



wwPDB EM Validation Summary Report ⓘ

Feb 22, 2024 – 09:22 AM EST

PDB ID : 4V6L
EMDB ID : EMD-1850
Title : Structural insights into cognate vs. near-cognate discrimination during decoding.
Authors : Agirrezabala, X.; Schreiner, E.; Trabuco, L.G.; Lei, J.; Ortiz-Meoz, R.F.; Schulten, K.; Green, R.; Frank, J.
Deposited on : 2011-01-07
Resolution : 13.20 Å (reported)
Based on initial models : 2I2U, 3FIH

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:

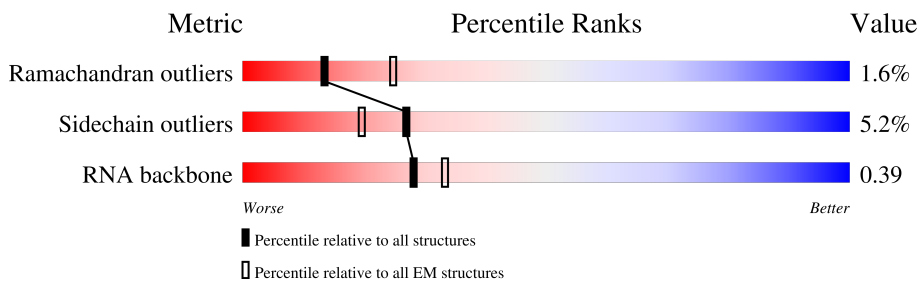
EMDB validation analysis : 0.0.1.dev70
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (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 13.20 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	1542	
2	AB	76	
2	AE	76	
3	AC	393	
4	AD	24	
5	AF	241	
6	AG	233	
7	AH	206	

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Mol	Chain	Length	Quality of chain
8	AI	167	9% 93% 6%
9	AJ	135	6% 89% 10%
10	AK	179	92% 7%
11	AL	130	93% 6%
12	AM	130	91% 8%
13	AN	103	5% 90% 9%
14	AO	129	12% 95% 5%
15	AP	124	6% 90% 9%
16	AQ	118	97% ..
17	AR	101	85% 14%
18	AS	89	92% 7%
19	AT	82	95% 5%
20	AU	84	96% ..
21	AV	75	91% 8%
22	AW	92	95% ..
23	AX	87	94% 5%
24	AY	71	10% 87% 11%
25	BA	120	21% 50% 25%
26	BB	2904	21% 49% 26%
27	BC	234	14% 95% 5%
28	BD	273	93% 7%
29	BE	209	91% 8%
30	BF	201	93% 6%
31	BG	179	92% 7%
32	BH	177	91% 8%

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Mol	Chain	Length	Quality of chain
33	BI	149	30% 93% 7%
34	BJ	142	95%
35	BK	142	96%
36	BL	123	93% 7%
37	BM	144	94% 6%
38	BN	136	93% 7%
39	BO	127	94% 6%
40	BP	117	95% 5%
41	BQ	115	5% 91% 8%
42	BR	118	96%
43	BS	103	91% 8%
44	BT	110	95% 5%
45	BU	100	94% 6%
46	BV	104	95%
47	BW	94	94% 6%
48	BX	85	8% 86% 13%
49	BY	78	91% 6%
50	BZ	63	94% 6%
51	Ba	59	95%
52	Bb	70	9% 96%
53	Bc	57	5% 91% 7%
54	Bd	55	98%
55	Be	46	98%
56	Bf	65	95%
57	Bg	38	87% 13%

2 Entry composition [i](#)

There are 57 unique types of molecules in this entry. The entry contains 153634 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 16S ribosomal RNA.

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

- Molecule 2 is a RNA chain called A/T-site tRNA Phe.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	N	O	P	S		
2	AB	76	1635	735	291	532	75	2	0	0
2	AE	76	1635	735	291	532	75	2	0	0

- Molecule 3 is a protein called Elongation factor Tu 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	AC	393	3036	1918	523	582	13	0	0

- Molecule 4 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	AD	24	495	222	68	181	24	0	0

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- Molecule 25 is a RNA chain called 50S ribosomal RNA 5S.

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

- Molecule 26 is a RNA chain called 50S ribosomal RNA 23S.

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

- Molecule 27 is a protein called 50S ribosomal protein L1.

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

- Molecule 28 is a protein called 50S ribosomal protein L2.

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

- Molecule 29 is a protein called 50S ribosomal protein L3.

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

- Molecule 30 is a protein called 50S ribosomal protein L4.

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

- Molecule 31 is a protein called 50S ribosomal protein L5.

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

- Molecule 32 is a protein called 50S ribosomal protein L6.

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

- Molecule 33 is a protein called 50S ribosomal protein L9.

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

- Molecule 34 is a protein called 50S ribosomal protein L11.

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

- Molecule 35 is a protein called 50S ribosomal protein L13.

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

- Molecule 36 is a protein called 50S ribosomal protein L14.

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

- Molecule 37 is a protein called 50S ribosomal protein L15.

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

- Molecule 38 is a protein called 50S ribosomal protein L16.

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

- Molecule 39 is a protein called 50S ribosomal protein L17.

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

- Molecule 40 is a protein called 50S ribosomal protein L18.

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

- Molecule 41 is a protein called 50S ribosomal protein L19.

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

- Molecule 42 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	BR	117	947	604	192	151		0	0

- Molecule 43 is a protein called 50S ribosomal protein L21.

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

- Molecule 44 is a protein called 50S ribosomal protein L22.

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

- Molecule 45 is a protein called 50S ribosomal protein L23.

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

- Molecule 46 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	BV	103	789	498	148	143		0	0

- Molecule 47 is a protein called 50S ribosomal protein L25.

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

- Molecule 48 is a protein called 50S ribosomal protein L27.

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

- Molecule 49 is a protein called 50S ribosomal protein L28.

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

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

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

- Molecule 51 is a protein called 50S ribosomal protein L30.

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

- Molecule 52 is a protein called 50S ribosomal protein L31.

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

- Molecule 53 is a protein called 50S ribosomal protein L32.

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

- Molecule 54 is a protein called 50S ribosomal protein L33.

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

- Molecule 55 is a protein called 50S ribosomal protein L34.

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

- Molecule 56 is a protein called 50S ribosomal protein L35.

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

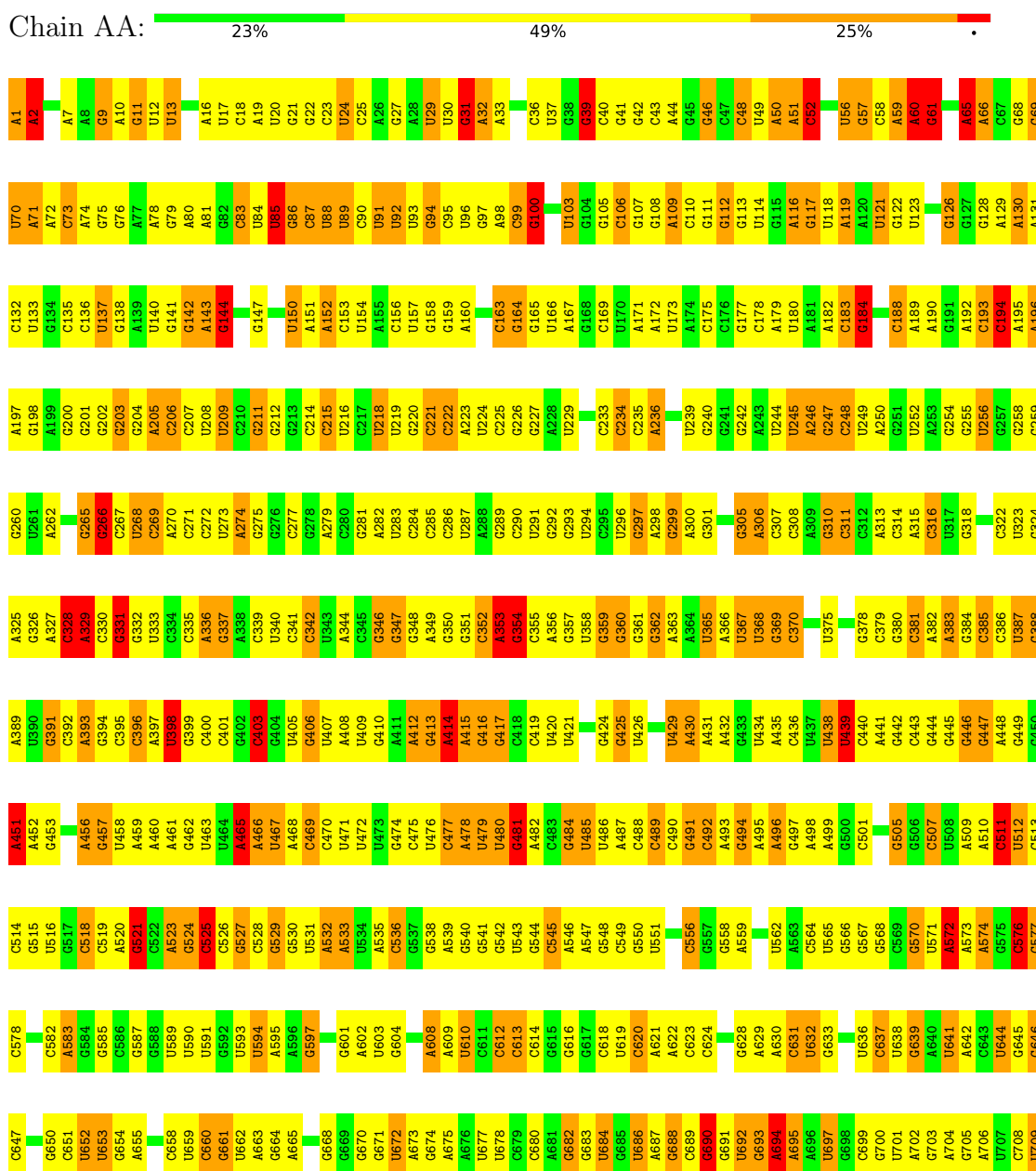
- Molecule 57 is a protein called 50S ribosomal protein L36.

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

3 Residue-property plots

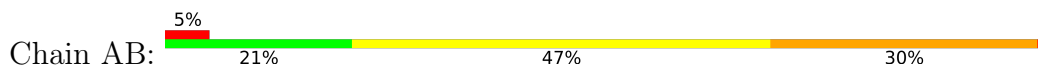
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 16S ribosomal RNA

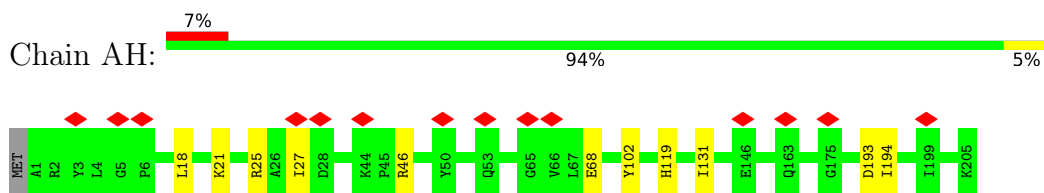


A1542	A1480	G1415	U1351	C1218	G1154	U1091	C1028	G966	C889	U837	G776	G710
	U1481	G1416	C1352	A1219	A1155	A1092	U1029	G966	A900	G838	A777	G711
	G1482	G1417	G1353	G1220	A1156	A1093	U1030	C967	A901	C839	A778	A712
	C1483	A1418	U1354	G1221	U1157	G1094	C1031	A968	G902	G840	G779	G713
	C1484	G1419	G1355	A1222	U1158	U1095	G1032	A969	U903	C841	A780	G714
	U1485	G1420	G1356	C1223	U1159	U1096	G1033	C970	G904	U842	A781	A715
	G1486	U1424	A1357	U1204	G1160	C1097	G1034	G971	U905	U843	A782	
	G1487	U1425	U1358	A1226	C1161	C1098	A1035	C972	A906	G844	C783	
	G1488	G1426	C1359	C1226	C1162	G1099	A1036	C973	A907	A845	C790	
	G1489	C1427	A1360	A1227	A1163	C1100	C1037	A974	A908	G846	G785	
	G1490	G1428	G1361	C1228	A1164	A1101	C1038	A975	A909	G786	G722	
	A1491	U1429	U1362	A1229	U1165	C1102	G1039	G976	C910	A787	U723	
	G1492	C1430	C1363	C1230	A1166	A1103	U1040	A977	U911	G788	G724	
	A1493	U1364	G1231	G1231	A1169	G1104	G1041	A978	G912	U789	G725	
	U1494	G1365	U1232	U1232	C1172	A1105	A1042	C979	A913	A790	C726	
	U1495	C1366	G1233	G1233	C1173	G1109	G1043	C980	G791	A792		
	C1496	U1367	A1234	C1234	U1173	C1109	A1044	U981	U916	U793	G732	
	G1497	G1368	U1235	U1235	G1174	A1110	C1045	U982	U916	A794	G733	
	U1498	U1369	A1236	C1237	G1175	A1111	A1046	A983	G917	A795	G734	
	A1499	G1371	C1237	C1237	A1176	C1112	G1047	C984	C857	C796	C735	
	U1500	U1372	G1241	G1241	G1177	C1113	G1048	C985	U920	G858	C736	
	C1501	G1373	A1306	G1242	G1178	U1114	U1049	U986	U921	G859	C737	
	U1502	A1440	U1307	G1242	A1179	C1115	G1050	G987	A860	C797	C738	
	C1503	U1441	U1308	C1243	A1180	U1116	G1051	G988	G861	C798	C739	
	G1504	G1442	G1309	G1244	G1181	A1117	U1052	U989	A923	G800	U740	
	G1505	C1443	G1310	C1245	G1182	U1118	G1053	C990	G928	U801	G741	
	U1506	U1444	A1311	A1246	U1183	C1119	C1054	U991	G929	A802	G742	
	A1507	U1445	G1312	U1247	G1184	C1120	A1055	U992	C930	A803		
	C1508	U1446	U1313	A1248	G1185	U1121	U1056	G993	C931	G804		
	U1509	A1447	C1314	C1249	G1186	U1122	G1057	A994	C932	C805		
		C1448	U1315	A1250	G1187	U1123	G1058	C995	G933	C806		
		C1449	G1316	G1251	A1188	G1124	C1059	A996	C934	G869		
		U1450	C1317	G1253	U1189	U1125	U1060	A997	A955	U870		
		U1451	A1318	A1254	G1190	U1126	G1061	C998	C936	U871		
		C1452	A1319	G1255	A1191	G1127	U1062	C999	A957	G809		
		G1453	C1320	A1256	C1192	C1128	G1063	C999	A938	A872		
		U1454	U1321	A1257	G1193	C1129	C1064	C1001	G941	A873		
		G1455	G1322	G1258	U1194	A1130	U1065	G1002	G942	G874		
		A1456	G1323	C1259	C1195	G1131	C1066	G1003	G943	U875		
		G1457	A1324	G1260	A1196	C1132	A1067	A1004	U944	C876		
		U1458	C1325	U1264	A1197	G1133	G1068	A1005	G944	C877		
		C1459	U1326	G1265	G1198	U1134	C1069	G1006	G945	A878		
		G1460	C1327	G1266	U1199	U1135	U1070	U1007	A946	C879		
		C1461	G1328	G1267	C1200	C1136	C1071	U1008	G947	C880		
		U1462	A1329	C1267	A1201	C1137	G1072	U1009	C948	G881		
		U1463	U1330	G1268	U1202	G1138	U1073	U1010	A949	C882		
		A1464	A1333	A1270	C1203	C1139	G1074	C1011	U950	G883		
		G1465	U1337	G1271	U1205	C1141	U1075	A1012	G951	U822		
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		G1473	U1341	G1276	U1146	A1146	G1085	U1017	G890	U828		
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		U1478	C1412	C1281	A1217	A1152	U1090	C1027	G962	U834		
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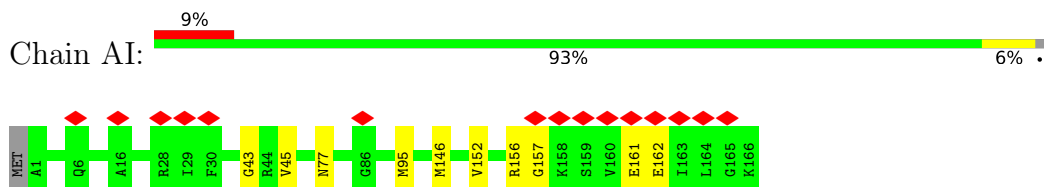
• Molecule 2: A/T-site tRNA Phe



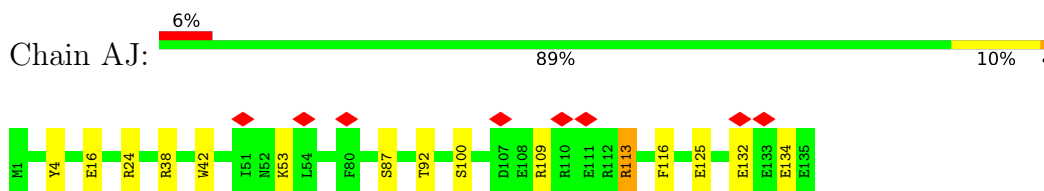
- Molecule 7: 30S ribosomal protein S4



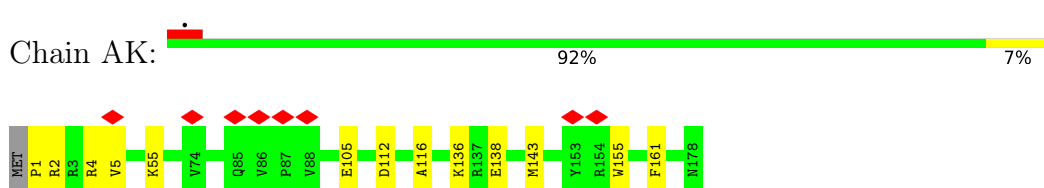
- Molecule 8: 30S ribosomal protein S5



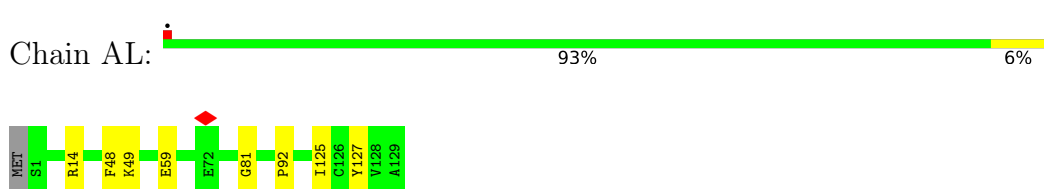
- Molecule 9: 30S ribosomal protein S6



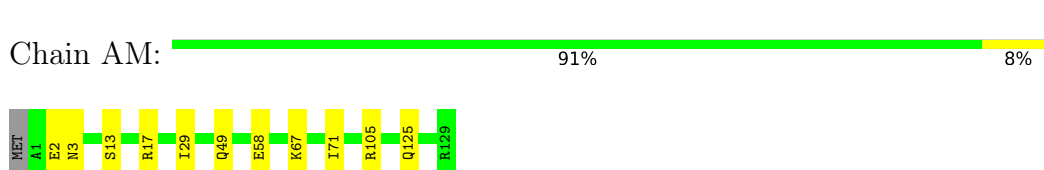
- Molecule 10: 30S ribosomal protein S7



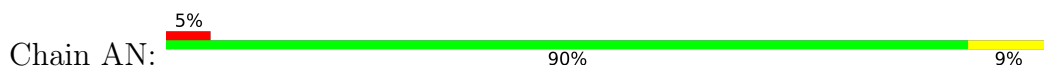
- Molecule 11: 30S ribosomal protein S8



- Molecule 12: 30S ribosomal protein S9

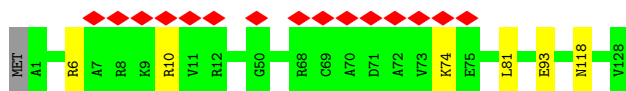


- Molecule 13: 30S ribosomal protein S10

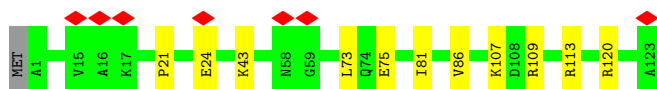
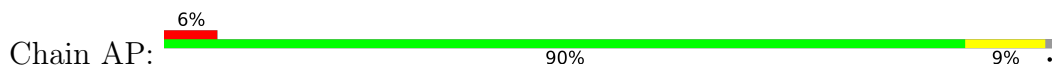




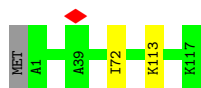
- Molecule 14: 30S ribosomal protein S11



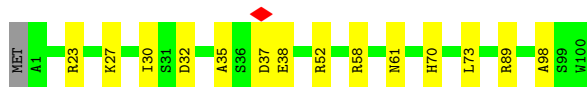
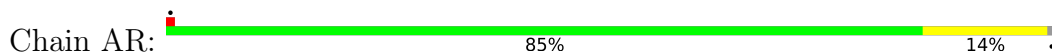
- Molecule 15: 30S ribosomal protein S12



- Molecule 16: 30S ribosomal protein S13



- Molecule 17: 30S ribosomal protein S14



- Molecule 18: 30S ribosomal protein S15



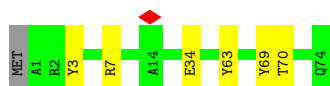
- Molecule 19: 30S ribosomal protein S16



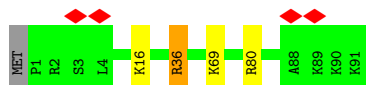
- Molecule 20: 30S ribosomal protein S17



• Molecule 21: 30S ribosomal protein S18



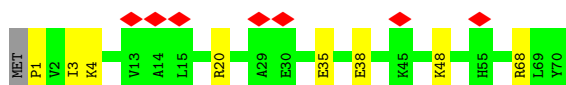
• Molecule 22: 30S ribosomal protein S19



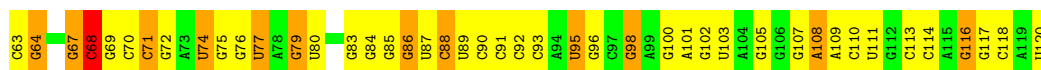
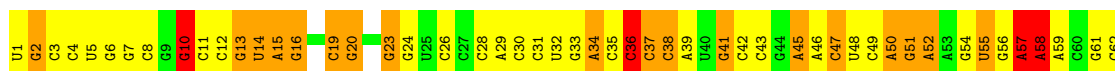
• Molecule 23: 30S ribosomal protein S20



• Molecule 24: 30S ribosomal protein S21



• Molecule 25: 50S ribosomal RNA 5S



• Molecule 26: 50S ribosomal RNA 23S



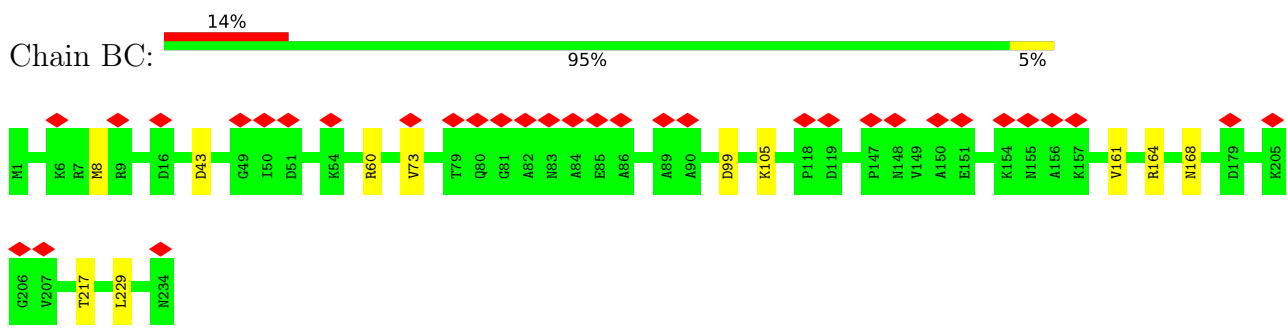
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A64	U65	C66	U67	G68	C69	G70	A71	U72	A73	C74	G75	C76	G80	A81	U82	A83	G84	C85	U86	A87	C88	G89	A90	U91	A92	C93	U94	A95	G96	C97	U98	A99	U100	C101	A102	U103	A104	C105	G108	A109	U110	A111	U112	C115	G116	A117	U118	A118	U119	C120	G121	A122	U123	G124	A125	U126	A127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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A1913	U1851	A1783	U1659	U1474	U1404	U1344	G1280	G1218	C1153	G1091	A1029
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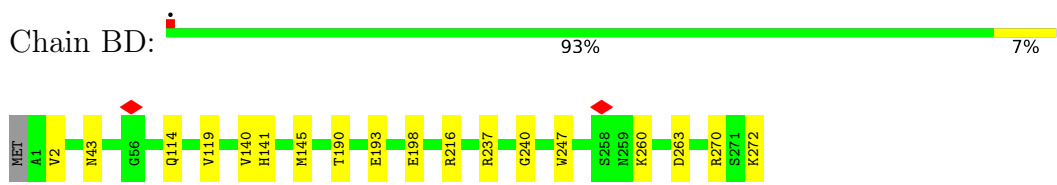
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U2903
U2904

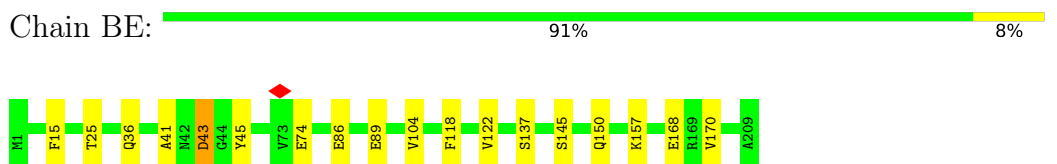
• Molecule 27: 50S ribosomal protein L1



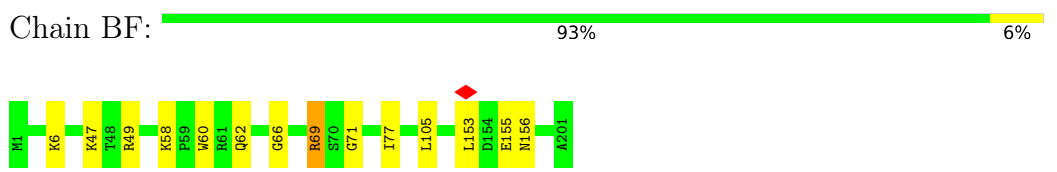
• Molecule 28: 50S ribosomal protein L2



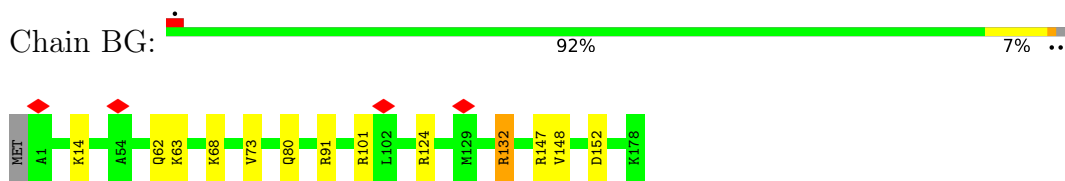
• Molecule 29: 50S ribosomal protein L3



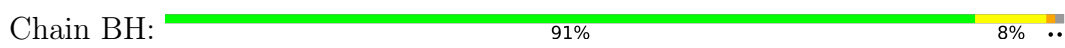
• Molecule 30: 50S ribosomal protein L4



• Molecule 31: 50S ribosomal protein L5

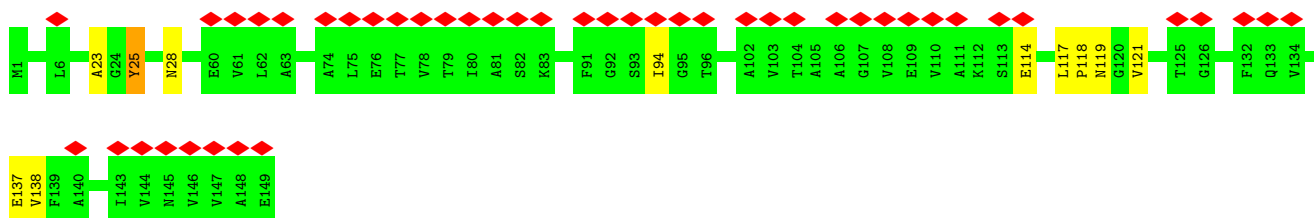


• Molecule 32: 50S ribosomal protein L6

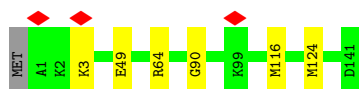




- Molecule 33: 50S ribosomal protein L9



- Molecule 34: 50S ribosomal protein L11



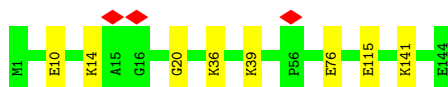
- Molecule 35: 50S ribosomal protein L13



- Molecule 36: 50S ribosomal protein L14

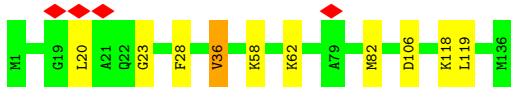


- Molecule 37: 50S ribosomal protein L15

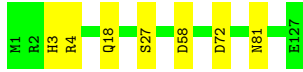


- Molecule 38: 50S ribosomal protein L16





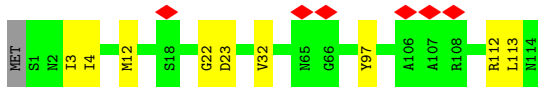
- Molecule 39: 50S ribosomal protein L17



- Molecule 40: 50S ribosomal protein L18



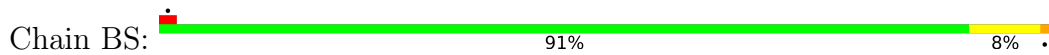
- Molecule 41: 50S ribosomal protein L19



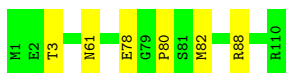
- Molecule 42: 50S ribosomal protein L20



- Molecule 43: 50S ribosomal protein L21

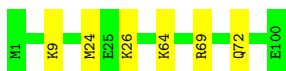


- Molecule 44: 50S ribosomal protein L22

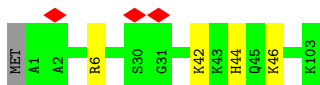


- Molecule 45: 50S ribosomal protein L23

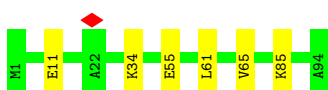




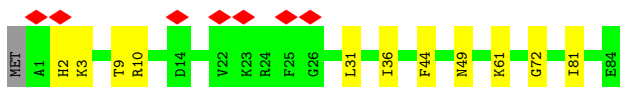
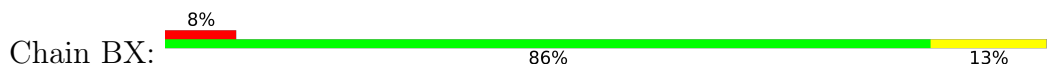
- Molecule 46: 50S ribosomal protein L24



- Molecule 47: 50S ribosomal protein L25



- Molecule 48: 50S ribosomal protein L27



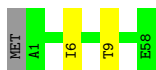
- Molecule 49: 50S ribosomal protein L28



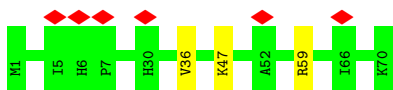
- Molecule 50: 50S ribosomal protein L29



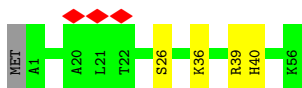
- Molecule 51: 50S ribosomal protein L30



- Molecule 52: 50S ribosomal protein L31



- Molecule 53: 50S ribosomal protein L32



- Molecule 54: 50S ribosomal protein L33



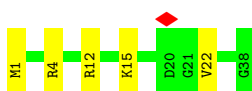
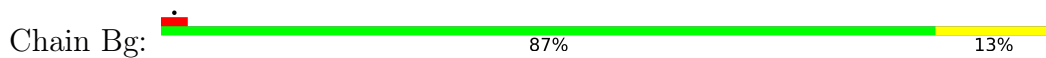
- Molecule 55: 50S ribosomal protein L34



- Molecule 56: 50S ribosomal protein L35



- Molecule 57: 50S ribosomal protein L36



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	26873	Depositor
Resolution determination method	Not provided	
CTF correction method	Not provided	
Microscope	FEI TECNAI F30	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	20	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	4000	Depositor
Magnification	59000	Depositor
Image detector	TVIPS TEMCAM-F415 (4k x 4k)	Depositor
Maximum map value	267.364	Depositor
Minimum map value	-80.270	Depositor
Average map value	5.966	Depositor
Map value standard deviation	25.669	Depositor
Recommended contour level	32.5	Depositor
Map size (\AA)	375, 375, 375	wwPDB
Map dimensions	250, 250, 250	wwPDB
Map angles ($^\circ$)	90, 90, 90	wwPDB
Pixel spacing (\AA)	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: PSU, 5MC, 2MA, OMU, 1MG, OMG, 7MG, OMC, 5MU, 4OC, 2MG, 3TD, 6MZ, CH, 4SU, MIA, UR3, MA6, H2U, 3AU

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	1.22	1/36769 (0.0%)	2.00	1273/57354 (2.2%)
2	AB	1.25	0/1580	2.01	56/2459 (2.3%)
2	AE	1.26	0/1580	2.04	66/2459 (2.7%)
3	AC	0.61	0/3092	0.97	1/4183 (0.0%)
4	AD	1.37	0/548	1.98	20/848 (2.4%)
5	AF	0.60	0/1904	1.00	1/2565 (0.0%)
6	AG	0.61	0/1852	1.04	0/2490
7	AH	0.64	0/1665	0.99	0/2227
8	AI	0.59	0/1239	1.07	1/1664 (0.1%)
9	AJ	0.62	0/1121	1.05	2/1509 (0.1%)
10	AK	0.63	0/1422	1.07	1/1908 (0.1%)
11	AL	0.59	0/989	1.01	0/1326
12	AM	0.65	0/1048	1.05	1/1394 (0.1%)
13	AN	0.57	0/835	1.08	1/1127 (0.1%)
14	AO	0.61	0/982	1.04	0/1323
15	AP	0.62	0/969	1.12	0/1300
16	AQ	0.58	0/919	1.02	0/1226
17	AR	0.63	0/817	1.15	2/1088 (0.2%)
18	AS	0.59	0/724	0.96	1/966 (0.1%)
19	AT	0.63	0/659	1.08	1/884 (0.1%)
20	AU	0.58	0/681	0.97	0/913
21	AV	0.73	0/637	1.08	0/851
22	AW	0.60	0/744	1.00	1/995 (0.1%)
23	AX	0.58	0/676	0.98	0/895
24	AY	0.69	0/598	1.18	1/792 (0.1%)
25	BA	1.24	0/2869	2.16	127/4474 (2.8%)
26	BB	1.22	0/69257	2.02	2547/108040 (2.4%)
27	BC	0.55	0/1748	0.98	0/2355
28	BD	0.62	0/2131	1.09	0/2863
29	BE	0.59	0/1586	1.04	0/2134
30	BF	0.58	0/1571	1.01	1/2113 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
31	BG	0.66	0/1444	1.10	0/1937
32	BH	0.59	0/1343	1.05	2/1816 (0.1%)
33	BI	0.58	0/1122	1.01	1/1515 (0.1%)
34	BJ	0.57	0/1046	0.93	0/1410
35	BK	0.64	0/1152	1.00	0/1551
36	BL	0.58	0/956	1.03	0/1279
37	BM	0.62	0/1062	1.07	0/1413
38	BN	0.63	0/1093	1.04	0/1460
39	BO	0.62	0/1021	1.06	0/1364
40	BP	0.60	0/910	1.01	0/1219
41	BQ	0.63	0/929	1.05	0/1242
42	BR	0.67	0/960	1.03	1/1278 (0.1%)
43	BS	0.63	0/829	1.06	0/1107
44	BT	0.54	0/864	0.98	0/1156
45	BU	0.57	0/794	1.02	0/1060
46	BV	0.58	0/797	1.02	0/1062
47	BW	0.61	0/766	0.98	0/1025
48	BX	0.64	0/642	1.10	0/848
49	BY	0.64	0/635	1.10	1/848 (0.1%)
50	BZ	0.56	0/510	1.05	0/677
51	Ba	0.55	0/453	0.97	0/605
52	Bb	0.62	0/559	1.10	0/745
53	Bc	0.62	0/450	1.12	0/599
54	Bd	0.60	0/448	0.96	0/594
55	Be	0.64	0/380	1.04	0/498
56	Bf	0.60	0/513	1.02	0/676
57	Bg	0.55	0/303	1.09	0/397
All	All	1.07	1/165193 (0.0%)	1.79	4109/246106 (1.7%)

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	502
2	AB	0	19
2	AE	0	15
3	AC	0	1
4	AD	0	9
6	AG	0	1
7	AH	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
8	AI	0	3
9	AJ	0	1
11	AL	0	1
13	AN	0	1
14	AO	0	1
15	AP	0	1
17	AR	0	2
21	AV	0	1
24	AY	0	1
25	BA	0	37
26	BB	0	952
27	BC	0	3
28	BD	0	2
29	BE	0	2
30	BF	0	2
32	BH	0	2
33	BI	0	1
41	BQ	0	1
42	BR	0	1
43	BS	0	1
48	BX	0	1
49	BY	0	1
53	Bc	0	1
All	All	0	1567

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	AA	439	U	C2-N3	5.10	1.41	1.37

The worst 5 of 4109 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
26	BB	2092	U	O4'-C1'-N1	16.66	121.53	108.20
25	BA	49	C	O4'-C1'-N1	15.19	120.35	108.20
1	AA	465	A	O4'-C1'-N9	14.84	120.07	108.20
26	BB	736	C	O4'-C1'-N1	12.90	118.52	108.20
26	BB	1535	A	O4'-C1'-N9	12.89	118.51	108.20

There are no chirality outliers.

5 of 1567 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	AA	10	A	Sidechain
1	AA	11	G	Sidechain
1	AA	13	U	Sidechain
1	AA	2	A	Sidechain
1	AA	7	A	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	33089	0	16678	0	0
2	AB	1635	0	849	0	0
2	AE	1635	0	849	0	0
3	AC	3036	0	3052	0	0
4	AD	495	0	249	0	0
5	AF	1872	0	1885	0	0
6	AG	1822	0	1913	0	0
7	AH	1643	0	1710	0	0
8	AI	1225	0	1273	0	0
9	AJ	1101	0	1050	0	0
10	AK	1400	0	1449	0	0
11	AL	979	0	1034	0	0
12	AM	1036	0	1084	0	0
13	AN	825	0	865	0	0
14	AO	965	0	997	0	0
15	AP	955	0	1019	0	0
16	AQ	910	0	981	0	0
17	AR	805	0	847	0	0
18	AS	716	0	742	0	0
19	AT	649	0	666	0	0
20	AU	672	0	716	0	0
21	AV	626	0	651	0	0
22	AW	727	0	769	0	0
23	AX	670	0	722	0	0
24	AY	590	0	631	0	0
25	BA	2566	0	1302	0	0
26	BB	62351	0	31387	0	0
27	BC	1733	0	1824	0	0
28	BD	2092	0	2170	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
29	BE	1565	0	1616	0	0
30	BF	1552	0	1619	0	0
31	BG	1420	0	1460	0	0
32	BH	1323	0	1374	0	0
33	BI	1111	0	1148	0	0
34	BJ	1032	0	1088	0	0
35	BK	1129	0	1162	0	0
36	BL	947	0	1023	0	0
37	BM	1053	0	1129	0	0
38	BN	1074	0	1157	0	0
39	BO	1008	0	1045	0	0
40	BP	900	0	935	0	0
41	BQ	917	0	965	0	0
42	BR	947	0	1022	0	0
43	BS	816	0	839	0	0
44	BT	857	0	922	0	0
45	BU	787	0	846	0	0
46	BV	789	0	847	0	0
47	BW	753	0	780	0	0
48	BX	634	0	656	0	0
49	BY	625	0	655	0	0
50	BZ	509	0	543	0	0
51	Ba	449	0	491	0	0
52	Bb	549	0	552	0	0
53	Bc	444	0	461	0	0
54	Bd	441	0	485	0	0
55	Be	377	0	418	0	0
56	Bf	504	0	574	0	0
57	Bg	302	0	343	0	0
All	All	153634	0	105519	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	391/393 (100%)	367 (94%)	21 (5%)	3 (1%)	19	60
5	AF	238/241 (99%)	215 (90%)	21 (9%)	2 (1%)	19	60
6	AG	230/233 (99%)	210 (91%)	18 (8%)	2 (1%)	17	57
7	AH	203/206 (98%)	189 (93%)	12 (6%)	2 (1%)	15	55
8	AI	164/167 (98%)	143 (87%)	18 (11%)	3 (2%)	8	40
9	AJ	133/135 (98%)	128 (96%)	3 (2%)	2 (2%)	10	46
10	AK	176/179 (98%)	159 (90%)	15 (8%)	2 (1%)	14	52
11	AL	127/130 (98%)	117 (92%)	8 (6%)	2 (2%)	9	44
12	AM	127/130 (98%)	111 (87%)	14 (11%)	2 (2%)	9	44
13	AN	101/103 (98%)	86 (85%)	11 (11%)	4 (4%)	3	23
14	AO	126/129 (98%)	113 (90%)	11 (9%)	2 (2%)	9	44
15	AP	121/124 (98%)	103 (85%)	13 (11%)	5 (4%)	3	23
16	AQ	115/118 (98%)	108 (94%)	7 (6%)	0	100	100
17	AR	98/101 (97%)	82 (84%)	9 (9%)	7 (7%)	1	14
18	AS	86/89 (97%)	83 (96%)	3 (4%)	0	100	100
19	AT	80/82 (98%)	78 (98%)	2 (2%)	0	100	100
20	AU	81/84 (96%)	73 (90%)	8 (10%)	0	100	100
21	AV	72/75 (96%)	65 (90%)	6 (8%)	1 (1%)	11	46
22	AW	89/92 (97%)	81 (91%)	8 (9%)	0	100	100
23	AX	84/87 (97%)	77 (92%)	7 (8%)	0	100	100
24	AY	68/71 (96%)	62 (91%)	5 (7%)	1 (2%)	10	46
27	BC	232/234 (99%)	204 (88%)	25 (11%)	3 (1%)	12	48
28	BD	270/273 (99%)	239 (88%)	22 (8%)	9 (3%)	4	26
29	BE	207/209 (99%)	186 (90%)	15 (7%)	6 (3%)	4	29
30	BF	199/201 (99%)	182 (92%)	14 (7%)	3 (2%)	10	46

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
31	BG	176/179 (98%)	148 (84%)	25 (14%)	3 (2%)	9	42
32	BH	174/177 (98%)	162 (93%)	9 (5%)	3 (2%)	9	42
33	BI	147/149 (99%)	126 (86%)	16 (11%)	5 (3%)	3	26
34	BJ	139/142 (98%)	121 (87%)	17 (12%)	1 (1%)	22	63
35	BK	140/142 (99%)	131 (94%)	9 (6%)	0	100	100
36	BL	121/123 (98%)	107 (88%)	12 (10%)	2 (2%)	9	42
37	BM	142/144 (99%)	124 (87%)	16 (11%)	2 (1%)	11	46
38	BN	134/136 (98%)	122 (91%)	9 (7%)	3 (2%)	6	35
39	BO	125/127 (98%)	116 (93%)	8 (6%)	1 (1%)	19	60
40	BP	115/117 (98%)	106 (92%)	8 (7%)	1 (1%)	17	57
41	BQ	112/115 (97%)	99 (88%)	11 (10%)	2 (2%)	8	40
42	BR	115/118 (98%)	109 (95%)	5 (4%)	1 (1%)	17	57
43	BS	101/103 (98%)	91 (90%)	7 (7%)	3 (3%)	4	28
44	BT	108/110 (98%)	98 (91%)	9 (8%)	1 (1%)	17	57
45	BU	98/100 (98%)	86 (88%)	11 (11%)	1 (1%)	15	55
46	BV	101/104 (97%)	90 (89%)	10 (10%)	1 (1%)	15	55
47	BW	92/94 (98%)	85 (92%)	5 (5%)	2 (2%)	6	35
48	BX	82/85 (96%)	68 (83%)	11 (13%)	3 (4%)	3	24
49	BY	75/78 (96%)	64 (85%)	9 (12%)	2 (3%)	5	31
50	BZ	61/63 (97%)	49 (80%)	9 (15%)	3 (5%)	2	20
51	Ba	56/59 (95%)	53 (95%)	2 (4%)	1 (2%)	8	40
52	Bb	68/70 (97%)	57 (84%)	10 (15%)	1 (2%)	10	46
53	Bc	54/57 (95%)	46 (85%)	6 (11%)	2 (4%)	3	24
54	Bd	52/55 (94%)	45 (86%)	7 (14%)	0	100	100
55	Be	44/46 (96%)	40 (91%)	4 (9%)	0	100	100
56	Bf	62/65 (95%)	59 (95%)	3 (5%)	0	100	100
57	Bg	36/38 (95%)	32 (89%)	3 (8%)	1 (3%)	5	30
All	All	6548/6682 (98%)	5895 (90%)	547 (8%)	106 (2%)	13	44

5 of 106 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	AH	18	LEU

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Mol	Chain	Res	Type
12	AM	3	ASN
13	AN	74	VAL
14	AO	118	ASN
15	AP	86	VAL

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	326/326 (100%)	311 (95%)	15 (5%)	27	52
5	AF	198/199 (100%)	188 (95%)	10 (5%)	24	48
6	AG	189/190 (100%)	180 (95%)	9 (5%)	25	51
7	AH	172/173 (99%)	164 (95%)	8 (5%)	26	51
8	AI	125/126 (99%)	122 (98%)	3 (2%)	49	69
9	AJ	116/116 (100%)	104 (90%)	12 (10%)	7	25
10	AK	146/147 (99%)	136 (93%)	10 (7%)	16	41
11	AL	104/105 (99%)	99 (95%)	5 (5%)	25	51
12	AM	106/107 (99%)	98 (92%)	8 (8%)	13	38
13	AN	90/90 (100%)	85 (94%)	5 (6%)	21	46
14	AO	98/99 (99%)	95 (97%)	3 (3%)	40	62
15	AP	103/104 (99%)	98 (95%)	5 (5%)	25	50
16	AQ	95/96 (99%)	93 (98%)	2 (2%)	53	72
17	AR	83/84 (99%)	79 (95%)	4 (5%)	25	51
18	AS	76/77 (99%)	71 (93%)	5 (7%)	16	41
19	AT	65/65 (100%)	62 (95%)	3 (5%)	27	52
20	AU	77/78 (99%)	75 (97%)	2 (3%)	46	66
21	AV	64/65 (98%)	60 (94%)	4 (6%)	18	43
22	AW	78/79 (99%)	74 (95%)	4 (5%)	24	48
23	AX	65/66 (98%)	61 (94%)	4 (6%)	18	43

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
24	AY	60/61 (98%)	55 (92%)	5 (8%)	11	34
27	BC	181/181 (100%)	176 (97%)	5 (3%)	43	65
28	BD	217/218 (100%)	210 (97%)	7 (3%)	39	61
29	BE	164/164 (100%)	153 (93%)	11 (7%)	16	41
30	BF	165/165 (100%)	156 (94%)	9 (6%)	21	47
31	BG	149/150 (99%)	138 (93%)	11 (7%)	13	38
32	BH	137/138 (99%)	128 (93%)	9 (7%)	16	41
33	BI	114/114 (100%)	109 (96%)	5 (4%)	28	53
34	BJ	109/110 (99%)	104 (95%)	5 (5%)	27	52
35	BK	116/116 (100%)	110 (95%)	6 (5%)	23	48
36	BL	104/104 (100%)	96 (92%)	8 (8%)	13	37
37	BM	103/103 (100%)	97 (94%)	6 (6%)	20	45
38	BN	109/109 (100%)	101 (93%)	8 (7%)	14	39
39	BO	103/103 (100%)	97 (94%)	6 (6%)	20	45
40	BP	87/87 (100%)	82 (94%)	5 (6%)	20	45
41	BQ	99/100 (99%)	93 (94%)	6 (6%)	18	44
42	BR	89/90 (99%)	88 (99%)	1 (1%)	73	84
43	BS	84/84 (100%)	78 (93%)	6 (7%)	14	39
44	BT	93/93 (100%)	88 (95%)	5 (5%)	22	47
45	BU	84/84 (100%)	79 (94%)	5 (6%)	19	44
46	BV	84/85 (99%)	81 (96%)	3 (4%)	35	59
47	BW	78/78 (100%)	74 (95%)	4 (5%)	24	48
48	BX	62/63 (98%)	55 (89%)	7 (11%)	6	21
49	BY	67/68 (98%)	64 (96%)	3 (4%)	27	52
50	BZ	55/55 (100%)	54 (98%)	1 (2%)	59	77
51	Ba	48/49 (98%)	47 (98%)	1 (2%)	53	72
52	Bb	62/62 (100%)	60 (97%)	2 (3%)	39	61
53	Bc	47/48 (98%)	46 (98%)	1 (2%)	53	72
54	Bd	48/49 (98%)	48 (100%)	0	100	100
55	Be	38/38 (100%)	37 (97%)	1 (3%)	46	66
56	Bf	51/52 (98%)	49 (96%)	2 (4%)	32	56

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
57	Bg	34/34 (100%)	30 (88%)	4 (12%)	5 20
All	All	5417/5447 (99%)	5138 (95%)	279 (5%)	27 48

5 of 279 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
41	BQ	112	ARG
43	BS	79	ARG
48	BX	44	PHE
17	AR	52	ARG
16	AQ	113	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	1539/1542 (99%)	193 (12%)	73 (4%)
2	AB	73/76 (96%)	12 (16%)	2 (2%)
2	AE	73/76 (96%)	13 (17%)	6 (8%)
25	BA	119/120 (99%)	15 (12%)	4 (3%)
26	BB	2898/2904 (99%)	401 (13%)	137 (4%)
4	AD	24/24 (100%)	4 (16%)	5 (20%)
All	All	4726/4742 (99%)	638 (13%)	227 (4%)

5 of 638 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	AA	2	A
1	AA	9	G
1	AA	31	G
1	AA	32	A
1	AA	39	G

5 of 227 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
26	BB	574	A
26	BB	2791	G

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Mol	Chain	Res	Type
26	BB	1085	A
26	BB	2751	G
26	BB	2380	C

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

55 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	PSU	AE	32	2	18,21,22	0.95	1 (5%)	22,30,33	1.14	2 (9%)
26	3TD	BB	1915	26	18,22,23	0.86	0	22,32,35	1.18	2 (9%)
2	MIA	AB	37	2	24,31,32	1.04	3 (12%)	26,44,47	1.61	4 (15%)
2	PSU	AB	32	2	18,21,22	0.93	1 (5%)	22,30,33	1.10	1 (4%)
2	H2U	AB	20	2	18,21,22	0.85	0	21,30,33	1.05	1 (4%)
2	4SU	AE	8	2	18,21,22	1.38	2 (11%)	26,30,33	1.45	3 (11%)
26	PSU	BB	1917	26	18,21,22	0.92	0	22,30,33	0.99	2 (9%)
2	H2U	AE	16	2	18,21,22	0.79	0	21,30,33	1.01	1 (4%)
26	PSU	BB	2605	26	18,21,22	0.91	1 (5%)	22,30,33	0.93	1 (4%)
2	5MU	AE	54	2	19,22,23	0.64	0	28,32,35	0.98	2 (7%)
26	CH	BB	2575	26	16,21,22	1.02	1 (6%)	20,30,33	1.06	1 (5%)
2	3AU	AB	47	-	24,28,29	0.83	1 (4%)	33,40,43	0.80	1 (3%)
2	3AU	AE	47	-	24,28,29	0.85	1 (4%)	33,40,43	1.19	2 (6%)
26	OMU	BB	2552	26	19,22,23	0.75	0	26,31,34	0.99	1 (3%)
1	MA6	AA	1518	1	19,26,27	1.01	1 (5%)	18,38,41	1.03	0
2	PSU	AB	55	2	18,21,22	0.95	1 (5%)	22,30,33	0.93	1 (4%)
2	H2U	AE	20	2	18,21,22	0.81	0	21,30,33	1.00	1 (4%)
26	5MC	BB	1962	26	18,22,23	0.56	0	26,32,35	1.22	2 (7%)
26	PSU	BB	2457	26	18,21,22	0.97	1 (5%)	22,30,33	1.31	3 (13%)
1	UR3	AA	1498	1	19,22,23	0.70	0	26,32,35	1.17	3 (11%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
26	PSU	BB	746	26	18,21,22	0.97	1 (5%)	22,30,33	1.10	2 (9%)
2	PSU	AE	39	2	18,21,22	0.89	1 (5%)	22,30,33	1.20	1 (4%)
26	5MU	BB	747	26	19,22,23	0.73	0	28,32,35	1.39	3 (10%)
2	7MG	AE	46	2	22,26,27	4.46	2 (9%)	29,39,42	1.50	3 (10%)
1	5MC	AA	967	1	18,22,23	0.67	0	26,32,35	0.85	1 (3%)
2	H2U	AB	16	2	18,21,22	0.86	0	21,30,33	1.32	2 (9%)
26	2MA	BB	2503	26	17,25,26	1.19	3 (17%)	17,37,40	1.43	3 (17%)
2	4SU	AB	8	2	18,21,22	1.42	1 (5%)	26,30,33	1.01	2 (7%)
26	OMC	BB	2498	26	19,22,23	0.61	0	26,31,34	0.87	0
1	2MG	AA	966	1	18,26,27	1.18	1 (5%)	16,38,41	1.34	2 (12%)
26	5MU	BB	1939	26	19,22,23	0.82	0	28,32,35	1.37	3 (10%)
2	5MU	AB	54	2	19,22,23	0.66	0	28,32,35	1.21	4 (14%)
26	6MZ	BB	2030	26	18,25,26	1.01	1 (5%)	16,36,39	1.45	3 (18%)
1	4OC	AA	1402	1	20,23,24	0.72	0	26,32,35	1.11	1 (3%)
2	MIA	AE	37	2	24,31,32	1.08	3 (12%)	26,44,47	1.55	3 (11%)
26	PSU	BB	2580	26	18,21,22	0.95	0	22,30,33	0.94	0
2	PSU	AB	39	2	18,21,22	0.91	0	22,30,33	0.92	1 (4%)
26	2MG	BB	1835	26	18,26,27	1.22	3 (16%)	16,38,41	0.73	0
1	MA6	AA	1519	1	19,26,27	1.01	1 (5%)	18,38,41	1.20	1 (5%)
26	2MG	BB	2445	26	18,26,27	1.24	3 (16%)	16,38,41	0.60	0
1	5MC	AA	1407	1	18,22,23	0.62	0	26,32,35	0.81	1 (3%)
26	1MG	BB	745	26	18,26,27	1.13	1 (5%)	19,39,42	1.26	1 (5%)
26	PSU	BB	2504	26	18,21,22	0.95	0	22,30,33	1.20	2 (9%)
1	7MG	AA	527	1	22,26,27	4.57	2 (9%)	29,39,42	1.35	1 (3%)
26	6MZ	BB	1618	26	18,25,26	0.95	1 (5%)	16,36,39	1.35	2 (12%)
26	OMG	BB	2251	26	18,26,27	1.11	2 (11%)	19,38,41	1.02	1 (5%)
26	PSU	BB	955	26	18,21,22	0.96	1 (5%)	22,30,33	1.08	1 (4%)
1	2MG	AA	1207	1	18,26,27	1.22	2 (11%)	16,38,41	0.95	0
2	7MG	AB	46	2	22,26,27	4.64	2 (9%)	29,39,42	1.32	1 (3%)
26	7MG	BB	2069	26	22,26,27	4.58	1 (4%)	29,39,42	1.39	2 (6%)
26	H2U	BB	2449	26	18,21,22	0.81	0	21,30,33	1.12	1 (4%)
1	2MG	AA	1516	1	18,26,27	1.20	2 (11%)	16,38,41	0.79	0
2	PSU	AE	55	2	18,21,22	0.98	1 (5%)	22,30,33	1.08	1 (4%)
1	PSU	AA	516	1	18,21,22	0.85	0	22,30,33	1.31	2 (9%)
26	PSU	BB	1911	26	18,21,22	0.84	0	22,30,33	1.02	1 (4%)

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	PSU	AE	32	2	-	0/7/25/26	0/2/2/2
26	3TD	BB	1915	26	-	0/7/25/26	0/2/2/2
2	MIA	AB	37	2	-	0/11/33/34	0/3/3/3
2	PSU	AB	32	2	-	0/7/25/26	0/2/2/2
2	H2U	AB	20	2	-	1/7/38/39	0/2/2/2
2	4SU	AE	8	2	-	0/7/25/26	0/2/2/2
26	PSU	BB	1917	26	-	0/7/25/26	0/2/2/2
2	H2U	AE	16	2	-	0/7/38/39	0/2/2/2
26	PSU	BB	2605	26	-	0/7/25/26	0/2/2/2
2	5MU	AE	54	2	-	0/7/25/26	0/2/2/2
26	CH	BB	2575	26	-	1/5/25/26	0/2/2/2
2	3AU	AB	47	-	-	2/16/34/35	0/2/2/2
2	3AU	AE	47	-	-	5/16/34/35	0/2/2/2
26	OMU	BB	2552	26	-	0/9/27/28	0/2/2/2
1	MA6	AA	1518	1	-	0/7/29/30	0/3/3/3
2	PSU	AB	55	2	-	1/7/25/26	0/2/2/2
2	H2U	AE	20	2	-	0/7/38/39	0/2/2/2
26	5MC	BB	1962	26	-	5/7/25/26	0/2/2/2
26	PSU	BB	2457	26	-	0/7/25/26	0/2/2/2
1	UR3	AA	1498	1	-	0/7/25/26	0/2/2/2
26	PSU	BB	746	26	-	4/7/25/26	0/2/2/2
2	PSU	AE	39	2	-	0/7/25/26	0/2/2/2
26	5MU	BB	747	26	-	4/7/25/26	0/2/2/2
2	7MG	AE	46	2	-	0/7/37/38	0/3/3/3
1	5MC	AA	967	1	-	0/7/25/26	0/2/2/2
2	H2U	AB	16	2	-	1/7/38/39	0/2/2/2
26	2MA	BB	2503	26	-	0/3/25/26	0/3/3/3
2	4SU	AB	8	2	-	0/7/25/26	0/2/2/2
26	OMC	BB	2498	26	-	1/9/27/28	0/2/2/2
1	2MG	AA	966	1	-	0/5/27/28	0/3/3/3
26	5MU	BB	1939	26	-	0/7/25/26	0/2/2/2
2	5MU	AB	54	2	-	0/7/25/26	0/2/2/2
26	6MZ	BB	2030	26	-	1/5/27/28	0/3/3/3
1	4OC	AA	1402	1	-	0/9/29/30	0/2/2/2
2	MIA	AE	37	2	-	0/11/33/34	0/3/3/3
26	PSU	BB	2580	26	-	2/7/25/26	0/2/2/2
2	PSU	AB	39	2	-	0/7/25/26	0/2/2/2
26	2MG	BB	1835	26	-	0/5/27/28	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	MA6	AA	1519	1	-	0/7/29/30	0/3/3/3
26	2MG	BB	2445	26	-	0/5/27/28	0/3/3/3
1	5MC	AA	1407	1	-	0/7/25/26	0/2/2/2
26	1MG	BB	745	26	-	0/3/25/26	0/3/3/3
26	PSU	BB	2504	26	-	1/7/25/26	0/2/2/2
1	7MG	AA	527	1	-	1/7/37/38	0/3/3/3
26	6MZ	BB	1618	26	-	0/5/27/28	0/3/3/3
26	OMG	BB	2251	26	-	0/5/27/28	0/3/3/3
26	PSU	BB	955	26	-	0/7/25/26	0/2/2/2
1	2MG	AA	1207	1	-	0/5/27/28	0/3/3/3
2	7MG	AB	46	2	-	1/7/37/38	0/3/3/3
26	7MG	BB	2069	26	-	0/7/37/38	0/3/3/3
26	H2U	BB	2449	26	-	0/7/38/39	0/2/2/2
1	2MG	AA	1516	1	-	0/5/27/28	0/3/3/3
2	PSU	AE	55	2	-	1/7/25/26	0/2/2/2
1	PSU	AA	516	1	-	0/7/25/26	0/2/2/2
26	PSU	BB	1911	26	-	1/7/25/26	0/2/2/2

The worst 5 of 49 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	AB	46	7MG	C8-N9	-21.46	1.34	1.46
26	BB	2069	7MG	C8-N9	-21.24	1.34	1.46
1	AA	527	7MG	C8-N9	-21.18	1.34	1.46
2	AE	46	7MG	C8-N9	-20.62	1.34	1.46
2	AB	8	4SU	C5-C4	-5.15	1.35	1.42

The worst 5 of 86 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	AE	46	7MG	N9-C8-N7	6.12	112.13	103.38
26	BB	2069	7MG	N9-C8-N7	6.09	112.09	103.38
1	AA	527	7MG	N9-C8-N7	6.04	112.02	103.38
2	AB	46	7MG	N9-C8-N7	5.67	111.49	103.38
1	AA	516	PSU	C6-C5-C4	4.37	121.26	118.20

There are no chirality outliers.

5 of 33 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	AA	527	7MG	C4'-C5'-O5'-P

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Mol	Chain	Res	Type	Atoms
2	AB	46	7MG	C4'-C5'-O5'-P
26	BB	746	PSU	C2'-C1'-C5-C4
26	BB	746	PSU	C2'-C1'-C5-C6
26	BB	747	5MU	C2'-C1'-N1-C2

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](#)

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.

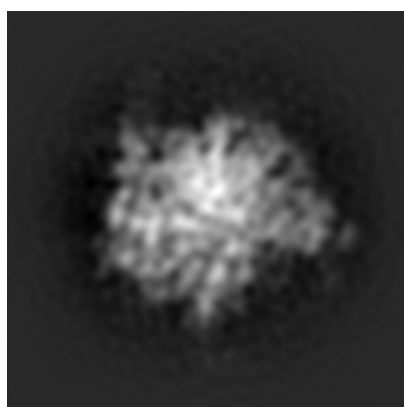
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-1850. These allow visual inspection of the internal detail of the map and identification of artifacts.

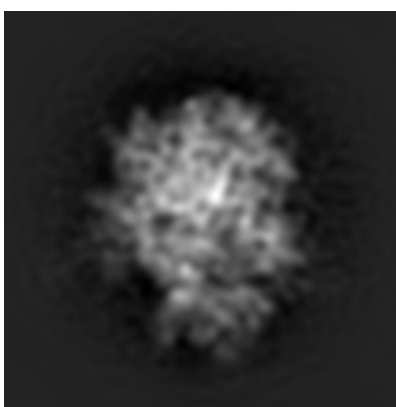
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

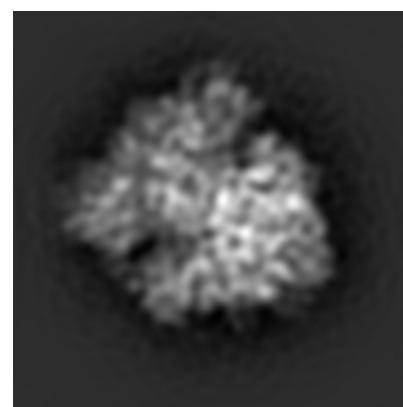
6.1.1 Primary map



X



Y

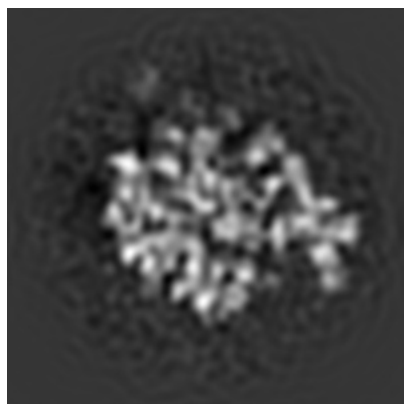


Z

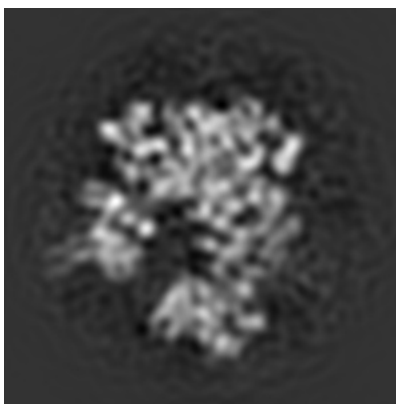
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

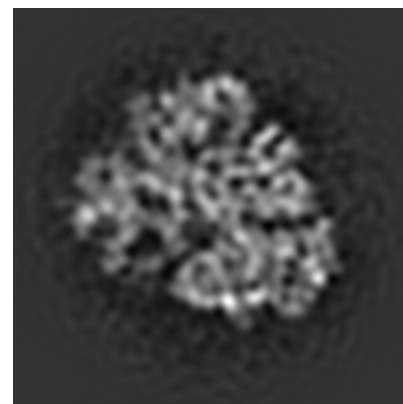
6.2.1 Primary map



X Index: 125



Y Index: 125

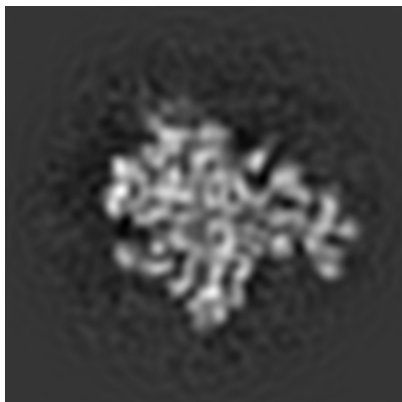


Z Index: 125

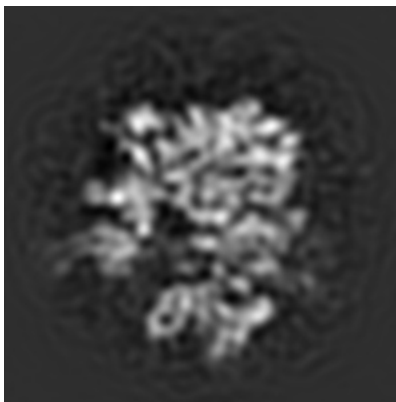
The images above show central slices of the map in three orthogonal directions.

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

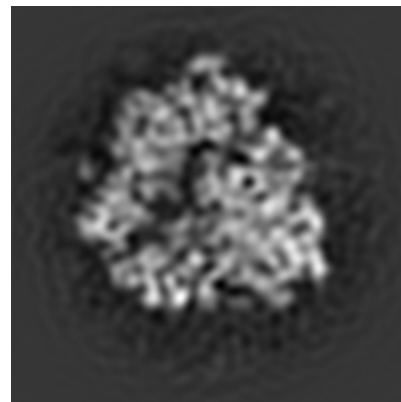
6.3.1 Primary map



X Index: 131



Y Index: 130

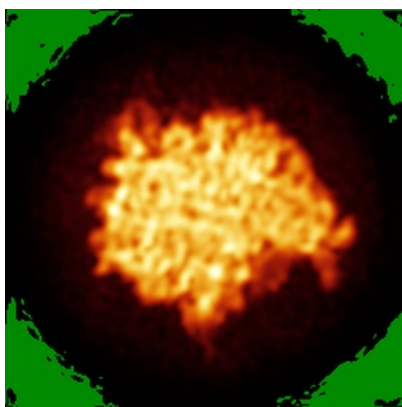


Z Index: 115

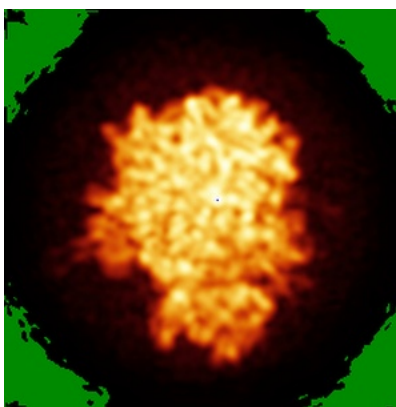
The images above show the largest variance slices of the map in three orthogonal directions.

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

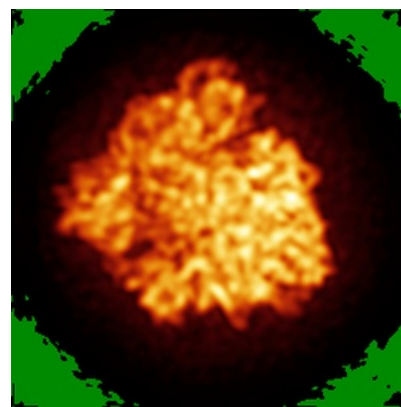
6.4.1 Primary map



X



Y

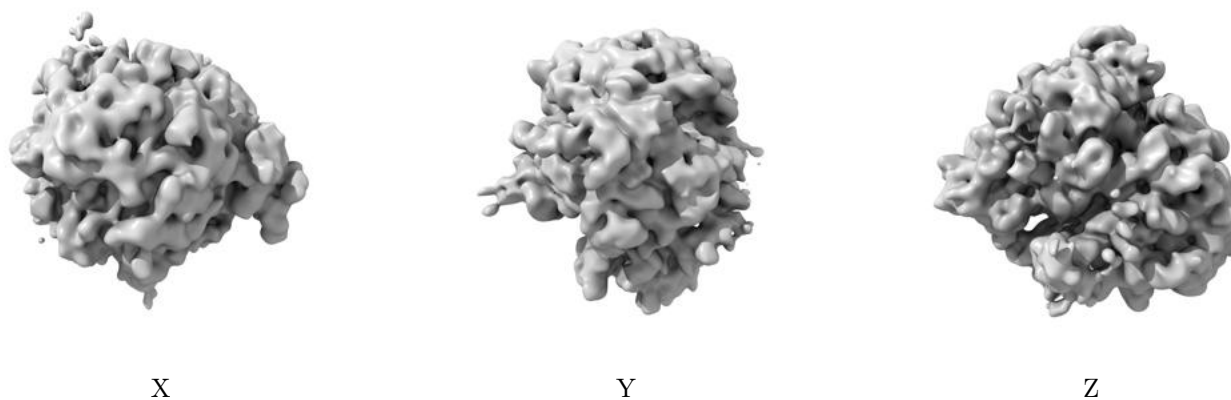


Z

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

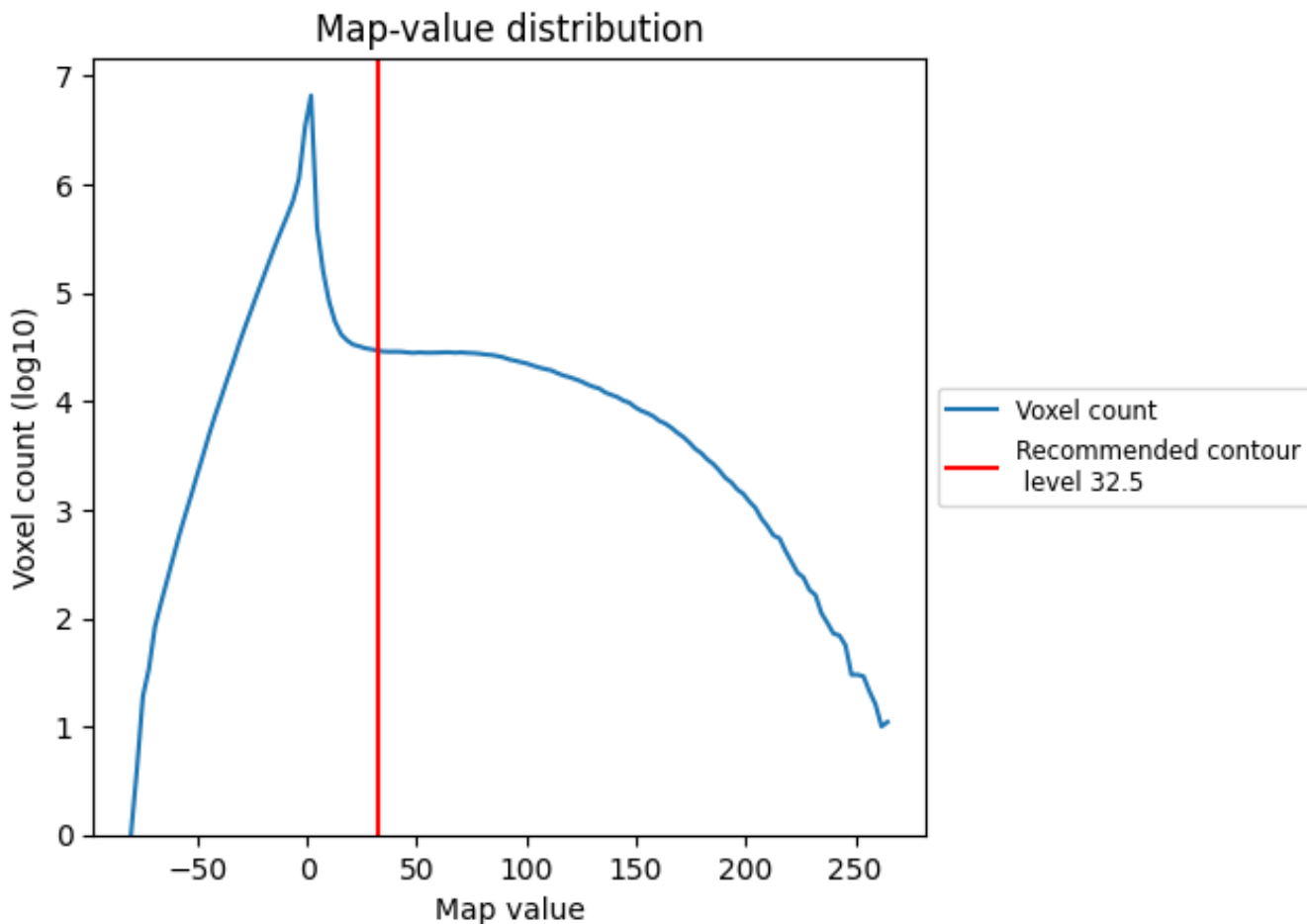
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

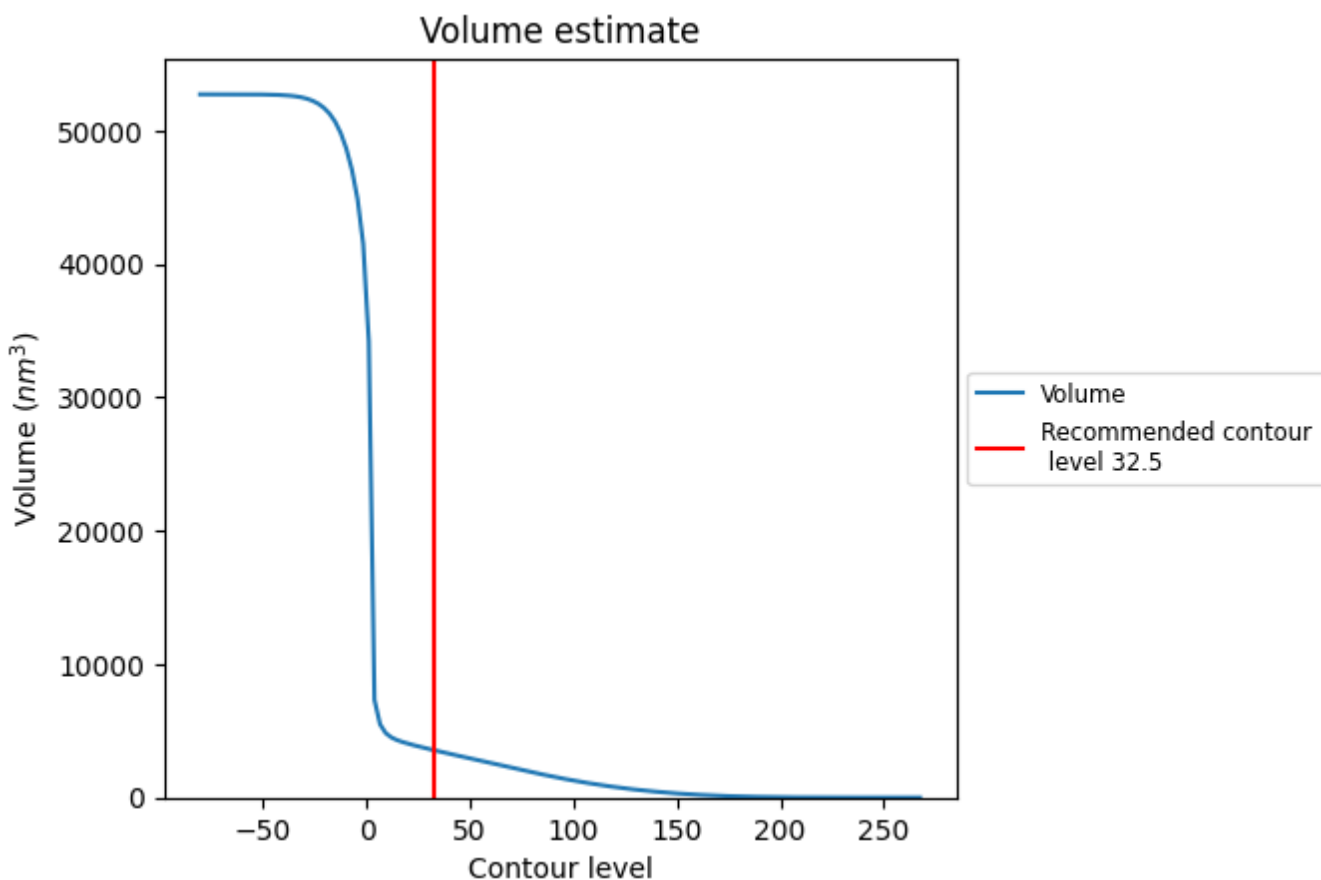
This section contains the results of statistical analysis of the map.

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.

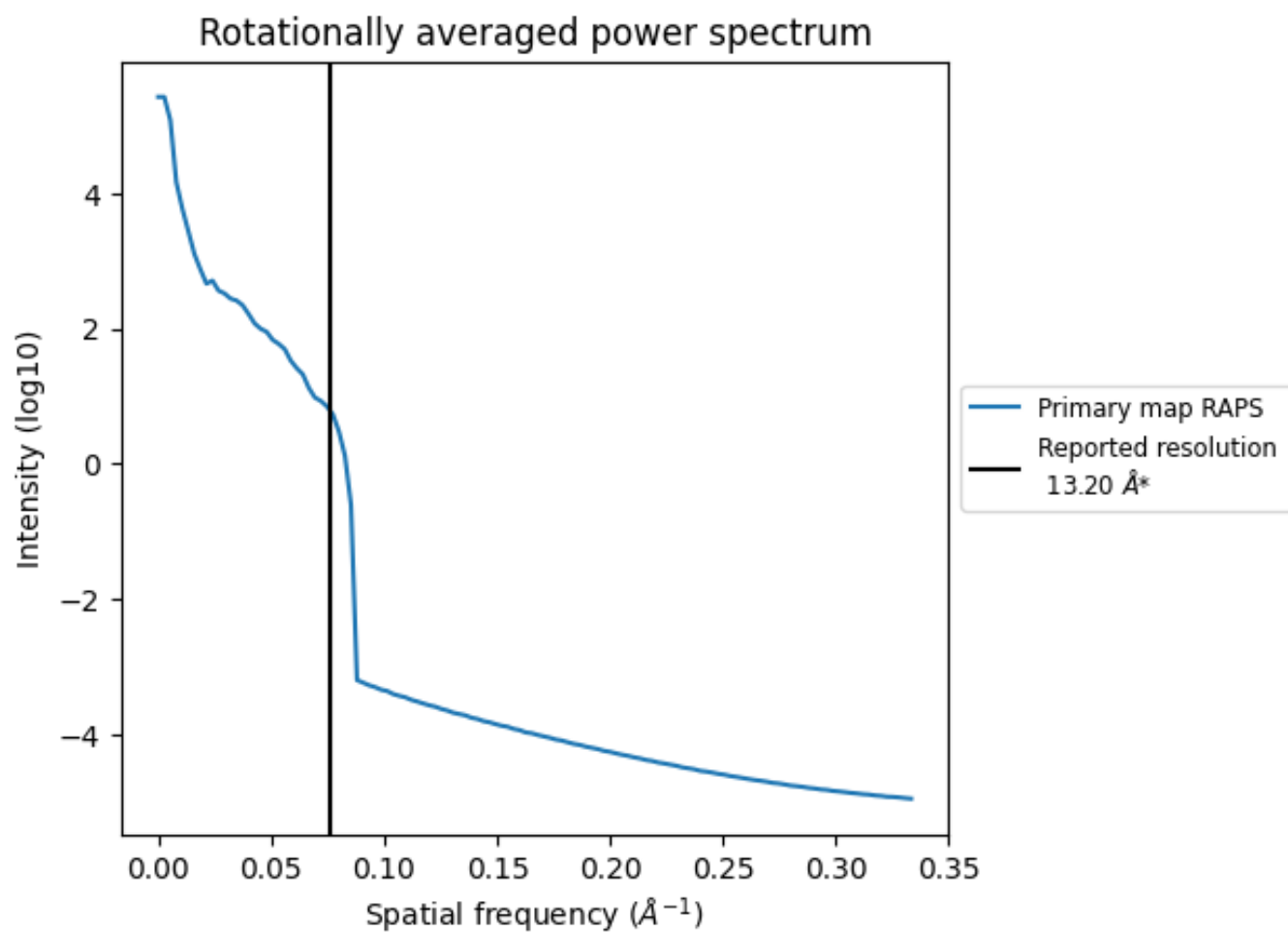
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 3559 nm^3 ; this corresponds to an approximate mass of 3215 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 0.076 Å⁻¹

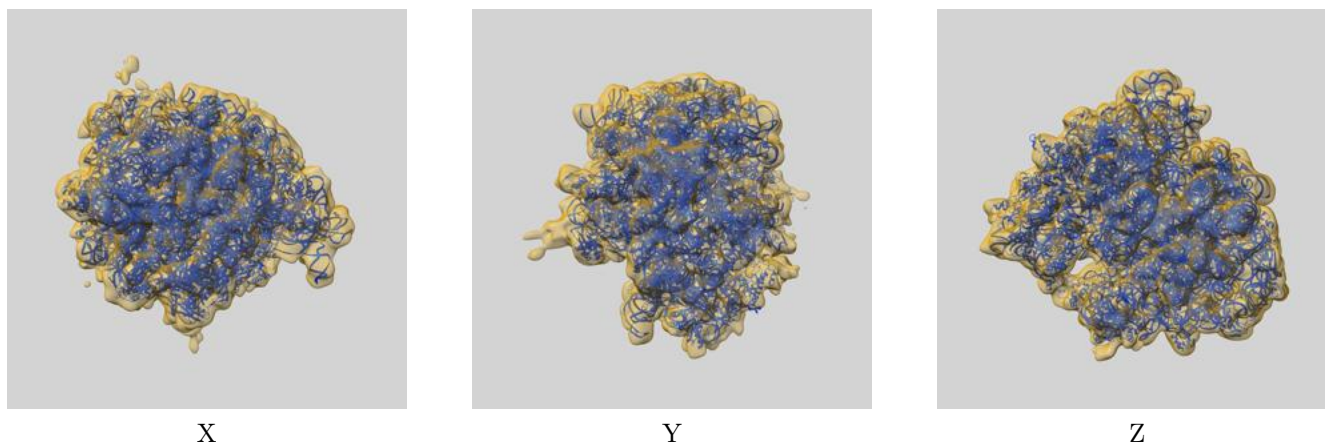
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

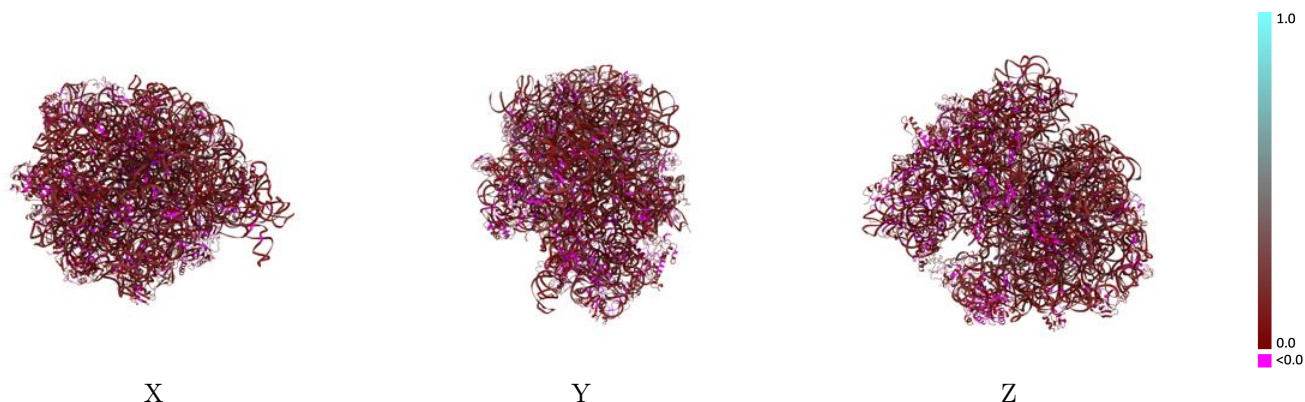
This section contains information regarding the fit between EMDB map EMD-1850 and PDB model 4V6L. Per-residue inclusion information can be found in section 3 on page 14.

9.1 Map-model overlay [i](#)



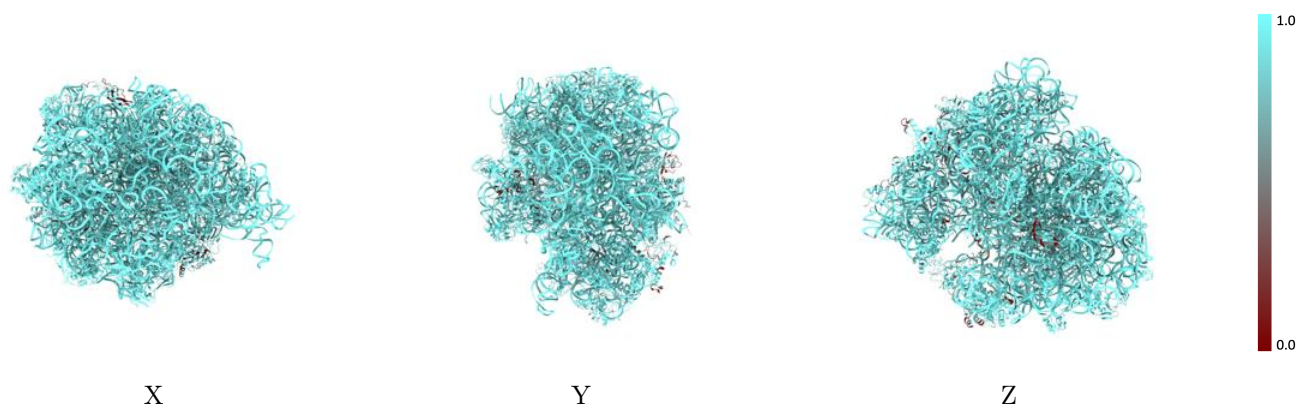
The images above show the 3D surface view of the map at the recommended contour level 32.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



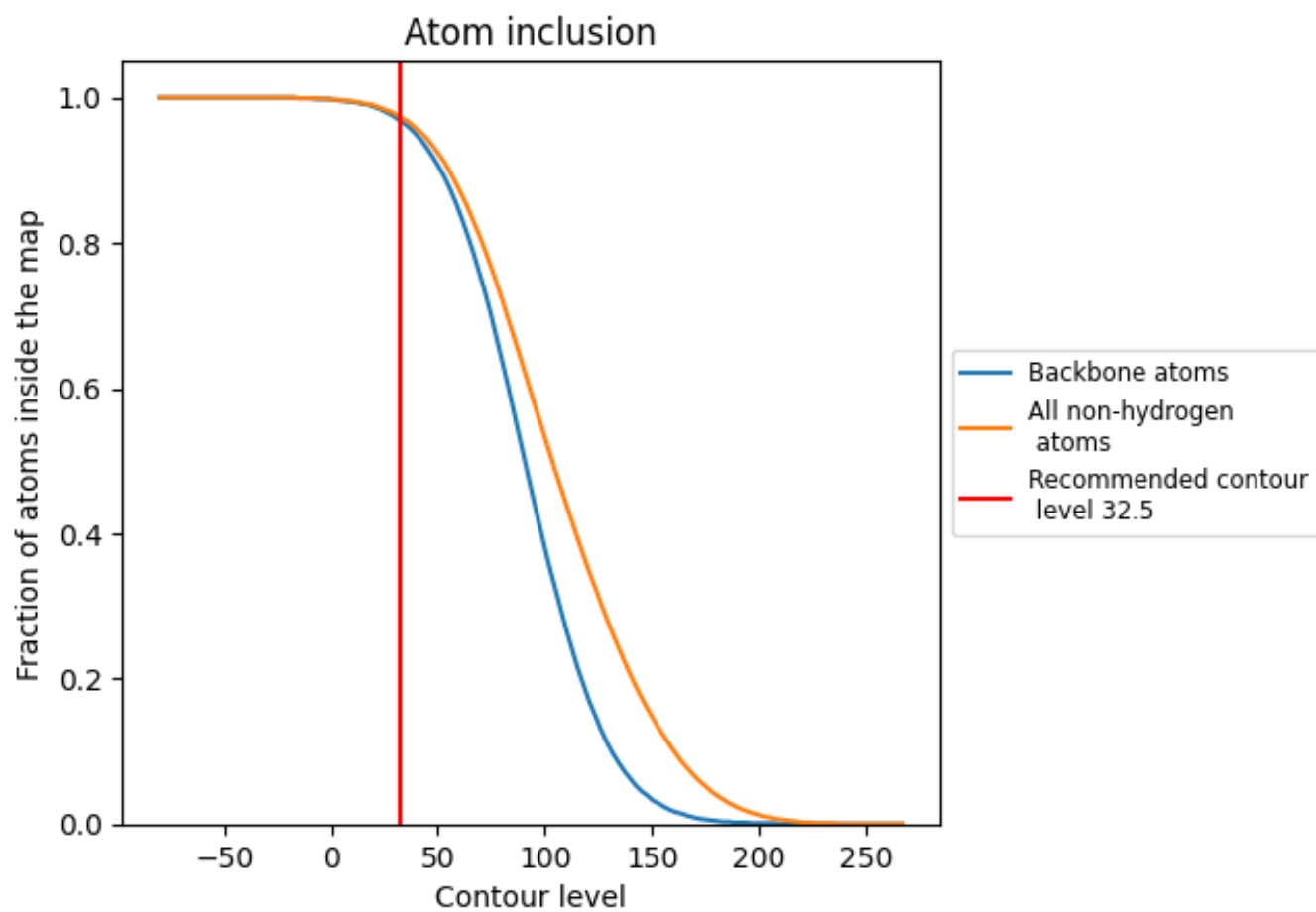
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (32.5).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 97% of all backbone atoms, 97% 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 (32.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9730	 0.0980
AA	 0.9910	 0.1100
AB	 0.8780	 0.0990
AC	 0.8430	 0.0640
AD	 0.8790	 0.0820
AE	 0.9550	 0.1100
AF	 0.9030	 0.0860
AG	 0.9010	 0.0700
AH	 0.9080	 0.0520
AI	 0.8840	 0.0690
AJ	 0.8840	 0.0670
AK	 0.9320	 0.0820
AL	 0.9760	 0.0640
AM	 0.9880	 0.0900
AN	 0.9310	 0.0220
AO	 0.8600	 0.0650
AP	 0.9350	 0.0400
AQ	 0.9820	 0.0790
AR	 0.9870	 0.0490
AS	 0.9990	 0.0720
AT	 0.9870	 0.0420
AU	 0.9860	 0.0910
AV	 0.9730	 0.0630
AW	 0.9560	 0.0560
AX	 0.9570	 0.0440
AY	 0.8980	 0.0720
BA	 0.9970	 0.1240
BB	 0.9950	 0.1180
BC	 0.8210	 0.0410
BD	 0.9890	 0.0490
BE	 0.9830	 0.0520
BF	 0.9810	 0.0670
BG	 0.9740	 0.0790
BH	 0.9890	 0.0910
BI	 0.6640	 0.0550



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Chain	Atom inclusion	Q-score
BJ	 0.9630	 0.0800
BK	 0.9630	 0.0660
BL	 0.9730	 0.0580
BM	 0.9760	 0.0380
BN	 0.9520	 0.0600
BO	 0.9970	 0.0630
BP	 0.9890	 0.0680
BQ	 0.9450	 0.0880
BR	 0.9870	 0.0620
BS	 0.9670	 0.0750
BT	 0.9960	 0.0720
BU	 0.9900	 0.0730
BV	 0.9650	 0.0830
BW	 0.9840	 0.0860
BX	 0.8830	 0.0410
BY	 0.9780	 0.0720
BZ	 0.9780	 0.0990
Ba	 0.9840	 0.0660
Bb	 0.9030	 0.0860
Bc	 0.9490	 0.0380
Bd	 0.9540	 0.0570
Be	 0.9970	 0.0200
Bf	 0.9590	 0.0230
Bg	 0.9800	 0.0240