



Full wwPDB EM Validation Report ⓘ

Mar 8, 2026 – 08:26 PM UTC

PDB ID : 7SYP / pdb_00007syp
EMDB ID : EMD-25536
Title : Structure of the wt IRES and 40S ribosome binary complex, open conformation. Structure 10(wt)
Authors : Brown, Z.P.; Abaeva, I.S.; De, S.; Hellen, C.U.T.; Pestova, T.V.; Frank, J.
Deposited on : 2021-11-25
Resolution : 4.00 Å(reported)
Based on initial models : 5FLX, 6D9J

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev132
MolProbity : 4-5-2 with Phenix2.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
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) : 2.49

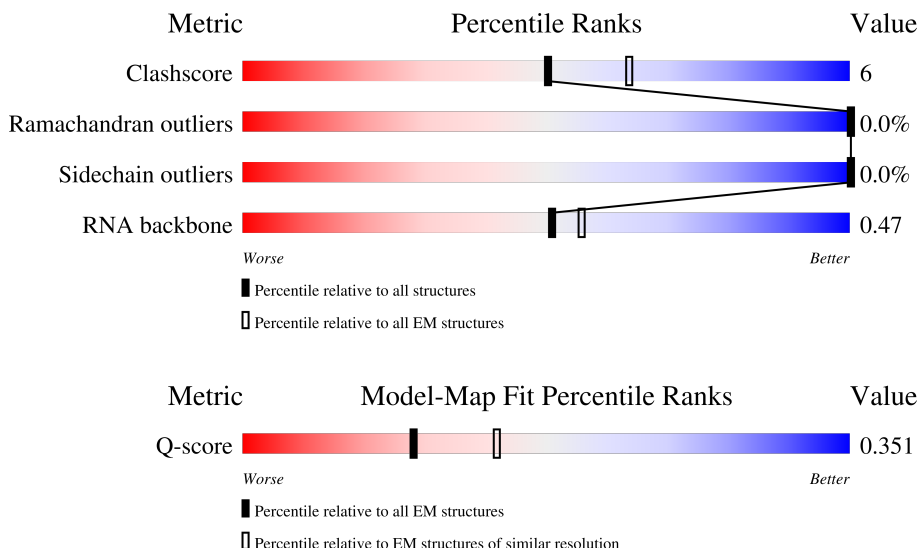
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.00 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	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	7587 (3.50 - 4.50)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	2	1870	
2	B	295	
3	C	264	

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Mol	Chain	Length	Quality of chain
4	D	221	
5	E	281	
6	F	263	
7	G	204	
8	H	249	
9	I	432	
10	J	208	
11	K	194	
12	L	149	
13	M	158	
14	N	132	
15	O	151	
16	P	168	
17	Q	145	
18	R	172	
19	S	135	
20	T	152	
21	U	145	
22	V	119	
23	W	83	
24	X	130	
25	Y	143	
26	Z	131	
27	a	124	
28	b	101	

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Mol	Chain	Length	Quality of chain
29	c	84	
30	d	69	
31	e	56	
32	f	133	
33	g	188	
34	h	317	
35	n	25	
36	7	12	
37	z	400	

2 Entry composition

There are 38 unique types of molecules in this entry. The entry contains 80436 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 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	2	1680	Total	C	N	O	P	0	0
			35864	16009	6439	11737	1679		

- Molecule 2 is a protein called uS2 (SA).

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

There is a discrepancy between the modelled and reference sequences:

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

- Molecule 3 is a protein called eS1.

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

- Molecule 4 is a protein called uS5.

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

- Molecule 5 is a protein called uS3.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	228	Total	C	N	O	S	0	0
			1768	1126	318	316	8		

- Molecule 6 is a protein called eS4 (S4 X isoform).

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

There are 4 discrepancies between the modelled and reference sequences:

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

- Molecule 7 is a protein called uS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	191	Total	C	N	O	S	0	0
			1509	943	286	273	7		

- Molecule 8 is a protein called eS6.

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

- Molecule 9 is a protein called eS7.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	185	Total	C	N	O	S	0	0
			1488	952	271	264	1		

- Molecule 10 is a protein called eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	206	Total	C	N	O	S	0	0
			1686	1058	332	291	5		

There is a discrepancy between the modelled and reference sequences:

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

- Molecule 11 is a protein called uS4.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	185	Total	C	N	O	S	0	0
			1525	969	306	248	2		

- Molecule 12 is a protein called eS10.

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

- Molecule 13 is a protein called uS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	151	Total	C	N	O	S	0	0
			1233	785	231	211	6		

- Molecule 14 is a protein called eS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	117	Total	C	N	O	S	0	0
			908	570	161	169	8		

- Molecule 15 is a protein called uS15.

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

- Molecule 16 is a protein called uS11.

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

- Molecule 17 is a protein called uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	Q	120	Total	C	N	O	S	0	0
			997	635	187	168	7		

- Molecule 18 is a protein called uS9.

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

- Molecule 19 is a protein called eS17.

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

- Molecule 20 is a protein called uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	T	144	Total	C	N	O	S	0	0
			1190	746	241	202	1		

- Molecule 21 is a protein called eS19.

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

- Molecule 22 is a protein called uS10.

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

- Molecule 23 is a protein called eS21.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	W	83	Total	C	N	O	S	0	0
			636	393	117	121	5		

There are 7 discrepancies between the modelled and reference sequences:

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

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Chain	Residue	Modelled	Actual	Comment	Reference
W	81	LYS	GLN	conflict	UNP G1TM82

- Molecule 24 is a protein called uS8.

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

- Molecule 25 is a protein called uS12.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Y	141	Total	C	N	O	S	0	0
			1098	693	219	183	3		

- Molecule 26 is a protein called eS24.

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

- Molecule 27 is a protein called eS25.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	a	77	Total	C	N	O	S	0	0
			614	393	114	106	1		

- Molecule 28 is a protein called eS26.

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	28	ARG	CYS	conflict	UNP G1TFE8
b	56	ALA	VAL	conflict	UNP G1TFE8

- Molecule 29 is a protein called eS27.

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

- Molecule 30 is a protein called eS28.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	d	67	Total	C	N	O	S	0	0
			530	321	108	99	2		

- Molecule 31 is a protein called uS14.

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

- Molecule 32 is a protein called eS30.

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

- Molecule 33 is a protein called eS31.

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

- Molecule 34 is a protein called Receptor for Activated C Kinase 1 (RACK1).

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

- Molecule 35 is a protein called eL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	n	25	Total	C	N	O	S	0	0
			239	145	64	27	3		

- Molecule 36 is a RNA chain called HCV IRES partially loaded mRNA portion.

Mol	Chain	Residues	Atoms				AltConf	Trace
36	7	12	Total	C	O	P	0	0
			144	60	72	12		

- Molecule 37 is a RNA chain called HCV IRES.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	z	249	Total	C	N	O	P	0	0
			5318	2369	951	1749	249		

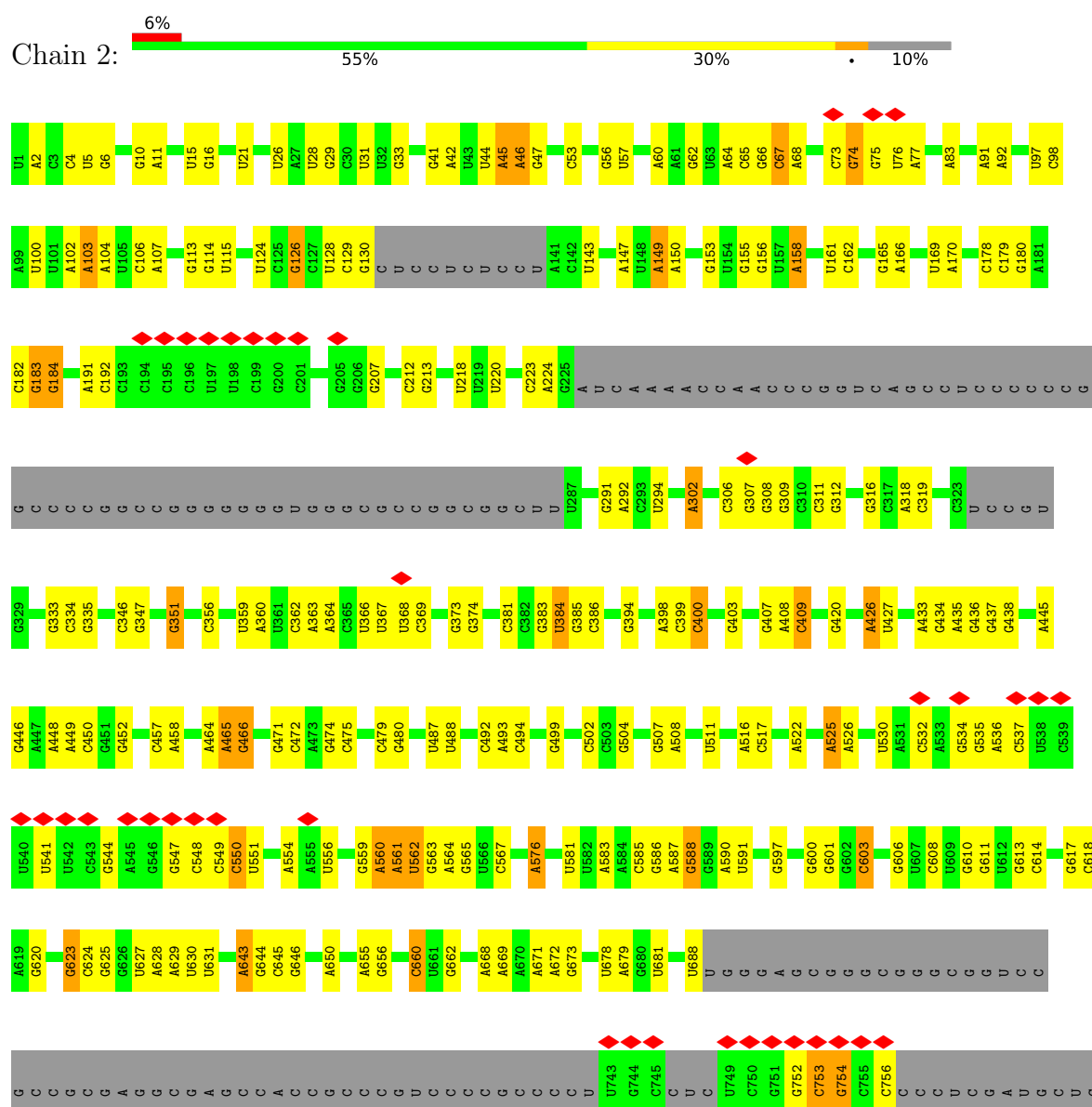
- Molecule 38 is ZINC ION (CCD ID: ZN) (formula: Zn).

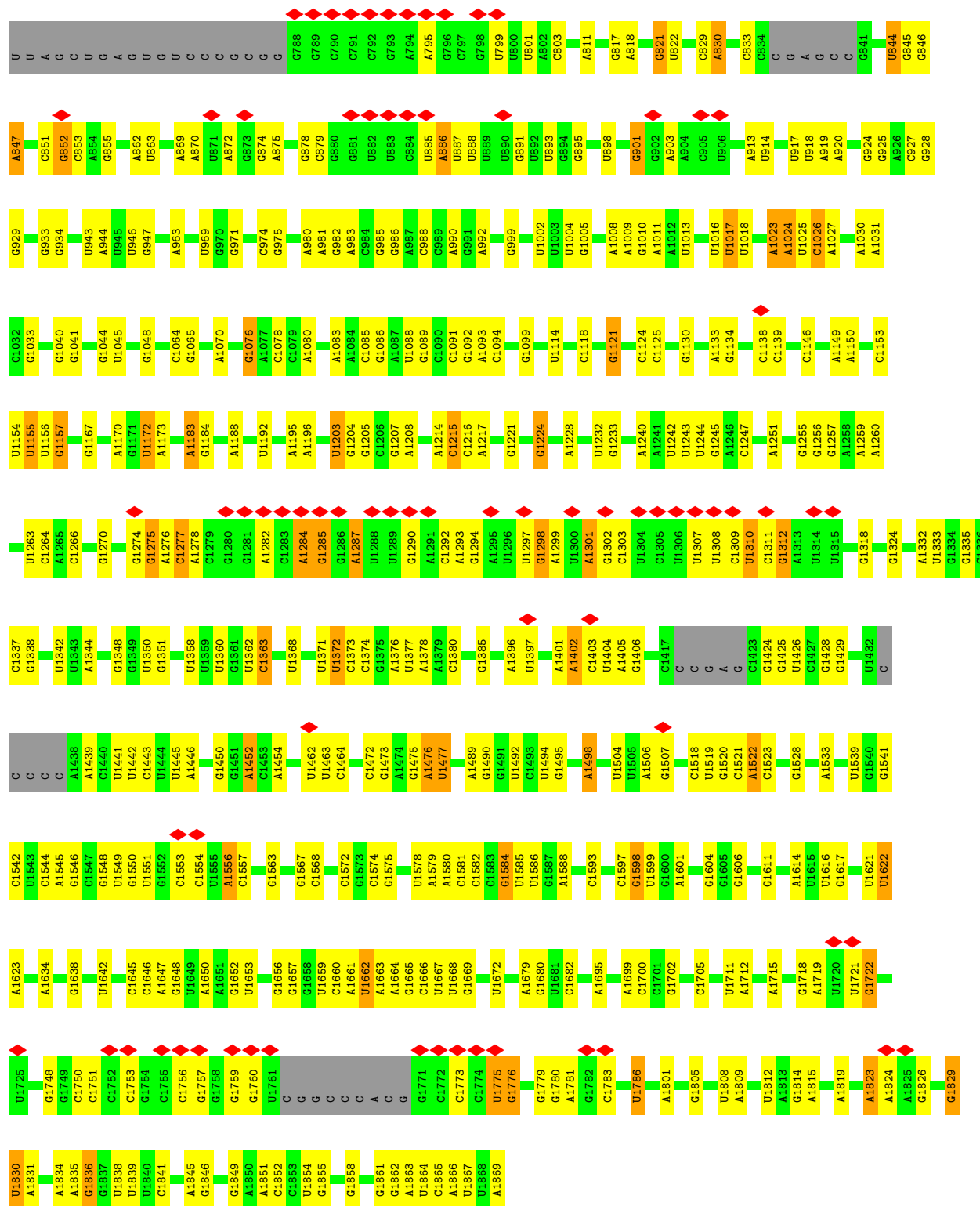
Mol	Chain	Residues	Atoms		AltConf
38	b	1	Total	Zn	0
			1	1	
38	g	1	Total	Zn	0
			1	1	

3 Residue-property plots [i](#)

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

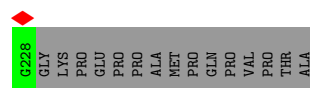
• Molecule 1: 18S rRNA



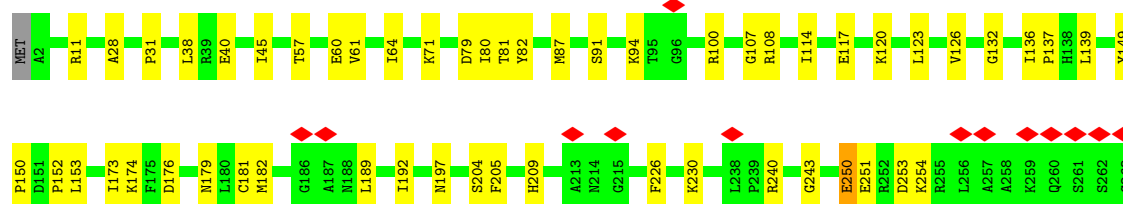
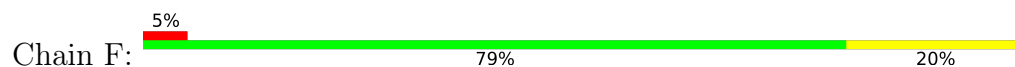


• Molecule 2: uS2 (SA)

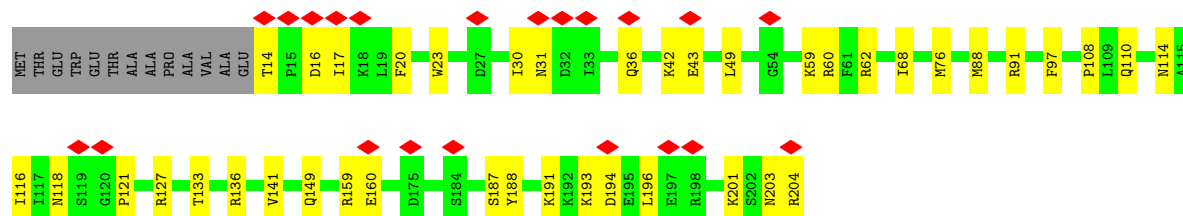
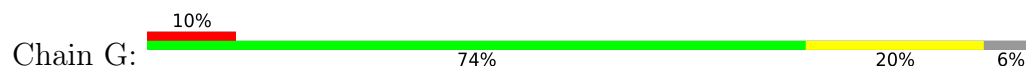




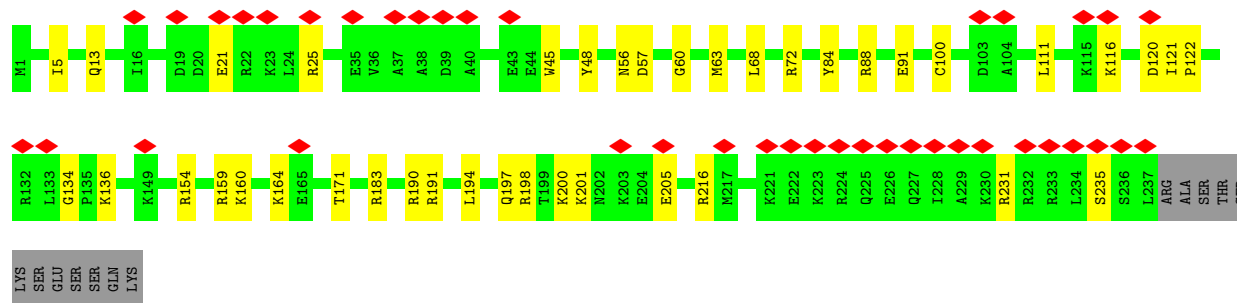
• Molecule 6: eS4 (S4 X isoform)



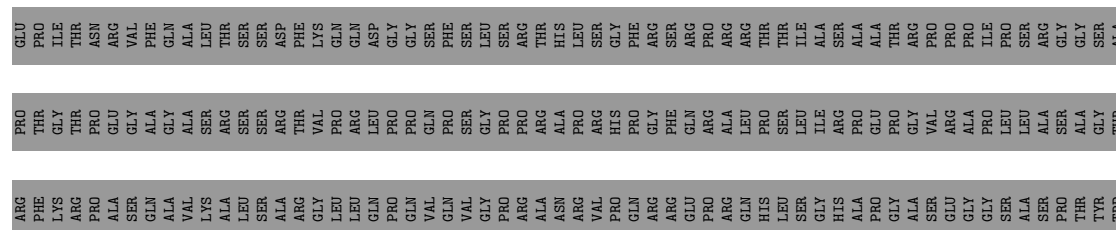
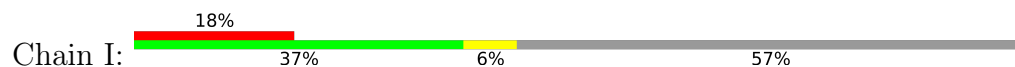
• Molecule 7: uS7

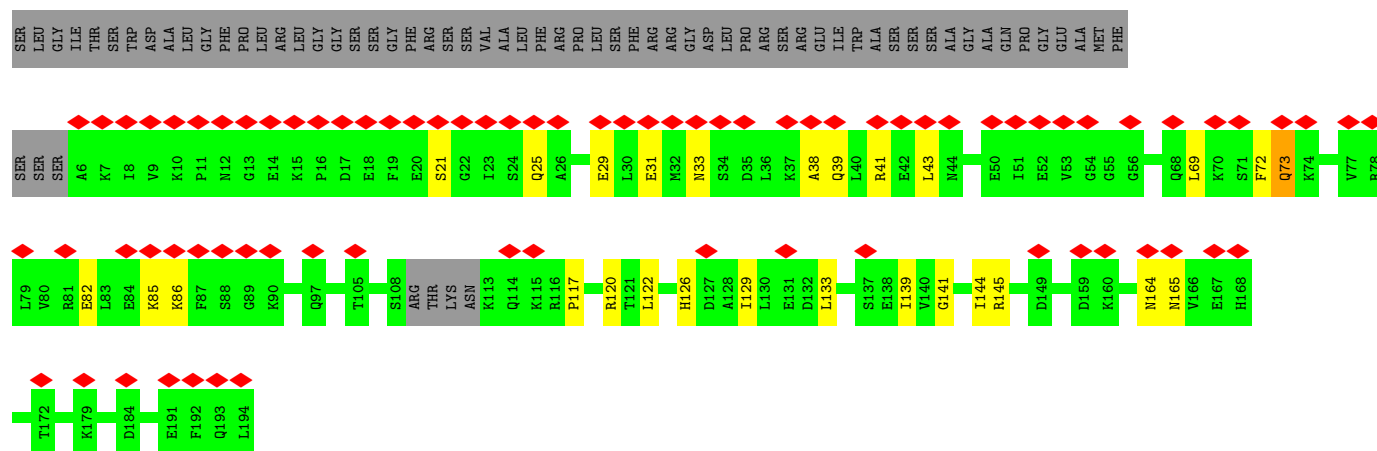


• Molecule 8: eS6

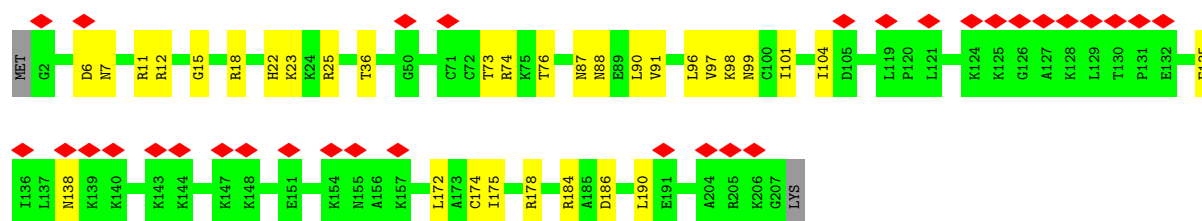
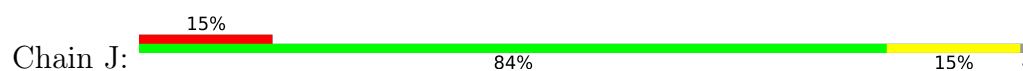


• Molecule 9: eS7

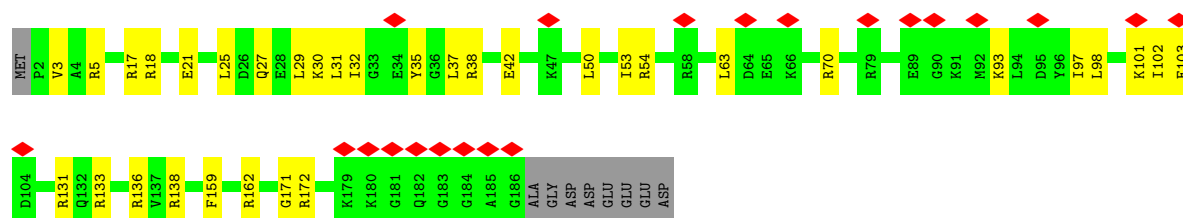
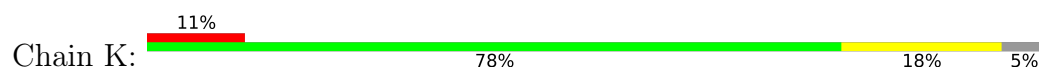




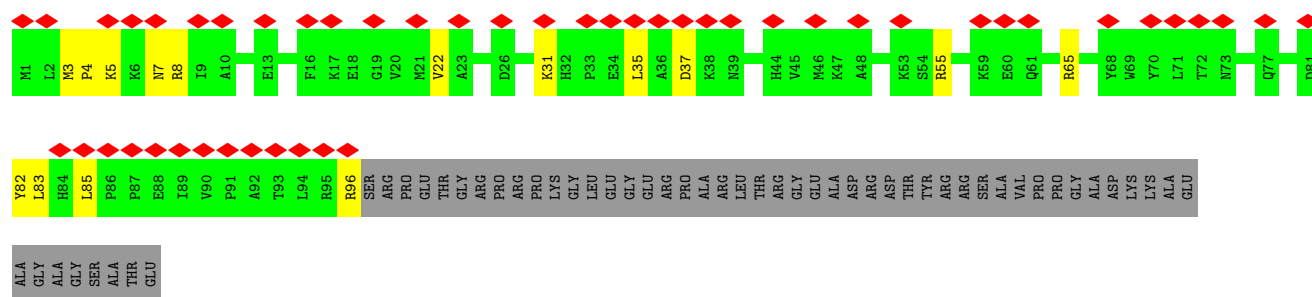
• Molecule 10: eS8



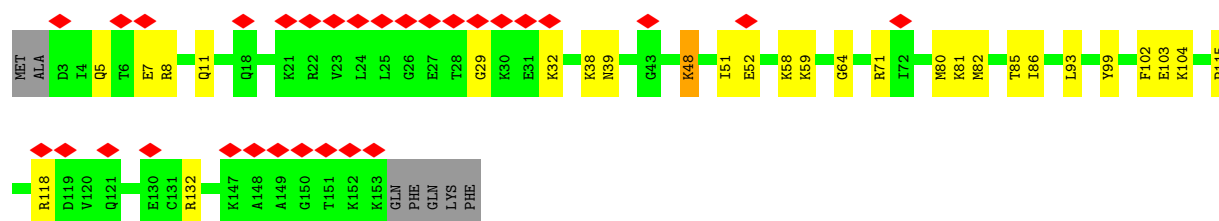
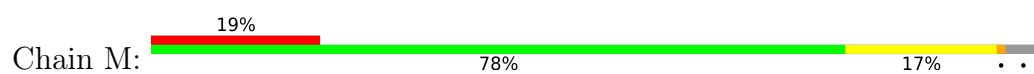
• Molecule 11: uS4



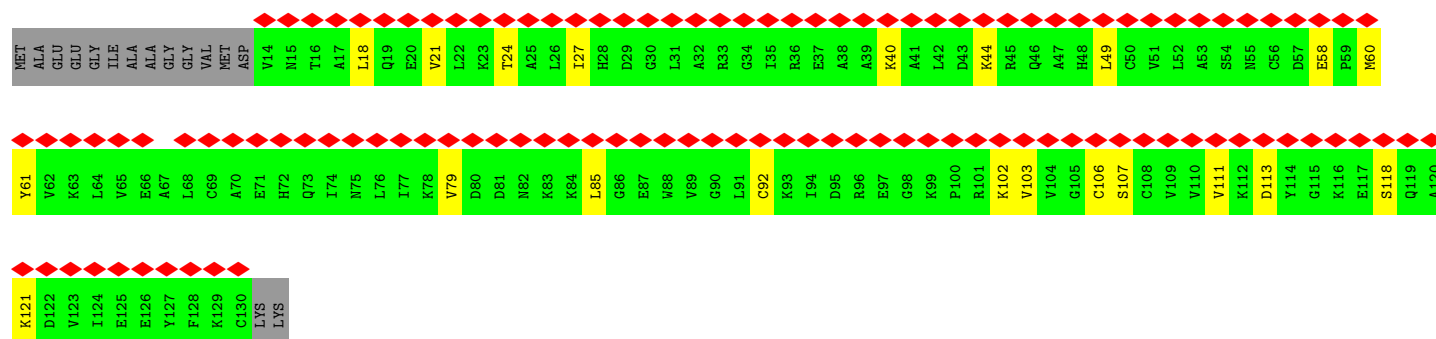
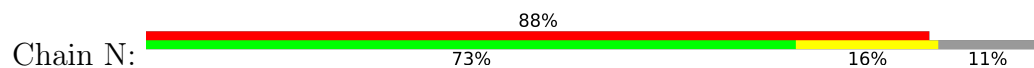
• Molecule 12: eS10



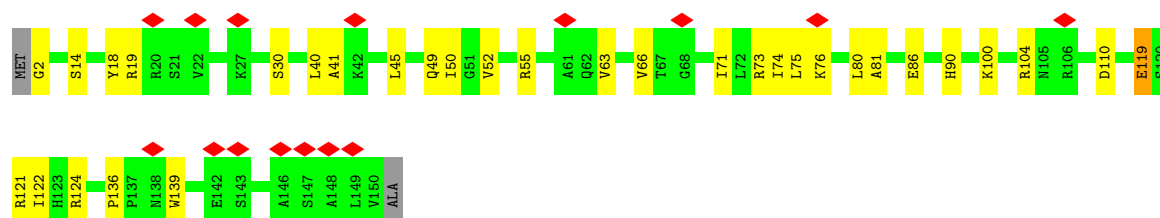
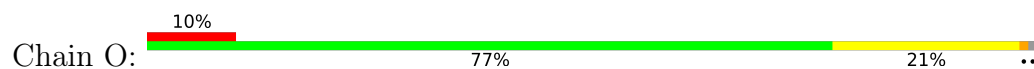
• Molecule 13: uS17



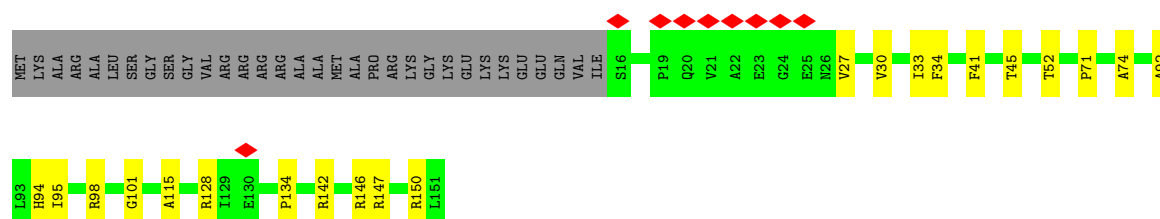
• Molecule 14: eS12



• Molecule 15: uS15

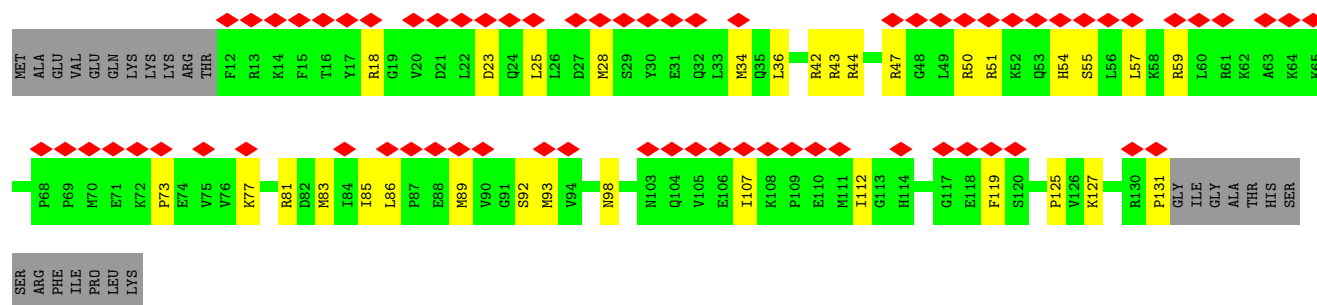


• Molecule 16: uS11

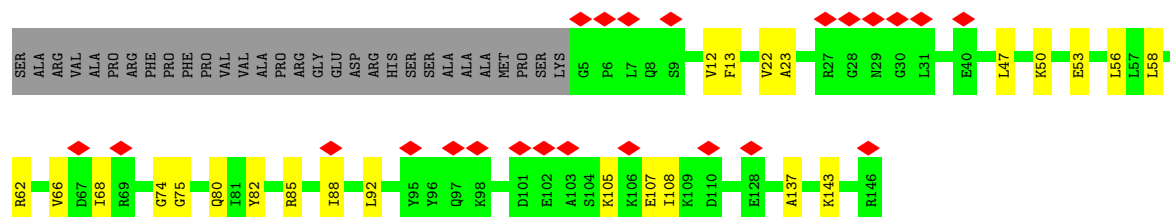


• Molecule 17: uS19

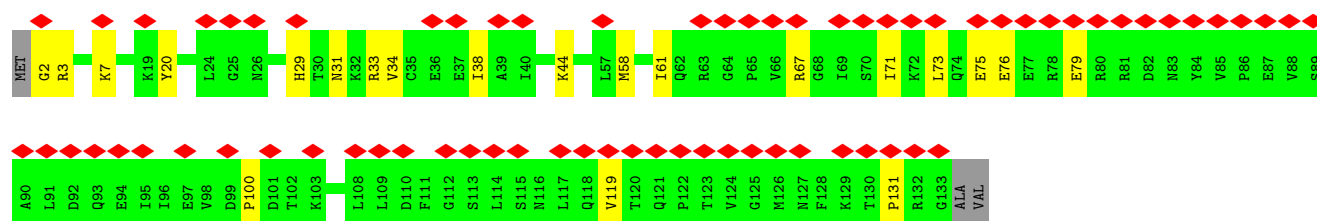
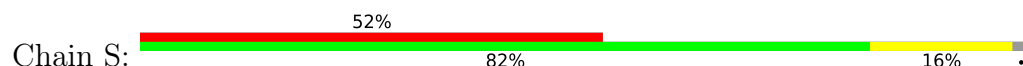




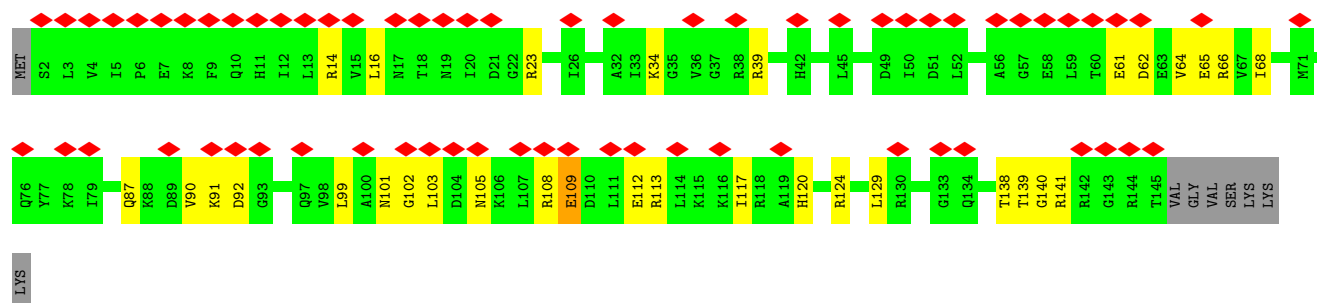
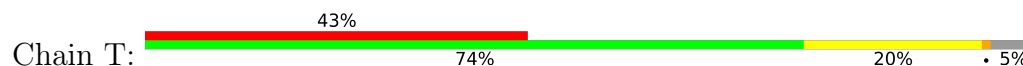
• Molecule 18: uS9



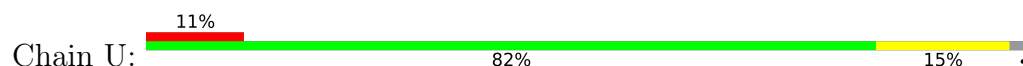
• Molecule 19: eS17

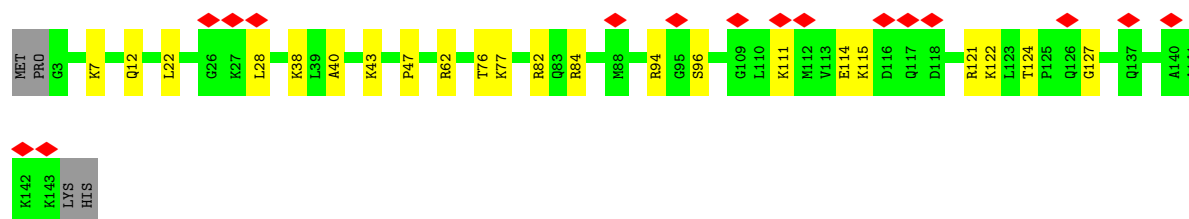


• Molecule 20: uS13

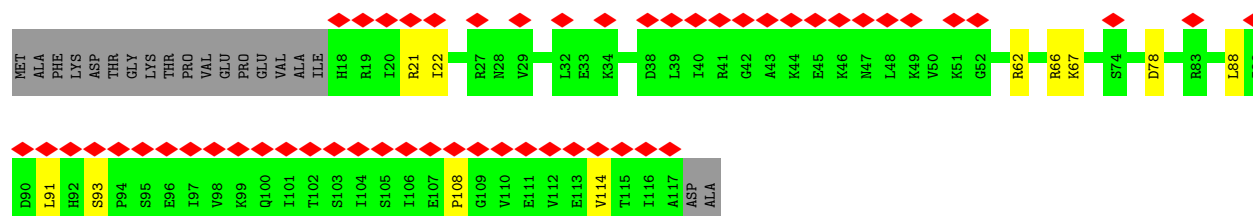
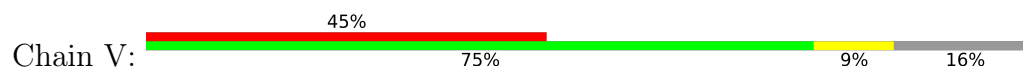


• Molecule 21: eS19

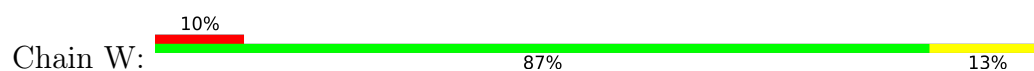




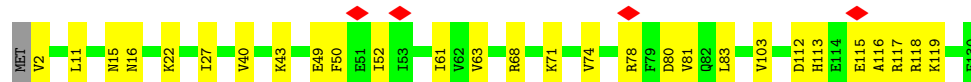
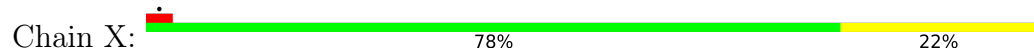
• Molecule 22: uS10



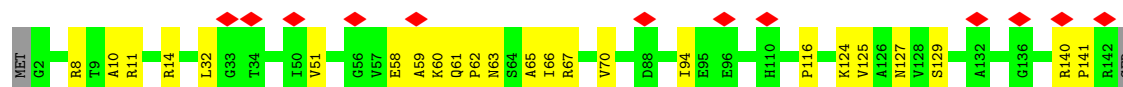
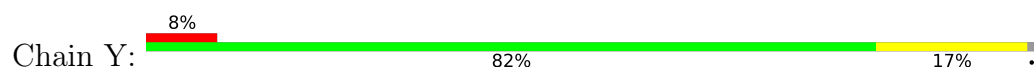
• Molecule 23: eS21



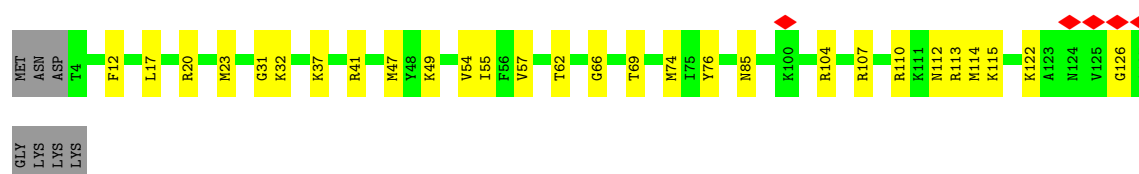
• Molecule 24: uS8



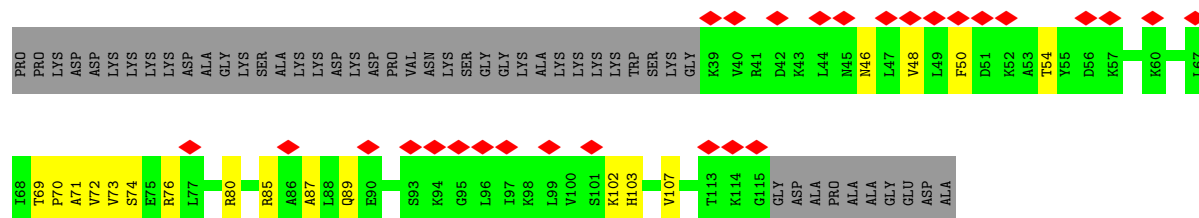
• Molecule 25: uS12



• Molecule 26: eS24



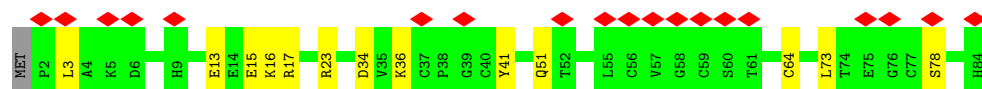
Chain a:



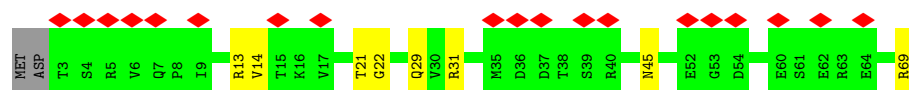
Chain b: 15% 75% 25%



Chain c: 23% 83% 15%



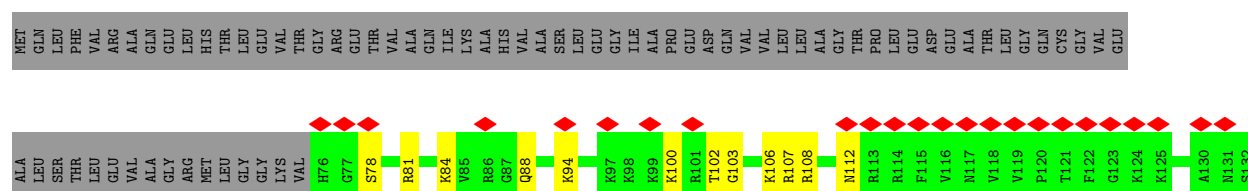
Chain d: 28% 86% 12%

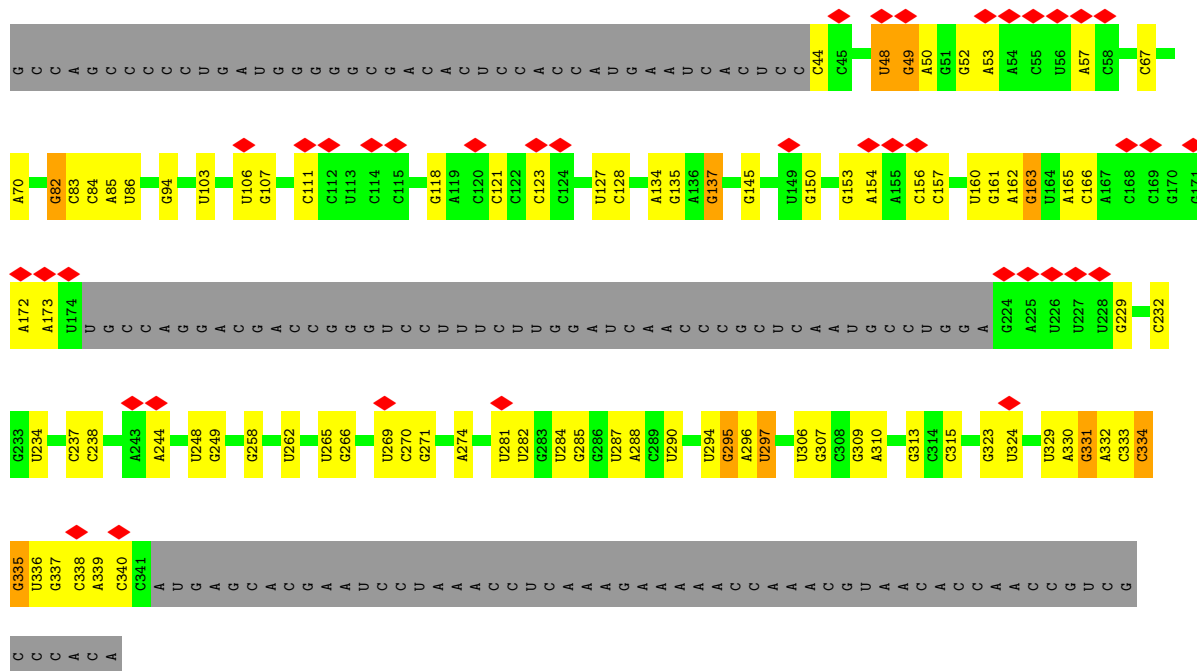


Chain e: 25% 70% 29%



Chain f:





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	97108	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	70.9	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	56000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.088	Depositor
Minimum map value	-0.039	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.017	Depositor
Map size (Å)	380.0, 380.0, 380.0	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95, 0.95, 0.95	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	2	0.14	0/40102	0.32	0/62495
2	B	0.20	0/1747	0.53	0/2374
3	C	0.19	0/1756	0.52	0/2350
4	D	0.20	0/1753	0.55	0/2369
5	E	0.25	1/1796 (0.1%)	0.51	0/2417
6	F	0.24	1/2118 (0.0%)	0.49	0/2849
7	G	0.24	0/1531	0.62	1/2059 (0.0%)
8	H	0.16	0/1946	0.42	0/2590
9	I	0.25	0/1510	0.68	3/2022 (0.1%)
10	J	0.17	0/1715	0.46	0/2287
11	K	0.23	0/1550	0.58	0/2069
12	L	0.18	0/834	0.54	0/1125
13	M	0.23	0/1254	0.58	1/1677 (0.1%)
14	N	0.18	0/918	0.50	2/1233 (0.2%)
15	O	0.28	0/1226	0.65	2/1649 (0.1%)
16	P	0.17	0/1029	0.44	0/1380
17	Q	0.20	0/1017	0.53	0/1358
18	R	0.22	0/1146	0.58	1/1534 (0.1%)
19	S	0.24	0/1082	0.69	2/1452 (0.1%)
20	T	0.27	0/1208	0.71	5/1618 (0.3%)
21	U	0.17	0/1115	0.44	0/1493
22	V	0.22	0/805	0.54	0/1081
23	W	0.21	0/643	0.55	0/860
24	X	0.25	0/1051	0.59	0/1406
25	Y	0.19	0/1116	0.53	0/1490
26	Z	0.18	0/1028	0.49	0/1366
27	a	0.34	0/620	0.83	0/831
28	b	0.18	0/828	0.47	0/1109
29	c	0.21	0/665	0.61	0/891
30	d	0.28	0/532	0.64	0/712
31	e	0.19	0/470	0.54	0/623
32	f	0.22	0/462	0.57	1/607 (0.2%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	g	0.16	0/567	0.43	0/753
34	h	0.16	0/2493	0.43	0/3394
35	n	0.21	0/240	0.65	0/305
36	7	0.03	0/155	0.06	0/236
37	z	0.13	0/5942	0.27	0/9262
All	All	0.18	2/85970 (0.0%)	0.43	18/125326 (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
6	F	0	1
25	Y	0	1
All	All	0	2

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
6	F	40	GLU	CA-CB	7.66	1.64	1.53
5	E	162	ASP	C-N	6.51	1.41	1.34

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	I	38	ALA	CA-C-N	-6.86	111.58	122.08
9	I	38	ALA	C-N-CA	-6.86	111.58	122.08
15	O	119	GLU	N-CA-CB	6.70	120.62	110.30
20	T	109	GLU	CA-CB-CG	6.52	127.14	114.10
20	T	109	GLU	N-CA-CB	6.45	120.91	110.40
14	N	60	MET	CB-CG-SD	5.74	129.93	112.70
15	O	119	GLU	CA-CB-CG	5.66	125.43	114.10
14	N	60	MET	CA-CB-CG	5.64	125.38	114.10
18	R	107	GLU	N-CA-CB	5.52	119.36	110.42
13	M	48	LYS	CA-CB-CG	5.51	125.11	114.10
7	G	160	GLU	N-CA-CB	5.33	119.10	110.40
32	f	94	LYS	CB-CG-CD	5.28	123.44	111.30
9	I	73	GLN	CA-CB-CG	5.24	124.57	114.10
20	T	112	GLU	N-CA-CB	5.22	119.17	110.41
20	T	16	LEU	CA-C-N	5.10	131.28	121.54
20	T	16	LEU	C-N-CA	5.10	131.28	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
19	S	73	LEU	CA-C-N	5.06	129.51	122.08
19	S	73	LEU	C-N-CA	5.06	129.51	122.08

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
6	F	250	GLU	Peptide
25	Y	61	GLN	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	2	35864	0	18113	278	0
2	B	1710	0	1708	21	0
3	C	1729	0	1803	20	0
4	D	1716	0	1806	25	0
5	E	1768	0	1866	17	0
6	F	2076	0	2177	33	0
7	G	1509	0	1563	25	0
8	H	1923	0	2089	30	0
9	I	1488	0	1582	17	0
10	J	1686	0	1772	21	0
11	K	1525	0	1640	25	0
12	L	810	0	836	12	0
13	M	1233	0	1310	19	0
14	N	908	0	939	11	0
15	O	1202	0	1289	22	0
16	P	1016	0	1039	15	0
17	Q	997	0	1045	21	0
18	R	1128	0	1195	14	0
19	S	1068	0	1121	14	0
20	T	1190	0	1249	22	0
21	U	1097	0	1130	16	0
22	V	795	0	862	9	0
23	W	636	0	637	10	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
24	X	1034	0	1080	21	0
25	Y	1098	0	1167	17	0
26	Z	1011	0	1083	21	0
27	a	614	0	678	14	0
28	b	814	0	863	16	0
29	c	651	0	672	9	0
30	d	530	0	561	6	0
31	e	459	0	452	16	0
32	f	457	0	502	6	0
33	g	555	0	563	6	0
34	h	2436	0	2393	38	0
35	n	239	0	289	8	0
36	7	144	0	73	1	0
37	z	5318	0	2689	23	0
38	b	1	0	0	0	0
38	g	1	0	0	0	0
All	All	80436	0	61836	733	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 6.

All (733) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1472:C:H42	1:2:1476:A:H62	1.07	0.97
1:2:934:G:H1	1:2:1008:A:H2	1.15	0.90
37:z:145:G:H1	37:z:248:U:H3	1.20	0.89
1:2:1748:G:H1	1:2:1786:U:H3	1.22	0.88
1:2:1656:G:H1	1:2:1668:U:H3	0.89	0.85
1:2:1657:G:H1	1:2:1667:U:H3	1.25	0.82
1:2:1368:U:HO2'	19:S:2:GLY:N	1.82	0.78
37:z:262:U:H3	37:z:271:G:H1	1.32	0.77
1:2:1472:C:N4	1:2:1476:A:H62	1.79	0.77
1:2:1287:A:H62	1:2:1312:G:H21	1.29	0.77
1:2:318:A:C2	1:2:333:G:N1	2.53	0.76
1:2:318:A:N1	1:2:333:G:C6	2.55	0.74
1:2:1287:A:H62	1:2:1312:G:N2	1.86	0.74
1:2:1472:C:H42	1:2:1476:A:N6	1.83	0.74
1:2:1048:G:H21	1:2:1070:A:H62	1.37	0.71
1:2:934:G:N1	1:2:1008:A:C2	2.53	0.71
1:2:1373:C:H5'	19:S:7:LYS:HE3	1.73	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1335:G:H1	1:2:1492:U:H3	1.40	0.70
1:2:1183:A:H5'	35:n:11:ARG:HE	1.57	0.70
1:2:1287:A:N6	1:2:1312:G:H21	1.92	0.68
16:P:27:VAL:O	16:P:92:ALA:HB3	1.94	0.67
1:2:16:G:H21	1:2:1195:A:H62	1.41	0.66
1:2:1033:G:H1	1:2:1080:A:HO2'	1.44	0.66
1:2:934:G:N1	1:2:1008:A:H2	1.91	0.65
1:2:318:A:C2	1:2:333:G:C2	2.85	0.65
1:2:1124:C:H5''	3:C:150:ILE:HG12	1.79	0.65
33:g:126:CYS:HB3	33:g:144:CYS:SG	2.37	0.65
6:F:182:MET:HB3	6:F:226:PHE:HB3	1.79	0.64
1:2:1091:C:HO2'	24:X:2:VAL:N	1.96	0.64
2:B:80:ARG:NH1	2:B:81:ASN:OD1	2.31	0.64
31:e:43:PHE:O	31:e:47:ALA:HB2	1.98	0.64
1:2:1652:G:H1	1:2:1672:U:H3	1.46	0.63
12:L:5:LYS:HD3	12:L:8:ARG:HH12	1.62	0.63
25:Y:60:LYS:HE2	25:Y:116:PRO:HB3	1.81	0.63
34:h:8:ARG:HD2	34:h:311:GLN:HB2	1.81	0.63
1:2:1324:G:H1	1:2:1504:U:H3	1.46	0.62
4:D:259:THR:HG21	23:W:16:LYS:H	1.63	0.62
24:X:22:LYS:HA	29:c:3:LEU:HB2	1.81	0.62
24:X:40:VAL:HA	24:X:43:LYS:HG2	1.82	0.62
32:f:78:SER:O	32:f:81:ARG:NH1	2.33	0.62
24:X:11:LEU:O	24:X:15:ASN:ND2	2.32	0.61
34:h:40:ILE:HB	34:h:59:LEU:HB2	1.82	0.61
21:U:124:THR:HG23	21:U:127:GLY:H	1.66	0.61
15:O:40:LEU:HB3	15:O:50:ILE:HD12	1.83	0.60
1:2:924:G:H1	1:2:1018:U:H3	1.48	0.60
1:2:625:G:H1	25:Y:65:ALA:HB2	1.66	0.60
1:2:581:U:OP1	11:K:133:ARG:NH2	2.35	0.60
22:V:67:LYS:HD2	31:e:44:ARG:HH12	1.67	0.59
1:2:67:C:H41	8:H:164:LYS:H	1.51	0.59
33:g:118:ARG:NH1	33:g:132:MET:O	2.35	0.59
1:2:934:G:O6	1:2:1008:A:N1	2.36	0.59
21:U:76:THR:HB	21:U:94:ARG:HB3	1.85	0.59
1:2:1277:C:H4'	12:L:55:ARG:HH12	1.68	0.58
6:F:107:GLY:HA2	6:F:189:LEU:HD22	1.85	0.58
1:2:1167:G:H1	1:2:1192:U:H3	1.50	0.58
30:d:29:GLN:NE2	30:d:45:ASN:OD1	2.36	0.58
34:h:5:MET:HE2	34:h:310:TRP:HB3	1.84	0.58
1:2:318:A:C2	1:2:333:G:C6	2.92	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:197:ASN:HB3	6:F:209:HIS:HB2	1.85	0.58
13:M:58:LYS:HG3	13:M:59:LYS:HG3	1.85	0.58
1:2:1016:U:H5''	15:O:14:SER:HB2	1.85	0.58
3:C:146:ARG:HB2	3:C:149:GLN:HB2	1.84	0.58
5:E:117:ARG:HD2	36:7:28:A:H2'	1.84	0.58
17:Q:73:PRO:HG2	17:Q:93:MET:HB2	1.85	0.58
1:2:373:G:H1'	13:M:82:MET:HE2	1.86	0.58
1:2:153:G:N3	8:H:13:GLN:NE2	2.52	0.58
34:h:18:VAL:HA	34:h:35:SER:HA	1.84	0.57
1:2:1475:G:OP2	1:2:1475:G:N2	2.37	0.57
1:2:829:C:O2'	1:2:845:G:N2	2.37	0.57
9:I:31:GLU:HG2	9:I:41:ARG:HH22	1.69	0.57
4:D:206:SER:O	4:D:211:LYS:NZ	2.33	0.57
1:2:1172:U:O2	1:2:1188:A:N7	2.36	0.57
3:C:150:ILE:HA	19:S:131:PRO:HB3	1.85	0.57
1:2:1260:A:H62	1:2:1661:A:H61	1.52	0.57
1:2:399:C:N3	13:M:104:LYS:NZ	2.51	0.57
1:2:1351:G:H1	1:2:1360:U:H3	1.53	0.57
1:2:1405:A:H2	1:2:1443:C:H42	1.51	0.57
1:2:1661:A:OP2	31:e:32:ARG:NH1	2.38	0.57
13:M:48:LYS:NZ	13:M:52:GLU:OE2	2.30	0.57
16:P:34:PHE:HB3	16:P:41:PHE:HB2	1.87	0.57
1:2:1301:A:HO2'	31:e:2:GLY:N	2.02	0.57
5:E:49:ILE:HG12	5:E:87:TYR:HB2	1.86	0.57
7:G:141:VAL:HG21	7:G:149:GLN:HE22	1.70	0.57
21:U:115:LYS:HA	21:U:121:ARG:HG3	1.87	0.57
1:2:1203:U:O2	4:D:117:ARG:NH2	2.38	0.56
11:K:63:LEU:O	11:K:70:ARG:NH1	2.37	0.56
1:2:156:G:N2	8:H:60:GLY:O	2.36	0.56
6:F:100:ARG:HB2	6:F:114:ILE:HD13	1.87	0.56
1:2:624:C:N4	25:Y:63:ASN:OD1	2.38	0.56
15:O:45:LEU:HB3	15:O:49:GLN:HE21	1.69	0.56
1:2:1616:U:OP2	17:Q:43:ARG:NH2	2.38	0.56
6:F:60:GLU:OE2	26:Z:20:ARG:NH2	2.34	0.56
6:F:137:PRO:HB2	6:F:150:PRO:HD2	1.87	0.56
16:P:45:THR:HA	16:P:52:THR:HA	1.87	0.56
1:2:603:C:N4	1:2:620:G:O6	2.39	0.56
26:Z:110:ARG:HG3	26:Z:114:MET:HE1	1.88	0.56
33:g:126:CYS:CB	33:g:144:CYS:SG	2.93	0.56
2:B:36:GLN:O	2:B:53:ARG:NH1	2.39	0.56
13:M:48:LYS:HA	13:M:51:ILE:HD12	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:X:115:GLU:O	24:X:119:LYS:HB2	2.05	0.56
1:2:400:C:OP2	25:Y:11:ARG:NH1	2.40	0.55
1:2:1023:A:OP2	15:O:124:ARG:NH2	2.39	0.55
11:K:27:GLN:HA	11:K:30:LYS:HE3	1.88	0.55
25:Y:140:ARG:NH1	25:Y:141:PRO:O	2.39	0.55
1:2:316:G:H3'	8:H:183:ARG:HH22	1.70	0.55
1:2:1542:C:OP1	21:U:62:ARG:NH1	2.40	0.55
3:C:33:VAL:HA	3:C:96:CYS:HB2	1.88	0.55
12:L:65:ARG:NH1	31:e:21:CYS:O	2.39	0.55
1:2:1659:U:O2	1:2:1664:A:N7	2.40	0.55
3:C:145:LYS:NZ	3:C:146:ARG:O	2.39	0.55
1:2:1284:A:H5'	1:2:1285:G:H2'	1.89	0.55
1:2:1292:C:O2'	33:g:138:ARG:NH2	2.39	0.55
11:K:50:LEU:HD13	11:K:102:ILE:HD13	1.88	0.55
26:Z:41:ARG:HE	26:Z:55:ILE:HB	1.71	0.55
1:2:516:A:N1	1:2:643:A:O2'	2.37	0.55
1:2:1155:U:O2'	24:X:71:LYS:NZ	2.36	0.55
10:J:88:ASN:O	10:J:91:VAL:HB	2.06	0.55
16:P:142:ARG:NH1	28:b:23:CYS:O	2.40	0.55
17:Q:44:ARG:HG3	17:Q:50:ARG:HH22	1.71	0.55
1:2:681:U:OP1	25:Y:8:ARG:NH1	2.37	0.55
7:G:201:LYS:HA	7:G:204:ARG:HD3	1.89	0.55
1:2:74:G:O6	8:H:159:ARG:NH1	2.40	0.55
1:2:1495:G:H4'	31:e:26:ASN:HD22	1.72	0.55
2:B:198:MET:HG3	2:B:200:ASP:H	1.72	0.55
1:2:1275:G:N2	1:2:1506:A:OP2	2.39	0.55
18:R:58:LEU:HB3	18:R:62:ARG:HD2	1.87	0.55
34:h:174:VAL:HB	34:h:188:HIS:HB2	1.88	0.55
37:z:294:U:H2'	37:z:295:G:H2'	1.88	0.55
4:D:208:PRO:HA	4:D:211:LYS:HE2	1.88	0.54
10:J:98:LYS:HD2	10:J:178:ARG:HG2	1.88	0.54
1:2:334:C:OP2	8:H:190:ARG:NH2	2.40	0.54
26:Z:54:VAL:HB	26:Z:76:TYR:HB2	1.88	0.54
18:R:105:LYS:HA	18:R:108:ILE:HG12	1.88	0.54
24:X:115:GLU:HA	24:X:118:ARG:HG2	1.89	0.54
7:G:187:SER:OG	7:G:188:TYR:N	2.41	0.54
1:2:158:A:N6	1:2:466:G:N7	2.53	0.54
15:O:49:GLN:HA	15:O:52:VAL:HG12	1.89	0.54
27:a:48:VAL:HG22	27:a:80:ARG:HE	1.72	0.54
1:2:1864:U:OP1	28:b:92:ARG:NH2	2.41	0.54
5:E:76:ARG:HB2	12:L:22:VAL:HG11	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:855:G:O2'	13:M:71:ARG:NH1	2.41	0.54
13:M:115:PRO:O	13:M:118:ARG:NH1	2.41	0.54
34:h:244:ASN:ND2	34:h:294:ASP:O	2.41	0.54
4:D:94:ILE:HD12	4:D:162:ILE:HD11	1.90	0.54
27:a:76:ARG:HH22	37:z:67:C:H1'	1.72	0.54
27:a:102:LYS:HA	27:a:107:VAL:HG12	1.90	0.54
28:b:38:LYS:HB3	28:b:71:LEU:HB2	1.90	0.54
34:h:191:HIS:NE2	34:h:215:GLN:O	2.41	0.54
34:h:212:LYS:HA	34:h:235:ILE:HG23	1.90	0.54
19:S:20:TYR:HE2	19:S:38:ILE:HG12	1.72	0.54
1:2:373:G:H2'	1:2:374:G:H8	1.73	0.53
1:2:1541:G:N3	21:U:12:GLN:NE2	2.56	0.53
1:2:1669:G:O2'	22:V:62:ARG:NH2	2.41	0.53
5:E:141:LYS:NZ	5:E:179:GLN:O	2.41	0.53
10:J:11:ARG:NH1	10:J:15:GLY:O	2.41	0.53
20:T:90:VAL:HG21	20:T:113:ARG:HH12	1.73	0.53
29:c:64:CYS:HB3	29:c:73:LEU:HD13	1.90	0.53
34:h:116:ASP:OD2	34:h:118:ARG:NH1	2.41	0.53
1:2:821:G:N7	11:K:138:ARG:NH2	2.54	0.53
34:h:8:ARG:NH1	34:h:311:GLN:O	2.42	0.53
13:M:5:GLN:NE2	13:M:11:GLN:O	2.41	0.53
13:M:103:GLU:HB2	25:Y:10:ALA:HB3	1.90	0.53
18:R:66:VAL:HG21	18:R:92:LEU:HD11	1.91	0.53
2:B:2:SER:N	2:B:56:GLU:OE1	2.42	0.53
1:2:618:C:H41	25:Y:67:ARG:HH22	1.57	0.53
1:2:1024:A:OP2	15:O:124:ARG:NH2	2.39	0.53
1:2:1048:G:N2	1:2:1070:A:H62	2.06	0.53
1:2:65:C:N4	8:H:134:GLY:O	2.41	0.53
6:F:31:PRO:HA	6:F:81:THR:HB	1.91	0.53
20:T:124:ARG:HE	20:T:129:LEU:HB2	1.73	0.53
9:I:31:GLU:OE2	9:I:41:ARG:NH1	2.42	0.53
12:L:4:PRO:HD2	12:L:7:ASN:HD21	1.73	0.52
20:T:61:GLU:HA	20:T:64:VAL:HG12	1.91	0.52
34:h:129:ILE:HD11	34:h:151:VAL:HG21	1.91	0.52
34:h:220:ASP:HB2	34:h:227:LEU:HD21	1.90	0.52
1:2:986:G:OP2	1:2:988:C:N4	2.42	0.52
2:B:198:MET:HB3	2:B:201:LEU:HB2	1.91	0.52
16:P:30:VAL:HG12	16:P:94:HIS:HB2	1.90	0.52
1:2:1263:U:H4'	31:e:27:ARG:HD2	1.91	0.52
7:G:191:LYS:NZ	37:z:70:A:O3'	2.40	0.52
28:b:88:SER:OG	28:b:89:ARG:N	2.43	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:830:A:OP2	1:2:846:G:N2	2.43	0.52
3:C:52:THR:HG22	3:C:58:ALA:H	1.73	0.52
9:I:82:GLU:HA	9:I:85:LYS:HG2	1.90	0.52
1:2:351:G:OP1	10:J:7:ASN:ND2	2.43	0.52
1:2:560:A:N6	1:2:588:G:O6	2.42	0.52
19:S:100:PRO:HG3	19:S:119:VAL:HG13	1.91	0.52
4:D:267:GLN:NE2	23:W:35:ASN:OD1	2.43	0.52
20:T:65:GLU:HA	20:T:68:ILE:HB	1.91	0.52
1:2:1010:G:H2'	1:2:1011:A:H8	1.75	0.52
2:B:33:GLN:NE2	23:W:63:GLY:O	2.43	0.52
5:E:39:VAL:HA	5:E:48:ILE:HG22	1.92	0.52
14:N:24:THR:HA	14:N:27:ILE:HG22	1.92	0.52
4:D:214:LEU:HD12	4:D:219:ILE:HB	1.92	0.52
7:G:88:MET:HG3	7:G:91:ARG:HH21	1.75	0.52
14:N:40:LYS:HG2	14:N:44:LYS:HZ2	1.74	0.52
17:Q:25:LEU:HA	17:Q:28:MET:HG2	1.92	0.52
1:2:1130:G:N2	1:2:1130:G:OP2	2.41	0.51
8:H:88:ARG:HB3	8:H:91:GLU:HG2	1.90	0.51
12:L:31:LYS:NZ	12:L:35:LEU:O	2.43	0.51
15:O:75:LEU:HB3	15:O:81:ALA:HB2	1.92	0.51
1:2:155:G:N2	8:H:56:ASN:OD1	2.42	0.51
1:2:944:A:H2	1:2:982:G:H1	1.55	0.51
1:2:1134:G:OP1	28:b:6:ARG:NH2	2.43	0.51
7:G:20:PHE:N	7:G:23:TRP:O	2.43	0.51
1:2:925:G:H1	1:2:1017:U:H3	1.57	0.51
6:F:173:ILE:HG23	6:F:230:LYS:HD3	1.93	0.51
2:B:206:ASP:N	2:B:206:ASP:OD1	2.44	0.51
11:K:31:LEU:O	11:K:35:TYR:HB2	2.11	0.51
14:N:106:CYS:SG	14:N:107:SER:N	2.84	0.51
28:b:64:LEU:HD12	28:b:65:PRO:HD2	1.92	0.51
8:H:191:ARG:HA	8:H:194:LEU:HD12	1.91	0.51
1:2:522:A:O2'	11:K:131:ARG:NH2	2.43	0.51
1:2:847:A:OP1	6:F:108:ARG:NH2	2.41	0.51
1:2:886:A:H61	1:2:901:G:H1'	1.75	0.51
6:F:149:TYR:HD2	8:H:205:GLU:HG2	1.74	0.51
7:G:30:ILE:HB	7:G:36:GLN:HE21	1.76	0.51
8:H:21:GLU:O	8:H:25:ARG:NH1	2.44	0.51
16:P:74:ALA:HB1	16:P:115:ALA:HB2	1.92	0.51
19:S:33:ARG:NH1	34:h:107:ASP:OD2	2.44	0.51
34:h:93:THR:HG23	34:h:94:THR:HG23	1.91	0.51
34:h:107:ASP:OD1	34:h:107:ASP:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1301:A:OP2	31:e:5:GLN:NE2	2.44	0.51
11:K:21:GLU:OE2	11:K:25:LEU:N	2.43	0.51
1:2:346:C:H5''	6:F:38:LEU:HB2	1.93	0.51
1:2:1719:A:N6	1:2:1814:G:O2'	2.43	0.51
20:T:90:VAL:HG23	20:T:91:LYS:HE2	1.91	0.51
34:h:282:GLU:OE2	34:h:285:GLN:NE2	2.41	0.51
35:n:16:LYS:HA	35:n:19:LYS:HG2	1.93	0.51
1:2:1372:U:OP1	1:2:1385:G:N2	2.37	0.50
1:2:124:U:OP1	8:H:201:LYS:NZ	2.44	0.50
6:F:87:MET:HE2	6:F:123:LEU:H	1.75	0.50
9:I:117:PRO:HG2	9:I:120:ARG:HD3	1.93	0.50
23:W:15:ARG:HG3	23:W:24:ILE:HD13	1.94	0.50
37:z:135:G:O2'	37:z:297:U:OP1	2.30	0.50
1:2:1597:C:OP2	27:a:85:ARG:NH2	2.43	0.50
5:E:138:VAL:HG22	5:E:184:ILE:HG22	1.93	0.50
2:B:157:VAL:O	23:W:65:SER:OG	2.29	0.50
4:D:249:SER:HA	23:W:23:ILE:HD11	1.93	0.50
1:2:844:U:OP2	6:F:240:ARG:NH1	2.44	0.50
1:2:1568:C:OP1	21:U:96:SER:OG	2.30	0.50
7:G:68:ILE:HD11	7:G:116:ILE:HG13	1.94	0.50
10:J:174:CYS:SG	10:J:175:ILE:N	2.85	0.50
22:V:66:ARG:O	31:e:44:ARG:NH1	2.44	0.50
10:J:36:THR:HB	10:J:96:LEU:HB2	1.93	0.50
18:R:74:GLY:O	18:R:80:GLN:NE2	2.41	0.50
23:W:66:ASP:OD2	23:W:67:ASP:N	2.45	0.50
5:E:8:LYS:HD3	31:e:34:TYR:HE2	1.77	0.50
12:L:3:MET:HE1	12:L:8:ARG:HB2	1.93	0.50
16:P:33:ILE:HD13	16:P:95:ILE:HG23	1.93	0.50
34:h:166:VAL:HG12	34:h:176:VAL:HG12	1.93	0.50
1:2:29:G:H4'	25:Y:129:SER:HB3	1.94	0.50
1:2:1718:G:H21	1:2:1815:A:H62	1.59	0.50
6:F:204:SER:OG	6:F:205:PHE:N	2.45	0.50
6:F:251:GLU:HA	6:F:254:LYS:HG2	1.93	0.50
15:O:119:GLU:HA	15:O:122:ILE:HG12	1.94	0.50
32:f:108:ARG:O	32:f:112:ASN:ND2	2.45	0.50
34:h:241:PHE:O	34:h:291:TRP:NE1	2.44	0.50
37:z:137:G:O6	37:z:287:U:O2	2.30	0.50
1:2:16:G:N2	1:2:1195:A:H62	2.10	0.49
1:2:433:A:OP1	10:J:25:ARG:NH2	2.45	0.49
1:2:563:G:H2'	1:2:564:A:H8	1.77	0.49
1:2:1864:U:OP2	28:b:4:LYS:NZ	2.43	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:136:ARG:NH1	11:K:159:PHE:O	2.45	0.49
18:R:13:PHE:HA	18:R:22:VAL:HA	1.92	0.49
32:f:103:GLY:H	32:f:106:LYS:HD3	1.77	0.49
1:2:1722:G:O6	1:2:1812:U:O4	2.30	0.49
4:D:272:HIS:HA	4:D:275:LYS:HZ3	1.77	0.49
18:R:68:ILE:HG21	18:R:88:ILE:HG22	1.92	0.49
34:h:88:ARG:HD2	34:h:97:THR:HG21	1.93	0.49
1:2:384:U:OP1	13:M:132:ARG:NH1	2.40	0.49
1:2:643:A:OP1	11:K:38:ARG:NH1	2.45	0.49
4:D:115:GLN:HE21	4:D:120:GLN:HE22	1.59	0.49
35:n:13:LEU:HA	35:n:16:LYS:HG2	1.94	0.49
1:2:91:A:H5''	1:2:92:A:H5''	1.95	0.49
1:2:1215:C:O2'	1:2:1645:C:OP2	2.30	0.49
1:2:1224:G:H1	1:2:1642:U:H3	1.59	0.49
1:2:1255:G:O3'	31:e:40:ARG:NH2	2.45	0.49
2:B:85:ARG:NH1	2:B:203:PHE:O	2.44	0.49
9:I:29:GLU:OE2	9:I:86:LYS:NZ	2.46	0.49
29:c:41:TYR:HB2	37:z:163:G:H3'	1.93	0.49
34:h:8:ARG:HH11	34:h:311:GLN:H	1.60	0.49
1:2:851:C:O2'	1:2:852:G:N2	2.43	0.49
5:E:90:LYS:NZ	5:E:91:VAL:O	2.46	0.49
19:S:29:HIS:HB2	34:h:36:ARG:HH21	1.78	0.49
1:2:77:A:OP2	8:H:154:ARG:NH1	2.46	0.49
1:2:218:U:O2	10:J:184:ARG:NH2	2.46	0.49
1:2:1611:G:O2'	20:T:87:GLN:O	2.29	0.49
7:G:42:LYS:HG3	7:G:43:GLU:HG3	1.95	0.49
17:Q:54:HIS:HB3	17:Q:57:LEU:HB2	1.94	0.49
1:2:975:G:OP1	16:P:98:ARG:NH1	2.46	0.49
1:2:1403:C:OP2	1:2:1405:A:N6	2.40	0.49
1:2:1599:U:OP2	27:a:46:ASN:ND2	2.44	0.49
7:G:97:PHE:HD1	7:G:108:PRO:HB2	1.78	0.49
20:T:39:ARG:HE	21:U:38:LYS:HD2	1.77	0.49
35:n:6:ARG:HA	35:n:9:ARG:HG2	1.94	0.49
37:z:248:U:H2'	37:z:249:G:H8	1.77	0.49
1:2:1290:G:N2	1:2:1310:U:O2	2.42	0.49
1:2:1528:G:O2'	1:2:1666:C:OP1	2.28	0.49
8:H:231:ARG:NH1	8:H:235:SER:OG	2.46	0.49
17:Q:57:LEU:HG	17:Q:83:MET:HE1	1.93	0.49
34:h:5:MET:HE3	34:h:6:THR:H	1.77	0.49
1:2:292:A:O2'	13:M:39:ASN:O	2.31	0.49
1:2:562:U:O4	11:K:172:ARG:NH2	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:30:ILE:HD12	7:G:36:GLN:HG3	1.95	0.49
10:J:98:LYS:NZ	10:J:99:ASN:OD1	2.41	0.49
1:2:104:A:N6	1:2:356:C:O2	2.46	0.49
1:2:126:G:OP2	8:H:198:ARG:NH1	2.46	0.49
1:2:1593:C:OP1	27:a:103:HIS:NE2	2.40	0.49
10:J:186:ASP:OD1	10:J:186:ASP:N	2.45	0.49
1:2:165:G:OP2	1:2:165:G:N2	2.40	0.48
1:2:536:A:H61	1:2:547:G:H1'	1.77	0.48
1:2:1244:U:H2'	1:2:1245:G:H8	1.77	0.48
13:M:29:GLY:O	13:M:32:LYS:NZ	2.42	0.48
19:S:76:GLU:HA	19:S:79:GLU:HB3	1.94	0.48
30:d:31:ARG:NH2	37:z:329:U:O2'	2.45	0.48
1:2:1705:C:O2	1:2:1851:A:O2'	2.30	0.48
1:2:1017:U:H5'	15:O:55:ARG:HE	1.78	0.48
1:2:1297:U:H2'	1:2:1298:G:H2'	1.94	0.48
2:B:76:VAL:HG12	2:B:123:VAL:HB	1.95	0.48
10:J:73:THR:O	10:J:74:ARG:NH1	2.46	0.48
10:J:135:GLU:HA	10:J:138:ASN:HB2	1.95	0.48
22:V:22:ILE:HG22	22:V:114:VAL:HG12	1.94	0.48
26:Z:20:ARG:HD2	26:Z:74:MET:HE1	1.95	0.48
1:2:1775:U:N3	1:2:1776:G:O6	2.46	0.48
11:K:53:ILE:HG12	11:K:97:ILE:HD11	1.95	0.48
13:M:99:TYR:HE2	25:Y:14:ARG:HG2	1.79	0.48
3:C:85:LYS:HG2	3:C:101:HIS:HB3	1.95	0.48
5:E:202:LYS:HD2	5:E:203:PRO:HD2	1.95	0.48
8:H:160:LYS:O	8:H:171:THR:OG1	2.32	0.48
9:I:139:ILE:O	15:O:19:ARG:NH1	2.46	0.48
31:e:12:ARG:HH21	31:e:17:GLY:H	1.61	0.48
8:H:48:TYR:OH	8:H:116:LYS:NZ	2.42	0.48
1:2:1450:G:O5'	19:S:44:LYS:NZ	2.45	0.48
1:2:1544:C:O2'	18:R:75:GLY:O	2.31	0.48
1:2:1855:G:OP2	16:P:147:ARG:NH2	2.46	0.48
5:E:40:ARG:HA	22:V:108:PRO:HB3	1.95	0.48
17:Q:18:ARG:NH1	17:Q:36:LEU:O	2.46	0.48
1:2:1344:A:N1	1:2:1385:G:O2'	2.47	0.48
1:2:1362:U:H5''	1:2:1363:C:H5	1.78	0.48
1:2:1823:A:O2'	25:Y:59:ALA:O	2.32	0.48
1:2:57:U:O2	1:2:499:G:O2'	2.32	0.48
1:2:409:C:N4	1:2:427:U:OP1	2.46	0.48
1:2:944:A:N1	1:2:982:G:O6	2.47	0.48
1:2:1121:G:O2'	3:C:204:ILE:O	2.26	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1656:G:O6	1:2:1668:U:O4	2.31	0.48
1:2:1841:C:OP2	35:n:2:ARG:NH1	2.46	0.48
7:G:16:ASP:OD1	7:G:17:ILE:N	2.43	0.48
8:H:197:GLN:HA	8:H:200:LYS:HG2	1.95	0.48
9:I:43:LEU:HD13	9:I:72:PHE:HE1	1.79	0.48
11:K:162:ARG:HE	26:Z:31:GLY:HA2	1.79	0.48
1:2:1477:U:OP2	19:S:3:ARG:NH1	2.47	0.47
34:h:292:SER:OG	34:h:293:ALA:N	2.47	0.47
1:2:464:A:H3'	1:2:465:A:H8	1.79	0.47
1:2:1858:G:OP2	16:P:146:ARG:NH2	2.38	0.47
1:2:21:U:O2'	11:K:17:ARG:O	2.32	0.47
1:2:581:U:H4'	26:Z:66:GLY:HA3	1.97	0.47
1:2:1374:C:O2'	1:2:1464:C:O2	2.31	0.47
1:2:1563:G:OP1	21:U:121:ARG:NH1	2.47	0.47
1:2:1598:G:O6	27:a:85:ARG:NH1	2.48	0.47
27:a:71:ALA:O	27:a:74:SER:OG	2.28	0.47
1:2:28:U:H2'	1:2:29:G:H8	1.79	0.47
1:2:1259:A:H62	1:2:1518:C:H3'	1.79	0.47
1:2:1845:A:H2'	1:2:1846:G:H8	1.79	0.47
15:O:41:ALA:HB1	15:O:80:LEU:HD22	1.95	0.47
37:z:127:U:OP1	37:z:313:G:O2'	2.30	0.47
8:H:116:LYS:HZ1	8:H:120:ASP:HA	1.79	0.47
15:O:86:GLU:O	15:O:90:HIS:ND1	2.47	0.47
20:T:109:GLU:O	20:T:113:ARG:HB2	2.14	0.47
1:2:600:G:H2'	1:2:601:G:H8	1.80	0.47
1:2:1297:U:H5''	17:Q:77:LYS:HD2	1.95	0.47
5:E:21:LEU:HD12	5:E:77:PHE:HE2	1.79	0.47
17:Q:92:SER:H	17:Q:107:ILE:HB	1.79	0.47
30:d:13:ARG:NH1	30:d:14:VAL:O	2.47	0.47
1:2:223:C:H2'	1:2:224:A:H8	1.79	0.47
1:2:535:G:N1	1:2:550:C:O2	2.47	0.47
1:2:1092:G:H2'	1:2:1093:A:H8	1.80	0.47
1:2:1092:G:OP1	15:O:2:GLY:N	2.48	0.47
3:C:23:ASP:OD1	3:C:23:ASP:N	2.47	0.47
4:D:201:GLY:N	4:D:221:ASP:OD2	2.46	0.47
7:G:118:ASN:O	7:G:193:LYS:NZ	2.37	0.47
12:L:83:LEU:HB3	12:L:85:LEU:HD23	1.97	0.47
26:Z:112:ASN:HA	26:Z:115:LYS:HG2	1.95	0.47
34:h:290:ALA:HB3	34:h:299:PHE:HB2	1.95	0.47
1:2:929:G:N2	1:2:1013:U:O2	2.46	0.47
1:2:1404:U:OP2	22:V:21:ARG:NH2	2.46	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:2:1539:U:H4'	21:U:47:PRO:HA	1.96	0.47
1:2:1549:U:OP1	31:e:34:TYR:OH	2.32	0.47
6:F:152:PRO:HG2	8:H:216:ARG:HG3	1.97	0.47
10:J:87:ASN:HB3	10:J:90:LEU:HB2	1.97	0.47
14:N:113:ASP:OD1	14:N:113:ASP:N	2.45	0.47
34:h:236:ILE:HG12	34:h:252:THR:HA	1.97	0.47
6:F:176:ASP:OD1	6:F:179:ASN:ND2	2.38	0.47
35:n:15:ARG:HA	35:n:18:ARG:HG2	1.96	0.47
1:2:53:C:OP1	26:Z:112:ASN:ND2	2.47	0.47
3:C:40:ASN:ND2	3:C:76:ASN:OD1	2.43	0.47
6:F:153:LEU:O	6:F:174:LYS:NZ	2.48	0.47
9:I:144:ILE:HB	24:X:52:ILE:HB	1.96	0.47
10:J:172:LEU:HB3	10:J:190:LEU:HD12	1.96	0.47
20:T:138:THR:O	20:T:141:ARG:NH2	2.48	0.47
1:2:183:G:O2'	1:2:184:G:O4'	2.33	0.46
1:2:1563:G:H1	1:2:1572:C:H42	1.63	0.46
15:O:63:VAL:HG11	15:O:71:ILE:HG23	1.96	0.46
1:2:1064:C:H2'	1:2:1065:G:H8	1.80	0.46
9:I:29:GLU:O	9:I:33:ASN:HB2	2.14	0.46
9:I:122:LEU:O	9:I:126:HIS:ND1	2.40	0.46
10:J:22:HIS:ND1	10:J:23:LYS:O	2.49	0.46
20:T:139:THR:OG1	20:T:140:GLY:N	2.48	0.46
2:B:10:MET:HG3	2:B:14:ASP:HB2	1.97	0.46
6:F:192:ILE:HG12	6:F:243:GLY:HA3	1.98	0.46
23:W:16:LYS:HG2	23:W:23:ILE:HG22	1.98	0.46
29:c:34:ASP:OD2	29:c:34:ASP:N	2.48	0.46
29:c:36:LYS:NZ	29:c:78:SER:OG	2.47	0.46
1:2:645:C:H2'	1:2:646:G:H8	1.80	0.46
1:2:928:G:H2'	1:2:929:G:C8	2.51	0.46
5:E:140:GLY:HA3	5:E:182:LEU:HG	1.97	0.46
21:U:114:GLU:OE2	21:U:122:LYS:NZ	2.43	0.46
1:2:10:G:H21	4:D:114:LYS:HA	1.80	0.46
1:2:436:G:H2'	1:2:437:G:C8	2.51	0.46
1:2:1337:C:H2'	1:2:1338:G:H8	1.80	0.46
3:C:153:THR:OG1	3:C:154:SER:N	2.49	0.46
5:E:226:GLN:NE2	34:h:224:GLY:O	2.48	0.46
34:h:286:CYS:HA	34:h:301:GLY:O	2.15	0.46
26:Z:47:MET:O	26:Z:49:LYS:NZ	2.48	0.46
7:G:31:ASN:OD1	7:G:114:ASN:ND2	2.49	0.46
1:2:1376:A:OP1	19:S:67:ARG:NH2	2.48	0.46
2:B:144:THR:OG1	2:B:156:TYR:O	2.28	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:128:VAL:HG21	4:D:155:ILE:HG22	1.98	0.46
7:G:110:GLN:NE2	7:G:114:ASN:OD1	2.47	0.46
33:g:100:LEU:HG	33:g:103:LEU:HD13	1.96	0.46
1:2:103:A:O5'	1:2:356:C:N4	2.49	0.46
1:2:1424:G:H2'	1:2:1425:G:H8	1.81	0.46
4:D:200:ARG:O	11:K:54:ARG:NH2	2.48	0.46
6:F:181:CYS:SG	6:F:182:MET:N	2.89	0.46
17:Q:85:ILE:HG23	17:Q:112:ILE:HA	1.98	0.46
34:h:87:LEU:HB2	34:h:101:PHE:HB2	1.98	0.46
2:B:104:THR:O	2:B:107:THR:OG1	2.30	0.46
9:I:21:SER:O	9:I:25:GLN:OE1	2.33	0.46
26:Z:114:MET:O	26:Z:122:LYS:NZ	2.47	0.46
1:2:934:G:C6	1:2:1008:A:N1	2.83	0.45
1:2:1426:U:H4'	21:U:7:LYS:HD3	1.97	0.45
18:R:50:LYS:HA	18:R:53:GLU:HG2	1.98	0.45
21:U:82:ARG:HH21	21:U:84:ARG:HD2	1.82	0.45
15:O:73:ARG:HD3	15:O:76:LYS:HE3	1.97	0.45
17:Q:86:LEU:HD12	17:Q:89:MET:HE1	1.97	0.45
16:P:101:GLY:HA3	16:P:134:PRO:HG2	1.98	0.45
26:Z:110:ARG:HE	26:Z:113:ARG:HH12	1.63	0.45
1:2:165:G:H2'	1:2:166:A:H8	1.82	0.45
8:H:84:TYR:OH	8:H:91:GLU:OE2	2.34	0.45
1:2:494:C:H5''	6:F:57:THR:HG23	1.97	0.45
1:2:1452:A:H61	1:2:1473:G:H21	1.64	0.45
1:2:1622:U:OP1	20:T:120:HIS:ND1	2.50	0.45
7:G:49:LEU:HG	18:R:47:LEU:HG	1.99	0.45
11:K:32:ILE:HG12	11:K:37:LEU:HB2	1.99	0.45
1:2:366:U:H3	1:2:394:G:H1	1.64	0.45
10:J:90:LEU:HD23	10:J:97:VAL:HG21	1.97	0.45
22:V:21:ARG:HD3	22:V:88:LEU:HD13	1.99	0.45
1:2:1157:G:O2'	24:X:74:VAL:O	2.35	0.45
9:I:145:ARG:HH21	24:X:49:GLU:HG3	1.82	0.45
28:b:88:SER:H	28:b:91:ALA:HB3	1.82	0.45
37:z:290:U:O2'	37:z:315:C:OP2	2.29	0.45
1:2:311:C:H5''	1:2:312:G:H5''	1.99	0.45
1:2:360:A:N6	1:2:400:C:O2	2.49	0.45
1:2:981:A:H2'	1:2:982:G:C8	2.52	0.45
1:2:1679:A:OP1	7:G:60:ARG:NH2	2.50	0.45
2:B:31:ASP:HB3	2:B:34:MET:HG2	1.99	0.45
18:R:82:TYR:HA	18:R:85:ARG:HG2	1.99	0.45
20:T:99:LEU:O	20:T:103:LEU:N	2.41	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:X:50:PHE:HB3	24:X:63:VAL:HG23	1.98	0.45
28:b:82:LYS:HD3	28:b:85:ARG:HH21	1.82	0.45
1:2:610:G:H2'	1:2:611:G:H8	1.83	0.44
1:2:817:G:H2'	1:2:818:A:H8	1.81	0.44
1:2:1004:U:H2'	1:2:1005:G:H8	1.82	0.44
1:2:1173:A:OP1	35:n:17:ARG:NH2	2.50	0.44
2:B:81:ASN:HA	2:B:84:GLN:HG2	2.00	0.44
14:N:118:SER:HB2	14:N:121:LYS:HB2	1.98	0.44
27:a:50:PHE:HD1	27:a:54:THR:HG23	1.82	0.44
29:c:15:GLU:O	29:c:23:ARG:NE	2.46	0.44
1:2:1094:C:O2	24:X:16:ASN:ND2	2.51	0.44
1:2:1125:C:O3'	2:B:41:ARG:NH2	2.50	0.44
2:B:42:LYS:HB3	2:B:48:ILE:HD11	1.99	0.44
8:H:121:ILE:HD12	8:H:122:PRO:HD2	1.98	0.44
19:S:71:ILE:HG21	19:S:75:GLU:HG3	2.00	0.44
27:a:50:PHE:HZ	27:a:87:ALA:HB2	1.81	0.44
28:b:41:ILE:HG23	28:b:68:TYR:HE1	1.83	0.44
34:h:34:ALA:HB2	34:h:40:ILE:HG23	1.99	0.44
35:n:19:LYS:HA	35:n:22:GLN:HG3	1.99	0.44
1:2:1550:G:H3'	1:2:1579:A:H61	1.83	0.44
11:K:101:LYS:HG3	11:K:103:GLU:HG3	1.99	0.44
24:X:83:LEU:O	24:X:117:ARG:NH1	2.50	0.44
28:b:37:LYS:HD2	28:b:70:LYS:HE2	2.00	0.44
1:2:587:A:O2'	1:2:588:G:N2	2.51	0.44
1:2:1522:A:H62	17:Q:131:PRO:HB3	1.82	0.44
3:C:125:VAL:HG23	3:C:172:MET:HE3	2.00	0.44
3:C:149:GLN:HE22	3:C:154:SER:HB3	1.81	0.44
19:S:58:MET:HA	19:S:61:ILE:HG12	1.98	0.44
1:2:45:A:H4'	1:2:46:A:H5'	1.98	0.44
1:2:420:G:O2'	1:2:660:C:N3	2.48	0.44
1:2:980:A:H2'	1:2:981:A:C8	2.53	0.44
3:C:103:MET:H	3:C:215:VAL:HB	1.82	0.44
6:F:79:ASP:HB3	6:F:82:TYR:HB2	2.00	0.44
12:L:8:ARG:NH2	12:L:82:TYR:OH	2.51	0.44
28:b:11:ALA:H	28:b:33:ASP:HB2	1.81	0.44
30:d:21:THR:OG1	30:d:22:GLY:N	2.50	0.44
1:2:31:U:O2'	1:2:643:A:N1	2.47	0.44
1:2:1203:U:N3	4:D:115:GLN:OE1	2.50	0.44
6:F:94:LYS:HB3	26:Z:17:LEU:HD12	1.99	0.44
7:G:14:THR:N	18:R:56:LEU:O	2.50	0.44
17:Q:51:ARG:HD2	17:Q:51:ARG:HA	1.84	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
24:X:113:HIS:HA	24:X:116:ALA:HB3	1.99	0.44
37:z:44:C:O2	37:z:118:G:N2	2.43	0.44
1:2:223:C:H2'	1:2:224:A:C8	2.53	0.44
11:K:3:VAL:HG21	11:K:5:ARG:HH11	1.82	0.44
26:Z:37:LYS:HD2	26:Z:57:VAL:HG23	2.00	0.44
19:S:31:ASN:HA	19:S:34:VAL:HB	1.99	0.44
25:Y:58:GLU:HA	25:Y:66:ILE:HG22	1.98	0.44
34:h:231:ASP:N	34:h:231:ASP:OD1	2.50	0.44
1:2:57:U:OP1	1:2:504:G:O2'	2.36	0.44
1:2:1350:U:O2	2:B:110:ASN:ND2	2.41	0.44
1:2:1584:G:OP1	21:U:77:LYS:NZ	2.51	0.44
28:b:43:ASN:HA	28:b:66:LYS:HA	2.00	0.44
1:2:982:G:H2'	1:2:983:A:H8	1.82	0.43
1:2:1099:G:H22	1:2:1133:A:H2	1.65	0.43
6:F:126:VAL:HG22	6:F:139:LEU:HD21	1.99	0.43
9:I:129:ILE:O	9:I:133:LEU:HB2	2.18	0.43
14:N:79:VAL:HG11	14:N:85:LEU:HD12	2.00	0.43
18:R:143:LYS:HB3	18:R:143:LYS:HE2	1.85	0.43
25:Y:94:ILE:HG22	25:Y:125:VAL:HG21	2.00	0.43
1:2:1829:G:O2'	1:2:1830:U:O4'	2.27	0.43
4:D:191:VAL:HG11	4:D:236:PHE:HA	1.99	0.43
6:F:80:ILE:HG23	6:F:81:THR:HG23	2.00	0.43
8:H:45:TRP:HA	8:H:48:TYR:HD2	1.83	0.43
9:I:141:GLY:HA2	15:O:18:TYR:HE2	1.83	0.43
16:P:71:PRO:HD2	37:z:335:G:N1	2.33	0.43
21:U:22:LEU:HD12	21:U:28:LEU:HD21	2.00	0.43
27:a:70:PRO:HA	27:a:73:VAL:HG22	1.99	0.43
1:2:65:C:OP1	8:H:136:LYS:NZ	2.45	0.43
1:2:76:U:H2'	8:H:154:ARG:HH11	1.83	0.43
4:D:164:PRO:HG2	4:D:248:TYR:HE2	1.83	0.43
6:F:250:GLU:HA	6:F:253:ASP:HB2	1.99	0.43
10:J:6:ASP:OD1	10:J:6:ASP:N	2.49	0.43
4:D:67:GLY:HA2	4:D:93:ILE:HD11	2.00	0.43
4:D:115:GLN:HG2	4:D:120:GLN:HE22	1.84	0.43
4:D:193:VAL:HG11	4:D:240:THR:HG22	1.99	0.43
11:K:18:ARG:HA	11:K:18:ARG:HD3	1.87	0.43
1:2:678:U:OP2	1:2:1026:C:N4	2.51	0.43
3:C:141:GLY:HA2	3:C:210:VAL:HG12	2.00	0.43
14:N:58:GLU:HB2	14:N:61:TYR:HB2	2.01	0.43
17:Q:55:SER:HB3	17:Q:59:ARG:HH21	1.84	0.43
17:Q:81:ARG:HH12	17:Q:98:ASN:HD22	1.66	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
20:T:23:ARG:NH2	27:a:46:ASN:O	2.42	0.43
21:U:111:LYS:HD3	21:U:111:LYS:HA	1.86	0.43
37:z:52:G:H2'	37:z:53:A:H8	1.83	0.43
1:2:927:C:O2	29:c:51:GLN:NE2	2.52	0.43
1:2:1146:C:O2'	1:2:1150:A:N1	2.45	0.43
1:2:1700:C:H5	1:2:1836:G:H1	1.67	0.43
1:2:1722:G:N1	1:2:1812:U:N3	2.65	0.43
14:N:49:LEU:HB3	14:N:111:VAL:HB	2.00	0.43
24:X:103:VAL:HA	24:X:112:ASP:HA	2.00	0.43
34:h:45:LEU:HB3	34:h:47:ARG:HE	1.84	0.43
37:z:145:G:N2	37:z:248:U:O2	2.41	0.43
1:2:98:C:OP2	1:2:426:A:O2'	2.28	0.43
1:2:623:G:O6	25:Y:63:ASN:ND2	2.51	0.43
1:2:753:C:O2'	1:2:754:G:O4'	2.37	0.43
1:2:1495:G:N2	31:e:42:CYS:SG	2.80	0.43
10:J:76:THR:HG21	10:J:104:ILE:HD12	2.00	0.43
11:K:93:LYS:HE2	11:K:93:LYS:HB3	1.90	0.43
30:d:69:ARG:HH21	37:z:335:G:H2'	1.82	0.43
34:h:155:ARG:NH2	34:h:200:VAL:O	2.52	0.43
1:2:149:A:H3'	1:2:150:A:H8	1.84	0.43
1:2:457:C:H2'	1:2:458:A:H8	1.83	0.43
1:2:1445:U:O4	1:2:1446:A:N6	2.52	0.43
5:E:48:ILE:HG13	5:E:86:LEU:HG	1.99	0.43
24:X:27:ILE:HB	24:X:61:ILE:HB	2.01	0.43
26:Z:104:ARG:HA	26:Z:107:ARG:HE	1.83	0.43
37:z:82:G:OP1	37:z:84:C:N4	2.43	0.43
1:2:64:A:H2	1:2:83:A:H62	1.67	0.43
1:2:149:A:N7	1:2:169:U:O2	2.52	0.43
28:b:20:PRO:HA	28:b:31:PRO:HA	2.00	0.43
1:2:212:C:H2'	1:2:213:G:C8	2.54	0.43
1:2:359:U:H3	1:2:403:G:H1	1.66	0.43
1:2:1040:G:O6	1:2:1076:G:N1	2.52	0.43
4:D:255:LEU:HD22	23:W:13:VAL:HG23	2.01	0.43
6:F:61:VAL:HG22	6:F:80:ILE:HD11	2.00	0.43
6:F:117:GLU:HA	6:F:120:LYS:HE2	2.00	0.43
2:B:65:ILE:HD13	2:B:121:LEU:HD22	2.02	0.42
4:D:196:ILE:HB	4:D:223:TYR:HB2	2.01	0.42
31:e:15:GLY:O	31:e:19:ARG:NH1	2.40	0.42
1:2:373:G:H4'	13:M:85:THR:HG21	2.00	0.42
1:2:511:U:O2'	1:2:576:A:N6	2.47	0.42
8:H:57:ASP:OD2	8:H:72:ARG:NH2	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:164:ASN:OD1	9:I:165:ASN:N	2.52	0.42
15:O:71:ILE:HA	15:O:74:ILE:HG12	2.00	0.42
16:P:128:ARG:HD3	28:b:59:PHE:HE2	1.84	0.42
1:2:1617:G:H3'	17:Q:47:ARG:HH22	1.84	0.42
6:F:11:ARG:HA	6:F:28:ALA:HB2	2.01	0.42
6:F:45:ILE:HG13	6:F:61:VAL:HG11	2.00	0.42
15:O:30:SER:OG	15:O:66:VAL:O	2.33	0.42
15:O:136:PRO:HG2	15:O:139:TRP:HB2	2.01	0.42
22:V:91:LEU:HD13	22:V:93:SER:HB2	2.00	0.42
27:a:85:ARG:HG2	27:a:89:GLN:HE22	1.84	0.42
7:G:76:MET:O	7:G:159:ARG:NH2	2.50	0.42
14:N:18:LEU:HA	14:N:21:VAL:HG12	2.01	0.42
20:T:105:ASN:HA	20:T:108:ARG:HG2	2.00	0.42
5:E:62:LYS:HD2	12:L:96:ARG:HH12	1.84	0.42
7:G:127:ARG:NH2	7:G:133:THR:O	2.48	0.42
1:2:433:A:H2'	1:2:434:G:C8	2.54	0.42
7:G:121:PRO:HD2	7:G:149:GLN:HE21	1.85	0.42
11:K:54:ARG:HE	11:K:98:LEU:HD13	1.85	0.42
24:X:83:LEU:HG	24:X:117:ARG:HH11	1.85	0.42
1:2:15:U:H3	1:2:1196:A:H61	1.68	0.42
1:2:1518:C:H5'	1:2:1519:U:H5''	2.02	0.42
1:2:1556:A:N6	31:e:12:ARG:O	2.52	0.42
1:2:1808:U:H2'	1:2:1809:A:C8	2.55	0.42
6:F:61:VAL:HA	6:F:64:ILE:HG22	2.02	0.42
13:M:93:LEU:HD11	13:M:102:PHE:HB3	2.00	0.42
17:Q:125:PRO:O	17:Q:127:LYS:NZ	2.52	0.42
26:Z:62:THR:HG23	26:Z:69:THR:HG22	2.01	0.42
1:2:1711:U:H2'	1:2:1712:A:C8	2.54	0.42
6:F:132:GLY:N	6:F:136:ILE:O	2.40	0.42
15:O:110:ASP:OD2	15:O:110:ASP:N	2.53	0.42
1:2:507:G:OP2	26:Z:104:ARG:NH2	2.53	0.42
1:2:1498:A:OP2	5:E:27:ARG:NH2	2.53	0.42
25:Y:51:VAL:HG22	25:Y:70:VAL:HG11	2.01	0.42
37:z:262:U:O4	37:z:271:G:O6	2.38	0.42
1:2:97:U:O2	1:2:434:G:N2	2.52	0.42
7:G:196:LEU:HD23	7:G:196:LEU:HA	1.93	0.42
8:H:63:MET:SD	8:H:63:MET:N	2.90	0.42
1:2:178:C:H2'	1:2:179:C:H6	1.84	0.41
1:2:1214:A:N6	1:2:1682:C:O2	2.53	0.41
2:B:10:MET:SD	2:B:10:MET:N	2.93	0.41
3:C:82:ARG:NH2	3:C:191:ASP:OD1	2.47	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:I:126:HIS:HA	9:I:129:ILE:HG22	2.00	0.41
20:T:14:ARG:HD2	20:T:14:ARG:HA	1.91	0.41
25:Y:32:LEU:HD23	25:Y:32:LEU:HA	1.90	0.41
27:a:69:THR:HG23	27:a:72:VAL:H	1.85	0.41
34:h:44:LYS:N	34:h:54:ILE:O	2.52	0.41
1:2:1854:U:OP1	16:P:150:ARG:NH2	2.49	0.41
20:T:34:LYS:HE3	20:T:103:LEU:HD22	2.01	0.41
1:2:5:U:H2'	1:2:6:G:C8	2.55	0.41
1:2:479:C:H2'	1:2:480:G:H8	1.86	0.41
3:C:227:LYS:O	3:C:231:LEU:HB2	2.20	0.41
4:D:194:ARG:HB2	4:D:225:SER:HB3	2.01	0.41
11:K:63:LEU:HD23	11:K:70:ARG:HB2	2.02	0.41
18:R:12:VAL:O	18:R:23:ALA:N	2.51	0.41
32:f:81:ARG:HH21	32:f:84:LYS:HD3	1.83	0.41
1:2:1660:C:O2'	1:2:1662:U:OP2	2.33	0.41
3:C:91:VAL:HG12	3:C:96:CYS:HA	2.02	0.41
17:Q:34:MET:HB2	17:Q:42:ARG:HB2	2.01	0.41
17:Q:119:PHE:CE1	20:T:117:ILE:HG12	2.56	0.41
26:Z:76:TYR:OH	26:Z:85:ASN:O	2.34	0.41
34:h:195:LEU:HD11	34:h:209:SER:HB2	2.03	0.41
34:h:240:CYS:HB3	34:h:291:TRP:HE1	1.85	0.41
1:2:1232:U:H2'	1:2:1233:G:C8	2.56	0.41
10:J:101:ILE:HD12	10:J:190:LEU:HD11	2.02	0.41
13:M:80:MET:HG3	13:M:86:ILE:HD12	2.03	0.41
17:Q:89:MET:O	17:Q:92:SER:OG	2.29	0.41
4:D:251:LEU:HD23	24:X:68:ARG:HA	2.03	0.41
20:T:101:ASN:OD1	20:T:102:GLY:N	2.53	0.41
24:X:80:ASP:OD1	24:X:81:VAL:N	2.54	0.41
26:Z:110:ARG:NH1	26:Z:126:GLY:O	2.54	0.41
1:2:28:U:H2'	1:2:29:G:C8	2.55	0.41
1:2:565:G:H22	1:2:586:G:H1'	1.84	0.41
1:2:803:C:O2'	24:X:80:ASP:OD2	2.35	0.41
1:2:885:U:H3	1:2:901:G:H22	1.68	0.41
1:2:1579:A:O2'	1:2:1581:C:OP2	2.38	0.41
13:M:81:LYS:HE2	13:M:81:LYS:HB3	1.91	0.41
20:T:141:ARG:HD3	20:T:141:ARG:HA	1.85	0.41
29:c:13:GLU:O	29:c:17:ARG:HB2	2.20	0.41
1:2:1172:U:C2	1:2:1188:A:N7	2.89	0.41
1:2:1722:G:O6	1:2:1812:U:C4	2.73	0.41
5:E:67:ARG:HH22	12:L:96:ARG:HD2	1.86	0.41
7:G:59:LYS:HB2	7:G:62:ARG:HG2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:M:38:LYS:NZ	13:M:64:GLY:O	2.43	0.41
23:W:67:ASP:O	23:W:71:ARG:HG2	2.21	0.41
1:2:60:A:HO2'	1:2:316:G:HO2'	1.50	0.41
1:2:475:C:O2'	1:2:507:G:N3	2.46	0.41
1:2:525:A:O2'	1:2:526:A:O4'	2.36	0.41
1:2:863:U:O2'	24:X:78:ARG:NH2	2.54	0.41
1:2:1545:A:H2'	1:2:1546:G:C8	2.56	0.41
8:H:5:ILE:HG13	8:H:111:LEU:HB2	2.02	0.41
9:I:69:LEU:HG	9:I:73:GLN:HE22	1.86	0.41
12:L:37:ASP:OD1	12:L:37:ASP:N	2.54	0.41
20:T:124:ARG:HD2	20:T:124:ARG:HA	1.80	0.41
22:V:67:LYS:HD3	22:V:78:ASP:HB3	2.02	0.41
26:Z:12:PHE:HD1	26:Z:23:MET:HB2	1.85	0.41
28:b:47:ALA:HB3	37:z:334:C:H42	1.85	0.41
33:g:133:ALA:O	33:g:139:HIS:ND1	2.35	0.41
1:2:1030:A:H2'	1:2:1031:A:H8	1.86	0.41
1:2:1228:A:O2'	1:2:1634:A:N3	2.52	0.41
20:T:92:ASP:OD1	20:T:92:ASP:N	2.54	0.41
34:h:120:ILE:HB	34:h:132:TRP:HB2	2.02	0.41
1:2:155:G:H2'	1:2:156:G:C8	2.56	0.40
1:2:946:U:H2'	1:2:947:G:C8	2.56	0.40
1:2:974:C:H2'	1:2:975:G:H8	1.85	0.40
1:2:1650:A:OP1	18:R:137:ALA:N	2.54	0.40
8:H:68:LEU:H	8:H:100:CYS:HG	1.68	0.40
34:h:212:LYS:HD2	34:h:235:ILE:HG12	2.03	0.40
37:z:48:U:O2'	37:z:49:G:O4'	2.35	0.40
1:2:581:U:O2'	26:Z:32:LYS:O	2.39	0.40
1:2:645:C:H2'	1:2:646:G:C8	2.56	0.40
1:2:925:G:OP1	15:O:121:ARG:NH1	2.55	0.40
1:2:1270:G:O2'	1:2:1301:A:N7	2.53	0.40
1:2:1282:A:OP2	14:N:102:LYS:NZ	2.49	0.40
1:2:1866:A:O2'	1:2:1867:U:O4'	2.35	0.40
6:F:71:LYS:HB2	6:F:91:SER:HB2	2.03	0.40
10:J:12:ARG:HH11	10:J:18:ARG:HG3	1.86	0.40
30:d:31:ARG:NH2	37:z:331:G:N7	2.70	0.40
1:2:106:C:H2'	1:2:107:A:C8	2.56	0.40
1:2:302:A:H1'	10:J:73:THR:HG23	2.02	0.40
1:2:561:A:H5'	11:K:171:GLY:HA3	2.04	0.40
1:2:1401:A:H2'	1:2:1402:A:C8	2.57	0.40
1:2:1579:A:O2'	1:2:1582:C:N4	2.54	0.40
11:K:29:LEU:HD21	32:f:107:ARG:HB3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:K:37:LEU:HD23	11:K:42:GLU:HB2	2.04	0.40
14:N:92:CYS:HB3	14:N:103:VAL:HG22	2.02	0.40
17:Q:23:ASP:OD1	17:Q:23:ASP:N	2.54	0.40
20:T:62:ASP:O	20:T:66:ARG:HB2	2.22	0.40
21:U:40:ALA:HB3	21:U:43:LYS:HG2	2.04	0.40
32:f:100:LYS:HG2	32:f:102:THR:H	1.85	0.40
34:h:283:PRO:HA	34:h:284:PRO:HD3	1.97	0.40
2:B:149:ASN:ND2	2:B:165:ASN:OD1	2.53	0.40
3:C:80:ALA:HB1	16:P:128:ARG:HH22	1.86	0.40
7:G:194:ASP:N	7:G:194:ASP:OD2	2.54	0.40
13:M:7:GLU:HG2	13:M:8:ARG:H	1.87	0.40
15:O:100:LYS:O	15:O:104:ARG:NH1	2.54	0.40
25:Y:124:LYS:HD3	25:Y:127:ASN:HA	2.03	0.40
37:z:309:G:H2'	37:z:310:A:H8	1.87	0.40
1:2:1008:A:H2'	1:2:1009:A:H8	1.87	0.40
3:C:169:MET:O	3:C:173:THR:OG1	2.33	0.40
4:D:169:TYR:OH	4:D:175:GLY:O	2.39	0.40
7:G:136:ARG:O	7:G:203:ASN:ND2	2.54	0.40
29:c:13:GLU:HA	29:c:16:LYS:HG2	2.02	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	215/295 (73%)	199 (93%)	16 (7%)	0	100	100
3	C	211/264 (80%)	202 (96%)	9 (4%)	0	100	100
4	D	219/221 (99%)	207 (94%)	12 (6%)	0	100	100
5	E	226/281 (80%)	221 (98%)	5 (2%)	0	100	100
6	F	260/263 (99%)	253 (97%)	7 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
7	G	189/204 (93%)	178 (94%)	11 (6%)	0	100	100
8	H	235/249 (94%)	228 (97%)	7 (3%)	0	100	100
9	I	181/432 (42%)	170 (94%)	11 (6%)	0	100	100
10	J	204/208 (98%)	198 (97%)	6 (3%)	0	100	100
11	K	183/194 (94%)	179 (98%)	4 (2%)	0	100	100
12	L	94/149 (63%)	90 (96%)	4 (4%)	0	100	100
13	M	149/158 (94%)	140 (94%)	9 (6%)	0	100	100
14	N	115/132 (87%)	106 (92%)	9 (8%)	0	100	100
15	O	147/151 (97%)	144 (98%)	3 (2%)	0	100	100
16	P	134/168 (80%)	125 (93%)	9 (7%)	0	100	100
17	Q	118/145 (81%)	110 (93%)	8 (7%)	0	100	100
18	R	140/172 (81%)	134 (96%)	6 (4%)	0	100	100
19	S	130/135 (96%)	118 (91%)	12 (9%)	0	100	100
20	T	142/152 (93%)	132 (93%)	10 (7%)	0	100	100
21	U	139/145 (96%)	133 (96%)	6 (4%)	0	100	100
22	V	98/119 (82%)	96 (98%)	2 (2%)	0	100	100
23	W	81/83 (98%)	77 (95%)	4 (5%)	0	100	100
24	X	127/130 (98%)	123 (97%)	4 (3%)	0	100	100
25	Y	139/143 (97%)	128 (92%)	10 (7%)	1 (1%)	18	54
26	Z	122/131 (93%)	119 (98%)	3 (2%)	0	100	100
27	a	75/124 (60%)	70 (93%)	5 (7%)	0	100	100
28	b	99/101 (98%)	97 (98%)	2 (2%)	0	100	100
29	c	81/84 (96%)	79 (98%)	2 (2%)	0	100	100
30	d	65/69 (94%)	62 (95%)	3 (5%)	0	100	100
31	e	53/56 (95%)	52 (98%)	1 (2%)	0	100	100
32	f	55/133 (41%)	50 (91%)	5 (9%)	0	100	100
33	g	66/188 (35%)	62 (94%)	4 (6%)	0	100	100
34	h	311/317 (98%)	292 (94%)	19 (6%)	0	100	100
35	n	23/25 (92%)	23 (100%)	0	0	100	100
All	All	4826/5821 (83%)	4597 (95%)	228 (5%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
25	Y	62	PRO

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	
2	B	180/245 (74%)	180 (100%)	0	100	100
3	C	194/231 (84%)	194 (100%)	0	100	100
4	D	187/187 (100%)	187 (100%)	0	100	100
5	E	190/232 (82%)	190 (100%)	0	100	100
6	F	224/225 (100%)	224 (100%)	0	100	100
7	G	161/170 (95%)	161 (100%)	0	100	100
8	H	207/218 (95%)	207 (100%)	0	100	100
9	I	165/360 (46%)	164 (99%)	1 (1%)	78	81
10	J	178/180 (99%)	178 (100%)	0	100	100
11	K	161/168 (96%)	161 (100%)	0	100	100
12	L	87/125 (70%)	87 (100%)	0	100	100
13	M	136/142 (96%)	136 (100%)	0	100	100
14	N	99/108 (92%)	99 (100%)	0	100	100
15	O	130/131 (99%)	130 (100%)	0	100	100
16	P	106/130 (82%)	106 (100%)	0	100	100
17	Q	109/130 (84%)	109 (100%)	0	100	100
18	R	117/140 (84%)	117 (100%)	0	100	100
19	S	119/121 (98%)	119 (100%)	0	100	100
20	T	125/132 (95%)	125 (100%)	0	100	100
21	U	111/116 (96%)	111 (100%)	0	100	100
22	V	92/107 (86%)	92 (100%)	0	100	100
23	W	67/67 (100%)	67 (100%)	0	100	100
24	X	112/113 (99%)	112 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
25	Y	113/115 (98%)	113 (100%)	0	100	100
26	Z	107/113 (95%)	107 (100%)	0	100	100
27	a	68/102 (67%)	68 (100%)	0	100	100
28	b	88/88 (100%)	88 (100%)	0	100	100
29	c	75/76 (99%)	75 (100%)	0	100	100
30	d	60/62 (97%)	60 (100%)	0	100	100
31	e	48/49 (98%)	48 (100%)	0	100	100
32	f	47/106 (44%)	46 (98%)	1 (2%)	47	65
33	g	61/154 (40%)	61 (100%)	0	100	100
34	h	272/275 (99%)	272 (100%)	0	100	100
35	n	24/24 (100%)	24 (100%)	0	100	100
All	All	4220/4942 (85%)	4218 (100%)	2 (0%)	100	100

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
9	I	39	GLN
32	f	88	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (50) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	141	ASN
2	B	169	HIS
3	C	124	HIS
3	C	177	GLN
3	C	202	GLN
4	D	115	GLN
5	E	57	ASN
6	F	138	HIS
7	G	101	HIS
7	G	137	GLN
7	G	149	GLN
9	I	12	ASN
9	I	162	GLN
10	J	52	ASN
11	K	113	GLN

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Mol	Chain	Res	Type
11	K	177	ASN
12	L	84	HIS
16	P	32	HIS
17	Q	24	GLN
17	Q	114	HIS
18	R	24	HIS
18	R	35	ASN
19	S	26	ASN
19	S	62	GLN
20	T	19	ASN
20	T	105	ASN
21	U	11	GLN
21	U	126	GLN
22	V	47	ASN
23	W	2	GLN
24	X	24	GLN
24	X	64	ASN
24	X	92	ASN
25	Y	20	GLN
25	Y	61	GLN
26	Z	15	ASN
27	a	64	ASN
29	c	9	HIS
29	c	26	GLN
29	c	51	GLN
29	c	65	GLN
30	d	29	GLN
30	d	45	ASN
32	f	112	ASN
33	g	93	HIS
33	g	135	HIS
34	h	117	ASN
34	h	296	GLN
34	h	305	ASN
34	h	311	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	2	1669/1870 (89%)	373 (22%)	8 (0%)
36	7	11/12 (91%)	8 (72%)	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
37	z	247/400 (61%)	66 (26%)	0
All	All	1927/2282 (84%)	447 (23%)	8 (0%)

All (447) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	2	2	A
1	2	4	C
1	2	11	A
1	2	26	U
1	2	33	G
1	2	41	G
1	2	42	A
1	2	44	U
1	2	45	A
1	2	46	A
1	2	47	G
1	2	56	G
1	2	62	G
1	2	66	G
1	2	67	C
1	2	68	A
1	2	73	C
1	2	74	G
1	2	75	G
1	2	100	U
1	2	102	A
1	2	103	A
1	2	113	G
1	2	114	G
1	2	115	U
1	2	126	G
1	2	128	U
1	2	129	C
1	2	130	G
1	2	143	U
1	2	147	A
1	2	149	A
1	2	158	A
1	2	161	U
1	2	162	C
1	2	170	A

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Mol	Chain	Res	Type
1	2	180	G
1	2	182	C
1	2	183	G
1	2	184	G
1	2	191	A
1	2	192	C
1	2	207	G
1	2	220	U
1	2	291	G
1	2	294	U
1	2	302	A
1	2	306	C
1	2	307	G
1	2	308	G
1	2	309	G
1	2	319	C
1	2	335	G
1	2	347	G
1	2	351	G
1	2	362	C
1	2	363	A
1	2	364	A
1	2	367	U
1	2	368	U
1	2	369	C
1	2	381	C
1	2	383	G
1	2	384	U
1	2	385	G
1	2	386	C
1	2	398	A
1	2	400	C
1	2	407	G
1	2	408	A
1	2	409	C
1	2	426	A
1	2	435	A
1	2	438	G
1	2	446	G
1	2	448	A
1	2	449	A
1	2	450	C

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Mol	Chain	Res	Type
1	2	452	G
1	2	465	A
1	2	466	G
1	2	471	G
1	2	472	C
1	2	474	G
1	2	487	U
1	2	488	U
1	2	492	C
1	2	493	A
1	2	502	C
1	2	508	A
1	2	517	C
1	2	525	A
1	2	530	U
1	2	532	C
1	2	534	G
1	2	537	C
1	2	541	U
1	2	544	G
1	2	548	C
1	2	549	C
1	2	550	C
1	2	551	U
1	2	554	A
1	2	556	U
1	2	559	G
1	2	560	A
1	2	561	A
1	2	562	U
1	2	567	C
1	2	576	A
1	2	583	A
1	2	585	C
1	2	588	G
1	2	590	A
1	2	591	U
1	2	597	G
1	2	603	C
1	2	606	G
1	2	608	C
1	2	613	G

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Mol	Chain	Res	Type
1	2	614	C
1	2	617	G
1	2	623	G
1	2	627	U
1	2	628	A
1	2	629	A
1	2	630	U
1	2	631	U
1	2	643	A
1	2	644	G
1	2	650	A
1	2	655	A
1	2	656	G
1	2	660	C
1	2	662	G
1	2	668	A
1	2	669	A
1	2	671	A
1	2	672	A
1	2	673	G
1	2	679	A
1	2	688	U
1	2	752	G
1	2	753	C
1	2	754	G
1	2	756	C
1	2	795	A
1	2	799	U
1	2	801	U
1	2	811	A
1	2	821	G
1	2	822	U
1	2	830	A
1	2	833	C
1	2	844	U
1	2	847	A
1	2	852	G
1	2	853	C
1	2	862	A
1	2	869	A
1	2	870	A
1	2	872	A

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Mol	Chain	Res	Type
1	2	874	G
1	2	875	A
1	2	878	G
1	2	879	C
1	2	886	A
1	2	887	U
1	2	888	U
1	2	891	G
1	2	893	U
1	2	895	G
1	2	898	U
1	2	901	G
1	2	903	A
1	2	913	A
1	2	914	U
1	2	917	U
1	2	918	U
1	2	919	A
1	2	920	A
1	2	933	G
1	2	943	U
1	2	963	A
1	2	969	U
1	2	971	G
1	2	985	G
1	2	990	A
1	2	992	A
1	2	999	G
1	2	1002	U
1	2	1017	U
1	2	1023	A
1	2	1024	A
1	2	1025	U
1	2	1026	C
1	2	1027	A
1	2	1041	G
1	2	1044	G
1	2	1045	U
1	2	1076	G
1	2	1078	C
1	2	1083	A
1	2	1085	C

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Mol	Chain	Res	Type
1	2	1086	G
1	2	1088	U
1	2	1089	G
1	2	1114	U
1	2	1118	C
1	2	1121	G
1	2	1138	C
1	2	1139	C
1	2	1149	A
1	2	1153	C
1	2	1154	U
1	2	1155	U
1	2	1156	U
1	2	1157	G
1	2	1170	A
1	2	1172	U
1	2	1183	A
1	2	1184	G
1	2	1203	U
1	2	1204	G
1	2	1205	G
1	2	1207	G
1	2	1208	A
1	2	1215	C
1	2	1216	C
1	2	1217	A
1	2	1221	G
1	2	1224	G
1	2	1240	A
1	2	1242	U
1	2	1243	U
1	2	1247	C
1	2	1251	A
1	2	1256	G
1	2	1257	G
1	2	1264	C
1	2	1266	C
1	2	1274	G
1	2	1275	G
1	2	1276	A
1	2	1277	C
1	2	1278	A

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Mol	Chain	Res	Type
1	2	1284	A
1	2	1285	G
1	2	1287	A
1	2	1293	A
1	2	1294	G
1	2	1298	G
1	2	1299	A
1	2	1301	A
1	2	1302	G
1	2	1303	C
1	2	1307	U
1	2	1308	U
1	2	1309	C
1	2	1310	U
1	2	1311	C
1	2	1312	G
1	2	1318	G
1	2	1332	A
1	2	1333	U
1	2	1342	U
1	2	1348	G
1	2	1358	U
1	2	1363	C
1	2	1371	U
1	2	1372	U
1	2	1377	U
1	2	1378	A
1	2	1380	C
1	2	1396	A
1	2	1397	U
1	2	1402	A
1	2	1406	G
1	2	1428	G
1	2	1429	G
1	2	1439	A
1	2	1441	U
1	2	1442	U
1	2	1452	A
1	2	1454	A
1	2	1462	U
1	2	1463	U
1	2	1476	A

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Mol	Chain	Res	Type
1	2	1477	U
1	2	1489	A
1	2	1490	G
1	2	1494	U
1	2	1498	A
1	2	1507	G
1	2	1520	G
1	2	1521	C
1	2	1522	A
1	2	1523	C
1	2	1533	A
1	2	1548	G
1	2	1551	U
1	2	1553	C
1	2	1554	C
1	2	1556	A
1	2	1557	C
1	2	1567	G
1	2	1574	C
1	2	1575	G
1	2	1578	U
1	2	1580	A
1	2	1584	G
1	2	1585	U
1	2	1586	U
1	2	1588	A
1	2	1598	G
1	2	1601	A
1	2	1604	G
1	2	1606	G
1	2	1614	A
1	2	1621	U
1	2	1622	U
1	2	1623	A
1	2	1638	G
1	2	1646	C
1	2	1647	A
1	2	1648	G
1	2	1653	U
1	2	1662	U
1	2	1663	A
1	2	1665	G

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Mol	Chain	Res	Type
1	2	1680	G
1	2	1695	A
1	2	1699	A
1	2	1702	G
1	2	1715	A
1	2	1721	U
1	2	1722	G
1	2	1750	C
1	2	1751	C
1	2	1753	C
1	2	1756	C
1	2	1757	G
1	2	1759	G
1	2	1760	G
1	2	1773	C
1	2	1775	U
1	2	1776	G
1	2	1779	G
1	2	1780	G
1	2	1781	A
1	2	1783	C
1	2	1786	U
1	2	1801	A
1	2	1805	G
1	2	1819	A
1	2	1823	A
1	2	1824	A
1	2	1826	G
1	2	1829	G
1	2	1830	U
1	2	1831	A
1	2	1834	A
1	2	1835	A
1	2	1836	G
1	2	1838	U
1	2	1839	U
1	2	1849	G
1	2	1852	C
1	2	1861	G
1	2	1862	G
1	2	1863	A
1	2	1865	C

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Mol	Chain	Res	Type
1	2	1869	A
36	7	18	A
36	7	19	A
36	7	20	A
36	7	22	A
36	7	23	A
36	7	25	A
36	7	26	A
36	7	28	A
37	z	48	U
37	z	49	G
37	z	50	A
37	z	57	A
37	z	82	G
37	z	83	C
37	z	85	A
37	z	86	U
37	z	94	G
37	z	103	U
37	z	106	U
37	z	107	G
37	z	111	C
37	z	121	C
37	z	123	C
37	z	128	C
37	z	134	A
37	z	137	G
37	z	150	G
37	z	153	G
37	z	154	A
37	z	156	C
37	z	157	C
37	z	160	U
37	z	161	G
37	z	162	A
37	z	163	G
37	z	165	A
37	z	166	C
37	z	172	A
37	z	173	A
37	z	229	G
37	z	232	C

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Mol	Chain	Res	Type
37	z	234	U
37	z	237	C
37	z	238	C
37	z	244	A
37	z	258	G
37	z	265	U
37	z	266	G
37	z	269	U
37	z	270	C
37	z	274	A
37	z	281	U
37	z	282	U
37	z	284	U
37	z	285	G
37	z	288	A
37	z	295	G
37	z	296	A
37	z	297	U
37	z	306	U
37	z	307	G
37	z	323	G
37	z	324	U
37	z	330	A
37	z	331	G
37	z	332	A
37	z	333	C
37	z	334	C
37	z	335	G
37	z	336	U
37	z	337	G
37	z	338	C
37	z	339	A
37	z	340	C

All (8) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	2	383	G
1	2	445	A
1	2	561	A
1	2	627	U
1	2	874	G

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Mol	Chain	Res	Type
1	2	886	A
1	2	1308	U
1	2	1759	G

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

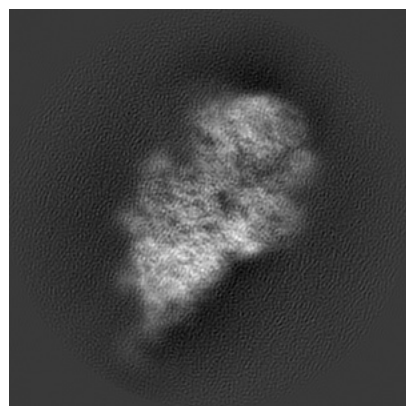
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-25536. These allow visual inspection of the internal detail of the map and identification of artifacts.

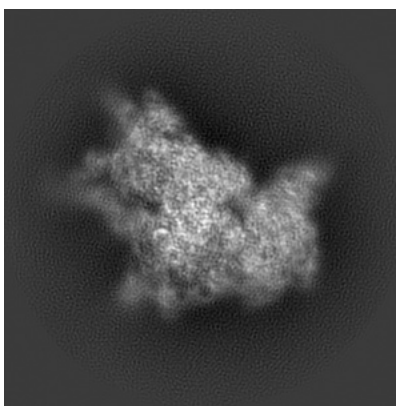
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

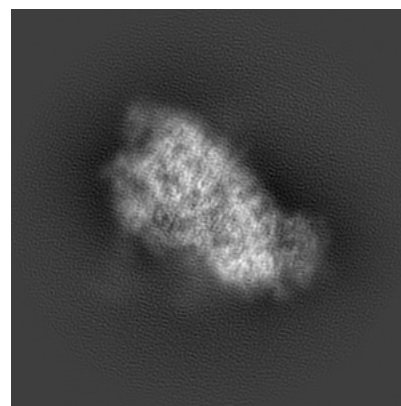
6.1.1 Primary map



X

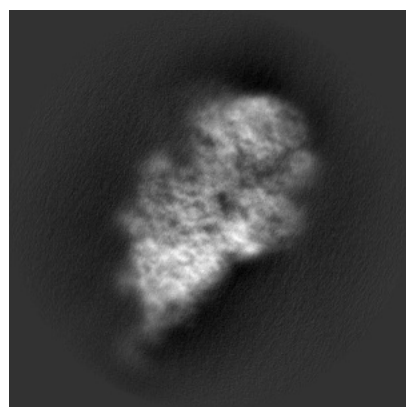


Y

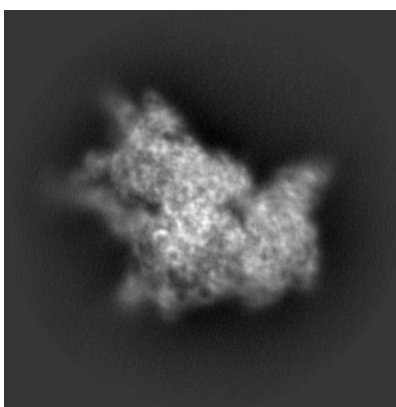


Z

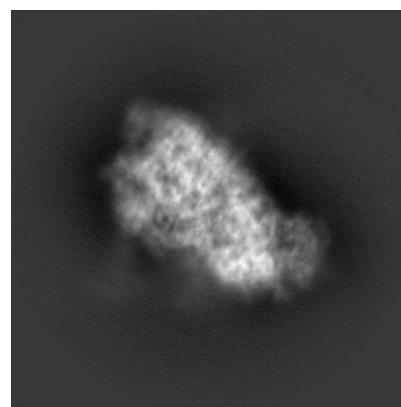
6.1.2 Raw map



X



Y

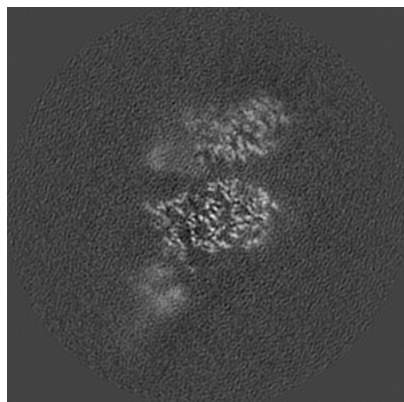


Z

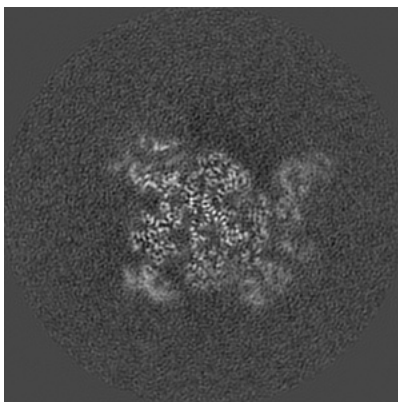
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

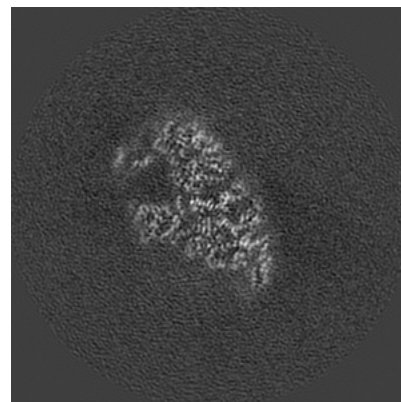
6.2.1 Primary map



X Index: 200

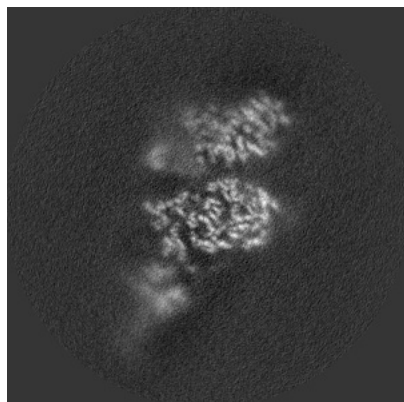


Y Index: 200

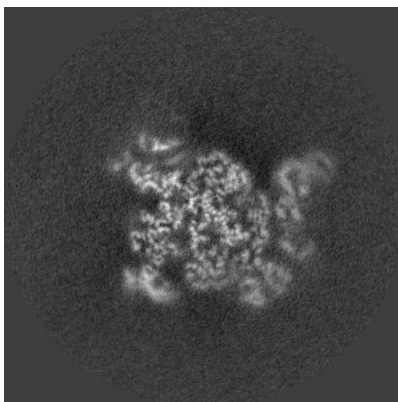


Z Index: 200

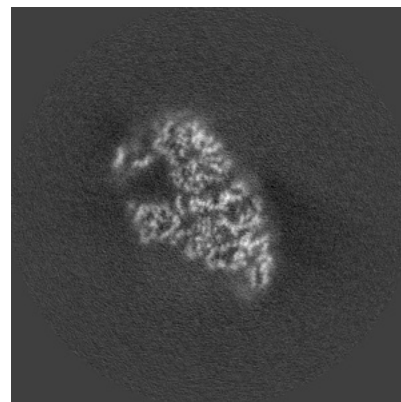
6.2.2 Raw map



X Index: 200



Y Index: 200

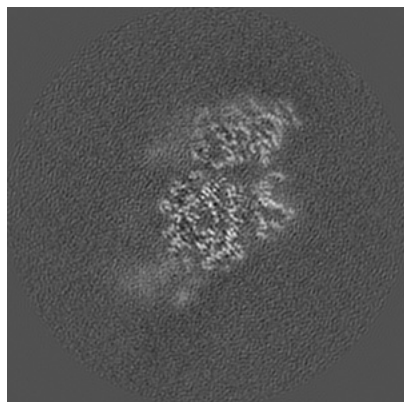


Z Index: 200

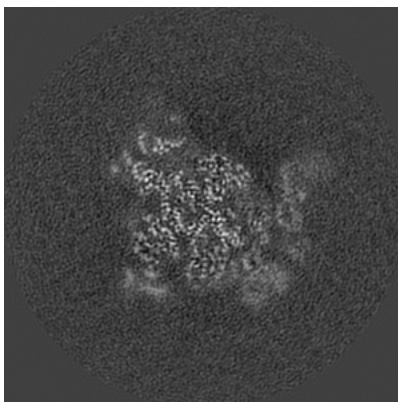
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

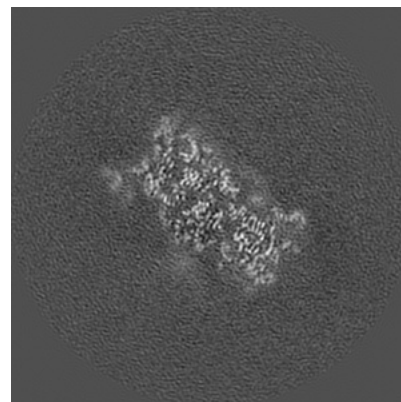
6.3.1 Primary map



X Index: 188

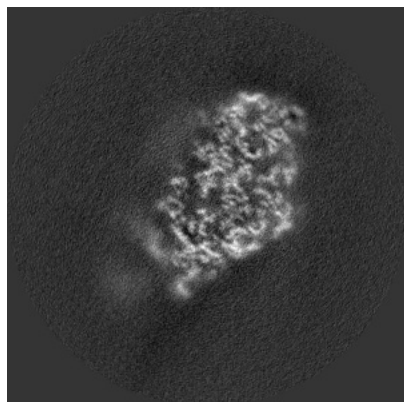


Y Index: 196

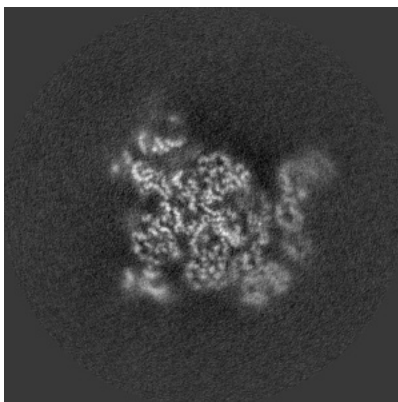


Z Index: 175

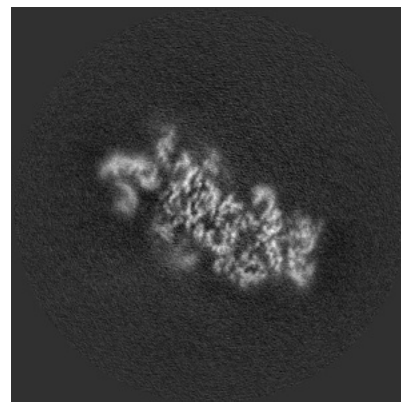
6.3.2 Raw map



X Index: 176



Y Index: 197

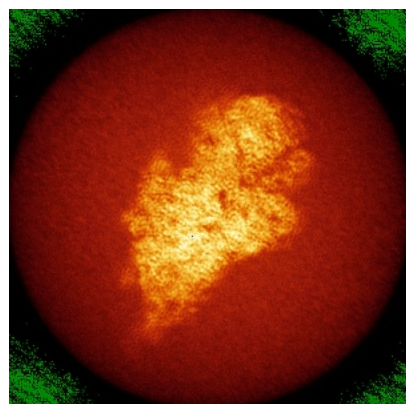


Z Index: 161

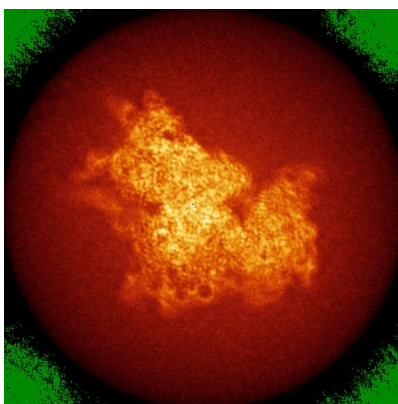
The images above show the largest variance slices of the map in three orthogonal directions.

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

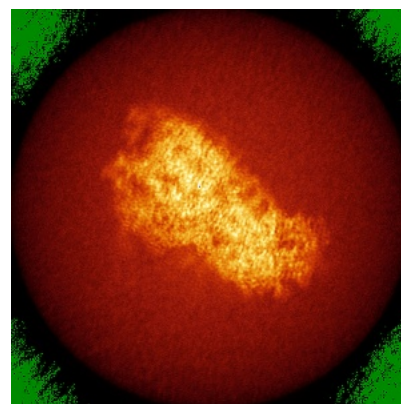
6.4.1 Primary map



X

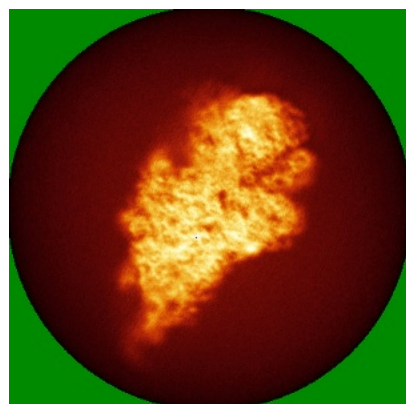


Y

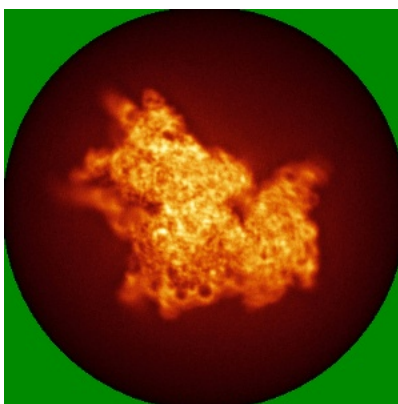


Z

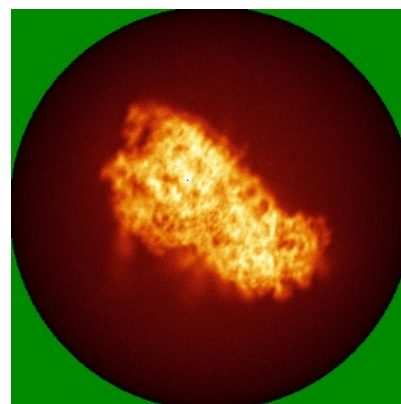
6.4.2 Raw map



X



Y



Z

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

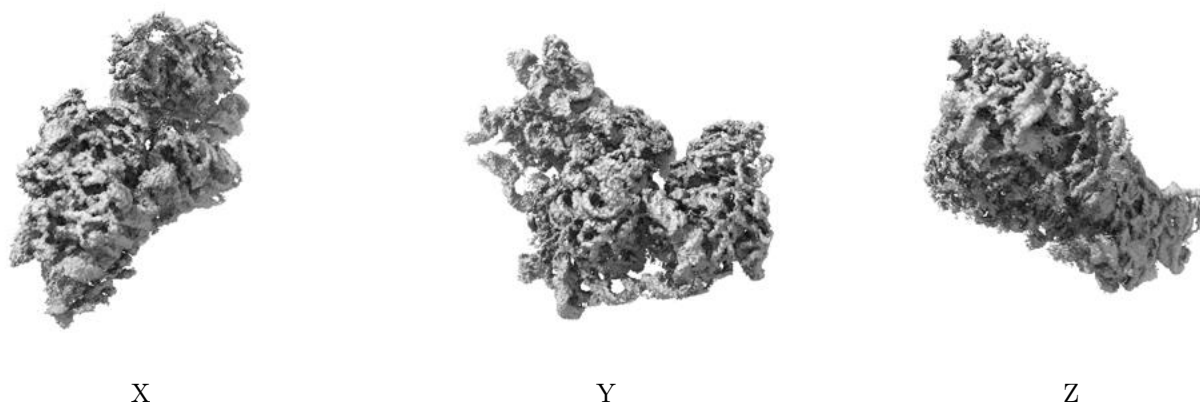
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.017. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

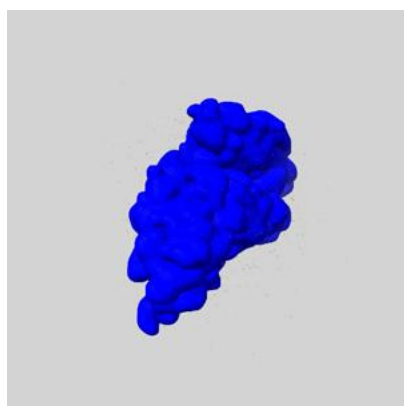
6.6 Mask visualisation [i](#)

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

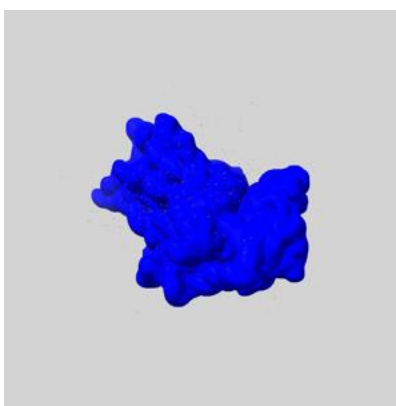
A mask typically either:

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

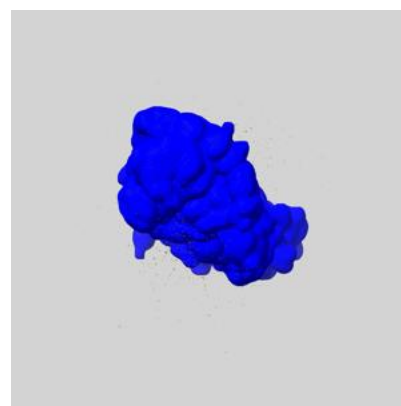
6.6.1 emd_25536_msk_1.map [i](#)



X



Y

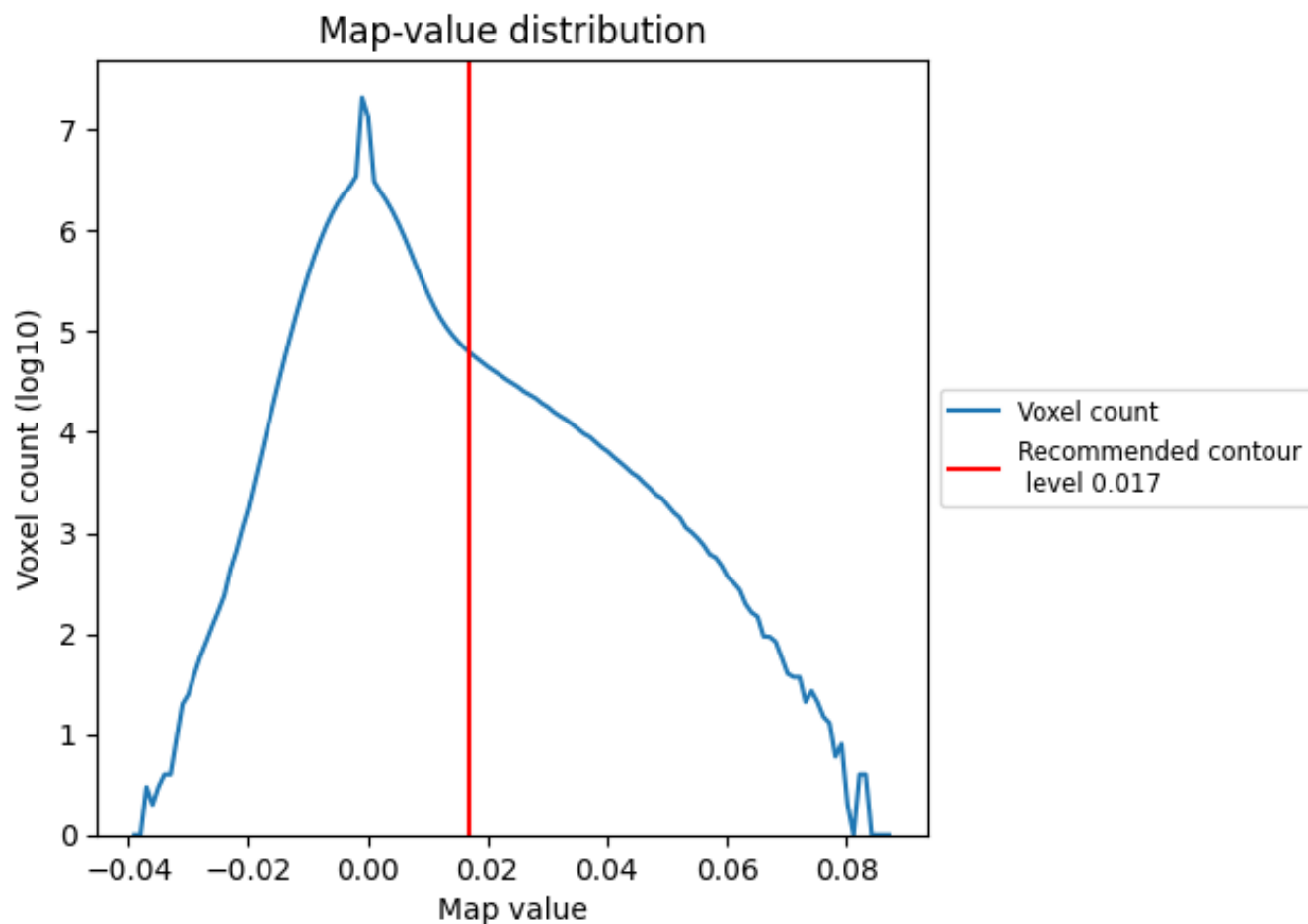


Z

7 Map analysis [i](#)

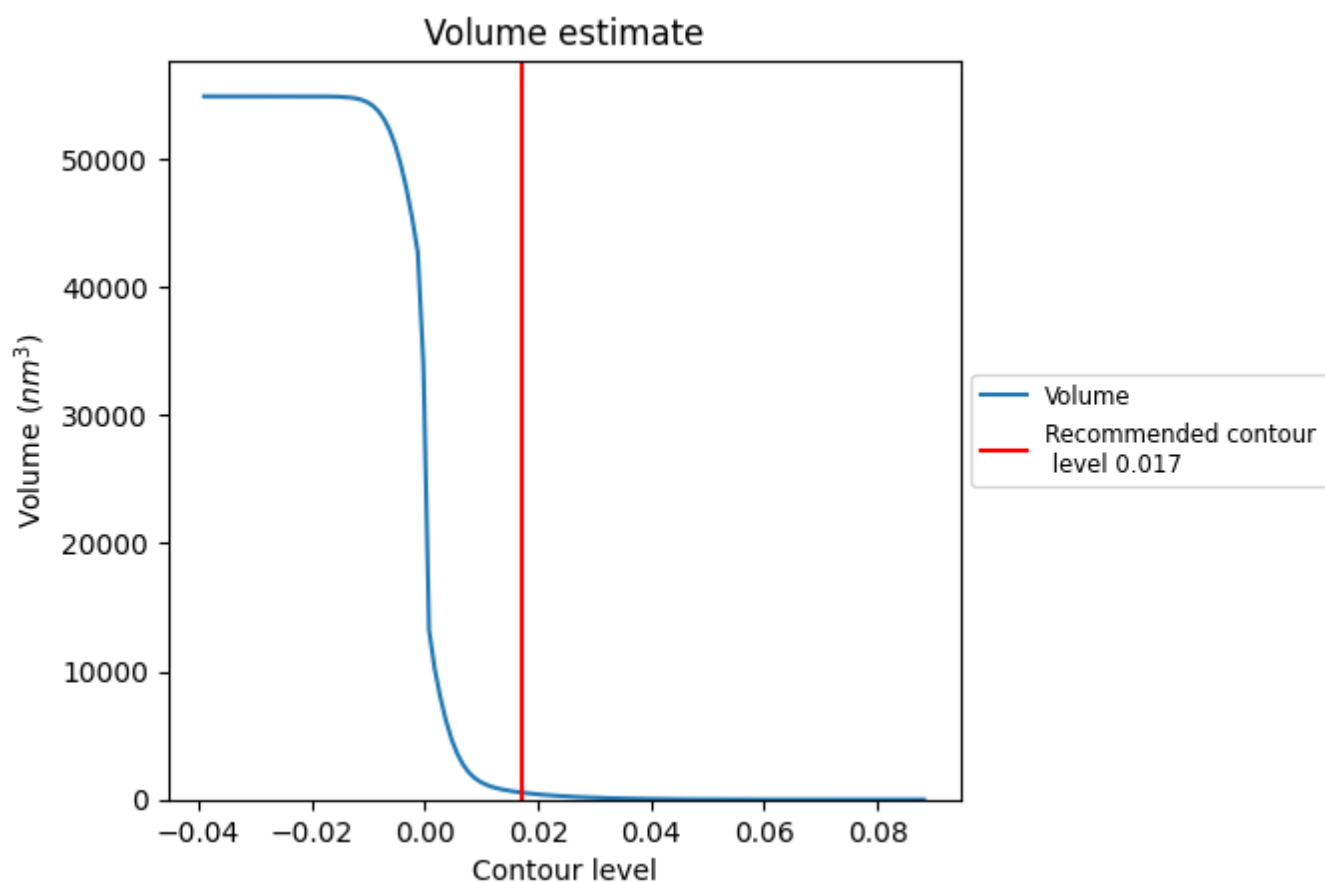
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

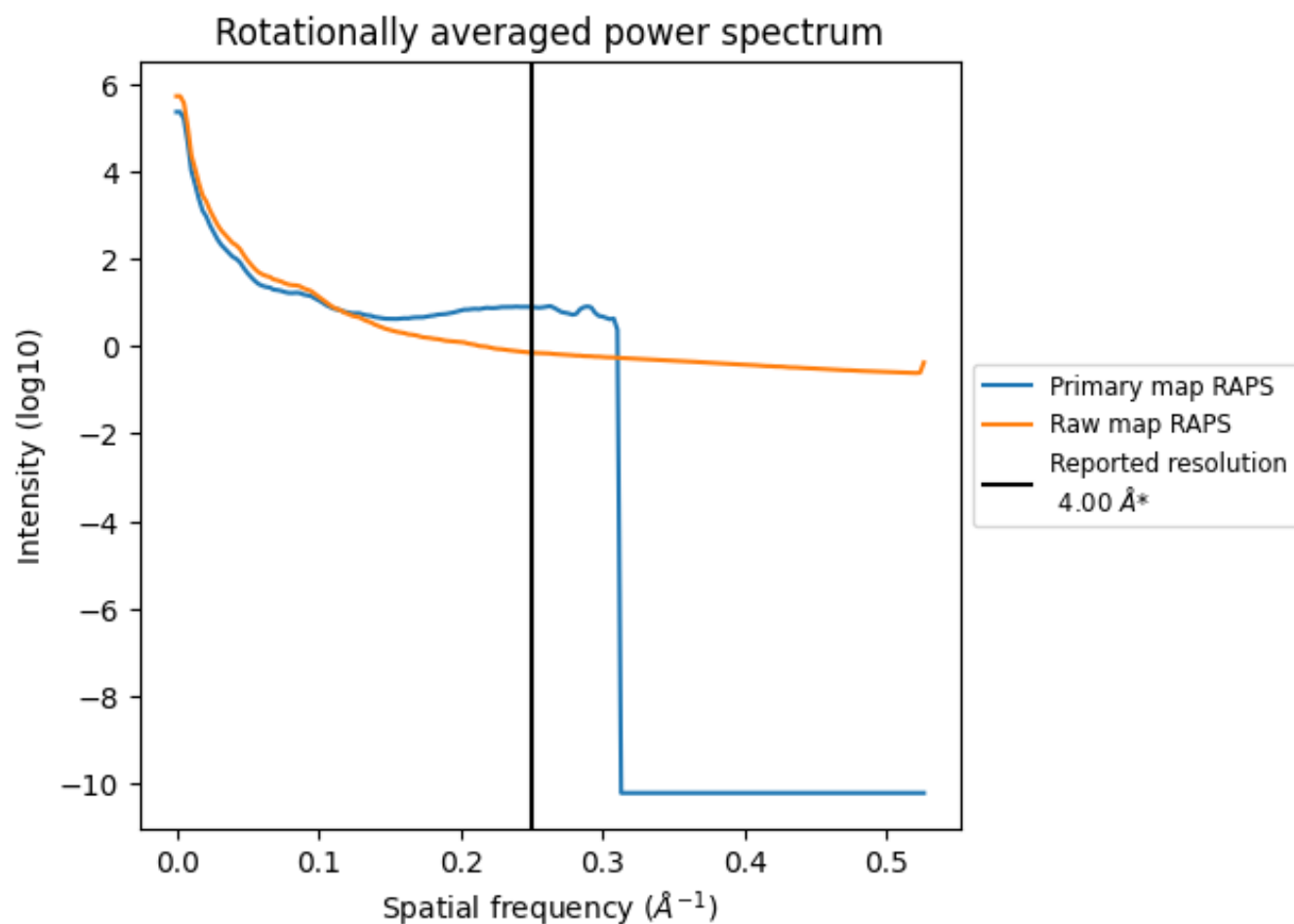
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 553 nm³; this corresponds to an approximate mass of 499 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 ⓘ

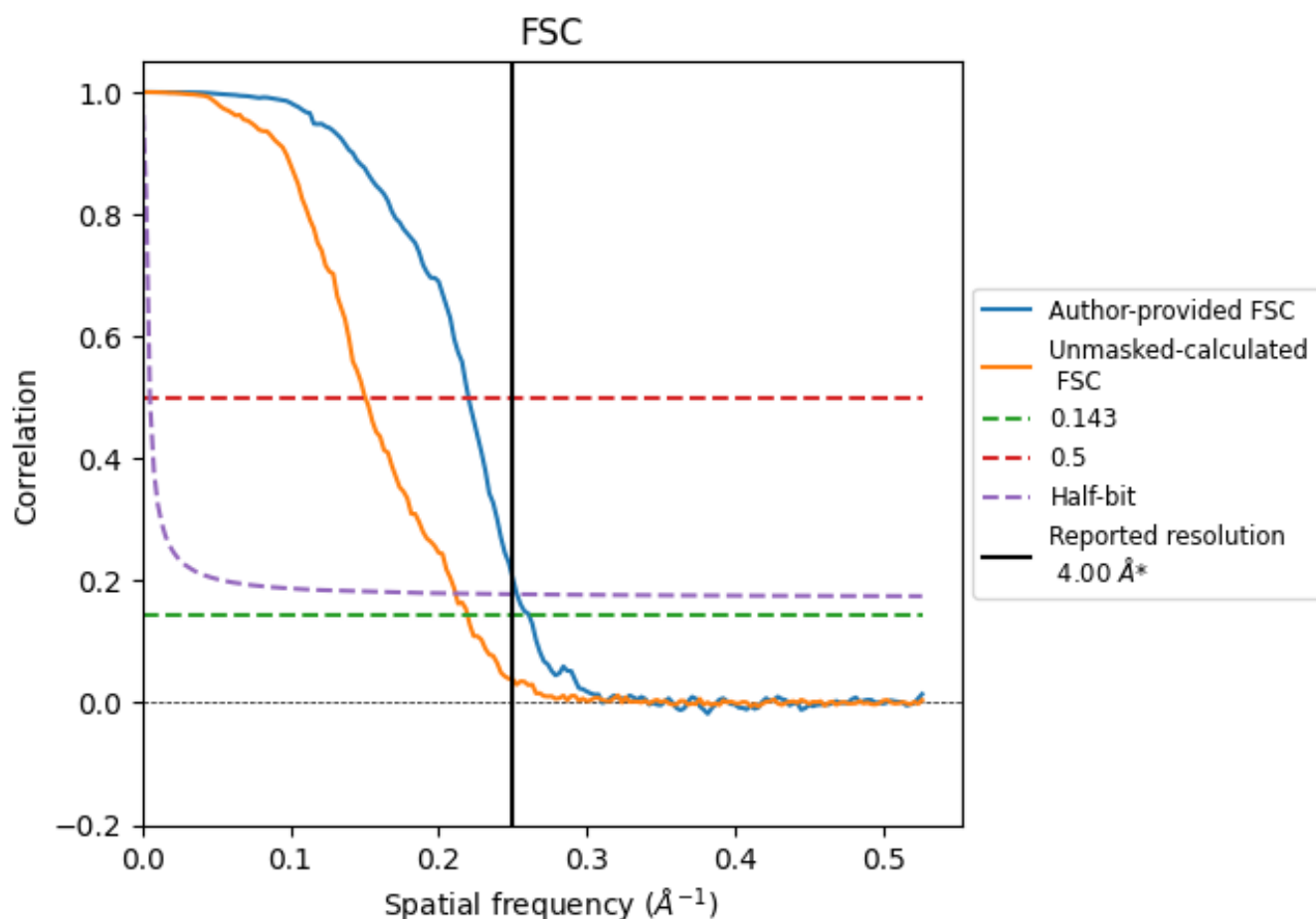


*Reported resolution corresponds to spatial frequency of 0.250 Å⁻¹

8 Fourier-Shell correlation [i](#)

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

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.250 $\text{\AA}^{-1}$

8.2 Resolution estimates [i](#)

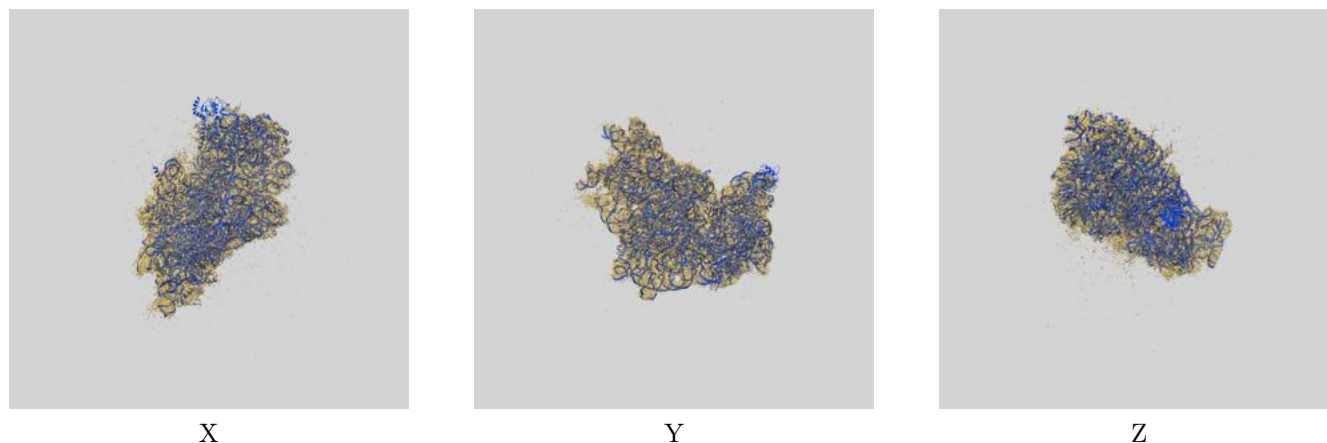
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.00	-	-
Author-provided FSC curve	3.83	4.54	3.95
Unmasked-calculated*	4.56	6.64	4.73

*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 4.56 differs from the reported value 4.0 by more than 10 %

9 Map-model fit [i](#)

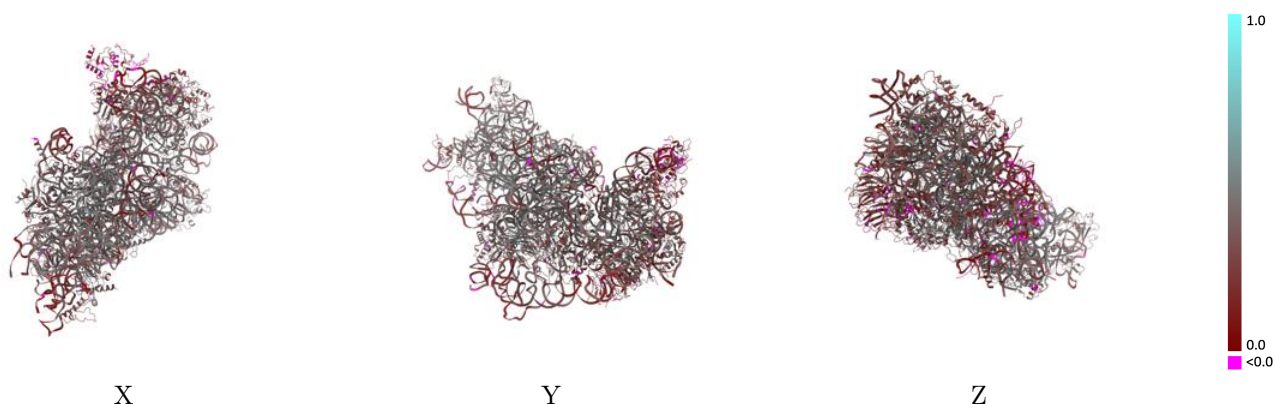
This section contains information regarding the fit between EMDB map EMD-25536 and PDB model 7SYP. Per-residue inclusion information can be found in [section 3](#) on [page 12](#).

9.1 Map-model overlay [i](#)



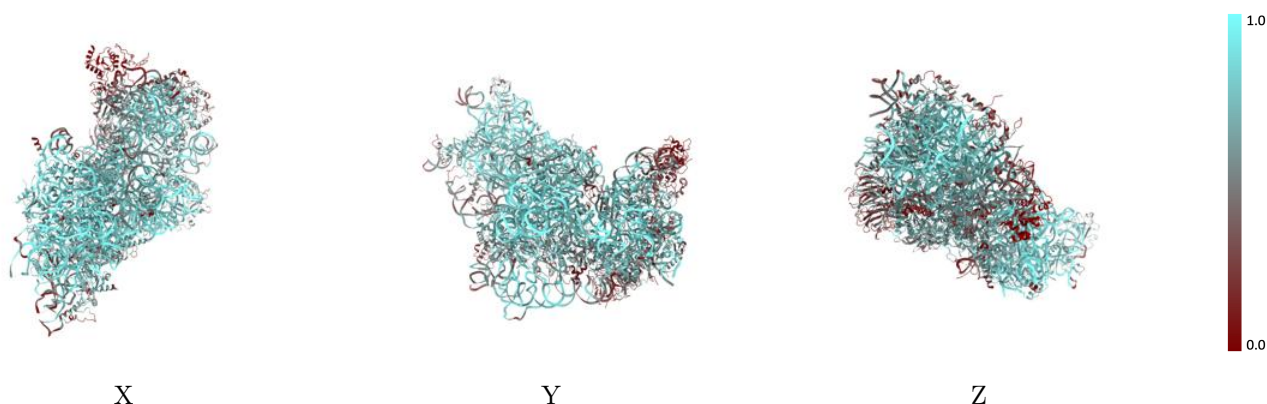
The images above show the 3D surface view of the map at the recommended contour level 0.017 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



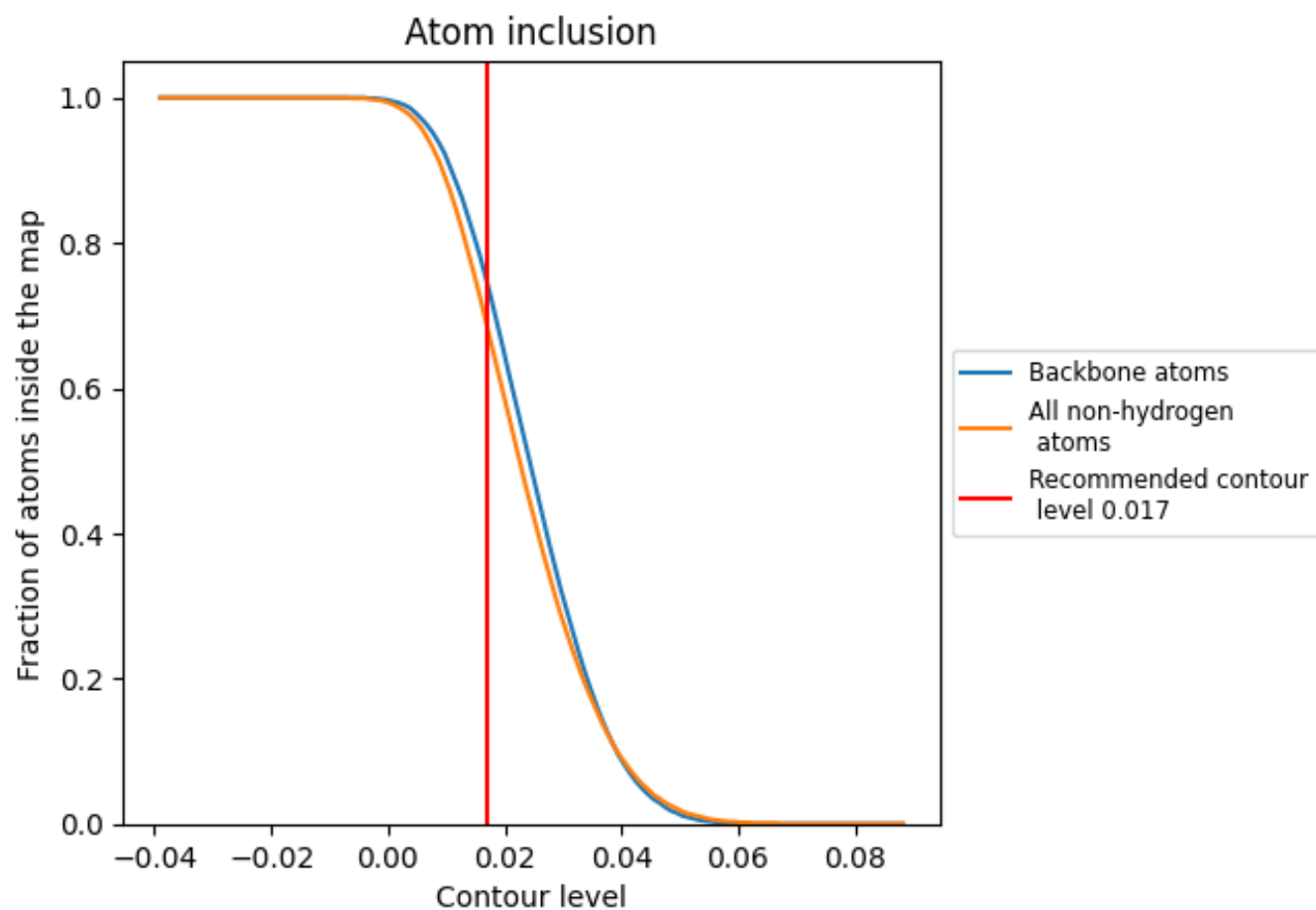
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.017).

9.4 Atom inclusion [i](#)



At the recommended contour level, 74% of all backbone atoms, 68% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.017) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.6840	 0.3510
2	 0.8110	 0.3730
7	 0.2220	 0.2170
B	 0.6370	 0.3560
C	 0.6830	 0.3960
D	 0.6480	 0.3910
E	 0.4790	 0.3320
F	 0.7440	 0.4190
G	 0.6600	 0.3800
H	 0.6380	 0.3520
I	 0.4340	 0.3280
J	 0.6490	 0.3860
K	 0.7030	 0.3990
L	 0.4040	 0.2380
M	 0.6390	 0.3950
N	 0.0250	 0.1600
O	 0.6870	 0.3780
P	 0.7220	 0.3950
Q	 0.3670	 0.2310
R	 0.6380	 0.3630
S	 0.4180	 0.2720
T	 0.4510	 0.3120
U	 0.6890	 0.3690
V	 0.3550	 0.2630
W	 0.6540	 0.3740
X	 0.6740	 0.4030
Y	 0.6800	 0.4060
Z	 0.7430	 0.3910
a	 0.4940	 0.3170
b	 0.6730	 0.3980
c	 0.5990	 0.3650
d	 0.5280	 0.3580
e	 0.5760	 0.3390
f	 0.4500	 0.2010
g	 0.0440	 0.1430



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Chain	Atom inclusion	Q-score
h	 0.3630	 0.2360
n	 0.5780	 0.3250
z	 0.6650	 0.2660