



## Full wwPDB EM Validation Report ⓘ

Mar 9, 2026 – 08:03 AM UTC

PDB ID : 7D0G / pdb\_00007d0g  
EMDB ID : EMD-30533  
Title : Cryo-EM structure of a pre-catalytic group II intron  
Authors : Liu, N.; Dong, X.L.; Hu, C.X.; Zeng, J.W.; Wang, J.W.; Wang, J.; Wang, H.W.; Belfort, M.  
Deposited on : 2020-09-10  
Resolution : 5.00 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev132  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

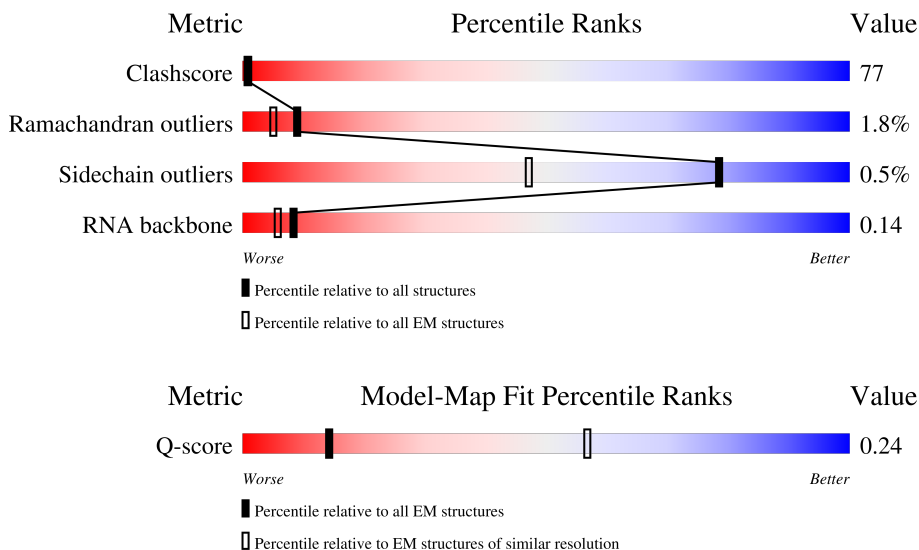
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 5.00 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) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 229148                      | 23984                       | -                                                        |
| Ramachandran outliers | 224038                      | 23583                       | -                                                        |
| Sidechain outliers    | 223484                      | 23102                       | -                                                        |
| RNA backbone          | 8273                        | 3508                        | -                                                        |
| Q-score               | -                           | 25397                       | 1057 ( 4.50 - 5.50 )                                     |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 916    |                  |
| 2   | C     | 599    |                  |

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 18967 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called RNA (714-MER).

| Mol | Chain | Residues | Atoms |      |      |      |     | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|-----|---------|-------|
| 1   | A     | 714      | Total | C    | N    | O    | P   | 0       | 0     |
|     |       |          | 15297 | 6849 | 2825 | 4909 | 714 |         |       |

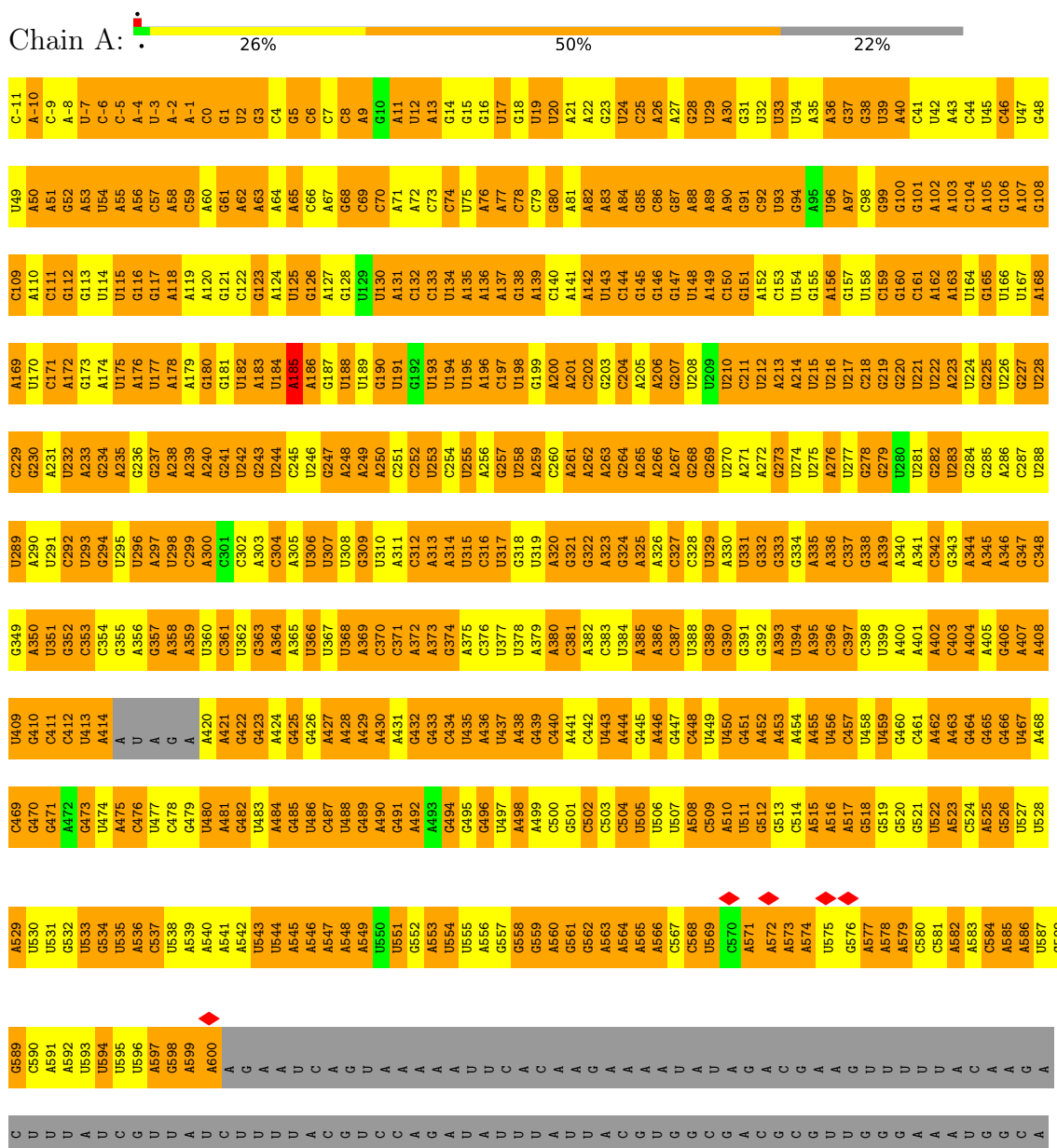
- Molecule 2 is a protein called Group II intron-encoded protein LtrA.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | C     | 447      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3670  | 2370 | 624 | 662 | 14 |         |       |

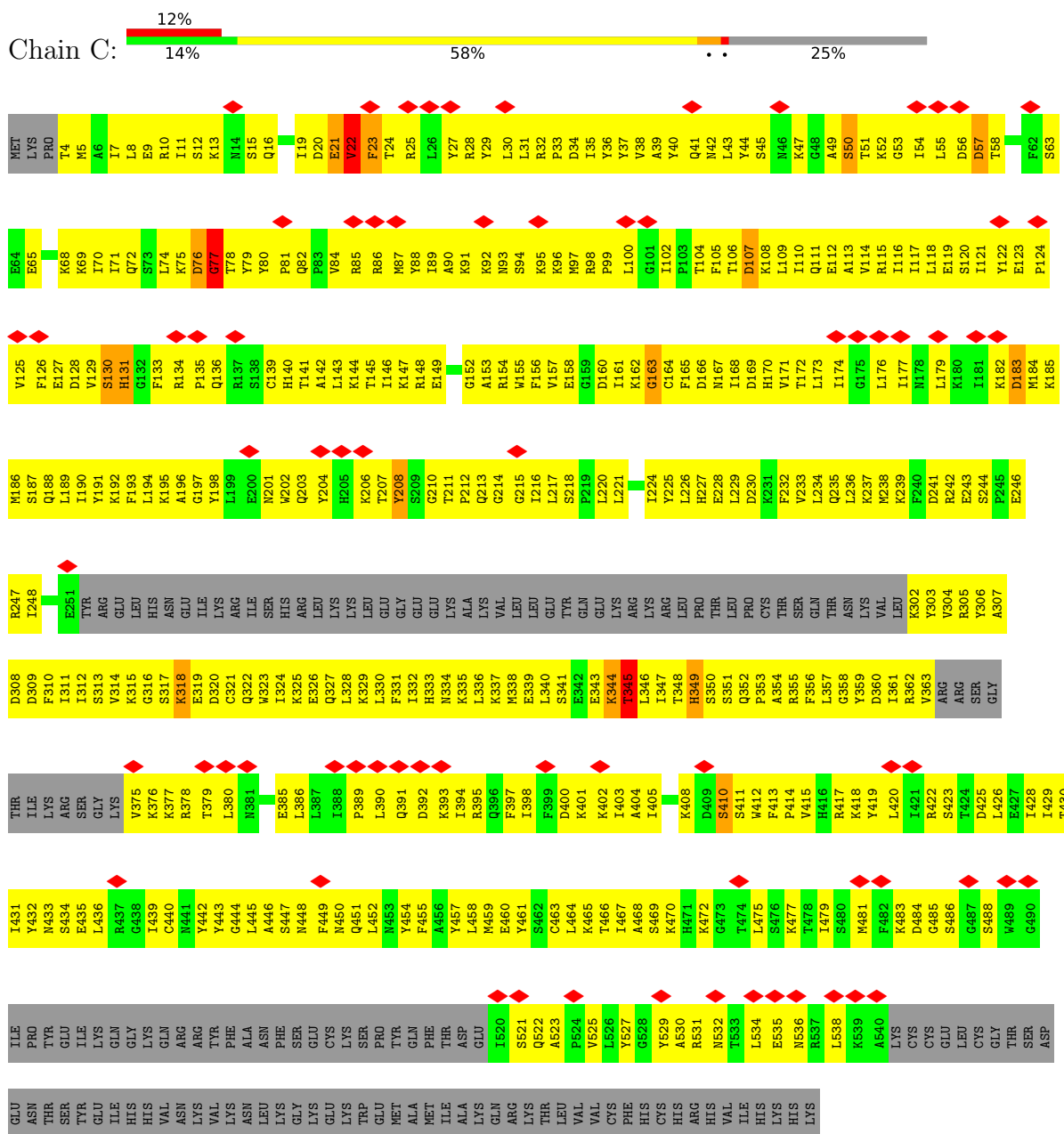
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

#### • Molecule 1: RNA (714-MER)



- Molecule 2: Group II intron-encoded protein LtrA



## 4 Experimental information

| Property                             | Value                           | Source    |
|--------------------------------------|---------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                 | Depositor |
| Imposed symmetry                     | POINT, Not provided             |           |
| Number of particles used             | 391788                          | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF               | Depositor |
| CTF correction method                | NONE                            | Depositor |
| Microscope                           | FEI TITAN KRIOS                 | Depositor |
| Voltage (kV)                         | 300                             | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 50                              | Depositor |
| Minimum defocus (nm)                 | Not provided                    |           |
| Maximum defocus (nm)                 | Not provided                    |           |
| Magnification                        | Not provided                    |           |
| Image detector                       | GATAN K2 SUMMIT (4k x 4k)       | Depositor |
| Maximum map value                    | 0.061                           | Depositor |
| Minimum map value                    | -0.018                          | Depositor |
| Average map value                    | 0.001                           | Depositor |
| Map value standard deviation         | 0.003                           | Depositor |
| Recommended contour level            | 0.01                            | Depositor |
| Map size ( $\text{\AA}$ )            | 240.40337, 240.40337, 240.40337 | wwPDB     |
| Map dimensions                       | 184, 184, 184                   | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0                | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.30654, 1.30654, 1.30654       | Depositor |

## 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   | A     | 0.29         | 1/17145 (0.0%) | 0.48        | 1/26721 (0.0%) |
| 2   | C     | 0.32         | 0/3747         | 0.75        | 8/5037 (0.2%)  |
| All | All   | 0.29         | 1/20892 (0.0%) | 0.53        | 9/31758 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 2   | C     | 0                   | 10                  |

All (1) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms  | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|--------|------|-------------|----------|
| 1   | A     | 2469 | C    | C1'-N1 | 5.51 | 1.55        | 1.47     |

All (9) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 2   | C     | 210 | GLY  | CA-C-N      | 7.78  | 143.64      | 120.69   |
| 2   | C     | 210 | GLY  | C-N-CA      | 7.78  | 143.64      | 120.69   |
| 2   | C     | 50  | SER  | N-CA-C      | 5.79  | 115.74      | 108.45   |
| 2   | C     | 57  | ASP  | N-CA-C      | -5.63 | 108.20      | 114.62   |
| 1   | A     | 185 | A    | C2'-C3'-O3' | 5.33  | 117.50      | 109.50   |
| 2   | C     | 22  | VAL  | CA-C-N      | 5.26  | 131.59      | 121.54   |
| 2   | C     | 22  | VAL  | C-N-CA      | 5.26  | 131.59      | 121.54   |
| 2   | C     | 77  | GLY  | N-CA-C      | 5.24  | 125.60      | 113.18   |
| 2   | C     | 345 | THR  | N-CA-C      | 5.13  | 118.00      | 107.37   |

There are no chirality outliers.

All (10) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 2   | C     | 129 | VAL  | Peptide |
| 2   | C     | 130 | SER  | Peptide |
| 2   | C     | 20  | ASP  | Peptide |
| 2   | C     | 208 | TYR  | Peptide |
| 2   | C     | 343 | GLU  | Peptide |
| 2   | C     | 344 | LYS  | Peptide |
| 2   | C     | 345 | THR  | Peptide |
| 2   | C     | 349 | HIS  | Peptide |
| 2   | C     | 410 | SER  | Peptide |
| 2   | C     | 76  | ASP  | Peptide |

## 5.2 Too-close contacts [i](#)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 15297 | 0        | 7693     | 1732    | 0            |
| 2   | C     | 3670  | 0        | 3749     | 537     | 0            |
| All | All   | 18967 | 0        | 11442    | 2225    | 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 77.

All (2225) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1        | Atom-2        | Interatomic distance (Å) | Clash overlap (Å) |
|---------------|---------------|--------------------------|-------------------|
| 1:A:561:G:C2  | 1:A:563:A:N6  | 2.02                     | 1.28              |
| 1:A:561:G:N2  | 1:A:563:A:C6  | 2.11                     | 1.19              |
| 1:A:2447:A:C2 | 1:A:2475:G:N1 | 2.13                     | 1.14              |
| 1:A:591:A:N6  | 1:A:592:A:N6  | 1.94                     | 1.12              |
| 1:A:591:A:C6  | 1:A:592:A:N6  | 2.17                     | 1.11              |
| 1:A:591:A:N6  | 1:A:592:A:H62 | 1.47                     | 1.09              |
| 1:A:432:G:C2  | 1:A:453:A:N6  | 2.21                     | 1.08              |
| 1:A:537:C:O2  | 1:A:598:G:N2  | 1.88                     | 1.06              |
| 1:A:528:U:H3  | 1:A:2393:A:N6 | 1.54                     | 1.05              |
| 1:A:140:C:O2  | 1:A:243:G:N2  | 1.90                     | 1.04              |
| 1:A:403:C:O2  | 1:A:460:G:N2  | 1.93                     | 1.01              |
| 1:A:489:G:C2  | 1:A:515:A:N6  | 2.28                     | 1.00              |

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| Atom-1        | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|---------------|----------------|--------------------------|-------------------|
| 1:A:57:C:O2   | 1:A:294:G:N2   | 1.94                     | 1.00              |
| 1:A:128:G:C6  | 1:A:154:U:N3   | 2.30                     | 0.99              |
| 1:A:73:C:O2   | 1:A:113:G:N2   | 1.95                     | 0.99              |
| 1:A:396:C:O2  | 1:A:466:G:N2   | 1.96                     | 0.99              |
| 1:A:2447:A:H2 | 1:A:2475:G:N1  | 1.52                     | 0.99              |
| 1:A:397:C:C2  | 1:A:465:G:N2   | 2.31                     | 0.98              |
| 1:A:193:U:O4  | 1:A:345:A:C5   | 2.18                     | 0.97              |
| 1:A:7:C:C2    | 1:A:391:G:C2   | 2.53                     | 0.96              |
| 1:A:528:U:H3  | 1:A:2393:A:H62 | 1.07                     | 0.95              |
| 1:A:219:G:N1  | 1:A:229:C:N3   | 2.14                     | 0.95              |
| 1:A:55:A:N1   | 1:A:296:U:C4   | 2.34                     | 0.94              |
| 1:A:432:G:N2  | 1:A:453:A:C6   | 2.34                     | 0.94              |
| 1:A:141:A:N1  | 1:A:243:G:C6   | 2.36                     | 0.94              |
| 1:A:193:U:O4  | 1:A:345:A:C6   | 2.21                     | 0.94              |
| 1:A:182:U:H3  | 1:A:353:C:H42  | 1.14                     | 0.94              |
| 1:A:423:G:N3  | 1:A:426:G:N2   | 2.15                     | 0.94              |
| 1:A:6:C:H1'   | 1:A:469:C:H2'  | 1.46                     | 0.93              |
| 1:A:397:C:N3  | 1:A:465:G:N1   | 2.16                     | 0.93              |
| 1:A:50:A:H1'  | 1:A:52:G:H5''  | 1.47                     | 0.93              |
| 1:A:477:U:N3  | 1:A:521:G:C6   | 2.36                     | 0.92              |
| 1:A:74:C:N4   | 1:A:111:C:N3   | 2.18                     | 0.92              |
| 1:A:561:G:N2  | 1:A:563:A:N6   | 2.16                     | 0.92              |
| 1:A:473:G:N1  | 1:A:524:C:N3   | 2.18                     | 0.92              |
| 1:A:537:C:N3  | 1:A:598:G:N1   | 2.17                     | 0.92              |
| 1:A:25:C:O2   | 1:A:374:G:N2   | 2.02                     | 0.91              |
| 1:A:145:G:C6  | 1:A:242:U:C4   | 2.58                     | 0.91              |
| 1:A:141:A:N1  | 1:A:243:G:O6   | 2.02                     | 0.91              |
| 1:A:396:C:N3  | 1:A:466:G:N1   | 2.18                     | 0.91              |
| 1:A:193:U:C4  | 1:A:345:A:C5   | 2.58                     | 0.91              |
| 1:A:431:A:N7  | 1:A:450:U:O2   | 2.03                     | 0.91              |
| 1:A:538:U:C4  | 1:A:598:G:C6   | 2.59                     | 0.91              |
| 1:A:128:G:N1  | 1:A:154:U:N3   | 2.19                     | 0.90              |
| 1:A:255:U:H5' | 1:A:257:G:H1   | 1.36                     | 0.90              |
| 1:A:432:G:N2  | 1:A:453:A:N6   | 2.19                     | 0.90              |
| 1:A:2442:G:C6 | 1:A:2481:U:N3  | 2.40                     | 0.89              |
| 1:A:489:G:N2  | 1:A:515:A:N6   | 2.21                     | 0.89              |
| 1:A:473:G:N2  | 1:A:524:C:O2   | 2.05                     | 0.89              |
| 1:A:568:C:N3  | 1:A:571:A:N6   | 2.20                     | 0.89              |
| 1:A:-10:A:C6  | 1:A:227:G:O6   | 2.25                     | 0.89              |
| 1:A:547:A:N6  | 1:A:588:G:N3   | 2.21                     | 0.89              |
| 1:A:413:U:N3  | 1:A:420:A:N6   | 2.21                     | 0.89              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:35:A:H2'     | 1:A:36:A:H4'     | 1.53                     | 0.88              |
| 1:A:128:G:N1     | 1:A:154:U:C2     | 2.41                     | 0.88              |
| 1:A:57:C:N3      | 1:A:294:G:N1     | 2.20                     | 0.88              |
| 1:A:137:A:N1     | 1:A:246:U:N3     | 2.20                     | 0.88              |
| 1:A:432:G:O6     | 1:A:449:U:O2     | 1.91                     | 0.88              |
| 1:A:413:U:C2     | 1:A:420:A:N6     | 2.42                     | 0.88              |
| 1:A:219:G:N2     | 1:A:229:C:O2     | 2.06                     | 0.88              |
| 1:A:2447:A:N1    | 1:A:2475:G:O6    | 2.07                     | 0.87              |
| 1:A:46:C:O2      | 1:A:61:G:N2      | 2.06                     | 0.87              |
| 1:A:396:C:C2     | 1:A:466:G:N2     | 2.42                     | 0.87              |
| 1:A:397:C:C2     | 1:A:465:G:C2     | 2.62                     | 0.87              |
| 1:A:82:A:N6      | 1:A:97:A:C6      | 2.43                     | 0.87              |
| 1:A:182:U:H3     | 1:A:353:C:N4     | 1.73                     | 0.87              |
| 1:A:180:G:O6     | 1:A:355:G:N2     | 2.08                     | 0.86              |
| 1:A:255:U:H2'    | 1:A:256:A:H2'    | 1.57                     | 0.86              |
| 1:A:53:A:N6      | 1:A:299:C:O2     | 2.09                     | 0.86              |
| 1:A:262:A:H2     | 1:A:308:U:H3     | 1.22                     | 0.86              |
| 2:C:211:THR:HG22 | 2:C:213:GLN:H    | 1.41                     | 0.86              |
| 1:A:25:C:N3      | 1:A:374:G:N1     | 2.23                     | 0.85              |
| 1:A:403:C:N3     | 1:A:460:G:N1     | 2.22                     | 0.85              |
| 2:C:433:ASN:ND2  | 2:C:525:VAL:O    | 2.09                     | 0.85              |
| 1:A:221:U:O4     | 1:A:227:G:N1     | 2.08                     | 0.85              |
| 1:A:2455:C:N3    | 1:A:2466:G:N1    | 2.23                     | 0.85              |
| 1:A:7:C:C2       | 1:A:391:G:N2     | 2.44                     | 0.85              |
| 1:A:2401:C:H5''  | 1:A:2404:A:H62   | 1.41                     | 0.85              |
| 1:A:519:G:H2'    | 1:A:520:G:C8     | 2.12                     | 0.84              |
| 1:A:398:C:O2     | 1:A:464:G:N2     | 2.11                     | 0.84              |
| 1:A:401:A:H2'    | 1:A:403:C:H1'    | 1.59                     | 0.84              |
| 1:A:547:A:N6     | 1:A:588:G:C4     | 2.46                     | 0.84              |
| 1:A:2455:C:O2    | 1:A:2466:G:N2    | 2.09                     | 0.84              |
| 2:C:353:PRO:HD3  | 2:C:362:ARG:HH11 | 1.41                     | 0.84              |
| 1:A:2440:G:C2    | 1:A:2483:C:C2    | 2.66                     | 0.83              |
| 1:A:46:C:N3      | 1:A:61:G:N1      | 2.25                     | 0.83              |
| 1:A:234:G:O2'    | 1:A:235:A:N7     | 2.11                     | 0.83              |
| 1:A:2449:A:N6    | 1:A:2469:C:O2'   | 2.11                     | 0.83              |
| 1:A:236:G:H1'    | 1:A:241:G:H22    | 1.41                     | 0.83              |
| 2:C:329:LYS:HE2  | 2:C:339:GLU:HA   | 1.61                     | 0.82              |
| 1:A:87:G:N2      | 1:A:398:C:O2     | 2.12                     | 0.82              |
| 1:A:87:G:H1      | 1:A:398:C:HO2'   | 1.25                     | 0.82              |
| 2:C:426:LEU:HA   | 2:C:429:ILE:HD12 | 1.59                     | 0.82              |
| 1:A:2433:G:C2    | 1:A:2490:C:C2    | 2.68                     | 0.82              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:396:C:O2     | 1:A:466:G:C2     | 2.33                     | 0.82              |
| 2:C:186:MET:HA   | 2:C:188:GLN:HE22 | 1.45                     | 0.82              |
| 1:A:137:A:N6     | 1:A:247:G:N3     | 2.27                     | 0.82              |
| 1:A:118:A:H2'    | 1:A:162:A:H61    | 1.45                     | 0.81              |
| 1:A:432:G:N3     | 1:A:453:A:N6     | 2.24                     | 0.81              |
| 1:A:188:U:O4     | 1:A:197:C:N3     | 2.13                     | 0.81              |
| 2:C:43:LEU:HG    | 2:C:47:LYS:HD3   | 1.62                     | 0.81              |
| 1:A:128:G:C2     | 1:A:154:U:C2     | 2.69                     | 0.81              |
| 1:A:16:G:C2      | 1:A:384:U:O2     | 2.33                     | 0.81              |
| 1:A:236:G:H2'    | 1:A:237:G:H5'    | 1.62                     | 0.81              |
| 1:A:397:C:O2     | 1:A:465:G:C2     | 2.33                     | 0.81              |
| 1:A:2447:A:N1    | 1:A:2475:G:C6    | 2.49                     | 0.81              |
| 2:C:28:ARG:NH2   | 2:C:31:LEU:O     | 2.14                     | 0.80              |
| 1:A:404:A:C6     | 1:A:460:G:C2     | 2.70                     | 0.80              |
| 1:A:332:G:H1'    | 1:A:333:G:H4'    | 1.64                     | 0.80              |
| 1:A:34:U:H2'     | 1:A:35:A:C4      | 2.16                     | 0.80              |
| 1:A:2440:G:N2    | 1:A:2483:C:C2    | 2.50                     | 0.80              |
| 2:C:449:PHE:HD1  | 2:C:452:LEU:HD12 | 1.47                     | 0.80              |
| 1:A:193:U:C4     | 1:A:345:A:N7     | 2.50                     | 0.80              |
| 1:A:88:A:OP1     | 1:A:400:A:O2'    | 2.00                     | 0.80              |
| 1:A:182:U:O2     | 1:A:353:C:N3     | 2.15                     | 0.80              |
| 1:A:561:G:N1     | 1:A:563:A:N6     | 2.30                     | 0.80              |
| 1:A:397:C:O2     | 1:A:465:G:N2     | 2.14                     | 0.80              |
| 1:A:7:C:N3       | 1:A:391:G:C2     | 2.50                     | 0.80              |
| 1:A:269:G:N1     | 1:A:291:U:N3     | 2.29                     | 0.80              |
| 1:A:125:U:H3     | 1:A:127:A:H62    | 1.30                     | 0.79              |
| 2:C:4:THR:HA     | 2:C:70:ILE:HA    | 1.62                     | 0.79              |
| 1:A:82:A:H62     | 1:A:97:A:N6      | 1.80                     | 0.79              |
| 1:A:354:C:O2'    | 1:A:2412:A:O2'   | 2.00                     | 0.79              |
| 1:A:235:A:N1     | 1:A:253:U:C4     | 2.51                     | 0.79              |
| 1:A:2447:A:H2    | 1:A:2475:G:H1    | 0.82                     | 0.79              |
| 1:A:477:U:C2     | 1:A:521:G:C2     | 2.71                     | 0.79              |
| 1:A:2433:G:H22   | 1:A:2490:C:H2'   | 1.47                     | 0.79              |
| 2:C:332:ILE:HA   | 2:C:336:LEU:HD21 | 1.65                     | 0.79              |
| 2:C:464:LEU:HA   | 2:C:467:ILE:HD12 | 1.63                     | 0.79              |
| 1:A:398:C:C2     | 1:A:464:G:N2     | 2.51                     | 0.78              |
| 2:C:402:LYS:HD3  | 2:C:418:LYS:HA   | 1.64                     | 0.78              |
| 1:A:270:U:H2'    | 1:A:271:A:H8     | 1.48                     | 0.78              |
| 1:A:412:C:H5'    | 1:A:2460:U:H1'   | 1.62                     | 0.78              |
| 1:A:464:G:H2'    | 1:A:465:G:H8     | 1.47                     | 0.78              |
| 2:C:398:ILE:HG23 | 2:C:403:ILE:HB   | 1.65                     | 0.78              |

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| Atom-1         | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|------------------|--------------------------|-------------------|
| 1:A:37:G:N2    | 1:A:39:U:OP1     | 2.15                     | 0.78              |
| 1:A:2451:C:H2' | 1:A:2452:A:C8    | 2.18                     | 0.78              |
| 1:A:381:C:H2'  | 1:A:382:A:C8     | 2.18                     | 0.78              |
| 1:A:572:A:H2'  | 1:A:573:A:C8     | 2.18                     | 0.78              |
| 1:A:339:A:H2'  | 1:A:340:A:C8     | 2.19                     | 0.78              |
| 1:A:485:G:O2'  | 1:A:512:G:N2     | 2.17                     | 0.78              |
| 1:A:119:A:OP2  | 1:A:162:A:N6     | 2.17                     | 0.78              |
| 1:A:561:G:C2   | 1:A:569:U:C2     | 2.71                     | 0.78              |
| 1:A:25:C:N4    | 1:A:375:A:N6     | 2.31                     | 0.78              |
| 1:A:28:G:C2    | 1:A:45:U:C2      | 2.71                     | 0.78              |
| 1:A:71:A:H2'   | 1:A:72:A:H8      | 1.49                     | 0.78              |
| 1:A:561:G:C6   | 1:A:569:U:N3     | 2.52                     | 0.77              |
| 2:C:333:HIS:HA | 2:C:337:LYS:HA   | 1.65                     | 0.77              |
| 1:A:357:G:H3'  | 1:A:358:A:H4'    | 1.66                     | 0.77              |
| 1:A:378:U:H2'  | 1:A:379:A:H8     | 1.48                     | 0.77              |
| 1:A:538:U:N3   | 1:A:598:G:C6     | 2.53                     | 0.77              |
| 1:A:81:A:H2'   | 1:A:82:A:C8      | 2.20                     | 0.77              |
| 1:A:82:A:N6    | 1:A:97:A:C5      | 2.53                     | 0.77              |
| 1:A:476:C:O2   | 1:A:521:G:N1     | 2.16                     | 0.77              |
| 2:C:114:VAL:HA | 2:C:117:ILE:HG12 | 1.65                     | 0.77              |
| 1:A:401:A:N6   | 1:A:461:C:O2     | 2.16                     | 0.77              |
| 1:A:539:A:H2'  | 1:A:540:A:C8     | 2.19                     | 0.77              |
| 1:A:541:A:H2'  | 1:A:542:A:C8     | 2.20                     | 0.77              |
| 2:C:10:ARG:NH1 | 2:C:36:TYR:OH    | 2.17                     | 0.77              |
| 1:A:140:C:N3   | 1:A:244:U:O4     | 2.17                     | 0.77              |
| 1:A:381:C:H2'  | 1:A:382:A:H8     | 1.48                     | 0.77              |
| 1:A:439:G:N1   | 1:A:442:C:OP2    | 2.18                     | 0.77              |
| 2:C:345:THR:HA | 2:C:346:LEU:HD12 | 1.64                     | 0.77              |
| 1:A:220:G:N2   | 1:A:228:U:O2'    | 2.17                     | 0.77              |
| 1:A:6:C:N4     | 1:A:391:G:H1     | 1.83                     | 0.76              |
| 1:A:2442:G:C6  | 1:A:2481:U:C4    | 2.73                     | 0.76              |
| 1:A:37:G:H3'   | 1:A:38:G:H8      | 1.48                     | 0.76              |
| 1:A:2436:G:C2  | 1:A:2488:U:C2    | 2.73                     | 0.76              |
| 1:A:6:C:C4     | 1:A:469:C:N4     | 2.54                     | 0.76              |
| 1:A:269:G:H2'  | 1:A:270:U:C6     | 2.19                     | 0.76              |
| 1:A:404:A:N6   | 1:A:459:U:O4     | 2.19                     | 0.76              |
| 1:A:2442:G:O6  | 1:A:2481:U:C4    | 2.39                     | 0.76              |
| 1:A:374:G:H2'  | 1:A:375:A:H8     | 1.50                     | 0.76              |
| 1:A:435:U:N3   | 1:A:445:G:O6     | 2.19                     | 0.76              |
| 1:A:557:G:O6   | 1:A:581:C:N4     | 2.18                     | 0.76              |
| 1:A:125:U:H5'  | 1:A:149:A:H5''   | 1.66                     | 0.76              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 2:C:84:VAL:HG21 | 2:C:197:GLY:HA2 | 1.66                     | 0.76              |
| 1:A:141:A:C2    | 1:A:243:G:C6    | 2.73                     | 0.76              |
| 1:A:432:G:N3    | 1:A:453:A:N7    | 2.33                     | 0.76              |
| 1:A:2440:G:N1   | 1:A:2483:C:N3   | 2.34                     | 0.76              |
| 1:A:322:G:H3'   | 1:A:323:A:H8    | 1.49                     | 0.75              |
| 1:A:2450:C:OP1  | 1:A:2468:A:N6   | 2.19                     | 0.75              |
| 1:A:25:C:H42    | 1:A:375:A:N6    | 1.84                     | 0.75              |
| 1:A:185:A:N1    | 1:A:2401:C:H1'  | 2.01                     | 0.75              |
| 2:C:414:PRO:HG2 | 2:C:461:TYR:HB2 | 1.69                     | 0.75              |
| 1:A:317:U:O2    | 1:A:332:G:N2    | 2.19                     | 0.75              |
| 1:A:2446:C:N3   | 1:A:2476:G:N1   | 2.33                     | 0.75              |
| 1:A:37:G:O2'    | 1:A:38:G:OP1    | 2.04                     | 0.75              |
| 1:A:183:A:C5    | 1:A:352:G:C6    | 2.75                     | 0.75              |
| 1:A:2433:G:N2   | 1:A:2490:C:O2   | 2.19                     | 0.75              |
| 2:C:184:MET:HG3 | 2:C:185:LYS:HG3 | 1.68                     | 0.75              |
| 1:A:561:G:N2    | 1:A:562:G:O6    | 2.19                     | 0.75              |
| 1:A:234:G:N1    | 1:A:256:A:N1    | 2.34                     | 0.75              |
| 1:A:397:C:H2'   | 1:A:398:C:C6    | 2.22                     | 0.75              |
| 2:C:55:LEU:N    | 2:C:58:THR:O    | 2.18                     | 0.75              |
| 1:A:464:G:H2'   | 1:A:465:G:C8    | 2.20                     | 0.75              |
| 1:A:2401:C:OP1  | 1:A:2404:A:N6   | 2.19                     | 0.75              |
| 2:C:486:SER:H   | 2:C:523:ALA:HB3 | 1.52                     | 0.75              |
| 1:A:9:A:C6      | 1:A:389:G:C6    | 2.74                     | 0.74              |
| 1:A:37:G:H21    | 1:A:371:C:H41   | 1.35                     | 0.74              |
| 1:A:41:C:H2'    | 1:A:42:U:H6     | 1.52                     | 0.74              |
| 1:A:82:A:N7     | 1:A:97:A:N1     | 2.34                     | 0.74              |
| 1:A:2448:A:H2'  | 1:A:2449:A:C4   | 2.23                     | 0.74              |
| 1:A:132:C:H42   | 1:A:147:G:H1    | 1.35                     | 0.74              |
| 2:C:89:ILE:O    | 2:C:98:ARG:N    | 2.19                     | 0.74              |
| 1:A:403:C:H3'   | 1:A:404:A:C8    | 2.22                     | 0.74              |
| 1:A:2468:A:O2'  | 1:A:2470:A:N6   | 2.20                     | 0.74              |
| 1:A:-6:C:N4     | 2:C:457:TYR:OH  | 2.21                     | 0.74              |
| 1:A:145:G:O6    | 1:A:242:U:C4    | 2.40                     | 0.74              |
| 1:A:269:G:N1    | 1:A:291:U:C2    | 2.56                     | 0.74              |
| 1:A:389:G:H2'   | 1:A:390:G:C8    | 2.23                     | 0.73              |
| 1:A:473:G:O6    | 1:A:524:C:N4    | 2.19                     | 0.73              |
| 2:C:28:ARG:HG2  | 2:C:31:LEU:HD22 | 1.70                     | 0.73              |
| 1:A:145:G:O6    | 1:A:242:U:O4    | 2.05                     | 0.73              |
| 1:A:176:A:N6    | 1:A:355:G:O2'   | 2.21                     | 0.73              |
| 1:A:-2:A:H2'    | 1:A:-1:A:C8     | 2.24                     | 0.73              |
| 2:C:4:THR:OG1   | 2:C:5:MET:N     | 2.21                     | 0.73              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 2:C:184:MET:SD  | 2:C:185:LYS:NZ   | 2.62                     | 0.73              |
| 1:A:-5:C:N4     | 1:A:275:U:O2'    | 2.21                     | 0.73              |
| 2:C:321:CYS:SG  | 2:C:325:LYS:NZ   | 2.61                     | 0.73              |
| 2:C:325:LYS:HA  | 2:C:328:LEU:HD12 | 1.70                     | 0.73              |
| 1:A:2446:C:N4   | 1:A:2476:G:O6    | 2.18                     | 0.73              |
| 1:A:28:G:N1     | 1:A:45:U:N3      | 2.37                     | 0.72              |
| 1:A:7:C:N3      | 1:A:391:G:N1     | 2.37                     | 0.72              |
| 1:A:522:U:H2'   | 1:A:523:A:C8     | 2.23                     | 0.72              |
| 1:A:2386:G:N2   | 1:A:2389:C:O2    | 2.21                     | 0.72              |
| 1:A:562:G:N2    | 1:A:567:C:O2     | 2.23                     | 0.72              |
| 1:A:2468:A:H2'  | 1:A:2469:C:C5    | 2.25                     | 0.72              |
| 1:A:5:G:C2      | 1:A:2420:A:C5    | 2.77                     | 0.72              |
| 1:A:427:A:H2    | 1:A:428:A:H62    | 1.36                     | 0.72              |
| 1:A:572:A:H2'   | 1:A:573:A:H8     | 1.53                     | 0.72              |
| 2:C:21:GLU:O    | 2:C:23:PHE:N     | 2.16                     | 0.72              |
| 2:C:139:CYS:O   | 2:C:143:LEU:N    | 2.21                     | 0.72              |
| 1:A:71:A:H2'    | 1:A:72:A:C8      | 2.23                     | 0.72              |
| 2:C:155:TRP:HB3 | 2:C:318:LYS:HB2  | 1.72                     | 0.72              |
| 1:A:105:A:H2'   | 1:A:106:G:H4'    | 1.71                     | 0.72              |
| 1:A:2445:G:O6   | 1:A:2477:U:N3    | 2.19                     | 0.72              |
| 1:A:2445:G:OP2  | 1:A:2471:A:N6    | 2.21                     | 0.72              |
| 1:A:25:C:N4     | 1:A:375:A:H61    | 1.87                     | 0.72              |
| 1:A:545:A:OP1   | 2:C:198:TYR:OH   | 2.08                     | 0.72              |
| 1:A:590:C:H2'   | 1:A:591:A:C8     | 2.24                     | 0.72              |
| 1:A:54:U:N3     | 1:A:298:U:O4     | 2.23                     | 0.71              |
| 1:A:396:C:C2    | 1:A:466:G:C2     | 2.78                     | 0.71              |
| 1:A:539:A:N6    | 1:A:597:A:N3     | 2.37                     | 0.71              |
| 1:A:6:C:H42     | 1:A:391:G:H1     | 1.36                     | 0.71              |
| 1:A:127:A:H61   | 1:A:155:G:H1'    | 1.54                     | 0.71              |
| 1:A:263:A:H2'   | 1:A:264:G:C4     | 2.25                     | 0.71              |
| 1:A:431:A:H62   | 1:A:450:U:H1'    | 1.52                     | 0.71              |
| 1:A:467:U:O2'   | 1:A:2486:A:N6    | 2.23                     | 0.71              |
| 1:A:50:A:H4'    | 1:A:51:A:H3'     | 1.72                     | 0.71              |
| 1:A:563:A:H4'   | 1:A:564:A:C6     | 2.25                     | 0.71              |
| 1:A:356:A:O2'   | 1:A:2412:A:OP1   | 2.05                     | 0.71              |
| 1:A:130:U:O2    | 1:A:152:A:N6     | 2.24                     | 0.71              |
| 2:C:133:PHE:O   | 2:C:305:ARG:NH2  | 2.24                     | 0.71              |
| 2:C:195:LYS:HA  | 2:C:207:THR:HG23 | 1.71                     | 0.71              |
| 1:A:494:G:N1    | 1:A:505:U:O4     | 2.23                     | 0.71              |
| 1:A:441:A:H1'   | 1:A:2475:G:H1'   | 1.73                     | 0.71              |
| 2:C:13:LYS:O    | 2:C:32:ARG:NH2   | 2.24                     | 0.71              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:563:A:N7     | 2:C:10:ARG:NE    | 2.39                     | 0.70              |
| 2:C:134:ARG:NH1  | 2:C:149:GLU:OE2  | 2.19                     | 0.70              |
| 2:C:52:LYS:NZ    | 2:C:57:ASP:O     | 2.22                     | 0.70              |
| 2:C:302:LYS:HG2  | 2:C:303:TYR:H    | 1.56                     | 0.70              |
| 1:A:235:A:O2'    | 1:A:236:G:O4'    | 2.07                     | 0.70              |
| 1:A:273:G:N1     | 1:A:288:U:N3     | 2.39                     | 0.70              |
| 1:A:600:A:OP1    | 1:A:2387:A:N6    | 2.23                     | 0.70              |
| 1:A:2446:C:H3'   | 1:A:2447:A:H8    | 1.57                     | 0.70              |
| 1:A:12:U:N3      | 1:A:15:G:N7      | 2.40                     | 0.70              |
| 2:C:104:THR:O    | 2:C:108:LYS:N    | 2.22                     | 0.70              |
| 1:A:31:G:C2      | 1:A:42:U:C2      | 2.79                     | 0.70              |
| 1:A:319:U:O2     | 1:A:335:A:N6     | 2.25                     | 0.70              |
| 2:C:128:ASP:HB3  | 2:C:305:ARG:HH22 | 1.55                     | 0.70              |
| 1:A:78:C:H2'     | 1:A:79:C:C6      | 2.27                     | 0.70              |
| 1:A:545:A:O2'    | 1:A:590:C:O2     | 2.07                     | 0.70              |
| 1:A:525:A:N3     | 1:A:526:G:N1     | 2.39                     | 0.70              |
| 1:A:2414:A:N7    | 1:A:2415:G:N2    | 2.40                     | 0.70              |
| 1:A:2453:G:H1    | 1:A:2470:A:N6    | 1.89                     | 0.70              |
| 1:A:374:G:H2'    | 1:A:375:A:C8     | 2.26                     | 0.69              |
| 1:A:221:U:H5'    | 2:C:375:VAL:HG22 | 1.74                     | 0.69              |
| 1:A:401:A:H61    | 1:A:461:C:H1'    | 1.57                     | 0.69              |
| 1:A:428:A:H2'    | 1:A:429:A:C5     | 2.27                     | 0.69              |
| 2:C:144:LYS:HD2  | 2:C:444:GLY:HA3  | 1.73                     | 0.69              |
| 2:C:38:VAL:O     | 2:C:42:ASN:N     | 2.24                     | 0.69              |
| 1:A:2477:U:H2'   | 1:A:2478:A:H8    | 1.57                     | 0.69              |
| 1:A:448:C:H2'    | 1:A:449:U:O4'    | 1.92                     | 0.69              |
| 1:A:2442:G:C2    | 1:A:2481:U:C2    | 2.81                     | 0.69              |
| 2:C:117:ILE:O    | 2:C:120:SER:OG   | 2.09                     | 0.69              |
| 2:C:220:LEU:HD12 | 2:C:220:LEU:H    | 1.57                     | 0.69              |
| 1:A:83:A:H2'     | 1:A:84:A:C4      | 2.28                     | 0.69              |
| 1:A:139:A:N1     | 1:A:245:C:N4     | 2.40                     | 0.69              |
| 1:A:217:U:H3     | 1:A:230:G:H22    | 1.41                     | 0.69              |
| 1:A:283:U:HO2'   | 1:A:284:G:H8     | 1.40                     | 0.69              |
| 1:A:303:A:H3'    | 1:A:304:C:H6     | 1.58                     | 0.69              |
| 1:A:404:A:N6     | 1:A:460:G:N1     | 2.40                     | 0.69              |
| 1:A:437:U:H2'    | 1:A:444:A:H1'    | 1.75                     | 0.69              |
| 2:C:335:LYS:O    | 2:C:337:LYS:NZ   | 2.25                     | 0.69              |
| 1:A:398:C:O2     | 1:A:464:G:C2     | 2.46                     | 0.69              |
| 2:C:448:ASN:OD1  | 2:C:451:GLN:N    | 2.24                     | 0.69              |
| 1:A:270:U:H2'    | 1:A:271:A:C8     | 2.27                     | 0.69              |
| 1:A:162:A:H5''   | 1:A:163:A:H8     | 1.58                     | 0.68              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:262:A:H2'    | 1:A:263:A:C4    | 2.28                     | 0.68              |
| 1:A:476:C:H2'    | 1:A:477:U:C6    | 2.28                     | 0.68              |
| 1:A:173:G:H2'    | 1:A:174:A:H8    | 1.58                     | 0.68              |
| 1:A:223:A:N6     | 2:C:457:TYR:OH  | 2.26                     | 0.68              |
| 1:A:-10:A:OP2    | 1:A:221:U:N3    | 2.24                     | 0.68              |
| 2:C:237:LYS:HD2  | 2:C:303:TYR:H   | 1.58                     | 0.68              |
| 1:A:318:G:N2     | 1:A:331:U:O2'   | 2.24                     | 0.68              |
| 1:A:396:C:C2     | 1:A:466:G:N1    | 2.62                     | 0.68              |
| 1:A:543:U:H2'    | 1:A:545:A:N6    | 2.08                     | 0.68              |
| 1:A:137:A:H2'    | 1:A:138:G:O4'   | 1.93                     | 0.68              |
| 1:A:142:A:N6     | 1:A:147:G:O6    | 2.26                     | 0.68              |
| 2:C:53:GLY:N     | 2:C:57:ASP:O    | 2.25                     | 0.68              |
| 2:C:84:VAL:HG22  | 2:C:212:PRO:HD2 | 1.75                     | 0.68              |
| 2:C:344:LYS:H    | 2:C:344:LYS:HD3 | 1.57                     | 0.68              |
| 2:C:361:ILE:HG13 | 2:C:386:LEU:HG  | 1.76                     | 0.68              |
| 2:C:484:ASP:O    | 2:C:488:SER:OG  | 2.07                     | 0.68              |
| 1:A:29:U:H2'     | 1:A:30:A:C8     | 2.28                     | 0.68              |
| 1:A:38:G:N3      | 1:A:39:U:N3     | 2.42                     | 0.68              |
| 1:A:108:G:H5''   | 1:A:109:C:H5    | 1.58                     | 0.68              |
| 1:A:313:A:H2'    | 1:A:314:A:N3    | 2.09                     | 0.68              |
| 1:A:76:A:N6      | 1:A:111:C:O2    | 2.27                     | 0.68              |
| 1:A:87:G:N1      | 1:A:398:C:O2'   | 2.24                     | 0.67              |
| 1:A:115:U:H2'    | 1:A:116:G:H8    | 1.59                     | 0.67              |
| 1:A:233:A:H1'    | 1:A:256:A:C5    | 2.28                     | 0.67              |
| 1:A:380:A:H2'    | 1:A:381:C:C6    | 2.29                     | 0.67              |
| 1:A:459:U:H3'    | 1:A:460:G:H8    | 1.59                     | 0.67              |
| 1:A:70:C:H2'     | 1:A:71:A:H8     | 1.59                     | 0.67              |
| 1:A:544:U:O3'    | 2:C:204:TYR:OH  | 2.12                     | 0.67              |
| 1:A:242:U:C4     | 1:A:243:G:O6    | 2.48                     | 0.67              |
| 1:A:317:U:N3     | 1:A:332:G:N1    | 2.42                     | 0.67              |
| 1:A:432:G:O2'    | 1:A:454:A:O2'   | 2.06                     | 0.67              |
| 1:A:2451:C:H2'   | 1:A:2452:A:H8   | 1.58                     | 0.67              |
| 2:C:5:MET:HB3    | 2:C:43:LEU:HD21 | 1.75                     | 0.67              |
| 1:A:229:C:H2'    | 1:A:230:G:C8    | 2.29                     | 0.67              |
| 2:C:9:GLU:HB3    | 2:C:36:TYR:HE1  | 1.59                     | 0.67              |
| 2:C:241:ASP:OD1  | 2:C:244:SER:OG  | 2.12                     | 0.67              |
| 1:A:2398:A:OP2   | 1:A:2421:C:O2'  | 2.10                     | 0.67              |
| 1:A:0:C:OP2      | 1:A:1:G:N2      | 2.27                     | 0.67              |
| 1:A:19:U:H2'     | 1:A:20:U:C6     | 2.30                     | 0.67              |
| 1:A:24:U:H3      | 1:A:375:A:H61   | 1.42                     | 0.67              |
| 1:A:70:C:H2'     | 1:A:71:A:C8     | 2.30                     | 0.67              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:136:A:N6    | 1:A:238:A:O2'    | 2.28                     | 0.67              |
| 1:A:268:G:H2'   | 1:A:269:G:C8     | 2.30                     | 0.67              |
| 1:A:285:G:H2'   | 1:A:286:A:H8     | 1.58                     | 0.67              |
| 2:C:96:LYS:HZ3  | 2:C:308:ASP:H    | 1.41                     | 0.67              |
| 1:A:194:U:O2'   | 1:A:195:U:O4'    | 2.13                     | 0.67              |
| 1:A:242:U:N3    | 1:A:243:G:O6     | 2.28                     | 0.67              |
| 2:C:327:GLN:HA  | 2:C:330:LEU:HD12 | 1.76                     | 0.67              |
| 1:A:68:G:O2'    | 1:A:69:C:OP1     | 2.13                     | 0.67              |
| 1:A:319:U:H2'   | 1:A:320:A:C8     | 2.29                     | 0.67              |
| 1:A:402:A:H3'   | 1:A:403:C:H5'    | 1.76                     | 0.67              |
| 1:A:81:A:H2'    | 1:A:82:A:H8      | 1.60                     | 0.67              |
| 1:A:1:G:N2      | 1:A:2:U:O4       | 2.28                     | 0.66              |
| 1:A:2411:G:N2   | 1:A:2414:A:OP2   | 2.28                     | 0.66              |
| 2:C:470:LYS:O   | 2:C:472:LYS:NZ   | 2.27                     | 0.66              |
| 1:A:466:G:H2'   | 1:A:467:U:C6     | 2.29                     | 0.66              |
| 1:A:2401:C:O2   | 1:A:2402:G:N2    | 2.29                     | 0.66              |
| 2:C:19:ILE:H    | 2:C:184:MET:HE1  | 1.60                     | 0.66              |
| 1:A:101:G:O2'   | 1:A:103:A:OP1    | 2.12                     | 0.66              |
| 1:A:548:A:H1'   | 1:A:588:G:H1     | 1.60                     | 0.66              |
| 1:A:2395:C:N4   | 1:A:2432:C:O2    | 2.25                     | 0.66              |
| 2:C:154:ARG:H   | 2:C:248:ILE:HG21 | 1.59                     | 0.66              |
| 1:A:5:G:O2'     | 1:A:2420:A:N6    | 2.22                     | 0.66              |
| 1:A:428:A:OP2   | 1:A:429:A:N6     | 2.27                     | 0.66              |
| 1:A:489:G:N2    | 1:A:514:C:OP1    | 2.28                     | 0.66              |
| 2:C:91:LYS:NZ   | 2:C:442:TYR:OH   | 2.29                     | 0.66              |
| 2:C:167:ASN:HB2 | 2:C:338:MET:SD   | 2.35                     | 0.66              |
| 1:A:161:C:H3'   | 1:A:162:A:H4'    | 1.77                     | 0.66              |
| 1:A:173:G:H2'   | 1:A:174:A:C8     | 2.30                     | 0.66              |
| 1:A:356:A:H3'   | 1:A:357:G:H8     | 1.61                     | 0.66              |
| 1:A:269:G:N2    | 1:A:291:U:O2     | 2.28                     | 0.66              |
| 1:A:348:C:H2'   | 1:A:349:G:C8     | 2.31                     | 0.66              |
| 2:C:322:GLN:CD  | 2:C:322:GLN:H    | 2.02                     | 0.66              |
| 1:A:165:G:H2'   | 1:A:166:U:H6     | 1.60                     | 0.66              |
| 1:A:247:G:H2'   | 1:A:251:C:N4     | 2.10                     | 0.66              |
| 1:A:552:G:H21   | 1:A:583:A:H2'    | 1.61                     | 0.66              |
| 1:A:527:U:C4    | 1:A:2394:A:N1    | 2.64                     | 0.66              |
| 1:A:538:U:C4    | 1:A:598:G:N1     | 2.63                     | 0.66              |
| 1:A:59:C:H2'    | 1:A:60:A:H8      | 1.59                     | 0.66              |
| 1:A:433:G:H2'   | 1:A:434:C:C6     | 2.30                     | 0.66              |
| 1:A:484:A:H3'   | 1:A:487:C:H41    | 1.61                     | 0.66              |
| 1:A:533:U:O2'   | 1:A:2386:G:N1    | 2.29                     | 0.66              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 2:C:155:TRP:H   | 2:C:350:SER:HA   | 1.60                     | 0.66              |
| 1:A:390:G:H2'   | 1:A:391:G:H8     | 1.61                     | 0.65              |
| 1:A:534:G:N2    | 1:A:2388:A:N7    | 2.44                     | 0.65              |
| 2:C:161:ILE:HA  | 2:C:341:SER:HB2  | 1.78                     | 0.65              |
| 1:A:2:U:H3'     | 1:A:3:G:C8       | 2.31                     | 0.65              |
| 1:A:2446:C:H41  | 1:A:2471:A:H2    | 1.43                     | 0.65              |
| 2:C:118:LEU:O   | 2:C:122:TYR:N    | 2.29                     | 0.65              |
| 1:A:193:U:H2'   | 1:A:206:A:C8     | 2.31                     | 0.65              |
| 1:A:213:A:H62   | 1:A:336:A:H61    | 1.45                     | 0.65              |
| 1:A:408:A:C8    | 1:A:452:A:H2'    | 2.31                     | 0.65              |
| 1:A:528:U:N3    | 1:A:2393:A:N6    | 2.35                     | 0.65              |
| 1:A:585:A:N6    | 2:C:198:TYR:OH   | 2.29                     | 0.65              |
| 1:A:-3:U:O2'    | 1:A:282:G:N2     | 2.28                     | 0.65              |
| 1:A:145:G:N1    | 1:A:242:U:C5     | 2.65                     | 0.65              |
| 1:A:544:U:OP2   | 1:A:546:A:N6     | 2.29                     | 0.65              |
| 1:A:-8:A:C6     | 1:A:224:U:C4     | 2.83                     | 0.65              |
| 1:A:-7:U:H2'    | 1:A:-6:C:C2      | 2.31                     | 0.65              |
| 1:A:47:U:H2'    | 1:A:48:G:C8      | 2.31                     | 0.65              |
| 1:A:162:A:H5'   | 1:A:163:A:H3'    | 1.76                     | 0.65              |
| 1:A:361:C:H2'   | 1:A:362:U:H6     | 1.61                     | 0.65              |
| 1:A:477:U:C4    | 1:A:521:G:C6     | 2.84                     | 0.65              |
| 1:A:2441:U:H2'  | 1:A:2442:G:C8    | 2.32                     | 0.65              |
| 1:A:61:G:H2'    | 1:A:62:A:C8      | 2.32                     | 0.65              |
| 1:A:126:G:O6    | 1:A:155:G:O2'    | 2.14                     | 0.65              |
| 1:A:2442:G:N1   | 1:A:2481:U:C2    | 2.65                     | 0.65              |
| 1:A:136:A:C8    | 1:A:240:A:H1'    | 2.31                     | 0.65              |
| 1:A:207:G:H1    | 1:A:342:C:H2'    | 1.61                     | 0.65              |
| 1:A:519:G:H2'   | 1:A:520:G:H8     | 1.62                     | 0.65              |
| 1:A:2452:A:H2   | 1:A:2472:G:H22   | 1.45                     | 0.65              |
| 2:C:243:GLU:O   | 2:C:247:ARG:N    | 2.28                     | 0.65              |
| 1:A:86:C:H5''   | 1:A:89:A:H61     | 1.61                     | 0.65              |
| 1:A:556:A:H4'   | 2:C:186:MET:H    | 1.61                     | 0.65              |
| 2:C:408:LYS:HD3 | 2:C:415:VAL:HG21 | 1.77                     | 0.65              |
| 1:A:25:C:N3     | 1:A:375:A:N1     | 2.44                     | 0.65              |
| 1:A:477:U:C2    | 1:A:521:G:N1     | 2.65                     | 0.65              |
| 1:A:561:G:C2    | 1:A:569:U:O2     | 2.50                     | 0.65              |
| 1:A:2445:G:C6   | 1:A:2478:A:C6    | 2.85                     | 0.65              |
| 1:A:2447:A:N6   | 1:A:2471:A:N3    | 2.45                     | 0.65              |
| 2:C:21:GLU:C    | 2:C:23:PHE:H     | 2.01                     | 0.65              |
| 1:A:208:U:N3    | 1:A:342:C:O2     | 2.30                     | 0.64              |
| 1:A:590:C:O2'   | 1:A:591:A:O4'    | 2.11                     | 0.64              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2440:G:C2   | 1:A:2483:C:O2    | 2.50                     | 0.64              |
| 2:C:359:TYR:OH  | 2:C:442:TYR:O    | 2.14                     | 0.64              |
| 1:A:304:C:H2'   | 1:A:305:A:C8     | 2.33                     | 0.64              |
| 1:A:591:A:N6    | 1:A:592:A:H61    | 1.91                     | 0.64              |
| 2:C:402:LYS:HB3 | 2:C:418:LYS:HB3  | 1.80                     | 0.64              |
| 1:A:51:A:H5''   | 1:A:267:A:H62    | 1.62                     | 0.64              |
| 1:A:4:C:H1'     | 1:A:386:A:C5     | 2.31                     | 0.64              |
| 1:A:122:C:H2'   | 1:A:123:G:C8     | 2.33                     | 0.64              |
| 2:C:156:PHE:HE1 | 2:C:351:SER:HA   | 1.62                     | 0.64              |
| 1:A:53:A:C6     | 1:A:298:U:N3     | 2.66                     | 0.64              |
| 1:A:128:G:O6    | 1:A:154:U:O4     | 2.16                     | 0.64              |
| 1:A:562:G:H2'   | 1:A:563:A:O4'    | 1.98                     | 0.64              |
| 1:A:-8:A:N1     | 1:A:225:G:O6     | 2.22                     | 0.64              |
| 1:A:377:U:H2'   | 1:A:378:U:C6     | 2.33                     | 0.64              |
| 1:A:562:G:N1    | 1:A:569:U:OP1    | 2.30                     | 0.64              |
| 2:C:398:ILE:HA  | 2:C:403:ILE:HD12 | 1.79                     | 0.64              |
| 1:A:81:A:H62    | 1:A:94:G:H8      | 1.44                     | 0.64              |
| 1:A:250:A:H1'   | 1:A:251:C:C2     | 2.32                     | 0.64              |
| 2:C:128:ASP:HB3 | 2:C:305:ARG:HH12 | 1.62                     | 0.64              |
| 1:A:389:G:O2'   | 1:A:390:G:OP1    | 2.15                     | 0.64              |
| 2:C:302:LYS:HB3 | 2:C:314:VAL:N    | 2.13                     | 0.64              |
| 1:A:132:C:H2'   | 1:A:133:C:C6     | 2.33                     | 0.64              |
| 1:A:527:U:N3    | 1:A:2394:A:C6    | 2.66                     | 0.64              |
| 2:C:432:TYR:OH  | 2:C:466:THR:OG1  | 2.16                     | 0.64              |
| 1:A:-2:A:C6     | 1:A:282:G:N1     | 2.66                     | 0.64              |
| 1:A:488:U:H3    | 1:A:504:C:P      | 2.21                     | 0.64              |
| 1:A:548:A:H1'   | 1:A:588:G:H22    | 1.63                     | 0.64              |
| 1:A:289:U:H2'   | 1:A:290:A:C8     | 2.33                     | 0.63              |
| 1:A:2442:G:O6   | 1:A:2481:U:O4    | 2.16                     | 0.63              |
| 1:A:105:A:H3'   | 1:A:105:A:N3     | 2.13                     | 0.63              |
| 1:A:407:A:H3'   | 1:A:408:A:H2     | 1.63                     | 0.63              |
| 1:A:2390:A:H2'  | 1:A:2391:A:C8    | 2.34                     | 0.63              |
| 2:C:221:LEU:HA  | 2:C:224:ILE:HD12 | 1.80                     | 0.63              |
| 1:A:64:A:H2'    | 1:A:65:A:C8      | 2.34                     | 0.63              |
| 1:A:76:A:H61    | 1:A:111:C:H1'    | 1.64                     | 0.63              |
| 1:A:145:G:N1    | 1:A:242:U:C4     | 2.66                     | 0.63              |
| 1:A:264:G:N2    | 1:A:306:U:O2     | 2.23                     | 0.63              |
| 1:A:356:A:H3'   | 1:A:357:G:C8     | 2.34                     | 0.63              |
| 1:A:531:U:H2'   | 1:A:532:G:C8     | 2.33                     | 0.63              |
| 2:C:33:PRO:HA   | 2:C:36:TYR:HB3   | 1.79                     | 0.63              |
| 2:C:133:PHE:HA  | 2:C:305:ARG:NE   | 2.13                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:156:PHE:HB3  | 2:C:315:LYS:HE3  | 1.80                     | 0.63              |
| 1:A:1:G:N1       | 1:A:105:A:OP1    | 2.31                     | 0.63              |
| 2:C:248:ILE:HG13 | 2:C:316:GLY:HA2  | 1.81                     | 0.63              |
| 1:A:248:A:H8     | 1:A:250:A:C6     | 2.15                     | 0.63              |
| 1:A:164:U:H2'    | 1:A:165:G:C8     | 2.34                     | 0.63              |
| 1:A:201:A:H4'    | 1:A:202:C:OP1    | 1.97                     | 0.63              |
| 1:A:237:G:N3     | 1:A:250:A:N6     | 2.46                     | 0.63              |
| 1:A:489:G:N1     | 1:A:515:A:N6     | 2.46                     | 0.63              |
| 1:A:2400:U:H3'   | 1:A:2423:U:N3    | 2.14                     | 0.63              |
| 1:A:48:G:N1      | 1:A:60:A:C6      | 2.67                     | 0.63              |
| 1:A:174:A:N6     | 1:A:361:C:N4     | 2.47                     | 0.63              |
| 2:C:344:LYS:HB3  | 2:C:345:THR:HG23 | 1.80                     | 0.63              |
| 1:A:7:C:H4'      | 1:A:517:A:H5''   | 1.81                     | 0.63              |
| 1:A:42:U:H2'     | 1:A:43:A:C8      | 2.34                     | 0.63              |
| 1:A:259:A:N6     | 1:A:311:A:N1     | 2.47                     | 0.63              |
| 1:A:433:G:O4'    | 1:A:453:A:N6     | 2.32                     | 0.63              |
| 1:A:589:G:H2'    | 1:A:590:C:C2     | 2.34                     | 0.63              |
| 1:A:2408:U:OP2   | 1:A:2409:C:N4    | 2.32                     | 0.63              |
| 1:A:33:U:H2'     | 1:A:34:U:C2      | 2.34                     | 0.63              |
| 1:A:332:G:N2     | 1:A:333:G:O2'    | 2.32                     | 0.62              |
| 2:C:51:THR:N     | 2:C:58:THR:OG1   | 2.32                     | 0.62              |
| 2:C:460:GLU:O    | 2:C:464:LEU:HG   | 1.97                     | 0.62              |
| 1:A:28:G:O4'     | 1:A:62:A:O2'     | 2.17                     | 0.62              |
| 1:A:125:U:H3     | 1:A:127:A:N6     | 1.96                     | 0.62              |
| 1:A:552:G:O2'    | 1:A:554:U:O2     | 2.17                     | 0.62              |
| 2:C:114:VAL:HG11 | 2:C:217:LEU:HD13 | 1.80                     | 0.62              |
| 2:C:336:LEU:HD23 | 2:C:336:LEU:H    | 1.65                     | 0.62              |
| 1:A:128:G:C2     | 1:A:154:U:O2     | 2.52                     | 0.62              |
| 1:A:128:G:O6     | 1:A:154:U:C4     | 2.52                     | 0.62              |
| 1:A:273:G:O6     | 1:A:288:U:O4     | 2.16                     | 0.62              |
| 1:A:423:G:H1'    | 1:A:426:G:N2     | 2.14                     | 0.62              |
| 2:C:164:CYS:SG   | 2:C:165:PHE:N    | 2.72                     | 0.62              |
| 1:A:217:U:P      | 1:A:257:G:H4'    | 2.39                     | 0.62              |
| 1:A:546:A:H5''   | 1:A:547:A:N7     | 2.13                     | 0.62              |
| 1:A:398:C:N3     | 1:A:463:A:N6     | 2.46                     | 0.62              |
| 1:A:430:A:N7     | 1:A:451:G:H1'    | 2.13                     | 0.62              |
| 1:A:584:C:H3'    | 1:A:585:A:C5'    | 2.28                     | 0.62              |
| 2:C:436:LEU:HA   | 2:C:439:ILE:HD12 | 1.80                     | 0.62              |
| 1:A:489:G:H3'    | 1:A:490:A:H2'    | 1.81                     | 0.62              |
| 2:C:408:LYS:HB2  | 2:C:415:VAL:HG11 | 1.80                     | 0.62              |
| 1:A:595:U:H2'    | 1:A:596:U:H6     | 1.63                     | 0.62              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 2:C:156:PHE:CE2 | 2:C:348:THR:HG21 | 2.35                     | 0.62              |
| 2:C:414:PRO:HB3 | 2:C:458:LEU:O    | 1.99                     | 0.62              |
| 2:C:447:SER:OG  | 2:C:448:ASN:N    | 2.30                     | 0.62              |
| 1:A:306:U:H2'   | 1:A:307:U:C4     | 2.34                     | 0.62              |
| 1:A:412:C:O3'   | 1:A:413:U:H3'    | 1.99                     | 0.62              |
| 1:A:556:A:O2'   | 2:C:188:GLN:NE2  | 2.32                     | 0.62              |
| 1:A:563:A:H5''  | 2:C:36:TYR:HE2   | 1.64                     | 0.62              |
| 2:C:302:LYS:NZ  | 2:C:303:TYR:O    | 2.33                     | 0.62              |
| 1:A:134:U:H3'   | 1:A:145:G:H1     | 1.65                     | 0.62              |
| 1:A:215:U:O3'   | 1:A:218:C:N4     | 2.32                     | 0.62              |
| 1:A:500:C:N4    | 1:A:2425:C:O2    | 2.21                     | 0.62              |
| 2:C:89:ILE:HD13 | 2:C:100:LEU:HD23 | 1.82                     | 0.62              |
| 1:A:117:G:O3'   | 1:A:118:A:H8     | 1.82                     | 0.62              |
| 1:A:188:U:C4    | 1:A:197:C:N3     | 2.67                     | 0.62              |
| 1:A:509:C:H4'   | 1:A:510:A:H5'    | 1.81                     | 0.62              |
| 1:A:2400:U:O2   | 1:A:2427:G:O6    | 2.16                     | 0.62              |
| 2:C:417:ARG:HB3 | 2:C:466:THR:HG23 | 1.81                     | 0.62              |
| 1:A:17:U:H2'    | 1:A:18:G:C8      | 2.34                     | 0.61              |
| 2:C:23:PHE:O    | 2:C:25:ARG:N     | 2.33                     | 0.61              |
| 2:C:34:ASP:OD1  | 2:C:35:ILE:N     | 2.28                     | 0.61              |
| 2:C:302:LYS:HD3 | 2:C:314:VAL:HG23 | 1.81                     | 0.61              |
| 1:A:489:G:N2    | 1:A:515:A:H62    | 1.96                     | 0.61              |
| 1:A:2441:U:H2'  | 1:A:2442:G:H8    | 1.64                     | 0.61              |
| 2:C:303:TYR:HA  | 2:C:313:SER:H    | 1.65                     | 0.61              |
| 1:A:316:C:H2'   | 1:A:317:U:H6     | 1.65                     | 0.61              |
| 2:C:317:SER:O   | 2:C:320:ASP:N    | 2.25                     | 0.61              |
| 1:A:226:U:H2'   | 1:A:227:G:C8     | 2.34                     | 0.61              |
| 1:A:299:C:H5'   | 1:A:300:A:H5''   | 1.83                     | 0.61              |
| 1:A:320:A:H2'   | 1:A:321:G:C8     | 2.35                     | 0.61              |
| 1:A:440:C:N4    | 1:A:2448:A:O4'   | 2.34                     | 0.61              |
| 2:C:118:LEU:HB2 | 2:C:220:LEU:HD23 | 1.83                     | 0.61              |
| 2:C:158:GLU:HG3 | 2:C:345:THR:HB   | 1.82                     | 0.61              |
| 1:A:111:C:H2'   | 1:A:112:G:C8     | 2.35                     | 0.61              |
| 1:A:584:C:OP1   | 2:C:206:LYS:NZ   | 2.24                     | 0.61              |
| 1:A:2404:A:H1'  | 1:A:2405:U:H5'   | 1.81                     | 0.61              |
| 1:A:134:U:OP1   | 1:A:240:A:N6     | 2.34                     | 0.61              |
| 1:A:411:C:O2'   | 1:A:412:C:O4'    | 2.17                     | 0.61              |
| 2:C:313:SER:O   | 2:C:315:LYS:HD3  | 2.01                     | 0.61              |
| 1:A:235:A:H2'   | 1:A:236:G:C8     | 2.36                     | 0.61              |
| 1:A:309:G:H2'   | 1:A:310:U:C6     | 2.36                     | 0.61              |
| 2:C:428:ILE:HA  | 2:C:431:ILE:HD12 | 1.82                     | 0.61              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:111:C:H2'   | 1:A:112:G:H8    | 1.66                     | 0.61              |
| 1:A:314:A:H2'   | 1:A:315:U:H6    | 1.65                     | 0.61              |
| 1:A:364:A:H3'   | 1:A:365:A:H8    | 1.66                     | 0.61              |
| 1:A:394:U:H1'   | 1:A:519:G:O2'   | 2.00                     | 0.61              |
| 1:A:432:G:O2'   | 1:A:433:G:OP1   | 2.19                     | 0.61              |
| 1:A:485:G:H8    | 1:A:512:G:H1    | 1.48                     | 0.61              |
| 1:A:489:G:N2    | 1:A:515:A:C6    | 2.69                     | 0.61              |
| 1:A:564:A:H5'   | 2:C:32:ARG:CZ   | 2.30                     | 0.61              |
| 1:A:2436:G:N1   | 1:A:2488:U:N3   | 2.48                     | 0.61              |
| 2:C:80:TYR:HB2  | 2:C:193:PHE:CE2 | 2.36                     | 0.61              |
| 2:C:98:ARG:NH1  | 2:C:99:PRO:O    | 2.33                     | 0.61              |
| 2:C:243:GLU:HB3 | 2:C:247:ARG:HB2 | 1.83                     | 0.61              |
| 1:A:-6:C:N4     | 2:C:457:TYR:HH  | 1.99                     | 0.61              |
| 1:A:145:G:O2'   | 1:A:146:G:H5'   | 2.00                     | 0.61              |
| 1:A:432:G:C2    | 1:A:453:A:C6    | 2.86                     | 0.61              |
| 1:A:538:U:O4    | 1:A:598:G:O6    | 2.17                     | 0.61              |
| 1:A:546:A:C8    | 1:A:585:A:H2'   | 2.36                     | 0.61              |
| 2:C:112:GLU:OE2 | 2:C:115:ARG:NH1 | 2.33                     | 0.61              |
| 2:C:119:GLU:HA  | 2:C:122:TYR:HB3 | 1.81                     | 0.61              |
| 2:C:306:TYR:HE2 | 2:C:311:ILE:H   | 1.47                     | 0.61              |
| 1:A:83:A:H1'    | 1:A:96:U:C4     | 2.35                     | 0.60              |
| 1:A:185:A:O2'   | 1:A:186:A:OP1   | 2.18                     | 0.60              |
| 1:A:24:U:H2'    | 1:A:25:C:C6     | 2.35                     | 0.60              |
| 1:A:113:G:H2'   | 1:A:114:U:H6    | 1.66                     | 0.60              |
| 1:A:509:C:H1'   | 1:A:510:A:N3    | 2.16                     | 0.60              |
| 1:A:5:G:C4      | 1:A:2420:A:C6   | 2.89                     | 0.60              |
| 1:A:168:A:H5'   | 1:A:374:G:OP2   | 2.01                     | 0.60              |
| 1:A:318:G:H2'   | 1:A:319:U:C6    | 2.36                     | 0.60              |
| 1:A:553:A:OP2   | 1:A:583:A:N6    | 2.34                     | 0.60              |
| 1:A:229:C:N4    | 1:A:230:G:O6    | 2.34                     | 0.60              |
| 1:A:379:A:H2'   | 1:A:380:A:C8    | 2.37                     | 0.60              |
| 1:A:390:G:H2'   | 1:A:391:G:C8    | 2.36                     | 0.60              |
| 1:A:485:G:H2'   | 1:A:512:G:H1    | 1.67                     | 0.60              |
| 1:A:571:A:H3'   | 1:A:573:A:H2'   | 1.82                     | 0.60              |
| 1:A:2410:C:O2'  | 1:A:2413:G:O6   | 2.18                     | 0.60              |
| 1:A:2411:G:N2   | 1:A:2413:G:H3'  | 2.16                     | 0.60              |
| 1:A:82:A:C6     | 1:A:97:A:C6     | 2.89                     | 0.60              |
| 1:A:198:U:H5    | 1:A:200:A:C4    | 2.20                     | 0.60              |
| 1:A:266:A:H4'   | 1:A:267:A:H5'   | 1.82                     | 0.60              |
| 1:A:371:C:H1'   | 1:A:372:A:C8    | 2.37                     | 0.60              |
| 1:A:454:A:H4'   | 1:A:455:A:H5'   | 1.83                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2438:G:N1    | 1:A:2484:C:O2'   | 2.35                     | 0.60              |
| 1:A:25:C:H2'     | 1:A:26:A:C5      | 2.36                     | 0.60              |
| 1:A:307:U:H2'    | 1:A:308:U:C6     | 2.37                     | 0.60              |
| 1:A:2433:G:N2    | 1:A:2490:C:C2    | 2.69                     | 0.60              |
| 2:C:183:ASP:CG   | 2:C:187:SER:HB2  | 2.25                     | 0.60              |
| 1:A:322:G:H3'    | 1:A:323:A:C8     | 2.33                     | 0.60              |
| 1:A:376:C:H2'    | 1:A:377:U:C6     | 2.37                     | 0.60              |
| 1:A:465:G:H2'    | 1:A:466:G:C8     | 2.37                     | 0.60              |
| 1:A:534:G:HO2'   | 1:A:2386:G:H8    | 1.48                     | 0.60              |
| 1:A:552:G:H5''   | 1:A:553:A:H5'    | 1.84                     | 0.60              |
| 1:A:2403:U:O2'   | 1:A:2424:A:N6    | 2.34                     | 0.60              |
| 1:A:48:G:C6      | 1:A:60:A:C6      | 2.89                     | 0.60              |
| 1:A:140:C:O2     | 1:A:244:U:N3     | 2.35                     | 0.60              |
| 1:A:141:A:H2'    | 1:A:143:U:H5''   | 1.82                     | 0.60              |
| 1:A:165:G:H2'    | 1:A:166:U:C6     | 2.36                     | 0.60              |
| 1:A:207:G:H2'    | 1:A:208:U:C6     | 2.37                     | 0.60              |
| 1:A:234:G:H1     | 1:A:254:C:H42    | 1.50                     | 0.60              |
| 1:A:402:A:H3'    | 1:A:403:C:C5'    | 2.31                     | 0.60              |
| 1:A:559:G:H22    | 1:A:573:A:H1'    | 1.67                     | 0.60              |
| 2:C:47:LYS:NZ    | 2:C:69:LYS:HE3   | 2.16                     | 0.60              |
| 1:A:102:A:N6     | 1:A:105:A:OP2    | 2.32                     | 0.60              |
| 1:A:188:U:N3     | 1:A:197:C:C2     | 2.70                     | 0.60              |
| 1:A:237:G:H5''   | 1:A:238:A:O5'    | 2.02                     | 0.60              |
| 1:A:238:A:O2'    | 1:A:241:G:OP1    | 2.20                     | 0.60              |
| 1:A:522:U:H2'    | 1:A:523:A:H8     | 1.66                     | 0.60              |
| 1:A:548:A:H2'    | 1:A:549:A:C8     | 2.36                     | 0.60              |
| 1:A:2385:C:N4    | 1:A:2390:A:OP1   | 2.35                     | 0.59              |
| 2:C:351:SER:HA   | 2:C:363:VAL:HG22 | 1.84                     | 0.59              |
| 1:A:183:A:C8     | 1:A:352:G:N1     | 2.71                     | 0.59              |
| 1:A:2455:C:H2'   | 1:A:2456:A:C8    | 2.37                     | 0.59              |
| 1:A:46:C:H2'     | 1:A:47:U:C6      | 2.37                     | 0.59              |
| 1:A:453:A:H1'    | 1:A:454:A:C4     | 2.37                     | 0.59              |
| 1:A:2433:G:C2    | 1:A:2490:C:N3    | 2.69                     | 0.59              |
| 1:A:2466:G:H2'   | 1:A:2467:A:C8    | 2.36                     | 0.59              |
| 2:C:68:LYS:O     | 2:C:71:ILE:C     | 2.45                     | 0.59              |
| 1:A:-2:A:C2      | 1:A:282:G:C2     | 2.90                     | 0.59              |
| 1:A:568:C:N4     | 1:A:573:A:O2'    | 2.34                     | 0.59              |
| 1:A:2425:C:H2'   | 1:A:2426:G:H8    | 1.67                     | 0.59              |
| 2:C:68:LYS:HE2   | 2:C:76:ASP:HB2   | 1.82                     | 0.59              |
| 2:C:125:VAL:HG23 | 2:C:227:HIS:HE1  | 1.68                     | 0.59              |
| 2:C:230:ASP:O    | 2:C:234:LEU:HG   | 2.03                     | 0.59              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:561:G:HO2'  | 1:A:562:G:H8     | 1.50                     | 0.59              |
| 1:A:564:A:OP2   | 1:A:566:A:N6     | 2.26                     | 0.59              |
| 1:A:2401:C:H5'' | 1:A:2404:A:N6    | 2.15                     | 0.59              |
| 1:A:125:U:O2'   | 1:A:157:G:O6     | 2.19                     | 0.59              |
| 1:A:577:A:O2'   | 1:A:578:A:O5'    | 2.16                     | 0.59              |
| 1:A:2453:G:C2   | 1:A:2470:A:N1    | 2.71                     | 0.59              |
| 1:A:2477:U:H2'  | 1:A:2478:A:C8    | 2.38                     | 0.59              |
| 2:C:88:TYR:CZ   | 2:C:165:PHE:HB3  | 2.37                     | 0.59              |
| 2:C:91:LYS:HE3  | 2:C:93:ASN:H     | 1.67                     | 0.59              |
| 1:A:456:U:H2'   | 1:A:457:C:C6     | 2.38                     | 0.59              |
| 1:A:2447:A:H2   | 1:A:2475:G:C2    | 2.18                     | 0.59              |
| 1:A:2463:U:H2'  | 1:A:2464:G:H8    | 1.68                     | 0.59              |
| 2:C:5:MET:HE3   | 2:C:8:LEU:H      | 1.68                     | 0.59              |
| 2:C:144:LYS:O   | 2:C:148:ARG:NH2  | 2.35                     | 0.59              |
| 1:A:6:C:C4      | 1:A:469:C:C4     | 2.90                     | 0.59              |
| 1:A:268:G:H2'   | 1:A:269:G:H8     | 1.66                     | 0.59              |
| 1:A:2480:C:H2'  | 1:A:2481:U:H6    | 1.66                     | 0.59              |
| 1:A:131:A:H2'   | 1:A:132:C:C4     | 2.37                     | 0.59              |
| 1:A:2433:G:N1   | 1:A:2490:C:C2    | 2.71                     | 0.59              |
| 2:C:125:VAL:O   | 2:C:227:HIS:NE2  | 2.36                     | 0.59              |
| 2:C:133:PHE:HA  | 2:C:305:ARG:CZ   | 2.33                     | 0.59              |
| 2:C:355:ARG:HA  | 2:C:360:ASP:HB2  | 1.85                     | 0.59              |
| 1:A:183:A:C4    | 1:A:352:G:C5     | 2.91                     | 0.59              |
| 1:A:255:U:H5'   | 1:A:257:G:N1     | 2.12                     | 0.59              |
| 1:A:269:G:C2    | 1:A:291:U:O2     | 2.56                     | 0.59              |
| 1:A:561:G:N3    | 1:A:561:G:H2'    | 2.17                     | 0.59              |
| 1:A:588:G:O2'   | 1:A:589:G:O5'    | 2.18                     | 0.59              |
| 2:C:22:VAL:O    | 2:C:24:THR:N     | 2.36                     | 0.59              |
| 1:A:239:A:H4'   | 1:A:240:A:H4'    | 1.84                     | 0.58              |
| 1:A:554:U:H2'   | 1:A:555:U:C2     | 2.38                     | 0.58              |
| 2:C:8:LEU:HD11  | 2:C:190:ILE:HG12 | 1.85                     | 0.58              |
| 1:A:235:A:N7    | 1:A:237:G:N1     | 2.51                     | 0.58              |
| 1:A:455:A:H4'   | 1:A:456:U:OP2    | 2.03                     | 0.58              |
| 1:A:592:A:N1    | 2:C:202:TRP:NE1  | 2.43                     | 0.58              |
| 2:C:87:MET:HG2  | 2:C:100:LEU:H    | 1.68                     | 0.58              |
| 1:A:457:C:H2'   | 1:A:458:U:H6     | 1.69                     | 0.58              |
| 1:A:559:G:N2    | 1:A:573:A:H1'    | 2.17                     | 0.58              |
| 2:C:329:LYS:O   | 2:C:333:HIS:N    | 2.35                     | 0.58              |
| 1:A:210:U:O2'   | 1:A:211:C:H5'    | 2.03                     | 0.58              |
| 1:A:413:U:N3    | 1:A:420:A:C6     | 2.72                     | 0.58              |
| 1:A:2413:G:H2'  | 1:A:2414:A:C4    | 2.38                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:146:ILE:HD12 | 2:C:147:LYS:HZ3  | 1.67                     | 0.58              |
| 1:A:5:G:N3       | 1:A:2420:A:C6    | 2.72                     | 0.58              |
| 1:A:16:G:N1      | 1:A:384:U:C2     | 2.71                     | 0.58              |
| 1:A:207:G:N1     | 1:A:342:C:O2     | 2.35                     | 0.58              |
| 1:A:526:G:C8     | 1:A:527:U:N3     | 2.72                     | 0.58              |
| 1:A:531:U:H2'    | 1:A:532:G:H8     | 1.69                     | 0.58              |
| 1:A:545:A:OP2    | 1:A:546:A:O2'    | 2.14                     | 0.58              |
| 2:C:90:ALA:HA    | 2:C:97:MET:HG2   | 1.84                     | 0.58              |
| 1:A:283:U:O2'    | 1:A:284:G:H8     | 1.85                     | 0.58              |
| 1:A:400:A:H2'    | 1:A:401:A:O4'    | 2.04                     | 0.58              |
| 2:C:28:ARG:HA    | 2:C:31:LEU:HD13  | 1.85                     | 0.58              |
| 1:A:108:G:C4     | 1:A:386:A:N6     | 2.72                     | 0.58              |
| 1:A:176:A:N3     | 1:A:178:A:H5'    | 2.18                     | 0.58              |
| 1:A:349:G:N1     | 1:A:350:A:H1'    | 2.18                     | 0.58              |
| 1:A:2404:A:N3    | 1:A:2424:A:N6    | 2.49                     | 0.58              |
| 1:A:113:G:H2'    | 1:A:114:U:C6     | 2.39                     | 0.58              |
| 2:C:318:LYS:HG3  | 2:C:347:ILE:HG21 | 1.85                     | 0.58              |
| 2:C:330:LEU:O    | 2:C:334:ASN:N    | 2.36                     | 0.58              |
| 1:A:21:A:H2'     | 1:A:22:A:C8      | 2.39                     | 0.58              |
| 1:A:148:U:O2'    | 1:A:150:C:OP1    | 2.20                     | 0.58              |
| 1:A:232:U:H1'    | 1:A:233:A:C2     | 2.38                     | 0.58              |
| 2:C:450:ASN:O    | 2:C:454:TYR:HB2  | 2.04                     | 0.58              |
| 1:A:239:A:N6     | 1:A:246:U:OP2    | 2.37                     | 0.57              |
| 1:A:13:A:N6      | 1:A:387:C:H1'    | 2.19                     | 0.57              |
| 1:A:86:C:H3'     | 1:A:89:A:N1      | 2.19                     | 0.57              |
| 1:A:145:G:C6     | 1:A:242:U:N3     | 2.72                     | 0.57              |
| 1:A:148:U:O2'    | 1:A:149:A:H4'    | 2.04                     | 0.57              |
| 1:A:189:U:N3     | 1:A:196:A:C6     | 2.70                     | 0.57              |
| 1:A:354:C:H2'    | 1:A:355:G:O4'    | 2.05                     | 0.57              |
| 1:A:400:A:N6     | 1:A:461:C:O2'    | 2.37                     | 0.57              |
| 1:A:489:G:H4'    | 1:A:502:C:OP1    | 2.03                     | 0.57              |
| 2:C:306:TYR:CD2  | 2:C:310:PHE:HA   | 2.39                     | 0.57              |
| 1:A:297:A:H2'    | 1:A:298:U:C6     | 2.38                     | 0.57              |
| 1:A:426:G:H2'    | 1:A:427:A:C8     | 2.40                     | 0.57              |
| 1:A:456:U:H2'    | 1:A:457:C:N1     | 2.19                     | 0.57              |
| 1:A:527:U:N3     | 1:A:2394:A:C5    | 2.72                     | 0.57              |
| 2:C:243:GLU:HA   | 2:C:246:GLU:HB2  | 1.85                     | 0.57              |
| 2:C:376:LYS:C    | 2:C:377:LYS:HD3  | 2.30                     | 0.57              |
| 1:A:183:A:N7     | 1:A:352:G:C6     | 2.73                     | 0.57              |
| 1:A:202:C:H2'    | 1:A:203:G:O4'    | 2.05                     | 0.57              |
| 1:A:470:G:H3'    | 1:A:471:G:H8     | 1.69                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:92:LYS:NZ    | 2:C:93:ASN:OD1   | 2.31                     | 0.57              |
| 2:C:361:ILE:HD12 | 2:C:386:LEU:H    | 1.69                     | 0.57              |
| 1:A:-8:A:H2'     | 1:A:-7:U:C5      | 2.40                     | 0.57              |
| 1:A:-5:C:H2'     | 1:A:-4:A:C8      | 2.39                     | 0.57              |
| 1:A:125:U:H2'    | 1:A:126:G:C8     | 2.40                     | 0.57              |
| 1:A:2410:C:O2    | 1:A:2416:G:N2    | 2.34                     | 0.57              |
| 2:C:224:ILE:O    | 2:C:227:HIS:N    | 2.36                     | 0.57              |
| 1:A:285:G:H2'    | 1:A:286:A:C8     | 2.39                     | 0.57              |
| 1:A:297:A:H2'    | 1:A:298:U:H6     | 1.69                     | 0.57              |
| 1:A:453:A:O2'    | 1:A:454:A:O5'    | 2.21                     | 0.57              |
| 1:A:2453:G:H1    | 1:A:2470:A:H61   | 1.52                     | 0.57              |
| 1:A:294:G:O2'    | 1:A:295:U:O4'    | 2.11                     | 0.57              |
| 1:A:431:A:H3'    | 1:A:432:G:H8     | 1.68                     | 0.57              |
| 1:A:487:C:O2'    | 1:A:488:U:OP2    | 2.23                     | 0.57              |
| 1:A:389:G:H2'    | 1:A:390:G:H8     | 1.67                     | 0.57              |
| 1:A:535:U:O2'    | 1:A:536:A:O5'    | 2.20                     | 0.57              |
| 1:A:546:A:N6     | 1:A:586:A:OP2    | 2.38                     | 0.57              |
| 1:A:2400:U:C2    | 1:A:2427:G:O6    | 2.58                     | 0.57              |
| 2:C:105:PHE:CD1  | 2:C:108:LYS:HE2  | 2.39                     | 0.57              |
| 2:C:157:VAL:HB   | 2:C:312:ILE:HD13 | 1.86                     | 0.57              |
| 1:A:131:A:H2'    | 1:A:132:C:C5     | 2.40                     | 0.57              |
| 1:A:473:G:C6     | 1:A:525:A:C2     | 2.93                     | 0.57              |
| 1:A:2453:G:N1    | 1:A:2470:A:N6    | 2.53                     | 0.57              |
| 1:A:38:G:H4'     | 1:A:371:C:C5     | 2.40                     | 0.57              |
| 1:A:61:G:H2'     | 1:A:62:A:H8      | 1.69                     | 0.57              |
| 1:A:123:G:H1     | 1:A:159:C:H42    | 1.52                     | 0.57              |
| 1:A:306:U:H5''   | 1:A:307:U:OP1    | 2.05                     | 0.57              |
| 1:A:307:U:O2'    | 1:A:308:U:O4'    | 2.21                     | 0.57              |
| 1:A:319:U:H1'    | 1:A:335:A:H61    | 1.70                     | 0.57              |
| 1:A:440:C:H41    | 1:A:2447:A:H2'   | 1.70                     | 0.57              |
| 1:A:581:C:H2'    | 1:A:582:A:H5'    | 1.85                     | 0.57              |
| 2:C:320:ASP:O    | 2:C:324:ILE:HD12 | 2.05                     | 0.57              |
| 1:A:41:C:H2'     | 1:A:42:U:C6      | 2.35                     | 0.56              |
| 1:A:115:U:H2'    | 1:A:116:G:C8     | 2.40                     | 0.56              |
| 1:A:243:G:H2'    | 1:A:244:U:C6     | 2.40                     | 0.56              |
| 1:A:343:G:OP2    | 1:A:343:G:N2     | 2.21                     | 0.56              |
| 1:A:438:A:N7     | 1:A:444:A:O2'    | 2.38                     | 0.56              |
| 2:C:112:GLU:O    | 2:C:116:ILE:HG12 | 2.04                     | 0.56              |
| 2:C:241:ASP:C    | 2:C:242:ARG:HD2  | 2.30                     | 0.56              |
| 1:A:37:G:H3'     | 1:A:38:G:C8      | 2.36                     | 0.56              |
| 1:A:55:A:N1      | 1:A:296:U:C5     | 2.73                     | 0.56              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:174:A:C2     | 1:A:361:C:C2    | 2.93                     | 0.56              |
| 1:A:174:A:N1     | 1:A:361:C:N3    | 2.52                     | 0.56              |
| 1:A:2413:G:H2'   | 1:A:2414:A:N9   | 2.20                     | 0.56              |
| 1:A:2436:G:C5    | 1:A:2437:A:H1'  | 2.39                     | 0.56              |
| 2:C:34:ASP:O     | 2:C:38:VAL:HG23 | 2.03                     | 0.56              |
| 1:A:-2:A:O2'     | 1:A:-1:A:O5'    | 2.22                     | 0.56              |
| 1:A:9:A:N6       | 1:A:389:G:O6    | 2.38                     | 0.56              |
| 1:A:59:C:H2'     | 1:A:60:A:C8     | 2.40                     | 0.56              |
| 1:A:137:A:N6     | 1:A:247:G:H1'   | 2.20                     | 0.56              |
| 1:A:177:U:H4'    | 1:A:178:A:H5''  | 1.87                     | 0.56              |
| 1:A:321:G:H2'    | 1:A:322:G:C8    | 2.39                     | 0.56              |
| 1:A:425:G:N1     | 1:A:453:A:OP1   | 2.38                     | 0.56              |
| 1:A:516:A:O2'    | 1:A:517:A:H5'   | 2.05                     | 0.56              |
| 1:A:561:G:C5     | 1:A:569:U:N3    | 2.74                     | 0.56              |
| 1:A:561:G:C5     | 1:A:569:U:C4    | 2.93                     | 0.56              |
| 1:A:2436:G:C6    | 1:A:2488:U:N3   | 2.73                     | 0.56              |
| 2:C:47:LYS:HZ2   | 2:C:69:LYS:HE3  | 1.70                     | 0.56              |
| 2:C:432:TYR:HA   | 2:C:435:GLU:OE2 | 2.06                     | 0.56              |
| 2:C:464:LEU:HD13 | 2:C:481:MET:HG2 | 1.87                     | 0.56              |
| 1:A:-9:C:H2'     | 1:A:-8:A:O4'    | 2.05                     | 0.56              |
| 1:A:178:A:H2'    | 1:A:179:A:C8    | 2.41                     | 0.56              |
| 1:A:561:G:H3'    | 2:C:10:ARG:NH2  | 2.20                     | 0.56              |
| 2:C:400:ASP:OD1  | 2:C:401:LYS:N   | 2.34                     | 0.56              |
| 1:A:361:C:H2'    | 1:A:362:U:C6    | 2.40                     | 0.56              |
| 1:A:2405:U:H2'   | 1:A:2407:C:O2   | 2.06                     | 0.56              |
| 1:A:2442:G:N1    | 1:A:2481:U:N3   | 2.53                     | 0.56              |
| 2:C:152:GLY:N    | 2:C:385:GLU:OE2 | 2.38                     | 0.56              |
| 2:C:160:ASP:H    | 2:C:344:LYS:HG2 | 1.71                     | 0.56              |
| 1:A:28:G:C6      | 1:A:45:U:N3     | 2.73                     | 0.56              |
| 1:A:57:C:O2'     | 1:A:58:A:H5''   | 2.05                     | 0.56              |
| 1:A:134:U:O2'    | 1:A:135:A:O5'   | 2.15                     | 0.56              |
| 1:A:269:G:C6     | 1:A:291:U:N3    | 2.74                     | 0.56              |
| 1:A:304:C:N3     | 1:A:305:A:N6    | 2.53                     | 0.56              |
| 2:C:320:ASP:O    | 2:C:323:TRP:HB2 | 2.05                     | 0.56              |
| 1:A:193:U:N3     | 1:A:345:A:C8    | 2.73                     | 0.56              |
| 1:A:200:A:H3'    | 1:A:200:A:N3    | 2.20                     | 0.56              |
| 1:A:211:C:HO2'   | 1:A:212:U:H6    | 1.54                     | 0.56              |
| 1:A:266:A:H1'    | 1:A:267:A:C8    | 2.41                     | 0.56              |
| 1:A:314:A:H62    | 1:A:316:C:H1'   | 1.69                     | 0.56              |
| 1:A:398:C:N3     | 1:A:464:G:N1    | 2.53                     | 0.56              |
| 1:A:528:U:O2     | 1:A:2393:A:C5   | 2.58                     | 0.56              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:539:A:H2'   | 1:A:540:A:H8    | 1.67                     | 0.56              |
| 1:A:82:A:H5''   | 1:A:83:A:N7     | 2.21                     | 0.56              |
| 1:A:182:U:H2'   | 1:A:352:G:H22   | 1.70                     | 0.56              |
| 1:A:216:U:H5    | 1:A:311:A:C2    | 2.23                     | 0.56              |
| 1:A:446:A:H2'   | 1:A:447:G:C4    | 2.41                     | 0.56              |
| 1:A:486:U:O2    | 1:A:487:C:O2'   | 2.13                     | 0.56              |
| 1:A:525:A:H2'   | 1:A:526:G:C2    | 2.40                     | 0.56              |
| 1:A:2446:C:O2   | 1:A:2476:G:N2   | 2.39                     | 0.56              |
| 2:C:420:LEU:HA  | 2:C:469:SER:HB2 | 1.86                     | 0.56              |
| 2:C:485:GLY:H   | 2:C:523:ALA:H   | 1.54                     | 0.56              |
| 1:A:-10:A:C4    | 1:A:227:G:N1    | 2.73                     | 0.56              |
| 1:A:127:A:N6    | 1:A:155:G:H1'   | 2.19                     | 0.56              |
| 1:A:215:U:O2'   | 1:A:216:U:O4'   | 2.24                     | 0.56              |
| 1:A:323:A:H3'   | 2:C:349:HIS:NE2 | 2.20                     | 0.56              |
| 1:A:545:A:N1    | 1:A:546:A:C5    | 2.74                     | 0.56              |
| 1:A:591:A:H2'   | 1:A:592:A:H8    | 1.70                     | 0.56              |
| 2:C:197:GLY:N   | 2:C:207:THR:H   | 2.03                     | 0.56              |
| 1:A:372:A:H1'   | 1:A:373:A:C2    | 2.41                     | 0.56              |
| 1:A:527:U:C4    | 1:A:2394:A:C6   | 2.94                     | 0.56              |
| 2:C:21:GLU:OE2  | 2:C:184:MET:HE2 | 2.05                     | 0.56              |
| 2:C:389:PRO:HG3 | 2:C:447:SER:O   | 2.06                     | 0.56              |
| 1:A:254:C:H3'   | 1:A:255:U:H4'   | 1.87                     | 0.55              |
| 1:A:375:A:H2'   | 1:A:376:C:C6    | 2.41                     | 0.55              |
| 1:A:412:C:H41   | 1:A:420:A:P     | 2.30                     | 0.55              |
| 1:A:432:G:N2    | 1:A:450:U:O4'   | 2.39                     | 0.55              |
| 1:A:2433:G:C6   | 1:A:2490:C:C4   | 2.94                     | 0.55              |
| 2:C:28:ARG:NH2  | 2:C:123:GLU:OE1 | 2.31                     | 0.55              |
| 1:A:28:G:H2'    | 1:A:29:U:H5'    | 1.88                     | 0.55              |
| 1:A:538:U:C2    | 1:A:598:G:C2    | 2.95                     | 0.55              |
| 1:A:556:A:H5''  | 2:C:185:LYS:HA  | 1.87                     | 0.55              |
| 1:A:2439:G:H2'  | 1:A:2440:G:H8   | 1.71                     | 0.55              |
| 2:C:94:SER:HB3  | 2:C:357:LEU:HB3 | 1.88                     | 0.55              |
| 2:C:208:TYR:CE1 | 2:C:218:SER:HB3 | 2.41                     | 0.55              |
| 1:A:-10:A:N1    | 1:A:227:G:O6    | 2.38                     | 0.55              |
| 1:A:250:A:O2'   | 1:A:251:C:H2'   | 2.05                     | 0.55              |
| 1:A:309:G:O2'   | 1:A:310:U:O4'   | 2.16                     | 0.55              |
| 1:A:331:U:H2'   | 1:A:332:G:C5    | 2.41                     | 0.55              |
| 1:A:547:A:O2'   | 1:A:548:A:OP1   | 2.23                     | 0.55              |
| 1:A:87:G:H5'    | 1:A:88:A:O5'    | 2.06                     | 0.55              |
| 1:A:317:U:H2'   | 1:A:318:G:C5    | 2.41                     | 0.55              |
| 1:A:467:U:H2'   | 1:A:468:A:C8    | 2.41                     | 0.55              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:548:A:C1'   | 1:A:588:G:H22    | 2.19                     | 0.55              |
| 1:A:561:G:N2    | 1:A:563:A:C5     | 2.71                     | 0.55              |
| 2:C:306:TYR:HD2 | 2:C:310:PHE:HA   | 1.70                     | 0.55              |
| 1:A:58:A:H2'    | 1:A:59:C:H6      | 1.71                     | 0.55              |
| 1:A:193:U:H2'   | 1:A:206:A:N7     | 2.21                     | 0.55              |
| 1:A:230:G:H2'   | 1:A:231:A:C8     | 2.41                     | 0.55              |
| 1:A:312:C:H2'   | 1:A:313:A:C8     | 2.42                     | 0.55              |
| 2:C:11:ILE:HG21 | 2:C:190:ILE:HD11 | 1.88                     | 0.55              |
| 2:C:158:GLU:O   | 2:C:345:THR:OG1  | 2.22                     | 0.55              |
| 2:C:352:GLN:HA  | 2:C:362:ARG:NH1  | 2.22                     | 0.55              |
| 1:A:37:G:C6     | 1:A:38:G:C4      | 2.95                     | 0.55              |
| 1:A:140:C:C2    | 1:A:243:G:N2     | 2.73                     | 0.55              |
| 1:A:320:A:H5'   | 1:A:337:C:H5''   | 1.87                     | 0.55              |
| 1:A:431:A:N6    | 1:A:450:U:H1'    | 2.21                     | 0.55              |
| 1:A:594:U:H2'   | 1:A:595:U:N1     | 2.21                     | 0.55              |
| 2:C:28:ARG:NE   | 2:C:123:GLU:HB3  | 2.21                     | 0.55              |
| 2:C:115:ARG:O   | 2:C:118:LEU:HB3  | 2.07                     | 0.55              |
| 2:C:394:ILE:HA  | 2:C:397:PHE:HB3  | 1.87                     | 0.55              |
| 1:A:284:G:H2'   | 1:A:285:G:H8     | 1.72                     | 0.55              |
| 1:A:349:G:C2    | 1:A:350:A:H1'    | 2.42                     | 0.55              |
| 1:A:403:C:H3'   | 1:A:404:A:H8     | 1.68                     | 0.55              |
| 1:A:515:A:OP2   | 1:A:516:A:H1'    | 2.07                     | 0.55              |
| 1:A:545:A:H1'   | 1:A:591:A:C2     | 2.42                     | 0.55              |
| 2:C:49:ALA:HB2  | 2:C:65:GLU:HB2   | 1.89                     | 0.55              |
| 2:C:75:LYS:HE2  | 2:C:192:LYS:HD2  | 1.89                     | 0.55              |
| 1:A:-8:A:C2     | 1:A:224:U:C2     | 2.95                     | 0.55              |
| 1:A:-5:C:N3     | 1:A:-4:A:N6      | 2.55                     | 0.55              |
| 1:A:219:G:C6    | 1:A:230:G:C6     | 2.95                     | 0.55              |
| 1:A:380:A:H2'   | 1:A:381:C:H6     | 1.72                     | 0.55              |
| 1:A:421:A:H3'   | 1:A:422:G:C8     | 2.42                     | 0.55              |
| 1:A:477:U:C4    | 1:A:521:G:O6     | 2.59                     | 0.55              |
| 1:A:545:A:H1'   | 1:A:591:A:N1     | 2.22                     | 0.55              |
| 1:A:571:A:H2'   | 1:A:573:A:C4     | 2.41                     | 0.55              |
| 1:A:2402:G:O6   | 1:A:2404:A:N6    | 2.38                     | 0.55              |
| 2:C:12:SER:O    | 2:C:15:SER:OG    | 2.24                     | 0.55              |
| 2:C:448:ASN:O   | 2:C:451:GLN:HG2  | 2.05                     | 0.55              |
| 1:A:134:U:C4    | 1:A:146:G:C6     | 2.95                     | 0.55              |
| 1:A:259:A:H2'   | 1:A:260:C:H6     | 1.72                     | 0.55              |
| 1:A:477:U:N3    | 1:A:521:G:N1     | 2.55                     | 0.55              |
| 1:A:495:G:H2'   | 1:A:496:G:C8     | 2.42                     | 0.55              |
| 1:A:2400:U:H5'' | 1:A:2423:U:C2    | 2.41                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2405:U:H2'   | 1:A:2407:C:C2    | 2.42                     | 0.55              |
| 2:C:8:LEU:HD13   | 2:C:11:ILE:HB    | 1.88                     | 0.55              |
| 1:A:13:A:H61     | 1:A:387:C:H1'    | 1.72                     | 0.55              |
| 1:A:48:G:H2'     | 1:A:49:U:C6      | 2.41                     | 0.55              |
| 1:A:58:A:N1      | 1:A:294:G:C6     | 2.75                     | 0.55              |
| 1:A:357:G:N7     | 1:A:358:A:O2'    | 2.35                     | 0.55              |
| 2:C:16:GLN:HG2   | 2:C:185:LYS:H    | 1.72                     | 0.55              |
| 2:C:211:THR:O    | 2:C:215:GLY:N    | 2.40                     | 0.55              |
| 1:A:19:U:H2'     | 1:A:20:U:H6      | 1.70                     | 0.54              |
| 1:A:156:A:O2'    | 1:A:158:U:O4     | 2.25                     | 0.54              |
| 1:A:164:U:H2'    | 1:A:165:G:H8     | 1.70                     | 0.54              |
| 1:A:210:U:H2'    | 1:A:211:C:C6     | 2.41                     | 0.54              |
| 2:C:157:VAL:HG21 | 2:C:321:CYS:HB2  | 1.90                     | 0.54              |
| 1:A:25:C:N4      | 1:A:374:G:O6     | 2.37                     | 0.54              |
| 1:A:70:C:H4'     | 1:A:119:A:C6     | 2.41                     | 0.54              |
| 1:A:83:A:H3'     | 1:A:83:A:OP2     | 2.07                     | 0.54              |
| 1:A:128:G:C6     | 1:A:154:U:C4     | 2.94                     | 0.54              |
| 1:A:177:U:H4'    | 1:A:178:A:C5'    | 2.37                     | 0.54              |
| 1:A:234:G:C6     | 1:A:256:A:N1     | 2.75                     | 0.54              |
| 1:A:354:C:H2'    | 1:A:355:G:C8     | 2.41                     | 0.54              |
| 1:A:459:U:H2'    | 1:A:460:G:O4'    | 2.06                     | 0.54              |
| 2:C:144:LYS:C    | 2:C:148:ARG:HH22 | 2.15                     | 0.54              |
| 2:C:527:TYR:HB2  | 2:C:531:ARG:HH21 | 1.71                     | 0.54              |
| 1:A:12:U:H1'     | 1:A:14:G:OP2     | 2.07                     | 0.54              |
| 1:A:82:A:C6      | 1:A:97:A:C5      | 2.95                     | 0.54              |
| 1:A:331:U:H2'    | 1:A:332:G:C4     | 2.42                     | 0.54              |
| 1:A:16:G:N1      | 1:A:383:C:O2     | 2.41                     | 0.54              |
| 1:A:158:U:H2'    | 1:A:159:C:C6     | 2.42                     | 0.54              |
| 1:A:193:U:C6     | 1:A:206:A:H8     | 2.25                     | 0.54              |
| 2:C:230:ASP:HA   | 2:C:233:VAL:HB   | 1.89                     | 0.54              |
| 1:A:229:C:H2'    | 1:A:230:G:H8     | 1.69                     | 0.54              |
| 1:A:268:G:O2'    | 1:A:269:G:H5'    | 2.08                     | 0.54              |
| 2:C:47:LYS:HE2   | 2:C:50:SER:H     | 1.72                     | 0.54              |
| 2:C:93:ASN:ND2   | 2:C:393:LYS:HD3  | 2.23                     | 0.54              |
| 1:A:-2:A:N1      | 1:A:282:G:C2     | 2.75                     | 0.54              |
| 1:A:0:C:O2'      | 1:A:1:G:O5'      | 2.26                     | 0.54              |
| 1:A:340:A:H2'    | 1:A:341:A:O4'    | 2.08                     | 0.54              |
| 2:C:162:LYS:O    | 2:C:164:CYS:N    | 2.40                     | 0.54              |
| 2:C:414:PRO:HG3  | 2:C:457:TYR:O    | 2.07                     | 0.54              |
| 1:A:-1:A:H3'     | 1:A:1:G:N1       | 2.22                     | 0.54              |
| 1:A:399:U:H3     | 1:A:463:A:N6     | 2.06                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:404:A:H2'    | 1:A:405:A:C8     | 2.43                     | 0.54              |
| 1:A:2405:U:C4    | 1:A:2418:G:O6    | 2.61                     | 0.54              |
| 1:A:2452:A:N6    | 1:A:2473:G:O6    | 2.40                     | 0.54              |
| 1:A:29:U:H2'     | 1:A:30:A:H8      | 1.71                     | 0.54              |
| 1:A:399:U:HO2'   | 1:A:400:A:H8     | 1.56                     | 0.54              |
| 1:A:491:G:H1'    | 1:A:513:G:H4'    | 1.89                     | 0.54              |
| 2:C:80:TYR:OH    | 2:C:107:ASP:OD1  | 2.26                     | 0.54              |
| 1:A:3:G:C4       | 1:A:4:C:N3       | 2.76                     | 0.54              |
| 1:A:117:G:H4'    | 1:A:118:A:H5'    | 1.90                     | 0.54              |
| 1:A:138:G:OP2    | 1:A:240:A:N6     | 2.41                     | 0.54              |
| 1:A:173:G:C2     | 1:A:362:U:C2     | 2.96                     | 0.54              |
| 1:A:284:G:H2'    | 1:A:285:G:C8     | 2.42                     | 0.54              |
| 1:A:420:A:H2     | 1:A:421:A:H62    | 1.53                     | 0.54              |
| 1:A:581:C:C2'    | 1:A:582:A:H5'    | 2.38                     | 0.54              |
| 2:C:157:VAL:HG22 | 2:C:347:ILE:HG23 | 1.89                     | 0.54              |
| 2:C:354:ALA:N    | 2:C:360:ASP:OD2  | 2.41                     | 0.54              |
| 1:A:31:G:C6      | 1:A:42:U:N3      | 2.76                     | 0.54              |
| 1:A:136:A:O2'    | 1:A:137:A:OP1    | 2.26                     | 0.54              |
| 1:A:161:C:C3'    | 1:A:162:A:H4'    | 2.37                     | 0.54              |
| 1:A:216:U:H2'    | 1:A:258:U:C5     | 2.43                     | 0.54              |
| 1:A:233:A:O2'    | 1:A:256:A:N6     | 2.41                     | 0.54              |
| 2:C:96:LYS:NZ    | 2:C:307:ALA:H    | 2.06                     | 0.54              |
| 2:C:394:ILE:O    | 2:C:398:ILE:HG12 | 2.08                     | 0.54              |
| 2:C:449:PHE:HZ   | 2:C:531:ARG:HA   | 1.72                     | 0.54              |
| 1:A:82:A:C5      | 1:A:97:A:N1      | 2.76                     | 0.53              |
| 1:A:499:A:N6     | 1:A:2401:C:O2'   | 2.40                     | 0.53              |
| 2:C:391:GLN:HA   | 2:C:394:ILE:HG12 | 1.90                     | 0.53              |
| 1:A:28:G:N1      | 1:A:45:U:C2      | 2.74                     | 0.53              |
| 1:A:98:C:H2'     | 1:A:99:G:C8      | 2.43                     | 0.53              |
| 1:A:182:U:H1'    | 1:A:2414:A:N3    | 2.23                     | 0.53              |
| 1:A:325:A:H5''   | 2:C:350:SER:OG   | 2.09                     | 0.53              |
| 1:A:342:C:N4     | 1:A:343:G:O6     | 2.42                     | 0.53              |
| 1:A:354:C:O2'    | 1:A:2413:G:O4'   | 2.27                     | 0.53              |
| 1:A:432:G:N3     | 1:A:453:A:C5     | 2.77                     | 0.53              |
| 1:A:520:G:C4     | 1:A:521:G:C8     | 2.96                     | 0.53              |
| 2:C:105:PHE:HA   | 2:C:108:LYS:HB2  | 1.90                     | 0.53              |
| 2:C:166:ASP:OD1  | 2:C:166:ASP:N    | 2.41                     | 0.53              |
| 2:C:173:LEU:O    | 2:C:177:ILE:HG12 | 2.06                     | 0.53              |
| 2:C:422:ARG:HE   | 2:C:423:SER:H    | 1.56                     | 0.53              |
| 1:A:114:U:C4     | 1:A:115:U:C4     | 2.96                     | 0.53              |
| 1:A:217:U:O2'    | 1:A:219:G:OP1    | 2.25                     | 0.53              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:342:C:H3'    | 1:A:343:G:N2    | 2.23                     | 0.53              |
| 1:A:423:G:H1'    | 1:A:426:G:C2    | 2.44                     | 0.53              |
| 1:A:447:G:H2'    | 1:A:448:C:N1    | 2.23                     | 0.53              |
| 1:A:572:A:OP2    | 1:A:573:A:H3'   | 2.08                     | 0.53              |
| 1:A:581:C:O2     | 2:C:192:LYS:NZ  | 2.25                     | 0.53              |
| 1:A:2413:G:C5    | 1:A:2414:A:N6   | 2.76                     | 0.53              |
| 1:A:2445:G:C6    | 1:A:2446:C:C4   | 2.96                     | 0.53              |
| 1:A:35:A:C2'     | 1:A:36:A:H4'    | 2.34                     | 0.53              |
| 1:A:52:G:N1      | 1:A:300:A:N7    | 2.56                     | 0.53              |
| 1:A:162:A:H3'    | 1:A:162:A:N3    | 2.23                     | 0.53              |
| 1:A:214:A:H3'    | 1:A:214:A:N3    | 2.22                     | 0.53              |
| 1:A:273:G:C6     | 1:A:288:U:N3    | 2.76                     | 0.53              |
| 1:A:2403:U:H1'   | 1:A:2424:A:N1   | 2.23                     | 0.53              |
| 2:C:24:THR:HB    | 2:C:27:TYR:CE1  | 2.44                     | 0.53              |
| 1:A:413:U:O4     | 1:A:420:A:N7    | 2.42                     | 0.53              |
| 1:A:584:C:H5     | 1:A:586:A:H5'   | 1.73                     | 0.53              |
| 2:C:340:LEU:HD22 | 2:C:344:LYS:HD2 | 1.89                     | 0.53              |
| 1:A:21:A:C6      | 1:A:379:A:C6    | 2.97                     | 0.53              |
| 1:A:141:A:C6     | 1:A:243:G:O6    | 2.61                     | 0.53              |
| 1:A:177:U:H4'    | 1:A:178:A:O5'   | 2.09                     | 0.53              |
| 1:A:269:G:H22    | 1:A:291:U:H2'   | 1.73                     | 0.53              |
| 1:A:413:U:C4     | 1:A:420:A:N7    | 2.77                     | 0.53              |
| 1:A:478:C:H2'    | 1:A:479:G:H8    | 1.74                     | 0.53              |
| 1:A:555:U:C2     | 1:A:556:A:N7    | 2.77                     | 0.53              |
| 1:A:565:A:O5'    | 2:C:29:TYR:OH   | 2.22                     | 0.53              |
| 1:A:2473:G:H2'   | 1:A:2474:C:C6   | 2.44                     | 0.53              |
| 2:C:134:ARG:HH11 | 2:C:145:THR:HB  | 1.73                     | 0.53              |
| 2:C:197:GLY:H    | 2:C:207:THR:H   | 1.55                     | 0.53              |
| 2:C:211:THR:HB   | 2:C:214:GLY:H   | 1.73                     | 0.53              |
| 2:C:321:CYS:SG   | 2:C:322:GLN:N   | 2.82                     | 0.53              |
| 1:A:168:A:H2'    | 1:A:169:A:C8    | 2.43                     | 0.53              |
| 1:A:174:A:N1     | 1:A:361:C:C4    | 2.77                     | 0.53              |
| 1:A:430:A:OP2    | 1:A:451:G:N2    | 2.41                     | 0.53              |
| 1:A:490:A:H1'    | 1:A:491:G:H4'   | 1.91                     | 0.53              |
| 1:A:504:C:H2'    | 1:A:505:U:C5    | 2.44                     | 0.53              |
| 2:C:179:LEU:HD12 | 2:C:179:LEU:H   | 1.74                     | 0.53              |
| 1:A:-10:A:N6     | 1:A:225:G:C6    | 2.74                     | 0.53              |
| 1:A:6:C:C2       | 1:A:469:C:N3    | 2.77                     | 0.53              |
| 1:A:31:G:C6      | 1:A:42:U:C4     | 2.97                     | 0.53              |
| 1:A:213:A:N6     | 1:A:334:G:O2'   | 2.42                     | 0.53              |
| 1:A:2411:G:H4'   | 1:A:2412:A:H2   | 1.73                     | 0.53              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:99:G:H2'    | 1:A:100:G:H1'    | 1.91                     | 0.53              |
| 1:A:470:G:H1'   | 1:A:2420:A:C5    | 2.44                     | 0.53              |
| 1:A:534:G:H1'   | 1:A:2386:G:H2'   | 1.91                     | 0.53              |
| 1:A:563:A:O2'   | 1:A:567:C:N3     | 2.39                     | 0.53              |
| 2:C:75:LYS:HD2  | 2:C:193:PHE:CD1  | 2.44                     | 0.53              |
| 2:C:155:TRP:HD1 | 2:C:318:LYS:HE3  | 1.73                     | 0.53              |
| 1:A:6:C:N4      | 1:A:469:C:N4     | 2.56                     | 0.53              |
| 1:A:121:G:N2    | 1:A:162:A:O2'    | 2.42                     | 0.53              |
| 1:A:215:U:H5''  | 1:A:218:C:C4     | 2.44                     | 0.53              |
| 1:A:325:A:OP1   | 2:C:349:HIS:ND1  | 2.39                     | 0.53              |
| 1:A:346:A:C4    | 1:A:347:G:C8     | 2.97                     | 0.53              |
| 1:A:431:A:H3'   | 1:A:432:G:C8     | 2.43                     | 0.53              |
| 1:A:484:A:C5'   | 1:A:513:G:H1     | 2.22                     | 0.53              |
| 2:C:52:LYS:HB2  | 2:C:115:ARG:HH11 | 1.73                     | 0.53              |
| 2:C:88:TYR:HE1  | 2:C:208:TYR:CZ   | 2.27                     | 0.53              |
| 1:A:3:G:N2      | 1:A:106:G:N7     | 2.57                     | 0.52              |
| 1:A:82:A:H2'    | 1:A:83:A:H5'     | 1.92                     | 0.52              |
| 1:A:432:G:N2    | 1:A:453:A:C5     | 2.70                     | 0.52              |
| 1:A:562:G:C2    | 1:A:563:A:H1'    | 2.44                     | 0.52              |
| 1:A:2463:U:H2'  | 1:A:2464:G:C8    | 2.43                     | 0.52              |
| 2:C:226:LEU:O   | 2:C:229:LEU:HB3  | 2.09                     | 0.52              |
| 2:C:400:ASP:OD2 | 2:C:401:LYS:NZ   | 2.42                     | 0.52              |
| 2:C:485:GLY:O   | 2:C:522:GLN:NE2  | 2.41                     | 0.52              |
| 1:A:453:A:O2'   | 1:A:454:A:H2'    | 2.09                     | 0.52              |
| 1:A:478:C:N4    | 1:A:479:G:O6     | 2.42                     | 0.52              |
| 1:A:543:U:H4'   | 2:C:202:TRP:HB3  | 1.91                     | 0.52              |
| 1:A:2426:G:H3'  | 1:A:2427:G:H8    | 1.73                     | 0.52              |
| 2:C:43:LEU:HD12 | 2:C:112:GLU:HG2  | 1.91                     | 0.52              |
| 1:A:58:A:H2'    | 1:A:59:C:C6      | 2.43                     | 0.52              |
| 1:A:83:A:H1'    | 1:A:96:U:O4      | 2.09                     | 0.52              |
| 1:A:236:G:N7    | 1:A:237:G:C4     | 2.77                     | 0.52              |
| 1:A:238:A:N3    | 1:A:238:A:H5''   | 2.25                     | 0.52              |
| 1:A:398:C:C2    | 1:A:464:G:C2     | 2.98                     | 0.52              |
| 1:A:489:G:N1    | 1:A:515:A:C6     | 2.77                     | 0.52              |
| 1:A:517:A:H4'   | 1:A:518:G:OP1    | 2.09                     | 0.52              |
| 1:A:555:U:N3    | 1:A:556:A:N7     | 2.57                     | 0.52              |
| 2:C:163:GLY:O   | 2:C:167:ASN:HB3  | 2.10                     | 0.52              |
| 1:A:233:A:H8    | 1:A:234:G:C5     | 2.28                     | 0.52              |
| 1:A:548:A:H2'   | 1:A:549:A:N9     | 2.25                     | 0.52              |
| 1:A:563:A:OP2   | 2:C:10:ARG:NH2   | 2.42                     | 0.52              |
| 2:C:156:PHE:HA  | 2:C:315:LYS:HG2  | 1.90                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:225:G:H2'    | 1:A:226:U:C6     | 2.45                     | 0.52              |
| 1:A:238:A:N6     | 1:A:247:G:O4'    | 2.43                     | 0.52              |
| 1:A:2483:C:OP2   | 1:A:2484:C:N4    | 2.43                     | 0.52              |
| 2:C:170:HIS:NE2  | 2:C:208:TYR:HB3  | 2.25                     | 0.52              |
| 1:A:2404:A:C5    | 1:A:2405:U:H5    | 2.28                     | 0.52              |
| 2:C:125:VAL:HG23 | 2:C:227:HIS:CE1  | 2.45                     | 0.52              |
| 2:C:452:LEU:HD13 | 2:C:534:LEU:HD22 | 1.91                     | 0.52              |
| 1:A:250:A:HO2'   | 1:A:251:C:H2'    | 1.74                     | 0.52              |
| 1:A:256:A:H4'    | 1:A:257:G:O5'    | 2.09                     | 0.52              |
| 1:A:526:G:N7     | 1:A:2394:A:N6    | 2.58                     | 0.52              |
| 1:A:569:U:N3     | 1:A:571:A:N1     | 2.57                     | 0.52              |
| 1:A:585:A:O2'    | 1:A:587:U:O4     | 2.25                     | 0.52              |
| 2:C:217:LEU:O    | 2:C:221:LEU:HG   | 2.09                     | 0.52              |
| 1:A:77:A:H2'     | 1:A:103:A:N6     | 2.24                     | 0.52              |
| 1:A:80:G:H2'     | 1:A:81:A:C8      | 2.45                     | 0.52              |
| 1:A:179:A:H2     | 1:A:180:G:C8     | 2.28                     | 0.52              |
| 1:A:234:G:H1     | 1:A:254:C:N4     | 2.08                     | 0.52              |
| 1:A:491:G:H2'    | 1:A:491:G:N3     | 2.25                     | 0.52              |
| 1:A:525:A:N3     | 1:A:526:G:N2     | 2.58                     | 0.52              |
| 1:A:598:G:C4     | 1:A:599:A:H5'    | 2.45                     | 0.52              |
| 1:A:2457:C:H2'   | 1:A:2458:A:H8    | 1.74                     | 0.52              |
| 2:C:128:ASP:HB2  | 2:C:135:PRO:HA   | 1.92                     | 0.52              |
| 1:A:18:G:H2'     | 1:A:19:U:C6      | 2.45                     | 0.52              |
| 1:A:31:G:N1      | 1:A:42:U:N3      | 2.58                     | 0.52              |
| 1:A:47:U:H2'     | 1:A:48:G:H8      | 1.73                     | 0.52              |
| 1:A:65:A:H2'     | 1:A:66:C:C6      | 2.45                     | 0.52              |
| 1:A:102:A:O3'    | 1:A:111:C:H6     | 1.92                     | 0.52              |
| 1:A:213:A:N6     | 1:A:336:A:H61    | 2.07                     | 0.52              |
| 1:A:364:A:C4     | 1:A:365:A:C8     | 2.97                     | 0.52              |
| 1:A:431:A:C5     | 1:A:450:U:O2     | 2.62                     | 0.52              |
| 1:A:474:U:H3'    | 1:A:475:A:H8     | 1.75                     | 0.52              |
| 2:C:27:TYR:CD2   | 2:C:28:ARG:HG3   | 2.46                     | 0.52              |
| 1:A:-10:A:N1     | 1:A:226:U:N3     | 2.58                     | 0.51              |
| 1:A:25:C:H2'     | 1:A:26:A:C4      | 2.45                     | 0.51              |
| 1:A:133:C:H2'    | 1:A:134:U:C4'    | 2.40                     | 0.51              |
| 1:A:176:A:N6     | 1:A:179:A:H61    | 2.08                     | 0.51              |
| 1:A:439:G:N2     | 1:A:443:U:O4'    | 2.43                     | 0.51              |
| 1:A:476:C:H2'    | 1:A:477:U:H6     | 1.76                     | 0.51              |
| 2:C:114:VAL:HG23 | 2:C:117:ILE:HD11 | 1.91                     | 0.51              |
| 2:C:338:MET:HE3  | 2:C:339:GLU:HG3  | 1.92                     | 0.51              |
| 2:C:464:LEU:HD22 | 2:C:481:MET:SD   | 2.50                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:-1:A:H3'     | 1:A:1:G:H1       | 1.74                     | 0.51              |
| 1:A:248:A:O4'    | 1:A:251:C:N4     | 2.42                     | 0.51              |
| 1:A:294:G:H2'    | 1:A:295:U:C6     | 2.45                     | 0.51              |
| 1:A:407:A:H3'    | 1:A:408:A:C2     | 2.42                     | 0.51              |
| 1:A:596:U:H3'    | 1:A:597:A:H8     | 1.76                     | 0.51              |
| 1:A:2436:G:N1    | 1:A:2488:U:C2    | 2.78                     | 0.51              |
| 2:C:16:GLN:HG2   | 2:C:185:LYS:N    | 2.25                     | 0.51              |
| 1:A:180:G:HO2'   | 1:A:181:G:H8     | 1.59                     | 0.51              |
| 1:A:483:U:H5''   | 1:A:484:A:O5'    | 2.10                     | 0.51              |
| 2:C:52:LYS:HB2   | 2:C:115:ARG:NH1  | 2.26                     | 0.51              |
| 1:A:92:C:H2'     | 1:A:93:U:H5'     | 1.92                     | 0.51              |
| 1:A:214:A:H5''   | 1:A:333:G:C5     | 2.46                     | 0.51              |
| 1:A:394:U:H2'    | 1:A:395:A:C8     | 2.45                     | 0.51              |
| 1:A:556:A:N6     | 1:A:582:A:N1     | 2.58                     | 0.51              |
| 1:A:2479:C:H2'   | 1:A:2480:C:C6    | 2.44                     | 0.51              |
| 2:C:211:THR:O    | 2:C:214:GLY:N    | 2.43                     | 0.51              |
| 2:C:525:VAL:HG21 | 2:C:529:TYR:H    | 1.76                     | 0.51              |
| 1:A:106:G:C6     | 1:A:109:C:H4'    | 2.45                     | 0.51              |
| 1:A:385:A:C6     | 1:A:387:C:C2     | 2.98                     | 0.51              |
| 2:C:454:TYR:O    | 2:C:458:LEU:HG   | 2.11                     | 0.51              |
| 1:A:82:A:H3'     | 1:A:83:A:C8      | 2.46                     | 0.51              |
| 1:A:303:A:H3'    | 1:A:304:C:C6     | 2.43                     | 0.51              |
| 1:A:2445:G:C6    | 1:A:2478:A:C5    | 2.99                     | 0.51              |
| 2:C:172:THR:OG1  | 2:C:335:LYS:O    | 2.19                     | 0.51              |
| 2:C:243:GLU:C    | 2:C:246:GLU:H    | 2.19                     | 0.51              |
| 2:C:247:ARG:HD2  | 2:C:317:SER:H    | 1.75                     | 0.51              |
| 2:C:351:SER:O    | 2:C:362:ARG:HA   | 2.11                     | 0.51              |
| 1:A:262:A:H2     | 1:A:308:U:N3     | 2.00                     | 0.51              |
| 1:A:2405:U:N3    | 1:A:2418:G:C6    | 2.79                     | 0.51              |
| 2:C:43:LEU:HD13  | 2:C:116:ILE:HG13 | 1.92                     | 0.51              |
| 2:C:116:ILE:HA   | 2:C:119:GLU:OE1  | 2.10                     | 0.51              |
| 1:A:141:A:C2     | 1:A:243:G:N1     | 2.79                     | 0.51              |
| 1:A:174:A:H61    | 1:A:361:C:N4     | 2.08                     | 0.51              |
| 1:A:259:A:H2'    | 1:A:260:C:C6     | 2.45                     | 0.51              |
| 1:A:360:U:H2'    | 1:A:361:C:C6     | 2.46                     | 0.51              |
| 1:A:504:C:H2'    | 1:A:505:U:H5     | 1.75                     | 0.51              |
| 2:C:232:PHE:O    | 2:C:235:GLN:HG2  | 2.11                     | 0.51              |
| 2:C:466:THR:O    | 2:C:469:SER:OG   | 2.28                     | 0.51              |
| 1:A:352:G:N2     | 1:A:2414:A:O2'   | 2.42                     | 0.51              |
| 1:A:463:A:H3'    | 1:A:464:G:H8     | 1.76                     | 0.51              |
| 1:A:538:U:N3     | 1:A:598:G:C5     | 2.78                     | 0.51              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2439:G:H2'  | 1:A:2440:G:C8    | 2.45                     | 0.51              |
| 1:A:59:C:C2     | 1:A:60:A:C8      | 2.99                     | 0.51              |
| 1:A:102:A:O2'   | 1:A:111:C:H5'    | 2.11                     | 0.51              |
| 1:A:185:A:O2'   | 1:A:186:A:P      | 2.68                     | 0.51              |
| 1:A:195:U:O5'   | 1:A:206:A:N6     | 2.44                     | 0.51              |
| 1:A:375:A:H2'   | 1:A:376:C:H6     | 1.76                     | 0.51              |
| 1:A:2448:A:H2'  | 1:A:2449:A:C5    | 2.46                     | 0.51              |
| 2:C:72:GLN:C    | 2:C:75:LYS:H     | 2.19                     | 0.51              |
| 2:C:165:PHE:HA  | 2:C:168:ILE:HG23 | 1.92                     | 0.51              |
| 1:A:-10:A:C5    | 1:A:227:G:N1     | 2.79                     | 0.50              |
| 1:A:215:U:O2'   | 1:A:313:A:N3     | 2.44                     | 0.50              |
| 1:A:333:G:H21   | 1:A:334:G:H22    | 1.60                     | 0.50              |
| 1:A:358:A:O2'   | 1:A:359:A:N7     | 2.45                     | 0.50              |
| 1:A:565:A:C8    | 2:C:29:TYR:CZ    | 2.99                     | 0.50              |
| 1:A:2403:U:H3   | 1:A:2425:C:N4    | 2.10                     | 0.50              |
| 2:C:232:PHE:HZ  | 2:C:331:PHE:HB3  | 1.76                     | 0.50              |
| 2:C:309:ASP:OD1 | 2:C:310:PHE:N    | 2.40                     | 0.50              |
| 1:A:188:U:O4    | 1:A:197:C:C4     | 2.63                     | 0.50              |
| 1:A:249:A:H1'   | 1:A:250:A:H2     | 1.76                     | 0.50              |
| 1:A:295:U:O2'   | 1:A:296:U:H5'    | 2.12                     | 0.50              |
| 1:A:582:A:O4'   | 2:C:192:LYS:NZ   | 2.44                     | 0.50              |
| 2:C:74:LEU:HD12 | 2:C:189:LEU:HD13 | 1.93                     | 0.50              |
| 1:A:120:A:N6    | 1:A:162:A:H2'    | 2.26                     | 0.50              |
| 1:A:458:U:H2'   | 1:A:459:U:O4'    | 2.12                     | 0.50              |
| 1:A:463:A:C4    | 1:A:464:G:C8     | 2.99                     | 0.50              |
| 2:C:51:THR:OG1  | 2:C:112:GLU:OE1  | 2.27                     | 0.50              |
| 2:C:128:ASP:HB3 | 2:C:305:ARG:NH2  | 2.24                     | 0.50              |
| 1:A:58:A:C2     | 1:A:293:U:C2     | 2.99                     | 0.50              |
| 1:A:65:A:H2'    | 1:A:66:C:H6      | 1.76                     | 0.50              |
| 1:A:115:U:C2'   | 1:A:116:G:H8     | 2.22                     | 0.50              |
| 1:A:389:G:C6    | 1:A:390:G:C6     | 3.00                     | 0.50              |
| 1:A:565:A:H2'   | 2:C:25:ARG:HH21  | 1.76                     | 0.50              |
| 1:A:2484:C:H2'  | 1:A:2485:U:C2    | 2.45                     | 0.50              |
| 2:C:302:LYS:O   | 2:C:313:SER:N    | 2.44                     | 0.50              |
| 1:A:114:U:N3    | 1:A:115:U:C4     | 2.80                     | 0.50              |
| 1:A:193:U:C4    | 1:A:345:A:C8     | 3.00                     | 0.50              |
| 1:A:194:U:N3    | 1:A:195:U:O2     | 2.45                     | 0.50              |
| 1:A:219:G:O6    | 1:A:229:C:N4     | 2.28                     | 0.50              |
| 1:A:233:A:C2    | 1:A:256:A:H1'    | 2.47                     | 0.50              |
| 1:A:546:A:H5''  | 1:A:547:A:C5     | 2.47                     | 0.50              |
| 1:A:2435:A:H2'  | 1:A:2436:G:H8    | 1.76                     | 0.50              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 2:C:131:HIS:HB3  | 2:C:307:ALA:HB2 | 1.94                     | 0.50              |
| 1:A:136:A:H5'    | 1:A:240:A:C6    | 2.46                     | 0.50              |
| 1:A:166:U:H2'    | 1:A:167:U:C6    | 2.47                     | 0.50              |
| 1:A:181:G:H2'    | 1:A:182:U:O4'   | 2.12                     | 0.50              |
| 1:A:261:A:O2'    | 1:A:262:A:H5'   | 2.11                     | 0.50              |
| 1:A:432:G:N3     | 1:A:453:A:C6    | 2.80                     | 0.50              |
| 2:C:429:ILE:HG21 | 2:C:523:ALA:HA  | 1.94                     | 0.50              |
| 1:A:67:A:C6      | 1:A:165:G:C6    | 2.99                     | 0.50              |
| 1:A:76:A:H2'     | 1:A:77:A:C8     | 2.47                     | 0.50              |
| 1:A:296:U:C5     | 1:A:297:A:C8    | 2.99                     | 0.50              |
| 1:A:338:G:H8     | 1:A:338:G:OP2   | 1.95                     | 0.50              |
| 1:A:420:A:H3'    | 1:A:422:G:O6    | 2.11                     | 0.50              |
| 1:A:528:U:C2     | 1:A:2393:A:N7   | 2.80                     | 0.50              |
| 1:A:598:G:H2'    | 1:A:598:G:N3    | 2.27                     | 0.50              |
| 1:A:2411:G:H22   | 1:A:2414:A:P    | 2.34                     | 0.50              |
| 2:C:133:PHE:HD1  | 2:C:305:ARG:HE  | 1.60                     | 0.50              |
| 1:A:140:C:C2     | 1:A:244:U:N3    | 2.78                     | 0.50              |
| 1:A:182:U:H2'    | 1:A:352:G:N2    | 2.26                     | 0.50              |
| 1:A:482:G:H5''   | 1:A:511:U:C4    | 2.47                     | 0.50              |
| 1:A:489:G:H2'    | 1:A:490:A:C8    | 2.47                     | 0.50              |
| 1:A:538:U:C4     | 1:A:598:G:O6    | 2.64                     | 0.50              |
| 2:C:94:SER:HA    | 2:C:357:LEU:HA  | 1.94                     | 0.50              |
| 2:C:167:ASN:OD1  | 2:C:225:TYR:OH  | 2.24                     | 0.50              |
| 1:A:54:U:O2      | 1:A:298:U:N3    | 2.44                     | 0.50              |
| 1:A:207:G:H2'    | 1:A:208:U:H6    | 1.76                     | 0.50              |
| 1:A:269:G:H2'    | 1:A:270:U:H6    | 1.73                     | 0.50              |
| 1:A:432:G:C6     | 1:A:450:U:C2    | 3.00                     | 0.50              |
| 1:A:440:C:N3     | 1:A:441:A:C8    | 2.79                     | 0.50              |
| 1:A:587:U:H2'    | 1:A:588:G:C8    | 2.46                     | 0.50              |
| 1:A:2386:G:H1'   | 1:A:2388:A:N3   | 2.27                     | 0.50              |
| 2:C:52:LYS:C     | 2:C:58:THR:HA   | 2.37                     | 0.50              |
| 2:C:303:TYR:N    | 2:C:313:SER:HB3 | 2.27                     | 0.50              |
| 2:C:324:ILE:O    | 2:C:328:LEU:HG  | 2.12                     | 0.50              |
| 1:A:57:C:C2      | 1:A:294:G:N2    | 2.64                     | 0.49              |
| 1:A:131:A:C6     | 1:A:147:G:C6    | 3.00                     | 0.49              |
| 1:A:179:A:H3'    | 1:A:179:A:N3    | 2.27                     | 0.49              |
| 1:A:224:U:H2'    | 1:A:225:G:C4    | 2.47                     | 0.49              |
| 1:A:396:C:O2'    | 1:A:397:C:H5'   | 2.12                     | 0.49              |
| 1:A:595:U:H2'    | 1:A:596:U:C6    | 2.44                     | 0.49              |
| 1:A:2392:U:H2'   | 1:A:2393:A:H2   | 1.77                     | 0.49              |
| 1:A:2440:G:N2    | 1:A:2483:C:O2   | 2.44                     | 0.49              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:317:U:H2'   | 1:A:318:G:N7    | 2.26                     | 0.49              |
| 1:A:403:C:H5''  | 1:A:404:A:O5'   | 2.12                     | 0.49              |
| 1:A:559:G:H1'   | 1:A:571:A:N1    | 2.26                     | 0.49              |
| 1:A:2429:U:H2'  | 1:A:2430:C:C4   | 2.47                     | 0.49              |
| 1:A:2465:U:H2'  | 1:A:2466:G:C8   | 2.47                     | 0.49              |
| 2:C:142:ALA:O   | 2:C:147:LYS:NZ  | 2.21                     | 0.49              |
| 2:C:412:TRP:O   | 2:C:413:PHE:HD1 | 1.94                     | 0.49              |
| 1:A:87:G:H3'    | 1:A:88:A:H4'    | 1.94                     | 0.49              |
| 1:A:159:C:H2'   | 1:A:160:G:C8    | 2.48                     | 0.49              |
| 1:A:185:A:H3'   | 1:A:186:A:C6    | 2.48                     | 0.49              |
| 1:A:404:A:N6    | 1:A:460:G:C6    | 2.81                     | 0.49              |
| 1:A:561:G:N1    | 1:A:569:U:C2    | 2.80                     | 0.49              |
| 1:A:561:G:H3'   | 2:C:10:ARG:HH21 | 1.76                     | 0.49              |
| 1:A:2388:A:O2'  | 1:A:2389:C:O5'  | 2.29                     | 0.49              |
| 1:A:2442:G:H2'  | 1:A:2443:G:C8   | 2.47                     | 0.49              |
| 2:C:16:GLN:HE21 | 2:C:185:LYS:C   | 2.20                     | 0.49              |
| 2:C:481:MET:HE3 | 2:C:488:SER:HB3 | 1.93                     | 0.49              |
| 2:C:484:ASP:N   | 2:C:484:ASP:OD1 | 2.45                     | 0.49              |
| 1:A:193:U:H4'   | 1:A:194:U:H5    | 1.78                     | 0.49              |
| 1:A:401:A:N6    | 1:A:461:C:H1'   | 2.26                     | 0.49              |
| 1:A:466:G:O2'   | 1:A:467:U:H5'   | 2.12                     | 0.49              |
| 1:A:482:G:O3'   | 1:A:483:U:H3'   | 2.12                     | 0.49              |
| 1:A:485:G:H5'   | 1:A:486:U:H5'   | 1.93                     | 0.49              |
| 1:A:18:G:H2'    | 1:A:19:U:H6     | 1.77                     | 0.49              |
| 1:A:135:A:N1    | 1:A:236:G:N2    | 2.59                     | 0.49              |
| 1:A:437:U:H2'   | 1:A:444:A:N3    | 2.27                     | 0.49              |
| 1:A:466:G:C5    | 1:A:467:U:C4    | 3.01                     | 0.49              |
| 1:A:520:G:H2'   | 1:A:521:G:H8    | 1.76                     | 0.49              |
| 1:A:583:A:OP1   | 2:C:206:LYS:NZ  | 2.45                     | 0.49              |
| 1:A:16:G:H2'    | 1:A:17:U:C6     | 2.47                     | 0.49              |
| 1:A:26:A:O2'    | 1:A:27:A:O4'    | 2.29                     | 0.49              |
| 1:A:313:A:C8    | 1:A:314:A:H2    | 2.31                     | 0.49              |
| 1:A:562:G:O6    | 1:A:568:C:H2'   | 2.12                     | 0.49              |
| 1:A:2410:C:H2'  | 1:A:2411:G:H1'  | 1.95                     | 0.49              |
| 1:A:2438:G:C5   | 1:A:2487:C:C4   | 3.00                     | 0.49              |
| 1:A:180:G:O2'   | 1:A:181:G:H8    | 1.95                     | 0.49              |
| 1:A:220:G:O3'   | 2:C:378:ARG:HD2 | 2.12                     | 0.49              |
| 1:A:323:A:C4    | 2:C:349:HIS:CE1 | 3.00                     | 0.49              |
| 1:A:479:G:H2'   | 1:A:480:U:H5    | 1.78                     | 0.49              |
| 1:A:527:U:C2    | 1:A:2394:A:C5   | 3.00                     | 0.49              |
| 1:A:2411:G:H21  | 1:A:2413:G:H3'  | 1.78                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2467:A:C5    | 1:A:2468:A:C5    | 3.01                     | 0.49              |
| 2:C:302:LYS:HG2  | 2:C:303:TYR:N    | 2.25                     | 0.49              |
| 1:A:138:G:H2'    | 1:A:139:A:C8     | 2.47                     | 0.49              |
| 1:A:183:A:C8     | 1:A:352:G:C6     | 3.00                     | 0.49              |
| 1:A:404:A:N6     | 1:A:460:G:C2     | 2.80                     | 0.49              |
| 1:A:564:A:H3'    | 1:A:564:A:N3     | 2.28                     | 0.49              |
| 2:C:87:MET:O     | 2:C:99:PRO:HB3   | 2.13                     | 0.49              |
| 2:C:170:HIS:HA   | 2:C:173:LEU:HB3  | 1.95                     | 0.49              |
| 2:C:428:ILE:HG22 | 2:C:432:TYR:CZ   | 2.48                     | 0.49              |
| 1:A:6:C:C2       | 1:A:469:C:C2     | 3.00                     | 0.49              |
| 1:A:135:A:H2     | 1:A:136:A:O4'    | 1.95                     | 0.49              |
| 1:A:283:U:C2     | 1:A:284:G:C8     | 3.01                     | 0.49              |
| 1:A:284:G:C6     | 1:A:285:G:C6     | 3.00                     | 0.49              |
| 1:A:428:A:H2'    | 1:A:429:A:N7     | 2.28                     | 0.49              |
| 1:A:546:A:H5'    | 1:A:589:G:N2     | 2.28                     | 0.49              |
| 1:A:2452:A:N1    | 1:A:2473:G:C6    | 2.81                     | 0.49              |
| 2:C:426:LEU:HD21 | 2:C:521:SER:HA   | 1.94                     | 0.49              |
| 1:A:6:C:OP1      | 1:A:2420:A:N6    | 2.46                     | 0.49              |
| 1:A:32:U:H3'     | 1:A:33:U:C6      | 2.48                     | 0.49              |
| 2:C:144:LYS:C    | 2:C:147:LYS:HZ1  | 2.21                     | 0.49              |
| 2:C:193:PHE:O    | 2:C:213:GLN:NE2  | 2.46                     | 0.49              |
| 2:C:244:SER:HA   | 2:C:316:GLY:N    | 2.28                     | 0.49              |
| 1:A:-10:A:C6     | 1:A:227:G:C6     | 3.00                     | 0.48              |
| 1:A:76:A:H2'     | 1:A:77:A:H8      | 1.77                     | 0.48              |
| 1:A:137:A:C6     | 1:A:247:G:H1'    | 2.48                     | 0.48              |
| 1:A:156:A:H8     | 1:A:158:U:O4     | 1.95                     | 0.48              |
| 1:A:266:A:H4'    | 1:A:267:A:C5'    | 2.43                     | 0.48              |
| 1:A:335:A:N1     | 1:A:337:C:H5     | 2.11                     | 0.48              |
| 1:A:446:A:OP2    | 1:A:446:A:H8     | 1.96                     | 0.48              |
| 1:A:547:A:N6     | 1:A:588:G:C2     | 2.79                     | 0.48              |
| 1:A:2411:G:H21   | 1:A:2413:G:H8    | 1.60                     | 0.48              |
| 1:A:2445:G:C5    | 1:A:2478:A:C6    | 3.01                     | 0.48              |
| 2:C:28:ARG:HA    | 2:C:31:LEU:HB2   | 1.93                     | 0.48              |
| 2:C:68:LYS:HB3   | 2:C:72:GLN:CD    | 2.38                     | 0.48              |
| 2:C:89:ILE:HB    | 2:C:98:ARG:O     | 2.13                     | 0.48              |
| 2:C:110:ILE:O    | 2:C:114:VAL:HG12 | 2.13                     | 0.48              |
| 1:A:60:A:H2'     | 1:A:61:G:H8      | 1.77                     | 0.48              |
| 1:A:153:C:H2'    | 1:A:154:U:C6     | 2.47                     | 0.48              |
| 1:A:494:G:H2'    | 1:A:495:G:C8     | 2.49                     | 0.48              |
| 2:C:168:ILE:HG21 | 2:C:208:TYR:CE2  | 2.48                     | 0.48              |
| 2:C:355:ARG:HH11 | 2:C:357:LEU:N    | 2.11                     | 0.48              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 2:C:479:ILE:O   | 2:C:483:LYS:HG3  | 2.13                     | 0.48              |
| 1:A:7:C:O2      | 1:A:391:G:C2     | 2.65                     | 0.48              |
| 1:A:25:C:N3     | 1:A:375:A:C6     | 2.80                     | 0.48              |
| 1:A:254:C:H2'   | 1:A:255:U:O3'    | 2.13                     | 0.48              |
| 1:A:287:C:H2'   | 1:A:288:U:C6     | 2.48                     | 0.48              |
| 1:A:461:C:H5''  | 1:A:462:A:H5''   | 1.94                     | 0.48              |
| 1:A:525:A:C4    | 1:A:526:G:N1     | 2.69                     | 0.48              |
| 1:A:526:G:C8    | 1:A:527:U:O2     | 2.67                     | 0.48              |
| 1:A:527:U:C4    | 1:A:2394:A:C2    | 3.01                     | 0.48              |
| 2:C:117:ILE:O   | 2:C:121:ILE:HG12 | 2.13                     | 0.48              |
| 1:A:73:C:O2     | 1:A:113:G:C2     | 2.66                     | 0.48              |
| 1:A:93:U:H2'    | 1:A:94:G:H21     | 1.77                     | 0.48              |
| 1:A:265:A:O3'   | 1:A:266:A:H2'    | 2.13                     | 0.48              |
| 1:A:336:A:H8    | 1:A:338:G:C8     | 2.31                     | 0.48              |
| 1:A:347:G:H2'   | 1:A:348:C:C6     | 2.48                     | 0.48              |
| 1:A:403:C:H4'   | 1:A:404:A:OP2    | 2.13                     | 0.48              |
| 1:A:473:G:C6    | 1:A:474:U:C4     | 3.02                     | 0.48              |
| 1:A:508:A:H2'   | 1:A:509:C:C2     | 2.48                     | 0.48              |
| 1:A:526:G:C8    | 1:A:527:U:C2     | 3.01                     | 0.48              |
| 1:A:2434:A:H2'  | 1:A:2435:A:C8    | 2.48                     | 0.48              |
| 2:C:25:ARG:HA   | 2:C:28:ARG:O     | 2.13                     | 0.48              |
| 2:C:96:LYS:NZ   | 2:C:308:ASP:H    | 2.09                     | 0.48              |
| 1:A:86:C:N3     | 1:A:92:C:N4      | 2.61                     | 0.48              |
| 1:A:125:U:H2'   | 1:A:126:G:H8     | 1.78                     | 0.48              |
| 1:A:190:G:O2'   | 1:A:191:U:O5'    | 2.32                     | 0.48              |
| 1:A:262:A:O2'   | 1:A:263:A:O4'    | 2.23                     | 0.48              |
| 1:A:398:C:H2'   | 1:A:399:U:N1     | 2.29                     | 0.48              |
| 1:A:421:A:H2'   | 1:A:421:A:N3     | 2.27                     | 0.48              |
| 2:C:106:THR:O   | 2:C:109:LEU:HG   | 2.14                     | 0.48              |
| 1:A:9:A:C6      | 1:A:389:G:O6     | 2.67                     | 0.48              |
| 1:A:478:C:H2'   | 1:A:479:G:C8     | 2.48                     | 0.48              |
| 1:A:21:A:C6     | 1:A:22:A:C6      | 3.02                     | 0.48              |
| 1:A:215:U:N3    | 1:A:315:U:O4     | 2.47                     | 0.48              |
| 1:A:227:G:H2'   | 1:A:228:U:C6     | 2.48                     | 0.48              |
| 1:A:356:A:C6    | 1:A:357:G:C5     | 3.02                     | 0.48              |
| 1:A:440:C:O2    | 1:A:440:C:H2'    | 2.13                     | 0.48              |
| 1:A:453:A:HO2'  | 1:A:454:A:H2'    | 1.79                     | 0.48              |
| 1:A:2446:C:H3'  | 1:A:2447:A:C8    | 2.44                     | 0.48              |
| 2:C:169:ASP:HB2 | 2:C:225:TYR:OH   | 2.13                     | 0.48              |
| 1:A:53:A:N6     | 1:A:298:U:N3     | 2.61                     | 0.48              |
| 1:A:106:G:C5    | 1:A:109:C:H4'    | 2.48                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:123:G:H1     | 1:A:159:C:N4     | 2.11                     | 0.48              |
| 1:A:243:G:C2     | 1:A:244:U:C4     | 3.01                     | 0.48              |
| 1:A:315:U:H2'    | 1:A:317:U:OP1    | 2.14                     | 0.48              |
| 1:A:2413:G:H2'   | 1:A:2414:A:C8    | 2.48                     | 0.48              |
| 1:A:2460:U:H2'   | 1:A:2461:A:C8    | 2.48                     | 0.48              |
| 1:A:56:A:N7      | 1:A:57:C:N4      | 2.62                     | 0.48              |
| 1:A:92:C:H2'     | 1:A:92:C:O2      | 2.13                     | 0.48              |
| 1:A:193:U:C4     | 1:A:207:G:C4     | 3.02                     | 0.48              |
| 1:A:410:G:N1     | 1:A:451:G:N7     | 2.61                     | 0.48              |
| 1:A:463:A:C5     | 1:A:464:G:C5     | 3.02                     | 0.48              |
| 1:A:512:G:H2'    | 1:A:512:G:N3     | 2.27                     | 0.48              |
| 1:A:2420:A:H4'   | 1:A:2421:C:OP2   | 2.14                     | 0.48              |
| 1:A:2468:A:H2'   | 1:A:2469:C:H5    | 1.78                     | 0.48              |
| 1:A:77:A:H2'     | 1:A:103:A:H61    | 1.77                     | 0.48              |
| 1:A:88:A:C8      | 1:A:89:A:N7      | 2.82                     | 0.48              |
| 1:A:311:A:H3'    | 1:A:312:C:C2     | 2.49                     | 0.48              |
| 1:A:438:A:N6     | 1:A:445:G:O4'    | 2.32                     | 0.48              |
| 2:C:79:TYR:HB3   | 2:C:81:PRO:HD3   | 1.95                     | 0.48              |
| 2:C:97:MET:HB2   | 2:C:165:PHE:HE2  | 1.78                     | 0.48              |
| 2:C:322:GLN:O    | 2:C:326:GLU:HG3  | 2.13                     | 0.48              |
| 2:C:398:ILE:HD11 | 2:C:455:PHE:HE1  | 1.79                     | 0.48              |
| 2:C:432:TYR:CE2  | 2:C:463:CYS:HB2  | 2.49                     | 0.48              |
| 1:A:2:U:OP2      | 1:A:104:C:H2'    | 2.14                     | 0.47              |
| 1:A:51:A:H5''    | 1:A:267:A:N6     | 2.27                     | 0.47              |
| 1:A:133:C:H2'    | 1:A:134:U:O4'    | 2.14                     | 0.47              |
| 1:A:183:A:C4     | 1:A:350:A:C6     | 3.02                     | 0.47              |
| 1:A:222:U:O2'    | 1:A:223:A:H8     | 1.97                     | 0.47              |
| 1:A:267:A:C4     | 1:A:268:G:C8     | 3.02                     | 0.47              |
| 1:A:485:G:H2'    | 1:A:512:G:N1     | 2.28                     | 0.47              |
| 2:C:140:HIS:HA   | 2:C:143:LEU:HD12 | 1.95                     | 0.47              |
| 2:C:148:ARG:HH21 | 2:C:445:LEU:HD23 | 1.78                     | 0.47              |
| 2:C:170:HIS:CE1  | 2:C:208:TYR:HB3  | 2.48                     | 0.47              |
| 2:C:329:LYS:HD3  | 2:C:340:LEU:HG   | 1.96                     | 0.47              |
| 2:C:426:LEU:O    | 2:C:430:THR:HG23 | 2.14                     | 0.47              |
| 1:A:-11:C:C4     | 1:A:228:U:N3     | 2.82                     | 0.47              |
| 1:A:-1:A:OP2     | 1:A:-1:A:H8      | 1.97                     | 0.47              |
| 1:A:35:A:C5      | 1:A:36:A:H1'     | 2.49                     | 0.47              |
| 1:A:138:G:P      | 1:A:240:A:H61    | 2.35                     | 0.47              |
| 1:A:357:G:H2'    | 1:A:359:A:O5'    | 2.15                     | 0.47              |
| 1:A:557:G:P      | 2:C:185:LYS:HB3  | 2.53                     | 0.47              |
| 1:A:2466:G:H2'   | 1:A:2467:A:H8    | 1.77                     | 0.47              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2488:U:H2'  | 1:A:2489:U:C6    | 2.48                     | 0.47              |
| 2:C:148:ARG:O   | 2:C:385:GLU:HG3  | 2.14                     | 0.47              |
| 2:C:414:PRO:HD3 | 2:C:458:LEU:HA   | 1.96                     | 0.47              |
| 1:A:13:A:H62    | 1:A:385:A:H61    | 1.61                     | 0.47              |
| 1:A:23:G:C2     | 1:A:24:U:C2      | 3.03                     | 0.47              |
| 1:A:211:C:C4    | 1:A:212:U:C4     | 3.02                     | 0.47              |
| 1:A:259:A:C6    | 1:A:260:C:N4     | 2.82                     | 0.47              |
| 1:A:324:G:H3'   | 1:A:324:G:N3     | 2.28                     | 0.47              |
| 1:A:387:C:P     | 1:A:387:C:H6     | 2.36                     | 0.47              |
| 1:A:446:A:H2'   | 1:A:447:G:C5     | 2.49                     | 0.47              |
| 1:A:538:U:O2    | 1:A:538:U:H2'    | 2.13                     | 0.47              |
| 1:A:544:U:OP2   | 1:A:545:A:N6     | 2.47                     | 0.47              |
| 1:A:2411:G:H4'  | 1:A:2412:A:C2    | 2.49                     | 0.47              |
| 2:C:98:ARG:NH2  | 2:C:216:ILE:O    | 2.47                     | 0.47              |
| 2:C:322:GLN:O   | 2:C:323:TRP:C    | 2.58                     | 0.47              |
| 1:A:188:U:N3    | 1:A:197:C:O2     | 2.47                     | 0.47              |
| 1:A:250:A:H1'   | 1:A:251:C:N3     | 2.29                     | 0.47              |
| 1:A:336:A:H1'   | 1:A:337:C:H3'    | 1.95                     | 0.47              |
| 1:A:2412:A:O2'  | 1:A:2413:G:O4'   | 2.33                     | 0.47              |
| 1:A:2456:A:C6   | 1:A:2466:G:C6    | 3.03                     | 0.47              |
| 2:C:412:TRP:HB2 | 2:C:454:TYR:OH   | 2.14                     | 0.47              |
| 2:C:532:ASN:O   | 2:C:536:ASN:ND2  | 2.48                     | 0.47              |
| 1:A:76:A:C4     | 1:A:77:A:C8      | 3.03                     | 0.47              |
| 1:A:81:A:H2     | 1:A:98:C:H1'     | 1.79                     | 0.47              |
| 1:A:137:A:N7    | 1:A:240:A:H2     | 2.13                     | 0.47              |
| 1:A:223:A:C6    | 1:A:224:U:C4     | 3.03                     | 0.47              |
| 1:A:236:G:C1'   | 1:A:241:G:H22    | 2.20                     | 0.47              |
| 1:A:237:G:O2'   | 1:A:248:A:N7     | 2.39                     | 0.47              |
| 1:A:264:G:H2'   | 1:A:265:A:C4'    | 2.44                     | 0.47              |
| 1:A:477:U:H2'   | 1:A:478:C:C6     | 2.49                     | 0.47              |
| 2:C:75:LYS:C    | 2:C:77:GLY:H     | 2.22                     | 0.47              |
| 2:C:113:ALA:O   | 2:C:117:ILE:HG23 | 2.15                     | 0.47              |
| 1:A:7:C:C4      | 1:A:391:G:N1     | 2.82                     | 0.47              |
| 1:A:13:A:H2'    | 1:A:14:G:O4'     | 2.15                     | 0.47              |
| 1:A:359:A:H2'   | 1:A:360:U:H6     | 1.80                     | 0.47              |
| 2:C:15:SER:HA   | 2:C:183:ASP:OD1  | 2.14                     | 0.47              |
| 2:C:155:TRP:CD1 | 2:C:318:LYS:HB3  | 2.50                     | 0.47              |
| 2:C:182:LYS:HE2 | 2:C:187:SER:O    | 2.14                     | 0.47              |
| 2:C:237:LYS:HD2 | 2:C:303:TYR:N    | 2.28                     | 0.47              |
| 1:A:-8:A:C6     | 1:A:224:U:N3     | 2.83                     | 0.47              |
| 1:A:6:C:N3      | 1:A:469:C:N3     | 2.62                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:28:G:N2      | 1:A:45:U:C2      | 2.83                     | 0.47              |
| 1:A:112:G:H2'    | 1:A:113:G:O4'    | 2.14                     | 0.47              |
| 1:A:184:U:H3     | 1:A:202:C:H5     | 1.62                     | 0.47              |
| 1:A:273:G:C2     | 1:A:288:U:C2     | 3.02                     | 0.47              |
| 1:A:285:G:C2     | 1:A:286:A:C5     | 3.02                     | 0.47              |
| 1:A:525:A:H2'    | 1:A:526:G:N1     | 2.30                     | 0.47              |
| 1:A:2459:G:N2    | 1:A:2462:A:OP2   | 2.48                     | 0.47              |
| 2:C:27:TYR:CE2   | 2:C:28:ARG:HG3   | 2.50                     | 0.47              |
| 2:C:329:LYS:HB2  | 2:C:340:LEU:HD11 | 1.96                     | 0.47              |
| 2:C:340:LEU:HD13 | 2:C:344:LYS:HZ3  | 1.78                     | 0.47              |
| 2:C:414:PRO:HB3  | 2:C:458:LEU:C    | 2.39                     | 0.47              |
| 2:C:431:ILE:O    | 2:C:434:SER:OG   | 2.21                     | 0.47              |
| 2:C:433:ASN:HB3  | 2:C:525:VAL:HG13 | 1.97                     | 0.47              |
| 2:C:531:ARG:O    | 2:C:535:GLU:HG2  | 2.15                     | 0.47              |
| 1:A:-2:A:C6      | 1:A:282:G:C2     | 3.02                     | 0.47              |
| 1:A:26:A:H2'     | 1:A:27:A:C4      | 2.50                     | 0.47              |
| 1:A:190:G:O2'    | 1:A:191:U:O4'    | 2.17                     | 0.47              |
| 1:A:204:C:C2     | 1:A:205:A:C8     | 3.03                     | 0.47              |
| 1:A:428:A:O2'    | 1:A:2461:A:N1    | 2.45                     | 0.47              |
| 2:C:331:PHE:HA   | 2:C:334:ASN:HB2  | 1.95                     | 0.47              |
| 2:C:429:ILE:HA   | 2:C:432:TYR:CD2  | 2.50                     | 0.47              |
| 1:A:46:C:H2'     | 1:A:47:U:H6      | 1.79                     | 0.47              |
| 1:A:134:U:P      | 1:A:240:A:H62    | 2.38                     | 0.47              |
| 1:A:186:A:O2'    | 1:A:2427:G:N2    | 2.48                     | 0.47              |
| 1:A:194:U:O2'    | 1:A:195:U:O5'    | 2.33                     | 0.47              |
| 1:A:198:U:H3'    | 1:A:200:A:OP2    | 2.14                     | 0.47              |
| 1:A:214:A:H2'    | 1:A:218:C:O2     | 2.14                     | 0.47              |
| 1:A:366:U:H4'    | 1:A:369:A:C8     | 2.50                     | 0.47              |
| 1:A:544:U:H3     | 1:A:592:A:N6     | 2.13                     | 0.47              |
| 1:A:566:A:H2'    | 1:A:567:C:C6     | 2.50                     | 0.47              |
| 1:A:2473:G:O2'   | 1:A:2474:C:H5'   | 2.15                     | 0.47              |
| 2:C:74:LEU:C     | 2:C:75:LYS:HG2   | 2.39                     | 0.47              |
| 2:C:114:VAL:HG22 | 2:C:220:LEU:HD22 | 1.95                     | 0.47              |
| 2:C:360:ASP:CG   | 2:C:361:ILE:H    | 2.23                     | 0.47              |
| 1:A:33:U:H2'     | 1:A:34:U:O2      | 2.14                     | 0.47              |
| 1:A:174:A:C6     | 1:A:361:C:N3     | 2.82                     | 0.47              |
| 1:A:193:U:C4     | 1:A:207:G:N3     | 2.83                     | 0.47              |
| 1:A:524:C:H2'    | 1:A:525:A:C8     | 2.50                     | 0.47              |
| 1:A:527:U:C2     | 1:A:2394:A:C4    | 3.03                     | 0.47              |
| 2:C:21:GLU:OE2   | 2:C:184:MET:HB3  | 2.14                     | 0.47              |
| 2:C:40:TYR:HA    | 2:C:44:TYR:HB3   | 1.96                     | 0.47              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 2:C:155:TRP:N    | 2:C:350:SER:HA  | 2.28                     | 0.47              |
| 1:A:100:G:O2'    | 1:A:101:G:OP1   | 2.31                     | 0.46              |
| 1:A:172:A:C6     | 1:A:363:G:N1    | 2.83                     | 0.46              |
| 1:A:260:C:H2'    | 1:A:261:A:C8    | 2.50                     | 0.46              |
| 1:A:334:G:H8     | 1:A:336:A:C6    | 2.33                     | 0.46              |
| 1:A:527:U:O4     | 1:A:2394:A:N1   | 2.48                     | 0.46              |
| 1:A:532:G:C4     | 1:A:533:U:H1'   | 2.51                     | 0.46              |
| 1:A:2401:C:N3    | 1:A:2426:G:N1   | 2.63                     | 0.46              |
| 2:C:225:TYR:OH   | 2:C:336:LEU:HB2 | 2.15                     | 0.46              |
| 2:C:325:LYS:O    | 2:C:328:LEU:HB2 | 2.15                     | 0.46              |
| 1:A:82:A:N6      | 1:A:97:A:N6     | 2.52                     | 0.46              |
| 1:A:82:A:H2'     | 1:A:82:A:N3     | 2.30                     | 0.46              |
| 1:A:224:U:H2'    | 1:A:225:G:C5    | 2.50                     | 0.46              |
| 1:A:233:A:H1'    | 1:A:256:A:C6    | 2.50                     | 0.46              |
| 1:A:441:A:C4     | 1:A:2475:G:C4   | 3.04                     | 0.46              |
| 1:A:485:G:O3'    | 1:A:486:U:H6    | 1.98                     | 0.46              |
| 1:A:565:A:P      | 1:A:565:A:H8    | 2.38                     | 0.46              |
| 1:A:2414:A:N7    | 1:A:2415:G:C2   | 2.83                     | 0.46              |
| 1:A:2449:A:C4    | 1:A:2469:C:C4   | 3.03                     | 0.46              |
| 2:C:127:GLU:HG3  | 2:C:305:ARG:NH2 | 2.30                     | 0.46              |
| 2:C:139:CYS:SG   | 2:C:140:HIS:N   | 2.88                     | 0.46              |
| 2:C:145:THR:O    | 2:C:148:ARG:NH1 | 2.48                     | 0.46              |
| 2:C:355:ARG:HH11 | 2:C:357:LEU:H   | 1.64                     | 0.46              |
| 1:A:53:A:P       | 1:A:53:A:O4'    | 2.73                     | 0.46              |
| 1:A:74:C:H41     | 1:A:111:C:N4    | 2.13                     | 0.46              |
| 1:A:208:U:H3     | 1:A:342:C:H1'   | 1.80                     | 0.46              |
| 1:A:436:A:O2'    | 1:A:437:U:OP1   | 2.31                     | 0.46              |
| 1:A:465:G:C2     | 1:A:466:G:C5    | 3.04                     | 0.46              |
| 1:A:489:G:C2     | 1:A:515:A:C6    | 3.01                     | 0.46              |
| 1:A:2400:U:O2    | 1:A:2427:G:C6   | 2.68                     | 0.46              |
| 2:C:54:ILE:O     | 2:C:56:ASP:N    | 2.44                     | 0.46              |
| 2:C:74:LEU:O     | 2:C:76:ASP:N    | 2.47                     | 0.46              |
| 2:C:303:TYR:HE1  | 2:C:310:PHE:HB3 | 1.80                     | 0.46              |
| 2:C:318:LYS:HG2  | 2:C:321:CYS:SG  | 2.54                     | 0.46              |
| 1:A:82:A:C5      | 1:A:97:A:C6     | 3.03                     | 0.46              |
| 1:A:88:A:H5'     | 1:A:400:A:O2'   | 2.15                     | 0.46              |
| 1:A:143:U:H3     | 1:A:242:U:HO2'  | 1.63                     | 0.46              |
| 1:A:484:A:H3'    | 1:A:487:C:N4    | 2.30                     | 0.46              |
| 1:A:2422:G:O3'   | 1:A:2423:U:H4'  | 2.16                     | 0.46              |
| 2:C:123:GLU:N    | 2:C:124:PRO:HD2 | 2.30                     | 0.46              |
| 2:C:128:ASP:HB3  | 2:C:305:ARG:NH1 | 2.28                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:347:ILE:HD12 | 2:C:347:ILE:H    | 1.80                     | 0.46              |
| 2:C:443:TYR:O    | 2:C:538:LEU:HD12 | 2.15                     | 0.46              |
| 2:C:475:LEU:C    | 2:C:477:LYS:H    | 2.22                     | 0.46              |
| 1:A:-8:A:N3      | 1:A:225:G:N2     | 2.58                     | 0.46              |
| 1:A:-7:U:H2'     | 1:A:-6:C:C6      | 2.50                     | 0.46              |
| 1:A:-3:U:C2'     | 1:A:282:G:H22    | 2.27                     | 0.46              |
| 1:A:74:C:H41     | 1:A:111:C:H42    | 1.63                     | 0.46              |
| 1:A:147:G:H2'    | 1:A:150:C:C6     | 2.50                     | 0.46              |
| 1:A:186:A:H1'    | 1:A:2427:G:H21   | 1.80                     | 0.46              |
| 1:A:205:A:H2'    | 1:A:206:A:H1'    | 1.98                     | 0.46              |
| 1:A:2440:G:N1    | 1:A:2483:C:C2    | 2.82                     | 0.46              |
| 2:C:118:LEU:HB2  | 2:C:220:LEU:CD2  | 2.46                     | 0.46              |
| 2:C:195:LYS:HG3  | 2:C:207:THR:OG1  | 2.16                     | 0.46              |
| 2:C:318:LYS:C    | 2:C:320:ASP:N    | 2.74                     | 0.46              |
| 2:C:398:ILE:HD11 | 2:C:455:PHE:CE1  | 2.51                     | 0.46              |
| 1:A:-1:A:H5''    | 1:A:1:G:O6       | 2.14                     | 0.46              |
| 1:A:28:G:C2      | 1:A:45:U:O2      | 2.69                     | 0.46              |
| 1:A:174:A:N6     | 1:A:361:C:H42    | 2.13                     | 0.46              |
| 1:A:204:C:H3'    | 1:A:205:A:H8     | 1.81                     | 0.46              |
| 1:A:246:U:H2'    | 1:A:247:G:H4'    | 1.98                     | 0.46              |
| 1:A:519:G:C2     | 1:A:520:G:C4     | 3.03                     | 0.46              |
| 1:A:591:A:C5     | 1:A:592:A:N7     | 2.83                     | 0.46              |
| 2:C:237:LYS:HG3  | 2:C:302:LYS:HA   | 1.97                     | 0.46              |
| 2:C:444:GLY:O    | 2:C:446:ALA:N    | 2.47                     | 0.46              |
| 1:A:-9:C:H42     | 1:A:-8:A:N6      | 2.14                     | 0.46              |
| 1:A:236:G:H1'    | 1:A:241:G:N2     | 2.19                     | 0.46              |
| 1:A:420:A:H2'    | 1:A:420:A:N3     | 2.30                     | 0.46              |
| 1:A:445:G:C6     | 1:A:446:A:C6     | 3.04                     | 0.46              |
| 1:A:551:U:H2'    | 1:A:552:G:C8     | 2.51                     | 0.46              |
| 1:A:564:A:H1'    | 2:C:30:LEU:HD13  | 1.97                     | 0.46              |
| 1:A:2412:A:H2'   | 1:A:2413:G:C4    | 2.51                     | 0.46              |
| 1:A:2419:U:O3'   | 1:A:2422:G:H5''  | 2.16                     | 0.46              |
| 1:A:2:U:H4'      | 1:A:3:G:OP2      | 2.16                     | 0.46              |
| 1:A:3:G:C2       | 1:A:105:A:N6     | 2.84                     | 0.46              |
| 1:A:86:C:C5      | 1:A:89:A:C6      | 3.03                     | 0.46              |
| 1:A:137:A:OP2    | 1:A:251:C:O2'    | 2.21                     | 0.46              |
| 1:A:151:G:C4     | 1:A:152:A:N7     | 2.83                     | 0.46              |
| 1:A:223:A:C5     | 1:A:224:U:C4     | 3.03                     | 0.46              |
| 1:A:341:A:H3'    | 1:A:342:C:H5''   | 1.96                     | 0.46              |
| 1:A:440:C:N4     | 1:A:2447:A:H2'   | 2.30                     | 0.46              |
| 1:A:2421:C:N4    | 1:A:2424:A:OP1   | 2.49                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2445:G:H5''  | 1:A:2471:A:N6    | 2.31                     | 0.46              |
| 2:C:88:TYR:HE1   | 2:C:208:TYR:CE2  | 2.34                     | 0.46              |
| 1:A:-10:A:H2'    | 1:A:-9:C:O4'     | 2.15                     | 0.46              |
| 1:A:102:A:H2'    | 1:A:102:A:N3     | 2.31                     | 0.46              |
| 1:A:232:U:C2     | 1:A:233:A:C6     | 3.04                     | 0.46              |
| 1:A:235:A:N7     | 1:A:237:G:C2     | 2.84                     | 0.46              |
| 1:A:488:U:H1'    | 1:A:503:C:OP2    | 2.16                     | 0.46              |
| 1:A:525:A:H2'    | 1:A:526:G:N2     | 2.31                     | 0.46              |
| 1:A:546:A:H5'    | 1:A:589:G:H21    | 1.80                     | 0.46              |
| 1:A:551:U:H2'    | 1:A:552:G:N7     | 2.31                     | 0.46              |
| 2:C:50:SER:OG    | 2:C:51:THR:HG23  | 2.15                     | 0.46              |
| 2:C:114:VAL:HG11 | 2:C:217:LEU:CD1  | 2.44                     | 0.46              |
| 2:C:176:LEU:HD13 | 2:C:179:LEU:HD21 | 1.98                     | 0.46              |
| 2:C:317:SER:OG   | 2:C:319:GLU:HB2  | 2.16                     | 0.46              |
| 2:C:420:LEU:HA   | 2:C:469:SER:CB   | 2.46                     | 0.46              |
| 1:A:41:C:H4'     | 1:A:368:U:H3     | 1.81                     | 0.46              |
| 1:A:69:C:H2'     | 1:A:70:C:C6      | 2.51                     | 0.46              |
| 1:A:124:A:N6     | 1:A:156:A:C8     | 2.83                     | 0.46              |
| 1:A:207:G:H21    | 1:A:208:U:H1'    | 1.81                     | 0.46              |
| 1:A:227:G:H2'    | 1:A:228:U:N1     | 2.30                     | 0.46              |
| 1:A:457:C:H2'    | 1:A:458:U:C6     | 2.48                     | 0.46              |
| 1:A:477:U:C2     | 1:A:521:G:C6     | 3.02                     | 0.46              |
| 1:A:496:G:N1     | 1:A:503:C:N3     | 2.64                     | 0.46              |
| 1:A:529:A:C6     | 1:A:2393:A:N6    | 2.84                     | 0.46              |
| 1:A:543:U:H2'    | 1:A:545:A:H62    | 1.77                     | 0.46              |
| 1:A:548:A:O2'    | 1:A:588:G:N2     | 2.49                     | 0.46              |
| 1:A:555:U:C4     | 1:A:556:A:N7     | 2.84                     | 0.46              |
| 1:A:2388:A:O2'   | 1:A:2389:C:O4'   | 2.34                     | 0.46              |
| 1:A:2407:C:H2'   | 1:A:2408:U:C4    | 2.50                     | 0.46              |
| 1:A:2457:C:H2'   | 1:A:2458:A:C8    | 2.51                     | 0.46              |
| 2:C:85:ARG:HH11  | 2:C:86:ARG:HH22  | 1.64                     | 0.46              |
| 2:C:105:PHE:HD1  | 2:C:108:LYS:HE2  | 1.80                     | 0.46              |
| 2:C:201:ASN:O    | 2:C:203:GLN:NE2  | 2.49                     | 0.46              |
| 1:A:6:C:N3       | 1:A:469:C:C4     | 2.84                     | 0.45              |
| 1:A:18:G:C6      | 1:A:19:U:C4      | 3.05                     | 0.45              |
| 1:A:51:A:O2'     | 1:A:52:G:OP2     | 2.33                     | 0.45              |
| 1:A:211:C:O2'    | 1:A:212:U:H6     | 1.99                     | 0.45              |
| 1:A:528:U:O2     | 1:A:2393:A:N7    | 2.49                     | 0.45              |
| 1:A:571:A:N7     | 1:A:574:A:O2'    | 2.49                     | 0.45              |
| 1:A:2448:A:H2'   | 1:A:2449:A:N9    | 2.31                     | 0.45              |
| 2:C:41:GLN:HA    | 2:C:45:SER:HB3   | 1.98                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:43:LEU:O     | 2:C:47:LYS:HG2   | 2.16                     | 0.45              |
| 2:C:88:TYR:CE1   | 2:C:165:PHE:HB3  | 2.51                     | 0.45              |
| 1:A:82:A:C5      | 1:A:97:A:C2      | 3.04                     | 0.45              |
| 1:A:87:G:H1      | 1:A:398:C:C2'    | 2.27                     | 0.45              |
| 1:A:278:G:N1     | 1:A:279:G:O6     | 2.50                     | 0.45              |
| 1:A:533:U:O2     | 1:A:2388:A:H2    | 2.00                     | 0.45              |
| 1:A:594:U:H2'    | 1:A:595:U:C6     | 2.52                     | 0.45              |
| 1:A:2406:A:N6    | 1:A:2418:G:N3    | 2.63                     | 0.45              |
| 2:C:75:LYS:HG3   | 2:C:77:GLY:HA3   | 1.97                     | 0.45              |
| 2:C:348:THR:HA   | 2:C:352:GLN:HB3  | 1.99                     | 0.45              |
| 1:A:59:C:C2      | 1:A:60:A:N7      | 2.85                     | 0.45              |
| 1:A:378:U:H2'    | 1:A:379:A:C8     | 2.38                     | 0.45              |
| 1:A:432:G:C4     | 1:A:450:U:O2     | 2.69                     | 0.45              |
| 1:A:498:A:H62    | 1:A:500:C:H3'    | 1.80                     | 0.45              |
| 1:A:507:U:H2'    | 1:A:508:A:C8     | 2.51                     | 0.45              |
| 1:A:2401:C:H4'   | 1:A:2402:G:OP1   | 2.16                     | 0.45              |
| 1:A:25:C:H3'     | 1:A:26:A:N7      | 2.32                     | 0.45              |
| 1:A:39:U:H3'     | 1:A:169:A:C2     | 2.51                     | 0.45              |
| 1:A:50:A:H5''    | 1:A:51:A:OP1     | 2.16                     | 0.45              |
| 1:A:180:G:O2'    | 1:A:181:G:H5''   | 2.17                     | 0.45              |
| 1:A:306:U:H2'    | 1:A:307:U:N3     | 2.32                     | 0.45              |
| 1:A:2400:U:H3'   | 1:A:2423:U:C4    | 2.52                     | 0.45              |
| 2:C:21:GLU:C     | 2:C:23:PHE:N     | 2.67                     | 0.45              |
| 2:C:112:GLU:HG3  | 2:C:115:ARG:HD3  | 1.98                     | 0.45              |
| 2:C:128:ASP:CB   | 2:C:305:ARG:HH22 | 2.25                     | 0.45              |
| 1:A:7:C:H2'      | 1:A:8:C:C6       | 2.52                     | 0.45              |
| 1:A:28:G:C2'     | 1:A:29:U:H5'     | 2.46                     | 0.45              |
| 1:A:78:C:O4'     | 1:A:103:A:N6     | 2.49                     | 0.45              |
| 1:A:118:A:C5     | 1:A:163:A:N3     | 2.84                     | 0.45              |
| 1:A:135:A:OP2    | 1:A:145:G:N2     | 2.34                     | 0.45              |
| 1:A:155:G:C2     | 1:A:156:A:H2     | 2.35                     | 0.45              |
| 1:A:171:C:H2'    | 1:A:172:A:C8     | 2.52                     | 0.45              |
| 1:A:213:A:H4'    | 1:A:214:A:OP2    | 2.15                     | 0.45              |
| 1:A:231:A:H2'    | 1:A:232:U:O2     | 2.17                     | 0.45              |
| 1:A:287:C:H2'    | 1:A:288:U:H6     | 1.80                     | 0.45              |
| 1:A:588:G:H2'    | 1:A:589:G:C5     | 2.51                     | 0.45              |
| 1:A:2401:C:H3'   | 1:A:2402:G:C6    | 2.52                     | 0.45              |
| 2:C:31:LEU:HD23  | 2:C:123:GLU:HG2  | 1.99                     | 0.45              |
| 2:C:182:LYS:HD3  | 2:C:183:ASP:O    | 2.16                     | 0.45              |
| 2:C:247:ARG:HH11 | 2:C:248:ILE:HG12 | 1.82                     | 0.45              |
| 1:A:35:A:H2'     | 1:A:36:A:C4'     | 2.36                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:260:C:C4     | 1:A:261:A:N6     | 2.84                     | 0.45              |
| 1:A:464:G:C2     | 1:A:465:G:C5     | 3.04                     | 0.45              |
| 1:A:556:A:O2'    | 2:C:186:MET:HA   | 2.17                     | 0.45              |
| 2:C:68:LYS:O     | 2:C:72:GLN:HG2   | 2.17                     | 0.45              |
| 2:C:195:LYS:HA   | 2:C:207:THR:CG2  | 2.44                     | 0.45              |
| 1:A:-10:A:C5     | 1:A:227:G:C6     | 3.05                     | 0.45              |
| 1:A:105:A:C8     | 1:A:107:A:OP1    | 2.69                     | 0.45              |
| 1:A:121:G:C2     | 1:A:162:A:H1'    | 2.51                     | 0.45              |
| 1:A:183:A:H2'    | 1:A:350:A:H61    | 1.82                     | 0.45              |
| 1:A:404:A:C5     | 1:A:460:G:N2     | 2.85                     | 0.45              |
| 1:A:432:G:C6     | 1:A:449:U:O2     | 2.68                     | 0.45              |
| 1:A:2482:C:H2'   | 1:A:2483:C:C6    | 2.52                     | 0.45              |
| 2:C:30:LEU:C     | 2:C:33:PRO:HD2   | 2.41                     | 0.45              |
| 2:C:156:PHE:CE1  | 2:C:351:SER:HA   | 2.48                     | 0.45              |
| 2:C:234:LEU:HD22 | 2:C:237:LYS:NZ   | 2.31                     | 0.45              |
| 1:A:2:U:H4'      | 1:A:104:C:N4     | 2.30                     | 0.45              |
| 1:A:28:G:N1      | 1:A:45:U:C4      | 2.84                     | 0.45              |
| 1:A:41:C:C2      | 1:A:42:U:C5      | 3.05                     | 0.45              |
| 1:A:140:C:N3     | 1:A:244:U:C4     | 2.84                     | 0.45              |
| 1:A:193:U:O3'    | 1:A:194:U:H6     | 2.00                     | 0.45              |
| 1:A:338:G:C2     | 1:A:339:A:C4     | 3.04                     | 0.45              |
| 1:A:553:A:H4'    | 1:A:554:U:C4     | 2.52                     | 0.45              |
| 1:A:561:G:N2     | 1:A:569:U:O2     | 2.50                     | 0.45              |
| 2:C:353:PRO:HB3  | 2:C:362:ARG:HB2  | 1.98                     | 0.45              |
| 1:A:-2:A:O2'     | 1:A:-1:A:O4'     | 2.34                     | 0.45              |
| 1:A:30:A:N1      | 1:A:31:G:C5      | 2.85                     | 0.45              |
| 1:A:168:A:C2     | 1:A:374:G:C8     | 3.04                     | 0.45              |
| 1:A:221:U:O2'    | 2:C:450:ASN:ND2  | 2.50                     | 0.45              |
| 1:A:273:G:C6     | 1:A:288:U:C4     | 3.05                     | 0.45              |
| 1:A:440:C:O2     | 1:A:441:A:H8     | 2.00                     | 0.45              |
| 1:A:2449:A:O2'   | 1:A:2450:C:OP2   | 2.30                     | 0.45              |
| 2:C:68:LYS:HA    | 2:C:76:ASP:OD2   | 2.17                     | 0.45              |
| 2:C:171:VAL:HG13 | 2:C:172:THR:H    | 1.81                     | 0.45              |
| 1:A:31:G:N1      | 1:A:42:U:C2      | 2.85                     | 0.45              |
| 1:A:214:A:H5''   | 1:A:333:G:C4     | 2.52                     | 0.45              |
| 1:A:365:A:H3'    | 1:A:366:U:C5     | 2.51                     | 0.45              |
| 1:A:407:A:H8     | 1:A:407:A:OP2    | 2.00                     | 0.45              |
| 1:A:547:A:H2'    | 1:A:548:A:H5'    | 1.98                     | 0.45              |
| 1:A:563:A:O5'    | 2:C:37:TYR:OH    | 2.32                     | 0.45              |
| 2:C:302:LYS:HZ2  | 2:C:313:SER:HB3  | 1.82                     | 0.45              |
| 2:C:449:PHE:CD1  | 2:C:452:LEU:HD12 | 2.38                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:527:TYR:O    | 2:C:531:ARG:HG2  | 2.17                     | 0.45              |
| 1:A:48:G:O6      | 1:A:60:A:N6      | 2.50                     | 0.44              |
| 1:A:71:A:C6      | 1:A:116:G:C6     | 3.06                     | 0.44              |
| 1:A:76:A:N6      | 1:A:111:C:C2     | 2.84                     | 0.44              |
| 1:A:134:U:HO2'   | 1:A:135:A:P      | 2.37                     | 0.44              |
| 1:A:411:C:O3'    | 1:A:2461:A:H1'   | 2.17                     | 0.44              |
| 1:A:475:A:C5     | 1:A:476:C:C4     | 3.05                     | 0.44              |
| 1:A:505:U:H2'    | 1:A:506:U:C6     | 2.52                     | 0.44              |
| 1:A:2406:A:H3'   | 1:A:2407:C:H4'   | 1.98                     | 0.44              |
| 2:C:7:ILE:HG12   | 2:C:72:GLN:O     | 2.16                     | 0.44              |
| 2:C:52:LYS:HB3   | 2:C:111:GLN:HE22 | 1.83                     | 0.44              |
| 2:C:140:HIS:HA   | 2:C:143:LEU:HB2  | 1.99                     | 0.44              |
| 2:C:225:TYR:HA   | 2:C:228:GLU:OE2  | 2.17                     | 0.44              |
| 2:C:401:LYS:HZ3  | 2:C:403:ILE:HD11 | 1.81                     | 0.44              |
| 1:A:249:A:H1'    | 1:A:250:A:C2     | 2.51                     | 0.44              |
| 1:A:422:G:H5''   | 1:A:423:G:OP2    | 2.17                     | 0.44              |
| 2:C:306:TYR:H    | 2:C:310:PHE:HE1  | 1.65                     | 0.44              |
| 1:A:74:C:N4      | 1:A:112:G:C5     | 2.85                     | 0.44              |
| 1:A:561:G:N1     | 1:A:569:U:N3     | 2.66                     | 0.44              |
| 2:C:74:LEU:C     | 2:C:76:ASP:H     | 2.24                     | 0.44              |
| 2:C:77:GLY:HA2   | 2:C:193:PHE:CZ   | 2.52                     | 0.44              |
| 1:A:9:A:N1       | 1:A:389:G:C6     | 2.86                     | 0.44              |
| 1:A:113:G:C2     | 1:A:114:U:C4     | 3.05                     | 0.44              |
| 1:A:185:A:HO2'   | 1:A:186:A:P      | 2.38                     | 0.44              |
| 1:A:220:G:C2     | 1:A:229:C:C2     | 3.05                     | 0.44              |
| 1:A:252:C:O2'    | 1:A:253:U:H5'    | 2.17                     | 0.44              |
| 1:A:335:A:H2'    | 1:A:335:A:N3     | 2.32                     | 0.44              |
| 1:A:400:A:C4     | 1:A:401:A:C8     | 3.06                     | 0.44              |
| 1:A:455:A:O5'    | 1:A:456:U:H5'    | 2.17                     | 0.44              |
| 1:A:564:A:P      | 2:C:13:LYS:HD3   | 2.57                     | 0.44              |
| 1:A:600:A:H5''   | 1:A:2387:A:N1    | 2.32                     | 0.44              |
| 1:A:2415:G:C5    | 1:A:2416:G:C6    | 3.05                     | 0.44              |
| 2:C:114:VAL:HG11 | 2:C:217:LEU:HD22 | 1.99                     | 0.44              |
| 2:C:337:LYS:HE2  | 2:C:337:LYS:HB2  | 1.64                     | 0.44              |
| 1:A:195:U:N3     | 1:A:344:A:OP2    | 2.49                     | 0.44              |
| 1:A:200:A:H2'    | 1:A:202:C:O5'    | 2.18                     | 0.44              |
| 1:A:339:A:H8     | 1:A:339:A:OP2    | 1.99                     | 0.44              |
| 1:A:393:A:H2'    | 1:A:393:A:OP2    | 2.17                     | 0.44              |
| 1:A:547:A:C6     | 1:A:588:G:C2     | 3.06                     | 0.44              |
| 1:A:2475:G:C2    | 1:A:2476:G:C5    | 3.05                     | 0.44              |
| 2:C:102:ILE:HB   | 2:C:212:PRO:HB3  | 1.99                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:-10:A:C2     | 1:A:227:G:C6     | 3.05                     | 0.44              |
| 1:A:5:G:N2       | 1:A:108:G:H1'    | 2.33                     | 0.44              |
| 1:A:81:A:C2      | 1:A:98:C:H1'     | 2.53                     | 0.44              |
| 1:A:167:U:H5''   | 1:A:168:A:OP1    | 2.18                     | 0.44              |
| 1:A:263:A:H2'    | 1:A:264:G:N9     | 2.33                     | 0.44              |
| 1:A:370:C:H4'    | 1:A:371:C:OP1    | 2.18                     | 0.44              |
| 1:A:481:A:N1     | 1:A:514:C:N4     | 2.66                     | 0.44              |
| 1:A:513:G:C5     | 1:A:514:C:H1'    | 2.53                     | 0.44              |
| 1:A:565:A:N1     | 2:C:25:ARG:HB3   | 2.33                     | 0.44              |
| 1:A:587:U:C2     | 1:A:588:G:N7     | 2.85                     | 0.44              |
| 2:C:82:GLN:HG2   | 2:C:212:PRO:HB2  | 1.98                     | 0.44              |
| 2:C:234:LEU:O    | 2:C:237:LYS:HB3  | 2.18                     | 0.44              |
| 2:C:534:LEU:O    | 2:C:538:LEU:HD13 | 2.18                     | 0.44              |
| 1:A:76:A:N1      | 1:A:111:C:H1'    | 2.33                     | 0.44              |
| 1:A:96:U:H3'     | 1:A:97:A:H8      | 1.83                     | 0.44              |
| 1:A:338:G:O2'    | 1:A:339:A:H5'    | 2.17                     | 0.44              |
| 1:A:2453:G:N1    | 1:A:2470:A:C6    | 2.86                     | 0.44              |
| 2:C:94:SER:CB    | 2:C:357:LEU:HB3  | 2.48                     | 0.44              |
| 2:C:155:TRP:CD1  | 2:C:318:LYS:HE3  | 2.51                     | 0.44              |
| 2:C:188:GLN:HG3  | 2:C:191:TYR:OH   | 2.17                     | 0.44              |
| 2:C:196:ALA:HB3  | 2:C:213:GLN:HG2  | 1.99                     | 0.44              |
| 2:C:332:ILE:HG22 | 2:C:338:MET:O    | 2.18                     | 0.44              |
| 1:A:183:A:C5     | 1:A:352:G:C5     | 3.06                     | 0.44              |
| 1:A:336:A:C8     | 1:A:338:G:N7     | 2.86                     | 0.44              |
| 1:A:356:A:H5'    | 1:A:358:A:H1'    | 1.98                     | 0.44              |
| 1:A:399:U:O2'    | 1:A:400:A:H8     | 2.00                     | 0.44              |
| 1:A:2459:G:N2    | 1:A:2461:A:H3'   | 2.33                     | 0.44              |
| 2:C:417:ARG:HG2  | 2:C:418:LYS:H    | 1.82                     | 0.44              |
| 1:A:11:A:N6      | 1:A:385:A:N7     | 2.66                     | 0.44              |
| 1:A:125:U:H1'    | 1:A:156:A:C4     | 2.53                     | 0.44              |
| 1:A:261:A:N7     | 1:A:262:A:N6     | 2.66                     | 0.44              |
| 1:A:546:A:C8     | 1:A:585:A:C8     | 3.06                     | 0.44              |
| 1:A:561:G:N2     | 1:A:562:G:C6     | 2.84                     | 0.44              |
| 2:C:146:ILE:HD12 | 2:C:146:ILE:H    | 1.83                     | 0.44              |
| 2:C:237:LYS:HD2  | 2:C:302:LYS:HG2  | 2.00                     | 0.44              |
| 2:C:303:TYR:CG   | 2:C:304:VAL:N    | 2.86                     | 0.44              |
| 2:C:417:ARG:H    | 2:C:465:LYS:HE2  | 1.83                     | 0.44              |
| 1:A:135:A:H3'    | 1:A:135:A:N3     | 2.33                     | 0.43              |
| 1:A:347:G:C4     | 1:A:348:C:C5     | 3.07                     | 0.43              |
| 1:A:393:A:H8     | 1:A:479:G:N3     | 2.16                     | 0.43              |
| 1:A:412:C:O2'    | 1:A:413:U:P      | 2.76                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:445:G:O2'    | 1:A:446:A:H5'    | 2.17                     | 0.43              |
| 1:A:466:G:C2     | 1:A:467:U:C2     | 3.06                     | 0.43              |
| 1:A:479:G:H2'    | 1:A:480:U:C5     | 2.53                     | 0.43              |
| 1:A:2438:G:C6    | 1:A:2439:G:C6    | 3.06                     | 0.43              |
| 1:A:2449:A:C8    | 1:A:2469:C:C5    | 3.06                     | 0.43              |
| 1:A:2475:G:C2    | 1:A:2476:G:C8    | 3.05                     | 0.43              |
| 2:C:28:ARG:CZ    | 2:C:123:GLU:HB3  | 2.48                     | 0.43              |
| 2:C:50:SER:O     | 2:C:51:THR:OG1   | 2.36                     | 0.43              |
| 2:C:157:VAL:HG12 | 2:C:158:GLU:N    | 2.33                     | 0.43              |
| 2:C:172:THR:OG1  | 2:C:337:LYS:NZ   | 2.51                     | 0.43              |
| 2:C:328:LEU:O    | 2:C:332:ILE:HG13 | 2.18                     | 0.43              |
| 1:A:63:A:H8      | 1:A:63:A:OP2     | 2.02                     | 0.43              |
| 1:A:111:C:O2'    | 1:A:112:G:H5'    | 2.17                     | 0.43              |
| 1:A:213:A:O4'    | 1:A:334:G:N2     | 2.51                     | 0.43              |
| 1:A:412:C:H5''   | 1:A:414:A:O4'    | 2.17                     | 0.43              |
| 1:A:432:G:H1     | 1:A:449:U:H2'    | 1.83                     | 0.43              |
| 1:A:465:G:N1     | 1:A:466:G:C6     | 2.86                     | 0.43              |
| 1:A:480:U:H3     | 1:A:516:A:P      | 2.40                     | 0.43              |
| 1:A:483:U:H4'    | 1:A:484:A:O4'    | 2.18                     | 0.43              |
| 1:A:564:A:C8     | 2:C:33:PRO:HB3   | 2.53                     | 0.43              |
| 1:A:2386:G:H1'   | 1:A:2388:A:C2    | 2.53                     | 0.43              |
| 1:A:2442:G:H2'   | 1:A:2443:G:H8    | 1.82                     | 0.43              |
| 2:C:68:LYS:HB3   | 2:C:72:GLN:NE2   | 2.33                     | 0.43              |
| 2:C:88:TYR:HE1   | 2:C:208:TYR:HH   | 1.63                     | 0.43              |
| 2:C:156:PHE:O    | 2:C:348:THR:HG23 | 2.18                     | 0.43              |
| 2:C:157:VAL:HG11 | 2:C:325:LYS:HD3  | 1.98                     | 0.43              |
| 2:C:161:ILE:HA   | 2:C:341:SER:CB   | 2.47                     | 0.43              |
| 2:C:317:SER:C    | 2:C:319:GLU:N    | 2.76                     | 0.43              |
| 2:C:405:ILE:H    | 2:C:415:VAL:HG22 | 1.82                     | 0.43              |
| 1:A:5:G:N2       | 1:A:2420:A:N7    | 2.66                     | 0.43              |
| 1:A:30:A:C6      | 1:A:43:A:C6      | 3.06                     | 0.43              |
| 1:A:78:C:C2      | 1:A:103:A:N1     | 2.87                     | 0.43              |
| 1:A:216:U:N3     | 1:A:312:C:O2'    | 2.51                     | 0.43              |
| 1:A:273:G:N1     | 1:A:288:U:C4     | 2.86                     | 0.43              |
| 1:A:334:G:H1'    | 1:A:336:A:N1     | 2.34                     | 0.43              |
| 1:A:407:A:C5     | 1:A:452:A:N1     | 2.86                     | 0.43              |
| 1:A:428:A:H2'    | 1:A:429:A:C8     | 2.53                     | 0.43              |
| 2:C:85:ARG:HD3   | 2:C:86:ARG:NH1   | 2.32                     | 0.43              |
| 2:C:146:ILE:HD12 | 2:C:147:LYS:NZ   | 2.34                     | 0.43              |
| 2:C:158:GLU:HG3  | 2:C:345:THR:CB   | 2.48                     | 0.43              |
| 1:A:8:C:H2'      | 1:A:9:A:H8       | 1.83                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:24:U:H3      | 1:A:375:A:N6     | 2.13                     | 0.43              |
| 1:A:38:G:OP1     | 1:A:371:C:C2     | 2.72                     | 0.43              |
| 1:A:162:A:C5     | 1:A:163:A:C5     | 3.07                     | 0.43              |
| 1:A:211:C:OP2    | 1:A:211:C:H6     | 2.02                     | 0.43              |
| 1:A:259:A:C6     | 1:A:311:A:C2     | 3.07                     | 0.43              |
| 1:A:297:A:O2'    | 1:A:298:U:H5'    | 2.18                     | 0.43              |
| 1:A:306:U:H2'    | 1:A:307:U:C5     | 2.53                     | 0.43              |
| 1:A:430:A:H5''   | 1:A:450:U:O4     | 2.18                     | 0.43              |
| 1:A:467:U:H2'    | 1:A:468:A:N9     | 2.33                     | 0.43              |
| 1:A:551:U:H6     | 1:A:553:A:OP1    | 2.01                     | 0.43              |
| 1:A:2406:A:H5''  | 1:A:2407:C:OP2   | 2.18                     | 0.43              |
| 2:C:302:LYS:HB3  | 2:C:313:SER:C    | 2.43                     | 0.43              |
| 2:C:361:ILE:HD13 | 2:C:363:VAL:HG12 | 2.00                     | 0.43              |
| 2:C:391:GLN:O    | 2:C:395:ARG:N    | 2.42                     | 0.43              |
| 1:A:3:G:N2       | 1:A:106:G:C5     | 2.87                     | 0.43              |
| 1:A:58:A:O2'     | 1:A:59:C:O5'     | 2.37                     | 0.43              |
| 1:A:88:A:H5'     | 1:A:400:A:C1'    | 2.49                     | 0.43              |
| 1:A:222:U:H1'    | 2:C:411:SER:HB2  | 2.01                     | 0.43              |
| 1:A:407:A:H2'    | 1:A:452:A:H61    | 1.82                     | 0.43              |
| 1:A:433:G:OP1    | 1:A:454:A:H8     | 2.00                     | 0.43              |
| 2:C:44:TYR:O     | 2:C:44:TYR:CG    | 2.71                     | 0.43              |
| 2:C:414:PRO:HG2  | 2:C:461:TYR:CB   | 2.45                     | 0.43              |
| 1:A:127:A:N6     | 1:A:154:U:H3     | 2.17                     | 0.43              |
| 1:A:128:G:O6     | 1:A:154:U:N3     | 2.45                     | 0.43              |
| 1:A:226:U:H2'    | 1:A:227:G:H8     | 1.84                     | 0.43              |
| 1:A:269:G:C2     | 1:A:291:U:C2     | 3.06                     | 0.43              |
| 1:A:396:C:H2'    | 1:A:397:C:C6     | 2.54                     | 0.43              |
| 1:A:436:A:HO2'   | 1:A:437:U:P      | 2.40                     | 0.43              |
| 1:A:441:A:H2     | 1:A:2474:C:C6    | 2.36                     | 0.43              |
| 1:A:510:A:H1'    | 1:A:512:G:N7     | 2.34                     | 0.43              |
| 1:A:568:C:H2'    | 1:A:569:U:H5''   | 2.00                     | 0.43              |
| 1:A:2404:A:H2    | 1:A:2424:A:N7    | 2.16                     | 0.43              |
| 1:A:2458:A:C6    | 1:A:2464:G:C6    | 3.06                     | 0.43              |
| 2:C:156:PHE:CZ   | 2:C:348:THR:HG21 | 2.54                     | 0.43              |
| 2:C:228:GLU:HG2  | 2:C:229:LEU:H    | 1.84                     | 0.43              |
| 2:C:233:VAL:O    | 2:C:236:LEU:HG   | 2.18                     | 0.43              |
| 2:C:348:THR:HB   | 2:C:352:GLN:N    | 2.34                     | 0.43              |
| 1:A:18:G:C6      | 1:A:382:A:C6     | 3.06                     | 0.43              |
| 1:A:178:A:C8     | 1:A:179:A:C5     | 3.06                     | 0.43              |
| 1:A:198:U:OP2    | 1:A:200:A:N6     | 2.40                     | 0.43              |
| 1:A:237:G:H5''   | 1:A:238:A:H4'    | 2.00                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:377:U:N3     | 1:A:378:U:C4     | 2.87                     | 0.43              |
| 1:A:428:A:H1'    | 1:A:2461:A:H61   | 1.83                     | 0.43              |
| 1:A:534:G:O2'    | 1:A:2386:G:H8    | 2.02                     | 0.43              |
| 1:A:546:A:C5'    | 1:A:589:G:H21    | 2.31                     | 0.43              |
| 1:A:2460:U:C2    | 1:A:2461:A:C8    | 3.07                     | 0.43              |
| 2:C:8:LEU:HD13   | 2:C:8:LEU:HA     | 1.85                     | 0.43              |
| 2:C:244:SER:O    | 2:C:314:VAL:HG12 | 2.18                     | 0.43              |
| 1:A:-10:A:N7     | 1:A:-9:C:C4      | 2.87                     | 0.43              |
| 1:A:4:C:H1'      | 1:A:386:A:N7     | 2.33                     | 0.43              |
| 1:A:83:A:H2'     | 1:A:84:A:N9      | 2.33                     | 0.43              |
| 1:A:99:G:C6      | 1:A:100:G:C5     | 3.07                     | 0.43              |
| 1:A:188:U:H2'    | 1:A:189:U:C6     | 2.54                     | 0.43              |
| 1:A:242:U:H6     | 1:A:242:U:O5'    | 2.01                     | 0.43              |
| 1:A:332:G:O4'    | 1:A:334:G:H5''   | 2.19                     | 0.43              |
| 1:A:410:G:H2'    | 1:A:411:C:H5'    | 2.01                     | 0.43              |
| 1:A:440:C:C2     | 1:A:441:A:H8     | 2.37                     | 0.43              |
| 1:A:459:U:C2     | 1:A:460:G:C8     | 3.06                     | 0.43              |
| 1:A:2413:G:C8    | 1:A:2413:G:OP2   | 2.72                     | 0.43              |
| 2:C:168:ILE:HG21 | 2:C:208:TYR:HE2  | 1.82                     | 0.43              |
| 2:C:353:PRO:HD3  | 2:C:362:ARG:HD2  | 2.00                     | 0.43              |
| 1:A:28:G:C8      | 1:A:62:A:C4      | 3.07                     | 0.43              |
| 1:A:51:A:OP2     | 1:A:268:G:N2     | 2.52                     | 0.43              |
| 1:A:138:G:H2'    | 1:A:139:A:H8     | 1.82                     | 0.43              |
| 1:A:162:A:C5     | 1:A:163:A:C6     | 3.07                     | 0.43              |
| 1:A:216:U:O2'    | 1:A:217:U:OP2    | 2.37                     | 0.43              |
| 1:A:253:U:H6     | 1:A:254:C:C4     | 2.37                     | 0.43              |
| 1:A:442:C:H2'    | 1:A:2450:C:H42   | 1.84                     | 0.43              |
| 1:A:2438:G:C6    | 1:A:2439:G:C5    | 3.06                     | 0.43              |
| 1:A:2480:C:H2'   | 1:A:2481:U:C6    | 2.50                     | 0.43              |
| 2:C:65:GLU:OE1   | 2:C:65:GLU:N     | 2.52                     | 0.43              |
| 2:C:195:LYS:HD2  | 2:C:207:THR:HG21 | 2.01                     | 0.43              |
| 2:C:392:ASP:OD1  | 2:C:395:ARG:HD2  | 2.18                     | 0.43              |
| 2:C:425:ASP:OD1  | 2:C:426:LEU:N    | 2.51                     | 0.43              |
| 1:A:3:G:OP2      | 1:A:104:C:N4     | 2.49                     | 0.43              |
| 1:A:15:G:H2'     | 1:A:16:G:C8      | 2.53                     | 0.43              |
| 1:A:30:A:N6      | 1:A:43:A:N6      | 2.67                     | 0.43              |
| 1:A:121:G:C6     | 1:A:162:A:H8     | 2.36                     | 0.43              |
| 1:A:139:A:H3'    | 1:A:139:A:OP2    | 2.19                     | 0.43              |
| 1:A:364:A:H2'    | 1:A:364:A:N3     | 2.34                     | 0.43              |
| 1:A:393:A:O2'    | 1:A:394:U:O5'    | 2.36                     | 0.43              |
| 1:A:547:A:H2'    | 1:A:548:A:O4'    | 2.18                     | 0.43              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:560:A:H5'   | 1:A:561:G:H8     | 1.83                     | 0.43              |
| 1:A:564:A:H8    | 2:C:33:PRO:HG3   | 1.83                     | 0.43              |
| 1:A:588:G:H2'   | 1:A:589:G:C4     | 2.54                     | 0.43              |
| 1:A:589:G:C2'   | 1:A:590:C:C2     | 3.01                     | 0.43              |
| 2:C:247:ARG:CZ  | 2:C:317:SER:HA   | 2.49                     | 0.43              |
| 1:A:102:A:N1    | 1:A:105:A:H5''   | 2.33                     | 0.42              |
| 1:A:122:C:N4    | 1:A:123:G:O6     | 2.51                     | 0.42              |
| 1:A:139:A:H2    | 1:A:244:U:O2     | 2.01                     | 0.42              |
| 1:A:213:A:H62   | 1:A:336:A:N6     | 2.14                     | 0.42              |
| 1:A:234:G:N2    | 1:A:254:C:N3     | 2.62                     | 0.42              |
| 1:A:378:U:C2    | 1:A:379:A:C8     | 3.07                     | 0.42              |
| 1:A:385:A:C5    | 1:A:387:C:C4     | 3.07                     | 0.42              |
| 1:A:2435:A:H2'  | 1:A:2436:G:C8    | 2.53                     | 0.42              |
| 2:C:52:LYS:HA   | 2:C:52:LYS:HD2   | 1.79                     | 0.42              |
| 2:C:81:PRO:O    | 2:C:198:TYR:HB3  | 2.18                     | 0.42              |
| 2:C:232:PHE:HA  | 2:C:235:GLN:CD   | 2.44                     | 0.42              |
| 2:C:529:TYR:HA  | 2:C:532:ASN:HD22 | 1.83                     | 0.42              |
| 1:A:31:G:N1     | 1:A:42:U:C4      | 2.87                     | 0.42              |
| 1:A:50:A:H5'    | 1:A:51:A:C2      | 2.55                     | 0.42              |
| 1:A:107:A:O2'   | 1:A:2419:U:O2    | 2.34                     | 0.42              |
| 1:A:112:G:H2'   | 1:A:113:G:C8     | 2.53                     | 0.42              |
| 1:A:141:A:C2    | 1:A:143:U:H5'    | 2.54                     | 0.42              |
| 1:A:173:G:N1    | 1:A:362:U:N3     | 2.66                     | 0.42              |
| 1:A:187:G:N2    | 1:A:197:C:C2     | 2.80                     | 0.42              |
| 1:A:261:A:C5    | 1:A:262:A:N1     | 2.87                     | 0.42              |
| 1:A:299:C:C6    | 1:A:300:A:H8     | 2.37                     | 0.42              |
| 1:A:303:A:C6    | 1:A:304:C:C4     | 3.07                     | 0.42              |
| 1:A:314:A:C8    | 1:A:315:U:C6     | 3.07                     | 0.42              |
| 1:A:486:U:H1'   | 1:A:487:C:C2     | 2.54                     | 0.42              |
| 1:A:582:A:H8    | 1:A:582:A:OP2    | 2.02                     | 0.42              |
| 2:C:77:GLY:O    | 2:C:78:THR:OG1   | 2.37                     | 0.42              |
| 2:C:237:LYS:HG2 | 2:C:241:ASP:OD2  | 2.19                     | 0.42              |
| 2:C:432:TYR:HA  | 2:C:435:GLU:CD   | 2.43                     | 0.42              |
| 1:A:14:G:C6     | 1:A:15:G:C5      | 3.07                     | 0.42              |
| 1:A:18:G:C6     | 1:A:382:A:N6     | 2.88                     | 0.42              |
| 1:A:76:A:C6     | 1:A:77:A:C5      | 3.08                     | 0.42              |
| 1:A:87:G:C8     | 1:A:88:A:H4'     | 2.55                     | 0.42              |
| 1:A:238:A:C6    | 1:A:247:G:O4'    | 2.73                     | 0.42              |
| 1:A:345:A:C2    | 1:A:346:A:H1'    | 2.55                     | 0.42              |
| 1:A:374:G:C2    | 1:A:375:A:C4     | 3.07                     | 0.42              |
| 1:A:441:A:C8    | 1:A:2475:G:C2    | 3.08                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:520:G:C2     | 1:A:521:G:C8     | 3.07                     | 0.42              |
| 1:A:2459:G:N2    | 1:A:2463:U:O4    | 2.51                     | 0.42              |
| 2:C:143:LEU:HD22 | 2:C:359:TYR:CE1  | 2.54                     | 0.42              |
| 1:A:-11:C:H2'    | 1:A:227:G:N2     | 2.35                     | 0.42              |
| 1:A:-8:A:N6      | 1:A:224:U:O4     | 2.52                     | 0.42              |
| 1:A:82:A:C3'     | 1:A:83:A:H5'     | 2.50                     | 0.42              |
| 1:A:150:C:O2     | 1:A:151:G:N2     | 2.52                     | 0.42              |
| 1:A:207:G:C6     | 1:A:342:C:O2     | 2.72                     | 0.42              |
| 1:A:261:A:C6     | 1:A:262:A:N1     | 2.88                     | 0.42              |
| 1:A:329:U:H2'    | 1:A:330:A:C8     | 2.54                     | 0.42              |
| 1:A:350:A:N3     | 1:A:350:A:H2'    | 2.34                     | 0.42              |
| 1:A:359:A:H2'    | 1:A:360:U:C6     | 2.53                     | 0.42              |
| 1:A:2387:A:O5'   | 1:A:2387:A:H8    | 2.02                     | 0.42              |
| 2:C:52:LYS:NZ    | 2:C:53:GLY:H     | 2.18                     | 0.42              |
| 2:C:74:LEU:O     | 2:C:75:LYS:HG2   | 2.20                     | 0.42              |
| 2:C:100:LEU:HD13 | 2:C:216:ILE:HG22 | 2.01                     | 0.42              |
| 2:C:171:VAL:HG13 | 2:C:172:THR:N    | 2.34                     | 0.42              |
| 2:C:351:SER:OG   | 2:C:362:ARG:HG2  | 2.19                     | 0.42              |
| 1:A:-6:C:H5'     | 2:C:477:LYS:NZ   | 2.34                     | 0.42              |
| 1:A:87:G:N2      | 1:A:399:U:O2     | 2.51                     | 0.42              |
| 1:A:96:U:H2'     | 1:A:97:A:C8      | 2.55                     | 0.42              |
| 1:A:118:A:H2'    | 1:A:162:A:N6     | 2.22                     | 0.42              |
| 1:A:233:A:C8     | 1:A:234:G:C6     | 3.07                     | 0.42              |
| 1:A:273:G:N3     | 1:A:273:G:H2'    | 2.33                     | 0.42              |
| 1:A:383:C:H2'    | 1:A:384:U:C6     | 2.55                     | 0.42              |
| 1:A:402:A:H2'    | 1:A:402:A:N3     | 2.34                     | 0.42              |
| 1:A:488:U:O2'    | 1:A:503:C:OP1    | 2.30                     | 0.42              |
| 1:A:2408:U:OP2   | 1:A:2409:C:C4    | 2.72                     | 0.42              |
| 2:C:143:LEU:HD22 | 2:C:359:TYR:HE1  | 1.84                     | 0.42              |
| 2:C:153:ALA:HB3  | 2:C:315:LYS:H    | 1.83                     | 0.42              |
| 2:C:194:LEU:HA   | 2:C:213:GLN:OE1  | 2.19                     | 0.42              |
| 1:A:76:A:N6      | 1:A:111:C:H1'    | 2.32                     | 0.42              |
| 1:A:215:U:C2     | 1:A:314:A:N3     | 2.88                     | 0.42              |
| 1:A:275:U:H3'    | 1:A:276:A:H8     | 1.84                     | 0.42              |
| 1:A:319:U:C3'    | 1:A:320:A:H8     | 2.32                     | 0.42              |
| 1:A:335:A:C6     | 1:A:337:C:H5     | 2.37                     | 0.42              |
| 1:A:374:G:C2     | 1:A:375:A:C5     | 3.08                     | 0.42              |
| 1:A:376:C:H2'    | 1:A:377:U:H6     | 1.81                     | 0.42              |
| 1:A:2405:U:O2'   | 1:A:2406:A:N7    | 2.51                     | 0.42              |
| 1:A:2458:A:C6    | 1:A:2459:G:C4    | 3.07                     | 0.42              |
| 2:C:82:GLN:O     | 2:C:84:VAL:HG23  | 2.19                     | 0.42              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 2:C:88:TYR:CE2  | 2:C:165:PHE:HB3 | 2.54                     | 0.42              |
| 2:C:122:TYR:HD1 | 2:C:126:PHE:HE2 | 1.67                     | 0.42              |
| 2:C:238:MET:HA  | 2:C:241:ASP:HB2 | 2.01                     | 0.42              |
| 1:A:80:G:C5     | 1:A:81:A:C6     | 3.07                     | 0.42              |
| 1:A:80:G:N2     | 1:A:99:G:C2     | 2.84                     | 0.42              |
| 1:A:123:G:N2    | 1:A:159:C:N3    | 2.61                     | 0.42              |
| 1:A:235:A:N1    | 1:A:253:U:N3    | 2.68                     | 0.42              |
| 1:A:258:U:O2    | 1:A:311:A:H2    | 2.03                     | 0.42              |
| 1:A:357:G:H3'   | 1:A:358:A:C4'   | 2.45                     | 0.42              |
| 1:A:365:A:C5    | 1:A:366:U:C4    | 3.08                     | 0.42              |
| 1:A:365:A:H2'   | 1:A:365:A:N3    | 2.34                     | 0.42              |
| 1:A:423:G:N2    | 1:A:426:G:H22   | 2.18                     | 0.42              |
| 1:A:450:U:H3'   | 1:A:450:U:OP2   | 2.20                     | 0.42              |
| 1:A:477:U:O4    | 1:A:521:G:O6    | 2.38                     | 0.42              |
| 1:A:558:G:OP2   | 1:A:558:G:H8    | 2.02                     | 0.42              |
| 1:A:2465:U:H2'  | 1:A:2466:G:H8   | 1.84                     | 0.42              |
| 2:C:54:ILE:N    | 2:C:58:THR:O    | 2.52                     | 0.42              |
| 1:A:30:A:N1     | 1:A:43:A:C6     | 2.88                     | 0.42              |
| 1:A:48:G:C5     | 1:A:49:U:C4     | 3.08                     | 0.42              |
| 1:A:56:A:N1     | 1:A:296:U:N3    | 2.68                     | 0.42              |
| 1:A:116:G:C2    | 1:A:117:G:C4    | 3.08                     | 0.42              |
| 1:A:174:A:H2'   | 1:A:175:U:C6    | 2.55                     | 0.42              |
| 1:A:258:U:C2    | 1:A:259:A:N7    | 2.88                     | 0.42              |
| 1:A:320:A:C6    | 1:A:321:G:C6    | 3.07                     | 0.42              |
| 1:A:441:A:C5    | 1:A:442:C:C2    | 3.08                     | 0.42              |
| 1:A:529:A:H2'   | 1:A:530:U:C6    | 2.55                     | 0.42              |
| 1:A:546:A:H4'   | 1:A:547:A:N7    | 2.34                     | 0.42              |
| 2:C:75:LYS:C    | 2:C:77:GLY:N    | 2.78                     | 0.42              |
| 2:C:146:ILE:HB  | 2:C:147:LYS:HD3 | 2.02                     | 0.42              |
| 2:C:410:SER:O   | 2:C:411:SER:OG  | 2.37                     | 0.42              |
| 1:A:81:A:C6     | 1:A:97:A:N6     | 2.88                     | 0.42              |
| 1:A:162:A:C6    | 1:A:163:A:C6    | 3.07                     | 0.42              |
| 1:A:167:U:O2'   | 1:A:374:G:O5'   | 2.25                     | 0.42              |
| 1:A:303:A:C4    | 1:A:304:C:C5    | 3.08                     | 0.42              |
| 1:A:319:U:H1'   | 1:A:335:A:N1    | 2.35                     | 0.42              |
| 1:A:371:C:H1'   | 1:A:372:A:N7    | 2.34                     | 0.42              |
| 1:A:373:A:H1'   | 1:A:374:G:C8    | 2.55                     | 0.42              |
| 1:A:405:A:H2'   | 1:A:406:G:C8    | 2.55                     | 0.42              |
| 1:A:434:C:H2'   | 1:A:435:U:N1    | 2.35                     | 0.42              |
| 1:A:477:U:O2    | 1:A:521:G:C2    | 2.72                     | 0.42              |
| 1:A:536:A:H61   | 1:A:593:U:H5    | 1.66                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:562:G:C6     | 1:A:563:A:C4     | 3.08                     | 0.42              |
| 2:C:196:ALA:HB3  | 2:C:213:GLN:HE21 | 1.84                     | 0.42              |
| 2:C:449:PHE:CZ   | 2:C:531:ARG:HA   | 2.54                     | 0.42              |
| 1:A:60:A:H2'     | 1:A:61:G:C8      | 2.53                     | 0.42              |
| 1:A:121:G:C6     | 1:A:162:A:C8     | 3.07                     | 0.42              |
| 1:A:173:G:C6     | 1:A:362:U:C4     | 3.07                     | 0.42              |
| 1:A:389:G:N1     | 1:A:390:G:C6     | 2.88                     | 0.42              |
| 1:A:400:A:H2'    | 1:A:401:A:C8     | 2.54                     | 0.42              |
| 1:A:423:G:H21    | 1:A:426:G:H22    | 1.68                     | 0.42              |
| 1:A:428:A:N3     | 1:A:2461:A:N1    | 2.67                     | 0.42              |
| 1:A:578:A:N7     | 1:A:579:A:C4     | 2.88                     | 0.42              |
| 1:A:2411:G:H2'   | 1:A:2413:G:P     | 2.59                     | 0.42              |
| 1:A:2483:C:H3'   | 1:A:2484:C:C6    | 2.54                     | 0.42              |
| 2:C:93:ASN:ND2   | 2:C:442:TYR:HB3  | 2.35                     | 0.42              |
| 2:C:96:LYS:HE2   | 2:C:308:ASP:HB2  | 2.01                     | 0.42              |
| 2:C:118:LEU:HD23 | 2:C:119:GLU:N    | 2.35                     | 0.42              |
| 2:C:235:GLN:HG3  | 2:C:239:LYS:NZ   | 2.34                     | 0.42              |
| 2:C:459:MET:HE3  | 2:C:463:CYS:HB3  | 2.02                     | 0.42              |
| 1:A:38:G:OP1     | 1:A:372:A:C6     | 2.72                     | 0.41              |
| 1:A:43:A:C6      | 1:A:44:C:C4      | 3.08                     | 0.41              |
| 1:A:76:A:C2      | 1:A:77:A:C4      | 3.08                     | 0.41              |
| 1:A:76:A:H8      | 1:A:76:A:O5'     | 2.03                     | 0.41              |
| 1:A:133:C:H2'    | 1:A:134:U:H4'    | 2.00                     | 0.41              |
| 1:A:148:U:O2     | 1:A:151:G:N1     | 2.39                     | 0.41              |
| 1:A:561:G:N1     | 1:A:569:U:O2     | 2.52                     | 0.41              |
| 1:A:577:A:C4     | 1:A:578:A:N1     | 2.88                     | 0.41              |
| 1:A:584:C:H6     | 1:A:584:C:H2'    | 1.69                     | 0.41              |
| 2:C:216:ILE:HG13 | 2:C:217:LEU:CD2  | 2.50                     | 0.41              |
| 1:A:5:G:C5       | 1:A:2420:A:C2    | 3.07                     | 0.41              |
| 1:A:26:A:H2'     | 1:A:27:A:N3      | 2.35                     | 0.41              |
| 1:A:56:A:O2'     | 1:A:57:C:H5'     | 2.20                     | 0.41              |
| 1:A:103:A:O5'    | 1:A:111:C:H5''   | 2.20                     | 0.41              |
| 1:A:134:U:H3'    | 1:A:145:G:N1     | 2.33                     | 0.41              |
| 1:A:318:G:C6     | 1:A:331:U:O2     | 2.73                     | 0.41              |
| 1:A:360:U:H2'    | 1:A:361:C:H6     | 1.84                     | 0.41              |
| 1:A:410:G:N2     | 1:A:451:G:C5     | 2.88                     | 0.41              |
| 1:A:431:A:N7     | 1:A:450:U:C2     | 2.83                     | 0.41              |
| 1:A:449:U:H6     | 1:A:449:U:O5'    | 2.02                     | 0.41              |
| 1:A:464:G:N1     | 1:A:465:G:C6     | 2.88                     | 0.41              |
| 1:A:477:U:N3     | 1:A:521:G:C5     | 2.88                     | 0.41              |
| 1:A:495:G:H2'    | 1:A:496:G:H8     | 1.84                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:569:U:O3'    | 1:A:574:A:H1'    | 2.20                     | 0.41              |
| 2:C:131:HIS:HB3  | 2:C:307:ALA:CB   | 2.50                     | 0.41              |
| 2:C:136:GLN:NE2  | 2:C:146:ILE:HD11 | 2.35                     | 0.41              |
| 1:A:-7:U:H2'     | 1:A:-6:C:C4      | 2.55                     | 0.41              |
| 1:A:85:G:H8      | 1:A:85:G:OP2     | 2.04                     | 0.41              |
| 1:A:89:A:O3'     | 1:A:90:A:H8      | 2.04                     | 0.41              |
| 1:A:90:A:H2'     | 1:A:91:G:C8      | 2.55                     | 0.41              |
| 1:A:275:U:H3'    | 1:A:276:A:C8     | 2.56                     | 0.41              |
| 1:A:317:U:C2     | 1:A:332:G:N2     | 2.88                     | 0.41              |
| 1:A:438:A:H5''   | 1:A:439:G:N7     | 2.35                     | 0.41              |
| 1:A:564:A:H5''   | 1:A:565:A:OP1    | 2.20                     | 0.41              |
| 1:A:2406:A:C6    | 1:A:2418:G:N2    | 2.87                     | 0.41              |
| 1:A:2440:G:C2    | 1:A:2483:C:N3    | 2.83                     | 0.41              |
| 2:C:7:ILE:HD12   | 2:C:7:ILE:H      | 1.85                     | 0.41              |
| 2:C:333:HIS:O    | 2:C:337:LYS:HG3  | 2.20                     | 0.41              |
| 2:C:379:THR:HG22 | 2:C:380:LEU:N    | 2.35                     | 0.41              |
| 1:A:37:G:O2'     | 1:A:38:G:P       | 2.78                     | 0.41              |
| 1:A:78:C:C4      | 1:A:79:C:N4      | 2.89                     | 0.41              |
| 1:A:84:A:H2'     | 1:A:85:G:C8      | 2.56                     | 0.41              |
| 1:A:248:A:H1'    | 1:A:250:A:C4     | 2.56                     | 0.41              |
| 1:A:266:A:H1'    | 1:A:267:A:H8     | 1.85                     | 0.41              |
| 1:A:351:U:O2     | 1:A:352:G:N7     | 2.53                     | 0.41              |
| 1:A:491:G:H5'    | 1:A:492:A:C8     | 2.55                     | 0.41              |
| 1:A:533:U:HO2'   | 1:A:2386:G:H1    | 1.65                     | 0.41              |
| 1:A:544:U:H3'    | 1:A:545:A:C2     | 2.56                     | 0.41              |
| 2:C:25:ARG:NH2   | 2:C:29:TYR:HE2   | 2.18                     | 0.41              |
| 2:C:389:PRO:HG2  | 2:C:451:GLN:OE1  | 2.20                     | 0.41              |
| 1:A:54:U:H3'     | 1:A:54:U:OP2     | 2.21                     | 0.41              |
| 1:A:136:A:H2'    | 1:A:240:A:C2     | 2.55                     | 0.41              |
| 1:A:136:A:H8     | 1:A:240:A:H1'    | 1.83                     | 0.41              |
| 1:A:185:A:H2'    | 1:A:186:A:C2     | 2.56                     | 0.41              |
| 1:A:352:G:H2'    | 1:A:353:C:C6     | 2.56                     | 0.41              |
| 1:A:397:C:C2     | 1:A:465:G:N1     | 2.73                     | 0.41              |
| 1:A:523:A:H2'    | 1:A:524:C:H6     | 1.85                     | 0.41              |
| 1:A:529:A:N6     | 1:A:2393:A:H61   | 2.18                     | 0.41              |
| 1:A:595:U:C6     | 1:A:596:U:H5     | 2.39                     | 0.41              |
| 1:A:2390:A:C2    | 1:A:2391:A:C5    | 3.08                     | 0.41              |
| 2:C:39:ALA:O     | 2:C:44:TYR:N     | 2.40                     | 0.41              |
| 2:C:485:GLY:HA2  | 2:C:523:ALA:HB3  | 2.02                     | 0.41              |
| 1:A:60:A:C4      | 1:A:61:G:C8      | 3.08                     | 0.41              |
| 1:A:67:A:C6      | 1:A:68:G:C5      | 3.09                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:131:A:O2'    | 1:A:132:C:OP1    | 2.34                     | 0.41              |
| 1:A:176:A:C5     | 1:A:355:G:H2'    | 2.55                     | 0.41              |
| 1:A:203:G:C2     | 1:A:349:G:N1     | 2.89                     | 0.41              |
| 1:A:261:A:C5     | 1:A:262:A:C6     | 3.08                     | 0.41              |
| 1:A:302:C:C2     | 1:A:303:A:C2     | 3.09                     | 0.41              |
| 1:A:327:C:C4     | 1:A:328:C:C4     | 3.09                     | 0.41              |
| 1:A:332:G:O2'    | 1:A:333:G:OP2    | 2.34                     | 0.41              |
| 1:A:393:A:C5     | 1:A:518:G:C5     | 3.08                     | 0.41              |
| 1:A:452:A:O3'    | 1:A:453:A:H3'    | 2.21                     | 0.41              |
| 1:A:532:G:C6     | 1:A:533:U:C2     | 3.08                     | 0.41              |
| 1:A:534:G:O2'    | 1:A:2386:G:H2'   | 2.20                     | 0.41              |
| 1:A:2434:A:C2    | 1:A:2435:A:C4    | 3.09                     | 0.41              |
| 1:A:2467:A:C2'   | 1:A:2468:A:H5'   | 2.50                     | 0.41              |
| 1:A:2476:G:H2'   | 1:A:2477:U:O4'   | 2.21                     | 0.41              |
| 2:C:140:HIS:O    | 2:C:143:LEU:HB2  | 2.20                     | 0.41              |
| 2:C:403:ILE:HG23 | 2:C:417:ARG:HH11 | 1.85                     | 0.41              |
| 2:C:418:LYS:HG3  | 2:C:419:TYR:N    | 2.35                     | 0.41              |
| 2:C:440:CYS:SG   | 2:C:530:ALA:HA   | 2.61                     | 0.41              |
| 1:A:5:G:C4       | 1:A:2420:A:N1    | 2.89                     | 0.41              |
| 1:A:5:G:N2       | 1:A:108:G:C8     | 2.88                     | 0.41              |
| 1:A:77:A:C2      | 1:A:103:A:C6     | 3.09                     | 0.41              |
| 1:A:194:U:HO2'   | 1:A:195:U:C4'    | 2.30                     | 0.41              |
| 1:A:205:A:H3'    | 1:A:206:A:N3     | 2.36                     | 0.41              |
| 1:A:227:G:H2'    | 1:A:228:U:C2     | 2.56                     | 0.41              |
| 1:A:274:U:C4     | 1:A:275:U:C4     | 3.08                     | 0.41              |
| 1:A:336:A:C8     | 1:A:337:C:C2     | 3.08                     | 0.41              |
| 1:A:518:G:N3     | 1:A:518:G:H2'    | 2.36                     | 0.41              |
| 1:A:2411:G:O2'   | 1:A:2413:G:OP2   | 2.38                     | 0.41              |
| 1:A:2443:G:H2'   | 1:A:2444:U:H6    | 1.85                     | 0.41              |
| 1:A:2:U:C4       | 1:A:105:A:C4     | 3.09                     | 0.41              |
| 1:A:49:U:H5''    | 1:A:50:A:C2      | 2.55                     | 0.41              |
| 1:A:72:A:H2'     | 1:A:73:C:H6      | 1.86                     | 0.41              |
| 1:A:409:U:O2     | 1:A:451:G:H8     | 2.04                     | 0.41              |
| 1:A:432:G:C6     | 1:A:450:U:N3     | 2.88                     | 0.41              |
| 1:A:510:A:O2'    | 1:A:511:U:OP2    | 2.34                     | 0.41              |
| 1:A:2388:A:P     | 1:A:2388:A:O4'   | 2.78                     | 0.41              |
| 1:A:2450:C:O2    | 1:A:2450:C:H2'   | 2.20                     | 0.41              |
| 1:A:2456:A:N1    | 1:A:2466:G:C6    | 2.88                     | 0.41              |
| 2:C:7:ILE:O      | 2:C:11:ILE:HG13  | 2.21                     | 0.41              |
| 2:C:358:GLY:O    | 2:C:390:LEU:HD22 | 2.21                     | 0.41              |
| 1:A:-7:U:H2'     | 1:A:-6:C:N1      | 2.35                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:3:G:N2       | 1:A:108:G:H22    | 2.18                     | 0.41              |
| 1:A:48:G:N1      | 1:A:60:A:C5      | 2.89                     | 0.41              |
| 1:A:71:A:N6      | 1:A:116:G:O6     | 2.53                     | 0.41              |
| 1:A:112:G:C6     | 1:A:113:G:C6     | 3.09                     | 0.41              |
| 1:A:118:A:N6     | 1:A:163:A:H1'    | 2.36                     | 0.41              |
| 1:A:234:G:C4     | 1:A:235:A:C6     | 3.09                     | 0.41              |
| 1:A:235:A:C2     | 1:A:253:U:C2     | 3.09                     | 0.41              |
| 1:A:239:A:O2'    | 1:A:245:C:H5     | 2.04                     | 0.41              |
| 1:A:318:G:N1     | 1:A:332:G:N1     | 2.69                     | 0.41              |
| 1:A:319:U:H2'    | 1:A:320:A:H8     | 1.79                     | 0.41              |
| 1:A:346:A:C5     | 1:A:347:G:C5     | 3.09                     | 0.41              |
| 1:A:356:A:H5''   | 1:A:356:A:N3     | 2.35                     | 0.41              |
| 1:A:357:G:C5     | 1:A:358:A:O2'    | 2.67                     | 0.41              |
| 1:A:401:A:H2'    | 1:A:403:C:C1'    | 2.42                     | 0.41              |
| 1:A:431:A:C6     | 1:A:432:G:H1'    | 2.55                     | 0.41              |
| 1:A:464:G:C4     | 1:A:465:G:C8     | 3.09                     | 0.41              |
| 1:A:484:A:H5'    | 1:A:485:G:H1'    | 2.02                     | 0.41              |
| 1:A:495:G:N1     | 1:A:504:C:N3     | 2.68                     | 0.41              |
| 1:A:508:A:H2'    | 1:A:509:C:N3     | 2.36                     | 0.41              |
| 1:A:508:A:H3'    | 1:A:508:A:N3     | 2.36                     | 0.41              |
| 1:A:536:A:N6     | 1:A:593:U:H5     | 2.19                     | 0.41              |
| 1:A:590:C:C2     | 1:A:591:A:C6     | 3.09                     | 0.41              |
| 1:A:2402:G:C6    | 1:A:2425:C:N4    | 2.88                     | 0.41              |
| 1:A:2460:U:O5'   | 1:A:2460:U:H6    | 2.04                     | 0.41              |
| 2:C:39:ALA:HA    | 2:C:42:ASN:HB3   | 2.02                     | 0.41              |
| 2:C:95:LYS:O     | 2:C:96:LYS:HG2   | 2.21                     | 0.41              |
| 2:C:146:ILE:HG21 | 2:C:304:VAL:HG11 | 2.03                     | 0.41              |
| 2:C:174:ILE:HA   | 2:C:177:ILE:HG12 | 2.02                     | 0.41              |
| 2:C:183:ASP:O    | 2:C:185:LYS:N    | 2.53                     | 0.41              |
| 2:C:356:PHE:O    | 2:C:359:TYR:N    | 2.45                     | 0.41              |
| 1:A:-3:U:H6      | 1:A:-3:U:OP2     | 2.04                     | 0.41              |
| 1:A:68:G:N3      | 1:A:68:G:H2'     | 2.36                     | 0.41              |
| 1:A:108:G:H8     | 1:A:2422:G:N2    | 2.19                     | 0.41              |
| 1:A:248:A:C8     | 1:A:250:A:C6     | 3.03                     | 0.41              |
| 1:A:296:U:H6     | 1:A:296:U:H2'    | 1.67                     | 0.41              |
| 1:A:321:G:C2     | 1:A:322:G:C5     | 3.09                     | 0.41              |
| 1:A:333:G:H2'    | 1:A:333:G:N3     | 2.36                     | 0.41              |
| 1:A:438:A:H3'    | 1:A:439:G:C8     | 2.56                     | 0.41              |
| 1:A:552:G:H2'    | 1:A:583:A:N7     | 2.36                     | 0.41              |
| 2:C:75:LYS:HZ3   | 2:C:78:THR:H     | 1.69                     | 0.41              |
| 2:C:157:VAL:HG12 | 2:C:158:GLU:H    | 1.85                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:191:TYR:HA   | 2:C:194:LEU:HG   | 2.02                     | 0.41              |
| 1:A:34:U:H2'     | 1:A:35:A:N3      | 2.36                     | 0.40              |
| 1:A:40:A:C6      | 1:A:41:C:C4      | 3.09                     | 0.40              |
| 1:A:51:A:N7      | 1:A:292:C:H2'    | 2.36                     | 0.40              |
| 1:A:75:U:H2'     | 1:A:76:A:N7      | 2.36                     | 0.40              |
| 1:A:82:A:C2'     | 1:A:83:A:H5'     | 2.51                     | 0.40              |
| 1:A:121:G:N2     | 1:A:162:A:H1'    | 2.36                     | 0.40              |
| 1:A:144:C:O4'    | 1:A:146:G:H8     | 2.04                     | 0.40              |
| 1:A:183:A:C5     | 1:A:352:G:O6     | 2.74                     | 0.40              |
| 1:A:208:U:C4     | 1:A:342:C:O2     | 2.74                     | 0.40              |
| 1:A:216:U:H2'    | 1:A:258:U:C6     | 2.56                     | 0.40              |
| 1:A:219:G:N2     | 1:A:229:C:C2     | 2.77                     | 0.40              |
| 1:A:219:G:H2'    | 1:A:220:G:O4'    | 2.21                     | 0.40              |
| 1:A:334:G:O2'    | 1:A:335:A:OP2    | 2.39                     | 0.40              |
| 1:A:382:A:C6     | 1:A:383:C:N3     | 2.90                     | 0.40              |
| 1:A:402:A:H5''   | 1:A:403:C:C6     | 2.56                     | 0.40              |
| 1:A:463:A:C2'    | 1:A:464:G:H5'    | 2.51                     | 0.40              |
| 1:A:484:A:H5'    | 1:A:513:G:H1     | 1.86                     | 0.40              |
| 1:A:544:U:C6     | 2:C:202:TRP:HA   | 2.56                     | 0.40              |
| 1:A:2447:A:C6    | 1:A:2448:A:C2    | 3.09                     | 0.40              |
| 1:A:74:C:N4      | 1:A:112:G:C6     | 2.89                     | 0.40              |
| 1:A:99:G:H2'     | 1:A:100:G:C1'    | 2.51                     | 0.40              |
| 1:A:178:A:H2'    | 1:A:179:A:N9     | 2.37                     | 0.40              |
| 1:A:193:U:C5     | 1:A:207:G:H1'    | 2.56                     | 0.40              |
| 1:A:203:G:N1     | 1:A:349:G:C6     | 2.89                     | 0.40              |
| 1:A:247:G:C8     | 1:A:248:A:C4     | 3.10                     | 0.40              |
| 1:A:260:C:H3'    | 1:A:261:A:C8     | 2.56                     | 0.40              |
| 1:A:277:U:O2     | 2:C:420:LEU:HD13 | 2.21                     | 0.40              |
| 1:A:295:U:H2'    | 1:A:296:U:C2     | 2.56                     | 0.40              |
| 1:A:401:A:C5     | 1:A:403:C:C5     | 3.10                     | 0.40              |
| 1:A:552:G:O3'    | 1:A:554:U:N3     | 2.54                     | 0.40              |
| 1:A:596:U:H2'    | 1:A:597:A:O4'    | 2.20                     | 0.40              |
| 1:A:2448:A:H2'   | 1:A:2449:A:C8    | 2.56                     | 0.40              |
| 2:C:121:ILE:O    | 2:C:124:PRO:HG2  | 2.21                     | 0.40              |
| 2:C:134:ARG:O    | 2:C:136:GLN:HG3  | 2.22                     | 0.40              |
| 2:C:155:TRP:H    | 2:C:350:SER:CA   | 2.29                     | 0.40              |
| 2:C:391:GLN:O    | 2:C:394:ILE:HG12 | 2.22                     | 0.40              |
| 2:C:398:ILE:HG21 | 2:C:404:ALA:HB3  | 2.02                     | 0.40              |
| 1:A:15:G:H2'     | 1:A:16:G:H8      | 1.87                     | 0.40              |
| 1:A:81:A:H8      | 1:A:83:A:N6      | 2.19                     | 0.40              |
| 1:A:173:G:C6     | 1:A:362:U:N3     | 2.89                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:175:U:C2     | 1:A:178:A:H2     | 2.39                     | 0.40              |
| 1:A:222:U:H5'    | 2:C:376:LYS:HB2  | 2.02                     | 0.40              |
| 1:A:345:A:C6     | 1:A:346:A:C4     | 3.10                     | 0.40              |
| 1:A:535:U:O3'    | 1:A:537:C:H5'    | 2.21                     | 0.40              |
| 1:A:538:U:C2     | 1:A:598:G:C4     | 3.09                     | 0.40              |
| 1:A:548:A:H1'    | 1:A:588:G:N2     | 2.34                     | 0.40              |
| 2:C:15:SER:O     | 2:C:21:GLU:HG3   | 2.21                     | 0.40              |
| 2:C:194:LEU:HA   | 2:C:213:GLN:CD   | 2.46                     | 0.40              |
| 2:C:457:TYR:C    | 2:C:459:MET:H    | 2.29                     | 0.40              |
| 2:C:468:ALA:HB2  | 2:C:477:LYS:HA   | 2.04                     | 0.40              |
| 1:A:78:C:C4      | 1:A:79:C:C4      | 3.10                     | 0.40              |
| 1:A:165:G:C2     | 1:A:166:U:C4     | 3.09                     | 0.40              |
| 1:A:174:A:C6     | 1:A:361:C:C4     | 3.10                     | 0.40              |
| 1:A:211:C:O2'    | 1:A:212:U:C6     | 2.70                     | 0.40              |
| 1:A:211:C:H1'    | 1:A:212:U:H5'    | 2.03                     | 0.40              |
| 1:A:227:G:H3'    | 1:A:227:G:OP2    | 2.22                     | 0.40              |
| 1:A:322:G:C5     | 1:A:323:A:C5     | 3.09                     | 0.40              |
| 1:A:521:G:C4     | 1:A:522:U:C5     | 3.10                     | 0.40              |
| 1:A:578:A:N7     | 1:A:579:A:C5     | 2.89                     | 0.40              |
| 1:A:2455:C:N4    | 1:A:2466:G:O6    | 2.27                     | 0.40              |
| 1:A:2464:G:C6    | 1:A:2465:U:C4    | 3.09                     | 0.40              |
| 2:C:28:ARG:HE    | 2:C:31:LEU:HB3   | 1.86                     | 0.40              |
| 2:C:136:GLN:HE22 | 2:C:146:ILE:HD11 | 1.87                     | 0.40              |
| 2:C:136:GLN:HB3  | 2:C:141:THR:HG21 | 2.01                     | 0.40              |
| 2:C:174:ILE:HD12 | 2:C:195:LYS:HD3  | 2.04                     | 0.40              |
| 1:A:19:U:C2      | 1:A:20:U:C5      | 3.10                     | 0.40              |
| 1:A:21:A:C6      | 1:A:379:A:C5     | 3.09                     | 0.40              |
| 1:A:106:G:HO2'   | 1:A:107:A:C5'    | 2.30                     | 0.40              |
| 1:A:150:C:OP1    | 1:A:150:C:H2'    | 2.21                     | 0.40              |
| 1:A:241:G:N3     | 1:A:241:G:O4'    | 2.55                     | 0.40              |
| 1:A:268:G:C2     | 1:A:269:G:C4     | 3.10                     | 0.40              |
| 1:A:304:C:C2     | 1:A:305:A:N7     | 2.90                     | 0.40              |
| 1:A:401:A:N1     | 1:A:461:C:H1'    | 2.36                     | 0.40              |
| 1:A:540:A:N6     | 1:A:541:A:N6     | 2.70                     | 0.40              |
| 1:A:2399:A:H5'   | 1:A:2419:U:OP1   | 2.22                     | 0.40              |
| 1:A:2401:C:H2'   | 1:A:2402:G:C2    | 2.57                     | 0.40              |
| 2:C:10:ARG:HD3   | 2:C:13:LYS:HZ1   | 1.85                     | 0.40              |
| 2:C:63:SER:C     | 2:C:65:GLU:H     | 2.30                     | 0.40              |
| 2:C:148:ARG:HE   | 2:C:445:LEU:HD23 | 1.87                     | 0.40              |
| 2:C:156:PHE:CD2  | 2:C:348:THR:HG21 | 2.56                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

| Mol | Chain | Analysed      | Favoured  | Allowed   | Outliers | Percentiles |    |
|-----|-------|---------------|-----------|-----------|----------|-------------|----|
| 2   | C     | 439/599 (73%) | 315 (72%) | 116 (26%) | 8 (2%)   | 6           | 32 |

All (8) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | C     | 22  | VAL  |
| 2   | C     | 23  | PHE  |
| 2   | C     | 130 | SER  |
| 2   | C     | 77  | GLY  |
| 2   | C     | 318 | LYS  |
| 2   | C     | 21  | GLU  |
| 2   | C     | 131 | HIS  |
| 2   | C     | 163 | GLY  |

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

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

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

| Mol | Chain | Analysed      | Rotameric  | Outliers | Percentiles |    |
|-----|-------|---------------|------------|----------|-------------|----|
| 2   | C     | 403/545 (74%) | 401 (100%) | 2 (0%)   | 81          | 82 |

All (2) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | C     | 107 | ASP  |
| 2   | C     | 183 | ASP  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | C     | 14  | ASN  |
| 2   | C     | 406 | GLN  |
| 2   | C     | 450 | ASN  |
| 2   | C     | 471 | HIS  |
| 2   | C     | 532 | ASN  |

### 5.3.3 RNA ⓘ

| Mol | Chain | Analysed      | Backbone Outliers | Pucker Outliers |
|-----|-------|---------------|-------------------|-----------------|
| 1   | A     | 711/916 (77%) | 475 (66%)         | 42 (5%)         |

All (475) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | -10 | A    |
| 1   | A     | -7  | U    |
| 1   | A     | -6  | C    |
| 1   | A     | -5  | C    |
| 1   | A     | -4  | A    |
| 1   | A     | -3  | U    |
| 1   | A     | -2  | A    |
| 1   | A     | -1  | A    |
| 1   | A     | 0   | C    |
| 1   | A     | 1   | G    |
| 1   | A     | 2   | U    |
| 1   | A     | 3   | G    |
| 1   | A     | 5   | G    |
| 1   | A     | 6   | C    |
| 1   | A     | 8   | C    |
| 1   | A     | 9   | A    |
| 1   | A     | 11  | A    |
| 1   | A     | 12  | U    |
| 1   | A     | 13  | A    |
| 1   | A     | 17  | U    |
| 1   | A     | 19  | U    |
| 1   | A     | 20  | U    |
| 1   | A     | 24  | U    |
| 1   | A     | 25  | C    |
| 1   | A     | 26  | A    |
| 1   | A     | 28  | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 29  | U    |
| 1   | A     | 30  | A    |
| 1   | A     | 33  | U    |
| 1   | A     | 36  | A    |
| 1   | A     | 38  | G    |
| 1   | A     | 39  | U    |
| 1   | A     | 40  | A    |
| 1   | A     | 46  | C    |
| 1   | A     | 50  | A    |
| 1   | A     | 51  | A    |
| 1   | A     | 52  | G    |
| 1   | A     | 53  | A    |
| 1   | A     | 54  | U    |
| 1   | A     | 55  | A    |
| 1   | A     | 56  | A    |
| 1   | A     | 57  | C    |
| 1   | A     | 58  | A    |
| 1   | A     | 59  | C    |
| 1   | A     | 61  | G    |
| 1   | A     | 62  | A    |
| 1   | A     | 63  | A    |
| 1   | A     | 65  | A    |
| 1   | A     | 69  | C    |
| 1   | A     | 70  | C    |
| 1   | A     | 74  | C    |
| 1   | A     | 76  | A    |
| 1   | A     | 77  | A    |
| 1   | A     | 78  | C    |
| 1   | A     | 80  | G    |
| 1   | A     | 82  | A    |
| 1   | A     | 83  | A    |
| 1   | A     | 84  | A    |
| 1   | A     | 85  | G    |
| 1   | A     | 86  | C    |
| 1   | A     | 87  | G    |
| 1   | A     | 88  | A    |
| 1   | A     | 89  | A    |
| 1   | A     | 90  | A    |
| 1   | A     | 91  | G    |
| 1   | A     | 92  | C    |
| 1   | A     | 93  | U    |
| 1   | A     | 94  | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 96  | U    |
| 1   | A     | 97  | A    |
| 1   | A     | 99  | G    |
| 1   | A     | 100 | G    |
| 1   | A     | 101 | G    |
| 1   | A     | 102 | A    |
| 1   | A     | 103 | A    |
| 1   | A     | 105 | A    |
| 1   | A     | 106 | G    |
| 1   | A     | 107 | A    |
| 1   | A     | 108 | G    |
| 1   | A     | 109 | C    |
| 1   | A     | 110 | A    |
| 1   | A     | 111 | C    |
| 1   | A     | 112 | G    |
| 1   | A     | 115 | U    |
| 1   | A     | 116 | G    |
| 1   | A     | 117 | G    |
| 1   | A     | 118 | A    |
| 1   | A     | 123 | G    |
| 1   | A     | 125 | U    |
| 1   | A     | 126 | G    |
| 1   | A     | 130 | U    |
| 1   | A     | 131 | A    |
| 1   | A     | 132 | C    |
| 1   | A     | 133 | C    |
| 1   | A     | 135 | A    |
| 1   | A     | 136 | A    |
| 1   | A     | 137 | A    |
| 1   | A     | 138 | G    |
| 1   | A     | 139 | A    |
| 1   | A     | 142 | A    |
| 1   | A     | 143 | U    |
| 1   | A     | 144 | C    |
| 1   | A     | 145 | G    |
| 1   | A     | 146 | G    |
| 1   | A     | 147 | G    |
| 1   | A     | 148 | U    |
| 1   | A     | 149 | A    |
| 1   | A     | 150 | C    |
| 1   | A     | 151 | G    |
| 1   | A     | 156 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 159 | C    |
| 1   | A     | 160 | G    |
| 1   | A     | 161 | C    |
| 1   | A     | 162 | A    |
| 1   | A     | 163 | A    |
| 1   | A     | 165 | G    |
| 1   | A     | 168 | A    |
| 1   | A     | 169 | A    |
| 1   | A     | 170 | U    |
| 1   | A     | 171 | C    |
| 1   | A     | 172 | A    |
| 1   | A     | 175 | U    |
| 1   | A     | 176 | A    |
| 1   | A     | 177 | U    |
| 1   | A     | 178 | A    |
| 1   | A     | 180 | G    |
| 1   | A     | 182 | U    |
| 1   | A     | 183 | A    |
| 1   | A     | 184 | U    |
| 1   | A     | 185 | A    |
| 1   | A     | 186 | A    |
| 1   | A     | 188 | U    |
| 1   | A     | 190 | G    |
| 1   | A     | 191 | U    |
| 1   | A     | 193 | U    |
| 1   | A     | 194 | U    |
| 1   | A     | 195 | U    |
| 1   | A     | 196 | A    |
| 1   | A     | 197 | C    |
| 1   | A     | 198 | U    |
| 1   | A     | 199 | G    |
| 1   | A     | 200 | A    |
| 1   | A     | 201 | A    |
| 1   | A     | 202 | C    |
| 1   | A     | 204 | C    |
| 1   | A     | 206 | A    |
| 1   | A     | 207 | G    |
| 1   | A     | 210 | U    |
| 1   | A     | 211 | C    |
| 1   | A     | 212 | U    |
| 1   | A     | 213 | A    |
| 1   | A     | 214 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 215 | U    |
| 1   | A     | 216 | U    |
| 1   | A     | 217 | U    |
| 1   | A     | 218 | C    |
| 1   | A     | 219 | G    |
| 1   | A     | 220 | G    |
| 1   | A     | 221 | U    |
| 1   | A     | 222 | U    |
| 1   | A     | 223 | A    |
| 1   | A     | 225 | G    |
| 1   | A     | 227 | G    |
| 1   | A     | 228 | U    |
| 1   | A     | 229 | C    |
| 1   | A     | 230 | G    |
| 1   | A     | 232 | U    |
| 1   | A     | 233 | A    |
| 1   | A     | 234 | G    |
| 1   | A     | 235 | A    |
| 1   | A     | 237 | G    |
| 1   | A     | 238 | A    |
| 1   | A     | 239 | A    |
| 1   | A     | 240 | A    |
| 1   | A     | 241 | G    |
| 1   | A     | 242 | U    |
| 1   | A     | 243 | G    |
| 1   | A     | 244 | U    |
| 1   | A     | 247 | G    |
| 1   | A     | 248 | A    |
| 1   | A     | 249 | A    |
| 1   | A     | 250 | A    |
| 1   | A     | 252 | C    |
| 1   | A     | 253 | U    |
| 1   | A     | 255 | U    |
| 1   | A     | 257 | G    |
| 1   | A     | 258 | U    |
| 1   | A     | 259 | A    |
| 1   | A     | 261 | A    |
| 1   | A     | 262 | A    |
| 1   | A     | 263 | A    |
| 1   | A     | 264 | G    |
| 1   | A     | 265 | A    |
| 1   | A     | 266 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 267 | A    |
| 1   | A     | 268 | G    |
| 1   | A     | 269 | G    |
| 1   | A     | 272 | A    |
| 1   | A     | 273 | G    |
| 1   | A     | 276 | A    |
| 1   | A     | 278 | G    |
| 1   | A     | 279 | G    |
| 1   | A     | 281 | U    |
| 1   | A     | 282 | G    |
| 1   | A     | 283 | U    |
| 1   | A     | 289 | U    |
| 1   | A     | 292 | C    |
| 1   | A     | 293 | U    |
| 1   | A     | 294 | G    |
| 1   | A     | 296 | U    |
| 1   | A     | 297 | A    |
| 1   | A     | 298 | U    |
| 1   | A     | 299 | C    |
| 1   | A     | 300 | A    |
| 1   | A     | 304 | C    |
| 1   | A     | 306 | U    |
| 1   | A     | 307 | U    |
| 1   | A     | 309 | G    |
| 1   | A     | 312 | C    |
| 1   | A     | 313 | A    |
| 1   | A     | 314 | A    |
| 1   | A     | 315 | U    |
| 1   | A     | 316 | C    |
| 1   | A     | 317 | U    |
| 1   | A     | 320 | A    |
| 1   | A     | 321 | G    |
| 1   | A     | 322 | G    |
| 1   | A     | 323 | A    |
| 1   | A     | 324 | G    |
| 1   | A     | 325 | A    |
| 1   | A     | 326 | A    |
| 1   | A     | 327 | C    |
| 1   | A     | 329 | U    |
| 1   | A     | 331 | U    |
| 1   | A     | 332 | G    |
| 1   | A     | 333 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 335 | A    |
| 1   | A     | 336 | A    |
| 1   | A     | 337 | C    |
| 1   | A     | 338 | G    |
| 1   | A     | 339 | A    |
| 1   | A     | 342 | C    |
| 1   | A     | 344 | A    |
| 1   | A     | 345 | A    |
| 1   | A     | 346 | A    |
| 1   | A     | 347 | G    |
| 1   | A     | 348 | C    |
| 1   | A     | 350 | A    |
| 1   | A     | 351 | U    |
| 1   | A     | 352 | G    |
| 1   | A     | 353 | C    |
| 1   | A     | 357 | G    |
| 1   | A     | 358 | A    |
| 1   | A     | 359 | A    |
| 1   | A     | 361 | C    |
| 1   | A     | 363 | G    |
| 1   | A     | 364 | A    |
| 1   | A     | 366 | U    |
| 1   | A     | 367 | U    |
| 1   | A     | 368 | U    |
| 1   | A     | 369 | A    |
| 1   | A     | 370 | C    |
| 1   | A     | 371 | C    |
| 1   | A     | 372 | A    |
| 1   | A     | 373 | A    |
| 1   | A     | 374 | G    |
| 1   | A     | 380 | A    |
| 1   | A     | 381 | C    |
| 1   | A     | 385 | A    |
| 1   | A     | 386 | A    |
| 1   | A     | 387 | C    |
| 1   | A     | 389 | G    |
| 1   | A     | 390 | G    |
| 1   | A     | 392 | G    |
| 1   | A     | 393 | A    |
| 1   | A     | 394 | U    |
| 1   | A     | 395 | A    |
| 1   | A     | 396 | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 397 | C    |
| 1   | A     | 402 | A    |
| 1   | A     | 403 | C    |
| 1   | A     | 404 | A    |
| 1   | A     | 406 | G    |
| 1   | A     | 407 | A    |
| 1   | A     | 408 | A    |
| 1   | A     | 409 | U    |
| 1   | A     | 410 | G    |
| 1   | A     | 411 | C    |
| 1   | A     | 412 | C    |
| 1   | A     | 413 | U    |
| 1   | A     | 414 | A    |
| 1   | A     | 421 | A    |
| 1   | A     | 422 | G    |
| 1   | A     | 423 | G    |
| 1   | A     | 424 | A    |
| 1   | A     | 425 | G    |
| 1   | A     | 427 | A    |
| 1   | A     | 428 | A    |
| 1   | A     | 429 | A    |
| 1   | A     | 430 | A    |
| 1   | A     | 432 | G    |
| 1   | A     | 433 | G    |
| 1   | A     | 434 | C    |
| 1   | A     | 435 | U    |
| 1   | A     | 436 | A    |
| 1   | A     | 437 | U    |
| 1   | A     | 438 | A    |
| 1   | A     | 439 | G    |
| 1   | A     | 440 | C    |
| 1   | A     | 443 | U    |
| 1   | A     | 444 | A    |
| 1   | A     | 446 | A    |
| 1   | A     | 448 | C    |
| 1   | A     | 450 | U    |
| 1   | A     | 451 | G    |
| 1   | A     | 452 | A    |
| 1   | A     | 453 | A    |
| 1   | A     | 455 | A    |
| 1   | A     | 456 | U    |
| 1   | A     | 457 | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 459 | U    |
| 1   | A     | 462 | A    |
| 1   | A     | 463 | A    |
| 1   | A     | 464 | G    |
| 1   | A     | 465 | G    |
| 1   | A     | 466 | G    |
| 1   | A     | 467 | U    |
| 1   | A     | 469 | C    |
| 1   | A     | 470 | G    |
| 1   | A     | 471 | G    |
| 1   | A     | 473 | G    |
| 1   | A     | 475 | A    |
| 1   | A     | 476 | C    |
| 1   | A     | 480 | U    |
| 1   | A     | 481 | A    |
| 1   | A     | 482 | G    |
| 1   | A     | 484 | A    |
| 1   | A     | 485 | G    |
| 1   | A     | 486 | U    |
| 1   | A     | 487 | C    |
| 1   | A     | 488 | U    |
| 1   | A     | 489 | G    |
| 1   | A     | 490 | A    |
| 1   | A     | 491 | G    |
| 1   | A     | 492 | A    |
| 1   | A     | 494 | G    |
| 1   | A     | 496 | G    |
| 1   | A     | 497 | U    |
| 1   | A     | 498 | A    |
| 1   | A     | 501 | G    |
| 1   | A     | 502 | C    |
| 1   | A     | 504 | C    |
| 1   | A     | 505 | U    |
| 1   | A     | 508 | A    |
| 1   | A     | 509 | C    |
| 1   | A     | 510 | A    |
| 1   | A     | 511 | U    |
| 1   | A     | 512 | G    |
| 1   | A     | 515 | A    |
| 1   | A     | 516 | A    |
| 1   | A     | 517 | A    |
| 1   | A     | 518 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 522 | U    |
| 1   | A     | 523 | A    |
| 1   | A     | 525 | A    |
| 1   | A     | 526 | G    |
| 1   | A     | 529 | A    |
| 1   | A     | 533 | U    |
| 1   | A     | 534 | G    |
| 1   | A     | 535 | U    |
| 1   | A     | 536 | A    |
| 1   | A     | 537 | C    |
| 1   | A     | 543 | U    |
| 1   | A     | 544 | U    |
| 1   | A     | 545 | A    |
| 1   | A     | 546 | A    |
| 1   | A     | 547 | A    |
| 1   | A     | 548 | A    |
| 1   | A     | 549 | A    |
| 1   | A     | 551 | U    |
| 1   | A     | 553 | A    |
| 1   | A     | 554 | U    |
| 1   | A     | 558 | G    |
| 1   | A     | 559 | G    |
| 1   | A     | 560 | A    |
| 1   | A     | 561 | G    |
| 1   | A     | 562 | G    |
| 1   | A     | 563 | A    |
| 1   | A     | 564 | A    |
| 1   | A     | 565 | A    |
| 1   | A     | 566 | A    |
| 1   | A     | 568 | C    |
| 1   | A     | 569 | U    |
| 1   | A     | 571 | A    |
| 1   | A     | 572 | A    |
| 1   | A     | 573 | A    |
| 1   | A     | 574 | A    |
| 1   | A     | 575 | U    |
| 1   | A     | 576 | G    |
| 1   | A     | 577 | A    |
| 1   | A     | 578 | A    |
| 1   | A     | 579 | A    |
| 1   | A     | 580 | C    |
| 1   | A     | 582 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 584  | C    |
| 1   | A     | 585  | A    |
| 1   | A     | 586  | A    |
| 1   | A     | 589  | G    |
| 1   | A     | 594  | U    |
| 1   | A     | 598  | G    |
| 1   | A     | 599  | A    |
| 1   | A     | 600  | A    |
| 1   | A     | 2386 | G    |
| 1   | A     | 2387 | A    |
| 1   | A     | 2388 | A    |
| 1   | A     | 2389 | C    |
| 1   | A     | 2390 | A    |
| 1   | A     | 2391 | A    |
| 1   | A     | 2392 | U    |
| 1   | A     | 2393 | A    |
| 1   | A     | 2394 | A    |
| 1   | A     | 2395 | C    |
| 1   | A     | 2396 | A    |
| 1   | A     | 2397 | G    |
| 1   | A     | 2398 | A    |
| 1   | A     | 2399 | A    |
| 1   | A     | 2400 | U    |
| 1   | A     | 2401 | C    |
| 1   | A     | 2402 | G    |
| 1   | A     | 2403 | U    |
| 1   | A     | 2404 | A    |
| 1   | A     | 2405 | U    |
| 1   | A     | 2406 | A    |
| 1   | A     | 2407 | C    |
| 1   | A     | 2408 | U    |
| 1   | A     | 2409 | C    |
| 1   | A     | 2411 | G    |
| 1   | A     | 2412 | A    |
| 1   | A     | 2413 | G    |
| 1   | A     | 2414 | A    |
| 1   | A     | 2415 | G    |
| 1   | A     | 2416 | G    |
| 1   | A     | 2417 | G    |
| 1   | A     | 2418 | G    |
| 1   | A     | 2420 | A    |
| 1   | A     | 2421 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 2422 | G    |
| 1   | A     | 2423 | U    |
| 1   | A     | 2424 | A    |
| 1   | A     | 2429 | U    |
| 1   | A     | 2430 | C    |
| 1   | A     | 2432 | C    |
| 1   | A     | 2433 | G    |
| 1   | A     | 2437 | A    |
| 1   | A     | 2438 | G    |
| 1   | A     | 2445 | G    |
| 1   | A     | 2448 | A    |
| 1   | A     | 2449 | A    |
| 1   | A     | 2450 | C    |
| 1   | A     | 2451 | C    |
| 1   | A     | 2453 | G    |
| 1   | A     | 2460 | U    |
| 1   | A     | 2461 | A    |
| 1   | A     | 2462 | A    |
| 1   | A     | 2463 | U    |
| 1   | A     | 2468 | A    |
| 1   | A     | 2470 | A    |
| 1   | A     | 2471 | A    |
| 1   | A     | 2474 | C    |
| 1   | A     | 2475 | G    |
| 1   | A     | 2479 | C    |
| 1   | A     | 2484 | C    |
| 1   | A     | 2486 | A    |
| 1   | A     | 2487 | C    |
| 1   | A     | 2491 | A    |

All (42) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | -6  | C    |
| 1   | A     | -2  | A    |
| 1   | A     | 37  | G    |
| 1   | A     | 38  | G    |
| 1   | A     | 51  | A    |
| 1   | A     | 52  | G    |
| 1   | A     | 68  | G    |
| 1   | A     | 104 | C    |
| 1   | A     | 106 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 130  | U    |
| 1   | A     | 131  | A    |
| 1   | A     | 134  | U    |
| 1   | A     | 177  | U    |
| 1   | A     | 185  | A    |
| 1   | A     | 190  | G    |
| 1   | A     | 201  | A    |
| 1   | A     | 213  | A    |
| 1   | A     | 234  | G    |
| 1   | A     | 265  | A    |
| 1   | A     | 346  | A    |
| 1   | A     | 351  | U    |
| 1   | A     | 371  | C    |
| 1   | A     | 388  | U    |
| 1   | A     | 389  | G    |
| 1   | A     | 403  | C    |
| 1   | A     | 412  | C    |
| 1   | A     | 432  | G    |
| 1   | A     | 436  | A    |
| 1   | A     | 437  | U    |
| 1   | A     | 517  | A    |
| 1   | A     | 535  | U    |
| 1   | A     | 547  | A    |
| 1   | A     | 597  | A    |
| 1   | A     | 2388 | A    |
| 1   | A     | 2395 | C    |
| 1   | A     | 2401 | C    |
| 1   | A     | 2405 | U    |
| 1   | A     | 2412 | A    |
| 1   | A     | 2420 | A    |
| 1   | A     | 2449 | A    |
| 1   | A     | 2450 | C    |
| 1   | A     | 2469 | C    |

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry

There are no ligands in this entry.

## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

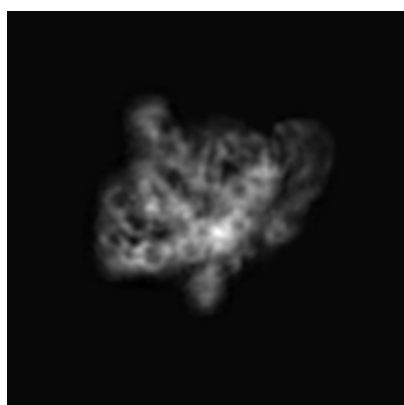
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-30533. These allow visual inspection of the internal detail of the map and identification of artifacts.

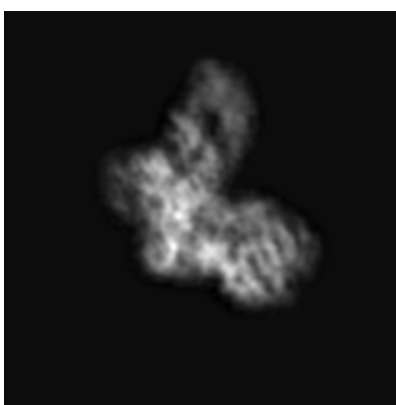
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

### 6.1 Orthogonal projections [i](#)

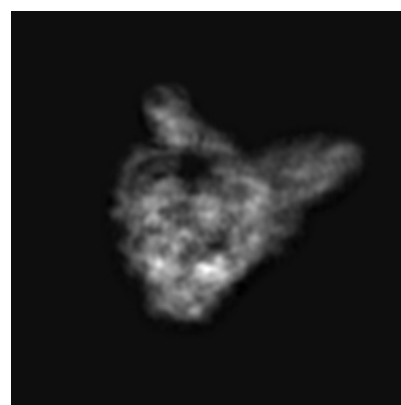
#### 6.1.1 Primary map



X



Y

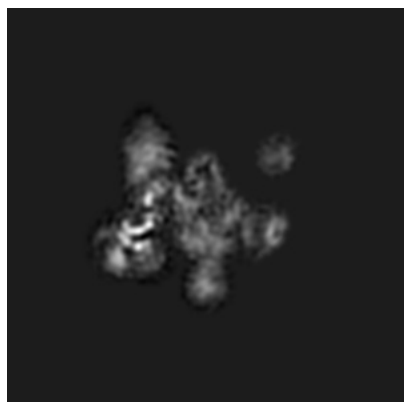


Z

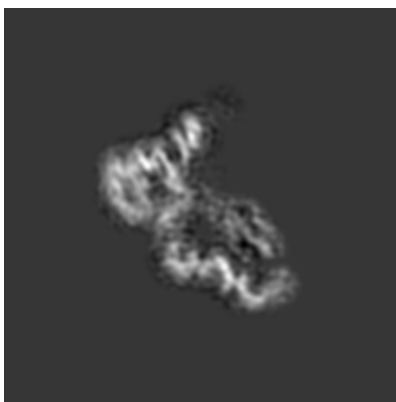
The images above show the map projected in three orthogonal directions.

### 6.2 Central slices [i](#)

#### 6.2.1 Primary map



X Index: 92



Y Index: 92

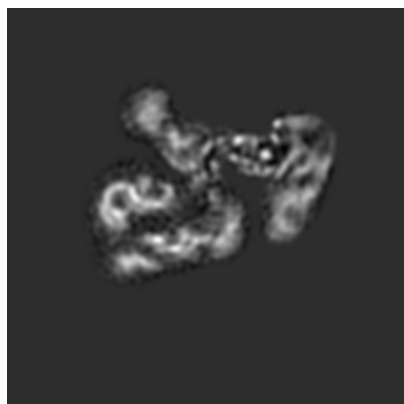


Z Index: 92

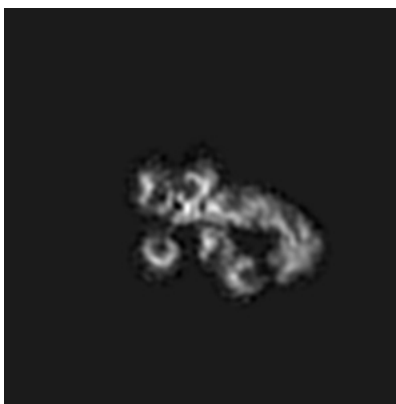
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

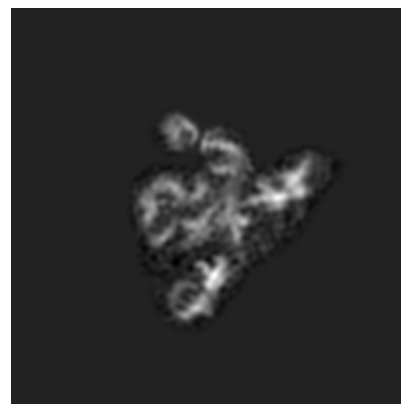
### 6.3.1 Primary map



X Index: 73



Y Index: 65

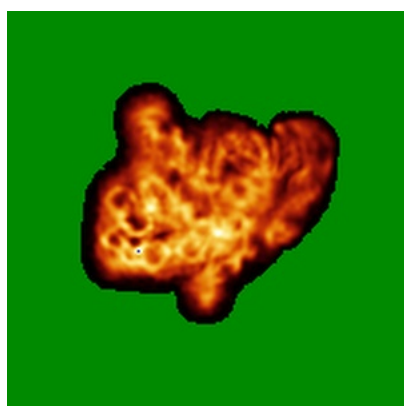


Z Index: 81

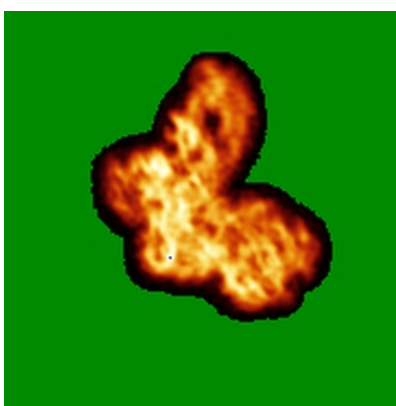
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

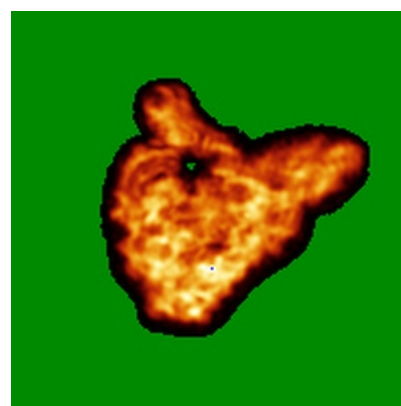
### 6.4.1 Primary map



X



Y



Z

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

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.01. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

## 6.6 Mask visualisation [i](#)

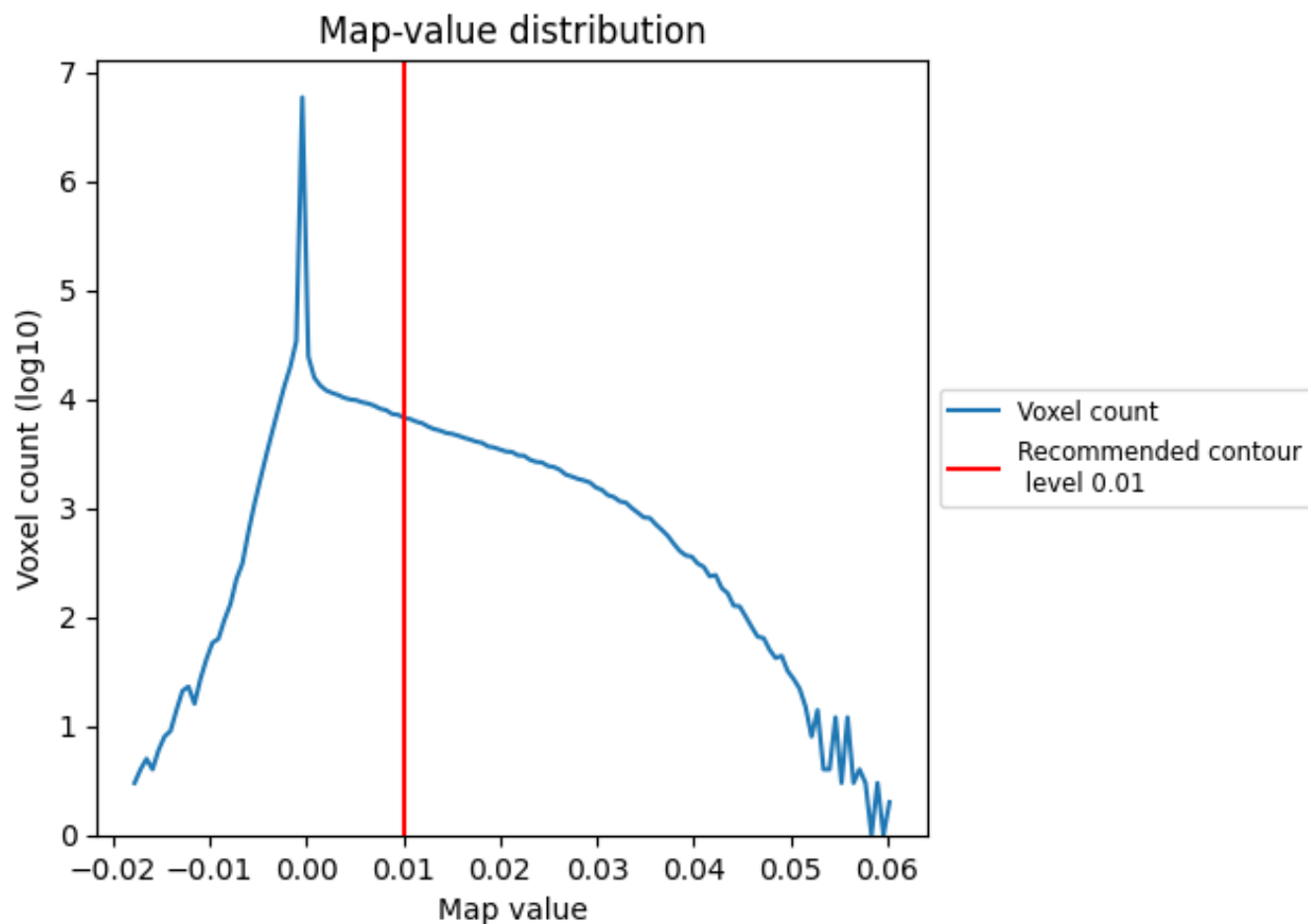
This section was not generated. No masks/segmentation were deposited.



## 7 Map analysis [i](#)

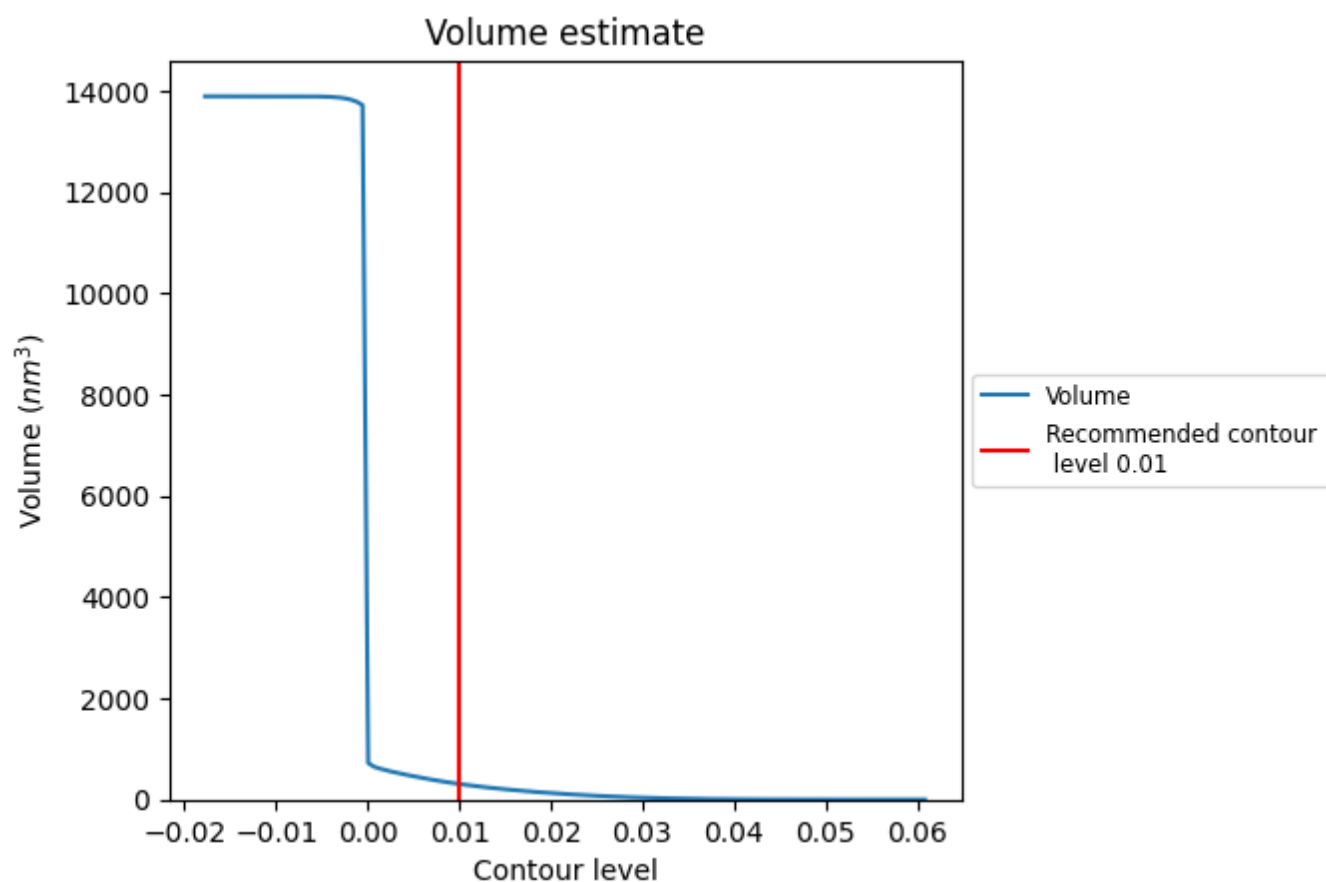
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

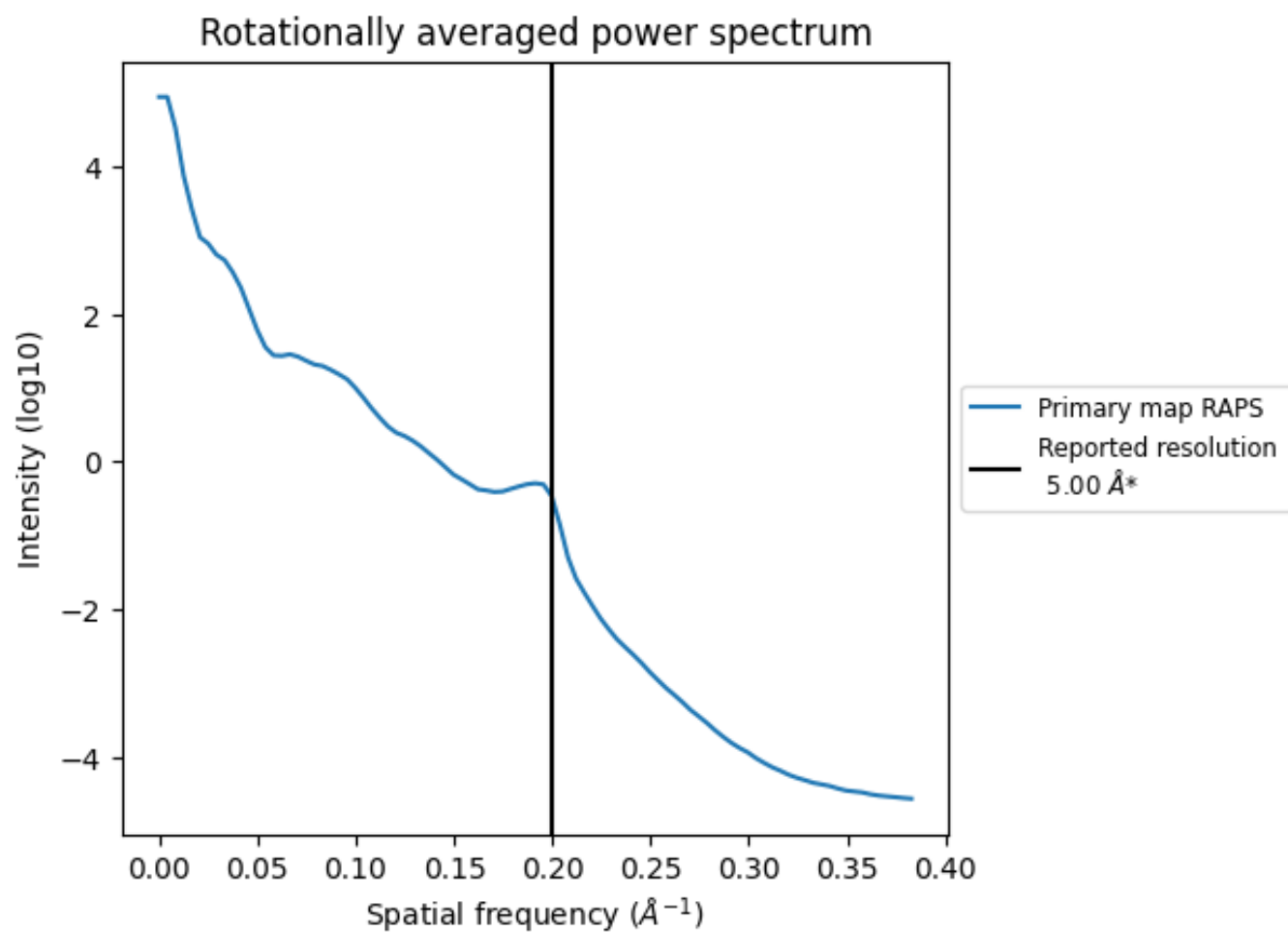
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 308  $\text{nm}^3$ ; this corresponds to an approximate mass of 279 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum ⓘ



\*Reported resolution corresponds to spatial frequency of 0.200 Å<sup>-1</sup>

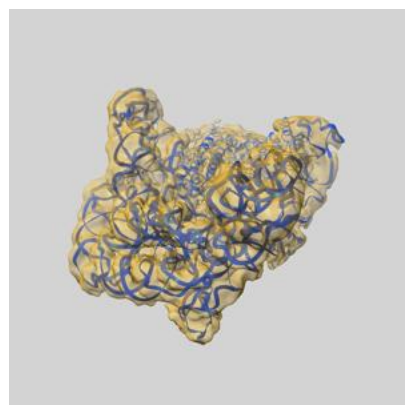
## 8 Fourier-Shell correlation

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

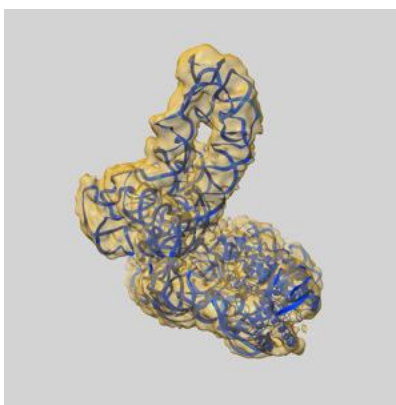
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-30533 and PDB model 7D0G. Per-residue inclusion information can be found in [section 3](#) on [page 4](#).

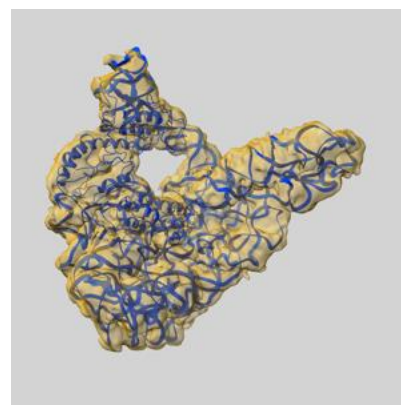
### 9.1 Map-model overlay [i](#)



X



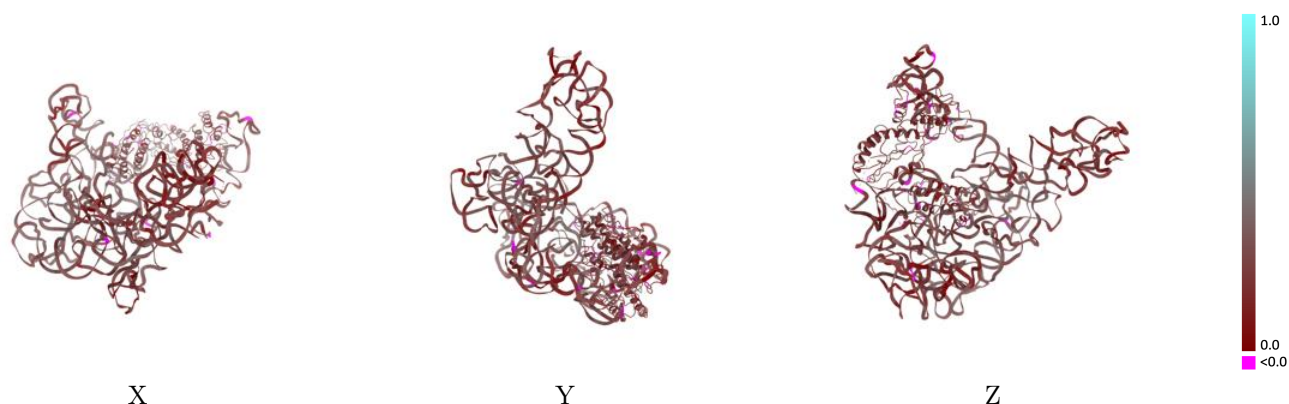
Y



Z

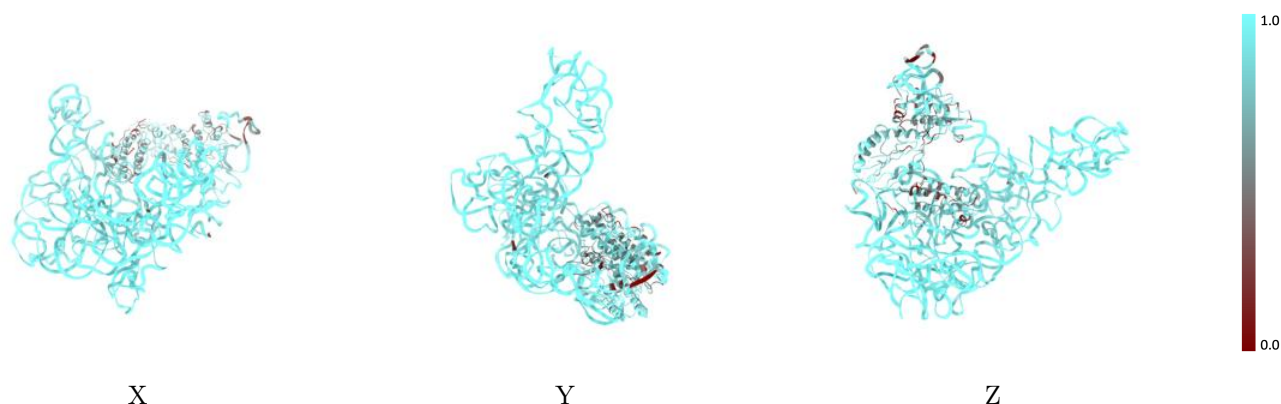
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



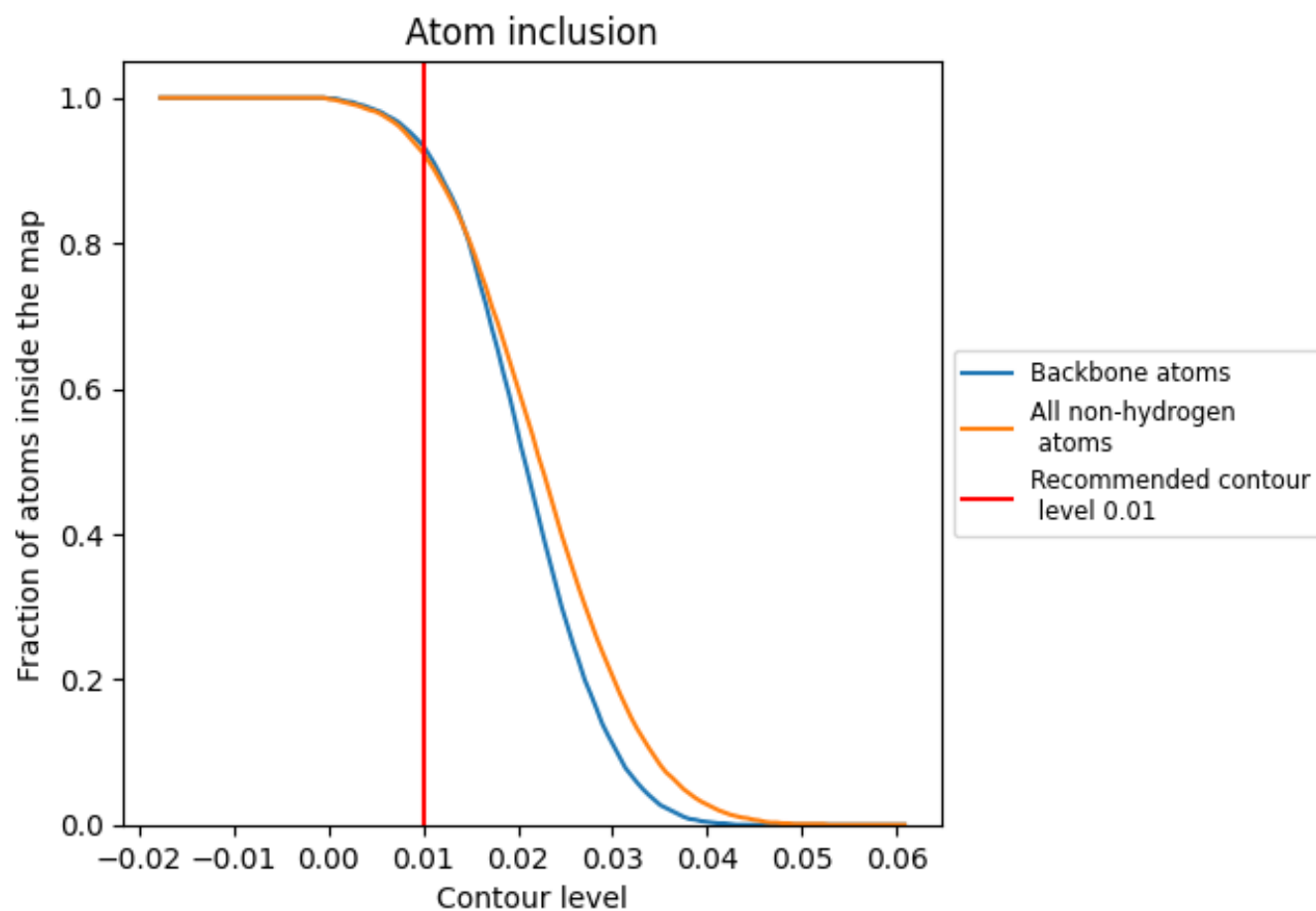
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.01).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 93% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion     | Q-score            |
|-------|--------------------|--------------------|
| All   | <div></div> 0.9240 | <div></div> 0.2400 |
| A     | <div></div> 0.9740 | <div></div> 0.2470 |
| C     | <div></div> 0.7080 | <div></div> 0.2110 |

