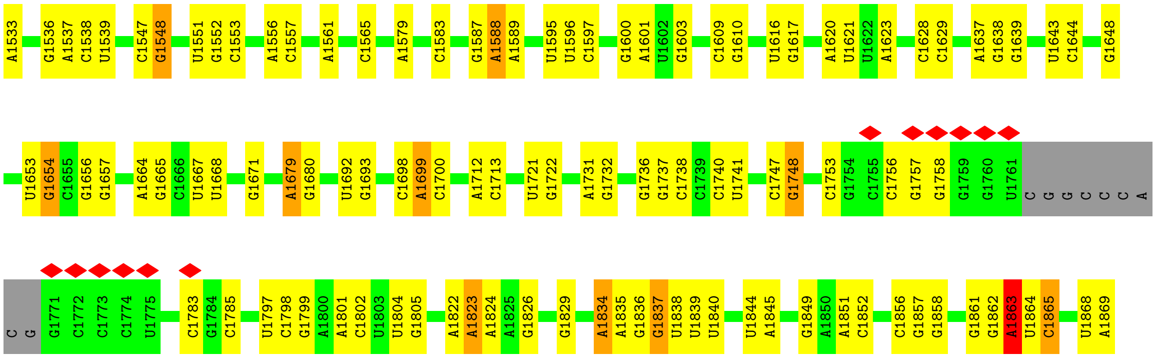
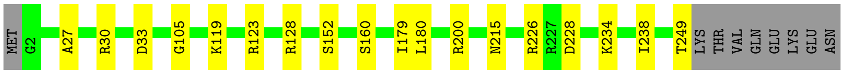
C1417 C C G A G C1423 G1424 G1425 G1428 G1429 U1432 C C C C C A1438 A1439 U1445 A1454 A1455 G1456 U1462 U1463 C1464 A1474 G1475 A1476 U1477 C1482 C1488 A1489 G1490 G1497 A1498 C1503 U1504 A1508 U1509 U1519 G1520 C1521 A1522 A1531 C1532



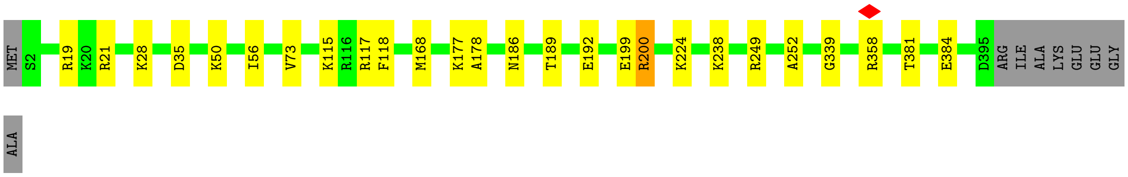
- Molecule 5: Ribosomal protein L8

Chain A:



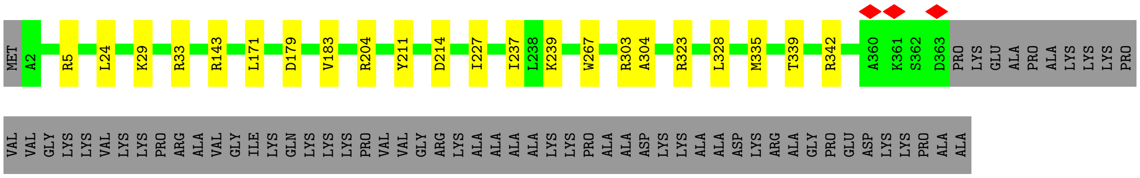
- Molecule 6: Ribosomal protein L3

Chain B:



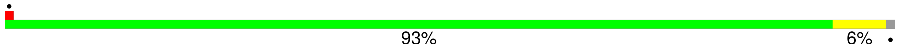
- Molecule 7: 60S ribosomal protein L4

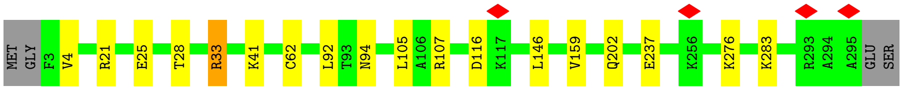
Chain C:



- Molecule 8: Large ribosomal subunit protein uL18

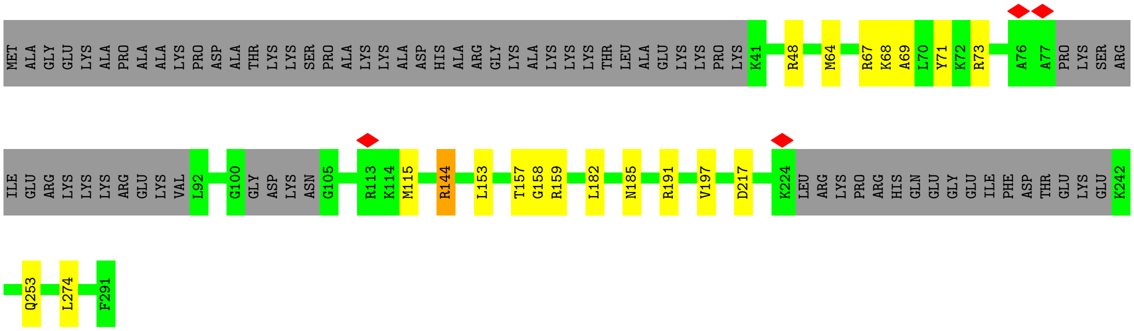
Chain D:





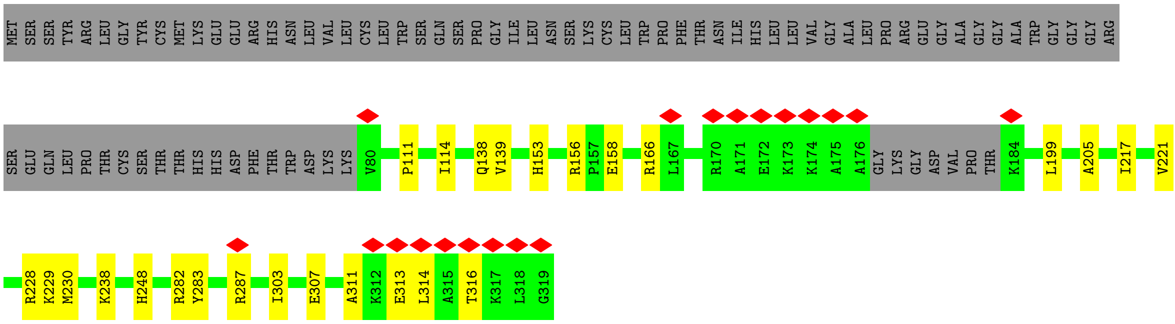
- Molecule 9: 60S ribosomal protein L6

Chain E:



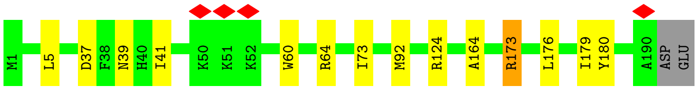
- Molecule 10: 60S ribosomal protein L7a

Chain G:



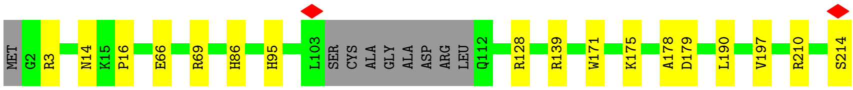
- Molecule 11: 60S ribosomal protein L9

Chain H:



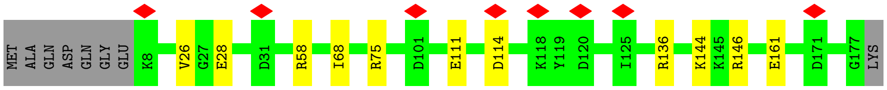
- Molecule 12: 60S ribosomal protein L10

Chain I:



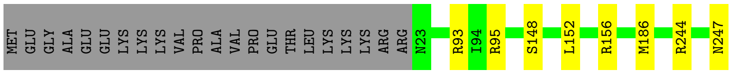
- Molecule 13: Ribosomal protein L11

Chain J:

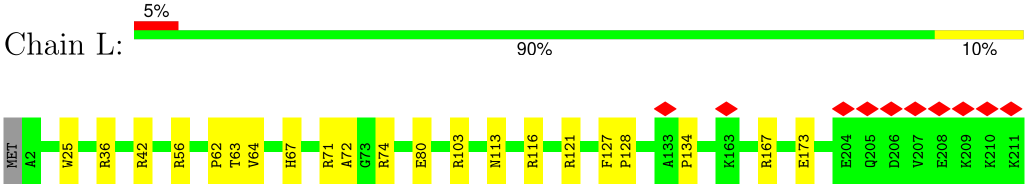


- Molecule 14: 60S ribosomal protein L7

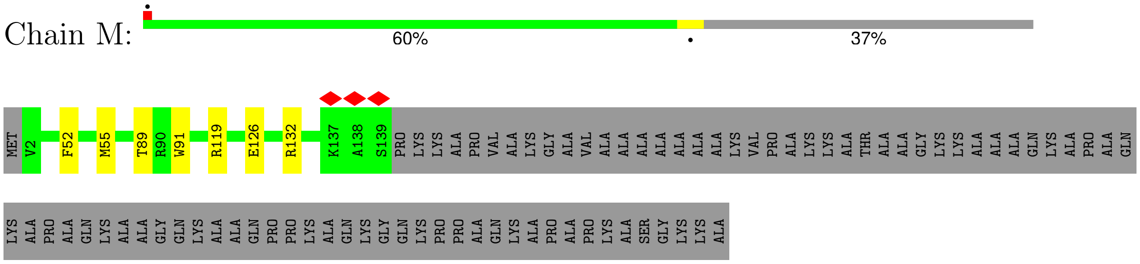
Chain K:



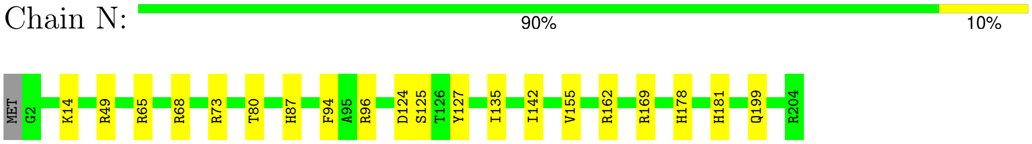
- Molecule 15: 60S ribosomal protein L13



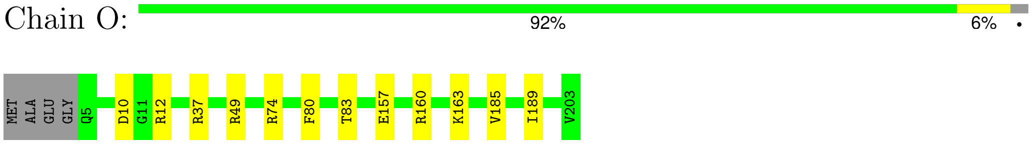
- Molecule 16: 60S ribosomal protein L14



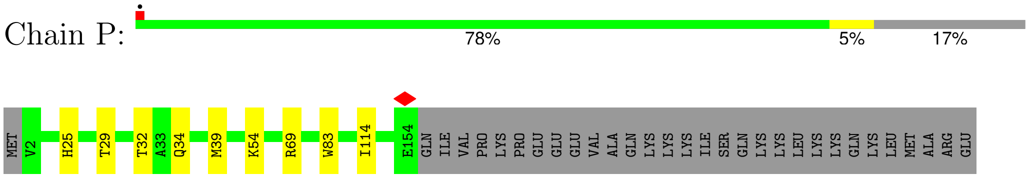
- Molecule 17: Ribosomal protein L15



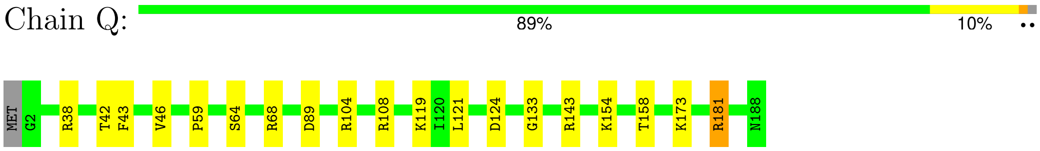
- Molecule 18: Large ribosomal subunit protein uL13



- Molecule 19: Large ribosomal subunit protein uL22

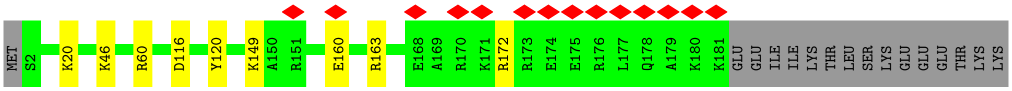


- Molecule 20: Ribosomal protein L18



- Molecule 21: Ribosomal protein L19

Chain R:

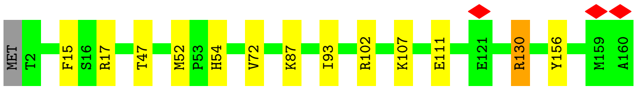


- Molecule 22: 60S ribosomal protein L18a

Chain S:

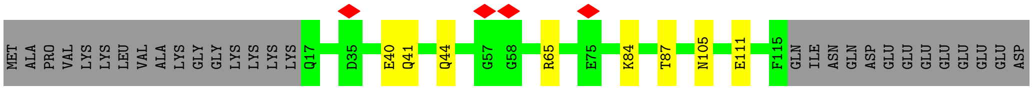
- Molecule 23: eL21

Chain T:



- Molecule 24: eL22

Chain U:



- Molecule 25: Ribosomal protein L23

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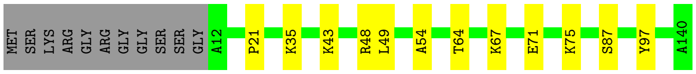
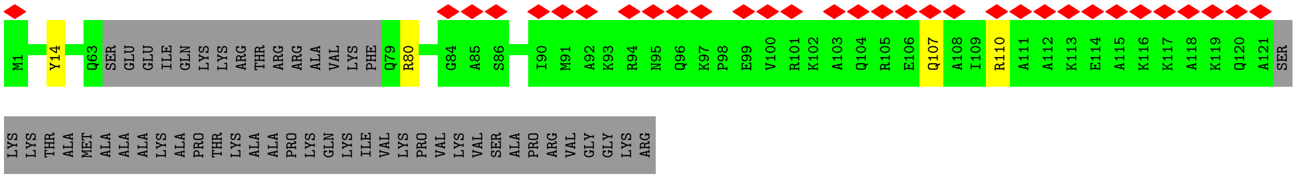


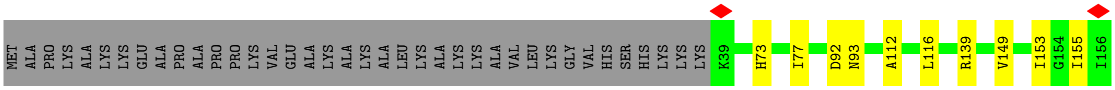
- Molecule 26: eL24

Chain W:

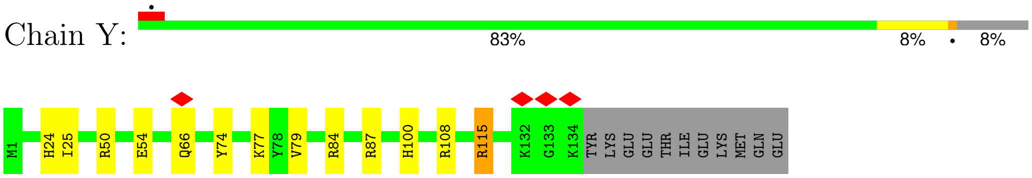


- Molecule 27: eL23

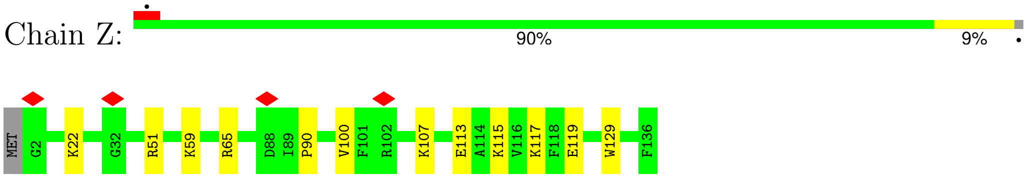
Chain X:



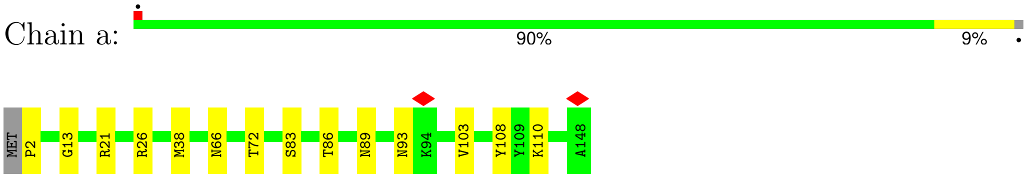
- Molecule 28: uL24



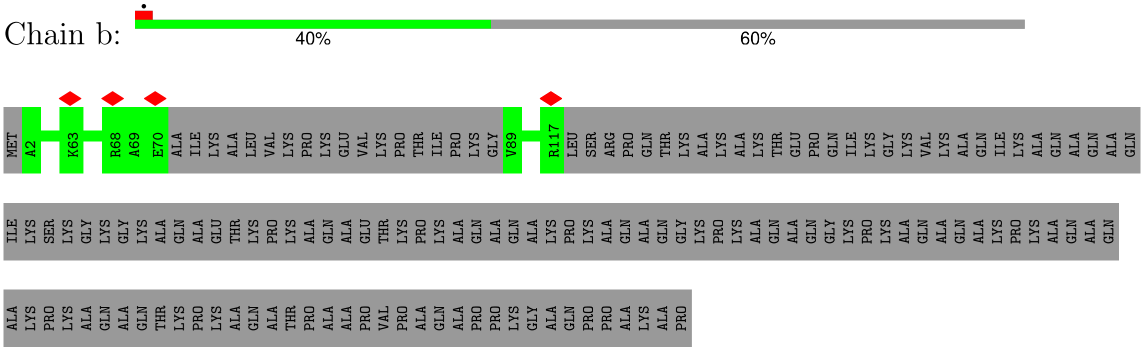
- Molecule 29: 60S ribosomal protein L27



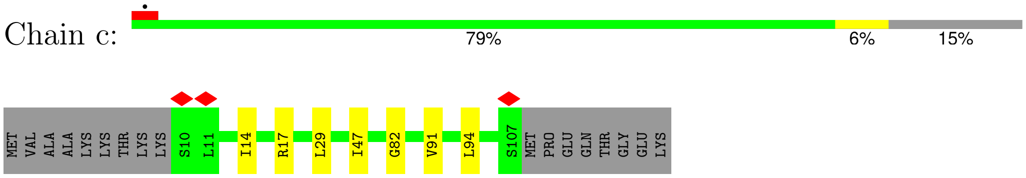
- Molecule 30: 60S ribosomal protein L27a



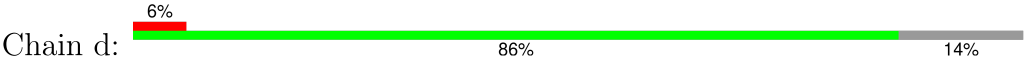
- Molecule 31: Large ribosomal subunit protein eL29

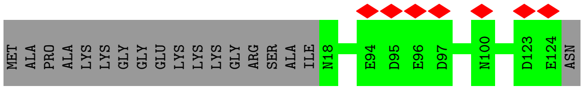


- Molecule 32: eL30



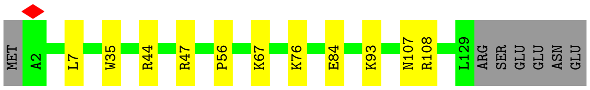
- Molecule 33: eL31





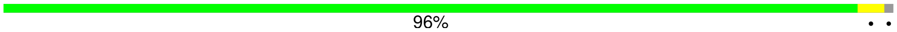
- Molecule 34: Ribosomal protein L32

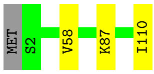
Chain e:



- Molecule 35: eL33

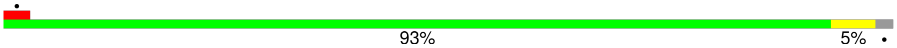
Chain f:

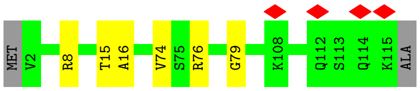




- Molecule 36: Large ribosomal subunit protein eL34

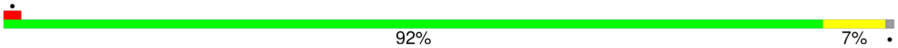
Chain g:

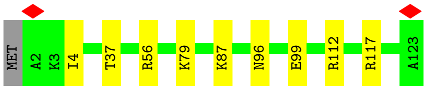




- Molecule 37: eL35

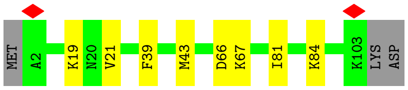
Chain h:





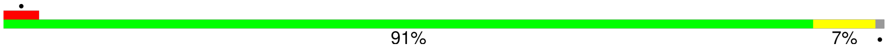
- Molecule 38: 60S ribosomal protein L36

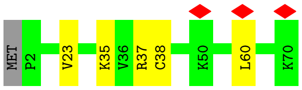
Chain i:



- Molecule 39: eL38

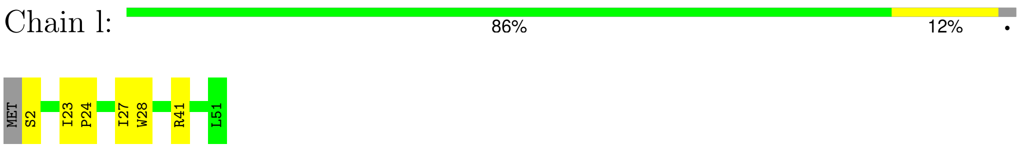
Chain k:





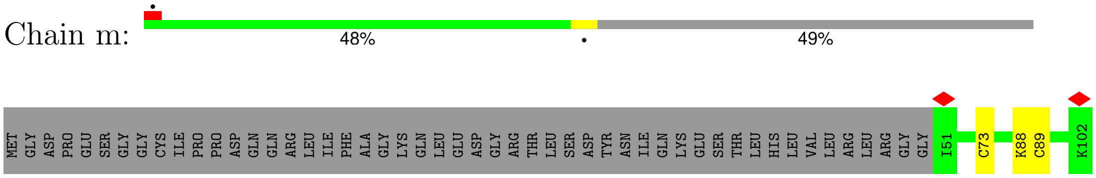
- Molecule 40: eL39

Chain l:



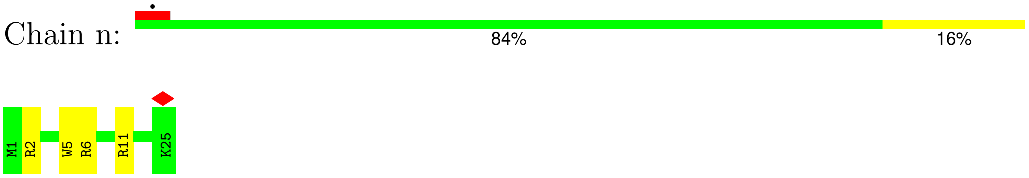
- Molecule 41: Ubiquitin-ribosomal protein eL40 fusion protein

Chain m:



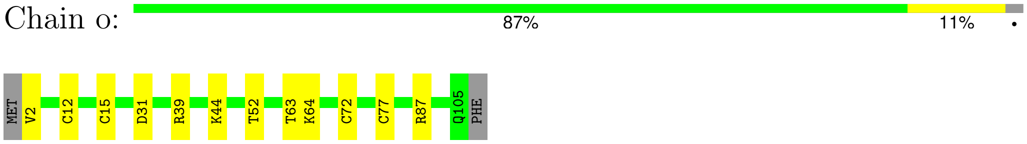
- Molecule 42: eL41

Chain n:



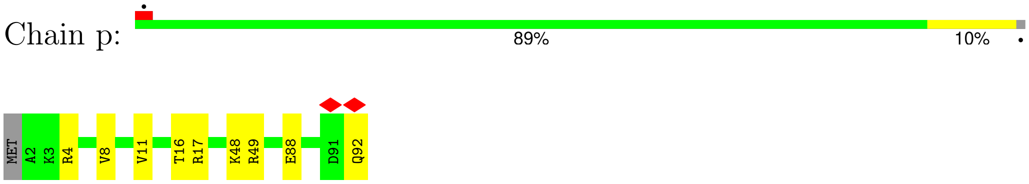
- Molecule 43: Large ribosomal subunit protein eL42

Chain o:



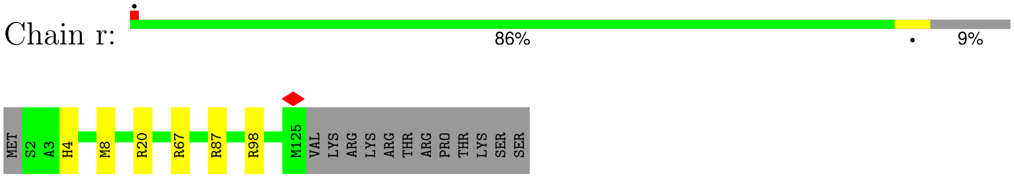
- Molecule 44: eL43

Chain p:



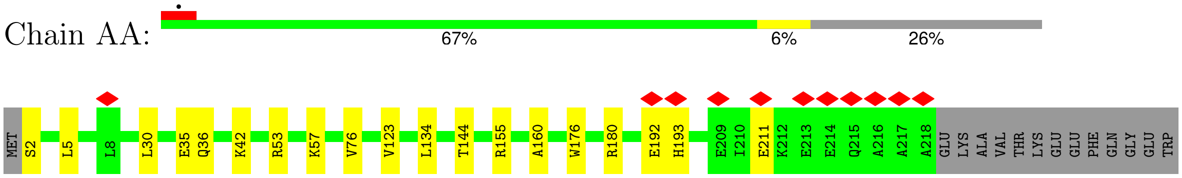
- Molecule 45: eL28

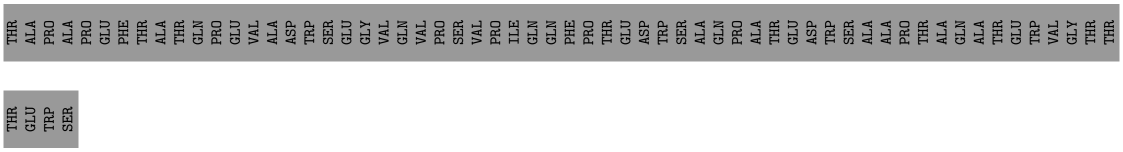
Chain r:



- Molecule 46: uS2 (SA)

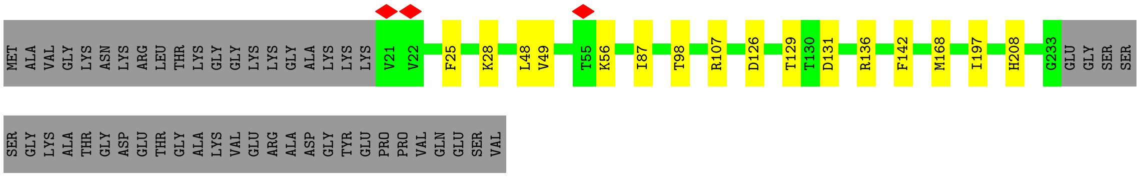
Chain AA:





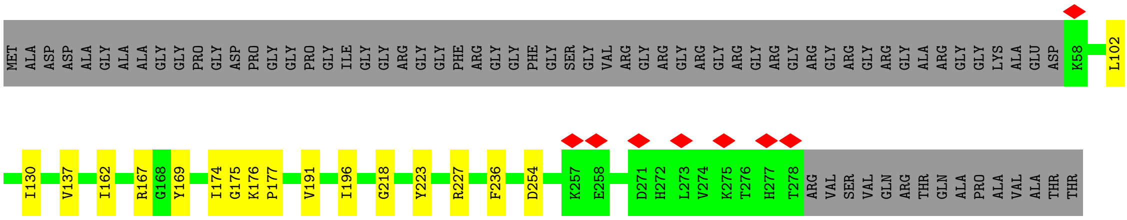
- Molecule 47: 40S ribosomal protein S3a

Chain BB:



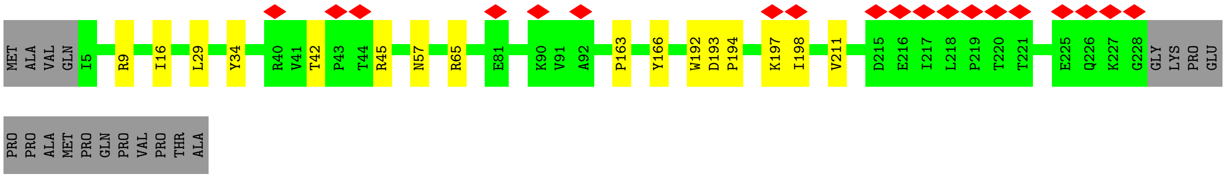
- Molecule 48: Small ribosomal subunit protein uS5

Chain CC:



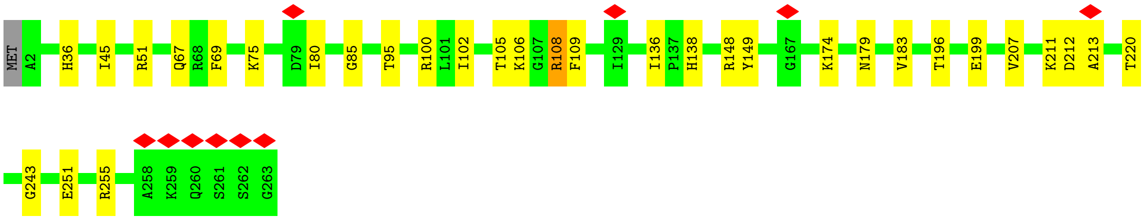
- Molecule 49: Ribosomal protein S3

Chain DD:



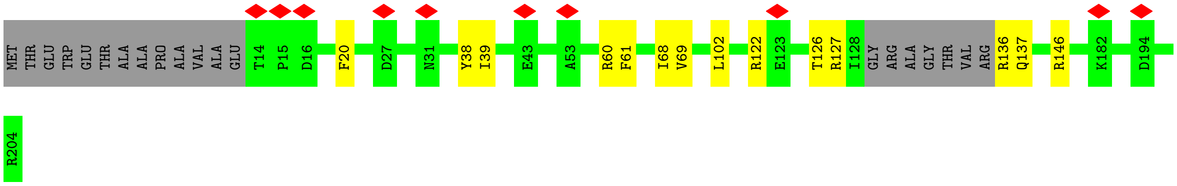
- Molecule 50: eS4 (S4 X isoform)

Chain EE:



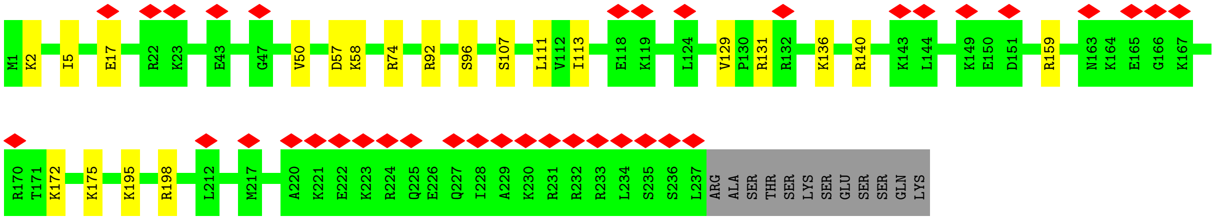
- Molecule 51: Ribosomal protein S5

Chain FF:



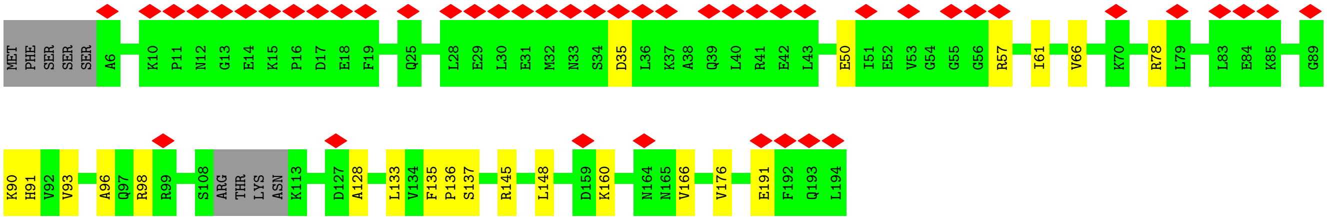
- Molecule 52: 40S ribosomal protein S6

Chain GG:



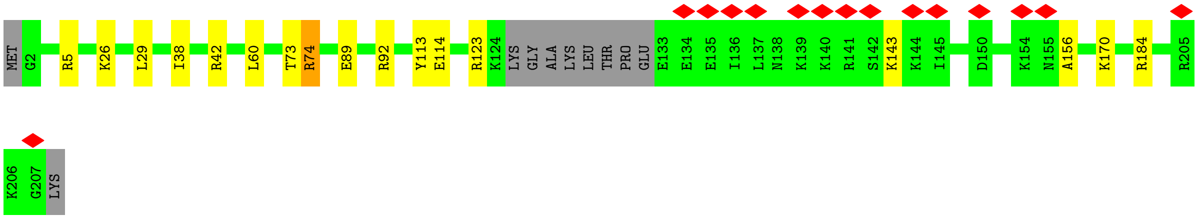
- Molecule 53: 40S ribosomal protein S7

Chain HH:



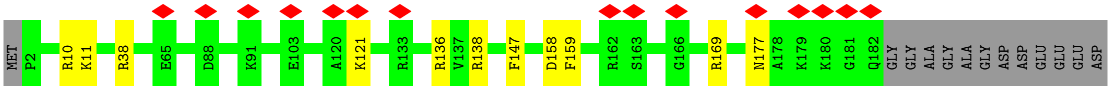
- Molecule 54: 40S ribosomal protein S8

Chain II:



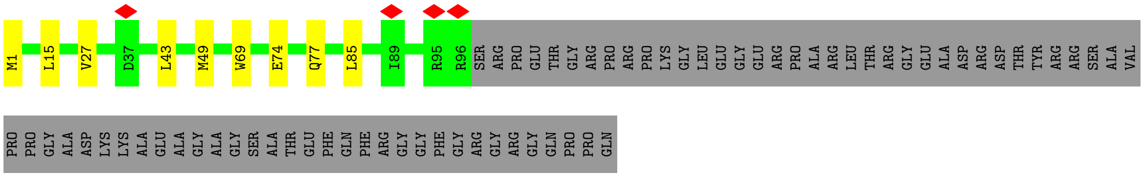
- Molecule 55: Ribosomal protein S9 (Predicted)

Chain JJ:



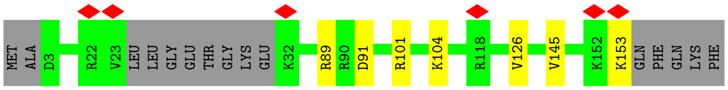
- Molecule 56: Small ribosomal subunit protein eS10

Chain KK:



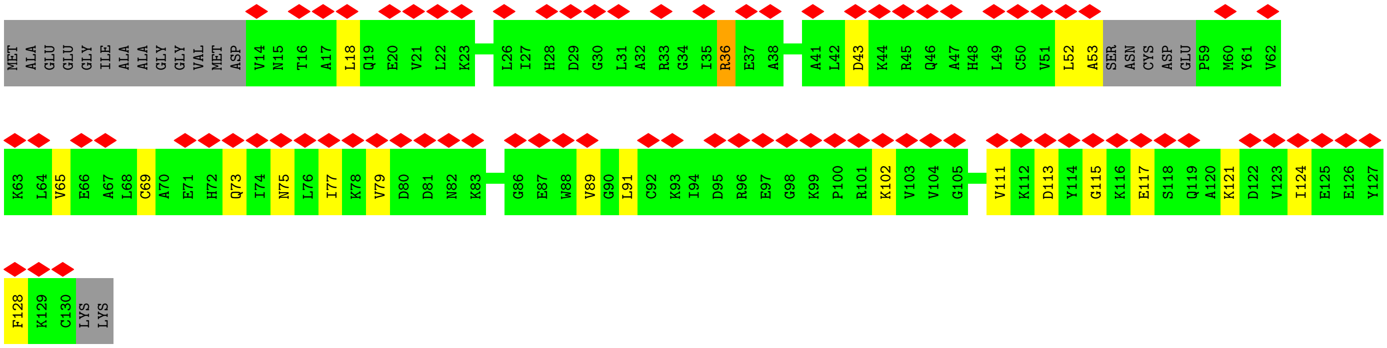
- Molecule 57: Ribosomal protein S11

Chain LL:



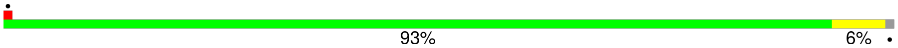
- Molecule 58: 40S ribosomal protein S12

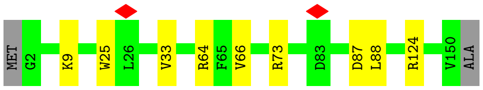
Chain MM:



- Molecule 59: Ribosomal protein S13

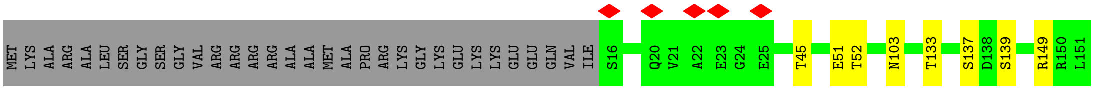
Chain NN:





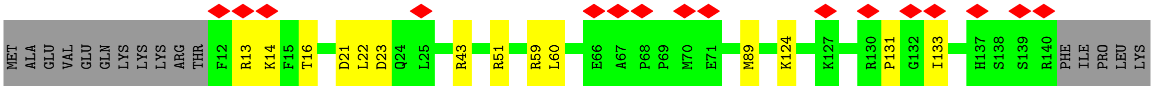
- Molecule 60: Small ribosomal subunit protein uS11

Chain OO:



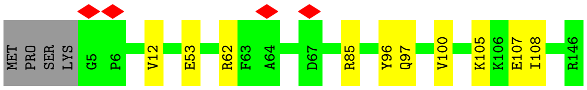
- Molecule 61: uS19

Chain PP:



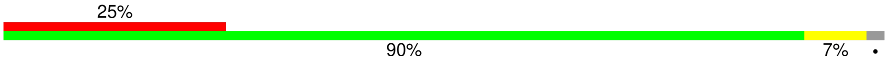
- Molecule 62: uS9

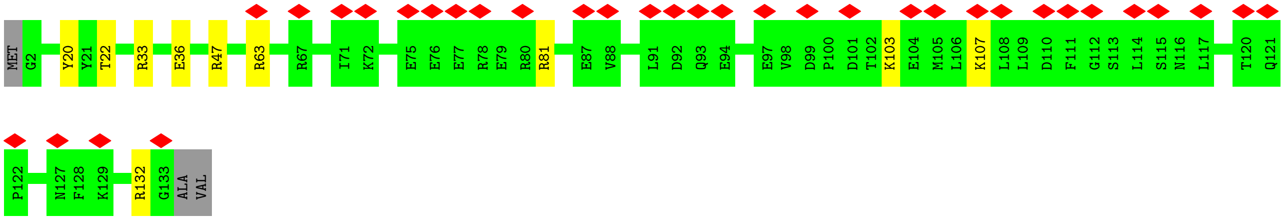
Chain QQ:



- Molecule 63: eS17

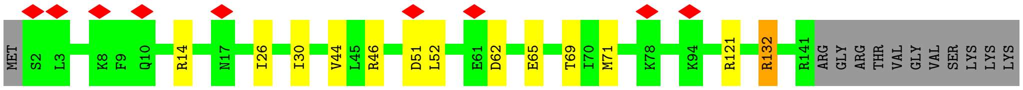
Chain RR:





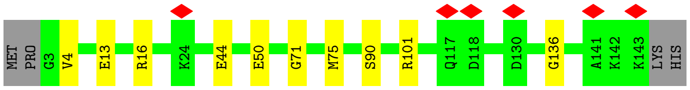
- Molecule 64: uS13

Chain SS:



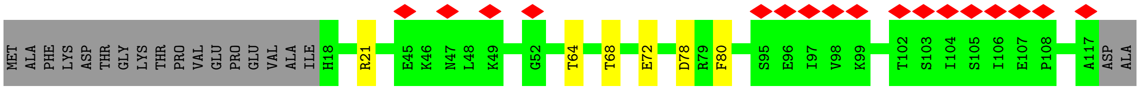
- Molecule 65: eS19

Chain TT:



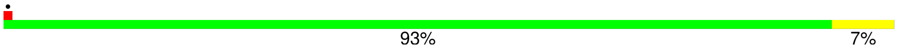
- Molecule 66: uS10

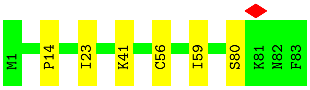
Chain UU:



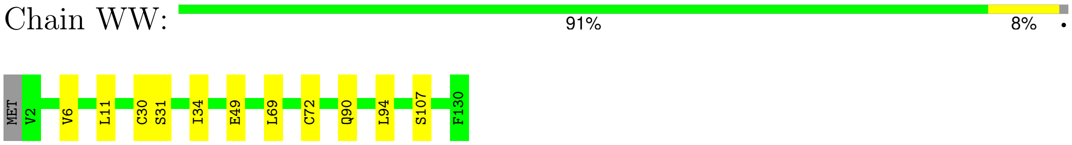
- Molecule 67: eS21

Chain VV:

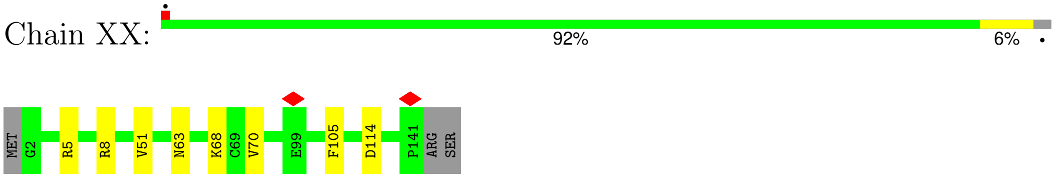




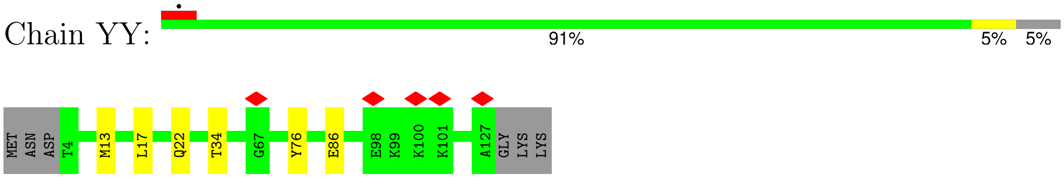
- Molecule 68: Ribosomal protein S15a



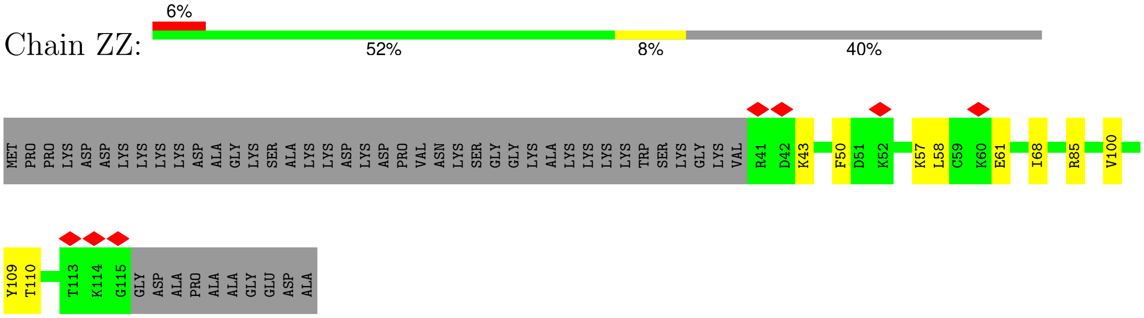
- Molecule 69: uS12



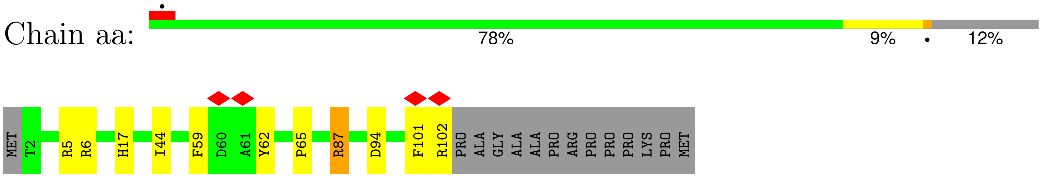
- Molecule 70: 40S ribosomal protein S24



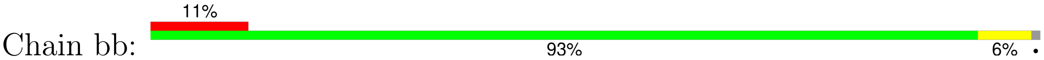
- Molecule 71: eS25

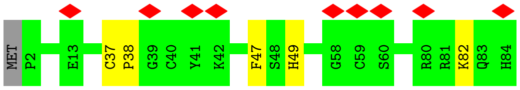


- Molecule 72: 40S ribosomal protein S26



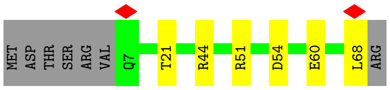
- Molecule 73: 40S ribosomal protein S27





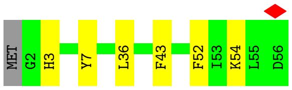
- Molecule 74: Ribosomal protein S28

Chain cc:



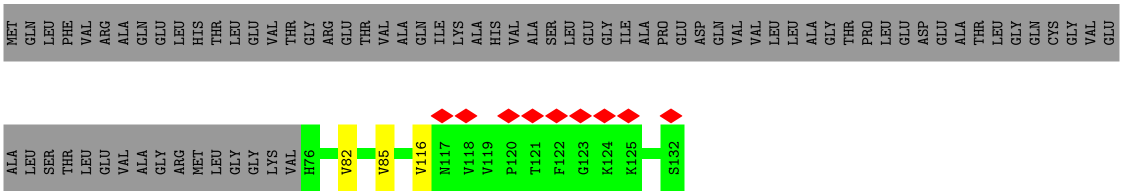
- Molecule 75: eS29

Chain dd:



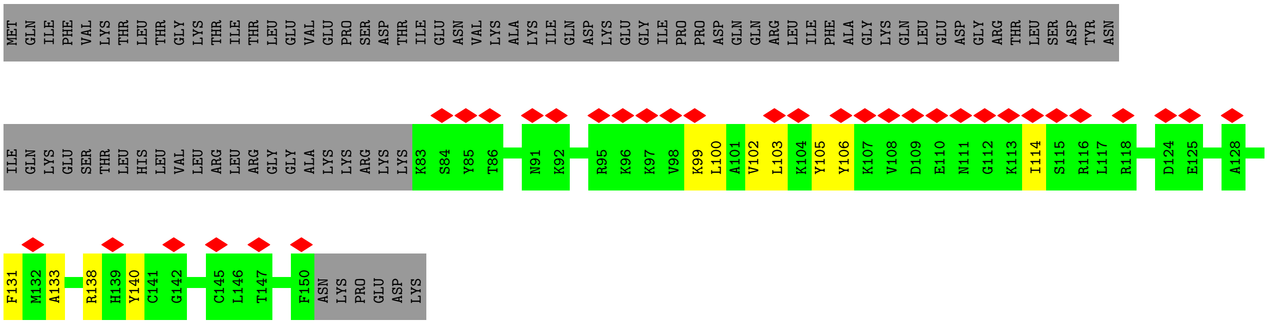
- Molecule 76: 40S ribosomal protein S30

Chain ee:



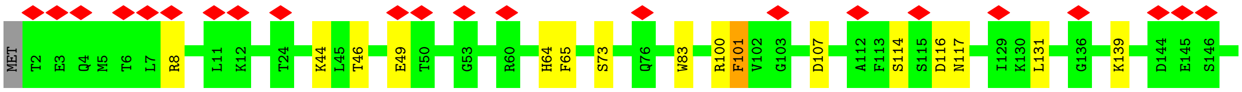
- Molecule 77: Ribosomal protein S27a

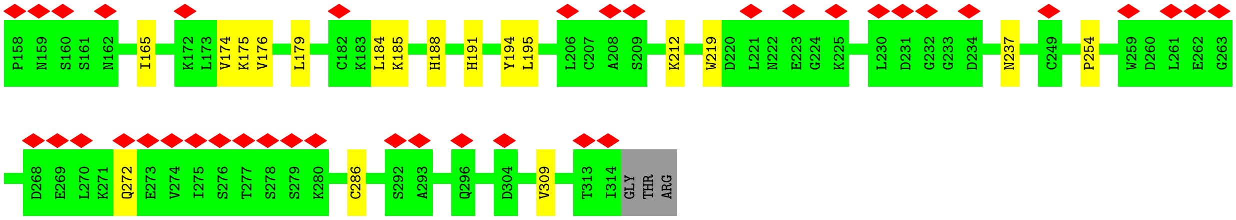
Chain ff:



- Molecule 78: RACK1

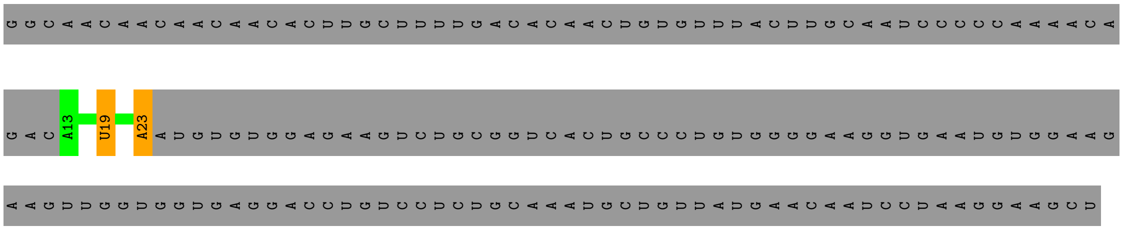
Chain gg:





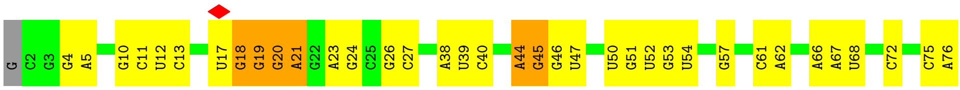
- Molecule 79: MF mRNA

Chain 10:



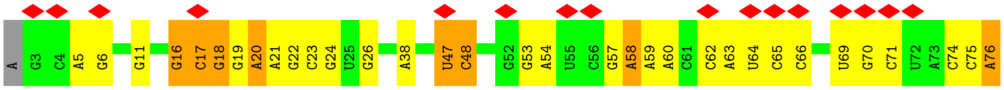
- Molecule 80: Phe-tRNA

Chain 12:



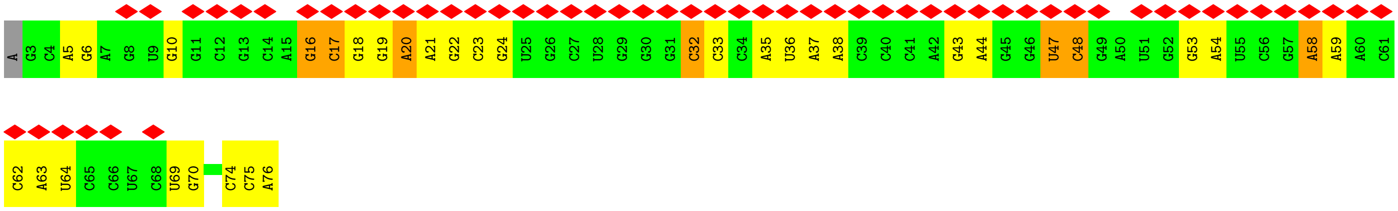
- Molecule 81: Met-tRNA

Chain 13:



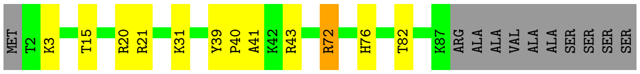
- Molecule 81: Met-tRNA

Chain 11:

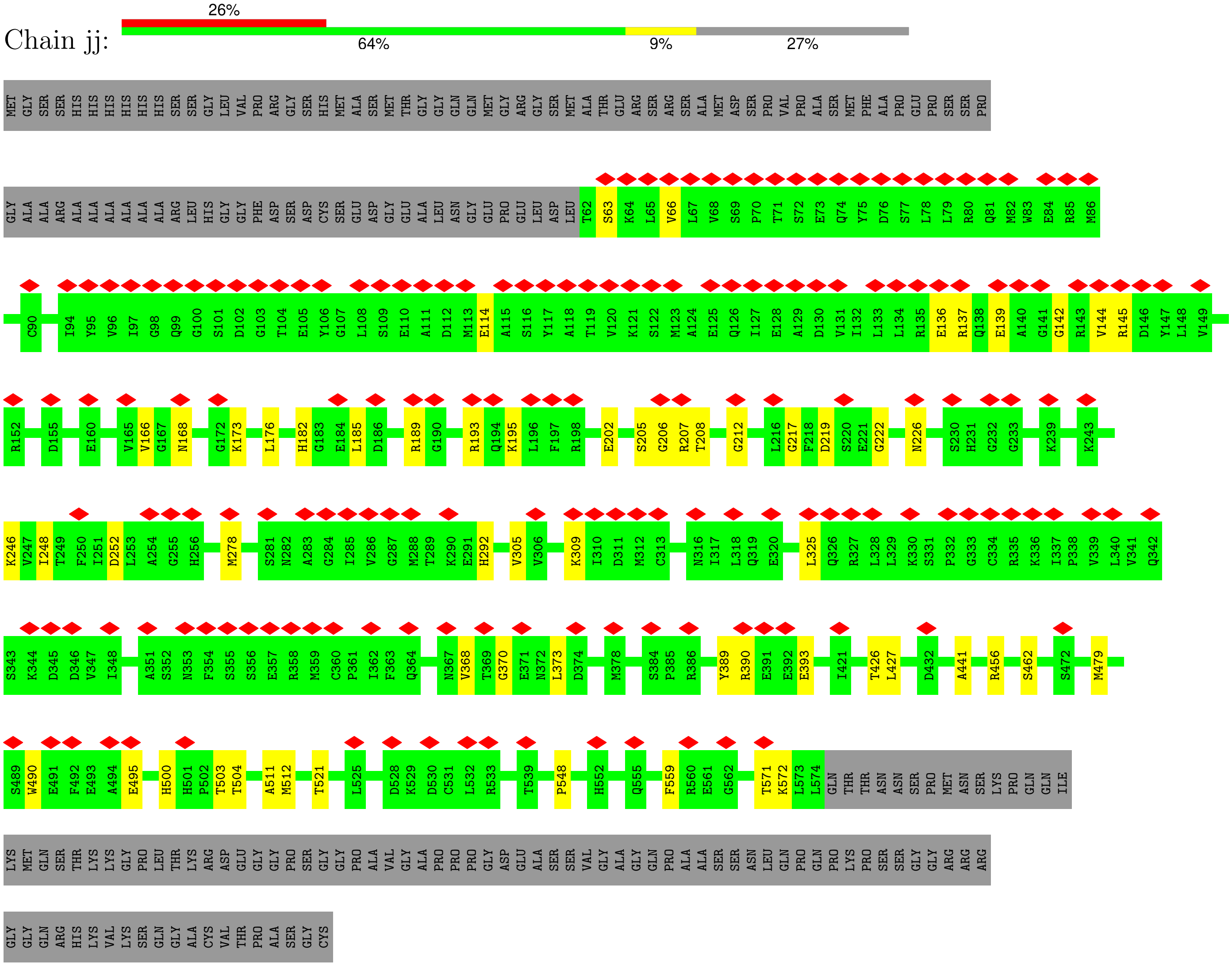


- Molecule 82: Ribosomal protein L37

Chain j:



- Molecule 83: GTP-binding protein 1



4 Experimental information ⓘ

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	7386	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\mathring{A}^2$)	29.7955	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.093	Depositor
Minimum map value	-0.032	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.005	Depositor
Recommended contour level	0.015	Depositor
Map size (Å)	464.8, 464.8, 464.8	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.162, 1.162, 1.162	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, K, SPD, GTP, ATP, GCP, 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	5	0.48	0/86380	0.68	16/134721 (0.0%)
2	7	0.48	0/2836	0.62	0/4421
3	8	0.47	0/3581	0.65	0/5577
4	9	0.42	0/40509	0.66	5/63128 (0.0%)
5	A	0.41	0/1936	0.52	0/2596
6	B	0.37	0/3240	0.54	0/4339
7	C	0.38	0/2937	0.56	0/3946
8	D	0.33	0/2437	0.49	0/3264
9	E	0.31	0/1762	0.56	0/2362
10	G	0.32	0/1910	0.53	0/2569
11	H	0.35	0/1535	0.51	0/2063
12	I	0.35	0/1702	0.46	0/2272
13	J	0.31	0/1385	0.47	0/1852
14	K	0.39	0/1911	0.52	0/2549
15	L	0.34	0/1733	0.51	0/2316
16	M	0.35	0/1158	0.52	0/1547
17	N	0.41	0/1746	0.56	0/2338
18	O	0.40	0/1662	0.57	0/2222
19	P	0.39	0/1268	0.60	0/1700
20	Q	0.40	0/1539	0.54	0/2054
21	R	0.35	0/1524	0.53	0/2013
22	S	0.39	0/1501	0.49	0/2012
23	T	0.36	0/1326	0.50	0/1770
24	U	0.29	0/823	0.51	0/1104
25	V	0.36	0/983	0.50	0/1319
26	W	0.32	0/873	0.51	0/1158
27	X	0.34	0/984	0.51	0/1323
28	Y	0.34	0/1132	0.51	0/1504
29	Z	0.36	0/1130	0.48	0/1507
30	a	0.40	0/1191	0.55	0/1590
31	b	0.32	0/819	0.54	0/1081
32	c	0.36	0/771	0.46	0/1034

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	d	0.37	0/903	0.53	0/1216
34	e	0.40	0/1071	0.56	0/1429
35	f	0.40	0/895	0.50	0/1198
36	g	0.39	0/916	0.56	0/1220
37	h	0.34	0/1021	0.54	0/1348
38	i	0.34	0/841	0.60	0/1112
39	k	0.30	0/575	0.47	0/761
40	l	0.39	0/459	0.54	0/608
41	m	0.34	0/435	0.49	0/575
42	n	0.39	0/241	0.62	0/305
43	o	0.36	0/864	0.51	0/1140
44	p	0.38	0/718	0.60	0/953
45	r	0.39	0/1010	0.55	0/1354
46	AA	0.30	0/1747	0.49	0/2374
47	BB	0.32	0/1756	0.51	0/2350
48	CC	0.34	0/1753	0.50	0/2369
49	DD	0.29	0/1767	0.51	0/2378
50	EE	0.27	0/2118	0.51	0/2849
51	FF	0.28	0/1481	0.53	0/1991
52	GG	0.24	0/1946	0.48	0/2590
53	HH	0.24	0/1511	0.51	0/2022
54	II	0.29	0/1655	0.50	0/2205
55	JJ	0.26	0/1533	0.51	0/2047
56	KK	0.28	0/834	0.48	0/1125
57	LL	0.32	0/1195	0.50	0/1597
58	MM	0.19	0/880	0.53	0/1179
59	NN	0.32	0/1226	0.54	0/1649
60	OO	0.34	0/1029	0.56	0/1380
61	PP	0.25	0/1079	0.51	0/1441
62	QQ	0.29	0/1146	0.49	0/1534
63	RR	0.26	0/1082	0.52	0/1452
64	SS	0.26	0/1175	0.50	0/1575
65	TT	0.28	0/1115	0.54	0/1493
66	UU	0.27	0/805	0.51	0/1081
67	VV	0.30	0/644	0.48	0/860
68	WW	0.35	0/1051	0.46	0/1406
69	XX	0.33	0/1105	0.51	0/1476
70	YY	0.23	0/1028	0.47	0/1366
71	ZZ	0.24	0/604	0.48	0/810
72	aa	0.33	0/828	0.54	0/1109
73	bb	0.27	0/665	0.50	0/891
74	cc	0.27	0/490	0.40	0/656
75	dd	0.33	0/470	0.55	0/623

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
76	ee	0.24	0/462	0.55	0/607
77	ff	0.21	0/567	0.58	0/753
78	gg	0.22	0/2493	0.46	0/3394
79	10	0.40	0/261	0.61	0/404
80	12	0.34	0/1787	0.72	0/2783
81	11	0.26	0/1773	0.65	1/2763 (0.0%)
81	13	0.33	0/1773	0.65	0/2763
82	j	0.41	0/720	0.55	0/952
83	jj	0.21	0/4047	0.49	0/5462
All	All	0.41	0/235774	0.62	22/346229 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
5	A	0	1
6	B	0	2
7	C	0	1
8	D	0	1
9	E	0	1
11	H	0	1
12	I	0	1
18	O	0	1
20	Q	0	2
23	T	0	1
28	Y	0	1
36	g	0	1
44	p	0	1
46	AA	0	1
50	EE	0	1
54	II	0	2
55	JJ	0	1
58	MM	0	1
59	NN	0	1
60	OO	0	1
64	SS	0	1
72	aa	0	1
82	j	0	1
83	jj	0	1
All	All	0	27

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	9	1308	U	C2'-C3'-O3'	6.60	119.40	109.50
1	5	1440	U	C2'-C3'-O3'	6.41	119.12	109.50
1	5	4170	A	C4'-C3'-O3'	5.96	118.33	109.40
1	5	1479	G	N9-C1'-C2'	5.72	120.59	112.00
4	9	1863	A	C1'-O4'-C4'	-5.61	104.09	109.70
1	5	4119	C	C2'-C3'-O3'	5.58	117.86	109.50
4	9	495	U	N1-C1'-C2'	5.56	120.34	112.00
1	5	3888	G	C2'-C3'-O3'	5.51	121.96	113.70
1	5	4964	C	N1-C1'-C2'	5.43	120.15	112.00
1	5	4944	C	C1'-O4'-C4'	-5.31	104.59	109.90
81	11	32	C	N1-C1'-C2'	5.29	119.94	112.00
1	5	1891	A	N9-C1'-C2'	5.25	119.87	112.00
1	5	4974	C	N1-C1'-C2'	5.20	119.81	112.00
1	5	4170	A	C2'-C3'-O3'	5.16	117.24	109.50
4	9	1445	U	N1-C1'-C2'	5.12	119.69	112.00
1	5	406	C	C2'-C3'-O3'	5.10	121.35	113.70
1	5	3673	C	C2'-C3'-O3'	5.09	117.13	109.50
4	9	918	U	N1-C1'-C2'	5.08	119.62	112.00
1	5	4232	U	C2'-C3'-O3'	5.06	117.09	109.50
1	5	4632	U	N1-C1'-C2'	5.06	119.58	112.00
1	5	4448	G	C4'-C3'-O3'	5.00	120.50	113.00
1	5	4632	U	C5'-C4'-C3'	-5.00	108.50	116.00

There are no chirality outliers.

All (27) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	A	123	ARG	Sidechain
46	AA	42	LYS	Peptide
6	B	200	ARG	Sidechain
6	B	21	ARG	Sidechain
7	C	204	ARG	Sidechain
8	D	33	ARG	Sidechain
9	E	144	ARG	Sidechain
50	EE	108	ARG	Sidechain
11	H	173	ARG	Sidechain
12	I	3	ARG	Sidechain
54	II	5	ARG	Sidechain
54	II	74	ARG	Sidechain
55	JJ	38	ARG	Sidechain

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Mol	Chain	Res	Type	Group
58	MM	36	ARG	Sidechain
59	NN	124	ARG	Sidechain
18	O	74	ARG	Sidechain
60	OO	149	ARG	Sidechain
20	Q	108	ARG	Sidechain
20	Q	181	ARG	Sidechain
64	SS	132	ARG	Sidechain
23	T	130	ARG	Sidechain
28	Y	115	ARG	Sidechain
72	aa	87	ARG	Sidechain
36	g	8	ARG	Sidechain
82	j	72	ARG	Sidechain
83	jj	500	HIS	Peptide
44	p	49	ARG	Sidechain

5.2 Too-close contacts ⓘ

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	5	77221	0	39013	585	0
2	7	2538	0	1286	9	0
3	8	3208	0	1629	25	0
4	9	36229	0	18300	308	0
5	A	1898	0	1993	13	0
6	B	3172	0	3310	18	0
7	C	2883	0	3053	18	0
8	D	2391	0	2424	12	0
9	E	1729	0	1887	16	0
10	G	1879	0	2027	15	0
11	H	1516	0	1597	9	0
12	I	1664	0	1712	9	0
13	J	1362	0	1399	8	0
14	K	1875	0	1995	7	0
15	L	1702	0	1820	15	0
16	M	1137	0	1211	6	0
17	N	1701	0	1749	17	0
18	O	1630	0	1778	8	0
19	P	1242	0	1274	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
20	Q	1515	0	1634	12	0
21	R	1508	0	1664	7	0
22	S	1462	0	1508	12	0
23	T	1298	0	1366	12	0
24	U	809	0	833	4	0
25	V	969	0	1031	7	0
26	W	860	0	903	3	0
27	X	967	0	1040	6	0
28	Y	1115	0	1205	8	0
29	Z	1107	0	1182	9	0
30	a	1162	0	1209	12	0
31	b	806	0	866	0	0
32	c	761	0	794	4	0
33	d	888	0	930	0	0
34	e	1053	0	1147	9	0
35	f	876	0	912	3	0
36	g	906	0	998	4	0
37	h	1013	0	1147	8	0
38	i	830	0	916	6	0
39	k	569	0	637	3	0
40	l	447	0	480	7	0
41	m	429	0	465	2	0
42	n	240	0	289	3	0
43	o	851	0	919	10	0
44	p	708	0	756	7	0
45	r	994	0	1051	5	0
46	AA	1710	0	1708	11	0
47	BB	1729	0	1803	10	0
48	CC	1716	0	1806	11	0
49	DD	1739	0	1832	10	0
50	EE	2076	0	2177	18	0
51	FF	1460	0	1509	11	0
52	GG	1923	0	2089	16	0
53	HH	1489	0	1582	13	0
54	II	1628	0	1706	13	0
55	JJ	1508	0	1626	8	0
56	KK	810	0	836	6	0
57	LL	1175	0	1249	5	0
58	MM	871	0	913	14	0
59	NN	1202	0	1289	6	0
60	OO	1016	0	1039	5	0
61	PP	1058	0	1104	11	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
62	QQ	1128	0	1195	6	0
63	RR	1068	0	1121	8	0
64	SS	1157	0	1213	11	0
65	TT	1097	0	1132	8	0
66	UU	795	0	862	5	0
67	VV	637	0	637	4	0
68	WW	1034	0	1080	10	0
69	XX	1087	0	1154	6	0
70	YY	1011	0	1083	4	0
71	ZZ	598	0	656	7	0
72	aa	814	0	867	8	0
73	bb	651	0	672	3	0
74	cc	488	0	514	4	0
75	dd	459	0	448	5	0
76	ee	457	0	502	3	0
77	ff	555	0	567	12	0
78	gg	2436	0	2393	23	0
79	10	234	0	118	3	0
80	12	1599	0	808	26	0
81	11	1585	0	804	21	0
81	13	1585	0	803	20	0
82	j	705	0	737	11	0
83	jj	3982	0	4069	39	0
84	5	10	0	19	3	0
85	dd	1	0	0	0	0
85	g	1	0	0	0	0
85	j	1	0	0	0	0
85	m	1	0	0	0	0
85	o	1	0	0	0	0
85	p	1	0	0	0	0
86	12	32	0	11	1	0
87	12	11	0	8	1	0
88	11	31	0	11	1	0
88	13	31	0	11	0	0
89	13	8	0	8	2	0
90	jj	32	0	14	5	0
91	jj	1	0	0	0	0
92	jj	1	0	0	0	0
All	All	219555	0	163124	1435	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 4.

All (1435) 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)
43:o:15:CYS:SG	43:o:77:CYS:SG	2.43	1.14
1:5:2638:G:N2	1:5:2697:A:N1	2.15	0.93
1:5:2489:C:O2’	1:5:2491:C:N4	2.13	0.81
1:5:2395:A:O2’	1:5:2806:A:H1’	1.79	0.81
80:12:4:G:H2’	80:12:5:A:H8	1.46	0.81
4:9:190:G:O2’	4:9:209:A:N6	2.15	0.80
1:5:2361:G:N7	19:P:25:HIS:ND1	2.30	0.79
1:5:93:G:OP1	84:5:5101:SPD:N10	2.16	0.78
8:D:202:GLN:NE2	8:D:237:GLU:OE1	2.18	0.77
1:5:1764:G:H8	1:5:1767:A:H62	1.32	0.76
1:5:2407:G:O6	40:l:2:SER:N	2.19	0.76
4:9:1292:C:H1’	77:ff:140:TYR:CE2	2.20	0.76
4:9:1834:A:H2	4:9:1837:G:H1	1.35	0.75
1:5:2647:A:H62	1:5:2686:G:H8	1.34	0.75
2:7:40:U:O2	13:J:75:ARG:NH1	2.19	0.75
8:D:107:ARG:NH2	8:D:116:ASP:OD1	2.20	0.74
4:9:1308:U:H2’	4:9:1309:C:C6	2.21	0.74
41:m:73:CYS:HB3	41:m:89:CYS:SG	2.28	0.74
1:5:2457:G:H21	1:5:3672:G:H21	1.32	0.73
63:RR:33:ARG:NH1	78:gg:107:ASP:OD2	2.21	0.73
1:5:2639:U:HO2’	1:5:2694:G:H1	0.76	0.73
4:9:65:C:H4’	52:GG:172:LYS:HE2	1.70	0.73
49:DD:57:ASN:O	49:DD:65:ARG:NH1	2.19	0.73
1:5:1577:G:OP1	44:p:17:ARG:NH1	2.22	0.73
4:9:1292:C:H1’	77:ff:140:TYR:HE2	1.53	0.72
80:12:4:G:H2’	80:12:5:A:C8	2.23	0.72
1:5:2313:A:O2’	1:5:2314:G:OP1	2.07	0.72
1:5:3663:A:OP1	5:A:119:LYS:NZ	2.21	0.72
1:5:1555:G:O6	44:p:4:ARG:NH2	2.23	0.72
1:5:4635:A:H2	1:5:4663:G:H21	1.35	0.71
4:9:1464:C:OP2	63:RR:63:ARG:NH2	2.23	0.71
1:5:3692:A:H62	1:5:3823:G:H21	1.36	0.71
65:TT:13:GLU:OE1	65:TT:16:ARG:NH1	2.22	0.71
1:5:3663:A:N6	1:5:4168:G:O2’	2.24	0.71
4:9:444:G:O6	54:II:26:LYS:NZ	2.22	0.71
1:5:3717:A:H2’	1:5:3718:A:C8	2.26	0.71
1:5:978:G:H22	1:5:1277:G:H1	1.37	0.70
83:jj:390:ARG:NH1	83:jj:393:GLU:OE2	2.21	0.70
12:I:14:ASN:O	12:I:128:ARG:NH2	2.18	0.69
14:K:152:LEU:HD23	14:K:247:ASN:HD22	1.56	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:1317:U:OP1	30:a:21:ARG:NH2	2.25	0.69
4:9:552:G:H5'	76:ee:116:VAL:HG11	1.75	0.69
61:PP:13:ARG:NH2	61:PP:16:THR:OG1	2.25	0.69
17:N:68:ARG:NH1	17:N:124:ASP:O	2.23	0.69
3:8:94:G:OP2	82:j:72:ARG:NH1	2.26	0.68
4:9:919:A:OP2	59:NN:64:ARG:NH2	2.18	0.68
1:5:691:C:H2'	1:5:692:A:C8	2.28	0.68
1:5:4626:A:OP2	6:B:224:LYS:NZ	2.20	0.68
83:jj:176:LEU:HD13	83:jj:278:MET:HE1	1.75	0.68
1:5:978:G:N2	1:5:1277:G:H1	1.93	0.67
1:5:1802:A:N3	23:T:130:ARG:NH2	2.40	0.67
4:9:560:A:OP2	55:JJ:177:ASN:ND2	2.24	0.67
1:5:3751:G:H21	1:5:3775:A:H8	1.42	0.67
4:9:903:A:H2'	4:9:904:A:C8	2.29	0.67
53:HH:66:VAL:HG22	53:HH:96:ALA:HB1	1.75	0.67
80:12:11:C:H2'	80:12:12:U:C6	2.30	0.67
56:KK:15:LEU:HD22	56:KK:49:MET:HE1	1.76	0.67
4:9:1228:A:H2'	4:9:1229:G:C8	2.31	0.66
83:jj:173:LYS:NZ	90:jj:700:GCP:O1B	2.21	0.66
4:9:1693:G:H21	4:9:1834:A:H8	1.43	0.66
47:BB:107:ARG:NH1	60:OO:133:THR:O	2.26	0.66
4:9:1236:G:O2'	61:PP:131:PRO:O	2.15	0.65
7:C:335:MET:O	7:C:339:THR:HG23	1.96	0.65
53:HH:160:LYS:NZ	53:HH:191:GLU:OE1	2.23	0.65
1:5:3736:A:H2'	1:5:3737:A:C8	2.31	0.65
1:5:4940:C:OP1	9:E:159:ARG:NH1	2.29	0.65
1:5:2520:C:O2	1:5:2640:G:N2	2.29	0.65
16:M:52:PHE:HA	16:M:55:MET:HE3	1.77	0.65
3:8:8:U:H2'	3:8:9:A:C8	2.32	0.65
1:5:1756:U:H2'	1:5:1757:U:C6	2.32	0.65
3:8:8:U:H2'	3:8:9:A:H8	1.62	0.65
48:CC:169:TYR:OH	48:CC:175:GLY:O	2.13	0.65
83:jj:389:TYR:OH	83:jj:456:ARG:NH1	2.30	0.65
1:5:2583:C:OP2	36:g:76:ARG:NH1	2.24	0.65
1:5:4258:C:H5'	13:J:68:ILE:HD11	1.77	0.65
1:5:4635:A:H8	1:5:5048:A:H61	1.45	0.65
2:7:7:G:OP1	8:D:33:ARG:NE	2.27	0.65
4:9:74:G:N7	52:GG:159:ARG:NH2	2.44	0.65
1:5:1197:C:H2'	1:5:1198:G:C8	2.32	0.64
4:9:903:A:H2'	4:9:904:A:H8	1.62	0.64
14:K:93:ARG:NH1	14:K:95:ARG:O	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:846:G:OP1	50:EE:106:LYS:NZ	2.30	0.64
1:5:4925:U:H4’	1:5:4926:C:H5’	1.79	0.64
26:W:107:GLN:OE1	26:W:110:ARG:NH1	2.31	0.64
1:5:1835:G:O2’	1:5:1836:G:OP2	2.14	0.64
4:9:570:C:O2’	70:YY:34:THR:O	2.07	0.64
82:j:20:ARG:NH2	82:j:39:TYR:OH	2.31	0.63
1:5:1177:U:H2’	1:5:1178:G:H8	1.62	0.63
1:5:2478:C:H2’	1:5:2479:G:C8	2.33	0.63
4:9:1565:C:OP2	65:TT:101:ARG:NH1	2.32	0.63
48:CC:196:ILE:HB	48:CC:223:TYR:HB2	1.78	0.63
80:12:18:G:O2’	80:12:57:G:N2	2.24	0.63
1:5:1234:G:HO2’	1:5:1235:G:H8	1.44	0.63
4:9:546:G:H2’	4:9:547:G:C8	2.34	0.63
1:5:2262:G:OP2	45:r:98:ARG:NH2	2.25	0.63
74:cc:44:ARG:NH2	74:cc:60:GLU:O	2.27	0.63
1:5:1198:G:H2’	1:5:1199:G:C8	2.33	0.63
1:5:3938:G:N2	1:5:4171:C:OP2	2.32	0.63
1:5:4751:G:H1	1:5:4948:C:H5	1.46	0.63
1:5:4992:G:H2’	1:5:4993:G:C8	2.33	0.63
16:M:89:THR:HG22	16:M:91:TRP:H	1.63	0.63
1:5:2566:G:H2’	1:5:2567:G:C8	2.34	0.63
54:II:113:TYR:OH	54:II:156:ALA:O	2.17	0.63
62:QQ:53:GLU:OE1	62:QQ:85:ARG:NH1	2.22	0.63
1:5:1771:U:H2’	1:5:1772:C:C6	2.34	0.62
5:A:234:LYS:HG2	5:A:238:ILE:HD12	1.79	0.62
10:G:158:GLU:OE1	10:G:166:ARG:NH1	2.32	0.62
4:9:1147:C:OP1	72:aa:6:ARG:NH1	2.32	0.62
1:5:2457:G:H21	1:5:3672:G:N2	1.97	0.62
47:BB:28:LYS:HB3	47:BB:48:LEU:HD11	1.81	0.62
78:gg:73:SER:OG	78:gg:117:ASN:ND2	2.31	0.62
1:5:2837:U:OP1	6:B:249:ARG:NH1	2.32	0.62
81:13:23:C:H2’	81:13:24:G:C8	2.35	0.62
1:5:1380:G:H4’	1:5:1381:U:O2	2.00	0.62
1:5:1075:G:H1	1:5:1235:G:N2	1.98	0.61
1:5:3910:C:H2’	1:5:3911:C:C6	2.35	0.61
51:FF:126:THR:O	51:FF:137:GLN:N	2.32	0.61
1:5:2303:C:OP1	34:e:107:ASN:ND2	2.33	0.61
1:5:2478:C:H2’	1:5:2479:G:H8	1.65	0.61
1:5:2300:A:N7	7:C:143:ARG:NH1	2.48	0.61
1:5:4944:C:N4	35:f:58:VAL:O	2.32	0.61
4:9:958:G:H2’	4:9:959:G:C8	2.35	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:C:237:ILE:HD12	7:C:237:ILE:H	1.65	0.61
4:9:1293:A:N6	4:9:1306:U:H3	1.98	0.61
1:5:1818:G:O2'	1:5:1819:G:OP1	2.16	0.61
1:5:2412:A:H2'	1:5:2413:U:C6	2.36	0.61
1:5:3860:A:H61	1:5:4560:C:H5	1.48	0.60
1:5:2493:G:O2'	3:8:127:U:OP1	2.18	0.60
4:9:1395:C:O2'	4:9:1396:A:OP1	2.18	0.60
29:Z:113:GLU:OE2	29:Z:117:LYS:NZ	2.33	0.60
4:9:107:A:H2'	4:9:108:G:C8	2.37	0.60
4:9:896:U:H2'	4:9:897:U:C6	2.36	0.60
4:9:1653:U:H2'	4:9:1654:G:C8	2.36	0.60
4:9:1693:G:N2	4:9:1834:A:H8	1.99	0.60
1:5:3947:A:H2'	1:5:3948:C:C6	2.36	0.60
4:9:1337:C:H2'	4:9:1338:G:H8	1.67	0.60
4:9:1272:C:O2'	4:9:1274:G:N2	2.34	0.60
4:9:64:A:H2	4:9:83:A:H62	1.50	0.60
4:9:928:G:H2'	4:9:929:G:C8	2.37	0.60
80:12:72:C:O2	86:12:101:GTP:N2	2.34	0.60
1:5:1177:U:H2'	1:5:1178:G:C8	2.36	0.60
4:9:115:U:H2'	4:9:116:U:C6	2.37	0.60
4:9:730:C:H2'	4:9:731:G:C8	2.36	0.60
4:9:1438:A:H2'	4:9:1439:A:C8	2.37	0.60
30:a:72:THR:HG22	30:a:110:LYS:HB3	1.84	0.60
1:5:2546:G:O2'	1:5:2547:G:OP1	2.19	0.60
1:5:908:G:OP2	22:S:149:LYS:NZ	2.33	0.60
1:5:3911:C:H2'	1:5:3912:U:H6	1.67	0.60
4:9:1399:C:H5"	78:gg:100:ARG:HH11	1.67	0.60
17:N:178:HIS:HA	17:N:181:HIS:NE2	2.17	0.60
81:13:76:A:HO2'	89:13:102:MET:N	2.00	0.60
1:5:1931:C:N4	1:5:2040:A:O2'	2.33	0.59
4:9:28:U:H2'	4:9:29:G:H8	1.67	0.59
4:9:873:G:OP1	57:LL:153:LYS:NZ	2.35	0.59
1:5:3827:G:O2'	1:5:3829:G:OP2	2.21	0.59
1:5:4693:C:OP1	11:H:64:ARG:NH2	2.34	0.59
14:K:156:ARG:NH1	14:K:247:ASN:OXT	2.34	0.59
1:5:980:U:OP2	9:E:68:LYS:NZ	2.28	0.59
1:5:1298:C:H2'	1:5:1299:G:H8	1.67	0.59
1:5:2477:A:H2'	1:5:2478:C:C6	2.37	0.59
1:5:2900:U:H2'	1:5:2901:G:C8	2.37	0.59
4:9:952:G:OP1	47:BB:56:LYS:NZ	2.32	0.59
22:S:99:ASP:OD1	22:S:108:GLN:NE2	2.36	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:1358:G:H2’	1:5:1360:G:O6	2.02	0.59
87:12:102:PHE:N	83:jj:462:SER:HG	2.01	0.59
14:K:148:SER:HA	14:K:244:ARG:HH22	1.66	0.59
1:5:3961:G:C6	1:5:3963:A:H2’	2.38	0.59
1:5:1405:C:H2’	1:5:1406:G:C8	2.38	0.59
4:9:448:A:N6	54:II:29:LEU:HD13	2.17	0.59
17:N:135:ILE:HG23	17:N:142:ILE:HD13	1.83	0.59
77:ff:133:ALA:N	77:ff:140:TYR:O	2.28	0.59
1:5:1514:U:H2’	1:5:1515:A:C8	2.38	0.59
1:5:2695:A:OP1	39:k:35:LYS:NZ	2.36	0.59
19:P:54:LYS:HA	19:P:83:TRP:CD1	2.37	0.59
83:jj:389:TYR:CZ	83:jj:456:ARG:HD3	2.37	0.59
4:9:533:A:H2’	4:9:534:G:C8	2.37	0.59
21:R:116:ASP:OD2	21:R:149:LYS:NZ	2.33	0.59
1:5:910:G:H2’	1:5:911:U:C6	2.38	0.58
1:5:2478:C:N4	1:5:2479:G:O6	2.37	0.58
64:SS:46:ARG:NH1	65:TT:50:GLU:OE1	2.36	0.58
81:13:23:C:H2’	81:13:24:G:H8	1.66	0.58
1:5:1961:G:O2’	1:5:2024:G:N2	2.36	0.58
1:5:87:A:OP2	20:Q:173:LYS:NZ	2.36	0.58
1:5:983:C:C5	9:E:73:ARG:HD3	2.39	0.58
1:5:2280:G:N2	1:5:2281:U:O4	2.36	0.58
48:CC:191:VAL:HG11	48:CC:236:PHE:HA	1.84	0.58
53:HH:93:VAL:HG21	53:HH:133:LEU:HD12	1.84	0.58
4:9:1741:U:OP1	54:II:42:ARG:NH2	2.36	0.58
57:LL:101:ARG:NH1	69:XX:5:ARG:O	2.36	0.58
63:RR:36:GLU:OE1	63:RR:47:ARG:NH1	2.33	0.58
1:5:1444:G:N2	1:5:1445:U:O4	2.36	0.58
1:5:2706:G:O6	21:R:46:LYS:NZ	2.36	0.58
4:9:1377:U:H2’	4:9:1378:A:H5”	1.85	0.58
17:N:94:PHE:CE2	17:N:96:ARG:HB2	2.38	0.58
36:g:74:VAL:O	36:g:79:GLY:HA3	2.04	0.58
81:11:5:A:H2’	81:11:6:G:C8	2.38	0.58
4:9:796:G:N7	4:9:797:C:N4	2.52	0.58
9:E:191:ARG:NH1	9:E:217:ASP:OD1	2.36	0.58
1:5:325:U:OP1	15:L:103:ARG:NH1	2.36	0.58
50:EE:251:GLU:OE2	50:EE:255:ARG:NH2	2.37	0.58
81:11:5:A:H2’	81:11:6:G:H8	1.69	0.58
81:11:23:C:H2’	81:11:24:G:C8	2.39	0.58
1:5:976:G:N2	7:C:323:ARG:HH21	2.02	0.58
4:9:1228:A:H2’	4:9:1229:G:H8	1.67	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:257:C:H2'	1:5:258:G:C8	2.39	0.57
1:5:1922:G:H2'	1:5:1923:A:H5'	1.85	0.57
4:9:1323:U:H2'	4:9:1324:G:C8	2.38	0.57
48:CC:167:ARG:NH1	48:CC:218:GLY:O	2.37	0.57
1:5:320:C:OP1	38:i:84:LYS:NZ	2.36	0.57
1:5:2465:C:H1'	1:5:3672:G:H22	1.69	0.57
1:5:4476:C:N3	11:H:173:ARG:NH1	2.53	0.57
4:9:1834:A:H2	4:9:1837:G:N1	2.00	0.57
83:jj:208:THR:N	90:jj:700:GCP:O1G	2.33	0.57
1:5:3788:C:N4	1:5:3812:C:OP2	2.32	0.57
1:5:3717:A:H2'	1:5:3718:A:H8	1.66	0.57
72:aa:87:ARG:NH2	72:aa:94:ASP:O	2.26	0.57
4:9:692:G:H2'	4:9:693:A:H8	1.70	0.57
68:WW:90:GLN:HG3	68:WW:94:LEU:HD12	1.86	0.57
81:11:47:U:H3'	81:11:48:C:H5'	1.86	0.57
4:9:870:A:H62	4:9:915:G:H2'	1.70	0.57
4:9:925:G:H1	4:9:1017:U:H3	1.51	0.57
52:GG:58:LYS:HA	52:GG:107:SER:HB2	1.87	0.57
4:9:1424:G:H2'	4:9:1425:G:H8	1.69	0.57
53:HH:50:GLU:OE2	53:HH:90:LYS:NZ	2.32	0.57
1:5:265:C:O2	1:5:266:C:N4	2.38	0.56
4:9:916:A:C5	59:NN:73:ARG:HD3	2.39	0.56
78:gg:254:PRO:O	78:gg:272:GLN:NE2	2.30	0.56
1:5:1075:G:H1	1:5:1235:G:H22	1.52	0.56
1:5:2361:G:N7	19:P:25:HIS:CE1	2.73	0.56
1:5:4051:C:H2'	1:5:4052:C:C6	2.39	0.56
1:5:4927:G:OP2	1:5:4927:G:N2	2.28	0.56
4:9:520:A:O2'	4:9:825:A:N3	2.32	0.56
1:5:3607:U:H2'	1:5:3608:A:C8	2.41	0.56
1:5:4950:U:O2'	1:5:4951:G:OP1	2.23	0.56
4:9:981:A:H2'	4:9:982:G:C8	2.41	0.56
4:9:1737:G:H2'	4:9:1738:C:C6	2.40	0.56
80:12:66:A:H2'	80:12:67:A:C8	2.40	0.56
1:5:2029:A:H2'	1:5:2030:A:C8	2.41	0.56
1:5:3949:A:H2'	1:5:3950:U:C6	2.41	0.56
1:5:4935:C:H2'	1:5:4936:G:H8	1.71	0.56
58:MM:113:ASP:OD2	58:MM:121:LYS:NZ	2.32	0.56
1:5:4188:U:H2'	1:5:4189:U:C6	2.41	0.56
1:5:4238:G:H2'	1:5:4239:A:C8	2.41	0.56
4:9:1628:C:H2'	4:9:1629:C:C6	2.40	0.56
1:5:910:G:H2'	1:5:911:U:H6	1.69	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:857:U:H2’	4:9:858:A:C8	2.40	0.56
12:I:66:GLU:OE1	12:I:69:ARG:NH1	2.39	0.56
1:5:2756:G:H2’	1:5:2757:A:C8	2.41	0.56
9:E:48:ARG:O	9:E:67:ARG:NH1	2.36	0.56
1:5:260:C:H2’	1:5:261:G:H8	1.69	0.55
1:5:2503:G:H5”	1:5:2503:G:H8	1.71	0.55
4:9:501:C:H2’	4:9:502:C:H5”	1.89	0.55
1:5:424:U:H2’	1:5:425:U:C6	2.42	0.55
1:5:1080:C:H2’	1:5:1081:C:C6	2.42	0.55
81:11:63:A:H2’	81:11:64:U:C6	2.41	0.55
81:11:69:U:H2’	81:11:70:G:H8	1.71	0.55
1:5:136:C:H42	37:h:79:LYS:HE3	1.71	0.55
1:5:156:G:N2	1:5:157:U:O4	2.38	0.55
1:5:2504:C:H2’	1:5:2505:C:H2’	1.88	0.55
8:D:62:CYS:HB3	8:D:105:LEU:HD22	1.88	0.55
1:5:1188:C:H2’	1:5:1189:G:H8	1.71	0.55
1:5:1927:U:OP1	1:5:1949:U:O2’	2.20	0.55
12:I:16:PRO:HA	12:I:95:HIS:CD2	2.42	0.55
1:5:2016:C:H2’	1:5:2017:A:H8	1.71	0.55
1:5:2864:A:H2’	1:5:2865:U:C6	2.41	0.55
4:9:552:G:H2’	4:9:553:U:C6	2.42	0.55
29:Z:115:LYS:NZ	29:Z:119:GLU:OE2	2.34	0.55
1:5:482:G:H3’	1:5:483:G:H5’	1.87	0.55
1:5:956:A:H8	1:5:957:G:C8	2.25	0.55
4:9:804:U:H2’	4:9:805:U:C6	2.42	0.55
4:9:1610:G:P	64:SS:121:ARG:HH21	2.30	0.55
34:e:84:GLU:CD	45:r:20:ARG:HH22	2.15	0.55
4:9:564:A:N6	4:9:586:G:O2’	2.34	0.55
1:5:100:C:H2’	1:5:101:A:H8	1.72	0.55
1:5:4064:C:H2’	1:5:4065:G:C8	2.41	0.55
4:9:530:U:H3’	4:9:531:A:H8	1.72	0.55
4:9:1113:A:H2’	4:9:1114:U:C6	2.42	0.55
78:gg:83:TRP:HA	78:gg:107:ASP:HB2	1.88	0.55
1:5:165:A:H2’	1:5:166:C:C6	2.42	0.54
4:9:1354:G:N2	4:9:1357:A:OP2	2.37	0.54
11:H:41:ILE:HG21	11:H:73:ILE:HD11	1.88	0.54
17:N:124:ASP:OD1	17:N:125:SER:N	2.39	0.54
50:EE:212:ASP:OD1	50:EE:213:ALA:N	2.39	0.54
1:5:394:G:N2	1:5:397:G:OP2	2.31	0.54
1:5:2755:A:P	29:Z:65:ARG:HH22	2.30	0.54
83:jj:427:LEU:HD12	83:jj:479:MET:HE2	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
70:YY:13:MET:SD	70:YY:22:GLN:NE2	2.81	0.54
1:5:1402:C:H2’	1:5:1403:G:H8	1.71	0.54
1:5:1532:G:OP2	82:j:31:LYS:NZ	2.33	0.54
1:5:4459:U:H2’	1:5:4460:U:C6	2.42	0.54
43:o:64:LYS:NZ	88:11:101:ATP:O1B	2.36	0.54
39:k:23:VAL:HG11	39:k:60:LEU:HD13	1.90	0.54
4:9:634:A:H2’	4:9:635:G:H8	1.73	0.54
1:5:2465:C:H1’	1:5:3672:G:N2	2.23	0.54
1:5:3799:A:OP1	25:V:64:THR:HG21	2.07	0.54
4:9:126:G:OP1	52:GG:198:ARG:NH1	2.35	0.54
4:9:1337:C:H2’	4:9:1338:G:C8	2.42	0.54
80:12:44:A:O2’	80:12:45:G:OP1	2.18	0.54
1:5:1405:C:H2’	1:5:1406:G:H8	1.72	0.54
1:5:2395:A:HO2’	1:5:2806:A:H1’	1.72	0.54
4:9:945:U:H2’	4:9:946:U:C6	2.43	0.54
58:MM:75:ASN:HB3	58:MM:128:PHE:CE2	2.43	0.54
1:5:956:A:N6	1:5:1283:G:O2’	2.37	0.54
1:5:1450:C:O2’	1:5:2104:A:H1’	2.08	0.54
1:5:1468:C:H2’	1:5:1469:C:C6	2.43	0.54
3:8:127:U:H2’	3:8:128:C:C6	2.43	0.54
4:9:533:A:H2’	4:9:534:G:H8	1.73	0.54
46:AA:36:GLN:O	46:AA:53:ARG:NH1	2.41	0.54
4:9:1865:C:OP2	72:aa:5:ARG:NH1	2.41	0.53
83:jj:370:GLY:HA2	83:jj:373:LEU:HD12	1.89	0.53
83:jj:511:ALA:HB3	83:jj:559:PHE:CZ	2.42	0.53
1:5:4935:C:H2’	1:5:4936:G:C8	2.43	0.53
4:9:1488:C:O2’	4:9:1490:G:OP2	2.19	0.53
52:GG:74:ARG:HA	52:GG:96:SER:HA	1.90	0.53
1:5:1246:G:H2’	1:5:1247:U:C6	2.43	0.53
1:5:3607:U:H2’	1:5:3608:A:H8	1.73	0.53
10:G:283:TYR:CE2	10:G:287:ARG:HD2	2.43	0.53
21:R:160:GLU:OE1	21:R:163:ARG:NH2	2.37	0.53
53:HH:135:PHE:CG	53:HH:136:PRO:HA	2.43	0.53
1:5:1402:C:H2’	1:5:1403:G:C8	2.42	0.53
78:gg:176:VAL:O	78:gg:185:LYS:N	2.35	0.53
81:13:18:G:H21	81:13:57:G:H2’	1.72	0.53
1:5:99:A:H2’	1:5:100:C:O2	2.08	0.53
1:5:260:C:H2’	1:5:261:G:C8	2.44	0.53
1:5:4038:C:H2’	1:5:4039:G:C8	2.43	0.53
1:5:4238:G:H2’	1:5:4239:A:H8	1.74	0.53
4:9:1282:A:H62	58:MM:102:LYS:NZ	2.06	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:1323:U:H2’	4:9:1324:G:H8	1.74	0.53
6:B:381:THR:HG23	6:B:384:GLU:H	1.73	0.53
15:L:63:THR:HG21	30:a:66:ASN:HB3	1.90	0.53
1:5:2566:G:H2’	1:5:2567:G:H8	1.72	0.53
4:9:1407:U:H2’	4:9:1408:U:C6	2.44	0.53
4:9:1698:C:O2’	4:9:1699:A:OP1	2.27	0.53
11:H:92:MET:HE2	11:H:179:ILE:HG22	1.91	0.53
1:5:295:A:OP2	43:o:39:ARG:NH1	2.41	0.53
1:5:1298:C:H2’	1:5:1299:G:C8	2.43	0.53
1:5:1890:G:H22	1:5:1939:A:H61	1.55	0.53
1:5:2848:G:O2’	1:5:3838:U:O4	2.25	0.53
64:SS:26:ILE:HD11	64:SS:52:LEU:HA	1.90	0.53
69:XX:63:ASN:ND2	69:XX:114:ASP:OD1	2.41	0.53
79:10:23:A:C8	79:10:23:A:H5’	2.44	0.53
1:5:717:U:H2’	1:5:718:C:C6	2.44	0.53
4:9:898:U:H2’	4:9:899:U:C6	2.44	0.53
4:9:1253:A:H4’	4:9:1254:C:H5”	1.91	0.53
10:G:229:LYS:HG2	38:i:43:MET:HE1	1.90	0.53
46:AA:2:SER:HB3	67:VV:80:SER:HB2	1.89	0.53
1:5:63:G:P	17:N:169:ARG:HH22	2.32	0.53
1:5:2412:A:H2’	1:5:2413:U:H6	1.74	0.53
1:5:3641:U:H5	1:5:3646:A:N7	2.06	0.53
1:5:3947:A:H2’	1:5:3948:C:H6	1.74	0.53
4:9:649:U:H2’	4:9:650:A:C8	2.44	0.53
4:9:682:U:OP2	69:XX:8:ARG:NH1	2.41	0.53
9:E:115:MET:O	45:r:87:ARG:NH1	2.36	0.53
84:5:5101:SPD:H82	30:a:38:MET:HE1	1.90	0.53
15:L:25:TRP:HE1	17:N:199:GLN:HG3	1.74	0.53
1:5:1190:C:H2’	1:5:1191:C:C6	2.45	0.52
1:5:1351:G:OP1	7:C:33:ARG:NH1	2.42	0.52
1:5:4413:C:H5	1:5:4429:C:H42	1.57	0.52
2:7:3:C:H2’	2:7:4:U:H6	1.74	0.52
4:9:546:G:H2’	4:9:547:G:H8	1.74	0.52
4:9:1667:U:H2’	4:9:1668:U:C6	2.44	0.52
1:5:1391:A:P	20:Q:181:ARG:HH22	2.32	0.52
4:9:1462:U:H2’	4:9:1464:C:C5	2.44	0.52
1:5:424:U:OP1	19:P:34:GLN:NE2	2.36	0.52
1:5:1238:A:O2’	1:5:1239:C:OP1	2.25	0.52
1:5:1741:G:O6	12:I:175:LYS:NZ	2.42	0.52
1:5:1890:G:N2	1:5:1939:A:H61	2.07	0.52
1:5:3598:C:H2’	1:5:3599:A:C8	2.44	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:3692:A:H62	1:5:3823:G:N2	2.07	0.52
1:5:4546:A:N7	5:A:215:ASN:ND2	2.56	0.52
4:9:448:A:H62	54:II:29:LEU:HD13	1.74	0.52
4:9:1138:C:OP1	46:AA:155:ARG:NH2	2.39	0.52
83:jj:193:ARG:NH1	90:jj:700:GCP:O2A	2.36	0.52
1:5:424:U:H2'	1:5:425:U:H6	1.74	0.52
1:5:906:C:H2'	1:5:907:C:C6	2.43	0.52
4:9:996:A:H2'	4:9:997:A:C8	2.44	0.52
22:S:112:ASP:OD1	22:S:116:ARG:NH1	2.40	0.52
83:jj:212:GLY:HA3	83:jj:252:ASP:HB3	1.90	0.52
1:5:4504:C:H2'	1:5:4505:C:C6	2.45	0.52
4:9:531:A:H3'	4:9:532:C:H5"	1.91	0.52
4:9:695:C:H2'	4:9:696:G:C8	2.44	0.52
4:9:878:G:H22	4:9:908:A:H2	1.57	0.52
4:9:1597:C:OP2	71:ZZ:85:ARG:NH2	2.33	0.52
6:B:50:LYS:NZ	6:B:339:GLY:O	2.36	0.52
9:E:69:ALA:HA	9:E:71:TYR:CE2	2.45	0.52
9:E:157:THR:HG23	9:E:158:GLY:N	2.24	0.52
83:jj:202:GLU:O	83:jj:206:GLY:N	2.40	0.52
1:5:1339:U:H2'	1:5:1340:C:C6	2.45	0.52
1:5:1444:G:H2'	1:5:1445:U:C5	2.45	0.52
1:5:4918:C:H2'	1:5:4919:G:O4'	2.10	0.52
3:8:102:G:OP2	3:8:104:A:O2'	2.24	0.52
1:5:516:C:H2'	1:5:517:C:C6	2.45	0.52
1:5:517:C:H2'	1:5:518:G:H8	1.74	0.52
1:5:976:G:H21	7:C:323:ARG:HE	1.57	0.52
4:9:1547:C:H5'	4:9:1548:G:OP2	2.08	0.52
1:5:134:G:C8	1:5:134:G:H5'	2.45	0.52
1:5:2489:C:HO2'	1:5:2491:C:N4	2.07	0.52
1:5:3968:U:H2'	1:5:3969:G:C8	2.45	0.52
1:5:4980:C:N3	19:P:69:ARG:NH2	2.56	0.52
4:9:942:G:H2'	4:9:943:U:C6	2.44	0.52
4:9:1293:A:H61	4:9:1306:U:H3	1.55	0.52
1:5:457:G:H2'	1:5:458:C:C6	2.45	0.52
53:HH:145:ARG:NE	68:WW:49:GLU:OE1	2.43	0.52
81:11:35:A:H2'	81:11:36:U:C6	2.45	0.52
1:5:490:C:H2'	1:5:491:G:C8	2.45	0.52
1:5:2404:A:OP2	40:l:2:SER:OG	2.25	0.52
1:5:2474:G:N2	1:5:2502:A:H2'	2.25	0.52
1:5:4909:A:OP1	18:O:163:LYS:NZ	2.42	0.52
4:9:51:U:H2'	4:9:52:G:C8	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:220:U:H2’	4:9:221:A:H8	1.74	0.52
46:AA:211:GLU:OE2	63:RR:81:ARG:NH2	2.43	0.52
1:5:3948:C:H5”	1:5:3949:A:OP2	2.10	0.51
4:9:640:A:H2’	4:9:641:A:C8	2.45	0.51
4:9:1286:G:OP1	77:ff:99:LYS:NZ	2.30	0.51
37:h:4:ILE:O	37:h:56:ARG:NH1	2.43	0.51
15:L:56:ARG:O	15:L:116:ARG:NH1	2.43	0.51
53:HH:57:ARG:HH22	53:HH:91:HIS:CE1	2.29	0.51
1:5:4760:G:H2’	1:5:4761:G:O4’	2.10	0.51
3:8:75:G:OP2	28:Y:74:TYR:OH	2.27	0.51
4:9:223:C:H2’	4:9:224:A:C8	2.46	0.51
74:cc:21:THR:HG22	74:cc:68:LEU:HD12	1.91	0.51
1:5:264:C:H5”	1:5:265:C:OP2	2.11	0.51
4:9:1377:U:C2’	4:9:1378:A:H5”	2.40	0.51
20:Q:119:LYS:HE2	20:Q:121:LEU:HD21	1.92	0.51
51:FF:102:LEU:HD11	71:ZZ:100:VAL:HG11	1.92	0.51
81:13:53:G:H2’	81:13:54:A:H8	1.76	0.51
1:5:4301:U:H4’	23:T:54:HIS:CD2	2.46	0.51
53:HH:98:ARG:CZ	53:HH:128:ALA:HB1	2.41	0.51
1:5:4305:G:H22	23:T:87:LYS:NZ	2.08	0.51
4:9:200:G:H2’	4:9:201:C:C6	2.45	0.51
4:9:1217:A:H2’	4:9:1218:C:C6	2.46	0.51
10:G:138:GLN:OE1	10:G:282:ARG:NH1	2.43	0.51
15:L:62:PRO:O	15:L:63:THR:OG1	2.15	0.51
20:Q:43:PHE:CD2	20:Q:133:GLY:HA3	2.45	0.51
81:13:5:A:H2’	81:13:6:G:H8	1.75	0.51
83:jj:246:LYS:HE2	83:jj:248:ILE:HD11	1.92	0.51
1:5:3606:U:H2’	1:5:3607:U:C6	2.46	0.51
3:8:66:A:H2’	3:8:67:U:C6	2.46	0.51
4:9:149:A:H2’	4:9:150:A:C8	2.45	0.51
4:9:1482:C:OP1	75:dd:54:LYS:NZ	2.29	0.51
16:M:126:GLU:HG3	18:O:185:VAL:CG1	2.40	0.51
48:CC:254:ASP:N	48:CC:254:ASP:OD1	2.40	0.51
64:SS:51:ASP:OD1	64:SS:51:ASP:N	2.43	0.51
81:11:69:U:H2’	81:11:70:G:C8	2.45	0.51
1:5:4099:G:N2	1:5:4109:G:H22	2.08	0.51
2:7:63:C:OP2	8:D:283:LYS:NZ	2.40	0.51
4:9:186:C:H2’	4:9:187:G:H8	1.76	0.51
4:9:1399:C:H5”	78:gg:100:ARG:NH1	2.26	0.51
8:D:146:LEU:HD21	8:D:159:VAL:HG12	1.91	0.51
1:5:3717:A:OP2	1:5:3735:G:N2	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:8:123:U:H5”	3:8:124:U:C5	2.45	0.51
18:O:80:PHE:O	18:O:83:THR:HG22	2.11	0.51
80:12:39:U:H2’	80:12:40:C:C6	2.46	0.51
22:S:161:ARG:NH1	22:S:164:LYS:O	2.44	0.51
43:o:63:THR:O	43:o:87:ARG:NH1	2.44	0.51
38:i:81:ILE:HD12	38:i:81:ILE:H	1.75	0.50
49:DD:211:VAL:O	63:RR:20:TYR:OH	2.24	0.50
54:II:89:GLU:OE2	54:II:92:ARG:NH2	2.41	0.50
83:jj:503:THR:HG23	83:jj:504:THR:H	1.77	0.50
2:7:3:C:H2’	2:7:4:U:C6	2.46	0.50
49:DD:16:ILE:HD11	75:dd:36:LEU:HD12	1.93	0.50
50:EE:105:THR:HG22	50:EE:243:GLY:HA2	1.93	0.50
51:FF:20:PHE:CE1	51:FF:69:VAL:HG21	2.45	0.50
68:WW:69:LEU:HD21	68:WW:72:CYS:HB2	1.92	0.50
81:11:23:C:H2’	81:11:24:G:H8	1.75	0.50
1:5:489:C:H2’	1:5:490:C:C6	2.46	0.50
1:5:699:C:H2’	1:5:700:G:H8	1.77	0.50
1:5:1502:G:O6	20:Q:89:ASP:HA	2.10	0.50
1:5:4572:U:H2’	1:5:4573:G:H8	1.76	0.50
1:5:4629:U:C2	1:5:4630:G:C8	3.00	0.50
12:I:179:ASP:OD1	12:I:179:ASP:N	2.44	0.50
61:PP:14:LYS:NZ	61:PP:23:ASP:OD2	2.44	0.50
1:5:152:U:P	17:N:49:ARG:HH12	2.35	0.50
1:5:906:C:H2’	1:5:907:C:H6	1.75	0.50
1:5:2616:C:OP1	21:R:60:ARG:NH1	2.45	0.50
1:5:2900:U:H2’	1:5:2901:G:H8	1.76	0.50
4:9:126:G:O2’	4:9:127:C:OP1	2.23	0.50
1:5:405:U:OP1	28:Y:87:ARG:NH2	2.28	0.50
1:5:1818:G:H2’	1:5:1820:U:OP2	2.12	0.50
9:E:153:LEU:HD13	9:E:197:VAL:HG11	1.92	0.50
28:Y:24:HIS:CE1	28:Y:25:ILE:HG13	2.46	0.50
80:12:67:A:H2’	80:12:68:U:C6	2.47	0.50
1:5:4925:U:H4’	1:5:4926:C:C5’	2.41	0.50
4:9:57:U:OP1	4:9:504:G:O2’	2.24	0.50
4:9:527:C:H2’	4:9:528:A:H8	1.77	0.50
4:9:1044:G:C8	5:A:249:THR:HG22	2.46	0.50
4:9:1839:U:H1’	4:9:1863:A:H2	1.77	0.50
4:9:28:U:H2’	4:9:29:G:C8	2.46	0.50
81:13:18:G:N2	81:13:57:G:H2’	2.27	0.50
1:5:1992:U:O2’	1:5:2002:A:OP1	2.20	0.50
40:l:23:ILE:HD11	40:l:28:TRP:HE1	1.76	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:FF:61:PHE:CZ	74:cc:51:ARG:HG3	2.47	0.50
1:5:980:U:H3	1:5:1275:G:H1	1.59	0.50
1:5:3600:G:H2'	1:5:3601:C:C6	2.47	0.50
4:9:986:G:C8	60:OO:137:SER:O	2.65	0.50
4:9:1489:A:H4'	4:9:1490:G:OP2	2.12	0.50
78:gg:188:HIS:HB3	78:gg:219:TRP:CZ3	2.46	0.50
83:jj:511:ALA:HB3	83:jj:559:PHE:CE2	2.47	0.50
1:5:3598:C:H2'	1:5:3599:A:H8	1.77	0.49
4:9:1131:G:OP1	59:NN:9:LYS:NZ	2.38	0.49
4:9:1300:U:O2	61:PP:51:ARG:NH1	2.45	0.49
9:E:157:THR:HG23	9:E:158:GLY:H	1.76	0.49
51:FF:136:ARG:CZ	81:11:32:C:H4'	2.42	0.49
1:5:3707:U:H2'	1:5:3708:C:C6	2.47	0.49
1:5:4907:G:C2	1:5:4915:G:C2	3.01	0.49
4:9:730:C:H2'	4:9:731:G:H8	1.77	0.49
4:9:862:A:C8	68:WW:107:SER:HA	2.47	0.49
4:9:1404:U:P	66:UU:21:ARG:HH22	2.36	0.49
4:9:1588:A:H2'	4:9:1589:A:C8	2.47	0.49
25:V:48:ARG:NH1	25:V:49:LEU:HB3	2.26	0.49
79:10:19:U:H5'	79:10:19:U:C6	2.47	0.49
1:5:257:C:H2'	1:5:258:G:H8	1.76	0.49
3:8:126:C:H1'	3:8:127:U:C6	2.47	0.49
60:OO:45:THR:HG22	60:OO:52:THR:HA	1.93	0.49
65:TT:71:GLY:O	65:TT:75:MET:HG2	2.13	0.49
80:12:53:G:H2'	80:12:54:U:C6	2.48	0.49
81:13:11:G:N1	81:13:26:G:H1'	2.27	0.49
1:5:1441:C:H2'	1:5:1442:C:C6	2.47	0.49
1:5:2553:A:H2	1:5:2765:A:H62	1.59	0.49
3:8:78:G:H2'	3:8:79:G:C8	2.47	0.49
4:9:51:U:H2'	4:9:52:G:H8	1.77	0.49
4:9:793:G:H2'	4:9:794:A:C8	2.48	0.49
4:9:1712:A:H2'	4:9:1713:C:C6	2.47	0.49
9:E:144:ARG:NH1	35:f:110:ILE:OXT	2.45	0.49
11:H:173:ARG:HG3	11:H:173:ARG:HH11	1.76	0.49
49:DD:193:ASP:OD2	49:DD:197:LYS:N	2.45	0.49
52:GG:50:VAL:HG12	52:GG:113:ILE:HD13	1.95	0.49
56:KK:27:VAL:HG13	56:KK:43:LEU:HD13	1.94	0.49
56:KK:74:GLU:OE1	56:KK:77:GLN:NE2	2.42	0.49
83:jj:182:HIS:CE1	83:jj:195:LYS:HB3	2.46	0.49
83:jj:219:ASP:OD1	83:jj:222:GLY:N	2.34	0.49
1:5:466:A:H4'	1:5:467:U:OP1	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:2487:G:O6	1:5:2489:C:H1'	2.13	0.49
1:5:3923:A:H2'	1:5:3924:C:C6	2.48	0.49
1:5:136:C:N4	37:h:79:LYS:HE3	2.26	0.49
1:5:1775:A:H2'	1:5:1776:A:C8	2.48	0.49
1:5:32:G:OP1	17:N:73:ARG:NH1	2.45	0.49
1:5:3672:G:O5'	1:5:3672:G:C8	2.66	0.49
1:5:3968:U:H2'	1:5:3969:G:H8	1.77	0.49
6:B:168:MET:HG2	6:B:178:ALA:HA	1.94	0.49
10:G:111:PRO:HD2	10:G:114:ILE:HD12	1.95	0.49
13:J:114:ASP:OD1	64:SS:14:ARG:NE	2.40	0.49
81:13:65:C:H2'	81:13:66:C:C6	2.48	0.49
83:jj:305:VAL:HG11	83:jj:325:LEU:HD21	1.94	0.49
4:9:674:C:H2'	4:9:675:U:C6	2.47	0.49
17:N:80:THR:HB	17:N:87:HIS:CB	2.42	0.49
4:9:17:C:H2'	4:9:18:C:C6	2.48	0.49
4:9:1692:U:H2'	4:9:1693:G:C8	2.48	0.49
83:jj:490:TRP:CZ2	83:jj:548:PRO:HD3	2.48	0.49
1:5:1812:C:H2'	1:5:1813:U:H6	1.76	0.48
4:9:607:U:O2'	4:9:608:C:OP1	2.28	0.48
4:9:1804:U:H2'	4:9:1805:G:C8	2.48	0.48
4:9:1856:C:H2'	4:9:1857:G:C8	2.48	0.48
59:NN:25:TRP:CG	73:bb:82:LYS:HE2	2.48	0.48
83:jj:166:VAL:HB	83:jj:292:HIS:ND1	2.28	0.48
1:5:4286:C:H2'	1:5:4287:G:C8	2.47	0.48
1:5:4771:C:H2'	1:5:4772:C:C5	2.49	0.48
4:9:1284:A:H5'	4:9:1286:G:H5'	1.93	0.48
10:G:313:GLU:HA	10:G:316:THR:HG22	1.96	0.48
50:EE:174:LYS:O	50:EE:179:ASN:ND2	2.45	0.48
81:13:5:A:H2'	81:13:6:G:C8	2.48	0.48
83:jj:139:GLU:N	83:jj:142:GLY:O	2.38	0.48
1:5:517:C:H2'	1:5:518:G:C8	2.48	0.48
1:5:4286:C:H2'	1:5:4287:G:H8	1.78	0.48
4:9:754:G:H2'	4:9:755:C:C6	2.48	0.48
20:Q:59:PRO:HG3	20:Q:143:ARG:HA	1.96	0.48
26:W:80:ARG:NH2	52:GG:129:VAL:O	2.45	0.48
78:gg:175:LYS:HE3	78:gg:184:LEU:HD13	1.95	0.48
1:5:989:U:H2'	1:5:990:C:C6	2.48	0.48
1:5:2755:A:OP2	29:Z:51:ARG:NH1	2.45	0.48
1:5:4274:A:H2'	1:5:4275:G:C8	2.48	0.48
1:5:4303:C:H2'	1:5:4305:G:C8	2.48	0.48
9:E:185:ASN:ND2	9:E:274:LEU:O	2.44	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:Y:50:ARG:HG2	28:Y:115:ARG:NH2	2.28	0.48
62:QQ:96:TYR:HA	62:QQ:100:VAL:HG22	1.95	0.48
1:5:978:G:N2	1:5:1277:G:H22	2.11	0.48
1:5:1457:G:O2'	1:5:1458:C:H5"	2.14	0.48
1:5:1509:C:H5"	30:a:2:PRO:HD2	1.96	0.48
1:5:3816:A:OP1	1:5:3818:U:H5	1.96	0.48
1:5:3823:G:O5'	1:5:3823:G:H8	1.96	0.48
1:5:5061:A:H5'	1:5:5061:A:C8	2.48	0.48
3:8:19:C:H2'	3:8:20:A:C8	2.48	0.48
4:9:912:C:C2	4:9:914:U:H1'	2.49	0.48
22:S:15:ARG:HB3	22:S:27:LEU:HD23	1.94	0.48
52:GG:2:LYS:HA	52:GG:17:GLU:HA	1.95	0.48
78:gg:174:VAL:HB	78:gg:188:HIS:HB2	1.94	0.48
80:12:66:A:H2'	80:12:67:A:H8	1.78	0.48
1:5:666:G:OP1	45:r:67:ARG:NH2	2.37	0.48
1:5:4578:G:H2'	1:5:4579:U:C6	2.48	0.48
4:9:168:C:OP1	52:GG:131:ARG:NH2	2.46	0.48
4:9:870:A:N6	4:9:915:G:H2'	2.28	0.48
4:9:1144:A:H2'	4:9:1145:A:C8	2.48	0.48
4:9:1404:U:OP1	66:UU:21:ARG:NH2	2.43	0.48
4:9:1822:A:H2'	4:9:1823:A:H5"	1.95	0.48
1:5:223:G:H4'	1:5:225:G:N7	2.29	0.48
1:5:3652:A:H2'	1:5:3653:A:C5	2.48	0.48
1:5:3926:C:O2'	17:N:87:HIS:HE1	1.97	0.48
46:AA:5:LEU:HD21	67:VV:41:LYS:HA	1.95	0.48
47:BB:142:PHE:HB2	47:BB:208:HIS:CE1	2.48	0.48
54:II:73:THR:O	54:II:74:ARG:NH1	2.41	0.48
58:MM:43:ASP:OD2	77:ff:106:TYR:OH	2.26	0.48
81:11:37:A:H2'	81:11:38:A:O4'	2.14	0.48
1:5:1236:C:H2'	1:5:1238:A:N7	2.29	0.48
1:5:2533:C:OP1	27:X:139:ARG:NH1	2.45	0.48
1:5:4047:A:O2'	1:5:4048:A:OP1	2.25	0.48
4:9:24:C:OP1	55:JJ:11:LYS:NZ	2.38	0.48
4:9:1139:C:C5	4:9:1148:A:C5	3.02	0.48
61:PP:60:LEU:HD11	61:PP:89:MET:HE3	1.96	0.48
1:5:1308:C:H2'	1:5:1309:C:C6	2.48	0.48
1:5:1444:G:O5'	1:5:1444:G:H8	1.96	0.48
1:5:1772:C:H2'	1:5:1773:U:O4'	2.14	0.48
1:5:2579:G:N2	1:5:2581:A:H3'	2.29	0.48
1:5:4232:U:H4'	1:5:4233:A:O5'	2.14	0.48
4:9:434:G:H2'	4:9:435:A:C8	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:588:G:N2	4:9:588:G:OP2	2.46	0.48
77:ff:133:ALA:HB3	77:ff:140:TYR:HB2	1.96	0.48
1:5:1344:C:H2’	1:5:1345:A:C8	2.49	0.48
1:5:2543:A:H2	1:5:2773:G:H22	1.61	0.48
1:5:4178:A:H2’	1:5:4179:G:C8	2.48	0.48
1:5:4508:C:OP1	25:V:43:LYS:NZ	2.43	0.48
1:5:4524:G:N3	6:B:252:ALA:HB1	2.29	0.48
4:9:1248:U:H2’	4:9:1249:C:C6	2.49	0.48
4:9:1656:G:C2	4:9:1657:G:C8	3.02	0.48
43:o:12:CYS:HB3	43:o:15:CYS:HB2	1.95	0.48
46:AA:192:GLU:HG2	46:AA:193:HIS:CD2	2.49	0.48
53:HH:35:ASP:CG	53:HH:78:ARG:HH22	2.22	0.48
78:gg:131:LEU:O	78:gg:139:LYS:N	2.46	0.48
1:5:1072:C:O2’	1:5:1073:G:O5’	2.26	0.47
1:5:1475:G:H2’	1:5:1476:C:C6	2.49	0.47
1:5:2632:U:H2’	1:5:2633:U:C6	2.48	0.47
1:5:4862:G:H2’	1:5:4863:G:C8	2.49	0.47
4:9:1286:G:OP2	77:ff:99:LYS:HD3	2.14	0.47
4:9:1551:U:OP1	49:DD:9:ARG:NH1	2.47	0.47
6:B:384:GLU:OE2	26:W:14:TYR:OH	2.32	0.47
22:S:77:ASN:ND2	22:S:137:CYS:SG	2.87	0.47
25:V:87:SER:HA	25:V:97:TYR:HB3	1.94	0.47
46:AA:30:LEU:HD21	46:AA:35:GLU:HG2	1.96	0.47
50:EE:196:THR:HG21	50:EE:211:LYS:HG3	1.95	0.47
75:dd:36:LEU:HD21	75:dd:43:PHE:CD1	2.49	0.47
83:jj:426:THR:HA	83:jj:441:ALA:HA	1.96	0.47
1:5:2384:U:H2’	1:5:2385:U:C6	2.49	0.47
4:9:524:U:OP1	4:9:525:A:O2’	2.23	0.47
4:9:1731:A:H2’	4:9:1732:G:C8	2.49	0.47
1:5:179:G:H2’	1:5:180:C:C6	2.48	0.47
1:5:1364:U:OP2	15:L:36:ARG:NH2	2.40	0.47
1:5:4260:U:H2’	1:5:4261:C:C6	2.50	0.47
4:9:1700:C:C2	4:9:1834:A:N6	2.83	0.47
7:C:179:ASP:O	7:C:183:VAL:HG23	2.14	0.47
11:H:124:ARG:NH1	11:H:164:ALA:O	2.47	0.47
24:U:105:ASN:HB2	24:U:111:GLU:HB2	1.95	0.47
81:11:62:C:H2’	81:11:63:A:C8	2.49	0.47
1:5:1394:G:H2’	1:5:1395:U:C6	2.49	0.47
4:9:122:G:OP1	50:EE:75:LYS:NZ	2.32	0.47
4:9:377:G:H2’	4:9:378:U:H6	1.78	0.47
4:9:1740:C:H2’	4:9:1741:U:C6	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
78:gg:188:HIS:HB3	78:gg:219:TRP:CH2	2.49	0.47
1:5:1080:C:H2’	1:5:1081:C:H6	1.78	0.47
1:5:2440:U:O2’	1:5:2441:C:OP1	2.31	0.47
4:9:1100:A:OP1	63:RR:132:ARG:NH2	2.44	0.47
1:5:54:G:OP1	82:j:43:ARG:NH1	2.46	0.47
1:5:1510:G:H2’	1:5:1511:U:C6	2.50	0.47
1:5:2404:A:H61	1:5:2787:A:N6	2.13	0.47
1:5:4904:G:N1	1:5:4918:C:N3	2.62	0.47
81:13:62:C:H2’	81:13:63:A:C8	2.50	0.47
1:5:107:G:OP2	15:L:42:ARG:NH1	2.48	0.47
1:5:258:G:H2’	1:5:259:C:C6	2.50	0.47
1:5:1440:U:H2’	1:5:1441:C:C6	2.49	0.47
1:5:1502:G:C8	1:5:1502:G:H5”	2.50	0.47
1:5:3842:C:OP1	6:B:238:LYS:HE3	2.14	0.47
1:5:4675:U:OP1	6:B:358:ARG:NH2	2.36	0.47
4:9:419:G:N2	4:9:661:U:O2	2.47	0.47
4:9:1119:A:H2’	4:9:1120:U:C6	2.50	0.47
4:9:1287:A:C2	4:9:1313:A:H1’	2.49	0.47
4:9:1597:C:H4’	4:9:1603:G:O6	2.14	0.47
6:B:56:ILE:O	6:B:73:VAL:HA	2.15	0.47
15:L:71:ARG:NH1	15:L:72:ALA:O	2.48	0.47
18:O:10:ASP:OD1	18:O:37:ARG:HD3	2.15	0.47
22:S:45:TRP:CZ2	22:S:61:ILE:HG13	2.50	0.47
43:o:12:CYS:SG	43:o:15:CYS:SG	3.13	0.47
58:MM:69:CYS:O	58:MM:73:GLN:N	2.48	0.47
64:SS:44:VAL:HG11	64:SS:71:MET:HG3	1.97	0.47
81:13:63:A:H2’	81:13:64:U:C6	2.49	0.47
1:5:135:G:OP2	37:h:87:LYS:NZ	2.44	0.47
1:5:2732:G:H2’	1:5:2733:C:C6	2.50	0.47
1:5:4594:U:H2’	1:5:4595:G:H8	1.78	0.47
4:9:792:C:H2’	4:9:793:G:H8	1.80	0.47
5:A:27:ALA:O	5:A:128:ARG:NH2	2.46	0.47
6:B:199:GLU:OE1	6:B:200:ARG:NH1	2.48	0.47
19:P:39:MET:O	19:P:114:ILE:HG22	2.14	0.47
1:5:1295:U:H4’	1:5:1296:G:O5’	2.15	0.47
1:5:1967:A:C2	1:5:2021:G:C5	3.03	0.47
81:11:53:G:H2’	81:11:54:A:H8	1.79	0.47
83:jj:208:THR:H	90:jj:700:GCP:PG	2.37	0.47
4:9:170:A:OP2	52:GG:140:ARG:NH2	2.40	0.47
4:9:1098:C:H2’	4:9:1099:G:C8	2.50	0.47
4:9:1503:C:H2’	4:9:1504:U:C6	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:D:41:LYS:HG3	23:T:93:ILE:HG13	1.96	0.47
62:QQ:62:ARG:HD3	62:QQ:108:ILE:HD11	1.97	0.47
1:5:6:C:H2'	1:5:7:C:C6	2.49	0.46
1:5:385:A:HO2'	1:5:387:G:H8	1.63	0.46
1:5:1211:G:O2'	1:5:1212:G:OP1	2.28	0.46
1:5:2706:G:O2'	1:5:2709:C:N4	2.44	0.46
1:5:4053:A:H2'	1:5:4054:C:C6	2.50	0.46
34:e:7:LEU:HB2	34:e:93:LYS:HB3	1.96	0.46
43:o:44:LYS:HE3	43:o:52:THR:HB	1.97	0.46
49:DD:163:PRO:HA	49:DD:166:TYR:CE1	2.49	0.46
83:jj:137:ARG:O	83:jj:144:VAL:N	2.46	0.46
83:jj:495:GLU:H	83:jj:571:THR:HG23	1.80	0.46
1:5:979:C:H2'	1:5:980:U:C6	2.51	0.46
1:5:2050:G:H2'	1:5:2051:C:C6	2.50	0.46
1:5:3917:A:H2'	1:5:3918:G:H8	1.79	0.46
1:5:4037:C:H2'	1:5:4038:C:C6	2.50	0.46
1:5:4947:U:O2'	1:5:4948:C:OP1	2.29	0.46
4:9:1259:A:H61	4:9:1519:U:H5"	1.80	0.46
4:9:1643:U:H2'	4:9:1644:C:C6	2.51	0.46
10:G:217:ILE:O	10:G:221:VAL:HG13	2.14	0.46
52:GG:136:LYS:NZ	52:GG:175:LYS:O	2.42	0.46
1:5:1075:G:H22	1:5:1235:G:N2	2.13	0.46
1:5:1384:C:O2'	1:5:1505:C:OP1	2.32	0.46
1:5:3726:A:H2'	1:5:3727:A:C8	2.51	0.46
1:5:4895:C:O2	16:M:132:ARG:HD3	2.15	0.46
3:8:66:A:H2'	3:8:67:U:H6	1.81	0.46
4:9:809:A:H2'	4:9:810:A:O4'	2.15	0.46
6:B:189:THR:HG23	6:B:192:GLU:H	1.80	0.46
1:5:1435:G:O2'	1:5:2105:A:N1	2.42	0.46
1:5:2404:A:H61	1:5:2787:A:H61	1.64	0.46
1:5:2539:C:H2'	1:5:2540:C:C6	2.51	0.46
1:5:3911:C:H2'	1:5:3912:U:C6	2.48	0.46
1:5:4305:G:H22	23:T:87:LYS:CD	2.28	0.46
4:9:194:C:C2	4:9:206:G:C2	3.04	0.46
7:C:29:LYS:HB2	7:C:267:TRP:HH2	1.80	0.46
19:P:29:THR:HA	19:P:32:THR:HG22	1.97	0.46
40:l:24:PRO:HD2	40:l:27:ILE:HD12	1.97	0.46
1:5:1411(B):C:H2'	1:5:1411(C):C:C6	2.50	0.46
1:5:3656:A:H2'	1:5:3657:U:H6	1.80	0.46
1:5:3770:U:H2'	1:5:3771:C:C6	2.51	0.46
1:5:3873:G:H2'	1:5:3874:G:C8	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:4039:G:H5’	1:5:4042:G:O6	2.16	0.46
1:5:4098:A:H61	1:5:4110:C:H42	1.63	0.46
4:9:115:U:O2’	4:9:381:C:O2	2.23	0.46
4:9:1292:C:H2’	4:9:1293:A:H5”	1.96	0.46
49:DD:193:ASP:OD2	49:DD:198:ILE:N	2.37	0.46
61:PP:21:ASP:OD1	61:PP:22:LEU:N	2.48	0.46
65:TT:4:VAL:HG11	65:TT:136:GLY:HA2	1.97	0.46
67:VV:14:PRO:HG2	67:VV:23:ILE:HD11	1.98	0.46
1:5:4035:G:H2’	1:5:4036:G:C8	2.51	0.46
1:5:4629:U:H2’	1:5:4630:G:H8	1.79	0.46
4:9:846:G:OP2	50:EE:108:ARG:NH2	2.42	0.46
47:BB:49:VAL:HA	60:OO:51:GLU:OE2	2.16	0.46
1:5:1722:C:H2’	1:5:1723:A:C8	2.51	0.46
1:5:2730:U:H2’	1:5:2731:C:C6	2.51	0.46
1:5:3848:U:H2’	1:5:3849:A:C8	2.51	0.46
1:5:3880:G:H2’	1:5:3881:G:C8	2.50	0.46
1:5:4452:U:O2’	1:5:4453:C:O5’	2.31	0.46
1:5:4936:G:O2’	1:5:4937:C:OP1	2.29	0.46
4:9:218:U:H2’	4:9:219:U:C6	2.51	0.46
4:9:793:G:H2’	4:9:794:A:H8	1.80	0.46
4:9:1239:U:H5”	61:PP:124:LYS:HD3	1.97	0.46
4:9:1305:C:H2’	4:9:1306:U:C6	2.51	0.46
4:9:1628:C:H2’	4:9:1629:C:H6	1.80	0.46
13:J:136:ARG:HH22	13:J:161:GLU:CD	2.24	0.46
56:KK:1:MET:HE1	56:KK:43:LEU:HG	1.98	0.46
81:13:47:U:H3’	81:13:48:C:H5’	1.96	0.46
1:5:180:C:H2’	1:5:181:C:C6	2.51	0.46
1:5:391:U:H2’	1:5:392:U:C6	2.51	0.46
1:5:746:A:O2’	1:5:747:A:H5’	2.15	0.46
1:5:1200:G:H2’	1:5:1201:U:C6	2.51	0.46
1:5:2016:C:HO2’	1:5:2017:A:P	2.39	0.46
1:5:3968:U:O2’	1:5:3969:G:OP1	2.32	0.46
1:5:4944:C:H4’	1:5:4944:C:OP1	2.15	0.46
4:9:26:U:H2’	4:9:27:A:C8	2.51	0.46
4:9:26:U:H2’	4:9:27:A:H8	1.81	0.46
4:9:792:C:H2’	4:9:793:G:C8	2.51	0.46
4:9:905:C:H2’	4:9:906:U:C6	2.51	0.46
50:EE:138:HIS:CD2	50:EE:148:ARG:HB3	2.51	0.46
58:MM:89:VAL:HG23	58:MM:91:LEU:HG	1.97	0.46
83:jj:205:SER:C	83:jj:207:ARG:H	2.24	0.46
1:5:1188:C:H2’	1:5:1189:G:C8	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:1198:G:H2'	1:5:1199:G:H8	1.77	0.46
1:5:2020:U:H2'	1:5:2021:G:H8	1.79	0.46
4:9:193:C:C2	4:9:207:G:C2	3.04	0.46
4:9:1102:G:H2'	4:9:1103:C:C6	2.51	0.46
13:J:26:VAL:HG23	13:J:28:GLU:H	1.81	0.46
50:EE:51:ARG:NH1	50:EE:109:PHE:O	2.45	0.46
82:j:21:ARG:NH2	82:j:41:ALA:O	2.49	0.46
81:11:16:G:O2'	81:11:17:C:OP1	2.31	0.46
1:5:3635:A:N6	44:p:17:ARG:O	2.46	0.46
4:9:527:C:H4'	55:JJ:121:LYS:HD2	1.98	0.46
4:9:1856:C:H2'	4:9:1857:G:H8	1.80	0.46
49:DD:42:THR:HG1	49:DD:45:ARG:C	2.21	0.46
62:QQ:62:ARG:NH2	62:QQ:107:GLU:OE2	2.37	0.46
1:5:492:U:H4'	1:5:493:G:OP2	2.16	0.45
1:5:699:C:H2'	1:5:700:G:C8	2.51	0.45
1:5:2267:U:O2	1:5:2270:G:H4'	2.16	0.45
1:5:4247:G:H5'	8:D:4:VAL:HG21	1.98	0.45
4:9:1308:U:H2'	4:9:1309:C:C5	2.50	0.45
5:A:226:ARG:NE	5:A:228:ASP:OD1	2.36	0.45
27:X:77:ILE:HD12	27:X:116:LEU:HD12	1.97	0.45
58:MM:18:LEU:HA	58:MM:124:ILE:HD11	1.97	0.45
1:5:76:A:OP2	15:L:74:ARG:NH1	2.47	0.45
1:5:3732:A:H2'	1:5:3733:A:C8	2.50	0.45
1:5:3882:C:H2'	1:5:3883:U:C6	2.52	0.45
4:9:649:U:H2'	4:9:650:A:H8	1.82	0.45
4:9:1616:U:H3	4:9:1620:A:H2	1.65	0.45
4:9:1679:A:H3'	51:FF:60:ARG:HD2	1.98	0.45
10:G:139:VAL:HG11	10:G:238:LYS:HG3	1.98	0.45
50:EE:45:ILE:HD12	50:EE:80:ILE:HD12	1.99	0.45
57:LL:126:VAL:HG12	57:LL:145:VAL:HG22	1.98	0.45
71:ZZ:50:PHE:CZ	71:ZZ:58:LEU:HD11	2.51	0.45
1:5:82:U:HO2'	1:5:1382:G:HO2'	1.62	0.45
1:5:4481:U:H2'	1:5:4482:U:H6	1.81	0.45
29:Z:22:LYS:HE2	29:Z:129:TRP:CH2	2.51	0.45
50:EE:95:THR:HG23	70:YY:17:LEU:HD21	1.98	0.45
50:EE:100:ARG:HD2	50:EE:102:ILE:HD11	1.98	0.45
72:aa:44:ILE:HD12	72:aa:65:PRO:HG2	1.98	0.45
77:ff:102:VAL:HA	77:ff:105:TYR:CD2	2.52	0.45
80:12:53:G:H2'	80:12:54:U:H6	1.81	0.45
1:5:481(A):C:H1'	1:5:483:G:O3'	2.16	0.45
1:5:4192:A:H2'	1:5:4193:C:C6	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:804:U:H2'	4:9:805:U:H6	1.81	0.45
4:9:1139:C:H2'	4:9:1140:G:O4'	2.16	0.45
4:9:1236:G:H2'	4:9:1237:C:C6	2.52	0.45
4:9:1378:A:H4'	4:9:1379:A:C4'	2.47	0.45
12:I:190:LEU:HB3	12:I:197:VAL:HG21	1.99	0.45
24:U:40:GLU:CD	24:U:65:ARG:HE	2.24	0.45
45:r:4:HIS:O	45:r:8:MET:HG2	2.15	0.45
52:GG:5:ILE:HG22	52:GG:111:LEU:HB2	1.97	0.45
80:12:52:U:H2'	80:12:53:G:H8	1.80	0.45
83:jj:114:GLU:CD	83:jj:145:ARG:HH22	2.25	0.45
1:5:1514:U:H2'	1:5:1515:A:H8	1.81	0.45
1:5:3650:C:OP1	5:A:200:ARG:NH2	2.49	0.45
1:5:4232:U:OP2	43:o:2:VAL:HA	2.16	0.45
1:5:4233:A:C8	1:5:4235:G:C8	3.04	0.45
1:5:4524:G:C2	6:B:252:ALA:HB1	2.51	0.45
1:5:4582:C:OP2	6:B:28:LYS:NZ	2.39	0.45
1:5:4916:G:H2'	1:5:4917:C:C6	2.52	0.45
4:9:656:G:O2'	48:CC:227:ARG:NH2	2.44	0.45
4:9:928:G:H1	4:9:1013:U:H3	1.64	0.45
4:9:1118:C:H5"	4:9:1118:C:O2	2.16	0.45
4:9:1595:U:H2'	4:9:1596:U:C6	2.51	0.45
10:G:199:LEU:HD12	10:G:205:ALA:HB2	1.99	0.45
47:BB:129:THR:OG1	47:BB:131:ASP:OD1	2.32	0.45
58:MM:75:ASN:HB3	58:MM:128:PHE:CZ	2.52	0.45
60:OO:103:ASN:HB3	60:OO:139:SER:OG	2.16	0.45
71:ZZ:68:ILE:HB	71:ZZ:109:TYR:HB2	1.99	0.45
80:12:50:U:H2'	80:12:51:G:H8	1.80	0.45
1:5:2869:U:O2'	1:5:2881:A:N7	2.44	0.45
4:9:1139:C:H5	4:9:1149:A:N6	2.14	0.45
4:9:1597:C:H4'	4:9:1603:G:C6	2.52	0.45
22:S:96:GLU:CD	22:S:138:ARG:H	2.25	0.45
23:T:72:VAL:HG13	23:T:93:ILE:HD11	1.99	0.45
32:c:82:GLY:HA2	32:c:91:VAL:HG12	1.99	0.45
1:5:1186:U:H2'	1:5:1187:G:N3	2.31	0.45
1:5:1245:C:N4	1:5:1246:G:O6	2.50	0.45
1:5:1764:G:H8	1:5:1767:A:N6	2.07	0.45
1:5:1802:A:H5"	1:5:1803:G:H5'	1.98	0.45
1:5:1812:C:H2'	1:5:1813:U:C6	2.50	0.45
1:5:2638:G:H1	1:5:2697:A:H61	1.64	0.45
1:5:3641:U:OP2	1:5:3646:A:N6	2.47	0.45
1:5:3653:A:H4'	5:A:179:ILE:O	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:4967:A:H2’	1:5:4968:A:C8	2.52	0.45
4:9:383:G:H5’	4:9:383:G:H8	1.80	0.45
4:9:1013:U:OP1	4:9:1129:G:O2’	2.34	0.45
4:9:1259:A:N6	4:9:1519:U:H5”	2.31	0.45
4:9:1797:U:H2’	4:9:1798:C:C6	2.52	0.45
36:g:15:THR:HG22	36:g:16:ALA:H	1.81	0.45
1:5:231:U:H4’	28:Y:100:HIS:CD2	2.52	0.45
1:5:966:A:H1’	1:5:968:C:N4	2.31	0.45
1:5:976:G:N2	7:C:323:ARG:NH2	2.65	0.45
1:5:1534:A:C8	82:j:15:THR:HG23	2.51	0.45
3:8:67:U:H2’	3:8:68:G:H8	1.82	0.45
4:9:186:C:H2’	4:9:187:G:C8	2.52	0.45
4:9:203:G:OP2	54:II:143:LYS:NZ	2.35	0.45
4:9:1747:C:H2’	4:9:1748:G:O4’	2.17	0.45
4:9:1865:C:H5	72:aa:6:ARG:H	1.63	0.45
14:K:148:SER:HA	14:K:244:ARG:NH2	2.31	0.45
48:CC:176:LYS:HG3	48:CC:177:PRO:HD2	1.98	0.45
81:13:70:G:H2’	81:13:71:C:C6	2.52	0.45
1:5:490:C:H2’	1:5:491:G:H8	1.81	0.45
1:5:1502:G:H5”	1:5:1502:G:H8	1.81	0.45
1:5:2756:G:H2’	1:5:2757:A:H8	1.82	0.45
1:5:4280:A:N6	8:D:28:THR:O	2.50	0.45
4:9:220:U:H2’	4:9:221:A:C8	2.52	0.45
4:9:1424:G:H2’	4:9:1425:G:C8	2.52	0.45
6:B:117:ARG:HA	6:B:177:LYS:HD2	1.98	0.45
47:BB:25:PHE:HA	47:BB:28:LYS:HG2	1.98	0.45
1:5:4419:U:C4	1:5:4420:U:C5	3.04	0.45
4:9:584:A:OP2	55:JJ:169:ARG:NH2	2.46	0.45
4:9:634:A:H2’	4:9:635:G:C8	2.50	0.45
4:9:689:U:H2’	4:9:690:G:C8	2.52	0.45
53:HH:145:ARG:NH2	68:WW:49:GLU:OE1	2.50	0.45
75:dd:3:HIS:CE1	75:dd:7:TYR:HB2	2.52	0.45
1:5:2540:C:H2’	1:5:2541:G:H8	1.82	0.44
1:5:3959:U:O2’	1:5:3960:A:O5’	2.35	0.44
1:5:4481:U:H2’	1:5:4482:U:C6	2.51	0.44
5:A:30:ARG:HH12	5:A:33:ASP:CG	2.24	0.44
15:L:63:THR:HG22	15:L:64:VAL:N	2.32	0.44
77:ff:100:LEU:HG	77:ff:103:LEU:HD13	1.99	0.44
83:jj:136:GLU:HA	83:jj:144:VAL:O	2.17	0.44
1:5:2056:G:C8	1:5:2058:G:C8	3.05	0.44
1:5:4148:C:OP1	29:Z:59:LYS:NZ	2.36	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:1539:U:OP1	65:TT:44:GLU:N	2.47	0.44
14:K:152:LEU:HD23	14:K:247:ASN:ND2	2.28	0.44
17:N:65:ARG:HD3	17:N:127:TYR:CD1	2.52	0.44
51:FF:39:ILE:HG23	51:FF:68:ILE:HD13	1.99	0.44
58:MM:52:LEU:HD13	58:MM:65:VAL:HG11	1.98	0.44
58:MM:111:VAL:HG12	58:MM:113:ASP:HA	1.98	0.44
72:aa:59:PHE:HB2	72:aa:62:TYR:HB2	1.99	0.44
1:5:1312:A:O2'	34:e:44:ARG:NH2	2.50	0.44
1:5:1617:G:H1'	1:5:2513:A:N6	2.33	0.44
1:5:4039:G:H4'	1:5:4049:U:H2'	1.98	0.44
1:5:4759:C:H2'	1:5:4760:G:C8	2.53	0.44
4:9:5:U:H2'	4:9:6:G:C8	2.53	0.44
4:9:29:G:H2'	4:9:30:C:C6	2.52	0.44
4:9:1101:U:H2'	4:9:1102:G:C8	2.52	0.44
4:9:1227:G:C2	4:9:1228:A:C8	3.05	0.44
4:9:1844:U:OP1	42:n:11:ARG:NH2	2.42	0.44
5:A:30:ARG:NH2	5:A:33:ASP:OD2	2.41	0.44
22:S:78:PHE:CE1	22:S:102:THR:HG22	2.52	0.44
59:NN:33:VAL:HG21	59:NN:66:VAL:HG11	2.00	0.44
80:12:67:A:H2'	80:12:68:U:H6	1.81	0.44
83:jj:63:SER:O	83:jj:66:VAL:HG22	2.18	0.44
1:5:433:A:C2	1:5:3867:A:H4'	2.53	0.44
1:5:2455:G:H1'	1:5:2471:G:C2	2.52	0.44
1:5:2822:G:N7	21:R:20:LYS:NZ	2.62	0.44
1:5:3642:A:C4	82:j:3:LYS:HB3	2.53	0.44
1:5:4099:G:N2	1:5:4109:G:H1	2.15	0.44
1:5:4339:A:H2'	1:5:4340:U:H6	1.81	0.44
1:5:4975:G:H4'	1:5:4976:U:O5'	2.17	0.44
4:9:909:G:OP2	21:R:172:ARG:NE	2.47	0.44
4:9:1561:A:O4'	4:9:1583:C:H4'	2.17	0.44
61:PP:13:ARG:HH21	61:PP:16:THR:HG1	1.63	0.44
1:5:970:G:OP1	1:5:2259:G:N2	2.44	0.44
1:5:1444:G:H2'	1:5:1445:U:C6	2.52	0.44
1:5:1483:C:H5"	1:5:1483:C:O2	2.16	0.44
1:5:2324:C:O2	34:e:76:LYS:NZ	2.50	0.44
1:5:2478:C:N3	1:5:2479:G:C5	2.85	0.44
1:5:3877:A:O2'	1:5:4400:G:N2	2.47	0.44
1:5:5062:G:C2	1:5:5063:G:C8	3.04	0.44
4:9:1654:G:OP1	65:TT:90:SER:HB2	2.18	0.44
28:Y:66:GLN:OE1	28:Y:84:ARG:NH2	2.44	0.44
29:Z:22:LYS:NZ	29:Z:129:TRP:O	2.42	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
78:gg:44:LYS:HE2	78:gg:46:THR:HG22	2.00	0.44
79:10:19:U:H5'	79:10:19:U:H6	1.82	0.44
1:5:2665:U:OP2	21:R:120:TYR:OH	2.28	0.44
1:5:3868:G:H22	1:5:3900:G:H1'	1.82	0.44
1:5:4563:U:H2'	1:5:4564:A:C8	2.53	0.44
2:7:92:C:H2'	2:7:93:G:H8	1.83	0.44
3:8:144:U:H2'	3:8:145:C:C6	2.52	0.44
4:9:821:G:C6	55:JJ:147:PHE:CZ	3.06	0.44
46:AA:76:VAL:HG12	46:AA:123:VAL:CG1	2.46	0.44
1:5:64:A:C4	1:5:109:G:N7	2.86	0.44
1:5:172:C:O2	37:h:112:ARG:NH1	2.32	0.44
4:9:416:U:H2'	4:9:417:C:O4'	2.18	0.44
4:9:880:G:C6	4:9:907:G:C6	3.05	0.44
4:9:1182:A:C5	4:9:1183:A:H1'	2.53	0.44
17:N:155:VAL:O	17:N:162:ARG:NH2	2.48	0.44
22:S:90:THR:HG23	23:T:156:TYR:CD2	2.52	0.44
30:a:83:SER:OG	30:a:86:THR:HG23	2.18	0.44
32:c:29:LEU:HD22	32:c:94:LEU:HD22	2.00	0.44
81:11:43:G:H2'	81:11:44:A:C8	2.53	0.44
1:5:223:G:H4'	1:5:225:G:C8	2.52	0.44
1:5:1088:C:H2'	1:5:1089:G:H8	1.83	0.44
1:5:1244:G:O5'	1:5:1244:G:H8	2.00	0.44
1:5:1801:A:O3'	23:T:102:ARG:NH1	2.50	0.44
1:5:3969:G:C6	1:5:4053:A:C2	3.05	0.44
1:5:4178:A:H2'	1:5:4179:G:H8	1.82	0.44
1:5:4562:C:H2'	1:5:4563:U:C6	2.52	0.44
1:5:4863:G:H2'	1:5:4864:U:H6	1.82	0.44
2:7:18:C:H2'	2:7:19:C:C6	2.53	0.44
3:8:6:C:H2'	3:8:7:U:C6	2.52	0.44
4:9:344:U:H2'	4:9:345:U:C6	2.53	0.44
4:9:1299:A:OP2	61:PP:59:ARG:NH1	2.51	0.44
4:9:1679:A:C2	51:FF:60:ARG:HA	2.53	0.44
23:T:17:ARG:NH1	23:T:47:THR:OG1	2.46	0.44
36:g:15:THR:HG22	36:g:16:ALA:N	2.32	0.44
48:CC:102:LEU:HG	48:CC:130:ILE:HG12	2.00	0.44
51:FF:127:ARG:HB2	81:11:33:C:H5"	1.99	0.44
69:XX:68:LYS:HE2	76:ee:82:VAL:HG22	1.99	0.44
1:5:40:G:O6	84:5:5101:SPD:H21	2.18	0.44
1:5:484:U:O2'	1:5:485:C:OP1	2.29	0.44
1:5:1558:A:H2'	1:5:1559:G:H8	1.83	0.44
1:5:1859:C:H2'	1:5:1860:U:C6	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:2326:G:OP1	34:e:108:ARG:NH2	2.49	0.44
4:9:898:U:H2’	4:9:899:U:H6	1.81	0.44
4:9:1037:G:H4’	4:9:1845:A:H4’	1.99	0.44
4:9:1313:A:H4’	4:9:1314:U:O5’	2.18	0.44
54:II:114:GLU:CD	54:II:123:ARG:HH21	2.20	0.44
1:5:190:G:H2’	1:5:191:G:H8	1.82	0.43
1:5:1370:G:O6	7:C:239:LYS:NZ	2.46	0.43
1:5:2099:C:C5	7:C:304:ALA:HB1	2.53	0.43
1:5:4036:G:O5’	1:5:4036:G:H8	2.01	0.43
1:5:4039:G:N7	1:5:4041:C:N4	2.65	0.43
1:5:4300:U:OP1	23:T:87:LYS:NZ	2.51	0.43
3:8:14:U:C4	3:8:15:G:C6	3.05	0.43
48:CC:137:VAL:O	48:CC:162:ILE:HA	2.17	0.43
80:12:52:U:H2’	80:12:53:G:C8	2.52	0.43
1:5:219:G:N3	1:5:219:G:H2’	2.34	0.43
1:5:391:U:H2’	1:5:392:U:H6	1.80	0.43
1:5:4485:C:O2’	41:m:88:LYS:NZ	2.49	0.43
1:5:4870:G:H2’	16:M:91:TRP:CZ2	2.53	0.43
1:5:4896:G:H2’	1:5:4897:G:H8	1.83	0.43
3:8:19:C:H2’	3:8:20:A:H8	1.83	0.43
4:9:312:G:OP2	52:GG:195:LYS:NZ	2.35	0.43
17:N:135:ILE:HG23	17:N:142:ILE:CD1	2.48	0.43
40:l:23:ILE:HD11	40:l:28:TRP:NE1	2.33	0.43
48:CC:196:ILE:HB	48:CC:223:TYR:CB	2.46	0.43
64:SS:26:ILE:O	64:SS:30:ILE:HG12	2.18	0.43
1:5:137:G:H2’	1:5:138:G:H8	1.84	0.43
1:5:166:C:H2’	1:5:167:C:C6	2.53	0.43
1:5:454:U:H6	1:5:454:U:OP2	2.01	0.43
1:5:1949:U:H2’	1:5:1950:U:C6	2.53	0.43
1:5:4886:C:H2’	1:5:4887:C:C6	2.53	0.43
4:9:616:A:H1’	76:ee:85:VAL:HG23	2.00	0.43
9:E:153:LEU:HB3	9:E:197:VAL:CG1	2.48	0.43
11:H:37:ASP:CG	11:H:39:ASN:HD22	2.26	0.43
29:Z:100:VAL:HG13	29:Z:107:LYS:HA	2.00	0.43
57:LL:104:LYS:HE3	69:XX:8:ARG:HD3	2.00	0.43
58:MM:115:GLY:C	58:MM:117:GLU:H	2.26	0.43
62:QQ:97:GLN:HG2	62:QQ:105:LYS:HD2	2.00	0.43
68:WW:11:LEU:HD22	68:WW:72:CYS:SG	2.58	0.43
1:5:272:U:H2’	1:5:273:U:C6	2.54	0.43
1:5:2054:U:O4	18:O:49:ARG:NH1	2.51	0.43
1:5:2361:G:C5	19:P:25:HIS:CE1	3.06	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:3656:A:H2’	1:5:3657:U:C6	2.54	0.43
1:5:3848:U:H2’	1:5:3849:A:H8	1.83	0.43
1:5:4561:C:C2	1:5:4562:C:C5	3.06	0.43
1:5:4591:U:H2’	1:5:4592:C:C6	2.54	0.43
4:9:1058:A:OP1	81:13:38:A:O2’	2.29	0.43
4:9:1310:U:H2’	4:9:1311:C:C6	2.53	0.43
10:G:153:HIS:CE1	10:G:156:ARG:HH11	2.36	0.43
11:H:5:LEU:HB2	11:H:60:TRP:CZ3	2.53	0.43
27:X:73:HIS:ND1	27:X:112:ALA:HA	2.33	0.43
50:EE:183:VAL:HG11	50:EE:220:THR:HG21	2.00	0.43
59:NN:87:ASP:OD1	59:NN:88:LEU:N	2.48	0.43
80:12:19:G:H4’	80:12:20:G:C4	2.53	0.43
1:5:2000:G:H4’	1:5:2017:A:C2	2.54	0.43
1:5:2342:G:OP2	30:a:2:PRO:HA	2.18	0.43
1:5:2479:G:H2’	1:5:2480:G:H8	1.81	0.43
4:9:1395:C:H1’	4:9:1474:A:C5	2.53	0.43
44:p:88:GLU:O	44:p:92:GLN:N	2.41	0.43
65:TT:4:VAL:HG11	65:TT:136:GLY:CA	2.48	0.43
1:5:271:C:H2’	1:5:272:U:C6	2.53	0.43
1:5:1348:U:H2’	1:5:1349:G:H8	1.83	0.43
1:5:2502:A:H4’	1:5:2503:G:OP1	2.19	0.43
1:5:4395:U:H6	1:5:4395:U:H5’	1.83	0.43
1:5:4623:G:OP1	6:B:19:ARG:NH2	2.52	0.43
4:9:1455:A:C2	4:9:1456:G:C8	3.06	0.43
4:9:1531:A:H2’	4:9:1532:C:C6	2.52	0.43
7:C:339:THR:HG22	7:C:342:ARG:HH22	1.84	0.43
8:D:21:ARG:NH1	8:D:25:GLU:OE2	2.47	0.43
28:Y:54:GLU:OE1	28:Y:108:ARG:NH1	2.48	0.43
70:YY:76:TYR:OH	70:YY:86:GLU:OE1	2.35	0.43
78:gg:165:ILE:HG23	78:gg:179:LEU:HD21	2.01	0.43
83:jj:370:GLY:HA2	83:jj:373:LEU:CD1	2.48	0.43
1:5:483:G:H5”	1:5:484:U:H3’	1.99	0.43
1:5:1973:G:H2’	1:5:1974:U:C6	2.53	0.43
1:5:2276:A:H2’	1:5:2277:C:O4’	2.19	0.43
4:9:349:A:H2’	4:9:350:C:C6	2.53	0.43
4:9:441:C:H2’	4:9:442:C:C6	2.54	0.43
13:J:58:ARG:NH2	81:13:20:A:OP1	2.41	0.43
24:U:84:LYS:HA	24:U:87:THR:HG22	1.99	0.43
50:EE:36:HIS:CD2	50:EE:85:GLY:HA3	2.54	0.43
56:KK:49:MET:HG3	56:KK:69:TRP:CE3	2.54	0.43
78:gg:194:TYR:CE2	78:gg:212:LYS:HD2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:177:G:C2	1:5:260:C:C2	3.07	0.43
1:5:933:G:N3	1:5:933:G:H5”	2.34	0.43
1:5:1168:G:C2	1:5:1194:G:C6	3.06	0.43
1:5:2864:A:H2’	1:5:2865:U:H6	1.82	0.43
1:5:4320:G:H2’	1:5:4321:U:C6	2.54	0.43
1:5:4967:A:H2’	1:5:4968:A:H8	1.84	0.43
4:9:1804:U:H2’	4:9:1805:G:H8	1.83	0.43
20:Q:124:ASP:OD1	20:Q:124:ASP:N	2.50	0.43
30:a:89:ASN:O	30:a:93:ASN:N	2.51	0.43
71:ZZ:57:LYS:NZ	71:ZZ:61:GLU:OE1	2.40	0.43
80:12:50:U:H2’	80:12:51:G:C8	2.54	0.43
1:5:1643:A:H2’	1:5:1644:C:C6	2.53	0.43
1:5:1906:U:H2’	1:5:1907:A:H8	1.84	0.43
1:5:2295:C:H2’	1:5:2296:G:H8	1.83	0.43
1:5:2318:G:H5”	34:e:67:LYS:HG3	2.01	0.43
1:5:3723:A:H2’	1:5:3724:A:C8	2.53	0.43
1:5:4637:G:H2’	1:5:4638:U:C6	2.53	0.43
2:7:94:C:H2’	2:7:95:C:C6	2.54	0.43
4:9:829:C:O3’	4:9:845:G:N2	2.48	0.43
4:9:860:G:H21	68:WW:107:SER:HB3	1.84	0.43
4:9:980:A:H2’	4:9:981:A:C8	2.54	0.43
4:9:1060:A:O2’	4:9:1062:A:N7	2.45	0.43
25:V:21:PRO:HA	25:V:54:ALA:HA	2.00	0.43
51:FF:38:TYR:OH	74:cc:54:ASP:OD1	2.28	0.43
77:ff:138:ARG:HG3	77:ff:140:TYR:CD1	2.54	0.43
80:12:21:A:N6	80:12:46:G:O2’	2.52	0.43
81:11:35:A:H2’	81:11:36:U:H6	1.84	0.43
1:5:174:C:H2’	1:5:175:C:C6	2.54	0.43
1:5:1599:G:H21	1:5:1601:A:C4’	2.32	0.43
1:5:1599:G:H2’	1:5:1600:A:H5”	2.01	0.43
1:5:2275:G:H2’	1:5:2276:A:C8	2.54	0.43
1:5:4458:C:H2’	1:5:4459:U:C6	2.54	0.43
4:9:412:G:O2’	4:9:812:A:N6	2.51	0.43
43:o:72:CYS:HB3	43:o:77:CYS:O	2.19	0.43
54:II:38:ILE:HA	54:II:60:LEU:O	2.19	0.43
83:jj:217:GLY:N	83:jj:226:ASN:OD1	2.34	0.43
1:5:699:C:C2	1:5:700:G:C8	3.07	0.42
1:5:1988:G:C2	1:5:1989:G:C5	3.07	0.42
1:5:3926:C:O2’	17:N:87:HIS:CE1	2.71	0.42
13:J:144:LYS:HE2	13:J:146:ARG:O	2.18	0.42
42:n:2:ARG:HB3	42:n:5:TRP:CD1	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
49:DD:29:LEU:HB2	49:DD:34:TYR:HB2	2.00	0.42
53:HH:61:ILE:HD11	53:HH:176:VAL:HG13	2.01	0.42
83:jj:572:LYS:HB3	83:jj:572:LYS:HE2	1.87	0.42
1:5:1191:C:H2'	1:5:1192:C:C6	2.54	0.42
1:5:1779:U:H2'	1:5:1780:A:C8	2.54	0.42
1:5:3661:G:N7	5:A:152:SER:OG	2.41	0.42
4:9:729:C:H2'	4:9:730:C:C6	2.55	0.42
27:X:155:ILE:HA	37:h:37:THR:HG21	2.00	0.42
51:FF:122:ARG:HA	51:FF:146:ARG:HD3	2.01	0.42
63:RR:22:THR:O	78:gg:212:LYS:NZ	2.38	0.42
73:bb:37:CYS:HB2	73:bb:38:PRO:HD2	2.01	0.42
78:gg:8:ARG:N	78:gg:309:VAL:O	2.46	0.42
80:12:23:A:C6	80:12:24:G:C6	3.07	0.42
80:12:26:G:C5	80:12:27:C:C5	3.07	0.42
81:11:58:A:C8	81:11:58:A:H5'	2.54	0.42
1:5:175:C:N3	1:5:262:G:N1	2.67	0.42
1:5:2395:A:O2'	1:5:2806:A:N3	2.44	0.42
1:5:2496:G:H2'	1:5:2497:C:C6	2.54	0.42
3:8:94:G:H21	82:j:82:THR:HB	1.84	0.42
4:9:217:A:C6	4:9:218:U:C5	3.07	0.42
54:II:114:GLU:OE1	54:II:123:ARG:NH2	2.36	0.42
66:UU:68:THR:HG21	66:UU:72:GLU:O	2.19	0.42
78:gg:191:HIS:CD2	78:gg:195:LEU:HD21	2.54	0.42
1:5:310:G:C4	1:5:311:G:C8	3.07	0.42
1:5:485:C:HO2'	1:5:486:C:P	2.42	0.42
1:5:983:C:C6	9:E:73:ARG:HD3	2.54	0.42
1:5:983:C:H42	1:5:1071:C:H42	1.67	0.42
1:5:1969:G:O6	1:5:2019:C:N4	2.52	0.42
1:5:4061:G:H2'	1:5:4062:A:H8	1.85	0.42
1:5:4291:G:H5"	1:5:4293:U:C6	2.54	0.42
1:5:4577:U:H2'	1:5:4578:G:H8	1.84	0.42
4:9:1010:G:H2'	4:9:1011:A:C8	2.54	0.42
4:9:1278:A:H2'	4:9:1279:C:C6	2.55	0.42
4:9:1538:C:H2'	4:9:1539:U:C6	2.55	0.42
4:9:1801:A:H2'	4:9:1802:C:C6	2.55	0.42
32:c:47:ILE:HD12	32:c:94:LEU:HD12	2.01	0.42
49:DD:192:TRP:CZ2	49:DD:194:PRO:HG3	2.54	0.42
80:12:61:C:H2'	80:12:62:A:C8	2.54	0.42
1:5:510:U:H5"	30:a:86:THR:HG22	2.02	0.42
1:5:734:G:C2	1:5:735:G:C8	3.07	0.42
1:5:1291:G:O2'	1:5:1292:C:OP1	2.32	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:1344:C:H2'	1:5:1345:A:H8	1.84	0.42
1:5:1769:G:H2'	1:5:1770:A:C8	2.55	0.42
1:5:3907:G:H22	89:13:102:MET:HG2	1.85	0.42
1:5:4174:U:H2'	1:5:4175:G:C8	2.55	0.42
1:5:4600:G:OP2	83:jj:189:ARG:NH2	2.50	0.42
1:5:4863:G:H2'	1:5:4864:U:C6	2.54	0.42
1:5:4928:C:H2'	1:5:4929:C:C6	2.53	0.42
3:8:125:C:H6	3:8:125:C:H2'	1.70	0.42
4:9:303:C:O2	54:II:184:ARG:NH2	2.51	0.42
4:9:755:C:H2'	4:9:756:C:C6	2.54	0.42
4:9:817:G:H2'	4:9:818:A:H8	1.85	0.42
4:9:1731:A:H2'	4:9:1732:G:H8	1.83	0.42
24:U:41:GLN:OE1	24:U:44:GLN:NE2	2.50	0.42
64:SS:62:ASP:OD1	64:SS:62:ASP:N	2.51	0.42
80:12:44:A:H2'	80:12:45:G:C8	2.55	0.42
1:5:2016:C:H2'	1:5:2017:A:C8	2.53	0.42
1:5:4239:A:H2'	1:5:4240:G:C8	2.54	0.42
4:9:375:U:H2'	4:9:376:A:C8	2.54	0.42
4:9:453:C:O2'	52:GG:92:ARG:O	2.32	0.42
9:E:182:LEU:HD12	9:E:253:GLN:HG2	2.01	0.42
23:T:107:LYS:NZ	23:T:111:GLU:OE2	2.36	0.42
27:X:92:ASP:C	27:X:93:ASN:HD22	2.27	0.42
29:Z:90:PRO:O	29:Z:117:LYS:HE2	2.19	0.42
55:JJ:158:ASP:OD1	55:JJ:159:PHE:N	2.50	0.42
71:ZZ:100:VAL:HG21	71:ZZ:110:THR:HG23	2.01	0.42
1:5:959:G:P	1:5:959:G:H3'	2.60	0.42
1:5:2602:G:H2'	1:5:2603:C:C6	2.55	0.42
1:5:4926:C:H5'	1:5:4926:C:O2	2.19	0.42
4:9:77:A:H2	52:GG:175:LYS:HG3	1.85	0.42
4:9:146:G:O2'	4:9:147:A:O5'	2.38	0.42
4:9:1378:A:H4'	4:9:1379:A:H4'	2.01	0.42
5:A:105:GLY:HA3	5:A:160:SER:HB3	2.02	0.42
8:D:92:LEU:C	8:D:94:ASN:H	2.27	0.42
20:Q:154:LYS:HE2	20:Q:158:THR:HG21	2.00	0.42
80:12:11:C:H2'	80:12:12:U:H6	1.83	0.42
1:5:461:G:H2'	1:5:462:G:C8	2.54	0.42
1:5:973:G:N2	1:5:1282:G:C8	2.88	0.42
1:5:1234:G:O2'	1:5:1235:G:H8	2.02	0.42
1:5:1314:C:C2	1:5:1315:C:C5	3.07	0.42
1:5:1477:C:O2'	1:5:1478:C:OP1	2.36	0.42
1:5:1604:G:H2'	1:5:1605:G:C8	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:1964:A:H3'	1:5:1965:G:H8	1.85	0.42
4:9:164:A:H3'	4:9:165:G:H21	1.84	0.42
4:9:1536:G:H2'	4:9:1537:A:C8	2.54	0.42
11:H:176:LEU:O	11:H:180:TYR:OH	2.37	0.42
12:I:210:ARG:O	12:I:214:SER:N	2.53	0.42
25:V:35:LYS:HB2	25:V:67:LYS:HG3	2.01	0.42
77:ff:106:TYR:HD2	77:ff:114:ILE:HG21	1.84	0.42
81:11:63:A:H2'	81:11:64:U:H6	1.82	0.42
1:5:280:G:H5"	17:N:14:LYS:HE2	2.00	0.42
1:5:1836:G:H4'	1:5:1837:A:O5'	2.19	0.42
1:5:3824:A:H2	44:p:16:THR:HB	1.85	0.42
3:8:31:G:H2'	3:8:32:C:O4'	2.20	0.42
4:9:5:U:H2'	4:9:6:G:H8	1.84	0.42
4:9:881:G:H2'	4:9:882:U:H6	1.84	0.42
4:9:1298:G:H2'	4:9:1299:A:C8	2.54	0.42
4:9:1600:G:H4'	71:ZZ:43:LYS:HD3	2.02	0.42
7:C:237:ILE:HD12	7:C:237:ILE:N	2.34	0.42
22:S:86:SER:N	22:S:89:GLY:O	2.45	0.42
46:AA:134:LEU:CD2	46:AA:144:THR:HG21	2.49	0.42
63:RR:103:LYS:O	63:RR:107:LYS:N	2.49	0.42
81:11:20:A:O2'	81:11:21:A:OP2	2.36	0.42
1:5:1078:A:H5'	1:5:1079:C:OP2	2.20	0.42
1:5:2573:A:N7	1:5:2761:U:O4	2.53	0.42
1:5:4174:U:H2'	1:5:4175:G:H8	1.84	0.42
1:5:4525:C:H2'	1:5:4526:U:C6	2.55	0.42
3:8:93:C:OP1	82:j:76:HIS:HE1	2.03	0.42
4:9:464:A:H5'	4:9:465:A:C8	2.55	0.42
4:9:1698:C:HO2'	4:9:1699:A:P	2.41	0.42
30:a:103:VAL:CG1	30:a:108:TYR:HB2	2.50	0.42
50:EE:136:ILE:HG23	50:EE:149:TYR:CE1	2.55	0.42
72:aa:101:PHE:CD2	72:aa:102:ARG:HG3	2.55	0.42
82:j:39:TYR:CD1	82:j:40:PRO:HA	2.55	0.42
1:5:1443:A:H2'	1:5:1444:G:O4'	2.20	0.41
1:5:3932:U:H2'	1:5:3933:G:H8	1.85	0.41
1:5:4572:U:H2'	1:5:4573:G:C8	2.54	0.41
1:5:4585:U:H2'	1:5:4586:G:H8	1.85	0.41
4:9:1310:U:P	58:MM:36:ARG:HH21	2.42	0.41
4:9:1397:U:O4	62:QQ:12:VAL:HA	2.19	0.41
15:L:128:PRO:HB3	15:L:134:PRO:HA	2.02	0.41
37:h:96:ASN:HB2	37:h:99:GLU:HB2	2.02	0.41
53:HH:148:LEU:N	68:WW:49:GLU:OE2	2.49	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
66:UU:80:PHE:HB3	75:dd:52:PHE:HB3	2.01	0.41
67:VV:56:CYS:SG	67:VV:59:ILE:HG22	2.60	0.41
73:bb:47:PHE:CE2	73:bb:49:HIS:HB2	2.55	0.41
83:jj:136:GLU:CD	83:jj:145:ARG:HE	2.28	0.41
1:5:2736:G:OP1	44:p:48:LYS:NZ	2.50	0.41
1:5:4581:G:C2	1:5:4723:A:C6	3.08	0.41
1:5:4978:G:H2’	1:5:4979:A:H5”	2.02	0.41
2:7:62:U:OP2	8:D:276:LYS:NZ	2.46	0.41
3:8:94:G:H21	82:j:82:THR:CB	2.33	0.41
4:9:318:A:C2	4:9:333:G:C2	3.09	0.41
4:9:1115:U:O2’	4:9:1116:C:P	2.78	0.41
4:9:1839:U:H2’	4:9:1840:U:C6	2.56	0.41
5:A:180:LEU:HD23	5:A:180:LEU:HA	1.85	0.41
25:V:71:GLU:O	25:V:75:LYS:NZ	2.53	0.41
57:LL:89:ARG:NH1	57:LL:91:ASP:OD1	2.44	0.41
58:MM:53:ALA:HA	58:MM:79:VAL:O	2.20	0.41
61:PP:133:ILE:HD12	61:PP:133:ILE:H	1.84	0.41
78:gg:101:PHE:CD1	78:gg:101:PHE:N	2.87	0.41
81:11:53:G:H2’	81:11:54:A:C8	2.55	0.41
1:5:201:C:H2’	1:5:202:C:C6	2.55	0.41
1:5:1660:U:H3’	30:a:13:GLY:HA2	2.02	0.41
4:9:933:G:H3’	4:9:993:G:H21	1.85	0.41
4:9:958:G:C6	4:9:959:G:C6	3.08	0.41
4:9:1232:U:H2’	4:9:1233:G:C8	2.55	0.41
47:BB:87:ILE:O	47:BB:98:THR:HA	2.21	0.41
83:jj:185:LEU:HD13	83:jj:368:VAL:O	2.19	0.41
1:5:456:C:H2’	1:5:457:G:C8	2.55	0.41
1:5:1563:A:N6	4:9:1028:A:N1	2.68	0.41
1:5:1957:U:HO2’	1:5:1958:A:P	2.44	0.41
1:5:1984:A:C8	1:5:2011:C:OP1	2.73	0.41
1:5:3877:A:N3	1:5:4401:G:O2’	2.49	0.41
1:5:4395:U:H5’	1:5:4395:U:C6	2.55	0.41
4:9:368:U:O2’	4:9:369:C:OP1	2.35	0.41
4:9:816:A:OP1	55:JJ:10:ARG:NH2	2.53	0.41
4:9:1305:C:H2’	4:9:1306:U:H6	1.84	0.41
4:9:1609:C:OP2	64:SS:132:ARG:HD3	2.20	0.41
7:C:328:LEU:HD13	14:K:186:MET:SD	2.60	0.41
44:p:8:VAL:O	44:p:11:VAL:HG22	2.20	0.41
47:BB:168:MET:HG2	47:BB:197:ILE:HG21	2.02	0.41
53:HH:137:SER:HB3	53:HH:166:VAL:HG21	2.01	0.41
54:II:170:LYS:HB2	54:II:170:LYS:HE2	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
78:gg:237:ASN:ND2	78:gg:286:CYS:O	2.43	0.41
83:jj:512:MET:HA	83:jj:521:THR:HA	2.02	0.41
1:5:216:C:H3'	1:5:217:C:H5"	2.02	0.41
1:5:462:G:H2'	1:5:463:A:C8	2.55	0.41
1:5:4089:G:C2	1:5:4161:G:C2	3.08	0.41
1:5:4494:G:C6	1:5:4507:A:N1	2.89	0.41
1:5:4994:G:H2'	1:5:4995:U:C6	2.56	0.41
3:8:33:G:H4'	3:8:34:U:C5	2.56	0.41
4:9:1157:G:N3	4:9:1157:G:H2'	2.36	0.41
4:9:1169:G:OP1	42:n:6:ARG:NH2	2.46	0.41
10:G:156:ARG:HH21	10:G:248:HIS:CE1	2.37	0.41
10:G:228:ARG:HG2	10:G:283:TYR:CD2	2.55	0.41
12:I:86:HIS:HB3	12:I:139:ARG:CG	2.49	0.41
12:I:171:TRP:HB2	12:I:178:ALA:HA	2.02	0.41
16:M:119:ARG:HG3	18:O:189:ILE:HB	2.03	0.41
83:jj:309:LYS:HG2	90:jj:700:GCP:C5	2.51	0.41
1:5:52:G:H4'	1:5:1529:G:H4'	2.01	0.41
1:5:100:C:H2'	1:5:101:A:C8	2.53	0.41
1:5:3760:A:N1	80:12:38:A:H5'	2.35	0.41
1:5:4164:C:H2'	1:5:4165:C:C6	2.55	0.41
1:5:4594:U:H2'	1:5:4595:G:C8	2.55	0.41
4:9:452:G:H2'	4:9:453:C:C6	2.55	0.41
4:9:1405:A:H2'	4:9:1406:G:O4'	2.20	0.41
18:O:12:ARG:O	22:S:171:ARG:NH2	2.52	0.41
46:AA:176:TRP:CH2	46:AA:180:ARG:HD3	2.55	0.41
1:5:4099:G:N2	1:5:4109:G:N2	2.69	0.41
1:5:4635:A:H3'	1:5:4636:U:H4'	2.03	0.41
1:5:5053:U:O2'	1:5:5054:C:OP1	2.37	0.41
4:9:562:U:H2'	4:9:563:G:C8	2.56	0.41
4:9:933:G:H2'	4:9:1000:C:O2	2.21	0.41
4:9:1102:G:C6	4:9:1103:C:N4	2.89	0.41
4:9:1858:G:OP1	72:aa:17:HIS:HE1	2.04	0.41
9:E:64:MET:HG3	9:E:68:LYS:HE2	2.02	0.41
50:EE:199:GLU:HB2	50:EE:207:VAL:HG13	2.02	0.41
81:13:58:A:H1'	81:13:60:A:N7	2.36	0.41
1:5:1655:C:OP2	30:a:26:ARG:NH1	2.47	0.41
1:5:2413:U:C2	1:5:2414:G:C8	3.09	0.41
1:5:4537:C:H2'	1:5:4538:G:C8	2.56	0.41
1:5:4628:U:H2'	1:5:4629:U:C6	2.56	0.41
1:5:4891:G:H1	1:5:4928:C:H5	1.68	0.41
1:5:5016:A:H2	1:5:5033:G:H21	1.63	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:9:799:U:C4	4:9:800:U:C4	3.09	0.41
4:9:1139:C:H5	4:9:1149:A:H62	1.68	0.41
4:9:1736:G:H2'	4:9:1737:G:C8	2.56	0.41
7:C:5:ARG:HD2	7:C:24:LEU:O	2.20	0.41
10:G:230:MET:HE2	38:i:39:PHE:CZ	2.56	0.41
20:Q:64:SER:O	20:Q:68:ARG:HG3	2.21	0.41
58:MM:52:LEU:N	58:MM:77:ILE:O	2.48	0.41
1:5:86:U:H2'	1:5:87:A:C8	2.56	0.41
1:5:691:C:H2'	1:5:692:A:H8	1.83	0.41
1:5:1411(A):G:H2'	1:5:1411(B):C:C6	2.55	0.41
1:5:1494:U:H2'	1:5:1495:G:H8	1.86	0.41
1:5:1633:G:H5'	1:5:1634:A:OP1	2.21	0.41
1:5:1786:A:H2'	1:5:1789:C:C5	2.55	0.41
1:5:1937:C:OP2	1:5:1938:C:O2'	2.36	0.41
1:5:2361:G:O6	19:P:25:HIS:CD2	2.74	0.41
1:5:2431:A:P	40:l:41:ARG:HH12	2.44	0.41
1:5:3599:A:H2'	1:5:3600:G:C8	2.56	0.41
1:5:3736:A:H2'	1:5:3737:A:H8	1.83	0.41
1:5:4343:U:O2'	43:o:31:ASP:OD1	2.39	0.41
1:5:4772:C:N4	1:5:4864:U:O2	2.53	0.41
4:9:377:G:H2'	4:9:378:U:C6	2.55	0.41
4:9:529:A:H2'	4:9:530:U:H6	1.85	0.41
4:9:907:G:H2'	4:9:908:A:C8	2.56	0.41
4:9:1307:U:H2'	4:9:1308:U:O4'	2.21	0.41
4:9:1798:C:H2'	4:9:1799:G:O4'	2.21	0.41
7:C:171:LEU:HD11	7:C:227:ILE:HD11	2.03	0.41
15:L:121:ARG:HA	15:L:121:ARG:HD2	1.86	0.41
38:i:66:ASP:OD1	38:i:67:LYS:N	2.54	0.41
39:k:37:ARG:HD3	39:k:38:CYS:O	2.21	0.41
46:AA:57:LYS:NZ	46:AA:160:ALA:O	2.54	0.41
68:WW:30:CYS:SG	68:WW:31:SER:N	2.94	0.41
77:ff:105:TYR:HB3	77:ff:131:PHE:CZ	2.56	0.41
78:gg:64:HIS:CG	78:gg:65:PHE:H	2.39	0.41
1:5:177:G:N1	1:5:260:C:N3	2.69	0.41
1:5:666:G:H4'	1:5:667:A:H5"	2.03	0.41
1:5:682:G:H5'	1:5:683:C:OP2	2.21	0.41
1:5:963:G:H2'	1:5:964:A:C8	2.56	0.41
1:5:1098:G:C6	1:5:1099:C:C4	3.08	0.41
1:5:1236:C:H2'	1:5:1238:A:C8	2.56	0.41
1:5:1591:U:OP2	1:5:2856:C:O2'	2.35	0.41
1:5:1960:A:H4'	1:5:1961:G:OP2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:2431:A:OP1	40:l:41:ARG:NH1	2.54	0.41
1:5:2490:U:H2'	1:5:2491:C:C6	2.56	0.41
1:5:3760:A:C8	4:9:1826:G:H4'	2.56	0.41
1:5:4746:C:H2'	1:5:4747:C:C6	2.56	0.41
4:9:293:C:H2'	4:9:293:C:O2	2.21	0.41
4:9:398:A:H5'	4:9:398:A:C8	2.56	0.41
4:9:1232:U:H2'	4:9:1233:G:H8	1.86	0.41
4:9:1294:G:C4	4:9:1295:A:C8	3.09	0.41
6:B:35:ASP:HB3	6:B:186:ASN:CG	2.46	0.41
27:X:149:VAL:O	27:X:153:ILE:HG23	2.21	0.41
32:c:14:ILE:HD13	32:c:17:ARG:HH21	1.86	0.41
64:SS:65:GLU:O	64:SS:69:THR:HG23	2.21	0.41
68:WW:6:VAL:HG12	68:WW:34:ILE:HD11	2.03	0.41
69:XX:51:VAL:HG13	69:XX:70:VAL:CG2	2.51	0.41
78:gg:49:GLU:H	78:gg:49:GLU:CD	2.29	0.41
80:12:23:A:H2'	80:12:24:G:C8	2.56	0.41
1:5:267:G:H2'	1:5:268:G:H8	1.85	0.40
1:5:516:C:H2'	1:5:517:C:H6	1.85	0.40
1:5:1883:G:OP1	34:e:47:ARG:NH1	2.44	0.40
1:5:1903:G:OP1	35:f:87:LYS:NZ	2.43	0.40
1:5:2744:A:H2'	1:5:2745:A:C8	2.56	0.40
1:5:3611:A:H2	1:5:5016:A:C8	2.40	0.40
4:9:689:U:C4	4:9:690:G:C6	3.09	0.40
38:i:19:LYS:HE2	38:i:21:VAL:HG12	2.01	0.40
48:CC:174:ILE:HD12	48:CC:174:ILE:HA	1.95	0.40
50:EE:67:GLN:HB3	50:EE:69:PHE:CE1	2.56	0.40
55:JJ:136:ARG:NE	55:JJ:138:ARG:O	2.54	0.40
56:KK:85:LEU:HD23	56:KK:85:LEU:HA	1.94	0.40
83:jj:173:LYS:HA	83:jj:278:MET:HE2	2.03	0.40
1:5:158:A:H5"	1:5:159:C:H2'	2.02	0.40
1:5:418:A:C2	3:8:17:A:H1'	2.57	0.40
1:5:461:G:H2'	1:5:462:G:H8	1.87	0.40
1:5:686:A:H2'	1:5:686:A:N3	2.36	0.40
1:5:1973:G:H2'	1:5:1974:U:C5	2.56	0.40
4:9:71:G:C6	4:9:79:A:N7	2.89	0.40
4:9:184:G:H2'	4:9:185:G:H8	1.86	0.40
4:9:493:A:H61	4:9:509:G:N2	2.19	0.40
4:9:517:C:H2'	4:9:518:G:O4'	2.21	0.40
52:GG:57:ASP:OD1	52:GG:58:LYS:N	2.54	0.40
81:13:69:U:H2'	81:13:70:G:H8	1.86	0.40
1:5:1566:C:H2'	1:5:1567:U:C6	2.57	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:5:1670:G:H2'	1:5:1855:G:H5"	2.03	0.40
1:5:1850:A:H2'	1:5:1851:G:C8	2.57	0.40
1:5:3770:U:OP1	81:13:24:G:O2'	2.37	0.40
1:5:4065:G:H2'	1:5:4066:U:C6	2.56	0.40
1:5:4577:U:H2'	1:5:4578:G:C8	2.56	0.40
4:9:182:C:H4'	4:9:183:G:O5'	2.21	0.40
10:G:303:ILE:O	10:G:307:GLU:HG2	2.21	0.40
13:J:111:GLU:OE1	64:SS:14:ARG:NH2	2.50	0.40
15:L:167:ARG:NH2	15:L:173:GLU:OE2	2.50	0.40
20:Q:42:THR:O	20:Q:46:VAL:HG23	2.21	0.40
23:T:15:PHE:CD2	23:T:52:MET:HE2	2.56	0.40
34:e:35:TRP:CZ2	34:e:56:PRO:HD2	2.56	0.40
81:13:16:G:H3'	81:13:17:C:C5	2.56	0.40
1:5:333:U:H5"	1:5:334:A:OP1	2.22	0.40
1:5:1189:G:C6	1:5:1190:C:C4	3.10	0.40
1:5:1200:G:H2'	1:5:1201:U:H6	1.87	0.40
1:5:1333:A:H2'	1:5:1334:A:C8	2.56	0.40
1:5:1353:G:N7	20:Q:104:ARG:NH2	2.70	0.40
1:5:1564:A:H2'	1:5:1565:A:C8	2.56	0.40
1:5:2385:U:H2'	1:5:2386:U:H6	1.86	0.40
1:5:2553:A:H1'	1:5:2554:U:O4'	2.21	0.40
4:9:533:A:C6	4:9:552:G:C6	3.09	0.40
4:9:1144:A:H5'	4:9:1355:C:H41	1.86	0.40
6:B:115:LYS:HA	6:B:118:PHE:CD2	2.57	0.40
7:C:303:ARG:O	20:Q:38:ARG:NH2	2.29	0.40
15:L:80:GLU:OE2	15:L:113:ASN:ND2	2.51	0.40
17:N:80:THR:HB	17:N:87:HIS:HB3	2.03	0.40
66:UU:64:THR:HA	66:UU:78:ASP:O	2.22	0.40
1:5:357:U:C2	1:5:359:A:N7	2.90	0.40
1:5:2520:C:H2'	1:5:2521:G:C8	2.57	0.40
1:5:3606:U:H2'	1:5:3607:U:H6	1.85	0.40
1:5:4339:A:H2'	1:5:4340:U:C6	2.55	0.40
1:5:4563:U:H2'	1:5:4564:A:H8	1.86	0.40
4:9:1397:U:O2	4:9:1397:U:H2'	2.21	0.40
4:9:1617:G:O6	61:PP:43:ARG:HD3	2.21	0.40
7:C:211:TYR:CE1	7:C:214:ASP:HB2	2.56	0.40
10:G:311:ALA:HA	10:G:314:LEU:HB2	2.03	0.40
15:L:127:PHE:O	37:h:117:ARG:NH2	2.50	0.40
18:O:157:GLU:OE1	18:O:160:ARG:NH1	2.55	0.40
28:Y:77:LYS:HB2	28:Y:79:VAL:HG22	2.04	0.40
47:BB:126:ASP:OD1	47:BB:136:ARG:HD3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
78:gg:114:SER:HB3	78:gg:116:ASP:O	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	A	246/257 (96%)	239 (97%)	7 (3%)	0	100	100
6	B	392/403 (97%)	378 (96%)	14 (4%)	0	100	100
7	C	360/425 (85%)	354 (98%)	6 (2%)	0	100	100
8	D	291/297 (98%)	284 (98%)	7 (2%)	0	100	100
9	E	208/291 (72%)	200 (96%)	8 (4%)	0	100	100
10	G	229/319 (72%)	223 (97%)	6 (3%)	0	100	100
11	H	188/192 (98%)	183 (97%)	5 (3%)	0	100	100
12	I	201/214 (94%)	195 (97%)	6 (3%)	0	100	100
13	J	168/178 (94%)	163 (97%)	5 (3%)	0	100	100
14	K	223/247 (90%)	215 (96%)	8 (4%)	0	100	100
15	L	208/211 (99%)	203 (98%)	5 (2%)	0	100	100
16	M	136/218 (62%)	135 (99%)	1 (1%)	0	100	100
17	N	201/204 (98%)	198 (98%)	3 (2%)	0	100	100
18	O	197/203 (97%)	192 (98%)	5 (2%)	0	100	100
19	P	151/184 (82%)	146 (97%)	5 (3%)	0	100	100
20	Q	185/188 (98%)	179 (97%)	6 (3%)	0	100	100
21	R	178/196 (91%)	178 (100%)	0	0	100	100
22	S	174/176 (99%)	170 (98%)	4 (2%)	0	100	100
23	T	157/160 (98%)	151 (96%)	6 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
24	U	97/128 (76%)	96 (99%)	1 (1%)	0	100	100
25	V	127/140 (91%)	124 (98%)	3 (2%)	0	100	100
26	W	102/157 (65%)	101 (99%)	1 (1%)	0	100	100
27	X	116/156 (74%)	116 (100%)	0	0	100	100
28	Y	132/145 (91%)	129 (98%)	3 (2%)	0	100	100
29	Z	133/136 (98%)	128 (96%)	5 (4%)	0	100	100
30	a	145/148 (98%)	135 (93%)	10 (7%)	0	100	100
31	b	94/245 (38%)	92 (98%)	2 (2%)	0	100	100
32	c	96/115 (84%)	94 (98%)	2 (2%)	0	100	100
33	d	105/125 (84%)	101 (96%)	4 (4%)	0	100	100
34	e	126/135 (93%)	123 (98%)	3 (2%)	0	100	100
35	f	107/110 (97%)	106 (99%)	1 (1%)	0	100	100
36	g	112/116 (97%)	109 (97%)	3 (3%)	0	100	100
37	h	120/123 (98%)	119 (99%)	1 (1%)	0	100	100
38	i	100/105 (95%)	98 (98%)	2 (2%)	0	100	100
39	k	67/70 (96%)	67 (100%)	0	0	100	100
40	l	48/51 (94%)	48 (100%)	0	0	100	100
41	m	50/102 (49%)	47 (94%)	3 (6%)	0	100	100
42	n	23/25 (92%)	23 (100%)	0	0	100	100
43	o	102/106 (96%)	98 (96%)	4 (4%)	0	100	100
44	p	89/92 (97%)	83 (93%)	6 (7%)	0	100	100
45	r	122/137 (89%)	118 (97%)	4 (3%)	0	100	100
46	AA	215/295 (73%)	208 (97%)	7 (3%)	0	100	100
47	BB	211/264 (80%)	205 (97%)	6 (3%)	0	100	100
48	CC	219/293 (75%)	215 (98%)	4 (2%)	0	100	100
49	DD	222/243 (91%)	219 (99%)	3 (1%)	0	100	100
50	EE	260/263 (99%)	252 (97%)	8 (3%)	0	100	100
51	FF	180/204 (88%)	169 (94%)	11 (6%)	0	100	100
52	GG	235/249 (94%)	230 (98%)	5 (2%)	0	100	100
53	HH	181/194 (93%)	173 (96%)	8 (4%)	0	100	100
54	II	194/208 (93%)	188 (97%)	6 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
55	JJ	179/194 (92%)	177 (99%)	2 (1%)	0	100	100
56	KK	94/165 (57%)	91 (97%)	3 (3%)	0	100	100
57	LL	139/158 (88%)	134 (96%)	5 (4%)	0	100	100
58	MM	108/132 (82%)	103 (95%)	5 (5%)	0	100	100
59	NN	147/151 (97%)	144 (98%)	3 (2%)	0	100	100
60	OO	134/168 (80%)	129 (96%)	5 (4%)	0	100	100
61	PP	127/145 (88%)	124 (98%)	3 (2%)	0	100	100
62	QQ	140/146 (96%)	136 (97%)	4 (3%)	0	100	100
63	RR	130/135 (96%)	127 (98%)	3 (2%)	0	100	100
64	SS	138/152 (91%)	135 (98%)	3 (2%)	0	100	100
65	TT	139/145 (96%)	136 (98%)	3 (2%)	0	100	100
66	UU	98/119 (82%)	94 (96%)	4 (4%)	0	100	100
67	VV	81/83 (98%)	79 (98%)	2 (2%)	0	100	100
68	WW	127/130 (98%)	125 (98%)	2 (2%)	0	100	100
69	XX	138/143 (96%)	135 (98%)	3 (2%)	0	100	100
70	YY	122/130 (94%)	118 (97%)	4 (3%)	0	100	100
71	ZZ	73/125 (58%)	71 (97%)	2 (3%)	0	100	100
72	aa	99/115 (86%)	95 (96%)	4 (4%)	0	100	100
73	bb	81/84 (96%)	79 (98%)	2 (2%)	0	100	100
74	cc	60/69 (87%)	59 (98%)	1 (2%)	0	100	100
75	dd	53/56 (95%)	50 (94%)	3 (6%)	0	100	100
76	ee	55/133 (41%)	52 (94%)	3 (6%)	0	100	100
77	ff	66/156 (42%)	62 (94%)	4 (6%)	0	100	100
78	gg	311/317 (98%)	291 (94%)	20 (6%)	0	100	100
82	j	84/97 (87%)	80 (95%)	4 (5%)	0	100	100
83	jj	511/703 (73%)	484 (95%)	27 (5%)	0	100	100
All	All	11657/13594 (86%)	11310 (97%)	347 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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	
5	A	190/199 (96%)	190 (100%)	0	100	100
6	B	342/348 (98%)	342 (100%)	0	100	100
7	C	302/347 (87%)	302 (100%)	0	100	100
8	D	247/250 (99%)	247 (100%)	0	100	100
9	E	190/251 (76%)	190 (100%)	0	100	100
10	G	200/272 (74%)	200 (100%)	0	100	100
11	H	169/171 (99%)	169 (100%)	0	100	100
12	I	175/181 (97%)	175 (100%)	0	100	100
13	J	143/149 (96%)	143 (100%)	0	100	100
14	K	196/215 (91%)	196 (100%)	0	100	100
15	L	175/176 (99%)	174 (99%)	1 (1%)	84	91
16	M	117/161 (73%)	117 (100%)	0	100	100
17	N	171/172 (99%)	171 (100%)	0	100	100
18	O	171/173 (99%)	171 (100%)	0	100	100
19	P	134/163 (82%)	134 (100%)	0	100	100
20	Q	164/165 (99%)	164 (100%)	0	100	100
21	R	159/175 (91%)	159 (100%)	0	100	100
22	S	157/157 (100%)	157 (100%)	0	100	100
23	T	139/140 (99%)	139 (100%)	0	100	100
24	U	89/114 (78%)	89 (100%)	0	100	100
25	V	100/107 (94%)	100 (100%)	0	100	100
26	W	86/126 (68%)	86 (100%)	0	100	100
27	X	106/134 (79%)	106 (100%)	0	100	100
28	Y	124/135 (92%)	124 (100%)	0	100	100
29	Z	117/118 (99%)	117 (100%)	0	100	100
30	a	119/120 (99%)	119 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
31	b	80/184 (44%)	80 (100%)	0	100	100
32	c	84/98 (86%)	84 (100%)	0	100	100
33	d	98/110 (89%)	98 (100%)	0	100	100
34	e	114/121 (94%)	114 (100%)	0	100	100
35	f	88/89 (99%)	88 (100%)	0	100	100
36	g	98/99 (99%)	98 (100%)	0	100	100
37	h	109/110 (99%)	109 (100%)	0	100	100
38	i	86/89 (97%)	86 (100%)	0	100	100
39	k	64/65 (98%)	64 (100%)	0	100	100
40	l	47/48 (98%)	47 (100%)	0	100	100
41	m	48/90 (53%)	48 (100%)	0	100	100
42	n	24/24 (100%)	24 (100%)	0	100	100
43	o	92/94 (98%)	92 (100%)	0	100	100
44	p	74/75 (99%)	74 (100%)	0	100	100
45	r	108/121 (89%)	108 (100%)	0	100	100
46	AA	180/245 (74%)	180 (100%)	0	100	100
47	BB	194/231 (84%)	194 (100%)	0	100	100
48	CC	187/225 (83%)	187 (100%)	0	100	100
49	DD	187/202 (93%)	187 (100%)	0	100	100
50	EE	224/225 (100%)	224 (100%)	0	100	100
51	FF	157/170 (92%)	157 (100%)	0	100	100
52	GG	207/218 (95%)	207 (100%)	0	100	100
53	HH	165/174 (95%)	165 (100%)	0	100	100
54	II	172/180 (96%)	172 (100%)	0	100	100
55	JJ	161/168 (96%)	161 (100%)	0	100	100
56	KK	87/136 (64%)	87 (100%)	0	100	100
57	LL	130/142 (92%)	130 (100%)	0	100	100
58	MM	94/108 (87%)	94 (100%)	0	100	100
59	NN	130/131 (99%)	130 (100%)	0	100	100
60	OO	106/130 (82%)	106 (100%)	0	100	100
61	PP	115/130 (88%)	115 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
62	QQ	117/121 (97%)	117 (100%)	0	100	100
63	RR	119/121 (98%)	119 (100%)	0	100	100
64	SS	122/132 (92%)	122 (100%)	0	100	100
65	TT	111/115 (96%)	111 (100%)	0	100	100
66	UU	92/107 (86%)	92 (100%)	0	100	100
67	VV	67/67 (100%)	67 (100%)	0	100	100
68	WW	112/113 (99%)	112 (100%)	0	100	100
69	XX	112/115 (97%)	111 (99%)	1 (1%)	75	88
70	YY	107/112 (96%)	107 (100%)	0	100	100
71	ZZ	66/103 (64%)	66 (100%)	0	100	100
72	aa	88/98 (90%)	88 (100%)	0	100	100
73	bb	75/76 (99%)	75 (100%)	0	100	100
74	cc	55/62 (89%)	55 (100%)	0	100	100
75	dd	48/49 (98%)	48 (100%)	0	100	100
76	ee	47/106 (44%)	47 (100%)	0	100	100
77	ff	61/140 (44%)	61 (100%)	0	100	100
78	gg	272/275 (99%)	271 (100%)	1 (0%)	89	94
82	j	73/80 (91%)	73 (100%)	0	100	100
83	jj	445/586 (76%)	444 (100%)	1 (0%)	92	96
All	All	10181/11529 (88%)	10177 (100%)	4 (0%)	100	100

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
15	L	67	HIS
69	XX	105	PHE
78	gg	101	PHE
83	jj	168	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (111) such sidechains are listed below:

Mol	Chain	Res	Type
5	A	194	ASN
5	A	205	ASN

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Mol	Chain	Res	Type
5	A	216	HIS
6	B	55	HIS
6	B	184	GLN
6	B	236	HIS
6	B	276	HIS
6	B	301	ASN
6	B	354	GLN
6	B	376	HIS
7	C	43	ASN
7	C	187	GLN
7	C	212	ASN
9	E	170	GLN
9	E	253	GLN
10	G	117	GLN
10	G	134	ASN
11	H	39	ASN
11	H	42	ASN
11	H	78	GLN
12	I	51	HIS
12	I	59	GLN
12	I	73	ASN
12	I	95	HIS
13	J	71	HIS
13	J	97	ASN
13	J	104	ASN
14	K	55	HIS
14	K	79	ASN
14	K	247	ASN
16	M	20	HIS
16	M	70	GLN
17	N	8	GLN
17	N	37	HIS
17	N	87	HIS
18	O	26	GLN
19	P	21	ASN
19	P	25	HIS
19	P	56	GLN
19	P	116	HIS
20	Q	7	HIS
21	R	141	HIS
21	R	143	HIS
22	S	77	ASN

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Mol	Chain	Res	Type
23	T	58	HIS
23	T	66	ASN
23	T	79	GLN
23	T	95	HIS
23	T	98	HIS
25	V	77	HIS
25	V	135	ASN
28	Y	61	HIS
28	Y	72	GLN
28	Y	127	GLN
31	b	101	HIS
33	d	121	ASN
36	g	114	GLN
37	h	68	ASN
39	k	28	ASN
39	k	31	ASN
40	l	19	GLN
45	r	45	HIS
46	AA	132	GLN
46	AA	149	ASN
46	AA	193	HIS
47	BB	158	HIS
47	BB	159	GLN
47	BB	163	GLN
48	CC	272	HIS
49	DD	22	ASN
50	EE	17	HIS
50	EE	142	HIS
50	EE	157	ASN
51	FF	82	ASN
51	FF	95	HIS
51	FF	179	ASN
51	FF	203	ASN
52	GG	56	ASN
52	GG	81	HIS
52	GG	197	GLN
53	HH	73	GLN
53	HH	114	GLN
53	HH	168	HIS
53	HH	186	ASN
57	LL	94	HIS
58	MM	48	HIS

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Mol	Chain	Res	Type
58	MM	75	ASN
59	NN	105	ASN
59	NN	123	HIS
62	QQ	11	GLN
62	QQ	48	GLN
62	QQ	80	GLN
64	SS	72	GLN
65	TT	85	ASN
67	VV	33	GLN
68	WW	91	ASN
69	XX	46	HIS
69	XX	61	GLN
70	YY	94	HIS
70	YY	124	ASN
72	aa	17	HIS
72	aa	43	ASN
74	cc	7	GLN
75	dd	3	HIS
76	ee	117	ASN
77	ff	139	HIS
78	gg	119	GLN
82	j	76	HIS
83	jj	182	HIS
83	jj	446	HIS
83	jj	487	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	5	3581/3601 (99%)	556 (15%)	169 (4%)
2	7	118/120 (98%)	6 (5%)	1 (0%)
3	8	149/156 (95%)	19 (12%)	5 (3%)
4	9	1685/1869 (90%)	248 (14%)	61 (3%)
79	10	10/185 (5%)	2 (20%)	1 (10%)
80	12	74/76 (97%)	10 (13%)	3 (4%)
81	11	73/75 (97%)	12 (16%)	5 (6%)
81	13	73/75 (97%)	13 (17%)	4 (5%)
All	All	5763/6157 (93%)	866 (15%)	249 (4%)

All (866) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	5	15	A
1	5	25	A
1	5	39	A
1	5	42	A
1	5	43	U
1	5	59	A
1	5	65	A
1	5	91	G
1	5	93	G
1	5	109	G
1	5	119	G
1	5	120	A
1	5	126	C
1	5	134	G
1	5	135	G
1	5	136	C
1	5	143	C
1	5	144	G
1	5	159	C
1	5	160	G
1	5	171	U
1	5	172	C
1	5	197	A
1	5	200	U
1	5	201	C
1	5	209	U
1	5	218	A
1	5	220	C
1	5	224	U
1	5	225	G
1	5	226	G
1	5	227	A
1	5	233	U
1	5	234	G
1	5	246	G
1	5	265	C
1	5	266	C
1	5	267	G
1	5	275	C
1	5	276	C
1	5	280	G
1	5	294	G
1	5	295	A

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Mol	Chain	Res	Type
1	5	296	A
1	5	297	U
1	5	306	A
1	5	316	U
1	5	334	A
1	5	340	C
1	5	362	A
1	5	379	G
1	5	386	A
1	5	387	G
1	5	407	A
1	5	408	A
1	5	409	G
1	5	410	A
1	5	412	G
1	5	413	G
1	5	431	G
1	5	432	U
1	5	449	C
1	5	450	G
1	5	453	G
1	5	454	U
1	5	455	C
1	5	467	U
1	5	468	U
1	5	481	G
1	5	481(A)	C
1	5	482	G
1	5	483	G
1	5	485	C
1	5	486	C
1	5	493	G
1	5	498	C
1	5	499	G
1	5	500	G
1	5	505	G
1	5	649	A
1	5	650	C
1	5	666	G
1	5	683	C
1	5	685	C
1	5	687	U

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Mol	Chain	Res	Type
1	5	696	C
1	5	697	G
1	5	704	C
1	5	705	G
1	5	730	G
1	5	731	G
1	5	738	C
1	5	747	A
1	5	749	G
1	5	758	G
1	5	913	U
1	5	914	U
1	5	915	A
1	5	917	A
1	5	923	C
1	5	924	C
1	5	925	C
1	5	926	G
1	5	929	A
1	5	931	C
1	5	932	A
1	5	933	G
1	5	934	C
1	5	935	A
1	5	935(A)	G
1	5	936	C
1	5	943	A
1	5	944	A
1	5	945	U
1	5	959	G
1	5	960	A
1	5	961	G
1	5	967	C
1	5	969	C
1	5	983	C
1	5	1065	G
1	5	1070	G
1	5	1072	C
1	5	1073	G
1	5	1076	C
1	5	1079	C
1	5	1084	C

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Mol	Chain	Res	Type
1	5	1179	U
1	5	1195	G
1	5	1204	C
1	5	1211	G
1	5	1212	G
1	5	1214	C
1	5	1215	C
1	5	1234	G
1	5	1235	G
1	5	1236	C
1	5	1237	C
1	5	1238	A
1	5	1239	C
1	5	1244	G
1	5	1248	C
1	5	1249	C
1	5	1250	C
1	5	1272	C
1	5	1273	G
1	5	1280	C
1	5	1283	G
1	5	1284	G
1	5	1287	G
1	5	1292	C
1	5	1293	G
1	5	1294	A
1	5	1296	G
1	5	1301	C
1	5	1304	C
1	5	1313	C
1	5	1324	A
1	5	1325	C
1	5	1326	A
1	5	1337	A
1	5	1339	U
1	5	1354	A
1	5	1359	G
1	5	1370	G
1	5	1371	A
1	5	1377	G
1	5	1380	G
1	5	1381	U

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Mol	Chain	Res	Type
1	5	1387	A
1	5	1388	A
1	5	1394	G
1	5	1397	A
1	5	1398	A
1	5	1421	G
1	5	1437	C
1	5	1438	U
1	5	1441	C
1	5	1445	U
1	5	1446	C
1	5	1455	G
1	5	1456	C
1	5	1458	C
1	5	1477	C
1	5	1478	C
1	5	1482	G
1	5	1483	C
1	5	1484	G
1	5	1485	C
1	5	1486	C
1	5	1498	G
1	5	1502	G
1	5	1523	A
1	5	1534	A
1	5	1547	A
1	5	1566	C
1	5	1578	U
1	5	1591	U
1	5	1596	U
1	5	1602	U
1	5	1612	G
1	5	1613	A
1	5	1614	C
1	5	1624	G
1	5	1625	G
1	5	1631	A
1	5	1633	G
1	5	1634	A
1	5	1641	G
1	5	1654	G
1	5	1661	C

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Mol	Chain	Res	Type
1	5	1676	C
1	5	1677	U
1	5	1691	G
1	5	1734	G
1	5	1741	G
1	5	1742	A
1	5	1750	G
1	5	1754	U
1	5	1755	C
1	5	1756	U
1	5	1761	G
1	5	1764	G
1	5	1766	A
1	5	1768	C
1	5	1769	G
1	5	1773	U
1	5	1787	A
1	5	1805	A
1	5	1819	G
1	5	1821	G
1	5	1834	U
1	5	1835	G
1	5	1836	G
1	5	1837	A
1	5	1842	G
1	5	1855	G
1	5	1869	G
1	5	1897	A
1	5	1899	G
1	5	1918	U
1	5	1919	G
1	5	1921	C
1	5	1922	G
1	5	1923	A
1	5	1931	C
1	5	1940	G
1	5	1948	G
1	5	1958	A
1	5	1962	A
1	5	1964	A
1	5	1977	C
1	5	1978	C

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Mol	Chain	Res	Type
1	5	1980	U
1	5	1981	G
1	5	1984	A
1	5	1987	C
1	5	1991	A
1	5	1992	U
1	5	1993	C
1	5	2001	G
1	5	2002	A
1	5	2004	U
1	5	2005	G
1	5	2008	U
1	5	2011	C
1	5	2017	A
1	5	2023	C
1	5	2024	G
1	5	2025	A
1	5	2026	A
1	5	2044	U
1	5	2048	U
1	5	2052	G
1	5	2055	G
1	5	2056	G
1	5	2069	A
1	5	2084	U
1	5	2089	G
1	5	2090	U
1	5	2092	G
1	5	2093	G
1	5	2094	C
1	5	2097	A
1	5	2098	G
1	5	2100	G
1	5	2102	G
1	5	2104	A
1	5	2106	G
1	5	2107	A
1	5	2108	G
1	5	2259	G
1	5	2260	C
1	5	2266	C
1	5	2267	U

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Mol	Chain	Res	Type
1	5	2268	A
1	5	2279	A
1	5	2289	C
1	5	2300	A
1	5	2301	G
1	5	2313	A
1	5	2314	G
1	5	2332	A
1	5	2333	G
1	5	2348	G
1	5	2351	C
1	5	2395	A
1	5	2421	G
1	5	2422	C
1	5	2428	A
1	5	2429	A
1	5	2441	C
1	5	2447	U
1	5	2469	C
1	5	2471	G
1	5	2475	G
1	5	2488	C
1	5	2489	C
1	5	2490	U
1	5	2491	C
1	5	2503	G
1	5	2504	C
1	5	2506	G
1	5	2513	A
1	5	2520	C
1	5	2546	G
1	5	2547	G
1	5	2553	A
1	5	2554	U
1	5	2555	G
1	5	2587	A
1	5	2601	A
1	5	2669	C
1	5	2673	G
1	5	2686	G
1	5	2687	U
1	5	2695	A

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Mol	Chain	Res	Type
1	5	2696	A
1	5	2697	A
1	5	2705	G
1	5	2708	U
1	5	2709	C
1	5	2710	C
1	5	2711	G
1	5	2712	G
1	5	2719	C
1	5	2726	G
1	5	2740	U
1	5	2743	A
1	5	2760	G
1	5	2761	U
1	5	2763	U
1	5	2764	A
1	5	2769	U
1	5	2787	A
1	5	2788	U
1	5	2789	A
1	5	2790	U
1	5	2791	C
1	5	2794	C
1	5	2795	A
1	5	2796	G
1	5	2826	U
1	5	2827	G
1	5	2855	G
1	5	3604	A
1	5	3605	C
1	5	3614	G
1	5	3615	G
1	5	3625	G
1	5	3626	G
1	5	3635	A
1	5	3644	U
1	5	3653	A
1	5	3662	A
1	5	3672	G
1	5	3673	C
1	5	3674	G
1	5	3711	A

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Mol	Chain	Res	Type
1	5	3712	A
1	5	3729	U
1	5	3748	A
1	5	3753	G
1	5	3759	A
1	5	3776	G
1	5	3777	G
1	5	3783	A
1	5	3784	A
1	5	3786	U
1	5	3811	G
1	5	3814	U
1	5	3817	A
1	5	3819	G
1	5	3838	U
1	5	3839	G
1	5	3840	U
1	5	3877	A
1	5	3878	C
1	5	3879	G
1	5	3888	G
1	5	3889	G
1	5	3897	G
1	5	3901	A
1	5	3905	A
1	5	3906	A
1	5	3907	G
1	5	3908	A
1	5	3915	U
1	5	3949	A
1	5	3950	U
1	5	3960	A
1	5	3963	A
1	5	3964	U
1	5	3967	G
1	5	3969	G
1	5	3972	A
1	5	3973	G
1	5	3976	C
1	5	4041	C
1	5	4042	G
1	5	4046	A

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Mol	Chain	Res	Type
1	5	4047	A
1	5	4048	A
1	5	4049	U
1	5	4069	U
1	5	4076	G
1	5	4084	G
1	5	4119	C
1	5	4120	U
1	5	4121	G
1	5	4122	G
1	5	4125	C
1	5	4127	A
1	5	4128	A
1	5	4163	U
1	5	4170	A
1	5	4171	C
1	5	4183	G
1	5	4184	G
1	5	4191	G
1	5	4213	A
1	5	4229	U
1	5	4233	A
1	5	4251	A
1	5	4255	A
1	5	4258	C
1	5	4266	G
1	5	4268	A
1	5	4271	A
1	5	4273	A
1	5	4280	A
1	5	4281	A
1	5	4291	G
1	5	4305	G
1	5	4306	U
1	5	4326	G
1	5	4330	G
1	5	4339	A
1	5	4349	C
1	5	4355	G
1	5	4373	G
1	5	4376	A
1	5	4377	G

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Mol	Chain	Res	Type
1	5	4378	A
1	5	4387	C
1	5	4394	A
1	5	4395	U
1	5	4396	A
1	5	4419	U
1	5	4422	A
1	5	4438	U
1	5	4448	G
1	5	4449	A
1	5	4452	U
1	5	4453	C
1	5	4464	A
1	5	4476	C
1	5	4488	A
1	5	4489	G
1	5	4500	U
1	5	4512	U
1	5	4513	A
1	5	4519	C
1	5	4522	G
1	5	4524	G
1	5	4548	A
1	5	4549	G
1	5	4567	G
1	5	4572	U
1	5	4573	G
1	5	4575	G
1	5	4590	A
1	5	4599	A
1	5	4627	U
1	5	4635	A
1	5	4636	U
1	5	4637	G
1	5	4656	A
1	5	4670	C
1	5	4672	A
1	5	4677	U
1	5	4700	A
1	5	4709	U
1	5	4719	G
1	5	4720	C

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Mol	Chain	Res	Type
1	5	4721	G
1	5	4736	C
1	5	4737	G
1	5	4745	G
1	5	4751	G
1	5	4754	G
1	5	4757	C
1	5	4759	C
1	5	4765	G
1	5	4771	C
1	5	4870	G
1	5	4871	C
1	5	4875	G
1	5	4876	A
1	5	4877	G
1	5	4882	U
1	5	4883	C
1	5	4885	U
1	5	4909	A
1	5	4910	A
1	5	4913	G
1	5	4914	G
1	5	4915	G
1	5	4921	C
1	5	4922	C
1	5	4925	U
1	5	4926	C
1	5	4931	G
1	5	4937	C
1	5	4944	C
1	5	4945	G
1	5	4948	C
1	5	4951	G
1	5	4956	A
1	5	4958	C
1	5	4965	U
1	5	4966	A
1	5	4976	U
1	5	4988	U
1	5	4989	U
1	5	4990	C
1	5	4991	U

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Mol	Chain	Res	Type
1	5	5013	C
1	5	5014	A
1	5	5017	G
1	5	5041	G
1	5	5047	C
1	5	5050	C
1	5	5054	C
1	5	5058	A
1	5	5062	G
2	7	7	G
2	7	42	A
2	7	53	U
2	7	64	G
2	7	100	A
2	7	110	G
3	8	2	G
3	8	3	A
3	8	34	U
3	8	35	C
3	8	49	G
3	8	59	A
3	8	62	A
3	8	63	U
3	8	87	G
3	8	94	G
3	8	95	A
3	8	104	A
3	8	105	C
3	8	110	U
3	8	114	G
3	8	123	U
3	8	125	C
3	8	126	C
3	8	137	A
4	9	2	A
4	9	4	C
4	9	17	C
4	9	25	A
4	9	26	U
4	9	33	G
4	9	41	G
4	9	46	A

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Mol	Chain	Res	Type
4	9	49	C
4	9	56	G
4	9	58	C
4	9	67	C
4	9	68	A
4	9	73	C
4	9	74	G
4	9	75	G
4	9	79	A
4	9	103	A
4	9	111	A
4	9	113	G
4	9	115	U
4	9	126	G
4	9	127	C
4	9	130	G
4	9	143	U
4	9	147	A
4	9	155	G
4	9	161	U
4	9	162	C
4	9	180	G
4	9	181	A
4	9	182	C
4	9	183	G
4	9	184	G
4	9	192	C
4	9	215	G
4	9	294	U
4	9	312	G
4	9	314	U
4	9	319	C
4	9	335	G
4	9	347	G
4	9	362	C
4	9	364	A
4	9	369	C
4	9	370	G
4	9	383	G
4	9	385	G
4	9	386	C
4	9	400	C

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Mol	Chain	Res	Type
4	9	408	A
4	9	409	C
4	9	418	A
4	9	428	U
4	9	448	A
4	9	449	A
4	9	450	C
4	9	452	G
4	9	464	A
4	9	465	A
4	9	466	G
4	9	472	C
4	9	474	G
4	9	482	G
4	9	487	U
4	9	492	C
4	9	496	C
4	9	516	A
4	9	517	C
4	9	531	A
4	9	532	C
4	9	533	A
4	9	544	G
4	9	550	C
4	9	551	U
4	9	554	A
4	9	555	A
4	9	556	U
4	9	559	G
4	9	561	A
4	9	562	U
4	9	564	A
4	9	571	U
4	9	572	U
4	9	590	A
4	9	591	U
4	9	592	C
4	9	606	G
4	9	607	U
4	9	608	C
4	9	609	U
4	9	614	C

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Mol	Chain	Res	Type
4	9	620	G
4	9	621	C
4	9	627	U
4	9	628	A
4	9	643	A
4	9	644	G
4	9	655	A
4	9	662	G
4	9	668	A
4	9	669	A
4	9	671	A
4	9	672	A
4	9	673	G
4	9	752	G
4	9	753	C
4	9	754	G
4	9	799	U
4	9	811	A
4	9	821	G
4	9	822	U
4	9	830	A
4	9	847	A
4	9	859	G
4	9	867	G
4	9	868	G
4	9	869	A
4	9	870	A
4	9	872	A
4	9	873	G
4	9	874	G
4	9	875	A
4	9	876	C
4	9	887	U
4	9	888	U
4	9	889	U
4	9	913	A
4	9	914	U
4	9	920	A
4	9	922	A
4	9	933	G
4	9	943	U
4	9	971	G

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Mol	Chain	Res	Type
4	9	990	A
4	9	992	A
4	9	999	G
4	9	1017	U
4	9	1023	A
4	9	1062	A
4	9	1083	A
4	9	1085	C
4	9	1115	U
4	9	1116	C
4	9	1117	C
4	9	1118	C
4	9	1119	A
4	9	1133	A
4	9	1138	C
4	9	1139	C
4	9	1149	A
4	9	1153	C
4	9	1154	U
4	9	1195	A
4	9	1207	G
4	9	1208	A
4	9	1215	C
4	9	1216	C
4	9	1224	G
4	9	1242	U
4	9	1251	A
4	9	1253	A
4	9	1254	C
4	9	1256	G
4	9	1257	G
4	9	1259	A
4	9	1274	G
4	9	1275	G
4	9	1285	G
4	9	1286	G
4	9	1289	U
4	9	1293	A
4	9	1301	A
4	9	1302	G
4	9	1308	U
4	9	1309	C

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Mol	Chain	Res	Type
4	9	1314	U
4	9	1322	G
4	9	1371	U
4	9	1372	U
4	9	1378	A
4	9	1379	A
4	9	1396	A
4	9	1397	U
4	9	1428	G
4	9	1429	G
4	9	1454	A
4	9	1462	U
4	9	1463	U
4	9	1464	C
4	9	1476	A
4	9	1477	U
4	9	1490	G
4	9	1497	G
4	9	1498	A
4	9	1508	A
4	9	1509	U
4	9	1519	U
4	9	1520	G
4	9	1521	C
4	9	1522	A
4	9	1533	A
4	9	1548	G
4	9	1552	G
4	9	1553	C
4	9	1556	A
4	9	1557	C
4	9	1579	A
4	9	1587	G
4	9	1588	A
4	9	1601	A
4	9	1621	U
4	9	1623	A
4	9	1637	A
4	9	1638	G
4	9	1639	G
4	9	1648	G
4	9	1654	G

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Mol	Chain	Res	Type
4	9	1665	G
4	9	1671	G
4	9	1680	G
4	9	1699	A
4	9	1721	U
4	9	1722	G
4	9	1748	G
4	9	1753	C
4	9	1756	C
4	9	1757	G
4	9	1758	G
4	9	1783	C
4	9	1785	C
4	9	1823	A
4	9	1824	A
4	9	1829	G
4	9	1834	A
4	9	1835	A
4	9	1836	G
4	9	1837	G
4	9	1838	U
4	9	1849	G
4	9	1851	A
4	9	1852	C
4	9	1861	G
4	9	1862	G
4	9	1863	A
4	9	1864	U
4	9	1865	C
4	9	1869	A
79	10	19	U
79	10	23	A
80	12	10	G
80	12	13	C
80	12	17	U
80	12	18	G
80	12	19	G
80	12	20	G
80	12	21	A
80	12	45	G
80	12	47	U
80	12	76	A

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Mol	Chain	Res	Type
81	13	17	C
81	13	18	G
81	13	19	G
81	13	20	A
81	13	21	A
81	13	22	G
81	13	47	U
81	13	48	C
81	13	58	A
81	13	59	A
81	13	74	C
81	13	75	C
81	13	76	A
81	11	10	G
81	11	17	C
81	11	18	G
81	11	20	A
81	11	22	G
81	11	47	U
81	11	48	C
81	11	58	A
81	11	59	A
81	11	74	C
81	11	75	C
81	11	76	A

All (249) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	5	42	A
1	5	64	A
1	5	125	C
1	5	134	G
1	5	143	C
1	5	217	C
1	5	218	A
1	5	219	G
1	5	224	U
1	5	226	G
1	5	245	C
1	5	265	C
1	5	266	C

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Mol	Chain	Res	Type
1	5	275	C
1	5	294	G
1	5	296	A
1	5	385	A
1	5	406	C
1	5	408	A
1	5	412	G
1	5	449	C
1	5	453	G
1	5	466	A
1	5	480	C
1	5	482	G
1	5	484	U
1	5	485	C
1	5	492	U
1	5	499	G
1	5	504	G
1	5	649	A
1	5	696	C
1	5	913	U
1	5	916	C
1	5	924	C
1	5	930	G
1	5	934	C
1	5	935(A)	G
1	5	955	G
1	5	959	G
1	5	960	A
1	5	966	A
1	5	969	C
1	5	1064	G
1	5	1072	C
1	5	1211	G
1	5	1214	C
1	5	1236	C
1	5	1237	C
1	5	1238	A
1	5	1249	C
1	5	1271	G
1	5	1283	G
1	5	1291	G
1	5	1324	A

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Mol	Chain	Res	Type
1	5	1358	G
1	5	1370	G
1	5	1377	G
1	5	1380	G
1	5	1387	A
1	5	1440	U
1	5	1445	U
1	5	1455	G
1	5	1477	C
1	5	1483	C
1	5	1484	G
1	5	1485	C
1	5	1502	G
1	5	1590	C
1	5	1613	A
1	5	1633	G
1	5	1678	C
1	5	1804	A
1	5	1818	G
1	5	1834	U
1	5	1835	G
1	5	1836	G
1	5	1898	C
1	5	1918	U
1	5	1921	C
1	5	1977	C
1	5	1979	A
1	5	1992	U
1	5	2001	G
1	5	2010	A
1	5	2016	C
1	5	2023	C
1	5	2025	A
1	5	2088	A
1	5	2089	G
1	5	2093	G
1	5	2094	C
1	5	2100	G
1	5	2106	G
1	5	2110	G
1	5	2266	C
1	5	2267	U

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Mol	Chain	Res	Type
1	5	2278	G
1	5	2313	A
1	5	2421	G
1	5	2428	A
1	5	2474	G
1	5	2502	A
1	5	2506	G
1	5	2513	A
1	5	2529	A
1	5	2546	G
1	5	2553	A
1	5	2586	G
1	5	2587	A
1	5	2696	A
1	5	2710	C
1	5	2761	U
1	5	2763	U
1	5	2790	U
1	5	2794	C
1	5	3603	G
1	5	3614	G
1	5	3625	G
1	5	3648	A
1	5	3672	G
1	5	3673	C
1	5	3786	U
1	5	3810	C
1	5	3876	A
1	5	3878	C
1	5	3888	G
1	5	3904	G
1	5	3949	A
1	5	3959	U
1	5	3966	A
1	5	3968	U
1	5	3972	A
1	5	4041	C
1	5	4046	A
1	5	4047	A
1	5	4075	U
1	5	4076	G
1	5	4115	G

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Mol	Chain	Res	Type
1	5	4119	C
1	5	4121	G
1	5	4124	G
1	5	4170	A
1	5	4204	C
1	5	4232	U
1	5	4254	G
1	5	4291	G
1	5	4305	G
1	5	4348	A
1	5	4395	U
1	5	4448	G
1	5	4452	U
1	5	4488	A
1	5	4527	G
1	5	4548	A
1	5	4572	U
1	5	4626	A
1	5	4635	A
1	5	4699	U
1	5	4719	G
1	5	4876	A
1	5	4884	G
1	5	4909	A
1	5	4921	C
1	5	4925	U
1	5	4936	G
1	5	4947	U
1	5	4965	U
1	5	5013	C
2	7	53	U
3	8	2	G
3	8	51	U
3	8	94	G
3	8	124	U
3	8	125	C
4	9	24	C
4	9	72	C
4	9	110	U
4	9	126	G
4	9	160	U
4	9	180	G

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Mol	Chain	Res	Type
4	9	182	C
4	9	448	A
4	9	465	A
4	9	516	A
4	9	532	C
4	9	553	U
4	9	555	A
4	9	561	A
4	9	587	A
4	9	591	U
4	9	606	G
4	9	608	C
4	9	620	G
4	9	627	U
4	9	752	G
4	9	821	G
4	9	858	A
4	9	867	G
4	9	869	A
4	9	870	A
4	9	872	A
4	9	874	G
4	9	875	A
4	9	919	A
4	9	1016	U
4	9	1061	U
4	9	1115	U
4	9	1117	C
4	9	1118	C
4	9	1137	U
4	9	1138	C
4	9	1153	C
4	9	1165	G
4	9	1215	C
4	9	1253	A
4	9	1274	G
4	9	1308	U
4	9	1313	A
4	9	1378	A
4	9	1395	C
4	9	1396	A
4	9	1428	G

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Mol	Chain	Res	Type
4	9	1463	U
4	9	1476	A
4	9	1489	A
4	9	1508	A
4	9	1519	U
4	9	1637	A
4	9	1638	G
4	9	1664	A
4	9	1679	A
4	9	1757	G
4	9	1837	G
4	9	1863	A
4	9	1868	U
79	10	19	U
80	12	19	G
80	12	44	A
80	12	75	C
81	13	16	G
81	13	19	G
81	13	58	A
81	13	74	C
81	11	10	G
81	11	16	G
81	11	19	G
81	11	58	A
81	11	74	C

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 15 ligands modelled in this entry, 8 are monoatomic - leaving 7 for Mogul analysis.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
84	SPD	5	5101	-	9,9,9	0.33	0	8,8,8	0.53	0
89	MET	13	102	81	6,7,8	0.48	0	2,7,9	0.20	0
88	ATP	13	101	81	28,33,33	0.67	0	34,52,52	0.76	1 (2%)
86	GTP	12	101	80	29,34,34	1.28	1 (3%)	35,54,54	1.59	7 (20%)
88	ATP	11	101	81	28,33,33	0.70	0	34,52,52	0.71	1 (2%)
90	GCP	jj	700	91	27,34,34	2.28	4 (14%)	35,54,54	2.49	10 (28%)
87	PHE	12	102	80	10,11,12	0.43	0	8,13,15	0.24	0

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
84	SPD	5	5101	-	-	1/7/7/7	-
89	MET	13	102	81	-	0/5/6/8	-
88	ATP	13	101	81	-	3/18/38/38	0/3/3/3
86	GTP	12	101	80	-	1/18/38/38	0/3/3/3
88	ATP	11	101	81	-	4/18/38/38	0/3/3/3
90	GCP	jj	700	91	-	1/15/38/38	0/3/3/3
87	PHE	12	102	80	-	0/5/6/8	0/1/1/1

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
90	jj	700	GCP	PB-O3A	9.40	1.68	1.58
86	12	101	GTP	C5-C6	-4.51	1.38	1.47
90	jj	700	GCP	C6-N1	4.28	1.40	1.33
90	jj	700	GCP	C8-N7	-2.52	1.30	1.34
90	jj	700	GCP	PB-O2B	-2.23	1.50	1.56

All (19) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
90	jj	700	GCP	C5-C6-N1	-9.63	110.54	123.42

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
90	jj	700	GCP	C2-N1-C6	7.23	126.02	115.96
86	12	101	GTP	O4'-C1'-N9	4.35	114.51	108.75
86	12	101	GTP	C8-N7-C5	3.53	108.56	102.55
90	jj	700	GCP	PB-O3A-PA	-3.16	122.07	132.37
90	jj	700	GCP	N3-C2-N1	-3.04	123.34	127.21
90	jj	700	GCP	O2B-PB-C3B	3.02	119.23	106.73
86	12	101	GTP	C5-C6-N1	2.96	119.72	114.07
86	12	101	GTP	C2-N1-C6	-2.84	119.91	125.11
90	jj	700	GCP	O1G-PG-C3B	-2.58	105.75	111.37
90	jj	700	GCP	O2B-PB-O1B	2.39	117.74	109.95
86	12	101	GTP	O6-C6-C5	-2.37	119.62	124.32
86	12	101	GTP	O2A-PA-O3A	2.35	113.63	107.27
88	13	101	ATP	C5-C6-N6	2.32	123.84	120.31
88	11	101	ATP	C5-C6-N6	2.32	123.84	120.31
90	jj	700	GCP	O3G-PG-O2G	2.22	114.29	107.96
90	jj	700	GCP	C2-N3-C4	-2.14	113.18	115.48
90	jj	700	GCP	O2A-PA-O3A	2.06	112.84	107.27
86	12	101	GTP	O2B-PB-O3A	2.03	112.77	107.27

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
90	jj	700	GCP	PG-C3B-PB-O1B
88	13	101	ATP	O4'-C4'-C5'-O5'
88	13	101	ATP	C3'-C4'-C5'-O5'
88	11	101	ATP	O4'-C4'-C5'-O5'
88	11	101	ATP	C3'-C4'-C5'-O5'
86	12	101	GTP	PB-O3B-PG-O1G
88	13	101	ATP	C4'-C5'-O5'-PA
88	11	101	ATP	PB-O3A-PA-O2A
84	5	5101	SPD	N1-C2-C3-C4
88	11	101	ATP	PB-O3A-PA-O1A

There are no ring outliers.

6 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
84	5	5101	SPD	3	0
89	13	102	MET	2	0
86	12	101	GTP	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
88	11	101	ATP	1	0
90	jj	700	GCP	5	0
87	12	102	PHE	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

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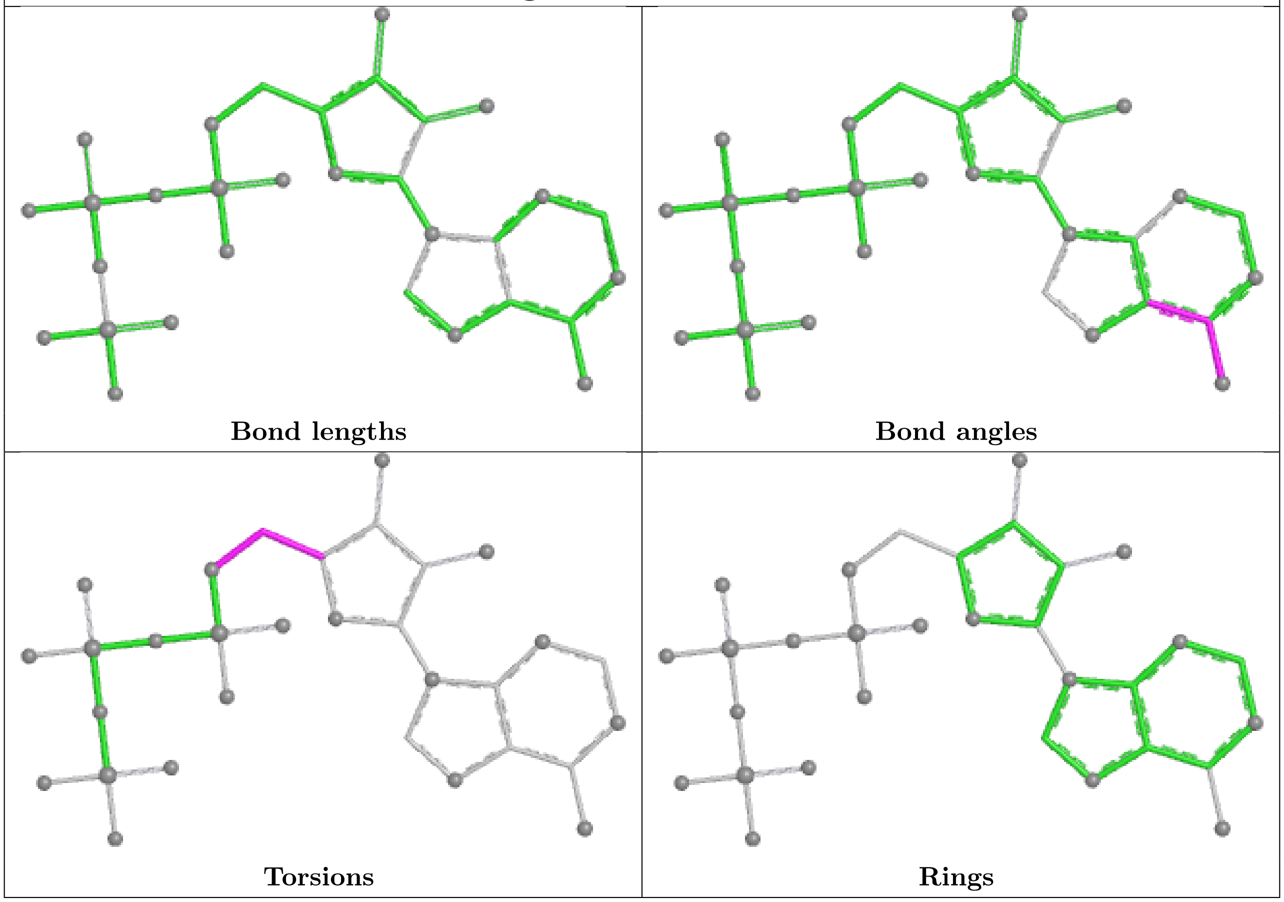
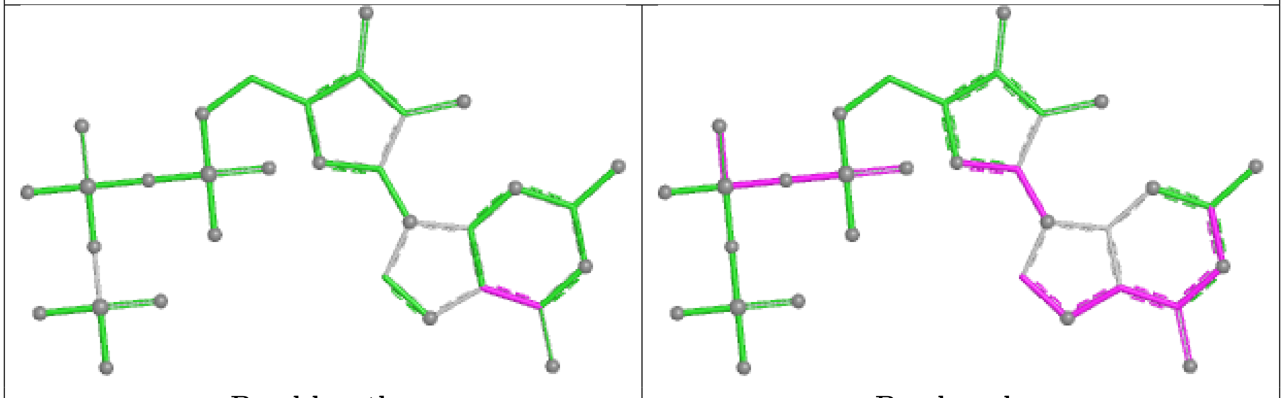
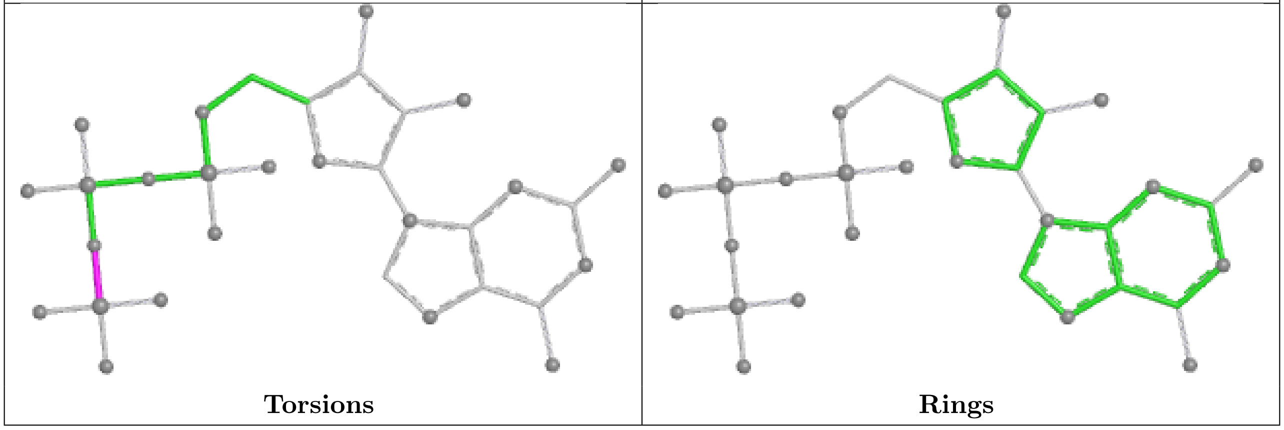


Ligand GTP 12 101



Bond lengths

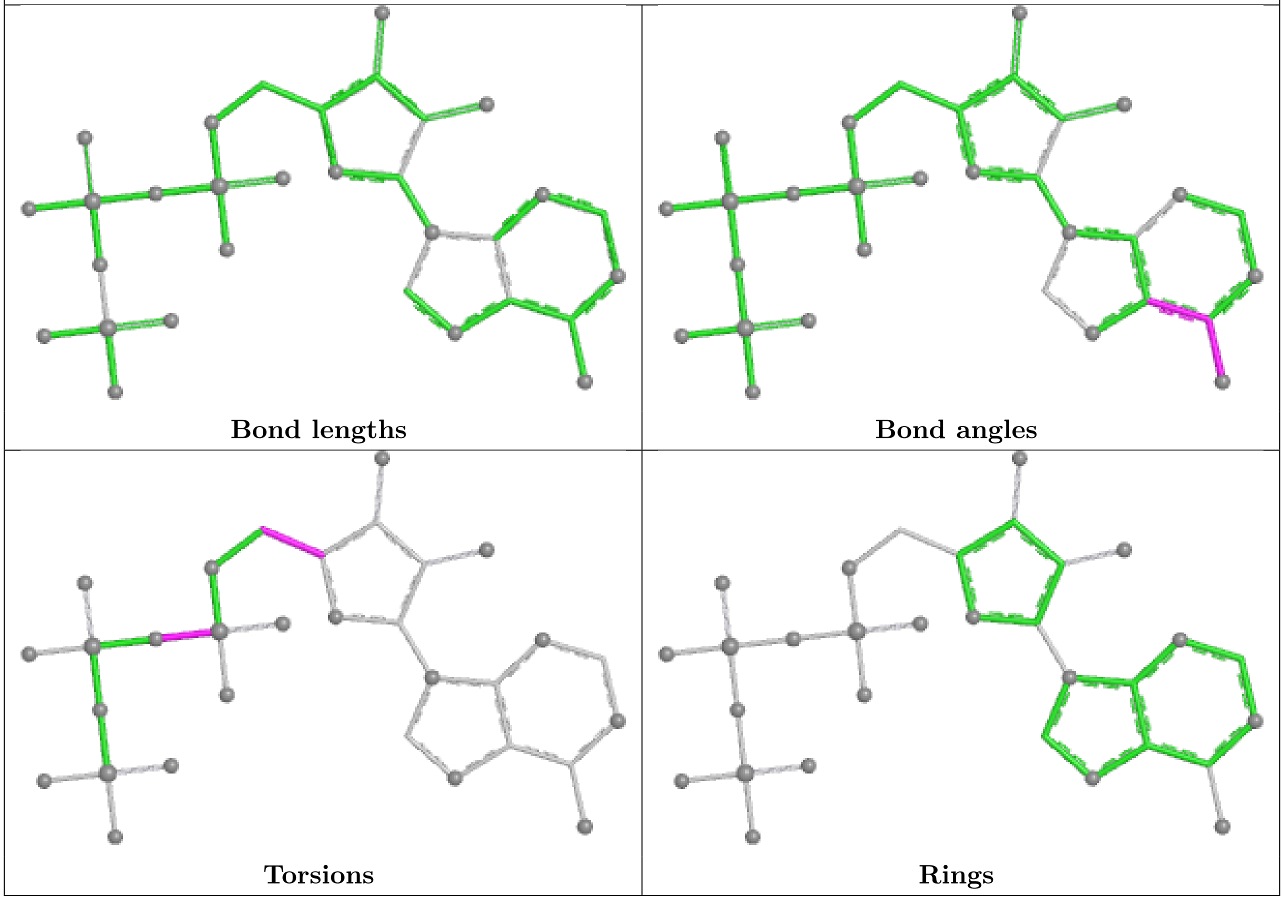
Bond angles



Torsions

Rings

Ligand ATP 11 101



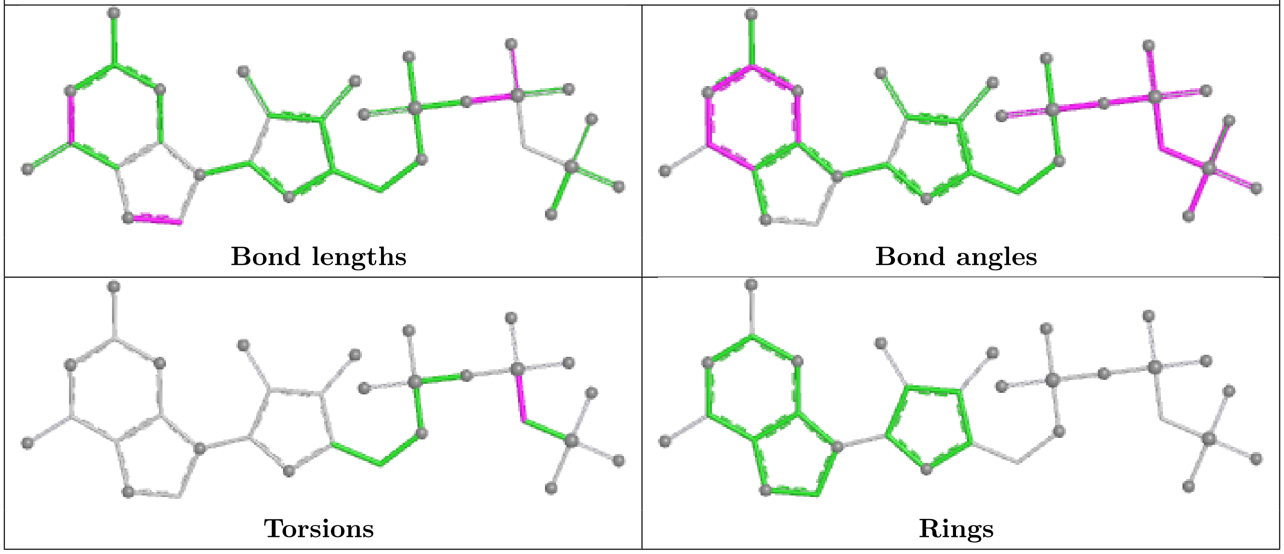
Bond lengths

Bond angles

Torsions

Rings

Ligand GCP jj 700



Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	5	23

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	5	2113:G	O3’	2258:C	P	40.87
1	5	1252:C	O3’	1271:G	P	35.01
1	5	1219:G	O3’	1233:G	P	21.62
1	5	1406(C):G	O3’	1411:C	P	19.27
1	5	4101:C	O3’	4107:G	P	17.36
1	5	523:C	O3’	638:G	P	17.18
1	5	990:C	O3’	1064:G	P	17.03
1	5	3976:C	O3’	4035:G	P	16.30
1	5	4777:C	O3’	4859:C	P	16.27
1	5	4138:C	O3’	4146:G	P	16.19
1	5	760:G	O3’	904:C	P	15.90
1	5	1696:C	O3’	1720:C	P	15.29
1	5	5022:U	O3’	5028:G	P	14.82
1	5	1364:U	O3’	1368:A	P	14.57
1	5	2901:G	O3’	3597:G	P	13.07
1	5	182:G	O3’	189:G	P	11.57
1	5	1180:C	O3’	1183:C	P	10.18
1	5	512:U	O3’	515:C	P	9.75
1	5	4729:A	O3’	4735:G	P	9.08
1	5	500:G	O3’	504:G	P	6.43
1	5	4740:G	O3’	4743:G	P	6.11
1	5	1100:U	O3’	1168:G	P	4.80
1	5	4899:G	O3’	4902:C	P	3.19

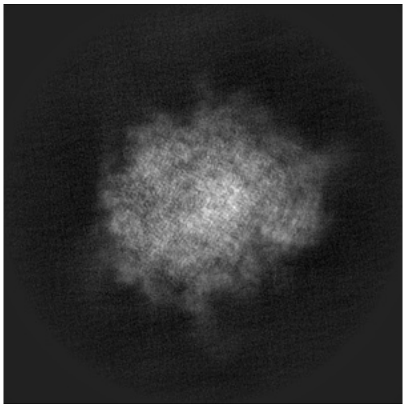
6 Map visualisation

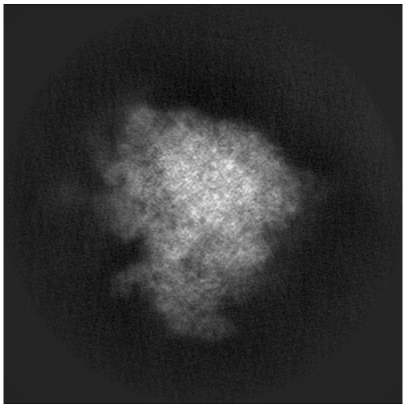
This section contains visualisations of the EMDB entry EMD-73308. These allow visual inspection of the internal detail of the map and identification of artifacts.

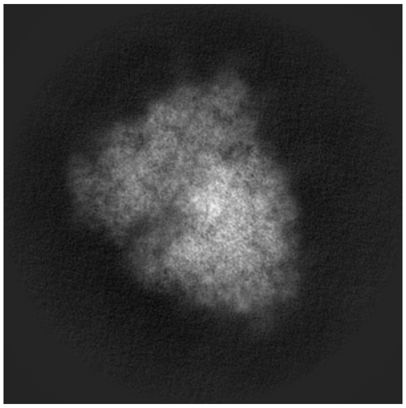
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

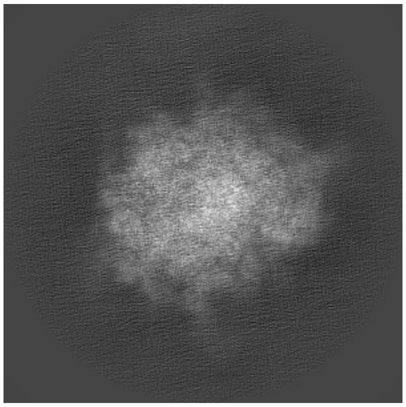
6.1.1 Primary map

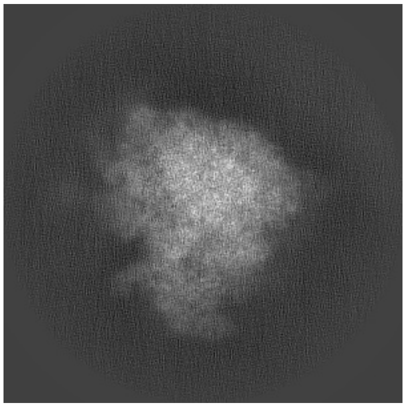

X

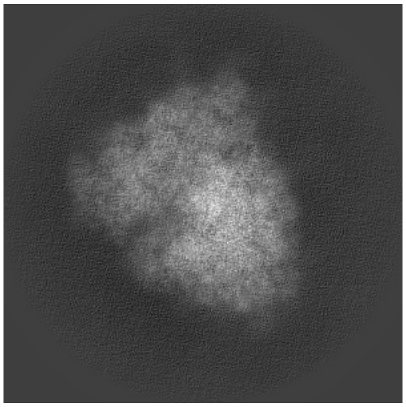

Y


Z

6.1.2 Raw map


X

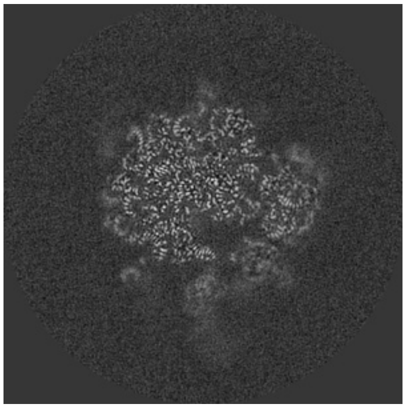

Y

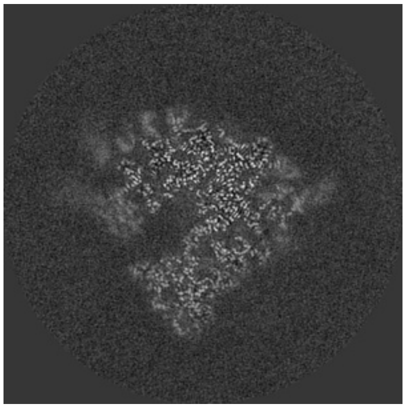

Z

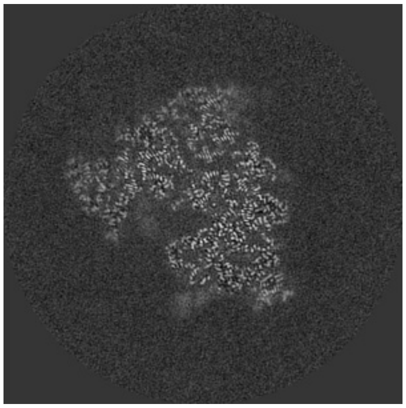
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

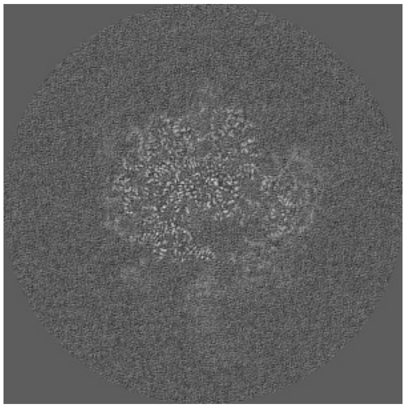
6.2.1 Primary map

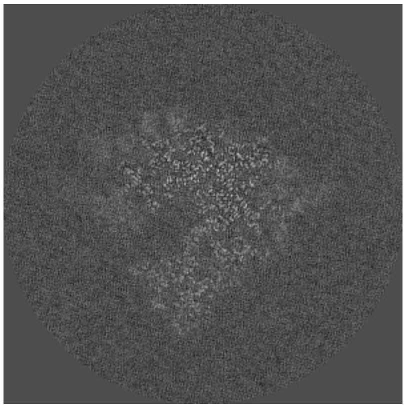

X Index: 200

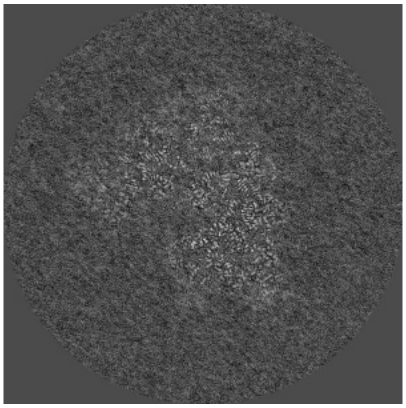

Y Index: 200


Z Index: 200

6.2.2 Raw map


X Index: 200

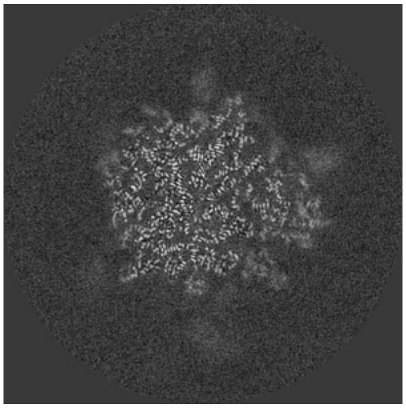

Y Index: 200


Z Index: 200

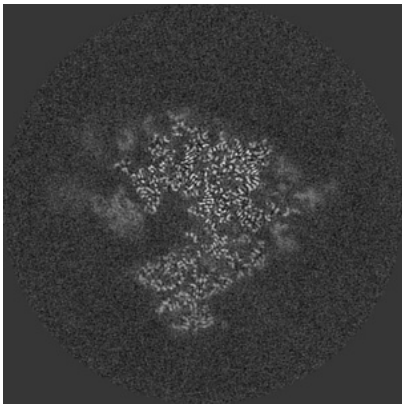
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

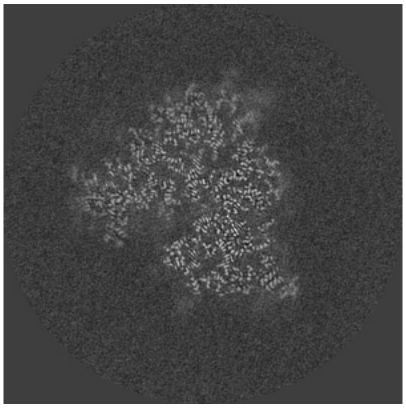
6.3.1 Primary map



X Index: 215

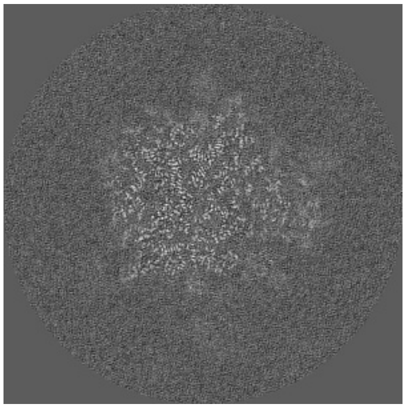


Y Index: 205

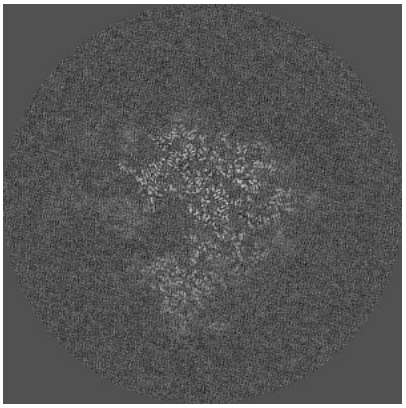


Z Index: 192

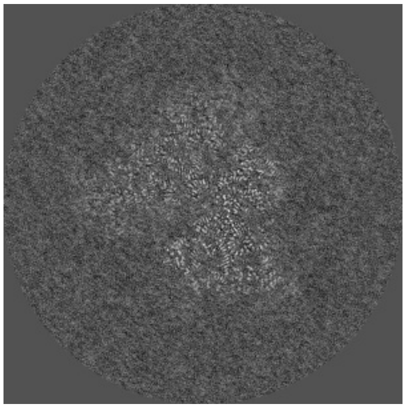
6.3.2 Raw map



X Index: 215



Y Index: 209

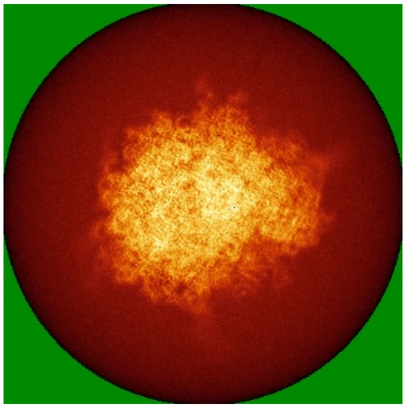


Z Index: 192

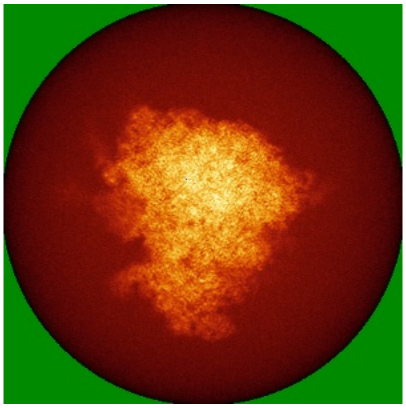
The images above show the largest variance slices of the map in three orthogonal directions.

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

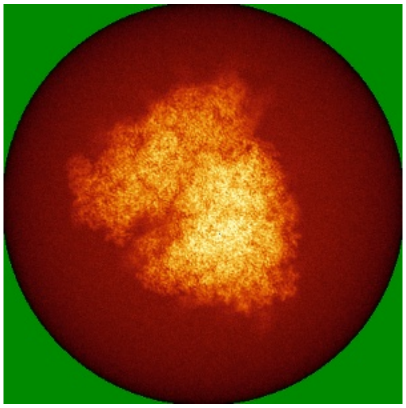
6.4.1 Primary map



X

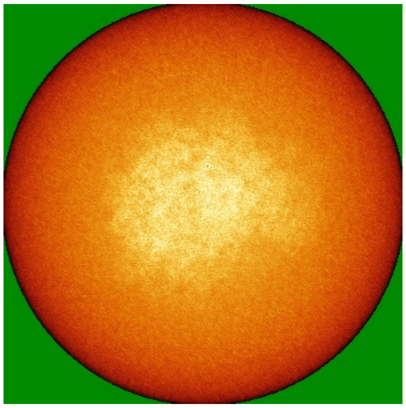


Y

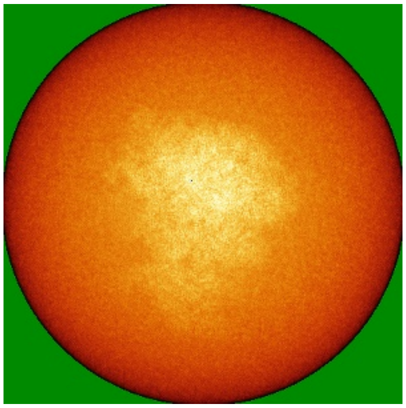


Z

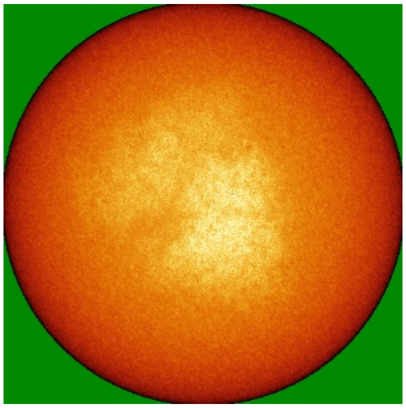
6.4.2 Raw map



X



Y



Z

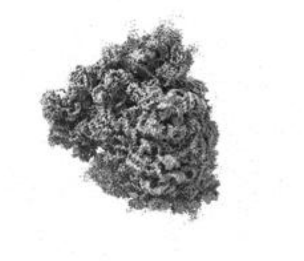
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X

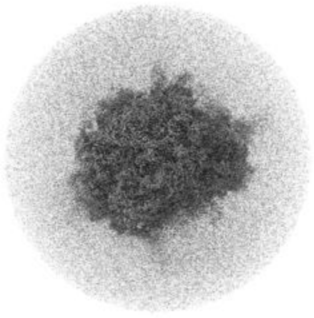
Y



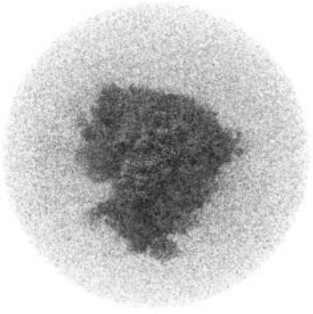
Z

The images above show the 3D surface view of the map at the recommended contour level 0.015. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

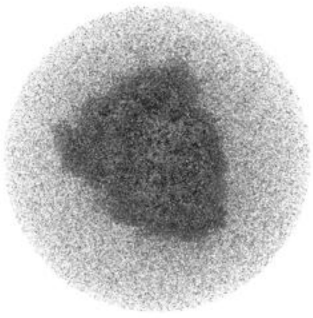
6.5.2 Raw map



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.

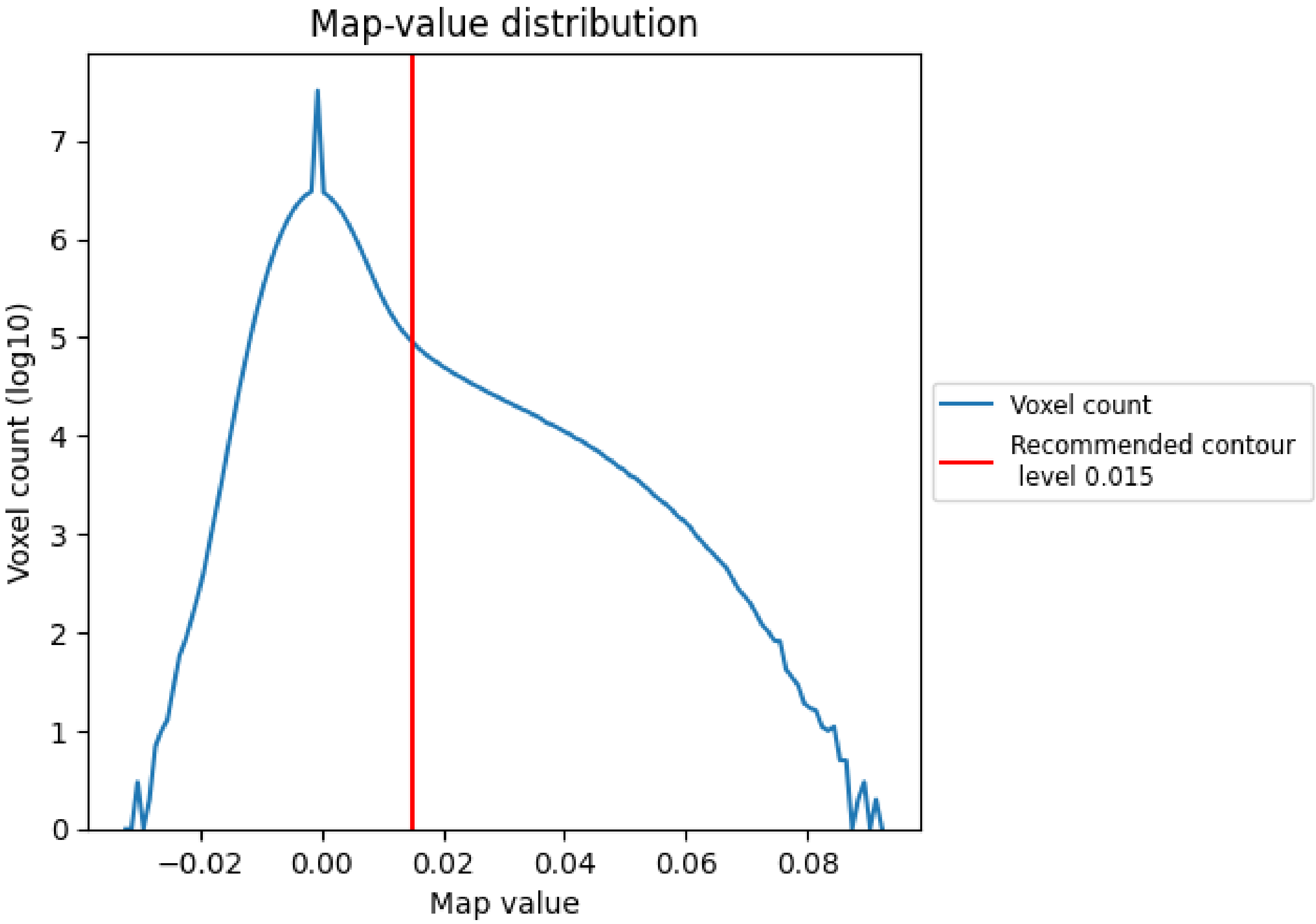
6.6 Mask visualisation ⓘ

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

7 Map analysis ⓘ

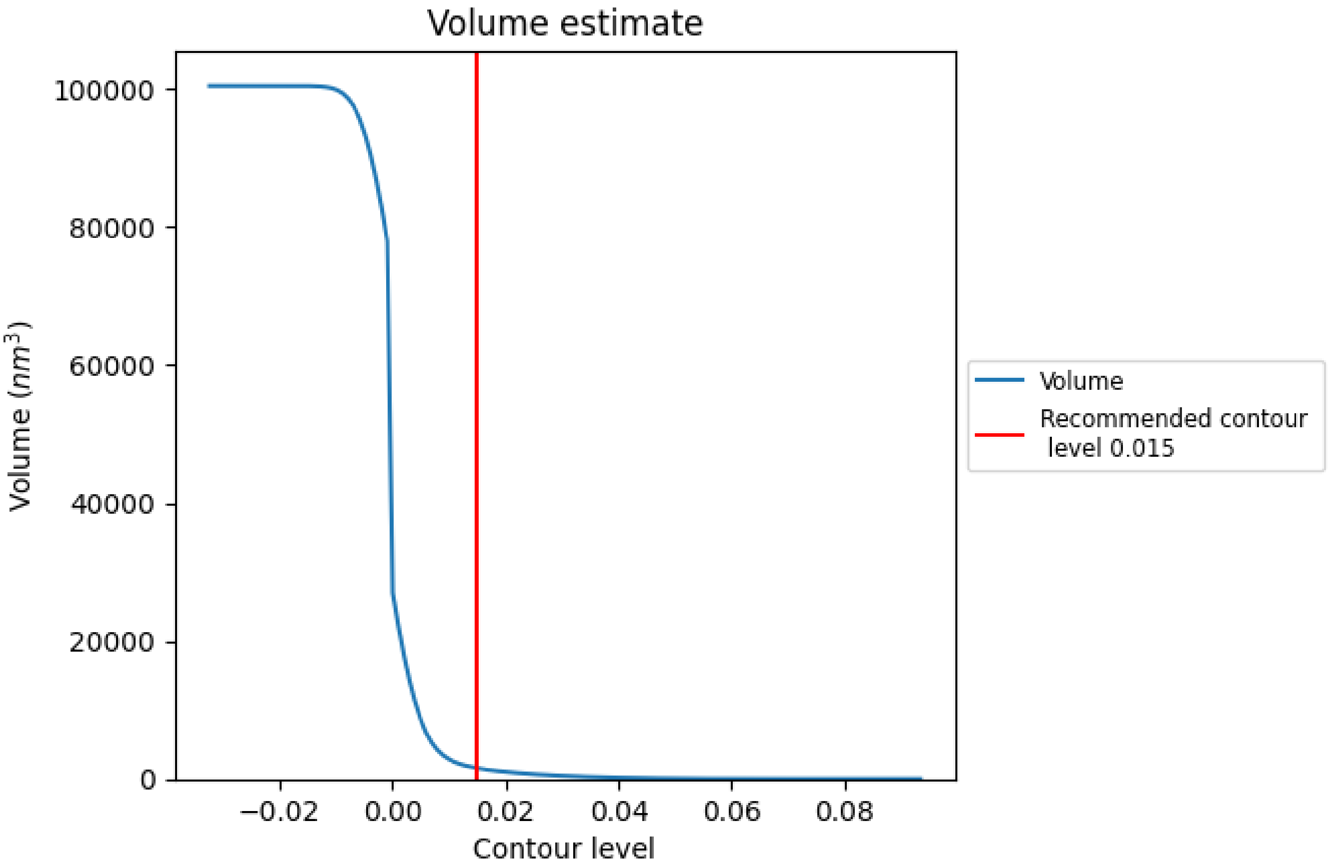
This section contains the results of statistical analysis of the map.

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.

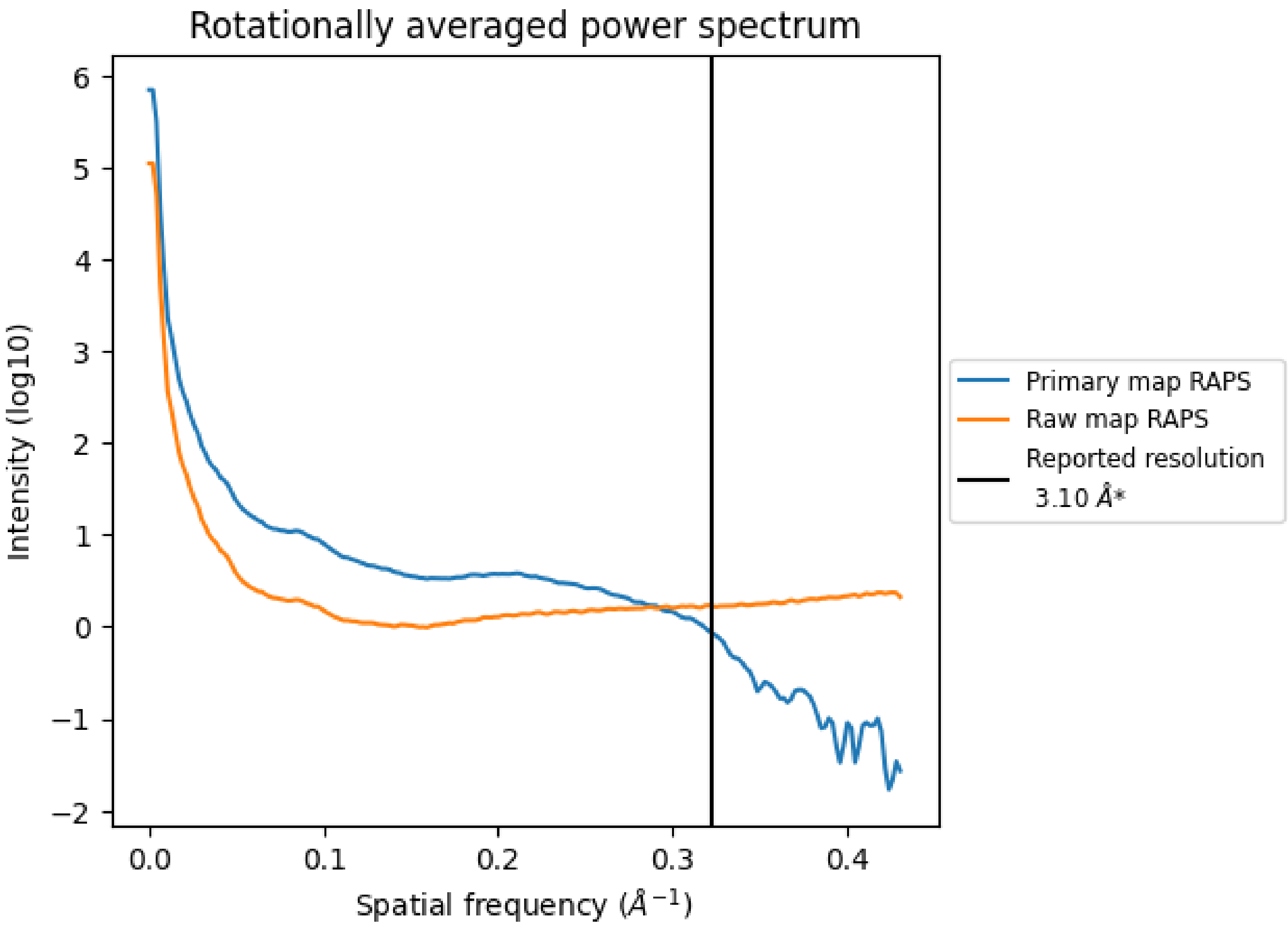
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 1575 nm^3; this corresponds to an approximate mass of 1422 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 ⓘ

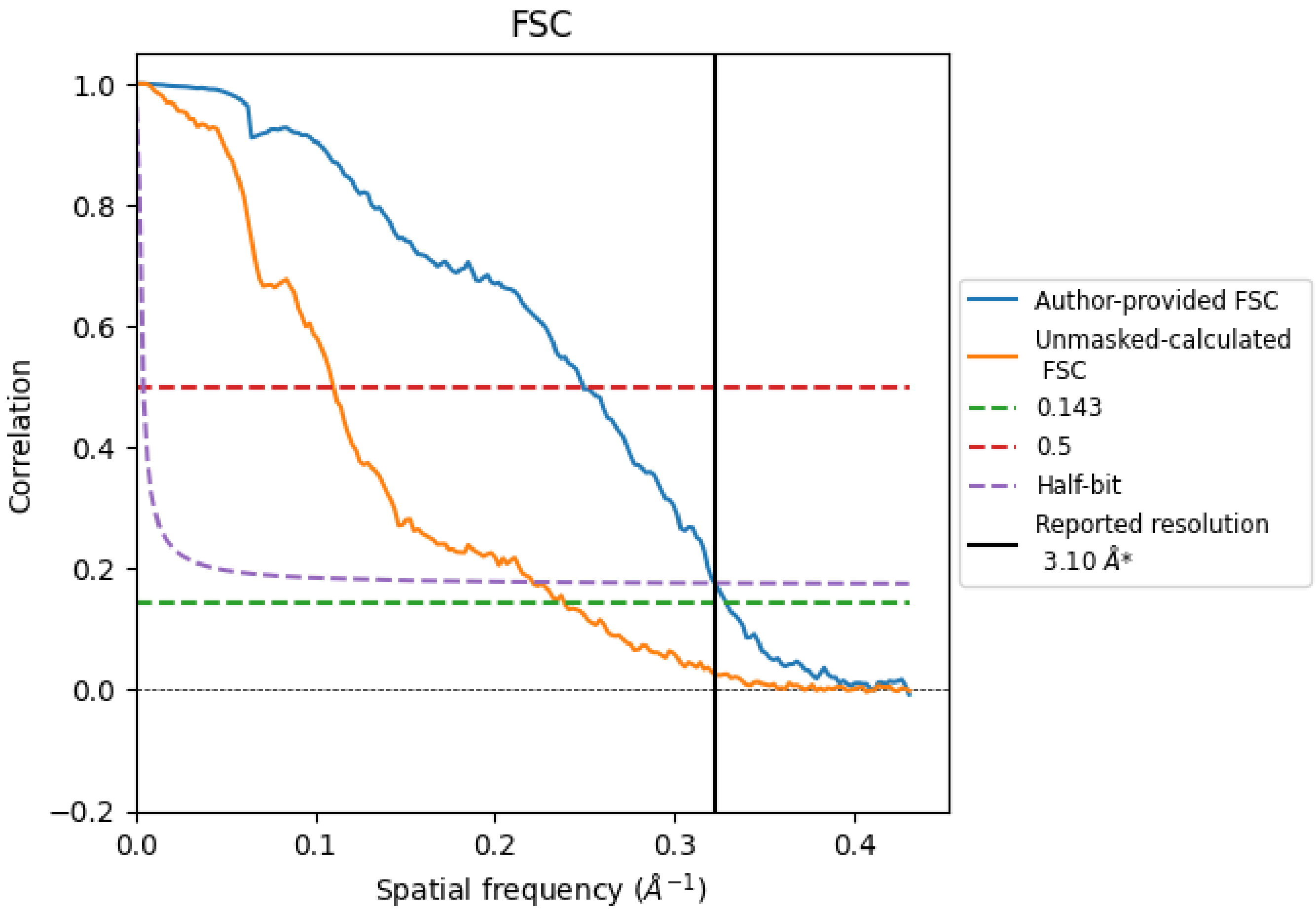


*Reported resolution corresponds to spatial frequency of 0.323 $Å^{-1}$

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 0.323 $Å^{-1}$

8.2 Resolution estimates

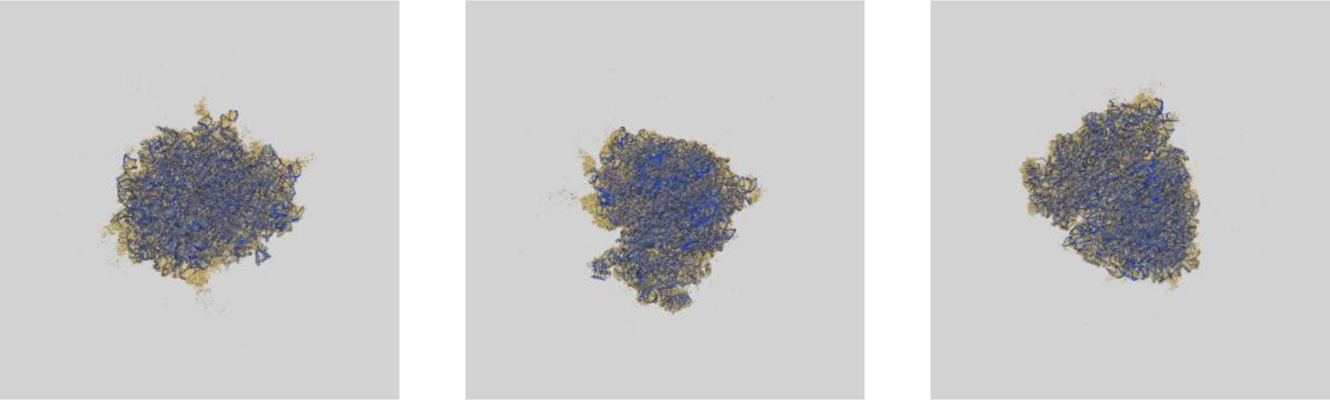
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.05	4.02	3.10
Unmasked-calculated*	4.19	9.09	4.53

*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 4.19 differs from the reported value 3.1 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-73308 and PDB model 9YPT. Per-residue inclusion information can be found in section 3 on page 31.

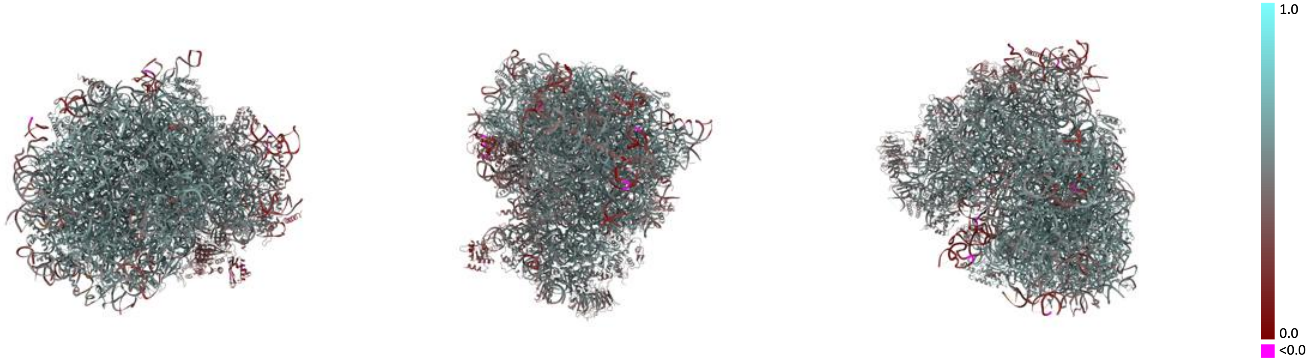
9.1 Map-model overlay ⓘ



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.015 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

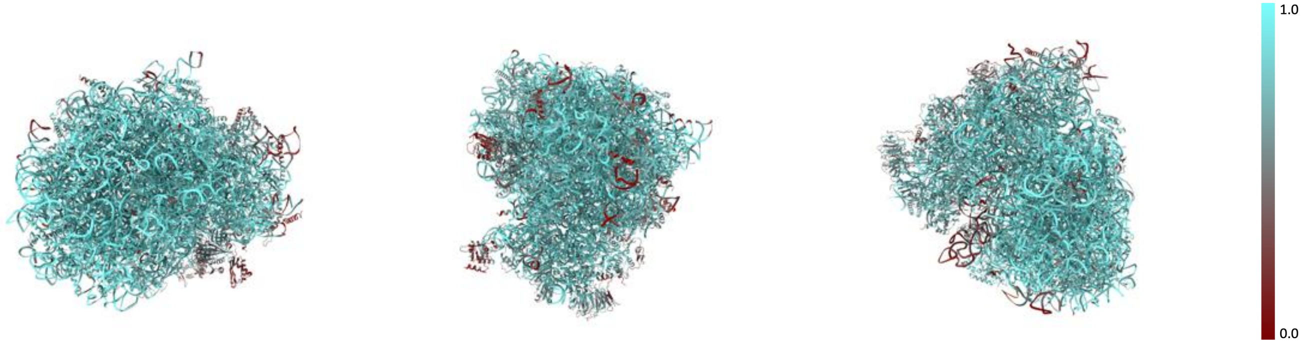
9.2 Q-score mapped to coordinate model (i)



X Y Z

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

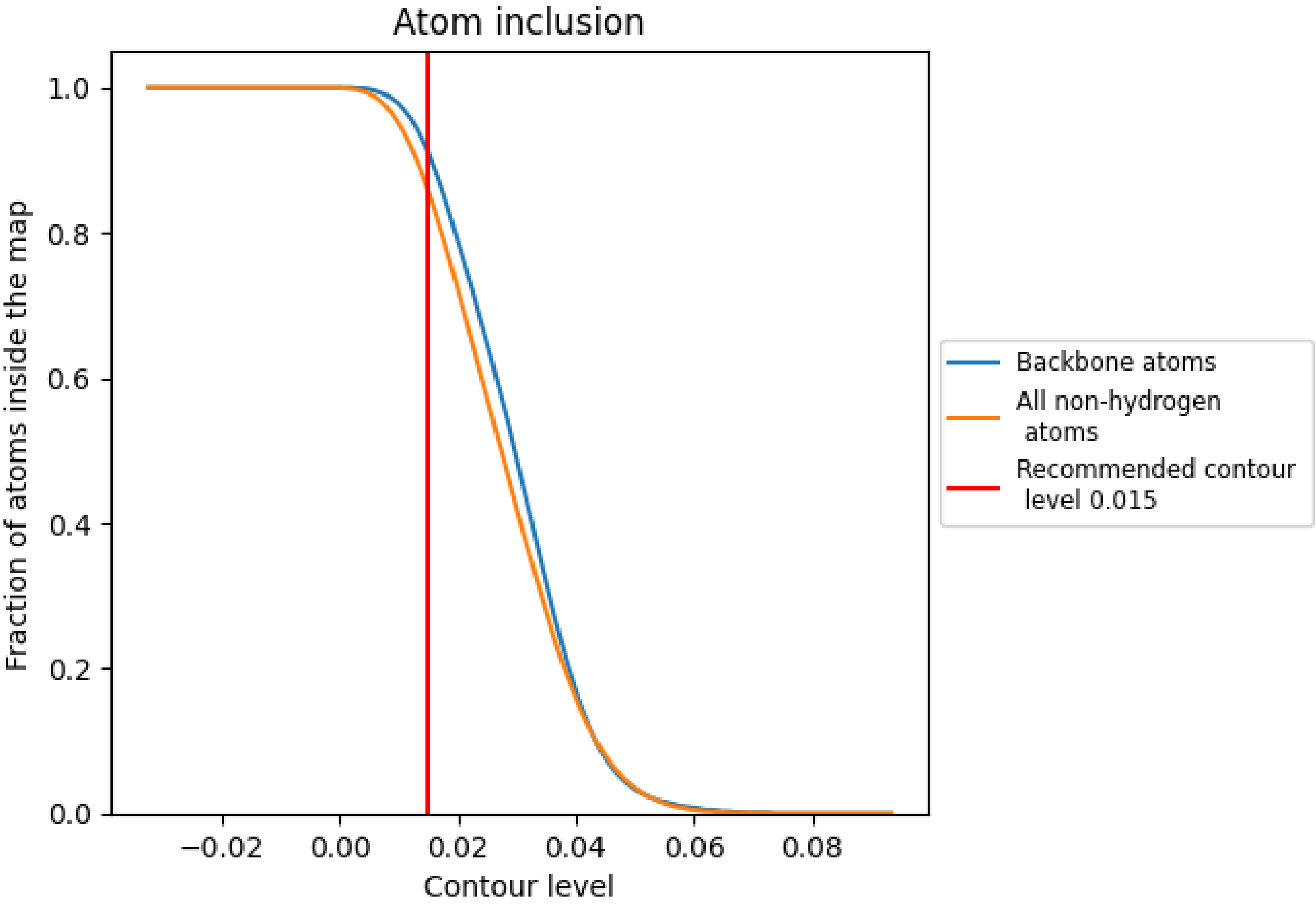
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.015).

9.4 Atom inclusion ⓘ



At the recommended contour level, 91% of all backbone atoms, 86% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.015) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8580	0.5280
10	0.9660	0.5590
11	0.3220	0.2250
12	0.8170	0.3460
13	0.6570	0.4300
5	0.9240	0.5420
7	0.9910	0.5950
8	0.9530	0.5630
9	0.9070	0.5200
A	0.9260	0.5990
AA	0.7510	0.5170
B	0.8780	0.5830
BB	0.8060	0.5400
C	0.8930	0.5810
CC	0.8110	0.5410
D	0.8410	0.5530
DD	0.7130	0.4960
E	0.8280	0.5400
EE	0.7790	0.5020
FF	0.7440	0.5020
G	0.7760	0.5240
GG	0.6590	0.4430
H	0.8230	0.5580
HH	0.5850	0.4690
I	0.8670	0.5740
II	0.7910	0.5240
J	0.7900	0.5200
JJ	0.7290	0.4590
K	0.9160	0.5860
KK	0.7090	0.4880
L	0.8260	0.5490
LL	0.8190	0.5430
M	0.8640	0.5530
MM	0.2740	0.2920
N	0.9460	0.5960

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Chain	Atom inclusion	Q-score
NN	0.8370	0.5550
O	0.9030	0.5800
OO	0.8450	0.5500
P	0.8850	0.5870
PP	0.6840	0.4750
Q	0.9010	0.5870
QQ	0.7780	0.5140
R	0.8160	0.5460
RR	0.6100	0.4750
S	0.8980	0.5870
SS	0.7230	0.4900
T	0.8680	0.5710
TT	0.7670	0.4820
U	0.7530	0.5030
UU	0.6650	0.4630
V	0.8960	0.5920
VV	0.7820	0.5220
W	0.6340	0.4570
WW	0.8530	0.5600
X	0.8520	0.5580
XX	0.8530	0.5660
Y	0.8310	0.5610
YY	0.7210	0.4820
Z	0.8460	0.5530
ZZ	0.6530	0.4650
a	0.9150	0.5880
aa	0.8360	0.5440
b	0.8020	0.5360
bb	0.7420	0.5200
c	0.8450	0.5480
cc	0.7360	0.5180
d	0.8310	0.5580
dd	0.8690	0.5380
e	0.9190	0.5960
ee	0.6640	0.4580
f	0.9390	0.6010
ff	0.4110	0.3400
g	0.8690	0.5670
gg	0.6070	0.4410
h	0.8440	0.5520
i	0.8190	0.5410
j	0.9610	0.6020

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Continued from previous page...

Chain	Atom inclusion	Q-score
jj	■ 0.4980	■ 0.3460
k	■ 0.7110	■ 0.5100
l	■ 0.9090	■ 0.5750
m	■ 0.8460	■ 0.5710
n	■ 0.8990	■ 0.5790
o	■ 0.8630	■ 0.5740
p	■ 0.8780	■ 0.5820
r	■ 0.9060	■ 0.5710