wwPDB EM Validation Summary Report (i)

May 13, 2024 – 09:58 pm BST

PDB ID	:	6TNN
EMDB ID	:	EMD-10535
Title	:	Mini-RNase III (Mini-III) bound to 50S ribosome with precursor 23S rRNA
Authors	:	Oerum, S.; Dendooven, T.; Gilet, L.; Catala, M.; Degut, C.; Trinquier, A.; Barraud, P.; Luisi, B.; Condon, C.; Tisne, C.
Deposited on	:	2019-12-09
Resolution	:	3.07 Å(reported)
Based on initial model	:	3J3V

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 (i) 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 (i)) were used in the production of this report:

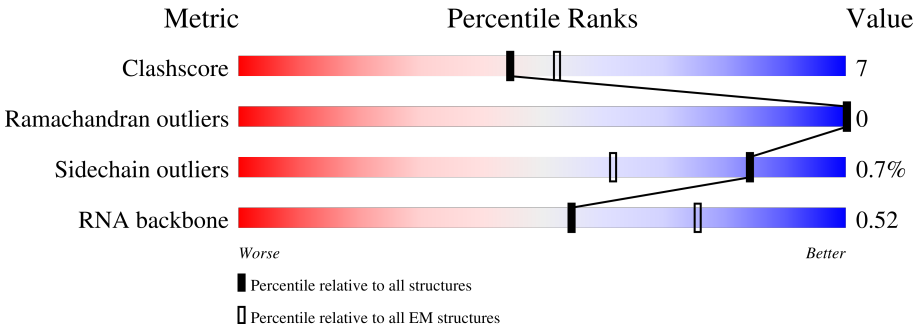
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.07 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 <=5%

Mol	Chain	Length	Quality of chain
1	b	166	70% · 26%
2	H	143	77% 15% 8%
2	I	143	76% 17% 6%
3	U	2930	61% 31% 8%
4	V	116	53% 34% 14%
5	W	277	86% 13% ·
6	X	209	89% 10% ·

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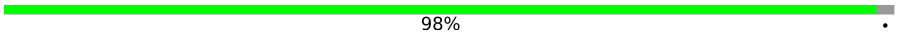
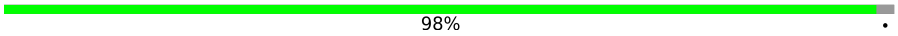
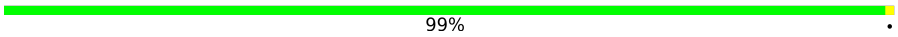
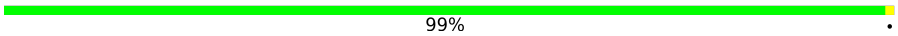
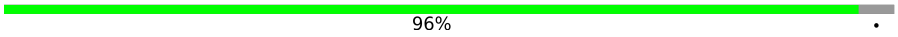
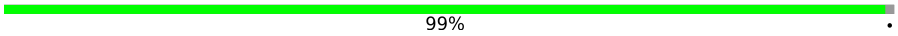
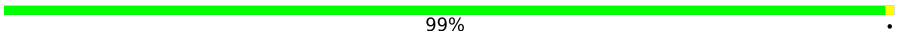
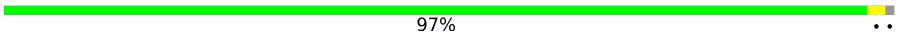
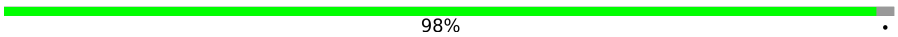
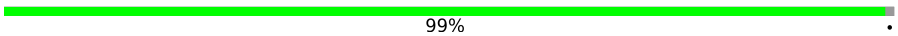
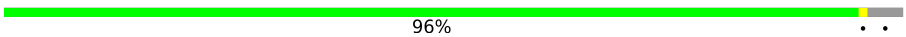
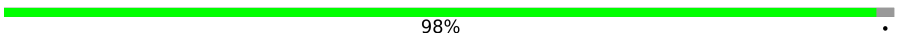
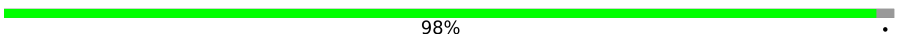
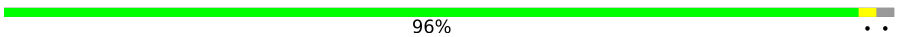
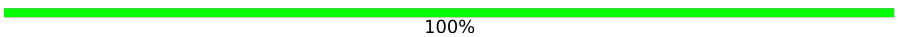
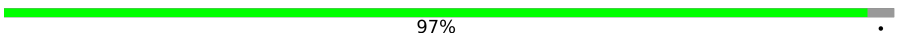
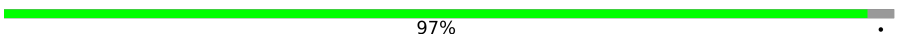
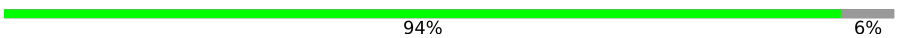
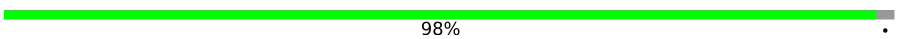
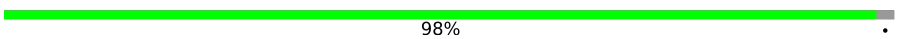
Mol	Chain	Length	Quality of chain
7	Y	207	
8	Z	179	
9	a	179	
10	c	145	
11	d	122	
12	e	146	
13	f	144	
14	g	120	
15	h	120	
16	i	115	
17	j	119	
18	k	102	
19	l	113	
20	m	95	
21	n	103	
22	o	94	
23	p	59	
24	q	49	
25	r	44	
26	s	66	
27	t	37	
28	u	62	
29	v	66	
30	w	59	

2 Entry composition (i)

There are 32 unique types of molecules in this entry. The entry contains 91840 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called 50S ribosomal protein L10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	b	123	955	602	163	189	1	0	0

- Molecule 2 is a protein called Mini-ribonuclease 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O			
2	H	132	1063	680	182	201		0	0
			Total	C	N	O	S		
2	I	134	1079	691	184	203	1	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
H	23	ASN	ASP	conflict	UNP O31418
I	23	ASN	ASP	conflict	UNP O31418

- Molecule 3 is a RNA chain called pre-23S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
3	U	2930	62920	28070	11619	20301	2930	0	0

- Molecule 4 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
4	V	116	2475	1105	447	808	115	0	0

- Molecule 5 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	W	275	Total	C	N	O	S	0	0
			2110	1312	416	376	6		

- Molecule 6 is a protein called 50S ribosomal protein L3.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	X	207	Total	C	N	O	S	0	0
			1574	988	290	291	5		

- Molecule 7 is a protein called 50S ribosomal protein L4.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	Y	205	Total	C	N	O	S	0	0
			1560	980	289	289	2		

- Molecule 8 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	Z	178	Total	C	N	O	S	0	0
			1403	893	245	258	7		

- Molecule 9 is a protein called 50S ribosomal protein L6.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	a	175	Total	C	N	O	S	0	0
			1341	835	248	256	2		

- Molecule 10 is a protein called 50S ribosomal protein L13.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	c	142	Total	C	N	O	S	0	0
			1122	710	206	201	5		

- Molecule 11 is a protein called 50S ribosomal protein L14.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	d	122	Total	C	N	O	S	0	0
			919	571	173	171	4		

- Molecule 12 is a protein called 50S ribosomal protein L15.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	e	146	Total	C	N	O	S	0	0
			1080	671	207	200	2		

- Molecule 13 is a protein called 50S ribosomal protein L16.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	f	138	Total	C	N	O	S	0	0
			1096	703	208	180	5		

- Molecule 14 is a protein called 50S ribosomal protein L17.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	g	119	Total	C	N	O	S	0	0
			952	583	186	179	4		

- Molecule 15 is a protein called 50S ribosomal protein L18.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	h	120	Total	C	N	O	S	0	0
			911	564	176	170	1		

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

Mol	Chain	Residues	Atoms				AltConf	Trace
16	i	114	Total	C	N	O	0	0
			935	595	184	156		

- Molecule 17 is a protein called 50S ribosomal protein L20.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	j	117	Total	C	N	O	S	0	0
			939	591	189	155	4		

- Molecule 18 is a protein called 50S ribosomal protein L21.

Mol	Chain	Residues	Atoms				AltConf	Trace
18	k	101	Total	C	N	O	0	0
			785	501	139	145		

- Molecule 19 is a protein called 50S ribosomal protein L22.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	l	109	Total	C	N	O	S	0	0
			841	525	164	149	3		

- Molecule 20 is a protein called 50S ribosomal protein L23.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	m	93	Total	C	N	O	S	0	0
			751	472	137	138	4		

- Molecule 21 is a protein called 50S ribosomal protein L24.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	n	101	Total	C	N	O	S	0	0
			761	478	142	137	4		

- Molecule 22 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	o	82	Total	C	N	O	0	0
			629	390	123	116		

- Molecule 23 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	p	54	Total	C	N	O	S	0	0
			425	262	86	70	7		

- Molecule 24 is a protein called 50S ribosomal protein L33 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	q	48	Total	C	N	O	S	0	0
			400	244	80	72	4		

- Molecule 25 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	r	44	Total	C	N	O	S	0	0
			366	222	89	53	2		

- Molecule 26 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	s	64	Total	C	N	O	S	0	0
			511	321	107	81	2		

- Molecule 27 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	t	36	Total	C	N	O	S	0	0
			287	181	59	43	4		

- Molecule 28 is a protein called 50S ribosomal protein L28.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	u	58	Total	C	N	O	S	0	0
			443	275	92	74	2		

- Molecule 29 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	v	65	Total	C	N	O	S	0	0
			529	328	102	97	2		

- Molecule 30 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	w	58	Total	C	N	O	S	0	0
			454	281	89	83	1		

- Molecule 31 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
31	I	1	Total	Mg	0
			1	1	
31	U	214	Total	Mg	0
			214	214	
31	V	1	Total	Mg	0
			1	1	
31	W	2	Total	Mg	0
			2	2	
31	e	2	Total	Mg	0
			2	2	
31	u	1	Total	Mg	0
			1	1	

- Molecule 32 is ZINC ION (three-letter code: ZN) (formula: Zn).

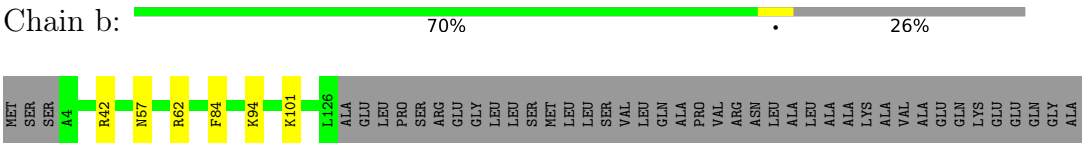
Mol	Chain	Residues	Atoms	AltConf
32	p	1	Total Zn 1 1	0
32	q	1	Total Zn 1 1	0
32	t	1	Total Zn 1 1	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

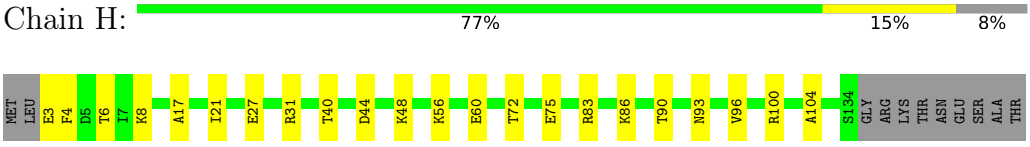
• Molecule 1: 50S ribosomal protein L10

Chain b:



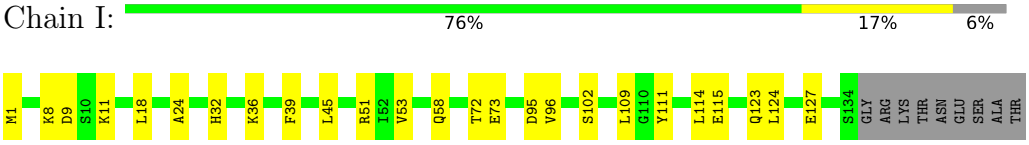
• Molecule 2: Mini-ribonuclease 3

Chain H:



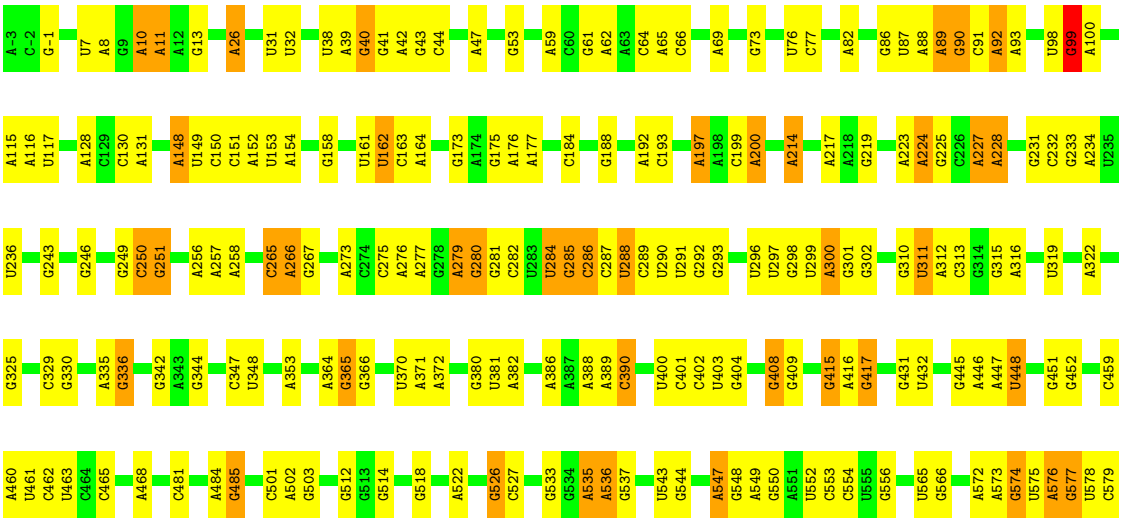
• Molecule 2: Mini-ribonuclease 3

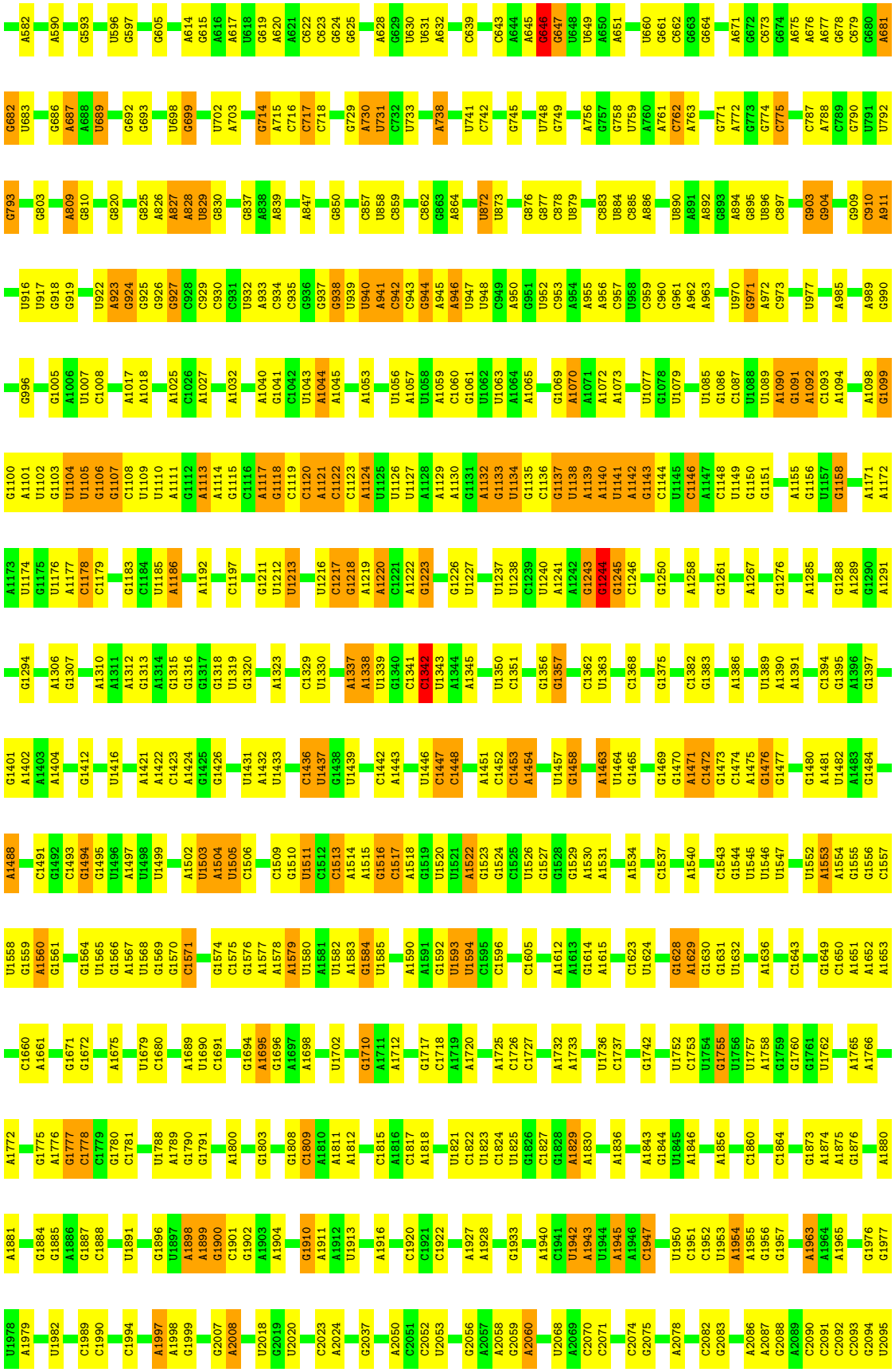
Chain I:

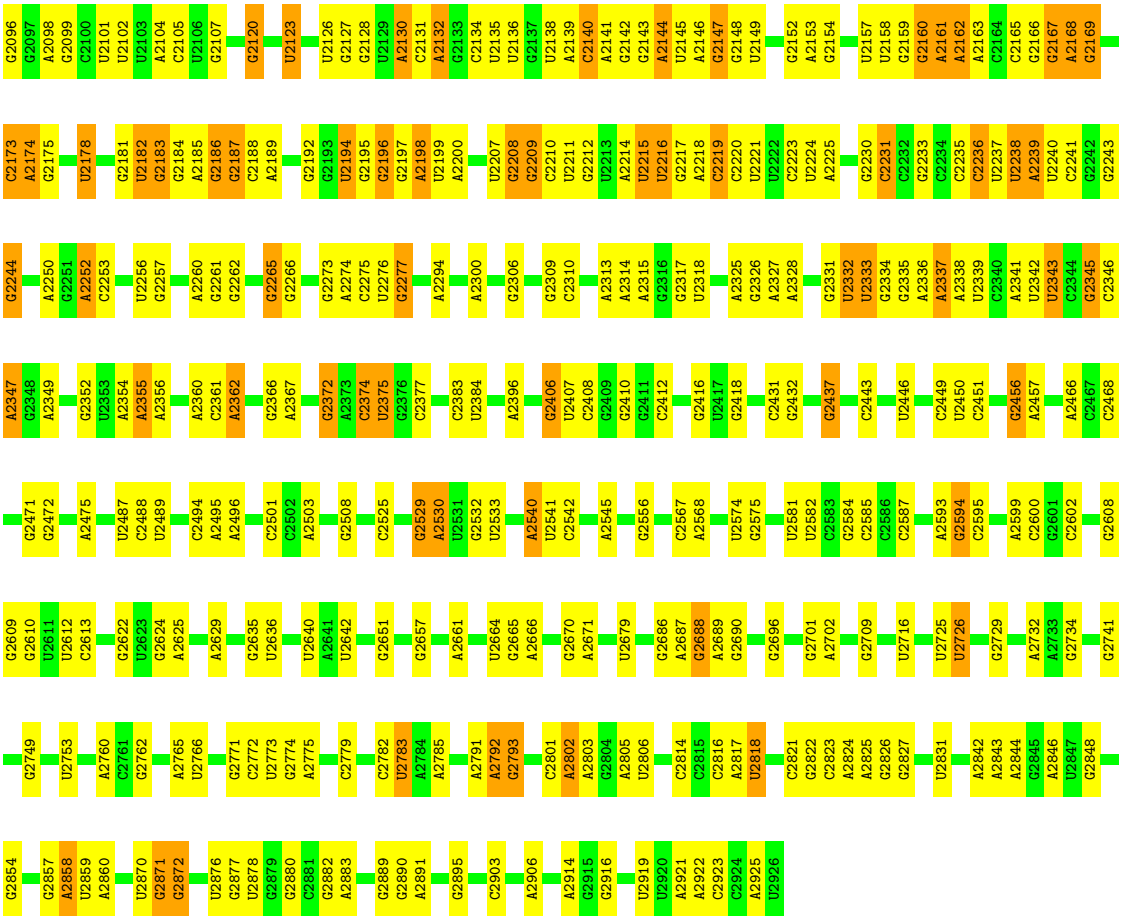


• Molecule 3: pre-23S rRNA

Chain U:

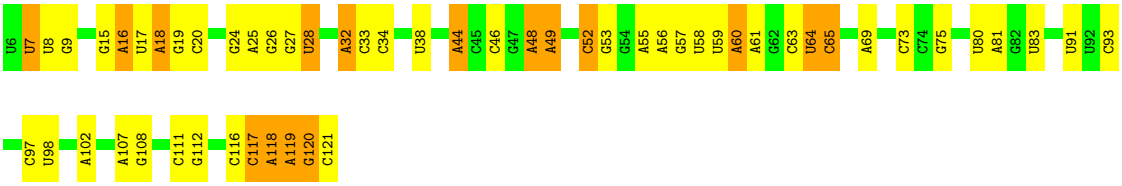



A582 A590 G593 U596 G597 G605 A614 G615 A616 A617 U618 G619 A620 A621 C622 C623 G624 G625 A628 G629 U630 U631 A632 C639 C643 A644 A645 G646 G647 U648 U649 A650 A651 U660 G661 C662 G663 G664 A671 G672 C673 G674 A675 A676 A677 G678 C679 G680 A681
G682 U683 G686 A687 A688 U689 G692 G693 U698 G699 U702 A703 G714 A715 C716 C717 C718 G729 A730 U731 C732 U733 A738 U741 C742 G745 U748 G749 A756 G757 G758 U759 A760 A761 C762 A763 G771 A772 G773 G774 C775 C787 A788 C789 G790 U791 U792
G793 G803 A809 G810 G820 G825 A826 A827 A828 U829 G830 G837 A838 A839 A847 G850 C857 U858 C859 C862 G863 A864 U872 U873 G876 G877 C878 U879 C883 U884 C885 A886 U890 A891 A892 G893 A894 G895 U896 C897 G903 G904 C909 C910 A911
U916 U917 G918 G919 U922 A923 G924 G925 G926 G927 C928 C929 C930 C931 U932 A933 C934 C935 G936 G937 G938 U939 U940 A941 C942 C943 G944 A945 A946 U947 U948 C949 A950 G951 U952 C953 A954 A955 A956 C957 U958 C959 C960 G961 A962 A963 U970 G971 A972 C973 U977 A985 A989 G990
G996 G1005 A1006 U1007 C1008 A1017 A1018 A1025 C1026 A1027 A1032 A1040 G1041 C1042 U1043 A1044 A1045 A1053 U1056 A1057 U1058 A1059 C1060 G1061 U1062 U1063 A1064 A1065 G1069 A1070 A1071 A1072 A1073 U1077 G1078 U1079 U1085 G1086 C1087 U1088 A1089 G1091 A1092 C1093 A1094 A1098 G1099
G1100 A1101 U1102 G1103 U1104 U1105 G1106 G1107 C1108 U1109 U1110 A1111 G1112 A1113 A1114 G1115 C1116 A1117 G1118 C1119 C1120 A1121 C1122 C1123 A1124 U1125 U1126 U1127 A1128 A1129 A1130 G1131 A1132 G1133 U1134 G1135 C1136 G1137 U1138 A1139 A1140 A1141 A1142 G1143 C1144 U1145 C1146 A1147 C1148 U1149 G1150 G1151 A1155 G1156 U1157 G1158 A1171 A1172
A1173 U1174 G1175 U1176 A1177 C1178 C1179 G1183 C1184 U1185 A1186 A1192 C1197 G1211 U1212 U1213 U1216 C1217 G1218 A1219 A1220 C1221 A1222 G1223 G1226 U1227 U1237 U1238 C1239 U1240 A1241 A1242 G1243 G1244 G1245 C1246 G1250 A1258 G1261 A1267 G1276 A1285 G1288 A1289 G1290 A1291
G1294 A1306 G1307 A1310 A1311 A1312 G1313 A1314 A1315 G1316 G1317 G1318 U1319 G1320 A1323 C1329 U1330 A1337 A1338 U1339 G1340 C1341 C1342 U1343 A1344 A1345 U1350 C1351 G1356 G1357 C1362 U1363 C1368 G1375 C1382 G1383 A1386 U1389 A1390 A1391 C1394 G1395 A1396 G1397
G1401 A1402 A1403 A1404 G1412 U1416 A1421 A1422 C1423 A1424 G1425 G1426 U1431 A1432 U1433 C1436 U1437 G1438 U1439 C1442 A1443 U1446 C1447 C1448 A1451 C1452 C1453 A1454 U1457 G1458 A1463 U1464 G1465 G1469 G1470 A1471 C1472 G1473 C1474 A1475 G1476 G1477 G1480 A1481 U1482 A1483 G1484
A1488 C1491 G1492 C1493 G1494 G1495 U1496 A1497 U1498 U1499 A1502 U1503 A1504 U1505 C1506 C1509 G1510 U1511 C1512 C1513 A1514 A1515 G1516 C1517 A1518 G1519 U1520 U1521 A1522 G1523 G1524 C1525 U1526 G1527 G1528 G1529 A1530 A1531 A1534 C1537 G1623 A1540 C1543 G1544 U1545 U1546 U1547 U1552 A1553 A1554 G1555 G1556 C1557
U1558 G1559 A1560 G1561 G1564 U1565 G1566 A1567 U1568 G1569 G1570 C1571 G1574 C1575 G1576 A1577 A1578 A1579 U1580 A1581 U1582 A1583 G1684 U1585 A1590 A1591 G1592 U1593 U1594 C1595 C1596 C1605 A1612 A1613 G1614 A1615 C1623 U1624 G1628 A1629 G1630 G1631 U1632 A1636 C1643 G1649 C1650 A1651 A1652 A1653
C1660 A1661 G1671 G1672 A1675 U1679 C1680 A1689 U1690 C1691 G1694 A1695 G1696 A1697 A1698 U1702 G1710 A1711 A1712 G1717 C1718 A1719 A1720 A1725 C1726 C1727 A1732 A1733 U1736 C1737 G1742 U1752 C1753 U1754 G1755 U1756 U1757 A1758 G1759 G1760 G1761 U1762 A1765 A1766
A1772 G1775 A1776 G1777 C1778 C1779 G1780 C1781 U1788 A1789 G1790 G1791 A1800 G1803 G1808 C1809 A1810 A1811 A1812 C1815 A1816 C1817 A1818 U1821 C1822 U1823 C1824 U1825 G1826 C1827 G1828 A1829 A1830 A1836 A1843 G1844 U1845 A1846 A1866 C1860 C1864 G1873 A1874 A1875 G1876 A1880
A1881 G1884 G1885 A1886 G1887 C1888 U1891 G1896 U1897 A1898 A1899 G1900 C1901 G1902 A1903 A1904 G1910 A1911 A1912 U1913 A1916 C1920 C1921 C1922 A1927 A1928 G1933 A1940 C1941 U1942 A1943 U1944 A1945 A1946 C1947 U1960 C1961 C1952 U1953 A1964 A1955 G1956 G1957 A1963 A1964 A1965 G1976 G1977
U1978 A1979 U1982 C1989 C1990 C1994 A1997 A1998 G1999 G2007 A2008 U2018 G2019 U2020 C2023 A2024 G2037 A2050 C2051 C2052 C2053 G2056 A2057 A2058 G2059 A2060 U2068 A2069 C2070 C2071 C2074 G2075 A2078 C2082 G2083 A2086 A2087 G2088 A2089 C2090 C2091 C2092 C2093 G2094 U2095



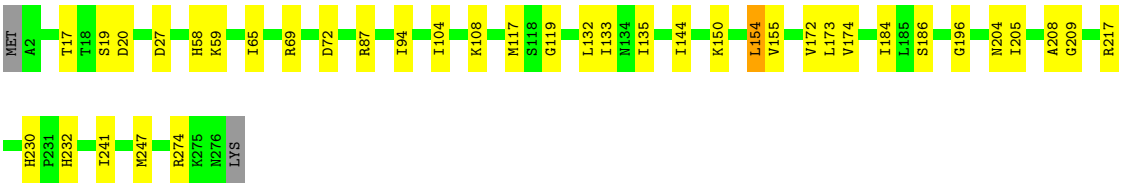
• Molecule 4: 5S rRNA

Chain V:



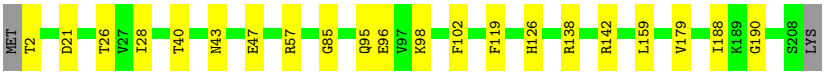
• Molecule 5: 50S ribosomal protein L2

Chain W:



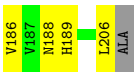
• Molecule 6: 50S ribosomal protein L3

Chain X:



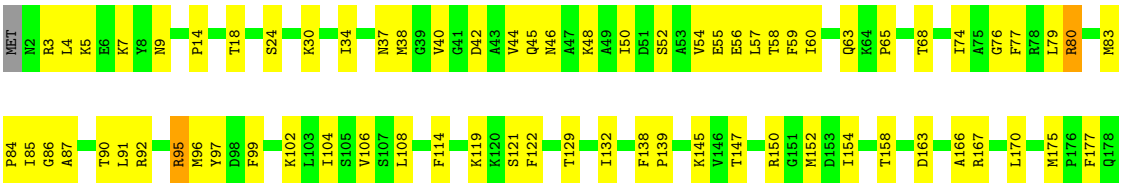
• Molecule 7: 50S ribosomal protein L4

Chain Y:



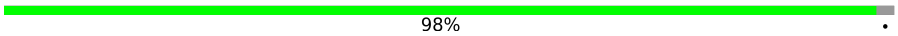
• Molecule 8: 50S ribosomal protein L5

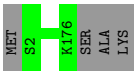
Chain Z:



• Molecule 9: 50S ribosomal protein L6

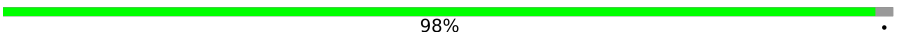
Chain a:

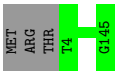




• Molecule 10: 50S ribosomal protein L13

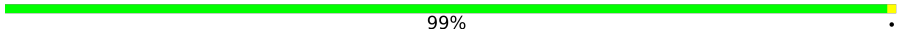
Chain c:





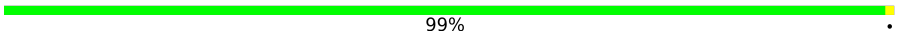
• Molecule 11: 50S ribosomal protein L14

Chain d:



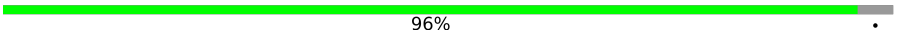
• Molecule 12: 50S ribosomal protein L15

Chain e:



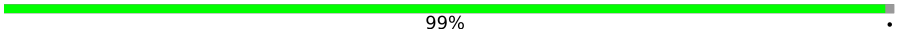
• Molecule 13: 50S ribosomal protein L16

Chain f:



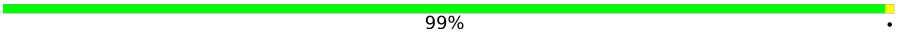
• Molecule 14: 50S ribosomal protein L17

Chain g:



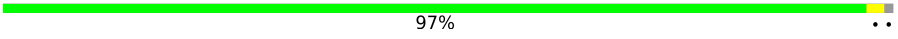
• Molecule 15: 50S ribosomal protein L18

Chain h:



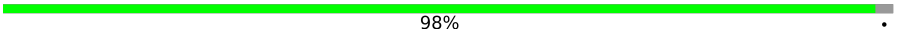
• Molecule 16: 50S ribosomal protein L19

Chain i:



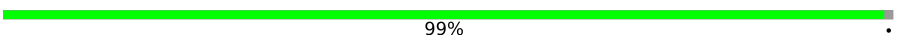
• Molecule 17: 50S ribosomal protein L20

Chain j:



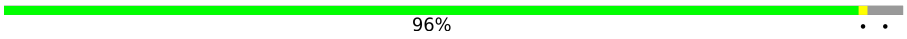
• Molecule 18: 50S ribosomal protein L21

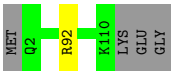
Chain k:



• Molecule 19: 50S ribosomal protein L22

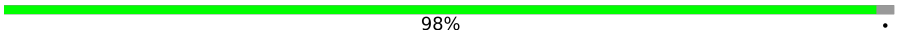
Chain l:





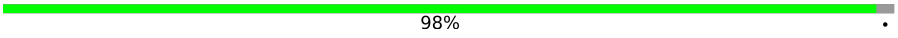
• Molecule 20: 50S ribosomal protein L23

Chain m:



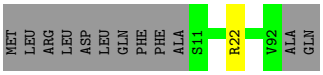
• Molecule 21: 50S ribosomal protein L24

Chain n:



• Molecule 22: 50S ribosomal protein L27

Chain o:

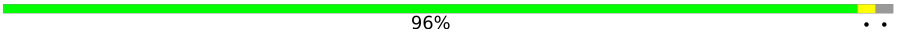


• Molecule 23: 50S ribosomal protein L32

Chain p:

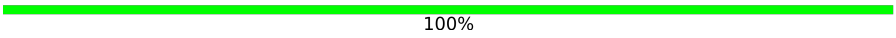
• Molecule 24: 50S ribosomal protein L33 1

Chain q:



• Molecule 25: 50S ribosomal protein L34

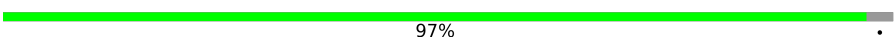
Chain r:



There are no outlier residues recorded for this chain.

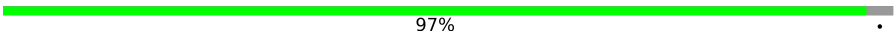
• Molecule 26: 50S ribosomal protein L35

Chain s:



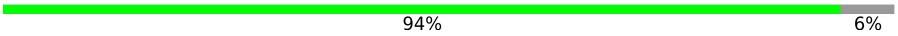
• Molecule 27: 50S ribosomal protein L36

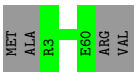
Chain t:



• Molecule 28: 50S ribosomal protein L28

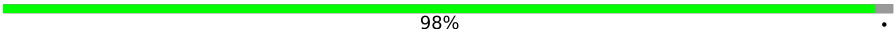
Chain u:





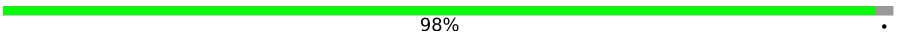
• Molecule 29: 50S ribosomal protein L29

Chain v:



• Molecule 30: 50S ribosomal protein L30

Chain w:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	57683	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TALOS ARCTICA	Depositor
Voltage (kV)	200	Depositor
Electron dose ($e^-/Å^2$)	23.94	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	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: ZN, MG

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	b	0.25	0/963	0.52	0/1298
2	H	0.26	0/1082	0.39	0/1454
2	I	0.26	0/1098	0.42	0/1475
3	U	0.41	0/70479	0.83	27/109956 (0.0%)
4	V	0.28	0/2767	0.82	1/4313 (0.0%)
5	W	0.29	0/2147	0.50	0/2880
6	X	0.29	0/1596	0.49	0/2139
7	Y	0.29	0/1579	0.46	0/2131
8	Z	0.26	0/1422	0.50	0/1909
9	a	0.26	0/1359	0.47	0/1831
10	c	0.29	0/1145	0.47	0/1541
11	d	0.28	0/926	0.47	0/1244
12	e	0.29	0/1092	0.49	0/1456
13	f	0.26	0/1119	0.44	0/1495
14	g	0.27	0/959	0.47	0/1283
15	h	0.25	0/920	0.45	0/1235
16	i	0.28	0/948	0.47	0/1268
17	j	0.32	0/951	0.45	0/1265
18	k	0.29	0/796	0.52	0/1069
19	l	0.28	0/850	0.47	0/1145
20	m	0.28	0/758	0.48	0/1010
21	n	0.28	0/771	0.50	0/1031
22	o	0.30	0/637	0.49	0/846
23	p	0.30	0/432	0.50	0/573
24	q	0.26	0/405	0.48	0/539
25	r	0.27	0/369	0.47	0/482
26	s	0.27	0/518	0.46	0/679
27	t	0.27	0/290	0.43	0/382
28	u	0.26	0/447	0.51	0/595
29	v	0.27	0/530	0.43	0/706
30	w	0.27	0/456	0.47	0/612
All	All	0.38	0/99811	0.76	28/149842 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	b	0	1
5	W	0	1
All	All	0	2

There are no bond length outliers.

The worst 5 of 28 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	U	1431	U	C2-N1-C1'	8.67	128.10	117.70
3	U	1357	G	N3-C4-N9	-7.64	121.41	126.00
3	U	1431	U	N1-C2-O2	6.99	127.70	122.80
3	U	1350	U	C2-N1-C1'	6.91	126.00	117.70
3	U	1557	C	N3-C2-O2	-6.89	117.08	121.90

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
5	W	154	LEU	Peptide
1	b	57	ASN	Peptide

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	b	955	0	990	0	0
2	H	1063	0	1065	16	0
2	I	1079	0	1088	17	0
3	U	62920	0	31659	563	0
4	V	2475	0	1255	33	0
5	W	2110	0	2200	30	0
6	X	1574	0	1642	15	0
7	Y	1560	0	1647	25	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
8	Z	1403	0	1467	55	0
9	a	1341	0	1388	0	0
10	c	1122	0	1162	0	0
11	d	919	0	977	0	0
12	e	1080	0	1132	0	0
13	f	1096	0	1165	0	0
14	g	952	0	983	0	0
15	h	911	0	947	0	0
16	i	935	0	1008	0	0
17	j	939	0	1005	0	0
18	k	785	0	826	0	0
19	l	841	0	899	0	0
20	m	751	0	802	0	0
21	n	761	0	821	0	0
22	o	629	0	644	0	0
23	p	425	0	442	0	0
24	q	400	0	410	0	0
25	r	366	0	410	0	0
26	s	511	0	564	0	0
27	t	287	0	327	0	0
28	u	443	0	487	0	0
29	v	529	0	568	0	0
30	w	454	0	491	0	0
31	I	1	0	0	0	0
31	U	214	0	0	0	0
31	V	1	0	0	0	0
31	W	2	0	0	0	0
31	e	2	0	0	0	0
31	u	1	0	0	0	0
32	p	1	0	0	0	0
32	q	1	0	0	0	0
32	t	1	0	0	0	0
All	All	91840	0	60471	721	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 7.

The worst 5 of 721 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)
3:U:2131:C:N4	3:U:2132:A:N6	2.04	1.04

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:U:2131:C:C4	3:U:2132:A:N6	2.35	0.92
3:U:1104:U:H3	3:U:1123:C:H42	1.01	0.92
3:U:927:G:H1	3:U:939:U:H3	1.23	0.87
3:U:1104:U:H3	3:U:1123:C:N4	1.73	0.86

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	
1	b	121/166 (73%)	101 (84%)	20 (16%)	0	100	100
2	H	130/143 (91%)	127 (98%)	3 (2%)	0	100	100
2	I	132/143 (92%)	128 (97%)	4 (3%)	0	100	100
5	W	273/277 (99%)	252 (92%)	21 (8%)	0	100	100
6	X	205/209 (98%)	194 (95%)	11 (5%)	0	100	100
7	Y	203/207 (98%)	189 (93%)	14 (7%)	0	100	100
8	Z	176/179 (98%)	159 (90%)	17 (10%)	0	100	100
9	a	173/179 (97%)	160 (92%)	13 (8%)	0	100	100
10	c	140/145 (97%)	133 (95%)	7 (5%)	0	100	100
11	d	120/122 (98%)	111 (92%)	9 (8%)	0	100	100
12	e	144/146 (99%)	132 (92%)	12 (8%)	0	100	100
13	f	136/144 (94%)	130 (96%)	6 (4%)	0	100	100
14	g	117/120 (98%)	107 (92%)	10 (8%)	0	100	100
15	h	118/120 (98%)	109 (92%)	9 (8%)	0	100	100
16	i	112/115 (97%)	111 (99%)	1 (1%)	0	100	100
17	j	115/119 (97%)	107 (93%)	8 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
18	k	99/102 (97%)	85 (86%)	14 (14%)	0	100	100
19	l	107/113 (95%)	103 (96%)	4 (4%)	0	100	100
20	m	91/95 (96%)	88 (97%)	3 (3%)	0	100	100
21	n	99/103 (96%)	88 (89%)	11 (11%)	0	100	100
22	o	80/94 (85%)	75 (94%)	5 (6%)	0	100	100
23	p	52/59 (88%)	47 (90%)	5 (10%)	0	100	100
24	q	46/49 (94%)	44 (96%)	2 (4%)	0	100	100
25	r	42/44 (96%)	40 (95%)	2 (5%)	0	100	100
26	s	62/66 (94%)	60 (97%)	2 (3%)	0	100	100
27	t	34/37 (92%)	33 (97%)	1 (3%)	0	100	100
28	u	56/62 (90%)	51 (91%)	5 (9%)	0	100	100
29	v	63/66 (96%)	60 (95%)	3 (5%)	0	100	100
30	w	56/59 (95%)	56 (100%)	0	0	100	100
All	All	3302/3483 (95%)	3080 (93%)	222 (7%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	b	105/138 (76%)	100 (95%)	5 (5%)	25	57
2	H	114/123 (93%)	113 (99%)	1 (1%)	78	90
2	I	116/123 (94%)	116 (100%)	0	100	100
5	W	223/225 (99%)	223 (100%)	0	100	100
6	X	168/170 (99%)	168 (100%)	0	100	100
7	Y	169/170 (99%)	168 (99%)	1 (1%)	86	93
8	Z	153/154 (99%)	149 (97%)	4 (3%)	46	72
9	a	148/151 (98%)	148 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
10	c	120/123 (98%)	120 (100%)	0	100	100
11	d	101/101 (100%)	100 (99%)	1 (1%)	76	89
12	e	110/110 (100%)	109 (99%)	1 (1%)	78	90
13	f	111/116 (96%)	111 (100%)	0	100	100
14	g	99/100 (99%)	99 (100%)	0	100	100
15	h	93/93 (100%)	92 (99%)	1 (1%)	73	88
16	i	99/100 (99%)	97 (98%)	2 (2%)	55	78
17	j	96/98 (98%)	96 (100%)	0	100	100
18	k	83/84 (99%)	83 (100%)	0	100	100
19	l	90/93 (97%)	89 (99%)	1 (1%)	73	88
20	m	84/85 (99%)	84 (100%)	0	100	100
21	n	85/87 (98%)	85 (100%)	0	100	100
22	o	64/74 (86%)	63 (98%)	1 (2%)	62	83
23	p	48/53 (91%)	48 (100%)	0	100	100
24	q	46/47 (98%)	45 (98%)	1 (2%)	52	76
25	r	39/39 (100%)	39 (100%)	0	100	100
26	s	54/56 (96%)	54 (100%)	0	100	100
27	t	34/35 (97%)	34 (100%)	0	100	100
28	u	47/50 (94%)	47 (100%)	0	100	100
29	v	56/57 (98%)	56 (100%)	0	100	100
30	w	52/53 (98%)	52 (100%)	0	100	100
All	All	2807/2908 (96%)	2788 (99%)	19 (1%)	84	92

5 of 19 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
16	i	13	LYS
22	o	22	ARG
24	q	48	THR
19	l	92	ARG
8	Z	5	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 49 such sidechains are listed below:

Mol	Chain	Res	Type
11	d	4	GLN
17	j	37	GLN
12	e	38	GLN
14	g	61	GLN
17	j	107	ASN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
3	U	2929/2930 (99%)	618 (21%)	29 (0%)
4	V	115/116 (99%)	30 (26%)	3 (2%)
All	All	3044/3046 (99%)	648 (21%)	32 (1%)

5 of 648 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
3	U	11	A
3	U	13	G
3	U	26	A
3	U	31	U
3	U	32	U

5 of 32 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
3	U	2871	G
4	V	24	G
3	U	681	A
3	U	646	G
4	V	52	C

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 224 ligands modelled in this entry, 224 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Map visualisation

This section contains visualisations of the EMDB entry EMD-10535. 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

This section was not generated.

6.2 Central slices

This section was not generated.

6.3 Largest variance slices

This section was not generated.

6.4 Orthogonal standard-deviation projections (False-color)

This section was not generated.

6.5 Orthogonal surface views

This section was not generated.

6.6 Mask visualisation

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

7 Map analysis

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

7.1 Map-value distribution

This section was not generated.

7.2 Volume estimate versus contour level

This section was not generated.

7.3 Rotationally averaged power spectrum

This section was not generated. The rotationally averaged power spectrum had issues being displayed.

8 Fourier-Shell correlation (i)

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

9 Map-model fit

This section was not generated.