



Full wwPDB EM Validation Report ⓘ

Oct 6, 2024 – 02:12 pm BST

PDB ID : 7PAJ
EMDB ID : EMD-13274
Title : 70S ribosome with EF-Tu-tRNA, P- and E-site tRNAs in Mycoplasma pneumoniae cells
Authors : Xue, L.; Lenz, S.; Rappsilber, J.; Mahamid, J.
Deposited on : 2021-07-30
Resolution : 7.30 Å (reported)
Based on initial models : 4V7C, 7OOC, 7OOD, 4V5L

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.dev113
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

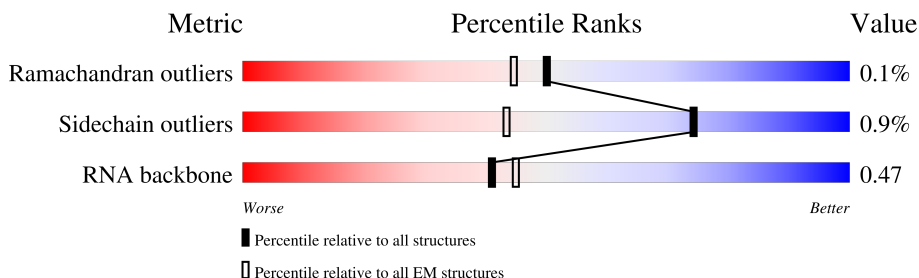
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 7.30 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	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

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	48	
2	1	59	
3	2	37	
4	9	394	
5	A	294	
6	B	273	
7	C	205	
8	D	219	

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Mol	Chain	Length	Quality of chain
9	E	215	
10	F	155	
11	G	142	
12	H	132	
13	I	108	
14	J	121	
15	K	139	
16	L	124	
17	M	61	
18	N	86	
19	O	94	
20	P	85	
21	Q	104	
22	R	87	
23	S	87	
24	T	60	
25	a	287	
26	b	287	
27	c	212	
28	d	180	
29	e	184	
30	f	149	
31	g	161	
32	h	137	
33	i	146	

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Mol	Chain	Length	Quality of chain
34	j	122	11% 99%
35	k	151	6% 98%
36	l	139	96% ..
37	m	124	96% .
38	n	116	8% 96% ..
39	o	119	10% 96% ..
40	p	127	89% 10%
41	q	100	10% 97% ..
42	r	159	87% 13%
43	s	237	38% 61%
44	t	111	24% 100%
45	u	104	7% 83% 17%
46	v	65	14% 95% ..
47	w	111	87% 10%
48	x	97	5% 44% 55%
49	y	57	12% 93% 5% .
50	z	53	9% 94% 6%
51	3	2907	70% 28% .
52	4	108	65% 32% .
53	5	1520	74% 24% .
54	6	76	25% 67% 30% .
54	7	76	67% 30% .
54	8	76	36% 67% 30% .

2 Entry composition

There are 54 unique types of molecules in this entry. The entry contains 150759 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 protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	0	47	Total	C	N	O	S	0	0
			380	236	81	61	2		

- Molecule 2 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	1	59	Total	C	N	O	S	0	0
			477	300	99	77	1		

- Molecule 3 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	2	37	Total	C	N	O	S	0	0
			304	189	65	46	4		

- Molecule 4 is a protein called Elongation factor Tu.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	9	393	Total	C	N	O	S	0	0
			3021	1892	533	583	13		

- Molecule 5 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	A	240	Total	C	N	O	S	0	0
			1921	1226	334	352	9		

- Molecule 6 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	B	215	Total	C	N	O	S	0	0
			1698	1073	313	307	5		

- Molecule 7 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	C	203	Total	C	N	O	S	0	0
			1660	1051	314	290	5		

- Molecule 8 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	D	153	Total	C	N	O	S	0	0
			1173	742	226	202	3		

- Molecule 9 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	E	167	Total	C	N	O	S	0	0
			1362	857	240	263	2		

- Molecule 10 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	F	154	Total	C	N	O	S	0	0
			1246	785	239	216	6		

- Molecule 11 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	G	141	Total	C	N	O	S	0	0
			1110	723	193	192	2		

- Molecule 12 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	H	128	Total	C	N	O	S	0	0
			1028	655	191	181	1		

- Molecule 13 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	I	101	Total	C	N	O	S	0	0
			809	523	142	143	1		

- Molecule 14 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	J	114	Total	C	N	O	S	0	0
			829	514	153	156	6		

- Molecule 15 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	K	136	Total	C	N	O	S	0	0
			1076	680	213	181	2		

- Molecule 16 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	L	118	Total	C	N	O		0	0
			951	594	191	166			

- Molecule 17 is a protein called 30S ribosomal protein S14 type Z.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	M	60	Total	C	N	O	S	0	0
			474	302	96	72	4		

- Molecule 18 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	N	83	Total	C	N	O		0	0
			673	428	125	120			

- Molecule 19 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	O	80	Total	C	N	O	S	0	0
			646	414	119	111	2		

- Molecule 20 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	P	83	Total	C	N	O		0	0
			675	425	135	115			

- Molecule 21 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	Q	65	Total	C	N	O	S	0	0
			535	342	103	86	4		

- Molecule 22 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	R	84	Total	C	N	O	S	0	0
			682	435	127	118	2		

- Molecule 23 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	S	77	Total	C	N	O		0	0
			629	383	135	111			

- Molecule 24 is a protein called 30S ribosomal protein S21.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	T	53	Total	C	N	O	S	0	0
			471	295	103	72	1		

- Molecule 25 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	a	285	Total	C	N	O	S	0	0
			2225	1385	437	397	6		

- Molecule 26 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	b	229	Total	C	N	O	S	0	0
			1762	1119	318	318	7		

- Molecule 27 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	c	210	Total	C	N	O	S	0	0
			1644	1047	297	297	3		

- Molecule 28 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	d	175	Total	C	N	O	S	0	0
			1388	893	245	246	4		

- Molecule 29 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	e	176	Total	C	N	O	S	0	0
			1396	899	247	250			

- Molecule 30 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	f	145	Total	C	N	O	S	0	0
			1160	746	204	207	3		

- Molecule 31 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	g	126	Total	C	N	O	S	0	0
			960	612	167	178	3		

- Molecule 32 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	h	128	Total	C	N	O	S	0	0
			959	616	160	177	6		

- Molecule 33 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	i	144	Total	C	N	O	S	0	0
			1164	737	213	209	5		

- Molecule 34 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	j	122	Total	C	N	O	S	0	0
			944	595	178	167	4		

- Molecule 35 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				AltConf	Trace
35	k	148	Total	C	N	O		
			1153	731	226	196	0	0

- Molecule 36 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	l	136	Total	C	N	O	S		
			1079	694	196	182	7	0	0

- Molecule 37 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	m	119	Total	C	N	O	S		
			958	609	175	171	3	0	0

- Molecule 38 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	n	112	Total	C	N	O	S		
			889	557	175	155	2	0	0

- Molecule 39 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	o	115	Total	C	N	O	S		
			938	592	180	165	1	0	0

- Molecule 40 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	p	114	Total	C	N	O	S		
			947	603	188	154	2	0	0

- Molecule 41 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
41	q	99	Total	C	N	O	S		
			811	525	148	134	4	0	0

- Molecule 42 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
42	r	139	Total	C	N	O	S	0	0
			1068	663	207	191	7		

- Molecule 43 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
43	s	92	Total	C	N	O	S	0	0
			720	475	122	122	1		

- Molecule 44 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
44	t	111	Total	C	N	O	S	0	0
			872	550	166	153	3		

- Molecule 45 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	u	86	Total	C	N	O	S	0	0
			657	409	130	117	1		

- Molecule 46 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	v	63	Total	C	N	O	S	0	0
			513	317	108	87	1		

- Molecule 47 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
47	w	100	Total	C	N	O	S	0	0
			818	517	153	148			

- Molecule 48 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
48	x	44	Total	C	N	O	S	0	0
			344	221	55	64	4		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
49	y	56	Total	C	N	O	S	0	0
			452	274	98	75	5		

- Molecule 50 is a protein called 50S ribosomal protein L33 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
50	z	50	Total	C	N	O	S	0	0
			408	255	81	68	4		

- Molecule 51 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	3	2878	Total	C	N	O	P	0	0
			61664	27558	11236	19995	2875		

- Molecule 52 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
52	4	105	Total	C	N	O	P	0	0
			2239	1003	409	724	103		

- Molecule 53 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
53	5	1493	Total	C	N	O	P	0	0
			31943	14279	5792	10382	1490		

- Molecule 54 is a RNA chain called tRNA-Phe.

Mol	Chain	Residues	Atoms					AltConf	Trace
54	6	76	Total	C	N	O	P	0	0
			1618	723	289	531	75		
54	7	76	Total	C	N	O	P	0	0
			1618	723	289	531	75		
54	8	76	Total	C	N	O	P	0	0
			1618	723	289	531	75		

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.

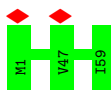
- Molecule 1: 50S ribosomal protein L34

Chain 0:  98%



- Molecule 2: 50S ribosomal protein L35

Chain 1:  100%




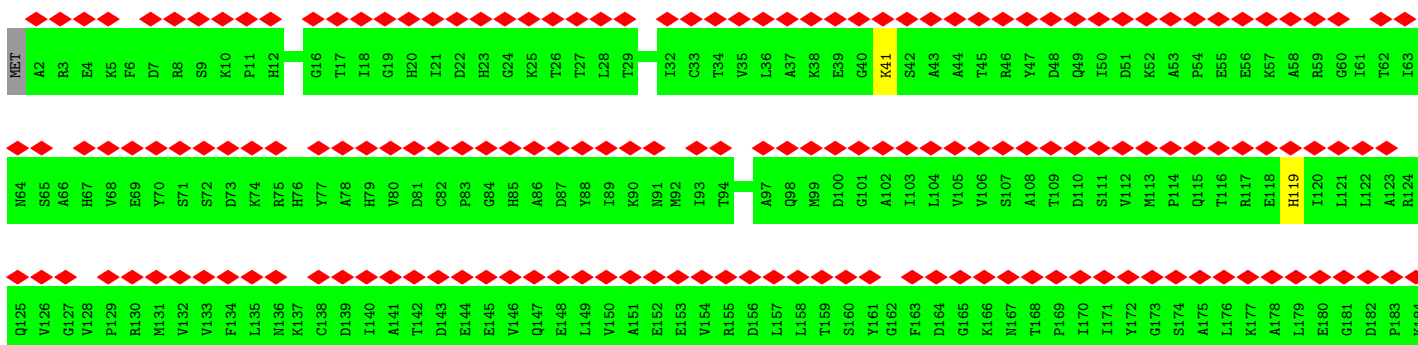
- Molecule 3: 50S ribosomal protein L36

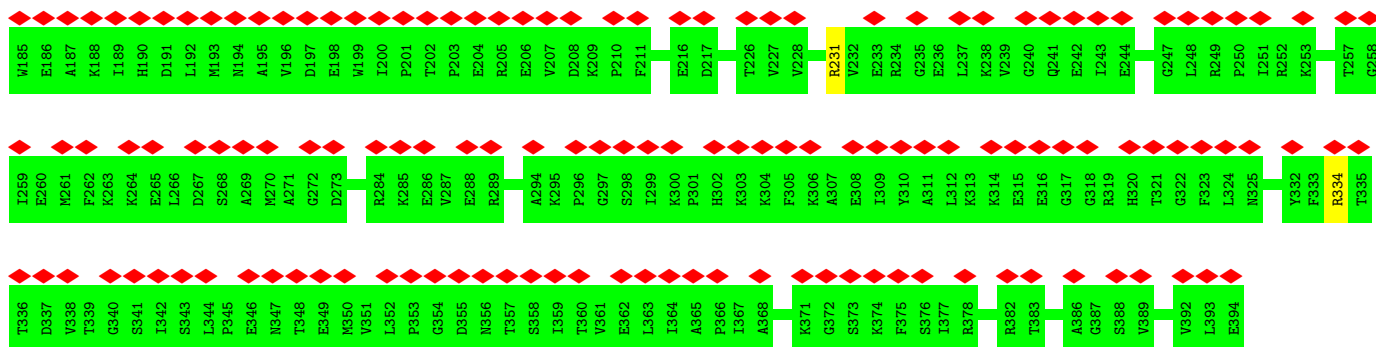
Chain 2:  97%



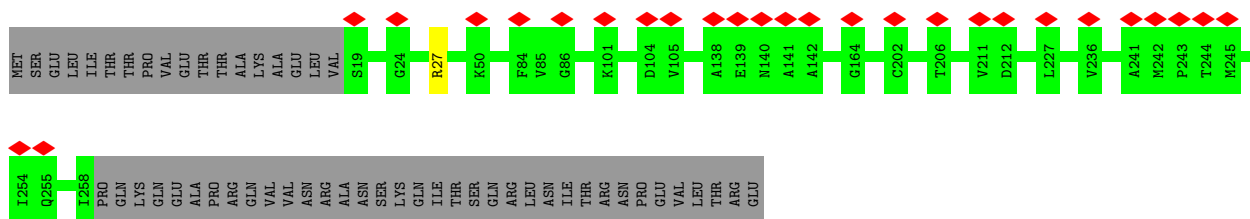
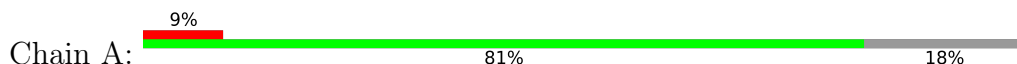
- Molecule 4: Elongation factor Tu

Chain 9:  77%
99%

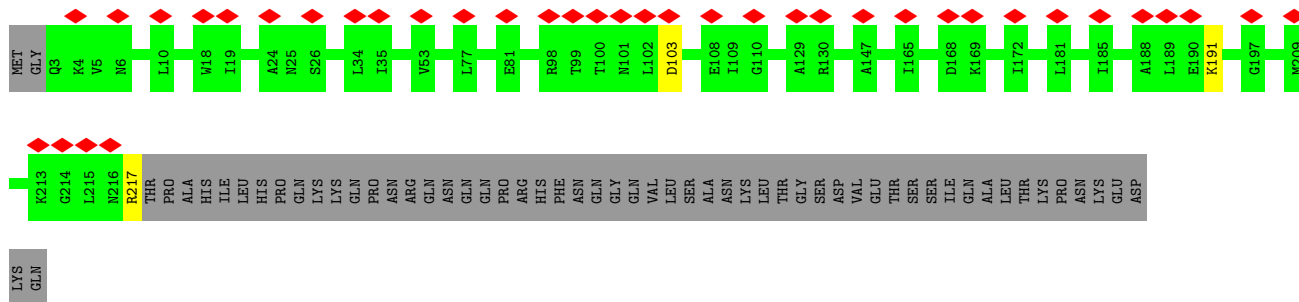
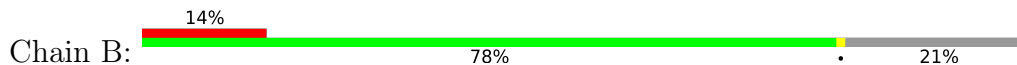




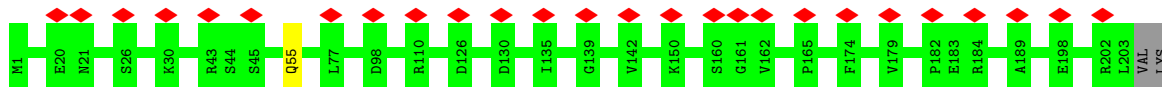
• Molecule 5: 30S ribosomal protein S2



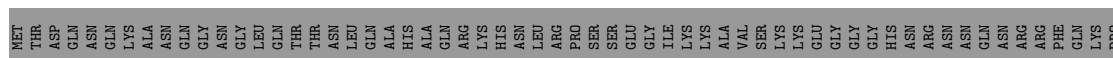
• Molecule 6: 30S ribosomal protein S3

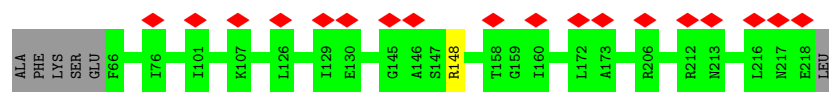


• Molecule 7: 30S ribosomal protein S4

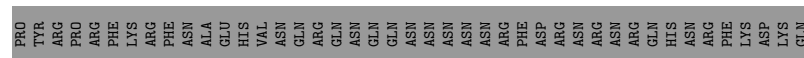
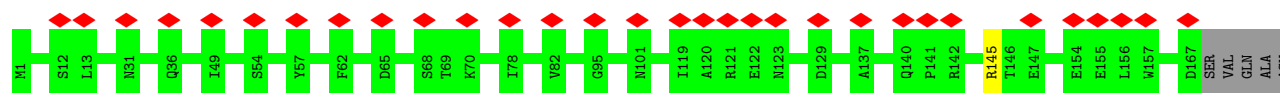
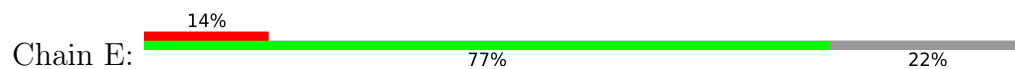


• Molecule 8: 30S ribosomal protein S5

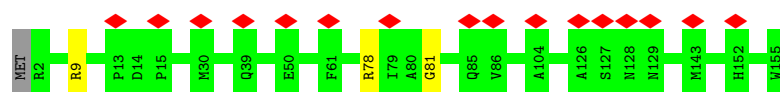




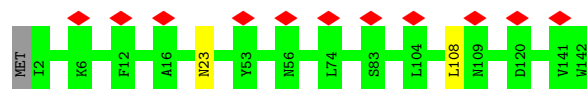
- Molecule 9: 30S ribosomal protein S6



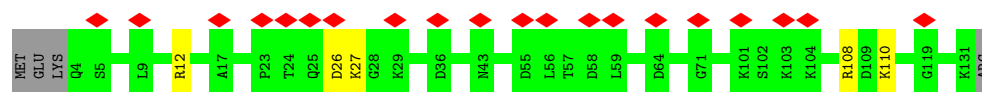
- Molecule 10: 30S ribosomal protein S7



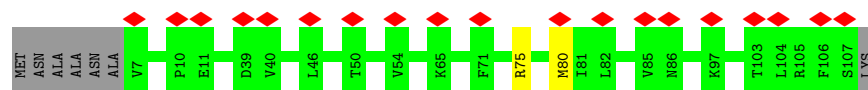
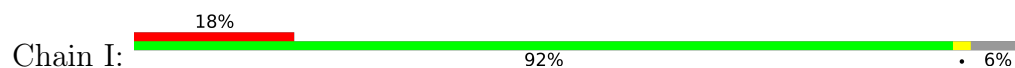
- Molecule 11: 30S ribosomal protein S8



- Molecule 12: 30S ribosomal protein S9

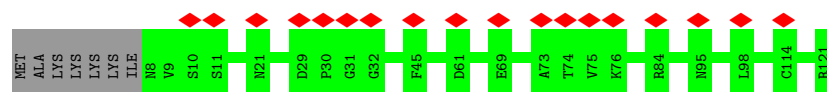


- Molecule 13: 30S ribosomal protein S10

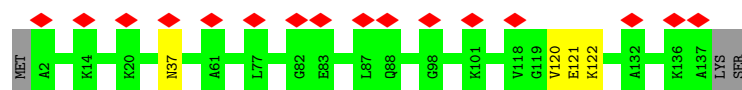


- Molecule 14: 30S ribosomal protein S11

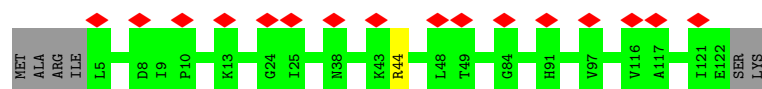




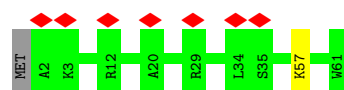
- Molecule 15: 30S ribosomal protein S12



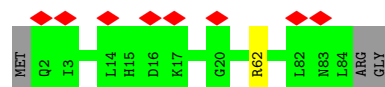
- Molecule 16: 30S ribosomal protein S13



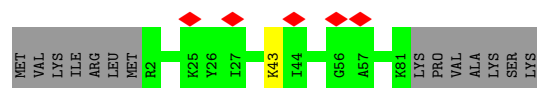
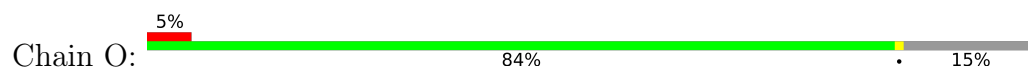
- Molecule 17: 30S ribosomal protein S14 type Z



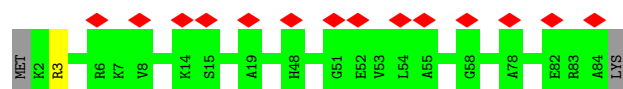
- Molecule 18: 30S ribosomal protein S15



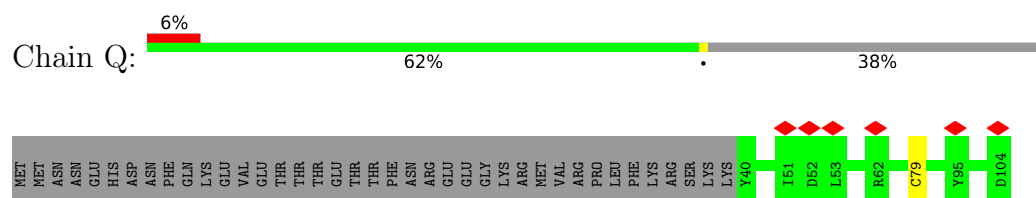
- Molecule 19: 30S ribosomal protein S16



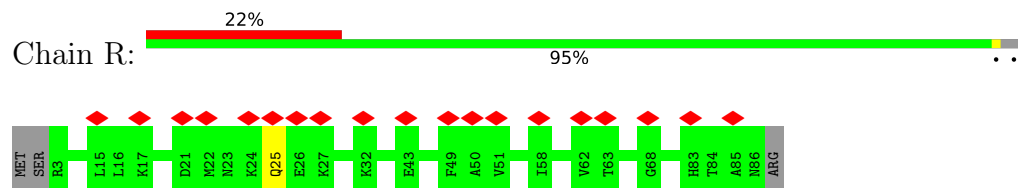
- Molecule 20: 30S ribosomal protein S17



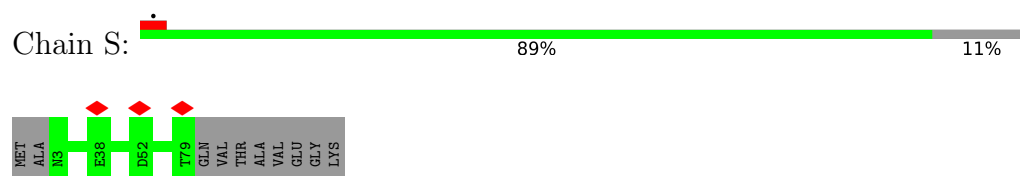
- Molecule 21: 30S ribosomal protein S18



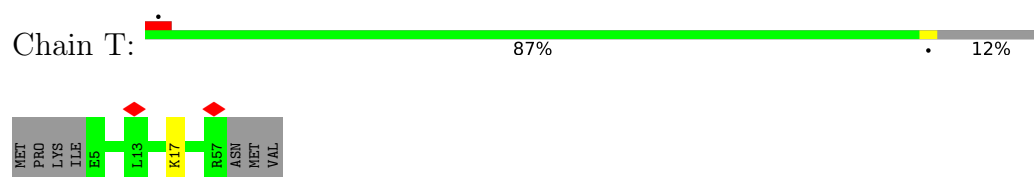
- Molecule 22: 30S ribosomal protein S19



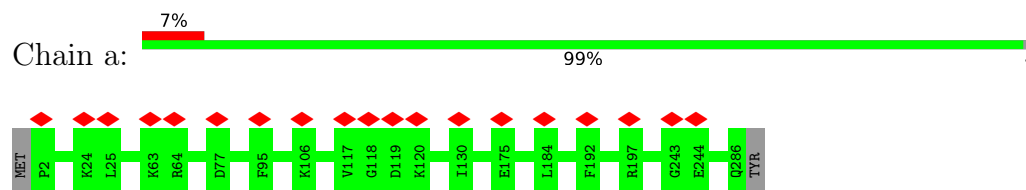
- Molecule 23: 30S ribosomal protein S20



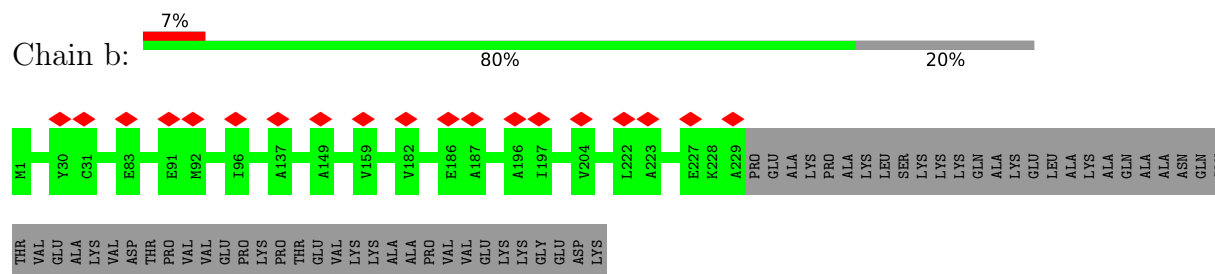
- Molecule 24: 30S ribosomal protein S21



- Molecule 25: 50S ribosomal protein L2

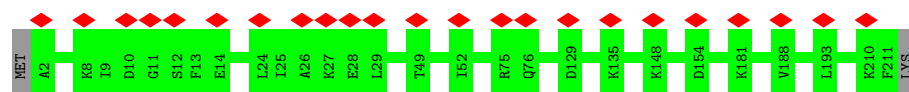


- Molecule 26: 50S ribosomal protein L3

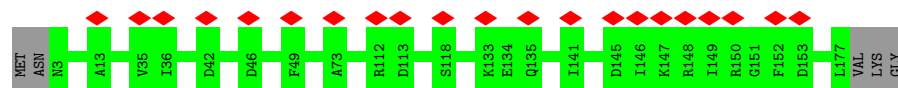


- Molecule 27: 50S ribosomal protein L4

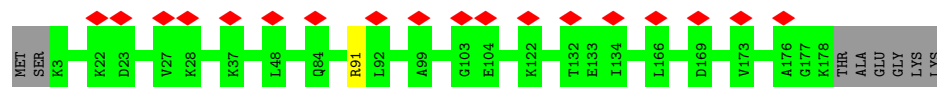




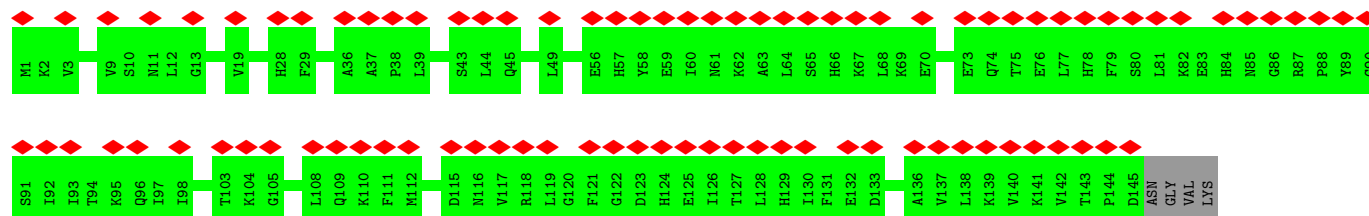
- Molecule 28: 50S ribosomal protein L5



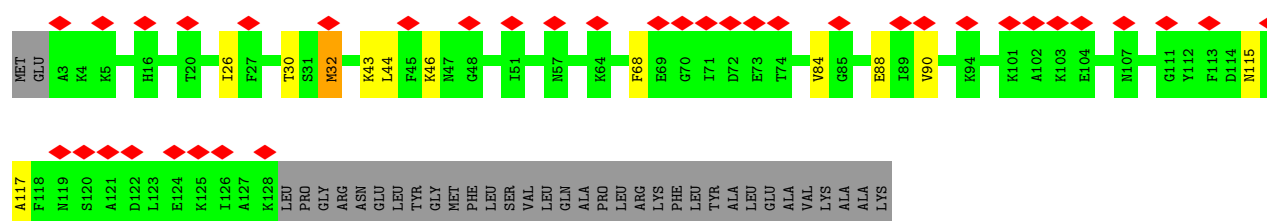
- Molecule 29: 50S ribosomal protein L6



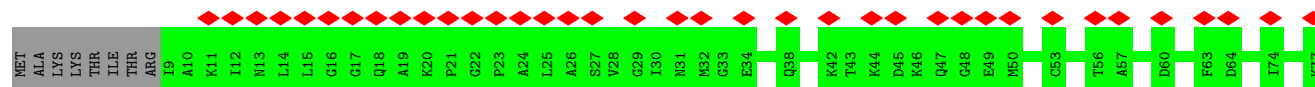
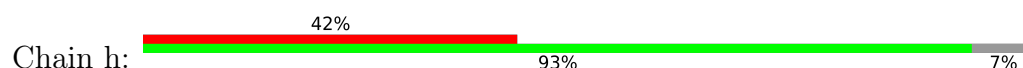
- Molecule 30: 50S ribosomal protein L9

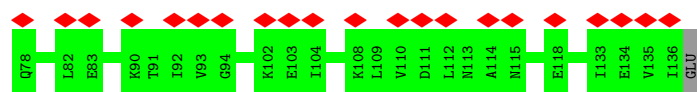


- Molecule 31: 50S ribosomal protein L10

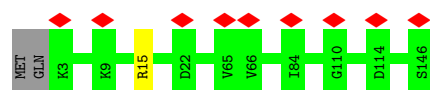


- Molecule 32: 50S ribosomal protein L11

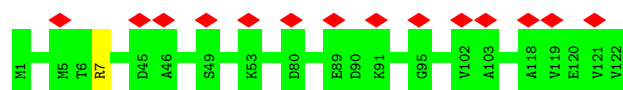




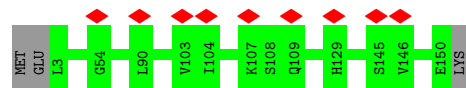
- Molecule 33: 50S ribosomal protein L13



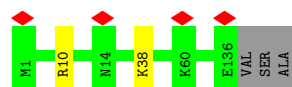
- Molecule 34: 50S ribosomal protein L14



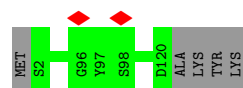
- Molecule 35: 50S ribosomal protein L15



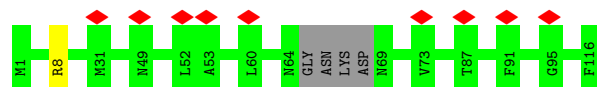
- Molecule 36: 50S ribosomal protein L16



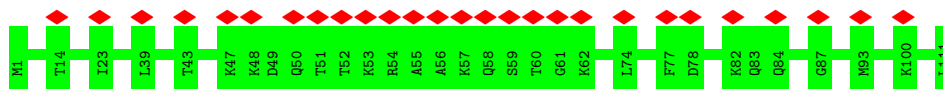
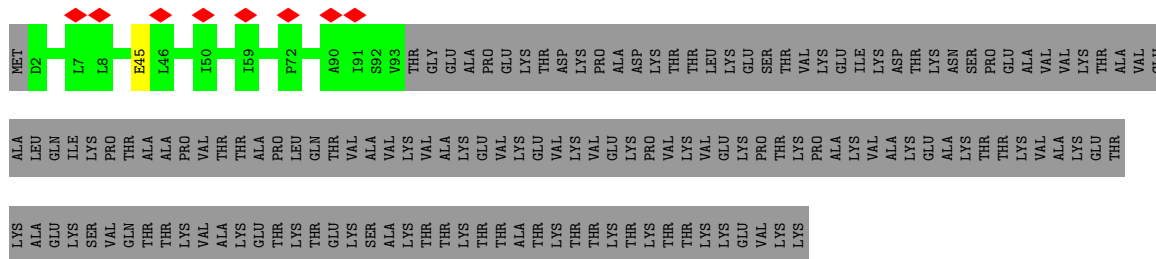
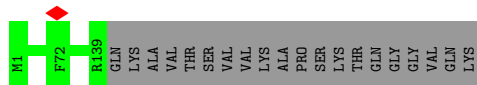
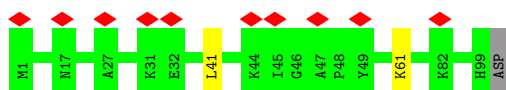
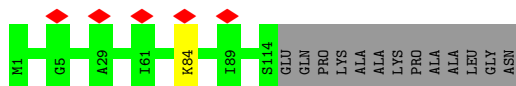
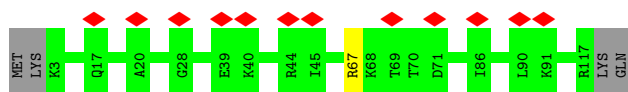
- Molecule 37: 50S ribosomal protein L17



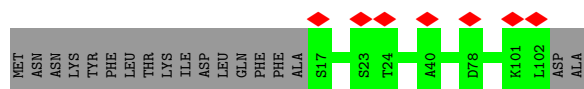
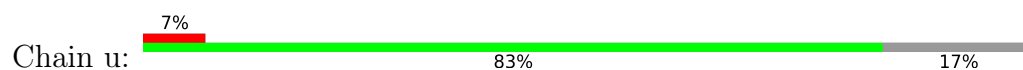
- Molecule 38: 50S ribosomal protein L18



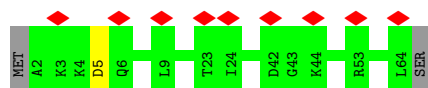
- Molecule 39: 50S ribosomal protein L19



- 



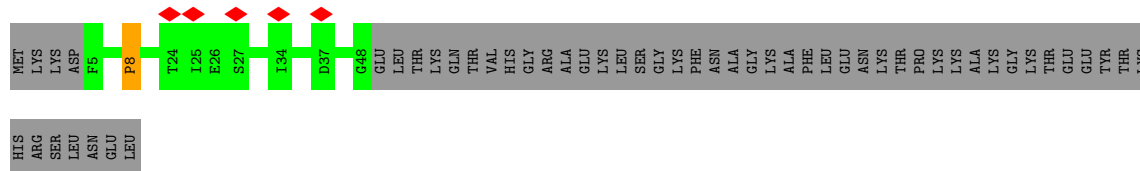
- Molecule 46: 50S ribosomal protein L28



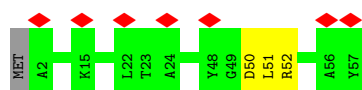
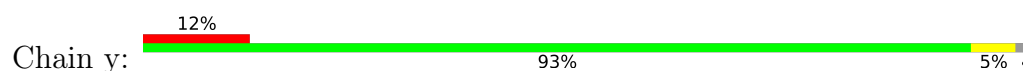
- Molecule 47: 50S ribosomal protein L29



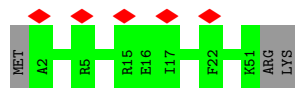
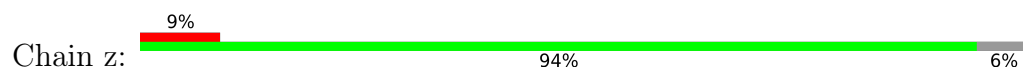
- Molecule 48: 50S ribosomal protein L31



- Molecule 49: 50S ribosomal protein L32



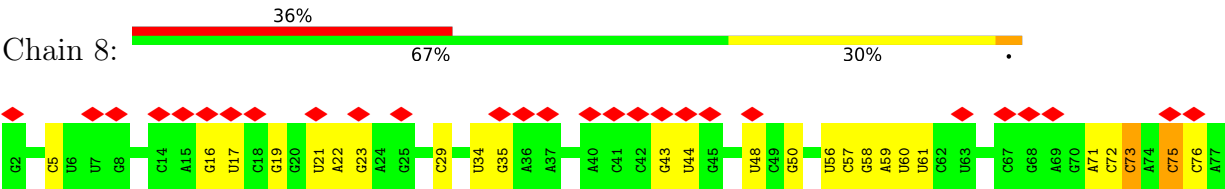
- Molecule 50: 50S ribosomal protein L33 1



- Molecule 51: 23S ribosomal RNA



A1619	G1508	A1393	G1257	G1163	U1027	G914	G792	U641	U500	C393	G252	C126	U
G1628	A1509	A1394	A1258	U1167	A1032	G917	G798	G650	G501	C394	C253	A127	A
A1637	A1510	A1395	A1259	A1168	A1043	G921	G799	G656	A502	A396	A255	A128	A
G1640	A1515	A1396	G1266	C1170	C1043	G922	C900	G656	G509	G397	G256	G132	
A1641	C1518	G1402	U1268	G1171	C1044	A	G903	A657	G510	C398	G133	G134	
G1642	A1519	A1406	G1278	G1174	A1045	C	G907	G658	U511	G399	U137	U138	
A1643	A1520	U1407	A1281	C1175	U1049	U	U807	A663	A513	G401	A266	G9	
A1644	A1532	G1412	A1282	U1176	U1049	A	G810	G670	A515	U403	G270	U10	
G1645	U1533	A1413	A1283	A1177	A1052	G928	G811	G670	A516	C404	G159	U14	
G1646	A1534	C1414	U1284	A1178	A1055	G929	A817	A673	A519	U407	A276	A15	
A1647	A1537	U1285	U1285	A1186	A1058	G930	A818	A681	C520	G408	U281	A163	
A1650	A1541	G1286	G1286	U1191	U1058	G931	U819	A682	U539	A403	U284	U165	
C1651	U1546	A1420	A1421	U1192	U1061	U932	U820	U688	A540	G410	U285	A166	
A1656	G1550	U1422	A1423	U1193	A1061	G936	A823	U689	U543	G418	G287	A170	
A1661	G1550	C1426	U1297	U1196	U1068	A937	U824	U690	C544				
G1668	A1431	A1431	A1298	G1197	G1075	A938	U825	U693	C545				
G1668	A1557	A1431	G1301	G1198	A1075	U944	A828	U693	G557	A421	G294	A178	
U1679	A1558	U1434	C1302	A1202	A1081	A947	G836	A701	C562	A421	U295	A179	
A1680	U	A1435	U1303	G1203	A1082	A948	U702	U702	C562	A422	U296	G181	
G	G	U1304	U1304	A1204	U1093	C949	A703	A703	C562	G424	G297	C182	
A	A	U1439	A1314	U1207	U1093	U950	G840	G704	C565	U425	U298	A183	
C	C	C1444	A1208	U1207	U1096	C951	C841	A705	G566	U426	A299	A184	
U	U	U1445	A1209	U1209	U1096	C952	U842	C706	U567	U427	G300	U185	
A	A	G1446	C1317	A1210	U1101	G953	U842	C706	U567	U428	U186	A186	
G1690	U	U1447	U1447	U1211	U1104	U952	C947	A712	U573	G432	U310	C187	
A1694	G	U1448	C1212	C1212	A1104	U968	A854	A720	A576	A437	U312	G188	
G1695	C	U1448	C1212	C1212	A1105	U968	A855	G721	A576	A437	G314	A200	
A1698	A	C1456	G1217	G1217	G1106	A981	A856	C722	A581	G442	A315	A203	
G1701	G1570	G1463	G1224	G1224	C1107	G982	U862	G730	U583	C444	G319	U206	
A1702	U1571	U1464	U1340	U1232	C1111	U987	U863	A734	G592	G447	A328	C207	
A1703	G1572	U1465	U1341	A1232	U1112	G990	C968	A739	G592	A448	A333	U210	
C1706	U1581	U1466	C1342	A1233	U1113	A993	G873	G739	U595	C449	A333	A203	
G1581	U1581	U1467	G1343	U1234	U1117	U994	U874	A740	G596	G455	C336	U204	
G1583	U1583	C1475	U1344	U1235	U1123	A995	G875	U749	G597	G456	A345	U205	
U1584	U1584	U1479	U1347	G1236	A1123	G997	U875	C752	U599	G460	G346	C207	
A1585	U1585	A1480	C1348	U1240	G1124	A996	A881	A740	C597	G460	A347	A226	
C1709	U1586	U1481	C1349	U1241	U1125	G997	C882	C752	U600	A466	G347	A227	
A1715	A1587	U1482	U1349	G1242	U1125	C1001	A883	G761	U601	U467	A228	A104	
A1716	A1588	G1483	G1353	G1245	A1133	A1009	U884	A765	A605	G478	A232	C107	
G1719	A1600	U1484	U1357	G1245	G1134	G1010	A885	C775	G606	C478	A357	A110	
U1727	A1485	A1248	C1358	A1248	G1147	A1016	C894	C775	G610	A483	A358	A237	
A1732	A1603	U1487	U1360	A1250	U1151	A1017	U902	G780	G620	U484	G363	A110	
G1733	U1612	A1493	U1369	C1252	U1151	G1018	U902	U781	G620	A485	A364	G242	
G1737	U1615	A1493	U1369	C1252	U1151	A1019	A907	U782	G625	G486	G372	U245	
U1748	G1616	A1497	A1370	U1254	U1154	G1020	U907	U782	G625	C487	G372	G246	
	U1617	G1507	G1371	G1255	G1157	C1021	U911	A786	A638	U495	U377	U247	
	U1618		C1378	A1256		A1024		C787					



4 Experimental information

Property	Value	Source
EM reconstruction method	SUBTOMOGRAM AVERAGING	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of subtomograms used	4634	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 ($e^-/\text{\AA}^2$)	3.2	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	3750	Depositor
Magnification	81000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	1.676	Depositor
Minimum map value	-0.632	Depositor
Average map value	0.025	Depositor
Map value standard deviation	0.127	Depositor
Recommended contour level	0.47	Depositor
Map size (Å)	435.328, 435.328, 435.328	wwPDB
Map dimensions	256, 256, 256	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.7005, 1.7005, 1.7005	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# $ Z > 5$	RMSZ	# $ Z > 5$
1	0	0.24	0/383	0.50	0/504
2	1	0.23	0/484	0.49	0/637
3	2	0.28	0/306	0.68	1/401 (0.2%)
4	9	0.26	0/3071	0.50	0/4147
5	A	0.26	0/1954	0.51	0/2642
6	B	0.25	0/1721	0.49	0/2323
7	C	0.28	0/1691	0.47	0/2267
8	D	0.24	0/1188	0.50	0/1593
9	E	0.25	0/1384	0.49	0/1867
10	F	0.24	0/1266	0.47	0/1700
11	G	0.25	0/1126	0.50	0/1517
12	H	0.26	0/1044	0.53	0/1395
13	I	0.30	0/820	0.69	1/1103 (0.1%)
14	J	0.26	0/844	0.47	0/1136
15	K	0.28	0/1094	0.53	0/1468
16	L	0.24	0/962	0.46	0/1289
17	M	0.33	0/483	0.53	0/643
18	N	0.24	0/679	0.46	0/907
19	O	0.25	0/659	0.46	0/885
20	P	0.24	0/684	0.49	0/913
21	Q	0.24	0/545	0.46	0/730
22	R	0.26	0/698	0.50	0/936
23	S	0.26	0/631	0.55	0/838
24	T	0.29	0/475	0.55	0/621
25	a	0.24	0/2267	0.49	0/3044
26	b	0.25	0/1795	0.50	0/2412
27	c	0.24	0/1671	0.47	0/2246
28	d	0.25	0/1409	0.51	0/1894
29	e	0.33	0/1420	0.57	1/1912 (0.1%)
30	f	0.26	0/1183	0.49	0/1587
31	g	0.38	0/969	0.61	0/1295
32	h	0.24	0/968	0.46	0/1298
33	i	0.24	0/1186	0.48	0/1592
34	j	0.26	0/953	0.52	0/1275

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
35	k	0.26	0/1170	0.49	0/1559
36	l	0.25	0/1104	0.52	0/1481
37	m	0.25	0/973	0.50	0/1309
38	n	0.26	0/897	0.53	0/1198
39	o	0.24	0/948	0.46	0/1262
40	p	0.23	0/961	0.42	0/1278
41	q	0.26	0/828	0.60	1/1111 (0.1%)
42	r	0.27	0/1077	0.53	0/1441
43	s	0.29	0/732	0.56	1/988 (0.1%)
44	t	0.24	0/879	0.49	0/1165
45	u	0.25	0/665	0.50	0/884
46	v	0.34	0/519	0.70	1/695 (0.1%)
47	w	0.27	0/826	0.58	1/1104 (0.1%)
48	x	0.28	0/353	0.53	1/474 (0.2%)
49	y	0.33	0/457	0.60	0/601
50	z	0.24	0/412	0.48	0/547
51	3	0.20	0/69073	0.80	32/107710 (0.0%)
52	4	0.20	0/2505	0.79	1/3902 (0.0%)
53	5	0.20	0/35768	0.78	21/55764 (0.0%)
54	6	0.21	0/1808	0.86	2/2817 (0.1%)
54	7	0.21	0/1808	0.86	2/2817 (0.1%)
54	8	0.21	0/1808	0.86	2/2817 (0.1%)
All	All	0.22	0/163584	0.73	68/243941 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
11	G	0	1
12	H	0	1
22	R	0	1
All	All	0	3

There are no bond length outliers.

All (68) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
47	w	26	LEU	CA-CB-CG	8.80	135.54	115.30
53	5	843	C	N3-C2-O2	-8.37	116.04	121.90
51	3	99	C	N3-C2-O2	-8.23	116.14	121.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
53	5	1183	C	N3-C2-O2	-7.90	116.37	121.90
53	5	877	C	N3-C2-O2	-7.76	116.47	121.90
51	3	659	C	N3-C2-O2	-7.13	116.91	121.90
51	3	1964	C	N3-C2-O2	-7.08	116.94	121.90
51	3	99	C	C6-N1-C2	-7.01	117.50	120.30
51	3	444	C	N3-C2-O2	-6.98	117.02	121.90
53	5	751	C	C2-N1-C1'	6.97	126.46	118.80
51	3	2197	U	C2-N1-C1'	6.85	125.92	117.70
51	3	567	U	C2-N1-C1'	6.82	125.89	117.70
51	3	205	C	N1-C2-O2	6.65	122.89	118.90
51	3	1507	G	O4'-C1'-N9	6.55	113.44	108.20
51	3	1697	C	N3-C2-O2	-6.45	117.39	121.90
51	3	567	U	N1-C2-O2	6.43	127.30	122.80
52	4	58	C	N3-C2-O2	-6.28	117.50	121.90
53	5	1484	C	N3-C2-O2	-6.26	117.52	121.90
51	3	2507	C	C2-N1-C1'	6.24	125.66	118.80
29	e	91	ARG	CG-CD-NE	6.23	124.89	111.80
51	3	1303	U	C2-N1-C1'	6.23	125.18	117.70
51	3	2507	C	N1-C2-O2	6.23	122.64	118.90
53	5	1483	C	N1-C2-O2	6.09	122.56	118.90
51	3	1341	U	C2-N1-C1'	6.06	124.98	117.70
51	3	98	C	N1-C2-O2	6.05	122.53	118.90
53	5	835	G	C5-C6-O6	5.93	132.16	128.60
51	3	659	C	N1-C2-O2	5.90	122.44	118.90
54	7	73	C	N3-C2-O2	-5.90	117.77	121.90
51	3	98	C	C2-N1-C1'	5.89	125.28	118.80
53	5	1119	C	C2-N1-C1'	5.87	125.25	118.80
53	5	974	C	C2-N1-C1'	5.85	125.23	118.80
54	6	73	C	N3-C2-O2	-5.83	117.82	121.90
51	3	426	U	C2-N1-C1'	5.83	124.69	117.70
53	5	835	G	N1-C6-O6	-5.82	116.41	119.90
54	8	73	C	N3-C2-O2	-5.81	117.83	121.90
13	I	80	MET	CA-CB-CG	5.79	123.14	113.30
53	5	751	C	N1-C2-O2	5.77	122.36	118.90
51	3	545	C	N1-C2-O2	5.75	122.35	118.90
41	q	41	LEU	CA-CB-CG	5.75	128.52	115.30
51	3	2350	C	N3-C2-O2	-5.72	117.90	121.90
46	v	5	ASP	CB-CG-OD1	-5.70	113.17	118.30
51	3	567	U	N3-C2-O2	-5.57	118.30	122.20
43	s	45	GLU	CA-CB-CG	5.55	125.62	113.40
51	3	2604	U	P-O3'-C3'	5.52	126.32	119.70
51	3	1341	U	N1-C2-O2	5.46	126.62	122.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
53	5	1183	C	C6-N1-C2	-5.44	118.12	120.30
53	5	1134	C	C2-N1-C1'	5.42	124.76	118.80
51	3	1303	U	N1-C2-O2	5.40	126.58	122.80
54	7	75	C	C2-N1-C1'	5.39	124.73	118.80
53	5	361	U	C2-N1-C1'	5.38	124.16	117.70
54	8	75	C	C2-N1-C1'	5.35	124.69	118.80
54	6	75	C	C2-N1-C1'	5.34	124.67	118.80
53	5	1182	C	N1-C2-O2	5.28	122.07	118.90
48	x	8	PRO	CA-N-CD	-5.27	104.13	111.50
53	5	877	C	N1-C2-O2	5.22	122.03	118.90
3	2	24	ARG	NE-CZ-NH2	5.21	122.90	120.30
51	3	443	C	N1-C2-O2	5.15	121.99	118.90
51	3	2507	C	N3-C2-O2	-5.15	118.29	121.90
53	5	975	C	N1-C2-O2	5.15	121.99	118.90
53	5	877	C	C6-N1-C2	-5.11	118.26	120.30
53	5	974	C	N1-C2-O2	5.10	121.96	118.90
51	3	1341	U	N3-C2-O2	-5.10	118.63	122.20
51	3	1303	U	N3-C2-O2	-5.09	118.64	122.20
53	5	975	C	C2-N1-C1'	5.09	124.39	118.80
53	5	1483	C	N3-C2-O2	-5.05	118.36	121.90
51	3	456	G	C5-C6-O6	5.03	131.62	128.60
51	3	2691	C	N1-C2-O2	5.02	121.92	118.90
51	3	1533	U	C2-N1-C1'	5.00	123.71	117.70

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
11	G	108	LEU	Peptide
12	H	26	ASP	Peptide
22	R	25	GLN	Peptide

5.2 Too-close contacts

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

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	45/48 (94%)	43 (96%)	2 (4%)	0	100	100
2	1	57/59 (97%)	51 (90%)	6 (10%)	0	100	100
3	2	35/37 (95%)	33 (94%)	2 (6%)	0	100	100
4	9	391/394 (99%)	367 (94%)	23 (6%)	1 (0%)	37	73
5	A	238/294 (81%)	223 (94%)	15 (6%)	0	100	100
6	B	213/273 (78%)	192 (90%)	20 (9%)	1 (0%)	25	64
7	C	201/205 (98%)	180 (90%)	21 (10%)	0	100	100
8	D	151/219 (69%)	144 (95%)	7 (5%)	0	100	100
9	E	165/215 (77%)	147 (89%)	18 (11%)	0	100	100
10	F	152/155 (98%)	136 (90%)	15 (10%)	1 (1%)	19	57
11	G	139/142 (98%)	122 (88%)	17 (12%)	0	100	100
12	H	126/132 (96%)	102 (81%)	23 (18%)	1 (1%)	16	55
13	I	99/108 (92%)	91 (92%)	8 (8%)	0	100	100
14	J	112/121 (93%)	107 (96%)	5 (4%)	0	100	100
15	K	134/139 (96%)	120 (90%)	14 (10%)	0	100	100
16	L	116/124 (94%)	100 (86%)	16 (14%)	0	100	100
17	M	58/61 (95%)	53 (91%)	5 (9%)	0	100	100
18	N	81/86 (94%)	81 (100%)	0	0	100	100
19	O	78/94 (83%)	73 (94%)	5 (6%)	0	100	100
20	P	81/85 (95%)	77 (95%)	4 (5%)	0	100	100
21	Q	63/104 (61%)	55 (87%)	7 (11%)	1 (2%)	8	38
22	R	82/87 (94%)	71 (87%)	11 (13%)	0	100	100
23	S	75/87 (86%)	75 (100%)	0	0	100	100
24	T	51/60 (85%)	49 (96%)	2 (4%)	0	100	100
25	a	283/287 (99%)	256 (90%)	27 (10%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
26	b	227/287 (79%)	209 (92%)	18 (8%)	0	100	100
27	c	208/212 (98%)	197 (95%)	11 (5%)	0	100	100
28	d	173/180 (96%)	160 (92%)	13 (8%)	0	100	100
29	e	174/184 (95%)	160 (92%)	14 (8%)	0	100	100
30	f	143/149 (96%)	130 (91%)	13 (9%)	0	100	100
31	g	124/161 (77%)	115 (93%)	7 (6%)	2 (2%)	8	38
32	h	126/137 (92%)	106 (84%)	20 (16%)	0	100	100
33	i	142/146 (97%)	133 (94%)	9 (6%)	0	100	100
34	j	120/122 (98%)	115 (96%)	5 (4%)	0	100	100
35	k	146/151 (97%)	139 (95%)	7 (5%)	0	100	100
36	l	134/139 (96%)	129 (96%)	5 (4%)	0	100	100
37	m	117/124 (94%)	111 (95%)	6 (5%)	0	100	100
38	n	108/116 (93%)	98 (91%)	10 (9%)	0	100	100
39	o	113/119 (95%)	104 (92%)	9 (8%)	0	100	100
40	p	112/127 (88%)	109 (97%)	3 (3%)	0	100	100
41	q	97/100 (97%)	79 (81%)	18 (19%)	0	100	100
42	r	137/159 (86%)	126 (92%)	11 (8%)	0	100	100
43	s	90/237 (38%)	81 (90%)	9 (10%)	0	100	100
44	t	109/111 (98%)	100 (92%)	9 (8%)	0	100	100
45	u	84/104 (81%)	79 (94%)	5 (6%)	0	100	100
46	v	61/65 (94%)	57 (93%)	4 (7%)	0	100	100
47	w	96/111 (86%)	90 (94%)	6 (6%)	0	100	100
48	x	42/97 (43%)	35 (83%)	6 (14%)	1 (2%)	5	27
49	y	54/57 (95%)	49 (91%)	5 (9%)	0	100	100
50	z	48/53 (91%)	45 (94%)	3 (6%)	0	100	100
All	All	6211/7064 (88%)	5704 (92%)	499 (8%)	8 (0%)	50	83

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	9	334	ARG
6	B	103	ASP
31	g	32	MET

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Mol	Chain	Res	Type
12	H	27	LYS
21	Q	79	CYS
31	g	117	ALA
48	x	8	PRO
10	F	81	GLY

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	40/41 (98%)	40 (100%)	0	100	100
2	1	51/51 (100%)	51 (100%)	0	100	100
3	2	35/35 (100%)	35 (100%)	0	100	100
4	9	324/325 (100%)	321 (99%)	3 (1%)	75	83
5	A	212/262 (81%)	211 (100%)	1 (0%)	86	89
6	B	180/232 (78%)	178 (99%)	2 (1%)	70	80
7	C	181/183 (99%)	180 (99%)	1 (1%)	84	88
8	D	123/178 (69%)	122 (99%)	1 (1%)	79	85
9	E	150/196 (76%)	149 (99%)	1 (1%)	81	87
10	F	131/132 (99%)	129 (98%)	2 (2%)	60	75
11	G	123/124 (99%)	122 (99%)	1 (1%)	79	85
12	H	111/115 (96%)	108 (97%)	3 (3%)	40	58
13	I	95/99 (96%)	94 (99%)	1 (1%)	70	80
14	J	91/97 (94%)	91 (100%)	0	100	100
15	K	117/120 (98%)	113 (97%)	4 (3%)	32	51
16	L	100/105 (95%)	99 (99%)	1 (1%)	73	82
17	M	47/48 (98%)	46 (98%)	1 (2%)	48	66
18	N	76/78 (97%)	75 (99%)	1 (1%)	65	77
19	O	69/82 (84%)	68 (99%)	1 (1%)	62	75
20	P	73/75 (97%)	72 (99%)	1 (1%)	62	75

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
21	Q	56/94 (60%)	56 (100%)	0	100	100
22	R	74/77 (96%)	74 (100%)	0	100	100
23	S	70/77 (91%)	70 (100%)	0	100	100
24	T	49/56 (88%)	48 (98%)	1 (2%)	50	68
25	a	241/243 (99%)	241 (100%)	0	100	100
26	b	186/233 (80%)	186 (100%)	0	100	100
27	c	182/184 (99%)	182 (100%)	0	100	100
28	d	150/154 (97%)	150 (100%)	0	100	100
29	e	153/159 (96%)	153 (100%)	0	100	100
30	f	123/134 (92%)	123 (100%)	0	100	100
31	g	101/129 (78%)	90 (89%)	11 (11%)	5	18
32	h	102/110 (93%)	102 (100%)	0	100	100
33	i	126/128 (98%)	125 (99%)	1 (1%)	79	85
34	j	103/103 (100%)	102 (99%)	1 (1%)	73	82
35	k	123/126 (98%)	123 (100%)	0	100	100
36	l	113/115 (98%)	111 (98%)	2 (2%)	54	71
37	m	105/109 (96%)	105 (100%)	0	100	100
38	n	96/99 (97%)	95 (99%)	1 (1%)	73	82
39	o	101/105 (96%)	100 (99%)	1 (1%)	73	82
40	p	100/108 (93%)	99 (99%)	1 (1%)	73	82
41	q	90/91 (99%)	89 (99%)	1 (1%)	70	80
42	r	116/132 (88%)	116 (100%)	0	100	100
43	s	82/208 (39%)	82 (100%)	0	100	100
44	t	96/96 (100%)	96 (100%)	0	100	100
45	u	69/85 (81%)	69 (100%)	0	100	100
46	v	58/60 (97%)	58 (100%)	0	100	100
47	w	87/98 (89%)	85 (98%)	2 (2%)	45	64
48	x	41/86 (48%)	41 (100%)	0	100	100
49	y	48/49 (98%)	45 (94%)	3 (6%)	15	36
50	z	47/50 (94%)	47 (100%)	0	100	100
All	All	5417/6076 (89%)	5367 (99%)	50 (1%)	74	83

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	9	41	LYS
4	9	119	HIS
4	9	231	ARG
5	A	27	ARG
6	B	191	LYS
6	B	217	ARG
7	C	55	GLN
8	D	148	ARG
9	E	145	ARG
10	F	9	ARG
10	F	78	ARG
11	G	23	ASN
12	H	12	ARG
12	H	108	ARG
12	H	110	LYS
13	I	75	ARG
15	K	37	ASN
15	K	120	VAL
15	K	121	GLU
15	K	122	LYS
16	L	44	ARG
17	M	57	LYS
18	N	62	ARG
19	O	43	LYS
20	P	3	ARG
24	T	17	LYS
31	g	26	ILE
31	g	30	THR
31	g	32	MET
31	g	43	LYS
31	g	44	LEU
31	g	46	LYS
31	g	68	PHE
31	g	84	VAL
31	g	88	GLU
31	g	90	VAL
31	g	115	ASN
33	i	15	ARG
34	j	7	ARG
36	l	10	ARG
36	l	38	LYS
38	n	8	ARG

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Mol	Chain	Res	Type
39	o	67	ARG
40	p	84	LYS
41	q	61	LYS
47	w	8	ARG
47	w	62	LYS
49	y	50	ASP
49	y	51	LEU
49	y	52	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
4	9	14	ASN
4	9	79	HIS
4	9	98	GLN
5	A	63	GLN
5	A	70	ASN
5	A	77	GLN
5	A	137	GLN
6	B	25	ASN
7	C	81	GLN
7	C	88	ASN
8	D	138	HIS
8	D	202	GLN
10	F	147	ASN
11	G	56	ASN
12	H	128	GLN
13	I	70	GLN
15	K	37	ASN
20	P	25	GLN
24	T	35	HIS
25	a	58	GLN
25	a	159	GLN
26	b	34	ASN
27	c	76	GLN
27	c	83	HIS
30	f	54	GLN
30	f	100	GLN
30	f	109	GLN
35	k	5	GLN
38	n	23	ASN
40	p	36	GLN

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Mol	Chain	Res	Type
44	t	2	GLN
44	t	17	ASN
47	w	90	HIS
49	y	40	HIS

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
51	3	2875/2907 (98%)	806 (28%)	31 (1%)
52	4	103/108 (95%)	33 (32%)	3 (2%)
53	5	1490/1520 (98%)	354 (23%)	3 (0%)
54	6	75/76 (98%)	23 (30%)	2 (2%)
54	7	75/76 (98%)	23 (30%)	2 (2%)
54	8	75/76 (98%)	23 (30%)	2 (2%)
All	All	4693/4763 (98%)	1262 (26%)	43 (0%)

All (1262) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
51	3	9	G
51	3	10	U
51	3	14	U
51	3	15	A
51	3	29	G
51	3	37	G
51	3	38	G
51	3	39	C
51	3	45	U
51	3	48	G
51	3	52	U
51	3	53	G
51	3	58	A
51	3	65	A
51	3	73	A
51	3	75	A
51	3	76	A
51	3	77	G
51	3	86	A
51	3	87	G
51	3	94	A
51	3	98	C

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Mol	Chain	Res	Type
51	3	100	U
51	3	102	A
51	3	103	G
51	3	104	A
51	3	107	C
51	3	110	A
51	3	115	U
51	3	119	A
51	3	120	A
51	3	121	U
51	3	122	G
51	3	126	C
51	3	128	A
51	3	132	G
51	3	134	U
51	3	137	U
51	3	159	G
51	3	163	A
51	3	165	U
51	3	166	A
51	3	170	A
51	3	178	A
51	3	180	A
51	3	181	G
51	3	183	A
51	3	184	A
51	3	186	A
51	3	188	G
51	3	200	A
51	3	203	A
51	3	204	U
51	3	206	U
51	3	208	A
51	3	209	G
51	3	210	U
51	3	219	G
51	3	220	A
51	3	226	A
51	3	227	A
51	3	228	A
51	3	232	A
51	3	237	A

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Mol	Chain	Res	Type
51	3	242	G
51	3	245	U
51	3	246	G
51	3	247	U
51	3	252	G
51	3	254	G
51	3	256	G
51	3	261	A
51	3	266	A
51	3	270	G
51	3	276	A
51	3	281	U
51	3	284	U
51	3	286	A
51	3	287	G
51	3	294	G
51	3	295	U
51	3	296	U
51	3	298	U
51	3	299	A
51	3	300	G
51	3	310	U
51	3	312	U
51	3	314	G
51	3	315	A
51	3	319	G
51	3	328	A
51	3	333	A
51	3	336	C
51	3	345	A
51	3	347	C
51	3	351	G
51	3	357	A
51	3	358	A
51	3	363	G
51	3	364	A
51	3	372	G
51	3	377	U
51	3	393	C
51	3	395	U
51	3	396	A
51	3	397	G

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Mol	Chain	Res	Type
51	3	399	G
51	3	401	G
51	3	402	A
51	3	403	U
51	3	404	C
51	3	407	U
51	3	409	A
51	3	410	G
51	3	411	U
51	3	418	G
51	3	421	A
51	3	422	A
51	3	424	G
51	3	425	U
51	3	426	U
51	3	428	U
51	3	432	G
51	3	437	A
51	3	442	G
51	3	447	G
51	3	448	A
51	3	449	C
51	3	455	G
51	3	460	G
51	3	466	A
51	3	467	U
51	3	478	G
51	3	483	A
51	3	484	U
51	3	485	A
51	3	487	C
51	3	495	U
51	3	500	U
51	3	501	G
51	3	502	A
51	3	509	G
51	3	511	U
51	3	514	A
51	3	515	A
51	3	516	A
51	3	519	A
51	3	520	C

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Mol	Chain	Res	Type
51	3	539	U
51	3	540	A
51	3	543	U
51	3	544	U
51	3	557	G
51	3	562	C
51	3	565	C
51	3	566	G
51	3	573	A
51	3	576	A
51	3	581	A
51	3	583	U
51	3	592	G
51	3	595	U
51	3	597	C
51	3	598	G
51	3	599	U
51	3	601	U
51	3	605	A
51	3	606	G
51	3	610	G
51	3	620	G
51	3	625	G
51	3	638	A
51	3	641	U
51	3	650	G
51	3	656	G
51	3	657	A
51	3	663	A
51	3	670	G
51	3	673	A
51	3	681	A
51	3	682	A
51	3	689	U
51	3	690	U
51	3	693	U
51	3	701	A
51	3	703	A
51	3	704	G
51	3	706	C
51	3	712	A
51	3	720	A

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Mol	Chain	Res	Type
51	3	721	G
51	3	722	C
51	3	730	G
51	3	734	A
51	3	739	G
51	3	740	A
51	3	749	U
51	3	752	C
51	3	761	G
51	3	765	A
51	3	775	C
51	3	780	G
51	3	782	U
51	3	786	A
51	3	787	C
51	3	792	G
51	3	798	G
51	3	799	A
51	3	800	C
51	3	803	G
51	3	807	U
51	3	810	G
51	3	811	G
51	3	817	A
51	3	819	U
51	3	820	U
51	3	823	A
51	3	824	A
51	3	825	U
51	3	828	A
51	3	836	G
51	3	840	G
51	3	842	U
51	3	847	C
51	3	854	A
51	3	856	A
51	3	862	U
51	3	863	U
51	3	868	C
51	3	873	G
51	3	875	G
51	3	881	A

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Mol	Chain	Res	Type
51	3	882	C
51	3	883	A
51	3	885	A
51	3	894	G
51	3	902	U
51	3	907	A
51	3	911	U
51	3	914	G
51	3	917	G
51	3	921	C
51	3	929	G
51	3	930	C
51	3	932	U
51	3	936	G
51	3	937	A
51	3	938	A
51	3	943	A
51	3	944	U
51	3	947	A
51	3	949	C
51	3	951	C
51	3	952	U
51	3	953	G
51	3	968	U
51	3	981	A
51	3	982	G
51	3	987	U
51	3	990	G
51	3	993	A
51	3	994	U
51	3	995	A
51	3	997	G
51	3	1001	C
51	3	1009	A
51	3	1010	G
51	3	1016	A
51	3	1018	G
51	3	1019	A
51	3	1021	C
51	3	1024	A
51	3	1027	U
51	3	1032	A

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Mol	Chain	Res	Type
51	3	1043	C
51	3	1045	A
51	3	1049	U
51	3	1052	A
51	3	1055	A
51	3	1058	U
51	3	1061	A
51	3	1068	U
51	3	1075	G
51	3	1081	A
51	3	1082	A
51	3	1093	U
51	3	1096	U
51	3	1101	U
51	3	1104	A
51	3	1105	A
51	3	1107	C
51	3	1111	C
51	3	1113	U
51	3	1117	U
51	3	1123	A
51	3	1124	G
51	3	1125	U
51	3	1132	C
51	3	1134	G
51	3	1147	G
51	3	1151	U
51	3	1154	U
51	3	1157	G
51	3	1163	G
51	3	1167	U
51	3	1168	A
51	3	1170	C
51	3	1171	G
51	3	1174	G
51	3	1176	U
51	3	1177	A
51	3	1178	A
51	3	1186	A
51	3	1191	A
51	3	1193	U
51	3	1196	U

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Mol	Chain	Res	Type
51	3	1198	G
51	3	1202	A
51	3	1204	A
51	3	1207	U
51	3	1208	A
51	3	1209	U
51	3	1210	A
51	3	1212	C
51	3	1217	G
51	3	1224	G
51	3	1232	U
51	3	1234	U
51	3	1235	U
51	3	1236	G
51	3	1240	U
51	3	1241	U
51	3	1242	G
51	3	1245	G
51	3	1248	A
51	3	1250	A
51	3	1251	G
51	3	1253	G
51	3	1255	G
51	3	1256	A
51	3	1257	G
51	3	1259	A
51	3	1266	G
51	3	1268	U
51	3	1278	G
51	3	1281	A
51	3	1282	G
51	3	1283	A
51	3	1285	U
51	3	1286	G
51	3	1292	A
51	3	1296	G
51	3	1297	U
51	3	1298	A
51	3	1301	G
51	3	1303	U
51	3	1304	U
51	3	1314	A

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Mol	Chain	Res	Type
51	3	1317	C
51	3	1328	A
51	3	1329	U
51	3	1330	U
51	3	1338	G
51	3	1339	U
51	3	1342	C
51	3	1344	U
51	3	1347	A
51	3	1348	C
51	3	1349	C
51	3	1353	G
51	3	1357	U
51	3	1358	C
51	3	1360	U
51	3	1369	U
51	3	1370	A
51	3	1371	G
51	3	1378	C
51	3	1393	A
51	3	1394	A
51	3	1396	A
51	3	1402	G
51	3	1406	A
51	3	1407	U
51	3	1412	A
51	3	1414	C
51	3	1420	A
51	3	1422	U
51	3	1423	A
51	3	1426	C
51	3	1431	A
51	3	1434	U
51	3	1435	A
51	3	1439	U
51	3	1444	C
51	3	1445	U
51	3	1447	A
51	3	1448	U
51	3	1456	C
51	3	1463	G
51	3	1465	U

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Mol	Chain	Res	Type
51	3	1467	U
51	3	1475	C
51	3	1479	A
51	3	1480	A
51	3	1481	U
51	3	1482	U
51	3	1483	G
51	3	1485	A
51	3	1487	U
51	3	1493	A
51	3	1497	A
51	3	1507	G
51	3	1508	G
51	3	1510	A
51	3	1515	A
51	3	1518	C
51	3	1520	A
51	3	1532	A
51	3	1534	A
51	3	1537	A
51	3	1541	A
51	3	1546	U
51	3	1550	G
51	3	1557	G
51	3	1558	A
51	3	1571	G
51	3	1572	U
51	3	1580	G
51	3	1582	G
51	3	1584	U
51	3	1585	A
51	3	1588	A
51	3	1589	A
51	3	1600	A
51	3	1603	A
51	3	1612	U
51	3	1615	G
51	3	1616	G
51	3	1618	U
51	3	1619	A
51	3	1628	G
51	3	1637	A

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Mol	Chain	Res	Type
51	3	1640	G
51	3	1641	A
51	3	1642	G
51	3	1643	A
51	3	1644	A
51	3	1646	G
51	3	1647	A
51	3	1650	A
51	3	1651	C
51	3	1656	A
51	3	1661	A
51	3	1668	G
51	3	1679	U
51	3	1680	A
51	3	1681	G
51	3	1682	C
51	3	1690	C
51	3	1694	A
51	3	1695	G
51	3	1698	A
51	3	1701	G
51	3	1702	A
51	3	1703	A
51	3	1706	C
51	3	1708	G
51	3	1709	C
51	3	1715	A
51	3	1716	A
51	3	1719	C
51	3	1727	U
51	3	1732	A
51	3	1733	G
51	3	1737	G
51	3	1748	U
51	3	1751	A
51	3	1752	A
51	3	1761	C
51	3	1762	A
51	3	1763	G
51	3	1764	U
51	3	1766	A
51	3	1767	A

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Mol	Chain	Res	Type
51	3	1768	G
51	3	1769	A
51	3	1770	A
51	3	1771	C
51	3	1780	A
51	3	1783	G
51	3	1784	U
51	3	1788	A
51	3	1789	C
51	3	1791	A
51	3	1807	C
51	3	1808	C
51	3	1809	A
51	3	1815	U
51	3	1816	A
51	3	1821	G
51	3	1823	U
51	3	1827	U
51	3	1836	A
51	3	1839	C
51	3	1842	G
51	3	1851	U
51	3	1855	A
51	3	1865	A
51	3	1868	A
51	3	1873	A
51	3	1886	C
51	3	1890	U
51	3	1891	A
51	3	1896	A
51	3	1906	G
51	3	1907	A
51	3	1909	C
51	3	1910	G
51	3	1913	G
51	3	1914	G
51	3	1920	A
51	3	1927	C
51	3	1934	A
51	3	1936	G
51	3	1937	G
51	3	1938	U

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Mol	Chain	Res	Type
51	3	1944	A
51	3	1945	A
51	3	1951	A
51	3	1952	G
51	3	1958	U
51	3	1962	U
51	3	1965	C
51	3	1966	G
51	3	1972	C
51	3	1973	U
51	3	1974	U
51	3	1977	A
51	3	1979	G
51	3	1989	U
51	3	1992	C
51	3	1998	U
51	3	1999	G
51	3	2000	U
51	3	2002	U
51	3	2003	C
51	3	2004	G
51	3	2009	U
51	3	2010	A
51	3	2020	A
51	3	2029	U
51	3	2030	A
51	3	2033	G
51	3	2035	U
51	3	2036	G
51	3	2037	A
51	3	2038	A
51	3	2040	A
51	3	2041	C
51	3	2046	G
51	3	2050	G
51	3	2055	A
51	3	2057	C
51	3	2062	C
51	3	2063	G
51	3	2067	A
51	3	2068	G
51	3	2069	A

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Mol	Chain	Res	Type
51	3	2070	C
51	3	2076	G
51	3	2081	U
51	3	2083	U
51	3	2084	A
51	3	2087	G
51	3	2095	A
51	3	2097	A
51	3	2100	G
51	3	2101	A
51	3	2106	G
51	3	2107	A
51	3	2110	U
51	3	2111	U
51	3	2112	A
51	3	2114	C
51	3	2116	U
51	3	2117	G
51	3	2118	U
51	3	2123	A
51	3	2124	A
51	3	2126	A
51	3	2127	G
51	3	2139	C
51	3	2140	G
51	3	2152	C
51	3	2155	G
51	3	2164	G
51	3	2165	A
51	3	2171	A
51	3	2173	G
51	3	2177	G
51	3	2179	A
51	3	2180	U
51	3	2193	U
51	3	2195	U
51	3	2197	U
51	3	2198	G
51	3	2199	C
51	3	2200	U
51	3	2201	G
51	3	2202	U

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Mol	Chain	Res	Type
51	3	2203	U
51	3	2206	A
51	3	2212	U
51	3	2219	U
51	3	2220	A
51	3	2222	C
51	3	2231	A
51	3	2233	A
51	3	2244	U
51	3	2246	G
51	3	2247	G
51	3	2251	U
51	3	2252	U
51	3	2254	G
51	3	2257	U
51	3	2262	C
51	3	2267	G
51	3	2276	A
51	3	2277	A
51	3	2278	G
51	3	2286	A
51	3	2287	G
51	3	2291	U
51	3	2293	C
51	3	2294	A
51	3	2295	A
51	3	2297	G
51	3	2305	C
51	3	2312	G
51	3	2313	U
51	3	2316	G
51	3	2317	A
51	3	2328	A
51	3	2330	A
51	3	2333	G
51	3	2334	U
51	3	2335	A
51	3	2341	G
51	3	2342	U
51	3	2343	A
51	3	2344	A
51	3	2350	C

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Mol	Chain	Res	Type
51	3	2351	U
51	3	2353	G
51	3	2355	C
51	3	2358	U
51	3	2362	A
51	3	2375	A
51	3	2380	U
51	3	2381	G
51	3	2391	G
51	3	2393	C
51	3	2410	C
51	3	2411	C
51	3	2414	U
51	3	2418	G
51	3	2423	G
51	3	2431	U
51	3	2433	A
51	3	2436	G
51	3	2437	G
51	3	2438	A
51	3	2439	U
51	3	2440	A
51	3	2442	A
51	3	2443	A
51	3	2449	U
51	3	2455	G
51	3	2456	A
51	3	2457	U
51	3	2459	A
51	3	2461	A
51	3	2477	A
51	3	2481	U
51	3	2483	C
51	3	2484	A
51	3	2486	A
51	3	2488	C
51	3	2491	C
51	3	2492	G
51	3	2497	U
51	3	2499	U
51	3	2502	G
51	3	2503	G

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Mol	Chain	Res	Type
51	3	2505	A
51	3	2506	C
51	3	2507	C
51	3	2508	U
51	3	2509	C
51	3	2511	A
51	3	2513	G
51	3	2515	C
51	3	2521	A
51	3	2526	A
51	3	2528	C
51	3	2538	A
51	3	2543	G
51	3	2561	G
51	3	2562	U
51	3	2569	A
51	3	2571	U
51	3	2572	A
51	3	2574	A
51	3	2575	G
51	3	2576	A
51	3	2578	A
51	3	2580	A
51	3	2581	C
51	3	2584	G
51	3	2589	G
51	3	2600	G
51	3	2604	U
51	3	2605	G
51	3	2609	C
51	3	2610	A
51	3	2615	G
51	3	2618	C
51	3	2619	C
51	3	2621	U
51	3	2624	C
51	3	2631	G
51	3	2636	U
51	3	2637	A
51	3	2641	A
51	3	2644	U
51	3	2647	A

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Mol	Chain	Res	Type
51	3	2649	G
51	3	2652	U
51	3	2654	U
51	3	2664	U
51	3	2668	A
51	3	2669	G
51	3	2681	G
51	3	2683	G
51	3	2690	U
51	3	2693	U
51	3	2697	C
51	3	2698	U
51	3	2715	C
51	3	2721	C
51	3	2728	U
51	3	2732	A
51	3	2734	C
51	3	2735	G
51	3	2737	G
51	3	2739	C
51	3	2740	U
51	3	2741	A
51	3	2747	U
51	3	2752	G
51	3	2756	A
51	3	2764	U
51	3	2765	A
51	3	2773	A
51	3	2774	A
51	3	2786	A
51	3	2798	A
51	3	2804	C
51	3	2806	A
51	3	2807	G
51	3	2808	A
51	3	2809	A
51	3	2810	A
51	3	2811	G
51	3	2813	A
51	3	2814	A
51	3	2815	G
51	3	2822	C

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Mol	Chain	Res	Type
51	3	2828	C
51	3	2837	U
51	3	2839	A
51	3	2840	U
51	3	2850	G
51	3	2853	U
51	3	2854	A
51	3	2858	A
51	3	2863	G
51	3	2865	U
51	3	2866	A
51	3	2871	G
51	3	2876	G
51	3	2877	A
51	3	2878	G
51	3	2879	U
51	3	2881	A
51	3	2882	U
51	3	2883	A
51	3	2884	C
51	3	2888	U
51	3	2889	U
51	3	2890	G
51	3	2895	A
51	3	2896	G
51	3	2897	G
51	3	2898	A
51	3	2899	C
52	4	4	G
52	4	9	C
52	4	10	C
52	4	11	A
52	4	14	U
52	4	21	G
52	4	22	G
52	4	23	A
52	4	27	A
52	4	30	U
52	4	35	C
52	4	38	U
52	4	39	U
52	4	42	G

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Mol	Chain	Res	Type
52	4	46	C
52	4	48	A
52	4	49	G
52	4	50	C
52	4	51	A
52	4	55	A
52	4	59	A
52	4	60	C
52	4	77	G
52	4	78	C
52	4	79	U
52	4	80	G
52	4	86	G
52	4	88	G
52	4	89	A
52	4	99	A
52	4	102	A
52	4	103	C
52	4	108	C
53	5	8	G
53	5	10	G
53	5	24	C
53	5	33	A
53	5	40	G
53	5	48	C
53	5	49	C
53	5	50	U
53	5	52	A
53	5	84	U
53	5	86	A
53	5	88	A
53	5	94	A
53	5	106	C
53	5	107	A
53	5	112	U
53	5	114	C
53	5	115	A
53	5	117	U
53	5	125	A
53	5	130	G
53	5	135	A
53	5	137	A

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Mol	Chain	Res	Type
53	5	145	G
53	5	149	G
53	5	163	G
53	5	187	A
53	5	193	G
53	5	194	U
53	5	195	U
53	5	197	A
53	5	198	A
53	5	210	G
53	5	223	G
53	5	230	G
53	5	236	C
53	5	239	A
53	5	240	U
53	5	241	C
53	5	243	G
53	5	246	A
53	5	247	G
53	5	250	G
53	5	253	G
53	5	262	G
53	5	263	C
53	5	269	A
53	5	272	G
53	5	275	A
53	5	276	U
53	5	277	G
53	5	285	G
53	5	290	G
53	5	294	A
53	5	295	G
53	5	299	U
53	5	301	G
53	5	302	A
53	5	311	A
53	5	312	A
53	5	321	A
53	5	324	C
53	5	325	A
53	5	326	C
53	5	328	G

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Mol	Chain	Res	Type
53	5	341	C
53	5	342	G
53	5	344	G
53	5	347	G
53	5	348	C
53	5	352	A
53	5	357	G
53	5	359	A
53	5	362	U
53	5	363	U
53	5	364	U
53	5	365	U
53	5	368	C
53	5	369	A
53	5	371	U
53	5	374	G
53	5	377	A
53	5	378	A
53	5	379	A
53	5	384	G
53	5	387	G
53	5	388	G
53	5	400	G
53	5	402	G
53	5	408	U
53	5	409	G
53	5	413	G
53	5	417	U
53	5	418	U
53	5	419	A
53	5	420	A
53	5	426	U
53	5	449	A
53	5	450	U
53	5	452	A
53	5	453	C
53	5	457	A
53	5	461	G
53	5	464	A
53	5	468	G
53	5	469	C
53	5	471	A

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Mol	Chain	Res	Type
53	5	473	A
53	5	476	U
53	5	477	U
53	5	478	G
53	5	481	U
53	5	482	G
53	5	483	U
53	5	488	U
53	5	493	A
53	5	495	U
53	5	497	A
53	5	509	C
53	5	516	C
53	5	517	C
53	5	519	G
53	5	525	G
53	5	526	C
53	5	529	U
53	5	530	A
53	5	531	A
53	5	537	A
53	5	543	C
53	5	545	A
53	5	550	U
53	5	557	A
53	5	558	U
53	5	560	U
53	5	562	U
53	5	564	G
53	5	569	U
53	5	570	A
53	5	571	A
53	5	573	G
53	5	574	C
53	5	575	A
53	5	586	G
53	5	594	A
53	5	595	G
53	5	605	A
53	5	617	U
53	5	628	A
53	5	632	A

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Mol	Chain	Res	Type
53	5	637	A
53	5	646	A
53	5	650	A
53	5	653	G
53	5	656	U
53	5	662	G
53	5	672	A
53	5	683	G
53	5	684	A
53	5	690	G
53	5	694	U
53	5	698	U
53	5	699	A
53	5	709	A
53	5	711	G
53	5	715	A
53	5	718	A
53	5	719	G
53	5	720	U
53	5	721	G
53	5	731	A
53	5	734	A
53	5	745	U
53	5	750	A
53	5	752	G
53	5	756	A
53	5	763	A
53	5	774	A
53	5	784	A
53	5	787	A
53	5	788	G
53	5	790	U
53	5	791	A
53	5	801	U
53	5	802	C
53	5	803	C
53	5	813	A
53	5	814	C
53	5	815	G
53	5	817	U
53	5	818	A
53	5	820	A

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Mol	Chain	Res	Type
53	5	825	A
53	5	829	G
53	5	838	A
53	5	866	A
53	5	867	A
53	5	870	A
53	5	877	C
53	5	881	G
53	5	883	A
53	5	885	U
53	5	895	A
53	5	908	A
53	5	910	C
53	5	911	G
53	5	917	G
53	5	918	A
53	5	921	G
53	5	922	G
53	5	923	G
53	5	929	C
53	5	930	A
53	5	933	A
53	5	934	G
53	5	937	G
53	5	940	G
53	5	941	A
53	5	953	A
53	5	955	U
53	5	956	U
53	5	964	A
53	5	966	A
53	5	970	A
53	5	971	A
53	5	972	A
53	5	975	C
53	5	976	U
53	5	987	U
53	5	988	G
53	5	989	A
53	5	997	G
53	5	1000	A
53	5	1002	A

Continued on next page...

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Mol	Chain	Res	Type
53	5	1003	G
53	5	1006	A
53	5	1013	C
53	5	1014	A
53	5	1015	U
53	5	1016	A
53	5	1019	G
53	5	1030	G
53	5	1033	U
53	5	1037	A
53	5	1039	G
53	5	1041	G
53	5	1042	G
53	5	1044	G
53	5	1045	C
53	5	1047	U
53	5	1056	U
53	5	1057	C
53	5	1058	A
53	5	1060	C
53	5	1070	G
53	5	1073	A
53	5	1075	G
53	5	1077	U
53	5	1083	A
53	5	1085	G
53	5	1086	U
53	5	1089	C
53	5	1092	A
53	5	1094	C
53	5	1103	C
53	5	1104	C
53	5	1112	U
53	5	1113	U
53	5	1118	A
53	5	1120	A
53	5	1122	U
53	5	1123	G
53	5	1124	U
53	5	1129	C
53	5	1133	A
53	5	1134	C

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
53	5	1135	U
53	5	1141	U
53	5	1142	G
53	5	1154	A
53	5	1156	G
53	5	1159	A
53	5	1168	G
53	5	1169	U
53	5	1171	A
53	5	1172	A
53	5	1173	A
53	5	1175	C
53	5	1187	U
53	5	1188	A
53	5	1189	U
53	5	1199	U
53	5	1200	G
53	5	1201	C
53	5	1211	A
53	5	1215	U
53	5	1216	G
53	5	1233	G
53	5	1235	C
53	5	1243	A
53	5	1245	A
53	5	1253	A
53	5	1255	A
53	5	1260	U
53	5	1261	A
53	5	1270	C
53	5	1272	C
53	5	1276	U
53	5	1279	G
53	5	1291	C
53	5	1294	U
53	5	1296	C
53	5	1297	G
53	5	1306	A
53	5	1310	C
53	5	1313	A
53	5	1315	U
53	5	1316	C

Continued on next page...

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Mol	Chain	Res	Type
53	5	1319	U
53	5	1335	G
53	5	1343	G
53	5	1353	C
53	5	1354	G
53	5	1356	U
53	5	1366	U
53	5	1369	A
53	5	1374	C
53	5	1375	C
53	5	1381	U
53	5	1394	G
53	5	1400	A
53	5	1403	A
53	5	1404	U
53	5	1408	A
53	5	1417	U
53	5	1423	C
53	5	1429	G
53	5	1431	A
53	5	1439	G
53	5	1451	A
53	5	1457	G
53	5	1462	G
53	5	1465	U
53	5	1466	U
53	5	1467	A
53	5	1468	A
53	5	1474	A
53	5	1478	A
53	5	1480	G
53	5	1481	U
53	5	1482	A
53	5	1495	C
53	5	1504	G
53	5	1505	G
53	5	1508	C
54	6	5	C
54	6	17	U
54	6	19	G
54	6	21	U
54	6	22	A

Continued on next page...

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Mol	Chain	Res	Type
54	6	23	G
54	6	29	C
54	6	34	U
54	6	35	G
54	6	43	G
54	6	44	U
54	6	48	U
54	6	50	G
54	6	56	U
54	6	57	C
54	6	58	G
54	6	59	A
54	6	61	U
54	6	71	A
54	6	72	C
54	6	73	C
54	6	75	C
54	6	76	C
54	7	5	C
54	7	17	U
54	7	19	G
54	7	21	U
54	7	22	A
54	7	23	G
54	7	29	C
54	7	34	U
54	7	35	G
54	7	43	G
54	7	44	U
54	7	48	U
54	7	50	G
54	7	56	U
54	7	57	C
54	7	58	G
54	7	59	A
54	7	61	U
54	7	71	A
54	7	72	C
54	7	73	C
54	7	75	C
54	7	76	C
54	8	5	C

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Mol	Chain	Res	Type
54	8	17	U
54	8	19	G
54	8	21	U
54	8	22	A
54	8	23	G
54	8	29	C
54	8	34	U
54	8	35	G
54	8	43	G
54	8	44	U
54	8	48	U
54	8	50	G
54	8	56	U
54	8	57	C
54	8	58	G
54	8	59	A
54	8	61	U
54	8	71	A
54	8	72	C
54	8	73	C
54	8	75	C
54	8	76	C

All (43) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
51	3	409	A
51	3	410	G
51	3	423	C
51	3	425	U
51	3	466	A
51	3	500	U
51	3	513	A
51	3	688	U
51	3	862	U
51	3	881	A
51	3	952	U
51	3	1017	A
51	3	1048	A
51	3	1209	U
51	3	1297	U
51	3	1481	U

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Mol	Chain	Res	Type
51	3	1507	G
51	3	1583	G
51	3	1587	U
51	3	1588	A
51	3	1820	U
51	3	2002	U
51	3	2126	A
51	3	2164	G
51	3	2341	G
51	3	2504	C
51	3	2604	U
51	3	2668	A
51	3	2764	U
51	3	2862	U
51	3	2897	G
52	4	10	C
52	4	54	U
52	4	59	A
53	5	196	G
53	5	419	A
53	5	1123	G
54	6	16	G
54	6	60	U
54	7	16	G
54	7	60	U
54	8	16	G
54	8	60	U

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

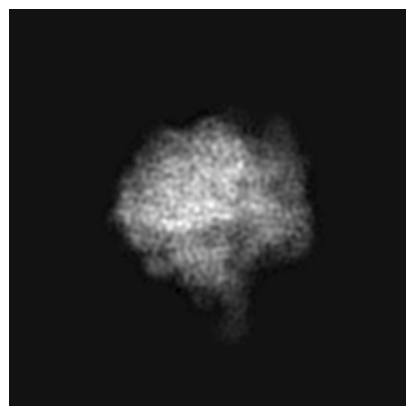
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-13274. These allow visual inspection of the internal detail of the map and identification of artifacts.

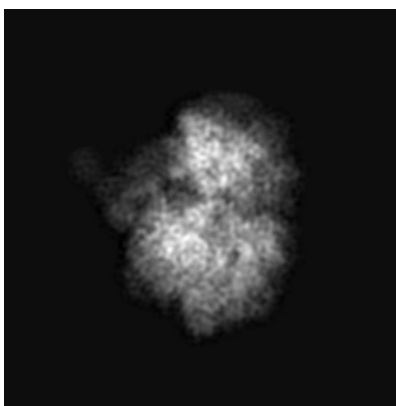
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

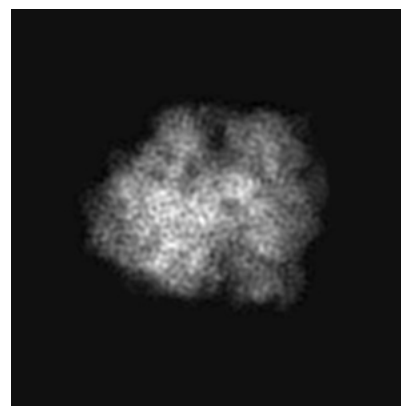
6.1.1 Primary map



X

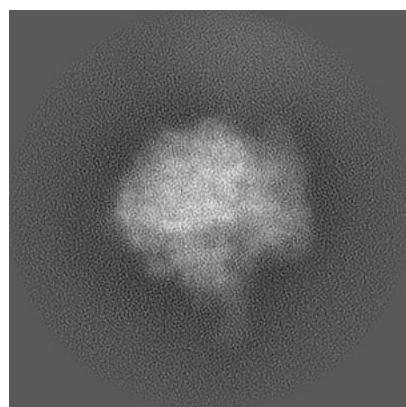


Y

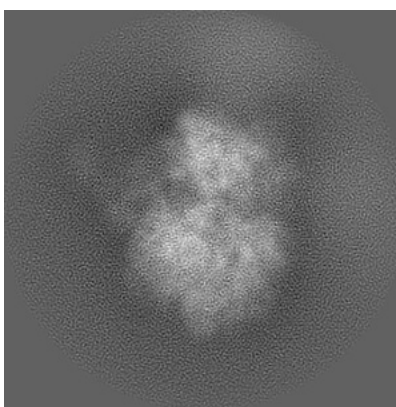


Z

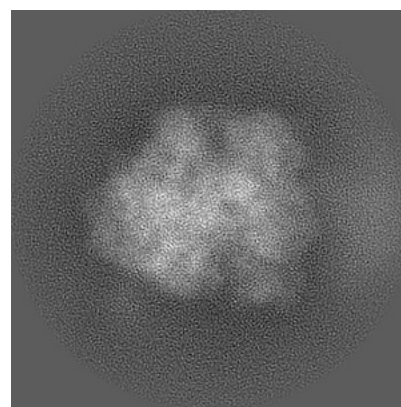
6.1.2 Raw map



X



Y

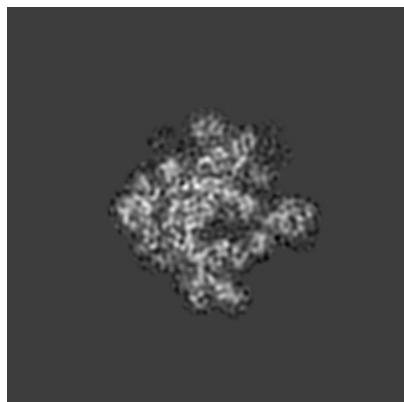


Z

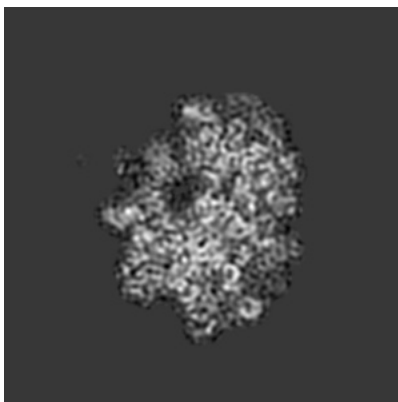
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

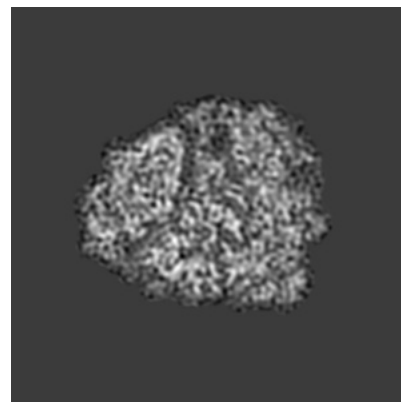
6.2.1 Primary map



X Index: 128

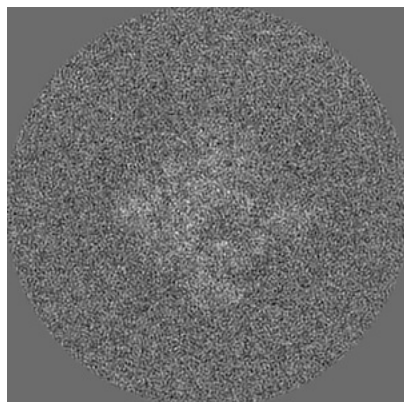


Y Index: 128

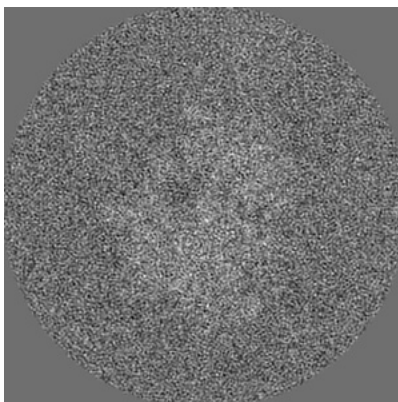


Z Index: 128

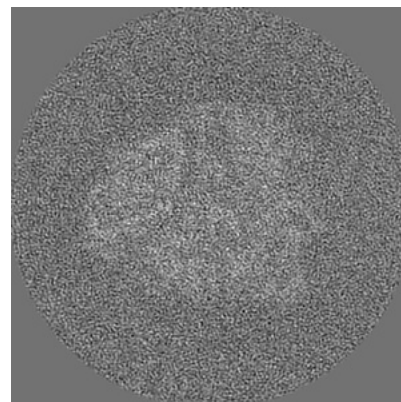
6.2.2 Raw map



X Index: 128



Y Index: 128

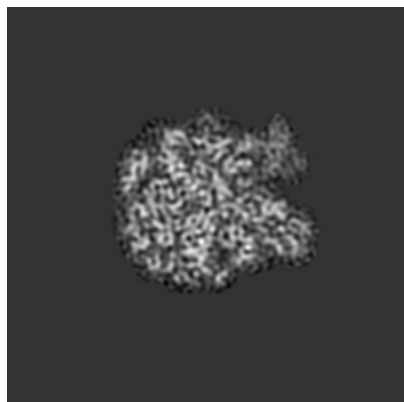


Z Index: 128

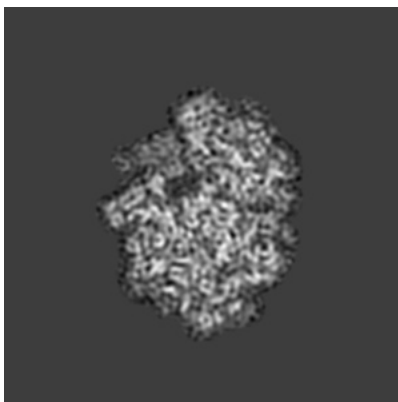
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

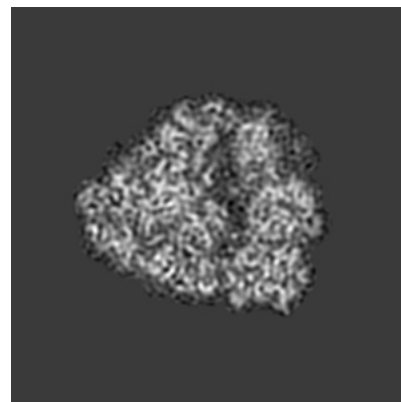
6.3.1 Primary map



X Index: 103

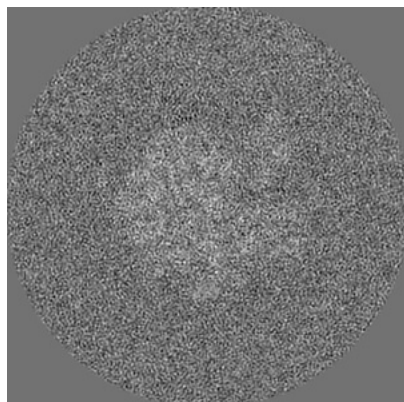


Y Index: 120

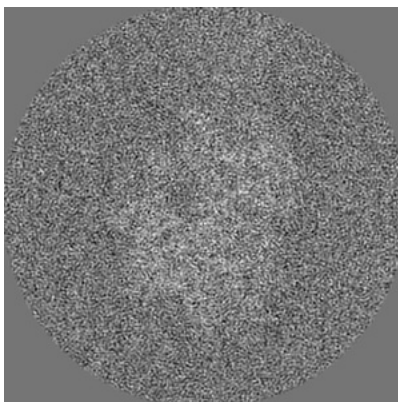


Z Index: 123

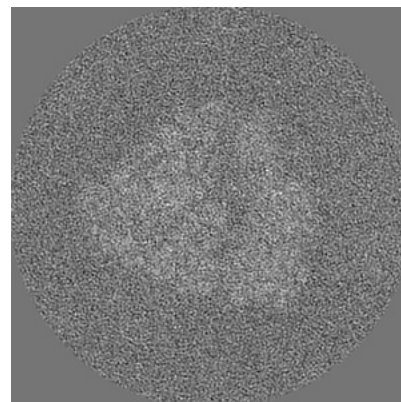
6.3.2 Raw map



X Index: 117



Y Index: 130

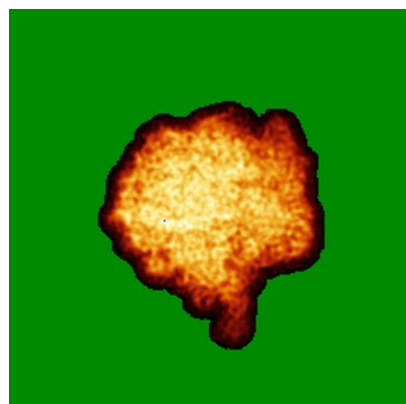


Z Index: 123

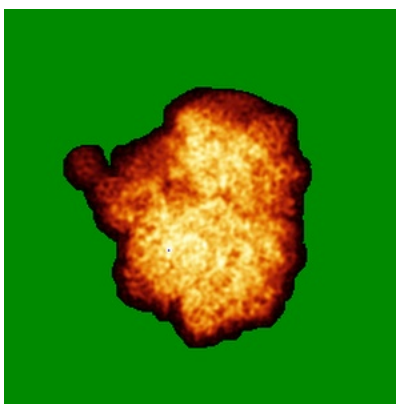
The images above show the largest variance slices of the map in three orthogonal directions.

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

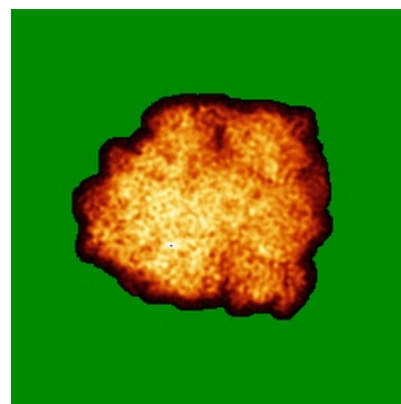
6.4.1 Primary map



X

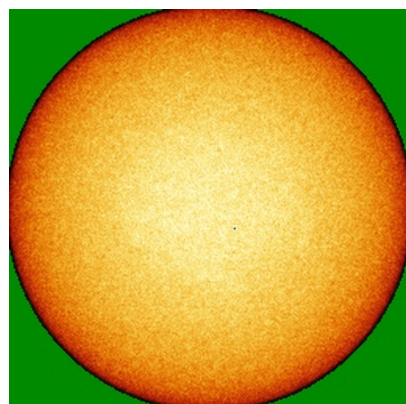


Y

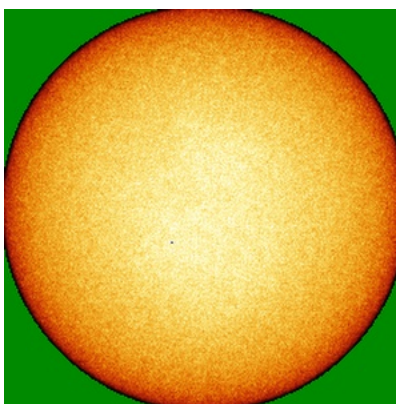


Z

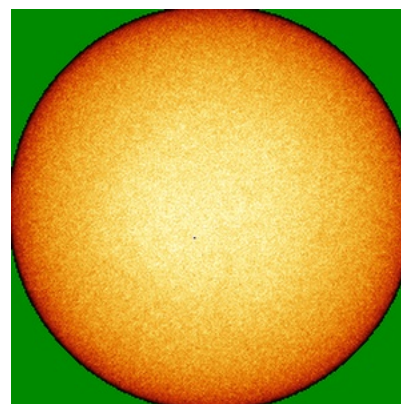
6.4.2 Raw map



X



Y

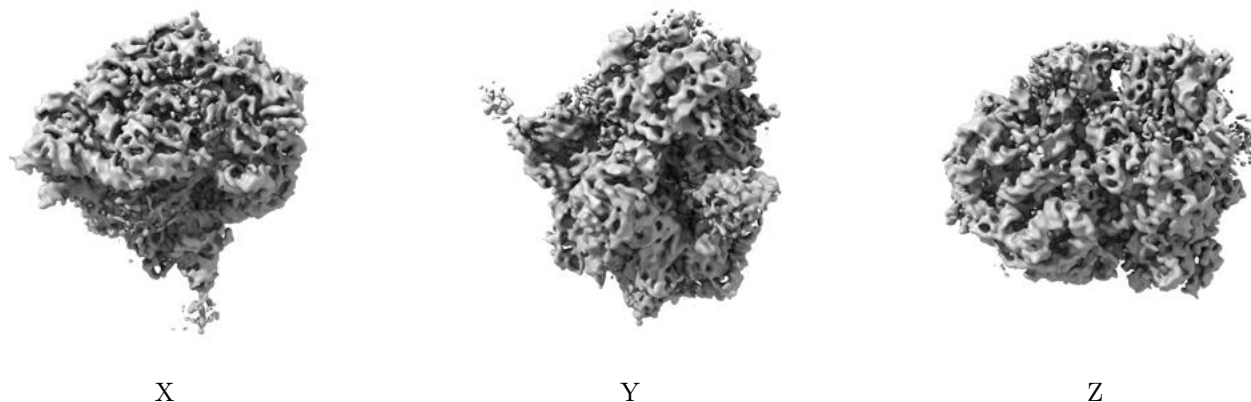


Z

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.

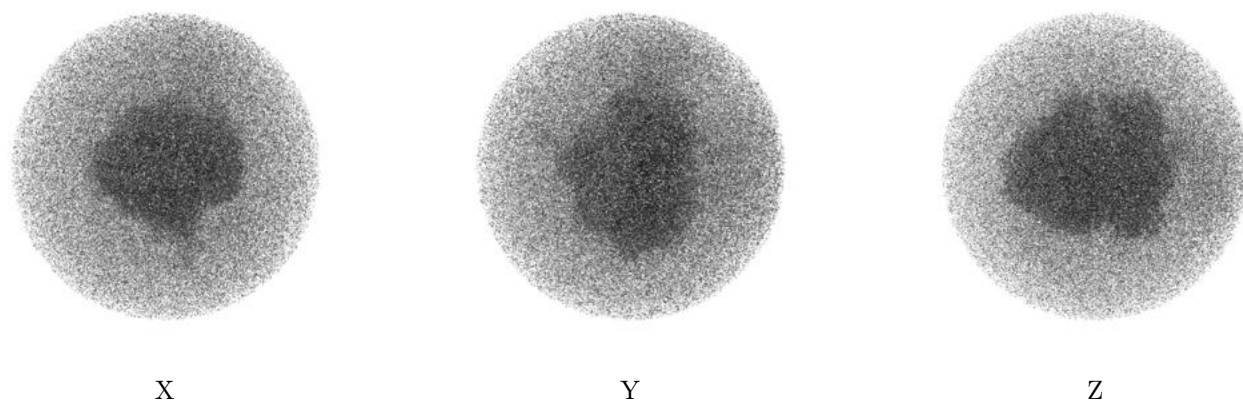
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.47. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



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

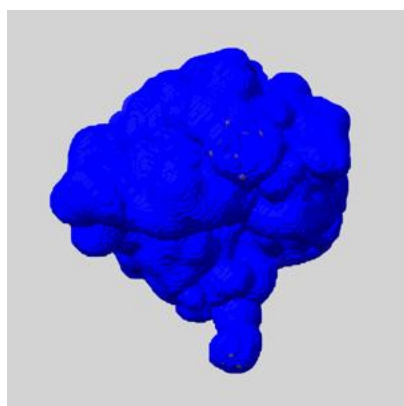
6.6 Mask visualisation [i](#)

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

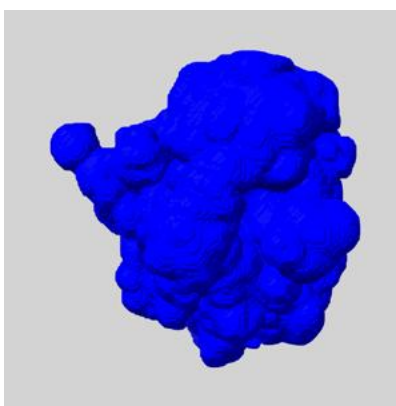
A mask typically either:

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

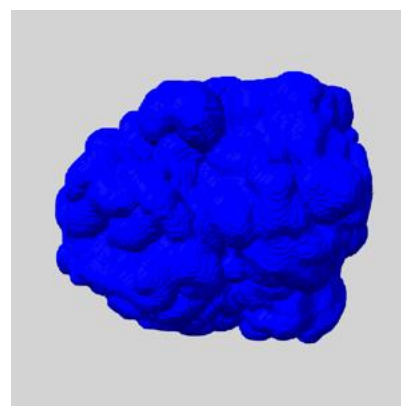
6.6.1 emd_13274_msk_1.map [i](#)



X



Y

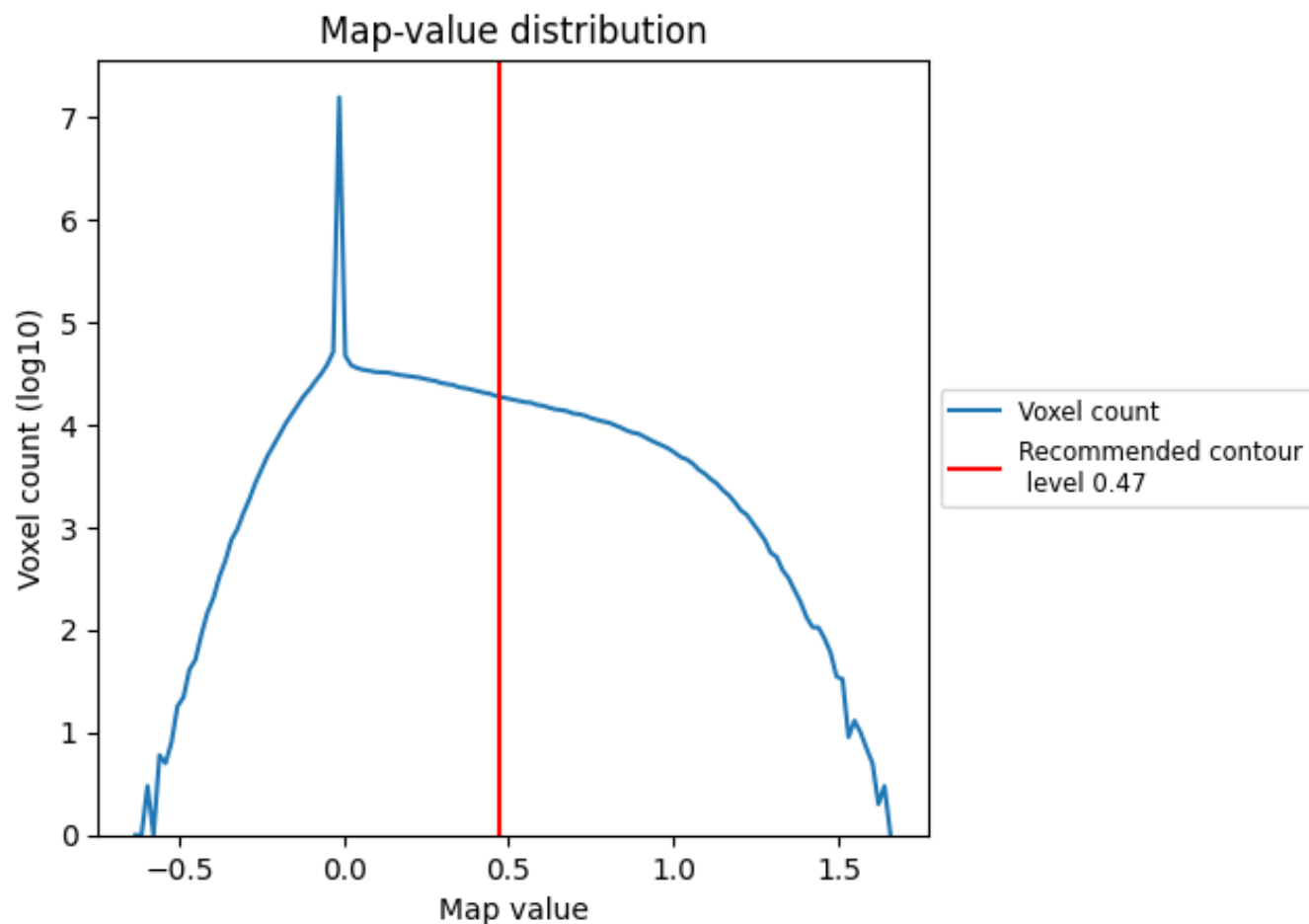


Z

7 Map analysis [i](#)

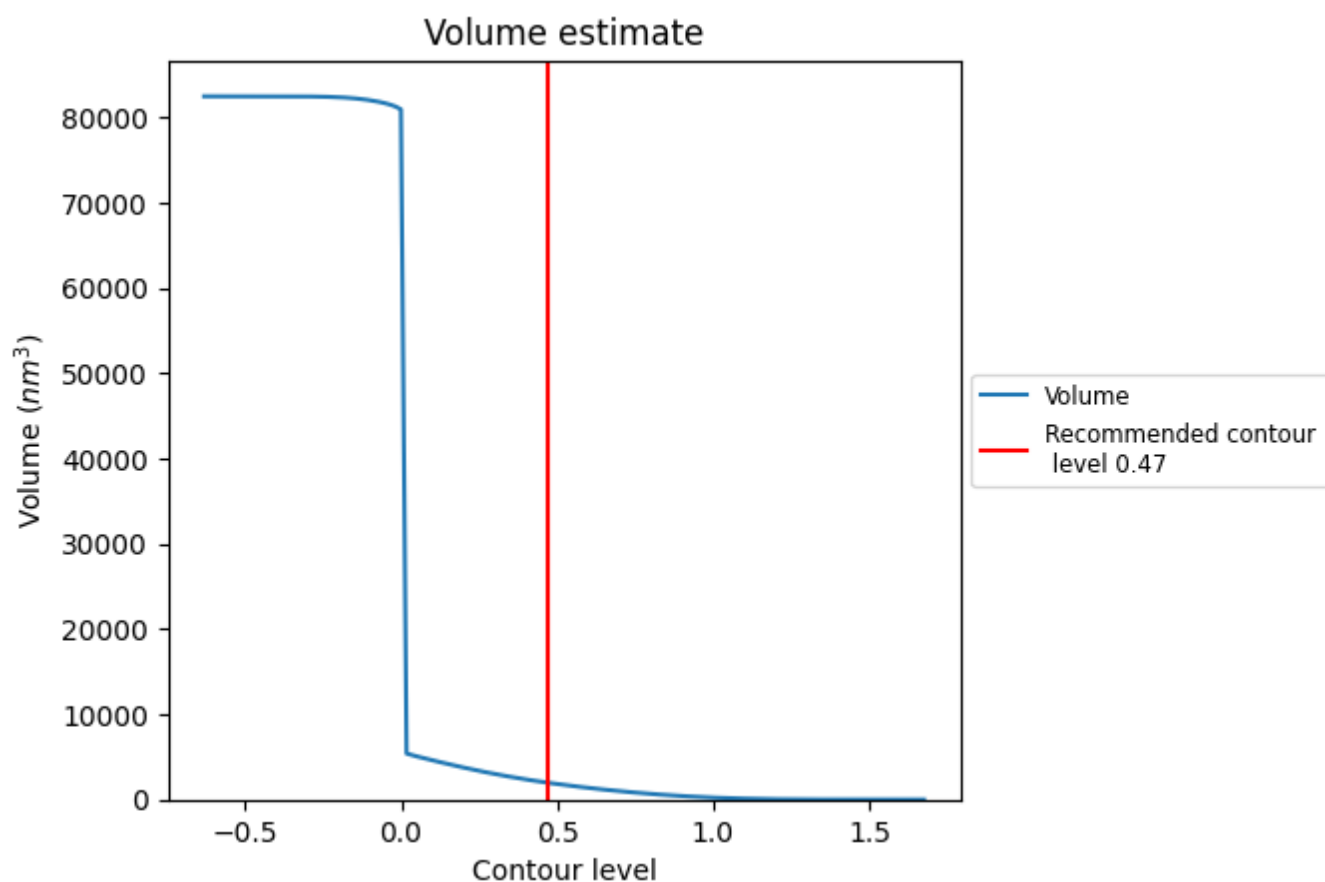
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

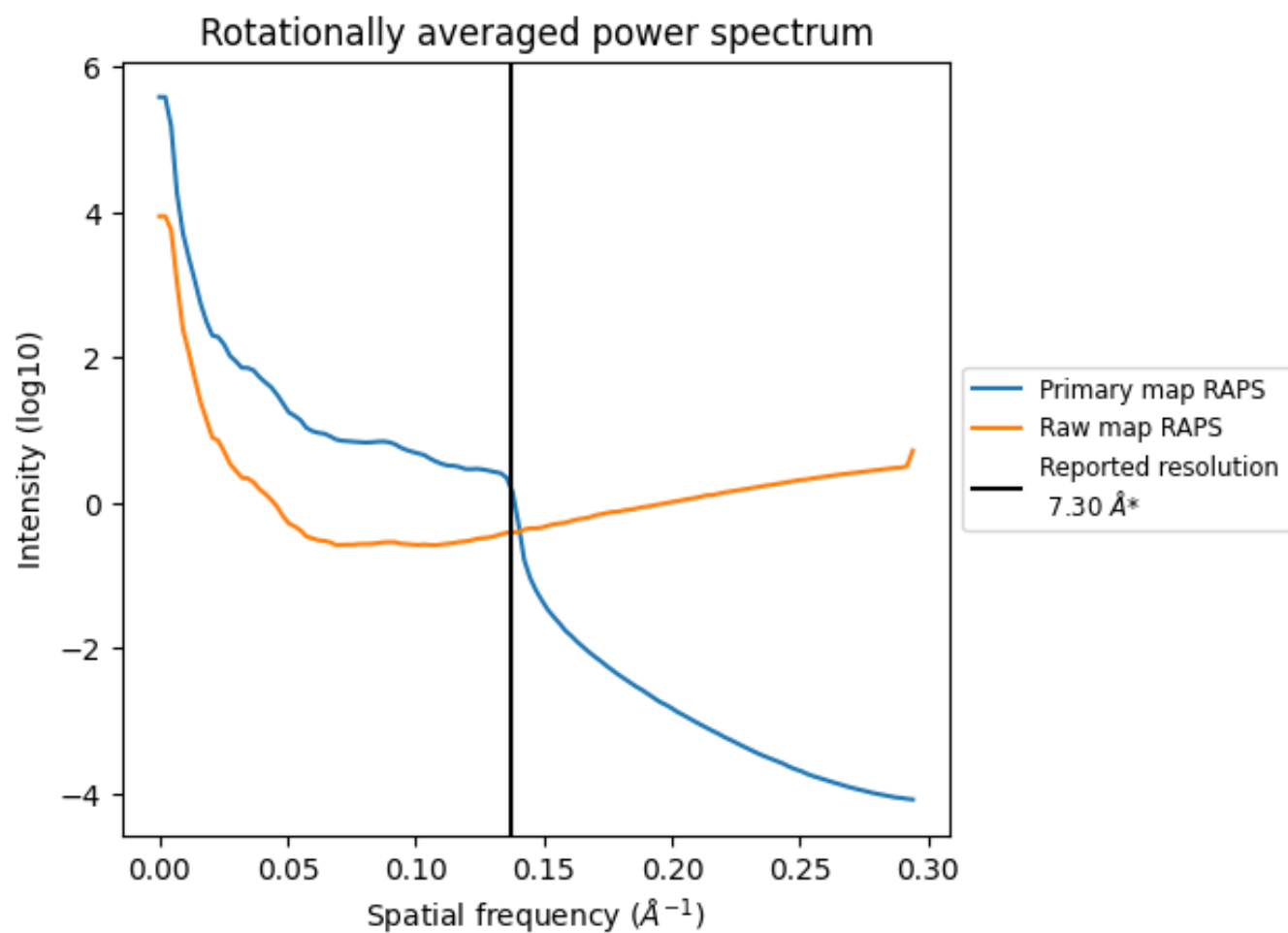
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1977 nm³; this corresponds to an approximate mass of 1786 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

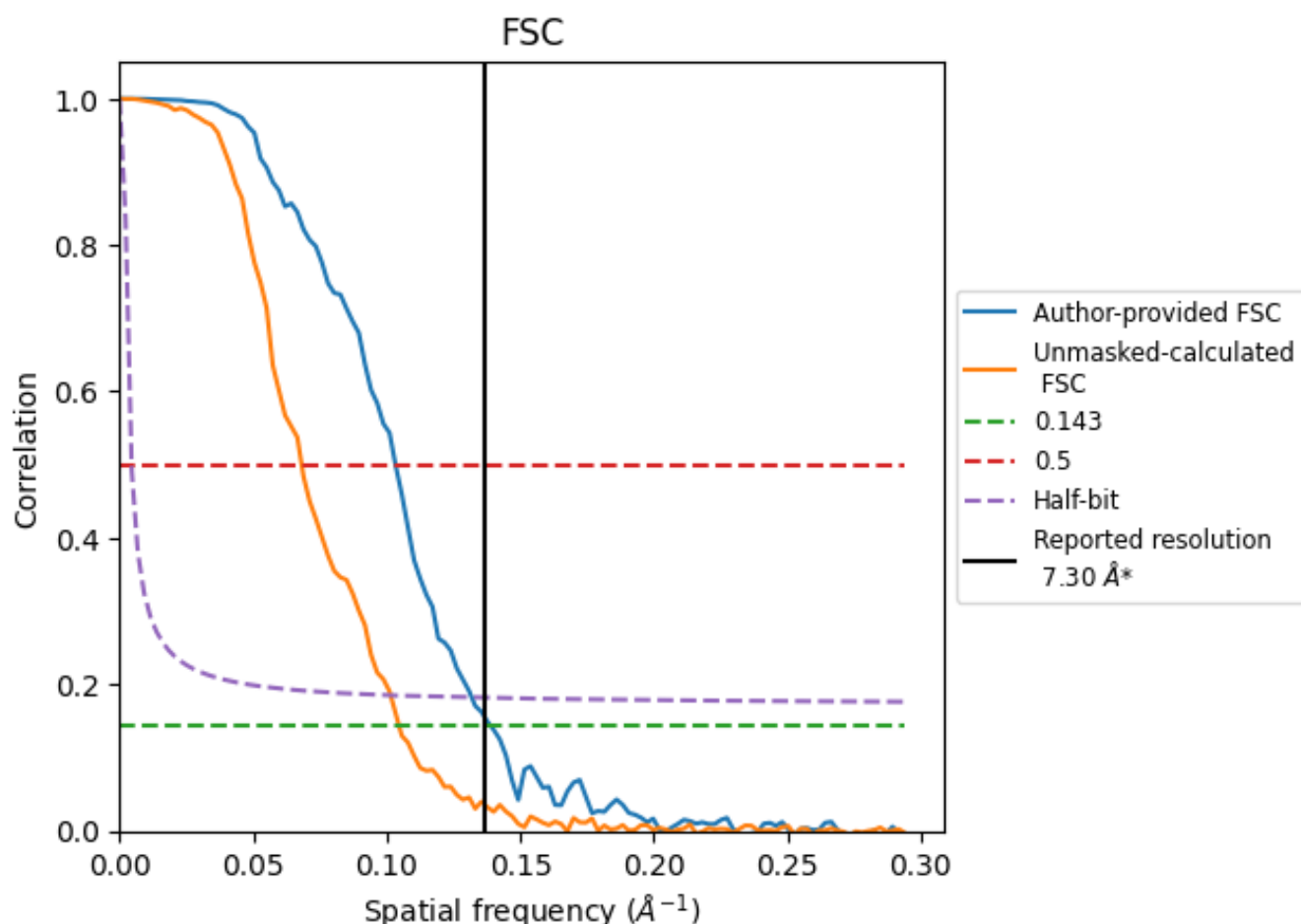


*Reported resolution corresponds to spatial frequency of 0.137 \AA^{-1}

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 0.137 Å⁻¹

8.2 Resolution estimates [i](#)

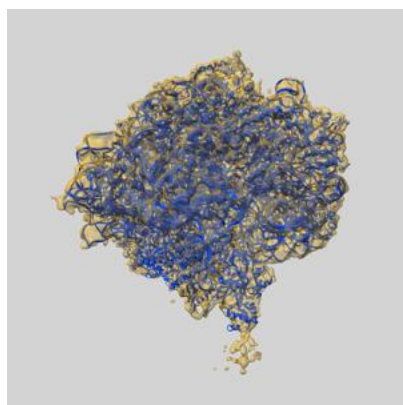
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	7.30	-	-
Author-provided FSC curve	7.19	9.68	7.58
Unmasked-calculated*	9.55	14.66	9.85

*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 9.55 differs from the reported value 7.3 by more than 10 %

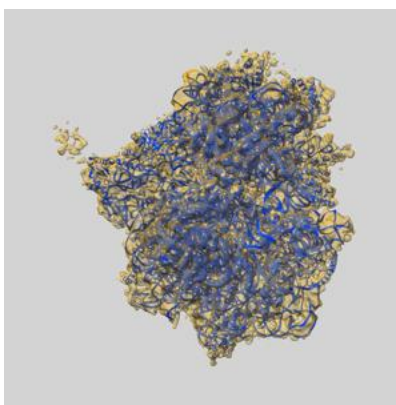
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-13274 and PDB model 7PAJ. Per-residue inclusion information can be found in section [3](#) on page [13](#).

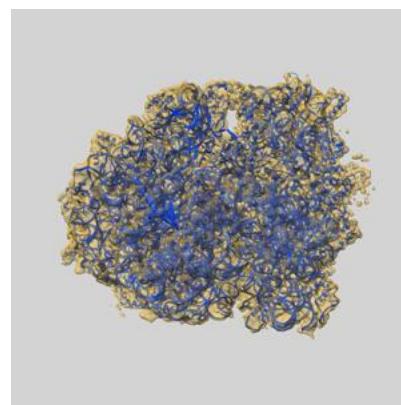
9.1 Map-model overlay [i](#)



X



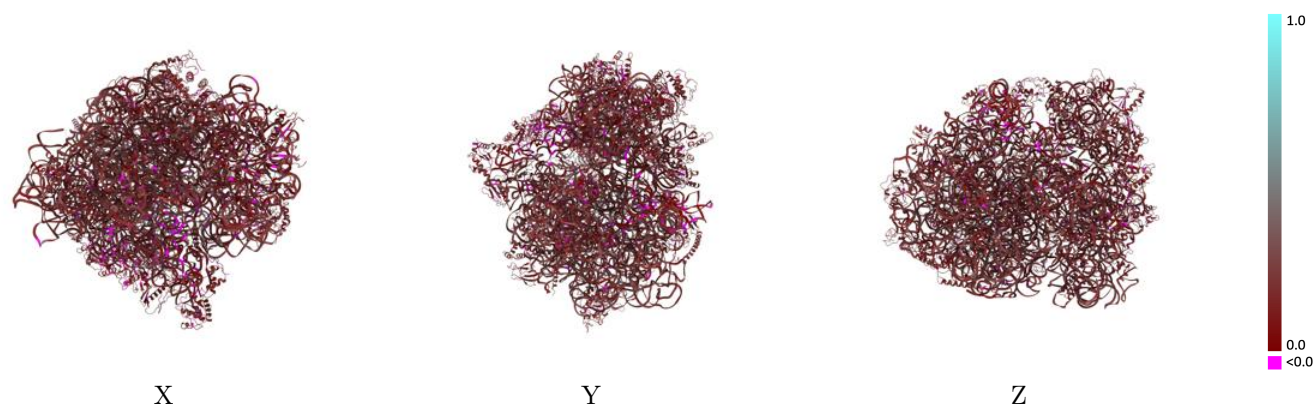
Y



Z

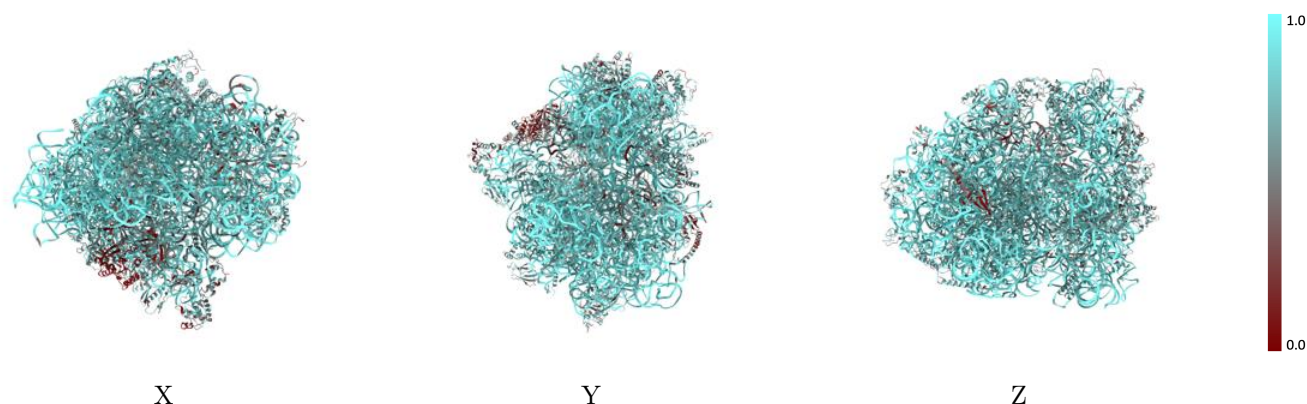
The images above show the 3D surface view of the map at the recommended contour level 0.47 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



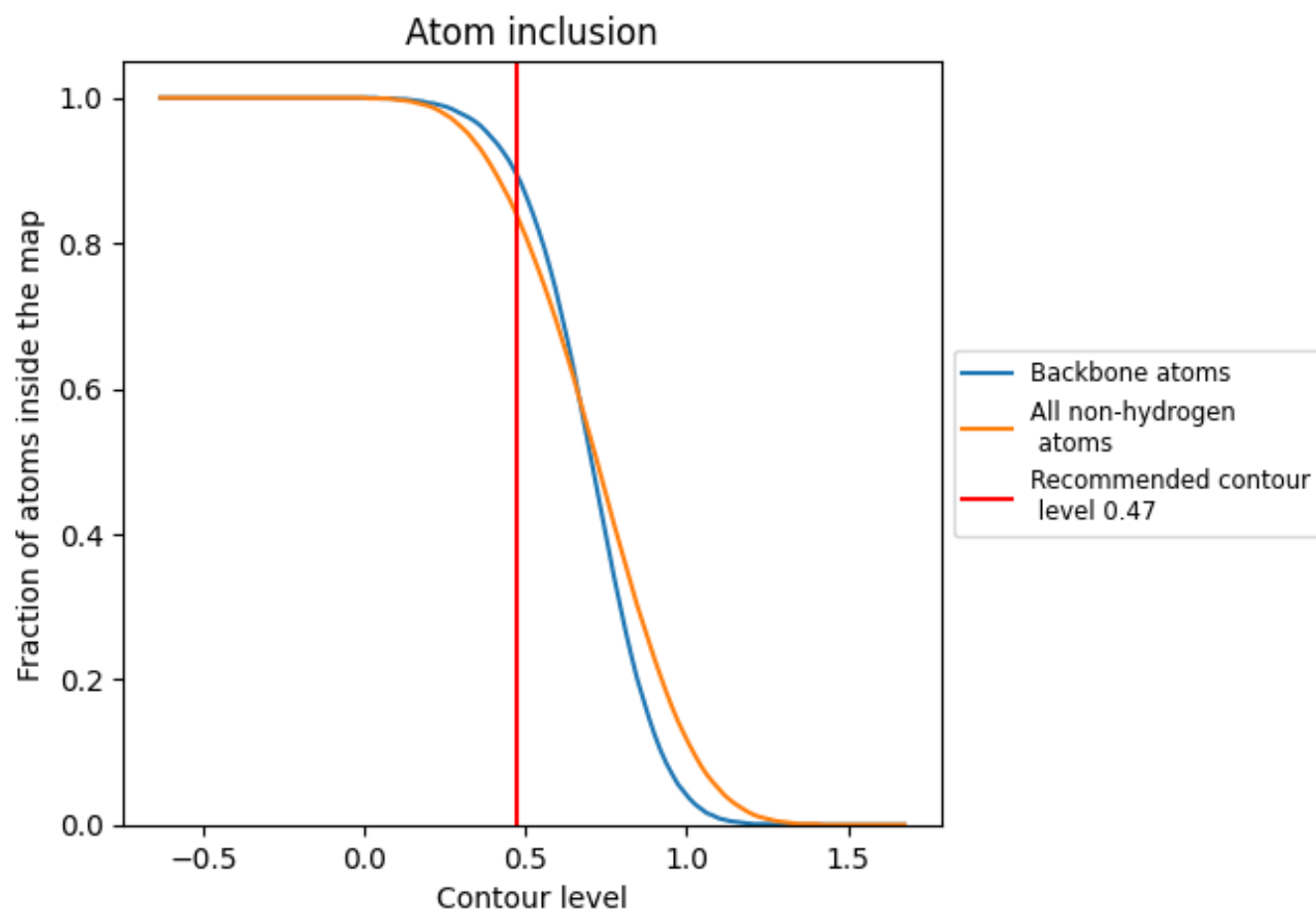
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.47).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 90% of all backbone atoms, 84% 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 (0.47) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.8420	 0.1960
0	 0.7780	 0.1690
1	 0.7550	 0.1730
2	 0.7600	 0.1510
3	 0.9510	 0.2120
4	 0.9550	 0.2220
5	 0.9510	 0.2100
6	 0.5970	 0.0750
7	 0.8870	 0.1850
8	 0.4920	 0.0950
9	 0.1920	 0.1340
A	 0.6510	 0.1940
B	 0.6340	 0.1810
C	 0.6620	 0.1730
D	 0.6780	 0.1840
E	 0.6230	 0.2000
F	 0.6470	 0.1790
G	 0.6710	 0.1730
H	 0.6600	 0.1570
I	 0.6150	 0.1580
J	 0.6930	 0.1750
K	 0.6990	 0.1740
L	 0.6560	 0.1730
M	 0.6610	 0.1520
N	 0.6800	 0.1880
O	 0.7410	 0.1650
P	 0.6740	 0.1740
Q	 0.7210	 0.1780
R	 0.6540	 0.1550
S	 0.7620	 0.1860
T	 0.6940	 0.1860
a	 0.7350	 0.1660
b	 0.7110	 0.1740
c	 0.6980	 0.1860
d	 0.6830	 0.1660



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Chain	Atom inclusion	Q-score
e	 0.6810	 0.1940
f	 0.3300	 0.1680
g	 0.5540	 0.1750
h	 0.4260	 0.1440
i	 0.7600	 0.1900
j	 0.6620	 0.1870
k	 0.7420	 0.1890
l	 0.7710	 0.1920
m	 0.7580	 0.1820
n	 0.7070	 0.1700
o	 0.6660	 0.1910
p	 0.7560	 0.1650
q	 0.6670	 0.1810
r	 0.7480	 0.1800
s	 0.7090	 0.1870
t	 0.5920	 0.1810
u	 0.7530	 0.1680
v	 0.7290	 0.1510
w	 0.7180	 0.1990
x	 0.6620	 0.1810
y	 0.7010	 0.1700
z	 0.7030	 0.1750