



Full wwPDB EM Validation Report ⓘ

Nov 6, 2022 – 09:04 PM EST

PDB ID : 6ND4
EMDB ID : EMD-0441
Title : Conformational switches control early maturation of the eukaryotic small ribosomal subunit
Authors : Hunziker, M.; Barandun, J.; Klinge, S.
Deposited on : 2018-12-13
Resolution : 4.30 Å(reported)
Based on initial model : 5WLC

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.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.2

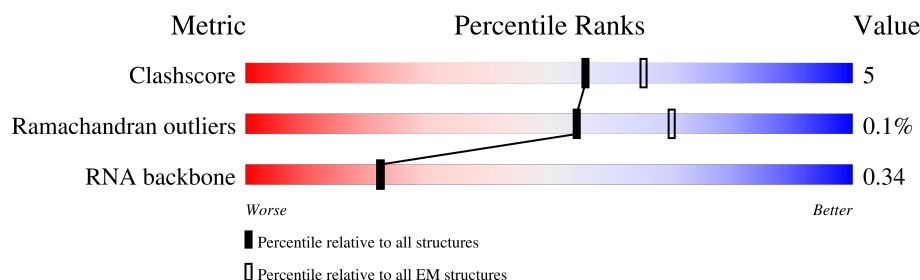
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 4.30 Å.

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






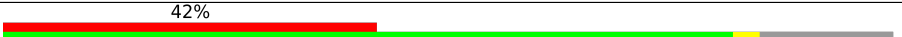
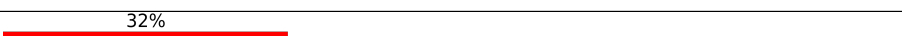
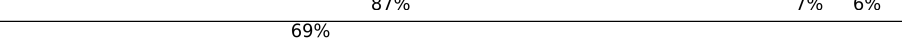
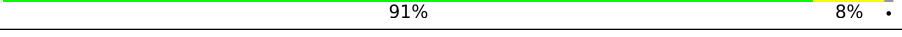




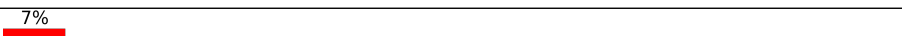

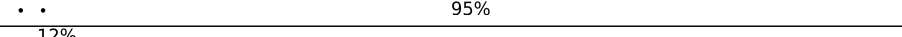





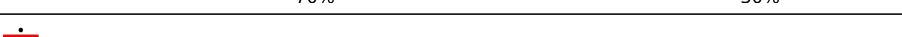
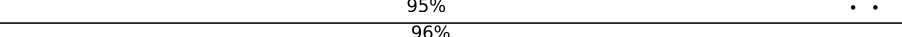
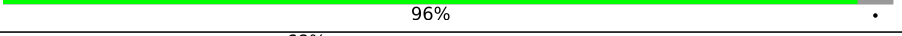
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
RNA backbone	4643	859

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	0	700	<div> <div>27%</div> <div>27%</div> <div>25%</div> <div>6%</div> <div>42%</div> </div>
2	1	15	<div> <div>87%</div> <div>80%</div> <div>13%</div> <div>7%</div> </div>
3	2	146	<div> <div>54%</div> <div>42%</div> <div>45%</div> <div>12%</div> </div>
4	H	853	<div> <div>17%</div> <div>93%</div> <div>5%</div> </div>
5	I	519	<div> <div>67%</div> <div>87%</div> <div>7%</div> <div>6%</div> </div>
6	J	513	<div> <div>45%</div> <div>90%</div> <div>6%</div> </div>
7	K	183	<div> <div>28%</div> <div>67%</div> <div>33%</div> </div>
8	L	643	<div> <div>6%</div> <div>70%</div> <div>26%</div> </div>

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	M	1769	
10	N	727	
11	O	923	
12	P	421	
13	Q	917	
14	R	736	
15	S	594	
16	T	939	
17	U	489	
18	W	554	
19	Z	183	
20	A	593	
21	D	214	
22	a	494	
23	b	503	
24	c	327	
24	d	327	
25	e	126	
25	f	126	
26	g	573	
27	l	189	
28	x	24	

2 Entry composition

There are 28 unique types of molecules in this entry. The entry contains 63993 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 5'ETS rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	408	Total	C	N	O	P	0	0
			8594	3839	1488	2860	407		

- Molecule 2 is a RNA chain called 18S rRNA 5' domain start.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	15	Total	C	N	O	P	0	0
			241	105	22	99	15		

- Molecule 3 is a RNA chain called U3 snoRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	146	Total	C	N	O	P	0	0
			3106	1390	554	1016	146		

- Molecule 4 is a protein called Utp17.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	H	834	Total	C	N	O	0	0
			4132	2464	834	834		

- Molecule 5 is a protein called Utp8.

Mol	Chain	Residues	Atoms				AltConf	Trace
5	I	487	Total	C	N	O	0	0
			2427	1453	487	487		

- Molecule 6 is a protein called Utp15.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	J	493	Total	C	N	O	0	0
			2441	1455	493	493		

- Molecule 7 is a protein called Utp9.

Mol	Chain	Residues	Atoms				AltConf	Trace
7	K	123	Total	C	N	O	0	0
			612	366	123	123		

- Molecule 8 is a protein called Utp5.

Mol	Chain	Residues	Atoms				AltConf	Trace
8	L	473	Total	C	N	O	0	0
			2344	1398	473	473		

- Molecule 9 is a protein called Utp10.

Mol	Chain	Residues	Atoms				AltConf	Trace
9	M	431	Total	C	N	O	0	0
			2151	1289	431	431		

- Molecule 10 is a protein called Utp4.

Mol	Chain	Residues	Atoms				AltConf	Trace
10	N	678	Total	C	N	O	0	0
			3355	1999	678	678		

- Molecule 11 is a protein called Utp1.

Mol	Chain	Residues	Atoms				AltConf	Trace
11	O	832	Total	C	N	O	0	0
			4111	2447	832	832		

- Molecule 12 is a protein called Utp6.

Mol	Chain	Residues	Atoms				AltConf	Trace
12	P	359	Total	C	N	O	0	0
			1786	1068	359	359		

- Molecule 13 is a protein called Utp12.

Mol	Chain	Residues	Atoms				AltConf	Trace
13	Q	862	Total	C	N	O	0	0
			4262	2538	862	862		

- Molecule 14 is a protein called Utp13.

Mol	Chain	Residues	Atoms				AltConf	Trace
14	R	725	Total	C	N	O	0	0
			3604	2154	725	725		

- Molecule 15 is a protein called Utp18.

Mol	Chain	Residues	Atoms				AltConf	Trace
15	S	481	Total	C	N	O	0	0
			2372	1410	481	481		

- Molecule 16 is a protein called Utp21.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	T	812	Total	C	N	O	0	0
			4003	2379	812	812		

- Molecule 17 is a protein called Sof1.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	U	407	Total	C	N	O	0	0
			2014	1200	407	407		

- Molecule 18 is a protein called Utp7.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	W	385	Total	C	N	O	0	0
			1895	1125	385	385		

- Molecule 19 is a protein called Imp3.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	Z	169	Total	C	N	O	0	0
			840	502	169	169		

- Molecule 20 is a protein called Mpp10.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	A	31	Total	C	N	O	0	0
			155	93	31	31		

- Molecule 21 is a protein called Bud21.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	D	25	Total	C	N	O	0	0
			124	74	25	25		

- Molecule 22 is a protein called Nop56.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	a	368	Total	C	N	O	0	0
			1822	1086	368	368		

- Molecule 23 is a protein called Nop58.

Mol	Chain	Residues	Atoms				AltConf	Trace
23	b	425	Total	C	N	O	0	0
			2109	1259	425	425		

- Molecule 24 is a protein called Nop1.1.

Mol	Chain	Residues	Atoms				AltConf	Trace
24	c	203	Total	C	N	O	0	0
			1000	594	203	203		
24	d	228	Total	C	N	O	0	0
			1122	666	228	228		

- Molecule 25 is a protein called Snu13.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	e	121	Total	C	N	O	0	0
			601	359	121	121		
25	f	121	Total	C	N	O	0	0
			601	359	121	121		

- Molecule 26 is a protein called Rrp9.

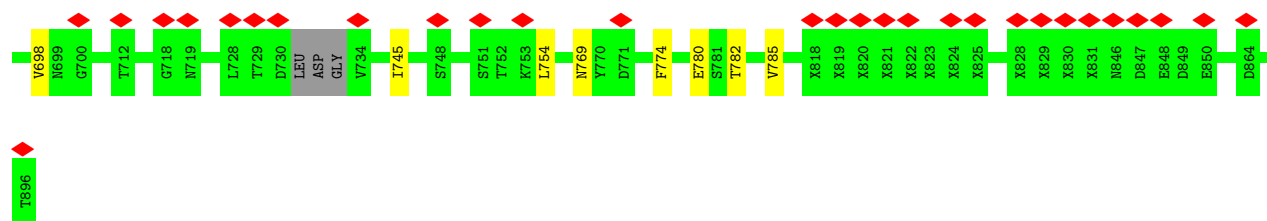
Mol	Chain	Residues	Atoms				AltConf	Trace
26	g	391	Total	C	N	O	0	0
			1925	1143	391	391		

- Molecule 27 is a protein called Utp24.

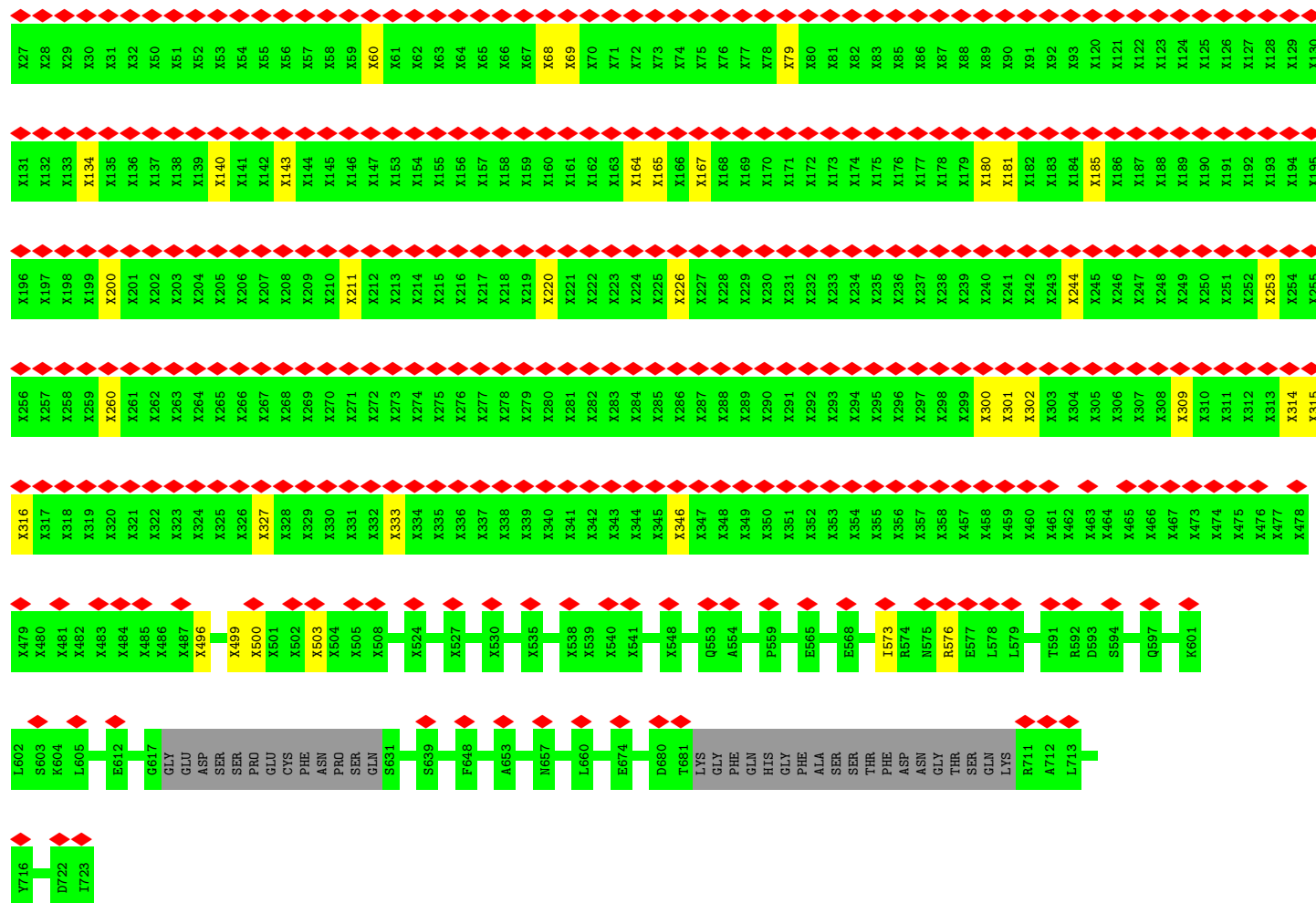
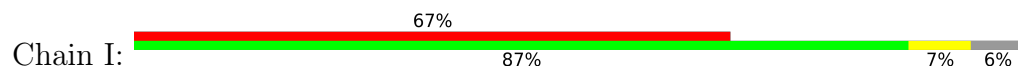
Mol	Chain	Residues	Atoms				AltConf	Trace
27	l	25	Total	C	N	O	0	0
			124	74	25	25		

- Molecule 28 is a protein called Unidentified fragment.

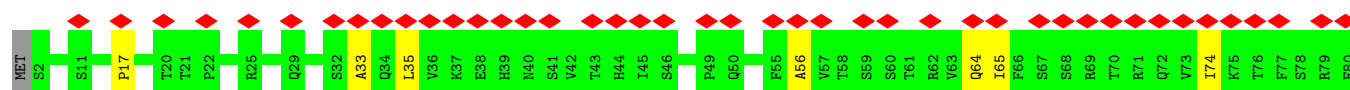
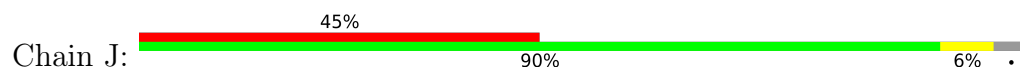
Mol	Chain	Residues	Atoms				AltConf	Trace
28	x	24	Total	C	N	O	0	0
			120	72	24	24		



• Molecule 5: Utp8



• Molecule 6: Utp15



ASP	SER	ASP	ASN	GLU	GLU	GLN	LYS	HIS	THR	SER	SER	LYS	GLN	ASP	GLY	ARG	LEU	GLU	THR
SER	ASP	ASN	GLU	GLU	GLN	LYS	HIS	THR	SER	SER	LYS	GLN	ASP	GLY	ARG	LEU	GLU	THR	THR

● Molecule 9: Utp10



MET	S2	A12	N36	SS37	A40	Q120	R124	I180	N184	A257	A277	E339	T358	I393	S409	K420	R432	THR	THR
LYS	ASP	THR	ALA	LYS	SER	PHE	GLN	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

LYS	ASP	THR	ALA	LYS	SER	PHE	GLN	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
ASP	THR	ALA	LYS	SER	PHE	GLN	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

GLU	SER	ARG	ILE	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
SER	ARG	ILE	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

THR	GLY	VAL	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
GLY	VAL	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

ILE	LEU	THR	PRO	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	PRO	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

SER	SER	TRP	GLU	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
TRP	GLU	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

PHE	ALA	SER	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
ALA	SER	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

PHE	SER	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
SER	THR	LYS	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

LEU	GLU	THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

LYS	LEU	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

GLY	ASN	GLU	GLY	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

PHE	LYS	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

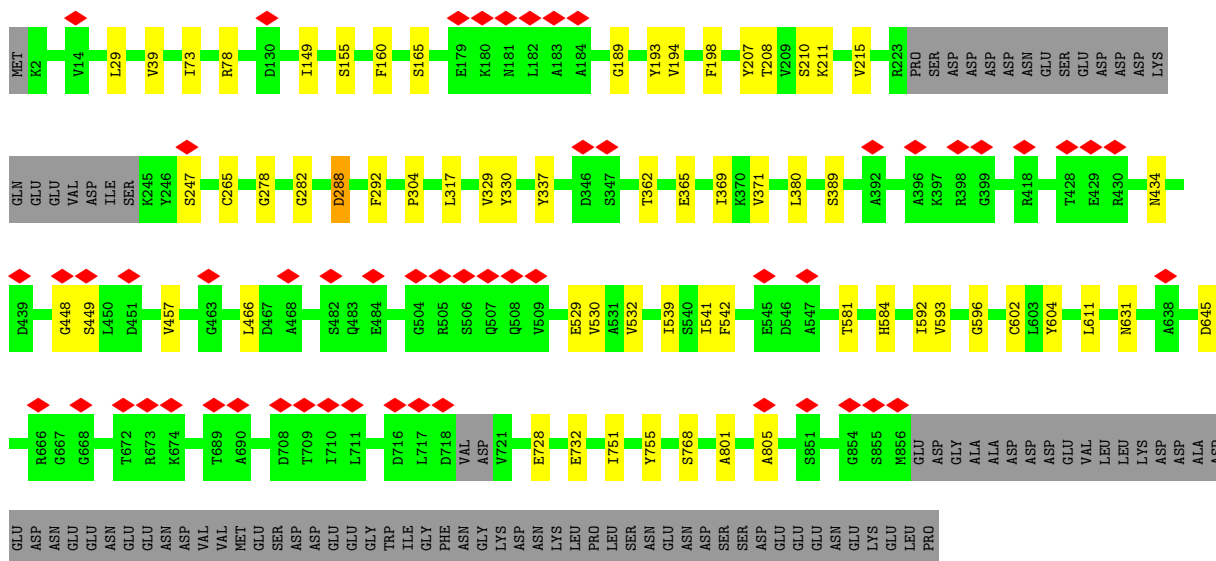
GLY	VAL	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

ARG	GLU	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

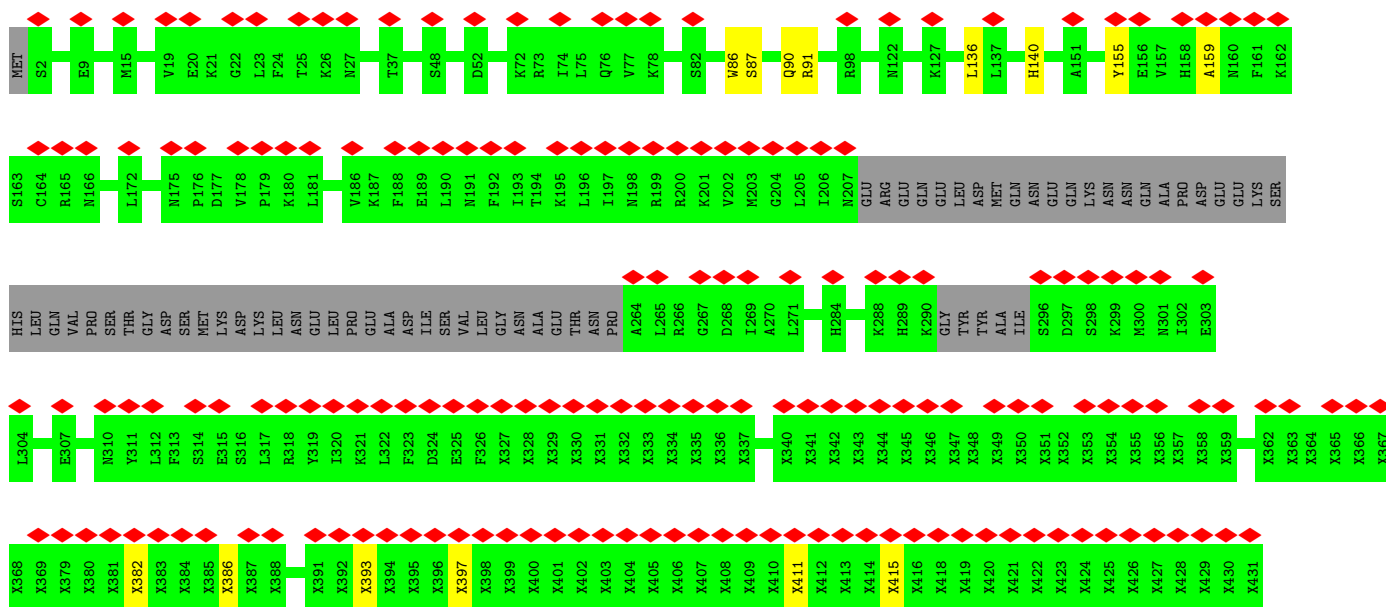
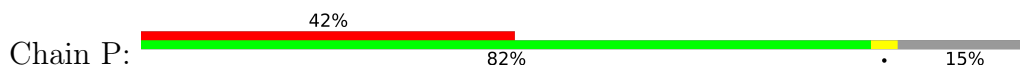
ILE	LEU	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

SER	LYS	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

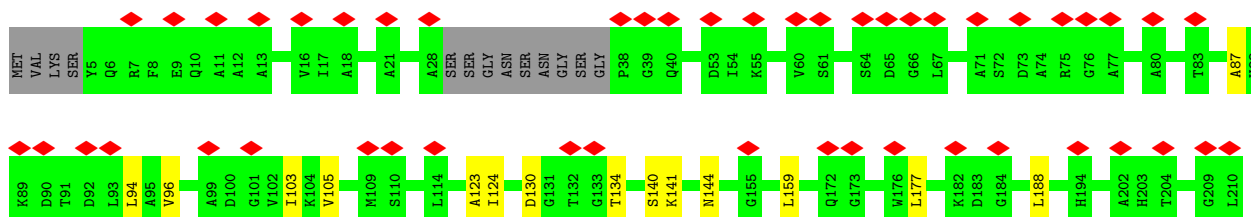
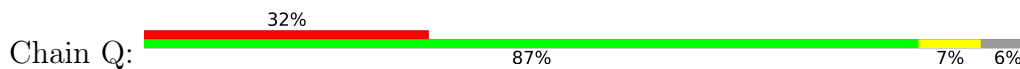
GLN	VAL	THR	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU
THR	LEU	VAL	THR	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU	LEU

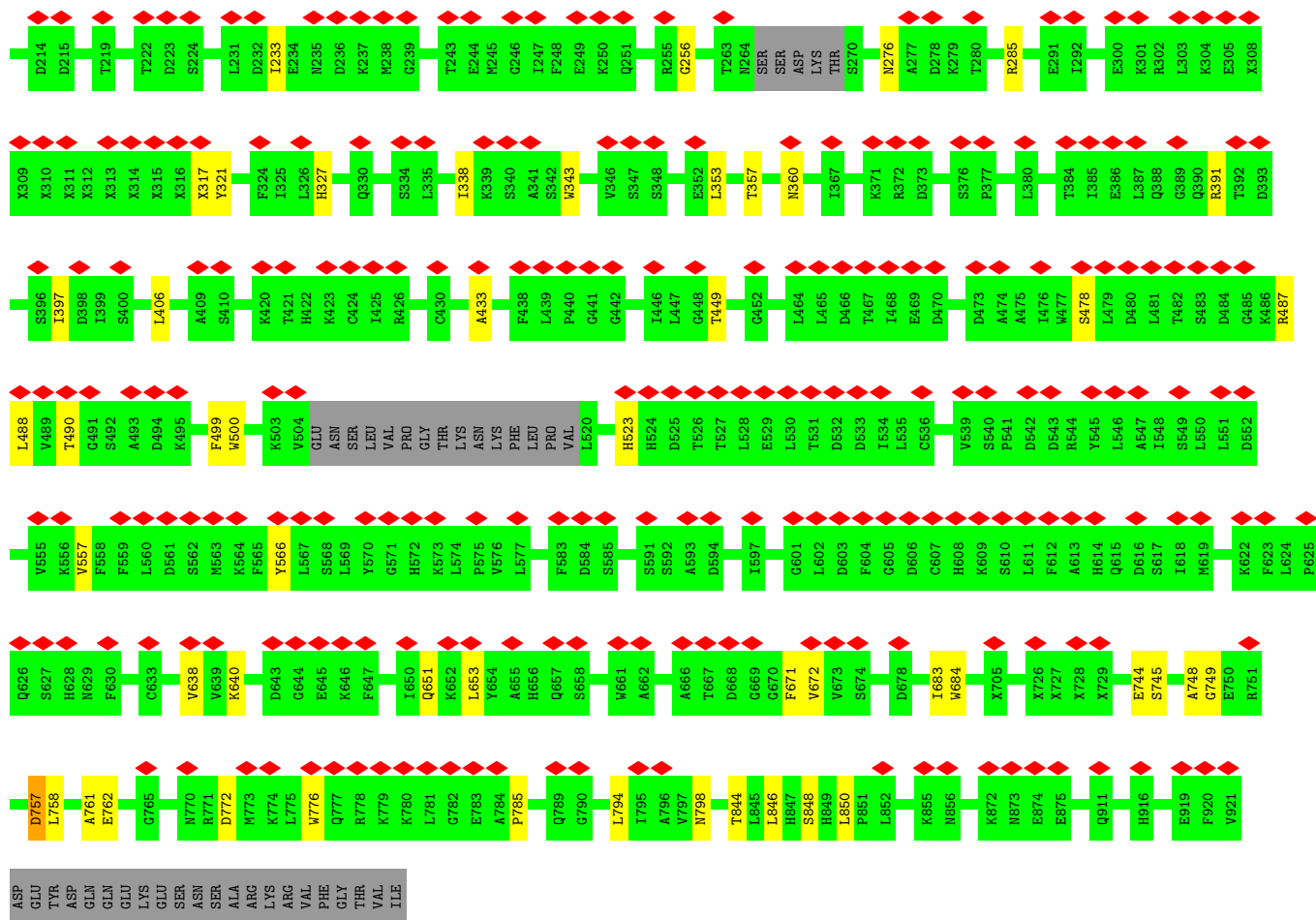


• Molecule 12: Utp6

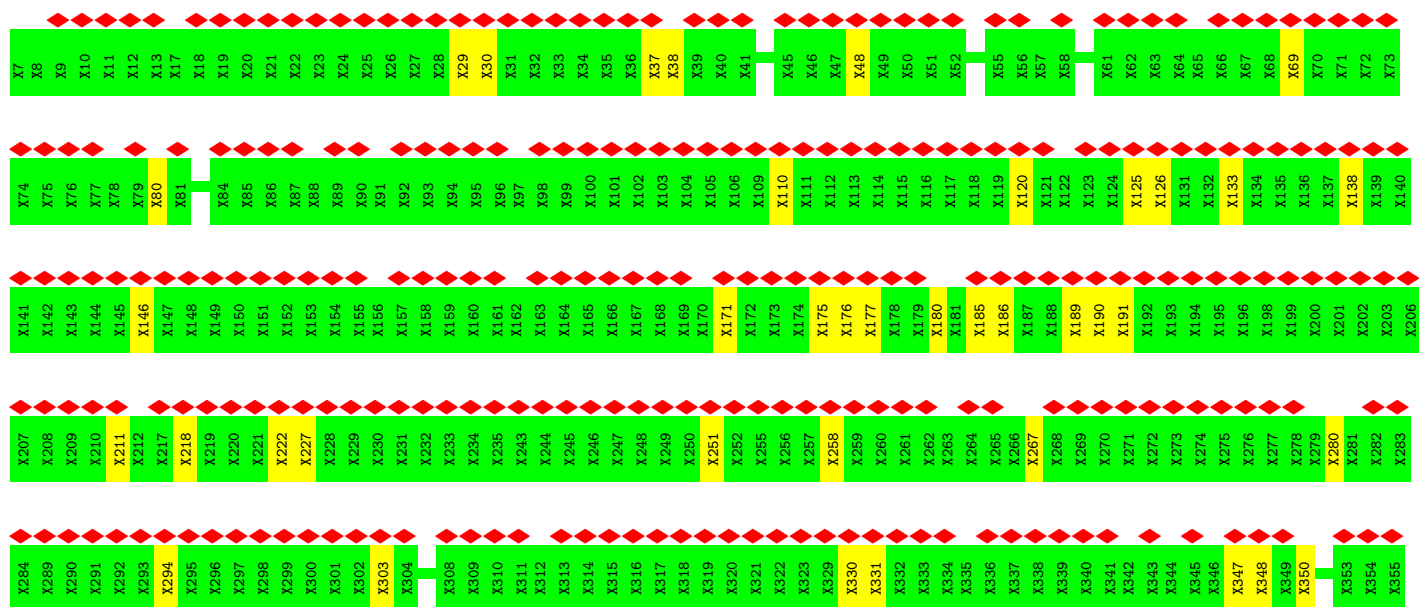
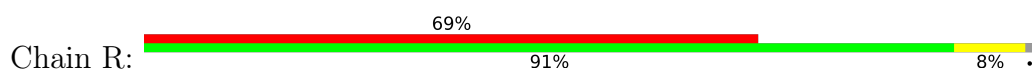


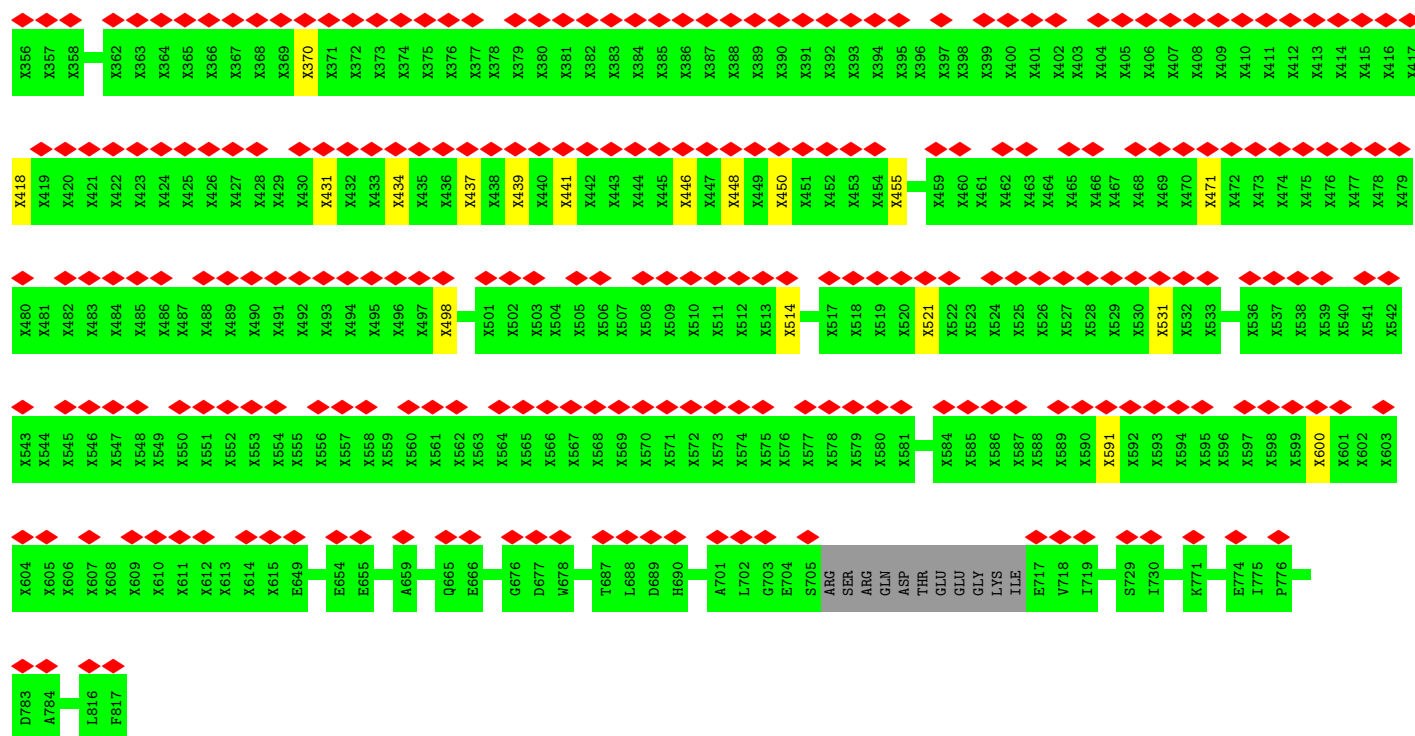
• Molecule 13: Utp12



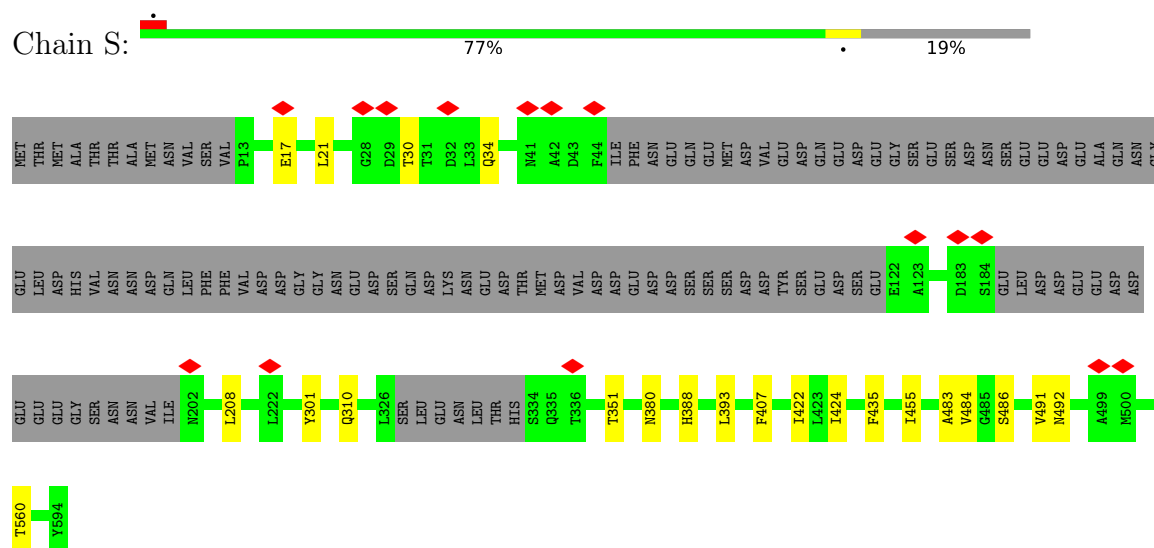


• Molecule 14: Utp13

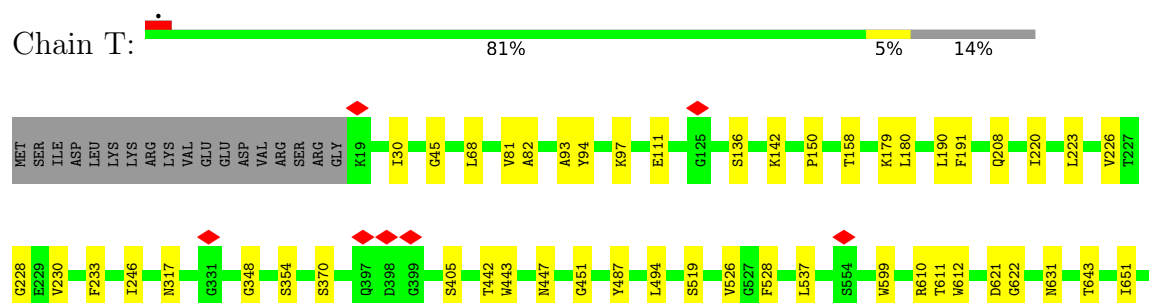


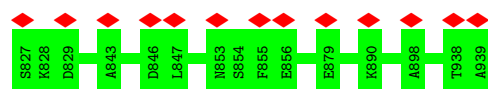
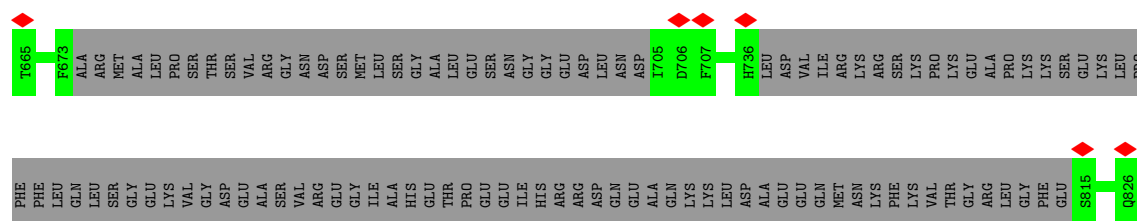


- Molecule 15: Utp18

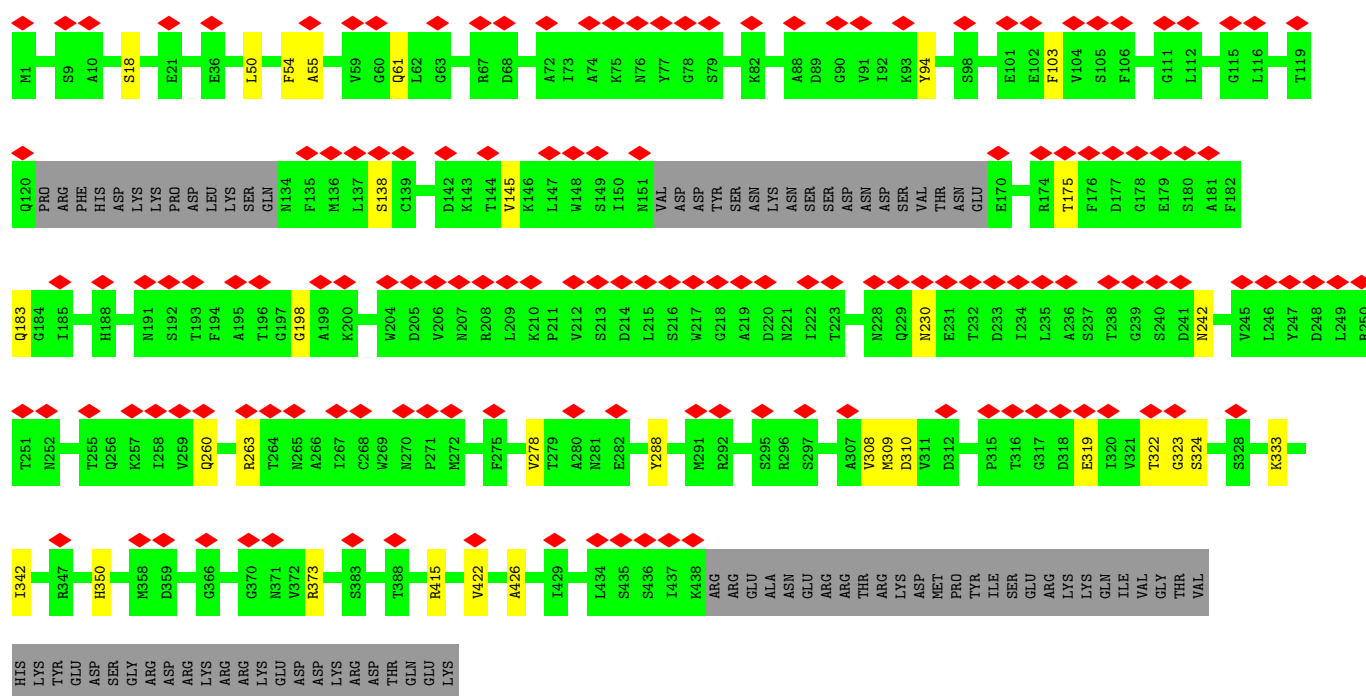
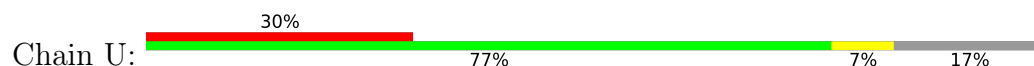


- Molecule 16: Utp21

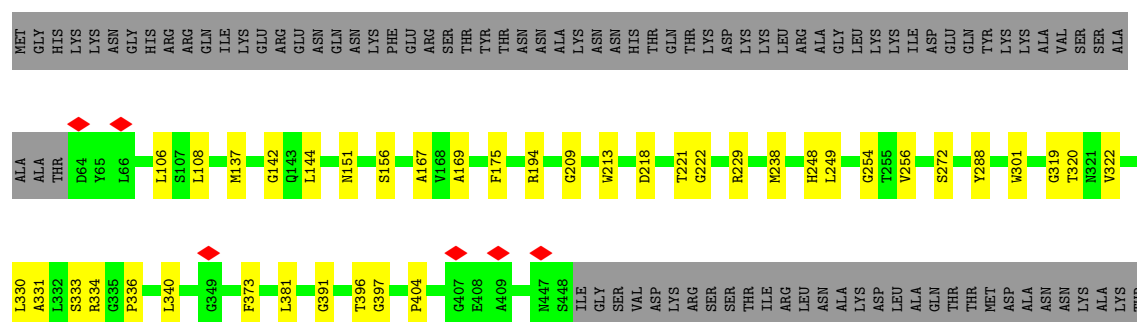




• Molecule 17: Sof1

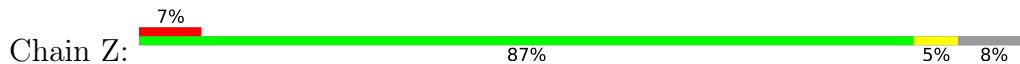


• Molecule 18: Utp7



[illegible]

- Molecule 19: Imp3



MET	V2		V16	T30	R34	R55	A58	T67	T89	S92	T102 V103	C107	A121	G139	Y157	D162	N163	S164	K165	I166	K167	K168	T169	L170	LEU	ARG	TYR	ARG	ASN	GLN	ILE	ASP	ASP	PHE	ASP	PHE	FER
-----	----	--	-----	-----	-----	-----	-----	-----	-----	-----	--------------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

- Molecule 20: Mpp10



MET	SER	GLU	LEU	PHE	GLY	VAL	LEU	LYS	SER	ASN	ALA	GLY	ARG	ILE	LEU	LYS	ASP	PRO	THR	ALA	SER	THR	LYS	ASP	VAL	LYS	ALA	TYR	ILE	ASP	SER	VAL	ASN	THR	CYS	LYS	LYS	LYS	GLY	SER	ILE	THR	THR	LYS	ALA	GLU	ASP	GLU	ILE	THR	VAL	ASP	GLY	LEU	ASP	ALA	ASN
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

GLN	VAL	TRP	GLN	VAL	LYS	LEU	VAL	LEU	ASP	SER	ILE	ASP	GLY	ASP	GLU	LEU	ILE	GLN	GLY	GLN	GLN	GLU	LEU	LYS	ASP	VAL	VAL	THR	THR	SER	SER	ASN	LEU	ASP	SER	SER	GLY	SER	THR	LEU	ASN	SER	SER	SER	GLY	GLU	GLU	GLU	GLU	ALA	GLU	SER	VAL	PHE	LYS	LYS	GLU	ASP
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

GLN MET LEU SER SER ALA ALA VAL ASP VAL SER SER GLU LEU LEU GLU GLU GLN SER ASN ASP SER SER LEU SER GLU ASN ASP ASP GLU GLU PRO SER MET MET SER SER SER LYS THR THR SER SER GLU ALA ALA ALA ARG ARG GLU GLU GLU GLU PHE PHE ALA ALA GLU GLU LYS LYS ARG ARG ILE ILE SER SER GLY GLY GLN GLN ASP ASP GLU GLU ARG ARG HIS HIS SER SER PRO PRO ASP ASP

[illegible]

THR	LYS	GLU	PRO	VAL	LYS	LYS	HIS	SER	ASP	VAL	VAL	LYS	ASP	PRO	GLY	GLU	GLU	GLU	LEU	LEU	ASP	GLU	GLU	GLU	GLU	HIS	ASP	SER	ALA	ALA	MET	ASP	LYS	VAL	LYS	LEU	LEU	PHE	ALA	ALA	ASN	ASP	GLU	GLU	ASP	ASP	GLY	VAL	GLY	GLU	ALA	ALA	SER	ASP	LYS	ASN	LEU	SER	SER	PHE
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

[illegible]

VAL	THR	GLU	SER	LEU	GLU	ASP	MET	ILE	ARG	ARG	ARG	ILE	GLN	ASP	SER	ASN	PHE	ASP	ASP	LEU	GLN	ARG	ARG	THR	LEU	LEU	ASP	ILE	THR	ARG	LYS	SER	GLN	ARG	PRO	GLN	PHE	GLU	LEU	LEU	SER	ASP	VAL	LYS	SER	SER	LYS	LYS	SER	LEU	ALA	GLU	ILE	TYR	GLU	ASP	TYR	THR	ARG	ALA
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

[illegible]

LYS	ALA	GLU	LYS	ASP	GLY	GLU	ILE	ARG	LEU	LYS	ASN	GLY	VAL	ALA	MET	SER	LYS	GLU	GLU	THR	LEU	ARG	GLU	ASP	LYS	ASN	ARG	LYS	LYS	ARG	LYS	ASN	LEU	PRO	ASN	VAL	ASN	LYS	ARG	ASP	VAL	ASP	THR	LEU	SER	LYS
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

ALA
LYS
ASN
ILE
THR
VAL
ILE
ASN
GLN
LYS
GLY
GLU
LYS
LYS
ASP
VAL
SER
GLY
LYS
THR
LYS
LYS
SER
ARG
SER
GLY
PRO
ASP
SER
THR
ASN
ILE
LYS
LEU

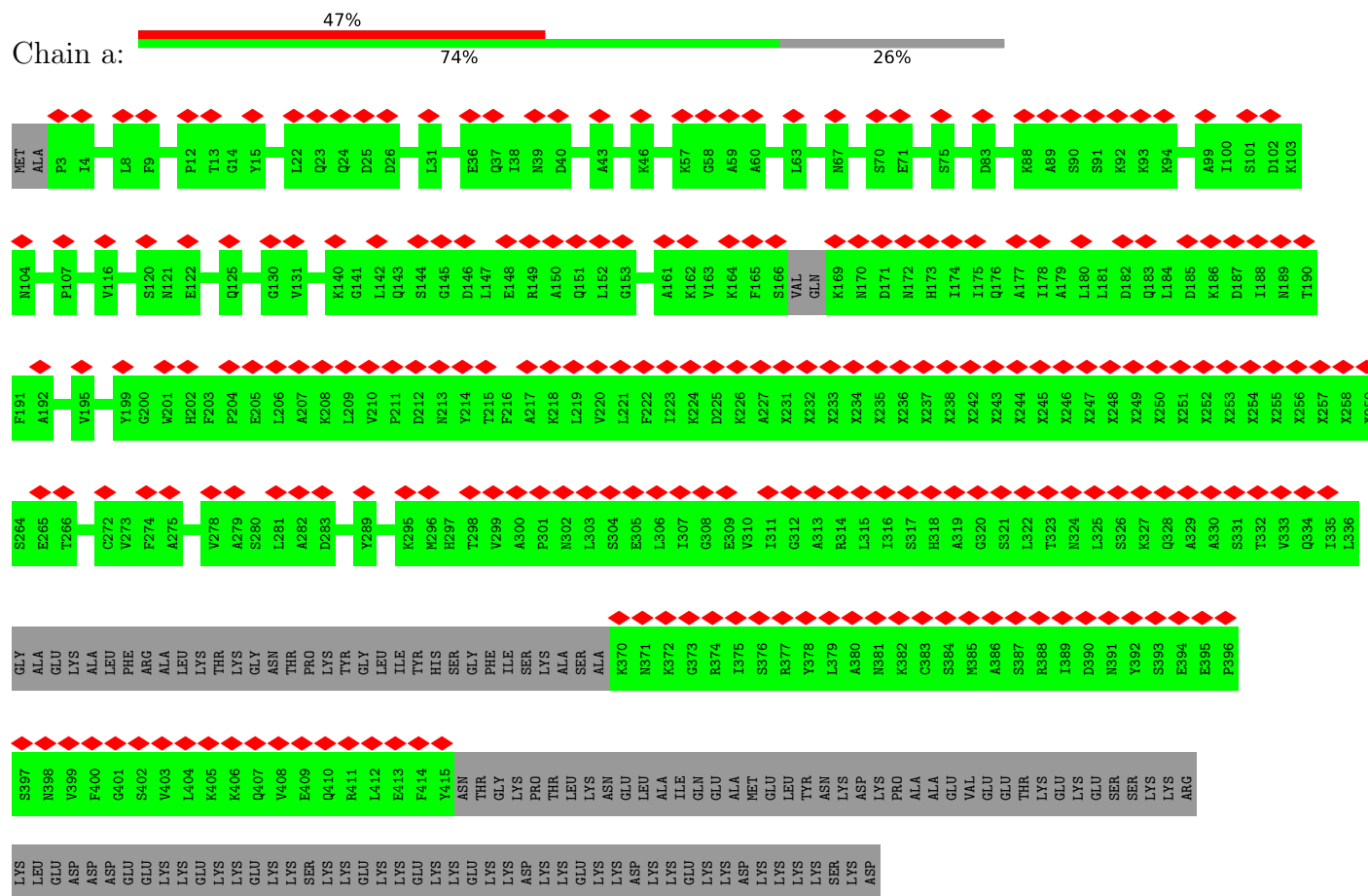
- Molecule 21: Bud21



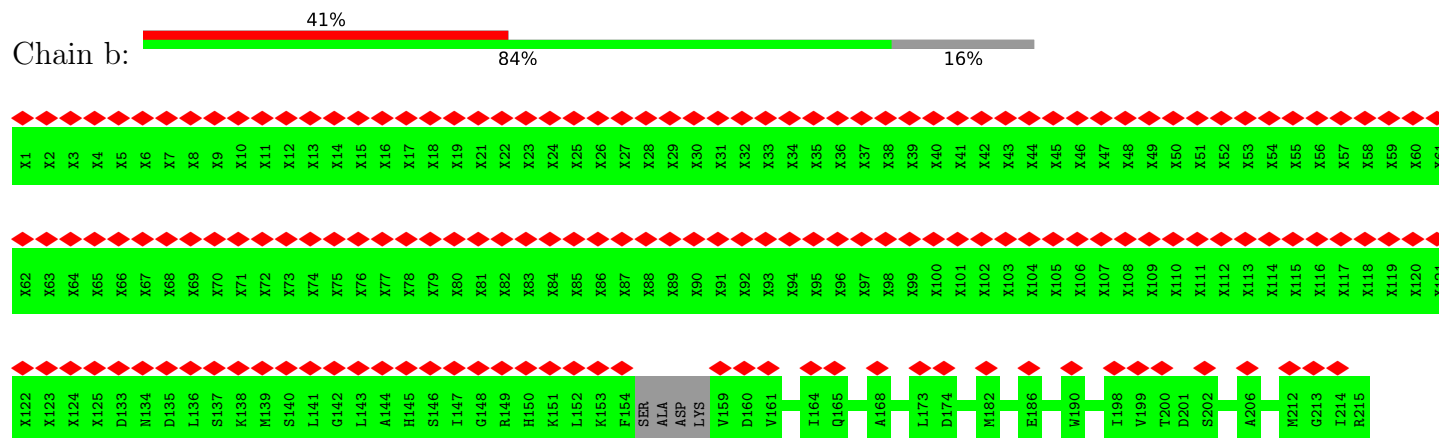
MET	SER	ASN	GLY	HIS	VAL	LYS	PHE	ASP	ALA	ASP	GLU	SER	GLN	ALA	SER	ALA	SER	ALA	ALA	VAL	THR	ASP	ARG	GLN	ASP	ASP	VAL	LEU	VAL	ILE	SER	LYS	LYS	LYS	LYS	GLU	VAL	HIS	SER	SER	SER	ASP	GLU	GLU	SER	ASP	ASP	ALA	ALA	PRO	GLN	GLY	GLU	GLY	LEU	HIS	SER	HIS	GLY	LYS
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

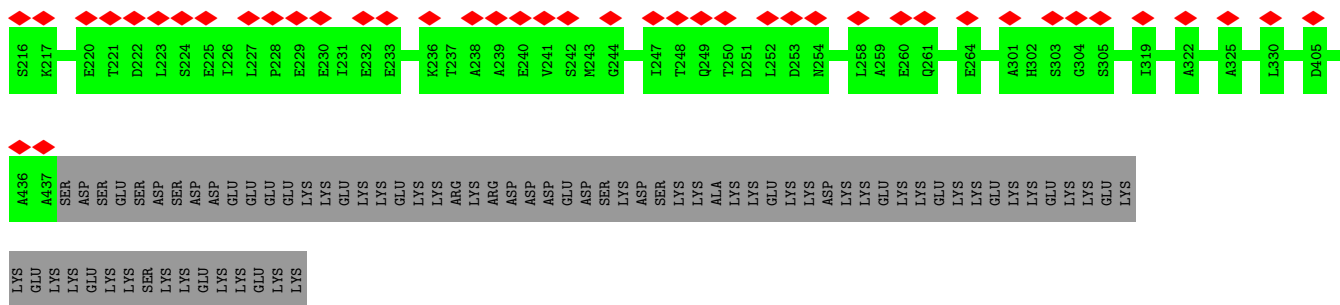
SER	GLJ	VAL	GLU	SER	GLN	ILE	THR	GLN	ARG	GLU	GLU	ALA	ILE	ARG	GLU	GLN	SER	LYS	ARG	ARG	LYS	GLN	ASN	GLU	LEU	TYR	ALA	LYS	GLN	LYS	VAL	SER	ASN	GLU	THR	GLU	VAL	ILE	ALA	GLU	LEU	PRO	GLU	GLY	ASN	ILE
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

- Molecule 22: Nop56

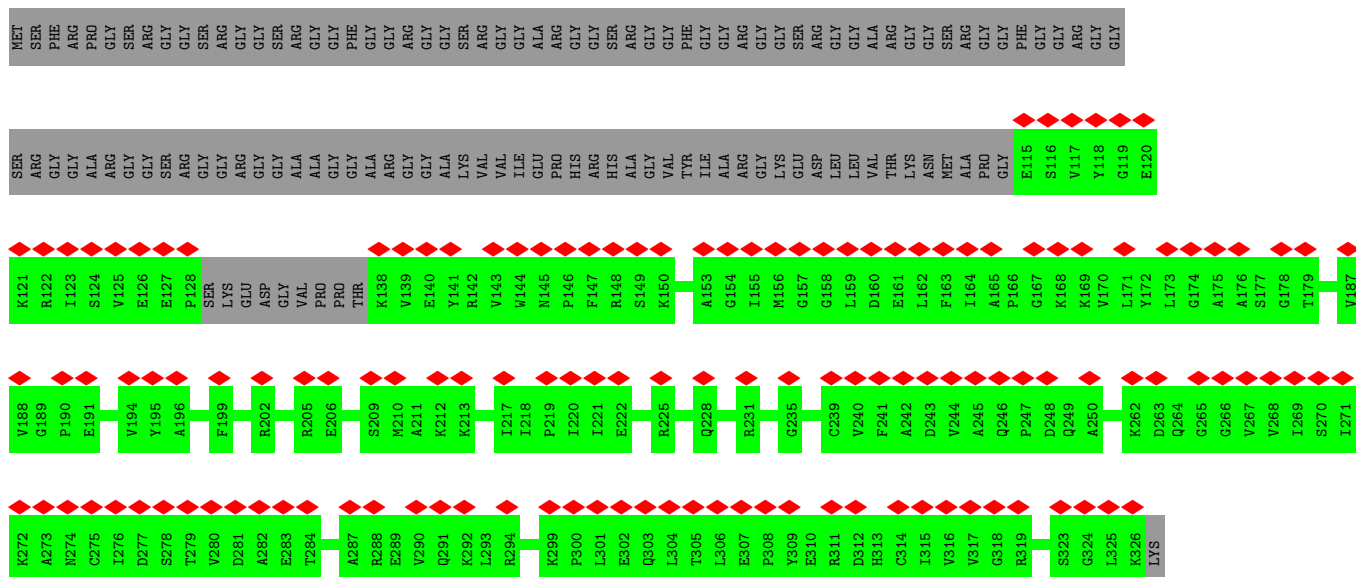
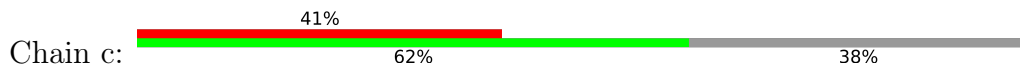


- Molecule 23: Nop58

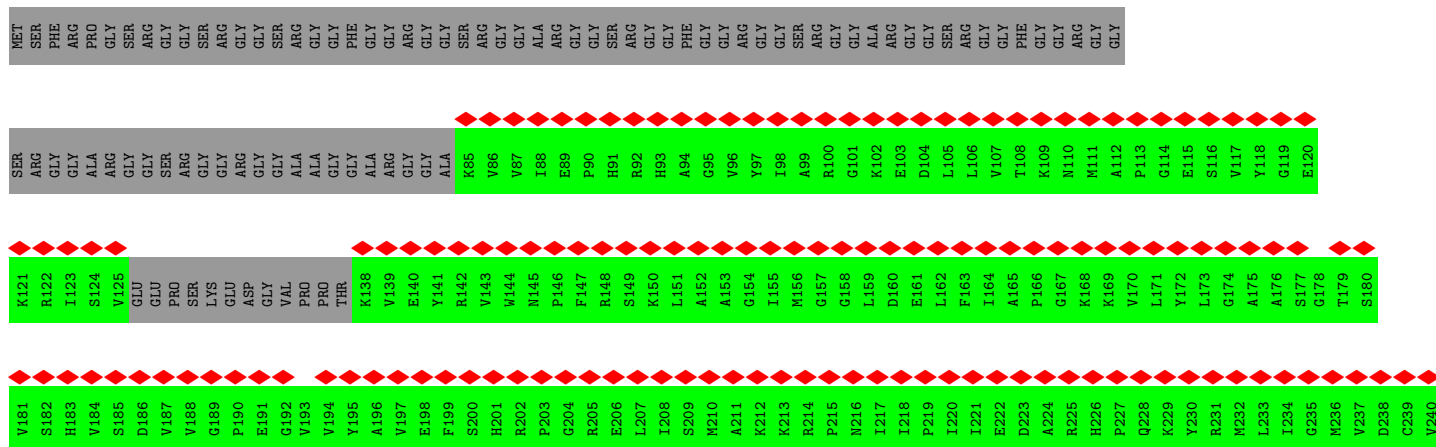


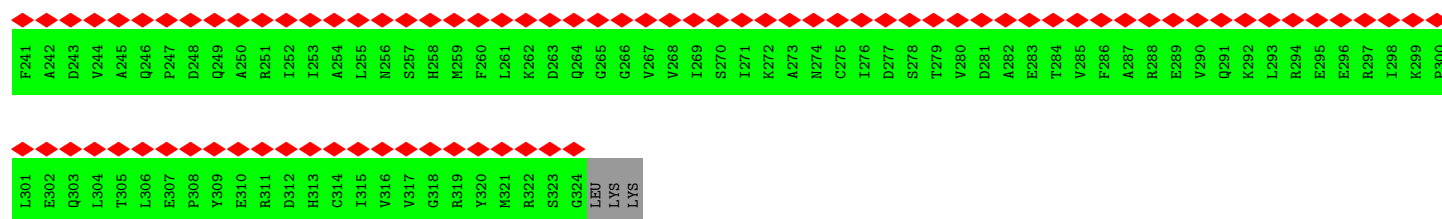


- Molecule 24: Nop1.1

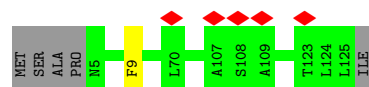


- Molecule 24: Nop1.1

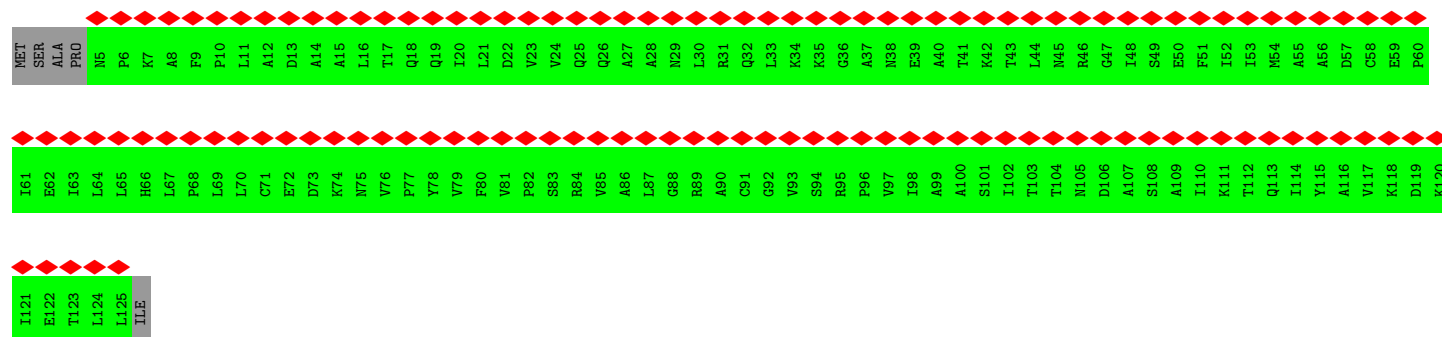




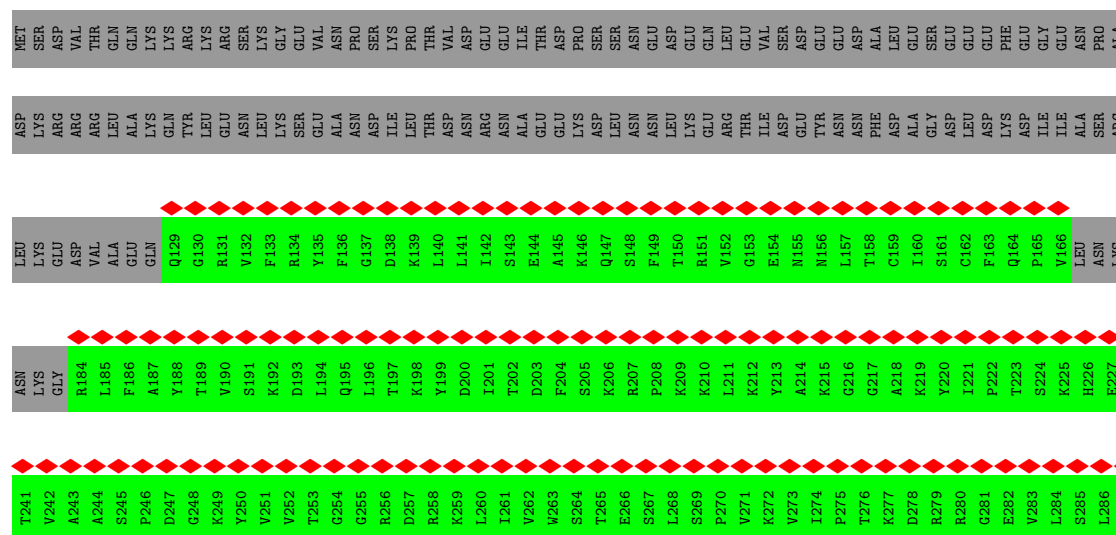
• Molecule 25: Snu13

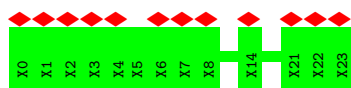


• Molecule 25: Snu13



• Molecule 26: Rrp9





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	52629	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	31.25	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.091	Depositor
Minimum map value	-0.049	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0203	Depositor
Map size (\AA)	576.0, 576.0, 576.0	wwPDB
Map dimensions	360, 360, 360	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.6, 1.6, 1.6	Depositor

5 Model quality

5.1 Standard geometry

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	0	0.58	0/9470	1.21	63/14733 (0.4%)
2	1	0.56	0/160	1.44	3/246 (1.2%)
3	2	4.97	14/3467 (0.4%)	1.76	41/5383 (0.8%)
4	H	0.33	0/4057	0.59	1/5649 (0.0%)
5	I	0.26	0/659	0.51	0/916
6	J	0.29	0/2439	0.57	1/3397 (0.0%)
7	K	0.27	0/436	0.51	0/607
8	L	0.34	0/2339	0.58	0/3254
9	M	0.33	0/2150	0.47	0/3006
10	N	0.31	0/3280	0.60	0/4563
11	O	0.35	0/4108	0.59	0/5717
12	P	0.28	0/1308	0.45	0/1821
13	Q	0.30	0/4081	0.60	1/5675 (0.0%)
14	R	0.29	0/785	0.46	0/1094
15	S	0.40	0/2368	0.59	0/3289
16	T	0.36	0/4000	0.59	0/5561
17	U	0.30	0/2011	0.56	0/2798
18	W	0.38	0/1894	0.59	0/2632
19	Z	0.33	0/839	0.53	0/1170
20	A	0.28	0/154	0.60	0/214
21	D	0.21	0/123	0.49	0/170
22	a	0.28	0/1688	0.48	0/2346
23	b	0.30	0/1487	0.51	0/2069
24	c	0.28	0/998	0.54	0/1385
24	d	0.27	0/1120	0.56	0/1554
25	e	0.31	0/600	0.54	0/836
25	f	0.27	0/600	0.53	0/836
26	g	0.27	0/1922	0.57	0/2668
27	l	0.27	0/123	0.43	0/170
All	All	1.26	14/58666 (0.0%)	0.84	110/83759 (0.1%)

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
4	H	0	4
5	I	0	1
10	N	0	1
11	O	0	2
13	Q	0	2
16	T	0	1
17	U	0	3
20	A	0	1
25	e	0	1
All	All	0	16

All (14) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	2	248	G	N3-C4	139.38	2.33	1.35
3	2	248	G	C2-N3	124.20	2.32	1.32
3	2	248	G	C6-N1	114.84	2.19	1.39
3	2	248	G	N1-C2	100.57	2.18	1.37
3	2	248	G	C5-C4	96.51	2.06	1.38
3	2	248	G	C5-C6	74.24	2.16	1.42
3	2	323	G	C6-N1	51.08	1.75	1.39
3	2	323	G	N3-C4	48.28	1.69	1.35
3	2	323	G	N1-C2	43.57	1.72	1.37
3	2	323	G	C2-N3	41.17	1.65	1.32
3	2	323	G	C5-C4	40.04	1.66	1.38
3	2	323	G	C5-C6	32.26	1.74	1.42
3	2	248	G	C8-N7	7.71	1.35	1.30
3	2	248	G	N9-C8	5.71	1.41	1.37

All (110) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2	248	G	C4-C5-N7	-36.18	96.33	110.80
3	2	248	G	C2-N3-C4	35.25	129.53	111.90
3	2	248	G	N3-C4-N9	32.84	145.70	126.00
3	2	248	G	N3-C4-C5	-32.12	112.54	128.60
3	2	248	G	N7-C8-N9	28.67	127.43	113.10
3	2	248	G	N1-C2-N3	-28.59	106.75	123.90
3	2	323	G	C2-N3-C4	24.43	124.12	111.90
3	2	248	G	C5-C6-N1	18.68	120.84	111.50
3	2	323	G	N1-C2-N3	-16.98	113.71	123.90

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2	248	G	C6-C5-N7	15.57	139.74	130.40
3	2	323	G	N3-C4-N9	14.48	134.69	126.00
3	2	323	G	N7-C8-N9	14.39	120.30	113.10
3	2	323	G	N3-C4-C5	-13.48	121.86	128.60
3	2	323	G	C4-C5-N7	-12.86	105.65	110.80
3	2	248	G	N3-C2-N2	10.69	127.38	119.90
1	0	524	U	OP1-P-O3'	-10.56	81.97	105.20
3	2	248	G	N1-C2-N2	10.54	125.69	116.20
3	2	248	G	C5-N7-C8	9.52	109.06	104.30
3	2	248	G	N9-C4-C5	-9.50	101.60	105.40
1	0	231	C	N1-C2-O2	9.43	124.56	118.90
3	2	248	G	N1-C6-O6	-8.89	114.56	119.90
3	2	248	G	C4-C5-C6	8.51	123.91	118.80
1	0	231	C	N3-C2-O2	-8.41	116.02	121.90
1	0	394	U	C5-C6-N1	8.39	126.89	122.70
1	0	525	U	OP1-P-OP2	8.34	132.11	119.60
1	0	87	C	C6-N1-C2	-7.75	117.20	120.30
1	0	524	U	OP2-P-O3'	-7.70	88.25	105.20
1	0	83	U	C2-N1-C1'	7.44	126.63	117.70
1	0	388	C	N1-C2-O2	7.28	123.27	118.90
1	0	87	C	C5-C6-N1	7.21	124.61	121.00
3	2	323	G	C6-C5-N7	6.98	134.59	130.40
3	2	323	G	N1-C2-N2	6.96	122.47	116.20
1	0	66	C	N1-C2-O2	6.88	123.03	118.90
1	0	66	C	C6-N1-C2	-6.86	117.56	120.30
3	2	85	G	C8-N9-C1'	6.75	135.78	127.00
3	2	248	G	C5-C6-O6	-6.68	124.59	128.60
1	0	503	C	C6-N1-C2	-6.64	117.65	120.30
1	0	394	U	C2-N1-C1'	6.57	125.58	117.70
1	0	172	C	C6-N1-C2	-6.55	117.68	120.30
1	0	108	U	C5-C6-N1	6.54	125.97	122.70
3	2	63	C	N1-C2-O2	6.39	122.73	118.90
1	0	231	C	C6-N1-C2	-6.35	117.76	120.30
1	0	274	C	N3-C2-O2	-6.32	117.48	121.90
3	2	323	G	C5-C6-N1	6.29	114.64	111.50
1	0	244	U	N3-C2-O2	-6.17	117.88	122.20
1	0	87	C	N1-C2-O2	6.12	122.57	118.90
13	Q	785	PRO	N-CA-CB	6.11	110.63	103.30
1	0	503	C	C5-C6-N1	6.08	124.04	121.00
1	0	66	C	N3-C2-O2	-6.08	117.64	121.90
1	0	90	G	O5'-P-OP1	-6.05	100.26	105.70
1	0	395	C	N1-C2-O2	6.04	122.53	118.90

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	2	85	G	O4'-C1'-N9	6.01	113.01	108.20
1	0	244	U	N1-C2-O2	6.00	127.00	122.80
1	0	151	U	C2-N1-C1'	5.97	124.86	117.70
1	0	343	C	C6-N1-C2	-5.93	117.93	120.30
3	2	105	C	C6-N1-C2	-5.89	117.94	120.30
1	0	90	G	O5'-P-OP2	5.88	117.76	110.70
1	0	81	A	P-O3'-C3'	5.78	126.64	119.70
1	0	311	C	P-O3'-C3'	5.76	126.61	119.70
1	0	543	C	C5-C6-N1	5.76	123.88	121.00
1	0	343	C	C5-C6-N1	5.74	123.87	121.00
2	1	12	U	C2-N1-C1'	5.74	124.59	117.70
1	0	172	C	C5-C6-N1	5.72	123.86	121.00
3	2	250	C	C6-N1-C2	-5.71	118.02	120.30
3	2	252	C	N1-C2-O2	5.71	122.33	118.90
3	2	63	C	C2-N1-C1'	5.67	125.03	118.80
3	2	27	U	C2-N1-C1'	5.66	124.50	117.70
1	0	138	U	N1-C2-O2	5.64	126.75	122.80
2	1	12	U	N1-C2-O2	5.64	126.75	122.80
3	2	323	G	N3-C2-N2	5.60	123.82	119.90
1	0	395	C	C2-N1-C1'	5.59	124.94	118.80
3	2	252	C	C6-N1-C2	-5.58	118.07	120.30
1	0	317	C	N1-C2-O2	5.57	122.24	118.90
1	0	332	U	N1-C2-O2	5.57	126.70	122.80
1	0	83	U	C6-N1-C1'	-5.54	113.44	121.20
3	2	201	C	C6-N1-C2	-5.51	118.10	120.30
1	0	266	U	C5-C6-N1	5.50	125.45	122.70
3	2	266	C	C6-N1-C2	-5.50	118.10	120.30
1	0	484	G	C6-C5-N7	-5.47	127.11	130.40
1	0	151	U	N1-C2-O2	5.47	126.63	122.80
1	0	317	C	C6-N1-C2	-5.47	118.11	120.30
3	2	85	G	C4-N9-C1'	-5.47	119.39	126.50
1	0	544	C	C6-N1-C2	-5.44	118.12	120.30
1	0	169	A	OP1-P-OP2	-5.40	111.50	119.60
1	0	588	C	C6-N1-C2	-5.38	118.15	120.30
1	0	151	U	N3-C2-O2	-5.37	118.44	122.20
4	H	769	ASN	C-N-CA	5.37	135.13	121.70
1	0	231	C	C2-N1-C1'	5.36	124.70	118.80
1	0	543	C	N1-C2-O2	5.36	122.11	118.90
1	0	506	G	C5-C6-O6	-5.32	125.41	128.60
1	0	83	U	O4'-C1'-N1	5.31	112.45	108.20
1	0	83	U	N1-C2-O2	5.30	126.51	122.80
3	2	252	C	N3-C2-O2	-5.27	118.21	121.90

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	0	394	U	N1-C2-O2	5.26	126.48	122.80
6	J	17	PRO	N-CA-CB	5.23	109.57	103.30
3	2	65	C	N1-C2-O2	5.22	122.03	118.90
1	0	66	C	C5-C6-N1	5.20	123.60	121.00
1	0	455	C	N1-C2-O2	5.16	122.00	118.90
1	0	376	U	N1-C2-O2	5.16	126.41	122.80
1	0	168	G	P-O3'-C3'	5.15	125.88	119.70
3	2	80	U	N1-C2-O2	5.10	126.37	122.80
1	0	502	G	N7-C8-N9	5.08	115.64	113.10
1	0	395	C	N3-C2-O2	-5.07	118.35	121.90
1	0	267	U	N1-C2-O2	5.06	126.34	122.80
1	0	87	C	C2-N1-C1'	5.06	124.37	118.80
1	0	167	U	N1-C2-O2	5.04	126.33	122.80
1	0	171	G	N3-C4-N9	5.03	129.02	126.00
3	2	32	G	N3-C4-N9	5.02	129.01	126.00
1	0	323	A	C2-N3-C4	5.01	113.11	110.60
2	1	12	U	N3-C2-O2	-5.00	118.70	122.20

There are no chirality outliers.

All (16) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
20	A	453	SER	Peptide
4	H	105	HIS	Peptide
4	H	180	ASP	Peptide
4	H	453	HIS	Peptide
4	H	477	VAL	Peptide
5	I	576	ARG	Peptide
10	N	758	ASN	Peptide
11	O	247	SER	Peptide
11	O	288	ASP	Peptide
13	Q	233	ILE	Peptide
13	Q	757	ASP	Peptide
16	T	94	TYR	Peptide
17	U	230	ASN	Peptide
17	U	350	HIS	Peptide
17	U	415	ARG	Peptide
25	e	9	PHE	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	0	8594	0	4350	61	0
2	1	241	0	139	1	0
3	2	3106	0	1577	34	0
4	H	4132	0	1739	21	0
5	I	2427	0	680	17	0
6	J	2441	0	1083	17	0
7	K	612	0	220	0	0
8	L	2344	0	1023	12	0
9	M	2151	0	944	6	0
10	N	3355	0	1431	28	0
11	O	4111	0	1853	34	0
12	P	1786	0	649	7	0
13	Q	4262	0	1858	33	0
14	R	3604	0	979	30	0
15	S	2372	0	1043	12	0
16	T	4003	0	1790	28	0
17	U	2014	0	890	17	0
18	W	1895	0	853	22	0
19	Z	840	0	354	6	0
20	A	155	0	70	3	0
21	D	124	0	51	1	0
22	a	1822	0	810	0	0
23	b	2109	0	871	0	0
24	c	1000	0	453	0	0
24	d	1122	0	514	0	0
25	e	601	0	289	0	0
25	f	601	0	289	0	0
26	g	1925	0	863	0	0
27	l	124	0	50	0	0
28	x	120	0	26	0	0
All	All	63993	0	27741	368	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 5.

All (368) 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)
3:2:323:G:C6	3:2:323:G:C5	1.74	1.65
3:2:323:G:C4	3:2:323:G:N3	1.69	1.61
3:2:323:G:C2	3:2:323:G:N1	1.72	1.55
3:2:323:G:C6	3:2:323:G:N1	1.75	1.52
3:2:248:G:C5	3:2:248:G:C4	2.05	1.36
3:2:248:G:C5	3:2:248:G:C6	2.16	1.32
3:2:248:G:C2	3:2:248:G:N1	2.18	1.11
3:2:248:G:C6	3:2:248:G:N1	2.19	1.09
5:I:185:UNK:HA	5:I:200:UNK:O	1.60	1.01
3:2:248:G:C2	3:2:248:G:N3	2.32	0.98
6:J:280:HIS:HA	6:J:296:TRP:O	1.65	0.96
3:2:248:G:C4	3:2:248:G:N3	2.33	0.96
14:R:211:UNK:O	14:R:218:UNK:HA	1.70	0.91
13:Q:671:PHE:HA	13:Q:684:TRP:O	1.71	0.90
6:J:33:ALA:HA	6:J:329:ILE:O	1.75	0.84
10:N:75:ASN:HA	10:N:91:ILE:O	1.77	0.84
6:J:35:LEU:HA	6:J:327:LEU:O	1.82	0.80
13:Q:638:VAL:HA	13:Q:653:LEU:O	1.84	0.78
11:O:532:VAL:O	11:O:539:ILE:HA	1.86	0.76
1:O:266:U:H4'	1:O:267:U:H2'	1.70	0.73
6:J:56:ALA:HA	6:J:64:GLN:O	1.88	0.73
8:L:243:SER:HA	8:L:256:PHE:O	1.89	0.72
10:N:294:TYR:HA	10:N:307:PHE:O	1.92	0.70
6:J:281:VAL:O	6:J:295:GLY:HA2	1.92	0.70
15:S:484:VAL:O	15:S:491:VAL:HA	1.92	0.70
6:J:129:VAL:H	6:J:143:ALA:HB3	1.57	0.69
11:O:73:ILE:HA	11:O:78:ARG:O	1.94	0.68
1:O:552:G:H22	1:O:585:C:H42	1.40	0.67
3:2:30:A:N6	17:U:342:ILE:O	2.28	0.67
4:H:55:TYR:HA	4:H:62:CYS:HA	1.77	0.66
8:L:162:GLN:HA	8:L:173:ILE:O	1.94	0.66
11:O:801:ALA:O	11:O:805:ALA:HB2	1.94	0.66
13:Q:256:GLY:HA2	13:Q:276:ASN:HA	1.78	0.66
18:W:249:LEU:O	18:W:256:VAL:HA	1.96	0.65
13:Q:397:ILE:HA	13:Q:406:LEU:O	1.95	0.65
4:H:581:GLY:HA2	4:H:600:SER:O	1.96	0.65
4:H:20:PRO:HA	4:H:48:PHE:HA	1.79	0.64
15:S:301:TYR:O	15:S:310:GLN:HA	1.98	0.64
10:N:111:SER:HA	10:N:524:LYS:HA	1.80	0.64
11:O:604:TYR:HA	11:O:611:LEU:HA	1.79	0.64
3:2:106:C:H42	3:2:309:G:H22	1.46	0.64
18:W:319:GLY:HA2	18:W:334:ARG:HA	1.79	0.63

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:488:ILE:O	10:N:495:VAL:HA	1.98	0.63
11:O:530:VAL:O	11:O:541:ILE:HA	1.98	0.63
1:O:86:C:N4	4:H:482:GLY:O	2.30	0.62
6:J:285:ASP:H	6:J:290:PHE:HA	1.64	0.62
17:U:61:GLN:HA	17:U:373:ARG:HA	1.81	0.62
1:O:345:U:H2'	1:O:346:G:H8	1.63	0.62
6:J:237:TRP:HA	6:J:244:LYS:HA	1.80	0.62
10:N:552:ILE:O	10:N:560:SER:HA	2.00	0.62
11:O:529:GLU:HA	11:O:542:PHE:O	1.98	0.62
14:R:439:UNK:HA	14:R:448:UNK:HA	1.82	0.62
16:T:179:LYS:HA	16:T:191:PHE:O	1.99	0.61
1:O:116:U:H2'	1:O:117:G:H8	1.66	0.61
1:O:554:G:H1	1:O:583:U:H3	1.48	0.61
14:R:175:UNK:HA	14:R:191:UNK:HA	1.81	0.61
18:W:167:ALA:HA	18:W:175:PHE:O	1.99	0.61
1:O:481:U:H1'	1:O:482:A:H5''	1.83	0.60
4:H:348:GLY:HA3	4:H:352:ASN:H	1.66	0.60
18:W:330:LEU:O	18:W:340:LEU:HA	2.01	0.60
18:W:194:ARG:H	18:W:209:GLY:HA2	1.67	0.60
14:R:125:UNK:HA	14:R:133:UNK:HA	1.84	0.59
17:U:183:GLN:H	17:U:198:GLY:HA2	1.67	0.59
18:W:238:MET:HA	18:W:248:HIS:O	2.02	0.59
11:O:434:ASN:N	11:O:448:GLY:O	2.35	0.59
6:J:95:LEU:HA	6:J:109:ASP:HA	1.85	0.59
13:Q:500:TRP:HA	13:Q:523:HIS:O	2.03	0.59
13:Q:96:VAL:O	13:Q:103:ILE:HA	2.02	0.58
6:J:274:ALA:O	6:J:281:VAL:HA	2.03	0.58
4:H:43:ASN:HA	4:H:55:TYR:O	2.03	0.58
13:Q:94:LEU:O	13:Q:105:VAL:HA	2.03	0.58
4:H:550:PRO:HA	8:L:366:GLY:HA3	1.87	0.57
14:R:120:UNK:O	14:R:138:UNK:N	2.37	0.57
13:Q:745:SER:O	13:Q:749:GLY:N	2.38	0.57
20:A:427:SER:O	20:A:431:GLN:N	2.35	0.57
4:H:512:ILE:HA	4:H:526:THR:O	2.05	0.57
16:T:631:ASN:O	16:T:643:THR:HA	2.05	0.57
1:O:307:C:O2'	1:O:311:C:OP1	2.23	0.56
10:N:252:GLN:HA	10:N:266:ASP:HA	1.87	0.56
13:Q:478:SER:O	13:Q:490:THR:HA	2.05	0.56
10:N:265:TRP:HA	10:N:272:LEU:HA	1.87	0.56
11:O:593:VAL:HA	11:O:602:CYS:O	2.06	0.56
16:T:599:TRP:HA	16:T:612:TRP:O	2.05	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
17:U:145:VAL:O	17:U:175:THR:HA	2.06	0.56
13:Q:317:UNK:O	13:Q:321:TYR:N	2.39	0.56
18:W:221:THR:HA	19:Z:16:VAL:HA	1.87	0.56
1:O:167:U:H3	1:O:228:A:H61	1.54	0.56
6:J:501:ALA:HB1	8:L:530:LEU:HA	1.86	0.56
17:U:94:TYR:O	17:U:103:PHE:N	2.37	0.56
10:N:475:THR:HA	10:N:490:SER:HA	1.88	0.55
5:I:165:UNK:HA	5:I:181:UNK:HA	1.88	0.55
1:O:157:U:H2'	1:O:158:G:H8	1.71	0.55
6:J:65:ILE:O	6:J:74:ILE:N	2.35	0.55
1:O:125:G:H2'	1:O:126:A:H8	1.71	0.55
14:R:521:UNK:O	14:R:531:UNK:N	2.39	0.55
5:I:167:UNK:O	5:I:180:UNK:N	2.40	0.55
13:Q:772:ASP:O	13:Q:776:TRP:N	2.40	0.54
12:P:382:UNK:O	12:P:386:UNK:N	2.41	0.54
12:P:393:UNK:O	12:P:397:UNK:N	2.41	0.54
18:W:254:GLY:O	18:W:272:SER:N	2.40	0.54
13:Q:794:LEU:O	13:Q:798:ASN:N	2.40	0.54
17:U:50:LEU:O	17:U:54:PHE:N	2.34	0.54
14:R:455:UNK:HA	14:R:471:UNK:HA	1.89	0.54
16:T:223:LEU:O	16:T:230:VAL:HA	2.08	0.54
20:A:448:LEU:O	20:A:452:SER:N	2.41	0.54
3:2:77:U:H2'	3:2:78:G:H8	1.71	0.54
3:2:94:A:H2'	3:2:95:A:H8	1.72	0.54
4:H:484:VAL:O	4:H:488:LEU:N	2.41	0.54
1:O:117:G:H22	1:O:128:C:H1'	1.72	0.54
14:R:30:UNK:HA	14:R:37:UNK:HA	1.90	0.54
3:2:57:A:H2'	3:2:58:A:H8	1.72	0.53
12:P:86:TRP:O	12:P:90:GLN:N	2.42	0.53
18:W:106:LEU:O	18:W:397:GLY:HA3	2.08	0.53
16:T:142:LYS:HA	16:T:150:PRO:HA	1.91	0.53
3:2:78:G:H1	3:2:329:C:H42	1.56	0.53
15:S:407:PHE:HA	15:S:424:ILE:O	2.08	0.53
14:R:69:UNK:HA	14:R:80:UNK:HA	1.91	0.53
5:I:60:UNK:HA	5:I:68:UNK:HA	1.90	0.52
10:N:66:ARG:HA	10:N:79:TRP:O	2.09	0.52
10:N:242:TRP:N	10:N:256:GLY:O	2.42	0.52
17:U:308:VAL:HA	17:U:324:SER:HA	1.90	0.52
1:O:117:G:N2	1:O:128:C:O2'	2.41	0.52
13:Q:144:ASN:HA	13:Q:159:LEU:O	2.09	0.52
14:R:331:UNK:HA	14:R:347:UNK:HA	1.92	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:0:227:U:H2'	1:0:228:A:C8	2.44	0.52
1:0:286:U:H2'	1:0:287:G:H8	1.74	0.52
16:T:180:LEU:O	16:T:190:LEU:HA	2.10	0.52
4:H:694:LEU:O	4:H:698:VAL:N	2.36	0.51
5:I:140:UNK:HA	5:I:164:UNK:HA	1.92	0.51
13:Q:672:VAL:O	13:Q:683:ILE:HA	2.11	0.51
5:I:226:UNK:O	5:I:244:UNK:N	2.44	0.51
9:M:277:ALA:HB1	15:S:208:LEU:HA	1.92	0.51
13:Q:846:LEU:O	13:Q:850:LEU:CB	2.58	0.51
18:W:213:TRP:HA	18:W:229:ARG:HA	1.92	0.51
10:N:553:LEU:HA	10:N:559:ILE:O	2.10	0.51
13:Q:640:LYS:HA	13:Q:651:GLN:O	2.11	0.51
17:U:422:VAL:O	17:U:426:ALA:N	2.44	0.51
15:S:483:ALA:HA	15:S:492:ASN:O	2.11	0.51
8:L:18:CYS:HA	8:L:30:GLY:O	2.10	0.51
11:O:645:ASP:N	18:W:151:ASN:O	2.42	0.51
11:O:317:LEU:O	11:O:329:VAL:HA	2.11	0.51
13:Q:488:LEU:O	13:Q:499:PHE:HA	2.10	0.51
16:T:354:SER:H	16:T:370:SER:HA	1.75	0.51
19:Z:30:THR:O	19:Z:34:ARG:N	2.43	0.51
3:2:87:G:N2	3:2:90:C:N3	2.59	0.50
16:T:610:ARG:HA	16:T:622:GLY:HA2	1.93	0.50
14:R:177:UNK:HA	14:R:189:UNK:HA	1.91	0.50
16:T:317:ASN:O	16:T:348:GLY:N	2.44	0.50
3:2:115:G:H1	3:2:252:C:H42	1.59	0.50
14:R:267:UNK:O	14:R:280:UNK:HA	2.11	0.50
14:R:176:UNK:N	14:R:190:UNK:O	2.45	0.50
18:W:320:THR:N	18:W:333:SER:O	2.44	0.50
18:W:137:MET:HA	18:W:144:LEU:HA	1.92	0.50
4:H:774:PHE:O	4:H:785:VAL:HA	2.12	0.50
14:R:350:UNK:O	14:R:370:UNK:N	2.44	0.50
1:0:308:A:H1'	16:T:45:GLY:HA2	1.93	0.50
1:0:324:U:H5''	1:0:326:C:H5''	1.94	0.50
1:0:497:A:N6	1:0:540:U:O4	2.45	0.50
3:2:39:C:O2'	17:U:18:SER:O	2.30	0.50
11:O:288:ASP:O	11:O:292:PHE:N	2.40	0.50
15:S:455:ILE:HA	15:S:486:SER:HA	1.94	0.50
17:U:138:SER:O	17:U:145:VAL:HA	2.11	0.50
9:M:12:ALA:HB2	18:W:142:GLY:HA3	1.93	0.49
11:O:330:TYR:HA	11:O:337:TYR:HA	1.94	0.49
1:0:296:C:O2'	16:T:68:LEU:O	2.27	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
13:Q:757:ASP:O	13:Q:761:ALA:N	2.41	0.49
10:N:127:ASP:N	10:N:132:LEU:O	2.44	0.49
1:O:249:G:H2'	1:O:250:G:H8	1.77	0.49
1:O:308:A:O2'	16:T:45:GLY:O	2.30	0.49
14:R:437:UNK:HA	14:R:450:UNK:HA	1.95	0.49
5:I:301:UNK:HA	5:I:315:UNK:HA	1.94	0.49
10:N:452:HIS:O	10:N:462:VAL:HA	2.12	0.49
10:N:768:ALA:O	21:D:214:GLY:N	2.46	0.49
14:R:418:UNK:HA	14:R:434:UNK:HA	1.95	0.49
16:T:442:THR:O	16:T:451:GLY:N	2.44	0.49
5:I:309:UNK:O	5:I:327:UNK:N	2.46	0.49
15:S:17:GLU:O	15:S:21:LEU:N	2.46	0.49
11:O:282:GLY:HA2	11:O:304:PRO:HA	1.95	0.49
14:R:37:UNK:N	14:R:48:UNK:O	2.45	0.49
16:T:443:TRP:HA	16:T:451:GLY:H	1.78	0.49
12:P:87:SER:O	12:P:91:ARG:N	2.46	0.49
17:U:278:VAL:HA	17:U:288:TYR:HA	1.95	0.49
19:Z:139:GLY:N	19:Z:157:TYR:O	2.41	0.49
6:J:272:LEU:O	6:J:283:VAL:HA	2.13	0.48
11:O:194:VAL:HA	11:O:210:SER:HA	1.95	0.48
1:O:540:U:O2'	1:O:542:U:OP2	2.29	0.48
20:A:453:SER:O	20:A:455:HIS:N	2.46	0.48
10:N:125:GLU:O	10:N:134:LEU:N	2.46	0.48
11:O:155:SER:N	11:O:160:PHE:O	2.46	0.48
11:O:208:THR:O	11:O:215:VAL:HA	2.13	0.48
16:T:228:GLY:O	16:T:246:ILE:N	2.40	0.48
18:W:322:VAL:HA	18:W:331:ALA:O	2.13	0.48
1:O:98:G:H1'	1:O:154:A:H2	1.79	0.48
4:H:546:LYS:O	8:L:364:THR:N	2.42	0.48
8:L:305:TRP:O	8:L:312:PRO:HA	2.13	0.48
1:O:226:U:H4'	1:O:227:U:H4'	1.95	0.48
10:N:306:GLN:O	10:N:323:SER:N	2.42	0.47
13:Q:338:ILE:HA	13:Q:357:THR:HA	1.95	0.47
8:L:23:ALA:N	8:L:26:LYS:O	2.47	0.47
11:O:457:VAL:O	11:O:466:LEU:N	2.31	0.47
1:O:503:C:H42	1:O:533:G:H1	1.62	0.47
5:I:253:UNK:HA	5:I:260:UNK:HA	1.97	0.47
1:O:237:A:O2'	1:O:240:C:O2	2.28	0.47
17:U:242:ASN:O	17:U:260:GLN:N	2.48	0.47
3:2:323:G:C4	3:2:323:G:C2	2.95	0.47
14:R:222:UNK:N	14:R:227:UNK:O	2.47	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:W:381:LEU:HA	18:W:391:GLY:O	2.14	0.47
8:L:466:ARG:O	8:L:470:PHE:CB	2.62	0.47
10:N:36:CYS:N	10:N:754:ILE:O	2.48	0.47
11:O:149:ILE:HA	11:O:165:SER:HA	1.97	0.47
11:O:434:ASN:H	11:O:449:SER:HA	1.80	0.47
15:S:30:THR:O	15:S:34:GLN:N	2.39	0.47
3:2:77:U:H2'	3:2:78:G:C8	2.49	0.47
11:O:751:ILE:O	11:O:755:TYR:CB	2.62	0.47
13:Q:433:ALA:HA	13:Q:449:THR:HA	1.97	0.46
2:1:8:N:O2'	2:1:10:G:OP1	2.33	0.46
13:Q:130:ASP:O	13:Q:134:THR:N	2.47	0.46
13:Q:177:LEU:O	13:Q:188:LEU:HA	2.15	0.46
11:O:365:GLU:HA	11:O:389:SER:HA	1.97	0.46
9:M:36:ASN:O	9:M:40:ALA:N	2.43	0.46
16:T:208:GLN:O	16:T:226:VAL:N	2.46	0.46
16:T:82:ALA:HB3	16:T:93:ALA:HB3	1.96	0.46
8:L:106:GLU:O	8:L:122:SER:N	2.47	0.46
1:0:339:A:N6	1:0:387:C:O2'	2.48	0.46
5:I:496:UNK:O	5:I:500:UNK:N	2.48	0.46
3:2:82:G:N2	3:2:327:G:O2'	2.43	0.46
4:H:226:SER:HA	4:H:238:SER:HA	1.98	0.46
1:0:121:G:N2	1:0:123:C:OP1	2.48	0.46
1:0:251:C:O2'	1:0:255:U:OP1	2.34	0.46
11:O:584:HIS:O	11:O:592:ILE:HA	2.16	0.46
1:0:540:U:N3	1:0:542:U:O4	2.49	0.45
4:H:745:ILE:O	4:H:754:LEU:N	2.37	0.45
1:0:478:U:H2'	1:0:479:G:H8	1.82	0.45
12:P:136:LEU:O	12:P:140:HIS:N	2.41	0.45
14:R:441:UNK:HA	14:R:446:UNK:HA	1.98	0.45
11:O:198:PHE:N	11:O:207:TYR:O	2.44	0.45
15:S:351:THR:O	15:S:380:ASN:N	2.50	0.45
3:2:84:U:O2'	3:2:85:G:O4'	2.34	0.45
10:N:243:SER:O	10:N:256:GLY:N	2.44	0.45
10:N:451:PHE:HA	10:N:464:LYS:HA	1.98	0.45
11:O:581:THR:H	11:O:596:GLY:HA2	1.80	0.45
13:Q:844:THR:O	13:Q:848:SER:N	2.49	0.45
1:0:289:U:H2'	1:0:290:G:H8	1.82	0.45
1:0:462:G:H2'	1:0:463:A:H8	1.82	0.45
4:H:45:ILE:HA	4:H:53:LYS:O	2.17	0.45
5:I:499:UNK:O	5:I:503:UNK:CB	2.64	0.45
11:O:801:ALA:O	11:O:805:ALA:CB	2.62	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
12:P:155:TYR:HA	12:P:159:ALA:HA	1.98	0.45
14:R:251:UNK:HA	14:R:258:UNK:HA	1.99	0.45
4:H:323:LEU:O	4:H:331:GLN:HA	2.16	0.45
4:H:563:SER:N	4:H:572:GLY:O	2.43	0.45
10:N:199:ASP:O	10:N:215:ALA:N	2.47	0.45
14:R:146:UNK:O	14:R:186:UNK:N	2.49	0.45
14:R:330:UNK:O	14:R:348:UNK:N	2.49	0.45
19:Z:55:ARG:HA	19:Z:58:ALA:HB3	1.99	0.45
5:I:134:UNK:N	5:I:143:UNK:O	2.50	0.45
14:R:294:UNK:HA	14:R:303:UNK:HA	1.99	0.45
16:T:487:TYR:HA	16:T:494:LEU:HA	1.99	0.45
18:W:336:PRO:O	18:W:373:PHE:N	2.49	0.45
17:U:319:GLU:HA	17:U:333:LYS:HA	1.98	0.45
1:O:264:C:H2'	1:O:265:A:C8	2.52	0.45
6:J:195:LEU:O	6:J:206:ILE:N	2.37	0.45
16:T:30:ILE:N	16:T:651:ILE:O	2.49	0.44
18:W:108:LEU:N	18:W:396:THR:O	2.41	0.44
1:O:324:U:H2'	1:O:327:A:C8	2.53	0.44
11:O:193:TYR:O	11:O:211:LYS:N	2.48	0.44
13:Q:285:ARG:N	13:Q:327:HIS:O	2.51	0.44
13:Q:758:LEU:O	13:Q:762:GLU:N	2.50	0.44
18:W:194:ARG:N	18:W:209:GLY:HA2	2.32	0.44
9:M:120:TRP:O	9:M:124:ARG:N	2.45	0.44
11:O:29:LEU:O	11:O:39:VAL:HA	2.17	0.44
17:U:309:MET:N	17:U:323:GLY:O	2.47	0.44
1:O:182:G:H1	1:O:215:U:H3	1.65	0.44
4:H:664:LEU:HA	4:H:670:LEU:HA	1.99	0.44
13:Q:343:TRP:HA	13:Q:353:LEU:HA	2.00	0.44
5:I:333:UNK:CB	5:I:346:UNK:O	2.65	0.44
14:R:110:UNK:HA	14:R:126:UNK:HA	1.99	0.44
1:O:242:C:H2'	1:O:243:A:C8	2.53	0.44
1:O:293:U:H5''	1:O:294:U:H5''	2.00	0.44
10:N:581:SER:HA	10:N:594:PHE:O	2.17	0.44
1:O:279:A:H2'	16:T:405:SER:HA	2.00	0.43
5:I:211:UNK:N	5:I:220:UNK:O	2.51	0.43
1:O:321:G:H4'	11:O:189:GLY:HA3	1.99	0.43
11:O:362:THR:O	11:O:369:ILE:HA	2.18	0.43
1:O:119:U:H3	1:O:126:A:H61	1.64	0.43
1:O:265:A:O2'	1:O:267:U:N3	2.50	0.43
4:H:780:GLU:O	4:H:782:THR:N	2.50	0.43
6:J:279:GLY:HA3	6:J:298:PHE:H	1.83	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:R:591:UNK:HA	14:R:600:UNK:O	2.18	0.43
6:J:215:VAL:HA	6:J:230:GLY:HA3	1.99	0.43
11:O:265:CYS:O	11:O:278:GLY:N	2.52	0.43
11:O:768:SER:HA	11:O:805:ALA:HB1	2.00	0.43
3:2:100:U:H3	3:2:315:A:H61	1.67	0.43
11:O:371:VAL:O	11:O:380:LEU:N	2.44	0.43
4:H:460:PHE:HA	4:H:467:GLN:HA	2.01	0.43
13:Q:123:ALA:O	13:Q:141:LYS:N	2.49	0.43
1:0:538:C:H2'	1:0:539:A:C8	2.54	0.43
8:L:163:LEU:O	8:L:172:LEU:HA	2.18	0.43
10:N:404:MET:HA	10:N:414:TYR:HA	2.00	0.43
17:U:310:ASP:O	17:U:322:THR:HA	2.19	0.43
10:N:208:GLY:O	10:N:231:VAL:N	2.48	0.42
1:0:85:G:H21	1:0:86:C:H41	1.66	0.42
14:R:498:UNK:HA	14:R:514:UNK:HA	2.01	0.42
1:0:289:U:H2'	1:0:290:G:C8	2.54	0.42
5:I:69:UNK:HA	5:I:79:UNK:HA	2.00	0.42
3:2:62:C:O2'	16:T:447:ASN:O	2.38	0.42
3:2:251:G:H5''	3:2:252:C:H5'	2.02	0.42
4:H:54:VAL:O	4:H:63:VAL:N	2.52	0.42
18:W:288:TYR:HA	18:W:301:TRP:O	2.20	0.42
1:0:278:G:N2	15:S:560:THR:O	2.53	0.42
1:0:286:U:H2'	1:0:287:G:C8	2.54	0.42
1:0:293:U:H2'	11:O:631:ASN:HA	2.01	0.42
3:2:314:C:H2'	3:2:315:A:C8	2.54	0.42
6:J:391:ASN:O	6:J:395:PHE:N	2.53	0.42
9:M:180:ILE:O	9:M:184:ASN:N	2.53	0.42
3:2:202:G:H2'	3:2:203:U:H4'	2.00	0.42
1:0:84:G:N2	10:N:772:PRO:O	2.45	0.42
1:0:106:A:H61	1:0:138:U:H3	1.66	0.41
11:O:728:GLU:O	11:O:732:GLU:N	2.51	0.41
13:Q:360:ASN:H	13:Q:391:ARG:HA	1.85	0.41
13:Q:557:VAL:O	13:Q:566:TYR:N	2.52	0.41
15:S:422:ILE:HA	15:S:435:PHE:O	2.20	0.41
18:W:218:ASP:O	18:W:222:GLY:N	2.46	0.41
1:0:173:G:H1	1:0:223:C:H42	1.69	0.41
1:0:230:C:H2'	1:0:231:C:H6	1.85	0.41
3:2:30:A:H2	17:U:55:ALA:HB1	1.85	0.41
9:M:37:SER:HA	9:M:40:ALA:HB3	2.01	0.41
19:Z:103:VAL:O	19:Z:107:CYS:CB	2.67	0.41
3:2:115:G:H2'	3:2:116:A:H8	1.85	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:N:334:ARG:H	10:N:351:GLY:HA2	1.84	0.41
13:Q:744:GLU:O	13:Q:748:ALA:N	2.46	0.41
1:0:101:G:H2'	1:0:103:G:N3	2.36	0.41
8:L:244:ILE:O	8:L:255:ILE:HA	2.20	0.41
14:R:171:UNK:N	14:R:175:UNK:O	2.53	0.41
1:0:531:C:H2'	1:0:532:A:H8	1.85	0.41
13:Q:124:ILE:HA	13:Q:140:SER:HA	2.02	0.41
16:T:136:SER:HA	16:T:158:THR:HA	2.02	0.41
3:2:253:G:N2	3:2:254:A:N1	2.68	0.41
1:0:96:C:H2'	1:0:97:G:H8	1.86	0.41
16:T:519:SER:O	16:T:526:VAL:HA	2.21	0.41
1:0:348:U:H2'	1:0:349:G:C8	2.56	0.41
3:2:317:A:H2'	3:2:319:G:C8	2.56	0.41
15:S:388:HIS:N	15:S:393:LEU:O	2.47	0.41
1:0:57:C:H2'	1:0:58:U:C6	2.56	0.41
1:0:456:U:H2'	1:0:457:G:C8	2.56	0.41
10:N:105:SER:O	10:N:112:LEU:HA	2.21	0.41
12:P:411:UNK:O	12:P:415:UNK:N	2.54	0.41
14:R:431:UNK:HA	14:R:439:UNK:O	2.21	0.41
16:T:220:ILE:HA	16:T:233:PHE:O	2.20	0.41
16:T:611:THR:N	16:T:621:ASP:O	2.54	0.41
1:0:350:A:H2'	1:0:351:A:C8	2.55	0.41
10:N:155:LYS:HA	10:N:168:ILE:O	2.20	0.40
10:N:535:GLU:O	10:N:541:ALA:HA	2.20	0.40
16:T:97:LYS:HA	16:T:111:GLU:HA	2.03	0.40
3:2:68:A:H2'	3:2:69:A:H8	1.85	0.40
5:I:300:UNK:O	5:I:316:UNK:N	2.54	0.40
14:R:180:UNK:N	14:R:185:UNK:O	2.54	0.40
1:0:465:G:H2'	1:0:466:A:C8	2.56	0.40
5:I:302:UNK:N	5:I:314:UNK:O	2.55	0.40
13:Q:87:ALA:HA	13:Q:94:LEU:HA	2.04	0.40
14:R:29:UNK:O	14:R:38:UNK:N	2.54	0.40
16:T:81:VAL:N	16:T:93:ALA:O	2.43	0.40
16:T:528:PHE:O	16:T:537:LEU:N	2.50	0.40
1:0:392:U:H4'	19:Z:102:THR:HA	2.04	0.40
17:U:242:ASN:HA	17:U:263:ARG:HA	2.03	0.40
3:2:68:A:H2'	3:2:69:A:C8	2.57	0.40
13:Q:487:ARG:HA	13:Q:500:TRP:O	2.22	0.40
18:W:156:SER:H	18:W:169:ALA:HB3	1.87	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	H	810/853 (95%)	748 (92%)	62 (8%)	0	100	100
5	I	128/519 (25%)	118 (92%)	9 (7%)	1 (1%)	19	60
6	J	489/513 (95%)	449 (92%)	40 (8%)	0	100	100
7	K	86/183 (47%)	86 (100%)	0	0	100	100
8	L	463/643 (72%)	424 (92%)	39 (8%)	0	100	100
9	M	429/1769 (24%)	412 (96%)	17 (4%)	0	100	100
10	N	654/727 (90%)	605 (92%)	47 (7%)	2 (0%)	41	76
11	O	826/923 (90%)	767 (93%)	59 (7%)	0	100	100
12	P	259/421 (62%)	251 (97%)	8 (3%)	0	100	100
13	Q	815/917 (89%)	744 (91%)	71 (9%)	0	100	100
14	R	154/736 (21%)	153 (99%)	1 (1%)	0	100	100
15	S	473/594 (80%)	444 (94%)	29 (6%)	0	100	100
16	T	806/939 (86%)	757 (94%)	49 (6%)	0	100	100
17	U	401/489 (82%)	380 (95%)	21 (5%)	0	100	100
18	W	383/554 (69%)	356 (93%)	26 (7%)	1 (0%)	41	76
19	Z	167/183 (91%)	160 (96%)	7 (4%)	0	100	100
20	A	29/593 (5%)	26 (90%)	2 (7%)	1 (3%)	3	29
21	D	23/214 (11%)	22 (96%)	1 (4%)	0	100	100
22	a	334/494 (68%)	323 (97%)	11 (3%)	0	100	100
23	b	297/503 (59%)	284 (96%)	13 (4%)	0	100	100
24	c	199/327 (61%)	183 (92%)	16 (8%)	0	100	100
24	d	224/327 (68%)	208 (93%)	16 (7%)	0	100	100
25	e	119/126 (94%)	109 (92%)	10 (8%)	0	100	100
25	f	119/126 (94%)	118 (99%)	1 (1%)	0	100	100
26	g	385/573 (67%)	361 (94%)	24 (6%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
27	1	23/189 (12%)	21 (91%)	2 (9%)	0	100	100
All	All	9095/14435 (63%)	8509 (94%)	581 (6%)	5 (0%)	54	85

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
20	A	454	VAL
5	I	573	ILE
18	W	404	PRO
10	N	248	PRO
10	N	759	PRO

5.3.2 Protein sidechains ⓘ

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	0	389/700 (55%)	143 (36%)	6 (1%)
2	1	6/15 (40%)	1 (16%)	0
3	2	139/146 (95%)	60 (43%)	1 (0%)
All	All	534/861 (62%)	204 (38%)	7 (1%)

All (204) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	0	20	C
1	0	61	U
1	0	63	G
1	0	64	U
1	0	82	A
1	0	83	U
1	0	84	G
1	0	85	G
1	0	86	C
1	0	87	C
1	0	90	G
1	0	98	G
1	0	102	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	0	103	G
1	0	104	A
1	0	105	G
1	0	106	A
1	0	109	C
1	0	110	G
1	0	111	C
1	0	115	G
1	0	116	U
1	0	124	A
1	0	125	G
1	0	128	C
1	0	129	U
1	0	130	G
1	0	137	C
1	0	139	C
1	0	141	A
1	0	142	U
1	0	144	C
1	0	150	G
1	0	151	U
1	0	152	U
1	0	153	U
1	0	159	A
1	0	160	C
1	0	161	A
1	0	163	G
1	0	167	U
1	0	169	A
1	0	170	U
1	0	171	G
1	0	176	U
1	0	177	U
1	0	213	G
1	0	226	U
1	0	227	U
1	0	229	A
1	0	233	G
1	0	234	A
1	0	235	A
1	0	236	C
1	0	238	G

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	0	239	U
1	0	240	C
1	0	244	U
1	0	246	G
1	0	249	G
1	0	251	C
1	0	252	A
1	0	253	U
1	0	254	C
1	0	256	U
1	0	265	A
1	0	267	U
1	0	268	G
1	0	272	A
1	0	273	G
1	0	278	G
1	0	279	A
1	0	280	A
1	0	281	G
1	0	292	A
1	0	294	U
1	0	296	C
1	0	299	G
1	0	303	A
1	0	304	U
1	0	309	A
1	0	310	U
1	0	311	C
1	0	312	U
1	0	313	A
1	0	314	U
1	0	315	U
1	0	316	U
1	0	319	A
1	0	322	A
1	0	323	A
1	0	324	U
1	0	325	U
1	0	326	C
1	0	329	A
1	0	330	C
1	0	331	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	0	332	U
1	0	334	G
1	0	335	G
1	0	336	G
1	0	337	G
1	0	340	U
1	0	373	U
1	0	374	U
1	0	375	C
1	0	381	G
1	0	382	U
1	0	383	G
1	0	386	A
1	0	388	C
1	0	395	C
1	0	397	A
1	0	401	A
1	0	461	A
1	0	462	G
1	0	465	G
1	0	468	A
1	0	469	C
1	0	470	U
1	0	471	C
1	0	473	A
1	0	476	A
1	0	478	U
1	0	481	U
1	0	482	A
1	0	484	G
1	0	485	G
1	0	503	C
1	0	504	U
1	0	510	A
1	0	511	G
1	0	512	A
1	0	513	G
1	0	525	U
1	0	535	G
1	0	536	A
1	0	540	U
1	0	541	U

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	0	548	A
1	0	584	U
1	0	585	C
1	0	592	U
2	1	10	G
3	2	24	G
3	2	25	G
3	2	31	G
3	2	32	G
3	2	33	A
3	2	35	U
3	2	38	U
3	2	41	C
3	2	48	A
3	2	49	C
3	2	51	C
3	2	55	A
3	2	56	A
3	2	57	A
3	2	60	A
3	2	61	G
3	2	64	A
3	2	72	C
3	2	73	A
3	2	81	U
3	2	82	G
3	2	83	A
3	2	85	G
3	2	87	G
3	2	88	U
3	2	89	C
3	2	90	C
3	2	91	C
3	2	92	A
3	2	93	U
3	2	94	A
3	2	97	C
3	2	98	U
3	2	100	U
3	2	102	U
3	2	104	C
3	2	105	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
3	2	114	A
3	2	115	G
3	2	117	A
3	2	118	A
3	2	201	C
3	2	202	G
3	2	247	U
3	2	248	G
3	2	250	C
3	2	251	G
3	2	252	C
3	2	254	A
3	2	255	U
3	2	256	G
3	2	305	G
3	2	307	G
3	2	322	A
3	2	324	U
3	2	325	C
3	2	327	G
3	2	328	A
3	2	329	C
3	2	332	G

All (7) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	0	81	A
1	0	161	A
1	0	311	C
1	0	313	A
1	0	314	U
1	0	325	U
3	2	327	G

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
14	R	14
5	I	9
3	2	6
13	Q	4
22	a	3
4	H	2
10	N	2
12	P	2
7	K	2
23	b	2
1	0	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	H	788:THR	C	818:UNK	N	46.57
1	I	358:UNK	C	457:UNK	N	42.14
1	N	689:UNK	C	731:HIS	N	41.05
1	R	615:UNK	C	649:GLU	N	29.13
1	R	323:UNK	C	329:UNK	N	28.33
1	R	13:UNK	C	17:UNK	N	27.51
1	I	487:UNK	C	496:UNK	N	25.09
1	I	467:UNK	C	473:UNK	N	22.00
1	H	831:UNK	C	846:ASN	N	21.99
1	2	28:C	O3'	30:A	P	20.50

Continued on next page...

Continued from previous page...

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	0	592:U	O3'	594:N	P	19.60
1	2	203:U	O3'	246:A	P	19.07
1	2	260:U	O3'	263:A	P	18.59
1	2	106:C	O3'	110:A	P	18.04
1	2	267:A	O3'	304:U	P	16.72
1	N	667:LYS	C	676:UNK	N	16.30
1	Q	729:UNK	C	736:SER	N	15.87
1	I	93:UNK	C	120:UNK	N	15.67
1	P	416:UNK	C	418:UNK	N	14.94
1	I	147:UNK	C	153:UNK	N	11.15
1	2	118:A	O3'	200:C	P	10.75
1	Q	689:ASP	C	705:UNK	N	10.35
1	I	517:UNK	C	524:UNK	N	9.87
1	R	235:UNK	C	243:UNK	N	9.71
1	P	369:UNK	C	379:UNK	N	9.41
1	Q	305:GLU	C	308:UNK	N	8.31
1	K	426:UNK	C	428:ASP	N	8.22
1	a	238:UNK	C	242:UNK	N	8.11
1	I	505:UNK	C	508:UNK	N	8.09
1	R	126:UNK	C	131:UNK	N	7.89
1	R	106:UNK	C	109:UNK	N	7.32
1	K	402:UNK	C	404:UNK	N	7.28
1	I	32:UNK	C	50:UNK	N	7.10
1	R	196:UNK	C	198:UNK	N	7.05
1	I	83:UNK	C	85:UNK	N	6.15
1	R	284:UNK	C	289:UNK	N	5.83
1	R	203:UNK	C	206:UNK	N	5.60
1	R	181:UNK	C	185:UNK	N	5.56
1	a	227:ALA	C	231:UNK	N	4.56
1	R	212:UNK	C	217:UNK	N	4.50
1	R	252:UNK	C	255:UNK	N	4.47
1	b	19:UNK	C	21:UNK	N	4.47
1	R	305:UNK	C	307:UNK	N	4.08
1	a	259:UNK	C	264:SER	N	3.94
1	b	125:UNK	C	133:ASP	N	3.69
1	Q	317:UNK	C	321:TYR	N	3.56
1	R	222:UNK	C	227:UNK	N	3.29

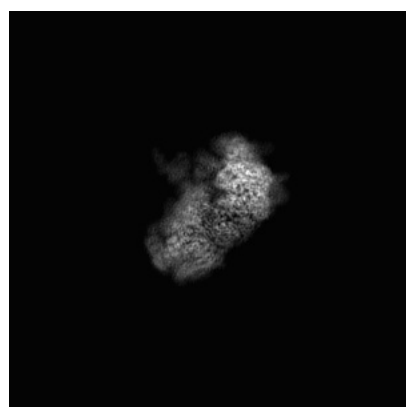
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0441. These allow visual inspection of the internal detail of the map and identification of artifacts.

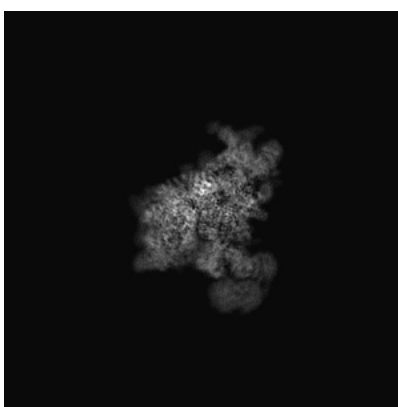
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

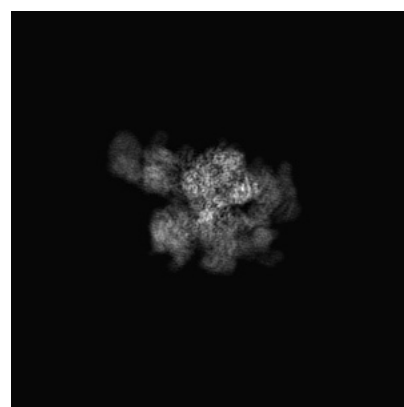
6.1.1 Primary map



X



Y

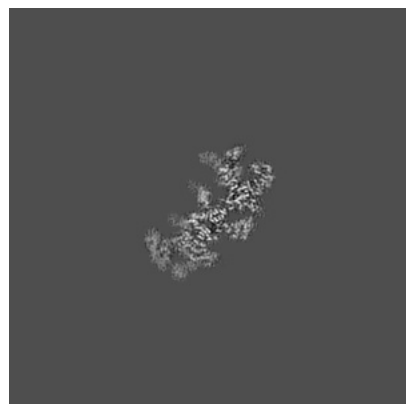


Z

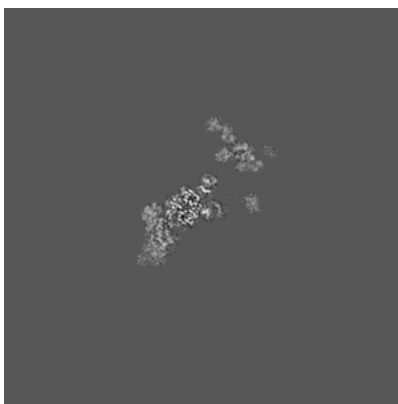
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

6.2.1 Primary map



X Index: 180



Y Index: 180

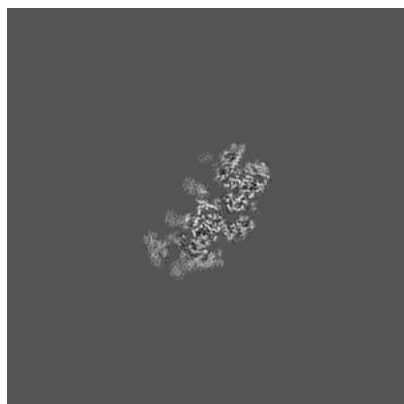


Z Index: 180

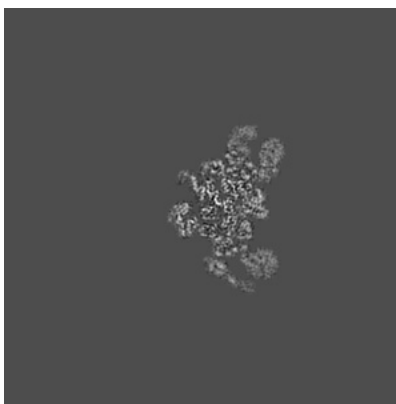
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

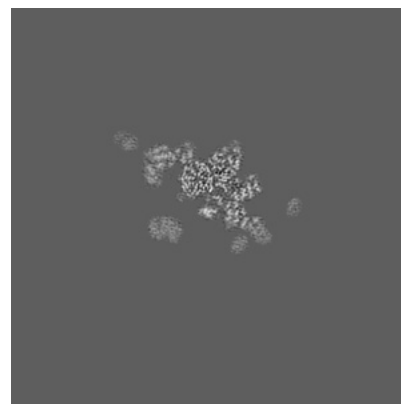
6.3.1 Primary map



X Index: 177



Y Index: 204



Z Index: 185

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

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0203. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

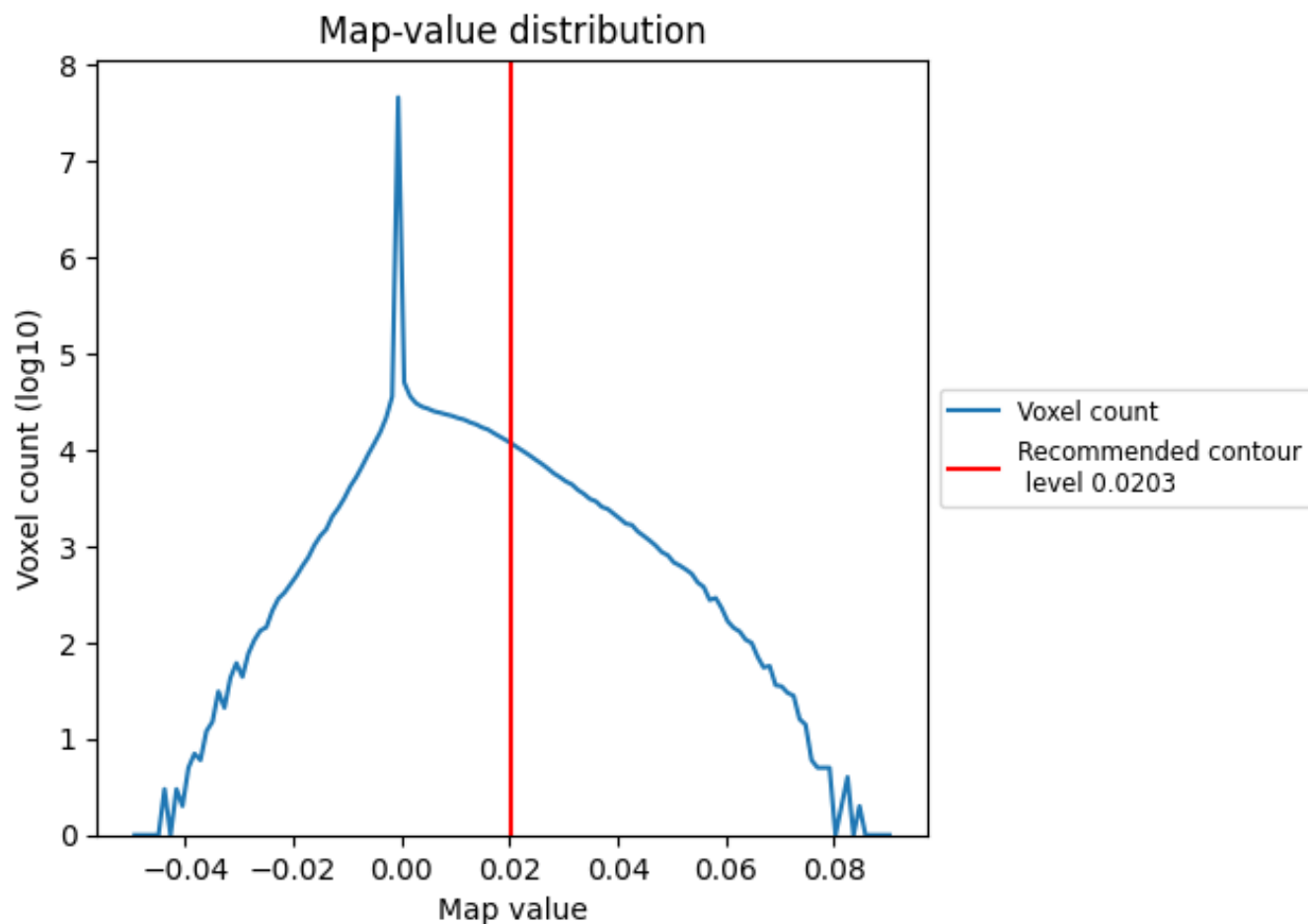
6.5 Mask visualisation

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

7 Map analysis [i](#)

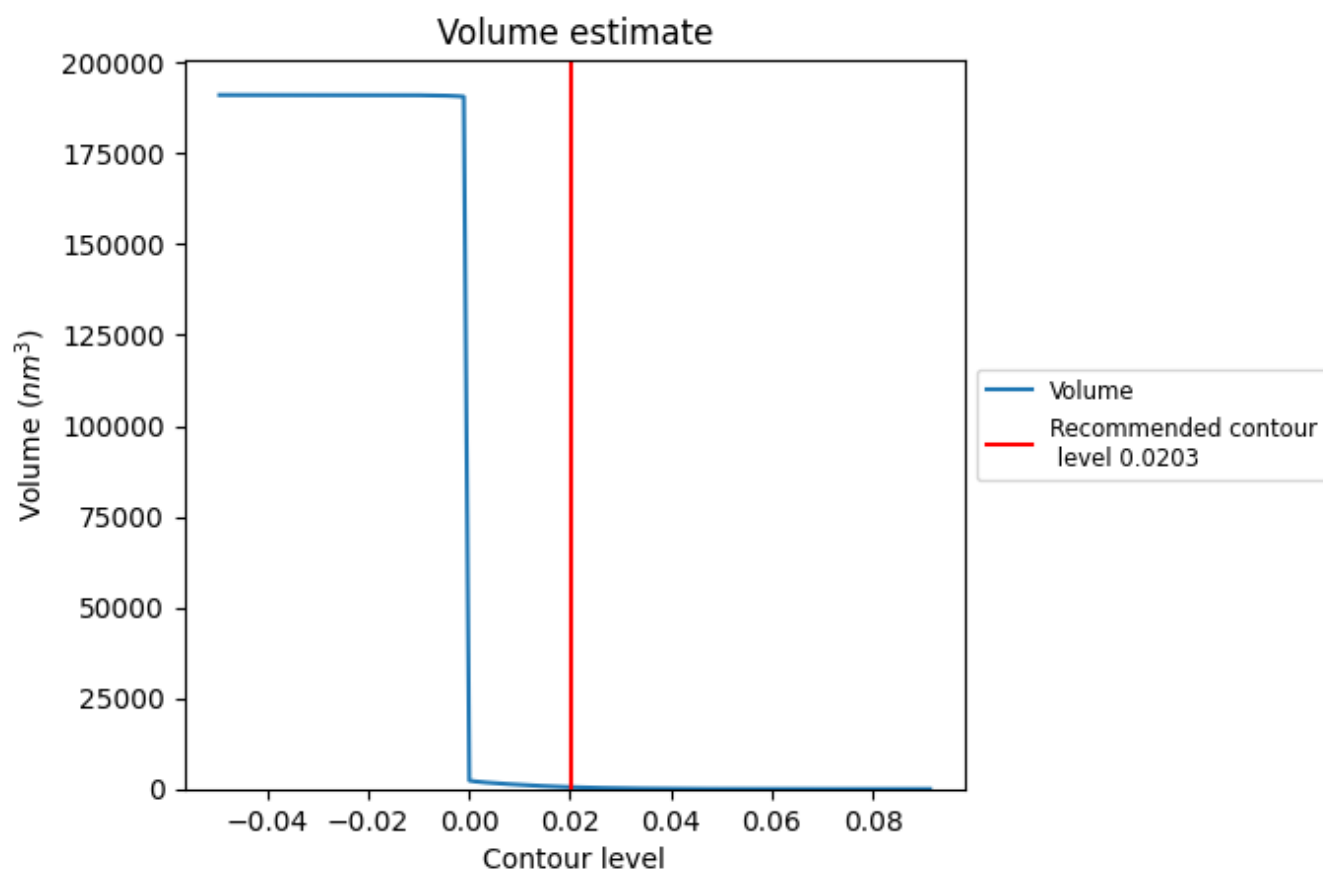
This section contains the results of statistical analysis of the map.

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.

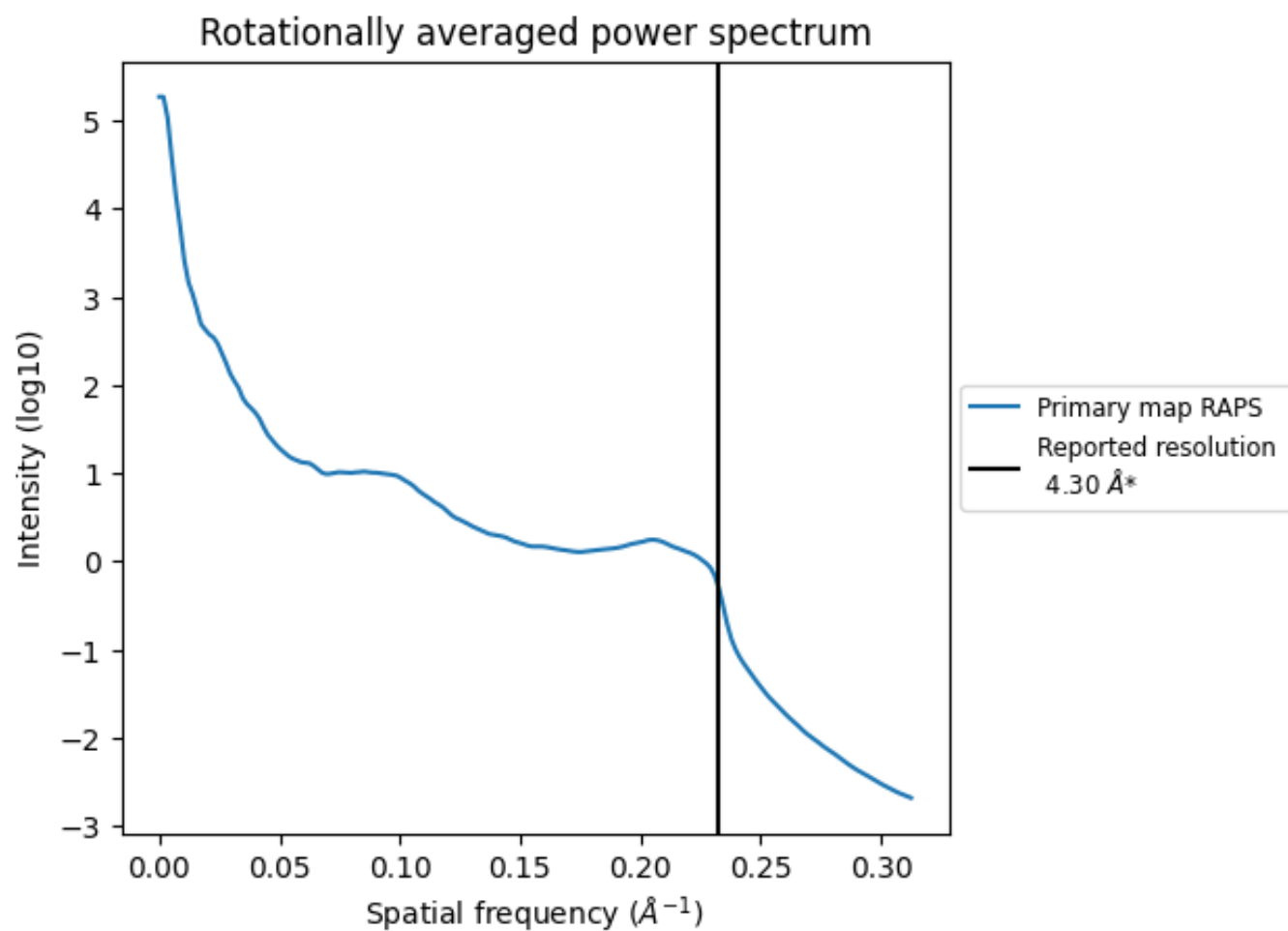
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 494 nm^3 ; this corresponds to an approximate mass of 446 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 ⓘ

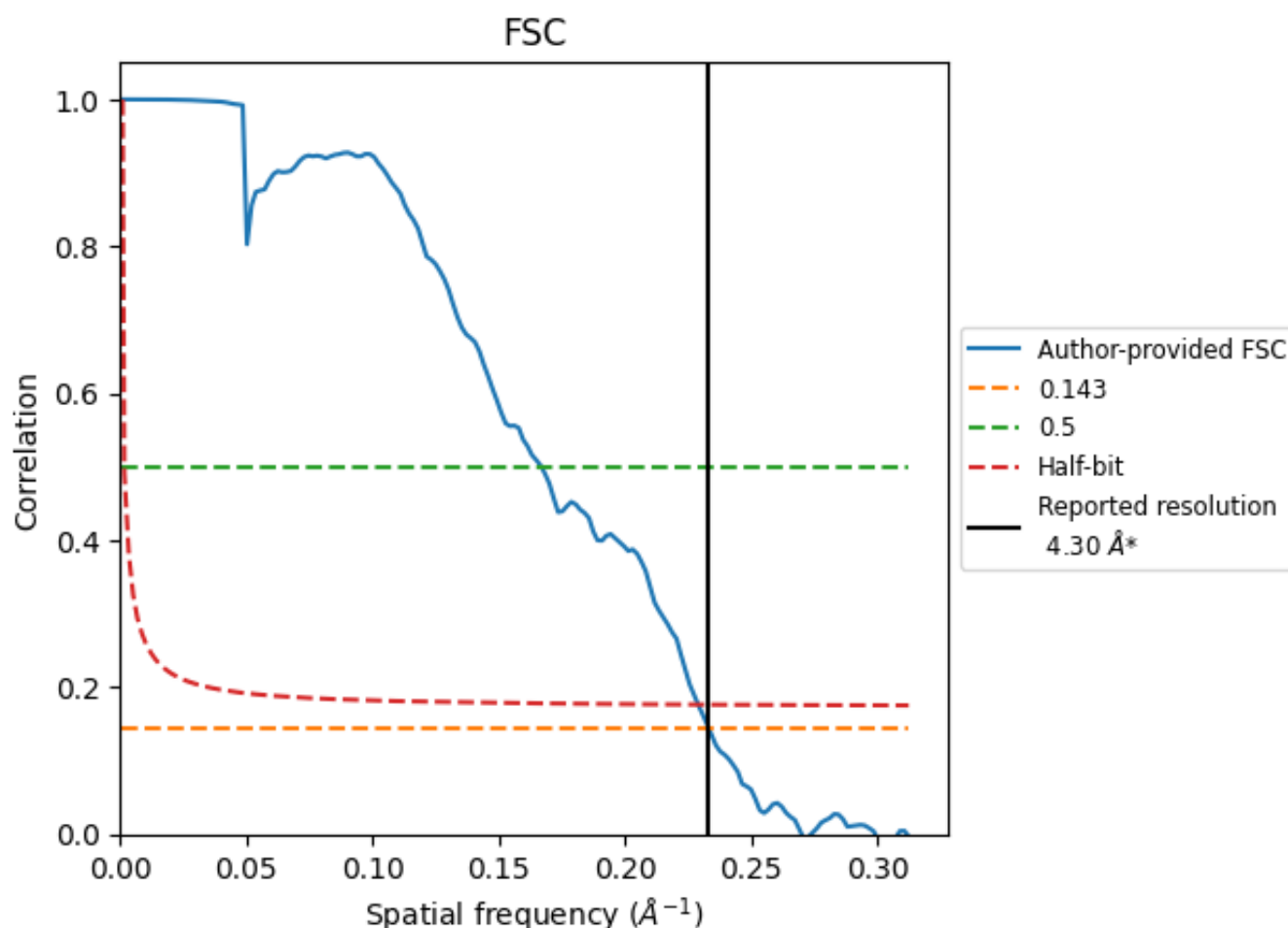


*Reported resolution corresponds to spatial frequency of 0.233 Å⁻¹

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 0.233 \AA^{-1}

8.2 Resolution estimates [i](#)

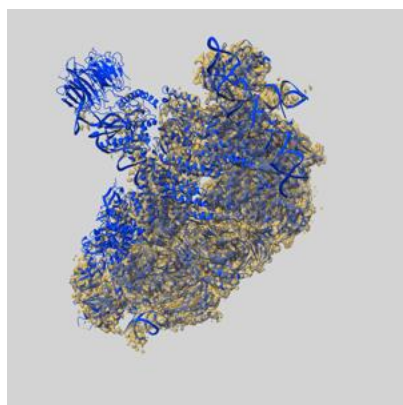
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	4.30	-	-
Author-provided FSC curve	4.28	6.00	4.37
Unmasked-calculated*	-	-	-

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

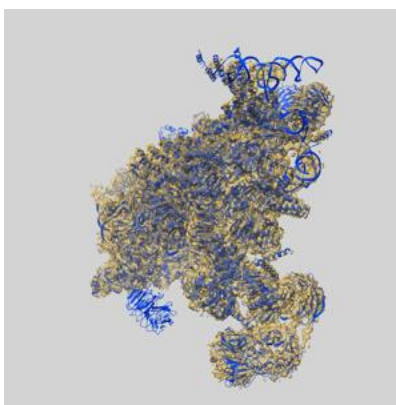
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-0441 and PDB model 6ND4. Per-residue inclusion information can be found in section [3](#) on page [9](#).

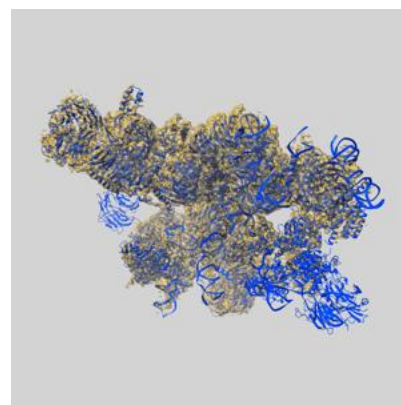
9.1 Map-model overlay [i](#)



X



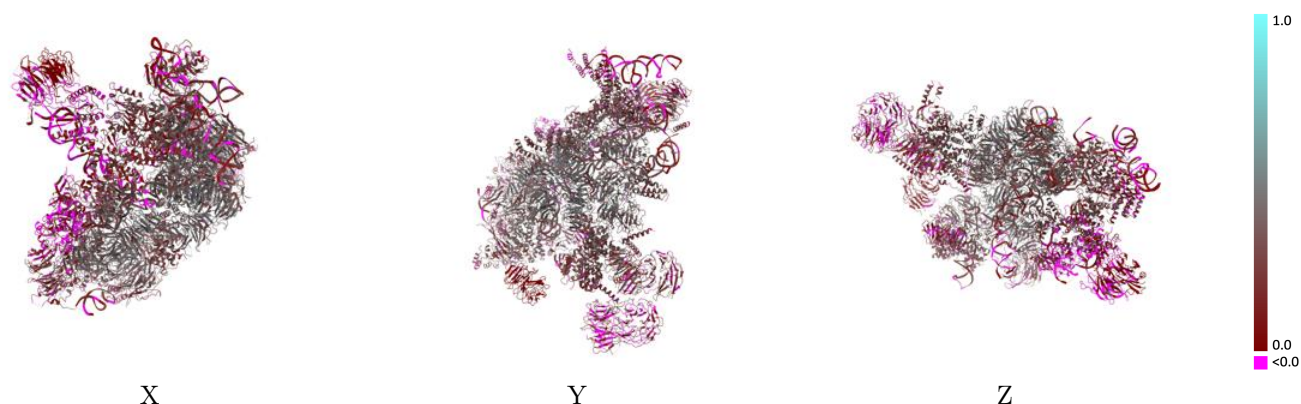
Y



Z

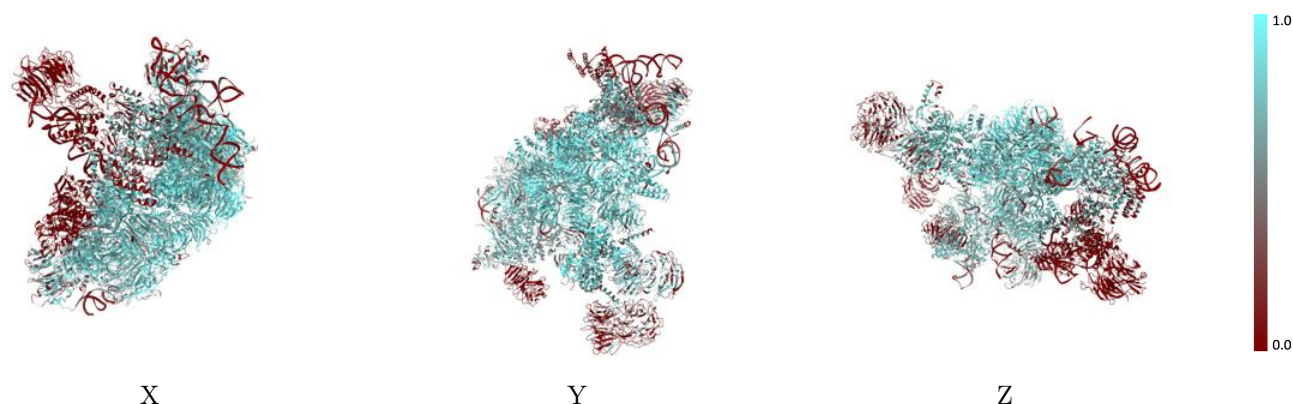
The images above show the 3D surface view of the map at the recommended contour level 0.0203 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



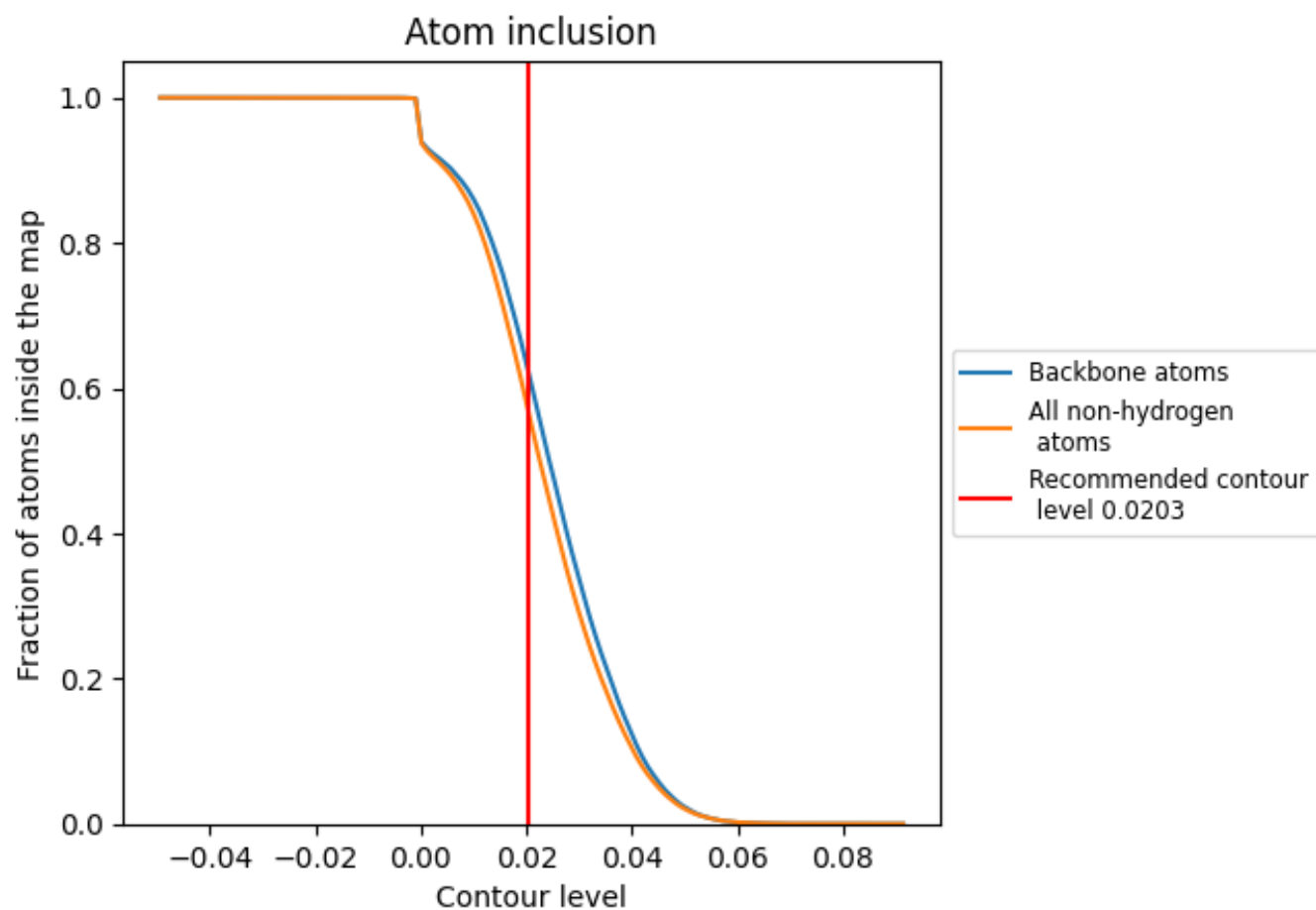
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0203).































































9.4 Atom inclusion [i](#)



At the recommended contour level, 62% of all backbone atoms, 57% 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 (0.0203) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.5693	 0.2600
0	 0.4768	 0.2040
1	 0.1867	 0.1290
2	 0.4095	 0.1860
A	 0.7419	 0.3040
D	 0.0081	 0.0810
H	 0.7410	 0.3340
I	 0.2546	 0.1020
J	 0.5063	 0.2290
K	 0.5147	 0.2280
L	 0.8247	 0.3740
M	 0.8842	 0.3690
N	 0.6748	 0.2950
O	 0.8358	 0.3920
P	 0.4798	 0.2180
Q	 0.5962	 0.2540
R	 0.3124	 0.1230
S	 0.8756	 0.4280
T	 0.8708	 0.4070
U	 0.5775	 0.2680
W	 0.8723	 0.4170
Z	 0.7940	 0.3540
a	 0.3540	 0.2140
b	 0.4590	 0.2040
c	 0.3240	 0.2090
d	 0.0303	 0.0830
e	 0.8403	 0.3590
f	 0.0283	 0.0610
g	 0.0047	 -0.0040
l	 0.0000	 0.1690
x	 0.5167	 0.2560

