



Full wwPDB EM Validation Report ⓘ

May 16, 2022 – 05:31 pm BST

PDB ID : 7OOD
EMDB ID : EMD-11999
Title : Mycoplasma pneumoniae 50S subunit of ribosomes in chloramphenicol-treated cells
Authors : Xue, L.; Lenz, S.; Rappsilber, J.; Mahamid, J.
Deposited on : 2021-05-27
Resolution : 3.40 Å (reported)
Based on initial models : 4YBB, 1DIV, 1ZAV, 3J9W

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

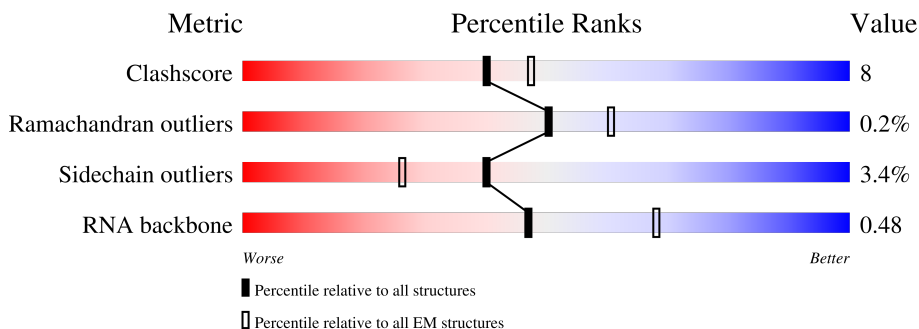
EMDB validation analysis : 0.0.1.dev8
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.28.1

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 3.40 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)
Clashscore	158937	4297
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	3	2907	99% 64% 29% 6% ..
2	4	108	97% 62% 27% 7% ..
3	w	111	89% 85% 5% 11%
4	a	287	99% 97% ..
5	c	212	99% 95% ..
6	e	184	96% 94% ..
7	k	151	98% 95% ..

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Mol	Chain	Length	Quality of chain
8	i	146	99% 97%
9	m	124	96% 95%
10	q	100	99% 95%
11	u	104	83% 82% 17%
12	y	57	98% 89% 9%
13	0	48	98% 75% 23%
14	2	37	100% 38% 57% 5%
15	1	59	100% 64% 32%
16	o	119	97% 92%
17	s	237	39% 39% 61%
18	v	65	97% 89% 8%
19	x	97	45% 45% 55%
20	z	53	94% 94% 6%
21	d	180	97% 94%
22	b	287	80% 78% 20%
23	l	139	98% 97%
24	p	127	90% 87% 10%
25	j	122	100% 96%
26	n	116	97% 97%
27	t	111	86% 86% 14%
28	r	159	87% 82% 5% 13%
29	f	149	97% 96%
30	h	137	93% 92% 7%
31	g	161	78% 75% 22%

2 Entry composition [i](#)

There are 35 unique types of molecules in this entry. The entry contains 89509 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 23S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	3	2879	61690	27566	11236	20009	2879	0	0

- Molecule 2 is a RNA chain called 5S ribosomal RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	4	105	2245	1003	409	728	105	0	0

- Molecule 3 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
3	w	99	798	505	149	144	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	a	285	2199	1370	433	390	6	0	0

- Molecule 5 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	c	210	1613	1026	294	290	3	0	0

- Molecule 6 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
6	e	176	1349	867	240	242	0	0

- Molecule 7 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
7	k	148	1138	722	223	193	0	0

- Molecule 8 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	i	144	1158	733	212	208	5	0	0

- Molecule 9 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	m	119	957	609	175	170	3	0	0

- Molecule 10 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	q	99	809	525	148	133	3	0	0

- Molecule 11 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	u	86	641	397	127	116	1	0	0

- Molecule 12 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	y	56	436	262	96	73	5	0	0

- Molecule 13 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	0	47	377	234	81	61	1	0	0

- Molecule 14 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	2	37	Total	C	N	O	S	0	0
			303	189	65	45	4		

- Molecule 15 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	1	59	Total	C	N	O	S	0	0
			477	300	99	77	1		

- Molecule 16 is a protein called 50S ribosomal protein L19.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	o	115	Total	C	N	O	S	0	0
			895	568	169	157	1		

- Molecule 17 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	s	92	Total	C	N	O	S	0	0
			714	470	121	122	1		

- Molecule 18 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	v	63	Total	C	N	O	S	0	0
			504	312	107	84	1		

- Molecule 19 is a protein called 50S ribosomal protein L31.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	x	44	Total	C	N	O	0	0
			218	130	44	44		

- Molecule 20 is a protein called 50S ribosomal protein L33 1.

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

- Molecule 21 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	d	175	Total	C	N	O	S	0	0
			1244	797	214	229	4		

- Molecule 22 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	b	229	Total	C	N	O	S	0	0
			1758	1116	317	318	7		

- Molecule 23 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	l	136	Total	C	N	O	S	0	0
			1057	680	193	177	7		

- Molecule 24 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	p	114	Total	C	N	O	S	0	0
			941	600	185	154	2		

- Molecule 25 is a protein called 50S ribosomal protein L14.

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

- Molecule 26 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	n	112	Total	C	N	O	S	0	0
			853	534	169	149	1		

- Molecule 27 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	t	96	Total	C	N	O	S	0	0
			706	449	132	122	3		

- Molecule 28 is a protein called 50S ribosomal protein L22.

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

- Molecule 29 is a protein called 50S ribosomal protein L9.

Mol	Chain	Residues	Atoms				AltConf	Trace
29	f	144	Total	C	N	O	0	0
			713	425	144	144		

- Molecule 30 is a protein called 50S ribosomal protein L11.

Mol	Chain	Residues	Atoms				AltConf	Trace
30	h	128	Total	C	N	O	0	0
			630	374	128	128		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
31	g	125	Total	C	N	O	0	0
			617	367	125	125		

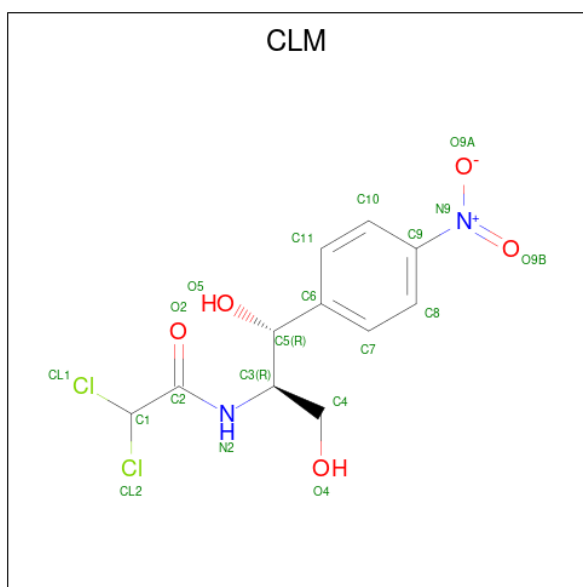
- Molecule 32 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms		AltConf
32	3	1	Total	K	0
			1	1	

- Molecule 33 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
33	3	24	Total	Mg	0
			24	24	
33	y	1	Total	Mg	0
			1	1	

- Molecule 34 is CHLORAMPHENICOL (three-letter code: CLM) (formula: C₁₁H₁₂Cl₂N₂O₅).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	Cl	N	O	
34	3	1	20	11	2	2	5	0

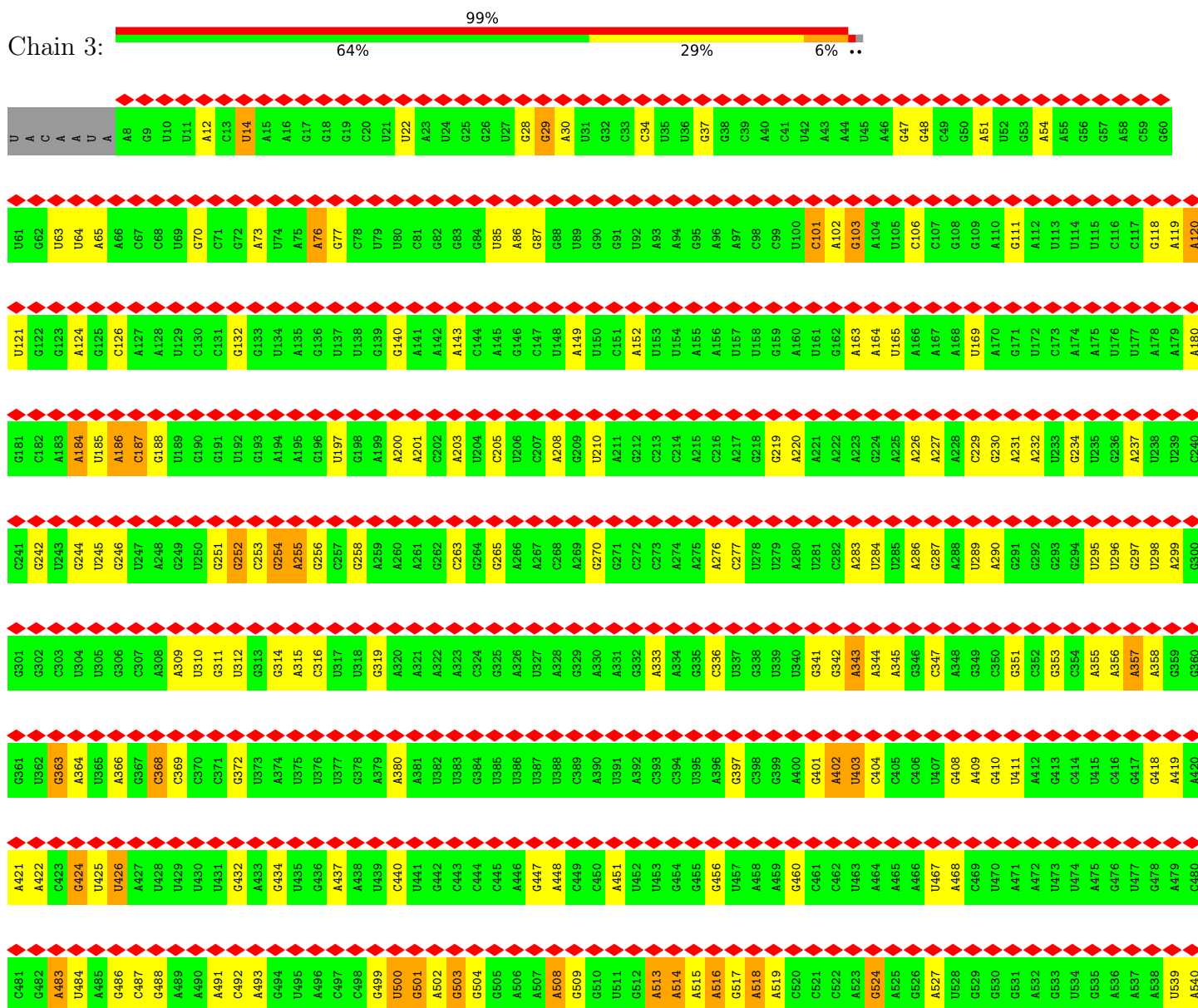
- Molecule 35 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
35	y	1	Total	Zn	0
			1	1	
35	2	1	Total	Zn	0
			1	1	
35	z	1	Total	Zn	0
			1	1	

3 Residue-property plots [i](#)

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

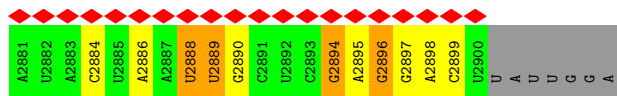
- Molecule 1: 23S ribosomal RNA



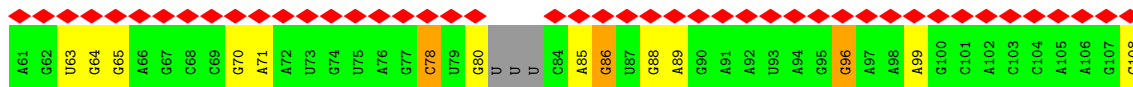
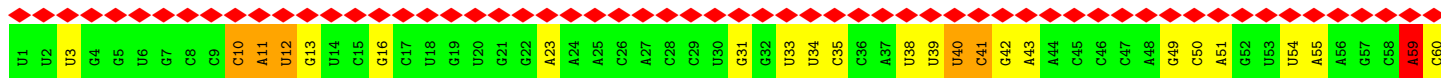
U1261	U1262	G1263	U1264	G1265	A1266	G1267	U1268	G1269	C1270	A1271	A1272	U1273	A1274	G1275	A1276	G1277	G1278	U1279	G1280	A1281	G1282	A1283	U1284	A1285	G1286	C1287	C1288	G1289	U1290	G1291	A1292	U1293	G1294	A1295	G1296	U1297	A1298	A1299	C1300	G1301	C1302	U1303	U1304	G1305	G1306	G1307	A1308	G1309	U1310	G1311	A1312	G1313	A1314	A1315	U1316	C1317	U1318	C1319	C1320
U1141	G1142	U1143	C1144	G1145	A1146	G1147	U1148	G1149	U1150	U1151	U1152	U1153	U1154	G1155	C1156	G1157	C1158	C1159	G1160	A1161	A1162	G1163	A1164	U1165	G1166	U1167	A1168	A1169	C1170	G1171	G1172	U1173	G1174	C1175	U1176	A1177	A1178	G1179	U1180	A1181	U1182	A1183	U1184	U1185	A1186	C1187	C1188	G1189	U1190	A1191	U1192	U1193	U1194	A1195	U1196	G1197	A1198	A1199	U1200
A1081	A1082	A1083	C1084	A1085	G1086	C1087	A1088	A1089	G1090	G1091	A1092	U1093	G1094	U1095	U1096	G1097	G1098	C1099	U1100	U1101	A1102	G1103	A1104	A1105	G1106	C1107	A1108	G1109	C1110	C1111	A1112	U1113	C1114	G1115	U1116	U1117	U1118	A1119	U1120	A1121	A1122	A1123	G1124	U1125	U1126	C1127	G1128	U1129	U1130	A1131	C1132	A1133	G1134	C1135	U1136	C1137	A1138	C1139	U1140
C1021	C1022	C1023	A1024	G1025	A1026	U1027	C1028	A1029	U1030	U1031	A1032	A1033	A1034	U1035	A1036	A1037	G1038	G1039	U1040	C1041	C1042	C1043	C1044	A1045	A1046	A1047	A1048	U1049	U1050	U1051	A1052	C1053	U1054	A1055	A1056	G1057	U1058	G1059	G1060	A1061	A1062	A1063	A1064	G1065	G1066	A1067	U1068	G1069	U1070	G1071	A1072	A1073	A1074	G1075	U1076	G1077	U1079	A1080	
C901	U902	A903	C904	U905	G906	A907	A908	U909	G910	U911	A912	U913	G914	A915	U916	G917	G918	C919	G920	C921	U922	A923	C924	C925	U926	A927	G928	G929	C930	G931	U932	A933	C934	U935	G936	A937	A938	U939	A940	C941	A942	C943	A944	U945	A946	U947	A948	C949	C951	U952	G953	A954	A955	U956	G957	C958	C959	A960	
C841	U842	G843	G844	U845	U846	C847	U848	C849	G850	U851	C852	G853	A854	A855	A856	A857	A858	G859	C860	U861	U862	U863	A864	A865	A866	G867	C868	U869	A870	G871	C872	G873	U874	G875	A876	G877	A878	U879	C880	A881	C882	A883	A884	A885	U886	A887	A888	G889	U890	A891	C892	A893	A894	A895	U896	A897	A898	A899	G900
U781	U782	G783	A784	A785	A786	C787	G788	A789	U790	A791	G792	G793	A794	G795	A796	U797	G798	A799	C800	U801	U802	G803	U804	G805	A806	U807	U808	A809	G810	G811	G812	U813	U814	G815	A816	A817	U818	U819	U820	C821	C822	A823	A824	U825	C826	G827	A828	A829	U830	U831	C832	C833	G834	A835	U836	U837	U838	A839	G840
U601	U602	G603	A604	A605	G606	G607	A608	U609	G610	A611	G612	C613	C614	G615	G616	C617	G618	A619	G620	U621	U622	A623	U624	G625	A626	U627	A628	G629	C630	A631	G632	G633	C634	G635	A636	U637	A638	G639	U640	U641	A642	A643	A644	G645	A646	G647	A648	A649	G650	A651	U652	G653	G654	U655	G656	C657	A658	G659	U660
G661	U662	A663	G664	A665	G666	G667	A668	A669	G670	C671	G672	A673	G674	U675	U676	U677	U678	A679	U680	U681	A682	G683	A684	G685	A686	U687	U688	U689	U690	A691	G692	U693	U694	G695	U696	U697	A698	U699	U700	A701	U702	A703	G704	A705	C706	C707	C708	G709	A710	A711	A712	C713	G714	G715	U716	U717	U718	G719	A720
G721	C722	U723	A724	G725	U726	C727	A728	U729	G730	A731	G732	C733	A734	G735	G736	U737	U738	G739	A740	U741	G742	G743	U744	U745	G746	A747	U748	U749	U750	A751	C752	U753	U754	C755	U756	A757	C758	U759	U760	G761	A762	G763	G764	A765	C766	C767	G768	A769	U770	C771	C772	G773	G774	C775	U776	U777	U778	C779	G780

C2041	G1981	U1801	G1741	G1681	U1621	U1501	A1441	A1381	C1321
A2042	G1982	C1802	C1742	C1682	C1622	A1502	G1442	A1382	A1322
C2043	U1983	U1803	U1743	G1683	U1623	A1503	A1443	G1383	A1323
C2044	A1984	A1804	U1744	A1684	A1624	G1504	C1444	C1384	A1324
C2045	A1985	U1805	A1745	G1685	G1625	U1505	U1445	U1385	C1325
G2046	C1986	G1806	U1746	U1686	C1626	U1506	G1446	G1386	C1326
G2047	G1987	C1807	G1747	G1687	U1627	G1507	A1447	A1387	G1327
U2048	A1988	A1808	U1748	A1688	G1628	G1508	U1448	G1388	A1328
A2049	U1989	A1809	A1749	A1689	U1629	U1509	U1449	G1389	U1329
G2050	G1990	A1810	A1750	C1690	A1630	A1510	G1450	C1390	U1330
G2051	U1991	A1811	A1751	U1691	A1631	C1511	A1451	U1391	G1331
C2052	C1992	C1812	A1752	A1692	C1632	A1512	G1452	G1392	A1332
G2053	U1993	C1813	U1753	U1693	C1633	U1513	U1453	A1393	C1333
C2054	U1994	G1814	U1754	A1694	C1634	U1514	G1454	U1394	U1334
A2055	G1995	U1815	A1755	G1695	G1635	A1515	A1455	A1395	A1335
A2056	A1996	A1816	A1756	C1696	U1636	G1516	C1456	A1396	A1336
C2057	C1997	G1817	G1757	C1697	A1637	U1517	A1457	G1397	G1337
G2058	U1998	A1818	C1758	A1698	C1638	C1518	A1458	C1398	G1338
G2059	G1999	G1819	C1759	A1699	C1639	A1519	A1459	G1399	U1339
G2060	U2000	U1820	G1760	G1700	G1640	A1520	G1460	U1400	U1340
A2061	C2001	G1821	C1761	G1701	A1641	A1521	A1461	A1401	C1341
C2062	U2002	A1822	A1762	A1702	G1642	U1522	A1462	G1402	U1342
G2063	C2003	U1823	G1763	A1703	A1643	C1523	G1463	G1403	C1343
G2064	G2004	U1824	U1764	C1704	A1644	G1524	G1464	U1404	U1344
A2065	G2005	U1825	G1765	U1705	C1645	U1525	U1465	G1405	G1345
A2066	C2006	A1826	A1766	G1706	G1646	U1526	U1466	A1406	G1346
U2067	U2007	U1827	A1767	U1707	A1647	U1527	U1467	U1407	A1347
A2068	A2008	A1828	G1768	G1708	A1648	U1528	U1468	G1408	C1348
A2069	U2009	U1829	A1769	C1709	C1649	U1529	U1469	G1409	C1349
A2070	A2010	G1830	A1770	A1710	A1650	G1530	C1470	A1410	A1350
G2071	G2011	U1831	C1771	A1711	C1651	C1531	A1471	C1411	G1351
A2072	A2012	G1832	G1772	A1712	A1652	U1532	C1472	A1412	G1352
C2073	C2013	U1833	A1773	U1713	C1653	U1533	C1473	A1413	G1353
G2074	U2014	G1834	G1774	U1714	G1654	U1534	C1474	C1414	U1354
U2075	C2015	U1835	G1775	A1715	U1655	A1535	C1475	A1415	C1355
G2076	G2016	A1836	G1776	A1716	A1656	C1536	C1476	A1416	G1356
A2077	U2017	C1837	G1777	C1717	G1657	U1537	U1477	G1417	U1357
A2078	G1958	A1838	G1778	C1718	U1658	U1538	U1478	U1418	C1358
G2079	A1959	C1839	G1779	C1719	C1659	U1539	A1479	U1419	C1359
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G2094	G2034	A1854	A1794	A1734	A1674	U1554	U1494	U1434	U1374
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G2099	G2039	U1859	A1799	G1739	U1679	A1559	C1499	U1439	C1379
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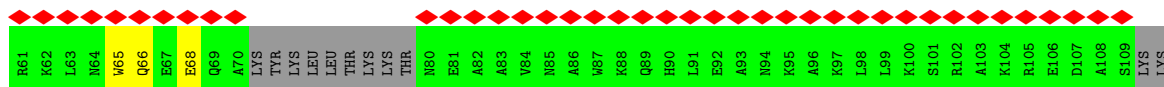
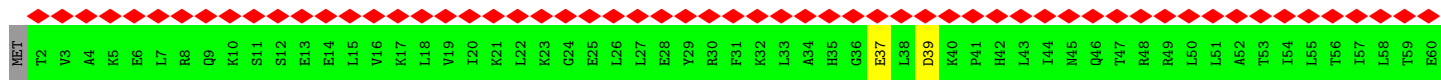
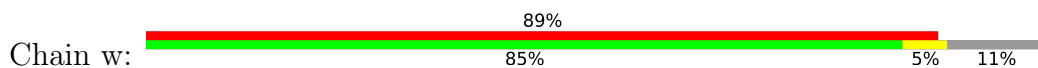
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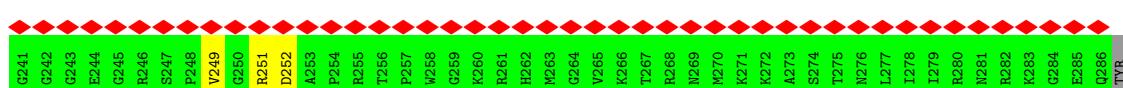
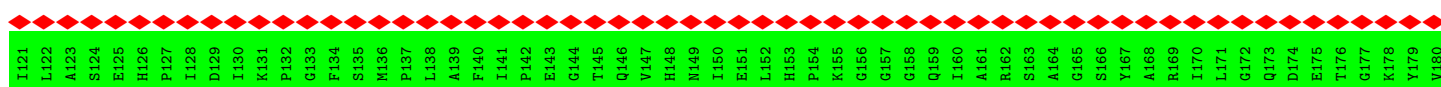
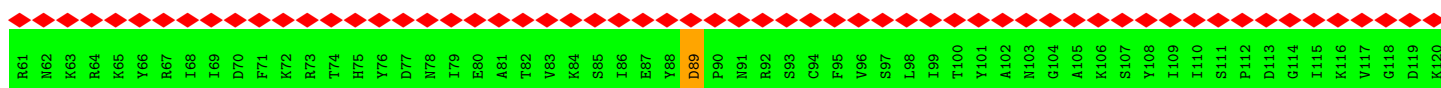
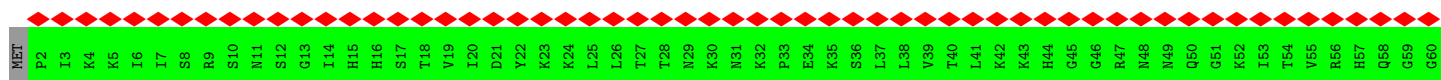
• Molecule 2: 5S ribosomal RNA



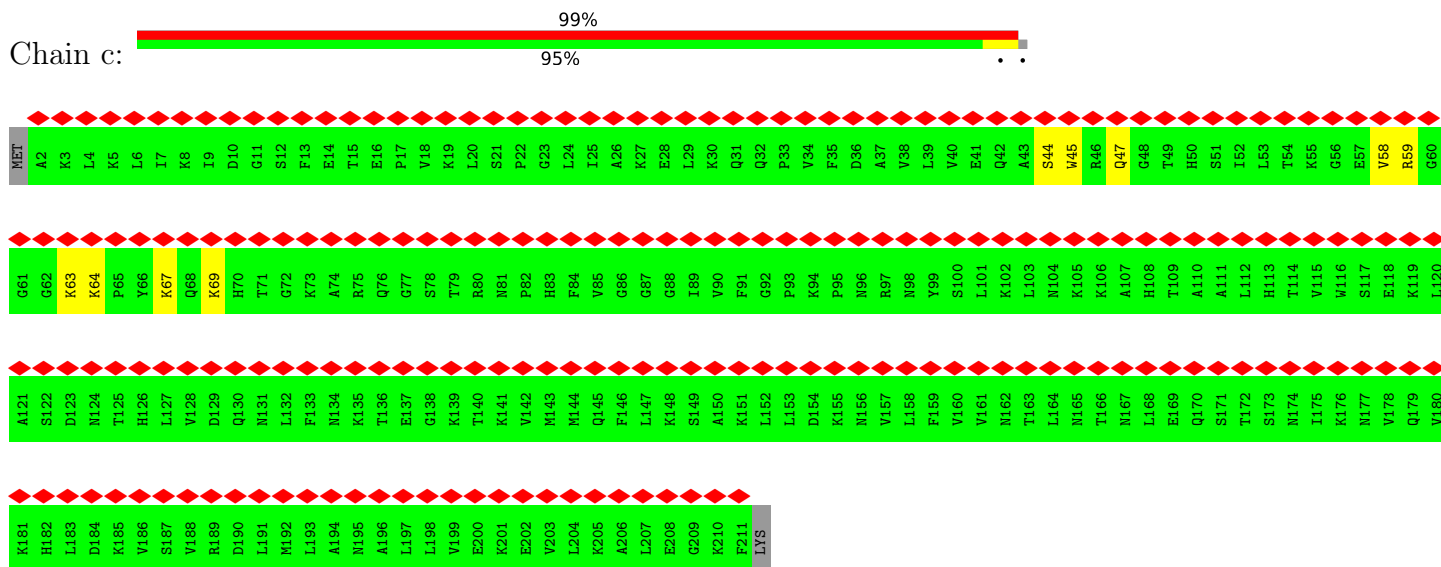
• Molecule 3: 50S ribosomal protein L29



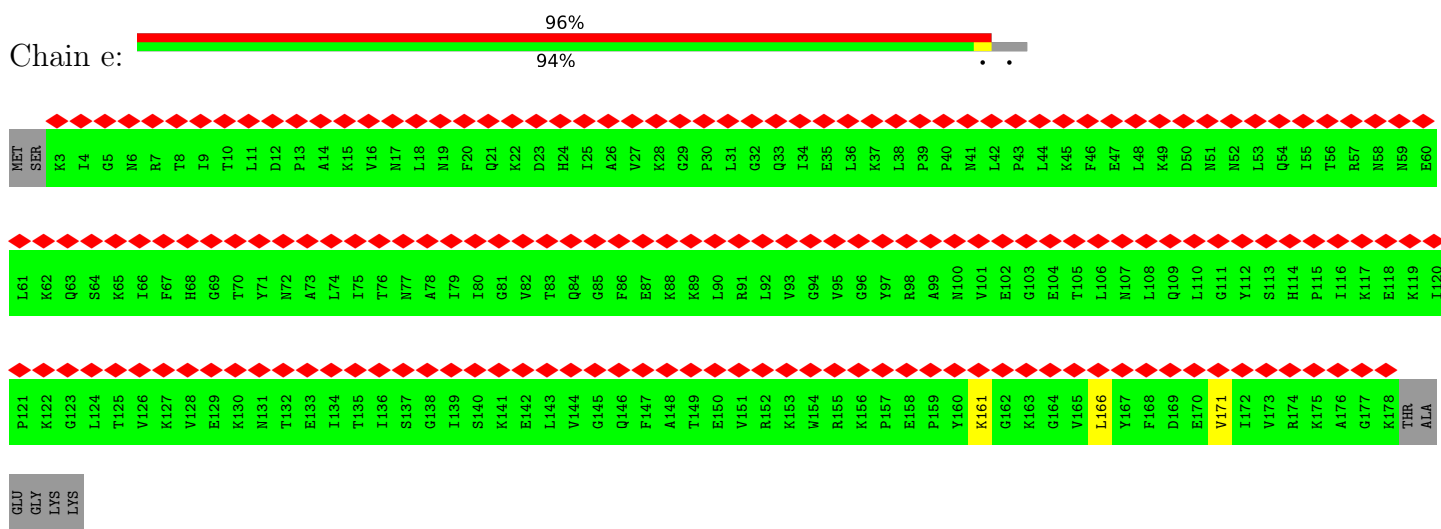
• Molecule 4: 50S ribosomal protein L2



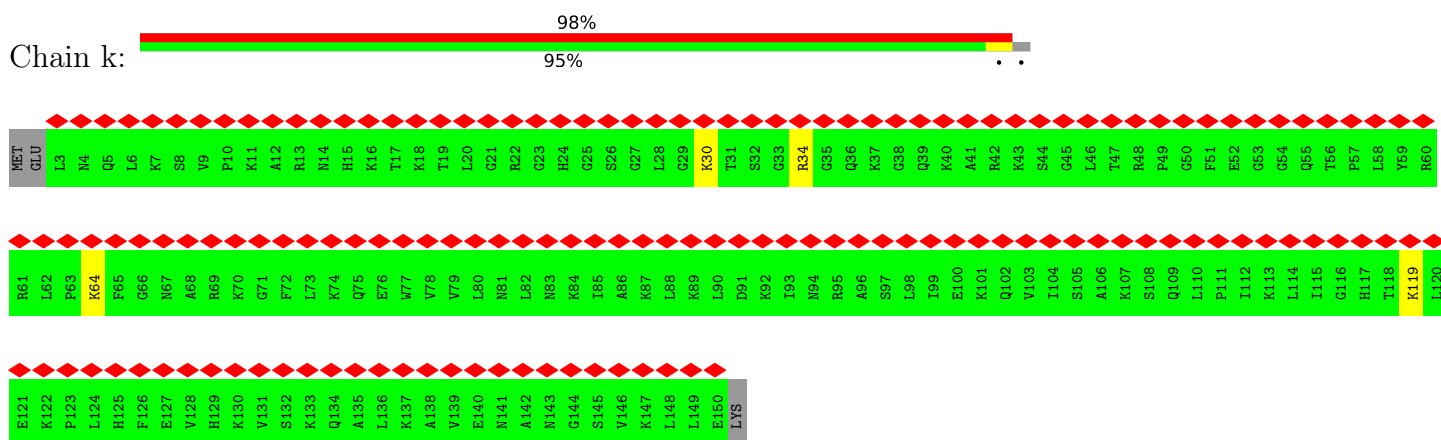
• Molecule 5: 50S ribosomal protein L4



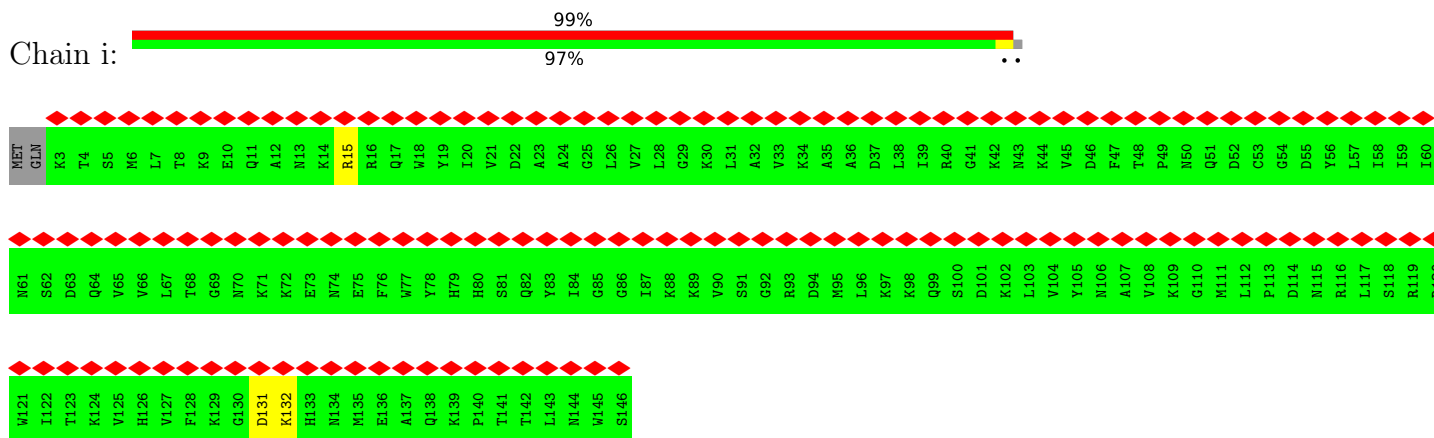
• Molecule 6: 50S ribosomal protein L6



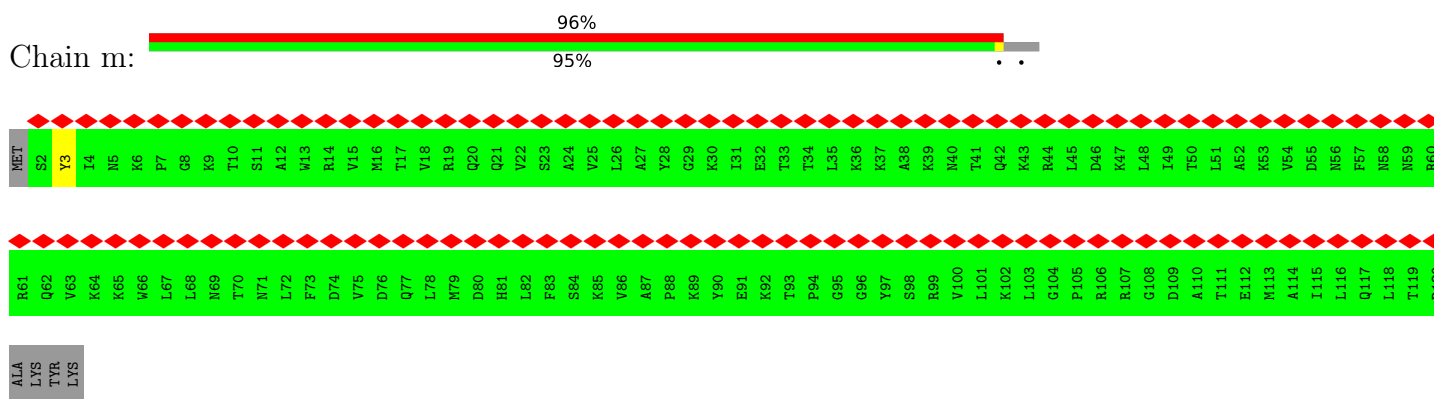
• Molecule 7: 50S ribosomal protein L15



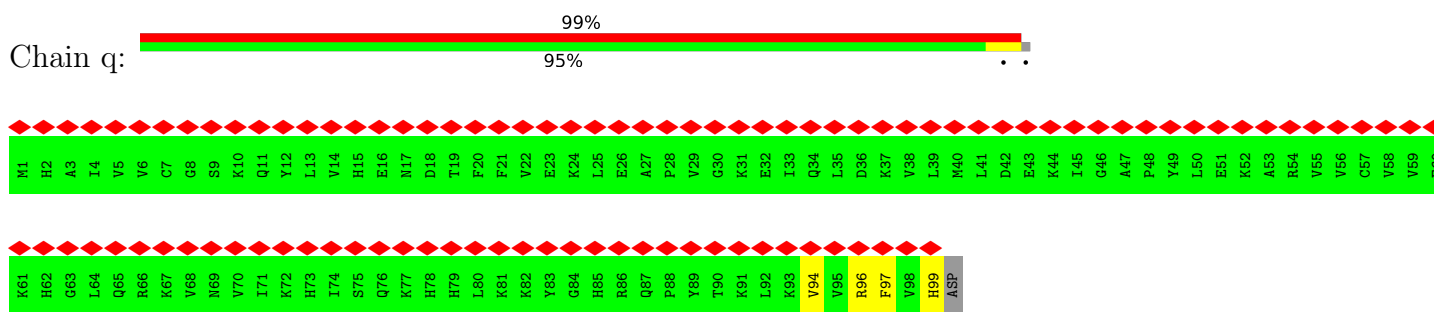
• Molecule 8: 50S ribosomal protein L13



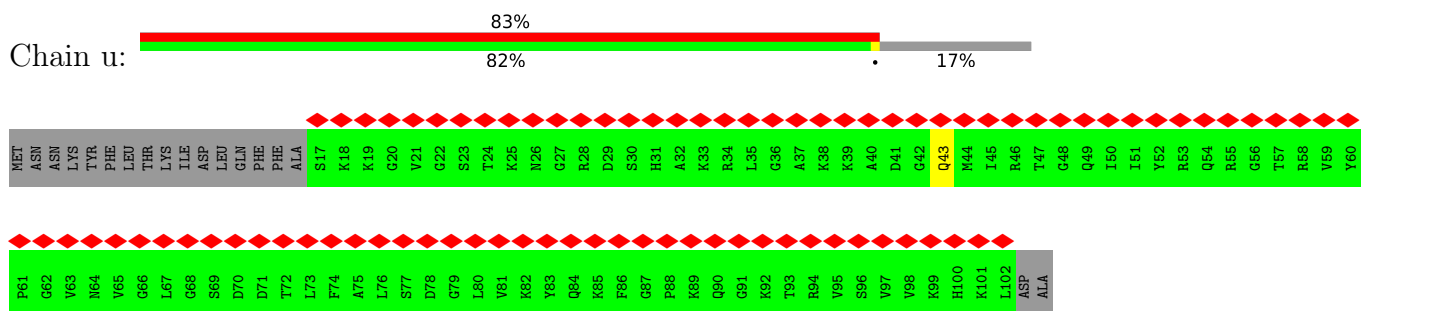
• Molecule 9: 50S ribosomal protein L17



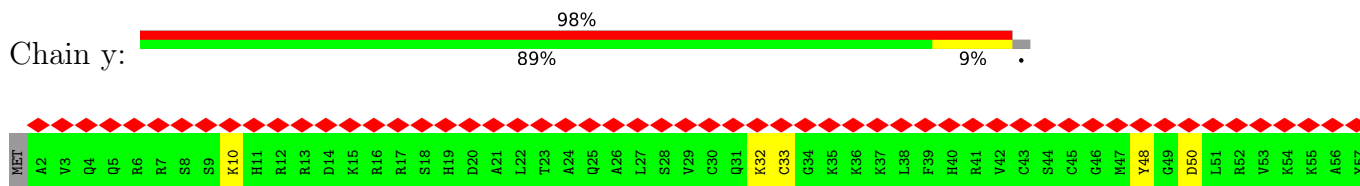
• Molecule 10: 50S ribosomal protein L21



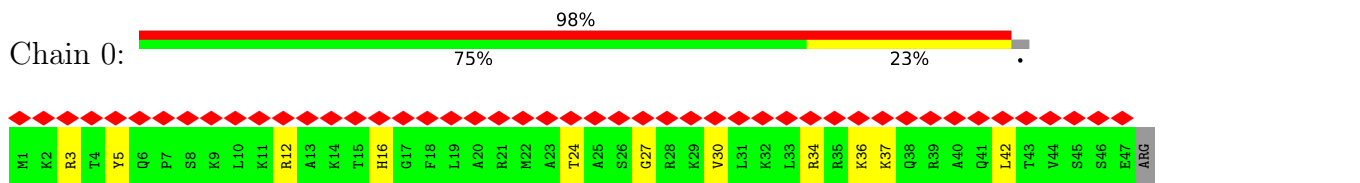
• Molecule 11: 50S ribosomal protein L27



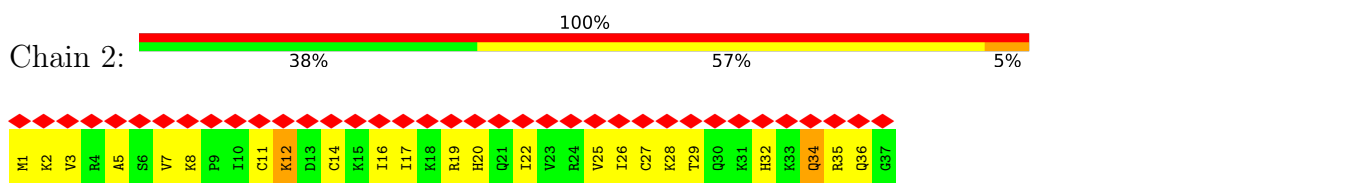
• Molecule 12: 50S ribosomal protein L32



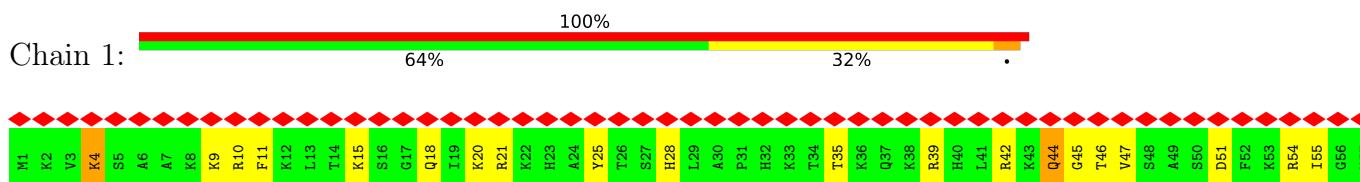
• Molecule 13: 50S ribosomal protein L34



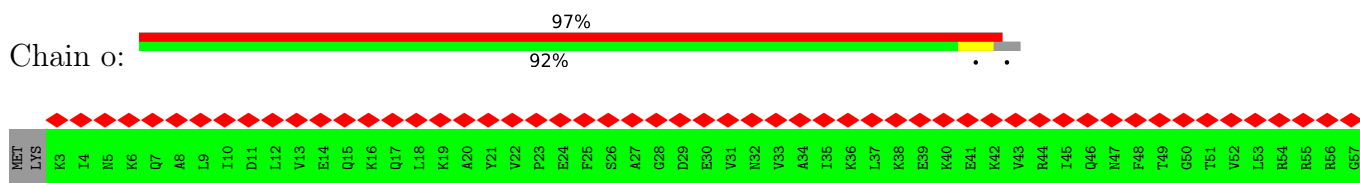
• Molecule 14: 50S ribosomal protein L36



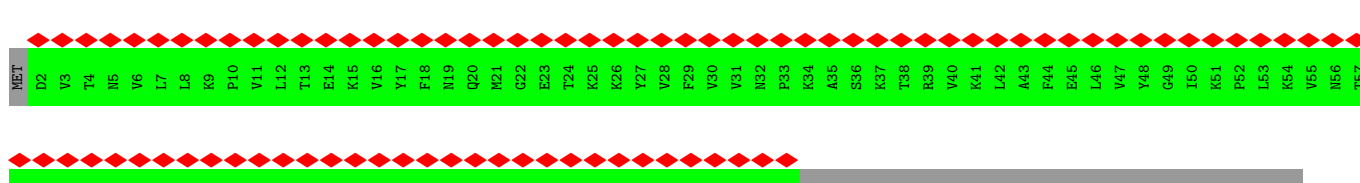
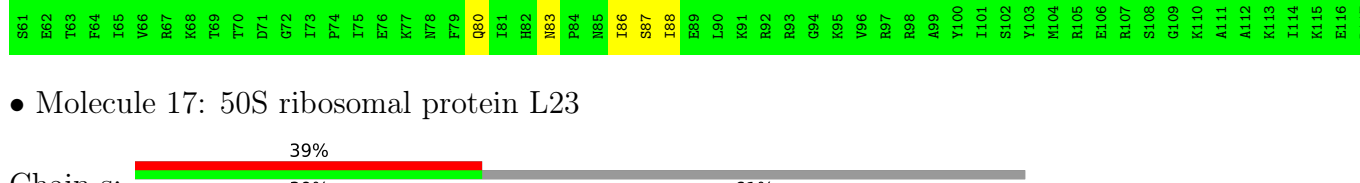
• Molecule 15: 50S ribosomal protein L35

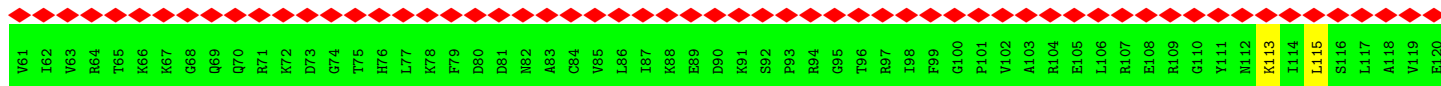
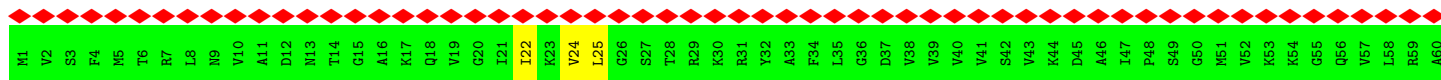


• Molecule 16: 50S ribosomal protein L19

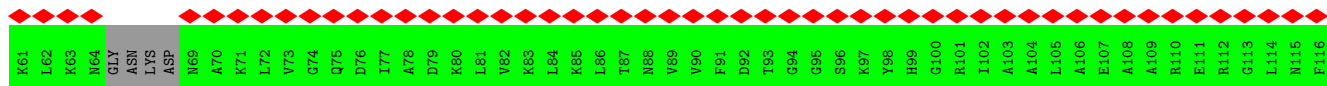
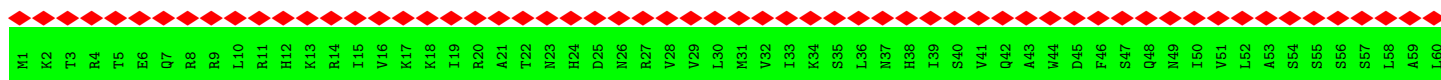


• Molecule 17: 50S ribosomal protein L23

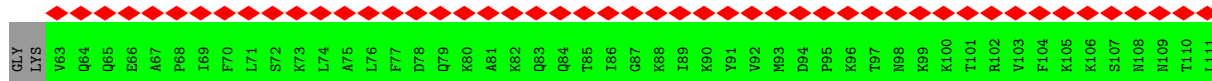
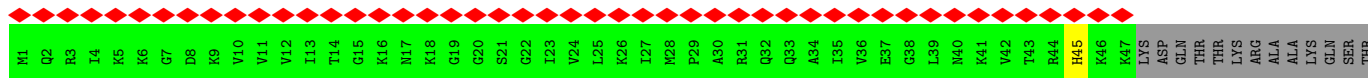
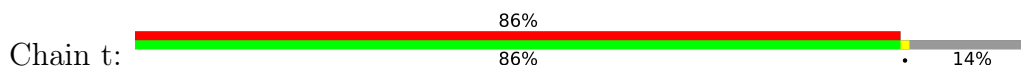




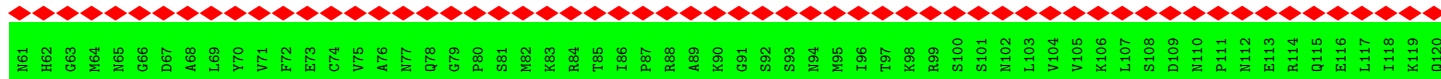
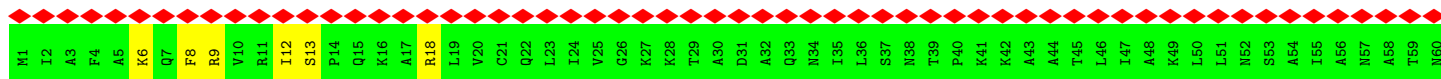
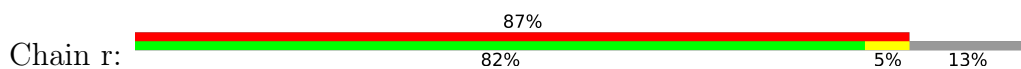
• Molecule 26: 50S ribosomal protein L18



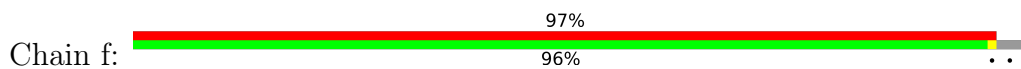
• Molecule 27: 50S ribosomal protein L24

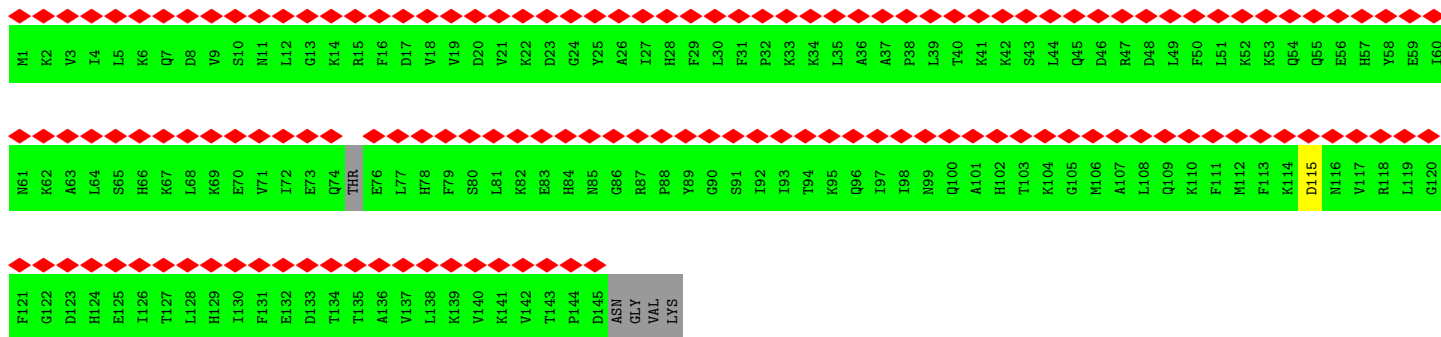


• Molecule 28: 50S ribosomal protein L22

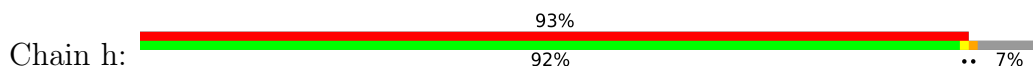


• Molecule 29: 50S ribosomal protein L9

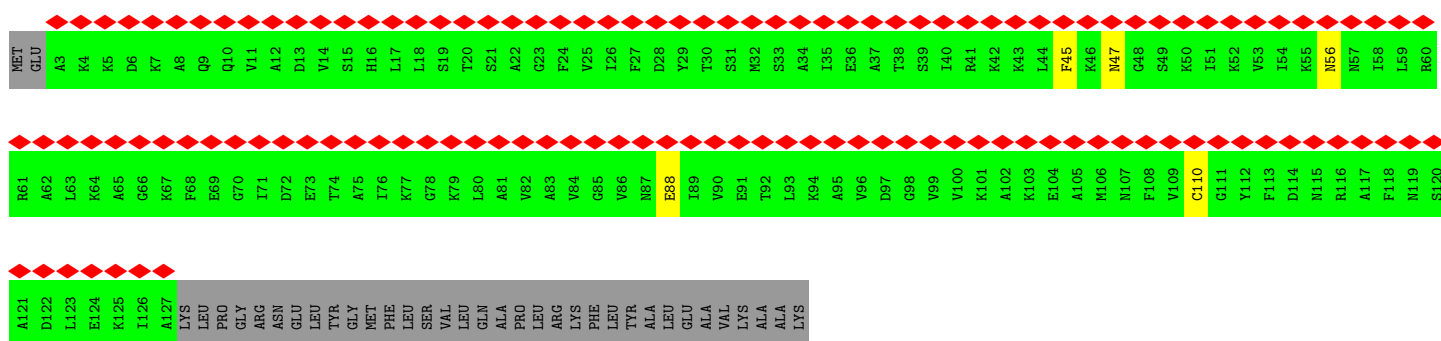
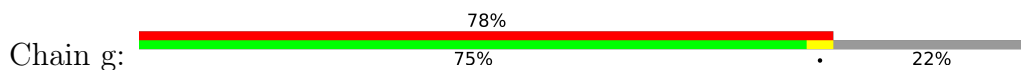




• Molecule 30: 50S ribosomal protein L11



• Molecule 31: 50S ribosomal protein L10



4 Experimental information

Property	Value	Source
EM reconstruction method	SUBTOMOGRAM AVERAGING	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of subtomograms used	17890	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	3.2	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	3750	Depositor
Magnification	81000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.022	Depositor
Minimum map value	-0.010	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.001	Depositor
Recommended contour level	0.0023	Depositor
Map size (Å)	323.076, 323.076, 323.076	wwPDB
Map dimensions	380, 380, 380	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.8502, 0.8502, 0.8502	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: K, MG, CLM, ZN

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	3	0.89	68/69100 (0.1%)	0.93	141/107749 (0.1%)
2	4	0.60	0/2511	0.82	1/3910 (0.0%)
3	w	0.41	0/806	0.61	0/1080
4	a	0.46	1/2241 (0.0%)	0.59	0/3013
5	c	0.41	0/1639	0.65	1/2209 (0.0%)
6	e	0.36	0/1373	0.55	0/1854
7	k	0.40	0/1155	0.59	0/1541
8	i	0.43	0/1180	0.54	0/1585
9	m	0.41	0/972	0.55	0/1308
10	q	0.42	0/826	0.59	0/1109
11	u	0.45	0/649	0.55	0/867
12	y	0.48	0/440	0.79	1/582 (0.2%)
13	0	0.41	0/380	0.50	0/501
14	2	0.57	1/305 (0.3%)	0.77	2/401 (0.5%)
15	1	0.44	0/484	0.56	0/637
16	o	0.42	0/905	0.63	1/1211 (0.1%)
17	s	0.39	0/726	0.51	0/981
18	v	0.39	0/510	0.59	0/684
19	x	0.25	0/217	0.48	0/301
20	z	0.39	0/412	0.58	0/547
21	d	0.32	0/1264	0.57	1/1719 (0.1%)
22	b	0.42	0/1791	0.57	0/2408
23	l	0.45	0/1082	0.54	0/1456
24	p	0.49	0/955	0.55	0/1271
25	j	0.49	0/953	0.60	0/1275
26	n	0.35	0/861	0.51	0/1156
27	t	0.35	0/712	0.52	0/954
28	r	0.50	1/1077 (0.1%)	0.57	0/1441
29	f	0.44	0/711	0.78	0/988
30	h	0.62	0/629	1.00	1/873 (0.1%)
31	g	0.76	0/616	1.03	1/856 (0.1%)
All	All	0.79	71/97482 (0.1%)	0.86	150/146467 (0.1%)

All (71) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	a	89	ASP	C-N	8.41	1.50	1.34
1	3	2735	G	O3'-P	-7.74	1.51	1.61
1	3	611	A	P-OP2	7.73	1.62	1.49
1	3	1281	A	C5-C6	-7.67	1.34	1.41
1	3	2057	C	O3'-P	-7.63	1.51	1.61
1	3	1222	A	O3'-P	-7.42	1.52	1.61
1	3	979	U	O3'-P	-7.23	1.52	1.61
28	r	13	SER	CA-CB	-7.20	1.42	1.52
1	3	2606	A	P-OP2	7.11	1.61	1.49
1	3	1704	C	O3'-P	-7.00	1.52	1.61
1	3	614	C	O3'-P	-6.98	1.52	1.61
1	3	2358	U	O3'-P	-6.97	1.52	1.61
1	3	784	A	O3'-P	-6.97	1.52	1.61
1	3	2851	U	O3'-P	-6.83	1.52	1.61
1	3	197	U	O3'-P	-6.70	1.53	1.61
1	3	875	G	O3'-P	-6.52	1.53	1.61
1	3	2509	C	O3'-P	6.50	1.69	1.61
1	3	30	A	O3'-P	-6.47	1.53	1.61
1	3	2475	C	O3'-P	-6.31	1.53	1.61
1	3	2558	G	O3'-P	-6.27	1.53	1.61
1	3	587	U	O3'-P	-6.25	1.53	1.61
1	3	2026	A	C5-C6	-6.22	1.35	1.41
1	3	999	U	O3'-P	-6.18	1.53	1.61
14	2	12	LYS	C-N	6.01	1.47	1.34
1	3	546	U	P-OP2	5.99	1.59	1.49
1	3	803	G	O3'-P	-5.99	1.53	1.61
1	3	1220	A	O3'-P	-5.98	1.53	1.61
1	3	1784	U	P-O5'	-5.96	1.53	1.59
1	3	518	A	O3'-P	5.92	1.68	1.61
1	3	846	U	O3'-P	-5.92	1.54	1.61
1	3	1692	A	O3'-P	-5.91	1.54	1.61
1	3	2465	U	O3'-P	-5.89	1.54	1.61
1	3	604	A	C5-C6	-5.88	1.35	1.41
1	3	2460	C	O3'-P	-5.86	1.54	1.61
1	3	711	A	O3'-P	-5.86	1.54	1.61
1	3	719	G	O3'-P	-5.86	1.54	1.61
1	3	2005	G	O3'-P	-5.79	1.54	1.61
1	3	2097	A	O3'-P	-5.78	1.54	1.61
1	3	652	U	O3'-P	-5.76	1.54	1.61
1	3	258	G	O3'-P	-5.75	1.54	1.61
1	3	2687	A	O3'-P	-5.72	1.54	1.61
1	3	1820	U	O3'-P	-5.63	1.54	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	3	2433	A	P-OP1	-5.57	1.39	1.49
1	3	2507	C	O3'-P	-5.55	1.54	1.61
1	3	1284	A	O3'-P	-5.55	1.54	1.61
1	3	255	A	P-OP2	5.54	1.58	1.49
1	3	1703	A	P-O5'	-5.54	1.54	1.59
1	3	566	G	O3'-P	-5.52	1.54	1.61
1	3	2073	C	O3'-P	-5.47	1.54	1.61
1	3	2626	A	O3'-P	-5.46	1.54	1.61
1	3	2694	A	P-O5'	-5.43	1.54	1.59
1	3	711	A	P-OP2	5.39	1.58	1.49
1	3	1692	A	C5-C6	-5.30	1.36	1.41
1	3	2274	A	P-OP1	5.25	1.57	1.49
1	3	1014	G	O3'-P	-5.23	1.54	1.61
1	3	926	U	C1'-N1	5.22	1.56	1.48
1	3	616	G	O3'-P	5.22	1.67	1.61
1	3	2850	G	O3'-P	-5.19	1.54	1.61
1	3	991	G	O3'-P	-5.16	1.54	1.61
1	3	786	A	P-OP1	5.15	1.57	1.49
1	3	1958	U	O3'-P	5.15	1.67	1.61
1	3	1216	U	O3'-P	5.12	1.67	1.61
1	3	893	A	O3'-P	-5.12	1.55	1.61
1	3	242	G	O3'-P	-5.10	1.55	1.61
1	3	824	A	P-OP2	5.10	1.57	1.49
1	3	1234	U	N3-C4	-5.09	1.33	1.38
1	3	1188	C	P-OP2	5.08	1.57	1.49
1	3	2397	G	O3'-P	-5.08	1.55	1.61
1	3	789	A	C5-C6	-5.06	1.36	1.41
1	3	254	G	O3'-P	-5.05	1.55	1.61
1	3	1190	A	P-OP2	5.04	1.57	1.49

All (150) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3	2506	C	O5'-P-OP1	-12.90	94.09	105.70
1	3	1399	G	O5'-P-OP1	-12.79	94.19	105.70
1	3	205	C	O5'-P-OP1	-12.26	94.67	105.70
1	3	372	G	O5'-P-OP2	-11.34	95.49	105.70
1	3	2060	G	O5'-P-OP1	11.10	124.02	110.70
1	3	1822	A	O5'-P-OP1	-10.96	95.83	105.70
1	3	503	G	O5'-P-OP1	-9.91	96.78	105.70
1	3	1810	A	O5'-P-OP1	-9.75	96.92	105.70
1	3	1355	C	O5'-P-OP1	-9.60	97.06	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3	779	C	O5'-P-OP1	-9.32	97.31	105.70
1	3	822	C	O5'-P-OP1	9.08	121.59	110.70
1	3	201	A	O5'-P-OP2	-8.93	97.67	105.70
1	3	991	G	O5'-P-OP1	-8.88	97.71	105.70
1	3	1821	G	O5'-P-OP2	8.88	121.35	110.70
1	3	984	C	O5'-P-OP1	8.81	121.28	110.70
1	3	554	U	O5'-P-OP2	-8.69	97.88	105.70
1	3	1508	G	O5'-P-OP2	-8.57	97.98	105.70
1	3	2370	G	O5'-P-OP1	-8.18	98.34	105.70
1	3	1783	G	O5'-P-OP2	8.12	120.44	110.70
1	3	1507	G	O4'-C1'-N9	8.09	114.67	108.20
1	3	1293	U	O5'-P-OP1	-8.07	98.44	105.70
1	3	2523	C	O5'-P-OP1	-8.06	98.45	105.70
1	3	1269	C	O5'-P-OP1	-7.91	98.59	105.70
1	3	2731	U	O5'-P-OP1	-7.83	98.65	105.70
1	3	2722	G	O5'-P-OP2	7.80	120.06	110.70
1	3	2054	C	O5'-P-OP1	-7.60	98.86	105.70
1	3	1297	U	P-O3'-C3'	7.59	128.81	119.70
1	3	434	G	O5'-P-OP1	7.59	119.81	110.70
1	3	840	G	O5'-P-OP1	-7.43	99.01	105.70
1	3	1297	U	C2'-C3'-O3'	7.41	125.81	109.50
1	3	2016	G	O5'-P-OP1	-7.35	99.08	105.70
1	3	2397	G	O5'-P-OP1	7.35	119.52	110.70
1	3	486	G	O5'-P-OP1	-7.33	99.10	105.70
14	2	12	LYS	C-N-CA	-7.28	103.50	121.70
1	3	1325	C	O5'-P-OP1	-7.28	99.15	105.70
1	3	786	A	O5'-P-OP2	-7.24	99.18	105.70
1	3	875	G	O5'-P-OP1	-7.20	99.22	105.70
1	3	2606	A	O5'-P-OP2	-7.17	99.25	105.70
1	3	615	G	O5'-P-OP1	-6.99	99.41	105.70
1	3	483	A	O5'-P-OP1	-6.94	99.45	105.70
1	3	614	C	O5'-P-OP1	-6.90	99.49	105.70
1	3	2493	G	O5'-P-OP1	-6.77	99.61	105.70
1	3	2005	G	O5'-P-OP1	-6.76	99.62	105.70
1	3	708	C	O5'-P-OP1	-6.75	99.63	105.70
1	3	1831	G	O5'-P-OP1	-6.65	99.71	105.70
1	3	619	A	C5'-C4'-O4'	-6.63	101.14	109.10
1	3	1287	C	O5'-P-OP1	-6.61	99.75	105.70
5	c	47	GLN	CB-CA-C	-6.61	97.19	110.40
1	3	1821	G	OP1-P-OP2	-6.45	109.93	119.60
1	3	706	C	O5'-P-OP1	-6.44	99.90	105.70
1	3	1281	A	O5'-P-OP1	-6.42	99.92	105.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3	1026	A	O5'-P-OP1	-6.37	99.97	105.70
1	3	1703	A	P-O5'-C5'	-6.34	110.76	120.90
1	3	2007	U	O5'-P-OP1	-6.34	100.00	105.70
1	3	1371	G	C4-N9-C1'	6.32	134.71	126.50
14	2	12	LYS	O-C-N	6.31	132.80	122.70
1	3	2732	A	O5'-P-OP1	-6.30	100.03	105.70
1	3	1371	G	N9-C1'-C2'	6.30	122.19	114.00
1	3	1380	U	O5'-P-OP1	-6.26	100.06	105.70
1	3	1166	G	O5'-P-OP2	-6.24	100.08	105.70
1	3	1234	U	C2-N1-C1'	6.24	125.19	117.70
1	3	1371	G	C8-N9-C1'	-6.23	118.91	127.00
1	3	14	U	N1-C1'-C2'	6.18	122.03	114.00
1	3	14	U	C2-N1-C1'	6.17	125.11	117.70
1	3	2506	C	O5'-P-OP2	6.14	118.07	110.70
1	3	1190	A	O5'-P-OP2	-6.09	100.22	105.70
1	3	2729	A	O5'-P-OP1	-6.07	100.24	105.70
1	3	2541	C	O5'-P-OP1	6.03	117.93	110.70
1	3	22	U	O5'-P-OP1	6.01	117.91	110.70
1	3	2636	U	P-O5'-C5'	-5.95	111.38	120.90
2	4	59	A	C2'-C3'-O3'	5.90	123.15	113.70
1	3	1372	U	O5'-P-OP2	-5.90	100.39	105.70
1	3	2060	G	OP1-P-OP2	-5.90	110.75	119.60
1	3	2256	C	O5'-P-OP1	-5.88	100.40	105.70
1	3	693	U	O5'-P-OP1	-5.87	100.42	105.70
1	3	2083	U	O5'-P-OP2	5.86	117.73	110.70
1	3	2069	A	O5'-P-OP1	5.80	117.66	110.70
1	3	625	G	O5'-P-OP2	5.75	117.61	110.70
1	3	1825	U	O5'-P-OP2	-5.74	100.54	105.70
1	3	1486	U	C2-N1-C1'	5.71	124.56	117.70
1	3	2691	C	O5'-P-OP2	5.68	117.51	110.70
1	3	1673	U	O5'-P-OP2	5.67	117.50	110.70
16	o	83	ASN	CB-CA-C	-5.66	99.08	110.40
1	3	1368	U	P-O5'-C5'	-5.64	111.87	120.90
1	3	1486	U	N1-C1'-C2'	5.64	121.33	114.00
1	3	1673	U	O5'-P-OP1	-5.64	100.62	105.70
1	3	2693	U	P-O5'-C5'	-5.64	111.87	120.90
1	3	2059	G	O5'-P-OP1	-5.63	100.63	105.70
1	3	1189	G	O5'-P-OP1	-5.63	100.64	105.70
1	3	980	C	P-O5'-C5'	-5.62	111.91	120.90
1	3	1370	A	O5'-P-OP1	-5.60	100.66	105.70
1	3	2465	U	P-O5'-C5'	-5.57	111.99	120.90
1	3	1699	A	P-O5'-C5'	-5.54	112.03	120.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3	598	G	P-O5'-C5'	-5.54	112.04	120.90
1	3	1035	U	O5'-P-OP2	5.53	117.34	110.70
1	3	2018	U	O5'-P-OP1	-5.51	100.74	105.70
1	3	1303	U	C2'-C3'-O3'	5.50	122.50	113.70
1	3	2509	C	C5'-C4'-O4'	-5.49	102.52	109.10
1	3	710	A	O4'-C1'-N9	-5.47	103.82	108.20
1	3	2606	A	O5'-P-OP1	5.47	117.26	110.70
1	3	2396	A	O5'-P-OP2	-5.44	100.81	105.70
12	y	48	TYR	CB-CA-C	-5.42	99.56	110.40
1	3	1970	C	N1-C1'-C2'	5.42	121.05	114.00
1	3	358	A	O5'-P-OP2	-5.41	100.83	105.70
1	3	1648	A	O5'-P-OP1	5.39	117.17	110.70
1	3	1235	U	P-O5'-C5'	-5.38	112.29	120.90
1	3	1350	A	O5'-P-OP1	-5.37	100.86	105.70
30	h	23	PRO	CA-C-N	5.35	128.96	117.20
1	3	1698	A	N9-C1'-C2'	5.34	120.94	114.00
1	3	1360	U	O5'-P-OP2	-5.33	100.90	105.70
1	3	488	G	O5'-P-OP2	-5.32	100.92	105.70
1	3	1368	U	P-O3'-C3'	5.30	126.06	119.70
1	3	1219	U	O5'-P-OP2	-5.30	100.93	105.70
1	3	1845	C	C3'-C2'-C1'	-5.29	97.26	101.50
1	3	881	A	C2'-C3'-O3'	5.28	122.15	113.70
1	3	2795	C	O5'-P-OP1	-5.27	100.95	105.70
1	3	1836	A	C2'-C3'-O3'	5.27	122.13	113.70
1	3	1583	G	C2'-C3'-O3'	5.22	122.05	113.70
1	3	513	A	C2'-C3'-O3'	5.22	122.05	113.70
31	g	56	ASN	CB-CA-C	-5.22	99.97	110.40
1	3	426	U	N1-C1'-C2'	5.21	120.78	114.00
1	3	524	G	O5'-P-OP1	-5.21	101.01	105.70
1	3	1388	G	O5'-P-OP2	5.18	116.92	110.70
1	3	616	G	P-O5'-C5'	-5.18	112.61	120.90
21	d	108	LEU	CA-CB-CG	5.18	127.21	115.30
1	3	2558	G	O5'-P-OP2	-5.16	101.05	105.70
1	3	688	U	C4'-C3'-O3'	5.15	123.31	113.00
1	3	467	U	O5'-P-OP1	-5.15	101.06	105.70
1	3	828	A	N9-C1'-C2'	5.15	120.69	114.00
1	3	230	G	O5'-P-OP1	-5.14	101.08	105.70
1	3	2886	A	P-O5'-C5'	-5.13	112.70	120.90
1	3	1188	C	O5'-P-OP1	-5.12	101.09	105.70
1	3	2735	G	C8-N9-C1'	-5.11	120.35	127.00
1	3	1790	U	OP1-P-OP2	5.10	127.25	119.60
1	3	1271	A	O5'-P-OP1	5.10	116.81	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	3	1810	A	OP1-P-OP2	5.09	127.24	119.60
1	3	1845	C	N1-C1'-C2'	5.09	120.62	114.00
1	3	1219	U	P-O5'-C5'	-5.08	112.76	120.90
1	3	1833	G	O5'-P-OP1	-5.08	101.13	105.70
1	3	29	G	O5'-P-OP1	-5.07	101.13	105.70
1	3	2735	G	C4-N9-C1'	5.06	133.08	126.50
1	3	1691	U	O5'-P-OP1	5.05	116.77	110.70
1	3	1257	G	O5'-P-OP1	-5.05	101.16	105.70
1	3	2023	U	O5'-P-OP1	-5.05	101.16	105.70
1	3	711	A	O5'-P-OP2	-5.05	101.16	105.70
1	3	1295	A	C4'-C3'-O3'	-5.04	98.81	109.40
1	3	1316	U	C2-N1-C1'	5.04	123.75	117.70
1	3	711	A	OP1-P-OP2	5.03	127.15	119.60
1	3	1276	A	O5'-P-OP1	-5.03	101.18	105.70
1	3	2734	C	C5'-C4'-O4'	-5.01	103.08	109.10

There are no chirality outliers.

There are no planarity outliers.

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	3	61690	0	30961	237	0
2	4	2245	0	1135	7	0
3	w	798	0	838	0	0
4	a	2199	0	2248	0	0
5	c	1613	0	1676	0	0
6	e	1349	0	1373	0	0
7	k	1138	0	1223	0	0
8	i	1158	0	1176	0	0
9	m	957	0	1008	0	0
10	q	809	0	852	0	0
11	u	641	0	650	0	0
12	y	436	0	441	0	0
13	0	377	0	422	14	0
14	2	303	0	348	22	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
15	l	477	0	530	30	0
16	o	895	0	932	0	0
17	s	714	0	785	0	0
18	v	504	0	542	0	0
19	x	218	0	90	0	0
20	z	408	0	436	0	0
21	d	1244	0	1160	0	0
22	b	1758	0	1797	0	0
23	l	1057	0	1088	0	0
24	p	941	0	1017	0	0
25	j	944	0	1019	0	0
26	n	853	0	873	0	0
27	t	706	0	726	0	0
28	r	1068	0	1150	0	0
29	f	713	0	313	0	0
30	h	630	0	309	0	0
31	g	617	0	308	0	0
32	3	1	0	0	0	0
33	3	24	0	0	0	0
33	y	1	0	0	0	0
34	3	20	0	10	4	0
35	2	1	0	0	0	0
35	y	1	0	0	0	0
35	z	1	0	0	0	0
All	All	89509	0	57436	272	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

All (272) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:2:11:CYS:SG	14:2:32:HIS:HE1	1.46	1.35
14:2:14:CYS:SG	14:2:27:CYS:HB2	1.99	1.03
1:3:254:G:OP2	15:1:10:ARG:NH2	2.01	0.93
1:3:253:C:O2	15:1:9:LYS:NZ	2.09	0.86
14:2:16:ILE:HG12	14:2:25:VAL:HG12	1.62	0.78
1:3:1507:G:O2'	1:3:1508:G:OP1	2.05	0.74
1:3:1462:A:O2'	1:3:1463:G:O4'	2.07	0.73
1:3:780:G:O2'	1:3:783:G:O2'	2.08	0.71
1:3:2123:A:N7	1:3:2169:G:O2'	2.24	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3:1370:A:O2'	1:3:1372:U:OP2	2.09	0.71
1:3:2400:A:H5'	15:1:25:TYR:CE2	2.26	0.71
1:3:2826:G:O2'	1:3:2828:C:OP2	2.08	0.71
1:3:1128:G:H21	1:3:1133:A:H62	1.39	0.71
1:3:1647:A:H61	1:3:1651:C:H2'	1.55	0.70
1:3:1446:G:N2	1:3:1613:A:OP2	2.24	0.70
1:3:1906:G:H22	1:3:1909:C:H41	1.40	0.70
1:3:1055:A:N1	1:3:1176:U:O2'	2.25	0.69
1:3:2460:C:C2	34:3:3026:CLM:H11	2.27	0.69
1:3:343:A:N3	1:3:363:G:O2'	2.24	0.69
1:3:2668:A:O2'	1:3:2669:G:O5'	2.10	0.69
1:3:1971:G:O2'	1:3:1974:U:OP2	2.11	0.68
1:3:1647:A:N6	1:3:1651:C:H2'	2.09	0.68
1:3:1646:G:C4	1:3:1654:G:N2	2.62	0.68
1:3:1063:A:OP2	1:3:1161:A:N6	2.27	0.68
1:3:1099:C:N4	1:3:1105:A:OP1	2.27	0.67
1:3:2593:U:O2'	1:3:2594:C:OP2	2.12	0.67
1:3:2013:C:H6	1:3:2013:C:O5'	1.78	0.67
1:3:500:U:HO2'	13:0:12:ARG:HH12	1.43	0.66
1:3:608:A:OP2	1:3:2507:C:O2'	2.11	0.66
1:3:1100:U:O2'	1:3:1101:U:O4'	2.08	0.66
1:3:558:C:O2	1:3:587:U:O2'	2.13	0.65
1:3:1389:G:O2'	1:3:2223:C:O2'	2.15	0.65
1:3:2141:A:N6	1:3:2164:G:O2'	2.30	0.65
1:3:2400:A:H5'	15:1:25:TYR:HE2	1.59	0.65
2:4:3:U:OP1	2:4:59:A:O2'	2.15	0.65
1:3:2266:C:O2'	1:3:2435:C:OP2	2.15	0.64
1:3:2122:G:O2'	1:3:2175:U:O2	2.15	0.64
1:3:2861:G:N2	1:3:2864:A:OP2	2.30	0.64
1:3:2669:G:O2'	1:3:2670:A:O4'	2.13	0.64
1:3:2400:A:C5'	15:1:25:TYR:CE2	2.81	0.64
1:3:2383:G:N2	1:3:2386:A:OP2	2.30	0.64
1:3:666:G:N2	1:3:669:A:OP2	2.31	0.63
1:3:2429:G:N7	15:1:28:HIS:CE1	2.67	0.63
1:3:2732:A:O2'	1:3:2733:A:H5'	1.98	0.63
1:3:608:A:O2'	1:3:2509:C:OP1	2.16	0.63
1:3:1242:G:O2'	1:3:1266:G:N2	2.29	0.63
1:3:85:U:O4	1:3:103:G:O2'	2.16	0.63
1:3:1392:G:N2	1:3:1395:A:OP2	2.32	0.63
1:3:1558:A:OP2	1:3:1571:G:N2	2.32	0.62
1:3:2516:G:O2'	1:3:2562:U:O2'	2.17	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3:2700:C:O2	1:3:2851:U:O2'	2.16	0.62
1:3:1000:U:O2'	1:3:2281:A:N3	2.28	0.62
1:3:366:A:O2'	1:3:368:C:OP2	2.14	0.62
1:3:2446:U:O2'	1:3:2448:C:OP1	2.17	0.62
1:3:663:A:O4'	1:3:673:A:N6	2.32	0.62
1:3:1890:U:O2'	1:3:1891:A:O4'	2.18	0.61
1:3:1962:U:O4	1:3:2564:C:N4	2.33	0.61
1:3:2460:C:N3	34:3:3026:CLM:H11	2.15	0.61
1:3:421:A:N6	1:3:424:G:OP2	2.32	0.61
1:3:874:U:O2'	1:3:1222:A:N3	2.34	0.61
1:3:1702:A:O2'	1:3:1708:G:N7	2.29	0.61
1:3:824:A:H2	13:0:3:ARG:NH2	1.99	0.61
1:3:1585:A:O2'	1:3:1586:U:OP1	2.16	0.60
1:3:2750:A:H5''	14:2:1:MET:CE	2.31	0.60
1:3:2400:A:C5'	15:1:25:TYR:CD2	2.85	0.60
1:3:2400:A:H5''	15:1:25:TYR:HD2	1.67	0.60
1:3:824:A:N6	1:3:1648:A:OP2	2.35	0.60
13:0:24:THR:HG23	13:0:27:GLY:H	1.66	0.60
1:3:1296:G:N2	1:3:2020:A:OP2	2.31	0.59
1:3:2289:C:O2'	1:3:2290:G:H5'	2.01	0.59
14:2:27:CYS:HG	14:2:29:THR:HG1	1.47	0.59
1:3:1786:U:OP2	1:3:1791:A:N6	2.32	0.59
2:4:12:U:O4'	2:4:96:G:N2	2.36	0.58
1:3:518:A:N6	1:3:541:G:O2'	2.37	0.58
1:3:721:G:N2	13:0:5:TYR:HE1	2.01	0.58
1:3:34:C:N4	1:3:483:A:OP2	2.36	0.58
1:3:806:A:O2'	1:3:1383:G:O2'	2.22	0.58
1:3:2390:G:H21	15:1:39:ARG:HH12	1.52	0.58
1:3:251:G:O6	15:1:9:LYS:NZ	2.32	0.57
1:3:1104:A:OP1	1:3:1131:A:O2'	2.21	0.57
1:3:2274:A:N6	1:3:2281:A:OP2	2.37	0.57
14:2:27:CYS:SG	14:2:29:THR:OG1	2.53	0.57
1:3:740:A:OP2	1:3:761:G:N2	2.32	0.57
1:3:828:A:OP2	1:3:2078:A:O2'	2.22	0.57
1:3:2663:G:O2'	1:3:2672:G:O6	2.19	0.57
2:4:40:U:HO2'	2:4:41:C:P	2.27	0.56
1:3:2798:A:H5'	1:3:2896:G:H21	1.70	0.56
1:3:524:G:N2	1:3:527:A:OP2	2.39	0.56
1:3:998:C:O2'	1:3:2504:C:O2'	2.20	0.56
1:3:1723:A:OP2	1:3:1732:A:N6	2.38	0.56
1:3:1128:G:N2	1:3:1133:A:H62	2.04	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
14:2:25:VAL:HG22	14:2:34:GLN:HB2	1.87	0.56
15:1:4:LYS:HE2	15:1:58:LEU:HD11	1.87	0.56
1:3:780:G:HO2'	1:3:783:G:HO2'	1.50	0.56
1:3:580:U:OP1	1:3:1249:A:O2'	2.14	0.55
1:3:54:A:OP2	1:3:120:A:N6	2.34	0.55
1:3:514:A:N7	1:3:516:A:N6	2.54	0.55
1:3:2400:A:H4'	15:1:25:TYR:CE2	2.42	0.55
1:3:518:A:OP2	1:3:542:A:N6	2.40	0.55
1:3:1444:C:O2'	1:3:1445:U:O5'	2.20	0.55
1:3:1587:U:O2'	1:3:1588:A:OP1	2.22	0.55
1:3:2455:G:N2	1:3:2458:A:OP2	2.36	0.55
1:3:2151:G:H1'	1:3:2154:A:H61	1.71	0.55
1:3:1295:A:C8	1:3:1297:U:C4	2.94	0.55
1:3:2123:A:OP1	1:3:2174:G:N2	2.40	0.55
1:3:499:G:N2	1:3:502:A:OP2	2.36	0.54
1:3:491:A:N6	1:3:508:A:N7	2.54	0.54
1:3:1325:C:H42	1:3:1677:G:H1	1.54	0.54
1:3:1987:C:O2'	1:3:1989:U:OP2	2.20	0.54
1:3:2511:A:O2'	1:3:2513:G:OP2	2.25	0.54
1:3:503:G:O2'	1:3:831:U:O2'	2.26	0.54
1:3:824:A:C2	13:0:3:ARG:CZ	2.91	0.53
1:3:666:G:OP2	15:1:20:LYS:NZ	2.40	0.53
1:3:918:G:O6	1:3:932:U:N3	2.42	0.53
1:3:140:G:N2	1:3:143:A:OP2	2.41	0.53
1:3:451:A:O2'	1:3:1873:A:OP1	2.26	0.53
1:3:2572:A:OP1	1:3:2656:G:O2'	2.25	0.53
1:3:1329:U:H5	1:3:1675:A:H61	1.57	0.53
1:3:1650:A:H3'	1:3:1651:C:H5''	1.89	0.53
14:2:27:CYS:SG	14:2:28:LYS:N	2.82	0.53
1:3:827:G:O2'	1:3:2448:C:N3	2.39	0.53
1:3:824:A:H2	13:0:3:ARG:CZ	2.22	0.52
1:3:1298:A:N3	1:3:2020:A:C6	2.77	0.52
1:3:1907:A:O2'	1:3:1908:A:OP1	2.24	0.52
1:3:2400:A:H5''	15:1:25:TYR:CD2	2.45	0.52
1:3:1295:A:O4'	1:3:1297:U:C6	2.62	0.52
1:3:603:G:N1	1:3:2507:C:OP1	2.42	0.52
1:3:500:U:O2'	1:3:501:G:OP1	2.25	0.51
1:3:635:G:O2'	1:3:638:A:O2'	2.24	0.51
1:3:2586:G:H4'	1:3:2586:G:OP2	2.10	0.51
1:3:721:G:O6	13:0:16:HIS:NE2	2.43	0.51
1:3:2429:G:N7	15:1:28:HIS:HE1	2.08	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3:501:G:OP1	13:0:12:ARG:NH2	2.42	0.51
1:3:1298:A:C2	1:3:2020:A:C5	2.99	0.51
1:3:2351:U:HO2'	1:3:2381:G:HO2'	1.58	0.51
14:2:8:LYS:HB2	14:2:8:LYS:NZ	2.25	0.51
1:3:402:A:O2'	1:3:403:U:O5'	2.27	0.51
1:3:1298:A:C2	1:3:2020:A:C4	2.99	0.50
1:3:1447:A:OP2	1:3:1611:C:N4	2.44	0.50
1:3:824:A:C2	13:0:3:ARG:NH2	2.78	0.50
1:3:980:C:HO2'	1:3:981:A:P	2.35	0.50
1:3:1367:G:H21	1:3:1637:A:H1'	1.76	0.50
1:3:2888:U:O2'	1:3:2889:U:O5'	2.25	0.50
1:3:504:G:OP2	13:0:37:LYS:NZ	2.38	0.50
1:3:553:A:H2'	1:3:554:U:H5'	1.92	0.50
1:3:869:U:H5'	15:1:54:ARG:HH11	1.77	0.50
1:3:184:A:O2'	1:3:186:A:N7	2.43	0.49
14:2:2:LYS:O	14:2:34:GLN:HA	2.13	0.49
1:3:923:A:H3'	1:3:924:C:C6	2.47	0.49
2:4:10:C:O2'	2:4:11:A:O5'	2.26	0.49
15:1:35:THR:O	15:1:39:ARG:HG2	2.13	0.49
1:3:2111:U:N3	1:3:2112:A:N7	2.59	0.49
1:3:610:G:H5'	1:3:610:G:H8	1.76	0.49
1:3:54:A:OP2	1:3:118:G:N1	2.46	0.49
1:3:1097:G:O6	1:3:1112:A:N6	2.45	0.49
2:4:40:U:O2'	2:4:41:C:O5'	2.31	0.49
1:3:856:A:N6	1:3:1008:A:O2'	2.46	0.48
1:3:928:G:H2'	1:3:929:G:H8	1.78	0.48
1:3:2474:C:H5'	14:2:5:ALA:HB3	1.95	0.48
1:3:2751:C:OP2	1:3:2763:C:N4	2.46	0.48
1:3:263:C:O2'	1:3:657:A:O2'	2.28	0.48
1:3:2367:C:O2'	15:1:51:ASP:OD1	2.29	0.48
1:3:227:A:O2'	1:3:456:G:N3	2.44	0.48
1:3:1091:G:O2'	1:3:1138:A:N6	2.46	0.48
1:3:1445:U:O4	1:3:1614:G:O6	2.31	0.48
1:3:1672:C:O2	1:3:2706:U:O2'	2.30	0.48
1:3:2275:A:H5''	1:3:2276:A:H5''	1.95	0.48
14:2:14:CYS:HA	14:2:26:ILE:O	2.14	0.48
1:3:880:C:H4'	1:3:881:A:C5	2.49	0.48
1:3:70:G:N2	1:3:76:A:O4'	2.47	0.47
1:3:1278:G:H3'	1:3:1279:U:C5'	2.44	0.47
1:3:2297:G:C2'	1:3:2298:G:H5'	2.44	0.47
13:0:34:ARG:NE	13:0:42:LEU:O	2.34	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3:1104:A:O2'	1:3:1108:A:N6	2.32	0.47
1:3:1311:G:N2	1:3:1314:A:OP2	2.46	0.47
1:3:2122:G:H2'	1:3:2124:A:H62	1.79	0.47
1:3:1278:G:H3'	1:3:1279:U:H5'	1.96	0.47
1:3:2400:A:C5'	15:1:25:TYR:HE2	2.22	0.47
1:3:2458:A:OP1	1:3:2505:A:O2'	2.20	0.47
15:1:21:ARG:HD3	15:1:47:VAL:HG12	1.97	0.47
1:3:1297:U:H2'	1:3:1297:U:O2	2.15	0.47
1:3:2429:G:C8	15:1:28:HIS:HE1	2.32	0.47
1:3:730:G:OP1	1:3:1408:G:O2'	2.32	0.47
1:3:922:C:H2'	1:3:923:A:C8	2.49	0.47
1:3:1431:A:HO2'	1:3:1497:A:HO2'	1.63	0.47
1:3:2547:C:C5'	14:2:3:VAL:HG11	2.44	0.47
14:2:19:ARG:HG2	14:2:20:HIS:ND1	2.30	0.47
15:1:18:GLN:OE1	15:1:18:GLN:HA	2.14	0.47
15:1:21:ARG:HG2	15:1:45:GLY:O	2.15	0.46
1:3:903:A:O2'	1:3:904:C:OP1	2.29	0.46
1:3:187:C:O2'	1:3:468:A:N3	2.46	0.46
15:1:11:PHE:CE2	15:1:55:ILE:HD12	2.51	0.46
1:3:2400:A:C4'	15:1:25:TYR:CE2	2.98	0.46
1:3:1653:C:H6	1:3:1653:C:O5'	1.98	0.46
1:3:1023:C:O2'	1:3:1036:A:N3	2.46	0.46
1:3:251:G:N2	1:3:255:A:OP2	2.42	0.46
1:3:341:G:N1	1:3:344:A:OP2	2.42	0.46
1:3:2013:C:O2'	1:3:2827:A:N3	2.48	0.45
1:3:2009:U:O4	1:3:2010:A:N6	2.48	0.45
1:3:2390:G:N2	15:1:39:ARG:HH12	2.14	0.45
1:3:185:U:O4'	13:0:36:LYS:CE	2.64	0.45
1:3:1659:C:H2'	1:3:1660:A:C5'	2.47	0.45
1:3:1369:U:OP2	1:3:1422:U:O2'	2.23	0.45
1:3:1659:C:H2'	1:3:1660:A:H5'	1.98	0.45
1:3:2460:C:C2	34:3:3026:CLM:C11	2.96	0.45
1:3:780:G:H21	1:3:785:A:H61	1.64	0.45
1:3:1815:U:O2'	1:3:1816:A:O5'	2.31	0.45
1:3:2306:A:H62	1:3:2326:G:H21	1.65	0.45
1:3:29:G:N2	1:3:548:A:OP2	2.50	0.44
1:3:2400:A:H4'	15:1:25:TYR:CD2	2.53	0.44
15:1:44:GLN:H	15:1:44:GLN:HG2	1.47	0.44
1:3:687:G:OP1	15:1:15:LYS:O	2.35	0.44
1:3:980:C:O2'	1:3:981:A:OP2	2.30	0.44
1:3:2547:C:H5'	14:2:3:VAL:HG11	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3:819:U:H3	1:3:828:A:H62	1.65	0.44
1:3:2439:U:N3	1:3:2442:A:OP2	2.48	0.44
1:3:2273:U:H3'	1:3:2274:A:H5''	2.00	0.44
1:3:553:A:C2'	1:3:554:U:H5'	2.48	0.44
1:3:880:C:H1'	1:3:968:U:H3	1.82	0.43
1:3:1278:G:C3'	1:3:1279:U:C5'	2.97	0.43
1:3:2299:U:O2'	1:3:2382:A:N3	2.52	0.43
1:3:401:G:O2'	1:3:402:A:OP1	2.31	0.43
1:3:1876:G:N2	1:3:1879:A:OP2	2.38	0.43
1:3:1104:A:HO2'	1:3:1108:A:H62	1.59	0.43
1:3:1475:C:O2'	1:3:1577:A:N3	2.49	0.43
1:3:2721:C:H3'	1:3:2722:G:H5''	2.00	0.43
1:3:2321:C:N4	1:3:2322:G:O6	2.52	0.43
1:3:2513:G:O5'	34:3:3026:CLM:O4	2.37	0.43
1:3:916:U:O4	1:3:936:G:N2	2.52	0.43
1:3:2548:G:O2'	1:3:2748:A:N3	2.44	0.43
2:4:78:C:H41	2:4:86:G:H1	1.67	0.43
1:3:86:A:N6	1:3:101:C:O4'	2.52	0.42
1:3:710:A:N3	1:3:2451:C:O2'	2.47	0.42
1:3:893:A:H61	1:3:957:G:H1	1.68	0.42
1:3:1444:C:HO2'	1:3:1445:U:P	2.43	0.42
1:3:1360:U:C5	1:3:1643:A:C4	3.07	0.42
1:3:1825:U:HO2'	1:3:1826:A:P	2.42	0.42
1:3:2006:C:O2'	1:3:2007:U:H5'	2.19	0.42
1:3:2750:A:H5''	14:2:1:MET:HE3	2.02	0.42
1:3:252:G:O2'	1:3:2440:A:OP1	2.20	0.42
1:3:333:A:N3	1:3:353:G:O2'	2.42	0.42
13:0:27:GLY:HA2	13:0:30:VAL:HG12	2.02	0.42
14:2:12:LYS:HB2	14:2:12:LYS:HE3	1.85	0.42
15:1:11:PHE:HE2	15:1:55:ILE:HD12	1.84	0.42
1:3:770:A:H1'	1:3:1668:G:H21	1.85	0.42
1:3:2814:A:H62	1:3:2894:G:H21	1.68	0.42
1:3:2118:U:OP2	1:3:2152:C:N4	2.53	0.41
14:2:2:LYS:HB2	14:2:34:GLN:HG3	2.02	0.41
1:3:357:A:H2'	1:3:357:A:N3	2.36	0.41
1:3:2540:G:N2	1:3:2671:G:O2'	2.54	0.41
14:2:7:VAL:HG23	14:2:7:VAL:O	2.20	0.41
1:3:605:A:H61	1:3:2036:G:H21	1.67	0.41
1:3:672:G:O2'	1:3:673:A:O5'	2.39	0.41
14:2:17:ILE:CD1	14:2:26:ILE:HD11	2.51	0.41
14:2:20:HIS:O	14:2:22:ILE:HG12	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:3:185:U:C6	13:0:36:LYS:NZ	2.74	0.41
1:3:1379:C:O2'	1:3:1605:A:N3	2.52	0.41
1:3:1698:A:H61	1:3:2003:C:N4	2.19	0.41
1:3:2813:A:H3'	1:3:2814:A:H5'	2.03	0.41
2:4:39:U:O2	2:4:39:U:H2'	2.20	0.41
1:3:571:A:H2'	1:3:572:G:H5'	2.03	0.41
14:2:25:VAL:CG2	14:2:34:GLN:HB2	2.49	0.41
1:3:85:U:O2'	1:3:86:A:H5'	2.21	0.40
1:3:721:G:H3'	1:3:722:C:H5'	2.02	0.40
1:3:923:A:C2	1:3:924:C:H1'	2.56	0.40
1:3:1406:A:O2'	1:3:1407:U:OP2	2.19	0.40
1:3:2038:A:N3	1:3:2463:G:O2'	2.37	0.40
1:3:289:U:O4	1:3:290:A:N6	2.53	0.40
1:3:1391:U:O2'	1:3:1816:A:N3	2.45	0.40
1:3:1481:U:O2'	1:3:1482:U:OP2	2.36	0.40
1:3:715:G:OP2	1:3:811:G:N2	2.54	0.40
1:3:1160:G:O6	1:3:1161:A:N6	2.55	0.40

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	w	95/111 (86%)	89 (94%)	6 (6%)	0	100	100
4	a	283/287 (99%)	253 (89%)	30 (11%)	0	100	100
5	c	208/212 (98%)	186 (89%)	22 (11%)	0	100	100
6	e	174/184 (95%)	165 (95%)	9 (5%)	0	100	100
7	k	146/151 (97%)	126 (86%)	20 (14%)	0	100	100
8	i	142/146 (97%)	134 (94%)	8 (6%)	0	100	100
9	m	117/124 (94%)	111 (95%)	6 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	q	97/100 (97%)	85 (88%)	12 (12%)	0	100	100
11	u	84/104 (81%)	76 (90%)	8 (10%)	0	100	100
12	y	54/57 (95%)	48 (89%)	6 (11%)	0	100	100
13	0	45/48 (94%)	43 (96%)	2 (4%)	0	100	100
14	2	35/37 (95%)	34 (97%)	1 (3%)	0	100	100
15	1	57/59 (97%)	53 (93%)	4 (7%)	0	100	100
16	o	113/119 (95%)	95 (84%)	18 (16%)	0	100	100
17	s	90/237 (38%)	82 (91%)	8 (9%)	0	100	100
18	v	61/65 (94%)	53 (87%)	8 (13%)	0	100	100
19	x	42/97 (43%)	31 (74%)	11 (26%)	0	100	100
20	z	48/53 (91%)	45 (94%)	3 (6%)	0	100	100
21	d	173/180 (96%)	154 (89%)	19 (11%)	0	100	100
22	b	227/287 (79%)	199 (88%)	28 (12%)	0	100	100
23	l	134/139 (96%)	118 (88%)	16 (12%)	0	100	100
24	p	112/127 (88%)	104 (93%)	8 (7%)	0	100	100
25	j	120/122 (98%)	105 (88%)	15 (12%)	0	100	100
26	n	108/116 (93%)	91 (84%)	17 (16%)	0	100	100
27	t	92/111 (83%)	84 (91%)	8 (9%)	0	100	100
28	r	137/159 (86%)	123 (90%)	14 (10%)	0	100	100
29	f	140/149 (94%)	121 (86%)	18 (13%)	1 (1%)	22	55
30	h	126/137 (92%)	116 (92%)	8 (6%)	2 (2%)	9	34
31	g	123/161 (76%)	115 (94%)	4 (3%)	4 (3%)	4	22
All	All	3383/3879 (87%)	3039 (90%)	337 (10%)	7 (0%)	50	78

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
29	f	115	ASP
30	h	20	LYS
31	g	45	PHE
31	g	110	CYS
30	h	23	PRO
31	g	88	GLU
31	g	47	ASN

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	w	83/98 (85%)	78 (94%)	5 (6%)	19	49
4	a	233/243 (96%)	226 (97%)	7 (3%)	41	68
5	c	174/184 (95%)	166 (95%)	8 (5%)	27	57
6	e	138/159 (87%)	135 (98%)	3 (2%)	52	75
7	k	118/126 (94%)	114 (97%)	4 (3%)	37	65
8	i	124/128 (97%)	121 (98%)	3 (2%)	49	74
9	m	104/109 (95%)	103 (99%)	1 (1%)	76	88
10	q	88/91 (97%)	84 (96%)	4 (4%)	27	58
11	u	64/85 (75%)	63 (98%)	1 (2%)	62	81
12	y	45/49 (92%)	41 (91%)	4 (9%)	9	33
13	0	39/41 (95%)	39 (100%)	0	100	100
14	2	35/35 (100%)	32 (91%)	3 (9%)	10	35
15	1	51/51 (100%)	47 (92%)	4 (8%)	12	39
16	o	91/105 (87%)	87 (96%)	4 (4%)	28	58
17	s	80/208 (38%)	80 (100%)	0	100	100
18	v	55/60 (92%)	50 (91%)	5 (9%)	9	32
20	z	47/50 (94%)	47 (100%)	0	100	100
21	d	111/154 (72%)	107 (96%)	4 (4%)	35	63
22	b	185/233 (79%)	181 (98%)	4 (2%)	52	75
23	l	107/115 (93%)	106 (99%)	1 (1%)	78	90
24	p	99/108 (92%)	95 (96%)	4 (4%)	31	60
25	j	103/103 (100%)	98 (95%)	5 (5%)	25	55
26	n	85/99 (86%)	85 (100%)	0	100	100
27	t	69/96 (72%)	68 (99%)	1 (1%)	67	83
28	r	116/132 (88%)	109 (94%)	7 (6%)	19	49
All	All	2444/2862 (85%)	2362 (97%)	82 (3%)	40	65

All (82) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	w	37	GLU
3	w	39	ASP
3	w	65	TRP
3	w	66	GLN
3	w	68	GLU
4	a	89	ASP
4	a	210	LEU
4	a	215	LYS
4	a	227	THR
4	a	249	VAL
4	a	251	ARG
4	a	252	ASP
5	c	44	SER
5	c	45	TRP
5	c	58	VAL
5	c	59	ARG
5	c	63	LYS
5	c	64	LYS
5	c	67	LYS
5	c	69	LYS
6	e	161	LYS
6	e	166	LEU
6	e	171	VAL
7	k	30	LYS
7	k	34	ARG
7	k	64	LYS
7	k	119	LYS
8	i	15	ARG
8	i	131	ASP
8	i	132	LYS
9	m	3	TYR
10	q	94	VAL
10	q	96	ARG
10	q	97	PHE
10	q	99	HIS
11	u	43	GLN
12	y	10	LYS
12	y	32	LYS
12	y	33	CYS
12	y	50	ASP
14	2	34	GLN
14	2	35	ARG

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Mol	Chain	Res	Type
14	2	36	GLN
15	1	4	LYS
15	1	42	ARG
15	1	44	GLN
15	1	46	THR
16	o	80	GLN
16	o	86	ILE
16	o	87	SER
16	o	88	ILE
18	v	45	THR
18	v	46	THR
18	v	47	ARG
18	v	48	ILE
18	v	49	LEU
21	d	88	LYS
21	d	94	GLU
21	d	96	MET
21	d	99	PHE
22	b	117	ARG
22	b	124	LYS
22	b	176	VAL
22	b	177	GLN
23	l	16	SER
24	p	50	ARG
24	p	84	LYS
24	p	86	ASN
24	p	93	VAL
25	j	22	ILE
25	j	24	VAL
25	j	25	LEU
25	j	113	LYS
25	j	115	LEU
27	t	45	HIS
28	r	6	LYS
28	r	8	PHE
28	r	9	ARG
28	r	12	ILE
28	r	18	ARG
28	r	137	MET
28	r	139	ARG

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

Mol	Chain	Res	Type
4	a	91	ASN
5	c	68	GLN
5	c	76	GLN
6	e	21	GLN
6	e	24	HIS
7	k	134	GLN
15	1	28	HIS
26	n	38	HIS

5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	3	2876/2907 (98%)	667 (23%)	58 (2%)
2	4	103/108 (95%)	32 (31%)	6 (5%)
All	All	2979/3015 (98%)	699 (23%)	64 (2%)

All (699) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	3	12	A
1	3	14	U
1	3	28	G
1	3	37	G
1	3	47	G
1	3	48	G
1	3	51	A
1	3	63	U
1	3	64	U
1	3	65	A
1	3	73	A
1	3	76	A
1	3	77	G
1	3	87	G
1	3	101	C
1	3	102	A
1	3	103	G
1	3	106	C
1	3	111	G
1	3	119	A
1	3	120	A
1	3	121	U
1	3	124	A

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Mol	Chain	Res	Type
1	3	126	C
1	3	132	G
1	3	149	A
1	3	152	A
1	3	163	A
1	3	164	A
1	3	165	U
1	3	169	U
1	3	180	A
1	3	184	A
1	3	186	A
1	3	187	C
1	3	188	G
1	3	200	A
1	3	203	A
1	3	208	A
1	3	210	U
1	3	219	G
1	3	220	A
1	3	226	A
1	3	229	C
1	3	231	A
1	3	232	A
1	3	234	G
1	3	237	A
1	3	244	G
1	3	245	U
1	3	246	G
1	3	252	G
1	3	256	G
1	3	265	G
1	3	270	G
1	3	276	A
1	3	277	C
1	3	283	A
1	3	284	U
1	3	286	A
1	3	287	G
1	3	295	U
1	3	296	U
1	3	297	G
1	3	298	U

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Mol	Chain	Res	Type
1	3	299	A
1	3	309	A
1	3	310	U
1	3	311	G
1	3	312	U
1	3	314	G
1	3	315	A
1	3	316	C
1	3	319	G
1	3	336	C
1	3	342	G
1	3	343	A
1	3	345	A
1	3	347	C
1	3	351	G
1	3	355	A
1	3	356	A
1	3	357	A
1	3	363	G
1	3	364	A
1	3	369	C
1	3	380	A
1	3	397	G
1	3	402	A
1	3	403	U
1	3	404	C
1	3	408	G
1	3	409	A
1	3	410	G
1	3	411	U
1	3	418	G
1	3	419	A
1	3	422	A
1	3	424	G
1	3	425	U
1	3	426	U
1	3	432	G
1	3	437	A
1	3	440	C
1	3	447	G
1	3	448	A
1	3	460	G

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Mol	Chain	Res	Type
1	3	484	U
1	3	487	C
1	3	492	C
1	3	493	A
1	3	500	U
1	3	501	G
1	3	509	G
1	3	514	A
1	3	515	A
1	3	516	A
1	3	517	G
1	3	519	A
1	3	539	U
1	3	540	A
1	3	543	U
1	3	554	U
1	3	562	C
1	3	566	G
1	3	567	U
1	3	568	G
1	3	573	A
1	3	581	A
1	3	583	U
1	3	589	A
1	3	596	G
1	3	604	A
1	3	605	A
1	3	606	G
1	3	608	A
1	3	609	U
1	3	610	G
1	3	620	G
1	3	636	U
1	3	637	U
1	3	638	A
1	3	647	G
1	3	648	G
1	3	649	A
1	3	650	G
1	3	652	U
1	3	657	A
1	3	663	A

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Mol	Chain	Res	Type
1	3	670	G
1	3	673	A
1	3	681	A
1	3	682	A
1	3	689	U
1	3	691	G
1	3	705	A
1	3	706	C
1	3	721	G
1	3	722	C
1	3	752	C
1	3	765	A
1	3	771	C
1	3	781	U
1	3	782	U
1	3	786	A
1	3	800	C
1	3	810	G
1	3	811	G
1	3	812	G
1	3	817	A
1	3	818	A
1	3	819	U
1	3	820	U
1	3	824	A
1	3	825	U
1	3	827	G
1	3	828	A
1	3	829	A
1	3	835	U
1	3	837	A
1	3	840	G
1	3	841	C
1	3	847	C
1	3	854	A
1	3	862	U
1	3	880	C
1	3	881	A
1	3	882	C
1	3	883	A
1	3	895	G
1	3	902	U

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Mol	Chain	Res	Type
1	3	904	C
1	3	906	G
1	3	914	G
1	3	917	G
1	3	920	G
1	3	923	A
1	3	924	C
1	3	925	C
1	3	927	A
1	3	928	G
1	3	930	C
1	3	932	U
1	3	935	U
1	3	936	G
1	3	944	U
1	3	947	A
1	3	949	C
1	3	951	C
1	3	952	U
1	3	953	G
1	3	970	U
1	3	981	A
1	3	982	G
1	3	994	U
1	3	995	A
1	3	997	G
1	3	1005	G
1	3	1008	A
1	3	1009	A
1	3	1010	G
1	3	1016	A
1	3	1026	A
1	3	1027	U
1	3	1032	A
1	3	1041	C
1	3	1049	U
1	3	1052	A
1	3	1057	G
1	3	1061	A
1	3	1068	U
1	3	1075	G
1	3	1078	C

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Mol	Chain	Res	Type
1	3	1080	A
1	3	1081	A
1	3	1082	A
1	3	1095	U
1	3	1102	A
1	3	1103	G
1	3	1104	A
1	3	1105	A
1	3	1107	C
1	3	1112	A
1	3	1118	U
1	3	1121	A
1	3	1123	A
1	3	1124	G
1	3	1125	U
1	3	1126	G
1	3	1132	C
1	3	1137	C
1	3	1146	A
1	3	1147	G
1	3	1151	U
1	3	1154	U
1	3	1160	G
1	3	1164	A
1	3	1165	U
1	3	1167	U
1	3	1168	A
1	3	1169	A
1	3	1170	C
1	3	1171	G
1	3	1176	U
1	3	1177	A
1	3	1178	A
1	3	1186	A
1	3	1190	A
1	3	1204	A
1	3	1207	U
1	3	1208	A
1	3	1209	U
1	3	1210	A
1	3	1212	C
1	3	1215	G

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Mol	Chain	Res	Type
1	3	1217	G
1	3	1219	U
1	3	1234	U
1	3	1235	U
1	3	1250	A
1	3	1251	G
1	3	1253	G
1	3	1256	A
1	3	1268	U
1	3	1278	G
1	3	1279	U
1	3	1281	A
1	3	1283	A
1	3	1285	U
1	3	1286	G
1	3	1292	A
1	3	1295	A
1	3	1298	A
1	3	1301	G
1	3	1302	C
1	3	1303	U
1	3	1304	U
1	3	1316	U
1	3	1328	A
1	3	1329	U
1	3	1330	U
1	3	1337	G
1	3	1338	G
1	3	1349	C
1	3	1360	U
1	3	1366	G
1	3	1369	U
1	3	1370	A
1	3	1380	U
1	3	1393	A
1	3	1402	G
1	3	1406	A
1	3	1407	U
1	3	1412	A
1	3	1423	A
1	3	1424	U
1	3	1431	A

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Mol	Chain	Res	Type
1	3	1434	U
1	3	1437	A
1	3	1444	C
1	3	1445	U
1	3	1448	U
1	3	1455	A
1	3	1456	C
1	3	1457	A
1	3	1463	G
1	3	1467	U
1	3	1480	A
1	3	1481	U
1	3	1482	U
1	3	1483	G
1	3	1486	U
1	3	1487	U
1	3	1494	U
1	3	1502	A
1	3	1504	G
1	3	1507	G
1	3	1508	G
1	3	1510	A
1	3	1513	A
1	3	1514	U
1	3	1515	A
1	3	1518	C
1	3	1519	A
1	3	1520	A
1	3	1522	U
1	3	1532	A
1	3	1533	U
1	3	1534	A
1	3	1541	A
1	3	1548	A
1	3	1557	G
1	3	1559	A
1	3	1571	G
1	3	1580	G
1	3	1582	G
1	3	1584	U
1	3	1585	A
1	3	1586	U

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Mol	Chain	Res	Type
1	3	1587	U
1	3	1588	A
1	3	1589	A
1	3	1592	A
1	3	1601	A
1	3	1603	A
1	3	1612	U
1	3	1615	G
1	3	1617	U
1	3	1618	U
1	3	1619	A
1	3	1641	A
1	3	1643	A
1	3	1644	A
1	3	1650	A
1	3	1651	C
1	3	1652	A
1	3	1653	C
1	3	1655	U
1	3	1656	A
1	3	1668	G
1	3	1679	U
1	3	1680	A
1	3	1681	G
1	3	1682	C
1	3	1688	A
1	3	1694	A
1	3	1699	A
1	3	1706	C
1	3	1707	U
1	3	1708	G
1	3	1727	U
1	3	1732	A
1	3	1733	G
1	3	1735	A
1	3	1737	G
1	3	1748	U
1	3	1751	A
1	3	1761	C
1	3	1762	A
1	3	1763	G
1	3	1764	U

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Mol	Chain	Res	Type
1	3	1765	G
1	3	1769	A
1	3	1770	A
1	3	1771	C
1	3	1780	A
1	3	1788	A
1	3	1789	C
1	3	1790	U
1	3	1791	A
1	3	1807	C
1	3	1809	A
1	3	1815	U
1	3	1816	A
1	3	1821	G
1	3	1822	A
1	3	1823	U
1	3	1834	U
1	3	1837	C
1	3	1841	U
1	3	1842	G
1	3	1854	A
1	3	1865	A
1	3	1866	G
1	3	1867	G
1	3	1869	G
1	3	1870	G
1	3	1876	G
1	3	1880	G
1	3	1891	A
1	3	1898	G
1	3	1903	A
1	3	1906	G
1	3	1907	A
1	3	1908	A
1	3	1910	G
1	3	1913	G
1	3	1920	A
1	3	1921	C
1	3	1926	A
1	3	1934	A
1	3	1936	G
1	3	1937	G

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Mol	Chain	Res	Type
1	3	1938	U
1	3	1945	A
1	3	1952	G
1	3	1962	U
1	3	1972	C
1	3	1977	A
1	3	1978	U
1	3	1979	G
1	3	1998	U
1	3	2000	U
1	3	2009	U
1	3	2011	G
1	3	2025	C
1	3	2027	G
1	3	2028	G
1	3	2038	A
1	3	2040	A
1	3	2041	C
1	3	2043	C
1	3	2050	G
1	3	2056	A
1	3	2062	C
1	3	2063	G
1	3	2067	A
1	3	2068	G
1	3	2069	A
1	3	2076	G
1	3	2084	A
1	3	2099	U
1	3	2100	G
1	3	2106	G
1	3	2107	A
1	3	2110	U
1	3	2111	U
1	3	2112	A
1	3	2114	C
1	3	2115	A
1	3	2117	G
1	3	2123	A
1	3	2124	A
1	3	2125	U
1	3	2128	G

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Mol	Chain	Res	Type
1	3	2130	A
1	3	2131	G
1	3	2132	G
1	3	2133	A
1	3	2139	C
1	3	2140	G
1	3	2153	U
1	3	2166	U
1	3	2171	A
1	3	2180	U
1	3	2181	A
1	3	2182	C
1	3	2193	U
1	3	2195	U
1	3	2196	G
1	3	2198	G
1	3	2199	C
1	3	2200	U
1	3	2201	G
1	3	2202	U
1	3	2203	U
1	3	2207	A
1	3	2211	G
1	3	2212	U
1	3	2219	U
1	3	2220	A
1	3	2221	U
1	3	2222	C
1	3	2223	C
1	3	2231	A
1	3	2233	A
1	3	2246	G
1	3	2247	G
1	3	2259	G
1	3	2274	A
1	3	2275	A
1	3	2276	A
1	3	2286	A
1	3	2291	U
1	3	2292	A
1	3	2294	A
1	3	2295	A

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Mol	Chain	Res	Type
1	3	2296	A
1	3	2298	G
1	3	2305	C
1	3	2312	G
1	3	2313	U
1	3	2316	G
1	3	2317	A
1	3	2324	A
1	3	2327	U
1	3	2329	G
1	3	2330	A
1	3	2333	G
1	3	2335	A
1	3	2341	G
1	3	2342	U
1	3	2343	A
1	3	2344	A
1	3	2346	G
1	3	2353	G
1	3	2355	C
1	3	2358	U
1	3	2366	A
1	3	2380	U
1	3	2391	G
1	3	2393	C
1	3	2410	C
1	3	2411	C
1	3	2414	U
1	3	2415	A
1	3	2418	G
1	3	2422	G
1	3	2431	U
1	3	2433	A
1	3	2435	C
1	3	2436	G
1	3	2438	A
1	3	2449	U
1	3	2453	G
1	3	2456	A
1	3	2457	U
1	3	2477	A
1	3	2484	A

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Mol	Chain	Res	Type
1	3	2486	A
1	3	2488	C
1	3	2492	G
1	3	2499	U
1	3	2505	A
1	3	2506	C
1	3	2507	C
1	3	2509	C
1	3	2510	G
1	3	2512	U
1	3	2513	G
1	3	2521	A
1	3	2526	A
1	3	2527	U
1	3	2528	C
1	3	2543	G
1	3	2555	U
1	3	2557	G
1	3	2562	U
1	3	2570	U
1	3	2574	A
1	3	2575	G
1	3	2580	A
1	3	2581	C
1	3	2584	G
1	3	2590	G
1	3	2594	C
1	3	2605	G
1	3	2610	A
1	3	2617	U
1	3	2618	C
1	3	2621	U
1	3	2622	A
1	3	2623	U
1	3	2631	G
1	3	2637	A
1	3	2638	G
1	3	2639	G
1	3	2642	G
1	3	2646	G
1	3	2654	U
1	3	2656	G

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Mol	Chain	Res	Type
1	3	2664	U
1	3	2668	A
1	3	2669	G
1	3	2672	G
1	3	2687	A
1	3	2697	C
1	3	2698	U
1	3	2722	G
1	3	2734	C
1	3	2737	G
1	3	2740	U
1	3	2741	A
1	3	2747	U
1	3	2752	G
1	3	2753	C
1	3	2756	A
1	3	2760	C
1	3	2765	A
1	3	2772	A
1	3	2784	A
1	3	2786	A
1	3	2788	U
1	3	2797	C
1	3	2798	A
1	3	2799	U
1	3	2800	U
1	3	2801	U
1	3	2808	A
1	3	2809	A
1	3	2811	G
1	3	2812	U
1	3	2813	A
1	3	2814	A
1	3	2815	G
1	3	2822	C
1	3	2824	A
1	3	2825	A
1	3	2826	G
1	3	2829	G
1	3	2835	G
1	3	2839	A
1	3	2853	U

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Mol	Chain	Res	Type
1	3	2863	G
1	3	2870	U
1	3	2871	G
1	3	2876	G
1	3	2884	C
1	3	2888	U
1	3	2889	U
1	3	2890	G
1	3	2894	G
1	3	2895	A
1	3	2896	G
1	3	2897	G
1	3	2898	A
1	3	2899	C
2	4	10	C
2	4	11	A
2	4	12	U
2	4	13	G
2	4	16	G
2	4	23	A
2	4	31	G
2	4	33	U
2	4	35	C
2	4	40	U
2	4	41	C
2	4	42	G
2	4	43	A
2	4	49	G
2	4	50	C
2	4	51	A
2	4	54	U
2	4	55	A
2	4	60	C
2	4	63	U
2	4	64	G
2	4	65	G
2	4	71	A
2	4	78	C
2	4	80	G
2	4	85	A
2	4	86	G
2	4	88	G

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Mol	Chain	Res	Type
2	4	89	A
2	4	96	G
2	4	99	A
2	4	108	C

All (64) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	3	296	U
1	3	311	G
1	3	315	A
1	3	357	A
1	3	368	C
1	3	410	G
1	3	425	U
1	3	447	G
1	3	500	U
1	3	508	A
1	3	513	A
1	3	514	A
1	3	604	A
1	3	647	G
1	3	648	G
1	3	688	U
1	3	781	U
1	3	811	G
1	3	881	A
1	3	901	C
1	3	903	A
1	3	952	U
1	3	980	C
1	3	1048	A
1	3	1209	U
1	3	1211	U
1	3	1297	U
1	3	1302	C
1	3	1328	A
1	3	1329	U
1	3	1462	A
1	3	1507	G
1	3	1519	A
1	3	1583	G

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Mol	Chain	Res	Type
1	3	1585	A
1	3	1587	U
1	3	1588	A
1	3	1618	U
1	3	1644	A
1	3	1680	A
1	3	1820	U
1	3	2029	U
1	3	2180	U
1	3	2290	G
1	3	2304	U
1	3	2332	U
1	3	2342	U
1	3	2504	C
1	3	2506	C
1	3	2604	U
1	3	2621	U
1	3	2622	A
1	3	2668	A
1	3	2787	U
1	3	2823	A
1	3	2862	U
1	3	2889	U
1	3	2897	G
2	4	10	C
2	4	34	U
2	4	38	U
2	4	54	U
2	4	59	A
2	4	70	G

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

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

5.5 Carbohydrates [\(i\)](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 30 ligands modelled in this entry, 29 are monoatomic - leaving 1 for Mogul analysis.

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
34	CLM	3	3026	-	19,20,20	2.42	7 (36%)	23,27,27	1.34	2 (8%)

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
34	CLM	3	3026	-	-	3/20/22/22	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
34	3	3026	CLM	O9B-N9	-5.97	1.12	1.22
34	3	3026	CLM	C2-N2	4.12	1.43	1.34
34	3	3026	CLM	C1-C2	3.80	1.58	1.53
34	3	3026	CLM	O2-C2	-3.42	1.16	1.23
34	3	3026	CLM	O5-C5	-3.12	1.36	1.42
34	3	3026	CLM	C3-N2	-3.00	1.41	1.46
34	3	3026	CLM	C11-C6	-2.46	1.35	1.39

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
34	3	3026	CLM	C4-C3-N2	-3.06	104.40	109.27
34	3	3026	CLM	C3-N2-C2	-2.79	118.14	123.07

There are no chirality outliers.

All (3) torsion outliers are listed below:

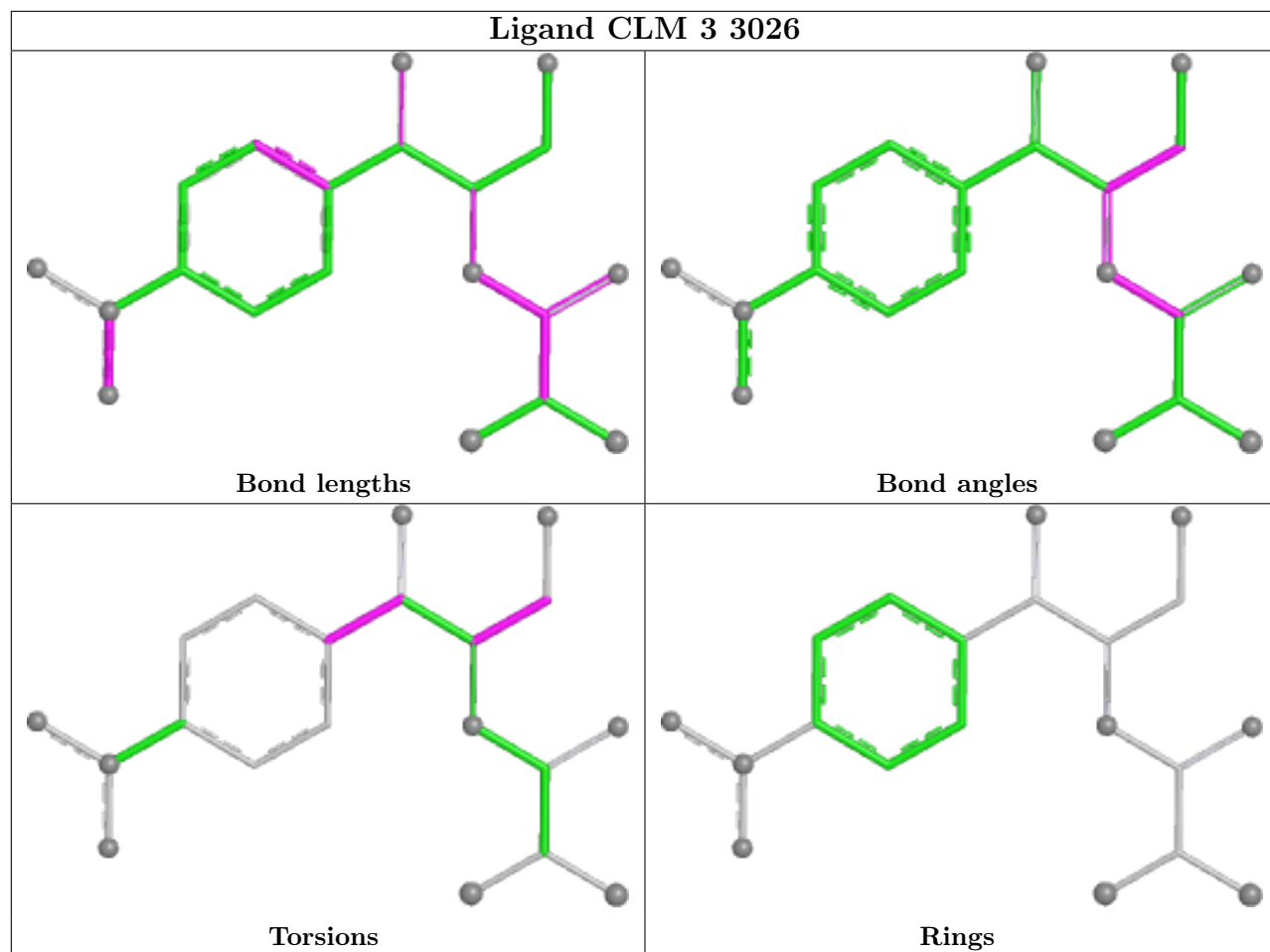
Mol	Chain	Res	Type	Atoms
34	3	3026	CLM	C3-C5-C6-C7
34	3	3026	CLM	C3-C5-C6-C11
34	3	3026	CLM	N2-C3-C4-O4

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
34	3	3026	CLM	4	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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.

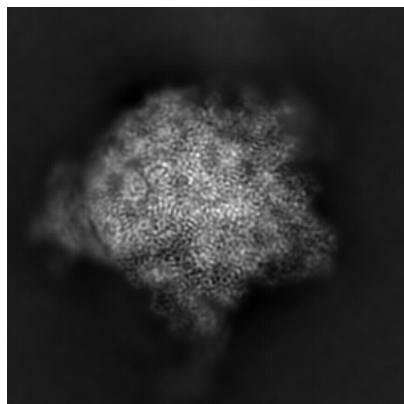
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-11999. These allow visual inspection of the internal detail of the map and identification of artifacts.

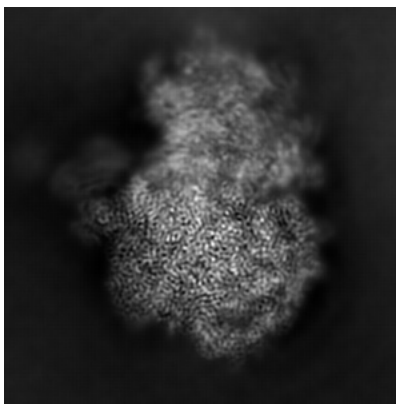
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

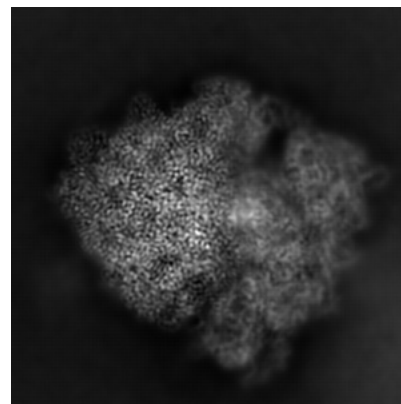
6.1.1 Primary map



X

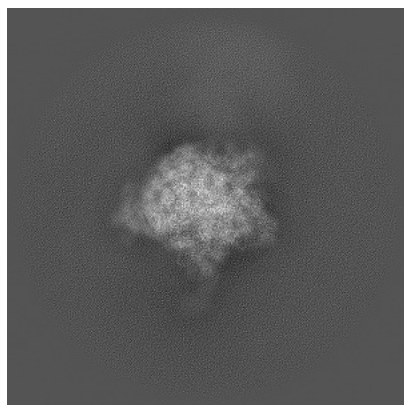


Y

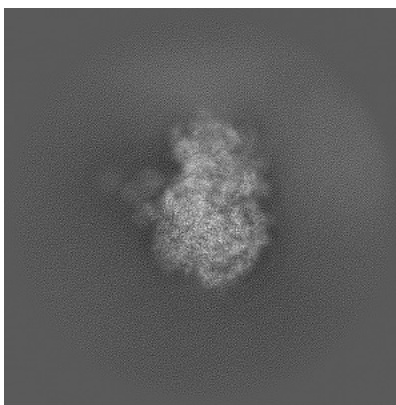


Z

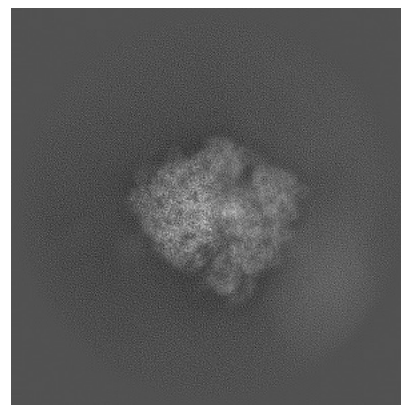
6.1.2 Raw map



X



Y

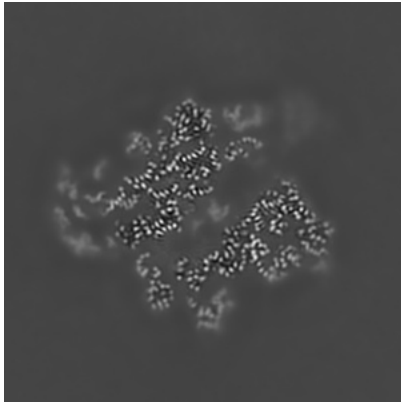


Z

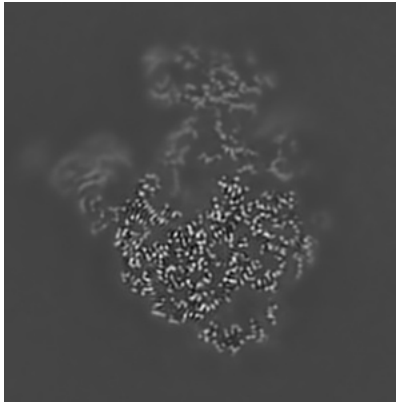
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

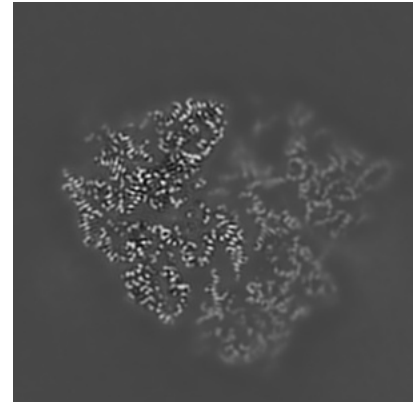
6.2.1 Primary map



X Index: 190

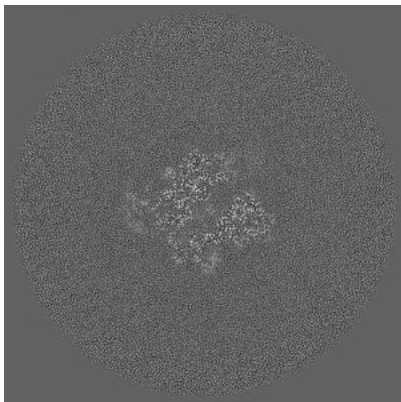


Y Index: 190

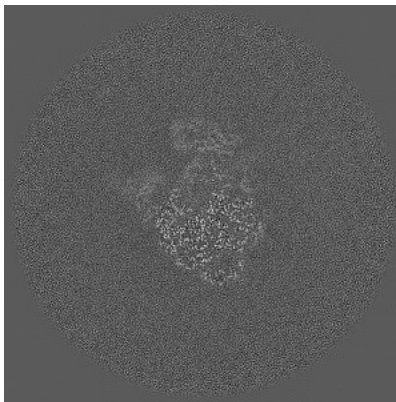


Z Index: 190

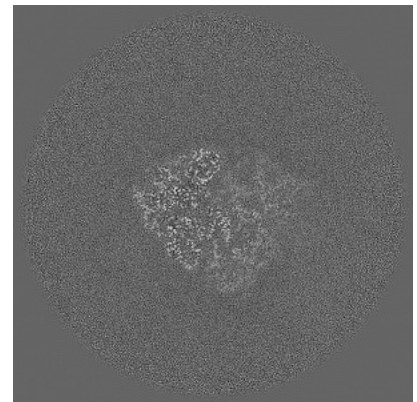
6.2.2 Raw map



X Index: 176



Y Index: 176

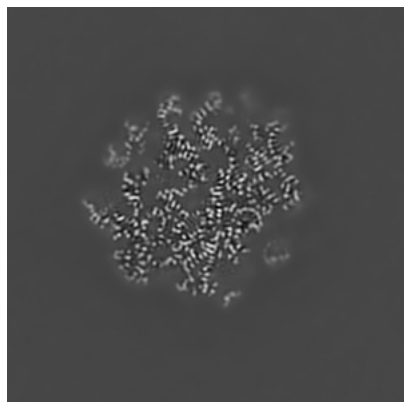


Z Index: 176

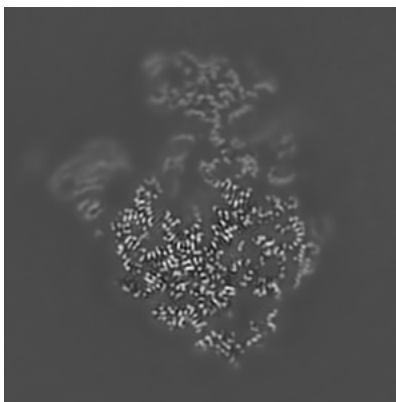
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

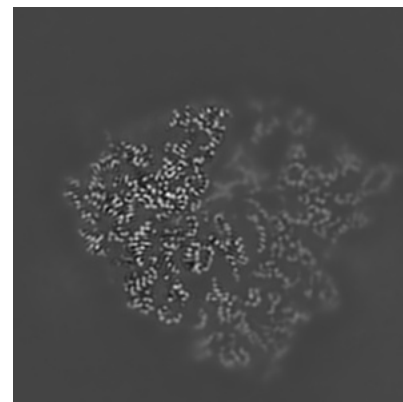
6.3.1 Primary map



X Index: 146

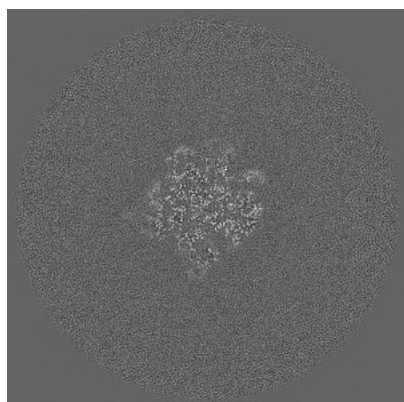


Y Index: 194

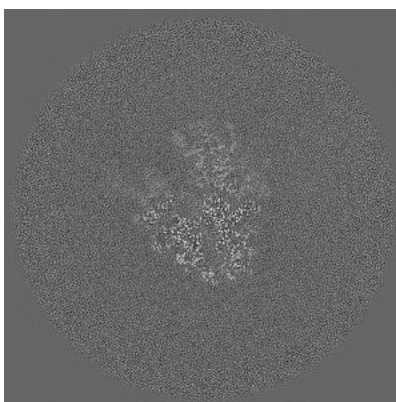


Z Index: 186

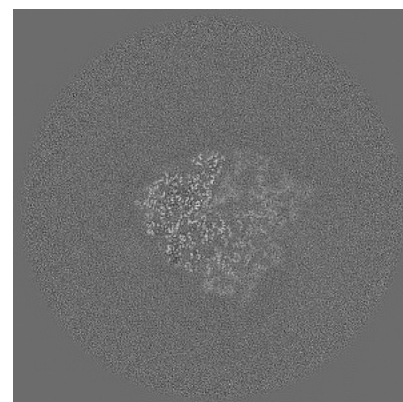
6.3.2 Raw map



X Index: 165



Y Index: 169



Z Index: 173

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

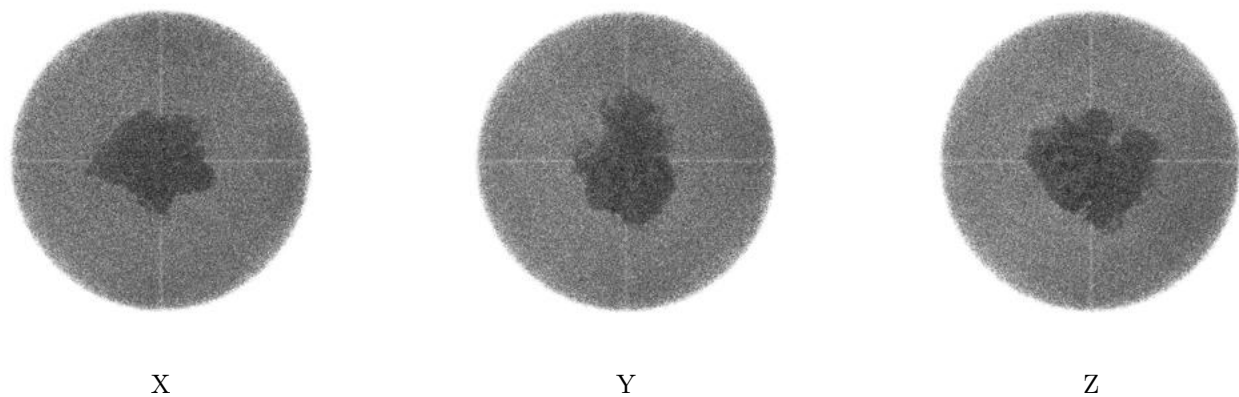
6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.0023. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.4.2 Raw map



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

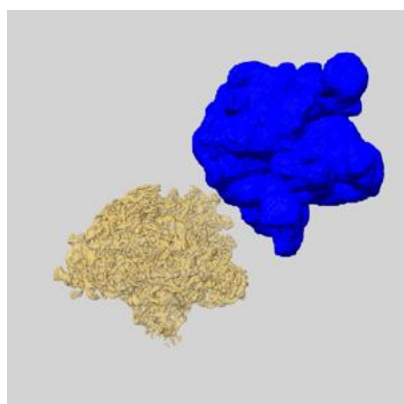
6.5 Mask visualisation [i](#)

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

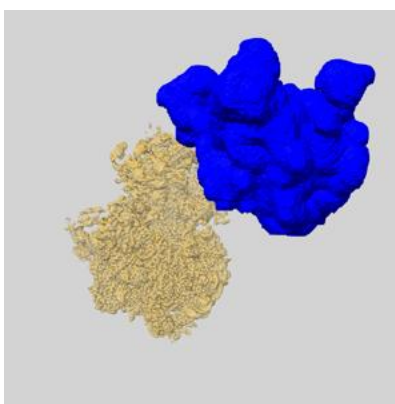
A mask typically either:

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

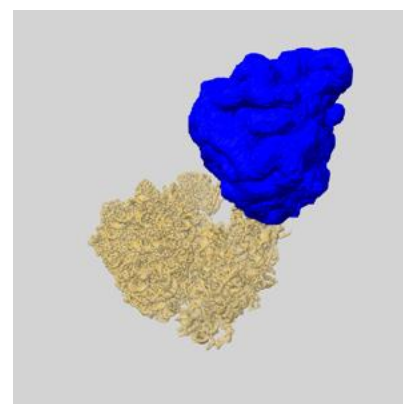
6.5.1 emd_11999_msk_1.map [i](#)



X



Y

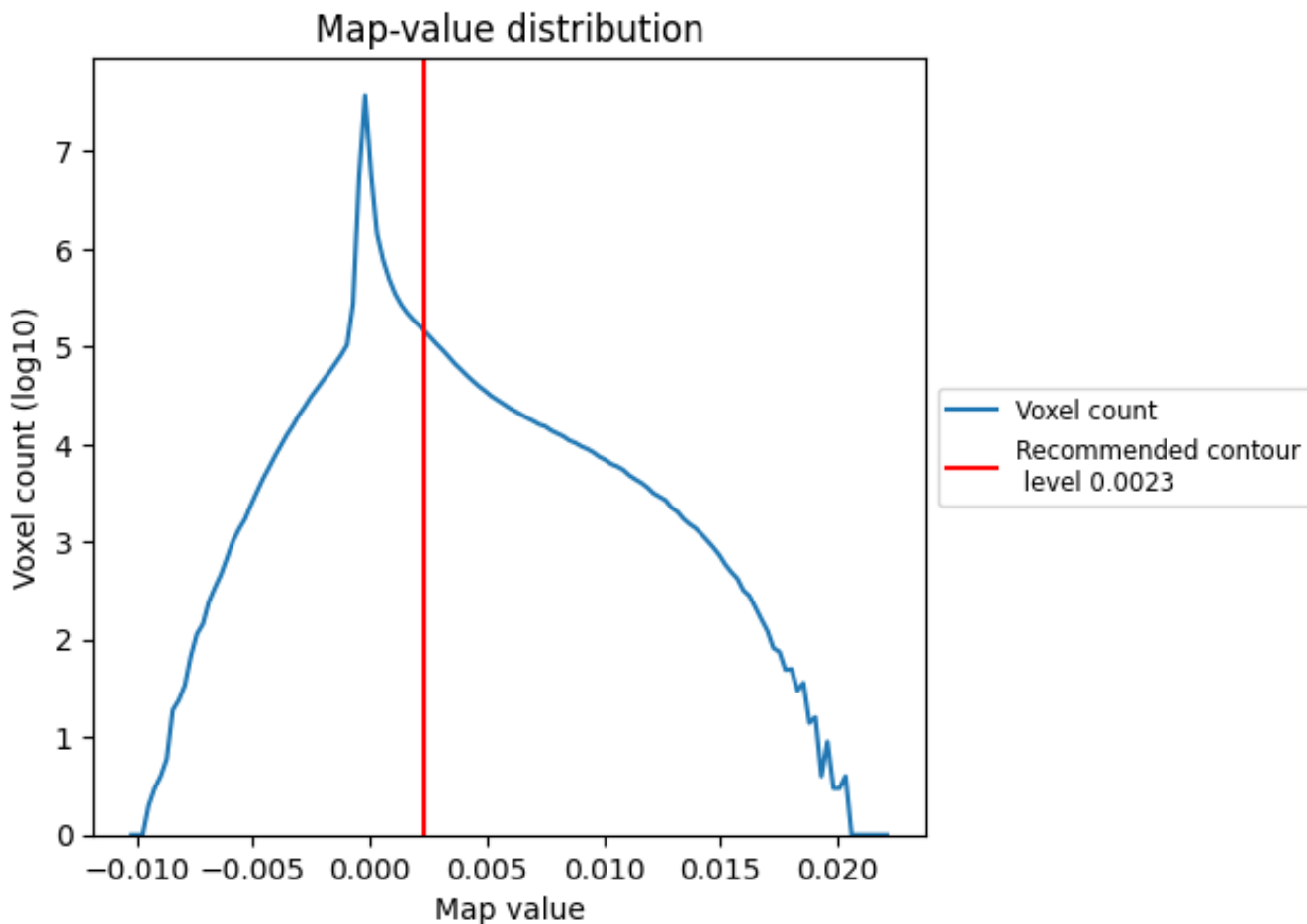


Z

7 Map analysis [i](#)

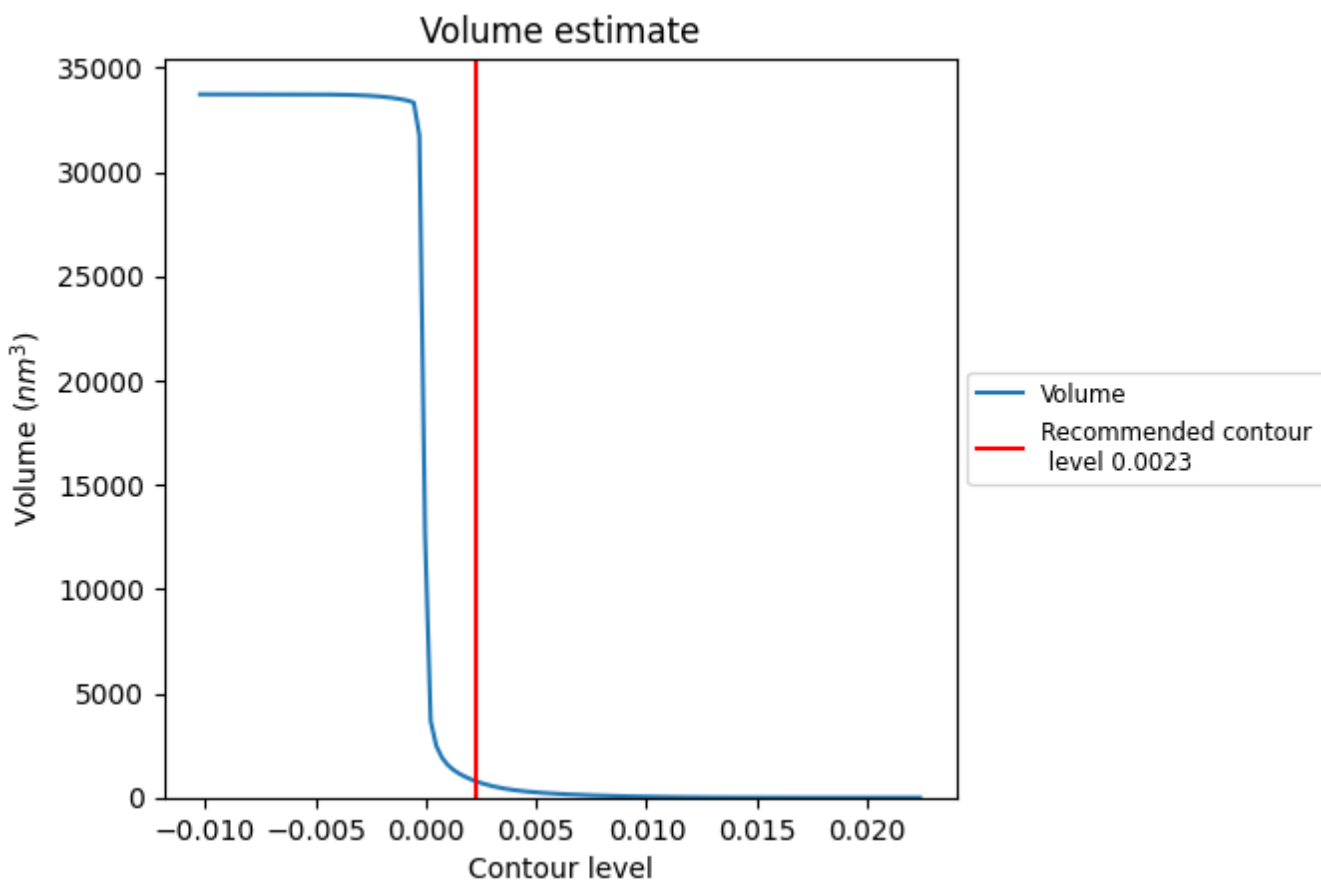
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

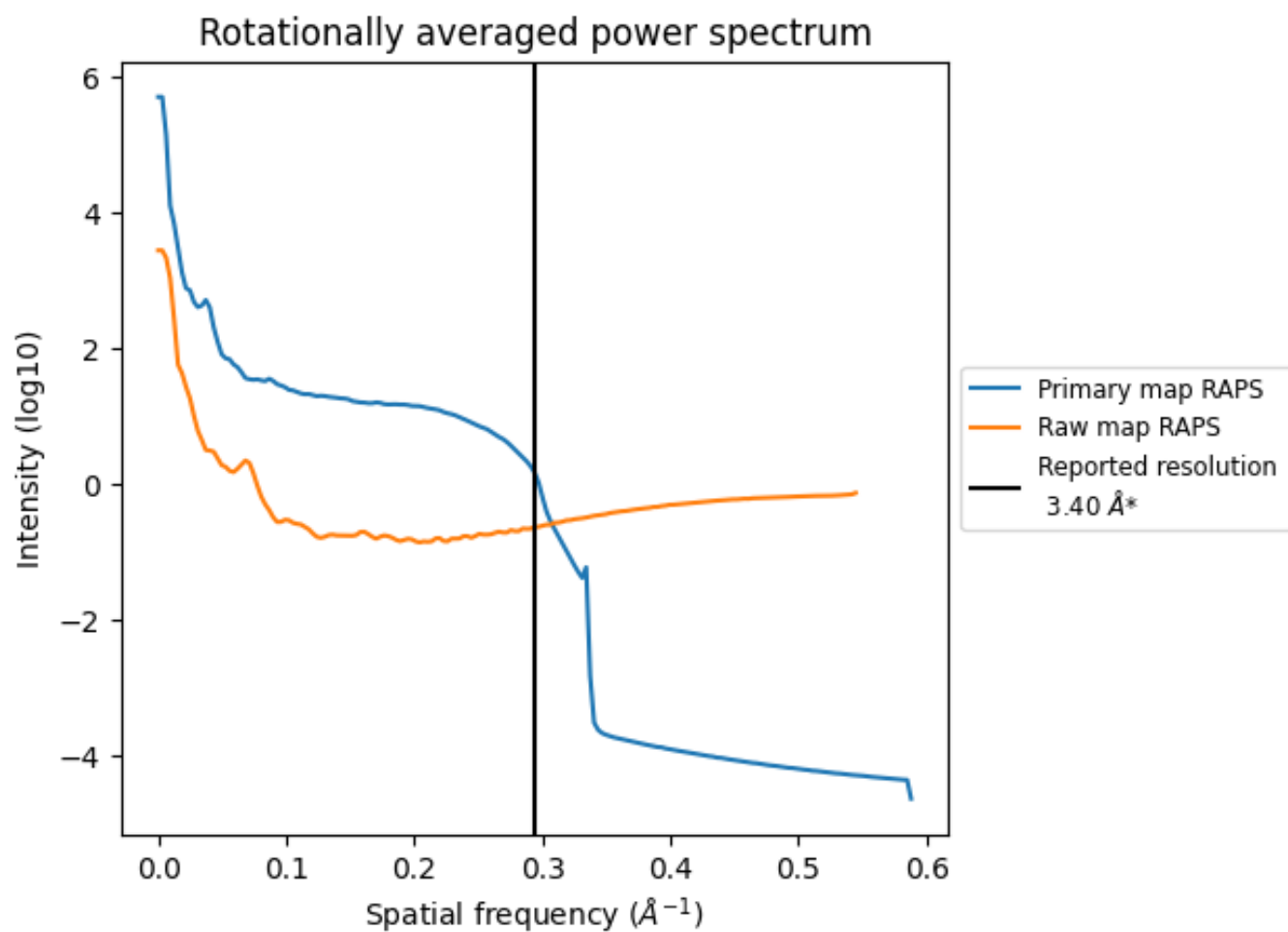
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 773 nm³; this corresponds to an approximate mass of 698 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

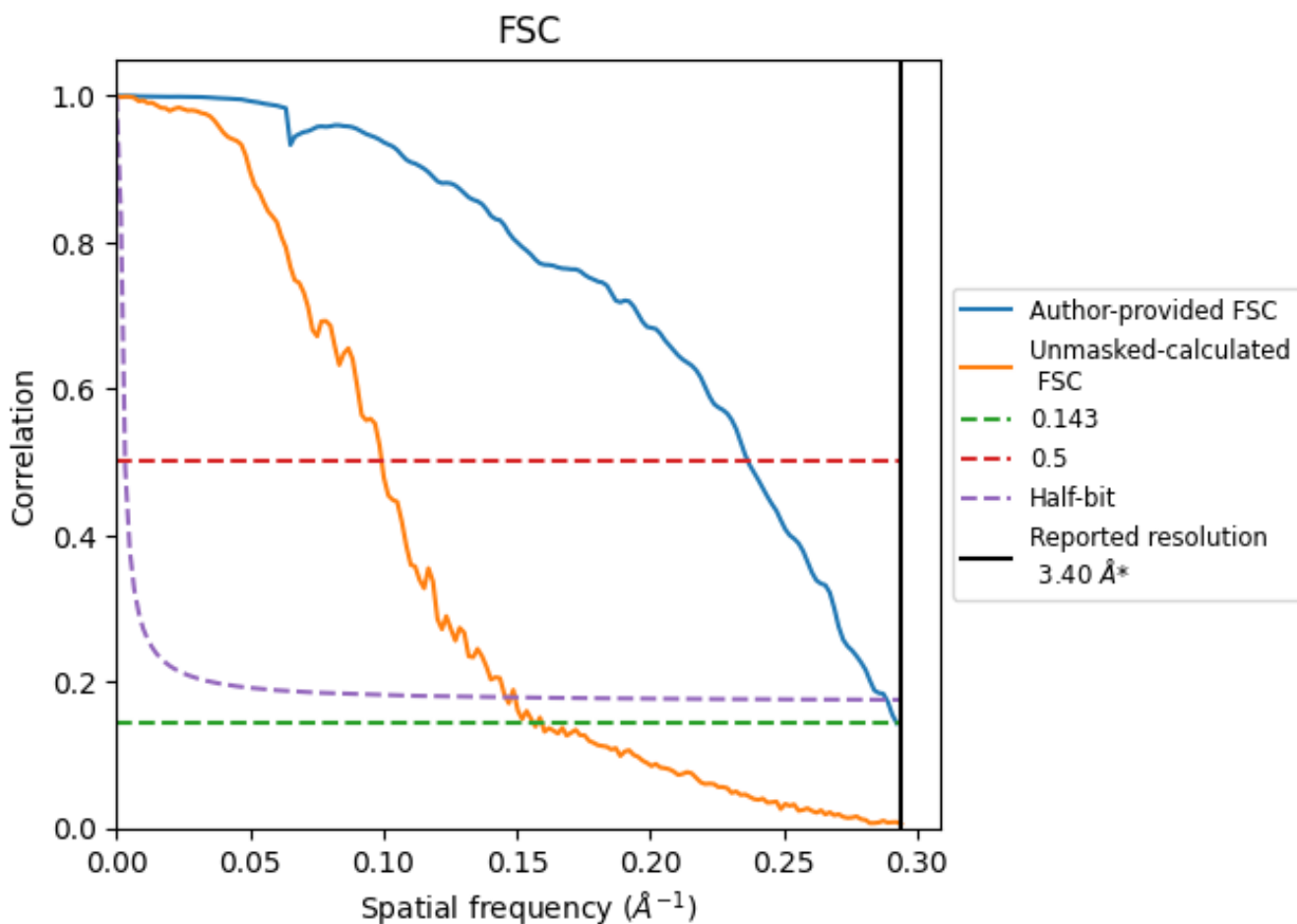


*Reported resolution corresponds to spatial frequency of 0.294 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.294 Å⁻¹

8.2 Resolution estimates [i](#)

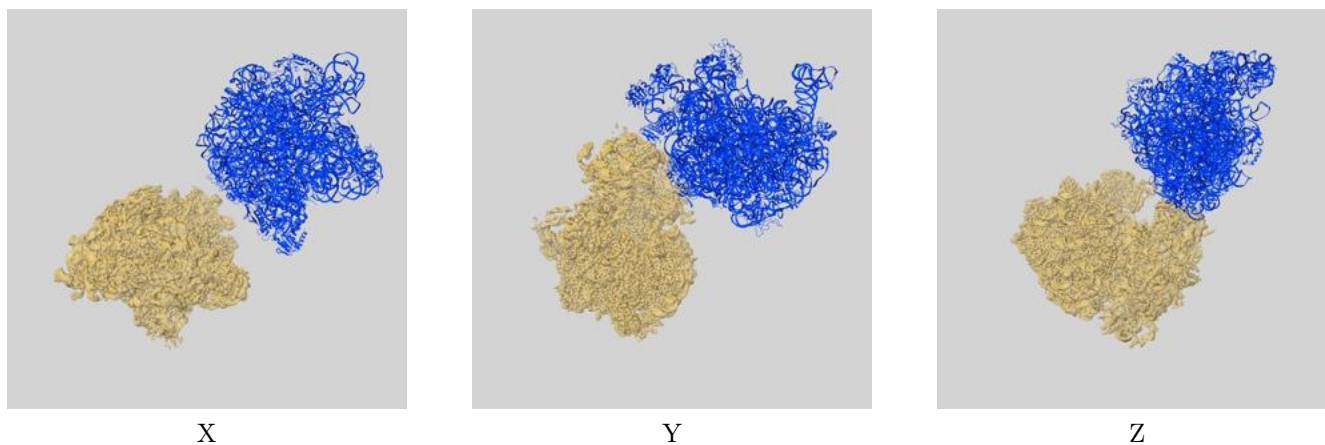
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.40	-	-
Author-provided FSC curve	3.42	4.22	3.47
Unmasked-calculated*	6.40	10.06	6.85

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 6.40 differs from the reported value 3.4 by more than 10 %

9 Map-model fit [i](#)

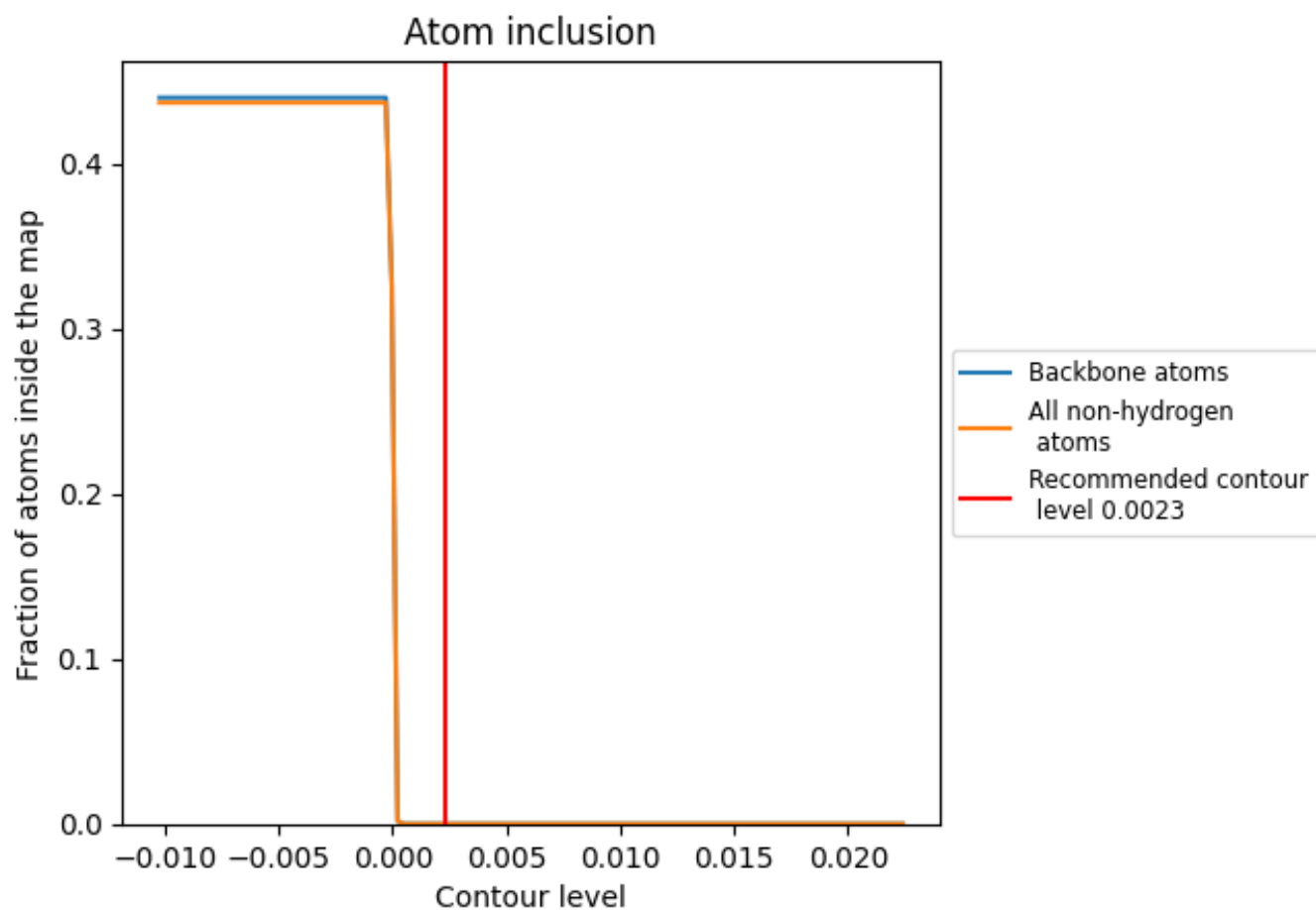
This section contains information regarding the fit between EMDB map EMD-11999 and PDB model 7OOD. Per-residue inclusion information can be found in section [3](#) on page [10](#).

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.0023 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 Atom inclusion [i](#)



At the recommended contour level, 0% of all backbone atoms, 0% of all non-hydrogen atoms, are inside the map.