



Full wwPDB EM Validation Report ⓘ

Jul 12, 2023 – 01:07 PM JST

PDB ID : 8I9R
EMDB ID : EMD-35281
Title : Cryo-EM structure of a Chaetomium thermophilum pre-60S ribosomal subunit
- State 5S RNP
Authors : Lau, B.; Huang, Z.; Beckmann, R.; Hurt, E.; Cheng, J.
Deposited on : 2023-02-07
Resolution : 3.10 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

EMDB validation analysis : 0.0.1.dev50
Mogul : 1.8.5 (274361), CSD as541be (2020)
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) : 2.34

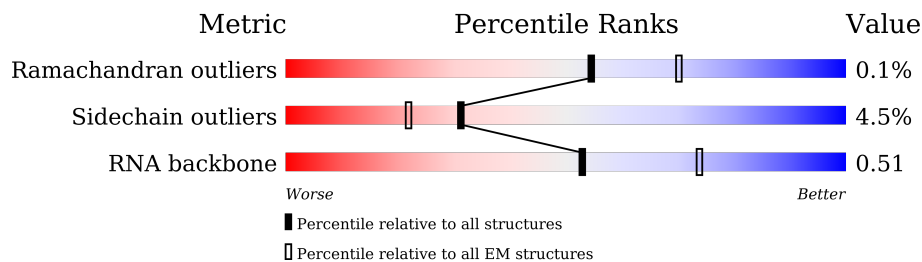
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.10 Å.

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



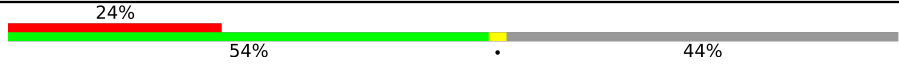
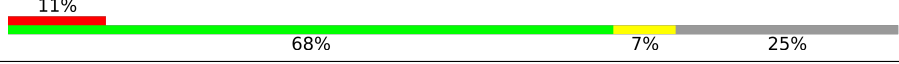
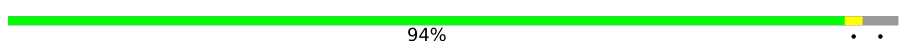
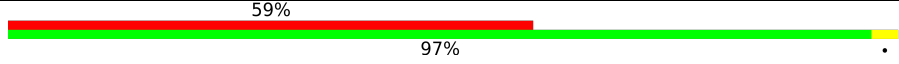
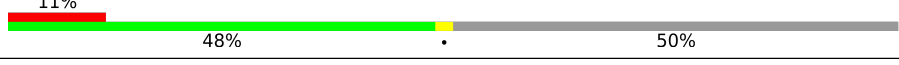


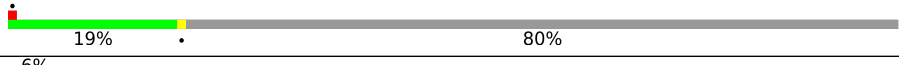
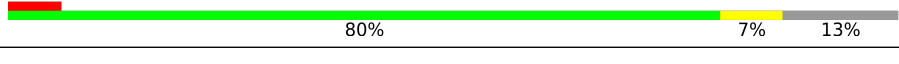
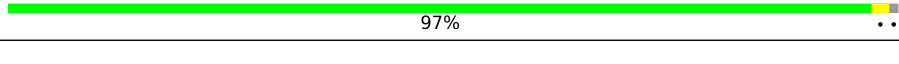



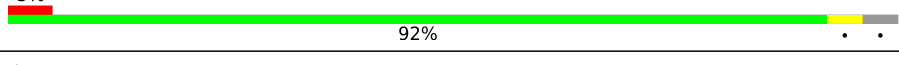

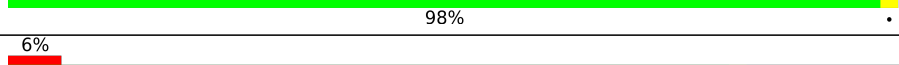

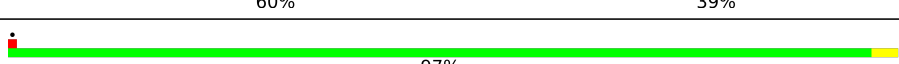
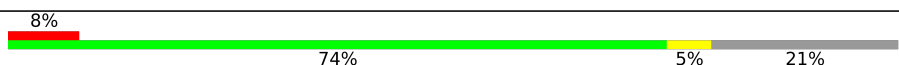
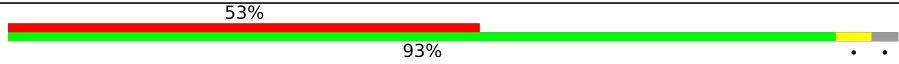
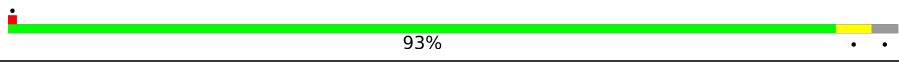
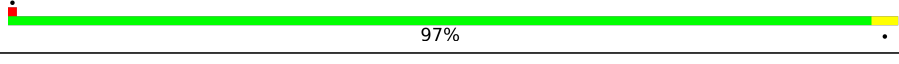
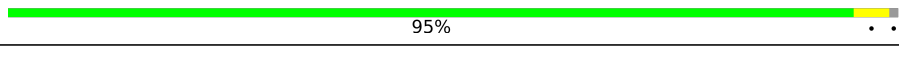


Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	C1	3341	
2	C2	256	
3	CA	316	
4	CB	391	
5	CC	801	
6	CE	598	
7	CH	661	
8	CI	414	

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Mol	Chain	Length	Quality of chain
9	CJ	679	
10	CM	249	
10	LF	249	
11	CN	246	
12	CQ	225	
13	CR	237	
14	CU	451	
15	Ch	354	
16	LB	392	
17	LC	365	
18	LE	200	
19	LG	262	
20	LL	213	
21	LM	142	
22	LN	203	
23	LO	204	
24	LP	187	
25	LQ	213	
26	LS	174	
27	LT	160	
28	LV	139	
29	LY	138	
30	Le	131	
31	Lf	109	
32	Lh	935	

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Mol	Chain	Length	Quality of chain
33	Li	110	75% 5% 20%
34	Lj	95	77% 22%
35	Cc	282	5% 80% 16%
36	Cd	436	76% 20%
37	Ce	336	56% 42%
38	Cf	570	25% 74%
39	Cy	350	70% 30%
40	Cg	478	46% 51%
41	CP	751	35% 43% 57%
42	CG	184	43% 96%
43	Lq	217	95% 94% 5%
44	Cx	202	45% 50% 50%
45	LJ	173	94% 98%
46	LD	304	90% 90% 10%
47	C4	119	83% 77% 18%
48	CX	203	9% 31% 69%

2 Entry composition [i](#)

There are 49 unique types of molecules in this entry. The entry contains 117417 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 RNA (3341-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	C1	2048	43814	19561	7931	14274	2048	0	0

- Molecule 2 is a RNA chain called RNA (256-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	C2	228	4846	2162	864	1592	228	0	0

- Molecule 3 is a protein called Brix domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	CA	260	2144	1371	393	373	7	0	0

- Molecule 4 is a protein called Ribosome biogenesis protein C8F11.04.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	CB	260	2063	1322	367	371	3	0	0

- Molecule 5 is a protein called Ribosome biogenesis protein ERB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	CC	272	2258	1438	379	434	7	0	0

- Molecule 6 is a protein called RNA helicase.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	CE	463	3673	2352	643	667	11	0	0

There are 42 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
CE	543	LYS	-	insertion	UNP G0RYU9
CE	544	SER	-	insertion	UNP G0RYU9
CE	545	PHE	-	insertion	UNP G0RYU9
CE	546	GLY	-	insertion	UNP G0RYU9
CE	547	PHE	-	insertion	UNP G0RYU9
CE	548	SER	-	insertion	UNP G0RYU9
CE	549	THR	-	insertion	UNP G0RYU9
CE	550	PRO	-	insertion	UNP G0RYU9
CE	551	PRO	-	insertion	UNP G0RYU9
CE	552	ARG	-	insertion	UNP G0RYU9
CE	553	VAL	-	insertion	UNP G0RYU9
CE	554	ASP	-	insertion	UNP G0RYU9
CE	555	ILE	-	insertion	UNP G0RYU9
CE	556	THR	-	insertion	UNP G0RYU9
CE	557	LEU	-	insertion	UNP G0RYU9
CE	558	SER	-	insertion	UNP G0RYU9
CE	559	ALA	-	insertion	UNP G0RYU9
CE	560	SER	-	insertion	UNP G0RYU9
CE	561	LEU	-	insertion	UNP G0RYU9
CE	562	SER	-	insertion	UNP G0RYU9
CE	563	ARG	-	insertion	UNP G0RYU9
CE	564	ASP	-	insertion	UNP G0RYU9
CE	565	LYS	-	insertion	UNP G0RYU9
CE	566	LYS	-	insertion	UNP G0RYU9
CE	567	PRO	-	insertion	UNP G0RYU9
CE	568	GLN	-	insertion	UNP G0RYU9
CE	569	GLY	-	insertion	UNP G0RYU9
CE	570	ARG	-	insertion	UNP G0RYU9
CE	571	ARG	-	insertion	UNP G0RYU9
CE	572	ALA	-	insertion	UNP G0RYU9
CE	573	TYR	-	insertion	UNP G0RYU9
CE	574	GLY	-	insertion	UNP G0RYU9
CE	575	SER	-	insertion	UNP G0RYU9
CE	576	GLN	-	insertion	UNP G0RYU9
CE	577	PRO	-	insertion	UNP G0RYU9
CE	578	ARG	-	insertion	UNP G0RYU9
CE	579	GLN	-	insertion	UNP G0RYU9
CE	580	GLY	-	insertion	UNP G0RYU9
CE	581	GLY	-	insertion	UNP G0RYU9
CE	582	ARG	-	insertion	UNP G0RYU9
CE	583	TYR	-	insertion	UNP G0RYU9
CE	584	LYS	-	insertion	UNP G0RYU9

- Molecule 7 is a protein called Nucleolar GTP-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	CH	108	891	561	146	183	1	0	0

- Molecule 8 is a protein called Putative RNA-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	CI	146	1196	763	224	204	5	0	0

- Molecule 9 is a protein called Pescadillo homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	CJ	380	3109	2003	547	549	10	0	0

- Molecule 10 is a protein called 60S ribosomal protein l7-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	CM	187	1525	987	278	257	3	0	0
10	LF	240	1967	1264	368	332	3	0	0

- Molecule 11 is a protein called Eukaryotic translation initiation factor 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	CN	246	1856	1158	322	369	7	0	0

- Molecule 12 is a protein called Ribosome biogenesis protein RLP24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	CQ	112	960	607	195	148	10	0	0

- Molecule 13 is a protein called Nucleolar protein 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	CR	167	1354	827	278	247	2	0	0

- Molecule 14 is a protein called rRNA-processing protein EBP2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	CU	121	969	604	179	183	3	0	0

- Molecule 15 is a protein called Ribosomal RNA-processing protein 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	Ch	71	562	350	109	102	1	0	0

- Molecule 16 is a protein called 60S ribosomal protein L3-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	LB	341	2708	1721	493	482	12	0	0

- Molecule 17 is a protein called 60S ribosomal protein L4-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	LC	362	2752	1738	526	479	9	0	0

- Molecule 18 is a protein called 60S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	LE	170	1338	861	241	233	3	0	0

- Molecule 19 is a protein called 60S ribosomal protein L8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	LG	183	1470	951	263	252	4	0	0

- Molecule 20 is a protein called 60S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	LL	117	964	608	206	148	2	0	0

- Molecule 21 is a protein called 60S ribosomal protein L14-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	LM	137	1101	699	211	190	1	0	0

- Molecule 22 is a protein called Ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	LN	183	1563	974	332	253	4	0	0

- Molecule 23 is a protein called 60S ribosomal protein L16-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	LO	204	1618	1039	306	267	6	0	0

- Molecule 24 is a protein called 60S ribosomal protein l17-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	LP	154	1212	758	233	218	3	0	0

- Molecule 25 is a protein called Ribosomal protein L18-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	LQ	129	1021	646	200	173	2	0	0

- Molecule 26 is a protein called 60S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	LS	174	1433	922	267	239	5	0	0

- Molecule 27 is a protein called 60S ribosomal protein l21-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	LT	126	1014	643	196	173	2	0	0

- Molecule 28 is a protein called 60S ribosomal protein l23-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	LV	135	Total	C	N	O	S	0	0
			995	633	185	170	7		

- Molecule 29 is a protein called 60S ribosomal protein L26-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	LY	134	Total	C	N	O	S	0	0
			1065	664	215	184	2		

- Molecule 30 is a protein called 60S ribosomal protein L32-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	Le	131	Total	C	N	O	S	0	0
			1055	663	213	172	7		

- Molecule 31 is a protein called 60S ribosomal protein l33-like protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	Lf	108	Total	C	N	O	S	0	0
			862	546	171	144	1		

- Molecule 32 is a protein called dolichyl-diphosphooligosaccharide--protein glycotransferase.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	Lh	121	Total	C	N	O	0	0
			995	633	196	166		

- Molecule 33 is a protein called 60S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	Li	88	Total	C	N	O	S	0	0
			731	449	162	119	1		

- Molecule 34 is a protein called Ribosomal protein L37.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	Lj	74	Total	C	N	O	S	0	0
			595	365	132	93	5		

- Molecule 35 is a protein called Ribosomal RNA-processing protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	Cc	236	1898	1208	337	343	10	0	0

- Molecule 36 is a protein called Brix domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	Cd	347	2800	1764	538	494	4	0	0

- Molecule 37 is a protein called Protein MAK16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	Ce	194	1609	1020	304	276	9	0	0

- Molecule 38 is a protein called 60S ribosome biogenesis protein Rrp14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	Cf	147	1225	755	245	224	1	0	0

- Molecule 39 is a protein called Ribosome production factor 2 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
39	Cy	244	1210	722	244	244	0	0

- Molecule 40 is a protein called Brix domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	Cg	233	1850	1168	348	324	10	0	0

- Molecule 41 is a protein called RNA methyltransferase nop2-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
41	CP	324	1596	948	324	324	0	0

- Molecule 42 is a protein called 60S ribosome subunit biogenesis protein NIP7.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	CG	177	Total	C	N	O	0	0
			873	519	177	177		

- Molecule 43 is a protein called Ribosomal protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
43	Lq	207	Total	C	N	O	0	0
			1021	607	207	207		

- Molecule 44 is a protein called Ribosome biogenesis regulatory protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
44	Cx	102	Total	C	N	O	0	0
			565	340	114	111		

- Molecule 45 is a protein called Putative ribosomal protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
45	LJ	169	Total	C	N	O	0	0
			831	492	169	170		

- Molecule 46 is a protein called 60S ribosomal protein l5-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
46	LD	273	Total	C	N	O	0	0
			1346	801	273	272		

- Molecule 47 is a RNA chain called RNA (119-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
47	C4	119	Total	C	N	O	P	0	0
			2536	1131	453	833	119		

- Molecule 48 is a protein called 60S ribosomal subunit-like protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
48	CX	63	Total	C	N	O	0	0
			375	233	68	74		

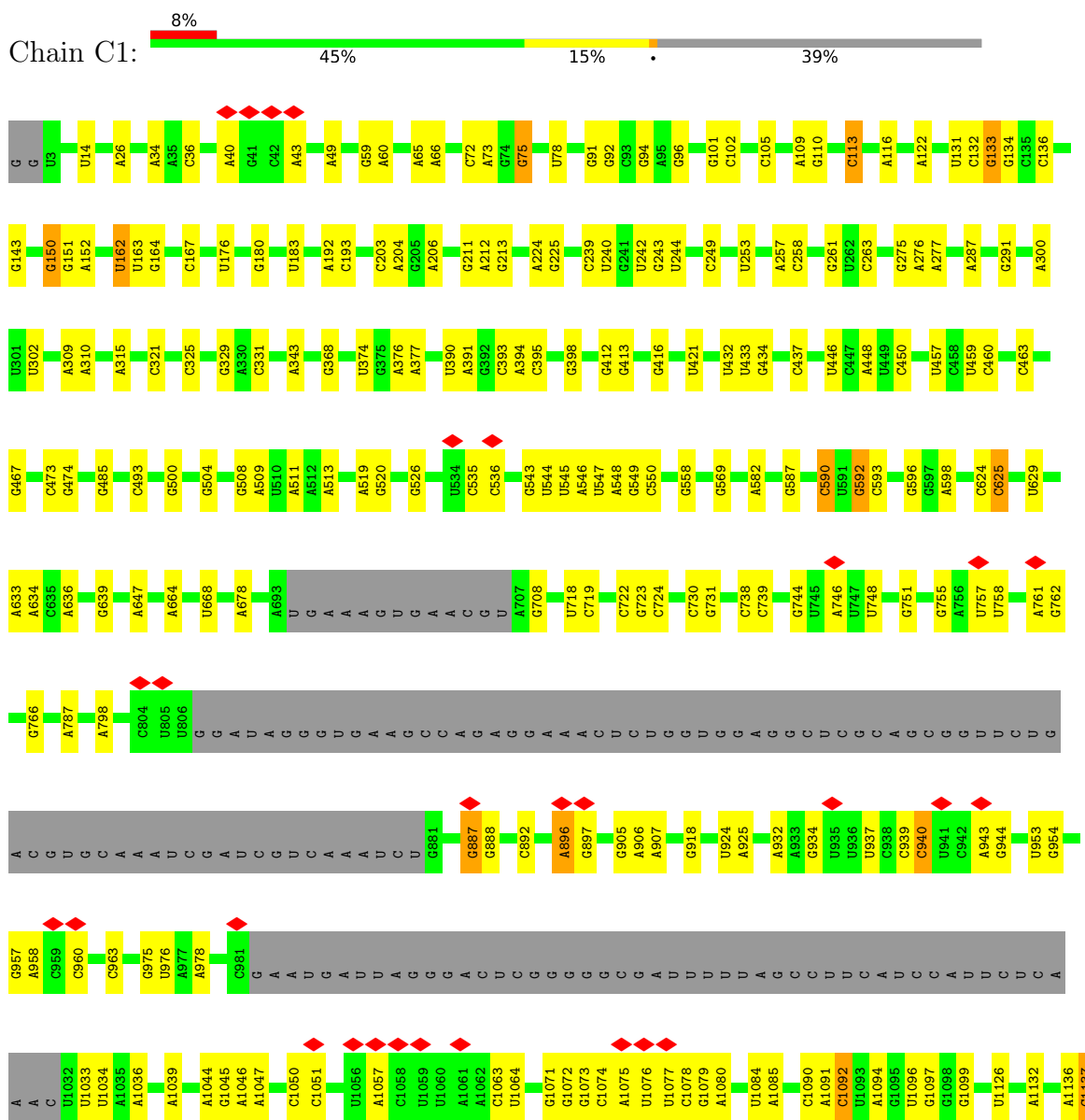
- Molecule 49 is ZINC ION (three-letter code: ZN) (formula: Zn).

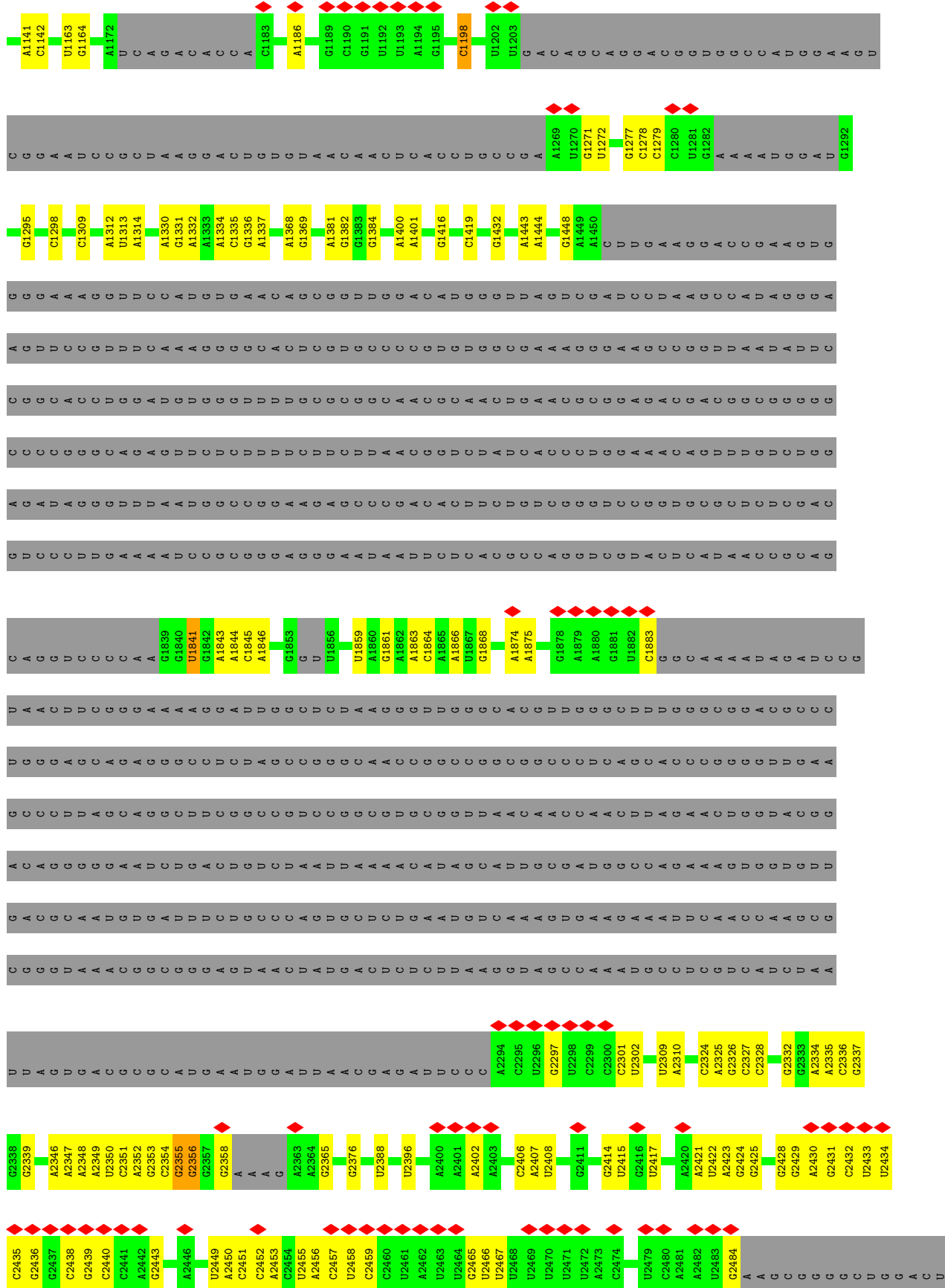
Mol	Chain	Residues	Atoms		AltConf
49	C1	1	Total 1	Zn 1	0
49	Lj	1	Total 1	Zn 1	0
49	Ce	1	Total 1	Zn 1	0

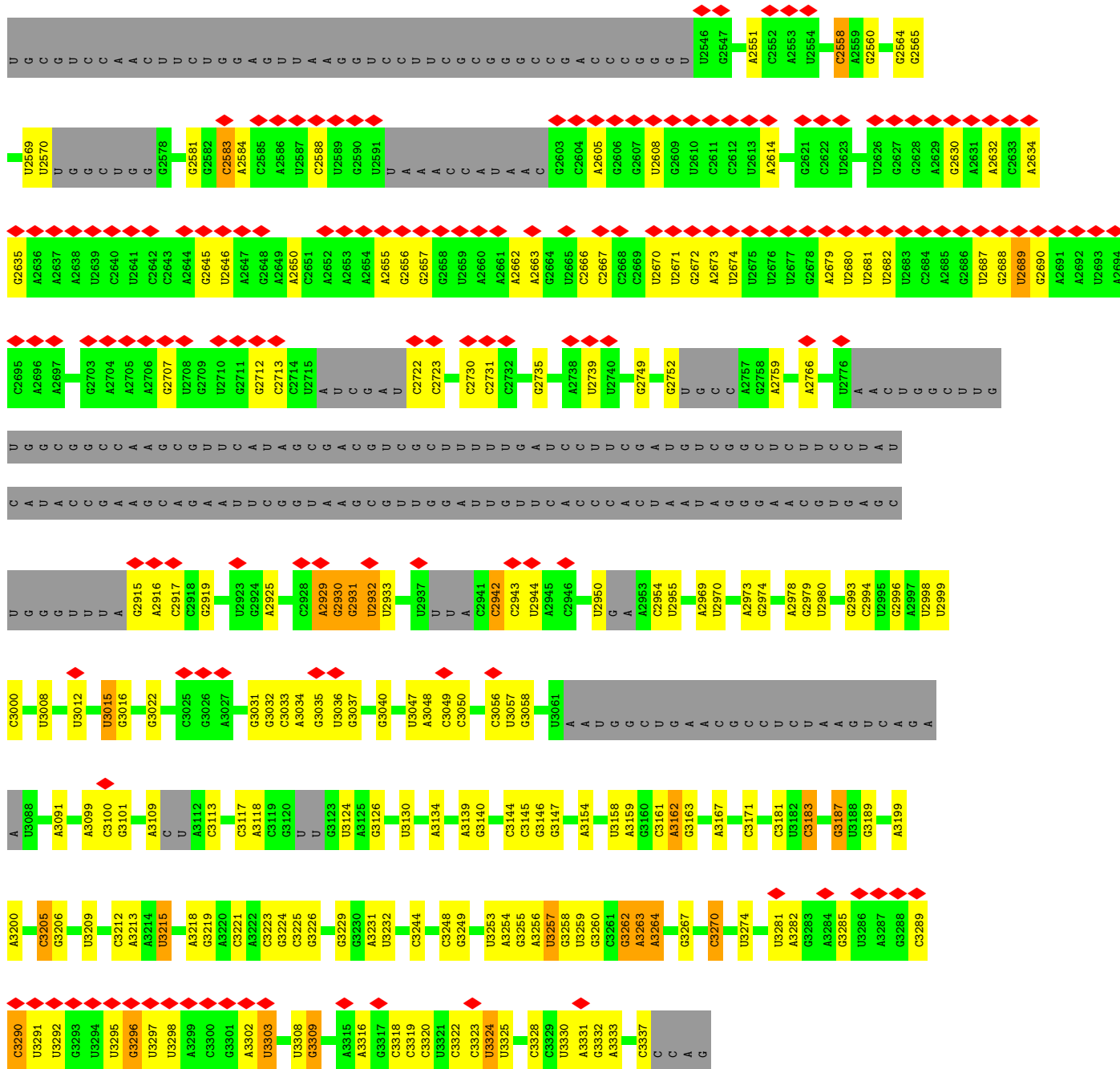
3 Residue-property plots i

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

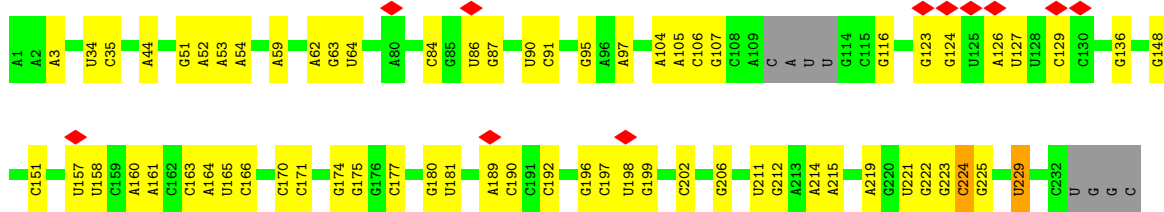
- Molecule 1: RNA (3341-MER)







• Molecule 2: RNA (256-MER)



GLU ASP
 GLU GLU
 THR ARG
 GLN LYS
 SER LYS
 ASP ASP
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 GLY GLY
 SER ASP
 GLU GLU
 ASN SER
 GLU GLU
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 ASP ASP
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 ARG ARG
 GLN GLN
 MET MET
 ARG ARG
 GLU GLU
 LEU LEU
 TYR TYR
 SER SER
 ASN ASN
 ALA ALA
 GLU GLU
 LYS LYS
 ASN ASN
 GLY GLY
 LYS LYS
 VAL VAL
 ASP ASP
 ALA ALA
 GLU GLU
 LYS LYS
 MET MET
 LEU LEU
 ALA ALA
 LYS LYS
 LYS LYS

ALA
 LEU LEU
 ARG ARG
 THR THR
 LYS LYS
 VAL VAL
 PRO PRO
 THR THR
 P105
 R106
 K107
 ILE ILE
 R115
 Q116
 VAL VAL
 PRO PRO
 GLU GLU
 ALA ALA
 THR THR
 LEU LEU
 LEU LEU
 LYS LYS
 ARG ARG
 LYS LYS
 SER SER
 GLN GLN
 ARG ARG
 LYS LYS
 THR THR
 LEU LEU
 PHE PHE
 ARG ARG
 GLN GLN
 MET MET
 ARG ARG
 GLU GLU
 TYR TYR
 SER SER
 ASN ASN
 ALA ALA
 GLU GLU
 LYS LYS
 ASN ASN
 GLY GLY
 LYS LYS
 VAL VAL
 ASP ASP
 ALA ALA
 GLU GLU
 LYS LYS
 MET MET
 LEU LEU
 ALA ALA
 LYS LYS
 LYS LYS

ALA

- Molecule 10: 60S ribosomal protein l7-like protein



MET SER
 THR THR
 VAL VAL
 PRO PRO
 THR THR
 P105
 R106
 K107
 ILE ILE
 R115
 Q116
 VAL VAL
 PRO PRO
 GLU GLU
 ALA ALA
 THR THR
 LEU LEU
 LEU LEU
 LYS LYS
 ARG ARG
 LYS LYS
 SER SER
 GLN GLN
 ARG ARG
 LYS LYS
 THR THR
 LEU LEU
 PHE PHE
 ARG ARG
 GLN GLN
 MET MET
 ARG ARG
 GLU GLU
 TYR TYR
 SER SER
 ASN ASN
 ALA ALA
 GLU GLU
 LYS LYS
 ASN ASN
 GLY GLY
 LYS LYS
 VAL VAL
 ASP ASP
 ALA ALA
 GLU GLU
 LYS LYS
 MET MET
 LEU LEU
 ALA ALA
 LYS LYS
 LYS LYS

E86
 K96
 K100
 K104
 P105
 R106
 K107
 R115
 Q116
 K127
 M132
 Y142
 G143
 Y144
 R151
 E152
 Y155
 Y159
 N163
 G164
 T170
 A173
 E177
 L190
 I191
 I194
 F195
 K202
 F207
 L208
 N217
 G218
 G219
 PHE ARG
 ARG PRO
 ARG ARG
 PHE LYS
 LYS HIS

PHE ILE
 GLU GLY
 GLY ASP
 LEU LEU
 G235
 R246
 A247
 M248
 N249

- Molecule 10: 60S ribosomal protein l7-like protein



MET SER
 THR THR
 VAL VAL
 PRO PRO
 THR THR
 GLN GLN
 N10
 D11
 I12
 L13
 K23
 E67
 R100
 R106
 E131
 N249

- Molecule 11: Eukaryotic translation initiation factor 6



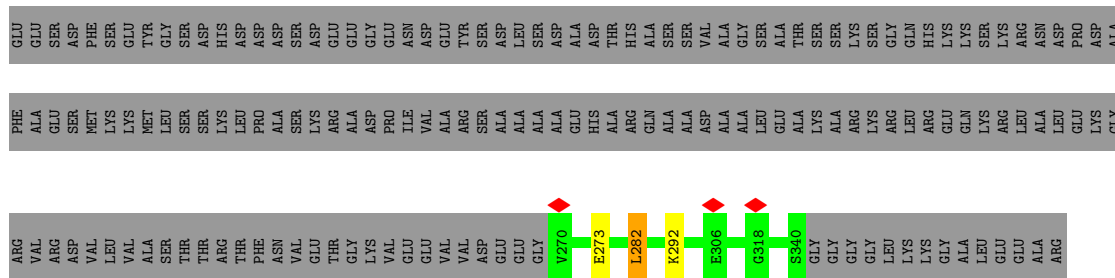
M1
 A2
 V3
 R4
 A5
 O6
 F7
 E8
 N9
 S10
 M11
 T18
 L19
 T20
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 S22
 Y23
 A27
 L28
 G29
 A30
 S31
 E32
 Y35
 F38
 E39
 A40
 Q43
 D44
 V45
 I46
 P47
 I48
 C49
 R50
 T51
 T52
 I53
 A54
 G55
 T56
 R57
 I58
 I59
 L62
 G65
 K68
 G69
 L70
 T75

H83
 S87
 L88
 P89
 D90
 D91
 I92
 R93
 I94
 Q95
 E98
 E99
 R100
 L101
 L104
 V107
 I108
 V109
 C110
 N111
 D112
 H113
 T114
 D120
 R123
 E124
 E127
 I128
 I129
 A130
 D131
 V132
 L133
 G134
 V135
 E136
 V137
 F138
 R139
 Q140
 T141
 I142
 A143
 D144
 H145
 V146
 S150
 Y151
 M152
 A153
 L154

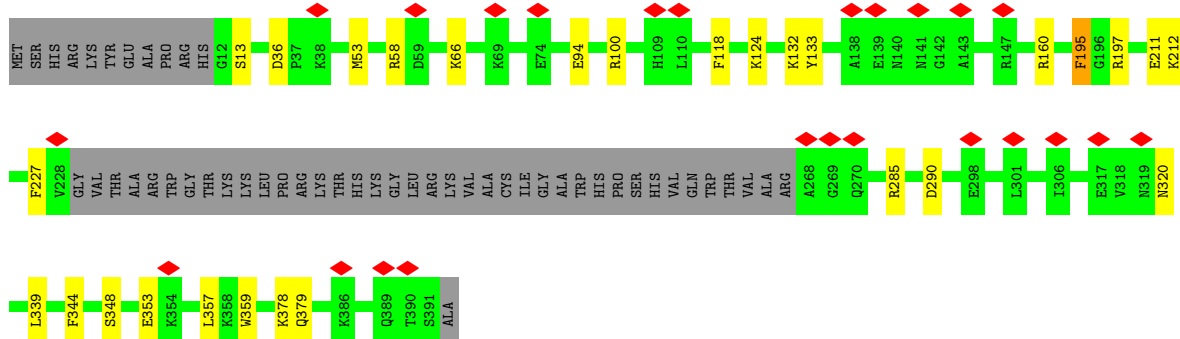
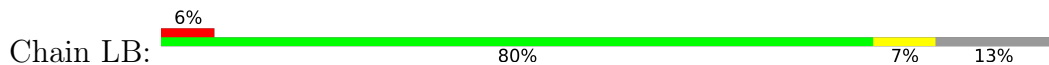
H162
 P163
 K164
 T165
 S166
 I167
 Q168
 D169
 E172
 L173
 L176
 F180
 L181
 V182
 A183
 G184
 S185
 V186
 N187
 R188
 G189
 S190
 N191
 V192
 I193
 G194
 G195
 V199
 N200
 D201
 W202
 L203
 A204
 V205
 L208
 D209
 T210
 T211
 A212
 P213
 E214
 L215
 S216
 V217
 I218
 E219
 S220
 V221
 F222
 R223
 L224
 G225
 E226
 G227
 A228

G229
 P230
 G231
 A232
 I233
 N234
 T235
 S236
 M237
 K238
 N239
 T240
 I241
 V242
 E243
 S244
 F245
 Y246

- Molecule 12: Ribosome biogenesis protein RLP24



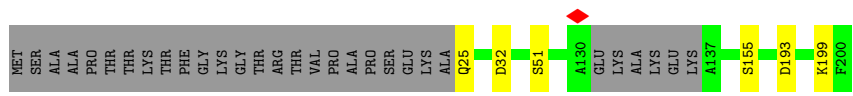
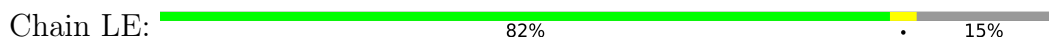
• Molecule 16: 60S ribosomal protein L3-like protein



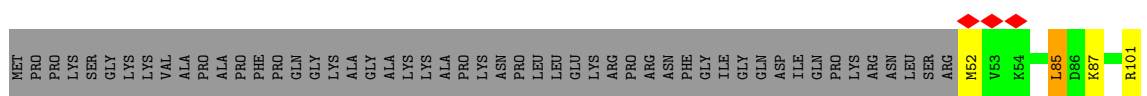
• Molecule 17: 60S ribosomal protein L4-like protein



• Molecule 18: 60S ribosomal protein L6

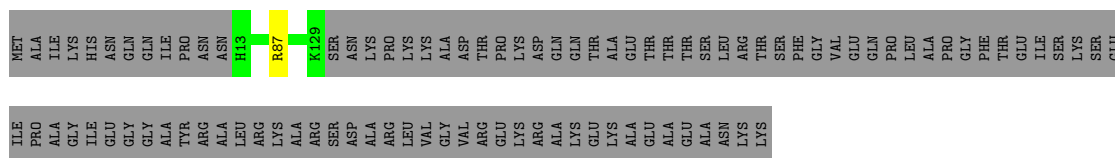


• Molecule 19: 60S ribosomal protein L8



• Molecule 20: 60S ribosomal protein L13

Chain LL:  54% 45%



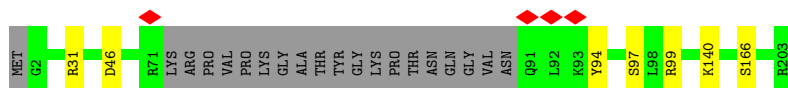
- Molecule 21: 60S ribosomal protein L14-like protein

Chain LM:  5% 92%



- Molecule 22: Ribosomal protein L15

Chain LN:  87% 10%




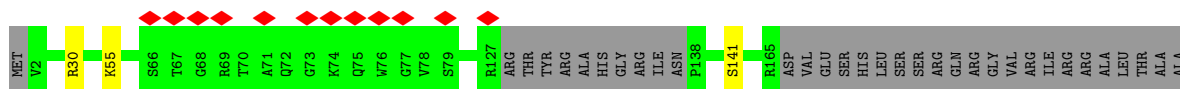
- Molecule 23: 60S ribosomal protein L16-like protein

Chain LO:  98%



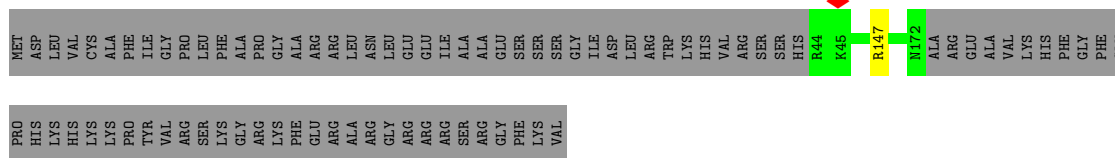
- Molecule 24: 60S ribosomal protein L17-like protein

Chain LP:  6% 81% 18%



- Molecule 25: Ribosomal protein L18-like protein

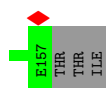
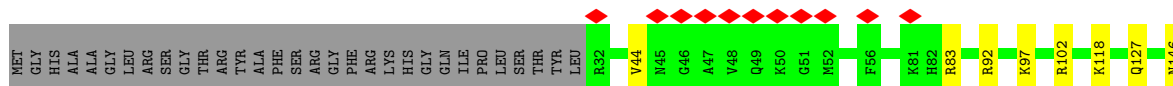
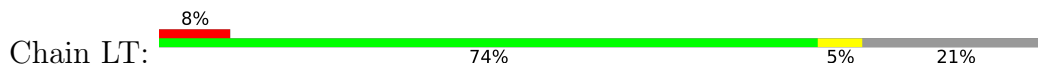
Chain LQ:  60% 39%



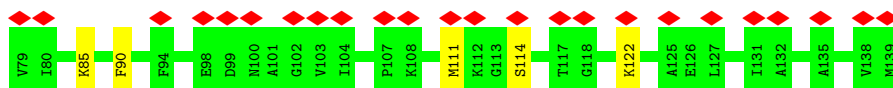
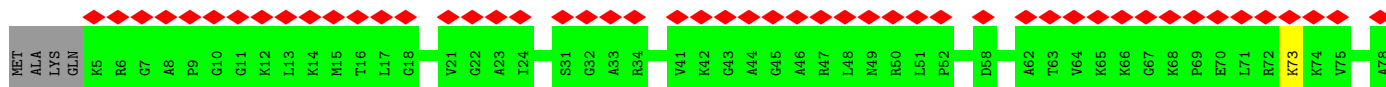
- Molecule 26: 60S ribosomal protein L20



- Molecule 27: 60S ribosomal protein l21-like protein



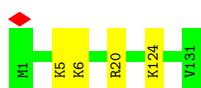
- Molecule 28: 60S ribosomal protein l23-like protein



- Molecule 29: 60S ribosomal protein L26-like protein



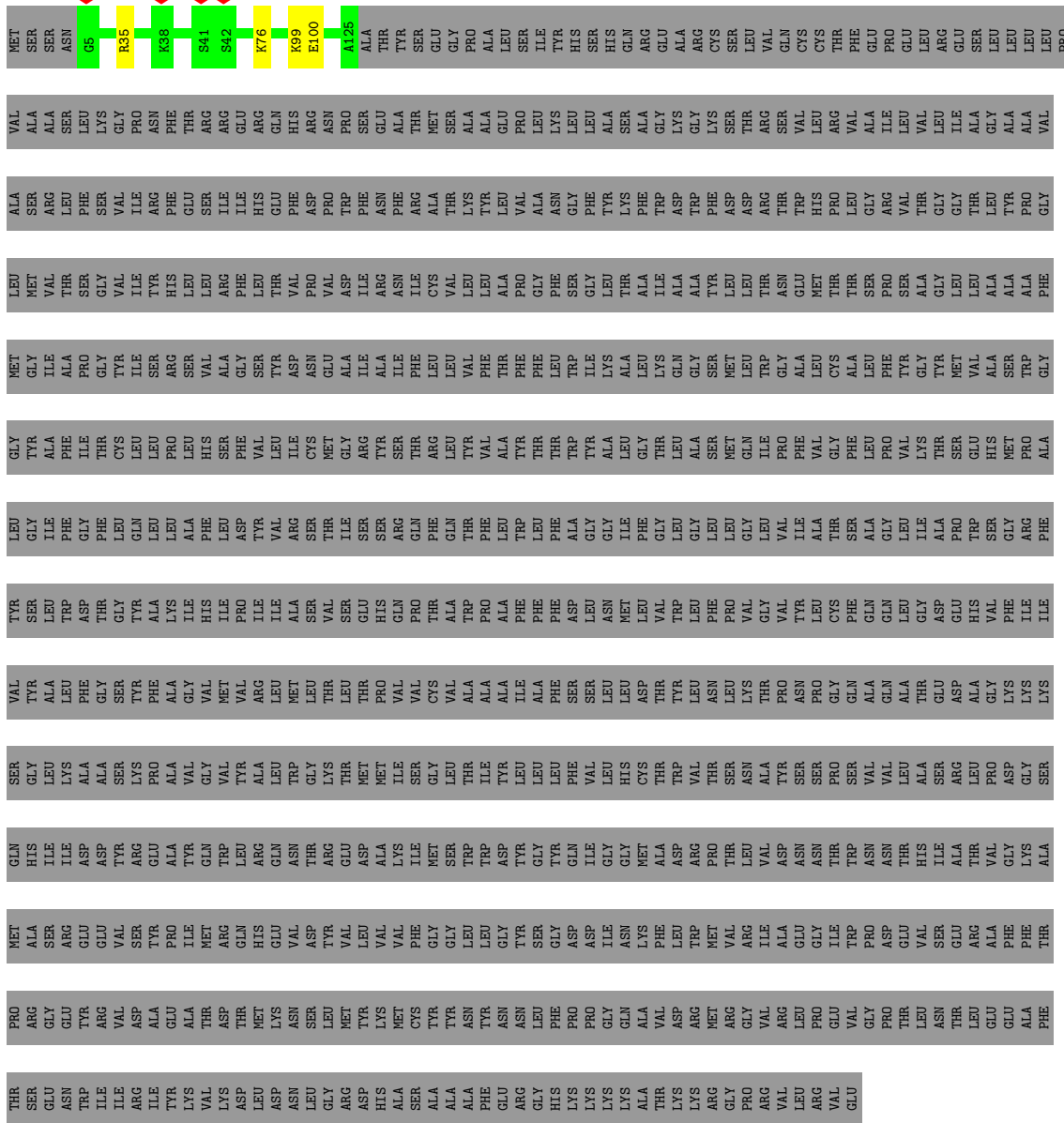
- Molecule 30: 60S ribosomal protein L32-like protein




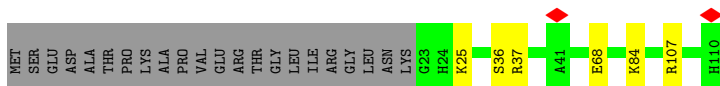
- Molecule 31: 60S ribosomal protein l33-like protein




● Molecule 32: dolichyl-diphosphooligosaccharide--protein glycotransferase

Chain Lh:  13% 87%

● Molecule 33: 60S ribosomal protein L36

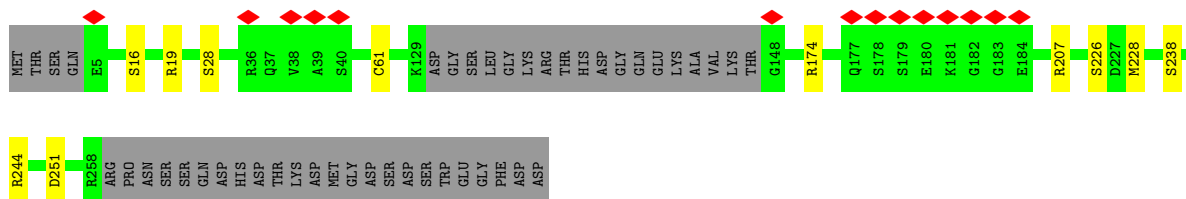
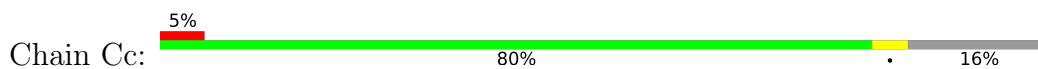
Chain Li:  75% 5% 20%

● Molecule 34: Ribosomal protein L37

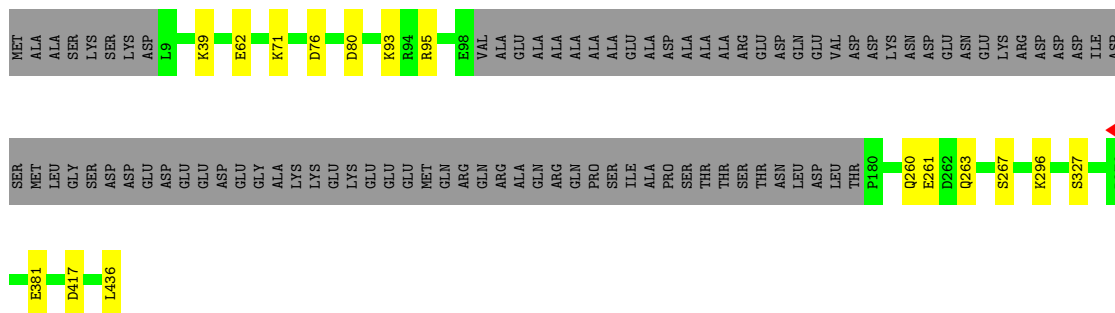
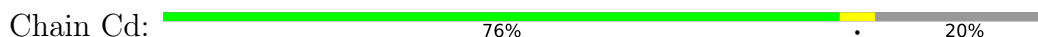
Chain Lj:  77% 22%



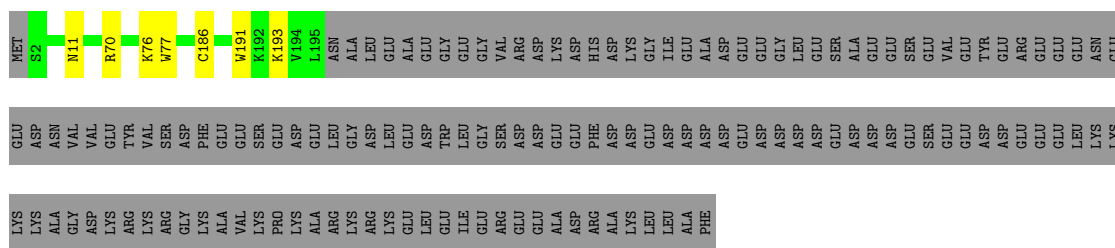
• Molecule 35: Ribosomal RNA-processing protein 1



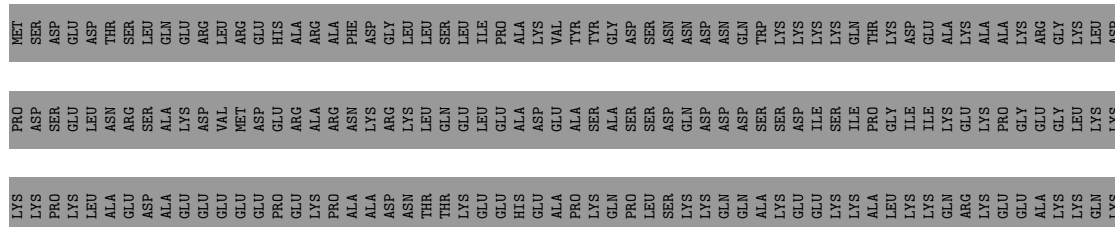
• Molecule 36: Brix domain-containing protein

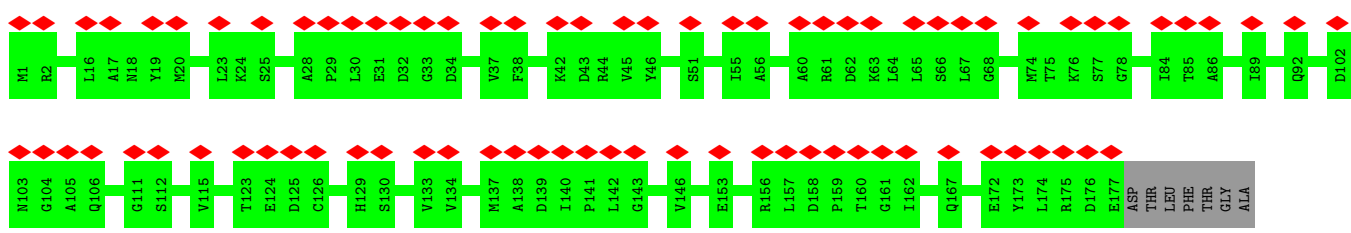


• Molecule 37: Protein MAK16

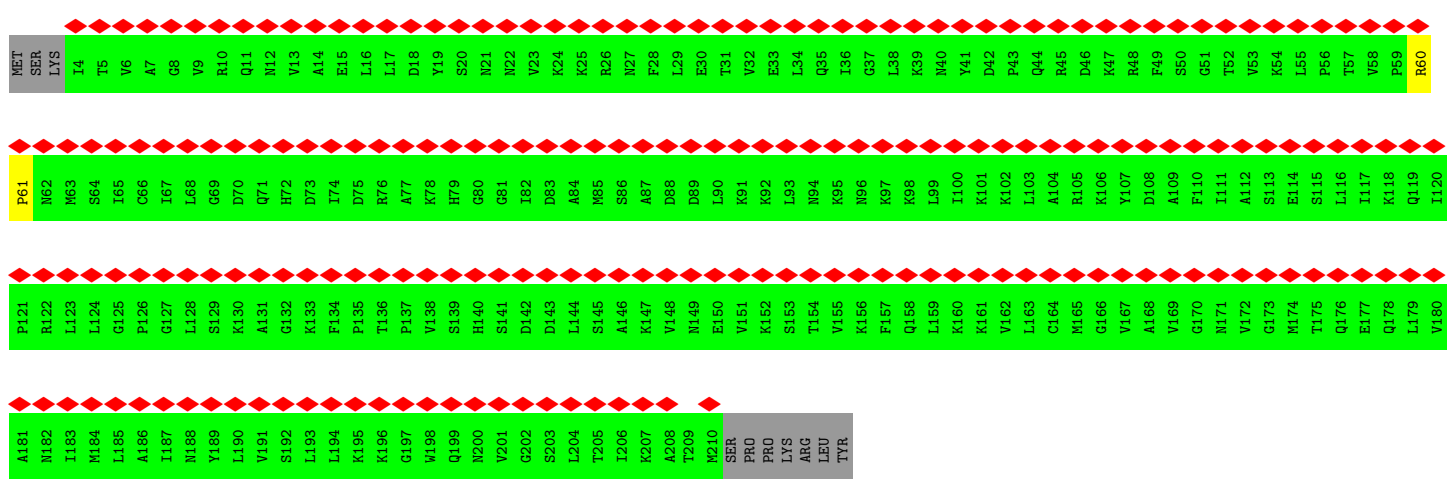


• Molecule 38: 60S ribosome biogenesis protein Rrp14

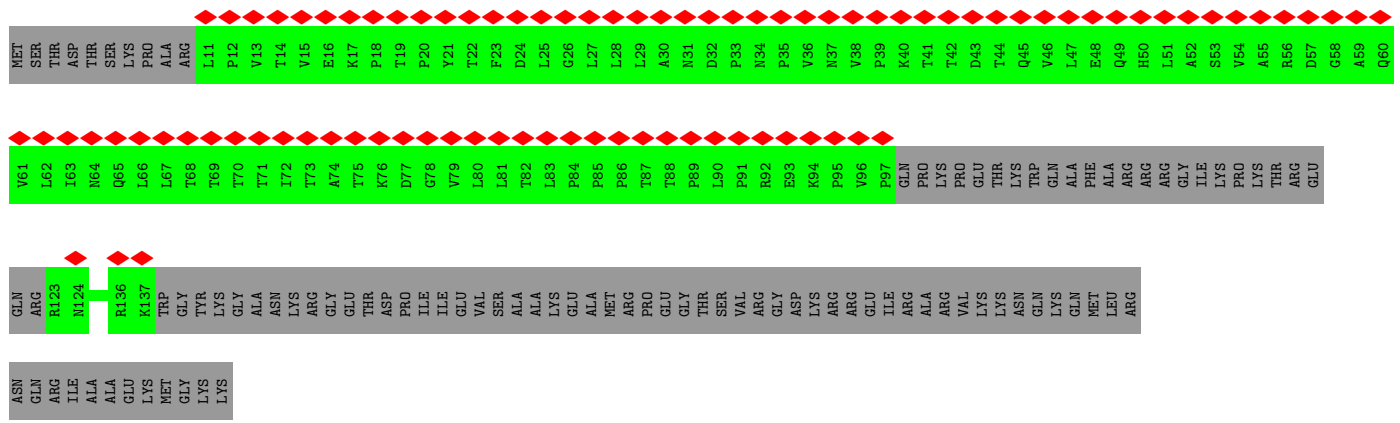




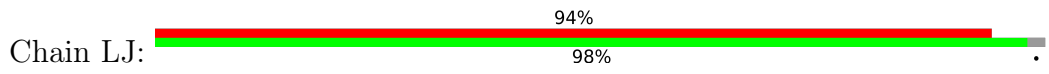
• Molecule 43: Ribosomal protein

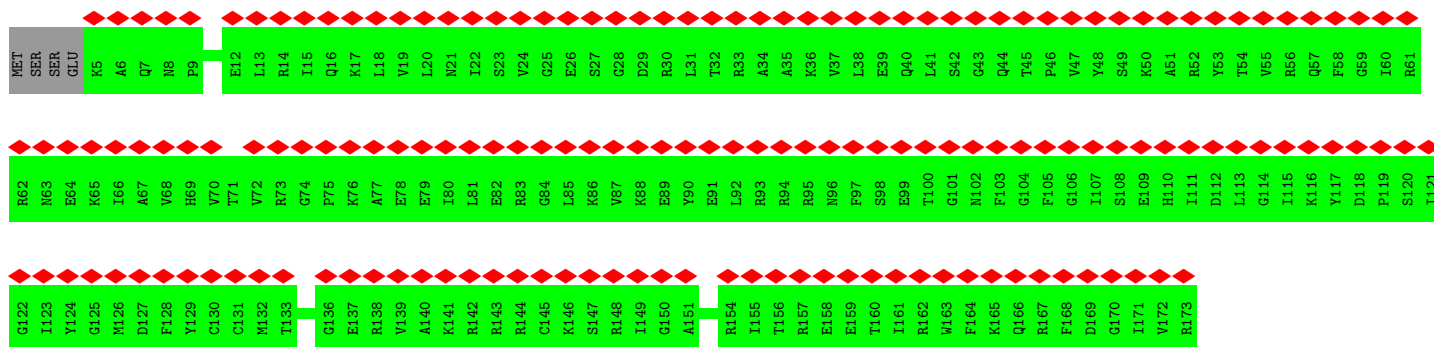


• Molecule 44: Ribosome biogenesis regulatory protein

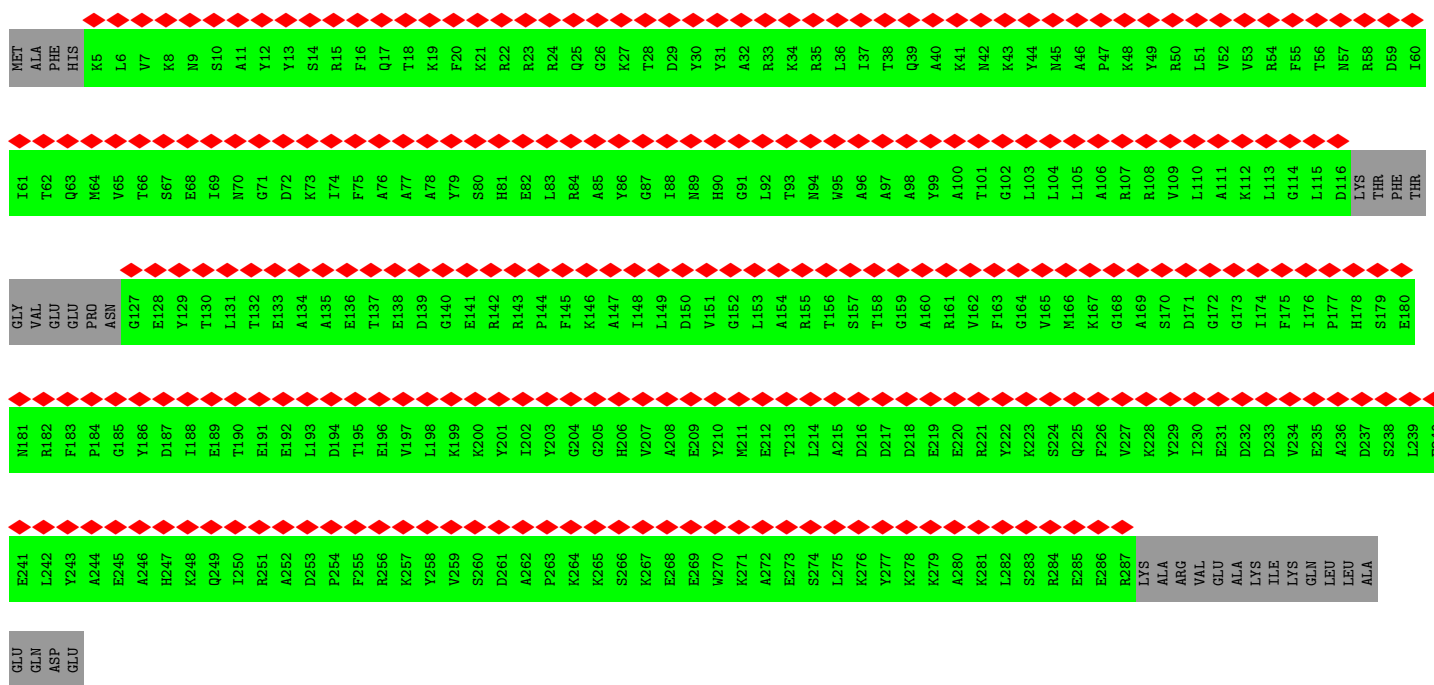


• Molecule 45: Putative ribosomal protein

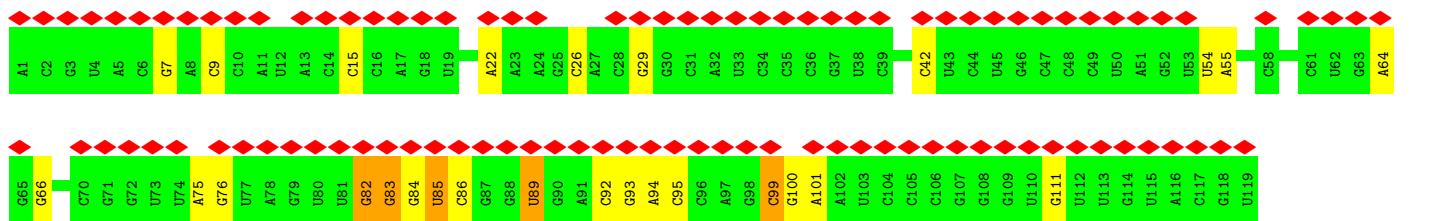
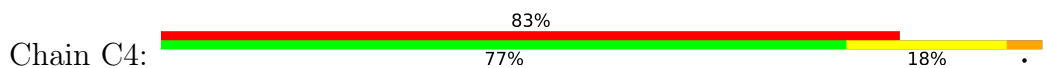




• Molecule 46: 60S ribosomal protein 15-like protein



• Molecule 47: RNA (119-MER)



• Molecule 48: 60S ribosomal subunit-like protein



MET	GLY	LYS	THR	ARG	THR	THR	ILE	LYS	ASN	LYS	HIS	ALA	GLU	PRO	SER	SER	LYS	LYS	LYS	ALA	LYS	LYS	ALA	GLY	ASP	GLY	GLY	VAL	LYS	LYS	THR	THR	LYS	ASP	ARG	ALA	GLY	SER	SER	LYS	LYS	ALA	VAL	VAL	PRO	ALA	ILE	GLU	VAL	LYS	GLY	LYS	PRO	ASN	LEU	GLY	GLN	ASP	LYS	LYS	LYS	GLN				
LYS	ARG	W63	L69	G70	G87	LYS	LYS	LYS	GLN	ASP	GLN	GLY	LYS	SER	VAL	PHE	GLU	VAL	ASP	GLU	D97	R98	E99	E117	I120	M121	R122	A123	R124	Q125	L126	E127	E128	E129	R130	E131	A132	R133	R134	ILE	GLU	ALA	GLU	LYS	LYS	GLU	GLU	ALA	ARG	LYS	LYS	ALA	LEU	LEU	LEU	GLU	ASN	THR	LYS	GLU	GLN	LEU	ARG			
LYS	ARG	LYS	ASN	LYS	LYS	LYS	LYS	LYS	ASP	GLN	GLY	LYS	LYS	SER	VAL	PHE	GLU	VAL	ASP	GLU	GLY	PRO	SER	SER	LEU	LYS	LEU	LEU	LEU	THR	SER	THR	GLY	SER	SER	LYS	LYS	LYS	VAL	SER	SER	PHE	ALA	THR	PRO	GLU	LYS	LYS	GLU	GLU	ALA	ARG	LYS	LYS	ALA	LEU	LEU	LEU	GLU	ASN	THR	LYS	GLU	GLN	LEU	ARG

4 Experimental information i

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	41599	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	44	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.491	Depositor
Minimum map value	-0.237	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.009	Depositor
Recommended contour level	0.02	Depositor
Map size (Å)	438.9, 438.9, 438.9	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.045, 1.045, 1.045	Depositor

5 Model quality i

5.1 Standard geometry i

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

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	C1	0.55	1/48945 (0.0%)	1.02	181/76270 (0.2%)
2	C2	0.57	0/5415	0.96	11/8436 (0.1%)
3	CA	0.34	0/2190	0.68	0/2940
4	CB	0.34	0/2109	0.65	2/2866 (0.1%)
5	CC	0.33	0/2325	0.67	4/3164 (0.1%)
6	CE	0.35	0/3743	0.61	1/5045 (0.0%)
7	CH	0.31	0/909	0.68	0/1229
8	CI	0.34	0/1225	0.64	0/1645
9	CJ	0.28	0/3189	0.58	2/4309 (0.0%)
10	CM	0.31	0/1555	0.65	1/2091 (0.0%)
10	LF	0.37	0/2004	0.60	1/2686 (0.0%)
11	CN	0.30	0/1881	0.66	1/2560 (0.0%)
12	CQ	0.34	0/981	0.70	0/1301
13	CR	0.33	0/1369	0.62	0/1828
14	CU	0.28	0/980	0.64	1/1314 (0.1%)
15	Ch	0.26	0/563	0.68	1/746 (0.1%)
16	LB	0.35	0/2760	0.72	5/3701 (0.1%)
17	LC	0.36	0/2809	0.58	0/3787
18	LE	0.34	0/1363	0.57	0/1833
19	LG	0.36	0/1492	0.59	1/2003 (0.0%)
20	LL	0.36	0/983	0.66	0/1318
21	LM	0.34	0/1120	0.64	1/1507 (0.1%)
22	LN	0.37	0/1595	0.63	1/2132 (0.0%)
23	LO	0.36	0/1652	0.64	1/2215 (0.0%)
24	LP	0.29	0/1231	0.56	0/1658
25	LQ	0.35	0/1033	0.61	0/1391
26	LS	0.35	0/1468	0.63	0/1975
27	LT	0.31	0/1033	0.62	0/1389
28	LV	0.32	0/1013	0.66	2/1361 (0.1%)
29	LY	0.34	0/1079	0.59	0/1443
30	Le	0.34	0/1073	0.57	0/1431
31	Lf	0.38	0/883	0.62	0/1187

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	Lh	0.30	0/1006	0.56	0/1338
33	Li	0.32	0/738	0.63	0/971
34	Lj	0.37	0/606	0.64	0/803
35	Cc	0.33	0/1934	0.58	1/2614 (0.0%)
36	Cd	0.33	0/2857	0.59	0/3843
37	Ce	0.38	0/1638	0.63	1/2196 (0.0%)
38	Cf	0.31	0/1238	0.67	2/1631 (0.1%)
39	Cy	0.24	0/1208	0.43	0/1682
40	Cg	0.51	2/1887 (0.1%)	0.85	4/2544 (0.2%)
41	CP	0.24	0/1595	0.46	0/2217
42	CG	0.26	0/872	0.50	0/1212
43	Lq	0.26	0/1020	0.49	0/1418
44	Cx	0.25	0/567	0.49	0/783
45	LJ	0.24	0/830	0.44	0/1150
46	LD	0.23	0/1344	0.41	0/1868
47	C4	0.30	0/2833	1.08	19/4414 (0.4%)
48	CX	0.58	0/377	0.66	0/518
All	All	0.44	3/124520 (0.0%)	0.84	244/179963 (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	CB	0	1
15	Ch	0	1
16	LB	0	1
19	LG	0	1
25	LQ	0	1
40	Cg	0	1
43	Lq	0	1
All	All	0	7

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
40	Cg	204	PRO	CG-CD	-15.22	1.00	1.50
40	Cg	204	PRO	N-CD	6.92	1.57	1.47
1	C1	3215	U	C1'-N1	6.65	1.58	1.48

All (244) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
40	Cg	204	PRO	N-CD-CG	-16.54	78.39	103.20
1	C1	1050	C	N3-C2-O2	-12.57	113.10	121.90
1	C1	1050	C	N1-C2-O2	10.13	124.98	118.90
37	Ce	186	CYS	C-N-CA	10.04	146.80	121.70
1	C1	625	C	C6-N1-C2	-10.02	116.29	120.30
40	Cg	204	PRO	CA-N-CD	-10.00	97.49	111.50
40	Cg	204	PRO	CA-CB-CG	-9.85	85.28	104.00
1	C1	739	C	N3-C2-O2	-9.20	115.46	121.90
1	C1	2931	G	P-O3'-C3'	-8.85	109.09	119.70
1	C1	2324	C	C2-N1-C1'	8.80	128.48	118.80
1	C1	398	G	O4'-C1'-N9	8.70	115.16	108.20
1	C1	2932	U	P-O3'-C3'	-8.62	109.35	119.70
1	C1	625	C	N3-C2-O2	-8.57	115.90	121.90
5	CC	181	ASP	CB-CG-OD1	8.35	125.82	118.30
1	C1	2723	C	N3-C2-O2	-8.27	116.11	121.90
1	C1	2680	U	N3-C2-O2	-8.22	116.45	122.20
1	C1	3290	C	N3-C2-O2	-8.16	116.19	121.90
1	C1	3320	C	N3-C2-O2	-8.14	116.20	121.90
1	C1	1050	C	C6-N1-C2	-8.06	117.08	120.30
1	C1	2943	C	N3-C2-O2	-8.00	116.30	121.90
22	LN	46	ASP	CB-CG-OD1	7.92	125.43	118.30
1	C1	3253	U	N1-C2-O2	7.75	128.23	122.80
5	CC	189	ASP	CB-CG-OD1	7.72	125.25	118.30
1	C1	3319	C	N1-C2-O2	7.71	123.53	118.90
2	C2	171	C	N3-C2-O2	-7.69	116.52	121.90
1	C1	1841	U	N3-C2-O2	-7.64	116.85	122.20
1	C1	2558	C	C2-N1-C1'	7.63	127.20	118.80
1	C1	3267	G	N1-C6-O6	-7.56	115.37	119.90
2	C2	170	C	N1-C2-O2	7.51	123.41	118.90
1	C1	2406	C	C2-N1-C1'	7.49	127.04	118.80
47	C4	95	C	N3-C2-O2	-7.47	116.67	121.90
1	C1	36	C	N1-C2-O2	7.42	123.35	118.90
1	C1	2417	U	C2-N1-C1'	7.29	126.45	117.70
47	C4	89	U	C2-N1-C1'	7.29	126.44	117.70
1	C1	1051	C	N3-C2-O2	-7.28	116.80	121.90
1	C1	2324	C	N1-C2-O2	7.26	123.26	118.90
47	C4	42	C	N1-C2-O2	7.25	123.25	118.90
1	C1	2680	U	N1-C2-O2	7.25	127.88	122.80
16	LB	36	ASP	CB-CG-OD1	7.21	124.79	118.30
1	C1	590	C	C6-N1-C2	-7.18	117.43	120.30
1	C1	3267	G	C5-C6-O6	7.10	132.86	128.60
1	C1	3253	U	C2-N1-C1'	7.09	126.21	117.70
1	C1	3264	A	O5'-P-OP1	-7.06	99.34	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C1	1137	C	C2-N1-C1'	6.81	126.29	118.80
1	C1	2930	G	P-O3'-C3'	-6.79	111.55	119.70
1	C1	2915	G	C4-N9-C1'	6.76	135.29	126.50
1	C1	263	C	N1-C2-O2	6.74	122.94	118.90
1	C1	2431	G	N3-C4-N9	-6.64	122.02	126.00
14	CU	253	LEU	CA-CB-CG	6.58	130.43	115.30
1	C1	3253	U	N3-C2-O2	-6.52	117.63	122.20
47	C4	95	C	N1-C2-O2	6.51	122.81	118.90
1	C1	3187	G	N1-C6-O6	-6.48	116.01	119.90
1	C1	473	C	C2-N1-C1'	6.45	125.90	118.80
1	C1	2324	C	C6-N1-C1'	-6.45	113.06	120.80
1	C1	887	G	P-O3'-C3'	6.44	127.43	119.70
16	LB	357	LEU	CA-CB-CG	6.39	130.00	115.30
1	C1	550	C	C2-N1-C1'	6.36	125.80	118.80
1	C1	2417	U	N3-C2-O2	-6.36	117.75	122.20
1	C1	2929	A	P-O3'-C3'	6.34	127.31	119.70
1	C1	3187	G	C5-C6-O6	6.33	132.40	128.60
1	C1	2328	C	C5-C6-N1	6.32	124.16	121.00
1	C1	590	C	N1-C2-O2	6.30	122.68	118.90
1	C1	3158	U	C2-N1-C1'	6.29	125.25	117.70
28	LV	73	LYS	CA-CB-CG	6.29	127.23	113.40
47	C4	82	G	C4-N9-C1'	6.29	134.67	126.50
1	C1	78	U	N3-C2-O2	-6.28	117.81	122.20
1	C1	3290	C	N1-C2-O2	6.28	122.67	118.90
1	C1	3257	U	P-O3'-C3'	6.24	127.18	119.70
1	C1	2998	U	N1-C2-O2	6.23	127.16	122.80
47	C4	89	U	N1-C2-O2	6.23	127.16	122.80
1	C1	102	C	N1-C2-O2	6.22	122.63	118.90
1	C1	2417	U	N1-C2-O2	6.21	127.15	122.80
23	LO	53	LEU	CA-CB-CG	6.20	129.56	115.30
47	C4	15	C	N3-C2-O2	-6.20	117.56	121.90
1	C1	3320	C	N1-C2-N3	6.19	123.53	119.20
1	C1	3015	U	N3-C2-O2	-6.19	117.87	122.20
47	C4	99	C	C2-N1-C1'	6.19	125.61	118.80
1	C1	263	C	C2-N1-C1'	6.17	125.59	118.80
1	C1	2998	U	C2-N1-C1'	6.16	125.10	117.70
1	C1	940	C	N3-C2-O2	-6.13	117.61	121.90
1	C1	590	C	N3-C2-O2	-6.12	117.61	121.90
1	C1	463	C	C2-N1-C1'	6.12	125.53	118.80
2	C2	64	U	N3-C2-O2	-6.12	117.92	122.20
1	C1	374	U	C2-N1-C1'	6.10	125.02	117.70
1	C1	433	U	C2-N1-C1'	6.09	125.01	117.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C1	1072	G	N1-C2-N2	-6.08	110.72	116.20
1	C1	3205	C	N1-C2-O2	6.05	122.53	118.90
1	C1	3320	C	C6-N1-C2	-6.01	117.90	120.30
1	C1	3270	C	N1-C2-O2	6.01	122.50	118.90
1	C1	1092	C	C2-N1-C1'	6.00	125.39	118.80
21	LM	104	LEU	CA-CB-CG	5.97	129.02	115.30
1	C1	2681	U	N1-C2-O2	5.96	126.97	122.80
1	C1	1841	U	O4'-C1'-N1	5.96	112.97	108.20
1	C1	2915	G	N3-C4-C5	-5.95	125.62	128.60
6	CE	342	ASP	CB-CG-OD1	5.95	123.65	118.30
1	C1	940	C	C6-N1-C2	-5.92	117.93	120.30
47	C4	26	C	N1-C2-O2	5.90	122.44	118.90
40	Cg	203	SER	C-N-CD	5.87	140.73	128.40
1	C1	150	G	P-O3'-C3'	5.87	126.74	119.70
1	C1	2915	G	N3-C4-N9	5.86	129.52	126.00
38	Cf	459	PRO	CA-N-CD	-5.86	103.30	111.50
16	LB	212	LYS	CA-CB-CG	5.86	126.28	113.40
1	C1	2681	U	C2-N1-C1'	5.85	124.72	117.70
1	C1	1841	U	N1-C2-O2	5.85	126.89	122.80
1	C1	1051	C	C6-N1-C2	-5.83	117.97	120.30
1	C1	167	C	C2-N1-C1'	5.83	125.21	118.80
1	C1	3309	G	N3-C4-C5	-5.82	125.69	128.60
1	C1	243	G	C4-N9-C1'	5.81	134.05	126.50
1	C1	2406	C	N1-C2-O2	5.81	122.38	118.90
1	C1	2942	C	N3-C2-O2	-5.81	117.84	121.90
1	C1	639	G	N1-C6-O6	-5.80	116.42	119.90
1	C1	1071	G	N1-C2-N2	-5.79	110.99	116.20
28	LV	111	MET	CA-CB-CG	5.78	123.13	113.30
1	C1	3183	C	C5-C4-N4	5.78	124.25	120.20
1	C1	2667	C	C2-N1-C1'	5.77	125.15	118.80
1	C1	2752	G	C5-C6-O6	5.76	132.06	128.60
1	C1	437	C	C2-N1-C1'	5.75	125.12	118.80
1	C1	3225	C	C2-N1-C1'	5.75	125.12	118.80
47	C4	42	C	C2-N1-C1'	5.75	125.12	118.80
47	C4	42	C	N3-C2-O2	-5.72	117.89	121.90
1	C1	3309	G	C4-N9-C1'	5.72	133.94	126.50
1	C1	3324	U	C2-N1-C1'	5.71	124.56	117.70
1	C1	2942	C	N1-C2-O2	5.71	122.33	118.90
1	C1	72	C	C2-N3-C4	-5.71	117.05	119.90
1	C1	101	G	C4-N9-C1'	5.69	133.90	126.50
1	C1	2356	G	N1-C2-N2	-5.69	111.08	116.20
1	C1	3319	C	N3-C2-O2	-5.68	117.92	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C1	2583	C	C2-N1-C1'	5.68	125.05	118.80
1	C1	2998	U	N3-C2-O2	-5.66	118.24	122.20
1	C1	2915	G	C8-N9-C1'	-5.66	119.64	127.00
15	Ch	282	LEU	CA-CB-CG	5.65	128.30	115.30
5	CC	314	ARG	CA-CB-CG	5.65	125.83	113.40
1	C1	939	C	N1-C2-O2	5.64	122.28	118.90
1	C1	739	C	C6-N1-C2	-5.64	118.04	120.30
1	C1	2431	G	C4-N9-C1'	-5.63	119.17	126.50
38	Cf	459	PRO	N-CD-CG	-5.62	94.76	103.20
1	C1	2731	C	C2-N1-C1'	5.62	124.99	118.80
1	C1	625	C	N1-C2-N3	5.62	123.13	119.20
1	C1	3183	C	N3-C4-N4	-5.59	114.08	118.00
1	C1	102	C	N3-C2-O2	-5.59	117.99	121.90
1	C1	2999	U	N1-C2-O2	5.58	126.70	122.80
1	C1	1071	G	N3-C2-N2	5.57	123.80	119.90
47	C4	82	G	C8-N9-C1'	-5.57	119.76	127.00
1	C1	2731	C	N1-C2-O2	5.57	122.24	118.90
1	C1	101	G	C8-N9-C1'	-5.57	119.76	127.00
47	C4	42	C	C6-N1-C2	-5.56	118.08	120.30
1	C1	625	C	N3-C4-C5	-5.55	119.68	121.90
47	C4	15	C	N1-C2-O2	5.55	122.23	118.90
1	C1	133	G	N3-C4-C5	-5.55	125.83	128.60
1	C1	3320	C	C5-C4-N4	5.54	124.08	120.20
1	C1	2999	U	N3-C2-O2	-5.54	118.33	122.20
1	C1	36	C	N3-C2-O2	-5.53	118.03	121.90
1	C1	162	U	N3-C2-O2	-5.52	118.33	122.20
2	C2	202	C	C5-C6-N1	5.52	123.76	121.00
1	C1	243	G	N3-C4-C5	-5.52	125.84	128.60
1	C1	896	A	P-O3'-C3'	5.51	126.31	119.70
1	C1	2431	G	C8-N9-C1'	5.50	134.15	127.00
1	C1	2722	C	N1-C2-O2	5.50	122.20	118.90
1	C1	592	G	O4'-C1'-N9	5.49	112.59	108.20
35	Cc	251	ASP	CB-CG-OD1	5.49	123.24	118.30
4	CB	141	GLU	CA-CB-CG	5.48	125.46	113.40
1	C1	2406	C	C5-C6-N1	5.47	123.74	121.00
16	LB	53	MET	CA-CB-CG	5.47	122.60	113.30
1	C1	963	C	C2-N1-C1'	5.46	124.81	118.80
1	C1	2406	C	C6-N1-C2	-5.45	118.12	120.30
2	C2	224	C	C2-N1-C1'	5.44	124.78	118.80
1	C1	3289	C	N1-C2-O2	5.44	122.16	118.90
1	C1	2408	U	C2-N1-C1'	5.43	124.22	117.70
2	C2	170	C	C2-N1-C1'	5.43	124.77	118.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	CJ	261	LYS	CA-CB-CG	5.40	125.28	113.40
2	C2	64	U	N1-C2-O2	5.40	126.58	122.80
1	C1	2680	U	C2-N1-C1'	5.39	124.17	117.70
16	LB	195	PHE	CB-CG-CD1	5.39	124.57	120.80
1	C1	1198	C	N1-C2-O2	5.38	122.13	118.90
2	C2	229	U	N1-C2-O2	5.38	126.57	122.80
1	C1	3296	G	N1-C2-N2	-5.37	111.36	116.20
1	C1	113	C	C2-N1-C1'	5.37	124.70	118.80
1	C1	2558	C	C6-N1-C1'	-5.36	114.37	120.80
1	C1	1072	G	N3-C2-N2	5.34	123.64	119.90
1	C1	639	G	C5-C6-O6	5.34	131.81	128.60
1	C1	2451	C	N1-C2-O2	5.34	122.11	118.90
1	C1	722	C	C2-N1-C1'	5.33	124.66	118.80
1	C1	3158	U	N3-C2-O2	-5.30	118.49	122.20
1	C1	738	C	N1-C2-O2	5.29	122.08	118.90
1	C1	3162	A	P-O3'-C3'	5.29	126.05	119.70
47	C4	82	G	P-O3'-C3'	5.28	126.04	119.70
1	C1	3320	C	C6-N1-C1'	5.28	127.14	120.80
1	C1	3296	G	P-O3'-C3'	5.26	126.02	119.70
1	C1	2681	U	N3-C2-O2	-5.26	118.52	122.20
47	C4	83	G	N3-C4-N9	5.26	129.16	126.00
1	C1	2440	C	N1-C2-O2	5.26	122.06	118.90
1	C1	738	C	N3-C2-O2	-5.26	118.22	121.90
47	C4	85	U	N3-C2-O2	-5.25	118.53	122.20
1	C1	249	C	N3-C2-O2	-5.24	118.23	121.90
1	C1	3309	G	C2-N3-C4	5.24	114.52	111.90
1	C1	1051	C	N1-C2-O2	5.23	122.04	118.90
1	C1	2458	U	N3-C2-O2	-5.22	118.54	122.20
1	C1	3319	C	C2-N1-C1'	5.22	124.54	118.80
1	C1	3324	U	N1-C2-O2	5.22	126.45	122.80
4	CB	251	GLU	CA-CB-CG	5.22	124.88	113.40
1	C1	3309	G	N3-C4-N9	5.21	129.13	126.00
1	C1	1092	C	C5-C6-N1	5.21	123.60	121.00
1	C1	263	C	N3-C2-O2	-5.20	118.26	121.90
10	LF	13	LEU	CA-CB-CG	5.20	127.25	115.30
1	C1	3262	G	O4'-C1'-N9	5.19	112.36	108.20
1	C1	590	C	C5-C6-N1	5.19	123.59	121.00
1	C1	724	C	N1-C2-O2	5.19	122.01	118.90
1	C1	2723	C	C6-N1-C2	-5.19	118.22	120.30
11	CN	224	LEU	CB-CG-CD1	-5.19	102.18	111.00
1	C1	3325	U	C2-N1-C1'	5.18	123.92	117.70
1	C1	34	A	O4'-C1'-N9	5.18	112.34	108.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C1	3303	U	N3-C2-O2	-5.18	118.58	122.20
47	C4	89	U	C6-N1-C1'	-5.18	113.95	121.20
1	C1	2355	G	N3-C4-N9	5.17	129.10	126.00
1	C1	953	U	C2-N1-C1'	5.17	123.90	117.70
1	C1	75	G	N3-C4-N9	5.16	129.09	126.00
1	C1	2943	C	N1-C2-O2	5.16	122.00	118.90
1	C1	3289	C	N3-C2-O2	-5.15	118.29	121.90
1	C1	2752	G	N1-C6-O6	-5.14	116.81	119.90
9	CJ	35	LYS	CA-CB-CG	5.14	124.71	113.40
10	CM	208	LEU	C-N-CA	5.12	134.50	121.70
1	C1	2558	C	C5-C6-N1	5.12	123.56	121.00
1	C1	1090	C	C2-N1-C1'	5.11	124.42	118.80
1	C1	101	G	O4'-C1'-N9	5.11	112.29	108.20
1	C1	3263	A	P-O3'-C3'	-5.10	113.58	119.70
1	C1	2354	C	N1-C2-O2	5.10	121.96	118.90
1	C1	133	G	C4-N9-C1'	5.09	133.12	126.50
1	C1	2731	C	C6-N1-C2	-5.08	118.27	120.30
1	C1	1137	C	C6-N1-C2	-5.08	118.27	120.30
19	LG	85	LEU	CA-CB-CG	5.07	126.97	115.30
2	C2	171	C	C6-N1-C2	-5.07	118.27	120.30
1	C1	2583	C	N1-C2-O2	5.06	121.94	118.90
1	C1	463	C	C6-N1-C2	-5.06	118.28	120.30
2	C2	177	C	C2-N1-C1'	5.04	124.34	118.80
1	C1	2558	C	N1-C2-O2	5.04	121.92	118.90
2	C2	170	C	N3-C2-O2	-5.04	118.38	121.90
1	C1	239	C	C2-N1-C1'	5.03	124.33	118.80
1	C1	892	C	N1-C2-O2	5.02	121.91	118.90
1	C1	2980	U	N1-C2-O2	5.02	126.32	122.80
1	C1	3270	C	N3-C2-O2	-5.02	118.38	121.90
1	C1	1074	C	C6-N1-C2	-5.01	118.30	120.30
1	C1	2406	C	C6-N1-C1'	-5.01	114.79	120.80
47	C4	42	C	C5-C6-N1	5.00	123.50	121.00
5	CC	196	MET	CA-CB-CG	5.00	121.80	113.30

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
4	CB	42	ARG	Peptide
40	Cg	154	ASP	Peptide
15	Ch	282	LEU	Peptide
16	LB	58	ARG	Sidechain

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Mol	Chain	Res	Type	Group
19	LG	161	ASP	Peptide
25	LQ	147	ARG	Sidechain
43	Lq	60	ARG	Peptide

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	CA	254/316 (80%)	236 (93%)	18 (7%)	0	100	100
4	CB	256/391 (66%)	235 (92%)	20 (8%)	1 (0%)	34	69
5	CC	264/801 (33%)	250 (95%)	14 (5%)	0	100	100
6	CE	459/598 (77%)	440 (96%)	19 (4%)	0	100	100
7	CH	106/661 (16%)	101 (95%)	4 (4%)	1 (1%)	17	52
8	CI	144/414 (35%)	133 (92%)	10 (7%)	1 (1%)	22	57
9	CJ	374/679 (55%)	357 (96%)	16 (4%)	1 (0%)	41	73
10	CM	183/249 (74%)	171 (93%)	12 (7%)	0	100	100
10	LF	238/249 (96%)	230 (97%)	7 (3%)	1 (0%)	34	69
11	CN	244/246 (99%)	228 (93%)	16 (7%)	0	100	100
12	CQ	110/225 (49%)	107 (97%)	3 (3%)	0	100	100
13	CR	159/237 (67%)	153 (96%)	6 (4%)	0	100	100
14	CU	119/451 (26%)	113 (95%)	6 (5%)	0	100	100
15	Ch	69/354 (20%)	66 (96%)	3 (4%)	0	100	100
16	LB	337/392 (86%)	319 (95%)	18 (5%)	0	100	100
17	LC	360/365 (99%)	349 (97%)	11 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	LE	166/200 (83%)	161 (97%)	5 (3%)	0	100	100
19	LG	179/262 (68%)	174 (97%)	5 (3%)	0	100	100
20	LL	115/213 (54%)	111 (96%)	4 (4%)	0	100	100
21	LM	135/142 (95%)	131 (97%)	4 (3%)	0	100	100
22	LN	179/203 (88%)	175 (98%)	4 (2%)	0	100	100
23	LO	202/204 (99%)	194 (96%)	8 (4%)	0	100	100
24	LP	150/187 (80%)	148 (99%)	2 (1%)	0	100	100
25	LQ	127/213 (60%)	123 (97%)	4 (3%)	0	100	100
26	LS	172/174 (99%)	164 (95%)	8 (5%)	0	100	100
27	LT	124/160 (78%)	115 (93%)	8 (6%)	1 (1%)	19	54
28	LV	133/139 (96%)	127 (96%)	6 (4%)	0	100	100
29	LY	132/138 (96%)	128 (97%)	4 (3%)	0	100	100
30	Le	129/131 (98%)	127 (98%)	2 (2%)	0	100	100
31	Lf	106/109 (97%)	102 (96%)	2 (2%)	2 (2%)	8	33
32	Lh	119/935 (13%)	117 (98%)	2 (2%)	0	100	100
33	Li	86/110 (78%)	84 (98%)	2 (2%)	0	100	100
34	Lj	72/95 (76%)	71 (99%)	1 (1%)	0	100	100
35	Cc	232/282 (82%)	222 (96%)	10 (4%)	0	100	100
36	Cd	343/436 (79%)	321 (94%)	22 (6%)	0	100	100
37	Ce	192/336 (57%)	188 (98%)	4 (2%)	0	100	100
38	Cf	145/570 (25%)	136 (94%)	9 (6%)	0	100	100
39	Cy	240/350 (69%)	238 (99%)	2 (1%)	0	100	100
40	Cg	229/478 (48%)	215 (94%)	12 (5%)	2 (1%)	17	52
41	CP	322/751 (43%)	314 (98%)	8 (2%)	0	100	100
42	CG	175/184 (95%)	171 (98%)	4 (2%)	0	100	100
43	Lq	205/217 (94%)	183 (89%)	21 (10%)	1 (0%)	29	64
44	Cx	98/202 (48%)	98 (100%)	0	0	100	100
45	LJ	167/173 (96%)	167 (100%)	0	0	100	100
46	LD	269/304 (88%)	266 (99%)	3 (1%)	0	100	100
48	CX	59/203 (29%)	56 (95%)	3 (5%)	0	100	100
All	All	8678/14729 (59%)	8315 (96%)	352 (4%)	11 (0%)	54	83

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	CB	117	PRO
8	CI	268	VAL
40	Cg	154	ASP
31	Lf	93	ALA
7	CH	403	LEU
10	LF	12	ILE
9	CJ	267	GLU
40	Cg	153	THR
27	LT	44	VAL
31	Lf	92	PRO
43	Lq	61	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	CA	231/276 (84%)	218 (94%)	13 (6%)	21	52
4	CB	222/329 (68%)	206 (93%)	16 (7%)	14	44
5	CC	252/710 (36%)	236 (94%)	16 (6%)	18	48
6	CE	398/517 (77%)	383 (96%)	15 (4%)	33	66
7	CH	95/575 (16%)	88 (93%)	7 (7%)	13	42
8	CI	121/336 (36%)	117 (97%)	4 (3%)	38	69
9	CJ	332/579 (57%)	321 (97%)	11 (3%)	38	69
10	CM	161/215 (75%)	145 (90%)	16 (10%)	8	29
10	LF	206/215 (96%)	202 (98%)	4 (2%)	57	81
11	CN	206/206 (100%)	199 (97%)	7 (3%)	37	69
12	CQ	100/192 (52%)	96 (96%)	4 (4%)	31	65
13	CR	144/206 (70%)	136 (94%)	8 (6%)	21	52
14	CU	104/376 (28%)	98 (94%)	6 (6%)	20	51
15	Ch	58/291 (20%)	56 (97%)	2 (3%)	37	69

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
16	LB	290/331 (88%)	267 (92%)	23 (8%)	12	40
17	LC	283/285 (99%)	274 (97%)	9 (3%)	39	69
18	LE	143/166 (86%)	137 (96%)	6 (4%)	30	62
19	LG	157/222 (71%)	146 (93%)	11 (7%)	15	45
20	LL	99/176 (56%)	98 (99%)	1 (1%)	76	90
21	LM	115/117 (98%)	110 (96%)	5 (4%)	29	62
22	LN	164/180 (91%)	158 (96%)	6 (4%)	34	66
23	LO	163/163 (100%)	160 (98%)	3 (2%)	59	82
24	LP	125/152 (82%)	122 (98%)	3 (2%)	49	76
25	LQ	110/178 (62%)	110 (100%)	0	100	100
26	LS	154/154 (100%)	148 (96%)	6 (4%)	32	65
27	LT	109/135 (81%)	102 (94%)	7 (6%)	17	48
28	LV	99/102 (97%)	95 (96%)	4 (4%)	31	65
29	LY	117/119 (98%)	112 (96%)	5 (4%)	29	62
30	Le	114/114 (100%)	110 (96%)	4 (4%)	36	68
31	Lf	89/90 (99%)	87 (98%)	2 (2%)	52	78
32	Lh	108/781 (14%)	104 (96%)	4 (4%)	34	66
33	Li	75/93 (81%)	69 (92%)	6 (8%)	12	40
34	Lj	61/78 (78%)	60 (98%)	1 (2%)	62	84
35	Cc	204/244 (84%)	194 (95%)	10 (5%)	25	57
36	Cd	295/367 (80%)	279 (95%)	16 (5%)	22	53
37	Ce	173/297 (58%)	167 (96%)	6 (4%)	36	68
38	Cf	127/482 (26%)	121 (95%)	6 (5%)	26	59
40	Cg	210/417 (50%)	202 (96%)	8 (4%)	33	66
44	Cx	14/176 (8%)	14 (100%)	0	100	100
48	CX	22/172 (13%)	21 (96%)	1 (4%)	27	60
All	All	6250/10814 (58%)	5968 (96%)	282 (4%)	31	60

All (282) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	CA	24	SER
3	CA	30	ARG

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Mol	Chain	Res	Type
3	CA	41	SER
3	CA	46	TYR
3	CA	72	SER
3	CA	105	SER
3	CA	132	CYS
3	CA	136	SER
3	CA	141	SER
3	CA	151	TYR
3	CA	183	SER
3	CA	263	SER
3	CA	278	ARG
4	CB	22	GLN
4	CB	31	LEU
4	CB	44	ASP
4	CB	48	ASN
4	CB	75	SER
4	CB	87	HIS
4	CB	93	GLU
4	CB	97	VAL
4	CB	98	CYS
4	CB	107	PHE
4	CB	121	ARG
4	CB	173	LYS
4	CB	240	ASN
4	CB	251	GLU
4	CB	264	ARG
4	CB	281	PHE
5	CC	137	TYR
5	CC	141	LYS
5	CC	162	ASP
5	CC	181	ASP
5	CC	185	HIS
5	CC	233	ARG
5	CC	266	GLU
5	CC	268	LYS
5	CC	269	MET
5	CC	285	LYS
5	CC	299	ARG
5	CC	315	GLU
5	CC	373	MET
5	CC	378	ARG
5	CC	382	TYR

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Mol	Chain	Res	Type
5	CC	396	TRP
6	CE	111	GLN
6	CE	120	GLU
6	CE	156	LYS
6	CE	191	PRO
6	CE	195	LEU
6	CE	260	SER
6	CE	317	TYR
6	CE	355	MET
6	CE	410	THR
6	CE	425	GLN
6	CE	485	PHE
6	CE	487	LYS
6	CE	552	ARG
6	CE	571	ARG
6	CE	583	TYR
7	CH	379	ARG
7	CH	392	LYS
7	CH	401	ARG
7	CH	447	TYR
7	CH	459	GLN
7	CH	467	ARG
7	CH	473	PHE
8	CI	198	PHE
8	CI	261	LYS
8	CI	291	ARG
8	CI	318	GLU
9	CJ	34	ARG
9	CJ	37	CYS
9	CJ	39	TRP
9	CJ	105	ARG
9	CJ	108	ARG
9	CJ	115	LYS
9	CJ	170	ARG
9	CJ	243	TYR
9	CJ	244	ARG
9	CJ	257	PHE
9	CJ	460	TRP
10	CM	51	PHE
10	CM	55	GLU
10	CM	96	LYS
10	CM	100	LYS

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Mol	Chain	Res	Type
10	CM	104	LYS
10	CM	106	ARG
10	CM	107	LYS
10	CM	115	ARG
10	CM	116	GLN
10	CM	127	LYS
10	CM	132	MET
10	CM	142	TYR
10	CM	144	TYR
10	CM	152	GLU
10	CM	159	TYR
10	CM	202	LYS
11	CN	4	ARG
11	CN	7	PHE
11	CN	9	ASN
11	CN	50	ARG
11	CN	136	GLU
11	CN	138	PHE
11	CN	209	ASP
12	CQ	22	MET
12	CQ	33	ARG
12	CQ	40	PHE
12	CQ	55	TYR
13	CR	8	ARG
13	CR	22	ARG
13	CR	24	LYS
13	CR	60	LYS
13	CR	70	LYS
13	CR	73	LEU
13	CR	135	GLN
13	CR	230	LYS
14	CU	216	PHE
14	CU	249	GLU
14	CU	255	ARG
14	CU	258	LEU
14	CU	289	LEU
14	CU	310	LYS
15	Ch	273	GLU
15	Ch	292	LYS
16	LB	13	SER
16	LB	66	LYS
16	LB	94	GLU

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Mol	Chain	Res	Type
16	LB	100	ARG
16	LB	118	PHE
16	LB	124	LYS
16	LB	132	LYS
16	LB	133	TYR
16	LB	160	ARG
16	LB	195	PHE
16	LB	197	ARG
16	LB	211	GLU
16	LB	227	PHE
16	LB	285	ARG
16	LB	290	ASP
16	LB	320	ASN
16	LB	339	LEU
16	LB	344	PHE
16	LB	348	SER
16	LB	353	GLU
16	LB	359	TRP
16	LB	378	LYS
16	LB	379	GLN
17	LC	47	LYS
17	LC	56	LYS
17	LC	94	MET
17	LC	121	PHE
17	LC	137	MET
17	LC	199	ARG
17	LC	273	LYS
17	LC	308	ARG
17	LC	323	LYS
18	LE	25	GLN
18	LE	32	ASP
18	LE	51	SER
18	LE	155	SER
18	LE	193	ASP
18	LE	199	LYS
10	LF	23	LYS
10	LF	67	GLU
10	LF	106	ARG
10	LF	131	GLU
19	LG	52	MET
19	LG	85	LEU
19	LG	87	LYS

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Mol	Chain	Res	Type
19	LG	101	ARG
19	LG	105	LYS
19	LG	137	TYR
19	LG	161	ASP
19	LG	219	SER
19	LG	228	LYS
19	LG	230	GLU
19	LG	234	LYS
20	LL	87	ARG
21	LM	12	ARG
21	LM	49	LYS
21	LM	71	LYS
21	LM	102	LYS
21	LM	109	ARG
22	LN	31	ARG
22	LN	94	TYR
22	LN	97	SER
22	LN	99	ARG
22	LN	140	LYS
22	LN	166	SER
23	LO	69	ARG
23	LO	170	TYR
23	LO	173	LYS
24	LP	30	ARG
24	LP	55	LYS
24	LP	141	SER
26	LS	57	GLU
26	LS	79	LEU
26	LS	81	TYR
26	LS	88	HIS
26	LS	90	MET
26	LS	98	SER
27	LT	83	ARG
27	LT	92	ARG
27	LT	97	LYS
27	LT	102	ARG
27	LT	118	LYS
27	LT	127	GLN
27	LT	146	ASN
28	LV	85	LYS
28	LV	90	PHE
28	LV	114	SER

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Mol	Chain	Res	Type
28	LV	122	LYS
29	LY	8	SER
29	LY	63	LYS
29	LY	68	LYS
29	LY	73	TYR
29	LY	76	LYS
30	Le	5	LYS
30	Le	6	LYS
30	Le	20	ARG
30	Le	124	LYS
31	Lf	56	ARG
31	Lf	62	ARG
32	Lh	35	ARG
32	Lh	76	LYS
32	Lh	99	LYS
32	Lh	100	GLU
33	Li	25	LYS
33	Li	36	SER
33	Li	37	ARG
33	Li	68	GLU
33	Li	84	LYS
33	Li	107	ARG
34	Lj	36	SER
35	Cc	16	SER
35	Cc	19	ARG
35	Cc	28	SER
35	Cc	61	CYS
35	Cc	174	ARG
35	Cc	207	ARG
35	Cc	226	SER
35	Cc	228	MET
35	Cc	238	SER
35	Cc	244	ARG
36	Cd	39	LYS
36	Cd	62	GLU
36	Cd	71	LYS
36	Cd	76	ASP
36	Cd	80	ASP
36	Cd	93	LYS
36	Cd	95	ARG
36	Cd	260	GLN
36	Cd	261	GLU

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Mol	Chain	Res	Type
36	Cd	263	GLN
36	Cd	267	SER
36	Cd	296	LYS
36	Cd	327	SER
36	Cd	381	GLU
36	Cd	417	ASP
36	Cd	436	LEU
37	Ce	11	ASN
37	Ce	70	ARG
37	Ce	76	LYS
37	Ce	77	TRP
37	Ce	191	TRP
37	Ce	193	LYS
38	Cf	406	PHE
38	Cf	446	MET
38	Cf	469	LYS
38	Cf	473	LEU
38	Cf	492	LYS
38	Cf	542	LYS
40	Cg	74	ARG
40	Cg	102	ASN
40	Cg	140	GLU
40	Cg	162	LYS
40	Cg	199	ASN
40	Cg	205	GLU
40	Cg	352	HIS
40	Cg	353	GLU
48	CX	69	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
4	CB	240	ASN
5	CC	243	GLN
9	CJ	177	HIS
10	CM	242	ASN
12	CQ	45	ASN
15	Ch	321	GLN
32	Lh	47	ASN
40	Cg	100	ASN

5.3.3 RNA 

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	C1	2026/3341 (60%)	482 (23%)	17 (0%)
2	C2	225/256 (87%)	61 (27%)	1 (0%)
47	C4	118/119 (99%)	23 (19%)	0
All	All	2369/3716 (63%)	566 (23%)	18 (0%)

All (566) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	C1	14	U
1	C1	26	A
1	C1	40	A
1	C1	43	A
1	C1	49	A
1	C1	59	G
1	C1	60	A
1	C1	65	A
1	C1	66	A
1	C1	73	A
1	C1	75	G
1	C1	91	G
1	C1	92	G
1	C1	94	G
1	C1	96	G
1	C1	105	C
1	C1	109	A
1	C1	110	G
1	C1	113	C
1	C1	116	A
1	C1	122	A
1	C1	131	U
1	C1	132	C
1	C1	133	G
1	C1	134	G
1	C1	136	C
1	C1	143	G
1	C1	150	G
1	C1	151	G
1	C1	152	A
1	C1	162	U
1	C1	163	U
1	C1	164	G

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Mol	Chain	Res	Type
1	C1	176	U
1	C1	180	G
1	C1	183	U
1	C1	192	A
1	C1	193	C
1	C1	203	C
1	C1	204	A
1	C1	206	A
1	C1	211	G
1	C1	212	A
1	C1	213	G
1	C1	224	A
1	C1	225	G
1	C1	240	U
1	C1	242	U
1	C1	244	U
1	C1	253	U
1	C1	257	A
1	C1	258	C
1	C1	261	G
1	C1	275	G
1	C1	276	A
1	C1	277	A
1	C1	287	A
1	C1	291	G
1	C1	300	A
1	C1	302	U
1	C1	309	A
1	C1	310	A
1	C1	315	A
1	C1	321	C
1	C1	325	C
1	C1	329	G
1	C1	331	C
1	C1	343	A
1	C1	368	G
1	C1	376	A
1	C1	377	A
1	C1	390	U
1	C1	391	A
1	C1	393	C
1	C1	394	A

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Mol	Chain	Res	Type
1	C1	395	C
1	C1	412	G
1	C1	413	G
1	C1	416	G
1	C1	421	U
1	C1	432	U
1	C1	434	G
1	C1	446	U
1	C1	448	A
1	C1	450	C
1	C1	457	U
1	C1	459	U
1	C1	460	C
1	C1	467	G
1	C1	474	G
1	C1	485	G
1	C1	493	C
1	C1	500	G
1	C1	504	G
1	C1	508	G
1	C1	509	A
1	C1	511	A
1	C1	513	A
1	C1	520	G
1	C1	526	G
1	C1	535	C
1	C1	536	C
1	C1	543	G
1	C1	544	U
1	C1	545	U
1	C1	546	A
1	C1	547	U
1	C1	548	A
1	C1	549	G
1	C1	558	G
1	C1	569	G
1	C1	582	A
1	C1	587	G
1	C1	590	C
1	C1	592	G
1	C1	593	C
1	C1	596	G

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Mol	Chain	Res	Type
1	C1	598	A
1	C1	624	C
1	C1	625	C
1	C1	629	U
1	C1	633	A
1	C1	634	A
1	C1	636	A
1	C1	647	A
1	C1	664	A
1	C1	668	U
1	C1	678	A
1	C1	708	G
1	C1	718	U
1	C1	719	C
1	C1	723	G
1	C1	730	C
1	C1	731	G
1	C1	744	G
1	C1	746	A
1	C1	748	U
1	C1	751	G
1	C1	755	G
1	C1	757	U
1	C1	758	U
1	C1	761	A
1	C1	762	G
1	C1	766	G
1	C1	787	A
1	C1	798	A
1	C1	887	G
1	C1	888	G
1	C1	896	A
1	C1	897	G
1	C1	905	G
1	C1	906	A
1	C1	907	A
1	C1	918	G
1	C1	924	U
1	C1	925	A
1	C1	932	A
1	C1	934	G
1	C1	937	U

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Mol	Chain	Res	Type
1	C1	940	C
1	C1	943	A
1	C1	944	G
1	C1	954	G
1	C1	957	G
1	C1	958	A
1	C1	960	C
1	C1	975	G
1	C1	976	U
1	C1	978	A
1	C1	1033	U
1	C1	1034	U
1	C1	1036	A
1	C1	1039	A
1	C1	1045	G
1	C1	1046	A
1	C1	1047	A
1	C1	1057	A
1	C1	1063	C
1	C1	1064	U
1	C1	1073	G
1	C1	1075	A
1	C1	1076	U
1	C1	1077	U
1	C1	1078	C
1	C1	1079	G
1	C1	1080	A
1	C1	1084	U
1	C1	1085	A
1	C1	1091	A
1	C1	1092	C
1	C1	1094	A
1	C1	1096	U
1	C1	1097	G
1	C1	1099	G
1	C1	1126	U
1	C1	1132	A
1	C1	1136	A
1	C1	1137	C
1	C1	1141	A
1	C1	1142	C
1	C1	1163	U

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Mol	Chain	Res	Type
1	C1	1164	G
1	C1	1186	A
1	C1	1198	C
1	C1	1271	G
1	C1	1272	U
1	C1	1277	G
1	C1	1278	C
1	C1	1279	C
1	C1	1295	G
1	C1	1298	C
1	C1	1309	C
1	C1	1312	A
1	C1	1313	U
1	C1	1314	A
1	C1	1330	A
1	C1	1331	G
1	C1	1332	A
1	C1	1334	A
1	C1	1335	C
1	C1	1336	G
1	C1	1337	A
1	C1	1368	A
1	C1	1369	G
1	C1	1381	A
1	C1	1382	G
1	C1	1384	G
1	C1	1400	A
1	C1	1401	A
1	C1	1416	G
1	C1	1419	C
1	C1	1432	G
1	C1	1443	A
1	C1	1444	A
1	C1	1448	G
1	C1	1841	U
1	C1	1843	A
1	C1	1844	A
1	C1	1845	C
1	C1	1846	A
1	C1	1859	U
1	C1	1861	G
1	C1	1863	A

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Mol	Chain	Res	Type
1	C1	1864	C
1	C1	1866	A
1	C1	1868	G
1	C1	1874	A
1	C1	1875	A
1	C1	1883	C
1	C1	2297	G
1	C1	2302	U
1	C1	2309	U
1	C1	2310	A
1	C1	2325	A
1	C1	2326	G
1	C1	2327	C
1	C1	2332	G
1	C1	2334	A
1	C1	2335	A
1	C1	2336	C
1	C1	2337	G
1	C1	2339	G
1	C1	2346	A
1	C1	2347	A
1	C1	2348	A
1	C1	2349	A
1	C1	2350	U
1	C1	2351	C
1	C1	2352	A
1	C1	2353	G
1	C1	2355	G
1	C1	2356	G
1	C1	2358	G
1	C1	2365	G
1	C1	2376	G
1	C1	2388	U
1	C1	2396	U
1	C1	2402	A
1	C1	2407	A
1	C1	2414	G
1	C1	2415	U
1	C1	2421	A
1	C1	2422	U
1	C1	2423	A
1	C1	2424	G

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Mol	Chain	Res	Type
1	C1	2425	G
1	C1	2428	G
1	C1	2429	G
1	C1	2430	A
1	C1	2432	C
1	C1	2433	U
1	C1	2434	U
1	C1	2435	C
1	C1	2436	G
1	C1	2438	C
1	C1	2439	G
1	C1	2443	G
1	C1	2449	U
1	C1	2450	A
1	C1	2452	C
1	C1	2453	A
1	C1	2455	U
1	C1	2456	A
1	C1	2457	C
1	C1	2459	C
1	C1	2465	G
1	C1	2466	U
1	C1	2467	U
1	C1	2484	G
1	C1	2551	A
1	C1	2558	C
1	C1	2560	G
1	C1	2564	G
1	C1	2565	G
1	C1	2570	U
1	C1	2581	G
1	C1	2583	C
1	C1	2584	A
1	C1	2588	C
1	C1	2605	A
1	C1	2608	U
1	C1	2614	A
1	C1	2630	G
1	C1	2632	A
1	C1	2634	A
1	C1	2635	G
1	C1	2645	G

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Mol	Chain	Res	Type
1	C1	2646	U
1	C1	2650	A
1	C1	2655	A
1	C1	2656	G
1	C1	2657	G
1	C1	2662	A
1	C1	2663	A
1	C1	2666	C
1	C1	2670	U
1	C1	2671	U
1	C1	2672	G
1	C1	2673	A
1	C1	2674	U
1	C1	2679	A
1	C1	2688	G
1	C1	2689	OMU
1	C1	2690	G
1	C1	2707	G
1	C1	2712	G
1	C1	2713	C
1	C1	2730	C
1	C1	2735	G
1	C1	2739	U
1	C1	2749	G
1	C1	2759	A
1	C1	2766	A
1	C1	2916	A
1	C1	2917	C
1	C1	2919	G
1	C1	2925	A
1	C1	2929	A
1	C1	2930	G
1	C1	2931	G
1	C1	2932	U
1	C1	2933	U
1	C1	2942	C
1	C1	2944	U
1	C1	2950	U
1	C1	2954	C
1	C1	2955	U
1	C1	2969	A
1	C1	2970	U

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Mol	Chain	Res	Type
1	C1	2973	A
1	C1	2974	G
1	C1	2978	A
1	C1	2979	G
1	C1	2993	G
1	C1	2994	C
1	C1	2996	G
1	C1	3000	C
1	C1	3008	U
1	C1	3012	U
1	C1	3015	U
1	C1	3016	G
1	C1	3022	G
1	C1	3031	G
1	C1	3032	G
1	C1	3033	C
1	C1	3034	A
1	C1	3035	G
1	C1	3036	U
1	C1	3037	G
1	C1	3040	G
1	C1	3047	U
1	C1	3048	A
1	C1	3049	C
1	C1	3050	C
1	C1	3056	C
1	C1	3057	U
1	C1	3058	G
1	C1	3091	A
1	C1	3099	A
1	C1	3100	C
1	C1	3101	G
1	C1	3109	A
1	C1	3113	C
1	C1	3117	C
1	C1	3118	A
1	C1	3124	U
1	C1	3126	G
1	C1	3130	U
1	C1	3134	A
1	C1	3139	A
1	C1	3140	G

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Mol	Chain	Res	Type
1	C1	3144	C
1	C1	3145	C
1	C1	3146	G
1	C1	3147	G
1	C1	3154	A
1	C1	3159	A
1	C1	3161	C
1	C1	3162	A
1	C1	3163	G
1	C1	3167	A
1	C1	3171	C
1	C1	3181	C
1	C1	3183	C
1	C1	3187	G
1	C1	3189	G
1	C1	3199	A
1	C1	3200	A
1	C1	3205	C
1	C1	3206	G
1	C1	3209	U
1	C1	3212	C
1	C1	3213	A
1	C1	3215	U
1	C1	3218	A
1	C1	3219	G
1	C1	3221	C
1	C1	3223	C
1	C1	3224	G
1	C1	3226	G
1	C1	3229	G
1	C1	3231	A
1	C1	3232	U
1	C1	3244	C
1	C1	3248	C
1	C1	3249	G
1	C1	3254	A
1	C1	3256	A
1	C1	3257	U
1	C1	3258	G
1	C1	3259	U
1	C1	3260	G
1	C1	3262	G

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Mol	Chain	Res	Type
1	C1	3263	A
1	C1	3264	A
1	C1	3270	C
1	C1	3274	U
1	C1	3281	U
1	C1	3282	A
1	C1	3285	G
1	C1	3290	C
1	C1	3291	U
1	C1	3292	U
1	C1	3295	U
1	C1	3296	G
1	C1	3297	U
1	C1	3298	U
1	C1	3302	A
1	C1	3303	U
1	C1	3308	U
1	C1	3309	G
1	C1	3316	A
1	C1	3318	C
1	C1	3322	C
1	C1	3323	C
1	C1	3324	U
1	C1	3328	C
1	C1	3330	U
1	C1	3331	A
1	C1	3332	G
1	C1	3333	A
1	C1	3337	C
2	C2	3	A
2	C2	34	U
2	C2	35	C
2	C2	44	A
2	C2	51	G
2	C2	52	A
2	C2	53	A
2	C2	54	A
2	C2	59	A
2	C2	62	A
2	C2	63	G
2	C2	84	C
2	C2	86	U

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Mol	Chain	Res	Type
2	C2	87	G
2	C2	90	U
2	C2	91	C
2	C2	95	G
2	C2	97	A
2	C2	104	A
2	C2	105	A
2	C2	106	C
2	C2	107	G
2	C2	116	G
2	C2	124	G
2	C2	126	A
2	C2	127	U
2	C2	129	C
2	C2	136	G
2	C2	148	G
2	C2	151	C
2	C2	157	U
2	C2	158	U
2	C2	160	A
2	C2	161	A
2	C2	163	C
2	C2	164	A
2	C2	165	U
2	C2	166	C
2	C2	174	G
2	C2	175	G
2	C2	180	G
2	C2	181	U
2	C2	189	A
2	C2	190	C
2	C2	192	C
2	C2	196	G
2	C2	197	C
2	C2	198	U
2	C2	199	G
2	C2	206	G
2	C2	211	U
2	C2	212	G
2	C2	214	A
2	C2	215	A
2	C2	219	A

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Mol	Chain	Res	Type
2	C2	221	U
2	C2	222	G
2	C2	223	G
2	C2	224	C
2	C2	225	G
2	C2	229	U
47	C4	7	G
47	C4	9	C
47	C4	22	A
47	C4	29	G
47	C4	54	U
47	C4	55	A
47	C4	64	A
47	C4	66	G
47	C4	75	A
47	C4	76	G
47	C4	82	G
47	C4	83	G
47	C4	84	G
47	C4	85	U
47	C4	86	C
47	C4	89	U
47	C4	92	C
47	C4	93	G
47	C4	94	A
47	C4	99	C
47	C4	100	G
47	C4	101	A
47	C4	111	G

All (18) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	C1	150	G
1	C1	519	A
1	C1	887	G
1	C1	896	A
1	C1	906	A
1	C1	1044	A
1	C1	1046	A
1	C1	2301	C
1	C1	2569	U

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Mol	Chain	Res	Type
1	C1	2929	A
1	C1	2932	U
1	C1	3015	U
1	C1	3162	A
1	C1	3255	G
1	C1	3257	U
1	C1	3296	G
1	C1	3297	U
2	C2	123	G

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

3 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	OMU	C1	2689	1	19,22,23	2.98	8 (42%)	26,31,34	1.68	4 (15%)
1	OMU	C1	2687	1	19,22,23	2.96	8 (42%)	26,31,34	1.67	4 (15%)
1	OMU	C1	2682	1	19,22,23	2.97	8 (42%)	26,31,34	1.64	4 (15%)

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	OMU	C1	2689	1	-	2/9/27/28	0/2/2/2
1	OMU	C1	2687	1	-	0/9/27/28	0/2/2/2
1	OMU	C1	2682	1	-	1/9/27/28	0/2/2/2

All (24) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C1	2682	OMU	C2-N1	7.20	1.50	1.38
1	C1	2689	OMU	C2-N1	7.20	1.50	1.38
1	C1	2687	OMU	C2-N1	7.15	1.49	1.38
1	C1	2689	OMU	C2-N3	6.72	1.49	1.38
1	C1	2682	OMU	C2-N3	6.71	1.49	1.38
1	C1	2687	OMU	C2-N3	6.70	1.49	1.38
1	C1	2682	OMU	C6-C5	5.92	1.48	1.35
1	C1	2689	OMU	C6-C5	5.91	1.48	1.35
1	C1	2687	OMU	C6-C5	5.89	1.48	1.35
1	C1	2689	OMU	C4-N3	3.61	1.45	1.38
1	C1	2687	OMU	C4-N3	3.56	1.44	1.38
1	C1	2682	OMU	C4-N3	3.50	1.44	1.38
1	C1	2687	OMU	O4-C4	-2.58	1.19	1.24
1	C1	2689	OMU	O4-C4	-2.58	1.19	1.24
1	C1	2682	OMU	O2-C2	-2.57	1.18	1.23
1	C1	2682	OMU	O4-C4	-2.57	1.19	1.24
1	C1	2689	OMU	O2-C2	-2.54	1.18	1.23
1	C1	2687	OMU	O2-C2	-2.52	1.18	1.23
1	C1	2687	OMU	C6-N1	2.14	1.43	1.38
1	C1	2682	OMU	C6-N1	2.14	1.43	1.38
1	C1	2687	OMU	C5-C4	2.13	1.48	1.43
1	C1	2689	OMU	C6-N1	2.12	1.43	1.38
1	C1	2689	OMU	C5-C4	2.11	1.48	1.43
1	C1	2682	OMU	C5-C4	2.05	1.48	1.43

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C1	2689	OMU	C4-N3-C2	-5.14	119.80	126.58
1	C1	2687	OMU	C4-N3-C2	-5.12	119.83	126.58
1	C1	2682	OMU	C4-N3-C2	-4.98	120.01	126.58
1	C1	2689	OMU	N3-C2-N1	3.71	119.82	114.89
1	C1	2687	OMU	N3-C2-N1	3.67	119.77	114.89
1	C1	2682	OMU	N3-C2-N1	3.59	119.66	114.89
1	C1	2687	OMU	C5-C4-N3	3.29	119.76	114.84
1	C1	2682	OMU	C5-C4-N3	3.28	119.75	114.84
1	C1	2689	OMU	C5-C4-N3	3.27	119.73	114.84
1	C1	2687	OMU	O4-C4-C5	-2.86	120.12	125.16
1	C1	2689	OMU	O4-C4-C5	-2.86	120.13	125.16
1	C1	2682	OMU	O4-C4-C5	-2.86	120.14	125.16

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	C1	2682	OMU	C1'-C2'-O2'-CM2
1	C1	2689	OMU	C3'-C4'-C5'-O5'
1	C1	2689	OMU	O4'-C4'-C5'-O5'

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 3 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

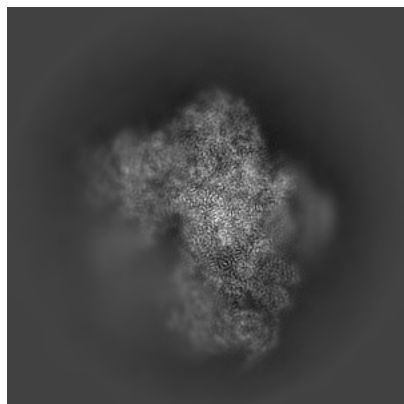
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-35281. These allow visual inspection of the internal detail of the map and identification of artifacts.

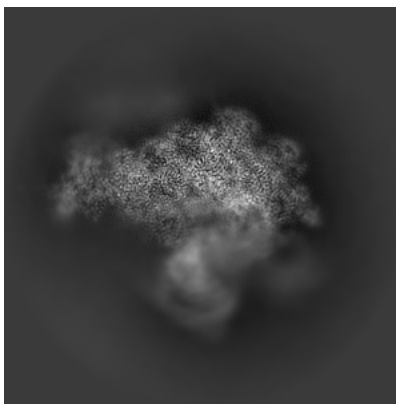
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

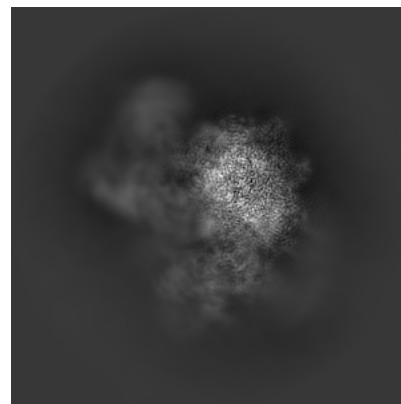
6.1.1 Primary map



X

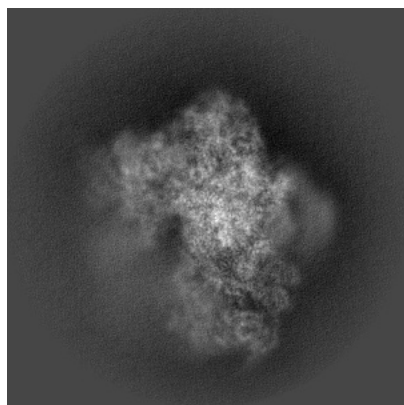


Y

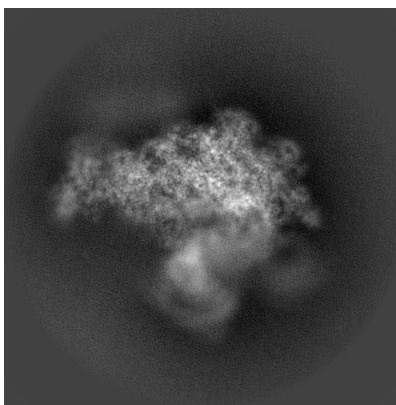


Z

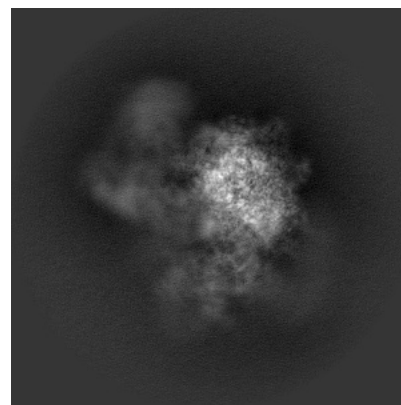
6.1.2 Raw map



X



Y

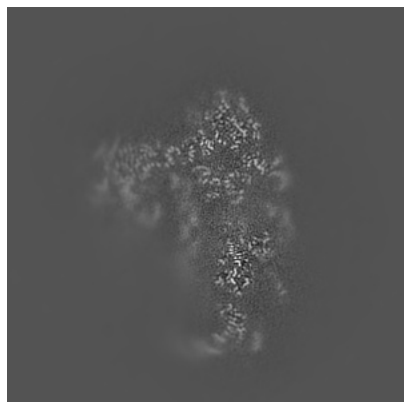


Z

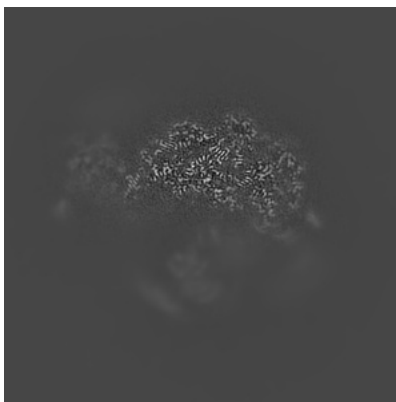
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

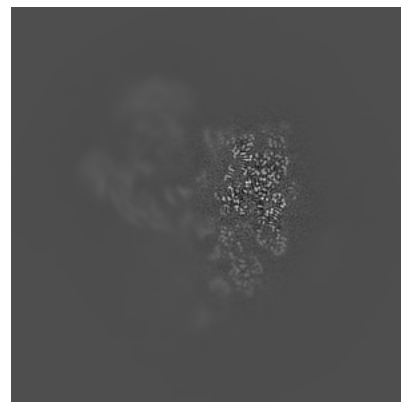
6.2.1 Primary map



X Index: 210

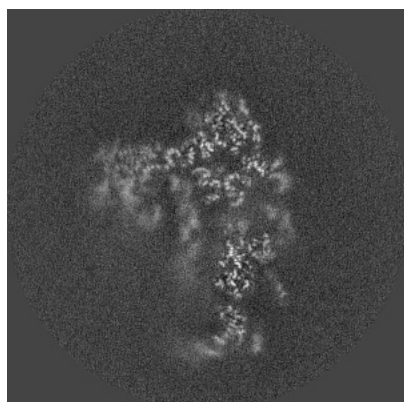


Y Index: 210

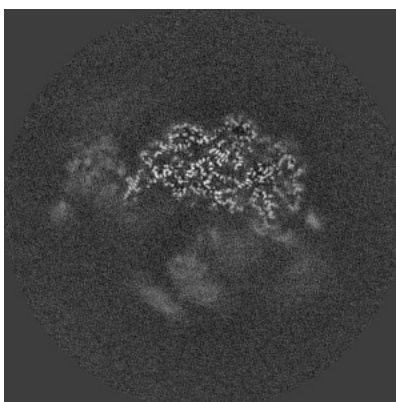


Z Index: 210

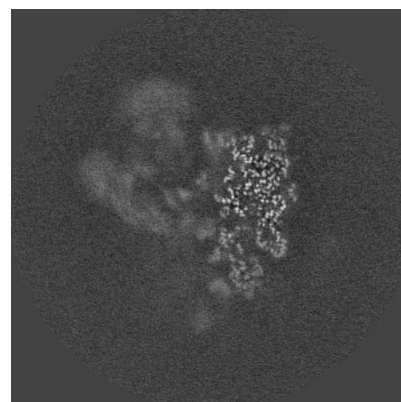
6.2.2 Raw map



X Index: 210



Y Index: 210

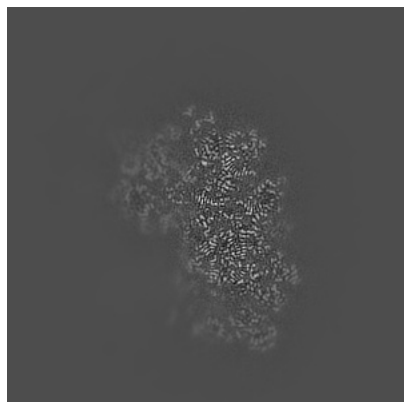


Z Index: 210

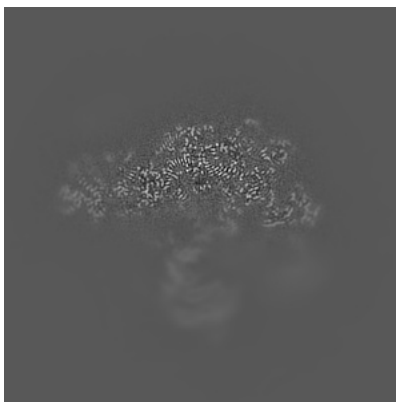
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

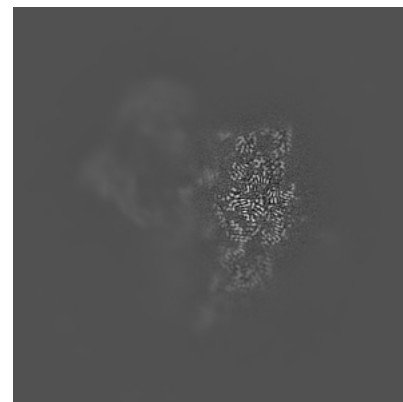
6.3.1 Primary map



X Index: 243

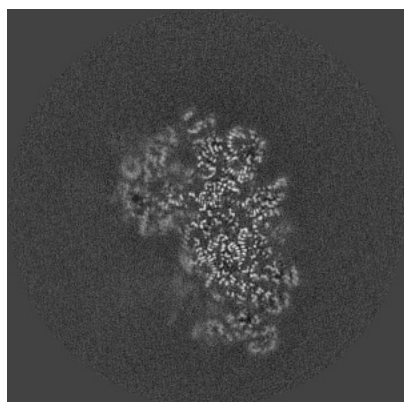


Y Index: 229

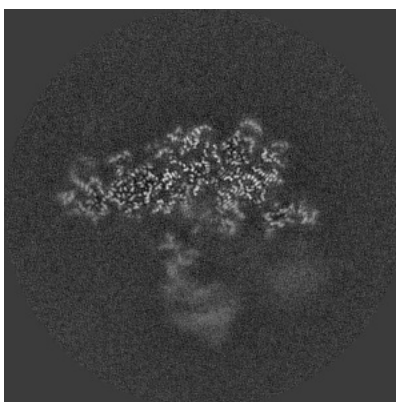


Z Index: 216

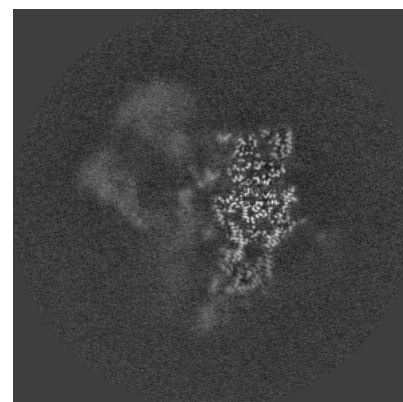
6.3.2 Raw map



X Index: 241



Y Index: 233

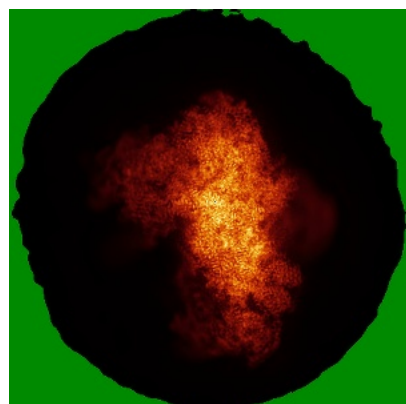


Z Index: 217

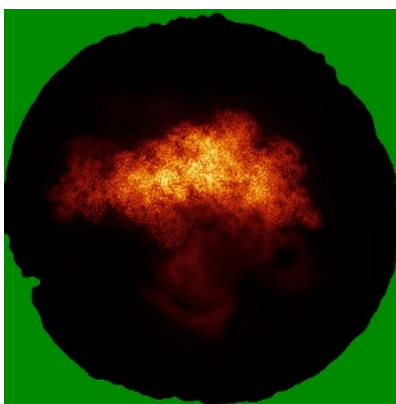
The images above show the largest variance slices of the map in three orthogonal directions.

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

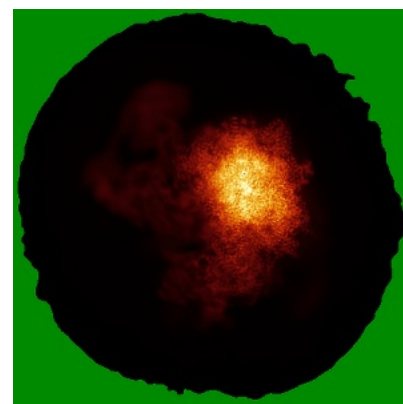
6.4.1 Primary map



X

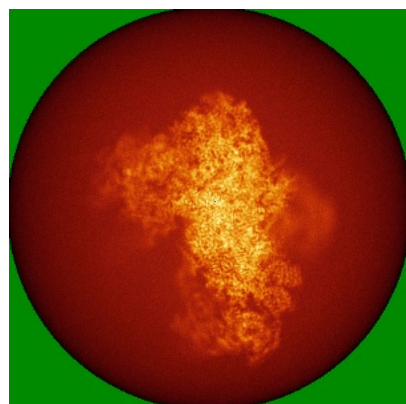


Y

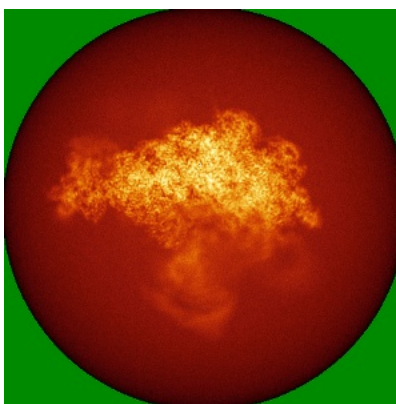


Z

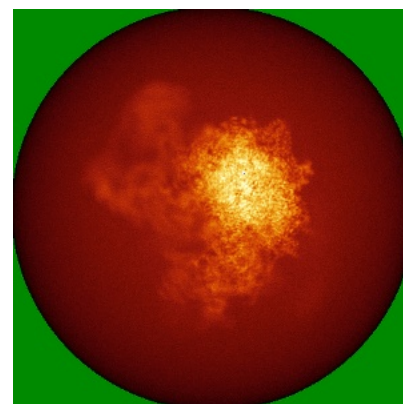
6.4.2 Raw map



X



Y



Z

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

6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.02. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



X



Y



Z

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

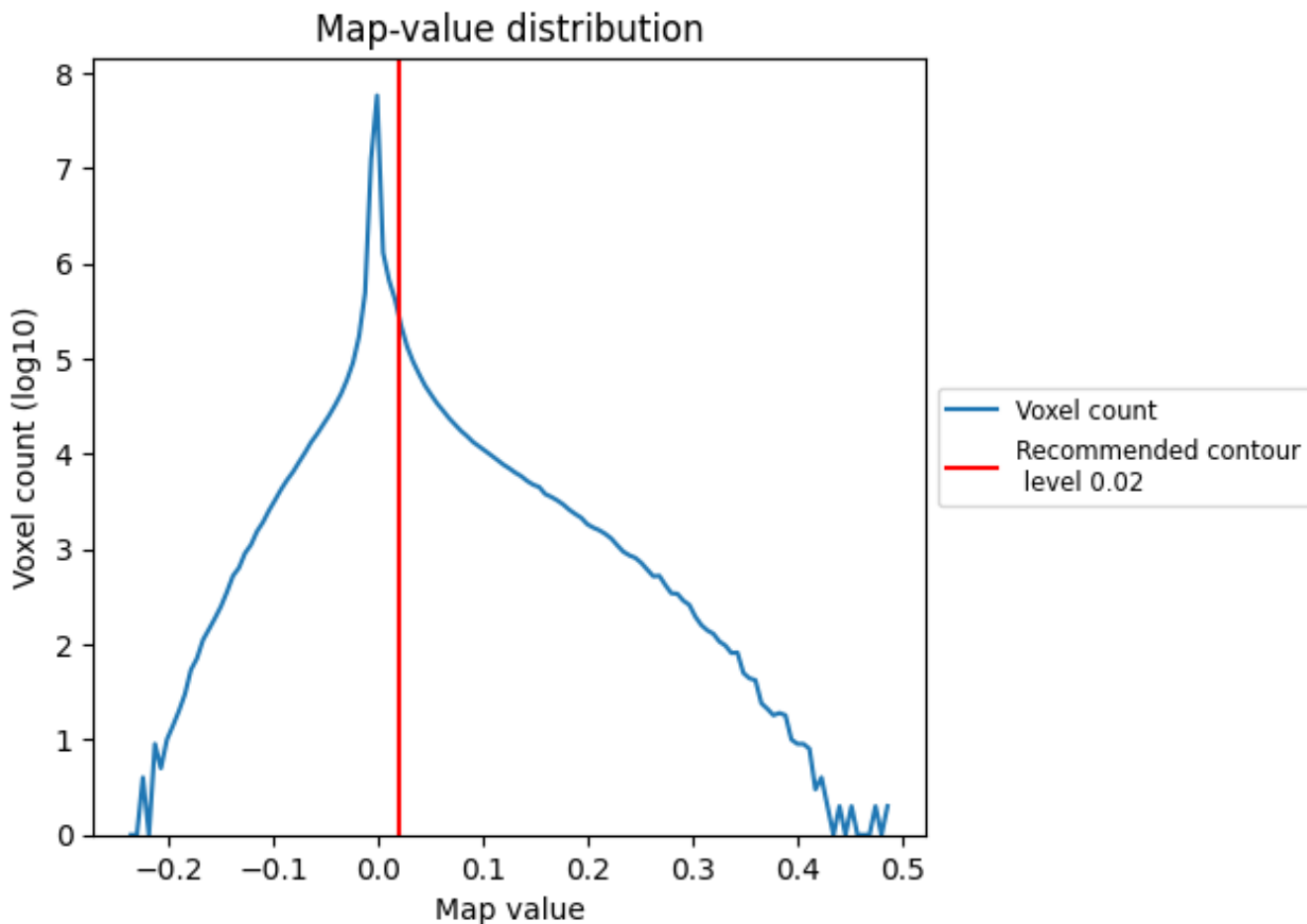
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

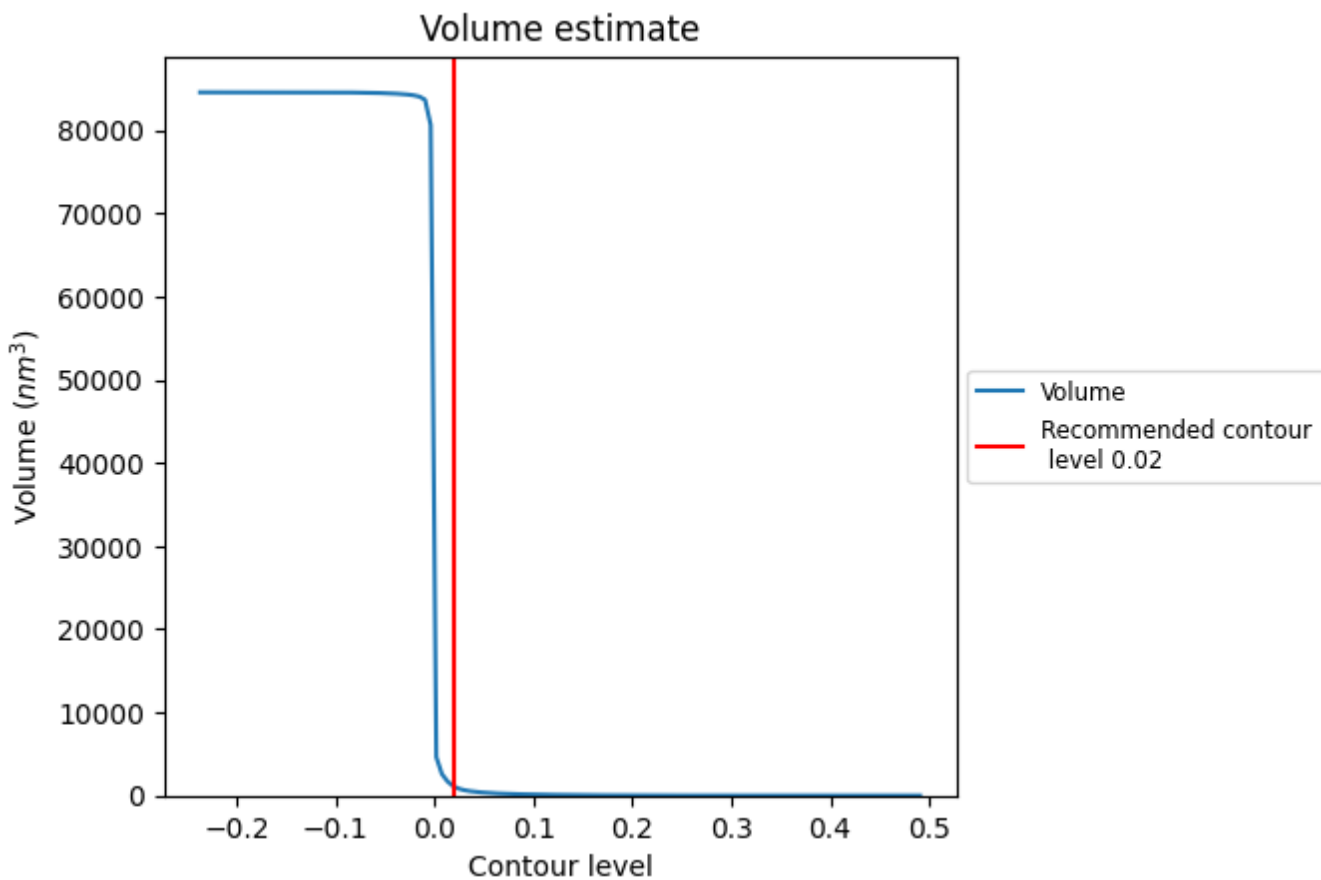
This section contains the results of statistical analysis of the map.

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.

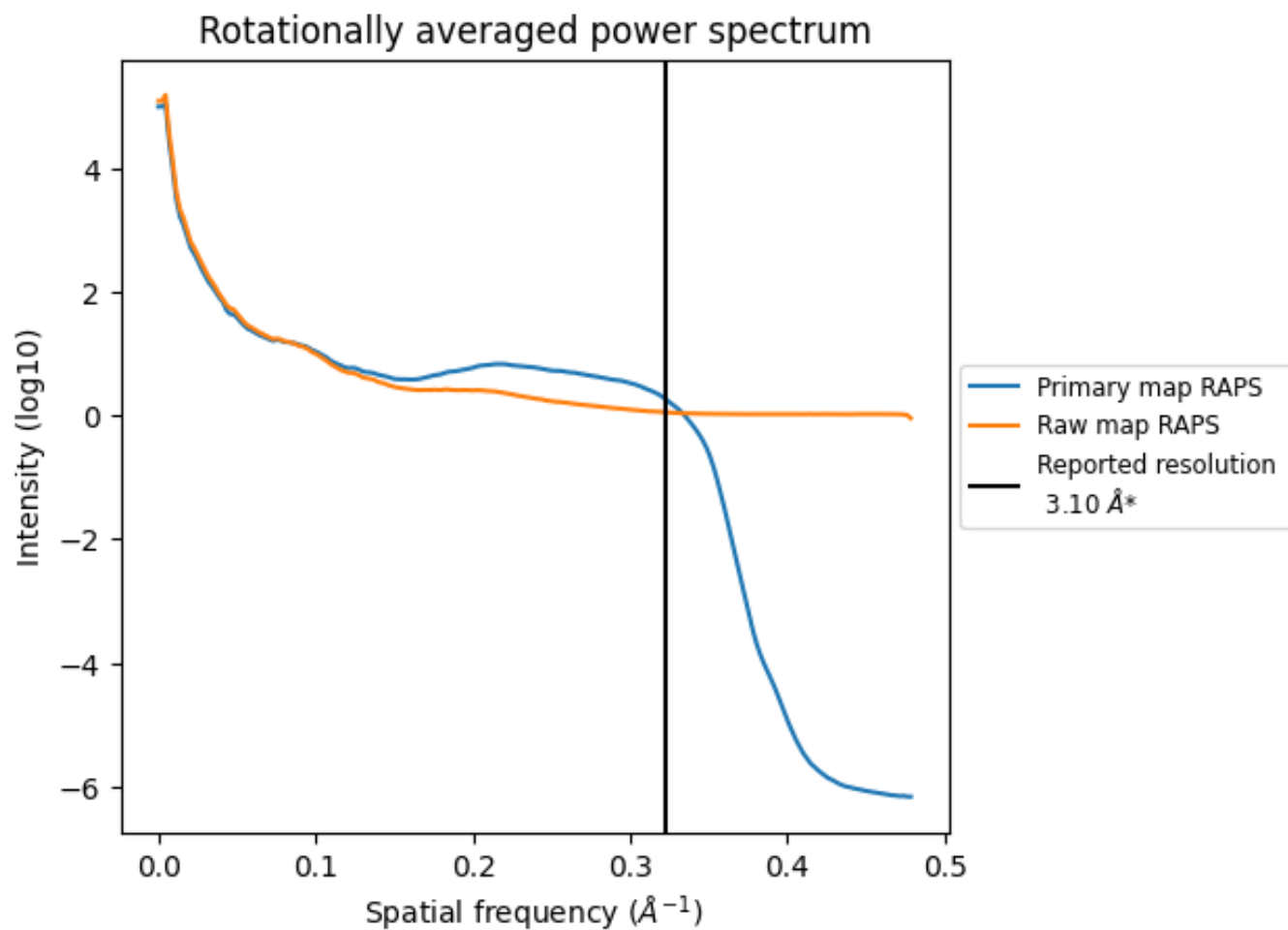
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1087 nm^3 ; this corresponds to an approximate mass of 982 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum [i](#)

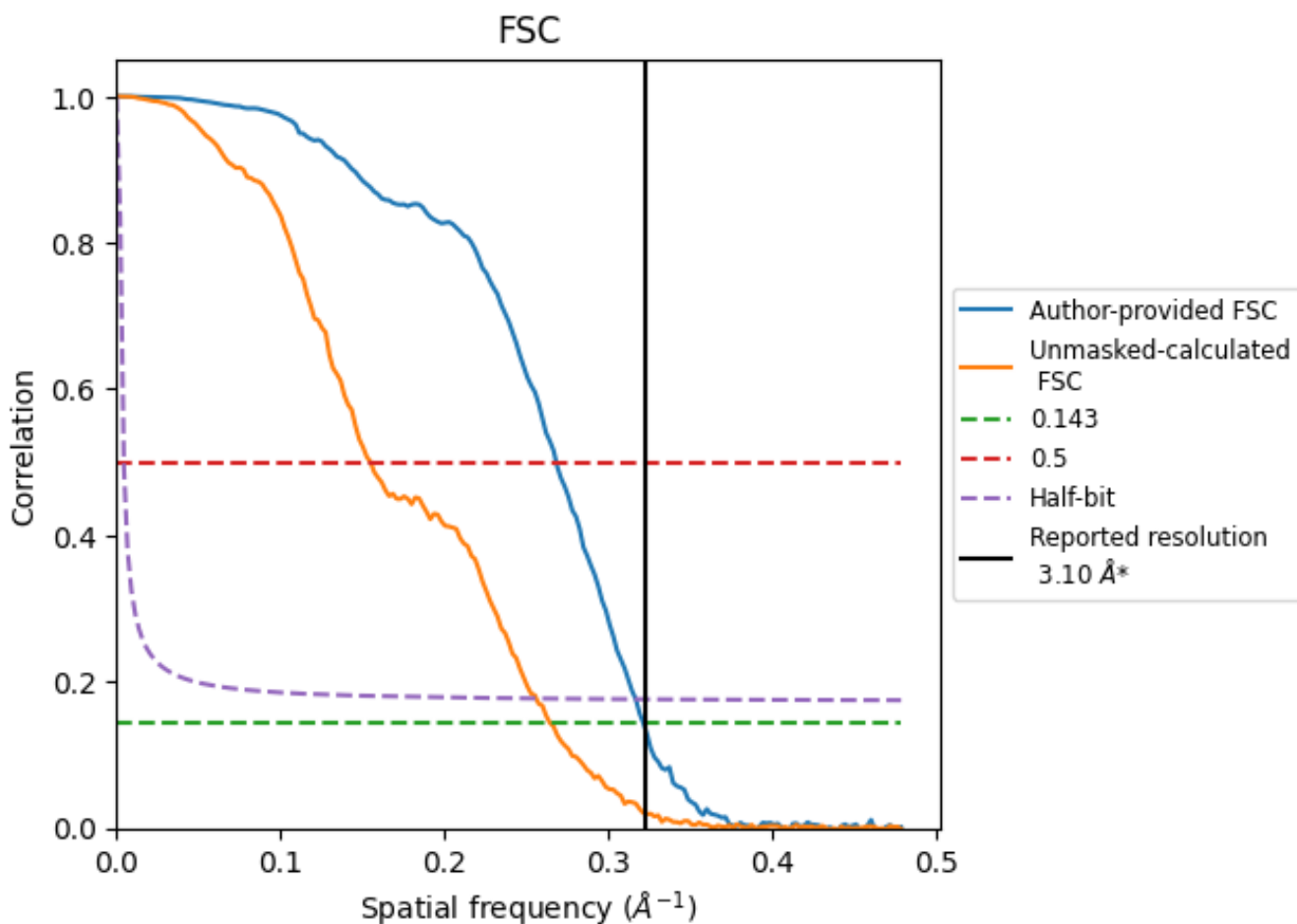


*Reported resolution corresponds to spatial frequency of 0.323 Å⁻¹

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 0.323 Å⁻¹

8.2 Resolution estimates [i](#)

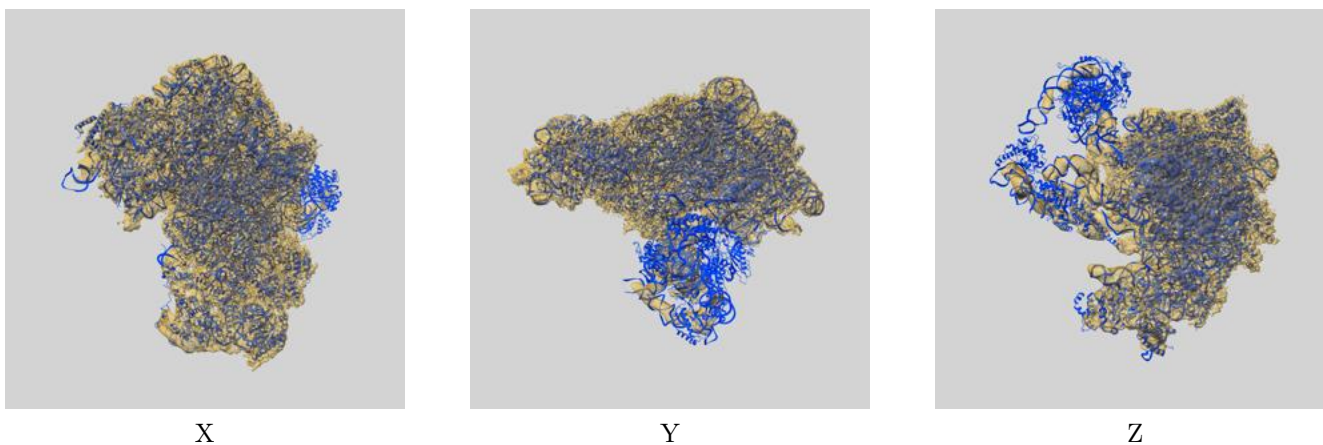
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.10	-	-
Author-provided FSC curve	3.11	3.73	3.16
Unmasked-calculated*	3.78	6.45	3.91

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.78 differs from the reported value 3.1 by more than 10 %

9 Map-model fit [i](#)

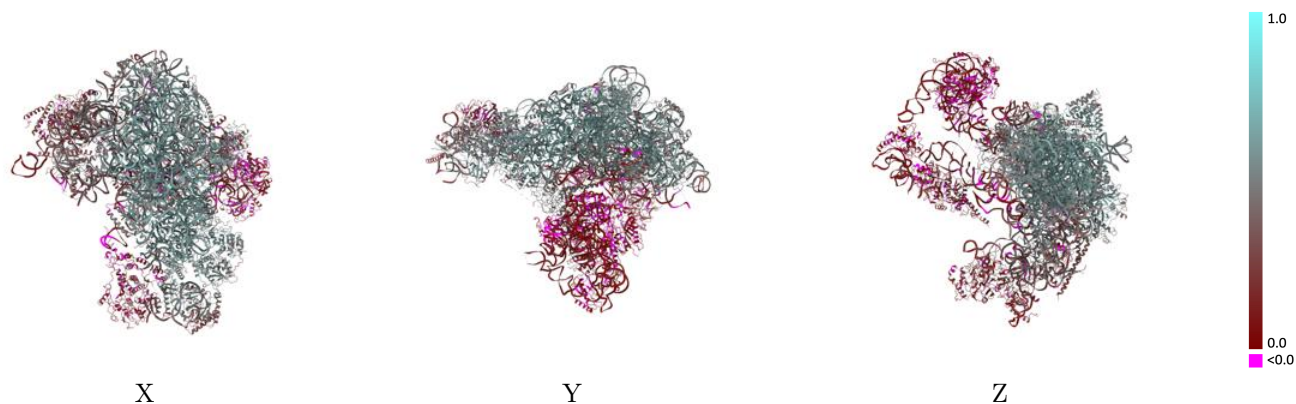
This section contains information regarding the fit between EMDB map EMD-35281 and PDB model 8I9R. Per-residue inclusion information can be found in section 3 on page 14.

9.1 Map-model overlay [i](#)



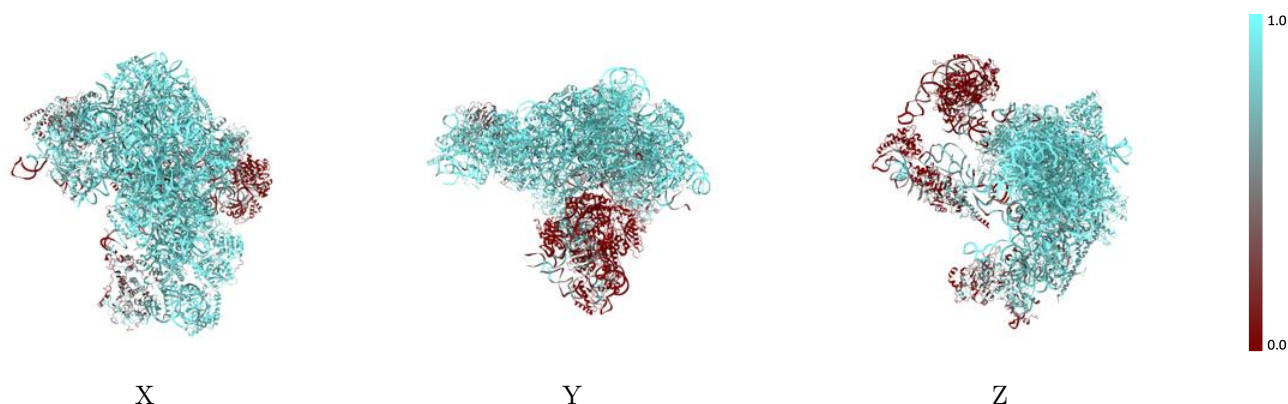
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



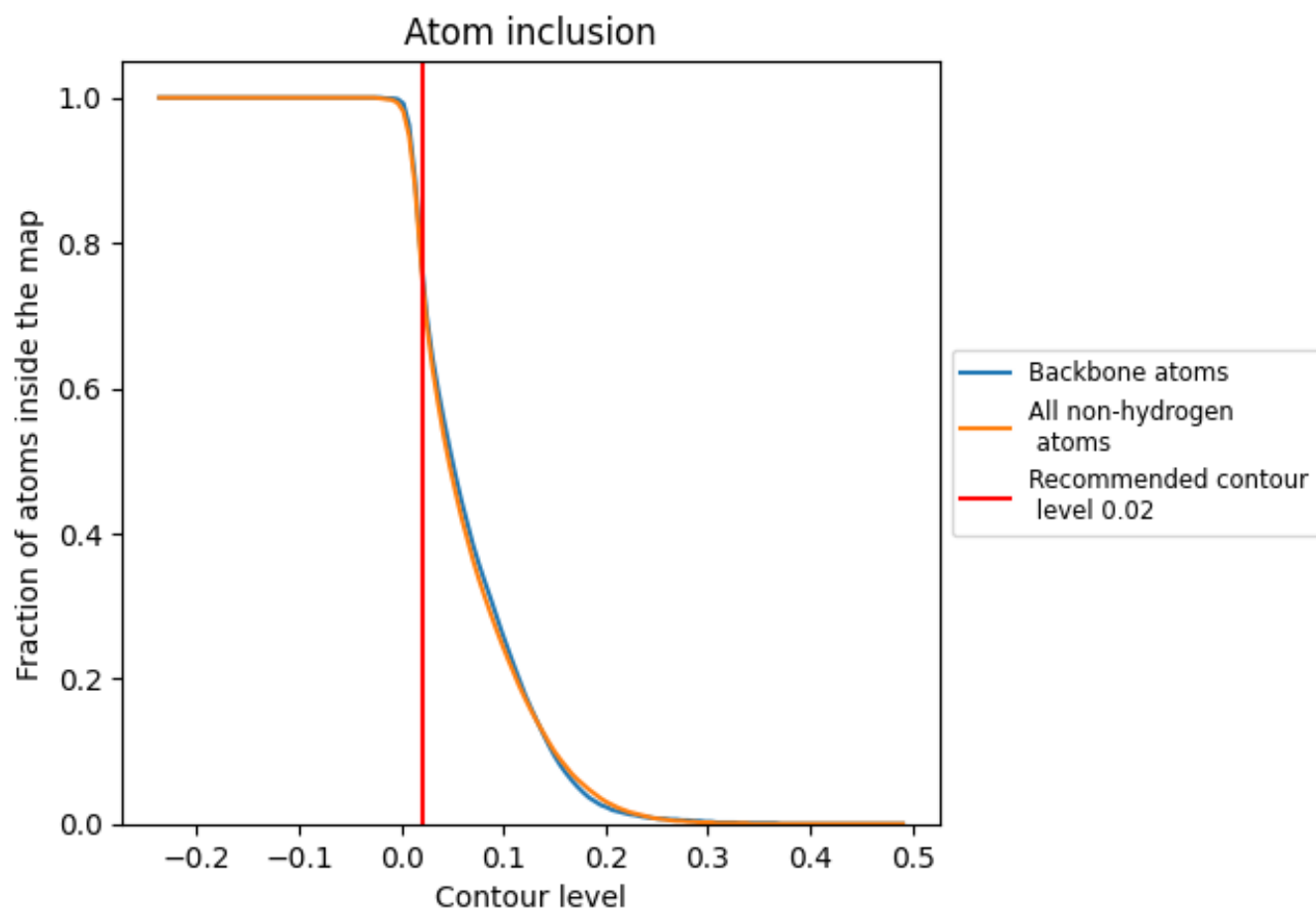
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 77% of all backbone atoms, 76% 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 (0.02) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7610	 0.4050
C1	 0.8260	 0.4090
C2	 0.9150	 0.4740
C4	 0.1690	 0.1000
CA	 0.8840	 0.4900
CB	 0.8480	 0.4450
CC	 0.6290	 0.3320
CE	 0.9000	 0.5130
CG	 0.5290	 0.1640
CH	 0.3820	 0.2080
CI	 0.8720	 0.4490
CJ	 0.4900	 0.1550
CM	 0.6900	 0.3100
CN	 0.3660	 0.1790
CP	 0.1970	 0.1380
CQ	 0.6160	 0.2450
CR	 0.9140	 0.5420
CU	 0.8040	 0.4050
CX	 0.6150	 0.3430
Cc	 0.8530	 0.5030
Cd	 0.9130	 0.5400
Ce	 0.9410	 0.5680
Cf	 0.7690	 0.4040
Cg	 0.7650	 0.3980
Ch	 0.7200	 0.3060
Cx	 0.1520	 0.1030
Cy	 0.0000	 0.0720
LB	 0.7710	 0.3770
LC	 0.9510	 0.5860
LD	 0.0010	 0.0380
LE	 0.9140	 0.5320
LF	 0.9320	 0.5550
LG	 0.9050	 0.5470
LJ	 0.0380	 0.0310
LL	 0.9420	 0.5770



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Chain	Atom inclusion	Q-score
LM	 0.8660	 0.4960
LN	 0.9470	 0.5970
LO	 0.9350	 0.5440
LP	 0.8320	 0.4810
LQ	 0.9480	 0.5760
LS	 0.9110	 0.5070
LT	 0.7370	 0.3560
LV	 0.3700	 0.1870
LY	 0.9300	 0.5690
Le	 0.9430	 0.5900
Lf	 0.9470	 0.5880
Lh	 0.8670	 0.4900
Li	 0.8930	 0.5270
Lj	 0.9590	 0.6060
Lq	 0.0080	 0.0760