Full wwPDB EM Validation Report

Jun 17, 2025 – 06:12 PM JST

PDB ID	:	8W51 / pdb_00008w51
EMDB ID	:	EMD-37271
Title	:	Structure of YchF(H114A) on E.coli 50S ribosomal subunit
Authors	:	Yu, T.; Li, X.; Zeng, F.
Deposited on	:	2023-08-25
Resolution	:	2.40 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

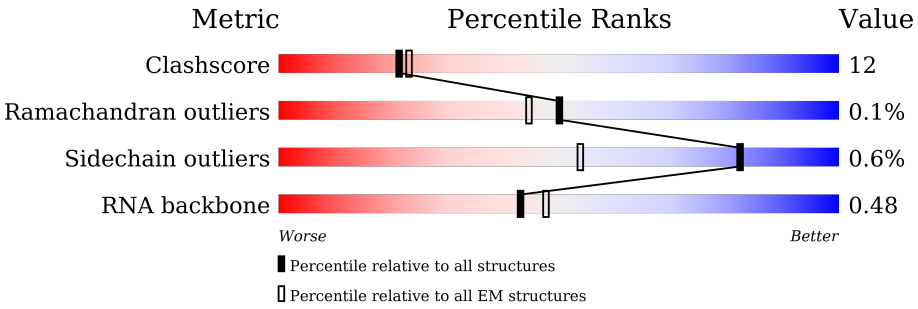
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 2.40 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	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	A	2904	49% 42% 9%
2	B	118	57% 39%
3	C	273	67% 30%
4	D	209	82% 18%
5	E	201	81% 19%
6	F	179	56% 42%
7	G	177	72% 27%

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Mol	Chain	Length	Quality of chain
8	H	149	
9	J	142	
10	K	142	
11	L	123	
12	M	144	
13	N	136	
14	O	127	
15	P	117	
16	Q	115	
17	R	118	
18	S	103	
19	T	110	
20	U	100	
21	V	104	
22	W	94	
23	X	85	
24	Y	78	
25	Z	63	
26	0	59	
27	1	57	
28	2	55	
29	3	46	
30	4	65	
31	5	38	
32	y	379	

2 Entry composition (i)

There are 34 unique types of molecules in this entry. The entry contains 93901 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 rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	A	2904	62351	27820	11472	20155	2904	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	B	118	2529	1126	464	821	118	0	0

- Molecule 3 is a protein called 50S ribosomal protein L2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	271	2082	1288	423	364	7	0	0

- Molecule 4 is a protein called 50S ribosomal protein L3.

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

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

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

- Molecule 6 is a protein called 50S ribosomal protein L5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	177	1410	899	249	256	6	0	0

- Molecule 7 is a protein called 50S ribosomal protein L6.

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

- Molecule 8 is a protein called 50S ribosomal protein L9.

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

- Molecule 9 is a protein called Large ribosomal subunit protein uL11.

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
11	L	123	Total	C	N	O	S	0	0
			946	593	181	166	6		

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
14	O	120	Total 960	C 593	N 196	O 166	S 5	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
15	P	116	Total 892	C 552	N 178	O 162	0	0

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

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

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

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

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

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

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

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
20	U	93	Total 738	C 466	N 139	O 131	S 2	0	0

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

Mol	Chain	Residues	Atoms				AltConf	Trace
21	V	102	Total 779	C 492	N 146	O 141	0	0

- Molecule 22 is a protein called 50S ribosomal protein L25.

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

- Molecule 23 is a protein called 50S ribosomal protein L27.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	X	77	Total 588	C 363	N 118	O 106	S 1	0	0

- Molecule 24 is a protein called 50S ribosomal protein L28.

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

- Molecule 25 is a protein called 50S ribosomal protein L29.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	Z	62	Total 501	C 308	N 98	O 94	S 1	0	0

- Molecule 26 is a protein called 50S ribosomal protein L30.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	0	58	Total 449	C 281	N 87	O 79	S 2	0	0

- Molecule 27 is a protein called 50S ribosomal protein L32.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	1	56	Total 444	C 269	N 94	O 80	S 1	0	0

- Molecule 28 is a protein called 50S ribosomal protein L33.

Mol	Chain	Residues	Atoms				AltConf	Trace
28	2	50	Total	C	N	O	0	0
			409	263	75	71		

- Molecule 29 is a protein called 50S ribosomal protein L34.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	3	46	Total	C	N	O	S	0	0
			377	228	90	57	2		

- Molecule 30 is a protein called 50S ribosomal protein L35.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	4	64	Total	C	N	O	S	0	0
			504	323	105	74	2		

- Molecule 31 is a protein called 50S ribosomal protein L36.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	5	38	Total	C	N	O	S	0	0
			302	185	65	48	4		

- Molecule 32 is a protein called Ribosome-binding ATPase YchF.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	y	363	Total	C	N	O	S	0	0
			2781	1757	470	540	14		

There are 17 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
y	-15	MET	-	initiating methionine	UNP P0ABU2
y	-14	GLY	-	expression tag	UNP P0ABU2
y	-13	HIS	-	expression tag	UNP P0ABU2
y	-12	HIS	-	expression tag	UNP P0ABU2
y	-11	HIS	-	expression tag	UNP P0ABU2
y	-10	HIS	-	expression tag	UNP P0ABU2
y	-9	HIS	-	expression tag	UNP P0ABU2
y	-8	HIS	-	expression tag	UNP P0ABU2
y	-7	GLU	-	expression tag	UNP P0ABU2
y	-6	ASN	-	expression tag	UNP P0ABU2
y	-5	LEU	-	expression tag	UNP P0ABU2
y	-4	TYR	-	expression tag	UNP P0ABU2

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Chain	Residue	Modelled	Actual	Comment	Reference
y	-3	PHE	-	expression tag	UNP P0ABU2
y	-2	GLN	-	expression tag	UNP P0ABU2
y	-1	GLY	-	expression tag	UNP P0ABU2
y	0	HIS	-	expression tag	UNP P0ABU2
y	114	ALA	HIS	engineered mutation	UNP P0ABU2

- Molecule 33 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	AltConf
33	A	99	Total Mg 99 99	0
33	B	4	Total Mg 4 4	0
33	D	1	Total Mg 1 1	0

- Molecule 34 is ZINC ION (CCD ID: ZN) (formula: Zn).

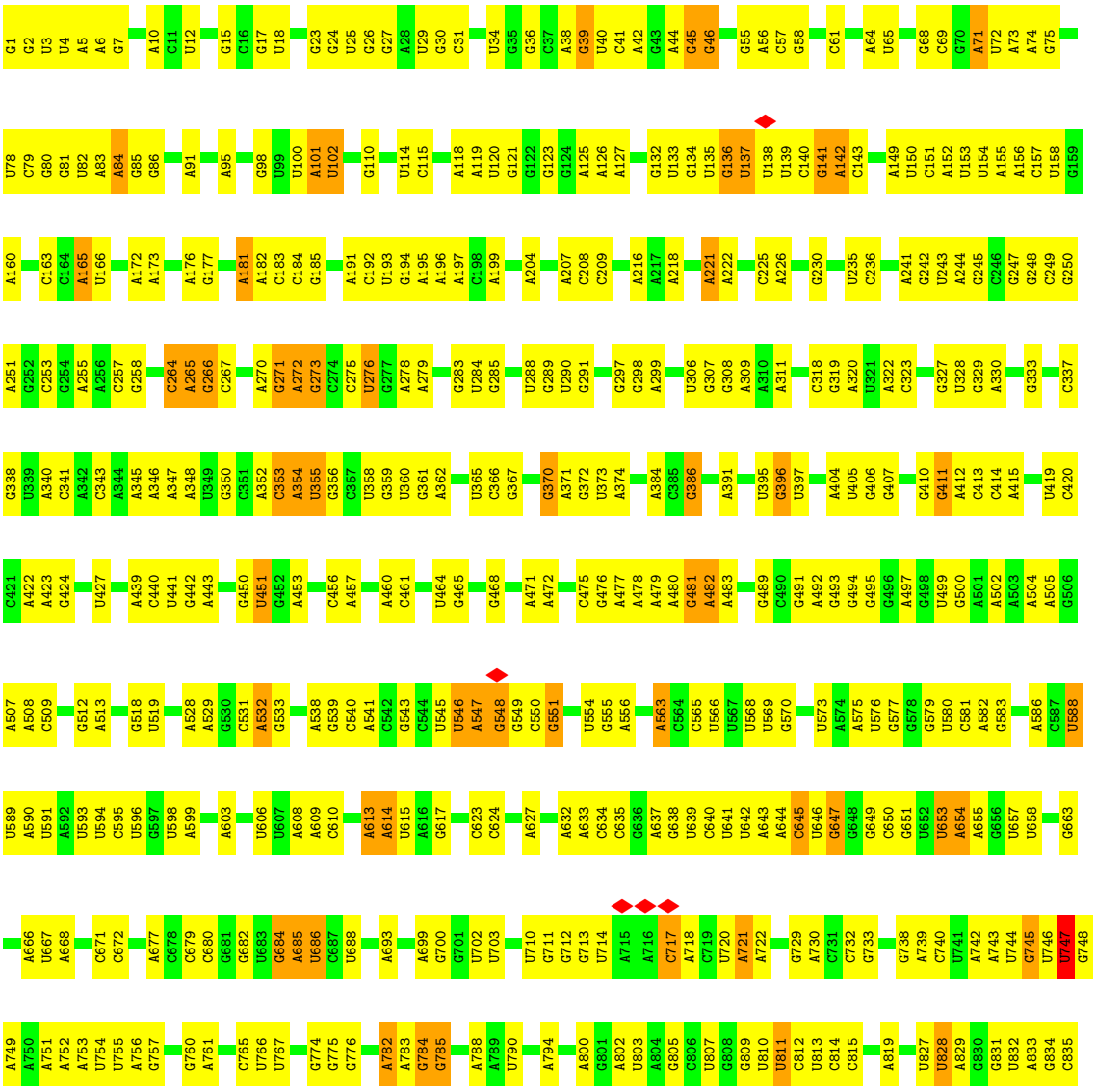
Mol	Chain	Residues	Atoms	AltConf
34	5	1	Total Zn 1 1	0

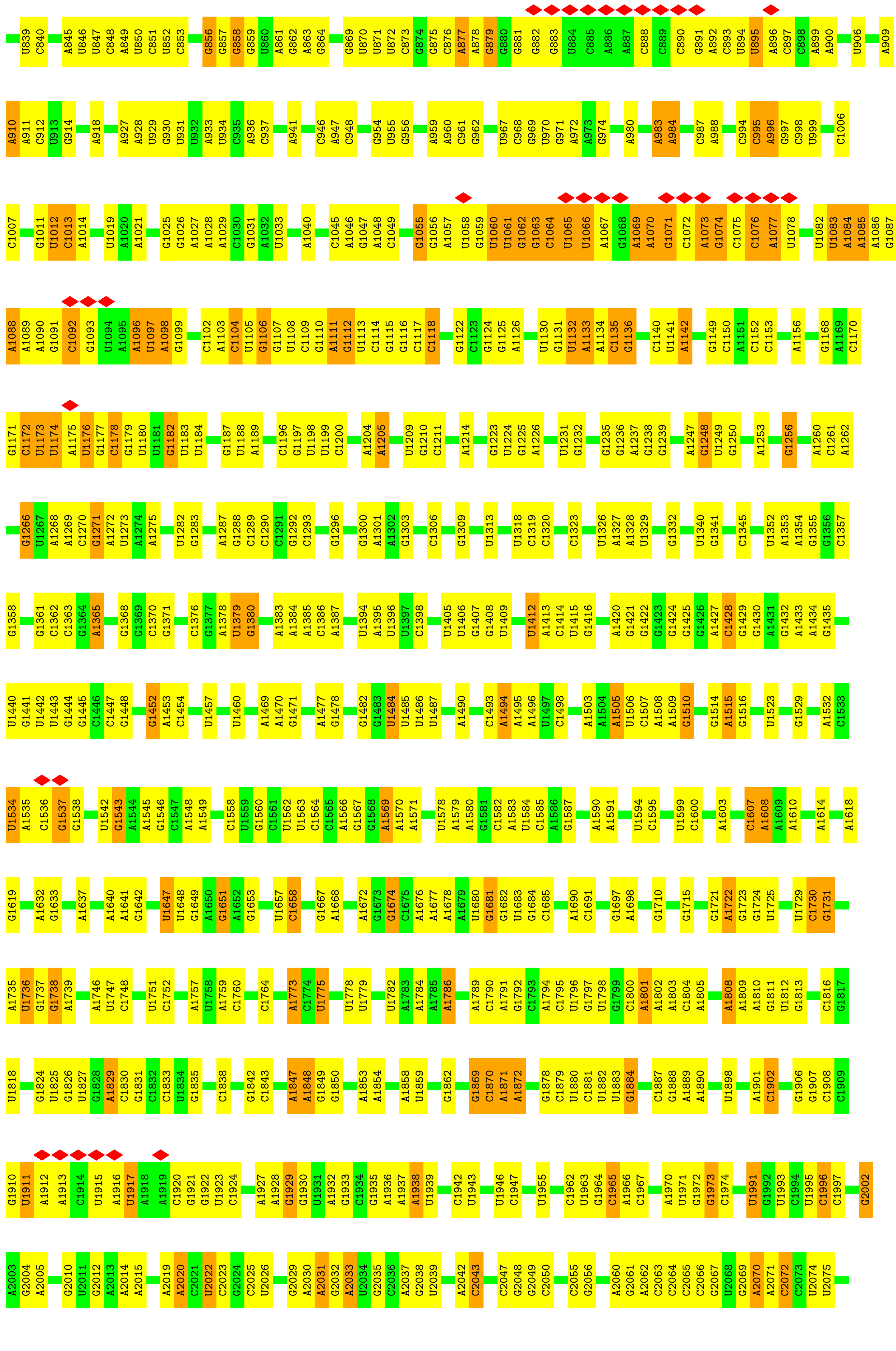
3 Residue-property plots (i)

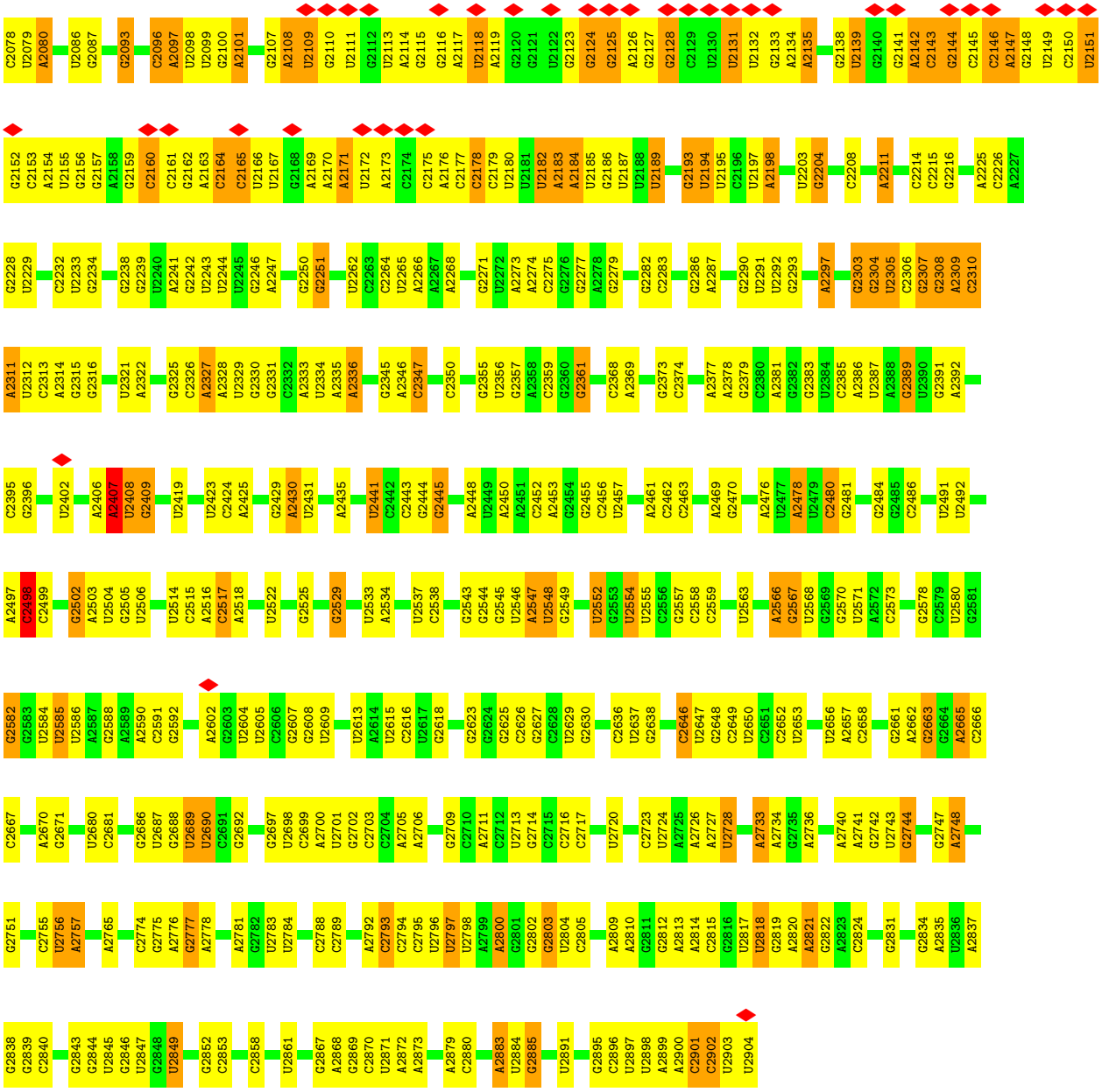
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

Chain A:

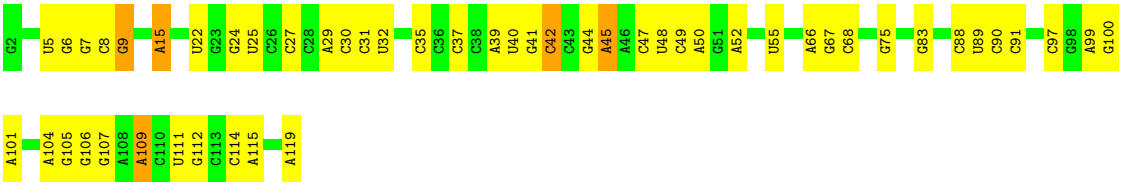



U839 C840 A845 U846 U847 C848 A849 U850 C851 U852 C853 G856 G857 G858 G859 U860 A861 G862 A863 G864 G869 U870 U871 U872 C873 G874 G875 C876 A877 A878 G879 G880 G881 G882 G883 U884 C885 A886 A887 C888 C889 C890 G891 A892 C893 U894 U895 A896 C897 C898 A899 A900 U906 A909
A910 A911 C912 U913 G914 A918 A927 A928 U929 G930 U931 U932 A933 U934 C935 A936 C937 A941 C946 A947 C948 G954 U955 G956 A959 A960 C961 G962 U967 C968 G969 U970 G971 A972 A973 G974 A980 A983 A984 C987 A988 C994 C995 A996 G997 C998 U999 C1006
C1007 G1011 U1012 C1013 A1014 U1019 A1020 A1021 G1025 G1026 A1027 A1028 A1029 C1030 G1031 A1032 U1033 A1040 C1045 A1046 G1047 A1048 C1049 G1055 G1056 A1057 U1058 G1059 U1060 U1061 G1062 G1063 C1064 U1065 U1066 A1067 G1068 A1069 A1070 G1071 C1072 A1073 G1074 C1075 C1076 A1077 U1078 U1082 U1083 A1084 A1085 A1086 G1087
A1088 A1089 A1090 G1091 C1092 G1093 U1094 A1095 A1096 U1097 A1098 G1099 C1102 A1103 C1104 U1105 G1106 G1107 U1108 C1109 G1110 A1111 G1112 U1113 C1114 G1115 G1116 C1117 C1118 G1122 C1123 G1124 G1125 A1126 U1130 G1131 U1132 A1133 A1134 C1135 G1136 C1140 U1141 A1142 G1149 C1150 A1151 C1152 C1153 A1156 G1168 A1169 C1170
G1171 C1172 U1173 U1174 A1175 U1176 G1177 C1178 G1179 U1180 U1181 G1182 U1183 U1184 G1187 G1188 A1189 C1196 G1197 U1198 U1199 C1200 A1204 A1205 U1209 G1210 C1211 A1214 G1223 U1224 G1225 A1226 U1231 G1232 G1235 G1236 A1237 G1238 G1239 A1247 G1248 U1249 G1250 A1253 G1256 A1260 C1261 A1262
G1266 U1267 A1268 A1269 C1270 G1271 A1272 U1273 A1274 A1275 U1282 G1283 A1287 G1288 C1289 C1290 G1291 G1292 C1293 G1296 G1300 A1301 A1302 G1303 C1306 G1309 U1313 U1318 C1319 C1320 C1323 U1326 A1327 A1328 U1329 G1332 U1340 G1341 C1345 U1352 A1353 A1354 G1355 G1356 C1357
G1358 G1361 C1362 C1363 G1364 A1365 G1368 G1369 C1370 G1371 C1376 G1377 A1378 U1379 G1380 A1383 A1384 A1385 C1386 A1387 U1394 A1395 U1396 U1397 C1398 U1405 U1406 G1407 G1408 U1409 U1412 A1413 C1414 U1415 G1416 A1420 G1421 G1422 G1423 G1424 G1425 G1426 A1427 C1428 G1429 G1430 A1431 G1432 A1433 A1434 G1435
U1440 G1441 U1442 U1443 G1444 G1445 C1446 C1447 G1448 G1452 A1453 C1454 U1457 U1460 A1469 A1470 G1471 A1477 G1478 G1482 G1483 U1484 U1485 U1486 U1487 A1490 C1493 A1494 A1495 A1496 U1497 C1498 A1503 A1504 A1505 U1506 C1507 A1508 A1509 G1510 G1514 A1515 G1516 U1523 G1529 A1532 C1533
U1534 A1535 C1536 G1537 G1538 U1542 G1543 A1544 A1545 G1546 C1547 A1548 A1549 C1558 U1559 G1560 C1561 U1562 U1563 C1564 C1565 A1566 G1567 G1568 A1569 A1570 A1571 U1578 A1579 A1580 G1581 C1582 A1583 U1584 C1585 A1586 G1587 A1590 A1591 U1594 C1595 U1599 C1600 A1603 C1607 A1608 A1609 A1610 A1614 A1618
G1619 A1632 G1633 A1637 A1640 A1641 G1642 U1647 U1648 G1649 A1650 G1651 A1652 G1653 U1657 C1658 G1667 A1668 A1672 G1673 G1674 C1675 A1676 A1677 A1678 A1679 U1680 G1681 G1682 U1683 G1684 C1685 A1690 C1691 G1697 A1698 G1710 G1715 G1721 A1722 G1723 G1724 U1725 U1729 C1730 G1731
A1735 U1736 G1737 G1738 A1739 A1746 U1747 C1748 U1751 C1752 A1757 U1758 A1759 C1760 C1764 A1773 C1774 U1775 U1778 U1779 U1782 A1783 A1784 A1785 A1786 A1789 C1790 A1791 G1792 C1793 A1794 C1795 U1796 G1797 U1798 G1799 C1800 A1801 A1802 A1803 C1804 A1805 A1808 A1809 A1810 G1811 U1812 G1813 C1816 G1817
U1818 G1824 U1825 G1826 U1827 G1828 A1829 C1830 G1831 C1832 C1833 U1834 G1835 C1838 G1842 C1843 A1847 A1848 G1849 G1850 A1853 A1854 A1858 U1859 G1862 G1869 C1870 A1871 A1872 G1878 C1879 U1880 C1881 U1882 U1883 G1884 C1887 G1888 A1889 A1890 U1898 A1901 C1902 G1906 G1907 C1908 C1909
G1910 U1911 A1912 A1913 C1914 U1915 A1916 U1917 A1918 A1919 C1920 G1921 G1922 U1923 C1924 A1927 A1928 G1929 G1930 U1931 A1932 G1933 C1934 G1935 A1936 A1937 A1938 U1939 C1942 U1943 U1946 C1947 U1955 C1962 U1963 G1964 C1965 A1966 C1967 A1970 U1971 G1972 G1973 C1974 U1991 G1992 U1993 C1994 U1995 C1996 C1997 G2002
A2003 G2004 A2005 G2010 U2011 G2012 A2013 A2014 A2015 A2019 A2020 C2021 U2022 C2023 G2024 C2025 U2026 G2029 A2030 A2031 G2032 A2033 U2034 G2035 C2036 A2037 G2038 U2039 A2042 C2043 C2047 G2048 G2049 C2050 C2055 G2056 A2060 G2061 A2062 C2063 C2064 C2065 C2066 G2067 U2068 G2069 A2070 A2071 C2072 C2073 U2074 U2075



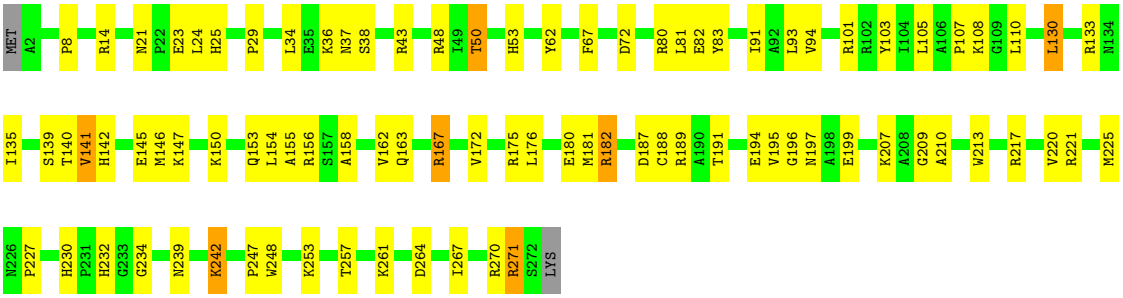
• Molecule 2: 5S rRNA

Chain B:



• Molecule 3: 50S ribosomal protein L2

Chain C:



• Molecule 4: 50S ribosomal protein L3

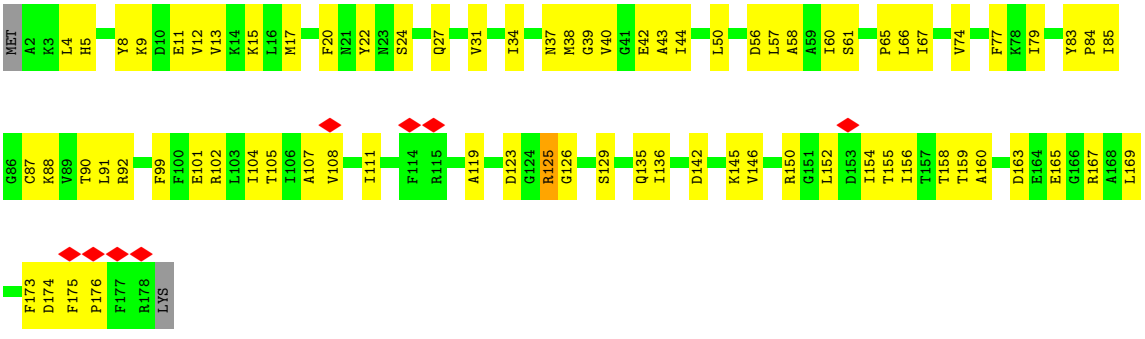
Chain D:

• Molecule 5: 50S ribosomal protein L4

Chain E:

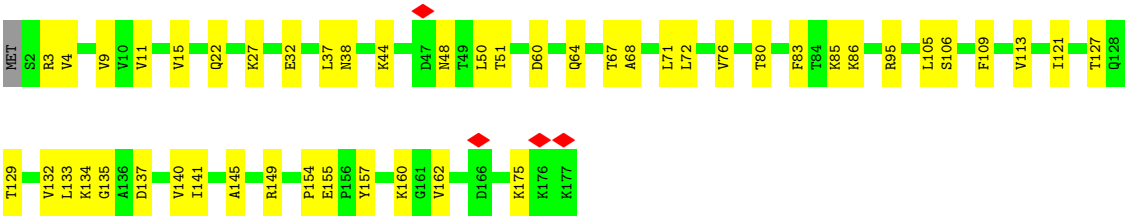
• Molecule 6: 50S ribosomal protein L5

Chain F:

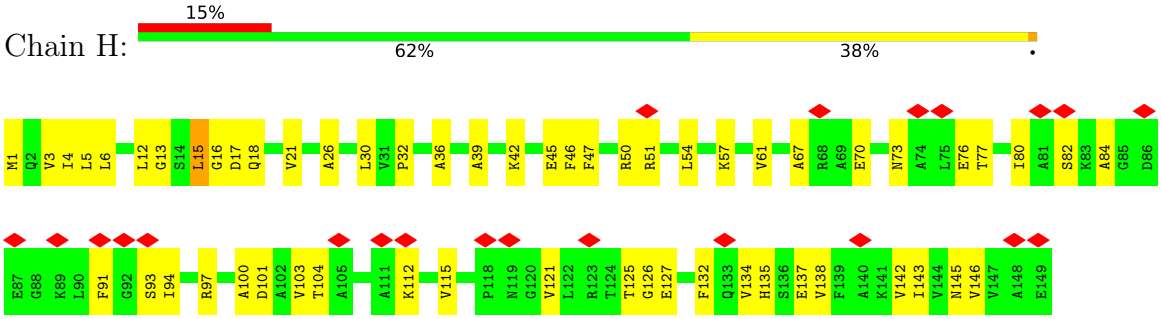


• Molecule 7: 50S ribosomal protein L6

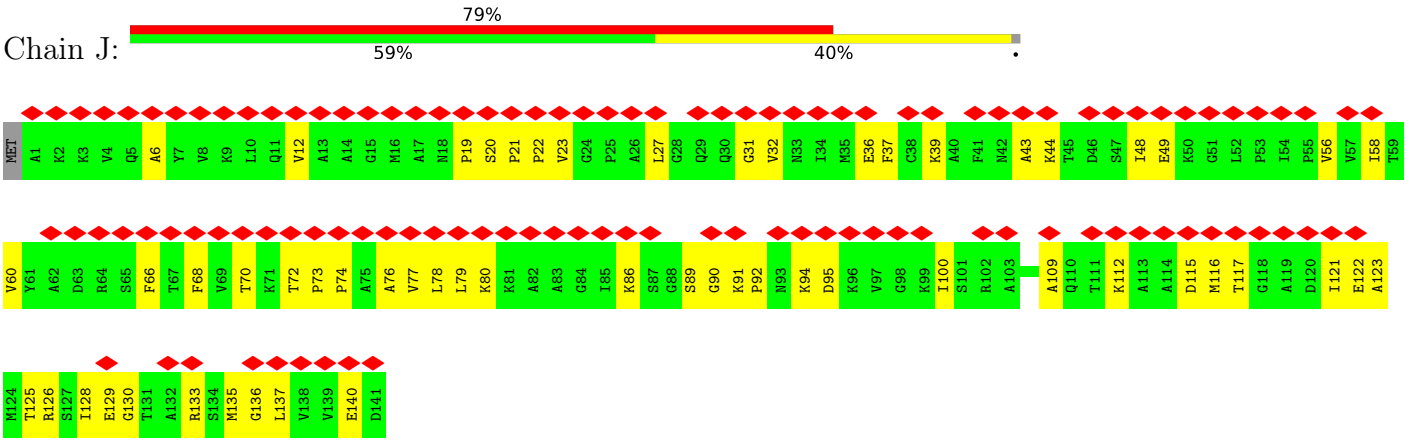
Chain G:



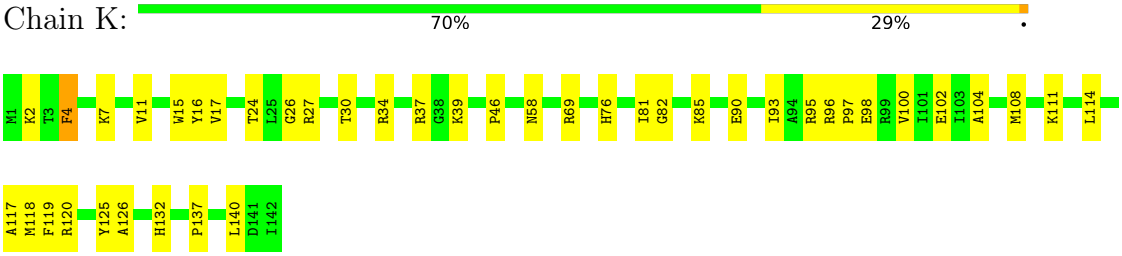
• Molecule 8: 50S ribosomal protein L9



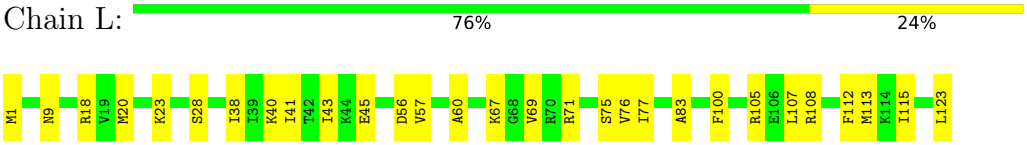
• Molecule 9: Large ribosomal subunit protein uL11



• Molecule 10: 50S ribosomal protein L13

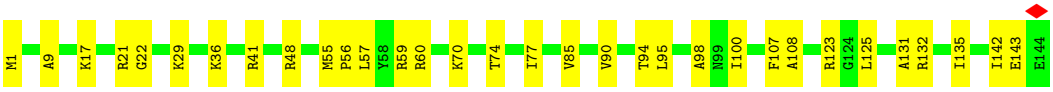


• Molecule 11: 50S ribosomal protein L14



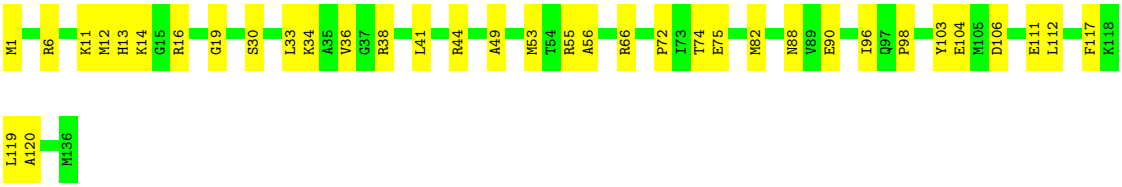
• Molecule 12: 50S ribosomal protein L15

Chain M:



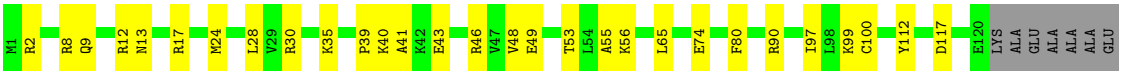
• Molecule 13: 50S ribosomal protein L16

Chain N:



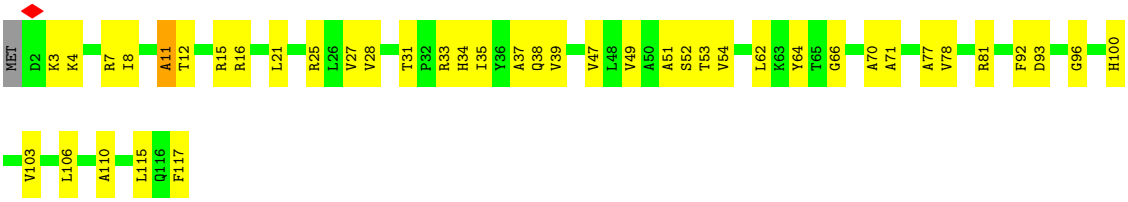
• Molecule 14: 50S ribosomal protein L17

Chain O:



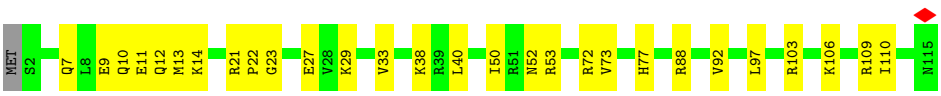
• Molecule 15: 50S ribosomal protein L18

Chain P:



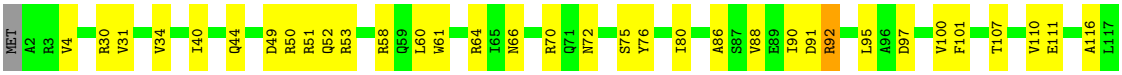
• Molecule 16: 50S ribosomal protein L19

Chain Q:



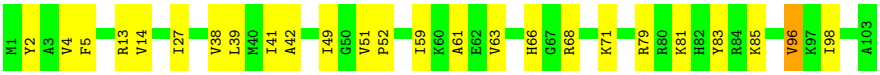
• Molecule 17: 50S ribosomal protein L20

Chain R:



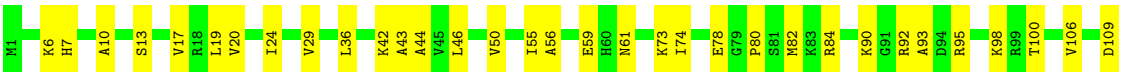
• Molecule 18: 50S ribosomal protein L21

Chain S:



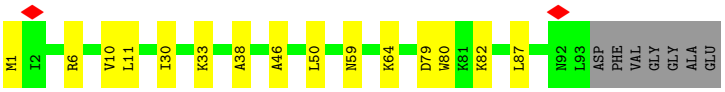
• Molecule 19: 50S ribosomal protein L22

Chain T:



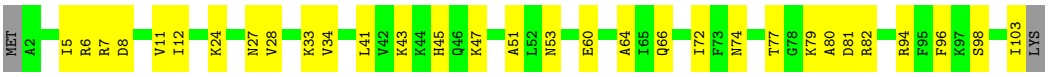
• Molecule 20: 50S ribosomal protein L23

Chain U:



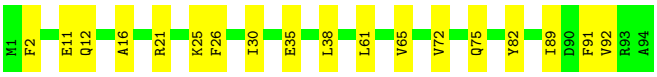
• Molecule 21: 50S ribosomal protein L24

Chain V:



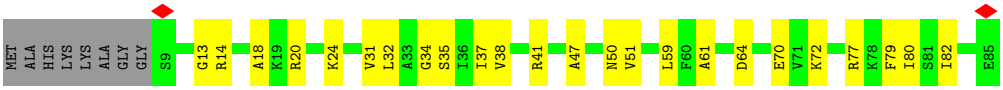
• Molecule 22: 50S ribosomal protein L25

Chain W:



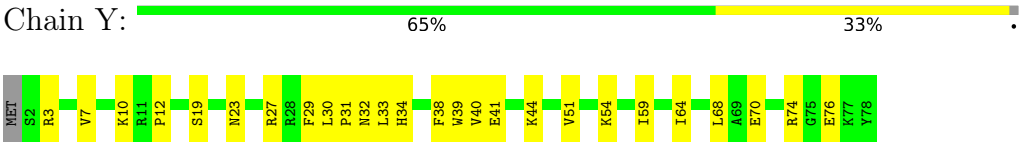
• Molecule 23: 50S ribosomal protein L27

Chain X:



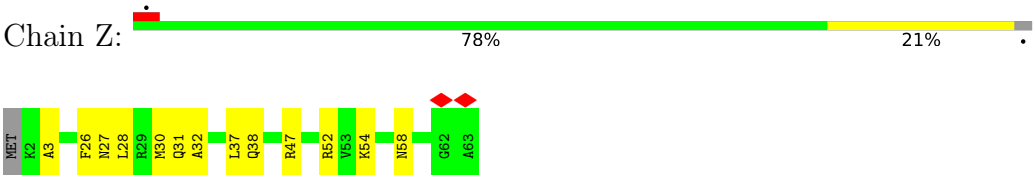
• Molecule 24: 50S ribosomal protein L28

Chain Y:



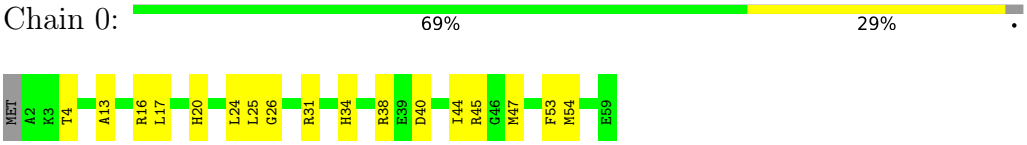
• Molecule 25: 50S ribosomal protein L29

Chain Z:



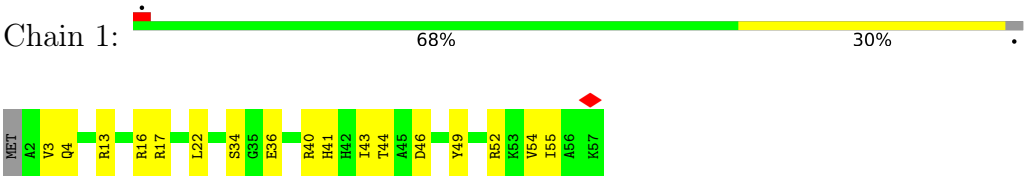
• Molecule 26: 50S ribosomal protein L30

Chain 0:



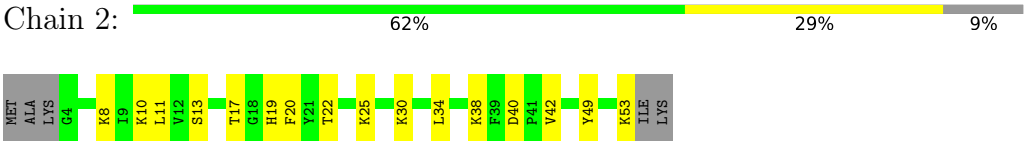
• Molecule 27: 50S ribosomal protein L32

Chain 1:



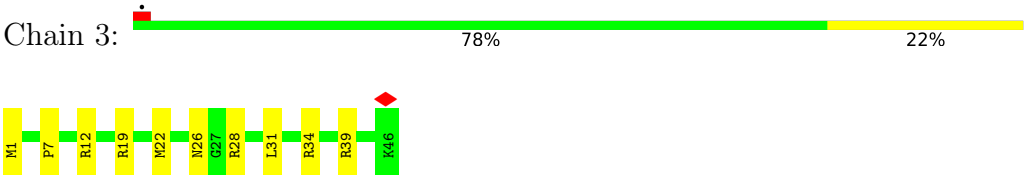
• Molecule 28: 50S ribosomal protein L33

Chain 2:



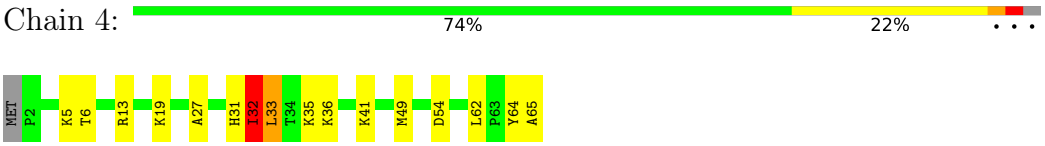
• Molecule 29: 50S ribosomal protein L34

Chain 3:



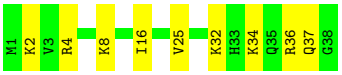
• Molecule 30: 50S ribosomal protein L35

Chain 4:



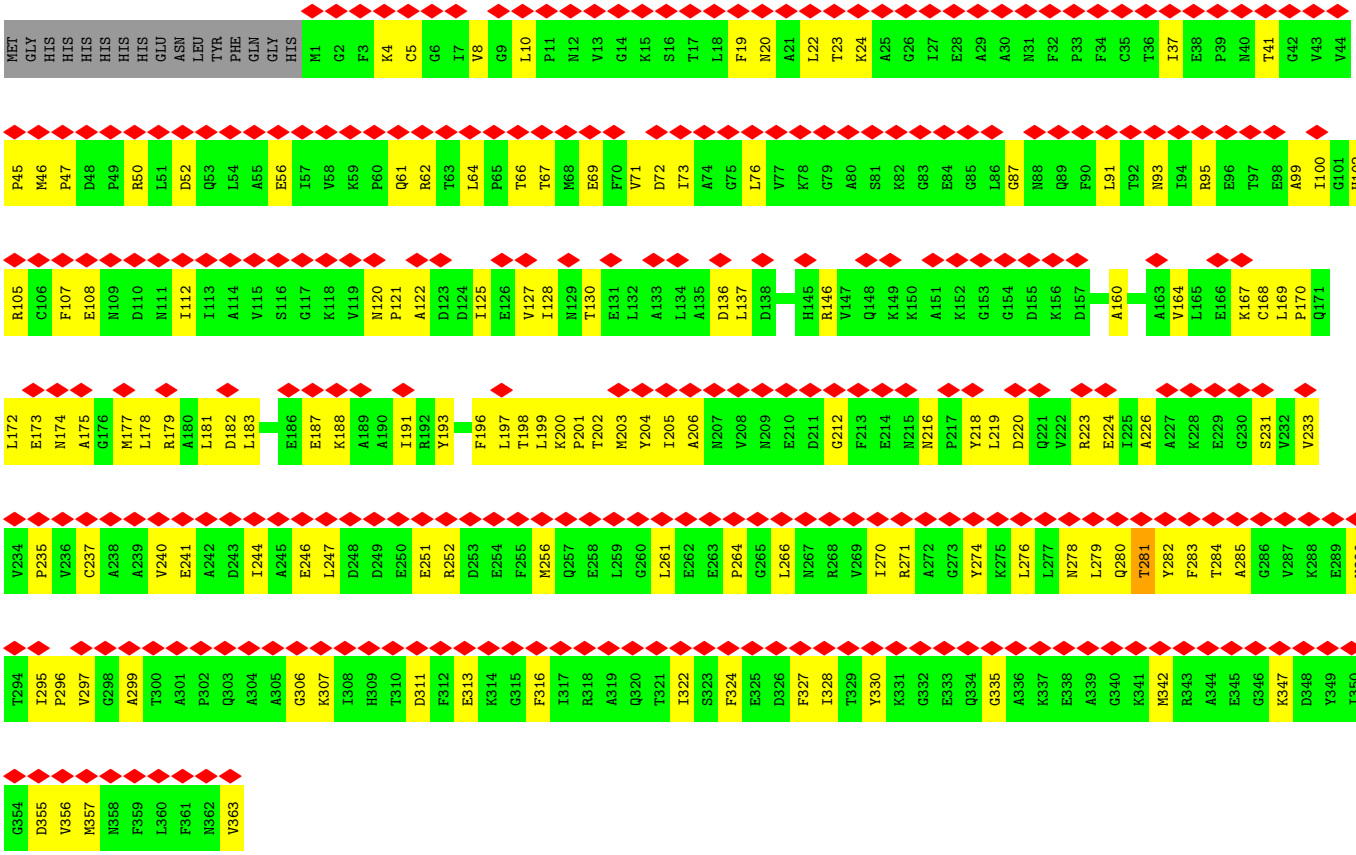
• Molecule 31: 50S ribosomal protein L36

Chain 5:



• Molecule 32: Ribosome-binding ATPase YchF

Chain y:



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	137631	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 ($e^-/Å^2$)	30	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	0.103	Depositor
Minimum map value	-0.043	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.003	Depositor
Recommended contour level	0.006	Depositor
Map size (Å)	403.19998, 403.19998, 403.19998	wwPDB
Map dimensions	384, 384, 384	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: 5MU, OMC, 5MC, 2MG, OMU, MG, PSU, OMG, 1MG, 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	A	0.69	0/69434	0.47	5/108325 (0.0%)
2	B	0.55	0/2828	0.40	0/4410
3	C	0.63	0/2121	0.60	0/2852
4	D	0.63	0/1586	0.60	0/2134
5	E	0.59	0/1571	0.55	0/2113
6	F	0.35	0/1434	0.64	0/1926
7	G	0.44	0/1343	0.54	0/1816
8	H	0.29	0/1122	0.51	0/1515
9	J	0.20	0/1046	0.53	0/1410
10	K	0.61	0/1152	0.55	0/1551
11	L	0.61	0/955	0.59	0/1279
12	M	0.58	0/1062	0.64	0/1413
13	N	0.61	0/1093	0.56	0/1460
14	O	0.62	0/973	0.60	0/1301
15	P	0.54	1/902 (0.1%)	0.60	0/1209
16	Q	0.58	0/929	0.59	0/1242
17	R	0.65	0/960	0.66	1/1278 (0.1%)
18	S	0.61	0/829	0.65	0/1107
19	T	0.63	0/864	0.59	0/1156
20	U	0.56	0/744	0.61	0/994
21	V	0.52	0/787	0.60	0/1051
22	W	0.51	0/766	0.48	0/1025
23	X	0.63	0/595	0.63	0/787
24	Y	0.61	0/635	0.62	0/848
25	Z	0.45	0/502	0.50	0/667
26	0	0.57	0/453	0.60	0/605
27	1	0.65	0/450	0.59	0/599
28	2	0.57	0/416	0.57	0/554
29	3	0.66	0/380	0.56	0/498
30	4	0.60	0/513	0.67	1/676 (0.1%)
31	5	0.65	0/303	0.58	0/397
32	y	0.21	0/2825	0.46	1/3819 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
All	All	0.65	1/101573 (0.0%)	0.50	8/152017 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	P	11	ALA	CA-CB	-6.11	1.44	1.53

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
17	R	50	ARG	N-CA-C	-10.32	100.11	111.36
30	4	33	LEU	N-CA-C	8.05	121.06	111.33
32	y	281	THR	N-CA-C	5.97	118.85	108.76
1	A	355	U	C2'-C3'-O3'	-5.49	105.47	113.70
1	A	1256	G	C4'-C3'-O3'	-5.39	104.92	113.00
1	A	2604	U	C1'-C2'-O2'	-5.36	100.36	108.40
1	A	1775	U	C1'-C2'-O2'	5.18	116.17	108.40
1	A	2407	A	C2'-C3'-O3'	5.00	121.21	113.70

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	A	62351	0	31373	1067	0
2	B	2529	0	1281	35	0
3	C	2082	0	2154	80	0
4	D	1565	0	1616	31	0
5	E	1552	0	1619	30	0
6	F	1410	0	1444	68	0
7	G	1323	0	1371	31	0
8	H	1111	0	1148	42	0
9	J	1032	0	1088	51	0
10	K	1129	0	1162	36	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
11	L	946	0	1023	21	0
12	M	1053	0	1129	35	0
13	N	1074	0	1157	34	0
14	O	960	0	1000	23	0
15	P	892	0	923	34	0
16	Q	917	0	962	21	0
17	R	947	0	1019	32	0
18	S	816	0	839	20	0
19	T	857	0	922	28	0
20	U	738	0	807	12	0
21	V	779	0	831	27	0
22	W	753	0	780	13	0
23	X	588	0	604	16	0
24	Y	625	0	652	21	0
25	Z	501	0	531	11	0
26	0	449	0	488	11	0
27	1	444	0	458	25	0
28	2	409	0	440	11	0
29	3	377	0	418	10	0
30	4	504	0	572	18	0
31	5	302	0	340	8	0
32	y	2781	0	2788	109	0
33	A	99	0	0	0	0
33	B	4	0	0	0	0
33	D	1	0	0	0	0
34	5	1	0	0	0	0
All	All	93901	0	62939	1772	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 12.

All (1772) 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)
1:A:2885:G:H22	27:1:40:ARG:NH1	1.37	1.20
32:y:280:GLN:NE2	32:y:295:ILE:HD11	1.64	1.10
1:A:2885:G:N2	27:1:40:ARG:HH12	1.52	1.05
1:A:1779:U:H5	1:A:1784:A:N7	1.59	0.99
1:A:1813:G:N3	3:C:50:THR:HG21	1.77	0.98
1:A:2885:G:N2	27:1:40:ARG:HH22	1.62	0.97
1:A:1062:G:N1	1:A:1077:A:C2	2.36	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1173:U:H2'	1:A:1174:U:H4'	1.49	0.92
17:R:92:ARG:HG2	17:R:92:ARG:HH11	1.35	0.92
32:y:280:GLN:HE21	32:y:295:ILE:CG1	1.82	0.91
32:y:73:ILE:HD12	32:y:93:ASN:HB3	1.52	0.91
1:A:2885:G:H22	27:1:40:ARG:CZ	1.84	0.90
27:1:44:THR:HG22	27:1:46:ASP:H	1.37	0.89
1:A:528:A:C2	1:A:2042:A:H2'	2.08	0.89
1:A:2469:A:H4'	13:N:55:ARG:CD	2.01	0.88
32:y:280:GLN:HE21	32:y:295:ILE:HD11	1.37	0.88
6:F:125:ARG:HG2	6:F:125:ARG:HH11	1.38	0.88
3:C:167:ARG:HH21	3:C:167:ARG:HG2	1.37	0.87
1:A:2297:A:N1	1:A:2321:U:H5	1.73	0.87
32:y:280:GLN:HE21	32:y:295:ILE:CD1	1.88	0.87
28:2:17:THR:HG22	28:2:19:HIS:H	1.40	0.86
1:A:468:G:N7	29:3:39:ARG:NH2	2.23	0.86
1:A:1062:G:C2	1:A:1077:A:C2	2.63	0.85
10:K:114:LEU:HG	10:K:118:MET:HE3	1.59	0.85
1:A:2885:G:H21	27:1:40:ARG:HH22	1.24	0.85
3:C:146:MET:HE2	3:C:154:LEU:HD11	1.58	0.84
32:y:100:ILE:O	32:y:202:THR:HA	1.79	0.83
1:A:2101:A:C2	1:A:2189:U:O2	2.32	0.83
1:A:956:G:N7	13:N:14:LYS:NZ	2.26	0.83
1:A:1060:U:C2	1:A:1062:G:H5'	2.15	0.82
32:y:280:GLN:NE2	32:y:295:ILE:CD1	2.43	0.82
1:A:2885:G:N2	27:1:40:ARG:NH2	2.28	0.82
9:J:31:GLY:HA3	9:J:60:VAL:HG21	1.61	0.82
1:A:1117:C:HO2'	1:A:1118:C:H6	1.29	0.81
1:A:1178:C:N4	1:A:1179:G:O6	2.14	0.80
1:A:2885:G:H22	27:1:40:ARG:HH12	0.81	0.80
32:y:285:ALA:HA	32:y:290:VAL:HG22	1.63	0.80
1:A:1063:G:O2'	9:J:89:SER:HB2	1.82	0.80
1:A:1063:G:N2	1:A:1076:C:C2	2.50	0.80
1:A:713:G:H21	1:A:718:A:H62	1.30	0.80
10:K:17:VAL:HG23	10:K:137:PRO:HB2	1.64	0.80
1:A:1266:G:O6	19:T:13:SER:HB3	1.83	0.79
1:A:2311:A:H1'	6:F:85:ILE:HD11	1.64	0.79
1:A:2189:U:H6	1:A:2189:U:C5'	1.94	0.79
1:A:1813:G:N3	3:C:50:THR:CG2	2.46	0.79
26:0:4:THR:HA	26:0:38:ARG:O	1.83	0.78
3:C:232:HIS:HA	3:C:242:LYS:HE3	1.64	0.78
1:A:528:A:N1	1:A:2042:A:H2'	1.98	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
9:J:91:LYS:HG2	9:J:94:LYS:HD2	1.65	0.78
19:T:7:HIS:CD2	19:T:10:ALA:HB2	2.19	0.77
1:A:2885:G:N2	27:1:40:ARG:NH1	2.21	0.77
5:E:61:ARG:HE	5:E:64:GLY:HA3	1.46	0.77
1:A:1434:A:H2'	1:A:1435:G:C8	2.20	0.77
1:A:1176:U:H2'	1:A:1177:G:C8	2.20	0.77
1:A:1266:G:O6	19:T:13:SER:CB	2.33	0.76
1:A:2124:G:O6	1:A:2125:G:N2	2.19	0.76
7:G:149:ARG:HA	7:G:162:VAL:HG13	1.67	0.75
3:C:67:PHE:CE1	3:C:156:ARG:HD3	2.22	0.75
8:H:5:LEU:HD13	8:H:13:GLY:HA2	1.69	0.75
1:A:2478:A:H5'	31:5:32:LYS:HE2	1.67	0.75
8:H:47:PHE:HA	8:H:51:ARG:HB2	1.69	0.75
13:N:53:MET:HE1	13:N:103:TYR:CG	2.22	0.75
6:F:105:THR:O	6:F:108:VAL:N	2.20	0.74
1:A:1060:U:O4'	1:A:1062:G:H5"	1.86	0.74
1:A:528:A:H2	1:A:2043:C:H5'	1.53	0.73
3:C:133:ARG:NH2	3:C:187:ASP:OD1	2.21	0.73
3:C:167:ARG:HG2	3:C:167:ARG:NH2	1.98	0.73
24:Y:10:LYS:HE3	24:Y:54:LYS:HD3	1.68	0.73
1:A:962:G:H21	1:A:2250:G:H1	1.36	0.73
1:A:1869:G:N1	1:A:1871:A:O2'	2.22	0.73
1:A:1651:G:H5'	14:O:39:PRO:HG2	1.70	0.72
1:A:1434:A:H2'	1:A:1435:G:H8	1.52	0.72
1:A:1056:G:H4'	1:A:1086:A:H8	1.54	0.72
1:A:2291:U:H2'	1:A:2292:U:C6	2.25	0.72
14:O:35:LYS:NZ	14:O:100:CYS:SG	2.63	0.72
1:A:543:G:H1	1:A:550:C:H42	1.34	0.72
8:H:4:ILE:HG22	8:H:18:GLN:HG2	1.72	0.72
5:E:105:LEU:HD23	5:E:200:LEU:HD21	1.70	0.72
13:N:66:ARG:NH1	13:N:104:GLU:OE1	2.23	0.72
8:H:15:LEU:C	8:H:15:LEU:HD12	2.15	0.71
1:A:1093:G:O2'	1:A:1098:A:N6	2.22	0.71
1:A:563:A:OP2	18:S:79:ARG:NH1	2.22	0.71
1:A:1056:G:N1	1:A:1102:C:OP2	2.20	0.71
32:y:322:ILE:HD11	32:y:342:MET:HG2	1.73	0.71
1:A:2469:A:H4'	13:N:55:ARG:HD3	1.71	0.71
4:D:101:PHE:HD1	4:D:104:VAL:HG21	1.55	0.71
32:y:24:LYS:NZ	32:y:246:GLU:OE1	2.24	0.70
4:D:60:VAL:HG13	4:D:64:GLU:HG3	1.73	0.70
1:A:253:C:OP2	30:4:5:LYS:NZ	2.22	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:70:GLU:HB2	8:H:134:VAL:HG21	1.72	0.70
1:A:639:U:H2'	1:A:640:C:C6	2.26	0.70
4:D:156:PHE:HB3	10:K:81:ILE:HG22	1.74	0.70
31:5:2:LYS:HD3	31:5:4:ARG:HH21	1.56	0.70
3:C:107:PRO:HD2	3:C:110:LEU:HD22	1.72	0.70
10:K:16:TYR:HB3	10:K:140:LEU:HD22	1.74	0.70
1:A:870:U:OP1	13:N:6:ARG:NH2	2.25	0.70
21:V:28:VAL:HG12	21:V:34:VAL:HG12	1.73	0.69
1:A:721:A:H2'	1:A:722:A:C8	2.26	0.69
1:A:586:A:H5'	5:E:84:THR:HG21	1.73	0.69
1:A:849:A:H2'	1:A:850:U:C6	2.28	0.69
32:y:167:LYS:HZ3	32:y:181:LEU:HD22	1.56	0.69
5:E:145:ASP:HA	5:E:166:LYS:HB3	1.75	0.69
6:F:44:ILE:H	6:F:44:ILE:HD12	1.56	0.69
1:A:27:G:N2	1:A:512:G:H1'	2.06	0.69
15:P:33:ARG:HD3	15:P:34:HIS:CE1	2.27	0.68
28:2:10:LYS:HG2	28:2:53:LYS:HB2	1.75	0.68
1:A:1156:A:C8	17:R:51:ARG:HG2	2.29	0.68
6:F:38:MET:HG2	6:F:57:LEU:HD12	1.76	0.68
1:A:2313:C:O4'	6:F:37:ASN:ND2	2.27	0.68
32:y:311:ASP:HB3	32:y:363:VAL:HG21	1.75	0.68
4:D:148:GLN:HB2	4:D:152:PRO:HG2	1.74	0.68
23:X:37:ILE:HG21	23:X:80:ILE:HG21	1.76	0.68
9:J:12:VAL:HG11	9:J:22:PRO:HB2	1.74	0.68
3:C:141:VAL:HG22	3:C:191:THR:O	1.94	0.68
1:A:2246:G:H2'	1:A:2247:A:C8	2.29	0.67
1:A:1469:A:H2'	1:A:1470:A:C8	2.29	0.67
1:A:2297:A:N1	1:A:2321:U:C5	2.61	0.67
15:P:34:HIS:HA	15:P:53:THR:HB	1.75	0.67
1:A:1590:A:H2'	1:A:1591:A:C8	2.29	0.67
1:A:2720:U:OP1	16:Q:53:ARG:NH2	2.27	0.67
8:H:16:GLY:HA2	8:H:47:PHE:CE1	2.29	0.67
32:y:220:ASP:O	32:y:224:GLU:HG2	1.94	0.67
1:A:528:A:C2	1:A:2043:C:H5'	2.29	0.67
3:C:180:GLU:HG3	3:C:270:ARG:HA	1.77	0.67
1:A:27:G:C2	1:A:512:G:N3	2.63	0.67
32:y:4:LYS:O	32:y:99:ALA:HB3	1.95	0.67
3:C:155:ALA:HB2	3:C:162:VAL:HG13	1.77	0.67
17:R:97:ASP:OD2	18:S:13:ARG:NE	2.28	0.67
1:A:1509:A:O2'	1:A:1510:G:OP2	2.13	0.67
10:K:95:ARG:HD2	10:K:96:ARG:HG3	1.77	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:S:61:ALA:HB1	18:S:96:VAL:CG1	2.25	0.67
1:A:2012:G:H8	1:A:2012:G:O5'	1.78	0.66
1:A:1779:U:C5	1:A:1784:A:N7	2.52	0.66
1:A:1249:U:H4'	17:R:4:VAL:HG21	1.76	0.66
8:H:127:GLU:OE2	8:H:145:ASN:ND2	2.28	0.66
13:N:53:MET:HG3	13:N:120:ALA:HB2	1.78	0.66
32:y:274:TYR:HA	32:y:279:LEU:HD12	1.77	0.66
12:M:123:ARG:NH1	12:M:143:GLU:OE2	2.26	0.66
1:A:494:G:H4'	19:T:6:LYS:HB2	1.77	0.66
1:A:1869:G:H21	1:A:1872:A:H62	1.43	0.66
1:A:2445:2MG:OP1	5:E:69:ARG:NH1	2.24	0.66
1:A:2885:G:H22	27:1:40:ARG:NH2	1.91	0.66
6:F:58:ALA:HB2	6:F:65:PRO:HD3	1.76	0.66
15:P:11:ALA:HB2	15:P:96:GLY:N	2.10	0.66
32:y:203:MET:HE3	32:y:205:ILE:HD11	1.77	0.66
1:A:191:A:H2'	1:A:192:C:C6	2.30	0.66
1:A:782:A:C2	3:C:225:MET:HG2	2.31	0.66
32:y:120:ASN:HD21	32:y:122:ALA:HB3	1.61	0.66
32:y:102:HIS:CE1	32:y:128:ILE:HG21	2.31	0.65
11:L:40:LYS:HZ2	11:L:57:VAL:HG12	1.59	0.65
1:A:1061:U:H4'	1:A:1070:A:H1'	1.76	0.65
19:T:24:ILE:HD13	19:T:36:LEU:HD11	1.78	0.65
1:A:528:A:C2	1:A:2043:C:H4'	2.32	0.65
1:A:997:G:OP1	17:R:92:ARG:HG2	1.95	0.65
1:A:1063:G:N1	1:A:1076:C:C4	2.64	0.65
1:A:2141:G:N2	1:A:2151:U:O2	2.29	0.65
5:E:115:GLN:HE22	12:M:1:MET:HG2	1.61	0.65
1:A:1724:G:H1	1:A:1736:U:H3	1.45	0.65
14:O:8:ARG:HD2	14:O:43:GLU:HG2	1.79	0.65
19:T:20:VAL:HG11	19:T:44:ALA:HA	1.77	0.65
1:A:1056:G:H4'	1:A:1086:A:C8	2.31	0.65
1:A:2584:U:H2'	1:A:2585:U:H2'	1.77	0.65
14:O:28:LEU:HD23	14:O:48:VAL:HG21	1.78	0.65
1:A:2870:C:H5"	14:O:65:LEU:HD21	1.77	0.65
19:T:7:HIS:HD2	19:T:10:ALA:HB2	1.60	0.65
1:A:45:G:H5"	1:A:46:G:H5'	1.78	0.64
1:A:121:G:H4'	1:A:149:A:H5'	1.79	0.64
7:G:27:LYS:HG3	7:G:32:GLU:HG3	1.78	0.64
32:y:146:ARG:NH2	32:y:193:TYR:OH	2.30	0.64
1:A:2250:G:O5'	1:A:2250:G:H8	1.80	0.64
1:A:2304:G:H22	1:A:2312:U:H3	1.46	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
8:H:67:ALA:HA	8:H:138:VAL:HG11	1.78	0.64
1:A:1658:C:OP1	4:D:140:HIS:CD2	2.50	0.64
8:H:84:ALA:HA	8:H:91:PHE:H	1.62	0.64
1:A:1340:U:OP2	20:U:82:LYS:NZ	2.31	0.64
1:A:871:U:H2'	1:A:872:U:C6	2.32	0.64
1:A:2484:G:OP1	13:N:44:ARG:NH2	2.29	0.64
3:C:175:ARG:HH11	3:C:181:MET:HE1	1.63	0.64
1:A:373:U:O2'	1:A:423:A:H1'	1.98	0.64
4:D:61:THR:HB	4:D:63:PRO:HD2	1.80	0.64
16:Q:29:LYS:HB3	16:Q:40:LEU:HD22	1.78	0.64
1:A:142:A:H1'	20:U:1:MET:HB3	1.80	0.64
21:V:81:ASP:OD2	21:V:96:PHE:HB3	1.97	0.63
32:y:212:GLY:O	32:y:216:ASN:ND2	2.30	0.63
1:A:962:G:N2	1:A:2250:G:H1	1.95	0.63
1:A:1092:C:H3'	1:A:1093:G:H8	1.62	0.63
1:A:1412:U:H2'	1:A:1413:A:H8	1.63	0.63
1:A:2141:G:H1	1:A:2151:U:H3	1.46	0.63
1:A:2901:C:O2'	1:A:2902:C:O4'	2.15	0.63
13:N:53:MET:HE1	13:N:103:TYR:CD2	2.33	0.63
15:P:37:ALA:HB2	15:P:106:LEU:HD11	1.81	0.63
17:R:107:THR:O	17:R:111:GLU:HG2	1.98	0.63
1:A:1204:A:H4'	1:A:1205:A:H5"	1.80	0.63
1:A:2135:A:N6	1:A:2156:G:O2'	2.30	0.63
1:A:2469:A:H4'	13:N:55:ARG:HD2	1.80	0.63
14:O:30:ARG:NH1	14:O:74:GLU:OE2	2.30	0.63
1:A:1197:G:H2'	1:A:1198:U:H6	1.63	0.63
1:A:2305:U:H2'	1:A:2306:C:C6	2.34	0.63
20:U:30:ILE:HD11	20:U:87:LEU:HD11	1.81	0.62
32:y:280:GLN:OE1	32:y:352:LYS:C	2.42	0.62
1:A:27:G:C4	1:A:512:G:C2	2.87	0.62
3:C:105:LEU:HD11	3:C:156:ARG:HG3	1.82	0.62
1:A:64:A:H2'	1:A:65:U:C6	2.35	0.62
1:A:1063:G:C2	1:A:1076:C:N3	2.67	0.62
1:A:2692:G:H1'	1:A:2847:U:H1'	1.80	0.62
18:S:61:ALA:HB1	18:S:96:VAL:HG13	1.80	0.62
1:A:2306:C:N4	6:F:39:GLY:O	2.33	0.62
6:F:119:ALA:O	6:F:167:ARG:NH1	2.31	0.62
1:A:141:G:H3'	1:A:142:A:O4'	1.99	0.62
1:A:528:A:C2	1:A:2043:C:C5'	2.82	0.62
13:N:19:GLY:O	13:N:38:ARG:NH2	2.26	0.62
1:A:2144:G:O2'	1:A:2147:A:N6	2.33	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1187:G:H5”	18:S:83:TYR:CE1	2.34	0.61
8:H:97:ARG:HG3	8:H:112:LYS:HD2	1.81	0.61
13:N:75:GLU:HB2	13:N:90:GLU:HG3	1.81	0.61
1:A:1176:U:O2’	1:A:1177:G:O4’	2.08	0.61
1:A:543:G:H1	1:A:550:C:N4	1.97	0.61
1:A:2795:C:H2’	1:A:2796:U:C6	2.35	0.61
32:y:5:CYS:HA	32:y:99:ALA:O	2.00	0.61
4:D:25:THR:HG21	4:D:193:VAL:HG22	1.83	0.61
11:L:77:ILE:HG12	16:Q:72:ARG:HG2	1.82	0.61
32:y:183:LEU:HB2	32:y:188:LYS:HE3	1.82	0.61
32:y:216:ASN:HB2	32:y:219:LEU:HB3	1.81	0.61
1:A:2246:G:H2’	1:A:2247:A:H8	1.65	0.61
3:C:141:VAL:HG12	3:C:162:VAL:CG2	2.31	0.61
8:H:16:GLY:HA2	8:H:47:PHE:CZ	2.35	0.61
1:A:27:G:C4	1:A:512:G:N2	2.68	0.61
1:A:493:G:H2’	1:A:494:G:O4’	2.00	0.61
1:A:1084:A:H2’	1:A:1085:A:C8	2.35	0.61
1:A:2327:A:H2’	1:A:2328:A:C8	2.35	0.61
1:A:2514:U:H2’	1:A:2515:C:C6	2.36	0.61
6:F:158:THR:HG23	6:F:160:ALA:H	1.65	0.61
10:K:4:PHE:O	17:R:64:ARG:NH1	2.33	0.61
1:A:1746:A:H2’	1:A:1747:U:C6	2.36	0.61
11:L:1:MET:HB2	11:L:67:LYS:HG3	1.82	0.61
2:B:9:G:OP1	15:P:15:ARG:HD3	2.00	0.61
32:y:247:LEU:HD13	32:y:251:GLU:HB3	1.83	0.61
1:A:713:G:N2	1:A:718:A:H62	1.99	0.61
1:A:2788:C:H2’	1:A:2789:C:C6	2.36	0.61
1:A:1:G:H2’	1:A:2:G:H8	1.65	0.61
22:W:75:GLN:HB2	22:W:92:VAL:HG22	1.83	0.61
1:A:1223:G:OP1	18:S:68:ARG:NH2	2.33	0.60
32:y:99:ALA:HB1	32:y:276:LEU:HD23	1.82	0.60
1:A:72:U:OP2	25:Z:54:LYS:HE3	2.01	0.60
1:A:2118:U:O2	1:A:2145:C:N4	2.33	0.60
1:A:1697:G:OP2	1:A:1698:A:O2’	2.13	0.60
1:A:2657:A:N6	1:A:2665:A:C8	2.69	0.60
1:A:1062:G:N2	1:A:1077:A:N3	2.48	0.60
1:A:1149:G:H2’	1:A:1150:C:C6	2.37	0.60
1:A:2547:A:H2’	1:A:2548:U:C6	2.36	0.60
7:G:155:GLU:HG2	7:G:157:TYR:H	1.64	0.60
30:4:32:ILE:HG13	30:4:35:LYS:HE2	1.84	0.60
1:A:1063:G:C2	1:A:1076:C:C2	2.90	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2184:A:H2'	1:A:2185:U:C6	2.37	0.60
8:H:73:ASN:OD1	8:H:76:GLU:N	2.33	0.60
9:J:123:ALA:HA	9:J:126:ARG:HE	1.66	0.60
23:X:59:LEU:HD12	23:X:80:ILE:HD12	1.84	0.60
12:M:57:LEU:HD13	12:M:60:ARG:NH1	2.17	0.60
1:A:397:U:OP2	24:Y:10:LYS:NZ	2.33	0.60
7:G:95:ARG:HB3	7:G:106:SER:OG	2.01	0.60
1:A:1063:G:O2'	9:J:89:SER:CB	2.50	0.60
1:A:1889:A:H2'	1:A:1890:A:C8	2.37	0.60
1:A:2529:G:H4'	7:G:175:LYS:HE2	1.84	0.60
17:R:92:ARG:HH11	17:R:92:ARG:CG	2.11	0.60
1:A:2537:U:H2'	1:A:2538:C:C6	2.36	0.60
11:L:38:ILE:HD11	11:L:112:PHE:HZ	1.66	0.60
23:X:50:ASN:HB2	23:X:82:ILE:HB	1.84	0.60
1:A:476:G:H4'	1:A:502:A:N1	2.16	0.59
1:A:1117:C:O2'	1:A:1118:C:H6	1.83	0.59
1:A:2328:A:H2'	1:A:2329:U:C6	2.36	0.59
6:F:107:ALA:O	6:F:111:ILE:HG12	2.02	0.59
17:R:92:ARG:HG2	17:R:92:ARG:NH1	2.12	0.59
1:A:617:G:OP1	5:E:102:ARG:NE	2.34	0.59
3:C:167:ARG:HG3	3:C:172:VAL:HG12	1.84	0.59
1:A:711:G:O6	1:A:720:U:O2	2.20	0.59
1:A:1385:A:O2'	1:A:1396:U:O2	2.20	0.59
17:R:66:ASN:O	17:R:70:ARG:HG3	2.03	0.59
1:A:414:C:H2'	1:A:415:A:C8	2.37	0.59
1:A:479:A:H4'	1:A:480:A:H5'	1.85	0.59
1:A:807:U:P	12:M:36:LYS:HE2	2.43	0.59
1:A:2845:U:H5"	16:Q:52:ASN:O	2.03	0.59
1:A:1778:U:H2'	1:A:1784:A:N6	2.18	0.59
1:A:2143:C:H3'	1:A:2144:G:C8	2.37	0.59
1:A:2567:G:H2'	1:A:2568:U:C6	2.38	0.59
1:A:663:G:H5"	12:M:17:LYS:HD2	1.84	0.59
1:A:1171:G:H2'	1:A:1172:C:C6	2.37	0.59
1:A:1797:G:O2'	3:C:257:THR:OG1	2.20	0.59
1:A:2743:U:OP1	31:5:34:LYS:NZ	2.29	0.59
1:A:1060:U:N1	1:A:1062:G:H5'	2.18	0.59
1:A:2151:U:H2'	1:A:2152:G:H8	1.67	0.59
14:O:12:ARG:O	14:O:17:ARG:NH2	2.36	0.59
21:V:81:ASP:OD1	21:V:82:ARG:N	2.31	0.59
1:A:2002:G:H5"	14:O:9:GLN:NE2	2.17	0.59
12:M:77:ILE:CD1	12:M:108:ALA:HB1	2.32	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1594:U:H2'	1:A:1595:C:C6	2.38	0.58
1:A:1721:G:O2'	1:A:1739:A:N6	2.35	0.58
24:Y:39:TRP:HE1	24:Y:41:GLU:HG2	1.67	0.58
25:Z:27:ASN:O	25:Z:31:GLN:HG3	2.03	0.58
30:4:32:ILE:HG23	30:4:32:ILE:O	2.04	0.58
2:B:66:A:H61	2:B:107:G:H2'	1.68	0.58
3:C:176:LEU:HD11	3:C:182:ARG:HG2	1.85	0.58
1:A:554:U:H2'	1:A:555:G:O4'	2.04	0.58
1:A:645:C:O2'	1:A:646:U:H5"	2.03	0.58
1:A:839:U:H2'	1:A:840:C:C6	2.39	0.58
5:E:158:PHE:HA	5:E:169:VAL:HG21	1.85	0.58
6:F:5:HIS:CD2	6:F:9:LYS:HE2	2.38	0.58
20:U:33:LYS:HG2	20:U:80:TRP:CZ3	2.38	0.58
1:A:586:A:C5'	5:E:84:THR:HG21	2.33	0.58
12:M:131:ALA:O	12:M:135:ILE:HG13	2.02	0.58
1:A:1792:G:O2'	1:A:1830:C:OP1	2.21	0.58
10:K:81:ILE:HG13	10:K:82:GLY:N	2.19	0.58
32:y:10:LEU:HD23	32:y:76:LEU:HD23	1.85	0.58
1:A:930:G:H1'	26:0:25:LEU:HD21	1.83	0.58
1:A:948:C:H1'	1:A:984:A:C8	2.38	0.58
1:A:1548:A:H2'	1:A:1549:A:C8	2.39	0.58
1:A:2101:A:N1	1:A:2189:U:O2	2.36	0.58
1:A:714:U:H1'	1:A:717:C:H5	1.69	0.58
1:A:1056:G:H5"	1:A:1057:A:H5'	1.86	0.58
1:A:181:A:H2'	1:A:182:A:C8	2.38	0.58
1:A:1199:U:H1'	17:R:4:VAL:HG12	1.85	0.58
1:A:2002:G:H5'	14:O:13:ASN:HA	1.85	0.58
1:A:2783:U:H2'	1:A:2784:U:C6	2.39	0.58
9:J:48:ILE:HG13	9:J:49:GLU:H	1.69	0.58
28:2:38:LYS:HB2	28:2:49:TYR:CD2	2.39	0.58
5:E:98:LYS:O	5:E:102:ARG:HD3	2.03	0.57
1:A:813:U:H2'	1:A:814:C:C6	2.39	0.57
1:A:1115:G:O2'	1:A:1116:G:H5"	2.03	0.57
1:A:2146:C:O2'	1:A:2147:A:O5'	2.18	0.57
1:A:588:U:H2'	1:A:589:U:C6	2.39	0.57
1:A:807:U:OP1	12:M:36:LYS:HE2	2.04	0.57
1:A:1171:G:H2'	1:A:1172:C:H6	1.68	0.57
1:A:1773:A:H5"	1:A:1829:A:OP2	2.05	0.57
1:A:2032:G:N2	4:D:151:THR:OG1	2.36	0.57
1:A:2557:G:H2'	1:A:2558:C:C6	2.39	0.57
3:C:8:PRO:HB3	3:C:14:ARG:HG3	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:12:U:O2	1:A:12:U:H2'	2.04	0.57
1:A:589:U:H2'	1:A:590:A:C8	2.39	0.57
1:A:1060:U:N1	1:A:1062:G:C5'	2.67	0.57
2:B:8:C:O3'	15:P:25:ARG:NH1	2.35	0.57
32:y:280:GLN:HE22	32:y:295:ILE:HD11	1.60	0.57
1:A:1412:U:H2'	1:A:1413:A:C8	2.40	0.57
1:A:2740:A:H2'	1:A:2741:A:C8	2.39	0.57
2:B:49:C:H2'	2:B:50:A:C8	2.39	0.57
6:F:125:ARG:HG2	6:F:125:ARG:NH1	2.13	0.57
12:M:85:VAL:HB	12:M:94:THR:HG22	1.86	0.57
1:A:1570:A:H2'	1:A:1571:A:C8	2.39	0.57
1:A:2002:G:H5"	14:O:9:GLN:HE21	1.69	0.57
1:A:2015:A:H5'	19:T:92:ARG:HH22	1.69	0.57
2:B:40:U:H1'	2:B:45:A:H61	1.67	0.57
13:N:56:ALA:HB2	13:N:119:LEU:HD12	1.87	0.57
13:N:41:LEU:HG	13:N:96:ILE:HG13	1.87	0.57
26:0:44:ILE:HA	26:0:47:MET:HE2	1.85	0.57
1:A:594:U:H2'	1:A:595:C:C6	2.40	0.57
1:A:742:A:H2'	1:A:743:A:C8	2.40	0.57
1:A:1801:A:H5'	1:A:2203:U:O2'	2.04	0.57
1:A:2313:C:H5"	6:F:88:LYS:HD3	1.86	0.57
1:A:84:A:H5"	21:V:6:ARG:HD2	1.87	0.57
1:A:482:A:P	21:V:47:LYS:NZ	2.77	0.57
3:C:141:VAL:HG12	3:C:162:VAL:HG22	1.87	0.57
6:F:163:ASP:N	6:F:163:ASP:OD1	2.36	0.57
6:F:40:VAL:HG11	6:F:50:LEU:HD11	1.87	0.56
9:J:112:LYS:HB3	9:J:115:ASP:CB	2.35	0.56
32:y:284:THR:O	32:y:290:VAL:HA	2.05	0.56
1:A:306:U:H2'	1:A:307:G:O4'	2.06	0.56
1:A:910:A:H2'	1:A:911:A:C8	2.40	0.56
1:A:984:A:H2'	1:A:984:A:N3	2.19	0.56
10:K:117:ALA:HA	10:K:120:ARG:HH21	1.70	0.56
32:y:226:ALA:O	32:y:231:SER:N	2.36	0.56
1:A:1026:G:H2'	1:A:1027:A:H8	1.71	0.56
1:A:2273:A:H2'	1:A:2274:A:C8	2.40	0.56
6:F:56:ASP:O	6:F:60:ILE:HD12	2.05	0.56
7:G:60:ASP:OD2	7:G:64:GLN:NE2	2.31	0.56
32:y:46:MET:HB3	32:y:66:THR:HG23	1.87	0.56
32:y:283:PHE:HB2	32:y:356:VAL:HG22	1.87	0.56
1:A:1062:G:O2'	9:J:135:MET:HG2	2.05	0.56
1:A:1790:C:H2'	1:A:1791:A:C5	2.40	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2189:U:H6	1:A:2189:U:H5"	1.69	0.56
1:A:2796:U:H2'	1:A:2797:U:H5"	1.86	0.56
1:A:290:U:H3	1:A:350:G:H1	1.53	0.56
1:A:1794:A:H2'	1:A:1795:C:C6	2.40	0.56
1:A:2680:U:O2'	1:A:2681:C:H5'	2.05	0.56
5:E:157:LEU:HG	5:E:169:VAL:HG11	1.87	0.56
10:K:69:ARG:O	10:K:90:GLU:HG3	2.06	0.56
32:y:121:PRO:O	32:y:125:ILE:HG12	2.06	0.56
1:A:1534:U:H1'	1:A:1538:G:N1	2.21	0.56
32:y:50:ARG:NH1	32:y:353:ASP:OD2	2.38	0.56
32:y:280:GLN:HE21	32:y:295:ILE:HG12	1.69	0.56
1:A:477:A:H2'	1:A:478:A:C8	2.40	0.56
1:A:851:C:H2'	1:A:852:U:C6	2.41	0.56
1:A:2025:C:H2'	1:A:2026:U:C6	2.41	0.56
1:A:2086:U:H2'	1:A:2087:G:C8	2.40	0.56
1:A:2700:A:H2'	1:A:2701:U:C6	2.41	0.56
1:A:2776:A:H4'	1:A:2777:G:H5"	1.88	0.56
6:F:126:GLY:HA3	6:F:160:ALA:HB3	1.86	0.56
1:A:24:G:O2'	19:T:78:GLU:O	2.23	0.56
1:A:299:A:N3	1:A:319:G:O2'	2.38	0.56
1:A:2151:U:H2'	1:A:2152:G:C8	2.41	0.56
2:B:29:A:H2'	2:B:30:C:C6	2.41	0.56
32:y:244:ILE:HG21	32:y:264:PRO:HB3	1.87	0.56
1:A:1028:A:N3	1:A:2486:C:O2'	2.35	0.56
1:A:1197:G:H2'	1:A:1198:U:C6	2.41	0.56
1:A:2265:U:OP2	1:A:2266:A:O2'	2.20	0.56
2:B:40:U:N3	2:B:44:G:OP2	2.28	0.56
9:J:66:PHE:CE2	9:J:68:PHE:HB3	2.40	0.56
1:A:499:U:H5"	21:V:43:LYS:HE3	1.88	0.56
1:A:2148:G:H2'	1:A:2149:U:C6	2.41	0.56
24:Y:7:VAL:HG21	24:Y:59:ILE:HD11	1.86	0.56
1:A:57:C:H2'	1:A:58:G:O4'	2.07	0.55
1:A:151:C:H2'	1:A:152:A:H8	1.71	0.55
1:A:1060:U:OP2	9:J:74:PRO:HB3	2.06	0.55
1:A:2804:U:H2'	1:A:2805:C:C6	2.41	0.55
5:E:26:ALA:HB2	12:M:9:ALA:HB2	1.88	0.55
13:N:82:MET:HE2	13:N:82:MET:HA	1.86	0.55
27:1:52:ARG:CZ	27:1:54:VAL:HG12	2.36	0.55
1:A:580:U:H2'	1:A:581:C:C6	2.41	0.55
1:A:849:A:H2'	1:A:850:U:H6	1.69	0.55
1:A:2591:C:H2'	1:A:2592:G:C8	2.41	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
6:F:90:THR:HG21	6:F:92:ARG:HH11	1.70	0.55
32:y:293:TRP:HB3	32:y:307:LYS:NZ	2.21	0.55
1:A:848:C:H2'	1:A:849:A:C8	2.41	0.55
11:L:43:ILE:HD12	11:L:56:ASP:HB2	1.89	0.55
1:A:751:A:H5'	19:T:90:LYS:HA	1.88	0.55
1:A:1802:A:H2'	1:A:1803:A:C8	2.40	0.55
1:A:1912:A:H62	1:A:1917:PSU:HN3	1.53	0.55
17:R:88:VAL:HG13	18:S:49:ILE:HD11	1.88	0.55
1:A:221:A:N1	1:A:265:A:O2'	2.39	0.55
1:A:608:A:H2'	1:A:609:A:C8	2.42	0.55
1:A:1028:A:H2'	1:A:1029:A:C8	2.42	0.55
1:A:2186:G:H2'	1:A:2187:U:C6	2.41	0.55
1:A:347:A:H2'	1:A:348:A:C8	2.42	0.55
1:A:360:U:H2'	1:A:361:G:O4'	2.07	0.55
1:A:419:U:H2'	1:A:420:C:C6	2.40	0.55
1:A:1485:U:H2'	1:A:1486:U:C6	2.42	0.55
1:A:17:G:H2'	1:A:18:U:C6	2.42	0.55
1:A:581:C:H2'	1:A:582:A:C8	2.41	0.55
1:A:1677:A:H2'	1:A:1678:A:C8	2.42	0.55
1:A:2204:G:OP2	3:C:147:LYS:NZ	2.24	0.55
1:A:2516:A:O2'	1:A:2517:C:H5'	2.06	0.55
1:A:2554:U:H2'	1:A:2555:U:C6	2.41	0.55
7:G:86:LYS:HG2	7:G:132:VAL:HG22	1.86	0.55
12:M:57:LEU:HD22	30:4:54:ASP:HB3	1.88	0.55
1:A:994:C:OP1	17:R:53:ARG:NH2	2.40	0.55
1:A:1090:A:H2'	1:A:1091:G:H8	1.71	0.55
1:A:1801:A:OP2	3:C:150:LYS:NZ	2.32	0.55
6:F:79:ILE:HD13	6:F:85:ILE:HD12	1.89	0.55
8:H:12:LEU:HD23	8:H:12:LEU:H	1.71	0.55
23:X:31:VAL:HB	23:X:35:SER:OG	2.07	0.55
32:y:19:PHE:HA	32:y:22:LEU:HD12	1.89	0.55
1:A:182:A:H2'	1:A:183:C:H6	1.72	0.55
2:B:42:C:C6	6:F:66:LEU:HB2	2.42	0.55
4:D:121:THR:HB	4:D:127:PHE:CD2	2.41	0.55
8:H:76:GLU:HA	8:H:142:VAL:HG22	1.89	0.55
30:4:31:HIS:C	30:4:33:LEU:H	2.15	0.55
1:A:482:A:OP1	21:V:47:LYS:NZ	2.38	0.54
1:A:1060:U:C1'	1:A:1062:G:H5"	2.37	0.54
32:y:125:ILE:HD12	32:y:204:TYR:HE2	1.73	0.54
1:A:634:C:H2'	1:A:635:C:C6	2.42	0.54
1:A:1028:A:N6	1:A:1125:G:H2'	2.22	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:167:ARG:HH21	3:C:167:ARG:CG	2.13	0.54
1:A:365:U:H2'	1:A:366:C:C6	2.42	0.54
1:A:1361:G:H2'	1:A:1362:C:C6	2.42	0.54
5:E:118:LEU:HD11	5:E:188:MET:HE3	1.88	0.54
31:5:2:LYS:HE2	31:5:32:LYS:O	2.07	0.54
1:A:101:A:O2'	1:A:102:U:H5'	2.07	0.54
1:A:172:A:H2'	1:A:173:A:C8	2.43	0.54
1:A:1064:C:N4	1:A:1070:A:OP2	2.39	0.54
1:A:1187:G:OP1	18:S:85:LYS:NZ	2.26	0.54
1:A:2127:G:H2'	1:A:2128:G:C8	2.43	0.54
9:J:129:GLU:HB3	9:J:133:ARG:NH2	2.23	0.54
15:P:62:LEU:HD22	15:P:70:ALA:HA	1.88	0.54
32:y:164:VAL:HG22	32:y:187:GLU:HG2	1.89	0.54
1:A:276:U:O2'	1:A:278:A:N7	2.40	0.54
1:A:1224:U:H2'	1:A:1225:G:C8	2.42	0.54
12:M:95:LEU:HD11	12:M:125:LEU:HD21	1.89	0.54
1:A:244:A:H2'	1:A:245:G:O4'	2.07	0.54
1:A:482:A:O5'	21:V:47:LYS:NZ	2.38	0.54
1:A:518:G:H2'	1:A:519:U:C6	2.42	0.54
1:A:1883:U:H2'	1:A:1884:G:O4'	2.07	0.54
14:O:56:LYS:NZ	14:O:90:ARG:O	2.41	0.54
24:Y:12:PRO:HB3	24:Y:30:LEU:HD23	1.89	0.54
1:A:1090:A:H2'	1:A:1091:G:C8	2.41	0.54
1:A:283:G:H2'	1:A:284:U:O4'	2.08	0.54
1:A:833:A:H2'	1:A:834:G:C8	2.43	0.54
1:A:911:A:N6	13:N:11:LYS:O	2.41	0.54
1:A:1946:U:H2'	1:A:1947:C:C6	2.43	0.54
1:A:2015:A:H5'	19:T:92:ARG:NH2	2.22	0.54
1:A:2170:A:O2'	1:A:2171:A:H5"	2.08	0.54
3:C:72:ASP:CG	3:C:189:ARG:HH12	2.15	0.54
32:y:87:GLY:O	32:y:91:LEU:HG	2.07	0.54
32:y:95:ARG:HG2	32:y:197:LEU:HD21	1.89	0.54
1:A:653:U:H3'	1:A:654:A:H5"	1.90	0.54
1:A:2638:G:O2'	1:A:2775:G:N2	2.40	0.54
18:S:63:VAL:HA	18:S:96:VAL:HG22	1.90	0.54
32:y:178:LEU:HD12	32:y:181:LEU:HD12	1.90	0.54
1:A:606:U:OP2	5:E:99:LYS:HE2	2.08	0.54
1:A:947:A:H2'	1:A:948:C:C6	2.43	0.54
1:A:1738:G:H21	1:A:1739:A:H62	1.56	0.54
1:A:1932:A:H2'	1:A:1933:G:O4'	2.07	0.54
4:D:55:LYS:HG2	4:D:60:VAL:HG23	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:11:LEU:HB3	28:2:49:TYR:HB3	1.90	0.54
30:4:32:ILE:HG22	30:4:36:LYS:NZ	2.22	0.54
1:A:644:A:H2'	1:A:645:C:O4'	2.08	0.53
1:A:1680:U:H2'	1:A:1681:G:O4'	2.08	0.53
1:A:1690:A:H2'	1:A:1691:C:O4'	2.08	0.53
1:A:1853:A:N1	1:A:2087:G:H1'	2.22	0.53
1:A:1902:C:H4'	3:C:242:LYS:O	2.08	0.53
1:A:2189:U:C5'	1:A:2189:U:C6	2.85	0.53
11:L:71:ARG:NH2	11:L:123:LEU:O	2.38	0.53
15:P:51:ALA:HB3	15:P:78:VAL:HB	1.90	0.53
1:A:593:U:H2'	1:A:594:U:C6	2.42	0.53
1:A:856:G:H2'	1:A:857:G:C8	2.43	0.53
1:A:892:A:H2'	1:A:893:C:C6	2.44	0.53
1:A:2064:C:H2'	1:A:2065:C:C6	2.43	0.53
8:H:77:THR:HA	8:H:143:ILE:O	2.08	0.53
9:J:39:LYS:O	9:J:43:ALA:N	2.35	0.53
10:K:7:LYS:O	10:K:11:VAL:HG13	2.09	0.53
18:S:5:PHE:HB3	18:S:59:ILE:HD12	1.90	0.53
32:y:45:PRO:HA	32:y:67:THR:HG22	1.89	0.53
1:A:84:A:N1	1:A:98:G:O2'	2.35	0.53
1:A:729:G:C6	3:C:207:LYS:HB2	2.44	0.53
1:A:2756:U:H1'	1:A:2757:A:H5"	1.90	0.53
6:F:125:ARG:HH11	6:F:125:ARG:CG	2.13	0.53
1:A:322:A:OP2	5:E:163:ASN:HB2	2.07	0.53
1:A:2742:G:OP1	31:5:36:ARG:HD2	2.08	0.53
4:D:38:LYS:NZ	4:D:81:GLU:OE2	2.41	0.53
32:y:280:GLN:NE2	32:y:295:ILE:CG1	2.63	0.53
1:A:749:A:H4'	1:A:1271:G:N3	2.23	0.53
1:A:1105:U:H2'	1:A:1106:G:H8	1.72	0.53
10:K:4:PHE:C	10:K:4:PHE:CD1	2.85	0.53
12:M:57:LEU:HD13	12:M:60:ARG:HH11	1.73	0.53
1:A:5:A:H2'	1:A:6:A:C8	2.43	0.53
1:A:579:G:O2'	1:A:2019:A:OP1	2.27	0.53
1:A:1183:U:H2'	1:A:1184:U:C6	2.43	0.53
1:A:1871:A:O2'	1:A:1872:A:OP2	2.26	0.53
3:C:267:ILE:HG21	3:C:270:ARG:HD2	1.89	0.53
4:D:24:VAL:HG12	4:D:178:VAL:HG21	1.90	0.53
1:A:1062:G:C6	1:A:1077:A:N1	2.76	0.53
1:A:1738:G:N2	1:A:1739:A:H62	2.07	0.53
1:A:2502:G:H5"	1:A:2503:A:H5"	1.90	0.53
4:D:181:ASP:OD2	4:D:184:ARG:NE	2.41	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:739:A:H1'	1:A:740:C:H5	1.73	0.53
1:A:1056:G:C2'	1:A:1103:A:H61	2.22	0.53
1:A:1065:U:H2'	1:A:1066:U:C6	2.44	0.53
1:A:1173:U:O2	1:A:1176:U:N3	2.42	0.53
1:A:2271:G:OP1	23:X:18:ALA:HB1	2.09	0.53
3:C:72:ASP:OD2	3:C:189:ARG:NH1	2.42	0.53
8:H:50:ARG:HH11	8:H:54:LEU:HD23	1.73	0.53
1:A:1198:U:H2'	1:A:1199:U:C6	2.43	0.53
1:A:1505:A:H2'	1:A:1506:U:O4'	2.09	0.53
12:M:70:LYS:O	12:M:74:THR:HG23	2.08	0.53
1:A:243:U:OP1	30:4:6:THR:OG1	2.22	0.52
1:A:2896:C:H2'	1:A:2897:U:C6	2.45	0.52
4:D:32:ASN:HD22	4:D:32:ASN:N	2.06	0.52
16:Q:92:VAL:HG21	16:Q:97:LEU:HD21	1.90	0.52
1:A:1063:G:C6	1:A:1076:C:N4	2.77	0.52
12:M:77:ILE:HD11	12:M:108:ALA:HB1	1.91	0.52
24:Y:3:ARG:O	24:Y:12:PRO:HD3	2.09	0.52
1:A:152:A:H2'	1:A:153:U:C6	2.45	0.52
1:A:739:A:N3	1:A:740:C:N4	2.50	0.52
1:A:810:U:C4	12:M:29:LYS:O	2.62	0.52
1:A:1637:A:H5'	1:A:1760:C:O2'	2.10	0.52
1:A:2839:G:O2'	14:O:49:GLU:OE1	2.26	0.52
5:E:149:ILE:HG22	5:E:192:ALA:HB1	1.90	0.52
9:J:76:ALA:HA	9:J:135:MET:HE1	1.91	0.52
32:y:201:PRO:HB2	32:y:276:LEU:HG	1.90	0.52
1:A:150:U:H2'	1:A:151:C:C6	2.44	0.52
1:A:157:C:H2'	1:A:158:U:O4'	2.10	0.52
1:A:1115:G:N3	1:A:1116:G:C8	2.78	0.52
1:A:1494:A:H2'	1:A:1495:A:C8	2.45	0.52
1:A:2185:U:H2'	1:A:2186:G:C8	2.45	0.52
10:K:16:TYR:HB3	10:K:140:LEU:CD2	2.39	0.52
1:A:1428:C:C5	1:A:1569:A:H5"	2.45	0.52
1:A:2262:U:OP1	1:A:2387:U:O2'	2.26	0.52
1:A:2316:G:H4'	6:F:125:ARG:CZ	2.39	0.52
1:A:2649:C:H2'	1:A:2650:U:H6	1.74	0.52
1:A:987:C:H2'	1:A:988:A:O4'	2.10	0.52
10:K:37:ARG:HD2	10:K:118:MET:SD	2.50	0.52
17:R:40:ILE:O	17:R:44:GLN:HG3	2.09	0.52
23:X:77:ARG:HG3	23:X:77:ARG:HH11	1.74	0.52
32:y:64:LEU:HD12	32:y:291:ARG:HD2	1.92	0.52
32:y:252:ARG:O	32:y:256:MET:HG2	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:78:U:H2'	1:A:79:C:C6	2.45	0.52
1:A:340:A:H2'	1:A:341:C:O4'	2.09	0.52
1:A:1599:U:H2'	1:A:1600:C:C6	2.45	0.52
1:A:2010:G:H5"	19:T:42:LYS:HB2	1.92	0.52
8:H:3:VAL:HG22	8:H:36:ALA:HB1	1.92	0.52
21:V:77:THR:OG1	21:V:79:LYS:HB2	2.10	0.52
32:y:66:THR:H	32:y:292:ALA:HB3	1.75	0.52
32:y:316:PHE:HB3	32:y:347:LYS:HE2	1.91	0.52
1:A:441:U:H2'	1:A:442:G:C8	2.44	0.52
6:F:12:VAL:HA	6:F:15:LYS:HD2	1.91	0.52
8:H:103:VAL:HG21	8:H:132:PHE:CZ	2.44	0.52
1:A:151:C:H2'	1:A:152:A:C8	2.45	0.52
1:A:582:A:H2'	1:A:583:G:C8	2.45	0.52
1:A:2108:A:H2'	1:A:2109:U:O4'	2.09	0.52
1:A:2116:G:O6	1:A:2171:A:N6	2.42	0.52
1:A:2233:U:H2'	1:A:2234:G:C8	2.45	0.52
7:G:32:GLU:N	7:G:32:GLU:OE1	2.43	0.52
1:A:30:G:H2'	1:A:31:C:C6	2.45	0.52
1:A:1798:U:H5	3:C:271:ARG:CZ	2.22	0.52
1:A:1920:C:H2'	1:A:1921:G:H8	1.74	0.52
1:A:2183:A:H2'	1:A:2184:A:C8	2.45	0.52
1:A:2314:A:H2'	1:A:2315:G:H8	1.74	0.52
1:A:2743:U:H2'	1:A:2744:G:O4'	2.10	0.52
9:J:80:LYS:HD3	9:J:86:LYS:HG3	1.92	0.52
1:A:1579:A:H2'	1:A:1580:A:C8	2.44	0.51
1:A:2461:A:H1'	1:A:2492:U:C2	2.45	0.51
3:C:21:ASN:HB3	3:C:24:LEU:HG	1.92	0.51
4:D:62:LYS:HB2	4:D:63:PRO:HD3	1.92	0.51
26:0:31:ARG:HG2	26:0:34:HIS:HB2	1.92	0.51
32:y:37:ILE:HG23	32:y:41:THR:O	2.11	0.51
9:J:126:ARG:HA	9:J:129:GLU:HB2	1.91	0.51
17:R:49:ASP:HA	17:R:52:GLN:HB2	1.91	0.51
1:A:1056:G:H2'	1:A:1103:A:H61	1.76	0.51
1:A:1073:A:C8	1:A:1074:G:C8	2.99	0.51
1:A:1922:G:H2'	1:A:1923:U:H6	1.75	0.51
1:A:2014:A:O3'	19:T:92:ARG:NH2	2.44	0.51
1:A:2615:U:C2	27:1:4:GLN:HA	2.45	0.51
7:G:9:VAL:HB	7:G:50:LEU:HB2	1.92	0.51
9:J:48:ILE:HG13	9:J:49:GLU:N	2.24	0.51
13:N:38:ARG:HB2	13:N:98:PRO:HD3	1.92	0.51
21:V:77:THR:HB	21:V:79:LYS:HD2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
32:y:322:ILE:HB	32:y:327:PHE:HE1	1.74	0.51
1:A:272:A:H2'	1:A:273:G:C8	2.46	0.51
1:A:747:5MU:O2	1:A:2014:A:H1'	2.10	0.51
1:A:1063:G:N1	1:A:1076:C:N3	2.58	0.51
1:A:1641:A:H2'	1:A:1642:G:O4'	2.10	0.51
3:C:199:GLU:CD	3:C:199:GLU:H	2.18	0.51
32:y:136:ASP:OD2	32:y:198:THR:OG1	2.22	0.51
1:A:686:U:H2'	1:A:788:A:C2	2.45	0.51
1:A:807:U:OP2	12:M:41:ARG:NH1	2.43	0.51
1:A:848:C:H2'	1:A:849:A:H8	1.74	0.51
1:A:2657:A:C6	1:A:2665:A:C8	2.98	0.51
15:P:33:ARG:HA	15:P:66:GLY:HA3	1.92	0.51
18:S:38:VAL:HG21	18:S:41:ILE:HD11	1.92	0.51
1:A:643:A:N1	1:A:2369:A:O2'	2.44	0.51
1:A:2037:A:H2'	1:A:2038:G:C8	2.46	0.51
1:A:2314:A:H2'	1:A:2315:G:C8	2.46	0.51
1:A:475:C:C4	1:A:481:G:O6	2.64	0.51
1:A:569:U:H2'	1:A:570:G:O4'	2.11	0.51
1:A:811:U:H2'	12:M:21:ARG:HA	1.93	0.51
1:A:1365:A:OP1	24:Y:3:ARG:NH2	2.38	0.51
1:A:2408:U:H2'	1:A:2409:G:C8	2.45	0.51
6:F:125:ARG:NH1	6:F:125:ARG:CG	2.73	0.51
15:P:25:ARG:HG3	15:P:27:VAL:HG23	1.93	0.51
21:V:8:ASP:OD1	21:V:24:LYS:NZ	2.27	0.51
32:y:206:ALA:HB3	32:y:235:PRO:HA	1.92	0.51
1:A:5:A:C2	1:A:2899:A:C2	2.98	0.51
1:A:194:G:H2'	1:A:195:A:O4'	2.10	0.51
1:A:483:A:OP1	21:V:47:LYS:HE3	2.11	0.51
1:A:1682:G:H2'	1:A:1683:U:C6	2.45	0.51
1:A:1923:U:H2'	1:A:1924:C:C6	2.46	0.51
1:A:2029:G:N1	1:A:2033:A:OP2	2.40	0.51
1:A:2038:G:H2'	1:A:2039:U:O4'	2.11	0.51
1:A:2134:A:N7	1:A:2156:G:N2	2.59	0.51
5:E:46:GLN:O	5:E:88:ARG:NH1	2.42	0.51
7:G:121:ILE:HD13	7:G:135:GLY:HA3	1.91	0.51
9:J:112:LYS:HB3	9:J:115:ASP:HB2	1.93	0.51
1:A:832:U:H2'	1:A:833:A:C8	2.45	0.51
1:A:2079:U:H2'	1:A:2080:A:O4'	2.11	0.51
1:A:2096:C:H2'	1:A:2097:A:C8	2.46	0.51
1:A:2163:A:H3'	1:A:2164:C:H4'	1.93	0.51
1:A:2308:G:H5"	1:A:2309:A:OP2	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2355:G:H4'	23:X:24:LYS:HD2	1.93	0.51
6:F:4:LEU:HD11	6:F:176:PRO:HG3	1.93	0.51
7:G:127:THR:HG23	7:G:129:THR:H	1.76	0.51
11:L:107:LEU:HD21	11:L:115:ILE:HG21	1.93	0.51
15:P:52:SER:OG	15:P:54:VAL:HG12	2.11	0.51
1:A:2250:G:OP1	1:A:2275:C:O2'	2.29	0.51
1:A:2345:G:N3	1:A:2381:A:H2'	2.27	0.51
6:F:31:VAL:HG13	6:F:169:LEU:HD21	1.92	0.51
32:y:306:GLY:CA	32:y:313:GLU:HB2	2.41	0.51
1:A:1084:A:H2'	1:A:1085:A:H8	1.76	0.50
1:A:2070:A:H2'	1:A:2071:A:O4'	2.12	0.50
1:A:2101:A:N1	1:A:2189:U:C2	2.79	0.50
1:A:2159:G:H2'	1:A:2160:C:C6	2.46	0.50
1:A:2407:A:H2'	1:A:2408:U:C6	2.46	0.50
1:A:609:A:H2'	1:A:610:C:O4'	2.10	0.50
1:A:857:G:H2'	1:A:858:G:O4'	2.11	0.50
10:K:34:ARG:HG2	10:K:39:LYS:HB2	1.92	0.50
15:P:92:PHE:HB2	15:P:117:PHE:CD2	2.46	0.50
20:U:11:LEU:HD21	20:U:50:LEU:HD12	1.93	0.50
26:0:13:ALA:HA	26:0:16:ARG:HG3	1.93	0.50
1:A:39:G:H2'	1:A:40:U:C6	2.46	0.50
1:A:892:A:H2'	1:A:893:C:H6	1.76	0.50
1:A:971:G:H2'	1:A:972:A:O4'	2.12	0.50
1:A:2096:C:H2'	1:A:2097:A:H8	1.77	0.50
1:A:2656:U:N3	1:A:2665:A:N7	2.59	0.50
13:N:74:THR:HA	13:N:88:ASN:O	2.11	0.50
1:A:264:C:O2'	1:A:265:A:H2'	2.11	0.50
1:A:495:G:O2'	19:T:61:ASN:ND2	2.43	0.50
1:A:2014:A:H2'	1:A:2015:A:C8	2.47	0.50
1:A:2065:C:H2'	1:A:2066:C:H6	1.76	0.50
1:A:2097:A:H2'	1:A:2098:U:C6	2.47	0.50
1:A:2165:C:H2'	1:A:2166:U:O4'	2.11	0.50
1:A:2618:G:H21	4:D:155:VAL:HG21	1.76	0.50
5:E:84:THR:HG23	5:E:85:PHE:N	2.26	0.50
7:G:105:LEU:HB2	7:G:113:VAL:HG23	1.92	0.50
17:R:58:ARG:HA	17:R:61:TRP:CE3	2.46	0.50
1:A:667:U:H2'	1:A:668:A:O4'	2.11	0.50
1:A:1413:A:H2'	1:A:1414:C:C6	2.46	0.50
1:A:2179:C:H2'	1:A:2180:U:C6	2.46	0.50
13:N:33:LEU:HD13	13:N:117:PHE:HB3	1.93	0.50
24:Y:64:ILE:HG13	24:Y:68:LEU:HD13	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:414:C:H2'	1:A:415:A:H8	1.75	0.50
1:A:581:C:H2'	1:A:582:A:H8	1.77	0.50
1:A:998:C:P	17:R:92:ARG:HH22	2.35	0.50
1:A:1113:U:H2'	1:A:1114:C:C6	2.46	0.50
1:A:1117:C:O2'	1:A:1118:C:O5'	2.30	0.50
1:A:1818:U:OP2	3:C:156:ARG:HD2	2.12	0.50
1:A:1942:C:OP2	1:A:1943:U:O2'	2.24	0.50
7:G:64:GLN:HA	7:G:67:THR:HG22	1.93	0.50
1:A:44:A:H2'	1:A:45:G:O4'	2.11	0.50
1:A:1477:A:N6	1:A:1514:G:O2'	2.43	0.50
1:A:1796:U:H2'	1:A:1797:G:C8	2.46	0.50
1:A:1812:U:H2'	1:A:1813:G:C8	2.46	0.50
16:Q:22:PRO:HD3	16:Q:50:ILE:HD12	1.94	0.50
1:A:645:C:H2'	1:A:647:G:C8	2.46	0.50
1:A:1922:G:H2'	1:A:1923:U:C6	2.47	0.50
1:A:2648:G:H2'	1:A:2649:C:C6	2.47	0.50
5:E:134:LEU:O	5:E:138:LEU:HG	2.12	0.50
21:V:74:ASN:HA	21:V:96:PHE:CE1	2.47	0.50
30:4:31:HIS:C	30:4:33:LEU:N	2.70	0.50
1:A:959:A:H2'	1:A:960:A:C8	2.47	0.50
1:A:1747:U:H2'	1:A:1748:C:C6	2.47	0.50
3:C:91:ILE:HD12	3:C:103:TYR:CD1	2.47	0.50
4:D:181:ASP:HB3	4:D:186:LEU:HB2	1.92	0.50
32:y:108:GLU:HG3	32:y:218:TYR:HE2	1.77	0.50
32:y:168:CYS:SG	32:y:178:LEU:HD11	2.52	0.50
32:y:178:LEU:HB3	32:y:198:THR:OG1	2.11	0.50
1:A:320:A:H4'	1:A:322:A:N7	2.27	0.49
1:A:811:U:OP2	12:M:22:GLY:N	2.44	0.49
1:A:2698:U:H2'	1:A:2699:C:C6	2.47	0.49
5:E:149:ILE:HB	5:E:188:MET:HG3	1.94	0.49
1:A:40:U:H2'	1:A:41:C:C6	2.47	0.49
1:A:71:A:H5'	1:A:73:A:C8	2.47	0.49
1:A:1111:A:N3	1:A:1112:G:H1'	2.27	0.49
1:A:1266:G:OP1	27:1:16:ARG:NH2	2.36	0.49
1:A:1995:U:H3'	1:A:1996:C:H2'	1.94	0.49
1:A:2099:U:H2'	1:A:2100:G:C8	2.47	0.49
1:A:2312:U:H2'	6:F:37:ASN:HD21	1.77	0.49
17:R:76:TYR:CZ	17:R:80:ILE:HG13	2.46	0.49
17:R:92:ARG:CG	17:R:92:ARG:NH1	2.73	0.49
32:y:61:GLN:C	32:y:62:ARG:HD3	2.37	0.49
5:E:73:ILE:HG22	5:E:78:TRP:CZ3	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:L:76:VAL:HG12	16:Q:73:VAL:HB	1.94	0.49
16:Q:27:GLU:OE1	16:Q:29:LYS:HE3	2.12	0.49
1:A:1105:U:H2'	1:A:1106:G:C8	2.47	0.49
1:A:1880:U:H2'	1:A:1881:C:C6	2.48	0.49
1:A:2189:U:H6	1:A:2189:U:H5'	1.76	0.49
1:A:2228:G:H2'	1:A:2229:U:C6	2.46	0.49
3:C:180:GLU:OE1	3:C:270:ARG:NH1	2.46	0.49
6:F:104:ILE:HG13	6:F:105:THR:H	1.77	0.49
12:M:56:PRO:O	12:M:60:ARG:HG3	2.12	0.49
16:Q:14:LYS:HE3	16:Q:77:HIS:HA	1.94	0.49
26:0:40:ASP:OD1	26:0:45:ARG:NE	2.46	0.49
1:A:641:U:O2'	1:A:2350:C:OP1	2.24	0.49
1:A:1296:G:OP1	1:A:2709:G:O2'	2.26	0.49
1:A:1327:A:H2'	1:A:1328:A:O4'	2.11	0.49
1:A:1794:A:H2'	1:A:1795:C:H6	1.77	0.49
6:F:43:ALA:HB2	6:F:50:LEU:HD21	1.95	0.49
7:G:22:GLN:NE2	7:G:38:ASN:O	2.45	0.49
8:H:26:ALA:HA	8:H:30:LEU:HB2	1.95	0.49
10:K:97:PRO:O	10:K:100:VAL:HG22	2.11	0.49
24:Y:70:GLU:O	24:Y:74:ARG:HG3	2.12	0.49
1:A:1386:C:H2'	1:A:1387:A:C8	2.47	0.49
1:A:2005:A:O2'	1:A:2049:G:OP1	2.24	0.49
1:A:2723:C:H2'	1:A:2724:U:O4'	2.13	0.49
1:A:2783:U:H2'	1:A:2784:U:H6	1.76	0.49
6:F:99:PHE:HZ	6:F:154:ILE:HD13	1.78	0.49
6:F:56:ASP:OD2	6:F:135:GLN:HG3	2.13	0.49
8:H:32:PRO:HA	24:Y:39:TRP:CD1	2.47	0.49
8:H:93:SER:OG	8:H:121:VAL:O	2.30	0.49
8:H:100:ALA:HB2	8:H:115:VAL:HG21	1.95	0.49
11:L:108:ARG:HG3	11:L:113:MET:HE1	1.94	0.49
15:P:15:ARG:HH11	15:P:25:ARG:HH11	1.60	0.49
32:y:107:PHE:CE2	32:y:112:ILE:HD12	2.48	0.49
32:y:204:TYR:HB2	32:y:233:VAL:HG12	1.92	0.49
1:A:752:A:H3'	29:3:1:MET:SD	2.53	0.49
1:A:1249:U:H4'	17:R:4:VAL:CG2	2.41	0.49
1:A:1405:U:H2'	1:A:1406:U:C6	2.47	0.49
1:A:2178:C:H2'	1:A:2179:C:C5	2.48	0.49
1:A:2178:C:H2'	1:A:2179:C:C6	2.48	0.49
2:B:91:C:OP1	13:N:19:GLY:N	2.34	0.49
8:H:135:HIS:HD1	8:H:137:GLU:CD	2.21	0.49
15:P:110:ALA:HB1	15:P:115:LEU:HD12	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
25:Z:26:PHE:O	25:Z:30:MET:HG2	2.13	0.49
1:A:547:A:H3'	1:A:548:G:O4'	2.13	0.49
1:A:699:A:H2'	1:A:700:G:O4'	2.13	0.49
1:A:1069:A:H1'	1:A:1096:A:H4'	1.94	0.49
1:A:2687:U:H2'	1:A:2688:G:O4'	2.12	0.49
2:B:49:C:H2'	2:B:50:A:H8	1.78	0.49
27:1:13:ARG:O	27:1:17:ARG:HG3	2.13	0.49
1:A:682:G:H5'	29:3:26:ASN:ND2	2.28	0.49
1:A:2373:G:H2'	1:A:2374:C:C6	2.48	0.49
1:A:2392:A:O2'	12:M:60:ARG:O	2.29	0.49
9:J:44:LYS:O	9:J:48:ILE:HG12	2.13	0.49
20:U:6:ARG:O	20:U:10:VAL:HG23	2.13	0.49
32:y:177:MET:HE2	32:y:179:ARG:HH12	1.77	0.49
1:A:1065:U:H2'	1:A:1066:U:H6	1.78	0.48
1:A:1318:U:H2'	1:A:1319:C:C6	2.48	0.48
1:A:1424:G:H2'	1:A:1425:G:O4'	2.13	0.48
1:A:1485:U:H2'	1:A:1486:U:H6	1.77	0.48
1:A:2019:A:H2	1:A:2035:G:H22	1.61	0.48
1:A:2114:A:H61	1:A:2170:A:N6	2.10	0.48
1:A:2419:U:H4'	28:2:22:THR:HG21	1.93	0.48
32:y:330:TYR:O	32:y:335:GLY:HA3	2.13	0.48
1:A:1045:C:H41	1:A:1111:A:H2'	1.77	0.48
1:A:2155:U:H2'	1:A:2156:G:O4'	2.14	0.48
1:A:2441:U:OP2	1:A:2586:U:O2'	2.26	0.48
1:A:2636:C:H2'	1:A:2637:U:C6	2.48	0.48
1:A:2649:C:H2'	1:A:2650:U:C6	2.48	0.48
6:F:20:PHE:CE2	6:F:165:GLU:HG2	2.47	0.48
18:S:51:VAL:HB	18:S:52:PRO:HD2	1.94	0.48
19:T:73:LYS:HB2	19:T:106:VAL:HB	1.94	0.48
32:y:107:PHE:HE2	32:y:112:ILE:HD12	1.78	0.48
1:A:478:A:N1	1:A:500:G:H4'	2.28	0.48
1:A:936:A:H2'	1:A:937:C:C6	2.48	0.48
1:A:1083:U:H2'	1:A:1085:A:OP2	2.13	0.48
1:A:1096:A:H8	1:A:1096:A:OP2	1.96	0.48
1:A:1667:G:O2'	1:A:1991:U:O4	2.25	0.48
1:A:2662:A:H8	1:A:2662:A:O5'	1.97	0.48
6:F:136:ILE:HG22	6:F:146:VAL:HG21	1.95	0.48
6:F:142:ASP:O	6:F:146:VAL:HG23	2.13	0.48
9:J:121:ILE:O	9:J:125:THR:OG1	2.24	0.48
10:K:24:THR:HB	10:K:27:ARG:HG2	1.96	0.48
1:A:56:A:H2'	1:A:57:C:O4'	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:639:U:H2'	1:A:640:C:H6	1.75	0.48
1:A:1824:G:O3'	3:C:247:PRO:HD3	2.12	0.48
1:A:2030:A:N3	1:A:2499:C:H5"	2.28	0.48
13:N:34:LYS:HD3	22:W:82:TYR:HA	1.94	0.48
14:O:9:GLN:O	14:O:17:ARG:HD3	2.13	0.48
1:A:1567:G:OP2	3:C:83:TYR:OH	2.24	0.48
23:X:70:GLU:HG3	23:X:72:LYS:HD3	1.94	0.48
32:y:282:TYR:HB2	32:y:355:ASP:O	2.13	0.48
1:A:576:U:H2'	1:A:577:G:C8	2.48	0.48
1:A:2395:C:H2'	1:A:2396:G:O4'	2.13	0.48
1:A:2700:A:H2'	1:A:2701:U:H6	1.78	0.48
5:E:129:PRO:HB3	5:E:156:ASN:HA	1.95	0.48
9:J:23:VAL:HG11	9:J:27:LEU:HD23	1.95	0.48
11:L:40:LYS:NZ	11:L:57:VAL:HG12	2.29	0.48
12:M:85:VAL:HG21	12:M:90:VAL:HG22	1.96	0.48
24:Y:64:ILE:HG13	24:Y:68:LEU:CD1	2.43	0.48
25:Z:3:ALA:HB2	25:Z:52:ARG:HD3	1.96	0.48
3:C:29:PRO:HG2	3:C:34:LEU:HD21	1.94	0.48
7:G:38:ASN:HD21	7:G:64:GLN:CD	2.22	0.48
9:J:95:ASP:N	9:J:95:ASP:OD1	2.46	0.48
16:Q:23:GLY:O	16:Q:110:ILE:HD11	2.13	0.48
19:T:56:ALA:HA	19:T:59:GLU:HG2	1.94	0.48
21:V:7:ARG:HG3	21:V:27:ASN:HA	1.96	0.48
1:A:41:C:H2'	1:A:42:A:O4'	2.14	0.48
1:A:395:U:O2'	1:A:396:G:N7	2.41	0.48
1:A:1026:G:H2'	1:A:1027:A:C8	2.49	0.48
1:A:1182:G:H2'	1:A:1183:U:O4'	2.13	0.48
1:A:1442:U:H2'	1:A:1443:U:C6	2.49	0.48
1:A:2331:G:O2'	1:A:2336:A:N1	2.39	0.48
2:B:47:C:OP1	15:P:3:LYS:HE2	2.14	0.48
6:F:102:ARG:HH21	6:F:102:ARG:HG3	1.79	0.48
12:M:98:ALA:HB3	12:M:100:ILE:HD12	1.96	0.48
15:P:62:LEU:CD2	15:P:70:ALA:HA	2.44	0.48
22:W:21:ARG:HA	22:W:25:LYS:O	2.14	0.48
23:X:34:GLY:N	23:X:61:ALA:O	2.38	0.48
1:A:1064:C:H4'	9:J:90:GLY:N	2.29	0.48
1:A:1370:C:H2'	1:A:1371:G:O4'	2.13	0.48
1:A:1486:U:H2'	1:A:1487:U:H6	1.78	0.48
1:A:2047:C:H2'	1:A:2048:G:C8	2.49	0.48
1:A:2065:C:H2'	1:A:2066:C:C6	2.49	0.48
1:A:2689:U:O2	1:A:2713:U:H5"	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2840:C:H5”	14:O:53:THR:OG1	2.13	0.48
3:C:225:MET:SD	3:C:230:HIS:HB2	2.54	0.48
9:J:130:GLY:HA2	9:J:133:ARG:HG2	1.95	0.48
12:M:48:ARG:NH2	30:4:5:LYS:O	2.42	0.48
1:A:297:G:H2’	1:A:298:G:O4’	2.14	0.48
1:A:1964:G:H4’	1:A:1965:C:OP2	2.13	0.48
7:G:85:LYS:HG2	7:G:145:ALA:HB2	1.94	0.48
21:V:11:VAL:HG12	21:V:72:ILE:HA	1.96	0.48
32:y:8:VAL:HG12	32:y:73:ILE:HB	1.95	0.48
32:y:291:ARG:HD3	32:y:293:TRP:CZ2	2.49	0.48
1:A:207:A:H2’	1:A:208:C:O4’	2.13	0.47
1:A:642:U:O2’	1:A:644:A:N7	2.43	0.47
1:A:1125:G:OP2	1:A:1126:A:O2’	2.21	0.47
1:A:1420:A:C5	1:A:2211:A:C5	3.01	0.47
1:A:1486:U:H2’	1:A:1487:U:C6	2.49	0.47
1:A:1881:C:H2’	1:A:1882:U:O4’	2.14	0.47
1:A:2185:U:H2’	1:A:2186:G:H8	1.78	0.47
1:A:2242:G:H2’	1:A:2243:U:O4’	2.14	0.47
1:A:2243:U:H2’	1:A:2244:U:C6	2.49	0.47
1:A:2869:G:H2’	1:A:2870:C:C6	2.49	0.47
8:H:5:LEU:HD13	8:H:13:GLY:CA	2.42	0.47
1:A:191:A:H2’	1:A:192:C:H6	1.79	0.47
1:A:954:G:H5”	13:N:13:HIS:HB3	1.97	0.47
1:A:1060:U:C4	1:A:1062:G:O4’	2.67	0.47
1:A:1808:A:H3’	1:A:1809:A:C8	2.49	0.47
1:A:1838:C:N4	1:A:1898:U:H2’	2.29	0.47
1:A:2377:A:H2’	1:A:2378:A:C8	2.48	0.47
6:F:142:ASP:OD1	6:F:145:LYS:N	2.41	0.47
1:A:134:G:H2’	1:A:135:U:C6	2.49	0.47
1:A:1223:G:N7	18:S:71:LYS:NZ	2.61	0.47
1:A:2747:G:O6	1:A:2755:C:H5”	2.14	0.47
3:C:43:ARG:HA	3:C:48:ARG:O	2.14	0.47
6:F:38:MET:SD	6:F:152:LEU:HB3	2.54	0.47
17:R:72:ASN:HB3	17:R:110:VAL:HG11	1.96	0.47
17:R:86:ALA:HB2	17:R:116:ALA:HB2	1.96	0.47
1:A:863:A:H2’	1:A:864:G:C8	2.50	0.47
1:A:881:G:O6	1:A:895:U:O2	2.31	0.47
5:E:23:PHE:HA	5:E:107:SER:OG	2.14	0.47
7:G:11:VAL:HG12	7:G:48:ASN:O	2.14	0.47
9:J:92:PRO:HB3	9:J:136:GLY:HA3	1.97	0.47
12:M:74:THR:HG22	12:M:107:PHE:HB2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
16:Q:10:GLN:C	16:Q:12:GLN:H	2.22	0.47
22:W:11:GLU:HB3	22:W:16:ALA:CB	2.44	0.47
24:Y:40:VAL:O	24:Y:44:LYS:N	2.48	0.47
27:1:41:HIS:HA	27:1:49:TYR:OH	2.14	0.47
32:y:160:ALA:O	32:y:164:VAL:HG23	2.14	0.47
1:A:204:A:H8	1:A:204:A:OP1	1.98	0.47
1:A:1199:U:H2'	1:A:1200:C:C6	2.49	0.47
1:A:1563:U:H2'	1:A:1564:C:C6	2.50	0.47
1:A:1849:G:H2'	1:A:1850:G:H8	1.80	0.47
2:B:66:A:N6	2:B:107:G:H2'	2.28	0.47
7:G:137:ASP:HB3	7:G:140:VAL:HB	1.96	0.47
19:T:46:LEU:O	19:T:50:VAL:HG23	2.14	0.47
32:y:102:HIS:ND1	32:y:128:ILE:HD13	2.28	0.47
1:A:320:A:N3	5:E:163:ASN:ND2	2.61	0.47
1:A:1060:U:C1'	1:A:1062:G:C5'	2.92	0.47
1:A:1102:C:H2'	1:A:1103:A:H8	1.78	0.47
1:A:1421:G:C2	1:A:1422:G:C8	3.03	0.47
1:A:1798:U:C5	3:C:271:ARG:CZ	2.97	0.47
1:A:1853:A:H2'	1:A:1854:A:C8	2.50	0.47
1:A:2099:U:H2'	1:A:2100:G:H8	1.79	0.47
2:B:5:U:H2'	2:B:6:G:C8	2.50	0.47
21:V:12:ILE:HG21	21:V:80:ALA:HB2	1.95	0.47
1:A:27:G:H22	1:A:512:G:H1'	1.76	0.47
1:A:45:G:C5'	1:A:46:G:H5'	2.44	0.47
1:A:160:A:N3	1:A:2208:C:O2'	2.40	0.47
1:A:580:U:O3'	17:R:31:VAL:HG13	2.15	0.47
1:A:784:G:H5'	1:A:785:G:OP1	2.15	0.47
1:A:1209:U:O2'	1:A:1237:A:N1	2.46	0.47
1:A:1266:G:OP1	27:1:16:ARG:HD2	2.15	0.47
1:A:1562:U:H2'	1:A:1563:U:O4'	2.15	0.47
1:A:1809:A:H2'	1:A:1810:A:C8	2.50	0.47
1:A:1830:C:H2'	1:A:1831:G:H8	1.80	0.47
1:A:2074:U:H2'	1:A:2075:U:C6	2.48	0.47
1:A:2241:A:H2'	1:A:2242:G:C8	2.50	0.47
1:A:2329:U:H2'	1:A:2330:G:C8	2.50	0.47
1:A:2741:A:H2'	1:A:2742:G:O4'	2.14	0.47
3:C:210:ALA:HA	3:C:213:TRP:CE3	2.50	0.47
4:D:60:VAL:HG13	4:D:64:GLU:CG	2.44	0.47
8:H:126:GLY:H	8:H:146:VAL:HG23	1.79	0.47
9:J:80:LYS:HG3	9:J:86:LYS:HA	1.96	0.47
10:K:15:TRP:HB3	10:K:137:PRO:HB3	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:K:76:HIS:CE1	10:K:85:LYS:HB2	2.50	0.47
11:L:105:ARG:HH11	11:L:108:ARG:HH21	1.61	0.47
1:A:308:G:H2'	1:A:309:A:C8	2.50	0.47
1:A:686:U:H2'	1:A:788:A:N1	2.30	0.47
1:A:754:U:H2'	1:A:755:U:C6	2.50	0.47
1:A:869:G:H2'	1:A:870:U:O4'	2.14	0.47
1:A:996:A:HO2'	17:R:91:ASP:CG	2.23	0.47
1:A:1066:U:P	1:A:1073:A:H61	2.37	0.47
1:A:1357:C:H2'	1:A:1358:G:O4'	2.14	0.47
1:A:1965:C:OP1	1:A:1966:A:O2'	2.24	0.47
1:A:2079:U:O2'	24:Y:23:ASN:OD1	2.31	0.47
1:A:2656:U:O2	1:A:2657:A:C8	2.68	0.47
1:A:651:G:OP1	30:4:19:LYS:HB2	2.14	0.47
1:A:2800:A:C2	1:A:2895:G:H1'	2.50	0.47
2:B:52:A:N7	15:P:64:TYR:OH	2.29	0.47
6:F:101:GLU:O	6:F:105:THR:HB	2.14	0.47
9:J:122:GLU:O	9:J:126:ARG:HG2	2.15	0.47
9:J:129:GLU:HB3	9:J:133:ARG:HH21	1.80	0.47
16:Q:109:ARG:NH1	32:y:173:GLU:OE2	2.48	0.47
32:y:136:ASP:OD1	32:y:196:PHE:CD1	2.68	0.47
1:A:193:U:O3'	1:A:803:U:H4'	2.15	0.47
1:A:918:A:H5"	2:B:97:C:O2'	2.15	0.47
1:A:2897:U:H2'	1:A:2898:U:C6	2.49	0.47
8:H:125:THR:HA	8:H:146:VAL:HG23	1.96	0.47
9:J:91:LYS:HG2	9:J:94:LYS:HB2	1.97	0.47
10:K:104:ALA:O	10:K:108:MET:HG3	2.15	0.47
13:N:53:MET:HE1	13:N:103:TYR:CD1	2.49	0.47
19:T:29:VAL:HB	19:T:55:ILE:HD11	1.97	0.47
23:X:41:ARG:HA	23:X:41:ARG:HD3	1.44	0.47
1:A:481:G:O2'	1:A:507:A:N1	2.45	0.46
1:A:2646:C:H2'	1:A:2647:U:O4'	2.14	0.46
7:G:11:VAL:HG22	7:G:15:VAL:HB	1.97	0.46
14:O:55:ALA:HA	14:O:80:PHE:CE2	2.50	0.46
20:U:10:VAL:HG13	20:U:38:ALA:HB1	1.97	0.46
28:2:13:SER:OG	28:2:40:ASP:OD2	2.26	0.46
31:5:16:ILE:HD13	31:5:25:VAL:HG22	1.97	0.46
1:A:328:U:O3'	21:V:66:GLN:HG3	2.15	0.46
1:A:439:A:H2'	1:A:440:C:O4'	2.16	0.46
1:A:532:A:N1	1:A:2020:A:H1'	2.30	0.46
1:A:594:U:H2'	1:A:595:C:H6	1.79	0.46
1:A:1205:A:N7	5:E:165:HIS:CE1	2.83	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1354:A:H2'	1:A:1355:G:O4'	2.15	0.46
1:A:1928:A:H2'	1:A:1929:G:O4'	2.15	0.46
6:F:34:ILE:HG12	6:F:156:ILE:HG13	1.97	0.46
7:G:9:VAL:O	7:G:50:LEU:N	2.44	0.46
9:J:100:ILE:O	9:J:140:GLU:N	2.35	0.46
32:y:100:ILE:HD12	32:y:200:LYS:HB2	1.97	0.46
32:y:183:LEU:HD12	32:y:199:LEU:HD21	1.98	0.46
1:A:1:G:H2'	1:A:2:G:C8	2.47	0.46
1:A:36:G:N3	1:A:450:G:O2'	2.48	0.46
1:A:323:C:C4	1:A:333:G:C8	3.04	0.46
1:A:1071:G:H22	1:A:1090:A:N6	2.13	0.46
1:A:1798:U:H5	3:C:271:ARG:NH2	2.13	0.46
1:A:2895:G:H2'	1:A:2896:C:C6	2.51	0.46
4:D:178:VAL:N	4:D:188:LEU:O	2.44	0.46
9:J:116:MET:HG3	9:J:117:THR:H	1.79	0.46
15:P:35:ILE:HG21	15:P:71:ALA:HA	1.98	0.46
22:W:38:LEU:HD21	22:W:65:VAL:HG21	1.97	0.46
1:A:396:G:H1'	24:Y:29:PHE:HB3	1.96	0.46
1:A:2545:G:H2'	1:A:2546:U:O4'	2.14	0.46
4:D:15:PHE:N	16:Q:12:GLN:OE1	2.48	0.46
5:E:111:GLU:O	5:E:115:GLN:HG3	2.16	0.46
9:J:56:VAL:HG23	9:J:70:THR:HA	1.96	0.46
32:y:266:LEU:O	32:y:270:ILE:HG22	2.15	0.46
1:A:271:G:H4'	1:A:272:A:OP1	2.15	0.46
1:A:2849:U:O4	16:Q:21:ARG:NH2	2.48	0.46
2:B:29:A:OP2	15:P:31:THR:HG23	2.15	0.46
4:D:56:LYS:HB2	4:D:59:ARG:HB2	1.97	0.46
21:V:41:LEU:HD13	21:V:60:GLU:OE2	2.15	0.46
23:X:38:VAL:HG12	23:X:59:LEU:HB2	1.98	0.46
1:A:6:A:H2'	1:A:7:G:C8	2.50	0.46
1:A:540:C:H2'	1:A:541:A:C8	2.50	0.46
1:A:1011:G:OP1	17:R:75:SER:HB2	2.15	0.46
8:H:1:MET:N	8:H:21:VAL:O	2.31	0.46
10:K:98:GLU:H	10:K:98:GLU:CD	2.23	0.46
19:T:82:MET:HB2	19:T:98:LYS:HB2	1.97	0.46
19:T:84:ARG:O	19:T:95:ARG:HA	2.16	0.46
32:y:105:ARG:HB2	32:y:107:PHE:CE1	2.51	0.46
1:A:165:A:H2'	1:A:166:U:O4'	2.15	0.46
1:A:182:A:H2'	1:A:183:C:C6	2.49	0.46
1:A:744:U:H5"	1:A:1658:C:H5"	1.97	0.46
1:A:839:U:H2'	1:A:840:C:H6	1.81	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1055:G:H3'	1:A:1056:G:H8	1.81	0.46
1:A:1470:A:H2'	1:A:1471:G:O4'	2.15	0.46
1:A:1773:A:N7	1:A:1829:A:H1'	2.31	0.46
1:A:2297:A:C2	1:A:2321:U:H5	2.32	0.46
6:F:173:PHE:C	6:F:175:PHE:H	2.22	0.46
9:J:32:VAL:HB	9:J:58:ILE:HD11	1.98	0.46
12:M:132:ARG:HG3	12:M:142:ILE:HD12	1.98	0.46
19:T:80:PRO:O	19:T:100:THR:OG1	2.26	0.46
25:Z:28:LEU:HD22	25:Z:37:LEU:HD13	1.98	0.46
32:y:130:THR:HG22	32:y:175:ALA:HB1	1.96	0.46
1:A:141:G:H5'	1:A:142:A:C8	2.50	0.46
1:A:532:A:H4'	1:A:533:G:C8	2.51	0.46
1:A:632:A:H2'	1:A:633:A:C8	2.50	0.46
1:A:995:C:N4	10:K:2:LYS:HG3	2.31	0.46
1:A:1282:U:H2'	1:A:1283:G:O4'	2.16	0.46
1:A:2543:G:H2'	1:A:2544:G:O4'	2.16	0.46
1:A:2590:A:H2'	1:A:2591:C:C6	2.51	0.46
8:H:103:VAL:HG21	8:H:132:PHE:HZ	1.80	0.46
28:2:25:LYS:HE2	28:2:30:LYS:O	2.15	0.46
1:A:208:C:H2'	1:A:209:C:C6	2.51	0.46
1:A:828:U:H4'	1:A:831:G:N1	2.31	0.46
1:A:1062:G:C2	1:A:1077:A:N3	2.84	0.46
1:A:1269:A:H2'	1:A:1270:C:C6	2.51	0.46
2:B:8:C:OP1	15:P:15:ARG:NH2	2.49	0.46
3:C:145:GLU:HB2	3:C:188:CYS:HB3	1.98	0.46
3:C:175:ARG:HD3	3:C:181:MET:CE	2.46	0.46
32:y:4:LYS:HG2	32:y:69:GLU:HG2	1.97	0.46
1:A:1058:U:O3'	9:J:116:MET:HE3	2.16	0.46
1:A:1141:U:H4'	1:A:1142:A:O4'	2.16	0.46
1:A:1796:U:H2'	1:A:1797:G:H8	1.81	0.46
1:A:1963:U:O5'	1:A:1963:U:H6	1.97	0.46
1:A:2078:C:H2'	1:A:2079:U:C6	2.51	0.46
18:S:2:TYR:CZ	18:S:42:ALA:HB3	2.50	0.46
1:A:55:G:O2'	1:A:127:A:N1	2.45	0.45
1:A:881:G:N2	1:A:882:G:C4	2.84	0.45
1:A:1102:C:H2'	1:A:1103:A:C8	2.51	0.45
1:A:1779:U:OP2	1:A:1784:A:N6	2.40	0.45
1:A:1858:A:H2'	1:A:1859:U:O4'	2.17	0.45
1:A:2334:U:C4	15:P:16:ARG:HG3	2.52	0.45
1:A:2480:C:H2'	1:A:2481:G:O4'	2.17	0.45
6:F:8:TYR:O	6:F:13:VAL:HG23	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
10:K:81:ILE:HG13	10:K:82:GLY:H	1.81	0.45
32:y:322:ILE:HG13	32:y:342:MET:HA	1.98	0.45
1:A:36:G:H4'	1:A:451:U:C2	2.50	0.45
1:A:852:U:H2'	1:A:853:C:C6	2.52	0.45
1:A:2050:C:O2'	4:D:146:ILE:HG21	2.15	0.45
1:A:2066:C:O2'	1:A:2067:G:H5'	2.16	0.45
1:A:2625:G:H2'	1:A:2626:C:O4'	2.15	0.45
9:J:6:ALA:HB3	9:J:60:VAL:HG12	1.98	0.45
20:U:64:LYS:HA	20:U:79:ASP:OD1	2.16	0.45
1:A:155:A:H2'	1:A:156:A:C8	2.50	0.45
1:A:732:C:H2'	1:A:733:G:O4'	2.16	0.45
1:A:766:U:H2'	1:A:767:U:C6	2.51	0.45
1:A:851:C:H2'	1:A:852:U:H6	1.80	0.45
1:A:1076:C:H3'	1:A:1077:A:H8	1.81	0.45
1:A:1131:G:OP1	10:K:82:GLY:HA2	2.16	0.45
1:A:1721:G:C2	1:A:1738:G:C4	3.05	0.45
1:A:1870:C:H3'	1:A:1871:A:C8	2.51	0.45
1:A:1915:U:C4	1:A:1916:A:C5	3.05	0.45
4:D:62:LYS:N	4:D:63:PRO:CD	2.80	0.45
32:y:352:LYS:HG2	32:y:355:ASP:OD2	2.17	0.45
1:A:3:U:H2'	1:A:4:U:C6	2.52	0.45
1:A:756:A:H2'	1:A:757:G:O4'	2.16	0.45
1:A:1130:U:C2	1:A:2025:C:H5"	2.51	0.45
1:A:2019:A:H4'	17:R:34:VAL:HG21	1.98	0.45
4:D:4:LEU:HD23	4:D:4:LEU:HA	1.74	0.45
11:L:100:PHE:CG	32:y:182:ASP:HB2	2.51	0.45
12:M:56:PRO:HD2	12:M:59:ARG:HG3	1.97	0.45
32:y:46:MET:HE1	32:y:271:ARG:HA	1.98	0.45
1:A:135:U:H2'	1:A:136:G:O4'	2.17	0.45
1:A:910:A:N3	1:A:2264:C:O2'	2.41	0.45
1:A:1114:C:O2'	1:A:1115:G:H5'	2.16	0.45
1:A:2153:C:H2'	1:A:2154:A:H8	1.82	0.45
1:A:2819:G:H2'	1:A:2821:A:N7	2.32	0.45
1:A:2852:G:H2'	1:A:2853:C:O4'	2.17	0.45
3:C:227:PRO:HD3	3:C:234:GLY:CA	2.47	0.45
4:D:156:PHE:CB	10:K:81:ILE:HG22	2.46	0.45
6:F:173:PHE:O	6:F:175:PHE:N	2.43	0.45
13:N:111:GLU:HG2	13:N:112:LEU:N	2.31	0.45
19:T:17:VAL:HA	19:T:43:ALA:HB1	1.97	0.45
32:y:170:PRO:O	32:y:174:ASN:ND2	2.48	0.45
1:A:323:C:H6	1:A:1205:A:C2	2.35	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1196:C:H2'	1:A:1197:G:O4'	2.16	0.45
1:A:1231:U:H2'	1:A:1232:G:H8	1.81	0.45
1:A:1710:G:H4'	1:A:2858:C:O2	2.17	0.45
1:A:2570:G:H2'	1:A:2571:U:O4'	2.16	0.45
1:A:2810:A:H4'	4:D:62:LYS:HD3	1.99	0.45
1:A:2818:U:H2'	1:A:2819:G:C8	2.51	0.45
6:F:104:ILE:HD12	6:F:176:PRO:HD3	1.98	0.45
19:T:74:ILE:O	19:T:74:ILE:HG12	2.16	0.45
24:Y:31:PRO:HG2	24:Y:33:LEU:HG	1.99	0.45
30:4:62:LEU:HB3	30:4:65:ALA:HB3	1.99	0.45
32:y:20:ASN:HA	32:y:23:THR:HG22	1.97	0.45
1:A:270:A:C2	1:A:370:G:C5	3.05	0.45
1:A:353:C:H2'	1:A:354:A:H8	1.81	0.45
1:A:528:A:C2	1:A:2043:C:C4'	2.99	0.45
1:A:686:U:O4	29:3:12:ARG:HB2	2.17	0.45
1:A:1429:G:H2'	1:A:1430:G:H8	1.81	0.45
1:A:1683:U:H2'	1:A:1684:G:C8	2.52	0.45
1:A:2307:G:H4'	1:A:2308:G:O5'	2.17	0.45
1:A:2558:C:H2'	1:A:2559:C:O4'	2.17	0.45
1:A:2839:G:OP1	14:O:46:ARG:HD2	2.17	0.45
6:F:38:MET:HB2	6:F:87:CYS:SG	2.57	0.45
8:H:42:LYS:HA	8:H:45:GLU:HG3	1.98	0.45
8:H:46:PHE:HD2	8:H:51:ARG:HE	1.63	0.45
13:N:36:VAL:HG13	22:W:82:TYR:CD2	2.52	0.45
1:A:235:U:H2'	1:A:236:C:H6	1.82	0.45
1:A:337:C:H2'	1:A:338:G:O4'	2.16	0.45
1:A:353:C:H2'	1:A:354:A:C8	2.52	0.45
1:A:717:C:H3'	1:A:718:A:H8	1.82	0.45
1:A:2063:C:O2	1:A:2450:A:N1	2.50	0.45
1:A:2843:G:H2'	1:A:2844:G:O4'	2.17	0.45
32:y:19:PHE:CD1	32:y:72:ASP:HB2	2.52	0.45
32:y:177:MET:HE3	32:y:198:THR:HA	1.99	0.45
32:y:282:TYR:CE2	32:y:293:TRP:HB2	2.52	0.45
1:A:18:U:OP1	17:R:30:ARG:NH2	2.50	0.45
1:A:358:U:H2'	1:A:359:G:H8	1.82	0.45
1:A:954:G:OP2	13:N:16:ARG:NH1	2.49	0.45
1:A:1069:A:C1'	1:A:1096:A:H4'	2.47	0.45
1:A:1427:A:H4'	1:A:1428:C:O4'	2.17	0.45
3:C:25:HIS:CG	3:C:80:ARG:HD2	2.51	0.45
3:C:25:HIS:HB3	3:C:82:GLU:HG2	1.99	0.45
8:H:4:ILE:HG23	8:H:39:ALA:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
28:2:11:LEU:HD21	28:2:34:LEU:HD23	1.98	0.45
1:A:61:C:OP2	25:Z:47:ARG:NH1	2.42	0.45
1:A:638:G:H2'	1:A:639:U:O4'	2.17	0.45
1:A:1363:C:O2'	1:A:1809:A:N3	2.41	0.45
1:A:1849:G:H2'	1:A:1850:G:C8	2.52	0.45
1:A:2119:A:N6	1:A:2167:U:H1'	2.32	0.45
1:A:2455:G:H2'	1:A:2456:C:C6	2.52	0.45
1:A:2657:A:H61	1:A:2665:A:H2'	1.81	0.45
2:B:75:G:H5"	22:W:12:GLN:OE1	2.17	0.45
8:H:30:LEU:HB3	8:H:36:ALA:HB3	1.99	0.45
10:K:111:LYS:HD3	10:K:111:LYS:HA	1.64	0.45
18:S:51:VAL:HB	18:S:52:PRO:CD	2.47	0.45
1:A:91:A:H8	1:A:91:A:OP1	2.00	0.44
1:A:197:A:N6	1:A:2430:A:H2'	2.32	0.44
1:A:208:C:H2'	1:A:209:C:H6	1.82	0.44
1:A:288:U:C2	1:A:289:G:C8	3.05	0.44
1:A:909:A:H2'	1:A:912:C:C5	2.52	0.44
1:A:969:G:H2'	1:A:970:U:C6	2.52	0.44
1:A:1104:C:H2'	1:A:1105:U:C6	2.51	0.44
1:A:1210:G:OP1	1:A:1211:C:O2'	2.23	0.44
1:A:1484:U:H2'	1:A:1485:U:C6	2.51	0.44
1:A:1842:G:H2'	1:A:1843:C:C6	2.52	0.44
1:A:1901:A:OP2	3:C:253:LYS:NZ	2.32	0.44
1:A:2590:A:H2'	1:A:2591:C:H6	1.81	0.44
1:A:2657:A:N6	1:A:2666:C:C5	2.85	0.44
1:A:2834:G:H2'	1:A:2879:A:H61	1.81	0.44
1:A:2900:A:H2'	1:A:2901:C:O4'	2.17	0.44
2:B:111:U:H2'	2:B:112:G:H8	1.82	0.44
3:C:105:LEU:HD11	3:C:156:ARG:CG	2.46	0.44
6:F:22:TYR:HB2	6:F:27:GLN:OE1	2.17	0.44
9:J:36:GLU:HG3	9:J:36:GLU:O	2.17	0.44
14:O:117:ASP:CG	14:O:117:ASP:O	2.60	0.44
1:A:413:C:H2'	1:A:414:C:H6	1.83	0.44
1:A:1045:C:N4	1:A:1111:A:H2'	2.31	0.44
1:A:1614:A:C2	19:T:93:ALA:HB2	2.52	0.44
1:A:2661:G:H2'	1:A:2662:A:C8	2.52	0.44
8:H:15:LEU:HD12	8:H:47:PHE:HZ	1.81	0.44
32:y:256:MET:HB3	32:y:261:LEU:O	2.17	0.44
1:A:156:A:H2'	1:A:157:C:C6	2.52	0.44
1:A:568:U:O2'	1:A:570:G:N7	2.41	0.44
1:A:1055:G:H5"	1:A:1056:G:OP2	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1223:G:N2	1:A:1226:A:OP2	2.44	0.44
1:A:1920:C:H2'	1:A:1921:G:C8	2.52	0.44
1:A:2127:G:H2'	1:A:2128:G:H8	1.78	0.44
6:F:74:VAL:HG12	6:F:79:ILE:HD11	1.99	0.44
9:J:72:THR:HG21	9:J:112:LYS:HG2	1.99	0.44
25:Z:32:ALA:HB2	25:Z:37:LEU:HD23	1.98	0.44
1:A:247:G:H4'	1:A:386:G:C5	2.51	0.44
1:A:1013:C:H2'	1:A:1014:A:H8	1.82	0.44
1:A:2311:A:C2	6:F:77:PHE:HB3	2.53	0.44
1:A:2443:C:H2'	1:A:2444:G:C8	2.52	0.44
3:C:108:LYS:HA	3:C:196:GLY:HA3	1.98	0.44
6:F:11:GLU:HB3	6:F:15:LYS:NZ	2.32	0.44
6:F:129:SER:HB2	6:F:155:THR:HG23	1.98	0.44
7:G:76:VAL:O	7:G:80:THR:HG22	2.17	0.44
17:R:90:ILE:HG22	17:R:95:LEU:HG	2.00	0.44
21:V:51:ALA:C	21:V:53:ASN:H	2.25	0.44
32:y:278:ASN:CG	32:y:297:VAL:HB	2.43	0.44
1:A:679:C:H2'	1:A:680:C:C6	2.52	0.44
1:A:729:G:C5	3:C:207:LYS:HB2	2.53	0.44
1:A:910:A:N1	1:A:2277:G:H1'	2.32	0.44
1:A:1066:U:O5'	1:A:1073:A:N6	2.50	0.44
1:A:1072:C:H42	1:A:1092:C:N4	2.15	0.44
1:A:1825:U:H2'	1:A:1826:G:C8	2.53	0.44
1:A:2071:A:H2'	1:A:2072:C:C6	2.53	0.44
1:A:2153:C:H2'	1:A:2154:A:C8	2.53	0.44
1:A:2812:G:H2'	1:A:2813:A:C8	2.53	0.44
1:A:2817:U:OP1	14:O:99:LYS:NZ	2.49	0.44
9:J:79:LEU:HD12	9:J:79:LEU:O	2.17	0.44
10:K:102:GLU:HG2	10:K:119:PHE:CZ	2.52	0.44
21:V:33:LYS:HB3	21:V:64:ALA:HB1	2.00	0.44
28:2:17:THR:HG21	28:2:42:VAL:HB	1.99	0.44
32:y:71:VAL:HG12	32:y:73:ILE:HD11	2.00	0.44
32:y:136:ASP:HB3	32:y:172:LEU:HD22	2.00	0.44
1:A:235:U:H2'	1:A:236:C:C6	2.52	0.44
1:A:1006:C:H1'	10:K:108:MET:HB3	1.99	0.44
1:A:1432:G:O2'	1:A:1433:A:H5'	2.18	0.44
1:A:1973:G:H2'	1:A:1974:C:O4'	2.17	0.44
3:C:53:HIS:HB3	3:C:217:ARG:O	2.17	0.44
7:G:133:LEU:O	7:G:141:ILE:HD11	2.17	0.44
10:K:58:ASN:HA	10:K:126:ALA:O	2.17	0.44
10:K:125:TYR:OH	10:K:132:HIS:NE2	2.44	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:225:C:H2'	1:A:226:A:O4'	2.17	0.44
1:A:265:A:H4'	1:A:266:G:OP1	2.18	0.44
1:A:528:A:C8	1:A:528:A:H3'	2.52	0.44
1:A:2751:G:C2	7:G:3:ARG:NH2	2.86	0.44
3:C:23:GLU:OE1	3:C:81:LEU:HD22	2.18	0.44
3:C:37:ASN:HB2	3:C:62:TYR:HB2	2.00	0.44
8:H:101:ASP:O	8:H:104:THR:HB	2.18	0.44
25:Z:58:ASN:O	25:Z:58:ASN:ND2	2.50	0.44
1:A:483:A:C8	21:V:45:HIS:HD2	2.36	0.44
1:A:657:U:H2'	1:A:658:U:C6	2.53	0.44
1:A:814:C:H2'	1:A:815:C:H6	1.82	0.44
1:A:861:A:H2'	1:A:862:G:O4'	2.17	0.44
1:A:1007:C:OP1	10:K:37:ARG:NH2	2.51	0.44
1:A:1072:C:H42	1:A:1092:C:H41	1.66	0.44
1:A:1515:A:H3'	1:A:1516:G:H8	1.83	0.44
1:A:2291:U:H2'	1:A:2292:U:H6	1.80	0.44
1:A:2522:U:O2'	1:A:2647:U:OP1	2.26	0.44
7:G:154:PRO:HA	7:G:160:LYS:O	2.18	0.44
1:A:278:A:OP2	1:A:361:G:N1	2.50	0.44
1:A:546:U:OP1	1:A:546:U:H3'	2.17	0.44
1:A:782:A:N7	3:C:220:VAL:HG21	2.33	0.44
1:A:1268:A:H2'	1:A:1269:A:O4'	2.18	0.44
1:A:1289:C:H2'	1:A:1290:C:C6	2.53	0.44
1:A:1736:U:H2'	1:A:1737:G:O4'	2.18	0.44
1:A:2108:A:N1	1:A:2182:U:N3	2.65	0.44
1:A:2814:A:H2'	1:A:2815:C:C6	2.53	0.44
15:P:38:GLN:HB2	15:P:47:VAL:HG21	1.98	0.44
23:X:47:ALA:HB1	23:X:51:VAL:O	2.18	0.44
1:A:257:C:H2'	1:A:258:G:O4'	2.18	0.43
1:A:570:G:H2'	1:A:2030:A:N7	2.33	0.43
1:A:2131:U:H4'	1:A:2133:G:H5"	2.00	0.43
1:A:2667:C:H1'	7:G:109:PHE:CD1	2.52	0.43
6:F:135:GLN:HB3	6:F:150:ARG:O	2.18	0.43
8:H:82:SER:OG	8:H:94:ILE:HD11	2.18	0.43
22:W:11:GLU:HB3	22:W:16:ALA:HB1	2.00	0.43
24:Y:39:TRP:NE1	24:Y:41:GLU:HG2	2.32	0.43
28:2:10:LYS:HE2	28:2:20:PHE:CD2	2.53	0.43
1:A:482:A:P	21:V:47:LYS:HZ3	2.38	0.43
1:A:499:U:H2'	1:A:500:G:O4'	2.18	0.43
1:A:1496:A:H2'	1:A:1498:C:C4	2.53	0.43
2:B:104:A:H2'	2:B:105:G:O4'	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:L:23:LYS:HA	11:L:23:LYS:HD3	1.83	0.43
15:P:28:VAL:HG11	15:P:103:VAL:HG13	2.00	0.43
18:S:14:VAL:HG21	18:S:98:ILE:HD13	2.00	0.43
32:y:324:PHE:O	32:y:328:ILE:HG12	2.18	0.43
1:A:358:U:C2	1:A:359:G:C8	3.05	0.43
1:A:744:U:H2'	1:A:745:1MG:O4'	2.18	0.43
1:A:882:G:C5	1:A:883:G:C8	3.07	0.43
1:A:933:A:H5'	1:A:934:U:OP2	2.18	0.43
1:A:1657:U:H2'	1:A:1658:C:C6	2.54	0.43
1:A:2031:A:C6	1:A:2498:OMC:H1'	2.53	0.43
1:A:2697:G:H2'	1:A:2698:U:O4'	2.17	0.43
3:C:156:ARG:O	3:C:156:ARG:HG2	2.17	0.43
14:O:100:CYS:HA	27:1:43:ILE:HG12	2.00	0.43
20:U:11:LEU:HD22	20:U:46:ALA:HB1	2.00	0.43
1:A:2:G:H2'	1:A:3:U:C6	2.53	0.43
1:A:68:G:H2'	1:A:69:C:O4'	2.18	0.43
1:A:413:C:H2'	1:A:414:C:C6	2.53	0.43
1:A:684:G:C6	1:A:774:G:C4	3.05	0.43
1:A:1140:C:H5'	10:K:26:GLY:HA3	2.00	0.43
1:A:1607:C:H4'	1:A:1608:A:O5'	2.18	0.43
1:A:1676:A:H2'	1:A:1677:A:O4'	2.18	0.43
1:A:1847:A:H8	1:A:1847:A:OP2	2.01	0.43
1:A:2214:C:C2'	1:A:2215:C:H5'	2.48	0.43
1:A:2361:G:OP1	30:4:27:ALA:N	2.39	0.43
1:A:2652:C:H2'	1:A:2653:U:O4'	2.17	0.43
2:B:48:U:H2'	2:B:49:C:C6	2.53	0.43
6:F:8:TYR:HB2	6:F:173:PHE:HZ	1.83	0.43
11:L:105:ARG:HH11	11:L:108:ARG:NH2	2.17	0.43
22:W:72:VAL:HB	22:W:91:PHE:HB3	1.99	0.43
32:y:187:GLU:O	32:y:191:ILE:HG12	2.17	0.43
32:y:296:PRO:HG2	32:y:299:ALA:HB2	2.01	0.43
1:A:451:U:H2'	1:A:453:A:N7	2.34	0.43
1:A:1214:A:H4'	1:A:1239:G:H4'	1.99	0.43
1:A:1323:C:O5'	1:A:1323:C:H6	2.01	0.43
1:A:1484:U:H2'	1:A:1485:U:H6	1.83	0.43
1:A:2290:G:H2'	1:A:2291:U:O4'	2.19	0.43
1:A:2662:A:H2'	1:A:2663:G:O4'	2.17	0.43
1:A:2792:A:H3'	1:A:2793:C:H5"	2.00	0.43
3:C:93:LEU:HD11	3:C:101:ARG:HB3	2.00	0.43
8:H:135:HIS:ND1	8:H:137:GLU:OE1	2.49	0.43
16:Q:33:VAL:HG12	16:Q:38:LYS:HG2	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
18:S:79:ARG:C	18:S:81:LYS:H	2.27	0.43
1:A:646:U:H3'	1:A:647:G:H5"	2.01	0.43
1:A:649:G:H2'	1:A:650:C:O4'	2.19	0.43
1:A:1059:G:C8	1:A:1060:U:H2'	2.54	0.43
1:A:1447:C:H2'	1:A:1448:G:C8	2.54	0.43
2:B:5:U:H2'	2:B:6:G:H8	1.82	0.43
6:F:61:SER:HB2	6:F:91:LEU:HD21	1.99	0.43
12:M:123:ARG:HG2	12:M:143:GLU:HG3	2.01	0.43
16:Q:7:GLN:O	16:Q:11:GLU:HG3	2.18	0.43
24:Y:38:PHE:HZ	24:Y:51:VAL:HG11	1.84	0.43
27:1:40:ARG:HG3	27:1:41:HIS:ND1	2.33	0.43
1:A:84:A:N3	1:A:85:G:H1'	2.33	0.43
1:A:278:A:N1	1:A:361:G:O2'	2.50	0.43
1:A:645:C:H2'	1:A:647:G:N7	2.34	0.43
1:A:646:U:C4	1:A:2368:C:H1'	2.54	0.43
1:A:1096:A:H2'	1:A:1097:U:O4'	2.19	0.43
1:A:1506:U:H2'	1:A:1507:C:C6	2.54	0.43
1:A:1542:U:H2'	1:A:1543:G:C8	2.53	0.43
1:A:1869:G:H5'	1:A:1870:C:OP2	2.18	0.43
1:A:2316:G:O2'	6:F:125:ARG:NH2	2.51	0.43
1:A:2379:G:H4'	15:P:21:LEU:HD11	1.99	0.43
2:B:106:G:H2'	2:B:107:G:O4'	2.19	0.43
4:D:124:ARG:HD2	4:D:165:MET:HB2	1.99	0.43
11:L:9:ASN:O	11:L:83:ALA:HA	2.19	0.43
32:y:47:PRO:HB2	32:y:271:ARG:HH21	1.84	0.43
1:A:290:U:H2'	1:A:291:G:O4'	2.18	0.43
1:A:370:G:C8	1:A:370:G:O5'	2.72	0.43
1:A:693:A:O2'	1:A:1353:A:N3	2.44	0.43
1:A:828:U:H2'	1:A:829:A:C8	2.54	0.43
1:A:1188:U:O2'	1:A:1189:A:H5'	2.19	0.43
1:A:1341:G:OP2	1:A:1394:U:O2'	2.33	0.43
1:A:1379:U:H4'	1:A:1380:G:OP1	2.19	0.43
1:A:1414:C:N4	1:A:1415:U:O4	2.52	0.43
1:A:1545:A:H2'	1:A:1546:G:O4'	2.19	0.43
1:A:1805:A:N3	3:C:50:THR:HG23	2.33	0.43
1:A:2123:G:H2'	1:A:2124:G:C8	2.54	0.43
1:A:2346:A:H3'	1:A:2347:C:H5"	2.00	0.43
9:J:60:VAL:HA	9:J:66:PHE:HB2	2.01	0.43
15:P:39:VAL:HB	15:P:49:VAL:HG22	2.01	0.43
23:X:77:ARG:HB2	23:X:79:PHE:CE1	2.52	0.43
1:A:61:C:P	25:Z:47:ARG:HH12	2.41	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:95:A:H4'	25:Z:38:GLN:O	2.19	0.43
1:A:185:G:H4'	1:A:218:A:H4'	2.00	0.43
1:A:270:A:C2	1:A:370:G:C6	3.07	0.43
1:A:555:G:O2'	1:A:556:A:C8	2.71	0.43
1:A:967:U:H2'	1:A:968:C:C6	2.54	0.43
1:A:1751:U:H2'	1:A:1752:C:C6	2.53	0.43
1:A:2150:C:H5"	1:A:2151:U:OP2	2.18	0.43
1:A:2690:U:O2'	1:A:2872:A:H1'	2.19	0.43
1:A:2774:C:H2'	1:A:2775:G:O4'	2.18	0.43
4:D:104:VAL:O	4:D:177:VAL:HG11	2.19	0.43
11:L:41:ILE:HD13	11:L:60:ALA:HB2	2.01	0.43
12:M:56:PRO:HD2	12:M:59:ARG:HB2	2.01	0.43
13:N:30:SER:H	13:N:106:ASP:HB3	1.83	0.43
18:S:51:VAL:O	18:S:52:PRO:C	2.60	0.43
1:A:6:A:H2'	1:A:7:G:H8	1.84	0.43
1:A:71:A:H5"	1:A:72:U:H3'	2.00	0.43
1:A:126:A:O5'	29:3:19:ARG:HG3	2.18	0.43
1:A:755:U:H2'	1:A:756:A:C8	2.54	0.43
1:A:1025:G:H1'	1:A:1135:C:O5'	2.19	0.43
1:A:1093:G:H1'	1:A:1099:G:N2	2.34	0.43
1:A:1812:U:H2'	1:A:1813:G:H8	1.83	0.43
1:A:1887:C:H2'	1:A:1888:G:O4'	2.19	0.43
1:A:2189:U:C6	1:A:2189:U:C4'	3.01	0.43
1:A:2251:OMG:H1'	1:A:2251:OMG:HM23	1.56	0.43
1:A:2788:C:O2'	1:A:2809:A:N3	2.48	0.43
2:B:7:G:OP1	15:P:4:LYS:HE2	2.19	0.43
6:F:67:ILE:CG2	6:F:84:PRO:HB3	2.48	0.43
32:y:137:LEU:HB2	32:y:172:LEU:HB3	2.01	0.43
1:A:141:G:N2	20:U:1:MET:HG2	2.34	0.42
1:A:289:G:C2	1:A:352:A:C2	3.07	0.42
1:A:569:U:O2'	1:A:983:A:N1	2.45	0.42
1:A:666:A:H2'	1:A:667:U:C6	2.53	0.42
1:A:1012:U:O4	10:K:30:THR:OG1	2.33	0.42
1:A:1152:C:H2'	1:A:1153:C:H6	1.84	0.42
1:A:1534:U:H1'	1:A:1538:G:H1	1.82	0.42
1:A:1795:C:H2'	1:A:1796:U:O4'	2.19	0.42
1:A:2591:C:H2'	1:A:2592:G:H8	1.82	0.42
9:J:74:PRO:HD2	9:J:77:VAL:HG22	2.01	0.42
15:P:28:VAL:HG12	15:P:93:ASP:O	2.19	0.42
21:V:94:ARG:O	21:V:103:ILE:HG12	2.19	0.42
28:2:8:LYS:HE2	28:2:8:LYS:HB2	1.83	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:743:A:OP1	4:D:135:GLY:HA2	2.19	0.42
1:A:760:G:H2'	1:A:761:A:O4'	2.19	0.42
1:A:788:A:OP1	1:A:790:U:H5	2.02	0.42
1:A:1786:A:H1'	1:A:1938:A:N6	2.34	0.42
1:A:2142:A:H2'	1:A:2143:C:O4'	2.18	0.42
1:A:2702:G:H2'	1:A:2703:C:C6	2.54	0.42
1:A:2727:A:C2'	1:A:2728:U:H5'	2.48	0.42
1:A:2846:G:H2'	1:A:2847:U:C6	2.53	0.42
2:B:15:A:O4'	2:B:109:A:C8	2.72	0.42
5:E:119:ILE:O	5:E:187:VAL:HA	2.19	0.42
6:F:4:LEU:HD23	6:F:101:GLU:HB2	2.01	0.42
6:F:60:ILE:HD12	6:F:60:ILE:H	1.84	0.42
12:M:55:MET:HE2	12:M:55:MET:HA	2.01	0.42
12:M:74:THR:HG22	12:M:107:PHE:CD2	2.54	0.42
16:Q:9:GLU:O	16:Q:13:MET:HG3	2.19	0.42
22:W:2:PHE:HB2	22:W:61:LEU:HD22	2.01	0.42
1:A:1048:A:C4	1:A:1049:C:C5	3.08	0.42
1:A:1077:A:N1	1:A:1088:A:H2'	2.34	0.42
1:A:1106:G:H2'	1:A:1107:G:H8	1.84	0.42
1:A:1309:G:H4'	29:3:7:PRO:HB2	2.01	0.42
1:A:1444:G:H2'	1:A:1445:G:H8	1.84	0.42
1:A:1537:G:H3'	1:A:1537:G:N3	2.34	0.42
1:A:1847:A:O2'	1:A:1848:A:C8	2.68	0.42
2:B:29:A:H2'	2:B:30:C:O4'	2.20	0.42
6:F:158:THR:OG1	6:F:159:THR:N	2.52	0.42
7:G:68:ALA:O	7:G:72:LEU:HD23	2.18	0.42
9:J:19:PRO:HD2	9:J:37:PHE:CE1	2.55	0.42
12:M:74:THR:HG22	12:M:107:PHE:HD2	1.83	0.42
14:O:24:MET:HE1	14:O:40:LYS:HD3	2.01	0.42
1:A:482:A:O2'	1:A:497:A:N1	2.41	0.42
1:A:879:G:N2	1:A:899:A:H1'	2.34	0.42
1:A:1062:G:C6	1:A:1077:A:C2	3.05	0.42
1:A:1619:G:O2'	29:3:1:MET:N	2.50	0.42
1:A:2229:U:O2	24:Y:34:HIS:HE1	2.02	0.42
1:A:2497:A:N3	1:A:2498:OMC:N4	2.66	0.42
1:A:2552:OMU:HM23	1:A:2554:U:C6	2.55	0.42
2:B:55:U:O2'	6:F:24:SER:OG	2.20	0.42
6:F:60:ILE:O	6:F:102:ARG:NH1	2.43	0.42
8:H:80:ILE:HB	8:H:146:VAL:HG12	2.00	0.42
10:K:93:ILE:HD13	10:K:93:ILE:HA	1.92	0.42
11:L:18:ARG:HB2	11:L:45:GLU:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
29:3:34:ARG:CZ	29:3:39:ARG:HD2	2.50	0.42
32:y:19:PHE:CG	32:y:72:ASP:HB2	2.55	0.42
32:y:46:MET:SD	32:y:47:PRO:HD2	2.59	0.42
32:y:95:ARG:CG	32:y:197:LEU:HD21	2.50	0.42
32:y:237:CYS:O	32:y:241:GLU:HG2	2.19	0.42
1:A:241:A:N1	1:A:255:A:H5"	2.34	0.42
1:A:580:U:H2'	1:A:581:C:H6	1.82	0.42
1:A:833:A:H2'	1:A:834:G:H8	1.84	0.42
1:A:834:G:H2'	1:A:835:C:O4'	2.19	0.42
1:A:1398:C:H5"	20:U:59:ASN:HD21	1.84	0.42
1:A:1805:A:H5"	3:C:248:TRP:CE2	2.53	0.42
1:A:2108:A:C2	1:A:2182:U:C2	3.07	0.42
1:A:2119:A:H61	1:A:2167:U:H1'	1.84	0.42
1:A:2163:A:H5"	1:A:2171:A:C8	2.55	0.42
1:A:2702:G:H2'	1:A:2703:C:H6	1.84	0.42
3:C:36:LYS:NZ	3:C:38:SER:HB2	2.34	0.42
3:C:130:LEU:CD1	3:C:135:ILE:HG12	2.50	0.42
13:N:12:MET:SD	13:N:72:PRO:HD2	2.60	0.42
15:P:15:ARG:NH1	15:P:25:ARG:HH11	2.17	0.42
32:y:137:LEU:HD22	32:y:173:GLU:HA	2.01	0.42
32:y:223:ARG:HH21	32:y:235:PRO:HG2	1.84	0.42
1:A:136:G:H2'	1:A:137:U:H5'	2.02	0.42
1:A:142:A:O2'	20:U:1:MET:HB2	2.20	0.42
1:A:242:G:H5"	30:4:64:TYR:CE2	2.55	0.42
1:A:464:U:H2'	1:A:465:G:O4'	2.20	0.42
1:A:586:A:N1	1:A:809:G:O2'	2.46	0.42
1:A:590:A:H2'	1:A:591:U:C6	2.54	0.42
1:A:929:U:H1'	26:0:26:GLY:O	2.20	0.42
1:A:2080:A:O5'	24:Y:19:SER:HB2	2.20	0.42
1:A:2328:A:H2'	1:A:2329:U:H6	1.80	0.42
1:A:2462:C:H2'	1:A:2463:C:C6	2.55	0.42
8:H:5:LEU:CD1	8:H:13:GLY:HA2	2.43	0.42
32:y:52:ASP:O	32:y:56:GLU:HG3	2.20	0.42
1:A:136:G:C2'	1:A:137:U:H5'	2.49	0.42
1:A:373:U:H2'	1:A:374:A:H8	1.84	0.42
1:A:721:A:H2'	1:A:722:A:H8	1.81	0.42
1:A:956:G:C5	13:N:14:LYS:NZ	2.86	0.42
1:A:1804:C:H2'	1:A:1805:A:C8	2.55	0.42
1:A:2563:U:H1'	1:A:2566:A:C6	2.55	0.42
9:J:137:LEU:HD23	9:J:137:LEU:H	1.84	0.42
15:P:12:THR:O	15:P:16:ARG:HG2	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
15:P:77:ALA:O	15:P:81:ARG:HG3	2.20	0.42
1:A:1854:A:O4'	1:A:2233:U:H4'	2.19	0.42
1:A:2020:A:C2	1:A:2022:U:O4'	2.72	0.42
1:A:2419:U:OP1	30:4:41:LYS:NZ	2.40	0.42
1:A:2885:G:N2	27:1:40:ARG:CZ	2.58	0.42
3:C:253:LYS:HD3	3:C:253:LYS:HA	1.89	0.42
7:G:44:LYS:HB3	7:G:51:THR:OG1	2.20	0.42
8:H:57:LYS:O	8:H:61:VAL:HG13	2.20	0.42
10:K:4:PHE:CG	17:R:100:VAL:HG11	2.55	0.42
27:1:36:GLU:OE2	27:1:44:THR:HG21	2.19	0.42
32:y:10:LEU:HD11	32:y:127:VAL:HG21	2.00	0.42
32:y:237:CYS:HB3	32:y:240:VAL:HB	2.01	0.42
1:A:471:A:H2'	1:A:472:A:O4'	2.20	0.42
1:A:528:A:H3'	1:A:528:A:H8	1.84	0.42
1:A:671:C:H2'	1:A:672:C:C6	2.54	0.42
1:A:753:A:H2'	1:A:754:U:H6	1.85	0.42
1:A:956:G:O6	13:N:14:LYS:NZ	2.52	0.42
1:A:1106:G:C2	1:A:1107:G:C8	3.07	0.42
1:A:1614:A:H2	19:T:93:ALA:HB2	1.85	0.42
1:A:1647:U:P	1:A:1647:U:H3'	2.59	0.42
1:A:1668:A:O2'	1:A:1674:G:N7	2.41	0.42
1:A:1722:A:H2'	1:A:1723:G:O4'	2.20	0.42
1:A:2345:G:H4'	1:A:2346:A:O5'	2.20	0.42
6:F:13:VAL:O	6:F:17:MET:HG2	2.20	0.42
7:G:71:LEU:HD23	7:G:71:LEU:HA	1.86	0.42
9:J:116:MET:HG3	9:J:117:THR:N	2.34	0.42
18:S:4:VAL:O	18:S:39:LEU:N	2.42	0.42
22:W:35:GLU:OE1	22:W:35:GLU:N	2.53	0.42
1:A:176:A:O2'	1:A:177:G:H5'	2.19	0.42
1:A:492:A:C2	19:T:7:HIS:CE1	3.08	0.42
1:A:623:C:H2'	1:A:624:C:C6	2.55	0.42
1:A:702:U:H2'	1:A:703:U:C6	2.54	0.42
1:A:711:G:H2'	1:A:712:G:O4'	2.19	0.42
1:A:753:A:H2'	1:A:754:U:C6	2.55	0.42
1:A:800:A:C2	1:A:802:A:C8	3.08	0.42
1:A:927:A:H2'	1:A:928:A:C8	2.55	0.42
1:A:1069:A:N6	1:A:1073:A:C8	2.88	0.42
1:A:1103:A:H3'	1:A:1104:C:C6	2.55	0.42
1:A:1107:G:H2'	1:A:1108:U:H6	1.85	0.42
1:A:1124:G:O2'	31:5:37:GLN:HG2	2.20	0.42
1:A:1632:A:H2'	1:A:1633:G:C8	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2096:C:HO2'	1:A:2097:A:P	2.43	0.42
1:A:2443:C:H2'	1:A:2444:G:H8	1.84	0.42
1:A:2452:C:H2'	1:A:2453:A:C8	2.55	0.42
1:A:2733:A:H2'	1:A:2734:A:O4'	2.20	0.42
3:C:261:LYS:HA	3:C:264:ASP:OD2	2.20	0.42
21:V:51:ALA:C	21:V:53:ASN:N	2.78	0.42
1:A:25:U:H2'	1:A:26:G:O4'	2.20	0.41
1:A:30:G:H2'	1:A:31:C:H6	1.84	0.41
1:A:613:A:N3	1:A:614:A:H2'	2.35	0.41
1:A:729:G:N7	3:C:209:GLY:N	2.66	0.41
1:A:783:A:H2'	1:A:784:G:H4'	2.02	0.41
1:A:1031:G:H5"	31:5:8:LYS:NZ	2.35	0.41
1:A:1319:C:O2'	1:A:1320:C:H5'	2.20	0.41
1:A:1672:A:C2	1:A:2582:G:H5'	2.55	0.41
1:A:1910:G:N1	1:A:1911:PSU:O4	2.53	0.41
1:A:2093:G:H1'	1:A:2198:A:C2	2.54	0.41
3:C:36:LYS:HZ3	3:C:38:SER:HB2	1.84	0.41
6:F:40:VAL:C	6:F:42:GLU:H	2.27	0.41
9:J:20:SER:HB3	9:J:21:PRO:HD3	2.02	0.41
13:N:49:ALA:HB1	13:N:120:ALA:HB1	2.02	0.41
30:4:49:MET:HE3	30:4:49:MET:HB3	1.95	0.41
32:y:357:MET:N	32:y:357:MET:SD	2.93	0.41
1:A:81:G:H2'	1:A:82:U:O4'	2.19	0.41
1:A:184:C:H2'	1:A:185:G:C8	2.55	0.41
1:A:184:C:H2'	1:A:185:G:H8	1.86	0.41
1:A:909:A:H2'	1:A:912:C:H5	1.84	0.41
1:A:1248:G:OP1	5:E:44:ARG:NH2	2.41	0.41
1:A:1441:G:H2'	1:A:1442:U:C6	2.55	0.41
1:A:1684:G:H2'	1:A:1685:C:C6	2.54	0.41
1:A:2292:U:H2'	1:A:2293:G:C8	2.55	0.41
1:A:2309:A:H2'	1:A:2310:C:O4'	2.20	0.41
1:A:2356:U:O3'	23:X:20:ARG:HG2	2.20	0.41
1:A:2566:A:N1	11:L:28:SER:OG	2.43	0.41
1:A:2670:A:H2'	1:A:2671:G:O4'	2.19	0.41
1:A:2834:G:H1'	1:A:2883:A:N6	2.35	0.41
3:C:140:THR:HG21	3:C:194:GLU:HG2	2.03	0.41
3:C:176:LEU:N	3:C:176:LEU:HD12	2.35	0.41
9:J:19:PRO:HD2	9:J:37:PHE:CD1	2.55	0.41
12:M:48:ARG:H	12:M:48:ARG:HG2	1.65	0.41
18:S:27:ILE:O	18:S:66:HIS:NE2	2.47	0.41
1:A:250:G:OP2	30:4:13:ARG:NH2	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:460:A:H2'	1:A:461:C:O4'	2.20	0.41
1:A:644:A:C2	1:A:2369:A:H1'	2.56	0.41
1:A:877:A:H2	1:A:900:A:N7	2.18	0.41
1:A:1289:C:H2'	1:A:1290:C:H6	1.86	0.41
1:A:1429:G:H2'	1:A:1430:G:C8	2.55	0.41
10:K:4:PHE:HB2	17:R:101:PHE:CE2	2.55	0.41
14:O:41:ALA:HB1	14:O:97:ILE:HD12	2.01	0.41
1:A:132:G:H2'	1:A:133:U:C6	2.55	0.41
1:A:272:A:H2'	1:A:273:G:H8	1.82	0.41
1:A:595:C:H2'	1:A:596:U:H6	1.85	0.41
1:A:640:C:H2'	1:A:641:U:C6	2.55	0.41
1:A:1131:G:O2'	1:A:2026:U:H5'	2.20	0.41
1:A:1318:U:H2'	1:A:1319:C:H6	1.85	0.41
1:A:1384:A:H1'	1:A:1405:U:H1'	2.02	0.41
1:A:2303:G:H1'	6:F:123:ASP:OD1	2.19	0.41
3:C:94:VAL:O	3:C:101:ARG:HA	2.21	0.41
5:E:75:SER:O	5:E:81:GLY:HA3	2.20	0.41
9:J:58:ILE:HA	9:J:66:PHE:CE2	2.55	0.41
9:J:109:ALA:HB2	9:J:128:ILE:HG13	2.03	0.41
10:K:46:PRO:HD3	17:R:60:LEU:HD13	2.02	0.41
22:W:26:PHE:HE2	22:W:89:ILE:HG13	1.85	0.41
26:0:24:LEU:HD11	26:0:54:MET:CE	2.50	0.41
1:A:538:A:H2'	1:A:539:G:O4'	2.20	0.41
1:A:685:A:H1'	1:A:688:U:O4	2.19	0.41
1:A:1878:G:H2'	1:A:1879:C:O4'	2.20	0.41
1:A:2804:U:H2'	1:A:2805:C:H6	1.83	0.41
1:A:2870:C:H2'	1:A:2871:U:O4'	2.21	0.41
2:B:37:C:O2	15:P:100:HIS:HE1	2.04	0.41
2:B:100:G:H2'	2:B:101:A:O4'	2.21	0.41
6:F:104:ILE:O	6:F:108:VAL:HG23	2.21	0.41
9:J:73:PRO:HA	9:J:74:PRO:HD3	1.86	0.41
12:M:57:LEU:CD1	12:M:60:ARG:NH1	2.82	0.41
21:V:5:ILE:HD13	21:V:72:ILE:HG23	2.01	0.41
23:X:13:GLY:H	23:X:14:ARG:NH1	2.18	0.41
32:y:278:ASN:ND2	32:y:297:VAL:O	2.53	0.41
1:A:152:A:H2'	1:A:153:U:H6	1.84	0.41
1:A:242:G:C8	30:4:5:LYS:HD3	2.55	0.41
1:A:406:G:H2'	1:A:407:G:O4'	2.20	0.41
1:A:565:C:H2'	1:A:566:U:O4'	2.20	0.41
1:A:783:A:H4'	1:A:2588:G:H4'	2.03	0.41
1:A:948:C:C1'	1:A:984:A:C8	3.04	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1332:G:H2'	1:A:1332:G:N3	2.34	0.41
1:A:2193:G:O2'	1:A:2194:U:OP1	2.35	0.41
1:A:2831:G:H1'	1:A:2883:A:H2'	2.03	0.41
1:A:2849:U:H4'	1:A:2868:A:C2	2.55	0.41
1:A:2885:G:H1	27:1:40:ARG:HH12	1.67	0.41
2:B:45:A:O4'	6:F:92:ARG:NH2	2.53	0.41
3:C:108:LYS:HA	3:C:196:GLY:CA	2.51	0.41
7:G:37:LEU:HD13	7:G:68:ALA:HB1	2.03	0.41
9:J:32:VAL:HG23	9:J:60:VAL:HG23	2.02	0.41
1:A:319:G:H2'	1:A:320:A:O4'	2.21	0.41
1:A:814:C:H2'	1:A:815:C:C6	2.56	0.41
1:A:875:G:H2'	1:A:876:C:C6	2.55	0.41
1:A:1152:C:H2'	1:A:1153:C:C6	2.56	0.41
1:A:1199:U:C1'	17:R:4:VAL:HG12	2.48	0.41
1:A:1637:A:H4'	1:A:2711:A:O2'	2.21	0.41
1:A:1901:A:H2'	1:A:1902:C:C6	2.56	0.41
1:A:2047:C:H2'	1:A:2048:G:H8	1.84	0.41
1:A:2107:G:H1	1:A:2182:U:H3	1.68	0.41
1:A:2515:C:H2'	1:A:2516:A:H8	1.84	0.41
7:G:83:PHE:O	7:G:134:LYS:HA	2.21	0.41
13:N:1:MET:N	13:N:1:MET:HE2	2.36	0.41
15:P:4:LYS:HD2	15:P:7:ARG:HH21	1.86	0.41
15:P:4:LYS:NZ	15:P:8:ILE:HD11	2.34	0.41
32:y:169:LEU:O	32:y:173:GLU:HG3	2.21	0.41
1:A:29:U:H2'	1:A:30:G:C8	2.56	0.41
1:A:397:U:H5"	24:Y:32:ASN:HB2	2.03	0.41
1:A:598:U:H2'	1:A:599:A:C8	2.56	0.41
1:A:654:A:H3'	1:A:654:A:N3	2.36	0.41
1:A:872:U:H2'	1:A:873:C:C6	2.55	0.41
1:A:1214:A:H61	1:A:1235:G:H1'	1.86	0.41
1:A:1287:A:O2'	1:A:1288:G:H5'	2.21	0.41
1:A:2134:A:N6	1:A:2157:G:O4'	2.53	0.41
1:A:2148:G:H2'	1:A:2149:U:H6	1.83	0.41
1:A:2359:C:O2'	30:4:54:ASP:OD2	2.31	0.41
1:A:2498:OMC:CM2	1:A:2499:C:H5'	2.51	0.41
1:A:2748:A:H5'	7:G:4:VAL:HG21	2.02	0.41
2:B:83:G:H4'	26:0:53:PHE:CG	2.55	0.41
6:F:99:PHE:HA	6:F:102:ARG:NH2	2.35	0.41
1:A:153:U:H2'	1:A:154:U:C6	2.56	0.41
1:A:422:A:H2'	1:A:423:A:C8	2.56	0.41
1:A:684:G:C2	1:A:794:A:C2	3.09	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:747:5MU:H5”	1:A:748:G:H5’	2.02	0.41
1:A:782:A:N3	3:C:225:MET:HG2	2.35	0.41
1:A:1019:U:O2’	1:A:1021:A:N7	2.48	0.41
1:A:1057:A:H2’	1:A:1058:U:H6	1.86	0.41
1:A:1071:G:H2’	1:A:1072:C:C5	2.56	0.41
1:A:1108:U:H2’	1:A:1109:C:O4’	2.21	0.41
1:A:1197:G:C4	1:A:1198:U:C5	3.08	0.41
1:A:1440:U:H2’	1:A:1441:G:C8	2.56	0.41
1:A:1496:A:H2’	1:A:1498:C:C5	2.56	0.41
1:A:1558:C:O4’	1:A:1560:G:C8	2.74	0.41
1:A:1818:U:O2’	3:C:153:GLN:O	2.30	0.41
1:A:1827:U:OP2	3:C:221:ARG:HD2	2.21	0.41
1:A:1907:G:C6	1:A:1908:C:C4	3.08	0.41
1:A:2119:A:C5	1:A:2169:A:C6	3.09	0.41
1:A:2177:C:H2’	1:A:2178:C:O4’	2.21	0.41
1:A:2627:G:O2’	1:A:2781:A:N1	2.35	0.41
1:A:2646:C:O5’	1:A:2646:C:H6	2.03	0.41
1:A:2657:A:C5	1:A:2665:A:C5	3.08	0.41
1:A:2802:G:H2’	1:A:2803:G:O4’	2.20	0.41
2:B:39:A:H2’	2:B:40:U:C6	2.55	0.41
3:C:135:ILE:HG22	3:C:139:SER:OG	2.21	0.41
3:C:158:ALA:HB1	3:C:197:ASN:O	2.20	0.41
3:C:163:GLN:OE1	3:C:175:ARG:NH2	2.54	0.41
9:J:73:PRO:HB2	9:J:78:LEU:HD21	2.02	0.41
12:M:108:ALA:HB3	12:M:125:LEU:HG	2.03	0.41
25:Z:28:LEU:HD23	25:Z:28:LEU:HA	1.87	0.41
26:0:17:LEU:O	26:0:20:HIS:N	2.52	0.41
29:3:22:MET:SD	29:3:28:ARG:HG2	2.61	0.41
32:y:282:TYR:HE2	32:y:307:LYS:HD3	1.86	0.41
1:A:114:U:H2’	1:A:115:C:C6	2.56	0.41
1:A:482:A:P	21:V:47:LYS:HZ1	2.42	0.41
1:A:1394:U:H4’	1:A:1603:A:H4’	2.02	0.41
1:A:1724:G:H2’	1:A:1725:U:C6	2.56	0.41
1:A:1730:C:H1’	1:A:1731:G:OP2	2.21	0.41
1:A:1935:G:H1’	1:A:1964:G:N2	2.35	0.41
1:A:2015:A:C6	27:1:3:VAL:HG23	2.56	0.41
1:A:2232:C:P	24:Y:27:ARG:HH12	2.44	0.41
1:A:2533:U:H2’	1:A:2534:A:O4’	2.21	0.41
1:A:2822:G:O2’	1:A:2824:C:OP2	2.30	0.41
3:C:105:LEU:O	3:C:107:PRO:HD3	2.21	0.41
3:C:133:ARG:HG3	3:C:167:ARG:HH11	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
11:L:20:MET:O	11:L:41:ILE:HA	2.21	0.41
11:L:69:VAL:O	11:L:76:VAL:HA	2.21	0.41
11:L:75:SER:HB2	16:Q:73:VAL:O	2.21	0.41
1:A:40:U:H2'	1:A:41:C:H6	1.86	0.40
1:A:250:G:H2'	1:A:251:A:C8	2.56	0.40
1:A:391:A:O2'	1:A:410:G:OP1	2.27	0.40
1:A:589:U:H2'	1:A:590:A:H8	1.85	0.40
1:A:906:U:HO2'	13:N:66:ARG:HH21	1.66	0.40
1:A:1114:C:H2'	1:A:1115:G:C8	2.56	0.40
1:A:2159:G:H2'	1:A:2160:C:H6	1.85	0.40
2:B:114:C:H2'	2:B:115:A:C8	2.56	0.40
4:D:101:PHE:HZ	4:D:203:VAL:O	2.04	0.40
6:F:11:GLU:HB3	6:F:15:LYS:HZ3	1.85	0.40
8:H:115:VAL:HG22	8:H:132:PHE:CD1	2.55	0.40
19:T:109:ASP:OD1	19:T:109:ASP:N	2.48	0.40
27:1:34:SER:OG	27:1:36:GLU:HG2	2.21	0.40
29:3:31:LEU:HD23	29:3:31:LEU:HA	1.89	0.40
1:A:38:A:H2'	1:A:39:G:O4'	2.21	0.40
1:A:155:A:H2'	1:A:156:A:H8	1.85	0.40
1:A:980:A:N7	1:A:1136:G:H5'	2.35	0.40
1:A:1313:U:O2	1:A:1313:U:C2'	2.69	0.40
1:A:1406:U:C2	1:A:1407:G:C8	3.09	0.40
1:A:1477:A:H2'	1:A:1478:G:O4'	2.21	0.40
1:A:1640:A:H2'	1:A:1641:A:C8	2.56	0.40
1:A:1653:G:H3'	14:O:2:ARG:HG2	2.02	0.40
1:A:1759:A:H2'	1:A:1760:C:C6	2.57	0.40
1:A:1775:U:O4	1:A:1789:A:H2	2.02	0.40
1:A:1884:G:H8	1:A:1884:G:OP2	2.03	0.40
1:A:2193:G:H2'	1:A:2194:U:C6	2.55	0.40
1:A:2607:G:H2'	1:A:2608:G:O4'	2.21	0.40
2:B:48:U:H4'	15:P:100:HIS:ND1	2.37	0.40
3:C:142:HIS:HB2	3:C:195:VAL:HG23	2.02	0.40
6:F:43:ALA:HB1	6:F:83:TYR:HE1	1.85	0.40
9:J:112:LYS:HB3	9:J:115:ASP:HB3	2.02	0.40
16:Q:106:LYS:O	16:Q:109:ARG:HG2	2.20	0.40
23:X:32:LEU:HA	23:X:64:ASP:OD1	2.20	0.40
26:0:38:ARG:HA	26:0:38:ARG:HD3	1.90	0.40
1:A:555:G:O2'	1:A:556:A:H8	2.04	0.40
1:A:700:G:O2'	1:A:1632:A:N3	2.39	0.40
1:A:2578:G:OP2	1:A:2578:G:H4'	2.21	0.40
1:A:2615:U:H2'	1:A:2616:C:H6	1.86	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2657:A:N1	1:A:2665:A:H2'	2.36	0.40
1:A:2686:G:H2'	1:A:2687:U:O4'	2.21	0.40
1:A:2705:A:H2'	1:A:2706:A:O4'	2.22	0.40
1:A:2838:G:C6	1:A:2839:G:C5	3.09	0.40
16:Q:103:ARG:HG3	16:Q:103:ARG:HH11	1.87	0.40
1:A:123:G:H4'	1:A:1376:C:O5'	2.21	0.40
1:A:245:G:O2'	1:A:384:A:N1	2.49	0.40
1:A:613:A:H4'	1:A:614:A:OP1	2.21	0.40
1:A:829:A:N7	1:A:2247:A:O2'	2.52	0.40
1:A:971:G:H4'	1:A:983:A:O2'	2.22	0.40
1:A:1260:A:H2'	1:A:1261:C:O4'	2.21	0.40
1:A:1452:G:H2'	1:A:1457:U:O4	2.22	0.40
1:A:1736:U:H2'	1:A:1737:G:C8	2.57	0.40
1:A:1789:A:H2'	1:A:1790:C:O4'	2.21	0.40
1:A:2194:U:H2'	1:A:2195:U:O4'	2.22	0.40
1:A:2548:U:H2'	1:A:2549:G:O4'	2.22	0.40
1:A:2837:A:H2'	1:A:2838:G:C8	2.56	0.40
1:A:2895:G:H2'	1:A:2896:C:H6	1.87	0.40
2:B:31:C:C2	2:B:32:U:C5	3.09	0.40
4:D:4:LEU:HD21	4:D:96:ILE:CG2	2.51	0.40
5:E:73:ILE:HG22	5:E:78:TRP:HZ3	1.85	0.40
16:Q:103:ARG:HG3	16:Q:103:ARG:NH1	2.37	0.40
32:y:46:MET:SD	32:y:270:ILE:HG13	2.60	0.40
1:A:265:A:N1	1:A:427:U:O2'	2.53	0.40
1:A:391:A:H1'	1:A:411:G:O4'	2.21	0.40
1:A:551:G:H5"	1:A:551:G:H8	1.86	0.40
1:A:881:G:C2	1:A:882:G:C5	3.10	0.40
1:A:1132:U:H2'	1:A:1133:A:C8	2.56	0.40
1:A:1170:C:N4	1:A:1171:G:O6	2.55	0.40
1:A:1292:G:H2'	1:A:1293:C:C6	2.57	0.40
1:A:1724:G:H2'	1:A:1725:U:H6	1.86	0.40
1:A:2138:G:C5	1:A:2139:U:H1'	2.57	0.40
1:A:2214:C:H2'	1:A:2215:C:H5'	2.03	0.40
1:A:2282:G:H4'	1:A:2389:G:O2'	2.22	0.40
1:A:2386:A:H2'	1:A:2387:U:O4'	2.22	0.40
3:C:239:ASN:HD22	3:C:239:ASN:HA	1.70	0.40
8:H:6:LEU:HD23	8:H:47:PHE:HE2	1.85	0.40
8:H:15:LEU:HG	8:H:15:LEU:O	2.21	0.40
13:N:14:LYS:HE3	13:N:14:LYS:HB2	1.86	0.40
14:O:112:TYR:CE2	27:1:55:ILE:HD13	2.57	0.40
19:T:19:LEU:HB3	27:1:22:LEU:HG	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
21:V:81:ASP:OD2	21:V:98:SER:HB3	2.21	0.40
22:W:30:ILE:HD12	22:W:38:LEU:HD23	2.02	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	C	269/273 (98%)	257 (96%)	12 (4%)	0	100	100
4	D	207/209 (99%)	197 (95%)	10 (5%)	0	100	100
5	E	199/201 (99%)	195 (98%)	4 (2%)	0	100	100
6	F	175/179 (98%)	158 (90%)	16 (9%)	1 (1%)	22	33
7	G	174/177 (98%)	167 (96%)	7 (4%)	0	100	100
8	H	147/149 (99%)	131 (89%)	16 (11%)	0	100	100
9	J	139/142 (98%)	119 (86%)	20 (14%)	0	100	100
10	K	140/142 (99%)	138 (99%)	2 (1%)	0	100	100
11	L	121/123 (98%)	119 (98%)	2 (2%)	0	100	100
12	M	142/144 (99%)	138 (97%)	4 (3%)	0	100	100
13	N	134/136 (98%)	131 (98%)	3 (2%)	0	100	100
14	O	118/127 (93%)	115 (98%)	3 (2%)	0	100	100
15	P	114/117 (97%)	108 (95%)	6 (5%)	0	100	100
16	Q	112/115 (97%)	104 (93%)	8 (7%)	0	100	100
17	R	115/118 (98%)	113 (98%)	2 (2%)	0	100	100
18	S	101/103 (98%)	93 (92%)	8 (8%)	0	100	100
19	T	108/110 (98%)	105 (97%)	3 (3%)	0	100	100
20	U	91/100 (91%)	85 (93%)	6 (7%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
21	V	100/104 (96%)	89 (89%)	11 (11%)	0	100 100
22	W	92/94 (98%)	91 (99%)	1 (1%)	0	100 100
23	X	75/85 (88%)	73 (97%)	2 (3%)	0	100 100
24	Y	75/78 (96%)	74 (99%)	1 (1%)	0	100 100
25	Z	60/63 (95%)	56 (93%)	4 (7%)	0	100 100
26	0	56/59 (95%)	53 (95%)	3 (5%)	0	100 100
27	1	54/57 (95%)	52 (96%)	2 (4%)	0	100 100
28	2	48/55 (87%)	41 (85%)	7 (15%)	0	100 100
29	3	44/46 (96%)	43 (98%)	1 (2%)	0	100 100
30	4	62/65 (95%)	59 (95%)	2 (3%)	1 (2%)	8 11
31	5	36/38 (95%)	35 (97%)	1 (3%)	0	100 100
32	y	361/379 (95%)	345 (96%)	16 (4%)	0	100 100
All	All	3669/3788 (97%)	3484 (95%)	183 (5%)	2 (0%)	50 65

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	F	174	ASP
30	4	32	ILE

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	C	216/218 (99%)	209 (97%)	7 (3%)	34 54
4	D	164/164 (100%)	163 (99%)	1 (1%)	84 92
5	E	165/165 (100%)	165 (100%)	0	100 100
6	F	148/150 (99%)	147 (99%)	1 (1%)	81 91
7	G	137/138 (99%)	137 (100%)	0	100 100
8	H	114/114 (100%)	112 (98%)	2 (2%)	54 73

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
9	J	109/110 (99%)	109 (100%)	0	100 100
10	K	116/116 (100%)	115 (99%)	1 (1%)	75 88
11	L	104/104 (100%)	104 (100%)	0	100 100
12	M	103/103 (100%)	103 (100%)	0	100 100
13	N	109/109 (100%)	109 (100%)	0	100 100
14	O	100/103 (97%)	100 (100%)	0	100 100
15	P	86/87 (99%)	86 (100%)	0	100 100
16	Q	99/100 (99%)	98 (99%)	1 (1%)	73 86
17	R	89/90 (99%)	88 (99%)	1 (1%)	70 84
18	S	84/84 (100%)	83 (99%)	1 (1%)	67 82
19	T	93/93 (100%)	93 (100%)	0	100 100
20	U	80/84 (95%)	80 (100%)	0	100 100
21	V	83/85 (98%)	83 (100%)	0	100 100
22	W	78/78 (100%)	78 (100%)	0	100 100
23	X	59/63 (94%)	59 (100%)	0	100 100
24	Y	67/68 (98%)	66 (98%)	1 (2%)	60 77
25	Z	54/55 (98%)	54 (100%)	0	100 100
26	0	48/49 (98%)	48 (100%)	0	100 100
27	1	47/48 (98%)	47 (100%)	0	100 100
28	2	45/49 (92%)	45 (100%)	0	100 100
29	3	38/38 (100%)	38 (100%)	0	100 100
30	4	51/52 (98%)	50 (98%)	1 (2%)	50 70
31	5	34/34 (100%)	34 (100%)	0	100 100
32	y	293/307 (95%)	292 (100%)	1 (0%)	91 96
All	All	3013/3058 (98%)	2995 (99%)	18 (1%)	82 92

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	50	THR
3	C	130	LEU
3	C	141	VAL
3	C	167	ARG
3	C	182	ARG

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Mol	Chain	Res	Type
3	C	242	LYS
3	C	271	ARG
4	D	32	ASN
6	F	125	ARG
8	H	15	LEU
8	H	17	ASP
10	K	4	PHE
16	Q	88	ARG
17	R	92	ARG
18	S	96	VAL
24	Y	76	GLU
30	4	32	ILE
32	y	281	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	70	ASN
3	C	115	GLN
3	C	134	ASN
3	C	153	GLN
3	C	226	ASN
3	C	239	ASN
4	D	42	ASN
4	D	173	GLN
5	E	94	GLN
5	E	136	GLN
5	E	195	GLN
6	F	23	ASN
7	G	73	ASN
8	H	11	ASN
8	H	18	GLN
8	H	128	HIS
9	J	93	ASN
9	J	104	GLN
10	K	58	ASN
11	L	9	ASN
14	O	9	GLN
15	P	34	HIS
16	Q	52	ASN
17	R	20	GLN
19	T	7	HIS

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Mol	Chain	Res	Type
20	U	92	ASN
21	V	54	GLN
25	Z	36	GLN
25	Z	38	GLN
32	y	267	ASN
32	y	320	GLN

5.3.3 RNA

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
1	A	2903/2904 (99%)	519 (17%)	19 (0%)
2	B	117/118 (99%)	18 (15%)	0
All	All	3020/3022 (99%)	537 (17%)	19 (0%)

All (537) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
1	A	10	A
1	A	15	G
1	A	23	G
1	A	34	U
1	A	39	G
1	A	45	G
1	A	46	G
1	A	71	A
1	A	74	A
1	A	75	G
1	A	80	G
1	A	83	A
1	A	84	A
1	A	86	G
1	A	101	A
1	A	102	U
1	A	110	G
1	A	118	A
1	A	119	A
1	A	120	U
1	A	125	A
1	A	136	G
1	A	137	U
1	A	138	U

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Mol	Chain	Res	Type
1	A	139	U
1	A	140	C
1	A	141	G
1	A	142	A
1	A	143	C
1	A	163	C
1	A	165	A
1	A	181	A
1	A	196	A
1	A	199	A
1	A	216	A
1	A	221	A
1	A	222	A
1	A	230	G
1	A	248	G
1	A	249	C
1	A	265	A
1	A	266	G
1	A	267	C
1	A	271	G
1	A	272	A
1	A	273	G
1	A	275	C
1	A	276	U
1	A	279	A
1	A	285	G
1	A	311	A
1	A	318	C
1	A	327	G
1	A	329	G
1	A	330	A
1	A	343	C
1	A	345	A
1	A	346	A
1	A	353	C
1	A	354	A
1	A	355	U
1	A	356	G
1	A	362	A
1	A	367	G
1	A	371	A
1	A	372	G

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Mol	Chain	Res	Type
1	A	386	G
1	A	396	G
1	A	404	A
1	A	405	U
1	A	411	G
1	A	412	A
1	A	424	G
1	A	443	A
1	A	451	U
1	A	456	C
1	A	457	A
1	A	481	G
1	A	482	A
1	A	489	G
1	A	491	G
1	A	504	A
1	A	505	A
1	A	508	A
1	A	509	C
1	A	513	A
1	A	529	A
1	A	531	C
1	A	532	A
1	A	545	U
1	A	546	U
1	A	547	A
1	A	548	G
1	A	549	G
1	A	551	G
1	A	563	A
1	A	573	U
1	A	575	A
1	A	588	U
1	A	603	A
1	A	613	A
1	A	614	A
1	A	615	U
1	A	627	A
1	A	637	A
1	A	645	C
1	A	647	G
1	A	653	U

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Mol	Chain	Res	Type
1	A	654	A
1	A	655	A
1	A	677	A
1	A	684	G
1	A	685	A
1	A	686	U
1	A	710	U
1	A	717	C
1	A	721	A
1	A	730	A
1	A	738	G
1	A	747	5MU
1	A	765	C
1	A	775	G
1	A	776	G
1	A	782	A
1	A	784	G
1	A	785	G
1	A	805	G
1	A	811	U
1	A	812	C
1	A	819	A
1	A	827	U
1	A	828	U
1	A	845	A
1	A	846	U
1	A	847	U
1	A	856	G
1	A	858	G
1	A	859	G
1	A	877	A
1	A	878	A
1	A	879	G
1	A	888	C
1	A	890	C
1	A	891	G
1	A	894	U
1	A	895	U
1	A	896	A
1	A	897	C
1	A	910	A
1	A	914	G

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Mol	Chain	Res	Type
1	A	931	U
1	A	941	A
1	A	946	C
1	A	961	C
1	A	974	G
1	A	983	A
1	A	984	A
1	A	995	C
1	A	996	A
1	A	999	U
1	A	1012	U
1	A	1013	C
1	A	1033	U
1	A	1040	A
1	A	1046	A
1	A	1047	G
1	A	1055	G
1	A	1060	U
1	A	1061	U
1	A	1062	G
1	A	1063	G
1	A	1064	C
1	A	1065	U
1	A	1066	U
1	A	1067	A
1	A	1069	A
1	A	1070	A
1	A	1071	G
1	A	1073	A
1	A	1074	G
1	A	1075	C
1	A	1076	C
1	A	1077	A
1	A	1078	U
1	A	1082	U
1	A	1083	U
1	A	1084	A
1	A	1085	A
1	A	1087	G
1	A	1088	A
1	A	1089	A
1	A	1092	C

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Mol	Chain	Res	Type
1	A	1096	A
1	A	1097	U
1	A	1098	A
1	A	1104	C
1	A	1106	G
1	A	1110	G
1	A	1111	A
1	A	1112	G
1	A	1118	C
1	A	1122	G
1	A	1132	U
1	A	1133	A
1	A	1134	A
1	A	1135	C
1	A	1136	G
1	A	1142	A
1	A	1168	G
1	A	1172	C
1	A	1173	U
1	A	1174	U
1	A	1175	A
1	A	1176	U
1	A	1178	C
1	A	1180	U
1	A	1182	G
1	A	1205	A
1	A	1236	G
1	A	1238	G
1	A	1247	A
1	A	1248	G
1	A	1250	G
1	A	1253	A
1	A	1256	G
1	A	1262	A
1	A	1266	G
1	A	1271	G
1	A	1272	A
1	A	1273	U
1	A	1275	A
1	A	1300	G
1	A	1301	A
1	A	1303	G

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Mol	Chain	Res	Type
1	A	1306	C
1	A	1326	U
1	A	1329	U
1	A	1345	C
1	A	1352	U
1	A	1365	A
1	A	1368	G
1	A	1378	A
1	A	1379	U
1	A	1380	G
1	A	1383	A
1	A	1395	A
1	A	1408	G
1	A	1409	U
1	A	1412	U
1	A	1416	G
1	A	1428	C
1	A	1452	G
1	A	1453	A
1	A	1454	C
1	A	1460	U
1	A	1482	G
1	A	1484	U
1	A	1490	A
1	A	1493	C
1	A	1494	A
1	A	1503	A
1	A	1505	A
1	A	1508	A
1	A	1510	G
1	A	1515	A
1	A	1523	U
1	A	1529	G
1	A	1532	A
1	A	1534	U
1	A	1535	A
1	A	1536	C
1	A	1537	G
1	A	1543	G
1	A	1566	A
1	A	1569	A
1	A	1578	U

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Mol	Chain	Res	Type
1	A	1582	C
1	A	1583	A
1	A	1584	U
1	A	1585	C
1	A	1587	G
1	A	1607	C
1	A	1608	A
1	A	1610	A
1	A	1618	A
1	A	1647	U
1	A	1648	U
1	A	1649	G
1	A	1651	G
1	A	1658	C
1	A	1674	G
1	A	1681	G
1	A	1715	G
1	A	1722	A
1	A	1729	U
1	A	1730	C
1	A	1731	G
1	A	1735	A
1	A	1736	U
1	A	1738	G
1	A	1757	A
1	A	1764	C
1	A	1773	A
1	A	1782	U
1	A	1786	A
1	A	1800	C
1	A	1801	A
1	A	1808	A
1	A	1811	G
1	A	1816	C
1	A	1829	A
1	A	1833	C
1	A	1847	A
1	A	1848	A
1	A	1862	G
1	A	1869	G
1	A	1870	C
1	A	1871	A

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Mol	Chain	Res	Type
1	A	1872	A
1	A	1884	G
1	A	1902	C
1	A	1906	G
1	A	1913	A
1	A	1927	A
1	A	1929	G
1	A	1930	G
1	A	1936	A
1	A	1937	A
1	A	1938	A
1	A	1955	U
1	A	1965	C
1	A	1967	C
1	A	1970	A
1	A	1971	U
1	A	1972	G
1	A	1973	G
1	A	1991	U
1	A	1993	U
1	A	1996	C
1	A	1997	C
1	A	2002	G
1	A	2004	G
1	A	2020	A
1	A	2022	U
1	A	2023	C
1	A	2031	A
1	A	2033	A
1	A	2043	C
1	A	2055	C
1	A	2056	G
1	A	2060	A
1	A	2061	G
1	A	2062	A
1	A	2069	G
1	A	2070	A
1	A	2072	C
1	A	2080	A
1	A	2093	G
1	A	2096	C
1	A	2097	A

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Mol	Chain	Res	Type
1	A	2101	A
1	A	2108	A
1	A	2109	U
1	A	2110	G
1	A	2111	U
1	A	2113	U
1	A	2115	G
1	A	2117	A
1	A	2118	U
1	A	2124	G
1	A	2125	G
1	A	2126	A
1	A	2128	G
1	A	2131	U
1	A	2132	U
1	A	2135	A
1	A	2139	U
1	A	2142	A
1	A	2143	C
1	A	2144	G
1	A	2146	C
1	A	2147	A
1	A	2151	U
1	A	2160	C
1	A	2161	C
1	A	2162	G
1	A	2164	C
1	A	2165	C
1	A	2171	A
1	A	2172	U
1	A	2173	A
1	A	2175	C
1	A	2176	A
1	A	2178	C
1	A	2182	U
1	A	2183	A
1	A	2184	A
1	A	2189	U
1	A	2193	G
1	A	2194	U
1	A	2197	U
1	A	2198	A

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Mol	Chain	Res	Type
1	A	2204	G
1	A	2211	A
1	A	2216	G
1	A	2225	A
1	A	2226	C
1	A	2238	G
1	A	2239	G
1	A	2268	A
1	A	2279	G
1	A	2283	C
1	A	2286	G
1	A	2287	A
1	A	2297	A
1	A	2303	G
1	A	2304	G
1	A	2305	U
1	A	2307	G
1	A	2309	A
1	A	2310	C
1	A	2311	A
1	A	2322	A
1	A	2325	G
1	A	2326	C
1	A	2327	A
1	A	2333	A
1	A	2335	A
1	A	2336	A
1	A	2347	C
1	A	2357	G
1	A	2361	G
1	A	2383	G
1	A	2385	C
1	A	2389	G
1	A	2391	G
1	A	2402	U
1	A	2406	A
1	A	2407	A
1	A	2408	U
1	A	2409	G
1	A	2423	U
1	A	2424	C
1	A	2425	A

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Mol	Chain	Res	Type
1	A	2429	G
1	A	2430	A
1	A	2431	U
1	A	2435	A
1	A	2441	U
1	A	2448	A
1	A	2470	G
1	A	2476	A
1	A	2478	A
1	A	2480	C
1	A	2491	U
1	A	2498	OMC
1	A	2502	G
1	A	2505	G
1	A	2506	U
1	A	2517	C
1	A	2518	A
1	A	2525	G
1	A	2529	G
1	A	2547	A
1	A	2548	U
1	A	2554	U
1	A	2566	A
1	A	2567	G
1	A	2573	C
1	A	2582	G
1	A	2585	U
1	A	2602	A
1	A	2609	U
1	A	2613	U
1	A	2623	G
1	A	2629	U
1	A	2630	G
1	A	2646	C
1	A	2658	C
1	A	2663	G
1	A	2665	A
1	A	2689	U
1	A	2690	U
1	A	2714	G
1	A	2716	C
1	A	2717	C

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Mol	Chain	Res	Type
1	A	2726	A
1	A	2728	U
1	A	2733	A
1	A	2736	A
1	A	2744	G
1	A	2748	A
1	A	2757	A
1	A	2765	A
1	A	2777	G
1	A	2778	A
1	A	2793	C
1	A	2794	C
1	A	2797	U
1	A	2798	U
1	A	2800	A
1	A	2803	G
1	A	2818	U
1	A	2820	A
1	A	2821	A
1	A	2835	A
1	A	2849	U
1	A	2861	U
1	A	2867	G
1	A	2873	A
1	A	2880	C
1	A	2883	A
1	A	2884	U
1	A	2885	G
1	A	2891	U
1	A	2901	C
1	A	2902	C
1	A	2903	U
1	A	2904	U
2	B	9	G
2	B	15	A
2	B	22	U
2	B	24	G
2	B	25	U
2	B	27	C
2	B	35	C
2	B	41	G
2	B	42	C

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Mol	Chain	Res	Type
2	B	45	A
2	B	67	G
2	B	68	C
2	B	88	C
2	B	89	U
2	B	90	C
2	B	99	A
2	B	109	A
2	B	119	A

All (19) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
1	A	100	U
1	A	139	U
1	A	264	C
1	A	370	G
1	A	404	A
1	A	613	A
1	A	784	G
1	A	1142	A
1	A	1379	U
1	A	1730	C
1	A	2096	C
1	A	2146	C
1	A	2193	G
1	A	2286	G
1	A	2308	G
1	A	2407	A
1	A	2518	A
1	A	2756	U
1	A	2873	A

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

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

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the

expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	PSU	A	955	1	18,21,22	1.11	1 (5%)	22,30,33	1.72	4 (18%)
1	OMG	A	2251	1	18,26,27	0.99	1 (5%)	19,38,41	1.04	2 (10%)
1	2MG	A	2445	1	18,26,27	1.27	2 (11%)	16,38,41	1.16	3 (18%)
1	PSU	A	746	1,33	18,21,22	1.17	2 (11%)	22,30,33	1.98	5 (22%)
1	PSU	A	2605	1	18,21,22	1.21	2 (11%)	22,30,33	2.16	5 (22%)
1	1MG	A	745	1	18,26,27	0.64	0	19,39,42	1.08	3 (15%)
1	PSU	A	2504	1	18,21,22	1.26	1 (5%)	22,30,33	1.89	6 (27%)
1	PSU	A	1911	1	18,21,22	1.15	1 (5%)	22,30,33	1.86	5 (22%)
1	PSU	A	2580	1	18,21,22	1.22	3 (16%)	22,30,33	1.84	5 (22%)
1	5MC	A	1962	1	18,22,23	0.98	2 (11%)	26,32,35	1.03	2 (7%)
1	PSU	A	2457	1	18,21,22	1.22	2 (11%)	22,30,33	2.05	5 (22%)
1	OMC	A	2498	1,33	19,22,23	0.95	2 (10%)	26,31,34	0.91	1 (3%)
1	OMU	A	2552	1	19,22,23	1.46	4 (21%)	26,31,34	1.83	4 (15%)
1	2MG	A	1835	1	18,26,27	1.08	1 (5%)	16,38,41	1.22	4 (25%)
1	PSU	A	1917	1	18,21,22	1.04	1 (5%)	22,30,33	1.71	4 (18%)
1	5MU	A	747	1	19,22,23	1.55	3 (15%)	28,32,35	2.13	7 (25%)
1	5MU	A	1939	1	19,22,23	1.50	3 (15%)	28,32,35	2.47	8 (28%)

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
1	PSU	A	955	1	-	0/7/25/26	0/2/2/2
1	OMG	A	2251	1	-	1/5/27/28	0/3/3/3
1	2MG	A	2445	1	-	1/5/27/28	0/3/3/3
1	PSU	A	746	1,33	-	1/7/25/26	0/2/2/2
1	PSU	A	2605	1	-	0/7/25/26	0/2/2/2
1	1MG	A	745	1	-	0/3/25/26	0/3/3/3
1	PSU	A	2504	1	-	1/7/25/26	0/2/2/2
1	PSU	A	1911	1	-	3/7/25/26	0/2/2/2
1	PSU	A	2580	1	-	0/7/25/26	0/2/2/2
1	5MC	A	1962	1	-	0/7/25/26	0/2/2/2
1	PSU	A	2457	1	-	0/7/25/26	0/2/2/2
1	OMC	A	2498	1,33	-	0/9/27/28	0/2/2/2

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	OMU	A	2552	1	-	0/9/27/28	0/2/2/2
1	2MG	A	1835	1	-	0/5/27/28	0/3/3/3
1	PSU	A	1917	1	-	0/7/25/26	0/2/2/2
1	5MU	A	747	1	-	1/7/25/26	0/2/2/2
1	5MU	A	1939	1	-	0/7/25/26	0/2/2/2

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1911	PSU	C6-C5	3.80	1.39	1.35
1	A	2504	PSU	C6-C5	3.71	1.39	1.35
1	A	747	5MU	C4-N3	-3.64	1.32	1.38
1	A	2552	OMU	C2-N3	-3.58	1.31	1.38
1	A	1917	PSU	C6-C5	3.55	1.39	1.35
1	A	2552	OMU	C4-N3	-3.53	1.32	1.38
1	A	1939	5MU	C4-N3	-3.52	1.32	1.38
1	A	2445	2MG	C6-N1	-3.42	1.32	1.37
1	A	1939	5MU	C6-N1	-3.29	1.32	1.38
1	A	1835	2MG	C6-N1	-3.23	1.33	1.37
1	A	747	5MU	C6-N1	-3.22	1.32	1.38
1	A	747	5MU	C2-N3	-3.13	1.32	1.38
1	A	1939	5MU	C2-N3	-3.10	1.32	1.38
1	A	1962	5MC	C6-N1	-3.03	1.32	1.38
1	A	2605	PSU	C6-C5	2.67	1.38	1.35
1	A	2580	PSU	C6-C5	2.64	1.38	1.35
1	A	2251	OMG	C6-N1	-2.49	1.34	1.37
1	A	2580	PSU	O4'-C1'	-2.43	1.40	1.43
1	A	2457	PSU	C6-C5	2.39	1.38	1.35
1	A	2552	OMU	C5-C4	-2.39	1.38	1.43
1	A	2498	OMC	C5-C4	-2.32	1.37	1.42
1	A	2580	PSU	C4-C5	-2.28	1.37	1.44
1	A	2445	2MG	C2-N1	-2.25	1.33	1.36
1	A	746	PSU	C4-C5	-2.25	1.37	1.44
1	A	746	PSU	O4'-C1'	-2.23	1.40	1.43
1	A	2552	OMU	C6-N1	-2.16	1.32	1.38
1	A	955	PSU	C6-C5	2.13	1.37	1.35
1	A	1962	5MC	C6-C5	2.12	1.38	1.34
1	A	2605	PSU	C4-C5	-2.05	1.38	1.44
1	A	2457	PSU	O4'-C1'	-2.04	1.41	1.43
1	A	2498	OMC	C6-N1	-2.01	1.33	1.38

All (73) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	1939	5MU	C4-N3-C2	-6.30	119.20	127.35
1	A	1939	5MU	N3-C2-N1	5.83	122.63	114.89
1	A	2605	PSU	C4-N3-C2	-5.79	118.00	126.34
1	A	2605	PSU	N1-C2-N3	5.67	121.55	115.13
1	A	2457	PSU	N1-C2-N3	5.61	121.48	115.13
1	A	747	5MU	C4-N3-C2	-5.18	120.65	127.35
1	A	747	5MU	N3-C2-N1	5.17	121.75	114.89
1	A	746	PSU	C4-N3-C2	-5.13	118.95	126.34
1	A	746	PSU	N1-C2-N3	5.12	120.93	115.13
1	A	2552	OMU	C4-N3-C2	-5.03	119.95	126.58
1	A	1939	5MU	C5-C4-N3	5.00	119.58	115.31
1	A	2504	PSU	N1-C2-N3	5.00	120.80	115.13
1	A	2457	PSU	C4-N3-C2	-4.89	119.29	126.34
1	A	747	5MU	C5-C6-N1	-4.89	118.31	123.34
1	A	1911	PSU	N1-C2-N3	4.80	120.56	115.13
1	A	1939	5MU	C5-C6-N1	-4.75	118.45	123.34
1	A	2552	OMU	N3-C2-N1	4.74	121.18	114.89
1	A	1911	PSU	C4-N3-C2	-4.67	119.62	126.34
1	A	2580	PSU	N1-C2-N3	4.66	120.41	115.13
1	A	955	PSU	C4-N3-C2	-4.61	119.70	126.34
1	A	955	PSU	N1-C2-N3	4.59	120.33	115.13
1	A	1917	PSU	N1-C2-N3	4.50	120.23	115.13
1	A	2504	PSU	C4-N3-C2	-4.41	119.98	126.34
1	A	2580	PSU	C4-N3-C2	-4.31	120.13	126.34
1	A	1917	PSU	C4-N3-C2	-4.31	120.13	126.34
1	A	2552	OMU	C5-C4-N3	4.13	121.01	114.84
1	A	1939	5MU	O2-C2-N1	-3.79	117.75	122.79
1	A	747	5MU	C5-C4-N3	3.74	118.50	115.31
1	A	1939	5MU	O4-C4-C5	-3.45	120.90	124.90
1	A	747	5MU	O4-C4-C5	-3.39	120.97	124.90
1	A	2504	PSU	C6-N1-C2	-3.28	119.33	122.68
1	A	746	PSU	C6-C5-C4	3.23	120.45	118.20
1	A	2457	PSU	O2-C2-N1	-3.17	119.30	122.79
1	A	1939	5MU	C5M-C5-C4	2.95	122.01	118.77
1	A	1962	5MC	C5-C4-N3	-2.92	118.53	121.67
1	A	2580	PSU	C6-N1-C2	-2.80	119.81	122.68
1	A	1962	5MC	C5-C6-N1	-2.80	120.46	123.34
1	A	1939	5MU	C5M-C5-C6	-2.78	119.13	122.85
1	A	2457	PSU	C6-N1-C2	-2.66	119.97	122.68
1	A	1911	PSU	O2-C2-N1	-2.63	119.90	122.79
1	A	2580	PSU	O4'-C1'-C2'	2.58	108.78	105.14
1	A	2445	2MG	C5-C6-N1	2.56	118.46	113.95
1	A	1835	2MG	C5-C6-N1	2.54	118.44	113.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	746	PSU	O2-C2-N1	-2.54	120.00	122.79
1	A	1911	PSU	C6-N1-C2	-2.47	120.16	122.68
1	A	2605	PSU	C6-C5-C4	2.44	119.90	118.20
1	A	1917	PSU	O2-C2-N1	-2.42	120.12	122.79
1	A	745	1MG	C5-C6-N1	2.42	117.54	113.90
1	A	2552	OMU	O4-C4-C5	-2.42	120.91	125.16
1	A	2251	OMG	C8-N7-C5	2.40	107.57	102.99
1	A	2498	OMC	O2-C2-N3	-2.37	118.47	122.33
1	A	2251	OMG	C5-C6-N1	2.36	118.11	113.95
1	A	2605	PSU	O2-C2-N1	-2.34	120.22	122.79
1	A	2457	PSU	C6-C5-C4	2.33	119.83	118.20
1	A	2445	2MG	C8-N7-C5	2.32	107.40	102.99
1	A	1917	PSU	C6-N1-C2	-2.31	120.32	122.68
1	A	745	1MG	C8-N7-C5	2.30	107.37	102.99
1	A	1835	2MG	CM2-N2-C2	-2.29	118.81	123.86
1	A	1835	2MG	O6-C6-C5	-2.20	120.07	124.37
1	A	747	5MU	C5M-C5-C6	-2.19	119.92	122.85
1	A	2504	PSU	O4-C4-N3	-2.18	115.93	120.12
1	A	1835	2MG	C8-N7-C5	2.15	107.08	102.99
1	A	747	5MU	O2-C2-N1	-2.13	119.96	122.79
1	A	2445	2MG	O6-C6-C5	-2.13	120.22	124.37
1	A	955	PSU	O2-C2-N1	-2.10	120.48	122.79
1	A	2580	PSU	O2-C2-N1	-2.09	120.49	122.79
1	A	955	PSU	C6-N1-C2	-2.09	120.55	122.68
1	A	2504	PSU	O2-C2-N3	-2.09	117.88	121.82
1	A	2504	PSU	C5-C4-N3	2.04	121.19	116.58
1	A	2605	PSU	C5-C6-N1	-2.04	119.05	122.11
1	A	1911	PSU	O4'-C1'-C2'	2.03	108.01	105.14
1	A	745	1MG	O6-C6-C5	-2.02	120.62	124.19
1	A	746	PSU	C6-N1-C2	-2.01	120.62	122.68

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	1911	PSU	C2'-C1'-C5-C6
1	A	2251	OMG	C1'-C2'-O2'-CM2
1	A	747	5MU	C3'-C4'-C5'-O5'
1	A	2445	2MG	C3'-C4'-C5'-O5'
1	A	1911	PSU	O4'-C4'-C5'-O5'
1	A	2504	PSU	O4'-C4'-C5'-O5'
1	A	746	PSU	O4'-C1'-C5-C6

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Mol	Chain	Res	Type	Atoms
1	A	1911	PSU	O4'-C1'-C5-C6

There are no ring outliers.

8 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	2251	OMG	1	0
1	A	2445	2MG	1	0
1	A	745	1MG	1	0
1	A	1911	PSU	1	0
1	A	2498	OMC	3	0
1	A	2552	OMU	1	0
1	A	1917	PSU	1	0
1	A	747	5MU	2	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 105 ligands modelled in this entry, 105 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.

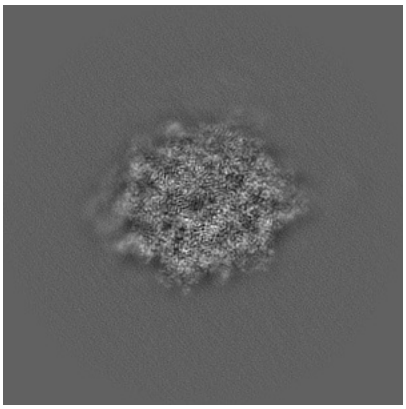
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-37271. These allow visual inspection of the internal detail of the map and identification of artifacts.

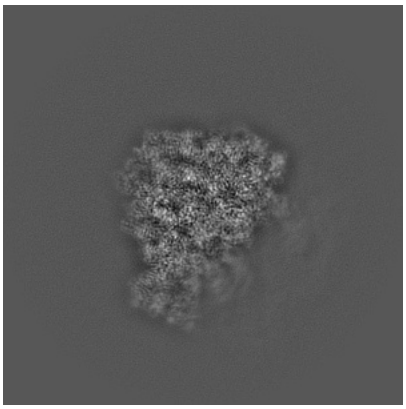
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

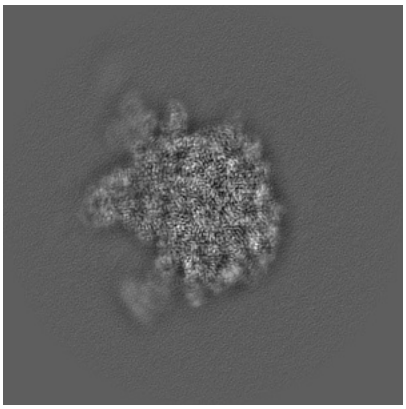
6.1.1 Primary map



X

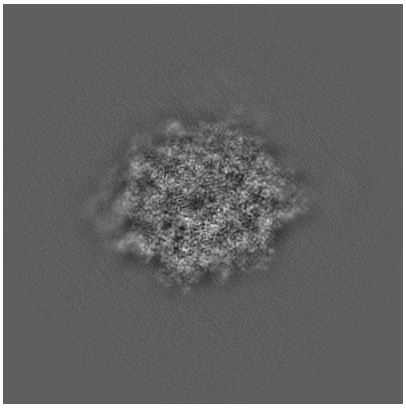


Y

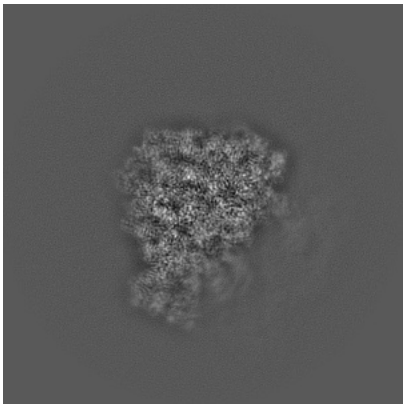


Z

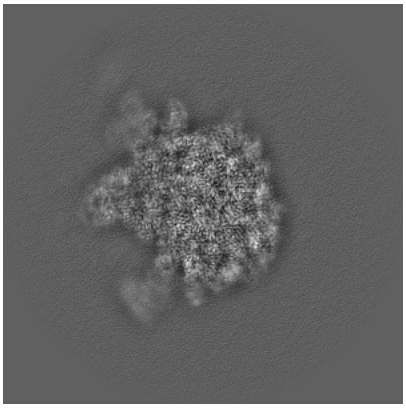
6.1.2 Raw map



X



Y

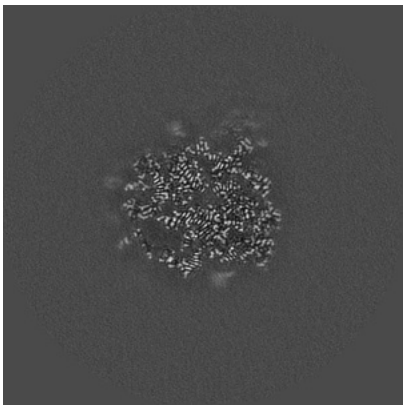


Z

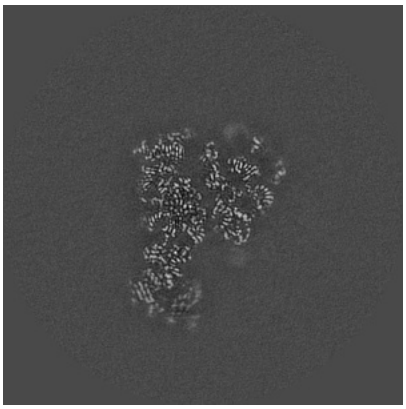
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

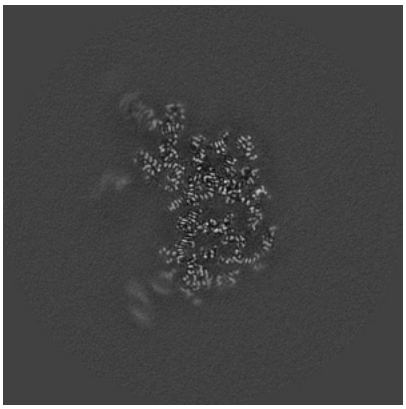
6.2.1 Primary map



X Index: 192

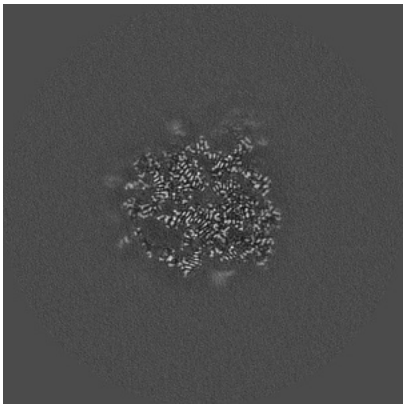


Y Index: 192

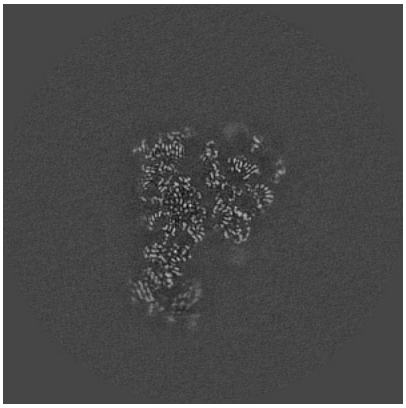


Z Index: 192

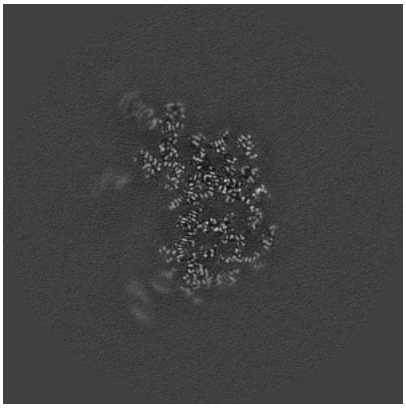
6.2.2 Raw map



X Index: 192



Y Index: 192

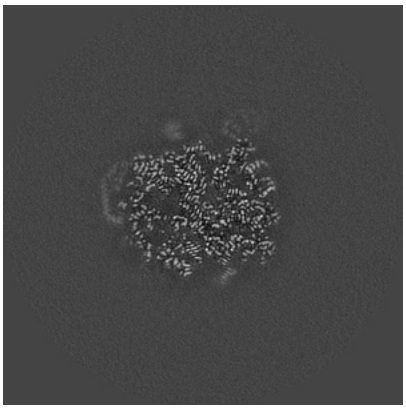


Z Index: 192

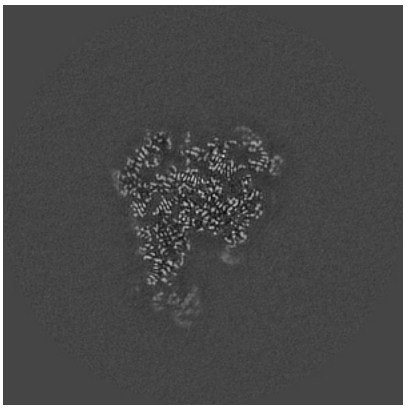
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

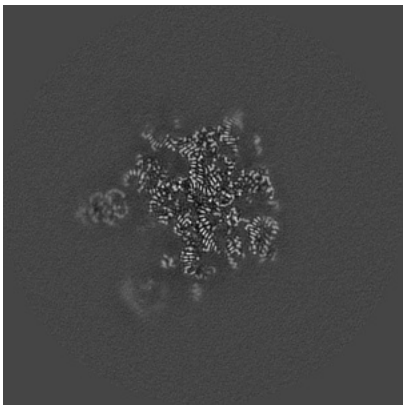
6.3.1 Primary map



X Index: 187

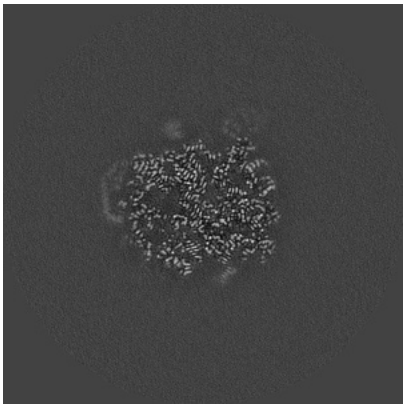


Y Index: 176

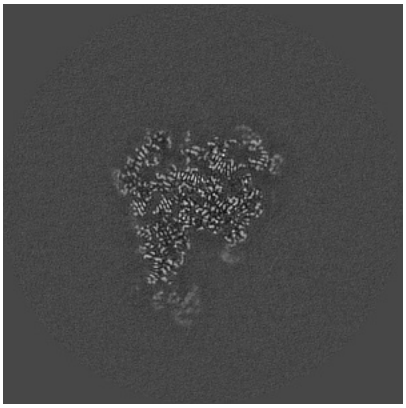


Z Index: 177

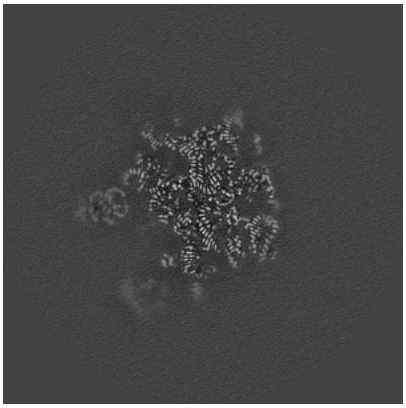
6.3.2 Raw map



X Index: 187



Y Index: 176

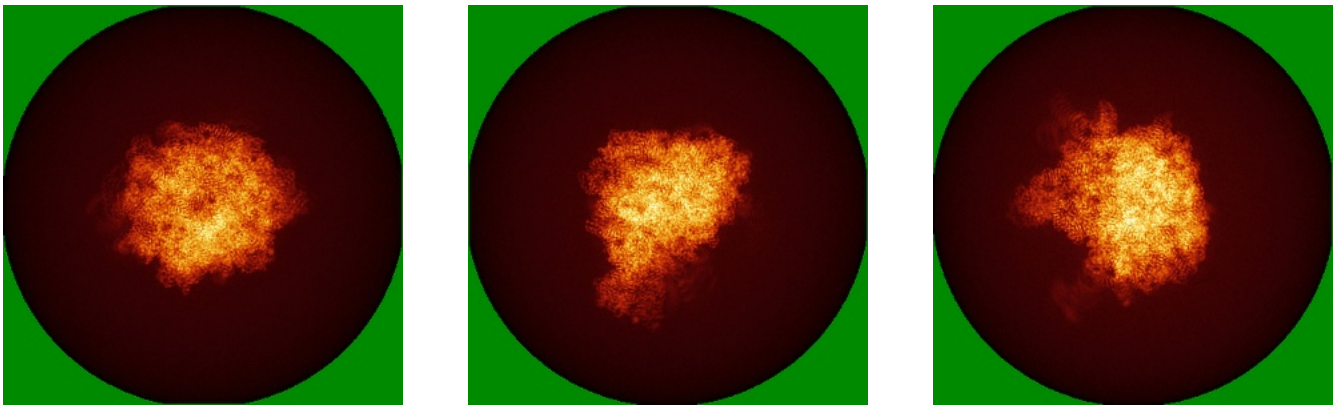


Z Index: 177

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

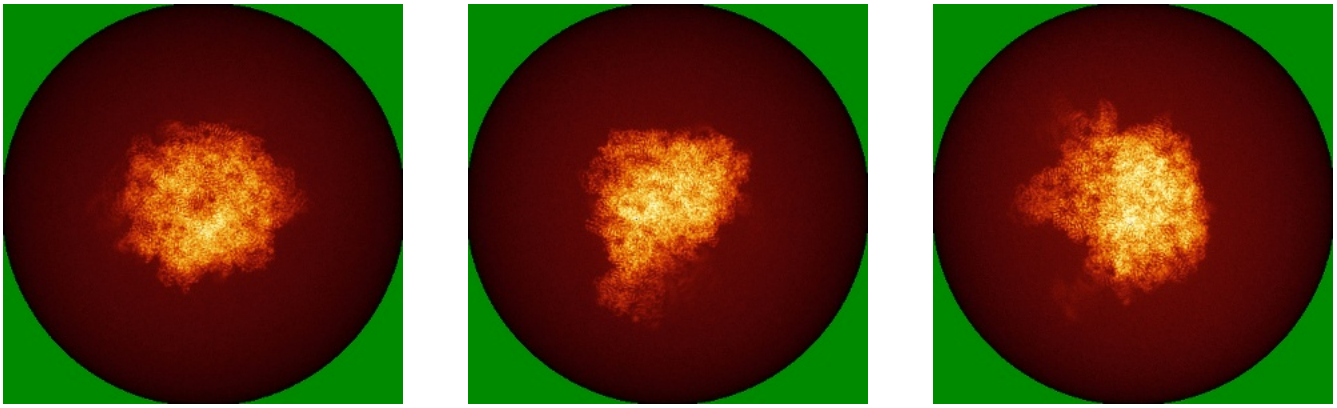
6.4 Orthogonal standard-deviation projections (False-color) (i)

6.4.1 Primary map



X Y Z

6.4.2 Raw map



X Y Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.006. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

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

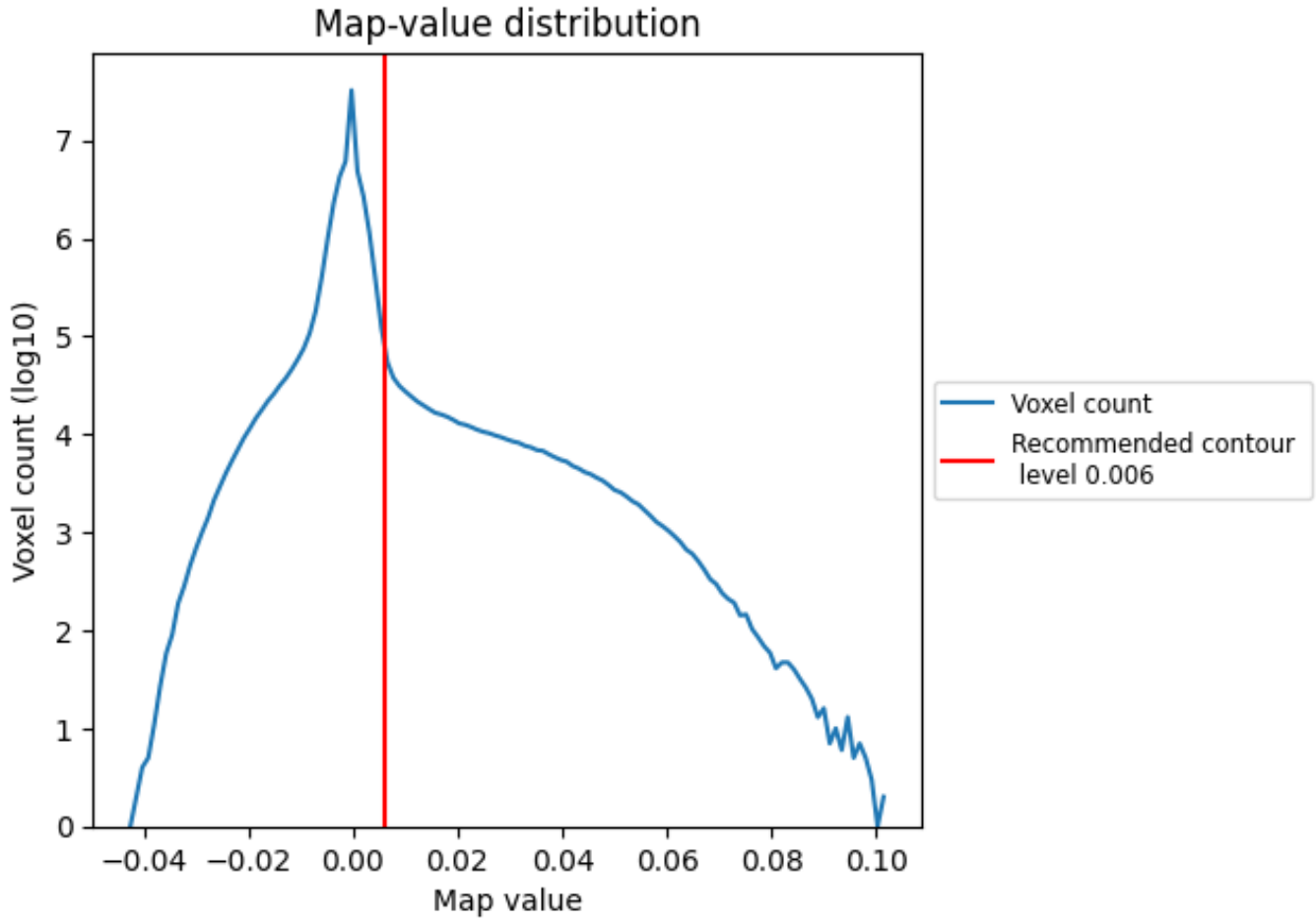
6.6 Mask visualisation (i)

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

7 Map analysis

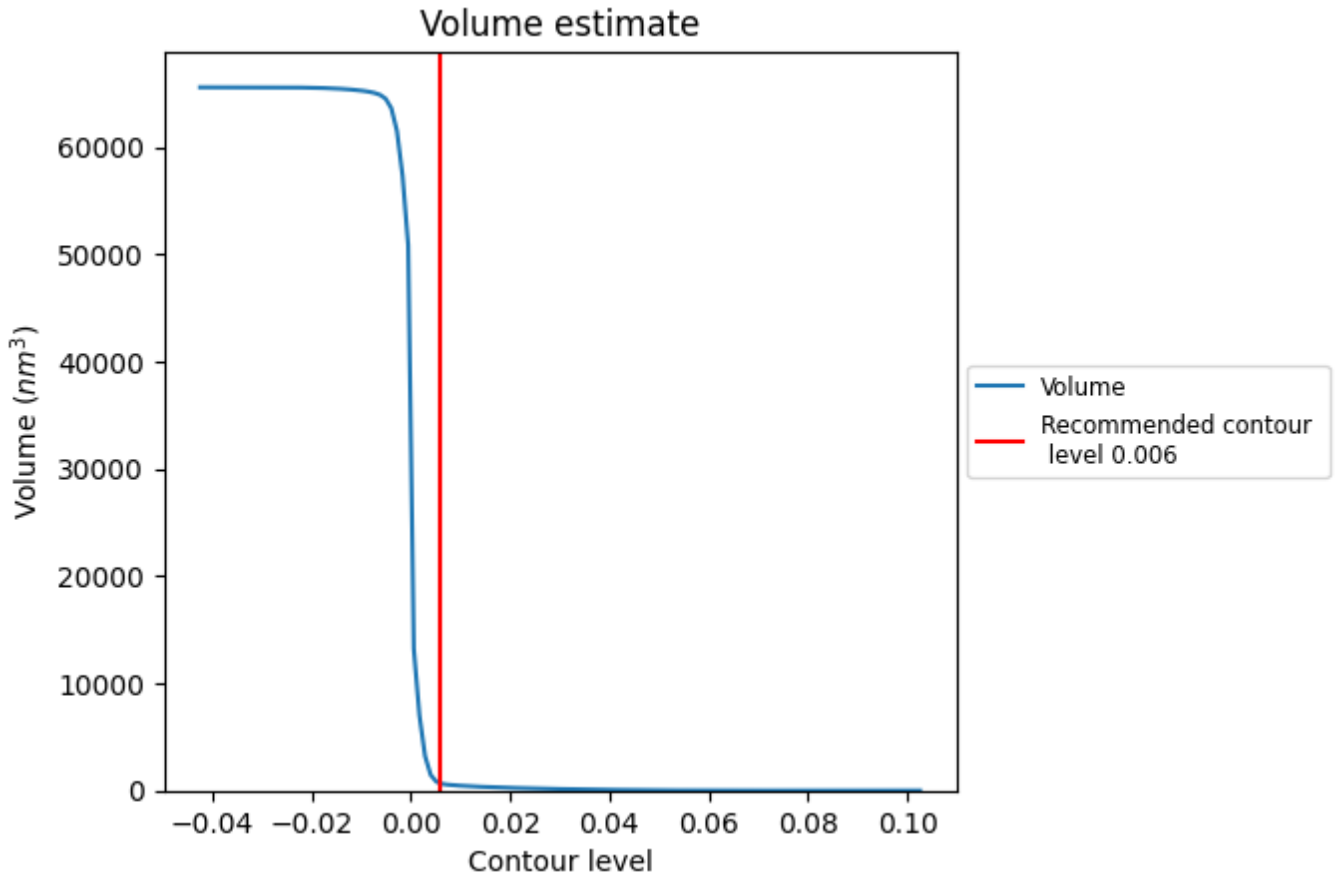
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution



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.

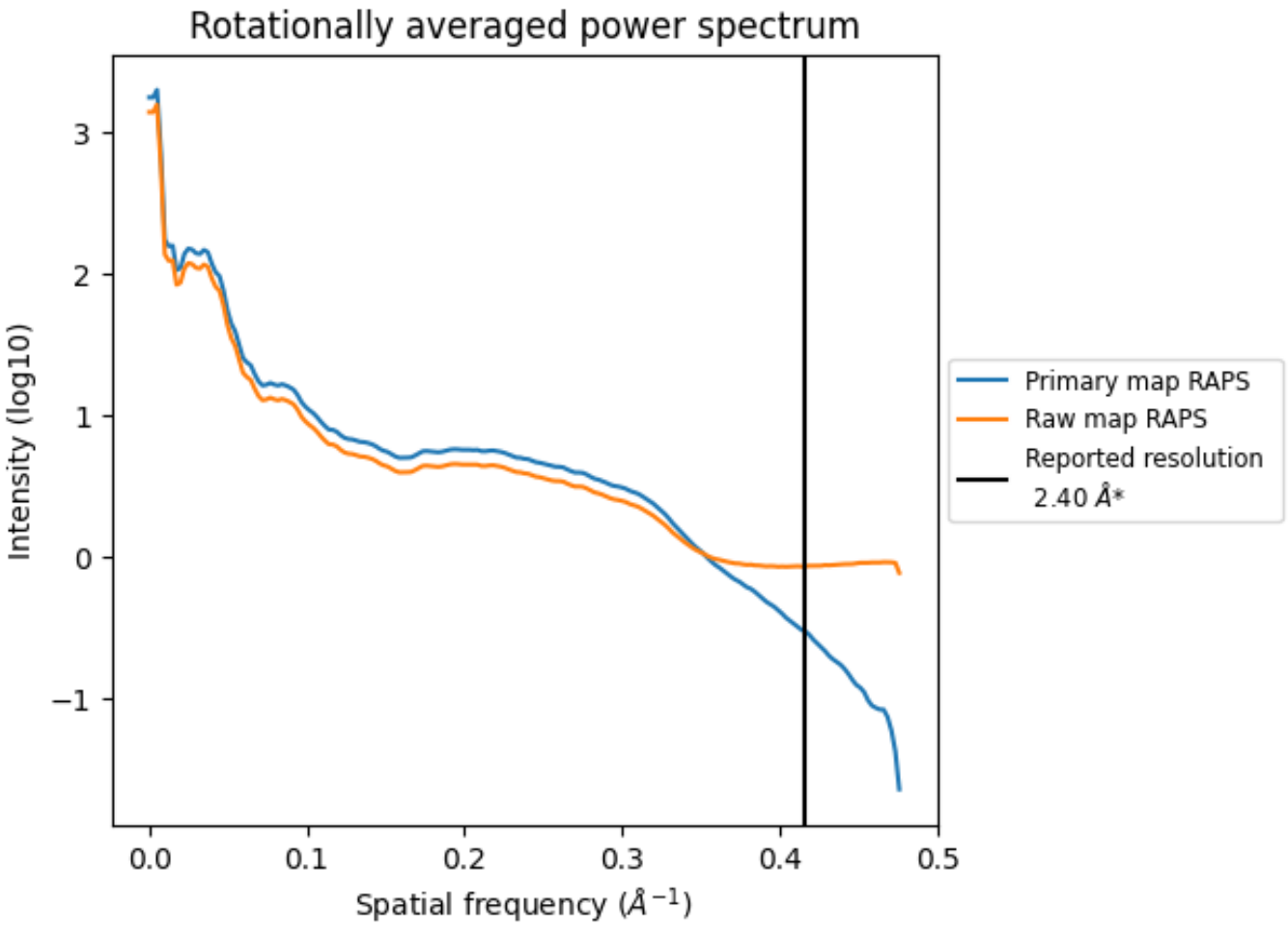
7.2 Volume estimate (i)



The volume at the recommended contour level is 667 nm^3; this corresponds to an approximate mass of 603 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)

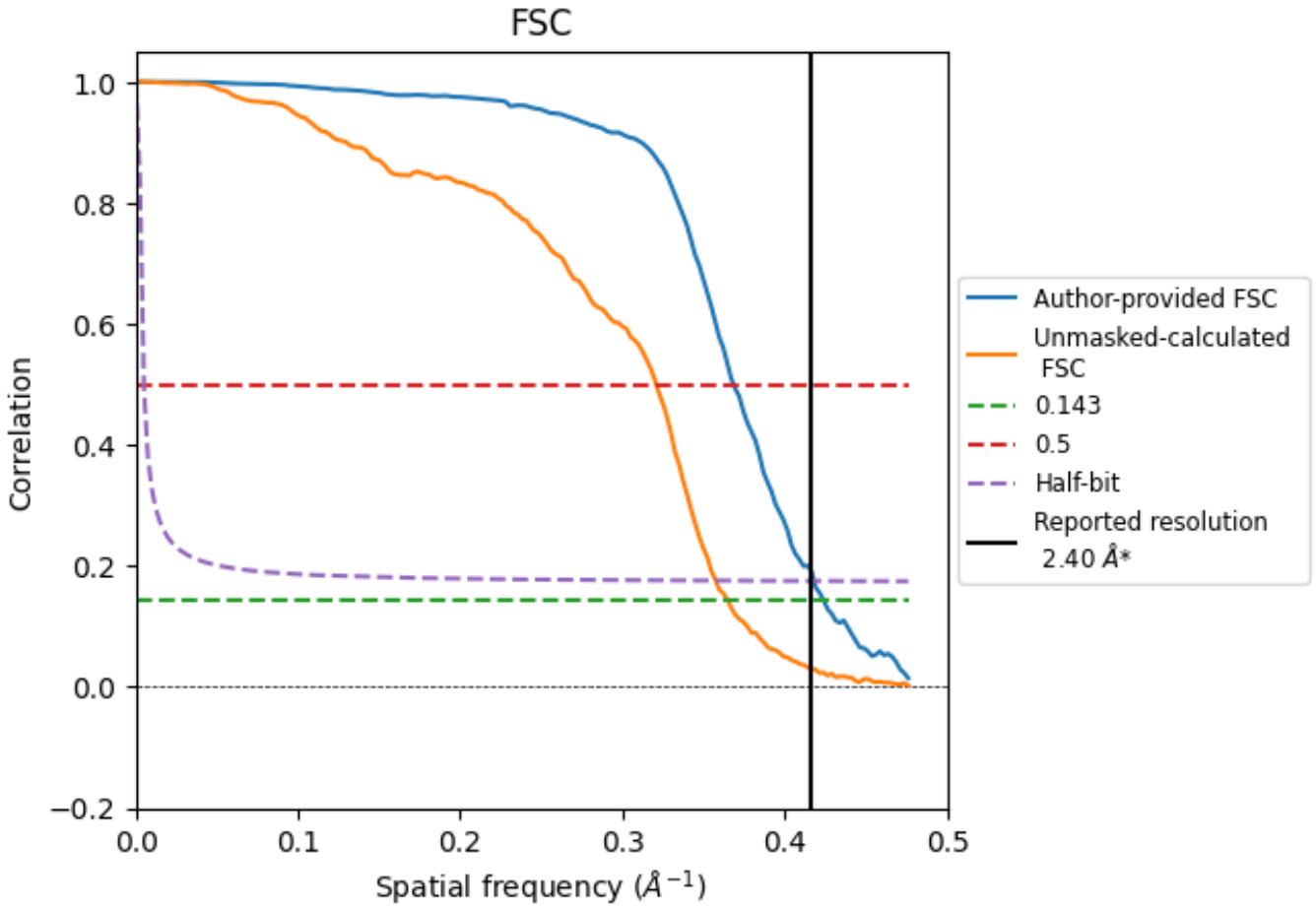


*Reported resolution corresponds to spatial frequency of 0.417 $Å^{-1}$

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.417 Å^{-1}

8.2 Resolution estimates (i)

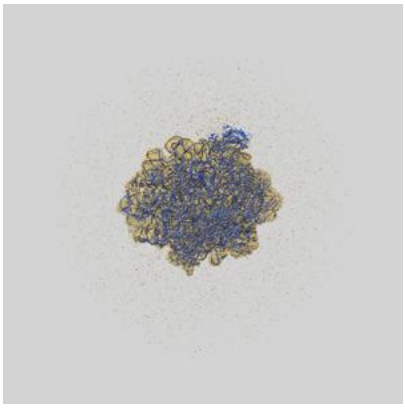
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.40	-	-
Author-provided FSC curve	2.36	2.71	2.39
Unmasked-calculated*	2.74	3.12	2.80

*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 2.74 differs from the reported value 2.4 by more than 10 %

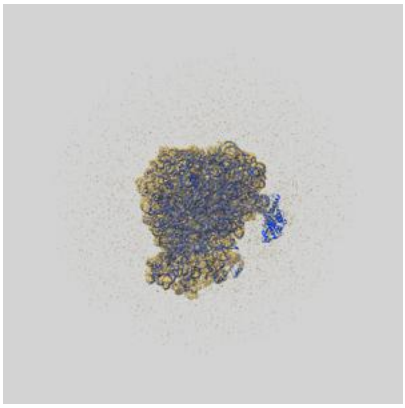
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-37271 and PDB model 8W51. Per-residue inclusion information can be found in section 3 on page 10.

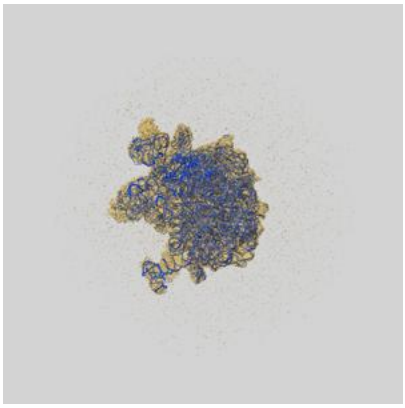
9.1 Map-model overlay



X



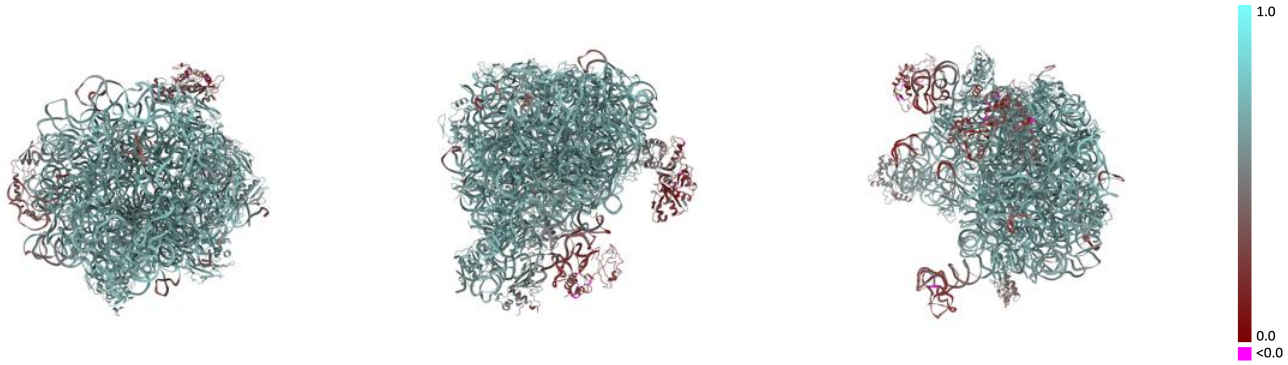
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.006 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

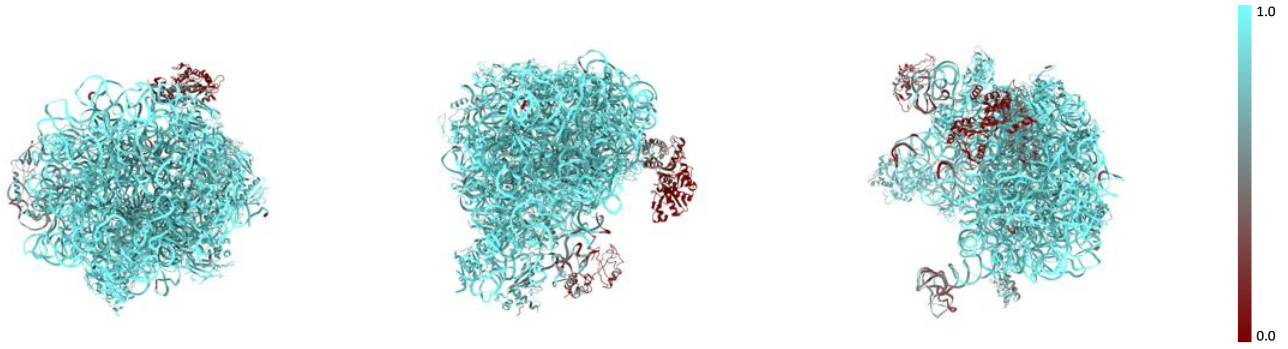
9.2 Q-score mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

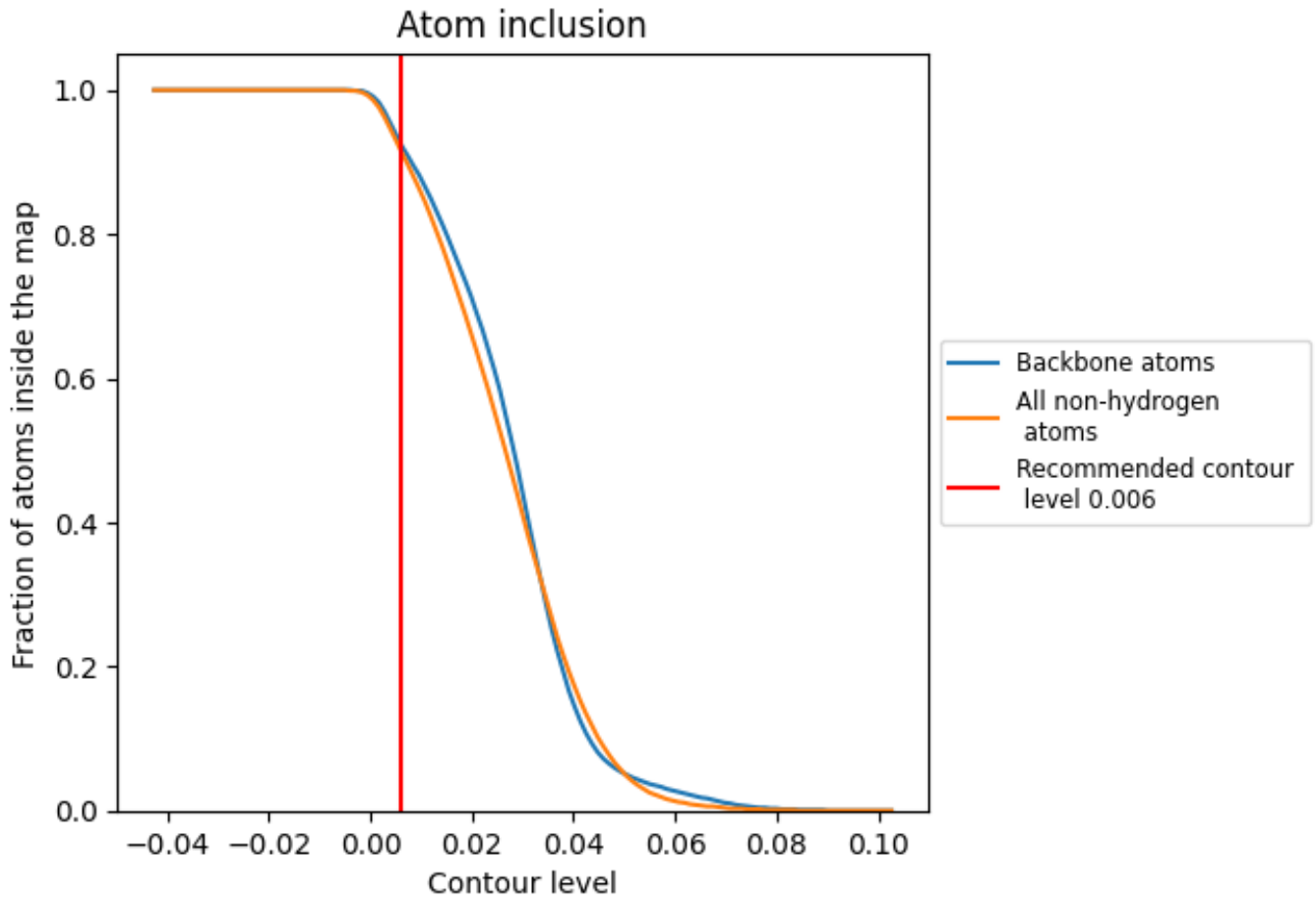
9.3 Atom inclusion mapped to coordinate model (i)



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.006).

9.4 Atom inclusion (i)



At the recommended contour level, 92% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.006) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.9160	0.6070
0	0.9450	0.6410
1	0.9350	0.6560
2	0.9350	0.6110
3	0.9630	0.6840
4	0.9610	0.6710
5	0.9490	0.6540
A	0.9580	0.6200
B	0.9800	0.6140
C	0.9590	0.6630
D	0.9530	0.6580
E	0.9350	0.6350
F	0.7570	0.4720
G	0.8890	0.5750
H	0.6740	0.4440
J	0.2260	0.2220
K	0.9460	0.6490
L	0.9450	0.6430
M	0.9420	0.6430
N	0.9520	0.6560
O	0.9700	0.6660
P	0.8960	0.5970
Q	0.9270	0.6350
R	0.9640	0.6690
S	0.9310	0.6350
T	0.9390	0.6540
U	0.8930	0.6100
V	0.9100	0.6080
W	0.9160	0.6200
X	0.9270	0.6530
Y	0.9400	0.6450
Z	0.8920	0.6040
y	0.1760	0.3150