



wwPDB EM Validation Summary Report ⓘ

Feb 22, 2024 – 10:56 AM EST

PDB ID : 4V6N
EMDB ID : EMD-5361
Title : Structural characterization of mRNA-tRNA translocation intermediates (50S ribosome of class2 of the six classes)
Authors : Agirrezabala, X.; Liao, H.; Schreiner, E.; Fu, J.; Ortiz-Meoz, R.F.; Schulten, K.; Green, R.; Frank, J.
Deposited on : 2011-12-07
Resolution : 12.10 Å (reported)
Based on initial models : 1ZAV, 2I2V, 1MZP

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.dev70
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

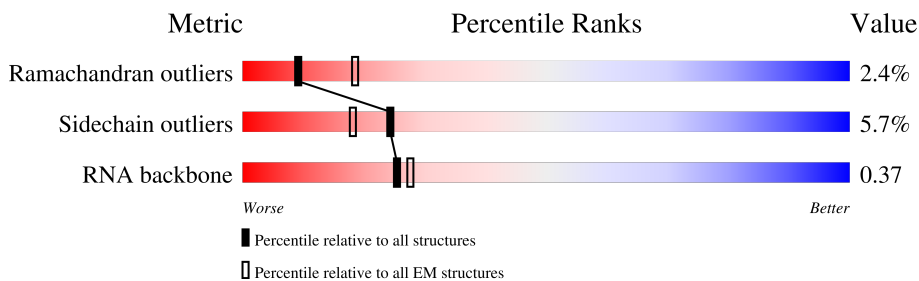
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 12.10 Å.

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



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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AA	120	
2	AB	2904	
3	AC	234	
4	AD	272	
5	AE	209	
6	AF	201	
7	AG	178	
8	AH	176	

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Mol	Chain	Length	Quality of chain
9	AI	149	10% 81% 15% 5%
10	AJ	164	16% 80% 18% .
11	AK	141	. 84% 14% .
12	AL	142	70% 25% 5%
13	AM	123	74% 22% .
14	AN	144	78% 20% .
15	AO	136	79% 17% .
16	AP	127	78% 20% .
17	AQ	117	78% 20% .
18	AR	114	. 74% 21% . .
19	AS	117	78% 17% 5%
20	AT	103	74% 23% .
21	AU	110	72% 25% .
22	AV	100	78% 21% .
23	AW	103	77% 20% . .
24	AX	94	84% 14% .
25	AY	84	77% 18% 5%
26	AZ	77	70% 25% 5%
27	A0	63	79% 17% .
28	A1	58	78% 21% .
29	A2	70	. 77% 14% 9%
30	A3	56	70% 21% 9%
31	A4	54	72% 22% 6%
32	A5	46	63% 33% .
33	A6	64	80% 14% 6%

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Mol	Chain	Length	Quality of chain
34	A7	38	71% 29%
35	BA	1542	32% 54% 14%
36	BB	76	15% 33% 51% 16%
37	BC	47	15% 30% 34% 36%
38	BD	77	34% 55% 12%
39	BE	240	78% 18% .
40	BF	232	76% 21% .
41	BG	205	76% 21% .
42	BH	166	84% 14% .
43	BI	135	69% 28% .
44	BJ	178	75% 23% ..
45	BK	129	78% 16% 5%
46	BL	129	68% 27% 5%
47	BM	103	74% 23% ..
48	BN	128	77% 18% 5%
49	BO	123	74% 23% .
50	BP	117	77% 19% .
51	BQ	100	67% 31% .
52	BR	88	75% 23% .
53	BS	82	77% 20% .
54	BT	83	75% 24% .
55	BU	74	69% 20% 11%
56	BV	91	79% 19% .
57	BW	86	86% 13% .
58	BX	70	69% 26% 6%

2 Entry composition [i](#)

There are 60 unique types of molecules in this entry. The entry contains 152351 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	AA	120	2566	1144	468	835	119	0	0

- Molecule 2 is a RNA chain called 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	AB	2904	62351	27824	11469	20155	2903	0	0

- Molecule 3 is a protein called 50S ribosomal protein L1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	AC	234	1733	1081	315	330	7	0	0

- Molecule 4 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	AD	272	2092	1294	425	366	7	0	0

- Molecule 5 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	AE	209	1565	979	288	294	4	0	0

- Molecule 6 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	AF	201	1552	974	283	290	5	0	0

- Molecule 7 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	AG	178	1420	905	251	258	6	0	0

- Molecule 8 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	AH	176	1323	832	243	246	2	0	0

- Molecule 9 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	AI	149	1111	699	197	214	1	0	0

- Molecule 10 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	AJ	164	1233	776	220	231	6	0	0

- Molecule 11 is a protein called 50S ribosomal protein L11.

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

- Molecule 12 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	AL	142	1129	714	212	199	4	0	0

- Molecule 13 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	AM	123	947	593	181	167	6	0	0

- Molecule 14 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	AN	144	1053	654	207	190	2	0	0

- Molecule 15 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	AO	136	1074	686	205	177	6	0	0

- Molecule 16 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	AP	127	1008	621	204	178	5	0	0

- Molecule 17 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	AQ	117	900	557	179	163	1	0	0

- Molecule 18 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	AR	114	917	574	179	163	1	0	0

- Molecule 19 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
19	AS	117	947	604	192	151	0	0

- Molecule 20 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	AT	103	816	516	153	145	2	0	0

- Molecule 21 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	AU	110	857	532	166	156	3	0	0

- Molecule 22 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	AV	100	787	496	146	143	2	0	0

- Molecule 23 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
23	AW	103	789	498	148	143	0	0

- Molecule 24 is a protein called 50S ribosomal protein L25.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	AX	94	753	479	137	134	3	0	0

- Molecule 25 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	AY	84	634	391	129	113	1	0	0

- Molecule 26 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
26	AZ	77	625	388	129	106	2	0	0

- Molecule 27 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	A0	63	509	313	99	95	2	0	0

- Molecule 28 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	A1	58	Total	C	N	O	S	0	0
			449	281	87	79	2		

- Molecule 29 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	A2	70	Total	C	N	O	S	0	0
			549	339	104	100	6		

- Molecule 30 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	A3	56	Total	C	N	O	S	0	0
			444	269	94	80	1		

- Molecule 31 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	A4	54	Total	C	N	O	0	0
			441	284	81	76		

- Molecule 32 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	A5	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 33 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
33	A6	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 34 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	A7	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 35 is a RNA chain called 16S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
35	BA	1542	33089	14767	6064	10717	1541	0	0

- Molecule 36 is a RNA chain called A site tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	N	O	P	S		
36	BB	76	1627	731	287	532	75	2	0	0

- Molecule 37 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
37	BC	47	993	445	167	335	46	0	0

- Molecule 38 is a RNA chain called P site tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	N	O	P	S		
38	BD	77	1641	734	297	533	76	1	0	0

- Molecule 39 is a protein called 30S ribosomal protein S2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	BE	240	1872	1180	332	352	8	0	0

- Molecule 40 is a protein called 30S ribosomal protein S3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	BF	232	1822	1149	346	323	4	0	0

- Molecule 41 is a protein called 30S ribosomal protein S4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	BG	205	1643	1026	315	298	4	0	0

- Molecule 42 is a protein called 30S ribosomal protein S5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	BH	166	1225	761	232	226	6	0	0

- Molecule 43 is a protein called 30S ribosomal protein S6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	BI	135	1101	677	198	219	7	0	0

- Molecule 44 is a protein called 30S ribosomal protein S7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	BJ	178	1400	874	269	253	4	0	0

- Molecule 45 is a protein called 30S ribosomal protein S8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	BK	129	979	616	173	184	6	0	0

- Molecule 46 is a protein called 30S ribosomal protein S9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	BL	129	1036	642	208	183	3	0	0

- Molecule 47 is a protein called 30S ribosomal protein S10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	BM	103	825	514	158	151	2	0	0

- Molecule 48 is a protein called 30S ribosomal protein S11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	BN	128	965	595	196	171	3	0	0

- Molecule 49 is a protein called 30S ribosomal protein S12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	BO	123	955	590	196	165	4	0	0

- Molecule 50 is a protein called 30S ribosomal protein S13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	BP	117	910	564	183	160	3	0	0

- Molecule 51 is a protein called 30S ribosomal protein S14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	BQ	100	805	499	164	139	3	0	0

- Molecule 52 is a protein called 30S ribosomal protein S15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	BR	88	716	440	146	129	1	0	0

- Molecule 53 is a protein called 30S ribosomal protein S16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	BS	82	649	406	128	114	1	0	0

- Molecule 54 is a protein called 30S ribosomal protein S17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	BT	83	672	425	124	120	3	0	0

- Molecule 55 is a protein called 30S ribosomal protein S18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	BU	74	626	395	123	107	1	0	0

- Molecule 56 is a protein called 30S ribosomal protein S19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	BV	91	727	464	139	122	2	0	0

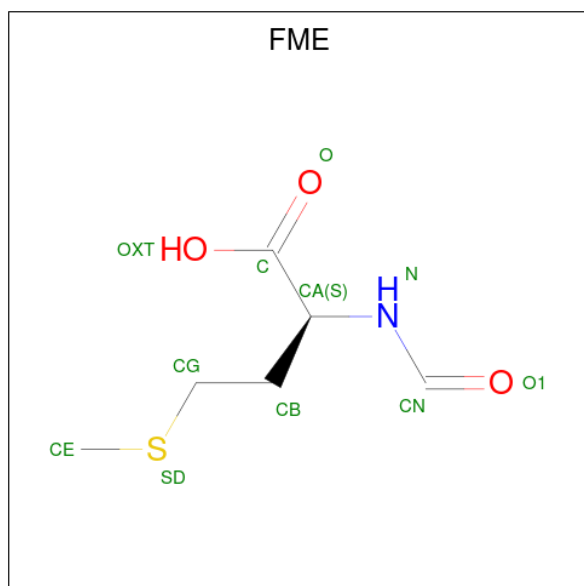
- Molecule 57 is a protein called 30S ribosomal protein S20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	BW	86	670	414	138	115	3	0	0

- Molecule 58 is a protein called 30S ribosomal protein S21.

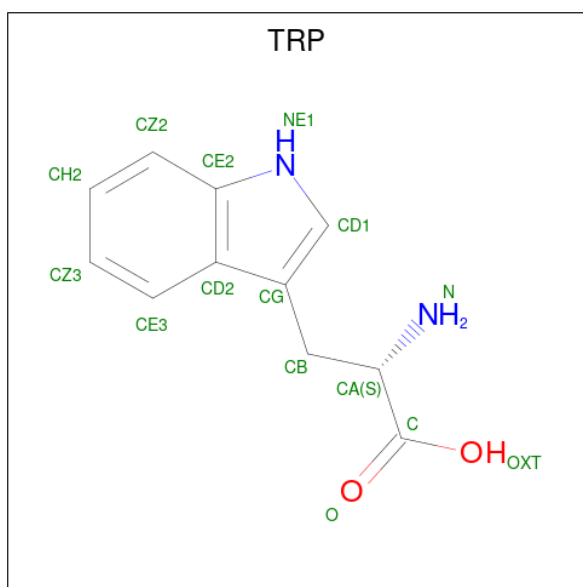
Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	BX	70	590	366	125	98	1	0	0

- Molecule 59 is N-FORMYLMETHIONINE (three-letter code: FME) (formula: C₆H₁₁NO₃S).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	S	
59	AB	1	10	6	1	2	1	0

- Molecule 60 is TRYPTOPHAN (three-letter code: TRP) (formula: C₁₁H₁₂N₂O₂).

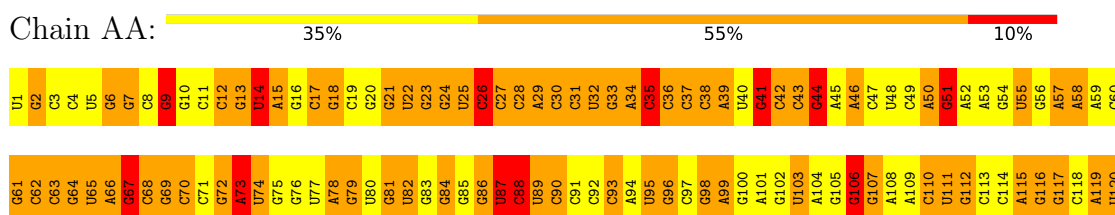


Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
60	BB	1	14	11	2	1	0

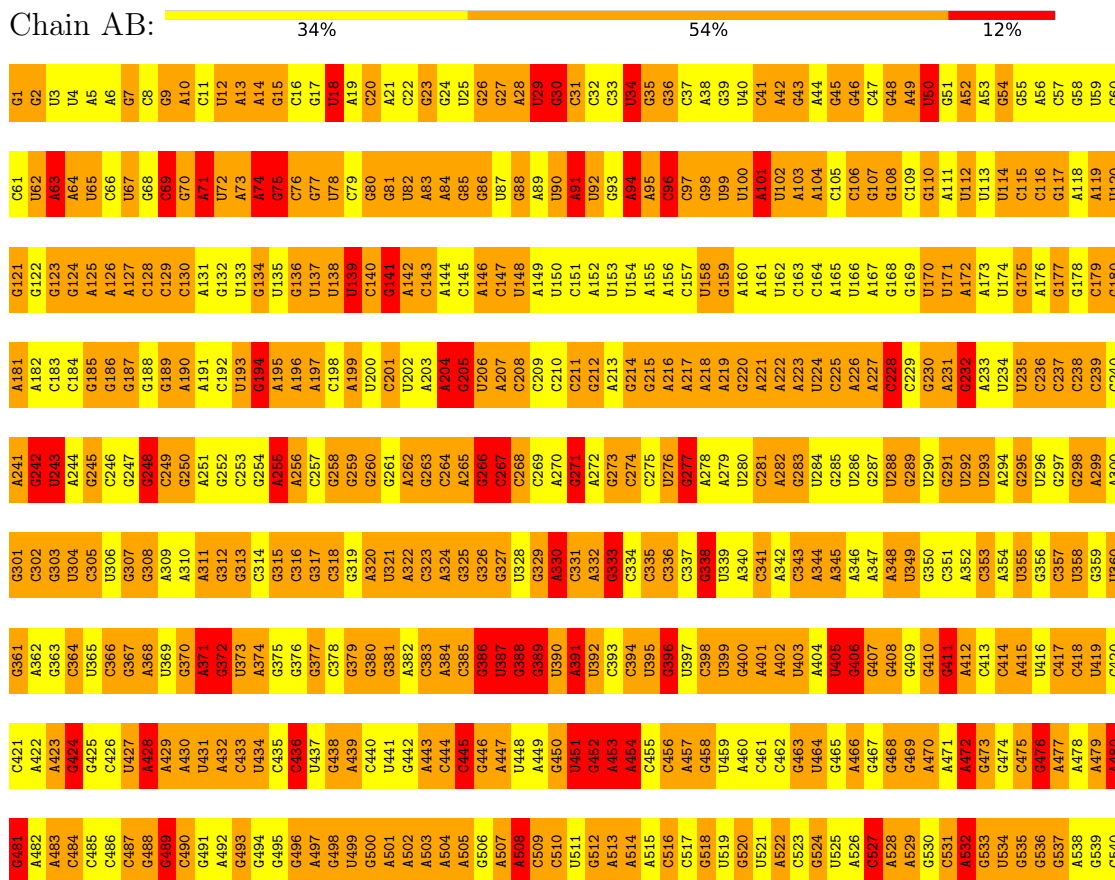
3 Residue-property plots

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

- Molecule 1: 5S ribosomal RNA

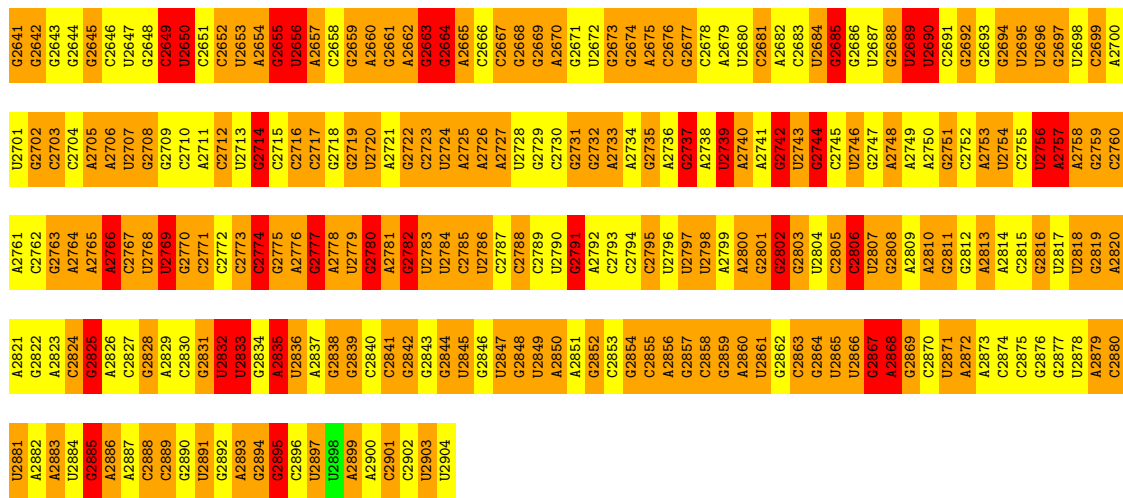


- Molecule 2: 23S ribosomal RNA

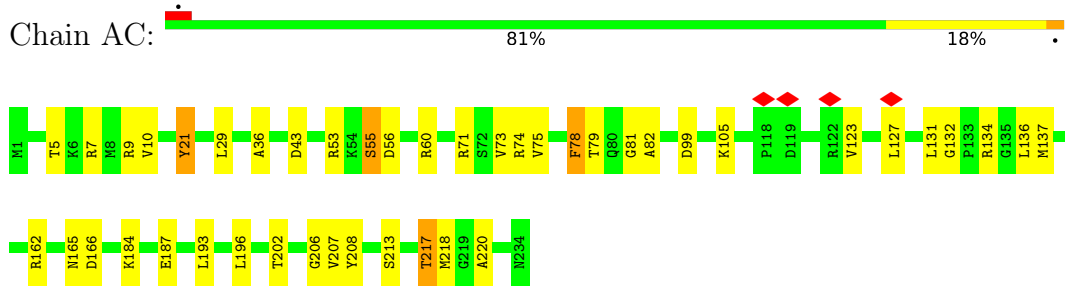


G1561	G1562	G1563	G1564	G1565	G1566	G1567	G1568	G1569	G1570	G1571	G1572	G1573	G1574	G1575	G1576	G1577	G1578	G1579	G1580	G1581	G1582	G1583	G1584	G1585	G1586	G1587	G1588	G1589	G1590	G1591	G1592	G1593	G1594	G1595	G1596	G1597	G1598	G1599	G1600	G1601	G1602	G1603	G1604	G1605	G1606	G1607	G1608	G1609	G1610	G1611	G1612	G1613	G1614	G1615	G1616	G1617	G1618	G1619	G1620
U1441	U1442	U1443	U1444	U1445	U1446	U1447	U1448	U1449	U1450	U1451	U1452	U1453	U1454	U1455	U1456	U1457	U1458	U1459	U1460	U1461	U1462	U1463	U1464	U1465	U1466	U1467	U1468	U1469	U1470	U1471	U1472	U1473	U1474	U1475	U1476	U1477	U1478	U1479	U1480	U1481	U1482	U1483	U1484	U1485	U1486	U1487	U1488	U1489	U1490	U1491	U1492	U1493	U1494	U1495	U1496	U1497	U1498	U1499	U1500
G1381	G1382	G1383	G1384	G1385	G1386	G1387	G1388	G1389	G1390	G1391	G1392	G1393	G1394	G1395	G1396	G1397	G1398	G1399	U1400	G1401	G1402	G1403	G1404	G1405	G1406	G1407	G1408	G1409	G1410	G1411	G1412	G1413	G1414	G1415	G1416	G1417	G1418	G1419	G1420	G1421	G1422	G1423	G1424	G1425	G1426	G1427	G1428	G1429	G1430	G1431	G1432	G1433	G1434	G1435	G1436	G1437	G1438	G1439	G1440
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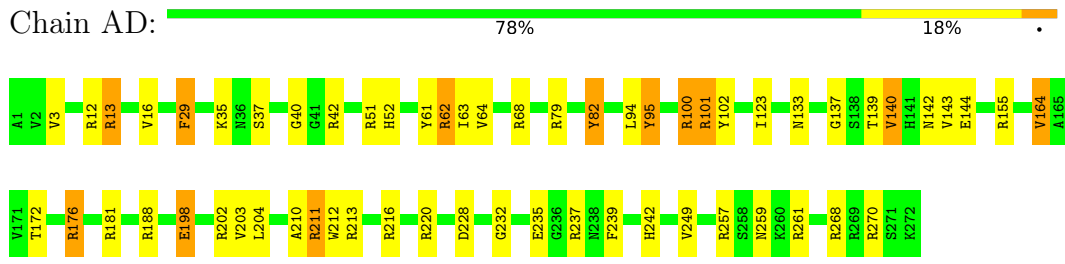
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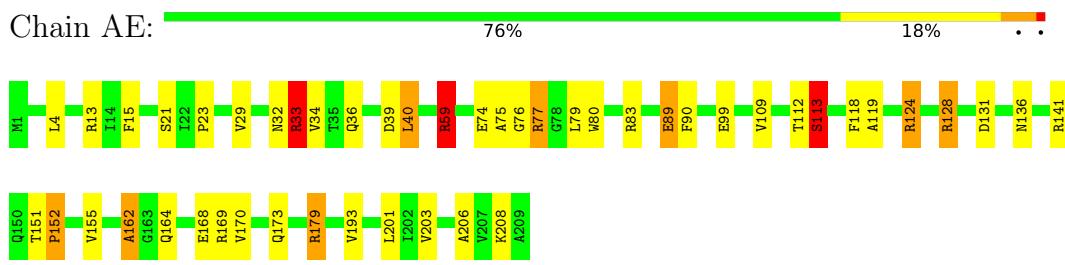
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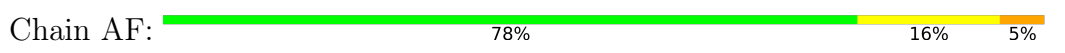
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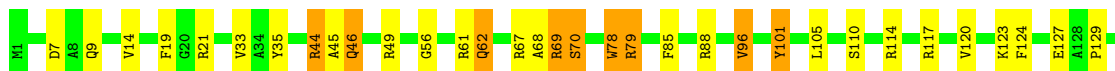


• Molecule 5: 50S ribosomal protein L3



• Molecule 6: 50S ribosomal protein L4

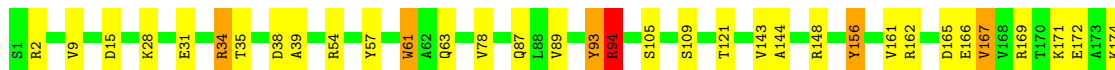
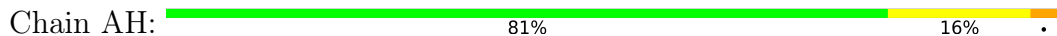




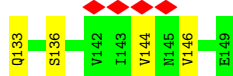
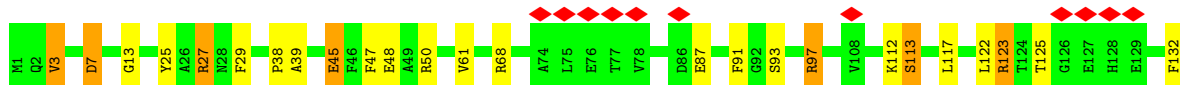
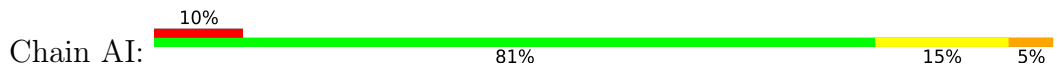
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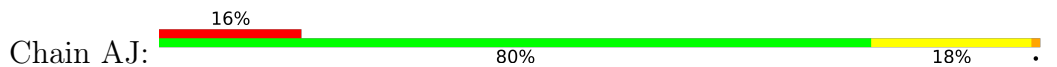
• Molecule 8: 50S ribosomal protein L6




• Molecule 9: 50S ribosomal protein L9



• Molecule 10: 50S ribosomal protein L10



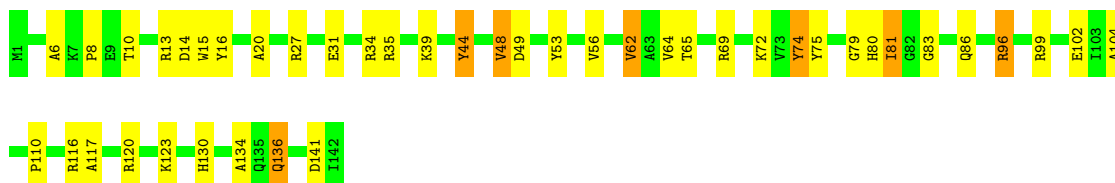
• Molecule 11: 50S ribosomal protein L11

Chain AK:  84% 14%




- Molecule 12: 50S ribosomal protein L13

Chain AL:  70% 25% 5%




- Molecule 13: 50S ribosomal protein L14

Chain AM:  74% 22%




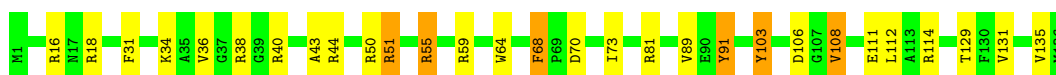
- Molecule 14: 50S ribosomal protein L15

Chain AN:  78% 20%




- Molecule 15: 50S ribosomal protein L16

Chain AO:  79% 17%




- Molecule 16: 50S ribosomal protein L17

Chain AP:  78% 20%

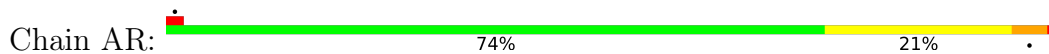


- Molecule 17: 50S ribosomal protein L18

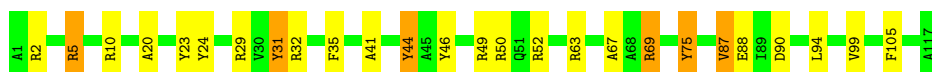
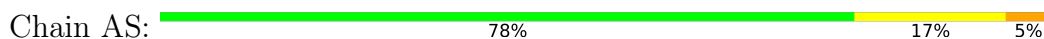
Chain AQ:  78% 20%



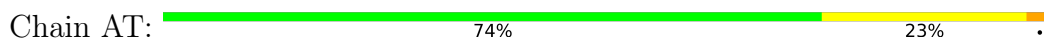
- Molecule 18: 50S ribosomal protein L19



- Molecule 19: 50S ribosomal protein L20



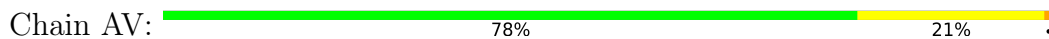
- Molecule 20: 50S ribosomal protein L21



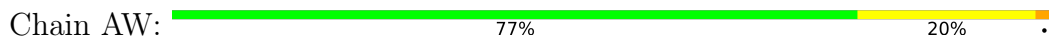
- Molecule 21: 50S ribosomal protein L22



- Molecule 22: 50S ribosomal protein L23



- Molecule 23: 50S ribosomal protein L24

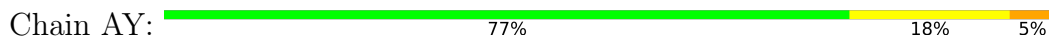


- Molecule 24: 50S ribosomal protein L25

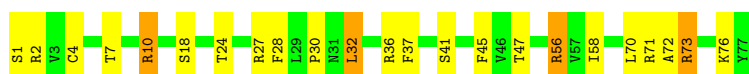




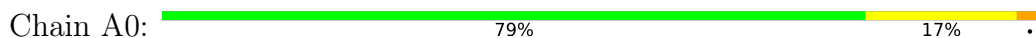
- Molecule 25: 50S ribosomal protein L27



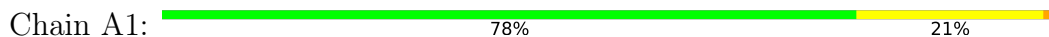
- Molecule 26: 50S ribosomal protein L28



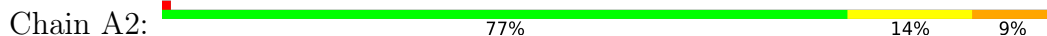
- Molecule 27: 50S ribosomal protein L29



- Molecule 28: 50S ribosomal protein L30



- Molecule 29: 50S ribosomal protein L31

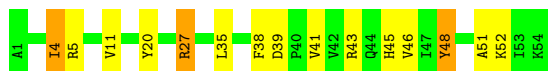


- Molecule 30: 50S ribosomal protein L32



- Molecule 31: 50S ribosomal protein L33

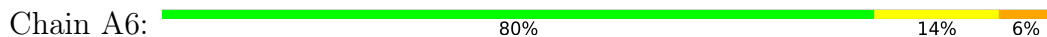




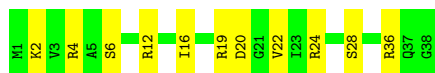
- Molecule 32: 50S ribosomal protein L34



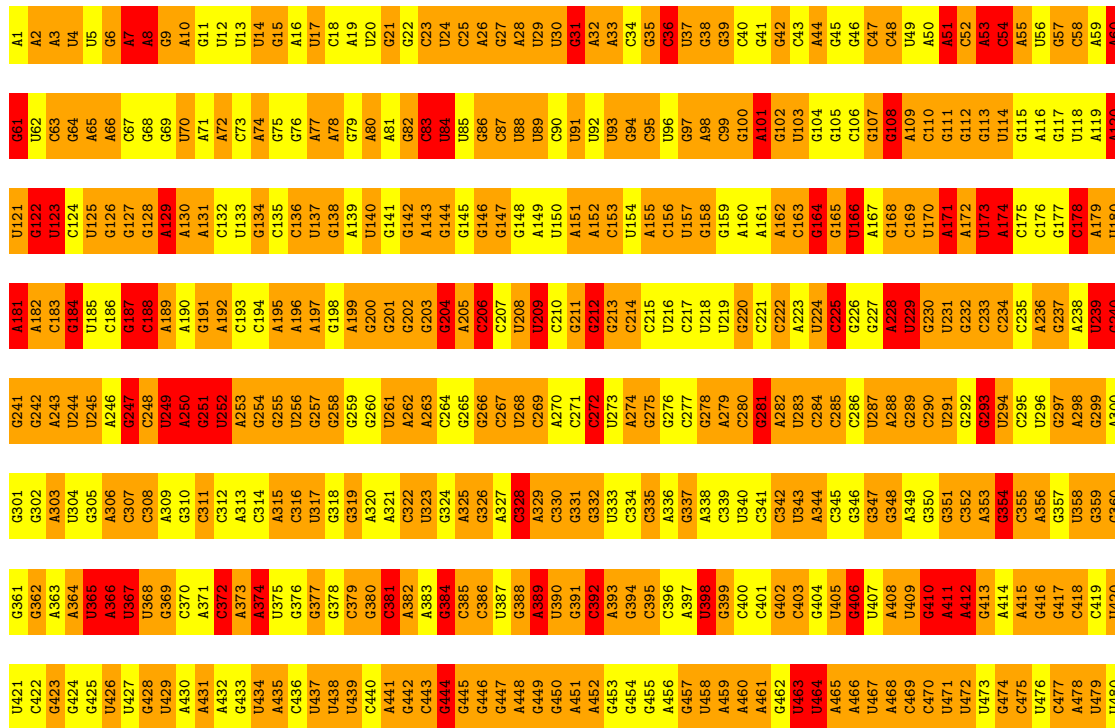
- Molecule 33: 50S ribosomal protein L35



- Molecule 34: 50S ribosomal protein L36

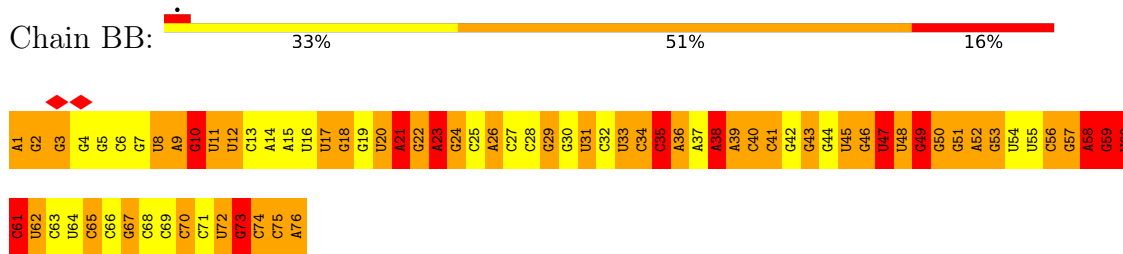


- Molecule 35: 16S ribosomal RNA

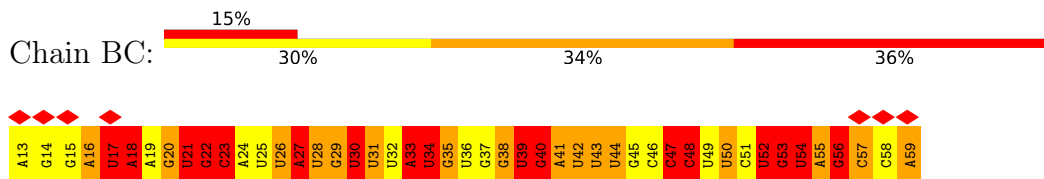


G481	G541	G601	G661	G721	A781	G841	A901	U961	A1021	A1081	C1141	A1201	A1261	U1321	U1381	A1441	C1501
A482	G542	A602	U662	G722	A782	U842	G902	C962	A1022	A1082	G1142	U1202	C1262	C1322	C1382	G1442	A1502
G483	U543	U603	A663	U723	C783	U843	G903	G963	U1023	U1083	G1143	A1203	C1263	G1323	C1383	G1443	A1503
G484	G544	G604	G664	G724	A784	U844	U904	A964	G1024	G1084	G1144	A1204	C1264	G1324	G1384	G1444	A1504
U485	C545	U605	A665	G725	C785	U845	U905	U965	U1025	U1085	A1145	A1205	G1265	G1325	G1385	U1445	G1505
U486	U546	G606	G666	G726	A786	G846	A906	G966	G1026	U1086	G1146	G1206	G1266	U1326	G1386	U1446	G1506
A487	A547	A607	G667	G727	A787	G847	A907	C967	C1027	G1087	C1147	G1207	G1267	C1327	G1387	C1447	A1507
C488	G548	A608	G668	A728	C788	C848	A908	A968	C1028	G1088	U1148	C1208	G1268	C1328	C1388	C1448	C1508
C489	C549	A609	G669	A729	C789	G849	A909	A969	U1029	U1089	U1149	C1209	A1269	A1329	C1389	C1449	C1509
G490	U550	U610	G670	G730	A790	U850	C910	C970	C1030	U1090	A1150	C1210	G1270	U1330	U1390	U1450	A1510
G491	U551	C611	G671	G731	A791	U851	U911	G971	C1031	U1091	A1151	C1211	G1271	G1331	U1391	U1451	A1511
C492	U552	C612	U672	G732	A792	U852	A912	G972	G1032	U1092	A1152	C1212	G1272	A1332	U1392	U1452	A1512
A493	A553	G613	A673	G733	A793	U853	A913	G973	G1033	U1093	G1153	C1213	C1273	A1333	U1393	G1453	A1513
G494	A554	C614	G674	G734	A794	U854	A914	C974	G1034	U1094	G1154	C1214	A1274	G1334	A1394	C1454	A1514
A495	U555	G615	A675	C735	A795	U855	A915	A965	A1035	U1095	A1155	C1215	A1275	U1335	C1395	G1455	A1515
A496	C556	U616	A676	C736	A796	U856	U916	G976	C1036	U1096	G1156	C1216	G1276	A1336	U1396	U1456	A1516
A497	G557	G617	A677	C737	A797	U857	A917	A977	C1037	U1097	A1157	C1217	G1277	G1337	U1397	U1457	A1517
A498	G558	C618	U678	C738	A798	U858	A918	A978	C1038	U1098	A1158	C1218	G1278	A1338	U1398	U1458	A1518
A499	A559	U619	C679	C739	A799	U859	A919	C979	G1039	U1099	U1159	C1219	G1279	A1339	U1399	U1459	A1519
G500	A560	C620	C680	U740	A800	U860	U920	C980	U1040	C1100	G1160	C1220	U1280	A1340	C1400	C1460	C1520
C501	U561	A621	A681	U741	A801	U861	U921	C981	G1041	A1101	G1161	C1221	A1281	U1341	C1401	G1461	C1521
C502	U562	A622	A682	U742	A802	U862	A922	C982	A1042	A1102	C1162	C1222	A1282	C1342	C1402	U1462	C1522
A503	A563	C623	G683	U743	A803	U863	A923	A983	G1043	C1103	G1163	C1223	U1283	G1343	C1403	U1463	C1523
C504	C564	C624	U684	C744	A804	U864	C924	C984	A1044	U1104	G1164	U1224	C1284	C1344	C1404	U1464	C1524
G505	U565	U625	A685	G745	A805	U865	G925	C985	C1045	A1105	U1165	A1225	U1285	U1345	U1405	U1465	G1525
G506	G566	G626	U686	A746	A806	U866	G926	C986	A1046	U1106	G1166	C1226	U1286	C1346	U1406	U1466	G1526
C507	G567	G627	A687	U747	A807	U867	G927	C987	G1047	C1107	A1167	C1227	A1287	U1347	C1407	U1467	U1527
U508	G568	C628	A688	U748	A808	U868	G928	C988	G1048	U1108	A1168	C1228	U1288	U1348	U1408	U1468	U1528
A509	C569	A629	C689	U749	A809	U869	G929	C989	U1049	C1109	A1169	C1229	U1289	A1349	C1409	U1469	U1529
A510	U570	U630	A690	C750	A810	U870	C930	C990	G1050	U1110	A1170	C1230	U1290	U1350	U1410	U1470	G1530
C511	U571	C631	G691	U751	A811	U871	C931	C991	C1051	U1111	A1171	C1231	U1291	U1351	U1411	U1471	A1531
U512	A572	C632	U692	G752	A812	U872	C932	C992	U1052	U1112	C1172	C1232	U1292	C1352	C1412	U1472	U1532
C513	A573	A633	G693	U753	A813	U873	G933	C993	G1053	C1113	C1173	C1233	U1293	C1353	A1413	U1473	C1533
C514	A574	C634	A694	C754	A814	U874	C934	C994	C1054	U1114	G1174	C1234	U1294	U1354	U1414	U1474	A1534
G515	G575	A635	A695	G755	A815	U875	A935	C995	A1055	U1115	G1175	C1235	U1295	U1355	G1415	G1475	G1535
U516	C576	U636	A696	C756	A816	U876	C936	C996	U1056	U1116	A1176	C1236	U1296	U1356	U1416	U1476	C1536
C517	G577	C637	U697	U757	A817	U877	A937	C997	G1057	U1117	C1177	C1237	U1297	U1357	G1417	U1477	U1537
C518	C578	U638	A698	C758	A818	U878	C938	C998	C1058	U1118	G1178	U1238	U1298	U1358	A1418	U1478	C1538
C519	A579	G639	C699	A759	A819	U879	C939	C999	U1059	C1119	A1179	C1239	U1299	C1359	U1419	C1479	C1539
A520	C580	A640	C700	A760	A820	U880	C940	A1000	U1060	C1120	G1180	U1240	U1300	U1360	U1420	U1480	U1540
G521	G581	U641	U701	G761	A821	U881	G941	C1001	G1061	U1121	G1181	C1241	C1301	C1361	G1421	U1481	U1541
C522	C582	A642	A702	U762	A822	U882	C942	C1002	U1062	U1122	G1182	C1242	C1302	A1362	G1422	U1482	A1542
A523	A583	C643	G703	G763	A823	U883	C943	C1003	C1063	U1123	U1183	G1243	C1303	U1363	U1423	U1483	A1543
G524	G584	U644	A704	C764	A824	U884	C944	A1004	G1064	G1124	G1184	U1244	C1304	U1364	U1424	U1484	C1544
C525	G585	G645	C705	A765	A825	U885	C945	A1005	U1065	U1125	G1185	C1245	G1305	U1365	U1425	U1485	U1545
C526	C586	U646	A706	A766	A826	U886	A946	C1006	C1066	U1126	G1186	A1246	A1306	C1366	U1426	U1486	C1546
G527	G587	C647	U707	G767	A827	U887	C947	C1007	A1067	U1127	G1187	C1247	U1307	C1367	C1427	U1487	C1547
C528	C588	A648	C708	A768	A828	U888	C948	U1008	G1068	C1128	A1188	C1248	U1308	A1368	A1428	U1488	C1548
G529	U589	U649	A709	A769	A829	U889	C949	U1009	C1069	U1129	U1189	C1249	U1309	C1369	A1429	U1489	C1549
U530	U590	C650	G710	C770	A830	U890	U950	U1010	U1070	A1130	G1190	C1250	U1310	G1370	U1430	U1490	C1550
U531	U591	C651	G711	G771	A831	U891	G951	C1011	C1071	U1131	A1191	C1251	U1311	G1371	A1431	U1491	C1551
A532	G592	U652	A712	U772	A832	U892	U952	C1012	G1072	U1132	A1192	C1252	U1312	U1372	G1432	U1492	C1552
A533	C593	G713	A713	G773	A833	U893	G953	C1013	U1073	U1133	A1193	G1253	U1313	G1373	A1433	U1493	C1553
U534	U594	C654	G714	G774	A834	U894	G954	C1014	U1074	U1134	A1194	C1254	U1314	A1374	A1434	U1494	C1554
A535	A595	A655	A715	G775	A835	U895	U955	G1015	U1075	U1135	A1195	C1255	U1315	A1375	G1435	U1495	C1555
C536	C596	U656	A716	A776	A836	U896	U956	C1016	U1076	U1136	A1196	C1256	U1316	U1376	U1436	U1496	C1556
G537	G597	U657	A717	A777	A837	U897	C957	C1017	G1077	C1137	A1197	C1257	U1317	C1377	A1437	U1497	C1557
G538	U598	C658	A718	G778	A838	U898	A958	C1018	U1078	U1138	A1198	C1258	U1318	C1378	U1438	U1498	C1558
A539	C599	G719	A719	C779	A839	U899	A959	C1019	U1079	U1139	A1199	C1259	U1319	C1379	U1439	U1499	C1559
U540	A600	C660	C720	A790	A840	U900	U960	G1020	A1080	C1140	G1140	C1200	U1260	U1320	U1380	U1440	C1560

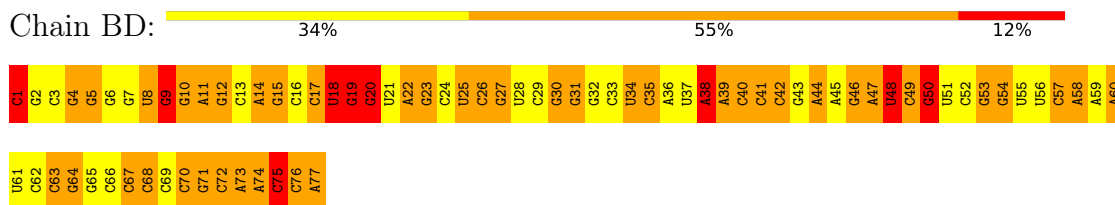
• Molecule 36: A site tRNA



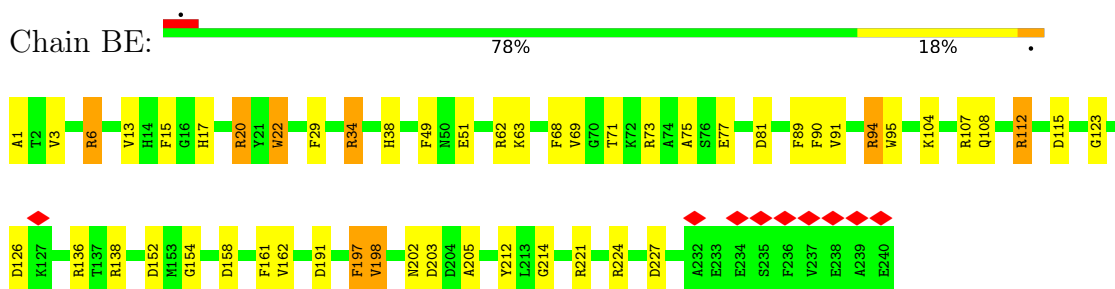
• Molecule 37: mRNA



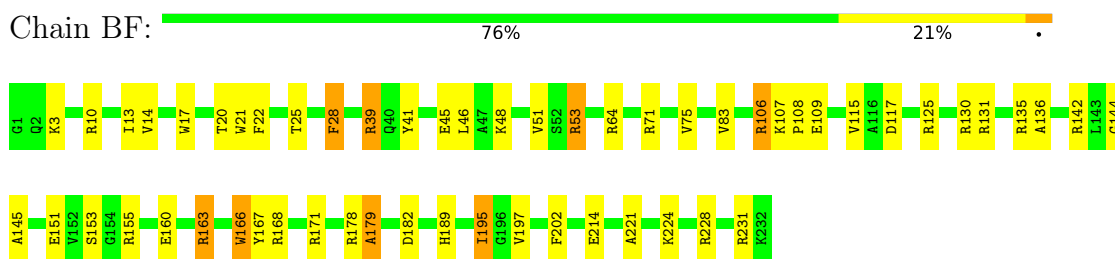
• Molecule 38: P site tRNA



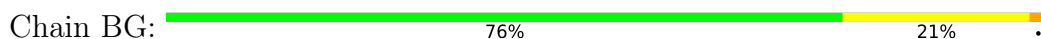
• Molecule 39: 30S ribosomal protein S2

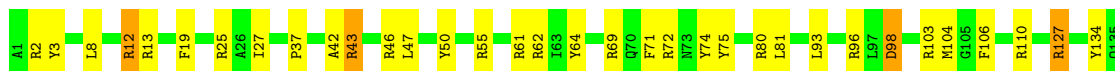


• Molecule 40: 30S ribosomal protein S3

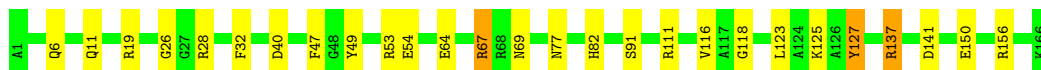
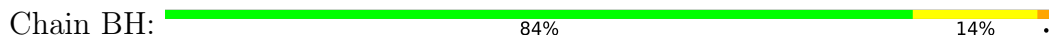


• Molecule 41: 30S ribosomal protein S4





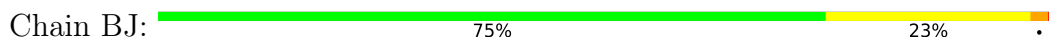
• Molecule 42: 30S ribosomal protein S5



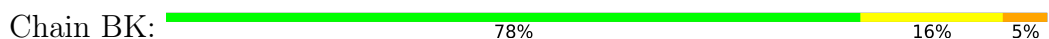
• Molecule 43: 30S ribosomal protein S6



• Molecule 44: 30S ribosomal protein S7



• Molecule 45: 30S ribosomal protein S8



• Molecule 46: 30S ribosomal protein S9





- Molecule 47: 30S ribosomal protein S10

Chain BM: 74% 23%



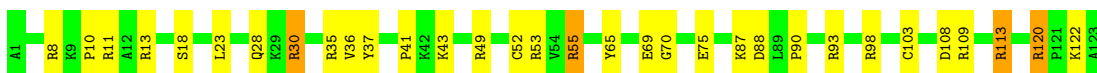
- Molecule 48: 30S ribosomal protein S11

Chain BN: 77% 18% 5%



- Molecule 49: 30S ribosomal protein S12

Chain BO: 74% 23%



- Molecule 50: 30S ribosomal protein S13

Chain BP: 77% 19%



- Molecule 51: 30S ribosomal protein S14

Chain BQ: 67% 31%



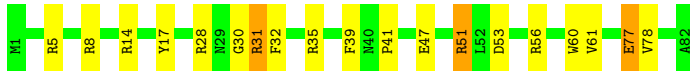
- Molecule 52: 30S ribosomal protein S15

Chain BR: 75% 23%

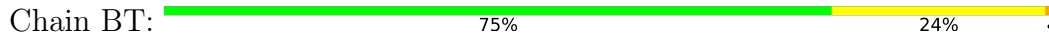


- Molecule 53: 30S ribosomal protein S16

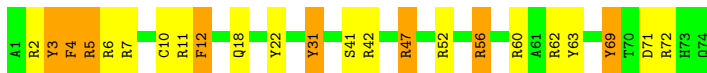
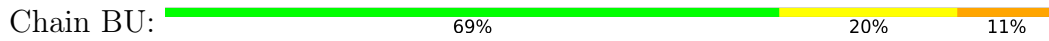
Chain BS: 77% 20%



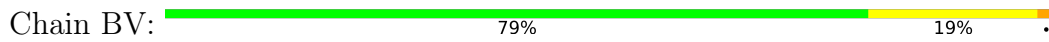
- Molecule 54: 30S ribosomal protein S17



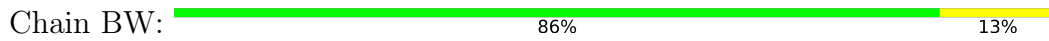
- Molecule 55: 30S ribosomal protein S18



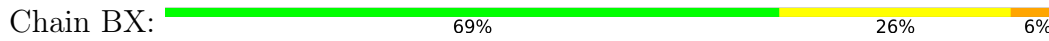
- Molecule 56: 30S ribosomal protein S19



- Molecule 57: 30S ribosomal protein S20



- Molecule 58: 30S ribosomal protein S21



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	36204	Depositor
Resolution determination method	FSC 0.5 CUT-OFF	Depositor
CTF correction method	Volumes were CTF-corrected in defocus groups	Depositor
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	25	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	58269	Depositor
Image detector	TVIPS TEMCAM-F415 (4k x 4k)	Depositor
Maximum map value	1.471	Depositor
Minimum map value	-0.515	Depositor
Average map value	0.030	Depositor
Map value standard deviation	0.201	Depositor
Recommended contour level	0.1	Depositor
Map size (Å)	375.0, 375.0, 375.0	wwPDB
Map dimensions	250, 250, 250	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.5, 1.5, 1.5	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: OMC, MIA, 2MA, OMG, 3TD, 5MU, 1MG, CH, PSU, 4OC, FME, 5MC, UR3, 7MG, 4SU, MA6, 2MG, OMU, 6MZ, H2U

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	AA	3.14	330/2869 (11.5%)	3.60	681/4474 (15.2%)
2	AB	3.07	7254/69257 (10.5%)	3.51	15515/108040 (14.4%)
3	AC	1.50	7/1748 (0.4%)	1.83	37/2355 (1.6%)
4	AD	1.51	4/2131 (0.2%)	1.99	62/2863 (2.2%)
5	AE	1.50	6/1586 (0.4%)	1.92	28/2134 (1.3%)
6	AF	1.47	5/1571 (0.3%)	1.92	37/2113 (1.8%)
7	AG	1.60	10/1444 (0.7%)	2.03	49/1937 (2.5%)
8	AH	1.53	3/1343 (0.2%)	1.92	28/1816 (1.5%)
9	AI	1.45	3/1122 (0.3%)	1.96	24/1515 (1.6%)
10	AJ	1.56	7/1247 (0.6%)	1.92	21/1679 (1.3%)
11	AK	1.50	3/1046 (0.3%)	1.84	19/1410 (1.3%)
12	AL	1.52	7/1152 (0.6%)	1.94	33/1551 (2.1%)
13	AM	1.41	1/956 (0.1%)	1.89	24/1279 (1.9%)
14	AN	1.52	2/1062 (0.2%)	1.98	27/1413 (1.9%)
15	AO	1.48	2/1093 (0.2%)	2.19	34/1460 (2.3%)
16	AP	1.48	4/1021 (0.4%)	2.00	21/1364 (1.5%)
17	AQ	1.49	3/910 (0.3%)	1.93	24/1219 (2.0%)
18	AR	1.56	6/929 (0.6%)	2.07	25/1242 (2.0%)
19	AS	1.57	5/960 (0.5%)	2.21	34/1278 (2.7%)
20	AT	1.56	1/829 (0.1%)	1.93	19/1107 (1.7%)
21	AU	1.47	4/864 (0.5%)	2.01	27/1156 (2.3%)
22	AV	1.49	4/794 (0.5%)	1.86	17/1060 (1.6%)
23	AW	1.53	4/797 (0.5%)	1.94	20/1062 (1.9%)
24	AX	1.46	2/766 (0.3%)	1.80	14/1025 (1.4%)
25	AY	1.51	0/642	1.97	16/848 (1.9%)
26	AZ	1.57	3/635 (0.5%)	2.13	20/848 (2.4%)
27	A0	1.51	1/510 (0.2%)	1.90	10/677 (1.5%)
28	A1	1.41	1/453 (0.2%)	2.05	17/605 (2.8%)
29	A2	1.55	1/559 (0.2%)	2.18	16/745 (2.1%)
30	A3	1.53	4/450 (0.9%)	2.15	17/599 (2.8%)
31	A4	1.50	0/448	1.96	12/594 (2.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
32	A5	1.49	4/380 (1.1%)	2.28	17/498 (3.4%)
33	A6	1.49	3/513 (0.6%)	1.89	11/676 (1.6%)
34	A7	1.42	1/303 (0.3%)	2.16	11/397 (2.8%)
35	BA	3.10	3971/36769 (10.8%)	3.53	8378/57354 (14.6%)
36	BB	3.03	178/1600 (11.1%)	3.53	372/2492 (14.9%)
37	BC	3.13	119/1108 (10.7%)	3.48	238/1724 (13.8%)
38	BD	3.05	179/1721 (10.4%)	3.56	400/2683 (14.9%)
39	BE	1.49	8/1904 (0.4%)	1.96	46/2565 (1.8%)
40	BF	1.49	6/1852 (0.3%)	1.99	48/2490 (1.9%)
41	BG	1.57	9/1665 (0.5%)	2.08	56/2227 (2.5%)
42	BH	1.50	5/1239 (0.4%)	1.87	27/1664 (1.6%)
43	BI	1.55	5/1121 (0.4%)	2.04	41/1509 (2.7%)
44	BJ	1.54	8/1422 (0.6%)	1.94	39/1908 (2.0%)
45	BK	1.42	7/989 (0.7%)	1.98	21/1326 (1.6%)
46	BL	1.56	8/1048 (0.8%)	2.24	44/1394 (3.2%)
47	BM	1.49	3/835 (0.4%)	2.00	25/1127 (2.2%)
48	BN	1.48	2/982 (0.2%)	2.08	28/1323 (2.1%)
49	BO	1.52	4/969 (0.4%)	1.90	23/1300 (1.8%)
50	BP	1.52	5/919 (0.5%)	2.05	25/1226 (2.0%)
51	BQ	1.62	9/817 (1.1%)	2.10	30/1088 (2.8%)
52	BR	1.47	1/724 (0.1%)	2.09	29/966 (3.0%)
53	BS	1.52	1/659 (0.2%)	2.18	22/884 (2.5%)
54	BT	1.55	4/681 (0.6%)	2.06	19/913 (2.1%)
55	BU	1.55	4/637 (0.6%)	2.18	28/851 (3.3%)
56	BV	1.52	2/744 (0.3%)	1.90	13/995 (1.3%)
57	BW	1.49	2/676 (0.3%)	1.78	7/895 (0.8%)
58	BX	1.58	2/598 (0.3%)	2.02	22/792 (2.8%)
All	All	2.70	12237/164069 (7.5%)	3.17	26948/244735 (11.0%)

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
1	AA	0	68
2	AB	0	1652
3	AC	0	2
4	AD	0	11
5	AE	0	11
6	AF	0	3
7	AG	0	8

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Mol	Chain	#Chirality outliers	#Planarity outliers
8	AH	0	5
9	AI	0	3
10	AJ	0	3
11	AK	0	2
12	AL	0	4
13	AM	0	5
14	AN	0	4
15	AO	0	3
16	AP	0	8
17	AQ	0	2
18	AR	0	7
19	AS	0	5
20	AT	0	5
21	AU	0	2
22	AV	0	1
23	AW	0	1
24	AX	0	1
25	AY	0	7
26	AZ	0	2
27	A0	0	4
28	A1	0	1
29	A2	0	3
30	A3	0	3
31	A4	0	2
33	A6	0	5
35	BA	0	910
36	BB	0	37
37	BC	0	28
38	BD	0	45
39	BE	0	4
40	BF	0	7
41	BG	0	2
42	BH	0	3
43	BI	0	5
44	BJ	0	6
45	BK	0	4
46	BL	0	4
47	BM	0	2
48	BN	0	3
49	BO	0	8
50	BP	0	2
51	BQ	0	3

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Mol	Chain	#Chirality outliers	#Planarity outliers
52	BR	0	1
53	BS	0	4
54	BT	0	1
55	BU	0	5
56	BV	0	4
57	BW	0	2
58	BX	0	3
All	All	0	2936

The worst 5 of 12237 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	AB	2225	A	N3-C4	18.05	1.45	1.34
2	AB	2615	U	C2-N3	17.29	1.49	1.37
35	BA	729	A	P-O5'	15.61	1.75	1.59
2	AB	1970	A	N9-C4	15.52	1.47	1.37
2	AB	1008	A	N3-C4	15.09	1.44	1.34

The worst 5 of 26948 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	AB	2855	C	N3-C4-C5	-23.45	112.52	121.90
2	AB	1264	A	N9-C4-C5	22.40	114.76	105.80
29	A2	25	ARG	NE-CZ-NH1	21.63	131.12	120.30
2	AB	248	G	C2-N3-C4	20.59	122.19	111.90
2	AB	6	A	C8-N9-C4	-20.57	97.57	105.80

There are no chirality outliers.

5 of 2936 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	12	C	Sidechain
1	AA	2	G	Sidechain
1	AA	6	G	Sidechain
1	AA	7	G	Sidechain
1	AA	9	G	Sidechain

5.2 Too-close contacts [\(i\)](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AA	2566	0	1294	0	0
2	AB	62351	0	31238	0	0
3	AC	1733	0	1824	0	0
4	AD	2092	0	2170	0	0
5	AE	1565	0	1616	0	0
6	AF	1552	0	1619	0	0
7	AG	1420	0	1460	0	0
8	AH	1323	0	1374	0	0
9	AI	1111	0	1148	0	0
10	AJ	1233	0	1283	0	0
11	AK	1032	0	1088	0	0
12	AL	1129	0	1162	0	0
13	AM	947	0	1023	0	0
14	AN	1053	0	1129	0	0
15	AO	1074	0	1157	0	0
16	AP	1008	0	1045	0	0
17	AQ	900	0	935	0	0
18	AR	917	0	965	0	0
19	AS	947	0	1022	0	0
20	AT	816	0	839	0	0
21	AU	857	0	922	0	0
22	AV	787	0	846	0	0
23	AW	789	0	847	0	0
24	AX	753	0	780	0	0
25	AY	634	0	656	0	0
26	AZ	625	0	655	0	0
27	A0	509	0	543	0	0
28	A1	449	0	491	0	0
29	A2	549	0	552	0	0
30	A3	444	0	461	0	0
31	A4	441	0	485	0	0
32	A5	377	0	418	0	0
33	A6	504	0	574	0	0
34	A7	302	0	343	0	0
35	BA	33089	0	16604	0	0
36	BB	1627	0	845	0	0
37	BC	993	0	499	0	0
38	BD	1641	0	841	0	0
39	BE	1872	0	1885	0	0
40	BF	1822	0	1913	0	0
41	BG	1643	0	1710	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
42	BH	1225	0	1273	0	0
43	BI	1101	0	1050	0	0
44	BJ	1400	0	1449	0	0
45	BK	979	0	1034	0	0
46	BL	1036	0	1084	0	0
47	BM	825	0	865	0	0
48	BN	965	0	997	0	0
49	BO	955	0	1019	0	0
50	BP	910	0	981	0	0
51	BQ	805	0	847	0	0
52	BR	716	0	742	0	0
53	BS	649	0	666	0	0
54	BT	672	0	716	0	0
55	BU	626	0	651	0	0
56	BV	727	0	768	0	0
57	BW	670	0	722	0	0
58	BX	590	0	631	0	0
59	AB	10	0	10	0	0
60	BB	14	0	9	0	0
All	All	152351	0	103775	0	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). Clashscore could not be calculated for this entry.

There are no clashes within the asymmetric unit.

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	AC	232/234 (99%)	214 (92%)	12 (5%)	6 (3%)	5	31
4	AD	270/272 (99%)	237 (88%)	24 (9%)	9 (3%)	4	26

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
5	AE	207/209 (99%)	171 (83%)	28 (14%)	8 (4%)	3	23
6	AF	199/201 (99%)	172 (86%)	18 (9%)	9 (4%)	2	22
7	AG	176/178 (99%)	151 (86%)	16 (9%)	9 (5%)	2	19
8	AH	174/176 (99%)	158 (91%)	13 (8%)	3 (2%)	9	42
9	AI	147/149 (99%)	131 (89%)	10 (7%)	6 (4%)	3	23
10	AJ	162/164 (99%)	156 (96%)	5 (3%)	1 (1%)	25	66
11	AK	139/141 (99%)	135 (97%)	4 (3%)	0	100	100
12	AL	140/142 (99%)	119 (85%)	16 (11%)	5 (4%)	3	25
13	AM	121/123 (98%)	107 (88%)	9 (7%)	5 (4%)	3	23
14	AN	142/144 (99%)	127 (89%)	12 (8%)	3 (2%)	7	36
15	AO	134/136 (98%)	123 (92%)	8 (6%)	3 (2%)	6	35
16	AP	125/127 (98%)	114 (91%)	10 (8%)	1 (1%)	19	60
17	AQ	115/117 (98%)	110 (96%)	5 (4%)	0	100	100
18	AR	112/114 (98%)	97 (87%)	13 (12%)	2 (2%)	8	40
19	AS	115/117 (98%)	107 (93%)	4 (4%)	4 (4%)	3	25
20	AT	101/103 (98%)	91 (90%)	8 (8%)	2 (2%)	7	38
21	AU	108/110 (98%)	100 (93%)	5 (5%)	3 (3%)	5	30
22	AV	98/100 (98%)	75 (76%)	20 (20%)	3 (3%)	4	27
23	AW	101/103 (98%)	89 (88%)	10 (10%)	2 (2%)	7	38
24	AX	92/94 (98%)	87 (95%)	4 (4%)	1 (1%)	14	52
25	AY	82/84 (98%)	63 (77%)	17 (21%)	2 (2%)	6	33
26	AZ	75/77 (97%)	66 (88%)	7 (9%)	2 (3%)	5	31
27	A0	61/63 (97%)	56 (92%)	4 (7%)	1 (2%)	9	44
28	A1	56/58 (97%)	54 (96%)	2 (4%)	0	100	100
29	A2	68/70 (97%)	64 (94%)	3 (4%)	1 (2%)	10	46
30	A3	54/56 (96%)	47 (87%)	4 (7%)	3 (6%)	2	19
31	A4	52/54 (96%)	49 (94%)	1 (2%)	2 (4%)	3	24
32	A5	44/46 (96%)	39 (89%)	3 (7%)	2 (4%)	2	22
33	A6	62/64 (97%)	59 (95%)	2 (3%)	1 (2%)	9	44
34	A7	36/38 (95%)	29 (81%)	5 (14%)	2 (6%)	2	19
39	BE	238/240 (99%)	220 (92%)	12 (5%)	6 (2%)	5	32

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
40	BF	230/232 (99%)	217 (94%)	8 (4%)	5 (2%)	6	35
41	BG	203/205 (99%)	189 (93%)	11 (5%)	3 (2%)	10	46
42	BH	164/166 (99%)	149 (91%)	13 (8%)	2 (1%)	13	50
43	BI	133/135 (98%)	123 (92%)	9 (7%)	1 (1%)	19	60
44	BJ	176/178 (99%)	164 (93%)	9 (5%)	3 (2%)	9	42
45	BK	127/129 (98%)	119 (94%)	7 (6%)	1 (1%)	19	60
46	BL	127/129 (98%)	115 (91%)	9 (7%)	3 (2%)	6	33
47	BM	101/103 (98%)	90 (89%)	6 (6%)	5 (5%)	2	20
48	BN	126/128 (98%)	112 (89%)	11 (9%)	3 (2%)	6	33
49	BO	121/123 (98%)	107 (88%)	12 (10%)	2 (2%)	9	42
50	BP	115/117 (98%)	110 (96%)	3 (3%)	2 (2%)	9	42
51	BQ	98/100 (98%)	84 (86%)	9 (9%)	5 (5%)	2	19
52	BR	86/88 (98%)	81 (94%)	4 (5%)	1 (1%)	13	50
53	BS	80/82 (98%)	77 (96%)	3 (4%)	0	100	100
54	BT	81/83 (98%)	72 (89%)	8 (10%)	1 (1%)	13	50
55	BU	72/74 (97%)	62 (86%)	7 (10%)	3 (4%)	3	22
56	BV	89/91 (98%)	82 (92%)	6 (7%)	1 (1%)	14	52
57	BW	84/86 (98%)	79 (94%)	4 (5%)	1 (1%)	13	50
58	BX	68/70 (97%)	61 (90%)	4 (6%)	3 (4%)	2	22
All	All	6319/6423 (98%)	5710 (90%)	457 (7%)	152 (2%)	9	33

5 of 152 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	AC	217	THR
4	AD	94	LEU
6	AF	62	GLN
6	AF	188	MET
7	AG	136	ILE

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	AC	181/181 (100%)	177 (98%)	4 (2%)	52	71
4	AD	217/217 (100%)	212 (98%)	5 (2%)	50	70
5	AE	164/164 (100%)	148 (90%)	16 (10%)	8	26
6	AF	165/165 (100%)	156 (94%)	9 (6%)	21	47
7	AG	149/149 (100%)	140 (94%)	9 (6%)	19	44
8	AH	137/137 (100%)	125 (91%)	12 (9%)	10	31
9	AI	114/114 (100%)	107 (94%)	7 (6%)	18	44
10	AJ	122/122 (100%)	111 (91%)	11 (9%)	9	30
11	AK	109/109 (100%)	104 (95%)	5 (5%)	27	52
12	AL	116/116 (100%)	104 (90%)	12 (10%)	7	25
13	AM	104/104 (100%)	96 (92%)	8 (8%)	13	37
14	AN	103/103 (100%)	98 (95%)	5 (5%)	25	50
15	AO	109/109 (100%)	106 (97%)	3 (3%)	43	65
16	AP	103/103 (100%)	100 (97%)	3 (3%)	42	64
17	AQ	87/87 (100%)	81 (93%)	6 (7%)	15	40
18	AR	99/99 (100%)	91 (92%)	8 (8%)	11	35
19	AS	89/89 (100%)	87 (98%)	2 (2%)	52	71
20	AT	84/84 (100%)	77 (92%)	7 (8%)	11	34
21	AU	93/93 (100%)	87 (94%)	6 (6%)	17	42
22	AV	84/84 (100%)	80 (95%)	4 (5%)	25	51
23	AW	84/84 (100%)	79 (94%)	5 (6%)	19	44
24	AX	78/78 (100%)	74 (95%)	4 (5%)	24	48
25	AY	62/62 (100%)	60 (97%)	2 (3%)	39	61
26	AZ	67/67 (100%)	61 (91%)	6 (9%)	9	30
27	A0	55/55 (100%)	52 (94%)	3 (6%)	21	47
28	A1	48/48 (100%)	46 (96%)	2 (4%)	30	54
29	A2	62/62 (100%)	56 (90%)	6 (10%)	8	27
30	A3	47/47 (100%)	45 (96%)	2 (4%)	29	53
31	A4	48/48 (100%)	44 (92%)	4 (8%)	11	34
32	A5	38/38 (100%)	34 (90%)	4 (10%)	7	24

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
33	A6	51/51 (100%)	50 (98%)	1 (2%)	55	74
34	A7	34/34 (100%)	33 (97%)	1 (3%)	42	64
39	BE	198/198 (100%)	187 (94%)	11 (6%)	21	46
40	BF	189/189 (100%)	176 (93%)	13 (7%)	15	40
41	BG	172/172 (100%)	165 (96%)	7 (4%)	30	55
42	BH	125/125 (100%)	120 (96%)	5 (4%)	31	55
43	BI	116/116 (100%)	109 (94%)	7 (6%)	19	44
44	BJ	146/146 (100%)	138 (94%)	8 (6%)	21	47
45	BK	104/104 (100%)	93 (89%)	11 (11%)	6	24
46	BL	106/106 (100%)	99 (93%)	7 (7%)	16	41
47	BM	90/90 (100%)	87 (97%)	3 (3%)	38	61
48	BN	98/98 (100%)	93 (95%)	5 (5%)	24	48
49	BO	103/103 (100%)	96 (93%)	7 (7%)	16	41
50	BP	95/95 (100%)	90 (95%)	5 (5%)	22	47
51	BQ	83/83 (100%)	81 (98%)	2 (2%)	49	69
52	BR	76/76 (100%)	74 (97%)	2 (3%)	46	66
53	BS	65/65 (100%)	64 (98%)	1 (2%)	65	80
54	BT	77/77 (100%)	72 (94%)	5 (6%)	17	42
55	BU	64/64 (100%)	61 (95%)	3 (5%)	26	51
56	BV	78/78 (100%)	73 (94%)	5 (6%)	17	42
57	BW	65/65 (100%)	63 (97%)	2 (3%)	40	62
58	BX	60/60 (100%)	56 (93%)	4 (7%)	16	41
All	All	5213/5213 (100%)	4918 (94%)	295 (6%)	24	45

5 of 295 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
44	BJ	145	GLU
56	BV	56	HIS
45	BK	60	LEU
49	BO	49	ARG
13	AM	114	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	AA	119/120 (99%)	17 (14%)	10 (8%)
2	AB	2898/2904 (99%)	529 (18%)	183 (6%)
35	BA	1538/1542 (99%)	299 (19%)	117 (7%)
36	BB	74/76 (97%)	25 (33%)	5 (6%)
37	BC	46/47 (97%)	16 (34%)	7 (15%)
38	BD	77/77 (100%)	14 (18%)	2 (2%)
All	All	4752/4766 (99%)	900 (18%)	324 (6%)

5 of 900 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	9	G
1	AA	13	G
1	AA	14	U
1	AA	25	U
1	AA	26	C

5 of 324 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
35	BA	497	G
35	BA	1226	C
35	BA	622	A
35	BA	937	A
35	BA	1362	A

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	5MC	AB	1962	2	18,22,23	1.95	6 (33%)	26,32,35	2.60	9 (34%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
35	UR3	BA	1498	35	19,22,23	1.23	2 (10%)	26,32,35	1.42	3 (11%)
2	1MG	AB	745	2	18,26,27	1.96	6 (33%)	19,39,42	2.08	6 (31%)
36	MIA	BB	37	36	24,31,32	1.86	5 (20%)	26,44,47	1.99	7 (26%)
2	PSU	AB	2580	2	18,21,22	2.30	6 (33%)	22,30,33	2.76	5 (22%)
2	PSU	AB	2457	2	18,21,22	1.85	6 (33%)	22,30,33	1.66	6 (27%)
2	PSU	AB	955	2	18,21,22	1.80	4 (22%)	22,30,33	2.43	2 (9%)
36	7MG	BB	46	36	22,26,27	6.66	3 (13%)	29,39,42	1.36	4 (13%)
2	6MZ	AB	1618	2	18,25,26	1.40	2 (11%)	16,36,39	1.50	1 (6%)
38	H2U	BD	21	38	18,21,22	0.99	1 (5%)	21,30,33	1.63	3 (14%)
35	2MG	BA	1516	35	18,26,27	1.78	6 (33%)	16,38,41	1.22	1 (6%)
2	OMU	AB	2552	2	19,22,23	1.61	3 (15%)	26,31,34	1.63	9 (34%)
35	MA6	BA	1519	35	19,26,27	1.52	5 (26%)	18,38,41	1.18	2 (11%)
36	H2U	BB	16	36	18,21,22	1.50	4 (22%)	21,30,33	1.40	4 (19%)
2	3TD	AB	1915	2	18,22,23	1.94	5 (27%)	22,32,35	1.52	3 (13%)
36	OMC	BB	32	36	19,22,23	1.03	1 (5%)	26,31,34	1.77	7 (26%)
36	H2U	BB	20	36	18,21,22	1.86	5 (27%)	21,30,33	1.97	5 (23%)
2	OMC	AB	2498	2	19,22,23	1.07	1 (5%)	26,31,34	1.47	5 (19%)
2	CH	AB	2575	2	16,21,22	1.08	0	20,30,33	1.35	3 (15%)
2	PSU	AB	2605	2	18,21,22	1.22	3 (16%)	22,30,33	1.40	3 (13%)
36	5MU	BB	54	36	19,22,23	1.44	4 (21%)	28,32,35	2.42	5 (17%)
2	PSU	AB	746	2	18,21,22	1.27	1 (5%)	22,30,33	1.80	3 (13%)
2	7MG	AB	2069	2	22,26,27	5.35	4 (18%)	29,39,42	1.51	6 (20%)
2	6MZ	AB	2030	2	18,25,26	1.39	4 (22%)	16,36,39	2.59	4 (25%)
2	5MU	AB	747	2	19,22,23	1.51	4 (21%)	28,32,35	2.31	9 (32%)
2	2MG	AB	2445	2	18,26,27	2.19	4 (22%)	16,38,41	0.91	0
38	PSU	BD	56	38	18,21,22	1.94	4 (22%)	22,30,33	1.54	4 (18%)
38	4SU	BD	8	38	18,21,22	1.97	4 (22%)	26,30,33	1.50	5 (19%)
35	2MG	BA	966	35	18,26,27	2.40	6 (33%)	16,38,41	1.52	4 (25%)
35	2MG	BA	1207	35	18,26,27	2.21	6 (33%)	16,38,41	1.70	5 (31%)
38	OMC	BD	33	38	19,22,23	1.09	1 (5%)	26,31,34	1.52	3 (11%)
2	PSU	AB	2504	2	18,21,22	1.91	6 (33%)	22,30,33	1.74	4 (18%)
35	5MC	BA	967	35	18,22,23	1.37	2 (11%)	26,32,35	1.81	4 (15%)
35	4OC	BA	1402	35	20,23,24	1.61	3 (15%)	26,32,35	2.03	7 (26%)
36	4SU	BB	8	36	18,21,22	2.27	5 (27%)	26,30,33	3.27	9 (34%)
2	2MA	AB	2503	2	17,25,26	1.08	1 (5%)	17,37,40	1.59	4 (23%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
35	PSU	BA	516	35	18,21,22	1.70	6 (33%)	22,30,33	2.12	7 (31%)
2	5MU	AB	1939	2	19,22,23	1.51	4 (21%)	28,32,35	1.62	7 (25%)
2	PSU	AB	1917	2	18,21,22	1.59	3 (16%)	22,30,33	1.63	2 (9%)
35	MA6	BA	1518	35	19,26,27	1.45	2 (10%)	18,38,41	1.32	2 (11%)
38	5MU	BD	55	38	19,22,23	1.43	4 (21%)	28,32,35	1.58	4 (14%)
35	7MG	BA	527	35	22,26,27	5.58	7 (31%)	29,39,42	1.43	3 (10%)
2	OMG	AB	2251	2,38	18,26,27	1.65	4 (22%)	19,38,41	1.12	1 (5%)
36	PSU	BB	55	36	18,21,22	2.04	6 (33%)	22,30,33	2.58	11 (50%)
2	H2U	AB	2449	2	18,21,22	1.51	3 (16%)	21,30,33	1.69	4 (19%)
35	5MC	BA	1407	35	18,22,23	1.44	2 (11%)	26,32,35	1.46	4 (15%)
36	H2U	BB	17	36	18,21,22	1.27	3 (16%)	21,30,33	2.09	8 (38%)
2	2MG	AB	1835	2	18,26,27	1.75	5 (27%)	16,38,41	1.37	2 (12%)
2	PSU	AB	1911	2	18,21,22	1.98	4 (22%)	22,30,33	1.94	7 (31%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	5MC	AB	1962	2	-	0/7/25/26	0/2/2/2
35	UR3	BA	1498	35	-	1/7/25/26	0/2/2/2
2	1MG	AB	745	2	-	0/3/25/26	0/3/3/3
36	MIA	BB	37	36	-	3/11/33/34	0/3/3/3
2	PSU	AB	2580	2	-	2/7/25/26	0/2/2/2
2	PSU	AB	2457	2	-	0/7/25/26	0/2/2/2
2	PSU	AB	955	2	-	0/7/25/26	0/2/2/2
36	7MG	BB	46	36	-	1/7/37/38	0/3/3/3
2	6MZ	AB	1618	2	-	0/5/27/28	0/3/3/3
38	H2U	BD	21	38	-	0/7/38/39	0/2/2/2
35	2MG	BA	1516	35	-	2/5/27/28	0/3/3/3
2	OMU	AB	2552	2	-	0/9/27/28	0/2/2/2
35	MA6	BA	1519	35	-	0/7/29/30	0/3/3/3
36	H2U	BB	16	36	-	0/7/38/39	0/2/2/2
2	3TD	AB	1915	2	-	0/7/25/26	0/2/2/2
36	OMC	BB	32	36	-	0/9/27/28	0/2/2/2
36	H2U	BB	20	36	-	0/7/38/39	0/2/2/2
2	OMC	AB	2498	2	-	1/9/27/28	0/2/2/2
2	CH	AB	2575	2	-	0/5/25/26	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PSU	AB	2605	2	-	2/7/25/26	0/2/2/2
36	5MU	BB	54	36	-	0/7/25/26	0/2/2/2
2	PSU	AB	746	2	-	2/7/25/26	0/2/2/2
2	7MG	AB	2069	2	-	0/7/37/38	0/3/3/3
2	6MZ	AB	2030	2	-	1/5/27/28	0/3/3/3
2	5MU	AB	747	2	-	0/7/25/26	0/2/2/2
2	2MG	AB	2445	2	-	0/5/27/28	0/3/3/3
38	PSU	BD	56	38	-	0/7/25/26	0/2/2/2
38	4SU	BD	8	38	-	0/7/25/26	0/2/2/2
35	2MG	BA	966	35	-	0/5/27/28	0/3/3/3
35	2MG	BA	1207	35	-	0/5/27/28	0/3/3/3
38	OMC	BD	33	38	-	0/9/27/28	0/2/2/2
2	PSU	AB	2504	2	-	1/7/25/26	0/2/2/2
35	5MC	BA	967	35	-	1/7/25/26	0/2/2/2
35	4OC	BA	1402	35	-	0/9/29/30	0/2/2/2
36	4SU	BB	8	36	-	1/7/25/26	0/2/2/2
2	2MA	AB	2503	2	-	0/3/25/26	0/3/3/3
35	PSU	BA	516	35	-	0/7/25/26	0/2/2/2
2	5MU	AB	1939	2	-	0/7/25/26	0/2/2/2
2	PSU	AB	1917	2	-	1/7/25/26	0/2/2/2
35	MA6	BA	1518	35	-	0/7/29/30	0/3/3/3
38	5MU	BD	55	38	-	0/7/25/26	0/2/2/2
35	7MG	BA	527	35	-	2/7/37/38	0/3/3/3
2	OMG	AB	2251	2,38	-	0/5/27/28	0/3/3/3
36	PSU	BB	55	36	-	2/7/25/26	0/2/2/2
2	H2U	AB	2449	2	-	0/7/38/39	0/2/2/2
35	5MC	BA	1407	35	-	0/7/25/26	0/2/2/2
36	H2U	BB	17	36	-	1/7/38/39	0/2/2/2
2	2MG	AB	1835	2	-	0/5/27/28	0/3/3/3
2	PSU	AB	1911	2	-	0/7/25/26	0/2/2/2

The worst 5 of 186 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
36	BB	46	7MG	C8-N9	-30.44	1.29	1.46
35	BA	527	7MG	C8-N9	-24.50	1.32	1.46
2	AB	2069	7MG	C8-N9	-24.06	1.32	1.46
36	BB	8	4SU	C4-N3	6.72	1.44	1.37
2	AB	1911	PSU	C2-N1	6.03	1.44	1.36

The worst 5 of 226 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
36	BB	8	4SU	S4-C4-N3	-10.65	109.72	120.21
2	AB	2580	PSU	C3'-C2'-C1'	10.33	113.66	101.64
2	AB	955	PSU	C3'-C2'-C1'	-8.60	91.61	101.64
36	BB	8	4SU	C5-C4-N3	8.36	122.44	114.69
2	AB	2030	6MZ	C9-N6-C6	8.13	129.87	122.87

There are no chirality outliers.

5 of 24 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	AB	746	PSU	O4'-C1'-C5-C4
2	AB	746	PSU	O4'-C1'-C5-C6
2	AB	2580	PSU	O4'-C1'-C5-C4
2	AB	2580	PSU	O4'-C1'-C5-C6
2	AB	2605	PSU	C2'-C1'-C5-C6

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
59	FME	AB	3001	60	8,9,10	1.94	3 (37%)	7,9,11	2.18	3 (42%)
60	TRP	BB	101	36,59	13,15,16	1.37	1 (7%)	13,20,22	2.26	5 (38%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
59	FME	AB	3001	60	-	3/7/9/11	-
60	TRP	BB	101	36,59	-	2/4/6/8	0/2/2/2

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	AB	3001	FME	CA-N	-4.28	1.40	1.46
60	BB	101	TRP	CD1-NE1	2.41	1.41	1.36
59	AB	3001	FME	O-C	2.35	1.29	1.19
59	AB	3001	FME	CB-CA	2.17	1.57	1.53

The worst 5 of 8 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
60	BB	101	TRP	CB-CG-CD1	-4.76	122.09	127.97
60	BB	101	TRP	CB-CG-CD2	4.39	133.07	126.25
59	AB	3001	FME	O-C-CA	-4.19	113.79	124.78
59	AB	3001	FME	C-CA-N	2.91	114.98	109.73
60	BB	101	TRP	CD2-CE2-NE1	-2.59	102.16	107.92

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
59	AB	3001	FME	O1-CN-N-CA
59	AB	3001	FME	O-C-CA-CB
60	BB	101	TRP	O-C-CA-CB
60	BB	101	TRP	CA-CB-CG-CD1
59	AB	3001	FME	N-CA-CB-CG

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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	AA	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	AA	39:A	O3'	40:U	P	1.77

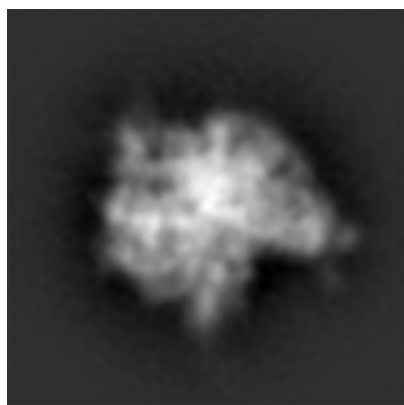
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-5361. These allow visual inspection of the internal detail of the map and identification of artifacts.

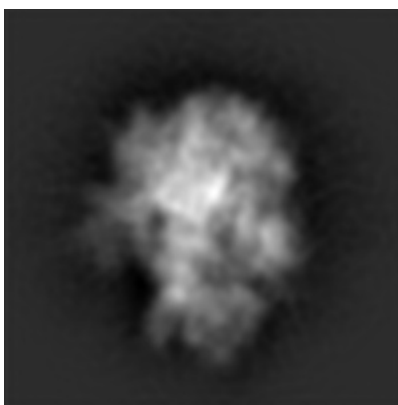
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

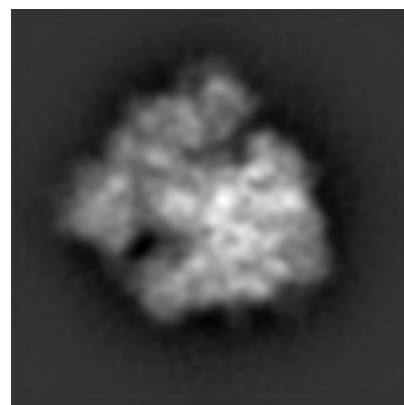
6.1.1 Primary map



X



Y

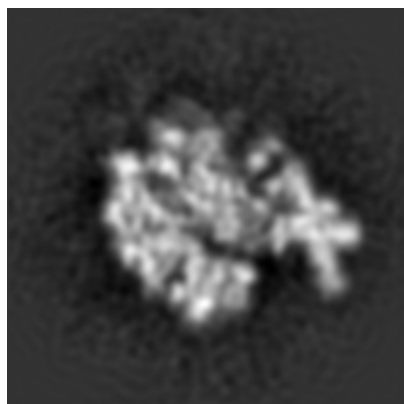


Z

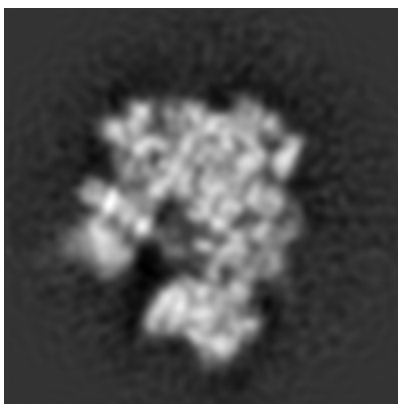
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

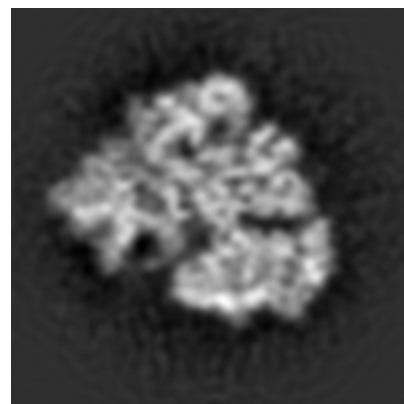
6.2.1 Primary map



X Index: 125



Y Index: 125

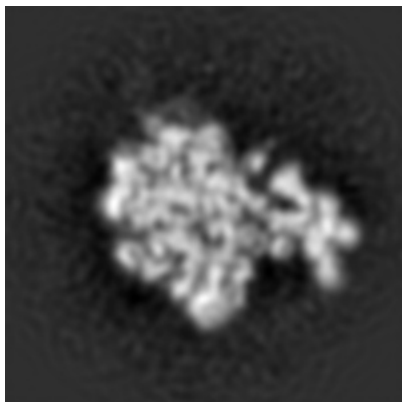


Z Index: 125

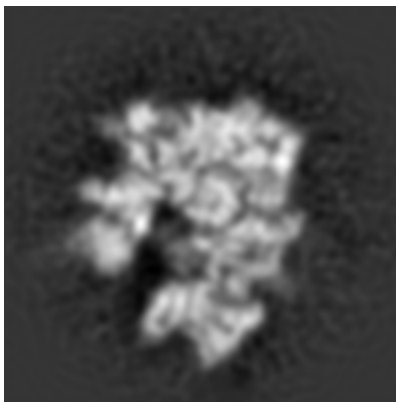
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [\(i\)](#)

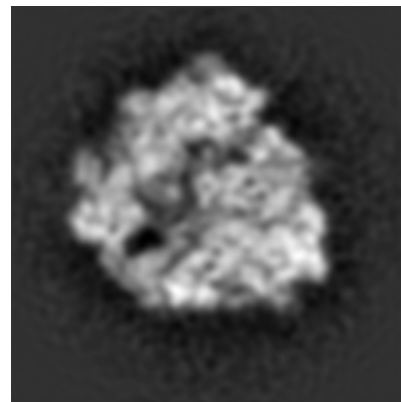
6.3.1 Primary map



X Index: 130



Y Index: 129

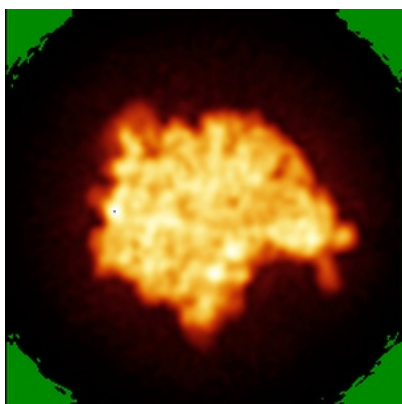


Z Index: 116

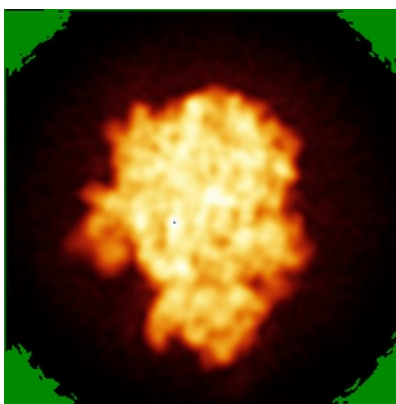
The images above show the largest variance slices of the map in three orthogonal directions.

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

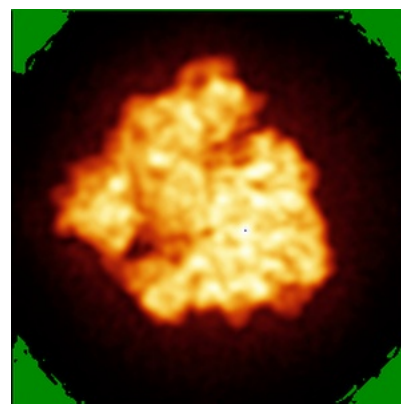
6.4.1 Primary map



X



Y

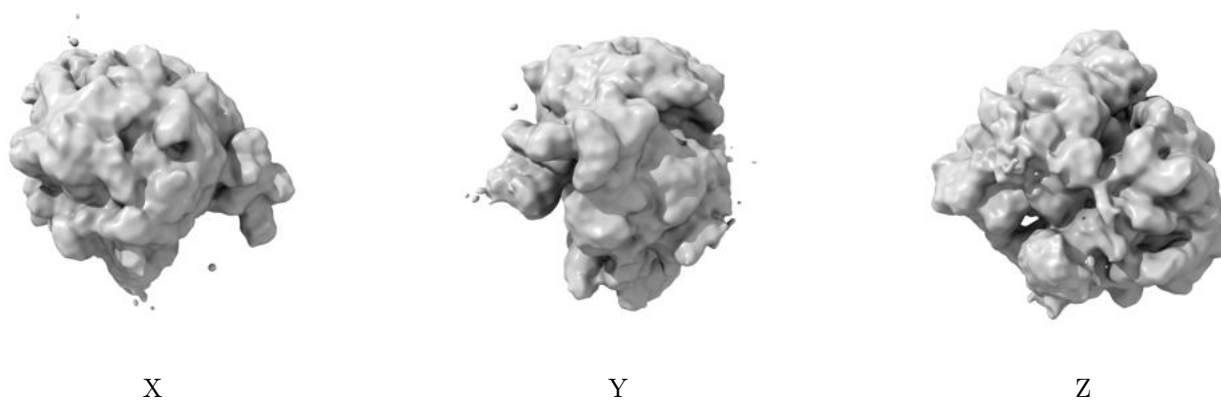


Z

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 0.1. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

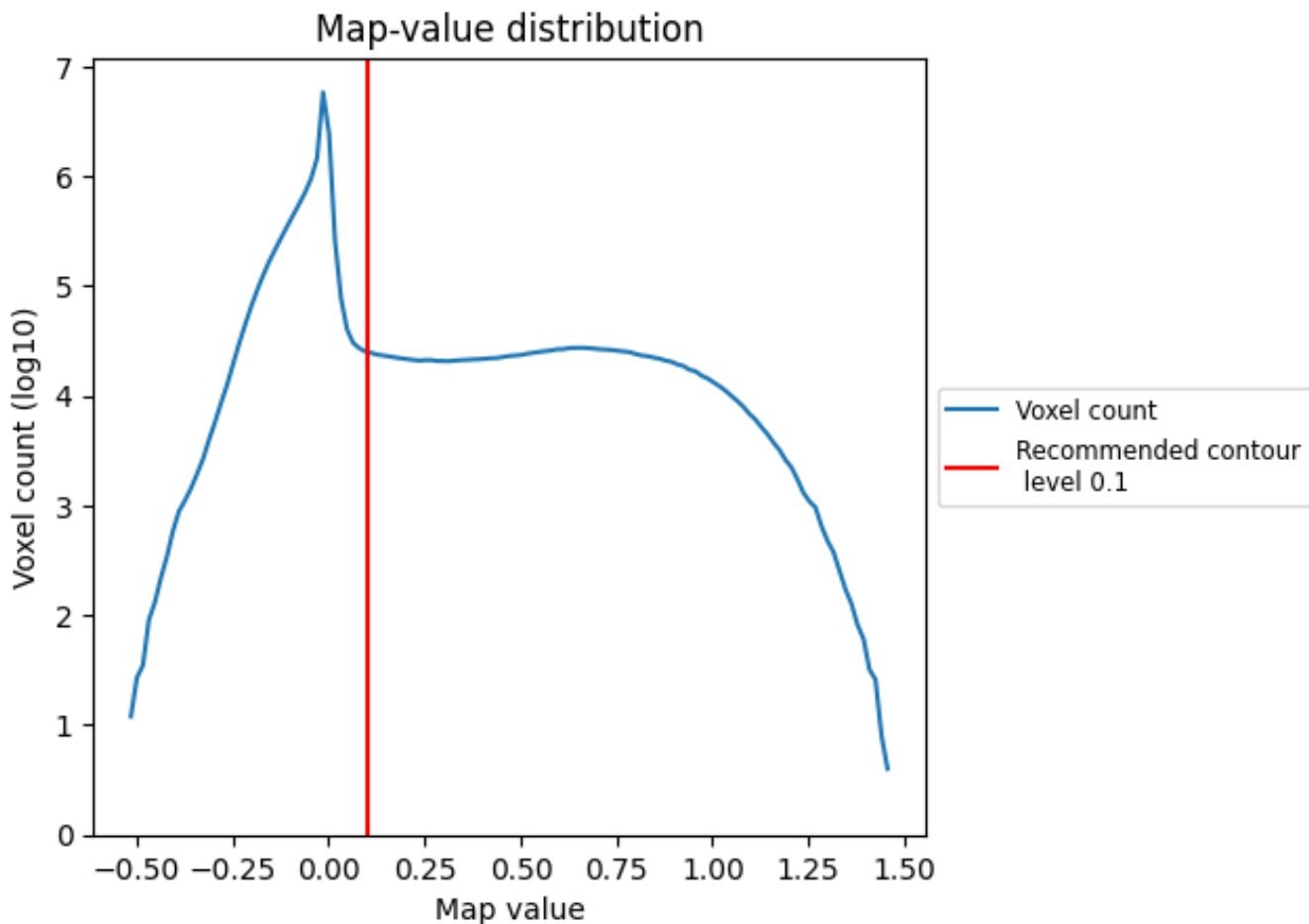
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

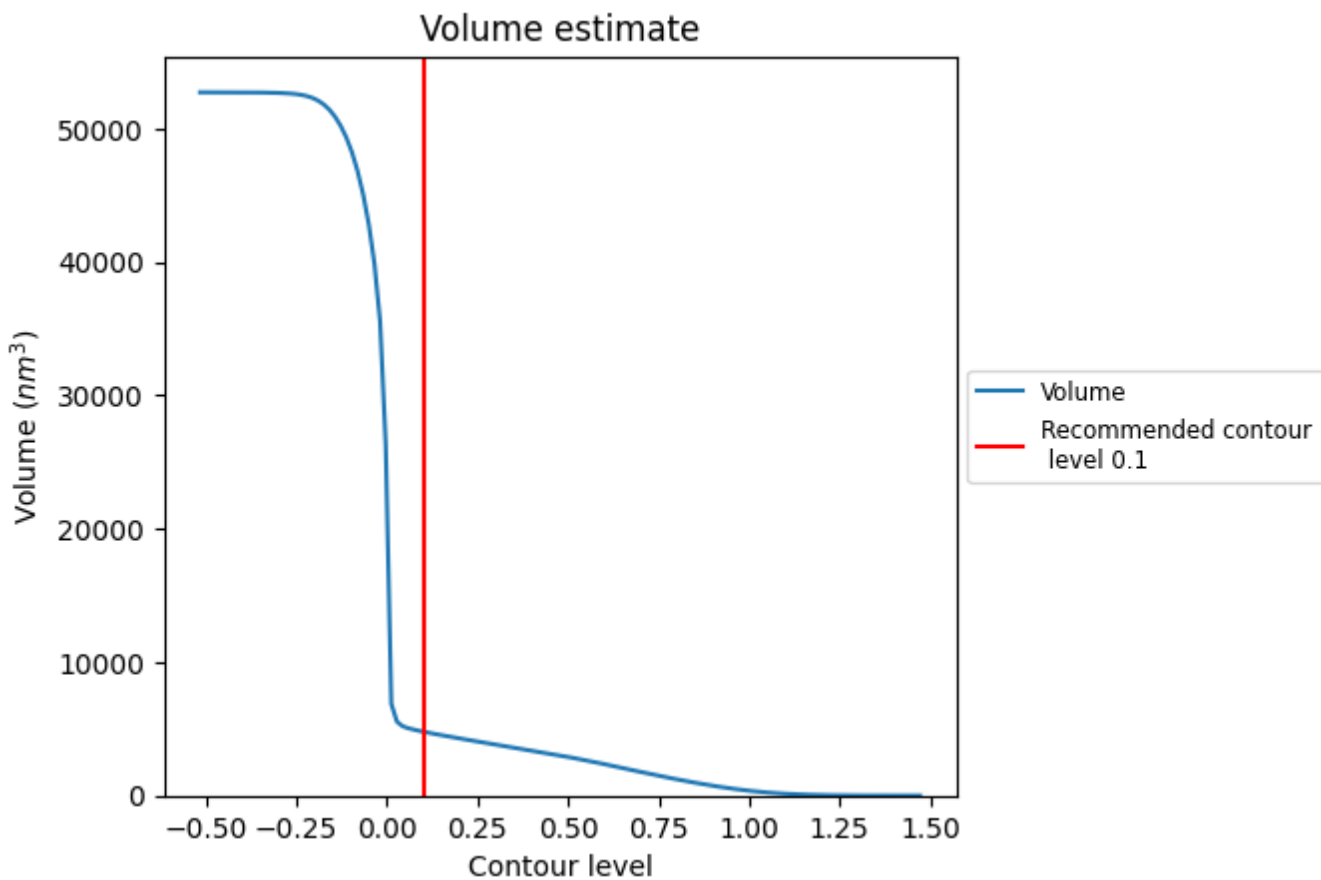
This section contains the results of statistical analysis of the map.

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.

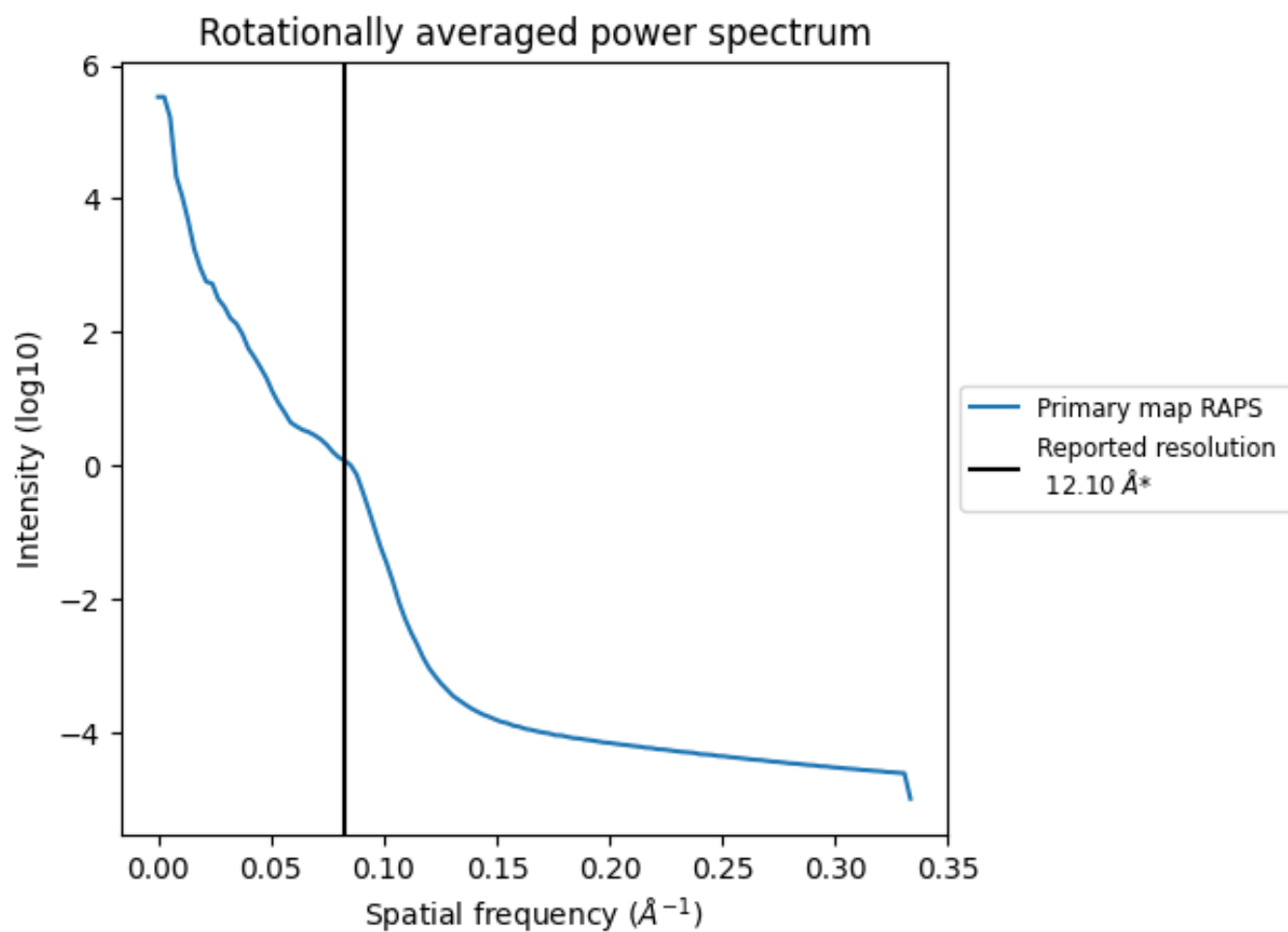
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 4792 nm^3 ; this corresponds to an approximate mass of 4329 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 0.083 Å⁻¹

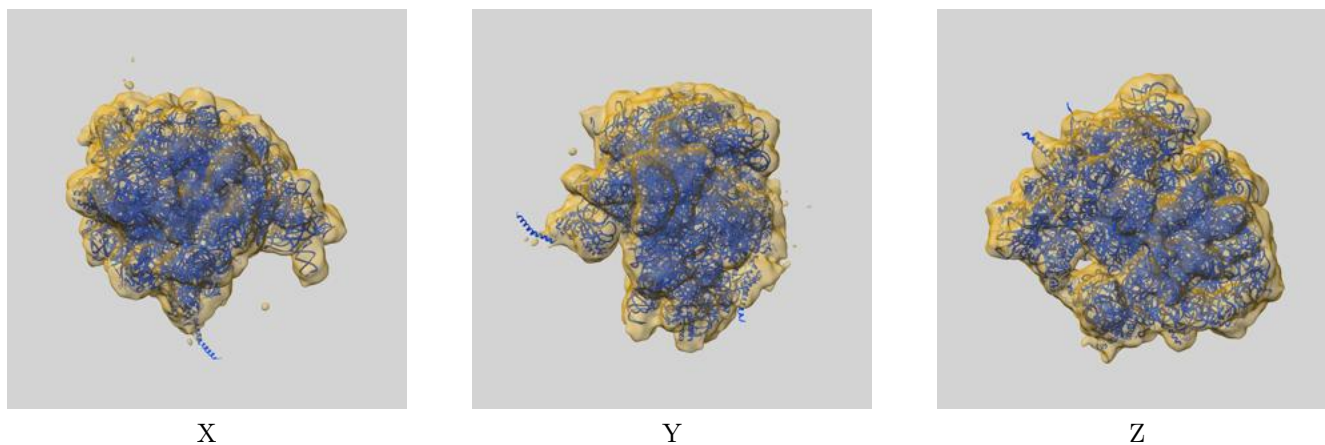
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-5361 and PDB model 4V6N. Per-residue inclusion information can be found in section 3 on page 15.

9.1 Map-model overlay [i](#)



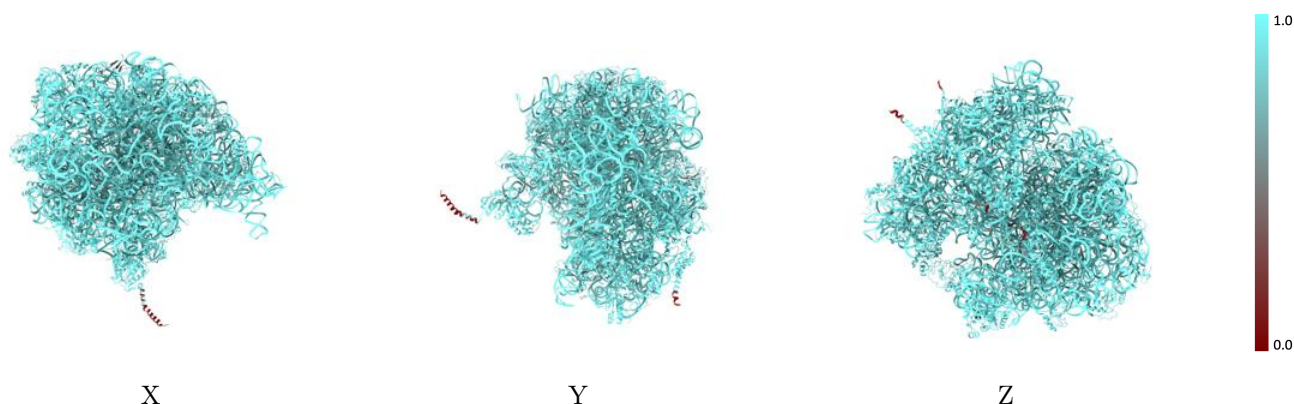
The images above show the 3D surface view of the map at the recommended contour level 0.1 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



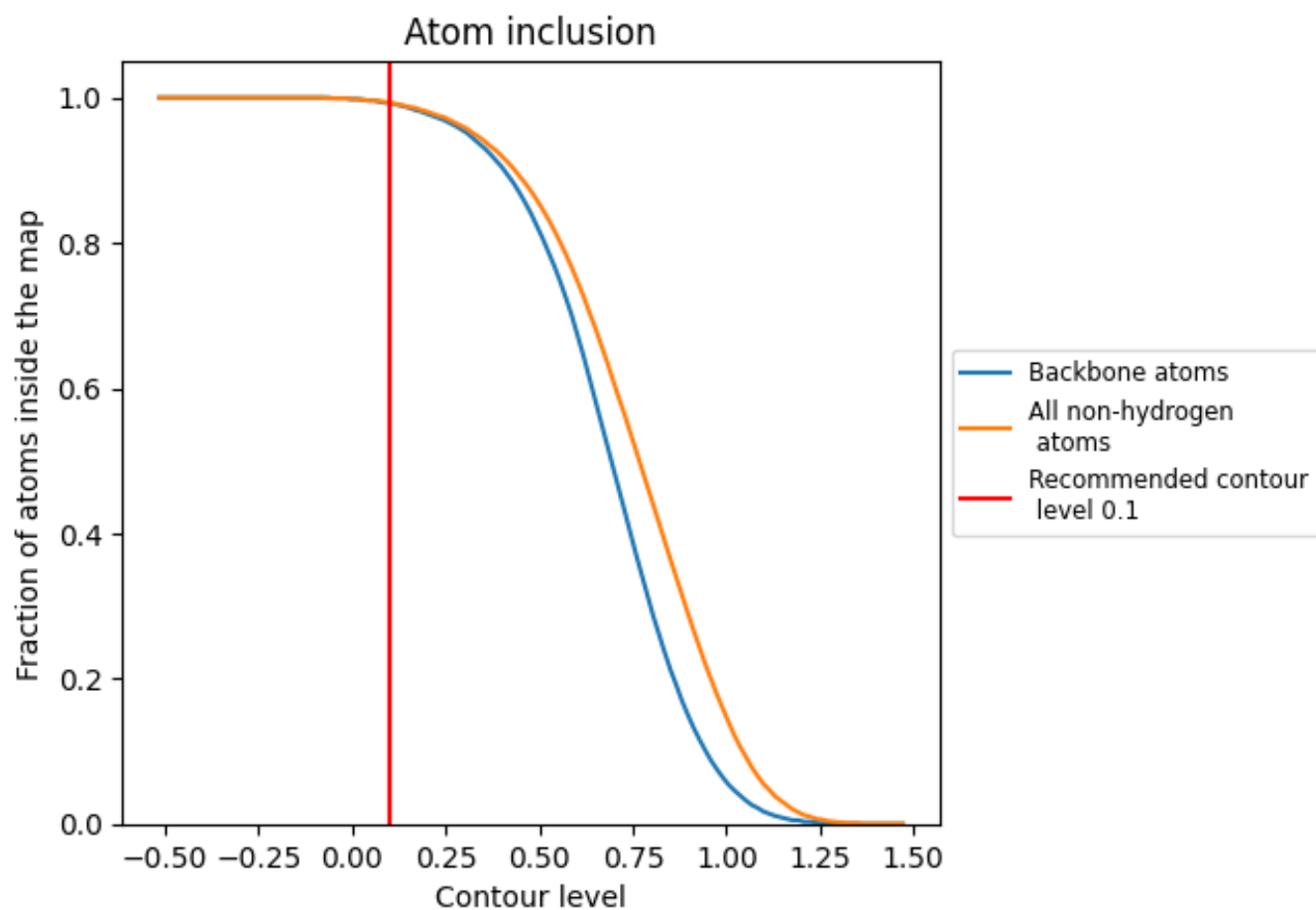
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.1).

9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 99% 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 (0.1) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9930	0.0770
A0	1.0000	0.0300
A1	0.9980	0.0550
A2	0.9570	0.0330
A3	1.0000	0.0210
A4	0.9910	0.0590
A5	1.0000	0.0300
A6	1.0000	-0.0280
A7	1.0000	0.0160
AA	1.0000	0.1100
AB	1.0000	0.0960
AC	0.9570	0.0360
AD	0.9990	0.0260
AE	1.0000	0.0340
AF	0.9990	0.0560
AG	0.9990	0.0640
AH	0.9990	0.0270
AI	0.8680	0.0300
AJ	0.8280	0.0480
AK	0.9790	0.0430
AL	1.0000	0.0270
AM	0.9940	0.0380
AN	1.0000	0.0070
AO	1.0000	0.0400
AP	1.0000	0.0310
AQ	0.9990	0.0630
AR	0.9880	0.0320
AS	1.0000	0.0200
AT	0.9960	0.0540
AU	0.9980	0.0440
AV	0.9990	0.0140
AW	1.0000	0.0530
AX	1.0000	0.0660
AY	1.0000	0.0020
AZ	1.0000	0.0440



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Chain	Atom inclusion	Q-score
BA	 1.0000	 0.0940
BB	 0.9020	 0.0390
BC	 0.8390	 0.0110
BD	 0.9850	 0.0780
BE	 0.9590	 0.0610
BF	 0.9950	 0.0750
BG	 1.0000	 0.0510
BH	 0.9990	 0.0410
BI	 0.9680	 0.0490
BJ	 0.9960	 0.0660
BK	 1.0000	 0.0410
BL	 0.9880	 0.0510
BM	 1.0000	 0.0420
BN	 0.9530	 0.0590
BO	 0.9810	 0.0230
BP	 1.0000	 0.0770
BQ	 1.0000	 0.0340
BR	 1.0000	 0.0520
BS	 0.9980	 0.0180
BT	 1.0000	 0.0580
BU	 1.0000	 0.0370
BV	 0.9960	 0.0330
BW	 1.0000	 0.0310
BX	 0.9960	 0.0380