



wwPDB EM Validation Summary Report ⓘ

May 21, 2024 – 04:21 PM EDT

PDB ID : 8UQM
EMDB ID : EMD-42474
Title : Escherichia coli transcription-translation coupled complex class B (TTC-B) containing RfaH in loaded state, NusA, mRNA with a 24 nt long spacer, and fMet-tRNAs in E-site and P-site of the ribosome
Authors : Molodtsov, V.; Wang, C.; Ebright, R.H.
Deposited on : 2023-10-24
Resolution : 5.30 Å(reported)

This is a wwPDB EM Validation Summary 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.dev92
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

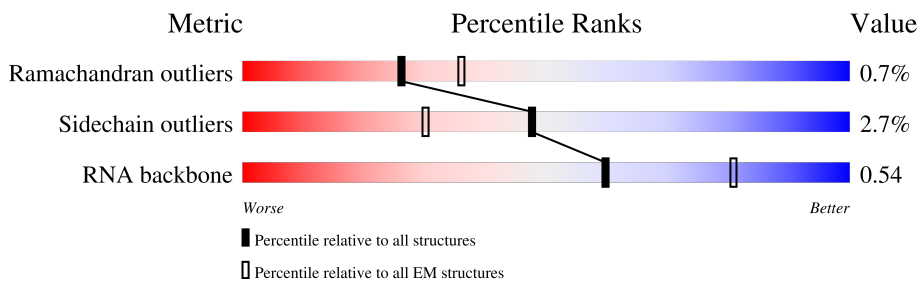
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 5.30 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.






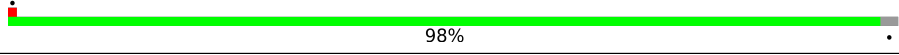



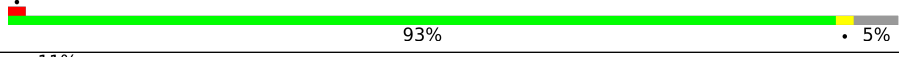


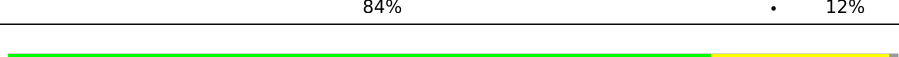
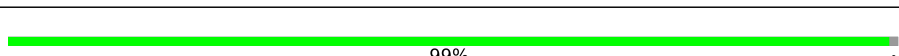
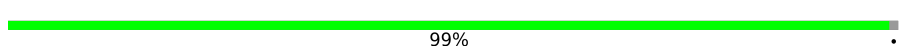
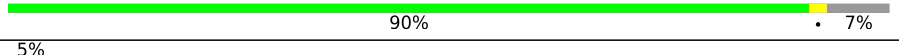

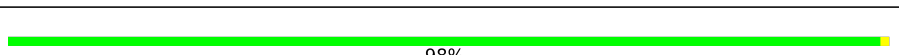
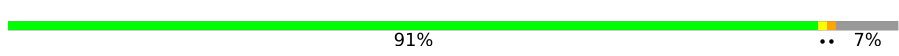


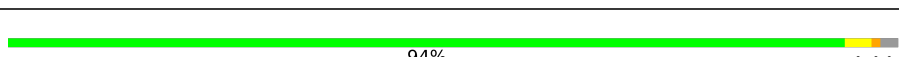
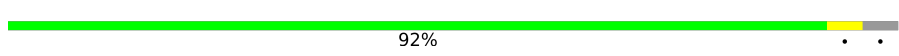




Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	0	103	
2	1	110	
3	2	100	
4	3	104	
5	4	94	
6	5	36	
7	6	36	
8	7	41	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	9	165	 84% 10%
10	A	76	 51% 47%
10	B	76	 51% 47%
11	AA	1342	 98%
12	AB	162	 51% 44% 5%
13	AC	329	 67% 33%
13	AD	329	 12% 91% 9%
14	AE	1407	 93% 5%
15	AF	91	 11% 90% 10%
16	AG	495	 15% 69% 27%
17	C	75	 84% 12%
18	D	1542	 79% 20%
19	E	87	 99%
20	F	71	 99%
21	G	241	 90% 7%
22	H	557	 5% 45% 54%
23	I	233	 87% 11%
24	J	206	 98%
25	K	167	 91% 7%
26	L	135	 74% 23%
27	M	179	 83% 16%
28	N	130	 98%
29	O	130	 94%
30	P	103	 92%
31	Q	129	 88% 9%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
32	R	124	98%
33	S	101	98%
34	T	89	98%
35	U	82	98%
36	V	84	94% 5%
37	W	92	87% 10%
38	X	118	95%
39	Y	142	6% 98%
40	Z	121	25% 75%
41	a	2904	80% 19%
42	b	85	89% 11%
43	c	78	96%
44	d	120	88% 12%
45	e	63	95%
46	f	59	97%
47	g	70	93% 6%
48	h	273	98%
49	i	57	96%
50	j	209	99%
51	k	55	95% 5%
52	l	201	99%
53	m	46	100%
54	n	179	97%
55	o	65	94% 5%
56	p	177	98%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
57	q	38	 100%
58	r	149	 100%
59	s	142	 97%
60	t	123	 97%
61	u	144	 98%
62	v	136	 99%
63	w	127	 89% 5% 6%
64	x	117	 99%
65	y	115	 97%
66	z	118	 97%

2 Entry composition [i](#)

There are 68 unique types of molecules in this entry. The entry contains 280205 atoms, of which 98639 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 protein called Ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
1	0	103	1655	516	839	153	145	2	0	0

- Molecule 2 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
2	1	110	1779	532	922	166	156	3	0	0

- Molecule 3 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
3	2	94	1557	470	811	140	134	2	0	0

- Molecule 4 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	H	N	O		
4	3	103	1632	498	844	148	142	0	0

- Molecule 5 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
5	4	94	1533	479	780	137	134	3	0	0

- Molecule 6 is a DNA chain called NT DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
6	5	31	636	303	117	185	31	0	0

- Molecule 7 is a DNA chain called T DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	6	36	Total	C	N	O	P	0	0
			706	337	119	215	35		

- Molecule 8 is a RNA chain called mRNA with 24 nt long spacer.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	7	37	Total	C	N	O	P	0	0
			772	345	110	280	37		

- Molecule 9 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	9	148	Total	C	N	O	S	0	0
			1117	705	196	209	7		

- Molecule 10 is a RNA chain called E-site and P-site fMet-tRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace	
10	A	76	Total	C	H	N	O	P	0	0
			2446	723	826	295	527	75		
10	B	76	Total	C	H	N	O	P	0	0
			2434	723	814	295	527	75		

- Molecule 11 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	AA	1316	Total	C	N	O	S	0	0
			10381	6514	1810	2014	43		

- Molecule 12 is a protein called Transcription antitermination protein RfaH.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	AB	161	Total	C	N	O	S	0	0
			1286	828	222	232	4		

- Molecule 13 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	AC	221	Total	C	N	O	S	0	0
			1698	1060	299	333	6		

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	AD	299	2078	1287	378	407	6	0	0

- Molecule 14 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	AE	1337	10404	6535	1856	1963	50	0	0

- Molecule 15 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	AF	82	650	396	122	131	1	0	0

- Molecule 16 is a protein called Transcription termination/antitermination protein NusA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	AG	495	3852	2396	669	774	13	0	0

- Molecule 17 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
17	C	66	1103	344	559	102	97	1	0	0

- Molecule 18 is a RNA chain called 16S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			P
18	D	1524	49126	14585	16423	6003	10591	1524	0	0

- Molecule 19 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
19	E	86	1388	414	719	138	114	3	0	0

- Molecule 20 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
20	F	70	1218	366	629	125	97	1	0	0

- Molecule 21 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
21	G	225	3545	1113	1785	316	323	8	0	0

- Molecule 22 is a protein called 30S ribosomal protein S1.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
22	H	259	3184	1073	1454	305	349	3	0	0

- Molecule 23 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
23	I	208	3346	1036	1710	307	290	3	0	0

- Molecule 24 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
24	J	205	3350	1026	1707	315	298	4	0	0

- Molecule 25 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
25	K	156	2348	717	1196	217	212	6	0	0

- Molecule 26 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
26	L	104	1694	536	846	153	152	7	0	0

- Molecule 27 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
27	M	151	2416	735	1235	227	215	4	0	0

- Molecule 28 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
28	N	129	2010	616	1031	173	184	6	0	0

- Molecule 29 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
29	O	127	2092	634	1070	206	179	3	0	0

- Molecule 30 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
30	P	99	1621	495	831	151	143	1	0	0

- Molecule 31 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
31	Q	117	1764	540	887	174	160	3	0	0

- Molecule 32 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
32	R	121	1940	580	1001	194	161	4	0	0

- Molecule 33 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
33	S	100	1649	499	844	164	139	3	0	0

- Molecule 34 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace	
34	T	88	Total	C	H	N	O	S	0	0
			1448	439	734	144	130	1		

- Molecule 35 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace	
35	U	82	Total	C	H	N	O	S	0	0
			1315	406	666	128	114	1		

- Molecule 36 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace	
36	V	80	Total	C	H	N	O	S	0	0
			1339	411	691	121	113	3		

- Molecule 37 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace	
37	W	83	Total	C	H	N	O	S	0	0
			1351	424	688	126	111	2		

- Molecule 38 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace	
38	X	116	Total	C	H	N	O	S	0	0
			1864	558	964	181	158	3		

- Molecule 39 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	Y	141	Total	C	N	O	S	0	0
			1032	651	179	196	6		

- Molecule 40 is a protein called 50S ribosomal protein L7/L12.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	Z	30	Total	C	N	O	S	0	0
			227	144	33	47	3		

- Molecule 41 is a RNA chain called 23S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	P		
41	a	2880	92918	27587	31077	11398	19976	2880	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
a	887	A	U	conflict	GB 937521852

- Molecule 42 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
42	b	76	1181	360	599	117	104	1	0	0

- Molecule 43 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
43	c	77	1277	388	652	129	106	2	0	0

- Molecule 44 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	P		
44	d	120	3870	1144	1301	468	837	120	0	0

- Molecule 45 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
45	e	62	1032	308	531	98	94	1	0	0

- Molecule 46 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	H	N	O	S		
46	f	58	936	281	488	87	78	2	0	0

- Molecule 47 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
47	g	66	1042	323	520	99	94	6	0	0

- Molecule 48 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
48	h	271	4236	1288	2154	423	364	7	0	0

- Molecule 49 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
49	i	56	903	269	459	94	80	1	0	0

- Molecule 50 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
50	j	209	3182	979	1617	288	294	4	0	0

- Molecule 51 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			
51	k	52	890	275	464	78	73		0	0

- Molecule 52 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
52	l	201	3171	974	1619	283	290	5	0	0

- Molecule 53 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace	
			Total	C	H	N	O			S
53	m	46	795	228	418	90	57	2	0	0

- Molecule 54 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace	
54	n	177	Total	C	H	N	O	S	0	0
			2853	899	1443	249	256	6		

- Molecule 55 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace	
55	o	64	Total	C	H	N	O	S	0	0
			1076	323	572	105	74	2		

- Molecule 56 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace	
56	p	175	Total	C	H	N	O	S	0	0
			2671	826	1358	241	244	2		

- Molecule 57 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace	
57	q	38	Total	C	H	N	O	S	0	0
			645	185	343	65	48	4		

- Molecule 58 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace	
58	r	149	Total	C	H	N	O	S	0	0
			2259	699	1148	197	214	1		

- Molecule 59 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace	
59	s	142	Total	C	H	N	O	S	0	0
			2291	714	1162	212	199	4		

- Molecule 60 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace	
60	t	123	Total	C	H	N	O	S	0	0
			1969	593	1023	181	166	6		

- Molecule 61 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace	
61	u	144	Total	C	H	N	O	S	0	0
			2182	654	1129	207	190	2		

- Molecule 62 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace	
62	v	136	Total	C	H	N	O	S	0	0
			2231	686	1157	205	177	6		

- Molecule 63 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace	
63	w	119	Total	C	H	N	O	S	0	0
			1945	588	994	195	163	5		

- Molecule 64 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace	
64	x	116	Total	C	H	N	O		0	0
			1815	552	923	178	162			

- Molecule 65 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace	
65	y	114	Total	C	H	N	O	S	0	0
			1879	574	962	179	163	1		

- Molecule 66 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace	
66	z	117	Total	C	H	N	O		0	0
			1967	604	1020	192	151			

- Molecule 67 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
67	AE	1	Total	Mg	0
			1	1	

- Molecule 68 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
68	AE	2	Total 2	Zn 2	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: Ribosomal protein L21

Chain 0:  100%


There are no outlier residues recorded for this chain.

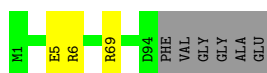
- Molecule 2: 50S ribosomal protein L22

Chain 1:  100%

There are no outlier residues recorded for this chain.

- Molecule 3: 50S ribosomal protein L23

Chain 2:  91% 6%



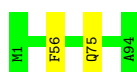
- Molecule 4: 50S ribosomal protein L24

Chain 3:  99%



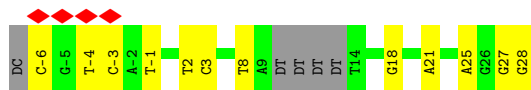
- Molecule 5: 50S ribosomal protein L25

Chain 4:  98%

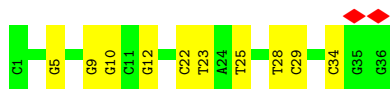


- Molecule 6: NT DNA

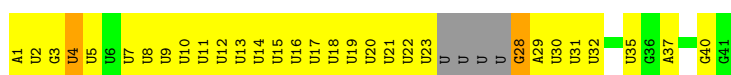
Chain 5:  11% 53% 33% 14%



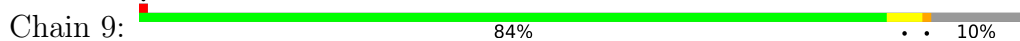
- Molecule 7: T DNA



- Molecule 8: mRNA with 24 nt long spacer



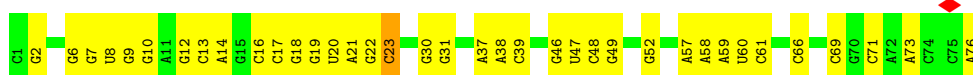
- Molecule 9: 50S ribosomal protein L10



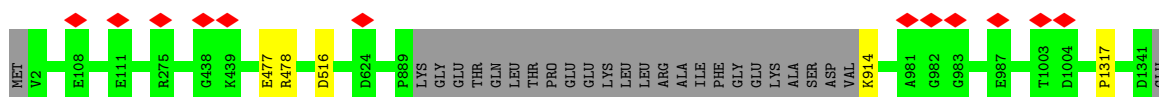
- Molecule 10: E-site and P-site fMet-tRNA



- Molecule 10: E-site and P-site fMet-tRNA

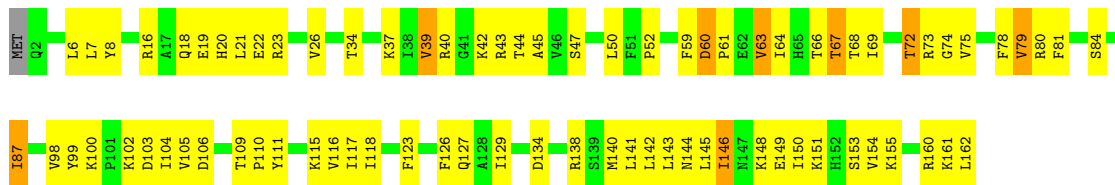


- Molecule 11: DNA-directed RNA polymerase subunit beta



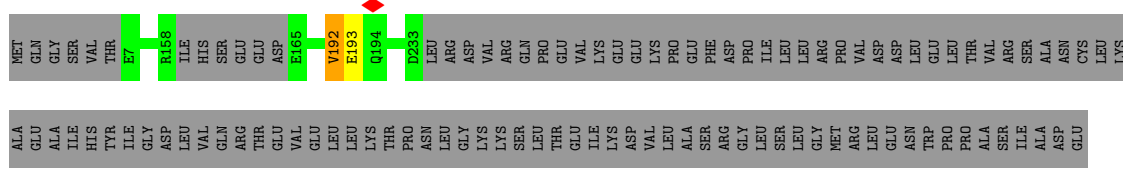
- Molecule 12: Transcription antitermination protein RfaH

Chain AB: 

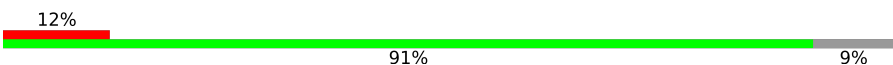


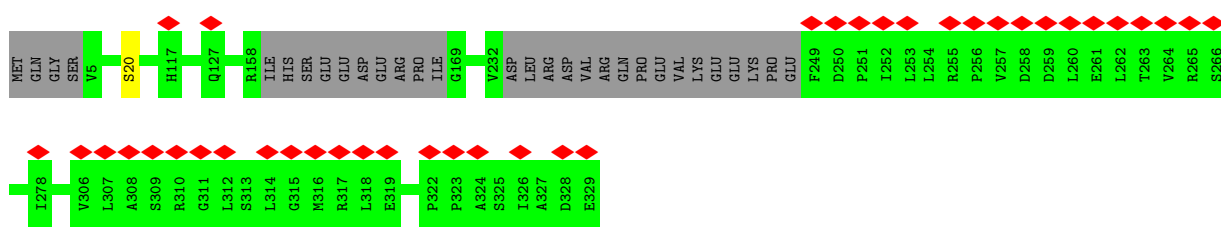
• Molecule 13: DNA-directed RNA polymerase subunit alpha

Chain AC: 



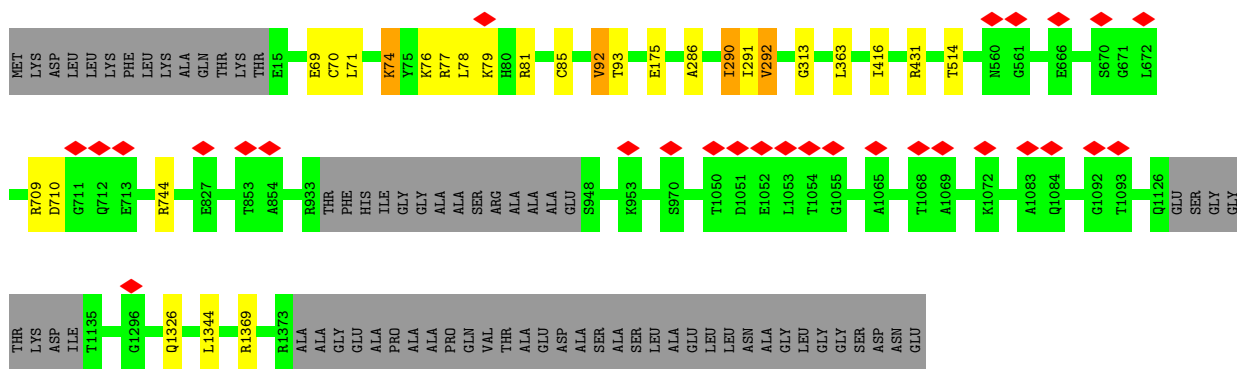
• Molecule 13: DNA-directed RNA polymerase subunit alpha

Chain AD: 



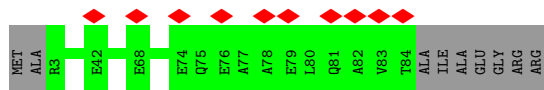
• Molecule 14: DNA-directed RNA polymerase subunit beta'

Chain AE: 

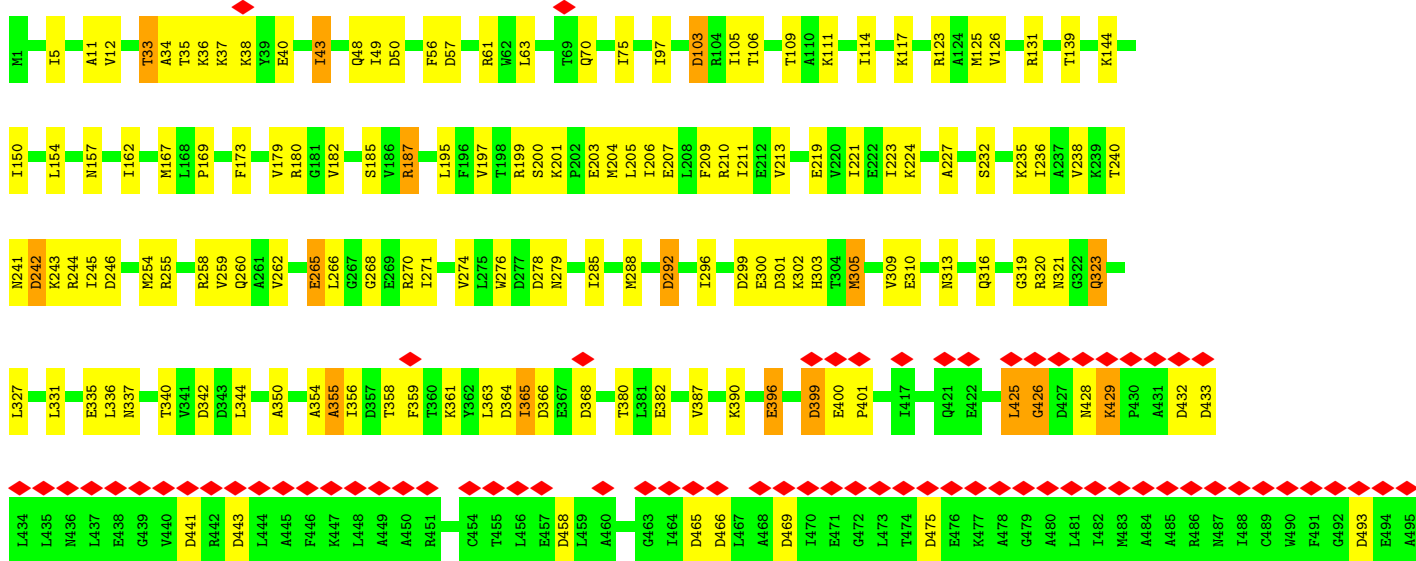
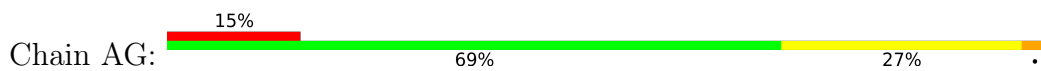


• Molecule 15: DNA-directed RNA polymerase subunit omega

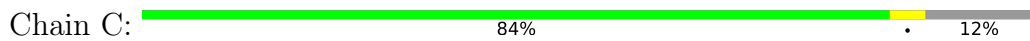
Chain AF: 



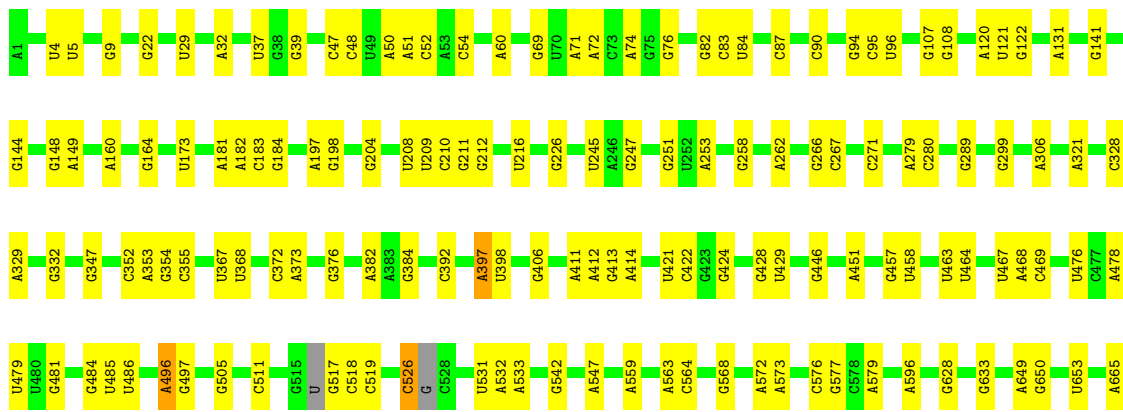
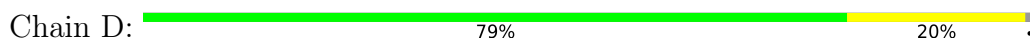
• Molecule 16: Transcription termination/antitermination protein NusA

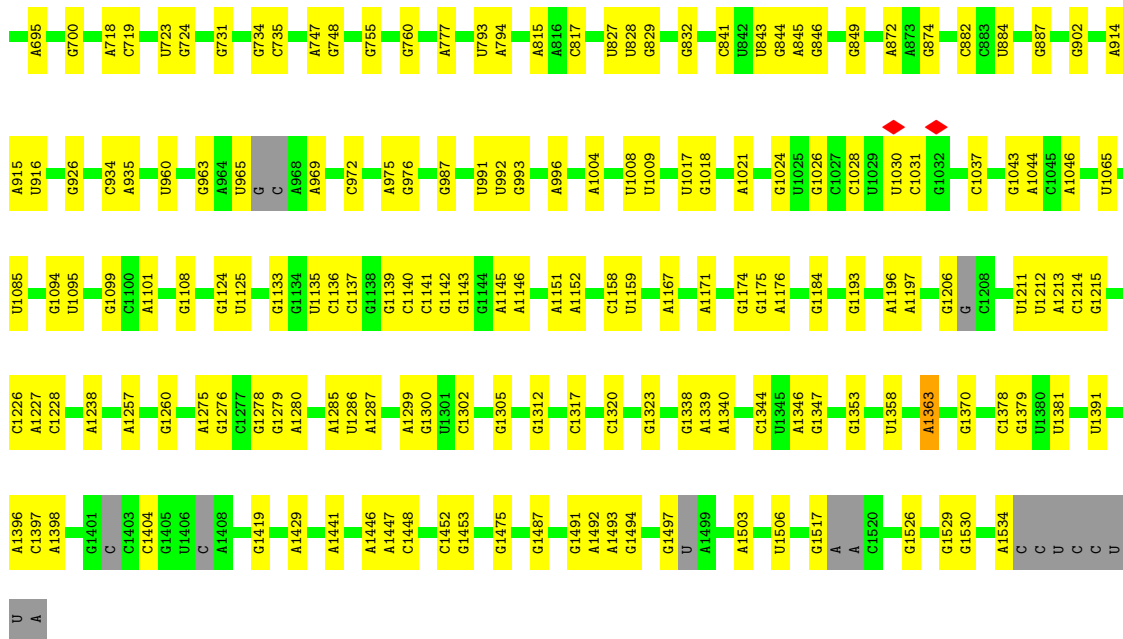


• Molecule 17: 30S ribosomal protein S18



• Molecule 18: 16S rRNA





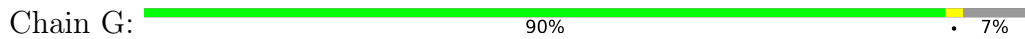
- Molecule 19: 30S ribosomal protein S20



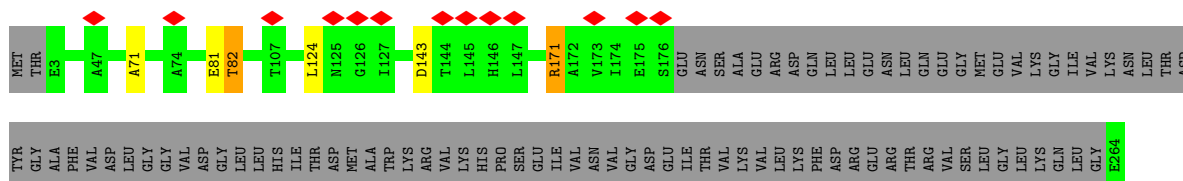
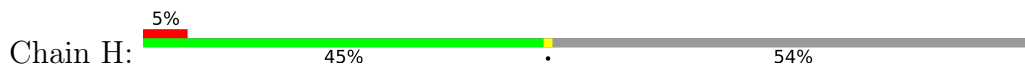
- Molecule 20: 30S ribosomal protein S21

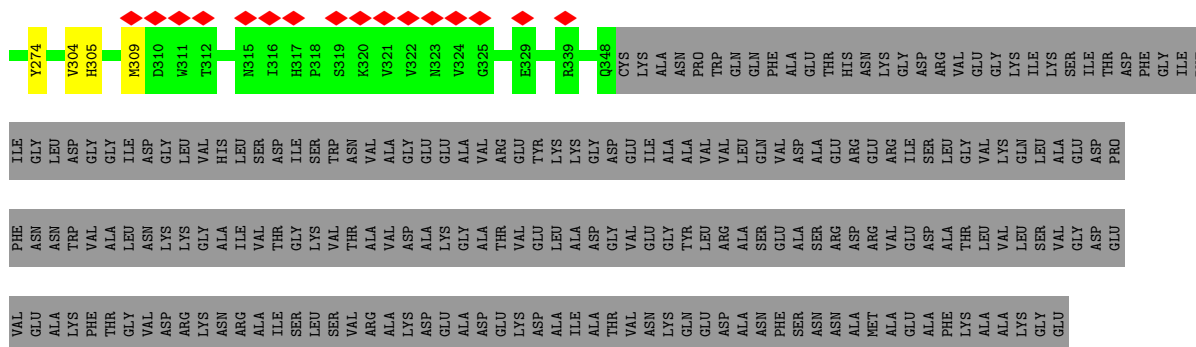


- Molecule 21: 30S ribosomal protein S2

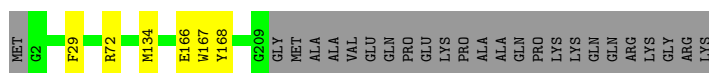
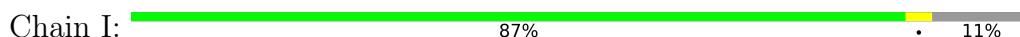


- Molecule 22: 30S ribosomal protein S1





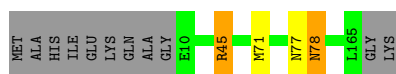
• Molecule 23: 30S ribosomal protein S3



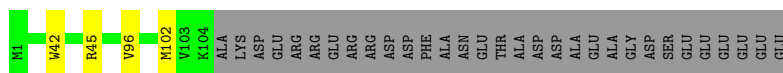
• Molecule 24: 30S ribosomal protein S4



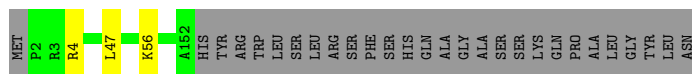
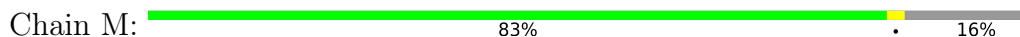
• Molecule 25: 30S ribosomal protein S5



• Molecule 26: 30S ribosomal protein S6



• Molecule 27: 30S ribosomal protein S7



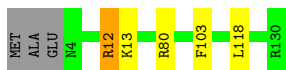
• Molecule 28: 30S ribosomal protein S8





- Molecule 29: 30S ribosomal protein S9

Chain O: 94%



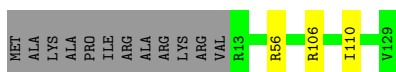
- Molecule 30: 30S ribosomal protein S10

Chain P: 92%



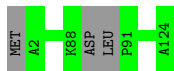
- Molecule 31: 30S ribosomal protein S11

Chain Q: 88%



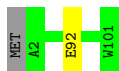
- Molecule 32: 30S ribosomal protein S12

Chain R: 98%



- Molecule 33: 30S ribosomal protein S14

Chain S: 98%



- Molecule 34: 30S ribosomal protein S15

Chain T: 98%

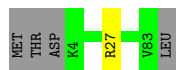


- Molecule 35: 30S ribosomal protein S16

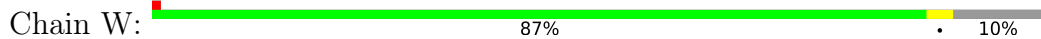
Chain U: 98%



- Molecule 36: 30S ribosomal protein S17



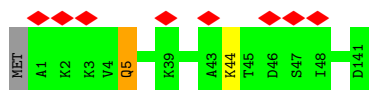
- Molecule 37: 30S ribosomal protein S19



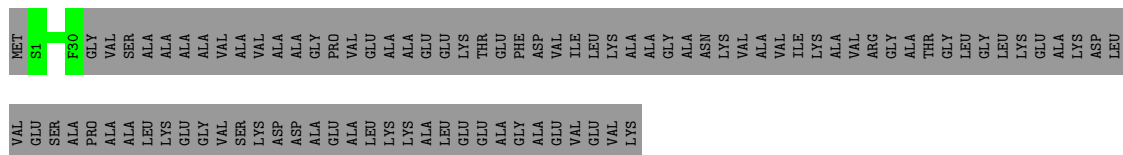
- Molecule 38: 30S ribosomal protein S13



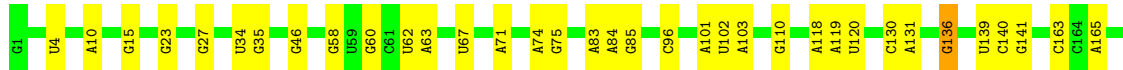
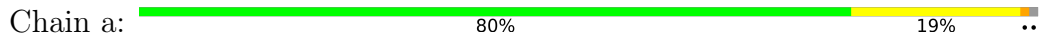
- Molecule 39: 50S ribosomal protein L11



- Molecule 40: 50S ribosomal protein L7/L12



- Molecule 41: 23S rRNA

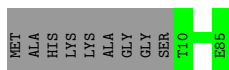


C2606	G2458	A2322	G2162	C2065	U1923	U1768	U1564	C1345	G1107	C995	A819	A609	G411	A181
U2609	G2470	G2325	A2163	G2056	C1924	C1764	U1559	U1352	A1111	A996	U827	A613	A412	A196
C2611	U2474	C2326	C2164	A2060	U1926	U1773	U1559	U1352	G1112	U999	U828	A614	A420	G215
U2613	C2475	A2327	C2165	G2061	G1929	C1774	A1566	A1365	U1119	C1005	A845	A616	C420	G216
U2629	A2476	U2329	A2169	A2062	G1930	U1775	A1569	G1388	G1122	U1012	U846	A626	G424	A221
G2630	U2477	C2332	A2170	U2068	A1936	A1791	C1577	A1378	G1128	C1013	G888	A627	U451	A222
G2638	A2478	A2333	U2172	G	U1938	C1800	U1578	A1379	U1019	U1019	G859	A637	A457	C235
G2663	G2484	U2334	C2178	A2070	U1940	A1808	A1580	A1380	A1132	A1020	G869	C645	A477	G248
G2669	U2491	A2335	U2182	C2073	U1955	G1811	C1582	A1383	A1133	A1021	A878	U646	G451	C249
A2670	A2497	C2338	A2183	U	U1961	G1816	A1583	A1392	U1141	G1026	G881	A654	G491	C253
G2671	C2499	C2339	U2185	A2097	C	G1817	A1584	A1395	A1142	U1033	G882	A654	G491	G251
U2689	G2502	U2347	U2188	U2098	U1963	U1818	C1585	A1396	U1169	U1033	U884	A668	A501	C264
U2690	A	C2347	U2189	U2099	G1964	G1818	C1585	A1396	C1170	G1041	C885	U686	A503	A265
G2714	U2505	C2350	G2193	G2100	A1966	A1829	U1589	U1406	A1169	G1045	C888	G704	A504	G266
C2715	U2506	G2100	U2194	G2110	C1967	G	A1590	G1407	C1170	A1046	U891	G704	A505	C267
A2726	C2512	U2111	A2198	U2111	U1971	C1886	A1613	U1408	U1173	C1045	C891	U710	C509	G271
A2744	A2513	G2112	G2204	U2113	G1972	A1847	G1613	G1416	U1173	C1083	U894	C717	G620	A272
A2748	U2519	U2114	A2211	G2114	A1987	A1848	C1617	G1417	U1174	A1069	G893	G729	U621	C275
U2756	C2520	G2116	A2212	G2115	U1991	A1857	A	G1418	U1175	A1069	U895	A730	A522	U276
A2757	G2525	U2118	A2225	A2117	U1992	A1858	G1519	G1418	U1176	U1061	C897	G738	A529	G277
A2765	G2529	G2121	C2226	U2118	U1993	U1859	U1647	G1419	U1177	C1084	C898	G738	A529	A278
G2777	G2535	U2122	U2229	G2121	C1997	G1862	U1648	G1452	G1225	U1066	G907	A742	C551	G285
A2778	C2551	G2123	G2238	G2124	G2002	U1864	A1655	A1453	G1238	A1068	A910	U744	A532	G291
G2791	U	G2125	G2239	G2125	G2012	G1869	U1655	G1482	G1248	A1070	G914	G	C542	A311
A2792	U2554	G2127	A2425	A2126	A2013	A1870	U1665	G1482	A1253	G1071	C915	U	G543	G329
C2793	A2426	G2128	G2252	G2128	A2020	A1872	U1674	A1490	G1266	C1072	U931	G748	C544	A330
U2796	G2429	U2131	A2268	U2131	U2021	G1873	A1677	U1497	U1257	G1074	A941	G757	U545	C353
U2797	A2430	U2132	A2278	U2132	G2023	G1906	U1677	U1497	G1266	C1079	G942	A764	U547	G361
U2798	U2431	G2133	A2278	G2133	G2027	G1907	G1703	A1503	G1266	A1080	A945	C765	G549	A362
A2800	A2434	U2139	C2283	U2139	U2028	U	U1714	A1508	G1271	U1082	A946	G775	C551	A371
G2801	A2435	G2140	A2284	G2140	G2029	U	G1715	A1509	A1272	A1083	C946	G776	G551	G372
U2818	U2441	G2141	A2287	G2141	A	A1913	U1729	G1510	U1273	A1084	G953	A782	A563	U373
G2819	G2444	C2146	A2288	C2146	G2032	U	U1729	A1515	A1276	A1086	U	A785	U569	G375
A2820	G	A2147	A2288	A2147	A2033	U	C1730	G1529	G1300	A1088	G956	G784	U573	C383
A2823	U2447	A2154	A2297	A2154	C2043	U	C1732	G1530	A1301	A1089	A960	A800	A575	C385
G2824	G2447	U2305	U2305	G2157	G2049	A1918	G1738	U1534	A1321	A1090	C961	A805	U588	G386
G2825	A2448	A2308	A2309	A2158	G2050	A1919	G1760	A1536	G1331	A1095	G974	G805	U603	G396
	C2456	A2309		G2159	A2052	A1921	G1760	A1536	G1334	U1101	A993	C812	A603	U405



- Molecule 42: 50S ribosomal protein L27

Chain b: 89% 11%



- Molecule 43: 50S ribosomal protein L28

Chain c: 96% ..



- Molecule 44: 5S rRNA

Chain d: 88% 12%



- Molecule 45: 50S ribosomal protein L29

Chain e: 95% ..



- Molecule 46: 50S ribosomal protein L30

Chain f: 97% ..



- Molecule 47: 50S ribosomal protein L31

Chain g: 93% • 6%



- Molecule 48: 50S ribosomal protein L2

Chain h: 98% ..



- Molecule 49: 50S ribosomal protein L32

Chain i: 96%



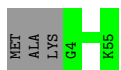
- Molecule 50: 50S ribosomal protein L3

Chain j: 99%



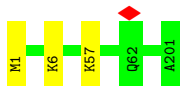
- Molecule 51: 50S ribosomal protein L33

Chain k: 95% 5%



- Molecule 52: 50S ribosomal protein L4

Chain l: 99%



- Molecule 53: 50S ribosomal protein L34

Chain m: 100%

There are no outlier residues recorded for this chain.

- Molecule 54: 50S ribosomal protein L5

Chain n: 97%



- Molecule 55: 50S ribosomal protein L35

Chain o: 94% 5%



- Molecule 56: 50S ribosomal protein L6

Chain p: 98%



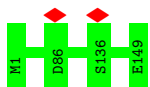
- Molecule 57: 50S ribosomal protein L36

Chain q: 100%

There are no outlier residues recorded for this chain.

- Molecule 58: 50S ribosomal protein L9

Chain r: 100%



- Molecule 59: 50S ribosomal protein L13

Chain s: 97%



- Molecule 60: 50S ribosomal protein L14

Chain t: 97%



- Molecule 61: 50S ribosomal protein L15

Chain u: 98%



- Molecule 62: 50S ribosomal protein L16

Chain v: 99%



- Molecule 63: 50S ribosomal protein L17

Chain w: 89% 5% 6%



- Molecule 64: 50S ribosomal protein L18

Chain x: 99%



- Molecule 65: 50S ribosomal protein L19

Chain y: 97%



- Molecule 66: 50S ribosomal protein L20

Chain z: 97%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	19976	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/\text{\AA}^2$)	28	Depositor
Minimum defocus (nm)	1250	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.030	Depositor
Minimum map value	-0.008	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.0019	Depositor
Map size (Å)	531.968, 531.968, 531.968	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.039, 1.039, 1.039	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: MG, 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	0	0.47	0/829	0.60	0/1107
2	1	0.58	0/864	0.69	0/1156
3	2	0.67	1/752 (0.1%)	0.71	1/1005 (0.1%)
4	3	0.41	0/796	0.55	0/1062
5	4	0.65	2/766 (0.3%)	0.69	0/1025
6	5	1.16	11/712 (1.5%)	1.12	1/1094 (0.1%)
7	6	1.12	8/786 (1.0%)	1.15	2/1206 (0.2%)
8	7	0.54	2/856 (0.2%)	0.89	4/1326 (0.3%)
9	9	0.36	0/1131	0.66	2/1524 (0.1%)
10	A	0.55	1/1810 (0.1%)	1.26	11/2821 (0.4%)
10	B	0.55	1/1810 (0.1%)	1.26	11/2821 (0.4%)
11	AA	0.43	0/10547	0.61	2/14232 (0.0%)
12	AB	0.63	0/1317	0.58	0/1786
13	AC	0.41	0/1718	0.62	0/2328
13	AD	0.34	0/2096	0.59	0/2854
14	AE	0.42	0/10561	0.63	3/14258 (0.0%)
15	AF	0.34	0/652	0.57	0/879
16	AG	0.64	2/3897 (0.1%)	0.79	22/5273 (0.4%)
17	C	0.70	0/553	0.93	4/743 (0.5%)
18	D	0.60	14/36610 (0.0%)	1.03	65/57091 (0.1%)
19	E	0.57	0/675	0.70	0/895
20	F	0.62	0/597	0.59	0/792
21	G	0.66	2/1791 (0.1%)	0.83	8/2413 (0.3%)
22	H	0.43	0/1746	0.70	0/2382
23	I	0.62	2/1663 (0.1%)	0.70	4/2241 (0.2%)
24	J	0.54	2/1665 (0.1%)	0.59	0/2227
25	K	0.69	1/1165 (0.1%)	0.86	4/1568 (0.3%)
26	L	0.79	3/867 (0.3%)	0.82	3/1171 (0.3%)
27	M	0.55	0/1195	0.70	2/1602 (0.1%)
28	N	0.52	0/989	0.63	1/1326 (0.1%)
29	O	0.67	4/1034 (0.4%)	0.82	4/1375 (0.3%)
30	P	0.52	0/800	0.67	1/1082 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	Q	0.71	1/893 (0.1%)	0.82	4/1205 (0.3%)
32	R	0.56	0/952	0.65	0/1274
33	S	0.63	1/817 (0.1%)	0.64	0/1088
34	T	0.56	0/722	0.72	1/964 (0.1%)
35	U	0.45	0/659	0.65	1/884 (0.1%)
36	V	0.56	0/657	0.70	0/881
37	W	0.56	1/680 (0.1%)	0.69	3/915 (0.3%)
38	X	0.48	0/909	0.72	1/1215 (0.1%)
39	Y	0.42	1/1046 (0.1%)	0.57	2/1410 (0.1%)
40	Z	0.23	0/227	0.38	0/304
41	a	0.61	14/69247 (0.0%)	1.03	132/107985 (0.1%)
42	b	0.47	0/589	0.57	0/779
43	c	0.57	1/635 (0.2%)	0.66	1/848 (0.1%)
44	d	0.50	0/2872	0.95	0/4478
45	e	0.81	2/502 (0.4%)	0.66	0/667
46	f	0.53	0/452	0.72	2/605 (0.3%)
47	g	0.50	1/531 (0.2%)	0.67	1/709 (0.1%)
48	h	0.53	2/2121 (0.1%)	0.67	6/2852 (0.2%)
49	i	0.42	0/450	0.65	1/599 (0.2%)
50	j	0.53	0/1586	0.64	2/2134 (0.1%)
51	k	0.51	0/433	0.68	0/576
52	l	0.54	1/1571 (0.1%)	0.64	1/2113 (0.0%)
53	m	0.43	0/380	0.60	0/498
54	n	0.51	0/1434	0.68	2/1926 (0.1%)
55	o	0.51	0/513	0.85	1/676 (0.1%)
56	p	0.50	0/1333	0.68	3/1805 (0.2%)
57	q	0.46	0/303	0.60	0/397
58	r	0.34	0/1122	0.52	0/1515
59	s	0.83	5/1152 (0.4%)	0.81	4/1551 (0.3%)
60	t	0.55	1/955 (0.1%)	0.89	5/1279 (0.4%)
61	u	0.47	1/1062 (0.1%)	0.63	0/1413
62	v	0.61	1/1093 (0.1%)	0.75	1/1460 (0.1%)
63	w	0.90	5/964 (0.5%)	0.95	9/1289 (0.7%)
64	x	0.42	0/902	0.57	0/1209
65	y	0.46	0/929	0.59	1/1242 (0.1%)
66	z	0.63	1/960 (0.1%)	0.60	0/1278
All	All	0.58	95/194903 (0.0%)	0.92	339/286688 (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
9	9	0	3
13	AC	0	1
13	AD	0	1
14	AE	0	4
16	AG	0	3
21	G	0	1
22	H	0	5
23	I	0	1
25	K	0	2
29	O	0	1
38	X	0	1
39	Y	0	1
54	n	0	1
55	o	0	1
59	s	0	1
61	u	0	2
All	All	0	29

The worst 5 of 95 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
63	w	35	LYS	CE-NZ	-15.23	1.10	1.49
26	L	42	TRP	CB-CG	-12.33	1.28	1.50
3	2	5	GLU	CG-CD	-11.56	1.34	1.51
45	e	46	VAL	CB-CG1	-11.33	1.29	1.52
63	w	42	LYS	CD-CE	-10.77	1.24	1.51

The worst 5 of 339 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
41	a	1019	U	C5-C4-O4	30.65	144.29	125.90
41	a	1141	U	C5-C4-O4	29.47	143.58	125.90
18	D	1358	U	C5-C4-O4	29.31	143.49	125.90
18	D	37	U	C5-C4-O4	29.31	143.49	125.90
18	D	827	U	C5-C4-O4	28.70	143.12	125.90

There are no chirality outliers.

5 of 29 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
9	9	107	GLU	Peptide
9	9	79	PRO	Peptide

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Group
9	9	92	ALA	Peptide
13	AC	192	VAL	Peptide
13	AD	20	SER	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	
1	0	101/103 (98%)	97 (96%)	4 (4%)	0	100	100
2	1	108/110 (98%)	107 (99%)	1 (1%)	0	100	100
3	2	92/100 (92%)	87 (95%)	5 (5%)	0	100	100
4	3	101/104 (97%)	98 (97%)	3 (3%)	0	100	100
5	4	92/94 (98%)	89 (97%)	3 (3%)	0	100	100
9	9	146/165 (88%)	100 (68%)	43 (30%)	3 (2%)	7	38
11	AA	1312/1342 (98%)	1195 (91%)	116 (9%)	1 (0%)	51	85
12	AB	159/162 (98%)	112 (70%)	30 (19%)	17 (11%)	0	8
13	AC	217/329 (66%)	203 (94%)	12 (6%)	2 (1%)	17	56
13	AD	293/329 (89%)	269 (92%)	24 (8%)	0	100	100
14	AE	1331/1407 (95%)	1213 (91%)	112 (8%)	6 (0%)	29	69
15	AF	80/91 (88%)	77 (96%)	3 (4%)	0	100	100
16	AG	493/495 (100%)	376 (76%)	88 (18%)	29 (6%)	1	19
17	C	64/75 (85%)	63 (98%)	1 (2%)	0	100	100
19	E	84/87 (97%)	83 (99%)	1 (1%)	0	100	100
20	F	68/71 (96%)	68 (100%)	0	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
21	G	223/241 (92%)	212 (95%)	10 (4%)	1 (0%)	34	72
22	H	255/557 (46%)	182 (71%)	66 (26%)	7 (3%)	5	33
23	I	206/233 (88%)	193 (94%)	13 (6%)	0	100	100
24	J	203/206 (98%)	201 (99%)	2 (1%)	0	100	100
25	K	154/167 (92%)	145 (94%)	8 (5%)	1 (1%)	25	65
26	L	102/135 (76%)	97 (95%)	4 (4%)	1 (1%)	15	54
27	M	149/179 (83%)	140 (94%)	8 (5%)	1 (1%)	22	62
28	N	127/130 (98%)	123 (97%)	4 (3%)	0	100	100
29	O	125/130 (96%)	116 (93%)	8 (6%)	1 (1%)	19	60
30	P	97/103 (94%)	89 (92%)	8 (8%)	0	100	100
31	Q	115/129 (89%)	107 (93%)	8 (7%)	0	100	100
32	R	117/124 (94%)	112 (96%)	5 (4%)	0	100	100
33	S	98/101 (97%)	97 (99%)	1 (1%)	0	100	100
34	T	86/89 (97%)	83 (96%)	3 (4%)	0	100	100
35	U	80/82 (98%)	76 (95%)	4 (5%)	0	100	100
36	V	78/84 (93%)	74 (95%)	4 (5%)	0	100	100
37	W	81/92 (88%)	80 (99%)	1 (1%)	0	100	100
38	X	114/118 (97%)	103 (90%)	9 (8%)	2 (2%)	8	41
39	Y	139/142 (98%)	101 (73%)	38 (27%)	0	100	100
40	Z	28/121 (23%)	22 (79%)	6 (21%)	0	100	100
42	b	74/85 (87%)	73 (99%)	1 (1%)	0	100	100
43	c	75/78 (96%)	72 (96%)	3 (4%)	0	100	100
45	e	60/63 (95%)	57 (95%)	3 (5%)	0	100	100
46	f	56/59 (95%)	52 (93%)	4 (7%)	0	100	100
47	g	64/70 (91%)	62 (97%)	2 (3%)	0	100	100
48	h	269/273 (98%)	255 (95%)	14 (5%)	0	100	100
49	i	54/57 (95%)	49 (91%)	5 (9%)	0	100	100
50	j	207/209 (99%)	198 (96%)	9 (4%)	0	100	100
51	k	50/55 (91%)	50 (100%)	0	0	100	100
52	l	199/201 (99%)	188 (94%)	11 (6%)	0	100	100
53	m	44/46 (96%)	43 (98%)	1 (2%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
54	n	175/179 (98%)	160 (91%)	14 (8%)	1 (1%)	25	65
55	o	62/65 (95%)	57 (92%)	4 (6%)	1 (2%)	9	44
56	p	173/177 (98%)	162 (94%)	11 (6%)	0	100	100
57	q	36/38 (95%)	35 (97%)	1 (3%)	0	100	100
58	r	147/149 (99%)	139 (95%)	8 (5%)	0	100	100
59	s	140/142 (99%)	133 (95%)	7 (5%)	0	100	100
60	t	121/123 (98%)	114 (94%)	7 (6%)	0	100	100
61	u	142/144 (99%)	134 (94%)	8 (6%)	0	100	100
62	v	134/136 (98%)	129 (96%)	5 (4%)	0	100	100
63	w	117/127 (92%)	112 (96%)	5 (4%)	0	100	100
64	x	114/117 (97%)	107 (94%)	7 (6%)	0	100	100
65	y	112/115 (97%)	105 (94%)	7 (6%)	0	100	100
66	z	115/118 (98%)	111 (96%)	4 (4%)	0	100	100
All	All	10058/11053 (91%)	9187 (91%)	797 (8%)	74 (1%)	26	62

5 of 74 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
12	AB	52	PRO
12	AB	60	ASP
12	AB	87	ILE
12	AB	98	VAL
12	AB	109	THR

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	
1	0	84/84 (100%)	84 (100%)	0	100	100
2	1	93/93 (100%)	93 (100%)	0	100	100
3	2	81/84 (96%)	80 (99%)	1 (1%)	71	84

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
4	3	84/85 (99%)	84 (100%)	0	100	100
5	4	78/78 (100%)	78 (100%)	0	100	100
9	9	112/123 (91%)	109 (97%)	3 (3%)	44	65
11	AA	1135/1157 (98%)	1133 (100%)	2 (0%)	93	96
12	AB	141/142 (99%)	71 (50%)	70 (50%)	0	0
13	AC	186/286 (65%)	186 (100%)	0	100	100
13	AD	185/286 (65%)	185 (100%)	0	100	100
14	AE	1122/1168 (96%)	1103 (98%)	19 (2%)	60	78
15	AF	70/75 (93%)	70 (100%)	0	100	100
16	AG	409/409 (100%)	294 (72%)	115 (28%)	0	3
17	C	57/65 (88%)	57 (100%)	0	100	100
19	E	65/66 (98%)	65 (100%)	0	100	100
20	F	60/61 (98%)	60 (100%)	0	100	100
21	G	187/199 (94%)	186 (100%)	1 (0%)	88	93
22	H	137/461 (30%)	137 (100%)	0	100	100
23	I	171/190 (90%)	170 (99%)	1 (1%)	86	91
24	J	172/173 (99%)	171 (99%)	1 (1%)	86	91
25	K	119/126 (94%)	119 (100%)	0	100	100
26	L	91/116 (78%)	91 (100%)	0	100	100
27	M	124/147 (84%)	124 (100%)	0	100	100
28	N	104/105 (99%)	104 (100%)	0	100	100
29	O	105/107 (98%)	104 (99%)	1 (1%)	76	86
30	P	86/90 (96%)	83 (96%)	3 (4%)	36	59
31	Q	90/99 (91%)	90 (100%)	0	100	100
32	R	101/104 (97%)	101 (100%)	0	100	100
33	S	83/84 (99%)	83 (100%)	0	100	100
34	T	76/77 (99%)	76 (100%)	0	100	100
35	U	65/65 (100%)	64 (98%)	1 (2%)	65	80
36	V	74/78 (95%)	73 (99%)	1 (1%)	67	81
37	W	72/79 (91%)	72 (100%)	0	100	100
38	X	94/96 (98%)	94 (100%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
39	Y	109/110 (99%)	108 (99%)	1 (1%)	78	88
40	Z	26/85 (31%)	26 (100%)	0	100	100
42	b	58/63 (92%)	58 (100%)	0	100	100
43	c	67/68 (98%)	67 (100%)	0	100	100
45	e	54/55 (98%)	54 (100%)	0	100	100
46	f	48/49 (98%)	48 (100%)	0	100	100
47	g	59/62 (95%)	59 (100%)	0	100	100
48	h	216/218 (99%)	216 (100%)	0	100	100
49	i	47/48 (98%)	47 (100%)	0	100	100
50	j	164/164 (100%)	164 (100%)	0	100	100
51	k	47/49 (96%)	47 (100%)	0	100	100
52	l	165/165 (100%)	164 (99%)	1 (1%)	86	91
53	m	38/38 (100%)	38 (100%)	0	100	100
54	n	148/150 (99%)	148 (100%)	0	100	100
55	o	51/52 (98%)	51 (100%)	0	100	100
56	p	136/138 (99%)	136 (100%)	0	100	100
57	q	34/34 (100%)	34 (100%)	0	100	100
58	r	114/114 (100%)	114 (100%)	0	100	100
59	s	116/116 (100%)	115 (99%)	1 (1%)	78	88
60	t	104/104 (100%)	103 (99%)	1 (1%)	76	86
61	u	103/103 (100%)	103 (100%)	0	100	100
62	v	109/109 (100%)	109 (100%)	0	100	100
63	w	99/103 (96%)	98 (99%)	1 (1%)	76	86
64	x	86/87 (99%)	86 (100%)	0	100	100
65	y	99/100 (99%)	97 (98%)	2 (2%)	55	73
66	z	89/90 (99%)	88 (99%)	1 (1%)	73	84
All	All	8299/9132 (91%)	8072 (97%)	227 (3%)	48	65

5 of 227 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
16	AG	117	LYS
59	s	86	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
16	AG	210	ARG
39	Y	44	LYS
16	AG	361	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 84 such sidechains are listed below:

Mol	Chain	Res	Type
26	L	3	HIS
54	n	5	HIS
27	M	68	ASN
45	e	31	GLN
62	v	45	GLN

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
10	A	75/76 (98%)	29 (38%)	8 (10%)
10	B	75/76 (98%)	29 (38%)	8 (10%)
18	D	1514/1542 (98%)	289 (19%)	20 (1%)
41	a	2859/2904 (98%)	508 (17%)	0
44	d	119/120 (99%)	15 (12%)	0
8	7	36/41 (87%)	26 (72%)	5 (13%)
All	All	4678/4759 (98%)	896 (19%)	41 (0%)

5 of 896 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
8	7	3	G
8	7	4	U
8	7	5	U
8	7	7	U
8	7	8	U

5 of 41 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
18	D	517	G
18	D	1213	A
18	D	991	U
18	D	1196	A

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
18	D	1447	A

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

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

5.5 Carbohydrates [i](#)

There are no 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.

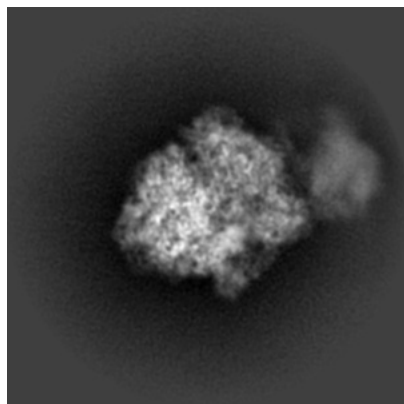
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-42474. These allow visual inspection of the internal detail of the map and identification of artifacts.

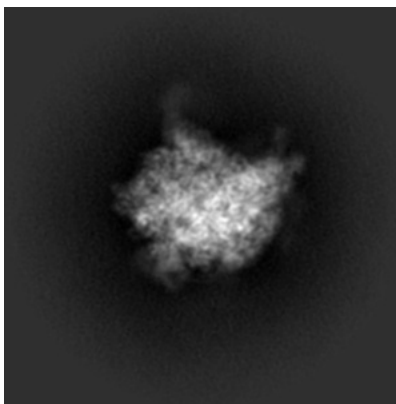
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

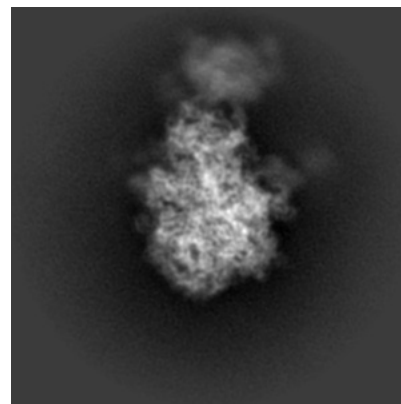
6.1.1 Primary map



X

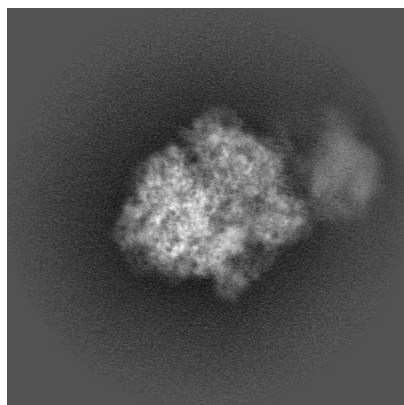


Y

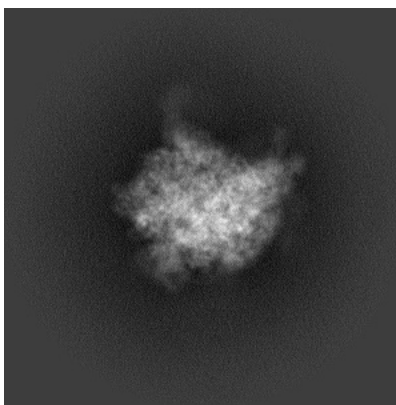


Z

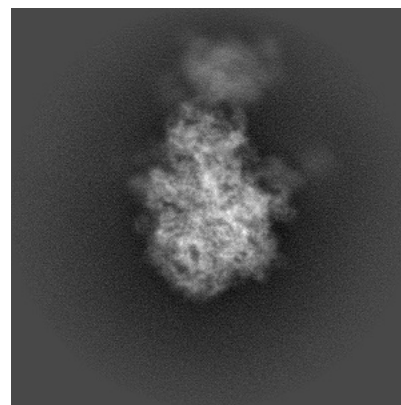
6.1.2 Raw map



X



Y

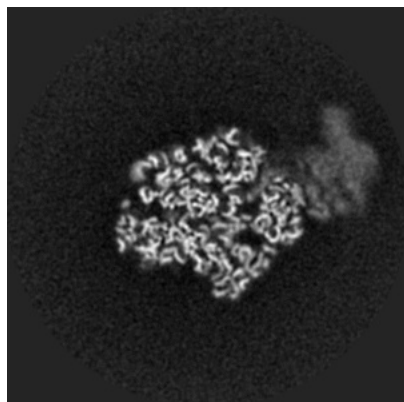


Z

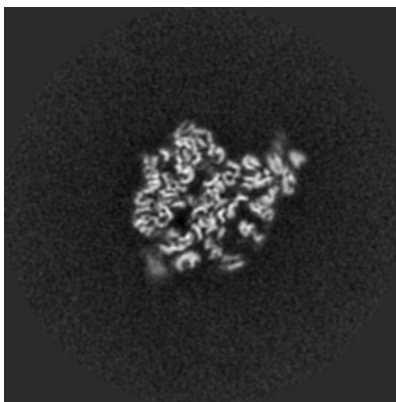
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

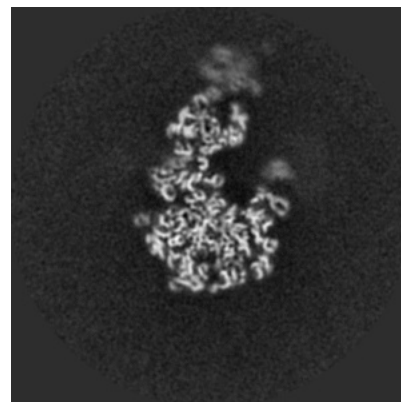
6.2.1 Primary map



X Index: 256

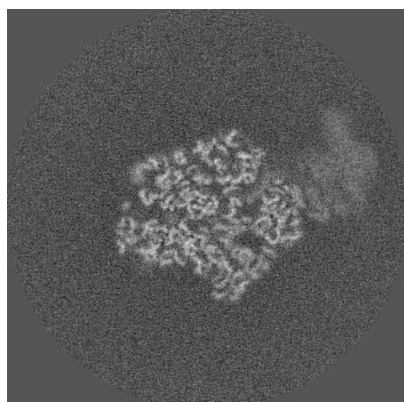


Y Index: 256

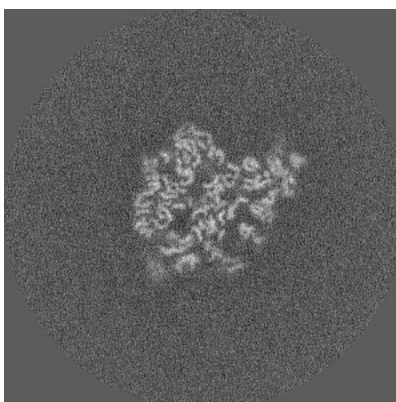


Z Index: 256

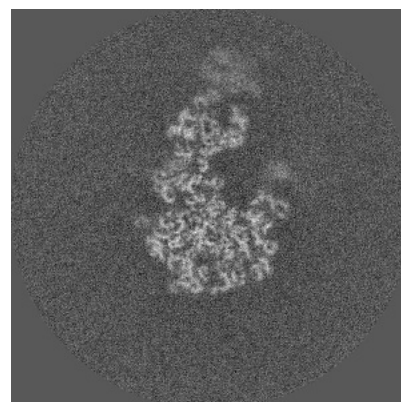
6.2.2 Raw map



X Index: 256



Y Index: 256

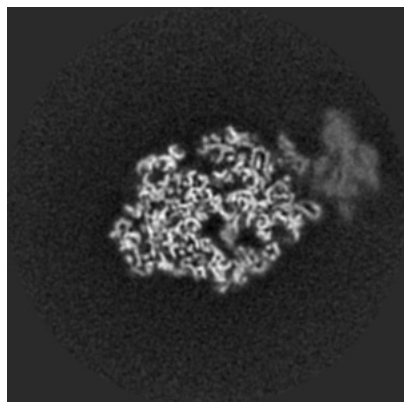


Z Index: 256

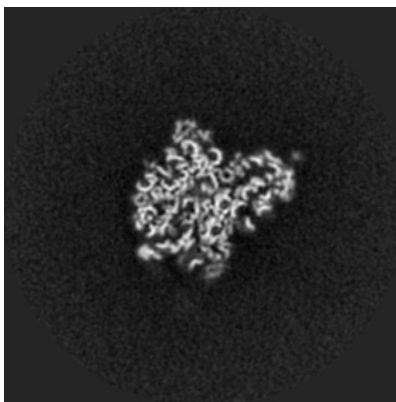
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

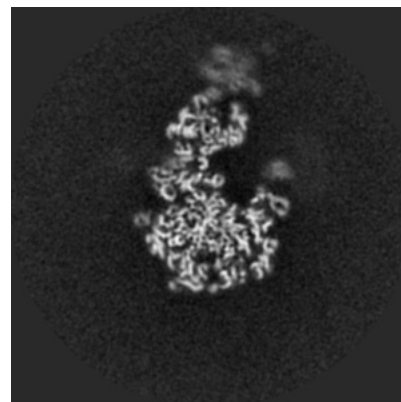
6.3.1 Primary map



X Index: 245

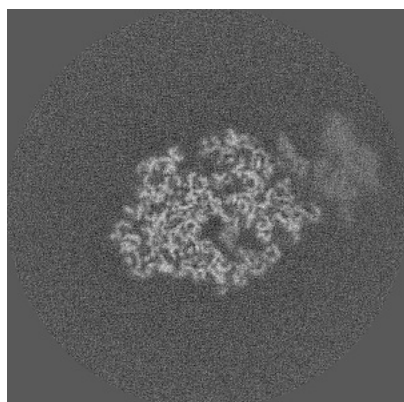


Y Index: 248

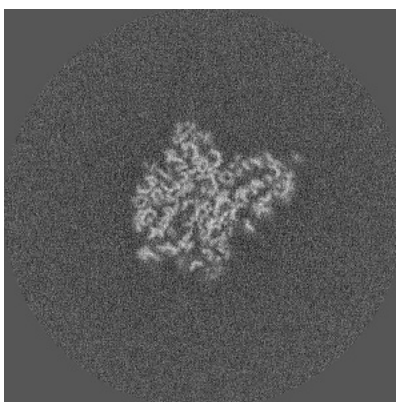


Z Index: 257

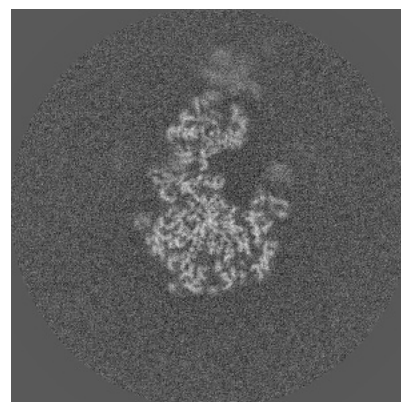
6.3.2 Raw map



X Index: 244



Y Index: 249



Z Index: 258

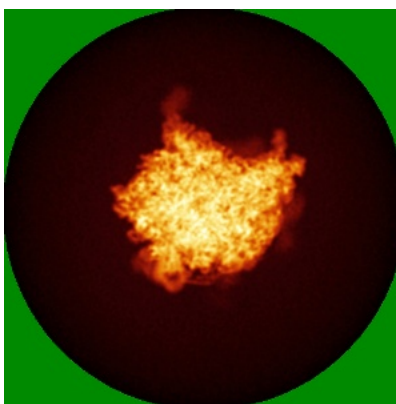
The images above show the largest variance slices of the map in three orthogonal directions.

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

6.4.1 Primary map



X

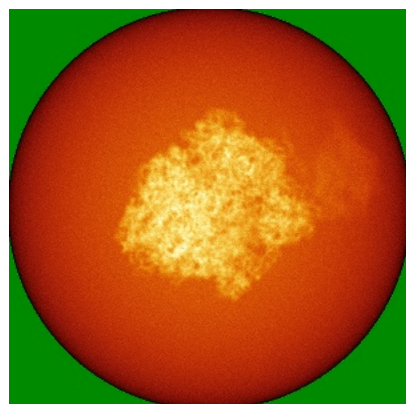


Y

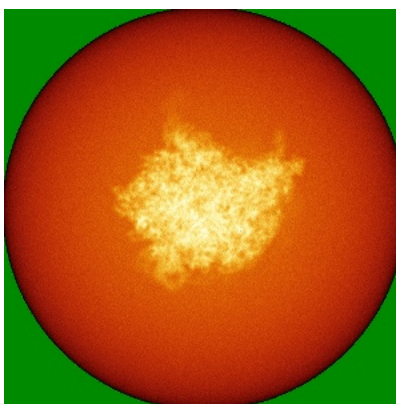


Z

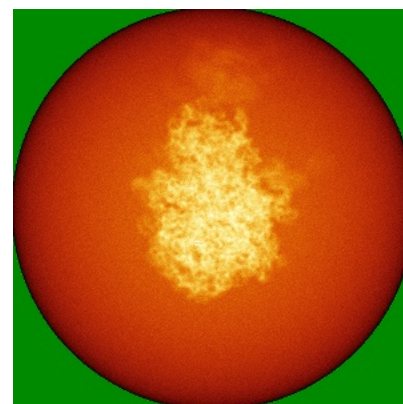
6.4.2 Raw map



X



Y

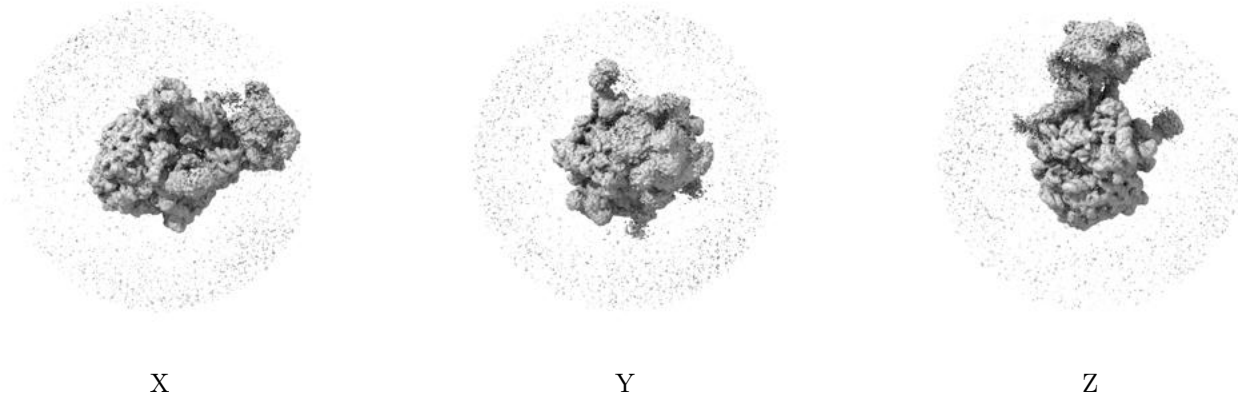


Z

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

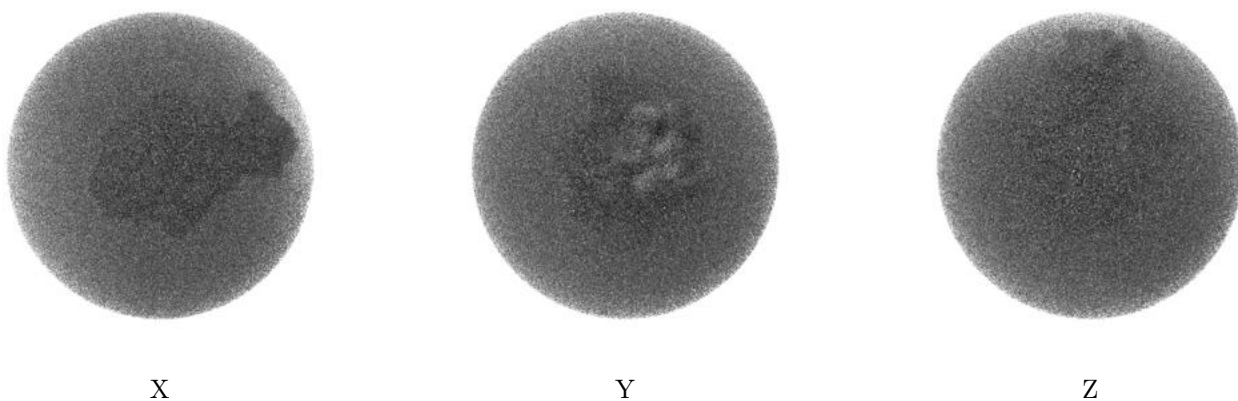
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0019. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

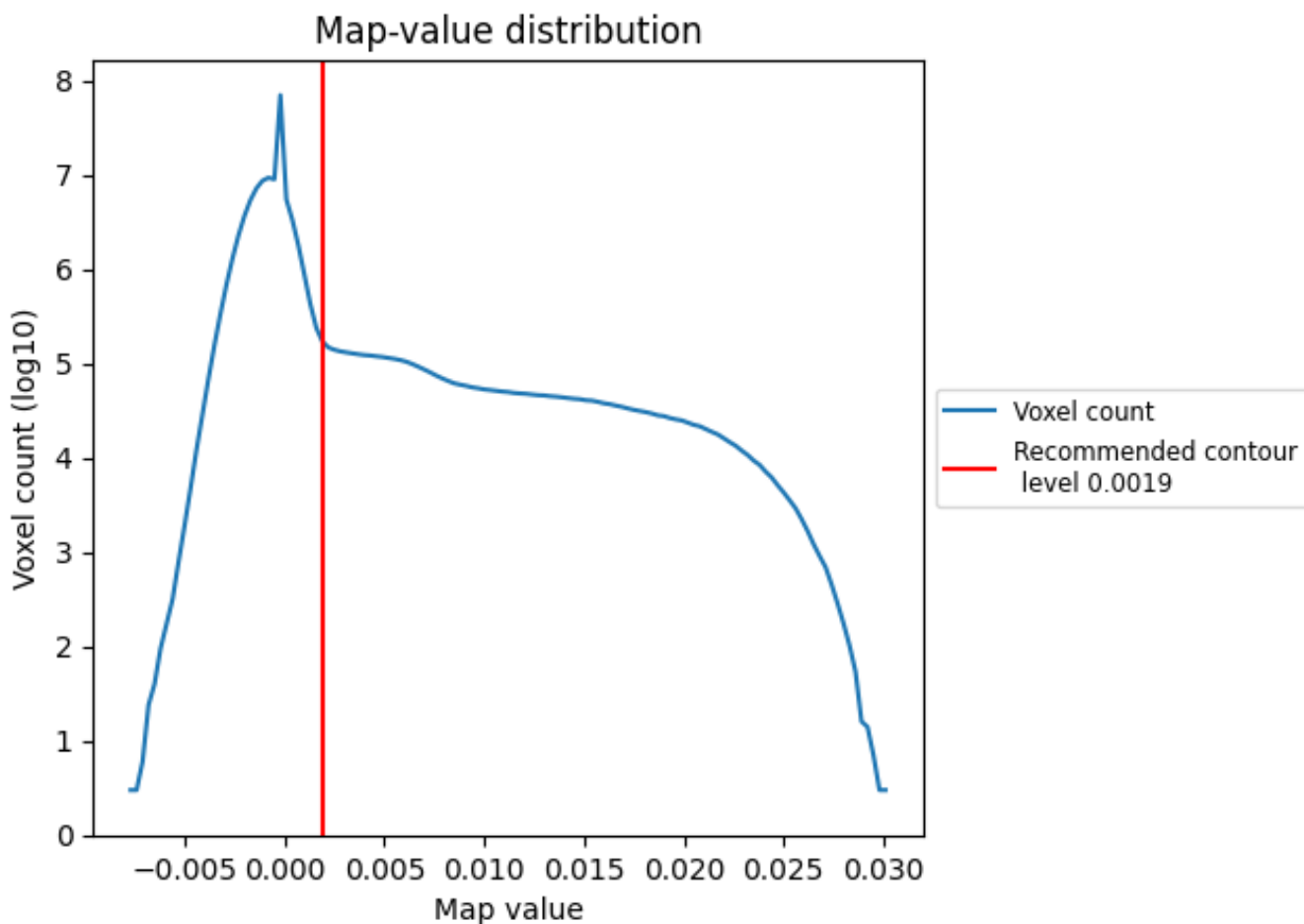
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

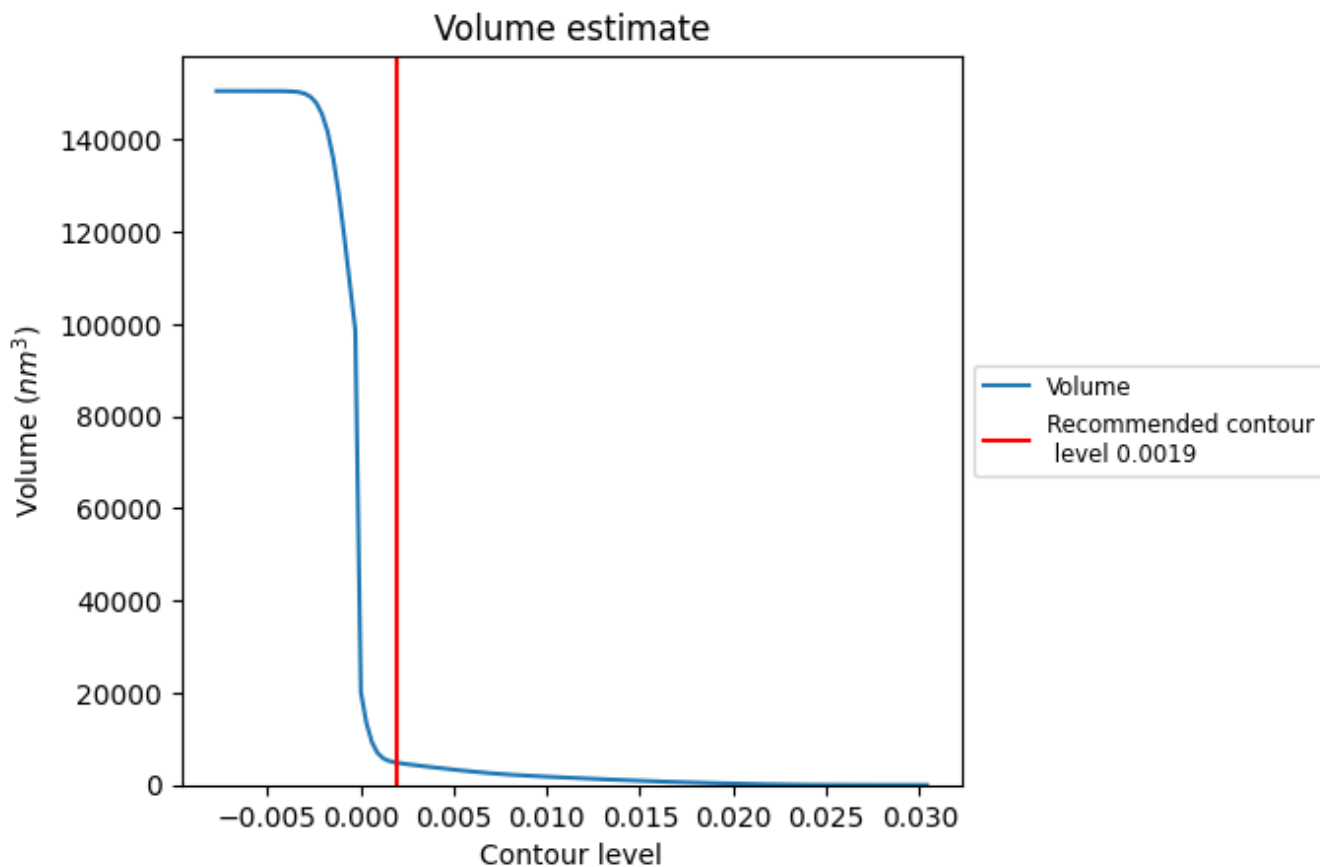
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

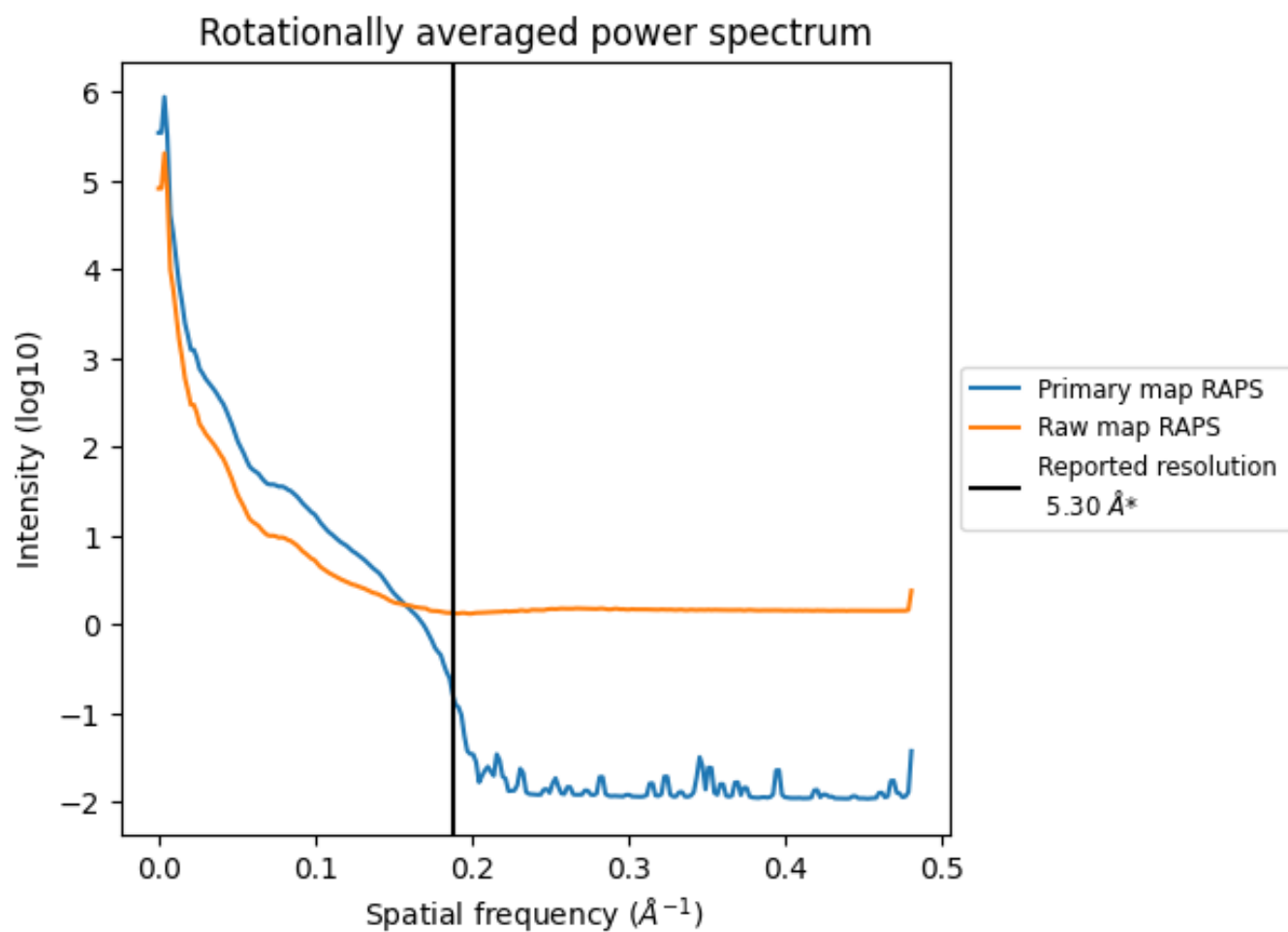
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 4878 nm^3 ; this corresponds to an approximate mass of 4406 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

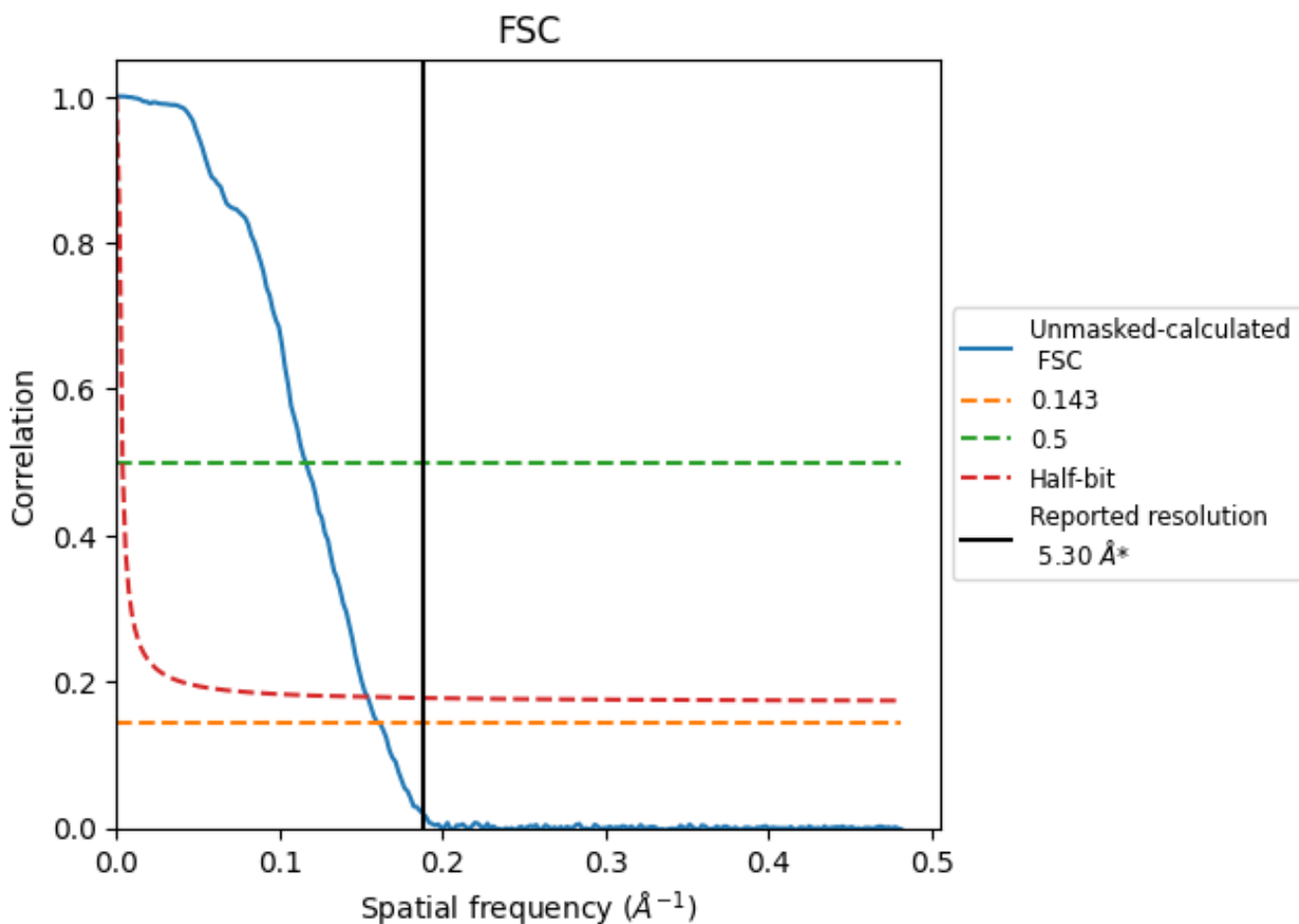


*Reported resolution corresponds to spatial frequency of 0.189 Å⁻¹

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 0.189 Å⁻¹

8.2 Resolution estimates [i](#)

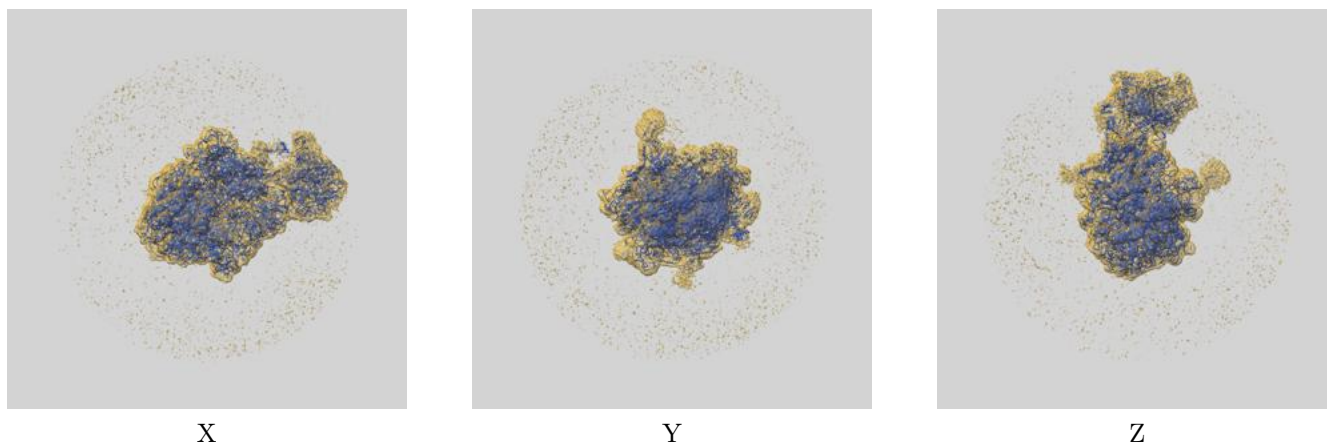
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	5.30	-	-
Author-provided FSC curve	-	-	-
Unmasked-calculated*	6.21	8.62	6.49

*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 6.21 differs from the reported value 5.3 by more than 10 %

9 Map-model fit [i](#)

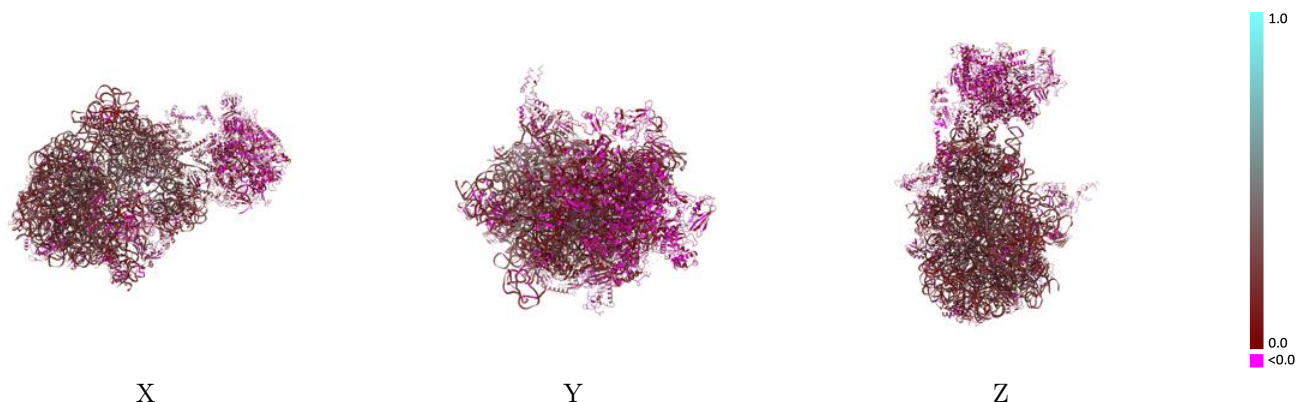
This section contains information regarding the fit between EMDB map EMD-42474 and PDB model 8UQM. Per-residue inclusion information can be found in section 3 on page 17.

9.1 Map-model overlay [i](#)



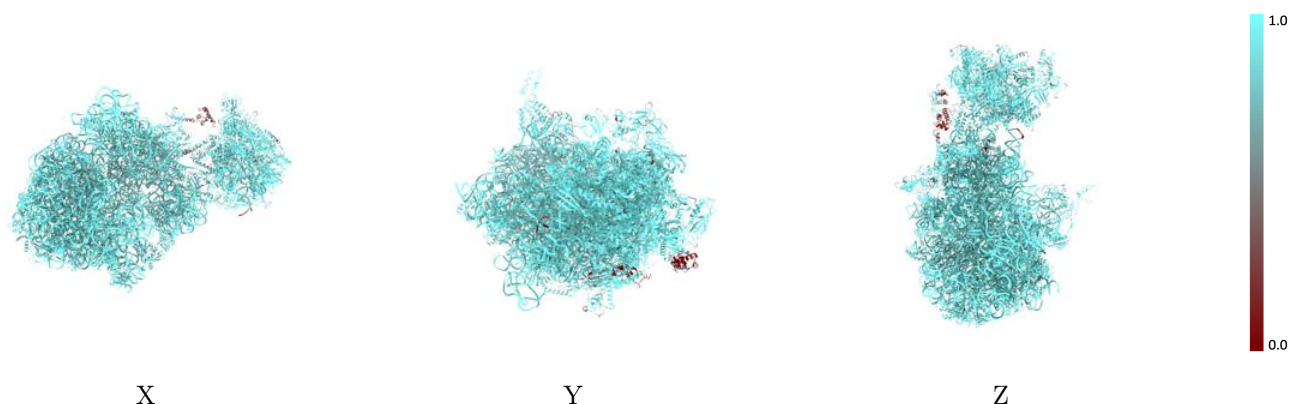
The images above show the 3D surface view of the map at the recommended contour level 0.0019 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



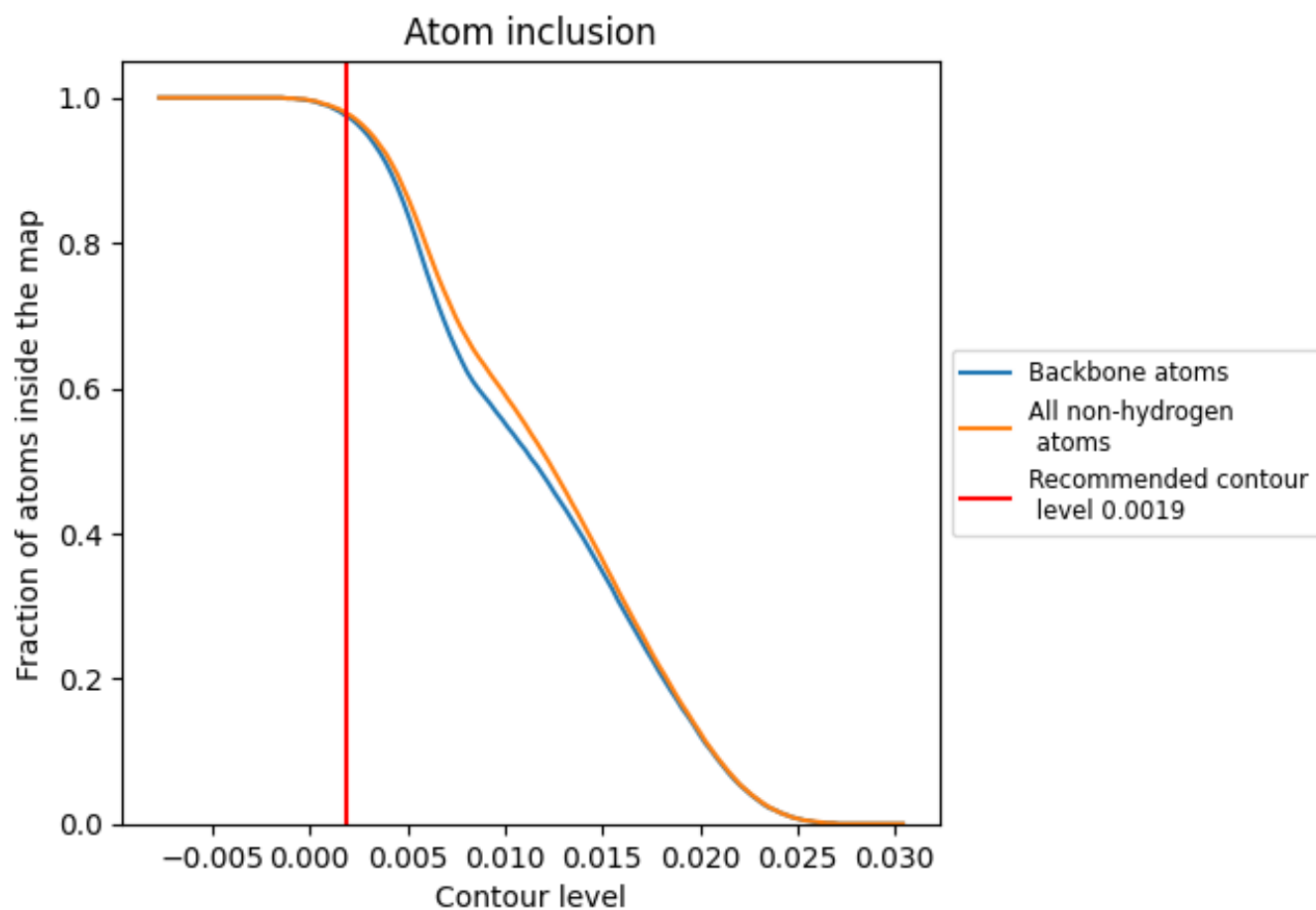
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0019).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 98% 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 (0.0019) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9780	 0.1740
0	 0.9810	 0.1530
1	 0.9800	 0.1790
2	 0.9780	 0.1490
3	 0.9850	 0.1330
4	 0.9890	 0.1570
5	 0.8930	 0.0610
6	 0.9290	 0.0700
7	 0.9720	 0.1090
9	 0.9790	 0.1000
A	 0.9990	 0.1900
AA	 0.9770	 0.0680
AB	 0.9910	 0.0890
AC	 0.9870	 0.0430
AD	 0.8800	 0.0530
AE	 0.9670	 0.0700
AF	 0.8310	 0.0770
AG	 0.8160	 0.1010
B	 0.9540	 0.1070
C	 0.9940	 0.1630
D	 0.9980	 0.2310
E	 0.9910	 0.1510
F	 0.9790	 0.1830
G	 0.9690	 0.1560
H	 0.8700	 0.0550
I	 0.9790	 0.1950
J	 0.9920	 0.1760
K	 0.9950	 0.2210
L	 0.9920	 0.1570
M	 0.9900	 0.1500
N	 0.9780	 0.1820
O	 0.9870	 0.1400
P	 0.9860	 0.1630
Q	 0.9920	 0.1620
R	 0.9970	 0.2230



Continued on next page...

Continued from previous page...

Chain	Atom inclusion	Q-score
S	 0.9880	 0.1630
T	 0.9840	 0.1590
U	 0.9890	 0.1670
V	 0.9810	 0.1740
W	 0.9550	 0.1120
X	 0.9800	 0.1400
Y	 0.9170	 0.0750
Z	 1.0000	 0.0220
a	 0.9970	 0.2170
b	 0.9820	 0.1350
c	 0.9770	 0.1630
d	 0.9990	 0.1810
e	 0.9800	 0.1280
f	 0.9860	 0.1660
g	 0.9820	 0.1030
h	 0.9840	 0.1620
i	 0.9770	 0.1880
j	 0.9920	 0.1680
k	 0.9950	 0.1450
l	 0.9700	 0.1340
m	 0.9890	 0.1710
n	 0.9730	 0.1220
o	 0.9700	 0.1310
p	 0.9930	 0.1540
q	 0.9900	 0.1570
r	 0.9410	 0.1140
s	 0.9810	 0.1790
t	 0.9770	 0.1910
u	 0.9880	 0.1440
v	 0.9840	 0.1890
w	 0.9780	 0.1670
x	 0.9760	 0.0960
y	 0.9800	 0.1750
z	 0.9860	 0.1440