



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 15, 2023 – 04:24 PM EDT

PDB ID : 1XBP
Title : Inhibition of peptide bond formation by pleuromutilins: The structure of the 50S ribosomal subunit from *Deinococcus radiodurans* in complex with Tiamulin
Authors : Schlunzen, F.; Pyetan, E.; Fucini, P.; Yonath, A.; Harms, J.M.
Deposited on : 2004-08-31
Resolution : 3.50 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.35

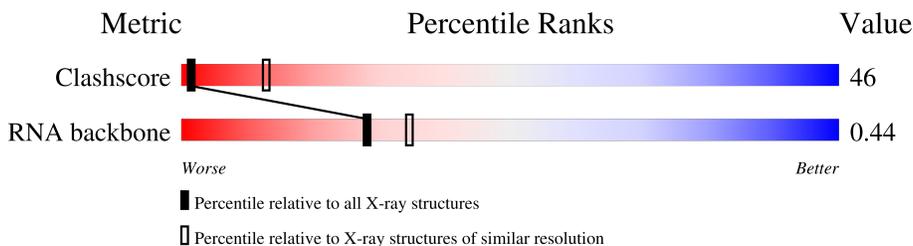
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.50 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) | Similar resolution (#Entries, resolution range(Å)) |
|--------------|-----------------------------|---|
| Clashscore | 141614 | 1036 (3.58-3.42) |
| RNA backbone | 3102 | 1002 (4.00-3.00) |

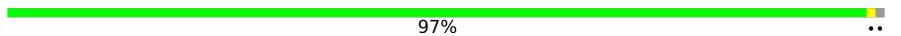
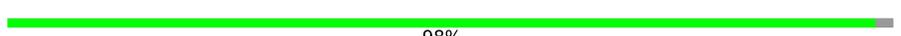
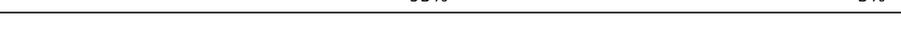
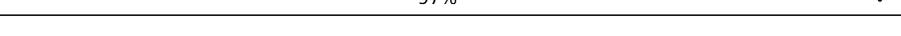
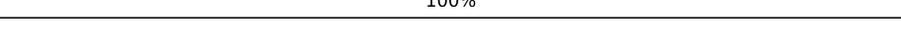
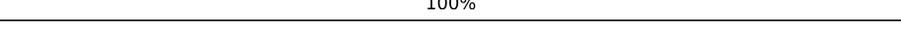
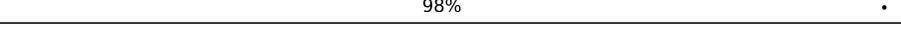
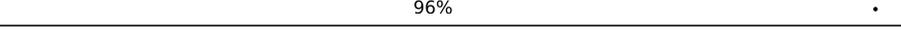
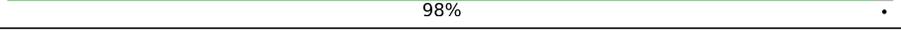
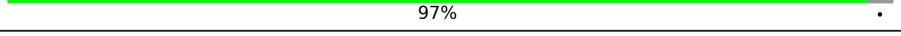
The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$

Note EDS was not executed.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | 0 | 2880 | 11% 63% 19% . . |
| 2 | 9 | 124 | 13% 69% 14% 5% |
| 3 | A | 274 | 98% .. |
| 4 | B | 211 | 96% .. |
| 5 | C | 204 | 97% . |
| 6 | D | 180 | 99% . |
| 7 | E | 185 | 95% . . |
| 8 | F | 146 | 36% 64% |
| 9 | G | 144 | 99% . |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|---|
| 10 | H | 174 |  82% 18% |
| 11 | I | 134 |  97% |
| 12 | J | 156 |  90% 10% |
| 13 | K | 141 |  87% 12% |
| 14 | L | 116 |  97% |
| 15 | M | 113 |  98% |
| 16 | N | 166 |  75% 25% |
| 17 | O | 118 |  99% |
| 18 | P | 100 |  100% |
| 19 | Q | 134 |  94% 5% |
| 20 | R | 94 |  97% |
| 21 | S | 115 |  98% |
| 22 | T | 237 |  94% 6% |
| 23 | U | 91 |  95% 5% |
| 24 | W | 67 |  97% |
| 25 | X | 55 |  100% |
| 26 | Y | 73 |  100% |
| 27 | Z | 59 |  98% |
| 28 | 1 | 55 |  96% |
| 29 | 2 | 47 |  98% |
| 30 | 3 | 65 |  97% |
| 31 | 4 | 37 |  95% 5% |

2 Entry composition [i](#)

There are 32 unique types of molecules in this entry. The entry contains 65328 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 23S RIBOSOMAL RNA.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|---------|-------|
| | | | Total | C | N | O | P | | | |
| 1 | 0 | 2766 | 59359 | 26479 | 10949 | 19166 | 2765 | 0 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|---------|-------|
| | | | Total | C | N | O | P | | | |
| 2 | 9 | 118 | 2516 | 1124 | 464 | 811 | 117 | 0 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|---------|---------|-------|
| 3 | A | 270 | Total | C | 0 | 0 | 270 |
| | | | 270 | 270 | | | |

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

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|---------|---------|-------|
| 4 | B | 205 | Total | C | 0 | 0 | 205 |
| | | | 205 | 205 | | | |

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

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|---------|---------|-------|
| 5 | C | 197 | Total | C | 0 | 0 | 197 |
| | | | 197 | 197 | | | |

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

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|---------|---------|-------|
| 6 | D | 178 | Total | C | 0 | 0 | 178 |
| | | | 178 | 178 | | | |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 7 | E | 177 | Total C 177 177 | 0 | 0 | 177 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 8 | F | 52 | Total C 52 52 | 0 | 0 | 52 |

- Molecule 9 is a protein called 50S ribosomal protein L11.

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 9 | G | 143 | Total C 143 143 | 0 | 0 | 143 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 10 | H | 143 | Total C 143 143 | 0 | 0 | 143 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 11 | I | 132 | Total C 132 132 | 0 | 0 | 132 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 12 | J | 141 | Total C 141 141 | 0 | 0 | 141 |

- Molecule 13 is a protein called ribosomal protein L16.

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 13 | K | 124 | Total C 124 124 | 0 | 0 | 124 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 14 | L | 114 | Total C 114 114 | 0 | 0 | 114 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 15 | M | 111 | Total C 111 111 | 0 | 0 | 111 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 16 | N | 125 | Total C 125 125 | 0 | 0 | 125 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 17 | O | 117 | Total C 117 117 | 0 | 0 | 117 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 18 | P | 100 | Total C 100 100 | 0 | 0 | 100 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 19 | Q | 127 | Total C 127 127 | 0 | 0 | 127 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 20 | R | 93 | Total C 93 93 | 0 | 0 | 93 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 21 | S | 113 | Total C 113 113 | 0 | 0 | 113 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|--------------------|---------|---------|-------|
| 22 | T | 223 | Total C 223 223 | 0 | 0 | 223 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 23 | U | 86 | Total C 86 86 | 0 | 0 | 86 |

- Molecule 24 is a protein called 50S ribosomal protein L29.

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 24 | W | 65 | Total C 65 65 | 0 | 0 | 65 |

- Molecule 25 is a protein called 50S ribosomal protein L30.

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 25 | X | 55 | Total C 55 55 | 0 | 0 | 55 |

- Molecule 26 is a protein called 50S ribosomal protein L31.

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 26 | Y | 73 | Total C 73 73 | 0 | 0 | 73 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 27 | Z | 58 | Total C 58 58 | 0 | 0 | 58 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 28 | 1 | 53 | Total C 53 53 | 0 | 0 | 53 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 29 | 2 | 46 | Total C 46 46 | 0 | 0 | 46 |

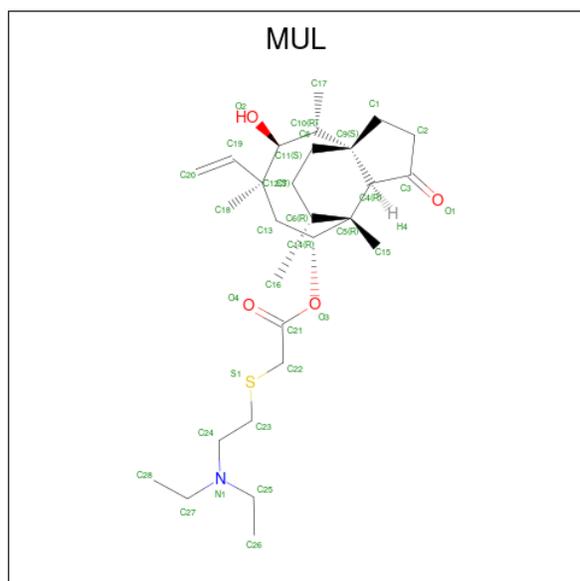
- Molecule 30 is a protein called 50S ribosomal protein L35.

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 30 | 3 | 63 | Total C 63 63 | 0 | 0 | 63 |

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

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf | Trace |
|-----|-------|----------|------------------|---------|---------|-------|
| 31 | 4 | 35 | Total C 35 35 | 0 | 0 | 35 |

- Molecule 32 is TIAMULIN (three-letter code: MUL) (formula: C₂₈H₄₇NO₄S).



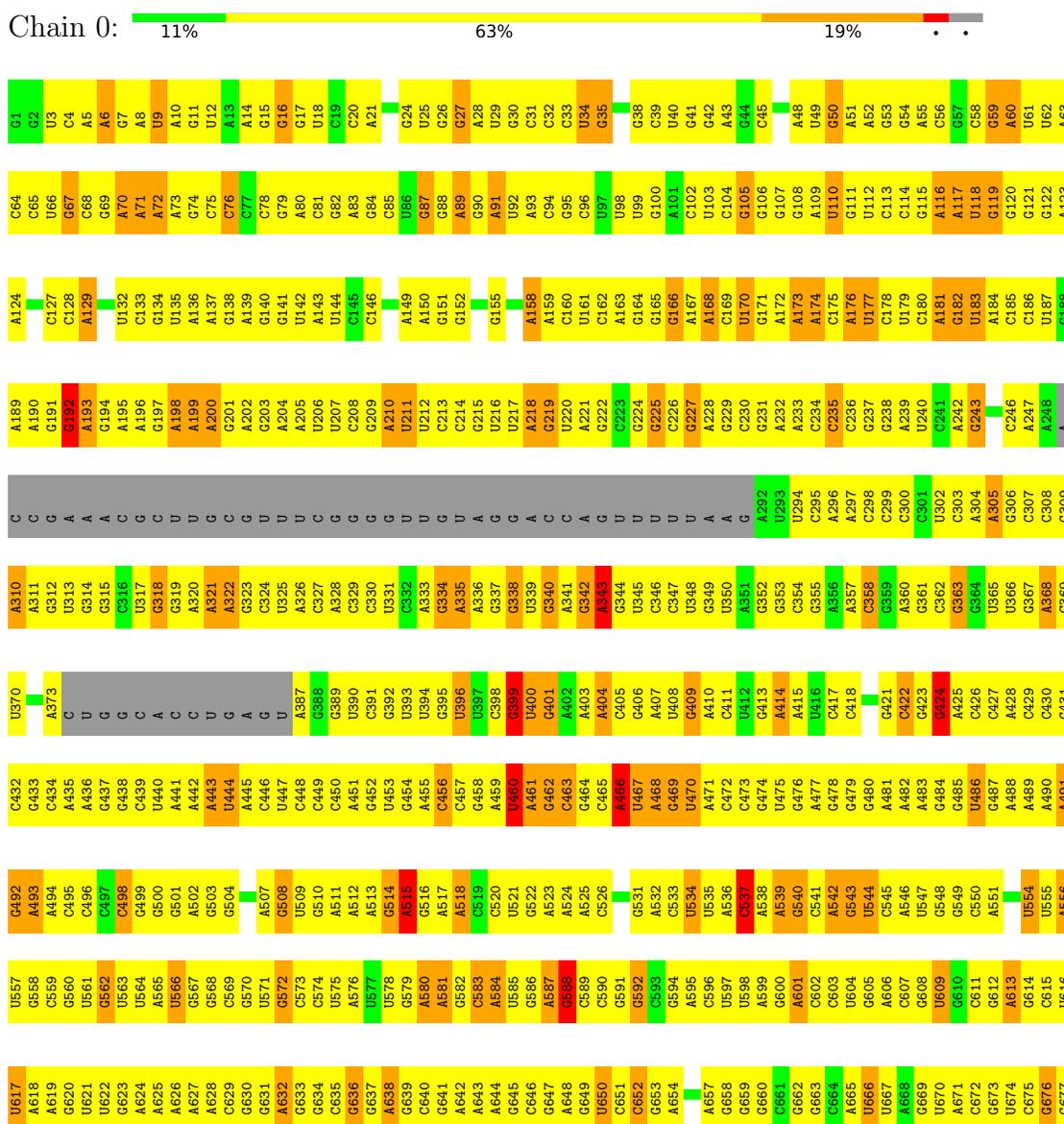
| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|-----|-------|----------|------------------------------|---------|---------|
| 32 | 0 | 1 | Total C N O S 34 28 1 4 1 | 0 | 0 |

3 Residue-property plots

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

Note EDS was not executed.

- Molecule 1: 23S RIBOSOMAL RNA



| | | | | | | | | | | | | | | | | |
|-------|-------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A1610 | G1678 | A740 | A801 | G861 | A922 | G983 | U1044 | G1110 | U1172 | C1234 | G1296 | G1366 | A1416 | U1481 | G1545 | A1610 |
| U1611 | C679 | G741 | A802 | A862 | A923 | A884 | G1045 | C1111 | G1173 | C1235 | A1297 | U1357 | C1417 | U1482 | C1546 | U1611 |
| G1613 | U680 | G742 | C803 | C863 | G924 | G985 | G1046 | C1112 | G1174 | G1236 | A1298 | G1358 | U1424 | G1483 | U1547 | G1613 |
| C1614 | A681 | A743 | C804 | C864 | U925 | G986 | G1047 | C1113 | A1175 | G1237 | A1299 | G1359 | U1425 | G1484 | U1548 | C1614 |
| G1615 | G682 | C744 | C805 | A865 | C926 | A1114 | U1048 | C1114 | U1176 | A1239 | U1300 | G1360 | U1426 | U1485 | C1549 | G1615 |
| C1616 | A683 | C745 | A806 | U866 | G927 | G987 | C1049 | C1115 | U1177 | G1240 | U1301 | G1361 | G1427 | U1486 | C1552 | C1616 |
| G1617 | C684 | G746 | A807 | C867 | G928 | G988 | C1052 | U1116 | C1182 | G1241 | C1302 | A1362 | G1428 | U1487 | G1553 | G1617 |
| U1618 | U685 | A747 | C808 | U868 | A929 | A990 | G1053 | G1117 | C1183 | A1242 | U1303 | C1363 | G1429 | G1488 | G1554 | U1618 |
| A1619 | C686 | A748 | C809 | C869 | A930 | A991 | G1054 | G1118 | U1182 | A1243 | U1304 | C1364 | A1428 | C1489 | U1555 | A1619 |
| C1620 | G687 | C749 | U810 | C870 | G931 | A992 | C1055 | U1119 | C1184 | G1244 | U1305 | A1365 | G1429 | U1490 | U1556 | C1620 |
| G1621 | A688 | C750 | G811 | U871 | G932 | C993 | A1056 | U1120 | G1185 | U1245 | U1306 | A1366 | U1430 | C1491 | G1557 | G1621 |
| C1622 | A689 | G751 | G812 | C872 | G933 | A994 | U1057 | G1121 | C1186 | G1246 | U1307 | A1367 | G1431 | A1492 | C1558 | C1622 |
| G1623 | U690 | G752 | A813 | U873 | G934 | A995 | G1058 | G1122 | G1187 | G1247 | C1308 | G1368 | A1432 | G1493 | G1559 | G1623 |
| A1624 | C691 | U753 | G814 | A874 | C935 | C996 | G1059 | G1123 | A1188 | G1248 | G1309 | C1369 | U1434 | G1494 | U1560 | A1624 |
| U1625 | G692 | G754 | A815 | C875 | A936 | C997 | A1059 | U1124 | C1189 | A1250 | C1310 | U1370 | G1435 | C1495 | A1561 | U1625 |
| C1626 | A693 | C755 | U816 | A876 | C937 | C998 | C1060 | C1127 | G1188 | A1251 | C1311 | G1371 | G1436 | G1496 | A1562 | A1626 |
| G1627 | G694 | C756 | A817 | C877 | A999 | G1000 | C1063 | G1128 | C1190 | C1252 | C1312 | G1372 | G1437 | A1499 | G1563 | C1627 |
| C1628 | G695 | U757 | G818 | C878 | G940 | A1001 | C1064 | U1129 | G1191 | G1253 | U1313 | G1373 | G1438 | U1500 | U1564 | G1628 |
| G1629 | U696 | C758 | C819 | A879 | U941 | A1002 | C1065 | U1130 | A1192 | G1254 | A1314 | G1374 | G1439 | C1501 | G1565 | C1629 |
| A1630 | A698 | C759 | U820 | C880 | U942 | C1003 | A1065 | U1131 | G1193 | A1255 | A1315 | C1375 | G1440 | G1502 | G1566 | A1630 |
| C1631 | C700 | G761 | G822 | C882 | U944 | A1004 | G1067 | U1133 | U1195 | U1257 | G1317 | G1376 | A1441 | G1503 | G1567 | C1631 |
| G1632 | U701 | A762 | U823 | C883 | G945 | U1005 | A1068 | C1133 | G1196 | G1258 | A1318 | G1377 | C1442 | U1504 | A1568 | G1632 |
| U1633 | A702 | C763 | U824 | A883 | G946 | C1006 | G1069 | C1135 | U1197 | A1259 | C1319 | G1378 | C1443 | U1505 | A1569 | C1633 |
| C1635 | A703 | A764 | C825 | A884 | U947 | A1007 | U1072 | G1136 | C1198 | G1260 | A1320 | C1380 | C1444 | A1507 | C1506 | A1634 |
| G1636 | A704 | C765 | U826 | C885 | C948 | G1008 | U1073 | A1137 | U1199 | G1261 | A1321 | G1381 | U1445 | G1508 | G1508 | G1635 |
| U1637 | G705 | A766 | C827 | C886 | G949 | C1009 | G1074 | A1138 | G1200 | U1262 | G1322 | G1382 | U1446 | A1509 | C1509 | C1636 |
| C1638 | A706 | C767 | C828 | C887 | G950 | C1010 | G1075 | A1139 | G1201 | G1263 | G1323 | G1383 | U1447 | A1510 | U1510 | G1637 |
| G1639 | U707 | U770 | C829 | C888 | G951 | C1011 | C1076 | A1140 | U1202 | C1264 | G1324 | G1384 | U1448 | C1448 | C1511 | G1638 |
| C1640 | G708 | U771 | C830 | C889 | U952 | A1012 | U1076 | U1141 | A1203 | C1265 | U1325 | G1385 | U1449 | C1449 | C1512 | U1639 |
| G1641 | A709 | C772 | G831 | C890 | G953 | C1013 | U1077 | G1142 | U1204 | G1266 | G1326 | G1386 | U1451 | C1451 | U1513 | C1640 |
| U1642 | C710 | A773 | A832 | C891 | U954 | G1014 | A1078 | A1143 | G1205 | A1267 | C1327 | G1387 | U1452 | C1452 | U1514 | G1641 |
| A1643 | G711 | C774 | A833 | C892 | G955 | U1015 | G1079 | U1144 | G1206 | U1268 | C1328 | G1388 | U1453 | C1453 | U1515 | C1642 |
| C1644 | A712 | U775 | A834 | C893 | A956 | C1016 | A1080 | C1145 | G1207 | G1269 | G1329 | C1389 | U1454 | C1454 | U1516 | A1643 |
| G1645 | G713 | A776 | C835 | C894 | G957 | C1017 | A1081 | G1146 | U1208 | G1270 | G1330 | G1390 | U1455 | C1455 | C1517 | G1644 |
| U1646 | G714 | C777 | G836 | C895 | U958 | C1018 | G1082 | G1147 | G1209 | C1271 | G1331 | A1391 | U1456 | C1456 | U1518 | U1645 |
| C1647 | U715 | A778 | U837 | C896 | G959 | C1019 | C1083 | G1148 | C1210 | G1272 | G1332 | U1392 | U1457 | C1457 | G1519 | G1646 |
| G1648 | U716 | C778 | A838 | C897 | U960 | A1020 | A1084 | G1149 | G1211 | G1273 | G1333 | G1393 | U1458 | C1458 | U1520 | U1647 |
| A1649 | G717 | U779 | U839 | C898 | G961 | A1021 | G1085 | C1150 | U1212 | C1274 | A1334 | G1394 | U1459 | C1459 | U1521 | C1648 |
| U1650 | A718 | C781 | A840 | C899 | G962 | C1022 | C1086 | U1151 | U1213 | A1275 | A1335 | A1395 | G1460 | C1522 | C1522 | A1649 |
| C1651 | A719 | U782 | A842 | C900 | G963 | U1023 | C1087 | C1152 | G1214 | U1276 | G1336 | C1396 | C1461 | C1523 | C1523 | U1650 |
| G1652 | A720 | G783 | G843 | C901 | G964 | G1024 | A1088 | A1153 | A1215 | G1277 | G1337 | A1397 | C1462 | C1524 | C1524 | U1651 |
| U1653 | C721 | U784 | G844 | C902 | G965 | A1025 | C1089 | G1154 | G1216 | A1278 | G1338 | G1398 | U1463 | C1525 | C1525 | G1652 |
| A1654 | G722 | U785 | U844 | C903 | G966 | U1026 | C1090 | G1155 | U1217 | G1279 | U1339 | C1399 | U1464 | G1527 | G1527 | A1653 |
| C1655 | C723 | U786 | U845 | C904 | G967 | C1027 | C1091 | U1156 | C1218 | U1280 | C1340 | A1400 | G1465 | C1528 | C1528 | U1654 |
| G1656 | U726 | U787 | A846 | C905 | G968 | G1028 | C1092 | G1157 | C1219 | A1281 | G1341 | G1401 | G1466 | C1529 | C1529 | C1655 |
| U1657 | U727 | A788 | A848 | C906 | U969 | C1029 | A1094 | U1158 | A1225 | A1282 | U1342 | G1402 | U1467 | U1530 | U1530 | U1656 |
| A1658 | G728 | G789 | A849 | C907 | A970 | U1030 | A1095 | A1159 | C1221 | C1283 | C1343 | U1403 | U1468 | C1531 | C1531 | A1657 |
| C1659 | A729 | U791 | G850 | C908 | A971 | C1031 | A1096 | C1160 | G1222 | G1284 | C1344 | U1404 | U1469 | A1532 | A1532 | A1658 |
| G1660 | C730 | C791 | C851 | C909 | C972 | A1032 | A1097 | U1161 | G1223 | A1285 | G1345 | A1405 | G1470 | G1533 | G1533 | G1659 |
| U1661 | G733 | U792 | U852 | C910 | U973 | G1033 | C1098 | A1162 | A1224 | U1286 | C1346 | A1406 | G1471 | G1536 | G1536 | C1660 |
| C1662 | A734 | G793 | C853 | C911 | U974 | U1034 | A1099 | C1163 | A1225 | A1287 | C1347 | G1407 | C1472 | U1537 | U1537 | U1661 |
| G1663 | G735 | U794 | G854 | C912 | C975 | G1035 | C1102 | G1164 | A1226 | A1288 | C1348 | U1408 | U1473 | A1538 | A1538 | C1662 |
| U1664 | A735 | C794 | G855 | C913 | C976 | G1036 | C1103 | C1165 | A1227 | A1289 | A1349 | U1409 | U1474 | U1539 | U1539 | C1663 |
| C1665 | G736 | U795 | A856 | C914 | G977 | U1037 | G1104 | A1167 | C1228 | A1290 | G1350 | U1410 | U1475 | C1540 | C1540 | G1664 |
| G1666 | C737 | A797 | U857 | C915 | U978 | U1038 | G1105 | G1168 | C1230 | A1291 | G1351 | C1411 | U1476 | U1541 | U1541 | C1665 |
| U1667 | U738 | G798 | U858 | C916 | A979 | A1039 | U1105 | C1169 | C1231 | A1292 | G1352 | C1412 | C1477 | G1542 | G1542 | G1666 |
| A1668 | C739 | U800 | U859 | C917 | G980 | A1040 | A1106 | C1170 | U1232 | U1293 | A1353 | U1413 | U1478 | U1543 | U1543 | U1667 |
| G1669 | U739 | U800 | U860 | C918 | C982 | G1041 | A1107 | A1171 | A1233 | U1295 | A1355 | C1415 | G1480 | A1544 | A1544 | A1669 |

Chain D:  99%



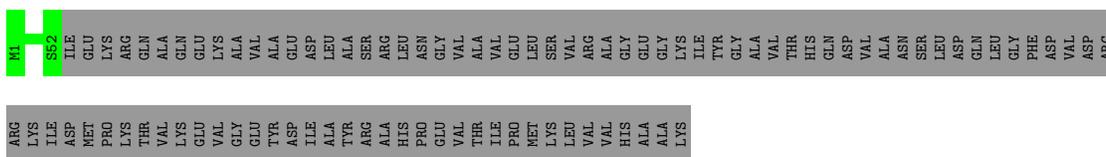
- Molecule 7: 50S ribosomal protein L6

Chain E:  95%



- Molecule 8: 50S ribosomal protein L9

Chain F:  36% 64%



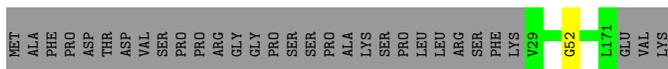
- Molecule 9: 50S ribosomal protein L11

Chain G:  99%



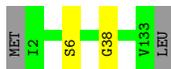
- Molecule 10: 50S ribosomal protein L13

Chain H:  82% 18%



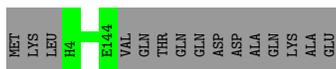
- Molecule 11: 50S ribosomal protein L14

Chain I:  97%



- Molecule 12: 50S ribosomal protein L15

Chain J:  90% 10%

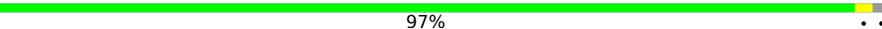


- Molecule 13: ribosomal protein L16

Chain K:  87% 12%

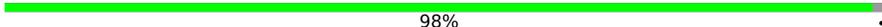


- Molecule 14: 50S ribosomal protein L17

Chain L:  97%



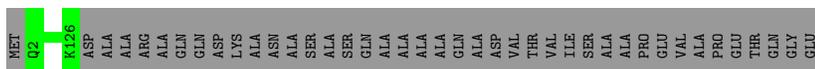
- Molecule 15: 50S ribosomal protein L18

Chain M:  98%

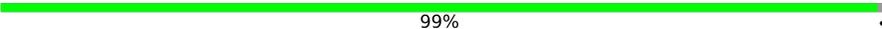


- Molecule 16: 50S ribosomal protein L19

Chain N:  75% 25%



- Molecule 17: 50S ribosomal protein L20

Chain O:  99%

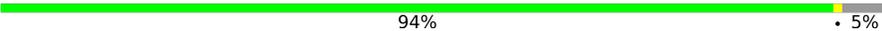


- Molecule 18: 50S ribosomal protein L21

Chain P:  100%

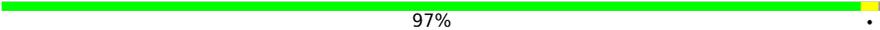
There are no outlier residues recorded for this chain.

- Molecule 19: 50S ribosomal protein L22

Chain Q:  94% 5%



- Molecule 20: 50S ribosomal protein L23

Chain R:  97% ..



- Molecule 21: 50S ribosomal protein L24

Chain S:  98% .



- Molecule 22: 50S ribosomal protein L25

Chain T:  94% 6%



- Molecule 23: 50S ribosomal protein L27

Chain U:  95% 5%



- Molecule 24: 50S ribosomal protein L29

Chain W:  97% .

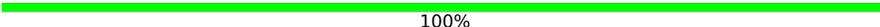


- Molecule 25: 50S ribosomal protein L30

Chain X:  100%

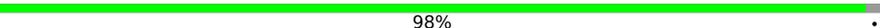
There are no outlier residues recorded for this chain.

- Molecule 26: 50S ribosomal protein L31

Chain Y:  100%

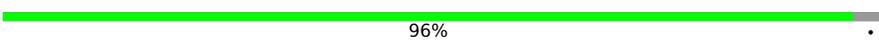
There are no outlier residues recorded for this chain.

- Molecule 27: 50S ribosomal protein L32

Chain Z:  98% .

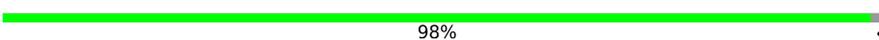


- Molecule 28: 50S ribosomal protein L33

Chain 1:  96%

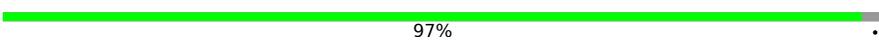


- Molecule 29: 50S ribosomal protein L34

Chain 2:  98%

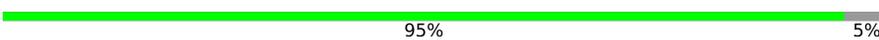


- Molecule 30: 50S ribosomal protein L35

Chain 3:  97%



- Molecule 31: 50S ribosomal protein L36

Chain 4:  95% 5%



4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

| Property | Value | Source |
|--|---|-----------|
| Space group | I 2 2 2 | Depositor |
| Cell constants a, b, c, α , β , γ | 168.70Å 405.00Å 693.00Å 90.00° 90.00° 90.00° | Depositor |
| Resolution (Å) | 15.00 – 3.50 | Depositor |
| % Data completeness (in resolution range) | 88.3 (15.00-3.50) | Depositor |
| R_{merge} | (Not available) | Depositor |
| R_{sym} | 0.14 | Depositor |
| Refinement program | CNS | Depositor |
| R, R_{free} | 0.290 , 0.360 | Depositor |
| Estimated twinning fraction | No twinning to report. | Xtrriage |
| Total number of atoms | 65328 | wwPDB-VP |
| Average B, all atoms (Å ²) | 40.0 | wwPDB-VP |

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: MUL

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 | 0 | 0.79 | 21/66467 (0.0%) | 0.82 | 43/103673 (0.0%) |
| 2 | 9 | 0.44 | 0/2813 | 0.73 | 0/4384 |
| All | All | 0.78 | 21/69280 (0.0%) | 0.82 | 43/108057 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1 | 0 | 0 | 260 |

All (21) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1 | 0 | 1646 | G | C5-C6 | -7.94 | 1.34 | 1.42 |
| 1 | 0 | 2570 | C | N1-C2 | 6.85 | 1.47 | 1.40 |
| 1 | 0 | 2801 | A | C5-C6 | -6.62 | 1.35 | 1.41 |
| 1 | 0 | 2673 | G | C5-C6 | -6.49 | 1.35 | 1.42 |
| 1 | 0 | 2222 | U | N3-C4 | -6.45 | 1.32 | 1.38 |
| 1 | 0 | 833 | A | C5-C6 | -6.24 | 1.35 | 1.41 |
| 1 | 0 | 754 | G | C5-C6 | -6.18 | 1.36 | 1.42 |
| 1 | 0 | 2574 | G | C5-C6 | -6.17 | 1.36 | 1.42 |
| 1 | 0 | 1410 | U | N1-C2 | 6.01 | 1.44 | 1.38 |
| 1 | 0 | 2492 | G | C5-C6 | -6.00 | 1.36 | 1.42 |
| 1 | 0 | 803 | C | N1-C2 | 5.69 | 1.45 | 1.40 |
| 1 | 0 | 1686 | A | C5-C6 | -5.66 | 1.35 | 1.41 |
| 1 | 0 | 1340 | C | N1-C2 | 5.60 | 1.45 | 1.40 |
| 1 | 0 | 2664 | G | C5-C6 | -5.54 | 1.36 | 1.42 |
| 1 | 0 | 1160 | C | N1-C2 | 5.40 | 1.45 | 1.40 |
| 1 | 0 | 2807 | U | N1-C2 | 5.39 | 1.43 | 1.38 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1 | 0 | 2218 | G | C5-C6 | -5.37 | 1.36 | 1.42 |
| 1 | 0 | 1993 | G | C5-C6 | -5.06 | 1.37 | 1.42 |
| 1 | 0 | 537 | C | N1-C2 | 5.06 | 1.45 | 1.40 |
| 1 | 0 | 1672 | A | C5-C6 | -5.04 | 1.36 | 1.41 |
| 1 | 0 | 689 | A | C5-C6 | -5.03 | 1.36 | 1.41 |

All (43) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1 | 0 | 2482 | A | N9-C1'-C2' | 8.75 | 125.37 | 114.00 |
| 1 | 0 | 460 | U | N1-C1'-C2' | 7.48 | 123.72 | 114.00 |
| 1 | 0 | 859 | U | N1-C1'-C2' | -7.43 | 103.83 | 112.00 |
| 1 | 0 | 1710 | U | N1-C1'-C2' | 7.14 | 123.28 | 114.00 |
| 1 | 0 | 1266 | G | N9-C1'-C2' | 6.48 | 122.43 | 114.00 |
| 1 | 0 | 1281 | A | N9-C1'-C2' | -6.39 | 104.97 | 112.00 |
| 1 | 0 | 1715 | A | N9-C1'-C2' | 6.36 | 122.27 | 114.00 |
| 1 | 0 | 2427 | A | O4'-C4'-C3' | -6.32 | 97.69 | 104.00 |
| 1 | 0 | 2044 | G | N9-C1'-C2' | 6.18 | 122.04 | 114.00 |
| 1 | 0 | 993 | C | N1-C1'-C2' | 6.11 | 121.94 | 114.00 |
| 1 | 0 | 468 | A | N9-C1'-C2' | 6.07 | 121.89 | 114.00 |
| 1 | 0 | 1634 | A | N9-C1'-C2' | 5.98 | 121.77 | 114.00 |
| 1 | 0 | 1337 | G | N9-C1'-C2' | 5.89 | 121.66 | 114.00 |
| 1 | 0 | 2521 | A | N9-C1'-C2' | 5.87 | 121.64 | 114.00 |
| 1 | 0 | 1775 | A | N9-C1'-C2' | 5.83 | 121.58 | 114.00 |
| 1 | 0 | 918 | A | N9-C1'-C2' | -5.77 | 105.65 | 112.00 |
| 1 | 0 | 860 | U | N1-C1'-C2' | 5.73 | 121.45 | 114.00 |
| 1 | 0 | 869 | C | N1-C1'-C2' | 5.69 | 121.39 | 114.00 |
| 1 | 0 | 1313 | U | C2'-C3'-O3' | 5.64 | 122.72 | 113.70 |
| 1 | 0 | 2805 | G | C5'-C4'-C3' | -5.55 | 107.12 | 116.00 |
| 1 | 0 | 1749 | G | O4'-C1'-N9 | 5.54 | 112.63 | 108.20 |
| 1 | 0 | 1685 | A | C5'-C4'-O4' | 5.54 | 115.74 | 109.10 |
| 1 | 0 | 804 | C | N1-C1'-C2' | 5.53 | 121.18 | 114.00 |
| 1 | 0 | 2560 | G | N9-C1'-C2' | 5.51 | 121.16 | 114.00 |
| 1 | 0 | 1333 | G | N9-C1'-C2' | 5.49 | 121.14 | 114.00 |
| 1 | 0 | 955 | G | N9-C1'-C2' | -5.46 | 106.00 | 112.00 |
| 1 | 0 | 700 | C | N1-C1'-C2' | 5.42 | 121.05 | 114.00 |
| 1 | 0 | 2794 | G | C5'-C4'-C3' | -5.42 | 107.33 | 116.00 |
| 1 | 0 | 1264 | C | N1-C1'-C2' | 5.41 | 121.04 | 114.00 |
| 1 | 0 | 562 | G | OP2-P-O3' | 5.36 | 117.00 | 105.20 |
| 1 | 0 | 2093 | G | C2'-C3'-O3' | 5.33 | 122.23 | 113.70 |
| 1 | 0 | 2674 | C | N1-C1'-C2' | -5.31 | 106.16 | 112.00 |
| 1 | 0 | 1141 | U | OP1-P-O3' | 5.31 | 116.88 | 105.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1 | 0 | 1698 | C | N1-C1'-C2' | 5.30 | 120.89 | 114.00 |
| 1 | 0 | 192 | G | C2'-C3'-O3' | 5.23 | 122.06 | 113.70 |
| 1 | 0 | 1137 | A | N9-C1'-C2' | 5.13 | 120.67 | 114.00 |
| 1 | 0 | 972 | C | OP1-P-O3' | 5.09 | 116.41 | 105.20 |
| 1 | 0 | 1652 | G | C5'-C4'-O4' | 5.09 | 115.21 | 109.10 |
| 1 | 0 | 2592 | U | O4'-C1'-N1 | -5.07 | 104.14 | 108.20 |
| 1 | 0 | 1335 | A | N9-C1'-C2' | -5.04 | 106.46 | 112.00 |
| 1 | 0 | 518 | A | N9-C1'-C2' | 5.04 | 120.55 | 114.00 |
| 1 | 0 | 2707 | G | O4'-C1'-N9 | 5.01 | 112.21 | 108.20 |
| 1 | 0 | 815 | A | OP1-P-O3' | 5.00 | 116.20 | 105.20 |

There are no chirality outliers.

All (260) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|------|------|-----------|
| 1 | 0 | 1005 | U | Sidechain |
| 1 | 0 | 1011 | A | Sidechain |
| 1 | 0 | 1018 | C | Sidechain |
| 1 | 0 | 1077 | U | Sidechain |
| 1 | 0 | 1137 | A | Sidechain |
| 1 | 0 | 1139 | A | Sidechain |
| 1 | 0 | 1142 | G | Sidechain |
| 1 | 0 | 1145 | C | Sidechain |
| 1 | 0 | 1151 | U | Sidechain |
| 1 | 0 | 1168 | G | Sidechain |
| 1 | 0 | 1176 | U | Sidechain |
| 1 | 0 | 1199 | U | Sidechain |
| 1 | 0 | 1203 | A | Sidechain |
| 1 | 0 | 1209 | G | Sidechain |
| 1 | 0 | 1262 | U | Sidechain |
| 1 | 0 | 1263 | G | Sidechain |
| 1 | 0 | 1264 | C | Sidechain |
| 1 | 0 | 1266 | G | Sidechain |
| 1 | 0 | 1275 | A | Sidechain |
| 1 | 0 | 1278 | A | Sidechain |
| 1 | 0 | 1294 | G | Sidechain |
| 1 | 0 | 1299 | A | Sidechain |
| 1 | 0 | 1304 | U | Sidechain |
| 1 | 0 | 1307 | U | Sidechain |
| 1 | 0 | 1310 | C | Sidechain |
| 1 | 0 | 1312 | G | Sidechain |
| 1 | 0 | 1325 | U | Sidechain |

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| Mol | Chain | Res | Type | Group |
|------------|--------------|------------|-------------|--------------|
| 1 | 0 | 1333 | G | Sidechain |
| 1 | 0 | 1335 | A | Sidechain |
| 1 | 0 | 1342 | U | Sidechain |
| 1 | 0 | 1343 | C | Sidechain |
| 1 | 0 | 1345 | G | Sidechain |
| 1 | 0 | 1346 | C | Sidechain |
| 1 | 0 | 1355 | A | Sidechain |
| 1 | 0 | 1366 | A | Sidechain |
| 1 | 0 | 1410 | U | Sidechain |
| 1 | 0 | 1448 | A | Sidechain |
| 1 | 0 | 1459 | U | Sidechain |
| 1 | 0 | 1471 | G | Sidechain |
| 1 | 0 | 1482 | U | Sidechain |
| 1 | 0 | 1490 | U | Sidechain |
| 1 | 0 | 1509 | A | Sidechain |
| 1 | 0 | 1521 | U | Sidechain |
| 1 | 0 | 1563 | U | Sidechain |
| 1 | 0 | 16 | G | Sidechain |
| 1 | 0 | 1619 | A | Sidechain |
| 1 | 0 | 1625 | A | Sidechain |
| 1 | 0 | 1626 | A | Sidechain |
| 1 | 0 | 1631 | C | Sidechain |
| 1 | 0 | 1632 | A | Sidechain |
| 1 | 0 | 1633 | C | Sidechain |
| 1 | 0 | 1647 | U | Sidechain |
| 1 | 0 | 1649 | A | Sidechain |
| 1 | 0 | 166 | G | Sidechain |
| 1 | 0 | 1663 | C | Sidechain |
| 1 | 0 | 1671 | A | Sidechain |
| 1 | 0 | 1673 | C | Sidechain |
| 1 | 0 | 1674 | C | Sidechain |
| 1 | 0 | 1678 | G | Sidechain |
| 1 | 0 | 1680 | U | Sidechain |
| 1 | 0 | 1688 | U | Sidechain |
| 1 | 0 | 170 | U | Sidechain |
| 1 | 0 | 1707 | A | Sidechain |
| 1 | 0 | 1710 | U | Sidechain |
| 1 | 0 | 1720 | G | Sidechain |
| 1 | 0 | 1723 | U | Sidechain |
| 1 | 0 | 1733 | U | Sidechain |
| 1 | 0 | 1745 | C | Sidechain |
| 1 | 0 | 1752 | U | Sidechain |

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| Mol | Chain | Res | Type | Group |
|------------|--------------|------------|-------------|--------------|
| 1 | 0 | 1766 | U | Sidechain |
| 1 | 0 | 1767 | G | Sidechain |
| 1 | 0 | 1769 | U | Sidechain |
| 1 | 0 | 1812 | U | Sidechain |
| 1 | 0 | 1819 | U | Sidechain |
| 1 | 0 | 183 | U | Sidechain |
| 1 | 0 | 1832 | G | Sidechain |
| 1 | 0 | 1887 | G | Sidechain |
| 1 | 0 | 1916 | G | Sidechain |
| 1 | 0 | 1922 | U | Sidechain |
| 1 | 0 | 1926 | U | Sidechain |
| 1 | 0 | 1934 | U | Sidechain |
| 1 | 0 | 1935 | A | Sidechain |
| 1 | 0 | 1936 | A | Sidechain |
| 1 | 0 | 1938 | U | Sidechain |
| 1 | 0 | 1945 | C | Sidechain |
| 1 | 0 | 1951 | G | Sidechain |
| 1 | 0 | 1953 | A | Sidechain |
| 1 | 0 | 1955 | G | Sidechain |
| 1 | 0 | 1956 | G | Sidechain |
| 1 | 0 | 1969 | G | Sidechain |
| 1 | 0 | 1976 | U | Sidechain |
| 1 | 0 | 1980 | A | Sidechain |
| 1 | 0 | 1992 | G | Sidechain |
| 1 | 0 | 2004 | U | Sidechain |
| 1 | 0 | 2018 | G | Sidechain |
| 1 | 0 | 2020 | G | Sidechain |
| 1 | 0 | 2033 | C | Sidechain |
| 1 | 0 | 2034 | A | Sidechain |
| 1 | 0 | 2038 | C | Sidechain |
| 1 | 0 | 2039 | G | Sidechain |
| 1 | 0 | 2046 | C | Sidechain |
| 1 | 0 | 2059 | U | Sidechain |
| 1 | 0 | 2066 | G | Sidechain |
| 1 | 0 | 2074 | U | Sidechain |
| 1 | 0 | 211 | U | Sidechain |
| 1 | 0 | 2207 | G | Sidechain |
| 1 | 0 | 2211 | U | Sidechain |
| 1 | 0 | 2216 | G | Sidechain |
| 1 | 0 | 2219 | U | Sidechain |
| 1 | 0 | 2222 | U | Sidechain |
| 1 | 0 | 2229 | G | Sidechain |

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| Mol | Chain | Res | Type | Group |
|------------|--------------|------------|-------------|--------------|
| 1 | 0 | 2230 | G | Sidechain |
| 1 | 0 | 2251 | U | Sidechain |
| 1 | 0 | 2255 | G | Sidechain |
| 1 | 0 | 2261 | G | Sidechain |
| 1 | 0 | 2280 | A | Sidechain |
| 1 | 0 | 2297 | G | Sidechain |
| 1 | 0 | 2302 | G | Sidechain |
| 1 | 0 | 2306 | A | Sidechain |
| 1 | 0 | 2317 | G | Sidechain |
| 1 | 0 | 2334 | C | Sidechain |
| 1 | 0 | 2342 | U | Sidechain |
| 1 | 0 | 235 | C | Sidechain |
| 1 | 0 | 2356 | A | Sidechain |
| 1 | 0 | 2365 | U | Sidechain |
| 1 | 0 | 2371 | A | Sidechain |
| 1 | 0 | 2375 | G | Sidechain |
| 1 | 0 | 2376 | G | Sidechain |
| 1 | 0 | 2377 | U | Sidechain |
| 1 | 0 | 2392 | G | Sidechain |
| 1 | 0 | 2412 | A | Sidechain |
| 1 | 0 | 2428 | U | Sidechain |
| 1 | 0 | 2430 | A | Sidechain |
| 1 | 0 | 2447 | G | Sidechain |
| 1 | 0 | 2459 | C | Sidechain |
| 1 | 0 | 2480 | C | Sidechain |
| 1 | 0 | 2483 | U | Sidechain |
| 1 | 0 | 2485 | U | Sidechain |
| 1 | 0 | 2492 | G | Sidechain |
| 1 | 0 | 2493 | U | Sidechain |
| 1 | 0 | 2498 | U | Sidechain |
| 1 | 0 | 2513 | A | Sidechain |
| 1 | 0 | 2520 | A | Sidechain |
| 1 | 0 | 2524 | G | Sidechain |
| 1 | 0 | 2525 | U | Sidechain |
| 1 | 0 | 2548 | G | Sidechain |
| 1 | 0 | 2549 | G | Sidechain |
| 1 | 0 | 2551 | A | Sidechain |
| 1 | 0 | 2553 | G | Sidechain |
| 1 | 0 | 2554 | C | Sidechain |
| 1 | 0 | 2573 | C | Sidechain |
| 1 | 0 | 2583 | U | Sidechain |
| 1 | 0 | 2585 | C | Sidechain |

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| Mol | Chain | Res | Type | Group |
|------------|--------------|------------|-------------|--------------|
| 1 | 0 | 2587 | G | Sidechain |
| 1 | 0 | 2599 | U | Sidechain |
| 1 | 0 | 2603 | G | Sidechain |
| 1 | 0 | 2609 | G | Sidechain |
| 1 | 0 | 2610 | G | Sidechain |
| 1 | 0 | 2625 | U | Sidechain |
| 1 | 0 | 2627 | G | Sidechain |
| 1 | 0 | 2655 | C | Sidechain |
| 1 | 0 | 2674 | C | Sidechain |
| 1 | 0 | 2675 | U | Sidechain |
| 1 | 0 | 2677 | U | Sidechain |
| 1 | 0 | 2685 | A | Sidechain |
| 1 | 0 | 2693 | U | Sidechain |
| 1 | 0 | 27 | G | Sidechain |
| 1 | 0 | 2700 | U | Sidechain |
| 1 | 0 | 2701 | A | Sidechain |
| 1 | 0 | 2704 | U | Sidechain |
| 1 | 0 | 2705 | A | Sidechain |
| 1 | 0 | 2763 | U | Sidechain |
| 1 | 0 | 2794 | G | Sidechain |
| 1 | 0 | 2796 | A | Sidechain |
| 1 | 0 | 2824 | C | Sidechain |
| 1 | 0 | 2828 | C | Sidechain |
| 1 | 0 | 2836 | U | Sidechain |
| 1 | 0 | 2838 | U | Sidechain |
| 1 | 0 | 2841 | U | Sidechain |
| 1 | 0 | 2842 | C | Sidechain |
| 1 | 0 | 2844 | G | Sidechain |
| 1 | 0 | 2846 | G | Sidechain |
| 1 | 0 | 310 | A | Sidechain |
| 1 | 0 | 338 | G | Sidechain |
| 1 | 0 | 342 | G | Sidechain |
| 1 | 0 | 343 | A | Sidechain |
| 1 | 0 | 396 | U | Sidechain |
| 1 | 0 | 399 | G | Sidechain |
| 1 | 0 | 400 | U | Sidechain |
| 1 | 0 | 422 | C | Sidechain |
| 1 | 0 | 424 | G | Sidechain |
| 1 | 0 | 444 | U | Sidechain |
| 1 | 0 | 460 | U | Sidechain |
| 1 | 0 | 462 | G | Sidechain |
| 1 | 0 | 466 | A | Sidechain |

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| Mol | Chain | Res | Type | Group |
|------------|--------------|------------|-------------|--------------|
| 1 | 0 | 469 | G | Sidechain |
| 1 | 0 | 470 | U | Sidechain |
| 1 | 0 | 493 | A | Sidechain |
| 1 | 0 | 498 | C | Sidechain |
| 1 | 0 | 508 | G | Sidechain |
| 1 | 0 | 515 | A | Sidechain |
| 1 | 0 | 534 | U | Sidechain |
| 1 | 0 | 535 | U | Sidechain |
| 1 | 0 | 544 | U | Sidechain |
| 1 | 0 | 566 | U | Sidechain |
| 1 | 0 | 578 | U | Sidechain |
| 1 | 0 | 580 | A | Sidechain |
| 1 | 0 | 581 | A | Sidechain |
| 1 | 0 | 588 | G | Sidechain |
| 1 | 0 | 592 | G | Sidechain |
| 1 | 0 | 596 | C | Sidechain |
| 1 | 0 | 6 | A | Sidechain |
| 1 | 0 | 609 | U | Sidechain |
| 1 | 0 | 631 | G | Sidechain |
| 1 | 0 | 650 | U | Sidechain |
| 1 | 0 | 67 | G | Sidechain |
| 1 | 0 | 676 | G | Sidechain |
| 1 | 0 | 680 | U | Sidechain |
| 1 | 0 | 685 | U | Sidechain |
| 1 | 0 | 689 | A | Sidechain |
| 1 | 0 | 696 | U | Sidechain |
| 1 | 0 | 707 | U | Sidechain |
| 1 | 0 | 743 | A | Sidechain |
| 1 | 0 | 756 | C | Sidechain |
| 1 | 0 | 757 | U | Sidechain |
| 1 | 0 | 759 | C | Sidechain |
| 1 | 0 | 761 | G | Sidechain |
| 1 | 0 | 767 | G | Sidechain |
| 1 | 0 | 775 | U | Sidechain |
| 1 | 0 | 788 | G | Sidechain |
| 1 | 0 | 789 | G | Sidechain |
| 1 | 0 | 793 | G | Sidechain |
| 1 | 0 | 795 | A | Sidechain |
| 1 | 0 | 798 | G | Sidechain |
| 1 | 0 | 804 | C | Sidechain |
| 1 | 0 | 806 | A | Sidechain |
| 1 | 0 | 815 | A | Sidechain |

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| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|-----------|
| 1 | 0 | 822 | G | Sidechain |
| 1 | 0 | 823 | U | Sidechain |
| 1 | 0 | 824 | U | Sidechain |
| 1 | 0 | 826 | U | Sidechain |
| 1 | 0 | 831 | G | Sidechain |
| 1 | 0 | 832 | A | Sidechain |
| 1 | 0 | 839 | U | Sidechain |
| 1 | 0 | 840 | U | Sidechain |
| 1 | 0 | 845 | U | Sidechain |
| 1 | 0 | 859 | U | Sidechain |
| 1 | 0 | 863 | C | Sidechain |
| 1 | 0 | 886 | A | Sidechain |
| 1 | 0 | 9 | U | Sidechain |
| 1 | 0 | 918 | A | Sidechain |
| 1 | 0 | 919 | U | Sidechain |
| 1 | 0 | 941 | U | Sidechain |
| 1 | 0 | 946 | U | Sidechain |
| 1 | 0 | 954 | U | Sidechain |
| 1 | 0 | 969 | U | Sidechain |
| 1 | 0 | 972 | C | Sidechain |
| 1 | 0 | 986 | A | Sidechain |
| 1 | 0 | 993 | C | Sidechain |
| 1 | 0 | 994 | A | Sidechain |

5.2 Too-close contacts

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 | 0 | 59359 | 0 | 29916 | 4247 | 0 |
| 2 | 9 | 2516 | 0 | 1286 | 144 | 0 |
| 3 | A | 270 | 0 | 0 | 2 | 0 |
| 4 | B | 205 | 0 | 0 | 3 | 0 |
| 5 | C | 197 | 0 | 0 | 0 | 0 |
| 6 | D | 178 | 0 | 0 | 0 | 0 |
| 7 | E | 177 | 0 | 0 | 1 | 0 |
| 8 | F | 52 | 0 | 0 | 0 | 0 |
| 9 | G | 143 | 0 | 0 | 0 | 0 |
| 10 | H | 143 | 0 | 0 | 1 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 11 | I | 132 | 0 | 0 | 2 | 0 |
| 12 | J | 141 | 0 | 0 | 0 | 0 |
| 13 | K | 124 | 0 | 0 | 1 | 0 |
| 14 | L | 114 | 0 | 0 | 3 | 0 |
| 15 | M | 111 | 0 | 0 | 0 | 0 |
| 16 | N | 125 | 0 | 0 | 0 | 0 |
| 17 | O | 117 | 0 | 0 | 0 | 0 |
| 18 | P | 100 | 0 | 0 | 0 | 0 |
| 19 | Q | 127 | 0 | 0 | 1 | 0 |
| 20 | R | 93 | 0 | 0 | 1 | 0 |
| 21 | S | 113 | 0 | 0 | 0 | 0 |
| 22 | T | 223 | 0 | 0 | 0 | 0 |
| 23 | U | 86 | 0 | 0 | 0 | 0 |
| 24 | W | 65 | 0 | 0 | 0 | 0 |
| 25 | X | 55 | 0 | 0 | 0 | 0 |
| 26 | Y | 73 | 0 | 0 | 0 | 0 |
| 27 | Z | 58 | 0 | 0 | 0 | 0 |
| 28 | 1 | 53 | 0 | 0 | 0 | 0 |
| 29 | 2 | 46 | 0 | 0 | 0 | 0 |
| 30 | 3 | 63 | 0 | 0 | 0 | 0 |
| 31 | 4 | 35 | 0 | 0 | 0 | 0 |
| 32 | 0 | 34 | 0 | 47 | 4 | 0 |
| All | All | 65328 | 0 | 31249 | 4383 | 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 46.

All (4383) 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) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:584:A:H4' | 1:0:2038:C:N4 | 1.53 | 1.23 |
| 1:0:1621:C:H4' | 1:0:1626:A:N6 | 1.57 | 1.19 |
| 1:0:918:A:H2' | 1:0:919:U:H5'' | 1.24 | 1.18 |
| 1:0:1339:U:H5'' | 1:0:1994:U:H1' | 1.21 | 1.18 |
| 1:0:1938:U:O2' | 1:0:1939:U:H5' | 1.42 | 1.18 |
| 1:0:796:A:H5'' | 1:0:2568:A:OP1 | 1.44 | 1.16 |
| 1:0:1313:U:H4' | 1:0:1314:A:O4' | 1.46 | 1.15 |
| 1:0:635:C:H2' | 1:0:636:G:H5'' | 1.27 | 1.15 |
| 1:0:104:C:H2' | 1:0:105:G:H5'' | 1.26 | 1.14 |
| 1:0:1791:C:H2' | 1:0:1792:C:H5'' | 1.25 | 1.13 |
| 1:0:1921:A:H2' | 1:0:1922:U:H5'' | 1.18 | 1.13 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1572:C:H2' | 1:0:1573:G:H5'' | 1.19 | 1.12 |
| 1:0:1463:A:H1' | 1:0:1543:G:H22 | 1.14 | 1.12 |
| 1:0:1181:C:H2' | 1:0:1182:U:H5'' | 1.33 | 1.11 |
| 1:0:2691:C:H3' | 1:0:2692:A:H5'' | 1.25 | 1.11 |
| 1:0:922:A:H2' | 1:0:923:A:H8 | 1.11 | 1.10 |
| 1:0:1572:C:C2' | 1:0:1573:G:H5'' | 1.82 | 1.10 |
| 1:0:451:A:H2' | 1:0:452:G:H8 | 1.12 | 1.09 |
| 1:0:1908:C:H2' | 1:0:1909:U:H4' | 1.30 | 1.09 |
| 1:0:2078:G:H22 | 1:0:2178:U:H1' | 1.16 | 1.09 |
| 1:0:940:G:H3' | 1:0:941:U:C5' | 1.83 | 1.09 |
| 1:0:2414:A:H2' | 1:0:2415:G:H5'' | 1.28 | 1.08 |
| 1:0:2548:G:H2' | 1:0:2549:G:H5'' | 1.36 | 1.08 |
| 1:0:2447:G:O2' | 1:0:2448:A:H5'' | 1.54 | 1.08 |
| 1:0:460:U:C4 | 1:0:592:G:H1' | 1.90 | 1.06 |
| 1:0:2812:A:H2' | 1:0:2813:G:C8 | 1.91 | 1.06 |
| 1:0:128:C:H2' | 1:0:129:A:H5'' | 1.11 | 1.05 |
| 1:0:1636:G:H2' | 1:0:1637:U:C6 | 1.91 | 1.05 |
| 1:0:1976:U:H2' | 1:0:1977:C:H5' | 1.37 | 1.05 |
| 1:0:2610:G:H5' | 1:0:2866:A:H1' | 1.38 | 1.04 |
| 1:0:616:U:H2' | 1:0:617:U:H5'' | 1.39 | 1.03 |
| 1:0:1339:U:H5'' | 1:0:1994:U:C1' | 1.88 | 1.03 |
| 1:0:2318:U:H2' | 1:0:2319:G:H8 | 1.21 | 1.03 |
| 1:0:941:U:H2' | 1:0:942:U:O4' | 1.57 | 1.02 |
| 1:0:1198:C:H5'' | 1:0:1199:U:H4' | 1.39 | 1.02 |
| 1:0:2484:G:H3' | 1:0:2555:G:H22 | 1.23 | 1.02 |
| 1:0:2319:G:H2' | 1:0:2320:G:C8 | 1.94 | 1.02 |
| 1:0:727:U:H2' | 1:0:728:G:H5'' | 1.42 | 1.02 |
| 1:0:837:U:H2' | 1:0:838:A:C8 | 1.94 | 1.01 |
| 1:0:103:U:H2' | 1:0:104:C:H6 | 1.25 | 1.00 |
| 1:0:165:G:H2' | 1:0:166:G:O4' | 1.60 | 1.00 |
| 1:0:451:A:H2' | 1:0:452:G:C8 | 1.95 | 1.00 |
| 1:0:772:G:H2' | 1:0:773:G:H8 | 1.26 | 1.00 |
| 1:0:320:A:H2 | 1:0:340:G:HO2' | 1.03 | 1.00 |
| 1:0:1202:U:H2' | 1:0:1203:A:C8 | 1.97 | 1.00 |
| 1:0:128:C:C2' | 1:0:129:A:H5'' | 1.92 | 1.00 |
| 1:0:1587:A:H2' | 1:0:1588:A:H8 | 1.22 | 1.00 |
| 1:0:58:C:H3' | 1:0:59:G:H5'' | 1.37 | 0.99 |
| 1:0:1587:A:H2' | 1:0:1588:A:C8 | 1.97 | 0.99 |
| 1:0:2318:U:H2' | 1:0:2319:G:C8 | 1.95 | 0.99 |
| 1:0:1016:C:C6 | 1:0:1154:A:H1' | 1.96 | 0.99 |
| 1:0:490:A:O2' | 1:0:491:A:H5' | 1.62 | 0.99 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:820:U:H2' | 1:0:821:A:H8 | 1.21 | 0.99 |
| 1:0:2051:U:H5' | 1:0:2052:G:OP1 | 1.61 | 0.98 |
| 1:0:2607:C:H3' | 1:0:2608:A:H5' | 1.43 | 0.98 |
| 1:0:584:A:H4' | 1:0:2038:C:H41 | 1.14 | 0.98 |
| 1:0:940:G:H3' | 1:0:941:U:H5'' | 1.01 | 0.98 |
| 1:0:1924:C:H2' | 1:0:1925:C:O4' | 1.64 | 0.98 |
| 1:0:1094:C:H2' | 1:0:1096:A:OP2 | 1.64 | 0.97 |
| 1:0:525:A:H2' | 1:0:526:C:H5' | 1.46 | 0.97 |
| 1:0:922:A:H2' | 1:0:923:A:C8 | 1.98 | 0.97 |
| 1:0:1323:G:H1' | 1:0:1627:C:C5' | 1.94 | 0.97 |
| 1:0:2790:C:H2' | 1:0:2791:C:H6 | 1.29 | 0.97 |
| 1:0:1252:C:O2' | 1:0:1253:C:H5'' | 1.65 | 0.97 |
| 1:0:2509:A:H2' | 1:0:2510:A:H5'' | 1.43 | 0.96 |
| 1:0:2306:A:H2' | 1:0:2307:A:C8 | 2.00 | 0.96 |
| 1:0:847:C:H41 | 1:0:955:G:H21 | 1.12 | 0.96 |
| 1:0:940:G:C3' | 1:0:941:U:H5'' | 1.93 | 0.95 |
| 1:0:1218:C:H2' | 1:0:1219:C:C6 | 1.99 | 0.95 |
| 1:0:1911:A:H2' | 1:0:1912:G:H5' | 1.49 | 0.95 |
| 1:0:929:A:H3' | 1:0:930:A:H5'' | 1.48 | 0.95 |
| 1:0:1066:G:H2' | 1:0:1067:G:H4' | 1.46 | 0.95 |
| 1:0:1304:U:O2' | 1:0:1305:C:H5' | 1.66 | 0.95 |
| 1:0:1826:U:O2' | 1:0:1952:A:H2' | 1.66 | 0.95 |
| 1:0:2437:G:C6 | 1:0:2469:G:H2' | 2.01 | 0.95 |
| 1:0:34:U:H2' | 1:0:35:G:H5' | 1.50 | 0.94 |
| 1:0:50:G:H2' | 1:0:117:A:C2 | 2.02 | 0.94 |
| 1:0:1212:U:H2' | 1:0:1213:U:H6 | 1.29 | 0.94 |
| 1:0:984:A:H2 | 1:0:1200:G:H1 | 1.01 | 0.94 |
| 1:0:2437:G:N1 | 1:0:2469:G:H2' | 1.83 | 0.94 |
| 1:0:525:A:C2' | 1:0:526:C:H5' | 1.97 | 0.93 |
| 1:0:1012:A:H2' | 1:0:1013:G:H5' | 1.50 | 0.93 |
| 1:0:71:A:H2 | 1:0:75:C:H1' | 1.29 | 0.93 |
| 1:0:1698:C:O2' | 1:0:1753:A:H2' | 1.69 | 0.93 |
| 1:0:759:C:O2 | 1:0:2590:U:H4' | 1.67 | 0.93 |
| 1:0:2369:U:H2' | 1:0:2370:G:C8 | 2.04 | 0.93 |
| 1:0:2378:G:H22 | 1:0:2397:A:H1' | 1.32 | 0.93 |
| 1:0:831:G:H21 | 1:0:1203:A:H62 | 1.11 | 0.93 |
| 1:0:773:G:H2' | 1:0:774:A:H5' | 1.50 | 0.93 |
| 1:0:2468:G:H2' | 1:0:2469:G:H5' | 1.51 | 0.93 |
| 1:0:195:A:H2' | 1:0:196:A:O4' | 1.69 | 0.93 |
| 1:0:689:A:C8 | 1:0:2422:C:H1' | 2.04 | 0.93 |
| 1:0:1921:A:C2' | 1:0:1922:U:H5'' | 1.99 | 0.93 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2199:C:H2' | 1:0:2200:G:H8 | 1.32 | 0.93 |
| 1:0:1212:U:H2' | 1:0:1213:U:C6 | 2.04 | 0.92 |
| 1:0:2713:A:H2' | 1:0:2714:A:H8 | 1.33 | 0.92 |
| 1:0:1250:A:O2' | 1:0:1251:G:H4' | 1.70 | 0.92 |
| 1:0:612:G:O3' | 1:0:613:A:H4' | 1.69 | 0.92 |
| 1:0:1847:G:H2' | 1:0:1848:U:H6 | 1.34 | 0.92 |
| 1:0:2691:C:H3' | 1:0:2692:A:C5' | 1.99 | 0.92 |
| 1:0:701:U:H4' | 1:0:1771:A:H2 | 1.32 | 0.92 |
| 1:0:2824:C:H42 | 1:0:2842:C:H1' | 1.33 | 0.92 |
| 1:0:2447:G:H22 | 1:0:2460:G:H2' | 1.34 | 0.92 |
| 1:0:1065:A:H2' | 1:0:1066:G:H8 | 1.33 | 0.92 |
| 1:0:1800:A:H2' | 1:0:1802:A:N6 | 1.85 | 0.91 |
| 1:0:540:G:O2' | 1:0:541:C:H4' | 1.70 | 0.91 |
| 1:0:1198:C:H5'' | 1:0:1199:U:C4' | 1.99 | 0.91 |
| 1:0:693:A:H2' | 1:0:694:G:H8 | 1.35 | 0.91 |
| 1:0:652:C:N4 | 1:0:657:A:H61 | 1.68 | 0.91 |
| 1:0:71:A:C2 | 1:0:75:C:H1' | 2.05 | 0.91 |
| 1:0:1339:U:C5' | 1:0:1994:U:H1' | 2.01 | 0.91 |
| 1:0:1781:C:H2' | 1:0:1782:A:C8 | 2.05 | 0.91 |
| 1:0:1254:G:H2' | 1:0:1255:A:H8 | 1.35 | 0.91 |
| 1:0:1323:G:H1' | 1:0:1627:C:H5'' | 1.52 | 0.91 |
| 1:0:1686:A:C2' | 1:0:1687:C:H5' | 2.01 | 0.91 |
| 1:0:1181:C:C2' | 1:0:1182:U:H5'' | 2.01 | 0.90 |
| 1:0:2811:G:H2' | 1:0:2812:A:C8 | 2.05 | 0.90 |
| 2:9:102:A:O2' | 2:9:103:A:H5' | 1.69 | 0.90 |
| 1:0:652:C:H42 | 1:0:657:A:N6 | 1.69 | 0.90 |
| 1:0:2636:A:H62 | 1:0:2643:G:H21 | 1.20 | 0.90 |
| 2:9:25:G:H2' | 2:9:26:G:O4' | 1.70 | 0.90 |
| 1:0:942:U:O2' | 1:0:943:U:H5' | 1.70 | 0.90 |
| 1:0:1142:G:O6 | 1:0:2008:C:H1' | 1.72 | 0.90 |
| 1:0:759:C:H42 | 1:0:2591:C:P | 1.93 | 0.90 |
| 1:0:1391:A:H2' | 1:0:1392:U:C5 | 2.06 | 0.90 |
| 1:0:1391:A:H2' | 1:0:1392:U:H5 | 1.37 | 0.90 |
| 1:0:159:A:H2' | 1:0:160:C:C6 | 2.06 | 0.90 |
| 1:0:1392:U:H2' | 1:0:1393:G:H5' | 1.53 | 0.89 |
| 1:0:688:A:H1' | 1:0:2422:C:O2' | 1.73 | 0.89 |
| 1:0:1453:A:H2' | 1:0:1454:U:H5' | 1.54 | 0.89 |
| 1:0:1640:C:H2' | 1:0:1641:C:H6 | 1.36 | 0.89 |
| 1:0:635:C:C2' | 1:0:636:G:H5'' | 2.03 | 0.89 |
| 1:0:918:A:H2' | 1:0:919:U:C5' | 2.02 | 0.89 |
| 1:0:2541:U:H2' | 1:0:2542:U:O4' | 1.72 | 0.89 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2686:C:H2' | 1:0:2687:G:C8 | 2.08 | 0.89 |
| 1:0:2811:G:H2' | 1:0:2812:A:H8 | 1.36 | 0.89 |
| 1:0:367:G:H2' | 1:0:368:A:H5'' | 1.55 | 0.89 |
| 1:0:831:G:C2' | 1:0:832:A:H5'' | 2.02 | 0.89 |
| 1:0:755:C:H2' | 1:0:756:C:C6 | 2.08 | 0.89 |
| 1:0:2321:C:H2' | 1:0:2322:U:O4' | 1.72 | 0.88 |
| 1:0:681:A:H2' | 1:0:683:A:N7 | 1.87 | 0.88 |
| 1:0:1953:A:H1' | 1:0:1955:G:H1' | 1.55 | 0.88 |
| 1:0:1057:A:O5' | 1:0:1058:G:H5' | 1.73 | 0.88 |
| 1:0:2414:A:C2' | 1:0:2415:G:H5'' | 2.02 | 0.88 |
| 1:0:2759:U:H5'' | 1:0:2760:G:OP2 | 1.74 | 0.88 |
| 1:0:2812:A:H2' | 1:0:2813:G:H8 | 1.36 | 0.88 |
| 1:0:1135:C:H2' | 1:0:1136:G:H8 | 1.37 | 0.88 |
| 2:9:67:C:H2' | 2:9:68:A:H5' | 1.53 | 0.88 |
| 1:0:1541:G:N2 | 1:0:1562:G:H22 | 1.70 | 0.88 |
| 1:0:2397:A:H2' | 1:0:2398:U:O4' | 1.74 | 0.88 |
| 1:0:776:G:H3' | 1:0:776:G:N3 | 1.90 | 0.87 |
| 1:0:1672:A:C2 | 1:0:1673:C:H1' | 2.10 | 0.87 |
| 1:0:1674:C:H2' | 1:0:1675:C:C6 | 2.09 | 0.87 |
| 2:9:92:G:H2' | 2:9:93:G:H5' | 1.56 | 0.87 |
| 1:0:958:G:H2' | 1:0:959:C:C6 | 2.08 | 0.87 |
| 1:0:1463:A:H1' | 1:0:1543:G:N2 | 1.89 | 0.87 |
| 1:0:2686:C:H2' | 1:0:2687:G:H8 | 1.40 | 0.87 |
| 1:0:103:U:H2' | 1:0:104:C:C6 | 2.10 | 0.86 |
| 1:0:1147:G:O2' | 1:0:1148:G:H5' | 1.76 | 0.86 |
| 1:0:853:C:H1' | 1:0:950:G:H22 | 1.41 | 0.86 |
| 1:0:792:U:O2' | 1:0:793:G:H5' | 1.75 | 0.86 |
| 1:0:1459:U:OP1 | 1:0:1459:U:H3' | 1.74 | 0.86 |
| 1:0:1683:G:H2' | 1:0:1684:G:H5' | 1.58 | 0.86 |
| 1:0:128:C:H2' | 1:0:129:A:C5' | 2.02 | 0.86 |
| 1:0:831:G:H21 | 1:0:1203:A:N6 | 1.74 | 0.86 |
| 1:0:1514:C:H2' | 1:0:1515:U:O4' | 1.76 | 0.86 |
| 1:0:2790:C:H2' | 1:0:2791:C:C6 | 2.11 | 0.85 |
| 1:0:2697:G:O2' | 1:0:2698:G:H5' | 1.76 | 0.85 |
| 1:0:2769:C:H3' | 1:0:2770:A:C8 | 2.11 | 0.85 |
| 1:0:1202:U:H2' | 1:0:1203:A:H8 | 1.40 | 0.85 |
| 1:0:2040:A:H2' | 1:0:2041:A:H8 | 1.40 | 0.85 |
| 1:0:1640:C:H2' | 1:0:1641:C:C6 | 2.10 | 0.85 |
| 1:0:523:A:H2 | 1:0:591:G:H4' | 1.40 | 0.85 |
| 1:0:964:A:H2' | 1:0:965:G:C8 | 2.11 | 0.85 |
| 2:9:67:C:C2' | 2:9:68:A:H5' | 2.06 | 0.85 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:701:U:H4' | 1:0:1771:A:C2 | 2.11 | 0.85 |
| 1:0:1807:A:H1' | 1:0:1809:G:H1' | 1.57 | 0.85 |
| 1:0:2329:C:O2' | 1:0:2330:G:H5' | 1.76 | 0.85 |
| 1:0:1686:A:H2' | 1:0:1687:C:H5' | 1.57 | 0.85 |
| 1:0:1765:C:H4' | 1:0:1962:C:O2 | 1.77 | 0.85 |
| 1:0:2558:C:H2' | 1:0:2559:U:H6 | 1.40 | 0.85 |
| 1:0:2813:G:H2' | 1:0:2814:G:H8 | 1.41 | 0.85 |
| 1:0:186:C:H2' | 1:0:187:U:H6 | 1.39 | 0.85 |
| 1:0:734:G:H2' | 1:0:735:G:H8 | 1.40 | 0.85 |
| 1:0:1065:A:H2' | 1:0:1066:G:C8 | 2.12 | 0.85 |
| 1:0:1917:C:H2' | 1:0:1918:G:O4' | 1.76 | 0.85 |
| 1:0:2162:C:H2' | 1:0:2163:U:C6 | 2.12 | 0.85 |
| 1:0:1073:G:H2' | 1:0:1074:G:H5'' | 1.58 | 0.84 |
| 1:0:584:A:C4' | 1:0:2038:C:N4 | 2.39 | 0.84 |
| 1:0:2756:A:N6 | 1:0:2762:G:H1' | 1.92 | 0.84 |
| 1:0:2820:C:H2' | 1:0:2821:G:H8 | 1.38 | 0.84 |
| 1:0:104:C:C2' | 1:0:105:G:H5'' | 2.07 | 0.84 |
| 1:0:159:A:H2' | 1:0:160:C:H6 | 1.42 | 0.84 |
| 1:0:2241:U:H4' | 1:0:2307:A:C2 | 2.13 | 0.84 |
| 1:0:58:C:H3' | 1:0:59:G:C5' | 2.07 | 0.84 |
| 1:0:1226:A:N1 | 1:0:1250:A:H1' | 1.93 | 0.84 |
| 2:9:102:A:C2' | 2:9:103:A:H5' | 2.06 | 0.84 |
| 1:0:1454:U:H2' | 1:0:1455:C:O4' | 1.77 | 0.84 |
| 1:0:678:G:H2' | 1:0:679:C:H6 | 1.43 | 0.84 |
| 1:0:1618:U:O5' | 1:0:1618:U:H6 | 1.61 | 0.84 |
| 1:0:1682:A:H61 | 1:0:1977:C:H42 | 1.23 | 0.84 |
| 1:0:60:A:H61 | 1:0:91:A:N6 | 1.74 | 0.84 |
| 1:0:460:U:O4 | 1:0:592:G:H1' | 1.77 | 0.84 |
| 1:0:773:G:C2' | 1:0:774:A:H5' | 2.08 | 0.84 |
| 1:0:799:C:H2' | 1:0:800:U:C6 | 2.13 | 0.84 |
| 1:0:50:G:H2' | 1:0:117:A:N1 | 1.93 | 0.83 |
| 1:0:1469:U:H5' | 1:0:1470:G:N7 | 1.92 | 0.83 |
| 1:0:689:A:H8 | 1:0:2422:C:H1' | 1.43 | 0.83 |
| 1:0:1664:G:H4' | 1:0:1665:C:OP1 | 1.78 | 0.83 |
| 1:0:931:G:H22 | 1:0:2247:A:H3' | 1.42 | 0.83 |
| 1:0:2764:U:H2' | 1:0:2765:C:C6 | 2.13 | 0.83 |
| 1:0:2769:C:H3' | 1:0:2770:A:H8 | 1.41 | 0.83 |
| 1:0:2820:C:H2' | 1:0:2821:G:C8 | 2.13 | 0.83 |
| 1:0:853:C:H1' | 1:0:950:G:N2 | 1.93 | 0.83 |
| 1:0:1621:C:C4' | 1:0:1626:A:N6 | 2.41 | 0.83 |
| 1:0:2329:C:H2' | 1:0:2330:G:O4' | 1.77 | 0.83 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2787:A:H2' | 1:0:2788:C:H6 | 1.43 | 0.83 |
| 1:0:1284:G:C4 | 1:0:1633:C:H5' | 2.14 | 0.83 |
| 1:0:1807:A:C1' | 1:0:1809:G:H1' | 2.08 | 0.83 |
| 1:0:2494:C:H2' | 1:0:2495:G:C8 | 2.13 | 0.83 |
| 1:0:677:G:H1' | 1:0:951:G:H5'' | 1.59 | 0.83 |
| 1:0:2038:C:H42 | 1:0:2479:U:H4' | 1.41 | 0.83 |
| 2:9:7:C:O2' | 2:9:8:C:H5' | 1.78 | 0.83 |
| 2:9:31:A:H2' | 2:9:32:C:H6 | 1.43 | 0.83 |
| 1:0:175:C:H42 | 1:0:225:G:H1 | 1.26 | 0.83 |
| 1:0:1293:A:O2' | 1:0:1294:G:H5' | 1.78 | 0.83 |
| 1:0:1469:U:H5' | 1:0:1470:G:C8 | 2.12 | 0.83 |
| 1:0:1900:U:O2' | 1:0:1946:U:H5' | 1.77 | 0.83 |
| 1:0:428:A:H2' | 1:0:429:C:C6 | 2.14 | 0.83 |
| 1:0:550:C:H2' | 1:0:551:A:C8 | 2.14 | 0.83 |
| 1:0:712:A:H2' | 1:0:713:G:O4' | 1.79 | 0.83 |
| 1:0:1645:U:H2' | 1:0:1646:G:C8 | 2.13 | 0.83 |
| 1:0:1959:U:H2' | 1:0:1960:A:C8 | 2.14 | 0.83 |
| 1:0:796:A:H4' | 1:0:2567:G:O3' | 1.78 | 0.83 |
| 1:0:1541:G:H22 | 1:0:1562:G:N2 | 1.77 | 0.83 |
| 1:0:1791:C:C2' | 1:0:1792:C:H5'' | 2.08 | 0.83 |
| 1:0:2607:C:H3' | 1:0:2608:A:C5' | 2.09 | 0.82 |
| 1:0:867:G:H2' | 1:0:868:U:C6 | 2.14 | 0.82 |
| 1:0:1010:U:H2' | 1:0:1011:A:C8 | 2.14 | 0.82 |
| 1:0:1052:C:H2' | 1:0:1053:G:C8 | 2.14 | 0.82 |
| 1:0:2628:C:H2' | 1:0:2629:U:C6 | 2.14 | 0.82 |
| 1:0:1355:A:N7 | 1:0:1410:U:H1' | 1.93 | 0.82 |
| 1:0:1665:C:O2' | 1:0:1666:G:H5' | 1.79 | 0.82 |
| 1:0:1976:U:C2' | 1:0:1977:C:H5' | 2.10 | 0.82 |
| 1:0:2266:A:H2' | 1:0:2268:G:C8 | 2.13 | 0.82 |
| 1:0:483:A:H2' | 1:0:484:G:H5'' | 1.60 | 0.82 |
| 1:0:1174:G:O2' | 1:0:1175:A:H5' | 1.78 | 0.82 |
| 1:0:538:A:O5' | 1:0:538:A:H8 | 1.63 | 0.82 |
| 1:0:820:U:H2' | 1:0:821:A:C8 | 2.13 | 0.82 |
| 1:0:841:G:H2' | 1:0:842:A:C8 | 2.14 | 0.82 |
| 1:0:1883:A:H1' | 1:0:1953:A:H62 | 1.43 | 0.82 |
| 1:0:2824:C:N4 | 1:0:2842:C:H1' | 1.94 | 0.82 |
| 1:0:524:A:O2' | 1:0:525:A:H5' | 1.79 | 0.82 |
| 1:0:995:A:H5'' | 1:0:996:C:H5 | 1.43 | 0.82 |
| 1:0:1291:G:O2' | 1:0:1292:A:H5' | 1.80 | 0.82 |
| 1:0:2319:G:H2' | 1:0:2320:G:H8 | 1.40 | 0.82 |
| 1:0:1198:C:C5' | 1:0:1199:U:H4' | 2.08 | 0.81 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1470:G:H22 | 1:0:2684:A:H1' | 1.45 | 0.81 |
| 1:0:571:U:H2' | 1:0:581:A:C8 | 2.15 | 0.81 |
| 1:0:1106:A:H2' | 1:0:1107:A:C8 | 2.15 | 0.81 |
| 1:0:1655:C:OP1 | 1:0:2690:A:H5' | 1.79 | 0.81 |
| 1:0:2012:A:N7 | 1:0:2014:A:H5' | 1.94 | 0.81 |
| 1:0:2327:U:H2' | 1:0:2328:G:H8 | 1.42 | 0.81 |
| 1:0:2396:C:O2' | 1:0:2397:A:H5' | 1.81 | 0.81 |
| 1:0:2658:A:O2' | 1:0:2659:C:H5' | 1.79 | 0.81 |
| 1:0:1252:C:C2' | 1:0:1253:C:H5'' | 2.10 | 0.81 |
| 1:0:1925:C:H2' | 1:0:1926:U:H5 | 1.46 | 0.81 |
| 1:0:2078:G:N2 | 1:0:2178:U:H1' | 1.95 | 0.81 |
| 1:0:2642:G:O2' | 1:0:2643:G:H5' | 1.81 | 0.81 |
| 1:0:468:A:O2' | 1:0:469:G:H4' | 1.81 | 0.81 |
| 1:0:478:G:H2' | 1:0:479:G:H8 | 1.43 | 0.81 |
| 1:0:584:A:C4' | 1:0:2038:C:H41 | 1.92 | 0.81 |
| 1:0:2194:A:C2' | 1:0:2195:C:H5'' | 2.11 | 0.81 |
| 1:0:2199:C:H2' | 1:0:2200:G:C8 | 2.14 | 0.81 |
| 1:0:2499:C:H41 | 1:0:2521:A:H2 | 1.26 | 0.81 |
| 1:0:652:C:H42 | 1:0:657:A:H61 | 0.85 | 0.81 |
| 1:0:799:C:H2' | 1:0:800:U:H6 | 1.44 | 0.81 |
| 1:0:2788:C:O2' | 1:0:2789:U:H5' | 1.80 | 0.81 |
| 1:0:494:A:H2' | 1:0:495:C:O4' | 1.81 | 0.81 |
| 1:0:2468:G:H2' | 1:0:2469:G:C5' | 2.11 | 0.81 |
| 1:0:918:A:C2' | 1:0:919:U:H5'' | 2.10 | 0.81 |
| 1:0:1068:A:H2' | 1:0:1069:G:C8 | 2.15 | 0.81 |
| 1:0:1935:A:H2 | 1:0:2539:C:O2 | 1.64 | 0.81 |
| 1:0:432:C:H2' | 1:0:433:G:H8 | 1.46 | 0.80 |
| 1:0:1323:G:H1' | 1:0:1627:C:H5' | 1.63 | 0.80 |
| 1:0:1791:C:H2' | 1:0:1792:C:C5' | 2.11 | 0.80 |
| 1:0:1807:A:O2' | 1:0:1808:C:H4' | 1.81 | 0.80 |
| 1:0:1489:C:H3' | 1:0:1490:U:H5' | 1.61 | 0.80 |
| 1:0:2040:A:H2' | 1:0:2041:A:C8 | 2.15 | 0.80 |
| 1:0:2433:G:H2' | 1:0:2434:G:H8 | 1.44 | 0.80 |
| 1:0:313:U:H2' | 1:0:314:G:C8 | 2.16 | 0.80 |
| 1:0:755:C:H2' | 1:0:756:C:H6 | 1.43 | 0.80 |
| 1:0:867:G:H2' | 1:0:868:U:H6 | 1.45 | 0.80 |
| 1:0:1479:G:H2' | 1:0:1480:G:C8 | 2.16 | 0.80 |
| 1:0:2508:G:H5'' | 1:0:2509:A:H5'' | 1.62 | 0.80 |
| 2:9:92:G:C2' | 2:9:93:G:H5' | 2.10 | 0.80 |
| 1:0:1430:G:N2 | 1:0:1599:G:H1' | 1.96 | 0.80 |
| 1:0:1727:C:H4' | 1:0:2833:C:O2 | 1.81 | 0.80 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1414:G:H21 | 1:0:1484:G:H21 | 1.27 | 0.80 |
| 1:0:2185:U:H2' | 1:0:2186:G:C8 | 2.16 | 0.80 |
| 1:0:58:C:H1' | 1:0:72:A:C8 | 2.17 | 0.80 |
| 1:0:2669:C:H41 | 14:L:15:SER:CA | 1.94 | 0.80 |
| 1:0:2856:U:H2' | 1:0:2857:C:H6 | 1.47 | 0.80 |
| 1:0:2672:U:H2' | 1:0:2673:G:H8 | 1.47 | 0.80 |
| 1:0:523:A:C2 | 1:0:591:G:H4' | 2.16 | 0.79 |
| 1:0:2783:U:H2' | 1:0:2784:A:H4' | 1.64 | 0.79 |
| 1:0:170:U:O2' | 1:0:171:G:H5' | 1.82 | 0.79 |
| 1:0:693:A:H2' | 1:0:694:G:C8 | 2.16 | 0.79 |
| 1:0:1621:C:H4' | 1:0:1626:A:H62 | 1.44 | 0.79 |
| 1:0:1764:A:C5 | 1:0:1821:A:H1' | 2.17 | 0.79 |
| 2:9:4:C:H2' | 2:9:5:C:C6 | 2.17 | 0.79 |
| 1:0:870:C:H2' | 1:0:871:U:H6 | 1.47 | 0.79 |
| 1:0:2758:A:H4' | 1:0:2759:U:H5 | 1.47 | 0.79 |
| 1:0:512:A:H2' | 1:0:513:A:H5' | 1.64 | 0.79 |
| 1:0:969:U:N3 | 2:9:92:G:H4' | 1.96 | 0.79 |
| 1:0:1719:G:H2' | 1:0:1720:G:H8 | 1.47 | 0.79 |
| 1:0:2012:A:C5 | 1:0:2014:A:H5' | 2.18 | 0.79 |
| 1:0:1655:C:H5'' | 1:0:2689:C:O2' | 1.82 | 0.79 |
| 1:0:1222:G:H1' | 1:0:1251:G:N2 | 1.98 | 0.79 |
| 1:0:1226:A:C2 | 1:0:1250:A:H1' | 2.16 | 0.79 |
| 1:0:1692:C:H2' | 1:0:1693:A:C5' | 2.13 | 0.79 |
| 1:0:369:C:H2' | 1:0:370:U:C6 | 2.18 | 0.79 |
| 1:0:1004:A:H2' | 1:0:1005:U:H5' | 1.63 | 0.79 |
| 1:0:218:A:O2' | 1:0:219:G:H4' | 1.82 | 0.79 |
| 1:0:317:U:H3 | 1:0:321:A:H62 | 1.28 | 0.79 |
| 1:0:1847:G:H2' | 1:0:1848:U:C6 | 2.18 | 0.79 |
| 1:0:1888:C:H5'' | 1:0:1889:G:H5'' | 1.65 | 0.79 |
| 1:0:986:A:C8 | 1:0:987:G:C8 | 2.71 | 0.79 |
| 1:0:1004:A:H2' | 1:0:1005:U:C5' | 2.13 | 0.79 |
| 1:0:1486:A:H2' | 1:0:1487:C:C6 | 2.17 | 0.79 |
| 1:0:2469:G:H4' | 1:0:2470:U:H5 | 1.46 | 0.79 |
| 1:0:826:U:H2' | 1:0:827:C:C6 | 2.18 | 0.78 |
| 1:0:2177:U:H2' | 1:0:2178:U:C6 | 2.18 | 0.78 |
| 1:0:584:A:H2' | 1:0:585:U:H6 | 1.48 | 0.78 |
| 1:0:927:C:C2' | 1:0:928:G:H5' | 2.13 | 0.78 |
| 1:0:1026:U:H2' | 1:0:1027:C:C6 | 2.18 | 0.78 |
| 1:0:1407:G:H2' | 1:0:1408:A:O4' | 1.83 | 0.78 |
| 1:0:60:A:H61 | 1:0:91:A:H61 | 1.31 | 0.78 |
| 1:0:1474:A:H3' | 1:0:1474:A:N3 | 1.98 | 0.78 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:11:G:H2' | 1:0:12:U:O4' | 1.84 | 0.78 |
| 1:0:2791:C:O2' | 1:0:2792:C:H5' | 1.83 | 0.78 |
| 1:0:956:A:C2 | 1:0:2427:A:O2' | 2.37 | 0.78 |
| 1:0:1621:C:H4' | 1:0:1626:A:H61 | 1.49 | 0.78 |
| 1:0:1218:C:H2' | 1:0:1219:C:H6 | 1.43 | 0.78 |
| 1:0:1341:G:H2' | 1:0:1343:C:C4 | 2.19 | 0.78 |
| 1:0:2817:A:C2 | 1:0:2851:G:C2 | 2.72 | 0.78 |
| 1:0:1409:U:H5'' | 1:0:1410:U:OP2 | 1.84 | 0.78 |
| 1:0:1453:A:C2' | 1:0:1454:U:H5' | 2.14 | 0.78 |
| 1:0:1989:C:O2' | 1:0:1990:U:H5' | 1.84 | 0.78 |
| 1:0:2448:A:H2' | 1:0:2449:G:O4' | 1.84 | 0.78 |
| 2:9:93:G:H2' | 2:9:94:G:H8 | 1.49 | 0.78 |
| 1:0:677:G:C1' | 1:0:951:G:H5'' | 2.13 | 0.77 |
| 1:0:1636:G:H2' | 1:0:1637:U:H6 | 1.46 | 0.77 |
| 1:0:2468:G:C2' | 1:0:2469:G:H5' | 2.14 | 0.77 |
| 1:0:1674:C:H2' | 1:0:1675:C:H6 | 1.48 | 0.77 |
| 2:9:58:G:H4' | 2:9:59:A:H5' | 1.65 | 0.77 |
| 1:0:343:A:H2' | 1:0:345:U:OP2 | 1.84 | 0.77 |
| 1:0:2503:G:H2' | 1:0:2504:G:H5'' | 1.65 | 0.77 |
| 1:0:922:A:C2' | 1:0:923:A:H8 | 1.94 | 0.77 |
| 1:0:1254:G:H2' | 1:0:1255:A:C8 | 2.18 | 0.77 |
| 1:0:1572:C:H2' | 1:0:1573:G:C5' | 2.10 | 0.77 |
| 1:0:932:G:H2' | 1:0:933:G:C8 | 2.19 | 0.77 |
| 1:0:1183:C:H42 | 1:0:1190:C:H42 | 1.33 | 0.77 |
| 1:0:640:C:H2' | 1:0:641:G:O4' | 1.85 | 0.77 |
| 1:0:1685:A:H1' | 1:0:1686:A:C2 | 2.20 | 0.77 |
| 1:0:1861:G:O2' | 1:0:1862:C:H5' | 1.85 | 0.77 |
| 1:0:1666:G:H2' | 1:0:1667:A:H8 | 1.48 | 0.77 |
| 1:0:2005:U:H2' | 1:0:2595:C:O2' | 1.84 | 0.77 |
| 2:9:84:G:H2' | 2:9:85:G:H8 | 1.48 | 0.77 |
| 1:0:456:C:O2' | 1:0:457:C:H5' | 1.85 | 0.77 |
| 1:0:632:A:H2' | 1:0:633:G:H5' | 1.66 | 0.77 |
| 1:0:776:G:H2' | 1:0:778:G:H5'' | 1.67 | 0.77 |
| 1:0:1280:U:C2' | 1:0:1281:A:H5' | 2.15 | 0.77 |
| 1:0:1470:G:N2 | 1:0:2684:A:H1' | 2.00 | 0.77 |
| 1:0:2201:G:H2' | 1:0:2202:G:H8 | 1.50 | 0.77 |
| 1:0:1479:G:H2' | 1:0:1480:G:H8 | 1.48 | 0.76 |
| 1:0:1700:C:H2' | 1:0:1701:C:C6 | 2.20 | 0.76 |
| 1:0:1280:U:H2' | 1:0:1281:A:H5' | 1.67 | 0.76 |
| 1:0:2539:C:H42 | 1:0:2540:A:N6 | 1.84 | 0.76 |
| 1:0:958:G:H2' | 1:0:959:C:H6 | 1.47 | 0.76 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1284:G:N3 | 1:0:1633:C:H5' | 2.00 | 0.76 |
| 1:0:2233:C:H2' | 1:0:2234:G:H8 | 1.49 | 0.76 |
| 1:0:1299:A:N6 | 1:0:1302:C:C4 | 2.53 | 0.76 |
| 1:0:1323:G:C1' | 1:0:1627:C:H5'' | 2.14 | 0.76 |
| 1:0:1747:G:H4' | 1:0:1749:G:H1' | 1.68 | 0.76 |
| 1:0:2548:G:C2' | 1:0:2549:G:H5'' | 2.15 | 0.76 |
| 1:0:79:G:H2' | 1:0:80:A:H8 | 1.50 | 0.76 |
| 1:0:951:G:H2' | 1:0:952:A:H5'' | 1.67 | 0.76 |
| 1:0:1911:A:C2' | 1:0:1912:G:H5' | 2.16 | 0.76 |
| 1:0:2770:A:H4' | 1:0:2867:G:H22 | 1.48 | 0.76 |
| 1:0:186:C:H2' | 1:0:187:U:C6 | 2.21 | 0.76 |
| 1:0:1383:C:H2' | 1:0:1384:G:C8 | 2.21 | 0.76 |
| 1:0:195:A:H61 | 1:0:212:U:H4' | 1.50 | 0.76 |
| 1:0:977:G:H5' | 1:0:2251:U:O2 | 1.86 | 0.76 |
| 1:0:1355:A:C8 | 1:0:1410:U:H1' | 2.21 | 0.76 |
| 1:0:2019:C:O2' | 1:0:2020:G:H5' | 1.84 | 0.76 |
| 1:0:2380:U:H2' | 1:0:2381:A:H5' | 1.66 | 0.76 |
| 1:0:2498:U:H2' | 1:0:2520:A:N1 | 2.01 | 0.76 |
| 1:0:1715:A:H1' | 1:0:1717:A:C4' | 2.15 | 0.76 |
| 1:0:2209:G:H2' | 1:0:2210:C:H6 | 1.51 | 0.76 |
| 1:0:590:C:H2' | 1:0:591:G:C8 | 2.21 | 0.76 |
| 1:0:1586:A:H2' | 1:0:1587:A:C8 | 2.21 | 0.76 |
| 1:0:81:C:H4' | 1:0:307:C:H5' | 1.68 | 0.76 |
| 1:0:560:G:H21 | 1:0:1233:A:H2 | 1.32 | 0.76 |
| 1:0:575:U:H2' | 1:0:576:A:C8 | 2.21 | 0.76 |
| 1:0:2764:U:H2' | 1:0:2765:C:H6 | 1.48 | 0.75 |
| 1:0:520:C:H2' | 1:0:521:U:O4' | 1.86 | 0.75 |
| 1:0:1363:C:O2' | 1:0:1364:C:H5' | 1.85 | 0.75 |
| 1:0:1373:G:H2' | 1:0:1374:G:H5' | 1.67 | 0.75 |
| 1:0:521:U:H5 | 1:0:522:G:N3 | 1.84 | 0.75 |
| 1:0:837:U:H2' | 1:0:838:A:H8 | 1.48 | 0.75 |
| 1:0:1655:C:H4' | 1:0:2689:C:O2 | 1.86 | 0.75 |
| 1:0:2194:A:H2' | 1:0:2195:C:H5'' | 1.67 | 0.75 |
| 1:0:2241:U:H4' | 1:0:2307:A:H2 | 1.48 | 0.75 |
| 1:0:1760:G:H1' | 1:0:1941:C:OP1 | 1.86 | 0.75 |
| 1:0:2570:C:H2' | 1:0:2571:G:C8 | 2.21 | 0.75 |
| 1:0:79:G:O2' | 1:0:80:A:H5' | 1.86 | 0.75 |
| 1:0:391:C:O2' | 1:0:392:G:H5' | 1.86 | 0.75 |
| 1:0:2756:A:C6 | 1:0:2762:G:H1' | 2.21 | 0.75 |
| 1:0:543:G:H2' | 1:0:544:U:C6 | 2.21 | 0.75 |
| 1:0:991:A:H62 | 1:0:992:A:N6 | 1.85 | 0.75 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:0:1619:A:H2 | 1:0:1620:C:C4 | 2.04 | 0.75 |
| 1:0:2378:G:N2 | 1:0:2397:A:H1' | 2.01 | 0.75 |
| 1:0:703:A:H2' | 1:0:704:G:H8 | 1.49 | 0.75 |
| 1:0:2733:A:O2' | 1:0:2734:U:H5' | 1.87 | 0.75 |
| 1:0:2758:A:H4' | 1:0:2759:U:C5 | 2.22 | 0.75 |
| 32:0:2881:MUL:H14 | 32:0:2881:MUL:H10 | 1.67 | 0.75 |
| 2:9:31:A:H2' | 2:9:32:C:C6 | 2.22 | 0.75 |
| 1:0:785:U:H5' | 1:0:1368:G:O2' | 1.86 | 0.75 |
| 1:0:1348:C:H2' | 1:0:1349:A:H8 | 1.52 | 0.75 |
| 1:0:1541:G:H22 | 1:0:1562:G:H22 | 1.30 | 0.75 |
| 1:0:442:A:H62 | 1:0:443:A:N6 | 1.85 | 0.74 |
| 1:0:488:A:H8 | 1:0:488:A:OP1 | 1.69 | 0.74 |
| 1:0:859:U:H4' | 1:0:860:U:C5 | 2.21 | 0.74 |
| 2:9:12:C:H2' | 2:9:13:C:O4' | 1.87 | 0.74 |
| 1:0:796:A:C5' | 1:0:2568:A:OP1 | 2.31 | 0.74 |
| 1:0:836:G:H2' | 1:0:837:U:H6 | 1.52 | 0.74 |
| 1:0:1750:A:H1' | 1:0:2690:A:C2 | 2.22 | 0.74 |
| 1:0:1362:A:O5' | 1:0:1362:A:H8 | 1.70 | 0.74 |
| 1:0:1445:A:H2' | 1:0:1446:U:O4' | 1.86 | 0.74 |
| 1:0:1489:C:H3' | 1:0:1490:U:C5' | 2.18 | 0.74 |
| 2:9:6:C:H2' | 2:9:7:C:C6 | 2.22 | 0.74 |
| 1:0:976:C:H5' | 1:0:2252:A:H1' | 1.69 | 0.74 |
| 1:0:2742:G:H2' | 1:0:2743:G:C8 | 2.22 | 0.74 |
| 1:0:2829:A:H2' | 1:0:2830:U:O4' | 1.86 | 0.74 |
| 1:0:2832:G:N2 | 1:0:2835:A:OP2 | 2.21 | 0.74 |
| 1:0:107:G:C6 | 1:0:108:G:N7 | 2.55 | 0.74 |
| 1:0:1660:G:H2' | 1:0:1661:C:O4' | 1.87 | 0.74 |
| 1:0:1791:C:H1' | 1:0:1793:A:H5' | 1.68 | 0.74 |
| 1:0:88:G:H3' | 1:0:89:A:H5'' | 1.70 | 0.74 |
| 1:0:392:G:N2 | 1:0:408:U:H3 | 1.86 | 0.74 |
| 1:0:633:G:O2' | 1:0:634:G:H5' | 1.88 | 0.74 |
| 1:0:1970:G:O2' | 1:0:1971:C:H5' | 1.87 | 0.74 |
| 1:0:2185:U:H2' | 1:0:2186:G:H8 | 1.51 | 0.74 |
| 1:0:1941:C:O2' | 1:0:1942:G:H5' | 1.87 | 0.74 |
| 1:0:1999:U:H2' | 1:0:2000:U:O4' | 1.87 | 0.74 |
| 1:0:83:A:H2 | 1:0:98:U:H1' | 1.50 | 0.74 |
| 1:0:167:A:H2' | 1:0:168:A:C8 | 2.23 | 0.74 |
| 1:0:556:A:H2' | 1:0:557:U:H5' | 1.70 | 0.74 |
| 1:0:1271:C:H2' | 1:0:1272:G:C8 | 2.23 | 0.74 |
| 1:0:1083:C:H42 | 1:0:1103:C:H41 | 1.36 | 0.74 |
| 1:0:1164:C:H2' | 1:0:1165:G:C8 | 2.23 | 0.74 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:759:C:C2 | 1:0:2590:U:H4' | 2.22 | 0.73 |
| 1:0:1503:G:H2' | 1:0:1504:G:C8 | 2.23 | 0.73 |
| 1:0:1825:C:O2' | 1:0:1826:U:H5' | 1.88 | 0.73 |
| 2:9:36:A:H2' | 2:9:46:G:O6 | 1.88 | 0.73 |
| 1:0:579:G:H2' | 1:0:2013:A:N6 | 2.03 | 0.73 |
| 1:0:1125:G:H2' | 1:0:1126:A:C8 | 2.22 | 0.73 |
| 1:0:1463:A:C1' | 1:0:1543:G:H22 | 1.98 | 0.73 |
| 1:0:1222:G:C1' | 1:0:1251:G:N2 | 2.52 | 0.73 |
| 1:0:1773:C:O5' | 1:0:1773:C:H6 | 1.72 | 0.73 |
| 1:0:537:C:H1' | 1:0:2759:U:O2 | 1.88 | 0.73 |
| 1:0:875:G:N2 | 1:0:928:G:H1' | 2.03 | 0.73 |
| 1:0:1312:G:H5'' | 1:0:1313:U:H5'' | 1.70 | 0.73 |
| 1:0:1459:U:H2' | 1:0:1475:U:O2' | 1.88 | 0.73 |
| 1:0:1621:C:H2' | 1:0:1622:G:O4' | 1.89 | 0.73 |
| 1:0:2288:A:H2' | 1:0:2289:A:O4' | 1.88 | 0.73 |
| 1:0:2484:G:H3' | 1:0:2555:G:N2 | 2.00 | 0.73 |
| 1:0:708:G:H1 | 1:0:780:U:H3 | 1.36 | 0.73 |
| 1:0:1619:A:H2 | 1:0:1620:C:C5 | 2.06 | 0.73 |
| 1:0:1135:C:H2' | 1:0:1136:G:C8 | 2.22 | 0.73 |
| 1:0:2491:C:H2' | 1:0:2492:G:O4' | 1.88 | 0.73 |
| 1:0:1271:C:H2' | 1:0:1272:G:H8 | 1.54 | 0.73 |
| 1:0:1692:C:H2' | 1:0:1693:A:H5' | 1.70 | 0.73 |
| 1:0:1938:U:C2' | 1:0:1939:U:H5' | 2.19 | 0.73 |
| 1:0:2059:U:P | 1:0:2217:G:H1 | 2.12 | 0.73 |
| 1:0:2418:A:H2 | 1:0:2564:U:H4' | 1.54 | 0.73 |
| 1:0:616:U:C2' | 1:0:617:U:H5'' | 2.15 | 0.73 |
| 1:0:651:C:H2' | 1:0:652:C:H5'' | 1.70 | 0.73 |
| 1:0:2177:U:H2' | 1:0:2178:U:H6 | 1.51 | 0.73 |
| 1:0:2475:C:H2' | 1:0:2476:A:H5' | 1.70 | 0.73 |
| 1:0:759:C:N3 | 1:0:2590:U:O3' | 2.22 | 0.73 |
| 1:0:831:G:H2' | 1:0:832:A:H5'' | 1.70 | 0.73 |
| 1:0:2079:A:H2' | 1:0:2080:U:C6 | 2.24 | 0.73 |
| 1:0:400:U:H4' | 1:0:401:G:C5 | 2.24 | 0.72 |
| 1:0:649:G:H2' | 1:0:650:U:H6 | 1.54 | 0.72 |
| 1:0:1110:G:H2' | 1:0:1111:C:C6 | 2.24 | 0.72 |
| 1:0:2245:A:H4' | 1:0:2246:A:C5 | 2.23 | 0.72 |
| 1:0:2847:G:C2 | 1:0:2848:A:N6 | 2.57 | 0.72 |
| 1:0:704:G:H2' | 1:0:705:C:H6 | 1.53 | 0.72 |
| 1:0:808:C:H2' | 1:0:809:C:C6 | 2.24 | 0.72 |
| 1:0:836:G:O2' | 1:0:837:U:H5' | 1.90 | 0.72 |
| 1:0:1653:C:H2' | 1:0:1654:A:C8 | 2.24 | 0.72 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2052:G:H2' | 1:0:2053:G:H5' | 1.70 | 0.72 |
| 1:0:687:G:O2' | 1:0:688:A:H5' | 1.89 | 0.72 |
| 1:0:704:G:O2' | 1:0:705:C:H5' | 1.90 | 0.72 |
| 1:0:1691:G:H21 | 1:0:1694:A:H61 | 1.36 | 0.72 |
| 1:0:2515:G:H2' | 1:0:2516:U:C6 | 2.24 | 0.72 |
| 1:0:79:G:H2' | 1:0:80:A:C8 | 2.24 | 0.72 |
| 1:0:457:C:H2' | 1:0:458:G:O4' | 1.88 | 0.72 |
| 1:0:677:G:H4' | 1:0:951:G:O3' | 1.90 | 0.72 |
| 1:0:2639:A:H2' | 1:0:2640:G:H8 | 1.54 | 0.72 |
| 2:9:78:A:H2' | 2:9:79:U:C6 | 2.24 | 0.72 |
| 1:0:313:U:H2' | 1:0:314:G:H8 | 1.51 | 0.72 |
| 1:0:1008:G:O2' | 1:0:1009:C:H5' | 1.89 | 0.72 |
| 1:0:2592:U:H3' | 1:0:2592:U:H6 | 1.55 | 0.72 |
| 1:0:2656:G:C2 | 1:0:2711:G:C2 | 2.78 | 0.72 |
| 1:0:2672:U:H2' | 1:0:2673:G:C8 | 2.24 | 0.72 |
| 1:0:1125:G:H2' | 1:0:1126:A:H8 | 1.54 | 0.72 |
| 1:0:473:C:H2' | 1:0:474:G:H8 | 1.54 | 0.72 |
| 1:0:2262:C:H2' | 1:0:2263:C:H6 | 1.55 | 0.72 |
| 1:0:2466:G:O2' | 1:0:2467:A:H5' | 1.89 | 0.72 |
| 1:0:2639:A:H2' | 1:0:2640:G:C8 | 2.24 | 0.72 |
| 1:0:2693:U:H5'' | 1:0:2694:G:OP2 | 1.90 | 0.72 |
| 1:0:1800:A:H2' | 1:0:1802:A:H62 | 1.55 | 0.72 |
| 1:0:550:C:H2' | 1:0:551:A:H8 | 1.55 | 0.72 |
| 1:0:698:A:HO2' | 1:0:700:C:H5 | 1.37 | 0.72 |
| 1:0:976:C:H2' | 1:0:977:G:C8 | 2.25 | 0.72 |
| 1:0:1190:C:H2' | 1:0:1191:G:C8 | 2.24 | 0.72 |
| 1:0:2225:G:H2' | 1:0:2226:A:C8 | 2.25 | 0.72 |
| 1:0:757:U:O2 | 1:0:767:G:N2 | 2.23 | 0.71 |
| 1:0:1140:A:C2 | 1:0:2549:G:O4' | 2.43 | 0.71 |
| 1:0:2740:C:O2' | 1:0:2741:G:H5' | 1.90 | 0.71 |
| 1:0:357:A:H3' | 1:0:358:C:H5' | 1.71 | 0.71 |
| 1:0:167:A:H3' | 1:0:181:A:C2 | 2.25 | 0.71 |
| 1:0:366:U:H2' | 1:0:367:G:C8 | 2.25 | 0.71 |
| 1:0:498:C:C5 | 1:0:499:G:N7 | 2.58 | 0.71 |
| 1:0:930:A:C8 | 2:9:82:U:H4' | 2.25 | 0.71 |
| 1:0:1287:A:C6 | 1:0:1315:A:C2 | 2.77 | 0.71 |
| 1:0:2162:C:H2' | 1:0:2163:U:H6 | 1.50 | 0.71 |
| 1:0:2447:G:O2' | 1:0:2448:A:C5' | 2.37 | 0.71 |
| 1:0:2808:U:H3' | 1:0:2809:A:H5' | 1.70 | 0.71 |
| 1:0:1641:C:H3' | 1:0:1642:G:H8 | 1.53 | 0.71 |
| 2:9:28:A:C2 | 2:9:29:C:H1' | 2.26 | 0.71 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 2:9:29:C:H2' | 2:9:30:C:C6 | 2.26 | 0.71 |
| 1:0:74:G:H2' | 1:0:75:C:H6 | 1.55 | 0.71 |
| 1:0:1199:U:H3' | 1:0:1200:G:H5'' | 1.72 | 0.71 |
| 1:0:1313:U:H4' | 1:0:1314:A:C1' | 2.20 | 0.71 |
| 1:0:2367:A:N7 | 1:0:2368:G:C6 | 2.58 | 0.71 |
| 1:0:2523:G:O2' | 1:0:2524:G:H5' | 1.90 | 0.71 |
| 1:0:471:A:C2 | 1:0:481:A:C4 | 2.78 | 0.71 |
| 1:0:876:A:H4' | 2:9:103:A:N3 | 2.05 | 0.71 |
| 1:0:1223:G:N2 | 1:0:1225:G:H21 | 1.89 | 0.71 |
| 1:0:1248:G:O2' | 1:0:1249:G:H5' | 1.91 | 0.71 |
| 1:0:1679:U:H2' | 1:0:1680:U:O4' | 1.89 | 0.71 |
| 1:0:1780:A:H8 | 1:0:1780:A:O5' | 1.72 | 0.71 |
| 1:0:1785:A:H4' | 1:0:1883:A:C2 | 2.25 | 0.71 |
| 1:0:2650:G:O2' | 1:0:2651:U:H5' | 1.90 | 0.71 |
| 1:0:2824:C:H1' | 1:0:2843:A:N1 | 2.05 | 0.71 |
| 1:0:236:C:H2' | 1:0:237:G:H8 | 1.56 | 0.71 |
| 1:0:322:A:H1' | 1:0:343:A:C5 | 2.26 | 0.71 |
| 1:0:1333:G:N2 | 1:0:1344:C:N4 | 2.38 | 0.71 |
| 1:0:1517:C:H2' | 1:0:1518:C:C6 | 2.26 | 0.71 |
| 1:0:2052:G:C2' | 1:0:2053:G:H5' | 2.20 | 0.71 |
| 1:0:2327:U:H2' | 1:0:2328:G:C8 | 2.25 | 0.71 |
| 2:9:40:C:H2' | 2:9:41:A:O4' | 1.90 | 0.71 |
| 1:0:852:U:H2' | 1:0:853:C:C6 | 2.26 | 0.71 |
| 1:0:1497:C:O2' | 1:0:1498:G:H5' | 1.90 | 0.71 |
| 1:0:1572:C:C3' | 1:0:1573:G:H5'' | 2.20 | 0.71 |
| 1:0:1855:G:H2' | 1:0:1856:U:C6 | 2.25 | 0.71 |
| 2:9:4:C:H2' | 2:9:5:C:H6 | 1.53 | 0.71 |
| 1:0:17:G:H2' | 1:0:18:U:C6 | 2.26 | 0.71 |
| 1:0:181:A:H5'' | 1:0:182:G:OP1 | 1.90 | 0.71 |
| 1:0:1624:A:H2' | 1:0:1625:A:H5'' | 1.72 | 0.71 |
| 1:0:2015:G:H22 | 1:0:2038:C:H1' | 1.55 | 0.71 |
| 1:0:2633:A:H4' | 1:0:2634:G:H4' | 1.72 | 0.71 |
| 1:0:2739:G:O2' | 1:0:2740:C:H5' | 1.91 | 0.71 |
| 1:0:2785:A:H2' | 1:0:2786:G:O4' | 1.90 | 0.71 |
| 1:0:984:A:H2 | 1:0:1200:G:N1 | 1.83 | 0.70 |
| 1:0:1519:G:O2' | 1:0:1520:G:H5' | 1.91 | 0.70 |
| 1:0:1671:A:H2' | 1:0:1672:A:H8 | 1.55 | 0.70 |
| 1:0:1975:G:N2 | 1:0:1978:U:H5 | 1.89 | 0.70 |
| 1:0:2627:G:H21 | 11:I:38:GLY:CA | 2.04 | 0.70 |
| 1:0:2856:U:C6 | 1:0:2857:C:H5 | 2.09 | 0.70 |
| 1:0:1333:G:N2 | 1:0:1344:C:H41 | 1.89 | 0.70 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2532:G:C2 | 1:0:2533:U:H1' | 2.25 | 0.70 |
| 1:0:139:A:H2' | 1:0:140:G:H8 | 1.56 | 0.70 |
| 1:0:191:G:O2' | 1:0:192:G:H5' | 1.91 | 0.70 |
| 1:0:798:G:O2' | 1:0:1770:U:H4' | 1.91 | 0.70 |
| 1:0:2856:U:H2' | 1:0:2857:C:C6 | 2.26 | 0.70 |
| 1:0:461:A:C2 | 1:0:462:G:C4 | 2.79 | 0.70 |
| 1:0:825:C:O2' | 1:0:826:U:H5' | 1.91 | 0.70 |
| 1:0:1800:A:H2' | 1:0:1802:A:C6 | 2.27 | 0.70 |
| 1:0:545:C:O2' | 1:0:546:A:H5' | 1.92 | 0.70 |
| 1:0:743:A:C2 | 1:0:744:C:C2 | 2.80 | 0.70 |
| 1:0:772:G:H2' | 1:0:773:G:C8 | 2.18 | 0.70 |
| 1:0:998:C:H2' | 1:0:999:A:O4' | 1.91 | 0.70 |
| 1:0:1816:G:O2' | 1:0:1817:U:H5' | 1.92 | 0.70 |
| 1:0:1939:U:H1' | 1:0:2531:U:OP1 | 1.92 | 0.70 |
| 1:0:1990:U:C4 | 1:0:1991:C:N4 | 2.60 | 0.70 |
| 1:0:2216:G:O5' | 1:0:2216:G:H8 | 1.74 | 0.70 |
| 1:0:2502:G:C8 | 1:0:2745:A:N7 | 2.59 | 0.70 |
| 1:0:81:C:H2' | 1:0:82:G:O4' | 1.91 | 0.70 |
| 1:0:369:C:H2' | 1:0:370:U:H6 | 1.56 | 0.70 |
| 1:0:759:C:N4 | 1:0:2591:C:P | 2.64 | 0.70 |
| 1:0:957:G:O2' | 1:0:958:G:H5' | 1.91 | 0.70 |
| 1:0:233:A:O2' | 1:0:234:C:H5' | 1.91 | 0.70 |
| 1:0:857:U:H2' | 1:0:858:G:H5' | 1.73 | 0.70 |
| 1:0:2474:G:H2' | 1:0:2475:C:O4' | 1.90 | 0.70 |
| 1:0:2527:G:H2' | 1:0:2528:G:O4' | 1.92 | 0.70 |
| 1:0:2563:U:H2' | 1:0:2564:U:H5'' | 1.72 | 0.70 |
| 1:0:2839:G:H2' | 1:0:2840:U:O4' | 1.91 | 0.70 |
| 1:0:441:A:H2' | 1:0:442:A:O4' | 1.90 | 0.70 |
| 1:0:474:G:C2 | 1:0:478:G:C6 | 2.80 | 0.70 |
| 1:0:977:G:O2' | 1:0:978:U:H5' | 1.91 | 0.70 |
| 1:0:995:A:H5'' | 1:0:996:C:C5 | 2.26 | 0.70 |
| 1:0:1073:G:C2' | 1:0:1074:G:H5'' | 2.21 | 0.70 |
| 1:0:1715:A:O2' | 1:0:1716:G:H3' | 1.91 | 0.70 |
| 1:0:2225:G:H2' | 1:0:2226:A:H8 | 1.54 | 0.70 |
| 1:0:797:A:N6 | 1:0:2055:G:O2' | 2.25 | 0.70 |
| 1:0:941:U:O2' | 1:0:942:U:H5' | 1.91 | 0.70 |
| 1:0:1135:C:O2' | 1:0:1136:G:H5' | 1.92 | 0.70 |
| 1:0:1514:C:H5' | 1:0:1593:C:H4' | 1.73 | 0.70 |
| 1:0:2583:U:C2' | 1:0:2584:U:H5' | 2.22 | 0.70 |
| 1:0:436:A:OP1 | 1:0:437:G:H5'' | 1.91 | 0.70 |
| 1:0:457:C:C2' | 1:0:458:G:H5' | 2.21 | 0.70 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:699:G:H2' | 1:0:699:G:N3 | 2.07 | 0.70 |
| 1:0:708:G:H1' | 1:0:1392:U:O2 | 1.92 | 0.69 |
| 1:0:1348:C:H2' | 1:0:1349:A:C8 | 2.27 | 0.69 |
| 1:0:1656:U:O2' | 1:0:1657:A:H5'' | 1.91 | 0.69 |
| 1:0:1682:A:N6 | 1:0:1977:C:H42 | 1.89 | 0.69 |
| 1:0:2587:G:H8 | 1:0:2587:G:O5' | 1.75 | 0.69 |
| 2:9:42:U:H2' | 2:9:45:C:H41 | 1.57 | 0.69 |
| 1:0:31:C:H2' | 1:0:32:C:C6 | 2.27 | 0.69 |
| 1:0:60:A:N6 | 1:0:91:A:H61 | 1.89 | 0.69 |
| 1:0:317:U:H3 | 1:0:321:A:N6 | 1.91 | 0.69 |
| 1:0:1370:U:O2' | 1:0:1371:G:H5' | 1.92 | 0.69 |
| 1:0:1663:C:O5' | 1:0:1663:C:H6 | 1.75 | 0.69 |
| 1:0:1740:G:O2' | 1:0:1741:G:H5' | 1.91 | 0.69 |
| 1:0:2212:U:H2' | 1:0:2213:G:C8 | 2.28 | 0.69 |
| 1:0:912:A:H2' | 1:0:913:A:H8 | 1.57 | 0.69 |
| 1:0:2585:C:H2' | 1:0:2586:G:H8 | 1.57 | 0.69 |
| 1:0:83:A:C2 | 1:0:98:U:H1' | 2.27 | 0.69 |
| 1:0:310:A:O2' | 1:0:311:A:H5' | 1.91 | 0.69 |
| 1:0:334:G:N3 | 1:0:344:G:H1' | 2.07 | 0.69 |
| 1:0:1411:C:H2' | 1:0:1412:C:H6 | 1.58 | 0.69 |
| 1:0:2372:A:H2' | 1:0:2373:C:O4' | 1.92 | 0.69 |
| 1:0:321:A:H2' | 1:0:323:G:N7 | 2.08 | 0.69 |
| 1:0:330:C:H2' | 1:0:331:U:C6 | 2.28 | 0.69 |
| 1:0:1095:A:H2' | 1:0:1096:A:O4' | 1.92 | 0.69 |
| 1:0:2450:A:H2' | 1:0:2451:G:O4' | 1.92 | 0.69 |
| 1:0:2660:C:O2' | 1:0:2661:G:H5' | 1.92 | 0.69 |
| 1:0:337:G:H2' | 1:0:338:G:H8 | 1.57 | 0.69 |
| 1:0:638:A:O2' | 1:0:639:G:H5' | 1.92 | 0.69 |
| 1:0:792:U:C2' | 1:0:793:G:H5' | 2.22 | 0.69 |
| 1:0:1933:G:H8 | 1:0:1933:G:O5' | 1.76 | 0.69 |
| 1:0:29:U:H2' | 1:0:30:G:C8 | 2.28 | 0.69 |
| 1:0:763:A:C2 | 1:0:765:C:H1' | 2.28 | 0.69 |
| 1:0:1151:U:H5'' | 1:0:1153:A:H5' | 1.74 | 0.69 |
| 1:0:446:C:H2' | 1:0:447:U:O4' | 1.92 | 0.69 |
| 1:0:1040:A:H2' | 1:0:1041:G:H5' | 1.73 | 0.69 |
| 1:0:1531:C:H2' | 1:0:1532:A:H5' | 1.75 | 0.69 |
| 1:0:2508:G:C5' | 1:0:2509:A:H5'' | 2.22 | 0.69 |
| 1:0:2558:C:H2' | 1:0:2559:U:C6 | 2.27 | 0.69 |
| 1:0:1657:A:O2' | 1:0:1658:A:H5' | 1.91 | 0.68 |
| 1:0:143:A:H2' | 1:0:144:U:O4' | 1.93 | 0.68 |
| 1:0:495:C:H2' | 1:0:496:C:C6 | 2.28 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:969:U:C4 | 2:9:92:G:H4' | 2.27 | 0.68 |
| 1:0:1373:G:C2' | 1:0:1374:G:H5' | 2.23 | 0.68 |
| 1:0:1657:A:H2' | 1:0:1658:A:O4' | 1.93 | 0.68 |
| 1:0:239:A:C5' | 1:0:620:G:H5' | 2.23 | 0.68 |
| 1:0:322:A:N1 | 1:0:341:A:P | 2.66 | 0.68 |
| 1:0:429:C:H2' | 1:0:430:C:C6 | 2.29 | 0.68 |
| 1:0:833:A:N3 | 1:0:954:U:O2' | 2.26 | 0.68 |
| 1:0:1203:A:H2' | 1:0:1203:A:N3 | 2.08 | 0.68 |
| 1:0:1451:C:H2' | 1:0:1452:U:H6 | 1.58 | 0.68 |
| 1:0:1457:A:O2' | 1:0:1458:A:H5' | 1.93 | 0.68 |
| 1:0:1700:C:H2' | 1:0:1701:C:H6 | 1.56 | 0.68 |
| 1:0:2495:G:H2' | 1:0:2496:C:O4' | 1.93 | 0.68 |
| 1:0:2657:G:O2' | 1:0:2658:A:H5' | 1.93 | 0.68 |
| 1:0:1085:G:H2' | 1:0:1086:C:C6 | 2.28 | 0.68 |
| 1:0:1144:U:O2' | 1:0:1145:C:H5'' | 1.94 | 0.68 |
| 1:0:1281:A:C2 | 1:0:1996:A:C6 | 2.82 | 0.68 |
| 1:0:1858:C:H2' | 1:0:1859:A:H8 | 1.58 | 0.68 |
| 1:0:2494:C:H2' | 1:0:2495:G:H8 | 1.58 | 0.68 |
| 1:0:827:C:H2' | 1:0:828:C:C6 | 2.28 | 0.68 |
| 1:0:1317:G:O2' | 1:0:1318:A:H5' | 1.92 | 0.68 |
| 1:0:1823:G:H2' | 1:0:1824:C:C6 | 2.29 | 0.68 |
| 1:0:2299:A:H5'' | 1:0:2300:G:C4 | 2.28 | 0.68 |
| 1:0:239:A:H5'' | 1:0:620:G:H5' | 1.75 | 0.68 |
| 1:0:314:G:H2' | 1:0:315:G:C8 | 2.28 | 0.68 |
| 1:0:392:G:H22 | 1:0:408:U:H3 | 1.42 | 0.68 |
| 1:0:703:A:O2' | 1:0:704:G:H5' | 1.93 | 0.68 |
| 1:0:1182:U:H2' | 1:0:1183:C:H5'' | 1.76 | 0.68 |
| 1:0:1598:C:H2' | 1:0:1599:G:O4' | 1.93 | 0.68 |
| 1:0:1605:A:O2' | 1:0:1606:C:H5' | 1.93 | 0.68 |
| 1:0:2006:G:N2 | 1:0:2024:U:H1' | 2.08 | 0.68 |
| 1:0:394:U:O2' | 1:0:395:G:H5' | 1.94 | 0.68 |
| 1:0:1289:A:O2' | 1:0:1290:A:H5' | 1.93 | 0.68 |
| 1:0:2006:G:H2' | 1:0:2007:G:H8 | 1.58 | 0.68 |
| 1:0:2642:G:H2' | 1:0:2643:G:H8 | 1.59 | 0.68 |
| 1:0:1436:G:H2' | 1:0:1437:A:C8 | 2.29 | 0.68 |
| 1:0:1692:C:H2' | 1:0:1693:A:O5' | 1.94 | 0.68 |
| 1:0:2040:A:O2' | 1:0:2041:A:H5' | 1.94 | 0.68 |
| 1:0:2245:A:H4' | 1:0:2246:A:C6 | 2.29 | 0.68 |
| 1:0:698:A:C1' | 1:0:700:C:H41 | 2.06 | 0.68 |
| 1:0:781:G:O2' | 1:0:782:U:H5' | 1.94 | 0.68 |
| 1:0:915:C:H2' | 1:0:916:U:C6 | 2.29 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1017:C:O2' | 1:0:1018:C:H5' | 1.93 | 0.68 |
| 1:0:1926:U:O5' | 1:0:1926:U:H6 | 1.76 | 0.68 |
| 1:0:68:C:H1' | 1:0:72:A:H1' | 1.74 | 0.67 |
| 1:0:853:C:C2 | 1:0:950:G:N1 | 2.62 | 0.67 |
| 1:0:1656:U:C2' | 1:0:1657:A:H5'' | 2.23 | 0.67 |
| 1:0:216:U:O5' | 1:0:216:U:H6 | 1.77 | 0.67 |
| 1:0:311:A:H2 | 1:0:334:G:N2 | 1.92 | 0.67 |
| 1:0:344:G:C2 | 1:0:345:U:C6 | 2.82 | 0.67 |
| 1:0:357:A:H3' | 1:0:358:C:C5' | 2.24 | 0.67 |
| 1:0:362:C:H2' | 1:0:363:G:H4' | 1.75 | 0.67 |
| 1:0:829:C:C2 | 1:0:1206:G:N2 | 2.63 | 0.67 |
| 1:0:1685:A:N7 | 1:0:1691:G:C5 | 2.62 | 0.67 |
| 1:0:1687:C:H1' | 1:0:1976:U:O2 | 1.95 | 0.67 |
| 1:0:1715:A:H1' | 1:0:1717:A:O4' | 1.94 | 0.67 |
| 1:0:1769:U:N3 | 1:0:1775:A:H1' | 2.09 | 0.67 |
| 1:0:1927:U:O2 | 1:0:1927:U:H2' | 1.93 | 0.67 |
| 1:0:2585:C:H2' | 1:0:2586:G:C8 | 2.30 | 0.67 |
| 1:0:2585:C:O2' | 1:0:2586:G:H5' | 1.94 | 0.67 |
| 1:0:2839:G:H2' | 1:0:2840:U:C6 | 2.29 | 0.67 |
| 1:0:1076:U:H6 | 1:0:1076:U:O5' | 1.78 | 0.67 |
| 1:0:2645:C:H2' | 1:0:2646:C:H5' | 1.76 | 0.67 |
| 1:0:297:A:H2' | 1:0:298:C:C6 | 2.28 | 0.67 |
| 1:0:417:C:O5' | 1:0:417:C:H6 | 1.76 | 0.67 |
| 1:0:571:U:N3 | 1:0:581:A:N6 | 2.43 | 0.67 |
| 1:0:1764:A:N7 | 1:0:1821:A:H1' | 2.08 | 0.67 |
| 1:0:2475:C:C2' | 1:0:2476:A:H5' | 2.24 | 0.67 |
| 1:0:2499:C:H2' | 1:0:2500:C:H6 | 1.59 | 0.67 |
| 1:0:861:G:H22 | 1:0:943:U:H4' | 1.59 | 0.67 |
| 1:0:1000:G:P | 1:0:1168:G:H4' | 2.35 | 0.67 |
| 1:0:1212:U:C2 | 1:0:1213:U:C5 | 2.83 | 0.67 |
| 1:0:1654:A:H4' | 1:0:2690:A:O2' | 1.94 | 0.67 |
| 1:0:2502:G:H1' | 1:0:2745:A:C8 | 2.29 | 0.67 |
| 1:0:2824:C:H42 | 1:0:2842:C:C1' | 2.06 | 0.67 |
| 2:9:45:C:H42 | 2:9:47:A:H62 | 1.40 | 0.67 |
| 1:0:71:A:H2 | 1:0:75:C:C1' | 2.07 | 0.67 |
| 1:0:235:C:H2' | 1:0:236:C:H5' | 1.77 | 0.67 |
| 1:0:425:A:N7 | 1:0:2390:A:H2 | 1.92 | 0.67 |
| 1:0:589:C:N4 | 1:0:590:C:N4 | 2.43 | 0.67 |
| 1:0:600:G:H3' | 1:0:601:A:C5' | 2.25 | 0.67 |
| 1:0:872:G:O2' | 1:0:2247:A:C5 | 2.46 | 0.67 |
| 1:0:1068:A:H2' | 1:0:1069:G:H8 | 1.58 | 0.67 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2159:A:H8 | 1:0:2159:A:O5' | 1.78 | 0.67 |
| 1:0:2583:U:O2' | 1:0:2584:U:H5' | 1.95 | 0.67 |
| 2:9:30:C:O5' | 2:9:30:C:H6 | 1.78 | 0.67 |
| 1:0:516:G:O2' | 1:0:517:A:C8 | 2.47 | 0.67 |
| 1:0:915:C:H2' | 1:0:916:U:H6 | 1.59 | 0.67 |
| 1:0:1012:A:C2' | 1:0:1013:G:H5' | 2.23 | 0.67 |
| 1:0:14:A:C2 | 1:0:2603:G:N2 | 2.63 | 0.67 |
| 1:0:322:A:N1 | 1:0:341:A:OP1 | 2.27 | 0.67 |
| 1:0:322:A:H8 | 1:0:322:A:OP1 | 1.77 | 0.67 |
| 1:0:633:G:H2' | 1:0:634:G:O4' | 1.94 | 0.67 |
| 1:0:1314:A:N6 | 1:0:1316:G:C4 | 2.63 | 0.67 |
| 1:0:1754:G:OP1 | 1:0:1754:G:H4' | 1.95 | 0.67 |
| 1:0:1889:G:H1 | 1:0:1908:C:N4 | 1.93 | 0.67 |
| 1:0:622:U:C2' | 1:0:623:G:H5' | 2.25 | 0.67 |
| 1:0:716:U:H2' | 1:0:717:G:O4' | 1.95 | 0.67 |
| 1:0:1011:A:C2 | 1:0:1166:A:C6 | 2.83 | 0.67 |
| 1:0:2231:G:O2' | 1:0:2232:G:H5' | 1.94 | 0.67 |
| 1:0:575:U:H2' | 1:0:576:A:H8 | 1.60 | 0.66 |
| 1:0:788:G:H2' | 1:0:807:A:C5 | 2.29 | 0.66 |
| 1:0:877:G:O2' | 1:0:878:C:H5' | 1.93 | 0.66 |
| 1:0:1290:A:H2' | 1:0:1291:G:C8 | 2.31 | 0.66 |
| 1:0:1715:A:H1' | 1:0:1717:A:H4' | 1.77 | 0.66 |
| 1:0:1727:C:H4' | 1:0:2833:C:C2 | 2.30 | 0.66 |
| 1:0:1779:C:O2' | 1:0:1780:A:H5' | 1.96 | 0.66 |
| 1:0:1960:A:O2' | 1:0:1961:A:H5' | 1.95 | 0.66 |
| 1:0:42:G:N2 | 1:0:450:C:C2 | 2.63 | 0.66 |
| 1:0:457:C:O2' | 1:0:458:G:H5' | 1.95 | 0.66 |
| 1:0:473:C:H2' | 1:0:474:G:C8 | 2.30 | 0.66 |
| 1:0:545:C:O2 | 1:0:568:G:N2 | 2.27 | 0.66 |
| 1:0:822:G:O2' | 1:0:823:U:H5' | 1.95 | 0.66 |
| 1:0:854:G:H2' | 1:0:855:G:C8 | 2.31 | 0.66 |
| 1:0:1407:G:H4' | 1:0:1620:C:OP1 | 1.94 | 0.66 |
| 1:0:1784:C:O2' | 1:0:1785:A:H5' | 1.95 | 0.66 |
| 1:0:2539:C:N4 | 1:0:2540:A:H62 | 1.93 | 0.66 |
| 1:0:1151:U:H5'' | 1:0:1153:A:C5' | 2.24 | 0.66 |
| 1:0:1755:G:H2' | 1:0:1756:C:C6 | 2.30 | 0.66 |
| 1:0:2262:C:H2' | 1:0:2263:C:C6 | 2.30 | 0.66 |
| 1:0:2763:U:H2' | 1:0:2764:U:C6 | 2.31 | 0.66 |
| 1:0:1579:G:O2' | 1:0:1580:C:H5' | 1.95 | 0.66 |
| 1:0:1678:G:O2' | 1:0:1679:U:H5' | 1.95 | 0.66 |
| 1:0:2173:G:H2' | 1:0:2174:G:O4' | 1.95 | 0.66 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2703:C:O2' | 1:0:2704:U:H5' | 1.95 | 0.66 |
| 2:9:77:G:H2' | 2:9:78:A:O4' | 1.96 | 0.66 |
| 1:0:704:G:H2' | 1:0:705:C:C6 | 2.30 | 0.66 |
| 1:0:727:U:C2' | 1:0:728:G:H5'' | 2.23 | 0.66 |
| 1:0:1262:U:H3' | 1:0:1262:U:H6 | 1.59 | 0.66 |
| 1:0:1284:G:N2 | 1:0:1633:C:O4' | 2.29 | 0.66 |
| 1:0:1641:C:H2' | 1:0:1642:G:O4' | 1.96 | 0.66 |
| 1:0:2093:G:H2' | 1:0:2094:C:H6 | 1.60 | 0.66 |
| 1:0:2443:C:C2 | 1:0:2466:G:N2 | 2.63 | 0.66 |
| 1:0:2713:A:H2' | 1:0:2714:A:C8 | 2.23 | 0.66 |
| 1:0:186:C:O2' | 1:0:187:U:H5' | 1.94 | 0.66 |
| 1:0:827:C:H2' | 1:0:828:C:H6 | 1.60 | 0.66 |
| 1:0:1327:C:O5' | 1:0:1327:C:H6 | 1.79 | 0.66 |
| 1:0:757:U:C2 | 1:0:767:G:N2 | 2.63 | 0.66 |
| 1:0:841:G:N2 | 1:0:2226:A:H4' | 2.11 | 0.66 |
| 1:0:1466:C:H2' | 1:0:1467:U:O4' | 1.96 | 0.66 |
| 1:0:1585:A:H2' | 1:0:1586:A:C8 | 2.30 | 0.66 |
| 1:0:2196:U:H2' | 1:0:2197:U:C6 | 2.31 | 0.66 |
| 1:0:2198:U:C3' | 1:0:2199:C:H5'' | 2.26 | 0.66 |
| 1:0:2687:G:O2' | 1:0:2688:G:H5' | 1.95 | 0.66 |
| 2:9:58:G:H4' | 2:9:59:A:C5' | 2.26 | 0.66 |
| 1:0:486:U:C2' | 1:0:487:G:H5' | 2.25 | 0.66 |
| 1:0:981:C:H2' | 1:0:982:C:H6 | 1.61 | 0.66 |
| 1:0:1117:G:H2' | 1:0:1118:G:H8 | 1.61 | 0.66 |
| 1:0:1577:G:O2' | 1:0:1578:U:H5' | 1.96 | 0.66 |
| 1:0:1658:A:C8 | 1:0:1659:G:N7 | 2.63 | 0.66 |
| 1:0:2660:C:N4 | 1:0:2704:U:C5 | 2.64 | 0.66 |
| 1:0:1436:G:H2' | 1:0:1437:A:H8 | 1.59 | 0.66 |
| 1:0:1928:G:N2 | 1:0:1929:U:C2 | 2.64 | 0.66 |
| 1:0:2758:A:C4' | 1:0:2759:U:H5 | 2.08 | 0.66 |
| 1:0:632:A:C2' | 1:0:633:G:H5' | 2.26 | 0.66 |
| 1:0:940:G:N7 | 1:0:941:U:C6 | 2.64 | 0.66 |
| 1:0:966:A:N6 | 1:0:967:G:C2 | 2.64 | 0.66 |
| 1:0:1231:A:C4 | 1:0:1245:G:N2 | 2.64 | 0.66 |
| 1:0:1429:A:H1' | 1:0:1603:A:C6 | 2.31 | 0.66 |
| 1:0:1743:C:H5' | 1:0:2836:U:O2' | 1.96 | 0.66 |
| 1:0:176:A:C2 | 1:0:2413:A:C2 | 2.84 | 0.65 |
| 1:0:1831:G:H2' | 1:0:1832:G:H5' | 1.78 | 0.65 |
| 1:0:604:U:H2' | 1:0:605:G:H8 | 1.61 | 0.65 |
| 1:0:876:A:O2' | 1:0:877:G:H5' | 1.96 | 0.65 |
| 1:0:991:A:C8 | 1:0:992:A:N7 | 2.64 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1486:A:H2' | 1:0:1487:C:H6 | 1.58 | 0.65 |
| 1:0:1698:C:O2' | 1:0:1753:A:C2' | 2.44 | 0.65 |
| 1:0:2539:C:N4 | 1:0:2540:A:N6 | 2.43 | 0.65 |
| 2:9:65:A:H2' | 2:9:66:G:C8 | 2.32 | 0.65 |
| 1:0:305:A:H2' | 1:0:306:G:O4' | 1.96 | 0.65 |
| 1:0:366:U:H2' | 1:0:367:G:H8 | 1.61 | 0.65 |
| 1:0:927:C:O2' | 1:0:928:G:H5' | 1.95 | 0.65 |
| 1:0:2447:G:H22 | 1:0:2460:G:C2' | 2.07 | 0.65 |
| 1:0:2708:U:C4 | 1:0:2709:C:N4 | 2.65 | 0.65 |
| 1:0:1436:G:H8 | 1:0:1436:G:O5' | 1.80 | 0.65 |
| 1:0:1540:C:O2' | 1:0:1541:G:H5' | 1.95 | 0.65 |
| 1:0:1741:G:O2' | 1:0:1742:G:H5' | 1.96 | 0.65 |
| 1:0:2038:C:H5' | 1:0:2039:G:H5'' | 1.77 | 0.65 |
| 1:0:443:A:O2' | 1:0:444:U:H5' | 1.97 | 0.65 |
| 1:0:490:A:N7 | 1:0:492:G:O4' | 2.29 | 0.65 |
| 1:0:759:C:H5'' | 1:0:761:G:O4' | 1.97 | 0.65 |
| 1:0:818:G:O6 | 1:0:2051:U:C5' | 2.45 | 0.65 |
| 1:0:2082:C:C4 | 1:0:2174:G:N2 | 2.64 | 0.65 |
| 1:0:2491:C:H3' | 1:0:2492:G:H5'' | 1.79 | 0.65 |
| 1:0:14:A:C2 | 1:0:2604:G:H1' | 2.32 | 0.65 |
| 1:0:830:C:H2' | 1:0:831:G:H8 | 1.61 | 0.65 |
| 1:0:871:U:O2 | 1:0:2247:A:H2' | 1.97 | 0.65 |
| 1:0:1312:G:H4' | 1:0:1314:A:N3 | 2.10 | 0.65 |
| 1:0:1581:C:N4 | 1:0:1583:A:H1' | 2.11 | 0.65 |
| 1:0:1969:G:O2' | 1:0:1970:G:H5' | 1.97 | 0.65 |
| 1:0:2122:G:H2' | 1:0:2123:G:C8 | 2.31 | 0.65 |
| 1:0:2810:A:H8 | 1:0:2810:A:O5' | 1.79 | 0.65 |
| 1:0:847:C:H41 | 1:0:955:G:N2 | 1.91 | 0.65 |
| 1:0:2048:C:O2' | 1:0:2049:C:H5' | 1.97 | 0.65 |
| 1:0:2198:U:H3' | 1:0:2199:C:H5'' | 1.79 | 0.65 |
| 1:0:2234:G:H2' | 1:0:2235:G:O4' | 1.97 | 0.65 |
| 1:0:2426:G:O5' | 1:0:2480:C:H5 | 1.78 | 0.65 |
| 1:0:927:C:H2' | 1:0:928:G:H5' | 1.77 | 0.65 |
| 1:0:1161:U:H2' | 1:0:1162:A:C8 | 2.31 | 0.65 |
| 1:0:1280:U:O2' | 1:0:1281:A:H5' | 1.96 | 0.65 |
| 1:0:1287:A:C5 | 1:0:1315:A:C2 | 2.85 | 0.65 |
| 1:0:2030:U:H2' | 1:0:2031:A:H8 | 1.61 | 0.65 |
| 1:0:2278:A:H2' | 1:0:2279:G:C8 | 2.31 | 0.65 |
| 1:0:429:C:H2' | 1:0:430:C:H6 | 1.62 | 0.65 |
| 1:0:1271:C:O2' | 1:0:1272:G:H5' | 1.97 | 0.65 |
| 1:0:1288:A:H2' | 1:0:1289:A:O4' | 1.97 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1992:G:O2' | 1:0:1993:G:H5' | 1.97 | 0.65 |
| 1:0:2015:G:N2 | 1:0:2038:C:H1' | 2.12 | 0.65 |
| 1:0:2024:U:O5' | 1:0:2024:U:H6 | 1.78 | 0.65 |
| 1:0:2080:U:H2' | 1:0:2081:U:C6 | 2.32 | 0.65 |
| 1:0:2266:A:C2 | 1:0:2268:G:H1' | 2.32 | 0.65 |
| 1:0:76:C:H6 | 1:0:76:C:H5' | 1.62 | 0.65 |
| 1:0:635:C:O2' | 1:0:670:U:H5'' | 1.97 | 0.65 |
| 1:0:1299:A:N6 | 1:0:1302:C:C5 | 2.65 | 0.65 |
| 1:0:1644:G:O2' | 1:0:1645:U:H5' | 1.97 | 0.65 |
| 1:0:2755:A:O2' | 1:0:2756:A:H5' | 1.96 | 0.65 |
| 1:0:587:A:H2' | 1:0:588:G:H5'' | 1.79 | 0.64 |
| 1:0:2511:G:H2' | 1:0:2512:A:O4' | 1.97 | 0.64 |
| 1:0:604:U:H2' | 1:0:605:G:C8 | 2.32 | 0.64 |
| 1:0:681:A:N6 | 1:0:683:A:H2' | 2.11 | 0.64 |
| 1:0:1268:U:H5' | 1:0:1269:G:H5'' | 1.78 | 0.64 |
| 1:0:2442:C:C2 | 1:0:2467:A:C2 | 2.84 | 0.64 |
| 1:0:532:A:H2' | 1:0:533:C:H6 | 1.60 | 0.64 |
| 1:0:804:C:O2 | 1:0:804:C:H2' | 1.96 | 0.64 |
| 1:0:868:U:H2' | 1:0:869:C:C6 | 2.33 | 0.64 |
| 1:0:936:A:O2' | 1:0:937:C:H5' | 1.97 | 0.64 |
| 1:0:1673:C:H42 | 1:0:1987:G:H1 | 1.44 | 0.64 |
| 1:0:2526:U:C5 | 1:0:2545:A:N7 | 2.65 | 0.64 |
| 1:0:2748:C:H2' | 1:0:2749:A:C8 | 2.31 | 0.64 |
| 1:0:1514:C:H6 | 1:0:1514:C:O5' | 1.80 | 0.64 |
| 1:0:335:A:H2' | 1:0:336:A:H5' | 1.79 | 0.64 |
| 1:0:574:C:H2' | 1:0:575:U:H6 | 1.61 | 0.64 |
| 1:0:2404:A:H5' | 1:0:2406:C:C5' | 2.28 | 0.64 |
| 1:0:2691:C:OP2 | 1:0:2691:C:H4' | 1.98 | 0.64 |
| 1:0:486:U:H2' | 1:0:487:G:H5' | 1.80 | 0.64 |
| 1:0:486:U:O2' | 1:0:487:G:H5' | 1.97 | 0.64 |
| 1:0:584:A:H5' | 1:0:2038:C:C5 | 2.33 | 0.64 |
| 1:0:622:U:H2' | 1:0:623:G:O4' | 1.97 | 0.64 |
| 1:0:831:G:O2' | 1:0:832:A:H5'' | 1.98 | 0.64 |
| 1:0:2618:A:H1' | 1:0:2758:A:C2 | 2.33 | 0.64 |
| 1:0:2809:A:H62 | 1:0:2854:G:H1' | 1.63 | 0.64 |
| 1:0:170:U:H2' | 1:0:171:G:H8 | 1.62 | 0.64 |
| 1:0:239:A:H2' | 1:0:240:U:O4' | 1.98 | 0.64 |
| 1:0:755:C:C2 | 1:0:756:C:C5 | 2.86 | 0.64 |
| 1:0:944:A:H2' | 1:0:945:G:H8 | 1.61 | 0.64 |
| 1:0:1319:C:H2' | 1:0:1320:A:H8 | 1.63 | 0.64 |
| 1:0:1643:A:H1' | 1:0:1657:A:C2 | 2.33 | 0.64 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2181:A:H2' | 1:0:2182:A:H5' | 1.78 | 0.64 |
| 1:0:2233:C:H2' | 1:0:2234:G:C8 | 2.32 | 0.64 |
| 1:0:2862:G:N2 | 1:0:2863:U:C2 | 2.66 | 0.64 |
| 2:9:61:A:H8 | 2:9:61:A:O5' | 1.81 | 0.64 |
| 1:0:429:C:O2' | 1:0:430:C:H5' | 1.96 | 0.64 |
| 1:0:487:G:H1' | 1:0:515:A:C2 | 2.32 | 0.64 |
| 1:0:620:G:O2' | 1:0:621:U:H5' | 1.98 | 0.64 |
| 1:0:622:U:H2' | 1:0:623:G:H5' | 1.80 | 0.64 |
| 1:0:678:G:H2' | 1:0:679:C:C6 | 2.31 | 0.64 |
| 1:0:962:C:N3 | 1:0:963:G:N7 | 2.45 | 0.64 |
| 1:0:972:C:N4 | 1:0:2014:A:N1 | 2.46 | 0.64 |
| 1:0:2447:G:H8 | 1:0:2447:G:O5' | 1.79 | 0.64 |
| 1:0:28:A:H1' | 1:0:523:A:N1 | 2.13 | 0.64 |
| 1:0:330:C:H2' | 1:0:331:U:H6 | 1.61 | 0.64 |
| 1:0:595:A:H62 | 1:0:1264:C:H42 | 1.45 | 0.64 |
| 1:0:815:A:H2' | 1:0:816:U:O4' | 1.97 | 0.64 |
| 1:0:1004:A:C2' | 1:0:1005:U:H5'' | 2.27 | 0.64 |
| 1:0:1004:A:C2' | 1:0:1005:U:C5' | 2.75 | 0.64 |
| 1:0:1193:G:H2' | 1:0:1194:U:H6 | 1.60 | 0.64 |
| 1:0:1687:C:O2' | 1:0:1977:C:H4' | 1.98 | 0.64 |
| 1:0:2499:C:N4 | 1:0:2521:A:H2 | 1.96 | 0.64 |
| 1:0:163:A:H2' | 1:0:164:G:H8 | 1.61 | 0.64 |
| 1:0:225:G:C5' | 1:0:226:C:H5' | 2.28 | 0.64 |
| 1:0:555:U:OP2 | 1:0:1233:A:N6 | 2.31 | 0.64 |
| 1:0:967:G:H21 | 1:0:970:A:H8 | 1.45 | 0.64 |
| 1:0:1105:U:H2' | 1:0:1107:A:OP2 | 1.99 | 0.64 |
| 1:0:1287:A:C2 | 1:0:1662:G:O4' | 2.51 | 0.64 |
| 1:0:1316:G:O2' | 1:0:1317:G:H5' | 1.98 | 0.64 |
| 1:0:1586:A:H2' | 1:0:1587:A:H8 | 1.61 | 0.64 |
| 1:0:2201:G:H2' | 1:0:2202:G:C8 | 2.32 | 0.64 |
| 1:0:225:G:OP2 | 1:0:226:C:C6 | 2.51 | 0.63 |
| 1:0:478:G:O2' | 1:0:479:G:H5' | 1.98 | 0.63 |
| 1:0:573:C:H2' | 1:0:574:C:O4' | 1.98 | 0.63 |
| 1:0:594:G:C6 | 1:0:1264:C:C5 | 2.87 | 0.63 |
| 1:0:1073:G:H2' | 1:0:1074:G:C5' | 2.28 | 0.63 |
| 1:0:1313:U:H1' | 1:0:1642:G:N2 | 2.13 | 0.63 |
| 1:0:2104:G:H2' | 1:0:2105:U:C6 | 2.33 | 0.63 |
| 1:0:982:C:H4' | 1:0:994:A:O2' | 1.97 | 0.63 |
| 1:0:1279:G:H1' | 1:0:1995:G:O6 | 1.98 | 0.63 |
| 1:0:1706:A:C2 | 1:0:1707:A:C4 | 2.86 | 0.63 |
| 1:0:1900:U:H2' | 1:0:1901:A:H5' | 1.80 | 0.63 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2862:G:O2' | 1:0:2863:U:H5' | 1.98 | 0.63 |
| 1:0:953:G:C6 | 1:0:954:U:N3 | 2.66 | 0.63 |
| 1:0:1191:G:H2' | 1:0:1192:A:C8 | 2.34 | 0.63 |
| 1:0:1458:A:H3' | 1:0:1459:U:C5' | 2.29 | 0.63 |
| 1:0:2563:U:O5' | 1:0:2563:U:H6 | 1.82 | 0.63 |
| 1:0:798:G:N2 | 1:0:799:C:C1' | 2.60 | 0.63 |
| 1:0:855:G:H2' | 1:0:856:A:C8 | 2.34 | 0.63 |
| 1:0:1183:C:N4 | 1:0:1190:C:H42 | 1.95 | 0.63 |
| 1:0:1300:A:C2 | 1:0:1301:U:C2 | 2.86 | 0.63 |
| 1:0:1312:G:HO2' | 1:0:1314:A:H2 | 1.45 | 0.63 |
| 1:0:1699:A:C5 | 1:0:1748:U:H1' | 2.34 | 0.63 |
| 1:0:1888:C:H5'' | 1:0:1889:G:C5' | 2.28 | 0.63 |
| 1:0:2431:C:O2' | 1:0:2432:A:H5' | 1.98 | 0.63 |
| 1:0:2813:G:O2' | 1:0:2814:G:H5' | 1.98 | 0.63 |
| 1:0:445:A:O2' | 1:0:446:C:H5' | 1.99 | 0.63 |
| 1:0:493:A:N3 | 1:0:516:G:N2 | 2.47 | 0.63 |
| 1:0:1618:U:O5' | 1:0:1618:U:C6 | 2.48 | 0.63 |
| 1:0:120:G:O2' | 1:0:121:G:H5' | 1.99 | 0.63 |
| 1:0:139:A:H2' | 1:0:140:G:C8 | 2.34 | 0.63 |
| 1:0:1358:C:H2' | 1:0:1359:G:H5'' | 1.81 | 0.63 |
| 1:0:1564:U:O2' | 1:0:1565:G:H5' | 1.99 | 0.63 |
| 1:0:1724:C:H3' | 1:0:1724:C:OP2 | 1.98 | 0.63 |
| 1:0:2005:U:H5'' | 1:0:2006:G:OP1 | 1.98 | 0.63 |
| 1:0:2049:C:H2' | 1:0:2050:G:H5' | 1.81 | 0.63 |
| 1:0:2567:G:O6 | 1:0:2586:G:C2 | 2.52 | 0.63 |
| 2:9:65:A:H2' | 2:9:66:G:H8 | 1.64 | 0.63 |
| 1:0:342:G:C6 | 1:0:1222:G:N1 | 2.60 | 0.63 |
| 1:0:357:A:C3' | 1:0:358:C:H5' | 2.29 | 0.63 |
| 1:0:473:C:O2' | 1:0:474:G:H5' | 1.99 | 0.63 |
| 1:0:1591:U:H2' | 1:0:1592:U:O4' | 1.99 | 0.63 |
| 1:0:1737:G:H2' | 1:0:1738:U:C6 | 2.33 | 0.63 |
| 1:0:2434:G:N1 | 1:0:2477:C:N4 | 2.47 | 0.63 |
| 2:9:7:C:H2' | 2:9:8:C:H6 | 1.64 | 0.63 |
| 2:9:29:C:H2' | 2:9:30:C:C5 | 2.34 | 0.63 |
| 1:0:929:A:H3' | 1:0:930:A:C5' | 2.26 | 0.63 |
| 1:0:955:G:H5' | 1:0:956:A:H5'' | 1.79 | 0.63 |
| 1:0:1653:C:O2 | 1:0:1751:A:H2 | 1.82 | 0.63 |
| 1:0:1685:A:H61 | 1:0:1693:A:H61 | 1.47 | 0.63 |
| 1:0:1997:A:H2' | 1:0:1998:A:C8 | 2.34 | 0.63 |
| 1:0:194:G:C6 | 1:0:444:U:O2 | 2.52 | 0.62 |
| 1:0:432:C:H2' | 1:0:433:G:C8 | 2.31 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:665:A:H3' | 1:0:666:U:C5' | 2.29 | 0.62 |
| 1:0:798:G:H2' | 1:0:798:G:N3 | 2.14 | 0.62 |
| 1:0:1347:C:O2' | 1:0:1348:C:H5' | 1.99 | 0.62 |
| 1:0:1764:A:O2' | 1:0:1765:C:H5' | 1.99 | 0.62 |
| 1:0:1800:A:C2 | 1:0:1802:A:N1 | 2.66 | 0.62 |
| 1:0:1982:C:H4' | 1:0:2703:C:O2 | 1.99 | 0.62 |
| 1:0:1994:U:H2' | 1:0:1995:G:H5' | 1.80 | 0.62 |
| 1:0:2473:G:O2' | 1:0:2474:G:H5' | 1.98 | 0.62 |
| 1:0:2810:A:H4' | 1:0:2811:G:C8 | 2.34 | 0.62 |
| 1:0:2822:U:C5 | 1:0:2823:G:C4 | 2.87 | 0.62 |
| 1:0:491:A:N3 | 1:0:491:A:H2' | 2.14 | 0.62 |
| 1:0:699:G:H5' | 1:0:700:C:OP2 | 1.98 | 0.62 |
| 1:0:2198:U:H2' | 1:0:2199:C:H5'' | 1.82 | 0.62 |
| 1:0:2469:G:H5'' | 1:0:2470:U:OP1 | 1.99 | 0.62 |
| 1:0:2721:A:H2' | 1:0:2722:C:O4' | 1.98 | 0.62 |
| 1:0:2824:C:O2 | 1:0:2843:A:C4 | 2.51 | 0.62 |
| 1:0:636:G:H2' | 1:0:637:G:H5' | 1.80 | 0.62 |
| 1:0:1196:G:O2' | 1:0:1197:U:H5' | 1.98 | 0.62 |
| 1:0:1685:A:N3 | 1:0:1686:A:C2 | 2.68 | 0.62 |
| 1:0:2034:A:H5' | 1:0:2557:G:O4' | 2.00 | 0.62 |
| 1:0:168:A:H2' | 1:0:169:C:C6 | 2.34 | 0.62 |
| 1:0:932:G:C6 | 1:0:933:G:C6 | 2.88 | 0.62 |
| 1:0:1474:A:N1 | 1:0:1476:G:C8 | 2.68 | 0.62 |
| 1:0:1532:A:H2' | 1:0:1533:G:H8 | 1.64 | 0.62 |
| 1:0:1876:C:C5 | 1:0:1877:C:C5 | 2.87 | 0.62 |
| 1:0:2506:C:O2' | 1:0:2507:U:H5' | 1.99 | 0.62 |
| 1:0:2595:C:H2' | 1:0:2596:C:O4' | 1.99 | 0.62 |
| 1:0:2642:G:H2' | 1:0:2643:G:C8 | 2.35 | 0.62 |
| 1:0:173:A:C4 | 1:0:818:G:N2 | 2.67 | 0.62 |
| 1:0:414:A:H2' | 1:0:415:A:O4' | 2.00 | 0.62 |
| 1:0:1541:G:N2 | 1:0:1562:G:N2 | 2.38 | 0.62 |
| 1:0:1697:U:N3 | 1:0:1755:G:OP2 | 2.32 | 0.62 |
| 1:0:2426:G:N1 | 1:0:2483:U:O4 | 2.31 | 0.62 |
| 1:0:2434:G:N2 | 1:0:2435:C:C2 | 2.68 | 0.62 |
| 1:0:2787:A:H2' | 1:0:2788:C:C6 | 2.32 | 0.62 |
| 1:0:2876:C:O2' | 1:0:2877:A:H5' | 1.99 | 0.62 |
| 1:0:1281:A:C2 | 1:0:1996:A:N1 | 2.68 | 0.62 |
| 1:0:1392:U:C2' | 1:0:1393:G:H5' | 2.29 | 0.62 |
| 1:0:2046:C:C2' | 1:0:2047:C:O5' | 2.47 | 0.62 |
| 1:0:2057:U:H2' | 1:0:2058:U:H6 | 1.64 | 0.62 |
| 2:9:14:C:H4' | 2:9:17:A:H61 | 1.63 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:615:C:H1' | 1:0:671:A:H4' | 1.81 | 0.62 |
| 1:0:1276:U:H2' | 1:0:1277:G:C8 | 2.34 | 0.62 |
| 1:0:2059:U:OP2 | 1:0:2217:G:N2 | 2.30 | 0.62 |
| 1:0:2306:A:H2' | 1:0:2307:A:H8 | 1.63 | 0.62 |
| 1:0:2663:U:N3 | 1:0:2664:G:N7 | 2.48 | 0.62 |
| 1:0:2859:U:C5 | 1:0:2860:C:C2 | 2.87 | 0.62 |
| 1:0:311:A:C2 | 1:0:334:G:N2 | 2.67 | 0.62 |
| 1:0:1147:G:H2' | 1:0:1148:G:H8 | 1.64 | 0.62 |
| 1:0:1760:G:O2' | 1:0:1761:G:H5' | 2.00 | 0.62 |
| 1:0:2758:A:C5' | 1:0:2759:U:H5 | 2.13 | 0.62 |
| 1:0:115:G:C6 | 1:0:117:A:N6 | 2.68 | 0.62 |
| 1:0:333:A:O2' | 1:0:350:U:H2' | 2.00 | 0.62 |
| 1:0:581:A:C2 | 1:0:582:G:H1' | 2.34 | 0.62 |
| 1:0:873:U:O5' | 1:0:2247:A:C2 | 2.52 | 0.62 |
| 1:0:1610:A:O2' | 1:0:1611:U:H5' | 2.00 | 0.62 |
| 1:0:2534:U:C5 | 1:0:2535:C:C4 | 2.88 | 0.62 |
| 1:0:2748:C:H2' | 1:0:2749:A:H8 | 1.64 | 0.62 |
| 1:0:2800:C:O2' | 1:0:2801:A:H5' | 2.00 | 0.62 |
| 1:0:1264:C:HO2' | 1:0:1265:G:H8 | 1.47 | 0.62 |
| 1:0:1925:C:H2' | 1:0:1926:U:C5 | 2.32 | 0.62 |
| 1:0:2046:C:H2' | 1:0:2047:C:O5' | 2.00 | 0.62 |
| 1:0:2606:G:O5' | 1:0:2606:G:H8 | 1.83 | 0.62 |
| 1:0:2814:G:H1 | 1:0:2853:U:H3 | 1.48 | 0.62 |
| 1:0:482:A:O5' | 1:0:482:A:H8 | 1.83 | 0.61 |
| 1:0:689:A:C2 | 1:0:690:A:C8 | 2.88 | 0.61 |
| 1:0:1073:G:C3' | 1:0:1074:G:H5'' | 2.30 | 0.61 |
| 1:0:1273:G:H2' | 1:0:1274:C:H6 | 1.65 | 0.61 |
| 1:0:1558:C:H2' | 1:0:1559:G:H5' | 1.82 | 0.61 |
| 1:0:200:A:C2 | 1:0:421:G:O4' | 2.53 | 0.61 |
| 1:0:214:C:N4 | 1:0:215:G:O6 | 2.33 | 0.61 |
| 1:0:216:U:H2' | 1:0:217:U:O4' | 2.00 | 0.61 |
| 1:0:367:G:C2' | 1:0:368:A:H5'' | 2.28 | 0.61 |
| 1:0:446:C:H2' | 1:0:447:U:C6 | 2.34 | 0.61 |
| 1:0:583:C:H4' | 1:0:2038:C:C5 | 2.35 | 0.61 |
| 1:0:584:A:H5' | 1:0:2038:C:C4 | 2.35 | 0.61 |
| 1:0:619:A:H2' | 1:0:620:G:C8 | 2.35 | 0.61 |
| 1:0:785:U:H5' | 1:0:1368:G:HO2' | 1.63 | 0.61 |
| 1:0:1688:U:O2 | 1:0:1690:U:C6 | 2.53 | 0.61 |
| 1:0:2043:A:N3 | 1:0:2481:G:C2 | 2.67 | 0.61 |
| 1:0:2418:A:C2 | 1:0:2564:U:H4' | 2.35 | 0.61 |
| 1:0:500:G:C5 | 1:0:1297:A:C2 | 2.88 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:718:A:C8 | 1:0:740:A:C2 | 2.88 | 0.61 |
| 1:0:944:A:H2' | 1:0:945:G:C8 | 2.35 | 0.61 |
| 1:0:985:G:H5'' | 1:0:985:G:N3 | 2.14 | 0.61 |
| 1:0:1719:G:H2' | 1:0:1720:G:C8 | 2.32 | 0.61 |
| 1:0:29:U:O2' | 1:0:30:G:H5' | 2.00 | 0.61 |
| 1:0:797:A:H4' | 1:0:798:G:N7 | 2.15 | 0.61 |
| 1:0:1141:U:OP2 | 1:0:2549:G:N2 | 2.34 | 0.61 |
| 1:0:1153:A:C2 | 1:0:1155:G:C6 | 2.88 | 0.61 |
| 1:0:1273:G:H2' | 1:0:1274:C:C6 | 2.36 | 0.61 |
| 1:0:2663:U:C2 | 1:0:2664:G:C8 | 2.88 | 0.61 |
| 1:0:2682:C:C5 | 1:0:2683:C:C5 | 2.89 | 0.61 |
| 1:0:1299:A:C6 | 1:0:1302:C:C5 | 2.88 | 0.61 |
| 1:0:1302:C:O2' | 1:0:1343:C:H4' | 2.00 | 0.61 |
| 1:0:1499:A:H2' | 1:0:1500:U:C6 | 2.36 | 0.61 |
| 1:0:2230:G:H1' | 1:0:2429:A:O4' | 2.01 | 0.61 |
| 1:0:51:A:OP2 | 1:0:117:A:N6 | 2.34 | 0.61 |
| 1:0:305:A:C2' | 1:0:306:G:H5' | 2.30 | 0.61 |
| 1:0:688:A:HO2' | 1:0:2422:C:H4' | 1.66 | 0.61 |
| 1:0:1441:A:H1' | 1:0:1586:A:OP2 | 2.00 | 0.61 |
| 1:0:1685:A:H1' | 1:0:1686:A:C4 | 2.36 | 0.61 |
| 1:0:1701:C:C2 | 1:0:1722:G:N2 | 2.68 | 0.61 |
| 1:0:1216:G:O2' | 1:0:1217:U:H5' | 1.99 | 0.61 |
| 1:0:1292:A:N6 | 1:0:1293:A:N6 | 2.48 | 0.61 |
| 1:0:1430:G:H22 | 1:0:1599:G:H1' | 1.65 | 0.61 |
| 1:0:1457:A:C2 | 1:0:1565:G:C4 | 2.88 | 0.61 |
| 1:0:1479:G:C2 | 1:0:1480:G:C4 | 2.89 | 0.61 |
| 1:0:1711:C:O5' | 1:0:1711:C:H6 | 1.84 | 0.61 |
| 1:0:1928:G:C2 | 1:0:1929:U:C2 | 2.88 | 0.61 |
| 1:0:2019:C:C2' | 1:0:2020:G:H5' | 2.30 | 0.61 |
| 1:0:2810:A:H4' | 1:0:2811:G:N7 | 2.16 | 0.61 |
| 1:0:698:A:H1' | 1:0:700:C:H41 | 1.66 | 0.61 |
| 1:0:781:G:H2' | 1:0:782:U:C6 | 2.36 | 0.61 |
| 1:0:1270:C:N4 | 1:0:1271:C:H41 | 1.98 | 0.61 |
| 1:0:1280:U:H2' | 1:0:1281:A:C5' | 2.31 | 0.61 |
| 1:0:1680:U:O2 | 1:0:1981:A:C2 | 2.54 | 0.61 |
| 1:0:1827:G:H2' | 1:0:1828:C:C6 | 2.36 | 0.61 |
| 1:0:2032:G:N2 | 1:0:2599:U:C2 | 2.69 | 0.61 |
| 1:0:2544:A:H2' | 1:0:2545:A:C1' | 2.31 | 0.61 |
| 1:0:2816:C:C2 | 1:0:2852:G:N2 | 2.69 | 0.61 |
| 1:0:2822:U:H5 | 1:0:2823:G:C4 | 2.19 | 0.61 |
| 1:0:579:G:H2' | 1:0:2013:A:H62 | 1.64 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:792:U:H2' | 1:0:793:G:O4' | 2.00 | 0.61 |
| 1:0:1175:A:H8 | 1:0:1175:A:O5' | 1.84 | 0.61 |
| 1:0:1658:A:C8 | 1:0:1659:G:C8 | 2.89 | 0.61 |
| 1:0:1764:A:C2' | 1:0:1765:C:H5' | 2.31 | 0.61 |
| 1:0:1994:U:O5' | 1:0:1994:U:H6 | 1.83 | 0.61 |
| 1:0:2046:C:N3 | 1:0:2430:A:C2 | 2.69 | 0.61 |
| 1:0:2090:U:H2' | 1:0:2091:C:H6 | 1.65 | 0.61 |
| 1:0:2611:A:C2 | 1:0:2767:C:C2 | 2.89 | 0.61 |
| 1:0:179:U:O2' | 1:0:180:C:H5' | 2.00 | 0.60 |
| 1:0:478:G:H2' | 1:0:479:G:C8 | 2.32 | 0.60 |
| 1:0:584:A:C4 | 1:0:585:U:C5 | 2.88 | 0.60 |
| 1:0:1256:C:H2' | 1:0:1257:U:O4' | 2.01 | 0.60 |
| 1:0:1273:G:C2' | 1:0:1274:C:O5' | 2.49 | 0.60 |
| 1:0:1683:G:N7 | 1:0:1684:G:N2 | 2.48 | 0.60 |
| 1:0:1944:C:H2' | 1:0:1945:C:O4' | 2.01 | 0.60 |
| 1:0:1982:C:H4' | 1:0:2665:G:H22 | 1.65 | 0.60 |
| 1:0:2573:C:H42 | 1:0:2578:G:H1 | 1.49 | 0.60 |
| 1:0:2586:G:H8 | 1:0:2586:G:O5' | 1.84 | 0.60 |
| 1:0:322:A:H1' | 1:0:343:A:C6 | 2.35 | 0.60 |
| 1:0:537:C:Cl' | 1:0:2759:U:HO2' | 2.14 | 0.60 |
| 1:0:829:C:H2' | 1:0:830:C:O4' | 2.01 | 0.60 |
| 1:0:976:C:O2' | 1:0:977:G:H5' | 2.01 | 0.60 |
| 1:0:1383:C:H2' | 1:0:1384:G:H8 | 1.65 | 0.60 |
| 1:0:2489:C:C4 | 1:0:2490:U:C5 | 2.89 | 0.60 |
| 1:0:2712:G:H5' | 1:0:2713:A:C8 | 2.36 | 0.60 |
| 1:0:688:A:O2' | 1:0:2422:C:H4' | 2.00 | 0.60 |
| 1:0:701:U:H2' | 1:0:702:A:O4' | 2.01 | 0.60 |
| 1:0:936:A:H2' | 1:0:937:C:C6 | 2.36 | 0.60 |
| 1:0:1521:U:H2' | 1:0:1522:C:C6 | 2.36 | 0.60 |
| 1:0:1704:G:H8 | 1:0:1704:G:O5' | 1.84 | 0.60 |
| 1:0:2250:G:O2' | 1:0:2251:U:H5' | 2.01 | 0.60 |
| 1:0:2637:C:O2' | 1:0:2638:G:H5' | 2.01 | 0.60 |
| 1:0:2742:G:O2' | 1:0:2743:G:H5' | 2.01 | 0.60 |
| 2:9:79:U:H2' | 2:9:80:A:H5' | 1.83 | 0.60 |
| 1:0:498:C:N4 | 1:0:499:G:C6 | 2.68 | 0.60 |
| 1:0:951:G:H2' | 1:0:952:A:C5' | 2.32 | 0.60 |
| 1:0:1312:G:H2' | 1:0:1643:A:H61 | 1.65 | 0.60 |
| 1:0:1999:U:O2' | 1:0:2000:U:H5' | 2.02 | 0.60 |
| 1:0:2053:G:N1 | 1:0:2054:A:C2 | 2.70 | 0.60 |
| 1:0:2437:G:H2' | 1:0:2469:G:N2 | 2.16 | 0.60 |
| 1:0:2602:G:C4 | 1:0:2603:G:C8 | 2.89 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2702:G:C5 | 1:0:2703:C:C4 | 2.90 | 0.60 |
| 1:0:173:A:H61 | 1:0:844:G:H21 | 1.50 | 0.60 |
| 1:0:669:G:H2' | 1:0:670:U:C6 | 2.36 | 0.60 |
| 1:0:818:G:N1 | 1:0:2051:U:OP1 | 2.33 | 0.60 |
| 1:0:1213:U:C2 | 1:0:1260:A:H2 | 2.19 | 0.60 |
| 1:0:1370:U:H2' | 1:0:1371:G:O4' | 2.01 | 0.60 |
| 1:0:1436:G:O5' | 1:0:1436:G:C8 | 2.54 | 0.60 |
| 1:0:1964:A:H3' | 1:0:1965:U:H5' | 1.83 | 0.60 |
| 1:0:2333:A:C2 | 1:0:2343:C:N3 | 2.69 | 0.60 |
| 1:0:2443:C:N3 | 1:0:2466:G:N2 | 2.50 | 0.60 |
| 1:0:2526:U:C6 | 1:0:2545:A:N6 | 2.70 | 0.60 |
| 1:0:342:G:H2' | 1:0:343:A:H5' | 1.82 | 0.60 |
| 1:0:473:C:C2 | 1:0:474:G:C8 | 2.90 | 0.60 |
| 1:0:591:G:H2' | 1:0:592:G:H8 | 1.66 | 0.60 |
| 1:0:875:G:H22 | 1:0:928:G:H1' | 1.67 | 0.60 |
| 1:0:1004:A:O2' | 1:0:1005:U:H5'' | 2.01 | 0.60 |
| 1:0:1283:C:H5'' | 1:0:1284:G:O5' | 2.02 | 0.60 |
| 1:0:1291:G:C2' | 1:0:1292:A:H5' | 2.32 | 0.60 |
| 1:0:1373:G:H2' | 1:0:1374:G:C5' | 2.31 | 0.60 |
| 1:0:1750:A:C4' | 1:0:2694:G:H21 | 2.15 | 0.60 |
| 1:0:2044:G:C8 | 1:0:2482:A:H1' | 2.36 | 0.60 |
| 1:0:2476:A:H5'' | 1:0:2477:C:OP1 | 2.01 | 0.60 |
| 1:0:788:G:N2 | 1:0:801:A:OP2 | 2.33 | 0.60 |
| 1:0:854:G:H2' | 1:0:855:G:H8 | 1.65 | 0.60 |
| 1:0:1213:U:C2 | 1:0:1260:A:C2 | 2.89 | 0.60 |
| 1:0:1272:G:H2' | 1:0:1273:G:H8 | 1.66 | 0.60 |
| 1:0:2522:G:H2' | 1:0:2523:G:H8 | 1.66 | 0.60 |
| 1:0:2768:C:H4' | 1:0:2785:A:H5' | 1.83 | 0.60 |
| 1:0:177:U:OP2 | 1:0:177:U:C6 | 2.54 | 0.60 |
| 1:0:459:A:C2 | 1:0:466:A:C8 | 2.89 | 0.60 |
| 1:0:734:G:H2' | 1:0:735:G:C8 | 2.31 | 0.60 |
| 1:0:889:C:O2' | 1:0:890:U:H5' | 2.01 | 0.60 |
| 1:0:1310:C:C2 | 1:0:1311:C:C5 | 2.90 | 0.60 |
| 1:0:1999:U:H2' | 1:0:2000:U:H6 | 1.67 | 0.60 |
| 1:0:2442:C:O2' | 1:0:2443:C:H5' | 2.01 | 0.60 |
| 1:0:1141:U:O2' | 1:0:1142:G:P | 2.59 | 0.60 |
| 1:0:1273:G:O2' | 1:0:1274:C:O5' | 2.20 | 0.60 |
| 1:0:2872:U:H2' | 1:0:2873:G:H8 | 1.65 | 0.60 |
| 1:0:337:G:H2' | 1:0:338:G:C8 | 2.37 | 0.60 |
| 1:0:487:G:H1' | 1:0:515:A:H2 | 1.67 | 0.60 |
| 1:0:727:U:H2' | 1:0:728:G:C5' | 2.27 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:790:A:C2 | 1:0:791:G:C4 | 2.90 | 0.60 |
| 1:0:1106:A:H2' | 1:0:1107:A:H8 | 1.65 | 0.60 |
| 1:0:1323:G:C1' | 1:0:1627:C:C5' | 2.73 | 0.60 |
| 1:0:1378:A:H2' | 1:0:1379:A:C8 | 2.37 | 0.60 |
| 1:0:1391:A:C2' | 1:0:1392:U:H5 | 2.14 | 0.60 |
| 1:0:1937:G:N2 | 1:0:1969:G:OP1 | 2.35 | 0.60 |
| 1:0:2053:G:C2 | 1:0:2054:A:N3 | 2.70 | 0.60 |
| 1:0:2164:G:H2' | 1:0:2165:A:H8 | 1.67 | 0.60 |
| 1:0:2612:G:N2 | 1:0:2766:U:O2 | 2.34 | 0.60 |
| 1:0:481:A:C6 | 1:0:482:A:C6 | 2.90 | 0.59 |
| 1:0:614:G:O2' | 1:0:615:C:H5' | 2.02 | 0.59 |
| 1:0:691:C:O2' | 1:0:692:C:H5' | 2.03 | 0.59 |
| 1:0:790:A:O2' | 1:0:791:G:H5' | 2.02 | 0.59 |
| 1:0:940:G:C8 | 1:0:941:U:H5'' | 2.37 | 0.59 |
| 1:0:976:C:H2' | 1:0:977:G:H8 | 1.66 | 0.59 |
| 1:0:1294:G:C2 | 1:0:1303:U:O2 | 2.55 | 0.59 |
| 1:0:1667:A:N1 | 1:0:1668:G:C5 | 2.70 | 0.59 |
| 1:0:1856:U:O2' | 1:0:1857:G:H5' | 2.01 | 0.59 |
| 1:0:2560:G:H4' | 1:0:2561:G:C8 | 2.37 | 0.59 |
| 2:9:35:C:H2' | 2:9:36:A:O4' | 2.00 | 0.59 |
| 2:9:78:A:H2' | 2:9:79:U:H6 | 1.68 | 0.59 |
| 1:0:678:G:O2' | 1:0:679:C:H5' | 2.01 | 0.59 |
| 1:0:782:U:H2' | 1:0:783:G:H8 | 1.66 | 0.59 |
| 1:0:991:A:N6 | 1:0:992:A:N6 | 2.49 | 0.59 |
| 1:0:1619:A:C2 | 1:0:1620:C:C4 | 2.89 | 0.59 |
| 1:0:2506:C:H2' | 1:0:2507:U:C6 | 2.36 | 0.59 |
| 1:0:17:G:C5 | 1:0:18:U:O4 | 2.56 | 0.59 |
| 1:0:109:A:H3' | 1:0:110:U:H5'' | 1.83 | 0.59 |
| 1:0:235:C:C2' | 1:0:236:C:H5' | 2.32 | 0.59 |
| 1:0:471:A:H2' | 1:0:472:C:H5' | 1.83 | 0.59 |
| 1:0:600:G:O6 | 1:0:602:C:C4 | 2.55 | 0.59 |
| 1:0:1241:G:O2' | 1:0:1242:A:H5' | 2.02 | 0.59 |
| 1:0:1399:C:O2' | 1:0:1400:A:H5' | 2.01 | 0.59 |
| 1:0:1491:C:H42 | 1:0:1532:A:H61 | 1.49 | 0.59 |
| 1:0:2246:A:H2' | 1:0:2246:A:N3 | 2.18 | 0.59 |
| 1:0:2817:A:N1 | 1:0:2851:G:C6 | 2.70 | 0.59 |
| 1:0:7:G:N2 | 1:0:2870:C:O2 | 2.35 | 0.59 |
| 1:0:315:G:H8 | 1:0:315:G:O5' | 1.85 | 0.59 |
| 1:0:565:A:C5 | 1:0:566:U:C4 | 2.90 | 0.59 |
| 1:0:751:G:H1' | 1:0:772:G:N2 | 2.16 | 0.59 |
| 1:0:776:G:C2' | 1:0:778:G:H5'' | 2.31 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1528:C:H2' | 1:0:1529:C:H5'' | 1.84 | 0.59 |
| 1:0:1531:C:C2' | 1:0:1532:A:H5' | 2.31 | 0.59 |
| 1:0:1991:C:H2' | 1:0:1992:G:H8 | 1.67 | 0.59 |
| 1:0:2034:A:C6 | 1:0:2593:A:N6 | 2.70 | 0.59 |
| 1:0:2064:U:H2' | 1:0:2065:A:H8 | 1.67 | 0.59 |
| 1:0:2324:G:O2' | 1:0:2325:A:H5'' | 2.02 | 0.59 |
| 1:0:2386:G:H2' | 1:0:2387:U:C6 | 2.38 | 0.59 |
| 1:0:2535:C:H2' | 1:0:2536:G:O4' | 2.02 | 0.59 |
| 1:0:2555:G:H3' | 1:0:2555:G:OP1 | 2.02 | 0.59 |
| 1:0:2558:C:H6 | 1:0:2558:C:O5' | 1.85 | 0.59 |
| 1:0:2697:G:C2 | 1:0:2698:G:C8 | 2.91 | 0.59 |
| 1:0:2756:A:O2' | 1:0:2758:A:H3' | 2.03 | 0.59 |
| 1:0:91:A:H2' | 1:0:92:U:C6 | 2.38 | 0.59 |
| 1:0:335:A:C2' | 1:0:336:A:H5' | 2.32 | 0.59 |
| 1:0:820:U:O2' | 1:0:821:A:H5' | 2.01 | 0.59 |
| 1:0:831:G:N2 | 1:0:1203:A:H62 | 1.92 | 0.59 |
| 1:0:1281:A:C2 | 1:0:1996:A:C2 | 2.90 | 0.59 |
| 1:0:1313:U:O2' | 1:0:1314:A:O5' | 2.20 | 0.59 |
| 1:0:2308:A:H2' | 1:0:2309:G:C8 | 2.37 | 0.59 |
| 1:0:2370:G:O5' | 1:0:2370:G:H8 | 1.85 | 0.59 |
| 1:0:2426:G:N2 | 1:0:2431:C:N4 | 2.50 | 0.59 |
| 1:0:2447:G:N2 | 1:0:2460:G:H2' | 2.12 | 0.59 |
| 1:0:2621:G:O2' | 1:0:2622:G:H5' | 2.02 | 0.59 |
| 1:0:2769:C:H2' | 1:0:2770:A:O4' | 2.02 | 0.59 |
| 2:9:25:G:H2' | 2:9:26:G:C1' | 2.33 | 0.59 |
| 2:9:54:U:H2' | 2:9:55:C:C6 | 2.38 | 0.59 |
| 1:0:487:G:H8 | 1:0:487:G:O5' | 1.85 | 0.59 |
| 1:0:836:G:C4 | 1:0:837:U:C5 | 2.90 | 0.59 |
| 1:0:927:C:H2' | 1:0:928:G:O4' | 2.03 | 0.59 |
| 1:0:1213:U:N3 | 1:0:1260:A:C2 | 2.70 | 0.59 |
| 1:0:1783:G:O2' | 1:0:1784:C:H5' | 2.02 | 0.59 |
| 1:0:1922:U:H1' | 1:0:2570:C:O2' | 2.03 | 0.59 |
| 1:0:1966:C:C2 | 1:0:1967:U:C5 | 2.91 | 0.59 |
| 2:9:84:G:O2' | 2:9:85:G:H5' | 2.02 | 0.59 |
| 1:0:588:G:C2 | 1:0:1275:A:C6 | 2.91 | 0.59 |
| 1:0:929:A:O2' | 2:9:101:A:H4' | 2.02 | 0.59 |
| 1:0:1040:A:C8 | 1:0:1041:G:C8 | 2.90 | 0.59 |
| 1:0:1322:G:H2' | 1:0:1323:G:C8 | 2.38 | 0.59 |
| 1:0:1672:A:C2 | 1:0:1673:C:C1' | 2.86 | 0.59 |
| 1:0:1781:C:H2' | 1:0:1782:A:H8 | 1.65 | 0.59 |
| 1:0:1979:C:H42 | 1:0:2706:U:H6 | 1.49 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2225:G:H2' | 1:0:2226:A:O4' | 2.02 | 0.59 |
| 1:0:2434:G:C2 | 1:0:2435:C:C2 | 2.90 | 0.59 |
| 1:0:2549:G:H2' | 1:0:2550:C:H5' | 1.85 | 0.59 |
| 1:0:2676:G:H2' | 1:0:2677:U:H6 | 1.67 | 0.59 |
| 1:0:342:G:H2' | 1:0:343:A:C5' | 2.32 | 0.59 |
| 1:0:583:C:H4' | 1:0:2038:C:C6 | 2.37 | 0.59 |
| 1:0:758:G:O2' | 1:0:761:G:H1' | 2.02 | 0.59 |
| 1:0:776:G:N3 | 1:0:776:G:C3' | 2.63 | 0.59 |
| 1:0:863:C:O2' | 1:0:864:C:H5' | 2.03 | 0.59 |
| 1:0:1147:G:H2' | 1:0:1148:G:C8 | 2.37 | 0.59 |
| 1:0:1196:G:H2' | 1:0:1197:U:O4' | 2.03 | 0.59 |
| 1:0:1299:A:H2' | 1:0:1301:U:OP2 | 2.02 | 0.59 |
| 1:0:1851:A:H61 | 1:0:1867:A:H1' | 1.67 | 0.59 |
| 1:0:2228:U:H4' | 1:0:2254:C:C5 | 2.37 | 0.59 |
| 1:0:2658:A:H8 | 1:0:2658:A:O5' | 1.85 | 0.59 |
| 2:9:71:G:N2 | 2:9:72:C:H1' | 2.18 | 0.59 |
| 1:0:215:G:H2' | 1:0:216:U:O4' | 2.02 | 0.59 |
| 1:0:218:A:H1' | 1:0:220:U:C5 | 2.37 | 0.59 |
| 1:0:1556:A:H2' | 1:0:1557:G:C8 | 2.38 | 0.59 |
| 1:0:2843:A:O2' | 1:0:2844:G:H5' | 2.03 | 0.59 |
| 2:9:62:C:N4 | 2:9:63:A:H62 | 2.01 | 0.59 |
| 1:0:197:G:H1 | 1:0:440:U:H3' | 1.68 | 0.59 |
| 1:0:682:G:O3' | 1:0:816:U:OP1 | 2.21 | 0.59 |
| 1:0:2612:G:C2 | 1:0:2766:U:O2 | 2.55 | 0.59 |
| 1:0:2799:C:H2' | 1:0:2800:C:O4' | 2.03 | 0.59 |
| 2:9:7:C:H2' | 2:9:8:C:C6 | 2.37 | 0.59 |
| 2:9:69:G:O2' | 2:9:70:C:H5' | 2.03 | 0.59 |
| 1:0:14:A:H2 | 1:0:2603:G:N2 | 1.99 | 0.58 |
| 1:0:306:G:H2' | 1:0:307:C:H6 | 1.67 | 0.58 |
| 1:0:765:C:H5 | 1:0:1772:C:H1' | 1.68 | 0.58 |
| 1:0:981:C:H2' | 1:0:982:C:C6 | 2.38 | 0.58 |
| 1:0:1010:U:H2' | 1:0:1011:A:H8 | 1.67 | 0.58 |
| 1:0:1131:G:C6 | 1:0:1132:C:C4 | 2.91 | 0.58 |
| 1:0:1181:C:C3' | 1:0:1182:U:H5'' | 2.33 | 0.58 |
| 1:0:1267:A:OP2 | 1:0:1269:G:H8 | 1.85 | 0.58 |
| 1:0:1284:G:N3 | 1:0:1633:C:C4' | 2.66 | 0.58 |
| 1:0:1284:G:N3 | 1:0:1633:C:C5' | 2.66 | 0.58 |
| 1:0:1688:U:O2 | 1:0:1690:U:C5 | 2.56 | 0.58 |
| 1:0:1940:C:N4 | 1:0:1941:C:N4 | 2.51 | 0.58 |
| 1:0:853:C:O2 | 1:0:950:G:C2 | 2.57 | 0.58 |
| 1:0:971:A:H2' | 1:0:973:U:OP1 | 2.03 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:979:A:C2 | 1:0:980:G:C4 | 2.91 | 0.58 |
| 1:0:1063:C:H2' | 1:0:1064:C:C6 | 2.37 | 0.58 |
| 1:0:1287:A:C5 | 1:0:1315:A:N1 | 2.71 | 0.58 |
| 1:0:1474:A:C6 | 1:0:1476:G:C8 | 2.91 | 0.58 |
| 1:0:1665:C:C2 | 1:0:1666:G:C8 | 2.91 | 0.58 |
| 1:0:1809:G:P | 1:0:1809:G:H8 | 2.25 | 0.58 |
| 1:0:2240:C:H2' | 1:0:2241:U:H5' | 1.84 | 0.58 |
| 1:0:641:G:N2 | 1:0:644:A:OP2 | 2.26 | 0.58 |
| 1:0:912:A:H2' | 1:0:913:A:C8 | 2.37 | 0.58 |
| 1:0:1038:U:H2' | 1:0:1039:A:C8 | 2.38 | 0.58 |
| 1:0:1187:A:H2' | 1:0:1188:A:C8 | 2.39 | 0.58 |
| 1:0:1686:A:O2' | 1:0:2528:G:OP1 | 2.21 | 0.58 |
| 1:0:1981:A:H4' | 1:0:2704:U:O2' | 2.03 | 0.58 |
| 1:0:2039:G:H2' | 1:0:2039:G:N3 | 2.17 | 0.58 |
| 1:0:2382:C:H2' | 1:0:2383:C:H6 | 1.68 | 0.58 |
| 1:0:173:A:N3 | 1:0:818:G:N2 | 2.51 | 0.58 |
| 1:0:208:C:H2' | 1:0:209:G:H5' | 1.84 | 0.58 |
| 1:0:209:G:N2 | 1:0:433:G:OP1 | 2.35 | 0.58 |
| 1:0:421:G:O2' | 1:0:422:C:H5' | 2.02 | 0.58 |
| 1:0:649:G:H2' | 1:0:650:U:C6 | 2.37 | 0.58 |
| 1:0:750:C:C4 | 1:0:751:G:N7 | 2.71 | 0.58 |
| 1:0:1118:G:H2' | 1:0:1119:U:C6 | 2.37 | 0.58 |
| 1:0:1223:G:H1' | 1:0:1225:G:H1' | 1.85 | 0.58 |
| 1:0:2333:A:H2' | 1:0:2334:C:C6 | 2.38 | 0.58 |
| 1:0:2595:C:H2' | 1:0:2596:C:C6 | 2.38 | 0.58 |
| 1:0:2847:G:C2 | 1:0:2848:A:C6 | 2.91 | 0.58 |
| 1:0:639:G:O2' | 1:0:640:C:H5' | 2.04 | 0.58 |
| 1:0:681:A:C4 | 1:0:683:A:N7 | 2.71 | 0.58 |
| 1:0:1012:A:H2' | 1:0:1013:G:C5' | 2.26 | 0.58 |
| 1:0:1223:G:C2 | 1:0:1250:A:N6 | 2.71 | 0.58 |
| 1:0:1254:G:O2' | 1:0:1255:A:H5' | 2.04 | 0.58 |
| 1:0:1468:A:C8 | 1:0:1468:A:OP2 | 2.56 | 0.58 |
| 1:0:1679:U:C4 | 1:0:1680:U:C5 | 2.91 | 0.58 |
| 1:0:2059:U:H2' | 1:0:2060:A:H5'' | 1.84 | 0.58 |
| 1:0:2299:A:H5' | 1:0:2300:G:C5 | 2.38 | 0.58 |
| 1:0:2397:A:C2' | 1:0:2398:U:O4' | 2.51 | 0.58 |
| 1:0:2409:A:H3' | 1:0:2409:A:H8 | 1.68 | 0.58 |
| 1:0:2678:C:O2 | 1:0:2688:G:N2 | 2.36 | 0.58 |
| 2:9:6:C:H2' | 2:9:7:C:H6 | 1.68 | 0.58 |
| 1:0:10:A:H2' | 1:0:11:G:C8 | 2.38 | 0.58 |
| 1:0:171:G:N1 | 1:0:179:U:C4 | 2.71 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:304:A:H2' | 1:0:305:A:H5'' | 1.84 | 0.58 |
| 1:0:483:A:H2' | 1:0:484:G:C5' | 2.33 | 0.58 |
| 1:0:1009:C:O5' | 1:0:1009:C:H6 | 1.87 | 0.58 |
| 1:0:1662:G:O5' | 1:0:1662:G:H8 | 1.86 | 0.58 |
| 1:0:2105:U:H2' | 1:0:2106:G:C8 | 2.38 | 0.58 |
| 1:0:18:U:O2' | 1:0:563:U:OP1 | 2.22 | 0.58 |
| 1:0:203:G:H5' | 1:0:234:C:H4' | 1.85 | 0.58 |
| 1:0:213:C:O2' | 1:0:214:C:H5' | 2.02 | 0.58 |
| 1:0:783:G:N3 | 1:0:1367:A:H2 | 2.01 | 0.58 |
| 1:0:2816:C:O2 | 1:0:2852:G:N2 | 2.37 | 0.58 |
| 1:0:2824:C:H1' | 1:0:2843:A:C2 | 2.38 | 0.58 |
| 1:0:132:U:H2' | 1:0:133:C:C6 | 2.38 | 0.58 |
| 1:0:625:A:O2' | 1:0:626:A:H5' | 2.04 | 0.58 |
| 1:0:677:G:O3' | 1:0:952:A:OP1 | 2.21 | 0.58 |
| 1:0:717:G:C6 | 1:0:739:G:C2 | 2.91 | 0.58 |
| 1:0:830:C:O2 | 1:0:1205:G:N2 | 2.36 | 0.58 |
| 1:0:983:G:OP2 | 1:0:985:G:H5' | 2.03 | 0.58 |
| 1:0:1003:C:H2' | 1:0:1004:A:H8 | 1.68 | 0.58 |
| 1:0:1884:A:O2' | 1:0:1885:C:H5' | 2.02 | 0.58 |
| 1:0:2549:G:C2 | 1:0:2550:C:H1' | 2.39 | 0.58 |
| 1:0:173:A:C2 | 1:0:818:G:N2 | 2.71 | 0.58 |
| 1:0:406:G:H2' | 1:0:407:A:H8 | 1.68 | 0.58 |
| 1:0:574:C:H2' | 1:0:575:U:C6 | 2.39 | 0.58 |
| 1:0:698:A:O2' | 1:0:700:C:H5 | 1.87 | 0.58 |
| 1:0:742:G:O6 | 1:0:1765:C:N3 | 2.37 | 0.58 |
| 1:0:742:G:OP1 | 1:0:776:G:OP2 | 2.22 | 0.58 |
| 1:0:763:A:H2 | 1:0:765:C:H1' | 1.67 | 0.58 |
| 1:0:944:A:H2' | 1:0:945:G:O4' | 2.04 | 0.58 |
| 1:0:944:A:O2' | 1:0:945:G:H5' | 2.04 | 0.58 |
| 1:0:974:U:O2' | 1:0:975:C:H5' | 2.03 | 0.58 |
| 1:0:1407:G:C6 | 1:0:1408:A:C6 | 2.91 | 0.58 |
| 1:0:1784:C:C2' | 1:0:1785:A:H5' | 2.33 | 0.58 |
| 1:0:2024:U:O2' | 1:0:2025:A:H5' | 2.03 | 0.58 |
| 1:0:2044:G:N2 | 1:0:2046:C:C4 | 2.71 | 0.58 |
| 1:0:2229:G:OP2 | 1:0:2229:G:H4' | 2.03 | 0.58 |
| 1:0:2644:A:H2' | 1:0:2645:C:C6 | 2.38 | 0.58 |
| 1:0:2713:A:C5 | 1:0:2714:A:N7 | 2.72 | 0.58 |
| 1:0:2787:A:O2' | 1:0:2788:C:H5' | 2.04 | 0.58 |
| 2:9:100:G:H2' | 2:9:101:A:O4' | 2.03 | 0.58 |
| 1:0:225:G:H5' | 1:0:226:C:H5' | 1.86 | 0.58 |
| 1:0:927:C:H2' | 1:0:928:G:C5' | 2.33 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1028:G:C6 | 1:0:1157:G:C6 | 2.92 | 0.58 |
| 1:0:1252:C:H2' | 1:0:1253:C:H5'' | 1.84 | 0.58 |
| 1:0:1407:G:H4' | 1:0:1620:C:P | 2.43 | 0.58 |
| 1:0:1468:A:OP2 | 1:0:1468:A:H8 | 1.86 | 0.58 |
| 1:0:168:A:C2 | 1:0:169:C:N3 | 2.71 | 0.57 |
| 1:0:778:G:H2' | 1:0:779:U:H6 | 1.68 | 0.57 |
| 1:0:1479:G:H2' | 1:0:1480:G:O4' | 2.03 | 0.57 |
| 1:0:1619:A:C2 | 1:0:1620:C:C5 | 2.90 | 0.57 |
| 1:0:1938:U:C4 | 1:0:2531:U:H1' | 2.39 | 0.57 |
| 1:0:1975:G:H2' | 1:0:1980:A:N6 | 2.18 | 0.57 |
| 1:0:2186:G:N1 | 1:0:2200:G:C6 | 2.72 | 0.57 |
| 2:9:48:A:O2' | 2:9:49:C:H5' | 2.04 | 0.57 |
| 1:0:533:C:N3 | 1:0:534:U:C2 | 2.71 | 0.57 |
| 1:0:568:G:O6 | 1:0:569:C:N3 | 2.38 | 0.57 |
| 1:0:1311:C:C2 | 1:0:1660:G:N2 | 2.72 | 0.57 |
| 1:0:1701:C:O2 | 1:0:1722:G:N2 | 2.37 | 0.57 |
| 1:0:2217:G:C2' | 1:0:2217:G:N3 | 2.66 | 0.57 |
| 1:0:2436:U:O2' | 1:0:2437:G:H5' | 2.03 | 0.57 |
| 1:0:2649:A:O2' | 1:0:2650:G:H5' | 2.04 | 0.57 |
| 1:0:2829:A:N1 | 1:0:2839:G:C6 | 2.72 | 0.57 |
| 2:9:93:G:H2' | 2:9:94:G:C8 | 2.36 | 0.57 |
| 1:0:229:G:H2' | 1:0:230:C:H6 | 1.69 | 0.57 |
| 1:0:600:G:H3' | 1:0:601:A:H5'' | 1.85 | 0.57 |
| 1:0:1843:U:H2' | 1:0:1844:C:C6 | 2.38 | 0.57 |
| 1:0:2164:G:H2' | 1:0:2165:A:C8 | 2.39 | 0.57 |
| 1:0:2514:G:H2' | 1:0:2515:G:H8 | 1.69 | 0.57 |
| 1:0:2529:G:C5 | 1:0:2530:C:C5 | 2.92 | 0.57 |
| 2:9:92:G:C3' | 2:9:93:G:H5' | 2.33 | 0.57 |
| 1:0:218:A:H1' | 1:0:220:U:C4 | 2.39 | 0.57 |
| 1:0:401:G:H1' | 1:0:403:A:H62 | 1.69 | 0.57 |
| 1:0:815:A:O2' | 1:0:816:U:H5' | 2.05 | 0.57 |
| 1:0:1491:C:N4 | 1:0:1532:A:H61 | 2.02 | 0.57 |
| 1:0:1681:A:N1 | 1:0:1682:A:C4 | 2.73 | 0.57 |
| 1:0:1830:C:N4 | 1:0:1881:U:H3' | 2.19 | 0.57 |
| 1:0:1928:G:C6 | 1:0:1929:U:C4 | 2.92 | 0.57 |
| 1:0:1975:G:H2' | 1:0:1980:A:H62 | 1.69 | 0.57 |
| 1:0:2015:G:H4' | 1:0:2016:A:OP1 | 2.02 | 0.57 |
| 1:0:2096:U:H2' | 1:0:2097:A:H5'' | 1.87 | 0.57 |
| 1:0:2433:G:C4 | 1:0:2434:G:C8 | 2.92 | 0.57 |
| 1:0:2642:G:C4 | 1:0:2643:G:C8 | 2.92 | 0.57 |
| 1:0:109:A:H8 | 1:0:109:A:O5' | 1.87 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:327:C:O2' | 1:0:328:A:H5' | 2.04 | 0.57 |
| 1:0:544:U:O5' | 1:0:544:U:H6 | 1.87 | 0.57 |
| 1:0:636:G:C2' | 1:0:637:G:H5' | 2.34 | 0.57 |
| 1:0:965:G:C2' | 1:0:966:A:H5' | 2.34 | 0.57 |
| 1:0:983:G:OP2 | 1:0:985:G:C5' | 2.53 | 0.57 |
| 1:0:1089:C:O5' | 1:0:1089:C:H6 | 1.87 | 0.57 |
| 1:0:1293:A:C2 | 1:0:1304:U:C2 | 2.93 | 0.57 |
| 1:0:1764:A:H2' | 1:0:1765:C:O4' | 2.05 | 0.57 |
| 1:0:1787:U:H2' | 1:0:1788:C:C6 | 2.39 | 0.57 |
| 1:0:2331:A:C2' | 1:0:2332:G:H5' | 2.35 | 0.57 |
| 1:0:2341:G:O2' | 1:0:2342:U:H5' | 2.04 | 0.57 |
| 1:0:2418:A:O2' | 1:0:2566:A:H5' | 2.04 | 0.57 |
| 1:0:2652:G:H2' | 1:0:2653:A:H8 | 1.68 | 0.57 |
| 1:0:74:G:H2' | 1:0:75:C:C6 | 2.39 | 0.57 |
| 1:0:442:A:N6 | 1:0:443:A:N6 | 2.53 | 0.57 |
| 1:0:614:G:H2' | 1:0:615:C:H6 | 1.69 | 0.57 |
| 1:0:701:U:C4' | 1:0:1771:A:H2 | 2.10 | 0.57 |
| 1:0:766:A:O2' | 1:0:767:G:H5' | 2.03 | 0.57 |
| 1:0:1358:C:C2' | 1:0:1359:G:H5'' | 2.34 | 0.57 |
| 1:0:1726:C:O2' | 1:0:1727:C:H5' | 2.05 | 0.57 |
| 2:9:102:A:H2' | 2:9:103:A:H5' | 1.85 | 0.57 |
| 1:0:16:G:O2' | 1:0:17:G:H5' | 2.04 | 0.57 |
| 1:0:159:A:C8 | 1:0:160:C:C5 | 2.93 | 0.57 |
| 1:0:513:A:N3 | 1:0:515:A:N7 | 2.53 | 0.57 |
| 1:0:778:G:H2' | 1:0:779:U:C6 | 2.40 | 0.57 |
| 1:0:805:G:H2' | 1:0:2419:C:C2 | 2.39 | 0.57 |
| 1:0:859:U:H4' | 1:0:860:U:H5 | 1.66 | 0.57 |
| 1:0:1248:G:C5 | 1:0:1249:G:N1 | 2.73 | 0.57 |
| 1:0:1690:U:H2' | 1:0:1691:G:H5'' | 1.86 | 0.57 |
| 1:0:1900:U:C2' | 1:0:1901:A:H5' | 2.35 | 0.57 |
| 1:0:2455:A:C2 | 1:0:2460:G:N2 | 2.73 | 0.57 |
| 1:0:2592:U:C3' | 1:0:2592:U:C6 | 2.88 | 0.57 |
| 1:0:2742:G:H2' | 1:0:2743:G:H8 | 1.66 | 0.57 |
| 1:0:2815:C:O2' | 1:0:2816:C:H5' | 2.04 | 0.57 |
| 1:0:150:A:H8 | 1:0:150:A:O5' | 1.87 | 0.57 |
| 1:0:179:U:C2' | 1:0:180:C:H5' | 2.35 | 0.57 |
| 1:0:180:C:N3 | 1:0:181:A:N6 | 2.50 | 0.57 |
| 1:0:471:A:C2' | 1:0:472:C:H5' | 2.34 | 0.57 |
| 1:0:622:U:H2' | 1:0:623:G:C5' | 2.34 | 0.57 |
| 1:0:761:G:O6 | 1:0:764:A:H5' | 2.04 | 0.57 |
| 1:0:878:C:O2' | 1:0:879:A:H8 | 1.88 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1313:U:H5' | 1:0:1314:A:N3 | 2.20 | 0.57 |
| 1:0:1608:U:H2' | 1:0:1609:G:C8 | 2.40 | 0.57 |
| 1:0:1777:A:H62 | 1:0:2585:C:H1' | 1.68 | 0.57 |
| 1:0:2470:U:O2' | 1:0:2471:U:H5' | 2.05 | 0.57 |
| 1:0:2739:G:O5' | 1:0:2739:G:H8 | 1.87 | 0.57 |
| 1:0:464:G:C2 | 1:0:465:C:C4 | 2.92 | 0.57 |
| 1:0:539:A:N6 | 1:0:2024:U:H3 | 2.01 | 0.57 |
| 1:0:679:C:H2' | 1:0:680:U:H6 | 1.68 | 0.57 |
| 1:0:699:G:N3 | 1:0:699:G:C2' | 2.68 | 0.57 |
| 1:0:870:C:C5 | 1:0:871:U:H5 | 2.22 | 0.57 |
| 1:0:1198:C:H5'' | 1:0:1199:U:C5' | 2.34 | 0.57 |
| 1:0:2324:G:C4 | 1:0:2326:C:H5 | 2.22 | 0.57 |
| 1:0:2426:G:O5' | 1:0:2480:C:C5 | 2.57 | 0.57 |
| 1:0:2434:G:H2' | 1:0:2435:C:C6 | 2.38 | 0.57 |
| 1:0:2610:G:H5' | 1:0:2866:A:C1' | 2.25 | 0.57 |
| 1:0:533:C:H2' | 1:0:534:U:O4' | 2.05 | 0.57 |
| 1:0:619:A:H2' | 1:0:620:G:H8 | 1.69 | 0.57 |
| 1:0:632:A:H2' | 1:0:633:G:C5' | 2.33 | 0.57 |
| 1:0:870:C:C6 | 1:0:871:U:H5 | 2.22 | 0.57 |
| 1:0:968:C:N4 | 1:0:2437:G:H5'' | 2.19 | 0.57 |
| 1:0:989:G:N2 | 1:0:997:C:C2 | 2.73 | 0.57 |
| 1:0:1208:A:H8 | 1:0:1208:A:O5' | 1.87 | 0.57 |
| 1:0:1388:C:H2' | 1:0:1389:C:H6 | 1.69 | 0.57 |
| 1:0:1407:G:C2' | 1:0:1408:A:O4' | 2.51 | 0.57 |
| 1:0:2533:U:H2' | 1:0:2534:U:C6 | 2.40 | 0.57 |
| 1:0:2587:G:O5' | 1:0:2587:G:C8 | 2.57 | 0.57 |
| 1:0:2817:A:O2' | 1:0:2818:G:H5' | 2.04 | 0.57 |
| 1:0:178:C:H2' | 1:0:179:U:C6 | 2.40 | 0.56 |
| 1:0:608:G:O2' | 1:0:609:U:H5' | 2.05 | 0.56 |
| 1:0:874:A:H2' | 1:0:874:A:N3 | 2.19 | 0.56 |
| 1:0:940:G:C8 | 1:0:941:U:O4' | 2.58 | 0.56 |
| 1:0:1046:U:H2' | 1:0:1047:G:H8 | 1.70 | 0.56 |
| 1:0:1499:A:H2' | 1:0:1500:U:H6 | 1.70 | 0.56 |
| 1:0:2059:U:H5'' | 1:0:2217:G:C6 | 2.40 | 0.56 |
| 1:0:2091:C:H2' | 1:0:2092:U:H5' | 1.87 | 0.56 |
| 1:0:2093:G:H2' | 1:0:2094:C:C6 | 2.40 | 0.56 |
| 1:0:2378:G:H22 | 1:0:2397:A:C1' | 2.13 | 0.56 |
| 1:0:2535:C:O2' | 1:0:2536:G:H5' | 2.05 | 0.56 |
| 1:0:2782:G:H3' | 1:0:2783:U:C5' | 2.35 | 0.56 |
| 1:0:531:G:O6 | 1:0:532:A:N6 | 2.38 | 0.56 |
| 1:0:815:A:O4' | 1:0:815:A:OP2 | 2.22 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1355:A:N7 | 1:0:1410:U:C1' | 2.68 | 0.56 |
| 1:0:1503:G:H2' | 1:0:1504:G:H8 | 1.70 | 0.56 |
| 1:0:306:G:H2' | 1:0:307:C:C6 | 2.39 | 0.56 |
| 1:0:425:A:N7 | 1:0:2390:A:C2 | 2.73 | 0.56 |
| 1:0:540:G:C8 | 1:0:540:G:OP2 | 2.58 | 0.56 |
| 1:0:749:C:H2' | 1:0:750:C:C6 | 2.41 | 0.56 |
| 1:0:853:C:O2 | 1:0:950:G:N1 | 2.39 | 0.56 |
| 1:0:914:C:O2' | 1:0:915:C:H5' | 2.05 | 0.56 |
| 1:0:967:G:N2 | 1:0:970:A:H8 | 2.03 | 0.56 |
| 1:0:995:A:C5' | 1:0:996:C:H5 | 2.15 | 0.56 |
| 1:0:1014:G:N3 | 1:0:1021:A:C2 | 2.73 | 0.56 |
| 1:0:1200:G:O2' | 1:0:1201:G:H5' | 2.04 | 0.56 |
| 1:0:1279:G:H1 | 19:Q:37:LYS:CA | 2.18 | 0.56 |
| 1:0:1310:C:H2' | 1:0:1311:C:C6 | 2.40 | 0.56 |
| 1:0:1955:G:H2' | 1:0:1956:G:H5' | 1.87 | 0.56 |
| 1:0:2033:C:H2' | 1:0:2034:A:O4' | 2.05 | 0.56 |
| 1:0:2067:U:O5' | 1:0:2067:U:H6 | 1.89 | 0.56 |
| 1:0:2429:A:OP1 | 1:0:2476:A:H2' | 2.04 | 0.56 |
| 1:0:2695:C:C2 | 1:0:2696:A:C8 | 2.94 | 0.56 |
| 1:0:2724:G:C2 | 1:0:2725:C:C4 | 2.92 | 0.56 |
| 1:0:2837:G:O5' | 1:0:2837:G:C8 | 2.58 | 0.56 |
| 1:0:4:C:H2' | 1:0:5:A:H8 | 1.71 | 0.56 |
| 1:0:28:A:H5'' | 1:0:460:U:C5 | 2.41 | 0.56 |
| 1:0:560:G:C6 | 1:0:561:U:C4 | 2.94 | 0.56 |
| 1:0:689:A:H2 | 1:0:690:A:C8 | 2.23 | 0.56 |
| 1:0:704:G:C2 | 1:0:705:C:C2 | 2.92 | 0.56 |
| 1:0:743:A:OP2 | 1:0:744:C:OP2 | 2.23 | 0.56 |
| 1:0:930:A:H8 | 2:9:82:U:O2' | 1.89 | 0.56 |
| 1:0:976:C:H5' | 1:0:2252:A:C1' | 2.34 | 0.56 |
| 1:0:1272:G:H2' | 1:0:1273:G:C8 | 2.41 | 0.56 |
| 1:0:1459:U:C2' | 1:0:1475:U:O2' | 2.53 | 0.56 |
| 1:0:1473:U:H5'' | 1:0:1474:A:C4 | 2.41 | 0.56 |
| 1:0:1538:A:O2' | 1:0:1539:U:H5' | 2.05 | 0.56 |
| 1:0:2198:U:C2' | 1:0:2199:C:H5'' | 2.36 | 0.56 |
| 1:0:2829:A:H2' | 1:0:2830:U:H6 | 1.70 | 0.56 |
| 1:0:311:A:H2 | 1:0:334:G:H21 | 1.52 | 0.56 |
| 1:0:394:U:C2' | 1:0:395:G:H5' | 2.36 | 0.56 |
| 1:0:570:G:H2' | 1:0:571:U:H5' | 1.87 | 0.56 |
| 1:0:721:C:H2' | 1:0:722:C:C6 | 2.40 | 0.56 |
| 1:0:1312:G:O2' | 1:0:1314:A:H2 | 1.88 | 0.56 |
| 1:0:1543:G:H2' | 1:0:1544:A:O4' | 2.06 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1650:A:N7 | 1:0:1652:G:N7 | 2.53 | 0.56 |
| 1:0:2241:U:C4' | 1:0:2307:A:C2 | 2.86 | 0.56 |
| 1:0:2326:C:N4 | 1:0:2350:G:N2 | 2.54 | 0.56 |
| 1:0:2544:A:H5'' | 1:0:2545:A:OP2 | 2.05 | 0.56 |
| 1:0:2753:C:H2' | 1:0:2754:C:H6 | 1.70 | 0.56 |
| 1:0:109:A:C3' | 1:0:110:U:H5'' | 2.35 | 0.56 |
| 1:0:687:G:C5 | 1:0:817:A:N1 | 2.74 | 0.56 |
| 1:0:1503:G:C6 | 1:0:1504:G:C6 | 2.93 | 0.56 |
| 1:0:1669:A:H2' | 1:0:1670:G:H4' | 1.87 | 0.56 |
| 1:0:1700:C:C6 | 1:0:1701:C:C5 | 2.93 | 0.56 |
| 1:0:1825:C:C2' | 1:0:1826:U:H5' | 2.34 | 0.56 |
| 1:0:1838:G:H2' | 1:0:1839:A:H5' | 1.87 | 0.56 |
| 1:0:2006:G:H2' | 1:0:2007:G:C8 | 2.40 | 0.56 |
| 1:0:2436:U:O2 | 1:0:2474:G:N2 | 2.39 | 0.56 |
| 1:0:2437:G:C6 | 1:0:2469:G:C2' | 2.85 | 0.56 |
| 1:0:2544:A:H2' | 1:0:2545:A:H1' | 1.86 | 0.56 |
| 1:0:2710:C:O2' | 1:0:2711:G:H5' | 2.06 | 0.56 |
| 1:0:2717:G:H2' | 1:0:2718:A:H8 | 1.70 | 0.56 |
| 1:0:167:A:H3' | 1:0:181:A:N1 | 2.21 | 0.56 |
| 1:0:322:A:C2 | 1:0:342:G:OP2 | 2.59 | 0.56 |
| 1:0:613:A:C2 | 1:0:614:G:C5 | 2.94 | 0.56 |
| 1:0:676:G:H8 | 1:0:676:G:O5' | 1.89 | 0.56 |
| 1:0:741:G:C4 | 1:0:743:A:C8 | 2.94 | 0.56 |
| 1:0:951:G:C2' | 1:0:952:A:H5'' | 2.36 | 0.56 |
| 1:0:1001:A:N3 | 1:0:1167:A:H2 | 2.03 | 0.56 |
| 1:0:1322:G:C6 | 1:0:1323:G:C6 | 2.94 | 0.56 |
| 1:0:1389:C:O2' | 1:0:1390:G:H5' | 2.05 | 0.56 |
| 1:0:1392:U:OP1 | 1:0:1392:U:H6 | 1.89 | 0.56 |
| 1:0:1615:C:H2' | 1:0:1616:C:C6 | 2.41 | 0.56 |
| 1:0:1793:A:N6 | 1:0:1806:G:H2' | 2.20 | 0.56 |
| 1:0:2217:G:N3 | 1:0:2217:G:H2' | 2.19 | 0.56 |
| 1:0:2543:A:H8 | 1:0:2543:A:O5' | 1.89 | 0.56 |
| 1:0:171:G:H2' | 1:0:172:A:O4' | 2.06 | 0.56 |
| 1:0:525:A:H2' | 1:0:526:C:C5' | 2.27 | 0.56 |
| 1:0:797:A:H4' | 1:0:798:G:C8 | 2.40 | 0.56 |
| 1:0:834:A:N7 | 1:0:957:G:C5 | 2.74 | 0.56 |
| 1:0:836:G:H8 | 1:0:836:G:O5' | 1.87 | 0.56 |
| 1:0:859:U:H3' | 1:0:859:U:C6 | 2.41 | 0.56 |
| 1:0:971:A:C2' | 1:0:973:U:OP1 | 2.53 | 0.56 |
| 1:0:1110:G:H2' | 1:0:1111:C:O4' | 2.06 | 0.56 |
| 1:0:1544:A:C6 | 1:0:1545:G:C6 | 2.94 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1715:A:HO2' | 1:0:1716:G:H3' | 1.70 | 0.56 |
| 1:0:2546:G:H2' | 1:0:2547:C:C6 | 2.41 | 0.56 |
| 1:0:2612:G:H5' | 1:0:2786:G:O2' | 2.06 | 0.56 |
| 2:9:61:A:O5' | 2:9:61:A:C8 | 2.58 | 0.56 |
| 1:0:78:C:O5' | 1:0:78:C:H6 | 1.88 | 0.56 |
| 1:0:591:G:H2' | 1:0:592:G:C8 | 2.40 | 0.56 |
| 1:0:820:U:C2 | 1:0:821:A:C8 | 2.93 | 0.56 |
| 1:0:1223:G:C4 | 1:0:1250:A:N6 | 2.74 | 0.56 |
| 1:0:1480:G:C2 | 1:0:1481:U:H1' | 2.41 | 0.56 |
| 1:0:1514:C:H6 | 1:0:1514:C:P | 2.29 | 0.56 |
| 1:0:1881:U:H2' | 1:0:1882:G:H5' | 1.88 | 0.56 |
| 1:0:2248:A:N7 | 1:0:2249:U:C4 | 2.74 | 0.56 |
| 1:0:2679:G:C2 | 1:0:2687:G:C2 | 2.94 | 0.56 |
| 1:0:2746:G:H2' | 1:0:2746:G:N3 | 2.21 | 0.56 |
| 1:0:112:U:O2' | 1:0:113:C:H5' | 2.04 | 0.56 |
| 1:0:536:A:C2 | 1:0:2605:C:H1' | 2.41 | 0.56 |
| 1:0:644:A:H2' | 1:0:645:G:H5' | 1.88 | 0.56 |
| 1:0:729:A:H2' | 1:0:730:C:H6 | 1.71 | 0.56 |
| 1:0:942:U:C2' | 1:0:943:U:H5' | 2.36 | 0.56 |
| 1:0:1046:U:H2' | 1:0:1047:G:C8 | 2.41 | 0.56 |
| 1:0:1288:A:H62 | 1:0:1309:G:C4' | 2.18 | 0.56 |
| 1:0:1398:G:H2' | 1:0:1399:C:C6 | 2.41 | 0.56 |
| 1:0:1664:G:C4' | 1:0:1665:C:OP1 | 2.54 | 0.56 |
| 1:0:1707:A:N7 | 1:0:1714:A:C2 | 2.74 | 0.56 |
| 1:0:1777:A:N6 | 1:0:2585:C:O4' | 2.39 | 0.56 |
| 1:0:1789:U:C4 | 1:0:1811:A:C2 | 2.94 | 0.56 |
| 1:0:211:U:O2' | 1:0:212:U:H5' | 2.06 | 0.55 |
| 1:0:756:C:O2' | 1:0:757:U:H5' | 2.06 | 0.55 |
| 1:0:788:G:H5'' | 1:0:790:A:H1' | 1.88 | 0.55 |
| 1:0:805:G:H5'' | 1:0:806:A:O5' | 2.06 | 0.55 |
| 1:0:1007:A:H2' | 1:0:1008:G:H8 | 1.71 | 0.55 |
| 1:0:1014:G:O2' | 1:0:1015:U:H5' | 2.06 | 0.55 |
| 1:0:1040:A:N7 | 1:0:1041:G:C8 | 2.74 | 0.55 |
| 1:0:1452:U:C4 | 1:0:1568:A:C2 | 2.93 | 0.55 |
| 1:0:1635:G:H2' | 1:0:1636:G:O4' | 2.06 | 0.55 |
| 1:0:1686:A:O2' | 1:0:1687:C:H5' | 2.06 | 0.55 |
| 1:0:1692:C:C2' | 1:0:1693:A:H5' | 2.34 | 0.55 |
| 1:0:1938:U:O2' | 1:0:1939:U:C5' | 2.35 | 0.55 |
| 1:0:1972:G:C2' | 1:0:1973:C:H5' | 2.36 | 0.55 |
| 1:0:1984:A:H1' | 1:0:2668:U:C4 | 2.41 | 0.55 |
| 1:0:2496:C:C2 | 1:0:2521:A:N6 | 2.73 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2640:G:H2' | 1:0:2641:A:C8 | 2.41 | 0.55 |
| 1:0:2816:C:C2 | 1:0:2852:G:C2 | 2.94 | 0.55 |
| 1:0:2843:A:C6 | 1:0:2844:G:C2 | 2.94 | 0.55 |
| 2:9:62:C:N3 | 2:9:63:A:N7 | 2.54 | 0.55 |
| 1:0:947:C:N3 | 1:0:948:C:C4 | 2.73 | 0.55 |
| 1:0:2503:G:C2' | 1:0:2504:G:H5'' | 2.33 | 0.55 |
| 1:0:2703:C:O5' | 1:0:2703:C:H6 | 1.88 | 0.55 |
| 2:9:59:A:H2' | 2:9:60:A:H5' | 1.88 | 0.55 |
| 1:0:931:G:N2 | 1:0:2247:A:H3' | 2.18 | 0.55 |
| 1:0:1011:A:C2 | 1:0:1012:A:C2 | 2.94 | 0.55 |
| 1:0:1151:U:C5' | 1:0:1153:A:H5' | 2.36 | 0.55 |
| 1:0:1329:U:H5' | 1:0:1405:A:H1' | 1.88 | 0.55 |
| 1:0:1517:C:H2' | 1:0:1518:C:H6 | 1.70 | 0.55 |
| 1:0:2007:G:O2' | 1:0:2008:C:H5' | 2.06 | 0.55 |
| 1:0:2034:A:H2' | 1:0:2035:G:C8 | 2.41 | 0.55 |
| 1:0:2044:G:C2 | 1:0:2046:C:C4 | 2.95 | 0.55 |
| 1:0:2472:U:C4 | 1:0:2473:G:N7 | 2.74 | 0.55 |
| 1:0:2518:C:O2' | 1:0:2519:C:H5' | 2.06 | 0.55 |
| 1:0:2641:A:H8 | 1:0:2641:A:O5' | 1.89 | 0.55 |
| 1:0:2766:U:O2' | 1:0:2767:C:H5' | 2.07 | 0.55 |
| 2:9:114:C:O5' | 2:9:114:C:H6 | 1.88 | 0.55 |
| 1:0:177:U:OP2 | 1:0:177:U:H6 | 1.90 | 0.55 |
| 1:0:459:A:N1 | 1:0:466:A:H3' | 2.22 | 0.55 |
| 1:0:646:C:O2 | 1:0:650:U:H4' | 2.06 | 0.55 |
| 1:0:811:G:O2' | 1:0:812:G:H5' | 2.06 | 0.55 |
| 1:0:1190:C:H6 | 1:0:1190:C:O5' | 1.88 | 0.55 |
| 1:0:1312:G:H2' | 1:0:1643:A:N6 | 2.22 | 0.55 |
| 1:0:2060:A:OP1 | 1:0:2061:C:OP2 | 2.25 | 0.55 |
| 1:0:2217:G:N3 | 1:0:2217:G:H3' | 2.21 | 0.55 |
| 1:0:2458:U:C4 | 1:0:2459:C:C4 | 2.94 | 0.55 |
| 1:0:176:A:H1' | 1:0:2221:G:H21 | 1.70 | 0.55 |
| 1:0:215:G:N2 | 1:0:632:A:C8 | 2.75 | 0.55 |
| 1:0:521:U:C5 | 1:0:522:G:N3 | 2.71 | 0.55 |
| 1:0:746:G:N7 | 1:0:774:A:C5 | 2.74 | 0.55 |
| 1:0:813:A:H2' | 1:0:813:A:N3 | 2.22 | 0.55 |
| 1:0:976:C:O2' | 1:0:977:G:C5' | 2.54 | 0.55 |
| 1:0:2367:A:N7 | 1:0:2368:G:C5 | 2.75 | 0.55 |
| 1:0:2395:C:N4 | 1:0:2396:C:N4 | 2.54 | 0.55 |
| 1:0:2413:A:H8 | 1:0:2413:A:H3' | 1.71 | 0.55 |
| 1:0:2459:C:C2' | 1:0:2460:G:H5' | 2.37 | 0.55 |
| 1:0:2656:G:H2' | 1:0:2657:G:H8 | 1.71 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 2:9:33:C:H2' | 2:9:34:C:C6 | 2.41 | 0.55 |
| 1:0:495:C:H2' | 1:0:496:C:H6 | 1.69 | 0.55 |
| 1:0:576:A:H2 | 1:0:580:A:H62 | 1.54 | 0.55 |
| 1:0:584:A:H2' | 1:0:585:U:C6 | 2.36 | 0.55 |
| 1:0:689:A:C2' | 1:0:690:A:H5' | 2.36 | 0.55 |
| 1:0:758:G:H2' | 1:0:759:C:H5' | 1.89 | 0.55 |
| 1:0:1431:U:H2' | 1:0:1432:G:O4' | 2.07 | 0.55 |
| 1:0:1485:U:H2' | 1:0:1486:A:C8 | 2.41 | 0.55 |
| 1:0:1558:C:C2' | 1:0:1559:G:H5' | 2.36 | 0.55 |
| 1:0:1855:G:H2' | 1:0:1856:U:H6 | 1.72 | 0.55 |
| 1:0:2051:U:H3 | 1:0:2409:A:H61 | 1.55 | 0.55 |
| 1:0:2622:G:H2' | 1:0:2623:A:O4' | 2.07 | 0.55 |
| 2:9:89:G:C2 | 2:9:93:G:C2 | 2.94 | 0.55 |
| 1:0:28:A:H5'' | 1:0:460:U:H5 | 1.71 | 0.55 |
| 1:0:515:A:H2' | 1:0:516:G:H5' | 1.89 | 0.55 |
| 1:0:575:U:C2 | 1:0:576:A:C8 | 2.94 | 0.55 |
| 1:0:697:G:H1 | 1:0:807:A:H2 | 1.51 | 0.55 |
| 1:0:2753:C:O2' | 1:0:2754:C:H5' | 2.07 | 0.55 |
| 1:0:2813:G:C4 | 1:0:2814:G:C8 | 2.94 | 0.55 |
| 1:0:2820:C:C2 | 1:0:2821:G:N7 | 2.75 | 0.55 |
| 2:9:79:U:C2' | 2:9:80:A:H5' | 2.37 | 0.55 |
| 1:0:62:U:H2' | 1:0:63:A:C8 | 2.42 | 0.55 |
| 1:0:1171:A:O5' | 1:0:1171:A:H8 | 1.88 | 0.55 |
| 1:0:1223:G:H1' | 1:0:1225:G:C1' | 2.37 | 0.55 |
| 1:0:1838:G:C2' | 1:0:1839:A:H5' | 2.37 | 0.55 |
| 1:0:1989:C:O5' | 1:0:1989:C:H6 | 1.89 | 0.55 |
| 1:0:2181:A:C2' | 1:0:2182:A:H5' | 2.37 | 0.55 |
| 1:0:2197:U:H2' | 1:0:2198:U:C6 | 2.42 | 0.55 |
| 1:0:2641:A:H2' | 1:0:2642:G:H5' | 1.89 | 0.55 |
| 2:9:18:G:H2' | 2:9:19:C:C6 | 2.42 | 0.55 |
| 1:0:3:U:H6 | 1:0:3:U:O5' | 1.90 | 0.55 |
| 1:0:198:A:O2' | 1:0:199:A:P | 2.64 | 0.55 |
| 1:0:347:C:H2' | 1:0:348:U:O4' | 2.07 | 0.55 |
| 1:0:435:A:O2' | 1:0:436:A:H5' | 2.06 | 0.55 |
| 1:0:805:G:N7 | 1:0:2419:C:H1' | 2.21 | 0.55 |
| 1:0:872:G:O6 | 1:0:928:G:OP2 | 2.25 | 0.55 |
| 1:0:914:C:H2' | 1:0:915:C:H6 | 1.72 | 0.55 |
| 1:0:933:G:O2' | 1:0:934:G:H5' | 2.07 | 0.55 |
| 1:0:962:C:C2 | 1:0:963:G:N7 | 2.75 | 0.55 |
| 1:0:1054:C:H2' | 1:0:1055:A:H5' | 1.89 | 0.55 |
| 1:0:1202:U:C2' | 1:0:1203:A:H8 | 2.17 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1369:G:O2' | 1:0:1370:U:H5' | 2.06 | 0.55 |
| 1:0:1618:U:C5 | 1:0:1618:U:OP2 | 2.59 | 0.55 |
| 1:0:1625:A:H1' | 1:0:1632:A:H4' | 1.89 | 0.55 |
| 1:0:1757:C:O2 | 1:0:1970:G:C2 | 2.60 | 0.55 |
| 1:0:2025:A:O5' | 1:0:2025:A:H8 | 1.90 | 0.55 |
| 1:0:2236:U:N3 | 1:0:2237:C:C5 | 2.75 | 0.55 |
| 1:0:2441:U:C2 | 1:0:2442:C:C6 | 2.94 | 0.55 |
| 1:0:2543:A:C6 | 1:0:2626:U:H4' | 2.41 | 0.55 |
| 1:0:102:C:O2' | 1:0:103:U:H5' | 2.07 | 0.55 |
| 1:0:562:G:H2' | 1:0:563:U:O4' | 2.06 | 0.55 |
| 1:0:677:G:C2 | 1:0:678:G:C5 | 2.95 | 0.55 |
| 1:0:678:G:C4 | 1:0:679:C:C5 | 2.95 | 0.55 |
| 1:0:868:U:H2' | 1:0:869:C:H6 | 1.71 | 0.55 |
| 1:0:951:G:H2' | 1:0:952:A:C4' | 2.37 | 0.55 |
| 1:0:977:G:H1' | 1:0:2246:A:C5 | 2.42 | 0.55 |
| 1:0:1150:C:O2' | 1:0:1153:A:H4' | 2.06 | 0.55 |
| 1:0:1235:C:O2' | 1:0:1236:G:H5' | 2.07 | 0.55 |
| 1:0:1341:G:H2' | 1:0:1343:C:N4 | 2.22 | 0.55 |
| 1:0:1552:C:C2' | 1:0:1553:G:H5' | 2.37 | 0.55 |
| 1:0:1769:U:H3 | 1:0:1775:A:H1' | 1.72 | 0.55 |
| 1:0:2047:C:H6 | 1:0:2047:C:H3' | 1.72 | 0.55 |
| 1:0:2051:U:H3 | 1:0:2409:A:N6 | 2.05 | 0.55 |
| 1:0:2409:A:H2' | 1:0:2410:U:H5' | 1.88 | 0.55 |
| 1:0:2610:G:C5' | 1:0:2866:A:H1' | 2.24 | 0.55 |
| 1:0:2665:G:C5 | 1:0:2666:U:C5 | 2.95 | 0.55 |
| 1:0:2792:C:C2 | 1:0:2805:G:N2 | 2.75 | 0.55 |
| 1:0:136:A:H2' | 1:0:137:A:O4' | 2.07 | 0.54 |
| 1:0:632:A:C2 | 1:0:633:G:C5 | 2.95 | 0.54 |
| 1:0:703:A:H2' | 1:0:704:G:C8 | 2.37 | 0.54 |
| 1:0:870:C:H2' | 1:0:871:U:C6 | 2.37 | 0.54 |
| 1:0:983:G:O6 | 1:0:984:A:N6 | 2.40 | 0.54 |
| 1:0:1017:C:O2 | 1:0:1018:C:C1' | 2.54 | 0.54 |
| 1:0:2090:U:H2' | 1:0:2091:C:C6 | 2.42 | 0.54 |
| 1:0:74:G:O2' | 1:0:75:C:H5' | 2.06 | 0.54 |
| 1:0:321:A:C2 | 1:0:323:G:H1' | 2.42 | 0.54 |
| 1:0:569:C:O2' | 1:0:570:G:H5' | 2.08 | 0.54 |
| 1:0:798:G:N2 | 1:0:799:C:O4' | 2.40 | 0.54 |
| 1:0:1141:U:O2' | 1:0:1142:G:OP1 | 2.23 | 0.54 |
| 1:0:1197:U:O5' | 1:0:1197:U:H6 | 1.91 | 0.54 |
| 1:0:1356:G:OP2 | 1:0:1357:U:OP2 | 2.26 | 0.54 |
| 1:0:1685:A:H2 | 1:0:1976:U:C2 | 2.25 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1735:G:H2' | 1:0:1736:C:H6 | 1.71 | 0.54 |
| 1:0:1990:U:O4 | 1:0:1991:C:N4 | 2.41 | 0.54 |
| 1:0:2059:U:C3' | 1:0:2217:G:O6 | 2.55 | 0.54 |
| 1:0:2174:G:H2' | 1:0:2175:A:H8 | 1.73 | 0.54 |
| 1:0:2555:G:H2' | 1:0:2555:G:N3 | 2.22 | 0.54 |
| 1:0:2583:U:H2' | 1:0:2584:U:H5' | 1.89 | 0.54 |
| 1:0:2641:A:C2' | 1:0:2642:G:H5' | 2.37 | 0.54 |
| 2:9:20:A:O2' | 2:9:21:C:H5' | 2.07 | 0.54 |
| 1:0:565:A:C6 | 1:0:566:U:C4 | 2.96 | 0.54 |
| 1:0:956:A:H2' | 1:0:957:G:O5' | 2.08 | 0.54 |
| 1:0:958:G:C6 | 1:0:982:C:N3 | 2.76 | 0.54 |
| 1:0:1077:U:H2' | 1:0:1079:G:OP2 | 2.07 | 0.54 |
| 1:0:1755:G:C2 | 1:0:1756:C:C2 | 2.96 | 0.54 |
| 1:0:1797:C:H2' | 1:0:1798:G:O4' | 2.07 | 0.54 |
| 1:0:2404:A:P | 1:0:2406:C:H5' | 2.47 | 0.54 |
| 1:0:2554:C:H3' | 1:0:2554:C:C6 | 2.43 | 0.54 |
| 1:0:2618:A:H2' | 1:0:2619:G:O4' | 2.08 | 0.54 |
| 1:0:2640:G:C6 | 1:0:2641:A:C6 | 2.95 | 0.54 |
| 1:0:2697:G:N2 | 1:0:2698:G:C4 | 2.75 | 0.54 |
| 1:0:2761:A:O5' | 1:0:2761:A:H8 | 1.89 | 0.54 |
| 1:0:43:A:H2 | 1:0:448:C:N4 | 2.05 | 0.54 |
| 1:0:322:A:N1 | 1:0:341:A:OP2 | 2.41 | 0.54 |
| 1:0:533:C:H1' | 1:0:563:U:O2' | 2.07 | 0.54 |
| 1:0:584:A:C5' | 1:0:2038:C:N4 | 2.70 | 0.54 |
| 1:0:759:C:N4 | 1:0:2591:C:OP1 | 2.34 | 0.54 |
| 1:0:874:A:C2 | 1:0:875:G:H1' | 2.42 | 0.54 |
| 1:0:1002:C:C6 | 1:0:1198:C:N3 | 2.75 | 0.54 |
| 1:0:1090:C:O2' | 1:0:1091:C:H5' | 2.07 | 0.54 |
| 1:0:1411:C:O2' | 1:0:1412:C:H5' | 2.08 | 0.54 |
| 1:0:1787:U:O5' | 1:0:1787:U:H6 | 1.89 | 0.54 |
| 1:0:1934:U:O2 | 1:0:1936:A:H8 | 1.90 | 0.54 |
| 1:0:2077:G:O2' | 1:0:2078:G:H5' | 2.07 | 0.54 |
| 1:0:2207:G:O2' | 1:0:2208:U:H5' | 2.07 | 0.54 |
| 1:0:2299:A:C5' | 1:0:2300:G:C4 | 2.91 | 0.54 |
| 1:0:2540:A:H2' | 1:0:2541:U:O5' | 2.06 | 0.54 |
| 1:0:2600:A:C2' | 1:0:2601:C:H5' | 2.37 | 0.54 |
| 1:0:224:G:C8 | 1:0:226:C:H1' | 2.42 | 0.54 |
| 1:0:485:G:O6 | 1:0:520:C:C4 | 2.61 | 0.54 |
| 1:0:494:A:OP2 | 1:0:495:C:H5 | 1.91 | 0.54 |
| 1:0:622:U:O2' | 1:0:623:G:H5' | 2.07 | 0.54 |
| 1:0:701:U:C5' | 1:0:1771:A:H2 | 2.20 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:971:A:O2' | 1:0:973:U:OP1 | 2.21 | 0.54 |
| 1:0:1262:U:H3' | 1:0:1262:U:C6 | 2.41 | 0.54 |
| 1:0:1805:G:H1' | 3:A:46:ARG:CA | 2.38 | 0.54 |
| 1:0:2058:U:H3' | 1:0:2217:G:N1 | 2.23 | 0.54 |
| 1:0:2441:U:H2' | 1:0:2442:C:H6 | 1.72 | 0.54 |
| 1:0:2459:C:H2' | 1:0:2460:G:H5' | 1.90 | 0.54 |
| 1:0:31:C:H2' | 1:0:32:C:H6 | 1.71 | 0.54 |
| 1:0:312:G:N2 | 1:0:328:A:C1' | 2.71 | 0.54 |
| 1:0:512:A:C2' | 1:0:513:A:H5' | 2.35 | 0.54 |
| 1:0:580:A:N7 | 1:0:584:A:N6 | 2.56 | 0.54 |
| 1:0:729:A:O2' | 1:0:730:C:H5' | 2.08 | 0.54 |
| 1:0:798:G:N2 | 1:0:799:C:H1' | 2.23 | 0.54 |
| 1:0:987:G:H4' | 1:0:1167:A:N7 | 2.23 | 0.54 |
| 1:0:1049:C:C2 | 1:0:1129:A:C2 | 2.95 | 0.54 |
| 1:0:1072:U:O5' | 1:0:1072:U:H6 | 1.91 | 0.54 |
| 1:0:1197:U:H2' | 1:0:1198:C:O4' | 2.08 | 0.54 |
| 1:0:1339:U:O2' | 1:0:1993:G:H1' | 2.06 | 0.54 |
| 1:0:1432:G:C2 | 1:0:1594:U:C5 | 2.95 | 0.54 |
| 1:0:1692:C:O2' | 1:0:1693:A:H5' | 2.08 | 0.54 |
| 1:0:1782:A:C2 | 1:0:1821:A:H4' | 2.43 | 0.54 |
| 1:0:2359:U:N3 | 1:0:2360:C:C5 | 2.76 | 0.54 |
| 1:0:2404:A:H4' | 1:0:2405:A:O5' | 2.07 | 0.54 |
| 1:0:2709:C:C4 | 1:0:2710:C:N4 | 2.75 | 0.54 |
| 2:9:84:G:H2' | 2:9:85:G:C8 | 2.36 | 0.54 |
| 1:0:140:G:H2' | 1:0:141:G:H8 | 1.73 | 0.54 |
| 1:0:539:A:C6 | 1:0:2025:A:C2 | 2.95 | 0.54 |
| 1:0:677:G:N2 | 1:0:678:G:C4 | 2.75 | 0.54 |
| 1:0:968:C:C2 | 1:0:2438:A:H5' | 2.43 | 0.54 |
| 1:0:1236:G:N2 | 1:0:1240:G:C4 | 2.76 | 0.54 |
| 1:0:1761:G:O2' | 1:0:1762:C:H5' | 2.08 | 0.54 |
| 1:0:1779:C:O5' | 1:0:1779:C:H6 | 1.91 | 0.54 |
| 1:0:1972:G:H2' | 1:0:1973:C:O4' | 2.07 | 0.54 |
| 1:0:1976:U:H2' | 1:0:1977:C:C5' | 2.26 | 0.54 |
| 1:0:2474:G:O2' | 1:0:2475:C:H5' | 2.08 | 0.54 |
| 1:0:158:A:H2 | 1:0:447:U:H4' | 1.72 | 0.54 |
| 1:0:748:A:N7 | 1:0:749:C:N3 | 2.56 | 0.54 |
| 1:0:931:G:O2' | 1:0:932:G:H5' | 2.07 | 0.54 |
| 1:0:1141:U:H3 | 1:0:2008:C:H5'' | 1.73 | 0.54 |
| 1:0:1276:U:H2' | 1:0:1277:G:O4' | 2.08 | 0.54 |
| 1:0:1312:G:H2' | 1:0:1656:U:O4 | 2.08 | 0.54 |
| 1:0:1375:C:C4 | 1:0:1376:C:C5 | 2.96 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1645:U:H2' | 1:0:1646:G:H8 | 1.69 | 0.54 |
| 1:0:1668:G:C2 | 1:0:1990:U:O2 | 2.61 | 0.54 |
| 1:0:1851:A:O5' | 1:0:1851:A:H8 | 1.91 | 0.54 |
| 1:0:1886:G:H2' | 1:0:1887:G:H8 | 1.73 | 0.54 |
| 1:0:2022:C:C4 | 1:0:2023:C:C4 | 2.96 | 0.54 |
| 1:0:2397:A:H2' | 1:0:2398:U:C6 | 2.43 | 0.54 |
| 1:0:2409:A:H3' | 1:0:2409:A:C8 | 2.42 | 0.54 |
| 1:0:2707:G:O2' | 1:0:2708:U:H5' | 2.07 | 0.54 |
| 2:9:100:G:C2 | 2:9:101:A:H1' | 2.42 | 0.54 |
| 1:0:66:U:C2 | 1:0:67:G:N7 | 2.75 | 0.54 |
| 1:0:114:C:O2' | 1:0:115:G:H5' | 2.08 | 0.54 |
| 1:0:229:G:H2' | 1:0:230:C:C6 | 2.43 | 0.54 |
| 1:0:532:A:H2' | 1:0:533:C:C6 | 2.41 | 0.54 |
| 1:0:546:A:H2' | 1:0:547:U:C6 | 2.43 | 0.54 |
| 1:0:784:U:O2' | 1:0:785:U:H5' | 2.08 | 0.54 |
| 1:0:931:G:H2' | 1:0:932:G:O4' | 2.07 | 0.54 |
| 1:0:1004:A:C6 | 1:0:1005:U:C5 | 2.95 | 0.54 |
| 1:0:1365:U:O2' | 1:0:1366:A:H5' | 2.08 | 0.54 |
| 1:0:1385:C:H2' | 1:0:1386:A:H8 | 1.72 | 0.54 |
| 1:0:1459:U:O2 | 1:0:1475:U:O3' | 2.25 | 0.54 |
| 1:0:1683:G:C2' | 1:0:1684:G:H5' | 2.32 | 0.54 |
| 1:0:1789:U:O2' | 1:0:1793:A:H1' | 2.07 | 0.54 |
| 1:0:2222:U:H2' | 1:0:2223:U:C6 | 2.43 | 0.54 |
| 1:0:2266:A:H2' | 1:0:2268:G:N7 | 2.22 | 0.54 |
| 1:0:2279:G:H2' | 1:0:2280:A:C8 | 2.42 | 0.54 |
| 1:0:2331:A:H2' | 1:0:2332:G:H5' | 1.90 | 0.54 |
| 1:0:2371:A:H3' | 1:0:2371:A:N3 | 2.22 | 0.54 |
| 1:0:2373:C:C5 | 1:0:2374:C:C5 | 2.96 | 0.54 |
| 1:0:2395:C:N4 | 1:0:2396:C:H41 | 2.05 | 0.54 |
| 1:0:2674:C:H2' | 1:0:2675:U:C6 | 2.43 | 0.54 |
| 1:0:2709:C:N4 | 1:0:2710:C:N4 | 2.56 | 0.54 |
| 1:0:11:G:H8 | 1:0:11:G:O5' | 1.90 | 0.54 |
| 1:0:128:C:C2' | 1:0:129:A:C5' | 2.74 | 0.54 |
| 1:0:475:U:O4 | 1:0:476:G:N1 | 2.41 | 0.54 |
| 1:0:1117:G:H2' | 1:0:1118:G:C8 | 2.42 | 0.54 |
| 1:0:1193:G:O2' | 1:0:1194:U:H5' | 2.06 | 0.54 |
| 1:0:1532:A:H2' | 1:0:1533:G:C8 | 2.43 | 0.54 |
| 1:0:1619:A:H2 | 1:0:1620:C:C6 | 2.26 | 0.54 |
| 1:0:1746:A:H2 | 1:0:2696:A:H1' | 1.73 | 0.54 |
| 1:0:1767:G:N2 | 1:0:1768:U:H1' | 2.22 | 0.54 |
| 1:0:1920:A:C2 | 1:0:1922:U:C5 | 2.96 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:815:A:H2' | 1:0:816:U:C6 | 2.43 | 0.53 |
| 1:0:941:U:C2' | 1:0:942:U:H5' | 2.38 | 0.53 |
| 1:0:1140:A:H2 | 1:0:2548:G:HO2' | 1.56 | 0.53 |
| 1:0:2623:A:N6 | 1:0:2624:G:N1 | 2.56 | 0.53 |
| 1:0:2713:A:N6 | 1:0:2714:A:N6 | 2.56 | 0.53 |
| 1:0:2739:G:H2' | 1:0:2740:C:O4' | 2.08 | 0.53 |
| 2:9:34:C:O2' | 2:9:35:C:H5' | 2.08 | 0.53 |
| 1:0:121:G:O2' | 1:0:122:G:H5' | 2.08 | 0.53 |
| 1:0:175:C:N3 | 1:0:225:G:N2 | 2.56 | 0.53 |
| 1:0:175:C:O2' | 1:0:176:A:C8 | 2.53 | 0.53 |
| 1:0:845:U:P | 1:0:955:G:O6 | 2.67 | 0.53 |
| 1:0:1438:G:C2 | 1:0:1591:U:C2 | 2.96 | 0.53 |
| 1:0:1496:G:H1 | 1:0:1527:G:H1 | 1.57 | 0.53 |
| 1:0:1948:C:C2 | 1:0:1949:A:N7 | 2.75 | 0.53 |
| 1:0:2318:U:C2' | 1:0:2319:G:H8 | 2.08 | 0.53 |
| 1:0:2375:G:C2 | 1:0:2400:G:C2 | 2.96 | 0.53 |
| 1:0:2376:G:C6 | 1:0:2399:C:N3 | 2.76 | 0.53 |
| 1:0:2443:C:H2' | 1:0:2444:C:O4' | 2.09 | 0.53 |
| 1:0:2718:A:H2 | 1:0:2746:G:H1 | 1.57 | 0.53 |
| 1:0:2756:A:N7 | 1:0:2762:G:C8 | 2.77 | 0.53 |
| 1:0:2816:C:O2 | 1:0:2852:G:C2 | 2.61 | 0.53 |
| 1:0:58:C:C1' | 1:0:72:A:C8 | 2.89 | 0.53 |
| 1:0:691:C:C2 | 1:0:692:C:C5 | 2.96 | 0.53 |
| 1:0:701:U:O2' | 1:0:702:A:H5' | 2.09 | 0.53 |
| 1:0:814:G:H3' | 1:0:815:A:H5' | 1.91 | 0.53 |
| 1:0:835:U:C4 | 1:0:849:G:C2 | 2.96 | 0.53 |
| 1:0:1379:A:H2' | 1:0:1380:C:C6 | 2.44 | 0.53 |
| 1:0:1574:A:O4' | 1:0:1574:A:OP1 | 2.25 | 0.53 |
| 1:0:1692:C:C2' | 1:0:1693:A:O5' | 2.56 | 0.53 |
| 1:0:1935:A:C2 | 1:0:1936:A:C2 | 2.97 | 0.53 |
| 1:0:1966:C:H2' | 1:0:1967:U:H6 | 1.73 | 0.53 |
| 1:0:2266:A:N3 | 1:0:2268:G:H1' | 2.22 | 0.53 |
| 1:0:2437:G:N7 | 1:0:2469:G:C5 | 2.76 | 0.53 |
| 1:0:2542:U:H2' | 1:0:2544:A:OP2 | 2.09 | 0.53 |
| 1:0:2625:U:O5' | 1:0:2625:U:H6 | 1.89 | 0.53 |
| 1:0:2661:G:C2 | 4:B:21:ILE:CA | 2.91 | 0.53 |
| 1:0:315:G:N2 | 1:0:325:U:O2 | 2.41 | 0.53 |
| 1:0:353:G:H2' | 1:0:354:C:H6 | 1.73 | 0.53 |
| 1:0:401:G:N3 | 1:0:403:A:N6 | 2.56 | 0.53 |
| 1:0:629:C:C2' | 1:0:630:G:H5' | 2.39 | 0.53 |
| 1:0:709:A:O2' | 1:0:1639:U:H4' | 2.07 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:829:C:N3 | 1:0:1206:G:N1 | 2.57 | 0.53 |
| 1:0:1098:G:C5 | 1:0:1114:A:C2 | 2.96 | 0.53 |
| 1:0:1451:C:O2' | 1:0:1452:U:H5' | 2.08 | 0.53 |
| 1:0:1656:U:H2' | 1:0:1657:A:C5' | 2.38 | 0.53 |
| 1:0:1678:G:C2 | 1:0:1983:G:N3 | 2.77 | 0.53 |
| 1:0:2052:G:H2' | 1:0:2053:G:C5' | 2.39 | 0.53 |
| 1:0:2199:C:O2' | 1:0:2200:G:H5' | 2.09 | 0.53 |
| 1:0:2856:U:C5 | 1:0:2857:C:H5 | 2.27 | 0.53 |
| 2:9:9:G:H2' | 2:9:10:U:C6 | 2.43 | 0.53 |
| 2:9:18:G:H2' | 2:9:19:C:H6 | 1.74 | 0.53 |
| 2:9:56:G:H2' | 2:9:57:U:O4' | 2.09 | 0.53 |
| 1:0:305:A:H2' | 1:0:306:G:C5' | 2.39 | 0.53 |
| 1:0:525:A:O2' | 1:0:526:C:H5' | 2.06 | 0.53 |
| 1:0:796:A:C2 | 1:0:1770:U:H5' | 2.43 | 0.53 |
| 1:0:991:A:N7 | 1:0:992:A:N7 | 2.57 | 0.53 |
| 1:0:1055:A:C2 | 1:0:1121:G:H2' | 2.44 | 0.53 |
| 1:0:1372:A:C8 | 1:0:1373:G:C8 | 2.97 | 0.53 |
| 1:0:1641:C:H3' | 1:0:1642:G:C8 | 2.39 | 0.53 |
| 1:0:1811:A:H1' | 1:0:1813:A:C4 | 2.44 | 0.53 |
| 1:0:1935:A:C2 | 1:0:2539:C:O2 | 2.55 | 0.53 |
| 1:0:2053:G:C2 | 1:0:2054:A:C4 | 2.97 | 0.53 |
| 1:0:2064:U:O4 | 1:0:2216:G:C2 | 2.60 | 0.53 |
| 1:0:2622:G:N2 | 1:0:2752:C:C2 | 2.77 | 0.53 |
| 1:0:2839:G:H2' | 1:0:2840:U:H6 | 1.72 | 0.53 |
| 2:9:116:C:H2' | 2:9:117:G:O4' | 2.09 | 0.53 |
| 1:0:448:C:C5 | 1:0:449:C:C5 | 2.96 | 0.53 |
| 1:0:471:A:H2' | 1:0:472:C:O4' | 2.09 | 0.53 |
| 1:0:545:C:H2' | 1:0:546:A:C8 | 2.44 | 0.53 |
| 1:0:873:U:C3' | 1:0:874:A:H5' | 2.39 | 0.53 |
| 1:0:1248:G:N7 | 1:0:1249:G:C6 | 2.77 | 0.53 |
| 1:0:2007:G:H2' | 1:0:2008:C:C6 | 2.44 | 0.53 |
| 1:0:2047:C:H3' | 1:0:2047:C:C6 | 2.43 | 0.53 |
| 1:0:2347:C:H41 | 1:0:2361:G:H1 | 1.57 | 0.53 |
| 1:0:2499:C:H2' | 1:0:2500:C:C6 | 2.41 | 0.53 |
| 1:0:2701:A:N1 | 1:0:2848:A:C6 | 2.76 | 0.53 |
| 1:0:2748:C:H2' | 1:0:2749:A:O4' | 2.09 | 0.53 |
| 1:0:67:G:N3 | 1:0:73:A:C8 | 2.76 | 0.53 |
| 1:0:421:G:H2' | 1:0:422:C:H6 | 1.72 | 0.53 |
| 1:0:689:A:O2' | 1:0:690:A:H5' | 2.07 | 0.53 |
| 1:0:1002:C:N3 | 1:0:1003:C:C5 | 2.77 | 0.53 |
| 1:0:1125:G:O2' | 1:0:1126:A:H5' | 2.08 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1277:G:C6 | 1:0:1278:A:N6 | 2.77 | 0.53 |
| 1:0:1970:G:H2' | 1:0:1971:C:C6 | 2.44 | 0.53 |
| 1:0:1976:U:H2' | 1:0:1976:U:O2 | 2.09 | 0.53 |
| 1:0:1993:G:H2' | 1:0:1994:U:C6 | 2.43 | 0.53 |
| 1:0:2107:G:H2' | 1:0:2108:G:O4' | 2.07 | 0.53 |
| 1:0:2663:U:N3 | 1:0:2664:G:C5 | 2.77 | 0.53 |
| 1:0:2763:U:O2' | 1:0:2764:U:H5' | 2.08 | 0.53 |
| 2:9:8:C:OP1 | 2:9:63:A:H5' | 2.09 | 0.53 |
| 1:0:38:G:H1 | 1:0:453:U:H3 | 1.56 | 0.53 |
| 1:0:537:C:O2 | 1:0:2759:U:O2 | 2.27 | 0.53 |
| 1:0:543:G:H2' | 1:0:544:U:C5 | 2.43 | 0.53 |
| 1:0:932:G:H2' | 1:0:933:G:H8 | 1.70 | 0.53 |
| 1:0:1385:C:H1' | 1:0:2192:U:C6 | 2.44 | 0.53 |
| 1:0:1756:C:O5' | 1:0:1756:C:H6 | 1.91 | 0.53 |
| 1:0:2036:G:O2' | 1:0:2037:A:H5' | 2.08 | 0.53 |
| 1:0:2431:C:H2' | 1:0:2432:A:O4' | 2.08 | 0.53 |
| 1:0:2795:A:N3 | 1:0:2795:A:H2' | 2.23 | 0.53 |
| 1:0:88:G:H3' | 1:0:89:A:C5' | 2.38 | 0.53 |
| 1:0:237:G:N2 | 1:0:238:G:H1' | 2.24 | 0.53 |
| 1:0:565:A:C6 | 1:0:566:U:N3 | 2.77 | 0.53 |
| 1:0:763:A:H2' | 1:0:764:A:H5'' | 1.90 | 0.53 |
| 1:0:965:G:O2' | 1:0:966:A:H5' | 2.08 | 0.53 |
| 1:0:1066:G:H3' | 1:0:1067:G:H5'' | 1.90 | 0.53 |
| 1:0:1352:G:N1 | 1:0:1353:A:N6 | 2.57 | 0.53 |
| 1:0:1576:G:C2 | 1:0:1577:G:C4 | 2.97 | 0.53 |
| 1:0:1695:U:H2' | 1:0:1696:C:O4' | 2.09 | 0.53 |
| 1:0:2377:U:H4' | 1:0:2378:G:OP1 | 2.09 | 0.53 |
| 1:0:2446:C:H2' | 1:0:2447:G:O4' | 2.08 | 0.53 |
| 1:0:2491:C:H2' | 1:0:2492:G:C4' | 2.39 | 0.53 |
| 1:0:2713:A:C4 | 1:0:2714:A:N7 | 2.77 | 0.53 |
| 2:9:42:U:O5' | 2:9:42:U:H6 | 1.92 | 0.53 |
| 1:0:121:G:H2' | 1:0:122:G:O4' | 2.09 | 0.53 |
| 1:0:305:A:H2' | 1:0:306:G:H5' | 1.89 | 0.53 |
| 1:0:357:A:H2' | 1:0:358:C:H5' | 1.90 | 0.53 |
| 1:0:1256:C:H2' | 1:0:1257:U:C6 | 2.44 | 0.53 |
| 1:0:1666:G:H2' | 1:0:1667:A:C8 | 2.37 | 0.53 |
| 1:0:2030:U:H2' | 1:0:2031:A:C8 | 2.43 | 0.53 |
| 1:0:2825:A:O2' | 1:0:2826:C:H5' | 2.09 | 0.53 |
| 1:0:163:A:H2' | 1:0:164:G:C8 | 2.43 | 0.52 |
| 1:0:228:A:H8 | 1:0:228:A:O5' | 1.92 | 0.52 |
| 1:0:749:C:O2' | 1:0:750:C:H5' | 2.09 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1055:A:OP1 | 1:0:1057:A:H5' | 2.09 | 0.52 |
| 1:0:1235:C:C2 | 1:0:1241:G:N2 | 2.77 | 0.52 |
| 1:0:1325:U:H5' | 1:0:1326:U:C4 | 2.44 | 0.52 |
| 1:0:1721:G:O2' | 1:0:1722:G:H5' | 2.09 | 0.52 |
| 1:0:1952:A:O3' | 1:0:1953:A:O4' | 2.27 | 0.52 |
| 1:0:1974:U:H2' | 1:0:1975:G:H5'' | 1.90 | 0.52 |
| 1:0:2679:G:N2 | 1:0:2687:G:C4 | 2.77 | 0.52 |
| 1:0:475:U:C4 | 1:0:476:G:C6 | 2.97 | 0.52 |
| 1:0:632:A:H3' | 1:0:632:A:N3 | 2.24 | 0.52 |
| 1:0:745:C:H2' | 1:0:746:G:H5' | 1.90 | 0.52 |
| 1:0:748:A:N7 | 1:0:749:C:C2 | 2.77 | 0.52 |
| 1:0:966:A:N6 | 1:0:967:G:C4 | 2.77 | 0.52 |
| 1:0:1002:C:C5 | 1:0:1198:C:N3 | 2.78 | 0.52 |
| 1:0:1230:C:H2' | 1:0:1231:A:H8 | 1.73 | 0.52 |
| 1:0:1302:C:C4 | 1:0:1303:U:C4 | 2.97 | 0.52 |
| 1:0:1333:G:N7 | 1:0:1342:U:H5' | 2.25 | 0.52 |
| 1:0:1356:G:C4' | 1:0:1613:G:H2' | 2.40 | 0.52 |
| 1:0:1685:A:H1' | 1:0:1686:A:N3 | 2.24 | 0.52 |
| 1:0:1727:C:H4' | 1:0:2833:C:N3 | 2.24 | 0.52 |
| 1:0:2413:A:H3' | 1:0:2413:A:C8 | 2.44 | 0.52 |
| 1:0:2442:C:N3 | 1:0:2467:A:C2 | 2.77 | 0.52 |
| 1:0:2497:A:OP2 | 1:0:2498:U:OP2 | 2.27 | 0.52 |
| 1:0:2594:U:C2 | 1:0:2595:C:C5 | 2.97 | 0.52 |
| 1:0:2686:C:O2' | 1:0:2687:G:H5' | 2.09 | 0.52 |
| 1:0:2725:C:H2' | 1:0:2726:U:C6 | 2.43 | 0.52 |
| 1:0:161:U:C4 | 1:0:162:C:N4 | 2.77 | 0.52 |
| 1:0:502:A:H2' | 1:0:503:G:H5' | 1.90 | 0.52 |
| 1:0:688:A:H8 | 1:0:688:A:O5' | 1.92 | 0.52 |
| 1:0:758:G:C2' | 1:0:759:C:H5' | 2.40 | 0.52 |
| 1:0:759:C:N3 | 1:0:2590:U:H4' | 2.24 | 0.52 |
| 1:0:781:G:O5' | 1:0:781:G:H8 | 1.92 | 0.52 |
| 1:0:848:A:O2' | 1:0:849:G:H5' | 2.09 | 0.52 |
| 1:0:929:A:H2 | 2:9:81:C:O2 | 1.92 | 0.52 |
| 1:0:1288:A:N6 | 1:0:1309:G:H5' | 2.25 | 0.52 |
| 1:0:1655:C:H5'' | 1:0:2689:C:C2' | 2.39 | 0.52 |
| 1:0:1656:U:H2' | 1:0:1657:A:H5'' | 1.92 | 0.52 |
| 1:0:2324:G:H4' | 1:0:2326:C:H5'' | 1.91 | 0.52 |
| 1:0:201:G:O2' | 1:0:202:A:H5' | 2.09 | 0.52 |
| 1:0:215:G:N2 | 1:0:632:A:H8 | 2.06 | 0.52 |
| 1:0:1131:G:O2' | 1:0:1132:C:H5' | 2.09 | 0.52 |
| 1:0:1222:G:H1' | 1:0:1251:G:H21 | 1.75 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1440:G:H3' | 1:0:1441:A:H5' | 1.91 | 0.52 |
| 1:0:1456:C:O2' | 1:0:1457:A:H5' | 2.09 | 0.52 |
| 1:0:1888:C:C5' | 1:0:1889:G:H5'' | 2.38 | 0.52 |
| 1:0:2026:C:O2' | 1:0:2027:C:H5' | 2.10 | 0.52 |
| 1:0:2062:U:H2' | 1:0:2063:A:O4' | 2.10 | 0.52 |
| 1:0:2441:U:N3 | 1:0:2442:C:C5 | 2.78 | 0.52 |
| 1:0:2623:A:H2' | 1:0:2624:G:O4' | 2.09 | 0.52 |
| 1:0:26:G:C6 | 1:0:27:G:N1 | 2.77 | 0.52 |
| 1:0:33:C:O2 | 1:0:34:U:C4 | 2.62 | 0.52 |
| 1:0:350:U:H6 | 1:0:350:U:O5' | 1.92 | 0.52 |
| 1:0:575:U:N3 | 1:0:576:A:C5 | 2.78 | 0.52 |
| 1:0:808:C:H2' | 1:0:809:C:H6 | 1.72 | 0.52 |
| 1:0:834:A:C8 | 1:0:957:G:N7 | 2.77 | 0.52 |
| 1:0:932:G:N2 | 1:0:2248:A:OP2 | 2.42 | 0.52 |
| 1:0:941:U:H2' | 1:0:942:U:C4' | 2.39 | 0.52 |
| 1:0:1017:C:O2' | 1:0:1018:C:C5' | 2.58 | 0.52 |
| 1:0:1780:A:O5' | 1:0:1780:A:C8 | 2.57 | 0.52 |
| 1:0:2059:U:OP2 | 1:0:2217:G:N1 | 2.41 | 0.52 |
| 1:0:2642:G:C5 | 1:0:2643:G:C5 | 2.98 | 0.52 |
| 1:0:2669:C:N4 | 14:L:15:SER:CA | 2.69 | 0.52 |
| 1:0:2760:G:C2' | 1:0:2761:A:OP1 | 2.58 | 0.52 |
| 1:0:486:U:H2' | 1:0:487:G:C5' | 2.40 | 0.52 |
| 1:0:1162:A:O2' | 1:0:1163:C:H5' | 2.10 | 0.52 |
| 1:0:1304:U:C2' | 1:0:1305:C:H5' | 2.40 | 0.52 |
| 1:0:1318:A:C6 | 1:0:1319:C:C4 | 2.98 | 0.52 |
| 1:0:1339:U:P | 1:0:1339:U:H6 | 2.33 | 0.52 |
| 1:0:1388:C:H2' | 1:0:1389:C:C6 | 2.45 | 0.52 |
| 1:0:1409:U:H6 | 1:0:1409:U:OP1 | 1.91 | 0.52 |
| 1:0:1442:C:H2' | 1:0:1443:G:OP1 | 2.08 | 0.52 |
| 1:0:1478:U:H2' | 1:0:1479:G:H8 | 1.74 | 0.52 |
| 1:0:1530:U:O5' | 1:0:1530:U:H6 | 1.92 | 0.52 |
| 1:0:1696:C:C6 | 1:0:1697:U:C5 | 2.97 | 0.52 |
| 1:0:1932:G:H2' | 1:0:1933:G:C8 | 2.45 | 0.52 |
| 1:0:2467:A:H8 | 1:0:2467:A:O5' | 1.93 | 0.52 |
| 1:0:2843:A:N1 | 1:0:2844:G:C2 | 2.77 | 0.52 |
| 2:9:77:G:O2' | 2:9:78:A:H5' | 2.10 | 0.52 |
| 1:0:691:C:C2 | 1:0:692:C:C6 | 2.98 | 0.52 |
| 1:0:930:A:OP1 | 1:0:930:A:H4' | 2.08 | 0.52 |
| 1:0:1536:G:O2' | 1:0:1537:U:H5' | 2.10 | 0.52 |
| 1:0:2124:C:O2' | 1:0:2125:C:H5' | 2.10 | 0.52 |
| 1:0:2759:U:C5' | 1:0:2760:G:OP2 | 2.54 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2872:U:H2' | 1:0:2873:G:C8 | 2.43 | 0.52 |
| 1:0:25:U:H3 | 1:0:525:A:N6 | 2.08 | 0.52 |
| 1:0:171:G:O2' | 1:0:172:A:H5' | 2.09 | 0.52 |
| 1:0:174:A:H4' | 1:0:2052:G:OP2 | 2.10 | 0.52 |
| 1:0:639:G:H8 | 1:0:639:G:O5' | 1.93 | 0.52 |
| 1:0:702:A:N3 | 1:0:792:U:H1' | 2.25 | 0.52 |
| 1:0:714:G:C6 | 1:0:715:U:C4 | 2.98 | 0.52 |
| 1:0:861:G:H21 | 1:0:944:A:C1' | 2.22 | 0.52 |
| 1:0:873:U:C4 | 1:0:930:A:N6 | 2.78 | 0.52 |
| 1:0:944:A:C2 | 1:0:945:G:H1' | 2.45 | 0.52 |
| 1:0:979:A:C6 | 1:0:980:G:C6 | 2.98 | 0.52 |
| 1:0:994:A:N7 | 1:0:995:A:N3 | 2.57 | 0.52 |
| 1:0:1007:A:H2' | 1:0:1008:G:C8 | 2.45 | 0.52 |
| 1:0:1331:G:C6 | 1:0:1332:G:N7 | 2.78 | 0.52 |
| 1:0:1536:G:C8 | 1:0:1537:U:C5 | 2.98 | 0.52 |
| 1:0:1926:U:O5' | 1:0:1926:U:C6 | 2.61 | 0.52 |
| 1:0:2493:U:O2' | 1:0:2494:C:H5' | 2.10 | 0.52 |
| 1:0:2511:G:C4 | 1:0:2512:A:C8 | 2.98 | 0.52 |
| 1:0:119:G:H1' | 1:0:129:A:C2 | 2.45 | 0.52 |
| 1:0:309:G:HO2' | 1:0:333:A:H2 | 1.58 | 0.52 |
| 1:0:349:G:H2' | 1:0:350:U:C6 | 2.45 | 0.52 |
| 1:0:541:C:H3' | 1:0:541:C:C6 | 2.44 | 0.52 |
| 1:0:741:G:C5 | 1:0:743:A:N7 | 2.78 | 0.52 |
| 1:0:843:G:N3 | 1:0:2427:A:N6 | 2.57 | 0.52 |
| 1:0:1089:C:O2 | 1:0:1099:A:H5' | 2.10 | 0.52 |
| 1:0:1312:G:H4' | 1:0:1313:U:H5' | 1.91 | 0.52 |
| 1:0:1392:U:OP1 | 1:0:1392:U:C6 | 2.63 | 0.52 |
| 1:0:2589:C:O2' | 1:0:2590:U:C5 | 2.56 | 0.52 |
| 1:0:2635:U:O5' | 1:0:2635:U:H6 | 1.93 | 0.52 |
| 1:0:2705:A:O2' | 1:0:2706:U:C5 | 2.58 | 0.52 |
| 1:0:15:G:H2' | 1:0:16:G:C5' | 2.40 | 0.52 |
| 1:0:56:C:O5' | 1:0:56:C:H6 | 1.92 | 0.52 |
| 1:0:401:G:C4 | 1:0:403:A:N7 | 2.78 | 0.52 |
| 1:0:652:C:H2' | 1:0:653:G:O4' | 2.10 | 0.52 |
| 1:0:931:G:C2' | 1:0:932:G:H5' | 2.39 | 0.52 |
| 1:0:1997:A:C2 | 1:0:1998:A:C5 | 2.97 | 0.52 |
| 1:0:1999:U:H2' | 1:0:2000:U:C6 | 2.45 | 0.52 |
| 1:0:2800:C:H2' | 1:0:2801:A:O4' | 2.09 | 0.52 |
| 1:0:2862:G:O2' | 1:0:2863:U:C5' | 2.57 | 0.52 |
| 1:0:28:A:H1' | 1:0:523:A:C6 | 2.44 | 0.51 |
| 1:0:82:G:H21 | 1:0:102:C:N4 | 2.08 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:502:A:C2' | 1:0:503:G:H5' | 2.40 | 0.51 |
| 1:0:1029:C:H3' | 1:0:1030:U:H5'' | 1.92 | 0.51 |
| 1:0:1375:C:N4 | 1:0:1376:C:C4 | 2.79 | 0.51 |
| 1:0:1458:A:H3' | 1:0:1459:U:H5'' | 1.91 | 0.51 |
| 1:0:1544:A:N6 | 1:0:1545:G:C6 | 2.78 | 0.51 |
| 1:0:1683:G:N7 | 1:0:1684:G:C2 | 2.77 | 0.51 |
| 1:0:1766:U:H2' | 1:0:1767:G:O4' | 2.10 | 0.51 |
| 1:0:2249:U:O2' | 1:0:2250:G:H5' | 2.09 | 0.51 |
| 1:0:2436:U:H2' | 1:0:2437:G:O4' | 2.09 | 0.51 |
| 1:0:2442:C:C2 | 1:0:2467:A:H2 | 2.25 | 0.51 |
| 1:0:2571:G:C2 | 1:0:2582:G:N1 | 2.78 | 0.51 |
| 1:0:2601:C:H2' | 1:0:2602:G:O5' | 2.10 | 0.51 |
| 1:0:2618:A:C5 | 1:0:2619:G:H1' | 2.45 | 0.51 |
| 1:0:2656:G:N3 | 1:0:2711:G:C2 | 2.78 | 0.51 |
| 1:0:2676:G:H2' | 1:0:2677:U:C6 | 2.45 | 0.51 |
| 1:0:2713:A:O2' | 1:0:2714:A:H5' | 2.11 | 0.51 |
| 1:0:2728:A:C2 | 1:0:2736:U:H1' | 2.45 | 0.51 |
| 1:0:494:A:H62 | 1:0:507:A:H2 | 1.54 | 0.51 |
| 1:0:700:C:O2' | 1:0:701:U:H5' | 2.09 | 0.51 |
| 1:0:1004:A:H2' | 1:0:1005:U:H5'' | 1.85 | 0.51 |
| 1:0:1151:U:OP1 | 1:0:1153:A:P | 2.69 | 0.51 |
| 1:0:1198:C:H5'' | 1:0:1199:U:H5'' | 1.92 | 0.51 |
| 1:0:1471:G:O6 | 1:0:1472:C:C4 | 2.64 | 0.51 |
| 1:0:1718:A:OP1 | 1:0:1754:G:N1 | 2.43 | 0.51 |
| 1:0:1856:U:OP1 | 1:0:2389:G:O2' | 2.29 | 0.51 |
| 1:0:1858:C:H2' | 1:0:1859:A:C8 | 2.42 | 0.51 |
| 1:0:2026:C:OP1 | 1:0:2757:G:O2' | 2.27 | 0.51 |
| 1:0:2376:G:N1 | 1:0:2399:C:C2 | 2.78 | 0.51 |
| 1:0:2599:U:H6 | 1:0:2599:U:O5' | 1.94 | 0.51 |
| 2:9:9:G:H2' | 2:9:10:U:O4' | 2.10 | 0.51 |
| 1:0:26:G:C5 | 1:0:27:G:C2 | 2.98 | 0.51 |
| 1:0:162:C:H2' | 1:0:163:A:C8 | 2.45 | 0.51 |
| 1:0:451:A:O2' | 1:0:452:G:H5' | 2.09 | 0.51 |
| 1:0:585:U:H4' | 1:0:2481:G:C8 | 2.46 | 0.51 |
| 1:0:861:G:N2 | 1:0:943:U:O2' | 2.44 | 0.51 |
| 1:0:982:C:O2' | 1:0:983:G:H5' | 2.10 | 0.51 |
| 1:0:1066:G:C2' | 1:0:1067:G:H4' | 2.30 | 0.51 |
| 1:0:1278:A:O2' | 1:0:1279:G:P | 2.68 | 0.51 |
| 1:0:1293:A:C2 | 1:0:1304:U:N3 | 2.77 | 0.51 |
| 1:0:1566:G:O2' | 1:0:1567:A:H5' | 2.09 | 0.51 |
| 1:0:1581:C:H41 | 1:0:1583:A:H1' | 1.75 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1708:C:O2' | 1:0:1709:U:H5' | 2.09 | 0.51 |
| 1:0:2665:G:C6 | 1:0:2666:U:C4 | 2.97 | 0.51 |
| 1:0:2813:G:H2' | 1:0:2814:G:C8 | 2.33 | 0.51 |
| 1:0:2814:G:N2 | 1:0:2815:C:C2 | 2.78 | 0.51 |
| 1:0:224:G:N7 | 1:0:226:C:O2 | 2.44 | 0.51 |
| 1:0:393:U:N3 | 1:0:394:U:C4 | 2.78 | 0.51 |
| 1:0:460:U:N3 | 1:0:592:G:H1' | 2.23 | 0.51 |
| 1:0:471:A:H2' | 1:0:472:C:C5' | 2.40 | 0.51 |
| 1:0:977:G:H1' | 1:0:2246:A:C4 | 2.45 | 0.51 |
| 1:0:1270:C:N4 | 1:0:1271:C:N4 | 2.58 | 0.51 |
| 1:0:1353:A:N1 | 1:0:1619:A:N7 | 2.59 | 0.51 |
| 1:0:1364:C:O5' | 1:0:1364:C:H6 | 1.92 | 0.51 |
| 1:0:1920:A:OP2 | 1:0:1921:A:OP2 | 2.29 | 0.51 |
| 1:0:2276:C:O2' | 1:0:2277:A:H5' | 2.11 | 0.51 |
| 1:0:2379:G:H2' | 1:0:2380:U:O4' | 2.10 | 0.51 |
| 1:0:2738:A:H2' | 1:0:2739:G:H5' | 1.92 | 0.51 |
| 1:0:538:A:O5' | 1:0:538:A:C8 | 2.53 | 0.51 |
| 1:0:611:C:C6 | 1:0:611:C:H3' | 2.46 | 0.51 |
| 1:0:633:G:HO2' | 1:0:634:G:H5' | 1.76 | 0.51 |
| 1:0:644:A:N6 | 1:0:651:C:OP1 | 2.43 | 0.51 |
| 1:0:828:C:C2 | 1:0:1207:G:N2 | 2.79 | 0.51 |
| 1:0:916:U:N3 | 1:0:917:U:C4 | 2.79 | 0.51 |
| 1:0:984:A:O2' | 1:0:1201:G:H1' | 2.10 | 0.51 |
| 1:0:1012:A:H62 | 1:0:1165:G:H21 | 1.59 | 0.51 |
| 1:0:1110:G:H2' | 1:0:1111:C:H6 | 1.73 | 0.51 |
| 1:0:1972:G:O2' | 1:0:1973:C:H5' | 2.11 | 0.51 |
| 1:0:2033:C:C4 | 1:0:2034:A:C2 | 2.99 | 0.51 |
| 1:0:2623:A:C6 | 1:0:2624:G:C2 | 2.98 | 0.51 |
| 1:0:2764:U:H2' | 1:0:2765:C:C5 | 2.46 | 0.51 |
| 1:0:91:A:H2' | 1:0:92:U:H6 | 1.73 | 0.51 |
| 1:0:389:G:H2' | 1:0:390:U:C6 | 2.45 | 0.51 |
| 1:0:471:A:C2 | 1:0:481:A:C5 | 2.99 | 0.51 |
| 1:0:719:A:H2' | 1:0:720:A:O4' | 2.10 | 0.51 |
| 1:0:737:C:O5' | 1:0:737:C:H6 | 1.93 | 0.51 |
| 1:0:837:U:N3 | 1:0:838:A:C5 | 2.78 | 0.51 |
| 1:0:944:A:C4 | 1:0:945:G:C8 | 2.99 | 0.51 |
| 1:0:1141:U:O5' | 1:0:1141:U:H6 | 1.93 | 0.51 |
| 1:0:1175:A:H2' | 1:0:1176:U:C6 | 2.44 | 0.51 |
| 1:0:1368:G:O2' | 1:0:1369:G:H5' | 2.11 | 0.51 |
| 1:0:1500:U:O2' | 1:0:1501:C:H5' | 2.09 | 0.51 |
| 1:0:1684:G:H2' | 1:0:1974:U:O4 | 2.10 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1697:U:O2 | 1:0:1754:G:C8 | 2.63 | 0.51 |
| 1:0:1800:A:C2 | 1:0:1802:A:C2 | 2.99 | 0.51 |
| 1:0:1922:U:O2' | 1:0:2571:G:H1' | 2.10 | 0.51 |
| 1:0:2227:C:H2' | 1:0:2228:U:H5' | 1.91 | 0.51 |
| 1:0:2837:G:O5' | 1:0:2837:G:H8 | 1.94 | 0.51 |
| 2:9:30:C:C6 | 2:9:30:C:O5' | 2.61 | 0.51 |
| 2:9:75:A:N6 | 2:9:106:U:C4 | 2.79 | 0.51 |
| 1:0:4:C:H2' | 1:0:5:A:C8 | 2.46 | 0.51 |
| 1:0:15:G:O2' | 1:0:16:G:H5' | 2.11 | 0.51 |
| 1:0:50:G:C4 | 1:0:117:A:H2 | 2.29 | 0.51 |
| 1:0:55:A:C2 | 1:0:113:C:O2 | 2.64 | 0.51 |
| 1:0:71:A:N6 | 1:0:110:U:H1' | 2.26 | 0.51 |
| 1:0:423:G:N3 | 1:0:431:G:N2 | 2.59 | 0.51 |
| 1:0:588:G:N3 | 1:0:1275:A:N1 | 2.59 | 0.51 |
| 1:0:705:C:OP1 | 3:A:57:GLY:CA | 2.59 | 0.51 |
| 1:0:1287:A:N1 | 1:0:1661:C:O2' | 2.24 | 0.51 |
| 1:0:1362:A:OP1 | 1:0:1363:C:H5'' | 2.10 | 0.51 |
| 1:0:1385:C:C2 | 1:0:1386:A:C8 | 2.98 | 0.51 |
| 1:0:1442:C:H3' | 1:0:1442:C:H6 | 1.76 | 0.51 |
| 1:0:1471:G:O6 | 1:0:1472:C:N4 | 2.44 | 0.51 |
| 1:0:1625:A:O2' | 1:0:1632:A:H5' | 2.10 | 0.51 |
| 1:0:1827:G:H2' | 1:0:1828:C:H6 | 1.74 | 0.51 |
| 1:0:2261:G:H5'' | 1:0:2262:C:O5' | 2.10 | 0.51 |
| 1:0:541:C:H3' | 1:0:541:C:H6 | 1.75 | 0.51 |
| 1:0:698:A:H61 | 1:0:786:U:H3' | 1.74 | 0.51 |
| 1:0:755:C:C4 | 1:0:756:C:N4 | 2.79 | 0.51 |
| 1:0:782:U:H2' | 1:0:783:G:C8 | 2.45 | 0.51 |
| 1:0:1083:C:H42 | 1:0:1103:C:N4 | 2.05 | 0.51 |
| 1:0:1147:G:C2 | 1:0:1148:G:C4 | 2.99 | 0.51 |
| 1:0:1500:U:H3 | 1:0:1520:G:H22 | 1.58 | 0.51 |
| 1:0:1780:A:H2' | 1:0:1781:C:H6 | 1.76 | 0.51 |
| 1:0:1791:C:O2' | 1:0:1793:A:H5' | 2.11 | 0.51 |
| 1:0:1951:G:OP1 | 1:0:2571:G:OP1 | 2.28 | 0.51 |
| 1:0:2027:C:H2' | 1:0:2028:C:O4' | 2.11 | 0.51 |
| 1:0:2090:U:C2 | 1:0:2166:G:N1 | 2.79 | 0.51 |
| 1:0:2523:G:H2' | 1:0:2524:G:O4' | 2.11 | 0.51 |
| 1:0:2568:A:C2 | 1:0:2585:C:N3 | 2.79 | 0.51 |
| 1:0:2586:G:C8 | 1:0:2586:G:O5' | 2.64 | 0.51 |
| 1:0:65:C:O5' | 1:0:65:C:H6 | 1.94 | 0.51 |
| 1:0:501:G:H2' | 1:0:502:A:C8 | 2.46 | 0.51 |
| 1:0:805:G:H2' | 1:0:2419:C:O2 | 2.11 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:815:A:H2' | 1:0:816:U:H6 | 1.75 | 0.51 |
| 1:0:972:C:N4 | 1:0:2014:A:C6 | 2.79 | 0.51 |
| 1:0:1548:U:H2' | 1:0:1549:C:C6 | 2.45 | 0.51 |
| 1:0:1683:G:O6 | 1:0:1977:C:N4 | 2.44 | 0.51 |
| 1:0:1683:G:O2' | 11:I:6:SER:CA | 2.59 | 0.51 |
| 1:0:1690:U:C2' | 1:0:1691:G:H5'' | 2.41 | 0.51 |
| 1:0:1852:G:N2 | 1:0:1853:C:C2 | 2.78 | 0.51 |
| 1:0:1892:C:H6 | 1:0:1892:C:O5' | 1.94 | 0.51 |
| 1:0:2276:C:O5' | 1:0:2276:C:H6 | 1.94 | 0.51 |
| 1:0:2309:G:H1 | 1:0:2364:C:H42 | 1.58 | 0.51 |
| 1:0:2394:G:O2' | 1:0:2395:C:H5' | 2.10 | 0.51 |
| 1:0:2760:G:H2' | 1:0:2761:A:OP1 | 2.11 | 0.51 |
| 1:0:81:C:H4' | 1:0:307:C:C5' | 2.40 | 0.51 |
| 1:0:127:C:H5'' | 1:0:1615:C:O2' | 2.11 | 0.51 |
| 1:0:300:C:P | 1:0:300:C:H6 | 2.34 | 0.51 |
| 1:0:459:A:C2 | 1:0:466:A:H8 | 2.29 | 0.51 |
| 1:0:677:G:O4' | 1:0:951:G:H5'' | 2.11 | 0.51 |
| 1:0:751:G:C6 | 1:0:772:G:O6 | 2.63 | 0.51 |
| 1:0:824:U:H2' | 1:0:825:C:H5' | 1.92 | 0.51 |
| 1:0:1350:G:H2' | 1:0:1351:G:H8 | 1.75 | 0.51 |
| 1:0:1355:A:C8 | 1:0:1410:U:C1' | 2.94 | 0.51 |
| 1:0:1658:A:N7 | 1:0:1659:G:C5 | 2.79 | 0.51 |
| 1:0:1735:G:H2' | 1:0:1736:C:C6 | 2.45 | 0.51 |
| 1:0:2194:A:H2' | 1:0:2195:C:C5' | 2.40 | 0.51 |
| 1:0:2312:A:C2 | 1:0:2314:A:C6 | 2.99 | 0.51 |
| 1:0:2498:U:H5'' | 1:0:2499:C:OP1 | 2.11 | 0.51 |
| 1:0:2817:A:C2 | 1:0:2851:G:N3 | 2.79 | 0.51 |
| 2:9:72:C:O2' | 2:9:73:C:H5' | 2.10 | 0.51 |
| 1:0:617:U:H2' | 1:0:618:A:O4' | 2.11 | 0.50 |
| 1:0:790:A:C2 | 1:0:791:G:N9 | 2.79 | 0.50 |
| 1:0:962:C:H2' | 1:0:963:G:H8 | 1.77 | 0.50 |
| 1:0:1256:C:C5 | 1:0:1257:U:C4 | 2.99 | 0.50 |
| 1:0:1656:U:C2' | 1:0:1657:A:C5' | 2.89 | 0.50 |
| 1:0:1678:G:N2 | 1:0:1983:G:H1' | 2.26 | 0.50 |
| 1:0:1768:U:H2' | 1:0:1769:U:H6 | 1.75 | 0.50 |
| 1:0:1791:C:C1' | 1:0:1793:A:H5' | 2.38 | 0.50 |
| 1:0:2475:C:C3' | 1:0:2476:A:H5' | 2.41 | 0.50 |
| 1:0:2535:C:C2' | 1:0:2536:G:H5' | 2.41 | 0.50 |
| 1:0:2593:A:H8 | 1:0:2593:A:H3' | 1.76 | 0.50 |
| 1:0:2829:A:H2' | 1:0:2830:U:C6 | 2.46 | 0.50 |
| 2:9:91:A:H8 | 2:9:91:A:O5' | 1.94 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 2:9:115:G:O2' | 2:9:116:C:H5' | 2.11 | 0.50 |
| 1:0:167:A:C8 | 1:0:168:A:N7 | 2.80 | 0.50 |
| 1:0:193:A:N7 | 1:0:444:U:C4 | 2.79 | 0.50 |
| 1:0:409:G:O2' | 1:0:410:A:H5' | 2.11 | 0.50 |
| 1:0:846:A:H2' | 1:0:847:C:C6 | 2.47 | 0.50 |
| 1:0:984:A:C2 | 1:0:1200:G:N1 | 2.68 | 0.50 |
| 1:0:1333:G:N2 | 1:0:1344:C:C5 | 2.79 | 0.50 |
| 1:0:1373:G:O2' | 1:0:1374:G:H5' | 2.11 | 0.50 |
| 1:0:1825:C:H2' | 1:0:1826:U:O4' | 2.12 | 0.50 |
| 1:0:2354:G:N2 | 1:0:2357:A:OP2 | 2.44 | 0.50 |
| 1:0:2404:A:H5' | 1:0:2406:C:O5' | 2.10 | 0.50 |
| 1:0:2520:A:H8 | 1:0:2520:A:O5' | 1.94 | 0.50 |
| 1:0:2838:U:N3 | 1:0:2839:G:N7 | 2.58 | 0.50 |
| 1:0:2857:C:O2 | 1:0:2857:C:H2' | 2.10 | 0.50 |
| 1:0:669:G:H2' | 1:0:670:U:H6 | 1.75 | 0.50 |
| 1:0:765:C:O2' | 1:0:766:A:O4' | 2.28 | 0.50 |
| 1:0:861:G:H22 | 1:0:943:U:C4' | 2.24 | 0.50 |
| 1:0:1271:C:C2 | 1:0:1272:G:N7 | 2.80 | 0.50 |
| 1:0:1471:G:C6 | 1:0:1472:C:C4 | 3.00 | 0.50 |
| 1:0:1541:G:H2' | 1:0:1542:G:O4' | 2.11 | 0.50 |
| 1:0:1913:G:N3 | 1:0:1951:G:O6 | 2.43 | 0.50 |
| 1:0:1937:G:N3 | 1:0:2530:C:H5'' | 2.26 | 0.50 |
| 1:0:2041:A:C6 | 1:0:2042:A:N1 | 2.79 | 0.50 |
| 1:0:2459:C:N4 | 1:0:2460:G:C2 | 2.80 | 0.50 |
| 1:0:2508:G:H5'' | 1:0:2509:A:C5' | 2.39 | 0.50 |
| 1:0:2530:C:O2' | 1:0:2531:U:H5' | 2.12 | 0.50 |
| 1:0:2593:A:H3' | 1:0:2593:A:C8 | 2.46 | 0.50 |
| 1:0:2611:A:H2 | 1:0:2767:C:C2 | 2.28 | 0.50 |
| 1:0:2617:G:N2 | 1:0:2755:A:H2' | 2.26 | 0.50 |
| 1:0:2761:A:O5' | 1:0:2761:A:C8 | 2.64 | 0.50 |
| 1:0:2836:U:H2' | 1:0:2837:G:H8 | 1.75 | 0.50 |
| 1:0:41:G:N1 | 1:0:451:A:C6 | 2.80 | 0.50 |
| 1:0:117:A:OP1 | 1:0:118:U:H5 | 1.95 | 0.50 |
| 1:0:297:A:H2' | 1:0:298:C:H6 | 1.73 | 0.50 |
| 1:0:551:A:N3 | 1:0:562:G:C2 | 2.79 | 0.50 |
| 1:0:702:A:N6 | 1:0:703:A:C6 | 2.80 | 0.50 |
| 1:0:755:C:C2 | 1:0:756:C:C6 | 2.99 | 0.50 |
| 1:0:874:A:C2 | 1:0:875:G:C1' | 2.94 | 0.50 |
| 1:0:922:A:H62 | 13:K:17:ARG:CA | 2.24 | 0.50 |
| 1:0:1216:G:H2' | 1:0:1217:U:O4' | 2.12 | 0.50 |
| 1:0:2043:A:C2 | 1:0:2481:G:C2 | 3.00 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2170:C:H2' | 1:0:2171:U:O4' | 2.12 | 0.50 |
| 1:0:2487:G:C2 | 1:0:2561:G:O6 | 2.63 | 0.50 |
| 1:0:2770:A:C4' | 1:0:2867:G:H22 | 2.19 | 0.50 |
| 1:0:761:G:C2 | 1:0:763:A:C6 | 2.99 | 0.50 |
| 1:0:839:U:N3 | 1:0:841:G:H1' | 2.26 | 0.50 |
| 1:0:929:A:H5'' | 1:0:929:A:H8 | 1.75 | 0.50 |
| 1:0:1287:A:N7 | 1:0:1315:A:N1 | 2.60 | 0.50 |
| 1:0:1366:A:C2 | 1:0:1391:A:N1 | 2.80 | 0.50 |
| 1:0:1386:A:H2' | 1:0:1387:G:O4' | 2.11 | 0.50 |
| 1:0:1662:G:OP1 | 1:0:1663:C:H5' | 2.11 | 0.50 |
| 1:0:2618:A:C1' | 1:0:2758:A:C2 | 2.95 | 0.50 |
| 2:9:62:C:C4 | 2:9:63:A:N7 | 2.80 | 0.50 |
| 1:0:8:A:O2' | 1:0:9:U:H5' | 2.12 | 0.50 |
| 1:0:9:U:O5' | 1:0:9:U:H6 | 1.95 | 0.50 |
| 1:0:321:A:C2 | 1:0:341:A:C2 | 2.99 | 0.50 |
| 1:0:400:U:H4' | 1:0:401:G:C4 | 2.47 | 0.50 |
| 1:0:445:A:C2' | 1:0:446:C:H5' | 2.41 | 0.50 |
| 1:0:1168:G:C6 | 1:0:1169:C:C4 | 2.99 | 0.50 |
| 1:0:1427:G:N7 | 1:0:1428:G:N3 | 2.59 | 0.50 |
| 1:0:1514:C:O5' | 1:0:1514:C:C6 | 2.63 | 0.50 |
| 1:0:1577:G:H2' | 1:0:1578:U:H6 | 1.76 | 0.50 |
| 1:0:1782:A:N6 | 1:0:1820:G:H2' | 2.27 | 0.50 |
| 1:0:2073:A:C6 | 1:0:2074:U:O4 | 2.65 | 0.50 |
| 1:0:2232:G:C5 | 1:0:2233:C:C5 | 3.00 | 0.50 |
| 1:0:2329:C:C2' | 1:0:2330:G:H5' | 2.41 | 0.50 |
| 1:0:2363:G:H5'' | 1:0:2365:U:OP1 | 2.11 | 0.50 |
| 1:0:2445:C:C2 | 1:0:2464:G:N2 | 2.80 | 0.50 |
| 1:0:70:A:O2' | 1:0:72:A:OP2 | 2.23 | 0.50 |
| 1:0:171:G:H21 | 1:0:228:A:H2 | 1.58 | 0.50 |
| 1:0:483:A:C2' | 1:0:484:G:H5'' | 2.35 | 0.50 |
| 1:0:539:A:N1 | 1:0:2025:A:C2 | 2.79 | 0.50 |
| 1:0:585:U:H4' | 1:0:2481:G:N7 | 2.26 | 0.50 |
| 1:0:633:G:H2' | 1:0:634:G:C8 | 2.47 | 0.50 |
| 1:0:745:C:H2' | 1:0:746:G:C5' | 2.42 | 0.50 |
| 1:0:875:G:C6 | 1:0:928:G:N2 | 2.80 | 0.50 |
| 1:0:1242:A:O2' | 1:0:1243:G:H5' | 2.11 | 0.50 |
| 1:0:1672:A:O2' | 4:B:115:GLY:CA | 2.60 | 0.50 |
| 1:0:1680:U:C2 | 1:0:1981:A:C2 | 3.00 | 0.50 |
| 1:0:1920:A:H2' | 1:0:1921:A:C8 | 2.46 | 0.50 |
| 1:0:2487:G:H4' | 1:0:2533:U:O2' | 2.10 | 0.50 |
| 1:0:2642:G:H2' | 1:0:2643:G:O4' | 2.11 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2645:C:O5' | 1:0:2645:C:H6 | 1.94 | 0.50 |
| 1:0:2795:A:OP2 | 1:0:2796:A:N6 | 2.40 | 0.50 |
| 2:9:23:G:H2' | 2:9:24:U:C6 | 2.46 | 0.50 |
| 1:0:222:G:N2 | 1:0:231:G:H1' | 2.27 | 0.50 |
| 1:0:541:C:C6 | 1:0:541:C:C3' | 2.95 | 0.50 |
| 1:0:542:A:OP2 | 1:0:2003:A:H1' | 2.12 | 0.50 |
| 1:0:636:G:H2' | 1:0:637:G:C5' | 2.40 | 0.50 |
| 1:0:845:U:O5' | 1:0:955:G:O6 | 2.30 | 0.50 |
| 1:0:845:U:C5 | 1:0:955:G:C6 | 3.00 | 0.50 |
| 1:0:946:U:C2 | 1:0:947:C:C5 | 2.99 | 0.50 |
| 1:0:1380:C:H6 | 1:0:1380:C:O5' | 1.95 | 0.50 |
| 1:0:1737:G:H8 | 1:0:1737:G:O5' | 1.94 | 0.50 |
| 1:0:1777:A:N6 | 1:0:2585:C:C1' | 2.75 | 0.50 |
| 1:0:1787:U:H2' | 1:0:1788:C:H6 | 1.75 | 0.50 |
| 1:0:1990:U:H6 | 1:0:1990:U:O5' | 1.93 | 0.50 |
| 1:0:2299:A:C5' | 1:0:2300:G:C5 | 2.95 | 0.50 |
| 1:0:2586:G:H2' | 1:0:2587:G:O4' | 2.11 | 0.50 |
| 1:0:317:U:H3' | 1:0:318:G:H5'' | 1.92 | 0.50 |
| 1:0:462:G:H2' | 1:0:463:C:H5' | 1.93 | 0.50 |
| 1:0:568:G:C6 | 1:0:569:C:N3 | 2.80 | 0.50 |
| 1:0:569:C:H2' | 1:0:570:G:C8 | 2.47 | 0.50 |
| 1:0:742:G:H2' | 1:0:1766:U:O2 | 2.12 | 0.50 |
| 1:0:1003:C:H2' | 1:0:1004:A:C8 | 2.45 | 0.50 |
| 1:0:1016:C:C2 | 1:0:1154:A:N3 | 2.80 | 0.50 |
| 1:0:1466:C:O2' | 1:0:1467:U:H5' | 2.12 | 0.50 |
| 1:0:1579:G:H2' | 1:0:1580:C:H6 | 1.77 | 0.50 |
| 1:0:2425:G:H2' | 1:0:2480:C:C5 | 2.46 | 0.50 |
| 1:0:2470:U:O5' | 1:0:2470:U:H6 | 1.95 | 0.50 |
| 1:0:2549:G:C2' | 1:0:2550:C:H5' | 2.41 | 0.50 |
| 1:0:2600:A:O2' | 1:0:2601:C:H5' | 2.12 | 0.50 |
| 1:0:2737:A:H2' | 1:0:2738:A:H5' | 1.93 | 0.50 |
| 2:9:104:A:C2 | 2:9:105:G:H1' | 2.47 | 0.50 |
| 1:0:24:G:H2' | 1:0:25:U:C6 | 2.46 | 0.49 |
| 1:0:39:C:O5' | 1:0:39:C:H6 | 1.95 | 0.49 |
| 1:0:76:C:H5' | 1:0:76:C:C6 | 2.44 | 0.49 |
| 1:0:406:G:H2' | 1:0:407:A:C8 | 2.47 | 0.49 |
| 1:0:705:C:N4 | 1:0:706:A:N6 | 2.59 | 0.49 |
| 1:0:835:U:OP2 | 1:0:957:G:OP2 | 2.30 | 0.49 |
| 1:0:864:C:O2' | 1:0:865:A:H5' | 2.12 | 0.49 |
| 1:0:881:U:O2 | 1:0:924:C:H1' | 2.10 | 0.49 |
| 1:0:1067:G:H21 | 1:0:1115:C:N4 | 2.10 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1209:G:O2' | 1:0:1210:C:H5' | 2.11 | 0.49 |
| 1:0:1331:G:C6 | 1:0:1332:G:C5 | 3.00 | 0.49 |
| 1:0:1338:G:OP2 | 1:0:1632:A:H2' | 2.12 | 0.49 |
| 1:0:1476:G:N2 | 1:0:1477:C:H1' | 2.27 | 0.49 |
| 1:0:1573:G:N7 | 1:0:1574:A:N7 | 2.60 | 0.49 |
| 1:0:1618:U:OP2 | 1:0:1618:U:H5 | 1.95 | 0.49 |
| 1:0:1628:C:C2 | 1:0:1636:G:N2 | 2.80 | 0.49 |
| 1:0:2338:C:H2' | 1:0:2339:A:C8 | 2.47 | 0.49 |
| 1:0:2531:U:C6 | 1:0:2533:U:OP2 | 2.65 | 0.49 |
| 1:0:2571:G:N1 | 1:0:2582:G:C6 | 2.80 | 0.49 |
| 1:0:2693:U:C5 | 1:0:2695:C:OP2 | 2.65 | 0.49 |
| 1:0:2770:A:H4' | 1:0:2867:G:N2 | 2.21 | 0.49 |
| 1:0:15:G:C2' | 1:0:16:G:H5' | 2.42 | 0.49 |
| 1:0:180:C:C4 | 1:0:181:A:N6 | 2.80 | 0.49 |
| 1:0:320:A:N7 | 1:0:341:A:N6 | 2.60 | 0.49 |
| 1:0:322:A:OP1 | 1:0:322:A:C8 | 2.63 | 0.49 |
| 1:0:344:G:N3 | 1:0:345:U:C6 | 2.80 | 0.49 |
| 1:0:576:A:N1 | 1:0:580:A:N7 | 2.60 | 0.49 |
| 1:0:695:G:N2 | 1:0:809:C:O2 | 2.45 | 0.49 |
| 1:0:992:A:H5'' | 1:0:993:C:OP2 | 2.12 | 0.49 |
| 1:0:1133:G:O2' | 1:0:1134:C:H5' | 2.12 | 0.49 |
| 1:0:1310:C:N3 | 1:0:1311:C:N4 | 2.59 | 0.49 |
| 1:0:1348:C:O2' | 1:0:1349:A:H5' | 2.11 | 0.49 |
| 1:0:1465:G:H2' | 1:0:1466:C:O4' | 2.12 | 0.49 |
| 1:0:1737:G:H2' | 1:0:1738:U:H6 | 1.77 | 0.49 |
| 1:0:1767:G:N2 | 1:0:1768:U:C1' | 2.75 | 0.49 |
| 1:0:2376:G:C2 | 1:0:2399:C:O2 | 2.65 | 0.49 |
| 1:0:2414:A:C3' | 1:0:2415:G:H5'' | 2.41 | 0.49 |
| 1:0:113:C:N4 | 1:0:114:C:H41 | 2.11 | 0.49 |
| 1:0:158:A:OP2 | 1:0:159:A:OP2 | 2.30 | 0.49 |
| 1:0:317:U:O5' | 1:0:317:U:H6 | 1.96 | 0.49 |
| 1:0:339:U:O4 | 1:0:342:G:OP1 | 2.31 | 0.49 |
| 1:0:839:U:H2' | 1:0:841:G:O4' | 2.13 | 0.49 |
| 1:0:845:U:OP2 | 1:0:955:G:O6 | 2.30 | 0.49 |
| 1:0:991:A:C2 | 1:0:1146:G:H4' | 2.47 | 0.49 |
| 1:0:1003:C:O2' | 1:0:1004:A:H5' | 2.12 | 0.49 |
| 1:0:1339:U:H6 | 1:0:1339:U:OP2 | 1.95 | 0.49 |
| 1:0:1364:C:C2 | 1:0:1394:G:C2 | 3.00 | 0.49 |
| 1:0:1726:C:O2' | 1:0:2834:A:N3 | 2.37 | 0.49 |
| 1:0:1937:G:N3 | 1:0:2530:C:C5' | 2.75 | 0.49 |
| 1:0:1966:C:H2' | 1:0:1967:U:C6 | 2.47 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2055:G:H2' | 1:0:2056:C:O4' | 2.12 | 0.49 |
| 1:0:2225:G:O2' | 1:0:2226:A:H5' | 2.13 | 0.49 |
| 1:0:2279:G:H8 | 1:0:2279:G:O5' | 1.94 | 0.49 |
| 1:0:2818:G:O2' | 1:0:2819:G:H5' | 2.12 | 0.49 |
| 1:0:2847:G:N1 | 1:0:2848:A:N6 | 2.60 | 0.49 |
| 2:9:20:A:N1 | 2:9:69:G:O6 | 2.45 | 0.49 |
| 2:9:28:A:H3' | 2:9:29:C:H6 | 1.77 | 0.49 |
| 2:9:69:G:H2' | 2:9:70:C:O4' | 2.12 | 0.49 |
| 1:0:639:G:H2' | 1:0:640:C:H6 | 1.77 | 0.49 |
| 1:0:837:U:C2 | 1:0:838:A:C5 | 3.00 | 0.49 |
| 1:0:839:U:OP1 | 1:0:2408:G:OP2 | 2.30 | 0.49 |
| 1:0:931:G:H21 | 1:0:2247:A:H5'' | 1.77 | 0.49 |
| 1:0:1041:G:O2' | 1:0:2445:C:H4' | 2.12 | 0.49 |
| 1:0:1556:A:H2' | 1:0:1557:G:H8 | 1.75 | 0.49 |
| 1:0:2007:G:O2' | 1:0:2008:C:O4' | 2.28 | 0.49 |
| 1:0:2182:A:H2' | 1:0:2183:C:O4' | 2.12 | 0.49 |
| 1:0:2203:G:O5' | 1:0:2203:G:H8 | 1.94 | 0.49 |
| 1:0:2293:G:O2' | 1:0:2294:U:H5' | 2.12 | 0.49 |
| 1:0:2478:C:O5' | 1:0:2478:C:H6 | 1.94 | 0.49 |
| 1:0:2484:G:O2' | 1:0:2485:U:H5'' | 2.13 | 0.49 |
| 1:0:2592:U:H6 | 1:0:2592:U:C3' | 2.18 | 0.49 |
| 1:0:2736:U:O2' | 1:0:2737:A:H5' | 2.11 | 0.49 |
| 1:0:2797:G:O5' | 1:0:2797:G:H8 | 1.95 | 0.49 |
| 1:0:2812:A:C2 | 1:0:2813:G:C5 | 3.01 | 0.49 |
| 1:0:484:G:O2' | 1:0:485:G:H5' | 2.12 | 0.49 |
| 1:0:588:G:N2 | 1:0:589:C:C2 | 2.81 | 0.49 |
| 1:0:837:U:H1' | 1:0:2337:A:N7 | 2.27 | 0.49 |
| 1:0:941:U:H2' | 1:0:942:U:C5' | 2.42 | 0.49 |
| 1:0:964:A:H2' | 1:0:965:G:H8 | 1.70 | 0.49 |
| 1:0:1210:C:H1' | 1:0:1239:A:C4 | 2.47 | 0.49 |
| 1:0:1288:A:N6 | 1:0:1309:G:C4' | 2.75 | 0.49 |
| 1:0:1294:G:H1 | 1:0:1302:C:H42 | 1.60 | 0.49 |
| 1:0:1689:U:C4 | 1:0:1690:U:C4 | 3.00 | 0.49 |
| 1:0:1852:G:C2 | 1:0:1853:C:C2 | 3.00 | 0.49 |
| 1:0:2029:G:H2' | 1:0:2030:U:H6 | 1.77 | 0.49 |
| 1:0:2083:G:H2' | 1:0:2084:G:C8 | 2.48 | 0.49 |
| 1:0:2298:U:H3 | 2:9:15:A:N6 | 2.11 | 0.49 |
| 1:0:2476:A:O2' | 1:0:2477:C:H5 | 1.96 | 0.49 |
| 1:0:2558:C:O2' | 1:0:2559:U:H5' | 2.12 | 0.49 |
| 1:0:2712:G:H3' | 1:0:2713:A:H5' | 1.93 | 0.49 |
| 2:9:67:C:C3' | 2:9:68:A:H5' | 2.42 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:314:G:O2' | 1:0:315:G:H5' | 2.12 | 0.49 |
| 1:0:889:C:C2' | 1:0:890:U:H5' | 2.42 | 0.49 |
| 1:0:940:G:H8 | 1:0:940:G:O5' | 1.95 | 0.49 |
| 1:0:959:C:H5'' | 1:0:972:C:O2' | 2.12 | 0.49 |
| 1:0:994:A:N7 | 1:0:995:A:C4 | 2.81 | 0.49 |
| 1:0:1356:G:O4' | 1:0:1613:G:H2' | 2.12 | 0.49 |
| 1:0:1359:G:H2' | 1:0:1360:G:O4' | 2.12 | 0.49 |
| 1:0:1476:G:O2' | 1:0:2682:C:H1' | 2.12 | 0.49 |
| 1:0:1842:G:H2' | 1:0:1843:U:C6 | 2.48 | 0.49 |
| 1:0:1975:G:N2 | 1:0:1978:U:C5 | 2.77 | 0.49 |
| 1:0:2174:G:H2' | 1:0:2175:A:C8 | 2.47 | 0.49 |
| 1:0:2467:A:C5 | 1:0:2468:G:N7 | 2.80 | 0.49 |
| 1:0:2474:G:N7 | 1:0:2475:C:C5 | 2.81 | 0.49 |
| 1:0:2670:C:H4' | 1:0:2846:G:O2' | 2.13 | 0.49 |
| 1:0:2856:U:O2' | 1:0:2857:C:H5' | 2.13 | 0.49 |
| 1:0:65:C:H2' | 1:0:66:U:O4' | 2.12 | 0.49 |
| 1:0:537:C:C2 | 1:0:2759:U:H2' | 2.47 | 0.49 |
| 1:0:866:U:H6 | 1:0:866:U:O5' | 1.95 | 0.49 |
| 1:0:873:U:H3' | 1:0:874:A:C5' | 2.43 | 0.49 |
| 1:0:1016:C:C5 | 1:0:1154:A:H1' | 2.46 | 0.49 |
| 1:0:1484:G:O2' | 1:0:1485:U:H5' | 2.12 | 0.49 |
| 1:0:1674:C:C6 | 1:0:1987:G:N2 | 2.80 | 0.49 |
| 1:0:1760:G:H2' | 1:0:1761:G:H8 | 1.77 | 0.49 |
| 1:0:2225:G:N2 | 1:0:2405:A:O2' | 2.45 | 0.49 |
| 1:0:2401:A:H8 | 1:0:2401:A:O5' | 1.95 | 0.49 |
| 1:0:2532:G:N2 | 1:0:2533:U:H1' | 2.27 | 0.49 |
| 1:0:2665:G:C6 | 1:0:2666:U:N3 | 2.80 | 0.49 |
| 1:0:2674:C:C2 | 1:0:2675:U:C5 | 3.01 | 0.49 |
| 1:0:2800:C:C2' | 1:0:2801:A:H5' | 2.42 | 0.49 |
| 1:0:2867:G:H2' | 1:0:2867:G:N3 | 2.26 | 0.49 |
| 1:0:753:U:H6 | 1:0:753:U:O5' | 1.96 | 0.49 |
| 1:0:861:G:N3 | 1:0:944:A:H1' | 2.28 | 0.49 |
| 1:0:1064:C:O5' | 1:0:1064:C:H6 | 1.96 | 0.49 |
| 1:0:1333:G:C5 | 1:0:1342:U:H5' | 2.48 | 0.49 |
| 1:0:1563:U:N3 | 1:0:1564:U:C4 | 2.80 | 0.49 |
| 1:0:1671:A:O2' | 1:0:1672:A:H5' | 2.12 | 0.49 |
| 1:0:1768:U:H2' | 1:0:1769:U:C6 | 2.47 | 0.49 |
| 1:0:2261:G:H4' | 1:0:2262:C:OP2 | 2.12 | 0.49 |
| 1:0:2326:C:N4 | 1:0:2350:G:C2 | 2.81 | 0.49 |
| 1:0:2419:C:C4 | 1:0:2420:C:H1' | 2.48 | 0.49 |
| 1:0:2664:G:C2 | 1:0:2705:A:C2 | 3.01 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2713:A:C4 | 1:0:2714:A:C8 | 3.00 | 0.49 |
| 1:0:2861:A:H2' | 1:0:2862:G:H8 | 1.78 | 0.49 |
| 1:0:20:C:C4 | 1:0:21:A:N7 | 2.80 | 0.49 |
| 1:0:313:U:O2' | 1:0:314:G:H5' | 2.12 | 0.49 |
| 1:0:338:G:O2' | 1:0:339:U:H5' | 2.12 | 0.49 |
| 1:0:357:A:C2' | 1:0:358:C:H5' | 2.42 | 0.49 |
| 1:0:403:A:H5'' | 1:0:404:A:OP1 | 2.12 | 0.49 |
| 1:0:691:C:N3 | 1:0:692:C:C5 | 2.81 | 0.49 |
| 1:0:704:G:N2 | 1:0:705:C:C2 | 2.81 | 0.49 |
| 1:0:858:G:H5'' | 1:0:859:U:H5' | 1.94 | 0.49 |
| 1:0:956:A:H2 | 1:0:2427:A:O2' | 1.90 | 0.49 |
| 1:0:1126:A:C6 | 1:0:1127:C:C4 | 3.01 | 0.49 |
| 1:0:1354:A:O2' | 1:0:1355:A:OP1 | 2.27 | 0.49 |
| 1:0:1761:G:H8 | 1:0:1761:G:O5' | 1.95 | 0.49 |
| 1:0:2270:U:O2' | 1:0:2353:G:H1' | 2.13 | 0.49 |
| 1:0:2468:G:O2' | 1:0:2469:G:H5' | 2.13 | 0.49 |
| 1:0:2490:U:C4 | 1:0:2491:C:C4 | 3.01 | 0.49 |
| 1:0:2567:G:C6 | 1:0:2586:G:C2 | 3.01 | 0.49 |
| 1:0:2644:A:H2' | 1:0:2645:C:H6 | 1.77 | 0.49 |
| 1:0:2714:A:O2' | 1:0:2715:C:H5' | 2.13 | 0.49 |
| 1:0:7:G:H8 | 1:0:7:G:O5' | 1.96 | 0.49 |
| 1:0:312:G:N2 | 1:0:328:A:H1' | 2.27 | 0.49 |
| 1:0:523:A:O2' | 1:0:524:A:H5' | 2.13 | 0.49 |
| 1:0:1011:A:N1 | 1:0:1166:A:C5 | 2.81 | 0.49 |
| 1:0:1355:A:O4' | 1:0:1410:U:H4' | 2.13 | 0.49 |
| 1:0:1375:C:N4 | 1:0:1376:C:C5 | 2.80 | 0.49 |
| 1:0:1540:C:HO2' | 1:0:1541:G:H5' | 1.78 | 0.49 |
| 1:0:1645:U:O2' | 1:0:2677:U:H5'' | 2.13 | 0.49 |
| 1:0:2396:C:H2' | 1:0:2397:A:O4' | 2.13 | 0.49 |
| 1:0:2622:G:C2 | 1:0:2752:C:N3 | 2.81 | 0.49 |
| 1:0:2737:A:H61 | 7:E:60:LYS:CA | 2.26 | 0.49 |
| 1:0:2764:U:C2 | 1:0:2765:C:C5 | 3.01 | 0.49 |
| 1:0:2793:G:C4 | 1:0:2804:G:N1 | 2.80 | 0.49 |
| 2:9:92:G:H2' | 2:9:93:G:C5' | 2.37 | 0.49 |
| 1:0:15:G:H2' | 1:0:16:G:H5' | 1.94 | 0.48 |
| 1:0:26:G:H2' | 1:0:27:G:O4' | 2.13 | 0.48 |
| 1:0:150:A:H2' | 1:0:151:G:O4' | 2.13 | 0.48 |
| 1:0:720:A:N6 | 1:0:721:C:N4 | 2.61 | 0.48 |
| 1:0:742:G:C4 | 1:0:1766:U:C2 | 3.01 | 0.48 |
| 1:0:757:U:H2' | 1:0:758:G:O4' | 2.13 | 0.48 |
| 1:0:820:U:O2' | 1:0:821:A:C5' | 2.61 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:837:U:C4 | 1:0:838:A:N6 | 2.81 | 0.48 |
| 1:0:887:G:O2' | 1:0:888:G:H5' | 2.12 | 0.48 |
| 1:0:1260:A:N6 | 1:0:1262:U:H1' | 2.27 | 0.48 |
| 1:0:1466:C:N4 | 1:0:1476:G:O6 | 2.34 | 0.48 |
| 1:0:1668:G:O2' | 1:0:1669:A:H5' | 2.13 | 0.48 |
| 1:0:1716:G:O4' | 1:0:1716:G:OP1 | 2.31 | 0.48 |
| 1:0:2502:G:N9 | 1:0:2745:A:N7 | 2.61 | 0.48 |
| 1:0:343:A:N6 | 1:0:346:C:C5 | 2.81 | 0.48 |
| 1:0:404:A:C2 | 1:0:424:G:N2 | 2.80 | 0.48 |
| 1:0:765:C:O2' | 1:0:766:A:C8 | 2.66 | 0.48 |
| 1:0:817:A:H2' | 1:0:819:C:N4 | 2.27 | 0.48 |
| 1:0:840:U:C5 | 1:0:2405:A:H2 | 2.32 | 0.48 |
| 1:0:951:G:C3' | 1:0:952:A:H5'' | 2.43 | 0.48 |
| 1:0:953:G:C5 | 1:0:954:U:N3 | 2.81 | 0.48 |
| 1:0:958:G:O6 | 1:0:982:C:N4 | 2.46 | 0.48 |
| 1:0:963:G:C6 | 1:0:977:G:N1 | 2.81 | 0.48 |
| 1:0:1282:A:H8 | 1:0:1282:A:O5' | 1.96 | 0.48 |
| 1:0:1407:G:O2' | 1:0:1408:A:H5' | 2.14 | 0.48 |
| 1:0:1761:G:O5' | 1:0:1761:G:C8 | 2.66 | 0.48 |
| 1:0:2163:U:H2' | 1:0:2164:G:C8 | 2.48 | 0.48 |
| 1:0:2422:C:N3 | 1:0:2423:G:N7 | 2.61 | 0.48 |
| 1:0:2504:G:N1 | 1:0:2518:C:C4 | 2.81 | 0.48 |
| 1:0:2742:G:H2' | 1:0:2743:G:O4' | 2.13 | 0.48 |
| 2:9:34:C:C2' | 2:9:35:C:H5' | 2.43 | 0.48 |
| 1:0:138:G:H2' | 1:0:139:A:C8 | 2.48 | 0.48 |
| 1:0:487:G:C5 | 1:0:489:A:OP2 | 2.67 | 0.48 |
| 1:0:875:G:H2' | 1:0:876:A:O4' | 2.13 | 0.48 |
| 1:0:1302:C:N4 | 1:0:1303:U:C4 | 2.82 | 0.48 |
| 1:0:1668:G:C6 | 1:0:1669:A:C6 | 3.01 | 0.48 |
| 1:0:1773:C:O5' | 1:0:1773:C:C6 | 2.60 | 0.48 |
| 1:0:2231:G:N7 | 1:0:2232:G:N7 | 2.62 | 0.48 |
| 1:0:2613:A:O2' | 1:0:2614:A:H5' | 2.14 | 0.48 |
| 1:0:2645:C:C5 | 1:0:2646:C:C5 | 3.01 | 0.48 |
| 2:9:6:C:H2' | 2:9:7:C:C5 | 2.48 | 0.48 |
| 2:9:58:G:O2' | 2:9:59:A:OP2 | 2.25 | 0.48 |
| 2:9:101:A:C2 | 2:9:102:A:N6 | 2.82 | 0.48 |
| 1:0:26:G:N7 | 1:0:27:G:C6 | 2.81 | 0.48 |
| 1:0:207:U:H2' | 1:0:208:C:H6 | 1.78 | 0.48 |
| 1:0:300:C:H6 | 1:0:300:C:O5' | 1.97 | 0.48 |
| 1:0:513:A:C4 | 1:0:515:A:N7 | 2.81 | 0.48 |
| 1:0:635:C:H2' | 1:0:636:G:C5' | 2.19 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:640:C:O2' | 1:0:641:G:H5' | 2.13 | 0.48 |
| 1:0:692:C:C2' | 1:0:693:A:O5' | 2.62 | 0.48 |
| 1:0:923:A:H2' | 1:0:923:A:N3 | 2.29 | 0.48 |
| 1:0:1000:G:OP1 | 1:0:1168:G:O3' | 2.32 | 0.48 |
| 1:0:1038:U:H2' | 1:0:1039:A:H8 | 1.77 | 0.48 |
| 1:0:1038:U:H5 | 1:0:1137:A:C2 | 2.31 | 0.48 |
| 1:0:1223:G:N3 | 1:0:1250:A:N6 | 2.61 | 0.48 |
| 1:0:1256:C:C5 | 1:0:1257:U:C5 | 3.01 | 0.48 |
| 1:0:1315:A:H5'' | 1:0:1316:G:OP1 | 2.14 | 0.48 |
| 1:0:1340:C:C6 | 1:0:1341:G:N7 | 2.81 | 0.48 |
| 1:0:1438:G:H2' | 1:0:1439:G:O4' | 2.13 | 0.48 |
| 1:0:1650:A:N7 | 1:0:1652:G:C5 | 2.81 | 0.48 |
| 1:0:1869:A:N7 | 1:0:1870:U:C4 | 2.81 | 0.48 |
| 1:0:2018:G:H8 | 1:0:2018:G:O5' | 1.96 | 0.48 |
| 1:0:2030:U:C2 | 1:0:2031:A:C8 | 3.01 | 0.48 |
| 1:0:2039:G:C2 | 1:0:2040:A:C8 | 3.01 | 0.48 |
| 1:0:2173:G:C5 | 1:0:2174:G:C5 | 3.01 | 0.48 |
| 1:0:2205:C:C5 | 1:0:2206:C:C5 | 3.01 | 0.48 |
| 1:0:2587:G:H8 | 1:0:2587:G:P | 2.36 | 0.48 |
| 1:0:2691:C:O5' | 1:0:2694:G:H4' | 2.14 | 0.48 |
| 1:0:2695:C:H2' | 1:0:2696:A:H8 | 1.78 | 0.48 |
| 1:0:5:A:H2' | 1:0:6:A:H8 | 1.78 | 0.48 |
| 1:0:191:G:O2' | 1:0:194:G:OP1 | 2.31 | 0.48 |
| 1:0:488:A:OP1 | 1:0:488:A:C8 | 2.59 | 0.48 |
| 1:0:531:G:O2' | 1:0:532:A:H5' | 2.14 | 0.48 |
| 1:0:645:G:H2' | 1:0:646:C:C6 | 2.48 | 0.48 |
| 1:0:742:G:H3' | 1:0:742:G:N3 | 2.28 | 0.48 |
| 1:0:750:C:C2' | 1:0:751:G:H5' | 2.43 | 0.48 |
| 1:0:791:G:C6 | 1:0:792:U:C4 | 3.01 | 0.48 |
| 1:0:824:U:H2' | 1:0:825:C:C5' | 2.44 | 0.48 |
| 1:0:1001:A:N6 | 1:0:1200:G:O2' | 2.45 | 0.48 |
| 1:0:1153:A:C2 | 1:0:1155:G:O6 | 2.65 | 0.48 |
| 1:0:1362:A:OP2 | 1:0:1363:C:C5 | 2.67 | 0.48 |
| 1:0:1381:G:N2 | 1:0:1382:G:C4 | 2.81 | 0.48 |
| 1:0:1474:A:N3 | 1:0:1474:A:C3' | 2.75 | 0.48 |
| 1:0:1486:A:H2' | 1:0:1487:C:C5 | 2.48 | 0.48 |
| 1:0:1552:C:H2' | 1:0:1553:G:H5' | 1.95 | 0.48 |
| 1:0:1730:G:H2' | 1:0:1731:C:C6 | 2.49 | 0.48 |
| 1:0:1779:C:HO2' | 1:0:1780:A:H5' | 1.77 | 0.48 |
| 1:0:1780:A:C5 | 1:0:1781:C:C5 | 3.01 | 0.48 |
| 1:0:1818:G:H2' | 1:0:1819:U:C6 | 2.49 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2054:A:H2' | 1:0:2055:G:H8 | 1.77 | 0.48 |
| 1:0:2209:G:H2' | 1:0:2210:C:C6 | 2.40 | 0.48 |
| 1:0:2229:G:H2' | 1:0:2475:C:OP1 | 2.13 | 0.48 |
| 1:0:2241:U:H1' | 1:0:2307:A:H1' | 1.94 | 0.48 |
| 1:0:2347:C:H2' | 1:0:2348:A:C8 | 2.49 | 0.48 |
| 1:0:2379:G:C2 | 1:0:2380:U:H1' | 2.48 | 0.48 |
| 1:0:2529:G:C4 | 1:0:2530:C:C5 | 3.01 | 0.48 |
| 2:9:23:G:H2' | 2:9:24:U:H6 | 1.78 | 0.48 |
| 1:0:17:G:H2' | 1:0:18:U:C5 | 2.48 | 0.48 |
| 1:0:105:G:H2' | 1:0:106:G:O4' | 2.14 | 0.48 |
| 1:0:120:G:C2 | 1:0:121:G:C4 | 3.02 | 0.48 |
| 1:0:344:G:N2 | 1:0:345:U:N1 | 2.61 | 0.48 |
| 1:0:549:G:C6 | 1:0:550:C:C4 | 3.02 | 0.48 |
| 1:0:600:G:H2' | 1:0:601:A:OP1 | 2.13 | 0.48 |
| 1:0:971:A:H1' | 1:0:2435:C:O2' | 2.13 | 0.48 |
| 1:0:977:G:H4' | 1:0:2246:A:C2 | 2.48 | 0.48 |
| 1:0:1284:G:C2 | 1:0:1633:C:O4' | 2.67 | 0.48 |
| 1:0:1429:A:H1' | 1:0:1603:A:N6 | 2.29 | 0.48 |
| 1:0:1633:C:O5' | 1:0:1633:C:H6 | 1.96 | 0.48 |
| 1:0:1767:G:N1 | 1:0:1768:U:C2 | 2.81 | 0.48 |
| 1:0:1934:U:O2 | 1:0:1936:A:C8 | 2.66 | 0.48 |
| 1:0:2020:G:H2' | 1:0:2021:G:O4' | 2.14 | 0.48 |
| 1:0:2025:A:H3' | 1:0:2025:A:C8 | 2.48 | 0.48 |
| 1:0:2094:C:N4 | 1:0:2103:G:N3 | 2.61 | 0.48 |
| 1:0:2464:G:O2' | 1:0:2465:G:H5' | 2.13 | 0.48 |
| 1:0:2570:C:H2' | 1:0:2571:G:H8 | 1.74 | 0.48 |
| 1:0:2642:G:C6 | 1:0:2643:G:C5 | 3.02 | 0.48 |
| 1:0:2696:A:C2 | 1:0:2697:G:C8 | 3.02 | 0.48 |
| 1:0:2824:C:C2' | 1:0:2825:A:OP2 | 2.62 | 0.48 |
| 1:0:633:G:H8 | 1:0:633:G:O5' | 1.97 | 0.48 |
| 1:0:957:G:H22 | 1:0:983:G:H1' | 1.78 | 0.48 |
| 1:0:1073:G:H3' | 1:0:1074:G:H5'' | 1.95 | 0.48 |
| 1:0:1131:G:C2 | 1:0:1132:C:C2 | 3.01 | 0.48 |
| 1:0:1355:A:H3' | 1:0:1355:A:OP2 | 2.14 | 0.48 |
| 1:0:1416:A:O2' | 1:0:1417:C:H5' | 2.13 | 0.48 |
| 1:0:1469:U:OP2 | 1:0:1471:G:N7 | 2.47 | 0.48 |
| 1:0:2046:C:N3 | 1:0:2430:A:H2 | 2.12 | 0.48 |
| 1:0:2047:C:C6 | 1:0:2047:C:C3' | 2.97 | 0.48 |
| 1:0:2207:G:C5 | 1:0:2208:U:C4 | 3.02 | 0.48 |
| 1:0:2245:A:O2' | 1:0:2246:A:C4 | 2.67 | 0.48 |
| 1:0:2334:C:H6 | 1:0:2334:C:O5' | 1.97 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2626:U:H2' | 1:0:2627:G:C8 | 2.48 | 0.48 |
| 1:0:67:G:C5 | 1:0:72:A:C2 | 3.01 | 0.48 |
| 1:0:477:A:H8 | 1:0:477:A:O5' | 1.96 | 0.48 |
| 1:0:635:C:C3' | 1:0:636:G:H5'' | 2.43 | 0.48 |
| 1:0:666:U:O5' | 1:0:666:U:H6 | 1.95 | 0.48 |
| 1:0:849:G:C8 | 1:0:850:C:C5 | 3.01 | 0.48 |
| 1:0:867:G:O2' | 1:0:868:U:H5' | 2.14 | 0.48 |
| 1:0:1038:U:H3 | 1:0:2466:G:HO2' | 1.60 | 0.48 |
| 1:0:1262:U:C6 | 1:0:1262:U:C3' | 2.96 | 0.48 |
| 1:0:1358:C:C3' | 1:0:1359:G:H5'' | 2.44 | 0.48 |
| 1:0:1401:G:O2' | 1:0:1541:G:H5' | 2.13 | 0.48 |
| 1:0:1470:G:C2 | 1:0:2684:A:N3 | 2.82 | 0.48 |
| 1:0:1507:A:H4' | 1:0:1510:A:OP1 | 2.13 | 0.48 |
| 1:0:1683:G:N2 | 1:0:1686:A:N7 | 2.61 | 0.48 |
| 1:0:1801:C:H1' | 1:0:2208:U:H5' | 1.95 | 0.48 |
| 1:0:2059:U:H5'' | 1:0:2217:G:N1 | 2.28 | 0.48 |
| 1:0:2193:C:C2 | 1:0:2194:A:C8 | 3.02 | 0.48 |
| 1:0:2243:C:H2' | 1:0:2244:C:H5' | 1.96 | 0.48 |
| 1:0:2326:C:H42 | 1:0:2349:G:H1 | 1.62 | 0.48 |
| 1:0:2442:C:H2' | 1:0:2443:C:H6 | 1.77 | 0.48 |
| 1:0:2450:A:O2' | 1:0:2451:G:H5' | 2.13 | 0.48 |
| 1:0:2468:G:N3 | 1:0:2469:G:O4' | 2.47 | 0.48 |
| 1:0:2673:G:C2 | 1:0:2674:C:C6 | 3.02 | 0.48 |
| 1:0:2822:U:H5 | 1:0:2823:G:C5 | 2.31 | 0.48 |
| 1:0:600:G:C2' | 1:0:601:A:OP1 | 2.61 | 0.48 |
| 1:0:642:A:H2' | 1:0:643:A:C8 | 2.49 | 0.48 |
| 1:0:1242:A:H8 | 1:0:1242:A:O5' | 1.97 | 0.48 |
| 1:0:1250:A:C2' | 1:0:1251:G:H4' | 2.44 | 0.48 |
| 1:0:1373:G:H1 | 1:0:2192:U:H3 | 1.62 | 0.48 |
| 1:0:1660:G:H8 | 1:0:1660:G:O5' | 1.97 | 0.48 |
| 1:0:333:A:HO2' | 1:0:350:U:H2' | 1.77 | 0.48 |
| 1:0:439:C:H2' | 1:0:440:U:O4' | 2.14 | 0.48 |
| 1:0:459:A:N6 | 1:0:466:A:H2' | 2.28 | 0.48 |
| 1:0:606:A:C2 | 1:0:607:C:C2 | 3.02 | 0.48 |
| 1:0:685:U:C2 | 1:0:822:G:N2 | 2.81 | 0.48 |
| 1:0:714:G:O2' | 1:0:715:U:H5' | 2.14 | 0.48 |
| 1:0:762:A:C6 | 1:0:1634:A:C2 | 3.02 | 0.48 |
| 1:0:780:U:H2' | 1:0:781:G:C8 | 2.48 | 0.48 |
| 1:0:815:A:P | 1:0:815:A:H8 | 2.36 | 0.48 |
| 1:0:859:U:O5' | 1:0:859:U:H6 | 1.97 | 0.48 |
| 1:0:918:A:C2' | 1:0:919:U:C5' | 2.83 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1117:G:C5 | 1:0:1118:G:N7 | 2.82 | 0.48 |
| 1:0:1270:C:C4 | 1:0:1271:C:N4 | 2.82 | 0.48 |
| 1:0:1313:U:O5' | 1:0:1313:U:H6 | 1.97 | 0.48 |
| 1:0:1811:A:H1' | 1:0:1813:A:C5 | 2.48 | 0.48 |
| 1:0:2036:G:OP1 | 4:B:144:ARG:CA | 2.62 | 0.48 |
| 1:0:2217:G:N3 | 1:0:2217:G:C3' | 2.77 | 0.48 |
| 1:0:2243:C:N4 | 1:0:2244:C:C4 | 2.82 | 0.48 |
| 1:0:2321:C:O2' | 1:0:2353:G:H5'' | 2.14 | 0.48 |
| 1:0:2324:G:N7 | 1:0:2351:G:C2 | 2.82 | 0.48 |
| 1:0:2376:G:C2 | 1:0:2399:C:C2 | 3.02 | 0.48 |
| 1:0:2665:G:C5 | 1:0:2666:U:C4 | 3.01 | 0.48 |
| 1:0:167:A:C5' | 1:0:181:A:H2 | 2.27 | 0.47 |
| 1:0:189:A:O2' | 1:0:190:A:H5' | 2.14 | 0.47 |
| 1:0:803:C:H5'' | 1:0:804:C:OP2 | 2.14 | 0.47 |
| 1:0:980:G:H8 | 1:0:980:G:O5' | 1.97 | 0.47 |
| 1:0:1449:C:H2' | 1:0:1450:G:H8 | 1.78 | 0.47 |
| 1:0:1473:U:C5' | 1:0:1474:A:C5 | 2.97 | 0.47 |
| 1:0:1619:A:C2 | 1:0:1620:C:C6 | 3.02 | 0.47 |
| 1:0:2209:G:C5 | 1:0:2210:C:C5 | 3.02 | 0.47 |
| 1:0:2234:G:H3' | 1:0:2235:G:H8 | 1.79 | 0.47 |
| 1:0:2236:U:N3 | 1:0:2237:C:C4 | 2.82 | 0.47 |
| 1:0:2292:C:C2 | 1:0:2293:G:C8 | 3.02 | 0.47 |
| 1:0:2443:C:O2' | 1:0:2444:C:H5' | 2.14 | 0.47 |
| 1:0:2657:G:H2' | 1:0:2658:A:C8 | 2.49 | 0.47 |
| 1:0:2697:G:O2' | 1:0:2698:G:C5' | 2.54 | 0.47 |
| 1:0:51:A:H2' | 1:0:52:A:O4' | 2.14 | 0.47 |
| 1:0:513:A:H2' | 1:0:516:G:N7 | 2.29 | 0.47 |
| 1:0:525:A:C8 | 1:0:526:C:C6 | 3.03 | 0.47 |
| 1:0:737:C:H2' | 1:0:738:G:O4' | 2.14 | 0.47 |
| 1:0:859:U:C6 | 1:0:859:U:C3' | 2.96 | 0.47 |
| 1:0:1153:A:N3 | 1:0:1155:G:C6 | 2.82 | 0.47 |
| 1:0:1193:G:H2' | 1:0:1194:U:C6 | 2.45 | 0.47 |
| 1:0:1263:G:O2' | 1:0:1264:C:P | 2.72 | 0.47 |
| 1:0:1287:A:C6 | 1:0:1315:A:H2 | 2.30 | 0.47 |
| 1:0:1302:C:N4 | 1:0:1303:U:O4 | 2.47 | 0.47 |
| 1:0:1355:A:C5 | 1:0:1410:U:O4' | 2.67 | 0.47 |
| 1:0:1389:C:C2' | 1:0:1390:G:H5' | 2.44 | 0.47 |
| 1:0:1764:A:N7 | 1:0:1821:A:C1' | 2.77 | 0.47 |
| 1:0:1997:A:N1 | 1:0:1998:A:C6 | 2.82 | 0.47 |
| 2:9:71:G:N2 | 2:9:72:C:C1' | 2.77 | 0.47 |
| 1:0:689:A:C2 | 1:0:690:A:N9 | 2.83 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:831:G:OP2 | 1:0:1199:U:C5 | 2.68 | 0.47 |
| 1:0:1353:A:C6 | 1:0:1619:A:C8 | 3.02 | 0.47 |
| 1:0:1561:A:H2' | 1:0:1562:G:O4' | 2.15 | 0.47 |
| 1:0:1610:A:H2' | 1:0:1611:U:H6 | 1.79 | 0.47 |
| 1:0:1685:A:O2' | 1:0:1686:A:H3' | 2.14 | 0.47 |
| 1:0:2493:U:O2 | 1:0:2549:G:O6 | 2.31 | 0.47 |
| 1:0:2554:C:C6 | 1:0:2554:C:C3' | 2.97 | 0.47 |
| 1:0:2708:U:N3 | 1:0:2709:C:N3 | 2.62 | 0.47 |
| 1:0:2834:A:H8 | 1:0:2834:A:O5' | 1.98 | 0.47 |
| 2:9:78:A:H2' | 2:9:79:U:C5 | 2.48 | 0.47 |
| 1:0:168:A:O2' | 1:0:169:C:O4' | 2.26 | 0.47 |
| 1:0:202:A:H2' | 1:0:203:G:O4' | 2.14 | 0.47 |
| 1:0:311:A:H2' | 1:0:345:U:O2' | 2.15 | 0.47 |
| 1:0:314:G:N1 | 1:0:326:A:C6 | 2.83 | 0.47 |
| 1:0:711:C:H4' | 1:0:748:A:C2 | 2.49 | 0.47 |
| 1:0:827:C:C2 | 1:0:828:C:C5 | 3.02 | 0.47 |
| 1:0:1215:A:O2' | 1:0:1216:G:H5' | 2.15 | 0.47 |
| 1:0:1412:C:C2 | 1:0:1413:U:C5 | 3.03 | 0.47 |
| 1:0:1674:C:C2 | 1:0:1675:C:C5 | 3.03 | 0.47 |
| 1:0:1681:A:N1 | 1:0:1682:A:N3 | 2.62 | 0.47 |
| 1:0:1748:U:N3 | 1:0:1753:A:H2 | 2.12 | 0.47 |
| 1:0:1800:A:N3 | 1:0:1802:A:N1 | 2.62 | 0.47 |
| 1:0:1823:G:H2' | 1:0:1824:C:H6 | 1.74 | 0.47 |
| 1:0:2163:U:H2' | 1:0:2164:G:H8 | 1.78 | 0.47 |
| 1:0:2279:G:O2' | 1:0:2280:A:H5' | 2.14 | 0.47 |
| 1:0:2298:U:O4 | 2:9:15:A:N6 | 2.47 | 0.47 |
| 1:0:2324:G:N2 | 1:0:2361:G:C4 | 2.82 | 0.47 |
| 1:0:2442:C:H42 | 1:0:2466:G:H1 | 1.61 | 0.47 |
| 1:0:2844:G:O2' | 1:0:2845:C:H5' | 2.14 | 0.47 |
| 1:0:2859:U:H5 | 1:0:2860:C:C2 | 2.33 | 0.47 |
| 1:0:93:A:O2' | 1:0:94:C:H5' | 2.14 | 0.47 |
| 1:0:225:G:N2 | 1:0:2410:U:H1' | 2.28 | 0.47 |
| 1:0:246:C:H42 | 1:0:247:A:H62 | 1.63 | 0.47 |
| 1:0:336:A:H61 | 1:0:348:U:H3 | 1.62 | 0.47 |
| 1:0:551:A:C2 | 1:0:562:G:C2 | 3.02 | 0.47 |
| 1:0:722:C:N4 | 1:0:723:C:N4 | 2.62 | 0.47 |
| 1:0:1257:U:H2' | 1:0:1258:G:C8 | 2.50 | 0.47 |
| 1:0:1333:G:N2 | 1:0:1344:C:C4 | 2.81 | 0.47 |
| 1:0:1666:G:N3 | 1:0:1667:A:C8 | 2.83 | 0.47 |
| 1:0:1984:A:C6 | 1:0:1985:G:C5 | 3.02 | 0.47 |
| 1:0:2221:G:C2' | 1:0:2222:U:O5' | 2.62 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2434:G:C6 | 1:0:2477:C:N4 | 2.80 | 0.47 |
| 1:0:2502:G:C1' | 1:0:2745:A:C8 | 2.97 | 0.47 |
| 1:0:2702:G:C6 | 1:0:2703:C:C4 | 3.03 | 0.47 |
| 1:0:2817:A:C6 | 1:0:2851:G:C6 | 3.03 | 0.47 |
| 2:9:110:U:O2' | 2:9:111:C:H5' | 2.14 | 0.47 |
| 1:0:8:A:H2' | 1:0:9:U:C6 | 2.50 | 0.47 |
| 1:0:58:C:C5 | 1:0:59:G:O4' | 2.67 | 0.47 |
| 1:0:178:C:O2' | 1:0:179:U:H5' | 2.15 | 0.47 |
| 1:0:303:C:C2 | 1:0:360:A:C2 | 3.03 | 0.47 |
| 1:0:324:C:H2' | 1:0:325:U:O4' | 2.15 | 0.47 |
| 1:0:544:U:H2' | 1:0:545:C:O4' | 2.15 | 0.47 |
| 1:0:587:A:H2' | 1:0:588:G:C5' | 2.44 | 0.47 |
| 1:0:701:U:C4 | 1:0:702:A:C5 | 3.03 | 0.47 |
| 1:0:714:G:C5 | 1:0:715:U:C5 | 3.02 | 0.47 |
| 1:0:818:G:C6 | 1:0:2051:U:OP1 | 2.68 | 0.47 |
| 1:0:1035:G:O6 | 1:0:1036:G:O6 | 2.32 | 0.47 |
| 1:0:1331:G:C5 | 1:0:1332:G:N7 | 2.82 | 0.47 |
| 1:0:1347:C:C2' | 1:0:1348:C:H5' | 2.44 | 0.47 |
| 1:0:2177:U:O2' | 1:0:2178:U:H5' | 2.14 | 0.47 |
| 1:0:2227:C:C2' | 1:0:2228:U:H5' | 2.45 | 0.47 |
| 1:0:2409:A:C8 | 1:0:2409:A:C3' | 2.97 | 0.47 |
| 1:0:2496:C:H2' | 1:0:2521:A:H62 | 1.79 | 0.47 |
| 1:0:2633:A:H5'' | 1:0:2634:G:OP1 | 2.14 | 0.47 |
| 1:0:2717:G:H2' | 1:0:2718:A:C8 | 2.49 | 0.47 |
| 1:0:2718:A:N1 | 1:0:2719:U:C5 | 2.83 | 0.47 |
| 1:0:2749:A:C6 | 1:0:2750:G:C6 | 3.03 | 0.47 |
| 1:0:2840:U:N3 | 1:0:2841:U:O4 | 2.48 | 0.47 |
| 2:9:31:A:H2' | 2:9:32:C:O4' | 2.15 | 0.47 |
| 1:0:69:G:H5'' | 1:0:70:A:OP1 | 2.15 | 0.47 |
| 1:0:79:G:HO2' | 1:0:80:A:H5' | 1.77 | 0.47 |
| 1:0:178:C:H2' | 1:0:179:U:H6 | 1.77 | 0.47 |
| 1:0:192:G:H4' | 1:0:193:A:O5' | 2.15 | 0.47 |
| 1:0:225:G:O5' | 1:0:226:C:H5' | 2.15 | 0.47 |
| 1:0:481:A:N6 | 1:0:482:A:N6 | 2.62 | 0.47 |
| 1:0:807:A:C5 | 1:0:808:C:C4 | 3.02 | 0.47 |
| 1:0:941:U:C4 | 1:0:942:U:C2 | 3.03 | 0.47 |
| 1:0:974:U:H2' | 1:0:975:C:H6 | 1.80 | 0.47 |
| 1:0:1151:U:OP1 | 1:0:1153:A:OP2 | 2.32 | 0.47 |
| 1:0:1323:G:H2' | 1:0:1324:G:H4' | 1.97 | 0.47 |
| 1:0:1408:A:C2 | 1:0:1411:C:C4 | 3.03 | 0.47 |
| 1:0:1415:C:O2' | 1:0:1416:A:H5' | 2.15 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1424:U:H2' | 1:0:1425:G:C8 | 2.50 | 0.47 |
| 1:0:1434:U:O5' | 1:0:1434:U:H6 | 1.97 | 0.47 |
| 1:0:1578:U:O4 | 1:0:1579:G:O6 | 2.32 | 0.47 |
| 1:0:1649:A:H8 | 1:0:1649:A:O5' | 1.98 | 0.47 |
| 1:0:1650:A:C8 | 1:0:1652:G:N7 | 2.82 | 0.47 |
| 1:0:1771:A:C8 | 1:0:1772:C:H5 | 2.32 | 0.47 |
| 1:0:1933:G:O5' | 1:0:1933:G:C8 | 2.63 | 0.47 |
| 1:0:2082:C:H2' | 1:0:2083:G:O4' | 2.15 | 0.47 |
| 1:0:2091:C:H2' | 1:0:2092:U:C5' | 2.45 | 0.47 |
| 1:0:2173:G:O2' | 1:0:2174:G:H5' | 2.15 | 0.47 |
| 1:0:2203:G:H4' | 1:0:2204:A:H5' | 1.96 | 0.47 |
| 1:0:2376:G:H2' | 1:0:2377:U:C6 | 2.50 | 0.47 |
| 1:0:2721:A:C8 | 1:0:2722:C:C6 | 3.03 | 0.47 |
| 1:0:28:A:H61 | 1:0:522:G:H4' | 1.80 | 0.47 |
| 1:0:167:A:H2' | 1:0:168:A:H8 | 1.76 | 0.47 |
| 1:0:353:G:O2' | 1:0:354:C:H5' | 2.15 | 0.47 |
| 1:0:537:C:O4' | 1:0:2759:U:O2' | 2.32 | 0.47 |
| 1:0:611:C:C6 | 1:0:611:C:C3' | 2.98 | 0.47 |
| 1:0:676:G:C6 | 1:0:677:G:N7 | 2.82 | 0.47 |
| 1:0:717:G:H1' | 1:0:740:A:N6 | 2.30 | 0.47 |
| 1:0:755:C:N3 | 1:0:756:C:C4 | 2.83 | 0.47 |
| 1:0:810:U:O2' | 1:0:811:G:H5' | 2.15 | 0.47 |
| 1:0:1011:A:C2 | 1:0:1166:A:C5 | 3.02 | 0.47 |
| 1:0:1168:G:C2 | 1:0:1169:C:C2 | 3.03 | 0.47 |
| 1:0:1375:C:N4 | 1:0:1376:C:N4 | 2.63 | 0.47 |
| 1:0:1982:C:O2' | 1:0:1983:G:H5' | 2.14 | 0.47 |
| 1:0:2705:A:H8 | 1:0:2705:A:H5'' | 1.79 | 0.47 |
| 1:0:2721:A:C5 | 1:0:2722:C:C2 | 3.03 | 0.47 |
| 1:0:839:U:C4 | 1:0:841:G:H1' | 2.50 | 0.47 |
| 1:0:992:A:C2 | 1:0:2011:U:O4' | 2.67 | 0.47 |
| 1:0:1578:U:N3 | 1:0:1579:G:C5 | 2.83 | 0.47 |
| 1:0:1689:U:C4 | 1:0:1690:U:O4 | 2.68 | 0.47 |
| 1:0:1918:G:O5' | 1:0:1918:G:H8 | 1.97 | 0.47 |
| 1:0:2762:G:C6 | 1:0:2763:U:C5 | 3.03 | 0.47 |
| 1:0:26:G:C5 | 1:0:27:G:N1 | 2.83 | 0.47 |
| 1:0:184:A:H2' | 1:0:185:C:O4' | 2.15 | 0.47 |
| 1:0:218:A:N1 | 1:0:232:A:H5'' | 2.30 | 0.47 |
| 1:0:318:G:H22 | 1:0:321:A:C5' | 2.28 | 0.47 |
| 1:0:429:C:H2' | 1:0:430:C:O4' | 2.14 | 0.47 |
| 1:0:447:U:O2' | 1:0:448:C:C6 | 2.66 | 0.47 |
| 1:0:570:G:H2' | 1:0:571:U:C5' | 2.45 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:698:A:C4 | 1:0:787:A:C2 | 3.03 | 0.47 |
| 1:0:861:G:H21 | 1:0:944:A:H1' | 1.79 | 0.47 |
| 1:0:931:G:C6 | 1:0:932:G:C4 | 3.03 | 0.47 |
| 1:0:1102:G:H2' | 1:0:1103:C:H6 | 1.80 | 0.47 |
| 1:0:1172:U:H2' | 1:0:1173:G:H8 | 1.79 | 0.47 |
| 1:0:1629:G:C6 | 1:0:1633:C:N4 | 2.83 | 0.47 |
| 1:0:1744:G:H2' | 1:0:1746:A:OP2 | 2.15 | 0.47 |
| 1:0:1778:U:O2' | 1:0:1779:C:H5' | 2.14 | 0.47 |
| 1:0:1831:G:C2' | 1:0:1832:G:H5' | 2.45 | 0.47 |
| 1:0:1833:U:H6 | 1:0:1833:U:O5' | 1.98 | 0.47 |
| 1:0:1974:U:O5' | 1:0:1974:U:H6 | 1.97 | 0.47 |
| 1:0:2347:C:N4 | 1:0:2361:G:H1 | 2.12 | 0.47 |
| 1:0:2440:C:N3 | 1:0:2441:U:C5 | 2.83 | 0.47 |
| 1:0:2539:C:C4 | 1:0:2540:A:N7 | 2.83 | 0.47 |
| 1:0:2540:A:C2' | 1:0:2541:U:O5' | 2.62 | 0.47 |
| 1:0:162:C:H2' | 1:0:163:A:H8 | 1.79 | 0.46 |
| 1:0:208:C:C2' | 1:0:209:G:H5' | 2.45 | 0.46 |
| 1:0:556:A:C2' | 1:0:557:U:H5' | 2.42 | 0.46 |
| 1:0:581:A:N3 | 1:0:581:A:H2' | 2.30 | 0.46 |
| 1:0:773:G:C3' | 1:0:774:A:H5' | 2.44 | 0.46 |
| 1:0:860:U:H3 | 1:0:945:G:N2 | 2.13 | 0.46 |
| 1:0:1039:A:C5 | 1:0:1136:G:N2 | 2.83 | 0.46 |
| 1:0:1231:A:H3' | 1:0:1232:U:C6 | 2.49 | 0.46 |
| 1:0:1536:G:C8 | 1:0:1537:U:H5 | 2.33 | 0.46 |
| 1:0:1869:A:H2' | 1:0:1870:U:C6 | 2.50 | 0.46 |
| 1:0:1876:C:H2' | 1:0:1877:C:H5' | 1.97 | 0.46 |
| 1:0:1959:U:C2' | 1:0:1960:A:C8 | 2.93 | 0.46 |
| 1:0:2171:U:O5' | 1:0:2171:U:H6 | 1.99 | 0.46 |
| 1:0:2469:G:H4' | 1:0:2470:U:C5 | 2.37 | 0.46 |
| 1:0:2494:C:O2 | 1:0:2549:G:C5 | 2.68 | 0.46 |
| 1:0:2506:C:H2' | 1:0:2507:U:H6 | 1.79 | 0.46 |
| 1:0:2825:A:H2' | 1:0:2826:C:C6 | 2.51 | 0.46 |
| 1:0:29:U:H2' | 1:0:30:G:H8 | 1.77 | 0.46 |
| 1:0:165:G:O6 | 1:0:166:G:C2 | 2.68 | 0.46 |
| 1:0:348:U:C5 | 1:0:349:G:C8 | 3.04 | 0.46 |
| 1:0:391:C:H2' | 1:0:392:G:C8 | 2.51 | 0.46 |
| 1:0:509:U:H3' | 1:0:510:G:H8 | 1.80 | 0.46 |
| 1:0:542:A:H2' | 1:0:543:G:H5' | 1.97 | 0.46 |
| 1:0:584:A:H5' | 1:0:2038:C:N4 | 2.30 | 0.46 |
| 1:0:600:G:H3' | 1:0:601:A:H5' | 1.97 | 0.46 |
| 1:0:712:A:C8 | 1:0:713:G:C8 | 3.03 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:0:831:G:O2' | 1:0:832:A:C4' | 2.63 | 0.46 |
| 1:0:852:U:O2 | 1:0:951:G:C2 | 2.69 | 0.46 |
| 1:0:1292:A:H2' | 1:0:1293:A:H8 | 1.81 | 0.46 |
| 1:0:1314:A:N7 | 1:0:1316:G:N7 | 2.63 | 0.46 |
| 1:0:1783:G:N2 | 1:0:1784:C:H1' | 2.30 | 0.46 |
| 1:0:2002:A:N1 | 1:0:2003:A:C5 | 2.83 | 0.46 |
| 1:0:2007:G:C2 | 1:0:2023:C:O2 | 2.68 | 0.46 |
| 1:0:2044:G:N2 | 1:0:2046:C:C5 | 2.83 | 0.46 |
| 1:0:2078:G:N1 | 1:0:2178:U:C2 | 2.83 | 0.46 |
| 1:0:2125:C:O5' | 1:0:2125:C:H6 | 1.98 | 0.46 |
| 1:0:2359:U:C4 | 1:0:2360:C:H5 | 2.33 | 0.46 |
| 1:0:2383:C:H2' | 1:0:2384:G:O4' | 2.15 | 0.46 |
| 1:0:2491:C:C3' | 1:0:2492:G:H5'' | 2.45 | 0.46 |
| 1:0:314:G:H2' | 1:0:315:G:H8 | 1.77 | 0.46 |
| 1:0:319:G:C2 | 1:0:511:A:C4 | 3.04 | 0.46 |
| 1:0:605:G:H2' | 1:0:606:A:H8 | 1.81 | 0.46 |
| 1:0:809:C:H2' | 1:0:810:U:C6 | 2.50 | 0.46 |
| 1:0:844:G:N1 | 1:0:845:U:C2 | 2.83 | 0.46 |
| 1:0:1031:C:H4' | 1:0:1032:A:C8 | 2.50 | 0.46 |
| 1:0:1496:G:O5' | 1:0:1496:G:H8 | 1.98 | 0.46 |
| 1:0:1657:A:N7 | 1:0:1658:A:C5 | 2.84 | 0.46 |
| 1:0:2030:U:C2 | 1:0:2031:A:N7 | 2.84 | 0.46 |
| 1:0:2276:C:H2' | 1:0:2277:A:O4' | 2.14 | 0.46 |
| 1:0:2678:C:O2' | 1:0:2679:G:H5' | 2.15 | 0.46 |
| 32:0:2881:MUL:H14 | 32:0:2881:MUL:C10 | 2.42 | 0.46 |
| 1:0:20:C:O2' | 1:0:21:A:H5' | 2.16 | 0.46 |
| 1:0:173:A:N3 | 1:0:173:A:H2' | 2.30 | 0.46 |
| 1:0:318:G:N2 | 1:0:321:A:O4' | 2.48 | 0.46 |
| 1:0:629:C:O2' | 1:0:630:G:H5' | 2.15 | 0.46 |
| 1:0:698:A:C6 | 1:0:786:U:C6 | 3.03 | 0.46 |
| 1:0:839:U:H5'' | 1:0:2408:G:OP2 | 2.15 | 0.46 |
| 1:0:981:C:C5 | 1:0:982:C:C5 | 3.03 | 0.46 |
| 1:0:1018:C:H3' | 1:0:1018:C:C6 | 2.49 | 0.46 |
| 1:0:1281:A:H2 | 1:0:1996:A:C2 | 2.32 | 0.46 |
| 1:0:1379:A:N7 | 1:0:1380:C:N4 | 2.63 | 0.46 |
| 1:0:1457:A:C2' | 1:0:1458:A:H5' | 2.44 | 0.46 |
| 1:0:1569:A:H8 | 1:0:1569:A:O5' | 1.97 | 0.46 |
| 1:0:1945:C:O2' | 1:0:1946:U:H5 | 1.98 | 0.46 |
| 1:0:2554:C:O5' | 1:0:2554:C:H6 | 1.99 | 0.46 |
| 1:0:2626:U:O5' | 1:0:2626:U:H6 | 1.99 | 0.46 |
| 1:0:2651:U:H2' | 1:0:2652:G:C8 | 2.51 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2656:G:N3 | 1:0:2711:G:N2 | 2.63 | 0.46 |
| 1:0:2726:U:H2' | 1:0:2727:G:O4' | 2.15 | 0.46 |
| 2:9:94:G:H2' | 2:9:94:G:N3 | 2.31 | 0.46 |
| 1:0:133:C:H2' | 1:0:134:G:O4' | 2.16 | 0.46 |
| 1:0:348:U:O4 | 1:0:349:G:C5 | 2.69 | 0.46 |
| 1:0:348:U:C4 | 1:0:349:G:C5 | 3.04 | 0.46 |
| 1:0:513:A:H4' | 1:0:515:A:H5' | 1.97 | 0.46 |
| 1:0:658:G:H1' | 1:0:2330:G:H5'' | 1.98 | 0.46 |
| 1:0:740:A:N6 | 1:0:741:G:C2 | 2.84 | 0.46 |
| 1:0:836:G:H2' | 1:0:837:U:C6 | 2.41 | 0.46 |
| 1:0:836:G:C2 | 1:0:837:U:C5 | 3.04 | 0.46 |
| 1:0:873:U:P | 1:0:2247:A:C2 | 3.08 | 0.46 |
| 1:0:873:U:H2' | 1:0:874:A:H5' | 1.96 | 0.46 |
| 1:0:1429:A:O2' | 1:0:1430:G:H4' | 2.14 | 0.46 |
| 1:0:1996:A:O2' | 1:0:1997:A:H5' | 2.15 | 0.46 |
| 1:0:2012:A:C6 | 1:0:2014:A:H5' | 2.50 | 0.46 |
| 1:0:2013:A:H1' | 1:0:2478:C:H5' | 1.97 | 0.46 |
| 1:0:2026:C:O2' | 1:0:2027:C:C5' | 2.64 | 0.46 |
| 1:0:2300:G:H3' | 1:0:2300:G:N3 | 2.31 | 0.46 |
| 1:0:2309:G:H1 | 1:0:2364:C:N4 | 2.14 | 0.46 |
| 1:0:2617:G:H22 | 1:0:2755:A:H2' | 1.80 | 0.46 |
| 1:0:2637:C:H2' | 1:0:2638:G:C8 | 2.51 | 0.46 |
| 1:0:2726:U:O5' | 1:0:2726:U:H6 | 1.99 | 0.46 |
| 1:0:314:G:C2 | 1:0:326:A:C2 | 3.03 | 0.46 |
| 1:0:792:U:C2' | 1:0:793:G:C5' | 2.92 | 0.46 |
| 1:0:951:G:H2' | 1:0:952:A:O4' | 2.15 | 0.46 |
| 1:0:1220:G:H2' | 1:0:1221:C:H6 | 1.80 | 0.46 |
| 1:0:1289:A:N1 | 1:0:1290:A:C5 | 2.83 | 0.46 |
| 1:0:1309:G:C6 | 1:0:1310:C:C4 | 3.04 | 0.46 |
| 1:0:1468:A:H8 | 1:0:1468:A:P | 2.37 | 0.46 |
| 1:0:1549:C:H6 | 1:0:1549:C:O5' | 1.98 | 0.46 |
| 1:0:1683:G:N7 | 1:0:1684:G:N3 | 2.63 | 0.46 |
| 1:0:1690:U:H2' | 1:0:1691:G:C5' | 2.45 | 0.46 |
| 1:0:1979:C:H2' | 1:0:1980:A:H4' | 1.98 | 0.46 |
| 1:0:1997:A:C2 | 1:0:1998:A:C6 | 3.03 | 0.46 |
| 1:0:2106:G:H2' | 1:0:2107:G:C8 | 2.51 | 0.46 |
| 1:0:2429:A:OP1 | 1:0:2476:A:C8 | 2.69 | 0.46 |
| 1:0:2549:G:N2 | 1:0:2550:C:H1' | 2.31 | 0.46 |
| 1:0:2762:G:C5 | 1:0:2763:U:C5 | 3.03 | 0.46 |
| 1:0:470:U:O4 | 1:0:471:A:C6 | 2.69 | 0.46 |
| 1:0:681:A:C6 | 1:0:683:A:H2' | 2.51 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:728:G:H2' | 1:0:729:A:O4' | 2.16 | 0.46 |
| 1:0:863:C:H2' | 1:0:864:C:O4' | 2.15 | 0.46 |
| 1:0:866:U:O2' | 1:0:867:G:H5' | 2.15 | 0.46 |
| 1:0:1090:C:C2' | 1:0:1091:C:H5' | 2.46 | 0.46 |
| 1:0:1161:U:H2' | 1:0:1162:A:H8 | 1.76 | 0.46 |
| 1:0:1264:C:C2' | 1:0:1265:G:O5' | 2.63 | 0.46 |
| 1:0:1789:U:C4 | 1:0:1811:A:H2 | 2.32 | 0.46 |
| 1:0:1985:G:H2' | 1:0:1986:G:H8 | 1.81 | 0.46 |
| 1:0:2086:U:H2' | 1:0:2087:U:C6 | 2.50 | 0.46 |
| 1:0:2176:U:H2' | 1:0:2177:U:O4' | 2.15 | 0.46 |
| 1:0:2825:A:N7 | 1:0:2843:A:H2 | 2.14 | 0.46 |
| 2:9:89:G:N2 | 2:9:91:A:C8 | 2.84 | 0.46 |
| 1:0:65:C:C2 | 1:0:88:G:N2 | 2.84 | 0.46 |
| 1:0:299:C:H2' | 1:0:300:C:C5 | 2.51 | 0.46 |
| 1:0:485:G:O6 | 1:0:520:C:N4 | 2.48 | 0.46 |
| 1:0:507:A:H2' | 1:0:508:G:O4' | 2.15 | 0.46 |
| 1:0:587:A:H5'' | 1:0:1268:U:O3' | 2.16 | 0.46 |
| 1:0:621:U:H3 | 1:0:628:A:H61 | 1.64 | 0.46 |
| 1:0:646:C:H2' | 1:0:647:G:H8 | 1.80 | 0.46 |
| 1:0:751:G:C4 | 1:0:772:G:N1 | 2.83 | 0.46 |
| 1:0:1398:G:N1 | 1:0:1416:A:C5 | 2.84 | 0.46 |
| 1:0:1668:G:O6 | 1:0:1669:A:N6 | 2.49 | 0.46 |
| 1:0:1748:U:N3 | 1:0:1753:A:C2 | 2.84 | 0.46 |
| 1:0:2756:A:N6 | 1:0:2762:G:C1' | 2.73 | 0.46 |
| 1:0:2785:A:H2' | 1:0:2786:G:C8 | 2.51 | 0.46 |
| 1:0:2815:C:C4 | 1:0:2816:C:C5 | 3.04 | 0.46 |
| 1:0:2815:C:C2' | 1:0:2816:C:H5' | 2.45 | 0.46 |
| 2:9:108:G:H8 | 2:9:108:G:O5' | 1.99 | 0.46 |
| 1:0:34:U:C2' | 1:0:35:G:H5' | 2.34 | 0.46 |
| 1:0:54:G:O6 | 1:0:55:A:N6 | 2.49 | 0.46 |
| 1:0:66:U:O5' | 1:0:66:U:H6 | 1.99 | 0.46 |
| 1:0:195:A:H61 | 1:0:212:U:C4' | 2.23 | 0.46 |
| 1:0:220:U:O4 | 1:0:232:A:C8 | 2.69 | 0.46 |
| 1:0:394:U:O5' | 1:0:394:U:H6 | 1.99 | 0.46 |
| 1:0:427:C:O2' | 1:0:428:A:H5' | 2.15 | 0.46 |
| 1:0:588:G:C8 | 1:0:2000:U:O4 | 2.69 | 0.46 |
| 1:0:598:U:H2' | 1:0:599:A:C8 | 2.51 | 0.46 |
| 1:0:640:C:C2 | 1:0:641:G:C8 | 3.03 | 0.46 |
| 1:0:751:G:H2' | 1:0:752:G:O4' | 2.15 | 0.46 |
| 1:0:1311:C:N3 | 1:0:1660:G:C2 | 2.84 | 0.46 |
| 1:0:1398:G:C6 | 1:0:1416:A:C5 | 3.04 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1456:C:O2 | 1:0:1566:G:C2 | 2.69 | 0.46 |
| 1:0:1461:C:H2' | 1:0:1462:C:H6 | 1.81 | 0.46 |
| 1:0:1479:G:C4 | 1:0:1480:G:C8 | 3.04 | 0.46 |
| 1:0:1708:C:H2' | 1:0:1709:U:O4' | 2.15 | 0.46 |
| 1:0:1768:U:H6 | 1:0:1768:U:O5' | 1.99 | 0.46 |
| 1:0:1830:C:H42 | 1:0:1881:U:H3' | 1.81 | 0.46 |
| 1:0:1837:G:O2' | 1:0:1838:G:H5' | 2.16 | 0.46 |
| 1:0:1945:C:O2' | 1:0:1946:U:C5 | 2.68 | 0.46 |
| 1:0:2091:C:H2' | 1:0:2092:U:O4' | 2.16 | 0.46 |
| 1:0:2262:C:C2' | 1:0:2263:C:H6 | 2.27 | 0.46 |
| 1:0:2356:A:O2' | 1:0:2357:A:H5' | 2.15 | 0.46 |
| 1:0:2384:G:H21 | 1:0:2391:A:H62 | 1.63 | 0.46 |
| 1:0:2628:C:H2' | 1:0:2629:U:C5 | 2.48 | 0.46 |
| 2:9:5:C:H2' | 2:9:6:C:O4' | 2.16 | 0.46 |
| 2:9:95:U:H2' | 2:9:96:C:H6 | 1.80 | 0.46 |
| 1:0:70:A:P | 1:0:111:G:H4' | 2.56 | 0.46 |
| 1:0:95:G:C2 | 1:0:96:C:C2 | 3.03 | 0.46 |
| 1:0:117:A:OP1 | 1:0:118:U:C5 | 2.69 | 0.46 |
| 1:0:294:U:H2' | 1:0:295:C:H6 | 1.81 | 0.46 |
| 1:0:302:U:C2 | 1:0:361:G:N2 | 2.84 | 0.46 |
| 1:0:459:A:H1' | 1:0:461:A:N6 | 2.31 | 0.46 |
| 1:0:464:G:H2' | 1:0:465:C:C6 | 2.51 | 0.46 |
| 1:0:477:A:H2' | 1:0:478:G:H5' | 1.98 | 0.46 |
| 1:0:942:U:H2' | 1:0:943:U:C5' | 2.45 | 0.46 |
| 1:0:1145:C:C5 | 1:0:1147:G:OP2 | 2.69 | 0.46 |
| 1:0:1682:A:N6 | 1:0:1977:C:N4 | 2.62 | 0.46 |
| 1:0:1777:A:N6 | 1:0:2585:C:H1' | 2.32 | 0.46 |
| 1:0:1975:G:C6 | 1:0:1980:A:C2 | 3.04 | 0.46 |
| 1:0:2543:A:C6 | 1:0:2544:A:N1 | 2.84 | 0.46 |
| 1:0:2549:G:H2' | 1:0:2550:C:C5' | 2.46 | 0.46 |
| 1:0:184:A:H2' | 1:0:185:C:C6 | 2.51 | 0.45 |
| 1:0:472:C:N4 | 1:0:473:C:H41 | 2.13 | 0.45 |
| 1:0:533:C:C2 | 1:0:534:U:C2 | 3.04 | 0.45 |
| 1:0:809:C:H2' | 1:0:810:U:H6 | 1.80 | 0.45 |
| 1:0:921:A:O2' | 1:0:923:A:OP2 | 2.21 | 0.45 |
| 1:0:1020:A:H8 | 1:0:1020:A:O5' | 1.99 | 0.45 |
| 1:0:1038:U:O2 | 1:0:2466:G:H4' | 2.16 | 0.45 |
| 1:0:1111:C:C5 | 1:0:1112:U:H5 | 2.34 | 0.45 |
| 1:0:1213:U:H2' | 1:0:1214:C:C6 | 2.51 | 0.45 |
| 1:0:1300:A:N1 | 1:0:1666:G:H1' | 2.30 | 0.45 |
| 1:0:1402:G:H3' | 1:0:1403:U:H6 | 1.81 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1715:A:C8 | 1:0:1717:A:H1' | 2.50 | 0.45 |
| 1:0:1987:G:C5 | 1:0:1988:A:C8 | 3.04 | 0.45 |
| 1:0:2238:G:O2' | 1:0:2239:C:H5' | 2.16 | 0.45 |
| 1:0:2319:G:C2' | 1:0:2320:G:H8 | 2.21 | 0.45 |
| 1:0:2472:U:C5 | 1:0:2473:G:N7 | 2.84 | 0.45 |
| 1:0:2474:G:C5 | 1:0:2475:C:C4 | 3.03 | 0.45 |
| 1:0:2856:U:C2 | 1:0:2857:C:C5 | 3.04 | 0.45 |
| 1:0:319:G:H8 | 1:0:319:G:O5' | 2.00 | 0.45 |
| 1:0:387:A:N6 | 1:0:413:G:O2' | 2.49 | 0.45 |
| 1:0:393:U:H2' | 1:0:394:U:C6 | 2.52 | 0.45 |
| 1:0:404:A:N7 | 1:0:405:C:C4 | 2.85 | 0.45 |
| 1:0:693:A:O2' | 1:0:694:G:H5' | 2.17 | 0.45 |
| 1:0:751:G:C2 | 1:0:772:G:C6 | 3.04 | 0.45 |
| 1:0:941:U:C2' | 1:0:942:U:C5' | 2.93 | 0.45 |
| 1:0:978:U:H2' | 1:0:979:A:C8 | 2.50 | 0.45 |
| 1:0:1174:G:C2' | 1:0:1175:A:H5' | 2.45 | 0.45 |
| 1:0:1425:G:H2' | 1:0:1426:U:O4' | 2.16 | 0.45 |
| 1:0:1453:A:C3' | 1:0:1454:U:H5' | 2.46 | 0.45 |
| 1:0:1488:G:C2 | 1:0:1536:G:C2 | 3.04 | 0.45 |
| 1:0:1574:A:C2 | 1:0:1576:G:C8 | 3.04 | 0.45 |
| 1:0:1625:A:H1' | 1:0:1632:A:C4' | 2.47 | 0.45 |
| 1:0:1681:A:C2 | 1:0:1682:A:C4 | 3.04 | 0.45 |
| 1:0:1715:A:O2' | 1:0:1716:G:H8 | 1.99 | 0.45 |
| 1:0:1717:A:N7 | 1:0:1718:A:C5 | 2.84 | 0.45 |
| 1:0:2069:U:O5' | 1:0:2069:U:H6 | 1.99 | 0.45 |
| 1:0:2079:A:H2' | 1:0:2080:U:H6 | 1.77 | 0.45 |
| 1:0:2379:G:C2 | 1:0:2396:C:N3 | 2.84 | 0.45 |
| 1:0:2382:C:C4 | 1:0:2383:C:C5 | 3.05 | 0.45 |
| 1:0:2433:G:N1 | 1:0:2478:C:N4 | 2.65 | 0.45 |
| 1:0:2756:A:C6 | 1:0:2762:G:C1' | 2.98 | 0.45 |
| 1:0:25:U:O4 | 1:0:26:G:C2 | 2.69 | 0.45 |
| 1:0:26:G:C6 | 1:0:27:G:C2 | 3.04 | 0.45 |
| 1:0:203:G:O2' | 1:0:204:A:H5' | 2.17 | 0.45 |
| 1:0:224:G:H4' | 1:0:399:G:C6 | 2.50 | 0.45 |
| 1:0:392:G:H4' | 1:0:2211:U:H5'' | 1.98 | 0.45 |
| 1:0:408:U:O4 | 1:0:409:G:O6 | 2.34 | 0.45 |
| 1:0:481:A:N6 | 1:0:482:A:C6 | 2.85 | 0.45 |
| 1:0:697:G:N1 | 1:0:807:A:C2 | 2.78 | 0.45 |
| 1:0:710:C:C4 | 1:0:711:C:N4 | 2.84 | 0.45 |
| 1:0:754:G:C6 | 1:0:755:C:C5 | 3.04 | 0.45 |
| 1:0:838:A:H4' | 1:0:2407:G:C5 | 2.51 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:957:G:N2 | 1:0:983:G:H1' | 2.32 | 0.45 |
| 1:0:974:U:H2' | 1:0:975:C:C6 | 2.52 | 0.45 |
| 1:0:1396:C:O5' | 1:0:1396:C:H6 | 1.99 | 0.45 |
| 1:0:1407:G:O2' | 1:0:1408:A:O4' | 2.33 | 0.45 |
| 1:0:1416:A:C2 | 1:0:1417:C:C2 | 3.04 | 0.45 |
| 1:0:1442:C:H3' | 1:0:1442:C:C6 | 2.51 | 0.45 |
| 1:0:1449:C:O2' | 1:0:1450:G:H5' | 2.16 | 0.45 |
| 1:0:1735:G:O2' | 1:0:1736:C:H5' | 2.17 | 0.45 |
| 1:0:1769:U:O2 | 1:0:1770:U:C5 | 2.69 | 0.45 |
| 1:0:2318:U:O5' | 1:0:2318:U:H6 | 1.98 | 0.45 |
| 1:0:2457:A:C8 | 1:0:2508:G:C6 | 3.05 | 0.45 |
| 1:0:2645:C:C6 | 1:0:2645:C:O5' | 2.69 | 0.45 |
| 2:9:85:G:O2' | 2:9:86:A:H5' | 2.17 | 0.45 |
| 1:0:149:A:O2' | 1:0:150:A:H5' | 2.17 | 0.45 |
| 1:0:475:U:C2 | 1:0:801:A:C6 | 3.05 | 0.45 |
| 1:0:679:C:H2' | 1:0:680:U:C6 | 2.48 | 0.45 |
| 1:0:813:A:O2' | 1:0:814:G:C8 | 2.69 | 0.45 |
| 1:0:956:A:C2' | 1:0:957:G:O5' | 2.63 | 0.45 |
| 1:0:966:A:N7 | 1:0:967:G:N7 | 2.64 | 0.45 |
| 1:0:977:G:C5' | 1:0:2251:U:O2 | 2.59 | 0.45 |
| 1:0:1398:G:C2 | 1:0:1416:A:C4 | 3.05 | 0.45 |
| 1:0:1483:G:H2' | 1:0:1484:G:O5' | 2.16 | 0.45 |
| 1:0:1631:C:C5 | 1:0:1633:C:C4 | 3.03 | 0.45 |
| 1:0:1672:A:C2 | 1:0:2032:G:H5'' | 2.51 | 0.45 |
| 1:0:1950:C:H2' | 1:0:1951:G:O4' | 2.17 | 0.45 |
| 1:0:2236:U:C2 | 1:0:2237:C:C6 | 3.05 | 0.45 |
| 1:0:2347:C:H2' | 1:0:2348:A:H8 | 1.82 | 0.45 |
| 1:0:2391:A:O5' | 1:0:2391:A:C8 | 2.70 | 0.45 |
| 1:0:2522:G:H2' | 1:0:2523:G:C8 | 2.51 | 0.45 |
| 1:0:2705:A:N7 | 1:0:2707:G:N7 | 2.64 | 0.45 |
| 1:0:387:A:H1' | 1:0:414:A:C6 | 2.51 | 0.45 |
| 1:0:482:A:C2' | 1:0:483:A:H5' | 2.46 | 0.45 |
| 1:0:603:C:H2' | 1:0:604:U:C6 | 2.51 | 0.45 |
| 1:0:611:C:H3' | 1:0:611:C:H6 | 1.81 | 0.45 |
| 1:0:649:G:O2' | 1:0:650:U:H5' | 2.16 | 0.45 |
| 1:0:840:U:C4 | 1:0:2405:A:H2 | 2.33 | 0.45 |
| 1:0:873:U:O5' | 1:0:2247:A:H2 | 1.96 | 0.45 |
| 1:0:926:C:O5' | 1:0:926:C:H6 | 2.00 | 0.45 |
| 1:0:1228:G:C6 | 1:0:1229:C:C4 | 3.05 | 0.45 |
| 1:0:1289:A:C2 | 1:0:1290:A:C5 | 3.04 | 0.45 |
| 1:0:1339:U:OP2 | 1:0:1339:U:C6 | 2.69 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1774:A:H2 | 1:0:2567:G:C8 | 2.34 | 0.45 |
| 1:0:1793:A:O2' | 1:0:1794:A:H5' | 2.17 | 0.45 |
| 1:0:1915:A:C2 | 1:0:1952:A:C2 | 3.04 | 0.45 |
| 1:0:2205:C:H5 | 1:0:2206:C:C5 | 2.33 | 0.45 |
| 1:0:2232:G:H2' | 1:0:2233:C:H6 | 1.81 | 0.45 |
| 1:0:2266:A:C2' | 1:0:2268:G:C8 | 2.94 | 0.45 |
| 1:0:2396:C:HO2' | 1:0:2397:A:H5' | 1.78 | 0.45 |
| 1:0:2432:A:H2 | 1:0:2483:U:O2 | 2.00 | 0.45 |
| 1:0:2490:U:O4 | 1:0:2553:G:O6 | 2.35 | 0.45 |
| 1:0:2514:G:H2' | 1:0:2515:G:C8 | 2.51 | 0.45 |
| 1:0:2616:U:H2' | 1:0:2617:G:O4' | 2.16 | 0.45 |
| 1:0:146:C:N3 | 1:0:152:G:N2 | 2.65 | 0.45 |
| 1:0:321:A:N1 | 1:0:323:G:H1' | 2.32 | 0.45 |
| 1:0:720:A:N1 | 1:0:738:G:H1' | 2.32 | 0.45 |
| 1:0:865:A:H2' | 1:0:866:U:O5' | 2.16 | 0.45 |
| 1:0:873:U:C3' | 1:0:874:A:C5' | 2.95 | 0.45 |
| 1:0:1171:A:C5 | 1:0:1172:U:H5 | 2.34 | 0.45 |
| 1:0:1175:A:H2' | 1:0:1176:U:H6 | 1.81 | 0.45 |
| 1:0:1199:U:C3' | 1:0:1200:G:H5'' | 2.44 | 0.45 |
| 1:0:1358:C:H6 | 1:0:1358:C:O5' | 1.99 | 0.45 |
| 1:0:1503:G:C2 | 1:0:1504:G:C4 | 3.05 | 0.45 |
| 1:0:1605:A:H2' | 1:0:1606:C:H6 | 1.82 | 0.45 |
| 1:0:1692:C:C2' | 1:0:1693:A:C5' | 2.88 | 0.45 |
| 1:0:1694:A:H2' | 1:0:1695:U:C5' | 2.46 | 0.45 |
| 1:0:1791:C:O2 | 1:0:1793:A:O4' | 2.34 | 0.45 |
| 1:0:1865:C:H2' | 1:0:1866:G:O4' | 2.16 | 0.45 |
| 1:0:1967:U:O2' | 1:0:1968:G:H5' | 2.17 | 0.45 |
| 1:0:1973:C:O5' | 1:0:1973:C:H6 | 2.00 | 0.45 |
| 1:0:2059:U:H3' | 1:0:2217:G:O6 | 2.17 | 0.45 |
| 1:0:2085:G:H1 | 1:0:2171:U:H1' | 1.82 | 0.45 |
| 1:0:2091:C:C2' | 1:0:2092:U:H5' | 2.46 | 0.45 |
| 1:0:2689:C:N4 | 1:0:2690:A:N6 | 2.65 | 0.45 |
| 1:0:2825:A:H8 | 1:0:2825:A:O5' | 2.00 | 0.45 |
| 2:9:38:C:O2' | 2:9:39:C:H5' | 2.17 | 0.45 |
| 2:9:50:U:H2' | 2:9:51:G:C8 | 2.51 | 0.45 |
| 1:0:25:U:C4 | 1:0:26:G:C2 | 3.04 | 0.45 |
| 1:0:132:U:H2' | 1:0:133:C:H6 | 1.80 | 0.45 |
| 1:0:174:A:O2' | 1:0:2223:U:OP1 | 2.35 | 0.45 |
| 1:0:490:A:N7 | 1:0:492:G:C1' | 2.80 | 0.45 |
| 1:0:548:G:C2 | 1:0:549:G:C5 | 3.04 | 0.45 |
| 1:0:580:A:C4 | 1:0:2013:A:C6 | 3.04 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:818:G:O6 | 1:0:2051:U:H5' | 2.17 | 0.45 |
| 1:0:867:G:C6 | 1:0:936:A:N1 | 2.85 | 0.45 |
| 1:0:1020:A:O2' | 1:0:1021:A:H5' | 2.17 | 0.45 |
| 1:0:1280:U:C2' | 1:0:1281:A:C5' | 2.90 | 0.45 |
| 1:0:1291:G:C2' | 1:0:1292:A:C5' | 2.95 | 0.45 |
| 1:0:1295:U:H2' | 1:0:1296:G:H5' | 1.97 | 0.45 |
| 1:0:1457:A:N6 | 1:0:1458:A:N6 | 2.65 | 0.45 |
| 1:0:1460:G:C2 | 1:0:1461:C:C2 | 3.04 | 0.45 |
| 1:0:1634:A:O2' | 1:0:1635:G:H5' | 2.17 | 0.45 |
| 1:0:1818:G:H2' | 1:0:1819:U:H6 | 1.82 | 0.45 |
| 1:0:2027:C:O2' | 1:0:2028:C:H5' | 2.17 | 0.45 |
| 1:0:2033:C:N3 | 1:0:2034:A:C2 | 2.85 | 0.45 |
| 1:0:2039:G:N2 | 1:0:2040:A:C1' | 2.80 | 0.45 |
| 1:0:2359:U:C2 | 1:0:2360:C:C5 | 3.04 | 0.45 |
| 1:0:2538:C:O2' | 1:0:2539:C:H5' | 2.17 | 0.45 |
| 1:0:2674:C:H2' | 1:0:2675:U:H6 | 1.81 | 0.45 |
| 1:0:2792:C:N3 | 1:0:2805:G:C2 | 2.85 | 0.45 |
| 1:0:459:A:C6 | 1:0:466:A:H2' | 2.52 | 0.45 |
| 1:0:636:G:H2' | 1:0:637:G:O4' | 2.16 | 0.45 |
| 1:0:701:U:H5'' | 1:0:1771:A:H2 | 1.82 | 0.45 |
| 1:0:814:G:O5' | 1:0:814:G:H8 | 2.00 | 0.45 |
| 1:0:835:U:C5 | 1:0:849:G:N2 | 2.85 | 0.45 |
| 1:0:1059:A:C6 | 1:0:1060:C:N4 | 2.85 | 0.45 |
| 1:0:1294:G:C2 | 1:0:1303:U:C2 | 3.05 | 0.45 |
| 1:0:1336:G:C2' | 1:0:1337:G:H5' | 2.47 | 0.45 |
| 1:0:1385:C:H2' | 1:0:1386:A:C8 | 2.50 | 0.45 |
| 1:0:1429:A:H61 | 1:0:1602:G:H5' | 1.82 | 0.45 |
| 1:0:1531:C:H2' | 1:0:1532:A:C5' | 2.46 | 0.45 |
| 1:0:1717:A:H2' | 1:0:1718:A:O4' | 2.17 | 0.45 |
| 1:0:1800:A:H2' | 1:0:1802:A:C5 | 2.52 | 0.45 |
| 1:0:2132:G:H2' | 1:0:2133:G:C8 | 2.52 | 0.45 |
| 1:0:2245:A:O2' | 1:0:2246:A:N3 | 2.50 | 0.45 |
| 1:0:2279:G:H2' | 1:0:2280:A:H8 | 1.81 | 0.45 |
| 1:0:2549:G:C2 | 1:0:2550:C:C1' | 3.00 | 0.45 |
| 1:0:2608:A:O2' | 1:0:2609:G:H5' | 2.16 | 0.45 |
| 1:0:2849:C:C2 | 1:0:2850:U:C5 | 3.05 | 0.45 |
| 1:0:210:A:H62 | 1:0:442:A:H61 | 1.65 | 0.45 |
| 1:0:328:A:N1 | 1:0:329:C:C4 | 2.85 | 0.45 |
| 1:0:470:U:C5 | 1:0:480:G:N2 | 2.85 | 0.45 |
| 1:0:770:U:C2 | 1:0:771:C:C5 | 3.04 | 0.45 |
| 1:0:810:U:H6 | 1:0:810:U:O5' | 2.00 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:813:A:O2' | 1:0:814:G:H8 | 2.00 | 0.45 |
| 1:0:941:U:H4' | 1:0:941:U:OP1 | 2.17 | 0.45 |
| 1:0:1034:U:H4' | 1:0:1134:C:OP1 | 2.17 | 0.45 |
| 1:0:1164:C:H2' | 1:0:1165:G:O4' | 2.16 | 0.45 |
| 1:0:1226:A:N6 | 1:0:1249:G:H1' | 2.32 | 0.45 |
| 1:0:1242:A:H2' | 1:0:1243:G:C8 | 2.52 | 0.45 |
| 1:0:1560:A:H2' | 1:0:1561:A:O4' | 2.17 | 0.45 |
| 1:0:1755:G:H2' | 1:0:1756:C:H6 | 1.76 | 0.45 |
| 1:0:1940:C:C4 | 1:0:1941:C:N4 | 2.84 | 0.45 |
| 1:0:2047:C:H1' | 1:0:2429:A:C2 | 2.52 | 0.45 |
| 1:0:2071:G:H2' | 1:0:2072:C:H6 | 1.82 | 0.45 |
| 1:0:2310:G:N2 | 1:0:2364:C:C4 | 2.83 | 0.45 |
| 1:0:2447:G:N2 | 1:0:2460:G:C2' | 2.76 | 0.45 |
| 1:0:2596:C:C4 | 1:0:2597:G:N7 | 2.84 | 0.45 |
| 1:0:2843:A:H2' | 1:0:2844:G:O4' | 2.17 | 0.45 |
| 2:9:73:C:O2 | 2:9:109:G:C2 | 2.70 | 0.45 |
| 1:0:60:A:O2' | 1:0:61:U:H5' | 2.17 | 0.45 |
| 1:0:466:A:O2' | 1:0:467:U:OP2 | 2.32 | 0.45 |
| 1:0:708:G:C2 | 1:0:781:G:C2 | 3.05 | 0.45 |
| 1:0:760:U:O2 | 1:0:1997:A:H1' | 2.16 | 0.45 |
| 1:0:860:U:N3 | 1:0:945:G:N2 | 2.65 | 0.45 |
| 1:0:1075:C:H2' | 1:0:1076:U:O4' | 2.17 | 0.45 |
| 1:0:1163:C:H2' | 1:0:1164:C:C6 | 2.52 | 0.45 |
| 1:0:1762:C:O2' | 1:0:1777:A:H1' | 2.17 | 0.45 |
| 1:0:1774:A:C2 | 1:0:2567:G:O4' | 2.70 | 0.45 |
| 1:0:1859:A:C2 | 1:0:1860:A:C4 | 3.05 | 0.45 |
| 1:0:1930:C:C4 | 1:0:1931:G:N7 | 2.85 | 0.45 |
| 1:0:1934:U:C2 | 1:0:1937:G:N7 | 2.85 | 0.45 |
| 1:0:2318:U:C2' | 1:0:2319:G:C8 | 2.82 | 0.45 |
| 1:0:2404:A:H5' | 1:0:2406:C:O4' | 2.16 | 0.45 |
| 1:0:2404:A:O4' | 1:0:2406:C:C6 | 2.70 | 0.45 |
| 1:0:2487:G:C2 | 1:0:2561:G:C6 | 3.05 | 0.45 |
| 1:0:2520:A:C2 | 1:0:2745:A:N6 | 2.83 | 0.45 |
| 1:0:2528:G:C2 | 1:0:2529:G:N7 | 2.84 | 0.45 |
| 1:0:2544:A:C3' | 1:0:2545:A:O4' | 2.64 | 0.45 |
| 1:0:2546:G:C2 | 1:0:2547:C:C2 | 3.05 | 0.45 |
| 1:0:2800:C:H2' | 1:0:2801:A:C5' | 2.47 | 0.45 |
| 2:9:62:C:N4 | 2:9:63:A:N6 | 2.64 | 0.45 |
| 2:9:89:G:N1 | 2:9:93:G:C6 | 2.85 | 0.45 |
| 1:0:65:C:O2 | 1:0:88:G:N2 | 2.50 | 0.44 |
| 1:0:73:A:N6 | 1:0:87:G:C8 | 2.86 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:319:G:H1' | 1:0:511:A:O4' | 2.17 | 0.44 |
| 1:0:491:A:N6 | 1:0:510:G:H5' | 2.32 | 0.44 |
| 1:0:548:G:N3 | 1:0:549:G:C8 | 2.86 | 0.44 |
| 1:0:574:C:N4 | 1:0:582:G:OP1 | 2.51 | 0.44 |
| 1:0:646:C:H2' | 1:0:647:G:C8 | 2.52 | 0.44 |
| 1:0:789:G:O2' | 1:0:790:A:OP2 | 2.31 | 0.44 |
| 1:0:792:U:H2' | 1:0:793:G:C5' | 2.46 | 0.44 |
| 1:0:834:A:H5' | 1:0:835:U:C6 | 2.52 | 0.44 |
| 1:0:1000:G:OP1 | 1:0:1168:G:H4' | 2.17 | 0.44 |
| 1:0:1207:G:C6 | 1:0:1208:A:C6 | 3.05 | 0.44 |
| 1:0:1248:G:N1 | 1:0:1249:G:N2 | 2.64 | 0.44 |
| 1:0:1400:A:H2' | 1:0:1401:G:O4' | 2.17 | 0.44 |
| 1:0:1920:A:C2 | 1:0:1922:U:O4 | 2.70 | 0.44 |
| 1:0:1975:G:C5 | 1:0:1980:A:C6 | 3.06 | 0.44 |
| 1:0:2042:A:N3 | 1:0:2482:A:N6 | 2.65 | 0.44 |
| 1:0:2496:C:C6 | 1:0:2521:A:N7 | 2.85 | 0.44 |
| 1:0:91:A:C6 | 1:0:92:U:C4 | 3.06 | 0.44 |
| 1:0:482:A:H2' | 1:0:483:A:O4' | 2.17 | 0.44 |
| 1:0:713:G:O6 | 1:0:746:G:C2 | 2.70 | 0.44 |
| 1:0:754:G:C2 | 1:0:755:C:C5 | 3.05 | 0.44 |
| 1:0:807:A:C5 | 1:0:808:C:C5 | 3.05 | 0.44 |
| 1:0:830:C:C4 | 1:0:831:G:N7 | 2.85 | 0.44 |
| 1:0:931:G:H2' | 1:0:932:G:C5' | 2.47 | 0.44 |
| 1:0:1171:A:C5 | 1:0:1172:U:C5 | 3.05 | 0.44 |
| 1:0:1248:G:C6 | 1:0:1249:G:N1 | 2.85 | 0.44 |
| 1:0:1391:A:H2' | 1:0:1392:U:C6 | 2.49 | 0.44 |
| 1:0:1407:G:H4' | 1:0:1619:A:O3' | 2.17 | 0.44 |
| 1:0:1462:C:H1' | 1:0:1561:A:H1' | 2.00 | 0.44 |
| 1:0:1685:A:H2' | 1:0:1686:A:OP2 | 2.17 | 0.44 |
| 1:0:1760:G:H2' | 1:0:1761:G:C8 | 2.52 | 0.44 |
| 1:0:2071:G:H2' | 1:0:2072:C:C6 | 2.51 | 0.44 |
| 1:0:2441:U:C2 | 1:0:2442:C:C5 | 3.06 | 0.44 |
| 1:0:2489:C:H2' | 1:0:2490:U:H5' | 1.98 | 0.44 |
| 1:0:2701:A:C2 | 1:0:2848:A:C6 | 3.06 | 0.44 |
| 2:9:98:C:C6 | 2:9:98:C:H3' | 2.51 | 0.44 |
| 1:0:105:G:O6 | 1:0:106:G:C6 | 2.70 | 0.44 |
| 1:0:170:U:H4' | 1:0:816:U:O2' | 2.18 | 0.44 |
| 1:0:423:G:C2 | 1:0:431:G:C2 | 3.05 | 0.44 |
| 1:0:490:A:C2' | 1:0:491:A:H5' | 2.46 | 0.44 |
| 1:0:520:C:N3 | 1:0:521:U:C2 | 2.85 | 0.44 |
| 1:0:796:A:C5 | 1:0:798:G:C5 | 3.05 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:942:U:C2' | 1:0:943:U:C5' | 2.96 | 0.44 |
| 1:0:1460:G:N2 | 1:0:1461:C:O2 | 2.50 | 0.44 |
| 1:0:1673:C:C4 | 1:0:1674:C:C5 | 3.06 | 0.44 |
| 1:0:1801:C:H1' | 1:0:2208:U:C5' | 2.47 | 0.44 |
| 1:0:2026:C:O2' | 1:0:2027:C:O5' | 2.34 | 0.44 |
| 1:0:2056:C:H2' | 1:0:2057:U:H6 | 1.81 | 0.44 |
| 1:0:2062:U:H3 | 1:0:2220:A:H61 | 1.66 | 0.44 |
| 1:0:2380:U:C2' | 1:0:2381:A:H5' | 2.40 | 0.44 |
| 1:0:2490:U:C4 | 1:0:2491:C:C5 | 3.05 | 0.44 |
| 1:0:2574:G:H8 | 1:0:2574:G:O5' | 1.99 | 0.44 |
| 1:0:2843:A:N6 | 1:0:2844:G:N1 | 2.65 | 0.44 |
| 1:0:58:C:O2 | 1:0:72:A:H2' | 2.17 | 0.44 |
| 1:0:478:G:O2' | 1:0:479:G:C5' | 2.64 | 0.44 |
| 1:0:564:U:H2' | 1:0:565:A:C8 | 2.51 | 0.44 |
| 1:0:674:U:O2' | 1:0:675:C:H5' | 2.16 | 0.44 |
| 1:0:796:A:C8 | 1:0:798:G:N7 | 2.86 | 0.44 |
| 1:0:825:C:H2' | 1:0:826:U:O5' | 2.17 | 0.44 |
| 1:0:834:A:H5' | 1:0:835:U:H6 | 1.82 | 0.44 |
| 1:0:1301:U:C5 | 1:0:1340:C:C2 | 3.05 | 0.44 |
| 1:0:1311:C:N3 | 1:0:1660:G:N2 | 2.65 | 0.44 |
| 1:0:1491:C:H42 | 1:0:1532:A:N6 | 2.13 | 0.44 |
| 1:0:1544:A:N6 | 1:0:1545:G:O6 | 2.49 | 0.44 |
| 1:0:1579:G:H2' | 1:0:1580:C:C6 | 2.53 | 0.44 |
| 1:0:1655:C:C5' | 1:0:2689:C:O2' | 2.60 | 0.44 |
| 1:0:1676:U:C2 | 1:0:1985:G:N2 | 2.85 | 0.44 |
| 1:0:1724:C:N3 | 1:0:1747:G:C6 | 2.85 | 0.44 |
| 1:0:1869:A:H2' | 1:0:1870:U:O4' | 2.17 | 0.44 |
| 1:0:1948:C:N3 | 1:0:1949:A:N7 | 2.66 | 0.44 |
| 1:0:2363:G:C5' | 1:0:2365:U:OP1 | 2.66 | 0.44 |
| 1:0:2839:G:C8 | 1:0:2840:U:C5 | 3.06 | 0.44 |
| 2:9:107:C:H3' | 2:9:107:C:C6 | 2.52 | 0.44 |
| 1:0:197:G:N1 | 1:0:440:U:H3' | 2.31 | 0.44 |
| 1:0:394:U:H2' | 1:0:395:G:H5' | 1.99 | 0.44 |
| 1:0:615:C:C1' | 1:0:671:A:H4' | 2.45 | 0.44 |
| 1:0:733:G:H2' | 1:0:734:G:C8 | 2.53 | 0.44 |
| 1:0:854:G:C2 | 1:0:949:G:C2 | 3.06 | 0.44 |
| 1:0:947:C:O2' | 1:0:948:C:H5' | 2.17 | 0.44 |
| 1:0:1004:A:C2' | 1:0:1005:U:H5' | 2.38 | 0.44 |
| 1:0:1004:A:N6 | 1:0:1005:U:O4 | 2.50 | 0.44 |
| 1:0:1078:A:N6 | 1:0:1079:G:C6 | 2.85 | 0.44 |
| 1:0:1182:U:O4 | 1:0:1192:A:N1 | 2.50 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1220:G:N2 | 1:0:1221:C:C2 | 2.86 | 0.44 |
| 1:0:1263:G:O2' | 1:0:1264:C:O5' | 2.30 | 0.44 |
| 1:0:1271:C:O2' | 1:0:1272:G:C5' | 2.64 | 0.44 |
| 1:0:1546:C:H2' | 1:0:1547:U:C6 | 2.52 | 0.44 |
| 1:0:1548:U:C4 | 1:0:1549:C:N4 | 2.86 | 0.44 |
| 1:0:1730:G:H8 | 1:0:1730:G:O5' | 2.01 | 0.44 |
| 1:0:2270:U:H2' | 1:0:2271:C:C6 | 2.53 | 0.44 |
| 1:0:2324:G:N3 | 1:0:2326:C:H5 | 2.16 | 0.44 |
| 1:0:2433:G:C5 | 1:0:2434:G:N7 | 2.85 | 0.44 |
| 1:0:2489:C:C2' | 1:0:2490:U:H5' | 2.47 | 0.44 |
| 1:0:2493:U:O5' | 1:0:2493:U:H6 | 2.00 | 0.44 |
| 1:0:2656:G:H2' | 1:0:2657:G:C8 | 2.52 | 0.44 |
| 1:0:2811:G:C6 | 1:0:2858:A:C6 | 3.05 | 0.44 |
| 1:0:24:G:H2' | 1:0:25:U:H6 | 1.82 | 0.44 |
| 1:0:117:A:O3' | 1:0:118:U:H3' | 2.18 | 0.44 |
| 1:0:238:G:O4' | 1:0:618:A:H2 | 2.00 | 0.44 |
| 1:0:305:A:H2' | 1:0:306:G:C4' | 2.47 | 0.44 |
| 1:0:692:C:H2' | 1:0:693:A:H8 | 1.83 | 0.44 |
| 1:0:837:U:C2 | 1:0:838:A:N7 | 2.86 | 0.44 |
| 1:0:944:A:C6 | 1:0:945:G:C5 | 3.06 | 0.44 |
| 1:0:1014:G:N3 | 1:0:1021:A:H2 | 2.16 | 0.44 |
| 1:0:1222:G:C1' | 1:0:1251:G:H22 | 2.26 | 0.44 |
| 1:0:1332:G:O2' | 1:0:1333:G:H5' | 2.16 | 0.44 |
| 1:0:1638:G:C2 | 1:0:1639:U:C2 | 3.06 | 0.44 |
| 1:0:1647:U:H2' | 1:0:1649:A:OP2 | 2.18 | 0.44 |
| 1:0:1652:G:C5 | 1:0:1653:C:C4 | 3.05 | 0.44 |
| 1:0:1792:C:H6 | 1:0:1792:C:O5' | 2.01 | 0.44 |
| 1:0:2193:C:H2' | 1:0:2194:A:C8 | 2.52 | 0.44 |
| 1:0:2209:G:C4 | 1:0:2210:C:C5 | 3.05 | 0.44 |
| 1:0:2526:U:N3 | 1:0:2527:G:C5 | 2.86 | 0.44 |
| 1:0:2718:A:C2 | 1:0:2719:U:C6 | 3.06 | 0.44 |
| 1:0:2813:G:C5 | 1:0:2814:G:N7 | 2.86 | 0.44 |
| 1:0:26:G:H4' | 1:0:1273:G:O2' | 2.17 | 0.44 |
| 1:0:28:A:N3 | 1:0:523:A:C5 | 2.86 | 0.44 |
| 1:0:133:C:C4 | 1:0:134:G:C4 | 3.05 | 0.44 |
| 1:0:175:C:N4 | 1:0:225:G:H1 | 2.04 | 0.44 |
| 1:0:509:U:H6 | 1:0:509:U:O5' | 2.01 | 0.44 |
| 1:0:542:A:H2 | 1:0:572:G:HO2' | 1.64 | 0.44 |
| 1:0:588:G:O2' | 1:0:2002:A:OP1 | 2.35 | 0.44 |
| 1:0:691:C:N3 | 1:0:692:C:C4 | 2.86 | 0.44 |
| 1:0:761:G:H2' | 1:0:762:A:C8 | 2.53 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:805:G:H2' | 1:0:2419:C:N3 | 2.33 | 0.44 |
| 1:0:829:C:C2 | 1:0:1206:G:C2 | 3.06 | 0.44 |
| 1:0:832:A:N6 | 1:0:833:A:C6 | 2.85 | 0.44 |
| 1:0:929:A:C2 | 2:9:81:C:O2 | 2.70 | 0.44 |
| 1:0:1153:A:O2' | 1:0:1155:G:C8 | 2.64 | 0.44 |
| 1:0:1223:G:C8 | 1:0:1223:G:OP2 | 2.71 | 0.44 |
| 1:0:1560:A:H2' | 1:0:1561:A:C8 | 2.53 | 0.44 |
| 1:0:1785:A:O2' | 1:0:1786:C:H5' | 2.18 | 0.44 |
| 1:0:1941:C:C2' | 1:0:1942:G:H5' | 2.47 | 0.44 |
| 1:0:2052:G:O2' | 1:0:2053:G:H5' | 2.18 | 0.44 |
| 1:0:2259:G:H4' | 1:0:2306:A:H5' | 1.99 | 0.44 |
| 1:0:2301:A:H8 | 1:0:2301:A:H5'' | 1.82 | 0.44 |
| 1:0:2864:C:N4 | 1:0:2865:G:C2 | 2.86 | 0.44 |
| 1:0:487:G:N2 | 1:0:490:A:C4 | 2.85 | 0.44 |
| 1:0:757:U:O2 | 1:0:767:G:C2 | 2.70 | 0.44 |
| 1:0:926:C:H2' | 1:0:927:C:H5' | 1.99 | 0.44 |
| 1:0:986:A:H2 | 1:0:1001:A:C8 | 2.35 | 0.44 |
| 1:0:1001:A:N3 | 1:0:1167:A:C2 | 2.85 | 0.44 |
| 1:0:1134:C:C2 | 1:0:1135:C:C5 | 3.06 | 0.44 |
| 1:0:1212:U:C2' | 1:0:1213:U:H6 | 2.16 | 0.44 |
| 1:0:1411:C:H2' | 1:0:1412:C:O4' | 2.18 | 0.44 |
| 1:0:1446:U:C4 | 1:0:1447:U:C4 | 3.05 | 0.44 |
| 1:0:1542:G:H8 | 1:0:1542:G:O5' | 2.01 | 0.44 |
| 1:0:1610:A:C5 | 1:0:1611:U:C5 | 3.06 | 0.44 |
| 1:0:1694:A:O2' | 1:0:1695:U:H5' | 2.17 | 0.44 |
| 1:0:1753:A:H3' | 1:0:1753:A:C8 | 2.53 | 0.44 |
| 1:0:1807:A:H1' | 1:0:1809:G:C1' | 2.38 | 0.44 |
| 1:0:2029:G:H2' | 1:0:2030:U:C6 | 2.53 | 0.44 |
| 1:0:2231:G:HO2' | 1:0:2232:G:H5' | 1.83 | 0.44 |
| 1:0:2452:U:C4 | 1:0:2453:C:C5 | 3.05 | 0.44 |
| 1:0:2636:A:H8 | 1:0:2636:A:O5' | 2.01 | 0.44 |
| 1:0:178:C:H2' | 1:0:179:U:C5 | 2.53 | 0.44 |
| 1:0:227:G:C2 | 1:0:228:A:C4 | 3.05 | 0.44 |
| 1:0:487:G:C1' | 1:0:515:A:C2 | 3.01 | 0.44 |
| 1:0:548:G:H2' | 1:0:549:G:H8 | 1.83 | 0.44 |
| 1:0:584:A:H4' | 1:0:2038:C:H42 | 1.68 | 0.44 |
| 1:0:586:G:N2 | 1:0:1266:G:C2 | 2.86 | 0.44 |
| 1:0:597:U:N3 | 1:0:683:A:O2' | 2.31 | 0.44 |
| 1:0:748:A:N6 | 1:0:749:C:O2 | 2.51 | 0.44 |
| 1:0:1002:C:C2 | 1:0:1003:C:C6 | 3.05 | 0.44 |
| 1:0:1332:G:N1 | 1:0:1333:G:C2 | 2.86 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1347:C:C6 | 1:0:1347:C:H3' | 2.52 | 0.44 |
| 1:0:1587:A:C2 | 1:0:1588:A:C5 | 3.06 | 0.44 |
| 1:0:1685:A:N7 | 1:0:1691:G:C6 | 2.86 | 0.44 |
| 1:0:2238:G:H2' | 1:0:2239:C:C6 | 2.53 | 0.44 |
| 1:0:5:A:H2' | 1:0:6:A:C8 | 2.53 | 0.43 |
| 1:0:322:A:H2 | 1:0:342:G:P | 2.41 | 0.43 |
| 1:0:662:G:O2' | 1:0:663:G:H5' | 2.17 | 0.43 |
| 1:0:689:A:H2' | 1:0:690:A:O4' | 2.17 | 0.43 |
| 1:0:839:U:C2 | 1:0:841:G:H1' | 2.53 | 0.43 |
| 1:0:1080:A:C6 | 1:0:1084:A:N6 | 2.86 | 0.43 |
| 1:0:1170:U:O2' | 1:0:1171:A:H5' | 2.17 | 0.43 |
| 1:0:1398:G:C6 | 1:0:1416:A:C6 | 3.06 | 0.43 |
| 1:0:1984:A:C2 | 1:0:1985:G:C4 | 3.06 | 0.43 |
| 1:0:2006:G:C2 | 1:0:2024:U:O2 | 2.71 | 0.43 |
| 1:0:2103:G:O2' | 1:0:2104:G:H5' | 2.18 | 0.43 |
| 1:0:2335:U:O5' | 1:0:2335:U:H6 | 2.01 | 0.43 |
| 1:0:2630:C:O2 | 1:0:2649:A:C2 | 2.71 | 0.43 |
| 1:0:2762:G:C6 | 1:0:2763:U:C4 | 3.06 | 0.43 |
| 2:9:63:A:O2' | 2:9:64:C:H5' | 2.18 | 0.43 |
| 1:0:341:A:H2 | 1:0:1223:G:N7 | 2.16 | 0.43 |
| 1:0:344:G:H21 | 1:0:345:U:H1' | 1.82 | 0.43 |
| 1:0:445:A:H2' | 1:0:446:C:O4' | 2.18 | 0.43 |
| 1:0:761:G:N3 | 1:0:763:A:N6 | 2.67 | 0.43 |
| 1:0:861:G:H2' | 1:0:862:A:C8 | 2.52 | 0.43 |
| 1:0:1140:A:C2 | 1:0:2549:G:C1' | 3.01 | 0.43 |
| 1:0:1236:G:C2 | 1:0:1240:G:C2 | 3.06 | 0.43 |
| 1:0:1300:A:C2 | 1:0:1301:U:N3 | 2.86 | 0.43 |
| 1:0:1391:A:C2 | 1:0:1392:U:O4 | 2.72 | 0.43 |
| 1:0:1476:G:H21 | 1:0:1477:C:H1' | 1.83 | 0.43 |
| 1:0:1731:C:O5' | 1:0:1731:C:H6 | 2.01 | 0.43 |
| 1:0:1745:C:O2 | 1:0:1745:C:H2' | 2.18 | 0.43 |
| 1:0:1821:A:H2' | 1:0:1821:A:N3 | 2.32 | 0.43 |
| 1:0:1914:U:O2' | 1:0:1915:A:H5' | 2.17 | 0.43 |
| 1:0:2056:C:O2' | 1:0:2057:U:H5' | 2.18 | 0.43 |
| 1:0:2238:G:H2' | 1:0:2239:C:H6 | 1.83 | 0.43 |
| 1:0:2249:U:C2' | 1:0:2250:G:H5' | 2.48 | 0.43 |
| 1:0:2281:C:O5' | 1:0:2281:C:H6 | 2.01 | 0.43 |
| 1:0:2436:U:H1' | 1:0:2474:G:N2 | 2.33 | 0.43 |
| 1:0:2695:C:N3 | 1:0:2696:A:N7 | 2.66 | 0.43 |
| 1:0:2787:A:C5 | 1:0:2788:C:C5 | 3.06 | 0.43 |
| 1:0:2819:G:C8 | 1:0:2820:C:C5 | 3.06 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:354:C:H2' | 1:0:355:G:O4' | 2.19 | 0.43 |
| 1:0:365:U:H2' | 1:0:366:U:C6 | 2.53 | 0.43 |
| 1:0:836:G:O2' | 1:0:837:U:C5' | 2.64 | 0.43 |
| 1:0:968:C:N3 | 1:0:2438:A:OP1 | 2.50 | 0.43 |
| 1:0:1145:C:C6 | 1:0:1147:G:OP2 | 2.71 | 0.43 |
| 1:0:1284:G:N3 | 1:0:1633:C:O4' | 2.52 | 0.43 |
| 1:0:1301:U:C5 | 1:0:1340:C:N3 | 2.86 | 0.43 |
| 1:0:1310:C:H2' | 1:0:1311:C:H6 | 1.83 | 0.43 |
| 1:0:1358:C:H1' | 1:0:1409:U:H3 | 1.82 | 0.43 |
| 1:0:1564:U:C2' | 1:0:1565:G:H5' | 2.48 | 0.43 |
| 1:0:1657:A:N6 | 1:0:1658:A:C2 | 2.87 | 0.43 |
| 1:0:1666:G:O2' | 1:0:1667:A:H5' | 2.18 | 0.43 |
| 1:0:2046:C:O2' | 1:0:2047:C:H5' | 2.17 | 0.43 |
| 1:0:2307:A:N1 | 1:0:2308:A:C6 | 2.87 | 0.43 |
| 1:0:2426:G:O4' | 1:0:2480:C:C4 | 2.71 | 0.43 |
| 1:0:2651:U:O2' | 1:0:2652:G:H5' | 2.18 | 0.43 |
| 1:0:2793:G:C6 | 1:0:2804:G:O6 | 2.71 | 0.43 |
| 1:0:2794:G:C2 | 1:0:2803:C:C2 | 3.06 | 0.43 |
| 2:9:101:A:H2 | 2:9:102:A:N6 | 2.16 | 0.43 |
| 1:0:218:A:H4' | 1:0:220:U:C1' | 2.48 | 0.43 |
| 1:0:353:G:H2' | 1:0:354:C:C6 | 2.53 | 0.43 |
| 1:0:428:A:H2' | 1:0:429:C:H6 | 1.74 | 0.43 |
| 1:0:514:G:N3 | 1:0:514:G:H2' | 2.33 | 0.43 |
| 1:0:567:G:O2' | 1:0:568:G:H5' | 2.18 | 0.43 |
| 1:0:600:G:C3' | 1:0:601:A:C5' | 2.95 | 0.43 |
| 1:0:603:C:H2' | 1:0:604:U:H6 | 1.83 | 0.43 |
| 1:0:750:C:H2' | 1:0:751:G:O4' | 2.17 | 0.43 |
| 1:0:757:U:O2' | 1:0:758:G:H5' | 2.18 | 0.43 |
| 1:0:862:A:O2' | 1:0:863:C:H5' | 2.18 | 0.43 |
| 1:0:873:U:C2' | 1:0:874:A:H5' | 2.49 | 0.43 |
| 1:0:956:A:C6 | 1:0:2427:A:N3 | 2.86 | 0.43 |
| 1:0:959:C:H2' | 1:0:960:U:C6 | 2.53 | 0.43 |
| 1:0:971:A:N1 | 1:0:2475:C:H1' | 2.33 | 0.43 |
| 1:0:1342:U:H5'' | 1:0:1343:C:H5 | 1.84 | 0.43 |
| 1:0:1672:A:C6 | 1:0:1673:C:C2 | 3.07 | 0.43 |
| 1:0:1686:A:H5'' | 1:0:2529:G:OP1 | 2.18 | 0.43 |
| 1:0:1846:A:H2' | 1:0:1847:G:C5' | 2.49 | 0.43 |
| 1:0:2068:C:H2' | 1:0:2069:U:O4' | 2.17 | 0.43 |
| 1:0:2078:G:N1 | 1:0:2178:U:O2 | 2.51 | 0.43 |
| 1:0:2224:U:O2 | 1:0:2414:A:H3' | 2.18 | 0.43 |
| 1:0:2657:G:C2 | 1:0:2658:A:C4 | 3.07 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2726:U:H3' | 1:0:2727:G:H8 | 1.83 | 0.43 |
| 1:0:2736:U:H6 | 1:0:2736:U:H3' | 1.83 | 0.43 |
| 1:0:2750:G:O5' | 1:0:2750:G:H8 | 2.00 | 0.43 |
| 1:0:2815:C:O5' | 1:0:2815:C:H6 | 2.02 | 0.43 |
| 1:0:2824:C:O2 | 1:0:2843:A:N3 | 2.51 | 0.43 |
| 1:0:34:U:H2' | 1:0:35:G:C5' | 2.35 | 0.43 |
| 1:0:110:U:C5 | 1:0:111:G:C4 | 3.05 | 0.43 |
| 1:0:112:U:H2' | 1:0:113:C:O4' | 2.19 | 0.43 |
| 1:0:195:A:N6 | 1:0:212:U:H4' | 2.24 | 0.43 |
| 1:0:322:A:H2 | 1:0:342:G:OP1 | 2.00 | 0.43 |
| 1:0:411:C:H4' | 1:0:2072:C:O2' | 2.18 | 0.43 |
| 1:0:546:A:H2' | 1:0:547:U:O4' | 2.19 | 0.43 |
| 1:0:587:A:C6 | 1:0:2001:G:O4' | 2.71 | 0.43 |
| 1:0:688:A:O2' | 1:0:689:A:H5' | 2.18 | 0.43 |
| 1:0:796:A:H2 | 1:0:1770:U:H5' | 1.83 | 0.43 |
| 1:0:831:G:O2' | 1:0:832:A:C5' | 2.65 | 0.43 |
| 1:0:1002:C:N4 | 1:0:1003:C:N4 | 2.66 | 0.43 |
| 1:0:1236:G:N2 | 1:0:1240:G:N3 | 2.66 | 0.43 |
| 1:0:1244:U:H3' | 1:0:1244:U:H6 | 1.84 | 0.43 |
| 1:0:1323:G:H8 | 1:0:1323:G:O5' | 2.02 | 0.43 |
| 1:0:1379:A:C5 | 1:0:1380:C:C4 | 3.07 | 0.43 |
| 1:0:1389:C:N4 | 1:0:1390:G:C6 | 2.86 | 0.43 |
| 1:0:1652:G:C5 | 1:0:1653:C:C5 | 3.06 | 0.43 |
| 1:0:1776:A:N6 | 1:0:1778:U:H1' | 2.33 | 0.43 |
| 1:0:1886:G:O2' | 1:0:1887:G:H5' | 2.19 | 0.43 |
| 1:0:1922:U:O2 | 1:0:2571:G:C4' | 2.65 | 0.43 |
| 1:0:1924:C:C5 | 1:0:1925:C:C4 | 3.06 | 0.43 |
| 1:0:1959:U:H2' | 1:0:1960:A:H8 | 1.77 | 0.43 |
| 1:0:2032:G:O2' | 1:0:2033:C:H5' | 2.19 | 0.43 |
| 1:0:2394:G:H2' | 1:0:2395:C:C6 | 2.53 | 0.43 |
| 1:0:2532:G:C2 | 1:0:2533:U:C1' | 2.99 | 0.43 |
| 1:0:2605:C:H2' | 1:0:2606:G:C8 | 2.53 | 0.43 |
| 1:0:2705:A:N6 | 1:0:2707:G:C4 | 2.87 | 0.43 |
| 1:0:2721:A:N7 | 1:0:2722:C:C2 | 2.87 | 0.43 |
| 1:0:2754:C:N4 | 1:0:2755:A:C6 | 2.86 | 0.43 |
| 1:0:2756:A:N6 | 1:0:2762:G:N3 | 2.62 | 0.43 |
| 2:9:17:A:H1' | 2:9:112:A:C8 | 2.53 | 0.43 |
| 1:0:217:U:H6 | 1:0:217:U:O5' | 2.02 | 0.43 |
| 1:0:322:A:C2 | 1:0:342:G:P | 3.12 | 0.43 |
| 1:0:491:A:N1 | 1:0:509:U:H2' | 2.34 | 0.43 |
| 1:0:632:A:C2 | 1:0:633:G:C8 | 3.07 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:883:A:C6 | 1:0:920:G:C6 | 3.06 | 0.43 |
| 1:0:922:A:C4 | 1:0:923:A:C8 | 3.07 | 0.43 |
| 1:0:1215:A:N3 | 1:0:1258:G:C2 | 2.86 | 0.43 |
| 1:0:1226:A:C4 | 1:0:1250:A:N3 | 2.86 | 0.43 |
| 1:0:1289:A:C2 | 1:0:1290:A:C8 | 3.07 | 0.43 |
| 1:0:1291:G:H2' | 1:0:1292:A:C5' | 2.49 | 0.43 |
| 1:0:1391:A:C2' | 1:0:1392:U:OP1 | 2.66 | 0.43 |
| 1:0:1426:U:O5' | 1:0:1426:U:H6 | 2.02 | 0.43 |
| 1:0:1473:U:H5' | 1:0:1474:A:C5 | 2.54 | 0.43 |
| 1:0:1652:G:C6 | 1:0:1653:C:C4 | 3.07 | 0.43 |
| 1:0:1783:G:H1' | 1:0:1822:C:OP1 | 2.18 | 0.43 |
| 1:0:1855:G:H4' | 1:0:2390:A:H4' | 2.01 | 0.43 |
| 1:0:1995:G:H8 | 1:0:1995:G:O5' | 2.02 | 0.43 |
| 1:0:2091:C:H3' | 1:0:2092:U:H6 | 1.83 | 0.43 |
| 1:0:2404:A:O2' | 1:0:2405:A:OP2 | 2.33 | 0.43 |
| 1:0:2600:A:C2 | 1:0:2601:C:C2 | 3.06 | 0.43 |
| 1:0:2601:C:C2' | 1:0:2602:G:O5' | 2.65 | 0.43 |
| 1:0:63:A:C8 | 1:0:64:C:H5 | 2.36 | 0.43 |
| 1:0:174:A:O4' | 1:0:2051:U:H2' | 2.18 | 0.43 |
| 1:0:437:G:O2' | 1:0:438:G:H5' | 2.18 | 0.43 |
| 1:0:460:U:O2' | 1:0:461:A:OP1 | 2.30 | 0.43 |
| 1:0:466:A:C2' | 1:0:467:U:OP2 | 2.66 | 0.43 |
| 1:0:492:G:H2' | 1:0:517:A:C2 | 2.52 | 0.43 |
| 1:0:659:G:C6 | 1:0:660:G:C6 | 3.06 | 0.43 |
| 1:0:681:A:C5 | 1:0:683:A:C8 | 3.07 | 0.43 |
| 1:0:699:G:C5' | 1:0:700:C:OP2 | 2.65 | 0.43 |
| 1:0:831:G:O6 | 1:0:1202:U:OP2 | 2.36 | 0.43 |
| 1:0:1010:U:C2 | 1:0:1168:G:N2 | 2.87 | 0.43 |
| 1:0:1435:G:H2' | 1:0:1436:G:C8 | 2.53 | 0.43 |
| 1:0:1583:A:H8 | 1:0:1583:A:O5' | 2.01 | 0.43 |
| 1:0:1711:C:O5' | 1:0:1711:C:C6 | 2.69 | 0.43 |
| 1:0:1786:C:O4' | 1:0:1884:A:OP2 | 2.37 | 0.43 |
| 1:0:2327:U:O5' | 1:0:2327:U:H6 | 2.01 | 0.43 |
| 1:0:2391:A:O5' | 1:0:2391:A:H8 | 2.01 | 0.43 |
| 1:0:2433:G:C6 | 1:0:2478:C:N4 | 2.86 | 0.43 |
| 1:0:2435:C:O2' | 1:0:2436:U:H5' | 2.19 | 0.43 |
| 1:0:2441:U:O2' | 1:0:2442:C:H5' | 2.19 | 0.43 |
| 1:0:14:A:H2 | 1:0:2603:G:H21 | 1.59 | 0.43 |
| 1:0:395:G:H2' | 1:0:396:U:O4' | 2.18 | 0.43 |
| 1:0:396:U:H3' | 1:0:398:C:OP2 | 2.18 | 0.43 |
| 1:0:462:G:H2' | 1:0:463:C:C5' | 2.48 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:537:C:C6 | 1:0:2759:U:O2' | 2.66 | 0.43 |
| 1:0:671:A:H2' | 1:0:672:C:C6 | 2.54 | 0.43 |
| 1:0:672:C:O2' | 1:0:673:G:H5' | 2.19 | 0.43 |
| 1:0:771:C:O2' | 1:0:772:G:H5' | 2.19 | 0.43 |
| 1:0:813:A:HO2' | 1:0:814:G:H8 | 1.64 | 0.43 |
| 1:0:866:U:H2' | 1:0:867:G:C8 | 2.53 | 0.43 |
| 1:0:977:G:O2' | 1:0:978:U:C5' | 2.66 | 0.43 |
| 1:0:986:A:N7 | 1:0:987:G:C8 | 2.86 | 0.43 |
| 1:0:1077:U:C2 | 1:0:1079:G:OP2 | 2.72 | 0.43 |
| 1:0:1159:U:H2' | 1:0:1160:C:C6 | 2.53 | 0.43 |
| 1:0:1402:G:H3' | 1:0:1403:U:C6 | 2.54 | 0.43 |
| 1:0:1928:G:N1 | 1:0:1929:U:N3 | 2.67 | 0.43 |
| 1:0:1928:G:N1 | 1:0:1929:U:C4 | 2.86 | 0.43 |
| 1:0:1930:C:H42 | 1:0:1942:G:H1 | 1.66 | 0.43 |
| 1:0:1984:A:H2' | 1:0:1985:G:C8 | 2.54 | 0.43 |
| 1:0:1994:U:O5' | 1:0:1994:U:C6 | 2.69 | 0.43 |
| 1:0:2010:G:H2' | 1:0:2011:U:C6 | 2.54 | 0.43 |
| 1:0:2216:G:O5' | 1:0:2216:G:C8 | 2.63 | 0.43 |
| 1:0:2313:G:C2' | 1:0:2314:A:OP1 | 2.66 | 0.43 |
| 1:0:2331:A:N7 | 1:0:2345:A:N1 | 2.66 | 0.43 |
| 1:0:2529:G:C5 | 1:0:2530:C:H5 | 2.36 | 0.43 |
| 1:0:2571:G:C5 | 1:0:2572:U:C4 | 3.06 | 0.43 |
| 1:0:2653:A:N6 | 1:0:2654:A:C6 | 2.87 | 0.43 |
| 1:0:2817:A:C2 | 1:0:2851:G:C4 | 3.07 | 0.43 |
| 1:0:2833:C:H6 | 1:0:2833:C:OP1 | 2.01 | 0.43 |
| 20:R:57:ASN:CA | 20:R:76:LYS:CA | 2.96 | 0.43 |
| 1:0:38:G:O2' | 1:0:39:C:H5' | 2.19 | 0.43 |
| 1:0:342:G:N7 | 1:0:1222:G:N2 | 2.62 | 0.43 |
| 1:0:346:C:O2' | 1:0:347:C:H5' | 2.18 | 0.43 |
| 1:0:548:G:C2 | 1:0:549:G:N7 | 2.87 | 0.43 |
| 1:0:669:G:H2' | 1:0:670:U:O4' | 2.19 | 0.43 |
| 1:0:681:A:N9 | 1:0:683:A:N7 | 2.67 | 0.43 |
| 1:0:940:G:N7 | 1:0:941:U:O4' | 2.52 | 0.43 |
| 1:0:944:A:C6 | 1:0:945:G:C4 | 3.07 | 0.43 |
| 1:0:981:C:C5 | 1:0:982:C:H5 | 2.37 | 0.43 |
| 1:0:1095:A:H2 | 1:0:1116:U:H1' | 1.84 | 0.43 |
| 1:0:1672:A:H2' | 1:0:1673:C:O4' | 2.19 | 0.43 |
| 1:0:1760:G:C2' | 1:0:1761:G:H5' | 2.48 | 0.43 |
| 1:0:1964:A:C3' | 1:0:1965:U:H5' | 2.47 | 0.43 |
| 1:0:2022:C:H2' | 1:0:2023:C:C6 | 2.54 | 0.43 |
| 1:0:2024:U:O5' | 1:0:2024:U:C6 | 2.65 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2031:A:H2' | 1:0:2032:G:O4' | 2.19 | 0.43 |
| 1:0:2527:G:C5 | 1:0:2528:G:C8 | 3.07 | 0.43 |
| 1:0:2676:G:C8 | 1:0:2677:U:C5 | 3.07 | 0.43 |
| 1:0:2701:A:C6 | 1:0:2848:A:N6 | 2.87 | 0.43 |
| 1:0:2835:A:H8 | 1:0:2835:A:O5' | 2.01 | 0.43 |
| 1:0:65:C:C2' | 1:0:66:U:H5' | 2.48 | 0.43 |
| 1:0:140:G:H2' | 1:0:141:G:C8 | 2.53 | 0.43 |
| 1:0:167:A:H5'' | 1:0:181:A:C2 | 2.54 | 0.43 |
| 1:0:200:A:OP2 | 1:0:434:C:H4' | 2.19 | 0.43 |
| 1:0:220:U:O4 | 1:0:232:A:N7 | 2.51 | 0.43 |
| 1:0:931:G:C6 | 1:0:932:G:C5 | 3.06 | 0.43 |
| 1:0:966:A:C6 | 1:0:967:G:C4 | 3.07 | 0.43 |
| 1:0:1014:G:C2 | 1:0:1015:U:C6 | 3.06 | 0.43 |
| 1:0:1040:A:C2' | 1:0:1041:G:H5' | 2.47 | 0.43 |
| 1:0:1277:G:O6 | 1:0:1278:A:N6 | 2.52 | 0.43 |
| 1:0:1665:C:H2' | 1:0:1666:G:H8 | 1.84 | 0.43 |
| 1:0:1675:C:H6 | 1:0:1675:C:O5' | 2.01 | 0.43 |
| 1:0:1682:A:C5 | 1:0:1683:G:N7 | 2.87 | 0.43 |
| 1:0:1753:A:H3' | 1:0:1753:A:H8 | 1.84 | 0.43 |
| 1:0:1814:G:H2' | 1:0:1815:G:H8 | 1.83 | 0.43 |
| 1:0:1972:G:H2' | 1:0:1973:C:C5' | 2.49 | 0.43 |
| 1:0:2008:C:O5' | 1:0:2008:C:H6 | 2.02 | 0.43 |
| 1:0:2015:G:H22 | 1:0:2038:C:C1' | 2.27 | 0.43 |
| 1:0:2204:A:H4' | 1:0:2205:C:C4 | 2.54 | 0.43 |
| 1:0:2314:A:N7 | 1:0:2316:G:C5 | 2.87 | 0.43 |
| 1:0:2404:A:C5' | 1:0:2406:C:H5' | 2.49 | 0.43 |
| 1:0:2523:G:O2' | 1:0:2524:G:C5' | 2.63 | 0.43 |
| 1:0:2610:G:O6 | 1:0:2611:A:C6 | 2.71 | 0.43 |
| 1:0:2642:G:C5 | 1:0:2643:G:N7 | 2.87 | 0.43 |
| 1:0:2649:A:H2' | 1:0:2650:G:H8 | 1.84 | 0.43 |
| 1:0:2696:A:C2 | 1:0:2697:G:N7 | 2.87 | 0.43 |
| 1:0:2768:C:O5' | 1:0:2768:C:H6 | 2.01 | 0.43 |
| 1:0:91:A:C6 | 1:0:92:U:O4 | 2.71 | 0.42 |
| 1:0:173:A:N6 | 1:0:844:G:H21 | 2.14 | 0.42 |
| 1:0:319:G:N2 | 1:0:511:A:C5 | 2.87 | 0.42 |
| 1:0:322:A:C6 | 1:0:341:A:OP2 | 2.72 | 0.42 |
| 1:0:344:G:C2 | 1:0:345:U:C5 | 3.07 | 0.42 |
| 1:0:426:C:H4' | 1:0:1863:U:O2' | 2.18 | 0.42 |
| 1:0:502:A:H2' | 1:0:503:G:C5' | 2.48 | 0.42 |
| 1:0:544:U:O2' | 1:0:545:C:H5' | 2.18 | 0.42 |
| 1:0:606:A:C6 | 1:0:607:C:C4 | 3.07 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:776:G:O2' | 1:0:778:G:H5'' | 2.19 | 0.42 |
| 1:0:847:C:H2' | 1:0:848:A:C8 | 2.54 | 0.42 |
| 1:0:944:A:C2' | 1:0:945:G:H8 | 2.31 | 0.42 |
| 1:0:1030:U:C4 | 1:0:1153:A:N1 | 2.87 | 0.42 |
| 1:0:1040:A:C8 | 1:0:1040:A:H3' | 2.53 | 0.42 |
| 1:0:1172:U:H2' | 1:0:1173:G:C8 | 2.54 | 0.42 |
| 1:0:1332:G:C6 | 1:0:1333:G:C2 | 3.07 | 0.42 |
| 1:0:1686:A:HO2' | 1:0:1687:C:H5' | 1.83 | 0.42 |
| 1:0:1927:U:O2 | 1:0:1927:U:C2' | 2.65 | 0.42 |
| 1:0:1982:C:OP1 | 1:0:2704:U:H5' | 2.19 | 0.42 |
| 1:0:2106:G:C2 | 1:0:2159:A:C2 | 3.07 | 0.42 |
| 1:0:2434:G:N2 | 1:0:2435:C:O2 | 2.52 | 0.42 |
| 1:0:2434:G:C2 | 1:0:2477:C:N4 | 2.86 | 0.42 |
| 1:0:2703:C:HO2' | 1:0:2704:U:H5' | 1.82 | 0.42 |
| 1:0:2747:C:O2' | 1:0:2748:C:H5' | 2.19 | 0.42 |
| 2:9:76:U:O2' | 2:9:77:G:H5' | 2.19 | 0.42 |
| 1:0:433:G:N2 | 1:0:434:C:H1' | 2.34 | 0.42 |
| 1:0:659:G:O2' | 1:0:660:G:H5' | 2.19 | 0.42 |
| 1:0:705:C:N4 | 1:0:706:A:H62 | 2.17 | 0.42 |
| 1:0:772:G:C4 | 1:0:773:G:C8 | 3.07 | 0.42 |
| 1:0:962:C:C2 | 1:0:963:G:C8 | 3.07 | 0.42 |
| 1:0:1008:G:N2 | 1:0:1009:C:C2 | 2.87 | 0.42 |
| 1:0:1199:U:C6 | 1:0:1200:G:N7 | 2.88 | 0.42 |
| 1:0:1362:A:O5' | 1:0:1362:A:C8 | 2.61 | 0.42 |
| 1:0:1807:A:O4' | 1:0:1809:G:H1' | 2.19 | 0.42 |
| 1:0:2091:C:H3' | 1:0:2092:U:C6 | 2.54 | 0.42 |
| 1:0:2384:G:N2 | 1:0:2390:A:N7 | 2.67 | 0.42 |
| 1:0:2396:C:C2' | 1:0:2397:A:H5' | 2.49 | 0.42 |
| 1:0:2811:G:C6 | 1:0:2812:A:N6 | 2.87 | 0.42 |
| 2:9:70:C:O5' | 2:9:70:C:H6 | 2.01 | 0.42 |
| 2:9:77:G:C2' | 2:9:78:A:H5' | 2.50 | 0.42 |
| 1:0:119:G:H2' | 1:0:120:G:H8 | 1.84 | 0.42 |
| 1:0:591:G:C2 | 1:0:1272:G:C2 | 3.07 | 0.42 |
| 1:0:709:A:C6 | 1:0:710:C:C4 | 3.07 | 0.42 |
| 1:0:796:A:H2' | 1:0:797:A:H5' | 2.01 | 0.42 |
| 1:0:931:G:H4' | 2:9:83:C:H4' | 2.01 | 0.42 |
| 1:0:984:A:C8 | 1:0:1202:U:C4 | 3.08 | 0.42 |
| 1:0:1130:U:H2' | 1:0:1131:G:C8 | 2.54 | 0.42 |
| 1:0:1230:C:H2' | 1:0:1231:A:C8 | 2.54 | 0.42 |
| 1:0:1312:G:C2' | 1:0:1643:A:N6 | 2.82 | 0.42 |
| 1:0:1358:C:OP1 | 1:0:1358:C:C6 | 2.72 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1476:G:N2 | 1:0:1477:C:C2 | 2.88 | 0.42 |
| 1:0:1483:G:N1 | 1:0:1484:G:C5 | 2.87 | 0.42 |
| 1:0:1622:G:H4' | 1:0:1624:A:C4 | 2.54 | 0.42 |
| 1:0:1766:U:C2' | 1:0:1767:G:H5' | 2.50 | 0.42 |
| 1:0:1795:C:O5' | 1:0:1795:C:H6 | 2.02 | 0.42 |
| 1:0:1953:A:H2' | 1:0:1954:A:OP2 | 2.19 | 0.42 |
| 1:0:2047:C:O2 | 1:0:2429:A:C6 | 2.72 | 0.42 |
| 1:0:2284:U:H5 | 1:0:2286:G:C5 | 2.37 | 0.42 |
| 1:0:2498:U:C4 | 1:0:2521:A:C8 | 3.08 | 0.42 |
| 1:0:2780:A:H2' | 1:0:2781:G:C8 | 2.54 | 0.42 |
| 1:0:2793:G:C6 | 1:0:2804:G:C6 | 3.08 | 0.42 |
| 1:0:2801:A:N1 | 1:0:2802:C:O2 | 2.52 | 0.42 |
| 2:9:51:G:O2' | 2:9:52:G:H5' | 2.20 | 0.42 |
| 1:0:17:G:C5 | 1:0:18:U:C4 | 3.07 | 0.42 |
| 1:0:29:U:H3' | 1:0:29:U:H6 | 1.83 | 0.42 |
| 1:0:446:C:H2' | 1:0:447:U:H6 | 1.80 | 0.42 |
| 1:0:639:G:H2' | 1:0:640:C:C6 | 2.55 | 0.42 |
| 1:0:690:A:C6 | 1:0:691:C:C5 | 3.08 | 0.42 |
| 1:0:692:C:O2' | 1:0:693:A:H5' | 2.20 | 0.42 |
| 1:0:736:G:C6 | 1:0:737:C:N3 | 2.87 | 0.42 |
| 1:0:738:G:H2' | 1:0:739:G:O4' | 2.18 | 0.42 |
| 1:0:873:U:H5'' | 1:0:874:A:C8 | 2.54 | 0.42 |
| 1:0:936:A:H2' | 1:0:937:C:H6 | 1.81 | 0.42 |
| 1:0:968:C:H41 | 1:0:2437:G:H5'' | 1.83 | 0.42 |
| 1:0:1066:G:H3' | 1:0:1067:G:C5' | 2.49 | 0.42 |
| 1:0:1199:U:O5' | 1:0:1200:G:H5'' | 2.19 | 0.42 |
| 1:0:1248:G:C2 | 1:0:1249:G:N2 | 2.88 | 0.42 |
| 1:0:1375:C:O2' | 1:0:1802:A:H4' | 2.19 | 0.42 |
| 1:0:1746:A:C8 | 1:0:1746:A:H3' | 2.54 | 0.42 |
| 1:0:1764:A:H2' | 1:0:1765:C:C5' | 2.49 | 0.42 |
| 1:0:1889:G:OP2 | 1:0:1913:G:O6 | 2.37 | 0.42 |
| 1:0:1993:G:H2' | 1:0:1994:U:H6 | 1.83 | 0.42 |
| 1:0:2337:A:H2' | 1:0:2338:C:C6 | 2.55 | 0.42 |
| 1:0:2351:G:N2 | 1:0:2352:A:C4 | 2.87 | 0.42 |
| 1:0:2500:C:O2' | 1:0:2543:A:H2' | 2.20 | 0.42 |
| 1:0:2557:G:N2 | 1:0:2558:C:C2 | 2.88 | 0.42 |
| 1:0:2678:C:O2 | 1:0:2688:G:C2 | 2.72 | 0.42 |
| 1:0:2713:A:H8 | 1:0:2713:A:O5' | 2.01 | 0.42 |
| 1:0:2725:C:H2' | 1:0:2726:U:C5 | 2.54 | 0.42 |
| 1:0:2825:A:C2' | 1:0:2826:C:O5' | 2.67 | 0.42 |
| 1:0:2827:G:C2 | 1:0:2828:C:C2 | 3.07 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 2:9:42:U:H1' | 2:9:48:A:N1 | 2.34 | 0.42 |
| 2:9:108:G:H2' | 2:9:109:G:H8 | 1.83 | 0.42 |
| 1:0:8:A:H2' | 1:0:9:U:O4' | 2.20 | 0.42 |
| 1:0:50:G:C2' | 1:0:117:A:C2 | 2.89 | 0.42 |
| 1:0:74:G:H3' | 1:0:74:G:C8 | 2.54 | 0.42 |
| 1:0:197:G:H2' | 1:0:440:U:O4 | 2.19 | 0.42 |
| 1:0:701:U:C2 | 1:0:702:A:C8 | 3.07 | 0.42 |
| 1:0:931:G:O6 | 1:0:932:G:C6 | 2.73 | 0.42 |
| 1:0:1087:C:N4 | 1:0:1088:A:C2 | 2.87 | 0.42 |
| 1:0:1102:G:H2' | 1:0:1103:C:C6 | 2.54 | 0.42 |
| 1:0:1220:G:H2' | 1:0:1221:C:C6 | 2.54 | 0.42 |
| 1:0:1266:G:H3' | 1:0:1267:A:C5' | 2.46 | 0.42 |
| 1:0:1339:U:H5'' | 1:0:1994:U:O4' | 2.19 | 0.42 |
| 1:0:1348:C:H6 | 1:0:1348:C:O5' | 2.02 | 0.42 |
| 1:0:1674:C:C2 | 1:0:1675:C:C6 | 3.08 | 0.42 |
| 1:0:2270:U:O2' | 1:0:2353:G:N3 | 2.48 | 0.42 |
| 1:0:2696:A:N3 | 1:0:2697:G:C8 | 2.87 | 0.42 |
| 1:0:133:C:C4 | 1:0:134:G:C5 | 3.07 | 0.42 |
| 1:0:164:G:N1 | 1:0:165:G:C5 | 2.87 | 0.42 |
| 1:0:192:G:C1' | 1:0:193:A:H4' | 2.49 | 0.42 |
| 1:0:487:G:C1' | 1:0:515:A:H2 | 2.32 | 0.42 |
| 1:0:498:C:N4 | 1:0:499:G:C5 | 2.87 | 0.42 |
| 1:0:545:C:H2' | 1:0:546:A:H8 | 1.83 | 0.42 |
| 1:0:632:A:C2 | 1:0:633:G:N7 | 2.88 | 0.42 |
| 1:0:644:A:C2' | 1:0:645:G:H5' | 2.50 | 0.42 |
| 1:0:1260:A:C6 | 1:0:1262:U:H1' | 2.55 | 0.42 |
| 1:0:1438:G:N2 | 1:0:1591:U:C2 | 2.87 | 0.42 |
| 1:0:1545:G:H2' | 1:0:1546:C:O4' | 2.19 | 0.42 |
| 1:0:1877:C:O2' | 1:0:1878:C:H5' | 2.19 | 0.42 |
| 1:0:1999:U:C2' | 1:0:2000:U:H5' | 2.49 | 0.42 |
| 1:0:2047:C:H1' | 1:0:2429:A:N1 | 2.34 | 0.42 |
| 1:0:2203:G:C4' | 1:0:2204:A:H5' | 2.50 | 0.42 |
| 1:0:2301:A:H2' | 1:0:2302:G:H5' | 2.01 | 0.42 |
| 1:0:2321:C:H2' | 1:0:2322:U:C4' | 2.50 | 0.42 |
| 1:0:2390:A:H2' | 1:0:2391:A:H8 | 1.85 | 0.42 |
| 1:0:2447:G:H8 | 1:0:2447:G:P | 2.43 | 0.42 |
| 1:0:2494:C:O2' | 1:0:2495:G:H5' | 2.19 | 0.42 |
| 1:0:2627:G:C6 | 1:0:2628:C:C2 | 3.08 | 0.42 |
| 1:0:2718:A:C2 | 1:0:2719:U:C5 | 3.07 | 0.42 |
| 1:0:215:G:H2' | 1:0:216:U:C6 | 2.54 | 0.42 |
| 1:0:409:G:H2' | 1:0:410:A:C8 | 2.55 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 1:0:690:A:C2 | 1:0:691:C:C6 | 3.08 | 0.42 |
| 1:0:705:C:H2' | 1:0:706:A:C8 | 2.55 | 0.42 |
| 1:0:715:U:O5' | 1:0:715:U:H6 | 2.02 | 0.42 |
| 1:0:748:A:C5 | 1:0:749:C:C2 | 3.07 | 0.42 |
| 1:0:755:C:C4 | 1:0:756:C:C4 | 3.08 | 0.42 |
| 1:0:777:A:N6 | 1:0:1767:G:H1' | 2.34 | 0.42 |
| 1:0:1220:G:O2' | 1:0:1221:C:H5' | 2.20 | 0.42 |
| 1:0:1271:C:O2 | 1:0:1272:G:C8 | 2.73 | 0.42 |
| 1:0:1355:A:O2' | 1:0:1357:U:OP2 | 2.31 | 0.42 |
| 1:0:1377:G:N1 | 1:0:1381:G:C6 | 2.87 | 0.42 |
| 1:0:1514:C:P | 1:0:1514:C:C6 | 3.11 | 0.42 |
| 1:0:1566:G:C5' | 1:0:1733:U:O4 | 2.67 | 0.42 |
| 1:0:1666:G:O2' | 1:0:1667:A:C5' | 2.67 | 0.42 |
| 1:0:1900:U:O2' | 1:0:1946:U:OP1 | 2.36 | 0.42 |
| 1:0:1937:G:H1' | 1:0:2530:C:C4' | 2.49 | 0.42 |
| 1:0:2046:C:C2 | 1:0:2430:A:H2 | 2.38 | 0.42 |
| 1:0:2502:G:C2 | 1:0:2503:G:C8 | 3.07 | 0.42 |
| 1:0:2738:A:C8 | 1:0:2738:A:H3' | 2.54 | 0.42 |
| 1:0:2758:A:H5'' | 1:0:2759:U:H5 | 1.83 | 0.42 |
| 32:0:2881:MUL:H252 | 32:0:2881:MUL:H231 | 1.75 | 0.42 |
| 2:9:80:A:H2' | 2:9:81:C:O4' | 2.20 | 0.42 |
| 1:0:88:G:H8 | 1:0:88:G:O5' | 2.03 | 0.42 |
| 1:0:171:G:C6 | 1:0:179:U:C4 | 3.07 | 0.42 |
| 1:0:177:U:H6 | 1:0:177:U:P | 2.43 | 0.42 |
| 1:0:224:G:H4' | 1:0:399:G:C5 | 2.55 | 0.42 |
| 1:0:390:U:C4 | 1:0:391:C:C4 | 3.08 | 0.42 |
| 1:0:513:A:C2' | 1:0:516:G:N7 | 2.82 | 0.42 |
| 1:0:594:G:C4 | 1:0:1264:C:N4 | 2.88 | 0.42 |
| 1:0:647:G:H1' | 1:0:649:G:O2' | 2.20 | 0.42 |
| 1:0:665:A:H3' | 1:0:666:U:H5' | 2.02 | 0.42 |
| 1:0:687:G:N7 | 1:0:817:A:N1 | 2.68 | 0.42 |
| 1:0:688:A:N6 | 1:0:816:U:H3 | 2.17 | 0.42 |
| 1:0:718:A:O2' | 1:0:719:A:H5' | 2.19 | 0.42 |
| 1:0:815:A:C2' | 1:0:816:U:O4' | 2.67 | 0.42 |
| 1:0:866:U:H2' | 1:0:867:G:H8 | 1.85 | 0.42 |
| 1:0:1010:U:O2 | 1:0:1168:G:N2 | 2.53 | 0.42 |
| 1:0:1151:U:OP1 | 1:0:1153:A:OP1 | 2.38 | 0.42 |
| 1:0:1215:A:C2 | 1:0:1258:G:C6 | 3.08 | 0.42 |
| 1:0:1222:G:N9 | 1:0:1251:G:N2 | 2.68 | 0.42 |
| 1:0:1425:G:H2' | 1:0:1426:U:C6 | 2.55 | 0.42 |
| 1:0:1577:G:C2' | 1:0:1578:U:H5' | 2.49 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1622:G:H4' | 1:0:1624:A:N3 | 2.34 | 0.42 |
| 1:0:1674:C:O2 | 1:0:1675:C:C6 | 2.73 | 0.42 |
| 1:0:1702:C:N3 | 1:0:1703:C:C5 | 2.88 | 0.42 |
| 1:0:1767:G:N3 | 1:0:1767:G:H2' | 2.35 | 0.42 |
| 1:0:2194:A:O2' | 1:0:2195:C:H5'' | 2.19 | 0.42 |
| 1:0:2274:C:H2' | 1:0:2275:U:H5' | 2.02 | 0.42 |
| 1:0:2543:A:C6 | 1:0:2626:U:C4' | 3.02 | 0.42 |
| 1:0:2633:A:H8 | 1:0:2633:A:OP1 | 2.02 | 0.42 |
| 1:0:2642:G:O2' | 1:0:2643:G:C5' | 2.62 | 0.42 |
| 1:0:2668:U:O2 | 1:0:2668:U:C2' | 2.67 | 0.42 |
| 1:0:2696:A:H2' | 1:0:2697:G:H8 | 1.84 | 0.42 |
| 1:0:2746:G:C6 | 1:0:2747:C:C4 | 3.07 | 0.42 |
| 1:0:2762:G:C2' | 1:0:2763:U:H5' | 2.49 | 0.42 |
| 1:0:2783:U:H3' | 1:0:2783:U:C6 | 2.55 | 0.42 |
| 2:9:24:U:O2' | 2:9:25:G:H5' | 2.20 | 0.42 |
| 2:9:95:U:H2' | 2:9:96:C:C6 | 2.55 | 0.42 |
| 1:0:115:G:N1 | 1:0:117:A:N6 | 2.67 | 0.42 |
| 1:0:399:G:H2' | 1:0:399:G:N3 | 2.34 | 0.42 |
| 1:0:427:C:H42 | 1:0:2388:G:H1 | 1.68 | 0.42 |
| 1:0:457:C:H2' | 1:0:458:G:C5' | 2.50 | 0.42 |
| 1:0:461:A:C6 | 1:0:462:G:C6 | 3.08 | 0.42 |
| 1:0:604:U:C2 | 1:0:605:G:N7 | 2.88 | 0.42 |
| 1:0:837:U:N3 | 1:0:838:A:C6 | 2.87 | 0.42 |
| 1:0:852:U:O2 | 1:0:951:G:N2 | 2.53 | 0.42 |
| 1:0:1075:C:H3' | 1:0:1076:U:C6 | 2.55 | 0.42 |
| 1:0:1226:A:H2 | 1:0:1250:A:HO2' | 1.66 | 0.42 |
| 1:0:1435:G:H22 | 1:0:1512:A:H2 | 1.67 | 0.42 |
| 1:0:1459:U:P | 1:0:1459:U:H6 | 2.42 | 0.42 |
| 1:0:1573:G:C8 | 1:0:1574:A:N7 | 2.88 | 0.42 |
| 1:0:1578:U:N3 | 1:0:1579:G:N7 | 2.68 | 0.42 |
| 1:0:1612:U:O5' | 1:0:1612:U:H6 | 2.03 | 0.42 |
| 1:0:1618:U:H6 | 1:0:1618:U:P | 2.42 | 0.42 |
| 1:0:1981:A:H2' | 1:0:1982:C:O4' | 2.20 | 0.42 |
| 1:0:2025:A:C8 | 1:0:2025:A:C3' | 3.03 | 0.42 |
| 1:0:2252:A:H2' | 1:0:2253:A:O4' | 2.20 | 0.42 |
| 1:0:2267:A:C2 | 1:0:2304:G:O4' | 2.72 | 0.42 |
| 1:0:2333:A:C2 | 1:0:2343:C:C2 | 3.08 | 0.42 |
| 1:0:2422:C:C2 | 1:0:2423:G:C8 | 3.08 | 0.42 |
| 1:0:2442:C:H2' | 1:0:2443:C:C6 | 2.53 | 0.42 |
| 1:0:2565:C:H2' | 1:0:2566:A:C8 | 2.55 | 0.42 |
| 1:0:2593:A:C8 | 1:0:2593:A:C3' | 3.03 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 2:9:23:G:C6 | 2:9:24:U:C4 | 3.08 | 0.42 |
| 2:9:89:G:C2 | 2:9:93:G:N1 | 2.87 | 0.42 |
| 1:0:165:G:C5 | 1:0:166:G:C4 | 3.07 | 0.42 |
| 1:0:181:A:O4' | 1:0:183:U:C2 | 2.72 | 0.42 |
| 1:0:344:G:N2 | 1:0:345:U:C2 | 2.88 | 0.42 |
| 1:0:459:A:N6 | 1:0:484:G:H1' | 2.34 | 0.42 |
| 1:0:538:A:N6 | 1:0:2025:A:C2 | 2.88 | 0.42 |
| 1:0:572:G:OP2 | 1:0:581:A:C8 | 2.72 | 0.42 |
| 1:0:687:G:C6 | 1:0:820:U:O4 | 2.72 | 0.42 |
| 1:0:710:C:O2' | 1:0:711:C:H5' | 2.19 | 0.42 |
| 1:0:962:C:O5' | 1:0:962:C:H6 | 2.03 | 0.42 |
| 1:0:1175:A:O5' | 1:0:1175:A:C8 | 2.67 | 0.42 |
| 1:0:1319:C:H2' | 1:0:1320:A:C8 | 2.48 | 0.42 |
| 1:0:1327:C:P | 1:0:1345:G:H5' | 2.60 | 0.42 |
| 1:0:1826:U:HO2' | 1:0:1952:A:H2' | 1.79 | 0.42 |
| 1:0:1942:G:C6 | 1:0:1943:A:C6 | 3.08 | 0.42 |
| 1:0:2138:U:H2' | 1:0:2139:G:H5' | 2.01 | 0.42 |
| 1:0:2203:G:H5'' | 1:0:2204:A:H5' | 2.02 | 0.42 |
| 1:0:2316:G:C6 | 1:0:2317:G:C5 | 3.08 | 0.42 |
| 1:0:2359:U:C4 | 1:0:2360:C:C5 | 3.08 | 0.42 |
| 1:0:2489:C:H2' | 1:0:2490:U:C5' | 2.49 | 0.42 |
| 1:0:2684:A:C8 | 1:0:2685:A:C8 | 3.08 | 0.42 |
| 1:0:84:G:O2' | 1:0:85:C:H5' | 2.20 | 0.41 |
| 1:0:198:A:HO2' | 1:0:199:A:P | 2.43 | 0.41 |
| 1:0:627:A:N6 | 1:0:628:A:N6 | 2.67 | 0.41 |
| 1:0:687:G:HO2' | 1:0:688:A:H5' | 1.80 | 0.41 |
| 1:0:709:A:N6 | 1:0:710:C:N4 | 2.68 | 0.41 |
| 1:0:788:G:H2' | 1:0:807:A:N7 | 2.34 | 0.41 |
| 1:0:822:G:H5' | 1:0:1267:A:H4' | 2.01 | 0.41 |
| 1:0:940:G:N7 | 1:0:941:U:H6 | 2.17 | 0.41 |
| 1:0:958:G:C6 | 1:0:982:C:C4 | 3.08 | 0.41 |
| 1:0:1001:A:OP2 | 1:0:1200:G:OP1 | 2.38 | 0.41 |
| 1:0:1471:G:N2 | 1:0:2683:C:C2 | 2.88 | 0.41 |
| 1:0:1502:G:O2' | 1:0:1503:G:H5' | 2.19 | 0.41 |
| 1:0:1671:A:C5 | 1:0:1672:A:N7 | 2.88 | 0.41 |
| 1:0:1685:A:H61 | 1:0:1693:A:N6 | 2.13 | 0.41 |
| 1:0:1791:C:C2' | 1:0:1793:A:H5' | 2.50 | 0.41 |
| 1:0:1871:G:H2' | 1:0:1871:G:N3 | 2.35 | 0.41 |
| 1:0:2208:U:O2' | 1:0:2209:G:H5' | 2.20 | 0.41 |
| 1:0:2262:C:H2' | 1:0:2263:C:O4' | 2.20 | 0.41 |
| 1:0:2267:A:H2 | 1:0:2304:G:O4' | 2.03 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2337:A:H2' | 1:0:2338:C:H6 | 1.84 | 0.41 |
| 1:0:2687:G:H8 | 1:0:2687:G:O5' | 2.03 | 0.41 |
| 1:0:2792:C:C2 | 1:0:2805:G:C2 | 3.08 | 0.41 |
| 1:0:2821:G:C6 | 1:0:2846:G:N1 | 2.88 | 0.41 |
| 1:0:2858:A:H3' | 1:0:2859:U:H5' | 2.02 | 0.41 |
| 2:9:71:G:H2' | 2:9:71:G:N3 | 2.35 | 0.41 |
| 1:0:141:G:N2 | 1:0:142:U:C2 | 2.89 | 0.41 |
| 1:0:167:A:C2' | 1:0:168:A:O5' | 2.68 | 0.41 |
| 1:0:224:G:N7 | 1:0:226:C:H1' | 2.35 | 0.41 |
| 1:0:224:G:H2' | 1:0:226:C:O4' | 2.20 | 0.41 |
| 1:0:243:G:OP2 | 1:0:243:G:O4' | 2.39 | 0.41 |
| 1:0:362:C:C2' | 1:0:363:G:H4' | 2.47 | 0.41 |
| 1:0:618:A:N6 | 1:0:619:A:C2 | 2.88 | 0.41 |
| 1:0:658:G:C1' | 1:0:2330:G:H5'' | 2.50 | 0.41 |
| 1:0:712:A:N7 | 1:0:713:G:C4 | 2.88 | 0.41 |
| 1:0:736:G:C6 | 1:0:737:C:C2 | 3.08 | 0.41 |
| 1:0:873:U:C6 | 1:0:874:A:O4' | 2.73 | 0.41 |
| 1:0:941:U:C2 | 1:0:942:U:C1' | 3.03 | 0.41 |
| 1:0:1012:A:C8 | 1:0:1013:G:O4' | 2.73 | 0.41 |
| 1:0:1271:C:C2 | 1:0:1272:G:C8 | 3.09 | 0.41 |
| 1:0:1277:G:C8 | 1:0:1278:A:N7 | 2.88 | 0.41 |
| 1:0:1393:G:H8 | 1:0:1393:G:O5' | 2.03 | 0.41 |
| 1:0:1655:C:C4 | 1:0:1656:U:C5 | 3.07 | 0.41 |
| 1:0:1667:A:C2 | 1:0:1668:G:C8 | 3.08 | 0.41 |
| 1:0:1770:U:O2 | 1:0:1774:A:C6 | 2.74 | 0.41 |
| 1:0:2469:G:C5' | 1:0:2470:U:OP1 | 2.66 | 0.41 |
| 1:0:2701:A:H2' | 1:0:2702:G:O4' | 2.19 | 0.41 |
| 1:0:2847:G:N2 | 1:0:2848:A:N1 | 2.69 | 0.41 |
| 2:9:42:U:C2' | 2:9:45:C:H41 | 2.28 | 0.41 |
| 1:0:183:U:O5' | 1:0:183:U:H6 | 2.03 | 0.41 |
| 1:0:203:G:H5' | 1:0:234:C:C4' | 2.50 | 0.41 |
| 1:0:210:A:N6 | 1:0:442:A:H61 | 2.17 | 0.41 |
| 1:0:462:G:O5' | 1:0:462:G:H8 | 2.03 | 0.41 |
| 1:0:540:G:HO2' | 1:0:541:C:H4' | 1.77 | 0.41 |
| 1:0:573:C:N4 | 1:0:582:G:OP1 | 2.53 | 0.41 |
| 1:0:1046:U:O2' | 1:0:1047:G:H5' | 2.19 | 0.41 |
| 1:0:1225:G:H2' | 1:0:1249:G:N2 | 2.34 | 0.41 |
| 1:0:1252:C:HO2' | 1:0:1253:C:H5'' | 1.80 | 0.41 |
| 1:0:1366:A:O2' | 1:0:1367:A:H5' | 2.20 | 0.41 |
| 1:0:1395:A:H3' | 1:0:1396:C:C6 | 2.54 | 0.41 |
| 1:0:1414:G:H2' | 1:0:1415:C:O4' | 2.20 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1442:C:C6 | 1:0:1442:C:C3' | 3.03 | 0.41 |
| 1:0:1451:C:H2' | 1:0:1452:U:C6 | 2.47 | 0.41 |
| 1:0:1750:A:O2' | 1:0:1751:A:H5' | 2.20 | 0.41 |
| 1:0:1784:C:O5' | 1:0:1784:C:H6 | 2.03 | 0.41 |
| 1:0:1928:G:H2' | 1:0:1928:G:N3 | 2.35 | 0.41 |
| 1:0:2053:G:N2 | 1:0:2054:A:N3 | 2.68 | 0.41 |
| 1:0:2765:C:H2' | 1:0:2766:U:C6 | 2.55 | 0.41 |
| 1:0:40:U:H2' | 1:0:41:G:O4' | 2.21 | 0.41 |
| 1:0:174:A:C2 | 1:0:2223:U:H4' | 2.55 | 0.41 |
| 1:0:207:U:H2' | 1:0:208:C:C6 | 2.55 | 0.41 |
| 1:0:231:G:H8 | 1:0:231:G:O5' | 2.04 | 0.41 |
| 1:0:502:A:H2' | 1:0:503:G:O4' | 2.20 | 0.41 |
| 1:0:562:G:C6 | 1:0:563:U:N3 | 2.88 | 0.41 |
| 1:0:604:U:O2 | 1:0:605:G:C8 | 2.74 | 0.41 |
| 1:0:867:G:O2' | 1:0:868:U:C5' | 2.68 | 0.41 |
| 1:0:940:G:C8 | 1:0:941:U:C5' | 3.03 | 0.41 |
| 1:0:1001:A:H4' | 1:0:1168:G:P | 2.60 | 0.41 |
| 1:0:1166:A:C3' | 1:0:1167:A:H5'' | 2.49 | 0.41 |
| 1:0:1177:U:O4 | 1:0:1196:G:O6 | 2.38 | 0.41 |
| 1:0:1211:G:H8 | 1:0:1211:G:O5' | 2.03 | 0.41 |
| 1:0:1715:A:N7 | 1:0:1717:A:N3 | 2.68 | 0.41 |
| 1:0:1773:C:H2' | 1:0:2587:G:O2' | 2.20 | 0.41 |
| 1:0:1940:C:N4 | 1:0:1941:C:H41 | 2.16 | 0.41 |
| 1:0:2081:U:H2' | 1:0:2082:C:C5' | 2.51 | 0.41 |
| 1:0:2245:A:O2' | 1:0:2246:A:C2 | 2.74 | 0.41 |
| 1:0:2437:G:N7 | 1:0:2469:G:C4 | 2.88 | 0.41 |
| 1:0:2437:G:C8 | 1:0:2469:G:C2 | 3.08 | 0.41 |
| 1:0:2445:C:C2 | 1:0:2464:G:C2 | 3.08 | 0.41 |
| 1:0:2532:G:H2' | 1:0:2533:U:O5' | 2.20 | 0.41 |
| 1:0:2654:A:H8 | 1:0:2654:A:O5' | 2.03 | 0.41 |
| 1:0:2676:G:H2' | 1:0:2677:U:O4' | 2.20 | 0.41 |
| 1:0:2771:C:C4 | 1:0:2782:G:N2 | 2.89 | 0.41 |
| 1:0:2812:A:C2 | 1:0:2813:G:C4 | 3.08 | 0.41 |
| 1:0:2815:C:H2' | 1:0:2816:C:C5' | 2.51 | 0.41 |
| 1:0:2838:U:C4 | 1:0:2839:G:N7 | 2.88 | 0.41 |
| 1:0:91:A:C5 | 1:0:92:U:C5 | 3.08 | 0.41 |
| 1:0:118:U:H1' | 1:0:143:A:C8 | 2.55 | 0.41 |
| 1:0:230:C:N4 | 1:0:231:G:C6 | 2.88 | 0.41 |
| 1:0:391:C:H2' | 1:0:392:G:H8 | 1.86 | 0.41 |
| 1:0:446:C:C2' | 1:0:447:U:O4' | 2.65 | 0.41 |
| 1:0:494:A:C8 | 1:0:495:C:C5 | 3.09 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:0:601:A:H8 | 1:0:601:A:O5' | 2.04 | 0.41 |
| 1:0:754:G:C5 | 1:0:755:C:H5 | 2.39 | 0.41 |
| 1:0:765:C:C5 | 1:0:1772:C:H1' | 2.51 | 0.41 |
| 1:0:1278:A:HO2' | 1:0:1279:G:P | 2.42 | 0.41 |
| 1:0:1286:U:O2 | 1:0:2692:A:C2 | 2.74 | 0.41 |
| 1:0:1292:A:C6 | 1:0:1293:A:C5 | 3.08 | 0.41 |
| 1:0:1336:G:H2' | 1:0:1337:G:H5' | 2.02 | 0.41 |
| 1:0:1379:A:N7 | 1:0:1380:C:C4 | 2.88 | 0.41 |
| 1:0:1429:A:C2 | 1:0:1603:A:C8 | 3.08 | 0.41 |
| 1:0:1685:A:C2 | 1:0:1976:U:C2 | 3.06 | 0.41 |
| 1:0:1854:G:H1 | 1:0:1863:U:H3 | 1.68 | 0.41 |
| 1:0:2046:C:N3 | 1:0:2430:A:N1 | 2.68 | 0.41 |
| 1:0:2203:G:C5' | 1:0:2204:A:H5' | 2.50 | 0.41 |
| 1:0:2223:U:O5' | 1:0:2223:U:H6 | 2.03 | 0.41 |
| 1:0:2241:U:C4' | 1:0:2307:A:N3 | 2.83 | 0.41 |
| 1:0:2429:A:H5'' | 1:0:2476:A:C5 | 2.55 | 0.41 |
| 1:0:2592:U:H3' | 1:0:2592:U:C6 | 2.42 | 0.41 |
| 1:0:2697:G:C2 | 1:0:2698:G:C4 | 3.08 | 0.41 |
| 1:0:2697:G:N1 | 1:0:2698:G:C5 | 2.89 | 0.41 |
| 1:0:2790:C:C2 | 1:0:2791:C:C5 | 3.08 | 0.41 |
| 2:9:113:G:H2' | 2:9:114:C:C6 | 2.55 | 0.41 |
| 1:0:53:G:C6 | 1:0:54:G:C5 | 3.09 | 0.41 |
| 1:0:159:A:H2' | 1:0:160:C:O4' | 2.21 | 0.41 |
| 1:0:159:A:N1 | 1:0:192:G:N2 | 2.67 | 0.41 |
| 1:0:423:G:O5' | 1:0:423:G:H8 | 2.03 | 0.41 |
| 1:0:588:G:H4' | 1:0:2001:G:H5'' | 2.03 | 0.41 |
| 1:0:831:G:N2 | 1:0:1203:A:N6 | 2.55 | 0.41 |
| 1:0:1002:C:C4 | 1:0:1003:C:C5 | 3.08 | 0.41 |
| 1:0:1318:A:N6 | 1:0:1319:C:N4 | 2.68 | 0.41 |
| 1:0:1335:A:C2 | 1:0:1346:C:O2' | 2.73 | 0.41 |
| 1:0:1644:G:HO2' | 1:0:1645:U:H5' | 1.85 | 0.41 |
| 1:0:1656:U:H2' | 1:0:1657:A:H5' | 2.02 | 0.41 |
| 1:0:1713:G:N2 | 1:0:1960:A:O2' | 2.54 | 0.41 |
| 1:0:1965:U:C4 | 1:0:1966:C:C5 | 3.09 | 0.41 |
| 1:0:2052:G:N2 | 1:0:2422:C:C6 | 2.88 | 0.41 |
| 1:0:2059:U:C5' | 1:0:2217:G:O6 | 2.69 | 0.41 |
| 1:0:2238:G:H4' | 1:0:2407:G:OP2 | 2.19 | 0.41 |
| 1:0:2413:A:C8 | 1:0:2413:A:C3' | 3.02 | 0.41 |
| 1:0:2437:G:O6 | 1:0:2469:G:H3' | 2.20 | 0.41 |
| 1:0:2482:A:H2 | 32:0:2881:MUL:C20 | 2.33 | 0.41 |
| 1:0:2489:C:O2' | 1:0:2490:U:H5' | 2.21 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2645:C:C2' | 1:0:2646:C:H5' | 2.48 | 0.41 |
| 1:0:2665:G:C4 | 1:0:2666:U:C6 | 3.08 | 0.41 |
| 1:0:2819:G:N7 | 1:0:2820:C:C4 | 2.88 | 0.41 |
| 1:0:307:C:H2' | 1:0:308:C:C6 | 2.56 | 0.41 |
| 1:0:425:A:H2' | 1:0:426:C:O4' | 2.21 | 0.41 |
| 1:0:625:A:H2' | 1:0:626:A:O4' | 2.20 | 0.41 |
| 1:0:750:C:O2' | 1:0:751:G:H5' | 2.20 | 0.41 |
| 1:0:789:G:C2' | 1:0:790:A:OP2 | 2.69 | 0.41 |
| 1:0:836:G:N3 | 1:0:837:U:C5 | 2.89 | 0.41 |
| 1:0:1054:C:H2' | 1:0:1055:A:C5' | 2.51 | 0.41 |
| 1:0:1182:U:C2' | 1:0:1183:C:H5'' | 2.46 | 0.41 |
| 1:0:1284:G:C2' | 1:0:1633:C:H4' | 2.50 | 0.41 |
| 1:0:1354:A:HO2' | 1:0:1355:A:P | 2.44 | 0.41 |
| 1:0:1407:G:H8 | 1:0:1407:G:O5' | 2.04 | 0.41 |
| 1:0:1427:G:N7 | 1:0:1428:G:C2 | 2.89 | 0.41 |
| 1:0:1442:C:C2' | 1:0:1443:G:OP1 | 2.68 | 0.41 |
| 1:0:1555:A:H8 | 1:0:1555:A:O5' | 2.02 | 0.41 |
| 1:0:1594:U:O4 | 1:0:1595:A:N6 | 2.53 | 0.41 |
| 1:0:1666:G:N2 | 1:0:1667:A:C4 | 2.89 | 0.41 |
| 1:0:1697:U:H2' | 1:0:1754:G:N7 | 2.36 | 0.41 |
| 1:0:1700:C:C5 | 1:0:1701:C:C5 | 3.09 | 0.41 |
| 1:0:1778:U:H4' | 1:0:2568:A:H4' | 2.03 | 0.41 |
| 1:0:1830:C:C6 | 1:0:1882:G:C6 | 3.09 | 0.41 |
| 1:0:1889:G:N1 | 1:0:1908:C:N4 | 2.66 | 0.41 |
| 1:0:1981:A:O2' | 1:0:2704:U:H1' | 2.21 | 0.41 |
| 1:0:2548:G:C2 | 1:0:2549:G:C8 | 3.08 | 0.41 |
| 1:0:2603:G:O6 | 1:0:2604:G:C6 | 2.74 | 0.41 |
| 1:0:2810:A:O5' | 1:0:2810:A:C8 | 2.67 | 0.41 |
| 1:0:2844:G:C2' | 1:0:2845:C:H5' | 2.51 | 0.41 |
| 2:9:26:G:N7 | 2:9:58:G:C4 | 2.89 | 0.41 |
| 1:0:168:A:C6 | 1:0:169:C:N4 | 2.89 | 0.41 |
| 1:0:237:G:C6 | 1:0:238:G:C5 | 3.09 | 0.41 |
| 1:0:239:A:H4' | 1:0:620:G:H5' | 2.02 | 0.41 |
| 1:0:246:C:N3 | 1:0:247:A:N7 | 2.69 | 0.41 |
| 1:0:308:C:C2' | 1:0:309:G:H5' | 2.50 | 0.41 |
| 1:0:348:U:C5 | 1:0:349:G:N7 | 2.88 | 0.41 |
| 1:0:554:U:O2' | 1:0:555:U:H4' | 2.21 | 0.41 |
| 1:0:575:U:H2' | 1:0:576:A:O4' | 2.21 | 0.41 |
| 1:0:585:U:O2' | 1:0:2481:G:O6 | 2.38 | 0.41 |
| 1:0:657:A:N3 | 1:0:2329:C:O2' | 2.44 | 0.41 |
| 1:0:840:U:C5 | 1:0:2405:A:C2 | 3.08 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1038:U:H5 | 1:0:1137:A:C4 | 2.39 | 0.41 |
| 1:0:1089:C:O5' | 1:0:1089:C:C6 | 2.69 | 0.41 |
| 1:0:1150:C:OP1 | 10:H:52:GLY:CA | 2.69 | 0.41 |
| 1:0:1206:G:O2' | 1:0:1207:G:H5' | 2.20 | 0.41 |
| 1:0:1212:U:H2' | 1:0:1213:U:C5 | 2.49 | 0.41 |
| 1:0:1248:G:C5 | 1:0:1249:G:C2 | 3.09 | 0.41 |
| 1:0:1351:G:O2' | 1:0:1352:G:H5' | 2.21 | 0.41 |
| 1:0:1483:G:C2' | 1:0:1484:G:O5' | 2.69 | 0.41 |
| 1:0:1640:C:O5' | 1:0:1640:C:H6 | 2.03 | 0.41 |
| 1:0:1709:U:H6 | 1:0:1709:U:O5' | 2.04 | 0.41 |
| 1:0:1972:G:H2' | 1:0:1973:C:H5' | 2.02 | 0.41 |
| 1:0:2082:C:N4 | 1:0:2174:G:N2 | 2.68 | 0.41 |
| 1:0:2243:C:C2' | 1:0:2244:C:H5' | 2.51 | 0.41 |
| 1:0:2270:U:H6 | 1:0:2270:U:O5' | 2.04 | 0.41 |
| 1:0:2276:C:O5' | 1:0:2276:C:C6 | 2.73 | 0.41 |
| 1:0:2316:G:OP2 | 1:0:2317:G:OP2 | 2.39 | 0.41 |
| 1:0:2336:G:O5' | 1:0:2336:G:H8 | 2.04 | 0.41 |
| 1:0:2452:U:C4 | 1:0:2453:C:C4 | 3.09 | 0.41 |
| 1:0:2512:A:OP1 | 1:0:2644:A:H1' | 2.20 | 0.41 |
| 1:0:2514:G:N3 | 1:0:2515:G:N7 | 2.69 | 0.41 |
| 1:0:2535:C:C6 | 1:0:2536:G:C8 | 3.08 | 0.41 |
| 1:0:2627:G:C2' | 1:0:2628:C:H5' | 2.51 | 0.41 |
| 1:0:2749:A:C2 | 1:0:2750:G:C4 | 3.08 | 0.41 |
| 2:9:111:C:H6 | 2:9:111:C:O5' | 2.03 | 0.41 |
| 1:0:82:G:H21 | 1:0:102:C:H41 | 1.68 | 0.41 |
| 1:0:105:G:C6 | 1:0:106:G:C6 | 3.09 | 0.41 |
| 1:0:106:G:H2' | 1:0:107:G:H8 | 1.85 | 0.41 |
| 1:0:177:U:H2' | 1:0:178:C:O4' | 2.20 | 0.41 |
| 1:0:198:A:O2' | 1:0:199:A:OP2 | 2.37 | 0.41 |
| 1:0:246:C:C2 | 1:0:247:A:N7 | 2.89 | 0.41 |
| 1:0:369:C:H2' | 1:0:370:U:O4' | 2.21 | 0.41 |
| 1:0:454:G:C6 | 1:0:456:C:N4 | 2.89 | 0.41 |
| 1:0:461:A:N3 | 1:0:462:G:C8 | 2.89 | 0.41 |
| 1:0:473:C:N3 | 1:0:474:G:C5 | 2.89 | 0.41 |
| 1:0:488:A:C2 | 1:0:489:A:C2 | 3.09 | 0.41 |
| 1:0:594:G:C6 | 1:0:1264:C:C4 | 3.09 | 0.41 |
| 1:0:746:G:O6 | 1:0:774:A:C8 | 2.74 | 0.41 |
| 1:0:776:G:N3 | 1:0:776:G:C2' | 2.84 | 0.41 |
| 1:0:830:C:C2 | 1:0:1205:G:N2 | 2.89 | 0.41 |
| 1:0:865:A:C5 | 1:0:866:U:C4 | 3.09 | 0.41 |
| 1:0:947:C:O2' | 1:0:948:C:C5' | 2.69 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:965:G:N2 | 1:0:975:C:O2 | 2.54 | 0.41 |
| 1:0:1008:G:H8 | 1:0:1008:G:O5' | 2.04 | 0.41 |
| 1:0:1024:G:N1 | 1:0:1025:A:C6 | 2.88 | 0.41 |
| 1:0:1073:G:H2' | 1:0:1074:G:C4' | 2.51 | 0.41 |
| 1:0:1084:A:H4' | 1:0:2454:C:OP1 | 2.21 | 0.41 |
| 1:0:1089:C:C2 | 1:0:1099:A:H4' | 2.56 | 0.41 |
| 1:0:1251:G:C5 | 1:0:1252:C:C4 | 3.09 | 0.41 |
| 1:0:1251:G:C6 | 1:0:1252:C:N3 | 2.89 | 0.41 |
| 1:0:1352:G:C6 | 1:0:1353:A:N6 | 2.78 | 0.41 |
| 1:0:1377:G:N2 | 1:0:1381:G:C4 | 2.89 | 0.41 |
| 1:0:1746:A:C2 | 1:0:2696:A:H1' | 2.54 | 0.41 |
| 1:0:1767:G:C6 | 1:0:1768:U:C4 | 3.09 | 0.41 |
| 1:0:1773:C:H2' | 1:0:1774:A:H5' | 2.03 | 0.41 |
| 1:0:1960:A:C2' | 1:0:1961:A:H5' | 2.51 | 0.41 |
| 1:0:1992:G:H1' | 14:L:106:ASP:CA | 2.50 | 0.41 |
| 1:0:2019:C:H2' | 1:0:2020:G:C5' | 2.51 | 0.41 |
| 1:0:2033:C:N4 | 1:0:2034:A:N1 | 2.69 | 0.41 |
| 1:0:2063:A:C2 | 1:0:2064:U:C2 | 3.09 | 0.41 |
| 1:0:2090:U:N3 | 1:0:2166:G:N1 | 2.68 | 0.41 |
| 1:0:2161:C:O5' | 1:0:2161:C:H6 | 2.04 | 0.41 |
| 1:0:2436:U:C4 | 1:0:2437:G:C6 | 3.09 | 0.41 |
| 1:0:2454:C:H5'' | 1:0:2455:A:OP2 | 2.21 | 0.41 |
| 1:0:2572:U:H3' | 1:0:2572:U:C6 | 2.56 | 0.41 |
| 1:0:2655:C:O2' | 1:0:2656:G:H5' | 2.20 | 0.41 |
| 1:0:2736:U:C2' | 1:0:2737:A:H5' | 2.51 | 0.41 |
| 1:0:2837:G:N2 | 1:0:2838:U:C2 | 2.89 | 0.41 |
| 1:0:2839:G:C2' | 1:0:2840:U:C6 | 3.02 | 0.41 |
| 2:9:20:A:C2 | 2:9:69:G:C6 | 3.09 | 0.41 |
| 2:9:88:C:C2 | 2:9:89:G:C8 | 3.08 | 0.41 |
| 2:9:88:C:H2' | 2:9:89:G:H8 | 1.85 | 0.41 |
| 2:9:98:C:C6 | 2:9:98:C:C3' | 3.04 | 0.41 |
| 1:0:75:C:O2 | 1:0:109:A:C2 | 2.74 | 0.41 |
| 1:0:304:A:C2' | 1:0:305:A:H5'' | 2.50 | 0.41 |
| 1:0:344:G:N3 | 1:0:344:G:H2' | 2.35 | 0.41 |
| 1:0:500:G:C6 | 1:0:1297:A:C2 | 3.10 | 0.41 |
| 1:0:693:A:C6 | 1:0:811:G:C6 | 3.09 | 0.41 |
| 1:0:711:C:H4' | 1:0:748:A:H2 | 1.85 | 0.41 |
| 1:0:831:G:O2' | 1:0:832:A:O4' | 2.35 | 0.41 |
| 1:0:1157:G:O6 | 1:0:1158:A:N6 | 2.54 | 0.41 |
| 1:0:1183:C:N3 | 1:0:1184:G:C6 | 2.89 | 0.41 |
| 1:0:1668:G:C6 | 1:0:1669:A:N6 | 2.89 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1682:A:N7 | 1:0:1684:G:N2 | 2.69 | 0.41 |
| 1:0:1699:A:N7 | 1:0:1700:C:N3 | 2.69 | 0.41 |
| 1:0:1712:G:H3' | 1:0:1712:G:N3 | 2.36 | 0.41 |
| 1:0:1740:G:C2' | 1:0:1741:G:H5' | 2.51 | 0.41 |
| 1:0:1764:A:C5 | 1:0:1821:A:C1' | 2.97 | 0.41 |
| 1:0:1888:C:H2' | 1:0:1913:G:C2 | 2.56 | 0.41 |
| 1:0:2159:A:H2' | 1:0:2160:C:O4' | 2.21 | 0.41 |
| 1:0:2248:A:N7 | 1:0:2249:U:O4 | 2.53 | 0.41 |
| 1:0:2281:C:H2' | 1:0:2282:G:H8 | 1.85 | 0.41 |
| 1:0:2355:A:N6 | 1:0:2356:A:C2 | 2.88 | 0.41 |
| 1:0:2392:G:H2' | 1:0:2393:G:O4' | 2.20 | 0.41 |
| 1:0:2408:G:O4' | 1:0:2408:G:OP1 | 2.38 | 0.41 |
| 1:0:2419:C:H2' | 1:0:2420:C:H4' | 2.03 | 0.41 |
| 1:0:2807:U:H1' | 1:0:2809:A:C2 | 2.56 | 0.41 |
| 1:0:165:G:C8 | 1:0:166:G:C8 | 3.09 | 0.40 |
| 1:0:221:A:C2 | 1:0:232:A:C6 | 3.09 | 0.40 |
| 1:0:390:U:O4 | 1:0:391:C:N4 | 2.54 | 0.40 |
| 1:0:476:G:N2 | 1:0:697:G:N2 | 2.69 | 0.40 |
| 1:0:704:G:H2' | 1:0:705:C:O4' | 2.21 | 0.40 |
| 1:0:778:G:O2' | 1:0:779:U:H5' | 2.22 | 0.40 |
| 1:0:828:C:H2' | 1:0:829:C:C6 | 2.56 | 0.40 |
| 1:0:981:C:C6 | 1:0:982:C:C5 | 3.09 | 0.40 |
| 1:0:1012:A:H62 | 1:0:1165:G:N2 | 2.19 | 0.40 |
| 1:0:1254:G:C4 | 1:0:1255:A:N7 | 2.89 | 0.40 |
| 1:0:1256:C:C6 | 1:0:1257:U:C5 | 3.08 | 0.40 |
| 1:0:1404:C:N4 | 1:0:1407:G:N7 | 2.66 | 0.40 |
| 1:0:1491:C:H2' | 1:0:1492:A:C5' | 2.51 | 0.40 |
| 1:0:1657:A:N6 | 1:0:1658:A:N1 | 2.69 | 0.40 |
| 1:0:1673:C:N3 | 1:0:1674:C:C5 | 2.89 | 0.40 |
| 1:0:1718:A:P | 1:0:1754:G:H1 | 2.44 | 0.40 |
| 1:0:1769:U:O2 | 1:0:1770:U:H5 | 2.04 | 0.40 |
| 1:0:2049:C:C2' | 1:0:2050:G:H5' | 2.50 | 0.40 |
| 1:0:2184:C:H2' | 1:0:2185:U:C6 | 2.56 | 0.40 |
| 1:0:2241:U:H2' | 1:0:2242:C:O4' | 2.20 | 0.40 |
| 1:0:2243:C:N4 | 1:0:2244:C:N3 | 2.69 | 0.40 |
| 1:0:2455:A:C5 | 1:0:2456:U:C5 | 3.09 | 0.40 |
| 1:0:2503:G:C3' | 1:0:2504:G:H5'' | 2.51 | 0.40 |
| 1:0:2529:G:C6 | 1:0:2530:C:C5 | 3.08 | 0.40 |
| 1:0:2652:G:O2' | 1:0:2653:A:H5' | 2.20 | 0.40 |
| 1:0:2686:C:O2' | 1:0:2687:G:C5' | 2.69 | 0.40 |
| 1:0:2707:G:O2' | 1:0:2708:U:C5' | 2.69 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2709:C:C4 | 1:0:2710:C:C4 | 3.09 | 0.40 |
| 1:0:2859:U:H5 | 1:0:2860:C:N3 | 2.19 | 0.40 |
| 2:9:60:A:H2' | 2:9:61:A:H8 | 1.85 | 0.40 |
| 1:0:337:G:O2' | 1:0:338:G:H5' | 2.21 | 0.40 |
| 1:0:475:U:C4 | 1:0:476:G:N1 | 2.89 | 0.40 |
| 1:0:695:G:N2 | 1:0:809:C:C2 | 2.89 | 0.40 |
| 1:0:837:U:C4 | 1:0:838:A:C6 | 3.09 | 0.40 |
| 1:0:851:C:H2' | 1:0:852:U:C6 | 2.57 | 0.40 |
| 1:0:876:A:O3' | 2:9:103:A:C2 | 2.75 | 0.40 |
| 1:0:1038:U:C5 | 1:0:1137:A:C2 | 3.09 | 0.40 |
| 1:0:1183:C:H2' | 1:0:1184:G:O4' | 2.21 | 0.40 |
| 1:0:1249:G:O2' | 1:0:1250:A:P | 2.80 | 0.40 |
| 1:0:1253:C:H2' | 1:0:1254:G:H5' | 2.02 | 0.40 |
| 1:0:1365:U:H1' | 1:0:1586:A:H2 | 1.86 | 0.40 |
| 1:0:1437:A:O2' | 1:0:1438:G:H5' | 2.21 | 0.40 |
| 1:0:1603:A:C2 | 1:0:1604:A:C4 | 3.09 | 0.40 |
| 1:0:1603:A:H2' | 1:0:1604:A:C8 | 2.56 | 0.40 |
| 1:0:1662:G:H5'' | 1:0:1663:C:O4' | 2.20 | 0.40 |
| 1:0:1786:C:N3 | 1:0:1787:U:C2 | 2.89 | 0.40 |
| 1:0:1846:A:H2' | 1:0:1847:G:H5' | 2.03 | 0.40 |
| 1:0:1846:A:N7 | 1:0:1847:G:C5 | 2.89 | 0.40 |
| 1:0:1980:A:C2' | 1:0:1981:A:H5' | 2.52 | 0.40 |
| 1:0:2221:G:H2' | 1:0:2222:U:O5' | 2.20 | 0.40 |
| 1:0:2236:U:H2' | 1:0:2237:C:O4' | 2.22 | 0.40 |
| 1:0:2241:U:H4' | 1:0:2307:A:N3 | 2.34 | 0.40 |
| 1:0:2329:C:C2' | 1:0:2330:G:C5' | 2.99 | 0.40 |
| 1:0:2426:G:O4' | 1:0:2480:C:N4 | 2.54 | 0.40 |
| 1:0:2447:G:O5' | 1:0:2447:G:C8 | 2.67 | 0.40 |
| 1:0:2576:G:O2' | 1:0:2577:A:H5' | 2.22 | 0.40 |
| 1:0:2594:U:O2' | 1:0:2595:C:H5' | 2.21 | 0.40 |
| 1:0:2715:C:H2' | 1:0:2716:G:O4' | 2.21 | 0.40 |
| 1:0:2817:A:N1 | 1:0:2851:G:C5 | 2.89 | 0.40 |
| 1:0:210:A:N6 | 1:0:442:A:N6 | 2.69 | 0.40 |
| 1:0:296:A:N6 | 1:0:297:A:N6 | 2.70 | 0.40 |
| 1:0:545:C:N4 | 1:0:546:A:N6 | 2.70 | 0.40 |
| 1:0:613:A:C2 | 1:0:614:G:C6 | 3.09 | 0.40 |
| 1:0:616:U:C5 | 1:0:630:G:C2 | 3.10 | 0.40 |
| 1:0:946:U:H2' | 1:0:947:C:H6 | 1.86 | 0.40 |
| 1:0:988:G:O2' | 1:0:989:G:H5' | 2.22 | 0.40 |
| 1:0:1094:C:C2 | 1:0:1096:A:OP2 | 2.74 | 0.40 |
| 1:0:1151:U:H5'' | 1:0:1153:A:OP1 | 2.22 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1407:G:H2' | 1:0:1408:A:C8 | 2.57 | 0.40 |
| 1:0:1696:C:C5 | 1:0:1697:U:C4 | 3.10 | 0.40 |
| 1:0:1702:C:C2 | 1:0:1721:G:N2 | 2.89 | 0.40 |
| 1:0:1733:U:H5'' | 1:0:1733:U:H6 | 1.85 | 0.40 |
| 1:0:1970:G:O2' | 1:0:1971:C:C5' | 2.65 | 0.40 |
| 1:0:2321:C:O2' | 1:0:2322:U:H5' | 2.21 | 0.40 |
| 1:0:2445:C:N3 | 1:0:2464:G:C2 | 2.89 | 0.40 |
| 1:0:2470:U:O2' | 1:0:2471:U:C5' | 2.69 | 0.40 |
| 1:0:2484:G:H2' | 1:0:2485:U:H5' | 2.04 | 0.40 |
| 1:0:2537:C:H2' | 1:0:2538:C:O4' | 2.21 | 0.40 |
| 1:0:2571:G:C5 | 1:0:2572:U:O4 | 2.74 | 0.40 |
| 1:0:2641:A:H2' | 1:0:2642:G:O4' | 2.21 | 0.40 |
| 1:0:2644:A:C2 | 1:0:2645:C:C4 | 3.10 | 0.40 |
| 1:0:2762:G:H2' | 1:0:2763:U:H5' | 2.04 | 0.40 |
| 2:9:105:G:C2 | 2:9:106:U:C4 | 3.09 | 0.40 |
| 2:9:111:C:H5'' | 2:9:112:A:H4' | 2.03 | 0.40 |
| 1:0:190:A:C2 | 1:0:191:G:C2 | 3.10 | 0.40 |
| 1:0:324:C:C4 | 1:0:325:U:C4 | 3.09 | 0.40 |
| 1:0:446:C:C4 | 1:0:447:U:C4 | 3.09 | 0.40 |
| 1:0:484:G:H2' | 1:0:485:G:O4' | 2.21 | 0.40 |
| 1:0:525:A:C8 | 1:0:526:C:C5 | 3.10 | 0.40 |
| 1:0:685:U:C2 | 1:0:822:G:C2 | 3.09 | 0.40 |
| 1:0:1010:U:C4 | 1:0:1011:A:N6 | 2.90 | 0.40 |
| 1:0:1283:C:H2' | 1:0:1665:C:H5'' | 2.03 | 0.40 |
| 1:0:1386:A:N6 | 1:0:1387:G:C6 | 2.89 | 0.40 |
| 1:0:1402:G:H2' | 1:0:1403:U:O4' | 2.21 | 0.40 |
| 1:0:1411:C:C2' | 1:0:1412:C:H5' | 2.52 | 0.40 |
| 1:0:1459:U:C2 | 1:0:1475:U:O2' | 2.69 | 0.40 |
| 1:0:1491:C:H2' | 1:0:1492:A:H5' | 2.03 | 0.40 |
| 1:0:1753:A:C8 | 1:0:1753:A:C3' | 3.04 | 0.40 |
| 1:0:1979:C:H6 | 1:0:1979:C:H5'' | 1.87 | 0.40 |
| 1:0:1989:C:C2' | 1:0:1990:U:H5' | 2.51 | 0.40 |
| 1:0:2019:C:H2' | 1:0:2020:G:H5' | 2.00 | 0.40 |
| 1:0:2160:C:H6 | 1:0:2160:C:O5' | 2.04 | 0.40 |
| 1:0:2243:C:O2 | 1:0:2256:G:C2 | 2.74 | 0.40 |
| 1:0:2307:A:C6 | 1:0:2308:A:C6 | 3.09 | 0.40 |
| 1:0:2371:A:C2' | 1:0:2372:A:H5' | 2.52 | 0.40 |
| 1:0:2441:U:H2' | 1:0:2442:C:C6 | 2.55 | 0.40 |
| 1:0:2611:A:C2 | 1:0:2767:C:N3 | 2.89 | 0.40 |
| 1:0:2676:G:C5 | 1:0:2677:U:C5 | 3.09 | 0.40 |
| 1:0:2685:A:C2 | 1:0:2686:C:C2 | 3.09 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2788:C:H2' | 1:0:2789:U:H6 | 1.87 | 0.40 |
| 1:0:2794:G:C2 | 1:0:2803:C:N3 | 2.89 | 0.40 |
| 1:0:2801:A:C6 | 1:0:2802:C:C2 | 3.09 | 0.40 |
| 1:0:2802:C:O2' | 1:0:2803:C:H5' | 2.20 | 0.40 |
| 2:9:8:C:O2' | 2:9:9:G:H5' | 2.21 | 0.40 |
| 1:0:116:A:OP2 | 1:0:117:A:H5'' | 2.21 | 0.40 |
| 1:0:160:C:H2' | 1:0:161:U:H5' | 2.04 | 0.40 |
| 1:0:352:G:H2' | 1:0:353:G:O4' | 2.21 | 0.40 |
| 1:0:395:G:O6 | 1:0:404:A:N6 | 2.54 | 0.40 |
| 1:0:503:G:H2' | 1:0:504:G:O4' | 2.22 | 0.40 |
| 1:0:521:U:H5'' | 1:0:522:G:OP2 | 2.22 | 0.40 |
| 1:0:568:G:C6 | 1:0:569:C:C2 | 3.09 | 0.40 |
| 1:0:721:C:N3 | 1:0:737:C:O2 | 2.53 | 0.40 |
| 1:0:738:G:O5' | 1:0:738:G:H8 | 2.04 | 0.40 |
| 1:0:748:A:N7 | 1:0:749:C:C4 | 2.89 | 0.40 |
| 1:0:991:A:C4 | 1:0:1146:G:O4' | 2.74 | 0.40 |
| 1:0:1355:A:C1' | 1:0:1410:U:H4' | 2.52 | 0.40 |
| 1:0:1452:U:H5' | 1:0:1532:A:O2' | 2.21 | 0.40 |
| 1:0:1476:G:N3 | 1:0:2681:A:C2 | 2.90 | 0.40 |
| 1:0:1998:A:O5' | 1:0:1998:A:H8 | 2.04 | 0.40 |
| 1:0:2048:C:O5' | 1:0:2048:C:H6 | 2.03 | 0.40 |
| 1:0:2185:U:O5' | 1:0:2185:U:H6 | 2.04 | 0.40 |
| 1:0:2468:G:C2 | 1:0:2469:G:O4' | 2.74 | 0.40 |
| 1:0:2718:A:N1 | 1:0:2746:G:O6 | 2.54 | 0.40 |
| 1:0:2732:C:C5 | 1:0:2733:A:N7 | 2.90 | 0.40 |
| 2:9:89:G:C6 | 2:9:93:G:C6 | 3.10 | 0.40 |

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA 

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1 | 0 | 2757/2880 (95%) | 512 (18%) | 39 (1%) |
| 2 | 9 | 117/124 (94%) | 17 (14%) | 1 (0%) |
| All | All | 2874/3004 (95%) | 529 (18%) | 40 (1%) |

All (529) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | 0 | 34 | U |
| 1 | 0 | 35 | G |
| 1 | 0 | 45 | C |
| 1 | 0 | 48 | A |
| 1 | 0 | 49 | U |
| 1 | 0 | 50 | G |
| 1 | 0 | 59 | G |
| 1 | 0 | 60 | A |
| 1 | 0 | 70 | A |
| 1 | 0 | 71 | A |
| 1 | 0 | 72 | A |
| 1 | 0 | 76 | C |
| 1 | 0 | 87 | G |
| 1 | 0 | 89 | A |
| 1 | 0 | 90 | G |
| 1 | 0 | 91 | A |
| 1 | 0 | 99 | U |
| 1 | 0 | 100 | G |
| 1 | 0 | 105 | G |
| 1 | 0 | 110 | U |
| 1 | 0 | 116 | A |
| 1 | 0 | 117 | A |
| 1 | 0 | 118 | U |
| 1 | 0 | 119 | G |
| 1 | 0 | 123 | A |
| 1 | 0 | 124 | A |
| 1 | 0 | 129 | A |
| 1 | 0 | 135 | U |
| 1 | 0 | 155 | G |
| 1 | 0 | 158 | A |
| 1 | 0 | 168 | A |
| 1 | 0 | 173 | A |
| 1 | 0 | 174 | A |
| 1 | 0 | 176 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 177 | U |
| 1 | 0 | 181 | A |
| 1 | 0 | 182 | G |
| 1 | 0 | 193 | A |
| 1 | 0 | 199 | A |
| 1 | 0 | 200 | A |
| 1 | 0 | 205 | A |
| 1 | 0 | 206 | U |
| 1 | 0 | 210 | A |
| 1 | 0 | 218 | A |
| 1 | 0 | 219 | G |
| 1 | 0 | 225 | G |
| 1 | 0 | 227 | G |
| 1 | 0 | 242 | A |
| 1 | 0 | 243 | G |
| 1 | 0 | 305 | A |
| 1 | 0 | 318 | G |
| 1 | 0 | 321 | A |
| 1 | 0 | 322 | A |
| 1 | 0 | 334 | G |
| 1 | 0 | 335 | A |
| 1 | 0 | 340 | G |
| 1 | 0 | 343 | A |
| 1 | 0 | 358 | C |
| 1 | 0 | 363 | G |
| 1 | 0 | 368 | A |
| 1 | 0 | 373 | A |
| 1 | 0 | 399 | G |
| 1 | 0 | 401 | G |
| 1 | 0 | 404 | A |
| 1 | 0 | 409 | G |
| 1 | 0 | 414 | A |
| 1 | 0 | 418 | C |
| 1 | 0 | 424 | G |
| 1 | 0 | 443 | A |
| 1 | 0 | 455 | A |
| 1 | 0 | 456 | C |
| 1 | 0 | 460 | U |
| 1 | 0 | 461 | A |
| 1 | 0 | 463 | C |
| 1 | 0 | 467 | U |
| 1 | 0 | 486 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 491 | A |
| 1 | 0 | 492 | G |
| 1 | 0 | 514 | G |
| 1 | 0 | 515 | A |
| 1 | 0 | 518 | A |
| 1 | 0 | 537 | C |
| 1 | 0 | 539 | A |
| 1 | 0 | 540 | G |
| 1 | 0 | 542 | A |
| 1 | 0 | 543 | G |
| 1 | 0 | 554 | U |
| 1 | 0 | 556 | A |
| 1 | 0 | 558 | G |
| 1 | 0 | 559 | C |
| 1 | 0 | 572 | G |
| 1 | 0 | 583 | C |
| 1 | 0 | 584 | A |
| 1 | 0 | 587 | A |
| 1 | 0 | 588 | G |
| 1 | 0 | 601 | A |
| 1 | 0 | 613 | A |
| 1 | 0 | 617 | U |
| 1 | 0 | 624 | A |
| 1 | 0 | 632 | A |
| 1 | 0 | 636 | G |
| 1 | 0 | 638 | A |
| 1 | 0 | 648 | A |
| 1 | 0 | 652 | C |
| 1 | 0 | 654 | A |
| 1 | 0 | 666 | U |
| 1 | 0 | 667 | U |
| 1 | 0 | 684 | C |
| 1 | 0 | 697 | G |
| 1 | 0 | 699 | G |
| 1 | 0 | 700 | C |
| 1 | 0 | 726 | G |
| 1 | 0 | 728 | G |
| 1 | 0 | 742 | G |
| 1 | 0 | 743 | A |
| 1 | 0 | 745 | C |
| 1 | 0 | 753 | U |
| 1 | 0 | 761 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 765 | C |
| 1 | 0 | 766 | A |
| 1 | 0 | 775 | U |
| 1 | 0 | 776 | G |
| 1 | 0 | 778 | G |
| 1 | 0 | 789 | G |
| 1 | 0 | 790 | A |
| 1 | 0 | 794 | A |
| 1 | 0 | 796 | A |
| 1 | 0 | 797 | A |
| 1 | 0 | 798 | G |
| 1 | 0 | 801 | A |
| 1 | 0 | 802 | A |
| 1 | 0 | 803 | C |
| 1 | 0 | 804 | C |
| 1 | 0 | 806 | A |
| 1 | 0 | 807 | A |
| 1 | 0 | 813 | A |
| 1 | 0 | 815 | A |
| 1 | 0 | 818 | G |
| 1 | 0 | 819 | C |
| 1 | 0 | 825 | C |
| 1 | 0 | 832 | A |
| 1 | 0 | 834 | A |
| 1 | 0 | 840 | U |
| 1 | 0 | 841 | G |
| 1 | 0 | 843 | G |
| 1 | 0 | 844 | G |
| 1 | 0 | 860 | U |
| 1 | 0 | 869 | C |
| 1 | 0 | 873 | U |
| 1 | 0 | 919 | U |
| 1 | 0 | 922 | A |
| 1 | 0 | 926 | C |
| 1 | 0 | 930 | A |
| 1 | 0 | 931 | G |
| 1 | 0 | 941 | U |
| 1 | 0 | 943 | U |
| 1 | 0 | 944 | A |
| 1 | 0 | 952 | A |
| 1 | 0 | 955 | G |
| 1 | 0 | 957 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 968 | C |
| 1 | 0 | 969 | U |
| 1 | 0 | 970 | A |
| 1 | 0 | 971 | A |
| 1 | 0 | 972 | C |
| 1 | 0 | 984 | A |
| 1 | 0 | 985 | G |
| 1 | 0 | 994 | A |
| 1 | 0 | 996 | C |
| 1 | 0 | 1002 | C |
| 1 | 0 | 1005 | U |
| 1 | 0 | 1006 | C |
| 1 | 0 | 1007 | A |
| 1 | 0 | 1016 | C |
| 1 | 0 | 1019 | U |
| 1 | 0 | 1022 | A |
| 1 | 0 | 1023 | U |
| 1 | 0 | 1024 | G |
| 1 | 0 | 1030 | U |
| 1 | 0 | 1032 | A |
| 1 | 0 | 1033 | G |
| 1 | 0 | 1036 | G |
| 1 | 0 | 1037 | U |
| 1 | 0 | 1044 | U |
| 1 | 0 | 1045 | G |
| 1 | 0 | 1055 | A |
| 1 | 0 | 1056 | U |
| 1 | 0 | 1057 | A |
| 1 | 0 | 1059 | A |
| 1 | 0 | 1067 | G |
| 1 | 0 | 1073 | G |
| 1 | 0 | 1074 | G |
| 1 | 0 | 1081 | A |
| 1 | 0 | 1082 | G |
| 1 | 0 | 1087 | C |
| 1 | 0 | 1090 | C |
| 1 | 0 | 1099 | A |
| 1 | 0 | 1130 | U |
| 1 | 0 | 1135 | C |
| 1 | 0 | 1137 | A |
| 1 | 0 | 1138 | A |
| 1 | 0 | 1141 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 1142 | G |
| 1 | 0 | 1145 | C |
| 1 | 0 | 1146 | G |
| 1 | 0 | 1152 | C |
| 1 | 0 | 1155 | G |
| 1 | 0 | 1167 | A |
| 1 | 0 | 1168 | G |
| 1 | 0 | 1182 | U |
| 1 | 0 | 1183 | C |
| 1 | 0 | 1185 | C |
| 1 | 0 | 1199 | U |
| 1 | 0 | 1200 | G |
| 1 | 0 | 1223 | G |
| 1 | 0 | 1224 | A |
| 1 | 0 | 1234 | C |
| 1 | 0 | 1250 | A |
| 1 | 0 | 1251 | G |
| 1 | 0 | 1253 | C |
| 1 | 0 | 1262 | U |
| 1 | 0 | 1264 | C |
| 1 | 0 | 1265 | G |
| 1 | 0 | 1266 | G |
| 1 | 0 | 1267 | A |
| 1 | 0 | 1268 | U |
| 1 | 0 | 1269 | G |
| 1 | 0 | 1274 | C |
| 1 | 0 | 1278 | A |
| 1 | 0 | 1279 | G |
| 1 | 0 | 1280 | U |
| 1 | 0 | 1284 | G |
| 1 | 0 | 1285 | A |
| 1 | 0 | 1286 | U |
| 1 | 0 | 1288 | A |
| 1 | 0 | 1302 | C |
| 1 | 0 | 1313 | U |
| 1 | 0 | 1314 | A |
| 1 | 0 | 1316 | G |
| 1 | 0 | 1324 | G |
| 1 | 0 | 1326 | U |
| 1 | 0 | 1327 | C |
| 1 | 0 | 1334 | A |
| 1 | 0 | 1338 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 1339 | U |
| 1 | 0 | 1342 | U |
| 1 | 0 | 1343 | C |
| 1 | 0 | 1353 | A |
| 1 | 0 | 1354 | A |
| 1 | 0 | 1355 | A |
| 1 | 0 | 1356 | G |
| 1 | 0 | 1359 | G |
| 1 | 0 | 1391 | A |
| 1 | 0 | 1392 | U |
| 1 | 0 | 1397 | A |
| 1 | 0 | 1398 | G |
| 1 | 0 | 1410 | U |
| 1 | 0 | 1411 | C |
| 1 | 0 | 1433 | A |
| 1 | 0 | 1441 | A |
| 1 | 0 | 1442 | C |
| 1 | 0 | 1443 | G |
| 1 | 0 | 1446 | U |
| 1 | 0 | 1459 | U |
| 1 | 0 | 1468 | A |
| 1 | 0 | 1469 | U |
| 1 | 0 | 1470 | G |
| 1 | 0 | 1475 | U |
| 1 | 0 | 1482 | U |
| 1 | 0 | 1489 | C |
| 1 | 0 | 1490 | U |
| 1 | 0 | 1505 | U |
| 1 | 0 | 1508 | G |
| 1 | 0 | 1509 | A |
| 1 | 0 | 1513 | U |
| 1 | 0 | 1524 | C |
| 1 | 0 | 1529 | C |
| 1 | 0 | 1552 | C |
| 1 | 0 | 1573 | G |
| 1 | 0 | 1574 | A |
| 1 | 0 | 1582 | A |
| 1 | 0 | 1583 | A |
| 1 | 0 | 1585 | A |
| 1 | 0 | 1602 | G |
| 1 | 0 | 1618 | U |
| 1 | 0 | 1623 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 1624 | A |
| 1 | 0 | 1625 | A |
| 1 | 0 | 1626 | A |
| 1 | 0 | 1627 | C |
| 1 | 0 | 1634 | A |
| 1 | 0 | 1635 | G |
| 1 | 0 | 1636 | G |
| 1 | 0 | 1648 | C |
| 1 | 0 | 1652 | G |
| 1 | 0 | 1657 | A |
| 1 | 0 | 1664 | G |
| 1 | 0 | 1665 | C |
| 1 | 0 | 1670 | G |
| 1 | 0 | 1671 | A |
| 1 | 0 | 1680 | U |
| 1 | 0 | 1681 | A |
| 1 | 0 | 1685 | A |
| 1 | 0 | 1686 | A |
| 1 | 0 | 1688 | U |
| 1 | 0 | 1691 | G |
| 1 | 0 | 1693 | A |
| 1 | 0 | 1699 | A |
| 1 | 0 | 1711 | C |
| 1 | 0 | 1712 | G |
| 1 | 0 | 1715 | A |
| 1 | 0 | 1716 | G |
| 1 | 0 | 1717 | A |
| 1 | 0 | 1718 | A |
| 1 | 0 | 1724 | C |
| 1 | 0 | 1747 | G |
| 1 | 0 | 1748 | U |
| 1 | 0 | 1749 | G |
| 1 | 0 | 1750 | A |
| 1 | 0 | 1754 | G |
| 1 | 0 | 1755 | G |
| 1 | 0 | 1764 | A |
| 1 | 0 | 1771 | A |
| 1 | 0 | 1772 | C |
| 1 | 0 | 1773 | C |
| 1 | 0 | 1776 | A |
| 1 | 0 | 1778 | U |
| 1 | 0 | 1791 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 1799 | A |
| 1 | 0 | 1801 | C |
| 1 | 0 | 1802 | A |
| 1 | 0 | 1807 | A |
| 1 | 0 | 1808 | C |
| 1 | 0 | 1811 | A |
| 1 | 0 | 1821 | A |
| 1 | 0 | 1826 | U |
| 1 | 0 | 1831 | G |
| 1 | 0 | 1840 | A |
| 1 | 0 | 1884 | A |
| 1 | 0 | 1889 | G |
| 1 | 0 | 1909 | U |
| 1 | 0 | 1920 | A |
| 1 | 0 | 1922 | U |
| 1 | 0 | 1927 | U |
| 1 | 0 | 1928 | G |
| 1 | 0 | 1930 | C |
| 1 | 0 | 1938 | U |
| 1 | 0 | 1939 | U |
| 1 | 0 | 1949 | A |
| 1 | 0 | 1950 | C |
| 1 | 0 | 1953 | A |
| 1 | 0 | 1954 | A |
| 1 | 0 | 1955 | G |
| 1 | 0 | 1956 | G |
| 1 | 0 | 1964 | A |
| 1 | 0 | 1974 | U |
| 1 | 0 | 1976 | U |
| 1 | 0 | 1979 | C |
| 1 | 0 | 1980 | A |
| 1 | 0 | 1989 | C |
| 1 | 0 | 2004 | U |
| 1 | 0 | 2006 | G |
| 1 | 0 | 2008 | C |
| 1 | 0 | 2015 | G |
| 1 | 0 | 2016 | A |
| 1 | 0 | 2019 | C |
| 1 | 0 | 2038 | C |
| 1 | 0 | 2044 | G |
| 1 | 0 | 2045 | A |
| 1 | 0 | 2047 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 2051 | U |
| 1 | 0 | 2052 | G |
| 1 | 0 | 2060 | A |
| 1 | 0 | 2063 | A |
| 1 | 0 | 2075 | U |
| 1 | 0 | 2076 | G |
| 1 | 0 | 2082 | C |
| 1 | 0 | 2094 | C |
| 1 | 0 | 2096 | U |
| 1 | 0 | 2118 | A |
| 1 | 0 | 2119 | A |
| 1 | 0 | 2140 | G |
| 1 | 0 | 2162 | C |
| 1 | 0 | 2168 | A |
| 1 | 0 | 2181 | A |
| 1 | 0 | 2191 | A |
| 1 | 0 | 2195 | C |
| 1 | 0 | 2199 | C |
| 1 | 0 | 2204 | A |
| 1 | 0 | 2218 | G |
| 1 | 0 | 2229 | G |
| 1 | 0 | 2241 | U |
| 1 | 0 | 2245 | A |
| 1 | 0 | 2246 | A |
| 1 | 0 | 2247 | A |
| 1 | 0 | 2255 | G |
| 1 | 0 | 2262 | C |
| 1 | 0 | 2267 | A |
| 1 | 0 | 2268 | G |
| 1 | 0 | 2269 | G |
| 1 | 0 | 2285 | U |
| 1 | 0 | 2286 | G |
| 1 | 0 | 2287 | G |
| 1 | 0 | 2288 | A |
| 1 | 0 | 2297 | G |
| 1 | 0 | 2298 | U |
| 1 | 0 | 2299 | A |
| 1 | 0 | 2300 | G |
| 1 | 0 | 2301 | A |
| 1 | 0 | 2306 | A |
| 1 | 0 | 2314 | A |
| 1 | 0 | 2316 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 2325 | A |
| 1 | 0 | 2326 | C |
| 1 | 0 | 2362 | G |
| 1 | 0 | 2364 | C |
| 1 | 0 | 2378 | G |
| 1 | 0 | 2385 | U |
| 1 | 0 | 2396 | C |
| 1 | 0 | 2403 | C |
| 1 | 0 | 2404 | A |
| 1 | 0 | 2405 | A |
| 1 | 0 | 2406 | C |
| 1 | 0 | 2407 | G |
| 1 | 0 | 2408 | G |
| 1 | 0 | 2409 | A |
| 1 | 0 | 2415 | G |
| 1 | 0 | 2420 | C |
| 1 | 0 | 2427 | A |
| 1 | 0 | 2428 | U |
| 1 | 0 | 2435 | C |
| 1 | 0 | 2448 | A |
| 1 | 0 | 2455 | A |
| 1 | 0 | 2469 | G |
| 1 | 0 | 2470 | U |
| 1 | 0 | 2471 | U |
| 1 | 0 | 2476 | A |
| 1 | 0 | 2477 | C |
| 1 | 0 | 2481 | G |
| 1 | 0 | 2482 | A |
| 1 | 0 | 2483 | U |
| 1 | 0 | 2484 | G |
| 1 | 0 | 2485 | U |
| 1 | 0 | 2492 | G |
| 1 | 0 | 2496 | C |
| 1 | 0 | 2499 | C |
| 1 | 0 | 2504 | G |
| 1 | 0 | 2508 | G |
| 1 | 0 | 2509 | A |
| 1 | 0 | 2521 | A |
| 1 | 0 | 2522 | G |
| 1 | 0 | 2528 | G |
| 1 | 0 | 2545 | A |
| 1 | 0 | 2546 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 2549 | G |
| 1 | 0 | 2552 | C |
| 1 | 0 | 2561 | G |
| 1 | 0 | 2564 | U |
| 1 | 0 | 2565 | C |
| 1 | 0 | 2578 | G |
| 1 | 0 | 2581 | A |
| 1 | 0 | 2582 | G |
| 1 | 0 | 2588 | U |
| 1 | 0 | 2591 | C |
| 1 | 0 | 2593 | A |
| 1 | 0 | 2594 | U |
| 1 | 0 | 2608 | A |
| 1 | 0 | 2609 | G |
| 1 | 0 | 2625 | U |
| 1 | 0 | 2633 | A |
| 1 | 0 | 2634 | G |
| 1 | 0 | 2661 | G |
| 1 | 0 | 2668 | U |
| 1 | 0 | 2669 | C |
| 1 | 0 | 2670 | C |
| 1 | 0 | 2681 | A |
| 1 | 0 | 2692 | A |
| 1 | 0 | 2693 | U |
| 1 | 0 | 2699 | G |
| 1 | 0 | 2700 | U |
| 1 | 0 | 2707 | G |
| 1 | 0 | 2712 | G |
| 1 | 0 | 2713 | A |
| 1 | 0 | 2728 | A |
| 1 | 0 | 2730 | A |
| 1 | 0 | 2732 | C |
| 1 | 0 | 2737 | A |
| 1 | 0 | 2745 | A |
| 1 | 0 | 2758 | A |
| 1 | 0 | 2759 | U |
| 1 | 0 | 2760 | G |
| 1 | 0 | 2761 | A |
| 1 | 0 | 2771 | C |
| 1 | 0 | 2783 | U |
| 1 | 0 | 2784 | A |
| 1 | 0 | 2785 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 2795 | A |
| 1 | 0 | 2805 | G |
| 1 | 0 | 2807 | U |
| 1 | 0 | 2808 | U |
| 1 | 0 | 2809 | A |
| 1 | 0 | 2811 | G |
| 1 | 0 | 2825 | A |
| 1 | 0 | 2841 | U |
| 1 | 0 | 2842 | C |
| 1 | 0 | 2844 | G |
| 1 | 0 | 2847 | G |
| 1 | 0 | 2849 | C |
| 1 | 0 | 2854 | G |
| 1 | 0 | 2855 | C |
| 1 | 0 | 2861 | A |
| 1 | 0 | 2868 | G |
| 2 | 9 | 14 | C |
| 2 | 9 | 15 | A |
| 2 | 9 | 17 | A |
| 2 | 9 | 18 | G |
| 2 | 9 | 27 | A |
| 2 | 9 | 46 | G |
| 2 | 9 | 47 | A |
| 2 | 9 | 48 | A |
| 2 | 9 | 59 | A |
| 2 | 9 | 61 | A |
| 2 | 9 | 63 | A |
| 2 | 9 | 68 | A |
| 2 | 9 | 69 | G |
| 2 | 9 | 71 | G |
| 2 | 9 | 93 | G |
| 2 | 9 | 102 | A |
| 2 | 9 | 112 | A |

All (40) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 173 | A |
| 1 | 0 | 192 | G |
| 1 | 0 | 198 | A |
| 1 | 0 | 460 | U |
| 1 | 0 | 466 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | 0 | 491 | A |
| 1 | 0 | 583 | C |
| 1 | 0 | 765 | C |
| 1 | 0 | 789 | G |
| 1 | 0 | 801 | A |
| 1 | 0 | 805 | G |
| 1 | 0 | 1141 | U |
| 1 | 0 | 1249 | G |
| 1 | 0 | 1263 | G |
| 1 | 0 | 1265 | G |
| 1 | 0 | 1278 | A |
| 1 | 0 | 1313 | U |
| 1 | 0 | 1354 | A |
| 1 | 0 | 1634 | A |
| 1 | 0 | 1651 | U |
| 1 | 0 | 1664 | G |
| 1 | 0 | 1685 | A |
| 1 | 0 | 1698 | C |
| 1 | 0 | 1820 | G |
| 1 | 0 | 1919 | A |
| 1 | 0 | 1938 | U |
| 1 | 0 | 1975 | G |
| 1 | 0 | 2015 | G |
| 1 | 0 | 2016 | A |
| 1 | 0 | 2044 | G |
| 1 | 0 | 2046 | C |
| 1 | 0 | 2093 | G |
| 1 | 0 | 2161 | C |
| 1 | 0 | 2261 | G |
| 1 | 0 | 2377 | U |
| 1 | 0 | 2404 | A |
| 1 | 0 | 2482 | A |
| 1 | 0 | 2810 | A |
| 1 | 0 | 2824 | C |
| 2 | 9 | 58 | G |

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

1 ligand is 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 |
| 32 | MUL | 0 | 2881 | - | 36,36,36 | 1.35 | 4 (11%) | 54,55,55 | 1.70 | 9 (16%) |

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 |
|-----|------|-------|------|------|---------|------------|---------|
| 32 | MUL | 0 | 2881 | - | - | 5/18/79/79 | 0/3/3/3 |

All (4) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|---------|------|-------------|----------|
| 32 | 0 | 2881 | MUL | C5-C14 | 4.47 | 1.59 | 1.56 |
| 32 | 0 | 2881 | MUL | C12-C11 | 3.52 | 1.58 | 1.55 |
| 32 | 0 | 2881 | MUL | O3-C14 | 2.37 | 1.50 | 1.46 |
| 32 | 0 | 2881 | MUL | C10-C11 | 2.31 | 1.58 | 1.56 |

All (9) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 32 | 0 | 2881 | MUL | C18-C12-C11 | 6.34 | 111.76 | 108.06 |
| 32 | 0 | 2881 | MUL | O3-C21-C22 | 5.49 | 119.56 | 110.32 |
| 32 | 0 | 2881 | MUL | C16-C6-C7 | -2.92 | 105.97 | 110.37 |
| 32 | 0 | 2881 | MUL | C9-C10-C11 | 2.86 | 115.19 | 112.56 |
| 32 | 0 | 2881 | MUL | C17-C10-C11 | -2.71 | 110.00 | 112.11 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|------|-------------|----------|
| 32 | 0 | 2881 | MUL | O2-C11-C10 | 2.57 | 114.31 | 110.87 |
| 32 | 0 | 2881 | MUL | O3-C14-C13 | 2.20 | 108.61 | 106.24 |
| 32 | 0 | 2881 | MUL | C7-C8-C9 | 2.15 | 117.00 | 112.94 |
| 32 | 0 | 2881 | MUL | O3-C14-C5 | 2.12 | 109.42 | 106.18 |

There are no chirality outliers.

All (5) torsion outliers are listed below:

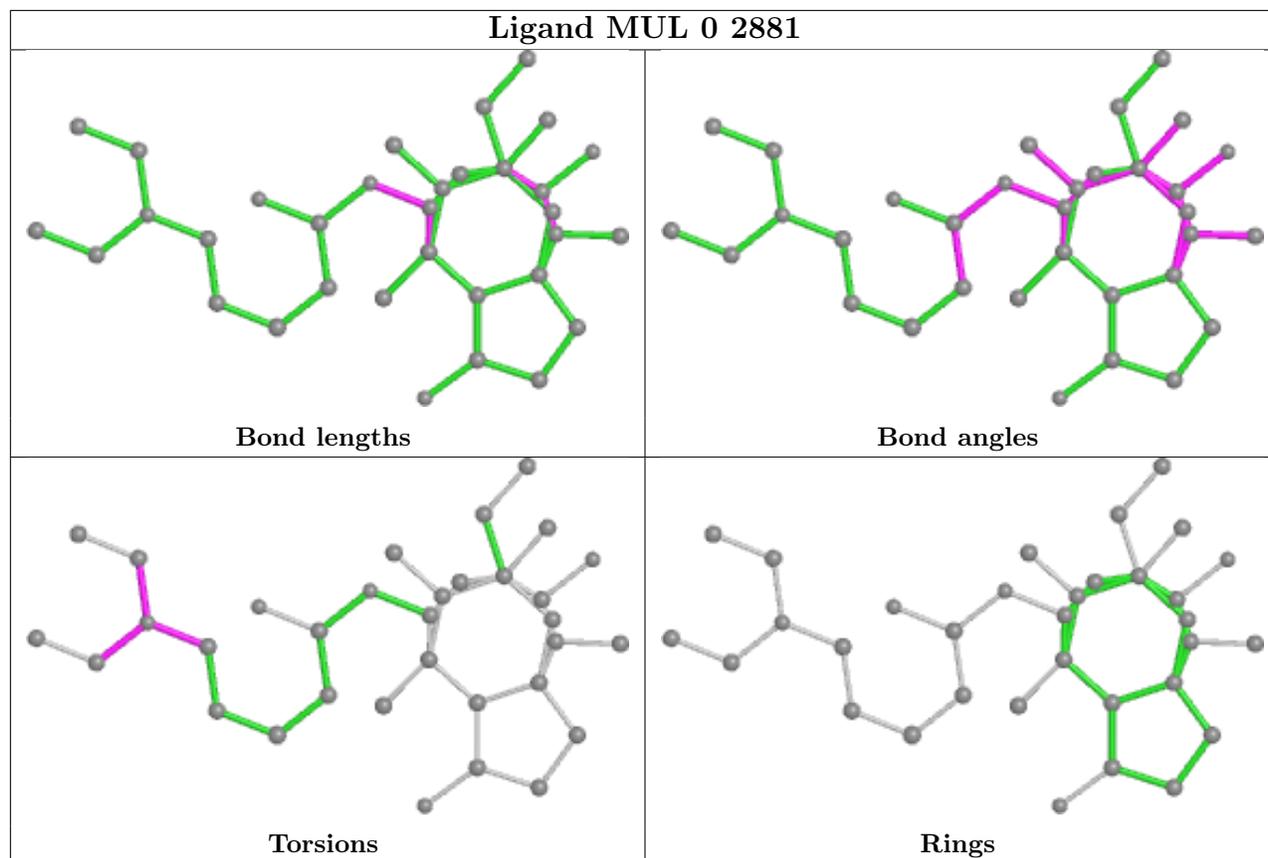
| Mol | Chain | Res | Type | Atoms |
|-----|-------|------|------|----------------|
| 32 | 0 | 2881 | MUL | C28-C27-N1-C24 |
| 32 | 0 | 2881 | MUL | C28-C27-N1-C25 |
| 32 | 0 | 2881 | MUL | C26-C25-N1-C27 |
| 32 | 0 | 2881 | MUL | C26-C25-N1-C24 |
| 32 | 0 | 2881 | MUL | C23-C24-N1-C27 |

There are no ring outliers.

1 monomer is involved in 4 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|------|------|---------|--------------|
| 32 | 0 | 2881 | MUL | 4 | 0 |

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



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.