



Full wwPDB EM Validation Report ⓘ

Mar 25, 2026 – 02:01 AM UTC

PDB ID : 9H74 / pdb_00009h74
EMDB ID : EMD-51911
Title : Late-stage 48S Initiation Complex with eIF3 (LS48S-eIF3 IC) guided by the trans-RNA
Authors : Nguyen, T.T.; Hashem, Y.; Rocha, R.E.O.; Boissier, F.; Qian, S.B.; Jia, L.; Uematsu, S.; Gu, Y.; Shi, S.
Deposited on : 2024-10-25
Resolution : 2.90 Å (reported)
Based on initial models : 6YAM, ., 6FYX, 8P09

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:

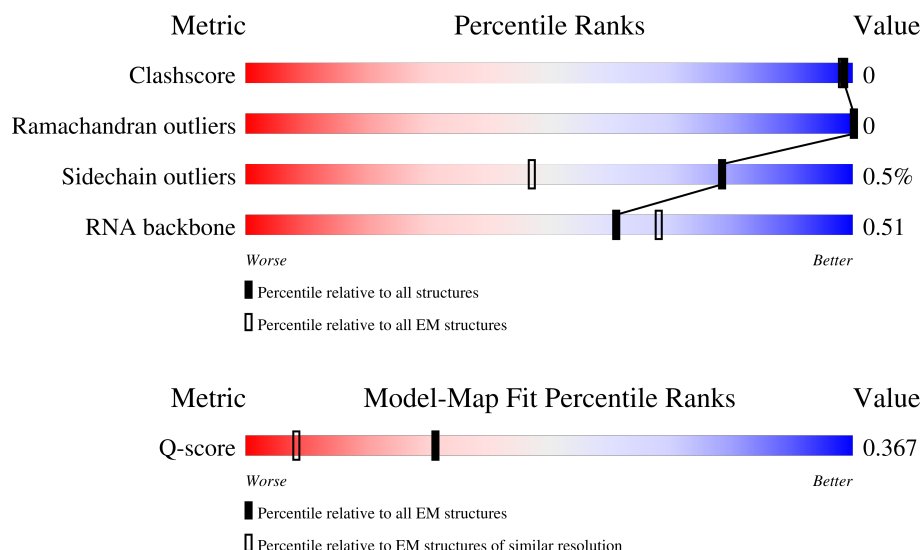
EMDB validation analysis : 0.0.1.dev132
Mogul : 2022.3.0, CSD as543be (2022)
MolProbity : 4-5-2 with Phenix2.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics : 202505.v01 (Using data 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 i

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

The reported resolution of this entry is 2.90 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.



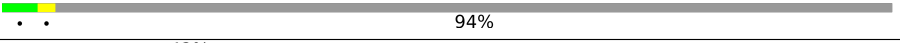



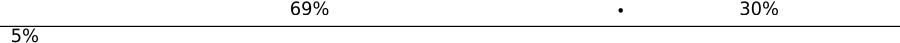
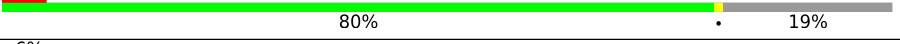


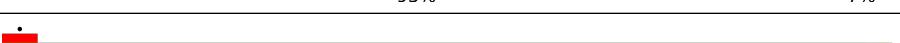
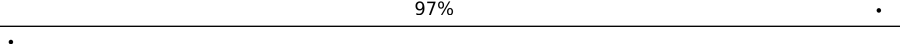



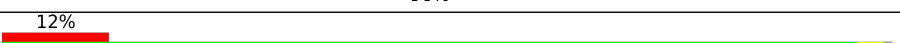
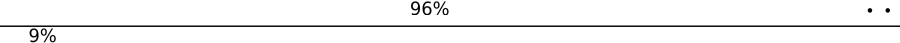
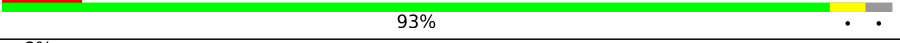

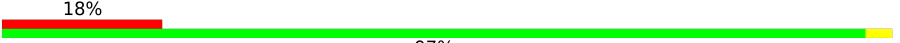
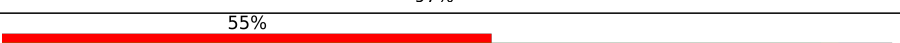
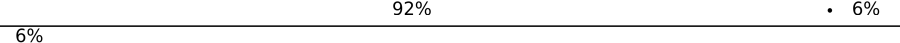
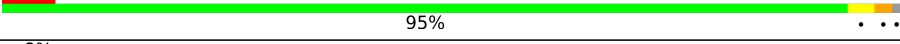

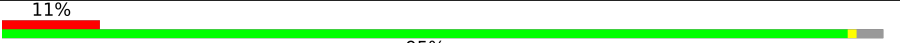
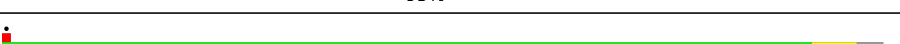

Metric	Whole archive (#Entries)	EM structures (#Entries)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
RNA backbone	8273	3508	-
Q-score	-	25397	13054 (2.40 - 3.40)

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	1	76	<div> <div>47%</div> <div>54%</div> <div>37%</div> <div>7%</div> <div>••</div> </div>
2	2	1863	<div> <div>10%</div> <div>64%</div> <div>23%</div> <div>6%</div> <div>7%</div> <div>•</div> </div>

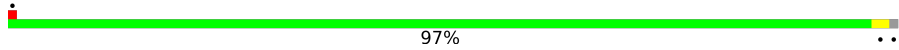
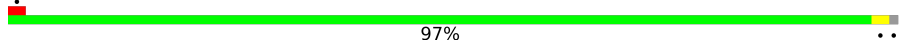
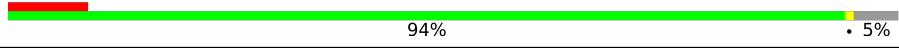

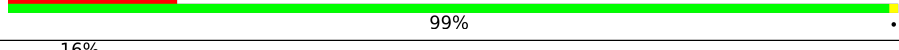
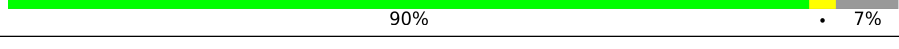
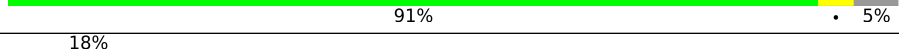
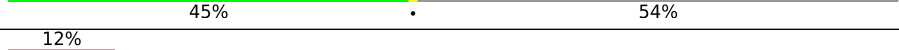
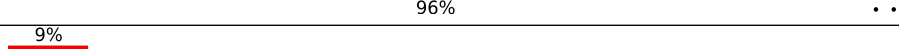
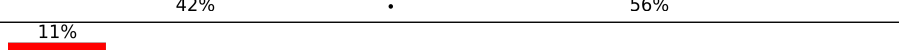

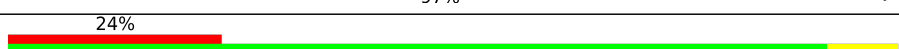





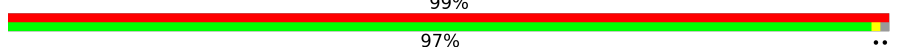

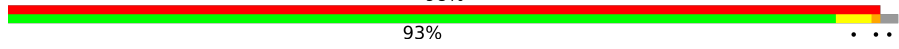
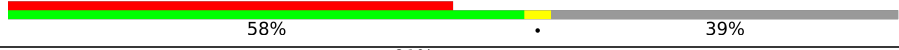



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Mol	Chain	Length	Quality of chain
3	3	160	
4	A	390	
5	B	485	
6	C	295	
7	D	264	
8	E	270	
9	F	243	
10	G	263	
11	H	204	
12	I	249	
13	J	194	
14	K	208	
15	L	194	
16	M	149	
17	N	158	
18	O	132	
19	P	151	
20	Q	151	
21	R	145	
22	S	146	
23	T	135	
24	U	152	
25	V	145	
26	W	119	
27	X	83	

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Mol	Chain	Length	Quality of chain
28	Y	130	
29	Z	143	
30	a	133	
31	b	115	
32	c	84	
33	d	69	
34	e	56	
35	f	156	
36	g	317	
37	i	133	
38	j	144	
39	k	599	
40	l	25	
41	m	557	
42	n	124	
43	o	430	
44	q	364	
45	r	352	
46	s	218	
47	t	607	
48	u	374	
49	v	913	
50	w	462	
51	y	1362	

2 Entry composition

There are 52 unique types of molecules in this entry. The entry contains 118867 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 Initiator methionylated tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	1	75	Total	C	N	O	P	0	0
			1614	722	299	519	74		

- Molecule 2 is a RNA chain called 18S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	2	1741	Total	C	N	O	P	0	0
			37147	16585	6650	12172	1740		

- Molecule 3 is a RNA chain called Linear mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	3	9	Total	C	N	O	P	0	0
			196	87	37	63	9		

- Molecule 4 is a protein called Eukaryotic translation initiation factor 2 subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	A	266	Total	C	N	O	S	0	0
			2146	1354	376	405	11		

- Molecule 5 is a protein called protein-synthesizing GTPase.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	B	422	Total	C	N	O	S	0	0
			3213	2044	561	591	17		

There are 51 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	?	-	UNK	deletion	UNP A0A5F9C3W2
B	367	VAL	UNK	conflict	UNP A0A5F9C3W2
B	368	GLY	UNK	conflict	UNP A0A5F9C3W2
B	369	GLN	UNK	conflict	UNP A0A5F9C3W2
B	370	VAL	UNK	conflict	UNP A0A5F9C3W2
B	371	LEU	UNK	conflict	UNP A0A5F9C3W2
B	372	GLY	UNK	conflict	UNP A0A5F9C3W2
B	373	ALA	UNK	conflict	UNP A0A5F9C3W2
B	374	VAL	UNK	conflict	UNP A0A5F9C3W2
B	375	GLY	UNK	conflict	UNP A0A5F9C3W2
B	376	ALA	UNK	conflict	UNP A0A5F9C3W2
B	377	LEU	UNK	conflict	UNP A0A5F9C3W2
B	378	PRO	UNK	conflict	UNP A0A5F9C3W2
B	379	GLU	UNK	conflict	UNP A0A5F9C3W2
B	380	ILE	UNK	conflict	UNP A0A5F9C3W2
B	381	PHE	UNK	conflict	UNP A0A5F9C3W2
B	382	THR	UNK	conflict	UNP A0A5F9C3W2
B	383	GLU	UNK	conflict	UNP A0A5F9C3W2
B	384	LEU	UNK	conflict	UNP A0A5F9C3W2
B	385	GLU	UNK	conflict	UNP A0A5F9C3W2
B	386	ILE	UNK	conflict	UNP A0A5F9C3W2
B	387	SER	UNK	conflict	UNP A0A5F9C3W2
B	388	TYR	UNK	conflict	UNP A0A5F9C3W2
B	389	PHE	UNK	conflict	UNP A0A5F9C3W2
B	390	LEU	UNK	conflict	UNP A0A5F9C3W2
B	391	LEU	UNK	conflict	UNP A0A5F9C3W2
B	392	ARG	UNK	conflict	UNP A0A5F9C3W2
B	393	ARG	UNK	conflict	UNP A0A5F9C3W2
B	394	LEU	UNK	conflict	UNP A0A5F9C3W2
B	395	LEU	UNK	conflict	UNP A0A5F9C3W2
B	396	GLY	UNK	conflict	UNP A0A5F9C3W2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	397	VAL	UNK	conflict	UNP A0A5F9C3W2
B	398	ARG	UNK	conflict	UNP A0A5F9C3W2
B	399	THR	UNK	conflict	UNP A0A5F9C3W2
B	400	GLU	UNK	conflict	UNP A0A5F9C3W2
B	401	GLY	UNK	conflict	UNP A0A5F9C3W2
B	402	ASP	UNK	conflict	UNP A0A5F9C3W2

- Molecule 6 is a protein called 40S ribosomal protein SA.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	C	207	Total	C	N	O	S	0	0
			1636	1042	288	298	8		

- Molecule 7 is a protein called 40S ribosomal protein S3a.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	D	215	Total	C	N	O	S	0	0
			1741	1107	309	310	15		

- Molecule 8 is a protein called Small ribosomal subunit protein uS5.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	E	226	Total	C	N	O	S	0	0
			1754	1139	298	310	7		

- Molecule 9 is a protein called Ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	F	227	Total	C	N	O	S	0	0
			1764	1124	317	315	8		

- Molecule 10 is a protein called 40S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	G	263	Total	C	N	O	S	0	0
			2083	1329	385	359	10		

- Molecule 11 is a protein called Ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	H	187	Total	C	N	O	S	0	0
			1482	928	279	268	7		

- Molecule 12 is a protein called Small ribosomal subunit protein eS6.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	I	237	Total	C	N	O	S	0	0
			1923	1199	387	330	7		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	130	THR	PRO	conflict	UNP G1TM55

- Molecule 13 is a protein called 40S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	J	190	Total	C	N	O	S	0	0
			1530	975	281	273	1		

- Molecule 14 is a protein called Small ribosomal subunit protein eS8.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	K	206	Total	C	N	O	S	0	0
			1679	1054	329	291	5		

- Molecule 15 is a protein called 40S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	L	188	Total	C	N	O	S	0	0
			1542	979	309	251	3		

- Molecule 16 is a protein called Small ribosomal subunit protein eS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	M	98	Total	C	N	O	S	0	0
			827	539	148	134	6		

- Molecule 17 is a protein called 40S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	N	158	Total	C	N	O	S	0	0
			1296	827	241	221	7		

- Molecule 18 is a protein called 40S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	O	124	Total	C	N	O	S	0	0
			958	600	170	179	9		

- Molecule 19 is a protein called 40S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	P	150	Total	C	N	O	S	0	0
			1208	773	229	205	1		

- Molecule 20 is a protein called 40S ribosomal protein uS11.

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

- Molecule 21 is a protein called 40S ribosomal protein uS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	R	140	Total	C	N	O	S	0	0
			1154	733	219	195	7		

- Molecule 22 is a protein called Ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	S	141	Total	C	N	O	S	0	0
			1124	715	212	194	3		

- Molecule 23 is a protein called 40S ribosomal protein eS17.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	T	126	Total	C	N	O	S	0	0
			1019	639	188	187	5		

- Molecule 24 is a protein called 40S ribosomal protein uS13.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	U	145	Total	C	N	O	S	0	0
			1194	747	243	203	1		

- Molecule 25 is a protein called 40S ribosomal protein eS19.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	V	141	Total	C	N	O	S	0	0
			1112	701	213	195	3		

- Molecule 26 is a protein called 40S ribosomal protein uS10.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	W	104	Total	C	N	O	S	0	0
			822	514	156	148	4		

- Molecule 27 is a protein called 40S ribosomal protein S21.

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

- Molecule 28 is a protein called Ribosomal protein S15a.

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

- Molecule 29 is a protein called 40S ribosomal protein S23.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	Z	142	Total	C	N	O	S	0	0
			1106	698	220	184	4		

- Molecule 30 is a protein called 40S ribosomal protein S24.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	a	126	Total	C	N	O	S	0	0
			1021	645	198	173	5		

- Molecule 31 is a protein called 40S ribosomal protein S26.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	b	99	Total	C	N	O	S	0	0
			789	491	162	130	6		

- Molecule 32 is a protein called 40S ribosomal protein S27.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	c	84	Total	C	N	O	S	0	0
			659	413	122	116	8		

- Molecule 33 is a protein called 40S ribosomal protein S28.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	d	64	Total	C	N	O	S	0	0
			506	308	102	94	2		

- Molecule 34 is a protein called 40S ribosomal protein S29.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	e	53	Total	C	N	O	S	0	0
			445	278	90	72	5		

- Molecule 35 is a protein called Ribosomal protein S27a.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	f	71	Total	C	N	O	S	0	0
			581	367	109	98	7		

- Molecule 36 is a protein called Small ribosomal subunit protein RACK1.

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

- Molecule 37 is a protein called 40S ribosomal protein S30.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	i	58	Total	C	N	O	S	0	0
			464	287	102	74	1		

- Molecule 38 is a protein called Eukaryotic translation initiation factor 1A, X-chromosomal.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	j	112	Total	C	N	O	S	0	0
			903	561	173	165	4		

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
j	141	THR	ILE	conflict	UNP P47813

- Molecule 39 is a protein called ATP binding cassette subfamily E member 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	k	595	Total	C	N	O	S	0	0
			4692	2995	802	864	31		

- Molecule 40 is a protein called 60S ribosomal protein L41.

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

- Molecule 41 is a protein called Eukaryotic translation initiation factor 3 subunit D.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	m	365	Total	C	N	O	S	0	0
			2955	1856	517	564	18		

- Molecule 42 is a protein called 40S ribosomal protein S25.

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

- Molecule 43 is a protein called Eukaryotic translation initiation factor 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	o	147	Total	C	N	O	S	0	0
			1162	733	205	213	11		

- Molecule 44 is a protein called Eukaryotic translation initiation factor 3 subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	q	272	Total	C	N	O	S	0	0
			2111	1330	359	410	12		

- Molecule 45 is a protein called Eukaryotic translation initiation factor 3 subunit H.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	r	324	Total	C	N	O	S	0	0
			2624	1654	452	503	15		

- Molecule 46 is a protein called Eukaryotic translation initiation factor 3 subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	s	215	Total	C	N	O	S	0	0
			1737	1109	285	330	13		

- Molecule 47 is a protein called Eukaryotic translation initiation factor 3 subunit L.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	t	372	Total	C	N	O	S	0	0
			3109	2010	519	563	17		

- Molecule 48 is a protein called Eukaryotic translation initiation factor 3 subunit M.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	u	365	Total	C	N	O	S	0	0
			2918	1850	493	558	17		

- Molecule 49 is a protein called Eukaryotic translation initiation factor 3 subunit C.

Mol	Chain	Residues	Atoms					AltConf	Trace
49	v	554	Total	C	N	O	S	0	0
			4508	2830	800	845	33		

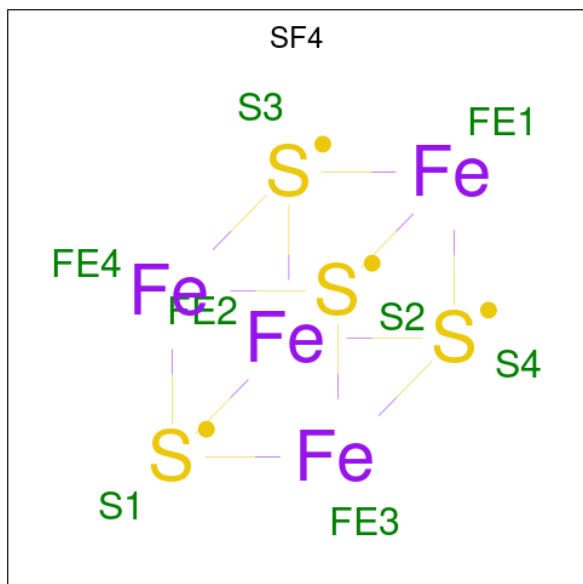
- Molecule 50 is a protein called Eukaryotic translation initiation factor 3 subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	w	419	Total	C	N	O	S	0	0
			3465	2220	586	639	20		

- Molecule 51 is a protein called Eukaryotic translation initiation factor 3 subunit A.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	y	603	Total	C	N	O	S	0	0
			4971	3133	897	920	21		

- Molecule 52 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe_4S_4) (labeled as "Ligand of Interest" by depositor).

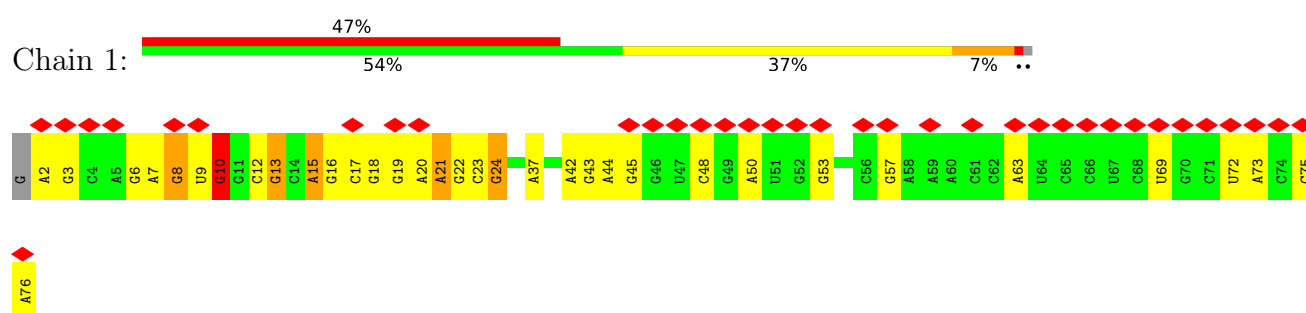


Mol	Chain	Residues	Atoms			AltConf
52	k	1	Total	Fe	S	0
			8	4	4	
52	k	1	Total	Fe	S	0
			8	4	4	

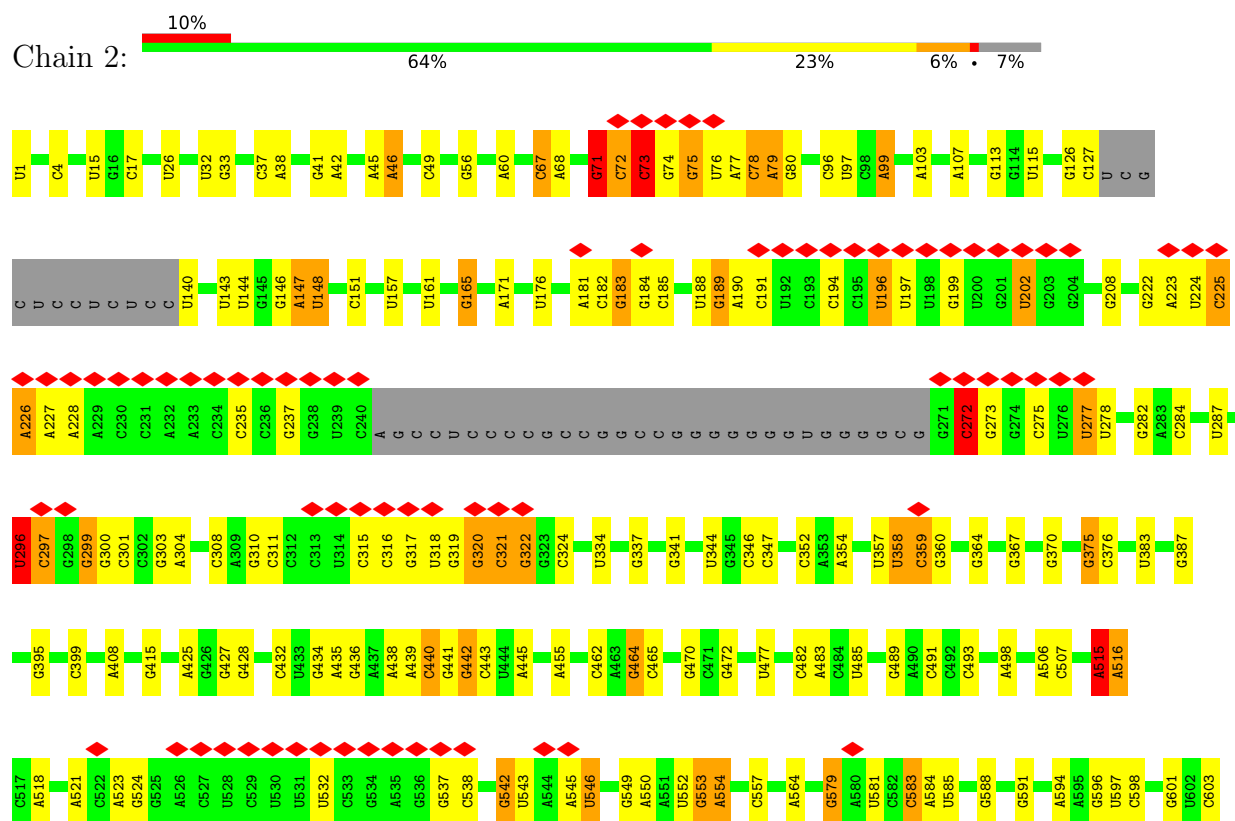
3 Residue-property plots

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: Initiator methionylated tRNA



• Molecule 2: 18S ribosomal RNA



- Molecule 3: Linear mRNA

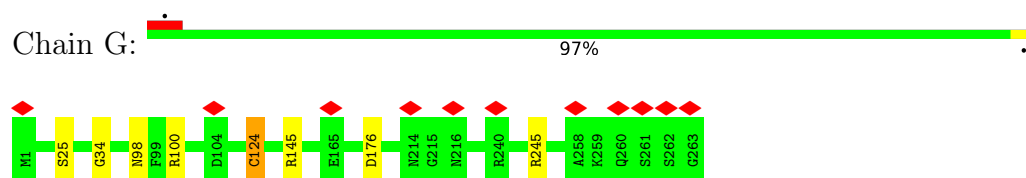
Chain 3: 

94%

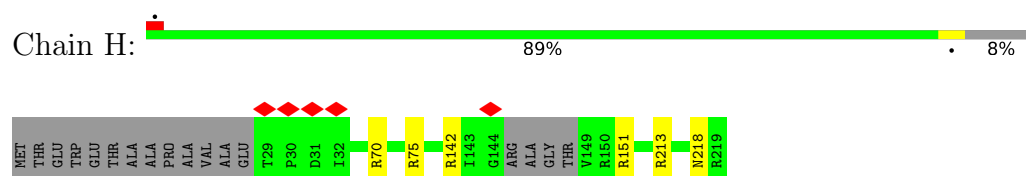
G G G A A C A U U U G C U U U C U G A C A A A A C A A U G G G A A A U C C G G A U U C A U U C A A C C U U U C G A A A A G C C U A U U A G U U A A



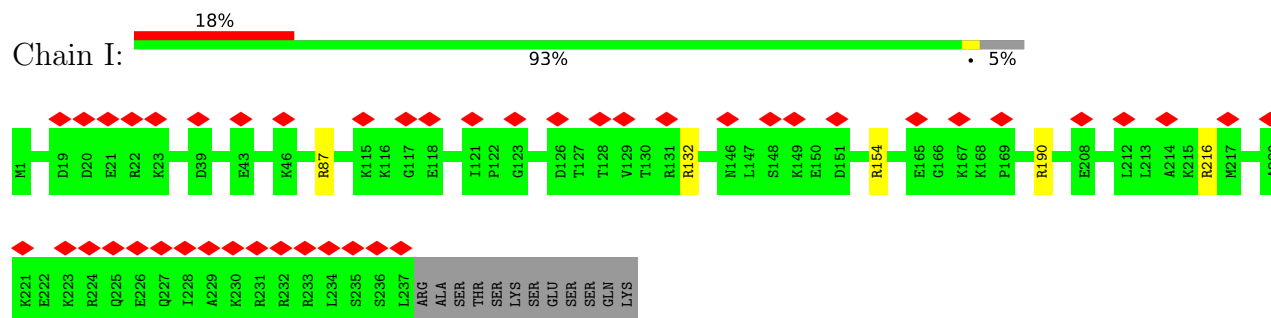
- Molecule 10: 40S ribosomal protein S4



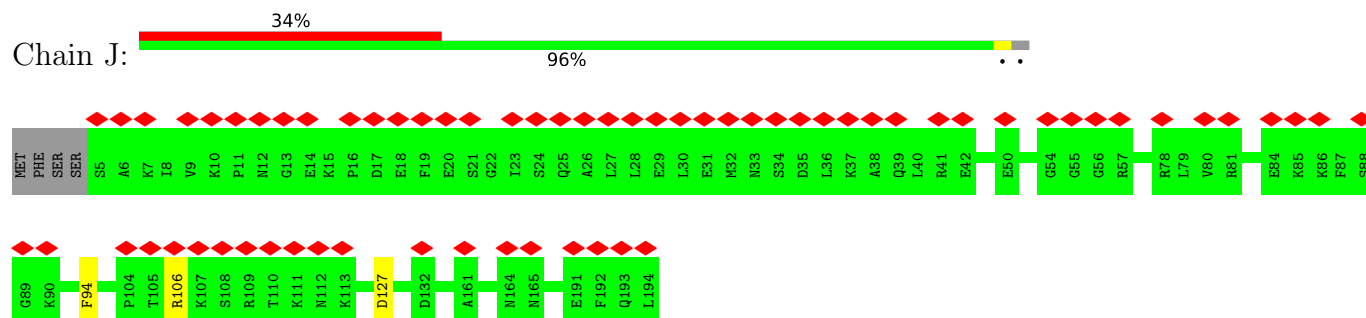
- Molecule 11: Ribosomal protein S5



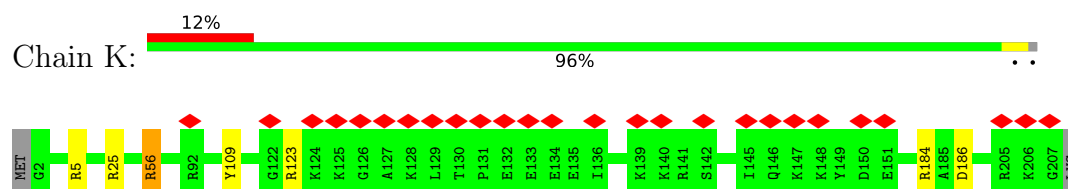
- Molecule 12: Small ribosomal subunit protein eS6



- Molecule 13: 40S ribosomal protein S7

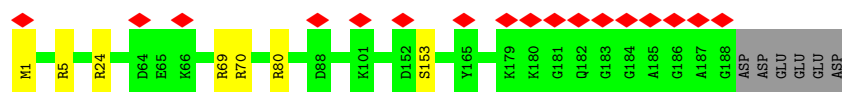


- Molecule 14: Small ribosomal subunit protein eS8

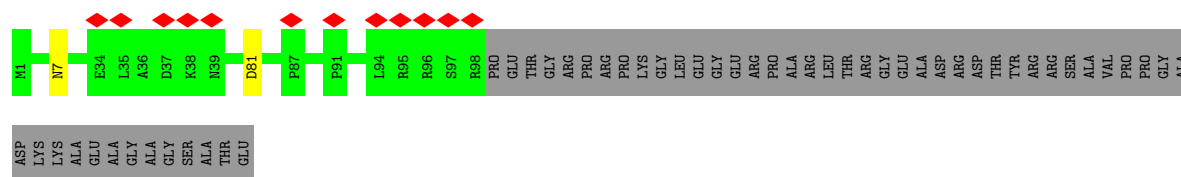


- Molecule 15: 40S ribosomal protein S9

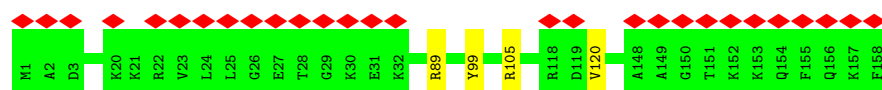




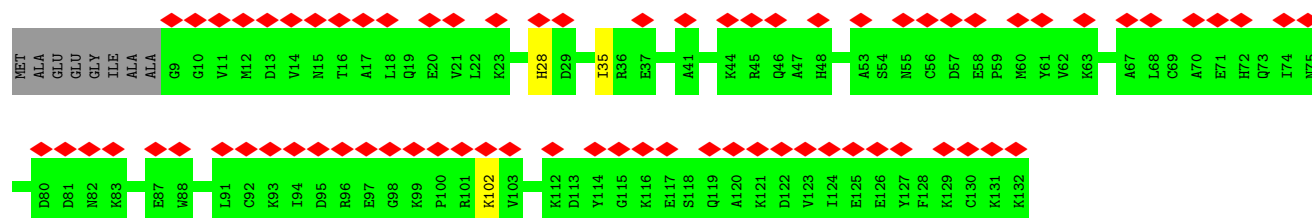
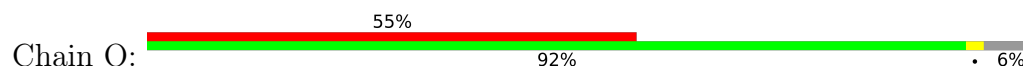
- Molecule 16: Small ribosomal subunit protein eS10



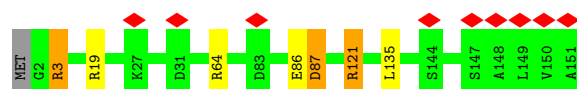
- Molecule 17: 40S ribosomal protein S11



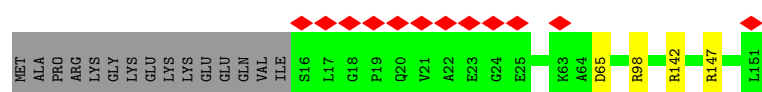
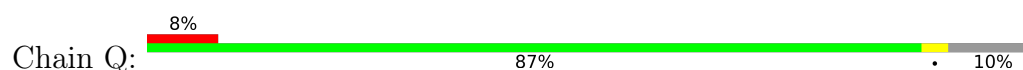
- Molecule 18: 40S ribosomal protein S12



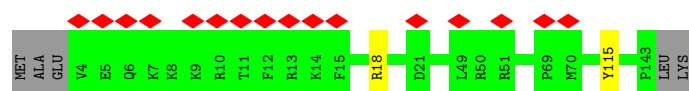
- Molecule 19: 40S ribosomal protein S13



- Molecule 20: 40S ribosomal protein uS11



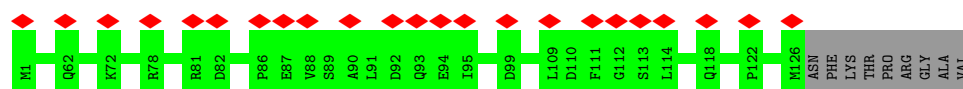
- Molecule 21: 40S ribosomal protein uS19



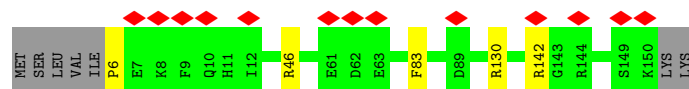
- Molecule 22: Ribosomal protein S16



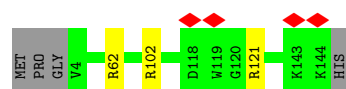
- Molecule 23: 40S ribosomal protein eS17



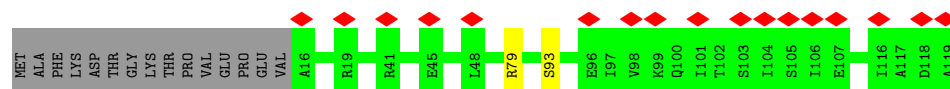
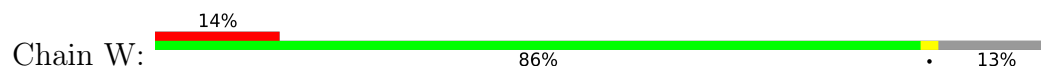
- Molecule 24: 40S ribosomal protein uS13



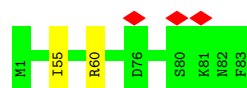
- Molecule 25: 40S ribosomal protein eS19



- Molecule 26: 40S ribosomal protein uS10

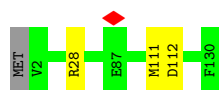


- Molecule 27: 40S ribosomal protein S21



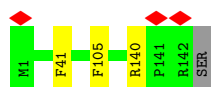
- Molecule 28: Ribosomal protein S15a

Chain Y:  97%

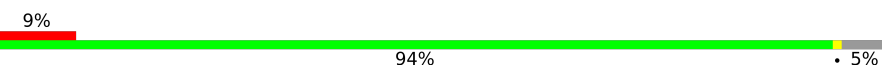


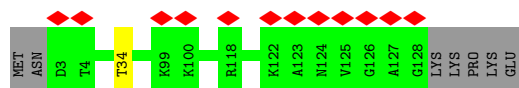
- Molecule 29: 40S ribosomal protein S23

Chain Z:  97%




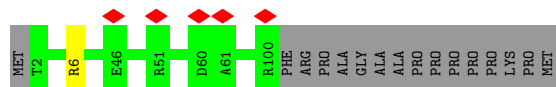
- Molecule 30: 40S ribosomal protein S24

Chain a:  9% 94% 5%



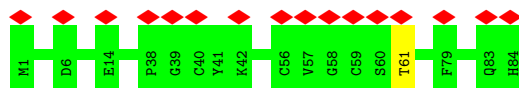
- Molecule 31: 40S ribosomal protein S26

Chain b:  85% 14%

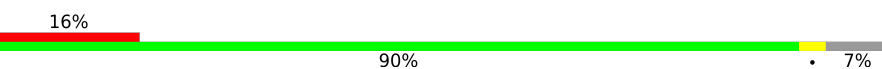


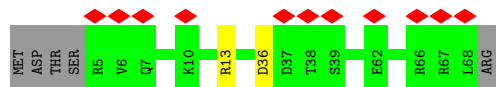
- Molecule 32: 40S ribosomal protein S27

Chain c:  19% 99%




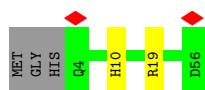
- Molecule 33: 40S ribosomal protein S28

Chain d:  16% 90% 7%

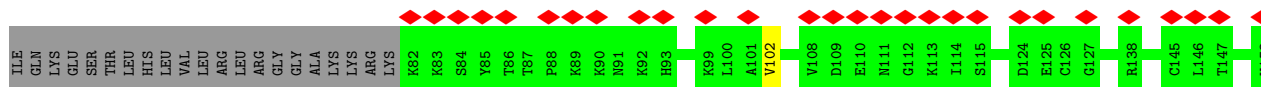
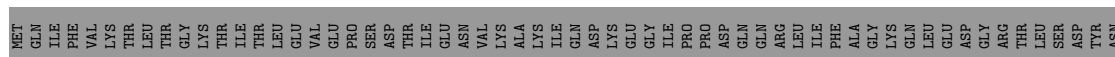
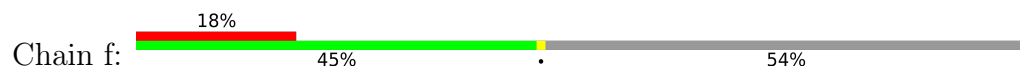


- Molecule 34: 40S ribosomal protein S29

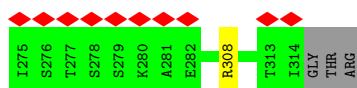
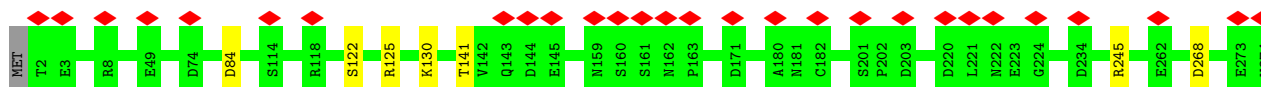
Chain e:  91% 5%



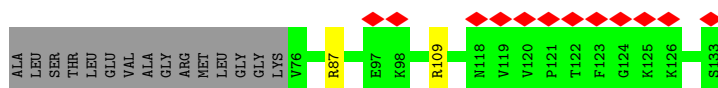
- Molecule 35: Ribosomal protein S27a



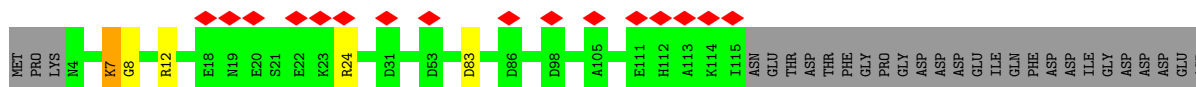
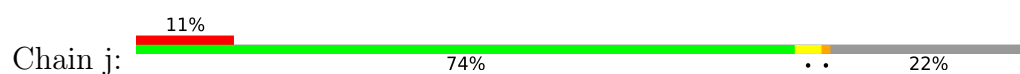
- Molecule 36: Small ribosomal subunit protein RACK1



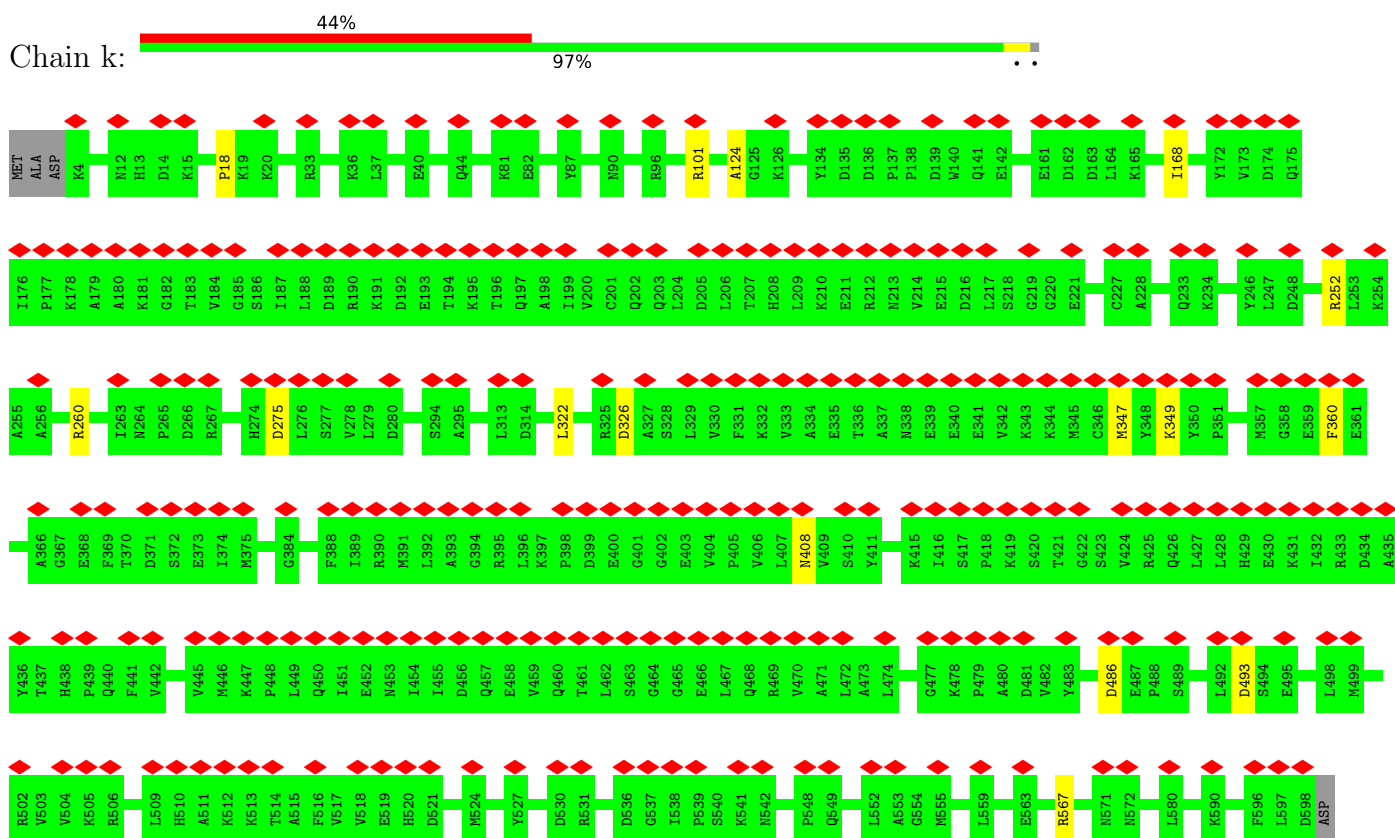
- Molecule 37: 40S ribosomal protein S30



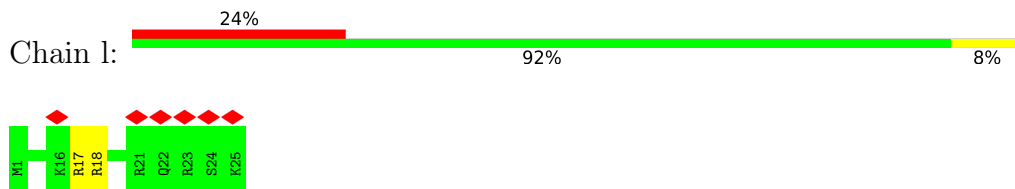
- Molecule 38: Eukaryotic translation initiation factor 1A, X-chromosomal



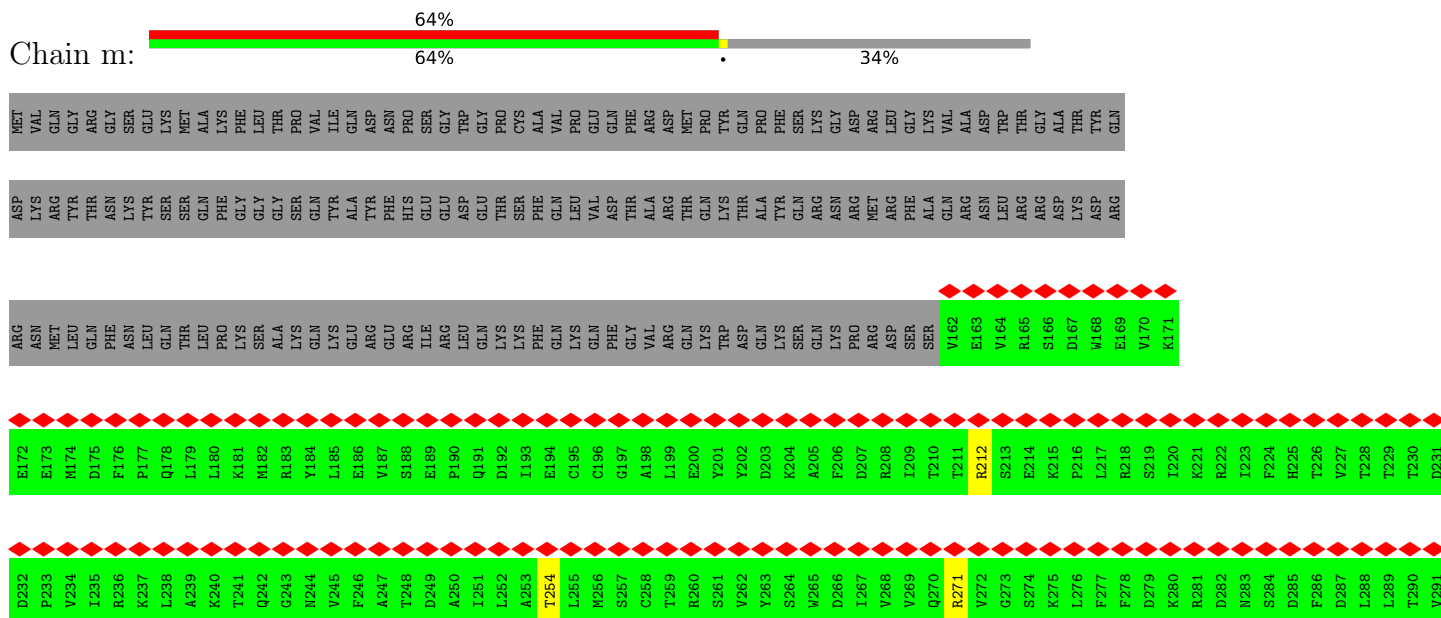
- Molecule 39: ATP binding cassette subfamily E member 1

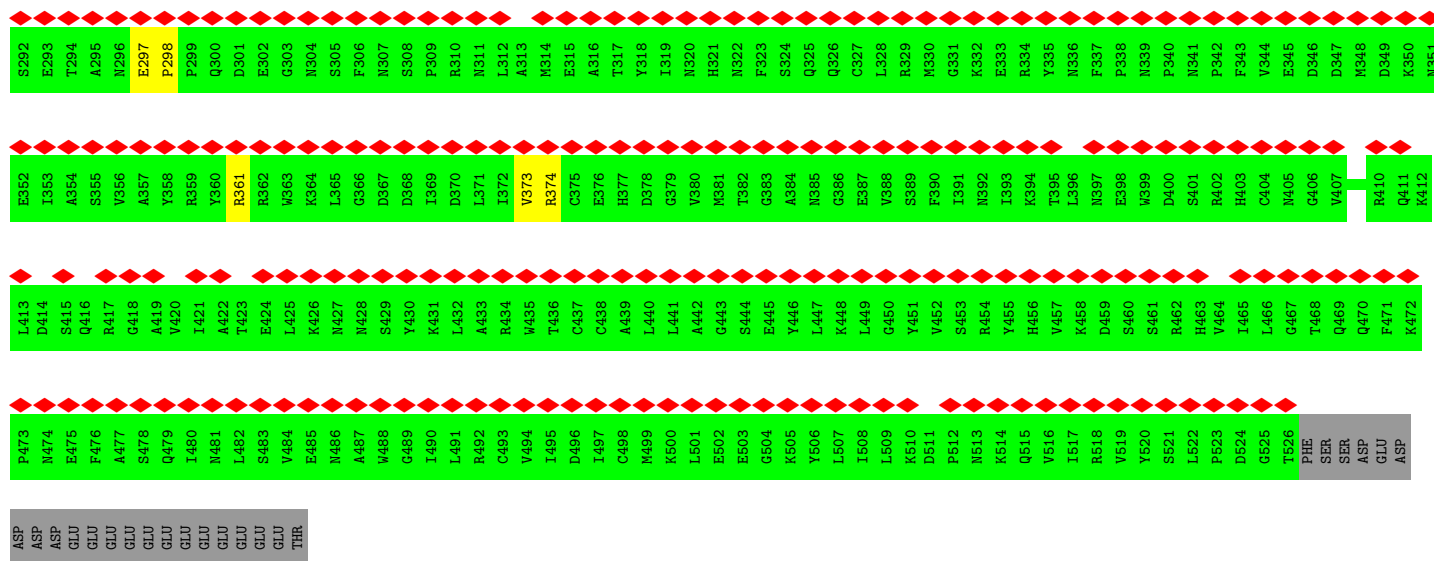


- Molecule 40: 60S ribosomal protein L41



- Molecule 41: Eukaryotic translation initiation factor 3 subunit D

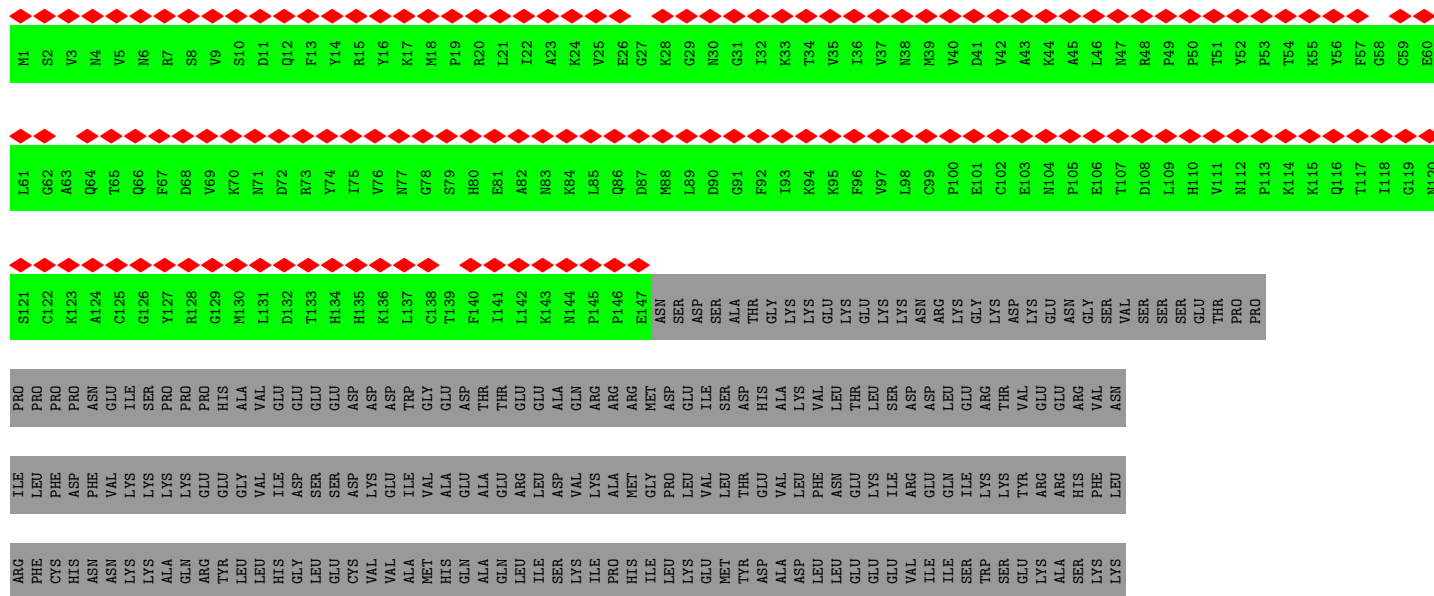




• Molecule 42: 40S ribosomal protein S25

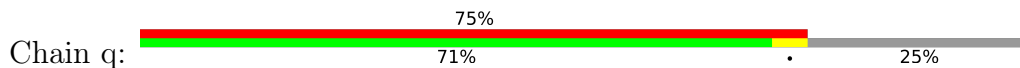


• Molecule 43: Eukaryotic translation initiation factor 5



LYS	TTR
ASP	SER
ASP	LYS
ASP	GLU
ILE	LEU
ASP	ALA
ILE	LYS
ASP	GLU
ALA	ILE
ILE	ARG
	VAL
	LYS
	ALA
	GLU
	PHE
	PRO
	THR
	ILE
	LYS
	TTP
	LEU
	LYS
	GLY
	ASP
	GLY
	SER
	SER
	GLY
	GLU
	GLU
	ASP
	ASP
	GLU
	ASN
	ILE
	GLY
	VAL
	VAL
	LYS
	VAL
	GLU
	THR
	VAL
	VAL
	SER
	LYS
	SER
	ASP

- Molecule 44: Eukaryotic translation initiation factor 3 subunit F



MET	ALA	THR	PRO	ALA	SER	ALA	PRO	THR	ALA	THR	PRO	ALA	ALA	ALA	ALA	PRO	ALA	SER	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ASP	PRO	ALA	ALA	ALA	ALA
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[illegible]

A114	R115	V116	T117	G118	T119	L120	L121	G122	T123	V124	D125	K126	H127	S128	V129	E130	V131	T132	M133	C134	F135	S136	V137	P138	H139	M140	E141	S142	E143	D144	E145	V146	A147	V148	D149	M150	E151	F152	A153	K154	M155	M156	V157	E158	L159	H160	K161	K162	V163	S164	P165	M166	E167	L168	T169	L170	G171	W172	V173
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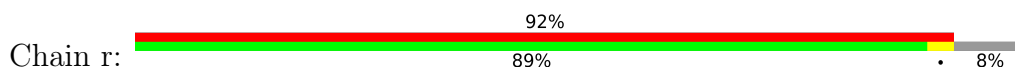
A174	T175	G176	H177	D178	I179	T180	E181	H182	S183	V184	L185	I186	H187	E188	V189	Y190	S191	E192	E193	A194	P195	P196	P197	I198	H199	L200	T201	V202	D203	T204	S205	L206	Q207	M208	G209	R210	M211	S212	T213	K214	A215	V216	V217	S218	T219	S220	M221	G222	V223	P224	G225	R226	T227	M228	G229	V230	M231	F232	T233
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P234	L235	T236	V237	K238	Y239	A240	Y241	Y242	D243	T244	E245	R246	T247	G248	V249	D250	L251	T252	K253	K254	T255	C256	S258	P259	M260	R261	V262	T263	G264	L265	S266	S267	D268	L269	Q270	Q271	V272	G273	G274	A275	S276	A277	R278	T279	Q280	D281	A282	L283	S284	T285	V286	L287	Q288	Y289	A290	E291	D292	V293
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L294	S295	G296	G297	V298	S299	A300	D301	N302	T303	V304	G305	R306	F307	L308	N309	S310	L311	V312	N313	Q314	V315	P316	K317	L318	V319	P320	D321	D322	F323	E324	T325	M326	L327	N328	S329	N330	T331	N332	D333	L334	L335	M336	V337	T338	V339	L340	A341	N342	L343	T344	Q345	S346	Q347	L348	A349	L350	N351	K352	K353
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L354	V355	N356	L357
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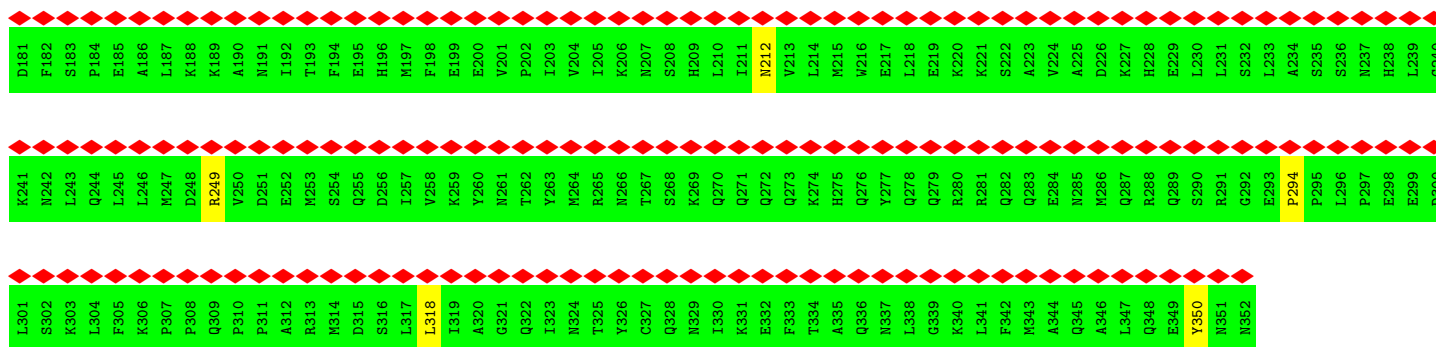
- Molecule 45: Eukaryotic translation initiation factor 3 subunit H



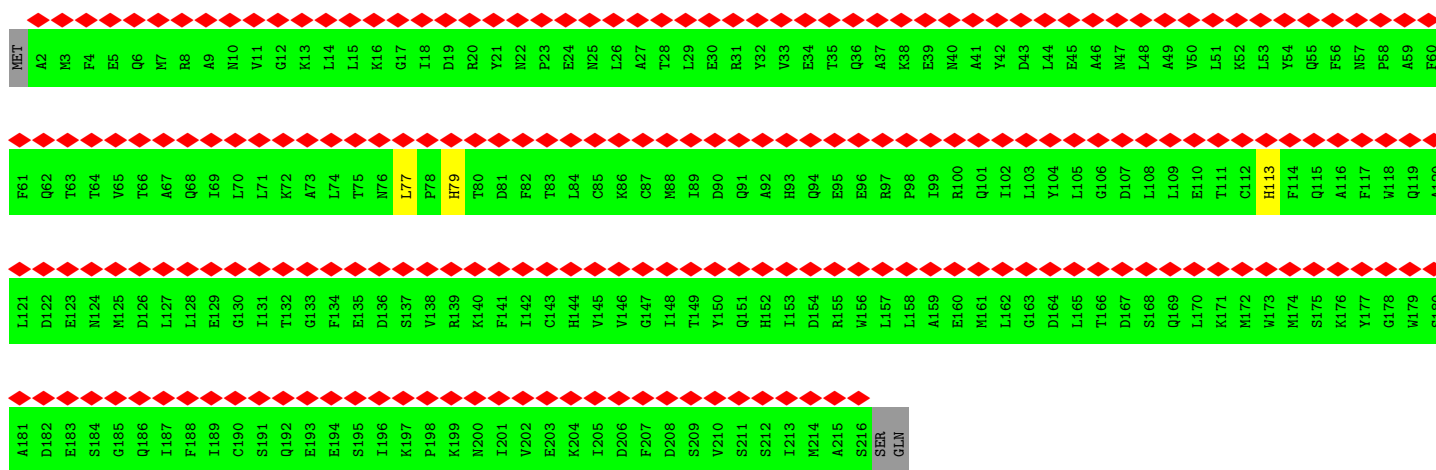
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G29	G30	G31	G32	G33	G34	A35	V36	K37	Q38	V39	Q40	I41	D42	G43	L44	V45	V46	L47	K48	I49	I50	K51	H52	Y53	Q54	E55	E56	G57	Q58	T59	G60

E61	E62	E63	E64	E65	E66	E67	E68	E69	E70	E71	E72	E73	E74	E75	E76	E77	E78	E79	E80	E81	E82	E83	E84	E85	E86	E87	E88	E89	E90	E91	E92	E93	E94	E95	E96	E97	E98	E99	E100	E101	E102	E103	E104	E105	E106	E107	E108	E109	E110	E111	E112	E113	E114	E115	E116	E117	E118	E119	E120
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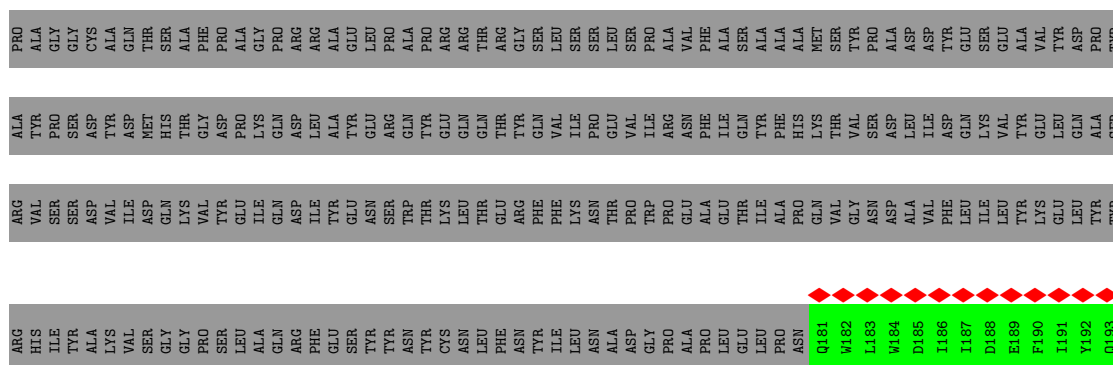
Q1'21	S1'22	T1'23	Y1'24	V1'25	G1'26	S1'27	F1'28	V1'29	T1'30	R1'31	A1'32	L1'33	L1'34	D1'35	S1'36	Q1'37	F1'38	S1'39	Y1'40	Q1'41	H1'42	A1'43	I1'44	E1'45	E1'46	S1'47	V1'48	V1'49	L1'50	I1'51	Y1'52	D1'53	P1'54	I1'55	K1'56	T1'57	A1'58	S1'59	G1'60	S1'61	L1'62	S1'63	L1'64	K1'65	A1'66	Y1'67	R1'68	L1'69	T1'70	P1'71	K1'72	L1'73	M1'74	E1'75	C1'77	K1'78	E1'79	L1'80
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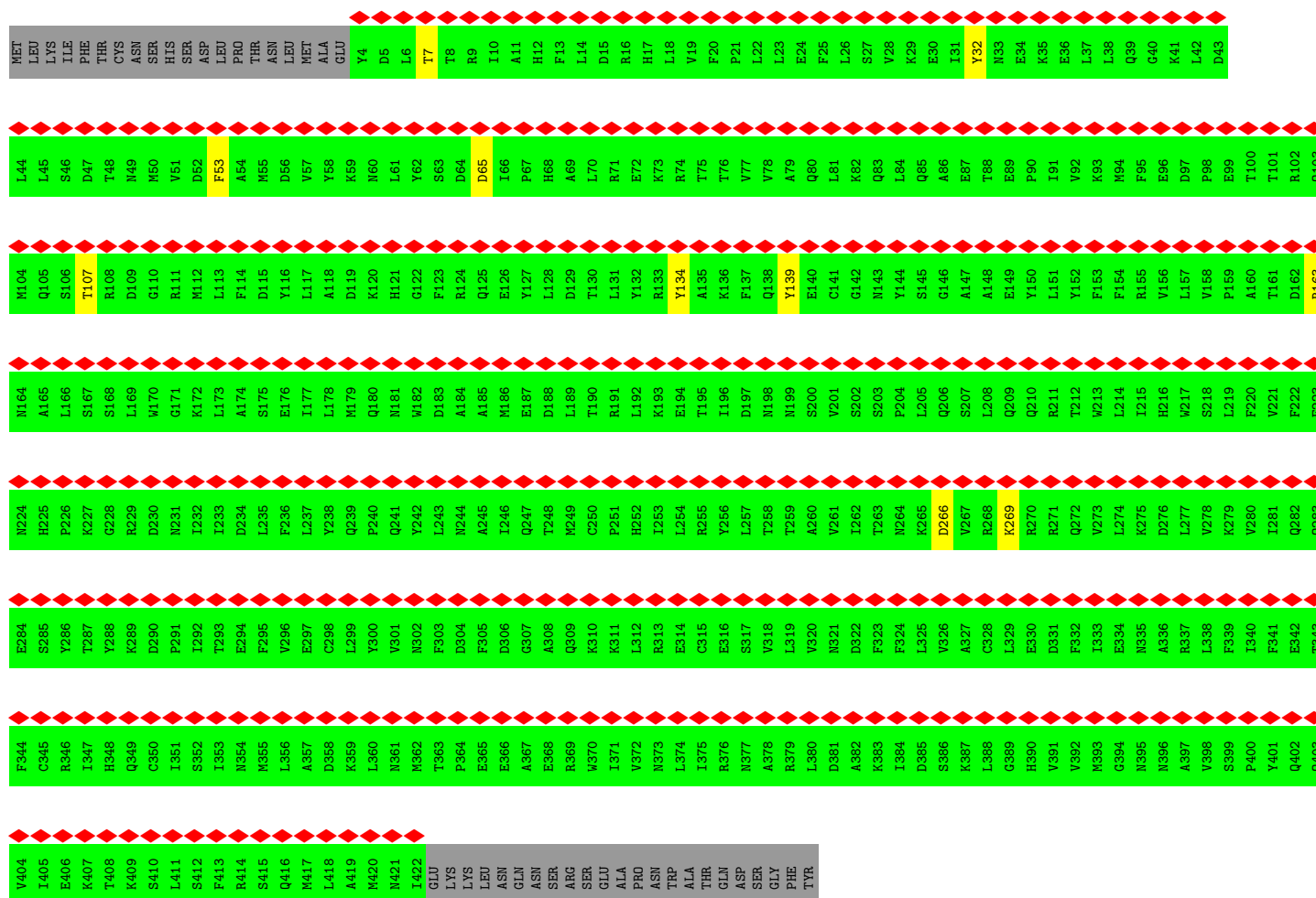
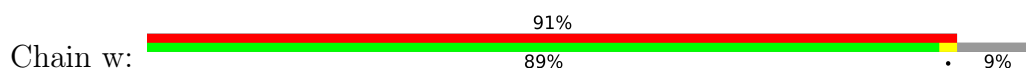
• Molecule 46: Eukaryotic translation initiation factor 3 subunit K



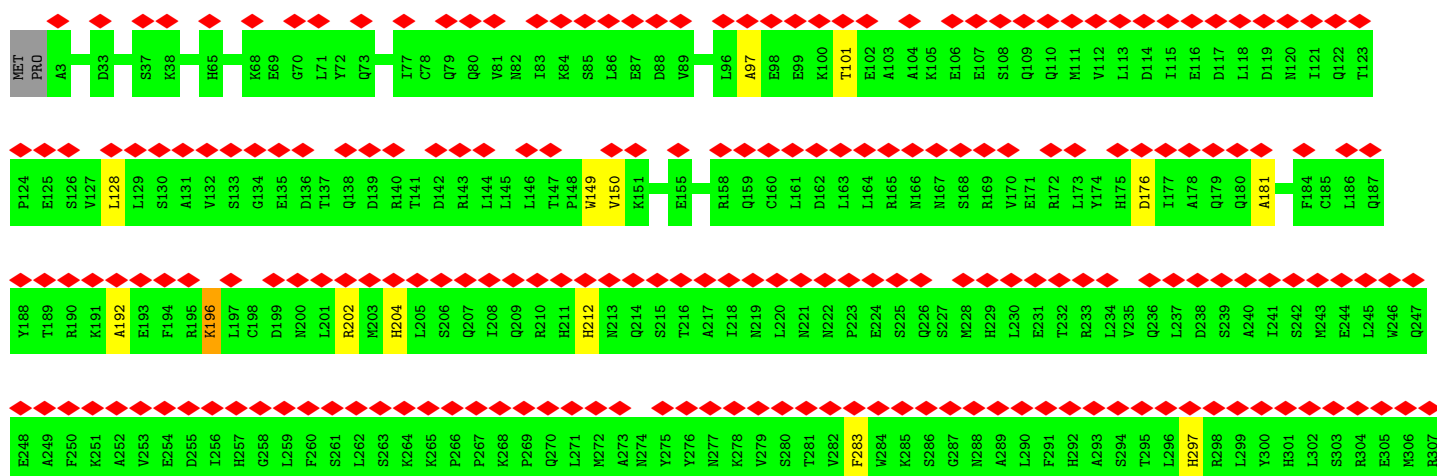
• Molecule 47: Eukaryotic translation initiation factor 3 subunit L



- Molecule 50: Eukaryotic translation initiation factor 3 subunit E



• Molecule 51: Eukaryotic translation initiation factor 3 subunit A





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	1000	Depositor
Resolution determination method	OTHER	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	59000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.157	Depositor
Minimum map value	-0.675	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.036	Depositor
Recommended contour level	0.15	Depositor
Map size (Å)	465.0, 465.0, 465.0	wwPDB
Map dimensions	500, 500, 500	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.93, 0.93, 0.93	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: T6A, I2T, SF4

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	1	0.83	0/1770	1.16	2/2759 (0.1%)
2	2	0.82	0/41503	1.15	90/64683 (0.1%)
3	3	0.80	0/219	1.10	2/340 (0.6%)
4	A	0.88	0/2177	1.38	5/2935 (0.2%)
5	B	0.91	0/3266	1.40	4/4415 (0.1%)
6	C	0.85	0/1673	1.41	3/2275 (0.1%)
7	D	0.80	0/1769	1.36	2/2367 (0.1%)
8	E	0.82	0/1794	1.37	3/2430 (0.1%)
9	F	0.81	0/1792	1.34	0/2412
10	G	0.87	0/2125	1.38	7/2856 (0.2%)
11	H	0.82	0/1503	1.39	5/2020 (0.2%)
12	I	0.87	0/1945	1.40	5/2588 (0.2%)
13	J	0.85	0/1553	1.39	3/2079 (0.1%)
14	K	0.89	0/1708	1.43	4/2278 (0.2%)
15	L	0.87	0/1567	1.44	6/2092 (0.3%)
16	M	0.84	0/851	1.34	2/1147 (0.2%)
17	N	0.88	0/1319	1.38	1/1761 (0.1%)
18	O	0.85	0/968	1.37	2/1296 (0.2%)
19	P	0.85	0/1232	1.42	7/1656 (0.4%)
20	Q	0.87	0/1029	1.49	4/1380 (0.3%)
21	R	0.87	0/1177	1.39	1/1571 (0.1%)
22	S	0.87	0/1142	1.41	10/1528 (0.7%)
23	T	0.87	0/1031	1.38	0/1383
24	U	0.90	0/1212	1.44	4/1621 (0.2%)
25	V	0.84	0/1132	1.43	3/1517 (0.2%)
26	W	0.87	0/832	1.40	2/1117 (0.2%)
27	X	0.82	0/644	1.38	3/860 (0.3%)
28	Y	0.84	0/1051	1.41	3/1406 (0.2%)
29	Z	0.84	0/1124	1.45	3/1500 (0.2%)
30	a	0.86	0/1038	1.34	0/1380
31	b	0.88	0/802	1.49	1/1076 (0.1%)
32	c	0.86	0/673	1.39	0/902

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
33	d	0.86	0/508	1.46	2/680 (0.3%)
34	e	0.90	0/455	1.55	2/603 (0.3%)
35	f	0.91	0/593	1.30	1/786 (0.1%)
36	g	0.87	0/2493	1.36	7/3394 (0.2%)
37	i	0.88	0/469	1.49	2/617 (0.3%)
38	j	0.87	1/913 (0.1%)	1.67	7/1213 (0.6%)
39	k	0.87	0/4779	1.38	12/6452 (0.2%)
40	l	0.96	0/241	1.65	2/305 (0.7%)
41	m	0.88	1/3015 (0.0%)	1.35	5/4078 (0.1%)
42	n	0.83	0/604	1.37	2/810 (0.2%)
43	o	0.89	0/1186	1.32	0/1599
44	q	0.84	0/2149	1.39	6/2920 (0.2%)
45	r	0.86	0/2675	1.42	5/3609 (0.1%)
46	s	0.69	0/1772	1.22	1/2396 (0.0%)
47	t	0.79	1/3185 (0.0%)	1.30	5/4296 (0.1%)
48	u	0.79	0/2963	1.40	13/3998 (0.3%)
49	v	0.87	0/4587	1.39	17/6191 (0.3%)
50	w	0.79	0/3538	1.35	8/4786 (0.2%)
51	y	0.87	0/5059	1.50	11/6832 (0.2%)
All	All	0.84	3/124805 (0.0%)	1.31	295/177195 (0.2%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	1	0	17
2	2	0	335
4	A	0	1
6	C	0	1
7	D	0	1
9	F	0	1
10	G	0	1
11	H	0	1
14	K	0	4
15	L	0	1
17	N	0	2
19	P	0	1
20	Q	0	1
21	R	0	1
28	Y	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
38	j	0	1
41	m	0	1
44	q	0	1
45	r	0	3
48	u	0	2
49	v	0	3
50	w	0	2
51	y	0	1
All	All	0	383

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
38	j	8	GLY	N-CA	5.76	1.51	1.45
41	m	298	PRO	CA-C	5.68	1.55	1.51
47	t	469	THR	CB-OG1	-5.16	1.35	1.43

All (295) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
51	y	507	ILE	O-C-N	-39.51	73.19	122.57
38	j	7	LYS	O-C-N	-28.40	92.94	122.19
51	y	507	ILE	CA-C-O	-19.26	96.70	120.78
6	C	20	ALA	N-CA-C	10.26	125.18	112.87
38	j	7	LYS	CA-C-N	8.64	132.03	121.83
38	j	7	LYS	C-N-CA	8.64	132.03	121.83
2	2	73	C	C2'-C3'-O3'	8.30	121.95	109.50
2	2	67	C	C2'-C3'-O3'	7.92	121.38	109.50
2	2	915	A	C2'-C3'-O3'	7.82	121.23	109.50
49	v	413	PHE	CA-CB-CG	7.65	121.45	113.80
51	y	204	HIS	CA-CB-CG	7.39	121.19	113.80
22	S	6	PRO	CA-N-CD	-7.31	101.77	112.00
24	U	6	PRO	CA-N-CD	-7.22	101.90	112.00
13	J	94	PHE	CA-CB-CG	7.11	120.91	113.80
14	K	186	ASP	CA-CB-CG	7.11	119.71	112.60
48	u	250	ALA	N-CA-C	7.03	121.15	112.58
29	Z	41	PHE	CA-CB-CG	6.82	120.62	113.80
2	2	1427	G	C4'-C3'-O3'	6.79	123.19	113.00
2	2	1515	G	C2'-C3'-O3'	-6.76	103.56	113.70
2	2	297	C	O4'-C1'-C2'	-6.76	99.04	105.80
2	2	71	G	C2'-C3'-O3'	6.75	119.63	109.50
2	2	1547	G	C4'-C3'-O3'	6.73	119.50	109.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
51	y	196	LYS	CB-CA-C	-6.63	100.37	110.92
2	2	1845	A	C2'-C3'-O3'	-6.63	103.76	113.70
2	2	491	C	N1-C1'-C2'	6.48	121.73	112.00
10	G	176	ASP	CA-CB-CG	6.47	119.07	112.60
40	l	18	ARG	NE-CZ-NH2	6.46	125.02	119.20
2	2	1135	C	O4'-C1'-N1	6.46	118.19	108.50
26	W	93	SER	N-CA-C	6.44	114.02	108.22
2	2	1507	U	O5'-C5'-C4'	6.42	121.13	111.50
39	k	493	ASP	CA-CB-CG	6.35	118.95	112.60
45	r	138	PHE	CA-CB-CG	6.35	120.15	113.80
48	u	57	ASP	CA-C-N	6.33	130.82	120.63
48	u	57	ASP	C-N-CA	6.33	130.82	120.63
36	g	125	ARG	NE-CZ-NH2	6.33	124.90	119.20
10	G	124	CYS	N-CA-CB	6.31	121.72	110.80
2	2	72	C	C2'-C3'-O3'	6.30	118.96	109.50
49	v	521	ARG	NE-CZ-NH2	6.29	124.86	119.20
39	k	486	ASP	CA-CB-CG	6.28	118.88	112.60
49	v	575	HIS	CA-CB-CG	6.28	120.08	113.80
22	S	85	ARG	NE-CZ-NH2	6.26	124.83	119.20
28	Y	111	MET	CA-C-N	6.22	129.59	120.82
28	Y	111	MET	C-N-CA	6.22	129.59	120.82
2	2	1506	G	O4'-C1'-C2'	-6.20	101.41	107.60
48	u	139	TYR	CA-C-N	6.14	124.11	120.24
48	u	139	TYR	C-N-CA	6.14	124.11	120.24
3	3	141	A	C5'-C4'-C3'	-6.13	106.80	116.00
15	L	80	ARG	NE-CZ-NH2	6.12	124.70	119.20
2	2	987	G	O4'-C4'-C3'	6.10	110.10	104.00
1	1	8	G	C4'-C3'-O3'	6.09	118.54	109.40
2	2	1105	C	N1-C1'-C2'	6.08	121.12	112.00
2	2	849	C	O4'-C1'-N1	6.07	117.61	108.50
45	r	212	ASN	N-CA-C	6.06	117.97	111.36
2	2	1473	U	N1-C1'-C2'	6.05	121.08	112.00
28	Y	112	ASP	CA-CB-CG	6.01	118.61	112.60
34	e	10	HIS	CA-CB-CG	6.01	119.81	113.80
2	2	818	U	C3'-C2'-C1'	6.00	107.30	101.30
25	V	121	ARG	NE-CZ-NH2	5.99	124.59	119.20
19	P	19	ARG	NE-CZ-NH2	5.98	124.58	119.20
49	v	867	VAL	CA-C-N	5.96	128.55	120.38
49	v	867	VAL	C-N-CA	5.96	128.55	120.38
12	I	87	ARG	NE-CZ-NH2	5.95	124.56	119.20
2	2	1673	A	O4'-C1'-N9	5.93	117.40	108.50
2	2	915	A	P-O3'-C3'	5.93	129.10	120.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
33	d	36	ASP	CA-CB-CG	5.92	118.52	112.60
3	3	140	G	C5'-C4'-C3'	-5.91	107.13	116.00
44	q	88	GLY	CA-C-N	5.91	125.59	119.92
44	q	88	GLY	C-N-CA	5.91	125.59	119.92
2	2	1414	C	O4'-C1'-N1	5.89	117.04	108.20
4	A	9	TYR	CA-C-N	5.88	128.43	120.38
4	A	9	TYR	C-N-CA	5.88	128.43	120.38
22	S	11	GLN	OE1-CD-NE2	-5.87	116.73	122.60
10	G	98	ASN	CA-CB-CG	5.86	118.46	112.60
2	2	909	A	O4'-C1'-N9	5.84	116.97	108.20
16	M	81	ASP	CA-CB-CG	5.84	118.44	112.60
36	g	84	ASP	CA-CB-CG	5.84	118.44	112.60
4	A	232	PRO	N-CA-C	5.83	117.82	110.70
14	K	56	ARG	NE-CZ-NH2	5.83	124.44	119.20
2	2	296	U	C3'-C2'-C1'	5.82	107.12	101.30
22	S	146	ARG	NE-CZ-NH2	5.81	124.43	119.20
2	2	491	C	O4'-C1'-C2'	-5.81	101.79	107.60
39	k	567	ARG	NE-CZ-NH2	5.81	124.43	119.20
8	E	171	HIS	CB-CG-CD2	-5.80	123.66	131.20
2	2	334	U	C5'-C4'-C3'	-5.79	107.31	116.00
41	m	212	ARG	NE-CZ-NH2	5.77	124.40	119.20
39	k	260	ARG	NE-CZ-NH2	5.77	124.40	119.20
19	P	64	ARG	NE-CZ-NH2	5.76	124.38	119.20
6	C	203	PHE	CA-CB-CG	5.74	119.54	113.80
12	I	132	ARG	NE-CZ-NH2	5.74	124.36	119.20
26	W	79	ARG	NE-CZ-NH2	5.72	124.35	119.20
16	M	7	ASN	CA-CB-CG	5.71	118.31	112.60
10	G	25	SER	N-CA-C	5.71	117.21	108.42
5	B	310	ARG	NE-CZ-NH2	5.71	124.34	119.20
2	2	1414	C	C5'-C4'-C3'	-5.71	106.64	115.20
2	2	515	A	C2'-C3'-O3'	5.70	118.05	109.50
2	2	1562	G	O4'-C1'-N9	5.69	117.04	108.50
19	P	135	LEU	CA-C-N	5.69	123.81	119.66
19	P	135	LEU	C-N-CA	5.69	123.81	119.66
7	D	162	ARG	NE-CZ-NH2	5.68	124.31	119.20
20	Q	65	ASP	CA-CB-CG	5.68	118.28	112.60
38	j	83	ASP	CA-C-N	5.68	131.41	122.21
38	j	83	ASP	C-N-CA	5.68	131.41	122.21
50	w	266	ASP	CA-CB-CG	5.68	118.28	112.60
2	2	583	C	C3'-C2'-C1'	5.67	106.97	101.30
2	2	1310	U	C2'-C3'-O3'	5.67	122.21	113.70
49	v	485	ARG	NE-CZ-NH2	5.67	124.31	119.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
22	S	138	ARG	NE-CZ-NH2	5.67	124.30	119.20
36	g	268	ASP	CA-CB-CG	5.66	118.26	112.60
42	n	80	ARG	NE-CZ-NH2	5.66	124.29	119.20
2	2	819	U	O4'-C1'-N1	5.66	116.98	108.50
48	u	55	GLU	CA-C-N	5.64	130.16	121.53
48	u	55	GLU	C-N-CA	5.64	130.16	121.53
2	2	818	U	O4'-C4'-C3'	5.64	109.64	104.00
37	i	109	ARG	NE-CZ-NH2	5.63	124.27	119.20
47	t	420	PHE	CA-CB-CG	5.63	119.43	113.80
49	v	872	ARG	NE-CZ-NH2	5.62	124.26	119.20
17	N	105	ARG	NE-CZ-NH2	5.61	124.25	119.20
14	K	25	ARG	NE-CZ-NH2	5.61	124.25	119.20
2	2	1472	A	C5'-C4'-C3'	-5.60	106.80	115.20
10	G	100	ARG	NE-CZ-NH2	5.60	124.24	119.20
44	q	109	ARG	NE-CZ-NH2	5.59	124.23	119.20
38	j	12	ARG	NE-CZ-NH2	5.59	124.23	119.20
14	K	123	ARG	NE-CZ-NH2	5.58	124.23	119.20
25	V	102	ARG	NE-CZ-NH2	5.58	124.22	119.20
2	2	321	C	C2'-C3'-O3'	5.58	117.87	109.50
47	t	216	ARG	NE-CZ-NH2	5.58	124.22	119.20
2	2	1294	G	O4'-C1'-N9	5.57	116.86	108.50
4	A	84	ASP	CA-CB-CG	5.57	118.17	112.60
36	g	308	ARG	NE-CZ-NH2	5.56	124.20	119.20
38	j	24	ARG	NE-CZ-NH2	5.56	124.20	119.20
11	H	218	ASN	CA-CB-CG	5.55	118.15	112.60
50	w	65	ASP	CA-C-N	5.54	124.76	120.33
50	w	65	ASP	C-N-CA	5.54	124.76	120.33
49	v	504	LEU	N-CA-C	-5.54	106.57	113.55
50	w	107	THR	CA-C-N	5.54	127.70	120.28
50	w	107	THR	C-N-CA	5.54	127.70	120.28
15	L	24	ARG	NE-CZ-NH2	5.53	124.18	119.20
18	O	35	ILE	N-CA-C	5.53	115.73	110.42
29	Z	140	ARG	NE-CZ-NH2	5.53	124.18	119.20
21	R	18	ARG	NE-CZ-NH2	5.53	124.18	119.20
49	v	676	HIS	CB-CG-CD2	-5.53	124.02	131.20
39	k	360	PHE	CA-CB-CG	5.52	119.32	113.80
2	2	301	C	C5'-C4'-C3'	-5.51	107.73	116.00
8	E	171	HIS	CA-CB-CG	5.51	119.31	113.80
24	U	142	ARG	NE-CZ-NH2	5.51	124.16	119.20
2	2	324	C	C4'-C3'-C2'	-5.51	97.09	102.60
2	2	1472	A	C4'-C3'-O3'	5.51	117.67	109.40
11	H	70	ARG	NE-CZ-NH2	5.51	124.16	119.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
41	m	374	ARG	NE-CZ-NH2	5.51	124.16	119.20
2	2	1370	C	C4'-C3'-C2'	-5.50	97.10	102.60
2	2	1619	U	O4'-C1'-N1	5.49	116.73	108.50
49	v	603	PRO	N-CA-C	5.49	117.40	110.70
27	X	60	ARG	NE-CZ-NH2	5.49	124.14	119.20
49	v	327	ALA	CA-C-N	5.48	127.55	120.70
49	v	327	ALA	C-N-CA	5.48	127.55	120.70
49	v	503	TYR	CA-CB-CG	5.47	123.74	113.90
2	2	1360	U	O4'-C1'-N1	5.45	116.68	108.50
33	d	13	ARG	NE-CZ-NH2	5.45	124.11	119.20
2	2	1549	C	C3'-C2'-C1'	5.45	106.75	101.30
4	A	54	ARG	NE-CZ-NH2	5.44	124.10	119.20
2	2	739	U	C4'-C3'-O3'	5.44	117.56	109.40
50	w	163	ARG	CA-C-N	5.44	127.83	120.65
50	w	163	ARG	C-N-CA	5.44	127.83	120.65
19	P	87	ASP	CA-CB-CG	5.44	118.04	112.60
51	y	421	GLU	CA-C-N	5.44	126.64	119.84
51	y	421	GLU	C-N-CA	5.44	126.64	119.84
15	L	153	SER	CA-C-N	5.43	127.82	120.38
15	L	153	SER	C-N-CA	5.43	127.82	120.38
20	Q	147	ARG	NE-CZ-NH2	5.43	124.09	119.20
2	2	545	A	C4'-C3'-O3'	5.43	121.14	113.00
37	i	87	ARG	NE-CZ-NH2	5.42	124.08	119.20
2	2	1828	A	C4'-C3'-C2'	-5.42	97.18	102.60
36	g	245	ARG	NE-CZ-NH2	5.42	124.08	119.20
48	u	9	ILE	N-CA-C	5.42	112.01	106.21
2	2	1215	C	C5'-C4'-C3'	-5.41	107.88	116.00
2	2	1670	A	O4'-C1'-N9	5.41	116.61	108.50
2	2	832	G	O4'-C4'-C3'	5.40	109.40	104.00
5	B	151	HIS	CB-CG-CD2	-5.38	124.20	131.20
6	C	110	ASN	CA-CB-CG	5.38	117.98	112.60
2	2	225	C	C5'-C4'-C3'	-5.37	107.94	116.00
2	2	341	G	C4'-C3'-C2'	-5.35	97.25	102.60
25	V	62	ARG	NE-CZ-NH2	5.35	124.01	119.20
2	2	1407	G	C4'-C3'-O3'	5.34	121.02	113.00
2	2	806	A	C5'-C4'-C3'	-5.34	107.99	116.00
45	r	294	PRO	N-CA-C	5.34	117.21	110.70
39	k	101	ARG	NE-CZ-NH2	5.34	124.00	119.20
22	S	62	ARG	NE-CZ-NH2	5.33	124.00	119.20
44	q	232	PHE	CA-CB-CG	5.33	119.13	113.80
22	S	13	PHE	CA-C-N	5.33	126.16	121.58
22	S	13	PHE	C-N-CA	5.33	126.16	121.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	2	1420	G	C5'-C4'-C3'	-5.33	107.21	115.20
2	2	954	G	O4'-C1'-N9	5.32	116.48	108.50
2	2	1119	C	C4'-C3'-C2'	-5.32	97.28	102.60
2	2	550	A	C4'-C3'-C2'	-5.31	97.29	102.60
2	2	1503	G	O4'-C1'-N9	5.30	116.15	108.20
44	q	210	ARG	NE-CZ-NH2	5.30	123.97	119.20
2	2	1776	G	C2'-C3'-O3'	-5.30	105.75	113.70
5	B	278	ASN	CA-C-N	5.29	127.56	120.58
5	B	278	ASN	C-N-CA	5.29	127.56	120.58
45	r	113	ASP	N-CA-C	5.28	116.87	108.79
11	H	151	ARG	NE-CZ-NH2	5.27	123.94	119.20
48	u	56	ASP	N-CA-CB	-5.27	105.47	111.79
19	P	3	ARG	NE-CZ-NH2	5.26	123.94	119.20
22	S	146	ARG	NH1-CZ-NH2	-5.26	112.47	119.30
13	J	106	ARG	NE-CZ-NH2	5.26	123.93	119.20
2	2	554	A	C4'-C3'-C2'	-5.25	97.34	102.60
2	2	792	G	C4'-C3'-O3'	5.25	120.88	113.00
11	H	213	ARG	NE-CZ-NH2	5.25	123.93	119.20
24	U	130	ARG	NE-CZ-NH2	5.25	123.93	119.20
2	2	235	C	C2'-C3'-O3'	-5.25	105.83	113.70
22	S	48	GLN	OE1-CD-NE2	-5.25	117.35	122.60
2	2	579	G	O4'-C1'-N9	5.24	116.06	108.20
48	u	288	GLU	CA-C-N	5.24	131.55	121.54
48	u	288	GLU	C-N-CA	5.24	131.55	121.54
15	L	5	ARG	NE-CZ-NH2	5.24	123.91	119.20
48	u	43	ALA	N-CA-C	5.22	117.27	110.53
29	Z	105	PHE	CA-CB-CG	5.21	119.01	113.80
49	v	501	ARG	NE-CZ-NH2	5.21	123.89	119.20
8	E	143	ARG	NE-CZ-NH2	5.21	123.89	119.20
2	2	1255	A	N9-C1'-C2'	5.20	119.80	112.00
2	2	1527	C	C3'-C2'-C1'	5.20	106.50	101.30
2	2	1842	U	O4'-C4'-C3'	5.20	109.20	104.00
31	b	6	ARG	NE-CZ-NH2	5.20	123.88	119.20
49	v	753	HIS	CB-CG-CD2	-5.19	124.45	131.20
2	2	1282	G	O4'-C4'-C3'	5.19	109.19	104.00
2	2	537	G	C2'-C3'-O3'	-5.18	105.93	113.70
2	2	1776	G	C4'-C3'-O3'	5.18	120.77	113.00
10	G	34	GLY	CA-C-N	5.17	124.84	119.56
10	G	34	GLY	C-N-CA	5.17	124.84	119.56
42	n	85	ARG	NE-CZ-NH2	5.17	123.85	119.20
7	D	208	HIS	CB-CG-CD2	-5.17	124.48	131.20
44	q	160	HIS	CB-CG-CD2	-5.16	124.49	131.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
12	I	154	ARG	NE-CZ-NH2	5.16	123.84	119.20
12	I	190	ARG	NE-CZ-NH2	5.16	123.84	119.20
47	t	368	HIS	CB-CG-CD2	-5.16	124.50	131.20
1	1	10	G	C3'-C2'-C1'	5.15	106.65	101.50
2	2	1350	G	C5'-C4'-C3'	-5.14	108.29	116.00
49	v	769	PHE	CA-CB-CG	5.14	118.94	113.80
19	P	121	ARG	NE-CZ-NH2	5.14	123.82	119.20
40	l	17	ARG	NE-CZ-NH2	5.14	123.82	119.20
39	k	326	ASP	N-CA-C	5.13	117.78	111.82
51	y	176	ASP	CA-CB-CG	5.13	117.73	112.60
49	v	441	ARG	NE-CZ-NH2	5.13	123.81	119.20
12	I	216	ARG	NE-CZ-NH2	5.13	123.81	119.20
50	w	53	PHE	CA-CB-CG	5.12	118.92	113.80
2	2	1666	G	C4'-C3'-C2'	-5.12	97.48	102.60
2	2	165	G	O4'-C1'-N9	5.12	116.18	108.50
13	J	127	ASP	CA-CB-CG	5.11	117.71	112.60
39	k	408	ASN	CA-CB-CG	5.11	117.71	112.60
39	k	275	ASP	N-CA-C	5.11	116.70	110.41
41	m	361	ARG	NE-CZ-NH2	5.11	123.80	119.20
2	2	1659	A	C5'-C4'-C3'	-5.11	107.54	115.20
51	y	202	ARG	NE-CZ-NH2	5.11	123.80	119.20
35	f	102	VAL	N-CA-C	5.10	115.88	110.72
2	2	649	G	N9-C1'-C2'	5.10	119.66	112.00
39	k	18	PRO	CA-C-N	5.10	127.63	120.28
39	k	18	PRO	C-N-CA	5.10	127.63	120.28
24	U	46	ARG	NE-CZ-NH2	5.10	123.79	119.20
51	y	196	LYS	N-CA-CB	5.10	117.57	109.82
2	2	1086	C	C4'-C3'-C2'	-5.09	97.51	102.60
2	2	848	G	O4'-C1'-N9	5.09	116.13	108.50
36	g	122	SER	CA-C-N	5.09	126.29	121.46
36	g	122	SER	C-N-CA	5.09	126.29	121.46
2	2	445	A	C4'-C3'-C2'	-5.08	97.52	102.60
2	2	73	C	C4'-C3'-C2'	-5.08	97.52	102.60
47	t	521	PHE	CA-CB-CG	5.08	118.88	113.80
2	2	1029	G	C2'-C3'-O3'	-5.08	106.08	113.70
47	t	352	ARG	NE-CZ-NH2	5.08	123.77	119.20
51	y	297	HIS	CB-CG-CD2	-5.08	124.60	131.20
45	r	249	ARG	NE-CZ-NH2	5.07	123.77	119.20
34	e	19	ARG	NE-CZ-NH2	5.07	123.76	119.20
2	2	1595	G	O4'-C4'-C3'	5.06	109.06	104.00
2	2	834	G	C2'-C3'-O3'	-5.06	106.11	113.70
2	2	272	C	O4'-C4'-C3'	5.06	109.06	104.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
41	m	297	GLU	CA-C-N	5.05	123.35	119.66
41	m	297	GLU	C-N-CA	5.05	123.35	119.66
2	2	1112	C	O4'-C4'-C3'	5.05	109.05	104.00
15	L	70	ARG	NE-CZ-NH2	5.05	123.75	119.20
51	y	212	HIS	CB-CG-CD2	-5.05	124.63	131.20
2	2	17	C	C4'-C3'-C2'	-5.05	97.55	102.60
48	u	14	GLN	OE1-CD-NE2	-5.04	117.56	122.60
39	k	252	ARG	NE-CZ-NH2	5.04	123.74	119.20
2	2	321	C	O3'-P-O5'	-5.03	96.46	104.00
2	2	1585	C	C2'-C3'-O3'	-5.02	106.17	113.70
11	H	142	ARG	NE-CZ-NH2	5.02	123.72	119.20
18	O	28	HIS	CB-CG-CD2	-5.02	124.67	131.20
46	s	113	HIS	CB-CG-CD2	-5.02	124.68	131.20
2	2	1419	C	O4'-C1'-C2'	-5.01	100.79	105.80
20	Q	142	ARG	CA-C-N	5.00	128.31	120.75
20	Q	142	ARG	C-N-CA	5.00	128.31	120.75
27	X	55	ILE	CA-C-N	5.00	127.82	120.71
27	X	55	ILE	C-N-CA	5.00	127.82	120.71
2	2	792	G	C2'-C3'-O3'	-5.00	106.20	113.70
2	2	1105	C	C1'-O4'-C4'	-5.00	104.90	109.90
2	2	1835	C	C4'-C3'-C2'	-5.00	97.60	102.60

There are no chirality outliers.

All (383) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	1	10	G	Sidechain
1	1	13	G	Sidechain
1	1	15	A	Sidechain
1	1	2	A	Sidechain
1	1	21	A	Sidechain
1	1	24	G	Sidechain
1	1	3	G	Sidechain
1	1	42	A	Sidechain
1	1	43	G	Sidechain
1	1	44	A	Sidechain
1	1	50	A	Sidechain
1	1	53	G	Sidechain
1	1	57	G	Sidechain
1	1	6	G	Sidechain
1	1	63	A	Sidechain
1	1	69	U	Sidechain

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Mol	Chain	Res	Type	Group
1	1	7	A	Sidechain
2	2	1	U	Sidechain
2	2	1004	A	Sidechain
2	2	1009	U	Sidechain
2	2	1010	G	Sidechain
2	2	1016	A	Sidechain
2	2	1053	C	Sidechain
2	2	1056	A	Sidechain
2	2	1066	A	Sidechain
2	2	107	A	Sidechain
2	2	1073	A	Sidechain
2	2	1076	A	Sidechain
2	2	1078	A	Sidechain
2	2	1093	G	Sidechain
2	2	1100	G	Sidechain
2	2	1110	U	Sidechain
2	2	1125	G	Sidechain
2	2	1126	G	Sidechain
2	2	1135	C	Sidechain
2	2	1145	A	Sidechain
2	2	1147	G	Sidechain
2	2	1148	U	Sidechain
2	2	1152	U	Sidechain
2	2	1155	G	Sidechain
2	2	1160	G	Sidechain
2	2	1161	G	Sidechain
2	2	1164	G	Sidechain
2	2	1169	A	Sidechain
2	2	1175	G	Sidechain
2	2	1177	A	Sidechain
2	2	1184	A	Sidechain
2	2	1191	A	Sidechain
2	2	1199	G	Sidechain
2	2	1200	A	Sidechain
2	2	1212	C	Sidechain
2	2	1213	A	Sidechain
2	2	1215	C	Sidechain
2	2	1216	A	Sidechain
2	2	1217	G	Sidechain
2	2	1219	A	Sidechain
2	2	1236	A	Sidechain
2	2	1237	A	Sidechain

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Mol	Chain	Res	Type	Group
2	2	1249	A	Sidechain
2	2	1253	G	Sidechain
2	2	1262	C	Sidechain
2	2	1269	C	Sidechain
2	2	1273	C	Sidechain
2	2	1282	G	Sidechain
2	2	1289	A	Sidechain
2	2	1294	G	Sidechain
2	2	1295	A	Sidechain
2	2	1304	U	Sidechain
2	2	1312	C	Sidechain
2	2	1314	G	Sidechain
2	2	1318	G	Sidechain
2	2	1322	U	Sidechain
2	2	1331	G	Sidechain
2	2	1334	G	Sidechain
2	2	1341	G	Sidechain
2	2	1350	G	Sidechain
2	2	1352	G	Sidechain
2	2	1359	C	Sidechain
2	2	1365	A	Sidechain
2	2	1370	C	Sidechain
2	2	1374	A	Sidechain
2	2	1390	G	Sidechain
2	2	1392	A	Sidechain
2	2	1397	A	Sidechain
2	2	140	U	Sidechain
2	2	1402	G	Sidechain
2	2	1403	U	Sidechain
2	2	1404	U	Sidechain
2	2	1407	G	Sidechain
2	2	1414	C	Sidechain
2	2	1417	A	Sidechain
2	2	1418	G	Sidechain
2	2	1422	U	Sidechain
2	2	1423	C	Sidechain
2	2	1427	G	Sidechain
2	2	1434	A	Sidechain
2	2	1439	C	Sidechain
2	2	144	U	Sidechain
2	2	1442	A	Sidechain
2	2	1447	G	Sidechain

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Mol	Chain	Res	Type	Group
2	2	1450	A	Sidechain
2	2	1452	G	Sidechain
2	2	146	G	Sidechain
2	2	1460	C	Sidechain
2	2	1469	G	Sidechain
2	2	147	A	Sidechain
2	2	1470	A	Sidechain
2	2	1477	G	Sidechain
2	2	148	U	Sidechain
2	2	1483	A	Sidechain
2	2	1493	G	Sidechain
2	2	15	U	Sidechain
2	2	1501	U	Sidechain
2	2	1504	A	Sidechain
2	2	1506	G	Sidechain
2	2	1507	U	Sidechain
2	2	1508	C	Sidechain
2	2	151	C	Sidechain
2	2	1513	C	Sidechain
2	2	1523	G	Sidechain
2	2	1524	C	Sidechain
2	2	1530	U	Sidechain
2	2	1536	G	Sidechain
2	2	1540	A	Sidechain
2	2	1547	G	Sidechain
2	2	1548	C	Sidechain
2	2	1549	C	Sidechain
2	2	1550	U	Sidechain
2	2	1551	A	Sidechain
2	2	1558	G	Sidechain
2	2	1561	G	Sidechain
2	2	1564	A	Sidechain
2	2	157	U	Sidechain
2	2	1570	G	Sidechain
2	2	1573	U	Sidechain
2	2	1574	A	Sidechain
2	2	1590	U	Sidechain
2	2	1593	G	Sidechain
2	2	1595	G	Sidechain
2	2	1598	G	Sidechain
2	2	1599	G	Sidechain
2	2	1601	G	Sidechain

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Mol	Chain	Res	Type	Group
2	2	1612	G	Sidechain
2	2	1618	A	Sidechain
2	2	1627	G	Sidechain
2	2	1631	G	Sidechain
2	2	1634	G	Sidechain
2	2	1635	A	Sidechain
2	2	1645	A	Sidechain
2	2	165	G	Sidechain
2	2	1652	G	Sidechain
2	2	1654	U	Sidechain
2	2	1655	C	Sidechain
2	2	1656	A	Sidechain
2	2	1663	U	Sidechain
2	2	1674	A	Sidechain
2	2	1676	U	Sidechain
2	2	1677	C	Sidechain
2	2	1678	C	Sidechain
2	2	1693	C	Sidechain
2	2	171	A	Sidechain
2	2	1712	C	Sidechain
2	2	1723	U	Sidechain
2	2	1730	A	Sidechain
2	2	1733	C	Sidechain
2	2	1738	G	Sidechain
2	2	1739	G	Sidechain
2	2	1744	G	Sidechain
2	2	176	U	Sidechain
2	2	1769	U	Sidechain
2	2	1779	C	Sidechain
2	2	1780	U	Sidechain
2	2	1794	A	Sidechain
2	2	1803	A	Sidechain
2	2	1807	A	Sidechain
2	2	1808	G	Sidechain
2	2	1809	A	Sidechain
2	2	1816	A	Sidechain
2	2	1818	A	Sidechain
2	2	1828	A	Sidechain
2	2	183	G	Sidechain
2	2	1831	G	Sidechain
2	2	184	G	Sidechain
2	2	1842	U	Sidechain

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Mol	Chain	Res	Type	Group
2	2	1843	G	Sidechain
2	2	1845	A	Sidechain
2	2	1850	C	Sidechain
2	2	1851	G	Sidechain
2	2	1853	A	Sidechain
2	2	1854	A	Sidechain
2	2	1858	U	Sidechain
2	2	188	U	Sidechain
2	2	189	G	Sidechain
2	2	190	A	Sidechain
2	2	194	C	Sidechain
2	2	196	U	Sidechain
2	2	199	G	Sidechain
2	2	202	U	Sidechain
2	2	208	G	Sidechain
2	2	222	G	Sidechain
2	2	226	A	Sidechain
2	2	228	A	Sidechain
2	2	237	G	Sidechain
2	2	272	C	Sidechain
2	2	273	G	Sidechain
2	2	275	C	Sidechain
2	2	277	U	Sidechain
2	2	282	G	Sidechain
2	2	284	C	Sidechain
2	2	287	U	Sidechain
2	2	296	U	Sidechain
2	2	299	G	Sidechain
2	2	308	C	Sidechain
2	2	311	C	Sidechain
2	2	318	U	Sidechain
2	2	319	G	Sidechain
2	2	32	U	Sidechain
2	2	320	G	Sidechain
2	2	322	G	Sidechain
2	2	344	U	Sidechain
2	2	357	U	Sidechain
2	2	358	U	Sidechain
2	2	359	C	Sidechain
2	2	360	G	Sidechain
2	2	364	G	Sidechain
2	2	367	G	Sidechain

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Mol	Chain	Res	Type	Group
2	2	370	G	Sidechain
2	2	375	G	Sidechain
2	2	38	A	Sidechain
2	2	383	U	Sidechain
2	2	387	G	Sidechain
2	2	395	G	Sidechain
2	2	408	A	Sidechain
2	2	415	G	Sidechain
2	2	42	A	Sidechain
2	2	425	A	Sidechain
2	2	427	G	Sidechain
2	2	428	G	Sidechain
2	2	432	C	Sidechain
2	2	434	G	Sidechain
2	2	435	A	Sidechain
2	2	436	G	Sidechain
2	2	440	C	Sidechain
2	2	441	G	Sidechain
2	2	442	G	Sidechain
2	2	443	C	Sidechain
2	2	45	A	Sidechain
2	2	46	A	Sidechain
2	2	464	G	Sidechain
2	2	465	C	Sidechain
2	2	470	G	Sidechain
2	2	472	G	Sidechain
2	2	483	A	Sidechain
2	2	485	U	Sidechain
2	2	489	G	Sidechain
2	2	49	C	Sidechain
2	2	493	C	Sidechain
2	2	515	A	Sidechain
2	2	516	A	Sidechain
2	2	518	A	Sidechain
2	2	521	A	Sidechain
2	2	523	A	Sidechain
2	2	524	G	Sidechain
2	2	532	U	Sidechain
2	2	542	G	Sidechain
2	2	546	U	Sidechain
2	2	549	G	Sidechain
2	2	553	G	Sidechain

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Mol	Chain	Res	Type	Group
2	2	557	C	Sidechain
2	2	564	A	Sidechain
2	2	581	U	Sidechain
2	2	585	U	Sidechain
2	2	588	G	Sidechain
2	2	591	G	Sidechain
2	2	594	A	Sidechain
2	2	60	A	Sidechain
2	2	601	G	Sidechain
2	2	603	C	Sidechain
2	2	604	G	Sidechain
2	2	605	C	Sidechain
2	2	606	A	Sidechain
2	2	611	C	Sidechain
2	2	615	G	Sidechain
2	2	629	C	Sidechain
2	2	639	U	Sidechain
2	2	649	G	Sidechain
2	2	652	G	Sidechain
2	2	654	A	Sidechain
2	2	658	A	Sidechain
2	2	659	A	Sidechain
2	2	661	A	Sidechain
2	2	670	G	Sidechain
2	2	678	U	Sidechain
2	2	684	A	Sidechain
2	2	71	G	Sidechain
2	2	73	C	Sidechain
2	2	731	C	Sidechain
2	2	735	C	Sidechain
2	2	740	G	Sidechain
2	2	744	C	Sidechain
2	2	745	U	Sidechain
2	2	75	G	Sidechain
2	2	78	C	Sidechain
2	2	785	G	Sidechain
2	2	789	G	Sidechain
2	2	79	A	Sidechain
2	2	790	A	Sidechain
2	2	791	A	Sidechain
2	2	793	C	Sidechain
2	2	795	U	Sidechain

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Mol	Chain	Res	Type	Group
2	2	804	A	Sidechain
2	2	807	A	Sidechain
2	2	820	C	Sidechain
2	2	822	A	Sidechain
2	2	824	G	Sidechain
2	2	829	C	Sidechain
2	2	830	C	Sidechain
2	2	831	C	Sidechain
2	2	832	G	Sidechain
2	2	836	C	Sidechain
2	2	841	G	Sidechain
2	2	845	A	Sidechain
2	2	854	A	Sidechain
2	2	857	A	Sidechain
2	2	858	A	Sidechain
2	2	864	G	Sidechain
2	2	868	A	Sidechain
2	2	870	G	Sidechain
2	2	873	C	Sidechain
2	2	882	A	Sidechain
2	2	888	U	Sidechain
2	2	889	U	Sidechain
2	2	897	G	Sidechain
2	2	899	A	Sidechain
2	2	907	C	Sidechain
2	2	908	C	Sidechain
2	2	914	U	Sidechain
2	2	930	G	Sidechain
2	2	939	U	Sidechain
2	2	950	U	Sidechain
2	2	959	A	Sidechain
2	2	96	C	Sidechain
2	2	961	U	Sidechain
2	2	964	U	Sidechain
2	2	966	G	Sidechain
2	2	967	G	Sidechain
2	2	97	U	Sidechain
2	2	980	C	Sidechain
2	2	982	G	Sidechain
2	2	984	C	Sidechain
2	2	986	A	Sidechain
2	2	99	A	Sidechain

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Mol	Chain	Res	Type	Group
4	A	39	TYR	Sidechain
6	C	191	ARG	Sidechain
7	D	82	ARG	Sidechain
9	F	45	ARG	Sidechain
10	G	245	ARG	Sidechain
11	H	75	ARG	Sidechain
14	K	109	TYR	Sidechain
14	K	184	ARG	Sidechain
14	K	5	ARG	Sidechain
14	K	56	ARG	Sidechain
15	L	69	ARG	Sidechain
17	N	89	ARG	Sidechain
17	N	99	TYR	Sidechain
19	P	121	ARG	Sidechain
20	Q	98	ARG	Sidechain
21	R	115	TYR	Sidechain
28	Y	28	ARG	Sidechain
38	j	7	LYS	Mainchain
41	m	271	ARG	Sidechain
44	q	190	TYR	Sidechain
45	r	350	TYR	Sidechain
45	r	75	ARG	Sidechain
45	r	99	TYR	Sidechain
48	u	19	ARG	Sidechain
48	u	9	ILE	Peptide
49	v	503	TYR	Sidechain
49	v	697	TYR	Sidechain
49	v	799	TYR	Sidechain
50	w	134	TYR	Sidechain
50	w	32	TYR	Sidechain
51	y	507	ILE	Mainchain

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	1	1614	0	822	3	0
2	2	37147	0	18752	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	3	196	0	98	0	0
4	A	2146	0	2191	0	0
5	B	3213	0	3354	0	0
6	C	1636	0	1641	0	0
7	D	1741	0	1815	0	0
8	E	1754	0	1834	0	0
9	F	1764	0	1863	0	0
10	G	2083	0	2189	0	0
11	H	1482	0	1534	0	0
12	I	1923	0	2089	0	0
13	J	1530	0	1627	0	0
14	K	1679	0	1762	0	0
15	L	1542	0	1659	1	0
16	M	827	0	854	0	0
17	N	1296	0	1374	0	0
18	O	958	0	993	1	0
19	P	1208	0	1294	0	0
20	Q	1016	0	1039	0	0
21	R	1154	0	1213	0	0
22	S	1124	0	1193	0	0
23	T	1019	0	1075	0	0
24	U	1194	0	1253	0	0
25	V	1112	0	1149	0	0
26	W	822	0	887	0	0
27	X	637	0	637	0	0
28	Y	1034	0	1080	0	0
29	Z	1106	0	1179	0	0
30	a	1021	0	1085	0	0
31	b	789	0	841	0	0
32	c	659	0	683	1	0
33	d	506	0	536	0	0
34	e	445	0	442	0	0
35	f	581	0	599	0	0
36	g	2436	0	2393	1	0
37	i	464	0	511	0	0
38	j	903	0	928	0	0
39	k	4692	0	4820	2	0
40	l	240	0	289	0	0
41	m	2955	0	2897	0	0
42	n	598	0	656	0	0
43	o	1162	0	1171	0	0
44	q	2111	0	2105	7	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
45	r	2624	0	2592	1	0
46	s	1737	0	1706	1	0
47	t	3109	0	3084	1	0
48	u	2918	0	2950	1	0
49	v	4508	0	4513	3	0
50	w	3465	0	3446	0	0
51	y	4971	0	5048	8	0
52	k	16	0	0	0	0
All	All	118867	0	101745	37	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 0.

All (37) 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)
51:y:181:ALA:HB1	51:y:196:LYS:HE2	1.44	0.99
51:y:181:ALA:HB1	51:y:196:LYS:CE	2.00	0.91
44:q:95:HIS:CE1	44:q:241:TYR:CD2	2.82	0.67
2:2:1244:I2T:OP2	2:2:1244:I2T:C6	2.48	0.62
2:2:1244:I2T:O2	2:2:1244:I2T:C32	2.47	0.59
44:q:95:HIS:CE1	44:q:131:VAL:O	2.57	0.57
51:y:101:THR:HG22	51:y:149:TRP:HB3	1.90	0.53
32:c:61:THR:HG23	49:v:340:ARG:HE	1.73	0.53
1:1:23:C:H2'	1:1:24:G:C8	2.46	0.51
44:q:95:HIS:HB2	44:q:96:PRO:CD	2.44	0.48
44:q:95:HIS:HB2	44:q:96:PRO:HD2	1.96	0.47
2:2:1078:A:H5'	2:2:1837:G:H4'	1.97	0.47
44:q:95:HIS:HE1	44:q:132:THR:HA	1.81	0.46
51:y:192:ALA:HB1	51:y:196:LYS:NZ	2.30	0.46
1:1:22:G:H2'	1:1:23:C:C6	2.51	0.46
49:v:782:LYS:HE2	49:v:782:LYS:HA	1.97	0.45
1:1:13:G:N2	1:1:24:G:H1	2.15	0.44
51:y:97:ALA:O	51:y:101:THR:HG23	2.17	0.44
2:2:1243:C:H4'	2:2:1244:I2T:O5'	2.17	0.44
2:2:498:A:OP2	15:L:1:MET:HE1	2.18	0.44
2:2:1098:G:H1	2:2:1126:G:N2	2.15	0.44
51:y:181:ALA:HB1	51:y:196:LYS:HE3	1.93	0.43
46:s:77:LEU:HA	46:s:79:HIS:H	1.83	0.42
44:q:357:LEU:HD21	47:t:544:ILE:CD1	2.50	0.42
48:u:237:ILE:H	48:u:237:ILE:HD12	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
51:y:472:VAL:HG22	51:y:484:ILE:HG23	2.01	0.41
18:O:102:LYS:HA	18:O:102:LYS:HE2	2.01	0.41
2:2:1243:C:H4'	2:2:1244:I2T:C5'	2.51	0.41
45:r:72:VAL:HG12	45:r:73:GLU:N	2.35	0.41
51:y:192:ALA:HB1	51:y:196:LYS:HZ2	1.86	0.41
2:2:868:A:H2'	2:2:869:G:C8	2.56	0.41
39:k:347:MET:SD	39:k:349:LYS:HE2	2.61	0.41
39:k:124:ALA:HB1	39:k:168:ILE:HD11	2.03	0.40
44:q:241:TYR:CG	44:q:242:TYR:N	2.87	0.40
36:g:130:LYS:HE2	36:g:141:THR:HG22	2.04	0.40
2:2:552:U:H2'	2:2:553:G:C8	2.56	0.40
49:v:598:ILE:HA	49:v:601:ALA:HB3	2.04	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	
4	A	264/390 (68%)	251 (95%)	13 (5%)	0	100	100
5	B	420/485 (87%)	396 (94%)	24 (6%)	0	100	100
6	C	205/295 (70%)	197 (96%)	8 (4%)	0	100	100
7	D	213/264 (81%)	205 (96%)	8 (4%)	0	100	100
8	E	224/270 (83%)	215 (96%)	9 (4%)	0	100	100
9	F	225/243 (93%)	217 (96%)	8 (4%)	0	100	100
10	G	261/263 (99%)	255 (98%)	6 (2%)	0	100	100
11	H	183/204 (90%)	176 (96%)	7 (4%)	0	100	100
12	I	235/249 (94%)	222 (94%)	13 (6%)	0	100	100
13	J	188/194 (97%)	181 (96%)	7 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
14	K	204/208 (98%)	196 (96%)	8 (4%)	0	100	100
15	L	186/194 (96%)	183 (98%)	3 (2%)	0	100	100
16	M	96/149 (64%)	89 (93%)	7 (7%)	0	100	100
17	N	156/158 (99%)	146 (94%)	10 (6%)	0	100	100
18	O	122/132 (92%)	112 (92%)	10 (8%)	0	100	100
19	P	148/151 (98%)	145 (98%)	3 (2%)	0	100	100
20	Q	134/151 (89%)	130 (97%)	4 (3%)	0	100	100
21	R	138/145 (95%)	131 (95%)	7 (5%)	0	100	100
22	S	139/146 (95%)	134 (96%)	5 (4%)	0	100	100
23	T	124/135 (92%)	120 (97%)	4 (3%)	0	100	100
24	U	143/152 (94%)	138 (96%)	5 (4%)	0	100	100
25	V	139/145 (96%)	136 (98%)	3 (2%)	0	100	100
26	W	102/119 (86%)	96 (94%)	6 (6%)	0	100	100
27	X	81/83 (98%)	78 (96%)	3 (4%)	0	100	100
28	Y	127/130 (98%)	124 (98%)	3 (2%)	0	100	100
29	Z	140/143 (98%)	137 (98%)	3 (2%)	0	100	100
30	a	124/133 (93%)	116 (94%)	8 (6%)	0	100	100
31	b	97/115 (84%)	94 (97%)	3 (3%)	0	100	100
32	c	82/84 (98%)	80 (98%)	2 (2%)	0	100	100
33	d	62/69 (90%)	61 (98%)	1 (2%)	0	100	100
34	e	51/56 (91%)	49 (96%)	2 (4%)	0	100	100
35	f	69/156 (44%)	63 (91%)	6 (9%)	0	100	100
36	g	311/317 (98%)	296 (95%)	15 (5%)	0	100	100
37	i	56/133 (42%)	54 (96%)	2 (4%)	0	100	100
38	j	110/144 (76%)	101 (92%)	9 (8%)	0	100	100
39	k	593/599 (99%)	554 (93%)	39 (7%)	0	100	100
40	l	23/25 (92%)	23 (100%)	0	0	100	100
41	m	363/557 (65%)	348 (96%)	15 (4%)	0	100	100
42	n	73/124 (59%)	71 (97%)	2 (3%)	0	100	100
43	o	145/430 (34%)	139 (96%)	6 (4%)	0	100	100
44	q	270/364 (74%)	239 (88%)	31 (12%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
45	r	322/352 (92%)	285 (88%)	37 (12%)	0	100	100
46	s	213/218 (98%)	208 (98%)	5 (2%)	0	100	100
47	t	370/607 (61%)	334 (90%)	36 (10%)	0	100	100
48	u	363/374 (97%)	325 (90%)	38 (10%)	0	100	100
49	v	552/913 (60%)	504 (91%)	48 (9%)	0	100	100
50	w	417/462 (90%)	376 (90%)	41 (10%)	0	100	100
51	y	601/1362 (44%)	548 (91%)	53 (9%)	0	100	100
All	All	9864/12792 (77%)	9278 (94%)	586 (6%)	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	
4	A	238/347 (69%)	238 (100%)	0	100	100
5	B	354/407 (87%)	354 (100%)	0	100	100
6	C	173/244 (71%)	173 (100%)	0	100	100
7	D	196/231 (85%)	196 (100%)	0	100	100
8	E	190/214 (89%)	189 (100%)	1 (0%)	81	93
9	F	190/202 (94%)	190 (100%)	0	100	100
10	G	225/225 (100%)	223 (99%)	2 (1%)	70	90
11	H	159/170 (94%)	159 (100%)	0	100	100
12	I	207/218 (95%)	207 (100%)	0	100	100
13	J	170/174 (98%)	170 (100%)	0	100	100
14	K	177/179 (99%)	177 (100%)	0	100	100
15	L	162/168 (96%)	162 (100%)	0	100	100
16	M	89/125 (71%)	89 (100%)	0	100	100
17	N	142/142 (100%)	141 (99%)	1 (1%)	76	92

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
18	O	104/108 (96%)	104 (100%)	0	100	100
19	P	130/131 (99%)	127 (98%)	3 (2%)	44	76
20	Q	106/119 (89%)	106 (100%)	0	100	100
21	R	126/130 (97%)	126 (100%)	0	100	100
22	S	117/121 (97%)	117 (100%)	0	100	100
23	T	114/121 (94%)	114 (100%)	0	100	100
24	U	125/132 (95%)	124 (99%)	1 (1%)	73	90
25	V	113/116 (97%)	113 (100%)	0	100	100
26	W	94/107 (88%)	94 (100%)	0	100	100
27	X	67/67 (100%)	67 (100%)	0	100	100
28	Y	112/113 (99%)	112 (100%)	0	100	100
29	Z	114/115 (99%)	114 (100%)	0	100	100
30	a	108/115 (94%)	107 (99%)	1 (1%)	70	90
31	b	87/99 (88%)	87 (100%)	0	100	100
32	c	76/76 (100%)	76 (100%)	0	100	100
33	d	57/62 (92%)	57 (100%)	0	100	100
34	e	47/49 (96%)	47 (100%)	0	100	100
35	f	64/140 (46%)	64 (100%)	0	100	100
36	g	272/275 (99%)	272 (100%)	0	100	100
37	i	48/106 (45%)	48 (100%)	0	100	100
38	j	94/123 (76%)	94 (100%)	0	100	100
39	k	523/526 (99%)	522 (100%)	1 (0%)	87	96
40	l	24/24 (100%)	24 (100%)	0	100	100
41	m	329/501 (66%)	327 (99%)	2 (1%)	78	93
42	n	66/102 (65%)	66 (100%)	0	100	100
43	o	131/388 (34%)	131 (100%)	0	100	100
44	q	239/282 (85%)	237 (99%)	2 (1%)	73	90
45	r	293/309 (95%)	291 (99%)	2 (1%)	76	92
46	s	190/193 (98%)	190 (100%)	0	100	100
47	t	342/544 (63%)	341 (100%)	1 (0%)	86	96
48	u	327/335 (98%)	321 (98%)	6 (2%)	51	80

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
49	v	501/812 (62%)	492 (98%)	9 (2%)	51 80
50	w	384/423 (91%)	381 (99%)	3 (1%)	73 90
51	y	554/1245 (44%)	549 (99%)	5 (1%)	70 90
All	All	8750/11155 (78%)	8710 (100%)	40 (0%)	78 93

All (40) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
8	E	225	TYR
10	G	124	CYS
10	G	145	ARG
17	N	120	VAL
19	P	3	ARG
19	P	86	GLU
19	P	87	ASP
24	U	83	PHE
30	a	34	THR
39	k	322	LEU
41	m	254	THR
41	m	373	VAL
44	q	136	SER
44	q	160	HIS
45	r	75	ARG
45	r	318	LEU
47	t	384	GLU
48	u	95	GLU
48	u	109	LEU
48	u	237	ILE
48	u	279	LEU
48	u	292	ILE
48	u	327	GLN
49	v	431	LEU
49	v	504	LEU
49	v	517	LYS
49	v	612	THR
49	v	703	SER
49	v	707	ARG
49	v	839	THR
49	v	842	VAL
49	v	843	VAL
50	w	7	THR

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Mol	Chain	Res	Type
50	w	139	TYR
50	w	269	LYS
51	y	128	LEU
51	y	150	VAL
51	y	283	PHE
51	y	495	SER
51	y	538	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (100) such sidechains are listed below:

Mol	Chain	Res	Type
4	A	23	ASN
6	C	24	HIS
6	C	29	ASN
6	C	111	GLN
6	C	113	GLN
7	D	75	GLN
7	D	76	ASN
7	D	101	HIS
7	D	124	HIS
7	D	149	GLN
9	F	57	ASN
9	F	74	GLN
9	F	174	HIS
10	G	67	GLN
10	G	98	ASN
11	H	46	ASN
11	H	51	GLN
11	H	129	ASN
12	I	197	GLN
13	J	44	ASN
13	J	68	GLN
13	J	76	GLN
13	J	193	GLN
14	K	181	GLN
15	L	75	ASN
15	L	113	GLN
17	N	112	HIS
18	O	15	ASN
18	O	82	ASN
19	P	49	GLN
21	R	53	GLN

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Mol	Chain	Res	Type
22	S	80	GLN
23	T	62	GLN
24	U	101	ASN
24	U	120	HIS
25	V	51	ASN
28	Y	15	ASN
28	Y	56	HIS
29	Z	73	GLN
29	Z	97	ASN
30	a	29	HIS
31	b	25	ASN
32	c	84	HIS
33	d	45	ASN
34	e	37	ASN
36	g	159	ASN
36	g	181	ASN
36	g	311	GLN
37	i	113	ASN
39	k	171	GLN
39	k	202	GLN
39	k	203	GLN
39	k	453	ASN
41	m	283	ASN
41	m	336	ASN
41	m	392	ASN
43	o	66	GLN
43	o	77	ASN
43	o	120	ASN
44	q	95	HIS
44	q	208	ASN
44	q	342	ASN
45	r	40	GLN
45	r	137	GLN
45	r	324	ASN
45	r	329	ASN
46	s	22	ASN
46	s	151	GLN
46	s	169	GLN
46	s	192	GLN
47	t	232	HIS
47	t	366	GLN
47	t	427	ASN

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Mol	Chain	Res	Type
47	t	443	GLN
47	t	489	GLN
47	t	499	ASN
48	u	39	HIS
48	u	155	ASN
48	u	345	GLN
49	v	355	GLN
49	v	364	ASN
49	v	365	ASN
49	v	423	ASN
49	v	430	ASN
49	v	536	GLN
49	v	539	ASN
49	v	597	ASN
49	v	853	GLN
50	w	143	ASN
50	w	239	GLN
50	w	244	ASN
51	y	40	HIS
51	y	213	ASN
51	y	214	GLN
51	y	219	ASN
51	y	441	GLN
51	y	481	GLN
51	y	551	GLN
51	y	586	ASN
51	y	596	GLN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	1	74/76 (97%)	16 (21%)	3 (4%)
2	2	1735/1863 (93%)	246 (14%)	68 (3%)
3	3	8/160 (5%)	1 (12%)	0
All	All	1817/2099 (86%)	263 (14%)	71 (3%)

All (263) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	1	8	G
1	1	9	U

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Mol	Chain	Res	Type
1	1	10	G
1	1	12	C
1	1	15	A
1	1	16	G
1	1	17	C
1	1	18	G
1	1	19	G
1	1	20	A
1	1	21	A
1	1	45	G
1	1	48	C
1	1	73	A
1	1	75	C
1	1	76	A
2	2	4	C
2	2	26	U
2	2	33	G
2	2	37	C
2	2	41	G
2	2	46	A
2	2	56	G
2	2	67	C
2	2	68	A
2	2	72	C
2	2	73	C
2	2	74	G
2	2	75	G
2	2	76	U
2	2	77	A
2	2	78	C
2	2	79	A
2	2	80	G
2	2	99	A
2	2	103	A
2	2	113	G
2	2	115	U
2	2	126	G
2	2	127	C
2	2	143	U
2	2	147	A
2	2	148	U
2	2	161	U

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Mol	Chain	Res	Type
2	2	181	A
2	2	182	C
2	2	183	G
2	2	185	C
2	2	191	C
2	2	196	U
2	2	197	U
2	2	202	U
2	2	223	A
2	2	224	U
2	2	225	C
2	2	226	A
2	2	227	A
2	2	277	U
2	2	278	U
2	2	296	U
2	2	297	C
2	2	299	G
2	2	300	G
2	2	303	G
2	2	304	A
2	2	310	G
2	2	315	C
2	2	316	C
2	2	317	G
2	2	321	C
2	2	322	G
2	2	337	G
2	2	346	C
2	2	347	C
2	2	352	C
2	2	354	A
2	2	358	U
2	2	359	C
2	2	375	G
2	2	376	C
2	2	399	C
2	2	438	A
2	2	439	A
2	2	440	C
2	2	442	G
2	2	455	A

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Mol	Chain	Res	Type
2	2	462	C
2	2	464	G
2	2	477	U
2	2	482	C
2	2	506	A
2	2	507	C
2	2	515	A
2	2	516	A
2	2	538	C
2	2	542	G
2	2	543	U
2	2	546	U
2	2	554	A
2	2	579	G
2	2	583	C
2	2	584	A
2	2	596	G
2	2	597	U
2	2	598	C
2	2	604	G
2	2	610	G
2	2	611	C
2	2	633	A
2	2	658	A
2	2	659	A
2	2	661	A
2	2	662	A
2	2	663	G
2	2	679	U
2	2	680	G
2	2	729	C
2	2	730	C
2	2	731	C
2	2	732	C
2	2	736	C
2	2	738	U
2	2	739	U
2	2	740	G
2	2	741	C
2	2	743	U
2	2	744	C
2	2	748	G

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Mol	Chain	Res	Type
2	2	749	C
2	2	750	G
2	2	789	G
2	2	793	C
2	2	794	G
2	2	795	U
2	2	807	A
2	2	817	G
2	2	818	U
2	2	833	A
2	2	834	G
2	2	837	G
2	2	843	A
2	2	866	A
2	2	870	G
2	2	872	C
2	2	873	C
2	2	874	G
2	2	883	U
2	2	886	U
2	2	907	C
2	2	908	C
2	2	909	A
2	2	912	A
2	2	913	U
2	2	915	A
2	2	916	A
2	2	918	A
2	2	929	G
2	2	939	U
2	2	951	A
2	2	965	U
2	2	966	G
2	2	967	G
2	2	986	A
2	2	987	G
2	2	988	A
2	2	1012	U
2	2	1013	U
2	2	1019	A
2	2	1057	U
2	2	1058	A

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Mol	Chain	Res	Type
2	2	1081	C
2	2	1111	U
2	2	1112	C
2	2	1113	C
2	2	1145	A
2	2	1150	U
2	2	1191	A
2	2	1211	C
2	2	1212	C
2	2	1220	G
2	2	1238	U
2	2	1244	I2T
2	2	1247	A
2	2	1252	G
2	2	1253	G
2	2	1255	A
2	2	1256	A
2	2	1270	G
2	2	1271	G
2	2	1281	G
2	2	1296	U
2	2	1298	G
2	2	1310	U
2	2	1311	U
2	2	1360	U
2	2	1367	U
2	2	1368	U
2	2	1374	A
2	2	1392	A
2	2	1393	U
2	2	1399	C
2	2	1400	U
2	2	1408	C
2	2	1414	C
2	2	1415	C
2	2	1417	A
2	2	1420	G
2	2	1428	U
2	2	1433	C
2	2	1434	A
2	2	1450	A
2	2	1459	U

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Mol	Chain	Res	Type
2	2	1473	U
2	2	1474	U
2	2	1485	A
2	2	1486	G
2	2	1493	G
2	2	1494	A
2	2	1506	G
2	2	1507	U
2	2	1515	G
2	2	1516	C
2	2	1517	A
2	2	1528	A
2	2	1546	U
2	2	1547	G
2	2	1548	C
2	2	1549	C
2	2	1550	U
2	2	1551	A
2	2	1553	C
2	2	1574	A
2	2	1575	A
2	2	1583	A
2	2	1596	A
2	2	1598	G
2	2	1599	G
2	2	1616	U
2	2	1618	A
2	2	1632	A
2	2	1633	G
2	2	1634	G
2	2	1643	G
2	2	1649	G
2	2	1660	G
2	2	1675	G
2	2	1717	G
2	2	1777	C
2	2	1778	G
2	2	1779	C
2	2	1820	G
2	2	1829	A
2	2	1831	G
2	2	1832	U

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Mol	Chain	Res	Type
2	2	1843	G
2	2	1846	C
2	2	1855	G
2	2	1856	G
2	2	1857	A
2	2	1858	U
2	2	1859	C
2	2	1863	A
3	3	144	G

All (71) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	1	8	G
1	1	20	A
1	1	72	U
2	2	67	C
2	2	71	G
2	2	73	C
2	2	75	G
2	2	76	U
2	2	77	A
2	2	147	A
2	2	181	A
2	2	189	G
2	2	223	A
2	2	225	C
2	2	272	C
2	2	297	C
2	2	303	G
2	2	320	G
2	2	321	C
2	2	322	G
2	2	346	C
2	2	358	U
2	2	359	C
2	2	438	A
2	2	506	A
2	2	583	C
2	2	596	G
2	2	610	G
2	2	660	A

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Mol	Chain	Res	Type
2	2	679	U
2	2	732	C
2	2	739	U
2	2	743	U
2	2	793	C
2	2	817	G
2	2	818	U
2	2	865	A
2	2	872	C
2	2	908	C
2	2	912	A
2	2	915	A
2	2	965	U
2	2	1012	U
2	2	1057	U
2	2	1112	C
2	2	1211	C
2	2	1249	A
2	2	1255	A
2	2	1270	G
2	2	1310	U
2	2	1311	U
2	2	1392	A
2	2	1415	C
2	2	1419	C
2	2	1427	G
2	2	1433	C
2	2	1473	U
2	2	1489	C
2	2	1493	G
2	2	1504	A
2	2	1547	G
2	2	1548	C
2	2	1549	C
2	2	1598	G
2	2	1617	U
2	2	1633	G
2	2	1674	A
2	2	1778	G
2	2	1831	G
2	2	1855	G
2	2	1857	A

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
1	T6A	1	37	1	31,34,35	1.17	3 (9%)	43,49,52	1.34	5 (11%)
2	I2T	2	1244	2	25,29,30	2.71	4 (16%)	28,42,45	1.26	4 (14%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	T6A	1	37	1	-	6/23/41/42	0/3/3/3
2	I2T	2	1244	2	-	3/16/34/35	0/2/2/2

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	2	1244	I2T	CN1-N1	-9.65	1.27	1.46
2	2	1244	I2T	O2'-C2'	-7.51	1.24	1.43
1	1	37	T6A	ODA-C13	4.90	1.36	1.22
2	2	1244	I2T	C33-N34	-4.09	1.27	1.48
1	1	37	T6A	ODB-C13	-2.32	1.23	1.30
1	1	37	T6A	C6-N6	-2.29	1.34	1.39
2	2	1244	I2T	C4-N3	-2.06	1.36	1.40

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	37	T6A	N6-C10-N11	4.68	120.20	113.77
2	2	1244	I2T	O3'-C3'-C4'	-3.64	100.64	111.08
1	1	37	T6A	O10-C10-N6	-3.46	117.49	123.64
2	2	1244	I2T	C3'-C2'-C1'	2.66	104.83	101.69

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	1	37	T6A	C14-C12-C13	2.66	114.67	110.03
2	2	1244	I2T	O3'-C3'-C2'	2.64	120.29	111.82
1	1	37	T6A	ODB-C13-C12	2.51	122.85	114.15
1	1	37	T6A	C15-C14-C12	2.51	117.25	112.29
2	2	1244	I2T	C32-C31-N3	-2.02	108.62	112.16

There are no chirality outliers.

All (9) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	2	1244	I2T	C32-C31-N3-C2
2	2	1244	I2T	C32-C31-N3-C4
1	1	37	T6A	N11-C12-C14-C15
1	1	37	T6A	N11-C12-C13-ODA
1	1	37	T6A	N11-C12-C13-ODB
1	1	37	T6A	N11-C12-C14-O14
1	1	37	T6A	C13-C12-C14-C15
1	1	37	T6A	C14-C12-N11-C10
2	2	1244	I2T	C4'-C5'-O5'-P

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	2	1244	I2T	4	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
52	SF4	k	701	39	0,12,12	-	-	-		
52	SF4	k	702	39	0,12,12	-	-	-		

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
52	SF4	k	701	39	-	-	0/6/5/5
52	SF4	k	702	39	-	-	0/6/5/5

There are no bond length outliers.

There are no bond angle outliers.

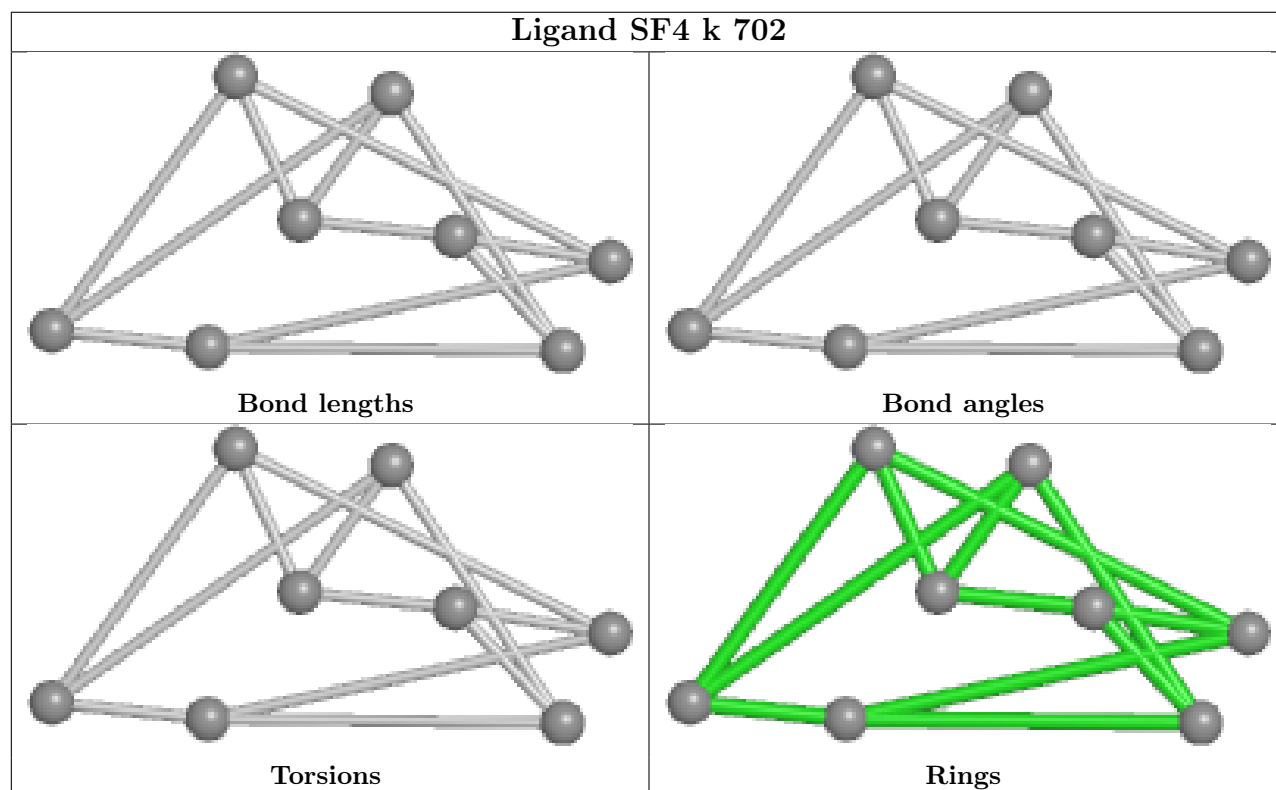
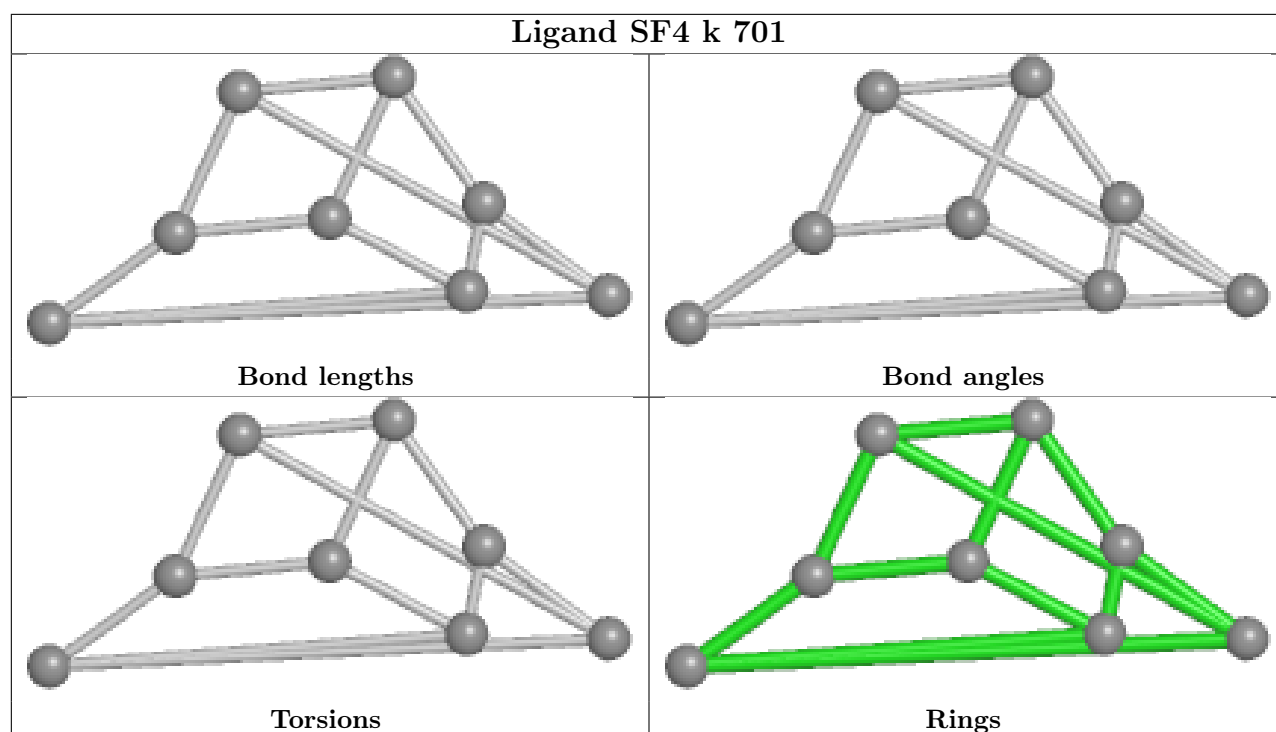
There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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 than 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.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

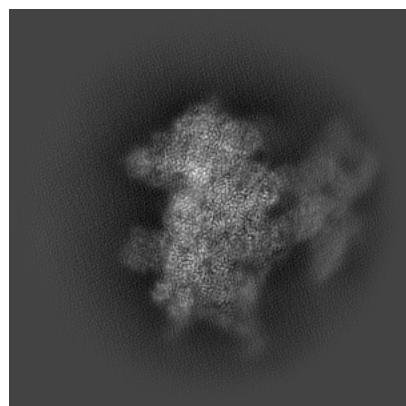
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-51911. These allow visual inspection of the internal detail of the map and identification of artifacts.

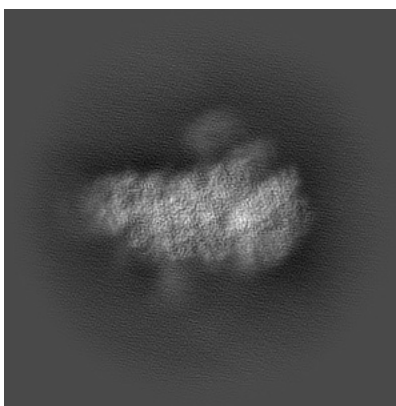
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

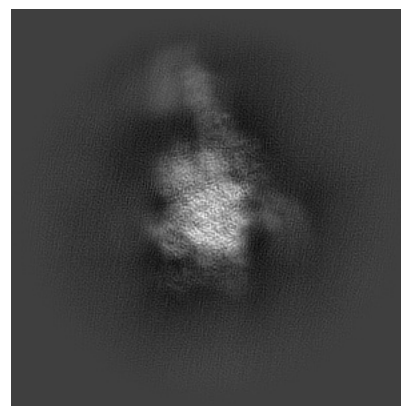
6.1.1 Primary map



X

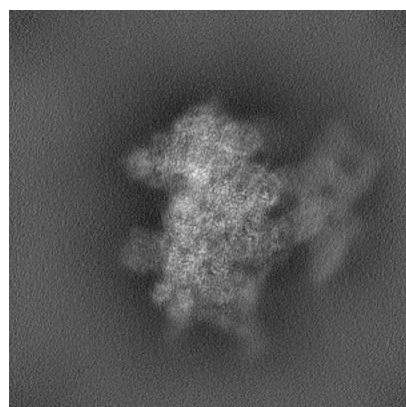


Y

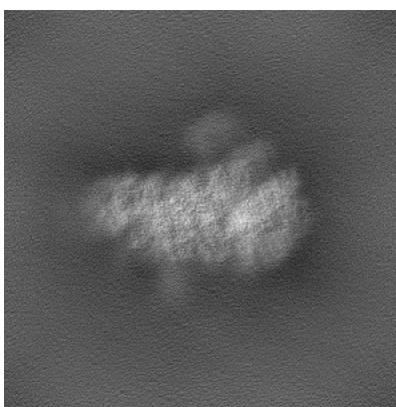


Z

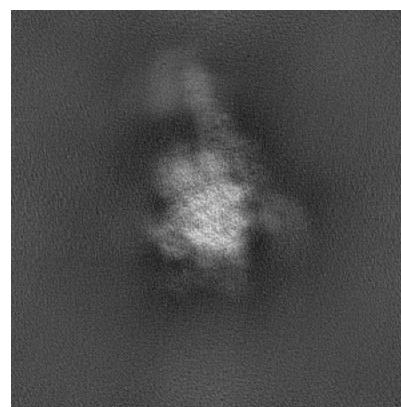
6.1.2 Raw map



X



Y

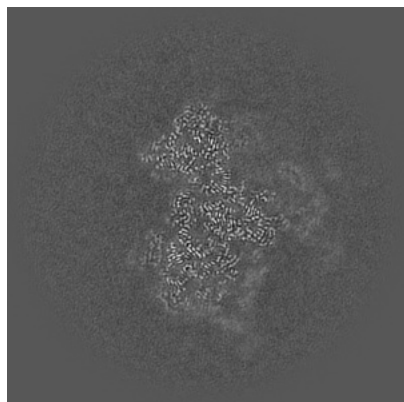


Z

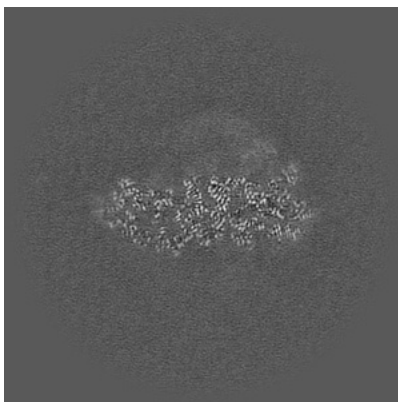
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

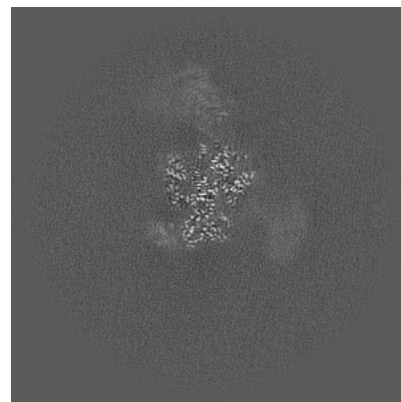
6.2.1 Primary map



X Index: 250

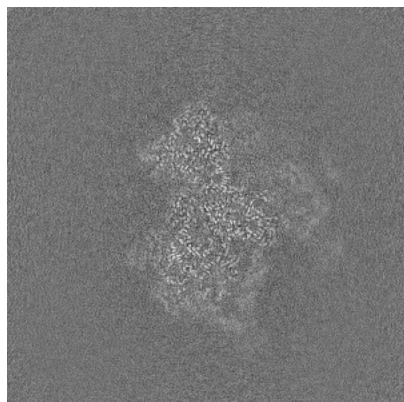


Y Index: 250

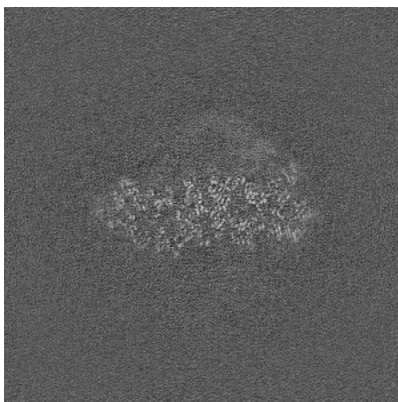


Z Index: 250

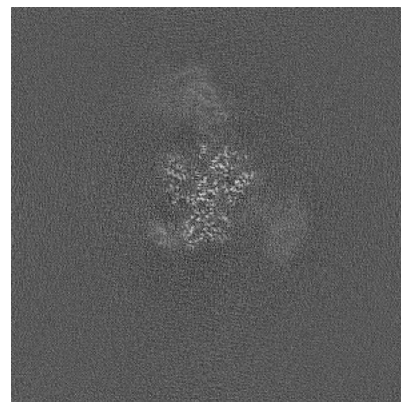
6.2.2 Raw map



X Index: 250



Y Index: 250

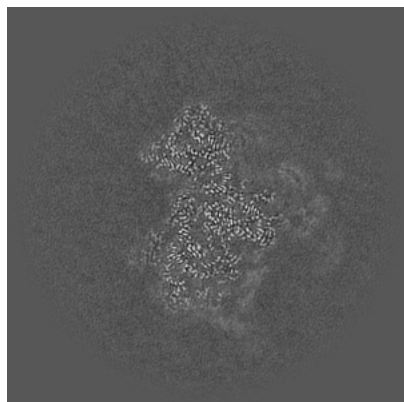


Z Index: 250

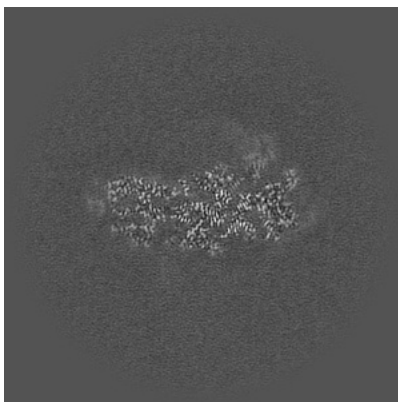
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

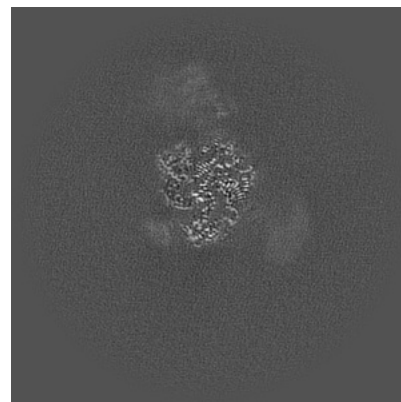
6.3.1 Primary map



X Index: 251

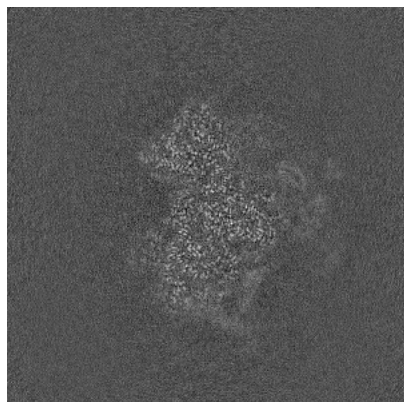


Y Index: 262

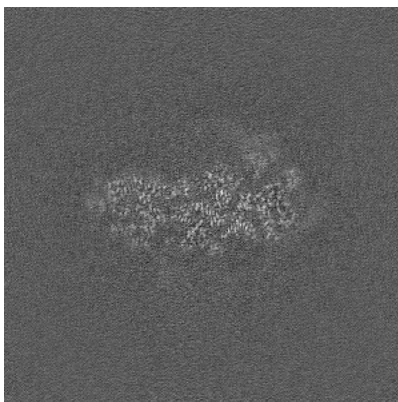


Z Index: 255

6.3.2 Raw map



X Index: 251



Y Index: 262

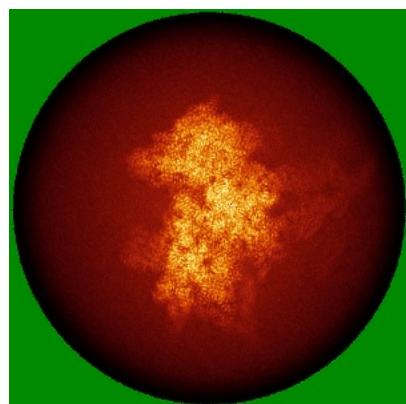


Z Index: 255

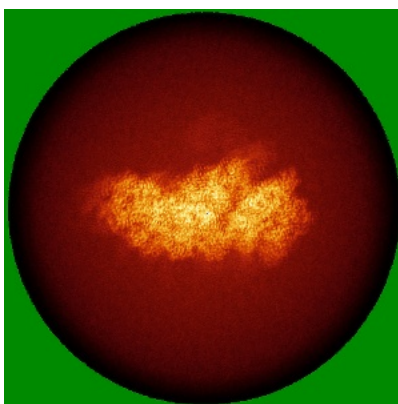
The images above show the largest variance slices of the map in three orthogonal directions.

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

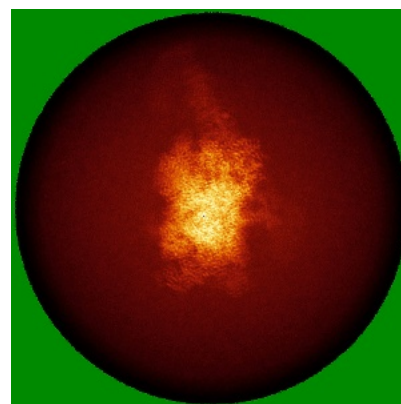
6.4.1 Primary map



X

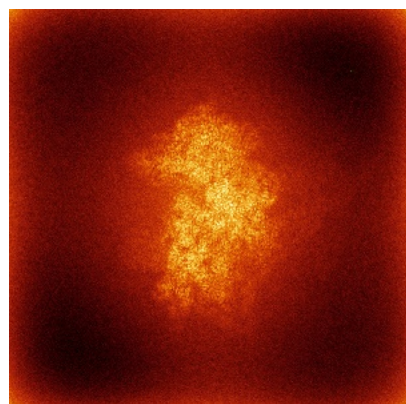


Y

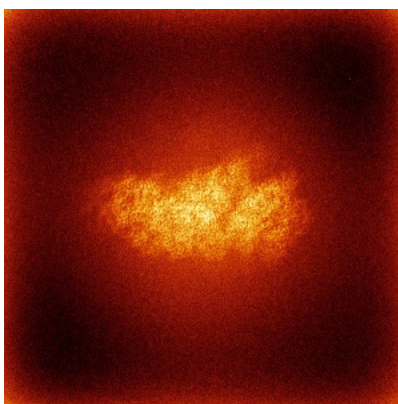


Z

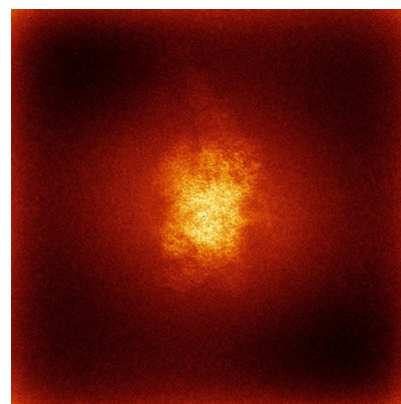
6.4.2 Raw map



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.

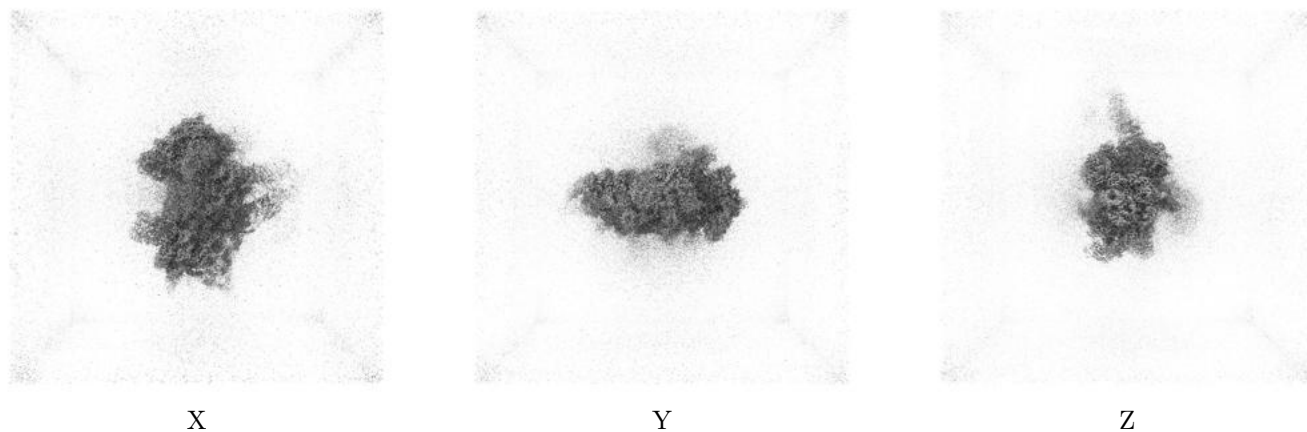
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.15. 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.

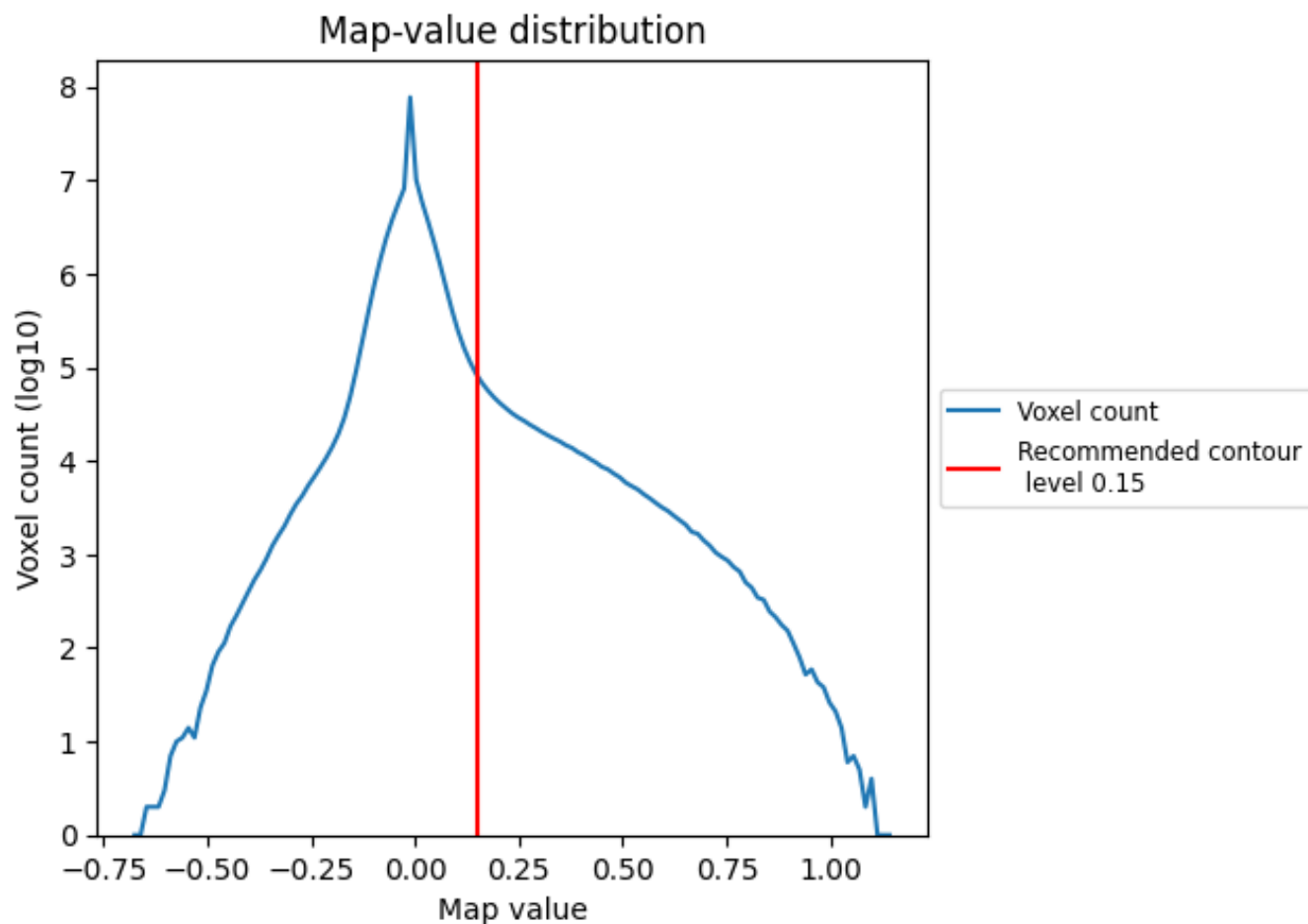
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

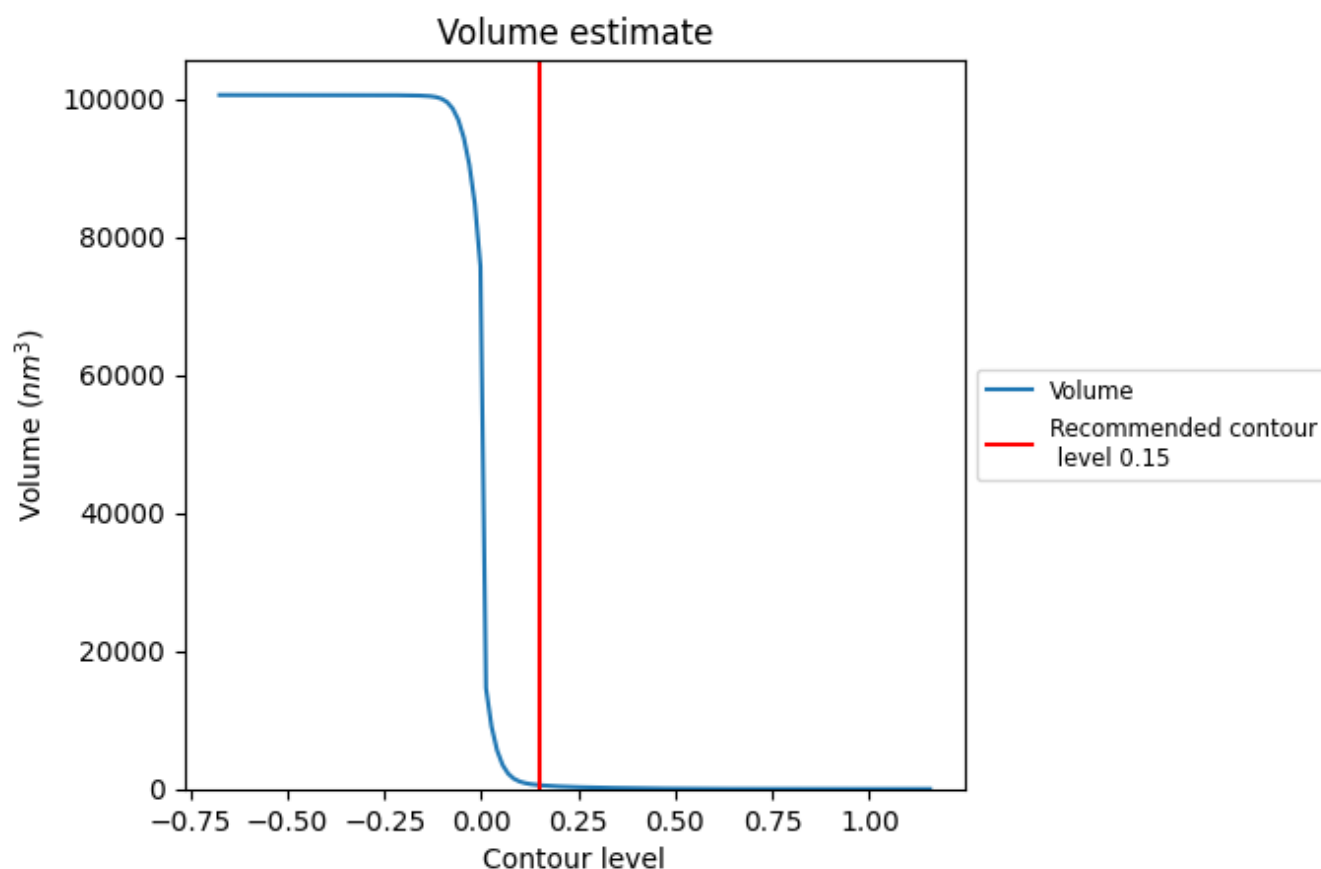
This section contains the results of statistical analysis of the map.

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.

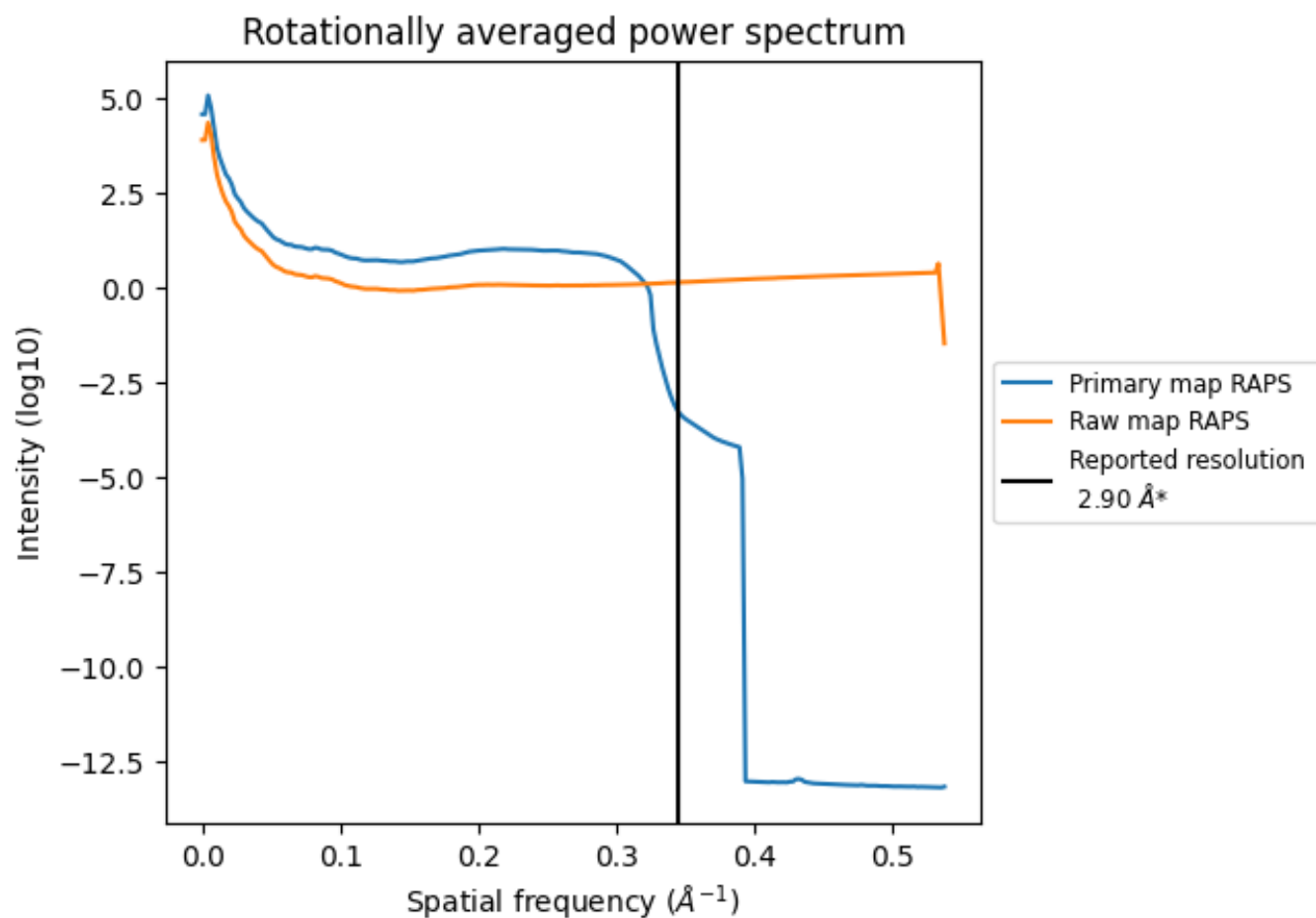
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 551 nm³; this corresponds to an approximate mass of 497 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 ⓘ

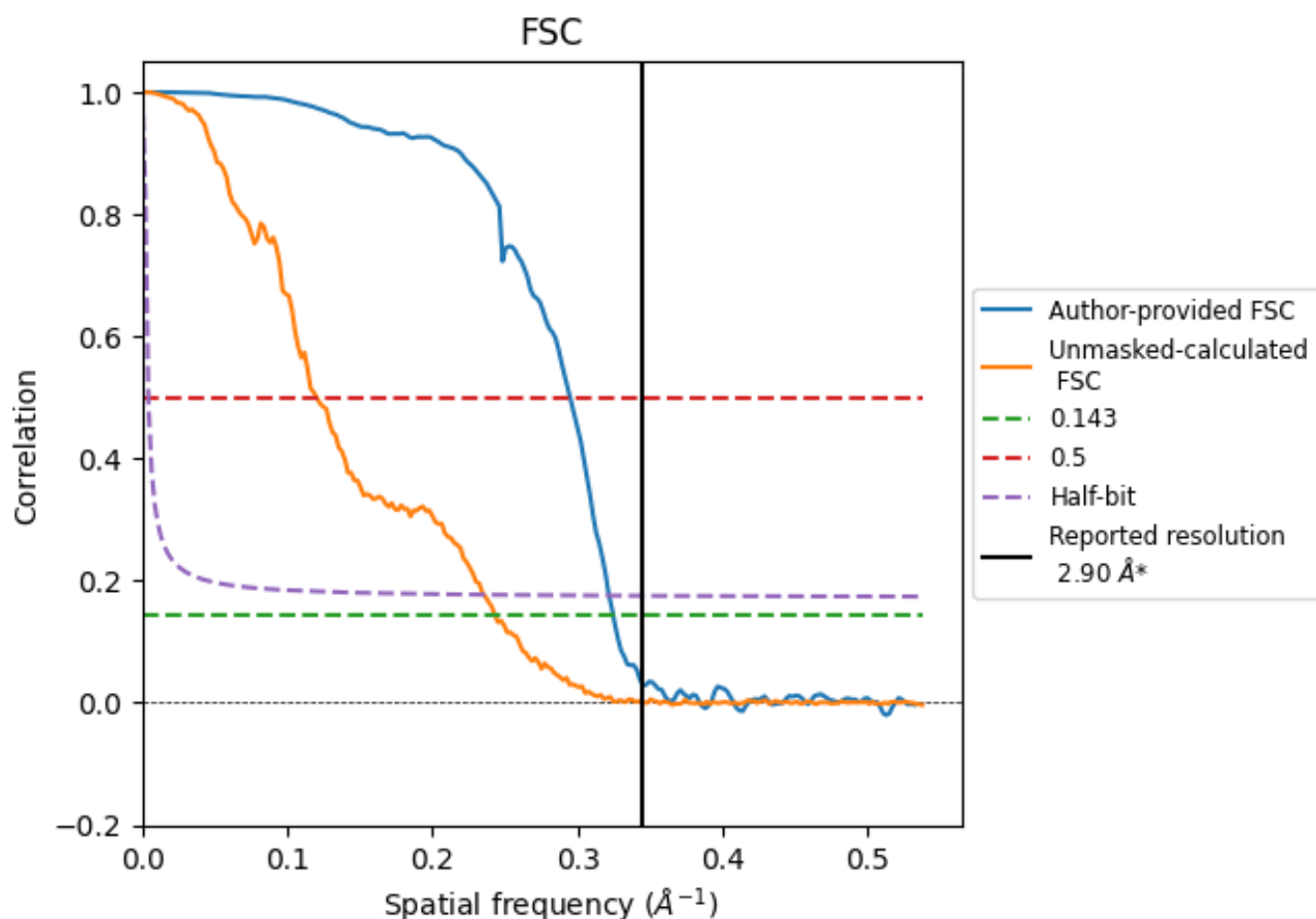


*Reported resolution corresponds to spatial frequency of 0.345 Å⁻¹

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 0.345 \AA^{-1}

8.2 Resolution estimates [i](#)

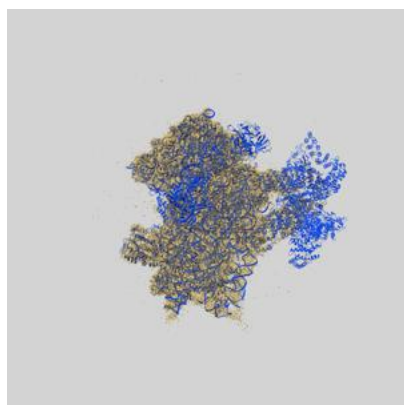
Resolution estimate (Å)	Estimation criterion (FSC cut-off)			
	0.143	0.5	Half-bit	Other
Reported by author	-	-	-	2.90
Author-provided FSC curve	3.08	3.39	3.11	-
Unmasked-calculated*	4.11	8.31	4.25	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

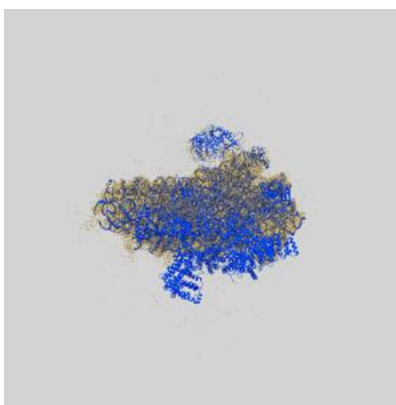
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-51911 and PDB model 9H74. Per-residue inclusion information can be found in [section 3](#) on [page 15](#).

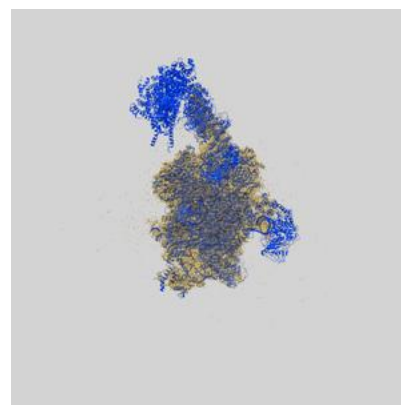
9.1 Map-model overlay [i](#)



X



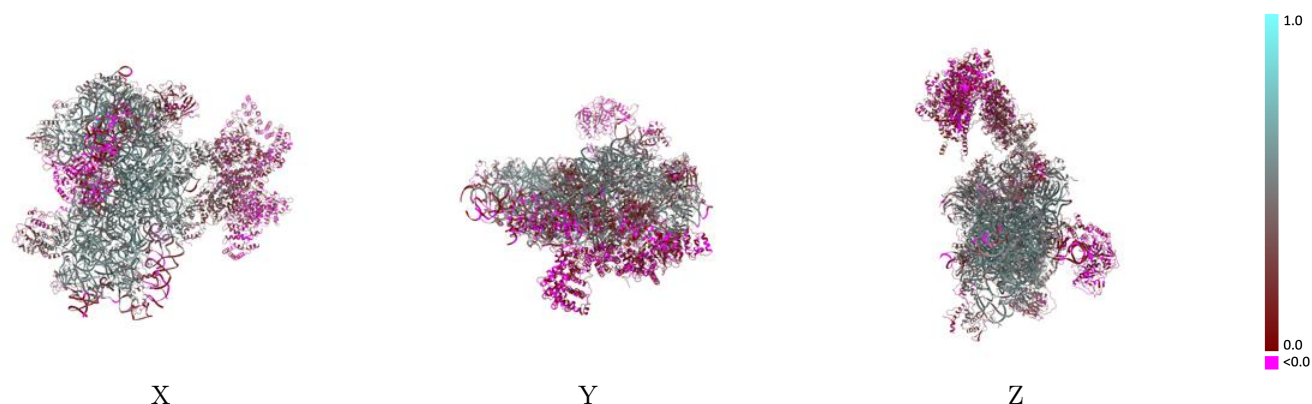
Y



Z

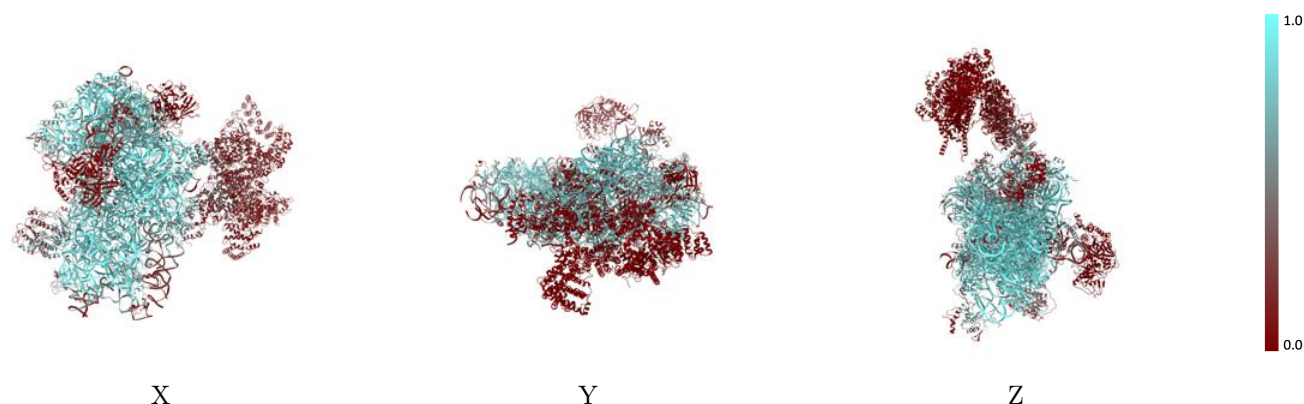
The images above show the 3D surface view of the map at the recommended contour level 0.15 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



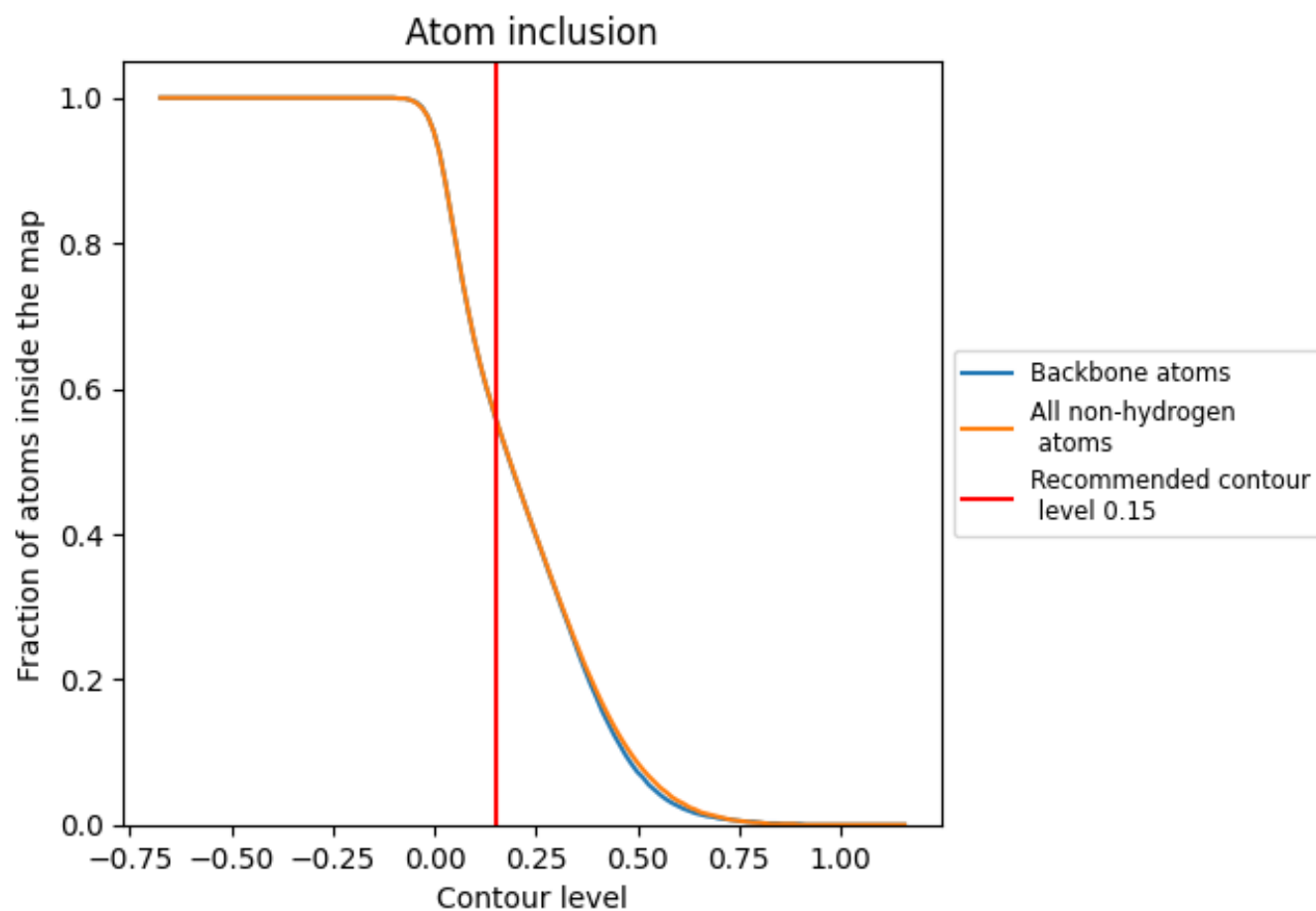
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.15).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 56% of all backbone atoms, 56% 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 (0.15) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5610	 0.3670
1	 0.4960	 0.2020
2	 0.8480	 0.4980
3	 0.9130	 0.5410
A	 0.3000	 0.1850
B	 0.0040	 0.0060
C	 0.7860	 0.4930
D	 0.7910	 0.4930
E	 0.7770	 0.5020
F	 0.7080	 0.4490
G	 0.7850	 0.4960
H	 0.8070	 0.5110
I	 0.6760	 0.4250
J	 0.5250	 0.3460
K	 0.7200	 0.4450
L	 0.7540	 0.4710
M	 0.7380	 0.4340
N	 0.7220	 0.4560
O	 0.3340	 0.2230
P	 0.7920	 0.5130
Q	 0.8030	 0.5080
R	 0.7270	 0.4470
S	 0.8470	 0.5260
T	 0.6530	 0.3960
U	 0.7650	 0.4660
V	 0.8170	 0.4950
W	 0.6620	 0.4290
X	 0.7620	 0.4710
Y	 0.8310	 0.5280
Z	 0.8410	 0.5270
a	 0.7640	 0.4680
b	 0.8260	 0.5210
c	 0.6540	 0.4210
d	 0.6730	 0.4740
e	 0.8550	 0.5200



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Chain	Atom inclusion	Q-score
f	 0.4840	 0.2900
g	 0.6920	 0.4170
i	 0.6730	 0.4140
j	 0.6450	 0.4300
k	 0.4420	 0.3270
l	 0.6800	 0.4310
m	 0.0510	 0.2610
n	 0.7030	 0.4330
o	 0.0580	 0.1640
q	 0.0010	 0.0770
r	 0.0000	 0.0880
s	 0.0000	 0.0220
t	 0.0000	 0.0450
u	 0.0010	 0.0650
v	 0.1930	 0.2730
w	 0.0030	 0.0380
y	 0.1700	 0.2600