



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 18, 2021 – 06:05 PM EST

PDB ID : 1P9X  
Title : THE CRYSTAL STRUCTURE OF THE 50S LARGE RIBOSOMAL SUB-UNIT FROM DEINOCOCCUS RADIODURANS COMPLEXED WITH TELITHROMYCIN KETOLIDE ANTIBIOTIC  
Authors : Berisio, R.; Harms, J.; Schlutzen, F.; Zarivach, R.; Hansen, H.A.; Fucini, P.; Yonath, A.  
Deposited on : 2003-05-13  
Resolution : 3.40 Å(reported)

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We welcome your comments at [validation@mail.wwpdb.org](mailto: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.

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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)  
Xtriage (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) : 2.16

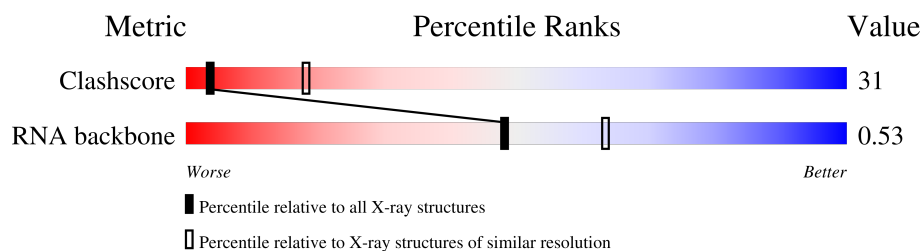
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.40 Å.

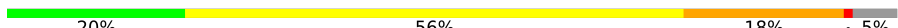
Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



| Metric       | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|--------------|-----------------------------|---|
| Clashscore   | 141614                      | 1055 (3.48-3.32)                                      |
| RNA backbone | 3102                        | 1006 (3.84-2.96)                                      |

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  $\geq 3$ , 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   |  20% 56% 18% • 5% |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res  | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|------|-----------|----------|---------|------------------|
| 2   | TEL  | 0     | 2881 | X         | -        | -       | -                |

2 Entry composition [i](#)

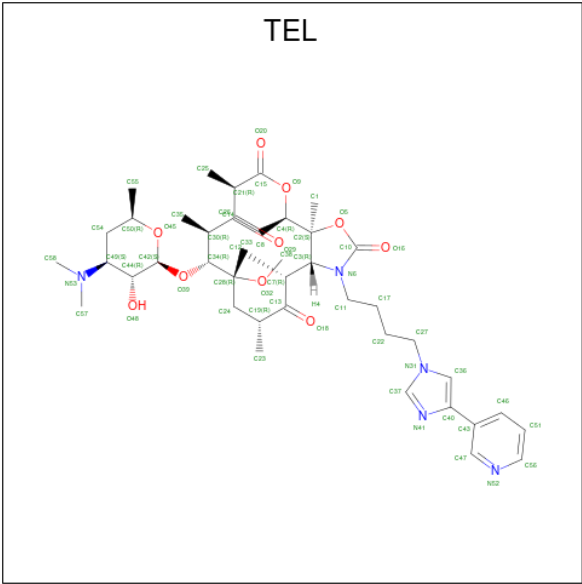
There are 2 unique types of molecules in this entry. The entry contains 58817 atoms, of which 0 are hydrogens and 0 are deuteriums.

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     | 2738     | 58759 | 26211 | 10836 | 18975 | 2737 | 0       | 0       | 0     |

- Molecule 2 is TELITHROMYCIN (three-letter code: TEL) (formula: C<sub>43</sub>H<sub>65</sub>N<sub>5</sub>O<sub>10</sub>).

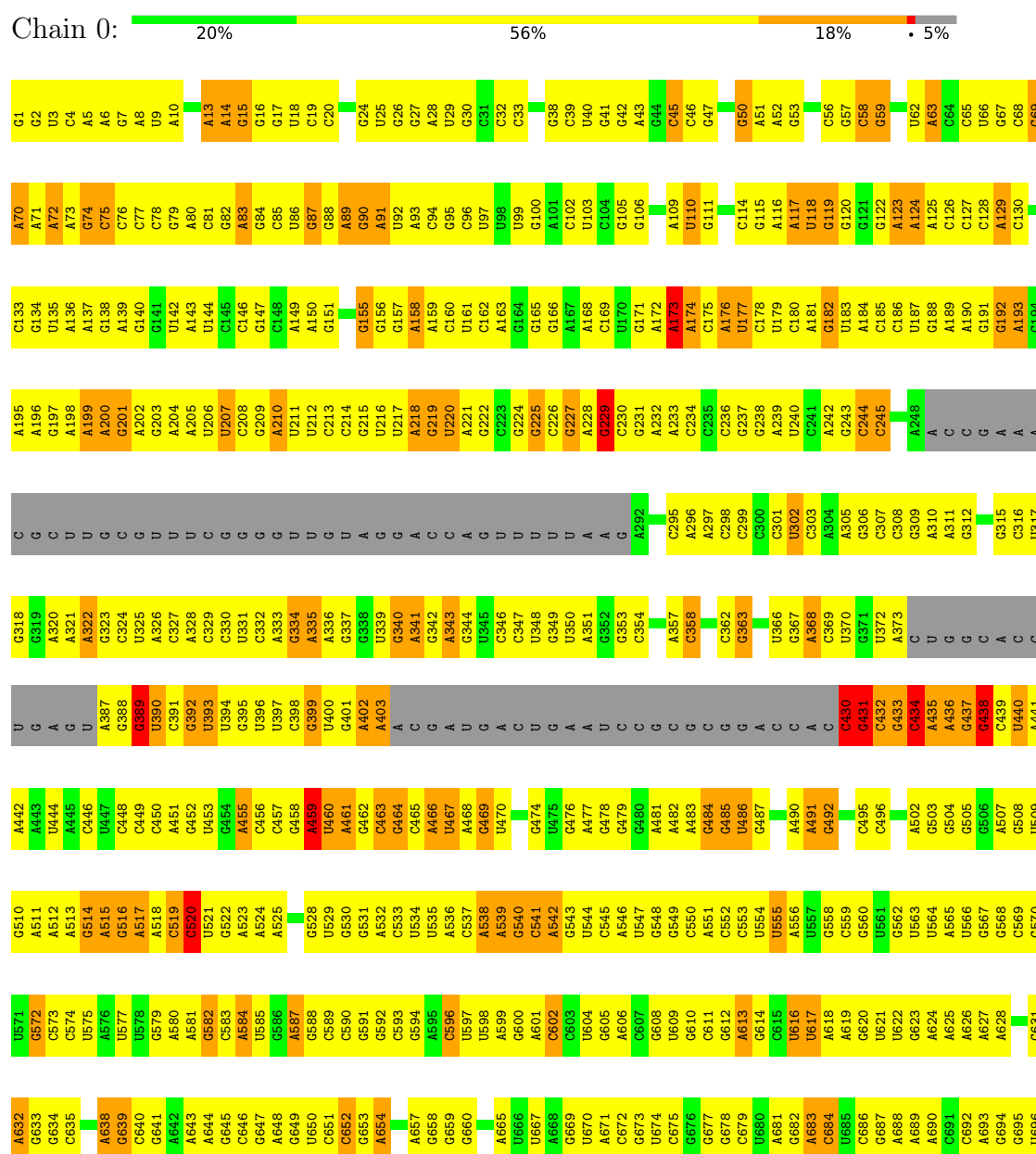


### 3 Residue-property plots

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



|       |       |       |       |       |       |       |       |       |       |       |      |      |      |      |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| C1616 | C1549 | A1474 | C1411 | A1349 | G1284 | C1221 | A1153 | A1088 | C1018 | G953  | G    | C828 | C765 | C697 |
| C1517 | C1550 | U1475 | C1412 | C1350 | A1285 | G1222 | G1154 | C1089 | U1019 | G954  | G    | C829 | A766 | A698 |
| U1618 | U1551 | G1476 | U1413 | G1351 | U1286 | G1223 | A1155 | C1090 | U1019 | G955  | G    | C830 | G767 | C699 |
| A1619 | C1552 | A1477 | C1414 | C1352 | A1287 | A1224 | U1159 | C1091 | A1021 | A956  | C    | G831 | U768 | C700 |
| G1620 | G1553 | U1478 | C1415 | A1353 | A1288 | G1225 | U1159 | U1092 | A1022 | G957  | C    | A832 | C769 | C701 |
| C1621 | G1554 | G1479 | A1416 | A1354 | A1289 | A1226 | C1160 | U1093 | U1023 | G958  | C    | A833 | A702 | A703 |
| C1622 | A1555 | G1480 | C1417 | A1355 | A1293 | G1227 | U1161 | C1094 | G1024 | C959  | C    | A834 | G704 | G705 |
| C1623 | A1556 | U1481 | C1418 | C1356 | U1294 | A1228 | A1162 | A1095 | A1025 | G960  | U    | U837 | G773 | C706 |
| A1624 | G1557 | U1482 | G1419 | U1357 | G1295 | C1229 | C1163 | A1096 | U1026 | G961  | A    | A838 | A774 | A707 |
| C1625 | C1558 | G1483 | A1420 | C1358 | U1296 | C1230 | C1164 | A1096 | C1027 | C962  | C    | U839 | U775 | U707 |
| A1626 | G1559 | G1484 | A1420 | G1359 | G1296 | A1231 | G1165 | A1099 | G1028 | G963  | C    | U840 | A777 | G708 |
| C1627 | A1560 | U1485 | U1424 | G1363 | A1297 | U1232 | A1166 | A1099 | C1029 | A964  | A    | U841 | A777 | G708 |
| A1561 | A1486 | U1486 | G1425 | C1363 | G1298 | U1233 | A1167 | G1102 | U1030 | G965  | G    | G841 | G778 |      |
| G1562 | C1487 | C1364 | G1428 | C1365 | A1299 | C1234 | G1168 | C1103 | C1031 | A966  | C    | A842 | G779 |      |
| A1630 | C1488 | A1365 | U1428 | U1366 | A1300 | C1235 | U1172 | G1104 | U1032 | G967  | U    | G843 | U780 | A712 |
| G1566 | C1489 | A1369 | A1429 | A1366 | U1301 | C1235 | U1172 | C1104 | G967  | U781  | U    | G844 | G781 | A713 |
| A1567 | U1490 | A1367 | G1430 | A1367 | C1302 | A1238 | G1173 | U1105 | U1033 | C968  | A    | U845 | U715 | U716 |
| C1568 | C1368 | U1431 | U1431 | G1368 | U1303 | A1238 | G1174 | A1107 | G1035 | A970  | C    | A846 | G783 | U716 |
| A1569 | G1369 | G1432 | A1432 | U1369 | U1304 | A1242 | G1175 | U1108 | G1036 | A971  | C    | C847 | G717 | U717 |
| C1570 | U1370 | A1433 | A1433 | G1371 | C1305 | G1243 | U1176 | A1109 | U1037 | C972  | A911 |      | A787 |      |
| G1571 | G1434 | U1434 | G1435 | C1372 | C1308 | U1244 | U1177 | A1109 | U1038 | A973  | C    | C851 | G788 |      |
| C1572 | A1436 | C1436 | U1436 | G1373 | G1309 | G1245 | A1179 | G1110 | U1038 | U974  | C914 | U852 | G789 | C723 |
| A1573 | A1437 | U1437 | A1437 | G1374 | C1310 | U1247 | A1180 | G1112 | A1040 | C975  | C915 | C853 | A790 | C724 |
| A1574 | U1500 | G1438 | G1438 | C1375 | C1311 | U1248 | C1181 | U1112 | U1041 |       | U916 | G854 | G791 |      |
| G1644 | C1500 | U1500 | A1438 | C1376 | C1312 | G1249 | U1182 | U1112 | G1042 | U978  | U917 | G855 | U792 | U727 |
| C1645 | G1501 | G1439 | G1439 | U1377 | U1313 | A1250 | U1183 | A1043 | U1044 | A979  | A918 | A856 | G728 | G728 |
| G1577 | U1502 | G1440 | G1440 | G1377 | C1312 | G1251 | C1183 | U1044 | U1044 | G980  | U919 | U857 | A794 | A729 |
| U1578 | C1502 | A1441 | A1441 | A1378 | A1314 | G1251 | G1184 | U1118 | G1045 | C981  | G920 | U858 | A795 |      |
| G1579 | U1505 | C1442 | C1442 | A1379 | A1315 | C1252 | C1185 | U1119 | U1046 | C982  | A921 | U859 | A796 | G733 |
| A1582 | G1508 | G1443 | G1443 | C1380 | G1316 | C1253 | C1185 | C1120 |       | G983  | A922 | U860 | A797 | G734 |
| C1583 | U1581 | C1444 | C1444 | G1381 | A1317 | G1254 | G1191 | G1121 | C1052 | A984  | A923 | G861 | G798 | G735 |
| G1584 | C1583 | A1445 | A1445 | C1382 | G1318 | U1254 | A1192 | A1122 | G1053 | G985  | C924 | U862 | C799 | C736 |
| A1585 | C1584 | U1513 | U1446 | C1383 | C1319 | C1256 | G1193 | G1123 | C1054 | A886  | U925 | C863 | A800 | G737 |
| C1586 | A1585 | C1514 | U1467 | C1384 | A1320 | U1257 | U1194 | U1124 | A1055 | C864  | G926 | C864 | G737 | G738 |
| C1587 | U1515 | A1446 | C1446 | C1385 | A1321 | G1258 | U1195 | G1125 | U1056 | A865  | C927 | A802 | G739 | G739 |
| A1587 | U1556 | C1448 | C1448 | A1386 | G1322 | A1259 | G1196 | A1126 | A1057 | U866  | G928 | C803 | A740 | A740 |
| C1588 | G1522 | C1450 | G1450 | G1387 | G1323 | A1260 | U1197 | C1127 | U1058 | A990  | A929 | G867 | C804 | G741 |
| G1589 | A1523 | C1451 | C1451 | C1388 | G1324 | G1261 | U1198 | G1128 | A991  | U868  | A930 | U868 | A806 | G742 |
| C1592 | U1523 | A1523 | U1452 | C1389 | U1325 | U1262 | C1199 | A1129 | A1059 | C869  | G931 | C869 | A743 | A743 |
| C1593 | G1527 | U1454 | U1454 | A1391 | C1327 | C1264 | G1201 | U1130 |       | C744  | G932 | C870 | A807 | C744 |
| C1594 | C1528 | U1455 | C1455 | U1392 | C1328 | G1265 | U1202 | G1067 | C993  | C871  | G933 | U871 | C808 | C745 |
| A1595 | C1529 | C1456 | C1456 | G1393 | U1329 | G1266 | U1203 | A1068 | C994  | C872  | G934 | C872 | C809 | G746 |
| A1596 | U1530 | A1457 | A1457 | C1394 | C1329 | A1267 | G1204 | G1069 | C996  | U810  | C935 | U873 | U810 | A747 |
| C1597 | C1531 | A1458 | A1458 | A1395 | G1332 | U1268 | G1205 | C1136 | C997  | A874  | A936 | A874 | G812 | A748 |
| C1598 | U1459 | C1393 | G1333 | C1396 | G1332 | G1269 | G1206 | A1136 | U1071 | G875  | C937 | G875 | A813 | C749 |
| A1603 | G1533 | A1397 | A1334 | A1397 | A1334 | C1270 | G1207 | A1138 | G1073 | G877  | G938 | G877 | G814 | G751 |
| C1604 | C1461 | G1398 | A1335 | G1398 | A1335 | G1271 | A1208 | A1139 | G1074 | A815  | G939 | C878 | A815 | G752 |
| A1604 | U1537 | C1399 | G1336 | C1399 | G1336 | G1272 | G1209 | A1140 | C1075 | A1001 | G940 | C878 | A816 | U752 |
| C1605 | A1538 | A1463 | C1337 | A1400 | G1337 | G1273 | C1210 | U1141 | G1075 | A879  | U941 | A879 | U816 | G753 |
| C1606 | U1539 | A1464 | G1338 | G1401 | G1337 | G1274 | G1211 | U1141 | U1077 | C880  | A817 | C880 | G754 | G754 |
| A1607 | C1540 | G1465 | U1339 | G1402 | U1339 | A     | U1212 | G1142 | U1077 | U881  | U942 | U881 | G818 | C755 |
| U1608 | G1541 | C1466 | U1403 | U1403 | C1340 | U1276 | U1213 | U1143 | A1078 | C882  | A944 | C882 | C756 | C756 |
| G1609 | U1542 | U1467 | C1403 | U1403 | C1340 | U1276 | C1214 | U1143 | G1079 | A883  | G945 | U820 | U757 | U757 |
| C1614 | C1542 | C1467 | G1404 | C1404 | G1341 | G1277 | C1214 | C1145 | A1080 | A1011 | U946 | A821 | G758 | G758 |
| A1610 | A1405 | U1468 | A1405 | A1405 | U1342 | A1278 | A1215 | G1146 | A1081 | A886  | U946 | A821 | C759 | C759 |
| U1611 | C1543 | U1468 | A1406 | A1406 | C1343 | G1279 | G1216 | G1147 | A1081 | U887  | C947 | G822 | U760 | U760 |
| A1612 | U1545 | G1470 | C1343 | G1401 | C1344 | C1274 | C1218 | G1148 | C1083 | G888  | U948 | G822 | A761 | A761 |
| G1613 | C1546 | A1408 | G1345 | A1408 | C1345 | U1280 | U1217 | G1149 | C1083 | C889  | G950 | U824 | A762 | A762 |
| C1614 | U1547 | U1409 | C1346 | U1409 | C1346 | A1282 | C1219 | C1149 | C1086 | U890  | G951 | U826 | C825 | C825 |
| A1518 | C1614 | U1547 | C1472 | C1614 | C1346 | A1282 | C1219 | C1149 | C1086 | U890  | G951 | U826 | A763 | A763 |
| C1518 | U1518 | C1472 | U1472 | C1614 | C1346 | A1282 | C1219 | C1149 | C1086 | U890  | G951 | U826 | A763 | A763 |

|       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| G2612 | A2544 | C2480 | U2410 | A2348 | A2277 | U2212 | U2081 | G2015 | C1948 | U1881 | A1811 | A1750 | A1685 |
| G2613 | A2545 | G2481 | A2411 | G2349 | A2278 | G2213 | C2082 | A2016 | A1949 | G1882 | U1812 | A1751 | A1686 |
| A2614 | G2546 | A2482 | A2412 | G2350 | G2279 | G2214 | G2083 | U2017 | C1950 | G1883 | U1813 | U1752 | C1687 |
| G2615 | G2547 | U2483 | A2413 | G2351 | A2280 |       | G2084 | G2018 | G1951 | A1883 | G1814 | A1753 | U1688 |
| U2616 | G2548 | G2484 | A2414 | A2352 | G2281 | G2217 | G2085 | C2019 | A1952 | A1884 | G1815 | G1754 | G1691 |
| G2617 | G2549 | U2485 |       | G2353 | G2282 | G2218 | U2086 | G2020 | A1953 | C1885 | G1816 | G1755 | C1692 |
| C2650 | C2550 | C2486 | A2418 | G2354 | G2283 | U2219 | U2087 | G2021 | A1954 | G1886 | U1817 | C1756 | A1693 |
| A2618 | A2551 | G2487 | A2419 | A2355 | U2284 |       | U2088 | C2022 | G1955 | G1887 | G1818 | C1757 | G1694 |
| G2619 | C2552 | G2488 | C2420 | A2356 | U2285 | U2222 | C2091 | C2023 | A1956 | G1888 | G1819 | C1758 | C1695 |
| G2620 | G2553 | C2489 | G2421 | C2357 | G2286 | U2223 | U2092 | U2024 | C1957 | G1889 | G1820 | A1759 | U1695 |
| G2621 | C2554 | C2490 | C2422 | A2358 | G2287 | U2224 | U2093 | A2025 | G1958 | G1890 | A1821 | G1760 | U1696 |
| G2622 | G2555 | C2491 | G2423 | C2359 | A2288 | G2225 | G2093 | C2026 | U1959 | C1891 | C1822 | G1761 | U1697 |
| A2623 | A2556 | G2492 | G2424 | C2360 | A2289 | A2226 | C2094 | G2027 |       |       | G1823 | G1762 | C1698 |
| G2624 | G2557 | U2493 | G2425 | G2361 | C2292 | C2227 | G2095 | C2028 | C1962 | U1894 | C1824 | G1763 | A1699 |
| U2625 | U2558 | G2494 | G2426 | G2362 |       | U2228 | U2096 | G2029 | G1963 |       | C1825 | G1764 | C1700 |
| U2626 | G2559 | G2495 | A2427 | G2363 | U2296 | U2229 | A2097 | U2030 | A1964 | A1899 | C1826 | A1765 | C1701 |
| G2627 | C2560 | C2496 | C2428 | C2364 | G2297 | G2230 | G     | A2031 | U1965 | U1900 | G1827 | U1766 | C1702 |
| C2628 | G2561 | A2497 | U2429 | A2367 | U2298 | G2231 | G     | G2032 |       | A1901 | C1828 | G1767 | C1703 |
| U2629 |       | U2498 | A2430 | G2368 | U2299 | G2232 | A     | C2033 | G1970 | G1909 | C1829 | G1774 | G1704 |
| C2630 |       | C2499 | G2431 | G2369 | G2300 |       | U     | A2034 | C1971 | G1910 | C1830 | U1770 | U1705 |
|       | A2566 | C2500 | A2432 | A2370 | A2301 | G2235 | A     | G2035 | C1972 | G1911 | G1831 | A1771 | U1706 |
| A2633 | G2567 |       | G2433 | G2371 | C2302 | U2236 | G2103 |       | C1973 | G1912 | U1832 | C1772 | A1707 |
| G2634 | A2568 | G2505 | G2434 | A2372 | G2303 | G2237 | G2104 | C2038 | U1974 | G1913 | U1833 | C1773 | C1774 |
| U2635 | A2569 | C2506 | G2435 | C2373 | C2304 | G2238 | U2105 | A2040 | G1975 | C1907 | G1834 | A1775 | G1711 |
|       | C2570 | U2507 | U2436 | G2374 | A2305 | G2239 | G2106 | A2041 | U1976 | U1908 | C1835 | A1776 | G1712 |
| G2641 | G2571 | G2508 | G2437 |       | A2306 | C2240 | G2107 | A2042 | C1977 | A1911 | G1836 | A1777 | G1713 |
| U2642 | U2572 | A2509 | A2438 | U2377 | A2307 | U2241 | G2108 | A2043 | U1978 | G1912 | U1837 | A1778 | A1715 |
| G2643 | C2573 | C2510 | U2439 | G2378 | A2308 | G2242 | A2109 | G2045 | C1979 | G1913 | A1840 | C1779 | G1716 |
| A2644 | G2574 | G2511 | C2440 | G2379 | G2310 | C2243 | G2110 | A2046 | A1980 | U1914 |       | A1780 | A1717 |
| C2645 | U2575 | A2512 | U2441 | G2380 | U2311 | C2244 | C     | A2047 | A1981 | G1915 | G1846 | G1781 | G1718 |
|       | G2576 | G2513 | C2442 | A2381 | A2312 | A2245 | U     | C2048 | C1982 | G1916 | U1847 | A1782 | G1719 |
| A2649 | A2577 | C2514 |       | A2382 | G2313 | A2246 | G     | A2049 | A1983 | U1917 | G1848 | G1783 | G1720 |
| G2650 | G2578 | U2515 | G2446 | G2383 | A2314 | A2247 | U     | U2051 | G1984 | G1918 | U1849 | A1784 | G1721 |
| U2651 | A2579 | G2516 | G2447 | C2384 | A2315 | U2248 | G     | G2050 | G1985 | A1919 | G1852 | C1785 | G1722 |
| G2652 | C2580 | C2517 | A2448 | U2385 | G2316 | U2249 | A2117 | U2052 | G1986 | A1920 | C1853 | U1787 | U1723 |
| A2653 | A2581 | G2518 | G2449 | U2386 |       | A2250 | A2118 | G2053 | A1987 | A1921 | G1854 | G1788 | G1724 |
| G2654 | G2582 | C2519 | A2450 | U2387 | C2321 | U2251 | A2119 | G2054 | A1988 | U1922 | U1856 | C1789 | C1725 |
| C2655 | U2583 | A2520 | G2451 | U2388 | U2322 | A2252 | G2120 | A2055 |       | G1923 | G1857 | U1789 | C1726 |
| G2656 | U2584 | A2521 |       | G2389 | U2323 | A2253 | C2121 | G2056 | U1994 | C1924 |       | G1790 |       |
| G2657 | C2585 | G2522 | A2455 | G2390 | G2324 | C2254 | U2122 | G2057 | C1995 | C1925 | G1859 | C1791 | C1729 |
| C2658 | G2586 | G2523 | U2456 | A2391 | A2325 | G2255 | G2123 | U2057 | A1996 | G1926 | A1859 | G1792 | G1730 |
| C2659 | G2587 |       | A2457 | G2392 | C2326 | G2256 | C2124 | U2058 | A1997 | U1927 | G1860 | A1793 | C1731 |
| U2660 | U2588 | G2527 | G2460 | G2393 | A2257 |       | C2125 | U2059 | A1998 | G1928 | G1861 | A1794 | U1732 |
| G2661 | C2589 | U2528 | G2461 | G2394 | C2260 | C2260 | U     | A2060 | U1999 | U1929 | C1862 | C1795 | U1733 |
| C2662 | U2590 | G2529 | G2462 | G2395 | G2261 | G2261 | U     | C2061 | G2001 | C1930 | U1863 | A1796 |       |
| G2663 | U2592 | C2530 | G2463 | C2396 | C2262 | C2262 | U     | U2062 | A2002 | G1931 | U1864 | C1797 | C1736 |
| C2664 | A2593 | U2531 | G2464 | A2397 | C2263 | G2263 | U     | A2063 | A2003 | G1932 | G1865 | G1798 | G1737 |
| U2665 | U2594 | G2532 | G2465 | U2398 | A2264 | C2264 | G     |       | A2004 | G1933 | G1866 | A1799 | U1738 |
| G2666 |       | U2533 | G2466 | G2399 | A2265 | A2265 |       | U2069 | U2004 |       | A1869 | A1800 | G1739 |
| C2667 | C2597 | U2534 | A2467 | G2400 | A2266 |       | G2132 | G2070 | G2005 | G1937 | U1870 | C1801 | G1740 |
| U2668 | G2598 | G2535 | G2468 | A2401 | A2267 | G2267 | G2133 | G2071 | G2006 | U1938 | G1871 | A1802 | G1741 |
| C2669 | C2670 | U2599 | G2469 | U2402 | G2268 | G2268 | U2134 | C2072 | G2007 | U1939 | G1872 | G     |       |
| G2670 | A2600 | C2537 | U2470 | C2403 | G2269 | G2269 | C2135 | A2073 | C2008 |       | A1873 | G1803 | C1743 |
| U2671 |       | G2538 |       | A2404 | U2270 | G2270 | G2136 | U2074 | U2009 | G1942 | G1874 | G1805 | G1744 |
| U2672 | C2605 | C2539 | C2475 | A2405 | C2271 |       | U2137 | U2075 | G2010 | A1943 | G1875 | G1806 | C1745 |
| G2673 | G2606 | U2540 | A2476 | C2406 | U2208 |       | U2138 | G2076 | U2011 | G1944 | C1876 | A1807 | A1746 |
| C2674 | U2675 | U2541 | C2477 | G2407 | G2209 |       | G2139 | A2012 | A2012 | C1945 | C1877 | G1808 | G1747 |
| G2675 | G2676 | U2542 | C2478 | U2543 | G2275 |       | G2140 | A2079 | A2013 | U1946 | U1878 | G1809 | U1748 |
| U2676 |       | A2543 | U2479 | A2409 | C2276 |       | A     | U2080 | A2014 | G1947 | C1878 | U1810 | G1749 |

|       |       |       |       |
|-------|-------|-------|-------|
| U2872 | C2804 | G2741 | C2878 |
| C2876 | G2806 | G2742 | G2879 |
| A2877 | U2807 | G2743 | U2880 |
| C     | U2808 | A2744 | A2881 |
| U     | A2809 | A2745 |       |
| C     | A2810 | G2746 | A2884 |
|       | A2811 | C2747 | A2885 |
|       | A2812 | C2748 | A2886 |
|       | A2813 | A2749 | G2887 |
|       | G2813 |       | G2888 |
|       | G2814 | G2753 | C2889 |
|       | C2815 | G2754 | C2890 |
|       | C2816 | A2755 | C2891 |
|       | A2817 | A2756 | A2892 |
|       |       | G2757 | U2893 |
|       | G2821 | A2758 | G2894 |
|       | U2822 | U2759 | C2895 |
|       | G2823 | G2760 | A2896 |
|       | C2824 | A2761 | G2897 |
|       | A2825 | G2762 | G2898 |
|       | C2826 | U2763 | G2899 |
|       | G2827 | U2764 | U2700 |
|       | C2828 | C2765 | A2701 |
|       | A2829 | U2766 | G2702 |
|       | U2830 | C2767 | C2703 |
|       | A2831 | C2768 | U2704 |
|       |       | C2769 | A2705 |
|       |       | A2770 | U2706 |
|       | A2835 | C2771 | G2707 |
|       | U2836 | U2772 | U2708 |
|       | G2837 | G2773 | C2709 |
|       |       | U2774 | C2710 |
|       | U2841 | U     | G2711 |
|       | C2842 | U     | G2712 |
|       | A2843 | A     | A2713 |
|       | C2844 |       | A2714 |
|       | C2845 | U2778 | C2715 |
|       | G2846 | C2779 | G2716 |
|       | A2847 | U2780 | G2717 |
|       | A2848 | G2781 | G2718 |
|       | C2849 | G2782 | U2719 |
|       | U2850 | U2783 | A2720 |
|       | G2851 | A2784 | A2721 |
|       | G2852 | A2785 | C2722 |
|       | U2853 | G2786 | C2723 |
|       | C2854 | A2787 | G2724 |
|       | C2855 | C2788 | C2725 |
|       | U2856 | U2789 | U2726 |
|       | C2857 | C2790 | G2727 |
|       | A2858 | C2791 | A2728 |
|       |       | C2792 | A2729 |
|       | G2862 | G2793 | A2730 |
|       | U2863 | G2794 | C2731 |
|       | C2864 | A2795 | C2732 |
|       | G2865 | A2796 | A2733 |
|       | A2866 | G2797 | C2734 |
|       | G2867 | U2798 | C2735 |
|       | U2868 | C2799 | U2736 |
|       | G2869 | C2800 | A2737 |
|       | C2870 | A2801 |       |
|       | U2871 |       |       |

## 4 Data and refinement statistics

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

| Property   | Value   | Source    |
|--|---|-----------|
| Space group  | I 2 2 2   | Depositor |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$ | 170.00Å 414.50Å 693.00Å<br>90.00° 90.00° 90.00° | Depositor |
| Resolution (Å)   | 15.00 – 3.40                                    | Depositor |
| % Data completeness<br>(in resolution range)             | (Not available) (15.00-3.40)                    | Depositor |
| $R_{merge}$  | 0.18  | Depositor |
| $R_{sym}$  | (Not available)                                 | Depositor |
| Refinement program                                       | CNS   | Depositor |
| R, $R_{free}$  | 0.273 , 0.340                                   | Depositor |
| Estimated twinning fraction                              | No twinning to report.                          | Xtriage   |
| Total number of atoms                                    | 58817   | wwPDB-VP  |
| Average B, all atoms (Å <sup>2</sup> )                   | 58.0  | 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: TEL

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     | 0.77         | 20/65792 (0.0%) | 0.71        | 28/102613 (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                   | 28                  |

All (20) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1   | 0     | 762  | A    | O3'-P | -8.05 | 1.51        | 1.61     |
| 1   | 0     | 1410 | U    | N1-C2 | 6.70  | 1.44        | 1.38     |
| 1   | 0     | 2493 | U    | N1-C2 | -6.33 | 1.32        | 1.38     |
| 1   | 0     | 1276 | U    | N1-C2 | 6.27  | 1.44        | 1.38     |
| 1   | 0     | 2555 | G    | C5-C6 | -6.20 | 1.36        | 1.42     |
| 1   | 0     | 950  | G    | C5-C6 | 6.14  | 1.48        | 1.42     |
| 1   | 0     | 2039 | G    | C5-C6 | -5.70 | 1.36        | 1.42     |
| 1   | 0     | 2523 | G    | C5-C6 | -5.65 | 1.36        | 1.42     |
| 1   | 0     | 2505 | G    | C5-C6 | 5.32  | 1.47        | 1.42     |
| 1   | 0     | 2699 | G    | C5-C6 | -5.26 | 1.37        | 1.42     |
| 1   | 0     | 764  | A    | P-O5' | 5.25  | 1.65        | 1.59     |
| 1   | 0     | 464  | G    | N9-C4 | -5.24 | 1.33        | 1.38     |
| 1   | 0     | 841  | G    | C5-C6 | -5.21 | 1.37        | 1.42     |
| 1   | 0     | 1781 | C    | N1-C2 | -5.16 | 1.34        | 1.40     |
| 1   | 0     | 1746 | A    | C5-C6 | -5.15 | 1.36        | 1.41     |
| 1   | 0     | 1985 | G    | C5-C6 | -5.12 | 1.37        | 1.42     |
| 1   | 0     | 2046 | C    | N1-C2 | -5.08 | 1.35        | 1.40     |
| 1   | 0     | 1283 | C    | N1-C2 | -5.08 | 1.35        | 1.40     |

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| Mol | Chain | Res  | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1   | 0     | 765  | C    | N1-C2 | -5.06 | 1.35        | 1.40     |
| 1   | 0     | 2592 | U    | O3'-P | -5.05 | 1.55        | 1.61     |

All (28) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 0     | 1182 | U    | O4'-C1'-N1  | 13.88 | 119.30      | 108.20   |
| 1   | 0     | 2044 | G    | P-O3'-C3'   | 11.50 | 133.50      | 119.70   |
| 1   | 0     | 765  | C    | N1-C1'-C2'  | 11.09 | 128.42      | 114.00   |
| 1   | 0     | 2001 | G    | N9-C1'-C2'  | -9.80 | 101.22      | 112.00   |
| 1   | 0     | 2041 | A    | OP1-P-OP2   | -6.87 | 109.30      | 119.60   |
| 1   | 0     | 764  | A    | OP1-P-OP2   | -6.83 | 109.36      | 119.60   |
| 1   | 0     | 2042 | A    | OP1-P-OP2   | -6.79 | 109.41      | 119.60   |
| 1   | 0     | 438  | G    | N9-C1'-C2'  | 6.69  | 122.69      | 114.00   |
| 1   | 0     | 2046 | C    | OP1-P-OP2   | -6.65 | 109.63      | 119.60   |
| 1   | 0     | 763  | A    | OP1-P-OP2   | -6.54 | 109.79      | 119.60   |
| 1   | 0     | 2044 | G    | OP1-P-OP2   | -6.53 | 109.81      | 119.60   |
| 1   | 0     | 430  | C    | C5'-C4'-O4' | -6.44 | 101.37      | 109.10   |
| 1   | 0     | 765  | C    | O4'-C1'-N1  | 6.44  | 113.36      | 108.20   |
| 1   | 0     | 2040 | A    | OP1-P-OP2   | -6.42 | 109.97      | 119.60   |
| 1   | 0     | 1618 | U    | C5'-C4'-O4' | -6.42 | 101.40      | 109.10   |
| 1   | 0     | 2045 | A    | OP1-P-OP2   | -6.20 | 110.30      | 119.60   |
| 1   | 0     | 765  | C    | OP1-P-OP2   | -5.99 | 110.62      | 119.60   |
| 1   | 0     | 765  | C    | C2-N1-C1'   | -5.86 | 112.35      | 118.80   |
| 1   | 0     | 765  | C    | C5'-C4'-O4' | 5.86  | 116.13      | 109.10   |
| 1   | 0     | 434  | C    | N1-C1'-C2'  | 5.59  | 121.26      | 114.00   |
| 1   | 0     | 765  | C    | C6-N1-C1'   | 5.54  | 127.45      | 120.80   |
| 1   | 0     | 438  | G    | C1'-O4'-C4' | -5.38 | 105.60      | 109.90   |
| 1   | 0     | 173  | A    | C2'-C3'-O3' | 5.36  | 122.28      | 113.70   |
| 1   | 0     | 438  | G    | O4'-C1'-N9  | 5.36  | 112.49      | 108.20   |
| 1   | 0     | 765  | C    | N1-C2-O2    | -5.22 | 115.77      | 118.90   |
| 1   | 0     | 765  | C    | O4'-C4'-C3' | -5.19 | 98.81       | 104.00   |
| 1   | 0     | 459  | A    | N9-C1'-C2'  | 5.14  | 120.68      | 114.00   |
| 1   | 0     | 2041 | A    | P-O3'-C3'   | 5.03  | 125.74      | 119.70   |

There are no chirality outliers.

All (28) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1036 | G    | Sidechain |
| 1   | 0     | 1475 | U    | Sidechain |
| 1   | 0     | 1619 | A    | Sidechain |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1632 | A    | Sidechain |
| 1   | 0     | 1774 | A    | Sidechain |
| 1   | 0     | 2051 | U    | Sidechain |
| 1   | 0     | 229  | G    | Sidechain |
| 1   | 0     | 2439 | U    | Sidechain |
| 1   | 0     | 2625 | U    | Sidechain |
| 1   | 0     | 2660 | C    | Sidechain |
| 1   | 0     | 2700 | U    | Sidechain |
| 1   | 0     | 2706 | U    | Sidechain |
| 1   | 0     | 2712 | G    | Sidechain |
| 1   | 0     | 2762 | G    | Sidechain |
| 1   | 0     | 389  | G    | Sidechain |
| 1   | 0     | 431  | G    | Sidechain |
| 1   | 0     | 438  | G    | Sidechain |
| 1   | 0     | 459  | A    | Sidechain |
| 1   | 0     | 520  | C    | Sidechain |
| 1   | 0     | 555  | U    | Sidechain |
| 1   | 0     | 707  | U    | Sidechain |
| 1   | 0     | 788  | G    | Sidechain |
| 1   | 0     | 796  | A    | Sidechain |
| 1   | 0     | 804  | C    | Sidechain |
| 1   | 0     | 814  | G    | Sidechain |
| 1   | 0     | 871  | U    | Sidechain |
| 1   | 0     | 873  | U    | Sidechain |
| 1   | 0     | 956  | 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     | 58759 | 0        | 29615    | 2745    | 0            |
| 2   | 0     | 58    | 0        | 65       | 11      | 0            |
| All | All   | 58817 | 0        | 29680    | 2746    | 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 31.

All (2746) 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) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:940:G:H3'   | 1:0:941:U:H5''  | 1.24                     | 1.18              |
| 1:0:752:G:H5'   | 1:0:1775:A:H61  | 1.07                     | 1.13              |
| 1:0:1572:C:H2'  | 1:0:1573:G:H5'' | 1.21                     | 1.10              |
| 1:0:2451:G:H1'  | 1:0:2457:A:H61  | 1.16                     | 1.09              |
| 1:0:387:A:H5'   | 1:0:436:A:H62   | 1.07                     | 1.08              |
| 1:0:588:G:H4'   | 1:0:2001:G:C4'  | 1.85                     | 1.06              |
| 1:0:1656:U:H2'  | 1:0:1657:A:H5'' | 1.38                     | 1.05              |
| 1:0:2841:U:H1'  | 1:0:2843:A:H1'  | 1.34                     | 1.04              |
| 1:0:2496:C:H42  | 1:0:2546:G:H1   | 1.05                     | 1.02              |
| 1:0:2198:U:H3'  | 1:0:2199:C:H5'' | 1.39                     | 1.01              |
| 1:0:436:A:H4'   | 1:0:437:G:H5''  | 1.42                     | 1.01              |
| 1:0:2498:U:H5'' | 1:0:2499:C:OP1  | 1.59                     | 1.00              |
| 1:0:2771:C:H42  | 1:0:2780:A:N6   | 1.59                     | 1.00              |
| 1:0:588:G:C4'   | 1:0:2001:G:H4'  | 1.92                     | 0.99              |
| 1:0:1449:C:H2'  | 1:0:1450:G:H5'' | 1.44                     | 0.98              |
| 1:0:951:G:H2'   | 1:0:952:A:H5''  | 1.46                     | 0.98              |
| 1:0:321:A:O2'   | 1:0:322:A:H3'   | 1.62                     | 0.98              |
| 1:0:681:A:H2'   | 1:0:683:A:H62   | 1.27                     | 0.98              |
| 1:0:588:G:H4'   | 1:0:2001:G:H4'  | 0.98                     | 0.96              |
| 1:0:430:C:H4'   | 1:0:2386:G:N2   | 1.81                     | 0.95              |
| 1:0:1673:C:N4   | 1:0:1987:G:H1   | 1.64                     | 0.95              |
| 1:0:983:G:OP2   | 1:0:985:G:H5''  | 1.65                     | 0.94              |
| 1:0:1747:G:H4'  | 1:0:1749:G:H1'  | 1.49                     | 0.94              |
| 1:0:2660:C:O2'  | 1:0:2661:G:H5'  | 1.66                     | 0.94              |
| 1:0:1572:C:C2'  | 1:0:1573:G:H5'' | 1.96                     | 0.94              |
| 1:0:681:A:H2'   | 1:0:683:A:N6    | 1.81                     | 0.94              |
| 1:0:794:A:H5'   | 1:0:795:A:H5''  | 1.48                     | 0.94              |
| 1:0:614:G:N2    | 1:0:634:G:H22   | 1.65                     | 0.94              |
| 1:0:616:U:H2'   | 1:0:617:U:H5''  | 1.50                     | 0.93              |
| 1:0:317:U:H3    | 1:0:321:A:H62   | 1.07                     | 0.93              |
| 1:0:1855:G:H4'  | 1:0:2390:A:H4'  | 1.51                     | 0.93              |
| 1:0:2194:A:H3'  | 1:0:2195:C:H5'' | 1.48                     | 0.92              |
| 1:0:1823:G:H1   | 1:0:1957:C:H42  | 1.10                     | 0.92              |
| 1:0:430:C:H4'   | 1:0:2386:G:H21  | 1.35                     | 0.92              |
| 1:0:1673:C:H42  | 1:0:1987:G:H1   | 1.09                     | 0.92              |
| 1:0:1294:G:H1   | 1:0:1302:C:H42  | 1.09                     | 0.92              |
| 1:0:752:G:H5'   | 1:0:1775:A:N6   | 1.85                     | 0.92              |
| 1:0:2380:U:H2'  | 1:0:2381:A:H5'  | 1.51                     | 0.92              |
| 1:0:2395:C:H2'  | 1:0:2396:C:H5'' | 1.51                     | 0.92              |
| 1:0:2771:C:H42  | 1:0:2780:A:H61  | 0.93                     | 0.91              |
| 1:0:614:G:H22   | 1:0:634:G:N2    | 1.67                     | 0.91              |
| 1:0:1791:C:H2'  | 1:0:1792:C:H5'' | 1.50                     | 0.91              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1937:G:H1'  | 1:0:2530:C:H4'  | 1.49                     | 0.91              |
| 1:0:614:G:H22   | 1:0:634:G:H22   | 1.11                     | 0.91              |
| 1:0:317:U:H3    | 1:0:321:A:N6    | 1.68                     | 0.90              |
| 1:0:683:A:OP2   | 1:0:683:A:H3'   | 1.71                     | 0.90              |
| 1:0:2804:G:H2'  | 1:0:2805:G:H5'' | 1.53                     | 0.90              |
| 1:0:321:A:HO2'  | 1:0:322:A:H8    | 0.94                     | 0.90              |
| 1:0:1651:U:H5'' | 1:0:1652:G:OP2  | 1.72                     | 0.90              |
| 1:0:387:A:C5'   | 1:0:436:A:H62   | 1.86                     | 0.89              |
| 1:0:2388:G:H2'  | 1:0:2389:G:O4'  | 1.73                     | 0.89              |
| 1:0:1108:U:H2'  | 1:0:1109:A:H5'  | 1.54                     | 0.89              |
| 1:0:2119:A:N6   | 1:0:2138:U:H3   | 1.71                     | 0.89              |
| 1:0:2043:A:H1'  | 1:0:2481:G:H1'  | 1.52                     | 0.89              |
| 1:0:1656:U:C2'  | 1:0:1657:A:H5'' | 2.03                     | 0.88              |
| 1:0:1029:C:H2'  | 1:0:1030:U:H5'' | 1.55                     | 0.88              |
| 1:0:1452:U:H3   | 1:0:1569:A:H62  | 1.18                     | 0.88              |
| 1:0:2378:G:H1   | 1:0:2396:C:H42  | 1.18                     | 0.88              |
| 1:0:588:G:HO2'  | 1:0:2001:G:HO2' | 1.20                     | 0.88              |
| 1:0:613:A:H2'   | 1:0:614:G:H8    | 1.36                     | 0.88              |
| 1:0:2063:A:H61  | 1:0:2219:U:H3   | 0.92                     | 0.88              |
| 1:0:387:A:H5'   | 1:0:436:A:N6    | 1.88                     | 0.87              |
| 1:0:990:A:H5'   | 1:0:991:A:H5''  | 1.56                     | 0.87              |
| 1:0:2043:A:H1'  | 1:0:2481:G:C1'  | 2.05                     | 0.86              |
| 1:0:2063:A:N6   | 1:0:2219:U:H3   | 1.72                     | 0.86              |
| 1:0:2532:G:H3'  | 1:0:2533:U:H5'' | 1.57                     | 0.86              |
| 1:0:1908:C:H2'  | 1:0:1909:U:H4'  | 1.57                     | 0.86              |
| 1:0:2311:U:H4'  | 1:0:2315:A:H61  | 1.36                     | 0.86              |
| 1:0:27:G:H1'    | 1:0:523:A:N6    | 1.91                     | 0.86              |
| 1:0:2841:U:H1'  | 1:0:2843:A:C1'  | 2.06                     | 0.86              |
| 1:0:804:C:O2    | 1:0:804:C:H2'   | 1.76                     | 0.86              |
| 1:0:2268:G:H5'' | 1:0:2363:G:O2'  | 1.76                     | 0.85              |
| 1:0:68:C:H1'    | 1:0:72:A:H1'    | 1.59                     | 0.85              |
| 1:0:1776:A:H4'  | 1:0:1965:U:O2'  | 1.76                     | 0.85              |
| 1:0:2410:U:O2   | 1:0:2412:A:H8   | 1.58                     | 0.85              |
| 1:0:2119:A:H61  | 1:0:2138:U:H3   | 1.20                     | 0.85              |
| 1:0:875:G:H2'   | 1:0:876:A:O4'   | 1.76                     | 0.85              |
| 1:0:204:A:N6    | 1:0:2386:G:H1'  | 1.91                     | 0.85              |
| 1:0:2469:G:H5'' | 1:0:2470:U:OP1  | 1.76                     | 0.85              |
| 1:0:1949:A:H1'  | 1:0:2572:U:H5'  | 1.58                     | 0.85              |
| 1:0:1679:U:H2'  | 1:0:1680:U:H5'  | 1.58                     | 0.85              |
| 1:0:1182:U:H2'  | 1:0:1183:C:H5'' | 1.58                     | 0.85              |
| 1:0:334:G:N3    | 1:0:344:G:H1'   | 1.93                     | 0.84              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:942:U:H2'   | 1:0:943:U:O4'   | 1.76                     | 0.84              |
| 1:0:1029:C:N4   | 1:0:1153:A:H61  | 1.74                     | 0.84              |
| 1:0:1916:G:H1   | 1:0:1950:C:H42  | 1.25                     | 0.84              |
| 1:0:200:A:N6    | 1:0:435:A:H62   | 1.76                     | 0.84              |
| 1:0:2085:G:H22  | 1:0:2171:U:H1'  | 1.42                     | 0.84              |
| 1:0:362:C:H2'   | 1:0:363:G:H4'   | 1.60                     | 0.84              |
| 1:0:1900:U:H4'  | 1:0:1946:U:H4'  | 1.58                     | 0.84              |
| 1:0:940:G:H3'   | 1:0:941:U:C5'   | 2.06                     | 0.84              |
| 1:0:588:G:H2'   | 1:0:589:C:C6    | 2.13                     | 0.84              |
| 1:0:1582:A:H2'  | 1:0:1583:A:H5'  | 1.59                     | 0.83              |
| 1:0:846:A:H62   | 1:0:955:G:N2    | 1.75                     | 0.83              |
| 1:0:2380:U:C2'  | 1:0:2381:A:H5'  | 2.09                     | 0.83              |
| 1:0:1900:U:H2'  | 1:0:1901:A:O4'  | 1.78                     | 0.83              |
| 1:0:1791:C:H1'  | 1:0:1793:A:H5'  | 1.60                     | 0.82              |
| 1:0:2081:U:H2'  | 1:0:2082:C:H5'' | 1.60                     | 0.82              |
| 1:0:1449:C:C2'  | 1:0:1450:G:H5'' | 2.09                     | 0.82              |
| 1:0:2549:G:H2'  | 1:0:2550:C:O4'  | 1.79                     | 0.82              |
| 1:0:918:A:H3'   | 1:0:919:U:H5''  | 1.60                     | 0.82              |
| 1:0:2824:C:H2'  | 1:0:2824:C:O2   | 1.79                     | 0.82              |
| 1:0:1634:A:H4'  | 1:0:1635:G:OP1  | 1.77                     | 0.81              |
| 1:0:1329:U:H5'  | 1:0:1405:A:H1'  | 1.61                     | 0.81              |
| 1:0:2442:C:H42  | 1:0:2466:G:H1   | 1.25                     | 0.81              |
| 1:0:114:C:O2'   | 1:0:124:A:H1'   | 1.80                     | 0.81              |
| 1:0:1039:A:N6   | 1:0:1136:G:H2'  | 1.96                     | 0.81              |
| 1:0:162:C:H5'   | 1:0:195:A:H1'   | 1.62                     | 0.81              |
| 1:0:2599:U:H2'  | 1:0:2600:A:H5'' | 1.61                     | 0.81              |
| 1:0:1911:A:H2'  | 1:0:1912:G:H5'  | 1.63                     | 0.81              |
| 1:0:765:C:O2'   | 1:0:766:A:OP2   | 1.97                     | 0.81              |
| 1:0:796:A:H4'   | 1:0:2568:A:OP1  | 1.81                     | 0.81              |
| 1:0:834:A:H62   | 1:0:983:G:H21   | 1.29                     | 0.81              |
| 1:0:109:A:H2'   | 1:0:110:U:H5''  | 1.63                     | 0.81              |
| 1:0:202:A:H2'   | 1:0:203:G:O4'   | 1.79                     | 0.81              |
| 1:0:204:A:H62   | 1:0:2386:G:H1'  | 1.44                     | 0.80              |
| 1:0:2680:U:C5'  | 1:0:2681:A:H5'' | 2.11                     | 0.80              |
| 1:0:490:A:H2'   | 1:0:491:A:H3'   | 1.63                     | 0.80              |
| 1:0:1001:A:H5'' | 1:0:1168:G:OP2  | 1.81                     | 0.80              |
| 1:0:2456:U:H1'  | 1:0:2460:G:H1   | 1.47                     | 0.80              |
| 1:0:431:G:O6    | 1:0:433:G:N2    | 2.15                     | 0.80              |
| 1:0:1930:C:H42  | 1:0:1942:G:H1   | 1.29                     | 0.80              |
| 1:0:613:A:H2'   | 1:0:614:G:C8    | 2.16                     | 0.80              |
| 1:0:929:A:H3'   | 1:0:930:A:H5''  | 1.64                     | 0.80              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2266:A:H61  | 1:0:2323:U:H1'  | 1.47                     | 0.79              |
| 1:0:864:C:H1'   | 1:0:940:G:H22   | 1.47                     | 0.79              |
| 1:0:2436:U:H2'  | 1:0:2437:G:O4'  | 1.82                     | 0.79              |
| 1:0:244:C:H2'   | 1:0:245:C:H5''  | 1.64                     | 0.79              |
| 1:0:2771:C:N4   | 1:0:2780:A:H61  | 1.77                     | 0.79              |
| 1:0:2382:C:H42  | 1:0:2393:G:H1   | 1.28                     | 0.79              |
| 1:0:689:A:H8    | 1:0:2052:G:H21  | 1.31                     | 0.79              |
| 1:0:2418:A:H5'' | 1:0:2419:C:OP1  | 1.83                     | 0.79              |
| 1:0:759:C:O2    | 1:0:2590:U:H4'  | 1.83                     | 0.79              |
| 1:0:611:C:O2'   | 1:0:614:G:H5''  | 1.83                     | 0.79              |
| 1:0:490:A:O2'   | 1:0:491:A:H5'   | 1.82                     | 0.78              |
| 1:0:2804:G:C2'  | 1:0:2805:G:H5'' | 2.13                     | 0.78              |
| 1:0:1860:A:H2'  | 1:0:1861:G:H5'  | 1.64                     | 0.78              |
| 1:0:2378:G:H1   | 1:0:2396:C:N4   | 1.82                     | 0.78              |
| 1:0:2451:G:H1'  | 1:0:2457:A:N6   | 1.97                     | 0.78              |
| 1:0:1811:A:H5'' | 1:0:1812:U:OP1  | 1.83                     | 0.78              |
| 1:0:653:G:H2'   | 1:0:654:A:H4'   | 1.64                     | 0.77              |
| 1:0:109:A:C3'   | 1:0:110:U:H5''  | 2.13                     | 0.77              |
| 1:0:165:G:H2'   | 1:0:166:G:O4'   | 1.85                     | 0.77              |
| 1:0:587:A:H2'   | 1:0:588:G:H5''  | 1.67                     | 0.77              |
| 1:0:27:G:H1'    | 1:0:523:A:H62   | 1.49                     | 0.77              |
| 1:0:2329:C:H2'  | 1:0:2330:G:O4'  | 1.84                     | 0.77              |
| 1:0:1139:A:H1'  | 1:0:2495:G:O2'  | 1.84                     | 0.77              |
| 1:0:38:G:H1     | 1:0:453:U:H3    | 1.31                     | 0.77              |
| 1:0:393:U:H2'   | 1:0:394:U:O4'   | 1.84                     | 0.77              |
| 1:0:1706:A:N7   | 1:0:1717:A:N1   | 2.32                     | 0.77              |
| 1:0:192:G:H1'   | 1:0:193:A:H4'   | 1.66                     | 0.77              |
| 1:0:396:U:H2'   | 1:0:398:C:N4    | 1.99                     | 0.77              |
| 1:0:681:A:C2'   | 1:0:683:A:H62   | 1.97                     | 0.77              |
| 1:0:1955:G:C2'  | 1:0:1956:G:H5'  | 2.15                     | 0.77              |
| 1:0:243:G:C6    | 1:0:244:C:H1'   | 2.19                     | 0.77              |
| 1:0:1683:G:H2'  | 1:0:1684:G:O4'  | 1.84                     | 0.77              |
| 1:0:2034:A:C5'  | 1:0:2557:G:H5'' | 2.15                     | 0.77              |
| 1:0:460:U:N3    | 1:0:592:G:H1'   | 2.00                     | 0.77              |
| 1:0:2669:C:O2   | 1:0:2669:C:H2'  | 1.83                     | 0.76              |
| 1:0:552:C:H2'   | 1:0:553:C:H5'   | 1.67                     | 0.76              |
| 1:0:1856:U:H5'  | 1:0:2389:G:O2'  | 1.85                     | 0.76              |
| 1:0:1823:G:H1   | 1:0:1957:C:N4   | 1.83                     | 0.76              |
| 1:0:926:C:H2'   | 1:0:927:C:H5'   | 1.67                     | 0.76              |
| 1:0:225:G:O5'   | 1:0:226:C:H5'   | 1.85                     | 0.76              |
| 1:0:1528:C:H3'  | 1:0:1529:C:H5'' | 1.65                     | 0.76              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2599:U:C2'  | 1:0:2600:A:H5'' | 2.15                     | 0.76              |
| 1:0:1955:G:O2'  | 1:0:1956:G:H5'  | 1.84                     | 0.76              |
| 1:0:2797:G:H2'  | 1:0:2798:A:H5'' | 1.68                     | 0.76              |
| 1:0:574:C:H4'   | 1:0:1266:G:O6   | 1.85                     | 0.76              |
| 1:0:2228:U:H4'  | 1:0:2254:C:H5   | 1.51                     | 0.76              |
| 1:0:2476:A:O2'  | 1:0:2477:C:H5'  | 1.86                     | 0.76              |
| 1:0:2812:A:H2'  | 1:0:2813:G:C8   | 2.20                     | 0.76              |
| 1:0:1294:G:H1   | 1:0:1302:C:N4   | 1.83                     | 0.76              |
| 1:0:1073:G:H2'  | 1:0:1074:G:C4'  | 2.15                     | 0.76              |
| 1:0:1302:C:O2'  | 1:0:1343:C:H4'  | 1.86                     | 0.76              |
| 1:0:168:A:H2'   | 1:0:169:C:C6    | 2.20                     | 0.76              |
| 1:0:210:A:H61   | 1:0:442:A:H61   | 1.34                     | 0.76              |
| 1:0:2266:A:N6   | 1:0:2323:U:H1'  | 2.01                     | 0.76              |
| 1:0:2475:C:H2'  | 1:0:2476:A:O4'  | 1.86                     | 0.75              |
| 1:0:2672:U:H2'  | 1:0:2673:G:H8   | 1.50                     | 0.75              |
| 1:0:951:G:C2'   | 1:0:952:A:H5''  | 2.15                     | 0.75              |
| 1:0:1921:A:H2'  | 1:0:1922:U:H5'' | 1.66                     | 0.75              |
| 1:0:1998:A:H2'  | 1:0:1999:U:H5'  | 1.67                     | 0.75              |
| 1:0:2377:U:H2'  | 1:0:2378:G:H8   | 1.50                     | 0.75              |
| 1:0:460:U:C4    | 1:0:592:G:H1'   | 2.21                     | 0.75              |
| 1:0:760:U:O2    | 1:0:1997:A:H1'  | 1.85                     | 0.75              |
| 1:0:437:G:H2'   | 1:0:438:G:H4'   | 1.68                     | 0.75              |
| 1:0:128:C:H2'   | 1:0:129:A:H5''  | 1.67                     | 0.75              |
| 1:0:2310:G:H2'  | 1:0:2311:U:O4'  | 1.86                     | 0.75              |
| 1:0:1778:U:H5'  | 1:0:2568:A:O2'  | 1.86                     | 0.75              |
| 1:0:328:A:O2'   | 1:0:329:C:H5'   | 1.87                     | 0.75              |
| 1:0:940:G:C3'   | 1:0:941:U:H5''  | 2.13                     | 0.75              |
| 1:0:468:A:H1'   | 1:0:470:U:C2    | 2.22                     | 0.75              |
| 1:0:918:A:C3'   | 1:0:919:U:H5''  | 2.16                     | 0.75              |
| 1:0:596:C:H1'   | 1:0:684:C:O4'   | 1.86                     | 0.75              |
| 1:0:109:A:C2'   | 1:0:110:U:H5''  | 2.17                     | 0.75              |
| 1:0:687:G:O2'   | 1:0:688:A:H5'   | 1.87                     | 0.75              |
| 1:0:1680:U:HO2' | 1:0:1681:A:H8   | 1.35                     | 0.74              |
| 1:0:400:U:H4'   | 1:0:401:G:C8    | 2.22                     | 0.74              |
| 1:0:777:A:H62   | 1:0:1767:G:H1'  | 1.52                     | 0.74              |
| 1:0:826:U:O2'   | 1:0:1238:A:H1'  | 1.87                     | 0.74              |
| 1:0:700:C:H1'   | 1:0:801:A:H5'   | 1.69                     | 0.74              |
| 1:0:1528:C:C3'  | 1:0:1529:C:H5'' | 2.17                     | 0.74              |
| 1:0:1529:C:H2'  | 1:0:1530:U:O4'  | 1.86                     | 0.74              |
| 1:0:1066:G:H3'  | 1:0:1067:G:H5'' | 1.68                     | 0.74              |
| 1:0:2194:A:C3'  | 1:0:2195:C:H5'' | 2.17                     | 0.74              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:0:929:A:N7    | 1:0:2247:A:N1    | 2.36                     | 0.74              |
| 1:0:964:A:H2'   | 1:0:965:G:H8     | 1.52                     | 0.74              |
| 1:0:2395:C:C2'  | 1:0:2396:C:H5''  | 2.17                     | 0.74              |
| 1:0:1088:A:H2'  | 1:0:1089:C:O4'   | 1.87                     | 0.74              |
| 1:0:514:G:H2'   | 1:0:514:G:N3     | 2.01                     | 0.74              |
| 1:0:987:G:H2'   | 1:0:988:G:H8     | 1.50                     | 0.74              |
| 1:0:2377:U:H2'  | 1:0:2378:G:C8    | 2.23                     | 0.74              |
| 1:0:2483:U:H5'  | 1:0:2484:G:OP2   | 1.89                     | 0.73              |
| 1:0:633:G:H2'   | 1:0:634:G:C8     | 2.23                     | 0.73              |
| 1:0:2686:C:H2'  | 1:0:2687:G:C8    | 2.24                     | 0.73              |
| 1:0:1043:A:H2   | 1:0:1133:G:H22   | 1.37                     | 0.73              |
| 1:0:2788:C:O2'  | 1:0:2789:U:H5'   | 1.87                     | 0.73              |
| 1:0:1260:A:HO2' | 1:0:1261:G:P     | 2.12                     | 0.73              |
| 1:0:1299:A:H2'  | 1:0:1301:U:OP2   | 1.88                     | 0.73              |
| 1:0:339:U:O2    | 1:0:339:U:H2'    | 1.88                     | 0.73              |
| 1:0:840:U:H4'   | 1:0:841:G:C2     | 2.24                     | 0.73              |
| 1:0:942:U:H2'   | 1:0:943:U:C4'    | 2.18                     | 0.73              |
| 1:0:1923:U:H5'  | 1:0:1924:C:OP1   | 1.89                     | 0.73              |
| 1:0:1149:G:H22  | 1:0:1154:A:C1'   | 2.01                     | 0.72              |
| 1:0:542:A:H2'   | 1:0:543:G:H5'    | 1.69                     | 0.72              |
| 1:0:214:C:H2'   | 1:0:215:G:H8     | 1.54                     | 0.72              |
| 1:0:2811:G:H2'  | 1:0:2812:A:C8    | 2.24                     | 0.72              |
| 1:0:1326:U:O2   | 1:0:1326:U:H2'   | 1.89                     | 0.72              |
| 1:0:1337:G:H1'  | 1:0:1632:A:N6    | 2.04                     | 0.72              |
| 1:0:1373:G:H2'  | 1:0:1374:G:H5'   | 1.71                     | 0.72              |
| 1:0:485:G:O2'   | 1:0:486:U:OP1    | 2.06                     | 0.72              |
| 1:0:1795:C:H2'  | 1:0:1796:A:H8    | 1.53                     | 0.72              |
| 1:0:311:A:H1'   | 1:0:330:C:H1'    | 1.70                     | 0.72              |
| 1:0:2680:U:H5'  | 1:0:2681:A:H5''  | 1.72                     | 0.72              |
| 1:0:717:G:H1'   | 1:0:740:A:H61    | 1.53                     | 0.72              |
| 1:0:825:C:H1'   | 1:0:1263:G:C2    | 2.25                     | 0.72              |
| 1:0:2041:A:H61  | 2:0:2881:TEL:C58 | 2.02                     | 0.72              |
| 1:0:482:A:C2'   | 1:0:483:A:H5'    | 2.20                     | 0.72              |
| 1:0:816:U:H2'   | 1:0:817:A:H5'    | 1.70                     | 0.72              |
| 1:0:930:A:H4'   | 1:0:930:A:OP1    | 1.90                     | 0.72              |
| 1:0:1979:C:H2'  | 1:0:1980:A:O4'   | 1.88                     | 0.72              |
| 1:0:1578:U:H2'  | 1:0:1579:G:C8    | 2.25                     | 0.72              |
| 1:0:369:C:H2'   | 1:0:370:U:O4'    | 1.90                     | 0.72              |
| 1:0:1918:G:H1'  | 1:0:1947:G:N2    | 2.05                     | 0.72              |
| 1:0:1582:A:C2'  | 1:0:1583:A:H5'   | 2.19                     | 0.71              |
| 1:0:1016:C:H1'  | 1:0:1154:A:N3    | 2.05                     | 0.71              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2532:G:C3'  | 1:0:2533:U:H5'' | 2.20                     | 0.71              |
| 1:0:2700:U:H3   | 1:0:2848:A:H62  | 1.38                     | 0.71              |
| 1:0:1149:G:H22  | 1:0:1154:A:H1'  | 1.53                     | 0.71              |
| 1:0:1055:A:N1   | 1:0:1122:A:H5'  | 2.06                     | 0.71              |
| 1:0:2814:G:H2'  | 1:0:2815:C:C6   | 2.26                     | 0.71              |
| 1:0:324:C:H2'   | 1:0:325:U:O4'   | 1.90                     | 0.71              |
| 1:0:541:C:H42   | 1:0:572:G:H4'   | 1.56                     | 0.71              |
| 1:0:1263:G:O2'  | 1:0:1264:C:OP1  | 2.07                     | 0.71              |
| 1:0:1795:C:H2'  | 1:0:1796:A:C8   | 2.25                     | 0.71              |
| 1:0:2593:A:O2'  | 1:0:2594:U:H5'  | 1.90                     | 0.71              |
| 1:0:197:G:H1'   | 1:0:211:U:H1'   | 1.71                     | 0.71              |
| 1:0:2299:A:H5'  | 1:0:2300:G:C4   | 2.26                     | 0.71              |
| 1:0:1982:C:H4'  | 1:0:2703:C:O2   | 1.90                     | 0.71              |
| 1:0:1719:G:H2'  | 1:0:1720:G:H8   | 1.56                     | 0.71              |
| 1:0:2660:C:H2'  | 1:0:2660:C:O2   | 1.89                     | 0.71              |
| 1:0:766:A:H2'   | 1:0:767:G:C8    | 2.26                     | 0.71              |
| 1:0:864:C:H1'   | 1:0:940:G:N2    | 2.04                     | 0.71              |
| 1:0:984:A:H1'   | 1:0:1202:U:C4   | 2.25                     | 0.71              |
| 1:0:1252:C:O2'  | 1:0:1253:C:H5'' | 1.91                     | 0.71              |
| 1:0:1345:G:H5'' | 1:0:1346:C:OP2  | 1.90                     | 0.71              |
| 1:0:1712:G:N3   | 1:0:1712:G:H3'  | 2.05                     | 0.71              |
| 1:0:430:C:H6    | 1:0:430:C:H5''  | 1.56                     | 0.71              |
| 1:0:616:U:C2'   | 1:0:617:U:H5''  | 2.20                     | 0.71              |
| 1:0:1177:U:H2'  | 1:0:1178:C:C6   | 2.25                     | 0.71              |
| 1:0:88:G:H3'    | 1:0:89:A:H5''   | 1.73                     | 0.71              |
| 1:0:1729:C:H2'  | 1:0:1730:G:C8   | 2.26                     | 0.71              |
| 1:0:2404:A:H5'' | 1:0:2405:A:H5'' | 1.73                     | 0.71              |
| 1:0:2599:U:C3'  | 1:0:2600:A:H5'' | 2.21                     | 0.71              |
| 1:0:2727:G:C2'  | 1:0:2728:A:H5'' | 2.21                     | 0.71              |
| 1:0:1007:A:H2'  | 1:0:1008:G:H8   | 1.55                     | 0.70              |
| 1:0:1073:G:H2'  | 1:0:1074:G:H4'  | 1.71                     | 0.70              |
| 1:0:1252:C:C2'  | 1:0:1253:C:H5'' | 2.20                     | 0.70              |
| 1:0:2198:U:C3'  | 1:0:2199:C:H5'' | 2.19                     | 0.70              |
| 1:0:484:G:O2'   | 1:0:485:G:H5'   | 1.91                     | 0.70              |
| 1:0:1466:C:H2'  | 1:0:1467:U:O4'  | 1.92                     | 0.70              |
| 1:0:200:A:N6    | 1:0:435:A:N6    | 2.39                     | 0.70              |
| 1:0:1541:G:H1   | 1:0:1562:G:H1   | 1.38                     | 0.70              |
| 1:0:2447:G:H1   | 1:0:2460:G:H2'  | 1.56                     | 0.70              |
| 1:0:1681:A:C2   | 1:0:2706:U:H1'  | 2.26                     | 0.70              |
| 1:0:700:C:O2    | 1:0:800:U:O3'   | 2.09                     | 0.70              |
| 1:0:2713:A:H2'  | 1:0:2714:A:C8   | 2.26                     | 0.70              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2812:A:H2'  | 1:0:2813:G:H8   | 1.56                     | 0.70              |
| 1:0:588:G:H2'   | 1:0:589:C:C5    | 2.26                     | 0.70              |
| 1:0:540:G:C6    | 1:0:2005:U:H5'' | 2.27                     | 0.70              |
| 1:0:826:U:H2'   | 1:0:827:C:C6    | 2.26                     | 0.70              |
| 1:0:1154:A:O2'  | 1:0:1155:G:OP1  | 2.08                     | 0.70              |
| 1:0:2686:C:H2'  | 1:0:2687:G:H8   | 1.55                     | 0.70              |
| 1:0:16:G:O2'    | 1:0:17:G:H5'    | 1.92                     | 0.70              |
| 1:0:1680:U:H1'  | 1:0:2665:G:O2'  | 1.91                     | 0.70              |
| 1:0:1356:G:H5'' | 1:0:1614:C:OP2  | 1.92                     | 0.70              |
| 1:0:218:A:N1    | 1:0:232:A:H5''  | 2.07                     | 0.70              |
| 1:0:2565:C:H2'  | 1:0:2566:A:C8   | 2.27                     | 0.70              |
| 1:0:841:G:H2'   | 1:0:842:A:C8    | 2.26                     | 0.70              |
| 1:0:1791:C:O2'  | 1:0:1793:A:H5'  | 1.92                     | 0.70              |
| 1:0:1026:U:H2'  | 1:0:1027:C:C6   | 2.26                     | 0.69              |
| 1:0:2754:C:H2'  | 1:0:2755:A:H8   | 1.57                     | 0.69              |
| 1:0:296:A:H2'   | 1:0:297:A:H8    | 1.57                     | 0.69              |
| 1:0:742:G:H5'   | 1:0:743:A:H5''  | 1.73                     | 0.69              |
| 1:0:1912:G:H2'  | 1:0:1912:G:N3   | 2.06                     | 0.69              |
| 1:0:1918:G:H2'  | 1:0:1945:C:H42  | 1.57                     | 0.69              |
| 1:0:343:A:N6    | 1:0:346:C:C5    | 2.60                     | 0.69              |
| 1:0:1655:C:OP1  | 1:0:2690:A:H5'  | 1.90                     | 0.69              |
| 1:0:52:A:H62    | 1:0:115:G:H21   | 1.39                     | 0.69              |
| 1:0:765:C:O2'   | 1:0:766:A:P     | 2.50                     | 0.69              |
| 1:0:937:C:H2'   | 1:0:938:G:O4'   | 1.92                     | 0.69              |
| 1:0:1195:U:H2'  | 1:0:1196:G:C8   | 2.28                     | 0.69              |
| 1:0:871:U:O2    | 1:0:2247:A:H2'  | 1.93                     | 0.69              |
| 1:0:2692:A:N3   | 1:0:2692:A:H2'  | 2.07                     | 0.69              |
| 1:0:651:C:C2'   | 1:0:652:C:H5''  | 2.22                     | 0.69              |
| 1:0:677:G:H1'   | 1:0:951:G:H5''  | 1.75                     | 0.69              |
| 1:0:1147:G:H2'  | 1:0:1148:G:H8   | 1.57                     | 0.69              |
| 1:0:2137:G:H2'  | 1:0:2138:U:C6   | 2.28                     | 0.69              |
| 1:0:990:A:C5'   | 1:0:991:A:H5''  | 2.22                     | 0.69              |
| 1:0:2721:A:H61  | 1:0:2743:G:H1'  | 1.57                     | 0.69              |
| 1:0:1429:A:H1'  | 1:0:1603:A:C6   | 2.28                     | 0.69              |
| 1:0:181:A:H5''  | 1:0:182:G:OP1   | 1.93                     | 0.69              |
| 1:0:2447:G:O2'  | 1:0:2448:A:H5'' | 1.93                     | 0.69              |
| 1:0:482:A:H2'   | 1:0:483:A:H5'   | 1.73                     | 0.69              |
| 1:0:119:G:H4'   | 1:0:142:U:H2'   | 1.75                     | 0.69              |
| 1:0:1854:G:H2'  | 1:0:1855:G:H8   | 1.57                     | 0.69              |
| 1:0:192:G:C1'   | 1:0:193:A:H4'   | 2.23                     | 0.69              |
| 1:0:1978:U:H3'  | 1:0:1979:C:H5'' | 1.74                     | 0.69              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:474:G:N2    | 1:0:476:G:H3'   | 2.07                     | 0.69              |
| 1:0:590:C:H2'   | 1:0:591:G:C8    | 2.28                     | 0.69              |
| 1:0:658:G:H2'   | 1:0:659:G:H8    | 1.57                     | 0.69              |
| 1:0:431:G:H2'   | 1:0:432:C:O5'   | 1.93                     | 0.68              |
| 1:0:644:A:H2'   | 1:0:645:G:H5'   | 1.73                     | 0.68              |
| 1:0:2059:U:H5'' | 1:0:2217:G:H1   | 1.58                     | 0.68              |
| 1:0:2404:A:H5'  | 1:0:2406:C:O4'  | 1.94                     | 0.68              |
| 1:0:2708:U:H2'  | 1:0:2709:C:C6   | 2.28                     | 0.68              |
| 1:0:218:A:H4'   | 1:0:219:G:O5'   | 1.94                     | 0.68              |
| 1:0:1032:A:H3'  | 1:0:1033:G:H5'' | 1.75                     | 0.68              |
| 1:0:1234:C:O2'  | 1:0:1235:C:H5'  | 1.92                     | 0.68              |
| 1:0:56:C:H2'    | 1:0:57:G:O4'    | 1.93                     | 0.68              |
| 1:0:598:U:H2'   | 1:0:599:A:C8    | 2.29                     | 0.68              |
| 1:0:818:G:N1    | 1:0:2050:G:O2'  | 2.27                     | 0.68              |
| 1:0:2238:G:H4'  | 1:0:2407:G:OP2  | 1.93                     | 0.68              |
| 1:0:2240:C:H1'  | 1:0:2367:A:H1'  | 1.75                     | 0.68              |
| 1:0:2652:G:H2'  | 1:0:2653:A:H8   | 1.58                     | 0.68              |
| 1:0:552:C:C2'   | 1:0:553:C:H5'   | 2.23                     | 0.68              |
| 1:0:952:A:H2'   | 1:0:953:G:C8    | 2.28                     | 0.68              |
| 1:0:1315:A:H5'' | 1:0:1316:G:OP2  | 1.94                     | 0.68              |
| 1:0:244:C:C2'   | 1:0:245:C:H5''  | 2.23                     | 0.68              |
| 1:0:1337:G:H4'  | 1:0:1632:A:H62  | 1.59                     | 0.68              |
| 1:0:1608:U:H2'  | 1:0:1609:G:H8   | 1.58                     | 0.68              |
| 1:0:1626:A:H5'' | 1:0:1627:C:OP2  | 1.94                     | 0.68              |
| 1:0:1706:A:H2'  | 1:0:1707:A:O4'  | 1.94                     | 0.68              |
| 1:0:2311:U:H4'  | 1:0:2315:A:N6   | 2.09                     | 0.68              |
| 1:0:688:A:H1'   | 1:0:2422:C:O2'  | 1.94                     | 0.68              |
| 1:0:716:U:H2'   | 1:0:717:G:O4'   | 1.93                     | 0.68              |
| 1:0:81:C:H5'    | 1:0:306:G:O2'   | 1.94                     | 0.68              |
| 1:0:1036:G:H1'  | 1:0:1145:C:H4'  | 1.74                     | 0.68              |
| 1:0:1368:G:H2'  | 1:0:1369:G:H8   | 1.57                     | 0.68              |
| 1:0:2081:U:C2'  | 1:0:2082:C:H5'' | 2.24                     | 0.68              |
| 1:0:2309:G:H1   | 1:0:2364:C:N4   | 1.89                     | 0.68              |
| 1:0:2702:G:H2'  | 1:0:2703:C:C6   | 2.28                     | 0.68              |
| 1:0:1922:U:O2   | 1:0:2571:G:H4'  | 1.94                     | 0.68              |
| 1:0:309:G:H21   | 1:0:351:A:H62   | 1.41                     | 0.68              |
| 1:0:933:G:H2'   | 1:0:934:G:H8    | 1.58                     | 0.68              |
| 1:0:1655:C:H5'' | 1:0:2689:C:O2'  | 1.93                     | 0.68              |
| 1:0:718:A:H62   | 1:0:739:G:H1'   | 1.58                     | 0.68              |
| 1:0:1514:C:H5'  | 1:0:1593:C:H5'' | 1.75                     | 0.67              |
| 1:0:366:U:H2'   | 1:0:367:G:H8    | 1.58                     | 0.67              |

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| Atom-1         | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-------------------|--------------------------|-------------------|
| 1:0:1766:U:H2' | 1:0:1767:G:O4'    | 1.94                     | 0.67              |
| 1:0:1549:C:H2' | 1:0:1550:C:O4'    | 1.93                     | 0.67              |
| 1:0:1937:G:H1' | 1:0:2530:C:C4'    | 2.22                     | 0.67              |
| 1:0:591:G:H2'  | 1:0:592:G:C8      | 2.28                     | 0.67              |
| 1:0:699:G:H5'  | 1:0:700:C:OP2     | 1.94                     | 0.67              |
| 1:0:1161:U:H2' | 1:0:1162:A:H8     | 1.60                     | 0.67              |
| 1:0:15:G:H22   | 1:0:536:A:H2      | 1.42                     | 0.67              |
| 1:0:1202:U:H2' | 1:0:1203:A:H8     | 1.60                     | 0.67              |
| 1:0:1582:A:H62 | 1:0:1584:G:H21    | 1.40                     | 0.67              |
| 1:0:1777:A:O2' | 1:0:1778:U:OP1    | 2.12                     | 0.67              |
| 1:0:1859:A:H2' | 1:0:1860:A:H8     | 1.60                     | 0.67              |
| 1:0:2736:U:O2' | 1:0:2737:A:H5'    | 1.95                     | 0.67              |
| 1:0:2041:A:H61 | 2:0:2881:TEL:H582 | 1.58                     | 0.67              |
| 1:0:594:G:C6   | 1:0:1264:C:N4     | 2.55                     | 0.67              |
| 1:0:109:A:H3'  | 1:0:110:U:H5''    | 1.76                     | 0.67              |
| 1:0:831:G:H21  | 1:0:1203:A:H62    | 1.41                     | 0.67              |
| 1:0:1222:G:H1' | 1:0:1251:G:N2     | 2.09                     | 0.67              |
| 1:0:2033:C:H2' | 1:0:2034:A:O4'    | 1.94                     | 0.67              |
| 1:0:368:A:H2'  | 1:0:369:C:O4'     | 1.94                     | 0.67              |
| 1:0:389:G:C8   | 1:0:389:G:H3'     | 2.30                     | 0.67              |
| 1:0:815:A:O2'  | 1:0:816:U:H5'     | 1.95                     | 0.67              |
| 1:0:1021:A:H1' | 1:0:1164:C:H1'    | 1.77                     | 0.67              |
| 1:0:1029:C:C2' | 1:0:1030:U:H5''   | 2.24                     | 0.67              |
| 1:0:1930:C:N4  | 1:0:1942:G:H1     | 1.92                     | 0.67              |
| 1:0:2410:U:O2  | 1:0:2412:A:C8     | 2.44                     | 0.67              |
| 1:0:2432:A:H4' | 1:0:2551:A:O2'    | 1.95                     | 0.67              |
| 1:0:1141:U:O2' | 1:0:1142:G:OP1    | 2.12                     | 0.67              |
| 1:0:1247:U:H2' | 1:0:1248:G:O4'    | 1.95                     | 0.67              |
| 1:0:1883:A:N3  | 1:0:1953:A:N7     | 2.43                     | 0.67              |
| 1:0:2369:U:H2' | 1:0:2370:G:H8     | 1.59                     | 0.67              |
| 1:0:38:G:H2'   | 1:0:39:C:C6       | 2.30                     | 0.66              |
| 1:0:1288:A:H2' | 1:0:1289:A:O4'    | 1.95                     | 0.66              |
| 1:0:139:A:H2'  | 1:0:140:G:H8      | 1.58                     | 0.66              |
| 1:0:1911:A:C2' | 1:0:1912:G:H5'    | 2.25                     | 0.66              |
| 1:0:2245:A:O2' | 1:0:2246:A:OP2    | 2.11                     | 0.66              |
| 1:0:73:A:H2'   | 1:0:73:A:N3       | 2.10                     | 0.66              |
| 1:0:1804:U:H2' | 1:0:1805:G:H8     | 1.60                     | 0.66              |
| 1:0:1182:U:C2' | 1:0:1183:C:H5''   | 2.25                     | 0.66              |
| 1:0:1223:G:H5' | 1:0:1225:G:O4'    | 1.95                     | 0.66              |
| 1:0:2396:C:H2' | 1:0:2397:A:H5'    | 1.77                     | 0.66              |
| 1:0:2521:A:H5' | 1:0:2522:G:OP1    | 1.95                     | 0.66              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2675:U:H2'  | 1:0:2676:G:C8   | 2.29                     | 0.66              |
| 1:0:741:G:H5'   | 1:0:742:G:OP2   | 1.94                     | 0.66              |
| 1:0:1071:U:H2'  | 1:0:1072:U:H5'  | 1.77                     | 0.66              |
| 1:0:1634:A:O2'  | 1:0:1635:G:H5'  | 1.95                     | 0.66              |
| 1:0:1679:U:C2'  | 1:0:1680:U:H5'  | 2.26                     | 0.66              |
| 1:0:541:C:H42   | 1:0:572:G:C4'   | 2.08                     | 0.66              |
| 1:0:1958:G:H2'  | 1:0:1959:U:C6   | 2.31                     | 0.66              |
| 1:0:2429:A:H5'' | 1:0:2476:A:H62  | 1.60                     | 0.66              |
| 1:0:2274:C:H2'  | 1:0:2275:U:H5'  | 1.77                     | 0.66              |
| 1:0:2816:C:H1'  | 1:0:2852:G:H22  | 1.59                     | 0.66              |
| 1:0:865:A:H2'   | 1:0:866:U:C6    | 2.30                     | 0.66              |
| 1:0:1083:C:N3   | 1:0:1103:C:C5   | 2.63                     | 0.66              |
| 1:0:589:C:H5'   | 1:0:2001:G:O2'  | 1.96                     | 0.66              |
| 1:0:2402:U:H4'  | 1:0:2404:A:N7   | 2.10                     | 0.66              |
| 1:0:336:A:H2'   | 1:0:337:G:C8    | 2.31                     | 0.66              |
| 1:0:340:G:H5'   | 1:0:341:A:OP1   | 1.95                     | 0.66              |
| 1:0:1561:A:H2'  | 1:0:1562:G:O4'  | 1.96                     | 0.66              |
| 1:0:2804:G:C3'  | 1:0:2805:G:H5'' | 2.25                     | 0.66              |
| 1:0:762:A:O2'   | 1:0:1633:C:H1'  | 1.95                     | 0.66              |
| 1:0:772:G:H2'   | 1:0:773:G:H8    | 1.61                     | 0.65              |
| 1:0:1218:C:H2'  | 1:0:1219:C:C6   | 2.32                     | 0.65              |
| 1:0:1776:A:H4'  | 1:0:1965:U:HO2' | 1.60                     | 0.65              |
| 1:0:2048:C:H2'  | 1:0:2049:C:H6   | 1.61                     | 0.65              |
| 1:0:2483:U:H3'  | 1:0:2484:G:H5'' | 1.77                     | 0.65              |
| 1:0:2782:G:H2'  | 1:0:2783:U:H5'  | 1.77                     | 0.65              |
| 1:0:681:A:C2'   | 1:0:683:A:N6    | 2.55                     | 0.65              |
| 1:0:1198:C:OP1  | 1:0:1199:U:H1'  | 1.96                     | 0.65              |
| 1:0:1435:G:H2'  | 1:0:1436:G:H8   | 1.59                     | 0.65              |
| 1:0:1458:A:H3'  | 1:0:1459:U:C5'  | 2.25                     | 0.65              |
| 1:0:1625:A:H2'  | 1:0:1625:A:N3   | 2.11                     | 0.65              |
| 1:0:542:A:C2'   | 1:0:543:G:H5'   | 2.25                     | 0.65              |
| 1:0:759:C:H5'   | 1:0:761:G:H1'   | 1.78                     | 0.65              |
| 1:0:78:C:H2'    | 1:0:79:G:H8     | 1.61                     | 0.65              |
| 1:0:1572:C:H2'  | 1:0:1573:G:C5'  | 2.14                     | 0.65              |
| 1:0:1662:G:H5'' | 1:0:1663:C:H5'  | 1.77                     | 0.65              |
| 1:0:2526:U:H2'  | 1:0:2527:G:C8   | 2.31                     | 0.65              |
| 1:0:2778:U:H2'  | 1:0:2779:C:C6   | 2.30                     | 0.65              |
| 1:0:389:G:H8    | 1:0:389:G:H3'   | 1.59                     | 0.65              |
| 1:0:2034:A:H5'  | 1:0:2557:G:H5'' | 1.78                     | 0.65              |
| 1:0:430:C:C4'   | 1:0:2386:G:N2   | 2.56                     | 0.65              |
| 1:0:728:G:H2'   | 1:0:729:A:O4'   | 1.96                     | 0.65              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:843:G:N3    | 1:0:2427:A:N6   | 2.44                     | 0.65              |
| 1:0:1407:G:H2'  | 1:0:1408:A:O4'  | 1.96                     | 0.65              |
| 1:0:2324:G:O2'  | 1:0:2325:A:OP2  | 2.12                     | 0.65              |
| 1:0:2398:U:H2'  | 1:0:2399:C:C6   | 2.32                     | 0.65              |
| 1:0:983:G:H3'   | 1:0:984:A:H5''  | 1.79                     | 0.65              |
| 1:0:133:C:H2'   | 1:0:134:G:O4'   | 1.96                     | 0.65              |
| 1:0:1552:C:H2'  | 1:0:1553:G:H5'  | 1.79                     | 0.65              |
| 1:0:2651:U:O2'  | 1:0:2652:G:H5'  | 1.96                     | 0.65              |
| 1:0:2312:A:H1'  | 1:0:2314:A:C5   | 2.32                     | 0.65              |
| 1:0:2034:A:H5'' | 1:0:2557:G:H5'' | 1.78                     | 0.65              |
| 1:0:457:C:H2'   | 1:0:458:G:O4'   | 1.96                     | 0.65              |
| 1:0:1358:C:H2'  | 1:0:1359:G:H5'  | 1.79                     | 0.65              |
| 1:0:2020:G:H2'  | 1:0:2021:G:C8   | 2.31                     | 0.65              |
| 1:0:2334:C:C3'  | 1:0:2335:U:H5'' | 2.27                     | 0.65              |
| 1:0:534:U:O2'   | 1:0:535:U:H5'   | 1.97                     | 0.65              |
| 1:0:1353:A:N3   | 1:0:1353:A:H2'  | 2.11                     | 0.65              |
| 1:0:1807:A:H1'  | 1:0:1809:G:C8   | 2.32                     | 0.65              |
| 1:0:2824:C:H4'  | 1:0:2825:A:H5'  | 1.79                     | 0.65              |
| 1:0:175:C:H1'   | 1:0:2413:A:H61  | 1.62                     | 0.64              |
| 1:0:1086:C:H2'  | 1:0:1087:C:H5'' | 1.78                     | 0.64              |
| 1:0:984:A:H1'   | 1:0:1202:U:C5   | 2.32                     | 0.64              |
| 1:0:1230:C:H2'  | 1:0:1231:A:H8   | 1.62                     | 0.64              |
| 1:0:1681:A:H61  | 1:0:1979:C:N4   | 1.96                     | 0.64              |
| 1:0:1725:C:N4   | 1:0:1741:G:H1   | 1.95                     | 0.64              |
| 1:0:430:C:H6    | 1:0:430:C:C5'   | 2.09                     | 0.64              |
| 1:0:1058:G:H2'  | 1:0:1121:G:H1   | 1.63                     | 0.64              |
| 1:0:2261:G:H4'  | 1:0:2262:C:OP2  | 1.95                     | 0.64              |
| 1:0:874:A:H2'   | 1:0:875:G:O4'   | 1.97                     | 0.64              |
| 1:0:1078:A:H2'  | 1:0:1079:G:H8   | 1.62                     | 0.64              |
| 1:0:1791:C:C2'  | 1:0:1792:C:H5'' | 2.26                     | 0.64              |
| 1:0:540:G:O6    | 1:0:2006:G:OP1  | 2.16                     | 0.64              |
| 1:0:587:A:C2'   | 1:0:588:G:H5''  | 2.27                     | 0.64              |
| 1:0:789:G:H1'   | 1:0:806:A:C6    | 2.33                     | 0.64              |
| 1:0:813:A:N3    | 1:0:813:A:H2'   | 2.12                     | 0.64              |
| 1:0:1223:G:N3   | 1:0:1225:G:N3   | 2.46                     | 0.64              |
| 1:0:1303:U:H2'  | 1:0:1304:U:C6   | 2.32                     | 0.64              |
| 1:0:1764:A:N7   | 1:0:1821:A:H1'  | 2.12                     | 0.64              |
| 1:0:1955:G:H2'  | 1:0:1956:G:H8   | 1.62                     | 0.64              |
| 1:0:2560:G:N3   | 1:0:2560:G:H3'  | 2.12                     | 0.64              |
| 1:0:2633:A:O2'  | 1:0:2634:G:H4'  | 1.98                     | 0.64              |
| 1:0:2091:C:H2'  | 1:0:2092:U:O4'  | 1.97                     | 0.64              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2389:G:H2'  | 1:0:2390:A:C8   | 2.33                     | 0.64              |
| 1:0:2671:C:H2'  | 1:0:2672:U:C6   | 2.32                     | 0.64              |
| 1:0:1937:G:N3   | 1:0:2530:C:H5'' | 2.13                     | 0.64              |
| 1:0:1948:C:OP2  | 1:0:1949:A:H3'  | 1.97                     | 0.64              |
| 1:0:781:G:N2    | 1:0:1392:U:H1'  | 2.13                     | 0.64              |
| 1:0:2713:A:H2'  | 1:0:2714:A:H8   | 1.61                     | 0.64              |
| 1:0:1299:A:O2'  | 1:0:1300:A:OP1  | 2.15                     | 0.64              |
| 1:0:1680:U:O2'  | 1:0:1681:A:H8   | 1.80                     | 0.64              |
| 1:0:2096:U:H3'  | 1:0:2097:A:H5'' | 1.80                     | 0.64              |
| 1:0:765:C:HO2'  | 1:0:766:A:P     | 2.20                     | 0.64              |
| 1:0:1437:A:H2'  | 1:0:1438:G:H8   | 1.62                     | 0.63              |
| 1:0:367:G:C3'   | 1:0:368:A:H5''  | 2.28                     | 0.63              |
| 1:0:952:A:O2'   | 1:0:1204:G:H4'  | 1.99                     | 0.63              |
| 1:0:1332:G:N1   | 1:0:1333:G:N2   | 2.46                     | 0.63              |
| 1:0:1337:G:C4'  | 1:0:1632:A:H62  | 2.12                     | 0.63              |
| 1:0:873:U:H3    | 1:0:930:A:N6    | 1.96                     | 0.63              |
| 1:0:1225:G:H2'  | 1:0:1249:G:N2   | 2.13                     | 0.63              |
| 1:0:2191:A:H2'  | 1:0:2192:U:OP1  | 1.99                     | 0.63              |
| 1:0:2274:C:H2'  | 1:0:2275:U:C5'  | 2.28                     | 0.63              |
| 1:0:651:C:H2'   | 1:0:652:C:H5''  | 1.78                     | 0.63              |
| 1:0:1886:G:H2'  | 1:0:1887:G:H8   | 1.63                     | 0.63              |
| 1:0:2334:C:H2'  | 1:0:2335:U:H5'' | 1.81                     | 0.63              |
| 1:0:2549:G:O2'  | 1:0:2550:C:H5'  | 1.98                     | 0.63              |
| 1:0:1451:C:H2'  | 1:0:1452:U:H6   | 1.62                     | 0.63              |
| 1:0:1141:U:O2   | 1:0:2008:C:H5'' | 1.99                     | 0.63              |
| 1:0:2382:C:N4   | 1:0:2393:G:H1   | 1.95                     | 0.63              |
| 1:0:2517:C:H2'  | 1:0:2518:C:C6   | 2.34                     | 0.63              |
| 1:0:1242:A:O2'  | 1:0:1243:G:H5'  | 1.99                     | 0.63              |
| 1:0:1299:A:HO2' | 1:0:1300:A:P    | 2.22                     | 0.63              |
| 1:0:1345:G:C5   | 1:0:1625:A:N6   | 2.66                     | 0.63              |
| 1:0:2299:A:H5'  | 1:0:2300:G:C5   | 2.34                     | 0.63              |
| 1:0:1588:A:H2'  | 1:0:1589:G:H8   | 1.64                     | 0.63              |
| 1:0:2426:G:H1'  | 1:0:2480:C:C5   | 2.34                     | 0.63              |
| 1:0:2428:U:O2   | 1:0:2428:U:H2'  | 1.98                     | 0.63              |
| 1:0:68:C:O2     | 1:0:68:C:H2'    | 1.99                     | 0.63              |
| 1:0:2495:G:H2'  | 1:0:2496:C:O4'  | 1.98                     | 0.63              |
| 1:0:321:A:O2'   | 1:0:322:A:H8    | 1.74                     | 0.63              |
| 1:0:612:G:O3'   | 1:0:613:A:H4'   | 1.99                     | 0.63              |
| 1:0:1161:U:H2'  | 1:0:1162:A:C8   | 2.34                     | 0.63              |
| 1:0:1679:U:O2   | 1:0:2666:U:H5'' | 1.99                     | 0.63              |
| 1:0:1982:C:H5'' | 1:0:2703:C:O2'  | 1.98                     | 0.63              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2384:G:H5'' | 1:0:2385:U:H5'' | 1.79                     | 0.63              |
| 1:0:2043:A:O2'  | 1:0:2481:G:O4'  | 2.17                     | 0.63              |
| 1:0:1380:C:H2'  | 1:0:1381:G:H5'  | 1.80                     | 0.62              |
| 1:0:1725:C:H42  | 1:0:1741:G:H1   | 1.47                     | 0.62              |
| 1:0:1791:C:H1'  | 1:0:1793:A:C5'  | 2.29                     | 0.62              |
| 1:0:2261:G:H5'' | 1:0:2262:C:O5'  | 1.98                     | 0.62              |
| 1:0:2687:G:O2'  | 1:0:2688:G:H5'  | 1.99                     | 0.62              |
| 1:0:1259:A:O2'  | 1:0:1260:A:H5'  | 1.99                     | 0.62              |
| 1:0:2380:U:H2'  | 1:0:2381:A:C5'  | 2.28                     | 0.62              |
| 1:0:550:C:H2'   | 1:0:551:A:C8    | 2.34                     | 0.62              |
| 1:0:2753:C:H2'  | 1:0:2754:C:C6   | 2.35                     | 0.62              |
| 1:0:2754:C:H2'  | 1:0:2755:A:C8   | 2.34                     | 0.62              |
| 1:0:2756:A:O2'  | 1:0:2757:G:OP2  | 2.15                     | 0.62              |
| 1:0:2763:U:H2'  | 1:0:2764:U:O4'  | 1.99                     | 0.62              |
| 1:0:323:G:H2'   | 1:0:324:C:C6    | 2.34                     | 0.62              |
| 1:0:200:A:H62   | 1:0:435:A:H62   | 1.47                     | 0.62              |
| 1:0:7:G:H2'     | 1:0:8:A:C8      | 2.34                     | 0.62              |
| 1:0:1029:C:N4   | 1:0:1153:A:N6   | 2.46                     | 0.62              |
| 1:0:1089:C:H2'  | 1:0:1099:A:O4'  | 2.00                     | 0.62              |
| 1:0:1218:C:H2'  | 1:0:1219:C:H6   | 1.64                     | 0.62              |
| 1:0:1416:A:O2'  | 1:0:1417:C:H5'  | 1.98                     | 0.62              |
| 1:0:1698:C:H4'  | 1:0:1699:A:OP1  | 2.00                     | 0.62              |
| 1:0:1871:G:N3   | 1:0:1871:G:H3'  | 2.14                     | 0.62              |
| 1:0:2672:U:H2'  | 1:0:2673:G:C8   | 2.33                     | 0.62              |
| 1:0:198:A:H62   | 1:0:439:C:H42   | 1.46                     | 0.62              |
| 1:0:210:A:N6    | 1:0:442:A:H61   | 1.98                     | 0.62              |
| 1:0:1114:A:H2'  | 1:0:1115:C:O4'  | 1.98                     | 0.62              |
| 1:0:1719:G:H2'  | 1:0:1720:G:C8   | 2.35                     | 0.62              |
| 1:0:1981:A:H4'  | 1:0:2704:U:H4'  | 1.80                     | 0.62              |
| 1:0:2024:U:H2'  | 1:0:2025:A:C8   | 2.34                     | 0.62              |
| 1:0:2565:C:H2'  | 1:0:2566:A:H8   | 1.62                     | 0.62              |
| 1:0:2746:G:N3   | 1:0:2746:G:H2'  | 2.13                     | 0.62              |
| 1:0:2870:C:H2'  | 1:0:2871:U:C6   | 2.35                     | 0.62              |
| 1:0:574:C:C4'   | 1:0:1266:G:O6   | 2.47                     | 0.62              |
| 1:0:645:G:H2'   | 1:0:646:C:C6    | 2.35                     | 0.62              |
| 1:0:168:A:H2'   | 1:0:169:C:H6    | 1.62                     | 0.62              |
| 1:0:1900:U:H4'  | 1:0:1946:U:C4'  | 2.30                     | 0.62              |
| 1:0:2343:C:H2'  | 1:0:2344:G:O4'  | 1.99                     | 0.62              |
| 1:0:2:G:H2'     | 1:0:3:U:C6      | 2.33                     | 0.62              |
| 1:0:562:G:H2'   | 1:0:563:U:C6    | 2.35                     | 0.62              |
| 1:0:788:G:N2    | 1:0:801:A:OP2   | 2.33                     | 0.62              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1782:A:N6   | 1:0:1820:G:H2'  | 2.14                     | 0.62              |
| 1:0:1869:A:H2'  | 1:0:1870:U:O4'  | 2.00                     | 0.62              |
| 1:0:2049:C:H2'  | 1:0:2050:G:H5'  | 1.82                     | 0.62              |
| 1:0:214:C:H2'   | 1:0:215:G:C8    | 2.34                     | 0.62              |
| 1:0:2691:C:H3'  | 1:0:2692:A:H5'' | 1.81                     | 0.62              |
| 1:0:2870:C:H2'  | 1:0:2871:U:H6   | 1.65                     | 0.62              |
| 1:0:367:G:H3'   | 1:0:368:A:H5''  | 1.81                     | 0.62              |
| 1:0:396:U:H2'   | 1:0:398:C:H41   | 1.63                     | 0.62              |
| 1:0:597:U:H2'   | 1:0:598:U:C6    | 2.34                     | 0.62              |
| 1:0:707:U:OP1   | 1:0:1585:A:H1'  | 2.00                     | 0.62              |
| 1:0:1555:A:H2'  | 1:0:1556:A:C8   | 2.35                     | 0.62              |
| 1:0:538:A:C2    | 1:0:2025:A:H2'  | 2.35                     | 0.62              |
| 1:0:222:G:N2    | 1:0:231:G:H1'   | 2.15                     | 0.62              |
| 1:0:431:G:N1    | 1:0:432:C:N4    | 2.48                     | 0.62              |
| 1:0:1194:U:H2'  | 1:0:1195:U:C6   | 2.34                     | 0.62              |
| 1:0:1278:A:O2'  | 1:0:1279:G:H4'  | 2.00                     | 0.62              |
| 1:0:2533:U:H2'  | 1:0:2534:U:C6   | 2.34                     | 0.62              |
| 1:0:2266:A:HO2' | 1:0:2267:A:H8   | 1.48                     | 0.62              |
| 1:0:2824:C:C2'  | 1:0:2824:C:O2   | 2.46                     | 0.62              |
| 1:0:699:G:C5'   | 1:0:700:C:OP2   | 2.48                     | 0.62              |
| 1:0:837:U:H2'   | 1:0:838:A:C8    | 2.34                     | 0.62              |
| 1:0:1102:G:N1   | 1:0:1112:U:H1'  | 2.15                     | 0.61              |
| 1:0:1979:C:O2'  | 1:0:1980:A:H5'  | 2.00                     | 0.61              |
| 1:0:2495:G:H2'  | 1:0:2496:C:C1'  | 2.30                     | 0.61              |
| 1:0:330:C:H2'   | 1:0:331:U:H6    | 1.64                     | 0.61              |
| 1:0:431:G:C6    | 1:0:433:G:N2    | 2.67                     | 0.61              |
| 1:0:569:C:N4    | 1:0:570:G:C6    | 2.67                     | 0.61              |
| 1:0:873:U:O2    | 1:0:2247:A:O5'  | 2.17                     | 0.61              |
| 1:0:978:U:H2'   | 1:0:979:A:C8    | 2.35                     | 0.61              |
| 1:0:1338:G:H4'  | 1:0:1339:U:OP1  | 1.99                     | 0.61              |
| 1:0:244:C:C3'   | 1:0:245:C:H5''  | 2.30                     | 0.61              |
| 1:0:2728:A:N1   | 1:0:2736:U:H1'  | 2.14                     | 0.61              |
| 1:0:2520:A:H1'  | 1:0:2744:A:H2   | 1.65                     | 0.61              |
| 1:0:1288:A:H62  | 1:0:1309:G:C4'  | 2.13                     | 0.61              |
| 1:0:2262:C:H2'  | 1:0:2263:C:O4'  | 2.00                     | 0.61              |
| 1:0:1033:G:O2'  | 1:0:1034:U:P    | 2.58                     | 0.61              |
| 1:0:1764:A:H2'  | 1:0:1765:C:H5'  | 1.81                     | 0.61              |
| 1:0:2059:U:C5'  | 1:0:2217:G:H1   | 2.13                     | 0.61              |
| 1:0:495:C:H2'   | 1:0:496:C:C6    | 2.35                     | 0.61              |
| 1:0:834:A:H62   | 1:0:983:G:N2    | 1.97                     | 0.61              |
| 1:0:14:A:N3     | 1:0:14:A:H2'    | 2.14                     | 0.61              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1720:G:O2' | 1:0:1721:G:H5'  | 2.00                     | 0.61              |
| 1:0:2243:C:H2' | 1:0:2244:C:O4'  | 2.01                     | 0.61              |
| 1:0:2692:A:O4' | 1:0:2692:A:OP1  | 2.19                     | 0.61              |
| 1:0:564:U:H2'  | 1:0:565:A:C8    | 2.34                     | 0.61              |
| 1:0:1392:U:O2  | 1:0:1392:U:H2'  | 2.00                     | 0.61              |
| 1:0:1354:A:H62 | 1:0:1407:G:H1   | 1.48                     | 0.61              |
| 1:0:2096:U:C3' | 1:0:2097:A:H5'' | 2.31                     | 0.61              |
| 1:0:2391:A:H2' | 1:0:2392:G:O4'  | 1.99                     | 0.61              |
| 1:0:822:G:O2'  | 1:0:823:U:H5'   | 2.00                     | 0.61              |
| 1:0:1617:G:H2' | 1:0:1618:U:H5'  | 1.82                     | 0.61              |
| 1:0:1975:G:H22 | 1:0:1979:C:H5   | 1.47                     | 0.61              |
| 1:0:2105:U:H2' | 1:0:2106:G:C8   | 2.35                     | 0.61              |
| 1:0:2658:A:O2' | 1:0:2659:C:H5'  | 2.01                     | 0.61              |
| 1:0:158:A:H1'  | 1:0:448:C:H5'   | 1.83                     | 0.61              |
| 1:0:541:C:H42  | 1:0:572:G:C5'   | 2.14                     | 0.61              |
| 1:0:2351:G:N3  | 1:0:2351:G:H2'  | 2.15                     | 0.61              |
| 1:0:2477:C:H6  | 1:0:2477:C:H3'  | 1.65                     | 0.61              |
| 1:0:2727:G:O2' | 1:0:2728:A:H5'' | 1.99                     | 0.61              |
| 1:0:879:A:H2'  | 1:0:879:A:N3    | 2.16                     | 0.61              |
| 1:0:987:G:H2'  | 1:0:988:G:C8    | 2.33                     | 0.61              |
| 1:0:2748:C:H2' | 1:0:2749:A:H8   | 1.65                     | 0.61              |
| 1:0:1429:A:O2' | 1:0:1430:G:H4'  | 2.00                     | 0.61              |
| 1:0:1775:A:H8  | 1:0:1775:A:O5'  | 1.83                     | 0.61              |
| 1:0:1997:A:H2' | 1:0:1998:A:C8   | 2.36                     | 0.61              |
| 1:0:460:U:H3   | 1:0:592:G:H1'   | 1.66                     | 0.61              |
| 1:0:665:A:N3   | 1:0:665:A:H2'   | 2.15                     | 0.61              |
| 1:0:796:A:N3   | 1:0:796:A:H2'   | 2.14                     | 0.61              |
| 1:0:809:C:H2'  | 1:0:810:U:C6    | 2.35                     | 0.61              |
| 1:0:987:G:H5'  | 1:0:1167:A:N6   | 2.16                     | 0.60              |
| 1:0:824:U:H1'  | 1:0:1264:C:O2   | 2.00                     | 0.60              |
| 1:0:1281:A:H2' | 1:0:1282:A:O4'  | 2.01                     | 0.60              |
| 1:0:1582:A:C3' | 1:0:1583:A:H5'  | 2.30                     | 0.60              |
| 1:0:1790:G:H4' | 1:0:1791:C:C6   | 2.37                     | 0.60              |
| 1:0:65:C:H2'   | 1:0:66:U:O4'    | 2.01                     | 0.60              |
| 1:0:706:A:H2'  | 1:0:707:U:C6    | 2.37                     | 0.60              |
| 1:0:804:C:O2   | 1:0:804:C:C2'   | 2.45                     | 0.60              |
| 1:0:1172:U:H2' | 1:0:1173:G:H8   | 1.64                     | 0.60              |
| 1:0:1621:C:O4' | 1:0:1626:A:N1   | 2.33                     | 0.60              |
| 1:0:2225:G:H2' | 1:0:2226:A:C8   | 2.36                     | 0.60              |
| 1:0:2487:G:H2' | 1:0:2488:G:H8   | 1.65                     | 0.60              |
| 1:0:674:U:H2'  | 1:0:675:C:O4'   | 2.02                     | 0.60              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:330:C:H2'   | 1:0:331:U:C6    | 2.36                     | 0.60              |
| 1:0:388:G:P     | 1:0:436:A:H61   | 2.24                     | 0.60              |
| 1:0:466:A:C2'   | 1:0:467:U:OP2   | 2.49                     | 0.60              |
| 1:0:468:A:O2'   | 1:0:469:G:H4'   | 2.01                     | 0.60              |
| 1:0:1474:A:N3   | 1:0:1474:A:H3'  | 2.16                     | 0.60              |
| 1:0:216:U:H2'   | 1:0:217:U:O4'   | 2.01                     | 0.60              |
| 1:0:2498:U:OP2  | 1:0:2498:U:H3'  | 2.00                     | 0.60              |
| 1:0:73:A:O3'    | 1:0:74:G:H4'    | 2.00                     | 0.60              |
| 1:0:1932:G:H3'  | 1:0:1933:G:C8   | 2.36                     | 0.60              |
| 1:0:2463:G:H2'  | 1:0:2464:G:H8   | 1.65                     | 0.60              |
| 1:0:2867:G:N3   | 1:0:2867:G:H2'  | 2.16                     | 0.60              |
| 1:0:510:G:H2'   | 1:0:512:A:OP2   | 2.00                     | 0.60              |
| 1:0:1057:A:H3'  | 1:0:1058:G:C5'  | 2.32                     | 0.60              |
| 1:0:1223:G:H5'' | 1:0:1224:A:OP1  | 2.02                     | 0.60              |
| 1:0:1532:A:H2'  | 1:0:1533:G:C8   | 2.37                     | 0.60              |
| 1:0:2000:U:H3'  | 1:0:2001:G:H5'' | 1.83                     | 0.60              |
| 1:0:2136:G:H2'  | 1:0:2137:G:C8   | 2.36                     | 0.60              |
| 1:0:2322:U:O2'  | 1:0:2323:U:H5'  | 2.02                     | 0.60              |
| 1:0:2496:C:H2'  | 1:0:2497:A:H5'' | 1.84                     | 0.60              |
| 1:0:357:A:H2'   | 1:0:358:C:H5'   | 1.84                     | 0.60              |
| 1:0:688:A:H2'   | 1:0:689:A:N3    | 2.15                     | 0.60              |
| 1:0:1016:C:H1'  | 1:0:1154:A:C2   | 2.37                     | 0.60              |
| 1:0:1184:G:H2'  | 1:0:1185:C:H5'  | 1.84                     | 0.60              |
| 1:0:1725:C:H2'  | 1:0:1726:C:H6   | 1.67                     | 0.60              |
| 1:0:460:U:H4'   | 1:0:461:A:OP2   | 2.01                     | 0.60              |
| 1:0:827:C:O2'   | 1:0:828:C:H5'   | 2.01                     | 0.60              |
| 1:0:872:G:O2'   | 1:0:873:U:H5''  | 2.01                     | 0.60              |
| 1:0:1700:C:H2'  | 1:0:1701:C:C6   | 2.36                     | 0.60              |
| 1:0:1886:G:H2'  | 1:0:1887:G:C8   | 2.37                     | 0.60              |
| 1:0:579:G:H2'   | 1:0:2013:A:N7   | 2.16                     | 0.60              |
| 1:0:2278:A:H61  | 1:0:2296:U:H3   | 1.49                     | 0.60              |
| 1:0:2432:A:H2'  | 1:0:2433:G:H8   | 1.65                     | 0.60              |
| 1:0:2425:G:H2'  | 1:0:2480:C:H5   | 1.67                     | 0.60              |
| 1:0:644:A:C2'   | 1:0:645:G:H5'   | 2.32                     | 0.60              |
| 1:0:658:G:H2'   | 1:0:659:G:C8    | 2.37                     | 0.60              |
| 1:0:311:A:H1'   | 1:0:330:C:C1'   | 2.31                     | 0.60              |
| 1:0:573:C:HO2'  | 1:0:1266:G:H1   | 1.50                     | 0.60              |
| 1:0:857:U:H2'   | 1:0:858:G:O4'   | 2.02                     | 0.60              |
| 1:0:1244:U:H2'  | 1:0:1245:G:C8   | 2.37                     | 0.59              |
| 1:0:1621:C:O4'  | 1:0:1626:A:C2   | 2.55                     | 0.59              |
| 1:0:1999:U:H2'  | 1:0:2000:U:O4'  | 2.02                     | 0.59              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2309:G:H1   | 1:0:2364:C:H42  | 1.49                     | 0.59              |
| 1:0:436:A:H4'   | 1:0:437:G:C5'   | 2.26                     | 0.59              |
| 1:0:787:A:H2'   | 1:0:788:G:N7    | 2.17                     | 0.59              |
| 1:0:1353:A:H5'' | 1:0:1354:A:N7   | 2.16                     | 0.59              |
| 1:0:2633:A:H5'' | 1:0:2634:G:OP1  | 2.02                     | 0.59              |
| 1:0:792:U:O2'   | 1:0:793:G:H5'   | 2.01                     | 0.59              |
| 1:0:1175:A:H2'  | 1:0:1176:U:C6   | 2.38                     | 0.59              |
| 1:0:1326:U:O2   | 1:0:1326:U:C2'  | 2.49                     | 0.59              |
| 1:0:2384:G:H5'' | 1:0:2385:U:C5'  | 2.32                     | 0.59              |
| 1:0:2659:C:H2'  | 1:0:2660:C:H6   | 1.66                     | 0.59              |
| 1:0:66:U:H2'    | 1:0:67:G:C8     | 2.36                     | 0.59              |
| 1:0:1904:G:H2'  | 1:0:1905:G:O4'  | 2.02                     | 0.59              |
| 1:0:2500:C:H4'  | 1:0:2544:A:O4'  | 2.03                     | 0.59              |
| 1:0:633:G:H2'   | 1:0:634:G:H8    | 1.66                     | 0.59              |
| 1:0:68:C:H2'    | 1:0:69:G:C8     | 2.36                     | 0.59              |
| 1:0:802:A:N3    | 1:0:802:A:H2'   | 2.16                     | 0.59              |
| 1:0:820:U:H2'   | 1:0:821:A:H8    | 1.67                     | 0.59              |
| 1:0:1376:C:H2'  | 1:0:1377:G:C8   | 2.37                     | 0.59              |
| 1:0:2386:G:H2'  | 1:0:2386:G:N3   | 2.17                     | 0.59              |
| 1:0:834:A:N6    | 1:0:983:G:H21   | 1.99                     | 0.59              |
| 1:0:998:C:H1'   | 1:0:1012:A:H1'  | 1.84                     | 0.59              |
| 1:0:1139:A:H1'  | 1:0:2495:G:HO2' | 1.66                     | 0.59              |
| 1:0:1225:G:H2'  | 1:0:1249:G:H22  | 1.67                     | 0.59              |
| 1:0:1298:G:O6   | 1:0:1342:U:C6   | 2.56                     | 0.59              |
| 1:0:1391:A:O2'  | 1:0:1392:U:P    | 2.60                     | 0.59              |
| 1:0:1578:U:H2'  | 1:0:1579:G:H8   | 1.66                     | 0.59              |
| 1:0:2469:G:H4'  | 1:0:2470:U:O5'  | 2.03                     | 0.59              |
| 1:0:2483:U:H3'  | 1:0:2484:G:C5'  | 2.33                     | 0.59              |
| 1:0:2652:G:O2'  | 1:0:2653:A:H5'  | 2.02                     | 0.59              |
| 1:0:2863:U:H2'  | 1:0:2864:C:C6   | 2.37                     | 0.59              |
| 1:0:757:U:H2'   | 1:0:758:G:H5'   | 1.85                     | 0.59              |
| 1:0:956:A:O2'   | 1:0:957:G:P     | 2.60                     | 0.59              |
| 1:0:1110:G:H2'  | 1:0:1111:C:C6   | 2.38                     | 0.59              |
| 1:0:824:U:C1'   | 1:0:1264:C:O2   | 2.50                     | 0.59              |
| 1:0:1304:U:O2'  | 1:0:1305:C:H5'  | 2.03                     | 0.59              |
| 1:0:2312:A:H1'  | 1:0:2314:A:N7   | 2.17                     | 0.59              |
| 1:0:1437:A:O2'  | 1:0:1515:U:H4'  | 2.02                     | 0.59              |
| 1:0:244:C:H2'   | 1:0:245:C:O4'   | 2.03                     | 0.59              |
| 1:0:2680:U:H5'' | 1:0:2681:A:H5'' | 1.83                     | 0.59              |
| 1:0:333:A:O2'   | 1:0:350:U:H2'   | 2.02                     | 0.59              |
| 1:0:759:C:C5'   | 1:0:761:G:H1'   | 2.33                     | 0.59              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1325:U:H5' | 1:0:1326:U:C6   | 2.38                     | 0.59              |
| 1:0:2321:C:H2' | 1:0:2322:U:O4'  | 2.03                     | 0.59              |
| 1:0:698:A:H1'  | 1:0:700:C:C5    | 2.38                     | 0.59              |
| 1:0:872:G:O2'  | 1:0:2247:A:H1'  | 2.03                     | 0.59              |
| 1:0:1548:U:H3  | 1:0:1554:G:H1   | 1.49                     | 0.59              |
| 1:0:1949:A:H1' | 1:0:2572:U:C5'  | 2.30                     | 0.59              |
| 1:0:2015:G:O2' | 1:0:2016:A:OP1  | 2.18                     | 0.59              |
| 1:0:233:A:H2'  | 1:0:234:C:C6    | 2.38                     | 0.59              |
| 1:0:1222:G:H1' | 1:0:1251:G:H22  | 1.68                     | 0.58              |
| 1:0:161:U:H2'  | 1:0:162:C:C6    | 2.37                     | 0.58              |
| 1:0:1764:A:OP1 | 1:0:1820:G:H3'  | 2.02                     | 0.58              |
| 1:0:2185:U:H2' | 1:0:2186:G:C8   | 2.38                     | 0.58              |
| 1:0:2356:A:H2' | 1:0:2357:A:C8   | 2.38                     | 0.58              |
| 1:0:2629:U:H2' | 1:0:2630:C:C6   | 2.37                     | 0.58              |
| 1:0:336:A:H2'  | 1:0:337:G:H8    | 1.67                     | 0.58              |
| 1:0:468:A:C2'  | 1:0:469:G:H4'   | 2.33                     | 0.58              |
| 1:0:647:G:H4'  | 1:0:649:G:O3'   | 2.03                     | 0.58              |
| 1:0:986:A:H2'  | 1:0:987:G:H5'   | 1.84                     | 0.58              |
| 1:0:2107:G:H2' | 1:0:2108:G:H8   | 1.67                     | 0.58              |
| 1:0:2326:C:H42 | 1:0:2350:G:N2   | 2.00                     | 0.58              |
| 1:0:693:A:H2'  | 1:0:694:G:C8    | 2.37                     | 0.58              |
| 1:0:1180:A:O2' | 1:0:1181:C:H5'  | 2.03                     | 0.58              |
| 1:0:1764:A:N7  | 1:0:1821:A:C1'  | 2.66                     | 0.58              |
| 1:0:2083:G:H22 | 1:0:2172:U:H3   | 1.51                     | 0.58              |
| 1:0:2395:C:H2' | 1:0:2396:C:C5'  | 2.29                     | 0.58              |
| 1:0:2061:C:H5' | 1:0:2413:A:H4'  | 1.85                     | 0.58              |
| 1:0:2607:C:H3' | 1:0:2608:A:H5'' | 1.85                     | 0.58              |
| 1:0:2624:G:H4' | 1:0:2712:G:H2'  | 1.84                     | 0.58              |
| 1:0:2843:A:N6  | 1:0:2844:G:C6   | 2.72                     | 0.58              |
| 1:0:569:C:N4   | 1:0:570:G:O6    | 2.36                     | 0.58              |
| 1:0:1633:C:O2' | 1:0:1634:A:H3'  | 2.04                     | 0.58              |
| 1:0:2555:G:N3  | 1:0:2555:G:H2'  | 2.17                     | 0.58              |
| 1:0:3:U:H2'    | 1:0:4:C:C6      | 2.38                     | 0.58              |
| 1:0:457:C:O2'  | 1:0:458:G:H5'   | 2.04                     | 0.58              |
| 1:0:67:G:N2    | 1:0:73:A:H8     | 2.01                     | 0.58              |
| 1:0:801:A:O2'  | 1:0:802:A:P     | 2.61                     | 0.58              |
| 1:0:165:G:O2'  | 1:0:166:G:H5'   | 2.04                     | 0.58              |
| 1:0:1865:C:H2' | 1:0:1866:G:O4'  | 2.03                     | 0.58              |
| 1:0:1980:A:O2' | 1:0:1981:A:H5'  | 2.03                     | 0.58              |
| 1:0:1212:U:H2' | 1:0:1213:U:C6   | 2.39                     | 0.58              |
| 1:0:1860:A:C2' | 1:0:1861:G:H5'  | 2.33                     | 0.58              |

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| Atom-1         | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-------------------|--------------------------|-------------------|
| 1:0:389:G:C8   | 1:0:389:G:C3'     | 2.87                     | 0.58              |
| 1:0:543:G:H2'  | 1:0:544:U:C6      | 2.39                     | 0.58              |
| 1:0:597:U:H3   | 1:0:683:A:HO2'    | 1.47                     | 0.58              |
| 1:0:787:A:H2'  | 1:0:788:G:C8      | 2.39                     | 0.58              |
| 1:0:855:G:O2'  | 1:0:856:A:H5'     | 2.03                     | 0.58              |
| 1:0:86:U:H1'   | 1:0:95:G:N2       | 2.18                     | 0.58              |
| 1:0:128:C:C2'  | 1:0:129:A:H5''    | 2.33                     | 0.58              |
| 1:0:1337:G:H1' | 1:0:1632:A:H61    | 1.67                     | 0.58              |
| 1:0:2544:A:H2' | 1:0:2545:A:C1'    | 2.33                     | 0.58              |
| 1:0:2484:G:H5' | 2:0:2881:TEL:H571 | 1.85                     | 0.58              |
| 1:0:590:C:H2'  | 1:0:591:G:H8      | 1.66                     | 0.58              |
| 1:0:877:G:H2'  | 1:0:878:C:C6      | 2.38                     | 0.58              |
| 1:0:847:C:N4   | 1:0:955:G:N2      | 2.52                     | 0.58              |
| 1:0:1001:A:H3' | 1:0:1002:C:H5''   | 1.86                     | 0.58              |
| 1:0:1821:A:H3' | 1:0:1822:C:C6     | 2.38                     | 0.58              |
| 1:0:1927:U:H4' | 1:0:1938:U:O2'    | 2.04                     | 0.58              |
| 1:0:2269:G:H2' | 1:0:2270:U:O4'    | 2.03                     | 0.58              |
| 1:0:70:A:H5'   | 1:0:71:A:OP1      | 2.03                     | 0.58              |
| 1:0:1299:A:N6  | 1:0:1302:C:N4     | 2.52                     | 0.58              |
| 1:0:1337:G:C1' | 1:0:1632:A:N6     | 2.66                     | 0.58              |
| 1:0:1378:A:H2' | 1:0:1379:A:C8     | 2.39                     | 0.58              |
| 1:0:1465:G:H2' | 1:0:1466:C:O4'    | 2.03                     | 0.58              |
| 1:0:2326:C:O2' | 1:0:2327:U:H5'    | 2.04                     | 0.58              |
| 1:0:2432:A:H4' | 1:0:2551:A:HO2'   | 1.67                     | 0.58              |
| 1:0:224:G:H1'  | 1:0:399:G:O6      | 2.04                     | 0.58              |
| 1:0:199:A:OP1  | 1:0:438:G:O6      | 2.21                     | 0.58              |
| 1:0:782:U:H2'  | 1:0:783:G:H8      | 1.68                     | 0.58              |
| 1:0:1955:G:H2' | 1:0:1956:G:H5'    | 1.86                     | 0.58              |
| 1:0:2493:U:H2' | 1:0:2494:C:C6     | 2.39                     | 0.58              |
| 1:0:605:G:C2   | 1:0:606:A:C5      | 2.91                     | 0.58              |
| 1:0:62:U:H5'   | 1:0:63:A:OP1      | 2.04                     | 0.58              |
| 1:0:651:C:C3'  | 1:0:652:C:H5''    | 2.34                     | 0.58              |
| 1:0:788:G:H2'  | 1:0:807:A:C5      | 2.39                     | 0.58              |
| 1:0:697:G:N2   | 1:0:807:A:H2      | 2.02                     | 0.58              |
| 1:0:1438:G:H2' | 1:0:1439:G:H5'    | 1.85                     | 0.57              |
| 1:0:1464:A:H2' | 1:0:1465:G:O4'    | 2.04                     | 0.57              |
| 1:0:2158:C:H2' | 1:0:2159:A:C8     | 2.37                     | 0.57              |
| 1:0:755:C:H2'  | 1:0:756:C:C6      | 2.39                     | 0.57              |
| 1:0:861:G:H1'  | 1:0:944:A:N3      | 2.18                     | 0.57              |
| 1:0:114:C:H2'  | 1:0:115:G:O4'     | 2.03                     | 0.57              |
| 1:0:1829:C:H42 | 1:0:1886:G:H1     | 1.52                     | 0.57              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2121:U:H2' | 1:0:2122:G:C8   | 2.38                     | 0.57              |
| 1:0:2369:U:H2' | 1:0:2370:G:C8   | 2.40                     | 0.57              |
| 1:0:210:A:H61  | 1:0:442:A:N6    | 2.02                     | 0.57              |
| 1:0:670:U:H2'  | 1:0:671:A:C8    | 2.39                     | 0.57              |
| 1:0:763:A:H5'' | 1:0:1631:C:H42  | 1.68                     | 0.57              |
| 1:0:1953:A:O2' | 1:0:1955:G:O4'  | 2.21                     | 0.57              |
| 1:0:2334:C:H3' | 1:0:2335:U:H5'' | 1.87                     | 0.57              |
| 1:0:2350:G:H2' | 1:0:2351:G:H8   | 1.68                     | 0.57              |
| 1:0:2491:C:C3' | 1:0:2492:G:H5'' | 2.34                     | 0.57              |
| 1:0:2690:A:OP1 | 1:0:2692:A:OP2  | 2.22                     | 0.57              |
| 1:0:871:U:H2'  | 1:0:871:U:O2    | 2.03                     | 0.57              |
| 1:0:1139:A:H61 | 1:0:2497:A:H61  | 1.50                     | 0.57              |
| 1:0:1194:U:H2' | 1:0:1195:U:H6   | 1.70                     | 0.57              |
| 1:0:2615:U:H3  | 1:0:2762:G:H1   | 1.52                     | 0.57              |
| 1:0:641:G:H4'  | 1:0:651:C:O2'   | 2.04                     | 0.57              |
| 1:0:717:G:H1'  | 1:0:740:A:N6    | 2.18                     | 0.57              |
| 1:0:1265:G:C2  | 1:0:1266:G:N2   | 2.72                     | 0.57              |
| 1:0:1393:G:H1' | 1:0:1585:A:N6   | 2.19                     | 0.57              |
| 1:0:861:G:C8   | 1:0:862:A:N7    | 2.72                     | 0.57              |
| 1:0:867:G:O2'  | 1:0:868:U:H5'   | 2.05                     | 0.57              |
| 1:0:2532:G:H2' | 1:0:2533:U:O4'  | 2.04                     | 0.57              |
| 1:0:322:A:H2'  | 1:0:342:G:OP1   | 2.04                     | 0.57              |
| 1:0:468:A:H2'  | 1:0:469:G:H4'   | 1.86                     | 0.57              |
| 1:0:639:G:H2'  | 1:0:640:C:C6    | 2.40                     | 0.57              |
| 1:0:68:C:C1'   | 1:0:72:A:H1'    | 2.34                     | 0.57              |
| 1:0:87:G:N3    | 1:0:87:G:H2'    | 2.20                     | 0.57              |
| 1:0:1395:A:H2' | 1:0:1396:C:O4'  | 2.05                     | 0.57              |
| 1:0:1793:A:H2' | 1:0:1794:A:C8   | 2.38                     | 0.57              |
| 1:0:2390:A:O2' | 1:0:2391:A:H5'  | 2.05                     | 0.57              |
| 1:0:514:G:C2'  | 1:0:514:G:N3    | 2.66                     | 0.57              |
| 1:0:852:U:H2'  | 1:0:853:C:C6    | 2.39                     | 0.57              |
| 1:0:1136:G:C6  | 1:0:1137:A:N6   | 2.73                     | 0.57              |
| 1:0:1758:C:O2' | 1:0:1759:A:H5'  | 2.05                     | 0.57              |
| 1:0:2334:C:C2' | 1:0:2335:U:H5'' | 2.34                     | 0.57              |
| 1:0:2442:C:N4  | 1:0:2466:G:H1   | 2.01                     | 0.57              |
| 1:0:2034:A:N6  | 1:0:2593:A:N7   | 2.51                     | 0.57              |
| 1:0:2056:C:O2' | 1:0:2057:U:H5'  | 2.04                     | 0.57              |
| 1:0:2672:U:H5' | 1:0:2844:G:N2   | 2.19                     | 0.57              |
| 1:0:449:C:H2'  | 1:0:450:C:H6    | 1.69                     | 0.57              |
| 1:0:552:C:H2'  | 1:0:553:C:C5'   | 2.35                     | 0.57              |
| 1:0:677:G:O2'  | 1:0:678:G:H5'   | 2.04                     | 0.57              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1069:G:O2'  | 1:0:1070:G:H5' | 2.03                     | 0.57              |
| 1:0:1554:G:H2'  | 1:0:1555:A:C8  | 2.39                     | 0.57              |
| 1:0:531:G:H2'   | 1:0:532:A:C8   | 2.40                     | 0.57              |
| 1:0:580:A:N3    | 1:0:582:G:N7   | 2.53                     | 0.57              |
| 1:0:723:C:H2'   | 1:0:724:C:C6   | 2.40                     | 0.57              |
| 1:0:747:A:H2'   | 1:0:748:A:O4'  | 2.05                     | 0.57              |
| 1:0:797:A:H5'   | 1:0:798:G:OP1  | 2.05                     | 0.57              |
| 1:0:1103:C:H2'  | 1:0:1104:G:C8  | 2.40                     | 0.56              |
| 1:0:1200:G:H2'  | 1:0:1201:G:O4' | 2.05                     | 0.56              |
| 1:0:1785:A:O2'  | 1:0:1883:A:H2' | 2.05                     | 0.56              |
| 1:0:435:A:N1    | 1:0:436:A:N3   | 2.53                     | 0.56              |
| 1:0:1313:U:O2'  | 1:0:1314:A:P   | 2.64                     | 0.56              |
| 1:0:1596:A:H2'  | 1:0:1597:A:O4' | 2.05                     | 0.56              |
| 1:0:202:A:C2    | 1:0:203:G:H1'  | 2.41                     | 0.56              |
| 1:0:2048:C:H2'  | 1:0:2049:C:C6  | 2.40                     | 0.56              |
| 1:0:2512:A:H2'  | 1:0:2513:A:C8  | 2.40                     | 0.56              |
| 1:0:1981:A:O2'  | 1:0:2704:U:H1' | 2.05                     | 0.56              |
| 1:0:1021:A:N3   | 1:0:1164:C:H1' | 2.20                     | 0.56              |
| 1:0:1286:U:H5'' | 1:0:1663:C:N4  | 2.19                     | 0.56              |
| 1:0:2478:C:H2'  | 1:0:2479:U:C6  | 2.41                     | 0.56              |
| 1:0:439:C:H3'   | 1:0:440:U:C6   | 2.40                     | 0.56              |
| 1:0:1344:C:O2'  | 1:0:1345:G:H8  | 1.88                     | 0.56              |
| 1:0:1457:A:H2'  | 1:0:1458:A:O4' | 2.04                     | 0.56              |
| 1:0:1608:U:H2'  | 1:0:1609:G:C8  | 2.39                     | 0.56              |
| 1:0:1617:G:H2'  | 1:0:1618:U:C5' | 2.36                     | 0.56              |
| 1:0:2014:A:N7   | 1:0:2477:C:O2  | 2.39                     | 0.56              |
| 1:0:2161:C:H2'  | 1:0:2162:C:C5  | 2.40                     | 0.56              |
| 1:0:2261:G:N2   | 1:0:2406:C:N3  | 2.51                     | 0.56              |
| 1:0:1285:A:OP2  | 1:0:1663:C:H2' | 2.05                     | 0.56              |
| 1:0:1474:A:H2'  | 1:0:1475:U:H5' | 1.88                     | 0.56              |
| 1:0:1655:C:H4'  | 1:0:2689:C:O2  | 2.06                     | 0.56              |
| 1:0:1811:A:H4'  | 1:0:1813:A:C8  | 2.39                     | 0.56              |
| 1:0:45:C:OP2    | 1:0:192:G:H3'  | 2.05                     | 0.56              |
| 1:0:2058:U:H5'  | 1:0:2576:G:H1' | 1.87                     | 0.56              |
| 1:0:2771:C:H5'  | 1:0:2867:G:H22 | 1.69                     | 0.56              |
| 1:0:391:C:H2'   | 1:0:392:G:H8   | 1.70                     | 0.56              |
| 1:0:1318:A:O2'  | 1:0:1319:C:H5' | 2.05                     | 0.56              |
| 1:0:2397:A:H2'  | 1:0:2398:U:C6  | 2.41                     | 0.56              |
| 1:0:2569:A:H2'  | 1:0:2570:C:C6  | 2.41                     | 0.56              |
| 1:0:478:G:O2'   | 1:0:479:G:H5'  | 2.05                     | 0.56              |
| 1:0:821:A:H2'   | 1:0:822:G:H8   | 1.70                     | 0.56              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1102:G:H1   | 1:0:1112:U:H1'  | 1.70                     | 0.56              |
| 1:0:1345:G:N3   | 1:0:1626:A:N7   | 2.53                     | 0.56              |
| 1:0:2034:A:OP2  | 1:0:2034:A:H8   | 1.87                     | 0.56              |
| 1:0:2212:U:H2'  | 1:0:2213:G:C8   | 2.40                     | 0.56              |
| 1:0:2830:U:H2'  | 1:0:2831:A:H8   | 1.71                     | 0.56              |
| 1:0:335:A:N6    | 1:0:349:G:O2'   | 2.37                     | 0.56              |
| 1:0:69:G:O2'    | 1:0:70:A:P      | 2.64                     | 0.56              |
| 1:0:119:G:H2'   | 1:0:120:G:H8    | 1.70                     | 0.56              |
| 1:0:1340:C:H2'  | 1:0:1341:G:O4'  | 2.06                     | 0.56              |
| 1:0:1922:U:H1'  | 1:0:2570:C:O2'  | 2.06                     | 0.56              |
| 1:0:1933:G:H8   | 1:0:1933:G:O5'  | 1.88                     | 0.56              |
| 1:0:2780:A:N3   | 1:0:2780:A:H2'  | 2.20                     | 0.56              |
| 1:0:346:C:O2    | 1:0:346:C:H2'   | 2.04                     | 0.56              |
| 1:0:1210:C:H2'  | 1:0:1211:G:C8   | 2.40                     | 0.56              |
| 1:0:1252:C:H2'  | 1:0:1253:C:H5'' | 1.87                     | 0.56              |
| 1:0:1987:G:C2'  | 1:0:1988:A:H5'  | 2.36                     | 0.56              |
| 1:0:2229:G:H5'' | 1:0:2230:G:H5'' | 1.88                     | 0.56              |
| 1:0:2429:A:H5'' | 1:0:2476:A:N6   | 2.20                     | 0.56              |
| 1:0:2496:C:N4   | 1:0:2546:G:H1   | 1.89                     | 0.56              |
| 1:0:2624:G:H4'  | 1:0:2712:G:C2'  | 2.36                     | 0.56              |
| 1:0:2624:G:H4'  | 1:0:2712:G:O2'  | 2.06                     | 0.56              |
| 1:0:2824:C:H1'  | 1:0:2843:A:C2   | 2.40                     | 0.56              |
| 1:0:694:G:H2'   | 1:0:695:G:C8    | 2.41                     | 0.56              |
| 1:0:879:A:H2'   | 1:0:880:C:C5'   | 2.36                     | 0.56              |
| 1:0:1073:G:H3'  | 1:0:1074:G:H5'' | 1.88                     | 0.56              |
| 1:0:1964:A:OP1  | 1:0:1965:U:OP2  | 2.24                     | 0.56              |
| 1:0:971:A:C2    | 1:0:2475:C:H1'  | 2.41                     | 0.56              |
| 1:0:2498:U:C5'  | 1:0:2499:C:OP1  | 2.44                     | 0.56              |
| 1:0:449:C:H2'   | 1:0:450:C:C6    | 2.40                     | 0.56              |
| 1:0:563:U:H2'   | 1:0:564:U:C6    | 2.40                     | 0.56              |
| 1:0:573:C:H2'   | 1:0:574:C:O4'   | 2.06                     | 0.56              |
| 1:0:682:G:N3    | 1:0:682:G:H2'   | 2.19                     | 0.56              |
| 1:0:742:G:N2    | 1:0:1766:U:C6   | 2.74                     | 0.56              |
| 1:0:1044:U:H5'  | 1:0:1045:G:OP1  | 2.06                     | 0.56              |
| 1:0:1021:A:H1'  | 1:0:1164:C:C1'  | 2.35                     | 0.56              |
| 1:0:117:A:H5'   | 1:0:118:U:OP1   | 2.06                     | 0.56              |
| 1:0:455:A:H4'   | 1:0:1214:C:O2'  | 2.05                     | 0.56              |
| 1:0:1537:U:H2'  | 1:0:1538:A:C8   | 2.40                     | 0.56              |
| 1:0:1797:C:H2'  | 1:0:1798:G:O4'  | 2.05                     | 0.56              |
| 1:0:2085:G:H22  | 1:0:2171:U:C1'  | 2.15                     | 0.56              |
| 1:0:2198:U:H3'  | 1:0:2199:C:C5'  | 2.26                     | 0.56              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2073:A:N6   | 1:0:2208:U:H3  | 2.03                     | 0.56              |
| 1:0:2402:U:O2'  | 1:0:2404:A:H2' | 2.05                     | 0.56              |
| 1:0:324:C:H6    | 1:0:324:C:O5'  | 1.88                     | 0.56              |
| 1:0:400:U:H4'   | 1:0:401:G:N9   | 2.20                     | 0.56              |
| 1:0:681:A:N6    | 1:0:683:A:H2'  | 2.21                     | 0.56              |
| 1:0:871:U:C2    | 1:0:2247:A:H2' | 2.41                     | 0.56              |
| 1:0:887:G:O2'   | 1:0:888:G:H5'  | 2.06                     | 0.56              |
| 1:0:929:A:C3'   | 1:0:930:A:H5'' | 2.36                     | 0.56              |
| 1:0:2783:U:N3   | 1:0:2785:A:N6  | 2.54                     | 0.55              |
| 1:0:1226:A:H62  | 1:0:1249:G:H1' | 1.72                     | 0.55              |
| 1:0:1698:C:H5'' | 1:0:1699:A:OP2 | 2.06                     | 0.55              |
| 1:0:1811:A:H1'  | 1:0:1813:A:C6  | 2.41                     | 0.55              |
| 1:0:1378:A:H2'  | 1:0:1379:A:H8  | 1.71                     | 0.55              |
| 1:0:1471:G:O2'  | 1:0:1472:C:H5' | 2.07                     | 0.55              |
| 1:0:2784:A:H3'  | 1:0:2784:A:OP1 | 2.05                     | 0.55              |
| 1:0:503:G:H2'   | 1:0:504:G:O4'  | 2.05                     | 0.55              |
| 1:0:979:A:H2'   | 1:0:980:G:C8   | 2.42                     | 0.55              |
| 1:0:1498:G:O2'  | 1:0:1499:A:H5' | 2.06                     | 0.55              |
| 1:0:1962:C:O2'  | 1:0:1963:G:H5' | 2.06                     | 0.55              |
| 1:0:2003:A:C2   | 1:0:2018:G:N2  | 2.74                     | 0.55              |
| 1:0:2191:A:C2'  | 1:0:2192:U:OP1 | 2.54                     | 0.55              |
| 1:0:219:G:C2'   | 1:0:220:U:OP2  | 2.55                     | 0.55              |
| 1:0:2298:U:H4'  | 1:0:2299:A:N7  | 2.21                     | 0.55              |
| 1:0:2779:C:O2'  | 1:0:2780:A:H5' | 2.06                     | 0.55              |
| 1:0:486:U:O2'   | 1:0:515:A:H1'  | 2.07                     | 0.55              |
| 1:0:781:G:H21   | 1:0:1392:U:H1' | 1.70                     | 0.55              |
| 1:0:837:U:H2'   | 1:0:838:A:H8   | 1.72                     | 0.55              |
| 1:0:1125:G:H2'  | 1:0:1126:A:C8  | 2.41                     | 0.55              |
| 1:0:1301:U:C4   | 1:0:1340:C:H1' | 2.42                     | 0.55              |
| 1:0:1370:U:H2'  | 1:0:1371:G:O4' | 2.06                     | 0.55              |
| 1:0:1531:C:H2'  | 1:0:1532:A:H5' | 1.88                     | 0.55              |
| 1:0:1695:U:C2'  | 1:0:1696:C:H5' | 2.36                     | 0.55              |
| 1:0:2261:G:H1   | 1:0:2406:C:H42 | 1.52                     | 0.55              |
| 1:0:2655:C:H2'  | 1:0:2656:G:C8  | 2.41                     | 0.55              |
| 1:0:2796:A:H2'  | 1:0:2797:G:H8  | 1.70                     | 0.55              |
| 1:0:2854:G:H2'  | 1:0:2854:G:N3  | 2.21                     | 0.55              |
| 1:0:1726:C:H1'  | 1:0:2835:A:H1' | 1.89                     | 0.55              |
| 1:0:1987:G:H2'  | 1:0:1988:A:H5' | 1.89                     | 0.55              |
| 1:0:2069:U:H2'  | 1:0:2070:G:H8  | 1.71                     | 0.55              |
| 1:0:243:G:H3'   | 1:0:244:C:H5'' | 1.89                     | 0.55              |
| 1:0:2664:G:H2'  | 1:0:2665:G:H8  | 1.72                     | 0.55              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:751:G:C2   | 1:0:752:G:H1'   | 2.41                     | 0.55              |
| 1:0:1196:G:C2' | 1:0:1197:U:H5'  | 2.37                     | 0.55              |
| 1:0:1414:G:H2' | 1:0:1415:C:C6   | 2.42                     | 0.55              |
| 1:0:1594:U:H2' | 1:0:1595:A:C8   | 2.41                     | 0.55              |
| 1:0:2496:C:C4  | 1:0:2521:A:C6   | 2.95                     | 0.55              |
| 1:0:459:A:N6   | 1:0:484:G:H1'   | 2.21                     | 0.55              |
| 1:0:510:G:N2   | 1:0:513:A:OP2   | 2.40                     | 0.55              |
| 1:0:95:G:H2'   | 1:0:96:C:C6     | 2.42                     | 0.55              |
| 1:0:1112:U:H2' | 1:0:1113:C:C5   | 2.41                     | 0.55              |
| 1:0:1554:G:H2' | 1:0:1555:A:H8   | 1.70                     | 0.55              |
| 1:0:1603:A:H2' | 1:0:1604:A:C8   | 2.42                     | 0.55              |
| 1:0:1763:G:C6  | 1:0:1963:G:N2   | 2.74                     | 0.55              |
| 1:0:58:C:H2'   | 1:0:59:G:O4'    | 2.07                     | 0.55              |
| 1:0:941:U:OP1  | 1:0:941:U:H4'   | 2.05                     | 0.55              |
| 1:0:1015:U:H5' | 1:0:1021:A:N6   | 2.22                     | 0.55              |
| 1:0:1468:A:H3' | 1:0:1469:U:H5'' | 1.88                     | 0.55              |
| 1:0:1626:A:H4' | 1:0:1627:C:OP1  | 2.07                     | 0.55              |
| 1:0:2667:C:H42 | 1:0:2699:G:H3'  | 1.71                     | 0.55              |
| 1:0:28:A:H61   | 1:0:522:G:H4'   | 1.71                     | 0.55              |
| 1:0:820:U:H2'  | 1:0:821:A:C8    | 2.41                     | 0.55              |
| 1:0:1367:A:H2' | 1:0:1368:G:O4'  | 2.07                     | 0.55              |
| 1:0:1482:U:H2' | 1:0:1483:G:C8   | 2.41                     | 0.55              |
| 1:0:1942:G:H2' | 1:0:1943:A:O4'  | 2.06                     | 0.55              |
| 1:0:2306:A:H2' | 1:0:2307:A:C8   | 2.41                     | 0.55              |
| 1:0:2674:C:H2' | 1:0:2675:U:C6   | 2.42                     | 0.55              |
| 1:0:2796:A:H2' | 1:0:2797:G:C8   | 2.43                     | 0.55              |
| 1:0:308:C:H2'  | 1:0:309:G:O4'   | 2.07                     | 0.55              |
| 1:0:441:A:H2'  | 1:0:442:A:O4'   | 2.06                     | 0.55              |
| 1:0:1213:U:H2' | 1:0:1214:C:C6   | 2.42                     | 0.54              |
| 1:0:1303:U:H2' | 1:0:1304:U:H6   | 1.71                     | 0.54              |
| 1:0:1376:C:H2' | 1:0:1377:G:H8   | 1.71                     | 0.54              |
| 1:0:1695:U:H2' | 1:0:1696:C:H5'  | 1.90                     | 0.54              |
| 1:0:1818:G:H2' | 1:0:1819:U:H6   | 1.72                     | 0.54              |
| 1:0:2213:G:O2' | 1:0:2214:G:H5'  | 2.06                     | 0.54              |
| 1:0:2252:A:H2' | 1:0:2253:A:O4'  | 2.07                     | 0.54              |
| 1:0:2054:A:H2  | 1:0:2419:C:H41  | 1.54                     | 0.54              |
| 1:0:2437:G:O2' | 1:0:2438:A:N7   | 2.34                     | 0.54              |
| 1:0:1774:A:O2' | 1:0:2586:G:H1'  | 2.06                     | 0.54              |
| 1:0:2716:G:H2' | 1:0:2717:G:H8   | 1.71                     | 0.54              |
| 1:0:2721:A:H2' | 1:0:2722:C:O4'  | 2.07                     | 0.54              |
| 1:0:1076:U:H2' | 1:0:1077:U:O4'  | 2.06                     | 0.54              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1479:G:H2'  | 1:0:1480:G:H8  | 1.72                     | 0.54              |
| 1:0:1587:A:H2'  | 1:0:1588:A:C8  | 2.42                     | 0.54              |
| 1:0:1618:U:H3'  | 1:0:1619:A:H2  | 1.72                     | 0.54              |
| 1:0:1345:G:N7   | 1:0:1625:A:N6  | 2.54                     | 0.54              |
| 1:0:1790:G:C8   | 1:0:1811:A:N6  | 2.75                     | 0.54              |
| 1:0:2018:G:O2'  | 1:0:2019:C:OP1 | 2.21                     | 0.54              |
| 1:0:2446:C:H2'  | 1:0:2447:G:O4' | 2.07                     | 0.54              |
| 1:0:2668:U:O2   | 1:0:2693:U:O4' | 2.24                     | 0.54              |
| 1:0:718:A:C2    | 1:0:740:A:H1'  | 2.41                     | 0.54              |
| 1:0:928:G:HO2'  | 1:0:929:A:H8   | 1.55                     | 0.54              |
| 1:0:984:A:H2'   | 1:0:984:A:N3   | 2.21                     | 0.54              |
| 1:0:1260:A:O2'  | 1:0:1261:G:OP1 | 2.21                     | 0.54              |
| 1:0:1428:G:H5'' | 1:0:1429:A:H5' | 1.89                     | 0.54              |
| 1:0:2544:A:H2'  | 1:0:2545:A:H1' | 1.88                     | 0.54              |
| 1:0:391:C:H2'   | 1:0:392:G:C8   | 2.43                     | 0.54              |
| 1:0:433:G:H1'   | 1:0:434:C:C5   | 2.42                     | 0.54              |
| 1:0:435:A:N1    | 1:0:436:A:C4   | 2.75                     | 0.54              |
| 1:0:652:C:H5'   | 1:0:652:C:H6   | 1.72                     | 0.54              |
| 1:0:975:C:H6    | 1:0:975:C:O5'  | 1.90                     | 0.54              |
| 1:0:1975:G:O2'  | 1:0:1976:U:P   | 2.65                     | 0.54              |
| 1:0:2204:A:O2'  | 1:0:2205:C:P   | 2.65                     | 0.54              |
| 1:0:2644:A:H2'  | 1:0:2645:C:C6  | 2.42                     | 0.54              |
| 1:0:2690:A:H3'  | 1:0:2691:C:H5' | 1.89                     | 0.54              |
| 1:0:395:G:H2'   | 1:0:396:U:H5'  | 1.90                     | 0.54              |
| 1:0:435:A:H2'   | 1:0:436:A:O5'  | 2.08                     | 0.54              |
| 1:0:8:A:H2'     | 1:0:9:U:C6     | 2.43                     | 0.54              |
| 1:0:1424:U:H2'  | 1:0:1425:G:C8  | 2.42                     | 0.54              |
| 1:0:1831:G:O2'  | 1:0:1832:G:H5' | 2.08                     | 0.54              |
| 1:0:1826:U:O2'  | 1:0:1952:A:H2' | 2.07                     | 0.54              |
| 1:0:2271:C:H4'  | 1:0:2354:G:O4' | 2.08                     | 0.54              |
| 1:0:2507:U:HO2' | 1:0:2508:G:H8  | 1.54                     | 0.54              |
| 1:0:1276:U:H3   | 1:0:1999:U:H3  | 1.55                     | 0.54              |
| 1:0:1451:C:H2'  | 1:0:1452:U:C6  | 2.41                     | 0.54              |
| 1:0:1452:U:O2'  | 1:0:1453:A:H5' | 2.08                     | 0.54              |
| 1:0:1618:U:H3'  | 1:0:1619:A:C2  | 2.43                     | 0.54              |
| 1:0:2345:A:H2'  | 1:0:2346:G:O4' | 2.08                     | 0.54              |
| 1:0:2821:G:H2'  | 1:0:2822:U:O4' | 2.07                     | 0.54              |
| 1:0:459:A:O2'   | 1:0:461:A:N6   | 2.38                     | 0.54              |
| 1:0:466:A:O3'   | 1:0:467:U:H4'  | 2.08                     | 0.54              |
| 1:0:239:A:H5'   | 1:0:619:A:O2'  | 2.07                     | 0.54              |
| 1:0:1315:A:H4'  | 1:0:1316:G:OP1 | 2.07                     | 0.54              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1778:U:H4' | 1:0:2568:A:O3'  | 2.08                     | 0.54              |
| 1:0:1781:C:H2' | 1:0:1782:A:C5   | 2.43                     | 0.54              |
| 1:0:2072:C:H2' | 1:0:2073:A:O4'  | 2.08                     | 0.54              |
| 1:0:2109:A:H2' | 1:0:2110:G:C8   | 2.42                     | 0.54              |
| 1:0:2201:G:H2' | 1:0:2202:G:H8   | 1.73                     | 0.54              |
| 1:0:295:C:N4   | 1:0:296:A:H62   | 2.06                     | 0.54              |
| 1:0:788:G:N2   | 1:0:801:A:P     | 2.80                     | 0.54              |
| 1:0:846:A:N6   | 1:0:955:G:N2    | 2.53                     | 0.54              |
| 1:0:2492:G:H2' | 1:0:2493:U:C6   | 2.42                     | 0.54              |
| 1:0:2668:U:H4' | 1:0:2669:C:H5'' | 1.90                     | 0.54              |
| 1:0:2721:A:N6  | 1:0:2743:G:H1'  | 2.23                     | 0.54              |
| 1:0:2773:G:H1  | 1:0:2779:C:H42  | 1.56                     | 0.54              |
| 1:0:459:A:H1'  | 1:0:461:A:N6    | 2.22                     | 0.54              |
| 1:0:964:A:H2'  | 1:0:965:G:C8    | 2.38                     | 0.54              |
| 1:0:2014:A:N7  | 1:0:2477:C:H1'  | 2.23                     | 0.54              |
| 1:0:2204:A:O2' | 1:0:2205:C:OP2  | 2.25                     | 0.54              |
| 1:0:2228:U:H4' | 1:0:2254:C:C5   | 2.40                     | 0.54              |
| 1:0:466:A:O2'  | 1:0:467:U:OP2   | 2.24                     | 0.54              |
| 1:0:476:G:C6   | 1:0:477:A:N6    | 2.76                     | 0.54              |
| 1:0:817:A:H2'  | 1:0:819:C:C4    | 2.43                     | 0.54              |
| 1:0:1825:C:O2' | 1:0:1826:U:H5'  | 2.08                     | 0.54              |
| 1:0:2002:A:C2' | 1:0:2003:A:O5'  | 2.56                     | 0.54              |
| 1:0:2053:G:H2' | 1:0:2054:A:C8   | 2.43                     | 0.54              |
| 1:0:2282:G:H1  | 1:0:2292:C:H42  | 1.54                     | 0.54              |
| 1:0:2357:A:H2' | 1:0:2358:C:O4'  | 2.07                     | 0.54              |
| 1:0:80:A:H2'   | 1:0:81:C:C6     | 2.43                     | 0.54              |
| 1:0:136:A:H2'  | 1:0:137:A:O4'   | 2.08                     | 0.53              |
| 1:0:1443:G:H1' | 1:0:1584:G:N3   | 2.22                     | 0.53              |
| 1:0:162:C:H2'  | 1:0:163:A:H8    | 1.73                     | 0.53              |
| 1:0:1804:U:H2' | 1:0:1805:G:C8   | 2.41                     | 0.53              |
| 1:0:2086:U:H2' | 1:0:2087:U:C6   | 2.43                     | 0.53              |
| 1:0:2726:U:H2' | 1:0:2727:G:O4'  | 2.08                     | 0.53              |
| 1:0:621:U:H2'  | 1:0:622:U:C6    | 2.43                     | 0.53              |
| 1:0:69:G:H4'   | 1:0:70:A:OP1    | 2.08                     | 0.53              |
| 1:0:700:C:H2'  | 1:0:701:U:C6    | 2.43                     | 0.53              |
| 1:0:2299:A:H5' | 1:0:2300:G:C8   | 2.43                     | 0.53              |
| 1:0:2469:G:C5' | 1:0:2470:U:OP1  | 2.54                     | 0.53              |
| 1:0:2782:G:C2' | 1:0:2783:U:H5'  | 2.39                     | 0.53              |
| 1:0:550:C:H2'  | 1:0:551:A:H8    | 1.71                     | 0.53              |
| 1:0:1253:C:H2' | 1:0:1254:G:C5'  | 2.38                     | 0.53              |
| 1:0:1417:C:O2' | 1:0:1418:C:H5'  | 2.09                     | 0.53              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1582:A:H3'  | 1:0:1583:A:C5' | 2.38                     | 0.53              |
| 1:0:1617:G:H3'  | 1:0:1618:U:O2  | 2.08                     | 0.53              |
| 1:0:1821:A:H5'' | 1:0:1822:C:C5  | 2.44                     | 0.53              |
| 1:0:195:A:H2'   | 1:0:196:A:O4'  | 2.08                     | 0.53              |
| 1:0:2020:G:H2'  | 1:0:2021:G:H8  | 1.72                     | 0.53              |
| 1:0:2621:G:O2'  | 1:0:2622:G:H5' | 2.08                     | 0.53              |
| 1:0:574:C:H2'   | 1:0:575:U:C6   | 2.43                     | 0.53              |
| 1:0:1244:U:H2'  | 1:0:1245:G:H8  | 1.73                     | 0.53              |
| 1:0:1247:U:O2'  | 1:0:1248:G:H5' | 2.09                     | 0.53              |
| 1:0:1267:A:OP1  | 1:0:1269:G:H8  | 1.91                     | 0.53              |
| 1:0:1312:G:H4'  | 1:0:1314:A:N3  | 2.24                     | 0.53              |
| 1:0:1355:A:H1'  | 1:0:1410:U:H4' | 1.90                     | 0.53              |
| 1:0:1669:A:N6   | 1:0:1670:G:C2  | 2.76                     | 0.53              |
| 1:0:1697:U:H2'  | 1:0:1698:C:O4' | 2.08                     | 0.53              |
| 1:0:1846:A:H2'  | 1:0:1847:G:O4' | 2.08                     | 0.53              |
| 1:0:2696:A:H2'  | 1:0:2697:G:H8  | 1.72                     | 0.53              |
| 1:0:538:A:H62   | 1:0:2759:U:H3  | 1.56                     | 0.53              |
| 1:0:1033:G:O2'  | 1:0:1034:U:OP2 | 2.23                     | 0.53              |
| 1:0:139:A:H2'   | 1:0:140:G:C8   | 2.41                     | 0.53              |
| 1:0:1467:U:H3'  | 1:0:1468:A:H5' | 1.89                     | 0.53              |
| 1:0:159:A:H2'   | 1:0:160:C:C6   | 2.44                     | 0.53              |
| 1:0:178:C:H2'   | 1:0:179:U:H6   | 1.73                     | 0.53              |
| 1:0:2085:G:H2'  | 1:0:2086:U:C6  | 2.42                     | 0.53              |
| 1:0:2432:A:H2'  | 1:0:2433:G:C8  | 2.44                     | 0.53              |
| 1:0:507:A:H2'   | 1:0:508:G:O4'  | 2.09                     | 0.53              |
| 1:0:742:G:H2'   | 1:0:742:G:N3   | 2.23                     | 0.53              |
| 1:0:1327:C:P    | 1:0:1345:G:H5' | 2.49                     | 0.53              |
| 1:0:1336:G:C2'  | 1:0:1337:G:H5' | 2.39                     | 0.53              |
| 1:0:1459:U:H2'  | 1:0:1475:U:O2' | 2.08                     | 0.53              |
| 1:0:1685:A:O2'  | 1:0:1686:A:O5' | 2.25                     | 0.53              |
| 1:0:1938:U:O2'  | 1:0:1939:U:OP1 | 2.23                     | 0.53              |
| 1:0:2069:U:H2'  | 1:0:2070:G:C8  | 2.44                     | 0.53              |
| 1:0:2652:G:H2'  | 1:0:2653:A:C8  | 2.41                     | 0.53              |
| 1:0:52:A:H2'    | 1:0:53:G:H5'   | 1.90                     | 0.53              |
| 1:0:653:G:H21   | 1:0:657:A:N6   | 2.06                     | 0.53              |
| 1:0:797:A:O2'   | 1:0:798:G:C8   | 2.61                     | 0.53              |
| 1:0:861:G:N2    | 1:0:943:U:HO2' | 2.07                     | 0.53              |
| 1:0:1446:U:O2'  | 1:0:1447:U:H5' | 2.09                     | 0.53              |
| 1:0:1686:A:N3   | 1:0:1686:A:H2' | 2.23                     | 0.53              |
| 1:0:1807:A:O2'  | 1:0:1808:C:H4' | 2.09                     | 0.53              |
| 1:0:1981:A:O3'  | 1:0:2704:U:H4' | 2.09                     | 0.53              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2784:A:H4' | 1:0:2786:G:N7  | 2.24                     | 0.53              |
| 1:0:27:G:HO2'  | 1:0:28:A:H8    | 1.55                     | 0.53              |
| 1:0:2817:A:C2  | 1:0:2851:G:N1  | 2.76                     | 0.53              |
| 1:0:315:G:H2'  | 1:0:316:C:C6   | 2.44                     | 0.53              |
| 1:0:521:U:H2'  | 1:0:522:G:H5'  | 1.90                     | 0.53              |
| 1:0:1449:C:H2' | 1:0:1450:G:C5' | 2.29                     | 0.53              |
| 1:0:701:U:O2'  | 1:0:1771:A:H2  | 1.90                     | 0.53              |
| 1:0:176:A:H8   | 1:0:177:U:H5   | 1.57                     | 0.53              |
| 1:0:2249:U:C2' | 1:0:2250:G:H5' | 2.39                     | 0.53              |
| 1:0:1380:C:C2' | 1:0:1381:G:H5' | 2.38                     | 0.53              |
| 1:0:1485:U:H2' | 1:0:1486:A:C8  | 2.44                     | 0.53              |
| 1:0:1681:A:H2  | 1:0:2706:U:H1' | 1.70                     | 0.53              |
| 1:0:1816:G:H2' | 1:0:1817:U:O4' | 2.09                     | 0.53              |
| 1:0:1999:U:O2' | 1:0:2000:U:H5' | 2.08                     | 0.53              |
| 1:0:2301:A:H2' | 1:0:2302:G:H5' | 1.91                     | 0.53              |
| 1:0:2671:C:H2' | 1:0:2672:U:H6  | 1.73                     | 0.53              |
| 1:0:756:C:H2'  | 1:0:757:U:H6   | 1.73                     | 0.53              |
| 1:0:956:A:HO2' | 1:0:957:G:P    | 2.32                     | 0.53              |
| 1:0:966:A:H2'  | 1:0:967:G:H5'  | 1.91                     | 0.53              |
| 1:0:1883:A:H1' | 1:0:1953:A:N7  | 2.24                     | 0.53              |
| 1:0:2217:G:H5' | 1:0:2218:G:N7  | 2.23                     | 0.53              |
| 1:0:2279:G:H2' | 1:0:2280:A:C8  | 2.43                     | 0.53              |
| 1:0:2487:G:H2' | 1:0:2488:G:C8  | 2.44                     | 0.53              |
| 1:0:2535:C:H2' | 1:0:2536:G:O4' | 2.08                     | 0.53              |
| 1:0:2612:G:H2' | 1:0:2613:A:C8  | 2.43                     | 0.53              |
| 1:0:2764:U:H2' | 1:0:2765:C:C6  | 2.44                     | 0.53              |
| 1:0:789:G:N3   | 1:0:806:A:N6   | 2.56                     | 0.53              |
| 1:0:879:A:H2'  | 1:0:880:C:H5'  | 1.89                     | 0.53              |
| 1:0:940:G:C8   | 1:0:941:U:H5'' | 2.44                     | 0.53              |
| 1:0:1030:U:C2' | 1:0:1031:C:H5' | 2.39                     | 0.52              |
| 1:0:1336:G:H2' | 1:0:1337:G:H5' | 1.91                     | 0.52              |
| 1:0:1810:U:H4' | 1:0:1813:A:H1' | 1.91                     | 0.52              |
| 1:0:2260:C:H2' | 1:0:2261:G:C8  | 2.44                     | 0.52              |
| 1:0:2266:A:O2' | 1:0:2267:A:H8  | 1.92                     | 0.52              |
| 1:0:2526:U:C4  | 1:0:2545:A:N7  | 2.77                     | 0.52              |
| 1:0:708:G:H1   | 1:0:780:U:H3   | 1.55                     | 0.52              |
| 1:0:932:G:H2'  | 1:0:933:G:C8   | 2.44                     | 0.52              |
| 1:0:1001:A:N6  | 1:0:1200:G:O3' | 2.42                     | 0.52              |
| 1:0:1036:G:C4  | 1:0:1145:C:O4' | 2.63                     | 0.52              |
| 1:0:1332:G:H2' | 1:0:1333:G:O4' | 2.09                     | 0.52              |
| 1:0:1364:C:H2' | 1:0:1365:U:C6  | 2.45                     | 0.52              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1979:C:O4'  | 1:0:1979:C:OP1  | 2.28                     | 0.52              |
| 1:0:2175:A:H2'  | 1:0:2176:U:C6   | 2.44                     | 0.52              |
| 1:0:2225:G:H1   | 1:0:2237:C:H42  | 1.57                     | 0.52              |
| 1:0:296:A:H2'   | 1:0:297:A:C8    | 2.43                     | 0.52              |
| 1:0:599:A:H2'   | 1:0:600:G:O4'   | 2.10                     | 0.52              |
| 1:0:67:G:H2'    | 1:0:68:C:O4'    | 2.08                     | 0.52              |
| 1:0:778:G:H2'   | 1:0:779:U:C6    | 2.44                     | 0.52              |
| 1:0:831:G:H5'   | 1:0:852:U:OP1   | 2.10                     | 0.52              |
| 1:0:839:U:OP1   | 1:0:2408:G:OP2  | 2.28                     | 0.52              |
| 1:0:1253:C:H2'  | 1:0:1254:G:H5'  | 1.92                     | 0.52              |
| 1:0:1671:A:O2'  | 1:0:1672:A:H5'  | 2.09                     | 0.52              |
| 1:0:2034:A:C6   | 1:0:2593:A:N6   | 2.77                     | 0.52              |
| 1:0:2044:G:H1'  | 1:0:2482:A:N1   | 2.25                     | 0.52              |
| 1:0:2270:U:O2'  | 1:0:2353:G:H1'  | 2.10                     | 0.52              |
| 1:0:316:C:H6    | 1:0:316:C:O5'   | 1.93                     | 0.52              |
| 1:0:545:C:O2'   | 1:0:546:A:H5'   | 2.09                     | 0.52              |
| 1:0:57:G:N2     | 1:0:72:A:C8     | 2.77                     | 0.52              |
| 1:0:678:G:O2'   | 1:0:679:C:H5'   | 2.09                     | 0.52              |
| 1:0:2004:U:OP2  | 1:0:2005:U:H5   | 1.92                     | 0.52              |
| 1:0:2265:A:H5'' | 1:0:2266:A:O4'  | 2.09                     | 0.52              |
| 1:0:2745:A:N3   | 1:0:2745:A:H3'  | 2.25                     | 0.52              |
| 1:0:757:U:C2'   | 1:0:758:G:H5'   | 2.39                     | 0.52              |
| 1:0:766:A:H2'   | 1:0:767:G:H8    | 1.73                     | 0.52              |
| 1:0:940:G:N7    | 1:0:941:U:C6    | 2.78                     | 0.52              |
| 1:0:1791:C:H1'  | 1:0:1793:A:C4'  | 2.40                     | 0.52              |
| 1:0:2756:A:H4'  | 1:0:2758:A:OP1  | 2.09                     | 0.52              |
| 1:0:437:G:H2'   | 1:0:438:G:C4'   | 2.37                     | 0.52              |
| 1:0:436:A:H4'   | 1:0:437:G:OP1   | 2.08                     | 0.52              |
| 1:0:727:U:H2'   | 1:0:728:G:H5''  | 1.90                     | 0.52              |
| 1:0:1001:A:C3'  | 1:0:1002:C:H5'' | 2.40                     | 0.52              |
| 1:0:1479:G:H2'  | 1:0:1480:G:C8   | 2.44                     | 0.52              |
| 1:0:1687:C:O2'  | 1:0:1977:C:H4'  | 2.09                     | 0.52              |
| 1:0:2204:A:H1'  | 1:0:2205:C:C5   | 2.45                     | 0.52              |
| 1:0:2510:A:H61  | 1:0:2641:A:H61  | 1.57                     | 0.52              |
| 1:0:324:C:C2'   | 1:0:325:U:H5'   | 2.39                     | 0.52              |
| 1:0:532:A:H2'   | 1:0:533:C:C6    | 2.44                     | 0.52              |
| 1:0:651:C:C3'   | 1:0:652:C:C5'   | 2.88                     | 0.52              |
| 1:0:773:G:H2'   | 1:0:774:A:H5'   | 1.90                     | 0.52              |
| 1:0:1260:A:O2'  | 1:0:1261:G:P    | 2.66                     | 0.52              |
| 1:0:783:G:H1'   | 1:0:1392:U:O4   | 2.10                     | 0.52              |
| 1:0:1442:C:H4'  | 1:0:1442:C:OP1  | 2.10                     | 0.52              |

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| Atom-1          | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:0:1761:G:H2'  | 1:0:1762:C:H5'    | 1.92                     | 0.52              |
| 1:0:1764:A:C5   | 1:0:1821:A:H1'    | 2.45                     | 0.52              |
| 1:0:2041:A:H8   | 1:0:2041:A:O5'    | 1.92                     | 0.52              |
| 1:0:208:C:H2'   | 1:0:209:G:O4'     | 2.10                     | 0.52              |
| 1:0:2817:A:C2   | 1:0:2851:G:C6     | 2.97                     | 0.52              |
| 1:0:2609:G:H1'  | 1:0:2868:G:H1'    | 1.90                     | 0.52              |
| 1:0:2484:G:OP2  | 2:0:2881:TEL:H581 | 2.10                     | 0.52              |
| 1:0:616:U:O4'   | 1:0:616:U:OP2     | 2.27                     | 0.52              |
| 1:0:930:A:N7    | 1:0:931:G:H1'     | 2.25                     | 0.52              |
| 1:0:1322:G:O2'  | 1:0:1323:G:H5'    | 2.09                     | 0.52              |
| 1:0:1532:A:H2'  | 1:0:1533:G:H8     | 1.74                     | 0.52              |
| 1:0:1783:G:H2'  | 1:0:1784:C:O4'    | 2.09                     | 0.52              |
| 1:0:222:G:H22   | 1:0:231:G:H1'     | 1.75                     | 0.52              |
| 1:0:2407:G:H5'' | 1:0:2408:G:OP1    | 2.08                     | 0.52              |
| 1:0:531:G:H2'   | 1:0:532:A:H8      | 1.74                     | 0.52              |
| 1:0:841:G:H3'   | 1:0:841:G:N3      | 2.24                     | 0.52              |
| 1:0:1128:G:O2'  | 1:0:1129:A:H5'    | 2.10                     | 0.52              |
| 1:0:1463:A:H1'  | 1:0:1543:G:N2     | 2.25                     | 0.52              |
| 1:0:1624:A:C6   | 1:0:1627:C:C2     | 2.98                     | 0.52              |
| 1:0:1823:G:C6   | 1:0:1824:C:N4     | 2.78                     | 0.52              |
| 1:0:2520:A:H4'  | 1:0:2744:A:N1     | 2.24                     | 0.52              |
| 1:0:2668:U:H5'  | 1:0:2669:C:OP1    | 2.10                     | 0.52              |
| 1:0:1982:C:OP1  | 1:0:2704:U:H5'    | 2.09                     | 0.52              |
| 1:0:201:G:N7    | 1:0:432:C:H4'     | 2.25                     | 0.52              |
| 1:0:66:U:H2'    | 1:0:67:G:N7       | 2.25                     | 0.52              |
| 1:0:1067:G:N1   | 1:0:1113:C:OP2    | 2.43                     | 0.52              |
| 1:0:1549:C:H3'  | 1:0:1550:C:C6     | 2.45                     | 0.52              |
| 1:0:1852:G:H2'  | 1:0:1853:C:C6     | 2.45                     | 0.52              |
| 1:0:162:C:C5'   | 1:0:195:A:H1'     | 2.36                     | 0.52              |
| 1:0:1982:C:OP1  | 1:0:2703:C:O2'    | 2.24                     | 0.52              |
| 1:0:2024:U:O2'  | 1:0:2025:A:H5'    | 2.09                     | 0.52              |
| 1:0:2586:G:H2'  | 1:0:2587:G:C8     | 2.45                     | 0.52              |
| 1:0:2677:U:O2'  | 1:0:2678:C:H5'    | 2.10                     | 0.52              |
| 1:0:2758:A:O2'  | 1:0:2759:U:P      | 2.68                     | 0.52              |
| 1:0:604:U:H2'   | 1:0:605:G:O4'     | 2.10                     | 0.52              |
| 1:0:1280:U:H3   | 1:0:1996:A:H62    | 1.57                     | 0.51              |
| 1:0:1284:G:O2'  | 1:0:1633:C:H4'    | 2.10                     | 0.51              |
| 1:0:1413:U:H2'  | 1:0:1414:G:C8     | 2.44                     | 0.51              |
| 1:0:1486:A:H2'  | 1:0:1487:C:C6     | 2.45                     | 0.51              |
| 1:0:1545:G:H2'  | 1:0:1546:C:H6     | 1.75                     | 0.51              |
| 1:0:1718:A:H2'  | 1:0:1719:G:H5'    | 1.92                     | 0.51              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1724:C:O2   | 1:0:1725:C:C5   | 2.62                     | 0.51              |
| 1:0:2235:G:O2'  | 1:0:2236:U:H5'  | 2.10                     | 0.51              |
| 1:0:2396:C:C2'  | 1:0:2397:A:H5'  | 2.40                     | 0.51              |
| 1:0:430:C:O2'   | 1:0:2386:G:C2   | 2.63                     | 0.51              |
| 1:0:465:C:O2'   | 1:0:483:A:N6    | 2.43                     | 0.51              |
| 1:0:749:C:H6    | 1:0:749:C:O5'   | 1.94                     | 0.51              |
| 1:0:92:U:H2'    | 1:0:93:A:C8     | 2.45                     | 0.51              |
| 1:0:984:A:C2    | 1:0:1200:G:N1   | 2.75                     | 0.51              |
| 1:0:122:G:O2'   | 1:0:123:A:H5''  | 2.10                     | 0.51              |
| 1:0:1337:G:O2'  | 1:0:1632:A:N6   | 2.44                     | 0.51              |
| 1:0:2007:G:H2'  | 1:0:2008:C:C6   | 2.46                     | 0.51              |
| 1:0:2060:A:H61  | 1:0:2222:U:H3   | 1.58                     | 0.51              |
| 1:0:393:U:H2'   | 1:0:394:U:C6    | 2.45                     | 0.51              |
| 1:0:487:G:H4'   | 1:0:511:A:H61   | 1.75                     | 0.51              |
| 1:0:638:A:O2'   | 1:0:639:G:H5'   | 2.11                     | 0.51              |
| 1:0:1149:G:N2   | 1:0:1154:A:C4   | 2.79                     | 0.51              |
| 1:0:1528:C:C2'  | 1:0:1529:C:H5'' | 2.41                     | 0.51              |
| 1:0:1823:G:H2'  | 1:0:1824:C:C6   | 2.45                     | 0.51              |
| 1:0:1998:A:C2'  | 1:0:1999:U:H5'  | 2.39                     | 0.51              |
| 1:0:460:U:C4'   | 1:0:461:A:OP2   | 2.58                     | 0.51              |
| 1:0:839:U:H5''  | 1:0:2408:G:P    | 2.50                     | 0.51              |
| 1:0:1007:A:H2'  | 1:0:1008:G:C8   | 2.42                     | 0.51              |
| 1:0:1573:G:O6   | 1:0:1574:A:N6   | 2.43                     | 0.51              |
| 1:0:1603:A:H2'  | 1:0:1604:A:H8   | 1.76                     | 0.51              |
| 1:0:1670:G:OP1  | 1:0:1670:G:H4'  | 2.10                     | 0.51              |
| 1:0:1716:G:O6   | 1:0:1754:G:H1'  | 2.11                     | 0.51              |
| 1:0:1829:C:N4   | 1:0:1886:G:H1   | 2.08                     | 0.51              |
| 1:0:1983:G:H2'  | 1:0:1984:A:C8   | 2.45                     | 0.51              |
| 1:0:2208:U:H2'  | 1:0:2209:G:H8   | 1.76                     | 0.51              |
| 1:0:2218:G:N2   | 1:0:2219:U:H1'  | 2.25                     | 0.51              |
| 1:0:2372:A:O2'  | 1:0:2373:C:H5'  | 2.10                     | 0.51              |
| 1:0:2014:A:H62  | 1:0:2477:C:H1'  | 1.75                     | 0.51              |
| 1:0:2512:A:H2'  | 1:0:2513:A:H8   | 1.75                     | 0.51              |
| 1:0:29:U:H2'    | 1:0:30:G:H8     | 1.73                     | 0.51              |
| 1:0:431:G:C2    | 1:0:432:C:H5    | 2.29                     | 0.51              |
| 1:0:441:A:C2'   | 1:0:442:A:H5'   | 2.41                     | 0.51              |
| 1:0:513:A:H5''  | 1:0:514:G:OP1   | 2.11                     | 0.51              |
| 1:0:942:U:C2'   | 1:0:943:U:H5'   | 2.40                     | 0.51              |
| 1:0:1324:G:HO2' | 1:0:1326:U:H5   | 1.56                     | 0.51              |
| 1:0:1514:C:H5'  | 1:0:1593:C:C5'  | 2.41                     | 0.51              |
| 1:0:1777:A:HO2' | 1:0:1778:U:P    | 2.33                     | 0.51              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1787:U:H2' | 1:0:1788:C:H6   | 1.75                     | 0.51              |
| 1:0:1859:A:H2' | 1:0:1860:A:C8   | 2.43                     | 0.51              |
| 1:0:627:A:H2'  | 1:0:628:A:C8    | 2.46                     | 0.51              |
| 1:0:846:A:H2'  | 1:0:847:C:C6    | 2.45                     | 0.51              |
| 1:0:1355:A:O4' | 1:0:1410:U:H1'  | 2.10                     | 0.51              |
| 1:0:155:G:O2'  | 1:0:156:G:H5'   | 2.09                     | 0.51              |
| 1:0:1821:A:H3' | 1:0:1822:C:H6   | 1.74                     | 0.51              |
| 1:0:2352:A:H2' | 1:0:2353:G:C8   | 2.45                     | 0.51              |
| 1:0:2348:A:N6  | 1:0:2361:G:H22  | 2.08                     | 0.51              |
| 1:0:460:U:O4   | 1:0:592:G:H1'   | 2.11                     | 0.51              |
| 1:0:1415:C:O2' | 1:0:1416:A:H5'  | 2.10                     | 0.51              |
| 1:0:1459:U:N3  | 1:0:1476:G:O5'  | 2.33                     | 0.51              |
| 1:0:1623:C:H5' | 1:0:1624:A:H5'' | 1.92                     | 0.51              |
| 1:0:1875:C:H2' | 1:0:1876:C:C6   | 2.44                     | 0.51              |
| 1:0:1890:G:H2' | 1:0:1891:C:C6   | 2.45                     | 0.51              |
| 1:0:2002:A:H2' | 1:0:2003:A:O5'  | 2.11                     | 0.51              |
| 1:0:2039:G:OP2 | 1:0:2483:U:O5'  | 2.29                     | 0.51              |
| 1:0:2173:G:H2' | 1:0:2174:G:O4'  | 2.10                     | 0.51              |
| 1:0:2680:U:H5' | 1:0:2681:A:C5'  | 2.40                     | 0.51              |
| 1:0:357:A:OP2  | 1:0:358:C:H1'   | 2.11                     | 0.51              |
| 1:0:431:G:C2'  | 1:0:432:C:O5'   | 2.58                     | 0.51              |
| 1:0:866:U:H2'  | 1:0:867:G:C8    | 2.45                     | 0.51              |
| 1:0:1739:G:H2' | 1:0:1740:G:C8   | 2.46                     | 0.51              |
| 1:0:1813:A:H2' | 1:0:1814:G:C8   | 2.46                     | 0.51              |
| 1:0:2021:G:O2' | 1:0:2022:C:H5'  | 2.11                     | 0.51              |
| 1:0:1477:C:O2' | 1:0:2681:A:H1'  | 2.11                     | 0.51              |
| 1:0:503:G:H2'  | 1:0:504:G:C8    | 2.45                     | 0.51              |
| 1:0:566:U:H2'  | 1:0:567:G:H8    | 1.76                     | 0.51              |
| 1:0:853:C:N3   | 1:0:950:G:O6    | 2.44                     | 0.51              |
| 1:0:956:A:C2'  | 1:0:957:G:O5'   | 2.58                     | 0.51              |
| 1:0:115:G:C2   | 1:0:117:A:N6    | 2.79                     | 0.51              |
| 1:0:192:G:O2'  | 1:0:193:A:OP2   | 2.28                     | 0.51              |
| 1:0:1948:C:C4  | 1:0:1949:A:N6   | 2.79                     | 0.51              |
| 1:0:2553:G:H8  | 1:0:2553:G:O5'  | 1.93                     | 0.51              |
| 1:0:2664:G:O2' | 1:0:2665:G:H5'  | 2.11                     | 0.51              |
| 1:0:2876:C:H2' | 1:0:2877:A:H8   | 1.76                     | 0.51              |
| 1:0:701:U:O2'  | 1:0:702:A:H5'   | 2.11                     | 0.51              |
| 1:0:974:U:H1'  | 1:0:2229:G:C2   | 2.46                     | 0.51              |
| 1:0:1133:G:O2' | 1:0:1134:C:H5'  | 2.11                     | 0.51              |
| 1:0:1354:A:H3' | 1:0:1410:U:O2   | 2.11                     | 0.51              |
| 1:0:1582:A:H62 | 1:0:1584:G:N2   | 2.07                     | 0.51              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1787:U:H2' | 1:0:1788:C:C6   | 2.46                     | 0.51              |
| 1:0:1827:G:H1' | 1:0:1914:U:O4   | 2.10                     | 0.51              |
| 1:0:2107:G:H2' | 1:0:2108:G:C8   | 2.46                     | 0.51              |
| 1:0:2210:C:H2' | 1:0:2211:U:O4'  | 2.11                     | 0.51              |
| 1:0:2249:U:H2' | 1:0:2250:G:H5'  | 1.93                     | 0.51              |
| 1:0:2394:G:H2' | 1:0:2395:C:C6   | 2.46                     | 0.51              |
| 1:0:2530:C:H2' | 1:0:2531:U:O4'  | 2.11                     | 0.51              |
| 1:0:2660:C:C2' | 1:0:2660:C:O2   | 2.59                     | 0.51              |
| 1:0:433:G:O2'  | 1:0:434:C:C6    | 2.63                     | 0.51              |
| 1:0:520:C:H2'  | 1:0:521:U:O4'   | 2.10                     | 0.51              |
| 1:0:986:A:N7   | 1:0:987:G:C8    | 2.79                     | 0.51              |
| 1:0:1938:U:O2  | 1:0:1938:U:H2'  | 2.09                     | 0.50              |
| 1:0:2516:U:H2' | 1:0:2517:C:C6   | 2.45                     | 0.50              |
| 1:0:2574:G:N2  | 1:0:2577:A:OP2  | 2.41                     | 0.50              |
| 1:0:2627:G:O2' | 1:0:2628:C:H5'  | 2.11                     | 0.50              |
| 1:0:2710:C:O2' | 1:0:2711:G:H5'  | 2.12                     | 0.50              |
| 1:0:671:A:H2'  | 1:0:672:C:C6    | 2.46                     | 0.50              |
| 1:0:805:G:O3'  | 1:0:806:A:O4'   | 2.29                     | 0.50              |
| 1:0:2121:U:H2' | 1:0:2122:G:H8   | 1.76                     | 0.50              |
| 1:0:2390:A:H2' | 1:0:2391:A:O4'  | 2.12                     | 0.50              |
| 1:0:2491:C:H2' | 1:0:2492:G:H5'' | 1.93                     | 0.50              |
| 1:0:2705:A:O2' | 1:0:2706:U:C6   | 2.64                     | 0.50              |
| 1:0:2753:C:H2' | 1:0:2754:C:H6   | 1.74                     | 0.50              |
| 1:0:541:C:H42  | 1:0:572:G:H5''  | 1.76                     | 0.50              |
| 1:0:625:A:N3   | 1:0:625:A:H2'   | 2.26                     | 0.50              |
| 1:0:944:A:H2'  | 1:0:945:G:O4'   | 2.11                     | 0.50              |
| 1:0:995:A:H5'' | 1:0:996:C:H5    | 1.75                     | 0.50              |
| 1:0:1822:C:H2' | 1:0:1823:G:C8   | 2.47                     | 0.50              |
| 1:0:1877:C:H2' | 1:0:1878:C:C6   | 2.46                     | 0.50              |
| 1:0:2618:A:H1' | 1:0:2758:A:C2   | 2.46                     | 0.50              |
| 1:0:2716:G:O2' | 1:0:2717:G:H5'  | 2.12                     | 0.50              |
| 1:0:340:G:H4'  | 1:0:341:A:C5'   | 2.41                     | 0.50              |
| 1:0:492:G:H2'  | 1:0:517:A:C2    | 2.46                     | 0.50              |
| 1:0:701:U:H4'  | 1:0:1771:A:C2   | 2.47                     | 0.50              |
| 1:0:914:C:H2'  | 1:0:915:C:C6    | 2.46                     | 0.50              |
| 1:0:941:U:H2'  | 1:0:942:U:N1    | 2.26                     | 0.50              |
| 1:0:1172:U:H2' | 1:0:1173:G:C8   | 2.45                     | 0.50              |
| 1:0:1645:U:H2' | 1:0:1646:G:C8   | 2.46                     | 0.50              |
| 1:0:218:A:O2'  | 1:0:219:G:P     | 2.69                     | 0.50              |
| 1:0:228:A:C5   | 1:0:229:G:H1'   | 2.46                     | 0.50              |
| 1:0:2669:C:H2' | 1:0:2670:C:OP2  | 2.11                     | 0.50              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2522:G:H5'' | 1:0:2746:G:O3' | 2.12                     | 0.50              |
| 1:0:2765:C:H2'  | 1:0:2766:U:C6  | 2.46                     | 0.50              |
| 1:0:462:G:H2'   | 1:0:463:C:H5'  | 1.92                     | 0.50              |
| 1:0:539:A:H2'   | 1:0:540:G:OP2  | 2.12                     | 0.50              |
| 1:0:765:C:H4'   | 1:0:766:A:H5'  | 1.93                     | 0.50              |
| 1:0:7:G:H2'     | 1:0:8:A:H8     | 1.74                     | 0.50              |
| 1:0:1035:G:H21  | 1:0:1155:G:C4' | 2.23                     | 0.50              |
| 1:0:1196:G:H2'  | 1:0:1197:U:H5' | 1.93                     | 0.50              |
| 1:0:1746:A:H2'  | 1:0:1747:G:H5' | 1.94                     | 0.50              |
| 1:0:2620:G:H2'  | 1:0:2621:G:H8  | 1.77                     | 0.50              |
| 1:0:2:G:H2'     | 1:0:3:U:H6     | 1.76                     | 0.50              |
| 1:0:322:A:H2'   | 1:0:342:G:P    | 2.51                     | 0.50              |
| 1:0:539:A:C2'   | 1:0:540:G:OP2  | 2.59                     | 0.50              |
| 1:0:773:G:C2'   | 1:0:774:A:H5'  | 2.42                     | 0.50              |
| 1:0:807:A:C6    | 1:0:808:C:C4   | 2.99                     | 0.50              |
| 1:0:1036:G:N3   | 1:0:1145:C:O4' | 2.45                     | 0.50              |
| 1:0:109:A:H2'   | 1:0:110:U:C5'  | 2.40                     | 0.50              |
| 1:0:1299:A:O2'  | 1:0:1300:A:P   | 2.69                     | 0.50              |
| 1:0:1789:U:C2   | 1:0:1811:A:H2  | 2.30                     | 0.50              |
| 1:0:2407:G:H5'  | 1:0:2408:G:C2  | 2.47                     | 0.50              |
| 1:0:688:A:O2'   | 1:0:2422:C:H4' | 2.11                     | 0.50              |
| 1:0:2519:C:C4   | 1:0:2520:A:N7  | 2.80                     | 0.50              |
| 1:0:2551:A:N3   | 1:0:2551:A:H2' | 2.26                     | 0.50              |
| 1:0:733:G:H2'   | 1:0:734:G:H8   | 1.76                     | 0.50              |
| 1:0:768:U:H2'   | 1:0:769:C:O4'  | 2.12                     | 0.50              |
| 1:0:32:C:H5'    | 1:0:1251:G:OP1 | 2.11                     | 0.50              |
| 1:0:1447:U:H1'  | 1:0:1577:G:N2  | 2.26                     | 0.50              |
| 1:0:1542:G:H21  | 1:0:1561:A:H62 | 1.59                     | 0.50              |
| 1:0:14:A:H62    | 1:0:15:G:N2    | 2.10                     | 0.50              |
| 1:0:2018:G:O2'  | 1:0:2019:C:P   | 2.70                     | 0.50              |
| 1:0:2351:G:N2   | 1:0:2352:A:N9  | 2.60                     | 0.50              |
| 1:0:2520:A:H1'  | 1:0:2744:A:C2  | 2.46                     | 0.50              |
| 1:0:2522:G:O4'  | 1:0:2746:G:H4' | 2.12                     | 0.50              |
| 1:0:357:A:H3'   | 1:0:358:C:O4'  | 2.11                     | 0.50              |
| 1:0:577:U:H4'   | 1:0:956:A:N6   | 2.26                     | 0.50              |
| 1:0:598:U:H2'   | 1:0:599:A:H8   | 1.72                     | 0.50              |
| 1:0:715:U:H2'   | 1:0:716:U:C6   | 2.46                     | 0.50              |
| 1:0:813:A:O2'   | 1:0:815:A:H5'  | 2.12                     | 0.50              |
| 1:0:857:U:O2'   | 1:0:858:G:H5'  | 2.11                     | 0.50              |
| 1:0:953:G:H2'   | 1:0:954:U:O4'  | 2.12                     | 0.50              |
| 1:0:971:A:H2    | 1:0:2475:C:H1' | 1.76                     | 0.50              |

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| Atom-1          | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:0:1255:A:H2'  | 1:0:1256:C:C6     | 2.47                     | 0.50              |
| 1:0:1363:C:O2'  | 1:0:1364:C:H5'    | 2.11                     | 0.50              |
| 1:0:1685:A:HO2' | 1:0:1686:A:P      | 2.33                     | 0.50              |
| 1:0:195:A:H2'   | 1:0:196:A:H5'     | 1.92                     | 0.50              |
| 1:0:2268:G:H5'' | 1:0:2363:G:HO2'   | 1.75                     | 0.50              |
| 1:0:2623:A:H2'  | 1:0:2624:G:O4'    | 2.11                     | 0.50              |
| 1:0:2756:A:O2'  | 1:0:2757:G:P      | 2.69                     | 0.50              |
| 1:0:820:U:H1'   | 1:0:2424:G:OP1    | 2.11                     | 0.50              |
| 1:0:1013:G:N2   | 1:0:1165:G:H1'    | 2.26                     | 0.50              |
| 1:0:183:U:H2'   | 1:0:184:A:H8      | 1.77                     | 0.50              |
| 1:0:2014:A:H62  | 1:0:2477:C:C1'    | 2.25                     | 0.50              |
| 1:0:931:G:N1    | 1:0:2247:A:H5''   | 2.27                     | 0.50              |
| 1:0:956:A:C2    | 1:0:2427:A:H1'    | 2.46                     | 0.50              |
| 1:0:2642:G:H2'  | 1:0:2643:G:O4'    | 2.11                     | 0.50              |
| 1:0:2796:A:HO2' | 1:0:2801:A:H2     | 1.59                     | 0.50              |
| 1:0:567:G:O2'   | 1:0:568:G:H5'     | 2.12                     | 0.50              |
| 1:0:1166:A:C2'  | 1:0:1167:A:H5''   | 2.41                     | 0.49              |
| 1:0:143:A:O2'   | 1:0:144:U:H5'     | 2.12                     | 0.49              |
| 1:0:2231:G:O2'  | 1:0:2232:G:H5'    | 2.12                     | 0.49              |
| 1:0:2280:A:H2'  | 1:0:2281:C:C6     | 2.47                     | 0.49              |
| 1:0:2307:A:H2'  | 1:0:2308:A:C8     | 2.47                     | 0.49              |
| 1:0:236:C:H2'   | 1:0:237:G:H8      | 1.77                     | 0.49              |
| 1:0:239:A:H5''  | 1:0:620:G:H5'     | 1.93                     | 0.49              |
| 1:0:2672:U:H5'  | 1:0:2844:G:H22    | 1.77                     | 0.49              |
| 1:0:357:A:H3'   | 1:0:358:C:C5'     | 2.42                     | 0.49              |
| 1:0:2016:A:N6   | 1:0:2019:C:N3     | 2.61                     | 0.49              |
| 1:0:2030:U:O2'  | 1:0:2031:A:H5'    | 2.11                     | 0.49              |
| 1:0:208:C:C2'   | 1:0:209:G:H5'     | 2.42                     | 0.49              |
| 1:0:2852:G:C2'  | 1:0:2853:U:H5'    | 2.42                     | 0.49              |
| 1:0:2484:G:O4'  | 2:0:2881:TEL:H572 | 2.13                     | 0.49              |
| 1:0:509:U:H2'   | 1:0:510:G:O4'     | 2.12                     | 0.49              |
| 1:0:508:G:O2'   | 1:0:509:U:H5'     | 2.12                     | 0.49              |
| 1:0:677:G:C1'   | 1:0:951:G:H5''    | 2.40                     | 0.49              |
| 1:0:982:C:H2'   | 1:0:983:G:O4'     | 2.12                     | 0.49              |
| 1:0:1296:G:H2'  | 1:0:1298:G:OP2    | 2.12                     | 0.49              |
| 1:0:1582:A:H3'  | 1:0:1583:A:H5'    | 1.93                     | 0.49              |
| 1:0:1614:C:H2'  | 1:0:1615:C:C6     | 2.46                     | 0.49              |
| 1:0:1691:G:H4'  | 1:0:1692:C:OP1    | 2.12                     | 0.49              |
| 1:0:1916:G:H1   | 1:0:1950:C:N4     | 2.02                     | 0.49              |
| 1:0:1932:G:H3'  | 1:0:1933:G:N7     | 2.27                     | 0.49              |
| 1:0:2197:U:H2'  | 1:0:2198:U:C6     | 2.48                     | 0.49              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2677:U:H3  | 1:0:2688:G:H1   | 1.58                     | 0.49              |
| 1:0:26:G:C6    | 1:0:27:G:N1     | 2.80                     | 0.49              |
| 1:0:26:G:N1    | 1:0:27:G:N2     | 2.60                     | 0.49              |
| 1:0:2748:C:H2' | 1:0:2749:A:C8   | 2.47                     | 0.49              |
| 1:0:389:G:C8   | 1:0:390:U:O4'   | 2.66                     | 0.49              |
| 1:0:431:G:C4   | 1:0:432:C:C5    | 3.00                     | 0.49              |
| 1:0:52:A:H62   | 1:0:115:G:N2    | 2.07                     | 0.49              |
| 1:0:643:A:O2'  | 1:0:644:A:H5'   | 2.12                     | 0.49              |
| 1:0:681:A:H2'  | 1:0:683:A:C6    | 2.45                     | 0.49              |
| 1:0:998:C:H2'  | 1:0:999:A:H5'   | 1.94                     | 0.49              |
| 1:0:1227:A:H2' | 1:0:1228:G:O4'  | 2.12                     | 0.49              |
| 1:0:1473:U:H4' | 1:0:1474:A:C5   | 2.47                     | 0.49              |
| 1:0:1778:U:OP2 | 1:0:1778:U:H3'  | 2.12                     | 0.49              |
| 1:0:1921:A:C2' | 1:0:1922:U:H5'' | 2.38                     | 0.49              |
| 1:0:2228:U:C1' | 1:0:2254:C:H41  | 2.25                     | 0.49              |
| 1:0:2388:G:H2' | 1:0:2389:G:C1'  | 2.41                     | 0.49              |
| 1:0:2714:A:H2' | 1:0:2715:C:O4'  | 2.12                     | 0.49              |
| 1:0:431:G:N3   | 1:0:432:C:H5    | 2.11                     | 0.49              |
| 1:0:717:G:H2'  | 1:0:739:G:N2    | 2.27                     | 0.49              |
| 1:0:947:C:H2'  | 1:0:948:C:C6    | 2.48                     | 0.49              |
| 1:0:951:G:C3'  | 1:0:952:A:H5''  | 2.41                     | 0.49              |
| 1:0:989:G:H2'  | 1:0:990:A:O4'   | 2.12                     | 0.49              |
| 1:0:1066:G:C3' | 1:0:1067:G:H5'' | 2.38                     | 0.49              |
| 1:0:19:C:H2'   | 1:0:20:C:H6     | 1.76                     | 0.49              |
| 1:0:2049:C:H2' | 1:0:2050:G:C5'  | 2.42                     | 0.49              |
| 1:0:2060:A:N6  | 1:0:2222:U:H3   | 2.11                     | 0.49              |
| 1:0:2082:C:H2' | 1:0:2083:G:C8   | 2.48                     | 0.49              |
| 1:0:2161:C:O2' | 1:0:2162:C:P    | 2.70                     | 0.49              |
| 1:0:219:G:H2'  | 1:0:220:U:OP2   | 2.13                     | 0.49              |
| 1:0:2548:G:H2' | 1:0:2549:G:H5'  | 1.93                     | 0.49              |
| 1:0:2783:U:H3  | 1:0:2785:A:N6   | 2.10                     | 0.49              |
| 1:0:339:U:C2'  | 1:0:339:U:O2    | 2.59                     | 0.49              |
| 1:0:592:G:C6   | 1:0:593:C:N4    | 2.81                     | 0.49              |
| 1:0:672:C:O2'  | 1:0:673:G:H5'   | 2.12                     | 0.49              |
| 1:0:761:G:H8   | 1:0:763:A:OP2   | 1.96                     | 0.49              |
| 1:0:941:U:H2'  | 1:0:942:U:C6    | 2.47                     | 0.49              |
| 1:0:1175:A:H2' | 1:0:1176:U:H6   | 1.78                     | 0.49              |
| 1:0:1540:C:H2' | 1:0:1541:G:O4'  | 2.11                     | 0.49              |
| 1:0:1705:U:O4' | 1:0:1718:A:N6   | 2.45                     | 0.49              |
| 1:0:1919:A:O4' | 1:0:1923:U:C5   | 2.65                     | 0.49              |
| 1:0:1937:G:H2' | 1:0:1939:U:C4   | 2.47                     | 0.49              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:203:G:N2    | 1:0:207:U:C4    | 2.80                     | 0.49              |
| 1:0:2606:G:HO2' | 1:0:2761:A:H2   | 1.60                     | 0.49              |
| 1:0:485:G:O2'   | 1:0:486:U:P     | 2.69                     | 0.49              |
| 1:0:833:A:N3    | 1:0:954:U:O2'   | 2.46                     | 0.49              |
| 1:0:1872:A:O2'  | 1:0:1873:A:H5'  | 2.13                     | 0.49              |
| 1:0:1875:C:H2'  | 1:0:1876:C:H6   | 1.77                     | 0.49              |
| 1:0:190:A:H2'   | 1:0:191:G:C8    | 2.48                     | 0.49              |
| 1:0:2093:G:O2'  | 1:0:2094:C:P    | 2.71                     | 0.49              |
| 1:0:2245:A:H4'  | 1:0:2246:A:O5'  | 2.13                     | 0.49              |
| 1:0:2308:A:H2'  | 1:0:2309:G:C8   | 2.47                     | 0.49              |
| 1:0:2347:C:H2'  | 1:0:2348:A:C8   | 2.47                     | 0.49              |
| 1:0:344:G:N3    | 1:0:344:G:H2'   | 2.28                     | 0.49              |
| 1:0:482:A:H2'   | 1:0:483:A:C5'   | 2.43                     | 0.49              |
| 1:0:838:A:H2'   | 1:0:839:U:O4'   | 2.13                     | 0.49              |
| 1:0:1137:A:H4'  | 1:0:1138:A:H5'' | 1.95                     | 0.49              |
| 1:0:1147:G:H2'  | 1:0:1148:G:C8   | 2.43                     | 0.49              |
| 1:0:173:A:H2    | 1:0:818:G:N3    | 2.10                     | 0.49              |
| 1:0:2203:G:H4'  | 1:0:2205:C:N3   | 2.28                     | 0.49              |
| 1:0:2336:G:N2   | 1:0:2339:A:OP2  | 2.43                     | 0.49              |
| 1:0:2433:G:N1   | 1:0:2478:C:N4   | 2.61                     | 0.49              |
| 1:0:2544:A:H2'  | 1:0:2545:A:O4'  | 2.13                     | 0.49              |
| 1:0:2795:A:C2'  | 1:0:2796:A:OP1  | 2.60                     | 0.49              |
| 1:0:2800:C:H2'  | 1:0:2801:A:H5'  | 1.94                     | 0.49              |
| 1:0:39:C:H2'    | 1:0:40:U:C6     | 2.47                     | 0.49              |
| 1:0:566:U:H2'   | 1:0:567:G:C8    | 2.48                     | 0.49              |
| 1:0:704:G:H2'   | 1:0:705:C:O4'   | 2.13                     | 0.49              |
| 1:0:838:A:H4'   | 1:0:2407:G:C5   | 2.48                     | 0.49              |
| 1:0:88:G:H3'    | 1:0:89:A:C5'    | 2.40                     | 0.49              |
| 1:0:942:U:H6    | 1:0:942:U:O5'   | 1.95                     | 0.49              |
| 1:0:860:U:H3    | 1:0:945:G:N2    | 2.10                     | 0.49              |
| 1:0:1368:G:H2'  | 1:0:1369:G:C8   | 2.44                     | 0.49              |
| 1:0:1391:A:O2'  | 1:0:1392:U:C6   | 2.66                     | 0.49              |
| 1:0:1764:A:C2'  | 1:0:1765:C:H5'  | 2.43                     | 0.49              |
| 1:0:2062:U:H2'  | 1:0:2063:A:O4'  | 2.12                     | 0.49              |
| 1:0:2723:C:O2'  | 1:0:2724:G:H5'  | 2.13                     | 0.49              |
| 1:0:778:G:H2'   | 1:0:779:U:H6    | 1.78                     | 0.49              |
| 1:0:826:U:HO2'  | 1:0:1238:A:H1'  | 1.73                     | 0.49              |
| 1:0:921:A:O2'   | 1:0:923:A:OP2   | 2.22                     | 0.49              |
| 1:0:50:G:H2'    | 1:0:117:A:N1    | 2.28                     | 0.49              |
| 1:0:1293:A:H2'  | 1:0:1294:G:C8   | 2.47                     | 0.49              |
| 1:0:1310:C:H2'  | 1:0:1311:C:H6   | 1.76                     | 0.49              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1653:C:H2'  | 1:0:1654:A:C8   | 2.48                     | 0.49              |
| 1:0:2559:U:C2'  | 1:0:2560:G:H5'  | 2.42                     | 0.49              |
| 1:0:2728:A:C6   | 1:0:2736:U:H1'  | 2.47                     | 0.49              |
| 1:0:394:U:O5'   | 1:0:394:U:H6    | 1.96                     | 0.49              |
| 1:0:159:A:H1'   | 1:0:446:C:O2'   | 2.12                     | 0.49              |
| 1:0:70:A:H4'    | 1:0:72:A:OP2    | 2.13                     | 0.49              |
| 1:0:1226:A:N6   | 1:0:1249:G:H1'  | 2.28                     | 0.48              |
| 1:0:118:U:O2    | 1:0:143:A:N7    | 2.46                     | 0.48              |
| 1:0:1973:C:H2'  | 1:0:1974:U:O4'  | 2.13                     | 0.48              |
| 1:0:2451:G:C1'  | 1:0:2457:A:H61  | 2.06                     | 0.48              |
| 1:0:520:C:O2'   | 1:0:1249:G:H5'' | 2.12                     | 0.48              |
| 1:0:968:C:C2'   | 1:0:969:U:OP1   | 2.61                     | 0.48              |
| 1:0:69:G:H3'    | 1:0:111:G:O2'   | 2.13                     | 0.48              |
| 1:0:125:A:H5''  | 1:0:126:C:C6    | 2.48                     | 0.48              |
| 1:0:1494:G:O6   | 1:0:1529:C:N3   | 2.46                     | 0.48              |
| 1:0:2349:G:H2'  | 1:0:2350:G:O4'  | 2.13                     | 0.48              |
| 1:0:2270:U:H5'' | 1:0:2359:U:O2'  | 2.12                     | 0.48              |
| 1:0:2407:G:H4'  | 1:0:2408:G:C4   | 2.48                     | 0.48              |
| 1:0:2427:A:OP2  | 1:0:2478:C:OP2  | 2.30                     | 0.48              |
| 1:0:2040:A:OP2  | 1:0:2483:U:OP1  | 2.31                     | 0.48              |
| 1:0:2549:G:C2'  | 1:0:2550:C:H5'  | 2.43                     | 0.48              |
| 1:0:2671:C:H4'  | 1:0:2845:C:O2   | 2.13                     | 0.48              |
| 1:0:459:A:N6    | 1:0:484:G:C1'   | 2.76                     | 0.48              |
| 1:0:621:U:H2'   | 1:0:622:U:H6    | 1.77                     | 0.48              |
| 1:0:614:G:N2    | 1:0:634:G:N2    | 2.38                     | 0.48              |
| 1:0:733:G:H2'   | 1:0:734:G:C8    | 2.48                     | 0.48              |
| 1:0:942:U:O2'   | 1:0:943:U:H5'   | 2.13                     | 0.48              |
| 1:0:1408:A:H5'' | 1:0:1409:U:OP1  | 2.13                     | 0.48              |
| 1:0:1918:G:C4   | 1:0:1945:C:N4   | 2.81                     | 0.48              |
| 1:0:1964:A:H5'' | 1:0:1965:U:OP2  | 2.13                     | 0.48              |
| 1:0:2229:G:OP1  | 1:0:2229:G:H8   | 1.96                     | 0.48              |
| 1:0:2397:A:H2'  | 1:0:2398:U:O4'  | 2.13                     | 0.48              |
| 1:0:2374:C:H42  | 1:0:2400:G:H1   | 1.61                     | 0.48              |
| 1:0:2542:U:H2'  | 1:0:2544:A:OP2  | 2.13                     | 0.48              |
| 1:0:2816:C:H1'  | 1:0:2852:G:N2   | 2.28                     | 0.48              |
| 1:0:2869:U:H2'  | 1:0:2870:C:C6   | 2.48                     | 0.48              |
| 1:0:430:C:O2'   | 1:0:2386:G:N2   | 2.47                     | 0.48              |
| 1:0:524:A:H1'   | 1:0:590:C:O2'   | 2.13                     | 0.48              |
| 1:0:756:C:H2'   | 1:0:757:U:C6    | 2.48                     | 0.48              |
| 1:0:78:C:H1'    | 1:0:357:A:N1    | 2.28                     | 0.48              |
| 1:0:931:G:H2'   | 1:0:932:G:H5'   | 1.95                     | 0.48              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:978:U:H2'   | 1:0:979:A:H8    | 1.78                     | 0.48              |
| 1:0:138:G:H2'   | 1:0:139:A:C8    | 2.48                     | 0.48              |
| 1:0:1766:U:C2'  | 1:0:1767:G:H5'  | 2.43                     | 0.48              |
| 1:0:1783:G:H1   | 1:0:1820:G:H1'  | 1.78                     | 0.48              |
| 1:0:191:G:O2'   | 1:0:192:G:H5'   | 2.13                     | 0.48              |
| 1:0:1996:A:O2'  | 1:0:1997:A:H5'  | 2.13                     | 0.48              |
| 1:0:991:A:H2    | 1:0:2020:G:N3   | 2.11                     | 0.48              |
| 1:0:2199:C:H2'  | 1:0:2200:G:C8   | 2.49                     | 0.48              |
| 1:0:2059:U:H5'' | 1:0:2217:G:N1   | 2.25                     | 0.48              |
| 1:0:2350:G:C2   | 1:0:2351:G:N7   | 2.82                     | 0.48              |
| 1:0:2548:G:H2'  | 1:0:2549:G:C5'  | 2.43                     | 0.48              |
| 1:0:697:G:C4    | 1:0:788:G:O6    | 2.66                     | 0.48              |
| 1:0:84:G:H2'    | 1:0:85:C:C6     | 2.48                     | 0.48              |
| 1:0:1531:C:C2'  | 1:0:1532:A:H5'  | 2.43                     | 0.48              |
| 1:0:1999:U:C2'  | 1:0:2000:U:H5'  | 2.43                     | 0.48              |
| 1:0:2076:G:C2   | 1:0:2181:A:N6   | 2.81                     | 0.48              |
| 1:0:2205:C:O2'  | 1:0:2206:C:H5'  | 2.13                     | 0.48              |
| 1:0:1038:U:C4   | 1:0:2467:A:H5'  | 2.49                     | 0.48              |
| 1:0:2765:C:H2'  | 1:0:2766:U:H6   | 1.78                     | 0.48              |
| 1:0:388:G:OP2   | 1:0:388:G:H8    | 1.97                     | 0.48              |
| 1:0:538:A:N6    | 1:0:2759:U:N3   | 2.61                     | 0.48              |
| 1:0:838:A:H2'   | 1:0:839:U:C6    | 2.48                     | 0.48              |
| 1:0:1033:G:HO2' | 1:0:1034:U:P    | 2.33                     | 0.48              |
| 1:0:1092:U:H2'  | 1:0:1093:U:C6   | 2.48                     | 0.48              |
| 1:0:1223:G:H5'  | 1:0:1225:G:C5'  | 2.43                     | 0.48              |
| 1:0:1299:A:N6   | 1:0:1302:C:C4   | 2.81                     | 0.48              |
| 1:0:1356:G:C5'  | 1:0:1614:C:OP2  | 2.62                     | 0.48              |
| 1:0:221:A:H2'   | 1:0:222:G:H5'   | 1.94                     | 0.48              |
| 1:0:638:A:C2'   | 1:0:639:G:H5'   | 2.44                     | 0.48              |
| 1:0:65:C:C2'    | 1:0:66:U:H5'    | 2.44                     | 0.48              |
| 1:0:67:G:C6     | 1:0:72:A:C2     | 3.01                     | 0.48              |
| 1:0:742:G:H5'   | 1:0:743:A:C5'   | 2.42                     | 0.48              |
| 1:0:81:C:H5''   | 1:0:307:C:H5'   | 1.96                     | 0.48              |
| 1:0:92:U:H2'    | 1:0:93:A:O4'    | 2.14                     | 0.48              |
| 1:0:1312:G:H5'' | 1:0:1313:U:OP1  | 2.13                     | 0.48              |
| 1:0:1341:G:H2'  | 1:0:1343:C:C4   | 2.48                     | 0.48              |
| 1:0:1854:G:H2'  | 1:0:1855:G:C8   | 2.44                     | 0.48              |
| 1:0:2225:G:N2   | 1:0:2405:A:HO2' | 2.12                     | 0.48              |
| 1:0:2548:G:C2'  | 1:0:2549:G:H5'' | 2.44                     | 0.48              |
| 1:0:2555:G:C2'  | 1:0:2555:G:N3   | 2.76                     | 0.48              |
| 1:0:2727:G:H2'  | 1:0:2728:A:H5'' | 1.94                     | 0.48              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:762:A:H2'   | 1:0:763:A:H8    | 1.78                     | 0.48              |
| 1:0:81:C:C5'    | 1:0:307:C:H5'   | 2.44                     | 0.48              |
| 1:0:946:U:O5'   | 1:0:946:U:H6    | 1.96                     | 0.48              |
| 1:0:961:G:H2'   | 1:0:962:C:C6    | 2.48                     | 0.48              |
| 1:0:1313:U:O2'  | 1:0:1314:A:OP2  | 2.25                     | 0.48              |
| 1:0:180:C:N3    | 1:0:181:A:C6    | 2.82                     | 0.48              |
| 1:0:2011:U:H3   | 1:0:2016:A:N6   | 2.12                     | 0.48              |
| 1:0:433:G:C2'   | 1:0:434:C:OP2   | 2.61                     | 0.48              |
| 1:0:529:U:H2'   | 1:0:530:G:H8    | 1.78                     | 0.48              |
| 1:0:1118:G:H2'  | 1:0:1119:U:C6   | 2.49                     | 0.48              |
| 1:0:1712:G:N3   | 1:0:1712:G:C3'  | 2.75                     | 0.48              |
| 1:0:1950:C:H2'  | 1:0:1951:G:H5'  | 1.94                     | 0.48              |
| 1:0:2347:C:H2'  | 1:0:2348:A:O4'  | 2.14                     | 0.48              |
| 1:0:2599:U:H3'  | 1:0:2600:A:H5'' | 1.95                     | 0.48              |
| 1:0:1982:C:H5'' | 1:0:2703:C:C2'  | 2.43                     | 0.48              |
| 1:0:698:A:C1'   | 1:0:700:C:C5    | 2.97                     | 0.48              |
| 1:0:825:C:H1'   | 1:0:1263:G:N1   | 2.27                     | 0.48              |
| 1:0:882:C:H2'   | 1:0:883:A:O4'   | 2.14                     | 0.48              |
| 1:0:986:A:H2    | 1:0:1001:A:O4'  | 1.96                     | 0.48              |
| 1:0:1327:C:OP1  | 1:0:1345:G:H5'  | 2.14                     | 0.48              |
| 1:0:173:A:O2'   | 1:0:174:A:OP1   | 2.30                     | 0.48              |
| 1:0:163:A:C2    | 1:0:188:G:C4    | 3.02                     | 0.48              |
| 1:0:1922:U:O2'  | 1:0:2571:G:H1'  | 2.13                     | 0.48              |
| 1:0:192:G:O2'   | 1:0:193:A:P     | 2.72                     | 0.48              |
| 1:0:1955:G:O2'  | 1:0:1956:G:C5'  | 2.57                     | 0.48              |
| 1:0:931:G:H1    | 1:0:2247:A:H5'' | 1.78                     | 0.48              |
| 1:0:2448:A:H2'  | 1:0:2449:G:O4'  | 2.13                     | 0.48              |
| 1:0:2555:G:OP1  | 1:0:2555:G:H3'  | 2.14                     | 0.48              |
| 1:0:2732:C:H3'  | 1:0:2733:A:H8   | 1.79                     | 0.48              |
| 1:0:502:A:H2'   | 1:0:503:G:H5'   | 1.95                     | 0.48              |
| 1:0:605:G:H2'   | 1:0:606:A:C8    | 2.48                     | 0.48              |
| 1:0:477:A:N3    | 1:0:696:U:H1'   | 2.28                     | 0.48              |
| 1:0:772:G:H2'   | 1:0:773:G:C8    | 2.47                     | 0.48              |
| 1:0:1108:U:C2'  | 1:0:1109:A:H5'  | 2.34                     | 0.47              |
| 1:0:119:G:H2'   | 1:0:120:G:C8    | 2.49                     | 0.47              |
| 1:0:1605:A:H2'  | 1:0:1606:C:C6   | 2.49                     | 0.47              |
| 1:0:1923:U:HO2' | 1:0:1924:C:H5   | 1.61                     | 0.47              |
| 1:0:2463:G:H2'  | 1:0:2464:G:C8   | 2.47                     | 0.47              |
| 1:0:2548:G:O2'  | 1:0:2549:G:H5'' | 2.14                     | 0.47              |
| 1:0:2695:C:H2'  | 1:0:2696:A:H8   | 1.78                     | 0.47              |
| 1:0:649:G:N1    | 1:0:660:G:N1    | 2.62                     | 0.47              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:763:A:H5'' | 1:0:1631:C:N4   | 2.29                     | 0.47              |
| 1:0:876:A:H2'  | 1:0:877:G:C8    | 2.49                     | 0.47              |
| 1:0:1055:A:H1' | 1:0:1058:G:H1'  | 1.96                     | 0.47              |
| 1:0:1489:C:H3' | 1:0:1490:U:H5'  | 1.97                     | 0.47              |
| 1:0:1618:U:OP2 | 1:0:1619:A:N1   | 2.47                     | 0.47              |
| 1:0:1679:U:H2' | 1:0:1680:U:C5'  | 2.37                     | 0.47              |
| 1:0:2157:C:H2' | 1:0:2158:C:C6   | 2.49                     | 0.47              |
| 1:0:2246:A:H3' | 1:0:2246:A:N3   | 2.30                     | 0.47              |
| 1:0:2597:G:H2' | 1:0:2598:C:H6   | 1.79                     | 0.47              |
| 1:0:2764:U:H2' | 1:0:2765:C:C5   | 2.49                     | 0.47              |
| 1:0:594:G:N1   | 1:0:1264:C:N4   | 2.57                     | 0.47              |
| 1:0:1040:A:C8  | 1:0:1041:G:C8   | 3.02                     | 0.47              |
| 1:0:1528:C:H2' | 1:0:1529:C:H5'' | 1.95                     | 0.47              |
| 1:0:1545:G:H2' | 1:0:1546:C:C6   | 2.48                     | 0.47              |
| 1:0:1641:C:H2' | 1:0:1642:G:H5'  | 1.96                     | 0.47              |
| 1:0:1791:C:C1' | 1:0:1793:A:H5'  | 2.38                     | 0.47              |
| 1:0:1888:C:H2' | 1:0:1913:G:C5   | 2.49                     | 0.47              |
| 1:0:2549:G:H5' | 1:0:2549:G:H8   | 1.79                     | 0.47              |
| 1:0:2605:C:H2' | 1:0:2606:G:O4'  | 2.14                     | 0.47              |
| 1:0:2650:G:O2' | 1:0:2651:U:H5'  | 2.13                     | 0.47              |
| 1:0:548:G:O2'  | 1:0:549:G:H5'   | 2.14                     | 0.47              |
| 1:0:608:G:O2'  | 1:0:609:U:H5'   | 2.15                     | 0.47              |
| 1:0:1293:A:H2' | 1:0:1294:G:H8   | 1.79                     | 0.47              |
| 1:0:1386:A:H2' | 1:0:1387:G:O4'  | 2.14                     | 0.47              |
| 1:0:1435:G:H2' | 1:0:1436:G:C8   | 2.45                     | 0.47              |
| 1:0:2001:G:H3' | 1:0:2001:G:C8   | 2.50                     | 0.47              |
| 1:0:2377:U:O2' | 1:0:2378:G:P    | 2.72                     | 0.47              |
| 1:0:839:U:H5'  | 1:0:2407:G:H2'  | 1.95                     | 0.47              |
| 1:0:2467:A:H2' | 1:0:2468:G:H8   | 1.78                     | 0.47              |
| 1:0:2532:G:H2' | 1:0:2533:U:C4'  | 2.44                     | 0.47              |
| 1:0:2607:C:O2' | 1:0:2762:G:OP1  | 2.33                     | 0.47              |
| 1:0:803:C:H3'  | 1:0:803:C:H6    | 1.80                     | 0.47              |
| 1:0:923:A:O4'  | 1:0:2243:C:H4'  | 2.15                     | 0.47              |
| 1:0:577:U:H4'  | 1:0:956:A:H61   | 1.79                     | 0.47              |
| 1:0:1293:A:O2' | 1:0:1294:G:H5'  | 2.15                     | 0.47              |
| 1:0:1407:G:O2' | 1:0:1408:A:H5'  | 2.15                     | 0.47              |
| 1:0:1424:U:H2' | 1:0:1425:G:H8   | 1.79                     | 0.47              |
| 1:0:1356:G:H1' | 1:0:1613:G:C2   | 2.50                     | 0.47              |
| 1:0:178:C:O2'  | 1:0:179:U:H5'   | 2.13                     | 0.47              |
| 1:0:187:U:H2'  | 1:0:188:G:H8    | 1.79                     | 0.47              |
| 1:0:2073:A:H61 | 1:0:2208:U:H3   | 1.62                     | 0.47              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:26:G:H2'    | 1:0:27:G:O4'    | 2.15                     | 0.47              |
| 1:0:2876:C:H2'  | 1:0:2877:A:C8   | 2.49                     | 0.47              |
| 1:0:831:G:N2    | 1:0:1203:A:H62  | 2.11                     | 0.47              |
| 1:0:1975:G:O2'  | 1:0:1976:U:O5'  | 2.33                     | 0.47              |
| 1:0:690:A:H4'   | 1:0:2053:G:O2'  | 2.14                     | 0.47              |
| 1:0:2080:U:H2'  | 1:0:2081:U:C6   | 2.49                     | 0.47              |
| 1:0:2629:U:H3   | 1:0:2649:A:H61  | 1.60                     | 0.47              |
| 1:0:200:A:C6    | 1:0:435:A:C5    | 3.03                     | 0.47              |
| 1:0:939:C:N3    | 1:0:940:G:O6    | 2.48                     | 0.47              |
| 1:0:105:G:O2'   | 1:0:106:G:H5'   | 2.14                     | 0.47              |
| 1:0:1073:G:C3'  | 1:0:1074:G:H5'' | 2.45                     | 0.47              |
| 1:0:1086:C:O5'  | 1:0:1086:C:H6   | 1.97                     | 0.47              |
| 1:0:1341:G:N2   | 1:0:1343:C:O2   | 2.48                     | 0.47              |
| 1:0:1391:A:O2'  | 1:0:1392:U:O5'  | 2.32                     | 0.47              |
| 1:0:1629:G:H3'  | 1:0:1630:A:C5'  | 2.44                     | 0.47              |
| 1:0:1736:C:H2'  | 1:0:1737:G:H8   | 1.79                     | 0.47              |
| 1:0:2134:U:O5'  | 1:0:2134:U:H6   | 1.98                     | 0.47              |
| 1:0:2204:A:C2'  | 1:0:2205:C:OP2  | 2.63                     | 0.47              |
| 1:0:2633:A:H4'  | 1:0:2634:G:OP1  | 2.14                     | 0.47              |
| 1:0:301:C:H2'   | 1:0:302:U:O4'   | 2.14                     | 0.47              |
| 1:0:593:C:H2'   | 1:0:594:G:C8    | 2.49                     | 0.47              |
| 1:0:782:U:H2'   | 1:0:783:G:C8    | 2.49                     | 0.47              |
| 1:0:1256:C:H2'  | 1:0:1257:U:C6   | 2.50                     | 0.47              |
| 1:0:1574:A:C2   | 1:0:1576:G:H1'  | 2.49                     | 0.47              |
| 1:0:1313:U:C4   | 1:0:1651:U:H1'  | 2.50                     | 0.47              |
| 1:0:195:A:C2'   | 1:0:196:A:H5'   | 2.44                     | 0.47              |
| 1:0:2200:G:H2'  | 1:0:2201:G:C8   | 2.49                     | 0.47              |
| 1:0:2207:G:H2'  | 1:0:2208:U:O4'  | 2.14                     | 0.47              |
| 1:0:1773:C:H1'  | 1:0:2588:U:O4'  | 2.15                     | 0.47              |
| 1:0:2598:C:H2'  | 1:0:2599:U:C6   | 2.50                     | 0.47              |
| 1:0:2760:G:H5'  | 1:0:2761:A:C8   | 2.50                     | 0.47              |
| 1:0:320:A:N3    | 1:0:340:G:H2'   | 2.29                     | 0.47              |
| 1:0:398:C:H42   | 1:0:402:A:N6    | 2.13                     | 0.47              |
| 1:0:564:U:H2'   | 1:0:565:A:H8    | 1.80                     | 0.47              |
| 1:0:1106:A:H2'  | 1:0:1107:A:C8   | 2.50                     | 0.47              |
| 1:0:1259:A:C2'  | 1:0:1260:A:H5'  | 2.45                     | 0.47              |
| 1:0:1431:U:H5'' | 1:0:1604:A:H1'  | 1.97                     | 0.47              |
| 1:0:1806:G:O6   | 1:0:1807:A:N6   | 2.47                     | 0.47              |
| 1:0:1820:G:H4'  | 1:0:1821:A:OP1  | 2.14                     | 0.47              |
| 1:0:1906:U:H2'  | 1:0:1907:C:C6   | 2.50                     | 0.47              |
| 1:0:1963:G:H2'  | 1:0:1964:A:OP1  | 2.15                     | 0.47              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:200:A:N1   | 1:0:435:A:N7   | 2.63                     | 0.47              |
| 1:0:203:G:O6   | 1:0:431:G:O3'  | 2.32                     | 0.47              |
| 1:0:2061:C:O2' | 1:0:2062:U:H5' | 2.15                     | 0.47              |
| 1:0:2161:C:H2' | 1:0:2162:C:C6  | 2.50                     | 0.47              |
| 1:0:1373:G:H1  | 1:0:2192:U:H3  | 1.63                     | 0.47              |
| 1:0:2386:G:C2  | 1:0:2387:U:C4  | 3.03                     | 0.47              |
| 1:0:2225:G:N2  | 1:0:2405:A:O2' | 2.48                     | 0.47              |
| 1:0:2496:C:C2  | 1:0:2521:A:N6  | 2.82                     | 0.47              |
| 1:0:788:G:H5'  | 1:0:790:A:N3   | 2.30                     | 0.47              |
| 1:0:1207:G:H2' | 1:0:1208:A:C8  | 2.50                     | 0.47              |
| 1:0:1442:C:H3' | 1:0:1443:G:C5' | 2.45                     | 0.47              |
| 1:0:1480:G:C2' | 1:0:1481:U:H5' | 2.45                     | 0.47              |
| 1:0:2040:A:C6  | 1:0:2041:A:C6  | 3.03                     | 0.47              |
| 1:0:2225:G:H2' | 1:0:2226:A:H8  | 1.80                     | 0.47              |
| 1:0:2240:C:H2' | 1:0:2241:U:H5' | 1.96                     | 0.47              |
| 1:0:2324:G:H4' | 1:0:2325:A:O5' | 2.15                     | 0.47              |
| 1:0:2477:C:C6  | 1:0:2477:C:H3' | 2.48                     | 0.47              |
| 1:0:459:A:C2   | 1:0:466:A:N7   | 2.83                     | 0.47              |
| 1:0:673:G:H2'  | 1:0:674:U:C6   | 2.49                     | 0.47              |
| 1:0:830:C:H3'  | 1:0:831:G:H8   | 1.80                     | 0.47              |
| 1:0:1199:U:C5  | 1:0:1201:G:O6  | 2.68                     | 0.47              |
| 1:0:1302:C:OP2 | 1:0:1302:C:H6  | 1.98                     | 0.47              |
| 1:0:1465:G:H2' | 1:0:1466:C:C1' | 2.45                     | 0.47              |
| 1:0:1674:C:H2' | 1:0:1675:C:C6  | 2.50                     | 0.47              |
| 1:0:1982:C:O2' | 1:0:1983:G:H5' | 2.15                     | 0.47              |
| 1:0:2194:A:H2' | 1:0:2195:C:O4' | 2.15                     | 0.47              |
| 1:0:2351:G:N2  | 1:0:2352:A:C4  | 2.83                     | 0.47              |
| 1:0:1039:A:H1' | 1:0:2466:G:O5' | 2.15                     | 0.47              |
| 1:0:2515:G:O2' | 1:0:2516:U:H5' | 2.15                     | 0.47              |
| 1:0:1949:A:N3  | 1:0:2572:U:O4' | 2.48                     | 0.47              |
| 1:0:2695:C:O5' | 1:0:2695:C:H6  | 1.97                     | 0.47              |
| 1:0:295:C:N4   | 1:0:296:A:N6   | 2.62                     | 0.47              |
| 1:0:387:A:H3'  | 1:0:388:G:C8   | 2.50                     | 0.47              |
| 1:0:580:A:H1'  | 1:0:582:G:N7   | 2.30                     | 0.47              |
| 1:0:718:A:N6   | 1:0:739:G:H1'  | 2.26                     | 0.47              |
| 1:0:853:C:C2   | 1:0:950:G:N1   | 2.83                     | 0.47              |
| 1:0:1147:G:C4  | 1:0:1148:G:C8  | 3.03                     | 0.46              |
| 1:0:1396:C:H6  | 1:0:1396:C:O5' | 1.99                     | 0.46              |
| 1:0:1443:G:N3  | 1:0:1584:G:C2  | 2.83                     | 0.46              |
| 1:0:176:A:C8   | 1:0:177:U:H5   | 2.33                     | 0.46              |
| 1:0:1949:A:N3  | 1:0:2571:G:O2' | 2.40                     | 0.46              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2228:U:H1'  | 1:0:2254:C:H41  | 1.79                     | 0.46              |
| 1:0:2387:U:C2'  | 1:0:2388:G:H5'  | 2.45                     | 0.46              |
| 1:0:2441:U:H2'  | 1:0:2442:C:C6   | 2.49                     | 0.46              |
| 1:0:2447:G:N1   | 1:0:2460:G:H2'  | 2.27                     | 0.46              |
| 1:0:2534:U:H2'  | 1:0:2535:C:H5'  | 1.98                     | 0.46              |
| 1:0:2658:A:H2'  | 1:0:2659:C:O4'  | 2.14                     | 0.46              |
| 1:0:357:A:C2'   | 1:0:358:C:H5'   | 2.45                     | 0.46              |
| 1:0:46:C:H2'    | 1:0:47:G:H8     | 1.80                     | 0.46              |
| 1:0:1272:G:H2'  | 1:0:1273:G:H8   | 1.80                     | 0.46              |
| 1:0:1496:G:N2   | 1:0:1527:G:H22  | 2.12                     | 0.46              |
| 1:0:1641:C:C2'  | 1:0:1642:G:H5'  | 2.45                     | 0.46              |
| 1:0:1745:C:N3   | 1:0:2696:A:O2'  | 2.47                     | 0.46              |
| 1:0:1861:G:H2'  | 1:0:1862:C:O4'  | 2.15                     | 0.46              |
| 1:0:2120:C:H42  | 1:0:2137:G:H1   | 1.61                     | 0.46              |
| 1:0:2437:G:O2'  | 1:0:2439:U:O4   | 2.33                     | 0.46              |
| 1:0:2477:C:C6   | 1:0:2477:C:C3'  | 2.98                     | 0.46              |
| 1:0:2499:C:C6   | 1:0:2546:G:H1'  | 2.49                     | 0.46              |
| 1:0:2570:C:O2'  | 1:0:2571:G:H5'  | 2.15                     | 0.46              |
| 1:0:2597:G:H2'  | 1:0:2598:C:C6   | 2.50                     | 0.46              |
| 1:0:2691:C:C3'  | 1:0:2692:A:H5'' | 2.46                     | 0.46              |
| 1:0:460:U:H5'   | 1:0:461:A:OP2   | 2.14                     | 0.46              |
| 1:0:516:G:C2'   | 1:0:517:A:OP2   | 2.62                     | 0.46              |
| 1:0:540:G:N2    | 1:0:2004:U:O2'  | 2.49                     | 0.46              |
| 1:0:616:U:C3'   | 1:0:617:U:H5''  | 2.45                     | 0.46              |
| 1:0:658:G:H1'   | 1:0:2330:G:C5'  | 2.45                     | 0.46              |
| 1:0:919:U:N3    | 1:0:920:G:N7    | 2.63                     | 0.46              |
| 1:0:983:G:P     | 1:0:985:G:H5''  | 2.53                     | 0.46              |
| 1:0:1030:U:H2'  | 1:0:1031:C:H5'  | 1.96                     | 0.46              |
| 1:0:1468:A:O5'  | 1:0:1468:A:H8   | 1.98                     | 0.46              |
| 1:0:1629:G:N1   | 1:0:1633:C:N4   | 2.63                     | 0.46              |
| 1:0:2570:C:H42  | 1:0:2582:G:H1   | 1.64                     | 0.46              |
| 1:0:389:G:C8    | 1:0:390:U:O2    | 2.69                     | 0.46              |
| 1:0:538:A:N1    | 1:0:2025:A:H2'  | 2.29                     | 0.46              |
| 1:0:1129:A:H2'  | 1:0:1130:U:C6   | 2.50                     | 0.46              |
| 1:0:1217:U:H2'  | 1:0:1218:C:H6   | 1.81                     | 0.46              |
| 1:0:1278:A:HO2' | 1:0:1279:G:P    | 2.39                     | 0.46              |
| 1:0:707:U:H5''  | 1:0:1585:A:C4   | 2.50                     | 0.46              |
| 1:0:1699:A:OP1  | 1:0:1716:G:N2   | 2.49                     | 0.46              |
| 1:0:1872:A:O2'  | 1:0:2070:G:H5'  | 2.16                     | 0.46              |
| 1:0:1339:U:O2'  | 1:0:1993:G:H1'  | 2.16                     | 0.46              |
| 1:0:2079:A:O2'  | 1:0:2080:U:H5'  | 2.15                     | 0.46              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2463:G:O2'  | 1:0:2464:G:H5' | 2.15                     | 0.46              |
| 1:0:2620:G:H2'  | 1:0:2621:G:C8  | 2.50                     | 0.46              |
| 1:0:2678:C:O2'  | 1:0:2679:G:H5' | 2.16                     | 0.46              |
| 1:0:2824:C:O2'  | 1:0:2825:A:P   | 2.74                     | 0.46              |
| 1:0:2825:A:C2   | 1:0:2844:G:H4' | 2.51                     | 0.46              |
| 1:0:2865:G:H8   | 1:0:2865:G:O5' | 1.99                     | 0.46              |
| 1:0:2782:G:C2   | 1:0:2866:A:N6  | 2.84                     | 0.46              |
| 1:0:2608:A:N6   | 1:0:2869:U:C2  | 2.82                     | 0.46              |
| 1:0:318:G:N2    | 1:0:321:A:C8   | 2.83                     | 0.46              |
| 1:0:200:A:C6    | 1:0:435:A:N6   | 2.84                     | 0.46              |
| 1:0:474:G:H22   | 1:0:476:G:H3'  | 1.76                     | 0.46              |
| 1:0:583:C:H5''  | 1:0:584:A:C5'  | 2.45                     | 0.46              |
| 1:0:755:C:O2'   | 1:0:756:C:H5'  | 2.16                     | 0.46              |
| 1:0:863:C:H2'   | 1:0:864:C:O4'  | 2.15                     | 0.46              |
| 1:0:851:C:C4    | 1:0:952:A:N6   | 2.84                     | 0.46              |
| 1:0:990:A:H5'   | 1:0:991:A:C5'  | 2.39                     | 0.46              |
| 1:0:1194:U:HO2' | 1:0:1195:U:P   | 2.39                     | 0.46              |
| 1:0:1302:C:C6   | 1:0:1302:C:OP2 | 2.69                     | 0.46              |
| 1:0:1402:G:H2'  | 1:0:1403:U:O4' | 2.16                     | 0.46              |
| 1:0:1622:G:H5'' | 1:0:1624:A:O4' | 2.16                     | 0.46              |
| 1:0:157:G:O6    | 1:0:191:G:N7   | 2.48                     | 0.46              |
| 1:0:1983:G:H2'  | 1:0:1984:A:H8  | 1.81                     | 0.46              |
| 1:0:2121:U:H3   | 1:0:2136:G:H1  | 1.64                     | 0.46              |
| 1:0:2559:U:H2'  | 1:0:2560:G:H5' | 1.97                     | 0.46              |
| 1:0:2569:A:H2'  | 1:0:2570:C:H6  | 1.80                     | 0.46              |
| 1:0:2655:C:H2'  | 1:0:2656:G:H8  | 1.79                     | 0.46              |
| 1:0:2787:A:H2'  | 1:0:2788:C:C6  | 2.51                     | 0.46              |
| 1:0:2867:G:N3   | 1:0:2867:G:C2' | 2.79                     | 0.46              |
| 1:0:402:A:OP2   | 1:0:403:A:OP2  | 2.33                     | 0.46              |
| 1:0:622:U:H2'   | 1:0:623:G:O4'  | 2.16                     | 0.46              |
| 1:0:1253:C:C2'  | 1:0:1254:G:H5' | 2.46                     | 0.46              |
| 1:0:1373:G:C2'  | 1:0:1374:G:H5' | 2.43                     | 0.46              |
| 1:0:1686:A:H5'' | 1:0:2529:G:OP1 | 2.15                     | 0.46              |
| 1:0:1725:C:H2'  | 1:0:1726:C:C6  | 2.48                     | 0.46              |
| 1:0:176:A:O2'   | 1:0:177:U:OP1  | 2.32                     | 0.46              |
| 1:0:1964:A:H3'  | 1:0:1965:U:H5' | 1.98                     | 0.46              |
| 1:0:2043:A:C2'  | 1:0:2044:G:OP2 | 2.64                     | 0.46              |
| 1:0:2716:G:H2'  | 1:0:2717:G:C8  | 2.51                     | 0.46              |
| 1:0:2721:A:H3'  | 1:0:2722:C:C6  | 2.51                     | 0.46              |
| 1:0:439:C:H2'   | 1:0:439:C:O2   | 2.16                     | 0.46              |
| 1:0:697:G:H2'   | 1:0:700:C:N4   | 2.30                     | 0.46              |

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| Atom-1         | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-------------------|--------------------------|-------------------|
| 1:0:85:C:O2'   | 1:0:86:U:H5'      | 2.15                     | 0.46              |
| 1:0:886:A:H2'  | 1:0:887:G:O4'     | 2.16                     | 0.46              |
| 1:0:1197:U:H2' | 1:0:1198:C:O4'    | 2.15                     | 0.46              |
| 1:0:1217:U:H2' | 1:0:1218:C:C6     | 2.51                     | 0.46              |
| 1:0:1287:A:C2  | 1:0:1315:A:H2     | 2.34                     | 0.46              |
| 1:0:129:A:H2'  | 1:0:130:C:O4'     | 2.16                     | 0.46              |
| 1:0:1316:G:C2  | 1:0:1317:G:C8     | 3.03                     | 0.46              |
| 1:0:1456:C:H2' | 1:0:1457:A:C8     | 2.51                     | 0.46              |
| 1:0:1643:A:H2' | 1:0:1644:G:H8     | 1.80                     | 0.46              |
| 1:0:1693:A:H2  | 1:0:1976:U:OP1    | 1.99                     | 0.46              |
| 1:0:1834:G:H2' | 1:0:1835:C:O4'    | 2.15                     | 0.46              |
| 1:0:1684:G:H2' | 1:0:1974:U:O4     | 2.15                     | 0.46              |
| 1:0:19:C:H2'   | 1:0:20:C:C6       | 2.50                     | 0.46              |
| 1:0:198:A:O4'  | 1:0:210:A:H1'     | 2.15                     | 0.46              |
| 1:0:2133:G:H2' | 1:0:2134:U:C6     | 2.50                     | 0.46              |
| 1:0:2181:A:O5' | 1:0:2181:A:H8     | 1.98                     | 0.46              |
| 1:0:1873:A:H2  | 1:0:2214:G:H1'    | 1.81                     | 0.46              |
| 1:0:243:G:H3'  | 1:0:244:C:C5'     | 2.46                     | 0.46              |
| 1:0:2722:C:H6  | 1:0:2722:C:O5'    | 1.98                     | 0.46              |
| 1:0:2041:A:N6  | 2:0:2881:TEL:H582 | 2.30                     | 0.46              |
| 1:0:339:U:O4   | 1:0:342:G:H5''    | 2.16                     | 0.46              |
| 1:0:958:G:H2'  | 1:0:959:C:C6      | 2.51                     | 0.46              |
| 1:0:127:C:H2'  | 1:0:128:C:C6      | 2.50                     | 0.46              |
| 1:0:1704:G:H1' | 1:0:1719:G:N2     | 2.30                     | 0.46              |
| 1:0:1724:C:H1' | 1:0:1747:G:C4     | 2.50                     | 0.46              |
| 1:0:1772:C:O2' | 1:0:1773:C:H5'    | 2.15                     | 0.46              |
| 1:0:1924:C:H2' | 1:0:1925:C:O4'    | 2.16                     | 0.46              |
| 1:0:2402:U:H4' | 1:0:2404:A:C5     | 2.51                     | 0.46              |
| 1:0:2430:A:P   | 1:0:2476:A:H61    | 2.38                     | 0.46              |
| 1:0:2447:G:O2' | 1:0:2448:A:C5'    | 2.63                     | 0.46              |
| 1:0:24:G:H2'   | 1:0:25:U:C6       | 2.51                     | 0.46              |
| 1:0:646:C:O2   | 1:0:650:U:H4'     | 2.15                     | 0.46              |
| 1:0:681:A:O2'  | 1:0:683:A:N6      | 2.49                     | 0.46              |
| 1:0:713:G:H2'  | 1:0:714:G:O4'     | 2.15                     | 0.46              |
| 1:0:1358:C:H1' | 1:0:1409:U:H3     | 1.81                     | 0.46              |
| 1:0:1435:G:O2' | 1:0:1436:G:H5'    | 2.16                     | 0.46              |
| 1:0:1651:U:C5' | 1:0:1652:G:OP2    | 2.56                     | 0.46              |
| 1:0:1885:C:H2' | 1:0:1886:G:H5'    | 1.98                     | 0.46              |
| 1:0:1955:G:H2' | 1:0:1956:G:C8     | 2.48                     | 0.46              |
| 1:0:2279:G:H2' | 1:0:2280:A:H8     | 1.81                     | 0.46              |
| 1:0:433:G:H2'  | 1:0:434:C:OP2     | 2.16                     | 0.46              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:653:G:H21  | 1:0:657:A:H61   | 1.64                     | 0.46              |
| 1:0:796:A:H2   | 1:0:797:A:H4'   | 1.81                     | 0.46              |
| 1:0:1059:A:H2  | 1:0:1123:G:N2   | 2.14                     | 0.46              |
| 1:0:1445:A:H2' | 1:0:1446:U:C6   | 2.51                     | 0.46              |
| 1:0:1522:C:H2' | 1:0:1523:A:O4'  | 2.16                     | 0.46              |
| 1:0:1622:G:H4' | 1:0:1624:A:N3   | 2.30                     | 0.46              |
| 1:0:1696:C:H3' | 1:0:1697:U:C6   | 2.51                     | 0.46              |
| 1:0:1142:G:O6  | 1:0:2008:C:H1'  | 2.16                     | 0.46              |
| 1:0:2080:U:H2' | 1:0:2081:U:H6   | 1.81                     | 0.46              |
| 1:0:2197:U:H2' | 1:0:2198:U:H6   | 1.81                     | 0.46              |
| 1:0:2695:C:H2' | 1:0:2696:A:C8   | 2.51                     | 0.46              |
| 1:0:2744:A:N6  | 1:0:2746:G:C2   | 2.84                     | 0.46              |
| 1:0:2756:A:H4' | 1:0:2757:G:O5'  | 2.16                     | 0.46              |
| 1:0:2828:C:O2' | 1:0:2829:A:H5'  | 2.16                     | 0.46              |
| 1:0:40:U:H2'   | 1:0:41:G:C8     | 2.51                     | 0.46              |
| 1:0:697:G:N2   | 1:0:807:A:C2    | 2.81                     | 0.46              |
| 1:0:751:G:H2'  | 1:0:752:G:O4'   | 2.16                     | 0.46              |
| 1:0:78:C:O2'   | 1:0:79:G:H5'    | 2.16                     | 0.46              |
| 1:0:796:A:N3   | 1:0:796:A:C2'   | 2.78                     | 0.46              |
| 1:0:1055:A:OP1 | 1:0:1057:A:H5'  | 2.16                     | 0.45              |
| 1:0:1750:A:C5' | 1:0:2695:C:H1'  | 2.47                     | 0.45              |
| 1:0:1819:U:H2' | 1:0:1820:G:O4'  | 2.15                     | 0.45              |
| 1:0:2767:C:H2' | 1:0:2768:C:C6   | 2.51                     | 0.45              |
| 1:0:439:C:H5'' | 1:0:440:U:H5    | 1.81                     | 0.45              |
| 1:0:622:U:C2'  | 1:0:623:G:H5'   | 2.46                     | 0.45              |
| 1:0:67:G:C5    | 1:0:72:A:C2     | 3.03                     | 0.45              |
| 1:0:677:G:H4'  | 1:0:952:A:OP1   | 2.16                     | 0.45              |
| 1:0:982:C:H2'  | 1:0:983:G:C8    | 2.51                     | 0.45              |
| 1:0:987:G:C5'  | 1:0:1167:A:H62  | 2.29                     | 0.45              |
| 1:0:162:C:H2'  | 1:0:163:A:C8    | 2.51                     | 0.45              |
| 1:0:2386:G:C2  | 1:0:2387:U:C5   | 3.05                     | 0.45              |
| 1:0:638:A:H2'  | 1:0:639:G:O4'   | 2.16                     | 0.45              |
| 1:0:821:A:H2'  | 1:0:822:G:C8    | 2.49                     | 0.45              |
| 1:0:970:A:H2'  | 1:0:971:A:C8    | 2.51                     | 0.45              |
| 1:0:1068:A:H2' | 1:0:1069:G:C8   | 2.51                     | 0.45              |
| 1:0:1086:C:C2' | 1:0:1087:C:H5'' | 2.45                     | 0.45              |
| 1:0:1376:C:H2' | 1:0:1377:G:O4'  | 2.17                     | 0.45              |
| 1:0:1408:A:H2' | 1:0:1411:C:N4   | 2.30                     | 0.45              |
| 1:0:1928:G:O6  | 1:0:1943:A:N6   | 2.48                     | 0.45              |
| 1:0:2484:G:N3  | 1:0:2485:U:H5   | 2.14                     | 0.45              |
| 1:0:2507:U:O2' | 1:0:2508:G:H8   | 1.99                     | 0.45              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2586:G:H2' | 1:0:2587:G:O4'  | 2.15                     | 0.45              |
| 1:0:2773:G:H1  | 1:0:2779:C:N4   | 2.13                     | 0.45              |
| 1:0:2824:C:C2' | 1:0:2825:A:OP2  | 2.64                     | 0.45              |
| 1:0:2824:C:O2' | 1:0:2825:A:O5'  | 2.33                     | 0.45              |
| 1:0:341:A:N1   | 1:0:1223:G:N7   | 2.64                     | 0.45              |
| 1:0:698:A:H1'  | 1:0:701:U:O4    | 2.17                     | 0.45              |
| 1:0:861:G:N2   | 1:0:943:U:C2'   | 2.79                     | 0.45              |
| 1:0:1029:C:C3' | 1:0:1030:U:H5'' | 2.46                     | 0.45              |
| 1:0:1184:G:C2' | 1:0:1185:C:H5'  | 2.47                     | 0.45              |
| 1:0:1392:U:O2  | 1:0:1392:U:C2'  | 2.65                     | 0.45              |
| 1:0:1399:C:H2' | 1:0:1400:A:C8   | 2.50                     | 0.45              |
| 1:0:1438:G:C2' | 1:0:1439:G:H5'  | 2.45                     | 0.45              |
| 1:0:1467:U:H3' | 1:0:1468:A:C5'  | 2.46                     | 0.45              |
| 1:0:1661:C:H2' | 1:0:1662:G:H8   | 1.81                     | 0.45              |
| 1:0:1763:G:N1  | 1:0:1963:G:N2   | 2.64                     | 0.45              |
| 1:0:2085:G:N2  | 1:0:2171:U:H1'  | 2.21                     | 0.45              |
| 1:0:2410:U:H2' | 1:0:2410:U:O2   | 2.15                     | 0.45              |
| 1:0:1:G:H2'    | 1:0:2:G:C8      | 2.52                     | 0.45              |
| 1:0:692:C:H2'  | 1:0:693:A:C8    | 2.51                     | 0.45              |
| 1:0:703:A:O2'  | 1:0:704:G:H5'   | 2.16                     | 0.45              |
| 1:0:788:G:H21  | 1:0:801:A:P     | 2.40                     | 0.45              |
| 1:0:856:A:H2'  | 1:0:857:U:H5'   | 1.98                     | 0.45              |
| 1:0:1605:A:H2' | 1:0:1606:C:H6   | 1.81                     | 0.45              |
| 1:0:1618:U:C2  | 1:0:1618:U:O5'  | 2.69                     | 0.45              |
| 1:0:1624:A:O2' | 1:0:1625:A:H5'  | 2.17                     | 0.45              |
| 1:0:1818:G:H2' | 1:0:1819:U:C6   | 2.52                     | 0.45              |
| 1:0:1914:U:O2' | 1:0:1915:A:H5'  | 2.16                     | 0.45              |
| 1:0:192:G:O2'  | 1:0:193:A:H4'   | 2.16                     | 0.45              |
| 1:0:1951:G:H4' | 1:0:1956:G:H4'  | 1.99                     | 0.45              |
| 1:0:1993:G:O2' | 1:0:1994:U:H5'  | 2.17                     | 0.45              |
| 1:0:2357:A:C2' | 1:0:2358:C:H5'  | 2.47                     | 0.45              |
| 1:0:2856:U:H2' | 1:0:2857:C:C6   | 2.52                     | 0.45              |
| 1:0:431:G:C4   | 1:0:432:C:H5    | 2.35                     | 0.45              |
| 1:0:200:A:H62  | 1:0:435:A:N6    | 2.09                     | 0.45              |
| 1:0:459:A:H1'  | 1:0:466:A:H62   | 1.81                     | 0.45              |
| 1:0:776:G:N3   | 1:0:776:G:H3'   | 2.32                     | 0.45              |
| 1:0:946:U:O2'  | 1:0:947:C:H5'   | 2.17                     | 0.45              |
| 1:0:1785:A:H2' | 1:0:1786:C:C6   | 2.51                     | 0.45              |
| 1:0:17:G:H2'   | 1:0:18:U:C6     | 2.51                     | 0.45              |
| 1:0:1929:U:H3  | 1:0:1943:A:N6   | 2.15                     | 0.45              |
| 1:0:162:C:H4'  | 1:0:195:A:O2'   | 2.17                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:0:2396:C:H2'    | 1:0:2397:A:C5'    | 2.45                     | 0.45              |
| 1:0:2541:U:H2'    | 1:0:2542:U:O4'    | 2.17                     | 0.45              |
| 1:0:2669:C:C2'    | 1:0:2670:C:OP2    | 2.65                     | 0.45              |
| 1:0:430:C:HO2'    | 1:0:2386:G:N2     | 2.15                     | 0.45              |
| 1:0:387:A:C4'     | 1:0:436:A:H62     | 2.30                     | 0.45              |
| 1:0:706:A:H2'     | 1:0:707:U:O4'     | 2.16                     | 0.45              |
| 1:0:753:U:H1'     | 1:0:1964:A:C4     | 2.52                     | 0.45              |
| 1:0:780:U:O2'     | 1:0:781:G:H5'     | 2.17                     | 0.45              |
| 1:0:874:A:C2      | 1:0:875:G:H1'     | 2.51                     | 0.45              |
| 1:0:882:C:C2      | 1:0:883:A:C8      | 3.05                     | 0.45              |
| 1:0:1707:A:N7     | 1:0:1714:A:H2     | 2.15                     | 0.45              |
| 1:0:1724:C:C2     | 1:0:1725:C:C5     | 3.05                     | 0.45              |
| 1:0:1740:G:O2'    | 1:0:1741:G:H5'    | 2.17                     | 0.45              |
| 1:0:192:G:H4'     | 1:0:193:A:O5'     | 2.17                     | 0.45              |
| 1:0:1970:G:O2'    | 1:0:1971:C:H5'    | 2.16                     | 0.45              |
| 1:0:2635:U:H3     | 1:0:2644:A:H8     | 1.64                     | 0.45              |
| 1:0:2724:G:O2'    | 1:0:2725:C:H5'    | 2.17                     | 0.45              |
| 1:0:395:G:C2'     | 1:0:396:U:H5'     | 2.47                     | 0.45              |
| 1:0:625:A:H2'     | 1:0:626:A:H5'     | 1.99                     | 0.45              |
| 1:0:1223:G:C5'    | 1:0:1224:A:OP1    | 2.65                     | 0.45              |
| 1:0:824:U:O4'     | 1:0:1264:C:O2     | 2.35                     | 0.45              |
| 1:0:1288:A:H2'    | 1:0:1289:A:C4'    | 2.46                     | 0.45              |
| 1:0:1302:C:O2'    | 1:0:1303:U:H5'    | 2.16                     | 0.45              |
| 1:0:1500:U:H2'    | 1:0:1501:C:C6     | 2.52                     | 0.45              |
| 1:0:1724:C:H1'    | 1:0:1747:G:N3     | 2.32                     | 0.45              |
| 1:0:1849:G:N2     | 1:0:1869:A:N6     | 2.64                     | 0.45              |
| 1:0:1918:G:H1'    | 1:0:1947:G:C2     | 2.51                     | 0.45              |
| 1:0:2204:A:H4'    | 1:0:2205:C:O4'    | 2.17                     | 0.45              |
| 1:0:2239:C:H2'    | 1:0:2240:C:H6     | 1.82                     | 0.45              |
| 1:0:2240:C:H2'    | 1:0:2241:U:C5'    | 2.47                     | 0.45              |
| 1:0:2338:C:H2'    | 1:0:2339:A:C8     | 2.52                     | 0.45              |
| 1:0:2827:G:H2'    | 1:0:2828:C:C6     | 2.52                     | 0.45              |
| 2:0:2881:TEL:H231 | 2:0:2881:TEL:H332 | 1.99                     | 0.45              |
| 1:0:689:A:H2'     | 1:0:690:A:H5'     | 1.99                     | 0.45              |
| 1:0:775:U:H4'     | 1:0:776:G:C8      | 2.52                     | 0.45              |
| 1:0:73:A:N6       | 1:0:87:G:OP2      | 2.40                     | 0.45              |
| 1:0:1035:G:H21    | 1:0:1155:G:H5'    | 1.82                     | 0.45              |
| 1:0:1035:G:C6     | 1:0:1036:G:O6     | 2.70                     | 0.45              |
| 1:0:1265:G:H2'    | 1:0:1266:G:O4'    | 2.16                     | 0.45              |
| 1:0:1349:A:H2'    | 1:0:1350:G:C8     | 2.52                     | 0.45              |
| 1:0:173:A:C2      | 1:0:818:G:H1'     | 2.51                     | 0.45              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1830:C:N4  | 1:0:1881:U:H3'  | 2.32                     | 0.45              |
| 1:0:1975:G:O4' | 1:0:1977:C:H5   | 2.00                     | 0.45              |
| 1:0:2013:A:C2' | 1:0:2014:A:OP2  | 2.64                     | 0.45              |
| 1:0:582:G:N1   | 1:0:2014:A:OP2  | 2.44                     | 0.45              |
| 1:0:872:G:O2'  | 1:0:2247:A:N3   | 2.49                     | 0.45              |
| 1:0:585:U:H5'' | 1:0:2482:A:OP1  | 2.17                     | 0.45              |
| 1:0:2513:A:C2  | 1:0:2514:G:H1'  | 2.52                     | 0.45              |
| 1:0:2694:G:H2' | 1:0:2695:C:C6   | 2.52                     | 0.45              |
| 1:0:737:C:H2'  | 1:0:738:G:O4'   | 2.17                     | 0.45              |
| 1:0:802:A:N3   | 1:0:802:A:C2'   | 2.80                     | 0.45              |
| 1:0:854:G:H2'  | 1:0:855:G:C8    | 2.52                     | 0.45              |
| 1:0:861:G:N2   | 1:0:943:U:H2'   | 2.31                     | 0.45              |
| 1:0:875:G:H3'  | 1:0:876:A:H8    | 1.81                     | 0.45              |
| 1:0:1149:G:N2  | 1:0:1154:A:H1'  | 2.28                     | 0.45              |
| 1:0:150:A:H2'  | 1:0:151:G:H5'   | 1.99                     | 0.45              |
| 1:0:1629:G:H3' | 1:0:1630:A:H5'' | 1.99                     | 0.45              |
| 1:0:1913:G:H2' | 1:0:1914:U:OP2  | 2.16                     | 0.45              |
| 1:0:2161:C:O2' | 1:0:2162:C:OP1  | 2.30                     | 0.45              |
| 1:0:2380:U:O2' | 1:0:2381:A:H5'  | 2.17                     | 0.45              |
| 1:0:631:G:H5'' | 1:0:632:A:OP1   | 2.17                     | 0.45              |
| 1:0:740:A:H2'  | 1:0:741:G:O4'   | 2.17                     | 0.45              |
| 1:0:813:A:H1'  | 1:0:815:A:H4'   | 1.98                     | 0.45              |
| 1:0:846:A:H62  | 1:0:955:G:H22   | 1.56                     | 0.45              |
| 1:0:1192:A:H2' | 1:0:1193:G:H8   | 1.82                     | 0.44              |
| 1:0:1385:C:H2' | 1:0:1386:A:H8   | 1.82                     | 0.44              |
| 1:0:1388:C:H2' | 1:0:1389:C:H6   | 1.81                     | 0.44              |
| 1:0:1406:A:O3' | 1:0:1407:G:H8   | 2.00                     | 0.44              |
| 1:0:1474:A:H2' | 1:0:1476:G:OP1  | 2.17                     | 0.44              |
| 1:0:1621:C:O4' | 1:0:1626:A:C6   | 2.70                     | 0.44              |
| 1:0:1758:C:C2' | 1:0:1759:A:H5'  | 2.47                     | 0.44              |
| 1:0:1804:U:O2' | 1:0:1805:G:H5'  | 2.17                     | 0.44              |
| 1:0:2005:U:O2' | 1:0:2017:U:C2   | 2.70                     | 0.44              |
| 1:0:208:C:H2'  | 1:0:209:G:H5'   | 1.99                     | 0.44              |
| 1:0:2274:C:C2' | 1:0:2275:U:C5'  | 2.95                     | 0.44              |
| 1:0:2410:U:H2' | 1:0:2412:A:OP2  | 2.16                     | 0.44              |
| 1:0:2455:A:H2' | 1:0:2455:A:N3   | 2.32                     | 0.44              |
| 1:0:2633:A:C4' | 1:0:2634:G:OP1  | 2.65                     | 0.44              |
| 1:0:2667:C:N4  | 1:0:2699:G:H3'  | 2.30                     | 0.44              |
| 1:0:2816:C:H2' | 1:0:2817:A:C8   | 2.52                     | 0.44              |
| 1:0:324:C:H2'  | 1:0:325:U:C5'   | 2.47                     | 0.44              |
| 1:0:430:C:C6   | 1:0:430:C:C5'   | 2.97                     | 0.44              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:441:A:O2'  | 1:0:442:A:H5'   | 2.16                     | 0.44              |
| 1:0:688:A:N7   | 1:0:816:U:O4    | 2.50                     | 0.44              |
| 1:0:697:G:C5   | 1:0:788:G:O6    | 2.70                     | 0.44              |
| 1:0:81:C:H2'   | 1:0:82:G:O4'    | 2.16                     | 0.44              |
| 1:0:830:C:O2'  | 1:0:852:U:H5''  | 2.17                     | 0.44              |
| 1:0:1528:C:H3' | 1:0:1529:C:C5'  | 2.40                     | 0.44              |
| 1:0:1948:C:N4  | 1:0:1949:A:N6   | 2.65                     | 0.44              |
| 1:0:2212:U:H2' | 1:0:2213:G:H8   | 1.79                     | 0.44              |
| 1:0:2239:C:H2' | 1:0:2240:C:C6   | 2.52                     | 0.44              |
| 1:0:2242:C:N4  | 1:0:2257:A:C6   | 2.85                     | 0.44              |
| 1:0:2578:G:N2  | 1:0:2579:A:H1'  | 2.33                     | 0.44              |
| 1:0:2585:C:O2' | 1:0:2586:G:H5'  | 2.17                     | 0.44              |
| 1:0:2706:U:H2' | 1:0:2706:U:O2   | 2.18                     | 0.44              |
| 1:0:734:G:H2'  | 1:0:735:G:H8    | 1.81                     | 0.44              |
| 1:0:873:U:C4   | 1:0:929:A:N6    | 2.85                     | 0.44              |
| 1:0:1083:C:N4  | 1:0:1103:C:C4   | 2.85                     | 0.44              |
| 1:0:1216:G:O2' | 1:0:1217:U:H5'  | 2.16                     | 0.44              |
| 1:0:1355:A:H1' | 1:0:1410:U:C4'  | 2.47                     | 0.44              |
| 1:0:1391:A:O2' | 1:0:1392:U:OP1  | 2.35                     | 0.44              |
| 1:0:1463:A:O2' | 1:0:1543:G:N2   | 2.51                     | 0.44              |
| 1:0:1625:A:O2' | 1:0:1632:A:H4'  | 2.17                     | 0.44              |
| 1:0:180:C:N3   | 1:0:181:A:N6    | 2.66                     | 0.44              |
| 1:0:2082:C:N4  | 1:0:2174:G:N2   | 2.65                     | 0.44              |
| 1:0:226:C:H4'  | 1:0:227:G:C8    | 2.53                     | 0.44              |
| 1:0:2505:G:H22 | 1:0:2517:C:H1'  | 1.83                     | 0.44              |
| 1:0:2800:C:C2' | 1:0:2801:A:H5'  | 2.47                     | 0.44              |
| 1:0:653:G:H4'  | 1:0:2328:G:H4'  | 1.99                     | 0.44              |
| 1:0:658:G:H1'  | 1:0:2330:G:H5'' | 1.99                     | 0.44              |
| 1:0:756:C:H2'  | 1:0:757:U:O4'   | 2.17                     | 0.44              |
| 1:0:873:U:H1'  | 1:0:2246:A:H5'' | 2.00                     | 0.44              |
| 1:0:1001:A:N7  | 1:0:1200:G:H4'  | 2.33                     | 0.44              |
| 1:0:1030:U:H2' | 1:0:1031:C:O4'  | 2.18                     | 0.44              |
| 1:0:1711:C:H4' | 1:0:1712:G:N2   | 2.32                     | 0.44              |
| 1:0:1970:G:H2' | 1:0:1971:C:C6   | 2.53                     | 0.44              |
| 1:0:1999:U:H6  | 1:0:1999:U:O5'  | 2.00                     | 0.44              |
| 1:0:2013:A:H2' | 1:0:2014:A:OP2  | 2.18                     | 0.44              |
| 1:0:2095:G:H2' | 1:0:2096:U:H5'' | 1.99                     | 0.44              |
| 1:0:2363:G:C2' | 1:0:2364:C:OP1  | 2.66                     | 0.44              |
| 1:0:2797:G:H2' | 1:0:2798:A:C5'  | 2.44                     | 0.44              |
| 1:0:26:G:C2    | 1:0:27:G:N2     | 2.85                     | 0.44              |
| 1:0:402:A:H2'  | 1:0:403:A:O4'   | 2.17                     | 0.44              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:434:C:C2'  | 1:0:434:C:O2    | 2.66                     | 0.44              |
| 1:0:439:C:H3'  | 1:0:440:U:C5    | 2.53                     | 0.44              |
| 1:0:591:G:H2'  | 1:0:592:G:H8    | 1.80                     | 0.44              |
| 1:0:4:C:O2'    | 1:0:5:A:H5'     | 2.17                     | 0.44              |
| 1:0:1142:G:H2' | 1:0:1143:A:C8   | 2.53                     | 0.44              |
| 1:0:1196:G:H2' | 1:0:1197:U:C5'  | 2.48                     | 0.44              |
| 1:0:1310:C:H2' | 1:0:1311:C:C6   | 2.52                     | 0.44              |
| 1:0:1401:G:O2' | 1:0:1402:G:H5'  | 2.17                     | 0.44              |
| 1:0:1630:A:H8  | 1:0:1630:A:OP2  | 2.00                     | 0.44              |
| 1:0:1751:A:H2' | 1:0:1752:U:C6   | 2.52                     | 0.44              |
| 1:0:192:G:O2'  | 1:0:193:A:C5'   | 2.65                     | 0.44              |
| 1:0:2178:U:H2' | 1:0:2179:C:H6   | 1.82                     | 0.44              |
| 1:0:2227:C:H2' | 1:0:2228:U:H5'  | 2.00                     | 0.44              |
| 1:0:236:C:H2'  | 1:0:237:G:C8    | 2.52                     | 0.44              |
| 1:0:239:A:H2'  | 1:0:240:U:O4'   | 2.17                     | 0.44              |
| 1:0:2467:A:H2' | 1:0:2468:G:C8   | 2.53                     | 0.44              |
| 1:0:2043:A:O2' | 1:0:2481:G:O5'  | 2.36                     | 0.44              |
| 1:0:2491:C:C2' | 1:0:2492:G:H5'' | 2.47                     | 0.44              |
| 1:0:2609:G:O4' | 1:0:2868:G:N3   | 2.51                     | 0.44              |
| 1:0:2661:G:H2' | 1:0:2662:C:O4'  | 2.18                     | 0.44              |
| 1:0:353:G:H2'  | 1:0:354:C:C6    | 2.52                     | 0.44              |
| 1:0:926:C:H2'  | 1:0:926:C:O2    | 2.17                     | 0.44              |
| 1:0:939:C:C4   | 1:0:940:G:O6    | 2.71                     | 0.44              |
| 1:0:1086:C:H2' | 1:0:1087:C:C5'  | 2.46                     | 0.44              |
| 1:0:1199:U:H3' | 1:0:1200:G:H5'' | 2.00                     | 0.44              |
| 1:0:1257:U:O2' | 1:0:1258:G:H5'  | 2.16                     | 0.44              |
| 1:0:1312:G:O2' | 1:0:1314:A:C2   | 2.66                     | 0.44              |
| 1:0:1321:A:N1  | 1:0:1624:A:N1   | 2.66                     | 0.44              |
| 1:0:1437:A:H2' | 1:0:1438:G:C8   | 2.48                     | 0.44              |
| 1:0:2105:U:H2' | 1:0:2106:G:H8   | 1.81                     | 0.44              |
| 1:0:2299:A:H5' | 1:0:2300:G:N9   | 2.32                     | 0.44              |
| 1:0:2315:A:O2' | 1:0:2364:C:H5'' | 2.17                     | 0.44              |
| 1:0:2343:C:H2' | 1:0:2344:G:C8   | 2.53                     | 0.44              |
| 1:0:2666:U:H2' | 1:0:2667:C:O4'  | 2.18                     | 0.44              |
| 1:0:2676:G:H2' | 1:0:2677:U:C6   | 2.53                     | 0.44              |
| 1:0:2728:A:H2' | 1:0:2729:A:O4'  | 2.17                     | 0.44              |
| 1:0:502:A:C2'  | 1:0:503:G:H5'   | 2.48                     | 0.44              |
| 1:0:755:C:H2'  | 1:0:756:C:O4'   | 2.18                     | 0.44              |
| 1:0:1083:C:N4  | 1:0:1104:G:C6   | 2.85                     | 0.44              |
| 1:0:1514:C:H4' | 1:0:1592:U:O2'  | 2.18                     | 0.44              |
| 1:0:216:U:H2'  | 1:0:217:U:C6    | 2.53                     | 0.44              |

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| Atom-1         | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|------------------|--------------------------|-------------------|
| 1:0:2428:U:C2' | 1:0:2428:U:O2    | 2.66                     | 0.44              |
| 1:0:324:C:O2'  | 1:0:325:U:H5'    | 2.17                     | 0.44              |
| 1:0:538:A:N6   | 1:0:2759:U:H3    | 2.15                     | 0.44              |
| 1:0:572:G:OP2  | 1:0:581:A:H5'    | 2.17                     | 0.44              |
| 1:0:620:G:H1   | 1:0:628:A:N6     | 2.15                     | 0.44              |
| 1:0:5:A:H2'    | 1:0:6:A:H8       | 1.83                     | 0.44              |
| 1:0:742:G:C2'  | 1:0:742:G:N3     | 2.79                     | 0.44              |
| 1:0:78:C:H2'   | 1:0:79:G:C8      | 2.48                     | 0.44              |
| 1:0:982:C:OP2  | 1:0:985:G:N1     | 2.50                     | 0.44              |
| 1:0:1001:A:H2' | 1:0:1002:C:H5''  | 1.99                     | 0.44              |
| 1:0:1153:A:C2  | 1:0:1155:G:C6    | 3.06                     | 0.44              |
| 1:0:1177:U:N3  | 1:0:1197:U:O2    | 2.51                     | 0.44              |
| 1:0:1249:G:C2' | 1:0:1250:A:OP2   | 2.66                     | 0.44              |
| 1:0:1253:C:H2' | 1:0:1254:G:O4'   | 2.17                     | 0.44              |
| 1:0:1866:G:O5' | 1:0:1866:G:H8    | 2.00                     | 0.44              |
| 1:0:1932:G:H2' | 1:0:1932:G:N3    | 2.33                     | 0.44              |
| 1:0:1929:U:H3  | 1:0:1943:A:H61   | 1.64                     | 0.44              |
| 1:0:2010:G:O2' | 1:0:2011:U:H5'   | 2.18                     | 0.44              |
| 1:0:2590:U:H1' | 2:0:2881:TEL:H21 | 2.00                     | 0.44              |
| 1:0:357:A:C3'  | 1:0:358:C:H5'    | 2.47                     | 0.44              |
| 1:0:224:G:C1'  | 1:0:399:G:O6     | 2.66                     | 0.44              |
| 1:0:469:G:O2'  | 1:0:470:U:C5     | 2.70                     | 0.44              |
| 1:0:547:U:H2'  | 1:0:548:G:H8     | 1.82                     | 0.44              |
| 1:0:698:A:OP2  | 1:0:787:A:N1     | 2.51                     | 0.44              |
| 1:0:968:C:H2'  | 1:0:969:U:OP1    | 2.17                     | 0.44              |
| 1:0:993:C:O5'  | 1:0:993:C:H6     | 2.01                     | 0.44              |
| 1:0:1052:C:O5' | 1:0:1052:C:H6    | 2.00                     | 0.44              |
| 1:0:1194:U:O2' | 1:0:1195:U:P     | 2.76                     | 0.44              |
| 1:0:1272:G:H2' | 1:0:1273:G:C8    | 2.52                     | 0.44              |
| 1:0:1333:G:N2  | 1:0:1344:C:N4    | 2.65                     | 0.44              |
| 1:0:1800:A:N3  | 1:0:1802:A:N1    | 2.66                     | 0.44              |
| 1:0:189:A:O2'  | 1:0:190:A:H5'    | 2.17                     | 0.44              |
| 1:0:1981:A:H4' | 1:0:2704:U:O2'   | 2.18                     | 0.44              |
| 1:0:200:A:C6   | 1:0:435:A:C6     | 3.05                     | 0.44              |
| 1:0:2122:G:H2' | 1:0:2123:G:C8    | 2.52                     | 0.44              |
| 1:0:2348:A:H61 | 1:0:2361:G:N2    | 2.16                     | 0.44              |
| 1:0:2498:U:P   | 1:0:2498:U:H3'   | 2.58                     | 0.44              |
| 1:0:2498:U:H5' | 1:0:2546:G:N2    | 2.33                     | 0.44              |
| 1:0:2622:G:H2' | 1:0:2623:A:O4'   | 2.18                     | 0.44              |
| 1:0:2828:C:H2' | 1:0:2829:A:H8    | 1.83                     | 0.44              |
| 1:0:29:U:H6    | 1:0:29:U:O5'     | 2.01                     | 0.44              |

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| Atom-1          | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:0:503:G:H2'   | 1:0:504:G:H8      | 1.81                     | 0.44              |
| 1:0:93:A:O2'    | 1:0:94:C:H5'      | 2.18                     | 0.44              |
| 1:0:1013:G:H22  | 1:0:1165:G:H1'    | 1.83                     | 0.43              |
| 1:0:1034:U:H2'  | 1:0:1035:G:H5'    | 2.00                     | 0.43              |
| 1:0:1703:C:H2'  | 1:0:1704:G:O4'    | 2.18                     | 0.43              |
| 1:0:16:G:C2'    | 1:0:17:G:H5'      | 2.48                     | 0.43              |
| 1:0:1821:A:H5'' | 1:0:1822:C:H5     | 1.82                     | 0.43              |
| 1:0:1904:G:H2'  | 1:0:1905:G:C8     | 2.53                     | 0.43              |
| 1:0:2043:A:H1'  | 1:0:2481:G:O4'    | 2.17                     | 0.43              |
| 1:0:2387:U:H2'  | 1:0:2388:G:H5'    | 2.00                     | 0.43              |
| 1:0:2709:C:H2'  | 1:0:2710:C:C6     | 2.53                     | 0.43              |
| 1:0:2824:C:H1'  | 1:0:2843:A:C4     | 2.53                     | 0.43              |
| 1:0:326:A:H2'   | 1:0:327:C:O4'     | 2.18                     | 0.43              |
| 1:0:52:A:C2'    | 1:0:53:G:H5'      | 2.48                     | 0.43              |
| 1:0:810:U:H2'   | 1:0:811:G:C8      | 2.52                     | 0.43              |
| 1:0:1445:A:H2'  | 1:0:1446:U:O4'    | 2.19                     | 0.43              |
| 1:0:1474:A:C2'  | 1:0:1475:U:H5'    | 2.47                     | 0.43              |
| 1:0:2002:A:H61  | 1:0:2018:G:H22    | 1.65                     | 0.43              |
| 1:0:2082:C:H2'  | 1:0:2083:G:H8     | 1.83                     | 0.43              |
| 1:0:2875:C:O2'  | 1:0:2876:C:H5'    | 2.17                     | 0.43              |
| 1:0:436:A:C4'   | 1:0:437:G:OP1     | 2.65                     | 0.43              |
| 1:0:451:A:H2'   | 1:0:452:G:O4'     | 2.18                     | 0.43              |
| 1:0:504:G:O2'   | 1:0:505:G:H5'     | 2.18                     | 0.43              |
| 1:0:568:G:H2'   | 1:0:569:C:O4'     | 2.18                     | 0.43              |
| 1:0:587:A:C3'   | 1:0:588:G:H5''    | 2.48                     | 0.43              |
| 1:0:855:G:H2'   | 1:0:856:A:O4'     | 2.18                     | 0.43              |
| 1:0:1052:C:H2'  | 1:0:1053:G:C8     | 2.53                     | 0.43              |
| 1:0:1223:G:H5'  | 1:0:1225:G:H5'    | 1.99                     | 0.43              |
| 1:0:1388:C:H2'  | 1:0:1389:C:C6     | 2.53                     | 0.43              |
| 1:0:2015:G:C2'  | 1:0:2015:G:N3     | 2.81                     | 0.43              |
| 1:0:203:G:O2'   | 1:0:204:A:H5'     | 2.18                     | 0.43              |
| 1:0:2041:A:H61  | 2:0:2881:TEL:H581 | 1.78                     | 0.43              |
| 1:0:2409:A:N7   | 1:0:2410:U:H5     | 2.16                     | 0.43              |
| 1:0:2792:C:C3'  | 1:0:2793:G:H5''   | 2.48                     | 0.43              |
| 1:0:2814:G:H2'  | 1:0:2815:C:H6     | 1.75                     | 0.43              |
| 1:0:321:A:N1    | 1:0:323:G:H1'     | 2.34                     | 0.43              |
| 1:0:600:G:O6    | 1:0:602:C:N4      | 2.51                     | 0.43              |
| 1:0:1625:A:N3   | 1:0:1625:A:C2'    | 2.80                     | 0.43              |
| 1:0:1779:C:H6   | 1:0:1779:C:O5'    | 2.01                     | 0.43              |
| 1:0:1779:C:O2'  | 1:0:1780:A:H5'    | 2.18                     | 0.43              |
| 1:0:1838:G:H2'  | 1:0:1839:A:O4'    | 2.19                     | 0.43              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:190:A:H2'  | 1:0:191:G:H8    | 1.82                     | 0.43              |
| 1:0:2299:A:O2' | 1:0:2312:A:N6   | 2.52                     | 0.43              |
| 1:0:2343:C:O2' | 1:0:2344:G:H5'  | 2.18                     | 0.43              |
| 1:0:2377:U:O5' | 1:0:2377:U:H6   | 2.01                     | 0.43              |
| 1:0:2817:A:N1  | 1:0:2851:G:C6   | 2.86                     | 0.43              |
| 1:0:317:U:N3   | 1:0:321:A:N6    | 2.49                     | 0.43              |
| 1:0:32:C:H2'   | 1:0:33:C:O4'    | 2.18                     | 0.43              |
| 1:0:320:A:N7   | 1:0:341:A:N7    | 2.67                     | 0.43              |
| 1:0:490:A:C2'  | 1:0:491:A:H5'   | 2.47                     | 0.43              |
| 1:0:815:A:H2'  | 1:0:816:U:O4'   | 2.19                     | 0.43              |
| 1:0:1610:A:H2' | 1:0:1611:U:C6   | 2.54                     | 0.43              |
| 1:0:1984:A:H2' | 1:0:1985:G:H8   | 1.82                     | 0.43              |
| 1:0:202:A:O2'  | 1:0:203:G:H5'   | 2.18                     | 0.43              |
| 1:0:2493:U:O2' | 1:0:2494:C:H5'  | 2.18                     | 0.43              |
| 1:0:700:C:O4'  | 1:0:801:A:O4'   | 2.36                     | 0.43              |
| 1:0:782:U:HO2' | 1:0:1392:U:H6   | 1.65                     | 0.43              |
| 1:0:788:G:H2'  | 1:0:807:A:C4    | 2.53                     | 0.43              |
| 1:0:1094:C:H2' | 1:0:1096:A:OP2  | 2.19                     | 0.43              |
| 1:0:1055:A:H61 | 1:0:1122:A:C5'  | 2.31                     | 0.43              |
| 1:0:1029:C:H41 | 1:0:1153:A:H61  | 1.56                     | 0.43              |
| 1:0:1154:A:H3' | 1:0:1154:A:C8   | 2.54                     | 0.43              |
| 1:0:952:A:HO2' | 1:0:1204:G:H4'  | 1.84                     | 0.43              |
| 1:0:1217:U:O2' | 1:0:1218:C:H5'  | 2.19                     | 0.43              |
| 1:0:1274:C:H6  | 1:0:1274:C:O5'  | 2.02                     | 0.43              |
| 1:0:1358:C:C2' | 1:0:1359:G:H5'  | 2.47                     | 0.43              |
| 1:0:1654:A:H4' | 1:0:2690:A:O2'  | 2.19                     | 0.43              |
| 1:0:1715:A:O2' | 1:0:1716:G:H5'' | 2.18                     | 0.43              |
| 1:0:1715:A:O2' | 1:0:1716:G:C5'  | 2.67                     | 0.43              |
| 1:0:201:G:N2   | 1:0:202:A:C4    | 2.86                     | 0.43              |
| 1:0:2178:U:H2' | 1:0:2179:C:C6   | 2.53                     | 0.43              |
| 1:0:219:G:C2'  | 1:0:231:G:H1    | 2.30                     | 0.43              |
| 1:0:1922:U:O2' | 1:0:2571:G:C1'  | 2.66                     | 0.43              |
| 1:0:457:C:H5'  | 1:0:1261:G:O6   | 2.19                     | 0.43              |
| 1:0:516:G:H2'  | 1:0:517:A:OP2   | 2.19                     | 0.43              |
| 1:0:935:C:H2'  | 1:0:936:A:H8    | 1.83                     | 0.43              |
| 1:0:935:C:O2'  | 1:0:936:A:H5'   | 2.19                     | 0.43              |
| 1:0:1325:U:H5' | 1:0:1326:U:H6   | 1.82                     | 0.43              |
| 1:0:1370:U:O2' | 1:0:1371:G:H5'  | 2.18                     | 0.43              |
| 1:0:1900:U:H3' | 1:0:1901:A:H8   | 1.82                     | 0.43              |
| 1:0:2176:U:C2' | 1:0:2177:U:H5'  | 2.49                     | 0.43              |
| 1:0:2240:C:C1' | 1:0:2367:A:H1'  | 2.45                     | 0.43              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2694:G:OP1  | 1:0:2694:G:H8  | 2.01                     | 0.43              |
| 1:0:486:U:H6    | 1:0:486:U:OP2  | 2.01                     | 0.43              |
| 1:0:738:G:H2'   | 1:0:739:G:O4'  | 2.18                     | 0.43              |
| 1:0:82:G:O2'    | 1:0:83:A:H5'   | 2.19                     | 0.43              |
| 1:0:915:C:H2'   | 1:0:916:U:C6   | 2.53                     | 0.43              |
| 1:0:1089:C:C2   | 1:0:1099:A:H4' | 2.54                     | 0.43              |
| 1:0:139:A:O2'   | 1:0:140:G:H5'  | 2.19                     | 0.43              |
| 1:0:1444:C:H2'  | 1:0:1445:A:C8  | 2.54                     | 0.43              |
| 1:0:1458:A:C3'  | 1:0:1459:U:C5' | 2.95                     | 0.43              |
| 1:0:1566:G:H2'  | 1:0:1567:A:C8  | 2.53                     | 0.43              |
| 1:0:1625:A:H1'  | 1:0:1632:A:H1' | 2.00                     | 0.43              |
| 1:0:1913:G:C2'  | 1:0:1914:U:OP2 | 2.67                     | 0.43              |
| 1:0:2082:C:H2'  | 1:0:2083:G:O4' | 2.19                     | 0.43              |
| 1:0:221:A:C2'   | 1:0:222:G:H5'  | 2.49                     | 0.43              |
| 1:0:2790:C:H2'  | 1:0:2791:C:H6  | 1.84                     | 0.43              |
| 1:0:322:A:C6    | 1:0:339:U:O2   | 2.72                     | 0.43              |
| 1:0:744:C:H2'   | 1:0:745:C:C6   | 2.53                     | 0.43              |
| 1:0:1054:C:H2'  | 1:0:1055:A:H5' | 2.00                     | 0.43              |
| 1:0:1071:U:C2'  | 1:0:1072:U:H5' | 2.47                     | 0.43              |
| 1:0:1083:C:N4   | 1:0:1104:G:O6  | 2.51                     | 0.43              |
| 1:0:1088:A:O2'  | 1:0:1089:C:H5' | 2.19                     | 0.43              |
| 1:0:1501:C:H2'  | 1:0:1502:G:O4' | 2.18                     | 0.43              |
| 1:0:1686:A:N3   | 1:0:1686:A:C2' | 2.81                     | 0.43              |
| 1:0:1790:G:HO2' | 1:0:1791:C:H6  | 1.59                     | 0.43              |
| 1:0:1908:C:C2'  | 1:0:1909:U:H4' | 2.40                     | 0.43              |
| 1:0:1912:G:C2'  | 1:0:1912:G:N3  | 2.78                     | 0.43              |
| 1:0:2028:C:H2'  | 1:0:2029:G:O5' | 2.17                     | 0.43              |
| 1:0:2033:C:H2'  | 1:0:2034:A:C1' | 2.48                     | 0.43              |
| 1:0:2107:G:O2'  | 1:0:2108:G:H5' | 2.19                     | 0.43              |
| 1:0:2418:A:H5'  | 1:0:2420:C:OP2 | 2.18                     | 0.43              |
| 1:0:2492:G:H2'  | 1:0:2493:U:O4' | 2.18                     | 0.43              |
| 1:0:367:G:H2'   | 1:0:368:A:H5'' | 2.00                     | 0.43              |
| 1:0:695:G:N2    | 1:0:809:C:C2   | 2.86                     | 0.43              |
| 1:0:830:C:C5    | 1:0:831:G:N7   | 2.86                     | 0.43              |
| 1:0:942:U:H2'   | 1:0:943:U:C5'  | 2.49                     | 0.43              |
| 1:0:1125:G:H2'  | 1:0:1126:A:H8  | 1.81                     | 0.43              |
| 1:0:1204:G:H2'  | 1:0:1205:G:H8  | 1.84                     | 0.43              |
| 1:0:1278:A:O2'  | 1:0:1279:G:P   | 2.76                     | 0.43              |
| 1:0:128:C:C3'   | 1:0:129:A:H5'' | 2.48                     | 0.43              |
| 1:0:1582:A:C3'  | 1:0:1583:A:C5' | 2.93                     | 0.43              |
| 1:0:1738:U:O2'  | 1:0:1739:G:H5' | 2.19                     | 0.43              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1937:G:N3   | 1:0:2530:C:C5' | 2.82                     | 0.43              |
| 1:0:2123:G:H2'  | 1:0:2124:C:C6  | 2.54                     | 0.43              |
| 1:0:2196:U:H2'  | 1:0:2197:U:O4' | 2.19                     | 0.43              |
| 1:0:2519:C:C5   | 1:0:2520:A:N7  | 2.87                     | 0.43              |
| 1:0:202:A:N6    | 1:0:432:C:OP2  | 2.37                     | 0.43              |
| 1:0:596:C:C1'   | 1:0:684:C:O4'  | 2.63                     | 0.43              |
| 1:0:750:C:H2'   | 1:0:751:G:O4'  | 2.18                     | 0.43              |
| 1:0:75:C:O5'    | 1:0:75:C:H6    | 2.01                     | 0.43              |
| 1:0:797:A:O2'   | 1:0:798:G:H8   | 2.02                     | 0.43              |
| 1:0:807:A:C5    | 1:0:808:C:C4   | 3.07                     | 0.43              |
| 1:0:90:G:H3'    | 1:0:91:A:C5'   | 2.48                     | 0.43              |
| 1:0:930:A:N3    | 1:0:930:A:O4'  | 2.51                     | 0.43              |
| 1:0:957:G:O2'   | 1:0:958:G:H5'  | 2.19                     | 0.43              |
| 1:0:102:C:H2'   | 1:0:103:U:O4'  | 2.19                     | 0.42              |
| 1:0:1316:G:C4   | 1:0:1317:G:C8  | 3.06                     | 0.42              |
| 1:0:1630:A:H2'  | 1:0:1631:C:H5' | 2.01                     | 0.42              |
| 1:0:1655:C:H2'  | 1:0:1656:U:O4' | 2.19                     | 0.42              |
| 1:0:1975:G:HO2' | 1:0:1976:U:P   | 2.42                     | 0.42              |
| 1:0:2023:C:H2'  | 1:0:2024:U:C6  | 2.54                     | 0.42              |
| 1:0:174:A:O2'   | 1:0:2223:U:OP1 | 2.29                     | 0.42              |
| 1:0:2571:G:H2'  | 1:0:2572:U:C6  | 2.54                     | 0.42              |
| 1:0:2593:A:C2'  | 1:0:2594:U:H5' | 2.48                     | 0.42              |
| 1:0:322:A:C2    | 1:0:346:C:C4   | 3.07                     | 0.42              |
| 1:0:481:A:H3'   | 1:0:482:A:C8   | 2.54                     | 0.42              |
| 1:0:515:A:H2'   | 1:0:516:G:H5'  | 2.00                     | 0.42              |
| 1:0:860:U:H6    | 1:0:860:U:O5'  | 2.02                     | 0.42              |
| 1:0:880:C:OP1   | 1:0:881:U:OP2  | 2.37                     | 0.42              |
| 1:0:1090:C:O2'  | 1:0:1091:C:H5' | 2.18                     | 0.42              |
| 1:0:1091:C:O2'  | 1:0:1092:U:H5' | 2.19                     | 0.42              |
| 1:0:1389:C:H2'  | 1:0:1390:G:O4' | 2.19                     | 0.42              |
| 1:0:1685:A:O2'  | 1:0:1686:A:P   | 2.77                     | 0.42              |
| 1:0:1730:G:O2'  | 1:0:1731:C:H5' | 2.20                     | 0.42              |
| 1:0:1930:C:H2'  | 1:0:1931:G:H5' | 2.01                     | 0.42              |
| 1:0:193:A:N7    | 1:0:444:U:N3   | 2.67                     | 0.42              |
| 1:0:2194:A:C3'  | 1:0:2195:C:C5' | 2.95                     | 0.42              |
| 1:0:931:G:H22   | 1:0:2247:A:C5' | 2.32                     | 0.42              |
| 1:0:2495:G:C2'  | 1:0:2496:C:O4' | 2.65                     | 0.42              |
| 1:0:2529:G:H2'  | 1:0:2530:C:H5' | 2.01                     | 0.42              |
| 1:0:2584:U:H2'  | 1:0:2585:C:C6  | 2.54                     | 0.42              |
| 1:0:2763:U:O2'  | 1:0:2764:U:H5' | 2.18                     | 0.42              |
| 1:0:2792:C:H2'  | 1:0:2793:G:O4' | 2.18                     | 0.42              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:434:C:C2'   | 1:0:435:A:OP2   | 2.66                     | 0.42              |
| 1:0:469:G:O2'   | 1:0:470:U:H5    | 2.02                     | 0.42              |
| 1:0:697:G:C6    | 1:0:788:G:N7    | 2.88                     | 0.42              |
| 1:0:956:A:O2'   | 1:0:957:G:OP1   | 2.36                     | 0.42              |
| 1:0:1419:G:O2'  | 1:0:1420:A:H5'  | 2.19                     | 0.42              |
| 1:0:1473:U:H5'  | 1:0:1474:A:C8   | 2.54                     | 0.42              |
| 1:0:1485:U:O2   | 1:0:1538:A:H2   | 2.03                     | 0.42              |
| 1:0:159:A:O2'   | 1:0:160:C:H5'   | 2.18                     | 0.42              |
| 1:0:1611:U:O2'  | 1:0:1612:U:H5'  | 2.18                     | 0.42              |
| 1:0:1624:A:N6   | 1:0:1627:C:C2   | 2.87                     | 0.42              |
| 1:0:1313:U:N3   | 1:0:1651:U:H1'  | 2.34                     | 0.42              |
| 1:0:2161:C:H2'  | 1:0:2162:C:H5   | 1.85                     | 0.42              |
| 1:0:2244:C:N3   | 1:0:2245:A:N6   | 2.68                     | 0.42              |
| 1:0:2506:C:O2'  | 1:0:2507:U:H5'  | 2.17                     | 0.42              |
| 1:0:2549:G:H2'  | 1:0:2550:C:C5'  | 2.49                     | 0.42              |
| 1:0:2867:G:HO2' | 1:0:2868:G:P    | 2.42                     | 0.42              |
| 1:0:746:G:OP2   | 1:0:774:A:N6    | 2.44                     | 0.42              |
| 1:0:789:G:H2'   | 1:0:790:A:OP2   | 2.18                     | 0.42              |
| 1:0:987:G:C5'   | 1:0:1167:A:N6   | 2.81                     | 0.42              |
| 1:0:1248:G:N1   | 1:0:1249:G:N2   | 2.68                     | 0.42              |
| 1:0:1461:C:H2'  | 1:0:1462:C:C6   | 2.54                     | 0.42              |
| 1:0:173:A:H61   | 1:0:844:G:H1'   | 1.83                     | 0.42              |
| 1:0:177:U:OP2   | 1:0:178:C:OP2   | 2.37                     | 0.42              |
| 1:0:2276:C:H1'  | 1:0:2301:A:N3   | 2.35                     | 0.42              |
| 1:0:2278:A:H2'  | 1:0:2279:G:C8   | 2.55                     | 0.42              |
| 1:0:2732:C:H3'  | 1:0:2733:A:C8   | 2.54                     | 0.42              |
| 1:0:747:A:O2'   | 1:0:748:A:H5'   | 2.19                     | 0.42              |
| 1:0:1154:A:H3'  | 1:0:1154:A:H8   | 1.85                     | 0.42              |
| 1:0:1440:G:H1'  | 1:0:1588:A:H61  | 1.84                     | 0.42              |
| 1:0:1641:C:H2'  | 1:0:1642:G:C5'  | 2.50                     | 0.42              |
| 1:0:1791:C:H2'  | 1:0:1792:C:C5'  | 2.35                     | 0.42              |
| 1:0:192:G:HO2'  | 1:0:193:A:P     | 2.42                     | 0.42              |
| 1:0:195:A:H61   | 1:0:212:U:H4'   | 1.84                     | 0.42              |
| 1:0:195:A:H2'   | 1:0:196:A:C5'   | 2.50                     | 0.42              |
| 1:0:2792:C:H2'  | 1:0:2793:G:H5'' | 2.02                     | 0.42              |
| 1:0:2836:U:O2'  | 1:0:2837:G:H5'  | 2.19                     | 0.42              |
| 1:0:341:A:C2    | 1:0:1223:G:N7   | 2.88                     | 0.42              |
| 1:0:40:U:H2'    | 1:0:41:G:H8     | 1.84                     | 0.42              |
| 1:0:431:G:C2    | 1:0:432:C:C5    | 3.07                     | 0.42              |
| 1:0:1073:G:H2'  | 1:0:1074:G:C5'  | 2.48                     | 0.42              |
| 1:0:1194:U:O2'  | 1:0:1195:U:O5'  | 2.38                     | 0.42              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1312:G:C4' | 1:0:1314:A:N3   | 2.83                     | 0.42              |
| 1:0:1383:C:H2' | 1:0:1384:G:O4'  | 2.20                     | 0.42              |
| 1:0:1459:U:O4  | 1:0:1476:G:H5'' | 2.19                     | 0.42              |
| 1:0:1365:U:H1' | 1:0:1586:A:C2   | 2.55                     | 0.42              |
| 1:0:1729:C:H2' | 1:0:1730:G:H8   | 1.83                     | 0.42              |
| 1:0:2109:A:H2' | 1:0:2110:G:H8   | 1.85                     | 0.42              |
| 1:0:2274:C:H2' | 1:0:2275:U:H5'' | 1.99                     | 0.42              |
| 1:0:2505:G:N1  | 1:0:2517:C:O2   | 2.52                     | 0.42              |
| 1:0:2526:U:C5  | 1:0:2545:A:N7   | 2.88                     | 0.42              |
| 1:0:988:G:N3   | 1:0:1012:A:H2   | 2.18                     | 0.42              |
| 1:0:1017:C:N3  | 1:0:1148:G:N1   | 2.68                     | 0.42              |
| 1:0:1300:A:H2' | 1:0:1300:A:N3   | 2.34                     | 0.42              |
| 1:0:146:C:H2'  | 1:0:147:G:C8    | 2.54                     | 0.42              |
| 1:0:1717:A:O2' | 1:0:1757:C:OP1  | 2.27                     | 0.42              |
| 1:0:172:A:N1   | 1:0:178:C:N3    | 2.68                     | 0.42              |
| 1:0:1872:A:H1' | 1:0:2070:G:H5'  | 2.02                     | 0.42              |
| 1:0:230:C:H2'  | 1:0:231:G:O4'   | 2.19                     | 0.42              |
| 1:0:2446:C:H2' | 1:0:2447:G:C1'  | 2.49                     | 0.42              |
| 1:0:2462:C:H2' | 1:0:2463:G:H5'  | 2.02                     | 0.42              |
| 1:0:2490:U:H2' | 1:0:2491:C:C6   | 2.54                     | 0.42              |
| 1:0:2539:C:N4  | 1:0:2540:A:N6   | 2.68                     | 0.42              |
| 1:0:458:G:H4'  | 1:0:461:A:C4    | 2.54                     | 0.42              |
| 1:0:76:C:H2'   | 1:0:77:C:C6     | 2.55                     | 0.42              |
| 1:0:790:A:O2'  | 1:0:791:G:H5'   | 2.20                     | 0.42              |
| 1:0:91:A:H2'   | 1:0:92:U:C6     | 2.54                     | 0.42              |
| 1:0:1108:U:H2' | 1:0:1109:A:C5'  | 2.39                     | 0.42              |
| 1:0:1011:A:N6  | 1:0:1166:A:C8   | 2.88                     | 0.42              |
| 1:0:1287:A:C2  | 1:0:1661:C:O2'  | 2.73                     | 0.42              |
| 1:0:1571:G:H2' | 1:0:1572:C:O4'  | 2.20                     | 0.42              |
| 1:0:1337:G:O2' | 1:0:1632:A:C6   | 2.72                     | 0.42              |
| 1:0:1894:U:H3  | 1:0:1901:A:H61  | 1.66                     | 0.42              |
| 1:0:238:G:O4'  | 1:0:618:A:H2    | 2.03                     | 0.42              |
| 1:0:298:C:H2'  | 1:0:299:C:C6    | 2.55                     | 0.42              |
| 1:0:458:G:H4'  | 1:0:461:A:N3    | 2.35                     | 0.42              |
| 1:0:528:G:H2'  | 1:0:529:U:C6    | 2.54                     | 0.42              |
| 1:0:73:A:H2'   | 1:0:74:G:OP2    | 2.20                     | 0.42              |
| 1:0:1125:G:H2' | 1:0:1126:A:O4'  | 2.18                     | 0.42              |
| 1:0:1029:C:N4  | 1:0:1153:A:C6   | 2.85                     | 0.42              |
| 1:0:1550:C:C2' | 1:0:1551:U:O5'  | 2.68                     | 0.42              |
| 1:0:1749:G:H2' | 1:0:1750:A:OP1  | 2.19                     | 0.42              |
| 1:0:742:G:N2   | 1:0:1766:U:C1'  | 2.83                     | 0.42              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2087:U:H2'  | 1:0:2088:U:C6   | 2.54                     | 0.42              |
| 1:0:2301:A:C2'  | 1:0:2302:G:H5'  | 2.50                     | 0.42              |
| 1:0:2538:C:H2'  | 1:0:2539:C:H6   | 1.85                     | 0.42              |
| 1:0:346:C:O2'   | 1:0:347:C:H5'   | 2.19                     | 0.42              |
| 1:0:387:A:O5'   | 1:0:436:A:N7    | 2.53                     | 0.42              |
| 1:0:461:A:H61   | 1:0:466:A:N6    | 2.17                     | 0.42              |
| 1:0:879:A:H2'   | 1:0:880:C:O5'   | 2.20                     | 0.42              |
| 1:0:1205:G:O2'  | 1:0:1206:G:H5'  | 2.20                     | 0.42              |
| 1:0:1271:C:H2'  | 1:0:1272:G:C8   | 2.55                     | 0.42              |
| 1:0:1552:C:C2'  | 1:0:1553:G:H5'  | 2.50                     | 0.42              |
| 1:0:1542:G:N2   | 1:0:1561:A:H62  | 2.18                     | 0.42              |
| 1:0:1514:C:OP2  | 1:0:1593:C:H5'' | 2.19                     | 0.42              |
| 1:0:174:A:H2'   | 1:0:175:C:O4'   | 2.20                     | 0.42              |
| 1:0:1770:U:H3'  | 1:0:1770:U:H6   | 1.85                     | 0.42              |
| 1:0:1900:U:O2'  | 1:0:1946:U:C5'  | 2.68                     | 0.42              |
| 1:0:1883:A:H1'  | 1:0:1953:A:C8   | 2.55                     | 0.42              |
| 1:0:1922:U:HO2' | 1:0:2571:G:C1'  | 2.33                     | 0.42              |
| 1:0:2696:A:H2'  | 1:0:2697:G:C8   | 2.53                     | 0.42              |
| 1:0:2756:A:N6   | 1:0:2762:G:C4   | 2.88                     | 0.42              |
| 1:0:332:C:H5''  | 1:0:333:A:OP2   | 2.20                     | 0.42              |
| 1:0:801:A:HO2'  | 1:0:802:A:P     | 2.42                     | 0.42              |
| 1:0:805:G:O6    | 1:0:2419:C:O4'  | 2.38                     | 0.42              |
| 1:0:914:C:H2'   | 1:0:915:C:H6    | 1.83                     | 0.42              |
| 1:0:577:U:H5'   | 1:0:956:A:H62   | 1.85                     | 0.42              |
| 1:0:180:C:H6    | 1:0:180:C:O5'   | 2.02                     | 0.41              |
| 1:0:200:A:H1'   | 1:0:432:C:N3    | 2.35                     | 0.41              |
| 1:0:2309:G:O2'  | 1:0:2310:G:H5'  | 2.19                     | 0.41              |
| 1:0:244:C:H2'   | 1:0:245:C:C5'   | 2.41                     | 0.41              |
| 1:0:2526:U:H2'  | 1:0:2527:G:H8   | 1.81                     | 0.41              |
| 1:0:2034:A:N6   | 1:0:2593:A:C5   | 2.88                     | 0.41              |
| 1:0:310:A:C4    | 1:0:333:A:N6    | 2.88                     | 0.41              |
| 1:0:1354:A:N6   | 1:0:1407:G:H1   | 2.14                     | 0.41              |
| 1:0:1440:G:H3'  | 1:0:1441:A:C5'  | 2.50                     | 0.41              |
| 1:0:1548:U:H2'  | 1:0:1549:C:H6   | 1.85                     | 0.41              |
| 1:0:1635:G:H2'  | 1:0:1635:G:N3   | 2.33                     | 0.41              |
| 1:0:1312:G:N2   | 1:0:1657:A:H5'  | 2.35                     | 0.41              |
| 1:0:1899:A:O5'  | 1:0:1899:A:H8   | 2.03                     | 0.41              |
| 1:0:1900:U:O2'  | 1:0:1946:U:H5'' | 2.19                     | 0.41              |
| 1:0:1975:G:N2   | 1:0:1979:C:H5   | 2.13                     | 0.41              |
| 1:0:2038:C:OP1  | 1:0:2039:G:H4'  | 2.20                     | 0.41              |
| 1:0:2326:C:N4   | 1:0:2350:G:N2   | 2.68                     | 0.41              |

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| Atom-1         | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|------------------|--------------------------|-------------------|
| 1:0:2491:C:H42 | 1:0:2553:G:H1    | 1.67                     | 0.41              |
| 1:0:2505:G:N1  | 1:0:2517:C:C2    | 2.88                     | 0.41              |
| 1:0:298:C:H2'  | 1:0:299:C:H6     | 1.83                     | 0.41              |
| 1:0:367:G:C2'  | 1:0:368:A:H5''   | 2.49                     | 0.41              |
| 1:0:42:G:H2'   | 1:0:43:A:O4'     | 2.19                     | 0.41              |
| 1:0:439:C:H5'' | 1:0:440:U:C5     | 2.56                     | 0.41              |
| 1:0:524:A:H2'  | 1:0:525:A:C8     | 2.55                     | 0.41              |
| 1:0:634:G:O2'  | 1:0:635:C:H5'    | 2.20                     | 0.41              |
| 1:0:73:A:O3'   | 1:0:74:G:C4'     | 2.66                     | 0.41              |
| 1:0:805:G:H5'  | 1:0:805:G:H8     | 1.85                     | 0.41              |
| 1:0:817:A:H2'  | 1:0:819:C:N4     | 2.35                     | 0.41              |
| 1:0:984:A:H2   | 1:0:1200:G:N1    | 2.15                     | 0.41              |
| 1:0:1159:U:O2' | 1:0:1160:C:H5'   | 2.20                     | 0.41              |
| 1:0:1550:C:H2' | 1:0:1551:U:O5'   | 2.20                     | 0.41              |
| 1:0:1750:A:C8  | 1:0:2675:U:H1'   | 2.56                     | 0.41              |
| 1:0:1762:C:O2' | 1:0:1777:A:O4'   | 2.37                     | 0.41              |
| 1:0:1872:A:H2' | 1:0:1873:A:C8    | 2.56                     | 0.41              |
| 1:0:1873:A:H4' | 1:0:2069:U:H4'   | 2.02                     | 0.41              |
| 1:0:2015:G:H2' | 1:0:2015:G:N3    | 2.34                     | 0.41              |
| 1:0:2281:C:O5' | 1:0:2281:C:H6    | 2.04                     | 0.41              |
| 1:0:2484:G:H5' | 2:0:2881:TEL:C57 | 2.48                     | 0.41              |
| 1:0:2496:C:C4  | 1:0:2521:A:N6    | 2.88                     | 0.41              |
| 1:0:2741:G:H2' | 1:0:2742:G:C8    | 2.55                     | 0.41              |
| 1:0:321:A:H4'  | 1:0:322:A:N7     | 2.36                     | 0.41              |
| 1:0:346:C:O2   | 1:0:346:C:C2'    | 2.68                     | 0.41              |
| 1:0:477:A:H1'  | 1:0:696:U:O4'    | 2.20                     | 0.41              |
| 1:0:610:G:N2   | 1:0:614:G:O3'    | 2.53                     | 0.41              |
| 1:0:847:C:H41  | 1:0:955:G:N2     | 2.18                     | 0.41              |
| 1:0:980:G:H2'  | 1:0:981:C:O4'    | 2.20                     | 0.41              |
| 1:0:1078:A:H2' | 1:0:1079:G:C8    | 2.49                     | 0.41              |
| 1:0:1083:C:C4  | 1:0:1104:G:O6    | 2.73                     | 0.41              |
| 1:0:114:C:O2'  | 1:0:115:G:H5'    | 2.21                     | 0.41              |
| 1:0:1166:A:H2' | 1:0:1167:A:H5''  | 2.02                     | 0.41              |
| 1:0:1221:C:H2' | 1:0:1222:G:C8    | 2.55                     | 0.41              |
| 1:0:1211:G:N2  | 1:0:1263:G:C4    | 2.88                     | 0.41              |
| 1:0:1684:G:H2' | 1:0:1685:A:OP2   | 2.20                     | 0.41              |
| 1:0:1739:G:H2' | 1:0:1740:G:H8    | 1.85                     | 0.41              |
| 1:0:1783:G:O2' | 1:0:1784:C:H5'   | 2.20                     | 0.41              |
| 1:0:16:G:HO2'  | 1:0:17:G:H5'     | 1.80                     | 0.41              |
| 1:0:1945:C:O2' | 1:0:1946:U:C6    | 2.73                     | 0.41              |
| 1:0:2698:G:H2' | 1:0:2699:G:O4'   | 2.21                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:593:C:H6    | 1:0:593:C:O5'  | 2.04                     | 0.41              |
| 1:0:58:C:O4'    | 1:0:72:A:C8    | 2.74                     | 0.41              |
| 1:0:718:A:N6    | 1:0:739:G:O2'  | 2.52                     | 0.41              |
| 1:0:1316:G:C6   | 1:0:1317:G:N7  | 2.88                     | 0.41              |
| 1:0:1454:U:H2'  | 1:0:1455:C:C6  | 2.55                     | 0.41              |
| 1:0:1685:A:N1   | 1:0:1691:G:H1' | 2.36                     | 0.41              |
| 1:0:1723:U:O5'  | 1:0:1723:U:H6  | 2.03                     | 0.41              |
| 1:0:197:G:OP2   | 1:0:439:C:OP2  | 2.38                     | 0.41              |
| 1:0:2061:C:C5'  | 1:0:2413:A:H4' | 2.50                     | 0.41              |
| 1:0:2433:G:O6   | 1:0:2477:C:N4  | 2.54                     | 0.41              |
| 1:0:1467:U:HO2' | 1:0:2681:A:N6  | 2.18                     | 0.41              |
| 1:0:2871:U:H2'  | 1:0:2872:U:C6  | 2.55                     | 0.41              |
| 1:0:369:C:O2'   | 1:0:370:U:H5'  | 2.20                     | 0.41              |
| 1:0:742:G:N2    | 1:0:1766:U:N1  | 2.68                     | 0.41              |
| 1:0:751:G:N3    | 1:0:752:G:H1'  | 2.35                     | 0.41              |
| 1:0:779:U:O5'   | 1:0:779:U:H6   | 2.03                     | 0.41              |
| 1:0:781:G:H2'   | 1:0:782:U:C6   | 2.56                     | 0.41              |
| 1:0:81:C:H4'    | 1:0:307:C:H5'  | 2.01                     | 0.41              |
| 1:0:846:A:H2'   | 1:0:847:C:H6   | 1.84                     | 0.41              |
| 1:0:1191:G:O2'  | 1:0:1192:A:H5' | 2.20                     | 0.41              |
| 1:0:1545:G:N2   | 1:0:1558:C:O2  | 2.54                     | 0.41              |
| 1:0:1462:C:O2'  | 1:0:1560:A:H1' | 2.19                     | 0.41              |
| 1:0:1972:G:H2'  | 1:0:1973:C:O4' | 2.21                     | 0.41              |
| 1:0:197:G:C1'   | 1:0:211:U:H1'  | 2.45                     | 0.41              |
| 1:0:2226:A:H2'  | 1:0:2227:C:C6  | 2.55                     | 0.41              |
| 1:0:2314:A:H1'  | 1:0:2315:A:N7  | 2.35                     | 0.41              |
| 1:0:2514:G:H2'  | 1:0:2515:G:H8  | 1.85                     | 0.41              |
| 1:0:346:C:C2'   | 1:0:347:C:H5'  | 2.51                     | 0.41              |
| 1:0:462:G:H8    | 1:0:462:G:O5'  | 2.03                     | 0.41              |
| 1:0:474:G:C6    | 1:0:478:G:O6   | 2.73                     | 0.41              |
| 1:0:459:A:N7    | 1:0:484:G:C5   | 2.89                     | 0.41              |
| 1:0:919:U:C4    | 1:0:920:G:N7   | 2.88                     | 0.41              |
| 1:0:1033:G:O2'  | 1:0:1035:G:N7  | 2.54                     | 0.41              |
| 1:0:1273:G:H2'  | 1:0:1274:C:C6  | 2.56                     | 0.41              |
| 1:0:1588:A:H2'  | 1:0:1589:G:C8  | 2.50                     | 0.41              |
| 1:0:1629:G:C6   | 1:0:1633:C:N4  | 2.89                     | 0.41              |
| 1:0:1761:G:C2'  | 1:0:1762:C:H5' | 2.49                     | 0.41              |
| 1:0:2018:G:HO2' | 1:0:2019:C:P   | 2.39                     | 0.41              |
| 1:0:2034:A:H2   | 1:0:2035:G:O6  | 2.03                     | 0.41              |
| 1:0:2302:G:H2'  | 1:0:2303:C:O4' | 2.19                     | 0.41              |
| 1:0:2382:C:N3   | 1:0:2393:G:N2  | 2.54                     | 0.41              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1139:A:N6  | 1:0:2497:A:H61  | 2.16                     | 0.41              |
| 1:0:2684:A:H3' | 1:0:2685:A:H8   | 1.85                     | 0.41              |
| 1:0:357:A:H3'  | 1:0:358:C:H5'   | 2.02                     | 0.41              |
| 1:0:774:A:O5'  | 1:0:774:A:H8    | 2.04                     | 0.41              |
| 1:0:833:A:H1'  | 1:0:954:U:O2'   | 2.21                     | 0.41              |
| 1:0:9:U:O2'    | 1:0:10:A:H5'    | 2.20                     | 0.41              |
| 1:0:1219:C:H2' | 1:0:1220:G:O5'  | 2.21                     | 0.41              |
| 1:0:1260:A:C2' | 1:0:1261:G:O5'  | 2.68                     | 0.41              |
| 1:0:1341:G:H2' | 1:0:1343:C:C5   | 2.55                     | 0.41              |
| 1:0:162:C:H5'  | 1:0:195:A:C1'   | 2.41                     | 0.41              |
| 1:0:1698:C:H2' | 1:0:1753:A:H2'  | 2.01                     | 0.41              |
| 1:0:1755:G:H2' | 1:0:1756:C:C6   | 2.56                     | 0.41              |
| 1:0:1809:G:H2' | 1:0:1810:U:O4'  | 2.21                     | 0.41              |
| 1:0:2633:A:C5' | 1:0:2634:G:OP1  | 2.68                     | 0.41              |
| 1:0:387:A:N6   | 1:0:388:G:N2    | 2.69                     | 0.41              |
| 1:0:545:C:N4   | 1:0:546:A:N6    | 2.68                     | 0.41              |
| 1:0:677:G:C2'  | 1:0:678:G:H5'   | 2.50                     | 0.41              |
| 1:0:922:A:H2'  | 1:0:923:A:C8    | 2.56                     | 0.41              |
| 1:0:1045:G:H2' | 1:0:1046:U:C6   | 2.56                     | 0.41              |
| 1:0:1057:A:H3' | 1:0:1058:G:H5'' | 2.00                     | 0.41              |
| 1:0:1035:G:H21 | 1:0:1155:G:C5'  | 2.34                     | 0.41              |
| 1:0:122:G:N2   | 1:0:124:A:H4'   | 2.36                     | 0.41              |
| 1:0:1281:A:H1' | 1:0:2592:U:O2   | 2.21                     | 0.41              |
| 1:0:1342:U:C5' | 1:0:1343:C:H5   | 2.34                     | 0.41              |
| 1:0:1394:G:H1' | 1:0:1587:A:C2   | 2.56                     | 0.41              |
| 1:0:1450:G:H2' | 1:0:1451:C:O4'  | 2.20                     | 0.41              |
| 1:0:1856:U:O3' | 1:0:2388:G:O2'  | 2.39                     | 0.41              |
| 1:0:2434:G:H2' | 1:0:2435:C:C6   | 2.56                     | 0.41              |
| 1:0:26:G:C6    | 1:0:27:G:C2     | 3.09                     | 0.41              |
| 1:0:340:G:C5'  | 1:0:341:A:OP1   | 2.65                     | 0.41              |
| 1:0:200:A:C6   | 1:0:435:A:N7    | 2.88                     | 0.41              |
| 1:0:700:C:C1'  | 1:0:801:A:O4'   | 2.69                     | 0.41              |
| 1:0:853:C:H2'  | 1:0:854:G:H8    | 1.86                     | 0.41              |
| 1:0:1184:G:C6  | 1:0:1185:C:N4   | 2.89                     | 0.41              |
| 1:0:1548:U:H2' | 1:0:1549:C:C6   | 2.56                     | 0.41              |
| 1:0:1749:G:C2' | 1:0:1750:A:OP1  | 2.69                     | 0.41              |
| 1:0:1777:A:O2' | 1:0:1778:U:P    | 2.77                     | 0.41              |
| 1:0:1908:C:O5' | 1:0:1908:C:H6   | 2.03                     | 0.41              |
| 1:0:2334:C:H3' | 1:0:2335:U:C5'  | 2.50                     | 0.41              |
| 1:0:2380:U:O2  | 1:0:2380:U:H2'  | 2.20                     | 0.41              |
| 1:0:2404:A:O2' | 1:0:2405:A:OP2  | 2.34                     | 0.41              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2519:C:H2'  | 1:0:2520:A:O4'  | 2.21                     | 0.41              |
| 1:0:2498:U:H5'  | 1:0:2546:G:H21  | 1.86                     | 0.41              |
| 1:0:2571:G:C5   | 1:0:2572:U:C4   | 3.08                     | 0.41              |
| 1:0:2746:G:N3   | 1:0:2746:G:C2'  | 2.83                     | 0.41              |
| 1:0:2830:U:H2'  | 1:0:2831:A:C8   | 2.52                     | 0.41              |
| 1:0:306:G:H2'   | 1:0:307:C:C6    | 2.56                     | 0.41              |
| 1:0:200:A:H4'   | 1:0:432:C:O2    | 2.21                     | 0.41              |
| 1:0:434:C:H2'   | 1:0:435:A:OP2   | 2.21                     | 0.41              |
| 1:0:459:A:H1'   | 1:0:466:A:N6    | 2.36                     | 0.41              |
| 1:0:486:U:OP2   | 1:0:486:U:C6    | 2.74                     | 0.41              |
| 1:0:767:G:H2'   | 1:0:768:U:C6    | 2.55                     | 0.41              |
| 1:0:889:C:O2'   | 1:0:890:U:H5'   | 2.20                     | 0.41              |
| 1:0:1018:C:O5'  | 1:0:1018:C:H6   | 2.04                     | 0.41              |
| 1:0:1038:U:O2'  | 1:0:1039:A:H5'  | 2.21                     | 0.41              |
| 1:0:1286:U:H4'  | 1:0:1288:A:OP1  | 2.21                     | 0.41              |
| 1:0:1333:G:N7   | 1:0:1342:U:H5'  | 2.35                     | 0.41              |
| 1:0:1352:G:H2'  | 1:0:1353:A:C8   | 2.56                     | 0.41              |
| 1:0:1452:U:C2'  | 1:0:1453:A:H5'  | 2.51                     | 0.41              |
| 1:0:1618:U:O2   | 1:0:1618:U:O5'  | 2.38                     | 0.41              |
| 1:0:1619:A:N3   | 1:0:1619:A:O5'  | 2.54                     | 0.41              |
| 1:0:1661:C:H2'  | 1:0:1662:G:C8   | 2.56                     | 0.41              |
| 1:0:1672:A:C2   | 1:0:2032:G:H4'  | 2.56                     | 0.41              |
| 1:0:1750:A:H5'' | 1:0:2695:C:H1'  | 2.02                     | 0.41              |
| 1:0:991:A:C2    | 1:0:2020:G:N3   | 2.89                     | 0.41              |
| 1:0:212:U:H2'   | 1:0:213:C:C6    | 2.55                     | 0.41              |
| 1:0:172:A:H1'   | 1:0:228:A:H1'   | 2.03                     | 0.41              |
| 1:0:2357:A:H2'  | 1:0:2358:C:H5'  | 2.03                     | 0.41              |
| 1:0:2262:C:C5   | 1:0:2368:G:H2'  | 2.56                     | 0.41              |
| 1:0:2616:U:H3   | 1:0:2756:A:H62  | 1.69                     | 0.41              |
| 1:0:2823:G:O2'  | 1:0:2843:A:N6   | 2.54                     | 0.41              |
| 1:0:324:C:H2'   | 1:0:325:U:H5'   | 2.02                     | 0.41              |
| 1:0:487:G:H4'   | 1:0:511:A:N6    | 2.36                     | 0.41              |
| 1:0:605:G:N1    | 1:0:606:A:C6    | 2.90                     | 0.41              |
| 1:0:871:U:H1'   | 1:0:2248:A:H5'' | 2.03                     | 0.41              |
| 1:0:1141:U:O2'  | 1:0:1142:G:P    | 2.78                     | 0.40              |
| 1:0:13:A:H4'    | 1:0:14:A:H8     | 1.86                     | 0.40              |
| 1:0:1419:G:H2'  | 1:0:1420:A:O4'  | 2.20                     | 0.40              |
| 1:0:1456:C:H2'  | 1:0:1457:A:H8   | 1.86                     | 0.40              |
| 1:0:1681:A:C2   | 1:0:2706:U:C1'  | 3.00                     | 0.40              |
| 1:0:1894:U:H6   | 1:0:1894:U:O5'  | 2.03                     | 0.40              |
| 1:0:190:A:O2'   | 1:0:191:G:H5'   | 2.20                     | 0.40              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:0:2041:A:N1   | 2:0:2881:TEL:O48 | 2.45                     | 0.40              |
| 1:0:2204:A:P    | 1:0:2204:A:H8    | 2.44                     | 0.40              |
| 1:0:2532:G:C3'  | 1:0:2533:U:C5'   | 2.96                     | 0.40              |
| 1:0:2843:A:N6   | 1:0:2844:G:N1    | 2.69                     | 0.40              |
| 1:0:439:C:C4    | 1:0:440:U:C2     | 3.09                     | 0.40              |
| 1:0:516:G:O2'   | 1:0:517:A:C8     | 2.73                     | 0.40              |
| 1:0:853:C:N3    | 1:0:950:G:C6     | 2.89                     | 0.40              |
| 1:0:1233:A:H2'  | 1:0:1234:C:OP1   | 2.22                     | 0.40              |
| 1:0:1234:C:H2'  | 1:0:1235:C:H6    | 1.86                     | 0.40              |
| 1:0:1446:U:H2'  | 1:0:1447:U:O4'   | 2.22                     | 0.40              |
| 1:0:1458:A:H5'' | 1:0:1459:U:OP2   | 2.21                     | 0.40              |
| 1:0:1597:A:H2'  | 1:0:1598:C:C6    | 2.56                     | 0.40              |
| 1:0:171:G:C2    | 1:0:179:U:C2     | 3.09                     | 0.40              |
| 1:0:173:A:HO2'  | 1:0:174:A:P      | 2.43                     | 0.40              |
| 1:0:1778:U:O2'  | 1:0:1779:C:H5'   | 2.21                     | 0.40              |
| 1:0:1816:G:O2'  | 1:0:1817:U:H5'   | 2.21                     | 0.40              |
| 1:0:1994:U:H2'  | 1:0:1995:G:H5'   | 2.03                     | 0.40              |
| 1:0:2082:C:O2'  | 1:0:2083:G:H5'   | 2.20                     | 0.40              |
| 1:0:2322:U:C2'  | 1:0:2323:U:H5'   | 2.51                     | 0.40              |
| 1:0:2633:A:C2   | 1:0:2644:A:H5''  | 2.56                     | 0.40              |
| 1:0:2756:A:O2'  | 1:0:2757:G:C5'   | 2.69                     | 0.40              |
| 1:0:178:C:O4'   | 1:0:399:G:N2     | 2.54                     | 0.40              |
| 1:0:464:G:H2'   | 1:0:465:C:H6     | 1.86                     | 0.40              |
| 1:0:619:A:H2'   | 1:0:620:G:H8     | 1.87                     | 0.40              |
| 1:0:748:A:H3'   | 1:0:749:C:C5     | 2.57                     | 0.40              |
| 1:0:1294:G:N1   | 1:0:1302:C:N4    | 2.55                     | 0.40              |
| 1:0:1406:A:H8   | 1:0:1406:A:O5'   | 2.04                     | 0.40              |
| 1:0:1489:C:H3'  | 1:0:1490:U:C5'   | 2.51                     | 0.40              |
| 1:0:14:A:N6     | 1:0:15:G:H21     | 2.19                     | 0.40              |
| 1:0:1679:U:C2'  | 1:0:1680:U:C5'   | 2.97                     | 0.40              |
| 1:0:1688:U:N3   | 1:0:1691:G:OP2   | 2.52                     | 0.40              |
| 1:0:2264:C:H2'  | 1:0:2265:A:H5'   | 2.02                     | 0.40              |
| 1:0:2783:U:C2   | 1:0:2866:A:N6    | 2.89                     | 0.40              |
| 1:0:2816:C:O2   | 1:0:2852:G:N1    | 2.54                     | 0.40              |
| 1:0:2862:G:O2'  | 1:0:2863:U:H5'   | 2.21                     | 0.40              |
| 1:0:474:G:N2    | 1:0:476:G:C8     | 2.87                     | 0.40              |
| 1:0:686:C:H2'   | 1:0:687:G:H8     | 1.86                     | 0.40              |
| 1:0:701:U:H6    | 1:0:701:U:O5'    | 2.04                     | 0.40              |
| 1:0:743:A:C6    | 1:0:744:C:C4     | 3.10                     | 0.40              |
| 1:0:796:A:C2    | 1:0:797:A:H4'    | 2.57                     | 0.40              |
| 1:0:1135:C:O2'  | 1:0:1136:G:H5'   | 2.22                     | 0.40              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1145:C:O5'  | 1:0:1146:G:OP2  | 2.39                     | 0.40              |
| 1:0:1308:C:H2'  | 1:0:1309:G:H8   | 1.87                     | 0.40              |
| 1:0:1450:G:O2'  | 1:0:1451:C:H5'  | 2.21                     | 0.40              |
| 1:0:1676:U:O2'  | 1:0:1677:C:H5'  | 2.22                     | 0.40              |
| 1:0:185:C:O2'   | 1:0:186:C:H5'   | 2.22                     | 0.40              |
| 1:0:2363:G:H2'  | 1:0:2364:C:OP1  | 2.21                     | 0.40              |
| 1:0:2377:U:O2'  | 1:0:2378:G:OP1  | 2.36                     | 0.40              |
| 1:0:2499:C:N1   | 1:0:2546:G:H1'  | 2.37                     | 0.40              |
| 1:0:2548:G:C2'  | 1:0:2549:G:C5'  | 3.00                     | 0.40              |
| 1:0:2792:C:H3'  | 1:0:2793:G:H5'' | 2.04                     | 0.40              |
| 1:0:2852:G:H2'  | 1:0:2853:U:H5'  | 2.03                     | 0.40              |
| 1:0:329:C:H2'   | 1:0:330:C:C6    | 2.57                     | 0.40              |
| 1:0:541:C:N4    | 1:0:572:G:H5''  | 2.36                     | 0.40              |
| 1:0:683:A:H5''  | 1:0:684:C:O5'   | 2.21                     | 0.40              |
| 1:0:698:A:C4'   | 1:0:700:C:H5    | 2.35                     | 0.40              |
| 1:0:844:G:H2'   | 1:0:845:U:O4'   | 2.21                     | 0.40              |
| 1:0:924:C:H2'   | 1:0:925:U:O4'   | 2.22                     | 0.40              |
| 1:0:874:A:C4    | 1:0:929:A:N6    | 2.89                     | 0.40              |
| 1:0:873:U:N3    | 1:0:930:A:C6    | 2.69                     | 0.40              |
| 1:0:834:A:O2'   | 1:0:955:G:H4'   | 2.22                     | 0.40              |
| 1:0:1029:C:H6   | 1:0:1029:C:O5'  | 2.05                     | 0.40              |
| 1:0:1177:U:C2   | 1:0:1197:U:O2   | 2.75                     | 0.40              |
| 1:0:1340:C:O2'  | 1:0:1341:G:H5'  | 2.21                     | 0.40              |
| 1:0:1366:A:N7   | 1:0:1390:G:C2   | 2.89                     | 0.40              |
| 1:0:1430:G:H2'  | 1:0:1431:U:C6   | 2.56                     | 0.40              |
| 1:0:1706:A:H2'  | 1:0:1707:A:C5'  | 2.51                     | 0.40              |
| 1:0:1725:C:O2'  | 1:0:1726:C:H5'  | 2.22                     | 0.40              |
| 1:0:174:A:H2    | 1:0:2413:A:H62  | 1.69                     | 0.40              |
| 1:0:1938:U:O2   | 1:0:1938:U:C2'  | 2.69                     | 0.40              |
| 1:0:1987:G:H2'  | 1:0:1988:A:C5'  | 2.52                     | 0.40              |
| 1:0:2104:G:H2'  | 1:0:2105:U:C6   | 2.56                     | 0.40              |
| 1:0:2160:C:H2'  | 1:0:2161:C:C6   | 2.56                     | 0.40              |
| 1:0:2236:U:H2'  | 1:0:2237:C:O4'  | 2.22                     | 0.40              |
| 1:0:2322:U:H4'  | 1:0:2352:A:O3'  | 2.22                     | 0.40              |
| 1:0:2691:C:H5'' | 1:0:2694:G:H5'  | 2.04                     | 0.40              |
| 1:0:38:G:H2'    | 1:0:39:C:H6     | 1.80                     | 0.40              |
| 1:0:441:A:H2'   | 1:0:442:A:H5'   | 2.04                     | 0.40              |
| 1:0:516:G:H5''  | 1:0:519:C:H1'   | 2.04                     | 0.40              |
| 1:0:839:U:N3    | 1:0:841:G:H1'   | 2.36                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

There are no protein molecules in this entry.

### 5.3.2 Protein sidechains [i](#)

There are no protein molecules in this entry.

### 5.3.3 RNA [i](#)

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | 0     | 2727/2880 (94%) | 580 (21%)         | 62 (2%)         |

All (580) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 13  | A    |
| 1   | 0     | 14  | A    |
| 1   | 0     | 15  | G    |
| 1   | 0     | 45  | C    |
| 1   | 0     | 50  | G    |
| 1   | 0     | 51  | A    |
| 1   | 0     | 58  | C    |
| 1   | 0     | 59  | G    |
| 1   | 0     | 63  | A    |
| 1   | 0     | 70  | A    |
| 1   | 0     | 72  | A    |
| 1   | 0     | 74  | G    |
| 1   | 0     | 75  | C    |
| 1   | 0     | 83  | A    |
| 1   | 0     | 87  | G    |
| 1   | 0     | 89  | A    |
| 1   | 0     | 90  | G    |
| 1   | 0     | 91  | A    |
| 1   | 0     | 97  | U    |
| 1   | 0     | 99  | U    |
| 1   | 0     | 100 | G    |
| 1   | 0     | 110 | U    |
| 1   | 0     | 116 | A    |
| 1   | 0     | 117 | A    |
| 1   | 0     | 118 | U    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 119 | G    |
| 1   | 0     | 123 | A    |
| 1   | 0     | 124 | A    |
| 1   | 0     | 129 | A    |
| 1   | 0     | 135 | U    |
| 1   | 0     | 149 | A    |
| 1   | 0     | 155 | G    |
| 1   | 0     | 158 | A    |
| 1   | 0     | 173 | A    |
| 1   | 0     | 174 | A    |
| 1   | 0     | 176 | A    |
| 1   | 0     | 177 | U    |
| 1   | 0     | 182 | G    |
| 1   | 0     | 193 | A    |
| 1   | 0     | 199 | A    |
| 1   | 0     | 200 | A    |
| 1   | 0     | 201 | G    |
| 1   | 0     | 205 | A    |
| 1   | 0     | 206 | U    |
| 1   | 0     | 207 | U    |
| 1   | 0     | 210 | A    |
| 1   | 0     | 218 | A    |
| 1   | 0     | 219 | G    |
| 1   | 0     | 220 | U    |
| 1   | 0     | 225 | G    |
| 1   | 0     | 227 | G    |
| 1   | 0     | 229 | G    |
| 1   | 0     | 242 | A    |
| 1   | 0     | 244 | C    |
| 1   | 0     | 245 | C    |
| 1   | 0     | 302 | U    |
| 1   | 0     | 303 | C    |
| 1   | 0     | 305 | A    |
| 1   | 0     | 312 | G    |
| 1   | 0     | 322 | A    |
| 1   | 0     | 334 | G    |
| 1   | 0     | 335 | A    |
| 1   | 0     | 340 | G    |
| 1   | 0     | 341 | A    |
| 1   | 0     | 343 | A    |
| 1   | 0     | 348 | U    |
| 1   | 0     | 358 | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 363 | G    |
| 1   | 0     | 368 | A    |
| 1   | 0     | 372 | U    |
| 1   | 0     | 373 | A    |
| 1   | 0     | 389 | G    |
| 1   | 0     | 390 | U    |
| 1   | 0     | 392 | G    |
| 1   | 0     | 393 | U    |
| 1   | 0     | 397 | U    |
| 1   | 0     | 399 | G    |
| 1   | 0     | 402 | A    |
| 1   | 0     | 403 | A    |
| 1   | 0     | 431 | G    |
| 1   | 0     | 432 | C    |
| 1   | 0     | 433 | G    |
| 1   | 0     | 434 | C    |
| 1   | 0     | 435 | A    |
| 1   | 0     | 437 | G    |
| 1   | 0     | 438 | G    |
| 1   | 0     | 440 | U    |
| 1   | 0     | 455 | A    |
| 1   | 0     | 456 | C    |
| 1   | 0     | 459 | A    |
| 1   | 0     | 460 | U    |
| 1   | 0     | 461 | A    |
| 1   | 0     | 463 | C    |
| 1   | 0     | 467 | U    |
| 1   | 0     | 469 | G    |
| 1   | 0     | 484 | G    |
| 1   | 0     | 486 | U    |
| 1   | 0     | 491 | A    |
| 1   | 0     | 492 | G    |
| 1   | 0     | 514 | G    |
| 1   | 0     | 515 | A    |
| 1   | 0     | 517 | A    |
| 1   | 0     | 518 | A    |
| 1   | 0     | 519 | C    |
| 1   | 0     | 520 | C    |
| 1   | 0     | 537 | C    |
| 1   | 0     | 538 | A    |
| 1   | 0     | 540 | G    |
| 1   | 0     | 541 | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 542 | A    |
| 1   | 0     | 554 | U    |
| 1   | 0     | 555 | U    |
| 1   | 0     | 556 | A    |
| 1   | 0     | 558 | G    |
| 1   | 0     | 559 | C    |
| 1   | 0     | 560 | G    |
| 1   | 0     | 572 | G    |
| 1   | 0     | 582 | G    |
| 1   | 0     | 584 | A    |
| 1   | 0     | 587 | A    |
| 1   | 0     | 596 | C    |
| 1   | 0     | 601 | A    |
| 1   | 0     | 602 | C    |
| 1   | 0     | 613 | A    |
| 1   | 0     | 616 | U    |
| 1   | 0     | 617 | U    |
| 1   | 0     | 624 | A    |
| 1   | 0     | 632 | A    |
| 1   | 0     | 638 | A    |
| 1   | 0     | 639 | G    |
| 1   | 0     | 648 | A    |
| 1   | 0     | 652 | C    |
| 1   | 0     | 654 | A    |
| 1   | 0     | 667 | U    |
| 1   | 0     | 669 | G    |
| 1   | 0     | 683 | A    |
| 1   | 0     | 684 | C    |
| 1   | 0     | 698 | A    |
| 1   | 0     | 699 | G    |
| 1   | 0     | 700 | C    |
| 1   | 0     | 712 | A    |
| 1   | 0     | 728 | G    |
| 1   | 0     | 742 | G    |
| 1   | 0     | 743 | A    |
| 1   | 0     | 753 | U    |
| 1   | 0     | 760 | U    |
| 1   | 0     | 761 | G    |
| 1   | 0     | 765 | C    |
| 1   | 0     | 766 | A    |
| 1   | 0     | 775 | U    |
| 1   | 0     | 778 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 787 | A    |
| 1   | 0     | 789 | G    |
| 1   | 0     | 790 | A    |
| 1   | 0     | 794 | A    |
| 1   | 0     | 795 | 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     | 805 | G    |
| 1   | 0     | 806 | A    |
| 1   | 0     | 807 | A    |
| 1   | 0     | 815 | A    |
| 1   | 0     | 818 | G    |
| 1   | 0     | 819 | C    |
| 1   | 0     | 825 | C    |
| 1   | 0     | 832 | 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     | 880 | C    |
| 1   | 0     | 919 | U    |
| 1   | 0     | 922 | A    |
| 1   | 0     | 926 | C    |
| 1   | 0     | 930 | A    |
| 1   | 0     | 931 | G    |
| 1   | 0     | 939 | C    |
| 1   | 0     | 941 | U    |
| 1   | 0     | 943 | U    |
| 1   | 0     | 944 | A    |
| 1   | 0     | 952 | A    |
| 1   | 0     | 956 | A    |
| 1   | 0     | 957 | G    |
| 1   | 0     | 969 | U    |
| 1   | 0     | 970 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 972  | C    |
| 1   | 0     | 984  | A    |
| 1   | 0     | 985  | G    |
| 1   | 0     | 990  | A    |
| 1   | 0     | 994  | A    |
| 1   | 0     | 996  | C    |
| 1   | 0     | 1016 | C    |
| 1   | 0     | 1019 | U    |
| 1   | 0     | 1023 | U    |
| 1   | 0     | 1024 | G    |
| 1   | 0     | 1030 | U    |
| 1   | 0     | 1032 | A    |
| 1   | 0     | 1033 | G    |
| 1   | 0     | 1034 | U    |
| 1   | 0     | 1036 | G    |
| 1   | 0     | 1037 | U    |
| 1   | 0     | 1044 | U    |
| 1   | 0     | 1055 | A    |
| 1   | 0     | 1056 | U    |
| 1   | 0     | 1057 | A    |
| 1   | 0     | 1058 | G    |
| 1   | 0     | 1059 | A    |
| 1   | 0     | 1067 | G    |
| 1   | 0     | 1071 | U    |
| 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     | 1137 | A    |
| 1   | 0     | 1138 | A    |
| 1   | 0     | 1141 | U    |
| 1   | 0     | 1142 | G    |
| 1   | 0     | 1145 | C    |
| 1   | 0     | 1146 | G    |
| 1   | 0     | 1152 | C    |
| 1   | 0     | 1153 | A    |
| 1   | 0     | 1155 | G    |
| 1   | 0     | 1166 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1167 | A    |
| 1   | 0     | 1183 | C    |
| 1   | 0     | 1185 | C    |
| 1   | 0     | 1195 | U    |
| 1   | 0     | 1199 | U    |
| 1   | 0     | 1200 | G    |
| 1   | 0     | 1223 | G    |
| 1   | 0     | 1224 | A    |
| 1   | 0     | 1233 | A    |
| 1   | 0     | 1235 | C    |
| 1   | 0     | 1250 | A    |
| 1   | 0     | 1251 | G    |
| 1   | 0     | 1253 | C    |
| 1   | 0     | 1261 | G    |
| 1   | 0     | 1262 | U    |
| 1   | 0     | 1264 | C    |
| 1   | 0     | 1265 | G    |
| 1   | 0     | 1267 | A    |
| 1   | 0     | 1269 | G    |
| 1   | 0     | 1274 | C    |
| 1   | 0     | 1278 | A    |
| 1   | 0     | 1279 | G    |
| 1   | 0     | 1284 | G    |
| 1   | 0     | 1285 | A    |
| 1   | 0     | 1286 | U    |
| 1   | 0     | 1288 | A    |
| 1   | 0     | 1289 | A    |
| 1   | 0     | 1300 | A    |
| 1   | 0     | 1302 | C    |
| 1   | 0     | 1313 | U    |
| 1   | 0     | 1314 | A    |
| 1   | 0     | 1316 | G    |
| 1   | 0     | 1324 | G    |
| 1   | 0     | 1327 | C    |
| 1   | 0     | 1334 | A    |
| 1   | 0     | 1338 | G    |
| 1   | 0     | 1339 | U    |
| 1   | 0     | 1342 | U    |
| 1   | 0     | 1343 | C    |
| 1   | 0     | 1346 | C    |
| 1   | 0     | 1354 | A    |
| 1   | 0     | 1356 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1359 | G    |
| 1   | 0     | 1391 | A    |
| 1   | 0     | 1392 | U    |
| 1   | 0     | 1397 | A    |
| 1   | 0     | 1398 | G    |
| 1   | 0     | 1407 | G    |
| 1   | 0     | 1411 | C    |
| 1   | 0     | 1433 | A    |
| 1   | 0     | 1441 | A    |
| 1   | 0     | 1442 | C    |
| 1   | 0     | 1443 | G    |
| 1   | 0     | 1450 | G    |
| 1   | 0     | 1459 | U    |
| 1   | 0     | 1460 | G    |
| 1   | 0     | 1468 | A    |
| 1   | 0     | 1469 | U    |
| 1   | 0     | 1470 | G    |
| 1   | 0     | 1474 | A    |
| 1   | 0     | 1475 | U    |
| 1   | 0     | 1476 | G    |
| 1   | 0     | 1482 | U    |
| 1   | 0     | 1489 | C    |
| 1   | 0     | 1490 | U    |
| 1   | 0     | 1505 | U    |
| 1   | 0     | 1508 | G    |
| 1   | 0     | 1513 | U    |
| 1   | 0     | 1514 | C    |
| 1   | 0     | 1524 | C    |
| 1   | 0     | 1529 | C    |
| 1   | 0     | 1552 | C    |
| 1   | 0     | 1553 | G    |
| 1   | 0     | 1573 | G    |
| 1   | 0     | 1574 | A    |
| 1   | 0     | 1583 | A    |
| 1   | 0     | 1585 | A    |
| 1   | 0     | 1614 | C    |
| 1   | 0     | 1618 | U    |
| 1   | 0     | 1619 | A    |
| 1   | 0     | 1623 | C    |
| 1   | 0     | 1624 | A    |
| 1   | 0     | 1625 | A    |
| 1   | 0     | 1627 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1631 | C    |
| 1   | 0     | 1634 | A    |
| 1   | 0     | 1635 | 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     | 1685 | A    |
| 1   | 0     | 1686 | A    |
| 1   | 0     | 1691 | G    |
| 1   | 0     | 1692 | C    |
| 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     | 1724 | C    |
| 1   | 0     | 1733 | U    |
| 1   | 0     | 1748 | U    |
| 1   | 0     | 1749 | G    |
| 1   | 0     | 1750 | A    |
| 1   | 0     | 1754 | G    |
| 1   | 0     | 1755 | G    |
| 1   | 0     | 1763 | G    |
| 1   | 0     | 1764 | A    |
| 1   | 0     | 1770 | U    |
| 1   | 0     | 1771 | A    |
| 1   | 0     | 1772 | C    |
| 1   | 0     | 1773 | C    |
| 1   | 0     | 1776 | A    |
| 1   | 0     | 1778 | U    |
| 1   | 0     | 1792 | C    |
| 1   | 0     | 1799 | A    |
| 1   | 0     | 1800 | A    |
| 1   | 0     | 1801 | C    |
| 1   | 0     | 1802 | A    |
| 1   | 0     | 1807 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1808 | C    |
| 1   | 0     | 1812 | U    |
| 1   | 0     | 1821 | A    |
| 1   | 0     | 1831 | G    |
| 1   | 0     | 1840 | A    |
| 1   | 0     | 1864 | G    |
| 1   | 0     | 1884 | A    |
| 1   | 0     | 1889 | G    |
| 1   | 0     | 1900 | U    |
| 1   | 0     | 1909 | U    |
| 1   | 0     | 1919 | A    |
| 1   | 0     | 1920 | A    |
| 1   | 0     | 1922 | U    |
| 1   | 0     | 1924 | C    |
| 1   | 0     | 1926 | U    |
| 1   | 0     | 1927 | U    |
| 1   | 0     | 1928 | G    |
| 1   | 0     | 1930 | C    |
| 1   | 0     | 1933 | G    |
| 1   | 0     | 1938 | U    |
| 1   | 0     | 1939 | U    |
| 1   | 0     | 1946 | U    |
| 1   | 0     | 1947 | G    |
| 1   | 0     | 1948 | C    |
| 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     | 1975 | G    |
| 1   | 0     | 1976 | U    |
| 1   | 0     | 1979 | C    |
| 1   | 0     | 1980 | A    |
| 1   | 0     | 2002 | A    |
| 1   | 0     | 2003 | A    |
| 1   | 0     | 2004 | U    |
| 1   | 0     | 2005 | U    |
| 1   | 0     | 2006 | G    |
| 1   | 0     | 2013 | A    |
| 1   | 0     | 2014 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2015 | G    |
| 1   | 0     | 2016 | A    |
| 1   | 0     | 2019 | C    |
| 1   | 0     | 2026 | C    |
| 1   | 0     | 2038 | C    |
| 1   | 0     | 2039 | G    |
| 1   | 0     | 2043 | A    |
| 1   | 0     | 2044 | G    |
| 1   | 0     | 2045 | A    |
| 1   | 0     | 2046 | C    |
| 1   | 0     | 2047 | C    |
| 1   | 0     | 2050 | G    |
| 1   | 0     | 2051 | U    |
| 1   | 0     | 2052 | G    |
| 1   | 0     | 2060 | 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     | 2121 | U    |
| 1   | 0     | 2140 | G    |
| 1   | 0     | 2162 | C    |
| 1   | 0     | 2168 | A    |
| 1   | 0     | 2181 | A    |
| 1   | 0     | 2191 | A    |
| 1   | 0     | 2192 | U    |
| 1   | 0     | 2195 | C    |
| 1   | 0     | 2199 | C    |
| 1   | 0     | 2205 | C    |
| 1   | 0     | 2218 | G    |
| 1   | 0     | 2229 | G    |
| 1   | 0     | 2230 | 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     | 2265 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2267 | A    |
| 1   | 0     | 2268 | G    |
| 1   | 0     | 2284 | U    |
| 1   | 0     | 2285 | U    |
| 1   | 0     | 2286 | G    |
| 1   | 0     | 2287 | G    |
| 1   | 0     | 2288 | A    |
| 1   | 0     | 2298 | U    |
| 1   | 0     | 2299 | A    |
| 1   | 0     | 2300 | G    |
| 1   | 0     | 2301 | A    |
| 1   | 0     | 2312 | A    |
| 1   | 0     | 2313 | G    |
| 1   | 0     | 2314 | A    |
| 1   | 0     | 2315 | A    |
| 1   | 0     | 2316 | G    |
| 1   | 0     | 2324 | G    |
| 1   | 0     | 2325 | A    |
| 1   | 0     | 2326 | C    |
| 1   | 0     | 2335 | U    |
| 1   | 0     | 2340 | C    |
| 1   | 0     | 2351 | G    |
| 1   | 0     | 2362 | G    |
| 1   | 0     | 2364 | C    |
| 1   | 0     | 2378 | G    |
| 1   | 0     | 2381 | A    |
| 1   | 0     | 2385 | U    |
| 1   | 0     | 2386 | G    |
| 1   | 0     | 2389 | G    |
| 1   | 0     | 2396 | C    |
| 1   | 0     | 2402 | U    |
| 1   | 0     | 2403 | C    |
| 1   | 0     | 2405 | A    |
| 1   | 0     | 2406 | C    |
| 1   | 0     | 2407 | G    |
| 1   | 0     | 2408 | G    |
| 1   | 0     | 2409 | A    |
| 1   | 0     | 2410 | U    |
| 1   | 0     | 2411 | A    |
| 1   | 0     | 2414 | A    |
| 1   | 0     | 2419 | C    |
| 1   | 0     | 2426 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2427 | A    |
| 1   | 0     | 2428 | U    |
| 1   | 0     | 2447 | G    |
| 1   | 0     | 2448 | A    |
| 1   | 0     | 2455 | A    |
| 1   | 0     | 2470 | U    |
| 1   | 0     | 2476 | A    |
| 1   | 0     | 2477 | C    |
| 1   | 0     | 2480 | C    |
| 1   | 0     | 2481 | G    |
| 1   | 0     | 2482 | A    |
| 1   | 0     | 2483 | U    |
| 1   | 0     | 2492 | G    |
| 1   | 0     | 2496 | C    |
| 1   | 0     | 2497 | A    |
| 1   | 0     | 2498 | U    |
| 1   | 0     | 2499 | C    |
| 1   | 0     | 2521 | A    |
| 1   | 0     | 2522 | G    |
| 1   | 0     | 2533 | U    |
| 1   | 0     | 2545 | A    |
| 1   | 0     | 2546 | G    |
| 1   | 0     | 2549 | G    |
| 1   | 0     | 2551 | A    |
| 1   | 0     | 2552 | C    |
| 1   | 0     | 2553 | G    |
| 1   | 0     | 2557 | G    |
| 1   | 0     | 2561 | G    |
| 1   | 0     | 2565 | C    |
| 1   | 0     | 2578 | G    |
| 1   | 0     | 2581 | A    |
| 1   | 0     | 2582 | G    |
| 1   | 0     | 2588 | U    |
| 1   | 0     | 2589 | C    |
| 1   | 0     | 2591 | C    |
| 1   | 0     | 2593 | A    |
| 1   | 0     | 2594 | U    |
| 1   | 0     | 2600 | A    |
| 1   | 0     | 2608 | A    |
| 1   | 0     | 2609 | G    |
| 1   | 0     | 2625 | U    |
| 1   | 0     | 2633 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2634 | G    |
| 1   | 0     | 2660 | C    |
| 1   | 0     | 2661 | G    |
| 1   | 0     | 2669 | C    |
| 1   | 0     | 2670 | C    |
| 1   | 0     | 2692 | A    |
| 1   | 0     | 2693 | U    |
| 1   | 0     | 2694 | G    |
| 1   | 0     | 2706 | U    |
| 1   | 0     | 2707 | G    |
| 1   | 0     | 2712 | G    |
| 1   | 0     | 2713 | A    |
| 1   | 0     | 2719 | U    |
| 1   | 0     | 2728 | A    |
| 1   | 0     | 2730 | A    |
| 1   | 0     | 2732 | C    |
| 1   | 0     | 2735 | C    |
| 1   | 0     | 2737 | A    |
| 1   | 0     | 2745 | A    |
| 1   | 0     | 2756 | A    |
| 1   | 0     | 2757 | G    |
| 1   | 0     | 2758 | A    |
| 1   | 0     | 2759 | U    |
| 1   | 0     | 2760 | G    |
| 1   | 0     | 2761 | A    |
| 1   | 0     | 2769 | C    |
| 1   | 0     | 2771 | C    |
| 1   | 0     | 2774 | U    |
| 1   | 0     | 2782 | G    |
| 1   | 0     | 2783 | U    |
| 1   | 0     | 2785 | A    |
| 1   | 0     | 2793 | G    |
| 1   | 0     | 2796 | A    |
| 1   | 0     | 2798 | A    |
| 1   | 0     | 2805 | G    |
| 1   | 0     | 2807 | U    |
| 1   | 0     | 2808 | U    |
| 1   | 0     | 2809 | A    |
| 1   | 0     | 2810 | A    |
| 1   | 0     | 2823 | G    |
| 1   | 0     | 2825 | A    |
| 1   | 0     | 2841 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2842 | C    |
| 1   | 0     | 2847 | G    |
| 1   | 0     | 2849 | C    |
| 1   | 0     | 2854 | G    |
| 1   | 0     | 2855 | C    |
| 1   | 0     | 2858 | A    |
| 1   | 0     | 2866 | A    |
| 1   | 0     | 2867 | G    |
| 1   | 0     | 2868 | G    |

All (62) RNA pucker outliers are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 69   | G    |
| 1   | 0     | 117  | A    |
| 1   | 0     | 173  | A    |
| 1   | 0     | 176  | A    |
| 1   | 0     | 192  | G    |
| 1   | 0     | 218  | A    |
| 1   | 0     | 219  | G    |
| 1   | 0     | 430  | C    |
| 1   | 0     | 434  | C    |
| 1   | 0     | 436  | A    |
| 1   | 0     | 438  | G    |
| 1   | 0     | 460  | U    |
| 1   | 0     | 466  | A    |
| 1   | 0     | 485  | G    |
| 1   | 0     | 516  | G    |
| 1   | 0     | 539  | A    |
| 1   | 0     | 765  | C    |
| 1   | 0     | 789  | G    |
| 1   | 0     | 801  | A    |
| 1   | 0     | 956  | A    |
| 1   | 0     | 1033 | G    |
| 1   | 0     | 1141 | U    |
| 1   | 0     | 1154 | A    |
| 1   | 0     | 1194 | U    |
| 1   | 0     | 1249 | G    |
| 1   | 0     | 1260 | A    |
| 1   | 0     | 1263 | G    |
| 1   | 0     | 1278 | A    |
| 1   | 0     | 1299 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1313 | U    |
| 1   | 0     | 1315 | A    |
| 1   | 0     | 1338 | G    |
| 1   | 0     | 1345 | G    |
| 1   | 0     | 1391 | A    |
| 1   | 0     | 1617 | G    |
| 1   | 0     | 1626 | A    |
| 1   | 0     | 1634 | A    |
| 1   | 0     | 1685 | A    |
| 1   | 0     | 1691 | G    |
| 1   | 0     | 1698 | C    |
| 1   | 0     | 1715 | A    |
| 1   | 0     | 1820 | G    |
| 1   | 0     | 1975 | G    |
| 1   | 0     | 2013 | A    |
| 1   | 0     | 2015 | G    |
| 1   | 0     | 2018 | G    |
| 1   | 0     | 2093 | G    |
| 1   | 0     | 2161 | C    |
| 1   | 0     | 2191 | A    |
| 1   | 0     | 2204 | A    |
| 1   | 0     | 2245 | A    |
| 1   | 0     | 2261 | G    |
| 1   | 0     | 2312 | A    |
| 1   | 0     | 2324 | G    |
| 1   | 0     | 2377 | U    |
| 1   | 0     | 2404 | A    |
| 1   | 0     | 2469 | G    |
| 1   | 0     | 2633 | A    |
| 1   | 0     | 2756 | A    |
| 1   | 0     | 2758 | A    |
| 1   | 0     | 2824 | C    |
| 1   | 0     | 2867 | 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 ⓘ

There are no monosaccharides in this entry.

## 5.6 Ligand geometry

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 |
| 2   | TEL  | 0     | 2881 | -    | 59,62,62     | 3.60 | 31 (52%) | 77,92,92    | 3.46 | 33 (42%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res  | Link | Chirals   | Torsions      | Rings   |
|-----|------|-------|------|------|-----------|---------------|---------|
| 2   | TEL  | 0     | 2881 | -    | 1/1/19/19 | 23/73/108/108 | 0/4/5/5 |

All (31) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|---------|-------|-------------|----------|
| 2   | 0     | 2881 | TEL  | C30-C34 | 12.60 | 1.72        | 1.54     |
| 2   | 0     | 2881 | TEL  | C7-C3   | 8.59  | 1.65        | 1.54     |
| 2   | 0     | 2881 | TEL  | C24-C28 | 7.93  | 1.64        | 1.52     |
| 2   | 0     | 2881 | TEL  | O9-C15  | 7.30  | 1.51        | 1.34     |
| 2   | 0     | 2881 | TEL  | C47-C43 | 6.74  | 1.51        | 1.39     |
| 2   | 0     | 2881 | TEL  | C24-C19 | 6.22  | 1.62        | 1.54     |
| 2   | 0     | 2881 | TEL  | C51-C46 | 5.32  | 1.50        | 1.38     |
| 2   | 0     | 2881 | TEL  | C30-C26 | 5.28  | 1.60        | 1.52     |
| 2   | 0     | 2881 | TEL  | C11-N6  | 4.98  | 1.55        | 1.46     |
| 2   | 0     | 2881 | TEL  | C21-C26 | 4.96  | 1.60        | 1.52     |
| 2   | 0     | 2881 | TEL  | O5-C10  | 4.23  | 1.42        | 1.35     |
| 2   | 0     | 2881 | TEL  | C2-C4   | 4.18  | 1.66        | 1.54     |
| 2   | 0     | 2881 | TEL  | C44-C49 | 4.15  | 1.62        | 1.53     |
| 2   | 0     | 2881 | TEL  | C56-N52 | 3.49  | 1.44        | 1.33     |
| 2   | 0     | 2881 | TEL  | C10-N6  | 3.36  | 1.41        | 1.35     |
| 2   | 0     | 2881 | TEL  | O32-C28 | 3.32  | 1.51        | 1.44     |
| 2   | 0     | 2881 | TEL  | C28-C34 | 3.29  | 1.64        | 1.55     |
| 2   | 0     | 2881 | TEL  | C49-N53 | 3.20  | 1.55        | 1.48     |

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| Mol | Chain | Res  | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|---------|-------|-------------|----------|
| 2   | 0     | 2881 | TEL  | C33-C28 | 3.15  | 1.59        | 1.52     |
| 2   | 0     | 2881 | TEL  | C21-C15 | 3.03  | 1.57        | 1.51     |
| 2   | 0     | 2881 | TEL  | C8-C4   | 2.94  | 1.63        | 1.53     |
| 2   | 0     | 2881 | TEL  | C3-N6   | 2.75  | 1.53        | 1.47     |
| 2   | 0     | 2881 | TEL  | O16-C10 | 2.72  | 1.25        | 1.21     |
| 2   | 0     | 2881 | TEL  | C37-N41 | -2.55 | 1.30        | 1.35     |
| 2   | 0     | 2881 | TEL  | C36-N31 | 2.54  | 1.41        | 1.38     |
| 2   | 0     | 2881 | TEL  | O29-C26 | 2.41  | 1.25        | 1.21     |
| 2   | 0     | 2881 | TEL  | O18-C13 | 2.37  | 1.25        | 1.21     |
| 2   | 0     | 2881 | TEL  | C12-C7  | 2.33  | 1.58        | 1.53     |
| 2   | 0     | 2881 | TEL  | C1-C2   | 2.31  | 1.57        | 1.52     |
| 2   | 0     | 2881 | TEL  | O39-C34 | 2.03  | 1.49        | 1.44     |
| 2   | 0     | 2881 | TEL  | O9-C4   | 2.03  | 1.49        | 1.46     |

All (33) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|--------|-------------|----------|
| 2   | 0     | 2881 | TEL  | O9-C15-C21  | 13.29  | 124.38      | 110.88   |
| 2   | 0     | 2881 | TEL  | C3-N6-C10   | -11.45 | 96.35       | 111.69   |
| 2   | 0     | 2881 | TEL  | C42-O39-C34 | 7.20   | 128.76      | 116.25   |
| 2   | 0     | 2881 | TEL  | O20-C15-C21 | -6.87  | 115.73      | 124.77   |
| 2   | 0     | 2881 | TEL  | C11-N6-C10  | -6.78  | 113.68      | 122.25   |
| 2   | 0     | 2881 | TEL  | C2-O5-C10   | -6.44  | 104.19      | 109.29   |
| 2   | 0     | 2881 | TEL  | C1-C2-C3    | -6.28  | 109.14      | 116.69   |
| 2   | 0     | 2881 | TEL  | O39-C34-C28 | -6.27  | 91.39       | 106.40   |
| 2   | 0     | 2881 | TEL  | C24-C28-C34 | 6.08   | 117.61      | 110.25   |
| 2   | 0     | 2881 | TEL  | O9-C4-C2    | 5.53   | 117.95      | 105.48   |
| 2   | 0     | 2881 | TEL  | C28-C24-C19 | 5.35   | 125.17      | 116.11   |
| 2   | 0     | 2881 | TEL  | C4-O9-C15   | -4.99  | 109.31      | 118.18   |
| 2   | 0     | 2881 | TEL  | C12-C7-C13  | -4.40  | 100.44      | 108.08   |
| 2   | 0     | 2881 | TEL  | O9-C4-C8    | -4.31  | 99.19       | 107.40   |
| 2   | 0     | 2881 | TEL  | O5-C2-C3    | -3.80  | 99.32       | 103.16   |
| 2   | 0     | 2881 | TEL  | C35-C30-C26 | -3.71  | 101.64      | 108.08   |
| 2   | 0     | 2881 | TEL  | O32-C28-C34 | -3.38  | 100.90      | 107.85   |
| 2   | 0     | 2881 | TEL  | C33-C28-C34 | -3.29  | 104.74      | 109.75   |
| 2   | 0     | 2881 | TEL  | C1-C2-C4    | -3.22  | 106.62      | 112.36   |
| 2   | 0     | 2881 | TEL  | C56-N52-C47 | 2.89   | 121.84      | 116.85   |
| 2   | 0     | 2881 | TEL  | C36-C40-C43 | -2.70  | 123.05      | 129.15   |
| 2   | 0     | 2881 | TEL  | C54-C49-N53 | -2.70  | 108.05      | 115.67   |
| 2   | 0     | 2881 | TEL  | O29-C26-C30 | -2.68  | 116.79      | 120.60   |
| 2   | 0     | 2881 | TEL  | C24-C19-C13 | -2.68  | 108.72      | 113.32   |
| 2   | 0     | 2881 | TEL  | O5-C2-C1    | 2.62   | 111.53      | 106.93   |

*Continued on next page...*



*Continued from previous page...*

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 2   | 0     | 2881 | TEL  | C17-C11-N6  | 2.48  | 117.15      | 113.31   |
| 2   | 0     | 2881 | TEL  | C55-C50-C54 | -2.37 | 109.68      | 113.40   |
| 2   | 0     | 2881 | TEL  | C54-C49-C44 | -2.23 | 106.76      | 109.97   |
| 2   | 0     | 2881 | TEL  | O9-C15-O20  | -2.18 | 119.86      | 123.94   |
| 2   | 0     | 2881 | TEL  | O32-C28-C24 | 2.15  | 110.43      | 105.71   |
| 2   | 0     | 2881 | TEL  | C14-C8-C4   | 2.13  | 118.43      | 113.13   |
| 2   | 0     | 2881 | TEL  | C23-C19-C24 | 2.12  | 113.71      | 109.81   |
| 2   | 0     | 2881 | TEL  | O29-C26-C21 | -2.01 | 116.91      | 120.68   |

All (1) chirality outliers are listed below:

| Mol | Chain | Res  | Type | Atom |
|-----|-------|------|------|------|
| 2   | 0     | 2881 | TEL  | C21  |

All (23) torsion outliers are listed below:

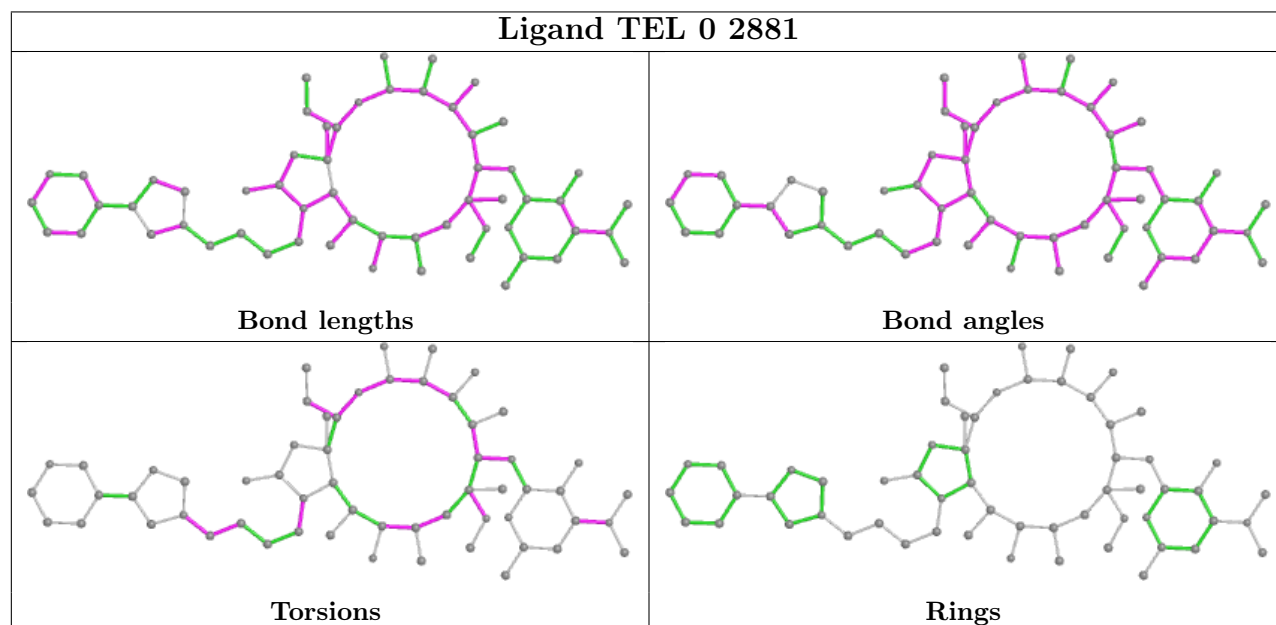
| Mol | Chain | Res  | Type | Atoms           |
|-----|-------|------|------|-----------------|
| 2   | 0     | 2881 | TEL  | C7-C13-C19-C24  |
| 2   | 0     | 2881 | TEL  | O9-C15-C21-C25  |
| 2   | 0     | 2881 | TEL  | C25-C21-C26-O29 |
| 2   | 0     | 2881 | TEL  | C25-C21-C26-C30 |
| 2   | 0     | 2881 | TEL  | C26-C30-C34-C28 |
| 2   | 0     | 2881 | TEL  | C28-C34-O39-C42 |
| 2   | 0     | 2881 | TEL  | C30-C34-O39-C42 |
| 2   | 0     | 2881 | TEL  | C17-C22-C27-N31 |
| 2   | 0     | 2881 | TEL  | C21-C15-O9-C4   |
| 2   | 0     | 2881 | TEL  | C2-C4-C8-C14    |
| 2   | 0     | 2881 | TEL  | C54-C49-N53-C58 |
| 2   | 0     | 2881 | TEL  | O20-C15-O9-C4   |
| 2   | 0     | 2881 | TEL  | O20-C15-C21-C25 |
| 2   | 0     | 2881 | TEL  | C13-C19-C24-C28 |
| 2   | 0     | 2881 | TEL  | C15-C21-C26-O29 |
| 2   | 0     | 2881 | TEL  | C15-C21-C26-C30 |
| 2   | 0     | 2881 | TEL  | O9-C4-C8-C14    |
| 2   | 0     | 2881 | TEL  | C23-C19-C24-C28 |
| 2   | 0     | 2881 | TEL  | C17-C11-N6-C10  |
| 2   | 0     | 2881 | TEL  | C22-C27-N31-C36 |
| 2   | 0     | 2881 | TEL  | C34-C28-O32-C38 |
| 2   | 0     | 2881 | TEL  | C2-C4-O9-C15    |
| 2   | 0     | 2881 | TEL  | O18-C13-C19-C24 |

There are no ring outliers.

1 monomer is involved in 11 short contacts:

| Mol | Chain | Res  | Type | Clashes | Symm-Clashes |
|-----|-------|------|------|---------|--------------|
| 2   | 0     | 2881 | TEL  | 11      | 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.