



# Full wwPDB X-ray Structure Validation Report ⓘ

May 12, 2020 – 11:53 pm BST

PDB ID : 2AAR  
Title : Structure of trigger factor binding domain in biologically homologous complex with eubacterial ribosome.  
Authors : Baram, D.; Pyetan, E.; Sittner, A.; Auerbach-Nevo, T.; Bashan, A.; Yonath, A.  
Deposited on : 2005-07-14  
Resolution : 3.50 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](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  |
| Xtriage (Phenix)               | : | 1.13   |
| EDS                            | : | 2.11   |
| Percentile statistics          | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac                         | : | 5.8.0158   |
| CCP4                           | : | 7.0.044 (Gargrove)   |
| Ideal geometry (proteins)      | : | Engh & Huber (2001)  |
| Ideal geometry (DNA, RNA)      | : | Parkinson et al. (1996)  |
| Validation Pipeline (wwPDB-VP) | : | 2.11   |

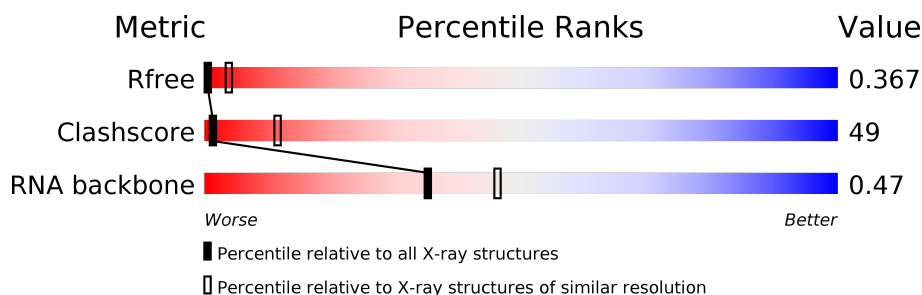
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.50 Å.

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



| Metric            | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-------------------|-----------------------------|---|
| R <sub>free</sub> | 130704                      | 1659 (3.60-3.40)                                      |
| Clashscore        | 141614                      | 1036 (3.58-3.42)                                      |
| RNA backbone      | 3102                        | 1002 (4.00-3.00)                                      |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on 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  $\leq 5\%$ .

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | 0     | 2880   |                  |
| 2   | R     | 95     |                  |
| 3   | W     | 67     |                  |
| 4   | 7     | 113    |                  |

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 59630 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 |
|-----|-------|----------|-------|-------|-------|-------|------|---------|---------|-------|
| 1   | 0     | 2766     | Total | C     | N     | O     | P    | 0       | 0       | 0     |
|     |       |          | 59359 | 26479 | 10949 | 19166 | 2765 |         |         |       |

- Molecule 2 is a protein called 50S ribosomal protein L23.

| Mol | Chain | Residues | Atoms |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---------|---------|-------|
| 2   | R     | 93       | Total | C  | 0       | 0       | 93    |
|     |       |          | 93    | 93 |         |         |       |

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

| Mol | Chain | Residues | Atoms |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---------|---------|-------|
| 3   | W     | 65       | Total | C  | 0       | 0       | 65    |
|     |       |          | 65    | 65 |         |         |       |

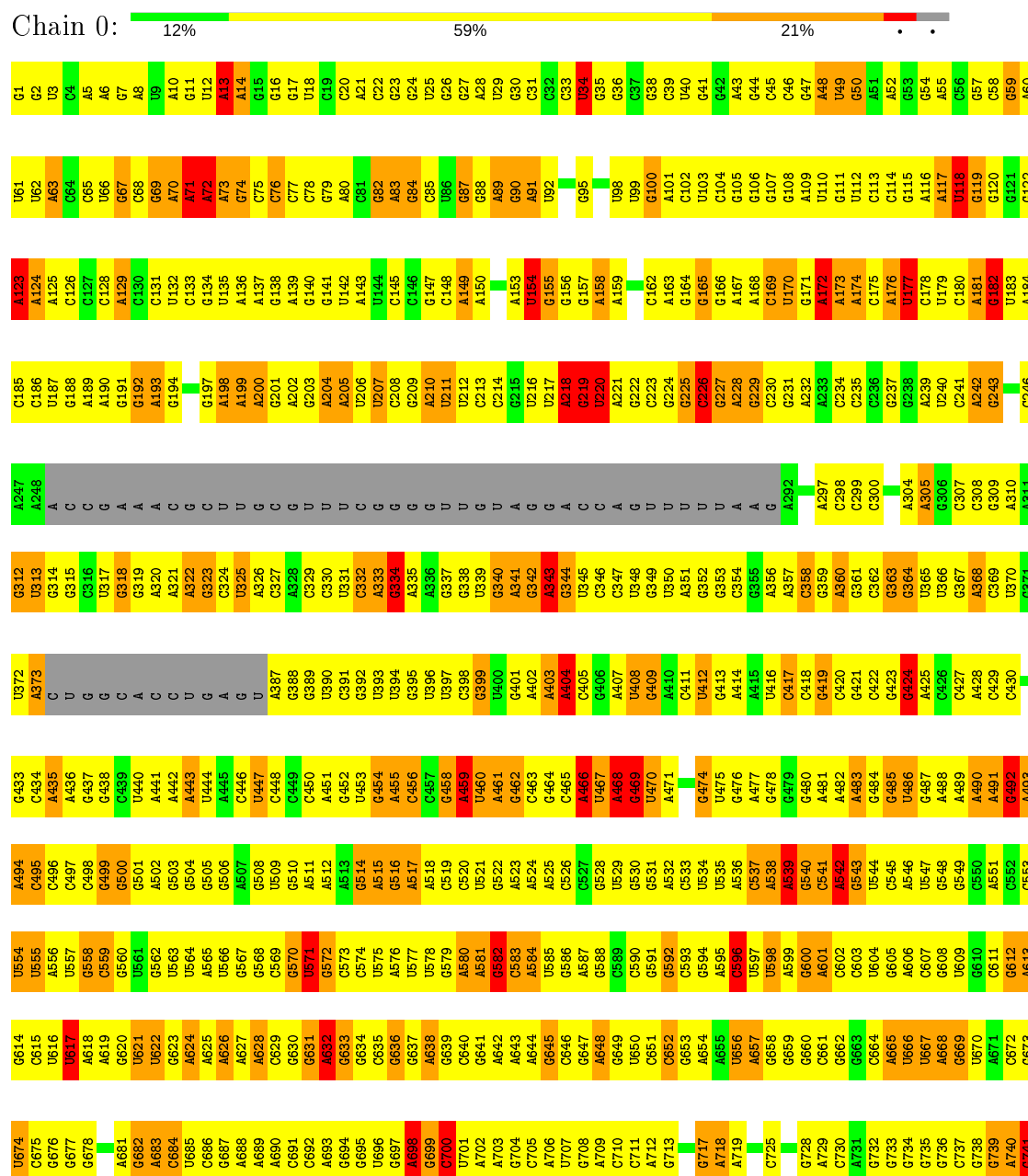
- Molecule 4 is a protein called Trigger Factor.

| Mol | Chain | Residues | Atoms |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|---------|---------|-------|
| 4   | 7     | 113      | Total | C   | 0       | 0       | 113   |
|     |       |          | 113   | 113 |         |         |       |

### 3 Residue-property plots

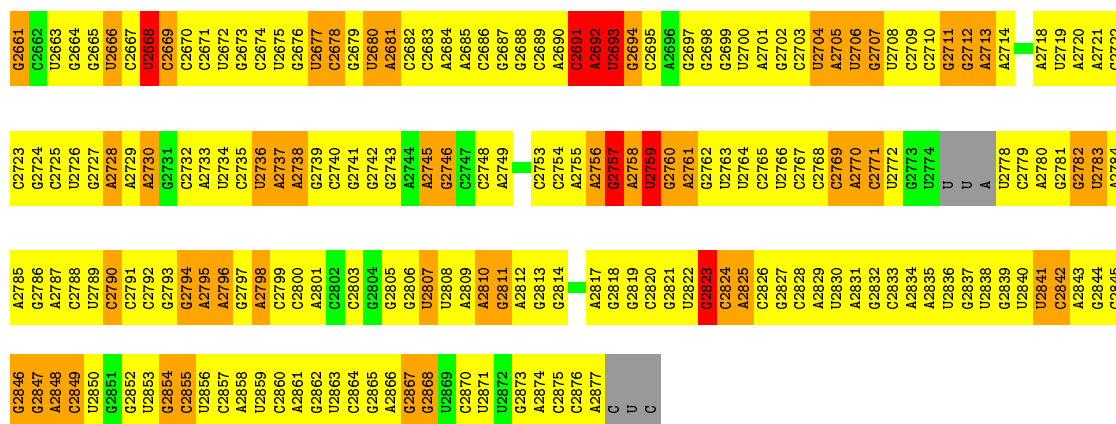
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according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

#### • Molecule 1: 23S ribosomal RNA



|       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       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| G1666 | G1667 | G1668 | G1669 | G1670 | G1671 | G1672 | G1673 | G1674 | G1675 | G1676 | G1677 | G1678 | G1679 | G1680 | G1681 | G1682 | G1683 | G1684 | G1685 | G1686 | G1687 | G1688 | G1689 | G1690 | G1691 | G1692 | G1693 | G1694 | G1695 | G1696 | G1697 | G1698 | G1699 | G1700 | G1701 | G1702 | G1703 | G1704 | G1705 | G1706 | G1707 | G1708 | G1709 | G1710 | G1711 | G1712 | G1713 | G1714 | G1715 | G1716 | G1717 | G1718 | G1719 | G1720 | G1721 | G1722 | G1723 | G1724 | G1725 | G1726 | G1727 | G1728 | G1729 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       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 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |
| A1605 | A1606 | A1607 | A1608 | A1609 | A1610 | A1611 | A1612 | A1613 | A1614 | A1615 | A1616 | A1617 | A1618 | A1619 | A1620 | A1621 | A1622 | A1623 | A1624 | A1625 | A1626 | A1627 | A1628 | A1629 | A1630 | A1631 | A1632 | A1633 | A1634 | A1635 | A1636 | A1637 | A1638 | A1639 | A1640 | A1641 | A1642 | A1643 | A1644 | A1645 | A1646 | A1647 | A1648 | A1649 | A1650 | A1651 | A1652 | A1653 | A1654 | A1655 | A1656 | A1657 | A1658 | A1659 | A1660 | A1661 | A1662 | A1663 | A1664 | A1665 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     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 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     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 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |
| G1545 | G1546 | G1547 | G1548 | G1549 | G1550 | G1551 | G1552 | G1553 | G1554 | G1555 | G1556 | G1557 | G1558 | G1559 | G1560 | G1561 | G1562 | G1563 | G1564 | G1565 | G1566 | G1567 | G1568 | G1569 | G1570 | G1571 | G1572 | G1573 | G1574 | G1575 | G1576 | G1577 | G1578 | G1579 | G1580 | G1581 | G1582 | G1583 | G1584 | G1585 | G1586 | G1587 | G1588 | G1589 | G1590 | G1591 | G1592 | G1593 | G1594 | G1595 | G1596 | G1597 | G1598 | G1599 | G1600 | G1601 | G1602 | G1603 | G1604 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    |
| G1483 | G1484 | G1485 | G1486 | G1487 | G1488 | G1489 | G1490 | G1491 | G1492 | G1493 | G1494 | G1495 | G1496 | G1497 | G1498 | G1499 | G1500 | G1501 | G1502 | G1503 | G1504 | G1505 | G1506 | G1507 | G1508 | G1509 | G1510 | G1511 | G1512 | G1513 | G1514 | G1515 | G1516 | G1517 | G1518 | G1519 | G1520 | G1521 | G1522 | G1523 | G1524 | G1525 | G1526 | G1527 | G1528 | G1529 | G1530 | G1531 | G1532 | G1533 | G1534 | G1535 | G1536 | G1537 | G1538 | G1539 | G1540 | G1541 | G1542 | G1543 | G1544 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       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 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     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| G1360 | G1361 | G1362 | G1363 | G1364 | G1365 | G1366 | G1367 | G1368 | G1369 | G1370 | G1371 | G1372 | G1373 | G1374 | G1375 | G1376 | G1377 | G1378 | G1379 | G1380 | G1381 | G1382 | G1383 | G1384 | G1385 | G1386 | G1387 | G1388 | G1389 | G1390 | G1391 | G1392 | G1393 | G1394 | G1395 | G1396 | G1397 | G1398 | G1399 | G1400 | G1401 | G1402 | G1403 | G1404 | G1405 | G1406 | G1407 | G1408 | G1409 | G1410 | G1411 | G1412 | G1413 | G1414 | G1415 | G1416 | G1417 | G1418 | G1419 | G1420 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       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| A1174 | A1173 | A1172 | A1171 | A1170 | A1169 | A1168 | A1167 | A1166 | A1165 | A1164 | A1163 | A1162 | A1161 | A1160 | A1159 | A1158 | A1157 | A1156 | A1155 | A1154 | A1153 | A1152 | A1151 | A1150 | A1149 | A1148 | A1147 | A1146 | A1145 | A1144 | A1143 | A1142 | A1141 | A1140 | A1139 | A1138 | A1137 | A1136 | A1135 | A1134 | A1133 | A1132 | A1131 | A1130 | A1129 | A1128 | A1127 | A1126 | A1125 | A1124 | A1123 | A1122 | A1121 | A1120 | A1119 | A1118 | A1117 | A1116 | A1115 | A1114 | A1113 | A1112 | A1111 | A1110 | A1109 | A1108 | A1107 | A1106 | A1105 | A1104 | A1103 | A1102 | A1101 | A1100 | A1099 | A1098 | A1097 | A1096 | A1095 | A1094 | A1093 | A1092 | A1091 | A1090 | A1089 | A1088 | A1087 | A1086 | A1085 | A1084 | A1083 | A1082 | A1081 | A1080 | A1079 | A1078 | A1077 | A1076 | A1075 | A1074 | A1073 | A1072 | A1071 | A1070 | A1069 | A1068 | A1067 | A1066 | A1065 | A1064 | A1063 | A1062 | A1061 | A1060 | A1059 | A1058 | A1057 | A1056 | A1055 | A1054 | A1053 | A1052 | A1051 | A1050 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A771 | A770 | A769 | A768 | A767 | A766 | A765 | A764 | A763 | A762 | A761 | A760 | A759 | A758 | A757 | A756 | A755 | A754 | A753 | A752 | A751 | A750 | A749 | A748 | A747 | A746 | A745 | A744 | A743 | A742 | A741 | A740 | A739 | A738 | A737 | A736 | A735 | A734 | A733 | A732 | A731 | A730 | A729 | A728 | A727 | A726 | A725 | A724 | A723 | A722 | A721 | A720 | A719 | A718 | A717 | A716 | A715 | A714 | A713 | A712 | A711 | A710 | A709 | A708 | A707 | A706 | A705 | A704 | A703 | A702 | A701 | A700 | A699 | A698 | A697 | A696 | A695 | A694 | A693 | A692 | A691 | A690 | A689 | A688 | A687 | A686 | A685 | A684 | A683 | A682 | A681 | A680 | A679 | A678 | A677 | A676 | A675 | A674 | A673 | A672 | A671 | A670 | A669 | A668 | A667 | A666 | A665 | A664 | A663 | A662 | A661 | A660 | A659 | A658 | A657 | A656 | A655 | A654 | A653 | A652 | A651 | A650 | A649 | A648 | A647 | A646 | A645 | A644 | A643 | A642 | A641 | A640 | A639 | A638 | A637 | A636 | A635 | A634 | A633 | A632 | A631 | A630 | A629 | 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A342 | A341 | A340 | A339 | A338 | A337 | A336 | A335 | A334 | A333 | A332 | A331 | A330 | A329 | A328 | A327 | A326 | A325 | A324 | A323 | A322 | A321 | A320 | A319 | A318 | A317 | A316 | A315 | A314 | A313 | A312 | A311 | A310 | A309 | A308 | A307 | A306 | A305 | A304 | A303 | A302 | A301 | A300 | A299 | A298 | A297 | A296 | A295 | A294 | A293 | A292 | A291 | A290 | A289 | A288 | A287 | A286 | A285 | A284 | A283 | A282 | A281 | A280 | A279 | A278 | A277 | A276 | A275 | A274 | A273 | A272 | A271 | A270 | A269 | A268 | A267 | A266 | A265 | A264 | A263 | A262 | A261 | A260 | A259 | A258 | A257 | A256 | A255 | A254 | A253 | A252 | A251 | A250 | A249 | A248 | A247 | A246 | A245 | A244 | A243 | A242 | A241 | A240 | A239 | A238 | A237 | A236 | A235 | A234 | A233 | A232 | A231 | A230 | A229 | A228 | A227 | A226 | A225 | A224 | A223 | A222 | A221 | A220 | A219 | A218 | A217 | A216 | A215 | A214 | A213 | A212 | A211 | A210 | A209 | A208 | A207 | A206 | A205 | A204 | A203 | A202 | A201 | A200 | 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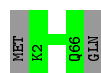
- Molecule 2: 50S ribosomal protein L23

Chain R:  98%



- Molecule 3: 50S ribosomal protein L29

Chain W:  97%



- Molecule 4: Trigger Factor

Chain 7:  100%

There are no outlier residues recorded for this chain.

## 4 Data and refinement statistics

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | I 2 2 2   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 169.39Å 407.06Å 692.75Å<br>90.00° 90.00° 90.00°             | Depositor        |
| Resolution (Å)  | 8.00 – 3.50<br>19.99 – 3.50                                 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 99.0 (8.00-3.50)<br>100.0 (19.99-3.50)                      | Depositor<br>EDS |
| $R_{merge}$   | (Not available)   | Depositor        |
| $R_{sym}$   | (Not available)   | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 1.83 (at 3.52Å)   | Xtriage          |
| Refinement program  | CNS 1.1   | Depositor        |
| R, $R_{free}$   | 0.251 , 0.320<br>0.336 , 0.367                              | Depositor<br>DCC |
| $R_{free}$ test set   | 13451 reflections (4.52%)                                   | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 98.5  | Xtriage          |
| Anisotropy  | 0.659   | Xtriage          |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.18 , 68.6   | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.28$ | Xtriage          |
| Estimated twinning fraction   | No twinning to report.                                      | Xtriage          |
| $F_o, F_c$ correlation  | 0.80  | EDS              |
| Total number of atoms   | 59630   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 90.0  | wwPDB-VP         |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.03% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.



## 5 Model quality

### 5.1 Standard geometry

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     | 0.65         | 7/66467 (0.0%) | 0.84        | 119/103673 (0.1%) |

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                   | 128                 |

All (7) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1   | 0     | 700  | C    | N1-C2 | 10.10 | 1.50        | 1.40     |
| 1   | 0     | 538  | A    | C5-C6 | -5.66 | 1.35        | 1.41     |
| 1   | 0     | 788  | G    | N9-C4 | 5.49  | 1.42        | 1.38     |
| 1   | 0     | 2593 | A    | C5-C6 | -5.46 | 1.36        | 1.41     |
| 1   | 0     | 774  | A    | C5-C6 | -5.29 | 1.36        | 1.41     |
| 1   | 0     | 1684 | G    | C5-C6 | -5.17 | 1.37        | 1.42     |
| 1   | 0     | 542  | A    | C5-C6 | -5.05 | 1.36        | 1.41     |

All (119) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 0     | 1279 | G    | N9-C1'-C2' | 10.85 | 128.10      | 114.00   |
| 1   | 0     | 1266 | G    | N9-C1'-C2' | 10.62 | 127.81      | 114.00   |
| 1   | 0     | 765  | C    | O4'-C1'-N1 | 9.33  | 115.66      | 108.20   |
| 1   | 0     | 2237 | C    | N1-C1'-C2' | 9.28  | 126.06      | 114.00   |
| 1   | 0     | 985  | G    | N9-C1'-C2' | 9.24  | 126.01      | 114.00   |
| 1   | 0     | 2693 | U    | N1-C1'-C2' | 8.80  | 125.45      | 114.00   |
| 1   | 0     | 1337 | G    | N9-C1'-C2' | 8.75  | 125.38      | 114.00   |
| 1   | 0     | 1716 | G    | N9-C1'-C2' | 8.62  | 125.20      | 114.00   |
| 1   | 0     | 788  | G    | N9-C1'-C2' | 8.29  | 124.78      | 114.00   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 0     | 2692 | A    | N9-C1'-C2'  | -8.22 | 102.96      | 112.00   |
| 1   | 0     | 1749 | G    | N9-C1'-C2'  | 8.18  | 124.63      | 114.00   |
| 1   | 0     | 2692 | A    | O4'-C1'-N9  | 8.15  | 114.72      | 108.20   |
| 1   | 0     | 2405 | A    | N9-C1'-C2'  | 8.10  | 124.53      | 114.00   |
| 1   | 0     | 804  | C    | N1-C1'-C2'  | 7.96  | 124.34      | 114.00   |
| 1   | 0     | 539  | A    | N9-C1'-C2'  | 7.79  | 124.13      | 114.00   |
| 1   | 0     | 1975 | G    | N9-C1'-C2'  | 7.69  | 124.00      | 114.00   |
| 1   | 0     | 1723 | U    | N1-C1'-C2'  | 7.67  | 123.98      | 114.00   |
| 1   | 0     | 1715 | A    | N9-C1'-C2'  | 7.63  | 123.92      | 114.00   |
| 1   | 0     | 1474 | A    | N9-C1'-C2'  | 7.51  | 123.76      | 114.00   |
| 1   | 0     | 1771 | A    | N9-C1'-C2'  | 7.47  | 123.71      | 114.00   |
| 1   | 0     | 2545 | A    | N9-C1'-C2'  | 7.42  | 123.65      | 114.00   |
| 1   | 0     | 582  | G    | N9-C1'-C2'  | 7.37  | 123.58      | 114.00   |
| 1   | 0     | 2823 | G    | N9-C1'-C2'  | 7.35  | 123.56      | 114.00   |
| 1   | 0     | 2660 | C    | N1-C1'-C2'  | 7.35  | 123.56      | 114.00   |
| 1   | 0     | 468  | A    | N9-C1'-C2'  | 7.31  | 123.50      | 114.00   |
| 1   | 0     | 765  | C    | C1'-O4'-C4' | -7.18 | 104.15      | 109.90   |
| 1   | 0     | 2217 | G    | N9-C1'-C2'  | 7.15  | 123.30      | 114.00   |
| 1   | 0     | 2810 | A    | N9-C1'-C2'  | 7.06  | 123.17      | 114.00   |
| 1   | 0     | 984  | A    | N9-C1'-C2'  | 7.04  | 123.15      | 114.00   |
| 1   | 0     | 596  | C    | N1-C1'-C2'  | 6.93  | 123.00      | 114.00   |
| 1   | 0     | 2692 | A    | C5'-C4'-C3' | -6.89 | 104.97      | 116.00   |
| 1   | 0     | 172  | A    | O4'-C1'-N9  | 6.77  | 113.61      | 108.20   |
| 1   | 0     | 469  | G    | N9-C1'-C2'  | 6.76  | 122.79      | 114.00   |
| 1   | 0     | 1036 | G    | N9-C1'-C2'  | 6.75  | 122.78      | 114.00   |
| 1   | 0     | 218  | A    | N9-C1'-C2'  | 6.72  | 122.73      | 114.00   |
| 1   | 0     | 818  | G    | N9-C1'-C2'  | 6.69  | 122.70      | 114.00   |
| 1   | 0     | 741  | G    | N9-C1'-C2'  | 6.69  | 122.70      | 114.00   |
| 1   | 0     | 789  | G    | C5'-C4'-C3' | 6.69  | 126.70      | 116.00   |
| 1   | 0     | 1581 | C    | N1-C1'-C2'  | 6.69  | 122.69      | 114.00   |
| 1   | 0     | 2551 | A    | N9-C1'-C2'  | 6.66  | 122.66      | 114.00   |
| 1   | 0     | 2014 | A    | N9-C1'-C2'  | 6.65  | 122.64      | 114.00   |
| 1   | 0     | 571  | U    | N1-C1'-C2'  | 6.64  | 122.63      | 114.00   |
| 1   | 0     | 118  | U    | N1-C1'-C2'  | 6.56  | 122.53      | 114.00   |
| 1   | 0     | 700  | C    | N1-C1'-C2'  | 6.55  | 122.52      | 114.00   |
| 1   | 0     | 765  | C    | N1-C1'-C2'  | 6.40  | 122.32      | 114.00   |
| 1   | 0     | 700  | C    | N1-C2-O2    | 6.37  | 122.72      | 118.90   |
| 1   | 0     | 2593 | A    | N9-C1'-C2'  | 6.36  | 122.27      | 114.00   |
| 1   | 0     | 2428 | U    | N1-C1'-C2'  | 6.34  | 122.24      | 114.00   |
| 1   | 0     | 698  | A    | N9-C1'-C2'  | 6.30  | 122.18      | 114.00   |
| 1   | 0     | 2691 | C    | N1-C1'-C2'  | 6.28  | 122.16      | 114.00   |
| 1   | 0     | 1777 | A    | N9-C1'-C2'  | 6.25  | 122.12      | 114.00   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 0     | 1963 | G    | N9-C1'-C2'  | 6.25  | 122.12      | 114.00   |
| 1   | 0     | 2476 | A    | C5'-C4'-O4' | -6.24 | 101.61      | 109.10   |
| 1   | 0     | 2848 | A    | N9-C1'-C2'  | 6.23  | 122.09      | 114.00   |
| 1   | 0     | 176  | A    | N9-C1'-C2'  | 6.20  | 122.06      | 114.00   |
| 1   | 0     | 424  | G    | N9-C1'-C2'  | 6.20  | 122.06      | 114.00   |
| 1   | 0     | 169  | C    | N1-C1'-C2'  | -6.12 | 105.27      | 112.00   |
| 1   | 0     | 2521 | A    | N9-C1'-C2'  | 6.12  | 121.95      | 114.00   |
| 1   | 0     | 795  | A    | C2'-C3'-O3' | -6.11 | 96.05       | 109.50   |
| 1   | 0     | 1324 | G    | N9-C1'-C2'  | 6.10  | 121.93      | 114.00   |
| 1   | 0     | 2426 | G    | N9-C1'-C2'  | 6.06  | 121.88      | 114.00   |
| 1   | 0     | 2810 | A    | C1'-O4'-C4' | -6.03 | 105.08      | 109.90   |
| 1   | 0     | 2608 | A    | N9-C1'-C2'  | 6.02  | 121.83      | 114.00   |
| 1   | 0     | 2692 | A    | C4-N9-C1'   | 6.01  | 137.12      | 126.30   |
| 1   | 0     | 2810 | A    | O4'-C1'-N9  | 5.99  | 112.99      | 108.20   |
| 1   | 0     | 2693 | U    | C1'-O4'-C4' | -5.95 | 105.14      | 109.90   |
| 1   | 0     | 1279 | G    | C1'-O4'-C4' | -5.95 | 105.14      | 109.90   |
| 1   | 0     | 334  | G    | O4'-C1'-N9  | 5.93  | 112.94      | 108.20   |
| 1   | 0     | 700  | C    | N3-C2-O2    | -5.90 | 117.77      | 121.90   |
| 1   | 0     | 13   | A    | N9-C1'-C2'  | 5.89  | 121.66      | 114.00   |
| 1   | 0     | 1811 | A    | N9-C1'-C2'  | 5.83  | 121.58      | 114.00   |
| 1   | 0     | 343  | A    | N9-C1'-C2'  | 5.82  | 121.57      | 114.00   |
| 1   | 0     | 2692 | A    | C8-N9-C1'   | -5.80 | 117.27      | 127.70   |
| 1   | 0     | 2692 | A    | C5'-C4'-O4' | 5.79  | 116.05      | 109.10   |
| 1   | 0     | 2044 | G    | N9-C1'-C2'  | 5.78  | 121.51      | 114.00   |
| 1   | 0     | 177  | U    | N1-C1'-C2'  | 5.76  | 121.48      | 114.00   |
| 1   | 0     | 2669 | C    | N1-C1'-C2'  | 5.71  | 121.42      | 114.00   |
| 1   | 0     | 814  | G    | N9-C1'-C2'  | 5.70  | 121.41      | 114.00   |
| 1   | 0     | 1670 | G    | N9-C1'-C2'  | 5.67  | 121.37      | 114.00   |
| 1   | 0     | 1410 | U    | N1-C1'-C2'  | 5.66  | 121.36      | 114.00   |
| 1   | 0     | 2794 | G    | C5'-C4'-C3' | -5.64 | 106.97      | 116.00   |
| 1   | 0     | 925  | U    | N1-C1'-C2'  | 5.64  | 121.33      | 114.00   |
| 1   | 0     | 13   | A    | C2'-C3'-O3' | 5.62  | 122.70      | 113.70   |
| 1   | 0     | 154  | U    | N1-C1'-C2'  | 5.61  | 121.29      | 114.00   |
| 1   | 0     | 1278 | A    | N9-C1'-C2'  | 5.61  | 121.29      | 114.00   |
| 1   | 0     | 1265 | G    | O4'-C1'-N9  | 5.60  | 112.68      | 108.20   |
| 1   | 0     | 1469 | U    | N1-C1'-C2'  | 5.52  | 121.18      | 114.00   |
| 1   | 0     | 1975 | G    | C2'-C3'-O3' | 5.50  | 122.50      | 113.70   |
| 1   | 0     | 1791 | C    | N1-C1'-C2'  | 5.50  | 121.15      | 114.00   |
| 1   | 0     | 2668 | U    | O4'-C1'-N1  | 5.48  | 112.58      | 108.20   |
| 1   | 0     | 795  | A    | C5'-C4'-O4' | -5.48 | 102.53      | 109.10   |
| 1   | 0     | 34   | U    | N1-C1'-C2'  | 5.47  | 121.11      | 114.00   |
| 1   | 0     | 1963 | G    | C2'-C3'-O3' | 5.42  | 122.38      | 113.70   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 0     | 855  | G    | N9-C1'-C2'  | -5.40 | 106.06      | 112.00   |
| 1   | 0     | 1583 | A    | N9-C1'-C2'  | 5.39  | 121.01      | 114.00   |
| 1   | 0     | 1000 | G    | N9-C1'-C2'  | 5.37  | 120.98      | 114.00   |
| 1   | 0     | 2496 | C    | N1-C1'-C2'  | 5.37  | 120.98      | 114.00   |
| 1   | 0     | 219  | G    | N9-C1'-C2'  | 5.33  | 120.94      | 114.00   |
| 1   | 0     | 226  | C    | N1-C1'-C2'  | 5.30  | 120.89      | 114.00   |
| 1   | 0     | 2426 | G    | C1'-O4'-C4' | -5.27 | 105.69      | 109.90   |
| 1   | 0     | 1333 | G    | N9-C1'-C2'  | 5.27  | 120.85      | 114.00   |
| 1   | 0     | 1664 | G    | N9-C1'-C2'  | 5.21  | 120.78      | 114.00   |
| 1   | 0     | 542  | A    | C5'-C4'-O4' | -5.19 | 102.87      | 109.10   |
| 1   | 0     | 843  | G    | N9-C1'-C2'  | 5.19  | 120.74      | 114.00   |
| 1   | 0     | 1250 | A    | N9-C1'-C2'  | 5.17  | 120.72      | 114.00   |
| 1   | 0     | 182  | G    | O4'-C1'-N9  | 5.17  | 112.33      | 108.20   |
| 1   | 0     | 123  | A    | N9-C1'-C2'  | 5.15  | 120.70      | 114.00   |
| 1   | 0     | 873  | U    | O4'-C4'-C3' | -5.14 | 98.86       | 104.00   |
| 1   | 0     | 72   | A    | O4'-C1'-N9  | 5.14  | 112.31      | 108.20   |
| 1   | 0     | 1495 | G    | C2'-C3'-O3' | 5.12  | 121.89      | 113.70   |
| 1   | 0     | 1947 | G    | N9-C1'-C2'  | 5.12  | 120.65      | 114.00   |
| 1   | 0     | 2604 | G    | C5'-C4'-C3' | -5.12 | 107.81      | 116.00   |
| 1   | 0     | 466  | A    | N9-C1'-C2'  | 5.09  | 120.62      | 114.00   |
| 1   | 0     | 71   | A    | N9-C1'-C2'  | 5.09  | 120.62      | 114.00   |
| 1   | 0     | 1357 | U    | N1-C1'-C2'  | 5.08  | 120.61      | 114.00   |
| 1   | 0     | 459  | A    | N9-C1'-C2'  | 5.08  | 120.60      | 114.00   |
| 1   | 0     | 468  | A    | C4'-C3'-O3' | -5.07 | 98.74       | 109.40   |
| 1   | 0     | 2624 | G    | N9-C1'-C2'  | 5.04  | 120.55      | 114.00   |
| 1   | 0     | 1926 | U    | N1-C1'-C2'  | 5.02  | 120.53      | 114.00   |

There are no chirality outliers.

All (128) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1036 | G    | Sidechain |
| 1   | 0     | 1142 | G    | Sidechain |
| 1   | 0     | 1170 | U    | Sidechain |
| 1   | 0     | 118  | U    | Sidechain |
| 1   | 0     | 1201 | G    | Sidechain |
| 1   | 0     | 1202 | U    | Sidechain |
| 1   | 0     | 1206 | G    | Sidechain |
| 1   | 0     | 123  | A    | Sidechain |
| 1   | 0     | 1250 | A    | Sidechain |
| 1   | 0     | 1251 | G    | Sidechain |
| 1   | 0     | 1269 | G    | Sidechain |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1279 | G    | Sidechain |
| 1   | 0     | 1307 | U    | Sidechain |
| 1   | 0     | 1313 | U    | Sidechain |
| 1   | 0     | 1322 | G    | Sidechain |
| 1   | 0     | 1325 | U    | Sidechain |
| 1   | 0     | 1357 | U    | Sidechain |
| 1   | 0     | 1373 | G    | Sidechain |
| 1   | 0     | 1402 | G    | Sidechain |
| 1   | 0     | 1410 | U    | Sidechain |
| 1   | 0     | 1450 | G    | Sidechain |
| 1   | 0     | 1459 | U    | Sidechain |
| 1   | 0     | 1469 | U    | Sidechain |
| 1   | 0     | 1474 | A    | Sidechain |
| 1   | 0     | 1475 | U    | Sidechain |
| 1   | 0     | 154  | U    | Sidechain |
| 1   | 0     | 1581 | C    | Sidechain |
| 1   | 0     | 1583 | A    | Sidechain |
| 1   | 0     | 1613 | G    | Sidechain |
| 1   | 0     | 1633 | C    | Sidechain |
| 1   | 0     | 1634 | A    | Sidechain |
| 1   | 0     | 1647 | U    | Sidechain |
| 1   | 0     | 165  | G    | Sidechain |
| 1   | 0     | 1651 | U    | Sidechain |
| 1   | 0     | 1664 | G    | Sidechain |
| 1   | 0     | 1666 | G    | Sidechain |
| 1   | 0     | 1686 | A    | Sidechain |
| 1   | 0     | 170  | U    | Sidechain |
| 1   | 0     | 1710 | U    | Sidechain |
| 1   | 0     | 1714 | A    | Sidechain |
| 1   | 0     | 1715 | A    | Sidechain |
| 1   | 0     | 1716 | G    | Sidechain |
| 1   | 0     | 172  | A    | Sidechain |
| 1   | 0     | 1723 | U    | Sidechain |
| 1   | 0     | 1754 | G    | Sidechain |
| 1   | 0     | 1755 | G    | Sidechain |
| 1   | 0     | 1763 | G    | Sidechain |
| 1   | 0     | 177  | U    | Sidechain |
| 1   | 0     | 1771 | A    | Sidechain |
| 1   | 0     | 1783 | G    | Sidechain |
| 1   | 0     | 1819 | U    | Sidechain |
| 1   | 0     | 1820 | G    | Sidechain |
| 1   | 0     | 1926 | U    | Sidechain |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | 0     | 1947 | G    | Sidechain |
| 1   | 0     | 1974 | U    | Sidechain |
| 1   | 0     | 1975 | G    | Sidechain |
| 1   | 0     | 1978 | U    | Sidechain |
| 1   | 0     | 1993 | G    | Sidechain |
| 1   | 0     | 1994 | U    | Sidechain |
| 1   | 0     | 1996 | A    | Sidechain |
| 1   | 0     | 2014 | A    | Sidechain |
| 1   | 0     | 2039 | G    | Sidechain |
| 1   | 0     | 2041 | A    | Sidechain |
| 1   | 0     | 2059 | U    | Sidechain |
| 1   | 0     | 2063 | A    | Sidechain |
| 1   | 0     | 211  | U    | Sidechain |
| 1   | 0     | 219  | G    | Sidechain |
| 1   | 0     | 220  | U    | Sidechain |
| 1   | 0     | 2225 | G    | Sidechain |
| 1   | 0     | 2237 | C    | Sidechain |
| 1   | 0     | 2246 | A    | Sidechain |
| 1   | 0     | 2251 | U    | Sidechain |
| 1   | 0     | 2267 | A    | Sidechain |
| 1   | 0     | 228  | A    | Sidechain |
| 1   | 0     | 2427 | A    | Sidechain |
| 1   | 0     | 2428 | U    | Sidechain |
| 1   | 0     | 2451 | G    | Sidechain |
| 1   | 0     | 2484 | G    | Sidechain |
| 1   | 0     | 2487 | G    | Sidechain |
| 1   | 0     | 2490 | U    | Sidechain |
| 1   | 0     | 2540 | A    | Sidechain |
| 1   | 0     | 2543 | A    | Sidechain |
| 1   | 0     | 2557 | G    | Sidechain |
| 1   | 0     | 2558 | C    | Sidechain |
| 1   | 0     | 2620 | G    | Sidechain |
| 1   | 0     | 2666 | U    | Sidechain |
| 1   | 0     | 2677 | U    | Sidechain |
| 1   | 0     | 2678 | C    | Sidechain |
| 1   | 0     | 2680 | U    | Sidechain |
| 1   | 0     | 2704 | U    | Sidechain |
| 1   | 0     | 2757 | G    | Sidechain |
| 1   | 0     | 2759 | U    | Sidechain |
| 1   | 0     | 2790 | C    | Sidechain |
| 1   | 0     | 2823 | G    | Sidechain |
| 1   | 0     | 404  | A    | Sidechain |

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| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 1   | 0     | 412 | U    | Sidechain |
| 1   | 0     | 443 | A    | Sidechain |
| 1   | 0     | 469 | G    | Sidechain |
| 1   | 0     | 474 | G    | Sidechain |
| 1   | 0     | 492 | G    | Sidechain |
| 1   | 0     | 570 | G    | Sidechain |
| 1   | 0     | 571 | U    | Sidechain |
| 1   | 0     | 582 | G    | Sidechain |
| 1   | 0     | 592 | G    | Sidechain |
| 1   | 0     | 596 | C    | Sidechain |
| 1   | 0     | 598 | U    | Sidechain |
| 1   | 0     | 617 | U    | Sidechain |
| 1   | 0     | 621 | U    | Sidechain |
| 1   | 0     | 622 | U    | Sidechain |
| 1   | 0     | 632 | A    | Sidechain |
| 1   | 0     | 67  | G    | Sidechain |
| 1   | 0     | 674 | U    | Sidechain |
| 1   | 0     | 698 | A    | Sidechain |
| 1   | 0     | 71  | A    | Sidechain |
| 1   | 0     | 765 | C    | Sidechain |
| 1   | 0     | 774 | A    | Sidechain |
| 1   | 0     | 792 | U    | Sidechain |
| 1   | 0     | 794 | A    | Sidechain |
| 1   | 0     | 804 | C    | Sidechain |
| 1   | 0     | 813 | A    | Sidechain |
| 1   | 0     | 814 | G    | Sidechain |
| 1   | 0     | 823 | U    | Sidechain |
| 1   | 0     | 833 | A    | Sidechain |
| 1   | 0     | 860 | U    | Sidechain |
| 1   | 0     | 955 | G    | Sidechain |
| 1   | 0     | 956 | A    | Sidechain |
| 1   | 0     | 984 | A    | Sidechain |
| 1   | 0     | 993 | C    | Sidechain |

## 5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | 0     | 59359 | 0        | 29917    | 4315    | 0            |
| 2   | R     | 93    | 0        | 0        | 0       | 0            |
| 3   | W     | 65    | 0        | 0        | 0       | 0            |
| 4   | 7     | 113   | 0        | 0        | 0       | 0            |
| All | All   | 59630 | 0        | 29917    | 4315    | 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 49.

All (4315) 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) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:541:C:O2'   | 1:0:2018:G:N2   | 1.63                     | 1.29              |
| 1:0:788:G:H22   | 1:0:801:A:P     | 1.58                     | 1.26              |
| 1:0:1066:G:H3'  | 1:0:1067:G:H4'  | 1.23                     | 1.20              |
| 1:0:2170:C:H2'  | 1:0:2171:U:H5'  | 1.23                     | 1.17              |
| 1:0:1314:A:O2'  | 1:0:1315:A:H3'  | 1.42                     | 1.15              |
| 1:0:2691:C:H2'  | 1:0:2692:A:H5'' | 1.26                     | 1.15              |
| 1:0:2708:U:H2'  | 1:0:2709:C:C6   | 1.83                     | 1.14              |
| 1:0:2737:A:H2'  | 1:0:2738:A:H5'  | 1.28                     | 1.13              |
| 1:0:788:G:C2    | 1:0:800:U:H2'   | 1.84                     | 1.13              |
| 1:0:1440:G:H3'  | 1:0:1441:A:H5'' | 1.26                     | 1.12              |
| 1:0:1055:A:H4'  | 1:0:1058:G:H4'  | 1.29                     | 1.12              |
| 1:0:1690:U:H2'  | 1:0:1691:G:H5'  | 1.27                     | 1.11              |
| 1:0:1345:G:H22  | 1:0:1625:A:H3'  | 1.13                     | 1.10              |
| 1:0:931:G:N2    | 1:0:2247:A:H5'  | 1.66                     | 1.10              |
| 1:0:2408:G:H5'  | 1:0:2409:A:OP2  | 1.51                     | 1.10              |
| 1:0:1679:U:H2'  | 1:0:1680:U:H5'' | 1.29                     | 1.08              |
| 1:0:1468:A:H5'' | 1:0:1472:C:H42  | 1.13                     | 1.07              |
| 1:0:2672:U:H2'  | 1:0:2673:G:H8   | 1.13                     | 1.07              |
| 1:0:1572:C:H2'  | 1:0:1573:G:H5'' | 1.31                     | 1.07              |
| 1:0:861:G:H22   | 1:0:943:U:H1'   | 1.21                     | 1.06              |
| 1:0:1921:A:H2'  | 1:0:1922:U:H5'' | 1.37                     | 1.06              |
| 1:0:918:A:H2'   | 1:0:919:U:H5''  | 1.36                     | 1.06              |
| 1:0:1345:G:N2   | 1:0:1625:A:H3'  | 1.70                     | 1.05              |
| 1:0:788:G:H2'   | 1:0:807:A:N7    | 1.71                     | 1.05              |
| 1:0:1337:G:H1'  | 1:0:1632:A:N6   | 1.70                     | 1.05              |
| 1:0:1679:U:C2'  | 1:0:1680:U:H5'' | 1.86                     | 1.04              |
| 1:0:219:G:N2    | 1:0:231:G:H2'   | 1.72                     | 1.03              |
| 1:0:69:G:H4'    | 1:0:70:A:OP1    | 1.55                     | 1.03              |
| 1:0:2556:A:H5'' | 1:0:2557:G:H5'  | 1.40                     | 1.03              |
| 1:0:1680:U:H6   | 1:0:1680:U:H5'  | 1.19                     | 1.02              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:873:U:H1'   | 1:0:2246:A:H5'' | 1.35                     | 1.02              |
| 1:0:2708:U:H2'  | 1:0:2709:C:H6   | 1.13                     | 1.02              |
| 1:0:940:G:H3'   | 1:0:941:U:C5'   | 1.88                     | 1.02              |
| 1:0:1775:A:H4'  | 1:0:1776:A:O5'  | 1.53                     | 1.02              |
| 1:0:2782:G:H3'  | 1:0:2783:U:H5'' | 1.35                     | 1.02              |
| 1:0:2691:C:C2'  | 1:0:2692:A:H5'' | 1.90                     | 1.02              |
| 1:0:976:C:H5'   | 1:0:2252:A:H1'  | 1.38                     | 1.01              |
| 1:0:2198:U:H3'  | 1:0:2199:C:H5'' | 1.39                     | 1.01              |
| 1:0:542:A:H2'   | 1:0:543:G:H5'   | 1.38                     | 1.01              |
| 1:0:1468:A:H5'' | 1:0:1472:C:N4   | 1.74                     | 1.01              |
| 1:0:2498:U:H4'  | 1:0:2499:C:OP1  | 1.54                     | 1.01              |
| 1:0:1437:A:O2'  | 1:0:1515:U:H4'  | 1.60                     | 1.00              |
| 1:0:1466:C:H2'  | 1:0:1467:U:H1'  | 1.39                     | 1.00              |
| 1:0:2482:A:H4'  | 1:0:2483:U:OP1  | 1.58                     | 1.00              |
| 1:0:788:G:N2    | 1:0:801:A:P     | 2.33                     | 1.00              |
| 1:0:788:G:N2    | 1:0:800:U:C3'   | 2.25                     | 1.00              |
| 1:0:2661:G:O6   | 1:0:2708:U:H1'  | 1.62                     | 0.99              |
| 1:0:1466:C:H2'  | 1:0:1467:U:C1'  | 1.92                     | 0.98              |
| 1:0:1337:G:H4'  | 1:0:1632:A:N7   | 1.77                     | 0.98              |
| 1:0:940:G:H3'   | 1:0:941:U:H5''  | 0.99                     | 0.98              |
| 1:0:1496:G:N2   | 1:0:1527:G:H1   | 1.62                     | 0.98              |
| 1:0:983:G:OP2   | 1:0:985:G:H5''  | 1.64                     | 0.98              |
| 1:0:2212:U:H2'  | 1:0:2213:G:C8   | 1.99                     | 0.98              |
| 1:0:619:A:H61   | 1:0:629:C:H42   | 1.03                     | 0.98              |
| 1:0:2496:C:O2'  | 1:0:2497:A:H3'  | 1.64                     | 0.97              |
| 1:0:652:C:H42   | 1:0:657:A:H61   | 1.04                     | 0.97              |
| 1:0:788:G:H5''  | 1:0:789:G:OP1   | 1.62                     | 0.97              |
| 1:0:976:C:H1'   | 1:0:2252:A:C2   | 2.00                     | 0.97              |
| 1:0:734:G:H2'   | 1:0:735:G:H8    | 1.27                     | 0.97              |
| 1:0:2352:A:H2'  | 1:0:2353:G:C8   | 2.01                     | 0.95              |
| 1:0:1572:C:C2'  | 1:0:1573:G:H5'' | 1.95                     | 0.95              |
| 1:0:1459:U:N3   | 1:0:1476:G:O5'  | 1.98                     | 0.95              |
| 1:0:824:U:H1'   | 1:0:1264:C:O2   | 1.64                     | 0.95              |
| 1:0:2038:C:H5'  | 1:0:2039:G:H5'' | 1.49                     | 0.95              |
| 1:0:67:G:C6     | 1:0:72:A:C2     | 2.55                     | 0.95              |
| 1:0:805:G:H2'   | 1:0:2419:C:N3   | 1.82                     | 0.95              |
| 1:0:940:G:C3'   | 1:0:941:U:H5''  | 1.94                     | 0.95              |
| 1:0:2782:G:H5'  | 1:0:2783:U:OP2  | 1.67                     | 0.94              |
| 1:0:1303:U:H2'  | 1:0:1304:U:C6   | 2.02                     | 0.94              |
| 1:0:1459:U:H2'  | 1:0:1475:U:O2'  | 1.68                     | 0.94              |
| 1:0:340:G:OP1   | 1:0:340:G:H3'   | 1.65                     | 0.94              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1077:U:H2'  | 1:0:1079:G:OP2  | 1.68                     | 0.94              |
| 1:0:2198:U:H3'  | 1:0:2199:C:C5'  | 1.98                     | 0.93              |
| 1:0:1373:G:H22  | 1:0:2192:U:H3   | 0.95                     | 0.93              |
| 1:0:1383:C:H2'  | 1:0:1384:G:H8   | 1.34                     | 0.93              |
| 1:0:836:G:H2'   | 1:0:837:U:C6    | 2.04                     | 0.93              |
| 1:0:929:A:H3'   | 1:0:930:A:H5''  | 1.51                     | 0.93              |
| 1:0:2764:U:H2'  | 1:0:2765:C:H6   | 1.34                     | 0.93              |
| 1:0:1030:U:H2'  | 1:0:1031:C:H5'  | 1.48                     | 0.92              |
| 1:0:1204:G:H2'  | 1:0:1205:G:H8   | 1.34                     | 0.92              |
| 1:0:1712:G:H2'  | 1:0:1713:G:H5'  | 1.48                     | 0.92              |
| 1:0:2672:U:H2'  | 1:0:2673:G:C8   | 2.03                     | 0.92              |
| 1:0:1714:A:C5'  | 1:0:1715:A:H5'' | 1.99                     | 0.92              |
| 1:0:2352:A:H2'  | 1:0:2353:G:H8   | 1.31                     | 0.92              |
| 1:0:66:U:N3     | 1:0:67:G:O6     | 2.03                     | 0.92              |
| 1:0:1978:U:H3'  | 1:0:1979:C:H5'' | 1.52                     | 0.91              |
| 1:0:1901:A:H2   | 1:0:1902:A:H62  | 1.16                     | 0.91              |
| 1:0:1191:G:H2'  | 1:0:1192:A:H8   | 1.35                     | 0.91              |
| 1:0:1242:A:H2'  | 1:0:1243:G:H8   | 1.35                     | 0.91              |
| 1:0:2368:G:H5'' | 1:0:2369:U:H5'  | 1.53                     | 0.91              |
| 1:0:1363:C:H2'  | 1:0:1364:C:H5'  | 1.52                     | 0.90              |
| 1:0:2624:G:H4'  | 1:0:2712:G:O2'  | 1.69                     | 0.90              |
| 1:0:788:G:H22   | 1:0:800:U:C3'   | 1.84                     | 0.90              |
| 1:0:2556:A:H5'' | 1:0:2557:G:C5'  | 2.02                     | 0.90              |
| 1:0:594:G:C4    | 1:0:1264:C:N4   | 2.40                     | 0.90              |
| 1:0:1303:U:H2'  | 1:0:1304:U:H6   | 1.35                     | 0.90              |
| 1:0:1528:C:H2'  | 1:0:1529:C:H5'' | 1.54                     | 0.90              |
| 1:0:631:G:H4'   | 1:0:632:A:C5'   | 2.01                     | 0.90              |
| 1:0:1465:G:H2'  | 1:0:1466:C:H6   | 1.37                     | 0.90              |
| 1:0:168:A:H2'   | 1:0:169:C:C6    | 2.07                     | 0.90              |
| 1:0:1698:C:O2'  | 1:0:1753:A:H2'  | 1.71                     | 0.90              |
| 1:0:359:G:H2'   | 1:0:360:A:H8    | 1.33                     | 0.90              |
| 1:0:635:C:O2'   | 1:0:670:U:H5''  | 1.69                     | 0.90              |
| 1:0:691:C:H2'   | 1:0:692:C:H6    | 1.36                     | 0.90              |
| 1:0:487:G:H4'   | 1:0:512:A:N1    | 1.87                     | 0.90              |
| 1:0:1438:G:H2'  | 1:0:1439:G:O4'  | 1.72                     | 0.89              |
| 1:0:594:G:C6    | 1:0:1264:C:H5   | 1.90                     | 0.89              |
| 1:0:689:A:H8    | 1:0:2052:G:H21  | 1.19                     | 0.89              |
| 1:0:83:A:H2     | 1:0:101:A:C5    | 1.90                     | 0.89              |
| 1:0:1036:G:OP1  | 1:0:1036:G:H8   | 1.54                     | 0.89              |
| 1:0:1221:C:H2'  | 1:0:1222:G:H8   | 1.36                     | 0.89              |
| 1:0:1054:C:H2'  | 1:0:1055:A:H5'  | 1.53                     | 0.89              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1764:A:H2'  | 1:0:1765:C:H5'  | 1.54                     | 0.89              |
| 1:0:566:U:H2'   | 1:0:567:G:H8    | 1.37                     | 0.89              |
| 1:0:1073:G:H2'  | 1:0:1074:G:H4'  | 1.52                     | 0.89              |
| 1:0:1384:G:N2   | 1:0:1385:C:H41  | 1.69                     | 0.89              |
| 1:0:168:A:H2'   | 1:0:169:C:H6    | 1.35                     | 0.88              |
| 1:0:2516:U:H2'  | 1:0:2517:C:C6   | 2.08                     | 0.88              |
| 1:0:700:C:O2    | 1:0:801:A:H5'   | 1.73                     | 0.88              |
| 1:0:58:C:H5'    | 1:0:59:G:OP2    | 1.72                     | 0.88              |
| 1:0:772:G:H2'   | 1:0:773:G:H8    | 1.36                     | 0.88              |
| 1:0:1670:G:H5'  | 1:0:2797:G:N2   | 1.89                     | 0.88              |
| 1:0:2516:U:H2'  | 1:0:2517:C:H6   | 1.37                     | 0.88              |
| 1:0:1198:C:H5'' | 1:0:1199:U:H4'  | 1.56                     | 0.88              |
| 1:0:2306:A:H2'  | 1:0:2307:A:C8   | 2.09                     | 0.88              |
| 1:0:459:A:H4'   | 1:0:461:A:N7    | 1.88                     | 0.88              |
| 1:0:926:C:H2'   | 1:0:927:C:H5'   | 1.53                     | 0.88              |
| 1:0:2225:G:H2'  | 1:0:2226:A:H8   | 1.39                     | 0.87              |
| 1:0:2503:G:H2'  | 1:0:2504:G:H5'' | 1.55                     | 0.87              |
| 1:0:861:G:N2    | 1:0:943:U:H1'   | 1.88                     | 0.87              |
| 1:0:1561:A:H2'  | 1:0:1562:G:O4'  | 1.74                     | 0.87              |
| 1:0:1679:U:H2'  | 1:0:1680:U:C5'  | 2.04                     | 0.87              |
| 1:0:2197:U:H2'  | 1:0:2198:U:C5   | 2.09                     | 0.87              |
| 1:0:819:C:O3'   | 1:0:843:G:N2    | 2.08                     | 0.87              |
| 1:0:1407:G:H2'  | 1:0:1408:A:C8   | 2.09                     | 0.87              |
| 1:0:2491:C:H5'  | 1:0:2492:G:OP2  | 1.75                     | 0.87              |
| 1:0:88:G:H3'    | 1:0:89:A:C5'    | 2.03                     | 0.87              |
| 1:0:2024:U:H2'  | 1:0:2025:A:C8   | 2.09                     | 0.87              |
| 1:0:542:A:H62   | 1:0:570:G:H21   | 1.21                     | 0.87              |
| 1:0:2761:A:H5'' | 1:0:2762:G:H5'  | 1.57                     | 0.87              |
| 1:0:1002:C:OP2  | 1:0:1200:G:OP2  | 1.93                     | 0.86              |
| 1:0:2658:A:O2'  | 1:0:2659:C:H5'  | 1.75                     | 0.86              |
| 1:0:39:C:H2'    | 1:0:40:U:C6     | 2.10                     | 0.86              |
| 1:0:359:G:H2'   | 1:0:360:A:C8    | 2.10                     | 0.86              |
| 1:0:2698:G:H2'  | 1:0:2699:G:C8   | 2.10                     | 0.86              |
| 1:0:2764:U:H2'  | 1:0:2765:C:C6   | 2.11                     | 0.86              |
| 1:0:469:G:N2    | 1:0:480:G:H2'   | 1.89                     | 0.86              |
| 1:0:717:G:H2'   | 1:0:739:G:H22   | 1.41                     | 0.86              |
| 1:0:2222:U:H2'  | 1:0:2223:U:H6   | 1.37                     | 0.86              |
| 1:0:76:C:H6     | 1:0:76:C:H5'    | 1.37                     | 0.86              |
| 1:0:619:A:N6    | 1:0:629:C:H42   | 1.74                     | 0.86              |
| 1:0:918:A:C2'   | 1:0:919:U:H5''  | 2.04                     | 0.86              |
| 1:0:1626:A:H5'' | 1:0:1627:C:OP2  | 1.75                     | 0.86              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:211:U:O2    | 1:0:211:U:H2'   | 1.73                     | 0.85              |
| 1:0:2811:G:H2'  | 1:0:2812:A:H8   | 1.41                     | 0.85              |
| 1:0:1386:A:H5'' | 1:0:2191:A:N6   | 1.91                     | 0.85              |
| 1:0:2311:U:H4'  | 1:0:2315:A:H61  | 1.40                     | 0.85              |
| 1:0:1807:A:H1'  | 1:0:1809:G:C8   | 2.10                     | 0.85              |
| 1:0:314:G:H2'   | 1:0:315:G:C8    | 2.12                     | 0.85              |
| 1:0:450:C:H2'   | 1:0:451:A:H8    | 1.41                     | 0.85              |
| 1:0:2737:A:H2'  | 1:0:2738:A:C5'  | 2.06                     | 0.85              |
| 1:0:787:A:O2'   | 1:0:788:G:H5'   | 1.76                     | 0.85              |
| 1:0:976:C:H5'   | 1:0:2252:A:C1'  | 2.06                     | 0.85              |
| 1:0:1429:A:H1'  | 1:0:1603:A:C6   | 2.10                     | 0.85              |
| 1:0:1624:A:O2'  | 1:0:1625:A:H5'  | 1.76                     | 0.85              |
| 1:0:1937:G:H2'  | 1:0:1939:U:O4   | 1.76                     | 0.85              |
| 1:0:2523:G:O2'  | 1:0:2524:G:H5'  | 1.77                     | 0.85              |
| 1:0:1453:A:H2'  | 1:0:1454:U:H5'  | 1.57                     | 0.85              |
| 1:0:1465:G:H2'  | 1:0:1466:C:C6   | 2.11                     | 0.85              |
| 1:0:2051:U:H3   | 1:0:2409:A:H2   | 1.20                     | 0.85              |
| 1:0:68:C:H2'    | 1:0:68:C:O2     | 1.77                     | 0.84              |
| 1:0:2094:C:N3   | 1:0:2103:G:H1'  | 1.92                     | 0.84              |
| 1:0:611:C:O2    | 1:0:614:G:H4'   | 1.75                     | 0.84              |
| 1:0:624:A:C2'   | 1:0:625:A:H5'   | 2.06                     | 0.84              |
| 1:0:734:G:H2'   | 1:0:735:G:C8    | 2.12                     | 0.84              |
| 1:0:619:A:H2'   | 1:0:620:G:H8    | 1.39                     | 0.84              |
| 1:0:1288:A:N6   | 1:0:1309:G:H5'  | 1.91                     | 0.84              |
| 1:0:1563:U:H2'  | 1:0:1564:U:C6   | 2.11                     | 0.84              |
| 1:0:2324:G:N2   | 1:0:2326:C:H41  | 1.74                     | 0.84              |
| 1:0:631:G:H4'   | 1:0:632:A:H5'   | 1.59                     | 0.84              |
| 1:0:788:G:N2    | 1:0:800:U:H2'   | 1.92                     | 0.84              |
| 1:0:946:U:H2'   | 1:0:947:C:C6    | 2.12                     | 0.84              |
| 1:0:1354:A:H3'  | 1:0:1410:U:O2   | 1.78                     | 0.84              |
| 1:0:1459:U:O4   | 1:0:1476:G:H5'' | 1.76                     | 0.84              |
| 1:0:2753:C:H2'  | 1:0:2754:C:H6   | 1.39                     | 0.84              |
| 1:0:2807:U:H2'  | 1:0:2807:U:O2   | 1.78                     | 0.84              |
| 1:0:641:G:H4'   | 1:0:651:C:O2'   | 1.78                     | 0.83              |
| 1:0:841:G:H2'   | 1:0:842:A:C8    | 2.13                     | 0.83              |
| 1:0:788:G:N2    | 1:0:800:U:C2'   | 2.42                     | 0.83              |
| 1:0:954:U:C4    | 1:0:955:G:N2    | 2.46                     | 0.83              |
| 1:0:2691:C:H2'  | 1:0:2692:A:C5'  | 2.07                     | 0.83              |
| 1:0:1252:C:O2'  | 1:0:1253:C:H5'' | 1.78                     | 0.83              |
| 1:0:1313:U:H4'  | 1:0:1314:A:O5'  | 1.79                     | 0.83              |
| 1:0:665:A:H3'   | 1:0:666:U:H5''  | 1.57                     | 0.83              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1040:A:H2' | 1:0:1041:G:H5'  | 1.60                     | 0.83              |
| 1:0:1373:G:N2  | 1:0:2192:U:H3   | 1.76                     | 0.83              |
| 1:0:619:A:H2'  | 1:0:620:G:C8    | 2.12                     | 0.83              |
| 1:0:2417:U:O2' | 1:0:2418:A:H5'' | 1.79                     | 0.82              |
| 1:0:1714:A:H5' | 1:0:1715:A:H5'' | 1.61                     | 0.82              |
| 1:0:2448:A:N6  | 1:0:2460:G:H1'  | 1.93                     | 0.82              |
| 1:0:1345:G:N2  | 1:0:1625:A:C3'  | 2.42                     | 0.82              |
| 1:0:2736:U:O2' | 1:0:2737:A:H5'  | 1.77                     | 0.82              |
| 1:0:1065:A:H2' | 1:0:1066:G:H8   | 1.44                     | 0.82              |
| 1:0:1680:U:C6  | 1:0:1680:U:H5'  | 2.12                     | 0.82              |
| 1:0:1690:U:C2' | 1:0:1691:G:H5'  | 2.08                     | 0.82              |
| 1:0:652:C:N4   | 1:0:657:A:H61   | 1.76                     | 0.82              |
| 1:0:1636:G:H2' | 1:0:1637:U:H6   | 1.45                     | 0.82              |
| 1:0:1673:C:H2' | 1:0:1674:C:H6   | 1.44                     | 0.82              |
| 1:0:1895:A:H2' | 1:0:1896:A:H8   | 1.44                     | 0.82              |
| 1:0:2447:G:H22 | 1:0:2460:G:H2'  | 1.45                     | 0.82              |
| 1:0:185:C:H2'  | 1:0:186:C:H6    | 1.44                     | 0.82              |
| 1:0:1384:G:H21 | 1:0:1385:C:H41  | 1.23                     | 0.81              |
| 1:0:2569:A:H2' | 1:0:2570:C:H6   | 1.43                     | 0.81              |
| 1:0:1326:U:O4  | 1:0:1619:A:N6   | 2.12                     | 0.81              |
| 1:0:2024:U:H2' | 1:0:2025:A:H8   | 1.42                     | 0.81              |
| 1:0:2228:U:H4' | 1:0:2229:G:OP1  | 1.79                     | 0.81              |
| 1:0:1483:G:H1  | 1:0:1539:U:H3   | 1.27                     | 0.81              |
| 1:0:1463:A:H1' | 1:0:1543:G:N2   | 1.94                     | 0.81              |
| 1:0:2222:U:H2' | 1:0:2223:U:C6   | 2.14                     | 0.81              |
| 1:0:1710:U:H3  | 1:0:1821:A:H61  | 1.26                     | 0.81              |
| 1:0:1900:U:H2' | 1:0:1901:A:H5'  | 1.61                     | 0.81              |
| 1:0:2320:G:H2' | 1:0:2321:C:O4'  | 1.79                     | 0.81              |
| 1:0:788:G:H2'  | 1:0:807:A:C8    | 2.15                     | 0.81              |
| 1:0:403:A:H3'  | 1:0:403:A:P     | 2.20                     | 0.81              |
| 1:0:469:G:H1'  | 1:0:470:U:H5    | 1.46                     | 0.81              |
| 1:0:594:G:C6   | 1:0:1264:C:C5   | 2.69                     | 0.81              |
| 1:0:219:G:H22  | 1:0:231:G:H2'   | 1.45                     | 0.81              |
| 1:0:777:A:O2'  | 1:0:778:G:OP1   | 1.98                     | 0.81              |
| 1:0:1223:G:H5' | 1:0:1225:G:O4'  | 1.81                     | 0.81              |
| 1:0:461:A:H2'  | 1:0:462:G:H8    | 1.45                     | 0.81              |
| 1:0:846:A:H2'  | 1:0:847:C:C6    | 2.16                     | 0.81              |
| 1:0:942:U:H2'  | 1:0:943:U:H5'   | 1.61                     | 0.81              |
| 1:0:1055:A:C4' | 1:0:1058:G:H4'  | 2.10                     | 0.81              |
| 1:0:2811:G:H2' | 1:0:2812:A:C8   | 2.15                     | 0.81              |
| 1:0:2208:U:H2' | 1:0:2209:G:H8   | 1.44                     | 0.80              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2588:U:H4' | 1:0:2589:C:OP2 | 1.81                     | 0.80              |
| 1:0:2876:C:H2' | 1:0:2877:A:O4' | 1.81                     | 0.80              |
| 1:0:412:U:H2'  | 1:0:413:G:H5'  | 1.64                     | 0.80              |
| 1:0:543:G:OP2  | 1:0:543:G:H8   | 1.64                     | 0.80              |
| 1:0:1458:A:H3' | 1:0:1459:U:C5' | 2.12                     | 0.80              |
| 1:0:163:A:H2'  | 1:0:164:G:H8   | 1.46                     | 0.80              |
| 1:0:873:U:H1'  | 1:0:2246:A:C5' | 2.09                     | 0.80              |
| 1:0:1467:U:H3' | 1:0:1468:A:H5' | 1.64                     | 0.80              |
| 1:0:2425:G:H2' | 1:0:2426:G:H5' | 1.64                     | 0.80              |
| 1:0:788:G:H21  | 1:0:804:C:H41  | 1.25                     | 0.80              |
| 1:0:1055:A:H4' | 1:0:1058:G:C4' | 2.10                     | 0.80              |
| 1:0:1191:G:H2' | 1:0:1192:A:C8  | 2.17                     | 0.80              |
| 1:0:1979:C:H2' | 1:0:1980:A:O4' | 1.82                     | 0.80              |
| 1:0:482:A:C2'  | 1:0:483:A:H5'  | 2.12                     | 0.80              |
| 1:0:1337:G:C1' | 1:0:1632:A:H62 | 1.94                     | 0.80              |
| 1:0:1301:U:O2' | 1:0:1664:G:N2  | 2.14                     | 0.79              |
| 1:0:2077:G:N1  | 1:0:2179:C:H1' | 1.97                     | 0.79              |
| 1:0:573:C:O2'  | 1:0:574:C:H5'  | 1.81                     | 0.79              |
| 1:0:788:G:C5'  | 1:0:789:G:OP1  | 2.30                     | 0.79              |
| 1:0:1690:U:H2' | 1:0:1691:G:C5' | 2.09                     | 0.79              |
| 1:0:2690:A:OP1 | 1:0:2692:A:OP2 | 2.00                     | 0.79              |
| 1:0:788:G:N2   | 1:0:800:U:H3'  | 1.98                     | 0.79              |
| 1:0:2200:G:H2' | 1:0:2201:G:C8  | 2.17                     | 0.79              |
| 1:0:684:C:H2'  | 1:0:685:U:H6   | 1.47                     | 0.79              |
| 1:0:699:G:N2   | 1:0:801:A:H61  | 1.80                     | 0.79              |
| 1:0:787:A:C4   | 1:0:788:G:N7   | 2.51                     | 0.79              |
| 1:0:752:G:H4'  | 1:0:753:U:OP1  | 1.81                     | 0.79              |
| 1:0:836:G:H2'  | 1:0:837:U:H6   | 1.42                     | 0.79              |
| 1:0:929:A:C3'  | 1:0:930:A:H5'  | 2.12                     | 0.79              |
| 1:0:2371:A:H2  | 1:0:2403:C:H42 | 1.29                     | 0.79              |
| 1:0:2821:G:H2' | 1:0:2822:U:H6  | 1.46                     | 0.79              |
| 1:0:590:C:H2'  | 1:0:591:G:C8   | 2.17                     | 0.79              |
| 1:0:704:G:H2'  | 1:0:705:C:H6   | 1.46                     | 0.79              |
| 1:0:922:A:H62  | 1:0:923:A:N6   | 1.80                     | 0.79              |
| 1:0:2856:U:H2' | 1:0:2857:C:H6  | 1.48                     | 0.79              |
| 1:0:1645:U:H2' | 1:0:1646:G:H8  | 1.48                     | 0.79              |
| 1:0:2225:G:H2' | 1:0:2226:A:C8  | 2.18                     | 0.79              |
| 1:0:2669:C:H2' | 1:0:2669:C:O2  | 1.83                     | 0.79              |
| 1:0:2660:C:O2' | 1:0:2661:G:H5' | 1.82                     | 0.79              |
| 1:0:583:C:H4'  | 1:0:584:A:O5'  | 1.82                     | 0.79              |
| 1:0:2821:G:H2' | 1:0:2822:U:C6  | 2.19                     | 0.78              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:39:C:H2'    | 1:0:40:U:H6     | 1.49                     | 0.78              |
| 1:0:2077:G:H1   | 1:0:2179:C:H1'  | 1.49                     | 0.78              |
| 1:0:1199:U:H3'  | 1:0:1200:G:H5'' | 1.65                     | 0.78              |
| 1:0:2513:A:C2   | 1:0:2514:G:H1'  | 2.18                     | 0.78              |
| 1:0:603:C:H2'   | 1:0:604:U:H6    | 1.49                     | 0.78              |
| 1:0:59:G:H1'    | 1:0:73:A:C2     | 2.18                     | 0.78              |
| 1:0:922:A:N6    | 1:0:923:A:H62   | 1.82                     | 0.78              |
| 1:0:1337:G:C1'  | 1:0:1632:A:N6   | 2.45                     | 0.78              |
| 1:0:1313:U:H1'  | 1:0:1642:G:C2   | 2.19                     | 0.78              |
| 1:0:1333:G:N2   | 1:0:1344:C:H41  | 1.81                     | 0.78              |
| 1:0:1886:G:H2'  | 1:0:1887:G:H8   | 1.47                     | 0.78              |
| 1:0:2422:C:O2'  | 1:0:2423:G:H5'  | 1.83                     | 0.78              |
| 1:0:471:A:C2    | 1:0:481:A:C4    | 2.72                     | 0.78              |
| 1:0:1807:A:H1'  | 1:0:1809:G:N9   | 1.98                     | 0.78              |
| 1:0:2200:G:H2'  | 1:0:2201:G:H8   | 1.46                     | 0.78              |
| 1:0:2522:G:H2'  | 1:0:2523:G:C8   | 2.19                     | 0.78              |
| 1:0:1920:A:N7   | 1:0:1922:U:H5'  | 1.99                     | 0.78              |
| 1:0:1686:A:H5'  | 1:0:1687:C:OP2  | 1.82                     | 0.78              |
| 1:0:2698:G:H2'  | 1:0:2699:G:H8   | 1.48                     | 0.78              |
| 1:0:1141:U:O2   | 1:0:2008:C:H5'' | 1.83                     | 0.78              |
| 1:0:2316:G:H3'  | 1:0:2316:G:OP2  | 1.84                     | 0.77              |
| 1:0:1359:G:H8   | 1:0:1359:G:H5'  | 1.50                     | 0.77              |
| 1:0:2170:C:H2'  | 1:0:2171:U:C5'  | 2.11                     | 0.77              |
| 1:0:229:G:O2'   | 1:0:230:C:H5'   | 1.84                     | 0.77              |
| 1:0:66:U:H2'    | 1:0:67:G:C8     | 2.20                     | 0.77              |
| 1:0:1393:G:N2   | 1:0:1586:A:N1   | 2.33                     | 0.77              |
| 1:0:169:C:N4    | 1:0:170:U:C2    | 2.52                     | 0.77              |
| 1:0:1748:U:H5'  | 1:0:1749:G:H5'' | 1.64                     | 0.77              |
| 1:0:1904:G:H2'  | 1:0:1905:G:H8   | 1.48                     | 0.77              |
| 1:0:2447:G:N2   | 1:0:2460:G:H2'  | 1.99                     | 0.77              |
| 1:0:1459:U:H3   | 1:0:1476:G:C5'  | 1.98                     | 0.77              |
| 1:0:2768:C:HO2' | 1:0:2784:A:H8   | 1.31                     | 0.77              |
| 1:0:619:A:H61   | 1:0:629:C:N4    | 1.82                     | 0.77              |
| 1:0:644:A:H2'   | 1:0:645:G:H5'   | 1.66                     | 0.77              |
| 1:0:2759:U:H4'  | 1:0:2761:A:N7   | 1.98                     | 0.77              |
| 1:0:460:U:C4    | 1:0:592:G:H1'   | 2.20                     | 0.77              |
| 1:0:89:A:H5'    | 1:0:90:G:OP1    | 1.83                     | 0.77              |
| 1:0:1938:U:O2'  | 1:0:1939:U:OP1  | 2.03                     | 0.77              |
| 1:0:2397:A:H2'  | 1:0:2398:U:O4'  | 1.84                     | 0.77              |
| 1:0:1440:G:H3'  | 1:0:1441:A:C5'  | 2.12                     | 0.77              |
| 1:0:1869:A:H2'  | 1:0:1870:U:O4'  | 1.85                     | 0.77              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2075:U:HO2' | 1:0:2076:G:H8  | 1.32                     | 0.77              |
| 1:0:2407:G:H5'' | 1:0:2408:G:OP1 | 1.83                     | 0.77              |
| 1:0:68:C:C2     | 1:0:72:A:N3    | 2.52                     | 0.77              |
| 1:0:788:G:C5'   | 1:0:790:A:H1'  | 2.15                     | 0.77              |
| 1:0:1919:A:H5'' | 1:0:1920:A:N1  | 2.00                     | 0.76              |
| 1:0:992:A:H2    | 1:0:2010:G:N3  | 1.84                     | 0.76              |
| 1:0:2521:A:H5'  | 1:0:2522:G:OP1 | 1.85                     | 0.76              |
| 1:0:403:A:H5'   | 1:0:425:A:H4'  | 1.66                     | 0.76              |
| 1:0:651:C:H2'   | 1:0:652:C:H5'' | 1.67                     | 0.76              |
| 1:0:845:U:OP2   | 1:0:955:G:O6   | 2.03                     | 0.76              |
| 1:0:624:A:H2'   | 1:0:625:A:H5'  | 1.67                     | 0.76              |
| 1:0:788:G:C2    | 1:0:800:U:C2'  | 2.67                     | 0.76              |
| 1:0:1174:G:H2'  | 1:0:1175:A:H8  | 1.49                     | 0.76              |
| 1:0:1595:A:H2'  | 1:0:1596:A:O4' | 1.85                     | 0.76              |
| 1:0:620:G:H2'   | 1:0:621:U:H6   | 1.50                     | 0.76              |
| 1:0:1066:G:H3'  | 1:0:1067:G:C4' | 2.11                     | 0.76              |
| 1:0:1338:G:H4'  | 1:0:1339:U:OP1 | 1.83                     | 0.76              |
| 1:0:931:G:N2    | 1:0:2247:A:C5' | 2.47                     | 0.76              |
| 1:0:357:A:H2'   | 1:0:358:C:H5'  | 1.68                     | 0.76              |
| 1:0:612:G:H4'   | 1:0:613:A:H4'  | 1.67                     | 0.76              |
| 1:0:1071:U:H3'  | 1:0:1072:U:H5' | 1.67                     | 0.76              |
| 1:0:1337:G:H1'  | 1:0:1632:A:H62 | 1.50                     | 0.76              |
| 1:0:2396:C:H6   | 1:0:2396:C:H5' | 1.50                     | 0.76              |
| 1:0:627:A:H2'   | 1:0:628:A:C8   | 2.20                     | 0.76              |
| 1:0:2756:A:O2'  | 1:0:2757:G:OP2 | 2.03                     | 0.76              |
| 1:0:33:C:N4     | 1:0:458:G:O2'  | 2.16                     | 0.76              |
| 1:0:764:A:H2    | 1:0:802:A:H2'  | 1.49                     | 0.76              |
| 1:0:169:C:H2'   | 1:0:170:U:H5'  | 1.67                     | 0.76              |
| 1:0:58:C:H1'    | 1:0:72:A:C8    | 2.21                     | 0.76              |
| 1:0:1794:A:H2   | 1:0:1814:G:N3  | 1.85                     | 0.76              |
| 1:0:2820:C:O2'  | 1:0:2821:G:H5' | 1.85                     | 0.76              |
| 1:0:542:A:H3'   | 1:0:542:A:H8   | 1.50                     | 0.76              |
| 1:0:955:G:H3'   | 1:0:955:G:C8   | 2.20                     | 0.76              |
| 1:0:1383:C:H2'  | 1:0:1384:G:C8  | 2.19                     | 0.75              |
| 1:0:2425:G:C2'  | 1:0:2426:G:H5' | 2.16                     | 0.75              |
| 1:0:469:G:O2'   | 1:0:470:U:OP2  | 2.03                     | 0.75              |
| 1:0:687:G:C2'   | 1:0:688:A:H5'  | 2.16                     | 0.75              |
| 1:0:83:A:C2     | 1:0:101:A:C5   | 2.73                     | 0.75              |
| 1:0:1712:G:C2'  | 1:0:1713:G:H5' | 2.16                     | 0.75              |
| 1:0:1391:A:O2'  | 1:0:1392:U:C6  | 2.39                     | 0.75              |
| 1:0:1548:U:H2'  | 1:0:1549:C:C6  | 2.20                     | 0.75              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1685:A:H4' | 1:0:1686:A:O5' | 1.85                     | 0.75              |
| 1:0:2286:G:C5  | 1:0:2287:G:H1' | 2.21                     | 0.75              |
| 1:0:638:A:O2'  | 1:0:639:G:H5'  | 1.85                     | 0.75              |
| 1:0:1378:A:H2' | 1:0:1379:A:C8  | 2.22                     | 0.75              |
| 1:0:1859:A:H2' | 1:0:1860:A:H8  | 1.52                     | 0.75              |
| 1:0:536:A:N6   | 1:0:2605:C:H4' | 2.01                     | 0.75              |
| 1:0:460:U:H4'  | 1:0:461:A:OP2  | 1.87                     | 0.75              |
| 1:0:788:G:H5'' | 1:0:790:A:H1'  | 1.69                     | 0.75              |
| 1:0:1280:U:H2' | 1:0:1281:A:H8  | 1.52                     | 0.75              |
| 1:0:704:G:O2'  | 1:0:705:C:H5'  | 1.86                     | 0.75              |
| 1:0:965:G:N3   | 1:0:2253:A:H2  | 1.84                     | 0.75              |
| 1:0:1079:G:H2' | 1:0:1080:A:O4' | 1.85                     | 0.75              |
| 1:0:1529:C:H2' | 1:0:1530:U:O4' | 1.86                     | 0.75              |
| 1:0:498:C:H2'  | 1:0:499:G:H8   | 1.52                     | 0.75              |
| 1:0:830:C:H2'  | 1:0:831:G:H8   | 1.51                     | 0.75              |
| 1:0:1710:U:H4' | 1:0:1711:C:OP2 | 1.86                     | 0.75              |
| 1:0:308:C:H2'  | 1:0:309:G:O4'  | 1.87                     | 0.75              |
| 1:0:388:G:N2   | 1:0:389:G:H1'  | 2.02                     | 0.75              |
| 1:0:745:C:H2'  | 1:0:746:G:O4'  | 1.87                     | 0.75              |
| 1:0:2311:U:C4' | 1:0:2315:A:H61 | 2.00                     | 0.75              |
| 1:0:2594:U:H5' | 1:0:2594:U:H6  | 1.51                     | 0.75              |
| 1:0:461:A:H2'  | 1:0:462:G:C8   | 2.21                     | 0.75              |
| 1:0:538:A:H2'  | 1:0:539:A:H5'' | 1.69                     | 0.75              |
| 1:0:620:G:H2'  | 1:0:621:U:C6   | 2.22                     | 0.75              |
| 1:0:1587:A:H2' | 1:0:1588:A:C8  | 2.22                     | 0.74              |
| 1:0:1908:C:H2' | 1:0:1909:U:H4' | 1.69                     | 0.74              |
| 1:0:687:G:H2'  | 1:0:817:A:H61  | 1.52                     | 0.74              |
| 1:0:1255:A:H2' | 1:0:1256:C:C6  | 2.21                     | 0.74              |
| 1:0:1363:C:C2' | 1:0:1364:C:H5' | 2.17                     | 0.74              |
| 1:0:2170:C:C2' | 1:0:2171:U:H5' | 2.12                     | 0.74              |
| 1:0:26:G:N1    | 1:0:27:G:N2    | 2.35                     | 0.74              |
| 1:0:789:G:H2'  | 1:0:789:G:N3   | 2.02                     | 0.74              |
| 1:0:2737:A:C2' | 1:0:2738:A:H5' | 2.14                     | 0.74              |
| 1:0:451:A:H2'  | 1:0:452:G:C8   | 2.22                     | 0.74              |
| 1:0:1883:A:H1' | 1:0:1953:A:H2' | 1.69                     | 0.74              |
| 1:0:2264:C:O4' | 1:0:2267:A:N6  | 2.20                     | 0.74              |
| 1:0:209:G:N2   | 1:0:433:G:OP1  | 2.19                     | 0.74              |
| 1:0:597:U:H2'  | 1:0:598:U:C6   | 2.23                     | 0.74              |
| 1:0:1281:A:H2' | 1:0:1282:A:H8  | 1.52                     | 0.74              |
| 1:0:682:G:H2'  | 1:0:682:G:N3   | 2.02                     | 0.74              |
| 1:0:691:C:H2'  | 1:0:692:C:C6   | 2.22                     | 0.74              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:742:G:H5'   | 1:0:743:A:H5''  | 1.68                     | 0.74              |
| 1:0:942:U:C2'   | 1:0:943:U:H5'   | 2.17                     | 0.74              |
| 1:0:2168:A:N3   | 1:0:2168:A:H2'  | 2.01                     | 0.74              |
| 1:0:1004:A:O2'  | 1:0:1005:U:H5'  | 1.86                     | 0.74              |
| 1:0:2691:C:C3'  | 1:0:2692:A:H5'' | 2.17                     | 0.74              |
| 1:0:1636:G:H2'  | 1:0:1637:U:C6   | 2.23                     | 0.74              |
| 1:0:1859:A:H2'  | 1:0:1860:A:C8   | 2.23                     | 0.74              |
| 1:0:234:C:C2'   | 1:0:235:C:H5'   | 2.18                     | 0.74              |
| 1:0:2769:C:H2'  | 1:0:2770:A:O4'  | 1.88                     | 0.74              |
| 1:0:1054:C:C2'  | 1:0:1055:A:H5'  | 2.18                     | 0.73              |
| 1:0:2197:U:H2'  | 1:0:2198:U:C6   | 2.22                     | 0.73              |
| 1:0:698:A:H4'   | 1:0:700:C:H5    | 1.53                     | 0.73              |
| 1:0:857:U:H2'   | 1:0:858:G:O4'   | 1.87                     | 0.73              |
| 1:0:865:A:H2'   | 1:0:866:U:C6    | 2.23                     | 0.73              |
| 1:0:1399:C:H2'  | 1:0:1400:A:C8   | 2.22                     | 0.73              |
| 1:0:1979:C:C2'  | 1:0:1980:A:O5'  | 2.35                     | 0.73              |
| 1:0:2106:G:H2'  | 1:0:2107:G:C8   | 2.23                     | 0.73              |
| 1:0:2504:G:H8   | 1:0:2504:G:H5'  | 1.53                     | 0.73              |
| 1:0:510:G:O5'   | 1:0:510:G:H8    | 1.70                     | 0.73              |
| 1:0:1153:A:H2'  | 1:0:1155:G:N7   | 2.03                     | 0.73              |
| 1:0:818:G:H5'   | 1:0:819:C:H5    | 1.52                     | 0.73              |
| 1:0:2270:U:H2'  | 1:0:2271:C:H6   | 1.54                     | 0.73              |
| 1:0:687:G:O2'   | 1:0:688:A:H5'   | 1.88                     | 0.73              |
| 1:0:177:U:O4    | 1:0:225:G:C2    | 2.40                     | 0.73              |
| 1:0:542:A:H3'   | 1:0:542:A:C8    | 2.24                     | 0.73              |
| 1:0:1167:A:H5'  | 1:0:1168:G:OP2  | 1.89                     | 0.73              |
| 1:0:116:A:N3    | 1:0:155:G:H1'   | 2.02                     | 0.73              |
| 1:0:2271:C:H4'  | 1:0:2354:G:O4'  | 1.89                     | 0.73              |
| 1:0:2569:A:H2'  | 1:0:2570:C:C6   | 2.23                     | 0.73              |
| 1:0:83:A:H4'    | 1:0:84:G:O5'    | 1.88                     | 0.73              |
| 1:0:1055:A:N6   | 1:0:1123:G:H1'  | 2.03                     | 0.73              |
| 1:0:2254:C:O2'  | 1:0:2255:G:OP2  | 2.06                     | 0.73              |
| 1:0:2335:U:H2'  | 1:0:2336:G:H8   | 1.52                     | 0.73              |
| 1:0:1055:A:H61  | 1:0:1123:G:H1'  | 1.52                     | 0.73              |
| 1:0:824:U:C1'   | 1:0:1264:C:O2   | 2.36                     | 0.73              |
| 1:0:2241:U:H5'  | 1:0:2241:U:H6   | 1.53                     | 0.73              |
| 1:0:2675:U:H2'  | 1:0:2676:G:C8   | 2.23                     | 0.73              |
| 1:0:1625:A:H2'  | 1:0:1625:A:N3   | 2.03                     | 0.73              |
| 1:0:1714:A:H5'' | 1:0:1715:A:H5'' | 1.71                     | 0.73              |
| 1:0:2866:A:N7   | 1:0:2867:G:C6   | 2.57                     | 0.73              |
| 1:0:422:C:H2'   | 1:0:423:G:C8    | 2.24                     | 0.73              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1066:G:C3' | 1:0:1067:G:H4'  | 2.13                     | 0.72              |
| 1:0:1010:U:H1' | 1:0:1168:G:H22  | 1.53                     | 0.72              |
| 1:0:1384:G:H21 | 1:0:1385:C:N4   | 1.86                     | 0.72              |
| 1:0:2503:G:C2' | 1:0:2504:G:H5'' | 2.19                     | 0.72              |
| 1:0:623:G:H5'  | 1:0:626:A:H62   | 1.54                     | 0.72              |
| 1:0:847:C:H2'  | 1:0:848:A:H8    | 1.53                     | 0.72              |
| 1:0:1065:A:H2' | 1:0:1066:G:C8   | 2.23                     | 0.72              |
| 1:0:1435:G:N2  | 1:0:1436:G:H1'  | 2.04                     | 0.72              |
| 1:0:1937:G:H2' | 1:0:1939:U:C4   | 2.24                     | 0.72              |
| 1:0:1198:C:C5' | 1:0:1199:U:H4'  | 2.18                     | 0.72              |
| 1:0:1737:G:H2' | 1:0:1738:U:C6   | 2.23                     | 0.72              |
| 1:0:2652:G:H2' | 1:0:2653:A:H8   | 1.52                     | 0.72              |
| 1:0:2660:C:O2  | 1:0:2660:C:H2'  | 1.86                     | 0.72              |
| 1:0:469:G:O2'  | 1:0:470:U:P     | 2.47                     | 0.72              |
| 1:0:1314:A:H4' | 1:0:1315:A:OP1  | 1.89                     | 0.72              |
| 1:0:1979:C:H2' | 1:0:1980:A:O5'  | 1.89                     | 0.72              |
| 1:0:1378:A:H2' | 1:0:1379:A:H8   | 1.54                     | 0.72              |
| 1:0:1391:A:O2' | 1:0:1392:U:O5'  | 2.07                     | 0.72              |
| 1:0:1645:U:H2' | 1:0:1646:G:C8   | 2.24                     | 0.72              |
| 1:0:1774:A:N1  | 1:0:2566:A:H2'  | 2.05                     | 0.72              |
| 1:0:1147:G:O2' | 1:0:1148:G:H5'  | 1.90                     | 0.72              |
| 1:0:1498:G:H22 | 1:0:1523:A:H1'  | 1.55                     | 0.72              |
| 1:0:651:C:C2'  | 1:0:652:C:H5''  | 2.20                     | 0.72              |
| 1:0:1238:A:O2' | 1:0:1239:A:H5'  | 1.88                     | 0.72              |
| 1:0:1496:G:H22 | 1:0:1527:G:H1   | 0.82                     | 0.72              |
| 1:0:219:G:HO2' | 1:0:220:U:P     | 2.12                     | 0.72              |
| 1:0:2476:A:H1' | 1:0:2477:C:H5   | 1.54                     | 0.72              |
| 1:0:624:A:O2'  | 1:0:625:A:H5'   | 1.89                     | 0.72              |
| 1:0:205:A:N3   | 1:0:207:U:H1'   | 2.04                     | 0.72              |
| 1:0:542:A:H62  | 1:0:570:G:N2    | 1.88                     | 0.72              |
| 1:0:1030:U:C5  | 1:0:1153:A:N6   | 2.58                     | 0.72              |
| 1:0:1278:A:O2' | 1:0:1279:G:O5'  | 2.07                     | 0.72              |
| 1:0:1764:A:C2' | 1:0:1765:C:H5'  | 2.18                     | 0.72              |
| 1:0:1804:U:H2' | 1:0:1805:G:H8   | 1.55                     | 0.72              |
| 1:0:225:G:O5'  | 1:0:226:C:H5''  | 1.88                     | 0.72              |
| 1:0:2274:C:H2' | 1:0:2275:U:H5'  | 1.72                     | 0.72              |
| 1:0:616:U:C4   | 1:0:617:U:H5    | 2.07                     | 0.72              |
| 1:0:2185:U:H2' | 1:0:2186:G:H8   | 1.55                     | 0.71              |
| 1:0:2498:U:C4' | 1:0:2499:C:OP1  | 2.37                     | 0.71              |
| 1:0:454:G:N2   | 1:0:456:C:C2    | 2.58                     | 0.71              |
| 1:0:543:G:OP2  | 1:0:543:G:C8    | 2.42                     | 0.71              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:173:A:H61   | 1:0:844:G:H21   | 1.38                     | 0.71              |
| 1:0:1818:G:H2'  | 1:0:1819:U:H6   | 1.53                     | 0.71              |
| 1:0:65:C:H2'    | 1:0:66:U:O4'    | 1.89                     | 0.71              |
| 1:0:1286:U:H4'  | 1:0:1288:A:OP2  | 1.90                     | 0.71              |
| 1:0:1581:C:O2'  | 1:0:1582:A:H3'  | 1.90                     | 0.71              |
| 1:0:2259:G:H4'  | 1:0:2306:A:H5'  | 1.71                     | 0.71              |
| 1:0:838:A:H2'   | 1:0:839:U:O4'   | 1.90                     | 0.71              |
| 1:0:117:A:H4'   | 1:0:118:U:O5'   | 1.89                     | 0.71              |
| 1:0:1386:A:H5'' | 1:0:2191:A:C6   | 2.25                     | 0.71              |
| 1:0:1680:U:C5'  | 1:0:1680:U:H6   | 2.00                     | 0.71              |
| 1:0:2387:U:H2'  | 1:0:2388:G:H8   | 1.56                     | 0.71              |
| 1:0:1670:G:H5'  | 1:0:2797:G:H22  | 1.52                     | 0.71              |
| 1:0:428:A:H2'   | 1:0:429:C:C6    | 2.26                     | 0.71              |
| 1:0:840:U:H4'   | 1:0:841:G:N2    | 2.05                     | 0.71              |
| 1:0:2628:C:H2'  | 1:0:2629:U:C6   | 2.25                     | 0.71              |
| 1:0:1442:C:C2'  | 1:0:1443:G:OP1  | 2.38                     | 0.71              |
| 1:0:2418:A:H4'  | 1:0:2419:C:O5'  | 1.88                     | 0.71              |
| 1:0:1:G:H2'     | 1:0:2:G:C8      | 2.24                     | 0.71              |
| 1:0:634:G:H2'   | 1:0:635:C:H6    | 1.53                     | 0.71              |
| 1:0:1299:A:H2'  | 1:0:1301:U:OP2  | 1.90                     | 0.71              |
| 1:0:1436:G:H2'  | 1:0:1437:A:O4'  | 1.90                     | 0.71              |
| 1:0:1606:C:N4   | 1:0:1607:A:H62  | 1.89                     | 0.71              |
| 1:0:2003:A:O2'  | 1:0:2004:U:H3'  | 1.91                     | 0.71              |
| 1:0:503:G:H2'   | 1:0:504:G:O4'   | 1.91                     | 0.71              |
| 1:0:73:A:H4'    | 1:0:74:G:O5'    | 1.90                     | 0.71              |
| 1:0:192:G:H4'   | 1:0:193:A:O5'   | 1.90                     | 0.71              |
| 1:0:2712:G:H3'  | 1:0:2713:A:H5'  | 1.72                     | 0.71              |
| 1:0:912:A:H2'   | 1:0:913:A:O4'   | 1.90                     | 0.71              |
| 1:0:2075:U:O2'  | 1:0:2076:G:H8   | 1.72                     | 0.71              |
| 1:0:2594:U:C6   | 1:0:2594:U:H5'  | 2.26                     | 0.71              |
| 1:0:501:G:H2'   | 1:0:502:A:H8    | 1.56                     | 0.71              |
| 1:0:755:C:O2'   | 1:0:756:C:H5'   | 1.91                     | 0.71              |
| 1:0:1045:G:H2'  | 1:0:1046:U:C6   | 2.25                     | 0.71              |
| 1:0:1102:G:H22  | 1:0:1112:U:H1'  | 1.56                     | 0.71              |
| 1:0:1429:A:H62  | 1:0:1601:U:H5'' | 1.55                     | 0.71              |
| 1:0:2675:U:H2'  | 1:0:2676:G:H8   | 1.53                     | 0.71              |
| 1:0:2725:C:H2'  | 1:0:2726:U:C6   | 2.25                     | 0.71              |
| 1:0:861:G:H1'   | 1:0:944:A:N3    | 2.06                     | 0.71              |
| 1:0:1441:A:O2'  | 1:0:1442:C:C6   | 2.44                     | 0.70              |
| 1:0:2019:C:O2'  | 1:0:2020:G:H5'  | 1.91                     | 0.70              |
| 1:0:965:G:N3    | 1:0:2253:A:C2   | 2.59                     | 0.70              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2437:G:O6  | 1:0:2469:G:H2'  | 1.91                     | 0.70              |
| 1:0:2560:G:N7  | 1:0:2589:C:C5   | 2.58                     | 0.70              |
| 1:0:1070:G:H2' | 1:0:1071:U:O4'  | 1.91                     | 0.70              |
| 1:0:2299:A:H2' | 1:0:2312:A:N6   | 2.06                     | 0.70              |
| 1:0:2463:G:H2' | 1:0:2464:G:H8   | 1.56                     | 0.70              |
| 1:0:794:A:H2   | 1:0:1767:G:N3   | 1.89                     | 0.70              |
| 1:0:990:A:H2'  | 1:0:993:C:N4    | 2.07                     | 0.70              |
| 1:0:1174:G:C2  | 1:0:1175:A:C5   | 2.80                     | 0.70              |
| 1:0:246:C:C5   | 1:0:373:A:H1'   | 2.26                     | 0.70              |
| 1:0:1097:A:H4' | 1:0:1114:A:C2   | 2.26                     | 0.70              |
| 1:0:1482:U:H4' | 1:0:1482:U:OP1  | 1.91                     | 0.70              |
| 1:0:923:A:H8   | 1:0:2243:C:H1'  | 1.57                     | 0.70              |
| 1:0:590:C:H2'  | 1:0:591:G:H8    | 1.54                     | 0.70              |
| 1:0:1435:G:C2  | 1:0:1436:G:H1'  | 2.26                     | 0.70              |
| 1:0:1712:G:H2' | 1:0:1713:G:C5'  | 2.21                     | 0.70              |
| 1:0:2692:A:H5' | 1:0:2693:U:H5'  | 1.73                     | 0.70              |
| 1:0:57:G:N2    | 1:0:69:G:C4     | 2.59                     | 0.70              |
| 1:0:592:G:C6   | 1:0:593:C:N4    | 2.60                     | 0.70              |
| 1:0:635:C:H2'  | 1:0:636:G:H5''  | 1.73                     | 0.70              |
| 1:0:788:G:H21  | 1:0:804:C:N4    | 1.89                     | 0.70              |
| 1:0:875:G:N2   | 1:0:928:G:H1'   | 2.06                     | 0.70              |
| 1:0:88:G:H3'   | 1:0:89:A:H5'    | 1.74                     | 0.70              |
| 1:0:1953:A:O2' | 1:0:1954:A:OP2  | 2.08                     | 0.70              |
| 1:0:537:C:O2'  | 1:0:538:A:C4    | 2.44                     | 0.70              |
| 1:0:816:U:C2'  | 1:0:817:A:H5'   | 2.21                     | 0.70              |
| 1:0:871:U:H2'  | 1:0:871:U:O2    | 1.92                     | 0.70              |
| 1:0:946:U:H2'  | 1:0:947:C:H6    | 1.53                     | 0.70              |
| 1:0:1174:G:H2' | 1:0:1175:A:C8   | 2.26                     | 0.70              |
| 1:0:1204:G:H2' | 1:0:1205:G:C8   | 2.23                     | 0.70              |
| 1:0:1229:C:H2' | 1:0:1230:C:H6   | 1.57                     | 0.70              |
| 1:0:1777:A:O2' | 1:0:1778:U:OP1  | 2.09                     | 0.70              |
| 1:0:163:A:H2'  | 1:0:164:G:C8    | 2.26                     | 0.70              |
| 1:0:2194:A:C3' | 1:0:2195:C:H5'' | 2.22                     | 0.70              |
| 1:0:2491:C:C5' | 1:0:2492:G:OP2  | 2.38                     | 0.70              |
| 1:0:755:C:H2'  | 1:0:756:C:C6    | 2.26                     | 0.70              |
| 1:0:926:C:H2'  | 1:0:927:C:C5'   | 2.22                     | 0.70              |
| 1:0:1538:A:H2' | 1:0:1539:U:H6   | 1.56                     | 0.70              |
| 1:0:149:A:H2'  | 1:0:150:A:C8    | 2.27                     | 0.69              |
| 1:0:1656:U:O2' | 1:0:1657:A:H5'' | 1.92                     | 0.69              |
| 1:0:212:U:N3   | 1:0:443:A:C2    | 2.59                     | 0.69              |
| 1:0:27:G:H1'   | 1:0:523:A:N6    | 2.06                     | 0.69              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:27:G:N2     | 1:0:522:G:O2'   | 2.25                     | 0.69              |
| 1:0:1088:A:H2'  | 1:0:1089:C:O4'  | 1.92                     | 0.69              |
| 1:0:1427:G:H2'  | 1:0:1428:G:O4'  | 1.92                     | 0.69              |
| 1:0:177:U:C5    | 1:0:225:G:N3    | 2.60                     | 0.69              |
| 1:0:1790:G:H4'  | 1:0:1791:C:O5'  | 1.92                     | 0.69              |
| 1:0:395:G:C6    | 1:0:396:U:O4    | 2.44                     | 0.69              |
| 1:0:1538:A:H2'  | 1:0:1539:U:C6   | 2.27                     | 0.69              |
| 1:0:2185:U:H2'  | 1:0:2186:G:C8   | 2.27                     | 0.69              |
| 1:0:2268:G:H5'' | 1:0:2363:G:O2'  | 1.91                     | 0.69              |
| 1:0:2632:U:H3   | 1:0:2633:A:H62  | 1.41                     | 0.69              |
| 1:0:468:A:H1'   | 1:0:470:U:C6    | 2.28                     | 0.69              |
| 1:0:1036:G:C8   | 1:0:1036:G:OP1  | 2.43                     | 0.69              |
| 1:0:1255:A:H2'  | 1:0:1256:C:H6   | 1.58                     | 0.69              |
| 1:0:1921:A:H2'  | 1:0:1922:U:C5'  | 2.19                     | 0.69              |
| 1:0:689:A:C8    | 1:0:2422:C:H1'  | 2.27                     | 0.69              |
| 1:0:1333:G:N2   | 1:0:1344:C:N4   | 2.40                     | 0.69              |
| 1:0:2268:G:O2'  | 1:0:2269:G:H5'  | 1.93                     | 0.69              |
| 1:0:318:G:N2    | 1:0:321:A:O5'   | 2.21                     | 0.69              |
| 1:0:765:C:O2    | 1:0:766:A:N7    | 2.25                     | 0.69              |
| 1:0:1177:U:N3   | 1:0:1196:G:N1   | 2.41                     | 0.69              |
| 1:0:1283:C:H5'' | 1:0:1284:G:O5'  | 1.93                     | 0.69              |
| 1:0:1512:A:H2'  | 1:0:1514:C:C4   | 2.28                     | 0.69              |
| 1:0:940:G:N7    | 1:0:941:U:C6    | 2.60                     | 0.69              |
| 1:0:1291:G:O2'  | 1:0:1292:A:H5'  | 1.93                     | 0.69              |
| 1:0:2368:G:H5'' | 1:0:2369:U:C5'  | 2.23                     | 0.69              |
| 1:0:2705:A:O2'  | 1:0:2706:U:C6   | 2.45                     | 0.69              |
| 1:0:2787:A:O2'  | 1:0:2788:C:H5'  | 1.93                     | 0.69              |
| 1:0:2859:U:H2'  | 1:0:2860:C:H5'  | 1.75                     | 0.69              |
| 1:0:792:U:O2'   | 1:0:793:G:H5'   | 1.91                     | 0.69              |
| 1:0:936:A:H2'   | 1:0:937:C:O4'   | 1.93                     | 0.69              |
| 1:0:1058:G:OP1  | 1:0:1058:G:H3'  | 1.93                     | 0.69              |
| 1:0:1435:G:C2'  | 1:0:1436:G:H5'  | 2.21                     | 0.69              |
| 1:0:1528:C:C2'  | 1:0:1529:C:H5'' | 2.21                     | 0.69              |
| 1:0:1550:C:H2'  | 1:0:1551:U:O4'  | 1.93                     | 0.69              |
| 1:0:1815:G:O2'  | 1:0:1816:G:H5'  | 1.92                     | 0.69              |
| 1:0:234:C:H2'   | 1:0:235:C:H5'   | 1.75                     | 0.69              |
| 1:0:712:A:H2'   | 1:0:713:G:O4'   | 1.93                     | 0.69              |
| 1:0:178:C:O2'   | 1:0:179:U:H5'   | 1.93                     | 0.68              |
| 1:0:1921:A:C2'  | 1:0:1922:U:H5'' | 2.21                     | 0.68              |
| 1:0:2015:G:N3   | 1:0:2015:G:H2'  | 2.07                     | 0.68              |
| 1:0:985:G:H1'   | 1:0:1001:A:N6   | 2.08                     | 0.68              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1445:A:H2'  | 1:0:1446:U:O4'  | 1.93                     | 0.68              |
| 1:0:1459:U:C4   | 1:0:1476:G:P    | 2.86                     | 0.68              |
| 1:0:1478:U:H2'  | 1:0:1479:G:H8   | 1.58                     | 0.68              |
| 1:0:226:C:H4'   | 1:0:227:G:H5''  | 1.75                     | 0.68              |
| 1:0:237:G:H1'   | 1:0:632:A:C8    | 2.27                     | 0.68              |
| 1:0:516:G:O2'   | 1:0:517:A:H8    | 1.77                     | 0.68              |
| 1:0:2107:G:H2'  | 1:0:2108:G:O4'  | 1.94                     | 0.68              |
| 1:0:318:G:N2    | 1:0:321:A:O4'   | 2.26                     | 0.68              |
| 1:0:2628:C:H2'  | 1:0:2629:U:H6   | 1.58                     | 0.68              |
| 1:0:318:G:N2    | 1:0:320:A:H3'   | 2.08                     | 0.68              |
| 1:0:1493:A:H2   | 1:0:1573:G:N3   | 1.91                     | 0.68              |
| 1:0:2074:U:H3'  | 1:0:2075:U:H5'' | 1.74                     | 0.68              |
| 1:0:1495:G:H2'  | 1:0:1496:G:C8   | 2.28                     | 0.68              |
| 1:0:2497:A:H5'' | 1:0:2498:U:OP2  | 1.93                     | 0.68              |
| 1:0:2542:U:O2   | 1:0:2544:A:H8   | 1.76                     | 0.68              |
| 1:0:1221:C:H2'  | 1:0:1222:G:C8   | 2.26                     | 0.68              |
| 1:0:1296:G:N2   | 1:0:1298:G:H3'  | 2.08                     | 0.68              |
| 1:0:1437:A:H2'  | 1:0:1438:G:H8   | 1.59                     | 0.68              |
| 1:0:1573:G:O6   | 1:0:1574:A:N6   | 2.27                     | 0.68              |
| 1:0:1777:A:HO2' | 1:0:1778:U:P    | 2.16                     | 0.68              |
| 1:0:2198:U:O5'  | 1:0:2199:C:H5'' | 1.93                     | 0.68              |
| 1:0:625:A:N3    | 1:0:625:A:H3'   | 2.09                     | 0.68              |
| 1:0:1468:A:H8   | 1:0:1468:A:O5'  | 1.77                     | 0.68              |
| 1:0:1689:U:C2'  | 1:0:1690:U:H5'' | 2.24                     | 0.68              |
| 1:0:1779:C:H2'  | 1:0:1780:A:C8   | 2.29                     | 0.68              |
| 1:0:2437:G:H2'  | 1:0:2469:G:H1   | 1.59                     | 0.68              |
| 1:0:1441:A:H3'  | 1:0:1441:A:N3   | 2.09                     | 0.68              |
| 1:0:1527:G:H2'  | 1:0:1527:G:N3   | 2.09                     | 0.68              |
| 1:0:2442:C:H2'  | 1:0:2443:C:H6   | 1.59                     | 0.68              |
| 1:0:353:G:H2'   | 1:0:354:C:O4'   | 1.94                     | 0.68              |
| 1:0:482:A:H2'   | 1:0:483:A:H5'   | 1.75                     | 0.68              |
| 1:0:968:C:N4    | 1:0:970:A:C2    | 2.61                     | 0.68              |
| 1:0:2106:G:H2'  | 1:0:2107:G:H8   | 1.58                     | 0.68              |
| 1:0:2779:C:H2'  | 1:0:2780:A:C8   | 2.28                     | 0.68              |
| 1:0:509:U:H2'   | 1:0:510:G:H5'   | 1.75                     | 0.68              |
| 1:0:1198:C:H5'' | 1:0:1199:U:C4'  | 2.22                     | 0.67              |
| 1:0:1332:G:C6   | 1:0:1333:G:N1   | 2.62                     | 0.67              |
| 1:0:1:G:N2      | 1:0:2877:A:H1'  | 2.09                     | 0.67              |
| 1:0:486:U:O2    | 1:0:515:A:H2    | 1.77                     | 0.67              |
| 1:0:566:U:H2'   | 1:0:567:G:C8    | 2.25                     | 0.67              |
| 1:0:1501:C:H2'  | 1:0:1502:G:O4'  | 1.94                     | 0.67              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2204:A:H4' | 1:0:2205:C:O5' | 1.93                     | 0.67              |
| 1:0:2335:U:H2' | 1:0:2336:G:C8  | 2.30                     | 0.67              |
| 1:0:2442:C:H2' | 1:0:2443:C:C6  | 2.30                     | 0.67              |
| 1:0:2489:C:H2' | 1:0:2490:U:H5' | 1.76                     | 0.67              |
| 1:0:2570:C:H2' | 1:0:2571:G:C8  | 2.29                     | 0.67              |
| 1:0:43:A:O2'   | 1:0:44:G:H5'   | 1.93                     | 0.67              |
| 1:0:1106:A:H2' | 1:0:1107:A:C8  | 2.28                     | 0.67              |
| 1:0:192:G:C1'  | 1:0:193:A:H4'  | 2.23                     | 0.67              |
| 1:0:1750:A:C8  | 1:0:2675:U:H1' | 2.29                     | 0.67              |
| 1:0:208:C:N4   | 1:0:209:G:N2   | 2.43                     | 0.67              |
| 1:0:2311:U:H4' | 1:0:2315:A:N6  | 2.09                     | 0.67              |
| 1:0:2761:A:C5' | 1:0:2762:G:H5' | 2.24                     | 0.67              |
| 1:0:317:U:H3'  | 1:0:318:G:H5'' | 1.76                     | 0.67              |
| 1:0:460:U:N3   | 1:0:592:G:H1'  | 2.08                     | 0.67              |
| 1:0:553:C:O2'  | 1:0:555:U:H5'  | 1.93                     | 0.67              |
| 1:0:205:A:C2   | 1:0:207:U:H1'  | 2.29                     | 0.67              |
| 1:0:5:A:H2'    | 1:0:6:A:H8     | 1.60                     | 0.67              |
| 1:0:1404:C:N3  | 1:0:1407:G:C8  | 2.62                     | 0.67              |
| 1:0:1690:U:H6  | 1:0:1690:U:H5' | 1.59                     | 0.67              |
| 1:0:393:U:H2'  | 1:0:394:U:H6   | 1.58                     | 0.67              |
| 1:0:500:G:H8   | 1:0:500:G:OP1  | 1.78                     | 0.67              |
| 1:0:1573:G:H5' | 1:0:1573:G:H8  | 1.58                     | 0.67              |
| 1:0:2184:C:O2' | 1:0:2185:U:H5' | 1.94                     | 0.67              |
| 1:0:20:C:O2'   | 1:0:21:A:H5'   | 1.94                     | 0.67              |
| 1:0:2274:C:H2' | 1:0:2275:U:C5' | 2.23                     | 0.67              |
| 1:0:237:G:H1'  | 1:0:632:A:H8   | 1.60                     | 0.67              |
| 1:0:113:C:O2'  | 1:0:114:C:H5'  | 1.95                     | 0.67              |
| 1:0:2588:U:C4' | 1:0:2589:C:OP2 | 2.43                     | 0.67              |
| 1:0:2859:U:C5  | 1:0:2860:C:C2  | 2.83                     | 0.67              |
| 1:0:324:C:H2'  | 1:0:325:U:O4'  | 1.94                     | 0.67              |
| 1:0:347:C:O2'  | 1:0:348:U:H5'  | 1.95                     | 0.67              |
| 1:0:616:U:H2'  | 1:0:617:U:C5'  | 2.25                     | 0.67              |
| 1:0:652:C:H42  | 1:0:657:A:N6   | 1.86                     | 0.67              |
| 1:0:68:C:C2'   | 1:0:72:A:H1'   | 2.25                     | 0.67              |
| 1:0:717:G:C2'  | 1:0:739:G:H22  | 2.06                     | 0.67              |
| 1:0:1181:C:H2' | 1:0:1182:U:H4' | 1.77                     | 0.67              |
| 1:0:1467:U:H3' | 1:0:1468:A:C5' | 2.24                     | 0.67              |
| 1:0:1710:U:H3  | 1:0:1821:A:N6  | 1.92                     | 0.67              |
| 1:0:818:G:H5'  | 1:0:819:C:C5   | 2.30                     | 0.67              |
| 1:0:1402:G:H2' | 1:0:1403:U:O4' | 1.94                     | 0.67              |
| 1:0:1546:C:H42 | 1:0:1556:A:N6  | 1.93                     | 0.67              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:623:G:H5'   | 1:0:626:A:N6    | 2.09                     | 0.67              |
| 1:0:1181:C:C3'  | 1:0:1182:U:H4'  | 2.25                     | 0.66              |
| 1:0:1431:U:H5'  | 1:0:1604:A:H1'  | 1.77                     | 0.66              |
| 1:0:2324:G:N7   | 1:0:2351:G:N2   | 2.43                     | 0.66              |
| 1:0:212:U:H3    | 1:0:443:A:H2    | 1.42                     | 0.66              |
| 1:0:1459:U:N3   | 1:0:1476:G:P    | 2.68                     | 0.66              |
| 1:0:2202:G:C2   | 1:0:2203:G:H1'  | 2.30                     | 0.66              |
| 1:0:2657:G:O2'  | 1:0:2658:A:H5'  | 1.96                     | 0.66              |
| 1:0:403:A:H5''  | 1:0:404:A:OP1   | 1.96                     | 0.66              |
| 1:0:931:G:H21   | 1:0:2247:A:H5'  | 1.61                     | 0.66              |
| 1:0:2680:U:H5'' | 1:0:2681:A:H5'  | 1.75                     | 0.66              |
| 1:0:2759:U:H5'' | 1:0:2760:G:H3'  | 1.77                     | 0.66              |
| 1:0:2074:U:H3'  | 1:0:2075:U:C5'  | 2.26                     | 0.66              |
| 1:0:1029:C:C3'  | 1:0:1030:U:H5'' | 2.25                     | 0.66              |
| 1:0:1109:A:H2'  | 1:0:1110:G:H5'  | 1.78                     | 0.66              |
| 1:0:1059:A:H8   | 1:0:1121:G:H21  | 1.44                     | 0.66              |
| 1:0:1442:C:N4   | 1:0:1585:A:C8   | 2.62                     | 0.66              |
| 1:0:219:G:O2'   | 1:0:220:U:P     | 2.52                     | 0.66              |
| 1:0:674:U:H2'   | 1:0:675:C:O4'   | 1.96                     | 0.66              |
| 1:0:1329:U:C2   | 1:0:1330:G:C8   | 2.84                     | 0.66              |
| 1:0:1727:C:H4'  | 1:0:2833:C:O2   | 1.96                     | 0.66              |
| 1:0:1886:G:H2'  | 1:0:1887:G:C8   | 2.30                     | 0.66              |
| 1:0:422:C:H2'   | 1:0:423:G:H8    | 1.60                     | 0.66              |
| 1:0:616:U:H2'   | 1:0:617:U:H5'   | 1.76                     | 0.66              |
| 1:0:682:G:H5''  | 1:0:683:A:OP2   | 1.95                     | 0.66              |
| 1:0:1186:G:N3   | 1:0:1186:G:H2'  | 2.09                     | 0.66              |
| 1:0:1196:G:H2'  | 1:0:1197:U:O4'  | 1.95                     | 0.66              |
| 1:0:1824:C:N4   | 1:0:1825:C:C4   | 2.64                     | 0.66              |
| 1:0:2109:A:H2'  | 1:0:2110:G:O4'  | 1.95                     | 0.66              |
| 1:0:2270:U:H2'  | 1:0:2271:C:C6   | 2.31                     | 0.66              |
| 1:0:2787:A:H2'  | 1:0:2788:C:H6   | 1.61                     | 0.66              |
| 1:0:91:A:H2'    | 1:0:92:U:C6     | 2.31                     | 0.66              |
| 1:0:1452:U:O2'  | 1:0:1453:A:H5'  | 1.96                     | 0.66              |
| 1:0:1508:G:N2   | 1:0:1515:U:H1'  | 2.11                     | 0.66              |
| 1:0:304:A:C3'   | 1:0:305:A:H5''  | 2.25                     | 0.66              |
| 1:0:697:G:C6    | 1:0:788:G:C5    | 2.84                     | 0.66              |
| 1:0:7:G:H2'     | 1:0:8:A:H8      | 1.60                     | 0.66              |
| 1:0:2796:A:H2'  | 1:0:2797:G:H8   | 1.61                     | 0.66              |
| 1:0:1729:C:H2'  | 1:0:1730:G:H8   | 1.60                     | 0.66              |
| 1:0:402:A:C8    | 1:0:2392:G:H4'  | 2.31                     | 0.66              |
| 1:0:2646:C:H2'  | 1:0:2647:G:O4'  | 1.96                     | 0.66              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:514:G:H2'  | 1:0:514:G:N3   | 2.11                     | 0.66              |
| 1:0:1447:U:H1' | 1:0:1577:G:N2  | 2.10                     | 0.65              |
| 1:0:1474:A:O2' | 1:0:1475:U:H5' | 1.94                     | 0.65              |
| 1:0:1740:G:H2' | 1:0:1741:G:O4' | 1.95                     | 0.65              |
| 1:0:234:C:O2'  | 1:0:235:C:H5'  | 1.96                     | 0.65              |
| 1:0:320:A:N3   | 1:0:340:G:O2'  | 2.29                     | 0.65              |
| 1:0:358:C:H6   | 1:0:358:C:O5'  | 1.79                     | 0.65              |
| 1:0:67:G:N1    | 1:0:72:A:C2    | 2.64                     | 0.65              |
| 1:0:922:A:N6   | 1:0:923:A:N6   | 2.43                     | 0.65              |
| 1:0:1142:G:O2' | 1:0:1143:A:O5' | 2.13                     | 0.65              |
| 1:0:1468:A:C8  | 1:0:1468:A:O5' | 2.50                     | 0.65              |
| 1:0:1614:C:O2' | 1:0:1615:C:H5' | 1.96                     | 0.65              |
| 1:0:2498:U:C5  | 1:0:2520:A:C6  | 2.84                     | 0.65              |
| 1:0:2859:U:H5  | 1:0:2860:C:C2  | 2.15                     | 0.65              |
| 1:0:636:G:H5'  | 1:0:636:G:H8   | 1.60                     | 0.65              |
| 1:0:672:C:O2'  | 1:0:673:G:H5'  | 1.96                     | 0.65              |
| 1:0:704:G:H2'  | 1:0:705:C:C6   | 2.31                     | 0.65              |
| 1:0:781:G:O2'  | 1:0:782:U:H5'  | 1.96                     | 0.65              |
| 1:0:700:C:O2   | 1:0:801:A:C5'  | 2.44                     | 0.65              |
| 1:0:1190:C:H2' | 1:0:1191:G:C8  | 2.32                     | 0.65              |
| 1:0:1356:G:O4' | 1:0:1613:G:H2' | 1.96                     | 0.65              |
| 1:0:1453:A:C2' | 1:0:1454:U:H5' | 2.26                     | 0.65              |
| 1:0:177:U:O2   | 1:0:178:C:O4'  | 2.14                     | 0.65              |
| 1:0:760:U:O2   | 1:0:1997:A:H1' | 1.97                     | 0.65              |
| 1:0:2753:C:H2' | 1:0:2754:C:C6  | 2.28                     | 0.65              |
| 1:0:466:A:O2'  | 1:0:467:U:OP2  | 2.10                     | 0.65              |
| 1:0:67:G:C5    | 1:0:72:A:C2    | 2.84                     | 0.65              |
| 1:0:7:G:H2'    | 1:0:8:A:C8     | 2.31                     | 0.65              |
| 1:0:1840:A:H2' | 1:0:1841:G:O4' | 1.96                     | 0.65              |
| 1:0:1846:A:H61 | 1:0:1871:G:H1' | 1.62                     | 0.65              |
| 1:0:2034:A:N6  | 1:0:2593:A:C4  | 2.64                     | 0.65              |
| 1:0:2379:G:O2' | 1:0:2380:U:H5' | 1.97                     | 0.65              |
| 1:0:1692:C:N4  | 1:0:1693:A:C2  | 2.65                     | 0.65              |
| 1:0:2759:U:H4' | 1:0:2761:A:C8  | 2.32                     | 0.65              |
| 1:0:501:G:H2'  | 1:0:502:A:C8   | 2.31                     | 0.65              |
| 1:0:1337:G:H1' | 1:0:1632:A:H61 | 1.62                     | 0.65              |
| 1:0:1563:U:H2' | 1:0:1564:U:H6  | 1.57                     | 0.65              |
| 1:0:2873:G:O2' | 1:0:2874:A:H5' | 1.96                     | 0.65              |
| 1:0:701:U:O2   | 1:0:800:U:H4'  | 1.96                     | 0.65              |
| 1:0:1040:A:C2' | 1:0:1041:G:H5' | 2.27                     | 0.65              |
| 1:0:1608:U:H2' | 1:0:1609:G:H8  | 1.61                     | 0.65              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1715:A:O2'  | 1:0:1716:G:C5'  | 2.45                     | 0.65              |
| 1:0:2077:G:H1   | 1:0:2179:C:C1'  | 2.10                     | 0.65              |
| 1:0:2313:G:O2'  | 1:0:2314:A:OP1  | 2.13                     | 0.65              |
| 1:0:2780:A:C2'  | 1:0:2781:G:H5'  | 2.26                     | 0.65              |
| 1:0:791:G:C6    | 1:0:792:U:N3    | 2.64                     | 0.65              |
| 1:0:1707:A:N7   | 1:0:1714:A:H2   | 1.93                     | 0.65              |
| 1:0:2071:G:O2'  | 1:0:2072:C:H5'  | 1.97                     | 0.65              |
| 1:0:2843:A:H2'  | 1:0:2844:G:C8   | 2.32                     | 0.65              |
| 1:0:321:A:C2    | 1:0:323:G:H1'   | 2.32                     | 0.65              |
| 1:0:68:C:H2'    | 1:0:72:A:H1'    | 1.79                     | 0.65              |
| 1:0:1481:U:HO2' | 1:0:1562:G:HO2' | 1.42                     | 0.65              |
| 1:0:172:A:N1    | 1:0:178:C:N3    | 2.45                     | 0.65              |
| 1:0:639:G:H2'   | 1:0:640:C:C6    | 2.32                     | 0.65              |
| 1:0:1211:G:H2'  | 1:0:1212:U:H6   | 1.62                     | 0.65              |
| 1:0:1526:U:H2'  | 1:0:1527:G:H8   | 1.62                     | 0.65              |
| 1:0:1770:U:O2   | 1:0:1774:A:C5   | 2.50                     | 0.65              |
| 1:0:1871:G:H3'  | 1:0:1871:G:N3   | 2.12                     | 0.65              |
| 1:0:2355:A:O2'  | 1:0:2356:A:H5'  | 1.97                     | 0.65              |
| 1:0:2499:C:O2'  | 1:0:2500:C:H5'  | 1.96                     | 0.65              |
| 1:0:317:U:C3'   | 1:0:318:G:H5''  | 2.26                     | 0.65              |
| 1:0:469:G:H22   | 1:0:480:G:H2'   | 1.61                     | 0.65              |
| 1:0:1436:G:H3'  | 1:0:1437:A:H8   | 1.61                     | 0.64              |
| 1:0:1851:A:N6   | 1:0:1867:A:H1'  | 2.12                     | 0.64              |
| 1:0:2188:A:H2'  | 1:0:2189:A:N7   | 2.11                     | 0.64              |
| 1:0:2245:A:N3   | 1:0:2251:U:H5   | 1.94                     | 0.64              |
| 1:0:787:A:N1    | 1:0:788:G:O6    | 2.30                     | 0.64              |
| 1:0:1007:A:N6   | 1:0:1171:A:C6   | 2.65                     | 0.64              |
| 1:0:1329:U:H2'  | 1:0:1330:G:H8   | 1.61                     | 0.64              |
| 1:0:1717:A:H5'  | 1:0:1718:A:OP2  | 1.97                     | 0.64              |
| 1:0:976:C:C5'   | 1:0:2252:A:H1'  | 2.23                     | 0.64              |
| 1:0:2437:G:H21  | 1:0:2438:A:N6   | 1.94                     | 0.64              |
| 1:0:2780:A:O2'  | 1:0:2781:G:H5'  | 1.96                     | 0.64              |
| 1:0:633:G:H2'   | 1:0:634:G:C8    | 2.31                     | 0.64              |
| 1:0:67:G:C5     | 1:0:72:A:H2     | 2.15                     | 0.64              |
| 1:0:237:G:O4'   | 1:0:632:A:H1'   | 1.98                     | 0.64              |
| 1:0:805:G:H2'   | 1:0:2419:C:C2   | 2.33                     | 0.64              |
| 1:0:2436:U:H2'  | 1:0:2437:G:O4'  | 1.97                     | 0.64              |
| 1:0:68:C:C6     | 1:0:72:A:C2     | 2.85                     | 0.64              |
| 1:0:1033:G:O2'  | 1:0:1034:U:O5'  | 2.15                     | 0.64              |
| 1:0:1540:C:H2'  | 1:0:1541:G:H8   | 1.62                     | 0.64              |
| 1:0:1608:U:H2'  | 1:0:1609:G:C8   | 2.32                     | 0.64              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1789:U:C4  | 1:0:1811:A:H2  | 2.14                     | 0.64              |
| 1:0:498:C:C5   | 1:0:499:G:N7   | 2.66                     | 0.64              |
| 1:0:931:G:O2'  | 1:0:932:G:H5'  | 1.97                     | 0.64              |
| 1:0:1434:U:H2' | 1:0:1435:G:C8  | 2.31                     | 0.64              |
| 1:0:1695:U:O2' | 1:0:1696:C:H5' | 1.98                     | 0.64              |
| 1:0:1974:U:H2' | 1:0:1975:G:H5' | 1.79                     | 0.64              |
| 1:0:211:U:O2   | 1:0:211:U:C2'  | 2.45                     | 0.64              |
| 1:0:976:C:C1'  | 1:0:2252:A:C2  | 2.79                     | 0.64              |
| 1:0:2266:A:N6  | 1:0:2323:U:C2  | 2.64                     | 0.64              |
| 1:0:2778:U:O2' | 1:0:2779:C:H5' | 1.98                     | 0.64              |
| 1:0:862:A:H2'  | 1:0:863:C:C6   | 2.33                     | 0.64              |
| 1:0:177:U:O2   | 1:0:177:U:H2'  | 1.97                     | 0.64              |
| 1:0:177:U:O2   | 1:0:178:C:C6   | 2.50                     | 0.64              |
| 1:0:1993:G:O2' | 1:0:1994:U:H5' | 1.98                     | 0.64              |
| 1:0:464:G:C6   | 1:0:465:C:N4   | 2.65                     | 0.64              |
| 1:0:510:G:N3   | 1:0:512:A:OP2  | 2.30                     | 0.64              |
| 1:0:460:U:O4   | 1:0:592:G:H1'  | 1.97                     | 0.64              |
| 1:0:613:A:O2'  | 1:0:614:G:H5'  | 1.97                     | 0.64              |
| 1:0:877:G:H2'  | 1:0:878:C:O4'  | 1.98                     | 0.64              |
| 1:0:1818:G:H2' | 1:0:1819:U:C6  | 2.32                     | 0.64              |
| 1:0:2188:A:C6  | 1:0:2189:A:N6  | 2.66                     | 0.64              |
| 1:0:2547:C:H2' | 1:0:2548:G:O4' | 1.96                     | 0.64              |
| 1:0:2660:C:N3  | 1:0:2704:U:C4  | 2.66                     | 0.64              |
| 1:0:816:U:O2'  | 1:0:817:A:H5'  | 1.98                     | 0.64              |
| 1:0:1438:G:C2  | 1:0:1591:U:C2  | 2.86                     | 0.64              |
| 1:0:2209:G:H2' | 1:0:2210:C:H6  | 1.63                     | 0.64              |
| 1:0:2311:U:C4' | 1:0:2315:A:N6  | 2.61                     | 0.64              |
| 1:0:1471:G:H1  | 1:0:2682:C:H42 | 1.44                     | 0.64              |
| 1:0:2697:G:O2' | 1:0:2698:G:H5' | 1.97                     | 0.64              |
| 1:0:2867:G:H8  | 1:0:2867:G:OP2 | 1.80                     | 0.64              |
| 1:0:66:U:H2'   | 1:0:67:G:N7    | 2.12                     | 0.64              |
| 1:0:955:G:H8   | 1:0:955:G:H3'  | 1.62                     | 0.64              |
| 1:0:1313:U:H1' | 1:0:1642:G:N2  | 2.13                     | 0.64              |
| 1:0:1698:C:H2' | 1:0:1753:A:N3  | 2.13                     | 0.64              |
| 1:0:1753:A:H8  | 1:0:1753:A:O5' | 1.81                     | 0.64              |
| 1:0:1947:G:H2' | 1:0:1950:C:OP1 | 1.98                     | 0.64              |
| 1:0:991:A:C2   | 1:0:2020:G:N3  | 2.66                     | 0.64              |
| 1:0:847:C:H2'  | 1:0:848:A:C8   | 2.33                     | 0.64              |
| 1:0:1216:G:O2' | 1:0:1217:U:H5' | 1.98                     | 0.64              |
| 1:0:1253:C:H6  | 1:0:1253:C:H5' | 1.63                     | 0.64              |
| 1:0:1638:G:N2  | 1:0:1639:U:C2  | 2.66                     | 0.64              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1684:G:O2'  | 1:0:1685:A:P    | 2.56                     | 0.64              |
| 1:0:2336:G:N2   | 1:0:2338:C:H5'' | 2.13                     | 0.64              |
| 1:0:67:G:C6     | 1:0:72:A:N1     | 2.65                     | 0.64              |
| 1:0:2522:G:H2'  | 1:0:2523:G:H8   | 1.61                     | 0.63              |
| 1:0:1170:U:O2'  | 1:0:1171:A:H5'  | 1.97                     | 0.63              |
| 1:0:1819:U:H5'  | 1:0:1954:A:OP2  | 1.98                     | 0.63              |
| 1:0:2067:U:H2'  | 1:0:2068:C:H6   | 1.62                     | 0.63              |
| 1:0:788:G:H5''  | 1:0:790:A:C1'   | 2.28                     | 0.63              |
| 1:0:1782:A:N6   | 1:0:1820:G:H2'  | 2.13                     | 0.63              |
| 1:0:2678:C:O2'  | 1:0:2679:G:H5'  | 1.99                     | 0.63              |
| 1:0:2794:G:H5'' | 1:0:2794:G:H8   | 1.63                     | 0.63              |
| 1:0:781:G:H2'   | 1:0:782:U:C6    | 2.34                     | 0.63              |
| 1:0:952:A:H2'   | 1:0:953:G:O4'   | 1.98                     | 0.63              |
| 1:0:1631:C:H5   | 1:0:1633:C:C4   | 2.17                     | 0.63              |
| 1:0:1656:U:C2'  | 1:0:1657:A:H5'' | 2.28                     | 0.63              |
| 1:0:1941:C:O2'  | 1:0:1942:G:H5'  | 1.99                     | 0.63              |
| 1:0:2523:G:HO2' | 1:0:2524:G:H5'  | 1.63                     | 0.63              |
| 1:0:1391:A:N7   | 1:0:1393:G:C5   | 2.66                     | 0.63              |
| 1:0:239:A:C2    | 1:0:443:A:N3    | 2.67                     | 0.63              |
| 1:0:805:G:H4'   | 1:0:806:A:OP2   | 1.97                     | 0.63              |
| 1:0:837:U:H2'   | 1:0:838:A:H8    | 1.63                     | 0.63              |
| 1:0:1193:G:H2'  | 1:0:1194:U:C6   | 2.34                     | 0.63              |
| 1:0:2160:C:H2'  | 1:0:2161:C:C6   | 2.33                     | 0.63              |
| 1:0:2274:C:O2   | 1:0:2274:C:H2'  | 1.98                     | 0.63              |
| 1:0:2756:A:O2'  | 1:0:2757:G:H5'  | 1.97                     | 0.63              |
| 1:0:26:G:C2     | 1:0:27:G:N2     | 2.67                     | 0.63              |
| 1:0:483:A:H2'   | 1:0:484:G:H5'   | 1.79                     | 0.63              |
| 1:0:789:G:C2'   | 1:0:789:G:N3    | 2.62                     | 0.63              |
| 1:0:455:A:C2    | 1:0:1258:G:N3   | 2.67                     | 0.63              |
| 1:0:1823:G:H2'  | 1:0:1824:C:C6   | 2.33                     | 0.63              |
| 1:0:2387:U:H2'  | 1:0:2388:G:C8   | 2.34                     | 0.63              |
| 1:0:2551:A:O2'  | 1:0:2552:C:OP2  | 2.16                     | 0.63              |
| 1:0:304:A:H3'   | 1:0:305:A:H5''  | 1.81                     | 0.63              |
| 1:0:542:A:C3'   | 1:0:542:A:C8    | 2.81                     | 0.63              |
| 1:0:742:G:H5'   | 1:0:743:A:C5'   | 2.28                     | 0.63              |
| 1:0:846:A:H2'   | 1:0:847:C:H6    | 1.64                     | 0.63              |
| 1:0:1442:C:O2'  | 1:0:1443:G:OP1  | 2.16                     | 0.63              |
| 1:0:219:G:O2'   | 1:0:220:U:OP2   | 2.13                     | 0.63              |
| 1:0:2222:U:C2   | 1:0:2223:U:C5   | 2.87                     | 0.63              |
| 1:0:1039:A:N6   | 1:0:1136:G:H2'  | 2.14                     | 0.63              |
| 1:0:1427:G:N7   | 1:0:1428:G:N3   | 2.47                     | 0.63              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1541:G:N2   | 1:0:1562:G:H22 | 1.97                     | 0.63              |
| 1:0:1919:A:H5'' | 1:0:1920:A:C2  | 2.33                     | 0.63              |
| 1:0:2756:A:H4'  | 1:0:2757:G:C5' | 2.29                     | 0.63              |
| 1:0:1287:A:N1   | 1:0:1661:C:O2' | 2.26                     | 0.62              |
| 1:0:149:A:H2'   | 1:0:150:A:H8   | 1.64                     | 0.62              |
| 1:0:1772:C:HO2' | 1:0:1773:C:P   | 2.21                     | 0.62              |
| 1:0:1825:C:O2'  | 1:0:1826:U:H5' | 1.98                     | 0.62              |
| 1:0:2642:G:H2'  | 1:0:2643:G:C5' | 2.29                     | 0.62              |
| 1:0:2788:C:O2'  | 1:0:2789:U:H5' | 1.98                     | 0.62              |
| 1:0:313:U:O2'   | 1:0:314:G:H5'  | 1.98                     | 0.62              |
| 1:0:79:G:O2'    | 1:0:356:A:N3   | 2.30                     | 0.62              |
| 1:0:404:A:H2'   | 1:0:405:C:C6   | 2.34                     | 0.62              |
| 1:0:469:G:H1'   | 1:0:470:U:C5   | 2.32                     | 0.62              |
| 1:0:1139:A:O2'  | 1:0:1140:A:P   | 2.57                     | 0.62              |
| 1:0:1253:C:H2'  | 1:0:1254:G:H5' | 1.80                     | 0.62              |
| 1:0:1287:A:C2   | 1:0:1315:A:H2  | 2.16                     | 0.62              |
| 1:0:1314:A:C2'  | 1:0:1315:A:H3' | 2.29                     | 0.62              |
| 1:0:2032:G:O2'  | 1:0:2033:C:H5' | 1.99                     | 0.62              |
| 1:0:1:G:H2'     | 1:0:2:G:H8     | 1.64                     | 0.62              |
| 1:0:594:G:C5    | 1:0:1264:C:N4  | 2.63                     | 0.62              |
| 1:0:698:A:H4'   | 1:0:700:C:C5   | 2.34                     | 0.62              |
| 1:0:752:G:C4'   | 1:0:753:U:OP1  | 2.46                     | 0.62              |
| 1:0:981:C:H2'   | 1:0:982:C:H6   | 1.64                     | 0.62              |
| 1:0:1265:G:O2'  | 1:0:1266:G:O4' | 2.16                     | 0.62              |
| 1:0:1407:G:C2   | 1:0:1408:A:C4  | 2.87                     | 0.62              |
| 1:0:1427:G:H2'  | 1:0:1428:G:C4' | 2.29                     | 0.62              |
| 1:0:1574:A:O2'  | 1:0:1575:C:H3' | 1.99                     | 0.62              |
| 1:0:2204:A:O2'  | 1:0:2205:C:OP2 | 2.13                     | 0.62              |
| 1:0:58:C:N4     | 1:0:73:A:N6    | 2.47                     | 0.62              |
| 1:0:73:A:O2'    | 1:0:74:G:OP2   | 2.15                     | 0.62              |
| 1:0:14:A:C2     | 1:0:536:A:N1   | 2.68                     | 0.62              |
| 1:0:1463:A:C1'  | 1:0:1543:G:H22 | 2.12                     | 0.62              |
| 1:0:199:A:N6    | 1:0:201:G:N1   | 2.47                     | 0.62              |
| 1:0:2690:A:C8   | 1:0:2694:G:O4' | 2.53                     | 0.62              |
| 1:0:46:C:H2'    | 1:0:47:G:H8    | 1.64                     | 0.62              |
| 1:0:542:A:C2'   | 1:0:543:G:H5'  | 2.21                     | 0.62              |
| 1:0:1197:U:H2'  | 1:0:1198:C:O4' | 1.99                     | 0.62              |
| 1:0:125:A:H5''  | 1:0:126:C:O4'  | 1.99                     | 0.62              |
| 1:0:403:A:H4'   | 1:0:404:A:O5'  | 1.98                     | 0.62              |
| 1:0:700:C:H2'   | 1:0:701:U:O4'  | 2.00                     | 0.62              |
| 1:0:1681:A:C2   | 1:0:2706:U:C2  | 2.88                     | 0.62              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2434:G:H2' | 1:0:2435:C:C6   | 2.34                     | 0.62              |
| 1:0:2738:A:H2' | 1:0:2738:A:N3   | 2.14                     | 0.62              |
| 1:0:38:G:C2    | 1:0:454:G:C2    | 2.88                     | 0.62              |
| 1:0:764:A:C2   | 1:0:802:A:H2'   | 2.32                     | 0.62              |
| 1:0:1082:G:N3  | 1:0:1082:G:H2'  | 2.13                     | 0.62              |
| 1:0:1408:A:H2  | 1:0:1411:C:N3   | 1.97                     | 0.62              |
| 1:0:1999:U:H2' | 1:0:2000:U:O4'  | 1.99                     | 0.62              |
| 1:0:2692:A:H3' | 1:0:2693:U:C5'  | 2.29                     | 0.62              |
| 1:0:493:A:H1'  | 1:0:508:G:N2    | 2.13                     | 0.62              |
| 1:0:1273:G:O2' | 1:0:1274:C:H5'  | 1.99                     | 0.62              |
| 1:0:2447:G:O2' | 1:0:2448:A:H8   | 1.83                     | 0.62              |
| 1:0:2455:A:C2  | 1:0:2460:G:N1   | 2.65                     | 0.62              |
| 1:0:455:A:H2   | 1:0:1258:G:N3   | 1.98                     | 0.62              |
| 1:0:1097:A:H4' | 1:0:1114:A:H2   | 1.64                     | 0.62              |
| 1:0:1010:U:H1' | 1:0:1168:G:N2   | 2.14                     | 0.62              |
| 1:0:1345:G:C5  | 1:0:1625:A:C6   | 2.88                     | 0.62              |
| 1:0:525:A:H2'  | 1:0:526:C:O4'   | 2.00                     | 0.62              |
| 1:0:982:C:C2'  | 1:0:983:G:H5'   | 2.29                     | 0.62              |
| 1:0:986:A:H2'  | 1:0:987:G:H5'   | 1.81                     | 0.62              |
| 1:0:451:A:H2'  | 1:0:452:G:H8    | 1.64                     | 0.62              |
| 1:0:541:C:O2   | 1:0:572:G:H5''  | 1.99                     | 0.62              |
| 1:0:787:A:C5   | 1:0:788:G:N7    | 2.68                     | 0.62              |
| 1:0:1458:A:C3' | 1:0:1459:U:H5'' | 2.29                     | 0.61              |
| 1:0:1490:U:H3' | 1:0:1490:U:OP1  | 1.99                     | 0.61              |
| 1:0:2279:G:H2' | 1:0:2280:A:H8   | 1.65                     | 0.61              |
| 1:0:2472:U:H2' | 1:0:2473:G:O5'  | 2.00                     | 0.61              |
| 1:0:2728:A:C8  | 1:0:2729:A:C8   | 2.88                     | 0.61              |
| 1:0:2760:G:O2' | 1:0:2761:A:OP1  | 2.18                     | 0.61              |
| 1:0:333:A:O2'  | 1:0:334:G:OP1   | 2.18                     | 0.61              |
| 1:0:1714:A:OP2 | 1:0:1715:A:H3'  | 2.00                     | 0.61              |
| 1:0:2740:C:O2' | 1:0:2741:G:H5'  | 2.00                     | 0.61              |
| 1:0:58:C:H3'   | 1:0:59:G:H5''   | 1.82                     | 0.61              |
| 1:0:796:A:H8   | 1:0:797:A:H4'   | 1.65                     | 0.61              |
| 1:0:939:C:H2'  | 1:0:940:G:C8    | 2.35                     | 0.61              |
| 1:0:1106:A:H2' | 1:0:1107:A:H8   | 1.64                     | 0.61              |
| 1:0:1262:U:H5' | 1:0:1262:U:H6   | 1.64                     | 0.61              |
| 1:0:984:A:H1'  | 1:0:1202:U:C5   | 2.36                     | 0.61              |
| 1:0:1435:G:H2' | 1:0:1436:G:H5'  | 1.82                     | 0.61              |
| 1:0:1478:U:H2' | 1:0:1479:G:C8   | 2.36                     | 0.61              |
| 1:0:58:C:N3    | 1:0:73:A:N1     | 2.48                     | 0.61              |
| 1:0:828:C:H2'  | 1:0:829:C:H6    | 1.65                     | 0.61              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1213:U:N3   | 1:0:1260:A:H2   | 1.99                     | 0.61              |
| 1:0:1337:G:C4'  | 1:0:1632:A:H62  | 2.13                     | 0.61              |
| 1:0:211:U:O2    | 1:0:212:U:C6    | 2.54                     | 0.61              |
| 1:0:2255:G:C6   | 1:0:2256:G:N7   | 2.68                     | 0.61              |
| 1:0:2323:U:H5'' | 1:0:2324:G:OP1  | 2.01                     | 0.61              |
| 1:0:2441:U:H2'  | 1:0:2442:C:H6   | 1.65                     | 0.61              |
| 1:0:2709:C:H2'  | 1:0:2710:C:C6   | 2.35                     | 0.61              |
| 1:0:746:G:N7    | 1:0:774:A:C5    | 2.68                     | 0.61              |
| 1:0:1548:U:C4   | 1:0:1549:C:N4   | 2.69                     | 0.61              |
| 1:0:1708:C:N3   | 1:0:1714:A:C2   | 2.69                     | 0.61              |
| 1:0:2671:C:H2'  | 1:0:2672:U:C6   | 2.35                     | 0.61              |
| 1:0:2825:A:H5'  | 1:0:2843:A:H2   | 1.65                     | 0.61              |
| 1:0:2867:G:O2'  | 1:0:2868:G:OP2  | 2.18                     | 0.61              |
| 1:0:452:G:H2'   | 1:0:453:U:O4'   | 2.01                     | 0.61              |
| 1:0:5:A:H2'     | 1:0:6:A:C8      | 2.36                     | 0.61              |
| 1:0:983:G:C6    | 1:0:984:A:N6    | 2.68                     | 0.61              |
| 1:0:1153:A:H2'  | 1:0:1155:G:C8   | 2.36                     | 0.61              |
| 1:0:1199:U:O5'  | 1:0:1200:G:H5'  | 2.00                     | 0.61              |
| 1:0:1354:A:C2   | 1:0:1411:C:H4'  | 2.35                     | 0.61              |
| 1:0:1754:G:H4'  | 1:0:1754:G:OP1  | 2.00                     | 0.61              |
| 1:0:2198:U:H5'' | 1:0:2199:C:OP2  | 2.01                     | 0.61              |
| 1:0:2548:G:H2'  | 1:0:2549:G:C5'  | 2.31                     | 0.61              |
| 1:0:2557:G:N2   | 1:0:2558:C:N1   | 2.49                     | 0.61              |
| 1:0:2782:G:H3'  | 1:0:2783:U:C5'  | 2.22                     | 0.61              |
| 1:0:553:C:H5'   | 1:0:554:U:OP1   | 2.01                     | 0.61              |
| 1:0:68:C:N1     | 1:0:72:A:N3     | 2.48                     | 0.61              |
| 1:0:692:C:O2'   | 1:0:693:A:H5'   | 2.01                     | 0.61              |
| 1:0:1502:G:O2'  | 1:0:1503:G:H5'  | 2.00                     | 0.61              |
| 1:0:1325:U:O2   | 1:0:1619:A:N7   | 2.34                     | 0.61              |
| 1:0:168:A:O2'   | 1:0:169:C:O4'   | 2.18                     | 0.61              |
| 1:0:27:G:HO2'   | 1:0:28:A:H8     | 1.47                     | 0.61              |
| 1:0:337:G:H2'   | 1:0:338:G:O4'   | 2.00                     | 0.61              |
| 1:0:403:A:C5'   | 1:0:404:A:H5'   | 2.31                     | 0.61              |
| 1:0:698:A:C5    | 1:0:787:A:C2    | 2.89                     | 0.61              |
| 1:0:953:G:C6    | 1:0:954:U:N3    | 2.68                     | 0.61              |
| 1:0:1242:A:O2'  | 1:0:1243:G:H5'  | 2.01                     | 0.61              |
| 1:0:1459:U:C4   | 1:0:1476:G:OP2  | 2.53                     | 0.61              |
| 1:0:1429:A:N6   | 1:0:1601:U:H5'' | 2.16                     | 0.61              |
| 1:0:1692:C:N4   | 1:0:1693:A:N1   | 2.49                     | 0.61              |
| 1:0:1794:A:C2   | 1:0:1814:G:N3   | 2.66                     | 0.61              |
| 1:0:177:U:C4    | 1:0:225:G:N3    | 2.69                     | 0.61              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2795:A:H2'  | 1:0:2795:A:N3   | 2.14                     | 0.61              |
| 1:0:314:G:H2'   | 1:0:315:G:H8    | 1.66                     | 0.61              |
| 1:0:717:G:HO2'  | 1:0:718:A:P     | 2.23                     | 0.61              |
| 1:0:1435:G:C2   | 1:0:1436:G:C1'  | 2.84                     | 0.61              |
| 1:0:1341:G:N2   | 1:0:1664:G:C2   | 2.68                     | 0.61              |
| 1:0:1975:G:N2   | 1:0:1979:C:C5   | 2.68                     | 0.61              |
| 1:0:2161:C:H2'  | 1:0:2162:C:C5   | 2.36                     | 0.61              |
| 1:0:2303:C:H5'' | 1:0:2304:G:H5'' | 1.81                     | 0.61              |
| 1:0:2560:G:N3   | 1:0:2560:G:H2'  | 2.15                     | 0.61              |
| 1:0:2796:A:H2'  | 1:0:2797:G:C8   | 2.36                     | 0.61              |
| 1:0:246:C:C6    | 1:0:373:A:H1'   | 2.36                     | 0.61              |
| 1:0:387:A:H2'   | 1:0:387:A:N3    | 2.16                     | 0.61              |
| 1:0:465:C:O2'   | 1:0:467:U:H1'   | 2.01                     | 0.61              |
| 1:0:509:U:C2'   | 1:0:510:G:H5'   | 2.31                     | 0.61              |
| 1:0:158:A:N1    | 1:0:159:A:C2    | 2.69                     | 0.60              |
| 1:0:1779:C:H2'  | 1:0:1780:A:H8   | 1.63                     | 0.60              |
| 1:0:2220:A:O2'  | 1:0:2221:G:H5'  | 2.01                     | 0.60              |
| 1:0:2245:A:N3   | 1:0:2251:U:C5   | 2.69                     | 0.60              |
| 1:0:2348:A:O2'  | 1:0:2349:G:H5'  | 2.00                     | 0.60              |
| 1:0:2636:A:H2'  | 1:0:2637:C:H5'  | 1.83                     | 0.60              |
| 1:0:343:A:H2'   | 1:0:345:U:OP2   | 2.00                     | 0.60              |
| 1:0:490:A:O2'   | 1:0:491:A:C5'   | 2.49                     | 0.60              |
| 1:0:1002:C:H5'  | 1:0:1199:U:OP1  | 2.01                     | 0.60              |
| 1:0:1408:A:C2   | 1:0:1411:C:N3   | 2.69                     | 0.60              |
| 1:0:140:G:H2'   | 1:0:141:G:C8    | 2.36                     | 0.60              |
| 1:0:1573:G:H5'  | 1:0:1573:G:C8   | 2.36                     | 0.60              |
| 1:0:2542:U:O2   | 1:0:2544:A:C8   | 2.53                     | 0.60              |
| 1:0:1949:A:O2'  | 1:0:2572:U:H5'  | 2.00                     | 0.60              |
| 1:0:2768:C:O2'  | 1:0:2784:A:H8   | 1.83                     | 0.60              |
| 1:0:2875:C:H2'  | 1:0:2876:C:C6   | 2.36                     | 0.60              |
| 1:0:1032:A:C2   | 1:0:1034:U:C2   | 2.89                     | 0.60              |
| 1:0:1664:G:H5'' | 1:0:1665:C:OP1  | 2.01                     | 0.60              |
| 1:0:1927:U:H2'  | 1:0:1927:U:O2   | 2.01                     | 0.60              |
| 1:0:1950:C:H2'  | 1:0:1951:G:H5'  | 1.82                     | 0.60              |
| 1:0:991:A:H2    | 1:0:2020:G:N3   | 1.99                     | 0.60              |
| 1:0:2501:U:O2'  | 1:0:2626:U:OP1  | 2.10                     | 0.60              |
| 1:0:579:G:H4'   | 1:0:994:A:C2    | 2.36                     | 0.60              |
| 1:0:801:A:O2'   | 1:0:802:A:OP2   | 2.15                     | 0.60              |
| 1:0:834:A:N7    | 1:0:957:G:C5    | 2.70                     | 0.60              |
| 1:0:875:G:H2'   | 1:0:876:A:H5'   | 1.83                     | 0.60              |
| 1:0:958:G:H2'   | 1:0:959:C:H6    | 1.65                     | 0.60              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1288:A:N7   | 1:0:1309:G:C1' | 2.63                     | 0.60              |
| 1:0:1313:U:O2'  | 1:0:1314:A:OP2 | 2.19                     | 0.60              |
| 1:0:2235:G:N2   | 1:0:2254:C:C4  | 2.70                     | 0.60              |
| 1:0:2758:A:O2'  | 1:0:2759:U:OP1 | 2.14                     | 0.60              |
| 1:0:389:G:C2    | 1:0:412:U:O2   | 2.53                     | 0.60              |
| 1:0:577:U:N3    | 1:0:580:A:OP2  | 2.30                     | 0.60              |
| 1:0:614:G:N1    | 1:0:634:G:N1   | 2.49                     | 0.60              |
| 1:0:668:A:O2'   | 1:0:669:G:O4'  | 2.18                     | 0.60              |
| 1:0:89:A:H4'    | 1:0:90:G:C5'   | 2.31                     | 0.60              |
| 1:0:958:G:H2'   | 1:0:959:C:C6   | 2.36                     | 0.60              |
| 1:0:1058:G:HO2' | 1:0:1121:G:H1  | 1.48                     | 0.60              |
| 1:0:1466:C:C2   | 1:0:1467:U:O2  | 2.55                     | 0.60              |
| 1:0:2343:C:H2'  | 1:0:2344:G:O4' | 2.01                     | 0.60              |
| 1:0:2687:G:H2'  | 1:0:2688:G:H8  | 1.66                     | 0.60              |
| 1:0:635:C:C2'   | 1:0:636:G:H5'' | 2.31                     | 0.60              |
| 1:0:765:C:O2'   | 1:0:766:A:H8   | 1.84                     | 0.60              |
| 1:0:828:C:H2'   | 1:0:829:C:C6   | 2.36                     | 0.60              |
| 1:0:929:A:H5''  | 1:0:2247:A:N1  | 2.16                     | 0.60              |
| 1:0:1507:A:H4'  | 1:0:1510:A:OP1 | 2.01                     | 0.60              |
| 1:0:1548:U:H2'  | 1:0:1549:C:H6  | 1.64                     | 0.60              |
| 1:0:2668:U:H5'  | 1:0:2669:C:H5' | 1.84                     | 0.60              |
| 1:0:2768:C:O2'  | 1:0:2784:A:C8  | 2.54                     | 0.60              |
| 1:0:689:A:H8    | 1:0:2052:G:N2  | 1.97                     | 0.60              |
| 1:0:805:G:N7    | 1:0:2419:C:H1' | 2.15                     | 0.60              |
| 1:0:531:G:H2'   | 1:0:532:A:H8   | 1.66                     | 0.60              |
| 1:0:684:C:H2'   | 1:0:685:U:C6   | 2.34                     | 0.60              |
| 1:0:827:C:O2'   | 1:0:1237:G:N2  | 2.34                     | 0.60              |
| 1:0:927:C:O2'   | 1:0:928:G:H5'  | 2.01                     | 0.60              |
| 1:0:983:G:N1    | 1:0:984:A:N6   | 2.48                     | 0.60              |
| 1:0:1181:C:C2'  | 1:0:1182:U:H4' | 2.32                     | 0.60              |
| 1:0:1466:C:O2   | 1:0:1467:U:H1' | 2.01                     | 0.60              |
| 1:0:1715:A:O2'  | 1:0:1716:G:H3' | 2.02                     | 0.60              |
| 1:0:1724:C:C2   | 1:0:1747:G:C6  | 2.90                     | 0.60              |
| 1:0:2054:A:H2'  | 1:0:2055:G:H8  | 1.67                     | 0.60              |
| 1:0:2402:U:H1'  | 1:0:2404:A:C2  | 2.36                     | 0.60              |
| 1:0:2666:U:C5   | 1:0:2667:C:C4  | 2.89                     | 0.60              |
| 1:0:430:C:H1'   | 1:0:2386:G:N2  | 2.17                     | 0.60              |
| 1:0:699:G:H5'   | 1:0:700:C:OP2  | 2.01                     | 0.60              |
| 1:0:794:A:C2    | 1:0:1767:G:N3  | 2.69                     | 0.60              |
| 1:0:1036:G:C4   | 1:0:1145:C:H1' | 2.37                     | 0.60              |
| 1:0:1120:C:H2'  | 1:0:1121:G:H5' | 1.84                     | 0.60              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1404:C:N3   | 1:0:1407:G:N7   | 2.50                     | 0.60              |
| 1:0:2574:G:N2   | 1:0:2576:G:H3'  | 2.16                     | 0.60              |
| 1:0:58:C:H42    | 1:0:73:A:N6     | 1.99                     | 0.60              |
| 1:0:1261:G:H4'  | 1:0:1262:U:OP2  | 2.01                     | 0.60              |
| 1:0:1633:C:O2'  | 1:0:1634:A:P    | 2.59                     | 0.60              |
| 1:0:2633:A:C2   | 1:0:2644:A:H5'' | 2.36                     | 0.60              |
| 1:0:2685:A:N1   | 1:0:2686:C:C2   | 2.70                     | 0.60              |
| 1:0:2708:U:C2'  | 1:0:2709:C:H6   | 2.03                     | 0.60              |
| 1:0:2827:G:O2'  | 1:0:2828:C:H5'  | 2.00                     | 0.60              |
| 1:0:579:G:H5'   | 1:0:994:A:H2    | 1.66                     | 0.60              |
| 1:0:841:G:N7    | 1:0:842:A:N6    | 2.49                     | 0.60              |
| 1:0:880:C:H6    | 1:0:880:C:O5'   | 1.85                     | 0.60              |
| 1:0:955:G:C3'   | 1:0:955:G:C8    | 2.81                     | 0.60              |
| 1:0:1444:C:H2'  | 1:0:1445:A:H8   | 1.66                     | 0.59              |
| 1:0:1525:A:H3'  | 1:0:1526:U:O4'  | 2.02                     | 0.59              |
| 1:0:1923:U:H5'  | 1:0:1924:C:OP1  | 2.01                     | 0.59              |
| 1:0:352:G:O2'   | 1:0:353:G:H5'   | 2.01                     | 0.59              |
| 1:0:843:G:H4'   | 1:0:844:G:OP1   | 2.02                     | 0.59              |
| 1:0:873:U:C6    | 1:0:2246:A:H4'  | 2.37                     | 0.59              |
| 1:0:1666:G:N2   | 1:0:1667:A:C4   | 2.70                     | 0.59              |
| 1:0:2080:U:H2'  | 1:0:2081:U:C6   | 2.37                     | 0.59              |
| 1:0:2268:G:H3'  | 1:0:2268:G:OP2  | 2.02                     | 0.59              |
| 1:0:2303:C:H5'' | 1:0:2304:G:C5'  | 2.32                     | 0.59              |
| 1:0:2668:U:O2   | 1:0:2693:U:O4'  | 2.20                     | 0.59              |
| 1:0:617:U:N3    | 1:0:632:A:N7    | 2.50                     | 0.59              |
| 1:0:763:A:H2'   | 1:0:764:A:H5''  | 1.84                     | 0.59              |
| 1:0:799:C:O2'   | 1:0:800:U:H5'   | 2.02                     | 0.59              |
| 1:0:1260:A:N6   | 1:0:1262:U:C2   | 2.70                     | 0.59              |
| 1:0:1582:A:O2'  | 1:0:1583:A:O5'  | 2.18                     | 0.59              |
| 1:0:1699:A:H61  | 1:0:1723:U:H3   | 1.50                     | 0.59              |
| 1:0:1828:C:N4   | 1:0:1829:C:N4   | 2.50                     | 0.59              |
| 1:0:199:A:N6    | 1:0:201:G:C6    | 2.70                     | 0.59              |
| 1:0:2094:C:C2   | 1:0:2103:G:H1'  | 2.37                     | 0.59              |
| 1:0:2014:A:C6   | 1:0:2477:C:H1'  | 2.38                     | 0.59              |
| 1:0:2551:A:HO2' | 1:0:2552:C:P    | 2.24                     | 0.59              |
| 1:0:773:G:C2'   | 1:0:774:A:H5'   | 2.31                     | 0.59              |
| 1:0:1458:A:H2'  | 1:0:1460:G:OP1  | 2.02                     | 0.59              |
| 1:0:1587:A:H2'  | 1:0:1588:A:H8   | 1.63                     | 0.59              |
| 1:0:1845:A:H2'  | 1:0:1846:A:C8   | 2.38                     | 0.59              |
| 1:0:2198:U:H3'  | 1:0:2199:C:C4'  | 2.32                     | 0.59              |
| 1:0:2201:G:C2   | 1:0:2202:G:C8   | 2.91                     | 0.59              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2534:U:H3' | 1:0:2535:C:H6   | 1.67                     | 0.59              |
| 1:0:2671:C:O2' | 1:0:2672:U:H5'  | 2.02                     | 0.59              |
| 1:0:107:G:N2   | 1:0:108:G:H1'   | 2.17                     | 0.59              |
| 1:0:116:A:H8   | 1:0:117:A:C8    | 2.21                     | 0.59              |
| 1:0:1635:G:O2' | 1:0:1636:G:H5'  | 2.02                     | 0.59              |
| 1:0:1950:C:H2' | 1:0:1951:G:C5'  | 2.32                     | 0.59              |
| 1:0:2354:G:N3  | 1:0:2356:A:N7   | 2.50                     | 0.59              |
| 1:0:2482:A:C4' | 1:0:2483:U:OP1  | 2.44                     | 0.59              |
| 1:0:309:G:H21  | 1:0:351:A:H62   | 1.50                     | 0.59              |
| 1:0:469:G:H21  | 1:0:480:G:H2'   | 1.67                     | 0.59              |
| 1:0:633:G:H2'  | 1:0:634:G:H8    | 1.66                     | 0.59              |
| 1:0:863:C:H2'  | 1:0:863:C:O2    | 2.01                     | 0.59              |
| 1:0:1124:U:O2' | 1:0:1125:G:H5'  | 2.02                     | 0.59              |
| 1:0:1153:A:H4' | 1:0:1154:A:OP1  | 2.03                     | 0.59              |
| 1:0:1219:C:H2' | 1:0:1220:G:O4'  | 2.02                     | 0.59              |
| 1:0:1256:C:H2' | 1:0:1257:U:C6   | 2.38                     | 0.59              |
| 1:0:1293:A:O2' | 1:0:1294:G:H5'  | 2.02                     | 0.59              |
| 1:0:1574:A:C2  | 1:0:1576:G:H1'  | 2.38                     | 0.59              |
| 1:0:1323:G:H1' | 1:0:1627:C:H5'  | 1.84                     | 0.59              |
| 1:0:1698:C:H1' | 1:0:1754:G:H5'  | 1.84                     | 0.59              |
| 1:0:1904:G:H2' | 1:0:1905:G:C8   | 2.33                     | 0.59              |
| 1:0:192:G:C4'  | 1:0:193:A:H4'   | 2.32                     | 0.59              |
| 1:0:2728:A:N6  | 1:0:2737:A:N7   | 2.50                     | 0.59              |
| 1:0:2756:A:H4' | 1:0:2757:G:O5'  | 2.03                     | 0.59              |
| 1:0:54:G:N2    | 1:0:114:C:C2    | 2.70                     | 0.59              |
| 1:0:59:G:C4    | 1:0:73:A:N1     | 2.71                     | 0.59              |
| 1:0:633:G:O2'  | 1:0:634:G:H5'   | 2.01                     | 0.59              |
| 1:0:757:U:H2'  | 1:0:758:G:H5'   | 1.84                     | 0.59              |
| 1:0:998:C:O2'  | 1:0:1011:A:H1'  | 2.02                     | 0.59              |
| 1:0:1029:C:H2' | 1:0:1030:U:H5'' | 1.83                     | 0.59              |
| 1:0:1450:G:C4  | 1:0:1573:G:N2   | 2.70                     | 0.59              |
| 1:0:1503:G:H2' | 1:0:1504:G:C8   | 2.37                     | 0.59              |
| 1:0:1744:G:N2  | 1:0:1746:A:H3'  | 2.18                     | 0.59              |
| 1:0:1926:U:O2' | 1:0:1927:U:P    | 2.59                     | 0.59              |
| 1:0:2007:G:O2' | 1:0:2008:C:H5'  | 2.02                     | 0.59              |
| 1:0:2095:G:OP2 | 1:0:2103:G:H4'  | 2.03                     | 0.59              |
| 1:0:2426:G:H4' | 1:0:2427:A:C5'  | 2.33                     | 0.59              |
| 1:0:2710:C:O2' | 1:0:2711:G:H5'  | 2.03                     | 0.59              |
| 1:0:2870:C:O2' | 1:0:2871:U:H5'  | 2.01                     | 0.59              |
| 1:0:310:A:N1   | 1:0:333:A:H2'   | 2.18                     | 0.59              |
| 1:0:411:C:H2'  | 1:0:412:U:O4'   | 2.02                     | 0.59              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:67:G:N2     | 1:0:73:A:O4'   | 2.35                     | 0.59              |
| 1:0:1018:C:C4   | 1:0:1019:U:C4  | 2.91                     | 0.59              |
| 1:0:1288:A:N7   | 1:0:1309:G:H1' | 2.17                     | 0.59              |
| 1:0:1329:U:O2'  | 1:0:1330:G:H5' | 2.02                     | 0.59              |
| 1:0:138:G:H2'   | 1:0:139:A:H8   | 1.67                     | 0.59              |
| 1:0:1675:C:H2'  | 1:0:1676:U:H6  | 1.67                     | 0.59              |
| 1:0:2324:G:N7   | 1:0:2360:C:C2  | 2.70                     | 0.59              |
| 1:0:357:A:H3'   | 1:0:358:C:C6   | 2.37                     | 0.59              |
| 1:0:222:G:H1'   | 1:0:397:U:O2   | 2.03                     | 0.59              |
| 1:0:538:A:H3'   | 1:0:538:A:C8   | 2.38                     | 0.59              |
| 1:0:83:A:H2     | 1:0:101:A:C4   | 2.21                     | 0.59              |
| 1:0:1153:A:O2'  | 1:0:1154:A:H3' | 2.02                     | 0.59              |
| 1:0:1234:C:O2   | 1:0:1242:A:C2  | 2.56                     | 0.59              |
| 1:0:147:G:O5'   | 1:0:147:G:H8   | 1.86                     | 0.59              |
| 1:0:1729:C:H2'  | 1:0:1730:G:C8  | 2.38                     | 0.59              |
| 1:0:237:G:C1'   | 1:0:632:A:H1'  | 2.32                     | 0.59              |
| 1:0:2728:A:H8   | 1:0:2729:A:C8  | 2.19                     | 0.59              |
| 1:0:2825:A:H2'  | 1:0:2826:C:H6  | 1.68                     | 0.59              |
| 1:0:659:G:H2'   | 1:0:660:G:C8   | 2.38                     | 0.59              |
| 1:0:682:G:C2'   | 1:0:682:G:N3   | 2.66                     | 0.59              |
| 1:0:788:G:C2'   | 1:0:807:A:C8   | 2.86                     | 0.59              |
| 1:0:968:C:O2'   | 1:0:969:U:OP1  | 2.20                     | 0.59              |
| 1:0:1257:U:O2'  | 1:0:1258:G:H5' | 2.02                     | 0.59              |
| 1:0:1280:U:H2'  | 1:0:1281:A:C8  | 2.36                     | 0.59              |
| 1:0:1419:G:H2'  | 1:0:1420:A:C8  | 2.38                     | 0.59              |
| 1:0:1486:A:H2'  | 1:0:1487:C:C6  | 2.36                     | 0.59              |
| 1:0:1731:C:N4   | 1:0:1732:U:H1' | 2.17                     | 0.59              |
| 1:0:1804:U:H2'  | 1:0:1805:G:C8  | 2.35                     | 0.59              |
| 1:0:1789:U:N3   | 1:0:1811:A:C2  | 2.71                     | 0.59              |
| 1:0:2338:C:H3'  | 1:0:2339:A:H8  | 1.67                     | 0.59              |
| 1:0:2447:G:HO2' | 1:0:2448:A:H8  | 1.50                     | 0.59              |
| 1:0:2729:A:N6   | 1:0:2730:A:H62 | 2.00                     | 0.59              |
| 1:0:2856:U:O2'  | 1:0:2857:C:H5' | 2.03                     | 0.59              |
| 1:0:986:A:C2    | 1:0:1001:A:C8  | 2.91                     | 0.58              |
| 1:0:1675:C:H2'  | 1:0:1676:U:C6  | 2.38                     | 0.58              |
| 1:0:1899:A:H2'  | 1:0:1900:U:H4' | 1.85                     | 0.58              |
| 1:0:2557:G:O2'  | 1:0:2558:C:H5' | 2.03                     | 0.58              |
| 1:0:340:G:O4'   | 1:0:488:A:H1'  | 2.03                     | 0.58              |
| 1:0:541:C:N3    | 1:0:572:G:C4'  | 2.66                     | 0.58              |
| 1:0:88:G:H3'    | 1:0:89:A:H5''  | 1.85                     | 0.58              |
| 1:0:1004:A:C2'  | 1:0:1005:U:H5' | 2.32                     | 0.58              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:826:U:C6    | 1:0:1209:G:N2  | 2.71                     | 0.58              |
| 1:0:1404:C:C4   | 1:0:1407:G:N7  | 2.71                     | 0.58              |
| 1:0:1554:G:O2'  | 1:0:1555:A:H5' | 2.02                     | 0.58              |
| 1:0:1582:A:O2'  | 1:0:1583:A:P   | 2.60                     | 0.58              |
| 1:0:1940:C:H2'  | 1:0:1941:C:C6  | 2.38                     | 0.58              |
| 1:0:2036:G:C2'  | 1:0:2037:A:H5' | 2.33                     | 0.58              |
| 1:0:2325:A:HO2' | 1:0:2326:C:P   | 2.26                     | 0.58              |
| 1:0:2367:A:N7   | 1:0:2368:G:C6  | 2.71                     | 0.58              |
| 1:0:2402:U:O2   | 1:0:2404:A:N1  | 2.36                     | 0.58              |
| 1:0:2437:G:H21  | 1:0:2438:A:H61 | 1.49                     | 0.58              |
| 1:0:442:A:C6    | 1:0:443:A:N6   | 2.71                     | 0.58              |
| 1:0:573:C:HO2'  | 1:0:574:C:H5'  | 1.66                     | 0.58              |
| 1:0:682:G:N2    | 1:0:683:A:C2   | 2.70                     | 0.58              |
| 1:0:71:A:N6     | 1:0:110:U:H4'  | 2.18                     | 0.58              |
| 1:0:765:C:HO2'  | 1:0:766:A:H8   | 1.40                     | 0.58              |
| 1:0:1199:U:O4   | 1:0:1201:G:O6  | 2.22                     | 0.58              |
| 1:0:1376:C:H2'  | 1:0:1377:G:H8  | 1.68                     | 0.58              |
| 1:0:2286:G:C6   | 1:0:2287:G:H1' | 2.37                     | 0.58              |
| 1:0:2770:A:H3'  | 1:0:2770:A:N3  | 2.18                     | 0.58              |
| 1:0:652:C:H6    | 1:0:652:C:H5'  | 1.68                     | 0.58              |
| 1:0:746:G:N7    | 1:0:774:A:C6   | 2.70                     | 0.58              |
| 1:0:1588:A:H2'  | 1:0:1589:G:C8  | 2.38                     | 0.58              |
| 1:0:1626:A:C5'  | 1:0:1627:C:OP2 | 2.48                     | 0.58              |
| 1:0:2191:A:H3'  | 1:0:2192:U:C5  | 2.38                     | 0.58              |
| 1:0:931:G:H22   | 1:0:2247:A:H5' | 1.64                     | 0.58              |
| 1:0:243:G:OP2   | 1:0:243:G:O4'  | 2.22                     | 0.58              |
| 1:0:459:A:H1'   | 1:0:461:A:N6   | 2.18                     | 0.58              |
| 1:0:538:A:H3'   | 1:0:538:A:H8   | 1.67                     | 0.58              |
| 1:0:810:U:H2'   | 1:0:811:G:O4'  | 2.03                     | 0.58              |
| 1:0:1581:C:O2'  | 1:0:1582:A:O5' | 2.21                     | 0.58              |
| 1:0:1606:C:H42  | 1:0:1607:A:N6  | 2.01                     | 0.58              |
| 1:0:1693:A:H2   | 1:0:1976:U:O4' | 1.87                     | 0.58              |
| 1:0:199:A:N6    | 1:0:201:G:C2   | 2.71                     | 0.58              |
| 1:0:2033:C:N4   | 1:0:2034:A:N1  | 2.52                     | 0.58              |
| 1:0:361:G:H8    | 1:0:361:G:O5'  | 1.86                     | 0.58              |
| 1:0:367:G:H3'   | 1:0:368:A:H5'' | 1.85                     | 0.58              |
| 1:0:441:A:C2'   | 1:0:442:A:H5'  | 2.34                     | 0.58              |
| 1:0:623:G:O3'   | 1:0:625:A:P    | 2.62                     | 0.58              |
| 1:0:764:A:C4    | 1:0:802:A:C2   | 2.91                     | 0.58              |
| 1:0:799:C:H2'   | 1:0:800:U:H6   | 1.69                     | 0.58              |
| 1:0:808:C:O2'   | 1:0:809:C:H5'  | 2.04                     | 0.58              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:116:A:C8   | 1:0:117:A:N7   | 2.72                     | 0.58              |
| 1:0:1177:U:H2' | 1:0:1178:C:C6  | 2.38                     | 0.58              |
| 1:0:1544:A:N6  | 1:0:1559:G:N2  | 2.52                     | 0.58              |
| 1:0:1606:C:N4  | 1:0:1607:A:N6  | 2.50                     | 0.58              |
| 1:0:162:C:O2'  | 1:0:163:A:H5'  | 2.04                     | 0.58              |
| 1:0:2309:G:H2' | 1:0:2310:G:O4' | 2.02                     | 0.58              |
| 1:0:2701:A:O2' | 1:0:2702:G:H5' | 2.03                     | 0.58              |
| 1:0:356:A:HO2' | 1:0:357:A:H8   | 1.50                     | 0.58              |
| 1:0:622:U:O2'  | 1:0:626:A:N6   | 2.33                     | 0.58              |
| 1:0:672:C:C2'  | 1:0:673:G:H5'  | 2.33                     | 0.58              |
| 1:0:717:G:C2'  | 1:0:739:G:N2   | 2.66                     | 0.58              |
| 1:0:992:A:C2   | 1:0:2010:G:N3  | 2.68                     | 0.58              |
| 1:0:1188:A:H2' | 1:0:1189:G:H5' | 1.84                     | 0.58              |
| 1:0:1845:A:N1  | 1:0:2070:G:H1' | 2.19                     | 0.58              |
| 1:0:2122:G:H2' | 1:0:2123:G:C8  | 2.38                     | 0.58              |
| 1:0:510:G:O5'  | 1:0:510:G:C8   | 2.56                     | 0.58              |
| 1:0:851:C:H2'  | 1:0:852:U:O4'  | 2.03                     | 0.58              |
| 1:0:1288:A:N7  | 1:0:1309:G:O4' | 2.37                     | 0.58              |
| 1:0:1399:C:O2' | 1:0:1400:A:H5' | 2.03                     | 0.58              |
| 1:0:1639:U:H2' | 1:0:1640:C:H6  | 1.67                     | 0.58              |
| 1:0:542:A:N6   | 1:0:570:G:H21  | 1.98                     | 0.58              |
| 1:0:614:G:N2   | 1:0:634:G:N2   | 2.51                     | 0.58              |
| 1:0:765:C:O2'  | 1:0:766:A:C8   | 2.53                     | 0.58              |
| 1:0:790:A:O2'  | 1:0:791:G:H5'  | 2.04                     | 0.58              |
| 1:0:876:A:H2   | 1:0:926:C:H41  | 1.49                     | 0.58              |
| 1:0:940:G:C8   | 1:0:941:U:O4'  | 2.56                     | 0.58              |
| 1:0:957:G:O2'  | 1:0:958:G:H5'  | 2.04                     | 0.58              |
| 1:0:1008:G:O2' | 1:0:1009:C:H5' | 2.03                     | 0.58              |
| 1:0:1045:G:N2  | 1:0:1133:G:H1' | 2.19                     | 0.58              |
| 1:0:829:C:N3   | 1:0:1206:G:C2  | 2.71                     | 0.58              |
| 1:0:1372:A:H2' | 1:0:1373:G:H5' | 1.85                     | 0.58              |
| 1:0:1467:U:O4  | 1:0:1473:U:H1' | 2.04                     | 0.58              |
| 1:0:1710:U:C4' | 1:0:1711:C:OP2 | 2.51                     | 0.58              |
| 1:0:1949:A:H1' | 1:0:2572:U:C5' | 2.33                     | 0.58              |
| 1:0:2713:A:O2' | 1:0:2714:A:H5' | 2.04                     | 0.58              |
| 1:0:2819:G:N2  | 1:0:2849:C:C6  | 2.72                     | 0.58              |
| 1:0:469:G:N2   | 1:0:480:G:C2'  | 2.66                     | 0.58              |
| 1:0:695:G:O2'  | 1:0:696:U:H5'  | 2.04                     | 0.58              |
| 1:0:815:A:N3   | 1:0:815:A:H2'  | 2.18                     | 0.58              |
| 1:0:871:U:C2'  | 1:0:871:U:O2   | 2.52                     | 0.58              |
| 1:0:1430:G:H2' | 1:0:1431:U:C6  | 2.39                     | 0.58              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:167:A:C8   | 1:0:184:A:C6    | 2.92                     | 0.58              |
| 1:0:1899:A:H3' | 1:0:1900:U:H5'' | 1.85                     | 0.58              |
| 1:0:1920:A:H2' | 1:0:1921:A:H8   | 1.69                     | 0.58              |
| 1:0:2077:G:C2  | 1:0:2179:C:H1'  | 2.38                     | 0.58              |
| 1:0:2528:G:H2' | 1:0:2529:G:H8   | 1.68                     | 0.58              |
| 1:0:2538:C:O2' | 1:0:2539:C:H5'  | 2.04                     | 0.58              |
| 1:0:450:C:H2'  | 1:0:451:A:C8    | 2.31                     | 0.58              |
| 1:0:490:A:O2'  | 1:0:491:A:H5'   | 2.03                     | 0.58              |
| 1:0:837:U:H2'  | 1:0:838:A:C8    | 2.38                     | 0.58              |
| 1:0:1690:U:H5' | 1:0:1690:U:C6   | 2.39                     | 0.57              |
| 1:0:1777:A:O2' | 1:0:1778:U:P    | 2.60                     | 0.57              |
| 1:0:1919:A:H4' | 1:0:1920:A:OP2  | 2.04                     | 0.57              |
| 1:0:1947:G:N1  | 1:0:1950:C:C4   | 2.72                     | 0.57              |
| 1:0:541:C:HO2' | 1:0:2018:G:N2   | 1.99                     | 0.57              |
| 1:0:197:G:N3   | 1:0:210:A:H2    | 2.02                     | 0.57              |
| 1:0:2121:U:H2' | 1:0:2122:G:C8   | 2.39                     | 0.57              |
| 1:0:332:C:O2'  | 1:0:333:A:OP1   | 2.22                     | 0.57              |
| 1:0:403:A:OP2  | 1:0:403:A:H3'   | 2.02                     | 0.57              |
| 1:0:568:G:H2'  | 1:0:569:C:O4'   | 2.04                     | 0.57              |
| 1:0:1211:G:C4  | 1:0:1212:U:C5   | 2.92                     | 0.57              |
| 1:0:2301:A:C6  | 1:0:2312:A:N6   | 2.72                     | 0.57              |
| 1:0:326:A:H2'  | 1:0:327:C:C6    | 2.39                     | 0.57              |
| 1:0:427:C:H2'  | 1:0:428:A:C8    | 2.39                     | 0.57              |
| 1:0:242:A:N6   | 1:0:441:A:C8    | 2.72                     | 0.57              |
| 1:0:464:G:O2'  | 1:0:465:C:H5'   | 2.04                     | 0.57              |
| 1:0:623:G:H4'  | 1:0:625:A:OP1   | 2.02                     | 0.57              |
| 1:0:881:U:H2'  | 1:0:882:C:C6    | 2.39                     | 0.57              |
| 1:0:1071:U:H3' | 1:0:1072:U:C5'  | 2.34                     | 0.57              |
| 1:0:2220:A:C2  | 1:0:2221:G:C5   | 2.92                     | 0.57              |
| 1:0:464:G:H2'  | 1:0:465:C:C6    | 2.39                     | 0.57              |
| 1:0:820:U:H2'  | 1:0:821:A:C8    | 2.39                     | 0.57              |
| 1:0:824:U:H4'  | 1:0:1264:C:H1'  | 1.86                     | 0.57              |
| 1:0:953:G:C5   | 1:0:954:U:C4    | 2.92                     | 0.57              |
| 1:0:1252:C:C2' | 1:0:1253:C:H5'' | 2.33                     | 0.57              |
| 1:0:1287:A:H2' | 1:0:1288:A:H5'' | 1.86                     | 0.57              |
| 1:0:1376:C:H2' | 1:0:1377:G:C8   | 2.38                     | 0.57              |
| 1:0:1467:U:C3' | 1:0:1468:A:H5'  | 2.33                     | 0.57              |
| 1:0:1644:G:O2' | 1:0:1645:U:H5'  | 2.04                     | 0.57              |
| 1:0:177:U:O2   | 1:0:178:C:C1'   | 2.51                     | 0.57              |
| 1:0:1973:C:H2' | 1:0:1974:U:O4'  | 2.05                     | 0.57              |
| 1:0:2254:C:O2' | 1:0:2255:G:P    | 2.62                     | 0.57              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2286:G:C4   | 1:0:2287:G:H1'  | 2.40                     | 0.57              |
| 1:0:2782:G:C3'  | 1:0:2783:U:H5'' | 2.22                     | 0.57              |
| 1:0:2824:C:H4'  | 1:0:2825:A:H5'  | 1.86                     | 0.57              |
| 1:0:323:G:H2'   | 1:0:323:G:N3    | 2.19                     | 0.57              |
| 1:0:68:C:C5     | 1:0:72:A:C2     | 2.92                     | 0.57              |
| 1:0:944:A:C2    | 1:0:945:G:H1'   | 2.39                     | 0.57              |
| 1:0:1392:U:OP2  | 1:0:1393:G:OP2  | 2.22                     | 0.57              |
| 1:0:1317:G:N2   | 1:0:1641:C:C2   | 2.72                     | 0.57              |
| 1:0:1807:A:N3   | 1:0:1809:G:N7   | 2.53                     | 0.57              |
| 1:0:1854:G:H1   | 1:0:1863:U:H3   | 1.53                     | 0.57              |
| 1:0:2549:G:O2'  | 1:0:2550:C:H5'  | 2.05                     | 0.57              |
| 1:0:2876:C:O2'  | 1:0:2877:A:H5'  | 2.05                     | 0.57              |
| 1:0:68:C:C2'    | 1:0:68:C:O2     | 2.48                     | 0.57              |
| 1:0:954:U:C5    | 1:0:955:G:N2    | 2.73                     | 0.57              |
| 1:0:1086:C:H2'  | 1:0:1087:C:H5'' | 1.86                     | 0.57              |
| 1:0:2172:U:C2'  | 1:0:2173:G:H5'  | 2.35                     | 0.57              |
| 1:0:2404:A:N3   | 1:0:2404:A:H2'  | 2.20                     | 0.57              |
| 1:0:2691:C:OP1  | 1:0:2694:G:H4'  | 2.05                     | 0.57              |
| 1:0:322:A:HO2'  | 1:0:323:G:P     | 2.26                     | 0.57              |
| 1:0:373:A:H2'   | 1:0:373:A:N3    | 2.20                     | 0.57              |
| 1:0:701:U:H5'   | 1:0:1771:A:C2   | 2.39                     | 0.57              |
| 1:0:1451:C:H2'  | 1:0:1452:U:H6   | 1.69                     | 0.57              |
| 1:0:1572:C:H2'  | 1:0:1573:G:C5'  | 2.18                     | 0.57              |
| 1:0:2011:U:O2'  | 1:0:2012:A:H5'  | 2.04                     | 0.57              |
| 1:0:2135:C:H2'  | 1:0:2136:G:H8   | 1.69                     | 0.57              |
| 1:0:2748:C:C2   | 1:0:2749:A:C8   | 2.93                     | 0.57              |
| 1:0:558:G:H2'   | 1:0:558:G:N3    | 2.18                     | 0.57              |
| 1:0:1016:C:C2   | 1:0:1154:A:C5   | 2.92                     | 0.57              |
| 1:0:1513:U:H5'' | 1:0:1514:C:OP2  | 2.05                     | 0.57              |
| 1:0:1919:A:C5'  | 1:0:1920:A:N1   | 2.68                     | 0.57              |
| 1:0:2184:C:H2'  | 1:0:2185:U:O4'  | 2.04                     | 0.57              |
| 1:0:2665:G:C5   | 1:0:2666:U:N3   | 2.72                     | 0.57              |
| 1:0:2756:A:H4'  | 1:0:2757:G:H5'' | 1.86                     | 0.57              |
| 1:0:521:U:H5''  | 1:0:522:G:OP2   | 2.04                     | 0.57              |
| 1:0:603:C:H2'   | 1:0:604:U:C6    | 2.37                     | 0.57              |
| 1:0:71:A:O2'    | 1:0:72:A:P      | 2.63                     | 0.57              |
| 1:0:1174:G:C2   | 1:0:1175:A:N7   | 2.73                     | 0.57              |
| 1:0:1287:A:C2'  | 1:0:1288:A:H5'' | 2.35                     | 0.57              |
| 1:0:1413:U:H2'  | 1:0:1414:G:C8   | 2.39                     | 0.57              |
| 1:0:208:C:H2'   | 1:0:209:G:O4'   | 2.04                     | 0.57              |
| 1:0:198:A:O4'   | 1:0:210:A:H1'   | 2.05                     | 0.57              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2172:U:O2' | 1:0:2173:G:H5'  | 2.04                     | 0.57              |
| 1:0:2560:G:O2' | 1:0:2561:G:N7   | 2.33                     | 0.57              |
| 1:0:530:G:H2'  | 1:0:531:G:H8    | 1.70                     | 0.57              |
| 1:0:541:C:C5   | 1:0:542:A:H1'   | 2.40                     | 0.57              |
| 1:0:651:C:C3'  | 1:0:652:C:H5''  | 2.34                     | 0.57              |
| 1:0:1152:C:O2' | 1:0:1153:A:OP1  | 2.19                     | 0.57              |
| 1:0:1458:A:H3' | 1:0:1459:U:H5'' | 1.84                     | 0.57              |
| 1:0:1544:A:H61 | 1:0:1559:G:N2   | 2.02                     | 0.57              |
| 1:0:2004:U:O2' | 1:0:2005:U:OP1  | 2.20                     | 0.57              |
| 1:0:221:A:H2'  | 1:0:221:A:N3    | 2.20                     | 0.57              |
| 1:0:2523:G:O2' | 1:0:2524:G:C5'  | 2.48                     | 0.57              |
| 1:0:2533:U:H2' | 1:0:2534:U:C6   | 2.40                     | 0.57              |
| 1:0:2739:G:C2' | 1:0:2740:C:H5'  | 2.35                     | 0.57              |
| 1:0:2756:A:O2' | 1:0:2757:G:P    | 2.63                     | 0.57              |
| 1:0:428:A:H2'  | 1:0:429:C:O4'   | 2.04                     | 0.57              |
| 1:0:788:G:N2   | 1:0:801:A:OP1   | 2.37                     | 0.57              |
| 1:0:1152:C:O5' | 1:0:1152:C:H6   | 1.88                     | 0.56              |
| 1:0:1181:C:C2  | 1:0:1182:U:H1'  | 2.40                     | 0.56              |
| 1:0:1436:G:H8  | 1:0:1436:G:O5'  | 1.88                     | 0.56              |
| 1:0:1541:G:N2  | 1:0:1562:G:N2   | 2.52                     | 0.56              |
| 1:0:162:C:H2'  | 1:0:163:A:H8    | 1.69                     | 0.56              |
| 1:0:1958:G:H2' | 1:0:1959:U:C6   | 2.40                     | 0.56              |
| 1:0:2264:C:C1' | 1:0:2267:A:H62  | 2.17                     | 0.56              |
| 1:0:2372:A:H2' | 1:0:2373:C:O4'  | 2.05                     | 0.56              |
| 1:0:2434:G:C6  | 1:0:2435:C:N4   | 2.73                     | 0.56              |
| 1:0:2642:G:H2' | 1:0:2643:G:O5'  | 2.05                     | 0.56              |
| 1:0:2762:G:O2' | 1:0:2763:U:H5'  | 2.05                     | 0.56              |
| 1:0:455:A:C2   | 1:0:1258:G:H1'  | 2.40                     | 0.56              |
| 1:0:546:A:H2'  | 1:0:547:U:C6    | 2.40                     | 0.56              |
| 1:0:855:G:H2'  | 1:0:856:A:O4'   | 2.04                     | 0.56              |
| 1:0:1202:U:H2' | 1:0:1203:A:H8   | 1.69                     | 0.56              |
| 1:0:1229:C:H2' | 1:0:1230:C:C6   | 2.39                     | 0.56              |
| 1:0:1253:C:H2' | 1:0:1254:G:C5'  | 2.35                     | 0.56              |
| 1:0:1281:A:H2' | 1:0:1282:A:C8   | 2.37                     | 0.56              |
| 1:0:1442:C:H2' | 1:0:1443:G:OP1  | 2.03                     | 0.56              |
| 1:0:1525:A:C8  | 1:0:1526:U:H1'  | 2.40                     | 0.56              |
| 1:0:1541:G:O2' | 1:0:1542:G:H5'  | 2.05                     | 0.56              |
| 1:0:1920:A:C6  | 1:0:1922:U:C5   | 2.93                     | 0.56              |
| 1:0:1279:G:O2' | 1:0:1995:G:O6   | 2.15                     | 0.56              |
| 1:0:2040:A:H2' | 1:0:2041:A:C8   | 2.40                     | 0.56              |
| 1:0:2194:A:H3' | 1:0:2195:C:H5'' | 1.87                     | 0.56              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:225:G:C2    | 1:0:2410:U:H4'  | 2.40                     | 0.56              |
| 1:0:318:G:H22   | 1:0:321:A:C5'   | 2.18                     | 0.56              |
| 1:0:587:A:H2'   | 1:0:588:G:H5''  | 1.85                     | 0.56              |
| 1:0:631:G:H5''  | 1:0:632:A:OP1   | 2.05                     | 0.56              |
| 1:0:1793:A:H2'  | 1:0:1794:A:O4'  | 2.06                     | 0.56              |
| 1:0:1864:G:C2   | 1:0:1865:C:H1'  | 2.40                     | 0.56              |
| 1:0:2321:C:O2'  | 1:0:2353:G:H5'' | 2.06                     | 0.56              |
| 1:0:2447:G:N7   | 1:0:2455:A:N1   | 2.53                     | 0.56              |
| 1:0:34:U:H5'    | 1:0:35:G:OP2    | 2.06                     | 0.56              |
| 1:0:212:U:C2    | 1:0:443:A:C2    | 2.93                     | 0.56              |
| 1:0:492:G:C2'   | 1:0:493:A:OP2   | 2.53                     | 0.56              |
| 1:0:541:C:H2'   | 1:0:542:A:OP1   | 2.05                     | 0.56              |
| 1:0:692:C:H2'   | 1:0:693:A:H8    | 1.70                     | 0.56              |
| 1:0:1164:C:H2'  | 1:0:1165:G:O4'  | 2.05                     | 0.56              |
| 1:0:172:A:C2    | 1:0:178:C:C2    | 2.93                     | 0.56              |
| 1:0:1919:A:H5'  | 1:0:1923:U:C5   | 2.41                     | 0.56              |
| 1:0:343:A:C5    | 1:0:346:C:C4    | 2.94                     | 0.56              |
| 1:0:68:C:C2     | 1:0:72:A:C2     | 2.93                     | 0.56              |
| 1:0:697:G:O6    | 1:0:788:G:C8    | 2.59                     | 0.56              |
| 1:0:1263:G:H4'  | 1:0:1264:C:OP1  | 2.05                     | 0.56              |
| 1:0:1437:A:O2'  | 1:0:1438:G:H5'  | 2.05                     | 0.56              |
| 1:0:1715:A:O2'  | 1:0:1716:G:H5'' | 2.05                     | 0.56              |
| 1:0:1829:C:H1'  | 1:0:1911:A:N3   | 2.20                     | 0.56              |
| 1:0:2039:G:C2   | 1:0:2040:A:C8   | 2.94                     | 0.56              |
| 1:0:2511:G:H2'  | 1:0:2512:A:C8   | 2.40                     | 0.56              |
| 1:0:408:U:H2'   | 1:0:408:U:O2    | 2.04                     | 0.56              |
| 1:0:651:C:N4    | 1:0:652:C:N4    | 2.53                     | 0.56              |
| 1:0:717:G:O2'   | 1:0:718:A:P     | 2.62                     | 0.56              |
| 1:0:873:U:H2'   | 1:0:874:A:H5'   | 1.88                     | 0.56              |
| 1:0:982:C:OP2   | 1:0:985:G:N2    | 2.38                     | 0.56              |
| 1:0:1200:G:H5'' | 1:0:1200:G:H8   | 1.70                     | 0.56              |
| 1:0:1518:C:H2'  | 1:0:1519:G:C8   | 2.41                     | 0.56              |
| 1:0:1793:A:N1   | 1:0:1814:G:H1'  | 2.21                     | 0.56              |
| 1:0:986:A:N3    | 1:0:1001:A:C4   | 2.74                     | 0.56              |
| 1:0:1153:A:H5'' | 1:0:1154:A:OP1  | 2.05                     | 0.56              |
| 1:0:1250:A:HO2' | 1:0:1251:G:C4'  | 2.18                     | 0.56              |
| 1:0:1260:A:HO2' | 1:0:1261:G:P    | 2.28                     | 0.56              |
| 1:0:1488:G:C4   | 1:0:1536:G:N2   | 2.73                     | 0.56              |
| 1:0:153:A:O2'   | 1:0:154:U:H5'   | 2.05                     | 0.56              |
| 1:0:1997:A:H2'  | 1:0:1998:A:C8   | 2.40                     | 0.56              |
| 1:0:2367:A:H5'  | 1:0:2368:G:OP2  | 2.05                     | 0.56              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2034:A:H61 | 1:0:2593:A:H2' | 1.71                     | 0.56              |
| 1:0:2511:G:H1' | 1:0:2642:G:N2  | 2.21                     | 0.56              |
| 1:0:366:U:H2'  | 1:0:367:G:C8   | 2.40                     | 0.56              |
| 1:0:551:A:C2   | 1:0:562:G:C2   | 2.93                     | 0.56              |
| 1:0:1002:C:C4  | 1:0:1198:C:N3  | 2.73                     | 0.56              |
| 1:0:1749:G:O2' | 1:0:1750:A:OP1 | 2.22                     | 0.56              |
| 1:0:2138:U:H6  | 1:0:2138:U:O5' | 1.88                     | 0.56              |
| 1:0:2174:G:H2' | 1:0:2175:A:C8  | 2.40                     | 0.56              |
| 1:0:2799:C:H2' | 1:0:2800:C:O4' | 2.06                     | 0.56              |
| 1:0:2812:A:H2' | 1:0:2813:G:H8  | 1.70                     | 0.56              |
| 1:0:2845:C:H2' | 1:0:2846:G:C5' | 2.36                     | 0.56              |
| 1:0:58:C:C5'   | 1:0:59:G:OP2   | 2.51                     | 0.56              |
| 1:0:604:U:H2'  | 1:0:604:U:O2   | 2.05                     | 0.56              |
| 1:0:697:G:N2   | 1:0:801:A:OP2  | 2.38                     | 0.56              |
| 1:0:67:G:N1    | 1:0:73:A:C5    | 2.74                     | 0.56              |
| 1:0:839:U:OP1  | 1:0:2408:G:OP2 | 2.23                     | 0.56              |
| 1:0:579:G:C4'  | 1:0:994:A:C2   | 2.88                     | 0.56              |
| 1:0:1149:G:O2' | 1:0:1150:C:H5' | 2.05                     | 0.56              |
| 1:0:1837:G:O2' | 1:0:1838:G:H5' | 2.06                     | 0.56              |
| 1:0:2108:G:N2  | 1:0:2109:A:H62 | 2.04                     | 0.56              |
| 1:0:226:C:O2'  | 1:0:227:G:P    | 2.64                     | 0.56              |
| 1:0:2856:U:H2' | 1:0:2857:C:C6  | 2.36                     | 0.56              |
| 1:0:330:C:C2'  | 1:0:331:U:H5'  | 2.36                     | 0.56              |
| 1:0:741:G:HO2' | 1:0:742:G:P    | 2.29                     | 0.56              |
| 1:0:787:A:O2'  | 1:0:790:A:N3   | 2.39                     | 0.56              |
| 1:0:1354:A:O2' | 1:0:1355:A:OP1 | 2.21                     | 0.56              |
| 1:0:1631:C:C5  | 1:0:1633:C:C4  | 2.94                     | 0.56              |
| 1:0:1690:U:C2' | 1:0:1691:G:C5' | 2.79                     | 0.56              |
| 1:0:1761:G:O2' | 1:0:1762:C:H5' | 2.05                     | 0.56              |
| 1:0:1926:U:H1' | 1:0:1928:G:H5' | 1.86                     | 0.56              |
| 1:0:204:A:O2'  | 1:0:205:A:O5'  | 2.21                     | 0.56              |
| 1:0:2382:C:O2  | 1:0:2383:C:C6  | 2.59                     | 0.56              |
| 1:0:2429:A:C2  | 1:0:2430:A:C4  | 2.93                     | 0.56              |
| 1:0:2441:U:H2' | 1:0:2442:C:C6  | 2.40                     | 0.56              |
| 1:0:2511:G:H2' | 1:0:2512:A:H8  | 1.71                     | 0.56              |
| 1:0:667:U:H2'  | 1:0:667:U:O2   | 2.04                     | 0.56              |
| 1:0:69:G:H2'   | 1:0:111:G:O2'  | 2.06                     | 0.56              |
| 1:0:1278:A:H8  | 1:0:1278:A:OP1 | 1.88                     | 0.56              |
| 1:0:1365:U:O2' | 1:0:1366:A:H5' | 2.06                     | 0.56              |
| 1:0:165:G:H2'  | 1:0:166:G:O4'  | 2.06                     | 0.56              |
| 1:0:1745:C:H2' | 1:0:1746:A:O4' | 2.06                     | 0.56              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1830:C:H42  | 1:0:1881:U:H2' | 1.70                     | 0.56              |
| 1:0:2006:G:C2   | 1:0:2007:G:C8  | 2.94                     | 0.56              |
| 1:0:2036:G:H2'  | 1:0:2037:A:H5' | 1.87                     | 0.56              |
| 1:0:2807:U:C2'  | 1:0:2807:U:O2  | 2.51                     | 0.56              |
| 1:0:541:C:N3    | 1:0:572:G:H4'  | 2.21                     | 0.56              |
| 1:0:611:C:H2'   | 1:0:612:G:H5'  | 1.88                     | 0.56              |
| 1:0:1026:U:O2'  | 1:0:1027:C:H5' | 2.06                     | 0.55              |
| 1:0:1089:C:C4   | 1:0:1099:A:H1' | 2.40                     | 0.55              |
| 1:0:1811:A:O2'  | 1:0:1812:U:OP2 | 2.23                     | 0.55              |
| 1:0:2046:C:O2   | 1:0:2430:A:C2  | 2.59                     | 0.55              |
| 1:0:2268:G:H2'  | 1:0:2269:G:H8  | 1.71                     | 0.55              |
| 1:0:2291:U:H6   | 1:0:2291:U:O5' | 1.88                     | 0.55              |
| 1:0:2544:A:H2'  | 1:0:2545:A:H1' | 1.87                     | 0.55              |
| 1:0:388:G:H21   | 1:0:389:G:H1'  | 1.70                     | 0.55              |
| 1:0:38:G:N2     | 1:0:454:G:N3   | 2.54                     | 0.55              |
| 1:0:646:C:O2'   | 1:0:650:U:OP1  | 2.17                     | 0.55              |
| 1:0:58:C:C4     | 1:0:72:A:C6    | 2.94                     | 0.55              |
| 1:0:1102:G:H22  | 1:0:1112:U:C1' | 2.19                     | 0.55              |
| 1:0:1139:A:O2'  | 1:0:1140:A:OP2 | 2.22                     | 0.55              |
| 1:0:1611:U:H2'  | 1:0:1612:U:O4' | 2.06                     | 0.55              |
| 1:0:1725:C:C2   | 1:0:1742:G:N2  | 2.74                     | 0.55              |
| 1:0:1821:A:H5'' | 1:0:1822:C:H5  | 1.71                     | 0.55              |
| 1:0:2178:U:O2'  | 1:0:2179:C:H5' | 2.07                     | 0.55              |
| 1:0:2370:G:O2'  | 1:0:2371:A:P   | 2.64                     | 0.55              |
| 1:0:2387:U:O2'  | 1:0:2388:G:H5' | 2.06                     | 0.55              |
| 1:0:2423:G:C5   | 1:0:2424:G:C8  | 2.94                     | 0.55              |
| 1:0:2630:C:H2'  | 1:0:2631:C:H6  | 1.71                     | 0.55              |
| 1:0:2630:C:H2'  | 1:0:2631:C:C6  | 2.40                     | 0.55              |
| 1:0:1670:G:C5'  | 1:0:2797:G:N2  | 2.68                     | 0.55              |
| 1:0:2845:C:C2'  | 1:0:2846:G:H5' | 2.35                     | 0.55              |
| 1:0:367:G:C3'   | 1:0:368:A:H5'' | 2.36                     | 0.55              |
| 1:0:460:U:C4'   | 1:0:461:A:OP2  | 2.53                     | 0.55              |
| 1:0:541:C:C5    | 1:0:542:A:N3   | 2.75                     | 0.55              |
| 1:0:624:A:H2'   | 1:0:625:A:C5'  | 2.35                     | 0.55              |
| 1:0:688:A:C2    | 1:0:689:A:N7   | 2.74                     | 0.55              |
| 1:0:575:U:O2'   | 1:0:822:G:OP2  | 2.18                     | 0.55              |
| 1:0:926:C:C2'   | 1:0:927:C:H5'  | 2.30                     | 0.55              |
| 1:0:1253:C:C6   | 1:0:1253:C:H5' | 2.41                     | 0.55              |
| 1:0:1314:A:H2   | 1:0:1642:G:N3  | 2.05                     | 0.55              |
| 1:0:1352:G:C6   | 1:0:1353:A:N6  | 2.73                     | 0.55              |
| 1:0:168:A:C2    | 1:0:169:C:C2   | 2.95                     | 0.55              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2094:C:O2   | 1:0:2095:G:N7   | 2.39                     | 0.55              |
| 1:0:2433:G:O2'  | 1:0:2434:G:H5'  | 2.06                     | 0.55              |
| 1:0:2469:G:H5'' | 1:0:2470:U:OP1  | 2.06                     | 0.55              |
| 1:0:2686:C:H2'  | 1:0:2687:G:C8   | 2.41                     | 0.55              |
| 1:0:338:G:C5    | 1:0:339:U:C5    | 2.95                     | 0.55              |
| 1:0:994:A:N7    | 1:0:995:A:C5    | 2.75                     | 0.55              |
| 1:0:1326:U:H5'' | 1:0:1327:C:OP2  | 2.06                     | 0.55              |
| 1:0:1499:A:H2'  | 1:0:1500:U:C6   | 2.41                     | 0.55              |
| 1:0:2087:U:H2'  | 1:0:2088:U:O4'  | 2.07                     | 0.55              |
| 1:0:2663:U:H2'  | 1:0:2664:G:O4'  | 2.05                     | 0.55              |
| 1:0:58:C:C6     | 1:0:72:A:N7     | 2.75                     | 0.55              |
| 1:0:658:G:H2'   | 1:0:659:G:H8    | 1.71                     | 0.55              |
| 1:0:757:U:C2'   | 1:0:758:G:H5'   | 2.37                     | 0.55              |
| 1:0:1301:U:H2'  | 1:0:1340:C:O2   | 2.07                     | 0.55              |
| 1:0:1313:U:O2'  | 1:0:1314:A:P    | 2.65                     | 0.55              |
| 1:0:157:G:H5'   | 1:0:158:A:OP2   | 2.06                     | 0.55              |
| 1:0:173:A:O2'   | 1:0:174:A:OP1   | 2.24                     | 0.55              |
| 1:0:1770:U:O2   | 1:0:1774:A:C6   | 2.59                     | 0.55              |
| 1:0:1926:U:O2'  | 1:0:1927:U:OP2  | 2.23                     | 0.55              |
| 1:0:1978:U:C3'  | 1:0:1979:C:H5'' | 2.29                     | 0.55              |
| 1:0:2404:A:O2'  | 1:0:2405:A:P    | 2.65                     | 0.55              |
| 1:0:2642:G:O2'  | 1:0:2643:G:H5'  | 2.05                     | 0.55              |
| 1:0:58:C:H3'    | 1:0:59:G:C5'    | 2.37                     | 0.55              |
| 1:0:758:G:C2    | 1:0:766:A:C6    | 2.94                     | 0.55              |
| 1:0:813:A:H4'   | 1:0:814:G:O5'   | 2.07                     | 0.55              |
| 1:0:116:A:H1'   | 1:0:155:G:O4'   | 2.05                     | 0.55              |
| 1:0:1242:A:H2'  | 1:0:1243:G:C8   | 2.28                     | 0.55              |
| 1:0:1724:C:O2   | 1:0:1747:G:C2   | 2.59                     | 0.55              |
| 1:0:1731:C:H6   | 1:0:1731:C:O5'  | 1.90                     | 0.55              |
| 1:0:1697:U:O2   | 1:0:1754:G:H3'  | 2.06                     | 0.55              |
| 1:0:1802:A:H2'  | 1:0:1803:G:O4'  | 2.07                     | 0.55              |
| 1:0:538:A:H2    | 1:0:2026:C:H4'  | 1.72                     | 0.55              |
| 1:0:2197:U:H2'  | 1:0:2198:U:H5   | 1.64                     | 0.55              |
| 1:0:2548:G:H2'  | 1:0:2549:G:H5'  | 1.89                     | 0.55              |
| 1:0:540:G:C2    | 1:0:2005:U:OP1  | 2.59                     | 0.55              |
| 1:0:790:A:C2    | 1:0:791:G:C4    | 2.94                     | 0.55              |
| 1:0:1029:C:C2'  | 1:0:1030:U:H5'' | 2.36                     | 0.55              |
| 1:0:1098:G:N3   | 1:0:1100:G:H1'  | 2.21                     | 0.55              |
| 1:0:109:A:C2    | 1:0:110:U:C2    | 2.94                     | 0.55              |
| 1:0:1499:A:H2'  | 1:0:1500:U:O4'  | 2.06                     | 0.55              |
| 1:0:192:G:O4'   | 1:0:193:A:H4'   | 2.07                     | 0.55              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2845:C:H2' | 1:0:2846:G:H5' | 1.89                     | 0.55              |
| 1:0:465:C:O2'  | 1:0:466:A:H5'' | 2.05                     | 0.55              |
| 1:0:653:G:N2   | 1:0:657:A:H62  | 2.04                     | 0.55              |
| 1:0:830:C:H2'  | 1:0:831:G:C8   | 2.39                     | 0.55              |
| 1:0:862:A:H2'  | 1:0:863:C:H6   | 1.70                     | 0.55              |
| 1:0:105:G:O2'  | 1:0:106:G:H5'  | 2.06                     | 0.55              |
| 1:0:1250:A:O2' | 1:0:1251:G:O4' | 2.14                     | 0.55              |
| 1:0:1399:C:H2' | 1:0:1400:A:H8  | 1.68                     | 0.55              |
| 1:0:1427:G:C8  | 1:0:1428:G:N3  | 2.75                     | 0.55              |
| 1:0:1458:A:C3' | 1:0:1459:U:C5' | 2.83                     | 0.55              |
| 1:0:1668:G:N2  | 1:0:1990:U:C2  | 2.75                     | 0.55              |
| 1:0:2476:A:H1' | 1:0:2477:C:C5  | 2.40                     | 0.55              |
| 1:0:2849:C:O2  | 1:0:2849:C:H2' | 2.06                     | 0.55              |
| 1:0:297:A:H2'  | 1:0:298:C:C6   | 2.42                     | 0.55              |
| 1:0:574:C:H4'  | 1:0:1266:G:O6  | 2.06                     | 0.55              |
| 1:0:625:A:H5'' | 1:0:626:A:OP2  | 2.07                     | 0.55              |
| 1:0:693:A:H2'  | 1:0:694:G:C8   | 2.42                     | 0.55              |
| 1:0:760:U:H6   | 1:0:760:U:O5'  | 1.90                     | 0.55              |
| 1:0:699:G:N2   | 1:0:801:A:N6   | 2.54                     | 0.55              |
| 1:0:822:G:O2'  | 1:0:823:U:H5'  | 2.07                     | 0.55              |
| 1:0:826:U:O2'  | 1:0:1238:A:H1' | 2.07                     | 0.55              |
| 1:0:865:A:H2'  | 1:0:866:U:H6   | 1.70                     | 0.55              |
| 1:0:939:C:N3   | 1:0:940:G:O6   | 2.39                     | 0.55              |
| 1:0:1260:A:N6  | 1:0:1262:U:O2  | 2.39                     | 0.55              |
| 1:0:219:G:C2'  | 1:0:220:U:OP2  | 2.55                     | 0.55              |
| 1:0:2262:C:C2  | 1:0:2368:G:C2  | 2.95                     | 0.55              |
| 1:0:2496:C:O2' | 1:0:2497:A:O5' | 2.24                     | 0.55              |
| 1:0:2668:U:H1' | 1:0:2693:U:C2  | 2.42                     | 0.55              |
| 1:0:477:A:C2   | 1:0:809:C:O4'  | 2.60                     | 0.55              |
| 1:0:620:G:H1   | 1:0:628:A:N6   | 2.05                     | 0.55              |
| 1:0:111:G:H5'  | 1:0:112:U:OP1  | 2.06                     | 0.55              |
| 1:0:1424:U:H2' | 1:0:1425:G:C8  | 2.42                     | 0.55              |
| 1:0:1496:G:N2  | 1:0:1528:C:C2  | 2.75                     | 0.55              |
| 1:0:1653:C:H2' | 1:0:1654:A:C8  | 2.41                     | 0.55              |
| 1:0:1922:U:O2' | 1:0:2571:G:O4' | 2.25                     | 0.55              |
| 1:0:2062:U:O4  | 1:0:2063:A:N6  | 2.40                     | 0.55              |
| 1:0:1872:A:H1' | 1:0:2070:G:H5' | 1.89                     | 0.55              |
| 1:0:2616:U:O2  | 1:0:2762:G:C2  | 2.60                     | 0.55              |
| 1:0:2825:A:H2' | 1:0:2826:C:C6  | 2.42                     | 0.55              |
| 1:0:393:U:O2'  | 1:0:394:U:H5'  | 2.06                     | 0.55              |
| 1:0:532:A:H2'  | 1:0:533:C:C6   | 2.42                     | 0.55              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:677:G:C4'   | 1:0:951:G:H5'' | 2.37                     | 0.55              |
| 1:0:833:A:H1'   | 1:0:954:U:H1'  | 1.89                     | 0.55              |
| 1:0:579:G:H5'   | 1:0:994:A:C2   | 2.42                     | 0.55              |
| 1:0:1403:U:C2   | 1:0:1408:A:N1  | 2.75                     | 0.54              |
| 1:0:1659:G:C6   | 1:0:1660:G:C5  | 2.95                     | 0.54              |
| 1:0:1826:U:O4'  | 1:0:1952:A:C2  | 2.60                     | 0.54              |
| 1:0:1970:G:N2   | 1:0:1971:C:C2  | 2.75                     | 0.54              |
| 1:0:2007:G:H2'  | 1:0:2008:C:H6  | 1.70                     | 0.54              |
| 1:0:208:C:N4    | 1:0:209:G:H21  | 2.05                     | 0.54              |
| 1:0:488:A:OP1   | 1:0:488:A:H8   | 1.90                     | 0.54              |
| 1:0:500:G:OP1   | 1:0:500:G:C8   | 2.59                     | 0.54              |
| 1:0:67:G:H2'    | 1:0:68:C:O4'   | 2.06                     | 0.54              |
| 1:0:825:C:H1'   | 1:0:1263:G:N2  | 2.22                     | 0.54              |
| 1:0:1218:C:O2'  | 1:0:1219:C:H5' | 2.07                     | 0.54              |
| 1:0:1974:U:C2'  | 1:0:1975:G:H5' | 2.37                     | 0.54              |
| 1:0:2191:A:H3'  | 1:0:2192:U:H5  | 1.71                     | 0.54              |
| 1:0:221:A:C2    | 1:0:222:G:H1'  | 2.42                     | 0.54              |
| 1:0:2859:U:C2'  | 1:0:2860:C:H5' | 2.37                     | 0.54              |
| 1:0:667:U:O2    | 1:0:668:A:H3'  | 2.06                     | 0.54              |
| 1:0:76:C:H6     | 1:0:76:C:C5'   | 2.15                     | 0.54              |
| 1:0:82:G:N2     | 1:0:100:G:H2'  | 2.22                     | 0.54              |
| 1:0:1301:U:H5'' | 1:0:1302:C:OP2 | 2.06                     | 0.54              |
| 1:0:1288:A:H62  | 1:0:1309:G:H5' | 1.71                     | 0.54              |
| 1:0:132:U:H2'   | 1:0:133:C:C6   | 2.42                     | 0.54              |
| 1:0:1399:C:O2'  | 1:0:1400:A:C5' | 2.55                     | 0.54              |
| 1:0:1846:A:N6   | 1:0:1871:G:H1' | 2.22                     | 0.54              |
| 1:0:1963:G:O2'  | 1:0:1964:A:OP1 | 2.20                     | 0.54              |
| 1:0:1994:U:C2'  | 1:0:1995:G:H5' | 2.38                     | 0.54              |
| 1:0:2829:A:H2'  | 1:0:2830:U:O4' | 2.07                     | 0.54              |
| 1:0:516:G:O2'   | 1:0:517:A:P    | 2.66                     | 0.54              |
| 1:0:68:C:C4     | 1:0:72:A:C2    | 2.95                     | 0.54              |
| 1:0:58:C:C1'    | 1:0:72:A:C8    | 2.90                     | 0.54              |
| 1:0:956:A:C2    | 1:0:2427:A:N3  | 2.76                     | 0.54              |
| 1:0:957:G:H2'   | 1:0:958:G:H8   | 1.72                     | 0.54              |
| 1:0:831:G:OP2   | 1:0:1199:U:C4  | 2.60                     | 0.54              |
| 1:0:1213:U:H3   | 1:0:1260:A:H2  | 1.54                     | 0.54              |
| 1:0:1479:G:O2'  | 1:0:1480:G:H5' | 2.06                     | 0.54              |
| 1:0:229:G:H2'   | 1:0:230:C:O4'  | 2.08                     | 0.54              |
| 1:0:2701:A:H2'  | 1:0:2702:G:O4' | 2.08                     | 0.54              |
| 1:0:322:A:H1'   | 1:0:343:A:C1'  | 2.37                     | 0.54              |
| 1:0:210:A:H61   | 1:0:442:A:N6   | 2.04                     | 0.54              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:474:G:C6   | 1:0:478:G:O6    | 2.61                     | 0.54              |
| 1:0:640:C:H4'  | 1:0:660:G:N3    | 2.22                     | 0.54              |
| 1:0:689:A:H8   | 1:0:2422:C:H1'  | 1.70                     | 0.54              |
| 1:0:1468:A:C5' | 1:0:1472:C:N4   | 2.62                     | 0.54              |
| 1:0:182:G:O2'  | 1:0:183:U:OP2   | 2.25                     | 0.54              |
| 1:0:1979:C:OP1 | 1:0:1979:C:O4'  | 2.26                     | 0.54              |
| 1:0:2048:C:O2' | 1:0:2049:C:H5'  | 2.07                     | 0.54              |
| 1:0:2797:G:H2' | 1:0:2798:A:H5'' | 1.89                     | 0.54              |
| 1:0:2841:U:H4' | 1:0:2842:C:O5'  | 2.08                     | 0.54              |
| 1:0:1035:G:C6  | 1:0:1036:G:C6   | 2.95                     | 0.54              |
| 1:0:1199:U:O5' | 1:0:1200:G:C5'  | 2.56                     | 0.54              |
| 1:0:1230:C:O2' | 1:0:1231:A:H5'  | 2.07                     | 0.54              |
| 1:0:139:A:O2'  | 1:0:140:G:H5'   | 2.08                     | 0.54              |
| 1:0:1440:G:N7  | 1:0:1441:A:C5   | 2.76                     | 0.54              |
| 1:0:2081:U:H2' | 1:0:2082:C:H5'' | 1.89                     | 0.54              |
| 1:0:2198:U:C3' | 1:0:2199:C:H5'' | 2.26                     | 0.54              |
| 1:0:2782:G:C5' | 1:0:2783:U:OP2  | 2.50                     | 0.54              |
| 1:0:2811:G:H8  | 1:0:2811:G:H5'  | 1.72                     | 0.54              |
| 1:0:58:C:N3    | 1:0:73:A:C6     | 2.76                     | 0.54              |
| 1:0:931:G:C2   | 1:0:932:G:H1'   | 2.42                     | 0.54              |
| 1:0:1287:A:C6  | 1:0:1315:A:C2   | 2.96                     | 0.54              |
| 1:0:1725:C:O2' | 1:0:1726:C:H5'  | 2.07                     | 0.54              |
| 1:0:2198:U:H6  | 1:0:2198:U:O5'  | 1.91                     | 0.54              |
| 1:0:2209:G:H2' | 1:0:2210:C:C6   | 2.42                     | 0.54              |
| 1:0:840:U:O2   | 1:0:2225:G:H4'  | 2.07                     | 0.54              |
| 1:0:175:C:N3   | 1:0:225:G:N2    | 2.54                     | 0.54              |
| 1:0:698:A:C8   | 1:0:786:U:C4    | 2.95                     | 0.54              |
| 1:0:877:G:H2'  | 1:0:878:C:H6    | 1.73                     | 0.54              |
| 1:0:879:A:H2'  | 1:0:879:A:N3    | 2.22                     | 0.54              |
| 1:0:986:A:C2   | 1:0:1001:A:N9   | 2.74                     | 0.54              |
| 1:0:48:A:C2    | 1:0:118:U:O4    | 2.61                     | 0.54              |
| 1:0:1452:U:OP2 | 1:0:1568:A:N6   | 2.41                     | 0.54              |
| 1:0:1761:G:C2' | 1:0:1762:C:H5'  | 2.38                     | 0.54              |
| 1:0:1994:U:H2' | 1:0:1995:G:H5'  | 1.90                     | 0.54              |
| 1:0:216:U:H2'  | 1:0:217:U:O4'   | 2.07                     | 0.54              |
| 1:0:2700:U:H2' | 1:0:2701:A:H8   | 1.73                     | 0.54              |
| 1:0:298:C:O2'  | 1:0:299:C:H5'   | 2.07                     | 0.54              |
| 1:0:541:C:N3   | 1:0:572:G:O4'   | 2.41                     | 0.54              |
| 1:0:637:G:O5'  | 1:0:637:G:H8    | 1.91                     | 0.54              |
| 1:0:67:G:C2    | 1:0:73:A:C4     | 2.96                     | 0.54              |
| 1:0:75:C:H2'   | 1:0:76:C:H5'    | 1.90                     | 0.54              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:774:A:O5'  | 1:0:774:A:C8   | 2.61                     | 0.54              |
| 1:0:1136:G:C6  | 1:0:1137:A:N6  | 2.76                     | 0.54              |
| 1:0:1285:A:O2' | 1:0:1286:U:OP1 | 2.22                     | 0.54              |
| 1:0:1326:U:H6  | 1:0:1326:U:H3' | 1.73                     | 0.54              |
| 1:0:1573:G:O6  | 1:0:1574:A:C6  | 2.61                     | 0.54              |
| 1:0:1632:A:H4' | 1:0:1633:C:OP2 | 2.07                     | 0.54              |
| 1:0:1767:G:N2  | 1:0:1768:U:H1' | 2.23                     | 0.54              |
| 1:0:1788:C:C4  | 1:0:1789:U:C4  | 2.95                     | 0.54              |
| 1:0:2055:G:O2' | 1:0:2056:C:H5' | 2.07                     | 0.54              |
| 1:0:2240:C:H2' | 1:0:2241:U:H5' | 1.88                     | 0.54              |
| 1:0:839:U:H5'' | 1:0:2408:G:OP2 | 2.08                     | 0.54              |
| 1:0:2676:G:C6  | 1:0:2690:A:C2  | 2.96                     | 0.54              |
| 1:0:2739:G:H2' | 1:0:2740:C:H5' | 1.90                     | 0.54              |
| 1:0:514:G:C2'  | 1:0:514:G:N3   | 2.70                     | 0.54              |
| 1:0:617:U:C6   | 1:0:632:A:N6   | 2.76                     | 0.54              |
| 1:0:632:A:C2   | 1:0:633:G:C8   | 2.96                     | 0.54              |
| 1:0:689:A:C2   | 1:0:815:A:N6   | 2.75                     | 0.54              |
| 1:0:827:C:O2'  | 1:0:828:C:H5'  | 2.08                     | 0.54              |
| 1:0:1030:U:C2' | 1:0:1031:C:H5' | 2.31                     | 0.54              |
| 1:0:1109:A:C2' | 1:0:1110:G:H5' | 2.37                     | 0.54              |
| 1:0:1241:G:O2' | 1:0:1242:A:H5' | 2.08                     | 0.54              |
| 1:0:1684:G:O2' | 1:0:1685:A:OP2 | 2.25                     | 0.54              |
| 1:0:169:C:C2'  | 1:0:170:U:H5'  | 2.35                     | 0.54              |
| 1:0:2094:C:C4  | 1:0:2103:G:H1' | 2.41                     | 0.54              |
| 1:0:2199:C:H2' | 1:0:2200:G:H8  | 1.71                     | 0.54              |
| 1:0:2362:G:H2' | 1:0:2363:G:O4' | 2.07                     | 0.54              |
| 1:0:2722:C:C4  | 1:0:2743:G:N2  | 2.76                     | 0.54              |
| 1:0:2762:G:C2' | 1:0:2763:U:H5' | 2.38                     | 0.54              |
| 1:0:538:A:C2   | 1:0:2026:C:H4' | 2.43                     | 0.54              |
| 1:0:833:A:N3   | 1:0:954:U:O2'  | 2.37                     | 0.54              |
| 1:0:1003:C:O2' | 1:0:1004:A:H5' | 2.08                     | 0.53              |
| 1:0:1758:C:C4  | 1:0:1759:A:N7  | 2.76                     | 0.53              |
| 1:0:185:C:O2'  | 1:0:186:C:H5'  | 2.08                     | 0.53              |
| 1:0:1977:C:C2  | 1:0:1978:U:C5  | 2.97                     | 0.53              |
| 1:0:2080:U:H2' | 1:0:2081:U:H6  | 1.73                     | 0.53              |
| 1:0:222:G:H2'  | 1:0:223:C:H6   | 1.72                     | 0.53              |
| 1:0:2345:A:O5' | 1:0:2345:A:H8  | 1.91                     | 0.53              |
| 1:0:2825:A:N3  | 1:0:2826:C:C6  | 2.77                     | 0.53              |
| 1:0:2827:G:H2' | 1:0:2828:C:C6  | 2.43                     | 0.53              |
| 1:0:2857:C:H2' | 1:0:2858:A:O5' | 2.08                     | 0.53              |
| 1:0:2859:U:H3' | 1:0:2859:U:H6  | 1.73                     | 0.53              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:403:A:H4'   | 1:0:404:A:C5'  | 2.37                     | 0.53              |
| 1:0:614:G:C5    | 1:0:615:C:C5   | 2.96                     | 0.53              |
| 1:0:1030:U:C4   | 1:0:1153:A:N6  | 2.77                     | 0.53              |
| 1:0:1105:U:N3   | 1:0:1107:A:N7  | 2.55                     | 0.53              |
| 1:0:1172:U:O2'  | 1:0:1173:G:H5' | 2.08                     | 0.53              |
| 1:0:2247:A:OP1  | 1:0:2247:A:H4' | 2.08                     | 0.53              |
| 1:0:202:A:O2'   | 1:0:234:C:H4'  | 2.09                     | 0.53              |
| 1:0:2557:G:C2   | 1:0:2558:C:C6  | 2.96                     | 0.53              |
| 1:0:197:G:H22   | 1:0:440:U:H2'  | 1.73                     | 0.53              |
| 1:0:612:G:H4'   | 1:0:613:A:C4'  | 2.36                     | 0.53              |
| 1:0:633:G:C6    | 1:0:634:G:C6   | 2.96                     | 0.53              |
| 1:0:700:C:N3    | 1:0:800:U:O3'  | 2.41                     | 0.53              |
| 1:0:1464:A:C6   | 1:0:1465:G:C6  | 2.96                     | 0.53              |
| 1:0:1749:G:O2'  | 1:0:1750:A:P   | 2.67                     | 0.53              |
| 1:0:2172:U:H2'  | 1:0:2173:G:O4' | 2.08                     | 0.53              |
| 1:0:2343:C:C2'  | 1:0:2344:G:H5' | 2.39                     | 0.53              |
| 1:0:2529:G:N2   | 1:0:2530:C:C2  | 2.76                     | 0.53              |
| 1:0:499:G:HO2'  | 1:0:500:G:P    | 2.31                     | 0.53              |
| 1:0:777:A:H62   | 1:0:1766:U:H3  | 1.56                     | 0.53              |
| 1:0:807:A:C2    | 1:0:808:C:C2   | 2.96                     | 0.53              |
| 1:0:819:C:O2'   | 1:0:820:U:H5'  | 2.09                     | 0.53              |
| 1:0:1064:C:H6   | 1:0:1064:C:O5' | 1.91                     | 0.53              |
| 1:0:1265:G:O2'  | 1:0:1266:G:C1' | 2.57                     | 0.53              |
| 1:0:1459:U:O4   | 1:0:1476:G:OP2 | 2.25                     | 0.53              |
| 1:0:1501:C:H2'  | 1:0:1502:G:C8  | 2.44                     | 0.53              |
| 1:0:1987:G:C5   | 1:0:1988:A:C8  | 2.97                     | 0.53              |
| 1:0:2324:G:N7   | 1:0:2360:C:O2  | 2.41                     | 0.53              |
| 1:0:2309:G:N2   | 1:0:2365:U:C2  | 2.76                     | 0.53              |
| 1:0:2734:U:H2'  | 1:0:2736:U:OP1 | 2.08                     | 0.53              |
| 1:0:365:U:H6    | 1:0:365:U:O5'  | 1.90                     | 0.53              |
| 1:0:366:U:H2'   | 1:0:367:G:H8   | 1.74                     | 0.53              |
| 1:0:774:A:H3'   | 1:0:774:A:H8   | 1.73                     | 0.53              |
| 1:0:875:G:H22   | 1:0:928:G:H1'  | 1.73                     | 0.53              |
| 1:0:834:A:N6    | 1:0:957:G:C2   | 2.76                     | 0.53              |
| 1:0:978:U:H2'   | 1:0:979:A:C8   | 2.43                     | 0.53              |
| 1:0:1199:U:O4   | 1:0:1201:G:C6  | 2.61                     | 0.53              |
| 1:0:1475:U:OP2  | 1:0:1475:U:H4' | 2.09                     | 0.53              |
| 1:0:1559:G:O2'  | 1:0:1560:A:H5' | 2.08                     | 0.53              |
| 1:0:1715:A:HO2' | 1:0:1716:G:P   | 2.32                     | 0.53              |
| 1:0:1724:C:N3   | 1:0:1747:G:C6  | 2.77                     | 0.53              |
| 1:0:1788:C:N4   | 1:0:1789:U:O4  | 2.41                     | 0.53              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2333:A:C2   | 1:0:2343:C:C2   | 2.97                     | 0.53              |
| 1:0:2563:U:O5'  | 1:0:2563:U:H6   | 1.92                     | 0.53              |
| 1:0:2671:C:H2'  | 1:0:2672:U:H6   | 1.72                     | 0.53              |
| 1:0:2728:A:O2'  | 1:0:2729:A:H5'  | 2.09                     | 0.53              |
| 1:0:2824:C:H4'  | 1:0:2825:A:C5'  | 2.38                     | 0.53              |
| 1:0:2845:C:O2'  | 1:0:2846:G:H5'  | 2.09                     | 0.53              |
| 1:0:469:G:O2'   | 1:0:480:G:N1    | 2.40                     | 0.53              |
| 1:0:564:U:H2'   | 1:0:565:A:C8    | 2.44                     | 0.53              |
| 1:0:572:G:N2    | 1:0:573:C:C2    | 2.77                     | 0.53              |
| 1:0:876:A:H2'   | 1:0:877:G:O4'   | 2.07                     | 0.53              |
| 1:0:1059:A:H8   | 1:0:1121:G:N2   | 2.07                     | 0.53              |
| 1:0:2699:G:H8   | 1:0:2699:G:O5'  | 1.91                     | 0.53              |
| 1:0:592:G:C6    | 1:0:593:C:C4    | 2.97                     | 0.53              |
| 1:0:751:G:H1'   | 1:0:772:G:N2    | 2.24                     | 0.53              |
| 1:0:89:A:H4'    | 1:0:90:G:O5'    | 2.09                     | 0.53              |
| 1:0:1002:C:O2   | 1:0:1175:A:C2   | 2.62                     | 0.53              |
| 1:0:1253:C:C5'  | 1:0:1253:C:H6   | 2.21                     | 0.53              |
| 1:0:132:U:H2'   | 1:0:133:C:H6    | 1.74                     | 0.53              |
| 1:0:1598:C:H2'  | 1:0:1599:G:O4'  | 2.09                     | 0.53              |
| 1:0:1653:C:O2   | 1:0:1751:A:H2   | 1.91                     | 0.53              |
| 1:0:225:G:N7    | 1:0:227:G:N3    | 2.57                     | 0.53              |
| 1:0:2308:A:C2   | 1:0:2366:U:O2   | 2.61                     | 0.53              |
| 1:0:2824:C:O2'  | 1:0:2825:A:OP2  | 2.22                     | 0.53              |
| 1:0:312:G:O2'   | 1:0:313:U:P     | 2.67                     | 0.53              |
| 1:0:459:A:H1'   | 1:0:461:A:H62   | 1.71                     | 0.53              |
| 1:0:492:G:O2'   | 1:0:493:A:P     | 2.66                     | 0.53              |
| 1:0:498:C:C6    | 1:0:499:G:N7    | 2.76                     | 0.53              |
| 1:0:66:U:C2     | 1:0:67:G:O6     | 2.60                     | 0.53              |
| 1:0:739:G:HO2'  | 1:0:740:A:P     | 2.31                     | 0.53              |
| 1:0:88:G:OP2    | 1:0:90:G:OP1    | 2.26                     | 0.53              |
| 1:0:951:G:H3'   | 1:0:952:A:H5''  | 1.91                     | 0.53              |
| 1:0:994:A:N7    | 1:0:995:A:C6    | 2.76                     | 0.53              |
| 1:0:1407:G:C6   | 1:0:1408:A:C6   | 2.97                     | 0.53              |
| 1:0:1541:G:H22  | 1:0:1561:A:N6   | 2.07                     | 0.53              |
| 1:0:1672:A:C6   | 1:0:1673:C:C2   | 2.97                     | 0.53              |
| 1:0:1789:U:C4   | 1:0:1811:A:C2   | 2.96                     | 0.53              |
| 1:0:2556:A:H5'' | 1:0:2557:G:H5'' | 1.88                     | 0.53              |
| 1:0:299:C:H2'   | 1:0:300:C:C5    | 2.43                     | 0.53              |
| 1:0:342:G:O2'   | 1:0:343:A:P     | 2.67                     | 0.53              |
| 1:0:631:G:H4'   | 1:0:632:A:H5''  | 1.88                     | 0.53              |
| 1:0:946:U:C2    | 1:0:947:C:C5    | 2.97                     | 0.53              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1091:C:H2' | 1:0:1092:U:C6   | 2.43                     | 0.53              |
| 1:0:118:U:O2'  | 1:0:119:G:OP2   | 2.23                     | 0.53              |
| 1:0:1535:C:C4  | 1:0:1536:G:C6   | 2.97                     | 0.53              |
| 1:0:1778:U:H2' | 1:0:1779:C:C6   | 2.44                     | 0.53              |
| 1:0:1790:G:O2' | 1:0:1791:C:H5'' | 2.08                     | 0.53              |
| 1:0:1801:C:H3' | 1:0:1802:A:C5'  | 2.39                     | 0.53              |
| 1:0:1938:U:C5  | 1:0:2536:G:N2   | 2.77                     | 0.53              |
| 1:0:2196:U:H2' | 1:0:2197:U:O4'  | 2.08                     | 0.53              |
| 1:0:2259:G:H4' | 1:0:2306:A:C5'  | 2.39                     | 0.53              |
| 1:0:2375:G:C2  | 1:0:2400:G:C2   | 2.97                     | 0.53              |
| 1:0:843:G:C5   | 1:0:2427:A:N7   | 2.77                     | 0.53              |
| 1:0:2639:A:H2' | 1:0:2640:G:O4'  | 2.09                     | 0.53              |
| 1:0:1750:A:N7  | 1:0:2675:U:H1'  | 2.23                     | 0.53              |
| 1:0:427:C:H1'  | 1:0:1856:U:H1'  | 1.91                     | 0.53              |
| 1:0:606:A:C2   | 1:0:607:C:C2    | 2.97                     | 0.53              |
| 1:0:1154:A:O2' | 1:0:1155:G:OP1  | 2.21                     | 0.53              |
| 1:0:1249:G:O2' | 1:0:1250:A:O5'  | 2.25                     | 0.53              |
| 1:0:1319:C:O2' | 1:0:1320:A:H5'  | 2.09                     | 0.53              |
| 1:0:1394:G:H1' | 1:0:1587:A:N1   | 2.24                     | 0.53              |
| 1:0:1528:C:C3' | 1:0:1529:C:H5'' | 2.39                     | 0.53              |
| 1:0:1689:U:H2' | 1:0:1690:U:H5'' | 1.90                     | 0.53              |
| 1:0:198:A:H4'  | 1:0:199:A:OP2   | 2.08                     | 0.53              |
| 1:0:203:G:O2'  | 1:0:205:A:N6    | 2.42                     | 0.53              |
| 1:0:2423:G:H2' | 1:0:2424:G:O4'  | 2.09                     | 0.53              |
| 1:0:956:A:C4   | 1:0:2427:A:C2   | 2.96                     | 0.53              |
| 1:0:1681:A:C2  | 1:0:2706:U:N1   | 2.77                     | 0.53              |
| 1:0:2779:C:H2' | 1:0:2780:A:N9   | 2.24                     | 0.53              |
| 1:0:538:A:C3'  | 1:0:538:A:C8    | 2.90                     | 0.53              |
| 1:0:580:A:C4   | 1:0:2013:A:N6   | 2.77                     | 0.53              |
| 1:0:622:U:C2   | 1:0:627:A:C2    | 2.96                     | 0.53              |
| 1:0:881:U:C4   | 1:0:882:C:N4    | 2.77                     | 0.53              |
| 1:0:976:C:H2'  | 1:0:977:G:H8    | 1.73                     | 0.53              |
| 1:0:1004:A:C5  | 1:0:1005:U:C5   | 2.97                     | 0.52              |
| 1:0:1052:C:H6  | 1:0:1052:C:O5'  | 1.92                     | 0.52              |
| 1:0:1385:C:H2' | 1:0:1386:A:O4'  | 2.09                     | 0.52              |
| 1:0:13:A:O2'   | 1:0:14:A:OP2    | 2.21                     | 0.52              |
| 1:0:1463:A:C1' | 1:0:1543:G:N2   | 2.66                     | 0.52              |
| 1:0:1287:A:H2  | 1:0:1661:C:O2   | 1.92                     | 0.52              |
| 1:0:1787:U:H2' | 1:0:1788:C:C6   | 2.44                     | 0.52              |
| 1:0:2056:C:O2' | 1:0:2057:U:H5'  | 2.09                     | 0.52              |
| 1:0:2177:U:O2' | 1:0:2178:U:H5'  | 2.09                     | 0.52              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2842:C:H5'  | 1:0:2843:A:H5' | 1.91                     | 0.52              |
| 1:0:2:G:H2'     | 1:0:3:U:C6     | 2.44                     | 0.52              |
| 1:0:420:C:H2'   | 1:0:421:G:H8   | 1.74                     | 0.52              |
| 1:0:547:U:H2'   | 1:0:548:G:H8   | 1.73                     | 0.52              |
| 1:0:574:C:C4'   | 1:0:1266:G:O6  | 2.57                     | 0.52              |
| 1:0:460:U:H3    | 1:0:592:G:H1'  | 1.73                     | 0.52              |
| 1:0:612:G:O2'   | 1:0:613:A:H4'  | 2.09                     | 0.52              |
| 1:0:1309:G:N2   | 1:0:1310:C:C2  | 2.77                     | 0.52              |
| 1:0:1468:A:H8   | 1:0:1468:A:P   | 2.31                     | 0.52              |
| 1:0:2068:C:O2   | 1:0:2068:C:H2' | 2.09                     | 0.52              |
| 1:0:2370:G:O2'  | 1:0:2371:A:OP2 | 2.27                     | 0.52              |
| 1:0:455:A:H2    | 1:0:1258:G:H1' | 1.75                     | 0.52              |
| 1:0:747:A:H2'   | 1:0:748:A:H8   | 1.73                     | 0.52              |
| 1:0:10:A:H2'    | 1:0:11:G:C8    | 2.44                     | 0.52              |
| 1:0:1375:C:N3   | 1:0:1376:C:C5  | 2.78                     | 0.52              |
| 1:0:140:G:H2'   | 1:0:141:G:H8   | 1.73                     | 0.52              |
| 1:0:1732:U:H2'  | 1:0:1733:U:O5' | 2.10                     | 0.52              |
| 1:0:2038:C:H2'  | 1:0:2483:U:H4' | 1.89                     | 0.52              |
| 1:0:689:A:H1'   | 1:0:2422:C:O4' | 2.09                     | 0.52              |
| 1:0:2598:C:O2'  | 1:0:2599:U:H5' | 2.09                     | 0.52              |
| 1:0:2658:A:H2'  | 1:0:2659:C:H6  | 1.74                     | 0.52              |
| 1:0:638:A:N6    | 1:0:647:G:H2'  | 2.24                     | 0.52              |
| 1:0:1105:U:O2   | 1:0:1107:A:N7  | 2.43                     | 0.52              |
| 1:0:48:A:N1     | 1:0:118:U:O4   | 2.42                     | 0.52              |
| 1:0:1230:C:C4   | 1:0:1246:G:N1  | 2.77                     | 0.52              |
| 1:0:1288:A:N6   | 1:0:1309:G:C5' | 2.70                     | 0.52              |
| 1:0:1493:A:H2'  | 1:0:1494:G:O4' | 2.10                     | 0.52              |
| 1:0:1582:A:HO2' | 1:0:1583:A:P   | 2.32                     | 0.52              |
| 1:0:1614:C:H2'  | 1:0:1615:C:H6  | 1.74                     | 0.52              |
| 1:0:173:A:O2'   | 1:0:174:A:P    | 2.67                     | 0.52              |
| 1:0:1813:A:O5'  | 1:0:1813:A:H8  | 1.92                     | 0.52              |
| 1:0:200:A:OP2   | 1:0:435:A:H4'  | 2.09                     | 0.52              |
| 1:0:1845:A:H1'  | 1:0:2212:U:O2' | 2.09                     | 0.52              |
| 1:0:242:A:O2'   | 1:0:243:G:H4'  | 2.09                     | 0.52              |
| 1:0:2580:C:H5'' | 1:0:2581:A:OP2 | 2.09                     | 0.52              |
| 1:0:2634:G:H2'  | 1:0:2634:G:N3  | 2.24                     | 0.52              |
| 1:0:356:A:H2'   | 1:0:357:A:C8   | 2.43                     | 0.52              |
| 1:0:68:C:C6     | 1:0:72:A:H2    | 2.27                     | 0.52              |
| 1:0:710:C:H2'   | 1:0:711:C:C6   | 2.45                     | 0.52              |
| 1:0:110:U:H2'   | 1:0:111:G:O4'  | 2.10                     | 0.52              |
| 1:0:128:C:H2'   | 1:0:129:A:H5'' | 1.91                     | 0.52              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1310:C:C2  | 1:0:1311:C:C5   | 2.98                     | 0.52              |
| 1:0:1325:U:O2' | 1:0:1326:U:OP2  | 2.26                     | 0.52              |
| 1:0:2010:G:N2  | 1:0:2020:G:C8   | 2.78                     | 0.52              |
| 1:0:423:G:N2   | 1:0:2386:G:C5   | 2.78                     | 0.52              |
| 1:0:2666:U:H2' | 1:0:2667:C:O4'  | 2.09                     | 0.52              |
| 1:0:441:A:H2'  | 1:0:442:A:H5'   | 1.92                     | 0.52              |
| 1:0:594:G:C2   | 1:0:1264:C:N4   | 2.78                     | 0.52              |
| 1:0:976:C:O2'  | 1:0:977:G:H5'   | 2.08                     | 0.52              |
| 1:0:1135:C:H2' | 1:0:1136:G:O4'  | 2.09                     | 0.52              |
| 1:0:1558:C:H2' | 1:0:1558:C:O2   | 2.08                     | 0.52              |
| 1:0:1834:G:H2' | 1:0:1835:C:C6   | 2.44                     | 0.52              |
| 1:0:1854:G:O2' | 1:0:1855:G:H5'  | 2.10                     | 0.52              |
| 1:0:1920:A:N6  | 1:0:1922:U:C6   | 2.77                     | 0.52              |
| 1:0:204:A:HO2' | 1:0:205:A:P     | 2.32                     | 0.52              |
| 1:0:2061:C:H42 | 1:0:2220:A:H61  | 1.57                     | 0.52              |
| 1:0:2560:G:N3  | 1:0:2560:G:C2'  | 2.73                     | 0.52              |
| 1:0:421:G:O2'  | 1:0:422:C:H5'   | 2.09                     | 0.52              |
| 1:0:692:C:H2'  | 1:0:693:A:C8    | 2.43                     | 0.52              |
| 1:0:1300:A:C2  | 1:0:1301:U:C2   | 2.98                     | 0.52              |
| 1:0:1339:U:H5  | 1:0:1664:G:HO2' | 1.58                     | 0.52              |
| 1:0:1498:G:N2  | 1:0:1523:A:H1'  | 2.24                     | 0.52              |
| 1:0:2020:G:C2  | 1:0:2021:G:C4   | 2.97                     | 0.52              |
| 1:0:2069:U:H2' | 1:0:2070:G:C8   | 2.45                     | 0.52              |
| 1:0:212:U:O2'  | 1:0:213:C:H5'   | 2.10                     | 0.52              |
| 1:0:2048:C:H1' | 1:0:2428:U:H3   | 1.73                     | 0.52              |
| 1:0:2652:G:N3  | 1:0:2653:A:C8   | 2.78                     | 0.52              |
| 1:0:2840:U:C4  | 1:0:2841:U:C5   | 2.97                     | 0.52              |
| 1:0:71:A:N6    | 1:0:110:U:C4'   | 2.73                     | 0.52              |
| 1:0:799:C:H2'  | 1:0:800:U:O4'   | 2.09                     | 0.52              |
| 1:0:941:U:H2'  | 1:0:942:U:C6    | 2.44                     | 0.52              |
| 1:0:1427:G:C2' | 1:0:1428:G:H5'  | 2.39                     | 0.52              |
| 1:0:1683:G:H2' | 1:0:1684:G:H5'  | 1.91                     | 0.52              |
| 1:0:1767:G:N2  | 1:0:1768:U:C1'  | 2.73                     | 0.52              |
| 1:0:2135:C:H2' | 1:0:2136:G:C8   | 2.44                     | 0.52              |
| 1:0:340:G:OP2  | 1:0:340:G:H8    | 1.93                     | 0.52              |
| 1:0:498:C:H2'  | 1:0:499:G:C8    | 2.40                     | 0.52              |
| 1:0:580:A:N7   | 1:0:584:A:C6    | 2.78                     | 0.52              |
| 1:0:699:G:H4'  | 1:0:700:C:OP2   | 2.09                     | 0.52              |
| 1:0:703:A:N1   | 1:0:786:U:C4    | 2.77                     | 0.52              |
| 1:0:719:A:O5'  | 1:0:719:A:H8    | 1.93                     | 0.52              |
| 1:0:872:G:O2'  | 1:0:873:U:H5''  | 2.09                     | 0.52              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:83:A:H62   | 1:0:98:U:C1'    | 2.23                     | 0.52              |
| 1:0:1253:C:C2' | 1:0:1254:G:H5'  | 2.40                     | 0.52              |
| 1:0:594:G:N1   | 1:0:1264:C:H5   | 2.06                     | 0.52              |
| 1:0:1695:U:H2' | 1:0:1696:C:O4'  | 2.09                     | 0.52              |
| 1:0:1795:C:C4  | 1:0:1806:G:N2   | 2.78                     | 0.52              |
| 1:0:1969:G:O2' | 1:0:1970:G:H5'  | 2.09                     | 0.52              |
| 1:0:2202:G:H2' | 1:0:2203:G:O4'  | 2.10                     | 0.52              |
| 1:0:2478:C:C4  | 1:0:2479:U:C4   | 2.98                     | 0.52              |
| 1:0:2548:G:C2' | 1:0:2549:G:H5'' | 2.40                     | 0.52              |
| 1:0:2636:A:C2' | 1:0:2637:C:H5'  | 2.40                     | 0.52              |
| 1:0:2821:G:H2' | 1:0:2822:U:O4'  | 2.10                     | 0.52              |
| 1:0:483:A:C2'  | 1:0:484:G:H5'   | 2.39                     | 0.52              |
| 1:0:490:A:O2'  | 1:0:491:A:P     | 2.68                     | 0.52              |
| 1:0:540:G:H5'' | 1:0:541:C:OP2   | 2.10                     | 0.52              |
| 1:0:840:U:C4'  | 1:0:841:G:N2    | 2.72                     | 0.52              |
| 1:0:875:G:C2'  | 1:0:876:A:H5'   | 2.40                     | 0.52              |
| 1:0:987:G:C2   | 1:0:988:G:C5    | 2.97                     | 0.52              |
| 1:0:1165:G:O5' | 1:0:1165:G:H8   | 1.92                     | 0.52              |
| 1:0:1269:G:H2' | 1:0:1269:G:N3   | 2.24                     | 0.52              |
| 1:0:142:U:H5'' | 1:0:143:A:OP1   | 2.10                     | 0.52              |
| 1:0:1698:C:O2' | 1:0:1753:A:C2'  | 2.51                     | 0.52              |
| 1:0:1920:A:N6  | 1:0:1922:U:C5   | 2.78                     | 0.52              |
| 1:0:588:G:O2'  | 1:0:2002:A:OP1  | 2.22                     | 0.52              |
| 1:0:2075:U:O2  | 1:0:2204:A:O2'  | 2.27                     | 0.52              |
| 1:0:213:C:H2'  | 1:0:214:C:H6    | 1.75                     | 0.52              |
| 1:0:2170:C:H6  | 1:0:2170:C:O5'  | 1.92                     | 0.52              |
| 1:0:2177:U:H2' | 1:0:2178:U:O4'  | 2.10                     | 0.52              |
| 1:0:2288:A:N3  | 1:0:2288:A:H2'  | 2.25                     | 0.52              |
| 1:0:2478:C:N4  | 1:0:2479:U:O4   | 2.43                     | 0.52              |
| 1:0:2839:G:H2' | 1:0:2840:U:C6   | 2.45                     | 0.52              |
| 1:0:638:A:OP2  | 1:0:638:A:H4'   | 2.09                     | 0.52              |
| 1:0:706:A:H2'  | 1:0:707:U:O4'   | 2.09                     | 0.52              |
| 1:0:775:U:H5'' | 1:0:776:G:OP1   | 2.10                     | 0.52              |
| 1:0:788:G:H5'' | 1:0:790:A:N9    | 2.25                     | 0.52              |
| 1:0:887:G:N2   | 1:0:888:G:H1'   | 2.25                     | 0.52              |
| 1:0:1495:G:H2' | 1:0:1496:G:H8   | 1.71                     | 0.51              |
| 1:0:1674:C:H2' | 1:0:1674:C:O2   | 2.09                     | 0.51              |
| 1:0:1686:A:H3' | 1:0:1687:C:H5'  | 1.91                     | 0.51              |
| 1:0:191:G:O2'  | 1:0:192:G:H5'   | 2.09                     | 0.51              |
| 1:0:2002:A:N6  | 1:0:2003:A:C6   | 2.78                     | 0.51              |
| 1:0:840:U:H2'  | 1:0:2051:U:O2   | 2.10                     | 0.51              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2324:G:O2'  | 1:0:2325:A:OP2  | 2.25                     | 0.51              |
| 1:0:2351:G:C2   | 1:0:2352:A:C8   | 2.98                     | 0.51              |
| 1:0:2501:U:C5'  | 1:0:2502:G:OP2  | 2.58                     | 0.51              |
| 1:0:2605:C:H2'  | 1:0:2606:G:O4'  | 2.10                     | 0.51              |
| 1:0:2663:U:C4   | 1:0:2664:G:N7   | 2.78                     | 0.51              |
| 1:0:391:C:C2'   | 1:0:392:G:H5'   | 2.40                     | 0.51              |
| 1:0:48:A:O2'    | 1:0:50:G:C2     | 2.63                     | 0.51              |
| 1:0:521:U:O4    | 1:0:522:G:C2    | 2.63                     | 0.51              |
| 1:0:621:U:O2    | 1:0:628:A:H2    | 1.94                     | 0.51              |
| 1:0:71:A:O5'    | 1:0:71:A:H8     | 1.93                     | 0.51              |
| 1:0:759:C:OP1   | 1:0:761:G:H4'   | 2.09                     | 0.51              |
| 1:0:788:G:H5'   | 1:0:790:A:H1'   | 1.92                     | 0.51              |
| 1:0:790:A:C2    | 1:0:791:G:N9    | 2.78                     | 0.51              |
| 1:0:792:U:C2'   | 1:0:793:G:H5'   | 2.40                     | 0.51              |
| 1:0:977:G:C5'   | 1:0:2251:U:O2   | 2.57                     | 0.51              |
| 1:0:1066:G:H5'' | 1:0:1067:G:OP2  | 2.10                     | 0.51              |
| 1:0:1153:A:C4'  | 1:0:1154:A:OP1  | 2.58                     | 0.51              |
| 1:0:124:A:H2'   | 1:0:125:A:C8    | 2.45                     | 0.51              |
| 1:0:1340:C:H2'  | 1:0:1341:G:O4'  | 2.10                     | 0.51              |
| 1:0:1509:A:H2'  | 1:0:1510:A:C8   | 2.45                     | 0.51              |
| 1:0:1692:C:N4   | 1:0:1693:A:C6   | 2.79                     | 0.51              |
| 1:0:2188:A:H2'  | 1:0:2189:A:C8   | 2.45                     | 0.51              |
| 1:0:2534:U:H3'  | 1:0:2535:C:C6   | 2.45                     | 0.51              |
| 1:0:2548:G:H2'  | 1:0:2549:G:H5'' | 1.93                     | 0.51              |
| 1:0:2762:G:C2   | 1:0:2763:U:C6   | 2.98                     | 0.51              |
| 1:0:2762:G:N2   | 1:0:2763:U:H1'  | 2.24                     | 0.51              |
| 1:0:529:U:O2'   | 1:0:530:G:H5'   | 2.10                     | 0.51              |
| 1:0:632:A:H3'   | 1:0:632:A:N3    | 2.25                     | 0.51              |
| 1:0:816:U:H2'   | 1:0:817:A:H5'   | 1.91                     | 0.51              |
| 1:0:864:C:O2'   | 1:0:865:A:H5'   | 2.11                     | 0.51              |
| 1:0:1141:U:O2'  | 1:0:1142:G:P    | 2.68                     | 0.51              |
| 1:0:52:A:H61    | 1:0:115:G:C2'   | 2.23                     | 0.51              |
| 1:0:1187:A:H2'  | 1:0:1188:A:H8   | 1.75                     | 0.51              |
| 1:0:1296:G:N2   | 1:0:1342:U:O4   | 2.43                     | 0.51              |
| 1:0:1323:G:N2   | 1:0:1326:U:N3   | 2.59                     | 0.51              |
| 1:0:1836:C:H2'  | 1:0:1837:G:O4'  | 2.10                     | 0.51              |
| 1:0:1279:G:O2'  | 1:0:1995:G:C6   | 2.61                     | 0.51              |
| 1:0:2073:A:C5   | 1:0:2074:U:C5   | 2.99                     | 0.51              |
| 1:0:2177:U:H2'  | 1:0:2178:U:C6   | 2.46                     | 0.51              |
| 1:0:2448:A:H62  | 1:0:2460:G:H1'  | 1.73                     | 0.51              |
| 1:0:2489:C:C2'  | 1:0:2490:U:H5'  | 2.39                     | 0.51              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2623:A:N6  | 1:0:2624:G:N1  | 2.58                     | 0.51              |
| 1:0:880:C:O2   | 1:0:925:U:H4'  | 2.11                     | 0.51              |
| 1:0:1606:C:C2  | 1:0:1607:A:N7  | 2.78                     | 0.51              |
| 1:0:1715:A:O2' | 1:0:1716:G:P   | 2.68                     | 0.51              |
| 1:0:1953:A:O4' | 1:0:1955:G:H1' | 2.09                     | 0.51              |
| 1:0:2569:A:C2  | 1:0:2584:U:C2  | 2.99                     | 0.51              |
| 1:0:2780:A:C5  | 1:0:2781:G:N7  | 2.78                     | 0.51              |
| 1:0:38:G:C2    | 1:0:454:G:N3   | 2.79                     | 0.51              |
| 1:0:600:G:O2'  | 1:0:601:A:OP1  | 2.22                     | 0.51              |
| 1:0:611:C:H5'' | 1:0:611:C:H6   | 1.75                     | 0.51              |
| 1:0:874:A:H2'  | 1:0:875:G:O4'  | 2.10                     | 0.51              |
| 1:0:983:G:P    | 1:0:985:G:H5'' | 2.50                     | 0.51              |
| 1:0:1036:G:O4' | 1:0:1036:G:OP1 | 2.28                     | 0.51              |
| 1:0:1102:G:H2' | 1:0:1103:C:C6  | 2.45                     | 0.51              |
| 1:0:1322:G:O2' | 1:0:1323:G:H5' | 2.11                     | 0.51              |
| 1:0:1493:A:C2  | 1:0:1494:G:H1' | 2.46                     | 0.51              |
| 1:0:1697:U:C5  | 1:0:1698:C:C4  | 2.98                     | 0.51              |
| 1:0:187:U:H2'  | 1:0:188:G:H8   | 1.76                     | 0.51              |
| 1:0:190:A:H2'  | 1:0:191:G:C8   | 2.46                     | 0.51              |
| 1:0:2052:G:C6  | 1:0:2053:G:N7  | 2.79                     | 0.51              |
| 1:0:2207:G:O2' | 1:0:2208:U:H5' | 2.11                     | 0.51              |
| 1:0:2266:A:N6  | 1:0:2323:U:C1' | 2.74                     | 0.51              |
| 1:0:2592:U:H4' | 1:0:2593:A:OP1 | 2.10                     | 0.51              |
| 1:0:2768:C:H2' | 1:0:2769:C:O4' | 2.11                     | 0.51              |
| 1:0:577:U:O5'  | 1:0:956:A:N6   | 2.43                     | 0.51              |
| 1:0:982:C:O2'  | 1:0:983:G:H5'  | 2.10                     | 0.51              |
| 1:0:105:G:C2'  | 1:0:106:G:H5'  | 2.40                     | 0.51              |
| 1:0:1129:A:H2' | 1:0:1130:U:H6  | 1.74                     | 0.51              |
| 1:0:1181:C:H3' | 1:0:1182:U:C4' | 2.41                     | 0.51              |
| 1:0:1251:G:N2  | 1:0:1252:C:C2  | 2.78                     | 0.51              |
| 1:0:1312:G:H2' | 1:0:1643:A:N6  | 2.26                     | 0.51              |
| 1:0:1426:U:O5' | 1:0:1428:G:N2  | 2.36                     | 0.51              |
| 1:0:2058:U:C4  | 1:0:2217:G:C6  | 2.99                     | 0.51              |
| 1:0:2076:G:H21 | 1:0:2181:A:N6  | 2.09                     | 0.51              |
| 1:0:175:C:H5'  | 1:0:2223:U:OP1 | 2.11                     | 0.51              |
| 1:0:2642:G:C2' | 1:0:2643:G:H5' | 2.41                     | 0.51              |
| 1:0:343:A:C8   | 1:0:346:C:N4   | 2.79                     | 0.51              |
| 1:0:59:G:H1'   | 1:0:73:A:N1    | 2.25                     | 0.51              |
| 1:0:1011:A:H2' | 1:0:1012:A:O4' | 2.11                     | 0.51              |
| 1:0:1094:C:H2' | 1:0:1096:A:N7  | 2.24                     | 0.51              |
| 1:0:1129:A:O2' | 1:0:1130:U:H5' | 2.10                     | 0.51              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1544:A:C6   | 1:0:1545:G:N1   | 2.79                     | 0.51              |
| 1:0:1708:C:H2'  | 1:0:1709:U:C6   | 2.46                     | 0.51              |
| 1:0:2286:G:N3   | 1:0:2286:G:H2'  | 2.25                     | 0.51              |
| 1:0:840:U:C4    | 1:0:2409:A:C6   | 2.99                     | 0.51              |
| 1:0:2656:G:H2'  | 1:0:2657:G:H8   | 1.74                     | 0.51              |
| 1:0:2676:G:N1   | 1:0:2690:A:C2   | 2.79                     | 0.51              |
| 1:0:2817:A:O2'  | 1:0:2818:G:H5'  | 2.10                     | 0.51              |
| 1:0:2843:A:H2'  | 1:0:2844:G:H8   | 1.76                     | 0.51              |
| 1:0:330:C:H2'   | 1:0:331:U:H5'   | 1.92                     | 0.51              |
| 1:0:562:G:C6    | 1:0:563:U:N3    | 2.78                     | 0.51              |
| 1:0:616:U:N3    | 1:0:617:U:H5    | 2.07                     | 0.51              |
| 1:0:941:U:H2'   | 1:0:942:U:H6    | 1.76                     | 0.51              |
| 1:0:1248:G:C2   | 1:0:1249:G:N2   | 2.79                     | 0.51              |
| 1:0:1437:A:HO2' | 1:0:1515:U:H4'  | 1.72                     | 0.51              |
| 1:0:1606:C:H2'  | 1:0:1607:A:H8   | 1.75                     | 0.51              |
| 1:0:1621:C:N4   | 1:0:1622:G:C2   | 2.79                     | 0.51              |
| 1:0:1707:A:N7   | 1:0:1714:A:C2   | 2.78                     | 0.51              |
| 1:0:1901:A:N3   | 1:0:1902:A:N7   | 2.58                     | 0.51              |
| 1:0:1920:A:H8   | 1:0:1921:A:H3'  | 1.76                     | 0.51              |
| 1:0:1991:C:H2'  | 1:0:1992:G:H8   | 1.75                     | 0.51              |
| 1:0:2201:G:O2'  | 1:0:2202:G:H5'  | 2.11                     | 0.51              |
| 1:0:2255:G:C2   | 1:0:2256:G:C8   | 2.99                     | 0.51              |
| 1:0:2727:G:H2'  | 1:0:2728:A:H5'' | 1.92                     | 0.51              |
| 1:0:404:A:H2'   | 1:0:405:C:H6    | 1.74                     | 0.51              |
| 1:0:429:C:H2'   | 1:0:430:C:H6    | 1.76                     | 0.51              |
| 1:0:55:A:O4'    | 1:0:125:A:C2    | 2.64                     | 0.51              |
| 1:0:790:A:C2    | 1:0:791:G:C8    | 2.98                     | 0.51              |
| 1:0:78:C:H2'    | 1:0:79:G:H8     | 1.76                     | 0.51              |
| 1:0:1305:C:H2'  | 1:0:1306:U:C6   | 2.45                     | 0.51              |
| 1:0:154:U:O2'   | 1:0:155:G:OP1   | 2.24                     | 0.51              |
| 1:0:1658:A:C8   | 1:0:1659:G:C8   | 2.98                     | 0.51              |
| 1:0:2016:A:C5   | 1:0:2019:C:C4   | 2.99                     | 0.51              |
| 1:0:2036:G:N2   | 1:0:2596:C:C2   | 2.79                     | 0.51              |
| 1:0:2054:A:C2   | 1:0:2420:C:N3   | 2.78                     | 0.51              |
| 1:0:2063:A:H2'  | 1:0:2064:U:O4'  | 2.11                     | 0.51              |
| 1:0:225:G:N3    | 1:0:2410:U:H4'  | 2.25                     | 0.51              |
| 1:0:2279:G:H2'  | 1:0:2280:A:C8   | 2.45                     | 0.51              |
| 1:0:227:G:C6    | 1:0:228:A:C6    | 2.98                     | 0.51              |
| 1:0:2362:G:H2'  | 1:0:2363:G:C8   | 2.46                     | 0.51              |
| 1:0:2384:G:N2   | 1:0:2390:A:N7   | 2.59                     | 0.51              |
| 1:0:424:G:OP2   | 1:0:2386:G:OP2  | 2.29                     | 0.51              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2560:G:O6   | 1:0:2589:C:C2   | 2.64                     | 0.51              |
| 1:0:2686:C:H2'  | 1:0:2687:G:H8   | 1.75                     | 0.51              |
| 1:0:691:C:O2'   | 1:0:692:C:H5'   | 2.10                     | 0.51              |
| 1:0:777:A:O2'   | 1:0:778:G:P     | 2.69                     | 0.51              |
| 1:0:793:G:C2    | 1:0:795:A:C2    | 2.99                     | 0.51              |
| 1:0:1137:A:H5'' | 1:0:1138:A:OP1  | 2.11                     | 0.51              |
| 1:0:115:G:C6    | 1:0:117:A:N6    | 2.79                     | 0.51              |
| 1:0:1325:U:O2'  | 1:0:1326:U:P    | 2.69                     | 0.51              |
| 1:0:1355:A:C6   | 1:0:1358:C:C2   | 2.99                     | 0.51              |
| 1:0:1437:A:H2'  | 1:0:1438:G:C8   | 2.42                     | 0.51              |
| 1:0:1481:U:O4'  | 1:0:1561:A:H2   | 1.94                     | 0.51              |
| 1:0:1498:G:O2'  | 1:0:1499:A:H5'  | 2.10                     | 0.51              |
| 1:0:1754:G:H2'  | 1:0:1755:G:O5'  | 2.11                     | 0.51              |
| 1:0:2507:U:HO2' | 1:0:2508:G:H8   | 1.58                     | 0.51              |
| 1:0:2870:C:H2'  | 1:0:2871:U:H6   | 1.76                     | 0.51              |
| 1:0:645:G:H2'   | 1:0:646:C:C6    | 2.46                     | 0.51              |
| 1:0:756:C:H2'   | 1:0:757:U:H6    | 1.76                     | 0.51              |
| 1:0:1029:C:H3'  | 1:0:1030:U:H5'' | 1.92                     | 0.50              |
| 1:0:1160:C:H2'  | 1:0:1161:U:O4'  | 2.11                     | 0.50              |
| 1:0:1234:C:H2'  | 1:0:1235:C:H6   | 1.76                     | 0.50              |
| 1:0:1249:G:HO2' | 1:0:1250:A:P    | 2.32                     | 0.50              |
| 1:0:1481:U:O2'  | 1:0:1562:G:H1'  | 2.10                     | 0.50              |
| 1:0:1495:G:O2'  | 1:0:1496:G:OP1  | 2.30                     | 0.50              |
| 1:0:1488:G:H1   | 1:0:1534:A:N6   | 2.08                     | 0.50              |
| 1:0:1928:G:N2   | 1:0:1929:U:C2   | 2.79                     | 0.50              |
| 1:0:1973:C:H2'  | 1:0:1974:U:C6   | 2.46                     | 0.50              |
| 1:0:2083:G:N2   | 1:0:2084:G:H1'  | 2.26                     | 0.50              |
| 1:0:2324:G:O6   | 1:0:2360:C:C4   | 2.64                     | 0.50              |
| 1:0:2557:G:N2   | 1:0:2558:C:C2   | 2.80                     | 0.50              |
| 1:0:2573:C:C4   | 1:0:2574:G:N7   | 2.79                     | 0.50              |
| 1:0:321:A:N1    | 1:0:323:G:H1'   | 2.26                     | 0.50              |
| 1:0:353:G:O2'   | 1:0:354:C:H5'   | 2.10                     | 0.50              |
| 1:0:490:A:HO2'  | 1:0:491:A:P     | 2.34                     | 0.50              |
| 1:0:677:G:C2    | 1:0:678:G:C8    | 2.99                     | 0.50              |
| 1:0:813:A:O2'   | 1:0:814:G:P     | 2.69                     | 0.50              |
| 1:0:861:G:N7    | 1:0:862:A:N7    | 2.59                     | 0.50              |
| 1:0:890:U:H6    | 1:0:890:U:O5'   | 1.94                     | 0.50              |
| 1:0:940:G:H8    | 1:0:940:G:O5'   | 1.94                     | 0.50              |
| 1:0:317:U:H4'   | 1:0:1224:A:H61  | 1.75                     | 0.50              |
| 1:0:122:G:C2'   | 1:0:123:A:H5''  | 2.41                     | 0.50              |
| 1:0:1581:C:HO2' | 1:0:1582:A:P    | 2.34                     | 0.50              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2231:G:C2' | 1:0:2232:G:H5'  | 2.41                     | 0.50              |
| 1:0:2352:A:C4  | 1:0:2353:G:N7   | 2.80                     | 0.50              |
| 1:0:2665:G:C2  | 1:0:2666:U:O2   | 2.64                     | 0.50              |
| 1:0:329:C:H2'  | 1:0:330:C:H6    | 1.77                     | 0.50              |
| 1:0:357:A:H2'  | 1:0:358:C:C5'   | 2.40                     | 0.50              |
| 1:0:490:A:H4'  | 1:0:491:A:H5'   | 1.92                     | 0.50              |
| 1:0:531:G:H2'  | 1:0:532:A:C8    | 2.45                     | 0.50              |
| 1:0:14:A:N1    | 1:0:536:A:C2    | 2.79                     | 0.50              |
| 1:0:58:C:C4    | 1:0:72:A:N6     | 2.79                     | 0.50              |
| 1:0:833:A:C2   | 1:0:834:A:N3    | 2.79                     | 0.50              |
| 1:0:921:A:C6   | 1:0:924:C:C2    | 2.99                     | 0.50              |
| 1:0:82:G:N2    | 1:0:101:A:OP2   | 2.44                     | 0.50              |
| 1:0:1016:C:O2' | 1:0:1023:U:C4   | 2.64                     | 0.50              |
| 1:0:1205:G:N2  | 1:0:1206:G:H1'  | 2.25                     | 0.50              |
| 1:0:1361:G:C6  | 1:0:1615:C:N4   | 2.80                     | 0.50              |
| 1:0:1689:U:C3' | 1:0:1690:U:H5'' | 2.38                     | 0.50              |
| 1:0:2016:A:H2' | 1:0:2018:G:OP2  | 2.10                     | 0.50              |
| 1:0:2228:U:N3  | 1:0:2232:G:OP2  | 2.43                     | 0.50              |
| 1:0:234:C:H2'  | 1:0:235:C:C5'   | 2.41                     | 0.50              |
| 1:0:2382:C:H2' | 1:0:2382:C:O2   | 2.10                     | 0.50              |
| 1:0:2477:C:O2' | 1:0:2478:C:H5'  | 2.11                     | 0.50              |
| 1:0:2702:G:C5  | 1:0:2703:C:C4   | 2.99                     | 0.50              |
| 1:0:47:G:N2    | 1:0:48:A:N7     | 2.57                     | 0.50              |
| 1:0:614:G:C2   | 1:0:634:G:N2    | 2.80                     | 0.50              |
| 1:0:774:A:C8   | 1:0:774:A:H3'   | 2.46                     | 0.50              |
| 1:0:781:G:H2'  | 1:0:782:U:H6    | 1.76                     | 0.50              |
| 1:0:814:G:O2'  | 1:0:815:A:OP1   | 2.25                     | 0.50              |
| 1:0:871:U:H1'  | 1:0:2248:A:C5'  | 2.41                     | 0.50              |
| 1:0:1002:C:H2' | 1:0:1003:C:C6   | 2.46                     | 0.50              |
| 1:0:1459:U:H2' | 1:0:1475:U:HO2' | 1.75                     | 0.50              |
| 1:0:1622:G:H4' | 1:0:1624:A:N3   | 2.26                     | 0.50              |
| 1:0:1715:A:O2' | 1:0:1716:G:O5'  | 2.30                     | 0.50              |
| 1:0:1885:C:H2' | 1:0:1886:G:H5'  | 1.92                     | 0.50              |
| 1:0:2054:A:H2' | 1:0:2055:G:C8   | 2.46                     | 0.50              |
| 1:0:2361:G:O5' | 1:0:2361:G:C8   | 2.64                     | 0.50              |
| 1:0:1949:A:H1' | 1:0:2572:U:H5'  | 1.93                     | 0.50              |
| 1:0:2844:G:O2' | 1:0:2845:C:H5'  | 2.11                     | 0.50              |
| 1:0:562:G:C6   | 1:0:563:U:C4    | 2.99                     | 0.50              |
| 1:0:541:C:C2   | 1:0:572:G:O4'   | 2.65                     | 0.50              |
| 1:0:836:G:C4   | 1:0:837:U:C5    | 3.00                     | 0.50              |
| 1:0:1421:U:H6  | 1:0:1421:U:O5'  | 1.94                     | 0.50              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1444:C:H2' | 1:0:1445:A:C8   | 2.46                     | 0.50              |
| 1:0:1691:G:O2' | 1:0:1693:A:N6   | 2.45                     | 0.50              |
| 1:0:1727:C:C2  | 1:0:1740:G:N2   | 2.80                     | 0.50              |
| 1:0:1908:C:N3  | 1:0:1909:U:O2'  | 2.42                     | 0.50              |
| 1:0:203:G:O2'  | 1:0:204:A:H5'   | 2.12                     | 0.50              |
| 1:0:2133:G:H2' | 1:0:2134:U:C6   | 2.47                     | 0.50              |
| 1:0:2057:U:C2  | 1:0:2415:G:N2   | 2.79                     | 0.50              |
| 1:0:2549:G:H2' | 1:0:2550:C:O4'  | 2.11                     | 0.50              |
| 1:0:2036:G:C2  | 1:0:2596:C:C2   | 3.00                     | 0.50              |
| 1:0:2642:G:H2' | 1:0:2643:G:H5'  | 1.94                     | 0.50              |
| 1:0:2722:C:O2' | 1:0:2723:C:H5'  | 2.11                     | 0.50              |
| 1:0:1010:U:O2  | 1:0:1010:U:H2'  | 2.10                     | 0.50              |
| 1:0:1208:A:H2' | 1:0:1209:G:O5'  | 2.11                     | 0.50              |
| 1:0:1288:A:N6  | 1:0:1308:C:O2'  | 2.45                     | 0.50              |
| 1:0:1336:G:C2  | 1:0:1346:C:H1'  | 2.47                     | 0.50              |
| 1:0:1404:C:C4  | 1:0:1407:G:C8   | 3.00                     | 0.50              |
| 1:0:1417:C:H2' | 1:0:1418:C:C6   | 2.47                     | 0.50              |
| 1:0:1487:C:O5' | 1:0:1487:C:H6   | 1.95                     | 0.50              |
| 1:0:1540:C:H2' | 1:0:1541:G:C8   | 2.45                     | 0.50              |
| 1:0:1658:A:N6  | 1:0:1659:G:C2   | 2.79                     | 0.50              |
| 1:0:174:A:H5'  | 1:0:174:A:H8    | 1.75                     | 0.50              |
| 1:0:177:U:O4   | 1:0:225:G:N3    | 2.44                     | 0.50              |
| 1:0:1678:G:C5  | 1:0:1983:G:N2   | 2.79                     | 0.50              |
| 1:0:2194:A:H2' | 1:0:2195:C:H5'' | 1.93                     | 0.50              |
| 1:0:2361:G:O5' | 1:0:2361:G:H8   | 1.94                     | 0.50              |
| 1:0:2496:C:N4  | 1:0:2521:A:C2   | 2.79                     | 0.50              |
| 1:0:2824:C:H1' | 1:0:2843:A:C4   | 2.46                     | 0.50              |
| 1:0:362:C:C4   | 1:0:363:G:H1'   | 2.46                     | 0.50              |
| 1:0:599:A:C2   | 1:0:681:A:C2    | 3.00                     | 0.50              |
| 1:0:653:G:N2   | 1:0:657:A:N6    | 2.59                     | 0.50              |
| 1:0:687:G:H2'  | 1:0:688:A:H5'   | 1.94                     | 0.50              |
| 1:0:1272:G:O2' | 1:0:1273:G:H5'  | 2.12                     | 0.50              |
| 1:0:1314:A:H2  | 1:0:1642:G:H21  | 1.58                     | 0.50              |
| 1:0:1437:A:C2  | 1:0:1592:U:O2   | 2.65                     | 0.50              |
| 1:0:1582:A:H4' | 1:0:1583:A:OP1  | 2.11                     | 0.50              |
| 1:0:1689:U:H2' | 1:0:1690:U:C5'  | 2.42                     | 0.50              |
| 1:0:1698:C:C2' | 1:0:1753:A:H2'  | 2.42                     | 0.50              |
| 1:0:1772:C:O2' | 1:0:1773:C:O5'  | 2.29                     | 0.50              |
| 1:0:1904:G:O2' | 1:0:1905:G:H5'  | 2.12                     | 0.50              |
| 1:0:1825:C:O2' | 1:0:1952:A:N1   | 2.44                     | 0.50              |
| 1:0:1953:A:H5' | 1:0:1955:G:H1'  | 1.94                     | 0.50              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2007:G:H2'  | 1:0:2008:C:C6  | 2.46                     | 0.50              |
| 1:0:2245:A:H5'  | 1:0:2246:A:C5  | 2.46                     | 0.50              |
| 1:0:2629:U:H2'  | 1:0:2630:C:C6  | 2.47                     | 0.50              |
| 1:0:2813:G:O2'  | 1:0:2814:G:H5' | 2.12                     | 0.50              |
| 1:0:304:A:H2'   | 1:0:305:A:H5'' | 1.93                     | 0.50              |
| 1:0:594:G:N3    | 1:0:1264:C:N4  | 2.56                     | 0.50              |
| 1:0:931:G:O6    | 1:0:2247:A:N7  | 2.44                     | 0.50              |
| 1:0:986:A:H62   | 1:0:999:A:H2   | 1.59                     | 0.50              |
| 1:0:827:C:H1'   | 1:0:1237:G:N2  | 2.27                     | 0.50              |
| 1:0:1466:C:H2'  | 1:0:1467:U:O4' | 2.11                     | 0.50              |
| 1:0:1459:U:C2'  | 1:0:1475:U:O2' | 2.52                     | 0.50              |
| 1:0:2570:C:H2'  | 1:0:2571:G:H8  | 1.72                     | 0.50              |
| 1:0:2595:C:H2'  | 1:0:2596:C:H6  | 1.76                     | 0.50              |
| 1:0:2761:A:H5'' | 1:0:2762:G:C5' | 2.36                     | 0.50              |
| 1:0:2812:A:O2'  | 1:0:2813:G:H5' | 2.11                     | 0.50              |
| 1:0:2825:A:C2   | 1:0:2826:C:C2  | 3.00                     | 0.50              |
| 1:0:2845:C:N3   | 1:0:2846:G:C5  | 2.80                     | 0.50              |
| 1:0:322:A:H1'   | 1:0:343:A:N9   | 2.27                     | 0.50              |
| 1:0:623:G:O2'   | 1:0:625:A:OP1  | 2.14                     | 0.50              |
| 1:0:676:G:C6    | 1:0:677:G:C5   | 2.99                     | 0.50              |
| 1:0:830:C:O2'   | 1:0:852:U:OP1  | 2.29                     | 0.50              |
| 1:0:836:G:N2    | 1:0:847:C:O2   | 2.43                     | 0.50              |
| 1:0:1149:G:O2'  | 1:0:1154:A:N1  | 2.34                     | 0.50              |
| 1:0:116:A:H8    | 1:0:117:A:N7   | 2.09                     | 0.50              |
| 1:0:1502:G:H2'  | 1:0:1503:G:H8  | 1.76                     | 0.50              |
| 1:0:1614:C:H2'  | 1:0:1615:C:C6  | 2.47                     | 0.50              |
| 1:0:1678:G:C4   | 1:0:1983:G:N2  | 2.80                     | 0.50              |
| 1:0:1821:A:H5'' | 1:0:1822:C:C5  | 2.46                     | 0.50              |
| 1:0:1881:U:C2'  | 1:0:1882:G:H5' | 2.41                     | 0.50              |
| 1:0:1977:C:H2'  | 1:0:1978:U:H6  | 1.77                     | 0.50              |
| 1:0:2407:G:H5'  | 1:0:2408:G:N3  | 2.27                     | 0.50              |
| 1:0:2713:A:H2'  | 1:0:2714:A:H8  | 1.76                     | 0.50              |
| 1:0:2832:G:N2   | 1:0:2835:A:OP2 | 2.44                     | 0.50              |
| 1:0:490:A:O2'   | 1:0:491:A:O5'  | 2.29                     | 0.50              |
| 1:0:62:U:O2'    | 1:0:63:A:N7    | 2.45                     | 0.50              |
| 1:0:789:G:C2    | 1:0:2220:A:OP1 | 2.65                     | 0.50              |
| 1:0:806:A:C2'   | 1:0:807:A:OP2  | 2.60                     | 0.50              |
| 1:0:1223:G:C4   | 1:0:1250:A:N6  | 2.80                     | 0.49              |
| 1:0:1234:C:H2'  | 1:0:1235:C:C6  | 2.47                     | 0.49              |
| 1:0:1242:A:C4   | 1:0:1243:G:C8  | 3.00                     | 0.49              |
| 1:0:1467:U:O4   | 1:0:1473:U:C2  | 2.65                     | 0.49              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1731:C:C4   | 1:0:1732:U:H1' | 2.47                     | 0.49              |
| 1:0:1793:A:C6   | 1:0:1794:A:C6  | 3.00                     | 0.49              |
| 1:0:1764:A:H2   | 1:0:1960:A:N1  | 2.10                     | 0.49              |
| 1:0:1975:G:C5   | 1:0:1980:A:C6  | 3.00                     | 0.49              |
| 1:0:222:G:H2'   | 1:0:223:C:C6   | 2.47                     | 0.49              |
| 1:0:2447:G:O2'  | 1:0:2448:A:O5' | 2.28                     | 0.49              |
| 1:0:2725:C:H2'  | 1:0:2726:U:H6  | 1.73                     | 0.49              |
| 1:0:2753:C:O2'  | 1:0:2754:C:H5' | 2.12                     | 0.49              |
| 1:0:753:U:H2'   | 1:0:754:G:C8   | 2.47                     | 0.49              |
| 1:0:773:G:H2'   | 1:0:774:A:H5'  | 1.94                     | 0.49              |
| 1:0:832:A:C8    | 1:0:1202:U:O4  | 2.65                     | 0.49              |
| 1:0:838:A:H2'   | 1:0:839:U:C6   | 2.47                     | 0.49              |
| 1:0:873:U:H2'   | 1:0:874:A:C5'  | 2.41                     | 0.49              |
| 1:0:1287:A:N1   | 1:0:1315:A:H2  | 2.10                     | 0.49              |
| 1:0:1375:C:H42  | 1:0:1376:C:N4  | 2.11                     | 0.49              |
| 1:0:1407:G:N1   | 1:0:1408:A:C2  | 2.80                     | 0.49              |
| 1:0:1435:G:O2'  | 1:0:1436:G:H5' | 2.12                     | 0.49              |
| 1:0:1706:A:N7   | 1:0:1715:A:N1  | 2.59                     | 0.49              |
| 1:0:2239:C:H2'  | 1:0:2240:C:H6  | 1.76                     | 0.49              |
| 1:0:2325:A:O2'  | 1:0:2326:C:P   | 2.70                     | 0.49              |
| 1:0:2472:U:C2'  | 1:0:2473:G:O5' | 2.59                     | 0.49              |
| 1:0:2042:A:C2   | 1:0:2482:A:C5  | 3.00                     | 0.49              |
| 1:0:2543:A:C2   | 1:0:2544:A:C2  | 2.99                     | 0.49              |
| 1:0:2633:A:N3   | 1:0:2635:U:C4  | 2.81                     | 0.49              |
| 1:0:2669:C:C2'  | 1:0:2670:C:OP2 | 2.59                     | 0.49              |
| 1:0:312:G:O2'   | 1:0:313:U:O5'  | 2.30                     | 0.49              |
| 1:0:735:G:H2'   | 1:0:736:G:O4'  | 2.12                     | 0.49              |
| 1:0:717:G:O2'   | 1:0:739:G:N2   | 2.45                     | 0.49              |
| 1:0:76:C:O2'    | 1:0:77:C:H5'   | 2.12                     | 0.49              |
| 1:0:789:G:O2'   | 1:0:790:A:P    | 2.70                     | 0.49              |
| 1:0:944:A:C2    | 1:0:945:G:C1'  | 2.95                     | 0.49              |
| 1:0:1169:C:C2'  | 1:0:1170:U:H5' | 2.42                     | 0.49              |
| 1:0:1407:G:C2   | 1:0:1408:A:N3  | 2.80                     | 0.49              |
| 1:0:1509:A:H2'  | 1:0:1510:A:H8  | 1.77                     | 0.49              |
| 1:0:1569:A:C6   | 1:0:1571:G:H1' | 2.47                     | 0.49              |
| 1:0:1625:A:N3   | 1:0:1625:A:C2' | 2.73                     | 0.49              |
| 1:0:1926:U:HO2' | 1:0:1927:U:P   | 2.35                     | 0.49              |
| 1:0:2047:C:H5'' | 1:0:2047:C:H6  | 1.75                     | 0.49              |
| 1:0:207:U:H2'   | 1:0:207:U:O2   | 2.11                     | 0.49              |
| 1:0:2357:A:H2'  | 1:0:2358:C:H5' | 1.93                     | 0.49              |
| 1:0:2496:C:C4   | 1:0:2521:A:C6  | 3.00                     | 0.49              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2588:U:C5' | 1:0:2589:C:OP2 | 2.61                     | 0.49              |
| 1:0:2737:A:C2' | 1:0:2738:A:C5' | 2.85                     | 0.49              |
| 1:0:2762:G:H21 | 1:0:2763:U:H1' | 1.76                     | 0.49              |
| 1:0:2780:A:H2' | 1:0:2781:G:H5' | 1.92                     | 0.49              |
| 1:0:1670:G:C5' | 1:0:2797:G:H22 | 2.23                     | 0.49              |
| 1:0:2856:U:C2  | 1:0:2857:C:C5  | 3.00                     | 0.49              |
| 1:0:330:C:O2'  | 1:0:331:U:H5'  | 2.12                     | 0.49              |
| 1:0:700:C:O2   | 1:0:800:U:O3'  | 2.29                     | 0.49              |
| 1:0:1433:A:N1  | 1:0:1434:U:H1' | 2.27                     | 0.49              |
| 1:0:1683:G:C2' | 1:0:1684:G:H5' | 2.43                     | 0.49              |
| 1:0:2019:C:H6  | 1:0:2019:C:H5' | 1.77                     | 0.49              |
| 1:0:2093:G:H4' | 1:0:2094:C:OP1 | 2.13                     | 0.49              |
| 1:0:2215:C:H2' | 1:0:2216:G:O4' | 2.12                     | 0.49              |
| 1:0:2395:C:H2' | 1:0:2396:C:H5' | 1.94                     | 0.49              |
| 1:0:2452:U:O2  | 1:0:2452:U:H2' | 2.13                     | 0.49              |
| 1:0:2646:C:O5' | 1:0:2646:C:H6  | 1.95                     | 0.49              |
| 1:0:1192:A:C2  | 1:0:1193:G:N7  | 2.80                     | 0.49              |
| 1:0:1293:A:C2' | 1:0:1294:G:H5' | 2.43                     | 0.49              |
| 1:0:1368:G:H2' | 1:0:1369:G:H8  | 1.77                     | 0.49              |
| 1:0:1394:G:O2' | 1:0:1395:A:H5' | 2.12                     | 0.49              |
| 1:0:1567:A:O2' | 1:0:1568:A:H5' | 2.13                     | 0.49              |
| 1:0:186:C:O2   | 1:0:186:C:H2'  | 2.13                     | 0.49              |
| 1:0:2233:C:C2' | 1:0:2234:G:H5' | 2.43                     | 0.49              |
| 1:0:2253:A:N6  | 1:0:2255:G:N3  | 2.61                     | 0.49              |
| 1:0:2431:C:O2' | 1:0:2432:A:H5' | 2.13                     | 0.49              |
| 1:0:2665:G:N2  | 1:0:2704:U:H1' | 2.28                     | 0.49              |
| 1:0:2770:A:H5' | 1:0:2867:G:H21 | 1.76                     | 0.49              |
| 1:0:2839:G:C5  | 1:0:2840:U:C4  | 3.01                     | 0.49              |
| 1:0:312:G:O2'  | 1:0:313:U:C6   | 2.65                     | 0.49              |
| 1:0:321:A:H2'  | 1:0:323:G:N7   | 2.26                     | 0.49              |
| 1:0:490:A:C2'  | 1:0:491:A:H5'  | 2.42                     | 0.49              |
| 1:0:496:C:C2   | 1:0:506:G:N2   | 2.81                     | 0.49              |
| 1:0:528:G:H2'  | 1:0:529:U:C6   | 2.48                     | 0.49              |
| 1:0:612:G:H4'  | 1:0:613:A:O3'  | 2.12                     | 0.49              |
| 1:0:840:U:H4'  | 1:0:841:G:H21  | 1.77                     | 0.49              |
| 1:0:874:A:C2'  | 1:0:875:G:H5'  | 2.42                     | 0.49              |
| 1:0:982:C:H2'  | 1:0:983:G:O4'  | 2.13                     | 0.49              |
| 1:0:1087:C:H3' | 1:0:1088:A:C8  | 2.47                     | 0.49              |
| 1:0:1245:G:H2' | 1:0:1246:G:H8  | 1.78                     | 0.49              |
| 1:0:1339:U:H5  | 1:0:1664:G:O2' | 1.95                     | 0.49              |
| 1:0:1560:A:N1  | 1:0:1561:A:C2  | 2.80                     | 0.49              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2220:A:C2   | 1:0:2221:G:C4   | 3.00                     | 0.49              |
| 1:0:2427:A:O2'  | 1:0:2428:U:P    | 2.70                     | 0.49              |
| 1:0:2733:A:C2'  | 1:0:2734:U:H5'  | 2.43                     | 0.49              |
| 1:0:2781:G:O3'  | 1:0:2782:G:O4'  | 2.30                     | 0.49              |
| 1:0:2820:C:H2'  | 1:0:2821:G:H8   | 1.77                     | 0.49              |
| 1:0:298:C:O5'   | 1:0:298:C:H6    | 1.95                     | 0.49              |
| 1:0:319:G:H2'   | 1:0:320:A:O4'   | 2.13                     | 0.49              |
| 1:0:594:G:N1    | 1:0:1264:C:C5   | 2.81                     | 0.49              |
| 1:0:647:G:H4'   | 1:0:649:G:O3'   | 2.12                     | 0.49              |
| 1:0:841:G:C2'   | 1:0:842:A:C8    | 2.92                     | 0.49              |
| 1:0:859:U:O2'   | 1:0:860:U:C6    | 2.54                     | 0.49              |
| 1:0:882:C:H2'   | 1:0:883:A:O4'   | 2.13                     | 0.49              |
| 1:0:1002:C:N4   | 1:0:1198:C:H42  | 2.11                     | 0.49              |
| 1:0:1111:C:H3'  | 1:0:1112:U:H6   | 1.77                     | 0.49              |
| 1:0:1133:G:C2   | 1:0:1134:C:C6   | 3.01                     | 0.49              |
| 1:0:1427:G:H1'  | 1:0:1604:A:H61  | 1.78                     | 0.49              |
| 1:0:1486:A:H2'  | 1:0:1487:C:C5   | 2.48                     | 0.49              |
| 1:0:1567:A:C2'  | 1:0:1568:A:H5'  | 2.42                     | 0.49              |
| 1:0:1570:C:O2'  | 1:0:1571:G:OP1  | 2.21                     | 0.49              |
| 1:0:1787:U:H2'  | 1:0:1788:C:H6   | 1.76                     | 0.49              |
| 1:0:1795:C:N4   | 1:0:1806:G:N2   | 2.60                     | 0.49              |
| 1:0:1981:A:H2'  | 1:0:1982:C:H6   | 1.77                     | 0.49              |
| 1:0:538:A:N7    | 1:0:2025:A:N1   | 2.61                     | 0.49              |
| 1:0:2177:U:H2'  | 1:0:2178:U:H6   | 1.77                     | 0.49              |
| 1:0:2194:A:C2'  | 1:0:2195:C:H5'' | 2.42                     | 0.49              |
| 1:0:2370:G:C1'  | 1:0:2403:C:H41  | 2.25                     | 0.49              |
| 1:0:2437:G:C4   | 1:0:2469:G:C2   | 3.01                     | 0.49              |
| 1:0:2658:A:HO2' | 1:0:2659:C:H5'  | 1.74                     | 0.49              |
| 1:0:2785:A:H2'  | 1:0:2786:G:O4'  | 2.12                     | 0.49              |
| 1:0:2825:A:C5'  | 1:0:2843:A:H2   | 2.24                     | 0.49              |
| 1:0:26:G:C2'    | 1:0:524:A:H61   | 2.26                     | 0.49              |
| 1:0:548:G:N2    | 1:0:549:G:C4    | 2.81                     | 0.49              |
| 1:0:58:C:H3'    | 1:0:59:G:C4'    | 2.42                     | 0.49              |
| 1:0:697:G:C6    | 1:0:788:G:N7    | 2.80                     | 0.49              |
| 1:0:840:U:H4'   | 1:0:841:G:C2    | 2.46                     | 0.49              |
| 1:0:940:G:OP2   | 1:0:941:U:H5'   | 2.12                     | 0.49              |
| 1:0:1142:G:O2'  | 1:0:1143:A:C5'  | 2.60                     | 0.49              |
| 1:0:1169:C:O2'  | 1:0:1170:U:H5'  | 2.12                     | 0.49              |
| 1:0:1440:G:H1'  | 1:0:1589:G:O6   | 2.12                     | 0.49              |
| 1:0:1559:G:C8   | 1:0:1559:G:H3'  | 2.48                     | 0.49              |
| 1:0:1830:C:N4   | 1:0:1881:U:H2'  | 2.28                     | 0.49              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:1881:U:O2'  | 1:0:1882:G:H5'  | 2.13                     | 0.49              |
| 1:0:1931:G:O2'  | 1:0:1932:G:H5'  | 2.12                     | 0.49              |
| 1:0:2048:C:H1'  | 1:0:2428:U:N3   | 2.28                     | 0.49              |
| 1:0:2561:G:O2'  | 1:0:2562:G:H5'  | 2.12                     | 0.49              |
| 1:0:501:G:H2'   | 1:0:502:A:O4'   | 2.13                     | 0.49              |
| 1:0:643:A:H61   | 1:0:652:C:P     | 2.36                     | 0.49              |
| 1:0:861:G:C1'   | 1:0:944:A:N3    | 2.76                     | 0.49              |
| 1:0:956:A:H5'   | 1:0:957:G:OP2   | 2.12                     | 0.49              |
| 1:0:1149:G:H2'  | 1:0:1150:C:H6   | 1.77                     | 0.49              |
| 1:0:1208:A:C2'  | 1:0:1209:G:O5'  | 2.61                     | 0.49              |
| 1:0:1251:G:C2   | 1:0:1252:C:C2   | 3.01                     | 0.49              |
| 1:0:1260:A:O2'  | 1:0:1261:G:OP1  | 2.25                     | 0.49              |
| 1:0:1585:A:C6   | 1:0:1586:A:C6   | 3.01                     | 0.49              |
| 1:0:1763:G:H2'  | 1:0:1764:A:H4'  | 1.95                     | 0.49              |
| 1:0:1825:C:H2'  | 1:0:1826:U:C6   | 2.47                     | 0.49              |
| 1:0:1901:A:O5'  | 1:0:1901:A:H8   | 1.95                     | 0.49              |
| 1:0:1908:C:C2'  | 1:0:1909:U:H4'  | 2.40                     | 0.49              |
| 1:0:208:C:O2'   | 1:0:209:G:H5'   | 2.12                     | 0.49              |
| 1:0:1750:A:H5'  | 1:0:2695:C:H1'  | 1.95                     | 0.49              |
| 1:0:631:G:O5'   | 1:0:631:G:H8    | 1.94                     | 0.49              |
| 1:0:793:G:H1'   | 1:0:796:A:H61   | 1.78                     | 0.49              |
| 1:0:846:A:C5    | 1:0:847:C:C4    | 3.01                     | 0.49              |
| 1:0:116:A:N3    | 1:0:155:G:C1'   | 2.74                     | 0.49              |
| 1:0:1173:G:H2'  | 1:0:1174:G:H8   | 1.77                     | 0.49              |
| 1:0:1831:G:C5   | 1:0:1832:G:N7   | 2.81                     | 0.49              |
| 1:0:1964:A:H5'' | 1:0:1965:U:OP2  | 2.11                     | 0.49              |
| 1:0:2238:G:O2'  | 1:0:2239:C:H5'  | 2.13                     | 0.49              |
| 1:0:2427:A:O2'  | 1:0:2428:U:OP1  | 2.31                     | 0.49              |
| 1:0:2429:A:H2'  | 1:0:2429:A:N3   | 2.27                     | 0.49              |
| 1:0:2633:A:H2   | 1:0:2644:A:H5'' | 1.77                     | 0.49              |
| 1:0:2632:U:C2   | 1:0:2633:A:N7   | 2.80                     | 0.49              |
| 1:0:389:G:N1    | 1:0:412:U:O2    | 2.46                     | 0.49              |
| 1:0:46:C:C4     | 1:0:47:G:N7     | 2.81                     | 0.49              |
| 1:0:677:G:H4'   | 1:0:951:G:H5''  | 1.95                     | 0.49              |
| 1:0:738:G:O5'   | 1:0:738:G:H8    | 1.96                     | 0.49              |
| 1:0:838:A:H2'   | 1:0:839:U:H6    | 1.78                     | 0.49              |
| 1:0:930:A:H2    | 1:0:2247:A:C2   | 2.31                     | 0.49              |
| 1:0:1016:C:C2   | 1:0:1017:C:C5   | 3.01                     | 0.48              |
| 1:0:1262:U:H3'  | 1:0:1262:U:C6   | 2.48                     | 0.48              |
| 1:0:1553:G:H2'  | 1:0:1553:G:N3   | 2.27                     | 0.48              |
| 1:0:172:A:C2    | 1:0:227:G:N2    | 2.78                     | 0.48              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:184:A:N7    | 1:0:185:C:C4   | 2.81                     | 0.48              |
| 1:0:242:A:O2'   | 1:0:243:G:C4'  | 2.61                     | 0.48              |
| 1:0:322:A:O2'   | 1:0:323:G:P    | 2.69                     | 0.48              |
| 1:0:346:C:N3    | 1:0:347:C:C5   | 2.81                     | 0.48              |
| 1:0:1034:U:O4   | 1:0:1035:G:N3  | 2.46                     | 0.48              |
| 1:0:1098:G:N2   | 1:0:1100:G:O2' | 2.42                     | 0.48              |
| 1:0:1226:A:H2'  | 1:0:1227:A:C8  | 2.47                     | 0.48              |
| 1:0:1325:U:O2'  | 1:0:1327:C:N4  | 2.46                     | 0.48              |
| 1:0:155:G:O2'   | 1:0:156:G:H5'  | 2.13                     | 0.48              |
| 1:0:1681:A:H61  | 1:0:1979:C:N4  | 2.11                     | 0.48              |
| 1:0:1692:C:C2'  | 1:0:1693:A:H5' | 2.43                     | 0.48              |
| 1:0:1833:U:O2'  | 1:0:1834:G:H5' | 2.13                     | 0.48              |
| 1:0:1894:U:O5'  | 1:0:1894:U:H6  | 1.97                     | 0.48              |
| 1:0:1918:G:C4   | 1:0:1945:C:N4  | 2.81                     | 0.48              |
| 1:0:1987:G:N7   | 1:0:1988:A:N7  | 2.61                     | 0.48              |
| 1:0:2026:C:O5'  | 1:0:2759:U:O4  | 2.31                     | 0.48              |
| 1:0:203:G:H1'   | 1:0:205:A:N6   | 2.28                     | 0.48              |
| 1:0:2083:G:O2'  | 1:0:2084:G:H5' | 2.12                     | 0.48              |
| 1:0:2256:G:C6   | 1:0:2257:A:N7  | 2.82                     | 0.48              |
| 1:0:2544:A:H2'  | 1:0:2545:A:C1' | 2.43                     | 0.48              |
| 1:0:2554:C:H2'  | 1:0:2557:G:O6  | 2.14                     | 0.48              |
| 1:0:2561:G:H8   | 1:0:2561:G:H5' | 1.78                     | 0.48              |
| 1:0:2632:U:H3   | 1:0:2633:A:N6  | 2.08                     | 0.48              |
| 1:0:2724:G:N7   | 1:0:2735:C:C2  | 2.81                     | 0.48              |
| 1:0:2758:A:HO2' | 1:0:2759:U:P   | 2.35                     | 0.48              |
| 1:0:2852:G:O2'  | 1:0:2853:U:H5' | 2.13                     | 0.48              |
| 1:0:408:U:O2    | 1:0:409:G:N7   | 2.46                     | 0.48              |
| 1:0:482:A:H2'   | 1:0:483:A:O4'  | 2.13                     | 0.48              |
| 1:0:616:U:H2'   | 1:0:617:U:H5'  | 1.96                     | 0.48              |
| 1:0:729:A:H2'   | 1:0:730:C:C6   | 2.48                     | 0.48              |
| 1:0:756:C:O2'   | 1:0:757:U:H5'  | 2.13                     | 0.48              |
| 1:0:806:A:O2'   | 1:0:807:A:H5'  | 2.13                     | 0.48              |
| 1:0:1249:G:O2'  | 1:0:1250:A:P   | 2.72                     | 0.48              |
| 1:0:1527:G:N3   | 1:0:1527:G:C2' | 2.75                     | 0.48              |
| 1:0:1317:G:C2   | 1:0:1641:C:C2  | 3.02                     | 0.48              |
| 1:0:1772:C:O2'  | 1:0:1773:C:C5' | 2.61                     | 0.48              |
| 1:0:2048:C:H2'  | 1:0:2049:C:O4' | 2.12                     | 0.48              |
| 1:0:2161:C:O2'  | 1:0:2162:C:P   | 2.71                     | 0.48              |
| 1:0:2262:C:N3   | 1:0:2368:G:C2  | 2.82                     | 0.48              |
| 1:0:2266:A:N6   | 1:0:2323:U:H1' | 2.28                     | 0.48              |
| 1:0:2359:U:O4   | 1:0:2360:C:N4  | 2.47                     | 0.48              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2392:G:H2' | 1:0:2393:G:O4' | 2.12                     | 0.48              |
| 1:0:805:G:N7   | 1:0:2419:C:C1' | 2.75                     | 0.48              |
| 1:0:2594:U:H2' | 1:0:2595:C:H6  | 1.78                     | 0.48              |
| 1:0:304:A:C2'  | 1:0:305:A:H5'' | 2.43                     | 0.48              |
| 1:0:317:U:H4'  | 1:0:1224:A:N6  | 2.28                     | 0.48              |
| 1:0:43:A:C2'   | 1:0:44:G:H5'   | 2.42                     | 0.48              |
| 1:0:501:G:C4   | 1:0:502:A:C8   | 3.01                     | 0.48              |
| 1:0:557:U:H6   | 1:0:557:U:O5'  | 1.96                     | 0.48              |
| 1:0:657:A:C2   | 1:0:658:G:C4   | 3.01                     | 0.48              |
| 1:0:686:C:N3   | 1:0:821:A:C2   | 2.82                     | 0.48              |
| 1:0:1113:C:H2' | 1:0:1114:A:C8  | 2.48                     | 0.48              |
| 1:0:1153:A:C5' | 1:0:1154:A:OP1 | 2.62                     | 0.48              |
| 1:0:1689:U:C3' | 1:0:1690:U:C5' | 2.91                     | 0.48              |
| 1:0:1727:C:O2' | 1:0:1728:A:H5' | 2.13                     | 0.48              |
| 1:0:1653:C:O2  | 1:0:1751:A:C2  | 2.65                     | 0.48              |
| 1:0:1761:G:C5  | 1:0:1762:C:C5  | 3.01                     | 0.48              |
| 1:0:1918:G:N2  | 1:0:1947:G:O4' | 2.46                     | 0.48              |
| 1:0:1963:G:O2' | 1:0:1965:U:OP2 | 2.32                     | 0.48              |
| 1:0:2161:C:O5' | 1:0:2161:C:H6  | 1.96                     | 0.48              |
| 1:0:2172:U:O5' | 1:0:2172:U:H6  | 1.97                     | 0.48              |
| 1:0:2555:G:O2' | 1:0:2558:C:OP2 | 2.31                     | 0.48              |
| 1:0:2594:U:C2  | 1:0:2595:C:C5  | 3.01                     | 0.48              |
| 1:0:2691:C:C2' | 1:0:2692:A:C5' | 2.78                     | 0.48              |
| 1:0:2690:A:OP1 | 1:0:2692:A:P   | 2.71                     | 0.48              |
| 1:0:571:U:O2'  | 1:0:572:G:OP2  | 2.18                     | 0.48              |
| 1:0:665:A:OP2  | 1:0:666:U:H5'  | 2.14                     | 0.48              |
| 1:0:699:G:C4'  | 1:0:700:C:OP2  | 2.61                     | 0.48              |
| 1:0:736:G:C2   | 1:0:737:C:H1'  | 2.47                     | 0.48              |
| 1:0:854:G:C4   | 1:0:949:G:N2   | 2.82                     | 0.48              |
| 1:0:1407:G:H2' | 1:0:1408:A:H8  | 1.74                     | 0.48              |
| 1:0:1791:C:O2' | 1:0:1792:C:P   | 2.71                     | 0.48              |
| 1:0:540:G:N3   | 1:0:2005:U:OP1 | 2.46                     | 0.48              |
| 1:0:2076:G:H2' | 1:0:2076:G:N3  | 2.28                     | 0.48              |
| 1:0:2238:G:C2  | 1:0:2261:G:C6  | 3.02                     | 0.48              |
| 1:0:2245:A:C2  | 1:0:2251:U:H5  | 2.31                     | 0.48              |
| 1:0:2274:C:C6  | 1:0:2317:G:N2  | 2.81                     | 0.48              |
| 1:0:2447:G:C8  | 1:0:2455:A:N1  | 2.81                     | 0.48              |
| 1:0:2463:G:H2' | 1:0:2464:G:C8  | 2.44                     | 0.48              |
| 1:0:2661:G:O6  | 1:0:2708:U:C1' | 2.49                     | 0.48              |
| 1:0:318:G:C2   | 1:0:320:A:H3'  | 2.47                     | 0.48              |
| 1:0:36:G:O2'   | 1:0:462:G:H2'  | 2.12                     | 0.48              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:498:C:C4    | 1:0:499:G:N7   | 2.82                     | 0.48              |
| 1:0:546:A:H2'   | 1:0:547:U:H6   | 1.77                     | 0.48              |
| 1:0:760:U:HO2'  | 1:0:761:G:P    | 2.36                     | 0.48              |
| 1:0:861:G:H22   | 1:0:943:U:C1'  | 2.07                     | 0.48              |
| 1:0:994:A:N6    | 1:0:995:A:N1   | 2.62                     | 0.48              |
| 1:0:1228:G:C6   | 1:0:1229:C:C4  | 3.02                     | 0.48              |
| 1:0:123:A:C2'   | 1:0:124:A:OP1  | 2.61                     | 0.48              |
| 1:0:1459:U:O4   | 1:0:1476:G:C5' | 2.56                     | 0.48              |
| 1:0:1586:A:H2'  | 1:0:1587:A:C8  | 2.49                     | 0.48              |
| 1:0:1345:G:C4   | 1:0:1625:A:C2  | 3.02                     | 0.48              |
| 1:0:1778:U:H3'  | 1:0:1779:C:H6  | 1.79                     | 0.48              |
| 1:0:1976:U:H2'  | 1:0:1977:C:O4' | 2.14                     | 0.48              |
| 1:0:1996:A:N6   | 1:0:1997:A:C6  | 2.81                     | 0.48              |
| 1:0:2352:A:C2   | 1:0:2353:G:C5  | 3.01                     | 0.48              |
| 1:0:332:C:HO2'  | 1:0:333:A:P    | 2.37                     | 0.48              |
| 1:0:562:G:H2'   | 1:0:563:U:O4'  | 2.14                     | 0.48              |
| 1:0:704:G:O2'   | 1:0:705:C:C5'  | 2.61                     | 0.48              |
| 1:0:789:G:C2'   | 1:0:790:A:OP2  | 2.61                     | 0.48              |
| 1:0:819:C:N3    | 1:0:820:U:H5   | 2.12                     | 0.48              |
| 1:0:825:C:H1'   | 1:0:1263:G:C2  | 2.48                     | 0.48              |
| 1:0:579:G:C5'   | 1:0:994:A:C2   | 2.96                     | 0.48              |
| 1:0:1325:U:H4'  | 1:0:1326:U:O5' | 2.13                     | 0.48              |
| 1:0:1359:G:C8   | 1:0:1359:G:H5' | 2.39                     | 0.48              |
| 1:0:1900:U:C2'  | 1:0:1901:A:H5' | 2.39                     | 0.48              |
| 1:0:2245:A:C2   | 1:0:2251:U:C5  | 3.01                     | 0.48              |
| 1:0:2321:C:N3   | 1:0:2322:U:C2  | 2.81                     | 0.48              |
| 1:0:60:A:H2'    | 1:0:61:U:H5'   | 1.96                     | 0.48              |
| 1:0:1036:G:N3   | 1:0:1145:C:O4' | 2.46                     | 0.48              |
| 1:0:1391:A:C8   | 1:0:1393:G:N7  | 2.82                     | 0.48              |
| 1:0:12:U:C2'    | 1:0:13:A:H5'   | 2.44                     | 0.48              |
| 1:0:1474:A:HO2' | 1:0:1475:U:H5' | 1.79                     | 0.48              |
| 1:0:1685:A:O2'  | 1:0:1686:A:OP2 | 2.30                     | 0.48              |
| 1:0:1971:C:H2'  | 1:0:1972:G:O4' | 2.13                     | 0.48              |
| 1:0:1984:A:C2   | 1:0:1985:G:C4  | 3.02                     | 0.48              |
| 1:0:2077:G:N2   | 1:0:2179:C:H1' | 2.28                     | 0.48              |
| 1:0:2258:G:C2'  | 1:0:2259:G:O5' | 2.61                     | 0.48              |
| 1:0:2427:A:H4'  | 1:0:2428:U:OP2 | 2.14                     | 0.48              |
| 1:0:2608:A:O2'  | 1:0:2609:G:O5' | 2.30                     | 0.48              |
| 1:0:2663:U:C2   | 1:0:2664:G:C8  | 3.02                     | 0.48              |
| 1:0:2825:A:O2'  | 1:0:2826:C:H5' | 2.14                     | 0.48              |
| 1:0:2862:G:O2'  | 1:0:2863:U:H5' | 2.13                     | 0.48              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:583:C:H4'   | 1:0:584:A:C5'   | 2.43                     | 0.48              |
| 1:0:592:G:O6    | 1:0:593:C:N4    | 2.47                     | 0.48              |
| 1:0:912:A:C2    | 1:0:913:A:H1'   | 2.48                     | 0.48              |
| 1:0:1066:G:N7   | 1:0:1067:G:H1'  | 2.28                     | 0.48              |
| 1:0:1137:A:H4'  | 1:0:1138:A:H5'' | 1.95                     | 0.48              |
| 1:0:594:G:O6    | 1:0:1264:C:H5   | 1.96                     | 0.48              |
| 1:0:1310:C:H2'  | 1:0:1311:C:C6   | 2.49                     | 0.48              |
| 1:0:145:C:C2    | 1:0:153:A:C2    | 3.01                     | 0.48              |
| 1:0:2050:G:O3'  | 1:0:2051:U:H4'  | 2.14                     | 0.48              |
| 1:0:2311:U:C1'  | 1:0:2315:A:N6   | 2.77                     | 0.48              |
| 1:0:2519:C:H2'  | 1:0:2520:A:H5'  | 1.96                     | 0.48              |
| 1:0:2490:U:O4   | 1:0:2554:C:N3   | 2.47                     | 0.48              |
| 1:0:2676:G:C6   | 1:0:2677:U:C4   | 3.02                     | 0.48              |
| 1:0:621:U:C2    | 1:0:622:U:C6    | 3.01                     | 0.48              |
| 1:0:237:G:H1'   | 1:0:632:A:H1'   | 1.96                     | 0.48              |
| 1:0:640:C:H4'   | 1:0:660:G:H21   | 1.79                     | 0.48              |
| 1:0:650:U:H2'   | 1:0:651:C:C6    | 2.49                     | 0.48              |
| 1:0:807:A:C2    | 1:0:808:C:N1    | 2.82                     | 0.48              |
| 1:0:84:G:N3     | 1:0:101:A:C2    | 2.82                     | 0.48              |
| 1:0:877:G:O2'   | 1:0:878:C:H5'   | 2.14                     | 0.48              |
| 1:0:967:G:H2'   | 1:0:968:C:H5''  | 1.95                     | 0.48              |
| 1:0:1198:C:OP1  | 1:0:1199:U:O2'  | 2.17                     | 0.48              |
| 1:0:1332:G:C2   | 1:0:1333:G:C2   | 3.02                     | 0.48              |
| 1:0:1441:A:C3'  | 1:0:1441:A:N3   | 2.77                     | 0.48              |
| 1:0:1451:C:H2'  | 1:0:1452:U:C6   | 2.47                     | 0.48              |
| 1:0:1491:C:N4   | 1:0:1492:A:C6   | 2.82                     | 0.48              |
| 1:0:169:C:C5    | 1:0:170:U:C6    | 3.02                     | 0.48              |
| 1:0:2001:G:H2'  | 1:0:2002:A:O4'  | 2.14                     | 0.48              |
| 1:0:2299:A:C2   | 1:0:2312:A:C6   | 3.02                     | 0.48              |
| 1:0:2238:G:C4   | 1:0:2406:C:N3   | 2.82                     | 0.48              |
| 1:0:2407:G:H5'  | 1:0:2408:G:C2   | 2.49                     | 0.48              |
| 1:0:1949:A:N3   | 1:0:2572:U:O4'  | 2.47                     | 0.48              |
| 1:0:2860:C:N4   | 1:0:2861:A:C4   | 2.82                     | 0.48              |
| 1:0:474:G:C2    | 1:0:478:G:C6    | 3.01                     | 0.48              |
| 1:0:26:G:H1'    | 1:0:524:A:N6    | 2.28                     | 0.48              |
| 1:0:584:A:C2    | 1:0:585:U:C6    | 3.02                     | 0.48              |
| 1:0:587:A:C2'   | 1:0:588:G:H5''  | 2.43                     | 0.48              |
| 1:0:836:G:H2'   | 1:0:837:U:C5    | 2.45                     | 0.48              |
| 1:0:951:G:C3'   | 1:0:952:A:H5''  | 2.44                     | 0.48              |
| 1:0:982:C:H5'   | 1:0:995:A:H5'   | 1.96                     | 0.48              |
| 1:0:1004:A:HO2' | 1:0:1005:U:H5'  | 1.78                     | 0.47              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1022:A:C5  | 1:0:1024:G:C8  | 3.01                     | 0.47              |
| 1:0:1097:A:H5' | 1:0:1115:C:H1' | 1.95                     | 0.47              |
| 1:0:1136:G:OP2 | 1:0:1137:A:H2' | 2.14                     | 0.47              |
| 1:0:134:G:C2   | 1:0:136:A:OP1  | 2.67                     | 0.47              |
| 1:0:1488:G:H1  | 1:0:1534:A:H61 | 1.59                     | 0.47              |
| 1:0:155:G:C6   | 1:0:156:G:N7   | 2.82                     | 0.47              |
| 1:0:1778:U:C4  | 1:0:1779:C:C4  | 3.02                     | 0.47              |
| 1:0:1714:A:O2' | 1:0:1961:A:OP1 | 2.24                     | 0.47              |
| 1:0:1971:C:C5  | 1:0:1972:G:N7  | 2.82                     | 0.47              |
| 1:0:2357:A:C2' | 1:0:2358:C:H5' | 2.44                     | 0.47              |
| 1:0:2364:C:H2' | 1:0:2365:U:C6  | 2.48                     | 0.47              |
| 1:0:2476:A:H4' | 1:0:2477:C:O5' | 2.13                     | 0.47              |
| 1:0:2608:A:O2' | 1:0:2609:G:P   | 2.73                     | 0.47              |
| 1:0:197:G:N2   | 1:0:440:U:H2'  | 2.29                     | 0.47              |
| 1:0:492:G:H1'  | 1:0:516:G:N2   | 2.29                     | 0.47              |
| 1:0:580:A:C4   | 1:0:2013:A:C6  | 3.02                     | 0.47              |
| 1:0:662:G:H2'  | 1:0:662:G:N3   | 2.29                     | 0.47              |
| 1:0:813:A:HO2' | 1:0:814:G:P    | 2.37                     | 0.47              |
| 1:0:830:C:O2'  | 1:0:852:U:H5'' | 2.14                     | 0.47              |
| 1:0:935:C:H2'  | 1:0:936:A:C8   | 2.49                     | 0.47              |
| 1:0:959:C:O4'  | 1:0:995:A:C2   | 2.67                     | 0.47              |
| 1:0:1231:A:C4  | 1:0:1232:U:C6  | 3.02                     | 0.47              |
| 1:0:1265:G:O2' | 1:0:1266:G:N9  | 2.47                     | 0.47              |
| 1:0:1288:A:H2' | 1:0:1289:A:O4' | 2.14                     | 0.47              |
| 1:0:1312:G:H4' | 1:0:1313:U:H5' | 1.94                     | 0.47              |
| 1:0:1366:A:C6  | 1:0:1367:A:C6  | 3.01                     | 0.47              |
| 1:0:1466:C:O3' | 1:0:1467:U:C4' | 2.62                     | 0.47              |
| 1:0:1459:U:C4  | 1:0:1476:G:O5' | 2.67                     | 0.47              |
| 1:0:1606:C:H2' | 1:0:1607:A:C8  | 2.48                     | 0.47              |
| 1:0:2762:G:N2  | 1:0:2763:U:C1' | 2.77                     | 0.47              |
| 1:0:2863:U:C2  | 1:0:2864:C:C6  | 3.01                     | 0.47              |
| 1:0:413:G:C8   | 1:0:413:G:H3'  | 2.50                     | 0.47              |
| 1:0:482:A:O2'  | 1:0:483:A:H5'  | 2.13                     | 0.47              |
| 1:0:490:A:C4'  | 1:0:491:A:H5'  | 2.43                     | 0.47              |
| 1:0:577:U:O2   | 1:0:579:G:C8   | 2.67                     | 0.47              |
| 1:0:67:G:N2    | 1:0:72:A:H2'   | 2.30                     | 0.47              |
| 1:0:763:A:H5'' | 1:0:1631:C:N4  | 2.29                     | 0.47              |
| 1:0:833:A:C2   | 1:0:834:A:C4   | 3.02                     | 0.47              |
| 1:0:929:A:C2'  | 1:0:930:A:H5'' | 2.43                     | 0.47              |
| 1:0:936:A:O2'  | 1:0:937:C:H5'  | 2.14                     | 0.47              |
| 1:0:1212:U:H2' | 1:0:1213:U:C6  | 2.49                     | 0.47              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1479:G:H2' | 1:0:1480:G:H8  | 1.79                     | 0.47              |
| 1:0:1537:U:N3  | 1:0:1538:A:C6  | 2.82                     | 0.47              |
| 1:0:1699:A:C2  | 1:0:1748:U:H1' | 2.48                     | 0.47              |
| 1:0:1840:A:O2' | 1:0:1841:G:H5' | 2.14                     | 0.47              |
| 1:0:198:A:O2'  | 1:0:199:A:P    | 2.73                     | 0.47              |
| 1:0:21:A:C6    | 1:0:530:G:C6   | 3.02                     | 0.47              |
| 1:0:2254:C:C2' | 1:0:2255:G:OP2 | 2.61                     | 0.47              |
| 1:0:2050:G:C4  | 1:0:2423:G:N2  | 2.81                     | 0.47              |
| 1:0:2557:G:N2  | 1:0:2558:C:C6  | 2.82                     | 0.47              |
| 1:0:2642:G:C2' | 1:0:2643:G:O5' | 2.62                     | 0.47              |
| 1:0:2673:G:C2  | 1:0:2674:C:C6  | 3.03                     | 0.47              |
| 1:0:26:G:H8    | 1:0:26:G:O5'   | 1.97                     | 0.47              |
| 1:0:1068:A:O2' | 1:0:1069:G:H5' | 2.14                     | 0.47              |
| 1:0:105:G:N1   | 1:0:106:G:C5   | 2.82                     | 0.47              |
| 1:0:116:A:H2'  | 1:0:118:U:O4   | 2.14                     | 0.47              |
| 1:0:1193:G:O2' | 1:0:1194:U:O5' | 2.32                     | 0.47              |
| 1:0:1208:A:N1  | 1:0:1209:G:C4  | 2.82                     | 0.47              |
| 1:0:1391:A:H1' | 1:0:1392:U:C5  | 2.49                     | 0.47              |
| 1:0:1581:C:O2' | 1:0:1582:A:C3' | 2.62                     | 0.47              |
| 1:0:1645:U:C2  | 1:0:1646:G:C8  | 3.02                     | 0.47              |
| 1:0:1881:U:H2' | 1:0:1882:G:H5' | 1.96                     | 0.47              |
| 1:0:1921:A:C2' | 1:0:1922:U:C5' | 2.88                     | 0.47              |
| 1:0:2007:G:C2  | 1:0:2023:C:O2  | 2.68                     | 0.47              |
| 1:0:2117:A:H61 | 1:0:2139:G:N2  | 2.11                     | 0.47              |
| 1:0:2347:C:H2' | 1:0:2348:A:O4' | 2.13                     | 0.47              |
| 1:0:319:G:O5'  | 1:0:319:G:H8   | 1.96                     | 0.47              |
| 1:0:395:G:C5   | 1:0:396:U:C5   | 3.02                     | 0.47              |
| 1:0:540:G:O6   | 1:0:2006:G:OP1 | 2.32                     | 0.47              |
| 1:0:83:A:H62   | 1:0:98:U:H1'   | 1.78                     | 0.47              |
| 1:0:861:G:N3   | 1:0:944:A:H1'  | 2.30                     | 0.47              |
| 1:0:1033:G:O2' | 1:0:1034:U:P   | 2.72                     | 0.47              |
| 1:0:1128:G:O2' | 1:0:1129:A:H5' | 2.14                     | 0.47              |
| 1:0:13:A:HO2'  | 1:0:14:A:P     | 2.37                     | 0.47              |
| 1:0:1693:A:C2  | 1:0:1976:U:O4' | 2.65                     | 0.47              |
| 1:0:1953:A:O4' | 1:0:1955:G:C1' | 2.62                     | 0.47              |
| 1:0:2006:G:C2  | 1:0:2024:U:O2  | 2.67                     | 0.47              |
| 1:0:2093:G:O2' | 1:0:2094:C:P   | 2.72                     | 0.47              |
| 1:0:2419:C:N3  | 1:0:2420:C:H1' | 2.29                     | 0.47              |
| 1:0:2490:U:H2' | 1:0:2491:C:C6  | 2.49                     | 0.47              |
| 1:0:2573:C:N4  | 1:0:2574:G:N7  | 2.63                     | 0.47              |
| 1:0:2771:C:C4  | 1:0:2772:U:C5  | 3.02                     | 0.47              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:617:U:N1    | 1:0:632:A:N6   | 2.62                     | 0.47              |
| 1:0:644:A:N3    | 1:0:2382:C:H4' | 2.29                     | 0.47              |
| 1:0:59:G:N3     | 1:0:73:A:C6    | 2.82                     | 0.47              |
| 1:0:103:U:H2'   | 1:0:104:C:C6   | 2.50                     | 0.47              |
| 1:0:1134:C:N4   | 1:0:1135:C:H41 | 2.13                     | 0.47              |
| 1:0:1260:A:O2'  | 1:0:1261:G:P   | 2.72                     | 0.47              |
| 1:0:1271:C:O2'  | 1:0:1272:G:H5' | 2.14                     | 0.47              |
| 1:0:1298:G:C5   | 1:0:1342:U:C5  | 3.02                     | 0.47              |
| 1:0:1337:G:H4'  | 1:0:1632:A:C5  | 2.49                     | 0.47              |
| 1:0:1373:G:H2'  | 1:0:1374:G:H5' | 1.95                     | 0.47              |
| 1:0:1502:G:H2'  | 1:0:1503:G:C8  | 2.49                     | 0.47              |
| 1:0:1606:C:N3   | 1:0:1607:A:N7  | 2.63                     | 0.47              |
| 1:0:1658:A:H2'  | 1:0:1659:G:O4' | 2.15                     | 0.47              |
| 1:0:1890:G:H2'  | 1:0:1891:C:O4' | 2.14                     | 0.47              |
| 1:0:1964:A:C5'  | 1:0:1965:U:OP2 | 2.62                     | 0.47              |
| 1:0:2015:G:H4'  | 1:0:2016:A:OP2 | 2.13                     | 0.47              |
| 1:0:2790:C:H2'  | 1:0:2791:C:C6  | 2.50                     | 0.47              |
| 1:0:2794:G:H5'' | 1:0:2794:G:C8  | 2.47                     | 0.47              |
| 1:0:2824:C:H4'  | 1:0:2843:A:C2  | 2.50                     | 0.47              |
| 1:0:310:A:H1'   | 1:0:330:C:O2'  | 2.15                     | 0.47              |
| 1:0:200:A:C6    | 1:0:435:A:C5   | 3.03                     | 0.47              |
| 1:0:492:G:H2'   | 1:0:493:A:OP2  | 2.14                     | 0.47              |
| 1:0:622:U:H1'   | 1:0:627:A:H2   | 1.79                     | 0.47              |
| 1:0:658:G:O2'   | 1:0:659:G:H5'  | 2.14                     | 0.47              |
| 1:0:68:C:C2     | 1:0:72:A:C4    | 3.03                     | 0.47              |
| 1:0:990:A:H2'   | 1:0:993:C:H42  | 1.75                     | 0.47              |
| 1:0:1017:C:O2'  | 1:0:1018:C:H5' | 2.15                     | 0.47              |
| 1:0:1077:U:H6   | 1:0:1077:U:O5' | 1.97                     | 0.47              |
| 1:0:109:A:O2'   | 1:0:110:U:H5'  | 2.15                     | 0.47              |
| 1:0:1177:U:O4   | 1:0:1196:G:O6  | 2.33                     | 0.47              |
| 1:0:1181:C:H3'  | 1:0:1182:U:H4' | 1.96                     | 0.47              |
| 1:0:1282:A:H2'  | 1:0:1283:C:C6  | 2.49                     | 0.47              |
| 1:0:1336:G:O6   | 1:0:1337:G:C6  | 2.67                     | 0.47              |
| 1:0:1381:G:C2   | 1:0:1382:G:C8  | 3.01                     | 0.47              |
| 1:0:1466:C:O3'  | 1:0:1467:U:H4' | 2.13                     | 0.47              |
| 1:0:1482:U:H1'  | 1:0:1562:G:N2  | 2.29                     | 0.47              |
| 1:0:1538:A:C8   | 1:0:1539:U:H5  | 2.32                     | 0.47              |
| 1:0:1581:C:N4   | 1:0:1583:A:C2  | 2.82                     | 0.47              |
| 1:0:1968:G:C6   | 1:0:1969:G:N7  | 2.83                     | 0.47              |
| 1:0:198:A:HO2'  | 1:0:199:A:P    | 2.38                     | 0.47              |
| 1:0:2061:C:H2'  | 1:0:2062:U:O4' | 2.14                     | 0.47              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:208:C:C2'   | 1:0:209:G:H5'   | 2.45                     | 0.47              |
| 1:0:2208:U:H2'  | 1:0:2209:G:C8   | 2.36                     | 0.47              |
| 1:0:2252:A:N7   | 1:0:2253:A:C5   | 2.83                     | 0.47              |
| 1:0:2523:G:H2'  | 1:0:2524:G:C8   | 2.49                     | 0.47              |
| 1:0:320:A:N6    | 1:0:341:A:C2    | 2.82                     | 0.47              |
| 1:0:739:G:O2'   | 1:0:740:A:O5'   | 2.33                     | 0.47              |
| 1:0:88:G:C3'    | 1:0:89:A:C5'    | 2.86                     | 0.47              |
| 1:0:982:C:H2'   | 1:0:983:G:H5'   | 1.95                     | 0.47              |
| 1:0:1053:G:H22  | 1:0:1123:G:N2   | 2.12                     | 0.47              |
| 1:0:136:A:H3'   | 1:0:137:A:H8    | 1.79                     | 0.47              |
| 1:0:1459:U:C4   | 1:0:1476:G:H5'' | 2.49                     | 0.47              |
| 1:0:1492:A:O5'  | 1:0:1492:A:H8   | 1.98                     | 0.47              |
| 1:0:1568:A:O2'  | 1:0:1569:A:H5'  | 2.14                     | 0.47              |
| 1:0:167:A:C6    | 1:0:168:A:C5    | 3.02                     | 0.47              |
| 1:0:1740:G:O2'  | 1:0:1741:G:H5'  | 2.13                     | 0.47              |
| 1:0:2383:C:O2   | 1:0:2383:C:H2'  | 2.15                     | 0.47              |
| 1:0:2608:A:HO2' | 1:0:2609:G:P    | 2.38                     | 0.47              |
| 1:0:2805:G:O2'  | 1:0:2806:G:H5'  | 2.13                     | 0.47              |
| 1:0:2868:G:N3   | 1:0:2868:G:H2'  | 2.30                     | 0.47              |
| 1:0:365:U:O2'   | 1:0:366:U:H5'   | 2.14                     | 0.47              |
| 1:0:459:A:H4'   | 1:0:461:A:C5    | 2.48                     | 0.47              |
| 1:0:612:G:C4'   | 1:0:613:A:H4'   | 2.41                     | 0.47              |
| 1:0:672:C:H2'   | 1:0:673:G:C5'   | 2.44                     | 0.47              |
| 1:0:686:C:C2'   | 1:0:687:G:H5'   | 2.45                     | 0.47              |
| 1:0:704:G:N3    | 1:0:705:C:C6    | 2.83                     | 0.47              |
| 1:0:709:A:O2'   | 1:0:710:C:H5'   | 2.14                     | 0.47              |
| 1:0:742:G:H4'   | 1:0:776:G:H5'   | 1.96                     | 0.47              |
| 1:0:475:U:C2    | 1:0:801:A:C6    | 3.02                     | 0.47              |
| 1:0:1008:G:C6   | 1:0:1170:U:N3   | 2.83                     | 0.47              |
| 1:0:1223:G:C8   | 1:0:1250:A:N6   | 2.82                     | 0.47              |
| 1:0:1332:G:N1   | 1:0:1333:G:N2   | 2.63                     | 0.47              |
| 1:0:1610:A:H2'  | 1:0:1611:U:O4'  | 2.15                     | 0.47              |
| 1:0:1637:U:H5'' | 1:0:1638:G:OP1  | 2.15                     | 0.47              |
| 1:0:16:G:O2'    | 1:0:17:G:H5'    | 2.15                     | 0.47              |
| 1:0:1761:G:H2'  | 1:0:1762:C:H5'  | 1.97                     | 0.47              |
| 1:0:202:A:C2    | 1:0:205:A:N6    | 2.83                     | 0.47              |
| 1:0:2044:G:N2   | 1:0:2046:C:C2   | 2.83                     | 0.47              |
| 1:0:2205:C:H2'  | 1:0:2206:C:C5'  | 2.45                     | 0.47              |
| 1:0:2703:C:HO2' | 1:0:2704:U:H5'  | 1.79                     | 0.47              |
| 1:0:330:C:H2'   | 1:0:331:U:C5'   | 2.45                     | 0.47              |
| 1:0:441:A:O2'   | 1:0:442:A:H5'   | 2.15                     | 0.47              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:788:G:C5'  | 1:0:790:A:C4   | 2.98                     | 0.47              |
| 1:0:914:C:H2'  | 1:0:915:C:C6   | 2.50                     | 0.47              |
| 1:0:1043:A:H2' | 1:0:1044:U:H5' | 1.97                     | 0.47              |
| 1:0:1060:C:H2' | 1:0:1061:A:H5' | 1.96                     | 0.47              |
| 1:0:1105:U:C2  | 1:0:1107:A:N7  | 2.83                     | 0.47              |
| 1:0:1294:G:C2  | 1:0:1303:U:C2  | 3.03                     | 0.47              |
| 1:0:1436:G:H3' | 1:0:1437:A:C8  | 2.47                     | 0.47              |
| 1:0:1679:U:C2' | 1:0:1680:U:C5' | 2.73                     | 0.47              |
| 1:0:1687:C:H1' | 1:0:1976:U:O2  | 2.15                     | 0.47              |
| 1:0:1733:U:H5' | 1:0:1734:C:H5  | 1.80                     | 0.47              |
| 1:0:1794:A:H61 | 1:0:1806:G:H2' | 1.79                     | 0.47              |
| 1:0:2076:G:H21 | 1:0:2181:A:H62 | 1.63                     | 0.47              |
| 1:0:2192:U:O5' | 1:0:2192:U:H6  | 1.97                     | 0.47              |
| 1:0:2180:U:C4  | 1:0:2203:G:C2  | 3.03                     | 0.47              |
| 1:0:2669:C:O2' | 1:0:2670:C:P   | 2.72                     | 0.47              |
| 1:0:2860:C:N4  | 1:0:2861:A:C5  | 2.82                     | 0.47              |
| 1:0:2867:G:H4' | 1:0:2868:G:O5' | 2.15                     | 0.47              |
| 1:0:398:C:C2'  | 1:0:399:G:OP2  | 2.63                     | 0.47              |
| 1:0:632:A:C2   | 1:0:633:G:C4   | 3.02                     | 0.47              |
| 1:0:639:G:H4'  | 1:0:661:C:O2'  | 2.15                     | 0.47              |
| 1:0:788:G:C5'  | 1:0:790:A:C1'  | 2.88                     | 0.47              |
| 1:0:820:U:H2'  | 1:0:821:A:H8   | 1.79                     | 0.47              |
| 1:0:984:A:C1'  | 1:0:1202:U:C6  | 2.98                     | 0.47              |
| 1:0:1071:U:H3  | 1:0:1090:C:N4  | 2.13                     | 0.47              |
| 1:0:1310:C:N4  | 1:0:1311:C:H41 | 2.13                     | 0.47              |
| 1:0:1365:U:O2  | 1:0:1391:A:N6  | 2.47                     | 0.47              |
| 1:0:1400:A:C6  | 1:0:1401:G:C5  | 3.03                     | 0.47              |
| 1:0:1427:G:OP2 | 1:0:1428:G:C6  | 2.68                     | 0.47              |
| 1:0:1431:U:H4' | 1:0:1604:A:H4' | 1.97                     | 0.47              |
| 1:0:1546:C:N4  | 1:0:1556:A:N6  | 2.63                     | 0.47              |
| 1:0:1633:C:O2' | 1:0:1634:A:OP1 | 2.33                     | 0.47              |
| 1:0:1882:G:H8  | 1:0:1882:G:H3' | 1.80                     | 0.47              |
| 1:0:1920:A:H2' | 1:0:1921:A:C8  | 2.49                     | 0.47              |
| 1:0:175:C:N4   | 1:0:225:G:H1   | 2.12                     | 0.47              |
| 1:0:2354:G:N3  | 1:0:2356:A:C8  | 2.82                     | 0.47              |
| 1:0:204:A:N6   | 1:0:2386:G:C8  | 2.83                     | 0.47              |
| 1:0:240:U:H2'  | 1:0:241:C:O4'  | 2.15                     | 0.47              |
| 1:0:1040:A:N3  | 1:0:2465:G:H1' | 2.30                     | 0.47              |
| 1:0:2859:U:H2' | 1:0:2860:C:C5' | 2.44                     | 0.47              |
| 1:0:304:A:C6   | 1:0:356:A:N6   | 2.77                     | 0.47              |
| 1:0:3:U:O5'    | 1:0:3:U:H6     | 1.98                     | 0.47              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:580:A:C8    | 1:0:584:A:N6    | 2.83                     | 0.47              |
| 1:0:817:A:H2'   | 1:0:819:C:N4    | 2.30                     | 0.47              |
| 1:0:1147:G:HO2' | 1:0:1148:G:H5'  | 1.79                     | 0.46              |
| 1:0:114:C:H2'   | 1:0:115:G:C8    | 2.50                     | 0.46              |
| 1:0:1255:A:C6   | 1:0:1256:C:N4   | 2.84                     | 0.46              |
| 1:0:138:G:H2'   | 1:0:139:A:C8    | 2.49                     | 0.46              |
| 1:0:1410:U:O2'  | 1:0:1411:C:P    | 2.73                     | 0.46              |
| 1:0:1442:C:O2'  | 1:0:1443:G:P    | 2.72                     | 0.46              |
| 1:0:1638:G:C2   | 1:0:1639:U:C2   | 3.03                     | 0.46              |
| 1:0:1676:U:O2'  | 1:0:2692:A:N6   | 2.48                     | 0.46              |
| 1:0:1699:A:H2'  | 1:0:1700:C:C6   | 2.51                     | 0.46              |
| 1:0:1707:A:N6   | 1:0:1708:C:O2   | 2.48                     | 0.46              |
| 1:0:182:G:C2'   | 1:0:183:U:OP2   | 2.62                     | 0.46              |
| 1:0:1829:C:O2'  | 1:0:1910:A:N3   | 2.40                     | 0.46              |
| 1:0:1982:C:O2   | 1:0:2666:U:O2'  | 2.32                     | 0.46              |
| 1:0:2034:A:H2   | 1:0:2035:G:O6   | 1.97                     | 0.46              |
| 1:0:218:A:O2'   | 1:0:219:G:O5'   | 2.32                     | 0.46              |
| 1:0:2309:G:C2'  | 1:0:2310:G:H5'  | 2.45                     | 0.46              |
| 1:0:2396:C:C6   | 1:0:2396:C:H5'  | 2.40                     | 0.46              |
| 1:0:840:U:C4    | 1:0:2409:A:C5   | 3.03                     | 0.46              |
| 1:0:2561:G:C8   | 1:0:2561:G:H5'  | 2.50                     | 0.46              |
| 1:0:2781:G:H2'  | 1:0:2782:G:C1'  | 2.45                     | 0.46              |
| 1:0:367:G:H2'   | 1:0:368:A:H5''  | 1.97                     | 0.46              |
| 1:0:571:U:C4    | 1:0:2019:C:O4'  | 2.68                     | 0.46              |
| 1:0:68:C:N1     | 1:0:72:A:C2     | 2.83                     | 0.46              |
| 1:0:872:G:H22   | 1:0:929:A:P     | 2.37                     | 0.46              |
| 1:0:928:G:H8    | 1:0:928:G:O5'   | 1.98                     | 0.46              |
| 1:0:1048:U:H2'  | 1:0:1049:C:O4'  | 2.16                     | 0.46              |
| 1:0:1337:G:H4'  | 1:0:1632:A:H62  | 1.80                     | 0.46              |
| 1:0:1332:G:N2   | 1:0:1347:C:C6   | 2.83                     | 0.46              |
| 1:0:1378:A:O2'  | 1:0:1379:A:H5'  | 2.16                     | 0.46              |
| 1:0:1433:A:C2   | 1:0:1434:U:H1'  | 2.50                     | 0.46              |
| 1:0:1443:G:H2'  | 1:0:1444:C:C6   | 2.50                     | 0.46              |
| 1:0:1458:A:H2'  | 1:0:1459:U:H5'' | 1.97                     | 0.46              |
| 1:0:1577:G:H2'  | 1:0:1578:U:O4'  | 2.15                     | 0.46              |
| 1:0:165:G:O2'   | 1:0:1378:A:N6   | 2.48                     | 0.46              |
| 1:0:1797:C:H2'  | 1:0:1798:G:O4'  | 2.15                     | 0.46              |
| 1:0:2209:G:C4   | 1:0:2210:C:C5   | 3.03                     | 0.46              |
| 1:0:2329:C:H2'  | 1:0:2330:G:O4'  | 2.15                     | 0.46              |
| 1:0:2352:A:N1   | 1:0:2353:G:C6   | 2.82                     | 0.46              |
| 1:0:2521:A:C5'  | 1:0:2522:G:OP1  | 2.58                     | 0.46              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:2549:G:H5'  | 1:0:2549:G:H8   | 1.80                     | 0.46              |
| 1:0:2633:A:O2'  | 1:0:2634:G:H4'  | 2.15                     | 0.46              |
| 1:0:239:A:H2    | 1:0:443:A:N3    | 2.12                     | 0.46              |
| 1:0:511:A:N6    | 1:0:512:A:C6    | 2.83                     | 0.46              |
| 1:0:575:U:H4'   | 1:0:822:G:OP2   | 2.15                     | 0.46              |
| 1:0:59:G:H1'    | 1:0:73:A:H2     | 1.74                     | 0.46              |
| 1:0:608:G:H2'   | 1:0:609:U:C6    | 2.50                     | 0.46              |
| 1:0:700:C:C5    | 1:0:701:U:C4    | 3.03                     | 0.46              |
| 1:0:119:G:H2'   | 1:0:120:G:H8    | 1.79                     | 0.46              |
| 1:0:1230:C:C6   | 1:0:1246:G:N2   | 2.84                     | 0.46              |
| 1:0:1288:A:H62  | 1:0:1309:G:C5'  | 2.28                     | 0.46              |
| 1:0:1348:C:H2'  | 1:0:1349:A:H8   | 1.81                     | 0.46              |
| 1:0:1564:U:O2'  | 1:0:1565:G:H5'  | 2.14                     | 0.46              |
| 1:0:1427:G:H1'  | 1:0:1604:A:N6   | 2.30                     | 0.46              |
| 1:0:1657:A:C2'  | 1:0:1658:A:H5'  | 2.45                     | 0.46              |
| 1:0:1796:A:N3   | 1:0:1805:G:C2   | 2.84                     | 0.46              |
| 1:0:1827:G:N3   | 1:0:1914:U:C5   | 2.84                     | 0.46              |
| 1:0:2184:C:C2'  | 1:0:2185:U:H5'  | 2.44                     | 0.46              |
| 1:0:2324:G:N2   | 1:0:2361:G:C4   | 2.83                     | 0.46              |
| 1:0:2391:A:H2'  | 1:0:2392:G:H5'  | 1.98                     | 0.46              |
| 1:0:2225:G:C2   | 1:0:2405:A:H1'  | 2.50                     | 0.46              |
| 1:0:2457:A:N7   | 1:0:2458:U:C5   | 2.83                     | 0.46              |
| 1:0:2519:C:C5   | 1:0:2520:A:N7   | 2.83                     | 0.46              |
| 1:0:1938:U:H5   | 1:0:2536:G:N2   | 2.13                     | 0.46              |
| 1:0:452:G:C2    | 1:0:453:U:C2    | 3.04                     | 0.46              |
| 1:0:499:G:O2'   | 1:0:500:G:OP1   | 2.32                     | 0.46              |
| 1:0:58:C:H3'    | 1:0:59:G:O4'    | 2.16                     | 0.46              |
| 1:0:1088:A:H8   | 1:0:1088:A:O5'  | 1.97                     | 0.46              |
| 1:0:1089:C:O5'  | 1:0:1089:C:H6   | 1.99                     | 0.46              |
| 1:0:1283:C:H5'' | 1:0:1284:G:C5'  | 2.45                     | 0.46              |
| 1:0:1411:C:O5'  | 1:0:1411:C:H6   | 1.97                     | 0.46              |
| 1:0:1427:G:H2'  | 1:0:1428:G:C5'  | 2.44                     | 0.46              |
| 1:0:1915:A:H61  | 1:0:1951:G:H1'  | 1.80                     | 0.46              |
| 1:0:1982:C:O2'  | 1:0:1983:G:H5'  | 2.14                     | 0.46              |
| 1:0:2081:U:C3'  | 1:0:2082:C:H5'' | 2.45                     | 0.46              |
| 1:0:2231:G:H2'  | 1:0:2232:G:O4'  | 2.15                     | 0.46              |
| 1:0:2375:G:O2'  | 1:0:2376:G:H5'  | 2.16                     | 0.46              |
| 1:0:2642:G:C2'  | 1:0:2643:G:C5'  | 2.94                     | 0.46              |
| 1:0:342:G:O2'   | 1:0:343:A:O5'   | 2.24                     | 0.46              |
| 1:0:349:G:H2'   | 1:0:350:U:O4'   | 2.15                     | 0.46              |
| 1:0:498:C:N4    | 1:0:499:G:O6    | 2.49                     | 0.46              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:621:U:O2'   | 1:0:622:U:H5'   | 2.16                     | 0.46              |
| 1:0:57:G:C2     | 1:0:72:A:N7     | 2.83                     | 0.46              |
| 1:0:67:G:N2     | 1:0:73:A:C4     | 2.83                     | 0.46              |
| 1:0:790:A:N3    | 1:0:790:A:H2'   | 2.30                     | 0.46              |
| 1:0:846:A:C5    | 1:0:847:C:N4    | 2.84                     | 0.46              |
| 1:0:961:G:C6    | 1:0:962:C:C4    | 3.04                     | 0.46              |
| 1:0:10:A:H2'    | 1:0:11:G:H8     | 1.80                     | 0.46              |
| 1:0:1174:G:N2   | 1:0:1175:A:C5   | 2.83                     | 0.46              |
| 1:0:1231:A:C5   | 1:0:1232:U:C5   | 3.03                     | 0.46              |
| 1:0:1295:U:H2'  | 1:0:1296:G:C8   | 2.50                     | 0.46              |
| 1:0:1295:U:O2'  | 1:0:1296:G:H5'  | 2.15                     | 0.46              |
| 1:0:1329:U:C2   | 1:0:1330:G:N7   | 2.84                     | 0.46              |
| 1:0:1370:U:O2'  | 1:0:1371:G:H5'  | 2.15                     | 0.46              |
| 1:0:1692:C:O2'  | 1:0:1693:A:H5'  | 2.15                     | 0.46              |
| 1:0:1901:A:O5'  | 1:0:1901:A:C8   | 2.68                     | 0.46              |
| 1:0:1979:C:H3'  | 1:0:1979:C:H6   | 1.80                     | 0.46              |
| 1:0:2043:A:H1'  | 1:0:2481:G:C1'  | 2.45                     | 0.46              |
| 1:0:2062:U:N3   | 1:0:2063:A:C5   | 2.83                     | 0.46              |
| 1:0:2309:G:N2   | 1:0:2365:U:N3   | 2.63                     | 0.46              |
| 1:0:2338:C:H3'  | 1:0:2339:A:C8   | 2.49                     | 0.46              |
| 1:0:2426:G:H4'  | 1:0:2427:A:O5'  | 2.15                     | 0.46              |
| 1:0:2492:G:H2'  | 1:0:2493:U:C6   | 2.50                     | 0.46              |
| 1:0:2557:G:H21  | 1:0:2558:C:C1'  | 2.29                     | 0.46              |
| 1:0:573:C:C2'   | 1:0:574:C:H5'   | 2.46                     | 0.46              |
| 1:0:606:A:H2'   | 1:0:607:C:C6    | 2.51                     | 0.46              |
| 1:0:876:A:O2'   | 1:0:877:G:H5'   | 2.16                     | 0.46              |
| 1:0:1040:A:H1'  | 1:0:2465:G:O4'  | 2.15                     | 0.46              |
| 1:0:1134:C:C2   | 1:0:1135:C:C5   | 3.03                     | 0.46              |
| 1:0:1180:A:H2'  | 1:0:1181:C:C6   | 2.51                     | 0.46              |
| 1:0:1312:G:H5'' | 1:0:1313:U:H5'' | 1.97                     | 0.46              |
| 1:0:1632:A:HO2' | 1:0:1633:C:P    | 2.39                     | 0.46              |
| 1:0:712:A:C2    | 1:0:1650:A:N3   | 2.83                     | 0.46              |
| 1:0:1659:G:H2'  | 1:0:1660:G:O4'  | 2.15                     | 0.46              |
| 1:0:1920:A:N1   | 1:0:1922:U:C5   | 2.84                     | 0.46              |
| 1:0:1923:U:C5'  | 1:0:1924:C:OP1  | 2.64                     | 0.46              |
| 1:0:2050:G:H4'  | 1:0:2051:U:OP2  | 2.14                     | 0.46              |
| 1:0:2066:G:C6   | 1:0:2067:U:N3   | 2.84                     | 0.46              |
| 1:0:2161:C:HO2' | 1:0:2162:C:P    | 2.37                     | 0.46              |
| 1:0:2188:A:N1   | 1:0:2189:A:N6   | 2.63                     | 0.46              |
| 1:0:2404:A:O2'  | 1:0:2405:A:O5'  | 2.32                     | 0.46              |
| 1:0:2499:C:C2'  | 1:0:2500:C:H5'  | 2.46                     | 0.46              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:2551:A:O2' | 1:0:2552:C:P   | 2.71                     | 0.46              |
| 1:0:2571:G:H2' | 1:0:2572:U:H6  | 1.81                     | 0.46              |
| 1:0:307:C:O2'  | 1:0:308:C:H5'  | 2.15                     | 0.46              |
| 1:0:435:A:N1   | 1:0:436:A:C2   | 2.84                     | 0.46              |
| 1:0:443:A:H2'  | 1:0:444:U:H5'  | 1.98                     | 0.46              |
| 1:0:616:U:C2'  | 1:0:617:U:C5'  | 2.93                     | 0.46              |
| 1:0:674:U:O2'  | 1:0:675:C:H5'  | 2.15                     | 0.46              |
| 1:0:765:C:H2'  | 1:0:766:A:OP2  | 2.16                     | 0.46              |
| 1:0:853:C:H2'  | 1:0:854:G:H8   | 1.81                     | 0.46              |
| 1:0:986:A:N7   | 1:0:987:G:N7   | 2.63                     | 0.46              |
| 1:0:1020:A:OP2 | 1:0:1021:A:OP2 | 2.34                     | 0.46              |
| 1:0:1022:A:C2  | 1:0:1024:G:C4  | 3.03                     | 0.46              |
| 1:0:109:A:C2   | 1:0:110:U:O2   | 2.69                     | 0.46              |
| 1:0:111:G:C5'  | 1:0:112:U:OP1  | 2.64                     | 0.46              |
| 1:0:1323:G:N2  | 1:0:1326:U:H3  | 2.14                     | 0.46              |
| 1:0:1459:U:N3  | 1:0:1476:G:C5' | 2.70                     | 0.46              |
| 1:0:1543:G:O6  | 1:0:1560:A:C8  | 2.69                     | 0.46              |
| 1:0:1828:C:N4  | 1:0:1829:C:H41 | 2.11                     | 0.46              |
| 1:0:2079:A:H2' | 1:0:2080:U:C6  | 2.51                     | 0.46              |
| 1:0:2187:A:C2' | 1:0:2188:A:H5' | 2.45                     | 0.46              |
| 1:0:2202:G:N2  | 1:0:2203:G:H1' | 2.31                     | 0.46              |
| 1:0:2228:U:O3' | 1:0:2229:G:H4' | 2.15                     | 0.46              |
| 1:0:177:U:H5   | 1:0:225:G:N3   | 2.11                     | 0.46              |
| 1:0:2322:U:H2' | 1:0:2323:U:O4' | 2.16                     | 0.46              |
| 1:0:2712:G:H3' | 1:0:2713:A:C5' | 2.45                     | 0.46              |
| 1:0:2806:G:O4' | 1:0:2858:A:C2  | 2.69                     | 0.46              |
| 1:0:297:A:C5   | 1:0:298:C:N4   | 2.84                     | 0.46              |
| 1:0:322:A:OP1  | 1:0:343:A:C2   | 2.69                     | 0.46              |
| 1:0:537:C:O2   | 1:0:538:A:N6   | 2.48                     | 0.46              |
| 1:0:548:G:O2'  | 1:0:549:G:H5'  | 2.16                     | 0.46              |
| 1:0:638:A:H2'  | 1:0:639:G:O4'  | 2.16                     | 0.46              |
| 1:0:875:G:H2'  | 1:0:876:A:C5'  | 2.46                     | 0.46              |
| 1:0:889:C:H2'  | 1:0:890:U:O4'  | 2.16                     | 0.46              |
| 1:0:1040:A:H2' | 1:0:1041:G:C5' | 2.40                     | 0.46              |
| 1:0:829:C:C4   | 1:0:1206:G:C2  | 3.04                     | 0.46              |
| 1:0:1309:G:C2  | 1:0:1310:C:C2  | 3.04                     | 0.46              |
| 1:0:1577:G:O2' | 1:0:1578:U:H5' | 2.16                     | 0.46              |
| 1:0:1621:C:H5' | 1:0:1626:A:N6  | 2.31                     | 0.46              |
| 1:0:1882:G:C8  | 1:0:1882:G:H3' | 2.51                     | 0.46              |
| 1:0:2277:A:H2' | 1:0:2278:A:O4' | 2.15                     | 0.46              |
| 1:0:2269:G:C2  | 1:0:2322:U:O2  | 2.69                     | 0.46              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:0:23:G:C2     | 1:0:24:G:C8     | 3.04                     | 0.46              |
| 1:0:2501:U:H5'' | 1:0:2502:G:OP2  | 2.16                     | 0.46              |
| 1:0:2857:C:C2'  | 1:0:2858:A:O5'  | 2.64                     | 0.46              |
| 1:0:538:A:H2    | 1:0:2026:C:C5'  | 2.29                     | 0.46              |
| 1:0:617:U:C2    | 1:0:632:A:N7    | 2.84                     | 0.46              |
| 1:0:924:C:H2'   | 1:0:925:U:O4'   | 2.16                     | 0.46              |
| 1:0:953:G:N7    | 1:0:954:U:C4    | 2.84                     | 0.46              |
| 1:0:986:A:C2'   | 1:0:987:G:H5'   | 2.46                     | 0.46              |
| 1:0:1019:U:O2'  | 1:0:1020:A:P    | 2.74                     | 0.46              |
| 1:0:1221:C:C2   | 1:0:1222:G:N7   | 2.84                     | 0.46              |
| 1:0:1298:G:C6   | 1:0:1342:U:C6   | 3.04                     | 0.46              |
| 1:0:1427:G:H2'  | 1:0:1428:G:H5'  | 1.96                     | 0.46              |
| 1:0:1455:C:N4   | 1:0:1456:C:N4   | 2.64                     | 0.46              |
| 1:0:13:A:O2'    | 1:0:14:A:P      | 2.74                     | 0.46              |
| 1:0:1622:G:H4'  | 1:0:1624:A:C2   | 2.50                     | 0.46              |
| 1:0:1699:A:C4   | 1:0:1748:U:C2   | 3.04                     | 0.46              |
| 1:0:2266:A:H61  | 1:0:2323:U:C2'  | 2.29                     | 0.46              |
| 1:0:2262:C:C2   | 1:0:2368:G:N2   | 2.83                     | 0.46              |
| 1:0:2057:U:H4'  | 1:0:2577:A:O4'  | 2.16                     | 0.46              |
| 1:0:2636:A:H2'  | 1:0:2637:C:C5'  | 2.44                     | 0.46              |
| 1:0:2742:G:O2'  | 1:0:2743:G:H5'  | 2.15                     | 0.46              |
| 1:0:2812:A:H2'  | 1:0:2813:G:C8   | 2.50                     | 0.46              |
| 1:0:2866:A:N7   | 1:0:2867:G:C5   | 2.84                     | 0.46              |
| 1:0:468:A:N6    | 1:0:481:A:H5''  | 2.31                     | 0.46              |
| 1:0:819:C:C2    | 1:0:820:U:C5    | 3.04                     | 0.46              |
| 1:0:947:C:H2'   | 1:0:948:C:H6    | 1.81                     | 0.46              |
| 1:0:1059:A:C8   | 1:0:1121:G:N2   | 2.73                     | 0.46              |
| 1:0:1102:G:N2   | 1:0:1112:U:H1'  | 2.29                     | 0.46              |
| 1:0:1119:U:O5'  | 1:0:1119:U:H6   | 1.98                     | 0.46              |
| 1:0:1193:G:O2'  | 1:0:1194:U:P    | 2.73                     | 0.46              |
| 1:0:1459:U:C6   | 1:0:1475:U:H2'  | 2.51                     | 0.46              |
| 1:0:1799:A:O2'  | 1:0:1800:A:OP1  | 2.31                     | 0.46              |
| 1:0:1956:G:H8   | 1:0:1956:G:H5'  | 1.81                     | 0.46              |
| 1:0:201:G:H2'   | 1:0:202:A:O4'   | 2.16                     | 0.46              |
| 1:0:211:U:O2    | 1:0:212:U:O4'   | 2.34                     | 0.46              |
| 1:0:2198:U:P    | 1:0:2199:C:H5'' | 2.55                     | 0.46              |
| 1:0:2231:G:H2'  | 1:0:2232:G:H5'  | 1.98                     | 0.46              |
| 1:0:2343:C:H2'  | 1:0:2344:G:H5'  | 1.98                     | 0.46              |
| 1:0:2505:G:N1   | 1:0:2517:C:C2   | 2.83                     | 0.46              |
| 1:0:2034:A:C6   | 1:0:2593:A:C4   | 3.04                     | 0.46              |
| 1:0:2655:C:H2'  | 1:0:2656:G:C8   | 2.51                     | 0.46              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:412:U:C2'  | 1:0:413:G:H5'  | 2.42                     | 0.46              |
| 1:0:713:G:C6   | 1:0:746:G:C2   | 3.04                     | 0.46              |
| 1:0:1137:A:H4' | 1:0:1138:A:C5' | 2.47                     | 0.45              |
| 1:0:124:A:H8   | 1:0:125:A:C4   | 2.34                     | 0.45              |
| 1:0:1305:C:H2' | 1:0:1306:U:H6  | 1.81                     | 0.45              |
| 1:0:202:A:H2'  | 1:0:203:G:H5'  | 1.98                     | 0.45              |
| 1:0:2083:G:H2' | 1:0:2084:G:O4' | 2.16                     | 0.45              |
| 1:0:2311:U:O4' | 1:0:2315:A:N6  | 2.49                     | 0.45              |
| 1:0:840:U:O4   | 1:0:2409:A:C5  | 2.69                     | 0.45              |
| 1:0:2450:A:N7  | 1:0:2451:G:N7  | 2.64                     | 0.45              |
| 1:0:2652:G:H2' | 1:0:2653:A:C8  | 2.42                     | 0.45              |
| 1:0:2663:U:N3  | 1:0:2664:G:C8  | 2.84                     | 0.45              |
| 1:0:2867:G:H4' | 1:0:2868:G:O4' | 2.17                     | 0.45              |
| 1:0:469:G:H22  | 1:0:480:G:C2'  | 2.24                     | 0.45              |
| 1:0:495:C:H2'  | 1:0:496:C:C6   | 2.50                     | 0.45              |
| 1:0:66:U:C2    | 1:0:67:G:N7    | 2.84                     | 0.45              |
| 1:0:672:C:O5'  | 1:0:672:C:H6   | 1.99                     | 0.45              |
| 1:0:681:A:H2'  | 1:0:683:A:N7   | 2.31                     | 0.45              |
| 1:0:578:U:H1'  | 1:0:958:G:O4'  | 2.16                     | 0.45              |
| 1:0:104:C:H2'  | 1:0:105:G:H8   | 1.81                     | 0.45              |
| 1:0:1255:A:O2' | 1:0:1256:C:H5' | 2.16                     | 0.45              |
| 1:0:1426:U:H3' | 1:0:1428:G:N2  | 2.31                     | 0.45              |
| 1:0:1429:A:H1' | 1:0:1603:A:N6  | 2.29                     | 0.45              |
| 1:0:1429:A:O2' | 1:0:1430:G:H4' | 2.15                     | 0.45              |
| 1:0:1439:G:N2  | 1:0:1440:G:C2  | 2.84                     | 0.45              |
| 1:0:1539:U:N3  | 1:0:1540:C:C5  | 2.84                     | 0.45              |
| 1:0:712:A:H2   | 1:0:1650:A:N3  | 2.14                     | 0.45              |
| 1:0:1915:A:H2' | 1:0:1916:G:O4' | 2.16                     | 0.45              |
| 1:0:1761:G:C2  | 1:0:1966:C:O2  | 2.70                     | 0.45              |
| 1:0:20:C:HO2'  | 1:0:21:A:H5'   | 1.80                     | 0.45              |
| 1:0:2205:C:C2' | 1:0:2206:C:H5' | 2.46                     | 0.45              |
| 1:0:2665:G:C6  | 1:0:2666:U:N3  | 2.83                     | 0.45              |
| 1:0:26:G:C6    | 1:0:27:G:C2    | 3.05                     | 0.45              |
| 1:0:494:A:H3'  | 1:0:495:C:C6   | 2.52                     | 0.45              |
| 1:0:605:G:H2'  | 1:0:606:A:H8   | 1.81                     | 0.45              |
| 1:0:620:G:C4   | 1:0:621:U:C5   | 3.04                     | 0.45              |
| 1:0:629:C:O2   | 1:0:629:C:H2'  | 2.17                     | 0.45              |
| 1:0:725:C:O5'  | 1:0:725:C:H6   | 1.99                     | 0.45              |
| 1:0:59:G:C2    | 1:0:73:A:C6    | 3.04                     | 0.45              |
| 1:0:796:A:H2'  | 1:0:797:A:H4'  | 1.99                     | 0.45              |
| 1:0:1218:C:H2' | 1:0:1219:C:C6  | 2.52                     | 0.45              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1299:A:C6  | 1:0:1302:C:C2   | 3.05                     | 0.45              |
| 1:0:1292:A:C2  | 1:0:1305:C:C2   | 3.04                     | 0.45              |
| 1:0:1340:C:O2' | 1:0:1341:G:H5'  | 2.16                     | 0.45              |
| 1:0:1633:C:O2' | 1:0:1634:A:O5'  | 2.34                     | 0.45              |
| 1:0:165:G:N7   | 1:0:166:G:N7    | 2.65                     | 0.45              |
| 1:0:171:G:H2'  | 1:0:172:A:O4'   | 2.16                     | 0.45              |
| 1:0:1778:U:C3' | 1:0:1779:C:H6   | 2.28                     | 0.45              |
| 1:0:1840:A:H2' | 1:0:1841:G:C5'  | 2.47                     | 0.45              |
| 1:0:2093:G:H3' | 1:0:2103:G:OP2  | 2.17                     | 0.45              |
| 1:0:2625:U:H6  | 1:0:2625:U:O5'  | 1.98                     | 0.45              |
| 1:0:2678:C:C4  | 1:0:2679:G:N7   | 2.84                     | 0.45              |
| 1:0:395:G:C4   | 1:0:396:U:C5    | 3.04                     | 0.45              |
| 1:0:437:G:O2'  | 1:0:438:G:H5'   | 2.16                     | 0.45              |
| 1:0:470:U:C4   | 1:0:480:G:N2    | 2.84                     | 0.45              |
| 1:0:468:A:N1   | 1:0:481:A:H5''  | 2.32                     | 0.45              |
| 1:0:572:G:H1'  | 1:0:2001:G:N2   | 2.30                     | 0.45              |
| 1:0:641:G:N2   | 1:0:643:A:H3'   | 2.32                     | 0.45              |
| 1:0:700:C:H2'  | 1:0:701:U:C1'   | 2.47                     | 0.45              |
| 1:0:741:G:O2'  | 1:0:742:G:OP1   | 2.34                     | 0.45              |
| 1:0:119:G:H2'  | 1:0:120:G:C8    | 2.51                     | 0.45              |
| 1:0:1209:G:O2' | 1:0:1210:C:H5'  | 2.16                     | 0.45              |
| 1:0:1294:G:N3  | 1:0:1303:U:O2   | 2.50                     | 0.45              |
| 1:0:1301:U:C2' | 1:0:1340:C:O2   | 2.65                     | 0.45              |
| 1:0:1346:C:N3  | 1:0:1347:C:C5   | 2.85                     | 0.45              |
| 1:0:1435:G:H2' | 1:0:1436:G:C5'  | 2.46                     | 0.45              |
| 1:0:1480:G:H2' | 1:0:1481:U:O4'  | 2.15                     | 0.45              |
| 1:0:1534:A:N6  | 1:0:1535:C:N4   | 2.65                     | 0.45              |
| 1:0:1679:U:C3' | 1:0:1680:U:H5'' | 2.45                     | 0.45              |
| 1:0:1713:G:H2' | 1:0:1714:A:O4'  | 2.17                     | 0.45              |
| 1:0:1780:A:C6  | 1:0:1781:C:C4   | 3.05                     | 0.45              |
| 1:0:192:G:H1'  | 1:0:193:A:H4'   | 1.99                     | 0.45              |
| 1:0:1950:C:C4  | 1:0:1951:G:C5   | 3.05                     | 0.45              |
| 1:0:2027:C:N1  | 1:0:2604:G:N2   | 2.64                     | 0.45              |
| 1:0:2358:C:H2' | 1:0:2359:U:C6   | 2.51                     | 0.45              |
| 1:0:2439:U:H2' | 1:0:2440:C:H5'  | 1.98                     | 0.45              |
| 1:0:2462:C:C4  | 1:0:2463:G:N7   | 2.85                     | 0.45              |
| 1:0:2466:G:H2' | 1:0:2467:A:H8   | 1.82                     | 0.45              |
| 1:0:2532:G:C2  | 1:0:2533:U:H1'  | 2.51                     | 0.45              |
| 1:0:2697:G:N1  | 1:0:2698:G:C5   | 2.84                     | 0.45              |
| 1:0:60:A:C2'   | 1:0:61:U:H5'    | 2.46                     | 0.45              |
| 1:0:658:G:H2'  | 1:0:659:G:C8    | 2.51                     | 0.45              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:697:G:O2'   | 1:0:801:A:N6   | 2.39                     | 0.45              |
| 1:0:812:G:C6    | 1:0:813:A:C6   | 3.04                     | 0.45              |
| 1:0:858:G:H8    | 1:0:858:G:O5'  | 1.99                     | 0.45              |
| 1:0:976:C:O4'   | 1:0:2252:A:N3  | 2.49                     | 0.45              |
| 1:0:118:U:O2    | 1:0:118:U:H2'  | 2.15                     | 0.45              |
| 1:0:826:U:N1    | 1:0:1209:G:N2  | 2.64                     | 0.45              |
| 1:0:1223:G:H5'  | 1:0:1225:G:C1' | 2.47                     | 0.45              |
| 1:0:1233:A:O2'  | 1:0:1234:C:OP1 | 2.31                     | 0.45              |
| 1:0:1326:U:C3'  | 1:0:1326:U:C6  | 3.00                     | 0.45              |
| 1:0:1410:U:HO2' | 1:0:1411:C:P   | 2.40                     | 0.45              |
| 1:0:1474:A:C6   | 1:0:1476:G:C4  | 3.04                     | 0.45              |
| 1:0:1480:G:O2'  | 1:0:1481:U:H5' | 2.16                     | 0.45              |
| 1:0:1498:G:H22  | 1:0:1523:A:C1' | 2.27                     | 0.45              |
| 1:0:1692:C:H2'  | 1:0:1693:A:H5' | 1.98                     | 0.45              |
| 1:0:1823:G:H2'  | 1:0:1824:C:H6  | 1.78                     | 0.45              |
| 1:0:187:U:H2'   | 1:0:188:G:C8   | 2.51                     | 0.45              |
| 1:0:1923:U:O2'  | 1:0:1925:C:N4  | 2.38                     | 0.45              |
| 1:0:2362:G:H2'  | 1:0:2363:G:H8  | 1.82                     | 0.45              |
| 1:0:2396:C:H2'  | 1:0:2397:A:O4' | 2.16                     | 0.45              |
| 1:0:2639:A:H2'  | 1:0:2640:G:C8  | 2.51                     | 0.45              |
| 1:0:2840:U:C5   | 1:0:2841:U:C5  | 3.04                     | 0.45              |
| 1:0:446:C:H2'   | 1:0:447:U:O4'  | 2.17                     | 0.45              |
| 1:0:58:C:C5     | 1:0:72:A:N6    | 2.85                     | 0.45              |
| 1:0:801:A:O2'   | 1:0:802:A:P    | 2.73                     | 0.45              |
| 1:0:829:C:O2'   | 1:0:830:C:H5'  | 2.17                     | 0.45              |
| 1:0:1294:G:C6   | 1:0:1295:U:C4  | 3.05                     | 0.45              |
| 1:0:1440:G:O6   | 1:0:1441:A:N6  | 2.50                     | 0.45              |
| 1:0:1469:U:H3'  | 1:0:1470:G:N7  | 2.32                     | 0.45              |
| 1:0:1666:G:C2   | 1:0:1667:A:C4  | 3.05                     | 0.45              |
| 1:0:1673:C:H2'  | 1:0:1674:C:C6  | 2.36                     | 0.45              |
| 1:0:1689:U:C2'  | 1:0:1690:U:C5' | 2.95                     | 0.45              |
| 1:0:1711:C:O2'  | 1:0:1712:G:OP2 | 2.30                     | 0.45              |
| 1:0:1822:C:O2'  | 1:0:1823:G:H5' | 2.16                     | 0.45              |
| 1:0:2003:A:C2   | 1:0:2018:G:C2  | 3.04                     | 0.45              |
| 1:0:2068:C:H1'  | 1:0:2214:G:N2  | 2.31                     | 0.45              |
| 1:0:223:C:O2'   | 1:0:398:C:H5'  | 2.16                     | 0.45              |
| 1:0:2273:C:H2'  | 1:0:2274:C:H6  | 1.82                     | 0.45              |
| 1:0:2379:G:C2'  | 1:0:2380:U:H5' | 2.47                     | 0.45              |
| 1:0:2460:G:C2'  | 1:0:2461:G:OP2 | 2.64                     | 0.45              |
| 1:0:2503:G:H2'  | 1:0:2504:G:C5' | 2.35                     | 0.45              |
| 1:0:2516:U:H2'  | 1:0:2517:C:O4' | 2.16                     | 0.45              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2844:G:C2'  | 1:0:2845:C:H5' | 2.47                     | 0.45              |
| 1:0:388:G:H2'   | 1:0:389:G:O4'  | 2.17                     | 0.45              |
| 1:0:26:G:H1'    | 1:0:525:A:H61  | 1.81                     | 0.45              |
| 1:0:541:C:C4    | 1:0:542:A:N3   | 2.85                     | 0.45              |
| 1:0:764:A:C2    | 1:0:802:A:C4   | 3.04                     | 0.45              |
| 1:0:813:A:C2    | 1:0:815:A:H8   | 2.34                     | 0.45              |
| 1:0:978:U:H2'   | 1:0:979:A:H8   | 1.80                     | 0.45              |
| 1:0:1007:A:C2   | 1:0:1008:G:C8  | 3.04                     | 0.45              |
| 1:0:1197:U:O5'  | 1:0:1197:U:H6  | 1.99                     | 0.45              |
| 1:0:1448:A:O2'  | 1:0:1449:C:H5' | 2.17                     | 0.45              |
| 1:0:1625:A:C6   | 1:0:1632:A:C2  | 3.04                     | 0.45              |
| 1:0:1654:A:H4'  | 1:0:2690:A:O2' | 2.16                     | 0.45              |
| 1:0:1744:G:H2'  | 1:0:1746:A:OP2 | 2.17                     | 0.45              |
| 1:0:1913:G:HO2' | 1:0:1914:U:P   | 2.40                     | 0.45              |
| 1:0:2059:U:O5'  | 1:0:2217:G:N2  | 2.50                     | 0.45              |
| 1:0:2231:G:H2'  | 1:0:2232:G:C5' | 2.47                     | 0.45              |
| 1:0:2240:C:H1'  | 1:0:2367:A:H1' | 1.97                     | 0.45              |
| 1:0:2434:G:C5   | 1:0:2435:C:N4  | 2.84                     | 0.45              |
| 1:0:2034:A:N6   | 1:0:2593:A:H2' | 2.31                     | 0.45              |
| 1:0:2794:G:C2   | 1:0:2803:C:C2  | 3.04                     | 0.45              |
| 1:0:2825:A:H5'  | 1:0:2843:A:C2  | 2.50                     | 0.45              |
| 1:0:395:G:C6    | 1:0:396:U:C4   | 3.04                     | 0.45              |
| 1:0:580:A:O2'   | 1:0:582:G:OP2  | 2.31                     | 0.45              |
| 1:0:611:C:H2'   | 1:0:614:G:H5'' | 1.99                     | 0.45              |
| 1:0:79:G:H2'    | 1:0:80:A:H8    | 1.81                     | 0.45              |
| 1:0:66:U:H1'    | 1:0:87:G:N2    | 2.32                     | 0.45              |
| 1:0:914:C:H2'   | 1:0:915:C:H6   | 1.81                     | 0.45              |
| 1:0:1141:U:O2'  | 1:0:1142:G:O5' | 2.35                     | 0.45              |
| 1:0:1175:A:C2   | 1:0:1176:U:C2  | 3.05                     | 0.45              |
| 1:0:1179:A:H2'  | 1:0:1180:A:C8  | 2.52                     | 0.45              |
| 1:0:1205:G:N2   | 1:0:1206:G:C1' | 2.80                     | 0.45              |
| 1:0:162:C:H2'   | 1:0:163:A:C8   | 2.49                     | 0.45              |
| 1:0:177:U:O2    | 1:0:177:U:C2'  | 2.64                     | 0.45              |
| 1:0:1784:C:O5'  | 1:0:1784:C:H6  | 1.99                     | 0.45              |
| 1:0:2094:C:N4   | 1:0:2103:G:C4  | 2.85                     | 0.45              |
| 1:0:2162:C:O2   | 1:0:2162:C:H2' | 2.17                     | 0.45              |
| 1:0:2692:A:C5'  | 1:0:2693:U:H5' | 2.45                     | 0.45              |
| 1:0:26:G:C6     | 1:0:27:G:N2    | 2.85                     | 0.45              |
| 1:0:471:A:C2    | 1:0:481:A:C5   | 3.04                     | 0.45              |
| 1:0:498:C:O2'   | 1:0:499:G:H5'  | 2.17                     | 0.45              |
| 1:0:538:A:N7    | 1:0:2025:A:C6  | 2.85                     | 0.45              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:584:A:C2   | 1:0:585:U:C5   | 3.04                     | 0.45              |
| 1:0:718:A:H62  | 1:0:739:G:H1'  | 1.81                     | 0.45              |
| 1:0:865:A:C5   | 1:0:866:U:C4   | 3.05                     | 0.45              |
| 1:0:922:A:H2'  | 1:0:923:A:O4'  | 2.16                     | 0.45              |
| 1:0:131:C:O5'  | 1:0:131:C:H6   | 1.99                     | 0.45              |
| 1:0:1415:C:H2' | 1:0:1416:A:H5' | 1.99                     | 0.45              |
| 1:0:1559:G:O5' | 1:0:1559:G:H8  | 1.99                     | 0.45              |
| 1:0:1605:A:O2' | 1:0:1606:C:H5' | 2.16                     | 0.45              |
| 1:0:1706:A:N7  | 1:0:1715:A:C2  | 2.85                     | 0.45              |
| 1:0:1820:G:O2' | 1:0:1821:A:OP1 | 2.33                     | 0.45              |
| 1:0:1927:U:C2' | 1:0:1927:U:O2  | 2.65                     | 0.45              |
| 1:0:225:G:C5'  | 1:0:226:C:H5'' | 2.47                     | 0.45              |
| 1:0:2447:G:O2' | 1:0:2448:A:C8  | 2.66                     | 0.45              |
| 1:0:2469:G:C4' | 1:0:2470:U:OP1 | 2.65                     | 0.45              |
| 1:0:2534:U:C6  | 1:0:2535:C:C6  | 3.05                     | 0.45              |
| 1:0:536:A:H61  | 1:0:2605:C:H4' | 1.80                     | 0.45              |
| 1:0:493:A:H5'' | 1:0:494:A:OP1  | 2.16                     | 0.45              |
| 1:0:611:C:O2   | 1:0:614:G:C5'  | 2.65                     | 0.45              |
| 1:0:60:A:C5    | 1:0:61:U:C5    | 3.05                     | 0.45              |
| 1:0:879:A:O2'  | 1:0:880:C:H5'  | 2.16                     | 0.45              |
| 1:0:994:A:N6   | 1:0:995:A:C2   | 2.85                     | 0.45              |
| 1:0:1038:U:O2  | 1:0:2466:G:O3' | 2.35                     | 0.45              |
| 1:0:1375:C:H2' | 1:0:1375:C:O2  | 2.15                     | 0.45              |
| 1:0:1424:U:H2' | 1:0:1425:G:O4' | 2.17                     | 0.45              |
| 1:0:1757:C:O2  | 1:0:1970:G:C2  | 2.70                     | 0.45              |
| 1:0:1790:G:O2' | 1:0:1791:C:OP2 | 2.30                     | 0.45              |
| 1:0:1824:C:O5' | 1:0:1824:C:H6  | 1.99                     | 0.45              |
| 1:0:1279:G:H22 | 1:0:1995:G:H2' | 1.82                     | 0.45              |
| 1:0:2021:G:O2' | 1:0:2022:C:H5' | 2.17                     | 0.45              |
| 1:0:2103:G:N1  | 1:0:2162:C:N4  | 2.65                     | 0.45              |
| 1:0:229:G:H2'  | 1:0:230:C:H6   | 1.81                     | 0.45              |
| 1:0:2359:U:H6  | 1:0:2359:U:O5' | 2.00                     | 0.45              |
| 1:0:2395:C:N4  | 1:0:2396:C:N4  | 2.64                     | 0.45              |
| 1:0:2519:C:C2' | 1:0:2520:A:H5' | 2.46                     | 0.45              |
| 1:0:2703:C:O2' | 1:0:2704:U:H5' | 2.17                     | 0.45              |
| 1:0:475:U:C2   | 1:0:801:A:N6   | 2.85                     | 0.45              |
| 1:0:600:G:O2'  | 1:0:601:A:H5'  | 2.18                     | 0.45              |
| 1:0:611:C:O2   | 1:0:614:G:C4'  | 2.57                     | 0.45              |
| 1:0:651:C:C3'  | 1:0:652:C:C5'  | 2.95                     | 0.45              |
| 1:0:640:C:C4'  | 1:0:660:G:H21  | 2.30                     | 0.45              |
| 1:0:67:G:C2    | 1:0:72:A:C2    | 3.05                     | 0.45              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:813:A:C2    | 1:0:815:A:C8   | 3.05                     | 0.45              |
| 1:0:1038:U:H2'  | 1:0:1039:A:O4' | 2.17                     | 0.44              |
| 1:0:1417:C:H2'  | 1:0:1418:C:H6  | 1.82                     | 0.44              |
| 1:0:1854:G:H2'  | 1:0:1855:G:H8  | 1.83                     | 0.44              |
| 1:0:1939:U:C4   | 1:0:1940:C:C4  | 3.04                     | 0.44              |
| 1:0:1997:A:H8   | 1:0:1997:A:O5' | 2.00                     | 0.44              |
| 1:0:2093:G:O2'  | 1:0:2094:C:H6  | 2.00                     | 0.44              |
| 1:0:2252:A:C8   | 1:0:2253:A:C8  | 3.06                     | 0.44              |
| 1:0:2366:U:H6   | 1:0:2366:U:H3' | 1.82                     | 0.44              |
| 1:0:2394:G:C6   | 1:0:2395:C:C4  | 3.04                     | 0.44              |
| 1:0:2523:G:H2'  | 1:0:2524:G:H8  | 1.82                     | 0.44              |
| 1:0:2540:A:N6   | 1:0:2541:U:C4  | 2.84                     | 0.44              |
| 1:0:2687:G:O2'  | 1:0:2688:G:H5' | 2.17                     | 0.44              |
| 1:0:2824:C:O2'  | 1:0:2825:A:P   | 2.75                     | 0.44              |
| 1:0:2841:U:HO2' | 1:0:2842:C:P   | 2.40                     | 0.44              |
| 1:0:364:G:H2'   | 1:0:365:U:C6   | 2.51                     | 0.44              |
| 1:0:485:G:O6    | 1:0:520:C:N4   | 2.51                     | 0.44              |
| 1:0:521:U:O4    | 1:0:522:G:N2   | 2.50                     | 0.44              |
| 1:0:632:A:H2    | 1:0:633:G:C5   | 2.35                     | 0.44              |
| 1:0:650:U:H2'   | 1:0:651:C:H6   | 1.82                     | 0.44              |
| 1:0:691:C:C2    | 1:0:692:C:C5   | 3.05                     | 0.44              |
| 1:0:705:C:O2'   | 1:0:706:A:H5'  | 2.17                     | 0.44              |
| 1:0:831:G:H5'   | 1:0:852:U:OP1  | 2.17                     | 0.44              |
| 1:0:1111:C:OP2  | 1:0:1112:U:H5  | 2.00                     | 0.44              |
| 1:0:1153:A:O2'  | 1:0:1154:A:C3' | 2.66                     | 0.44              |
| 1:0:1168:G:H8   | 1:0:1168:G:O5' | 2.00                     | 0.44              |
| 1:0:1393:G:C2   | 1:0:1394:G:C8  | 3.05                     | 0.44              |
| 1:0:167:A:C6    | 1:0:168:A:C6   | 3.05                     | 0.44              |
| 1:0:180:C:C2    | 1:0:181:A:N7   | 2.85                     | 0.44              |
| 1:0:192:G:O2'   | 1:0:193:A:C5'  | 2.65                     | 0.44              |
| 1:0:198:A:C8    | 1:0:243:G:C6   | 3.06                     | 0.44              |
| 1:0:540:G:H1'   | 1:0:2004:U:O2' | 2.17                     | 0.44              |
| 1:0:2058:U:H2'  | 1:0:2217:G:N2  | 2.32                     | 0.44              |
| 1:0:2182:A:C2   | 1:0:2183:C:H1' | 2.52                     | 0.44              |
| 1:0:2370:G:H22  | 1:0:2406:C:H4' | 1.81                     | 0.44              |
| 1:0:2656:G:H2'  | 1:0:2657:G:C8  | 2.51                     | 0.44              |
| 1:0:2753:C:C6   | 1:0:2754:C:H5  | 2.35                     | 0.44              |
| 1:0:318:G:H5'   | 1:0:318:G:H8   | 1.83                     | 0.44              |
| 1:0:344:G:C6    | 1:0:345:U:C4   | 3.05                     | 0.44              |
| 1:0:309:G:N2    | 1:0:351:A:H62  | 2.14                     | 0.44              |
| 1:0:48:A:H4'    | 1:0:49:U:H5''  | 1.99                     | 0.44              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:49:U:H2'    | 1:0:50:G:OP1   | 2.17                     | 0.44              |
| 1:0:531:G:C2    | 1:0:532:A:C5   | 3.05                     | 0.44              |
| 1:0:54:G:N2     | 1:0:114:C:N1   | 2.65                     | 0.44              |
| 1:0:698:A:C4'   | 1:0:700:C:H41  | 2.29                     | 0.44              |
| 1:0:1177:U:N3   | 1:0:1197:U:O2  | 2.51                     | 0.44              |
| 1:0:1682:A:H2'  | 1:0:1683:G:O4' | 2.17                     | 0.44              |
| 1:0:1711:C:C2'  | 1:0:1712:G:OP2 | 2.66                     | 0.44              |
| 1:0:1826:U:H1'  | 1:0:1955:G:N2  | 2.32                     | 0.44              |
| 1:0:2235:G:C6   | 1:0:2236:U:C4  | 3.05                     | 0.44              |
| 1:0:2236:U:H2'  | 1:0:2237:C:O4' | 2.18                     | 0.44              |
| 1:0:2324:G:C2'  | 1:0:2325:A:OP2 | 2.65                     | 0.44              |
| 1:0:2840:U:C4   | 1:0:2841:U:H5  | 2.34                     | 0.44              |
| 1:0:337:G:O2'   | 1:0:338:G:H5'  | 2.16                     | 0.44              |
| 1:0:391:C:H2'   | 1:0:392:G:H5'  | 1.99                     | 0.44              |
| 1:0:40:U:H2'    | 1:0:41:G:O4'   | 2.16                     | 0.44              |
| 1:0:488:A:H2'   | 1:0:489:A:O4'  | 2.16                     | 0.44              |
| 1:0:586:G:C6    | 1:0:587:A:N6   | 2.85                     | 0.44              |
| 1:0:78:C:C4     | 1:0:106:G:N1   | 2.86                     | 0.44              |
| 1:0:935:C:H2'   | 1:0:936:A:H8   | 1.82                     | 0.44              |
| 1:0:963:G:C6    | 1:0:977:G:C6   | 3.04                     | 0.44              |
| 1:0:1167:A:C5'  | 1:0:1168:G:OP2 | 2.63                     | 0.44              |
| 1:0:1341:G:H2'  | 1:0:1343:C:C4  | 2.52                     | 0.44              |
| 1:0:1385:C:C2   | 1:0:1386:A:C8  | 3.05                     | 0.44              |
| 1:0:168:A:O2'   | 1:0:169:C:H5'  | 2.16                     | 0.44              |
| 1:0:1715:A:O2'  | 1:0:1716:G:C3' | 2.65                     | 0.44              |
| 1:0:1781:C:H5'' | 1:0:1782:A:OP1 | 2.17                     | 0.44              |
| 1:0:1865:C:N4   | 1:0:1866:G:H21 | 2.16                     | 0.44              |
| 1:0:1872:A:H1'  | 1:0:2069:U:O2' | 2.16                     | 0.44              |
| 1:0:2350:G:C2   | 1:0:2351:G:C5  | 3.06                     | 0.44              |
| 1:0:2629:U:H2'  | 1:0:2630:C:H6  | 1.81                     | 0.44              |
| 1:0:2713:A:H2'  | 1:0:2714:A:C8  | 2.51                     | 0.44              |
| 1:0:2756:A:N6   | 1:0:2762:G:C4  | 2.86                     | 0.44              |
| 1:0:2791:C:O2'  | 1:0:2792:C:H5' | 2.16                     | 0.44              |
| 1:0:2799:C:C4   | 1:0:2800:C:N3  | 2.85                     | 0.44              |
| 1:0:2836:U:O2'  | 1:0:2837:G:H5' | 2.18                     | 0.44              |
| 1:0:304:A:N6    | 1:0:356:A:N7   | 2.66                     | 0.44              |
| 1:0:356:A:O2'   | 1:0:357:A:H8   | 2.01                     | 0.44              |
| 1:0:510:G:H2'   | 1:0:512:A:OP2  | 2.17                     | 0.44              |
| 1:0:67:G:H2'    | 1:0:68:C:H6    | 1.82                     | 0.44              |
| 1:0:765:C:O2'   | 1:0:766:A:P    | 2.75                     | 0.44              |
| 1:0:819:C:C2    | 1:0:820:U:H5   | 2.35                     | 0.44              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:1016:C:N3  | 1:0:1154:A:C4   | 2.85                     | 0.44              |
| 1:0:1159:U:O2' | 1:0:1160:C:H5'  | 2.18                     | 0.44              |
| 1:0:1213:U:H2' | 1:0:1214:C:C6   | 2.53                     | 0.44              |
| 1:0:1265:G:O2' | 1:0:1266:G:C4   | 2.66                     | 0.44              |
| 1:0:1310:C:H2' | 1:0:1311:C:H6   | 1.80                     | 0.44              |
| 1:0:1351:G:H2' | 1:0:1352:G:C8   | 2.53                     | 0.44              |
| 1:0:1523:A:O5' | 1:0:1523:A:H8   | 2.01                     | 0.44              |
| 1:0:1345:G:N7  | 1:0:1625:A:N6   | 2.66                     | 0.44              |
| 1:0:1635:G:N1  | 1:0:1636:G:C5   | 2.86                     | 0.44              |
| 1:0:1901:A:H2' | 1:0:1902:A:C8   | 2.52                     | 0.44              |
| 1:0:2011:U:H2' | 1:0:2012:A:O4'  | 2.18                     | 0.44              |
| 1:0:2091:C:H2' | 1:0:2092:U:H5'  | 1.99                     | 0.44              |
| 1:0:216:U:O2'  | 1:0:217:U:H5'   | 2.18                     | 0.44              |
| 1:0:2308:A:O2' | 1:0:2309:G:H5'  | 2.18                     | 0.44              |
| 1:0:2316:G:OP2 | 1:0:2317:G:OP2  | 2.35                     | 0.44              |
| 1:0:2324:G:N3  | 1:0:2326:C:C5   | 2.85                     | 0.44              |
| 1:0:2569:A:O2' | 1:0:2570:C:H5'  | 2.17                     | 0.44              |
| 1:0:2691:C:H3' | 1:0:2692:A:H5'' | 1.95                     | 0.44              |
| 1:0:494:A:H3'  | 1:0:495:C:C5    | 2.52                     | 0.44              |
| 1:0:496:C:N3   | 1:0:506:G:C2    | 2.86                     | 0.44              |
| 1:0:604:U:C2'  | 1:0:604:U:O2    | 2.65                     | 0.44              |
| 1:0:634:G:H8   | 1:0:634:G:O5'   | 2.00                     | 0.44              |
| 1:0:76:C:C6    | 1:0:76:C:H5'    | 2.30                     | 0.44              |
| 1:0:827:C:H2'  | 1:0:828:C:O5'   | 2.18                     | 0.44              |
| 1:0:998:C:O2   | 1:0:1011:A:H2   | 2.01                     | 0.44              |
| 1:0:1032:A:H3' | 1:0:1032:A:C8   | 2.52                     | 0.44              |
| 1:0:1073:G:C2  | 1:0:1074:G:H1'  | 2.53                     | 0.44              |
| 1:0:1177:U:O2  | 1:0:1196:G:N2   | 2.51                     | 0.44              |
| 1:0:1326:U:C6  | 1:0:1326:U:H3'  | 2.52                     | 0.44              |
| 1:0:1464:A:N6  | 1:0:1465:G:C6   | 2.85                     | 0.44              |
| 1:0:1469:U:H3' | 1:0:1470:G:C8   | 2.53                     | 0.44              |
| 1:0:1490:U:C2  | 1:0:1534:A:C2   | 3.06                     | 0.44              |
| 1:0:1314:A:C2  | 1:0:1642:G:N3   | 2.85                     | 0.44              |
| 1:0:1723:U:C5  | 1:0:1748:U:OP2  | 2.70                     | 0.44              |
| 1:0:1774:A:H2  | 1:0:2567:G:C8   | 2.35                     | 0.44              |
| 1:0:1668:G:C2  | 1:0:1990:U:C2   | 3.06                     | 0.44              |
| 1:0:2104:G:O2' | 1:0:2105:U:H5'  | 2.17                     | 0.44              |
| 1:0:2261:G:H4' | 1:0:2262:C:O5'  | 2.18                     | 0.44              |
| 1:0:2343:C:H2' | 1:0:2344:G:C5'  | 2.47                     | 0.44              |
| 1:0:2691:C:H2' | 1:0:2692:A:C4'  | 2.47                     | 0.44              |
| 1:0:2705:A:C4  | 1:0:2707:G:C8   | 3.06                     | 0.44              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2757:G:H8   | 1:0:2757:G:H3' | 1.81                     | 0.44              |
| 1:0:421:G:C2    | 1:0:422:C:C2   | 3.06                     | 0.44              |
| 1:0:48:A:N6     | 1:0:154:U:C6   | 2.86                     | 0.44              |
| 1:0:500:G:C5    | 1:0:1297:A:C2  | 3.06                     | 0.44              |
| 1:0:613:A:C4    | 1:0:636:G:N2   | 2.86                     | 0.44              |
| 1:0:616:U:N3    | 1:0:617:U:C5   | 2.86                     | 0.44              |
| 1:0:65:C:C2'    | 1:0:66:U:H5'   | 2.47                     | 0.44              |
| 1:0:879:A:N6    | 1:0:926:C:C5   | 2.86                     | 0.44              |
| 1:0:1255:A:C4   | 1:0:1256:C:C5  | 3.05                     | 0.44              |
| 1:0:1391:A:N7   | 1:0:1393:G:C6  | 2.85                     | 0.44              |
| 1:0:1657:A:H2'  | 1:0:1658:A:O4' | 2.17                     | 0.44              |
| 1:0:1788:C:C4   | 1:0:1789:U:C5  | 3.06                     | 0.44              |
| 1:0:1799:A:HO2' | 1:0:1800:A:P   | 2.41                     | 0.44              |
| 1:0:1966:C:O2'  | 1:0:1967:U:H5' | 2.18                     | 0.44              |
| 1:0:2015:G:C2   | 1:0:2038:C:N3  | 2.86                     | 0.44              |
| 1:0:2187:A:O2'  | 1:0:2188:A:H5' | 2.17                     | 0.44              |
| 1:0:468:A:N3    | 1:0:470:U:C4   | 2.86                     | 0.44              |
| 1:0:48:A:H5'    | 1:0:49:U:O5'   | 2.18                     | 0.44              |
| 1:0:628:A:N7    | 1:0:629:C:C5   | 2.86                     | 0.44              |
| 1:0:639:G:H2'   | 1:0:640:C:H6   | 1.82                     | 0.44              |
| 1:0:677:G:O2'   | 1:0:678:G:H5'  | 2.17                     | 0.44              |
| 1:0:787:A:H2'   | 1:0:788:G:H8   | 1.81                     | 0.44              |
| 1:0:806:A:H2'   | 1:0:807:A:OP2  | 2.18                     | 0.44              |
| 1:0:941:U:H2'   | 1:0:942:U:O4'  | 2.17                     | 0.44              |
| 1:0:1040:A:H2   | 1:0:2444:C:O2  | 2.01                     | 0.44              |
| 1:0:1193:G:H2'  | 1:0:1194:U:H6  | 1.80                     | 0.44              |
| 1:0:1198:C:O5'  | 1:0:1199:U:H4' | 2.17                     | 0.44              |
| 1:0:1200:G:H2'  | 1:0:1201:G:O4' | 2.17                     | 0.44              |
| 1:0:1469:U:P    | 1:0:1470:G:OP2 | 2.76                     | 0.44              |
| 1:0:1312:G:C2'  | 1:0:1643:A:N6  | 2.81                     | 0.44              |
| 1:0:167:A:C4    | 1:0:184:A:C2   | 3.05                     | 0.44              |
| 1:0:1697:U:O2'  | 1:0:1754:G:N7  | 2.37                     | 0.44              |
| 1:0:1790:G:O2'  | 1:0:1791:C:P   | 2.76                     | 0.44              |
| 1:0:1842:G:H2'  | 1:0:1843:U:H6  | 1.82                     | 0.44              |
| 1:0:1908:C:H2'  | 1:0:1909:U:C4' | 2.44                     | 0.44              |
| 1:0:2084:G:C2   | 1:0:2085:G:N7  | 2.85                     | 0.44              |
| 1:0:2312:A:O2'  | 1:0:2313:G:P   | 2.76                     | 0.44              |
| 1:0:2469:G:C5'  | 1:0:2470:U:OP1 | 2.66                     | 0.44              |
| 1:0:2542:U:H1'  | 1:0:2545:A:C5  | 2.52                     | 0.44              |
| 1:0:2657:G:HO2' | 1:0:2658:A:H5' | 1.82                     | 0.44              |
| 1:0:1681:A:N3   | 1:0:2706:U:C2  | 2.86                     | 0.44              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2748:C:C4  | 1:0:2749:A:N7   | 2.86                     | 0.44              |
| 1:0:80:A:O4'   | 1:0:305:A:H2    | 2.01                     | 0.44              |
| 1:0:591:G:H2'  | 1:0:592:G:O4'   | 2.17                     | 0.44              |
| 1:0:593:C:N4   | 1:0:594:G:C6    | 2.85                     | 0.44              |
| 1:0:622:U:H2'  | 1:0:623:G:H5'   | 1.99                     | 0.44              |
| 1:0:683:A:H4'  | 1:0:684:C:O5'   | 2.18                     | 0.44              |
| 1:0:765:C:C2'  | 1:0:766:A:OP2   | 2.66                     | 0.44              |
| 1:0:787:A:C2   | 1:0:788:G:C6    | 3.06                     | 0.44              |
| 1:0:951:G:H2'  | 1:0:952:A:O4'   | 2.17                     | 0.44              |
| 1:0:984:A:O2'  | 1:0:985:G:P     | 2.75                     | 0.44              |
| 1:0:102:C:H6   | 1:0:102:C:O5'   | 2.01                     | 0.44              |
| 1:0:1196:G:O2' | 1:0:1197:U:H5'  | 2.17                     | 0.44              |
| 1:0:1206:G:C6  | 1:0:1207:G:N7   | 2.86                     | 0.44              |
| 1:0:1223:G:C2  | 1:0:1250:A:N7   | 2.85                     | 0.44              |
| 1:0:1226:A:C1' | 1:0:1250:A:C2   | 3.00                     | 0.44              |
| 1:0:1441:A:C2' | 1:0:1441:A:N3   | 2.81                     | 0.44              |
| 1:0:1518:C:H2' | 1:0:1519:G:H8   | 1.82                     | 0.44              |
| 1:0:1479:G:N2  | 1:0:1543:G:H21  | 2.16                     | 0.44              |
| 1:0:1593:C:H2' | 1:0:1594:U:O4'  | 2.17                     | 0.44              |
| 1:0:1684:G:O2' | 1:0:1974:U:O4   | 2.36                     | 0.44              |
| 1:0:1716:G:O2' | 1:0:1717:A:OP1  | 2.34                     | 0.44              |
| 1:0:1895:A:C8  | 1:0:1896:A:N7   | 2.86                     | 0.44              |
| 1:0:211:U:O2'  | 1:0:212:U:H5'   | 2.18                     | 0.44              |
| 1:0:221:A:C2   | 1:0:222:G:C1'   | 3.00                     | 0.44              |
| 1:0:2240:C:C4  | 1:0:2259:G:N1   | 2.86                     | 0.44              |
| 1:0:23:G:N2    | 1:0:24:G:H1'    | 2.32                     | 0.44              |
| 1:0:2043:A:H4' | 1:0:2481:G:O4'  | 2.18                     | 0.44              |
| 1:0:2710:C:H2' | 1:0:2711:G:C8   | 2.52                     | 0.44              |
| 1:0:2818:G:N2  | 1:0:2850:U:C2   | 2.86                     | 0.44              |
| 1:0:2846:G:O2' | 1:0:2847:G:H5'' | 2.17                     | 0.44              |
| 1:0:322:A:H1'  | 1:0:343:A:C4    | 2.53                     | 0.44              |
| 1:0:210:A:N6   | 1:0:442:A:H61   | 2.16                     | 0.44              |
| 1:0:630:G:H5'' | 1:0:631:G:OP2   | 2.18                     | 0.44              |
| 1:0:63:A:H2'   | 1:0:63:A:N3     | 2.33                     | 0.44              |
| 1:0:664:C:H2'  | 1:0:665:A:C8    | 2.52                     | 0.44              |
| 1:0:68:C:O2    | 1:0:69:G:C8     | 2.70                     | 0.44              |
| 1:0:785:U:H2'  | 1:0:786:U:H6    | 1.81                     | 0.44              |
| 1:0:78:C:H2'   | 1:0:79:G:C8     | 2.53                     | 0.44              |
| 1:0:871:U:H1'  | 1:0:2248:A:H5'' | 1.99                     | 0.44              |
| 1:0:929:A:O2'  | 1:0:930:A:OP1   | 2.30                     | 0.44              |
| 1:0:1008:G:C2  | 1:0:1009:C:C6   | 3.06                     | 0.43              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1300:A:H5'' | 1:0:1301:U:OP2 | 2.18                     | 0.43              |
| 1:0:1309:G:C4   | 1:0:1662:G:N2  | 2.85                     | 0.43              |
| 1:0:1382:G:O2'  | 1:0:1383:C:H5' | 2.17                     | 0.43              |
| 1:0:1434:U:H2'  | 1:0:1435:G:N7  | 2.32                     | 0.43              |
| 1:0:1645:U:C4   | 1:0:1646:G:N7  | 2.86                     | 0.43              |
| 1:0:1678:G:O2'  | 1:0:1679:U:H5' | 2.18                     | 0.43              |
| 1:0:1794:A:H61  | 1:0:1806:G:C2' | 2.31                     | 0.43              |
| 1:0:2010:G:C2   | 1:0:2020:G:C5  | 3.06                     | 0.43              |
| 1:0:2161:C:O2   | 1:0:2162:C:H5  | 2.01                     | 0.43              |
| 1:0:2205:C:O2'  | 1:0:2206:C:H5' | 2.17                     | 0.43              |
| 1:0:976:C:C1'   | 1:0:2252:A:N3  | 2.81                     | 0.43              |
| 1:0:2299:A:H5'  | 1:0:2300:G:OP1 | 2.18                     | 0.43              |
| 1:0:2691:C:O2'  | 1:0:2692:A:N3  | 2.42                     | 0.43              |
| 1:0:2699:G:HO2' | 1:0:2700:U:H6  | 1.65                     | 0.43              |
| 1:0:2720:A:C6   | 1:0:2721:A:C6  | 3.05                     | 0.43              |
| 1:0:333:A:O4'   | 1:0:351:A:H1'  | 2.18                     | 0.43              |
| 1:0:340:G:C4'   | 1:0:341:A:OP2  | 2.66                     | 0.43              |
| 1:0:425:A:N7    | 1:0:2390:A:H2  | 2.16                     | 0.43              |
| 1:0:465:C:O2'   | 1:0:483:A:N6   | 2.47                     | 0.43              |
| 1:0:536:A:O2'   | 1:0:2026:C:C2' | 2.66                     | 0.43              |
| 1:0:672:C:H2'   | 1:0:673:G:H5'  | 2.00                     | 0.43              |
| 1:0:842:A:O2'   | 1:0:843:G:P    | 2.76                     | 0.43              |
| 1:0:931:G:N2    | 1:0:932:G:H1'  | 2.33                     | 0.43              |
| 1:0:986:A:H1'   | 1:0:1001:A:C2  | 2.53                     | 0.43              |
| 1:0:1071:U:N3   | 1:0:1090:C:N4  | 2.65                     | 0.43              |
| 1:0:1142:G:O2'  | 1:0:1143:A:O4' | 2.35                     | 0.43              |
| 1:0:1223:G:N9   | 1:0:1250:A:N6  | 2.65                     | 0.43              |
| 1:0:1332:G:N2   | 1:0:1347:C:N1  | 2.67                     | 0.43              |
| 1:0:1353:A:H4'  | 1:0:1354:A:OP2 | 2.19                     | 0.43              |
| 1:0:1461:C:H2'  | 1:0:1462:C:H6  | 1.82                     | 0.43              |
| 1:0:1715:A:HO2' | 1:0:1716:G:H3' | 1.83                     | 0.43              |
| 1:0:1866:G:H2'  | 1:0:1867:A:C8  | 2.53                     | 0.43              |
| 1:0:1928:G:OP2  | 1:0:1928:G:H8  | 2.01                     | 0.43              |
| 1:0:1947:G:H5'  | 1:0:1948:C:OP2 | 2.17                     | 0.43              |
| 1:0:2062:U:N3   | 1:0:2063:A:N7  | 2.66                     | 0.43              |
| 1:0:2120:C:H2'  | 1:0:2121:U:H5' | 2.00                     | 0.43              |
| 1:0:212:U:O2    | 1:0:443:A:C2   | 2.71                     | 0.43              |
| 1:0:2222:U:O2   | 1:0:2223:U:C6  | 2.70                     | 0.43              |
| 1:0:2311:U:C1'  | 1:0:2315:A:H62 | 2.30                     | 0.43              |
| 1:0:2262:C:C5   | 1:0:2368:G:C4  | 3.06                     | 0.43              |
| 1:0:2876:C:C2'  | 1:0:2877:A:H5' | 2.48                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:333:A:H5'  | 1:0:351:A:O4'  | 2.18                     | 0.43              |
| 1:0:492:G:H1'  | 1:0:516:G:H21  | 1.83                     | 0.43              |
| 1:0:534:U:H2'  | 1:0:535:U:C6   | 2.53                     | 0.43              |
| 1:0:708:G:OP1  | 1:0:1393:G:O2' | 2.29                     | 0.43              |
| 1:0:58:C:N1    | 1:0:72:A:N7    | 2.66                     | 0.43              |
| 1:0:777:A:C3'  | 1:0:778:G:H5'  | 2.48                     | 0.43              |
| 1:0:791:G:C6   | 1:0:792:U:C2   | 3.05                     | 0.43              |
| 1:0:826:U:C2   | 1:0:1209:G:N2  | 2.86                     | 0.43              |
| 1:0:1168:G:O5' | 1:0:1168:G:C8  | 2.71                     | 0.43              |
| 1:0:1210:C:C2  | 1:0:1211:G:C8  | 3.06                     | 0.43              |
| 1:0:1235:C:C2  | 1:0:1241:G:C2  | 3.07                     | 0.43              |
| 1:0:1301:U:C4' | 1:0:1302:C:OP2 | 2.66                     | 0.43              |
| 1:0:118:U:H1'  | 1:0:143:A:C8   | 2.53                     | 0.43              |
| 1:0:1764:A:C3' | 1:0:1765:C:H5' | 2.48                     | 0.43              |
| 1:0:1764:A:C5  | 1:0:1821:A:H1' | 2.53                     | 0.43              |
| 1:0:1834:G:C2  | 1:0:1835:C:C2  | 3.06                     | 0.43              |
| 1:0:2039:G:N3  | 1:0:2039:G:H2' | 2.34                     | 0.43              |
| 1:0:2057:U:C2  | 1:0:2415:G:C2  | 3.06                     | 0.43              |
| 1:0:2068:C:O2  | 1:0:2068:C:C2' | 2.66                     | 0.43              |
| 1:0:219:G:HO2' | 1:0:231:G:H1   | 1.64                     | 0.43              |
| 1:0:2219:U:C2  | 1:0:2220:A:C8  | 3.07                     | 0.43              |
| 1:0:2240:C:H2' | 1:0:2241:U:C5' | 2.47                     | 0.43              |
| 1:0:2451:G:H2' | 1:0:2454:C:H42 | 1.83                     | 0.43              |
| 1:0:2434:G:N1  | 1:0:2477:C:N4  | 2.66                     | 0.43              |
| 1:0:2607:C:O4' | 1:0:2761:A:C2  | 2.72                     | 0.43              |
| 1:0:2610:G:N3  | 1:0:2785:A:H2  | 2.16                     | 0.43              |
| 1:0:501:G:O2'  | 1:0:502:A:H5'  | 2.18                     | 0.43              |
| 1:0:624:A:C2'  | 1:0:625:A:C5'  | 2.90                     | 0.43              |
| 1:0:633:G:H2'  | 1:0:634:G:O5'  | 2.18                     | 0.43              |
| 1:0:58:C:O2    | 1:0:73:A:C2    | 2.72                     | 0.43              |
| 1:0:827:C:N4   | 1:0:828:C:N4   | 2.67                     | 0.43              |
| 1:0:84:G:H2'   | 1:0:85:C:O4'   | 2.17                     | 0.43              |
| 1:0:912:A:H8   | 1:0:912:A:O5'  | 2.01                     | 0.43              |
| 1:0:929:A:H2'  | 1:0:930:A:H5'' | 2.00                     | 0.43              |
| 1:0:930:A:H5'  | 1:0:931:G:C8   | 2.53                     | 0.43              |
| 1:0:105:G:H2'  | 1:0:106:G:H5'  | 2.01                     | 0.43              |
| 1:0:1262:U:C3' | 1:0:1262:U:C6  | 3.00                     | 0.43              |
| 1:0:1332:G:N1  | 1:0:1333:G:C2  | 2.86                     | 0.43              |
| 1:0:1348:C:H2' | 1:0:1349:A:C8  | 2.53                     | 0.43              |
| 1:0:1382:G:O4' | 1:0:1799:A:N6  | 2.52                     | 0.43              |
| 1:0:1515:U:O5' | 1:0:1515:U:H6  | 2.02                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1431:U:C5' | 1:0:1604:A:H1' | 2.47                     | 0.43              |
| 1:0:1631:C:H5  | 1:0:1633:C:N3  | 2.16                     | 0.43              |
| 1:0:1674:C:O2  | 1:0:1674:C:C2' | 2.65                     | 0.43              |
| 1:0:1688:U:O2  | 1:0:1690:U:H3' | 2.18                     | 0.43              |
| 1:0:1776:A:C8  | 1:0:1778:U:C5  | 3.05                     | 0.43              |
| 1:0:1876:C:H2' | 1:0:1877:C:H5' | 2.00                     | 0.43              |
| 1:0:1895:A:H2' | 1:0:1896:A:C8  | 2.37                     | 0.43              |
| 1:0:1913:G:C2' | 1:0:1914:U:OP2 | 2.66                     | 0.43              |
| 1:0:2450:A:C5  | 1:0:2451:G:C8  | 3.07                     | 0.43              |
| 1:0:2560:G:O6  | 1:0:2589:C:C6  | 2.72                     | 0.43              |
| 1:0:2655:C:O2  | 1:0:2712:G:N2  | 2.52                     | 0.43              |
| 1:0:2792:C:C2  | 1:0:2805:G:C2  | 3.07                     | 0.43              |
| 1:0:2824:C:O4' | 1:0:2843:A:C2  | 2.72                     | 0.43              |
| 1:0:510:G:N2   | 1:0:512:A:OP1  | 2.51                     | 0.43              |
| 1:0:577:U:O2   | 1:0:579:G:H8   | 2.00                     | 0.43              |
| 1:0:619:A:N1   | 1:0:629:C:N3   | 2.66                     | 0.43              |
| 1:0:640:C:H4'  | 1:0:660:G:N2   | 2.34                     | 0.43              |
| 1:0:703:A:C2   | 1:0:786:U:N3   | 2.87                     | 0.43              |
| 1:0:825:C:O2'  | 1:0:826:U:H5'  | 2.19                     | 0.43              |
| 1:0:834:A:C8   | 1:0:957:G:C8   | 3.06                     | 0.43              |
| 1:0:861:G:C8   | 1:0:862:A:N7   | 2.86                     | 0.43              |
| 1:0:1110:G:H2' | 1:0:1111:C:C6  | 2.54                     | 0.43              |
| 1:0:1291:G:H2' | 1:0:1292:A:O4' | 2.19                     | 0.43              |
| 1:0:1332:G:C2  | 1:0:1333:G:N2  | 2.86                     | 0.43              |
| 1:0:1347:C:H2' | 1:0:1347:C:O2  | 2.17                     | 0.43              |
| 1:0:1368:G:C6  | 1:0:1390:G:N2  | 2.86                     | 0.43              |
| 1:0:1550:C:O5' | 1:0:1550:C:H6  | 2.01                     | 0.43              |
| 1:0:1567:A:H2' | 1:0:1568:A:H5' | 2.01                     | 0.43              |
| 1:0:1365:U:H1' | 1:0:1586:A:C2  | 2.53                     | 0.43              |
| 1:0:1430:G:O2' | 1:0:1603:A:N3  | 2.49                     | 0.43              |
| 1:0:1312:G:H2' | 1:0:1643:A:H61 | 1.83                     | 0.43              |
| 1:0:165:G:N1   | 1:0:186:C:C4   | 2.87                     | 0.43              |
| 1:0:190:A:O2'  | 1:0:191:G:C5'  | 2.67                     | 0.43              |
| 1:0:2045:A:H4' | 1:0:2046:C:OP1 | 2.15                     | 0.43              |
| 1:0:2168:A:N3  | 1:0:2168:A:C2' | 2.76                     | 0.43              |
| 1:0:1774:A:C6  | 1:0:2566:A:C2  | 3.05                     | 0.43              |
| 1:0:1774:A:H5' | 1:0:2587:G:H4' | 2.00                     | 0.43              |
| 1:0:1:G:H2'    | 1:0:2:G:O4'    | 2.18                     | 0.43              |
| 1:0:404:A:C4   | 1:0:424:G:C2   | 3.07                     | 0.43              |
| 1:0:544:U:H2'  | 1:0:545:C:C6   | 2.53                     | 0.43              |
| 1:0:613:A:C5   | 1:0:636:G:N2   | 2.86                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:616:U:C2'  | 1:0:617:U:H5'' | 2.48                     | 0.43              |
| 1:0:718:A:C8   | 1:0:740:A:N3   | 2.86                     | 0.43              |
| 1:0:768:U:C5   | 1:0:769:C:C5   | 3.06                     | 0.43              |
| 1:0:772:G:C4   | 1:0:773:G:C8   | 3.07                     | 0.43              |
| 1:0:931:G:H2'  | 1:0:932:G:O4'  | 2.19                     | 0.43              |
| 1:0:973:U:H2'  | 1:0:974:U:H6   | 1.83                     | 0.43              |
| 1:0:1045:G:H2' | 1:0:1046:U:H6  | 1.82                     | 0.43              |
| 1:0:1211:G:H2' | 1:0:1212:U:C6  | 2.49                     | 0.43              |
| 1:0:1270:C:C2  | 1:0:1271:C:C5  | 3.07                     | 0.43              |
| 1:0:1330:G:C6  | 1:0:1349:A:C6  | 3.07                     | 0.43              |
| 1:0:1359:G:C6  | 1:0:1360:G:N7  | 2.86                     | 0.43              |
| 1:0:1466:C:N3  | 1:0:1467:U:O2  | 2.52                     | 0.43              |
| 1:0:1845:A:C6  | 1:0:1846:A:C6  | 3.07                     | 0.43              |
| 1:0:192:G:H4'  | 1:0:193:A:H4'  | 2.01                     | 0.43              |
| 1:0:2031:A:C6  | 1:0:2032:G:C5  | 3.07                     | 0.43              |
| 1:0:2059:U:H4' | 1:0:2060:A:OP1 | 2.17                     | 0.43              |
| 1:0:2321:C:H2' | 1:0:2322:U:O4' | 2.18                     | 0.43              |
| 1:0:2515:G:C6  | 1:0:2516:U:C4  | 3.06                     | 0.43              |
| 1:0:2705:A:N7  | 1:0:2707:G:C5  | 2.87                     | 0.43              |
| 1:0:2825:A:C8  | 1:0:2844:G:O4' | 2.71                     | 0.43              |
| 1:0:312:G:C4   | 1:0:313:U:C4   | 3.07                     | 0.43              |
| 1:0:310:A:N6   | 1:0:333:A:O2'  | 2.51                     | 0.43              |
| 1:0:470:U:C5   | 1:0:480:G:N2   | 2.86                     | 0.43              |
| 1:0:623:G:C5'  | 1:0:626:A:H62  | 2.26                     | 0.43              |
| 1:0:708:G:C4   | 1:0:709:A:C8   | 3.06                     | 0.43              |
| 1:0:987:G:N3   | 1:0:988:G:C8   | 2.87                     | 0.43              |
| 1:0:1144:U:H2' | 1:0:1147:G:OP1 | 2.19                     | 0.43              |
| 1:0:1016:C:C2  | 1:0:1154:A:C4  | 3.06                     | 0.43              |
| 1:0:1211:G:C4  | 1:0:1212:U:H5  | 2.36                     | 0.43              |
| 1:0:1381:G:C2  | 1:0:1382:G:N7  | 2.87                     | 0.43              |
| 1:0:1391:A:N7  | 1:0:1393:G:N7  | 2.66                     | 0.43              |
| 1:0:1404:C:N4  | 1:0:1407:G:C8  | 2.87                     | 0.43              |
| 1:0:1713:G:C2' | 1:0:1714:A:O5' | 2.66                     | 0.43              |
| 1:0:1742:G:C6  | 1:0:1743:C:N4  | 2.87                     | 0.43              |
| 1:0:1781:C:H2' | 1:0:1782:A:C5  | 2.53                     | 0.43              |
| 1:0:1861:G:O2' | 1:0:1862:C:H5' | 2.18                     | 0.43              |
| 1:0:1911:A:H2' | 1:0:1912:G:H5' | 2.01                     | 0.43              |
| 1:0:1947:G:C6  | 1:0:1950:C:C4  | 3.07                     | 0.43              |
| 1:0:2474:G:C5  | 1:0:2475:C:C5  | 3.07                     | 0.43              |
| 1:0:2745:A:H2  | 1:0:2746:G:O4' | 2.01                     | 0.43              |
| 1:0:2820:C:O2' | 1:0:2821:G:C5' | 2.60                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:497:C:O2   | 1:0:505:G:C2   | 2.71                     | 0.43              |
| 1:0:510:G:H8   | 1:0:510:G:P    | 2.41                     | 0.43              |
| 1:0:13:A:C2    | 1:0:535:U:N3   | 2.87                     | 0.43              |
| 1:0:704:G:C2   | 1:0:705:C:C6   | 3.06                     | 0.43              |
| 1:0:871:U:C5   | 1:0:932:G:N2   | 2.87                     | 0.43              |
| 1:0:959:C:O2'  | 1:0:960:U:H5'  | 2.17                     | 0.43              |
| 1:0:1016:C:H2' | 1:0:1017:C:H6  | 1.84                     | 0.43              |
| 1:0:1066:G:H3' | 1:0:1067:G:C5' | 2.49                     | 0.43              |
| 1:0:1251:G:O2' | 1:0:1252:C:H5' | 2.19                     | 0.43              |
| 1:0:1287:A:C2  | 1:0:1662:G:O4' | 2.72                     | 0.43              |
| 1:0:1322:G:H1' | 1:0:1627:C:O2' | 2.18                     | 0.43              |
| 1:0:1493:A:C2  | 1:0:1573:G:N3  | 2.79                     | 0.43              |
| 1:0:157:G:H5'  | 1:0:158:A:P    | 2.58                     | 0.43              |
| 1:0:1666:G:C2  | 1:0:1667:A:C8  | 3.06                     | 0.43              |
| 1:0:1769:U:C5  | 1:0:1775:A:N3  | 2.87                     | 0.43              |
| 1:0:1827:G:H1' | 1:0:1914:U:C2  | 2.54                     | 0.43              |
| 1:0:1920:A:N1  | 1:0:1922:U:C4  | 2.87                     | 0.43              |
| 1:0:2208:U:O2' | 1:0:2209:G:H5' | 2.19                     | 0.43              |
| 1:0:2212:U:C2' | 1:0:2213:G:C8  | 2.86                     | 0.43              |
| 1:0:2243:C:O2' | 1:0:2244:C:H5' | 2.18                     | 0.43              |
| 1:0:976:C:C4'  | 1:0:2252:A:N3  | 2.80                     | 0.43              |
| 1:0:2324:G:C2  | 1:0:2326:C:N4  | 2.86                     | 0.43              |
| 1:0:2543:A:C6  | 1:0:2544:A:N1  | 2.87                     | 0.43              |
| 1:0:2687:G:N3  | 1:0:2688:G:C8  | 2.87                     | 0.43              |
| 1:0:2772:U:C2  | 1:0:2781:G:C2  | 3.07                     | 0.43              |
| 1:0:2820:C:H6  | 1:0:2820:C:O5' | 2.01                     | 0.43              |
| 1:0:495:C:H2'  | 1:0:496:C:H6   | 1.84                     | 0.43              |
| 1:0:600:G:C6   | 1:0:602:C:C4   | 3.06                     | 0.43              |
| 1:0:67:G:C2    | 1:0:73:A:N9    | 2.87                     | 0.43              |
| 1:0:935:C:O2'  | 1:0:936:A:H5'  | 2.19                     | 0.43              |
| 1:0:986:A:H2'  | 1:0:987:G:C5'  | 2.48                     | 0.43              |
| 1:0:1007:A:N3  | 1:0:1008:G:C8  | 2.87                     | 0.43              |
| 1:0:1022:A:C6  | 1:0:1024:G:C5  | 3.07                     | 0.43              |
| 1:0:1151:U:O3' | 1:0:1152:C:H3' | 2.19                     | 0.43              |
| 1:0:1174:G:N3  | 1:0:1175:A:C8  | 2.87                     | 0.43              |
| 1:0:50:G:O2'   | 1:0:117:A:N1   | 2.35                     | 0.43              |
| 1:0:1181:C:H3' | 1:0:1182:U:C5' | 2.49                     | 0.43              |
| 1:0:1219:C:O5' | 1:0:1219:C:H6  | 2.01                     | 0.43              |
| 1:0:1231:A:H2' | 1:0:1232:U:O4' | 2.18                     | 0.43              |
| 1:0:1578:U:H2' | 1:0:1579:G:C8  | 2.53                     | 0.43              |
| 1:0:2226:A:H2' | 1:0:2227:C:C6  | 2.54                     | 0.43              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2355:A:H2' | 1:0:2356:A:O4'  | 2.19                     | 0.43              |
| 1:0:2504:G:C8  | 1:0:2504:G:H5'  | 2.42                     | 0.43              |
| 1:0:2501:U:O4  | 1:0:2520:A:H2   | 2.02                     | 0.43              |
| 1:0:2522:G:C6  | 1:0:2745:A:C5   | 3.07                     | 0.43              |
| 1:0:2532:G:N3  | 1:0:2533:U:H1'  | 2.34                     | 0.43              |
| 1:0:2658:A:H2' | 1:0:2659:C:C6   | 2.53                     | 0.43              |
| 1:0:2834:A:O2' | 1:0:2835:A:H5'  | 2.18                     | 0.43              |
| 1:0:2824:C:C4' | 1:0:2843:A:C2   | 3.02                     | 0.43              |
| 1:0:462:G:OP1  | 1:0:1261:G:N2   | 2.49                     | 0.43              |
| 1:0:583:C:O2'  | 1:0:584:A:OP2   | 2.30                     | 0.43              |
| 1:0:754:G:C2   | 1:0:755:C:C5    | 3.07                     | 0.43              |
| 1:0:774:A:O5'  | 1:0:774:A:H8    | 2.02                     | 0.43              |
| 1:0:777:A:C2'  | 1:0:778:G:H5'   | 2.49                     | 0.43              |
| 1:0:788:G:H4'  | 1:0:790:A:C4    | 2.54                     | 0.43              |
| 1:0:829:C:H2'  | 1:0:830:C:C6    | 2.54                     | 0.43              |
| 1:0:991:A:N7   | 1:0:992:A:N6    | 2.67                     | 0.43              |
| 1:0:1188:A:C2' | 1:0:1189:G:H5'  | 2.48                     | 0.43              |
| 1:0:1177:U:C2  | 1:0:1197:U:O2   | 2.72                     | 0.43              |
| 1:0:1002:C:C5  | 1:0:1198:C:C4   | 3.07                     | 0.43              |
| 1:0:1208:A:C2  | 1:0:1209:G:C4   | 3.07                     | 0.43              |
| 1:0:1391:A:H1' | 1:0:1392:U:C4   | 2.54                     | 0.43              |
| 1:0:1416:A:H2' | 1:0:1417:C:C6   | 2.53                     | 0.43              |
| 1:0:1458:A:C2' | 1:0:1459:U:H5'' | 2.48                     | 0.43              |
| 1:0:1459:U:C4  | 1:0:1476:G:C5'  | 3.02                     | 0.43              |
| 1:0:1453:A:C2  | 1:0:1569:A:C4   | 3.06                     | 0.43              |
| 1:0:1820:G:O2' | 1:0:1821:A:P    | 2.76                     | 0.43              |
| 1:0:1900:U:O2' | 1:0:1946:U:O4'  | 2.36                     | 0.43              |
| 1:0:1908:C:H6  | 1:0:1908:C:O5'  | 2.02                     | 0.43              |
| 1:0:1925:C:N3  | 1:0:1926:U:O4   | 2.52                     | 0.43              |
| 1:0:1937:G:H2' | 1:0:1939:U:C5   | 2.53                     | 0.43              |
| 1:0:1953:A:H4' | 1:0:1954:A:O5'  | 2.18                     | 0.43              |
| 1:0:1977:C:H2' | 1:0:1978:U:C6   | 2.54                     | 0.43              |
| 1:0:572:G:C8   | 1:0:2001:G:C2   | 3.07                     | 0.43              |
| 1:0:2042:A:C6  | 1:0:2482:A:N7   | 2.87                     | 0.43              |
| 1:0:2233:C:O2' | 1:0:2234:G:H5'  | 2.18                     | 0.43              |
| 1:0:2352:A:C6  | 1:0:2353:G:C6   | 3.07                     | 0.43              |
| 1:0:2571:G:H2' | 1:0:2572:U:C6   | 2.54                     | 0.43              |
| 1:0:2792:C:C2  | 1:0:2805:G:N2   | 2.87                     | 0.43              |
| 1:0:2873:G:H2' | 1:0:2874:A:C8   | 2.54                     | 0.43              |
| 1:0:468:A:H61  | 1:0:481:A:H5''  | 1.83                     | 0.43              |
| 1:0:648:A:H5'  | 1:0:649:G:O5'   | 2.19                     | 0.43              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:692:C:O2   | 1:0:693:A:C8   | 2.72                     | 0.43              |
| 1:0:77:C:C2    | 1:0:78:C:C5    | 3.07                     | 0.43              |
| 1:0:984:A:O4'  | 1:0:1202:U:C6  | 2.72                     | 0.43              |
| 1:0:1016:C:O2  | 1:0:1154:A:C6  | 2.72                     | 0.42              |
| 1:0:10:A:H2'   | 1:0:11:G:O4'   | 2.18                     | 0.42              |
| 1:0:1199:U:H5  | 1:0:1201:G:N7  | 2.17                     | 0.42              |
| 1:0:1328:C:C2  | 1:0:1329:U:C5  | 3.07                     | 0.42              |
| 1:0:1367:A:H2' | 1:0:1368:G:O4' | 2.18                     | 0.42              |
| 1:0:1453:A:H2' | 1:0:1454:U:C5' | 2.40                     | 0.42              |
| 1:0:1520:G:H2' | 1:0:1521:U:C6  | 2.53                     | 0.42              |
| 1:0:1529:C:H3' | 1:0:1529:C:C6  | 2.54                     | 0.42              |
| 1:0:1447:U:C1' | 1:0:1577:G:N2  | 2.79                     | 0.42              |
| 1:0:1665:C:C2  | 1:0:1666:G:C8  | 3.07                     | 0.42              |
| 1:0:1736:C:O2' | 1:0:1737:G:H5' | 2.19                     | 0.42              |
| 1:0:1926:U:O2  | 1:0:1926:U:C2' | 2.67                     | 0.42              |
| 1:0:1994:U:O2' | 1:0:1995:G:H5' | 2.19                     | 0.42              |
| 1:0:974:U:H1'  | 1:0:2229:G:C6  | 2.54                     | 0.42              |
| 1:0:2493:U:H2' | 1:0:2494:C:C6  | 2.54                     | 0.42              |
| 1:0:2694:G:O2' | 1:0:2695:C:H5' | 2.19                     | 0.42              |
| 1:0:2729:A:N6  | 1:0:2730:A:N6  | 2.67                     | 0.42              |
| 1:0:2771:C:N4  | 1:0:2772:U:O4  | 2.52                     | 0.42              |
| 1:0:309:G:C2   | 1:0:350:U:C5   | 3.08                     | 0.42              |
| 1:0:356:A:H2'  | 1:0:357:A:N7   | 2.33                     | 0.42              |
| 1:0:538:A:N1   | 1:0:2025:A:H2' | 2.34                     | 0.42              |
| 1:0:59:G:N3    | 1:0:73:A:N1    | 2.67                     | 0.42              |
| 1:0:600:G:O2'  | 1:0:601:A:P    | 2.76                     | 0.42              |
| 1:0:644:A:H1'  | 1:0:2382:C:O3' | 2.19                     | 0.42              |
| 1:0:71:A:C2'   | 1:0:72:A:OP1   | 2.67                     | 0.42              |
| 1:0:865:A:N1   | 1:0:937:C:O2   | 2.51                     | 0.42              |
| 1:0:1046:U:H2' | 1:0:1047:G:C8  | 2.53                     | 0.42              |
| 1:0:1135:C:O2' | 1:0:1136:G:H5' | 2.19                     | 0.42              |
| 1:0:1234:C:O2  | 1:0:1242:A:N1  | 2.52                     | 0.42              |
| 1:0:1253:C:C2  | 1:0:1254:G:C8  | 3.07                     | 0.42              |
| 1:0:1280:U:C5  | 1:0:1995:G:N2  | 2.88                     | 0.42              |
| 1:0:1402:G:N2  | 1:0:1412:C:C2  | 2.87                     | 0.42              |
| 1:0:1407:G:N2  | 1:0:1411:C:C6  | 2.87                     | 0.42              |
| 1:0:1754:G:C2' | 1:0:1755:G:O5' | 2.67                     | 0.42              |
| 1:0:179:U:H2'  | 1:0:180:C:C6   | 2.54                     | 0.42              |
| 1:0:1904:G:C4  | 1:0:1905:G:C8  | 3.07                     | 0.42              |
| 1:0:1915:A:N6  | 1:0:1951:G:H1' | 2.34                     | 0.42              |
| 1:0:229:G:N3   | 1:0:230:C:C6   | 2.87                     | 0.42              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:2302:G:H21 | 1:0:2316:G:H5'  | 1.84                     | 0.42              |
| 1:0:2371:A:C8  | 1:0:2372:A:C8   | 3.08                     | 0.42              |
| 1:0:2452:U:C2  | 1:0:2453:C:C6   | 3.07                     | 0.42              |
| 1:0:24:G:H2'   | 1:0:25:U:O4'    | 2.19                     | 0.42              |
| 1:0:2558:C:H2' | 1:0:2559:U:O4'  | 2.19                     | 0.42              |
| 1:0:2617:G:O2' | 1:0:2618:A:H8   | 2.02                     | 0.42              |
| 1:0:1681:A:C2  | 1:0:2706:U:H1'  | 2.53                     | 0.42              |
| 1:0:2026:C:C4  | 1:0:2757:G:C2   | 3.08                     | 0.42              |
| 1:0:2800:C:C5  | 1:0:2801:A:C8   | 3.07                     | 0.42              |
| 1:0:2813:G:H2' | 1:0:2814:G:O4'  | 2.19                     | 0.42              |
| 1:0:453:U:H2'  | 1:0:454:G:C8    | 2.54                     | 0.42              |
| 1:0:469:G:C2'  | 1:0:470:U:OP2   | 2.66                     | 0.42              |
| 1:0:482:A:H2'  | 1:0:483:A:C5'   | 2.43                     | 0.42              |
| 1:0:791:G:N2   | 1:0:800:U:C2    | 2.87                     | 0.42              |
| 1:0:922:A:N6   | 1:0:2256:G:O2'  | 2.52                     | 0.42              |
| 1:0:987:G:H2'  | 1:0:988:G:H8    | 1.84                     | 0.42              |
| 1:0:1469:U:OP2 | 1:0:1471:G:N7   | 2.53                     | 0.42              |
| 1:0:1483:G:C2  | 1:0:1540:C:C2   | 3.07                     | 0.42              |
| 1:0:1569:A:N1  | 1:0:1571:G:H1'  | 2.35                     | 0.42              |
| 1:0:1753:A:C8  | 1:0:1753:A:O5'  | 2.68                     | 0.42              |
| 1:0:188:G:O2'  | 1:0:189:A:H5'   | 2.19                     | 0.42              |
| 1:0:1960:A:H2' | 1:0:1961:A:O4'  | 2.19                     | 0.42              |
| 1:0:572:G:C8   | 1:0:2001:G:N1   | 2.88                     | 0.42              |
| 1:0:2016:A:N6  | 1:0:2019:C:C2   | 2.88                     | 0.42              |
| 1:0:2096:U:O2' | 1:0:2097:A:H5'' | 2.19                     | 0.42              |
| 1:0:210:A:H61  | 1:0:442:A:H61   | 1.67                     | 0.42              |
| 1:0:2389:G:N2  | 1:0:2390:A:H1'  | 2.35                     | 0.42              |
| 1:0:2484:G:O2' | 1:0:2485:U:H5'' | 2.19                     | 0.42              |
| 1:0:2787:A:H2' | 1:0:2788:C:C6   | 2.46                     | 0.42              |
| 1:0:2825:A:C2  | 1:0:2826:C:C4   | 3.07                     | 0.42              |
| 1:0:30:G:C6    | 1:0:31:C:C4     | 3.08                     | 0.42              |
| 1:0:329:C:C2   | 1:0:330:C:C5    | 3.08                     | 0.42              |
| 1:0:537:C:H1'  | 1:0:2759:U:C4   | 2.54                     | 0.42              |
| 1:0:614:G:N2   | 1:0:634:G:C2    | 2.87                     | 0.42              |
| 1:0:640:C:H1'  | 1:0:650:U:H1'   | 2.00                     | 0.42              |
| 1:0:677:G:O4'  | 1:0:951:G:H5''  | 2.18                     | 0.42              |
| 1:0:801:A:C2'  | 1:0:802:A:OP2   | 2.67                     | 0.42              |
| 1:0:934:G:O2'  | 1:0:935:C:H5'   | 2.19                     | 0.42              |
| 1:0:579:G:C5'  | 1:0:994:A:H2    | 2.31                     | 0.42              |
| 1:0:1017:C:O2  | 1:0:1018:C:C6   | 2.72                     | 0.42              |
| 1:0:1035:G:H8  | 1:0:1035:G:O5'  | 2.02                     | 0.42              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1147:G:C2' | 1:0:1148:G:H5' | 2.48                     | 0.42              |
| 1:0:1178:C:C2  | 1:0:1196:G:N2  | 2.88                     | 0.42              |
| 1:0:12:U:O2'   | 1:0:13:A:H5'   | 2.19                     | 0.42              |
| 1:0:1314:A:H2  | 1:0:1642:G:N2  | 2.16                     | 0.42              |
| 1:0:1323:G:H1' | 1:0:1627:C:C5' | 2.50                     | 0.42              |
| 1:0:1460:G:OP2 | 1:0:1475:U:O2  | 2.36                     | 0.42              |
| 1:0:1552:C:C2' | 1:0:1553:G:H5' | 2.49                     | 0.42              |
| 1:0:1645:U:H2' | 1:0:1646:G:O4' | 2.19                     | 0.42              |
| 1:0:1696:C:H5  | 1:0:1697:U:C4  | 2.36                     | 0.42              |
| 1:0:1851:A:H2' | 1:0:1852:G:O4' | 2.20                     | 0.42              |
| 1:0:1933:G:C8  | 1:0:1934:U:C5  | 3.07                     | 0.42              |
| 1:0:820:U:H1'  | 1:0:2043:A:H61 | 1.83                     | 0.42              |
| 1:0:2055:G:C2' | 1:0:2056:C:H5' | 2.49                     | 0.42              |
| 1:0:2408:G:C5' | 1:0:2409:A:OP2 | 2.43                     | 0.42              |
| 1:0:2632:U:N3  | 1:0:2633:A:N6  | 2.66                     | 0.42              |
| 1:0:2682:C:C4  | 1:0:2683:C:C5  | 3.08                     | 0.42              |
| 1:0:2764:U:O2' | 1:0:2765:C:H5' | 2.19                     | 0.42              |
| 1:0:2838:U:C2  | 1:0:2839:G:C8  | 3.07                     | 0.42              |
| 1:0:298:C:H2'  | 1:0:299:C:H6   | 1.83                     | 0.42              |
| 1:0:307:C:N3   | 1:0:308:C:C5   | 2.88                     | 0.42              |
| 1:0:312:G:HO2' | 1:0:313:U:H6   | 1.63                     | 0.42              |
| 1:0:461:A:C4   | 1:0:462:G:C8   | 3.06                     | 0.42              |
| 1:0:545:C:H2'  | 1:0:546:A:C8   | 2.54                     | 0.42              |
| 1:0:700:C:C6   | 1:0:701:U:C4   | 3.07                     | 0.42              |
| 1:0:970:A:C6   | 1:0:971:A:C6   | 3.07                     | 0.42              |
| 1:0:1098:G:C2  | 1:0:1100:G:H1' | 2.54                     | 0.42              |
| 1:0:1045:G:H22 | 1:0:1133:G:H1' | 1.83                     | 0.42              |
| 1:0:1187:A:H2' | 1:0:1188:A:C8  | 2.54                     | 0.42              |
| 1:0:1234:C:C2  | 1:0:1242:A:N1  | 2.87                     | 0.42              |
| 1:0:1333:G:N7  | 1:0:1342:U:H5' | 2.35                     | 0.42              |
| 1:0:1346:C:C4  | 1:0:1347:C:C5  | 3.08                     | 0.42              |
| 1:0:1381:G:N2  | 1:0:1382:G:C4  | 2.87                     | 0.42              |
| 1:0:1401:G:O2' | 1:0:1402:G:H5' | 2.19                     | 0.42              |
| 1:0:1529:C:C3' | 1:0:1529:C:C6  | 3.02                     | 0.42              |
| 1:0:1531:C:C5  | 1:0:1532:A:C4  | 3.08                     | 0.42              |
| 1:0:1541:G:H22 | 1:0:1562:G:N2  | 2.16                     | 0.42              |
| 1:0:1365:U:H1' | 1:0:1586:A:H2  | 1.84                     | 0.42              |
| 1:0:1732:U:C2' | 1:0:1733:U:O5' | 2.67                     | 0.42              |
| 1:0:1790:G:C5  | 1:0:1811:A:N6  | 2.87                     | 0.42              |
| 1:0:1864:G:N2  | 1:0:1865:C:H1' | 2.34                     | 0.42              |
| 1:0:1940:C:H2' | 1:0:1941:C:C5  | 2.53                     | 0.42              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:538:A:C2    | 1:0:2025:A:H2' | 2.55                     | 0.42              |
| 1:0:2038:C:H2'  | 1:0:2483:U:C4' | 2.49                     | 0.42              |
| 1:0:2039:G:C6   | 1:0:2556:A:C8  | 3.08                     | 0.42              |
| 1:0:2053:G:C6   | 1:0:2054:A:C6  | 3.07                     | 0.42              |
| 1:0:207:U:O2    | 1:0:208:C:C6   | 2.72                     | 0.42              |
| 1:0:221:A:C2    | 1:0:232:A:C2   | 3.07                     | 0.42              |
| 1:0:2347:C:O2'  | 1:0:2348:A:H5' | 2.19                     | 0.42              |
| 1:0:2044:G:H1'  | 1:0:2482:A:C2  | 2.55                     | 0.42              |
| 1:0:2699:G:HO2' | 1:0:2700:U:P   | 2.42                     | 0.42              |
| 1:0:465:C:HO2'  | 1:0:467:U:H1'  | 1.83                     | 0.42              |
| 1:0:47:G:H2'    | 1:0:47:G:N3    | 2.34                     | 0.42              |
| 1:0:493:A:OP2   | 1:0:517:A:N6   | 2.43                     | 0.42              |
| 1:0:775:U:H4'   | 1:0:776:G:O5'  | 2.19                     | 0.42              |
| 1:0:764:A:C5    | 1:0:802:A:C2   | 3.07                     | 0.42              |
| 1:0:697:G:C2    | 1:0:807:A:C2   | 3.07                     | 0.42              |
| 1:0:827:C:H1'   | 1:0:1237:G:H22 | 1.84                     | 0.42              |
| 1:0:838:A:C2'   | 1:0:839:U:O4'  | 2.62                     | 0.42              |
| 1:0:1095:A:C8   | 1:0:1096:A:N7  | 2.88                     | 0.42              |
| 1:0:48:A:N1     | 1:0:116:A:C4   | 2.87                     | 0.42              |
| 1:0:1181:C:H2'  | 1:0:1182:U:C4' | 2.47                     | 0.42              |
| 1:0:1216:G:C6   | 1:0:1217:U:C4  | 3.07                     | 0.42              |
| 1:0:123:A:O2'   | 1:0:124:A:P    | 2.76                     | 0.42              |
| 1:0:1251:G:N2   | 1:0:1252:C:H1' | 2.34                     | 0.42              |
| 1:0:1535:C:N3   | 1:0:1536:G:C6  | 2.88                     | 0.42              |
| 1:0:762:A:C6    | 1:0:1634:A:C2  | 3.07                     | 0.42              |
| 1:0:1649:A:H8   | 1:0:1649:A:O5' | 2.02                     | 0.42              |
| 1:0:185:C:H2'   | 1:0:186:C:C6   | 2.37                     | 0.42              |
| 1:0:2030:U:O2'  | 1:0:2031:A:H5' | 2.20                     | 0.42              |
| 1:0:2411:A:C6   | 1:0:2412:A:C6  | 3.08                     | 0.42              |
| 1:0:2042:A:C6   | 1:0:2482:A:C8  | 3.08                     | 0.42              |
| 1:0:2549:G:C2   | 1:0:2550:C:C2  | 3.08                     | 0.42              |
| 1:0:2595:C:H2'  | 1:0:2596:C:C6  | 2.54                     | 0.42              |
| 1:0:2756:A:O2'  | 1:0:2757:G:C5' | 2.68                     | 0.42              |
| 1:0:469:G:N2    | 1:0:480:G:C4   | 2.87                     | 0.42              |
| 1:0:511:A:N6    | 1:0:512:A:N1   | 2.67                     | 0.42              |
| 1:0:567:G:O2'   | 1:0:568:G:H5'  | 2.20                     | 0.42              |
| 1:0:59:G:C4     | 1:0:73:A:C6    | 3.07                     | 0.42              |
| 1:0:611:C:C5'   | 1:0:611:C:H6   | 2.33                     | 0.42              |
| 1:0:697:G:N1    | 1:0:788:G:C4   | 2.88                     | 0.42              |
| 1:0:88:G:C2     | 1:0:89:A:C8    | 3.07                     | 0.42              |
| 1:0:929:A:H4'   | 1:0:929:A:OP1  | 2.20                     | 0.42              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1442:C:HO2' | 1:0:1443:G:P   | 2.42                     | 0.42              |
| 1:0:149:A:C8    | 1:0:150:A:N7   | 2.87                     | 0.42              |
| 1:0:1564:U:C2   | 1:0:1565:G:C8  | 3.08                     | 0.42              |
| 1:0:1591:U:O2'  | 1:0:1592:U:H5' | 2.20                     | 0.42              |
| 1:0:1787:U:H2'  | 1:0:1788:C:O4' | 2.19                     | 0.42              |
| 1:0:1920:A:C8   | 1:0:1921:A:H3' | 2.55                     | 0.42              |
| 1:0:2069:U:H2'  | 1:0:2070:G:H8  | 1.82                     | 0.42              |
| 1:0:2207:G:C2'  | 1:0:2208:U:H5' | 2.49                     | 0.42              |
| 1:0:2058:U:H2'  | 1:0:2217:G:H22 | 1.84                     | 0.42              |
| 1:0:2299:A:H2'  | 1:0:2312:A:H62 | 1.79                     | 0.42              |
| 1:0:2315:A:H2'  | 1:0:2316:G:O5' | 2.20                     | 0.42              |
| 1:0:2500:C:H2'  | 1:0:2501:U:O4' | 2.19                     | 0.42              |
| 1:0:2559:U:C4   | 1:0:2560:G:H8  | 2.38                     | 0.42              |
| 1:0:2674:C:O2'  | 1:0:2675:U:H5' | 2.20                     | 0.42              |
| 1:0:2702:G:H2'  | 1:0:2703:C:C6  | 2.55                     | 0.42              |
| 1:0:2722:C:N3   | 1:0:2743:G:N2  | 2.68                     | 0.42              |
| 1:0:2792:C:H2'  | 1:0:2793:G:O4' | 2.19                     | 0.42              |
| 1:0:2818:G:O2'  | 1:0:2819:G:H5' | 2.20                     | 0.42              |
| 1:0:2867:G:OP2  | 1:0:2867:G:C8  | 2.67                     | 0.42              |
| 1:0:452:G:H2'   | 1:0:453:U:C6   | 2.55                     | 0.42              |
| 1:0:571:U:O2'   | 1:0:581:A:O4'  | 2.36                     | 0.42              |
| 1:0:988:G:O2'   | 1:0:989:G:H5'  | 2.19                     | 0.42              |
| 1:0:341:A:H2    | 1:0:1223:G:H2' | 1.84                     | 0.42              |
| 1:0:1238:A:HO2' | 1:0:1239:A:H5' | 1.81                     | 0.42              |
| 1:0:1313:U:HO2' | 1:0:1314:A:P   | 2.40                     | 0.42              |
| 1:0:1334:A:H3'  | 1:0:1335:A:H8  | 1.85                     | 0.42              |
| 1:0:1361:G:O6   | 1:0:1615:C:N4  | 2.53                     | 0.42              |
| 1:0:1720:G:O2'  | 1:0:1721:G:H5' | 2.20                     | 0.42              |
| 1:0:1811:A:H1'  | 1:0:1813:A:C5  | 2.55                     | 0.42              |
| 1:0:1837:G:C2   | 1:0:1879:G:C2  | 3.08                     | 0.42              |
| 1:0:2015:G:C2'  | 1:0:2015:G:N3  | 2.80                     | 0.42              |
| 1:0:2034:A:C2   | 1:0:2035:G:O6  | 2.73                     | 0.42              |
| 1:0:2333:A:N1   | 1:0:2343:C:N3  | 2.67                     | 0.42              |
| 1:0:2446:C:H2'  | 1:0:2447:G:O4' | 2.20                     | 0.42              |
| 1:0:2494:C:O2'  | 1:0:2495:G:H5' | 2.20                     | 0.42              |
| 1:0:1949:A:N3   | 1:0:2572:U:C4' | 2.83                     | 0.42              |
| 1:0:2691:C:C3'  | 1:0:2692:A:C5' | 2.94                     | 0.42              |
| 1:0:2728:A:C2   | 1:0:2737:A:N6  | 2.88                     | 0.42              |
| 1:0:616:U:C4    | 1:0:617:U:C5   | 2.98                     | 0.42              |
| 1:0:682:G:H3'   | 1:0:683:A:C8   | 2.55                     | 0.42              |
| 1:0:849:G:C5    | 1:0:850:C:C4   | 3.08                     | 0.42              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:984:A:H1'  | 1:0:1202:U:C6   | 2.54                     | 0.42              |
| 1:0:1073:G:H3' | 1:0:1074:G:H5'' | 2.02                     | 0.42              |
| 1:0:1096:A:O2' | 1:0:1115:C:O2   | 2.37                     | 0.42              |
| 1:0:1329:U:N3  | 1:0:1330:G:N7   | 2.68                     | 0.42              |
| 1:0:1537:U:C4  | 1:0:1538:A:C6   | 3.08                     | 0.42              |
| 1:0:1624:A:O2' | 1:0:1626:A:OP2  | 2.37                     | 0.42              |
| 1:0:172:A:N1   | 1:0:178:C:C2    | 2.88                     | 0.42              |
| 1:0:177:U:O2   | 1:0:178:C:N1    | 2.53                     | 0.42              |
| 1:0:203:G:H5'  | 1:0:234:C:H4'   | 2.02                     | 0.42              |
| 1:0:2081:U:C2' | 1:0:2082:C:H5'' | 2.50                     | 0.42              |
| 1:0:2221:G:C5  | 1:0:2222:U:C6   | 3.07                     | 0.42              |
| 1:0:976:C:HO2' | 1:0:2252:A:H2   | 1.68                     | 0.42              |
| 1:0:226:C:HO2' | 1:0:227:G:P     | 2.43                     | 0.42              |
| 1:0:2295:C:H2' | 1:0:2296:U:C6   | 2.54                     | 0.42              |
| 1:0:2297:G:O2' | 1:0:2300:G:O6   | 2.37                     | 0.42              |
| 1:0:2309:G:O2' | 1:0:2310:G:H5'  | 2.20                     | 0.42              |
| 1:0:2532:G:H2' | 1:0:2533:U:O4'  | 2.19                     | 0.42              |
| 1:0:2653:A:C2  | 1:0:2654:A:C4   | 3.08                     | 0.42              |
| 1:0:2665:G:C5  | 1:0:2666:U:C2   | 3.07                     | 0.42              |
| 1:0:2728:A:C2' | 1:0:2729:A:H5'  | 2.50                     | 0.42              |
| 1:0:2845:C:C2' | 1:0:2846:G:C5'  | 2.97                     | 0.42              |
| 1:0:2854:G:H5' | 1:0:2855:C:OP1  | 2.19                     | 0.42              |
| 1:0:309:G:C2   | 1:0:350:U:C4    | 3.08                     | 0.42              |
| 1:0:468:A:N6   | 1:0:482:A:OP2   | 2.52                     | 0.42              |
| 1:0:530:G:H2'  | 1:0:531:G:C8    | 2.52                     | 0.42              |
| 1:0:557:U:H3'  | 1:0:559:C:N4    | 2.35                     | 0.42              |
| 1:0:580:A:C6   | 1:0:584:A:C8    | 3.07                     | 0.42              |
| 1:0:787:A:O2'  | 1:0:788:G:C5'   | 2.58                     | 0.42              |
| 1:0:869:C:O2   | 1:0:934:G:C2    | 2.73                     | 0.42              |
| 1:0:852:U:O2   | 1:0:951:G:C2    | 2.73                     | 0.42              |
| 1:0:1098:G:N3  | 1:0:1100:G:C1'  | 2.82                     | 0.42              |
| 1:0:1145:C:C6  | 1:0:1147:G:OP1  | 2.73                     | 0.42              |
| 1:0:1161:U:H2' | 1:0:1162:A:H8   | 1.84                     | 0.42              |
| 1:0:1573:G:O5' | 1:0:1574:A:H5'' | 2.20                     | 0.42              |
| 1:0:1772:C:O2' | 1:0:1773:C:P    | 2.76                     | 0.42              |
| 1:0:1995:G:C2' | 1:0:1996:A:O5'  | 2.67                     | 0.42              |
| 1:0:2006:G:C2  | 1:0:2007:G:N7   | 2.88                     | 0.42              |
| 1:0:2057:U:H2' | 1:0:2058:U:C6   | 2.55                     | 0.42              |
| 1:0:2176:U:H2' | 1:0:2177:U:O4'  | 2.20                     | 0.42              |
| 1:0:2492:G:H2' | 1:0:2493:U:O4'  | 2.18                     | 0.42              |
| 1:0:2718:A:C6  | 1:0:2719:U:C5   | 3.08                     | 0.42              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2721:A:H2'  | 1:0:2722:C:O4' | 2.20                     | 0.42              |
| 1:0:404:A:C5    | 1:0:424:G:C2   | 3.08                     | 0.42              |
| 1:0:49:U:C2'    | 1:0:50:G:OP1   | 2.68                     | 0.42              |
| 1:0:665:A:H3'   | 1:0:666:U:C5'  | 2.39                     | 0.42              |
| 1:0:699:G:C5'   | 1:0:700:C:OP2  | 2.65                     | 0.42              |
| 1:0:829:C:C4    | 1:0:1206:G:N1  | 2.88                     | 0.42              |
| 1:0:878:C:N4    | 1:0:920:G:C8   | 2.86                     | 0.42              |
| 1:0:1174:G:N3   | 1:0:1175:A:N7  | 2.68                     | 0.41              |
| 1:0:1363:C:C2'  | 1:0:1364:C:C5' | 2.92                     | 0.41              |
| 1:0:1469:U:O5'  | 1:0:1470:G:OP2 | 2.38                     | 0.41              |
| 1:0:1500:U:O2'  | 1:0:1501:C:H5' | 2.20                     | 0.41              |
| 1:0:153:A:C2'   | 1:0:154:U:H5'  | 2.50                     | 0.41              |
| 1:0:1559:G:C8   | 1:0:1559:G:C3' | 3.03                     | 0.41              |
| 1:0:1621:C:C4'  | 1:0:1626:A:C6  | 3.03                     | 0.41              |
| 1:0:1811:A:O2'  | 1:0:1812:U:H5' | 2.20                     | 0.41              |
| 1:0:1850:G:HO2' | 1:0:1851:A:C5' | 2.33                     | 0.41              |
| 1:0:1956:G:C6   | 1:0:1957:C:C4  | 3.08                     | 0.41              |
| 1:0:1669:A:C2   | 1:0:1989:C:N3  | 2.88                     | 0.41              |
| 1:0:428:A:N1    | 1:0:2388:G:C6  | 2.88                     | 0.41              |
| 1:0:2457:A:N6   | 1:0:2458:U:C2  | 2.89                     | 0.41              |
| 1:0:1774:A:C2   | 1:0:2567:G:C8  | 3.08                     | 0.41              |
| 1:0:2655:C:H2'  | 1:0:2656:G:O4' | 2.19                     | 0.41              |
| 1:0:2757:G:C8   | 1:0:2757:G:H3' | 2.54                     | 0.41              |
| 1:0:2831:A:H2'  | 1:0:2832:G:C8  | 2.55                     | 0.41              |
| 1:0:43:A:O5'    | 1:0:43:A:H8    | 2.02                     | 0.41              |
| 1:0:464:G:C2    | 1:0:469:G:N7   | 2.88                     | 0.41              |
| 1:0:476:G:C6    | 1:0:477:A:N6   | 2.88                     | 0.41              |
| 1:0:554:U:OP2   | 1:0:554:U:H4'  | 2.20                     | 0.41              |
| 1:0:698:A:C4    | 1:0:787:A:C2   | 3.08                     | 0.41              |
| 1:0:863:C:N4    | 1:0:939:C:H42  | 2.18                     | 0.41              |
| 1:0:1055:A:C5'  | 1:0:1058:G:H4' | 2.50                     | 0.41              |
| 1:0:1109:A:H2'  | 1:0:1110:G:C5' | 2.47                     | 0.41              |
| 1:0:1274:C:H2'  | 1:0:1275:A:O5' | 2.20                     | 0.41              |
| 1:0:1781:C:H2'  | 1:0:1782:A:N7  | 2.35                     | 0.41              |
| 1:0:1795:C:H2'  | 1:0:1796:A:O4' | 2.20                     | 0.41              |
| 1:0:1913:G:O2'  | 1:0:1914:U:P   | 2.78                     | 0.41              |
| 1:0:1926:U:O2   | 1:0:1926:U:H2' | 2.19                     | 0.41              |
| 1:0:2043:A:HO2' | 1:0:2044:G:P   | 2.42                     | 0.41              |
| 1:0:2053:G:C2   | 1:0:2421:C:C2  | 3.08                     | 0.41              |
| 1:0:2164:G:H2'  | 1:0:2165:A:O4' | 2.20                     | 0.41              |
| 1:0:2220:A:N1   | 1:0:2221:G:C6  | 2.88                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2449:G:O2'  | 1:0:2450:A:H5' | 2.19                     | 0.41              |
| 1:0:2592:U:O2'  | 1:0:2593:A:OP1 | 2.29                     | 0.41              |
| 1:0:2619:G:C6   | 1:0:2755:A:C2  | 3.08                     | 0.41              |
| 1:0:2676:G:C2   | 1:0:2690:A:C2  | 3.08                     | 0.41              |
| 1:0:2766:U:O2'  | 1:0:2767:C:H5' | 2.19                     | 0.41              |
| 1:0:369:C:H2'   | 1:0:370:U:O4'  | 2.20                     | 0.41              |
| 1:0:668:A:C2'   | 1:0:669:G:OP2  | 2.68                     | 0.41              |
| 1:0:774:A:C3'   | 1:0:774:A:C8   | 3.04                     | 0.41              |
| 1:0:852:U:H1'   | 1:0:951:G:N2   | 2.35                     | 0.41              |
| 1:0:1008:G:N2   | 1:0:1009:C:C2  | 2.88                     | 0.41              |
| 1:0:103:U:C2    | 1:0:104:C:C5   | 3.09                     | 0.41              |
| 1:0:1566:G:H2'  | 1:0:1567:A:H8  | 1.85                     | 0.41              |
| 1:0:1672:A:N3   | 1:0:1672:A:H2' | 2.35                     | 0.41              |
| 1:0:1806:G:C5   | 1:0:1807:A:N7  | 2.89                     | 0.41              |
| 1:0:1833:U:H2'  | 1:0:1834:G:O4' | 2.20                     | 0.41              |
| 1:0:992:A:C2    | 1:0:2011:U:O4' | 2.73                     | 0.41              |
| 1:0:2040:A:C6   | 1:0:2041:A:C6  | 3.07                     | 0.41              |
| 1:0:2083:G:C2   | 1:0:2084:G:H1' | 2.56                     | 0.41              |
| 1:0:2187:A:H2'  | 1:0:2188:A:H5' | 2.01                     | 0.41              |
| 1:0:2221:G:N2   | 1:0:2413:A:H2  | 2.17                     | 0.41              |
| 1:0:2424:G:C2'  | 1:0:2425:G:H5' | 2.50                     | 0.41              |
| 1:0:2448:A:H61  | 1:0:2460:G:H1' | 1.80                     | 0.41              |
| 1:0:2569:A:C4   | 1:0:2570:C:C5  | 3.09                     | 0.41              |
| 1:0:2685:A:N6   | 1:0:2686:C:C4  | 2.88                     | 0.41              |
| 1:0:2825:A:N7   | 1:0:2843:A:O2' | 2.54                     | 0.41              |
| 1:0:28:A:C2     | 1:0:523:A:H1'  | 2.55                     | 0.41              |
| 1:0:545:C:H2'   | 1:0:546:A:H8   | 1.85                     | 0.41              |
| 1:0:565:A:H8    | 1:0:565:A:O5'  | 2.03                     | 0.41              |
| 1:0:588:G:N2    | 1:0:1275:A:C4  | 2.88                     | 0.41              |
| 1:0:649:G:H2'   | 1:0:650:U:H6   | 1.84                     | 0.41              |
| 1:0:753:U:C4    | 1:0:771:C:O2   | 2.73                     | 0.41              |
| 1:0:756:C:H2'   | 1:0:757:U:C6   | 2.54                     | 0.41              |
| 1:0:836:G:C6    | 1:0:848:A:N1   | 2.88                     | 0.41              |
| 1:0:1019:U:HO2' | 1:0:1020:A:P   | 2.44                     | 0.41              |
| 1:0:1124:U:H2'  | 1:0:1125:G:H8  | 1.84                     | 0.41              |
| 1:0:1142:G:O2'  | 1:0:1143:A:P   | 2.78                     | 0.41              |
| 1:0:1171:A:H2'  | 1:0:1172:U:C6  | 2.55                     | 0.41              |
| 1:0:1279:G:O2'  | 1:0:1995:G:N1  | 2.54                     | 0.41              |
| 1:0:1358:C:H2'  | 1:0:1359:G:H5' | 2.02                     | 0.41              |
| 1:0:1491:C:H42  | 1:0:1532:A:H61 | 1.66                     | 0.41              |
| 1:0:1686:A:H3'  | 1:0:1687:C:C5' | 2.51                     | 0.41              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:1791:C:C4  | 1:0:1810:U:O2  | 2.73                     | 0.41              |
| 1:0:182:G:O2'  | 1:0:183:U:P    | 2.78                     | 0.41              |
| 1:0:2308:A:H2' | 1:0:2309:G:O4' | 2.20                     | 0.41              |
| 1:0:2519:C:H2' | 1:0:2520:A:C5' | 2.51                     | 0.41              |
| 1:0:2594:U:C5' | 1:0:2594:U:H6  | 2.27                     | 0.41              |
| 1:0:2702:G:C6  | 1:0:2703:C:N3  | 2.88                     | 0.41              |
| 1:0:2713:A:C6  | 1:0:2714:A:C5  | 3.09                     | 0.41              |
| 1:0:2780:A:H2' | 1:0:2781:G:C5' | 2.50                     | 0.41              |
| 1:0:322:A:C2'  | 1:0:323:G:OP1  | 2.68                     | 0.41              |
| 1:0:402:A:H8   | 1:0:402:A:OP1  | 2.03                     | 0.41              |
| 1:0:416:U:H5'' | 1:0:417:C:OP1  | 2.20                     | 0.41              |
| 1:0:746:G:C8   | 1:0:774:A:C6   | 3.09                     | 0.41              |
| 1:0:79:G:C5    | 1:0:80:A:N7    | 2.89                     | 0.41              |
| 1:0:834:A:H5'' | 1:0:835:U:H6   | 1.85                     | 0.41              |
| 1:0:874:A:H2'  | 1:0:875:G:H5'  | 2.01                     | 0.41              |
| 1:0:1011:A:C6  | 1:0:1166:A:C5  | 3.08                     | 0.41              |
| 1:0:1023:U:H5' | 1:0:1024:G:OP1 | 2.20                     | 0.41              |
| 1:0:1070:G:H2' | 1:0:1071:U:C4' | 2.51                     | 0.41              |
| 1:0:1375:C:N3  | 1:0:1376:C:C6  | 2.89                     | 0.41              |
| 1:0:783:G:H1'  | 1:0:1392:U:C4  | 2.56                     | 0.41              |
| 1:0:1643:A:H1' | 1:0:1657:A:C2  | 2.56                     | 0.41              |
| 1:0:1653:C:O2' | 1:0:1751:A:N3  | 2.39                     | 0.41              |
| 1:0:1804:U:O2' | 1:0:1805:G:H5' | 2.20                     | 0.41              |
| 1:0:1849:G:H8  | 1:0:1849:G:O5' | 2.02                     | 0.41              |
| 1:0:2071:G:H2' | 1:0:2072:C:H6  | 1.84                     | 0.41              |
| 1:0:2195:C:C4  | 1:0:2196:U:C4  | 3.09                     | 0.41              |
| 1:0:2253:A:N6  | 1:0:2255:G:C4  | 2.88                     | 0.41              |
| 1:0:2304:G:N2  | 1:0:2305:C:O2  | 2.52                     | 0.41              |
| 1:0:2402:U:H1' | 1:0:2404:A:N1  | 2.35                     | 0.41              |
| 1:0:2556:A:C2  | 1:0:2593:A:C6  | 3.08                     | 0.41              |
| 1:0:459:A:N1   | 1:0:466:A:H2'  | 2.36                     | 0.41              |
| 1:0:541:C:O2   | 1:0:572:G:C5'  | 2.67                     | 0.41              |
| 1:0:591:G:H2'  | 1:0:592:G:C8   | 2.55                     | 0.41              |
| 1:0:617:U:H2'  | 1:0:618:A:O4'  | 2.21                     | 0.41              |
| 1:0:668:A:O2'  | 1:0:669:G:P    | 2.78                     | 0.41              |
| 1:0:1040:A:C8  | 1:0:1041:G:C8  | 3.08                     | 0.41              |
| 1:0:1105:U:H2' | 1:0:1106:A:H8  | 1.85                     | 0.41              |
| 1:0:1197:U:C2' | 1:0:1198:C:H5' | 2.51                     | 0.41              |
| 1:0:1415:C:C2' | 1:0:1416:A:H5' | 2.50                     | 0.41              |
| 1:0:1491:C:N4  | 1:0:1492:A:N6  | 2.68                     | 0.41              |
| 1:0:1842:G:H2' | 1:0:1843:U:C6  | 2.55                     | 0.41              |

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| Atom-1         | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:0:203:G:H1'  | 1:0:205:A:H62   | 1.85                     | 0.41              |
| 1:0:2071:G:C6  | 1:0:2072:C:C4   | 3.08                     | 0.41              |
| 1:0:2090:U:H1' | 1:0:2166:G:N2   | 2.36                     | 0.41              |
| 1:0:2283:G:C2  | 1:0:2284:U:C4   | 3.08                     | 0.41              |
| 1:0:2433:G:C5  | 1:0:2434:G:N7   | 2.88                     | 0.41              |
| 1:0:2463:G:C4  | 1:0:2464:G:C8   | 3.09                     | 0.41              |
| 1:0:2739:G:O2' | 1:0:2740:C:H5'  | 2.20                     | 0.41              |
| 1:0:2860:C:C4  | 1:0:2861:A:C4   | 3.08                     | 0.41              |
| 1:0:486:U:O2'  | 1:0:515:A:H1'   | 2.20                     | 0.41              |
| 1:0:485:G:C6   | 1:0:520:C:C4    | 3.08                     | 0.41              |
| 1:0:520:C:O2'  | 1:0:1249:G:H5'' | 2.20                     | 0.41              |
| 1:0:567:G:C2'  | 1:0:568:G:H5'   | 2.51                     | 0.41              |
| 1:0:592:G:C4   | 1:0:593:C:C5    | 3.09                     | 0.41              |
| 1:0:686:C:H2'  | 1:0:687:G:H5'   | 2.02                     | 0.41              |
| 1:0:736:G:C6   | 1:0:737:C:C2    | 3.08                     | 0.41              |
| 1:0:1073:G:H2' | 1:0:1074:G:C4'  | 2.36                     | 0.41              |
| 1:0:1075:C:H6  | 1:0:1075:C:O5'  | 2.04                     | 0.41              |
| 1:0:1231:A:H2' | 1:0:1232:U:H6   | 1.85                     | 0.41              |
| 1:0:1399:C:C2  | 1:0:1400:A:N7   | 2.89                     | 0.41              |
| 1:0:1625:A:H1' | 1:0:1632:A:H1'  | 2.01                     | 0.41              |
| 1:0:1794:A:N6  | 1:0:1806:G:H2'  | 2.36                     | 0.41              |
| 1:0:1807:A:P   | 1:0:1814:G:H4'  | 2.61                     | 0.41              |
| 1:0:1982:C:OP1 | 1:0:2703:C:O2'  | 2.38                     | 0.41              |
| 1:0:1141:U:C2  | 1:0:2008:C:H5'' | 2.54                     | 0.41              |
| 1:0:2179:C:H2' | 1:0:2180:U:O4'  | 2.20                     | 0.41              |
| 1:0:224:G:H4'  | 1:0:399:G:C6    | 2.56                     | 0.41              |
| 1:0:2299:A:N3  | 1:0:2312:A:C6   | 2.88                     | 0.41              |
| 1:0:2371:A:H2  | 1:0:2403:C:N4   | 2.07                     | 0.41              |
| 1:0:2439:U:C2' | 1:0:2440:C:H5'  | 2.51                     | 0.41              |
| 1:0:2499:C:C6  | 1:0:2546:G:H1'  | 2.56                     | 0.41              |
| 1:0:2507:U:O2' | 1:0:2508:G:H3'  | 2.20                     | 0.41              |
| 1:0:2579:A:H2' | 1:0:2580:C:C6   | 2.55                     | 0.41              |
| 1:0:2634:G:H2' | 1:0:2643:G:O6   | 2.20                     | 0.41              |
| 1:0:2827:G:C6  | 1:0:2828:C:N3   | 2.88                     | 0.41              |
| 1:0:309:G:N1   | 1:0:350:U:C5    | 2.89                     | 0.41              |
| 1:0:194:G:C6   | 1:0:444:U:O2    | 2.74                     | 0.41              |
| 1:0:462:G:P    | 1:0:1261:G:H22  | 2.42                     | 0.41              |
| 1:0:740:A:N6   | 1:0:741:G:N1    | 2.68                     | 0.41              |
| 1:0:1231:A:C5  | 1:0:1245:G:N1   | 2.88                     | 0.41              |
| 1:0:1552:C:H2' | 1:0:1553:G:H5'  | 2.01                     | 0.41              |
| 1:0:1587:A:N1  | 1:0:1588:A:C6   | 2.88                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1629:G:C6   | 1:0:1635:G:O6  | 2.74                     | 0.41              |
| 1:0:1657:A:H2'  | 1:0:1658:A:H5' | 2.03                     | 0.41              |
| 1:0:1684:G:C2'  | 1:0:1974:U:O4  | 2.68                     | 0.41              |
| 1:0:1687:C:C5   | 1:0:1688:U:C4  | 3.09                     | 0.41              |
| 1:0:1747:G:H5'  | 1:0:1748:U:OP1 | 2.21                     | 0.41              |
| 1:0:2040:A:H2'  | 1:0:2041:A:O4' | 2.20                     | 0.41              |
| 1:0:2109:A:C2'  | 1:0:2110:G:O4' | 2.66                     | 0.41              |
| 1:0:2171:U:O5'  | 1:0:2171:U:H6  | 2.03                     | 0.41              |
| 1:0:2205:C:H2'  | 1:0:2206:C:O4' | 2.21                     | 0.41              |
| 1:0:2233:C:H2'  | 1:0:2234:G:H5' | 2.03                     | 0.41              |
| 1:0:2484:G:HO2' | 1:0:2485:U:H6  | 1.66                     | 0.41              |
| 1:0:2489:C:H2'  | 1:0:2490:U:C5' | 2.49                     | 0.41              |
| 1:0:2504:G:C2   | 1:0:2505:G:C5  | 3.08                     | 0.41              |
| 1:0:2660:C:C2'  | 1:0:2660:C:O2  | 2.58                     | 0.41              |
| 1:0:2685:A:C2   | 1:0:2686:C:C2  | 3.08                     | 0.41              |
| 1:0:2873:G:H2'  | 1:0:2874:A:H8  | 1.85                     | 0.41              |
| 1:0:312:G:C5    | 1:0:313:U:O4   | 2.74                     | 0.41              |
| 1:0:389:G:H2'   | 1:0:390:U:C6   | 2.56                     | 0.41              |
| 1:0:590:C:C2    | 1:0:1273:G:N2  | 2.89                     | 0.41              |
| 1:0:669:G:H2'   | 1:0:670:U:C6   | 2.55                     | 0.41              |
| 1:0:827:C:C2'   | 1:0:828:C:O5'  | 2.69                     | 0.41              |
| 1:0:833:A:N1    | 1:0:834:A:C2   | 2.89                     | 0.41              |
| 1:0:863:C:O2    | 1:0:863:C:C2'  | 2.61                     | 0.41              |
| 1:0:870:C:O2'   | 1:0:871:U:H5'  | 2.21                     | 0.41              |
| 1:0:1103:C:H2'  | 1:0:1104:G:H8  | 1.85                     | 0.41              |
| 1:0:1134:C:N3   | 1:0:1135:C:C5  | 2.89                     | 0.41              |
| 1:0:1175:A:C2   | 1:0:1176:U:C6  | 3.09                     | 0.41              |
| 1:0:825:C:C1'   | 1:0:1263:G:C2  | 3.04                     | 0.41              |
| 1:0:1311:C:H5'  | 1:0:1315:A:N6  | 2.35                     | 0.41              |
| 1:0:1382:G:C6   | 1:0:1383:C:C4  | 3.08                     | 0.41              |
| 1:0:1424:U:H2'  | 1:0:1425:G:H8  | 1.84                     | 0.41              |
| 1:0:1475:U:H5'  | 1:0:1476:G:OP1 | 2.21                     | 0.41              |
| 1:0:1538:A:C8   | 1:0:1539:U:C5  | 3.09                     | 0.41              |
| 1:0:1591:U:H2'  | 1:0:1592:U:O4' | 2.21                     | 0.41              |
| 1:0:1807:A:O2'  | 1:0:1808:C:H4' | 2.20                     | 0.41              |
| 1:0:2187:A:N6   | 1:0:2199:C:N3  | 2.69                     | 0.41              |
| 1:0:2299:A:C2   | 1:0:2312:A:C5  | 3.09                     | 0.41              |
| 1:0:2351:G:C2   | 1:0:2352:A:N7  | 2.88                     | 0.41              |
| 1:0:2543:A:H8   | 1:0:2543:A:O5' | 2.03                     | 0.41              |
| 1:0:2585:C:C2'  | 1:0:2586:G:H5' | 2.51                     | 0.41              |
| 1:0:2859:U:C6   | 1:0:2859:U:C3' | 3.04                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:367:G:C2'   | 1:0:368:A:H5'' | 2.50                     | 0.41              |
| 1:0:407:A:H2'   | 1:0:408:U:C6   | 2.56                     | 0.41              |
| 1:0:446:C:O2'   | 1:0:447:U:H5'  | 2.21                     | 0.41              |
| 1:0:613:A:C6    | 1:0:636:G:N1   | 2.89                     | 0.41              |
| 1:0:625:A:H5''  | 1:0:626:A:P    | 2.61                     | 0.41              |
| 1:0:945:G:C6    | 1:0:946:U:C4   | 3.09                     | 0.41              |
| 1:0:103:U:N3    | 1:0:104:C:C4   | 2.89                     | 0.41              |
| 1:0:1139:A:O2'  | 1:0:1140:A:O5' | 2.39                     | 0.41              |
| 1:0:1214:C:O2   | 1:0:1259:A:C2  | 2.74                     | 0.41              |
| 1:0:1221:C:N4   | 1:0:1222:G:O6  | 2.54                     | 0.41              |
| 1:0:128:C:H2'   | 1:0:129:A:O4'  | 2.21                     | 0.41              |
| 1:0:172:A:C2    | 1:0:178:C:O2   | 2.73                     | 0.41              |
| 1:0:18:U:H6     | 1:0:18:U:O5'   | 2.03                     | 0.41              |
| 1:0:1983:G:C2'  | 1:0:1984:A:H5' | 2.51                     | 0.41              |
| 1:0:2103:G:H2'  | 1:0:2104:G:O4' | 2.20                     | 0.41              |
| 1:0:871:U:N3    | 1:0:2247:A:C8  | 2.88                     | 0.41              |
| 1:0:2370:G:C2'  | 1:0:2371:A:OP2 | 2.69                     | 0.41              |
| 1:0:246:C:C5    | 1:0:373:A:C1'  | 3.01                     | 0.41              |
| 1:0:2504:G:O2'  | 1:0:2505:G:H5' | 2.21                     | 0.41              |
| 1:0:2681:A:N6   | 1:0:2682:C:C4  | 2.89                     | 0.41              |
| 1:0:2685:A:C6   | 1:0:2686:C:C4  | 3.08                     | 0.41              |
| 1:0:2705:A:O2'  | 1:0:2706:U:N1  | 2.54                     | 0.41              |
| 1:0:2758:A:O2'  | 1:0:2760:G:H2' | 2.21                     | 0.41              |
| 1:0:2864:C:O2'  | 1:0:2865:G:H5' | 2.21                     | 0.41              |
| 1:0:347:C:C2    | 1:0:348:U:C6   | 3.09                     | 0.41              |
| 1:0:396:U:C5    | 1:0:398:C:C5   | 3.09                     | 0.41              |
| 1:0:48:A:H4'    | 1:0:49:U:C5'   | 2.50                     | 0.41              |
| 1:0:689:A:H2'   | 1:0:690:A:H5'  | 2.02                     | 0.41              |
| 1:0:1115:C:H2'  | 1:0:1116:U:C6  | 2.56                     | 0.41              |
| 1:0:1141:U:HO2' | 1:0:1142:G:P   | 2.43                     | 0.41              |
| 1:0:1274:C:C2'  | 1:0:1275:A:O5' | 2.69                     | 0.41              |
| 1:0:1332:G:C5   | 1:0:1333:G:C6  | 3.08                     | 0.41              |
| 1:0:1359:G:C6   | 1:0:1360:G:C5  | 3.09                     | 0.41              |
| 1:0:1469:U:OP2  | 1:0:1471:G:OP2 | 2.39                     | 0.41              |
| 1:0:1526:U:H2'  | 1:0:1527:G:C8  | 2.49                     | 0.41              |
| 1:0:1586:A:H2'  | 1:0:1587:A:H8  | 1.86                     | 0.41              |
| 1:0:1431:U:H4'  | 1:0:1604:A:C4' | 2.51                     | 0.41              |
| 1:0:1690:U:HO2' | 1:0:1691:G:P   | 2.44                     | 0.41              |
| 1:0:189:A:O2'   | 1:0:190:A:H5'  | 2.20                     | 0.41              |
| 1:0:2219:U:O2'  | 1:0:2220:A:H5' | 2.21                     | 0.41              |
| 1:0:2395:C:C4   | 1:0:2396:C:N4  | 2.89                     | 0.41              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:2465:G:C2   | 1:0:2466:G:C4  | 3.09                     | 0.41              |
| 1:0:2669:C:O2'  | 1:0:2670:C:OP2 | 2.37                     | 0.41              |
| 1:0:2683:C:N4   | 1:0:2684:A:C6  | 2.89                     | 0.41              |
| 1:0:309:G:N1    | 1:0:350:U:H5   | 2.19                     | 0.41              |
| 1:0:317:U:C2'   | 1:0:318:G:H5'' | 2.51                     | 0.41              |
| 1:0:499:G:C2'   | 1:0:500:G:O5'  | 2.69                     | 0.41              |
| 1:0:573:C:H2'   | 1:0:574:C:O4'  | 2.21                     | 0.41              |
| 1:0:649:G:C4    | 1:0:650:U:C5   | 3.09                     | 0.41              |
| 1:0:649:G:N1    | 1:0:660:G:N1   | 2.65                     | 0.41              |
| 1:0:79:G:C4     | 1:0:80:A:C8    | 3.08                     | 0.41              |
| 1:0:856:A:N6    | 1:0:857:U:N3   | 2.69                     | 0.41              |
| 1:0:996:C:OP2   | 1:0:996:C:H3'  | 2.21                     | 0.41              |
| 1:0:1002:C:O5'  | 1:0:1002:C:H6  | 2.03                     | 0.40              |
| 1:0:10:A:C2     | 1:0:11:G:H1'   | 2.56                     | 0.40              |
| 1:0:341:A:C2    | 1:0:1223:G:H2' | 2.56                     | 0.40              |
| 1:0:1251:G:C2   | 1:0:1252:C:N1  | 2.90                     | 0.40              |
| 1:0:1211:G:N2   | 1:0:1263:G:C5  | 2.89                     | 0.40              |
| 1:0:1312:G:H5'' | 1:0:1313:U:OP1 | 2.21                     | 0.40              |
| 1:0:1436:G:C8   | 1:0:1437:A:N7  | 2.89                     | 0.40              |
| 1:0:1491:C:C2   | 1:0:1533:G:C2  | 3.09                     | 0.40              |
| 1:0:1497:C:O2   | 1:0:1497:C:H2' | 2.21                     | 0.40              |
| 1:0:158:A:C6    | 1:0:159:A:N1   | 2.89                     | 0.40              |
| 1:0:1655:C:H5'' | 1:0:2689:C:O2' | 2.21                     | 0.40              |
| 1:0:1658:A:N6   | 1:0:1659:G:N3  | 2.69                     | 0.40              |
| 1:0:1698:C:H4'  | 1:0:1699:A:OP1 | 2.19                     | 0.40              |
| 1:0:169:C:N4    | 1:0:170:U:N1   | 2.69                     | 0.40              |
| 1:0:1910:A:N1   | 1:0:1911:A:C2  | 2.89                     | 0.40              |
| 1:0:1678:G:C5   | 1:0:1983:G:C2  | 3.08                     | 0.40              |
| 1:0:2019:C:O2'  | 1:0:2020:G:C5' | 2.66                     | 0.40              |
| 1:0:2032:G:O2'  | 1:0:2033:C:C5' | 2.66                     | 0.40              |
| 1:0:2053:G:C6   | 1:0:2054:A:C5  | 3.09                     | 0.40              |
| 1:0:2204:A:H5'  | 1:0:2205:C:O4' | 2.21                     | 0.40              |
| 1:0:2274:C:C2'  | 1:0:2275:U:C5' | 2.95                     | 0.40              |
| 1:0:2349:G:C6   | 1:0:2350:G:C4  | 3.09                     | 0.40              |
| 1:0:2510:A:C6   | 1:0:2511:G:C5  | 3.09                     | 0.40              |
| 1:0:2652:G:C2   | 1:0:2653:A:C8  | 3.09                     | 0.40              |
| 1:0:2748:C:N3   | 1:0:2749:A:N7  | 2.69                     | 0.40              |
| 1:0:346:C:C2    | 1:0:347:C:C5   | 3.09                     | 0.40              |
| 1:0:396:U:C6    | 1:0:398:C:H5   | 2.39                     | 0.40              |
| 1:0:404:A:C8    | 1:0:424:G:N2   | 2.89                     | 0.40              |
| 1:0:702:A:N6    | 1:0:703:A:C6   | 2.89                     | 0.40              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:782:U:O2    | 1:0:1392:U:H1' | 2.21                     | 0.40              |
| 1:0:922:A:C5    | 1:0:923:A:N7   | 2.90                     | 0.40              |
| 1:0:946:U:N3    | 1:0:947:C:C4   | 2.89                     | 0.40              |
| 1:0:986:A:H2    | 1:0:1001:A:O4' | 2.04                     | 0.40              |
| 1:0:105:G:C2    | 1:0:106:G:C4   | 3.10                     | 0.40              |
| 1:0:1047:G:C6   | 1:0:1131:G:C6  | 3.09                     | 0.40              |
| 1:0:1205:G:H21  | 1:0:1206:G:H1' | 1.86                     | 0.40              |
| 1:0:1281:A:H1'  | 1:0:2592:U:O2  | 2.21                     | 0.40              |
| 1:0:1386:A:H2'  | 1:0:1387:G:O4' | 2.21                     | 0.40              |
| 1:0:1496:G:N2   | 1:0:1528:C:H1' | 2.36                     | 0.40              |
| 1:0:1558:C:O2   | 1:0:1558:C:C2' | 2.68                     | 0.40              |
| 1:0:167:A:C2    | 1:0:168:A:C4   | 3.09                     | 0.40              |
| 1:0:174:A:C8    | 1:0:174:A:H5'  | 2.55                     | 0.40              |
| 1:0:1761:G:H2'  | 1:0:1762:C:C5' | 2.51                     | 0.40              |
| 1:0:1827:G:H1'  | 1:0:1914:U:N1  | 2.36                     | 0.40              |
| 1:0:2174:G:H2'  | 1:0:2175:A:H8  | 1.83                     | 0.40              |
| 1:0:2198:U:C3'  | 1:0:2199:C:C5' | 2.86                     | 0.40              |
| 1:0:2363:G:H5'' | 1:0:2365:U:OP1 | 2.22                     | 0.40              |
| 1:0:2459:C:N4   | 1:0:2460:G:C6  | 2.89                     | 0.40              |
| 1:0:2463:G:N3   | 1:0:2464:G:C8  | 2.89                     | 0.40              |
| 1:0:2492:G:H2'  | 1:0:2493:U:H6  | 1.85                     | 0.40              |
| 1:0:2496:C:HO2' | 1:0:2497:A:P   | 2.44                     | 0.40              |
| 1:0:2039:G:C5   | 1:0:2556:A:N7  | 2.89                     | 0.40              |
| 1:0:2687:G:C4   | 1:0:2688:G:C8  | 3.09                     | 0.40              |
| 1:0:2709:C:C2   | 1:0:2710:C:C5  | 3.10                     | 0.40              |
| 1:0:2728:A:H2'  | 1:0:2729:A:C5' | 2.51                     | 0.40              |
| 1:0:26:G:C6     | 1:0:27:G:N1    | 2.90                     | 0.40              |
| 1:0:2829:A:C2   | 1:0:2830:U:C2  | 3.09                     | 0.40              |
| 1:0:459:A:C1'   | 1:0:461:A:N6   | 2.84                     | 0.40              |
| 1:0:521:U:C5    | 1:0:522:G:C4   | 3.09                     | 0.40              |
| 1:0:562:G:C5    | 1:0:563:U:C4   | 3.09                     | 0.40              |
| 1:0:598:U:H2'   | 1:0:599:A:C8   | 2.57                     | 0.40              |
| 1:0:634:G:C5    | 1:0:635:C:C5   | 3.09                     | 0.40              |
| 1:0:644:A:H2'   | 1:0:645:G:C5'  | 2.43                     | 0.40              |
| 1:0:656:U:OP1   | 1:0:657:A:N7   | 2.53                     | 0.40              |
| 1:0:700:C:C5    | 1:0:701:U:N3   | 2.89                     | 0.40              |
| 1:0:732:G:O2'   | 1:0:733:G:H5'  | 2.21                     | 0.40              |
| 1:0:7:G:O2'     | 1:0:8:A:O4'    | 2.37                     | 0.40              |
| 1:0:1314:A:O2'  | 1:0:1315:A:O5' | 2.39                     | 0.40              |
| 1:0:1467:U:O4   | 1:0:1473:U:C1' | 2.69                     | 0.40              |
| 1:0:1676:U:C2   | 1:0:1985:G:N2  | 2.89                     | 0.40              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 1:0:1730:G:C4   | 1:0:1737:G:N2  | 2.89                     | 0.40              |
| 1:0:203:G:N2    | 1:0:204:A:N3   | 2.69                     | 0.40              |
| 1:0:2061:C:O2'  | 1:0:2062:U:H5' | 2.21                     | 0.40              |
| 1:0:2104:G:N2   | 1:0:2161:C:O2  | 2.55                     | 0.40              |
| 1:0:2196:U:C2'  | 1:0:2197:U:O4' | 2.70                     | 0.40              |
| 1:0:2269:G:N2   | 1:0:2322:U:H1' | 2.36                     | 0.40              |
| 1:0:22:C:C2     | 1:0:23:G:C8    | 3.09                     | 0.40              |
| 1:0:2270:U:O2'  | 1:0:2353:G:N3  | 2.45                     | 0.40              |
| 1:0:2424:G:H2'  | 1:0:2425:G:H5' | 2.04                     | 0.40              |
| 1:0:2460:G:H2'  | 1:0:2461:G:OP2 | 2.22                     | 0.40              |
| 1:0:2042:A:N3   | 1:0:2482:A:N6  | 2.69                     | 0.40              |
| 1:0:2683:C:N4   | 1:0:2684:A:N1  | 2.69                     | 0.40              |
| 1:0:1982:C:H4'  | 1:0:2703:C:O2  | 2.21                     | 0.40              |
| 1:0:2781:G:OP1  | 1:0:2782:G:OP1 | 2.39                     | 0.40              |
| 1:0:304:A:N1    | 1:0:356:A:N6   | 2.69                     | 0.40              |
| 1:0:419:G:O2'   | 1:0:420:C:H5'  | 2.20                     | 0.40              |
| 1:0:576:A:H2'   | 1:0:577:U:O4'  | 2.21                     | 0.40              |
| 1:0:739:G:O2'   | 1:0:740:A:P    | 2.77                     | 0.40              |
| 1:0:700:C:C2    | 1:0:800:U:O3'  | 2.74                     | 0.40              |
| 1:0:1035:G:P    | 1:0:1037:U:OP1 | 2.79                     | 0.40              |
| 1:0:1194:U:O2'  | 1:0:1195:U:P   | 2.79                     | 0.40              |
| 1:0:1330:G:C2   | 1:0:1331:G:C4  | 3.09                     | 0.40              |
| 1:0:1371:G:O2'  | 1:0:1386:A:N6  | 2.48                     | 0.40              |
| 1:0:1587:A:C2   | 1:0:1588:A:C5  | 3.09                     | 0.40              |
| 1:0:1680:U:C5'  | 1:0:1680:U:C6  | 2.90                     | 0.40              |
| 1:0:1741:G:HO2' | 1:0:2835:A:H2  | 1.68                     | 0.40              |
| 1:0:1773:C:OP1  | 1:0:1774:A:OP2 | 2.39                     | 0.40              |
| 1:0:1833:U:C2   | 1:0:1834:G:C8  | 3.08                     | 0.40              |
| 1:0:1995:G:O2'  | 1:0:1996:A:O5' | 2.36                     | 0.40              |
| 1:0:2009:U:C6   | 1:0:2009:U:C3' | 3.05                     | 0.40              |
| 1:0:2033:C:N4   | 1:0:2034:A:C6  | 2.89                     | 0.40              |
| 1:0:202:A:C2'   | 1:0:203:G:H5'  | 2.50                     | 0.40              |
| 1:0:2044:G:O2'  | 1:0:2045:A:OP2 | 2.35                     | 0.40              |
| 1:0:2184:C:H2'  | 1:0:2185:U:C5' | 2.52                     | 0.40              |
| 1:0:2796:A:C2   | 1:0:2797:G:C5  | 3.09                     | 0.40              |
| 1:0:29:U:H2'    | 1:0:30:G:C8    | 2.57                     | 0.40              |
| 1:0:305:A:C4    | 1:0:356:A:C6   | 3.09                     | 0.40              |
| 1:0:321:A:C5    | 1:0:323:G:C4   | 3.08                     | 0.40              |
| 1:0:403:A:H5'   | 1:0:404:A:H5'  | 2.04                     | 0.40              |
| 1:0:583:C:H5''  | 1:0:584:A:C5'  | 2.52                     | 0.40              |
| 1:0:58:C:C2     | 1:0:73:A:C2    | 3.09                     | 0.40              |

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| Atom-1         | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:0:788:G:N2   | 1:0:801:A:OP2  | 2.54                     | 0.40              |
| 1:0:1153:A:C6  | 1:0:1155:G:C6  | 3.09                     | 0.40              |
| 1:0:1657:A:H5' | 1:0:1657:A:H8  | 1.87                     | 0.40              |
| 1:0:1308:C:H42 | 1:0:1662:G:H1  | 1.69                     | 0.40              |
| 1:0:1760:G:C2  | 1:0:1761:G:C8  | 3.10                     | 0.40              |
| 1:0:1143:A:N6  | 1:0:2008:C:O2  | 2.55                     | 0.40              |
| 1:0:2187:A:H2' | 1:0:2188:A:C5' | 2.51                     | 0.40              |
| 1:0:220:U:C5   | 1:0:231:G:N2   | 2.90                     | 0.40              |
| 1:0:2270:U:C2  | 1:0:2271:C:C5  | 3.09                     | 0.40              |
| 1:0:2770:A:C5  | 1:0:2770:A:OP2 | 2.75                     | 0.40              |
| 1:0:322:A:C6   | 1:0:339:U:N3   | 2.90                     | 0.40              |
| 1:0:38:G:H22   | 1:0:454:G:H1'  | 1.86                     | 0.40              |
| 1:0:541:C:O2   | 1:0:572:G:O4'  | 2.39                     | 0.40              |
| 1:0:57:G:N2    | 1:0:69:G:C5    | 2.88                     | 0.40              |
| 1:0:622:U:C2   | 1:0:627:A:N1   | 2.89                     | 0.40              |
| 1:0:633:G:C2'  | 1:0:634:G:O5'  | 2.70                     | 0.40              |
| 1:0:5:A:N6     | 1:0:6:A:N6     | 2.68                     | 0.40              |
| 1:0:710:C:H2'  | 1:0:711:C:H6   | 1.83                     | 0.40              |
| 1:0:756:C:O5'  | 1:0:756:C:H6   | 2.05                     | 0.40              |
| 1:0:789:G:H2'  | 1:0:790:A:OP2  | 2.22                     | 0.40              |
| 1:0:873:U:C6   | 1:0:874:A:H5'  | 2.57                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

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

### 5.3.3 RNA [i](#)

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | 0     | 2757/2880 (95%) | 657 (23%)         | 223 (8%)        |

All (657) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 13  | A    |
| 1   | 0     | 14  | A    |
| 1   | 0     | 34  | U    |
| 1   | 0     | 45  | C    |
| 1   | 0     | 48  | A    |
| 1   | 0     | 49  | U    |
| 1   | 0     | 50  | G    |
| 1   | 0     | 59  | G    |
| 1   | 0     | 63  | A    |
| 1   | 0     | 69  | G    |
| 1   | 0     | 70  | A    |
| 1   | 0     | 71  | A    |
| 1   | 0     | 72  | A    |
| 1   | 0     | 74  | G    |
| 1   | 0     | 76  | C    |
| 1   | 0     | 82  | G    |
| 1   | 0     | 84  | G    |
| 1   | 0     | 87  | G    |
| 1   | 0     | 89  | A    |
| 1   | 0     | 90  | G    |
| 1   | 0     | 91  | A    |
| 1   | 0     | 95  | G    |
| 1   | 0     | 99  | U    |
| 1   | 0     | 100 | G    |
| 1   | 0     | 117 | A    |
| 1   | 0     | 118 | U    |
| 1   | 0     | 119 | G    |
| 1   | 0     | 123 | A    |
| 1   | 0     | 124 | A    |
| 1   | 0     | 129 | A    |
| 1   | 0     | 135 | U    |
| 1   | 0     | 148 | C    |
| 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     | 181 | A    |
| 1   | 0     | 182 | G    |
| 1   | 0     | 193 | A    |
| 1   | 0     | 199 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 200 | A    |
| 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     | 226 | C    |
| 1   | 0     | 227 | G    |
| 1   | 0     | 229 | G    |
| 1   | 0     | 242 | A    |
| 1   | 0     | 243 | G    |
| 1   | 0     | 305 | A    |
| 1   | 0     | 313 | U    |
| 1   | 0     | 318 | G    |
| 1   | 0     | 322 | A    |
| 1   | 0     | 323 | G    |
| 1   | 0     | 325 | U    |
| 1   | 0     | 333 | A    |
| 1   | 0     | 334 | G    |
| 1   | 0     | 335 | A    |
| 1   | 0     | 340 | G    |
| 1   | 0     | 341 | A    |
| 1   | 0     | 342 | G    |
| 1   | 0     | 343 | A    |
| 1   | 0     | 344 | G    |
| 1   | 0     | 358 | C    |
| 1   | 0     | 360 | A    |
| 1   | 0     | 363 | G    |
| 1   | 0     | 364 | G    |
| 1   | 0     | 368 | A    |
| 1   | 0     | 372 | U    |
| 1   | 0     | 373 | A    |
| 1   | 0     | 399 | G    |
| 1   | 0     | 401 | G    |
| 1   | 0     | 403 | A    |
| 1   | 0     | 404 | A    |
| 1   | 0     | 408 | U    |
| 1   | 0     | 409 | G    |
| 1   | 0     | 414 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 418 | C    |
| 1   | 0     | 419 | G    |
| 1   | 0     | 424 | G    |
| 1   | 0     | 435 | A    |
| 1   | 0     | 447 | U    |
| 1   | 0     | 448 | C    |
| 1   | 0     | 455 | A    |
| 1   | 0     | 456 | C    |
| 1   | 0     | 458 | G    |
| 1   | 0     | 459 | A    |
| 1   | 0     | 460 | U    |
| 1   | 0     | 461 | A    |
| 1   | 0     | 462 | G    |
| 1   | 0     | 463 | C    |
| 1   | 0     | 467 | U    |
| 1   | 0     | 469 | G    |
| 1   | 0     | 470 | U    |
| 1   | 0     | 483 | A    |
| 1   | 0     | 486 | U    |
| 1   | 0     | 491 | A    |
| 1   | 0     | 492 | G    |
| 1   | 0     | 493 | A    |
| 1   | 0     | 494 | A    |
| 1   | 0     | 495 | C    |
| 1   | 0     | 500 | G    |
| 1   | 0     | 514 | G    |
| 1   | 0     | 515 | A    |
| 1   | 0     | 517 | A    |
| 1   | 0     | 518 | A    |
| 1   | 0     | 519 | C    |
| 1   | 0     | 537 | C    |
| 1   | 0     | 539 | A    |
| 1   | 0     | 540 | G    |
| 1   | 0     | 541 | C    |
| 1   | 0     | 542 | A    |
| 1   | 0     | 543 | G    |
| 1   | 0     | 554 | U    |
| 1   | 0     | 555 | U    |
| 1   | 0     | 556 | A    |
| 1   | 0     | 558 | G    |
| 1   | 0     | 559 | C    |
| 1   | 0     | 560 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 572 | G    |
| 1   | 0     | 581 | A    |
| 1   | 0     | 582 | G    |
| 1   | 0     | 584 | A    |
| 1   | 0     | 595 | A    |
| 1   | 0     | 601 | A    |
| 1   | 0     | 613 | A    |
| 1   | 0     | 617 | U    |
| 1   | 0     | 624 | A    |
| 1   | 0     | 626 | A    |
| 1   | 0     | 628 | A    |
| 1   | 0     | 631 | G    |
| 1   | 0     | 632 | A    |
| 1   | 0     | 633 | G    |
| 1   | 0     | 636 | G    |
| 1   | 0     | 638 | A    |
| 1   | 0     | 642 | A    |
| 1   | 0     | 645 | G    |
| 1   | 0     | 648 | A    |
| 1   | 0     | 652 | C    |
| 1   | 0     | 654 | A    |
| 1   | 0     | 656 | U    |
| 1   | 0     | 657 | A    |
| 1   | 0     | 665 | A    |
| 1   | 0     | 666 | U    |
| 1   | 0     | 667 | U    |
| 1   | 0     | 669 | G    |
| 1   | 0     | 683 | A    |
| 1   | 0     | 684 | C    |
| 1   | 0     | 699 | G    |
| 1   | 0     | 700 | C    |
| 1   | 0     | 718 | A    |
| 1   | 0     | 728 | G    |
| 1   | 0     | 740 | A    |
| 1   | 0     | 741 | G    |
| 1   | 0     | 742 | G    |
| 1   | 0     | 743 | A    |
| 1   | 0     | 752 | G    |
| 1   | 0     | 753 | U    |
| 1   | 0     | 760 | U    |
| 1   | 0     | 761 | G    |
| 1   | 0     | 765 | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 774 | A    |
| 1   | 0     | 776 | G    |
| 1   | 0     | 778 | G    |
| 1   | 0     | 787 | A    |
| 1   | 0     | 789 | G    |
| 1   | 0     | 790 | A    |
| 1   | 0     | 794 | A    |
| 1   | 0     | 795 | A    |
| 1   | 0     | 797 | A    |
| 1   | 0     | 798 | G    |
| 1   | 0     | 802 | A    |
| 1   | 0     | 803 | C    |
| 1   | 0     | 805 | G    |
| 1   | 0     | 806 | A    |
| 1   | 0     | 807 | A    |
| 1   | 0     | 813 | A    |
| 1   | 0     | 814 | G    |
| 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     | 856 | A    |
| 1   | 0     | 863 | C    |
| 1   | 0     | 872 | G    |
| 1   | 0     | 873 | U    |
| 1   | 0     | 874 | A    |
| 1   | 0     | 878 | C    |
| 1   | 0     | 879 | A    |
| 1   | 0     | 912 | A    |
| 1   | 0     | 919 | U    |
| 1   | 0     | 922 | A    |
| 1   | 0     | 927 | C    |
| 1   | 0     | 930 | A    |
| 1   | 0     | 931 | G    |
| 1   | 0     | 938 | G    |
| 1   | 0     | 941 | U    |
| 1   | 0     | 943 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 944  | A    |
| 1   | 0     | 952  | A    |
| 1   | 0     | 957  | G    |
| 1   | 0     | 968  | C    |
| 1   | 0     | 969  | U    |
| 1   | 0     | 970  | A    |
| 1   | 0     | 972  | C    |
| 1   | 0     | 973  | U    |
| 1   | 0     | 984  | A    |
| 1   | 0     | 985  | G    |
| 1   | 0     | 994  | A    |
| 1   | 0     | 995  | A    |
| 1   | 0     | 996  | C    |
| 1   | 0     | 1000 | G    |
| 1   | 0     | 1006 | C    |
| 1   | 0     | 1007 | A    |
| 1   | 0     | 1019 | U    |
| 1   | 0     | 1020 | A    |
| 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     | 1054 | C    |
| 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     | 1072 | 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     | 1104 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1123 | G    |
| 1   | 0     | 1137 | A    |
| 1   | 0     | 1138 | A    |
| 1   | 0     | 1139 | A    |
| 1   | 0     | 1140 | A    |
| 1   | 0     | 1142 | G    |
| 1   | 0     | 1145 | C    |
| 1   | 0     | 1146 | G    |
| 1   | 0     | 1152 | C    |
| 1   | 0     | 1153 | A    |
| 1   | 0     | 1154 | A    |
| 1   | 0     | 1155 | G    |
| 1   | 0     | 1166 | A    |
| 1   | 0     | 1167 | A    |
| 1   | 0     | 1168 | G    |
| 1   | 0     | 1182 | U    |
| 1   | 0     | 1185 | C    |
| 1   | 0     | 1187 | A    |
| 1   | 0     | 1194 | U    |
| 1   | 0     | 1195 | U    |
| 1   | 0     | 1199 | U    |
| 1   | 0     | 1200 | G    |
| 1   | 0     | 1220 | G    |
| 1   | 0     | 1224 | A    |
| 1   | 0     | 1225 | G    |
| 1   | 0     | 1234 | 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     | 1266 | G    |
| 1   | 0     | 1267 | A    |
| 1   | 0     | 1268 | U    |
| 1   | 0     | 1269 | G    |
| 1   | 0     | 1278 | A    |
| 1   | 0     | 1279 | G    |
| 1   | 0     | 1284 | G    |
| 1   | 0     | 1285 | A    |
| 1   | 0     | 1286 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 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     | 1315 | A    |
| 1   | 0     | 1316 | G    |
| 1   | 0     | 1324 | G    |
| 1   | 0     | 1326 | U    |
| 1   | 0     | 1331 | G    |
| 1   | 0     | 1333 | G    |
| 1   | 0     | 1334 | A    |
| 1   | 0     | 1337 | G    |
| 1   | 0     | 1338 | G    |
| 1   | 0     | 1339 | U    |
| 1   | 0     | 1342 | U    |
| 1   | 0     | 1346 | C    |
| 1   | 0     | 1353 | A    |
| 1   | 0     | 1354 | A    |
| 1   | 0     | 1355 | A    |
| 1   | 0     | 1356 | G    |
| 1   | 0     | 1358 | C    |
| 1   | 0     | 1359 | G    |
| 1   | 0     | 1364 | C    |
| 1   | 0     | 1391 | A    |
| 1   | 0     | 1392 | U    |
| 1   | 0     | 1397 | A    |
| 1   | 0     | 1398 | G    |
| 1   | 0     | 1409 | U    |
| 1   | 0     | 1411 | C    |
| 1   | 0     | 1427 | G    |
| 1   | 0     | 1430 | G    |
| 1   | 0     | 1435 | G    |
| 1   | 0     | 1437 | A    |
| 1   | 0     | 1441 | A    |
| 1   | 0     | 1442 | C    |
| 1   | 0     | 1443 | G    |
| 1   | 0     | 1459 | U    |
| 1   | 0     | 1460 | G    |
| 1   | 0     | 1467 | U    |
| 1   | 0     | 1468 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1469 | U    |
| 1   | 0     | 1470 | G    |
| 1   | 0     | 1473 | U    |
| 1   | 0     | 1474 | A    |
| 1   | 0     | 1475 | U    |
| 1   | 0     | 1476 | G    |
| 1   | 0     | 1489 | C    |
| 1   | 0     | 1490 | U    |
| 1   | 0     | 1496 | G    |
| 1   | 0     | 1498 | G    |
| 1   | 0     | 1505 | U    |
| 1   | 0     | 1507 | A    |
| 1   | 0     | 1513 | U    |
| 1   | 0     | 1514 | C    |
| 1   | 0     | 1524 | C    |
| 1   | 0     | 1525 | A    |
| 1   | 0     | 1528 | C    |
| 1   | 0     | 1529 | C    |
| 1   | 0     | 1530 | U    |
| 1   | 0     | 1552 | C    |
| 1   | 0     | 1554 | G    |
| 1   | 0     | 1570 | C    |
| 1   | 0     | 1571 | G    |
| 1   | 0     | 1573 | G    |
| 1   | 0     | 1574 | A    |
| 1   | 0     | 1576 | G    |
| 1   | 0     | 1582 | A    |
| 1   | 0     | 1583 | A    |
| 1   | 0     | 1585 | A    |
| 1   | 0     | 1601 | U    |
| 1   | 0     | 1602 | G    |
| 1   | 0     | 1618 | U    |
| 1   | 0     | 1619 | A    |
| 1   | 0     | 1623 | C    |
| 1   | 0     | 1624 | A    |
| 1   | 0     | 1625 | A    |
| 1   | 0     | 1626 | A    |
| 1   | 0     | 1627 | C    |
| 1   | 0     | 1631 | C    |
| 1   | 0     | 1633 | C    |
| 1   | 0     | 1634 | A    |
| 1   | 0     | 1635 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 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     | 1687 | C    |
| 1   | 0     | 1690 | U    |
| 1   | 0     | 1691 | G    |
| 1   | 0     | 1692 | C    |
| 1   | 0     | 1699 | A    |
| 1   | 0     | 1710 | U    |
| 1   | 0     | 1711 | C    |
| 1   | 0     | 1712 | G    |
| 1   | 0     | 1713 | G    |
| 1   | 0     | 1715 | A    |
| 1   | 0     | 1716 | G    |
| 1   | 0     | 1717 | A    |
| 1   | 0     | 1723 | U    |
| 1   | 0     | 1724 | C    |
| 1   | 0     | 1732 | U    |
| 1   | 0     | 1734 | C    |
| 1   | 0     | 1747 | G    |
| 1   | 0     | 1748 | U    |
| 1   | 0     | 1749 | G    |
| 1   | 0     | 1750 | A    |
| 1   | 0     | 1754 | G    |
| 1   | 0     | 1755 | G    |
| 1   | 0     | 1764 | A    |
| 1   | 0     | 1771 | A    |
| 1   | 0     | 1772 | C    |
| 1   | 0     | 1773 | C    |
| 1   | 0     | 1775 | A    |
| 1   | 0     | 1776 | A    |
| 1   | 0     | 1777 | A    |
| 1   | 0     | 1778 | U    |
| 1   | 0     | 1782 | A    |
| 1   | 0     | 1791 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1792 | C    |
| 1   | 0     | 1793 | A    |
| 1   | 0     | 1800 | A    |
| 1   | 0     | 1801 | C    |
| 1   | 0     | 1802 | A    |
| 1   | 0     | 1807 | A    |
| 1   | 0     | 1808 | C    |
| 1   | 0     | 1811 | A    |
| 1   | 0     | 1812 | U    |
| 1   | 0     | 1821 | A    |
| 1   | 0     | 1830 | C    |
| 1   | 0     | 1831 | G    |
| 1   | 0     | 1840 | A    |
| 1   | 0     | 1863 | U    |
| 1   | 0     | 1866 | G    |
| 1   | 0     | 1889 | G    |
| 1   | 0     | 1897 | C    |
| 1   | 0     | 1900 | U    |
| 1   | 0     | 1909 | U    |
| 1   | 0     | 1910 | A    |
| 1   | 0     | 1914 | U    |
| 1   | 0     | 1920 | A    |
| 1   | 0     | 1921 | A    |
| 1   | 0     | 1922 | U    |
| 1   | 0     | 1923 | U    |
| 1   | 0     | 1924 | C    |
| 1   | 0     | 1926 | U    |
| 1   | 0     | 1927 | U    |
| 1   | 0     | 1928 | G    |
| 1   | 0     | 1930 | C    |
| 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     | 1951 | G    |
| 1   | 0     | 1953 | A    |
| 1   | 0     | 1954 | A    |
| 1   | 0     | 1955 | G    |
| 1   | 0     | 1956 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1957 | C    |
| 1   | 0     | 1964 | A    |
| 1   | 0     | 1976 | U    |
| 1   | 0     | 1979 | C    |
| 1   | 0     | 1980 | A    |
| 1   | 0     | 2004 | U    |
| 1   | 0     | 2005 | U    |
| 1   | 0     | 2006 | G    |
| 1   | 0     | 2014 | A    |
| 1   | 0     | 2015 | G    |
| 1   | 0     | 2016 | A    |
| 1   | 0     | 2017 | U    |
| 1   | 0     | 2019 | C    |
| 1   | 0     | 2026 | C    |
| 1   | 0     | 2034 | A    |
| 1   | 0     | 2035 | G    |
| 1   | 0     | 2038 | C    |
| 1   | 0     | 2039 | G    |
| 1   | 0     | 2044 | G    |
| 1   | 0     | 2045 | A    |
| 1   | 0     | 2046 | C    |
| 1   | 0     | 2051 | U    |
| 1   | 0     | 2052 | G    |
| 1   | 0     | 2059 | U    |
| 1   | 0     | 2060 | A    |
| 1   | 0     | 2075 | U    |
| 1   | 0     | 2076 | G    |
| 1   | 0     | 2082 | C    |
| 1   | 0     | 2083 | G    |
| 1   | 0     | 2094 | C    |
| 1   | 0     | 2096 | U    |
| 1   | 0     | 2110 | G    |
| 1   | 0     | 2118 | A    |
| 1   | 0     | 2140 | G    |
| 1   | 0     | 2162 | C    |
| 1   | 0     | 2168 | A    |
| 1   | 0     | 2171 | U    |
| 1   | 0     | 2172 | U    |
| 1   | 0     | 2181 | A    |
| 1   | 0     | 2189 | A    |
| 1   | 0     | 2191 | A    |
| 1   | 0     | 2192 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2195 | C    |
| 1   | 0     | 2199 | C    |
| 1   | 0     | 2205 | C    |
| 1   | 0     | 2214 | G    |
| 1   | 0     | 2217 | G    |
| 1   | 0     | 2218 | G    |
| 1   | 0     | 2229 | G    |
| 1   | 0     | 2237 | C    |
| 1   | 0     | 2241 | U    |
| 1   | 0     | 2245 | A    |
| 1   | 0     | 2246 | A    |
| 1   | 0     | 2247 | A    |
| 1   | 0     | 2254 | C    |
| 1   | 0     | 2255 | G    |
| 1   | 0     | 2261 | G    |
| 1   | 0     | 2262 | C    |
| 1   | 0     | 2265 | A    |
| 1   | 0     | 2268 | G    |
| 1   | 0     | 2285 | U    |
| 1   | 0     | 2286 | G    |
| 1   | 0     | 2287 | G    |
| 1   | 0     | 2288 | A    |
| 1   | 0     | 2289 | A    |
| 1   | 0     | 2298 | U    |
| 1   | 0     | 2299 | A    |
| 1   | 0     | 2300 | G    |
| 1   | 0     | 2301 | A    |
| 1   | 0     | 2303 | C    |
| 1   | 0     | 2304 | G    |
| 1   | 0     | 2306 | A    |
| 1   | 0     | 2307 | A    |
| 1   | 0     | 2313 | G    |
| 1   | 0     | 2314 | A    |
| 1   | 0     | 2316 | G    |
| 1   | 0     | 2324 | G    |
| 1   | 0     | 2325 | A    |
| 1   | 0     | 2326 | C    |
| 1   | 0     | 2329 | C    |
| 1   | 0     | 2338 | C    |
| 1   | 0     | 2340 | C    |
| 1   | 0     | 2351 | G    |
| 1   | 0     | 2362 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2364 | C    |
| 1   | 0     | 2369 | U    |
| 1   | 0     | 2371 | A    |
| 1   | 0     | 2381 | A    |
| 1   | 0     | 2382 | C    |
| 1   | 0     | 2385 | U    |
| 1   | 0     | 2386 | G    |
| 1   | 0     | 2396 | C    |
| 1   | 0     | 2398 | U    |
| 1   | 0     | 2402 | U    |
| 1   | 0     | 2404 | A    |
| 1   | 0     | 2405 | A    |
| 1   | 0     | 2406 | C    |
| 1   | 0     | 2408 | G    |
| 1   | 0     | 2409 | A    |
| 1   | 0     | 2410 | U    |
| 1   | 0     | 2418 | A    |
| 1   | 0     | 2419 | C    |
| 1   | 0     | 2420 | C    |
| 1   | 0     | 2427 | A    |
| 1   | 0     | 2428 | U    |
| 1   | 0     | 2448 | A    |
| 1   | 0     | 2455 | A    |
| 1   | 0     | 2461 | G    |
| 1   | 0     | 2470 | U    |
| 1   | 0     | 2477 | C    |
| 1   | 0     | 2481 | G    |
| 1   | 0     | 2483 | U    |
| 1   | 0     | 2484 | G    |
| 1   | 0     | 2485 | U    |
| 1   | 0     | 2492 | G    |
| 1   | 0     | 2497 | A    |
| 1   | 0     | 2498 | U    |
| 1   | 0     | 2499 | C    |
| 1   | 0     | 2504 | G    |
| 1   | 0     | 2508 | G    |
| 1   | 0     | 2521 | A    |
| 1   | 0     | 2522 | G    |
| 1   | 0     | 2545 | A    |
| 1   | 0     | 2546 | G    |
| 1   | 0     | 2549 | G    |
| 1   | 0     | 2552 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2553 | G    |
| 1   | 0     | 2556 | A    |
| 1   | 0     | 2561 | G    |
| 1   | 0     | 2564 | U    |
| 1   | 0     | 2565 | C    |
| 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     | 2595 | C    |
| 1   | 0     | 2600 | A    |
| 1   | 0     | 2609 | G    |
| 1   | 0     | 2621 | G    |
| 1   | 0     | 2624 | G    |
| 1   | 0     | 2625 | U    |
| 1   | 0     | 2630 | C    |
| 1   | 0     | 2633 | A    |
| 1   | 0     | 2634 | G    |
| 1   | 0     | 2661 | G    |
| 1   | 0     | 2668 | U    |
| 1   | 0     | 2681 | A    |
| 1   | 0     | 2691 | C    |
| 1   | 0     | 2692 | A    |
| 1   | 0     | 2693 | U    |
| 1   | 0     | 2694 | G    |
| 1   | 0     | 2705 | A    |
| 1   | 0     | 2706 | U    |
| 1   | 0     | 2707 | G    |
| 1   | 0     | 2711 | G    |
| 1   | 0     | 2712 | G    |
| 1   | 0     | 2713 | A    |
| 1   | 0     | 2728 | A    |
| 1   | 0     | 2730 | A    |
| 1   | 0     | 2732 | C    |
| 1   | 0     | 2736 | U    |
| 1   | 0     | 2737 | A    |
| 1   | 0     | 2738 | A    |
| 1   | 0     | 2745 | A    |
| 1   | 0     | 2746 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2757 | G    |
| 1   | 0     | 2758 | A    |
| 1   | 0     | 2759 | U    |
| 1   | 0     | 2761 | A    |
| 1   | 0     | 2769 | C    |
| 1   | 0     | 2770 | A    |
| 1   | 0     | 2771 | C    |
| 1   | 0     | 2782 | G    |
| 1   | 0     | 2783 | U    |
| 1   | 0     | 2795 | A    |
| 1   | 0     | 2796 | A    |
| 1   | 0     | 2798 | A    |
| 1   | 0     | 2807 | U    |
| 1   | 0     | 2808 | U    |
| 1   | 0     | 2809 | A    |
| 1   | 0     | 2810 | A    |
| 1   | 0     | 2811 | G    |
| 1   | 0     | 2825 | A    |
| 1   | 0     | 2841 | U    |
| 1   | 0     | 2842 | C    |
| 1   | 0     | 2846 | G    |
| 1   | 0     | 2847 | G    |
| 1   | 0     | 2849 | C    |
| 1   | 0     | 2854 | G    |
| 1   | 0     | 2855 | C    |
| 1   | 0     | 2867 | G    |
| 1   | 0     | 2868 | G    |

All (223) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 13  | A    |
| 1   | 0     | 34  | U    |
| 1   | 0     | 50  | G    |
| 1   | 0     | 69  | G    |
| 1   | 0     | 70  | A    |
| 1   | 0     | 71  | A    |
| 1   | 0     | 73  | A    |
| 1   | 0     | 82  | G    |
| 1   | 0     | 83  | A    |
| 1   | 0     | 89  | A    |
| 1   | 0     | 117 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 0     | 123 | A    |
| 1   | 0     | 154 | U    |
| 1   | 0     | 173 | A    |
| 1   | 0     | 176 | A    |
| 1   | 0     | 181 | A    |
| 1   | 0     | 192 | G    |
| 1   | 0     | 198 | A    |
| 1   | 0     | 204 | A    |
| 1   | 0     | 218 | A    |
| 1   | 0     | 219 | G    |
| 1   | 0     | 226 | C    |
| 1   | 0     | 312 | G    |
| 1   | 0     | 322 | A    |
| 1   | 0     | 332 | C    |
| 1   | 0     | 333 | A    |
| 1   | 0     | 340 | G    |
| 1   | 0     | 342 | G    |
| 1   | 0     | 343 | A    |
| 1   | 0     | 403 | A    |
| 1   | 0     | 417 | C    |
| 1   | 0     | 434 | C    |
| 1   | 0     | 447 | U    |
| 1   | 0     | 454 | G    |
| 1   | 0     | 458 | G    |
| 1   | 0     | 459 | A    |
| 1   | 0     | 460 | U    |
| 1   | 0     | 466 | A    |
| 1   | 0     | 468 | A    |
| 1   | 0     | 469 | G    |
| 1   | 0     | 485 | G    |
| 1   | 0     | 490 | A    |
| 1   | 0     | 492 | G    |
| 1   | 0     | 499 | G    |
| 1   | 0     | 516 | G    |
| 1   | 0     | 539 | A    |
| 1   | 0     | 571 | U    |
| 1   | 0     | 580 | A    |
| 1   | 0     | 582 | G    |
| 1   | 0     | 583 | C    |
| 1   | 0     | 596 | C    |
| 1   | 0     | 600 | G    |
| 1   | 0     | 612 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 631  | G    |
| 1   | 0     | 668  | A    |
| 1   | 0     | 682  | G    |
| 1   | 0     | 683  | A    |
| 1   | 0     | 684  | C    |
| 1   | 0     | 698  | A    |
| 1   | 0     | 699  | G    |
| 1   | 0     | 717  | G    |
| 1   | 0     | 739  | G    |
| 1   | 0     | 741  | G    |
| 1   | 0     | 752  | G    |
| 1   | 0     | 760  | U    |
| 1   | 0     | 775  | U    |
| 1   | 0     | 777  | A    |
| 1   | 0     | 789  | G    |
| 1   | 0     | 795  | A    |
| 1   | 0     | 801  | A    |
| 1   | 0     | 804  | C    |
| 1   | 0     | 805  | G    |
| 1   | 0     | 813  | A    |
| 1   | 0     | 814  | G    |
| 1   | 0     | 818  | G    |
| 1   | 0     | 842  | A    |
| 1   | 0     | 843  | G    |
| 1   | 0     | 956  | A    |
| 1   | 0     | 968  | C    |
| 1   | 0     | 972  | C    |
| 1   | 0     | 984  | A    |
| 1   | 0     | 1000 | G    |
| 1   | 0     | 1019 | U    |
| 1   | 0     | 1023 | U    |
| 1   | 0     | 1033 | G    |
| 1   | 0     | 1137 | A    |
| 1   | 0     | 1139 | A    |
| 1   | 0     | 1141 | U    |
| 1   | 0     | 1142 | G    |
| 1   | 0     | 1152 | C    |
| 1   | 0     | 1153 | A    |
| 1   | 0     | 1154 | A    |
| 1   | 0     | 1167 | A    |
| 1   | 0     | 1193 | G    |
| 1   | 0     | 1194 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1223 | G    |
| 1   | 0     | 1233 | A    |
| 1   | 0     | 1249 | G    |
| 1   | 0     | 1260 | A    |
| 1   | 0     | 1261 | G    |
| 1   | 0     | 1263 | G    |
| 1   | 0     | 1265 | G    |
| 1   | 0     | 1266 | G    |
| 1   | 0     | 1278 | A    |
| 1   | 0     | 1279 | G    |
| 1   | 0     | 1285 | A    |
| 1   | 0     | 1299 | A    |
| 1   | 0     | 1301 | U    |
| 1   | 0     | 1313 | U    |
| 1   | 0     | 1314 | A    |
| 1   | 0     | 1315 | A    |
| 1   | 0     | 1324 | G    |
| 1   | 0     | 1325 | U    |
| 1   | 0     | 1333 | G    |
| 1   | 0     | 1337 | G    |
| 1   | 0     | 1338 | G    |
| 1   | 0     | 1342 | U    |
| 1   | 0     | 1345 | G    |
| 1   | 0     | 1353 | A    |
| 1   | 0     | 1354 | A    |
| 1   | 0     | 1355 | A    |
| 1   | 0     | 1391 | A    |
| 1   | 0     | 1410 | U    |
| 1   | 0     | 1442 | C    |
| 1   | 0     | 1469 | U    |
| 1   | 0     | 1495 | G    |
| 1   | 0     | 1513 | U    |
| 1   | 0     | 1582 | A    |
| 1   | 0     | 1618 | U    |
| 1   | 0     | 1624 | A    |
| 1   | 0     | 1626 | A    |
| 1   | 0     | 1631 | C    |
| 1   | 0     | 1632 | A    |
| 1   | 0     | 1633 | C    |
| 1   | 0     | 1634 | A    |
| 1   | 0     | 1651 | U    |
| 1   | 0     | 1664 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 1670 | G    |
| 1   | 0     | 1684 | G    |
| 1   | 0     | 1685 | A    |
| 1   | 0     | 1691 | G    |
| 1   | 0     | 1698 | C    |
| 1   | 0     | 1710 | U    |
| 1   | 0     | 1715 | A    |
| 1   | 0     | 1716 | G    |
| 1   | 0     | 1749 | G    |
| 1   | 0     | 1772 | C    |
| 1   | 0     | 1775 | A    |
| 1   | 0     | 1777 | A    |
| 1   | 0     | 1790 | G    |
| 1   | 0     | 1791 | C    |
| 1   | 0     | 1799 | A    |
| 1   | 0     | 1811 | A    |
| 1   | 0     | 1820 | G    |
| 1   | 0     | 1913 | G    |
| 1   | 0     | 1919 | A    |
| 1   | 0     | 1923 | U    |
| 1   | 0     | 1926 | U    |
| 1   | 0     | 1938 | U    |
| 1   | 0     | 1947 | G    |
| 1   | 0     | 1953 | A    |
| 1   | 0     | 1963 | G    |
| 1   | 0     | 1975 | G    |
| 1   | 0     | 1979 | C    |
| 1   | 0     | 2004 | U    |
| 1   | 0     | 2005 | U    |
| 1   | 0     | 2015 | G    |
| 1   | 0     | 2018 | G    |
| 1   | 0     | 2034 | A    |
| 1   | 0     | 2044 | G    |
| 1   | 0     | 2045 | A    |
| 1   | 0     | 2050 | G    |
| 1   | 0     | 2059 | U    |
| 1   | 0     | 2093 | G    |
| 1   | 0     | 2161 | C    |
| 1   | 0     | 2204 | A    |
| 1   | 0     | 2217 | G    |
| 1   | 0     | 2228 | U    |
| 1   | 0     | 2237 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2245 | A    |
| 1   | 0     | 2254 | C    |
| 1   | 0     | 2261 | G    |
| 1   | 0     | 2312 | A    |
| 1   | 0     | 2325 | A    |
| 1   | 0     | 2370 | G    |
| 1   | 0     | 2404 | A    |
| 1   | 0     | 2405 | A    |
| 1   | 0     | 2418 | A    |
| 1   | 0     | 2426 | G    |
| 1   | 0     | 2427 | A    |
| 1   | 0     | 2428 | U    |
| 1   | 0     | 2447 | G    |
| 1   | 0     | 2469 | G    |
| 1   | 0     | 2476 | A    |
| 1   | 0     | 2482 | A    |
| 1   | 0     | 2485 | U    |
| 1   | 0     | 2496 | C    |
| 1   | 0     | 2497 | A    |
| 1   | 0     | 2498 | U    |
| 1   | 0     | 2521 | A    |
| 1   | 0     | 2545 | A    |
| 1   | 0     | 2551 | A    |
| 1   | 0     | 2588 | U    |
| 1   | 0     | 2592 | U    |
| 1   | 0     | 2593 | A    |
| 1   | 0     | 2594 | U    |
| 1   | 0     | 2608 | A    |
| 1   | 0     | 2633 | A    |
| 1   | 0     | 2668 | U    |
| 1   | 0     | 2693 | U    |
| 1   | 0     | 2705 | A    |
| 1   | 0     | 2706 | U    |
| 1   | 0     | 2756 | A    |
| 1   | 0     | 2758 | A    |
| 1   | 0     | 2760 | G    |
| 1   | 0     | 2810 | A    |
| 1   | 0     | 2823 | G    |
| 1   | 0     | 2824 | C    |
| 1   | 0     | 2841 | U    |
| 1   | 0     | 2846 | G    |
| 1   | 0     | 2848 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 0     | 2854 | G    |
| 1   | 0     | 2867 | G    |

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

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

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.