



## Full wwPDB EM Validation Report ⓘ

Mar 27, 2026 – 07:07 AM UTC

PDB ID : 7NAV / pdb\_00007nav  
EMDB ID : EMD-12249  
Title : Bacterial 30S ribosomal subunit assembly complex state D (Consensus refinement)  
Authors : Schedlbauer, A.; Iturrioz, I.; Ochoa-Lizarralde, B.; Diercks, T.; Kaminishi, T.; Capuni, R.; Astigarraga, E.; Gil-Carton, D.; Fucini, P.; Connell, S.  
Deposited on : 2021-01-25  
Resolution : 4.80 Å (reported)  
Based on initial model : 4YBB

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  
Mogul : 2022.3.0, CSD as543be (2022)  
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

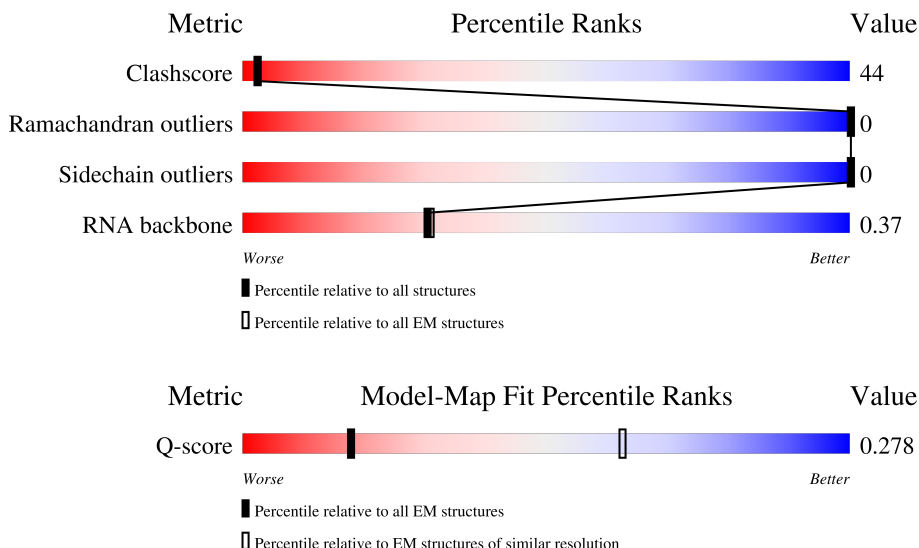
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 4.80 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.



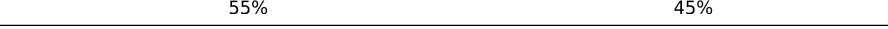
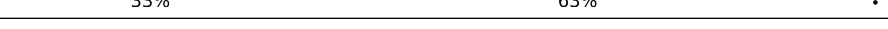
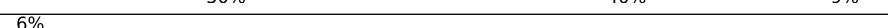
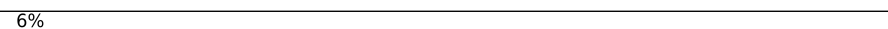
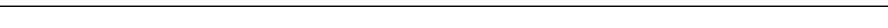
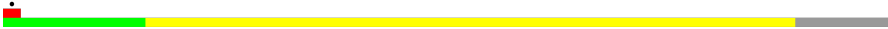
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 229148                      | 23984                       | -                                                        |
| Ramachandran outliers | 224038                      | 23583                       | -                                                        |
| Sidechain outliers    | 223484                      | 23102                       | -                                                        |
| RNA backbone          | 8273                        | 3508                        | -                                                        |
| Q-score               | -                           | 25397                       | 1575 ( 4.30 - 5.30 )                                     |

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     | 1542   |                  |
| 2   | B     | 241    |                  |
| 3   | C     | 233    |                  |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 4   | D     | 206    |    |
| 5   | E     | 167    |    |
| 6   | F     | 135    |    |
| 7   | G     | 179    |    |
| 8   | H     | 130    |    |
| 9   | I     | 130    |    |
| 10  | J     | 103    |    |
| 11  | K     | 129    |    |
| 12  | L     | 124    |    |
| 13  | M     | 118    |    |
| 14  | N     | 101    |    |
| 15  | O     | 89     |  |
| 16  | P     | 82     |  |
| 17  | Q     | 84     |  |
| 18  | R     | 75     |  |
| 19  | S     | 92     |  |
| 20  | T     | 87     |  |
| 21  | V     | 133    |  |
| 22  | X     | 151    |  |

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

| Mol | Type | Chain | Res  | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|------|-----------|----------|---------|------------------|
| 1   | 2MG  | A     | 1207 | -         | -        | X       | -                |

## 2 Entry composition

There are 24 unique types of molecules in this entry. The entry contains 52843 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 16S rRNA.

| Mol | Chain | Residues | Atoms |       |      |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|------|-------|------|---------|-------|
| 1   | A     | 1510     | Total | C     | N    | O     | P    | 0       | 0     |
|     |       |          | 32412 | 14460 | 5945 | 10497 | 1510 |         |       |

- Molecule 2 is a protein called 30S ribosomal protein S2.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 2   | B     | 224      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1753  | 1109 | 315 | 321 | 8 |         |       |

- Molecule 3 is a protein called 30S ribosomal protein S3.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 3   | C     | 211      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1653  | 1046 | 310 | 293 | 4 |         |       |

- Molecule 4 is a protein called 30S ribosomal protein S4.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 4   | D     | 205      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1643  | 1026 | 315 | 298 | 4 |         |       |

- Molecule 5 is a protein called 30S ribosomal protein S5.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 5   | E     | 156      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1152  | 717 | 217 | 212 | 6 |         |       |

- Molecule 6 is a protein called 30S ribosomal protein S6.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 6   | F     | 106      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 862   | 545 | 156 | 154 | 7 |         |       |

- Molecule 7 is a protein called 30S ribosomal protein S7.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 7   | G     | 151      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1181  | 735 | 227 | 215 | 4 |         |       |

- Molecule 8 is a protein called 30S ribosomal protein S8.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 8   | H     | 129      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 979   | 616 | 173 | 184 | 6 |         |       |

- Molecule 9 is a protein called 30S ribosomal protein S9.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 9   | I     | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1022  | 634 | 206 | 179 | 3 |         |       |

- Molecule 10 is a protein called 30S ribosomal protein S10.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 10  | J     | 99       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 795   | 498 | 152 | 144 | 1 |         |       |

- Molecule 11 is a protein called 30S ribosomal protein S11.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 11  | K     | 117      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 877   | 540 | 174 | 160 | 3 |         |       |

- Molecule 12 is a protein called 30S ribosomal protein S12.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 12  | L     | 123      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 957   | 591 | 196 | 165 | 5 |         |       |

- Molecule 13 is a protein called 30S ribosomal protein S13.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 13  | M     | 114      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 883   | 546 | 178 | 156 | 3 |         |       |

- Molecule 14 is a protein called 30S ribosomal protein S14.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 14  | N     | 100      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 805   | 499 | 164 | 139 | 3 |         |       |

- Molecule 15 is a protein called 30S ribosomal protein S15.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | O     | 88       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 714   | 439 | 144 | 130 | 1 |         |       |

- Molecule 16 is a protein called 30S ribosomal protein S16.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16  | P     | 82       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 649   | 406 | 128 | 114 | 1 |         |       |

- Molecule 17 is a protein called 30S ribosomal protein S17.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 17  | Q     | 80       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 648   | 411 | 121 | 113 | 3 |         |       |

- Molecule 18 is a protein called 30S ribosomal protein S18.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 18  | R     | 65       | Total | C   | N   | O  | S | 0       | 0     |
|     |       |          | 535   | 339 | 100 | 95 | 1 |         |       |

- Molecule 19 is a protein called 30S ribosomal protein S19.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 19  | S     | 82       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 658   | 421 | 125 | 110 | 2 |         |       |

- Molecule 20 is a protein called 30S ribosomal protein S20.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20  | T     | 86       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 670   | 414 | 138 | 115 | 3 |         |       |

- Molecule 21 is a protein called 30S ribosome-binding factor.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21  | V     | 99       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 783   | 497 | 137 | 144 | 5 |         |       |

- Molecule 22 is a protein called Ribosome maturation factor RimP.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 22  | X     | 151      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1174  | 742 | 197 | 230 | 5 |         |       |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment        | Reference  |
|-------|---------|----------|--------|----------------|------------|
| X     | 151     | ALA      | -      | expression tag | UNP P0A8A8 |

- Molecule 23 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 23  | A     | 37       | Total | Mg | 0       |
|     |       |          | 37    | 37 |         |

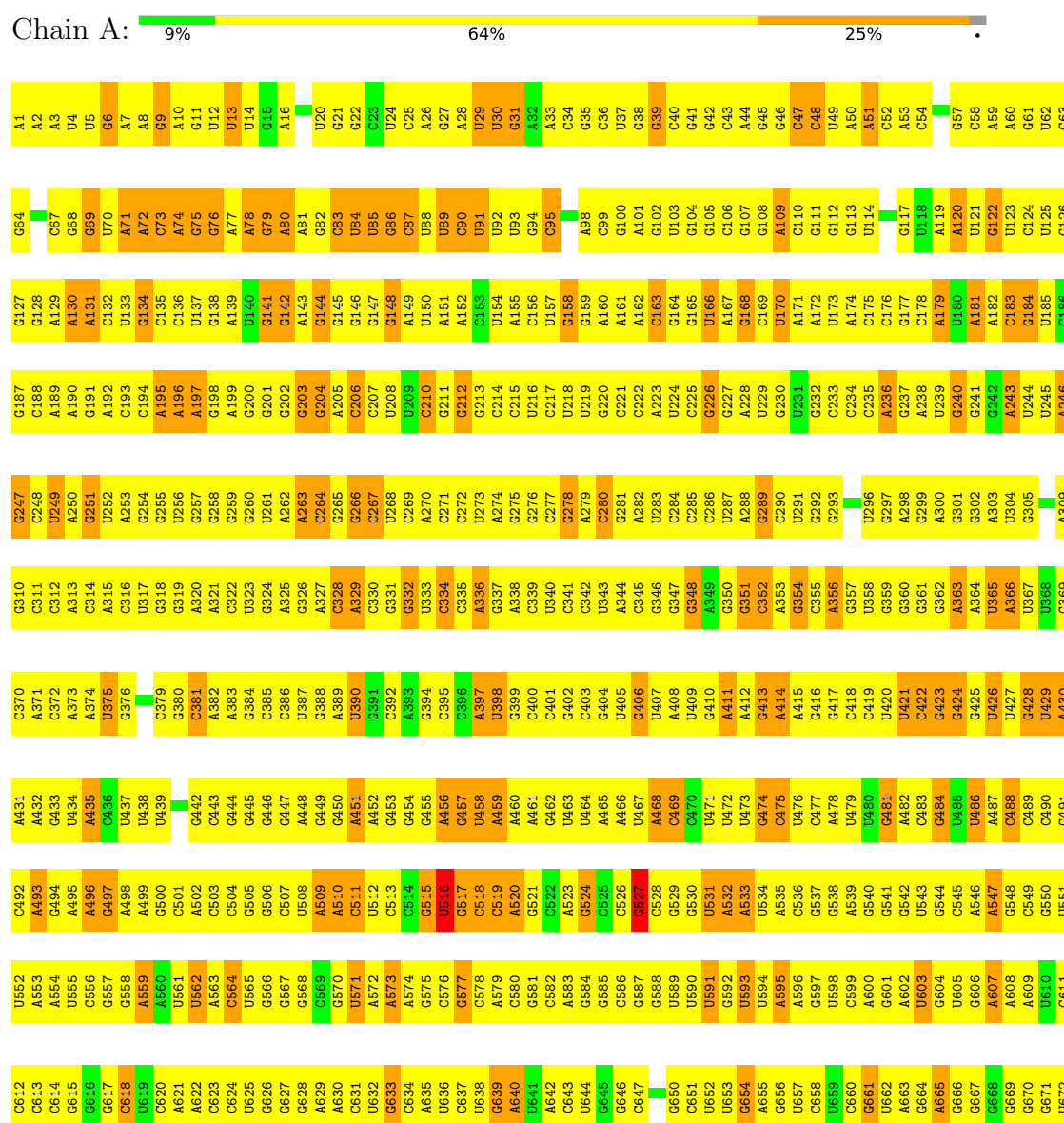
- Molecule 24 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 24  | B     | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |

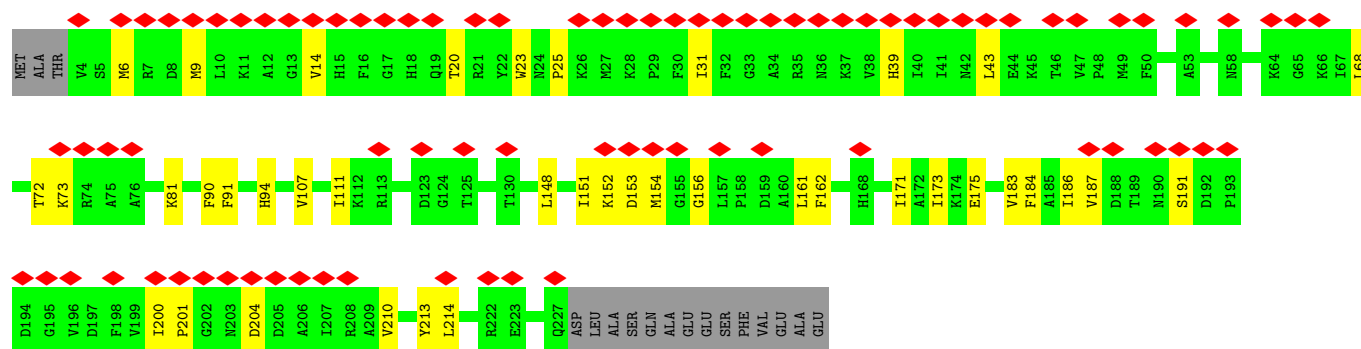
### 3 Residue-property plots

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: 16S rRNA







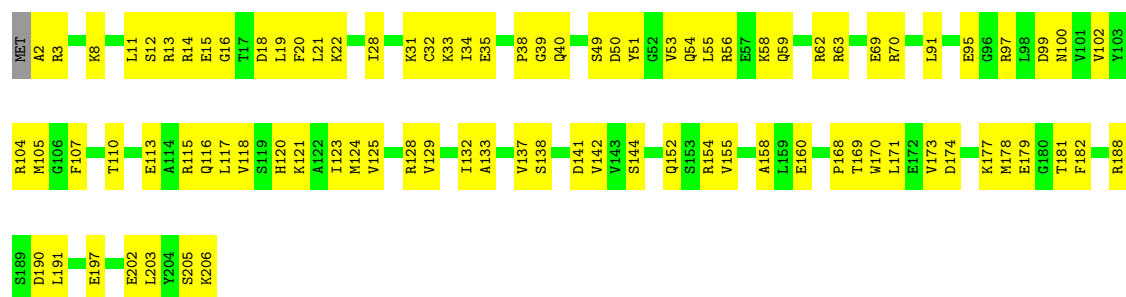
• Molecule 3: 30S ribosomal protein S3

Chain C: 32% 59% 9%



• Molecule 4: 30S ribosomal protein S4

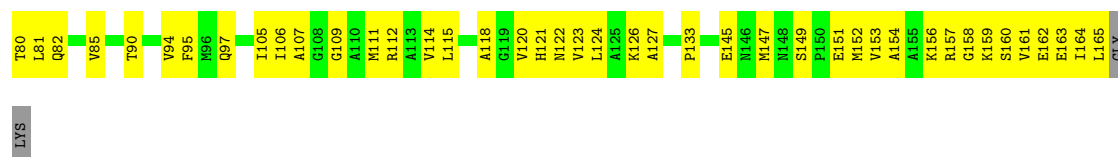
Chain D: 56% 43%



• Molecule 5: 30S ribosomal protein S5

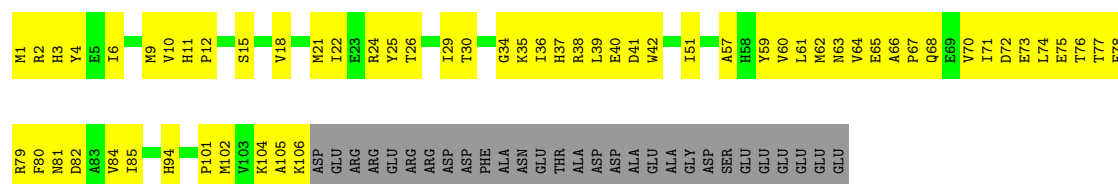
Chain E: 51% 43% 7%





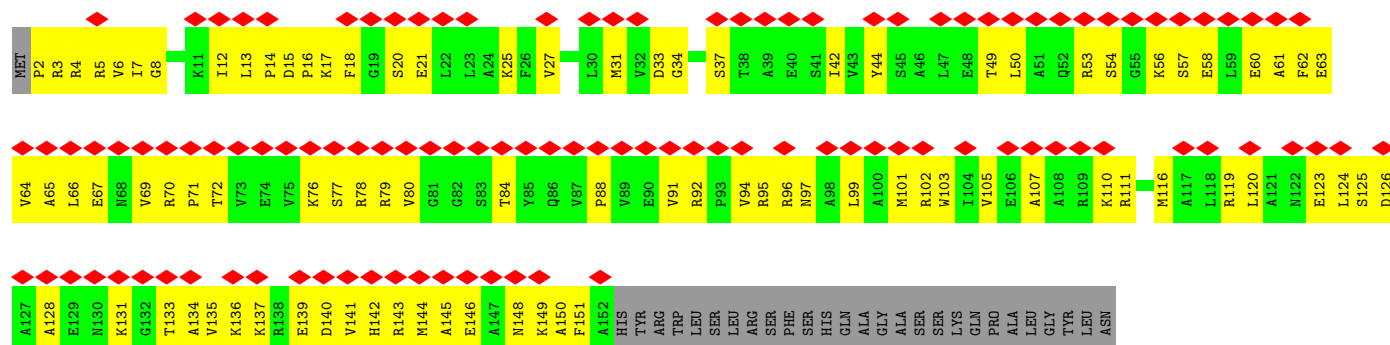
• Molecule 6: 30S ribosomal protein S6

Chain F: 34% 44% 21%



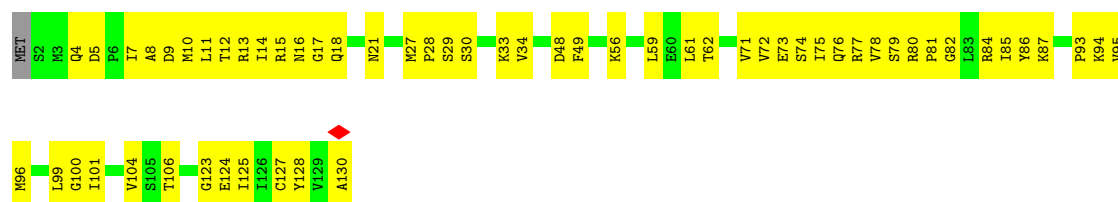
• Molecule 7: 30S ribosomal protein S7

Chain G: 34% 61% 50% 16%



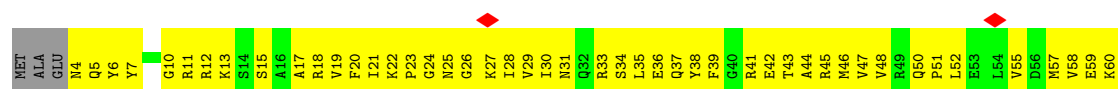
• Molecule 8: 30S ribosomal protein S8

Chain H: 55% 45%



• Molecule 9: 30S ribosomal protein S9

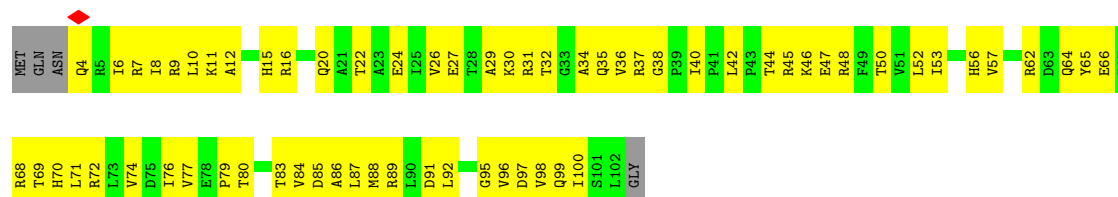
Chain I: 23% 74%





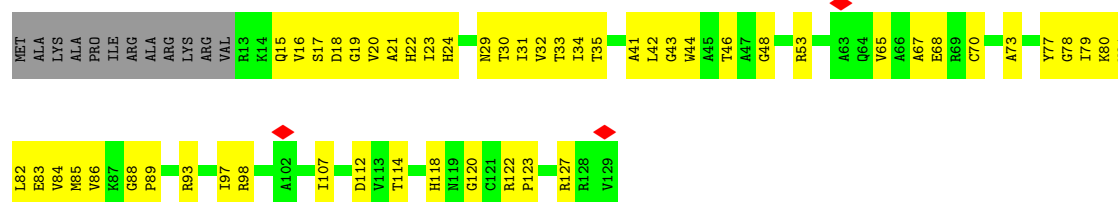
- Molecule 10: 30S ribosomal protein S10

Chain J: 33% 63%



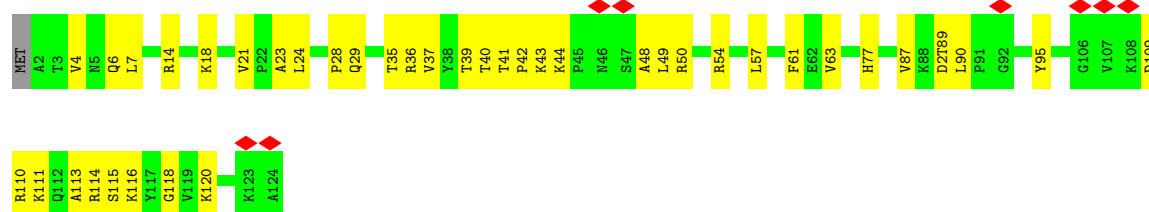
- Molecule 11: 30S ribosomal protein S11

Chain K: 50% 40% 9%



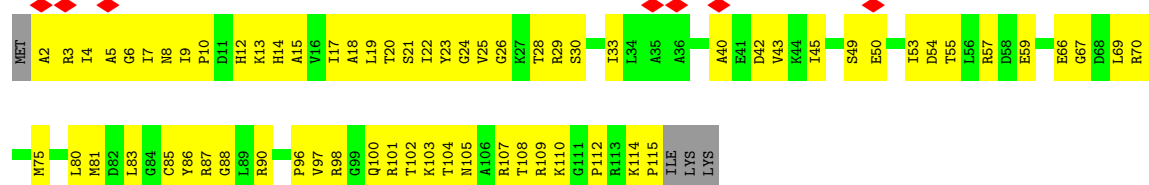
- Molecule 12: 30S ribosomal protein S12

Chain L: 6% 67% 32%



- Molecule 13: 30S ribosomal protein S13

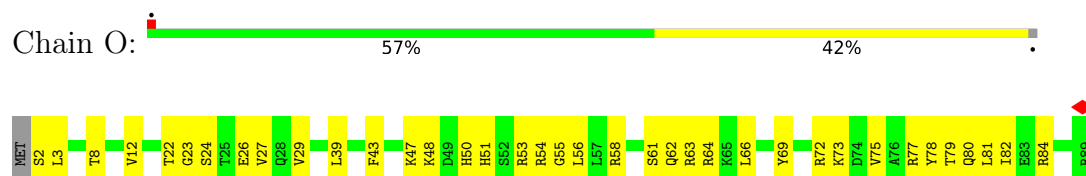
Chain M: 6% 39% 58%



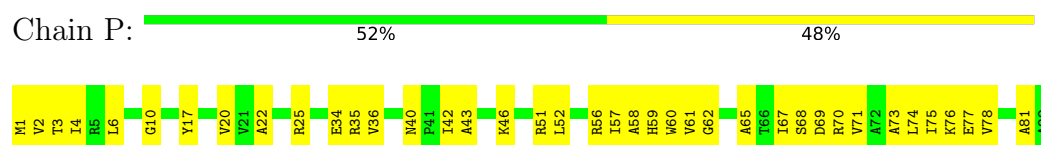
- Molecule 14: 30S ribosomal protein S14



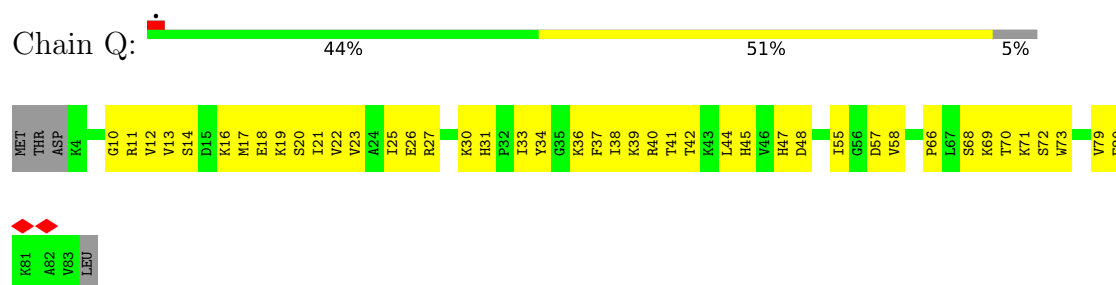
- Molecule 15: 30S ribosomal protein S15



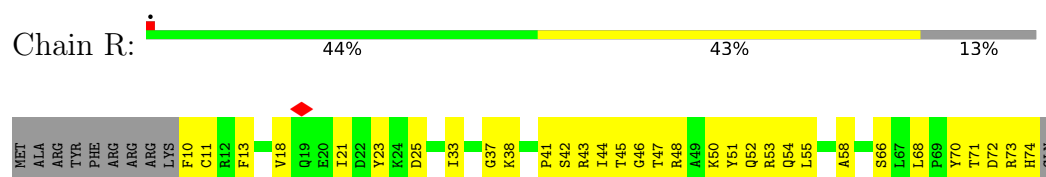
- Molecule 16: 30S ribosomal protein S16



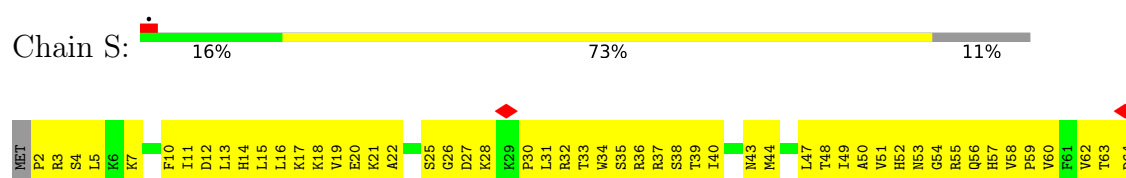
- Molecule 17: 30S ribosomal protein S17

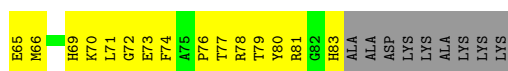


- Molecule 18: 30S ribosomal protein S18



- Molecule 19: 30S ribosomal protein S19

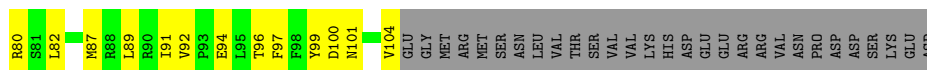
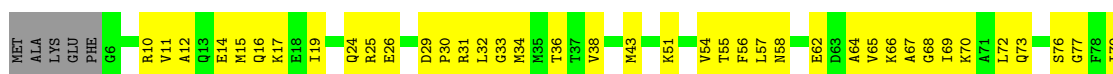
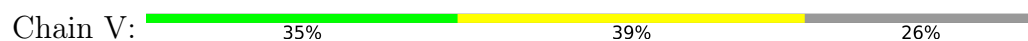




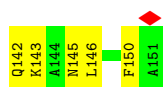
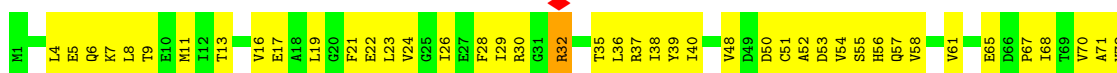
- Molecule 20: 30S ribosomal protein S20



- Molecule 21: 30S ribosome-binding factor



- Molecule 22: Ribosome maturation factor RimP



## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 4573                                    | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | FEI TITAN KRIOS                         | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 46.1                                    | 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                    | 0.093                                   | Depositor |
| Minimum map value                    | -0.030                                  | Depositor |
| Average map value                    | 0.000                                   | Depositor |
| Map value standard deviation         | 0.005                                   | Depositor |
| Recommended contour level            | 0.016                                   | Depositor |
| Map size (Å)                         | 416.64, 416.64, 416.64                  | wwPDB     |
| Map dimensions                       | 384, 384, 384                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 1.085, 1.085, 1.085                     | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, D2T, 5MC, 2MG, G7M, MA6, PSU, MG

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     | 0.47         | 1/36082 (0.0%) | 0.43        | 2/56281 (0.0%)  |
| 2   | B     | 0.52         | 0/1784         | 0.76        | 0/2403          |
| 3   | C     | 0.33         | 0/1680         | 0.51        | 0/2263          |
| 4   | D     | 0.79         | 0/1665         | 1.00        | 1/2227 (0.0%)   |
| 5   | E     | 0.82         | 0/1165         | 1.02        | 0/1568          |
| 6   | F     | 0.69         | 0/881          | 0.89        | 0/1189          |
| 7   | G     | 0.51         | 0/1195         | 0.77        | 0/1602          |
| 8   | H     | 0.87         | 0/989          | 1.10        | 2/1326 (0.2%)   |
| 9   | I     | 0.42         | 0/1034         | 0.66        | 1/1375 (0.1%)   |
| 10  | J     | 0.57         | 0/805          | 0.77        | 0/1089          |
| 11  | K     | 0.86         | 0/893          | 1.17        | 1/1205 (0.1%)   |
| 12  | L     | 0.89         | 0/960          | 1.11        | 0/1286          |
| 13  | M     | 0.67         | 0/892          | 0.92        | 0/1193          |
| 14  | N     | 0.46         | 0/817          | 0.67        | 0/1088          |
| 15  | O     | 0.71         | 0/722          | 0.93        | 0/964           |
| 16  | P     | 0.86         | 0/659          | 1.08        | 1/884 (0.1%)    |
| 17  | Q     | 0.82         | 0/657          | 1.03        | 1/881 (0.1%)    |
| 18  | R     | 0.81         | 0/544          | 1.12        | 0/731           |
| 19  | S     | 0.32         | 0/675          | 0.52        | 0/908           |
| 20  | T     | 0.78         | 0/676          | 1.03        | 1/895 (0.1%)    |
| 21  | V     | 0.81         | 0/792          | 1.15        | 5/1062 (0.5%)   |
| 22  | X     | 0.69         | 0/1192         | 0.92        | 1/1619 (0.1%)   |
| All | All   | 0.56         | 1/56759 (0.0%) | 0.63        | 16/84039 (0.0%) |

All (1) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 1   | A     | 571 | U    | O3'-P | -9.19 | 1.47        | 1.61     |

All (16) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 21  | V     | 91   | ILE  | CA-C-N      | -6.98 | 117.86      | 122.60   |
| 21  | V     | 91   | ILE  | C-N-CA      | -6.98 | 117.86      | 122.60   |
| 8   | H     | 56   | LYS  | CB-CA-C     | 6.89  | 116.99      | 111.00   |
| 9   | I     | 93   | SER  | N-CA-C      | -6.45 | 105.95      | 113.88   |
| 21  | V     | 30   | PRO  | CA-N-CD     | -6.14 | 103.41      | 112.00   |
| 8   | H     | 28   | PRO  | N-CA-C      | -5.87 | 101.99      | 111.14   |
| 17  | Q     | 66   | PRO  | N-CA-C      | 5.79  | 120.58      | 111.38   |
| 11  | K     | 43   | GLY  | CA-C-O      | -5.78 | 117.61      | 122.29   |
| 21  | V     | 36   | THR  | CB-CA-C     | 5.75  | 119.21      | 109.84   |
| 21  | V     | 92   | VAL  | N-CA-C      | -5.59 | 102.48      | 107.56   |
| 20  | T     | 56   | PRO  | CB-CA-C     | -5.43 | 103.66      | 112.62   |
| 4   | D     | 39   | GLY  | CA-C-O      | -5.38 | 118.27      | 122.52   |
| 1   | A     | 1103 | C    | C2'-C3'-O3' | 5.30  | 121.66      | 113.70   |
| 16  | P     | 46   | LYS  | N-CA-C      | -5.19 | 105.63      | 111.28   |
| 22  | X     | 32   | ARG  | N-CA-C      | -5.07 | 105.75      | 111.28   |
| 1   | A     | 1157 | A    | C2'-C3'-O3' | -5.01 | 101.98      | 109.50   |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 32412 | 0        | 16320    | 2260    | 0            |
| 2   | B     | 1753  | 0        | 1780     | 29      | 0            |
| 3   | C     | 1653  | 0        | 1727     | 156     | 0            |
| 4   | D     | 1643  | 0        | 1707     | 93      | 0            |
| 5   | E     | 1152  | 0        | 1196     | 85      | 0            |
| 6   | F     | 862   | 0        | 864      | 62      | 0            |
| 7   | G     | 1181  | 0        | 1238     | 105     | 0            |
| 8   | H     | 979   | 0        | 1031     | 74      | 0            |
| 9   | I     | 1022  | 0        | 1070     | 125     | 0            |
| 10  | J     | 795   | 0        | 836      | 79      | 0            |
| 11  | K     | 877   | 0        | 887      | 69      | 0            |
| 12  | L     | 957   | 0        | 1017     | 58      | 0            |
| 13  | M     | 883   | 0        | 941      | 71      | 0            |
| 14  | N     | 805   | 0        | 844      | 71      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 15  | O     | 714   | 0        | 734      | 39      | 0            |
| 16  | P     | 649   | 0        | 666      | 37      | 0            |
| 17  | Q     | 648   | 0        | 691      | 44      | 0            |
| 18  | R     | 535   | 0        | 552      | 37      | 0            |
| 19  | S     | 658   | 0        | 683      | 79      | 0            |
| 20  | T     | 670   | 0        | 719      | 36      | 0            |
| 21  | V     | 783   | 0        | 816      | 87      | 0            |
| 22  | X     | 1174  | 0        | 1174     | 95      | 0            |
| 23  | A     | 37    | 0        | 0        | 0       | 0            |
| 24  | B     | 1     | 0        | 0        | 0       | 0            |
| All | All   | 52843 | 0        | 37493    | 3419    | 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 44.

All (3419) 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) |
|------------------|-------------------|--------------------------|-------------------|
| 7:G:151:PHE:HZ   | 21:V:101:ASN:OD1  | 1.07                     | 1.27              |
| 7:G:151:PHE:CZ   | 21:V:101:ASN:CG   | 2.16                     | 1.24              |
| 1:A:532:A:N6     | 3:C:161:GLU:OE2   | 1.73                     | 1.19              |
| 7:G:151:PHE:CZ   | 21:V:101:ASN:OD1  | 1.96                     | 1.18              |
| 21:V:11:VAL:HG23 | 21:V:43:MET:HE1   | 1.32                     | 1.11              |
| 1:A:1073:U:OP1   | 5:E:62:LYS:HD3    | 1.49                     | 1.11              |
| 1:A:1081:A:H5'   | 5:E:23:LYS:HE2    | 1.30                     | 1.09              |
| 21:V:32:LEU:CD1  | 21:V:34:MET:H     | 1.67                     | 1.08              |
| 12:L:37:VAL:HG22 | 22:X:48:VAL:CG2   | 1.84                     | 1.07              |
| 7:G:151:PHE:CZ   | 21:V:101:ASN:ND2  | 2.25                     | 1.05              |
| 21:V:32:LEU:HD12 | 21:V:33:GLY:N     | 1.78                     | 0.97              |
| 21:V:32:LEU:HD12 | 21:V:34:MET:H     | 1.24                     | 0.97              |
| 1:A:1138:G:H2'   | 1:A:1140:C:H5'    | 1.45                     | 0.95              |
| 21:V:11:VAL:HG23 | 21:V:43:MET:CE    | 1.95                     | 0.95              |
| 1:A:1081:A:C5'   | 5:E:23:LYS:HE2    | 1.97                     | 0.95              |
| 12:L:37:VAL:CG2  | 22:X:48:VAL:CG2   | 2.46                     | 0.94              |
| 7:G:151:PHE:CD1  | 21:V:104:VAL:HG11 | 2.01                     | 0.94              |
| 1:A:1073:U:OP1   | 5:E:62:LYS:CD     | 2.14                     | 0.94              |
| 11:K:127:ARG:CZ  | 21:V:14:GLU:HG2   | 1.98                     | 0.93              |
| 18:R:33:ILE:HD13 | 18:R:68:LEU:CD1   | 1.98                     | 0.93              |
| 1:A:1489:G:O2'   | 22:X:32:ARG:HG3   | 1.68                     | 0.93              |
| 1:A:79:G:N3      | 1:A:90:C:N4       | 2.15                     | 0.93              |
| 7:G:151:PHE:HZ   | 21:V:101:ASN:CG   | 1.63                     | 0.92              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1410:A:N6    | 1:A:1490:U:O2     | 2.03                     | 0.92              |
| 18:R:33:ILE:HD13 | 18:R:68:LEU:HD12  | 1.50                     | 0.92              |
| 16:P:20:VAL:HG12 | 16:P:35:ARG:HB3   | 1.51                     | 0.91              |
| 1:A:438:U:N3     | 1:A:496:A:N7      | 2.17                     | 0.91              |
| 1:A:1055:A:N7    | 1:A:1200:C:N4     | 2.17                     | 0.91              |
| 1:A:447:G:N2     | 1:A:487:A:N7      | 2.18                     | 0.91              |
| 3:C:156:ARG:H    | 3:C:163:ALA:HA    | 1.35                     | 0.91              |
| 1:A:448:A:N7     | 1:A:486:U:N3      | 2.18                     | 0.90              |
| 7:G:151:PHE:CE1  | 21:V:101:ASN:CG   | 2.48                     | 0.90              |
| 10:J:50:THR:HG22 | 10:J:62:ARG:HE    | 1.35                     | 0.90              |
| 1:A:141:G:N1     | 1:A:222:C:N3      | 2.21                     | 0.89              |
| 2:B:73:LYS:HE3   | 2:B:204:ASP:O     | 1.74                     | 0.88              |
| 1:A:664:G:H22    | 1:A:741:G:H1      | 1.20                     | 0.88              |
| 7:G:151:PHE:HD1  | 21:V:104:VAL:HG11 | 1.35                     | 0.88              |
| 1:A:680:C:O2     | 1:A:710:G:N2      | 2.07                     | 0.87              |
| 6:F:36:ILE:HD11  | 6:F:39:LEU:HB2    | 1.56                     | 0.87              |
| 12:L:37:VAL:HG22 | 22:X:48:VAL:HG22  | 1.54                     | 0.87              |
| 1:A:682:G:O6     | 1:A:708:C:N4      | 2.08                     | 0.87              |
| 1:A:93:U:H2'     | 1:A:95:C:H5       | 1.40                     | 0.86              |
| 8:H:78:VAL:HG21  | 8:H:125:ILE:HG22  | 1.57                     | 0.86              |
| 8:H:15:ARG:HB2   | 8:H:75:ILE:HD11   | 1.55                     | 0.86              |
| 20:T:36:TYR:O    | 20:T:39:ILE:HG22  | 1.74                     | 0.86              |
| 1:A:658:C:N3     | 1:A:748:G:N1      | 2.24                     | 0.86              |
| 7:G:53:ARG:HE    | 7:G:125:SER:HB3   | 1.40                     | 0.86              |
| 1:A:686:U:H1'    | 11:K:44:TRP:HE1   | 1.40                     | 0.86              |
| 1:A:25:C:H2'     | 1:A:26:A:H8       | 1.41                     | 0.85              |
| 1:A:835:U:O2     | 1:A:851:G:N1      | 2.08                     | 0.85              |
| 1:A:948:C:N3     | 1:A:1233:G:N1     | 2.24                     | 0.85              |
| 1:A:437:U:O2     | 1:A:495:A:N6      | 2.10                     | 0.85              |
| 1:A:833:G:N2     | 1:A:853:C:O2      | 2.10                     | 0.85              |
| 1:A:1178:G:N2    | 1:A:1181:G:OP2    | 2.10                     | 0.85              |
| 9:I:7:TYR:HA     | 9:I:19:VAL:O      | 1.75                     | 0.85              |
| 1:A:947:G:N1     | 1:A:1234:C:N3     | 2.24                     | 0.85              |
| 8:H:104:VAL:HG12 | 8:H:125:ILE:HG12  | 1.57                     | 0.85              |
| 10:J:40:ILE:HG22 | 10:J:40:ILE:O     | 1.75                     | 0.85              |
| 1:A:71:A:N6      | 1:A:99:C:O2       | 2.09                     | 0.85              |
| 1:A:1535:C:O2'   | 21:V:29:ASP:HB3   | 1.77                     | 0.84              |
| 1:A:1237:C:O2'   | 1:A:1300:G:N2     | 2.09                     | 0.84              |
| 11:K:23:ILE:HG22 | 11:K:85:MET:O     | 1.76                     | 0.84              |
| 1:A:940:C:O2     | 1:A:1343:G:N2     | 2.11                     | 0.84              |
| 1:A:988:G:N2     | 1:A:1217:C:O2     | 2.09                     | 0.84              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 22:X:26:ILE:HG23 | 22:X:36:LEU:HD21 | 1.58                     | 0.84              |
| 1:A:1433:A:N6    | 1:A:1467:C:O2'   | 2.11                     | 0.83              |
| 11:K:19:GLY:HA2  | 11:K:79:ILE:HG21 | 1.59                     | 0.83              |
| 1:A:419:C:N3     | 1:A:424:G:N1     | 2.26                     | 0.83              |
| 1:A:1489:G:H4'   | 22:X:32:ARG:HE   | 1.44                     | 0.83              |
| 1:A:670:G:N1     | 1:A:736:C:N3     | 2.23                     | 0.83              |
| 1:A:1114:C:N3    | 1:A:1186:G:N1    | 2.24                     | 0.83              |
| 1:A:83:C:O2      | 1:A:86:G:N2      | 2.12                     | 0.83              |
| 5:E:13:GLU:CB    | 5:E:39:VAL:HG12  | 2.08                     | 0.83              |
| 9:I:6:TYR:HB2    | 9:I:21:ILE:HB    | 1.59                     | 0.83              |
| 1:A:1177:G:H3'   | 1:A:1178:G:H8    | 1.42                     | 0.83              |
| 1:A:296:U:N3     | 1:A:301:G:O6     | 2.12                     | 0.82              |
| 1:A:458:U:O2     | 1:A:474:G:N1     | 2.12                     | 0.82              |
| 4:D:12:SER:O     | 4:D:16:GLY:N     | 2.12                     | 0.82              |
| 11:K:127:ARG:NH2 | 21:V:14:GLU:HG2  | 1.94                     | 0.82              |
| 21:V:32:LEU:HD12 | 21:V:34:MET:N    | 1.92                     | 0.82              |
| 1:A:444:G:N1     | 1:A:490:C:N3     | 2.27                     | 0.82              |
| 9:I:19:VAL:HA    | 9:I:65:ILE:HG22  | 1.61                     | 0.82              |
| 18:R:33:ILE:CD1  | 18:R:68:LEU:HD11 | 2.08                     | 0.82              |
| 19:S:50:ALA:HA   | 19:S:58:VAL:O    | 1.80                     | 0.82              |
| 1:A:86:G:N3      | 1:A:87:C:N4      | 2.27                     | 0.82              |
| 1:A:996:A:N1     | 1:A:1045:C:O2'   | 2.13                     | 0.82              |
| 1:A:156:C:O2     | 1:A:165:G:N2     | 2.12                     | 0.82              |
| 1:A:673:A:N6     | 1:A:717:U:O4     | 2.13                     | 0.82              |
| 3:C:40:ARG:NH1   | 3:C:55:ILE:O     | 2.12                     | 0.82              |
| 5:E:13:GLU:HB2   | 5:E:39:VAL:HG12  | 1.60                     | 0.82              |
| 1:A:448:A:H3'    | 1:A:449:G:H8     | 1.43                     | 0.82              |
| 1:A:517:G:O2'    | 1:A:531:U:O4     | 1.98                     | 0.82              |
| 1:A:156:C:N3     | 1:A:165:G:N1     | 2.28                     | 0.81              |
| 1:A:265:G:H4'    | 17:Q:68:SER:H    | 1.42                     | 0.81              |
| 1:A:897:C:N3     | 1:A:902:G:N1     | 2.25                     | 0.81              |
| 1:A:1074:G:N1    | 1:A:1083:U:O2    | 2.11                     | 0.81              |
| 10:J:50:THR:OG1  | 10:J:64:GLN:HG3  | 1.80                     | 0.81              |
| 1:A:593:U:O2     | 1:A:646:G:N1     | 2.12                     | 0.81              |
| 1:A:601:G:N1     | 1:A:637:C:N3     | 2.23                     | 0.81              |
| 1:A:686:U:H2'    | 1:A:703:G:H21    | 1.45                     | 0.81              |
| 1:A:266:G:O6     | 1:A:271:C:N4     | 2.13                     | 0.81              |
| 8:H:29:SER:HB3   | 8:H:59:LEU:HB2   | 1.62                     | 0.81              |
| 12:L:24:LEU:HG   | 12:L:95:TYR:OH   | 1.79                     | 0.81              |
| 1:A:680:C:N3     | 1:A:710:G:N1     | 2.25                     | 0.81              |
| 18:R:70:TYR:O    | 18:R:71:THR:HG23 | 1.78                     | 0.81              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1244:G:N1    | 1:A:1293:C:N3    | 2.27                     | 0.81              |
| 10:J:47:GLU:O    | 10:J:66:GLU:HA   | 1.81                     | 0.81              |
| 1:A:75:G:N1      | 1:A:95:C:N3      | 2.27                     | 0.81              |
| 1:A:127:G:N1     | 1:A:234:C:N3     | 2.29                     | 0.81              |
| 13:M:3:ARG:NH2   | 13:M:7:ILE:O     | 2.14                     | 0.81              |
| 1:A:1162:C:O2    | 1:A:1174:G:N2    | 2.13                     | 0.81              |
| 6:F:15:SER:HA    | 6:F:18:VAL:HG23  | 1.62                     | 0.81              |
| 18:R:33:ILE:CD1  | 18:R:68:LEU:CD1  | 2.58                     | 0.81              |
| 1:A:987:G:N1     | 1:A:1218:C:N3    | 2.28                     | 0.80              |
| 22:X:104:ARG:HB2 | 22:X:142:GLN:HB3 | 1.63                     | 0.80              |
| 1:A:42:G:N2      | 1:A:400:C:O2     | 2.13                     | 0.80              |
| 1:A:1133:G:N1    | 1:A:1141:C:N3    | 2.27                     | 0.80              |
| 3:C:58:GLU:HG2   | 3:C:60:PRO:HD3   | 1.62                     | 0.80              |
| 1:A:601:G:N2     | 1:A:637:C:O2     | 2.11                     | 0.80              |
| 1:A:992:U:O2     | 1:A:1044:A:N6    | 2.11                     | 0.80              |
| 1:A:159:G:N2     | 1:A:162:A:OP2    | 2.12                     | 0.80              |
| 1:A:680:C:H2'    | 1:A:681:A:H8     | 1.47                     | 0.80              |
| 1:A:415:A:N6     | 1:A:428:G:O6     | 2.11                     | 0.80              |
| 5:E:145:GLU:OE1  | 5:E:145:GLU:N    | 2.12                     | 0.80              |
| 1:A:512:U:O4     | 1:A:539:A:N6     | 2.12                     | 0.80              |
| 1:A:890:G:O2'    | 1:A:906:A:N6     | 2.13                     | 0.80              |
| 8:H:49:PHE:HA    | 8:H:61:LEU:HA    | 1.64                     | 0.80              |
| 1:A:1314:C:N4    | 19:S:2:PRO:O     | 2.15                     | 0.80              |
| 12:L:21:VAL:HG21 | 12:L:24:LEU:HD12 | 1.64                     | 0.80              |
| 1:A:1048:G:N1    | 1:A:1209:C:O2    | 2.15                     | 0.80              |
| 3:C:129:MET:HB2  | 3:C:132:ARG:HE   | 1.46                     | 0.80              |
| 6:F:76:THR:O     | 6:F:80:PHE:N     | 2.13                     | 0.80              |
| 9:I:47:VAL:HA    | 9:I:50:GLN:HG2   | 1.62                     | 0.80              |
| 11:K:35:THR:HA   | 11:K:41:ALA:HA   | 1.63                     | 0.80              |
| 1:A:501:C:OP1    | 12:L:114:ARG:NH2 | 2.15                     | 0.80              |
| 1:A:771:G:N1     | 1:A:808:C:N3     | 2.26                     | 0.80              |
| 16:P:77:GLU:O    | 16:P:81:ALA:N    | 2.11                     | 0.80              |
| 1:A:80:A:H2'     | 1:A:81:A:C8      | 2.17                     | 0.79              |
| 1:A:1426:G:O6    | 1:A:1474:U:O2    | 2.01                     | 0.79              |
| 6:F:12:PRO:HD3   | 6:F:57:ALA:HA    | 1.61                     | 0.79              |
| 1:A:955:U:O2'    | 19:S:83:HIS:ND1  | 2.14                     | 0.79              |
| 1:A:587:G:OP1    | 8:H:84:ARG:NH2   | 2.15                     | 0.79              |
| 1:A:777:A:H3'    | 1:A:778:G:H8     | 1.48                     | 0.79              |
| 5:E:85:VAL:HG21  | 5:E:147:MET:HB2  | 1.63                     | 0.79              |
| 3:C:91:VAL:HG21  | 3:C:101:ILE:HD11 | 1.65                     | 0.79              |
| 6:F:102:MET:O    | 6:F:106:LYS:NZ   | 2.14                     | 0.79              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 12:L:44:LYS:HA   | 22:X:72:TYR:CD2  | 2.17                     | 0.79              |
| 1:A:606:G:N2     | 1:A:632:U:OP1    | 2.15                     | 0.79              |
| 1:A:863:U:O2     | 1:A:866:C:N4     | 2.13                     | 0.79              |
| 6:F:41:ASP:OD2   | 6:F:60:VAL:HG22  | 1.82                     | 0.79              |
| 1:A:537:G:OP1    | 12:L:110:ARG:NH2 | 2.16                     | 0.79              |
| 1:A:1113:C:N3    | 1:A:1187:G:N1    | 2.27                     | 0.79              |
| 1:A:1245:C:N3    | 1:A:1292:G:N1    | 2.28                     | 0.79              |
| 1:A:1284:C:H3'   | 1:A:1285:A:H2'   | 1.65                     | 0.79              |
| 1:A:1353:G:N2    | 1:A:1369:C:O2    | 2.13                     | 0.79              |
| 1:A:575:G:N2     | 1:A:880:C:O2     | 2.12                     | 0.79              |
| 6:F:26:THR:O     | 6:F:30:THR:N     | 2.16                     | 0.79              |
| 1:A:157:U:O2     | 1:A:164:G:N1     | 2.16                     | 0.79              |
| 1:A:511:C:N3     | 1:A:540:G:N1     | 2.29                     | 0.79              |
| 1:A:666:G:H5'    | 1:A:726:C:H1'    | 1.65                     | 0.79              |
| 1:A:834:U:O2     | 1:A:852:G:N1     | 2.13                     | 0.79              |
| 1:A:1077:G:N2    | 1:A:1080:A:OP2   | 2.16                     | 0.79              |
| 1:A:1178:G:O2'   | 1:A:1180:A:N7    | 2.15                     | 0.79              |
| 11:K:42:LEU:HD13 | 11:K:77:TYR:HE2  | 1.49                     | 0.78              |
| 1:A:1233:G:OP1   | 9:I:119:ARG:NH1  | 2.15                     | 0.78              |
| 1:A:532:A:H61    | 3:C:161:GLU:CD   | 1.90                     | 0.78              |
| 5:E:11:LEU:HB3   | 5:E:41:ASP:OD1   | 1.84                     | 0.78              |
| 1:A:419:C:N4     | 1:A:424:G:O6     | 2.16                     | 0.78              |
| 1:A:589:U:O2     | 1:A:650:G:N1     | 2.14                     | 0.78              |
| 1:A:987:G:N2     | 1:A:1218:C:O2    | 2.15                     | 0.78              |
| 3:C:41:GLN:HG2   | 3:C:45:LYS:HZ2   | 1.49                     | 0.78              |
| 2:B:23:TRP:HZ3   | 2:B:25:PRO:HA    | 1.48                     | 0.78              |
| 1:A:82:G:C5      | 1:A:83:C:H1'     | 2.19                     | 0.78              |
| 1:A:181:A:O2'    | 1:A:194:C:N4     | 2.17                     | 0.78              |
| 1:A:1000:A:N6    | 1:A:1040:U:O4    | 2.15                     | 0.78              |
| 1:A:122:G:N1     | 1:A:239:U:O2     | 2.17                     | 0.78              |
| 1:A:447:G:N1     | 1:A:486:U:OP2    | 2.16                     | 0.77              |
| 1:A:1015:G:H21   | 1:A:1218:C:H1'   | 1.47                     | 0.77              |
| 1:A:1162:C:N3    | 1:A:1174:G:N1    | 2.25                     | 0.77              |
| 3:C:60:PRO:HD2   | 3:C:64:ILE:HA    | 1.63                     | 0.77              |
| 1:A:67:C:O2      | 1:A:102:G:N2     | 2.17                     | 0.77              |
| 1:A:865:A:H5'    | 1:A:1078:U:O4    | 1.84                     | 0.77              |
| 1:A:444:G:N2     | 1:A:490:C:O2     | 2.16                     | 0.77              |
| 1:A:774:G:O6     | 1:A:805:C:N4     | 2.17                     | 0.77              |
| 1:A:8:A:H62      | 4:D:206:LYS:H    | 1.31                     | 0.77              |
| 1:A:318:G:O6     | 1:A:335:C:N4     | 2.17                     | 0.77              |
| 1:A:1006:G:N1    | 1:A:1023:U:O2    | 2.16                     | 0.77              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 9:I:39:PHE:O     | 9:I:45:ARG:NH2    | 2.17                     | 0.77              |
| 9:I:116:VAL:HG21 | 10:J:64:GLN:NE2   | 1.99                     | 0.77              |
| 21:V:73:GLN:CD   | 21:V:97:PHE:HD2   | 1.92                     | 0.77              |
| 1:A:35:G:O6      | 1:A:549:C:N4      | 2.15                     | 0.77              |
| 1:A:255:G:N2     | 1:A:271:C:O2      | 2.16                     | 0.77              |
| 1:A:297:G:N2     | 1:A:300:A:OP2     | 2.18                     | 0.77              |
| 1:A:1244:G:N2    | 1:A:1293:C:O2     | 2.15                     | 0.77              |
| 1:A:249:U:N3     | 1:A:275:G:O6      | 2.18                     | 0.77              |
| 1:A:256:U:OP1    | 17:Q:19:LYS:NZ    | 2.18                     | 0.76              |
| 11:K:127:ARG:NE  | 21:V:14:GLU:OE2   | 2.18                     | 0.76              |
| 1:A:35:G:N1      | 1:A:549:C:N3      | 2.27                     | 0.76              |
| 1:A:822:U:H2'    | 1:A:823:C:H6      | 1.48                     | 0.76              |
| 1:A:859:G:OP2    | 1:A:869:G:N1      | 2.14                     | 0.76              |
| 1:A:604:G:O6     | 1:A:634:C:N4      | 2.18                     | 0.76              |
| 3:C:12:LEU:HA    | 3:C:16:LYS:HB2    | 1.66                     | 0.76              |
| 4:D:28:ILE:HD11  | 4:D:34:ILE:HD13   | 1.66                     | 0.76              |
| 9:I:28:ILE:HG22  | 9:I:63:LEU:HB2    | 1.67                     | 0.76              |
| 1:A:1051:C:N3    | 1:A:1207:2MG:N1   | 2.27                     | 0.76              |
| 3:C:64:ILE:HG23  | 3:C:97:VAL:HG11   | 1.67                     | 0.76              |
| 1:A:52:C:N4      | 1:A:359:G:O6      | 2.17                     | 0.76              |
| 7:G:13:LEU:HD12  | 7:G:14:PRO:HD2    | 1.67                     | 0.76              |
| 1:A:150:U:O2     | 1:A:171:A:N6      | 2.17                     | 0.76              |
| 11:K:122:ARG:HD2 | 11:K:123:PRO:HD2  | 1.67                     | 0.76              |
| 9:I:114:LYS:HA   | 9:I:121:ALA:HA    | 1.66                     | 0.76              |
| 1:A:75:G:O6      | 1:A:95:C:N4       | 2.17                     | 0.76              |
| 1:A:418:C:N3     | 1:A:425:G:N1      | 2.29                     | 0.76              |
| 1:A:600:A:N6     | 1:A:638:U:O4      | 2.16                     | 0.76              |
| 1:A:449:G:O6     | 1:A:484:G:N1      | 2.16                     | 0.75              |
| 1:A:502:A:N6     | 1:A:543:U:O4      | 2.20                     | 0.75              |
| 9:I:25:ASN:O     | 9:I:61:LEU:N      | 2.19                     | 0.75              |
| 1:A:837:U:N3     | 1:A:849:G:O6      | 2.16                     | 0.75              |
| 1:A:1124:G:N1    | 1:A:1149:C:N3     | 2.32                     | 0.75              |
| 7:G:141:VAL:HG13 | 7:G:142:HIS:HD1   | 1.51                     | 0.75              |
| 1:A:1376:U:H2'   | 1:A:1377:A:C8     | 2.21                     | 0.75              |
| 11:K:88:GLY:H    | 11:K:114:THR:HG22 | 1.52                     | 0.75              |
| 1:A:660:C:O2     | 1:A:745:G:N2      | 2.18                     | 0.75              |
| 1:A:691:G:HO2'   | 1:A:797:C:HO2'    | 1.33                     | 0.75              |
| 1:A:1081:A:H5'   | 5:E:23:LYS:CE     | 2.14                     | 0.75              |
| 1:A:1119:C:N3    | 1:A:1154:G:N1     | 2.32                     | 0.75              |
| 8:H:34:VAL:HG22  | 8:H:59:LEU:HD13   | 1.69                     | 0.75              |
| 10:J:32:THR:HG21 | 10:J:83:THR:HA    | 1.69                     | 0.75              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:42:G:N1      | 1:A:400:C:N3     | 2.35                     | 0.75              |
| 1:A:511:C:N4     | 1:A:540:G:O6     | 2.17                     | 0.75              |
| 1:A:1038:C:H2'   | 1:A:1039:G:H8    | 1.51                     | 0.75              |
| 21:V:73:GLN:NE2  | 21:V:97:PHE:HD2  | 1.84                     | 0.75              |
| 1:A:448:A:N6     | 1:A:486:U:O2     | 2.12                     | 0.75              |
| 1:A:1309:G:OP1   | 13:M:87:ARG:NH2  | 2.20                     | 0.75              |
| 5:E:41:ASP:HB2   | 5:E:45:ARG:HB2   | 1.68                     | 0.75              |
| 1:A:679:C:N3     | 1:A:711:G:N1     | 2.30                     | 0.75              |
| 1:A:658:C:O2     | 1:A:748:G:N2     | 2.20                     | 0.75              |
| 1:A:671:G:O3'    | 6:F:79:ARG:NH2   | 2.20                     | 0.74              |
| 1:A:682:G:N1     | 1:A:708:C:N3     | 2.29                     | 0.74              |
| 1:A:897:C:O2     | 1:A:902:G:N2     | 2.17                     | 0.74              |
| 1:A:961:U:O2     | 1:A:1201:A:N6    | 2.17                     | 0.74              |
| 1:A:993:G:O6     | 1:A:1045:C:N4    | 2.19                     | 0.74              |
| 1:A:1052:U:N3    | 1:A:1206:G:O6    | 2.19                     | 0.74              |
| 4:D:138:SER:N    | 4:D:141:ASP:OD2  | 2.19                     | 0.74              |
| 1:A:269:C:H2'    | 1:A:270:A:H8     | 1.52                     | 0.74              |
| 1:A:669:G:O6     | 1:A:737:C:N4     | 2.18                     | 0.74              |
| 2:B:111:ILE:HD12 | 2:B:152:LYS:HA   | 1.68                     | 0.74              |
| 1:A:141:G:N2     | 1:A:222:C:O2     | 2.19                     | 0.74              |
| 1:A:458:U:H2'    | 1:A:459:A:C8     | 2.23                     | 0.74              |
| 4:D:118:VAL:HG12 | 4:D:123:ILE:HG13 | 1.70                     | 0.74              |
| 14:N:50:THR:HG22 | 19:S:13:LEU:HD13 | 1.70                     | 0.74              |
| 1:A:27:G:O6      | 1:A:556:C:N4     | 2.17                     | 0.74              |
| 1:A:993:G:N1     | 1:A:1045:C:N3    | 2.35                     | 0.74              |
| 3:C:11:ARG:NH2   | 3:C:177:THR:O    | 2.13                     | 0.74              |
| 7:G:101:MET:O    | 7:G:105:VAL:HG23 | 1.87                     | 0.74              |
| 1:A:597:G:N2     | 1:A:643:C:O2     | 2.15                     | 0.74              |
| 1:A:823:C:O2     | 1:A:877:G:N2     | 2.17                     | 0.74              |
| 1:A:1125:U:OP1   | 10:J:37:ARG:NH2  | 2.19                     | 0.74              |
| 10:J:50:THR:CG2  | 10:J:62:ARG:HB3  | 2.18                     | 0.74              |
| 1:A:199:A:H2'    | 1:A:200:G:H8     | 1.51                     | 0.74              |
| 7:G:5:ARG:NH1    | 7:G:6:VAL:O      | 2.21                     | 0.74              |
| 1:A:418:C:O2     | 1:A:425:G:N2     | 2.20                     | 0.74              |
| 13:M:2:ALA:HA    | 13:M:9:ILE:HG23  | 1.68                     | 0.74              |
| 1:A:446:G:N2     | 1:A:488:C:O2     | 2.20                     | 0.74              |
| 1:A:931:C:O2     | 1:A:1386:G:N2    | 2.15                     | 0.74              |
| 1:A:1141:C:HO2'  | 1:A:1142:G:H8    | 1.34                     | 0.74              |
| 6:F:15:SER:HA    | 6:F:18:VAL:CG2   | 2.16                     | 0.74              |
| 1:A:27:G:N1      | 1:A:556:C:N3     | 2.34                     | 0.74              |
| 1:A:261:U:OP2    | 20:T:71:LYS:NZ   | 2.20                     | 0.74              |

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| Atom-1          | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:A:309:A:O2'   | 1:A:607:A:N1      | 2.21                     | 0.74              |
| 1:A:79:G:H21    | 1:A:90:C:H5       | 1.36                     | 0.73              |
| 1:A:131:A:H2'   | 1:A:132:C:H6      | 1.53                     | 0.73              |
| 12:L:44:LYS:HB2 | 22:X:72:TYR:HB3   | 1.68                     | 0.73              |
| 1:A:199:A:H2'   | 1:A:200:G:C8      | 2.23                     | 0.73              |
| 1:A:454:G:O6    | 1:A:478:A:N6      | 2.20                     | 0.73              |
| 1:A:1353:G:N1   | 1:A:1369:C:N3     | 2.36                     | 0.73              |
| 13:M:107:ARG:HA | 13:M:110:LYS:HB3  | 1.68                     | 0.73              |
| 1:A:597:G:N1    | 1:A:643:C:N3      | 2.36                     | 0.73              |
| 1:A:670:G:N2    | 1:A:736:C:O2      | 2.16                     | 0.73              |
| 1:A:893:C:H2'   | 1:A:894:G:H8      | 1.52                     | 0.73              |
| 1:A:947:G:N2    | 1:A:1234:C:O2     | 2.15                     | 0.73              |
| 1:A:1418:A:OP2  | 1:A:1482:G:N2     | 2.22                     | 0.73              |
| 3:C:50:ALA:O    | 3:C:70:THR:OG1    | 2.05                     | 0.73              |
| 1:A:454:G:N1    | 1:A:478:A:N1      | 2.36                     | 0.73              |
| 22:X:120:VAL:HA | 22:X:125:ILE:HG23 | 1.71                     | 0.73              |
| 1:A:249:U:O2    | 1:A:275:G:N1      | 2.20                     | 0.73              |
| 1:A:265:G:N2    | 1:A:267:C:O4'     | 2.21                     | 0.73              |
| 1:A:457:G:N1    | 1:A:475:C:N3      | 2.32                     | 0.73              |
| 1:A:651:C:N4    | 1:A:753:A:OP2     | 2.22                     | 0.73              |
| 7:G:57:SER:O    | 7:G:61:ALA:N      | 2.21                     | 0.73              |
| 12:L:44:LYS:HA  | 22:X:72:TYR:HD2   | 1.53                     | 0.73              |
| 1:A:200:G:N2    | 1:A:217:C:O2      | 2.16                     | 0.73              |
| 9:I:120:LYS:HB2 | 9:I:123:ARG:HB3   | 1.71                     | 0.73              |
| 17:Q:45:HIS:CG  | 17:Q:70:THR:HG22  | 2.24                     | 0.73              |
| 19:S:47:LEU:O   | 19:S:62:VAL:N     | 2.22                     | 0.73              |
| 1:A:2:A:N3      | 1:A:613:C:O2'     | 2.21                     | 0.73              |
| 1:A:188:C:H2'   | 1:A:189:A:O4'     | 1.89                     | 0.73              |
| 1:A:1287:A:H2'  | 1:A:1288:A:C8     | 2.24                     | 0.73              |
| 3:C:72:ARG:HB3  | 3:C:75:ILE:HB     | 1.68                     | 0.73              |
| 13:M:5:ALA:H    | 13:M:57:ARG:HG2   | 1.52                     | 0.73              |
| 1:A:126:G:OP1   | 1:A:605:U:O2'     | 2.07                     | 0.73              |
| 1:A:544:G:OP1   | 4:D:59:GLN:NE2    | 2.22                     | 0.73              |
| 1:A:1114:C:N4   | 1:A:1186:G:O6     | 2.18                     | 0.73              |
| 1:A:1333:A:H3'  | 1:A:1334:G:H8     | 1.53                     | 0.73              |
| 1:A:213:G:OP2   | 1:A:214:C:N4      | 2.21                     | 0.73              |
| 1:A:785:G:H2'   | 1:A:786:G:C8      | 2.23                     | 0.73              |
| 4:D:15:GLU:OE2  | 4:D:56:ARG:NH2    | 2.22                     | 0.73              |
| 9:I:41:ARG:NH2  | 9:I:73:SER:OG     | 2.22                     | 0.73              |
| 1:A:660:C:N3    | 1:A:745:G:N1      | 2.36                     | 0.72              |
| 1:A:1133:G:O6   | 1:A:1141:C:N4     | 2.18                     | 0.72              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:139:A:N6     | 1:A:224:U:O4     | 2.17                     | 0.72              |
| 1:A:176:C:H3'    | 1:A:177:G:H21    | 1.53                     | 0.72              |
| 1:A:503:C:O2'    | 1:A:510:A:N1     | 2.22                     | 0.72              |
| 1:A:1166:G:N1    | 1:A:1169:A:OP2   | 2.20                     | 0.72              |
| 13:M:107:ARG:NH1 | 13:M:112:PRO:O   | 2.22                     | 0.72              |
| 1:A:333:U:H2'    | 1:A:334:C:H6     | 1.54                     | 0.72              |
| 1:A:451:A:OP2    | 16:P:70:ARG:NH2  | 2.22                     | 0.72              |
| 1:A:474:G:OP1    | 16:P:76:LYS:NZ   | 2.19                     | 0.72              |
| 9:I:52:LEU:HD21  | 9:I:58:VAL:HA    | 1.71                     | 0.72              |
| 1:A:446:G:N1     | 1:A:488:C:N3     | 2.34                     | 0.72              |
| 1:A:1518:MA6:H2' | 1:A:1519:MA6:O4' | 1.89                     | 0.72              |
| 16:P:56:ARG:HH21 | 16:P:59:HIS:CG   | 2.07                     | 0.72              |
| 1:A:375:U:OP1    | 16:P:70:ARG:NH1  | 2.23                     | 0.72              |
| 1:A:663:A:O3'    | 18:R:53:ARG:NH2  | 2.22                     | 0.72              |
| 1:A:1524:C:H2'   | 1:A:1525:G:C8    | 2.25                     | 0.72              |
| 4:D:177:LYS:HG3  | 4:D:179:GLU:HB3  | 1.70                     | 0.72              |
| 22:X:28:PHE:HB2  | 22:X:36:LEU:HD12 | 1.69                     | 0.72              |
| 3:C:121:THR:HA   | 3:C:124:LEU:HD12 | 1.70                     | 0.72              |
| 10:J:50:THR:HG22 | 10:J:62:ARG:NE   | 2.04                     | 0.72              |
| 1:A:844:G:H3'    | 1:A:845:A:H8     | 1.53                     | 0.72              |
| 1:A:939:G:O3'    | 7:G:102:ARG:NH2  | 2.22                     | 0.72              |
| 8:H:78:VAL:CG2   | 8:H:125:ILE:HG22 | 2.20                     | 0.72              |
| 1:A:101:A:OP1    | 20:T:5:LYS:NZ    | 2.23                     | 0.71              |
| 1:A:617:G:N1     | 1:A:623:C:N3     | 2.31                     | 0.71              |
| 12:L:21:VAL:CG2  | 12:L:24:LEU:HD12 | 2.20                     | 0.71              |
| 12:L:23:ALA:HB1  | 12:L:57:LEU:HD11 | 1.72                     | 0.71              |
| 22:X:98:GLU:HA   | 22:X:116:VAL:HA  | 1.70                     | 0.71              |
| 1:A:450:G:H2'    | 1:A:481:G:H22    | 1.54                     | 0.71              |
| 1:A:1190:G:HO2'  | 3:C:2:GLY:N      | 1.86                     | 0.71              |
| 5:E:154:ALA:O    | 5:E:158:GLY:N    | 2.22                     | 0.71              |
| 1:A:316:C:N4     | 1:A:337:G:O6     | 2.18                     | 0.71              |
| 3:C:19:ASN:O     | 3:C:40:ARG:NH2   | 2.22                     | 0.71              |
| 22:X:58:VAL:HA   | 22:X:61:VAL:HG22 | 1.72                     | 0.71              |
| 1:A:708:C:OP1    | 11:K:22:HIS:NE2  | 2.23                     | 0.71              |
| 9:I:25:ASN:HB3   | 9:I:62:ASP:HB3   | 1.72                     | 0.71              |
| 18:R:33:ILE:HD12 | 18:R:68:LEU:HD11 | 1.71                     | 0.71              |
| 20:T:15:GLU:OE1  | 20:T:18:ARG:NH2  | 2.24                     | 0.71              |
| 1:A:1165:U:H3'   | 1:A:1166:G:H8    | 1.56                     | 0.71              |
| 14:N:63:ARG:NH1  | 14:N:68:GLY:O    | 2.23                     | 0.71              |
| 1:A:687:A:H61    | 1:A:703:G:H5'    | 1.56                     | 0.71              |
| 1:A:714:G:H2'    | 1:A:715:A:C8     | 2.25                     | 0.71              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:861:G:N2     | 1:A:868:C:O2      | 2.17                     | 0.71              |
| 1:A:1426:G:C6    | 1:A:1474:U:O2     | 2.44                     | 0.71              |
| 9:I:84:THR:HG21  | 9:I:103:PHE:HB3   | 1.71                     | 0.71              |
| 1:A:107:G:N7     | 20:T:10:ARG:NH2   | 2.39                     | 0.71              |
| 1:A:919:A:O2'    | 1:A:1080:A:N1     | 2.20                     | 0.70              |
| 9:I:17:ALA:HA    | 9:I:66:THR:O      | 1.91                     | 0.70              |
| 1:A:427:U:O2'    | 1:A:541:G:OP1     | 2.09                     | 0.70              |
| 1:A:981:U:O2'    | 14:N:61:ARG:NH1   | 2.25                     | 0.70              |
| 1:A:142:G:H3'    | 1:A:143:A:H8      | 1.54                     | 0.70              |
| 1:A:354:G:O2'    | 1:A:389:A:OP1     | 2.09                     | 0.70              |
| 1:A:1257:A:OP1   | 3:C:27:LYS:NZ     | 2.23                     | 0.70              |
| 3:C:11:ARG:NH1   | 3:C:180:ALA:O     | 2.24                     | 0.70              |
| 1:A:210:C:O2     | 1:A:211:G:N1      | 2.24                     | 0.70              |
| 1:A:933:G:N7     | 7:G:3:ARG:NH1     | 2.38                     | 0.70              |
| 1:A:1113:C:O2    | 1:A:1187:G:N2     | 2.19                     | 0.70              |
| 1:A:1051:C:O2    | 1:A:1207:2MG:N2   | 2.20                     | 0.70              |
| 13:M:8:ASN:HD21  | 13:M:22:ILE:HA    | 1.54                     | 0.70              |
| 13:M:103:LYS:HG2 | 13:M:104:THR:HG23 | 1.73                     | 0.70              |
| 1:A:532:A:C6     | 3:C:161:GLU:OE2   | 2.44                     | 0.70              |
| 1:A:971:G:OP2    | 1:A:1231:G:N2     | 2.22                     | 0.70              |
| 1:A:523:A:H61    | 12:L:50:ARG:HH22  | 1.39                     | 0.70              |
| 1:A:1307:U:O2'   | 13:M:109:ARG:NH2  | 2.24                     | 0.70              |
| 5:E:154:ALA:HB2  | 5:E:164:ILE:HG12  | 1.72                     | 0.70              |
| 8:H:78:VAL:HG21  | 8:H:125:ILE:CG2   | 2.22                     | 0.70              |
| 16:P:42:ILE:HG22 | 16:P:42:ILE:O     | 1.91                     | 0.70              |
| 1:A:3:A:HO2'     | 1:A:612:C:HO2'    | 1.39                     | 0.70              |
| 1:A:893:C:H2'    | 1:A:894:G:C8      | 2.27                     | 0.70              |
| 1:A:957:U:OP1    | 19:S:81:ARG:NH2   | 2.25                     | 0.70              |
| 1:A:578:C:N4     | 1:A:763:G:O6      | 2.17                     | 0.70              |
| 1:A:735:C:H2'    | 1:A:736:C:H6      | 1.57                     | 0.70              |
| 1:A:1043:G:H2'   | 1:A:1044:A:C8     | 2.27                     | 0.70              |
| 1:A:1346:A:N6    | 1:A:1374:A:N7     | 2.40                     | 0.70              |
| 13:M:20:THR:HG23 | 13:M:26:GLY:HA2   | 1.72                     | 0.70              |
| 1:A:80:A:H2'     | 1:A:81:A:H8       | 1.56                     | 0.69              |
| 1:A:106:C:H2'    | 1:A:107:G:H8      | 1.56                     | 0.69              |
| 1:A:160:A:N6     | 1:A:347:G:O2'     | 2.24                     | 0.69              |
| 1:A:701:U:O2     | 1:A:703:G:N1      | 2.24                     | 0.69              |
| 1:A:30:U:O4      | 1:A:553:A:N6      | 2.18                     | 0.69              |
| 1:A:900:A:H3'    | 1:A:901:A:H8      | 1.55                     | 0.69              |
| 1:A:1112:C:N4    | 3:C:176:HIS:O     | 2.24                     | 0.69              |
| 1:A:236:A:H2'    | 1:A:237:G:C8      | 2.27                     | 0.69              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:84:U:OP2     | 1:A:85:U:N3      | 2.25                     | 0.69              |
| 1:A:771:G:N2     | 1:A:808:C:O2     | 2.13                     | 0.69              |
| 1:A:421:U:O2     | 3:C:127:ARG:CZ   | 2.40                     | 0.69              |
| 1:A:1112:C:N3    | 3:C:178:LEU:N    | 2.37                     | 0.69              |
| 7:G:151:PHE:CD1  | 21:V:104:VAL:CG1 | 2.76                     | 0.69              |
| 1:A:448:A:H3'    | 1:A:449:G:C8     | 2.26                     | 0.69              |
| 1:A:517:G:O2'    | 1:A:530:G:N7     | 2.26                     | 0.69              |
| 1:A:612:C:O2     | 1:A:628:G:N2     | 2.19                     | 0.69              |
| 1:A:617:G:O6     | 1:A:623:C:N4     | 2.17                     | 0.69              |
| 1:A:666:G:OP2    | 1:A:725:G:N2     | 2.24                     | 0.69              |
| 1:A:963:G:O2'    | 10:J:56:HIS:HE1  | 1.76                     | 0.69              |
| 1:A:1119:C:N4    | 1:A:1154:G:O6    | 2.20                     | 0.69              |
| 11:K:16:VAL:HB   | 11:K:79:ILE:HG12 | 1.73                     | 0.69              |
| 1:A:148:G:O6     | 1:A:174:A:N6     | 2.18                     | 0.69              |
| 1:A:215:C:H2'    | 1:A:216:U:O4'    | 1.93                     | 0.69              |
| 1:A:318:G:N1     | 1:A:335:C:N3     | 2.35                     | 0.69              |
| 1:A:555:U:H2'    | 1:A:556:C:C6     | 2.28                     | 0.69              |
| 1:A:136:C:O2     | 1:A:227:G:N2     | 2.18                     | 0.69              |
| 1:A:380:G:N2     | 1:A:383:A:OP2    | 2.25                     | 0.69              |
| 1:A:414:A:H2'    | 1:A:415:A:O4'    | 1.92                     | 0.69              |
| 1:A:691:G:O2'    | 1:A:797:C:O2'    | 2.08                     | 0.69              |
| 1:A:1059:C:H2'   | 1:A:1060:U:C6    | 2.28                     | 0.69              |
| 1:A:1512:U:O2    | 1:A:1523:G:N1    | 2.18                     | 0.69              |
| 1:A:200:G:N1     | 1:A:217:C:N3     | 2.34                     | 0.69              |
| 1:A:1512:U:H2'   | 1:A:1513:A:H8    | 1.57                     | 0.69              |
| 1:A:154:U:H2'    | 1:A:155:A:C8     | 2.29                     | 0.68              |
| 1:A:837:U:H2'    | 1:A:838:G:H8     | 1.59                     | 0.68              |
| 1:A:949:A:OP2    | 13:M:105:ASN:ND2 | 2.26                     | 0.68              |
| 1:A:1317:C:OP2   | 14:N:28:LYS:NZ   | 2.19                     | 0.68              |
| 2:B:187:VAL:HG13 | 2:B:191:SER:HB2  | 1.75                     | 0.68              |
| 19:S:30:PRO:HB3  | 19:S:48:THR:HG23 | 1.76                     | 0.68              |
| 19:S:53:ASN:OD1  | 19:S:56:GLN:N    | 2.23                     | 0.68              |
| 5:E:14:LYS:NZ    | 5:E:15:LEU:O     | 2.25                     | 0.68              |
| 14:N:74:LEU:O    | 14:N:78:GLY:N    | 2.20                     | 0.68              |
| 1:A:178:C:OP1    | 20:T:60:ARG:NH2  | 2.27                     | 0.68              |
| 1:A:257:G:H2'    | 1:A:258:G:H8     | 1.57                     | 0.68              |
| 1:A:1124:G:O6    | 1:A:1149:C:N4    | 2.20                     | 0.68              |
| 1:A:1380:U:C5    | 7:G:3:ARG:HA     | 2.28                     | 0.68              |
| 14:N:40:ASP:O    | 14:N:44:ALA:HB2  | 1.93                     | 0.68              |
| 1:A:52:C:N3      | 1:A:359:G:N1     | 2.39                     | 0.68              |
| 1:A:1130:A:H2'   | 1:A:1131:G:H8    | 1.59                     | 0.68              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:G:151:PHE:CE1  | 21:V:101:ASN:ND2 | 2.59                     | 0.68              |
| 11:K:127:ARG:HG3 | 21:V:14:GLU:OE2  | 1.93                     | 0.68              |
| 1:A:1310:G:N2    | 1:A:1327:C:O2    | 2.16                     | 0.68              |
| 8:H:15:ARG:HH21  | 8:H:75:ILE:HG13  | 1.57                     | 0.68              |
| 9:I:34:SER:O     | 9:I:38:TYR:N     | 2.26                     | 0.68              |
| 1:A:1129:C:O2'   | 1:A:1139:G:N7    | 2.26                     | 0.68              |
| 1:A:1279:G:OP2   | 1:A:1279:G:N2    | 2.26                     | 0.68              |
| 1:A:1199:U:H4'   | 10:J:56:HIS:ND1  | 2.09                     | 0.68              |
| 1:A:1221:G:OP1   | 19:S:36:ARG:NH2  | 2.22                     | 0.68              |
| 7:G:66:LEU:O     | 7:G:70:ARG:N     | 2.23                     | 0.68              |
| 8:H:81:PRO:O     | 8:H:84:ARG:NH2   | 2.26                     | 0.68              |
| 11:K:127:ARG:CD  | 21:V:14:GLU:OE2  | 2.41                     | 0.68              |
| 16:P:36:VAL:HG21 | 16:P:57:ILE:HG13 | 1.76                     | 0.68              |
| 1:A:136:C:N3     | 1:A:227:G:N1     | 2.37                     | 0.68              |
| 1:A:571:U:OP1    | 1:A:819:A:O2'    | 2.12                     | 0.68              |
| 1:A:822:U:H2'    | 1:A:823:C:C6     | 2.29                     | 0.68              |
| 1:A:1206:G:H5'   | 3:C:194:GLY:HA2  | 1.75                     | 0.68              |
| 9:I:67:VAL:O     | 9:I:68:LYS:NZ    | 2.25                     | 0.68              |
| 1:A:1316:G:N2    | 1:A:1319:A:OP2   | 2.25                     | 0.68              |
| 4:D:8:LYS:HB3    | 4:D:21:LEU:HD13  | 1.76                     | 0.68              |
| 1:A:439:U:O3'    | 4:D:121:LYS:NZ   | 2.26                     | 0.68              |
| 1:A:457:G:O6     | 1:A:475:C:N4     | 2.20                     | 0.68              |
| 1:A:1038:C:H2'   | 1:A:1039:G:C8    | 2.29                     | 0.67              |
| 1:A:1308:U:H3'   | 13:M:98:ARG:HH21 | 1.60                     | 0.67              |
| 17:Q:21:ILE:HG12 | 17:Q:48:ASP:HB2  | 1.76                     | 0.67              |
| 1:A:141:G:O6     | 1:A:222:C:N4     | 2.16                     | 0.67              |
| 1:A:405:U:O4     | 4:D:2:ALA:N      | 2.27                     | 0.67              |
| 1:A:563:A:P      | 12:L:14:ARG:HH22 | 2.17                     | 0.67              |
| 1:A:877:G:H2'    | 1:A:878:A:H8     | 1.60                     | 0.67              |
| 12:L:36:ARG:HH12 | 12:L:54:ARG:HH11 | 1.39                     | 0.67              |
| 15:O:75:VAL:HA   | 15:O:78:TYR:HB3  | 1.75                     | 0.67              |
| 1:A:604:G:N1     | 1:A:634:C:N3     | 2.37                     | 0.67              |
| 1:A:1213:A:O2'   | 1:A:1215:G:N7    | 2.21                     | 0.67              |
| 1:A:1466:C:H3'   | 1:A:1467:C:H6    | 1.59                     | 0.67              |
| 2:B:68:LEU:HB3   | 2:B:161:LEU:HD23 | 1.76                     | 0.67              |
| 3:C:81:GLY:O     | 3:C:85:GLU:N     | 2.27                     | 0.67              |
| 21:V:15:MET:CE   | 21:V:43:MET:SD   | 2.81                     | 0.67              |
| 1:A:808:C:OP1    | 15:O:48:LYS:NZ   | 2.24                     | 0.67              |
| 1:A:922:G:H1'    | 5:E:24:THR:HB    | 1.75                     | 0.67              |
| 1:A:1328:C:O2'   | 13:M:29:ARG:NH2  | 2.24                     | 0.67              |
| 10:J:57:VAL:O    | 10:J:57:VAL:HG22 | 1.95                     | 0.67              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1280:A:OP2   | 10:J:9:ARG:NH2   | 2.25                     | 0.67              |
| 1:A:1471:U:H2'   | 1:A:1472:U:C6    | 2.30                     | 0.67              |
| 12:L:37:VAL:CG2  | 22:X:48:VAL:HG23 | 2.24                     | 0.67              |
| 8:H:48:ASP:O     | 8:H:62:THR:N     | 2.26                     | 0.67              |
| 22:X:4:LEU:HB3   | 22:X:7:LYS:HB3   | 1.76                     | 0.67              |
| 1:A:219:U:H2'    | 1:A:220:G:C8     | 2.28                     | 0.67              |
| 1:A:1217:C:OP2   | 14:N:9:ARG:NH2   | 2.28                     | 0.67              |
| 1:A:1271:A:H2'   | 1:A:1272:G:H8    | 1.60                     | 0.67              |
| 13:M:80:LEU:HD21 | 13:M:87:ARG:HG3  | 1.76                     | 0.67              |
| 14:N:17:ALA:HA   | 14:N:55:SER:HA   | 1.76                     | 0.67              |
| 1:A:206:C:H2'    | 1:A:207:C:C6     | 2.29                     | 0.67              |
| 1:A:515:G:N1     | 1:A:536:C:N3     | 2.37                     | 0.67              |
| 1:A:785:G:H2'    | 1:A:786:G:H8     | 1.59                     | 0.67              |
| 1:A:612:C:N3     | 1:A:628:G:N1     | 2.40                     | 0.66              |
| 5:E:164:ILE:HG22 | 8:H:99:LEU:HG    | 1.77                     | 0.66              |
| 14:N:37:SER:OG   | 14:N:40:ASP:N    | 2.26                     | 0.66              |
| 1:A:1255:G:N1    | 1:A:1282:C:N3    | 2.41                     | 0.66              |
| 1:A:1286:U:O2'   | 1:A:1287:A:OP1   | 2.13                     | 0.66              |
| 1:A:1347:G:C8    | 9:I:109:ARG:HB3  | 2.30                     | 0.66              |
| 7:G:144:MET:O    | 7:G:148:ASN:ND2  | 2.28                     | 0.66              |
| 8:H:11:LEU:HA    | 8:H:14:ILE:HD12  | 1.76                     | 0.66              |
| 22:X:5:GLU:O     | 22:X:9:THR:OG1   | 2.11                     | 0.66              |
| 1:A:501:C:H2'    | 1:A:502:A:C8     | 2.29                     | 0.66              |
| 1:A:898:G:N2     | 1:A:901:A:OP2    | 2.29                     | 0.66              |
| 1:A:963:G:O2'    | 10:J:56:HIS:CE1  | 2.47                     | 0.66              |
| 1:A:1177:G:H3'   | 1:A:1178:G:C8    | 2.27                     | 0.66              |
| 3:C:83:ASP:OD1   | 3:C:84:VAL:N     | 2.28                     | 0.66              |
| 9:I:10:GLY:HA2   | 9:I:81:HIS:HD2   | 1.59                     | 0.66              |
| 1:A:344:A:O2'    | 1:A:346:G:N7     | 2.29                     | 0.66              |
| 1:A:854:U:H3'    | 1:A:871:U:H3     | 1.59                     | 0.66              |
| 17:Q:26:GLU:OE2  | 17:Q:40:ARG:N    | 2.27                     | 0.66              |
| 18:R:70:TYR:O    | 18:R:71:THR:CG2  | 2.43                     | 0.66              |
| 1:A:401:C:H2'    | 1:A:402:G:H8     | 1.60                     | 0.66              |
| 1:A:767:A:H2'    | 1:A:768:A:C8     | 2.30                     | 0.66              |
| 1:A:1381:U:O2'   | 7:G:79:ARG:O     | 2.07                     | 0.66              |
| 1:A:1489:G:O2'   | 22:X:32:ARG:CG   | 2.43                     | 0.66              |
| 1:A:64:G:OP1     | 1:A:382:A:N6     | 2.29                     | 0.66              |
| 1:A:670:G:O6     | 1:A:736:C:N4     | 2.21                     | 0.66              |
| 1:A:1410:A:H61   | 1:A:1490:U:H1'   | 1.59                     | 0.66              |
| 9:I:69:GLY:O     | 9:I:75:GLN:NE2   | 2.28                     | 0.66              |
| 22:X:8:LEU:HA    | 22:X:11:MET:HE2  | 1.78                     | 0.66              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:811:C:O2'    | 1:A:901:A:N1     | 2.26                     | 0.66              |
| 1:A:137:U:O2     | 1:A:226:G:N1     | 2.20                     | 0.66              |
| 1:A:1014:A:H4'   | 19:S:14:HIS:CE1  | 2.31                     | 0.66              |
| 1:A:1095:U:OP1   | 1:A:1108:G:N1    | 2.25                     | 0.66              |
| 1:A:1525:G:H2'   | 1:A:1526:G:H8    | 1.60                     | 0.66              |
| 1:A:269:C:H2'    | 1:A:270:A:C8     | 2.31                     | 0.66              |
| 1:A:673:A:H2'    | 1:A:674:G:C8     | 2.31                     | 0.66              |
| 1:A:1425:U:H2'   | 1:A:1426:G:H8    | 1.59                     | 0.66              |
| 12:L:49:LEU:HD22 | 22:X:52:ALA:HB1  | 1.76                     | 0.66              |
| 1:A:830:G:H2'    | 1:A:831:A:H8     | 1.60                     | 0.66              |
| 1:A:842:U:H2'    | 1:A:843:U:O4'    | 1.96                     | 0.66              |
| 1:A:1254:A:P     | 10:J:45:ARG:HH21 | 2.20                     | 0.66              |
| 1:A:1409:C:H2'   | 1:A:1410:A:C8    | 2.30                     | 0.66              |
| 1:A:1474:U:H2'   | 1:A:1475:G:C8    | 2.31                     | 0.66              |
| 6:F:68:GLN:OE1   | 6:F:68:GLN:N     | 2.29                     | 0.66              |
| 19:S:32:ARG:HA   | 19:S:50:ALA:O    | 1.94                     | 0.66              |
| 1:A:79:G:H1'     | 1:A:90:C:H42     | 1.61                     | 0.65              |
| 1:A:206:C:H2'    | 1:A:207:C:H6     | 1.60                     | 0.65              |
| 1:A:675:A:O5'    | 18:R:74:HIS:NE2  | 2.29                     | 0.65              |
| 1:A:1113:C:N4    | 1:A:1187:G:O6    | 2.25                     | 0.65              |
| 17:Q:18:GLU:N    | 17:Q:18:GLU:OE1  | 2.29                     | 0.65              |
| 22:X:124:MET:HB3 | 22:X:135:VAL:HB  | 1.77                     | 0.65              |
| 1:A:994:A:N7     | 1:A:1216:A:H4'   | 2.11                     | 0.65              |
| 1:A:1086:U:H2'   | 1:A:1087:G:C8    | 2.31                     | 0.65              |
| 1:A:1323:G:H2'   | 1:A:1324:A:H8    | 1.60                     | 0.65              |
| 1:A:802:A:H3'    | 1:A:803:G:H8     | 1.62                     | 0.65              |
| 1:A:982:U:O2     | 1:A:1222:G:N2    | 2.25                     | 0.65              |
| 1:A:1108:G:OP2   | 3:C:175:LEU:N    | 2.24                     | 0.65              |
| 1:A:1255:G:O6    | 1:A:1282:C:N4    | 2.17                     | 0.65              |
| 7:G:139:GLU:OE2  | 7:G:143:ARG:HD2  | 1.96                     | 0.65              |
| 9:I:36:GLU:HA    | 9:I:45:ARG:NE    | 2.11                     | 0.65              |
| 16:P:20:VAL:HA   | 16:P:35:ARG:HA   | 1.78                     | 0.65              |
| 1:A:125:U:H2'    | 1:A:126:G:H8     | 1.60                     | 0.65              |
| 1:A:1126:U:OP1   | 10:J:7:ARG:NH2   | 2.29                     | 0.65              |
| 1:A:1140:C:O2'   | 1:A:1141:C:O5'   | 2.11                     | 0.65              |
| 1:A:1245:C:O2    | 1:A:1292:G:N2    | 2.18                     | 0.65              |
| 1:A:1510:C:H2'   | 1:A:1511:G:H8    | 1.61                     | 0.65              |
| 3:C:22:TRP:HB3   | 3:C:59:ARG:H     | 1.61                     | 0.65              |
| 1:A:500:G:H2'    | 1:A:501:C:C6     | 2.31                     | 0.65              |
| 1:A:663:A:H2'    | 1:A:664:G:C8     | 2.31                     | 0.65              |
| 4:D:105:MET:HA   | 4:D:173:VAL:HG21 | 1.78                     | 0.65              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:204:G:H2'    | 1:A:205:A:O4'   | 1.96                     | 0.65              |
| 1:A:297:G:N2     | 1:A:301:G:N7    | 2.44                     | 0.65              |
| 1:A:321:A:H3'    | 1:A:328:C:H41   | 1.60                     | 0.65              |
| 5:E:107:ALA:O    | 5:E:112:ARG:NH2 | 2.29                     | 0.65              |
| 5:E:151:GLU:HA   | 5:E:154:ALA:HB3 | 1.77                     | 0.65              |
| 6:F:42:TRP:HE3   | 6:F:59:TYR:HB3  | 1.60                     | 0.65              |
| 9:I:30:ILE:HD11  | 9:I:67:VAL:HG12 | 1.79                     | 0.65              |
| 10:J:85:ASP:OD1  | 10:J:86:ALA:N   | 2.29                     | 0.65              |
| 11:K:127:ARG:NE  | 21:V:14:GLU:HG2 | 2.11                     | 0.65              |
| 1:A:337:G:H2'    | 1:A:338:A:H8    | 1.61                     | 0.65              |
| 1:A:680:C:H2'    | 1:A:681:A:C8    | 2.32                     | 0.65              |
| 1:A:767:A:H2'    | 1:A:768:A:H8    | 1.62                     | 0.65              |
| 1:A:979:C:O2     | 14:N:59:ARG:NE  | 2.28                     | 0.65              |
| 1:A:982:U:H4'    | 1:A:983:A:H5'   | 1.78                     | 0.65              |
| 1:A:265:G:H4'    | 17:Q:68:SER:N   | 2.12                     | 0.65              |
| 7:G:91:VAL:O     | 7:G:96:ARG:NH1  | 2.23                     | 0.65              |
| 1:A:581:G:N1     | 1:A:759:A:OP2   | 2.30                     | 0.65              |
| 1:A:703:G:H4'    | 1:A:704:A:H8    | 1.61                     | 0.65              |
| 1:A:728:A:H2'    | 1:A:729:A:C8    | 2.31                     | 0.65              |
| 10:J:44:THR:O    | 10:J:46:LYS:NZ  | 2.28                     | 0.65              |
| 21:V:32:LEU:HD13 | 21:V:34:MET:H   | 1.60                     | 0.65              |
| 1:A:399:G:H2'    | 1:A:400:C:C6    | 2.32                     | 0.65              |
| 1:A:449:G:N1     | 1:A:484:G:O6    | 2.19                     | 0.65              |
| 1:A:518:C:C4     | 1:A:529:G:H2'   | 2.32                     | 0.65              |
| 1:A:1066:C:H2'   | 1:A:1067:A:H8   | 1.62                     | 0.65              |
| 1:A:1360:A:OP2   | 14:N:75:ARG:NH2 | 2.27                     | 0.65              |
| 1:A:1376:U:O3'   | 7:G:95:ARG:NH1  | 2.30                     | 0.65              |
| 9:I:75:GLN:O     | 9:I:79:ILE:HG12 | 1.97                     | 0.65              |
| 11:K:15:GLN:OE1  | 11:K:17:SER:N   | 2.30                     | 0.64              |
| 1:A:628:G:H2'    | 1:A:629:A:C8    | 2.32                     | 0.64              |
| 1:A:687:A:N6     | 1:A:701:U:O4'   | 2.30                     | 0.64              |
| 9:I:42:GLU:OE1   | 9:I:45:ARG:NH1  | 2.28                     | 0.64              |
| 10:J:12:ALA:O    | 10:J:69:THR:HA  | 1.98                     | 0.64              |
| 1:A:1:A:H3'      | 1:A:2:A:H8      | 1.62                     | 0.64              |
| 1:A:665:A:N7     | 1:A:724:G:N2    | 2.39                     | 0.64              |
| 1:A:1151:A:HO2'  | 1:A:1152:A:H8   | 1.44                     | 0.64              |
| 1:A:1179:A:OP2   | 9:I:95:ARG:NH2  | 2.28                     | 0.64              |
| 20:T:58:VAL:HA   | 20:T:61:GLN:HG2 | 1.79                     | 0.64              |
| 1:A:427:U:OP2    | 1:A:428:G:O2'   | 2.15                     | 0.64              |
| 1:A:1278:G:H4'   | 1:A:1279:G:C4   | 2.33                     | 0.64              |
| 5:E:74:VAL:HG13  | 5:E:145:GLU:HA  | 1.79                     | 0.64              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:131:A:H2'    | 1:A:132:C:C6     | 2.32                     | 0.64              |
| 1:A:509:A:N3     | 1:A:543:U:O2'    | 2.30                     | 0.64              |
| 8:H:87:LYS:HG3   | 8:H:125:ILE:HD11 | 1.79                     | 0.64              |
| 9:I:25:ASN:OD1   | 9:I:26:GLY:N     | 2.30                     | 0.64              |
| 1:A:974:A:P      | 14:N:69:ARG:HH22 | 2.21                     | 0.64              |
| 14:N:92:GLU:OE1  | 14:N:92:GLU:N    | 2.31                     | 0.64              |
| 16:P:58:ALA:O    | 16:P:62:GLY:N    | 2.29                     | 0.64              |
| 1:A:362:G:N2     | 1:A:365:U:OP2    | 2.24                     | 0.64              |
| 1:A:1245:C:N4    | 1:A:1292:G:O6    | 2.26                     | 0.64              |
| 9:I:10:GLY:HA2   | 9:I:81:HIS:CD2   | 2.33                     | 0.64              |
| 12:L:41:THR:O    | 22:X:73:ASN:OD1  | 2.15                     | 0.64              |
| 16:P:34:GLU:OE2  | 16:P:60:TRP:NE1  | 2.30                     | 0.64              |
| 1:A:1124:G:H4'   | 10:J:40:ILE:HD11 | 1.79                     | 0.64              |
| 1:A:602:A:H2'    | 1:A:603:U:C6     | 2.31                     | 0.64              |
| 1:A:1271:A:H2'   | 1:A:1272:G:C8    | 2.32                     | 0.64              |
| 1:A:1315:U:O2'   | 1:A:1360:A:N3    | 2.29                     | 0.64              |
| 14:N:31:ILE:HA   | 14:N:41:ARG:HG3  | 1.80                     | 0.64              |
| 1:A:11:G:H2'     | 1:A:12:U:C6      | 2.33                     | 0.63              |
| 1:A:337:G:H2'    | 1:A:338:A:C8     | 2.34                     | 0.63              |
| 1:A:404:G:OP2    | 4:D:115:ARG:NH2  | 2.32                     | 0.63              |
| 1:A:679:C:O2     | 1:A:711:G:N2     | 2.17                     | 0.63              |
| 1:A:734:G:H2'    | 1:A:735:C:C6     | 2.33                     | 0.63              |
| 1:A:1132:C:N4    | 1:A:1133:G:O6    | 2.31                     | 0.63              |
| 1:A:1165:U:O4    | 1:A:1171:A:N6    | 2.19                     | 0.63              |
| 4:D:154:ARG:O    | 4:D:158:ALA:N    | 2.31                     | 0.63              |
| 14:N:16:LEU:HD21 | 14:N:52:PRO:HB2  | 1.80                     | 0.63              |
| 1:A:1016:A:C5    | 1:A:1017:U:H1'   | 2.33                     | 0.63              |
| 1:A:1277:C:H1'   | 1:A:1282:C:H1'   | 1.80                     | 0.63              |
| 9:I:35:LEU:HD21  | 9:I:45:ARG:HB3   | 1.80                     | 0.63              |
| 19:S:17:LYS:O    | 19:S:20:GLU:HG2  | 1.98                     | 0.63              |
| 22:X:23:LEU:HD11 | 22:X:26:ILE:HG13 | 1.80                     | 0.63              |
| 1:A:73:C:O2'     | 1:A:74:A:H5''    | 1.98                     | 0.63              |
| 1:A:93:U:H2'     | 1:A:95:C:C5      | 2.29                     | 0.63              |
| 1:A:823:C:N3     | 1:A:877:G:N1     | 2.44                     | 0.63              |
| 10:J:27:GLU:O    | 10:J:31:ARG:HG2  | 1.99                     | 0.63              |
| 1:A:515:G:O6     | 1:A:536:C:N4     | 2.18                     | 0.63              |
| 1:A:679:C:H2'    | 1:A:680:C:C6     | 2.33                     | 0.63              |
| 3:C:28:GLU:N     | 3:C:28:GLU:OE1   | 2.28                     | 0.63              |
| 3:C:93:ASP:OD1   | 3:C:94:ILE:N     | 2.32                     | 0.63              |
| 7:G:120:LEU:O    | 7:G:124:LEU:HG   | 1.98                     | 0.63              |
| 9:I:98:LEU:HA    | 9:I:101:ALA:HB3  | 1.80                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 19:S:33:THR:HG22 | 19:S:35:SER:H    | 1.64                     | 0.63              |
| 22:X:22:GLU:OE1  | 22:X:22:GLU:N    | 2.29                     | 0.63              |
| 1:A:203:G:N2     | 1:A:204:G:N7     | 2.46                     | 0.63              |
| 1:A:476:U:H2'    | 1:A:477:C:H6     | 1.63                     | 0.63              |
| 1:A:824:G:H2'    | 1:A:825:A:H8     | 1.63                     | 0.63              |
| 1:A:1130:A:H5''  | 9:I:64:TYR:HE2   | 1.64                     | 0.63              |
| 10:J:16:ARG:O    | 10:J:20:GLN:NE2  | 2.32                     | 0.63              |
| 19:S:51:VAL:O    | 19:S:57:HIS:HA   | 1.99                     | 0.63              |
| 1:A:475:C:H2'    | 1:A:476:U:C6     | 2.34                     | 0.63              |
| 1:A:979:C:OP1    | 1:A:1223:C:N4    | 2.32                     | 0.63              |
| 18:R:72:ASP:N    | 18:R:72:ASP:OD1  | 2.31                     | 0.63              |
| 1:A:162:A:C5     | 1:A:163:C:H1'    | 2.34                     | 0.63              |
| 1:A:334:C:H2'    | 1:A:335:C:C6     | 2.34                     | 0.63              |
| 1:A:370:C:O2     | 1:A:482:A:O2'    | 2.17                     | 0.63              |
| 1:A:701:U:OP1    | 1:A:702:A:O2'    | 2.13                     | 0.63              |
| 1:A:1162:C:H2'   | 1:A:1163:A:C8    | 2.34                     | 0.63              |
| 1:A:1376:U:H5'   | 7:G:102:ARG:NH2  | 2.14                     | 0.63              |
| 3:C:91:VAL:HA    | 3:C:94:ILE:HG22  | 1.81                     | 0.63              |
| 3:C:153:VAL:HG22 | 3:C:166:GLU:HG3  | 1.81                     | 0.63              |
| 8:H:96:MET:HB2   | 8:H:100:GLY:H    | 1.63                     | 0.63              |
| 22:X:13:THR:HA   | 22:X:16:VAL:HB   | 1.81                     | 0.63              |
| 1:A:53:A:H2'     | 1:A:54:C:O4'     | 1.99                     | 0.63              |
| 7:G:17:LYS:HZ1   | 9:I:42:GLU:HG3   | 1.64                     | 0.63              |
| 16:P:68:SER:HB3  | 16:P:71:VAL:HG23 | 1.81                     | 0.63              |
| 1:A:127:G:O6     | 1:A:234:C:N4     | 2.19                     | 0.63              |
| 1:A:724:G:H2'    | 1:A:725:G:H8     | 1.62                     | 0.63              |
| 1:A:1013:G:N2    | 1:A:1015:G:H3'   | 2.13                     | 0.63              |
| 7:G:57:SER:HB2   | 7:G:60:GLU:HB2   | 1.81                     | 0.63              |
| 9:I:96:SER:C     | 9:I:100:LYS:HZ2  | 2.07                     | 0.63              |
| 17:Q:20:SER:HA   | 17:Q:48:ASP:H    | 1.63                     | 0.63              |
| 19:S:25:SER:O    | 19:S:28:LYS:NZ   | 2.32                     | 0.63              |
| 1:A:399:G:H2'    | 1:A:400:C:H6     | 1.64                     | 0.62              |
| 1:A:722:G:O2'    | 1:A:723:U:O3'    | 2.15                     | 0.62              |
| 1:A:754:C:O5'    | 15:O:72:ARG:NH2  | 2.32                     | 0.62              |
| 6:F:42:TRP:CE3   | 6:F:59:TYR:HB3   | 2.34                     | 0.62              |
| 15:O:8:THR:O     | 15:O:12:VAL:HG23 | 1.99                     | 0.62              |
| 8:H:75:ILE:HA    | 8:H:128:TYR:O    | 1.99                     | 0.62              |
| 9:I:55:VAL:HG13  | 9:I:57:MET:HG2   | 1.80                     | 0.62              |
| 13:M:18:ALA:O    | 13:M:21:SER:OG   | 2.17                     | 0.62              |
| 1:A:340:U:H2'    | 1:A:341:C:H6     | 1.64                     | 0.62              |
| 1:A:664:G:OP1    | 18:R:53:ARG:NE   | 2.27                     | 0.62              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:713:G:N2     | 1:A:777:A:O2'     | 2.32                     | 0.62              |
| 1:A:799:G:H2'    | 1:A:800:G:O4'     | 1.99                     | 0.62              |
| 1:A:947:G:O6     | 1:A:1234:C:N4     | 2.29                     | 0.62              |
| 11:K:18:ASP:HA   | 11:K:81:ASN:HD22  | 1.64                     | 0.62              |
| 21:V:79:ILE:HA   | 21:V:82:LEU:HG    | 1.79                     | 0.62              |
| 1:A:690:G:O5'    | 11:K:29:ASN:ND2   | 2.32                     | 0.62              |
| 1:A:692:U:O2     | 1:A:694:A:H3'     | 1.98                     | 0.62              |
| 12:L:87:VAL:HG23 | 12:L:90:LEU:HB2   | 1.82                     | 0.62              |
| 22:X:24:VAL:HG23 | 22:X:90:HIS:CE1   | 2.35                     | 0.62              |
| 1:A:340:U:H2'    | 1:A:341:C:C6      | 2.34                     | 0.62              |
| 1:A:665:A:H1'    | 1:A:733:G:O4'     | 2.00                     | 0.62              |
| 1:A:783:C:OP1    | 1:A:1515:G:O2'    | 2.15                     | 0.62              |
| 1:A:987:G:H2'    | 1:A:988:G:H8      | 1.64                     | 0.62              |
| 1:A:1119:C:H2'   | 1:A:1120:C:H6     | 1.64                     | 0.62              |
| 3:C:18:TRP:O     | 3:C:54:ARG:NH2    | 2.31                     | 0.62              |
| 1:A:674:G:H2'    | 1:A:675:A:H8      | 1.65                     | 0.62              |
| 1:A:957:U:H2'    | 1:A:959:A:OP2     | 1.99                     | 0.62              |
| 1:A:1043:G:H2'   | 1:A:1044:A:H8     | 1.65                     | 0.62              |
| 1:A:1178:G:H3'   | 9:I:99:ARG:HH22   | 1.63                     | 0.62              |
| 1:A:1516:2MG:C2  | 1:A:1518:MA6:H5'' | 2.35                     | 0.62              |
| 6:F:101:PRO:HA   | 6:F:104:LYS:HG2   | 1.81                     | 0.62              |
| 9:I:116:VAL:HG21 | 10:J:64:GLN:HE22  | 1.64                     | 0.62              |
| 20:T:60:ARG:O    | 20:T:64:LYS:N     | 2.25                     | 0.62              |
| 21:V:32:LEU:CD1  | 21:V:34:MET:N     | 2.51                     | 0.62              |
| 1:A:76:G:H1      | 1:A:93:U:H3       | 1.48                     | 0.62              |
| 3:C:50:ALA:HB1   | 3:C:76:VAL:HG22   | 1.82                     | 0.62              |
| 1:A:142:G:H3'    | 1:A:143:A:C8      | 2.35                     | 0.62              |
| 1:A:688:G:H2'    | 1:A:689:C:O4'     | 2.00                     | 0.62              |
| 1:A:772:U:O4     | 1:A:807:A:N6      | 2.20                     | 0.62              |
| 1:A:786:G:H2'    | 1:A:787:A:C8      | 2.35                     | 0.62              |
| 1:A:1111:A:N6    | 3:C:176:HIS:O     | 2.33                     | 0.62              |
| 9:I:52:LEU:HA    | 9:I:55:VAL:HG12   | 1.82                     | 0.62              |
| 12:L:37:VAL:HG21 | 22:X:48:VAL:HG23  | 1.82                     | 0.62              |
| 22:X:137:ALA:O   | 22:X:140:ASN:ND2  | 2.33                     | 0.62              |
| 1:A:255:G:H2'    | 1:A:256:U:C6      | 2.34                     | 0.61              |
| 1:A:481:G:O2'    | 1:A:483:C:N4      | 2.33                     | 0.61              |
| 1:A:1512:U:H2'   | 1:A:1513:A:C8     | 2.35                     | 0.61              |
| 9:I:123:ARG:NH1  | 9:I:124:ARG:O     | 2.32                     | 0.61              |
| 1:A:35:G:H2'     | 1:A:36:C:C6       | 2.34                     | 0.61              |
| 1:A:127:G:N2     | 1:A:234:C:O2      | 2.32                     | 0.61              |
| 1:A:415:A:C4     | 1:A:416:G:C8      | 2.88                     | 0.61              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:774:G:N1      | 1:A:805:C:N3      | 2.36                     | 0.61              |
| 1:A:1091:U:O2'    | 1:A:1093:A:N7     | 2.30                     | 0.61              |
| 1:A:1107:C:H5'    | 3:C:169:ARG:HH21  | 1.65                     | 0.61              |
| 1:A:1165:U:H3'    | 1:A:1166:G:C8     | 2.35                     | 0.61              |
| 7:G:151:PHE:HD1   | 21:V:104:VAL:CG1  | 2.10                     | 0.61              |
| 19:S:44:MET:HG3   | 19:S:62:VAL:HG11  | 1.82                     | 0.61              |
| 22:X:126:THR:HG22 | 22:X:135:VAL:HG12 | 1.81                     | 0.61              |
| 1:A:419:C:O2      | 1:A:424:G:N2      | 2.26                     | 0.61              |
| 1:A:1328:C:H5''   | 13:M:28:THR:HG21  | 1.82                     | 0.61              |
| 4:D:124:MET:HB2   | 4:D:144:SER:HB3   | 1.83                     | 0.61              |
| 1:A:91:U:H2'      | 1:A:92:U:C6       | 2.35                     | 0.61              |
| 1:A:657:U:H2'     | 1:A:658:C:C6      | 2.36                     | 0.61              |
| 1:A:705:G:H2'     | 1:A:706:A:H5'     | 1.83                     | 0.61              |
| 1:A:1071:C:H2'    | 1:A:1072:G:H8     | 1.66                     | 0.61              |
| 4:D:28:ILE:CD1    | 4:D:34:ILE:HD13   | 2.31                     | 0.61              |
| 6:F:77:THR:O      | 6:F:81:ASN:N      | 2.23                     | 0.61              |
| 9:I:5:GLN:OE1     | 9:I:21:ILE:N      | 2.33                     | 0.61              |
| 22:X:51:CYS:O     | 22:X:55:SER:OG    | 2.08                     | 0.61              |
| 1:A:504:C:H42     | 1:A:541:G:H1      | 1.48                     | 0.61              |
| 14:N:64:CYS:HB3   | 14:N:69:ARG:H     | 1.65                     | 0.61              |
| 15:O:48:LYS:O     | 15:O:50:HIS:ND1   | 2.26                     | 0.61              |
| 19:S:13:LEU:HG    | 19:S:14:HIS:H     | 1.66                     | 0.61              |
| 1:A:10:A:H2'      | 1:A:11:G:H8       | 1.64                     | 0.61              |
| 1:A:54:C:H2'      | 1:A:352:C:H41     | 1.66                     | 0.61              |
| 1:A:657:U:H2'     | 1:A:658:C:H6      | 1.66                     | 0.61              |
| 1:A:1152:A:OP1    | 10:J:72:ARG:NH2   | 2.20                     | 0.61              |
| 14:N:37:SER:HG    | 14:N:40:ASP:H     | 1.48                     | 0.61              |
| 15:O:24:SER:O     | 15:O:27:VAL:HG12  | 2.00                     | 0.61              |
| 1:A:69:G:O6       | 1:A:98:A:N6       | 2.34                     | 0.61              |
| 1:A:401:C:O2'     | 1:A:621:A:N3      | 2.30                     | 0.61              |
| 1:A:1369:C:H2'    | 1:A:1370:G:C8     | 2.36                     | 0.61              |
| 1:A:1489:G:C4'    | 22:X:32:ARG:HE    | 2.13                     | 0.61              |
| 3:C:32:ASN:O      | 3:C:35:SER:OG     | 2.17                     | 0.61              |
| 19:S:64:ASP:OD1   | 19:S:64:ASP:N     | 2.30                     | 0.61              |
| 1:A:35:G:N2       | 1:A:549:C:O2      | 2.31                     | 0.61              |
| 1:A:868:C:H2'     | 1:A:869:G:O4'     | 2.01                     | 0.61              |
| 1:A:950:U:H3'     | 13:M:101:ARG:HH12 | 1.66                     | 0.61              |
| 1:A:1280:A:H5''   | 10:J:42:LEU:HD23  | 1.83                     | 0.61              |
| 1:A:1359:C:O5'    | 14:N:75:ARG:NH2   | 2.34                     | 0.61              |
| 1:A:1429:A:H3'    | 1:A:1430:A:H8     | 1.66                     | 0.61              |
| 3:C:147:LYS:HG2   | 3:C:204:LYS:HA    | 1.82                     | 0.61              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 13:M:3:ARG:O    | 13:M:57:ARG:NH1  | 2.34                     | 0.61              |
| 21:V:16:GLN:HA  | 21:V:19:ILE:HG12 | 1.83                     | 0.61              |
| 21:V:73:GLN:NE2 | 21:V:97:PHE:CD2  | 2.67                     | 0.61              |
| 1:A:189:A:H3'   | 1:A:190:A:H8     | 1.65                     | 0.60              |
| 1:A:666:G:H2'   | 1:A:667:G:H8     | 1.66                     | 0.60              |
| 1:A:771:G:O6    | 1:A:808:C:N4     | 2.27                     | 0.60              |
| 1:A:944:G:N1    | 1:A:1338:G:OP2   | 2.30                     | 0.60              |
| 1:A:410:G:N1    | 1:A:431:A:OP2    | 2.32                     | 0.60              |
| 1:A:579:A:H5'   | 1:A:728:A:H1'    | 1.83                     | 0.60              |
| 1:A:627:G:H5'   | 16:P:51:ARG:HH12 | 1.66                     | 0.60              |
| 1:A:876:C:O5'   | 8:H:15:ARG:NH1   | 2.34                     | 0.60              |
| 1:A:1251:A:H2'  | 1:A:1252:A:C8    | 2.36                     | 0.60              |
| 3:C:156:ARG:N   | 3:C:163:ALA:HA   | 2.13                     | 0.60              |
| 11:K:15:GLN:OE1 | 11:K:16:VAL:N    | 2.33                     | 0.60              |
| 13:M:50:GLU:OE1 | 13:M:50:GLU:N    | 2.26                     | 0.60              |
| 15:O:26:GLU:H   | 15:O:26:GLU:CD   | 2.08                     | 0.60              |
| 18:R:10:PHE:N   | 18:R:46:GLY:O    | 2.34                     | 0.60              |
| 1:A:855:U:OP2   | 1:A:871:U:N3     | 2.35                     | 0.60              |
| 1:A:1054:C:O5'  | 1:A:1196:A:O2'   | 2.18                     | 0.60              |
| 5:E:107:ALA:H   | 5:E:112:ARG:NH2  | 1.98                     | 0.60              |
| 5:E:153:VAL:HA  | 5:E:156:LYS:HB2  | 1.83                     | 0.60              |
| 1:A:75:G:H3'    | 1:A:76:G:H8      | 1.66                     | 0.60              |
| 1:A:713:G:H2'   | 1:A:714:G:C8     | 2.36                     | 0.60              |
| 1:A:1174:G:H2'  | 1:A:1175:G:C8    | 2.37                     | 0.60              |
| 5:E:95:PHE:N    | 5:E:126:LYS:O    | 2.34                     | 0.60              |
| 1:A:333:U:H2'   | 1:A:334:C:C6     | 2.35                     | 0.60              |
| 1:A:586:C:O2'   | 8:H:4:GLN:OE1    | 2.11                     | 0.60              |
| 1:A:825:A:O2'   | 8:H:9:ASP:OD2    | 2.19                     | 0.60              |
| 1:A:1244:G:O6   | 1:A:1293:C:N4    | 2.27                     | 0.60              |
| 1:A:1391:U:H2'  | 1:A:1392:G:C8    | 2.36                     | 0.60              |
| 6:F:21:MET:O    | 6:F:25:TYR:N     | 2.33                     | 0.60              |
| 8:H:77:ARG:HE   | 8:H:81:PRO:HD3   | 1.67                     | 0.60              |
| 19:S:33:THR:O   | 19:S:51:VAL:HA   | 2.01                     | 0.60              |
| 1:A:154:U:H2'   | 1:A:155:A:H8     | 1.66                     | 0.60              |
| 1:A:255:G:P     | 17:Q:71:LYS:HZ1  | 2.24                     | 0.60              |
| 1:A:265:G:H2'   | 1:A:267:C:H5     | 1.67                     | 0.60              |
| 1:A:427:U:OP1   | 4:D:13:ARG:NH2   | 2.34                     | 0.60              |
| 1:A:523:A:N6    | 12:L:50:ARG:HH22 | 1.99                     | 0.60              |
| 1:A:781:A:H62   | 1:A:801:U:H3     | 1.49                     | 0.60              |
| 4:D:125:VAL:N   | 4:D:128:ARG:O    | 2.34                     | 0.60              |
| 5:E:162:GLU:OE1 | 5:E:162:GLU:N    | 2.33                     | 0.60              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 8:H:13:ARG:O      | 8:H:17:GLY:N     | 2.34                     | 0.60              |
| 11:K:19:GLY:CA    | 11:K:79:ILE:CG2  | 2.80                     | 0.60              |
| 12:L:37:VAL:HG21  | 22:X:48:VAL:CG2  | 2.31                     | 0.60              |
| 13:M:83:LEU:HD11  | 19:S:65:GLU:HG3  | 1.83                     | 0.60              |
| 1:A:816:A:OP1     | 1:A:1526:G:O2'   | 2.18                     | 0.60              |
| 1:A:1366:C:H2'    | 1:A:1367:C:C6    | 2.37                     | 0.60              |
| 1:A:1472:U:H2'    | 1:A:1473:G:C8    | 2.36                     | 0.60              |
| 6:F:29:ILE:HD12   | 6:F:64:VAL:HG11  | 1.82                     | 0.60              |
| 21:V:16:GLN:O     | 21:V:19:ILE:HG12 | 2.01                     | 0.60              |
| 1:A:129:A:H1'     | 1:A:130:A:C8     | 2.37                     | 0.60              |
| 1:A:143:A:H5''    | 1:A:144:G:H5'    | 1.84                     | 0.60              |
| 1:A:1251:A:N1     | 1:A:1354:U:O2'   | 2.32                     | 0.60              |
| 10:J:40:ILE:O     | 10:J:40:ILE:CG2  | 2.48                     | 0.60              |
| 11:K:34:ILE:HD11  | 11:K:70:CYS:HA   | 1.82                     | 0.60              |
| 11:K:127:ARG:HH22 | 21:V:17:LYS:CE   | 2.15                     | 0.60              |
| 1:A:384:G:H2'     | 1:A:385:C:C6     | 2.37                     | 0.60              |
| 1:A:563:A:HO2'    | 1:A:566:G:HO2'   | 1.48                     | 0.60              |
| 1:A:736:C:H2'     | 1:A:737:C:C6     | 2.37                     | 0.60              |
| 1:A:746:A:H2'     | 1:A:747:A:C8     | 2.37                     | 0.60              |
| 1:A:980:C:O3'     | 14:N:13:ARG:NH2  | 2.34                     | 0.60              |
| 1:A:1175:G:H2'    | 1:A:1176:A:H8    | 1.67                     | 0.60              |
| 1:A:1223:C:OP2    | 19:S:78:ARG:NH2  | 2.23                     | 0.60              |
| 1:A:45:G:H2'      | 1:A:46:G:H8      | 1.67                     | 0.60              |
| 1:A:181:A:H62     | 1:A:195:A:P      | 2.25                     | 0.60              |
| 1:A:1291:U:H2'    | 1:A:1292:G:H8    | 1.67                     | 0.60              |
| 19:S:63:THR:OG1   | 19:S:64:ASP:OD1  | 2.20                     | 0.60              |
| 1:A:184:G:H2'     | 1:A:185:U:C6     | 2.37                     | 0.59              |
| 1:A:312:C:H2'     | 1:A:313:A:C8     | 2.36                     | 0.59              |
| 1:A:907:A:H3'     | 1:A:908:A:H8     | 1.66                     | 0.59              |
| 1:A:1055:A:C6     | 1:A:1206:G:C5    | 2.90                     | 0.59              |
| 1:A:1327:C:H2'    | 1:A:1328:C:C6    | 2.37                     | 0.59              |
| 1:A:1410:A:N6     | 1:A:1490:U:O2'   | 2.35                     | 0.59              |
| 1:A:1536:C:OP2    | 18:R:43:ARG:NH2  | 2.25                     | 0.59              |
| 3:C:180:ALA:HA    | 3:C:206:GLU:HG2  | 1.83                     | 0.59              |
| 6:F:36:ILE:HA     | 6:F:64:VAL:HG22  | 1.84                     | 0.59              |
| 15:O:47:LYS:HA    | 15:O:53:ARG:HH21 | 1.67                     | 0.59              |
| 20:T:5:LYS:HA     | 20:T:8:LYS:HE3   | 1.83                     | 0.59              |
| 22:X:54:VAL:HG13  | 22:X:76:VAL:HG21 | 1.84                     | 0.59              |
| 1:A:471:U:H2'     | 1:A:472:U:H6     | 1.67                     | 0.59              |
| 1:A:571:U:H5''    | 1:A:819:A:C2     | 2.37                     | 0.59              |
| 1:A:629:A:H2'     | 1:A:630:A:O4'    | 2.02                     | 0.59              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:1070:U:H2'    | 1:A:1071:C:H6    | 1.67                     | 0.59              |
| 1:A:1209:C:O2'    | 1:A:1214:C:N3    | 2.35                     | 0.59              |
| 15:O:75:VAL:O     | 15:O:79:THR:N    | 2.24                     | 0.59              |
| 1:A:1012:A:H2'    | 1:A:1013:G:C8    | 2.37                     | 0.59              |
| 1:A:1056:U:H5'    | 3:C:163:ALA:HB2  | 1.83                     | 0.59              |
| 3:C:70:THR:HG21   | 3:C:76:VAL:HG21  | 1.84                     | 0.59              |
| 6:F:35:LYS:HB3    | 6:F:37:HIS:CE1   | 2.37                     | 0.59              |
| 11:K:23:ILE:HA    | 11:K:32:VAL:HA   | 1.83                     | 0.59              |
| 12:L:37:VAL:CG2   | 22:X:48:VAL:HG21 | 2.29                     | 0.59              |
| 14:N:29:ALA:O     | 14:N:33:ASP:N    | 2.35                     | 0.59              |
| 1:A:59:A:H5''     | 1:A:387:U:H5''   | 1.84                     | 0.59              |
| 1:A:187:G:O2'     | 1:A:189:A:N7     | 2.35                     | 0.59              |
| 1:A:1279:G:O2'    | 1:A:1281:C:OP2   | 2.19                     | 0.59              |
| 1:A:1385:G:H2'    | 1:A:1386:G:C8    | 2.37                     | 0.59              |
| 1:A:1509:C:H42    | 1:A:1526:G:H1    | 1.49                     | 0.59              |
| 3:C:105:GLU:OE2   | 3:C:107:ARG:NH1  | 2.35                     | 0.59              |
| 4:D:14:ARG:HE     | 4:D:38:PRO:HD2   | 1.67                     | 0.59              |
| 22:X:102:VAL:HG12 | 22:X:143:LYS:HB3 | 1.83                     | 0.59              |
| 1:A:123:U:H2'     | 1:A:124:C:H6     | 1.67                     | 0.59              |
| 1:A:182:A:O2'     | 1:A:183:C:H5'    | 2.03                     | 0.59              |
| 1:A:674:G:O6      | 1:A:716:A:N6     | 2.20                     | 0.59              |
| 1:A:1147:C:O2     | 9:I:18:ARG:NH1   | 2.35                     | 0.59              |
| 1:A:1245:C:H2'    | 1:A:1246:A:H8    | 1.68                     | 0.59              |
| 1:A:1466:C:H3'    | 1:A:1467:C:C6    | 2.37                     | 0.59              |
| 3:C:19:ASN:HA     | 3:C:54:ARG:HH21  | 1.67                     | 0.59              |
| 8:H:48:ASP:HB3    | 8:H:62:THR:HB    | 1.85                     | 0.59              |
| 1:A:444:G:O6      | 1:A:490:C:N4     | 2.29                     | 0.59              |
| 1:A:738:C:OP1     | 6:F:2:ARG:NH2    | 2.36                     | 0.59              |
| 1:A:939:G:O6      | 1:A:1344:C:N4    | 2.34                     | 0.59              |
| 1:A:1212:U:H5'    | 1:A:1213:A:C4    | 2.38                     | 0.59              |
| 11:K:89:PRO:HG3   | 21:V:24:GLN:HE22 | 1.68                     | 0.59              |
| 1:A:123:U:H2'     | 1:A:124:C:C6     | 2.37                     | 0.59              |
| 1:A:831:A:N6      | 1:A:855:U:O4     | 2.19                     | 0.59              |
| 1:A:980:C:O2'     | 14:N:13:ARG:NH1  | 2.35                     | 0.59              |
| 1:A:1073:U:P      | 5:E:62:LYS:HD3   | 2.42                     | 0.59              |
| 1:A:1174:G:H2'    | 1:A:1175:G:H8    | 1.68                     | 0.59              |
| 9:I:80:ARG:HA     | 9:I:83:ILE:HD12  | 1.84                     | 0.59              |
| 1:A:289:G:H2'     | 1:A:290:C:H6     | 1.67                     | 0.59              |
| 1:A:454:G:H2'     | 1:A:455:G:H8     | 1.67                     | 0.59              |
| 1:A:1029:U:H4'    | 1:A:1030:U:C5    | 2.37                     | 0.59              |
| 1:A:1275:A:H2'    | 1:A:1276:G:O4'   | 2.02                     | 0.59              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:1376:U:OP2   | 7:G:25:LYS:NZ   | 2.27                     | 0.59              |
| 3:C:40:ARG:O     | 3:C:44:THR:HG23 | 2.02                     | 0.59              |
| 1:A:34:C:H2'     | 1:A:35:G:C8     | 2.38                     | 0.59              |
| 1:A:77:A:H3'     | 1:A:78:A:H8     | 1.67                     | 0.59              |
| 1:A:176:C:H2'    | 1:A:177:G:N3    | 2.17                     | 0.59              |
| 1:A:499:A:H4'    | 1:A:500:G:H5'   | 1.84                     | 0.59              |
| 1:A:1040:U:H2'   | 1:A:1041:G:C8   | 2.38                     | 0.59              |
| 1:A:1070:U:H2'   | 1:A:1071:C:C6   | 2.38                     | 0.59              |
| 1:A:1118:U:H2'   | 1:A:1119:C:C6   | 2.38                     | 0.59              |
| 4:D:22:LYS:HE3   | 4:D:31:LYS:CD   | 2.33                     | 0.59              |
| 1:A:194:C:O2'    | 1:A:195:A:H5'   | 2.02                     | 0.59              |
| 1:A:287:U:H2'    | 1:A:288:A:C8    | 2.38                     | 0.59              |
| 1:A:366:A:HO2'   | 1:A:394:G:H22   | 1.49                     | 0.59              |
| 1:A:578:C:N3     | 1:A:763:G:N1    | 2.48                     | 0.59              |
| 1:A:779:C:H2'    | 1:A:780:A:C8    | 2.38                     | 0.59              |
| 11:K:19:GLY:HA2  | 11:K:79:ILE:CG2 | 2.30                     | 0.59              |
| 1:A:531:U:H5'    | 1:A:532:A:N1    | 2.18                     | 0.58              |
| 1:A:593:U:H2'    | 1:A:594:U:C6    | 2.37                     | 0.58              |
| 1:A:794:A:H2'    | 1:A:795:C:C2    | 2.38                     | 0.58              |
| 1:A:881:G:OP2    | 12:L:6:GLN:NE2  | 2.36                     | 0.58              |
| 1:A:949:A:H1'    | 1:A:1364:U:H3   | 1.68                     | 0.58              |
| 1:A:1218:C:H2'   | 1:A:1219:A:C8   | 2.37                     | 0.58              |
| 3:C:106:VAL:HG22 | 3:C:108:LYS:H   | 1.66                     | 0.58              |
| 5:E:79:GLY:HA3   | 5:E:121:HIS:HB2 | 1.86                     | 0.58              |
| 21:V:80:ARG:HH12 | 21:V:94:GLU:HA  | 1.68                     | 0.58              |
| 1:A:91:U:H2'     | 1:A:92:U:H6     | 1.69                     | 0.58              |
| 1:A:246:A:C4     | 1:A:279:A:C6    | 2.92                     | 0.58              |
| 1:A:400:C:H2'    | 1:A:401:C:C6    | 2.37                     | 0.58              |
| 1:A:996:A:H2'    | 1:A:997:U:C6    | 2.38                     | 0.58              |
| 1:A:1064:G:O6    | 1:A:1192:C:N4   | 2.32                     | 0.58              |
| 1:A:1519:MA6:OP2 | 1:A:1519:MA6:H8 | 2.03                     | 0.58              |
| 16:P:42:ILE:O    | 16:P:42:ILE:CG2 | 2.51                     | 0.58              |
| 1:A:510:A:O2'    | 1:A:542:G:O2'   | 2.20                     | 0.58              |
| 1:A:877:G:H2'    | 1:A:878:A:C8    | 2.37                     | 0.58              |
| 1:A:948:C:O2     | 1:A:1233:G:N2   | 2.19                     | 0.58              |
| 1:A:1013:G:N2    | 1:A:1016:A:OP2  | 2.33                     | 0.58              |
| 1:A:1069:C:N3    | 1:A:1070:U:N3   | 2.50                     | 0.58              |
| 1:A:1191:A:H2'   | 1:A:1192:C:O4'  | 2.03                     | 0.58              |
| 1:A:1193:G:OP1   | 3:C:167:TRP:NE1 | 2.34                     | 0.58              |
| 1:A:1317:C:O5'   | 14:N:24:ARG:NH2 | 2.37                     | 0.58              |
| 3:C:183:ASP:H    | 3:C:204:LYS:NZ  | 2.01                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 9:I:58:VAL:HG23  | 9:I:59:GLU:H     | 1.69                     | 0.58              |
| 12:L:87:VAL:CG2  | 12:L:90:LEU:HB2  | 2.34                     | 0.58              |
| 22:X:97:GLU:O    | 22:X:117:ILE:N   | 2.28                     | 0.58              |
| 1:A:389:A:H3'    | 1:A:390:U:C6     | 2.39                     | 0.58              |
| 9:I:22:LYS:HD3   | 9:I:23:PRO:HD2   | 1.85                     | 0.58              |
| 11:K:31:ILE:HG12 | 11:K:46:THR:HG22 | 1.85                     | 0.58              |
| 1:A:677:U:H2'    | 1:A:678:U:C6     | 2.38                     | 0.58              |
| 1:A:715:A:H1'    | 1:A:777:A:C2     | 2.38                     | 0.58              |
| 1:A:1520:C:H2'   | 1:A:1521:C:C6    | 2.38                     | 0.58              |
| 1:A:160:A:H1'    | 1:A:344:A:N7     | 2.18                     | 0.58              |
| 1:A:716:A:H1'    | 11:K:120:GLY:HA2 | 1.84                     | 0.58              |
| 1:A:808:C:H2'    | 1:A:809:G:O4'    | 2.04                     | 0.58              |
| 1:A:826:C:H2'    | 1:A:827:U:C6     | 2.38                     | 0.58              |
| 1:A:1377:A:N7    | 7:G:8:GLY:HA2    | 2.18                     | 0.58              |
| 1:A:1385:G:H2'   | 1:A:1386:G:H8    | 1.69                     | 0.58              |
| 4:D:138:SER:HG   | 4:D:141:ASP:CG   | 2.11                     | 0.58              |
| 7:G:95:ARG:O     | 7:G:99:LEU:HG    | 2.04                     | 0.58              |
| 1:A:88:U:O2'     | 1:A:89:U:O5'     | 2.22                     | 0.58              |
| 1:A:160:A:H1'    | 1:A:344:A:C5     | 2.39                     | 0.58              |
| 1:A:1384:C:H2'   | 1:A:1385:G:C8    | 2.38                     | 0.58              |
| 9:I:6:TYR:O      | 9:I:21:ILE:N     | 2.35                     | 0.58              |
| 14:N:24:ARG:HD3  | 14:N:51:LEU:HD23 | 1.86                     | 0.58              |
| 20:T:17:ALA:O    | 20:T:21:ASN:N    | 2.32                     | 0.58              |
| 1:A:7:A:H5''     | 5:E:124:LEU:HD11 | 1.85                     | 0.58              |
| 1:A:125:U:H2'    | 1:A:126:G:C8     | 2.39                     | 0.58              |
| 1:A:398:U:H2'    | 1:A:399:G:H8     | 1.69                     | 0.58              |
| 1:A:481:G:N3     | 1:A:482:A:N6     | 2.51                     | 0.58              |
| 1:A:846:G:H2'    | 1:A:847:G:H8     | 1.69                     | 0.58              |
| 1:A:1267:C:N3    | 1:A:1268:G:N2    | 2.51                     | 0.58              |
| 6:F:25:TYR:HE2   | 6:F:77:THR:HG21  | 1.69                     | 0.58              |
| 9:I:22:LYS:HB3   | 9:I:62:ASP:OD1   | 2.04                     | 0.58              |
| 11:K:127:ARG:NH2 | 21:V:14:GLU:CG   | 2.67                     | 0.58              |
| 19:S:13:LEU:HG   | 19:S:14:HIS:N    | 2.19                     | 0.58              |
| 1:A:44:A:H2'     | 1:A:45:G:H8      | 1.69                     | 0.58              |
| 1:A:1073:U:OP1   | 5:E:62:LYS:CG    | 2.52                     | 0.58              |
| 1:A:1317:C:O2    | 19:S:37:ARG:NH2  | 2.29                     | 0.58              |
| 14:N:47:LYS:O    | 14:N:50:THR:OG1  | 2.15                     | 0.58              |
| 17:Q:44:LEU:HD21 | 17:Q:73:TRP:CG   | 2.39                     | 0.58              |
| 20:T:79:LEU:HD21 | 20:T:83:ILE:HD11 | 1.86                     | 0.58              |
| 22:X:128:THR:HA  | 22:X:133:ASP:HA  | 1.84                     | 0.58              |
| 1:A:75:G:N2      | 1:A:95:C:O2      | 2.33                     | 0.58              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:418:C:H2'   | 1:A:419:C:C6     | 2.39                     | 0.58              |
| 1:A:993:G:N2    | 1:A:996:A:H62    | 2.01                     | 0.58              |
| 1:A:1052:U:O2   | 1:A:1206:G:N1    | 2.24                     | 0.58              |
| 1:A:1130:A:H2'  | 1:A:1131:G:C8    | 2.39                     | 0.58              |
| 1:A:1314:C:H2'  | 1:A:1315:U:C6    | 2.38                     | 0.58              |
| 10:J:52:LEU:HB2 | 14:N:81:ARG:HD2  | 1.85                     | 0.58              |
| 1:A:517:G:H4'   | 1:A:519:C:C2     | 2.39                     | 0.57              |
| 1:A:635:A:H2'   | 1:A:636:U:C6     | 2.39                     | 0.57              |
| 1:A:977:A:N6    | 1:A:1224:U:O4'   | 2.37                     | 0.57              |
| 1:A:1393:U:O3'  | 1:A:1394:A:H2'   | 2.04                     | 0.57              |
| 3:C:123:GLN:HA  | 3:C:126:ARG:HB2  | 1.86                     | 0.57              |
| 19:S:12:ASP:OD1 | 19:S:14:HIS:N    | 2.36                     | 0.57              |
| 1:A:891:U:H2'   | 1:A:892:A:C8     | 2.38                     | 0.57              |
| 1:A:935:A:H2'   | 1:A:936:C:C6     | 2.39                     | 0.57              |
| 1:A:1356:G:H2'  | 1:A:1357:A:C8    | 2.39                     | 0.57              |
| 16:P:2:VAL:CG1  | 16:P:65:ALA:HA   | 2.32                     | 0.57              |
| 1:A:31:G:O2'    | 1:A:48:C:N4      | 2.34                     | 0.57              |
| 1:A:692:U:N3    | 1:A:695:A:OP2    | 2.38                     | 0.57              |
| 1:A:741:G:H5'   | 15:O:39:LEU:HD21 | 1.85                     | 0.57              |
| 1:A:921:U:H2'   | 1:A:922:G:C8     | 2.39                     | 0.57              |
| 1:A:1341:U:OP1  | 9:I:130:ARG:NH2  | 2.38                     | 0.57              |
| 9:I:33:ARG:HB2  | 9:I:38:TYR:HD1   | 1.68                     | 0.57              |
| 1:A:147:G:H2'   | 1:A:148:G:C8     | 2.40                     | 0.57              |
| 1:A:492:C:H2'   | 1:A:493:A:C8     | 2.39                     | 0.57              |
| 1:A:1167:A:H2'  | 1:A:1169:A:C8    | 2.39                     | 0.57              |
| 1:A:1427:C:H2'  | 1:A:1428:A:C8    | 2.40                     | 0.57              |
| 13:M:4:ILE:HG13 | 13:M:6:GLY:O     | 2.04                     | 0.57              |
| 14:N:20:TYR:HB3 | 14:N:51:LEU:HD21 | 1.86                     | 0.57              |
| 1:A:257:G:H2'   | 1:A:258:G:C8     | 2.39                     | 0.57              |
| 1:A:489:C:H2'   | 1:A:490:C:C6     | 2.40                     | 0.57              |
| 1:A:802:A:H2'   | 1:A:803:G:O4'    | 2.05                     | 0.57              |
| 1:A:1014:A:H2'  | 1:A:1015:G:C8    | 2.40                     | 0.57              |
| 6:F:76:THR:HA   | 6:F:79:ARG:HB3   | 1.85                     | 0.57              |
| 7:G:63:GLU:OE1  | 7:G:63:GLU:N     | 2.31                     | 0.57              |
| 10:J:65:TYR:HB3 | 14:N:96:LEU:HD11 | 1.87                     | 0.57              |
| 10:J:80:THR:O   | 10:J:83:THR:OG1  | 2.17                     | 0.57              |
| 1:A:366:A:O2'   | 1:A:394:G:N2     | 2.28                     | 0.57              |
| 1:A:591:U:H2'   | 1:A:592:G:C8     | 2.39                     | 0.57              |
| 1:A:671:G:H4'   | 6:F:79:ARG:HH12  | 1.70                     | 0.57              |
| 1:A:935:A:O2'   | 1:A:1383:C:N3    | 2.37                     | 0.57              |
| 1:A:954:G:O6    | 13:M:103:LYS:NZ  | 2.37                     | 0.57              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:1328:C:OP1    | 13:M:28:THR:OG1  | 2.20                     | 0.57              |
| 1:A:1471:U:H2'    | 1:A:1472:U:H6    | 1.69                     | 0.57              |
| 1:A:1489:G:H4'    | 22:X:32:ARG:NE   | 2.17                     | 0.57              |
| 3:C:175:LEU:O     | 3:C:176:HIS:ND1  | 2.37                     | 0.57              |
| 5:E:160:SER:O     | 5:E:164:ILE:HG13 | 2.05                     | 0.57              |
| 1:A:68:G:C5       | 1:A:69:G:H1'     | 2.40                     | 0.57              |
| 1:A:109:A:C6      | 1:A:326:G:C6     | 2.93                     | 0.57              |
| 1:A:312:C:H2'     | 1:A:313:A:H8     | 1.70                     | 0.57              |
| 1:A:425:G:H2'     | 1:A:426:U:O4'    | 2.04                     | 0.57              |
| 1:A:530:G:H2'     | 1:A:531:U:C2     | 2.40                     | 0.57              |
| 1:A:643:C:H2'     | 1:A:644:U:C6     | 2.38                     | 0.57              |
| 1:A:830:G:H2'     | 1:A:831:A:C8     | 2.39                     | 0.57              |
| 1:A:921:U:H2'     | 1:A:922:G:H8     | 1.70                     | 0.57              |
| 1:A:1070:U:O4     | 1:A:1094:G:N1    | 2.37                     | 0.57              |
| 1:A:1250:A:H2'    | 1:A:1251:A:C8    | 2.39                     | 0.57              |
| 6:F:51:ILE:HD11   | 18:R:66:SER:HB2  | 1.86                     | 0.57              |
| 9:I:84:THR:HA     | 9:I:87:LEU:HD12  | 1.87                     | 0.57              |
| 16:P:2:VAL:HG11   | 16:P:65:ALA:HA   | 1.85                     | 0.57              |
| 17:Q:30:LYS:HA    | 17:Q:37:PHE:HA   | 1.87                     | 0.57              |
| 1:A:8:A:C5        | 4:D:206:LYS:HB3  | 2.40                     | 0.57              |
| 1:A:130:A:N6      | 1:A:233:C:O2     | 2.38                     | 0.57              |
| 1:A:323:U:OP1     | 20:T:21:ASN:ND2  | 2.25                     | 0.57              |
| 1:A:724:G:H2'     | 1:A:725:G:C8     | 2.39                     | 0.57              |
| 1:A:841:C:H2'     | 1:A:843:U:C5     | 2.39                     | 0.57              |
| 1:A:1207:2MG:HM23 | 1:A:1208:C:H1'   | 1.87                     | 0.57              |
| 1:A:1418:A:C2     | 1:A:1419:G:H1'   | 2.39                     | 0.57              |
| 10:J:6:ILE:HG23   | 10:J:79:PRO:HG3  | 1.87                     | 0.57              |
| 22:X:84:PRO:HA    | 22:X:145:ASN:HA  | 1.87                     | 0.57              |
| 1:A:691:G:H22     | 1:A:695:A:H5''   | 1.70                     | 0.57              |
| 1:A:1097:C:H2'    | 1:A:1098:C:C6    | 2.39                     | 0.57              |
| 1:A:1432:G:N2     | 1:A:1468:A:OP2   | 2.37                     | 0.57              |
| 9:I:88:MET:HG2    | 9:I:95:ARG:HA    | 1.86                     | 0.57              |
| 11:K:127:ARG:HH22 | 21:V:17:LYS:HE2  | 1.69                     | 0.57              |
| 12:L:21:VAL:HG23  | 12:L:21:VAL:O    | 2.03                     | 0.57              |
| 1:A:625:U:H2'     | 1:A:626:G:H8     | 1.69                     | 0.57              |
| 1:A:735:C:O2'     | 1:A:736:C:H5'    | 2.05                     | 0.57              |
| 1:A:1333:A:H2'    | 1:A:1334:G:O4'   | 2.05                     | 0.57              |
| 1:A:1340:A:O3'    | 9:I:130:ARG:NH1  | 2.38                     | 0.57              |
| 1:A:1378:C:H5''   | 7:G:92:ARG:HH22  | 1.69                     | 0.57              |
| 3:C:31:ASP:HA     | 14:N:65:ARG:HH12 | 1.70                     | 0.57              |
| 17:Q:17:MET:N     | 17:Q:17:MET:SD   | 2.78                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:37:U:O2'     | 1:A:547:A:N1     | 2.33                     | 0.56              |
| 1:A:90:C:O2'     | 1:A:91:U:O5'     | 2.23                     | 0.56              |
| 1:A:451:A:N6     | 1:A:481:G:OP2    | 2.36                     | 0.56              |
| 1:A:501:C:H2'    | 1:A:502:A:H8     | 1.70                     | 0.56              |
| 1:A:777:A:H3'    | 1:A:778:G:C8     | 2.34                     | 0.56              |
| 1:A:815:A:N6     | 1:A:1509:C:O2'   | 2.38                     | 0.56              |
| 1:A:904:U:H2'    | 1:A:905:U:C6     | 2.40                     | 0.56              |
| 6:F:38:ARG:NE    | 6:F:63:ASN:OD1   | 2.28                     | 0.56              |
| 9:I:12:ARG:HG3   | 9:I:13:LYS:H     | 1.68                     | 0.56              |
| 14:N:63:ARG:HD2  | 14:N:68:GLY:C    | 2.29                     | 0.56              |
| 18:R:23:TYR:HB2  | 18:R:58:ALA:HB1  | 1.87                     | 0.56              |
| 21:V:15:MET:HE1  | 21:V:43:MET:SD   | 2.44                     | 0.56              |
| 1:A:191:G:H2'    | 1:A:192:A:C8     | 2.40                     | 0.56              |
| 1:A:195:A:H2'    | 1:A:196:A:C8     | 2.40                     | 0.56              |
| 1:A:1371:G:O3'   | 9:I:71:GLY:HA3   | 2.04                     | 0.56              |
| 3:C:59:ARG:HE    | 3:C:64:ILE:HG21  | 1.69                     | 0.56              |
| 21:V:68:GLY:O    | 21:V:72:LEU:N    | 2.29                     | 0.56              |
| 1:A:107:G:H3'    | 1:A:108:G:H21    | 1.70                     | 0.56              |
| 1:A:339:C:H2'    | 1:A:340:U:C6     | 2.40                     | 0.56              |
| 1:A:727:G:N2     | 1:A:730:G:OP2    | 2.35                     | 0.56              |
| 1:A:823:C:H2'    | 1:A:824:G:C8     | 2.41                     | 0.56              |
| 1:A:837:U:H2'    | 1:A:838:G:C8     | 2.41                     | 0.56              |
| 1:A:880:C:H2'    | 1:A:881:G:H8     | 1.70                     | 0.56              |
| 1:A:897:C:N4     | 1:A:902:G:O6     | 2.26                     | 0.56              |
| 1:A:1320:C:C2    | 19:S:72:GLY:HA3  | 2.41                     | 0.56              |
| 1:A:1525:G:H2'   | 1:A:1526:G:C8    | 2.40                     | 0.56              |
| 7:G:107:ALA:HA   | 7:G:110:LYS:HE2  | 1.86                     | 0.56              |
| 13:M:2:ALA:N     | 13:M:10:PRO:HD2  | 2.19                     | 0.56              |
| 21:V:32:LEU:HD13 | 21:V:34:MET:O    | 2.06                     | 0.56              |
| 1:A:343:U:O2'    | 1:A:346:G:O6     | 2.18                     | 0.56              |
| 1:A:581:G:O6     | 1:A:758:C:H3'    | 2.06                     | 0.56              |
| 1:A:689:C:H4'    | 1:A:705:G:O2'    | 2.04                     | 0.56              |
| 1:A:712:A:H2'    | 1:A:713:G:C8     | 2.40                     | 0.56              |
| 1:A:1031:C:O2    | 1:A:1032:G:N2    | 2.38                     | 0.56              |
| 1:A:1359:C:OP1   | 14:N:62:ASN:OD1  | 2.24                     | 0.56              |
| 3:C:133:ALA:HA   | 3:C:136:ARG:HH11 | 1.70                     | 0.56              |
| 4:D:160:GLU:N    | 4:D:160:GLU:OE1  | 2.38                     | 0.56              |
| 8:H:87:LYS:CG    | 8:H:125:ILE:HD11 | 2.34                     | 0.56              |
| 11:K:33:THR:HA   | 11:K:44:TRP:HA   | 1.87                     | 0.56              |
| 1:A:107:G:N1     | 20:T:6:SER:OG    | 2.37                     | 0.56              |
| 1:A:401:C:H2'    | 1:A:402:G:C8     | 2.40                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:608:A:H2'    | 1:A:609:A:O4'    | 2.05                     | 0.56              |
| 1:A:775:G:C2     | 1:A:776:G:C4     | 2.94                     | 0.56              |
| 1:A:782:A:H3'    | 1:A:783:C:H6     | 1.70                     | 0.56              |
| 1:A:789:U:H3     | 1:A:792:A:H5''   | 1.69                     | 0.56              |
| 1:A:1119:C:H2'   | 1:A:1120:C:C6    | 2.40                     | 0.56              |
| 1:A:197:A:N1     | 1:A:220:G:O2'    | 2.25                     | 0.56              |
| 1:A:324:G:N2     | 1:A:326:G:H3'    | 2.21                     | 0.56              |
| 1:A:426:U:O2'    | 4:D:40:GLN:HG3   | 2.05                     | 0.56              |
| 1:A:1157:A:C2    | 1:A:1180:A:H2'   | 2.41                     | 0.56              |
| 1:A:1280:A:OP1   | 10:J:9:ARG:NH1   | 2.31                     | 0.56              |
| 1:A:1323:G:H2'   | 1:A:1324:A:C8    | 2.39                     | 0.56              |
| 1:A:1532:U:H4'   | 21:V:80:ARG:HE   | 1.70                     | 0.56              |
| 12:L:42:PRO:HD3  | 12:L:50:ARG:HD3  | 1.86                     | 0.56              |
| 1:A:932:C:O2     | 1:A:1385:G:N1    | 2.38                     | 0.56              |
| 1:A:954:G:H2'    | 1:A:1227:A:H61   | 1.70                     | 0.56              |
| 2:B:23:TRP:CZ3   | 2:B:25:PRO:HA    | 2.34                     | 0.56              |
| 9:I:116:VAL:CG2  | 10:J:64:GLN:NE2  | 2.68                     | 0.56              |
| 1:A:90:C:O2'     | 1:A:91:U:H6      | 1.89                     | 0.56              |
| 1:A:606:G:N2     | 1:A:633:G:N7     | 2.53                     | 0.56              |
| 1:A:744:C:H2'    | 1:A:745:G:C8     | 2.41                     | 0.56              |
| 9:I:41:ARG:HG2   | 9:I:44:ALA:H     | 1.70                     | 0.56              |
| 14:N:20:TYR:HD2  | 14:N:55:SER:HB2  | 1.69                     | 0.56              |
| 21:V:73:GLN:HE22 | 21:V:97:PHE:N    | 2.02                     | 0.56              |
| 1:A:517:G:O2'    | 1:A:518:C:OP2    | 2.24                     | 0.56              |
| 4:D:55:LEU:O     | 4:D:59:GLN:HG2   | 2.06                     | 0.56              |
| 5:E:61:GLN:HA    | 5:E:64:MET:HE2   | 1.87                     | 0.56              |
| 11:K:127:ARG:CG  | 21:V:14:GLU:OE2  | 2.53                     | 0.56              |
| 19:S:18:LYS:NZ   | 19:S:32:ARG:O    | 2.39                     | 0.56              |
| 21:V:34:MET:HB3  | 21:V:57:LEU:HB3  | 1.87                     | 0.56              |
| 1:A:71:A:C4      | 1:A:72:A:C8      | 2.94                     | 0.56              |
| 1:A:507:C:H3'    | 1:A:508:U:H2'    | 1.88                     | 0.56              |
| 1:A:584:G:H2'    | 1:A:585:G:H8     | 1.71                     | 0.56              |
| 7:G:103:TRP:CG   | 7:G:137:LYS:HD3  | 2.41                     | 0.56              |
| 13:M:25:VAL:HG13 | 13:M:29:ARG:HB2  | 1.87                     | 0.56              |
| 18:R:42:SER:HA   | 18:R:45:THR:OG1  | 2.06                     | 0.56              |
| 1:A:10:A:H2'     | 1:A:11:G:C8      | 2.40                     | 0.55              |
| 1:A:280:C:C2     | 17:Q:41:THR:HG22 | 2.40                     | 0.55              |
| 1:A:459:A:C6     | 1:A:474:G:C6     | 2.94                     | 0.55              |
| 1:A:564:C:H2'    | 1:A:565:U:O4'    | 2.06                     | 0.55              |
| 3:C:6:HIS:HE1    | 3:C:8:ASN:HB2    | 1.70                     | 0.55              |
| 1:A:229:U:C2     | 1:A:230:G:C8     | 2.93                     | 0.55              |

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| Atom-1          | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:A:714:G:H2'   | 1:A:715:A:H8      | 1.70                     | 0.55              |
| 1:A:810:C:N4    | 1:A:811:C:N3      | 2.54                     | 0.55              |
| 1:A:875:U:O2'   | 8:H:16:ASN:OD1    | 2.20                     | 0.55              |
| 1:A:901:A:C8    | 1:A:902:G:H1'     | 2.40                     | 0.55              |
| 1:A:1308:U:H3'  | 13:M:98:ARG:NH2   | 2.21                     | 0.55              |
| 1:A:1312:G:H5'  | 19:S:5:LEU:HD11   | 1.88                     | 0.55              |
| 1:A:1333:A:H3'  | 1:A:1334:G:C8     | 2.39                     | 0.55              |
| 3:C:41:GLN:HG2  | 3:C:45:LYS:NZ     | 2.21                     | 0.55              |
| 3:C:130:PHE:CD1 | 3:C:157:LEU:HD12  | 2.40                     | 0.55              |
| 16:P:40:ASN:HB3 | 16:P:43:ALA:HB2   | 1.86                     | 0.55              |
| 21:V:77:GLY:HA2 | 21:V:80:ARG:HD3   | 1.89                     | 0.55              |
| 1:A:31:G:N2     | 1:A:47:C:O5'      | 2.40                     | 0.55              |
| 1:A:424:G:H2'   | 1:A:425:G:O4'     | 2.06                     | 0.55              |
| 1:A:846:G:H2'   | 1:A:847:G:C8      | 2.42                     | 0.55              |
| 4:D:104:ARG:HB3 | 4:D:168:PRO:HG2   | 1.89                     | 0.55              |
| 4:D:110:THR:O   | 4:D:113:GLU:HG2   | 2.06                     | 0.55              |
| 4:D:168:PRO:HB3 | 4:D:170:TRP:CH2   | 2.40                     | 0.55              |
| 4:D:174:ASP:OD2 | 4:D:177:LYS:N     | 2.35                     | 0.55              |
| 9:I:45:ARG:O    | 9:I:48:VAL:HG12   | 2.07                     | 0.55              |
| 22:X:117:ILE:HA | 22:X:127:VAL:HG22 | 1.88                     | 0.55              |
| 1:A:224:U:H2'   | 1:A:225:C:C6      | 2.41                     | 0.55              |
| 1:A:724:G:O2'   | 1:A:725:G:O4'     | 2.19                     | 0.55              |
| 1:A:782:A:H3'   | 1:A:783:C:C6      | 2.41                     | 0.55              |
| 1:A:1031:C:H4'  | 1:A:1032:G:O4'    | 2.07                     | 0.55              |
| 1:A:1170:A:H3'  | 1:A:1171:A:H8     | 1.71                     | 0.55              |
| 1:A:1300:G:O6   | 1:A:1334:G:H3'    | 2.07                     | 0.55              |
| 2:B:68:LEU:HD23 | 2:B:161:LEU:CD2   | 2.36                     | 0.55              |
| 3:C:112:ASP:OD2 | 3:C:115:LEU:HG    | 2.06                     | 0.55              |
| 7:G:60:GLU:OE1  | 7:G:60:GLU:N      | 2.37                     | 0.55              |
| 8:H:87:LYS:HG3  | 8:H:93:PRO:HD3    | 1.87                     | 0.55              |
| 1:A:124:C:H2'   | 1:A:125:U:C6      | 2.41                     | 0.55              |
| 1:A:229:U:H2'   | 1:A:230:G:H8      | 1.70                     | 0.55              |
| 1:A:721:G:H4'   | 1:A:722:G:O4'     | 2.06                     | 0.55              |
| 5:E:156:LYS:NZ  | 8:H:73:GLU:OE2    | 2.36                     | 0.55              |
| 9:I:83:ILE:O    | 9:I:87:LEU:HG     | 2.06                     | 0.55              |
| 1:A:255:G:OP1   | 17:Q:71:LYS:NZ    | 2.31                     | 0.55              |
| 1:A:502:A:O3'   | 12:L:116:LYS:NZ   | 2.38                     | 0.55              |
| 1:A:948:C:N4    | 1:A:1233:G:O6     | 2.25                     | 0.55              |
| 1:A:988:G:O2'   | 1:A:1014:A:N6     | 2.39                     | 0.55              |
| 1:A:1283:U:H2'  | 1:A:1284:C:H6     | 1.72                     | 0.55              |
| 1:A:1527:U:H2'  | 1:A:1528:U:C6     | 2.41                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:132:ARG:O    | 3:C:136:ARG:HG3  | 2.06                     | 0.55              |
| 9:I:5:GLN:OE1    | 9:I:6:TYR:N      | 2.39                     | 0.55              |
| 22:X:36:LEU:HB3  | 22:X:74:LEU:HG   | 1.87                     | 0.55              |
| 1:A:456:A:H2'    | 1:A:457:G:C8     | 2.42                     | 0.55              |
| 1:A:664:G:N2     | 1:A:741:G:H1     | 1.97                     | 0.55              |
| 1:A:921:U:H5''   | 1:A:1081:A:O3'   | 2.07                     | 0.55              |
| 1:A:984:C:H2'    | 1:A:985:C:C6     | 2.42                     | 0.55              |
| 1:A:1283:U:H2'   | 1:A:1284:C:C6    | 2.42                     | 0.55              |
| 11:K:127:ARG:NE  | 21:V:14:GLU:CG   | 2.70                     | 0.55              |
| 18:R:72:ASP:OD1  | 18:R:73:ARG:NH1  | 2.37                     | 0.55              |
| 21:V:65:VAL:HG11 | 21:V:99:TYR:HB2  | 1.89                     | 0.55              |
| 1:A:108:G:OP1    | 1:A:326:G:N2     | 2.32                     | 0.55              |
| 1:A:483:C:H3'    | 1:A:484:G:H8     | 1.72                     | 0.55              |
| 1:A:590:U:H2'    | 1:A:591:U:C6     | 2.41                     | 0.55              |
| 1:A:1071:C:H2'   | 1:A:1072:G:C8    | 2.41                     | 0.55              |
| 1:A:1381:U:C4    | 7:G:78:ARG:HD2   | 2.41                     | 0.55              |
| 4:D:188:ARG:NH1  | 4:D:197:GLU:OE2  | 2.39                     | 0.55              |
| 6:F:2:ARG:O      | 6:F:66:ALA:N     | 2.31                     | 0.55              |
| 7:G:56:LYS:HD3   | 7:G:57:SER:N     | 2.21                     | 0.55              |
| 13:M:40:ALA:O    | 13:M:43:VAL:HG12 | 2.06                     | 0.55              |
| 1:A:13:U:H1'     | 1:A:914:A:H5''   | 1.88                     | 0.55              |
| 1:A:33:A:O2'     | 12:L:29:GLN:OE1  | 2.19                     | 0.55              |
| 1:A:316:C:N3     | 1:A:337:G:N1     | 2.39                     | 0.55              |
| 1:A:1409:C:H2'   | 1:A:1410:A:H8    | 1.70                     | 0.55              |
| 3:C:157:LEU:HD23 | 3:C:164:ARG:O    | 2.06                     | 0.55              |
| 4:D:35:GLU:OE1   | 4:D:35:GLU:N     | 2.39                     | 0.55              |
| 7:G:61:ALA:HA    | 7:G:64:VAL:HB    | 1.89                     | 0.55              |
| 21:V:69:ILE:O    | 21:V:73:GLN:HG2  | 2.06                     | 0.55              |
| 22:X:53:ASP:HA   | 22:X:56:HIS:NE2  | 2.22                     | 0.55              |
| 1:A:1228:C:H41   | 13:M:103:LYS:HG3 | 1.72                     | 0.55              |
| 1:A:1243:C:H2'   | 1:A:1244:G:C8    | 2.42                     | 0.55              |
| 1:A:1342:C:N4    | 1:A:1343:G:O6    | 2.40                     | 0.55              |
| 1:A:1349:A:H1'   | 1:A:1374:A:N6    | 2.22                     | 0.55              |
| 1:A:1356:G:H2'   | 1:A:1357:A:H8    | 1.72                     | 0.55              |
| 3:C:23:PHE:HB2   | 10:J:95:GLY:O    | 2.07                     | 0.55              |
| 4:D:138:SER:OG   | 4:D:141:ASP:OD1  | 2.22                     | 0.55              |
| 5:E:149:SER:N    | 5:E:152:MET:SD   | 2.75                     | 0.55              |
| 7:G:31:MET:SD    | 7:G:34:GLY:HA2   | 2.46                     | 0.55              |
| 7:G:69:VAL:HG11  | 7:G:134:ALA:HB1  | 1.88                     | 0.55              |
| 1:A:25:C:H2'     | 1:A:26:A:C8      | 2.33                     | 0.54              |
| 1:A:322:C:H2'    | 1:A:323:U:O4'    | 2.08                     | 0.54              |

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| Atom-1          | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 1:A:1091:U:H2'  | 1:A:1093:A:OP2    | 2.07                     | 0.54              |
| 1:A:1143:G:C2   | 1:A:1144:G:C4     | 2.95                     | 0.54              |
| 1:A:1346:A:C5   | 1:A:1348:U:C2     | 2.95                     | 0.54              |
| 4:D:13:ARG:HD2  | 4:D:32:CYS:HB2    | 1.88                     | 0.54              |
| 5:E:13:GLU:N    | 5:E:13:GLU:OE1    | 2.40                     | 0.54              |
| 5:E:17:ALA:HB3  | 5:E:36:LEU:HD12   | 1.88                     | 0.54              |
| 13:M:90:ARG:HB2 | 13:M:97:VAL:HG12  | 1.88                     | 0.54              |
| 1:A:355:C:O2'   | 1:A:388:G:N3      | 2.23                     | 0.54              |
| 1:A:794:A:N7    | 1:A:795:C:N4      | 2.54                     | 0.54              |
| 1:A:1002:G:H3'  | 1:A:1003:G:H8     | 1.73                     | 0.54              |
| 1:A:1040:U:H2'  | 1:A:1041:G:H8     | 1.72                     | 0.54              |
| 1:A:1263:C:H2'  | 1:A:1264:U:C6     | 2.42                     | 0.54              |
| 6:F:105:ALA:C   | 6:F:106:LYS:HD3   | 2.32                     | 0.54              |
| 1:A:784:A:H2'   | 1:A:785:G:C8      | 2.42                     | 0.54              |
| 1:A:939:G:N1    | 1:A:1344:C:N3     | 2.54                     | 0.54              |
| 5:E:160:SER:OG  | 5:E:162:GLU:OE1   | 2.22                     | 0.54              |
| 17:Q:11:ARG:C   | 17:Q:23:VAL:HG23  | 2.32                     | 0.54              |
| 1:A:33:A:N3     | 12:L:29:GLN:NE2   | 2.54                     | 0.54              |
| 1:A:298:A:H2'   | 1:A:299:G:O4'     | 2.07                     | 0.54              |
| 1:A:329:A:O2'   | 1:A:332:G:N7      | 2.36                     | 0.54              |
| 1:A:410:G:H1'   | 1:A:433:G:N1      | 2.22                     | 0.54              |
| 1:A:675:A:C4    | 1:A:676:A:C8      | 2.95                     | 0.54              |
| 1:A:977:A:O3'   | 1:A:980:C:N4      | 2.41                     | 0.54              |
| 3:C:24:ALA:HB3  | 3:C:29:PHE:HD1    | 1.71                     | 0.54              |
| 9:I:51:PRO:HG3  | 9:I:80:ARG:HG3    | 1.89                     | 0.54              |
| 21:V:32:LEU:CD1 | 21:V:33:GLY:N     | 2.63                     | 0.54              |
| 1:A:321:A:H2'   | 1:A:322:C:C6      | 2.42                     | 0.54              |
| 1:A:669:G:N1    | 1:A:737:C:N3      | 2.45                     | 0.54              |
| 1:A:860:A:H2'   | 1:A:861:G:O4'     | 2.07                     | 0.54              |
| 1:A:864:A:H5''  | 5:E:90:THR:HB     | 1.90                     | 0.54              |
| 1:A:899:C:H2'   | 1:A:900:A:O4'     | 2.07                     | 0.54              |
| 1:A:1206:G:H2'  | 1:A:1207:2MG:H8   | 1.72                     | 0.54              |
| 1:A:1263:C:H2'  | 1:A:1264:U:H6     | 1.73                     | 0.54              |
| 1:A:1346:A:H62  | 1:A:1375:A:H62    | 1.56                     | 0.54              |
| 1:A:1381:U:H1'  | 7:G:80:VAL:HA     | 1.90                     | 0.54              |
| 1:A:1433:A:H2'  | 1:A:1434:A:C8     | 2.43                     | 0.54              |
| 3:C:131:ARG:HA  | 3:C:134:MET:HE3   | 1.89                     | 0.54              |
| 5:E:13:GLU:HB3  | 5:E:39:VAL:HG12   | 1.87                     | 0.54              |
| 7:G:150:ALA:O   | 21:V:104:VAL:HG21 | 2.08                     | 0.54              |
| 18:R:42:SER:OG  | 18:R:47:THR:N     | 2.41                     | 0.54              |
| 1:A:236:A:H2'   | 1:A:237:G:H8      | 1.70                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:422:C:H4'    | 1:A:423:G:C4     | 2.42                     | 0.54              |
| 1:A:604:G:H2'    | 1:A:605:U:O4'    | 2.08                     | 0.54              |
| 1:A:717:U:O2'    | 1:A:734:G:O4'    | 2.23                     | 0.54              |
| 1:A:719:C:H1'    | 18:R:38:LYS:HE2  | 1.89                     | 0.54              |
| 1:A:841:C:H42    | 1:A:844:G:P      | 2.31                     | 0.54              |
| 1:A:1386:G:H2'   | 1:A:1387:G:C8    | 2.42                     | 0.54              |
| 1:A:1488:G:O2'   | 22:X:32:ARG:NH2  | 2.40                     | 0.54              |
| 3:C:72:ARG:CZ    | 3:C:75:ILE:HG13  | 2.38                     | 0.54              |
| 7:G:77:SER:OG    | 7:G:84:THR:OG1   | 2.16                     | 0.54              |
| 8:H:75:ILE:O     | 8:H:76:GLN:NE2   | 2.40                     | 0.54              |
| 1:A:211:G:C2     | 1:A:212:G:C8     | 2.95                     | 0.54              |
| 1:A:690:G:H2'    | 1:A:691:G:C8     | 2.43                     | 0.54              |
| 1:A:939:G:O2'    | 1:A:1376:U:O4'   | 2.19                     | 0.54              |
| 1:A:1303:C:H2'   | 1:A:1304:G:O4'   | 2.08                     | 0.54              |
| 1:A:1342:C:H5''  | 9:I:129:LYS:HE2  | 1.88                     | 0.54              |
| 7:G:133:THR:HA   | 7:G:136:LYS:HB3  | 1.90                     | 0.54              |
| 8:H:5:ASP:OD2    | 8:H:8:ALA:N      | 2.26                     | 0.54              |
| 10:J:91:ASP:OD1  | 10:J:91:ASP:N    | 2.33                     | 0.54              |
| 14:N:40:ASP:O    | 14:N:44:ALA:CB   | 2.56                     | 0.54              |
| 22:X:6:GLN:CD    | 22:X:6:GLN:H     | 2.16                     | 0.54              |
| 22:X:36:LEU:H    | 22:X:74:LEU:HG   | 1.71                     | 0.54              |
| 1:A:379:C:H2'    | 1:A:380:G:C8     | 2.43                     | 0.54              |
| 1:A:487:A:H3'    | 1:A:488:C:H6     | 1.72                     | 0.54              |
| 1:A:680:C:N4     | 1:A:710:G:O6     | 2.34                     | 0.54              |
| 1:A:706:A:H2'    | 1:A:707:U:O4'    | 2.08                     | 0.54              |
| 1:A:737:C:H2'    | 1:A:738:C:H6     | 1.72                     | 0.54              |
| 1:A:882:C:H2'    | 1:A:883:C:C6     | 2.42                     | 0.54              |
| 1:A:891:U:H2'    | 1:A:892:A:H8     | 1.73                     | 0.54              |
| 1:A:1118:U:OP1   | 9:I:11:ARG:NH1   | 2.41                     | 0.54              |
| 1:A:117:G:N2     | 1:A:313:A:O2'    | 2.41                     | 0.54              |
| 1:A:155:A:H2'    | 1:A:156:C:C6     | 2.43                     | 0.54              |
| 1:A:289:G:H2'    | 1:A:290:C:C6     | 2.43                     | 0.54              |
| 1:A:371:A:O2'    | 1:A:373:A:N7     | 2.32                     | 0.54              |
| 1:A:445:G:C2     | 1:A:490:C:C2     | 2.96                     | 0.54              |
| 1:A:939:G:H4'    | 7:G:102:ARG:HH22 | 1.73                     | 0.54              |
| 1:A:1084:G:H1'   | 1:A:1103:C:H41   | 1.72                     | 0.54              |
| 2:B:173:ILE:HG23 | 2:B:183:VAL:HG21 | 1.89                     | 0.54              |
| 6:F:4:TYR:N      | 6:F:64:VAL:O     | 2.41                     | 0.54              |
| 1:A:27:G:H2'     | 1:A:28:A:O4'     | 2.08                     | 0.54              |
| 1:A:94:G:H5'     | 1:A:95:C:C5      | 2.43                     | 0.54              |
| 1:A:781:A:N7     | 1:A:801:U:O4     | 2.40                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:845:A:C5     | 1:A:846:G:C8     | 2.95                     | 0.54              |
| 1:A:878:A:P      | 8:H:80:ARG:HH21  | 2.31                     | 0.54              |
| 1:A:1179:A:H2'   | 1:A:1180:A:O4'   | 2.08                     | 0.54              |
| 3:C:129:MET:HB2  | 3:C:132:ARG:NE   | 2.19                     | 0.54              |
| 5:E:94:VAL:HA    | 5:E:127:ALA:HA   | 1.89                     | 0.54              |
| 1:A:6:G:O2'      | 1:A:7:A:H8       | 1.91                     | 0.53              |
| 1:A:27:G:C6      | 1:A:28:A:C5      | 2.97                     | 0.53              |
| 1:A:290:C:H2'    | 1:A:291:U:H6     | 1.72                     | 0.53              |
| 4:D:22:LYS:NZ    | 4:D:31:LYS:HE3   | 2.22                     | 0.53              |
| 9:I:7:TYR:CA     | 9:I:19:VAL:O     | 2.51                     | 0.53              |
| 9:I:21:ILE:HD12  | 9:I:61:LEU:HD12  | 1.88                     | 0.53              |
| 16:P:56:ARG:HH21 | 16:P:59:HIS:CD2  | 2.25                     | 0.53              |
| 1:A:167:A:N6     | 1:A:168:G:O6     | 2.41                     | 0.53              |
| 1:A:251:G:N1     | 1:A:266:G:C6     | 2.77                     | 0.53              |
| 1:A:1015:G:H2'   | 1:A:1016:A:C8    | 2.43                     | 0.53              |
| 1:A:1076:U:H2'   | 1:A:1077:G:C8    | 2.42                     | 0.53              |
| 1:A:1187:G:N3    | 14:N:100:SER:OG  | 2.40                     | 0.53              |
| 3:C:110:GLU:CD   | 3:C:110:GLU:H    | 2.16                     | 0.53              |
| 7:G:20:SER:OG    | 7:G:21:GLU:N     | 2.39                     | 0.53              |
| 12:L:42:PRO:HD2  | 12:L:48:ALA:H    | 1.72                     | 0.53              |
| 1:A:690:G:H2'    | 1:A:691:G:H8     | 1.72                     | 0.53              |
| 1:A:1090:U:H2'   | 1:A:1091:U:H6    | 1.74                     | 0.53              |
| 4:D:99:ASP:OD1   | 4:D:100:ASN:N    | 2.40                     | 0.53              |
| 5:E:111:MET:O    | 5:E:115:LEU:HG   | 2.08                     | 0.53              |
| 12:L:113:ALA:HB1 | 12:L:116:LYS:HZ3 | 1.73                     | 0.53              |
| 14:N:31:ILE:O    | 14:N:41:ARG:NE   | 2.36                     | 0.53              |
| 21:V:24:GLN:HG3  | 21:V:25:ARG:HG3  | 1.89                     | 0.53              |
| 21:V:32:LEU:HD12 | 21:V:32:LEU:C    | 2.34                     | 0.53              |
| 22:X:37:ARG:HA   | 22:X:75:GLU:HG2  | 1.90                     | 0.53              |
| 1:A:4:U:H2'      | 1:A:5:U:H2'      | 1.88                     | 0.53              |
| 1:A:671:G:O2'    | 6:F:79:ARG:NH2   | 2.41                     | 0.53              |
| 1:A:824:G:C6     | 1:A:877:G:C6     | 2.97                     | 0.53              |
| 1:A:843:U:H2'    | 1:A:844:G:H8     | 1.73                     | 0.53              |
| 1:A:1014:A:C6    | 1:A:1015:G:C6    | 2.96                     | 0.53              |
| 1:A:1516:2MG:O2' | 1:A:1518:MA6:N7  | 2.40                     | 0.53              |
| 6:F:82:ASP:OD1   | 6:F:82:ASP:N     | 2.41                     | 0.53              |
| 14:N:64:CYS:HB3  | 14:N:69:ARG:N    | 2.23                     | 0.53              |
| 7:G:15:ASP:OD2   | 7:G:18:PHE:N     | 2.42                     | 0.53              |
| 15:O:2:SER:OG    | 15:O:3:LEU:N     | 2.42                     | 0.53              |
| 1:A:150:U:C4     | 1:A:170:U:C4     | 2.97                     | 0.53              |
| 1:A:410:G:H2'    | 1:A:429:U:C5     | 2.43                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:424:G:C2     | 1:A:425:G:C4     | 2.96                     | 0.53              |
| 1:A:471:U:H2'    | 1:A:472:U:C6     | 2.43                     | 0.53              |
| 1:A:687:A:N1     | 1:A:700:G:O2'    | 2.34                     | 0.53              |
| 1:A:693:G:H2'    | 1:A:694:A:H8     | 1.74                     | 0.53              |
| 1:A:1068:G:H1'   | 1:A:1191:A:H2    | 1.74                     | 0.53              |
| 1:A:1096:C:H2'   | 1:A:1097:C:C6    | 2.43                     | 0.53              |
| 1:A:1486:G:H3'   | 1:A:1487:G:H8    | 1.74                     | 0.53              |
| 14:N:96:LEU:HD12 | 14:N:97:LYS:H    | 1.74                     | 0.53              |
| 1:A:664:G:P      | 18:R:53:ARG:HH21 | 2.32                     | 0.53              |
| 1:A:1288:A:H2'   | 1:A:1289:A:C8    | 2.44                     | 0.53              |
| 7:G:42:ILE:HD13  | 7:G:116:MET:HG2  | 1.90                     | 0.53              |
| 7:G:56:LYS:HD3   | 7:G:57:SER:H     | 1.74                     | 0.53              |
| 7:G:137:LYS:HA   | 7:G:140:ASP:OD2  | 2.07                     | 0.53              |
| 10:J:45:ARG:O    | 10:J:68:ARG:HA   | 2.09                     | 0.53              |
| 1:A:381:C:H2'    | 1:A:382:A:O4'    | 2.09                     | 0.53              |
| 1:A:879:C:H2'    | 1:A:880:C:H6     | 1.73                     | 0.53              |
| 1:A:1027:C:H2'   | 1:A:1028:C:C6    | 2.43                     | 0.53              |
| 12:L:44:LYS:CB   | 22:X:72:TYR:HB3  | 2.38                     | 0.53              |
| 14:N:33:ASP:O    | 14:N:41:ARG:NH2  | 2.41                     | 0.53              |
| 15:O:43:PHE:HE2  | 15:O:56:LEU:HD13 | 1.74                     | 0.53              |
| 1:A:122:G:H2'    | 1:A:123:U:C6     | 2.44                     | 0.53              |
| 1:A:499:A:C6     | 1:A:547:A:C8     | 2.97                     | 0.53              |
| 1:A:620:C:H1'    | 4:D:132:ILE:HG21 | 1.91                     | 0.53              |
| 1:A:844:G:H3'    | 1:A:845:A:C8     | 2.39                     | 0.53              |
| 7:G:63:GLU:HA    | 7:G:66:LEU:HG    | 1.90                     | 0.53              |
| 8:H:34:VAL:HG13  | 8:H:49:PHE:HE2   | 1.74                     | 0.53              |
| 9:I:98:LEU:HD12  | 9:I:103:PHE:HB2  | 1.90                     | 0.53              |
| 10:J:92:LEU:HB3  | 10:J:96:VAL:HG11 | 1.90                     | 0.53              |
| 1:A:35:G:O3'     | 12:L:118:GLY:HA2 | 2.09                     | 0.53              |
| 1:A:86:G:H1'     | 1:A:88:U:O4      | 2.09                     | 0.53              |
| 1:A:212:G:C6     | 1:A:213:G:C5     | 2.97                     | 0.53              |
| 1:A:363:A:H2'    | 1:A:364:A:C8     | 2.43                     | 0.53              |
| 1:A:454:G:H2'    | 1:A:455:G:C8     | 2.44                     | 0.53              |
| 1:A:526:C:C4     | 1:A:527:G7M:H1'  | 2.44                     | 0.53              |
| 1:A:1077:G:N2    | 1:A:1079:G:H3'   | 2.24                     | 0.53              |
| 1:A:1218:C:H2'   | 1:A:1219:A:H8    | 1.72                     | 0.53              |
| 5:E:151:GLU:H    | 5:E:151:GLU:CD   | 2.17                     | 0.53              |
| 8:H:106:THR:HA   | 8:H:123:GLY:HA3  | 1.90                     | 0.53              |
| 13:M:15:ALA:O    | 13:M:19:LEU:HG   | 2.09                     | 0.53              |
| 19:S:62:VAL:HA   | 19:S:66:MET:HE2  | 1.90                     | 0.53              |
| 1:A:901:A:C5     | 1:A:902:G:H1'    | 2.43                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:938:A:O3'    | 7:G:95:ARG:NH2   | 2.42                     | 0.52              |
| 1:A:1255:G:OP2   | 10:J:45:ARG:NH2  | 2.39                     | 0.52              |
| 6:F:2:ARG:N      | 6:F:66:ALA:O     | 2.31                     | 0.52              |
| 21:V:32:LEU:HD12 | 21:V:33:GLY:CA   | 2.38                     | 0.52              |
| 1:A:1:A:H3'      | 1:A:2:A:C8       | 2.43                     | 0.52              |
| 1:A:542:G:H2'    | 1:A:543:U:C6     | 2.45                     | 0.52              |
| 1:A:617:G:N2     | 1:A:623:C:O2     | 2.36                     | 0.52              |
| 1:A:665:A:N3     | 1:A:732:C:H2'    | 2.23                     | 0.52              |
| 1:A:701:U:H5''   | 1:A:702:A:H3'    | 1.92                     | 0.52              |
| 1:A:897:C:H2'    | 1:A:898:G:H8     | 1.74                     | 0.52              |
| 11:K:42:LEU:CD1  | 11:K:77:TYR:HE2  | 2.19                     | 0.52              |
| 1:A:417:G:H2'    | 1:A:418:C:C6     | 2.44                     | 0.52              |
| 1:A:716:A:C6     | 1:A:717:U:C4     | 2.97                     | 0.52              |
| 1:A:1112:C:O2'   | 3:C:179:ARG:NE   | 2.42                     | 0.52              |
| 1:A:1124:G:N2    | 1:A:1149:C:O2    | 2.42                     | 0.52              |
| 1:A:1489:G:C6    | 1:A:1490:U:C2    | 2.98                     | 0.52              |
| 8:H:10:MET:HG3   | 8:H:27:MET:HE1   | 1.90                     | 0.52              |
| 10:J:24:GLU:O    | 10:J:27:GLU:HG3  | 2.09                     | 0.52              |
| 14:N:4:GLN:HA    | 14:N:7:LYS:HE2   | 1.91                     | 0.52              |
| 16:P:71:VAL:O    | 16:P:75:ILE:HD12 | 2.09                     | 0.52              |
| 16:P:74:LEU:O    | 16:P:77:GLU:HG3  | 2.10                     | 0.52              |
| 17:Q:58:VAL:HG12 | 17:Q:79:VAL:HG23 | 1.91                     | 0.52              |
| 1:A:75:G:H3'     | 1:A:76:G:C8      | 2.45                     | 0.52              |
| 1:A:151:A:H3'    | 1:A:152:A:H8     | 1.74                     | 0.52              |
| 1:A:160:A:H8     | 1:A:160:A:OP1    | 1.93                     | 0.52              |
| 1:A:540:G:C4     | 1:A:541:G:C8     | 2.97                     | 0.52              |
| 1:A:1130:A:H5''  | 9:I:64:TYR:CE2   | 2.44                     | 0.52              |
| 1:A:1178:G:H21   | 1:A:1180:A:H3'   | 1.74                     | 0.52              |
| 1:A:1349:A:H3'   | 1:A:1350:A:H8    | 1.75                     | 0.52              |
| 2:B:23:TRP:HB3   | 2:B:39:HIS:CD2   | 2.45                     | 0.52              |
| 5:E:61:GLN:O     | 5:E:65:GLU:N     | 2.29                     | 0.52              |
| 6:F:22:ILE:O     | 6:F:26:THR:HG23  | 2.09                     | 0.52              |
| 7:G:12:ILE:HD11  | 7:G:21:GLU:HB3   | 1.91                     | 0.52              |
| 21:V:58:ASN:HB3  | 21:V:64:ALA:CB   | 2.40                     | 0.52              |
| 1:A:227:G:H2'    | 1:A:228:A:O4'    | 2.10                     | 0.52              |
| 1:A:264:C:H2'    | 1:A:265:G:H8     | 1.74                     | 0.52              |
| 1:A:459:A:H2'    | 1:A:460:A:C8     | 2.45                     | 0.52              |
| 1:A:620:C:H2'    | 1:A:621:A:O4'    | 2.09                     | 0.52              |
| 1:A:680:C:C2     | 1:A:711:G:C2     | 2.98                     | 0.52              |
| 1:A:1113:C:H2'   | 1:A:1114:C:C6    | 2.44                     | 0.52              |
| 1:A:1225:A:O5'   | 13:M:102:THR:OG1 | 2.20                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1230:C:H2'   | 1:A:1231:G:H8     | 1.74                     | 0.52              |
| 1:A:1268:G:O6    | 1:A:1269:A:N6     | 2.43                     | 0.52              |
| 1:A:113:G:H2'    | 1:A:114:U:C6      | 2.45                     | 0.52              |
| 1:A:342:C:C2     | 1:A:348:G:C2      | 2.97                     | 0.52              |
| 1:A:716:A:H2'    | 1:A:717:U:C6      | 2.45                     | 0.52              |
| 1:A:827:U:H2'    | 1:A:870:U:O4      | 2.10                     | 0.52              |
| 1:A:1161:C:H2'   | 1:A:1162:C:C6     | 2.44                     | 0.52              |
| 1:A:1246:A:C6    | 1:A:1292:G:C6     | 2.98                     | 0.52              |
| 1:A:1291:U:OP1   | 7:G:37:SER:OG     | 2.24                     | 0.52              |
| 1:A:1347:G:H22   | 1:A:1373:G:H3'    | 1.74                     | 0.52              |
| 12:L:40:THR:HG22 | 12:L:41:THR:H     | 1.74                     | 0.52              |
| 17:Q:14:SER:HA   | 17:Q:55:ILE:HG22  | 1.92                     | 0.52              |
| 22:X:136:PHE:HB3 | 22:X:141:ILE:HD11 | 1.91                     | 0.52              |
| 1:A:122:G:C2     | 1:A:123:U:C2      | 2.97                     | 0.52              |
| 1:A:855:U:H2'    | 1:A:856:C:H6      | 1.74                     | 0.52              |
| 1:A:895:G:H2'    | 1:A:896:C:C6      | 2.44                     | 0.52              |
| 1:A:955:U:O4'    | 1:A:1227:A:N6     | 2.43                     | 0.52              |
| 3:C:102:ASN:OD1  | 3:C:103:ILE:N     | 2.43                     | 0.52              |
| 7:G:67:GLU:OE1   | 7:G:70:ARG:NE     | 2.42                     | 0.52              |
| 9:I:115:LYS:HB2  | 9:I:118:LEU:HD12  | 1.92                     | 0.52              |
| 10:J:6:ILE:HD13  | 10:J:79:PRO:HB3   | 1.90                     | 0.52              |
| 12:L:35:THR:N    | 12:L:54:ARG:O     | 2.43                     | 0.52              |
| 14:N:39:GLU:HA   | 14:N:42:TRP:HB3   | 1.90                     | 0.52              |
| 18:R:18:VAL:HG23 | 18:R:18:VAL:O     | 2.09                     | 0.52              |
| 20:T:60:ARG:HA   | 20:T:63:ALA:HB3   | 1.91                     | 0.52              |
| 1:A:296:U:O2'    | 1:A:556:C:O2      | 2.26                     | 0.52              |
| 1:A:484:G:C6     | 1:A:486:U:H1'     | 2.45                     | 0.52              |
| 1:A:833:G:H2'    | 1:A:834:U:O4'     | 2.10                     | 0.52              |
| 1:A:836:G:C5     | 1:A:851:G:C6      | 2.98                     | 0.52              |
| 1:A:1248:A:C6    | 1:A:1290:G:C4     | 2.98                     | 0.52              |
| 1:A:1301:U:OP2   | 1:A:1303:C:N4     | 2.40                     | 0.52              |
| 1:A:1308:U:P     | 13:M:109:ARG:HH12 | 2.33                     | 0.52              |
| 3:C:167:TRP:HZ3  | 3:C:169:ARG:HB2   | 1.75                     | 0.52              |
| 7:G:65:ALA:HA    | 7:G:128:ALA:HA    | 1.91                     | 0.52              |
| 10:J:4:GLN:HG3   | 10:J:77:VAL:O     | 2.10                     | 0.52              |
| 10:J:15:HIS:HB3  | 10:J:70:HIS:CD2   | 2.45                     | 0.52              |
| 11:K:89:PRO:HG3  | 21:V:24:GLN:NE2   | 2.24                     | 0.52              |
| 1:A:219:U:H2'    | 1:A:220:G:H8      | 1.73                     | 0.52              |
| 1:A:463:U:H2'    | 1:A:464:U:C2      | 2.44                     | 0.52              |
| 1:A:476:U:H2'    | 1:A:477:C:C6      | 2.43                     | 0.52              |
| 1:A:624:C:H4'    | 16:P:10:GLY:HA2   | 1.90                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:624:C:H2'    | 1:A:625:U:C6     | 2.44                     | 0.52              |
| 1:A:631:C:H3'    | 1:A:632:U:H5'    | 1.90                     | 0.52              |
| 1:A:958:A:C2     | 19:S:55:ARG:HB3  | 2.44                     | 0.52              |
| 1:A:958:A:O2'    | 1:A:959:A:H5'    | 2.09                     | 0.52              |
| 2:B:31:ILE:HD13  | 2:B:39:HIS:CE1   | 2.44                     | 0.52              |
| 7:G:88:PRO:HB3   | 7:G:145:ALA:HB1  | 1.90                     | 0.52              |
| 11:K:93:ARG:NH1  | 11:K:97:ILE:HG13 | 2.24                     | 0.52              |
| 19:S:4:SER:OG    | 19:S:5:LEU:N     | 2.43                     | 0.52              |
| 22:X:89:GLU:O    | 22:X:93:ARG:HG3  | 2.10                     | 0.52              |
| 1:A:7:A:H2'      | 5:E:124:LEU:HD11 | 1.91                     | 0.52              |
| 1:A:127:G:C2     | 1:A:128:G:H1'    | 2.44                     | 0.52              |
| 1:A:137:U:H2'    | 1:A:138:G:H8     | 1.75                     | 0.52              |
| 1:A:155:A:H2'    | 1:A:156:C:H6     | 1.74                     | 0.52              |
| 1:A:455:G:N1     | 1:A:477:C:O2     | 2.39                     | 0.52              |
| 1:A:520:A:H5'    | 12:L:49:LEU:HG   | 1.92                     | 0.52              |
| 1:A:789:U:N3     | 1:A:792:A:H5''   | 2.25                     | 0.52              |
| 1:A:843:U:C2'    | 1:A:844:G:H8     | 2.23                     | 0.52              |
| 1:A:983:A:OP2    | 1:A:984:C:N4     | 2.37                     | 0.52              |
| 1:A:1175:G:H2'   | 1:A:1176:A:C8    | 2.45                     | 0.52              |
| 1:A:1264:U:H2'   | 1:A:1265:C:C6    | 2.45                     | 0.52              |
| 2:B:72:THR:HG22  | 2:B:94:HIS:O     | 2.10                     | 0.52              |
| 3:C:129:MET:O    | 3:C:132:ARG:HG2  | 2.09                     | 0.52              |
| 9:I:11:ARG:HB2   | 9:I:106:ARG:HE   | 1.75                     | 0.52              |
| 9:I:24:GLY:H     | 9:I:60:LYS:C     | 2.15                     | 0.52              |
| 9:I:88:MET:HE3   | 9:I:95:ARG:HD3   | 1.91                     | 0.52              |
| 22:X:102:VAL:CG1 | 22:X:143:LYS:HB3 | 2.40                     | 0.52              |
| 1:A:181:A:N6     | 1:A:195:A:C8     | 2.77                     | 0.51              |
| 1:A:206:C:C2     | 1:A:207:C:C5     | 2.97                     | 0.51              |
| 1:A:419:C:C4     | 1:A:420:U:C4     | 2.98                     | 0.51              |
| 1:A:638:U:H2'    | 1:A:639:G:O4'    | 2.09                     | 0.51              |
| 1:A:904:U:H2'    | 1:A:905:U:H6     | 1.74                     | 0.51              |
| 1:A:978:A:C6     | 1:A:1318:A:C6    | 2.98                     | 0.51              |
| 1:A:1312:G:N1    | 1:A:1325:C:O2    | 2.37                     | 0.51              |
| 1:A:1348:U:C2    | 1:A:1349:A:C8    | 2.97                     | 0.51              |
| 5:E:11:LEU:HD13  | 5:E:39:VAL:HB    | 1.93                     | 0.51              |
| 5:E:111:MET:HA   | 5:E:114:VAL:HG12 | 1.91                     | 0.51              |
| 14:N:74:LEU:O    | 14:N:77:PHE:N    | 2.39                     | 0.51              |
| 1:A:51:A:N7      | 1:A:114:U:O2'    | 2.42                     | 0.51              |
| 1:A:203:G:C6     | 1:A:215:C:C4     | 2.98                     | 0.51              |
| 1:A:284:C:H2'    | 1:A:285:C:C6     | 2.45                     | 0.51              |
| 1:A:483:C:C2     | 1:A:484:G:N7     | 2.78                     | 0.51              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:666:G:C4     | 1:A:667:G:C8      | 2.98                     | 0.51              |
| 1:A:676:A:H2'    | 1:A:677:U:C6      | 2.45                     | 0.51              |
| 1:A:878:A:P      | 8:H:80:ARG:HE     | 2.33                     | 0.51              |
| 1:A:1034:G:H2'   | 1:A:1035:A:C8     | 2.45                     | 0.51              |
| 1:A:1178:G:O5'   | 9:I:95:ARG:NH2    | 2.44                     | 0.51              |
| 1:A:1255:G:O2'   | 1:A:1258:G:H1'    | 2.10                     | 0.51              |
| 1:A:1427:C:H2'   | 1:A:1428:A:H8     | 1.76                     | 0.51              |
| 3:C:33:LEU:HD22  | 14:N:93:ILE:HD11  | 1.91                     | 0.51              |
| 8:H:85:ILE:O     | 8:H:124:GLU:HG3   | 2.10                     | 0.51              |
| 11:K:88:GLY:N    | 11:K:114:THR:HG22 | 2.21                     | 0.51              |
| 14:N:5:SER:HB3   | 14:N:9:ARG:HH21   | 1.76                     | 0.51              |
| 1:A:374:A:N1     | 1:A:390:U:O2'     | 2.39                     | 0.51              |
| 1:A:419:C:H2'    | 1:A:420:U:C6      | 2.46                     | 0.51              |
| 1:A:987:G:H2'    | 1:A:988:G:C8      | 2.44                     | 0.51              |
| 2:B:81:LYS:HG3   | 2:B:91:PHE:CZ     | 2.45                     | 0.51              |
| 3:C:62:LYS:NZ    | 3:C:97:VAL:HG13   | 2.26                     | 0.51              |
| 4:D:22:LYS:HE3   | 4:D:31:LYS:HD2    | 1.92                     | 0.51              |
| 5:E:162:GLU:HA   | 5:E:165:LEU:HG    | 1.92                     | 0.51              |
| 7:G:63:GLU:O     | 7:G:67:GLU:HG2    | 2.10                     | 0.51              |
| 16:P:60:TRP:HB3  | 16:P:65:ALA:HB2   | 1.92                     | 0.51              |
| 21:V:76:SER:O    | 21:V:80:ARG:HG3   | 2.11                     | 0.51              |
| 21:V:77:GLY:O    | 21:V:80:ARG:HB2   | 2.09                     | 0.51              |
| 22:X:24:VAL:HG11 | 22:X:79:PRO:HG3   | 1.92                     | 0.51              |
| 1:A:287:U:H2'    | 1:A:288:A:H8      | 1.74                     | 0.51              |
| 1:A:332:G:O3'    | 20:T:2:ALA:N      | 2.44                     | 0.51              |
| 1:A:665:A:C5     | 1:A:733:G:C5      | 2.98                     | 0.51              |
| 1:A:861:G:H2'    | 1:A:862:C:C6      | 2.45                     | 0.51              |
| 5:E:81:LEU:HB3   | 5:E:147:MET:SD    | 2.51                     | 0.51              |
| 1:A:208:U:C2     | 1:A:210:C:N3      | 2.78                     | 0.51              |
| 1:A:302:G:H2'    | 1:A:303:A:H8      | 1.75                     | 0.51              |
| 1:A:364:A:H8     | 1:A:364:A:O5'     | 1.93                     | 0.51              |
| 1:A:703:G:H5''   | 1:A:704:A:O4'     | 2.11                     | 0.51              |
| 1:A:821:G:O6     | 1:A:880:C:N4      | 2.44                     | 0.51              |
| 1:A:852:G:C6     | 1:A:853:C:C4      | 2.98                     | 0.51              |
| 1:A:893:C:H42    | 1:A:906:A:H2      | 1.56                     | 0.51              |
| 3:C:47:LEU:HB3   | 3:C:50:ALA:HB3    | 1.92                     | 0.51              |
| 3:C:74:GLY:O     | 3:C:78:GLY:N      | 2.44                     | 0.51              |
| 17:Q:12:VAL:HA   | 17:Q:23:VAL:HG23  | 1.93                     | 0.51              |
| 1:A:24:U:H2'     | 1:A:25:C:C6       | 2.45                     | 0.51              |
| 1:A:459:A:H2'    | 1:A:460:A:H8      | 1.76                     | 0.51              |
| 1:A:465:A:H3'    | 1:A:466:A:H8      | 1.75                     | 0.51              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:542:G:H2'    | 1:A:543:U:H6    | 1.76                     | 0.51              |
| 1:A:701:U:H1'    | 1:A:703:G:C6    | 2.45                     | 0.51              |
| 1:A:765:G:C6     | 1:A:812:G:C4    | 2.99                     | 0.51              |
| 1:A:939:G:OP1    | 7:G:102:ARG:NH1 | 2.35                     | 0.51              |
| 1:A:949:A:O2'    | 1:A:971:G:O6    | 2.19                     | 0.51              |
| 1:A:1213:A:C8    | 1:A:1215:G:C5   | 2.99                     | 0.51              |
| 1:A:1238:A:H5'   | 1:A:1336:C:H41  | 1.75                     | 0.51              |
| 1:A:1248:A:H2'   | 1:A:1249:C:C6   | 2.46                     | 0.51              |
| 1:A:1269:A:N3    | 1:A:1326:U:H1'  | 2.25                     | 0.51              |
| 7:G:67:GLU:HA    | 7:G:70:ARG:HG2  | 1.91                     | 0.51              |
| 7:G:92:ARG:HG3   | 7:G:94:VAL:HG22 | 1.92                     | 0.51              |
| 1:A:375:U:H2'    | 1:A:376:G:O4'   | 2.10                     | 0.51              |
| 1:A:674:G:C2     | 1:A:675:A:C5    | 2.99                     | 0.51              |
| 1:A:1014:A:H2'   | 1:A:1015:G:O4'  | 2.11                     | 0.51              |
| 1:A:1041:G:H2'   | 1:A:1042:A:C8   | 2.46                     | 0.51              |
| 1:A:1068:G:C2    | 1:A:1069:C:C2   | 2.98                     | 0.51              |
| 1:A:1144:G:H21   | 1:A:1146:A:H62  | 1.58                     | 0.51              |
| 1:A:1190:G:OP1   | 3:C:5:VAL:N     | 2.43                     | 0.51              |
| 1:A:1394:A:O2'   | 1:A:1395:C:O5'  | 2.26                     | 0.51              |
| 4:D:50:ASP:HA    | 4:D:53:VAL:HG22 | 1.93                     | 0.51              |
| 10:J:48:ARG:HH11 | 10:J:66:GLU:HG3 | 1.76                     | 0.51              |
| 19:S:21:LYS:O    | 19:S:25:SER:OG  | 2.16                     | 0.51              |
| 21:V:15:MET:SD   | 21:V:43:MET:SD  | 3.08                     | 0.51              |
| 1:A:71:A:H61     | 1:A:99:C:H1'    | 1.76                     | 0.51              |
| 1:A:190:A:C2     | 1:A:191:G:H1'   | 2.46                     | 0.51              |
| 1:A:646:G:C2     | 1:A:647:C:C2    | 2.99                     | 0.51              |
| 1:A:781:A:OP2    | 1:A:800:G:N1    | 2.31                     | 0.51              |
| 1:A:1008:U:H2'   | 1:A:1009:U:C6   | 2.46                     | 0.51              |
| 1:A:1339:A:H2'   | 1:A:1340:A:O4'  | 2.11                     | 0.51              |
| 3:C:51:SER:OG    | 3:C:72:ARG:HG2  | 2.11                     | 0.51              |
| 1:A:45:G:H2'     | 1:A:46:G:C8     | 2.44                     | 0.51              |
| 1:A:71:A:O2'     | 1:A:72:A:H8     | 1.94                     | 0.51              |
| 1:A:268:U:H2'    | 1:A:269:C:C6    | 2.46                     | 0.51              |
| 1:A:607:A:C2     | 1:A:608:A:C4    | 2.99                     | 0.51              |
| 1:A:826:C:H1'    | 8:H:16:ASN:HD22 | 1.76                     | 0.51              |
| 1:A:900:A:H2'    | 1:A:901:A:O4'   | 2.11                     | 0.51              |
| 1:A:1112:C:O2    | 3:C:179:ARG:N   | 2.40                     | 0.51              |
| 1:A:1143:G:H2'   | 1:A:1144:G:C8   | 2.46                     | 0.51              |
| 1:A:1238:A:H5'   | 1:A:1336:C:N4   | 2.25                     | 0.51              |
| 6:F:1:MET:HA     | 6:F:67:PRO:HA   | 1.93                     | 0.51              |
| 10:J:9:ARG:HB2   | 10:J:99:GLN:HB3 | 1.92                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 13:M:12:HIS:HA   | 13:M:45:ILE:HB   | 1.91                     | 0.51              |
| 18:R:13:PHE:CE2  | 18:R:55:LEU:HD11 | 2.45                     | 0.51              |
| 21:V:56:PHE:C    | 21:V:58:ASN:H    | 2.18                     | 0.51              |
| 1:A:132:C:C4     | 1:A:133:U:C4     | 2.98                     | 0.51              |
| 1:A:434:U:H2'    | 1:A:435:A:C8     | 2.46                     | 0.51              |
| 1:A:612:C:H2'    | 1:A:613:C:H6     | 1.74                     | 0.51              |
| 1:A:789:U:O2'    | 1:A:790:A:O5'    | 2.29                     | 0.51              |
| 1:A:807:A:H2'    | 1:A:808:C:C6     | 2.45                     | 0.51              |
| 1:A:861:G:N1     | 1:A:868:C:N3     | 2.55                     | 0.51              |
| 1:A:1250:A:H2'   | 1:A:1251:A:H8    | 1.76                     | 0.51              |
| 1:A:1418:A:C5    | 1:A:1419:G:C8    | 2.99                     | 0.51              |
| 2:B:111:ILE:HD13 | 2:B:148:LEU:HD13 | 1.92                     | 0.51              |
| 3:C:116:VAL:O    | 3:C:120:ILE:HG12 | 2.11                     | 0.51              |
| 3:C:131:ARG:HG3  | 3:C:135:LYS:HZ3  | 1.75                     | 0.51              |
| 4:D:50:ASP:O     | 4:D:53:VAL:N     | 2.44                     | 0.51              |
| 5:E:61:GLN:OE1   | 5:E:65:GLU:HB2   | 2.11                     | 0.51              |
| 12:L:43:LYS:HZ1  | 22:X:71:ALA:HB1  | 1.75                     | 0.51              |
| 19:S:47:LEU:H    | 19:S:62:VAL:HG12 | 1.76                     | 0.51              |
| 1:A:39:G:H2'     | 1:A:40:C:C6      | 2.46                     | 0.50              |
| 1:A:120:A:C4     | 1:A:122:G:C5     | 2.99                     | 0.50              |
| 1:A:193:C:C2     | 1:A:194:C:H5     | 2.30                     | 0.50              |
| 1:A:232:G:H1'    | 1:A:262:A:N1     | 2.26                     | 0.50              |
| 1:A:706:A:H2'    | 1:A:707:U:C6     | 2.45                     | 0.50              |
| 1:A:1114:C:O2    | 1:A:1186:G:N2    | 2.19                     | 0.50              |
| 1:A:1256:A:O2'   | 1:A:1278:G:O6    | 2.23                     | 0.50              |
| 3:C:70:THR:OG1   | 3:C:71:ALA:N     | 2.39                     | 0.50              |
| 3:C:132:ARG:HG3  | 3:C:136:ARG:NH1  | 2.26                     | 0.50              |
| 7:G:139:GLU:OE2  | 7:G:143:ARG:CD   | 2.59                     | 0.50              |
| 8:H:10:MET:HG3   | 8:H:27:MET:SD    | 2.51                     | 0.50              |
| 10:J:29:ALA:HB1  | 10:J:34:ALA:HB3  | 1.93                     | 0.50              |
| 11:K:82:LEU:HB2  | 11:K:107:ILE:HA  | 1.93                     | 0.50              |
| 19:S:32:ARG:HG2  | 19:S:33:THR:N    | 2.26                     | 0.50              |
| 20:T:11:ALA:O    | 20:T:14:SER:OG   | 2.23                     | 0.50              |
| 1:A:42:G:C6      | 1:A:43:C:C4      | 2.99                     | 0.50              |
| 1:A:510:A:N3     | 1:A:543:U:H1'    | 2.26                     | 0.50              |
| 1:A:583:A:C5     | 1:A:584:G:C8     | 2.99                     | 0.50              |
| 1:A:833:G:N1     | 1:A:853:C:N3     | 2.42                     | 0.50              |
| 1:A:1198:G:H2'   | 1:A:1199:U:C6    | 2.46                     | 0.50              |
| 1:A:1254:A:N6    | 1:A:1255:G:O6    | 2.44                     | 0.50              |
| 1:A:1343:G:OP1   | 9:I:124:ARG:NH1  | 2.43                     | 0.50              |
| 1:A:1344:C:P     | 9:I:124:ARG:HH21 | 2.35                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:177:THR:OG1  | 3:C:206:GLU:OE2  | 2.29                     | 0.50              |
| 5:E:105:ILE:HD12 | 5:E:123:VAL:HG12 | 1.93                     | 0.50              |
| 12:L:43:LYS:NZ   | 22:X:71:ALA:HB1  | 2.26                     | 0.50              |
| 17:Q:36:LYS:O    | 17:Q:38:ILE:HG12 | 2.11                     | 0.50              |
| 22:X:121:ASP:HB2 | 22:X:124:MET:O   | 2.11                     | 0.50              |
| 1:A:801:U:H2'    | 1:A:802:A:O4'    | 2.11                     | 0.50              |
| 1:A:1379:G:C5    | 1:A:1380:U:C4    | 3.00                     | 0.50              |
| 4:D:50:ASP:OD1   | 4:D:50:ASP:N     | 2.43                     | 0.50              |
| 6:F:11:HIS:HA    | 6:F:85:ILE:HD13  | 1.92                     | 0.50              |
| 13:M:4:ILE:HA    | 13:M:57:ARG:HH11 | 1.76                     | 0.50              |
| 13:M:26:GLY:H    | 13:M:29:ARG:HG2  | 1.76                     | 0.50              |
| 1:A:300:A:H2'    | 1:A:301:G:O4'    | 2.10                     | 0.50              |
| 1:A:499:A:H1'    | 1:A:500:G:C8     | 2.46                     | 0.50              |
| 1:A:602:A:H2'    | 1:A:603:U:H6     | 1.75                     | 0.50              |
| 1:A:1075:U:H2'   | 1:A:1076:U:H6    | 1.74                     | 0.50              |
| 1:A:1345:U:H5''  | 9:I:122:ARG:NH1  | 2.27                     | 0.50              |
| 1:A:1377:A:C6    | 7:G:7:ILE:HG13   | 2.46                     | 0.50              |
| 3:C:183:ASP:H    | 3:C:204:LYS:HZ2  | 1.59                     | 0.50              |
| 4:D:123:ILE:O    | 4:D:129:VAL:HA   | 2.12                     | 0.50              |
| 7:G:146:GLU:HA   | 7:G:149:LYS:HG3  | 1.92                     | 0.50              |
| 8:H:73:GLU:H     | 8:H:130:ALA:HB3  | 1.77                     | 0.50              |
| 11:K:17:SER:O    | 11:K:81:ASN:ND2  | 2.45                     | 0.50              |
| 12:L:57:LEU:HD12 | 12:L:61:PHE:HB2  | 1.93                     | 0.50              |
| 21:V:16:GLN:O    | 21:V:19:ILE:CG1  | 2.60                     | 0.50              |
| 1:A:207:C:H2'    | 1:A:208:U:O4'    | 2.12                     | 0.50              |
| 1:A:384:G:C2     | 1:A:385:C:C2     | 3.00                     | 0.50              |
| 1:A:466:A:H2'    | 1:A:468:A:N3     | 2.27                     | 0.50              |
| 1:A:658:C:N4     | 1:A:748:G:O6     | 2.32                     | 0.50              |
| 1:A:750:C:O2'    | 15:O:22:THR:N    | 2.43                     | 0.50              |
| 1:A:992:U:O2'    | 1:A:1043:G:N7    | 2.34                     | 0.50              |
| 1:A:1003:G:H2'   | 1:A:1003:G:N3    | 2.27                     | 0.50              |
| 1:A:1119:C:OP1   | 9:I:11:ARG:NH2   | 2.45                     | 0.50              |
| 1:A:1151:A:H5''  | 10:J:44:THR:HG23 | 1.93                     | 0.50              |
| 1:A:1152:A:O3'   | 10:J:15:HIS:NE2  | 2.45                     | 0.50              |
| 1:A:1297:G:H1'   | 1:A:1298:U:C5    | 2.47                     | 0.50              |
| 4:D:102:VAL:HG13 | 4:D:107:PHE:HB2  | 1.93                     | 0.50              |
| 7:G:126:ASP:OD1  | 7:G:131:LYS:NZ   | 2.36                     | 0.50              |
| 10:J:40:ILE:O    | 10:J:42:LEU:HD12 | 2.11                     | 0.50              |
| 13:M:33:ILE:HD12 | 13:M:59:GLU:HB3  | 1.94                     | 0.50              |
| 13:M:54:ASP:OD1  | 13:M:55:THR:N    | 2.44                     | 0.50              |
| 18:R:11:CYS:HB3  | 18:R:48:ARG:NH2  | 2.26                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:359:G:H2'    | 1:A:360:G:C8     | 2.47                     | 0.50              |
| 1:A:582:C:C2     | 1:A:759:A:N6     | 2.79                     | 0.50              |
| 1:A:977:A:H1'    | 1:A:982:U:O4     | 2.11                     | 0.50              |
| 3:C:8:ASN:HD21   | 3:C:184:TYR:HB3  | 1.75                     | 0.50              |
| 3:C:172:ARG:NH1  | 3:C:174:PRO:HG3  | 2.25                     | 0.50              |
| 3:C:191:THR:N    | 3:C:194:GLY:O    | 2.45                     | 0.50              |
| 4:D:116:GLN:HE22 | 4:D:154:ARG:HH22 | 1.59                     | 0.50              |
| 4:D:142:VAL:HG22 | 4:D:181:THR:HG23 | 1.93                     | 0.50              |
| 4:D:205:SER:HB2  | 5:E:106:ILE:HD13 | 1.93                     | 0.50              |
| 9:I:4:ASN:CG     | 9:I:5:GLN:H      | 2.18                     | 0.50              |
| 1:A:401:C:OP2    | 4:D:70:ARG:NE    | 2.38                     | 0.50              |
| 1:A:636:U:H2'    | 1:A:637:C:H6     | 1.77                     | 0.50              |
| 1:A:654:G:H2'    | 1:A:655:A:O4'    | 2.12                     | 0.50              |
| 1:A:748:G:C2     | 1:A:749:A:C4     | 2.99                     | 0.50              |
| 1:A:937:A:O2'    | 7:G:76:LYS:NZ    | 2.36                     | 0.50              |
| 1:A:988:G:O2'    | 1:A:1015:G:N1    | 2.43                     | 0.50              |
| 1:A:1410:A:H61   | 1:A:1490:U:C1'   | 2.25                     | 0.50              |
| 4:D:14:ARG:HH21  | 4:D:38:PRO:HG2   | 1.76                     | 0.50              |
| 15:O:77:ARG:HA   | 15:O:80:GLN:HG2  | 1.94                     | 0.50              |
| 21:V:58:ASN:HB3  | 21:V:64:ALA:HB1  | 1.93                     | 0.50              |
| 22:X:124:MET:HA  | 22:X:136:PHE:O   | 2.11                     | 0.50              |
| 1:A:68:G:H22     | 1:A:101:A:H2     | 1.58                     | 0.50              |
| 1:A:373:A:O2'    | 1:A:451:A:N7     | 2.45                     | 0.50              |
| 1:A:553:A:N6     | 1:A:554:A:C6     | 2.79                     | 0.50              |
| 1:A:824:G:H2'    | 1:A:825:A:C8     | 2.45                     | 0.50              |
| 1:A:933:G:OP1    | 7:G:4:ARG:NH2    | 2.40                     | 0.50              |
| 1:A:1170:A:H3'   | 1:A:1171:A:C8    | 2.46                     | 0.50              |
| 3:C:72:ARG:O     | 3:C:76:VAL:N     | 2.28                     | 0.50              |
| 8:H:17:GLY:O     | 8:H:21:ASN:N     | 2.45                     | 0.50              |
| 8:H:30:SER:H     | 8:H:33:LYS:HE3   | 1.76                     | 0.50              |
| 9:I:23:PRO:HA    | 9:I:61:LEU:HA    | 1.94                     | 0.50              |
| 9:I:36:GLU:H     | 9:I:36:GLU:CD    | 2.19                     | 0.50              |
| 13:M:14:HIS:HB2  | 13:M:17:ILE:HG12 | 1.93                     | 0.50              |
| 1:A:327:A:C5     | 1:A:329:A:C5     | 2.99                     | 0.50              |
| 1:A:499:A:O4'    | 1:A:547:A:N6     | 2.45                     | 0.50              |
| 1:A:598:U:H2'    | 1:A:599:C:C6     | 2.47                     | 0.50              |
| 1:A:720:C:OP2    | 1:A:721:G:O2'    | 2.27                     | 0.50              |
| 1:A:765:G:C5     | 1:A:812:G:C2     | 3.00                     | 0.50              |
| 1:A:936:C:H2'    | 1:A:937:A:O4'    | 2.11                     | 0.50              |
| 1:A:1141:C:O2'   | 1:A:1142:G:H5''  | 2.12                     | 0.50              |
| 1:A:1316:G:H1    | 1:A:1319:A:P     | 2.35                     | 0.50              |

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| Atom-1          | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:1360:A:H3'  | 1:A:1361:G:H8   | 1.77                     | 0.50              |
| 8:H:95:VAL:HG12 | 8:H:100:GLY:HA3 | 1.93                     | 0.50              |
| 12:L:7:LEU:HD12 | 17:Q:34:TYR:CZ  | 2.46                     | 0.50              |
| 1:A:429:U:H1'   | 1:A:430:A:H5''  | 1.93                     | 0.49              |
| 1:A:621:A:H2'   | 1:A:622:A:C8    | 2.47                     | 0.49              |
| 1:A:663:A:H2'   | 1:A:664:G:H8    | 1.76                     | 0.49              |
| 1:A:706:A:H2'   | 1:A:707:U:H6    | 1.78                     | 0.49              |
| 1:A:767:A:C2    | 1:A:768:A:C4    | 2.99                     | 0.49              |
| 1:A:815:A:C4    | 1:A:1529:G:C6   | 3.00                     | 0.49              |
| 1:A:898:G:C6    | 1:A:902:G:C6    | 2.99                     | 0.49              |
| 1:A:946:A:C6    | 1:A:947:G:C6    | 3.00                     | 0.49              |
| 1:A:1254:A:C6   | 1:A:1255:G:C6   | 3.00                     | 0.49              |
| 3:C:83:ASP:O    | 3:C:87:LEU:HG   | 2.12                     | 0.49              |
| 3:C:85:GLU:OE2  | 3:C:88:ARG:NH2  | 2.46                     | 0.49              |
| 4:D:11:LEU:O    | 4:D:15:GLU:N    | 2.44                     | 0.49              |
| 21:V:38:VAL:HA  | 21:V:54:VAL:HA  | 1.94                     | 0.49              |
| 1:A:201:G:H2'   | 1:A:202:G:C8    | 2.47                     | 0.49              |
| 1:A:275:G:P     | 17:Q:16:LYS:HD3 | 2.52                     | 0.49              |
| 1:A:477:C:H2'   | 1:A:478:A:C8    | 2.47                     | 0.49              |
| 1:A:497:G:H2'   | 1:A:498:A:C8    | 2.47                     | 0.49              |
| 1:A:626:G:C2    | 1:A:627:G:C4    | 3.00                     | 0.49              |
| 1:A:674:G:H2'   | 1:A:675:A:C8    | 2.44                     | 0.49              |
| 1:A:694:A:H2'   | 1:A:695:A:O4'   | 2.12                     | 0.49              |
| 1:A:799:G:C2    | 1:A:800:G:H1'   | 2.48                     | 0.49              |
| 1:A:939:G:O2'   | 1:A:1375:A:N3   | 2.45                     | 0.49              |
| 1:A:946:A:H2'   | 1:A:947:G:C8    | 2.46                     | 0.49              |
| 1:A:1073:U:H3   | 1:A:1102:A:H61  | 1.60                     | 0.49              |
| 3:C:62:LYS:NZ   | 3:C:98:PRO:HD2  | 2.27                     | 0.49              |
| 6:F:73:GLU:O    | 6:F:77:THR:OG1  | 2.28                     | 0.49              |
| 11:K:18:ASP:HA  | 11:K:81:ASN:HB2 | 1.94                     | 0.49              |
| 14:N:15:ALA:O   | 14:N:18:ASP:HB3 | 2.12                     | 0.49              |
| 14:N:24:ARG:NH2 | 14:N:56:SER:HB2 | 2.27                     | 0.49              |
| 15:O:80:GLN:O   | 15:O:84:ARG:N   | 2.35                     | 0.49              |
| 22:X:37:ARG:HG2 | 22:X:75:GLU:CD  | 2.36                     | 0.49              |
| 1:A:107:G:C8    | 1:A:108:G:N2    | 2.80                     | 0.49              |
| 1:A:262:A:C6    | 1:A:263:A:C6    | 3.00                     | 0.49              |
| 1:A:931:C:N3    | 1:A:1386:G:N1   | 2.43                     | 0.49              |
| 1:A:1216:A:H5'' | 14:N:5:SER:OG   | 2.12                     | 0.49              |
| 1:A:1244:G:C6   | 1:A:1245:C:C4   | 3.01                     | 0.49              |
| 1:A:1256:A:C6   | 1:A:1278:G:C2   | 3.00                     | 0.49              |
| 5:E:12:GLN:OE1  | 5:E:12:GLN:N    | 2.45                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 9:I:43:THR:HA    | 9:I:46:MET:HG2   | 1.93                     | 0.49              |
| 11:K:24:HIS:N    | 11:K:31:ILE:O    | 2.42                     | 0.49              |
| 1:A:516:PSU:H2'  | 1:A:517:G:C4     | 2.47                     | 0.49              |
| 1:A:766:A:C8     | 1:A:814:A:C6     | 3.00                     | 0.49              |
| 1:A:986:U:H2'    | 1:A:987:G:C8     | 2.47                     | 0.49              |
| 1:A:1059:C:H2'   | 1:A:1060:U:H6    | 1.73                     | 0.49              |
| 1:A:1088:G:H21   | 1:A:1167:A:H62   | 1.59                     | 0.49              |
| 1:A:1230:C:H2'   | 1:A:1231:G:C8    | 2.47                     | 0.49              |
| 10:J:34:ALA:HB1  | 10:J:76:ILE:HG21 | 1.94                     | 0.49              |
| 16:P:69:ASP:O    | 16:P:73:ALA:N    | 2.29                     | 0.49              |
| 20:T:44:LYS:HG3  | 20:T:87:ALA:HB3  | 1.95                     | 0.49              |
| 1:A:189:A:H3'    | 1:A:190:A:C8     | 2.45                     | 0.49              |
| 1:A:324:G:N1     | 1:A:327:A:OP2    | 2.40                     | 0.49              |
| 1:A:437:U:H5''   | 4:D:152:GLN:HG2  | 1.94                     | 0.49              |
| 1:A:450:G:H5''   | 1:A:451:A:H5''   | 1.93                     | 0.49              |
| 1:A:598:U:H4'    | 8:H:86:TYR:CE2   | 2.47                     | 0.49              |
| 1:A:646:G:C6     | 1:A:647:C:C4     | 3.00                     | 0.49              |
| 1:A:959:A:N1     | 1:A:1221:G:O2'   | 2.35                     | 0.49              |
| 1:A:1133:G:N2    | 1:A:1141:C:O2    | 2.29                     | 0.49              |
| 1:A:1179:A:O5'   | 9:I:99:ARG:NH2   | 2.46                     | 0.49              |
| 1:A:1181:G:O2'   | 1:A:1182:G:N7    | 2.35                     | 0.49              |
| 1:A:1265:C:H2'   | 1:A:1266:G:C8    | 2.48                     | 0.49              |
| 3:C:8:ASN:ND2    | 3:C:184:TYR:HB3  | 2.28                     | 0.49              |
| 4:D:22:LYS:CE    | 4:D:31:LYS:HE3   | 2.42                     | 0.49              |
| 9:I:15:SER:HA    | 9:I:68:LYS:O     | 2.13                     | 0.49              |
| 9:I:20:PHE:O     | 9:I:63:LEU:HA    | 2.13                     | 0.49              |
| 1:A:379:C:H2'    | 1:A:380:G:H8     | 1.78                     | 0.49              |
| 1:A:531:U:H4'    | 1:A:532:A:OP1    | 2.12                     | 0.49              |
| 1:A:771:G:H2'    | 1:A:772:U:C6     | 2.47                     | 0.49              |
| 1:A:974:A:H4'    | 1:A:975:A:H3'    | 1.94                     | 0.49              |
| 1:A:993:G:H22    | 1:A:996:A:H62    | 1.59                     | 0.49              |
| 1:A:1015:G:C6    | 1:A:1016:A:C6    | 3.00                     | 0.49              |
| 1:A:1108:G:O2'   | 1:A:1191:A:O4'   | 2.31                     | 0.49              |
| 1:A:1442:G:H2'   | 1:A:1443:C:C6    | 2.48                     | 0.49              |
| 10:J:50:THR:HG22 | 10:J:62:ARG:HB3  | 1.90                     | 0.49              |
| 11:K:22:HIS:NE2  | 11:K:85:MET:SD   | 2.85                     | 0.49              |
| 13:M:86:TYR:CZ   | 13:M:90:ARG:HD2  | 2.48                     | 0.49              |
| 14:N:10:GLU:O    | 14:N:14:VAL:HG23 | 2.11                     | 0.49              |
| 17:Q:72:SER:O    | 17:Q:72:SER:OG   | 2.30                     | 0.49              |
| 22:X:38:ILE:O    | 22:X:77:SER:N    | 2.27                     | 0.49              |
| 1:A:374:A:H4'    | 1:A:451:A:OP2    | 2.13                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:667:G:H4'    | 15:O:51:HIS:CE1  | 2.48                     | 0.49              |
| 1:A:979:C:H3'    | 1:A:980:C:C6     | 2.48                     | 0.49              |
| 4:D:169:THR:HG21 | 4:D:190:ASP:OD2  | 2.13                     | 0.49              |
| 11:K:21:ALA:H    | 11:K:84:VAL:HG22 | 1.78                     | 0.49              |
| 19:S:43:ASN:OD1  | 19:S:44:MET:N    | 2.40                     | 0.49              |
| 1:A:184:G:O6     | 1:A:192:A:N6     | 2.46                     | 0.49              |
| 1:A:252:U:O4     | 1:A:253:A:N6     | 2.45                     | 0.49              |
| 1:A:254:G:OP1    | 17:Q:70:THR:HB   | 2.13                     | 0.49              |
| 1:A:256:U:H2'    | 1:A:257:G:C8     | 2.48                     | 0.49              |
| 1:A:806:C:O2'    | 1:A:807:A:H5'    | 2.13                     | 0.49              |
| 1:A:840:C:C2     | 1:A:847:G:C2     | 3.01                     | 0.49              |
| 1:A:841:C:C2     | 1:A:846:G:C2     | 2.99                     | 0.49              |
| 1:A:1308:U:H5''  | 13:M:97:VAL:HG22 | 1.94                     | 0.49              |
| 1:A:1328:C:H2'   | 1:A:1329:A:C8    | 2.48                     | 0.49              |
| 11:K:22:HIS:O    | 11:K:33:THR:N    | 2.44                     | 0.49              |
| 20:T:61:GLN:O    | 20:T:66:LEU:N    | 2.45                     | 0.49              |
| 1:A:122:G:H2'    | 1:A:123:U:H6     | 1.77                     | 0.49              |
| 1:A:247:G:C5     | 1:A:278:G:C2     | 3.01                     | 0.49              |
| 1:A:473:U:H2'    | 1:A:474:G:O4'    | 2.13                     | 0.49              |
| 1:A:775:G:H2'    | 1:A:776:G:C8     | 2.48                     | 0.49              |
| 3:C:87:LEU:O     | 3:C:91:VAL:HG13  | 2.13                     | 0.49              |
| 3:C:146:ALA:HB3  | 3:C:149:ILE:HD11 | 1.95                     | 0.49              |
| 7:G:69:VAL:HG22  | 7:G:135:VAL:HB   | 1.93                     | 0.49              |
| 10:J:48:ARG:HD3  | 10:J:66:GLU:HG3  | 1.93                     | 0.49              |
| 1:A:264:C:H2'    | 1:A:265:G:C8     | 2.48                     | 0.49              |
| 1:A:760:G:H2'    | 1:A:761:G:H5'    | 1.95                     | 0.49              |
| 1:A:1126:U:O2'   | 1:A:1127:G:O5'   | 2.31                     | 0.49              |
| 1:A:1391:U:H2'   | 1:A:1392:G:H8    | 1.78                     | 0.49              |
| 3:C:55:ILE:HD13  | 3:C:68:ILE:HG12  | 1.95                     | 0.49              |
| 6:F:21:MET:HA    | 6:F:24:ARG:HB3   | 1.94                     | 0.49              |
| 8:H:79:SER:HB2   | 8:H:125:ILE:O    | 2.13                     | 0.49              |
| 10:J:50:THR:HG23 | 10:J:62:ARG:HB3  | 1.94                     | 0.49              |
| 16:P:57:ILE:O    | 16:P:61:VAL:HG23 | 2.13                     | 0.49              |
| 1:A:68:G:H1'     | 1:A:151:A:H61    | 1.77                     | 0.48              |
| 1:A:105:G:C6     | 1:A:106:C:C4     | 3.00                     | 0.48              |
| 1:A:259:G:H2'    | 1:A:260:G:O4'    | 2.13                     | 0.48              |
| 1:A:409:U:H2'    | 1:A:410:G:O4'    | 2.13                     | 0.48              |
| 1:A:551:U:H2'    | 1:A:552:U:C6     | 2.48                     | 0.48              |
| 1:A:652:U:O2'    | 1:A:752:G:N1     | 2.39                     | 0.48              |
| 1:A:745:G:H2'    | 1:A:746:A:C8     | 2.48                     | 0.48              |
| 1:A:841:C:H2'    | 1:A:843:U:H5     | 1.77                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1221:G:H2'   | 1:A:1222:G:C8    | 2.48                     | 0.48              |
| 1:A:1455:G:H2'   | 1:A:1456:A:C8    | 2.48                     | 0.48              |
| 5:E:157:ARG:O    | 5:E:159:LYS:HG3  | 2.13                     | 0.48              |
| 1:A:71:A:O4'     | 1:A:100:G:N2     | 2.46                     | 0.48              |
| 1:A:110:C:H2'    | 1:A:111:G:O4'    | 2.12                     | 0.48              |
| 1:A:158:G:C5     | 1:A:164:G:C2     | 3.01                     | 0.48              |
| 1:A:161:A:H2'    | 1:A:162:A:C8     | 2.48                     | 0.48              |
| 1:A:178:C:H2'    | 1:A:179:A:H8     | 1.78                     | 0.48              |
| 1:A:358:U:H2'    | 1:A:359:G:C8     | 2.49                     | 0.48              |
| 1:A:491:G:H2'    | 1:A:492:C:C6     | 2.48                     | 0.48              |
| 1:A:722:G:H1'    | 1:A:724:G:OP1    | 2.13                     | 0.48              |
| 1:A:823:C:H2'    | 1:A:824:G:H8     | 1.75                     | 0.48              |
| 1:A:841:C:H3'    | 1:A:843:U:OP2    | 2.13                     | 0.48              |
| 1:A:858:G:H1     | 1:A:870:U:P      | 2.36                     | 0.48              |
| 1:A:895:G:H2'    | 1:A:896:C:H6     | 1.78                     | 0.48              |
| 1:A:920:U:O4'    | 1:A:1080:A:C6    | 2.66                     | 0.48              |
| 1:A:1023:U:H2'   | 1:A:1024:G:C8    | 2.48                     | 0.48              |
| 1:A:1448:C:H2'   | 1:A:1449:C:C6    | 2.48                     | 0.48              |
| 16:P:75:ILE:HA   | 16:P:78:VAL:HG12 | 1.94                     | 0.48              |
| 19:S:11:ILE:HG13 | 19:S:38:SER:HB3  | 1.94                     | 0.48              |
| 22:X:50:ASP:O    | 22:X:54:VAL:HG12 | 2.14                     | 0.48              |
| 1:A:11:G:C5      | 1:A:12:U:C4      | 3.01                     | 0.48              |
| 1:A:134:G:C6     | 1:A:135:C:C2     | 3.01                     | 0.48              |
| 1:A:318:G:C6     | 1:A:336:A:C6     | 3.02                     | 0.48              |
| 1:A:654:G:C4     | 1:A:655:A:C8     | 3.02                     | 0.48              |
| 1:A:695:A:C4     | 1:A:696:A:C8     | 3.01                     | 0.48              |
| 1:A:865:A:H2'    | 1:A:866:C:O4'    | 2.13                     | 0.48              |
| 1:A:1243:C:H2'   | 1:A:1244:G:H8    | 1.77                     | 0.48              |
| 1:A:1246:A:C6    | 1:A:1247:U:C4    | 3.01                     | 0.48              |
| 1:A:1285:A:H5''  | 1:A:1286:U:C4    | 2.48                     | 0.48              |
| 1:A:1307:U:O3'   | 13:M:109:ARG:NH1 | 2.29                     | 0.48              |
| 1:A:1347:G:HO2'  | 1:A:1373:G:H1    | 1.60                     | 0.48              |
| 1:A:1378:C:H2'   | 1:A:1379:G:O4'   | 2.13                     | 0.48              |
| 1:A:1420:U:H2'   | 1:A:1421:G:C8    | 2.48                     | 0.48              |
| 5:E:55:GLU:OE1   | 5:E:55:GLU:N     | 2.46                     | 0.48              |
| 8:H:61:LEU:HD23  | 8:H:61:LEU:H     | 1.78                     | 0.48              |
| 8:H:74:SER:OG    | 8:H:130:ALA:HB2  | 2.14                     | 0.48              |
| 1:A:62:U:H2'     | 1:A:63:C:C6      | 2.48                     | 0.48              |
| 1:A:216:U:H2'    | 1:A:217:C:C6     | 2.48                     | 0.48              |
| 1:A:292:G:C6     | 1:A:309:A:C6     | 3.01                     | 0.48              |
| 1:A:461:A:C6     | 1:A:462:G:C6     | 3.01                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:688:G:O2'    | 1:A:704:A:N1     | 2.32                     | 0.48              |
| 1:A:1000:A:C6    | 1:A:1041:G:C6    | 3.02                     | 0.48              |
| 1:A:1244:G:C6    | 1:A:1294:G:C6    | 3.02                     | 0.48              |
| 1:A:1381:U:N3    | 7:G:78:ARG:HD2   | 2.28                     | 0.48              |
| 18:R:70:TYR:C    | 18:R:71:THR:HG23 | 2.38                     | 0.48              |
| 1:A:181:A:N1     | 1:A:195:A:C4     | 2.81                     | 0.48              |
| 1:A:620:C:C4     | 1:A:621:A:C5     | 3.01                     | 0.48              |
| 1:A:723:U:O4     | 1:A:855:U:H1'    | 2.14                     | 0.48              |
| 1:A:749:A:H2'    | 1:A:750:C:C6     | 2.48                     | 0.48              |
| 1:A:838:G:C4     | 1:A:849:G:C2     | 3.02                     | 0.48              |
| 1:A:935:A:H2'    | 1:A:936:C:H6     | 1.77                     | 0.48              |
| 1:A:1130:A:N1    | 1:A:1144:G:O2'   | 2.37                     | 0.48              |
| 1:A:1140:C:HO2'  | 1:A:1141:C:C5'   | 2.23                     | 0.48              |
| 1:A:1265:C:H2'   | 1:A:1266:G:H8    | 1.77                     | 0.48              |
| 1:A:1348:U:H2'   | 1:A:1349:A:H8    | 1.79                     | 0.48              |
| 3:C:84:VAL:HA    | 3:C:87:LEU:HD12  | 1.96                     | 0.48              |
| 6:F:1:MET:HA     | 6:F:67:PRO:CA    | 2.43                     | 0.48              |
| 20:T:18:ARG:CZ   | 20:T:19:LYS:HG3  | 2.43                     | 0.48              |
| 1:A:78:A:O2'     | 1:A:79:G:OP1     | 2.27                     | 0.48              |
| 1:A:112:G:H22    | 1:A:315:A:H2     | 1.61                     | 0.48              |
| 1:A:247:G:C6     | 1:A:278:G:C2     | 3.02                     | 0.48              |
| 1:A:254:G:C2     | 1:A:273:U:C2     | 3.01                     | 0.48              |
| 1:A:590:U:C4     | 1:A:650:G:C6     | 3.02                     | 0.48              |
| 1:A:660:C:N4     | 1:A:745:G:O6     | 2.38                     | 0.48              |
| 1:A:757:U:O2'    | 1:A:879:C:O2     | 2.27                     | 0.48              |
| 1:A:1319:A:OP1   | 19:S:3:ARG:NE    | 2.45                     | 0.48              |
| 4:D:58:LYS:HD2   | 4:D:62:ARG:HB2   | 1.96                     | 0.48              |
| 13:M:96:PRO:HB2  | 13:M:100:GLN:OE1 | 2.12                     | 0.48              |
| 1:A:109:A:C6     | 1:A:327:A:C6     | 3.02                     | 0.48              |
| 1:A:252:U:O2'    | 1:A:275:G:N2     | 2.46                     | 0.48              |
| 1:A:579:A:C5     | 1:A:763:G:N1     | 2.82                     | 0.48              |
| 1:A:1284:C:OP2   | 1:A:1285:A:O2'   | 2.28                     | 0.48              |
| 1:A:1534:A:H3'   | 1:A:1535:C:C6    | 2.48                     | 0.48              |
| 3:C:11:ARG:NH1   | 3:C:178:LEU:O    | 2.44                     | 0.48              |
| 3:C:152:GLU:OE2  | 3:C:165:THR:OG1  | 2.31                     | 0.48              |
| 3:C:153:VAL:HG22 | 3:C:166:GLU:CG   | 2.42                     | 0.48              |
| 6:F:29:ILE:HG23  | 6:F:34:GLY:HA3   | 1.96                     | 0.48              |
| 9:I:47:VAL:HA    | 9:I:50:GLN:CG    | 2.39                     | 0.48              |
| 19:S:63:THR:CG2  | 19:S:66:MET:HG3  | 2.44                     | 0.48              |
| 22:X:81:LEU:HD21 | 22:X:150:PHE:HB3 | 1.95                     | 0.48              |
| 1:A:210:C:H1'    | 1:A:211:G:C2     | 2.49                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:404:G:O2'    | 1:A:498:A:N1     | 2.32                     | 0.48              |
| 1:A:501:C:O3'    | 12:L:115:SER:OG  | 2.28                     | 0.48              |
| 1:A:771:G:N2     | 1:A:809:G:H1'    | 2.28                     | 0.48              |
| 1:A:862:C:H2'    | 1:A:863:U:C6     | 2.48                     | 0.48              |
| 1:A:948:C:OP1    | 13:M:108:THR:OG1 | 2.25                     | 0.48              |
| 1:A:1220:G:N2    | 19:S:54:GLY:O    | 2.43                     | 0.48              |
| 1:A:1248:A:C5    | 1:A:1290:G:C2    | 3.02                     | 0.48              |
| 1:A:1304:G:H1'   | 1:A:1334:G:N2    | 2.28                     | 0.48              |
| 5:E:43:ASN:HA    | 5:E:118:ALA:O    | 2.13                     | 0.48              |
| 5:E:80:THR:HG22  | 5:E:122:ASN:HB2  | 1.96                     | 0.48              |
| 9:I:89:GLU:HA    | 9:I:92:GLU:OE2   | 2.14                     | 0.48              |
| 15:O:75:VAL:O    | 15:O:79:THR:OG1  | 2.32                     | 0.48              |
| 21:V:55:THR:HG22 | 21:V:100:ASP:HB3 | 1.95                     | 0.48              |
| 1:A:37:U:H2'     | 1:A:38:G:C8      | 2.49                     | 0.48              |
| 1:A:79:G:H1'     | 1:A:90:C:N4      | 2.27                     | 0.48              |
| 1:A:145:G:N2     | 1:A:146:G:C4     | 2.82                     | 0.48              |
| 1:A:215:C:C4     | 1:A:216:U:C4     | 3.02                     | 0.48              |
| 1:A:247:G:O2'    | 1:A:282:A:N1     | 2.40                     | 0.48              |
| 1:A:343:U:H3'    | 1:A:345:C:N4     | 2.29                     | 0.48              |
| 1:A:537:G:H2'    | 1:A:538:G:H8     | 1.78                     | 0.48              |
| 1:A:805:C:H2'    | 1:A:806:C:H6     | 1.78                     | 0.48              |
| 1:A:940:C:H4'    | 1:A:1374:A:H2    | 1.79                     | 0.48              |
| 1:A:957:U:N3     | 1:A:960:U:OP2    | 2.47                     | 0.48              |
| 1:A:1058:G:C6    | 1:A:1059:C:C4    | 3.01                     | 0.48              |
| 1:A:1312:G:C2    | 1:A:1313:U:C2    | 3.02                     | 0.48              |
| 1:A:1426:G:C6    | 1:A:1427:C:C4    | 3.01                     | 0.48              |
| 2:B:187:VAL:O    | 2:B:201:PRO:HA   | 2.14                     | 0.48              |
| 11:K:93:ARG:NH1  | 11:K:97:ILE:CG1  | 2.77                     | 0.48              |
| 21:V:62:GLU:HA   | 21:V:65:VAL:HB   | 1.96                     | 0.48              |
| 22:X:19:LEU:HD12 | 22:X:54:VAL:HB   | 1.96                     | 0.48              |
| 1:A:58:C:O2'     | 1:A:388:G:N7     | 2.37                     | 0.48              |
| 1:A:381:C:H3'    | 1:A:382:A:H8     | 1.78                     | 0.48              |
| 1:A:426:U:O2'    | 4:D:40:GLN:CG    | 2.62                     | 0.48              |
| 1:A:549:C:C2     | 1:A:550:G:C8     | 3.02                     | 0.48              |
| 1:A:672:U:H5'    | 6:F:79:ARG:NH2   | 2.29                     | 0.48              |
| 1:A:719:C:OP2    | 1:A:720:C:N4     | 2.47                     | 0.48              |
| 1:A:897:C:H2'    | 1:A:898:G:C8     | 2.48                     | 0.48              |
| 1:A:1206:G:H2'   | 1:A:1207:2MG:C8  | 2.49                     | 0.48              |
| 1:A:1458:G:H2'   | 1:A:1459:G:C8    | 2.49                     | 0.48              |
| 6:F:10:VAL:HA    | 6:F:84:VAL:HA    | 1.96                     | 0.48              |
| 13:M:81:MET:HA   | 13:M:88:GLY:HA3  | 1.96                     | 0.48              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 17:Q:20:SER:HB3 | 17:Q:71:LYS:HD3  | 1.95                     | 0.48              |
| 17:Q:25:ILE:O   | 17:Q:42:THR:N    | 2.47                     | 0.48              |
| 22:X:57:GLN:O   | 22:X:61:VAL:HG13 | 2.14                     | 0.48              |
| 1:A:255:G:H2'   | 1:A:256:U:H6     | 1.79                     | 0.47              |
| 1:A:557:G:O6    | 1:A:558:G:N1     | 2.47                     | 0.47              |
| 1:A:919:A:N3    | 1:A:1080:A:H2    | 2.12                     | 0.47              |
| 1:A:1013:G:H2'  | 1:A:1015:G:OP2   | 2.13                     | 0.47              |
| 1:A:1130:A:OP1  | 9:I:64:TYR:OH    | 2.27                     | 0.47              |
| 1:A:1144:G:N2   | 1:A:1146:A:H62   | 2.11                     | 0.47              |
| 1:A:1151:A:O2'  | 1:A:1152:A:H8    | 1.96                     | 0.47              |
| 1:A:1231:G:H2'  | 1:A:1232:U:C6    | 2.49                     | 0.47              |
| 1:A:1246:A:H2'  | 1:A:1247:U:C6    | 2.49                     | 0.47              |
| 1:A:1305:G:H21  | 1:A:1332:A:H2    | 1.62                     | 0.47              |
| 1:A:1395:C:H2'  | 1:A:1396:A:C8    | 2.49                     | 0.47              |
| 7:G:49:THR:HG23 | 7:G:53:ARG:NH1   | 2.29                     | 0.47              |
| 13:M:19:LEU:HB2 | 13:M:30:SER:HB3  | 1.96                     | 0.47              |
| 20:T:45:ALA:O   | 20:T:49:LYS:HG3  | 2.14                     | 0.47              |
| 1:A:87:C:H2'    | 1:A:88:U:C6      | 2.49                     | 0.47              |
| 1:A:359:G:H2'   | 1:A:360:G:H8     | 1.78                     | 0.47              |
| 1:A:437:U:O2'   | 4:D:120:HIS:ND1  | 2.47                     | 0.47              |
| 1:A:537:G:C4    | 1:A:538:G:C8     | 3.02                     | 0.47              |
| 1:A:545:C:H3'   | 1:A:546:A:H8     | 1.79                     | 0.47              |
| 1:A:618:C:C2    | 1:A:622:A:N6     | 2.82                     | 0.47              |
| 1:A:1181:G:H4'  | 1:A:1182:G:H5'   | 1.96                     | 0.47              |
| 1:A:1256:A:H62  | 1:A:1278:G:H5'   | 1.79                     | 0.47              |
| 1:A:1433:A:H2'  | 1:A:1434:A:H8    | 1.79                     | 0.47              |
| 1:A:1434:A:H2'  | 1:A:1435:G:O4'   | 2.14                     | 0.47              |
| 8:H:80:ARG:NH2  | 8:H:82:GLY:HA3   | 2.28                     | 0.47              |
| 9:I:33:ARG:HD3  | 9:I:37:GLN:NE2   | 2.29                     | 0.47              |
| 9:I:127:PHE:CE2 | 9:I:129:LYS:HG2  | 2.49                     | 0.47              |
| 20:T:18:ARG:NH2 | 20:T:19:LYS:HG3  | 2.29                     | 0.47              |
| 20:T:36:TYR:HA  | 20:T:39:ILE:HG22 | 1.96                     | 0.47              |
| 1:A:518:C:H5'   | 1:A:530:G:N7     | 2.29                     | 0.47              |
| 1:A:652:U:O4    | 1:A:752:G:O2'    | 2.17                     | 0.47              |
| 1:A:754:C:P     | 15:O:72:ARG:HH22 | 2.37                     | 0.47              |
| 1:A:780:A:N6    | 1:A:801:U:OP2    | 2.40                     | 0.47              |
| 1:A:933:G:OP2   | 7:G:3:ARG:HB3    | 2.14                     | 0.47              |
| 1:A:987:G:C4    | 1:A:988:G:C8     | 3.03                     | 0.47              |
| 1:A:1141:C:C2   | 1:A:1142:G:C8    | 3.02                     | 0.47              |
| 1:A:1166:G:C6   | 1:A:1168:U:H5''  | 2.50                     | 0.47              |
| 1:A:1222:G:C6   | 1:A:1223:C:C4    | 3.02                     | 0.47              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1318:A:H1'   | 19:S:37:ARG:NH1   | 2.30                     | 0.47              |
| 1:A:1426:G:C6    | 1:A:1475:G:C5     | 3.02                     | 0.47              |
| 1:A:1469:C:H2'   | 1:A:1470:U:H6     | 1.78                     | 0.47              |
| 4:D:18:ASP:OD1   | 4:D:20:PHE:N      | 2.28                     | 0.47              |
| 5:E:153:VAL:O    | 5:E:157:ARG:N     | 2.47                     | 0.47              |
| 8:H:104:VAL:HA   | 8:H:125:ILE:HA    | 1.96                     | 0.47              |
| 15:O:61:SER:O    | 15:O:64:ARG:HB3   | 2.14                     | 0.47              |
| 17:Q:57:ASP:HB3  | 17:Q:80:GLU:HG2   | 1.96                     | 0.47              |
| 22:X:94:PHE:HB3  | 22:X:97:GLU:HB2   | 1.96                     | 0.47              |
| 1:A:286:C:H2'    | 1:A:287:U:C6      | 2.49                     | 0.47              |
| 1:A:303:A:H2'    | 1:A:304:U:O4'     | 2.13                     | 0.47              |
| 1:A:420:U:C2     | 1:A:422:C:N3      | 2.83                     | 0.47              |
| 1:A:442:G:C6     | 1:A:443:C:C4      | 3.02                     | 0.47              |
| 1:A:728:A:H2'    | 1:A:729:A:H8      | 1.74                     | 0.47              |
| 1:A:985:C:C2     | 1:A:1221:G:C2     | 3.02                     | 0.47              |
| 1:A:994:A:C5     | 1:A:1216:A:H4'    | 2.50                     | 0.47              |
| 1:A:1478:U:H3'   | 1:A:1479:C:H5''   | 1.96                     | 0.47              |
| 1:A:1534:A:H2'   | 1:A:1535:C:O4'    | 2.14                     | 0.47              |
| 8:H:12:THR:O     | 8:H:16:ASN:N      | 2.33                     | 0.47              |
| 9:I:81:HIS:O     | 9:I:84:THR:OG1    | 2.24                     | 0.47              |
| 11:K:82:LEU:HD22 | 11:K:107:ILE:HG22 | 1.95                     | 0.47              |
| 19:S:3:ARG:HH12  | 19:S:70:LYS:HE2   | 1.79                     | 0.47              |
| 1:A:384:G:C6     | 1:A:385:C:C4      | 3.02                     | 0.47              |
| 1:A:494:G:O2'    | 1:A:496:A:H1'     | 2.15                     | 0.47              |
| 1:A:577:G:H2'    | 1:A:578:C:H6      | 1.79                     | 0.47              |
| 1:A:601:G:C4     | 1:A:602:A:C8      | 3.02                     | 0.47              |
| 1:A:614:C:H2'    | 1:A:615:G:O4'     | 2.14                     | 0.47              |
| 1:A:661:G:C5     | 1:A:662:U:C4      | 3.02                     | 0.47              |
| 1:A:716:A:H2'    | 1:A:717:U:H6      | 1.79                     | 0.47              |
| 1:A:743:A:C6     | 1:A:744:C:C4      | 3.03                     | 0.47              |
| 1:A:757:U:OP1    | 1:A:822:U:O2'     | 2.31                     | 0.47              |
| 1:A:938:A:O2'    | 7:G:95:ARG:NH2    | 2.36                     | 0.47              |
| 1:A:1208:C:HO2'  | 1:A:1209:C:P      | 2.37                     | 0.47              |
| 1:A:1449:C:C4    | 1:A:1450:U:C4     | 3.03                     | 0.47              |
| 10:J:16:ARG:HD3  | 10:J:16:ARG:HA    | 1.61                     | 0.47              |
| 12:L:109:ASP:HA  | 12:L:111:LYS:NZ   | 2.30                     | 0.47              |
| 17:Q:39:LYS:O    | 17:Q:40:ARG:HD2   | 2.14                     | 0.47              |
| 1:A:1:A:C5       | 1:A:2:A:C5        | 3.02                     | 0.47              |
| 1:A:59:A:H3'     | 1:A:331:G:H22     | 1.80                     | 0.47              |
| 1:A:475:C:H2'    | 1:A:476:U:H6      | 1.78                     | 0.47              |
| 1:A:568:G:O2'    | 1:A:574:A:N1      | 2.47                     | 0.47              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:792:A:H4'    | 1:A:793:U:H5'     | 1.96                     | 0.47              |
| 1:A:1377:A:H4'   | 1:A:1378:C:H5     | 1.79                     | 0.47              |
| 1:A:1514:G:C2    | 1:A:1515:G:C4     | 3.03                     | 0.47              |
| 3:C:22:TRP:CB    | 3:C:59:ARG:HB2    | 2.45                     | 0.47              |
| 3:C:43:LEU:HD13  | 3:C:68:ILE:HD11   | 1.97                     | 0.47              |
| 14:N:42:TRP:O    | 14:N:45:VAL:HG12  | 2.15                     | 0.47              |
| 15:O:26:GLU:OE1  | 15:O:26:GLU:N     | 2.42                     | 0.47              |
| 20:T:9:LYS:O     | 20:T:12:ILE:N     | 2.48                     | 0.47              |
| 22:X:119:ALA:N   | 22:X:126:THR:OG1  | 2.41                     | 0.47              |
| 1:A:113:G:H2'    | 1:A:114:U:H6      | 1.79                     | 0.47              |
| 1:A:218:U:H2'    | 1:A:219:U:C6      | 2.50                     | 0.47              |
| 1:A:250:A:H5''   | 1:A:252:U:O4'     | 2.15                     | 0.47              |
| 1:A:265:G:H2'    | 1:A:267:C:C5      | 2.49                     | 0.47              |
| 1:A:283:U:H2'    | 1:A:284:C:C6      | 2.49                     | 0.47              |
| 1:A:447:G:H1'    | 1:A:487:A:H61     | 1.80                     | 0.47              |
| 1:A:517:G:N2     | 1:A:533:A:OP1     | 2.48                     | 0.47              |
| 1:A:613:C:H2'    | 1:A:614:C:C6      | 2.49                     | 0.47              |
| 1:A:663:A:C6     | 1:A:664:G:C6      | 3.03                     | 0.47              |
| 1:A:681:A:C6     | 1:A:710:G:C6      | 3.03                     | 0.47              |
| 1:A:691:G:H2'    | 1:A:692:U:C6      | 2.50                     | 0.47              |
| 1:A:695:A:H3'    | 1:A:696:A:H8      | 1.79                     | 0.47              |
| 1:A:810:C:C4     | 1:A:811:C:C2      | 3.03                     | 0.47              |
| 1:A:938:A:C2     | 1:A:1376:U:H1'    | 2.50                     | 0.47              |
| 1:A:1072:G:H2'   | 1:A:1073:U:O4'    | 2.14                     | 0.47              |
| 1:A:1141:C:O2'   | 1:A:1142:G:H8     | 1.93                     | 0.47              |
| 1:A:1186:G:C2    | 1:A:1187:G:C4     | 3.03                     | 0.47              |
| 1:A:1252:A:H2'   | 1:A:1253:G:O4'    | 2.14                     | 0.47              |
| 1:A:1321:U:O2    | 19:S:36:ARG:NH2   | 2.45                     | 0.47              |
| 1:A:1453:G:N1    | 1:A:1454:G:C4     | 2.82                     | 0.47              |
| 1:A:1535:C:O5'   | 1:A:1535:C:H6     | 1.97                     | 0.47              |
| 3:C:120:ILE:HD11 | 3:C:137:ALA:HB2   | 1.95                     | 0.47              |
| 8:H:87:LYS:CG    | 8:H:125:ILE:CD1   | 2.92                     | 0.47              |
| 10:J:84:VAL:O    | 10:J:87:LEU:HG    | 2.15                     | 0.47              |
| 13:M:67:GLY:HA2  | 13:M:70:ARG:HD2   | 1.96                     | 0.47              |
| 14:N:46:LEU:O    | 14:N:50:THR:HG23  | 2.14                     | 0.47              |
| 19:S:16:LEU:HA   | 19:S:19:VAL:HG12  | 1.96                     | 0.47              |
| 22:X:98:GLU:HB2  | 22:X:116:VAL:HG22 | 1.95                     | 0.47              |
| 1:A:88:U:O2'     | 1:A:89:U:O4'      | 2.33                     | 0.47              |
| 1:A:109:A:C8     | 1:A:327:A:O4'     | 2.68                     | 0.47              |
| 1:A:420:U:C2     | 1:A:422:C:C2      | 3.03                     | 0.47              |
| 1:A:517:G:N2     | 1:A:529:G:O2'     | 2.48                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:671:G:C5     | 1:A:672:U:C4     | 3.03                     | 0.47              |
| 1:A:747:A:H2'    | 1:A:748:G:C8     | 2.50                     | 0.47              |
| 1:A:842:U:H3'    | 1:A:843:U:C6     | 2.50                     | 0.47              |
| 1:A:1051:C:N4    | 1:A:1207:2MG:O6  | 2.34                     | 0.47              |
| 1:A:1114:C:H2'   | 1:A:1115:U:O4'   | 2.14                     | 0.47              |
| 1:A:1180:A:OP2   | 9:I:99:ARG:NH2   | 2.48                     | 0.47              |
| 1:A:1312:G:N7    | 19:S:2:PRO:HG2   | 2.30                     | 0.47              |
| 3:C:148:GLY:HA3  | 3:C:172:ARG:O    | 2.14                     | 0.47              |
| 3:C:169:ARG:NH2  | 3:C:172:ARG:HA   | 2.30                     | 0.47              |
| 7:G:134:ALA:O    | 7:G:137:LYS:HG2  | 2.15                     | 0.47              |
| 9:I:11:ARG:HB2   | 9:I:106:ARG:NE   | 2.29                     | 0.47              |
| 13:M:24:GLY:HA3  | 13:M:69:LEU:HD23 | 1.96                     | 0.47              |
| 21:V:31:ARG:HB3  | 21:V:67:ALA:HB1  | 1.95                     | 0.47              |
| 22:X:38:ILE:HD12 | 22:X:75:GLU:O    | 2.14                     | 0.47              |
| 1:A:62:U:OP1     | 1:A:385:C:O2'    | 2.32                     | 0.47              |
| 1:A:148:G:H1'    | 1:A:1447:A:H1'   | 1.97                     | 0.47              |
| 1:A:584:G:H2'    | 1:A:585:G:C8     | 2.48                     | 0.47              |
| 1:A:937:A:H1'    | 1:A:1379:G:N2    | 2.30                     | 0.47              |
| 1:A:1091:U:C2    | 1:A:1095:U:C4    | 3.03                     | 0.47              |
| 1:A:1289:A:H2'   | 1:A:1290:G:H5'   | 1.97                     | 0.47              |
| 6:F:4:TYR:CZ     | 6:F:71:ILE:HD13  | 2.49                     | 0.47              |
| 7:G:50:LEU:O     | 7:G:54:SER:OG    | 2.29                     | 0.47              |
| 7:G:151:PHE:CE1  | 21:V:104:VAL:CG1 | 2.98                     | 0.47              |
| 10:J:22:THR:O    | 10:J:26:VAL:HG22 | 2.15                     | 0.47              |
| 10:J:44:THR:HB   | 10:J:70:HIS:HA   | 1.97                     | 0.47              |
| 10:J:71:LEU:C    | 10:J:72:ARG:HH11 | 2.23                     | 0.47              |
| 21:V:51:LYS:HA   | 21:V:96:THR:OG1  | 2.15                     | 0.47              |
| 1:A:7:A:C8       | 5:E:124:LEU:HD21 | 2.50                     | 0.47              |
| 1:A:220:G:H2'    | 1:A:221:C:H6     | 1.78                     | 0.47              |
| 1:A:253:A:N6     | 1:A:274:A:N1     | 2.62                     | 0.47              |
| 1:A:323:U:H2'    | 1:A:324:G:O4'    | 2.14                     | 0.47              |
| 1:A:360:G:H2'    | 1:A:361:G:C8     | 2.50                     | 0.47              |
| 1:A:384:G:H2'    | 1:A:385:C:H6     | 1.80                     | 0.47              |
| 1:A:426:U:OP1    | 4:D:33:LYS:NZ    | 2.46                     | 0.47              |
| 1:A:489:C:H2'    | 1:A:490:C:H6     | 1.78                     | 0.47              |
| 1:A:529:G:H5''   | 1:A:533:A:H5'    | 1.97                     | 0.47              |
| 1:A:728:A:C6     | 1:A:729:A:C6     | 3.03                     | 0.47              |
| 1:A:782:A:O3'    | 1:A:1515:G:H4'   | 2.15                     | 0.47              |
| 1:A:944:G:H1'    | 1:A:1339:A:H61   | 1.80                     | 0.47              |
| 1:A:1245:C:C2    | 1:A:1246:A:C8    | 3.03                     | 0.47              |
| 1:A:1379:G:H2'   | 1:A:1380:U:C6    | 2.50                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:31:ASP:OD1   | 3:C:32:ASN:N     | 2.47                     | 0.47              |
| 4:D:50:ASP:O     | 4:D:53:VAL:HG22  | 2.15                     | 0.47              |
| 10:J:53:ILE:HG22 | 14:N:85:ARG:HD2  | 1.97                     | 0.47              |
| 13:M:49:SER:O    | 13:M:53:ILE:HG12 | 2.15                     | 0.47              |
| 1:A:155:A:C6     | 1:A:156:C:C4     | 3.03                     | 0.46              |
| 1:A:157:U:H2'    | 1:A:158:G:C8     | 2.50                     | 0.46              |
| 1:A:190:A:H2'    | 1:A:191:G:O4'    | 2.14                     | 0.46              |
| 1:A:191:G:H2'    | 1:A:192:A:H8     | 1.79                     | 0.46              |
| 1:A:523:A:OP2    | 1:A:523:A:H8     | 1.98                     | 0.46              |
| 1:A:592:G:C6     | 1:A:593:U:N3     | 2.83                     | 0.46              |
| 1:A:771:G:C6     | 1:A:809:G:C4     | 3.04                     | 0.46              |
| 1:A:842:U:C4     | 1:A:843:U:C2     | 3.03                     | 0.46              |
| 1:A:1486:G:H3'   | 1:A:1487:G:C8    | 2.50                     | 0.46              |
| 1:A:43:C:H2'     | 1:A:44:A:C8      | 2.50                     | 0.46              |
| 1:A:532:A:H3'    | 1:A:532:A:N3     | 2.30                     | 0.46              |
| 1:A:577:G:H2'    | 1:A:578:C:C6     | 2.51                     | 0.46              |
| 1:A:682:G:C2     | 1:A:709:U:C2     | 3.03                     | 0.46              |
| 1:A:721:G:N1     | 1:A:733:G:C4     | 2.84                     | 0.46              |
| 1:A:735:C:H2'    | 1:A:736:C:C6     | 2.43                     | 0.46              |
| 1:A:745:G:H2'    | 1:A:746:A:H8     | 1.78                     | 0.46              |
| 1:A:861:G:C6     | 1:A:862:C:C4     | 3.03                     | 0.46              |
| 1:A:921:U:C2     | 1:A:922:G:C8     | 3.03                     | 0.46              |
| 1:A:987:G:O6     | 1:A:1218:C:N4    | 2.31                     | 0.46              |
| 1:A:1177:G:C3'   | 1:A:1178:G:H8    | 2.20                     | 0.46              |
| 1:A:1248:A:H4'   | 9:I:33:ARG:HH22  | 1.80                     | 0.46              |
| 1:A:1278:G:H4'   | 1:A:1279:G:C2    | 2.50                     | 0.46              |
| 2:B:148:LEU:CD2  | 2:B:151:ILE:HD11 | 2.44                     | 0.46              |
| 3:C:42:TYR:O     | 3:C:46:GLU:HG2   | 2.15                     | 0.46              |
| 5:E:159:LYS:HD3  | 5:E:163:GLU:HG2  | 1.96                     | 0.46              |
| 8:H:10:MET:O     | 8:H:13:ARG:HB2   | 2.16                     | 0.46              |
| 17:Q:27:ARG:HG2  | 17:Q:40:ARG:O    | 2.15                     | 0.46              |
| 20:T:36:TYR:O    | 20:T:39:ILE:CG2  | 2.56                     | 0.46              |
| 1:A:277:C:H2'    | 1:A:278:G:C8     | 2.51                     | 0.46              |
| 1:A:325:A:H2'    | 1:A:326:G:O4'    | 2.15                     | 0.46              |
| 1:A:577:G:C8     | 1:A:816:A:N1     | 2.83                     | 0.46              |
| 1:A:636:U:H2'    | 1:A:637:C:C6     | 2.50                     | 0.46              |
| 1:A:674:G:H22    | 1:A:716:A:H2     | 1.63                     | 0.46              |
| 1:A:769:G:H2'    | 1:A:770:C:C6     | 2.51                     | 0.46              |
| 1:A:858:G:O6     | 1:A:869:G:H3'    | 2.15                     | 0.46              |
| 1:A:922:G:C6     | 1:A:1396:A:C6    | 3.04                     | 0.46              |
| 1:A:949:A:H61    | 1:A:1232:U:H3    | 1.63                     | 0.46              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:953:G:C6      | 1:A:1229:A:C6    | 3.04                     | 0.46              |
| 5:E:151:GLU:OE1   | 5:E:151:GLU:N    | 2.29                     | 0.46              |
| 9:I:91:ASP:C      | 9:I:93:SER:H     | 2.23                     | 0.46              |
| 1:A:302:G:H2'     | 1:A:303:A:C8     | 2.51                     | 0.46              |
| 1:A:639:G:C6      | 1:A:640:A:C5     | 3.04                     | 0.46              |
| 1:A:656:G:N2      | 1:A:750:C:N3     | 2.61                     | 0.46              |
| 1:A:711:G:H2'     | 1:A:712:A:C8     | 2.50                     | 0.46              |
| 1:A:741:G:C2      | 1:A:742:G:C4     | 3.03                     | 0.46              |
| 1:A:881:G:C2      | 1:A:882:C:C2     | 3.04                     | 0.46              |
| 1:A:881:G:C6      | 1:A:882:C:C4     | 3.04                     | 0.46              |
| 1:A:1296:C:H3'    | 1:A:1297:G:C8    | 2.50                     | 0.46              |
| 1:A:1470:U:H2'    | 1:A:1471:U:C6    | 2.50                     | 0.46              |
| 1:A:1516:2MG:H2'  | 1:A:1518:MA6:OP2 | 2.15                     | 0.46              |
| 3:C:2:GLY:O       | 3:C:4:LYS:NZ     | 2.31                     | 0.46              |
| 3:C:32:ASN:CG     | 3:C:59:ARG:HH11  | 2.22                     | 0.46              |
| 5:E:161:VAL:HG23  | 5:E:162:GLU:N    | 2.30                     | 0.46              |
| 9:I:21:ILE:HG12   | 9:I:86:ALA:HB1   | 1.95                     | 0.46              |
| 11:K:78:GLY:O     | 11:K:80:LYS:NZ   | 2.48                     | 0.46              |
| 13:M:100:GLN:OE1  | 13:M:100:GLN:N   | 2.48                     | 0.46              |
| 19:S:48:THR:HA    | 19:S:60:VAL:O    | 2.15                     | 0.46              |
| 1:A:3:A:H1'       | 1:A:613:C:O4'    | 2.16                     | 0.46              |
| 1:A:71:A:C5       | 1:A:100:G:C5     | 3.04                     | 0.46              |
| 1:A:131:A:OP1     | 1:A:263:A:H4'    | 2.15                     | 0.46              |
| 1:A:505:G:C4      | 1:A:535:A:C5     | 3.04                     | 0.46              |
| 1:A:594:U:C4      | 1:A:595:A:C6     | 3.03                     | 0.46              |
| 1:A:688:G:C6      | 1:A:700:G:C5     | 3.03                     | 0.46              |
| 1:A:714:G:C2      | 1:A:715:A:C4     | 3.03                     | 0.46              |
| 1:A:721:G:OP1     | 18:R:52:GLN:NE2  | 2.48                     | 0.46              |
| 1:A:1207:2MG:H2'  | 1:A:1208:C:C6    | 2.50                     | 0.46              |
| 1:A:1219:A:H2'    | 1:A:1220:G:C8    | 2.51                     | 0.46              |
| 1:A:1328:C:H2'    | 1:A:1329:A:H8    | 1.78                     | 0.46              |
| 1:A:1516:2MG:HM23 | 1:A:1519:MA6:N7  | 2.31                     | 0.46              |
| 4:D:169:THR:CG2   | 4:D:190:ASP:OD2  | 2.64                     | 0.46              |
| 4:D:178:MET:N     | 4:D:178:MET:SD   | 2.89                     | 0.46              |
| 6:F:38:ARG:HB3    | 6:F:63:ASN:OD1   | 2.15                     | 0.46              |
| 8:H:11:LEU:HB3    | 8:H:75:ILE:HD12  | 1.96                     | 0.46              |
| 11:K:23:ILE:CG2   | 11:K:86:VAL:HA   | 2.46                     | 0.46              |
| 13:M:4:ILE:HD12   | 13:M:22:ILE:HD11 | 1.97                     | 0.46              |
| 20:T:59:ASP:O     | 20:T:63:ALA:N    | 2.35                     | 0.46              |
| 1:A:202:G:O2'     | 1:A:468:A:H8     | 1.99                     | 0.46              |
| 1:A:236:A:N6      | 1:A:237:G:O6     | 2.49                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:319:G:C2     | 1:A:320:A:C8     | 3.04                     | 0.46              |
| 1:A:558:G:H2'    | 1:A:559:A:H2     | 1.80                     | 0.46              |
| 1:A:607:A:H2'    | 1:A:608:A:C8     | 2.51                     | 0.46              |
| 1:A:830:G:N1     | 1:A:857:C:N3     | 2.64                     | 0.46              |
| 1:A:1151:A:O2'   | 1:A:1152:A:H5''  | 2.16                     | 0.46              |
| 1:A:1292:G:C6    | 1:A:1293:C:C4    | 3.04                     | 0.46              |
| 1:A:1312:G:H2'   | 1:A:1313:U:C6    | 2.50                     | 0.46              |
| 3:C:111:LEU:HD21 | 3:C:144:LEU:HB3  | 1.97                     | 0.46              |
| 5:E:95:PHE:CZ    | 5:E:97:GLN:HB2   | 2.50                     | 0.46              |
| 1:A:43:C:O2      | 1:A:399:G:N1     | 2.45                     | 0.46              |
| 1:A:205:A:H3'    | 1:A:206:C:C6     | 2.50                     | 0.46              |
| 1:A:254:G:C2     | 1:A:255:G:C8     | 3.04                     | 0.46              |
| 1:A:283:U:H2'    | 1:A:284:C:H6     | 1.81                     | 0.46              |
| 1:A:582:C:H2'    | 1:A:583:A:O4'    | 2.15                     | 0.46              |
| 1:A:689:C:H3'    | 1:A:690:G:C8     | 2.51                     | 0.46              |
| 1:A:759:A:C2     | 1:A:760:G:H1'    | 2.51                     | 0.46              |
| 1:A:771:G:C6     | 1:A:809:G:C5     | 3.04                     | 0.46              |
| 1:A:844:G:N7     | 1:A:845:A:C4     | 2.84                     | 0.46              |
| 1:A:939:G:C6     | 1:A:940:C:N3     | 2.83                     | 0.46              |
| 1:A:1048:G:O2'   | 1:A:1050:G:O5'   | 2.34                     | 0.46              |
| 1:A:1081:A:OP2   | 1:A:1081:A:H8    | 1.99                     | 0.46              |
| 1:A:1163:A:C6    | 1:A:1174:G:C6    | 3.03                     | 0.46              |
| 1:A:1260:G:O2'   | 1:A:1275:A:N6    | 2.49                     | 0.46              |
| 1:A:1321:U:H3'   | 1:A:1322:C:H6    | 1.80                     | 0.46              |
| 1:A:1350:A:H2'   | 1:A:1351:U:C6    | 2.51                     | 0.46              |
| 9:I:33:ARG:HD3   | 9:I:37:GLN:HE22  | 1.81                     | 0.46              |
| 16:P:1:MET:HE2   | 16:P:1:MET:HB3   | 1.85                     | 0.46              |
| 16:P:67:ILE:HG22 | 16:P:68:SER:O    | 2.15                     | 0.46              |
| 19:S:74:PHE:O    | 19:S:76:PRO:HD3  | 2.16                     | 0.46              |
| 1:A:70:U:C4      | 1:A:94:G:C4      | 3.04                     | 0.46              |
| 1:A:447:G:H1     | 1:A:486:U:P      | 2.39                     | 0.46              |
| 1:A:519:C:C2     | 1:A:520:A:H1'    | 2.51                     | 0.46              |
| 1:A:621:A:C6     | 1:A:622:A:C6     | 3.03                     | 0.46              |
| 1:A:698:G:C5     | 1:A:699:C:N3     | 2.83                     | 0.46              |
| 1:A:794:A:C5     | 1:A:795:C:N4     | 2.84                     | 0.46              |
| 1:A:864:A:H3'    | 1:A:865:A:C8     | 2.50                     | 0.46              |
| 1:A:957:U:H5''   | 19:S:81:ARG:HH22 | 1.81                     | 0.46              |
| 1:A:1105:A:N1    | 1:A:1106:G:N1    | 2.64                     | 0.46              |
| 1:A:1119:C:P     | 9:I:11:ARG:HH22  | 2.39                     | 0.46              |
| 1:A:1378:C:OP2   | 7:G:6:VAL:HG11   | 2.15                     | 0.46              |
| 3:C:131:ARG:O    | 3:C:135:LYS:HG3  | 2.15                     | 0.46              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 5:E:36:LEU:HD13 | 5:E:133:PRO:HB2  | 1.98                     | 0.46              |
| 14:N:14:VAL:HA  | 14:N:60:GLN:NE2  | 2.31                     | 0.46              |
| 18:R:51:TYR:O   | 18:R:55:LEU:HG   | 2.16                     | 0.46              |
| 21:V:73:GLN:OE1 | 21:V:73:GLN:HA   | 2.15                     | 0.46              |
| 1:A:9:G:C6      | 1:A:10:A:C5      | 3.04                     | 0.46              |
| 1:A:113:G:H1'   | 1:A:354:G:H5'    | 1.97                     | 0.46              |
| 1:A:192:A:H2'   | 1:A:193:C:O4'    | 2.16                     | 0.46              |
| 1:A:200:G:C2    | 1:A:201:G:C8     | 3.04                     | 0.46              |
| 1:A:321:A:H2'   | 1:A:322:C:H6     | 1.80                     | 0.46              |
| 1:A:343:U:N3    | 1:A:345:C:O2     | 2.49                     | 0.46              |
| 1:A:688:G:C8    | 1:A:700:G:C2     | 3.03                     | 0.46              |
| 1:A:801:U:H2'   | 1:A:802:A:C8     | 2.50                     | 0.46              |
| 1:A:857:C:H3'   | 1:A:858:G:H8     | 1.81                     | 0.46              |
| 1:A:1016:A:HO2' | 1:A:1217:C:HO2'  | 1.64                     | 0.46              |
| 1:A:1347:G:C6   | 9:I:109:ARG:NH2  | 2.84                     | 0.46              |
| 1:A:1479:C:H2'  | 1:A:1480:A:C8    | 2.51                     | 0.46              |
| 1:A:1511:G:C2   | 1:A:1512:U:C2    | 3.03                     | 0.46              |
| 4:D:152:GLN:O   | 4:D:155:VAL:HG22 | 2.15                     | 0.46              |
| 7:G:58:GLU:OE1  | 7:G:58:GLU:N     | 2.40                     | 0.46              |
| 10:J:27:GLU:O   | 10:J:31:ARG:NH1  | 2.48                     | 0.46              |
| 12:L:77:HIS:CG  | 12:L:77:HIS:O    | 2.68                     | 0.46              |
| 13:M:71:ARG:HE  | 13:M:75:MET:HE2  | 1.81                     | 0.46              |
| 19:S:27:ASP:O   | 19:S:28:LYS:NZ   | 2.43                     | 0.46              |
| 1:A:91:U:O2'    | 1:A:92:U:O5'     | 2.33                     | 0.46              |
| 1:A:260:G:H2'   | 1:A:261:U:C6     | 2.51                     | 0.46              |
| 1:A:313:A:H2'   | 1:A:314:C:H6     | 1.81                     | 0.46              |
| 1:A:465:A:H3'   | 1:A:466:A:C8     | 2.50                     | 0.46              |
| 1:A:491:G:H2'   | 1:A:492:C:H6     | 1.81                     | 0.46              |
| 1:A:505:G:N1    | 1:A:506:G:C5     | 2.83                     | 0.46              |
| 1:A:642:A:C5    | 1:A:643:C:C5     | 3.04                     | 0.46              |
| 1:A:900:A:C6    | 1:A:901:A:C5     | 3.03                     | 0.46              |
| 1:A:945:G:H22   | 1:A:1236:A:H2    | 1.64                     | 0.46              |
| 1:A:959:A:N3    | 1:A:985:C:H1'    | 2.31                     | 0.46              |
| 1:A:988:G:C2    | 1:A:1218:C:C2    | 3.04                     | 0.46              |
| 1:A:1092:A:C5   | 1:A:1093:A:C6    | 3.04                     | 0.46              |
| 1:A:1182:G:H4'  | 1:A:1183:U:H5''  | 1.98                     | 0.46              |
| 1:A:1228:C:P    | 13:M:114:LYS:HB2 | 2.55                     | 0.46              |
| 1:A:1248:A:H5'' | 9:I:33:ARG:HH22  | 1.81                     | 0.46              |
| 1:A:1386:G:H2'  | 1:A:1387:G:H8    | 1.79                     | 0.46              |
| 1:A:1428:A:C6   | 1:A:1473:G:C6    | 3.04                     | 0.46              |
| 1:A:1510:C:H2'  | 1:A:1511:G:C8    | 2.47                     | 0.46              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 3:C:20:SER:OG    | 3:C:22:TRP:NE1  | 2.49                     | 0.46              |
| 3:C:169:ARG:HH22 | 3:C:172:ARG:HA  | 1.81                     | 0.46              |
| 5:E:48:PHE:O     | 5:E:67:ALA:HA   | 2.16                     | 0.46              |
| 15:O:47:LYS:HA   | 15:O:53:ARG:NH2 | 2.30                     | 0.46              |
| 1:A:126:G:H1     | 1:A:235:C:N4    | 2.14                     | 0.45              |
| 1:A:198:G:N2     | 1:A:220:G:H1'   | 2.31                     | 0.45              |
| 1:A:314:C:H2'    | 1:A:315:A:C8    | 2.51                     | 0.45              |
| 1:A:474:G:C2'    | 1:A:475:C:H5'   | 2.46                     | 0.45              |
| 1:A:505:G:OP2    | 1:A:535:A:H5'   | 2.17                     | 0.45              |
| 1:A:671:G:C6     | 1:A:736:C:C4    | 3.04                     | 0.45              |
| 1:A:676:A:H2     | 1:A:714:G:H22   | 1.62                     | 0.45              |
| 1:A:829:G:C2     | 1:A:830:G:C4    | 3.04                     | 0.45              |
| 1:A:947:G:C6     | 1:A:948:C:C4    | 3.04                     | 0.45              |
| 1:A:1071:C:C2    | 1:A:1105:A:C2   | 3.04                     | 0.45              |
| 1:A:1162:C:H2'   | 1:A:1163:A:H8   | 1.81                     | 0.45              |
| 4:D:54:GLN:O     | 4:D:58:LYS:N    | 2.42                     | 0.45              |
| 5:E:72:ILE:HD12  | 5:E:145:GLU:HB3 | 1.98                     | 0.45              |
| 6:F:35:LYS:HD2   | 6:F:35:LYS:N    | 2.31                     | 0.45              |
| 9:I:36:GLU:HA    | 9:I:45:ARG:HE   | 1.81                     | 0.45              |
| 14:N:46:LEU:O    | 14:N:49:GLN:HG2 | 2.16                     | 0.45              |
| 1:A:417:G:C2     | 1:A:418:C:C2    | 3.04                     | 0.45              |
| 1:A:505:G:C6     | 1:A:535:A:C2    | 3.04                     | 0.45              |
| 1:A:591:U:H2'    | 1:A:592:G:H8    | 1.79                     | 0.45              |
| 1:A:1161:C:H2'   | 1:A:1162:C:H6   | 1.81                     | 0.45              |
| 1:A:1221:G:H2'   | 1:A:1222:G:H8   | 1.81                     | 0.45              |
| 1:A:1371:G:H5''  | 9:I:71:GLY:N    | 2.31                     | 0.45              |
| 1:A:1448:C:H2'   | 1:A:1449:C:H6   | 1.80                     | 0.45              |
| 1:A:1511:G:H2'   | 1:A:1512:U:C6   | 2.52                     | 0.45              |
| 1:A:1520:C:H2'   | 1:A:1521:C:H6   | 1.79                     | 0.45              |
| 3:C:131:ARG:HG3  | 3:C:135:LYS:NZ  | 2.32                     | 0.45              |
| 7:G:14:PRO:HB3   | 7:G:21:GLU:HG3  | 1.97                     | 0.45              |
| 22:X:4:LEU:HB3   | 22:X:7:LYS:CB   | 2.45                     | 0.45              |
| 22:X:90:HIS:HA   | 22:X:93:ARG:NE  | 2.31                     | 0.45              |
| 1:A:156:C:C4     | 1:A:157:U:C4    | 3.05                     | 0.45              |
| 1:A:168:G:H2'    | 1:A:169:C:C6    | 2.51                     | 0.45              |
| 1:A:267:C:H2'    | 1:A:268:U:C6    | 2.52                     | 0.45              |
| 1:A:300:A:C5     | 1:A:301:G:H1'   | 2.51                     | 0.45              |
| 1:A:324:G:H22    | 1:A:327:A:P     | 2.39                     | 0.45              |
| 1:A:577:G:C2     | 1:A:578:C:C2    | 3.05                     | 0.45              |
| 1:A:604:G:C6     | 1:A:635:A:C6    | 3.05                     | 0.45              |
| 1:A:756:C:H2'    | 1:A:757:U:H6    | 1.81                     | 0.45              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:872:A:C8     | 1:A:874:G:C8      | 3.05                     | 0.45              |
| 1:A:1015:G:C6    | 1:A:1016:A:C5     | 3.05                     | 0.45              |
| 1:A:1279:G:H4'   | 1:A:1281:C:H5     | 1.80                     | 0.45              |
| 1:A:1425:U:H2'   | 1:A:1426:G:C8     | 2.47                     | 0.45              |
| 5:E:55:GLU:HG2   | 5:E:57:PRO:HD2    | 1.98                     | 0.45              |
| 7:G:27:VAL:O     | 7:G:31:MET:N      | 2.49                     | 0.45              |
| 10:J:30:LYS:HD3  | 10:J:30:LYS:HA    | 1.64                     | 0.45              |
| 11:K:20:VAL:HA   | 11:K:83:GLU:O     | 2.15                     | 0.45              |
| 17:Q:30:LYS:HB2  | 17:Q:37:PHE:CZ    | 2.51                     | 0.45              |
| 20:T:36:TYR:C    | 20:T:39:ILE:HG22  | 2.39                     | 0.45              |
| 21:V:73:GLN:NE2  | 21:V:97:PHE:N     | 2.64                     | 0.45              |
| 1:A:310:G:H2'    | 1:A:311:C:H6      | 1.81                     | 0.45              |
| 1:A:414:A:H2'    | 1:A:415:A:C8      | 2.52                     | 0.45              |
| 1:A:429:U:O4'    | 1:A:430:A:H8      | 2.00                     | 0.45              |
| 1:A:487:A:H3'    | 1:A:488:C:C6      | 2.49                     | 0.45              |
| 1:A:654:G:C5     | 1:A:753:A:C5      | 3.04                     | 0.45              |
| 1:A:661:G:C6     | 1:A:745:G:C6      | 3.05                     | 0.45              |
| 1:A:693:G:H2'    | 1:A:694:A:C8      | 2.51                     | 0.45              |
| 1:A:1228:C:P     | 13:M:107:ARG:HH22 | 2.40                     | 0.45              |
| 1:A:1245:C:H2'   | 1:A:1246:A:C8     | 2.50                     | 0.45              |
| 1:A:1318:A:O3'   | 19:S:3:ARG:NH2    | 2.44                     | 0.45              |
| 1:A:1526:G:C2    | 1:A:1527:U:C4     | 3.05                     | 0.45              |
| 5:E:62:LYS:HA    | 5:E:65:GLU:HB3    | 1.99                     | 0.45              |
| 5:E:161:VAL:HG23 | 5:E:162:GLU:H     | 1.82                     | 0.45              |
| 10:J:84:VAL:O    | 10:J:88:MET:HG2   | 2.16                     | 0.45              |
| 11:K:30:THR:C    | 11:K:31:ILE:HD12  | 2.42                     | 0.45              |
| 13:M:13:LYS:HD3  | 13:M:13:LYS:HA    | 1.71                     | 0.45              |
| 16:P:52:LEU:HD13 | 16:P:75:ILE:HG13  | 1.97                     | 0.45              |
| 22:X:124:MET:SD  | 22:X:137:ALA:HB2  | 2.56                     | 0.45              |
| 1:A:119:A:H4'    | 1:A:120:A:C8      | 2.52                     | 0.45              |
| 1:A:266:G:OP2    | 1:A:267:C:N4      | 2.50                     | 0.45              |
| 1:A:280:C:N3     | 17:Q:40:ARG:HA    | 2.31                     | 0.45              |
| 1:A:693:G:H8     | 21:V:10:ARG:HD3   | 1.81                     | 0.45              |
| 1:A:773:G:H2'    | 1:A:774:G:O4'     | 2.16                     | 0.45              |
| 1:A:1288:A:H2'   | 1:A:1289:A:H8     | 1.82                     | 0.45              |
| 1:A:1297:G:H1'   | 1:A:1298:U:H5     | 1.82                     | 0.45              |
| 1:A:1347:G:C4    | 1:A:1373:G:C6     | 3.04                     | 0.45              |
| 7:G:111:ARG:HD3  | 7:G:123:GLU:HG2   | 1.99                     | 0.45              |
| 8:H:12:THR:HA    | 8:H:15:ARG:HB3    | 1.98                     | 0.45              |
| 9:I:12:ARG:HA    | 9:I:12:ARG:HD2    | 1.64                     | 0.45              |
| 9:I:29:VAL:HG13  | 9:I:64:TYR:HA     | 1.99                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 11:K:81:ASN:O    | 11:K:82:LEU:HD12 | 2.16                     | 0.45              |
| 13:M:85:CYS:SG   | 19:S:73:GLU:HB3  | 2.56                     | 0.45              |
| 15:O:69:TYR:HA   | 15:O:72:ARG:HE   | 1.82                     | 0.45              |
| 17:Q:38:ILE:HD13 | 17:Q:38:ILE:HA   | 1.84                     | 0.45              |
| 1:A:41:G:H2'     | 1:A:42:G:H8      | 1.81                     | 0.45              |
| 1:A:131:A:C6     | 1:A:232:G:C6     | 3.05                     | 0.45              |
| 1:A:191:G:C2     | 1:A:192:A:C4     | 3.04                     | 0.45              |
| 1:A:453:G:H2'    | 1:A:454:G:O4'    | 2.16                     | 0.45              |
| 1:A:602:A:C6     | 1:A:603:U:C4     | 3.04                     | 0.45              |
| 1:A:685:G:H5'    | 11:K:42:LEU:HG   | 1.98                     | 0.45              |
| 1:A:834:U:H2'    | 1:A:835:U:C6     | 2.52                     | 0.45              |
| 1:A:898:G:H1'    | 1:A:901:A:H62    | 1.81                     | 0.45              |
| 1:A:984:C:O5'    | 1:A:984:C:H6     | 1.97                     | 0.45              |
| 1:A:1124:G:O2'   | 1:A:1145:A:N1    | 2.38                     | 0.45              |
| 1:A:1273:C:H3'   | 1:A:1274:A:H8    | 1.80                     | 0.45              |
| 1:A:1284:C:H2'   | 1:A:1285:A:C8    | 2.52                     | 0.45              |
| 6:F:37:HIS:N     | 6:F:63:ASN:O     | 2.50                     | 0.45              |
| 6:F:40:GLU:HB2   | 6:F:61:LEU:HB3   | 1.99                     | 0.45              |
| 8:H:77:ARG:NH2   | 8:H:79:SER:O     | 2.50                     | 0.45              |
| 9:I:31:ASN:OD1   | 9:I:68:LYS:NZ    | 2.46                     | 0.45              |
| 12:L:28:PRO:HB2  | 12:L:29:GLN:NE2  | 2.31                     | 0.45              |
| 19:S:49:ILE:O    | 19:S:59:PRO:HA   | 2.17                     | 0.45              |
| 1:A:11:G:H2'     | 1:A:12:U:H6      | 1.82                     | 0.45              |
| 1:A:507:C:H3'    | 1:A:508:U:H6     | 1.81                     | 0.45              |
| 1:A:580:C:H2'    | 1:A:581:G:O4'    | 2.17                     | 0.45              |
| 1:A:666:G:H2'    | 1:A:667:G:C8     | 2.50                     | 0.45              |
| 1:A:739:C:C4     | 1:A:740:U:C4     | 3.05                     | 0.45              |
| 1:A:801:U:C2     | 1:A:802:A:C8     | 3.04                     | 0.45              |
| 1:A:901:A:N7     | 1:A:902:G:H1'    | 2.32                     | 0.45              |
| 1:A:934:C:O2     | 1:A:937:A:N6     | 2.47                     | 0.45              |
| 1:A:959:A:N6     | 19:S:77:THR:O    | 2.46                     | 0.45              |
| 1:A:996:A:C6     | 1:A:997:U:C4     | 3.05                     | 0.45              |
| 1:A:1451:U:O2'   | 1:A:1452:C:OP1   | 2.33                     | 0.45              |
| 5:E:66:LYS:HG2   | 5:E:69:ARG:HH12  | 1.82                     | 0.45              |
| 8:H:49:PHE:HD2   | 8:H:59:LEU:HD11  | 1.82                     | 0.45              |
| 1:A:111:G:H8     | 1:A:111:G:O5'    | 2.00                     | 0.45              |
| 1:A:204:G:C6     | 1:A:205:A:C4     | 3.05                     | 0.45              |
| 1:A:676:A:C6     | 1:A:677:U:C4     | 3.05                     | 0.45              |
| 1:A:716:A:C2     | 1:A:717:U:C2     | 3.05                     | 0.45              |
| 1:A:728:A:C8     | 15:O:54:ARG:CZ   | 2.99                     | 0.45              |
| 1:A:761:G:C2     | 1:A:762:U:C2     | 3.04                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:945:G:C2     | 1:A:1337:G:C2    | 3.05                     | 0.45              |
| 1:A:976:G:N7     | 1:A:1362:A:N6    | 2.64                     | 0.45              |
| 1:A:1012:A:H2'   | 1:A:1013:G:H8    | 1.81                     | 0.45              |
| 1:A:1063:C:H3'   | 1:A:1064:G:H8    | 1.81                     | 0.45              |
| 1:A:1153:G:C2    | 1:A:1154:G:H1'   | 2.52                     | 0.45              |
| 1:A:1174:G:C2    | 1:A:1175:G:C4    | 3.04                     | 0.45              |
| 1:A:1379:G:N7    | 7:G:2:PRO:HG2    | 2.32                     | 0.45              |
| 1:A:1479:C:H2'   | 1:A:1480:A:H8    | 1.81                     | 0.45              |
| 4:D:113:GLU:O    | 4:D:117:LEU:N    | 2.50                     | 0.45              |
| 8:H:77:ARG:HA    | 8:H:127:CYS:HA   | 1.99                     | 0.45              |
| 14:N:79:LEU:HB2  | 14:N:84:VAL:HG13 | 1.99                     | 0.45              |
| 1:A:128:G:O6     | 1:A:129:A:N6     | 2.50                     | 0.45              |
| 1:A:160:A:H2'    | 1:A:161:A:O4'    | 2.16                     | 0.45              |
| 1:A:442:G:H22    | 1:A:491:G:H22    | 1.65                     | 0.45              |
| 1:A:445:G:C4     | 1:A:446:G:C8     | 3.05                     | 0.45              |
| 1:A:580:C:N4     | 1:A:761:G:C6     | 2.85                     | 0.45              |
| 1:A:683:G:C5     | 1:A:684:U:C4     | 3.05                     | 0.45              |
| 1:A:711:G:H2'    | 1:A:712:A:H8     | 1.82                     | 0.45              |
| 1:A:749:A:C6     | 1:A:750:C:C4     | 3.04                     | 0.45              |
| 1:A:828:U:C4     | 1:A:829:G:C8     | 3.05                     | 0.45              |
| 1:A:836:G:H3'    | 1:A:837:U:C6     | 2.52                     | 0.45              |
| 1:A:1002:G:C6    | 1:A:1039:G:C6    | 3.05                     | 0.45              |
| 1:A:1077:G:C2    | 1:A:1079:G:H3'   | 2.52                     | 0.45              |
| 1:A:1136:C:O2'   | 1:A:1137:C:H5'   | 2.17                     | 0.45              |
| 1:A:1225:A:H2'   | 1:A:1226:C:C5    | 2.51                     | 0.45              |
| 1:A:1350:A:OP2   | 9:I:120:LYS:NZ   | 2.29                     | 0.45              |
| 3:C:127:ARG:HE   | 3:C:127:ARG:HB2  | 1.59                     | 0.45              |
| 22:X:123:GLU:OE1 | 22:X:123:GLU:N   | 2.38                     | 0.45              |
| 1:A:171:A:O2'    | 1:A:172:A:O4'    | 2.31                     | 0.45              |
| 1:A:207:C:N3     | 1:A:213:G:C2     | 2.85                     | 0.45              |
| 1:A:1106:G:H2'   | 1:A:1107:C:H6    | 1.82                     | 0.45              |
| 1:A:1253:G:C6    | 1:A:1254:A:C5    | 3.04                     | 0.45              |
| 1:A:1316:G:N2    | 1:A:1318:A:H3'   | 2.32                     | 0.45              |
| 1:A:1348:U:H2'   | 1:A:1349:A:C8    | 2.52                     | 0.45              |
| 1:A:1350:A:O2'   | 7:G:33:ASP:OD1   | 2.23                     | 0.45              |
| 3:C:108:LYS:HB3  | 3:C:111:LEU:HG   | 1.99                     | 0.45              |
| 3:C:123:GLN:HB3  | 3:C:128:VAL:HG11 | 1.98                     | 0.45              |
| 3:C:140:ASN:HA   | 3:C:143:ARG:NH2  | 2.32                     | 0.45              |
| 4:D:62:ARG:NH2   | 4:D:69:GLU:H     | 2.14                     | 0.45              |
| 19:S:47:LEU:O    | 19:S:62:VAL:HG12 | 2.17                     | 0.45              |
| 20:T:79:LEU:CD2  | 20:T:83:ILE:HD11 | 2.46                     | 0.45              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:9:G:C2      | 1:A:26:A:C5      | 3.05                     | 0.44              |
| 1:A:144:G:C2    | 1:A:145:G:C4     | 3.05                     | 0.44              |
| 1:A:181:A:C6    | 1:A:194:C:H2'    | 2.52                     | 0.44              |
| 1:A:410:G:H1'   | 1:A:433:G:C2     | 2.52                     | 0.44              |
| 1:A:562:U:O2'   | 12:L:14:ARG:NH2  | 2.50                     | 0.44              |
| 1:A:674:G:H21   | 11:K:118:HIS:CG  | 2.34                     | 0.44              |
| 1:A:771:G:C5    | 1:A:809:G:C2     | 3.05                     | 0.44              |
| 1:A:974:A:C4    | 14:N:71:HIS:HE1  | 2.34                     | 0.44              |
| 1:A:1067:A:H1'  | 1:A:1068:G:O4'   | 2.17                     | 0.44              |
| 1:A:1306:A:C6   | 1:A:1307:U:C2    | 3.05                     | 0.44              |
| 1:A:1464:U:H2'  | 1:A:1465:A:C8    | 2.51                     | 0.44              |
| 1:A:1518:MA6:H8 | 1:A:1518:MA6:O5' | 2.17                     | 0.44              |
| 2:B:107:VAL:O   | 2:B:111:ILE:HG12 | 2.16                     | 0.44              |
| 4:D:97:ARG:HH21 | 4:D:133:ALA:C    | 2.24                     | 0.44              |
| 8:H:18:GLN:HE22 | 8:H:71:VAL:H     | 1.66                     | 0.44              |
| 13:M:6:GLY:HA2  | 13:M:66:GLU:HG3  | 1.98                     | 0.44              |
| 16:P:4:ILE:HA   | 16:P:20:VAL:O    | 2.17                     | 0.44              |
| 21:V:12:ALA:HA  | 21:V:43:MET:HE2  | 1.98                     | 0.44              |
| 21:V:16:GLN:C   | 21:V:19:ILE:HG12 | 2.43                     | 0.44              |
| 1:A:147:G:C2    | 1:A:148:G:C5     | 3.05                     | 0.44              |
| 1:A:188:C:C4    | 1:A:189:A:C5     | 3.05                     | 0.44              |
| 1:A:250:A:N1    | 1:A:275:G:C6     | 2.85                     | 0.44              |
| 1:A:279:A:P     | 1:A:281:G:H5'    | 2.57                     | 0.44              |
| 1:A:398:U:H2'   | 1:A:399:G:C8     | 2.51                     | 0.44              |
| 1:A:417:G:C6    | 1:A:418:C:C4     | 3.05                     | 0.44              |
| 1:A:518:C:C5    | 1:A:529:G:H2'    | 2.52                     | 0.44              |
| 1:A:801:U:H2'   | 1:A:802:A:H8     | 1.83                     | 0.44              |
| 1:A:836:G:C6    | 1:A:837:U:N3     | 2.85                     | 0.44              |
| 1:A:933:G:C2    | 1:A:935:A:O4'    | 2.71                     | 0.44              |
| 1:A:953:G:C2    | 1:A:954:G:H1'    | 2.53                     | 0.44              |
| 1:A:1051:C:C4   | 1:A:1052:U:C4    | 3.04                     | 0.44              |
| 1:A:1286:U:HO2' | 1:A:1287:A:P     | 2.39                     | 0.44              |
| 1:A:1526:G:H2'  | 1:A:1527:U:C6    | 2.52                     | 0.44              |
| 15:O:80:GLN:HG3 | 15:O:81:LEU:N    | 2.32                     | 0.44              |
| 17:Q:30:LYS:HB2 | 17:Q:37:PHE:CE1  | 2.52                     | 0.44              |
| 20:T:9:LYS:HB3  | 20:T:13:GLN:OE1  | 2.17                     | 0.44              |
| 20:T:16:LYS:HE2 | 20:T:19:LYS:HZ1  | 1.81                     | 0.44              |
| 1:A:71:A:N1     | 1:A:99:C:O2'     | 2.46                     | 0.44              |
| 1:A:182:A:C4    | 1:A:184:G:C8     | 3.06                     | 0.44              |
| 1:A:265:G:O2'   | 1:A:267:C:OP1    | 2.25                     | 0.44              |
| 1:A:414:A:C4    | 1:A:415:A:C8     | 3.05                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:431:A:C4     | 1:A:432:A:C8     | 3.05                     | 0.44              |
| 1:A:767:A:HO2'   | 1:A:1524:C:HO2'  | 1.64                     | 0.44              |
| 1:A:769:G:H2'    | 1:A:770:C:H6     | 1.82                     | 0.44              |
| 1:A:912:C:H2'    | 1:A:913:A:C8     | 2.53                     | 0.44              |
| 1:A:1133:G:C4    | 1:A:1134:G:C8    | 3.06                     | 0.44              |
| 1:A:1260:G:OP1   | 1:A:1284:C:O2'   | 2.31                     | 0.44              |
| 1:A:1489:G:N7    | 1:A:1490:U:C4    | 2.85                     | 0.44              |
| 1:A:1518:MA6:H3' | 1:A:1519:MA6:H8  | 1.99                     | 0.44              |
| 9:I:58:VAL:HG23  | 9:I:59:GLU:N     | 2.31                     | 0.44              |
| 10:J:56:HIS:C    | 10:J:57:VAL:HG12 | 2.42                     | 0.44              |
| 14:N:37:SER:C    | 14:N:39:GLU:H    | 2.25                     | 0.44              |
| 17:Q:31:HIS:CE1  | 17:Q:33:ILE:H    | 2.36                     | 0.44              |
| 1:A:90:C:HO2'    | 1:A:91:U:C5'     | 2.31                     | 0.44              |
| 1:A:175:C:H2'    | 1:A:176:C:H6     | 1.81                     | 0.44              |
| 1:A:181:A:N6     | 1:A:195:A:OP2    | 2.35                     | 0.44              |
| 1:A:300:A:C8     | 1:A:301:G:C8     | 3.05                     | 0.44              |
| 1:A:339:C:H2'    | 1:A:340:U:H6     | 1.82                     | 0.44              |
| 1:A:382:A:H2'    | 1:A:383:A:C8     | 2.52                     | 0.44              |
| 1:A:575:G:C6     | 1:A:821:G:N7     | 2.85                     | 0.44              |
| 1:A:588:G:C5     | 1:A:753:A:C4     | 3.06                     | 0.44              |
| 1:A:687:A:H4'    | 1:A:688:G:OP1    | 2.17                     | 0.44              |
| 1:A:836:G:C5     | 1:A:837:U:C4     | 3.06                     | 0.44              |
| 1:A:859:G:H2'    | 1:A:860:A:C8     | 2.52                     | 0.44              |
| 1:A:986:U:H1'    | 19:S:55:ARG:HA   | 2.00                     | 0.44              |
| 1:A:993:G:N2     | 1:A:1045:C:O2    | 2.44                     | 0.44              |
| 1:A:1143:G:H2'   | 1:A:1144:G:O4'   | 2.17                     | 0.44              |
| 1:A:1511:G:H2'   | 1:A:1512:U:H6    | 1.82                     | 0.44              |
| 1:A:1535:C:H3'   | 18:R:43:ARG:NH2  | 2.33                     | 0.44              |
| 9:I:5:GLN:HA     | 9:I:21:ILE:O     | 2.18                     | 0.44              |
| 9:I:113:ARG:NE   | 14:N:101:TRP:OXT | 2.47                     | 0.44              |
| 19:S:21:LYS:HD3  | 19:S:21:LYS:HA   | 1.64                     | 0.44              |
| 20:T:3:ASN:OD1   | 20:T:3:ASN:N     | 2.49                     | 0.44              |
| 1:A:164:G:C2     | 1:A:165:G:C8     | 3.06                     | 0.44              |
| 1:A:627:G:N2     | 1:A:628:G:H1'    | 2.33                     | 0.44              |
| 1:A:750:C:H1'    | 15:O:22:THR:OG1  | 2.18                     | 0.44              |
| 1:A:765:G:N7     | 1:A:812:G:N1     | 2.65                     | 0.44              |
| 1:A:838:G:H2'    | 1:A:839:C:O4'    | 2.18                     | 0.44              |
| 1:A:872:A:C6     | 1:A:874:G:C4     | 3.05                     | 0.44              |
| 1:A:936:C:C2     | 1:A:937:A:C8     | 3.05                     | 0.44              |
| 1:A:1147:C:O2'   | 9:I:18:ARG:NE    | 2.51                     | 0.44              |
| 1:A:1179:A:H5''  | 9:I:104:VAL:HG12 | 2.00                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1193:G:C2    | 1:A:1194:U:C2    | 3.06                     | 0.44              |
| 3:C:14:ILE:H     | 3:C:14:ILE:HD12  | 1.82                     | 0.44              |
| 3:C:156:ARG:HA   | 3:C:162:ILE:O    | 2.18                     | 0.44              |
| 6:F:71:ILE:O     | 6:F:75:GLU:HG3   | 2.16                     | 0.44              |
| 17:Q:47:HIS:HA   | 17:Q:71:LYS:HD2  | 1.99                     | 0.44              |
| 1:A:35:G:C5      | 1:A:36:C:C4      | 3.06                     | 0.44              |
| 1:A:216:U:H2'    | 1:A:217:C:H6     | 1.82                     | 0.44              |
| 1:A:402:G:C6     | 1:A:403:C:C4     | 3.06                     | 0.44              |
| 1:A:544:G:C5     | 1:A:545:C:C4     | 3.05                     | 0.44              |
| 1:A:784:A:N6     | 1:A:799:G:C6     | 2.86                     | 0.44              |
| 1:A:786:G:H2'    | 1:A:787:A:H8     | 1.79                     | 0.44              |
| 1:A:979:C:H3'    | 1:A:980:C:H6     | 1.83                     | 0.44              |
| 1:A:1137:C:O2    | 1:A:1138:G:N2    | 2.51                     | 0.44              |
| 1:A:1266:G:H2'   | 1:A:1268:G:OP2   | 2.16                     | 0.44              |
| 3:C:138:VAL:HG21 | 3:C:168:TYR:CE2  | 2.53                     | 0.44              |
| 4:D:54:GLN:HB2   | 4:D:203:LEU:HD13 | 1.99                     | 0.44              |
| 7:G:17:LYS:HD2   | 7:G:44:TYR:CE2   | 2.53                     | 0.44              |
| 8:H:10:MET:HG3   | 8:H:27:MET:CE    | 2.48                     | 0.44              |
| 16:P:56:ARG:O    | 16:P:59:HIS:HB3  | 2.17                     | 0.44              |
| 17:Q:20:SER:OG   | 17:Q:71:LYS:NZ   | 2.25                     | 0.44              |
| 19:S:10:PHE:O    | 19:S:39:THR:N    | 2.51                     | 0.44              |
| 19:S:40:ILE:HG13 | 19:S:69:HIS:O    | 2.18                     | 0.44              |
| 21:V:16:GLN:CA   | 21:V:19:ILE:HG12 | 2.46                     | 0.44              |
| 1:A:29:U:H2'     | 1:A:30:U:C6      | 2.53                     | 0.44              |
| 1:A:235:C:O2'    | 1:A:236:A:H5'    | 2.17                     | 0.44              |
| 1:A:424:G:C6     | 1:A:425:G:C5     | 3.06                     | 0.44              |
| 1:A:453:G:C4     | 1:A:454:G:C8     | 3.06                     | 0.44              |
| 1:A:530:G:H2'    | 1:A:531:U:C6     | 2.53                     | 0.44              |
| 1:A:553:A:H2'    | 1:A:554:A:O4'    | 2.18                     | 0.44              |
| 1:A:703:G:H4'    | 1:A:704:A:C8     | 2.48                     | 0.44              |
| 1:A:727:G:C2     | 1:A:731:G:C4     | 3.05                     | 0.44              |
| 1:A:774:G:C2     | 1:A:806:C:C2     | 3.06                     | 0.44              |
| 1:A:845:A:H2'    | 1:A:846:G:H5'    | 2.00                     | 0.44              |
| 1:A:1047:G:O2'   | 1:A:1215:G:O2'   | 2.21                     | 0.44              |
| 1:A:1126:U:P     | 10:J:7:ARG:HH22  | 2.39                     | 0.44              |
| 1:A:1291:U:H2'   | 1:A:1292:G:C8    | 2.51                     | 0.44              |
| 1:A:1425:U:O2'   | 1:A:1426:G:H5'   | 2.18                     | 0.44              |
| 2:B:154:MET:HG2  | 2:B:156:GLY:O    | 2.18                     | 0.44              |
| 4:D:171:LEU:HD23 | 4:D:182:PHE:HA   | 1.99                     | 0.44              |
| 7:G:58:GLU:HA    | 7:G:61:ALA:HB3   | 2.00                     | 0.44              |
| 8:H:87:LYS:HG2   | 8:H:125:ILE:HD12 | 1.99                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 17:Q:10:GLY:HA3  | 17:Q:25:ILE:HG13  | 1.99                     | 0.44              |
| 19:S:17:LYS:HA   | 19:S:20:GLU:OE2   | 2.18                     | 0.44              |
| 1:A:105:G:C5     | 1:A:106:C:C4      | 3.05                     | 0.44              |
| 1:A:157:U:H2'    | 1:A:158:G:H8      | 1.83                     | 0.44              |
| 1:A:332:G:C6     | 1:A:333:U:C4      | 3.06                     | 0.44              |
| 1:A:421:U:O2     | 3:C:127:ARG:NH2   | 2.51                     | 0.44              |
| 1:A:451:A:H4'    | 1:A:452:A:O4'     | 2.17                     | 0.44              |
| 1:A:608:A:C6     | 1:A:609:A:C4      | 3.06                     | 0.44              |
| 1:A:847:G:C6     | 1:A:848:C:C4      | 3.06                     | 0.44              |
| 1:A:981:U:P      | 14:N:13:ARG:HH22  | 2.40                     | 0.44              |
| 1:A:1128:C:N3    | 1:A:1145:A:N6     | 2.66                     | 0.44              |
| 1:A:1166:G:O2'   | 1:A:1169:A:N6     | 2.51                     | 0.44              |
| 1:A:1256:A:H8    | 1:A:1256:A:O5'    | 2.01                     | 0.44              |
| 1:A:1349:A:H2'   | 1:A:1350:A:O4'    | 2.18                     | 0.44              |
| 1:A:1433:A:C8    | 1:A:1468:A:C6     | 3.06                     | 0.44              |
| 3:C:55:ILE:HG13  | 3:C:57:ILE:HD11   | 2.00                     | 0.44              |
| 6:F:3:HIS:HA     | 6:F:65:GLU:HA     | 1.99                     | 0.44              |
| 6:F:78:PHE:N     | 6:F:78:PHE:CD1    | 2.84                     | 0.44              |
| 7:G:88:PRO:HD3   | 7:G:148:ASN:OD1   | 2.18                     | 0.44              |
| 10:J:7:ARG:O     | 10:J:100:ILE:HD12 | 2.18                     | 0.44              |
| 11:K:98:ARG:HH12 | 21:V:57:LEU:HD12  | 1.82                     | 0.44              |
| 12:L:41:THR:HA   | 12:L:48:ALA:O     | 2.18                     | 0.44              |
| 14:N:63:ARG:HD2  | 14:N:68:GLY:O     | 2.17                     | 0.44              |
| 15:O:55:GLY:O    | 15:O:58:ARG:N     | 2.51                     | 0.44              |
| 22:X:87:THR:O    | 22:X:90:HIS:N     | 2.49                     | 0.44              |
| 1:A:3:A:O2'      | 1:A:612:C:O2'     | 2.10                     | 0.44              |
| 1:A:257:G:C6     | 1:A:270:A:C6      | 3.05                     | 0.44              |
| 1:A:429:U:O2     | 1:A:430:A:C8      | 2.70                     | 0.44              |
| 1:A:504:C:C2     | 1:A:542:G:C2      | 3.06                     | 0.44              |
| 1:A:544:G:C6     | 1:A:545:C:C4      | 3.05                     | 0.44              |
| 1:A:635:A:C6     | 1:A:636:U:C4      | 3.05                     | 0.44              |
| 1:A:802:A:C8     | 1:A:803:G:C8      | 3.06                     | 0.44              |
| 1:A:818:G:O2'    | 1:A:820:U:H6      | 2.00                     | 0.44              |
| 1:A:1095:U:H2'   | 1:A:1096:C:C6     | 2.53                     | 0.44              |
| 1:A:1105:A:O2'   | 1:A:1106:G:H5'    | 2.18                     | 0.44              |
| 1:A:1228:C:OP1   | 13:M:114:LYS:HB2  | 2.18                     | 0.44              |
| 1:A:1237:C:O2'   | 1:A:1335:U:O4'    | 2.26                     | 0.44              |
| 1:A:1261:A:H4'   | 1:A:1284:C:OP1    | 2.18                     | 0.44              |
| 3:C:58:GLU:OE2   | 3:C:65:ARG:NE     | 2.50                     | 0.44              |
| 4:D:28:ILE:CD1   | 4:D:34:ILE:CD1    | 2.95                     | 0.44              |
| 8:H:77:ARG:HH21  | 8:H:81:PRO:N      | 2.16                     | 0.44              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 8:H:94:LYS:HB3  | 8:H:94:LYS:HE3   | 1.82                     | 0.44              |
| 9:I:96:SER:O    | 9:I:100:LYS:HG2  | 2.18                     | 0.44              |
| 15:O:26:GLU:OE2 | 15:O:77:ARG:HD2  | 2.18                     | 0.44              |
| 15:O:73:LYS:HD3 | 15:O:73:LYS:HA   | 1.72                     | 0.44              |
| 21:V:87:MET:HB2 | 21:V:89:LEU:HG   | 1.98                     | 0.44              |
| 22:X:40:ILE:O   | 22:X:40:ILE:HG13 | 2.18                     | 0.44              |
| 1:A:120:A:C5    | 1:A:122:G:C6     | 3.06                     | 0.43              |
| 1:A:144:G:H2'   | 1:A:145:G:C8     | 2.53                     | 0.43              |
| 1:A:465:A:C2    | 1:A:466:A:C4     | 3.05                     | 0.43              |
| 1:A:515:G:C6    | 1:A:537:G:C6     | 3.06                     | 0.43              |
| 1:A:520:A:C5'   | 12:L:49:LEU:H    | 2.31                     | 0.43              |
| 1:A:540:G:H2'   | 1:A:541:G:C8     | 2.53                     | 0.43              |
| 1:A:590:U:O2'   | 1:A:591:U:O5'    | 2.31                     | 0.43              |
| 1:A:600:A:C5    | 1:A:639:G:C2     | 3.06                     | 0.43              |
| 1:A:977:A:O2'   | 1:A:981:U:O2     | 2.35                     | 0.43              |
| 1:A:1057:G:C5   | 1:A:1058:G:C5    | 3.06                     | 0.43              |
| 1:A:1073:U:H2'  | 1:A:1074:G:O4'   | 2.17                     | 0.43              |
| 1:A:1166:G:C5   | 1:A:1168:U:H5''  | 2.52                     | 0.43              |
| 1:A:1179:A:N6   | 1:A:1180:A:N1    | 2.66                     | 0.43              |
| 1:A:1233:G:H2'  | 1:A:1234:C:C6    | 2.53                     | 0.43              |
| 1:A:1237:C:HO2' | 1:A:1300:G:H22   | 1.52                     | 0.43              |
| 1:A:1306:A:H2'  | 1:A:1307:U:O4'   | 2.17                     | 0.43              |
| 1:A:1375:A:H5'' | 7:G:25:LYS:HE3   | 1.99                     | 0.43              |
| 1:A:1426:G:C4   | 1:A:1475:G:C2    | 3.05                     | 0.43              |
| 3:C:32:ASN:OD1  | 3:C:59:ARG:HD2   | 2.18                     | 0.43              |
| 3:C:148:GLY:CA  | 3:C:172:ARG:H    | 2.31                     | 0.43              |
| 4:D:58:LYS:NZ   | 4:D:62:ARG:HD2   | 2.33                     | 0.43              |
| 5:E:109:GLY:O   | 5:E:112:ARG:HB3  | 2.18                     | 0.43              |
| 8:H:127:CYS:SG  | 8:H:128:TYR:N    | 2.91                     | 0.43              |
| 11:K:19:GLY:HA3 | 11:K:81:ASN:O    | 2.17                     | 0.43              |
| 19:S:22:ALA:O   | 19:S:26:GLY:N    | 2.36                     | 0.43              |
| 22:X:88:ALA:HA  | 22:X:91:TYR:HD1  | 1.83                     | 0.43              |
| 1:A:46:G:H2'    | 1:A:366:A:N7     | 2.32                     | 0.43              |
| 1:A:126:G:C6    | 1:A:236:A:N1     | 2.86                     | 0.43              |
| 1:A:197:A:C2    | 1:A:220:G:N3     | 2.86                     | 0.43              |
| 1:A:234:C:H2'   | 1:A:235:C:C6     | 2.53                     | 0.43              |
| 1:A:236:A:H8    | 1:A:236:A:OP2    | 2.01                     | 0.43              |
| 1:A:251:G:C2    | 1:A:266:G:C5     | 3.05                     | 0.43              |
| 1:A:358:U:H2'   | 1:A:359:G:H8     | 1.82                     | 0.43              |
| 1:A:517:G:N3    | 1:A:530:G:H8     | 2.16                     | 0.43              |
| 1:A:588:G:C6    | 1:A:753:A:C8     | 3.06                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:667:G:H4'    | 15:O:51:HIS:CG   | 2.54                     | 0.43              |
| 1:A:730:G:H2'    | 1:A:766:A:H5'    | 2.00                     | 0.43              |
| 1:A:859:G:C2     | 1:A:860:A:C4     | 3.06                     | 0.43              |
| 1:A:1133:G:C2    | 1:A:1142:G:C2    | 3.06                     | 0.43              |
| 1:A:1484:C:OP2   | 22:X:112:LYS:HD3 | 2.18                     | 0.43              |
| 1:A:1491:G:H3'   | 22:X:30:ARG:HD2  | 1.99                     | 0.43              |
| 1:A:1526:G:H2'   | 1:A:1527:U:H6    | 1.83                     | 0.43              |
| 2:B:171:ILE:O    | 2:B:175:GLU:HG3  | 2.18                     | 0.43              |
| 9:I:42:GLU:OE1   | 9:I:45:ARG:HD2   | 2.17                     | 0.43              |
| 9:I:98:LEU:O     | 9:I:102:GLY:N    | 2.51                     | 0.43              |
| 22:X:29:ILE:HD11 | 22:X:37:ARG:NH2  | 2.32                     | 0.43              |
| 22:X:100:THR:HA  | 22:X:114:GLN:HA  | 1.99                     | 0.43              |
| 1:A:39:G:C4      | 1:A:404:G:C2     | 3.06                     | 0.43              |
| 1:A:161:A:N1     | 1:A:347:G:O2'    | 2.33                     | 0.43              |
| 1:A:223:A:H2'    | 1:A:224:U:C6     | 2.54                     | 0.43              |
| 1:A:355:C:H2'    | 1:A:356:A:O4'    | 2.18                     | 0.43              |
| 1:A:504:C:N4     | 1:A:541:G:H1     | 2.12                     | 0.43              |
| 1:A:517:G:C4     | 1:A:530:G:H8     | 2.36                     | 0.43              |
| 1:A:646:G:H2'    | 1:A:647:C:C6     | 2.53                     | 0.43              |
| 1:A:667:G:O2'    | 15:O:51:HIS:ND1  | 2.39                     | 0.43              |
| 1:A:766:A:C4     | 1:A:767:A:C8     | 3.07                     | 0.43              |
| 1:A:779:C:C4     | 1:A:780:A:C6     | 3.06                     | 0.43              |
| 1:A:899:C:P      | 1:A:899:C:H6     | 2.41                     | 0.43              |
| 1:A:1145:A:O4'   | 1:A:1146:A:H8    | 2.00                     | 0.43              |
| 2:B:68:LEU:HA    | 2:B:90:PHE:O     | 2.19                     | 0.43              |
| 3:C:148:GLY:HA3  | 3:C:172:ARG:H    | 1.82                     | 0.43              |
| 4:D:50:ASP:O     | 4:D:54:GLN:HG3   | 2.18                     | 0.43              |
| 5:E:95:PHE:CE2   | 5:E:97:GLN:HB2   | 2.53                     | 0.43              |
| 12:L:18:LYS:HB2  | 12:L:18:LYS:HE3  | 1.86                     | 0.43              |
| 22:X:13:THR:OG1  | 22:X:17:GLU:HG2  | 2.18                     | 0.43              |
| 1:A:46:G:H2'     | 1:A:366:A:C5     | 2.53                     | 0.43              |
| 1:A:246:A:N1     | 1:A:278:G:O2'    | 2.42                     | 0.43              |
| 1:A:292:G:OP2    | 1:A:305:G:N1     | 2.34                     | 0.43              |
| 1:A:500:G:H2'    | 1:A:501:C:H6     | 1.81                     | 0.43              |
| 1:A:512:U:H2'    | 1:A:513:C:C6     | 2.52                     | 0.43              |
| 1:A:611:C:H2'    | 1:A:612:C:C6     | 2.54                     | 0.43              |
| 1:A:1103:C:H2'   | 1:A:1104:G:O4'   | 2.18                     | 0.43              |
| 3:C:32:ASN:ND2   | 3:C:59:ARG:HD2   | 2.33                     | 0.43              |
| 7:G:17:LYS:HE2   | 7:G:17:LYS:HB2   | 1.86                     | 0.43              |
| 10:J:10:LEU:HA   | 10:J:97:ASP:O    | 2.19                     | 0.43              |
| 10:J:11:LYS:HG2  | 10:J:71:LEU:HD13 | 2.01                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 14:N:9:ARG:O     | 14:N:13:ARG:HG3  | 2.18                     | 0.43              |
| 15:O:62:GLN:O    | 15:O:66:LEU:HG   | 2.18                     | 0.43              |
| 1:A:107:G:N2     | 1:A:108:G:H1'    | 2.34                     | 0.43              |
| 1:A:122:G:C6     | 1:A:123:U:C4     | 3.06                     | 0.43              |
| 1:A:134:G:C6     | 1:A:135:C:N3     | 2.86                     | 0.43              |
| 1:A:431:A:C5     | 1:A:432:A:C8     | 3.07                     | 0.43              |
| 1:A:558:G:C4     | 1:A:559:A:C2     | 3.07                     | 0.43              |
| 1:A:604:G:C6     | 1:A:605:U:C2     | 3.06                     | 0.43              |
| 1:A:711:G:C2     | 1:A:712:A:C4     | 3.06                     | 0.43              |
| 1:A:843:U:O2     | 1:A:844:G:N7     | 2.52                     | 0.43              |
| 1:A:1127:G:C6    | 1:A:1128:C:C4    | 3.06                     | 0.43              |
| 1:A:1140:C:HO2'  | 1:A:1141:C:P     | 2.38                     | 0.43              |
| 1:A:1227:A:OP1   | 19:S:80:TYR:OH   | 2.31                     | 0.43              |
| 1:A:1338:G:N2    | 1:A:1339:A:H1'   | 2.32                     | 0.43              |
| 1:A:1433:A:C6    | 1:A:1434:A:C5    | 3.06                     | 0.43              |
| 6:F:1:MET:HA     | 6:F:67:PRO:N     | 2.33                     | 0.43              |
| 9:I:31:ASN:HB2   | 9:I:38:TYR:HE1   | 1.84                     | 0.43              |
| 12:L:39:THR:CG2  | 22:X:55:SER:OG   | 2.66                     | 0.43              |
| 1:A:106:C:H2'    | 1:A:107:G:C8     | 2.46                     | 0.43              |
| 1:A:182:A:P      | 1:A:182:A:H8     | 2.41                     | 0.43              |
| 1:A:379:C:H2'    | 1:A:380:G:O4'    | 2.18                     | 0.43              |
| 1:A:414:A:C6     | 1:A:415:A:C5     | 3.07                     | 0.43              |
| 1:A:453:G:C6     | 1:A:454:G:C5     | 3.07                     | 0.43              |
| 1:A:725:G:C6     | 1:A:726:C:C4     | 3.07                     | 0.43              |
| 1:A:757:U:H2'    | 1:A:758:C:H6     | 1.84                     | 0.43              |
| 1:A:1014:A:C5    | 1:A:1015:G:C5    | 3.07                     | 0.43              |
| 1:A:1134:G:N1    | 1:A:1141:C:C4    | 2.87                     | 0.43              |
| 1:A:1338:G:H2'   | 1:A:1339:A:C8    | 2.54                     | 0.43              |
| 1:A:1433:A:H2'   | 1:A:1434:A:O4'   | 2.18                     | 0.43              |
| 10:J:44:THR:HB   | 10:J:69:THR:O    | 2.19                     | 0.43              |
| 11:K:42:LEU:HD13 | 11:K:77:TYR:CE2  | 2.40                     | 0.43              |
| 18:R:50:LYS:O    | 18:R:54:GLN:N    | 2.40                     | 0.43              |
| 19:S:35:SER:O    | 19:S:71:LEU:HD12 | 2.19                     | 0.43              |
| 1:A:57:G:H2'     | 1:A:58:C:C6      | 2.54                     | 0.43              |
| 1:A:106:C:O2'    | 1:A:379:C:H5''   | 2.19                     | 0.43              |
| 1:A:203:G:C2     | 1:A:215:C:C2     | 3.07                     | 0.43              |
| 1:A:255:G:C6     | 1:A:272:C:N3     | 2.87                     | 0.43              |
| 1:A:500:G:C5     | 1:A:546:A:C2     | 3.07                     | 0.43              |
| 1:A:520:A:H5'    | 12:L:49:LEU:H    | 1.83                     | 0.43              |
| 1:A:675:A:H1'    | 11:K:118:HIS:CD2 | 2.54                     | 0.43              |
| 1:A:719:C:H3'    | 1:A:720:C:C6     | 2.53                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:799:G:C6     | 1:A:800:G:C4     | 3.06                     | 0.43              |
| 1:A:841:C:N3     | 1:A:846:G:N1     | 2.66                     | 0.43              |
| 1:A:844:G:C4     | 1:A:845:A:H1'    | 2.52                     | 0.43              |
| 1:A:933:G:C5     | 1:A:935:A:C8     | 3.07                     | 0.43              |
| 1:A:1014:A:N6    | 1:A:1015:G:C6    | 2.86                     | 0.43              |
| 1:A:1105:A:N1    | 1:A:1106:G:C6    | 2.87                     | 0.43              |
| 1:A:1149:C:H2'   | 1:A:1150:A:C8    | 2.54                     | 0.43              |
| 1:A:1178:G:C8    | 9:I:99:ARG:NH1   | 2.87                     | 0.43              |
| 1:A:1237:C:H3'   | 1:A:1336:C:H41   | 1.83                     | 0.43              |
| 1:A:1300:G:C4    | 1:A:1334:G:C6    | 3.07                     | 0.43              |
| 1:A:1326:U:H2'   | 1:A:1327:C:C6    | 2.54                     | 0.43              |
| 1:A:1347:G:H5''  | 9:I:110:GLN:O    | 2.18                     | 0.43              |
| 1:A:1351:U:H1'   | 7:G:33:ASP:HB3   | 2.01                     | 0.43              |
| 1:A:1535:C:H4'   | 21:V:29:ASP:HB3  | 2.01                     | 0.43              |
| 6:F:9:MET:HG3    | 6:F:59:TYR:HA    | 2.01                     | 0.43              |
| 8:H:7:ILE:HG22   | 8:H:77:ARG:HD2   | 2.00                     | 0.43              |
| 18:R:33:ILE:HG23 | 18:R:37:GLY:HA2  | 1.99                     | 0.43              |
| 19:S:14:HIS:O    | 19:S:18:LYS:HG3  | 2.19                     | 0.43              |
| 20:T:73:ALA:O    | 20:T:74:ARG:C    | 2.60                     | 0.43              |
| 1:A:144:G:C6     | 1:A:145:G:C5     | 3.07                     | 0.43              |
| 1:A:205:A:C5     | 1:A:206:C:C4     | 3.06                     | 0.43              |
| 1:A:211:G:H3'    | 1:A:211:G:N3     | 2.34                     | 0.43              |
| 1:A:293:G:C4     | 1:A:305:G:N2     | 2.87                     | 0.43              |
| 1:A:318:G:H2'    | 1:A:319:G:H8     | 1.83                     | 0.43              |
| 1:A:345:C:H5''   | 1:A:346:G:O4'    | 2.19                     | 0.43              |
| 1:A:575:G:O2'    | 1:A:821:G:H5'    | 2.19                     | 0.43              |
| 1:A:706:A:O2'    | 11:K:33:THR:HG21 | 2.18                     | 0.43              |
| 1:A:742:G:C2     | 1:A:743:A:C8     | 3.07                     | 0.43              |
| 1:A:938:A:N6     | 1:A:939:G:C5     | 2.87                     | 0.43              |
| 1:A:1187:G:O5'   | 9:I:115:LYS:HE2  | 2.19                     | 0.43              |
| 1:A:1213:A:C2    | 1:A:1215:G:H1'   | 2.54                     | 0.43              |
| 1:A:1215:G:C6    | 1:A:1216:A:C5    | 3.07                     | 0.43              |
| 1:A:1216:A:C6    | 1:A:1217:C:C4    | 3.06                     | 0.43              |
| 1:A:1310:G:C2    | 1:A:1328:C:C2    | 3.06                     | 0.43              |
| 1:A:1342:C:C5'   | 9:I:129:LYS:HE2  | 2.48                     | 0.43              |
| 2:B:186:ILE:HG21 | 2:B:213:TYR:CE2  | 2.54                     | 0.43              |
| 10:J:10:LEU:HD23 | 10:J:98:VAL:HA   | 2.01                     | 0.43              |
| 11:K:48:GLY:HA3  | 11:K:53:ARG:HH21 | 1.84                     | 0.43              |
| 17:Q:45:HIS:CG   | 17:Q:70:THR:CG2  | 3.00                     | 0.43              |
| 19:S:28:LYS:HD3  | 19:S:28:LYS:HA   | 1.86                     | 0.43              |
| 22:X:97:GLU:OE1  | 22:X:97:GLU:N    | 2.51                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:20:U:H2'     | 1:A:21:G:O4'     | 2.19                     | 0.43              |
| 1:A:44:A:C4      | 1:A:45:G:C8      | 3.06                     | 0.43              |
| 1:A:60:A:OP1     | 1:A:331:G:N1     | 2.43                     | 0.43              |
| 1:A:61:G:C5      | 1:A:62:U:C4      | 3.07                     | 0.43              |
| 1:A:176:C:C2     | 1:A:177:G:C2     | 3.06                     | 0.43              |
| 1:A:192:A:C6     | 1:A:193:C:C4     | 3.07                     | 0.43              |
| 1:A:213:G:H3'    | 1:A:214:C:C6     | 2.53                     | 0.43              |
| 1:A:228:A:C6     | 1:A:229:U:C4     | 3.07                     | 0.43              |
| 1:A:247:G:C6     | 1:A:248:C:C2     | 3.07                     | 0.43              |
| 1:A:280:C:H4'    | 1:A:281:G:OP2    | 2.18                     | 0.43              |
| 1:A:312:C:C2     | 1:A:313:A:C8     | 3.07                     | 0.43              |
| 1:A:695:A:C6     | 1:A:696:A:C5     | 3.07                     | 0.43              |
| 1:A:696:A:C5     | 1:A:697:U:C4     | 3.07                     | 0.43              |
| 1:A:784:A:C6     | 1:A:799:G:C6     | 3.07                     | 0.43              |
| 1:A:919:A:HO2'   | 1:A:1080:A:N6    | 2.16                     | 0.43              |
| 1:A:1137:C:H1'   | 1:A:1138:G:N2    | 2.33                     | 0.43              |
| 1:A:1347:G:H1'   | 1:A:1348:U:H5    | 1.84                     | 0.43              |
| 1:A:1516:2MG:HN2 | 1:A:1519:MA6:P   | 2.41                     | 0.43              |
| 1:A:1535:C:H3'   | 18:R:43:ARG:HH22 | 1.83                     | 0.43              |
| 3:C:83:ASP:HA    | 3:C:86:LYS:HE3   | 2.00                     | 0.43              |
| 3:C:131:ARG:HA   | 3:C:131:ARG:HD2  | 1.82                     | 0.43              |
| 5:E:107:ALA:HB1  | 5:E:111:MET:HE3  | 2.01                     | 0.43              |
| 6:F:72:ASP:O     | 6:F:76:THR:HG23  | 2.19                     | 0.43              |
| 7:G:62:PHE:O     | 7:G:66:LEU:HG    | 2.18                     | 0.43              |
| 7:G:71:PRO:HA    | 7:G:142:HIS:HE1  | 1.84                     | 0.43              |
| 18:R:43:ARG:HB3  | 18:R:44:ILE:HD12 | 2.01                     | 0.43              |
| 20:T:5:LYS:C     | 20:T:7:ALA:H     | 2.27                     | 0.43              |
| 1:A:70:U:C2      | 1:A:94:G:C5      | 3.07                     | 0.43              |
| 1:A:165:G:H2'    | 1:A:166:U:C6     | 2.54                     | 0.43              |
| 1:A:182:A:N7     | 1:A:194:C:N4     | 2.67                     | 0.43              |
| 1:A:321:A:H2     | 1:A:332:G:H22    | 1.67                     | 0.43              |
| 1:A:403:C:H2'    | 1:A:404:G:C8     | 2.54                     | 0.43              |
| 1:A:406:G:C8     | 1:A:495:A:C4     | 3.06                     | 0.43              |
| 1:A:621:A:H2'    | 1:A:622:A:O4'    | 2.18                     | 0.43              |
| 1:A:683:G:C2     | 1:A:684:U:C2     | 3.07                     | 0.43              |
| 1:A:703:G:H3'    | 1:A:703:G:OP2    | 2.19                     | 0.43              |
| 1:A:720:C:H5''   | 18:R:41:PRO:HB3  | 2.01                     | 0.43              |
| 1:A:725:G:C2     | 1:A:726:C:C2     | 3.07                     | 0.43              |
| 1:A:744:C:H2'    | 1:A:745:G:H8     | 1.84                     | 0.43              |
| 1:A:747:A:N1     | 1:A:748:G:C6     | 2.87                     | 0.43              |
| 1:A:943:U:H3'    | 1:A:944:G:H8     | 1.84                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1090:U:H2'   | 1:A:1091:U:C6    | 2.53                     | 0.43              |
| 1:A:1146:A:H2    | 9:I:18:ARG:HH22  | 1.66                     | 0.43              |
| 1:A:1257:A:H3'   | 1:A:1258:G:H5'   | 1.99                     | 0.43              |
| 1:A:1304:G:C6    | 1:A:1305:G:C2    | 3.06                     | 0.43              |
| 2:B:9:MET:HB3    | 2:B:14:VAL:HB    | 2.00                     | 0.43              |
| 10:J:52:LEU:HD23 | 10:J:62:ARG:HG2  | 2.01                     | 0.43              |
| 11:K:19:GLY:N    | 11:K:79:ILE:CG2  | 2.82                     | 0.43              |
| 12:L:23:ALA:HB2  | 12:L:63:VAL:HG21 | 2.00                     | 0.43              |
| 13:M:23:TYR:CB   | 13:M:70:ARG:HH21 | 2.32                     | 0.43              |
| 14:N:28:LYS:O    | 14:N:32:SER:OG   | 2.17                     | 0.43              |
| 15:O:77:ARG:O    | 15:O:81:LEU:N    | 2.34                     | 0.43              |
| 1:A:205:A:C5     | 1:A:206:C:C5     | 3.07                     | 0.42              |
| 1:A:389:A:H3'    | 1:A:390:U:H6     | 1.84                     | 0.42              |
| 1:A:413:G:O2'    | 1:A:428:G:N2     | 2.52                     | 0.42              |
| 1:A:656:G:C2     | 1:A:657:U:C4     | 3.07                     | 0.42              |
| 1:A:855:U:H2'    | 1:A:856:C:C6     | 2.52                     | 0.42              |
| 1:A:1063:C:C4    | 1:A:1064:G:C5    | 3.07                     | 0.42              |
| 1:A:1074:G:OP2   | 5:E:66:LYS:CE    | 2.67                     | 0.42              |
| 1:A:1074:G:OP2   | 5:E:66:LYS:HE2   | 2.19                     | 0.42              |
| 1:A:1105:A:C2    | 1:A:1106:G:C2    | 3.07                     | 0.42              |
| 1:A:1106:G:O2'   | 3:C:169:ARG:NH2  | 2.52                     | 0.42              |
| 1:A:1524:C:H2'   | 1:A:1525:G:H8    | 1.80                     | 0.42              |
| 10:J:36:VAL:HG22 | 10:J:38:GLY:H    | 1.84                     | 0.42              |
| 18:R:73:ARG:N    | 18:R:73:ARG:HD2  | 2.33                     | 0.42              |
| 20:T:28:MET:HE2  | 20:T:28:MET:HB3  | 1.96                     | 0.42              |
| 22:X:19:LEU:HD21 | 22:X:57:GLN:HE22 | 1.84                     | 0.42              |
| 1:A:39:G:N1      | 1:A:403:C:O2     | 2.50                     | 0.42              |
| 1:A:44:A:H2'     | 1:A:45:G:C8      | 2.51                     | 0.42              |
| 1:A:193:C:C2     | 1:A:194:C:C5     | 3.07                     | 0.42              |
| 1:A:207:C:C4     | 1:A:208:U:C4     | 3.07                     | 0.42              |
| 1:A:236:A:C6     | 1:A:237:G:C6     | 3.07                     | 0.42              |
| 1:A:240:G:C4     | 1:A:241:G:C8     | 3.07                     | 0.42              |
| 1:A:507:C:C4     | 1:A:508:U:C4     | 3.07                     | 0.42              |
| 1:A:585:G:C6     | 1:A:586:C:C4     | 3.07                     | 0.42              |
| 1:A:614:C:N3     | 1:A:615:G:C8     | 2.87                     | 0.42              |
| 1:A:679:C:H2'    | 1:A:680:C:H6     | 1.80                     | 0.42              |
| 1:A:761:G:H2'    | 1:A:762:U:C6     | 2.54                     | 0.42              |
| 1:A:771:G:C2     | 1:A:772:U:C2     | 3.07                     | 0.42              |
| 1:A:900:A:C4     | 1:A:901:A:C8     | 3.07                     | 0.42              |
| 1:A:1003:G:C2    | 1:A:1038:C:C2    | 3.07                     | 0.42              |
| 1:A:1008:U:H5    | 1:A:1021:A:H61   | 1.67                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1181:G:H1'    | 1:A:1182:G:C4     | 2.54                     | 0.42              |
| 1:A:1349:A:C5     | 1:A:1350:A:C5     | 3.07                     | 0.42              |
| 1:A:1350:A:C6     | 1:A:1351:U:C4     | 3.06                     | 0.42              |
| 3:C:175:LEU:HD23  | 3:C:175:LEU:HA    | 1.77                     | 0.42              |
| 6:F:3:HIS:CE1     | 6:F:94:HIS:HA     | 2.54                     | 0.42              |
| 6:F:35:LYS:HB3    | 6:F:37:HIS:HE1    | 1.84                     | 0.42              |
| 7:G:16:PRO:HB2    | 9:I:46:MET:HB3    | 2.01                     | 0.42              |
| 8:H:10:MET:SD     | 8:H:33:LYS:HG2    | 2.59                     | 0.42              |
| 11:K:21:ALA:O     | 11:K:84:VAL:HG13  | 2.19                     | 0.42              |
| 13:M:54:ASP:OD1   | 13:M:54:ASP:N     | 2.51                     | 0.42              |
| 19:S:31:LEU:H     | 19:S:31:LEU:HD23  | 1.83                     | 0.42              |
| 1:A:168:G:C5      | 1:A:169:C:C4      | 3.08                     | 0.42              |
| 1:A:932:C:O2      | 1:A:1385:G:C2     | 2.72                     | 0.42              |
| 1:A:1275:A:C6     | 1:A:1276:G:C4     | 3.08                     | 0.42              |
| 1:A:1349:A:P      | 9:I:120:LYS:HZ3   | 2.42                     | 0.42              |
| 1:A:1360:A:H3'    | 1:A:1361:G:C8     | 2.55                     | 0.42              |
| 1:A:1377:A:H4'    | 1:A:1378:C:C5     | 2.55                     | 0.42              |
| 1:A:1433:A:C4     | 1:A:1434:A:C8     | 3.07                     | 0.42              |
| 1:A:1518:MA6:H102 | 1:A:1519:MA6:H103 | 2.00                     | 0.42              |
| 4:D:95:GLU:HA     | 4:D:100:ASN:ND2   | 2.34                     | 0.42              |
| 4:D:137:VAL:HG13  | 4:D:141:ASP:HB2   | 2.01                     | 0.42              |
| 5:E:53:ALA:HB2    | 5:E:62:LYS:NZ     | 2.34                     | 0.42              |
| 6:F:40:GLU:HB2    | 6:F:61:LEU:HD22   | 2.01                     | 0.42              |
| 6:F:67:PRO:HD2    | 6:F:70:VAL:HG11   | 2.01                     | 0.42              |
| 7:G:72:THR:H      | 7:G:142:HIS:CE1   | 2.37                     | 0.42              |
| 7:G:116:MET:HA    | 7:G:119:ARG:HG2   | 2.02                     | 0.42              |
| 11:K:127:ARG:NE   | 21:V:14:GLU:CD    | 2.77                     | 0.42              |
| 15:O:78:TYR:CE2   | 15:O:82:ILE:HD13  | 2.55                     | 0.42              |
| 17:Q:45:HIS:CD2   | 17:Q:70:THR:HG22  | 2.53                     | 0.42              |
| 1:A:109:A:C6      | 1:A:327:A:C5      | 3.07                     | 0.42              |
| 1:A:181:A:N6      | 1:A:194:C:H2'     | 2.34                     | 0.42              |
| 1:A:253:A:H2'     | 1:A:254:G:O4'     | 2.20                     | 0.42              |
| 1:A:411:A:N7      | 1:A:413:G:C4      | 2.87                     | 0.42              |
| 1:A:724:G:P       | 1:A:724:G:H8      | 2.43                     | 0.42              |
| 1:A:748:G:H2'     | 1:A:749:A:C8      | 2.54                     | 0.42              |
| 1:A:952:U:H2'     | 1:A:953:G:C8      | 2.54                     | 0.42              |
| 1:A:1014:A:H4'    | 19:S:14:HIS:ND1   | 2.34                     | 0.42              |
| 1:A:1016:A:N7     | 1:A:1017:U:H1'    | 2.35                     | 0.42              |
| 1:A:1055:A:C2     | 1:A:1056:U:H1'    | 2.53                     | 0.42              |
| 1:A:1063:C:H5''   | 1:A:1064:G:OP2    | 2.20                     | 0.42              |
| 1:A:1134:G:C2     | 1:A:1141:C:C2     | 3.07                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1163:A:H2'   | 1:A:1164:G:H8    | 1.84                     | 0.42              |
| 1:A:1206:G:C6    | 1:A:1207:2MG:C5  | 3.07                     | 0.42              |
| 1:A:1379:G:N2    | 1:A:1382:C:H42   | 2.18                     | 0.42              |
| 3:C:54:ARG:O     | 3:C:68:ILE:HA    | 2.19                     | 0.42              |
| 4:D:174:ASP:OD2  | 4:D:177:LYS:HG2  | 2.19                     | 0.42              |
| 6:F:1:MET:HA     | 6:F:66:ALA:C     | 2.44                     | 0.42              |
| 9:I:7:TYR:N      | 9:I:89:GLU:OE2   | 2.53                     | 0.42              |
| 9:I:15:SER:OG    | 9:I:69:GLY:O     | 2.34                     | 0.42              |
| 9:I:59:GLU:C     | 9:I:60:LYS:HD3   | 2.45                     | 0.42              |
| 10:J:72:ARG:HA   | 10:J:72:ARG:HD3  | 1.69                     | 0.42              |
| 14:N:16:LEU:HD22 | 14:N:54:ASP:C    | 2.44                     | 0.42              |
| 14:N:49:GLN:OE1  | 19:S:12:ASP:HA   | 2.20                     | 0.42              |
| 15:O:29:VAL:HG23 | 15:O:63:ARG:HB2  | 2.01                     | 0.42              |
| 18:R:42:SER:H    | 18:R:52:GLN:NE2  | 2.17                     | 0.42              |
| 19:S:79:THR:OG1  | 19:S:81:ARG:NH1  | 2.53                     | 0.42              |
| 21:V:11:VAL:HG23 | 21:V:43:MET:HE3  | 1.90                     | 0.42              |
| 1:A:49:U:O2      | 1:A:362:G:H1'    | 2.19                     | 0.42              |
| 1:A:90:C:O2'     | 1:A:91:U:C6      | 2.71                     | 0.42              |
| 1:A:102:G:C6     | 1:A:103:U:C4     | 3.08                     | 0.42              |
| 1:A:240:G:C2     | 1:A:287:U:C2     | 3.07                     | 0.42              |
| 1:A:265:G:C2     | 1:A:267:C:C6     | 3.07                     | 0.42              |
| 1:A:289:G:C4     | 1:A:290:C:C5     | 3.07                     | 0.42              |
| 1:A:345:C:H4'    | 1:A:346:G:H5''   | 2.01                     | 0.42              |
| 1:A:397:A:C5     | 1:A:548:G:C8     | 3.07                     | 0.42              |
| 1:A:628:G:C2     | 1:A:629:A:C4     | 3.07                     | 0.42              |
| 1:A:663:A:C2     | 1:A:664:G:C4     | 3.07                     | 0.42              |
| 1:A:666:G:C5     | 1:A:741:G:C6     | 3.07                     | 0.42              |
| 1:A:670:G:N1     | 1:A:737:C:N3     | 2.67                     | 0.42              |
| 1:A:908:A:H2'    | 1:A:909:A:C8     | 2.55                     | 0.42              |
| 1:A:1320:C:H1'   | 19:S:72:GLY:C    | 2.44                     | 0.42              |
| 3:C:31:ASP:OD1   | 3:C:31:ASP:N     | 2.47                     | 0.42              |
| 3:C:175:LEU:HD21 | 3:C:182:ILE:HG21 | 2.00                     | 0.42              |
| 4:D:91:LEU:HD21  | 4:D:191:LEU:HD12 | 2.01                     | 0.42              |
| 6:F:70:VAL:O     | 6:F:74:LEU:HB2   | 2.19                     | 0.42              |
| 7:G:141:VAL:HG13 | 7:G:142:HIS:ND1  | 2.26                     | 0.42              |
| 8:H:34:VAL:HG13  | 8:H:49:PHE:CE2   | 2.53                     | 0.42              |
| 10:J:79:PRO:HA   | 10:J:83:THR:HG21 | 2.00                     | 0.42              |
| 1:A:275:G:O5'    | 17:Q:16:LYS:HD3  | 2.19                     | 0.42              |
| 1:A:389:A:C6     | 1:A:390:U:H1'    | 2.54                     | 0.42              |
| 1:A:629:A:C4     | 1:A:630:A:C8     | 3.07                     | 0.42              |
| 1:A:673:A:C6     | 1:A:734:G:C6     | 3.08                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:681:A:C2     | 1:A:710:G:C4     | 3.08                     | 0.42              |
| 1:A:737:C:H2'    | 1:A:738:C:C6     | 2.53                     | 0.42              |
| 1:A:741:G:H2'    | 1:A:742:G:O4'    | 2.19                     | 0.42              |
| 1:A:776:G:O2'    | 1:A:777:A:O5'    | 2.33                     | 0.42              |
| 1:A:933:G:N2     | 1:A:1385:G:C4    | 2.87                     | 0.42              |
| 1:A:954:G:N2     | 1:A:1227:A:H62   | 2.18                     | 0.42              |
| 1:A:1238:A:N3    | 1:A:1241:G:O2'   | 2.50                     | 0.42              |
| 1:A:1261:A:N7    | 1:A:1274:A:H2    | 2.16                     | 0.42              |
| 1:A:1320:C:H2'   | 1:A:1321:U:O4'   | 2.19                     | 0.42              |
| 1:A:1489:G:H3'   | 1:A:1490:U:C6    | 2.55                     | 0.42              |
| 2:B:210:VAL:O    | 2:B:214:LEU:HG   | 2.19                     | 0.42              |
| 3:C:19:ASN:C     | 3:C:56:VAL:HG23  | 2.45                     | 0.42              |
| 3:C:67:THR:HA    | 3:C:102:ASN:O    | 2.19                     | 0.42              |
| 1:A:72:A:C5      | 1:A:73:C:C4      | 3.08                     | 0.42              |
| 1:A:104:G:C6     | 1:A:105:G:N7     | 2.87                     | 0.42              |
| 1:A:267:C:OP1    | 17:Q:69:LYS:HB2  | 2.19                     | 0.42              |
| 1:A:302:G:C4     | 1:A:303:A:C8     | 3.07                     | 0.42              |
| 1:A:309:A:H2'    | 1:A:310:G:H8     | 1.85                     | 0.42              |
| 1:A:313:A:H2'    | 1:A:314:C:C6     | 2.54                     | 0.42              |
| 1:A:519:C:C4     | 1:A:520:A:H1'    | 2.54                     | 0.42              |
| 1:A:580:C:C4     | 1:A:581:G:C5     | 3.08                     | 0.42              |
| 1:A:750:C:O2     | 15:O:23:GLY:N    | 2.53                     | 0.42              |
| 1:A:797:C:H2'    | 1:A:798:U:O4'    | 2.19                     | 0.42              |
| 1:A:815:A:N3     | 1:A:1527:U:O2'   | 2.46                     | 0.42              |
| 1:A:983:A:P      | 1:A:984:C:H41    | 2.41                     | 0.42              |
| 1:A:1125:U:C2    | 1:A:1127:G:C8    | 3.08                     | 0.42              |
| 1:A:1154:G:O6    | 1:A:1155:A:N6    | 2.53                     | 0.42              |
| 1:A:1204:A:H2'   | 1:A:1205:U:O4'   | 2.18                     | 0.42              |
| 1:A:1253:G:C2    | 1:A:1285:A:N6    | 2.88                     | 0.42              |
| 1:A:1255:G:C6    | 1:A:1279:G:N7    | 2.87                     | 0.42              |
| 1:A:1276:G:C2    | 1:A:1277:C:C2    | 3.08                     | 0.42              |
| 3:C:85:GLU:HG3   | 3:C:89:LYS:HE3   | 2.02                     | 0.42              |
| 4:D:18:ASP:OD1   | 4:D:19:LEU:N     | 2.53                     | 0.42              |
| 4:D:205:SER:HB3  | 5:E:106:ILE:CD1  | 2.50                     | 0.42              |
| 5:E:43:ASN:HB2   | 5:E:76:LEU:HD22  | 2.00                     | 0.42              |
| 16:P:71:VAL:HG12 | 16:P:75:ILE:HD11 | 2.02                     | 0.42              |
| 1:A:71:A:H61     | 1:A:99:C:C1'     | 2.32                     | 0.42              |
| 1:A:110:C:H4'    | 16:P:25:ARG:HG3  | 2.02                     | 0.42              |
| 1:A:299:G:H2'    | 1:A:300:A:C8     | 2.55                     | 0.42              |
| 1:A:406:G:H2'    | 1:A:407:U:C6     | 2.55                     | 0.42              |
| 1:A:630:A:H2'    | 1:A:631:C:C6     | 2.54                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:665:A:C5      | 1:A:733:G:C6      | 3.08                     | 0.42              |
| 1:A:727:G:N2      | 1:A:731:G:C4      | 2.88                     | 0.42              |
| 1:A:859:G:N7      | 1:A:869:G:C2      | 2.88                     | 0.42              |
| 1:A:1068:G:N2     | 1:A:1191:A:H1'    | 2.34                     | 0.42              |
| 1:A:1075:U:H2'    | 1:A:1076:U:C6     | 2.54                     | 0.42              |
| 1:A:1098:C:H2'    | 1:A:1099:G:H8     | 1.84                     | 0.42              |
| 1:A:1163:A:C4     | 1:A:1164:G:C8     | 3.07                     | 0.42              |
| 1:A:1194:U:C4     | 1:A:1195:C:N4     | 2.87                     | 0.42              |
| 1:A:1202:U:H2'    | 1:A:1203:C:O4'    | 2.20                     | 0.42              |
| 1:A:1309:G:C6     | 1:A:1310:G:C5     | 3.08                     | 0.42              |
| 1:A:1361:G:C2     | 1:A:1362:A:C4     | 3.08                     | 0.42              |
| 1:A:1390:U:H2'    | 1:A:1391:U:C6     | 2.55                     | 0.42              |
| 8:H:48:ASP:CG     | 8:H:49:PHE:N      | 2.78                     | 0.42              |
| 11:K:127:ARG:HG3  | 21:V:14:GLU:CD    | 2.43                     | 0.42              |
| 12:L:4:VAL:HA     | 12:L:7:LEU:HB2    | 2.00                     | 0.42              |
| 20:T:16:LYS:HE2   | 20:T:16:LYS:HA    | 2.02                     | 0.42              |
| 22:X:39:TYR:HA    | 22:X:77:SER:O     | 2.20                     | 0.42              |
| 1:A:132:C:C2      | 1:A:133:U:C6      | 3.08                     | 0.42              |
| 1:A:232:G:HO2'    | 1:A:262:A:H61     | 1.61                     | 0.42              |
| 1:A:505:G:C5      | 1:A:535:A:C4      | 3.08                     | 0.42              |
| 1:A:509:A:H2      | 1:A:544:G:O4'     | 2.03                     | 0.42              |
| 1:A:540:G:N2      | 1:A:541:G:H1'     | 2.35                     | 0.42              |
| 1:A:582:C:O2      | 1:A:759:A:N6      | 2.52                     | 0.42              |
| 1:A:812:G:O2'     | 1:A:813:U:OP2     | 2.30                     | 0.42              |
| 1:A:824:G:C4      | 1:A:825:A:C8      | 3.08                     | 0.42              |
| 1:A:872:A:C4      | 1:A:874:G:N7      | 2.88                     | 0.42              |
| 1:A:877:G:O6      | 1:A:878:A:N6      | 2.52                     | 0.42              |
| 1:A:1015:G:C2     | 1:A:1016:A:C4     | 3.08                     | 0.42              |
| 1:A:1266:G:C6     | 1:A:1270:G:C6     | 3.08                     | 0.42              |
| 1:A:1513:A:C6     | 1:A:1523:G:C6     | 3.08                     | 0.42              |
| 3:C:12:LEU:O      | 3:C:14:ILE:HD12   | 2.19                     | 0.42              |
| 3:C:43:LEU:HD23   | 3:C:43:LEU:HA     | 1.77                     | 0.42              |
| 3:C:72:ARG:NH1    | 3:C:75:ILE:HG13   | 2.34                     | 0.42              |
| 4:D:28:ILE:HD11   | 4:D:34:ILE:CD1    | 2.44                     | 0.42              |
| 19:S:50:ALA:HB1   | 19:S:57:HIS:HB2   | 2.02                     | 0.42              |
| 22:X:120:VAL:HG13 | 22:X:125:ILE:HG12 | 2.01                     | 0.42              |
| 1:A:52:C:O2       | 1:A:359:G:N2      | 2.49                     | 0.42              |
| 1:A:317:U:C2      | 1:A:337:G:C2      | 3.08                     | 0.42              |
| 1:A:394:G:H2'     | 1:A:395:C:C6      | 2.54                     | 0.42              |
| 1:A:410:G:OP2     | 4:D:31:LYS:NZ     | 2.52                     | 0.42              |
| 1:A:428:G:H4'     | 1:A:429:U:OP1     | 2.19                     | 0.42              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:650:G:C5    | 1:A:651:C:C5     | 3.07                     | 0.42              |
| 1:A:685:G:N1    | 1:A:686:U:O4     | 2.53                     | 0.42              |
| 1:A:721:G:N2    | 1:A:733:G:C5     | 2.87                     | 0.42              |
| 1:A:796:C:H2'   | 1:A:797:C:C6     | 2.55                     | 0.42              |
| 1:A:812:G:HO2'  | 1:A:813:U:P      | 2.42                     | 0.42              |
| 1:A:813:U:H5    | 1:A:816:A:N1     | 2.18                     | 0.42              |
| 1:A:903:G:H2'   | 1:A:904:U:C6     | 2.55                     | 0.42              |
| 1:A:933:G:C2    | 1:A:1385:G:C2    | 3.08                     | 0.42              |
| 1:A:948:C:H2'   | 1:A:949:A:H8     | 1.84                     | 0.42              |
| 1:A:974:A:OP1   | 14:N:69:ARG:NH2  | 2.53                     | 0.42              |
| 1:A:984:C:H2'   | 1:A:985:C:H6     | 1.84                     | 0.42              |
| 1:A:1062:U:H2'  | 1:A:1063:C:C6    | 2.54                     | 0.42              |
| 1:A:1086:U:H3   | 1:A:1099:G:H1    | 1.66                     | 0.42              |
| 1:A:1111:A:H2'  | 1:A:1112:C:C6    | 2.55                     | 0.42              |
| 1:A:1190:G:H5'  | 3:C:176:HIS:NE2  | 2.35                     | 0.42              |
| 1:A:1246:A:C2   | 1:A:1247:U:C2    | 3.08                     | 0.42              |
| 1:A:1286:U:O2'  | 1:A:1287:A:P     | 2.78                     | 0.42              |
| 1:A:1352:C:H2'  | 1:A:1353:G:C8    | 2.55                     | 0.42              |
| 1:A:1535:C:O2'  | 21:V:29:ASP:CB   | 2.58                     | 0.42              |
| 3:C:83:ASP:HA   | 3:C:86:LYS:HZ2   | 1.85                     | 0.42              |
| 15:O:26:GLU:HG3 | 15:O:81:LEU:HD22 | 2.01                     | 0.42              |
| 18:R:11:CYS:H   | 18:R:48:ARG:NH1  | 2.17                     | 0.42              |
| 21:V:73:GLN:CD  | 21:V:97:PHE:CD2  | 2.84                     | 0.42              |
| 22:X:54:VAL:O   | 22:X:58:VAL:HG13 | 2.20                     | 0.42              |
| 1:A:126:G:C6    | 1:A:236:A:C6     | 3.08                     | 0.41              |
| 1:A:127:G:C2    | 1:A:235:C:N3     | 2.88                     | 0.41              |
| 1:A:182:A:H8    | 1:A:182:A:OP2    | 2.03                     | 0.41              |
| 1:A:247:G:C6    | 1:A:278:G:N1     | 2.88                     | 0.41              |
| 1:A:298:A:C6    | 1:A:299:G:C4     | 3.08                     | 0.41              |
| 1:A:333:U:C2    | 1:A:334:C:C5     | 3.08                     | 0.41              |
| 1:A:457:G:N2    | 1:A:475:C:O2     | 2.32                     | 0.41              |
| 1:A:500:G:C4    | 1:A:501:C:C5     | 3.07                     | 0.41              |
| 1:A:579:A:N7    | 1:A:763:G:N1     | 2.68                     | 0.41              |
| 1:A:763:G:H2'   | 1:A:764:C:C6     | 2.55                     | 0.41              |
| 1:A:859:G:N7    | 1:A:869:G:N2     | 2.68                     | 0.41              |
| 1:A:898:G:C2    | 1:A:902:G:C5     | 3.08                     | 0.41              |
| 1:A:951:G:N1    | 1:A:1230:C:O2    | 2.41                     | 0.41              |
| 1:A:993:G:H22   | 1:A:996:A:N6     | 2.18                     | 0.41              |
| 1:A:1073:U:OP1  | 5:E:62:LYS:HG2   | 2.18                     | 0.41              |
| 1:A:1206:G:C4   | 1:A:1207:2MG:C8  | 3.08                     | 0.41              |
| 1:A:1279:G:H5'' | 10:J:9:ARG:HH22  | 1.85                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1417:G:N1    | 1:A:1482:G:C6    | 2.88                     | 0.41              |
| 1:A:1453:G:N2    | 1:A:1454:G:C8    | 2.88                     | 0.41              |
| 11:K:86:VAL:HG13 | 11:K:112:ASP:HA  | 2.01                     | 0.41              |
| 12:L:7:LEU:HB3   | 17:Q:34:TYR:CD2  | 2.55                     | 0.41              |
| 17:Q:19:LYS:O    | 17:Q:48:ASP:N    | 2.52                     | 0.41              |
| 17:Q:31:HIS:CE1  | 17:Q:34:TYR:H    | 2.37                     | 0.41              |
| 19:S:16:LEU:O    | 19:S:19:VAL:HG12 | 2.20                     | 0.41              |
| 22:X:21:PHE:CD2  | 22:X:40:ILE:HD12 | 2.55                     | 0.41              |
| 22:X:65:GLU:O    | 22:X:67:PRO:HD3  | 2.20                     | 0.41              |
| 1:A:144:G:C6     | 1:A:179:A:C5     | 3.08                     | 0.41              |
| 1:A:189:A:C5     | 1:A:190:A:C5     | 3.08                     | 0.41              |
| 1:A:202:G:O2'    | 1:A:468:A:C8     | 2.73                     | 0.41              |
| 1:A:202:G:H4'    | 1:A:469:C:H4'    | 2.01                     | 0.41              |
| 1:A:205:A:H3'    | 1:A:206:C:H6     | 1.85                     | 0.41              |
| 1:A:350:G:C2     | 1:A:351:G:C6     | 3.08                     | 0.41              |
| 1:A:394:G:C5     | 1:A:395:C:C4     | 3.09                     | 0.41              |
| 1:A:570:G:C8     | 1:A:873:A:C5     | 3.08                     | 0.41              |
| 1:A:589:U:H2'    | 1:A:590:U:H6     | 1.85                     | 0.41              |
| 1:A:681:A:C4     | 1:A:710:G:C2     | 3.08                     | 0.41              |
| 1:A:690:G:C2     | 1:A:691:G:C4     | 3.08                     | 0.41              |
| 1:A:749:A:H2'    | 1:A:750:C:H6     | 1.85                     | 0.41              |
| 1:A:756:C:H2'    | 1:A:757:U:C6     | 2.54                     | 0.41              |
| 1:A:849:G:C6     | 1:A:850:U:C2     | 3.08                     | 0.41              |
| 1:A:956:U:H2'    | 1:A:957:U:C6     | 2.54                     | 0.41              |
| 1:A:993:G:N2     | 1:A:1046:A:H1'   | 2.35                     | 0.41              |
| 1:A:1228:C:OP1   | 13:M:114:LYS:HD3 | 2.20                     | 0.41              |
| 2:B:187:VAL:N    | 2:B:200:ILE:O    | 2.45                     | 0.41              |
| 3:C:87:LEU:HA    | 3:C:90:VAL:HG22  | 2.02                     | 0.41              |
| 7:G:71:PRO:HA    | 7:G:142:HIS:CE1  | 2.55                     | 0.41              |
| 9:I:25:ASN:OD1   | 9:I:27:LYS:N     | 2.36                     | 0.41              |
| 14:N:73:PHE:CE2  | 14:N:75:ARG:HA   | 2.55                     | 0.41              |
| 19:S:15:LEU:HD13 | 19:S:38:SER:HB2  | 2.02                     | 0.41              |
| 22:X:35:THR:HG22 | 22:X:73:ASN:O    | 2.20                     | 0.41              |
| 22:X:99:VAL:HA   | 22:X:146:LEU:HA  | 2.01                     | 0.41              |
| 22:X:132:LYS:HE2 | 22:X:132:LYS:HB3 | 1.79                     | 0.41              |
| 1:A:273:U:H2'    | 1:A:274:A:C8     | 2.56                     | 0.41              |
| 1:A:299:G:N2     | 1:A:566:G:O6     | 2.53                     | 0.41              |
| 1:A:320:A:H2'    | 1:A:321:A:O4'    | 2.20                     | 0.41              |
| 1:A:345:C:H4'    | 1:A:346:G:C5'    | 2.51                     | 0.41              |
| 1:A:499:A:C2     | 1:A:547:A:C4     | 3.08                     | 0.41              |
| 1:A:693:G:N3     | 1:A:694:A:C8     | 2.88                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:713:G:N1     | 1:A:714:G:C6     | 2.88                     | 0.41              |
| 1:A:922:G:N1     | 1:A:1396:A:C6    | 2.88                     | 0.41              |
| 1:A:936:C:C4     | 1:A:937:A:C5     | 3.08                     | 0.41              |
| 1:A:958:A:C6     | 1:A:959:A:N1     | 2.88                     | 0.41              |
| 1:A:1165:U:C4    | 1:A:1166:G:C5    | 3.08                     | 0.41              |
| 1:A:1296:C:H5'   | 13:M:14:HIS:NE2  | 2.35                     | 0.41              |
| 1:A:1381:U:O2'   | 7:G:80:VAL:HA    | 2.20                     | 0.41              |
| 1:A:1436:U:H2'   | 1:A:1437:A:C8    | 2.55                     | 0.41              |
| 2:B:162:PHE:HA   | 2:B:184:PHE:O    | 2.20                     | 0.41              |
| 4:D:28:ILE:HG12  | 4:D:34:ILE:HB    | 2.02                     | 0.41              |
| 4:D:202:GLU:OE2  | 5:E:106:ILE:HG12 | 2.20                     | 0.41              |
| 5:E:30:ILE:HD13  | 5:E:30:ILE:HA    | 1.95                     | 0.41              |
| 8:H:87:LYS:HG3   | 8:H:125:ILE:CD1  | 2.50                     | 0.41              |
| 8:H:96:MET:HB2   | 8:H:100:GLY:N    | 2.32                     | 0.41              |
| 9:I:57:MET:HE2   | 9:I:61:LEU:HD22  | 2.02                     | 0.41              |
| 12:L:28:PRO:HB2  | 12:L:29:GLN:CD   | 2.45                     | 0.41              |
| 17:Q:13:VAL:HG22 | 17:Q:22:VAL:O    | 2.20                     | 0.41              |
| 1:A:77:A:H3'     | 1:A:78:A:C8      | 2.51                     | 0.41              |
| 1:A:138:G:C6     | 1:A:226:G:C5     | 3.09                     | 0.41              |
| 1:A:162:A:O5'    | 1:A:162:A:H8     | 2.04                     | 0.41              |
| 1:A:266:G:H1'    | 1:A:268:U:OP2    | 2.21                     | 0.41              |
| 1:A:672:U:H5'    | 6:F:79:ARG:HH21  | 1.85                     | 0.41              |
| 1:A:695:A:OP2    | 1:A:695:A:H8     | 2.02                     | 0.41              |
| 1:A:720:C:C4     | 1:A:721:G:C5     | 3.08                     | 0.41              |
| 1:A:833:G:C2     | 1:A:854:U:C2     | 3.08                     | 0.41              |
| 1:A:859:G:C8     | 1:A:869:G:N2     | 2.88                     | 0.41              |
| 1:A:1010:U:H2'   | 1:A:1011:C:C6    | 2.55                     | 0.41              |
| 1:A:1130:A:H2'   | 1:A:1131:G:O4'   | 2.20                     | 0.41              |
| 1:A:1193:G:C6    | 1:A:1194:U:C4    | 3.09                     | 0.41              |
| 1:A:1234:C:C4    | 1:A:1235:U:C4    | 3.09                     | 0.41              |
| 1:A:1449:C:H2'   | 1:A:1450:U:O4'   | 2.20                     | 0.41              |
| 7:G:50:LEU:HD21  | 7:G:61:ALA:HB3   | 2.02                     | 0.41              |
| 8:H:18:GLN:OE1   | 8:H:72:VAL:HG12  | 2.20                     | 0.41              |
| 14:N:62:ASN:HB3  | 14:N:73:PHE:CE2  | 2.55                     | 0.41              |
| 19:S:44:MET:SD   | 19:S:47:LEU:HB2  | 2.60                     | 0.41              |
| 20:T:71:LYS:HA   | 20:T:74:ARG:HB2  | 2.01                     | 0.41              |
| 1:A:6:G:O2'      | 1:A:7:A:O5'      | 2.38                     | 0.41              |
| 1:A:211:G:C6     | 1:A:212:G:C4     | 3.09                     | 0.41              |
| 1:A:274:A:H4'    | 1:A:275:G:OP1    | 2.20                     | 0.41              |
| 1:A:299:G:C6     | 1:A:300:A:C6     | 3.08                     | 0.41              |
| 1:A:405:U:OP2    | 4:D:3:ARG:HD3    | 2.20                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:500:G:C2     | 1:A:501:C:C2     | 3.08                     | 0.41              |
| 1:A:588:G:C6     | 1:A:589:U:C4     | 3.09                     | 0.41              |
| 1:A:685:G:H2'    | 1:A:686:U:C6     | 2.55                     | 0.41              |
| 1:A:693:G:C2     | 1:A:694:A:C4     | 3.09                     | 0.41              |
| 1:A:701:U:H4'    | 1:A:702:A:O5'    | 2.21                     | 0.41              |
| 1:A:729:A:C4     | 1:A:730:G:C8     | 3.08                     | 0.41              |
| 1:A:872:A:C5     | 1:A:874:G:C8     | 3.08                     | 0.41              |
| 1:A:901:A:OP2    | 1:A:901:A:C8     | 2.74                     | 0.41              |
| 1:A:955:U:H2'    | 1:A:956:U:H6     | 1.85                     | 0.41              |
| 1:A:999:C:C2     | 1:A:1000:A:C8    | 3.07                     | 0.41              |
| 1:A:1043:G:C2    | 1:A:1044:A:C4    | 3.09                     | 0.41              |
| 1:A:1228:C:H5'   | 1:A:1229:A:OP2   | 2.19                     | 0.41              |
| 1:A:1237:C:H2'   | 1:A:1336:C:C5    | 2.55                     | 0.41              |
| 1:A:1311:A:H2'   | 1:A:1312:G:O4'   | 2.20                     | 0.41              |
| 1:A:1321:U:H3'   | 1:A:1322:C:C6    | 2.55                     | 0.41              |
| 1:A:1338:G:C6    | 1:A:1339:A:C5    | 3.08                     | 0.41              |
| 1:A:1371:G:H2'   | 1:A:1372:U:O4'   | 2.21                     | 0.41              |
| 2:B:90:PHE:CE2   | 2:B:154:MET:HA   | 2.55                     | 0.41              |
| 3:C:86:LYS:O     | 3:C:90:VAL:HG13  | 2.20                     | 0.41              |
| 7:G:66:LEU:O     | 7:G:69:VAL:N     | 2.52                     | 0.41              |
| 12:L:49:LEU:HD22 | 22:X:52:ALA:CB   | 2.46                     | 0.41              |
| 13:M:90:ARG:CB   | 13:M:97:VAL:HG12 | 2.51                     | 0.41              |
| 14:N:54:ASP:HA   | 14:N:59:ARG:HG3  | 2.02                     | 0.41              |
| 16:P:6:LEU:HB3   | 16:P:17:TYR:CD1  | 2.55                     | 0.41              |
| 18:R:18:VAL:HG23 | 18:R:21:ILE:HG12 | 2.01                     | 0.41              |
| 1:A:7:A:O2'      | 5:E:126:LYS:HB2  | 2.20                     | 0.41              |
| 1:A:51:A:C6      | 1:A:353:A:C2     | 3.08                     | 0.41              |
| 1:A:451:A:H5'    | 16:P:70:ARG:HH22 | 1.86                     | 0.41              |
| 1:A:662:U:H2'    | 1:A:663:A:C8     | 2.55                     | 0.41              |
| 1:A:706:A:C6     | 1:A:707:U:N3     | 2.88                     | 0.41              |
| 1:A:1106:G:H2'   | 1:A:1107:C:C6    | 2.55                     | 0.41              |
| 1:A:1287:A:H2    | 1:A:1353:G:N3    | 2.19                     | 0.41              |
| 1:A:1375:A:H2'   | 1:A:1376:U:H6    | 1.86                     | 0.41              |
| 1:A:1384:C:H2'   | 1:A:1385:G:H8    | 1.84                     | 0.41              |
| 1:A:1418:A:N6    | 1:A:1482:G:O2'   | 2.54                     | 0.41              |
| 2:B:90:PHE:CZ    | 2:B:154:MET:HA   | 2.56                     | 0.41              |
| 3:C:16:LYS:HA    | 3:C:16:LYS:HD2   | 1.86                     | 0.41              |
| 3:C:35:SER:OG    | 3:C:59:ARG:NH1   | 2.49                     | 0.41              |
| 4:D:13:ARG:HH21  | 4:D:38:PRO:HA    | 1.86                     | 0.41              |
| 10:J:8:ILE:HG23  | 10:J:74:VAL:HB   | 2.03                     | 0.41              |
| 11:K:34:ILE:HD13 | 11:K:73:ALA:HB3  | 2.01                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 11:K:65:VAL:C    | 11:K:67:ALA:N    | 2.78                     | 0.41              |
| 12:L:120:LYS:HE2 | 12:L:120:LYS:HB2 | 1.96                     | 0.41              |
| 19:S:16:LEU:HA   | 19:S:16:LEU:HD23 | 1.92                     | 0.41              |
| 22:X:53:ASP:HA   | 22:X:56:HIS:CE1  | 2.56                     | 0.41              |
| 1:A:253:A:C4     | 1:A:254:G:C8     | 3.09                     | 0.41              |
| 1:A:359:G:C4     | 1:A:360:G:C8     | 3.09                     | 0.41              |
| 1:A:385:C:H2'    | 1:A:386:C:C6     | 2.55                     | 0.41              |
| 1:A:410:G:C2     | 1:A:429:U:C2     | 3.08                     | 0.41              |
| 1:A:582:C:N3     | 1:A:760:G:C6     | 2.89                     | 0.41              |
| 1:A:782:A:C2     | 1:A:783:C:H1'    | 2.56                     | 0.41              |
| 1:A:1051:C:H2'   | 1:A:1052:U:O4'   | 2.20                     | 0.41              |
| 1:A:1064:G:O2'   | 1:A:1190:G:N2    | 2.54                     | 0.41              |
| 1:A:1066:C:H2'   | 1:A:1067:A:C8    | 2.49                     | 0.41              |
| 1:A:1266:G:C2    | 1:A:1270:G:C4    | 3.09                     | 0.41              |
| 1:A:1279:G:H5''  | 10:J:9:ARG:NH2   | 2.35                     | 0.41              |
| 1:A:1375:A:C6    | 1:A:1376:U:C4    | 3.08                     | 0.41              |
| 2:B:20:THR:O     | 2:B:23:TRP:HD1   | 2.04                     | 0.41              |
| 4:D:49:SER:O     | 4:D:53:VAL:HG13  | 2.21                     | 0.41              |
| 5:E:160:SER:OG   | 5:E:163:GLU:HB2  | 2.20                     | 0.41              |
| 6:F:6:ILE:HB     | 6:F:62:MET:HE3   | 2.02                     | 0.41              |
| 8:H:48:ASP:N     | 8:H:62:THR:O     | 2.46                     | 0.41              |
| 8:H:73:GLU:OE1   | 8:H:73:GLU:N     | 2.53                     | 0.41              |
| 8:H:76:GLN:O     | 8:H:78:VAL:HG13  | 2.21                     | 0.41              |
| 9:I:42:GLU:OE2   | 9:I:45:ARG:HB2   | 2.20                     | 0.41              |
| 13:M:81:MET:HA   | 13:M:88:GLY:CA   | 2.49                     | 0.41              |
| 13:M:98:ARG:HB2  | 13:M:100:GLN:NE2 | 2.36                     | 0.41              |
| 15:O:50:HIS:HD1  | 15:O:50:HIS:H    | 1.68                     | 0.41              |
| 19:S:34:TRP:CD2  | 19:S:52:HIS:CE1  | 3.08                     | 0.41              |
| 20:T:16:LYS:HE2  | 20:T:19:LYS:NZ   | 2.36                     | 0.41              |
| 22:X:68:ILE:HG23 | 22:X:70:VAL:HG13 | 2.02                     | 0.41              |
| 1:A:27:G:C2      | 1:A:28:A:C4      | 3.08                     | 0.41              |
| 1:A:240:G:C2     | 1:A:241:G:C4     | 3.08                     | 0.41              |
| 1:A:256:U:H2'    | 1:A:257:G:H8     | 1.86                     | 0.41              |
| 1:A:318:G:H2'    | 1:A:319:G:C8     | 2.56                     | 0.41              |
| 1:A:362:G:N2     | 1:A:364:A:H3'    | 2.36                     | 0.41              |
| 1:A:406:G:C2     | 1:A:437:U:C2     | 3.09                     | 0.41              |
| 1:A:499:A:H1'    | 1:A:500:G:H8     | 1.86                     | 0.41              |
| 1:A:721:G:C6     | 1:A:733:G:C2     | 3.09                     | 0.41              |
| 1:A:819:A:C8     | 1:A:1529:G:C2    | 3.09                     | 0.41              |
| 1:A:921:U:H2'    | 1:A:922:G:O4'    | 2.21                     | 0.41              |
| 1:A:1015:G:OP2   | 1:A:1015:G:H8    | 2.04                     | 0.41              |

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| Atom-1           | Atom-2          | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:1329:A:OP1   | 13:M:29:ARG:HG2 | 2.21                     | 0.41              |
| 1:A:1464:U:H2'   | 1:A:1465:A:H8   | 1.86                     | 0.41              |
| 3:C:71:ALA:O     | 3:C:73:PRO:HD3  | 2.21                     | 0.41              |
| 10:J:80:THR:H    | 10:J:83:THR:CG2 | 2.33                     | 0.41              |
| 13:M:85:CYS:SG   | 13:M:86:TYR:N   | 2.93                     | 0.41              |
| 14:N:51:LEU:HD12 | 14:N:51:LEU:HA  | 1.88                     | 0.41              |
| 15:O:50:HIS:HA   | 15:O:53:ARG:HG3 | 2.02                     | 0.41              |
| 19:S:11:ILE:HA   | 19:S:38:SER:HB3 | 2.02                     | 0.41              |
| 21:V:66:LYS:HD2  | 21:V:70:LYS:HE3 | 2.02                     | 0.41              |
| 22:X:4:LEU:HD13  | 22:X:6:GLN:OE1  | 2.20                     | 0.41              |
| 22:X:85:LEU:HB2  | 22:X:90:HIS:HB3 | 2.02                     | 0.41              |
| 1:A:90:C:O2'     | 1:A:91:U:P      | 2.79                     | 0.41              |
| 1:A:90:C:H3'     | 1:A:90:C:OP2    | 2.21                     | 0.41              |
| 1:A:107:G:H21    | 1:A:108:G:H1'   | 1.86                     | 0.41              |
| 1:A:318:G:C2     | 1:A:336:A:C4    | 3.09                     | 0.41              |
| 1:A:408:A:H2'    | 1:A:409:U:O4'   | 2.21                     | 0.41              |
| 1:A:415:A:C5     | 1:A:416:G:N7    | 2.89                     | 0.41              |
| 1:A:422:C:H4'    | 1:A:423:G:N3    | 2.36                     | 0.41              |
| 1:A:437:U:H4'    | 4:D:154:ARG:NH2 | 2.35                     | 0.41              |
| 1:A:448:A:C6     | 1:A:449:G:C4    | 3.09                     | 0.41              |
| 1:A:472:U:H2'    | 1:A:473:U:C6    | 2.56                     | 0.41              |
| 1:A:478:A:C6     | 1:A:479:U:C4    | 3.09                     | 0.41              |
| 1:A:515:G:C6     | 1:A:516:PSU:C2  | 3.09                     | 0.41              |
| 1:A:516:PSU:O3'  | 1:A:517:G:O4'   | 2.38                     | 0.41              |
| 1:A:558:G:OP2    | 1:A:559:A:O2'   | 2.30                     | 0.41              |
| 1:A:606:G:H5''   | 1:A:607:A:H5'   | 2.03                     | 0.41              |
| 1:A:671:G:N1     | 1:A:736:C:C4    | 2.89                     | 0.41              |
| 1:A:695:A:C3'    | 1:A:696:A:H8    | 2.34                     | 0.41              |
| 1:A:846:G:C4     | 1:A:847:G:C8    | 3.09                     | 0.41              |
| 1:A:979:C:H1'    | 1:A:1317:C:N4   | 2.36                     | 0.41              |
| 1:A:1037:C:H2'   | 1:A:1038:C:C6   | 2.56                     | 0.41              |
| 1:A:1130:A:H5'   | 9:I:20:PHE:CE2  | 2.56                     | 0.41              |
| 1:A:1173:U:H2'   | 1:A:1174:G:O4'  | 2.21                     | 0.41              |
| 1:A:1177:G:H2'   | 1:A:1178:G:O4'  | 2.19                     | 0.41              |
| 1:A:1190:G:O5'   | 1:A:1190:G:H8   | 2.04                     | 0.41              |
| 1:A:1197:A:C2'   | 1:A:1198:G:H5'  | 2.51                     | 0.41              |
| 1:A:1316:G:H2'   | 1:A:1317:C:H5'' | 2.03                     | 0.41              |
| 1:A:1318:A:H5''  | 19:S:7:LYS:NZ   | 2.36                     | 0.41              |
| 1:A:1375:A:H2'   | 1:A:1376:U:C6   | 2.55                     | 0.41              |
| 1:A:1382:C:H1'   | 7:G:79:ARG:HB2  | 2.02                     | 0.41              |
| 1:A:1426:G:C5    | 1:A:1475:G:N1   | 2.88                     | 0.41              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:1432:G:C2     | 1:A:1467:C:C2    | 3.08                     | 0.41              |
| 1:A:1453:G:H3'    | 1:A:1453:G:N3    | 2.36                     | 0.41              |
| 1:A:1512:U:C2     | 1:A:1513:A:C8    | 3.09                     | 0.41              |
| 3:C:121:THR:O     | 3:C:124:LEU:HB2  | 2.21                     | 0.41              |
| 4:D:14:ARG:NE     | 4:D:38:PRO:HD2   | 2.34                     | 0.41              |
| 4:D:95:GLU:CD     | 4:D:100:ASN:HD21 | 2.27                     | 0.41              |
| 4:D:116:GLN:HG2   | 4:D:120:HIS:CE1  | 2.56                     | 0.41              |
| 5:E:156:LYS:HD2   | 8:H:71:VAL:HA    | 2.02                     | 0.41              |
| 6:F:6:ILE:O       | 6:F:62:MET:N     | 2.52                     | 0.41              |
| 6:F:106:LYS:HE2   | 6:F:106:LYS:HB2  | 1.92                     | 0.41              |
| 7:G:31:MET:HE2    | 7:G:31:MET:HB3   | 1.79                     | 0.41              |
| 8:H:101:ILE:HA    | 8:H:101:ILE:HD13 | 1.84                     | 0.41              |
| 11:K:21:ALA:C     | 11:K:84:VAL:HG13 | 2.46                     | 0.41              |
| 11:K:65:VAL:O     | 11:K:68:GLU:HG3  | 2.20                     | 0.41              |
| 12:L:44:LYS:CA    | 22:X:72:TYR:HD2  | 2.29                     | 0.41              |
| 14:N:7:LYS:O      | 14:N:11:VAL:HG23 | 2.20                     | 0.41              |
| 14:N:63:ARG:HA    | 14:N:63:ARG:HD3  | 1.76                     | 0.41              |
| 1:A:36:C:H2'      | 1:A:37:U:C6      | 2.55                     | 0.41              |
| 1:A:81:A:N6       | 1:A:86:G:C4      | 2.88                     | 0.41              |
| 1:A:105:G:C6      | 1:A:106:C:N3     | 2.89                     | 0.41              |
| 1:A:142:G:H8      | 1:A:142:G:OP2    | 2.04                     | 0.41              |
| 1:A:457:G:C6      | 1:A:458:U:C4     | 3.09                     | 0.41              |
| 1:A:563:A:O2'     | 1:A:566:G:O2'    | 2.22                     | 0.41              |
| 1:A:621:A:C6      | 1:A:622:A:C5     | 3.09                     | 0.41              |
| 1:A:628:G:C6      | 1:A:629:A:C6     | 3.09                     | 0.41              |
| 1:A:797:C:H2'     | 1:A:798:U:C6     | 2.55                     | 0.41              |
| 1:A:823:C:N4      | 1:A:878:A:H61    | 2.19                     | 0.41              |
| 1:A:1086:U:H2'    | 1:A:1087:G:H8    | 1.79                     | 0.41              |
| 1:A:1106:G:O3'    | 3:C:172:ARG:HG3  | 2.21                     | 0.41              |
| 1:A:1176:A:H3'    | 1:A:1177:G:H8    | 1.86                     | 0.41              |
| 1:A:1228:C:H4'    | 13:M:115:PRO:C   | 2.45                     | 0.41              |
| 1:A:1534:A:H3'    | 1:A:1535:C:C5    | 2.55                     | 0.41              |
| 2:B:152:LYS:HG3   | 2:B:153:ASP:CG   | 2.45                     | 0.41              |
| 3:C:79:LYS:HA     | 3:C:79:LYS:HD2   | 1.68                     | 0.41              |
| 4:D:116:GLN:HE22  | 4:D:154:ARG:NH2  | 2.19                     | 0.41              |
| 5:E:62:LYS:HE3    | 5:E:62:LYS:HB2   | 1.91                     | 0.41              |
| 5:E:82:GLN:N      | 5:E:147:MET:SD   | 2.94                     | 0.41              |
| 10:J:6:ILE:O      | 10:J:6:ILE:HG13  | 2.20                     | 0.41              |
| 11:K:127:ARG:HH21 | 21:V:14:GLU:CG   | 2.34                     | 0.41              |
| 13:M:10:PRO:HB3   | 13:M:21:SER:OG   | 2.21                     | 0.41              |
| 14:N:27:LEU:HD23  | 14:N:27:LEU:HA   | 1.90                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 16:P:3:THR:HG22  | 16:P:22:ALA:O    | 2.21                     | 0.41              |
| 22:X:98:GLU:HG3  | 22:X:115:GLY:C   | 2.46                     | 0.41              |
| 1:A:217:C:H2'    | 1:A:218:U:C6     | 2.57                     | 0.40              |
| 1:A:238:A:C5     | 1:A:239:U:C4     | 3.10                     | 0.40              |
| 1:A:255:G:C2     | 1:A:272:C:C2     | 3.09                     | 0.40              |
| 1:A:329:A:C5     | 1:A:332:G:C6     | 3.10                     | 0.40              |
| 1:A:515:G:C5     | 1:A:516:PSU:C2   | 3.09                     | 0.40              |
| 1:A:563:A:H4'    | 1:A:565:U:H5     | 1.87                     | 0.40              |
| 1:A:856:C:H2'    | 1:A:857:C:C6     | 2.56                     | 0.40              |
| 1:A:938:A:C5     | 1:A:939:G:C8     | 3.09                     | 0.40              |
| 1:A:949:A:C4     | 1:A:1233:G:C2    | 3.09                     | 0.40              |
| 1:A:1058:G:H1    | 1:A:1199:U:H3    | 1.69                     | 0.40              |
| 1:A:1069:C:N4    | 1:A:1070:U:O4    | 2.54                     | 0.40              |
| 1:A:1258:G:H2'   | 1:A:1259:C:C6    | 2.56                     | 0.40              |
| 1:A:1295:U:H2'   | 1:A:1296:C:C6    | 2.56                     | 0.40              |
| 3:C:83:ASP:HA    | 3:C:86:LYS:NZ    | 2.36                     | 0.40              |
| 5:E:17:ALA:H     | 5:E:36:LEU:HB2   | 1.86                     | 0.40              |
| 5:E:115:LEU:O    | 5:E:120:VAL:HG22 | 2.22                     | 0.40              |
| 14:N:93:ILE:HD13 | 14:N:93:ILE:HA   | 1.86                     | 0.40              |
| 18:R:23:TYR:C    | 18:R:25:ASP:H    | 2.29                     | 0.40              |
| 21:V:26:GLU:OE1  | 21:V:26:GLU:N    | 2.54                     | 0.40              |
| 1:A:24:U:O2'     | 1:A:524:G:O2'    | 2.21                     | 0.40              |
| 1:A:36:C:C4      | 1:A:37:U:C4      | 3.09                     | 0.40              |
| 1:A:82:G:N1      | 1:A:88:U:N3      | 2.70                     | 0.40              |
| 1:A:120:A:C6     | 1:A:122:G:C2     | 3.09                     | 0.40              |
| 1:A:132:C:H2'    | 1:A:133:U:C6     | 2.56                     | 0.40              |
| 1:A:232:G:O2'    | 1:A:262:A:N6     | 2.33                     | 0.40              |
| 1:A:416:G:H2'    | 1:A:417:G:C8     | 2.56                     | 0.40              |
| 1:A:539:A:C2     | 1:A:540:G:C4     | 3.08                     | 0.40              |
| 1:A:624:C:C4     | 1:A:625:U:C4     | 3.08                     | 0.40              |
| 1:A:776:G:N2     | 1:A:804:U:O4     | 2.53                     | 0.40              |
| 1:A:838:G:C6     | 1:A:849:G:C4     | 3.09                     | 0.40              |
| 1:A:1016:A:H3'   | 1:A:1017:U:O4'   | 2.22                     | 0.40              |
| 1:A:1211:U:O2'   | 1:A:1213:A:N3    | 2.45                     | 0.40              |
| 1:A:1225:A:H3'   | 13:M:102:THR:OG1 | 2.22                     | 0.40              |
| 1:A:1236:A:H4'   | 1:A:1304:G:H4'   | 2.02                     | 0.40              |
| 1:A:1288:A:N1    | 1:A:1371:G:H1'   | 2.35                     | 0.40              |
| 1:A:1309:G:C6    | 1:A:1329:A:C6    | 3.09                     | 0.40              |
| 2:B:6:MET:HE2    | 2:B:43:LEU:HB2   | 2.03                     | 0.40              |
| 3:C:18:TRP:HE3   | 3:C:18:TRP:H     | 1.69                     | 0.40              |
| 4:D:59:GLN:O     | 4:D:63:ARG:N     | 2.54                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:168:PRO:HB3  | 4:D:170:TRP:CZ3  | 2.56                     | 0.40              |
| 5:E:149:SER:O    | 5:E:152:MET:HB2  | 2.20                     | 0.40              |
| 10:J:34:ALA:HB2  | 10:J:83:THR:HG22 | 2.03                     | 0.40              |
| 11:K:65:VAL:C    | 11:K:67:ALA:H    | 2.30                     | 0.40              |
| 16:P:2:VAL:HG13  | 16:P:65:ALA:HA   | 2.02                     | 0.40              |
| 19:S:31:LEU:O    | 19:S:49:ILE:HG13 | 2.21                     | 0.40              |
| 21:V:56:PHE:C    | 21:V:58:ASN:N    | 2.78                     | 0.40              |
| 1:A:34:C:H2'     | 1:A:35:G:H8      | 1.85                     | 0.40              |
| 1:A:39:G:C6      | 1:A:404:G:C6     | 3.10                     | 0.40              |
| 1:A:119:A:H4'    | 1:A:120:A:C4     | 2.56                     | 0.40              |
| 1:A:168:G:C4     | 1:A:169:C:C5     | 3.09                     | 0.40              |
| 1:A:243:A:C5     | 1:A:281:G:N2     | 2.89                     | 0.40              |
| 1:A:520:A:C2     | 1:A:521:G:H1'    | 2.57                     | 0.40              |
| 1:A:537:G:N3     | 1:A:538:G:C8     | 2.89                     | 0.40              |
| 1:A:557:G:C6     | 1:A:558:G:C2     | 3.10                     | 0.40              |
| 1:A:582:C:C2     | 1:A:583:A:C8     | 3.09                     | 0.40              |
| 1:A:689:C:H3'    | 1:A:690:G:H8     | 1.87                     | 0.40              |
| 1:A:773:G:N1     | 1:A:807:A:C6     | 2.90                     | 0.40              |
| 1:A:1057:G:C6    | 1:A:1058:G:C4    | 3.10                     | 0.40              |
| 1:A:1060:U:C6    | 3:C:3:GLN:HG2    | 2.56                     | 0.40              |
| 1:A:1156:G:H5''  | 1:A:1156:G:C8    | 2.56                     | 0.40              |
| 1:A:1278:G:H4'   | 1:A:1279:G:N3    | 2.36                     | 0.40              |
| 1:A:1426:G:C6    | 1:A:1475:G:C6    | 3.09                     | 0.40              |
| 1:A:1489:G:C8    | 1:A:1490:U:C5    | 3.10                     | 0.40              |
| 3:C:36:ASP:O     | 3:C:39:VAL:HG22  | 2.22                     | 0.40              |
| 3:C:65:ARG:HD3   | 3:C:100:GLN:HG3  | 2.03                     | 0.40              |
| 3:C:148:GLY:O    | 3:C:202:ILE:HA   | 2.21                     | 0.40              |
| 4:D:62:ARG:NH2   | 4:D:69:GLU:N     | 2.70                     | 0.40              |
| 4:D:124:MET:HE3  | 4:D:128:ARG:N    | 2.36                     | 0.40              |
| 6:F:21:MET:HB2   | 6:F:24:ARG:NH2   | 2.36                     | 0.40              |
| 14:N:51:LEU:HD12 | 14:N:52:PRO:HD2  | 2.03                     | 0.40              |
| 15:O:3:LEU:HD23  | 15:O:3:LEU:HA    | 1.86                     | 0.40              |
| 19:S:3:ARG:HE    | 19:S:7:LYS:HZ3   | 1.69                     | 0.40              |
| 1:A:82:G:C2      | 1:A:88:U:C2      | 3.10                     | 0.40              |
| 1:A:508:U:H4'    | 4:D:51:TYR:CE2   | 2.56                     | 0.40              |
| 1:A:650:G:C6     | 1:A:651:C:C4     | 3.09                     | 0.40              |
| 1:A:679:C:N4     | 1:A:711:G:O6     | 2.35                     | 0.40              |
| 1:A:683:G:C2     | 1:A:708:C:C2     | 3.10                     | 0.40              |
| 1:A:683:G:C6     | 1:A:708:C:N3     | 2.89                     | 0.40              |
| 1:A:951:G:C6     | 1:A:1231:G:C6    | 3.10                     | 0.40              |
| 1:A:1078:U:H3'   | 1:A:1079:G:H8    | 1.87                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1165:U:H5'   | 1:A:1166:G:OP2   | 2.21                     | 0.40              |
| 1:A:1268:G:H21   | 1:A:1327:C:C4'   | 2.35                     | 0.40              |
| 1:A:1345:U:H5''  | 9:I:122:ARG:HH11 | 1.86                     | 0.40              |
| 4:D:124:MET:SD   | 4:D:129:VAL:HG22 | 2.61                     | 0.40              |
| 7:G:94:VAL:O     | 7:G:97:ASN:HB2   | 2.21                     | 0.40              |
| 10:J:85:ASP:O    | 10:J:89:ARG:N    | 2.46                     | 0.40              |
| 21:V:80:ARG:NH1  | 21:V:94:GLU:HA   | 2.34                     | 0.40              |
| 1:A:182:A:N7     | 1:A:184:G:C5     | 2.89                     | 0.40              |
| 1:A:356:A:C5     | 1:A:357:G:C8     | 3.09                     | 0.40              |
| 1:A:416:G:C6     | 1:A:417:G:C6     | 3.10                     | 0.40              |
| 1:A:419:C:N3     | 1:A:425:G:C2     | 2.89                     | 0.40              |
| 1:A:515:G:C4     | 1:A:516:PSU:C6   | 3.10                     | 0.40              |
| 1:A:573:A:H2'    | 1:A:574:A:C8     | 2.56                     | 0.40              |
| 1:A:628:G:C6     | 1:A:629:A:C5     | 3.10                     | 0.40              |
| 1:A:656:G:H1     | 1:A:750:C:N4     | 2.20                     | 0.40              |
| 1:A:736:C:N3     | 1:A:737:C:C4     | 2.90                     | 0.40              |
| 1:A:779:C:N4     | 1:A:780:A:C6     | 2.89                     | 0.40              |
| 1:A:932:C:H5'    | 7:G:4:ARG:CZ     | 2.51                     | 0.40              |
| 1:A:977:A:O2'    | 1:A:981:U:N3     | 2.54                     | 0.40              |
| 1:A:1091:U:H1'   | 1:A:1095:U:C2    | 2.56                     | 0.40              |
| 1:A:1207:2MG:C6  | 1:A:1208:C:C4    | 3.10                     | 0.40              |
| 1:A:1219:A:H2'   | 1:A:1220:G:H8    | 1.85                     | 0.40              |
| 1:A:1226:C:H2'   | 13:M:102:THR:O   | 2.22                     | 0.40              |
| 1:A:1251:A:H2'   | 1:A:1252:A:O4'   | 2.21                     | 0.40              |
| 1:A:1253:G:N2    | 1:A:1356:G:OP1   | 2.49                     | 0.40              |
| 1:A:1296:C:H3'   | 1:A:1297:G:H8    | 1.86                     | 0.40              |
| 3:C:22:TRP:HB3   | 3:C:59:ARG:N     | 2.33                     | 0.40              |
| 3:C:60:PRO:O     | 3:C:61:ALA:C     | 2.63                     | 0.40              |
| 6:F:29:ILE:HA    | 6:F:29:ILE:HD13  | 1.88                     | 0.40              |
| 8:H:11:LEU:O     | 8:H:15:ARG:N     | 2.35                     | 0.40              |
| 10:J:35:GLN:O    | 10:J:76:ILE:HA   | 2.21                     | 0.40              |
| 13:M:14:HIS:HB3  | 13:M:42:ASP:HA   | 2.03                     | 0.40              |
| 16:P:20:VAL:HG12 | 16:P:35:ARG:CB   | 2.38                     | 0.40              |
| 19:S:34:TRP:HE3  | 19:S:34:TRP:H    | 1.70                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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   | B     | 222/241 (92%)   | 217 (98%)  | 5 (2%)   | 0        | 100         | 100 |
| 3   | C     | 209/233 (90%)   | 190 (91%)  | 19 (9%)  | 0        | 100         | 100 |
| 4   | D     | 203/206 (98%)   | 191 (94%)  | 12 (6%)  | 0        | 100         | 100 |
| 5   | E     | 154/167 (92%)   | 145 (94%)  | 9 (6%)   | 0        | 100         | 100 |
| 6   | F     | 104/135 (77%)   | 97 (93%)   | 7 (7%)   | 0        | 100         | 100 |
| 7   | G     | 149/179 (83%)   | 137 (92%)  | 12 (8%)  | 0        | 100         | 100 |
| 8   | H     | 127/130 (98%)   | 118 (93%)  | 9 (7%)   | 0        | 100         | 100 |
| 9   | I     | 125/130 (96%)   | 109 (87%)  | 16 (13%) | 0        | 100         | 100 |
| 10  | J     | 97/103 (94%)    | 91 (94%)   | 6 (6%)   | 0        | 100         | 100 |
| 11  | K     | 115/129 (89%)   | 107 (93%)  | 8 (7%)   | 0        | 100         | 100 |
| 12  | L     | 120/124 (97%)   | 114 (95%)  | 6 (5%)   | 0        | 100         | 100 |
| 13  | M     | 112/118 (95%)   | 97 (87%)   | 15 (13%) | 0        | 100         | 100 |
| 14  | N     | 98/101 (97%)    | 88 (90%)   | 10 (10%) | 0        | 100         | 100 |
| 15  | O     | 86/89 (97%)     | 82 (95%)   | 4 (5%)   | 0        | 100         | 100 |
| 16  | P     | 80/82 (98%)     | 76 (95%)   | 4 (5%)   | 0        | 100         | 100 |
| 17  | Q     | 78/84 (93%)     | 72 (92%)   | 6 (8%)   | 0        | 100         | 100 |
| 18  | R     | 63/75 (84%)     | 60 (95%)   | 3 (5%)   | 0        | 100         | 100 |
| 19  | S     | 80/92 (87%)     | 71 (89%)   | 9 (11%)  | 0        | 100         | 100 |
| 20  | T     | 84/87 (97%)     | 78 (93%)   | 6 (7%)   | 0        | 100         | 100 |
| 21  | V     | 97/133 (73%)    | 93 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 22  | X     | 149/151 (99%)   | 140 (94%)  | 9 (6%)   | 0        | 100         | 100 |
| All | All   | 2552/2789 (92%) | 2373 (93%) | 179 (7%) | 0        | 100         | 100 |

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains ⓘ

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   | B     | 186/199 (94%)   | 186 (100%)  | 0        | 100         | 100 |
| 3   | C     | 172/190 (90%)   | 172 (100%)  | 0        | 100         | 100 |
| 4   | D     | 172/173 (99%)   | 172 (100%)  | 0        | 100         | 100 |
| 5   | E     | 119/126 (94%)   | 119 (100%)  | 0        | 100         | 100 |
| 6   | F     | 92/116 (79%)    | 92 (100%)   | 0        | 100         | 100 |
| 7   | G     | 124/147 (84%)   | 124 (100%)  | 0        | 100         | 100 |
| 8   | H     | 104/105 (99%)   | 104 (100%)  | 0        | 100         | 100 |
| 9   | I     | 105/107 (98%)   | 105 (100%)  | 0        | 100         | 100 |
| 10  | J     | 87/90 (97%)     | 87 (100%)   | 0        | 100         | 100 |
| 11  | K     | 90/99 (91%)     | 90 (100%)   | 0        | 100         | 100 |
| 12  | L     | 102/103 (99%)   | 102 (100%)  | 0        | 100         | 100 |
| 13  | M     | 92/96 (96%)     | 92 (100%)   | 0        | 100         | 100 |
| 14  | N     | 83/84 (99%)     | 83 (100%)   | 0        | 100         | 100 |
| 15  | O     | 76/77 (99%)     | 76 (100%)   | 0        | 100         | 100 |
| 16  | P     | 65/65 (100%)    | 65 (100%)   | 0        | 100         | 100 |
| 17  | Q     | 74/78 (95%)     | 74 (100%)   | 0        | 100         | 100 |
| 18  | R     | 56/65 (86%)     | 56 (100%)   | 0        | 100         | 100 |
| 19  | S     | 72/79 (91%)     | 72 (100%)   | 0        | 100         | 100 |
| 20  | T     | 65/66 (98%)     | 65 (100%)   | 0        | 100         | 100 |
| 21  | V     | 84/116 (72%)    | 84 (100%)   | 0        | 100         | 100 |
| 22  | X     | 130/130 (100%)  | 130 (100%)  | 0        | 100         | 100 |
| All | All   | 2150/2311 (93%) | 2150 (100%) | 0        | 100         | 100 |

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (38) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | B     | 24  | ASN  |
| 2   | B     | 94  | HIS  |
| 2   | B     | 120 | GLN  |
| 2   | B     | 122 | GLN  |
| 3   | C     | 190 | HIS  |
| 5   | E     | 70  | ASN  |
| 5   | E     | 73  | ASN  |
| 5   | E     | 121 | HIS  |
| 5   | E     | 132 | ASN  |
| 5   | E     | 135 | ASN  |
| 6   | F     | 46  | GLN  |
| 6   | F     | 52  | ASN  |
| 6   | F     | 55  | HIS  |
| 7   | G     | 122 | ASN  |
| 8   | H     | 21  | ASN  |
| 8   | H     | 76  | GLN  |
| 10  | J     | 56  | HIS  |
| 10  | J     | 70  | HIS  |
| 10  | J     | 99  | GLN  |
| 11  | K     | 29  | ASN  |
| 11  | K     | 81  | ASN  |
| 11  | K     | 118 | HIS  |
| 12  | L     | 5   | ASN  |
| 12  | L     | 72  | HIS  |
| 12  | L     | 75  | GLN  |
| 15  | O     | 20  | ASN  |
| 15  | O     | 37  | ASN  |
| 15  | O     | 40  | GLN  |
| 16  | P     | 79  | ASN  |
| 18  | R     | 19  | GLN  |
| 18  | R     | 52  | GLN  |
| 20  | T     | 20  | HIS  |
| 20  | T     | 84  | ASN  |
| 21  | V     | 16  | GLN  |
| 21  | V     | 58  | ASN  |
| 21  | V     | 73  | GLN  |
| 22  | X     | 140 | ASN  |
| 22  | X     | 145 | ASN  |

### 5.3.3 RNA ⓘ

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| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | A     | 1507/1542 (97%) | 441 (29%)         | 22 (1%)         |

All (441) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 6   | G    |
| 1   | A     | 9   | G    |
| 1   | A     | 13  | U    |
| 1   | A     | 14  | U    |
| 1   | A     | 16  | A    |
| 1   | A     | 22  | G    |
| 1   | A     | 29  | U    |
| 1   | A     | 31  | G    |
| 1   | A     | 39  | G    |
| 1   | A     | 47  | C    |
| 1   | A     | 48  | C    |
| 1   | A     | 50  | A    |
| 1   | A     | 51  | A    |
| 1   | A     | 69  | G    |
| 1   | A     | 71  | A    |
| 1   | A     | 72  | A    |
| 1   | A     | 73  | C    |
| 1   | A     | 74  | A    |
| 1   | A     | 75  | G    |
| 1   | A     | 76  | G    |
| 1   | A     | 79  | G    |
| 1   | A     | 80  | A    |
| 1   | A     | 83  | C    |
| 1   | A     | 84  | U    |
| 1   | A     | 85  | U    |
| 1   | A     | 86  | G    |
| 1   | A     | 87  | C    |
| 1   | A     | 89  | U    |
| 1   | A     | 90  | C    |
| 1   | A     | 91  | U    |
| 1   | A     | 95  | C    |
| 1   | A     | 109 | A    |
| 1   | A     | 120 | A    |
| 1   | A     | 121 | U    |
| 1   | A     | 122 | G    |
| 1   | A     | 130 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 131 | A    |
| 1   | A     | 134 | G    |
| 1   | A     | 141 | G    |
| 1   | A     | 142 | G    |
| 1   | A     | 144 | G    |
| 1   | A     | 148 | G    |
| 1   | A     | 149 | A    |
| 1   | A     | 158 | G    |
| 1   | A     | 163 | C    |
| 1   | A     | 166 | U    |
| 1   | A     | 168 | G    |
| 1   | A     | 170 | U    |
| 1   | A     | 173 | U    |
| 1   | A     | 179 | A    |
| 1   | A     | 181 | A    |
| 1   | A     | 183 | C    |
| 1   | A     | 184 | G    |
| 1   | A     | 195 | A    |
| 1   | A     | 196 | A    |
| 1   | A     | 197 | A    |
| 1   | A     | 203 | G    |
| 1   | A     | 204 | G    |
| 1   | A     | 206 | C    |
| 1   | A     | 210 | C    |
| 1   | A     | 212 | G    |
| 1   | A     | 226 | G    |
| 1   | A     | 236 | A    |
| 1   | A     | 240 | G    |
| 1   | A     | 243 | A    |
| 1   | A     | 244 | U    |
| 1   | A     | 245 | U    |
| 1   | A     | 246 | A    |
| 1   | A     | 247 | G    |
| 1   | A     | 249 | U    |
| 1   | A     | 251 | G    |
| 1   | A     | 263 | A    |
| 1   | A     | 264 | C    |
| 1   | A     | 266 | G    |
| 1   | A     | 267 | C    |
| 1   | A     | 276 | G    |
| 1   | A     | 278 | G    |
| 1   | A     | 280 | C    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 289 | G    |
| 1   | A     | 328 | C    |
| 1   | A     | 329 | A    |
| 1   | A     | 330 | C    |
| 1   | A     | 332 | G    |
| 1   | A     | 334 | C    |
| 1   | A     | 336 | A    |
| 1   | A     | 348 | G    |
| 1   | A     | 351 | G    |
| 1   | A     | 352 | C    |
| 1   | A     | 354 | G    |
| 1   | A     | 356 | A    |
| 1   | A     | 363 | A    |
| 1   | A     | 365 | U    |
| 1   | A     | 366 | A    |
| 1   | A     | 367 | U    |
| 1   | A     | 369 | G    |
| 1   | A     | 372 | C    |
| 1   | A     | 375 | U    |
| 1   | A     | 381 | C    |
| 1   | A     | 390 | U    |
| 1   | A     | 392 | C    |
| 1   | A     | 397 | A    |
| 1   | A     | 398 | U    |
| 1   | A     | 406 | G    |
| 1   | A     | 411 | A    |
| 1   | A     | 412 | A    |
| 1   | A     | 413 | G    |
| 1   | A     | 414 | A    |
| 1   | A     | 421 | U    |
| 1   | A     | 422 | C    |
| 1   | A     | 423 | G    |
| 1   | A     | 424 | G    |
| 1   | A     | 426 | U    |
| 1   | A     | 429 | U    |
| 1   | A     | 430 | A    |
| 1   | A     | 435 | A    |
| 1   | A     | 451 | A    |
| 1   | A     | 456 | A    |
| 1   | A     | 457 | G    |
| 1   | A     | 458 | U    |
| 1   | A     | 459 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 467 | U    |
| 1   | A     | 468 | A    |
| 1   | A     | 469 | C    |
| 1   | A     | 474 | G    |
| 1   | A     | 475 | C    |
| 1   | A     | 481 | G    |
| 1   | A     | 484 | G    |
| 1   | A     | 486 | U    |
| 1   | A     | 488 | C    |
| 1   | A     | 493 | A    |
| 1   | A     | 496 | A    |
| 1   | A     | 497 | G    |
| 1   | A     | 509 | A    |
| 1   | A     | 510 | A    |
| 1   | A     | 511 | C    |
| 1   | A     | 515 | G    |
| 1   | A     | 516 | PSU  |
| 1   | A     | 517 | G    |
| 1   | A     | 518 | C    |
| 1   | A     | 519 | C    |
| 1   | A     | 520 | A    |
| 1   | A     | 524 | G    |
| 1   | A     | 527 | G7M  |
| 1   | A     | 528 | C    |
| 1   | A     | 531 | U    |
| 1   | A     | 532 | A    |
| 1   | A     | 533 | A    |
| 1   | A     | 534 | U    |
| 1   | A     | 547 | A    |
| 1   | A     | 559 | A    |
| 1   | A     | 562 | U    |
| 1   | A     | 564 | C    |
| 1   | A     | 567 | G    |
| 1   | A     | 572 | A    |
| 1   | A     | 573 | A    |
| 1   | A     | 576 | C    |
| 1   | A     | 577 | G    |
| 1   | A     | 591 | U    |
| 1   | A     | 593 | U    |
| 1   | A     | 595 | A    |
| 1   | A     | 596 | A    |
| 1   | A     | 603 | U    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 607 | A    |
| 1   | A     | 618 | C    |
| 1   | A     | 633 | G    |
| 1   | A     | 639 | G    |
| 1   | A     | 640 | A    |
| 1   | A     | 653 | U    |
| 1   | A     | 654 | G    |
| 1   | A     | 661 | G    |
| 1   | A     | 665 | A    |
| 1   | A     | 675 | A    |
| 1   | A     | 676 | A    |
| 1   | A     | 677 | U    |
| 1   | A     | 682 | G    |
| 1   | A     | 686 | U    |
| 1   | A     | 687 | A    |
| 1   | A     | 688 | G    |
| 1   | A     | 693 | G    |
| 1   | A     | 696 | A    |
| 1   | A     | 697 | U    |
| 1   | A     | 698 | G    |
| 1   | A     | 700 | G    |
| 1   | A     | 701 | U    |
| 1   | A     | 702 | A    |
| 1   | A     | 703 | G    |
| 1   | A     | 704 | A    |
| 1   | A     | 708 | C    |
| 1   | A     | 709 | U    |
| 1   | A     | 714 | G    |
| 1   | A     | 720 | C    |
| 1   | A     | 721 | G    |
| 1   | A     | 722 | G    |
| 1   | A     | 723 | U    |
| 1   | A     | 727 | G    |
| 1   | A     | 731 | G    |
| 1   | A     | 735 | C    |
| 1   | A     | 736 | C    |
| 1   | A     | 755 | G    |
| 1   | A     | 763 | G    |
| 1   | A     | 774 | G    |
| 1   | A     | 777 | A    |
| 1   | A     | 785 | G    |
| 1   | A     | 788 | U    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 790 | A    |
| 1   | A     | 792 | A    |
| 1   | A     | 793 | U    |
| 1   | A     | 794 | A    |
| 1   | A     | 807 | A    |
| 1   | A     | 809 | G    |
| 1   | A     | 810 | C    |
| 1   | A     | 813 | U    |
| 1   | A     | 814 | A    |
| 1   | A     | 815 | A    |
| 1   | A     | 817 | C    |
| 1   | A     | 818 | G    |
| 1   | A     | 819 | A    |
| 1   | A     | 820 | U    |
| 1   | A     | 821 | G    |
| 1   | A     | 828 | U    |
| 1   | A     | 829 | G    |
| 1   | A     | 832 | G    |
| 1   | A     | 836 | G    |
| 1   | A     | 839 | C    |
| 1   | A     | 840 | C    |
| 1   | A     | 849 | G    |
| 1   | A     | 852 | G    |
| 1   | A     | 858 | G    |
| 1   | A     | 867 | G    |
| 1   | A     | 872 | A    |
| 1   | A     | 876 | C    |
| 1   | A     | 884 | U    |
| 1   | A     | 885 | G    |
| 1   | A     | 894 | G    |
| 1   | A     | 901 | A    |
| 1   | A     | 902 | G    |
| 1   | A     | 914 | A    |
| 1   | A     | 921 | U    |
| 1   | A     | 924 | C    |
| 1   | A     | 925 | G    |
| 1   | A     | 926 | G    |
| 1   | A     | 927 | G    |
| 1   | A     | 934 | C    |
| 1   | A     | 935 | A    |
| 1   | A     | 939 | G    |
| 1   | A     | 954 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 958  | A    |
| 1   | A     | 959  | A    |
| 1   | A     | 960  | U    |
| 1   | A     | 961  | U    |
| 1   | A     | 965  | U    |
| 1   | A     | 966  | 2MG  |
| 1   | A     | 968  | A    |
| 1   | A     | 969  | A    |
| 1   | A     | 971  | G    |
| 1   | A     | 975  | A    |
| 1   | A     | 976  | G    |
| 1   | A     | 977  | A    |
| 1   | A     | 982  | U    |
| 1   | A     | 983  | A    |
| 1   | A     | 984  | C    |
| 1   | A     | 989  | U    |
| 1   | A     | 992  | U    |
| 1   | A     | 993  | G    |
| 1   | A     | 994  | A    |
| 1   | A     | 995  | C    |
| 1   | A     | 999  | C    |
| 1   | A     | 1000 | A    |
| 1   | A     | 1001 | C    |
| 1   | A     | 1002 | G    |
| 1   | A     | 1003 | G    |
| 1   | A     | 1004 | A    |
| 1   | A     | 1014 | A    |
| 1   | A     | 1016 | A    |
| 1   | A     | 1017 | U    |
| 1   | A     | 1018 | G    |
| 1   | A     | 1020 | G    |
| 1   | A     | 1030 | U    |
| 1   | A     | 1031 | C    |
| 1   | A     | 1032 | G    |
| 1   | A     | 1037 | C    |
| 1   | A     | 1038 | C    |
| 1   | A     | 1042 | A    |
| 1   | A     | 1043 | G    |
| 1   | A     | 1044 | A    |
| 1   | A     | 1045 | C    |
| 1   | A     | 1053 | G    |
| 1   | A     | 1054 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 1064 | G    |
| 1   | A     | 1065 | U    |
| 1   | A     | 1067 | A    |
| 1   | A     | 1071 | C    |
| 1   | A     | 1076 | U    |
| 1   | A     | 1084 | G    |
| 1   | A     | 1086 | U    |
| 1   | A     | 1094 | G    |
| 1   | A     | 1095 | U    |
| 1   | A     | 1097 | C    |
| 1   | A     | 1101 | A    |
| 1   | A     | 1104 | G    |
| 1   | A     | 1106 | G    |
| 1   | A     | 1108 | G    |
| 1   | A     | 1112 | C    |
| 1   | A     | 1124 | G    |
| 1   | A     | 1125 | U    |
| 1   | A     | 1127 | G    |
| 1   | A     | 1130 | A    |
| 1   | A     | 1132 | C    |
| 1   | A     | 1133 | G    |
| 1   | A     | 1134 | G    |
| 1   | A     | 1135 | U    |
| 1   | A     | 1136 | C    |
| 1   | A     | 1137 | C    |
| 1   | A     | 1138 | G    |
| 1   | A     | 1139 | G    |
| 1   | A     | 1140 | C    |
| 1   | A     | 1141 | C    |
| 1   | A     | 1146 | A    |
| 1   | A     | 1150 | A    |
| 1   | A     | 1151 | A    |
| 1   | A     | 1152 | A    |
| 1   | A     | 1154 | G    |
| 1   | A     | 1155 | A    |
| 1   | A     | 1156 | G    |
| 1   | A     | 1157 | A    |
| 1   | A     | 1158 | C    |
| 1   | A     | 1159 | U    |
| 1   | A     | 1160 | G    |
| 1   | A     | 1162 | C    |
| 1   | A     | 1165 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 1166 | G    |
| 1   | A     | 1168 | U    |
| 1   | A     | 1179 | A    |
| 1   | A     | 1182 | G    |
| 1   | A     | 1184 | G    |
| 1   | A     | 1191 | A    |
| 1   | A     | 1192 | C    |
| 1   | A     | 1193 | G    |
| 1   | A     | 1196 | A    |
| 1   | A     | 1197 | A    |
| 1   | A     | 1198 | G    |
| 1   | A     | 1200 | C    |
| 1   | A     | 1201 | A    |
| 1   | A     | 1209 | C    |
| 1   | A     | 1211 | U    |
| 1   | A     | 1212 | U    |
| 1   | A     | 1213 | A    |
| 1   | A     | 1225 | A    |
| 1   | A     | 1226 | C    |
| 1   | A     | 1227 | A    |
| 1   | A     | 1228 | C    |
| 1   | A     | 1238 | A    |
| 1   | A     | 1239 | A    |
| 1   | A     | 1241 | G    |
| 1   | A     | 1250 | A    |
| 1   | A     | 1253 | G    |
| 1   | A     | 1257 | A    |
| 1   | A     | 1258 | G    |
| 1   | A     | 1260 | G    |
| 1   | A     | 1264 | U    |
| 1   | A     | 1270 | G    |
| 1   | A     | 1279 | G    |
| 1   | A     | 1280 | A    |
| 1   | A     | 1285 | A    |
| 1   | A     | 1286 | U    |
| 1   | A     | 1287 | A    |
| 1   | A     | 1288 | A    |
| 1   | A     | 1296 | C    |
| 1   | A     | 1297 | G    |
| 1   | A     | 1298 | U    |
| 1   | A     | 1299 | A    |
| 1   | A     | 1300 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 1302 | C    |
| 1   | A     | 1303 | C    |
| 1   | A     | 1305 | G    |
| 1   | A     | 1317 | C    |
| 1   | A     | 1319 | A    |
| 1   | A     | 1320 | C    |
| 1   | A     | 1322 | C    |
| 1   | A     | 1323 | G    |
| 1   | A     | 1331 | G    |
| 1   | A     | 1332 | A    |
| 1   | A     | 1333 | A    |
| 1   | A     | 1334 | G    |
| 1   | A     | 1336 | C    |
| 1   | A     | 1337 | G    |
| 1   | A     | 1342 | C    |
| 1   | A     | 1344 | C    |
| 1   | A     | 1346 | A    |
| 1   | A     | 1347 | G    |
| 1   | A     | 1348 | U    |
| 1   | A     | 1350 | A    |
| 1   | A     | 1352 | C    |
| 1   | A     | 1363 | A    |
| 1   | A     | 1368 | A    |
| 1   | A     | 1370 | G    |
| 1   | A     | 1373 | G    |
| 1   | A     | 1378 | C    |
| 1   | A     | 1379 | G    |
| 1   | A     | 1381 | U    |
| 1   | A     | 1384 | C    |
| 1   | A     | 1394 | A    |
| 1   | A     | 1395 | C    |
| 1   | A     | 1412 | C    |
| 1   | A     | 1414 | U    |
| 1   | A     | 1415 | G    |
| 1   | A     | 1420 | U    |
| 1   | A     | 1426 | G    |
| 1   | A     | 1429 | A    |
| 1   | A     | 1430 | A    |
| 1   | A     | 1432 | G    |
| 1   | A     | 1433 | A    |
| 1   | A     | 1441 | A    |
| 1   | A     | 1443 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 1446 | A    |
| 1   | A     | 1448 | C    |
| 1   | A     | 1451 | U    |
| 1   | A     | 1452 | C    |
| 1   | A     | 1453 | G    |
| 1   | A     | 1454 | G    |
| 1   | A     | 1470 | U    |
| 1   | A     | 1471 | U    |
| 1   | A     | 1473 | G    |
| 1   | A     | 1475 | G    |
| 1   | A     | 1479 | C    |
| 1   | A     | 1486 | G    |
| 1   | A     | 1488 | G    |
| 1   | A     | 1489 | G    |
| 1   | A     | 1490 | U    |
| 1   | A     | 1491 | G    |
| 1   | A     | 1508 | A    |
| 1   | A     | 1509 | C    |
| 1   | A     | 1518 | MA6  |
| 1   | A     | 1519 | MA6  |
| 1   | A     | 1524 | C    |
| 1   | A     | 1529 | G    |
| 1   | A     | 1530 | G    |
| 1   | A     | 1532 | U    |
| 1   | A     | 1533 | C    |
| 1   | A     | 1534 | A    |
| 1   | A     | 1536 | C    |

All (22) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 13  | U    |
| 1   | A     | 30  | U    |
| 1   | A     | 78  | A    |
| 1   | A     | 428 | G    |
| 1   | A     | 429 | U    |
| 1   | A     | 531 | U    |
| 1   | A     | 561 | U    |
| 1   | A     | 776 | G    |
| 1   | A     | 789 | U    |
| 1   | A     | 884 | U    |
| 1   | A     | 953 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 968  | A    |
| 1   | A     | 983  | A    |
| 1   | A     | 999  | C    |
| 1   | A     | 1103 | C    |
| 1   | A     | 1156 | G    |
| 1   | A     | 1158 | C    |
| 1   | A     | 1159 | U    |
| 1   | A     | 1208 | C    |
| 1   | A     | 1286 | U    |
| 1   | A     | 1297 | G    |
| 1   | A     | 1298 | U    |

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

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

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res  | Link | Bond lengths |      |             | Bond angles |      |             |
|-----|------|-------|------|------|--------------|------|-------------|-------------|------|-------------|
|     |      |       |      |      | Counts       | RMSZ | $\# Z  > 2$ | Counts      | RMSZ | $\# Z  > 2$ |
| 1   | PSU  | A     | 516  | 1    | 18,21,22     | 1.42 | 4 (22%)     | 21,30,33    | 2.43 | 6 (28%)     |
| 1   | G7M  | A     | 527  | 1    | 23,26,27     | 0.55 | 0           | 34,39,42    | 1.10 | 1 (2%)      |
| 1   | 2MG  | A     | 1207 | 1    | 23,26,27     | 1.32 | 4 (17%)     | 33,38,41    | 2.09 | 6 (18%)     |
| 12  | D2T  | L     | 89   | 12   | 8,9,10       | 1.07 | 1 (12%)     | 6,11,13     | 1.74 | 1 (16%)     |
| 1   | 2MG  | A     | 966  | 1    | 23,26,27     | 1.25 | 4 (17%)     | 33,38,41    | 2.34 | 9 (27%)     |
| 1   | 2MG  | A     | 1516 | 1    | 23,26,27     | 1.23 | 3 (13%)     | 33,38,41    | 2.37 | 11 (33%)    |
| 1   | 5MC  | A     | 967  | 1    | 19,22,23     | 1.64 | 3 (15%)     | 26,32,35    | 1.25 | 3 (11%)     |
| 1   | MA6  | A     | 1519 | 1    | 23,26,27     | 1.54 | 4 (17%)     | 33,38,41    | 2.42 | 12 (36%)    |
| 1   | MA6  | A     | 1518 | 1    | 23,26,27     | 1.59 | 4 (17%)     | 33,38,41    | 2.35 | 13 (39%)    |

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

| Mol | Type | Chain | Res  | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|------|------|---------|------------|---------|
| 1   | PSU  | A     | 516  | 1    | -       | 2/7/25/26  | 0/2/2/2 |
| 1   | G7M  | A     | 527  | 1    | -       | 1/7/25/26  | 0/3/3/3 |
| 1   | 2MG  | A     | 1207 | 1    | -       | 1/9/27/28  | 0/3/3/3 |
| 12  | D2T  | L     | 89   | 12   | -       | 3/7/12/14  | -       |
| 1   | 2MG  | A     | 966  | 1    | -       | 0/9/27/28  | 0/3/3/3 |
| 1   | 2MG  | A     | 1516 | 1    | -       | 2/9/27/28  | 0/3/3/3 |
| 1   | 5MC  | A     | 967  | 1    | -       | 0/7/25/26  | 0/2/2/2 |
| 1   | MA6  | A     | 1519 | 1    | -       | 4/11/29/30 | 0/3/3/3 |
| 1   | MA6  | A     | 1518 | 1    | -       | 4/11/29/30 | 0/3/3/3 |

All (27) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|---------|-------|-------------|----------|
| 1   | A     | 967  | 5MC  | C5-C4   | 5.84  | 1.48        | 1.44     |
| 1   | A     | 1519 | MA6  | C5-C4   | 4.81  | 1.47        | 1.39     |
| 1   | A     | 1518 | MA6  | C5-C4   | 4.79  | 1.47        | 1.39     |
| 1   | A     | 516  | PSU  | C4-N3   | -3.21 | 1.32        | 1.38     |
| 1   | A     | 1518 | MA6  | C5-C6   | 3.17  | 1.49        | 1.41     |
| 1   | A     | 966  | 2MG  | C5-C4   | 3.09  | 1.47        | 1.38     |
| 1   | A     | 1207 | 2MG  | C6-N1   | -3.00 | 1.33        | 1.38     |
| 1   | A     | 1516 | 2MG  | C5-C4   | 2.97  | 1.46        | 1.38     |
| 12  | L     | 89   | D2T  | O-C     | 2.80  | 1.30        | 1.20     |
| 1   | A     | 1207 | 2MG  | C5-C4   | 2.71  | 1.46        | 1.38     |
| 1   | A     | 967  | 5MC  | C6-C5   | 2.70  | 1.39        | 1.34     |
| 1   | A     | 1519 | MA6  | C5-N7   | -2.67 | 1.34        | 1.39     |
| 1   | A     | 1519 | MA6  | C5-C6   | 2.61  | 1.48        | 1.41     |
| 1   | A     | 1516 | 2MG  | C6-N1   | -2.46 | 1.34        | 1.38     |
| 1   | A     | 966  | 2MG  | C6-N1   | -2.39 | 1.34        | 1.38     |
| 1   | A     | 1518 | MA6  | C4-N9   | -2.36 | 1.32        | 1.37     |
| 1   | A     | 1518 | MA6  | C8-N7   | 2.32  | 1.36        | 1.31     |
| 1   | A     | 1207 | 2MG  | C4-N9   | -2.32 | 1.32        | 1.38     |
| 1   | A     | 967  | 5MC  | C6-N1   | -2.31 | 1.34        | 1.38     |
| 1   | A     | 1207 | 2MG  | C5-N7   | -2.28 | 1.34        | 1.39     |
| 1   | A     | 1516 | 2MG  | C5-N7   | -2.19 | 1.34        | 1.39     |
| 1   | A     | 516  | PSU  | C6-C5   | 2.17  | 1.37        | 1.35     |
| 1   | A     | 516  | PSU  | C2-N3   | -2.08 | 1.34        | 1.37     |
| 1   | A     | 1519 | MA6  | C4-N9   | -2.08 | 1.33        | 1.37     |
| 1   | A     | 966  | 2MG  | C2-N3   | 2.03  | 1.35        | 1.32     |
| 1   | A     | 516  | PSU  | O4'-C1' | -2.03 | 1.41        | 1.43     |
| 1   | A     | 966  | 2MG  | C5-N7   | -2.01 | 1.35        | 1.39     |

All (62) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1   | A     | 966  | 2MG  | C2-N3-C4  | 7.34  | 121.18      | 112.00   |
| 1   | A     | 516  | PSU  | N1-C2-N3  | 7.13  | 122.69      | 115.17   |
| 1   | A     | 1516 | 2MG  | C2-N3-C4  | 7.08  | 120.85      | 112.00   |
| 1   | A     | 1207 | 2MG  | C2-N3-C4  | 6.52  | 120.16      | 112.00   |
| 1   | A     | 966  | 2MG  | C5-C4-N3  | -6.24 | 118.45      | 128.39   |
| 1   | A     | 1516 | 2MG  | C5-C4-N3  | -6.03 | 118.80      | 128.39   |
| 1   | A     | 1519 | MA6  | C5-C4-N3  | -5.87 | 118.63      | 126.72   |
| 1   | A     | 1207 | 2MG  | C5-C4-N3  | -5.59 | 119.49      | 128.39   |
| 1   | A     | 1518 | MA6  | C5-C4-N3  | -4.89 | 119.98      | 126.72   |
| 1   | A     | 516  | PSU  | C4-N3-C2  | -4.88 | 119.64      | 126.37   |
| 1   | A     | 966  | 2MG  | N9-C4-N3  | 4.65  | 135.25      | 125.95   |
| 1   | A     | 1519 | MA6  | N3-C4-N9  | 4.54  | 134.89      | 127.17   |
| 1   | A     | 1518 | MA6  | C2-N1-C6  | 4.45  | 122.70      | 111.83   |
| 1   | A     | 1207 | 2MG  | N9-C4-N3  | 4.37  | 134.70      | 125.95   |
| 1   | A     | 1519 | MA6  | C10-N6-C6 | -4.35 | 109.45      | 120.52   |
| 1   | A     | 1516 | 2MG  | N9-C4-N3  | 4.32  | 134.59      | 125.95   |
| 1   | A     | 1518 | MA6  | C9-N6-C6  | -4.31 | 109.56      | 120.52   |
| 1   | A     | 1519 | MA6  | C9-N6-C6  | -4.25 | 109.72      | 120.52   |
| 1   | A     | 1519 | MA6  | C2-N1-C6  | 4.24  | 122.20      | 111.83   |
| 1   | A     | 1518 | MA6  | C4-C5-N7  | -4.20 | 105.78      | 110.58   |
| 1   | A     | 516  | PSU  | O2-C2-N1  | -3.92 | 118.74      | 122.79   |
| 1   | A     | 1518 | MA6  | N3-C4-N9  | 3.76  | 133.56      | 127.17   |
| 1   | A     | 1516 | 2MG  | CM2-N2-C2 | -3.74 | 115.61      | 123.65   |
| 1   | A     | 1518 | MA6  | C10-N6-C6 | -3.74 | 111.02      | 120.52   |
| 1   | A     | 1519 | MA6  | N1-C6-N6  | 3.72  | 121.39      | 116.86   |
| 1   | A     | 1519 | MA6  | C2-N3-C4  | 3.59  | 120.61      | 111.83   |
| 1   | A     | 1518 | MA6  | C2-N3-C4  | 3.53  | 120.46      | 111.83   |
| 1   | A     | 1518 | MA6  | N1-C2-N3  | -3.51 | 123.27      | 128.58   |
| 1   | A     | 1518 | MA6  | C4-N9-C8  | 3.48  | 109.39      | 105.74   |
| 1   | A     | 1516 | 2MG  | C6-C5-N7  | 3.38  | 136.45      | 130.29   |
| 1   | A     | 516  | PSU  | C5-C6-N1  | -3.37 | 117.46      | 122.14   |
| 1   | A     | 1519 | MA6  | C4-C5-N7  | -3.36 | 106.74      | 110.58   |
| 1   | A     | 1516 | 2MG  | N1-C2-N2  | 3.32  | 119.95      | 116.56   |
| 1   | A     | 1207 | 2MG  | C6-C5-N7  | 3.29  | 136.27      | 130.29   |
| 1   | A     | 966  | 2MG  | C6-C5-N7  | 3.23  | 136.17      | 130.29   |
| 1   | A     | 527  | G7M  | C8-N7-C5  | -3.20 | 103.78      | 107.78   |
| 1   | A     | 1519 | MA6  | N1-C2-N3  | -3.20 | 123.74      | 128.58   |
| 12  | L     | 89   | D2T  | O-C-CA    | -3.18 | 116.59      | 124.77   |
| 1   | A     | 1519 | MA6  | C10-N6-C9 | -3.16 | 106.01      | 116.18   |
| 1   | A     | 967  | 5MC  | C5-C6-N1  | -3.05 | 120.00      | 123.31   |
| 1   | A     | 1516 | 2MG  | N2-C2-N3  | -2.98 | 116.72      | 120.51   |
| 1   | A     | 1518 | MA6  | C5-N7-C8  | 2.87  | 107.97      | 103.45   |
| 1   | A     | 1518 | MA6  | C6-C5-N7  | 2.85  | 137.98      | 133.43   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | A     | 967  | 5MC  | C5-C4-N3    | -2.65 | 119.04      | 121.75   |
| 1   | A     | 1516 | 2MG  | C4-C5-N7    | -2.58 | 106.58      | 110.67   |
| 1   | A     | 966  | 2MG  | C4-C5-N7    | -2.57 | 106.60      | 110.67   |
| 1   | A     | 1518 | MA6  | N9-C8-N7    | -2.49 | 110.41      | 113.94   |
| 1   | A     | 1519 | MA6  | C5-C6-N6    | -2.40 | 121.53      | 125.33   |
| 1   | A     | 516  | PSU  | C6-C5-C4    | 2.40  | 119.79      | 118.17   |
| 1   | A     | 1516 | 2MG  | C2-N1-C6    | -2.38 | 121.67      | 124.55   |
| 1   | A     | 1207 | 2MG  | C4-C5-N7    | -2.36 | 106.93      | 110.67   |
| 1   | A     | 1516 | 2MG  | O6-C6-C5    | -2.35 | 120.32      | 126.53   |
| 1   | A     | 966  | 2MG  | N1-C2-N2    | 2.28  | 118.89      | 116.56   |
| 1   | A     | 1207 | 2MG  | CM2-N2-C2   | -2.21 | 118.91      | 123.65   |
| 1   | A     | 967  | 5MC  | C3'-C2'-C1' | 2.18  | 105.59      | 101.46   |
| 1   | A     | 516  | PSU  | O4'-C1'-C2' | 2.16  | 108.14      | 105.15   |
| 1   | A     | 966  | 2MG  | C3'-C2'-C1' | 2.15  | 105.54      | 101.46   |
| 1   | A     | 1518 | MA6  | C10-N6-C9   | -2.14 | 109.29      | 116.18   |
| 1   | A     | 966  | 2MG  | O6-C6-C5    | -2.11 | 120.96      | 126.53   |
| 1   | A     | 1519 | MA6  | C5-N7-C8    | 2.09  | 106.73      | 103.45   |
| 1   | A     | 966  | 2MG  | C2-N1-C6    | -2.02 | 122.10      | 124.55   |
| 1   | A     | 1516 | 2MG  | C5-C6-N1    | 2.02  | 118.38      | 113.25   |

There are no chirality outliers.

All (17) torsion outliers are listed below:

| Mol | Chain | Res  | Type | Atoms           |
|-----|-------|------|------|-----------------|
| 1   | A     | 1207 | 2MG  | N3-C2-N2-CM2    |
| 1   | A     | 1516 | 2MG  | N1-C2-N2-CM2    |
| 1   | A     | 1516 | 2MG  | N3-C2-N2-CM2    |
| 1   | A     | 1518 | MA6  | O4'-C4'-C5'-O5' |
| 1   | A     | 1519 | MA6  | O4'-C4'-C5'-O5' |
| 1   | A     | 516  | PSU  | C3'-C4'-C5'-O5' |
| 1   | A     | 1519 | MA6  | C3'-C4'-C5'-O5' |
| 1   | A     | 516  | PSU  | O4'-C4'-C5'-O5' |
| 1   | A     | 1518 | MA6  | C3'-C4'-C5'-O5' |
| 1   | A     | 1518 | MA6  | C5-C6-N6-C10    |
| 1   | A     | 1519 | MA6  | C5-C6-N6-C10    |
| 12  | L     | 89   | D2T  | CG-CB-SB-CB1    |
| 1   | A     | 527  | G7M  | C4'-C5'-O5'-P   |
| 1   | A     | 1519 | MA6  | C4'-C5'-O5'-P   |
| 1   | A     | 1518 | MA6  | C4'-C5'-O5'-P   |
| 12  | L     | 89   | D2T  | CA-CB-SB-CB1    |
| 12  | L     | 89   | D2T  | SB-CB-CG-OD2    |

There are no ring outliers.

6 monomers are involved in 26 short contacts:

| Mol | Chain | Res  | Type | Clashes | Symm-Clashes |
|-----|-------|------|------|---------|--------------|
| 1   | A     | 516  | PSU  | 5       | 0            |
| 1   | A     | 527  | G7M  | 1       | 0            |
| 1   | A     | 1207 | 2MG  | 10      | 0            |
| 1   | A     | 1516 | 2MG  | 5       | 0            |
| 1   | A     | 1519 | MA6  | 6       | 0            |
| 1   | A     | 1518 | MA6  | 7       | 0            |

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 38 ligands modelled in this entry, 38 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

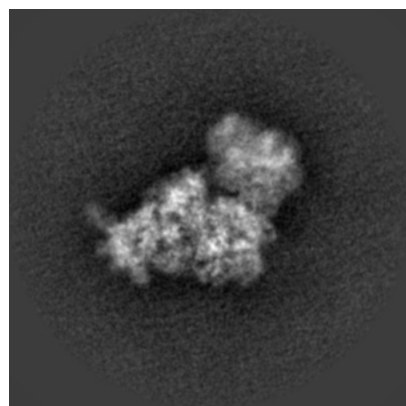
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-12249. These allow visual inspection of the internal detail of the map and identification of artifacts.

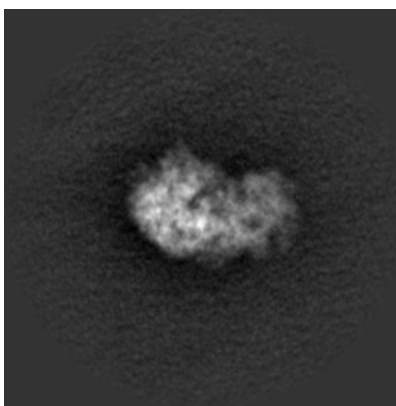
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

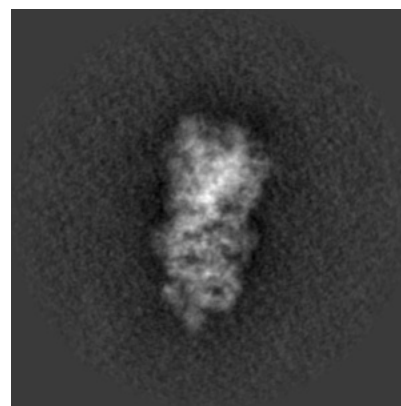
#### 6.1.1 Primary map



X

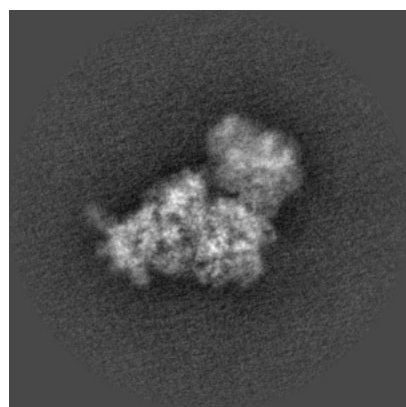


Y

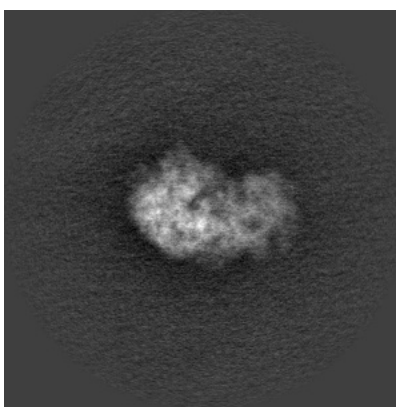


Z

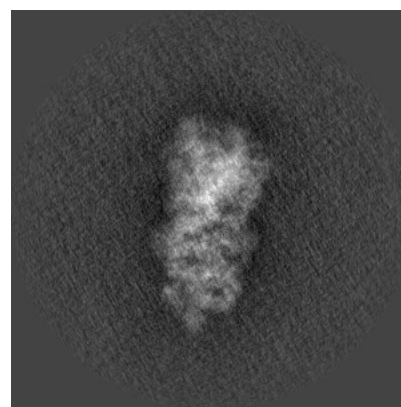
#### 6.1.2 Raw map



X



Y

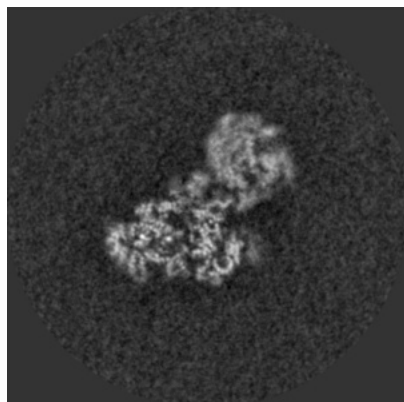


Z

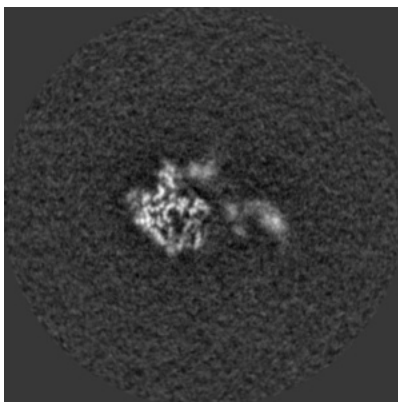
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

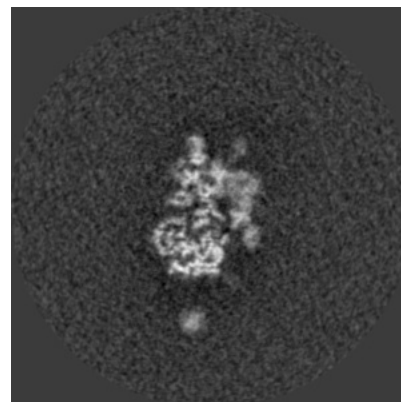
### 6.2.1 Primary map



X Index: 192

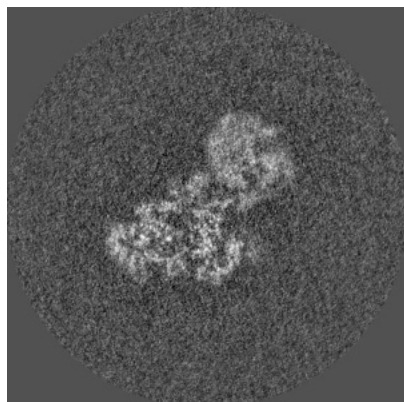


Y Index: 192

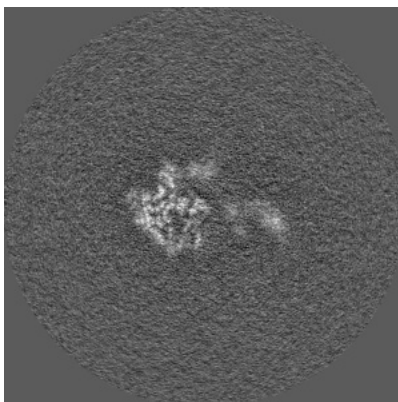


Z Index: 192

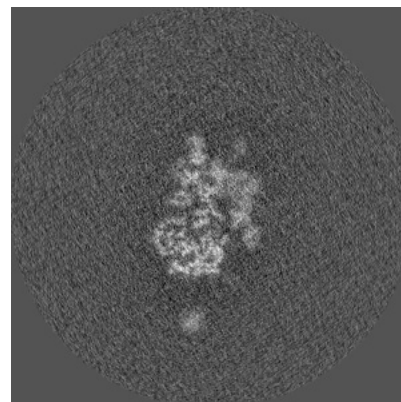
### 6.2.2 Raw map



X Index: 192



Y Index: 192

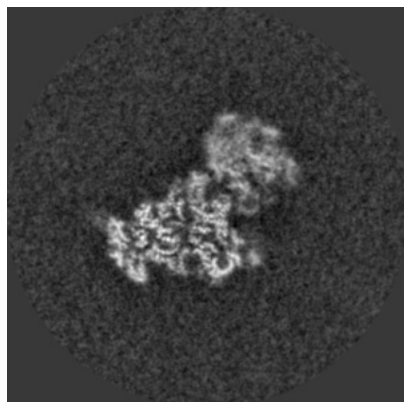


Z Index: 192

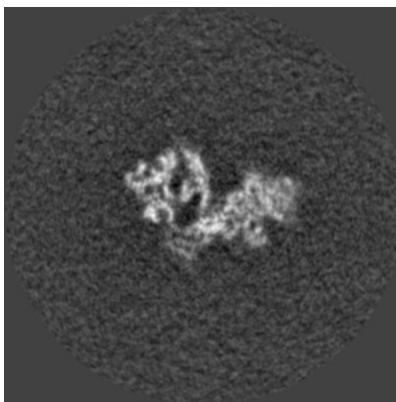
The images above show central slices of the map in three orthogonal directions.

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

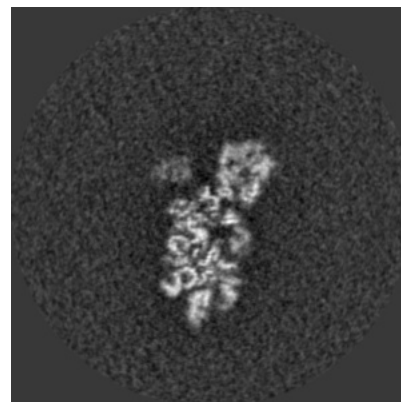
### 6.3.1 Primary map



X Index: 188

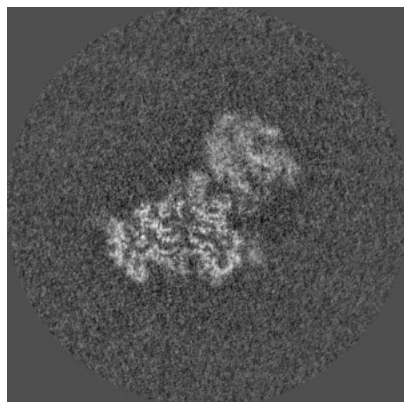


Y Index: 222

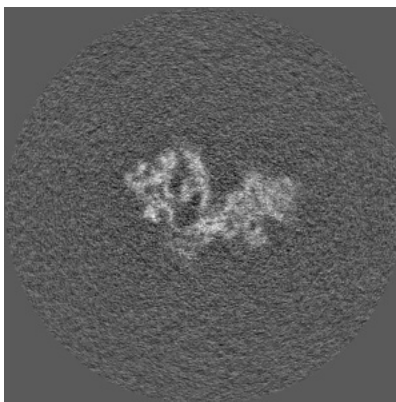


Z Index: 175

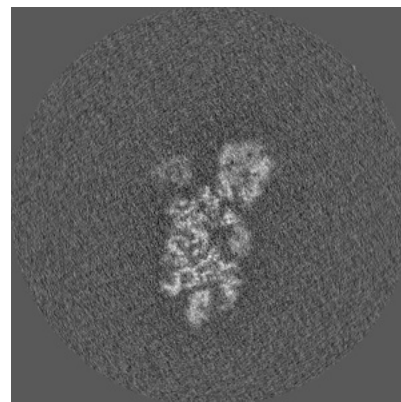
### 6.3.2 Raw map



X Index: 189



Y Index: 222

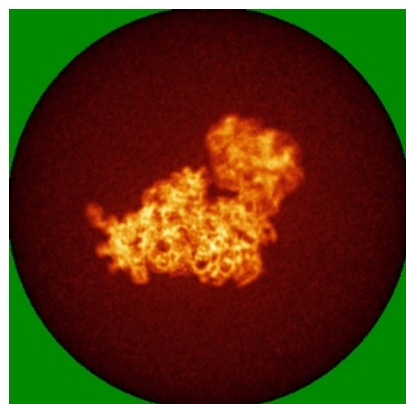


Z Index: 176

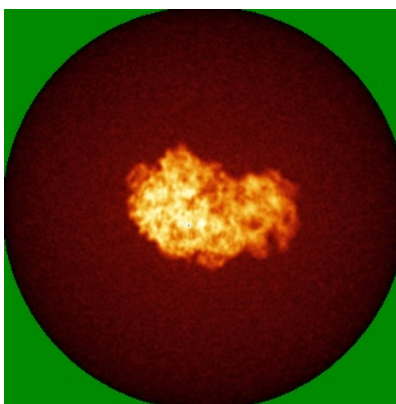
The images above show the largest variance slices of the map in three orthogonal directions.

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

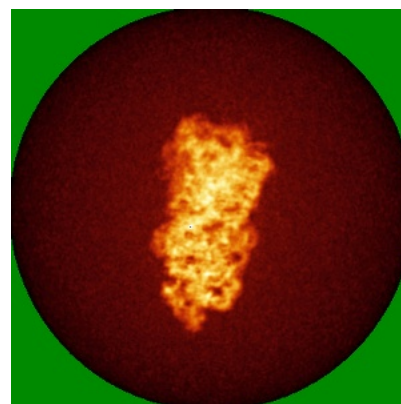
### 6.4.1 Primary map



X

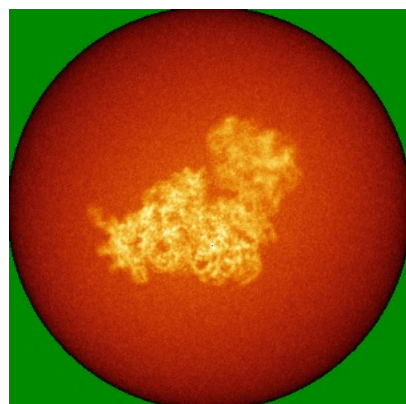


Y

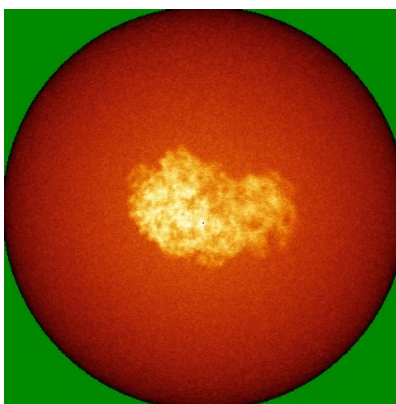


Z

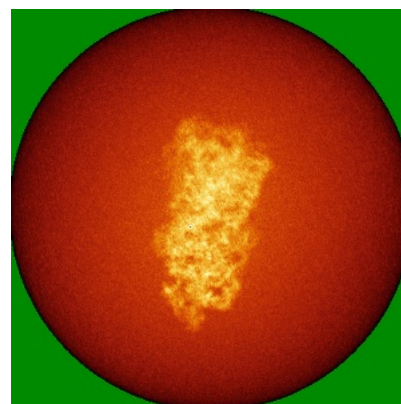
### 6.4.2 Raw map



X



Y

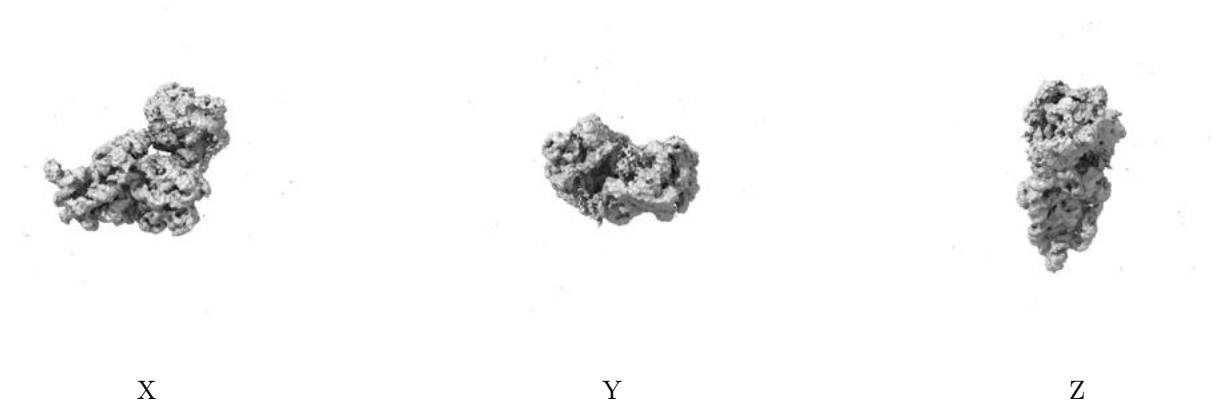


Z

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

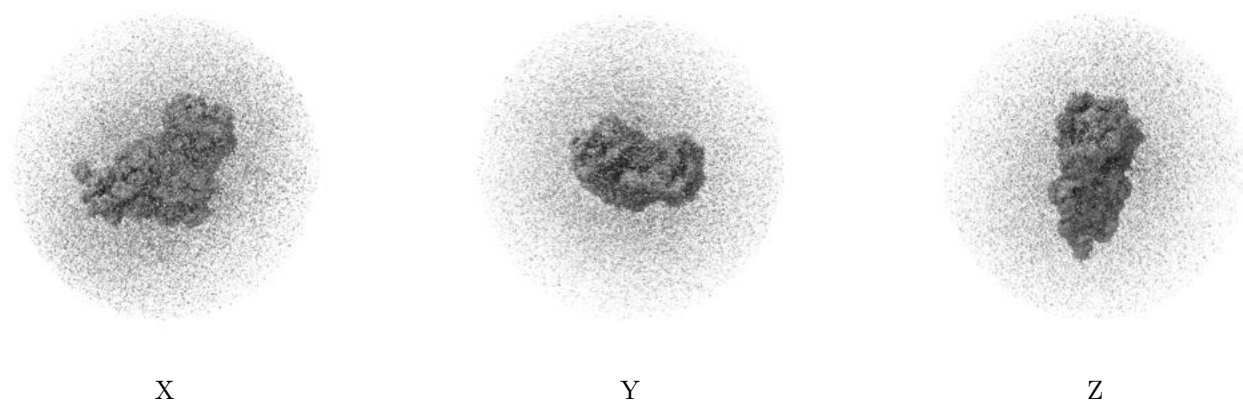
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.016. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

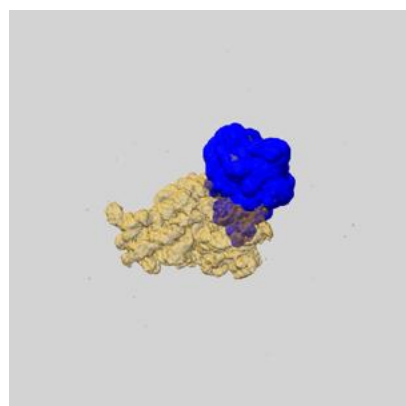
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

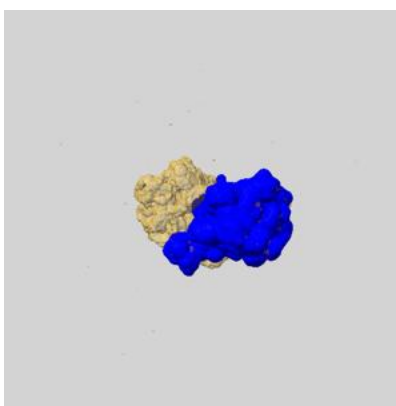
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

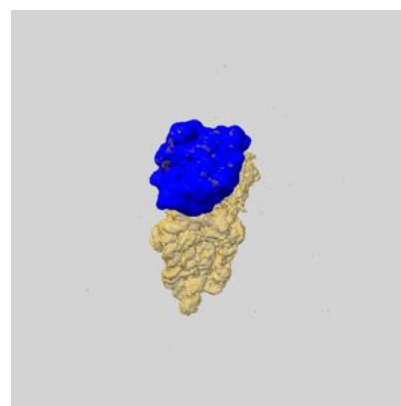
### 6.6.1 emd\_12249\_msk\_2.map [i](#)



X

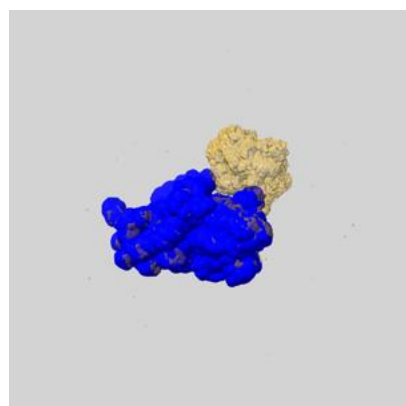


Y

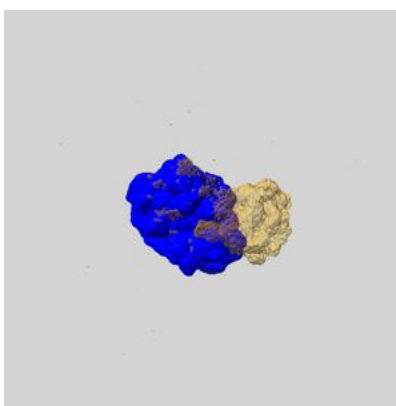


Z

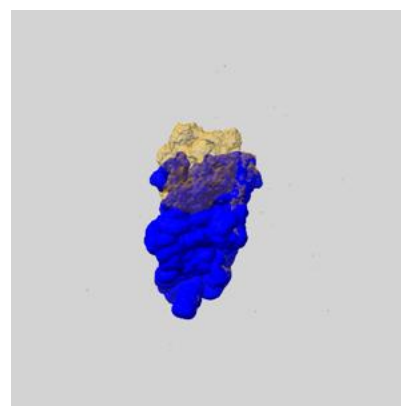
### 6.6.2 emd\_12249\_msk\_1.map [i](#)



X



Y

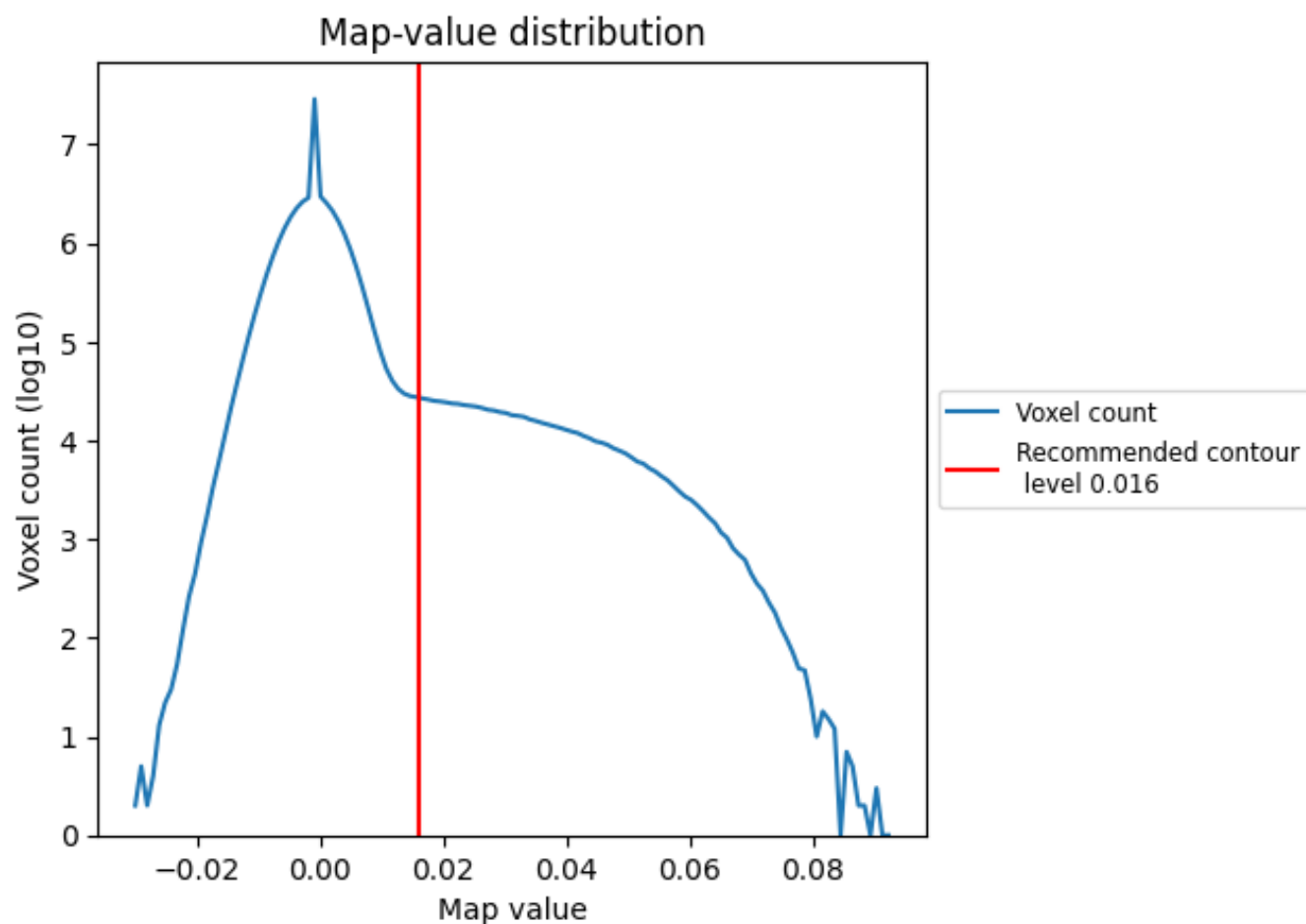


Z

## 7 Map analysis [i](#)

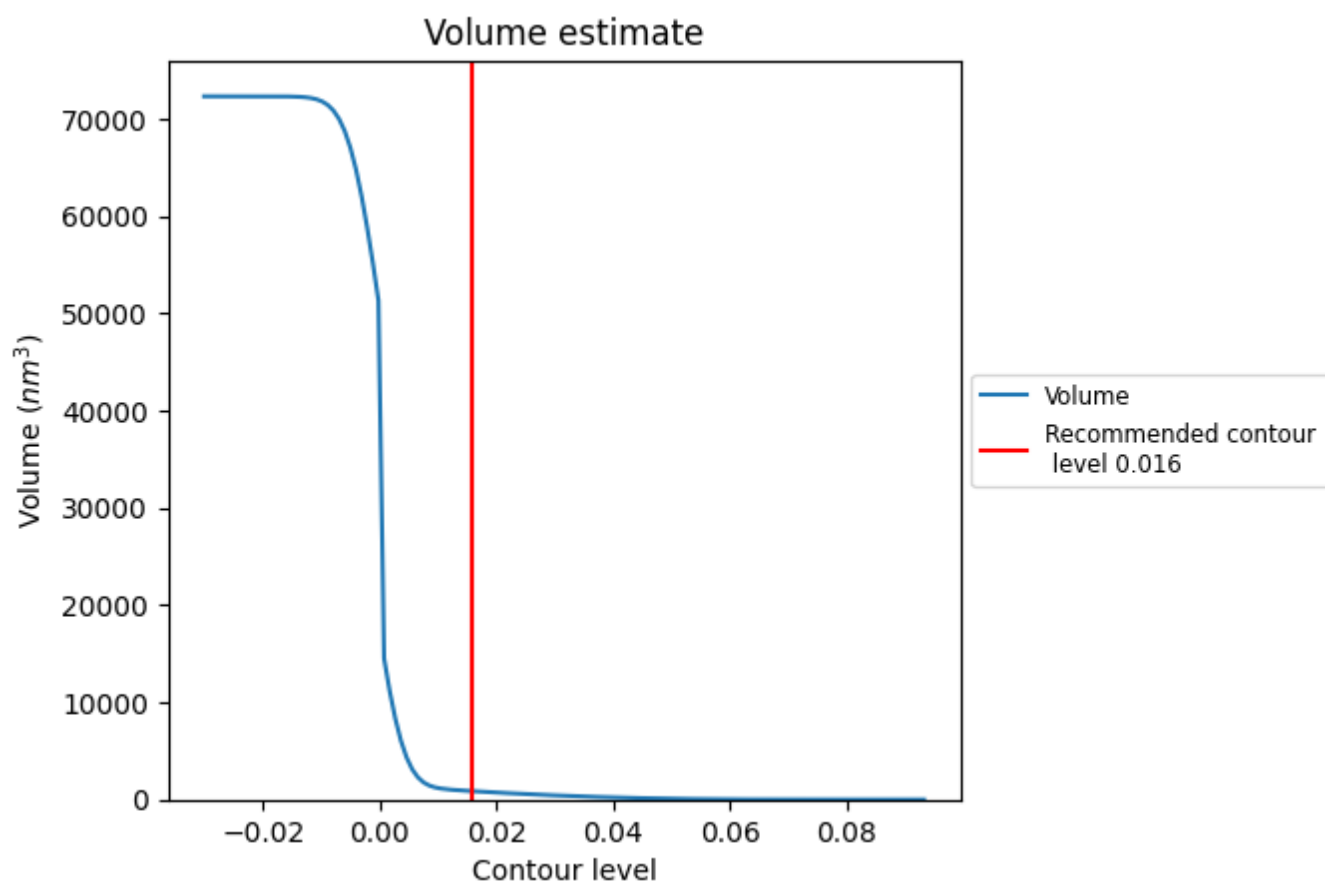
This section contains the results of statistical analysis of the map.

### 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.

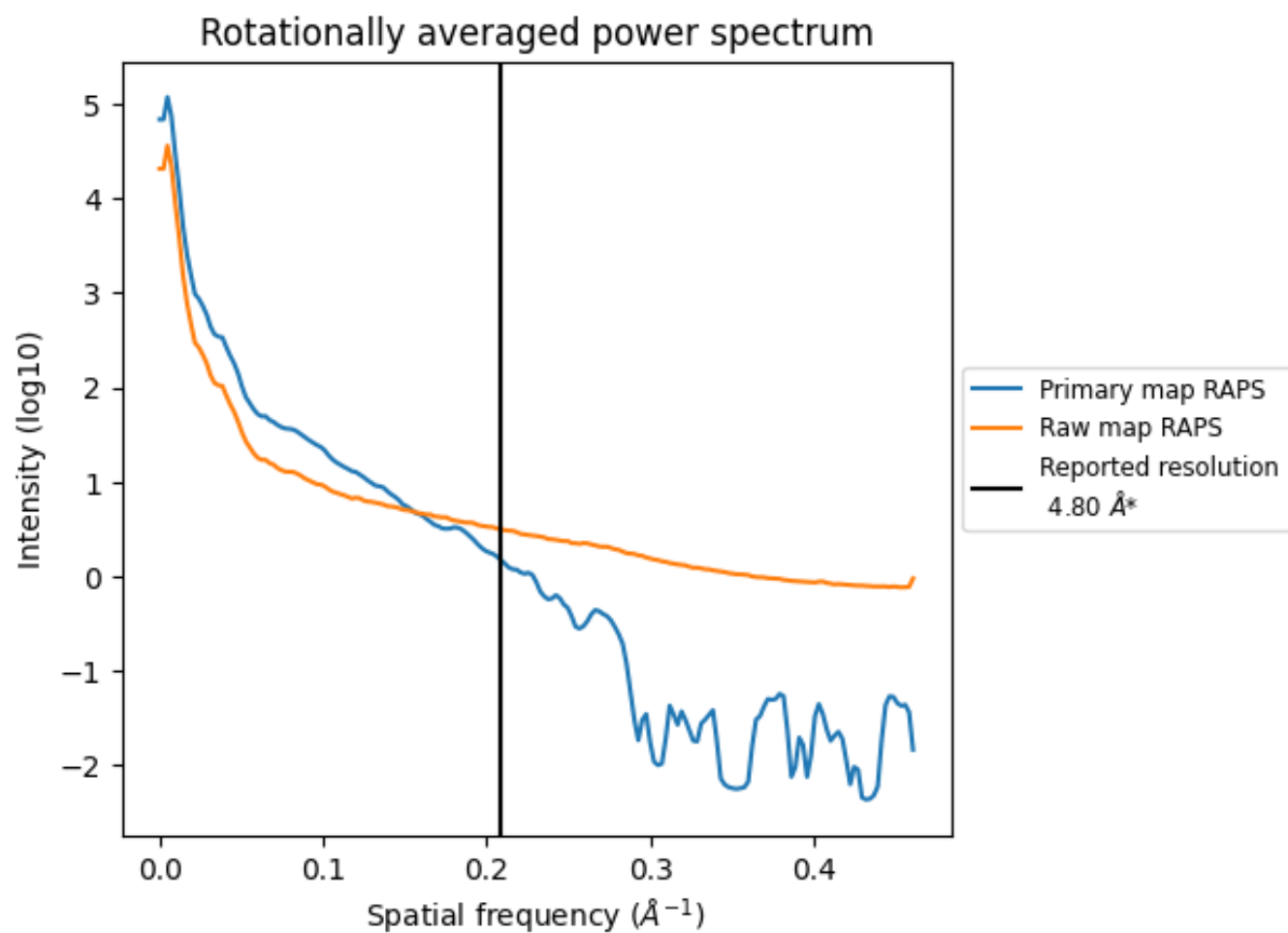
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 861 nm<sup>3</sup>; this corresponds to an approximate mass of 778 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 ⓘ

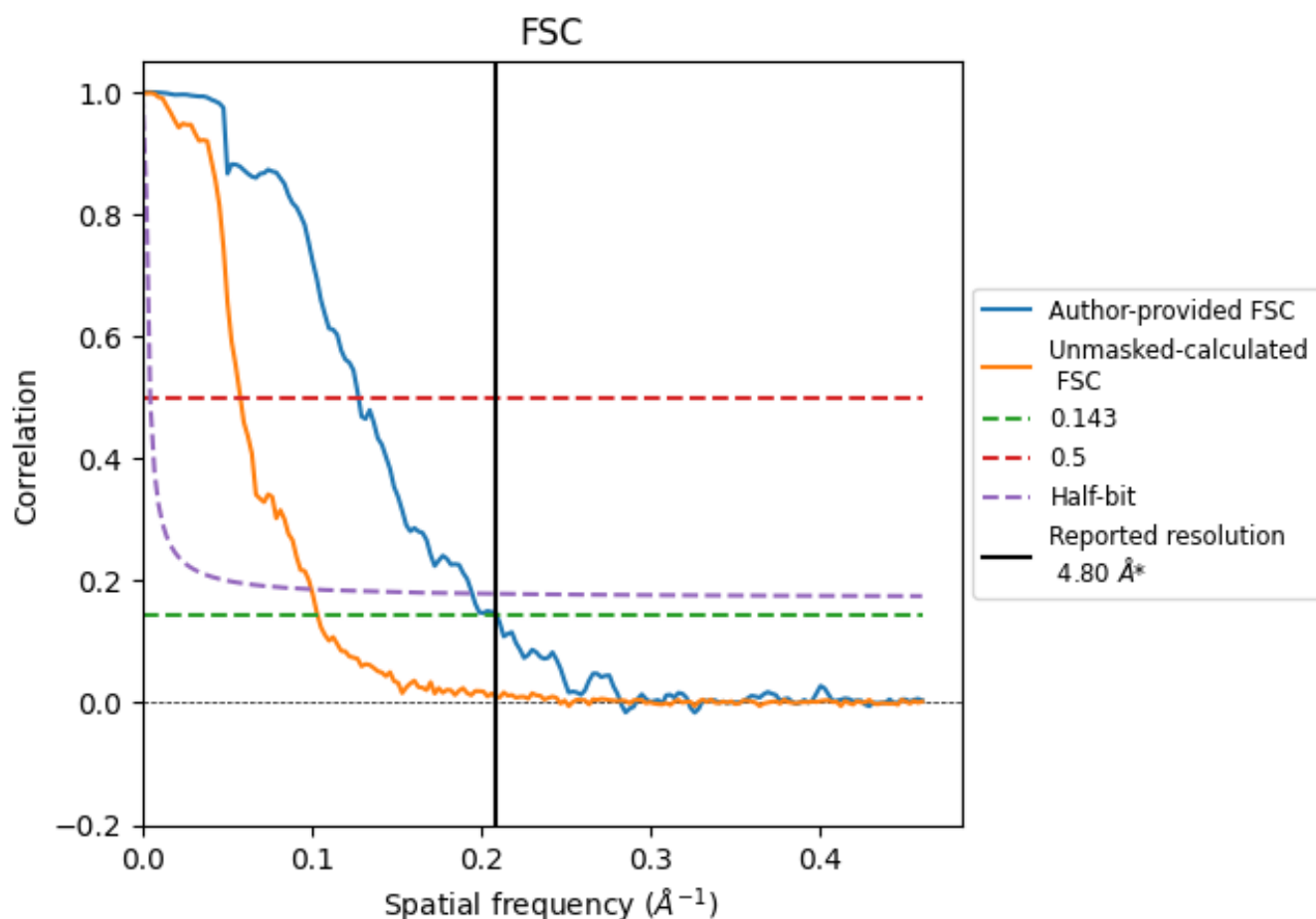


\*Reported resolution corresponds to spatial frequency of 0.208 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.208 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

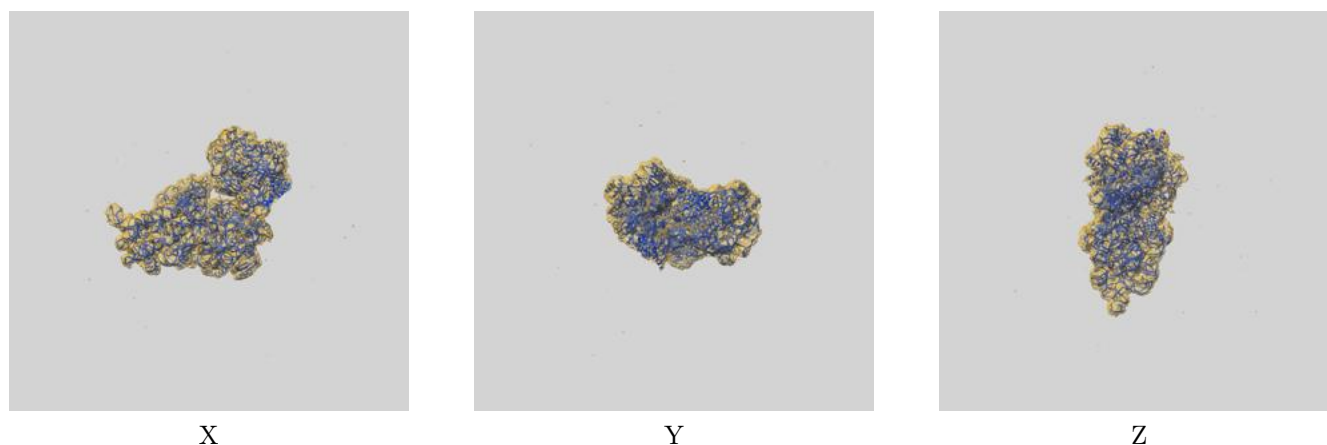
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |       |          |
|---------------------------|------------------------------------|-------|----------|
|                           | 0.143                              | 0.5   | Half-bit |
| Reported by author        | 4.80                               | -     | -        |
| Author-provided FSC curve | 4.77                               | 7.82  | 5.13     |
| Unmasked-calculated*      | 9.65                               | 17.24 | 10.01    |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 9.65 differs from the reported value 4.8 by more than 10 %

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

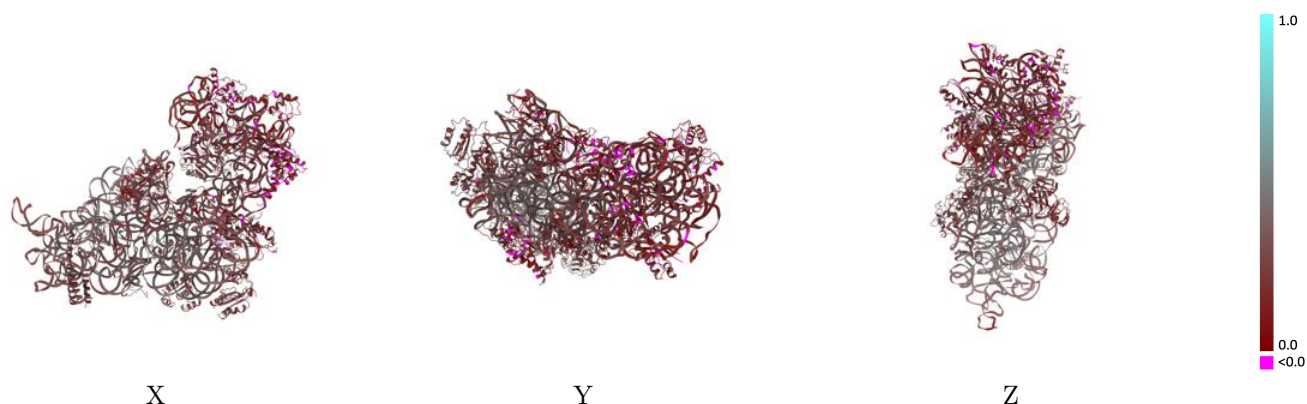
This section contains information regarding the fit between EMDB map EMD-12249 and PDB model 7NAV. Per-residue inclusion information can be found in section [3](#) on page [8](#).

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



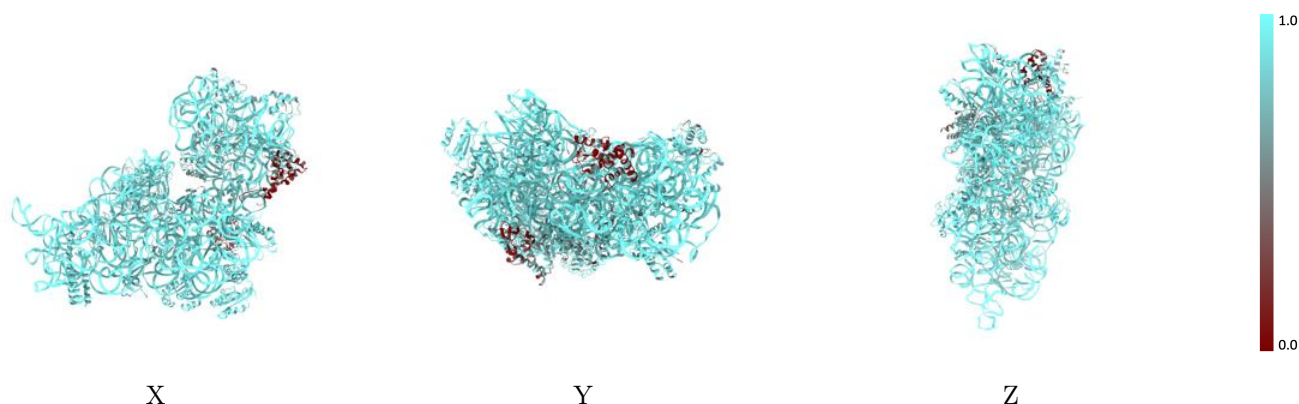
The images above show the 3D surface view of the map at the recommended contour level 0.016 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



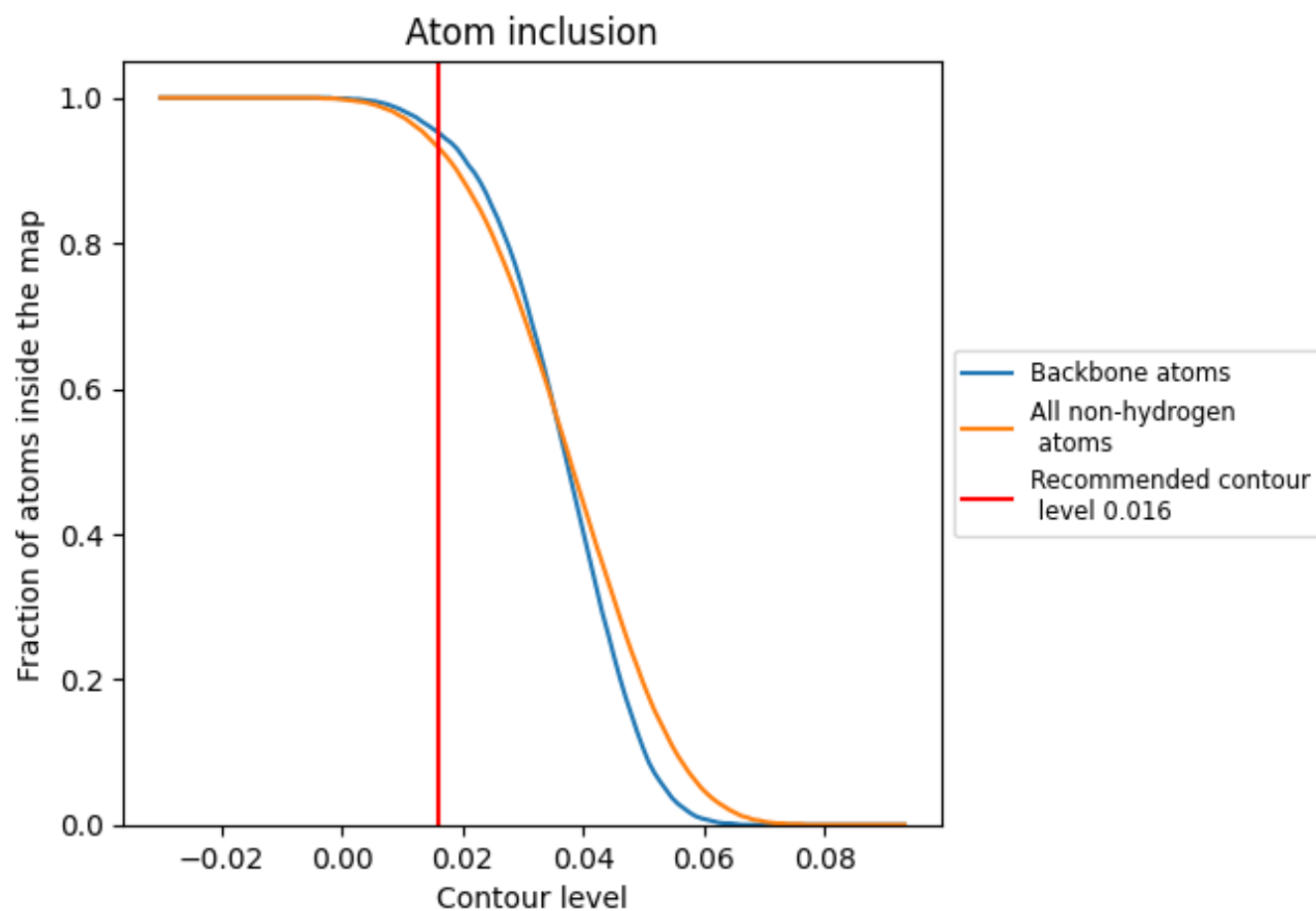
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.016).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 95% of all backbone atoms, 93% 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 (0.016) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.9320   |  0.2780   |
| A     |  0.9940   |  0.3110   |
| B     |  0.4810   |  0.1520   |
| C     |  0.8870   |  0.2280   |
| D     |  0.9150   |  0.2960   |
| E     |  0.8820   |  0.3060   |
| F     |  0.9440   |  0.2940   |
| G     |  0.2750   |  0.0870   |
| H     |  0.9090   |  0.2990   |
| I     |  0.9050   |  0.1550   |
| J     |  0.8930   |  0.1750   |
| K     |  0.9160   |  0.2090   |
| L     |  0.8140   |  0.2730   |
| M     |  0.8500   |  0.1350   |
| N     |  0.9000  |  0.2070  |
| O     |  0.9350 |  0.2890 |
| P     |  0.9490 |  0.3320 |
| Q     |  0.9180 |  0.3360 |
| R     |  0.9010 |  0.2510 |
| S     |  0.9140 |  0.1330 |
| T     |  0.9510 |  0.2850 |
| V     |  0.9210 |  0.2080 |
| X     |  0.9130 |  0.2050 |

