



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 7, 2023 – 01:37 PM EDT

PDB ID : 1Q82  
Title : Crystal Structure of CC-Puromycin bound to the A-site of the 50S ribosomal subunit  
Authors : Hansen, J.L.; Schmeing, T.M.; Moore, P.B.; Steitz, T.A.  
Deposited on : 2003-08-20  
Resolution : 2.98 Å(reported)

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

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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.35  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35

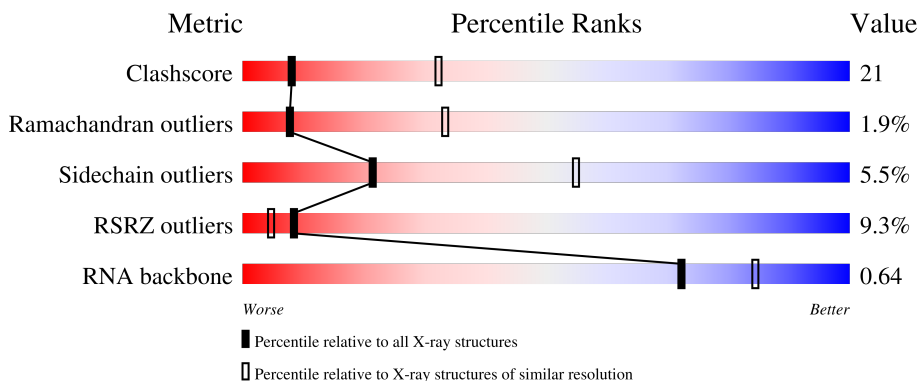
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.98 Å.

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



| Metric                | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| Clashscore            | 141614                      | 3103 (3.00-2.96)                                      |
| Ramachandran outliers | 138981                      | 2993 (3.00-2.96)                                      |
| Sidechain outliers    | 138945                      | 2996 (3.00-2.96)                                      |
| RSRZ outliers         | 127900                      | 2644 (3.00-2.96)                                      |
| RNA backbone          | 3102                        | 1088 (3.26-2.70)                                      |

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 2922   |                  |
| 2   | B     | 122    |                  |
| 3   | 5     | 2      |                  |
| 4   | C     | 239    |                  |
| 5   | D     | 337    |                  |

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| Mol | Chain | Length | Quality of chain      |
|-----|-------|--------|-----------------------|
| 6   | E     | 246    | 2%<br>54% 40% 5%      |
| 7   | F     | 176    | 38%<br>25% 45% 8% 20% |
| 8   | G     | 177    | 10%<br>50% 46% ..     |
| 9   | H     | 119    | 20%<br>53% 45% .      |
| 10  | I     | 348    | 5%<br>5% 92%          |
| 11  | J     | 167    | 10%<br>34% 51% 7% 7%  |
| 12  | K     | 145    | %<br>59% 32% 6% ..    |
| 13  | L     | 132    | 2%<br>57% 42% .       |
| 14  | M     | 164    | 24%<br>48% 38% . 12%  |
| 15  | N     | 194    | 11%<br>41% 53% 6%     |
| 16  | O     | 186    | 19%<br>40% 54% 6%     |
| 17  | P     | 115    | %<br>70% 29% .        |
| 18  | Q     | 148    | 5%<br>62% 34% ..      |
| 19  | R     | 95     | 3%<br>63% 34% .       |
| 20  | S     | 154    | 66% 28% ..            |
| 21  | T     | 84     | 5%<br>69% 26% ..      |
| 22  | U     | 119    | 9%<br>61% 36% .       |
| 23  | V     | 66     | 44%<br>39% 38% . 20%  |
| 24  | W     | 70     | 30%<br>51% 37% . 7%   |
| 25  | X     | 154    | 49% 45% 6%            |
| 26  | Y     | 91     | 11%<br>43% 42% 5% 10% |
| 27  | Z     | 240    | 2%<br>38% 18% . 41%   |
| 28  | 1     | 73     | 73%<br>27% 67% 5%     |
| 29  | 2     | 56     | 52% 48%               |
| 30  | 3     | 48     | 15%<br>60% 33% ..     |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 31  | 4     | 92     |                  |

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 |
|-----|------|-------|------|-----------|----------|---------|------------------|
| 32  | MG   | 1     | 8105 | -         | -        | -       | X                |
| 32  | MG   | A     | 8011 | -         | -        | X       | -                |
| 32  | MG   | A     | 8024 | -         | -        | -       | X                |
| 32  | MG   | A     | 8049 | -         | -        | -       | X                |
| 32  | MG   | A     | 8092 | -         | -        | -       | X                |
| 32  | MG   | A     | 8102 | -         | -        | -       | X                |
| 32  | MG   | A     | 8114 | -         | -        | -       | X                |
| 34  | NA   | A     | 8307 | -         | -        | -       | X                |
| 34  | NA   | A     | 8310 | -         | -        | -       | X                |
| 34  | NA   | A     | 8326 | -         | -        | -       | X                |
| 34  | NA   | A     | 8328 | -         | -        | -       | X                |
| 34  | NA   | A     | 8332 | -         | -        | -       | X                |
| 34  | NA   | A     | 8340 | -         | -        | -       | X                |
| 34  | NA   | A     | 8363 | -         | -        | -       | X                |
| 34  | NA   | A     | 8365 | -         | -        | -       | X                |
| 34  | NA   | A     | 8371 | -         | -        | -       | X                |
| 34  | NA   | A     | 8372 | -         | -        | -       | X                |
| 34  | NA   | A     | 8382 | -         | -        | -       | X                |
| 34  | NA   | A     | 8384 | -         | -        | -       | X                |
| 34  | NA   | B     | 8383 | -         | -        | -       | X                |
| 34  | NA   | S     | 8386 | -         | -        | -       | X                |
| 34  | NA   | T     | 8312 | -         | -        | -       | X                |
| 35  | CL   | A     | 8522 | -         | -        | -       | X                |
| 35  | CL   | M     | 8510 | -         | -        | -       | X                |
| 35  | CL   | N     | 8518 | -         | -        | X       | -                |
| 37  | CD   | 4     | 8404 | -         | -        | -       | X                |

## 2 Entry composition [i](#)

There are 38 unique types of molecules in this entry. The entry contains 98593 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called 23S ribosomal rna.

| Mol | Chain | Residues | Atoms |       |       |       |      | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|---------|-------|
|     |       |          | Total | C     | N     | O     | P    |         |         |       |
| 1   | A     | 2754     | 59017 | 26346 | 10878 | 19048 | 2745 | 0       | 0       | 0     |

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

| Mol | Chain | Residues | Atoms |      |     |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | P   |         |         |       |
| 2   | B     | 122      | 2600  | 1160 | 472 | 847 | 121 | 0       | 0       | 0     |

- Molecule 3 is a RNA chain called CC-puromycin.

| Mol | Chain | Residues | Atoms |    |   |    |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---|---------|---------|-------|
|     |       |          | Total | C  | N | O  | P |         |         |       |
| 3   | 5     | 2        | 40    | 18 | 6 | 14 | 2 | 0       | 0       | 0     |

- Molecule 4 is a protein called 50S ribosomal protein L2P.

| Mol | Chain | Residues | Atoms |      |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |         |       |
| 4   | C     | 237      | 1754  | 1072 | 352 | 325 | 5 | 0       | 0       | 0     |

- Molecule 5 is a protein called 50S ribosomal protein L3P.

| Mol | Chain | Residues | Atoms |      |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |         |       |
| 5   | D     | 337      | 2624  | 1616 | 493 | 510 | 5 | 0       | 0       | 0     |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| D     | ?       | -        | PRO    | deletion | UNP P20279 |
| D     | 310     | ARG      | PHE    | conflict | UNP P20279 |

- Molecule 6 is a protein called 50S ribosomal protein L4E.

| Mol | Chain | Residues | Atoms |      |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |         |       |
| 6   | E     | 246      | 1858  | 1131 | 344 | 382 | 1 | 0       | 0       | 0     |

- Molecule 7 is a protein called 50S ribosomal protein L5P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 7   | F     | 140      | 1094  | 685 | 195 | 210 | 4 | 0       | 0       | 0     |

- Molecule 8 is a protein called 50S ribosomal protein L6P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 8   | G     | 172      | 1357  | 840 | 224 | 289 | 4 | 0       | 0       | 0     |

- Molecule 9 is a protein called 50S ribosomal protein L7Ae.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 9   | H     | 119      | 885   | 552 | 141 | 191 | 1 | 0       | 0       | 0     |

- Molecule 10 is a protein called Acidic ribosomal protein P0 homolog.

| Mol | Chain | Residues | Atoms |     |    |    |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |         |       |
| 10  | I     | 29       | 240   | 149 | 39 | 51 | 1 | 0       | 0       | 0     |

- Molecule 11 is a protein called L10 Ribosomal Protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 11  | J     | 156      | 1215  | 766 | 233 | 212 | 4 | 0       | 0       | 0     |

- Molecule 12 is a protein called 50S ribosomal protein L13P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 12  | K     | 142      | 1119  | 696 | 199 | 221 | 3 | 0       | 0       | 0     |

- Molecule 13 is a protein called 50S ribosomal protein L14P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 13  | L     | 132      | 993   | 609 | 189 | 191 | 4 | 0       | 0       | 0     |

- Molecule 14 is a protein called 50S ribosomal protein L15P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 14  | M     | 145      | 1114  | 668 | 222 | 224 |   | 0       | 0       | 0     |

- Molecule 15 is a protein called L15 Ribosomal Protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 15  | N     | 194      | 1605  | 988 | 346 | 266 | 5 | 0       | 0       | 0     |

- Molecule 16 is a protein called 50S ribosomal protein L18P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 16  | O     | 186      | 1444  | 895 | 262 | 285 | 2 | 0       | 0       | 0     |

- Molecule 17 is a protein called 50S ribosomal protein L18e.

| Mol | Chain | Residues | Atoms |     |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|---------|-------|
|     |       |          | Total | C   | N   | O   |         |         |       |
| 17  | P     | 115      | 864   | 529 | 161 | 174 | 0       | 0       | 0     |

- Molecule 18 is a protein called 50S ribosomal protein L19E.

| Mol | Chain | Residues | Atoms |     |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|---------|-------|
|     |       |          | Total | C   | N   | O   |         |         |       |
| 18  | Q     | 143      | 1133  | 680 | 230 | 223 | 0       | 0       | 0     |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| Q     | 71      | LYS      | TYR    | conflict | UNP P14119 |

- Molecule 19 is a protein called 50S ribosomal protein L21e.

| Mol | Chain | Residues | Atoms |     |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|---------|-------|
|     |       |          | Total | C   | N   | O   |         |         |       |
| 19  | R     | 95       | 734   | 450 | 141 | 143 | 0       | 0       | 0     |

- Molecule 20 is a protein called 50S ribosomal protein L22P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 20  | S     | 150      | 1149  | 713 | 209 | 223 | 4 | 0       | 0       | 0     |

- Molecule 21 is a protein called 50S ribosomal protein L23P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 21  | T     | 81       | 641   | 389 | 111 | 138 | 3 | 0       | 0       | 0     |

- Molecule 22 is a protein called 50S ribosomal protein L24P.

| Mol | Chain | Residues | Atoms |     |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|---------|-------|
|     |       |          | Total | C   | N   | O   |         |         |       |
| 22  | U     | 119      | 949   | 568 | 180 | 201 | 0       | 0       | 0     |

- Molecule 23 is a protein called 50S ribosomal protein L24E.

| Mol | Chain | Residues | Atoms |     |    |    |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |         |       |
| 23  | V     | 53       | 410   | 244 | 75 | 86 | 5 | 0       | 0       | 0     |

- Molecule 24 is a protein called 50S ribosomal protein L29P.

| Mol | Chain | Residues | Atoms |     |    |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N  | O   | S |         |         |       |
| 24  | W     | 65       | 499   | 304 | 94 | 100 | 1 | 0       | 0       | 0     |

- Molecule 25 is a protein called 50S ribosomal protein L30P.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 25  | X     | 154      | 1195  | 737 | 209 | 243 | 6 | 0       | 0       | 0     |

- Molecule 26 is a protein called 50S ribosomal protein L31e.



| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 26  | Y     | 82       | 654   | 402 | 129 | 122 | 1 | 0       | 0       | 0     |

- Molecule 27 is a protein called 50S ribosomal protein L32E.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 27  | Z     | 142      | 1130  | 686 | 228 | 216 |   | 0       | 0       | 0     |

- Molecule 28 is a protein called L37Ae 50S ribosomal protein.

| Mol | Chain | Residues | Atoms |     |     |    |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O  | S |         |         |       |
| 28  | 1     | 73       | 563   | 359 | 111 | 86 | 7 | 0       | 0       | 0     |

- Molecule 29 is a protein called 50S ribosomal protein L37e.

| Mol | Chain | Residues | Atoms |     |    |    |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |         |       |
| 29  | 2     | 56       | 430   | 258 | 86 | 82 | 4 | 0       | 0       | 0     |

- Molecule 30 is a protein called 50S ribosomal protein L39e.

| Mol | Chain | Residues | Atoms |     |    |    |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |         |       |
| 30  | 3     | 46       | 393   | 238 | 86 | 68 | 1 | 0       | 0       | 0     |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| 3     | ?       | -        | ARG    | deletion | UNP P22452 |

- Molecule 31 is a protein called 50S ribosomal protein L44E.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 31  | 4     | 92       | 755   | 458 | 153 | 137 | 7 | 0       | 0       | 0     |

- Molecule 32 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms               | ZeroOcc | AltConf |
|-----|-------|----------|---------------------|---------|---------|
| 32  | A     | 109      | Total Mg<br>109 109 | 0       | 0       |
| 32  | B     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | C     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | D     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | L     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | U     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | Z     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | 1     | 1        | Total Mg<br>1 1     | 0       | 0       |
| 32  | 4     | 1        | Total Mg<br>1 1     | 0       | 0       |

- Molecule 33 is POTASSIUM ION (three-letter code: K) (formula: K).

| Mol | Chain | Residues | Atoms          | ZeroOcc | AltConf |
|-----|-------|----------|----------------|---------|---------|
| 33  | A     | 2        | Total K<br>2 2 | 0       | 0       |

- Molecule 34 is SODIUM ION (three-letter code: NA) (formula: Na).

| Mol | Chain | Residues | Atoms             | ZeroOcc | AltConf |
|-----|-------|----------|-------------------|---------|---------|
| 34  | A     | 71       | Total Na<br>71 71 | 0       | 0       |
| 34  | B     | 2        | Total Na<br>2 2   | 0       | 0       |
| 34  | C     | 1        | Total Na<br>1 1   | 0       | 0       |
| 34  | E     | 1        | Total Na<br>1 1   | 0       | 0       |
| 34  | J     | 2        | Total Na<br>2 2   | 0       | 0       |
| 34  | K     | 1        | Total Na<br>1 1   | 0       | 0       |
| 34  | M     | 1        | Total Na<br>1 1   | 0       | 0       |
| 34  | N     | 1        | Total Na<br>1 1   | 0       | 0       |

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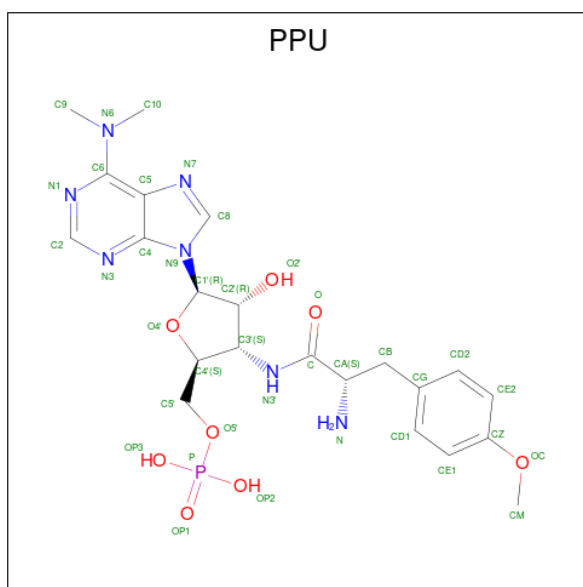
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| Mol | Chain | Residues | Atoms      |         | ZeroOcc | AltConf |
|-----|-------|----------|------------|---------|---------|---------|
| 34  | R     | 1        | Total<br>1 | Na<br>1 | 0       | 0       |
| 34  | S     | 2        | Total<br>2 | Na<br>2 | 0       | 0       |
| 34  | T     | 1        | Total<br>1 | Na<br>1 | 0       | 0       |
| 34  | U     | 1        | Total<br>1 | Na<br>1 | 0       | 0       |
| 34  | 4     | 1        | Total<br>1 | Na<br>1 | 0       | 0       |

- Molecule 35 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

| Mol | Chain | Residues | Atoms      |         | ZeroOcc | AltConf |
|-----|-------|----------|------------|---------|---------|---------|
| 35  | A     | 7        | Total<br>7 | Cl<br>7 | 0       | 0       |
| 35  | C     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | D     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | K     | 4        | Total<br>4 | Cl<br>4 | 0       | 0       |
| 35  | M     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | N     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | O     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | P     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | R     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | S     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |
| 35  | Z     | 2        | Total<br>2 | Cl<br>2 | 0       | 0       |
| 35  | 4     | 1        | Total<br>1 | Cl<br>1 | 0       | 0       |

- Molecule 36 is PUROMYCIN-5'-MONOPHOSPHATE (three-letter code: PPU) (formula: C<sub>22</sub>H<sub>30</sub>N<sub>7</sub>O<sub>8</sub>P).



| Mol | Chain | Residues | Atoms |    |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---|---|---------|---------|
|     |       |          | Total | C  | N | O | P |         |         |
| 36  | 5     | 1        | 37    | 22 | 7 | 7 | 1 | 0       | 0       |

- Molecule 37 is CADMIUM ION (three-letter code: CD) (formula: Cd).

| Mol | Chain | Residues | Atoms |    | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
| 37  | P     | 1        | Total | Cd | 0       | 0       |
|     |       |          | 1     | 1  |         |         |
| 37  | V     | 1        | Total | Cd | 0       | 0       |
|     |       |          | 1     | 1  |         |         |
| 37  | 1     | 1        | Total | Cd | 0       | 0       |
|     |       |          | 1     | 1  |         |         |
| 37  | 2     | 1        | Total | Cd | 0       | 0       |
|     |       |          | 1     | 1  |         |         |
| 37  | 4     | 1        | Total | Cd | 0       | 0       |
|     |       |          | 1     | 1  |         |         |

- Molecule 38 is water.

| Mol | Chain | Residues | Atoms |      | ZeroOcc | AltConf |
|-----|-------|----------|-------|------|---------|---------|
| 38  | A     | 5860     | Total | O    | 0       | 0       |
|     |       |          | 5860  | 5860 |         |         |
| 38  | B     | 146      | Total | O    | 0       | 0       |
|     |       |          | 146   | 146  |         |         |
| 38  | 5     | 1        | Total | O    | 0       | 0       |
|     |       |          | 1     | 1    |         |         |

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| Mol | Chain | Residues | Atoms        |          | ZeroOcc | AltConf |
|-----|-------|----------|--------------|----------|---------|---------|
| 38  | C     | 140      | Total<br>140 | O<br>140 | 0       | 0       |
| 38  | D     | 146      | Total<br>146 | O<br>146 | 0       | 0       |
| 38  | E     | 176      | Total<br>176 | O<br>176 | 0       | 0       |
| 38  | F     | 52       | Total<br>52  | O<br>52  | 0       | 0       |
| 38  | G     | 45       | Total<br>45  | O<br>45  | 0       | 0       |
| 38  | H     | 32       | Total<br>32  | O<br>32  | 0       | 0       |
| 38  | I     | 22       | Total<br>22  | O<br>22  | 0       | 0       |
| 38  | J     | 78       | Total<br>78  | O<br>78  | 0       | 0       |
| 38  | K     | 54       | Total<br>54  | O<br>54  | 0       | 0       |
| 38  | L     | 64       | Total<br>64  | O<br>64  | 0       | 0       |
| 38  | M     | 86       | Total<br>86  | O<br>86  | 0       | 0       |
| 38  | N     | 138      | Total<br>138 | O<br>138 | 0       | 0       |
| 38  | O     | 64       | Total<br>64  | O<br>64  | 0       | 0       |
| 38  | P     | 44       | Total<br>44  | O<br>44  | 0       | 0       |
| 38  | Q     | 70       | Total<br>70  | O<br>70  | 0       | 0       |
| 38  | R     | 57       | Total<br>57  | O<br>57  | 0       | 0       |
| 38  | S     | 83       | Total<br>83  | O<br>83  | 0       | 0       |
| 38  | T     | 36       | Total<br>36  | O<br>36  | 0       | 0       |
| 38  | U     | 38       | Total<br>38  | O<br>38  | 0       | 0       |
| 38  | V     | 22       | Total<br>22  | O<br>22  | 0       | 0       |
| 38  | W     | 16       | Total<br>16  | O<br>16  | 0       | 0       |

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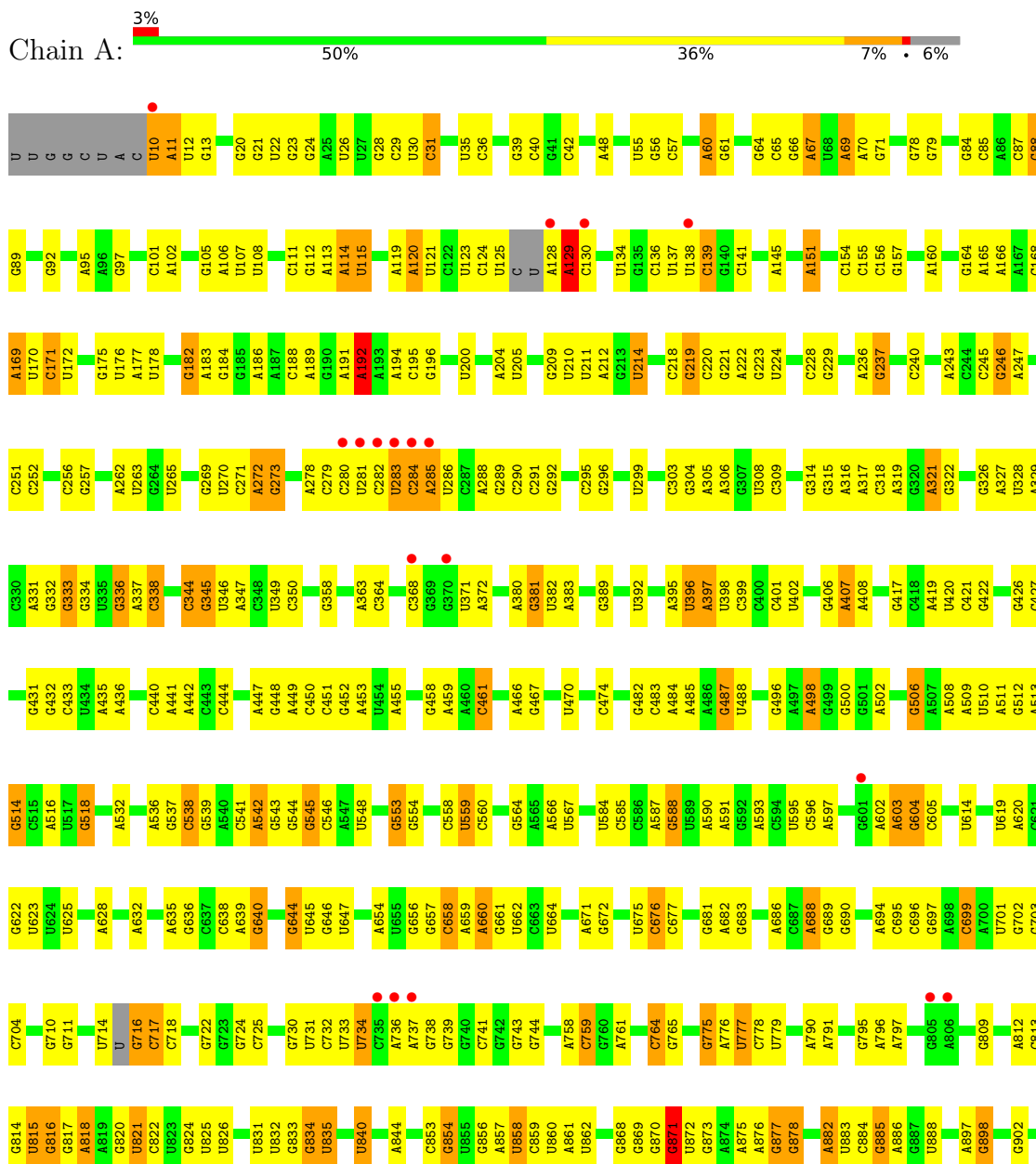
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| <b>Mol</b> | <b>Chain</b> | <b>Residues</b> | <b>Atoms</b>       | <b>ZeroOcc</b> | <b>AltConf</b> |
|------------|--------------|-----------------|--------------------|----------------|----------------|
| 38         | X            | 67              | Total O<br>67 67   | 0              | 0              |
| 38         | Y            | 28              | Total O<br>28 28   | 0              | 0              |
| 38         | Z            | 100             | Total O<br>100 100 | 0              | 0              |
| 38         | 1            | 36              | Total O<br>36 36   | 0              | 0              |
| 38         | 2            | 58              | Total O<br>58 58   | 0              | 0              |
| 38         | 3            | 37              | Total O<br>37 37   | 0              | 0              |
| 38         | 4            | 70              | Total O<br>70 70   | 0              | 0              |

### 3 Residue-property plots [i](#)

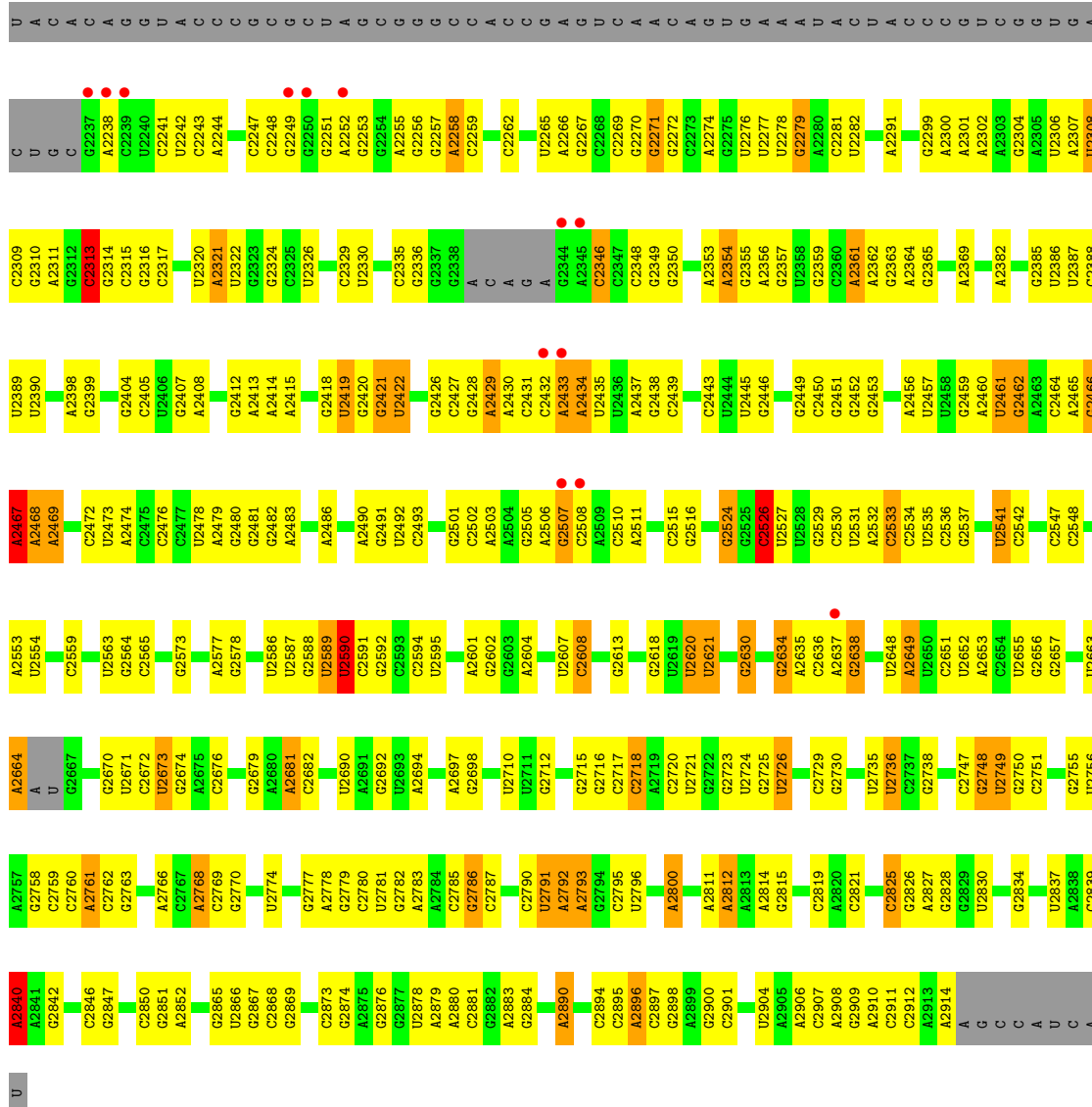
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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 dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: 23S ribosomal rna

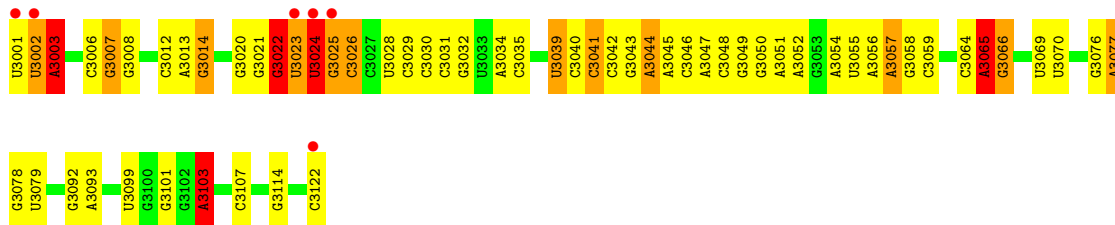


|       |       |       |       |       |       |       |       |       |      |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
| C2106 | A2007 | G1897 | G1563 | A1471 | U1362 | A1261 | U1187 | G1087 | G905 |
| U2107 | U2008 | G1828 | C1564 | C1472 | U1368 | G1265 | A1188 | A1088 | C906 |
| A2108 | G2009 | A1829 | C1565 | U1473 | U1368 | G1266 | A1189 | G     | G911 |
| U2109 | A2010 | A1736 | C1566 | C1474 | A1372 | U1267 | A1190 | U     | A912 |
| G2110 | G2011 | A1737 | G1655 | G1477 | G1376 | C1267 | A1191 | C     | A913 |
| A2112 | U2012 | C1738 | A1656 | U1478 | G1377 | G1268 | A1192 | C     | U917 |
| G2113 | G2013 | A1741 | A1657 | C1483 | U1380 | G1269 | A1193 | C     | G918 |
| G2014 | A2015 | A1742 | A1658 | G1484 | U1380 | U1270 | A1194 | A     | U919 |
| U2115 | U2016 | G1743 | A1659 | A1485 | U1384 | G1297 | C1196 | C     | C920 |
| A2019 | G2019 | U1749 | C1574 | A1488 | G1385 | U1279 | U1198 | C999  | A922 |
| G2119 | A2022 | G1750 | A1580 | U1488 | G1385 | G1289 | U1199 | C1000 | A923 |
| U2120 | G2022 | G1751 | G1589 | A1494 | U1297 | U1297 | A1200 | U1003 | G924 |
| G2121 | G2026 | G1752 | G1592 | A1495 | U1298 | U1298 | C1201 | A1007 | C925 |
| C2122 | U2027 | C1753 | G1593 | G1496 | G1387 | G1299 | A1202 | A1007 | A926 |
| A2123 | G2027 | A1754 | C1594 | G1497 | U1388 | U1304 | G1203 | A1007 | A926 |
| G2124 | A2028 | A1755 | G1595 | G1498 | G1389 | C1305 | C1204 | A1008 | A929 |
| G2128 | C2029 | A1852 | G1596 | U1499 | G1391 | U1306 | U1205 | U1009 | U932 |
| G2033 | G2033 | G1855 | U1596 | U1500 | A1392 | U1307 | A1207 | C1010 | G941 |
| U2034 | U2034 | C1856 | A1597 | A1501 | A1392 | A1307 | C1208 | A1013 | U942 |
| A2039 | A2039 | A1859 | G1680 | A1502 | C1394 | A1308 | C1209 | A1014 | U942 |
| G2044 | G2044 | U1860 | A1598 | U1503 | A1394 | U1309 | G1210 | A1014 | U948 |
| C2047 | C2047 | C1861 | U1599 | U1504 | A1407 | G1311 | G1211 | C1023 | U949 |
| A2054 | A2054 | C1862 | G1600 | A1504 | U1408 | G1312 | C1212 | G1024 | A951 |
| A2055 | A2055 | G1872 | G1601 | U1505 | G1409 | G1313 | C1213 | G1024 | G952 |
| G2063 | G2063 | U1873 | C1602 | G1512 | U1412 | G1315 | A1215 | G1027 | G953 |
| U2064 | U2064 | A1778 | G1605 | C1514 | G1417 | G1316 | G1216 | U1028 | U954 |
| C2071 | C2071 | A1779 | G1609 | A1515 | U1422 | G1324 | U1217 | U1029 | A955 |
| G2072 | G2072 | U1788 | G1610 | C1516 | A1424 | G1325 | U1219 | U1030 | G958 |
| A2074 | A2074 | A1778 | G1611 | U1517 | A1424 | A1328 | C1225 | G1038 | G959 |
| G2081 | G2081 | A1779 | A1612 | G1523 | A1427 | A1329 | G1226 | G1038 | G960 |
| A2089 | A2089 | C1787 | G1613 | U1524 | A1430 | A1331 | C1229 | U1041 | A961 |
| G2090 | G2090 | U1788 | G1614 | A1525 | G1430 | C1332 | U1234 | U1042 | C962 |
| G2091 | G2091 | U1788 | A1615 | A1526 | G1430 | C1333 | U1235 | C1043 | G968 |
| G2092 | G2092 | G1795 | G1616 | A1527 | A1434 | C1334 | A1236 | C1044 | G969 |
| G2093 | G2093 | A1796 | G1617 | A1528 | U1435 | C1335 | A1237 | C1045 | G969 |
| G2094 | G2094 | C1797 | U1625 | U1530 | C1436 | U1336 | U1237 | G1051 | U970 |
| A2096 | A2096 | C1798 | A1626 | U1531 | A1440 | A1337 | U1169 | C1052 | U    |
| G2100 | G2100 | A1804 | G1627 | C1534 | U1440 | G1340 | G1239 | G1053 | U    |
| A2101 | A2101 | G1805 | C1633 | G1535 | G1441 | A1341 | A1242 | G1053 | U    |
| G2102 | G2102 | G1806 | G1634 | C1536 | A1442 | C1342 | C1243 | G1055 | U    |
| A2103 | A2103 | G1813 | U1635 | G1543 | A1448 | C1343 | U1244 | G1056 | C    |
| C2104 | C2104 | G1814 | G1636 | U1544 | G1449 | G1344 | A1245 | G1057 | C    |
| C2105 | C2105 | A1815 | A1637 | C1545 | C1450 | A1345 | A1246 | A1058 | C    |
|       |       | G1718 | U1638 | U1546 | C1451 | U1346 | A1247 | G1059 | C    |
|       |       | U1722 | U1641 | G1546 | U1451 | U1347 | U1248 | C1060 | U    |
|       |       | G1723 | A1642 | G1557 | U1461 | A1351 | A1249 | G1072 | C    |
|       |       | U1724 | C1643 | C1558 | A1463 | A1352 | C1250 | A1181 | C    |
|       |       | C1725 | C1644 | A1559 | U1464 | C1353 | C1251 | C1182 | C    |
|       |       | G1730 | U1645 | U     | U1467 | C1360 | A1252 | C1183 | G    |
|       |       | A1732 | G1646 | C1562 | C1467 | C1361 | C1253 | U1184 | G    |
|       |       |       | G1647 |       |       |       | G1260 | U1185 | A    |
|       |       |       |       |       |       |       |       | C1186 | C    |





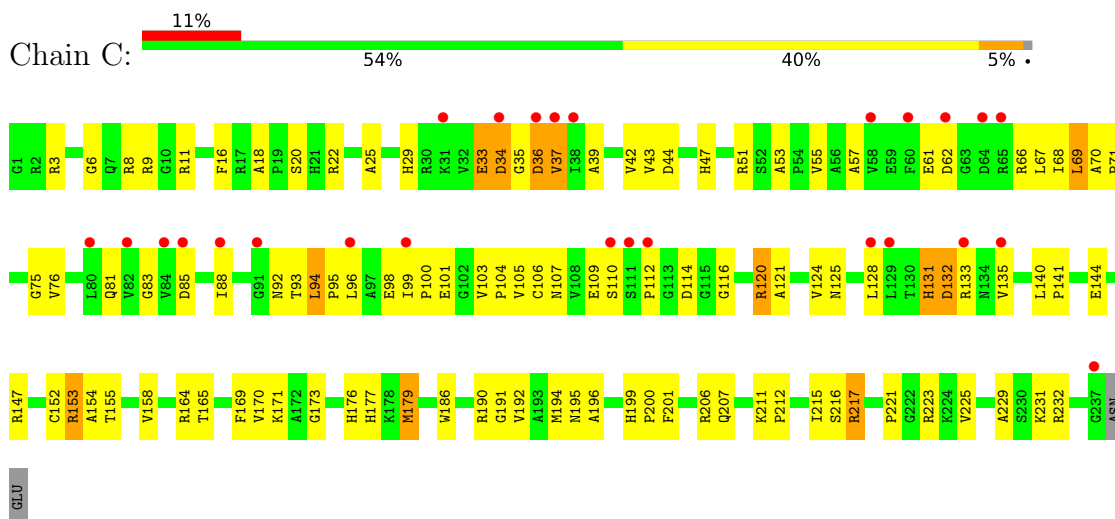
• Molecule 2: 5S ribosomal RNA



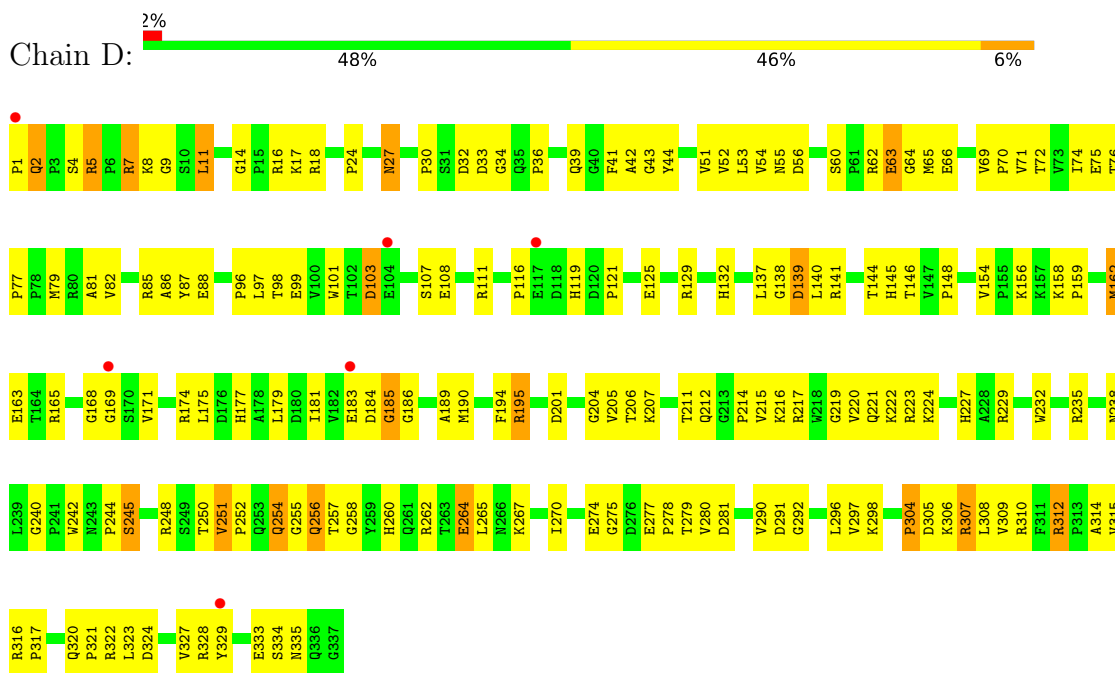
• Molecule 3: CC-puromycin



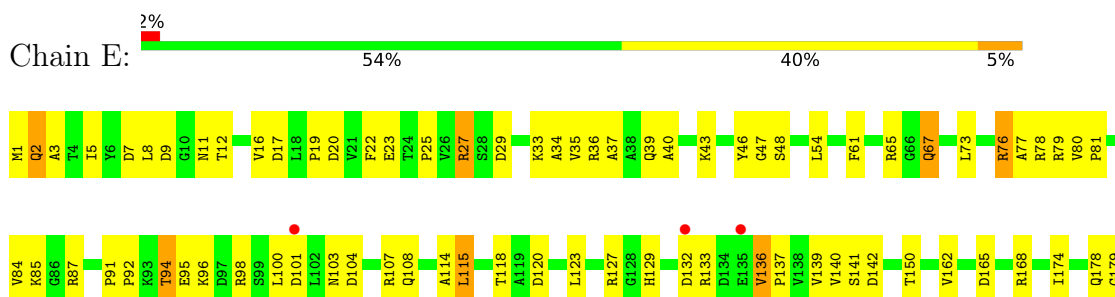
- Molecule 4: 50S ribosomal protein L2P



- Molecule 5: 50S ribosomal protein L3P

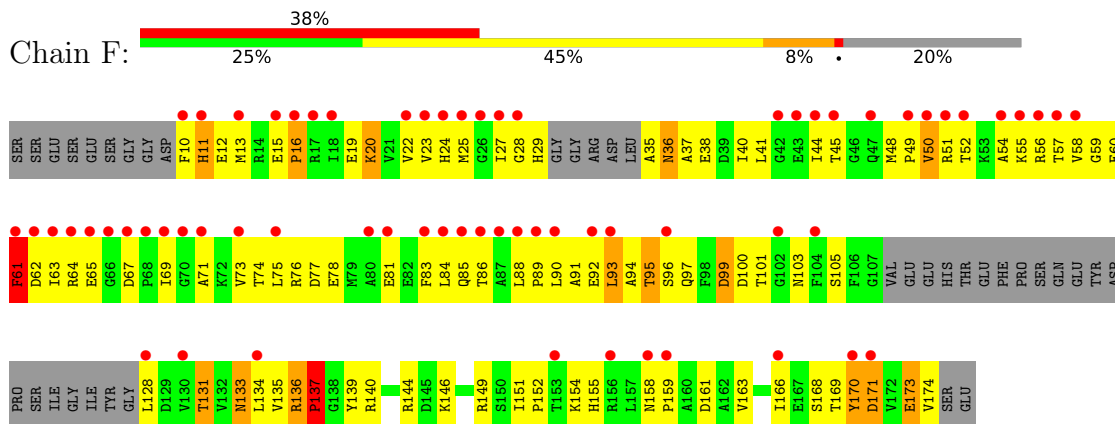


- Molecule 6: 50S ribosomal protein L4E

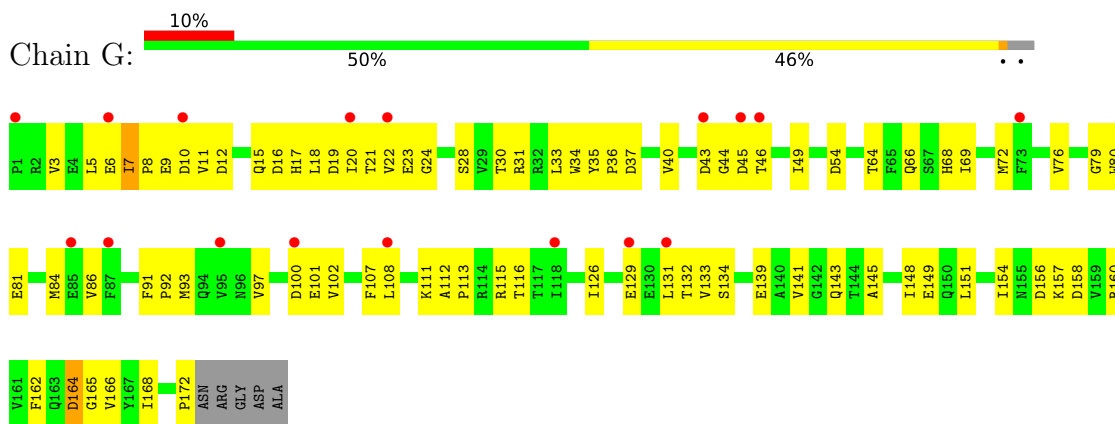




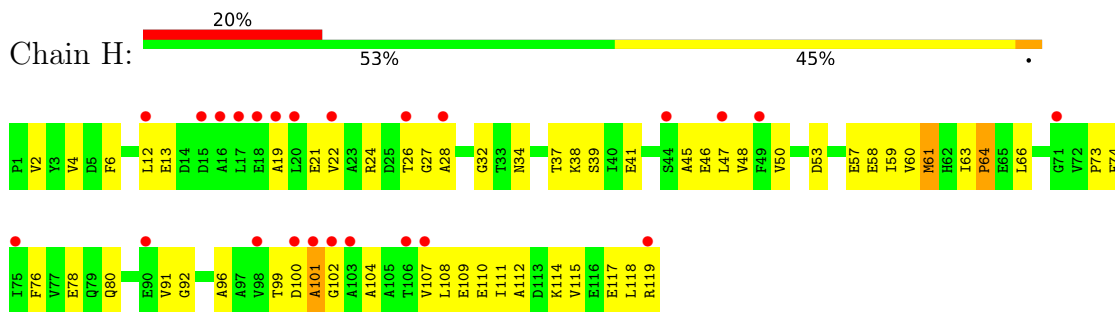
• Molecule 7: 50S ribosomal protein L5P



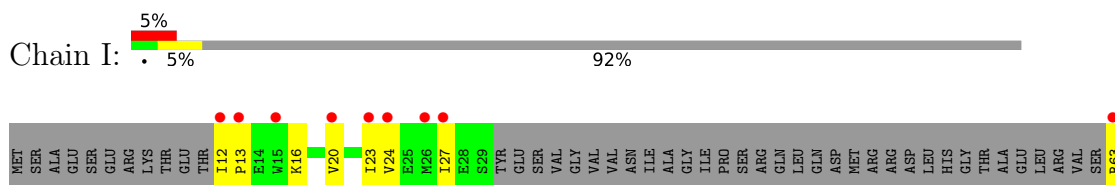
• Molecule 8: 50S ribosomal protein L6P



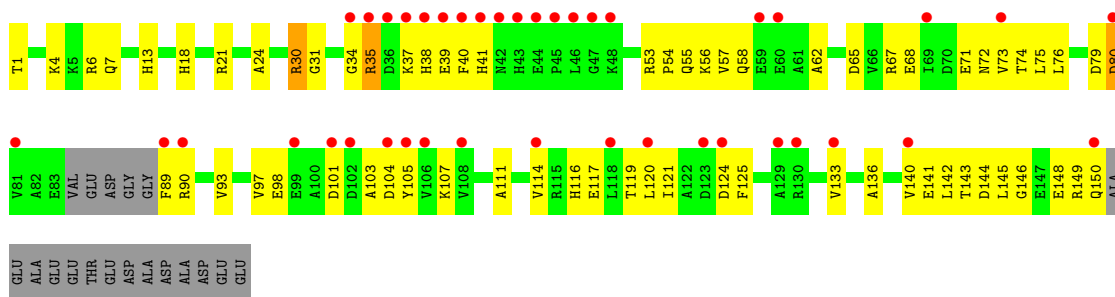
• Molecule 9: 50S ribosomal protein L7Ae



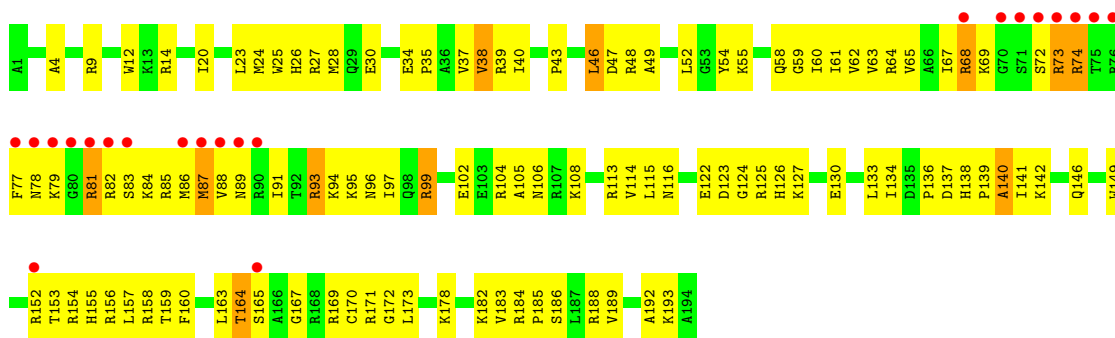
• Molecule 10: Acidic ribosomal protein P0 homolog



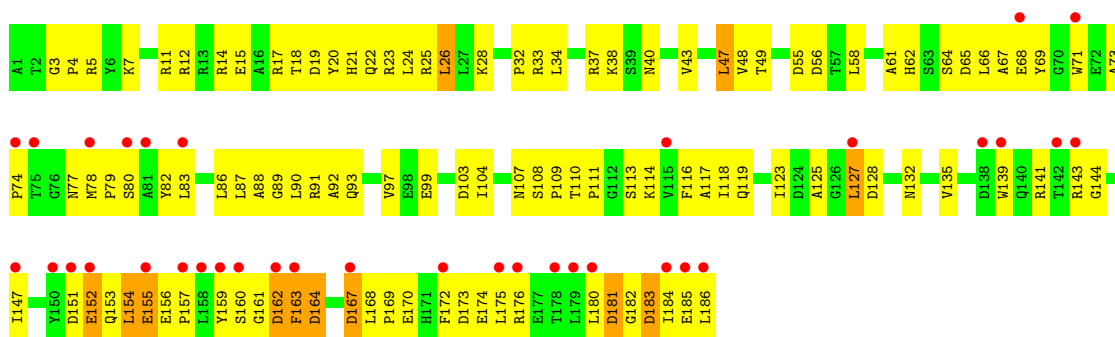




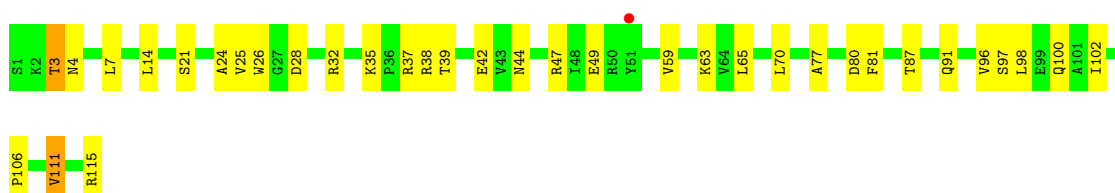
- Molecule 15: L15 Ribosomal Protein



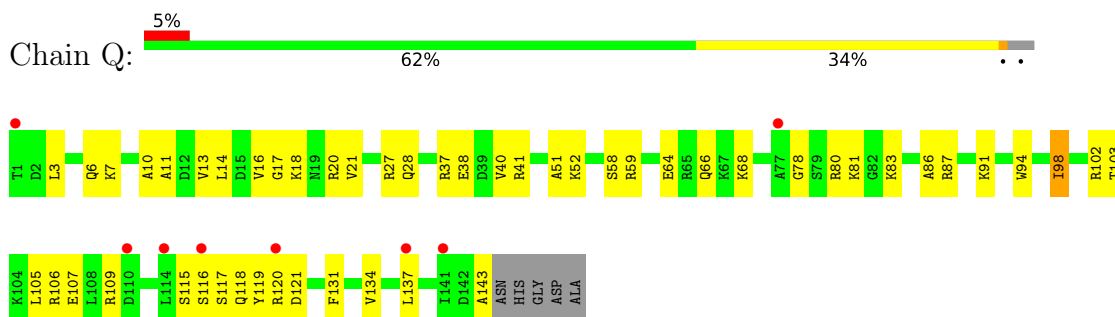
- Molecule 16: 50S ribosomal protein L18P



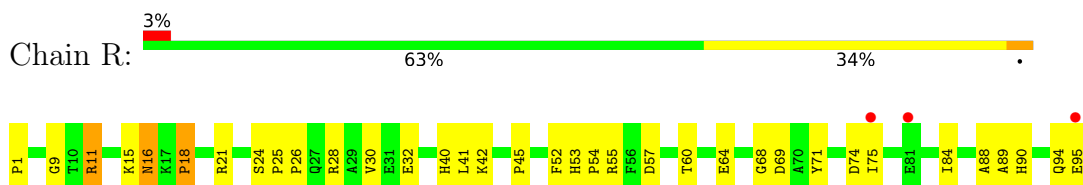
- Molecule 17: 50S ribosomal protein L18e



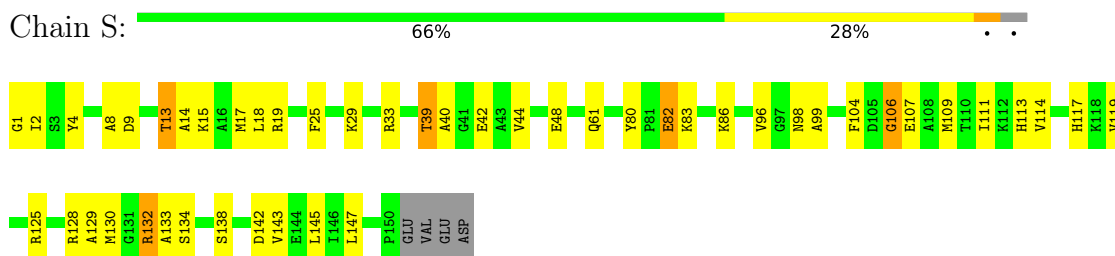
- Molecule 18: 50S ribosomal protein L19E



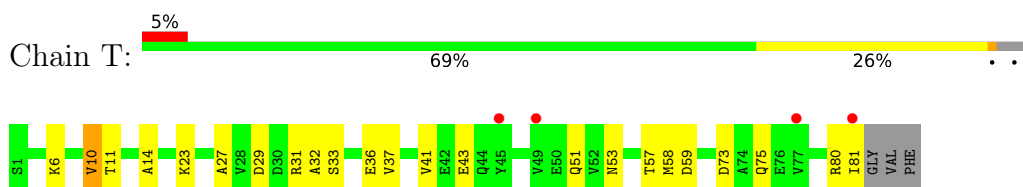
- Molecule 19: 50S ribosomal protein L21e



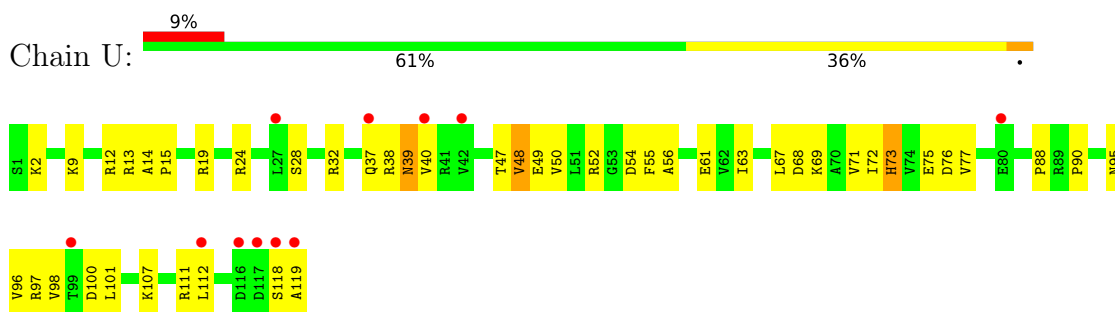
- Molecule 20: 50S ribosomal protein L22P



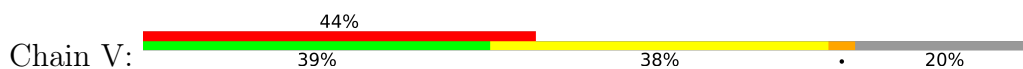
- Molecule 21: 50S ribosomal protein L23P



- Molecule 22: 50S ribosomal protein L24P

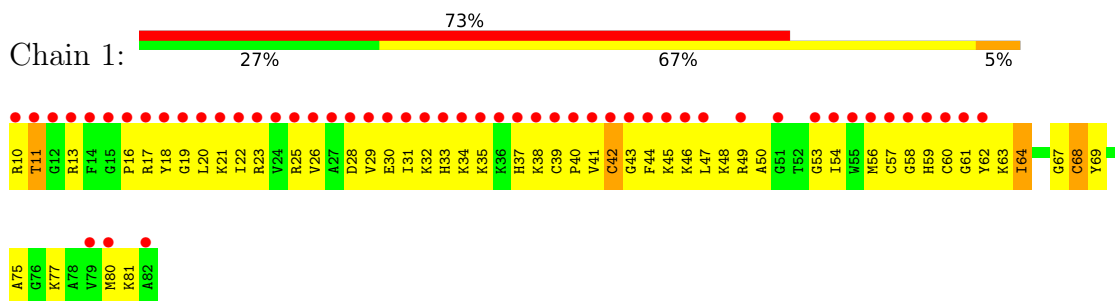


- Molecule 23: 50S ribosomal protein L24E

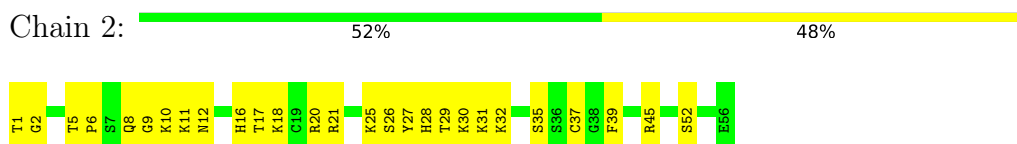




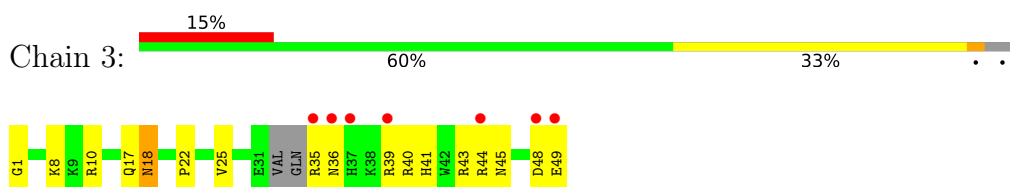
- Molecule 28: L37Ae 50S ribosomal protein



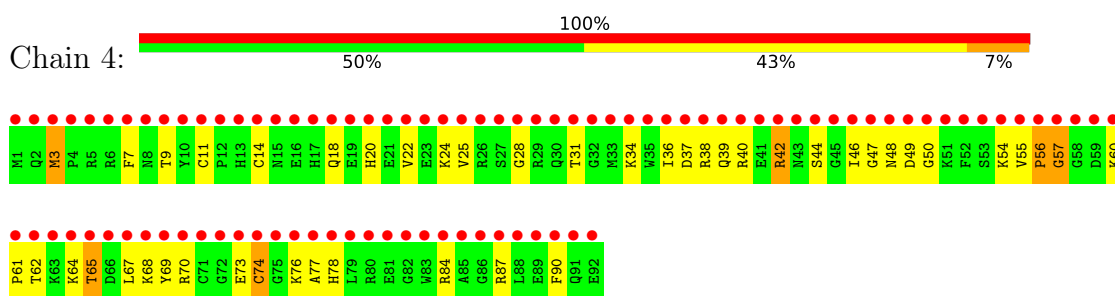
- Molecule 29: 50S ribosomal protein L37e



- Molecule 30: 50S ribosomal protein L39e



- Molecule 31: 50S ribosomal protein L44E





## 4 Data and refinement statistics

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | C 2 2 21  | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 213.16Å 301.29Å 575.40Å<br>90.00° 90.00° 90.00°             | Depositor        |
| Resolution (Å)  | 20.00 – 2.98<br>49.62 – 2.98                                | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 91.7 (20.00-2.98)<br>91.8 (49.62-2.98)                      | Depositor<br>EDS |
| $R_{merge}$   | (Not available)   | Depositor        |
| $R_{sym}$   | (Not available)   | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 0.50 (at 2.96Å)   | Xtrriage         |
| Refinement program  | CNS 1.0   | Depositor        |
| R, $R_{free}$   | 0.207 , 0.251<br>0.211 , (Not available)                    | Depositor<br>DCC |
| $R_{free}$ test set   | No test flags present.                                      | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 46.6  | Xtrriage         |
| Anisotropy  | 0.317   | Xtrriage         |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.31 , 63.9   | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.46$ , $\langle L^2 \rangle = 0.29$ | Xtrriage         |
| Estimated twinning fraction   | No twinning to report.                                      | Xtrriage         |
| $F_o, F_c$ correlation  | 0.91  | EDS              |
| Total number of atoms   | 98593   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 54.0  | wwPDB-VP         |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.55% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: NA, MG, CL, K, CD, PPU

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     | 0.58         | 2/66076 (0.0%) | 0.76        | 28/103052 (0.0%) |
| 2   | B     | 0.54         | 0/2905         | 0.82        | 4/4528 (0.1%)    |
| 3   | 5     | 2.09         | 1/43 (2.3%)    | 1.94        | 0/64             |
| 4   | C     | 0.45         | 0/1787         | 0.75        | 0/2409           |
| 5   | D     | 0.44         | 0/2689         | 0.70        | 0/3652           |
| 6   | E     | 0.48         | 0/1883         | 0.72        | 0/2551           |
| 7   | F     | 0.40         | 0/1111         | 0.63        | 0/1498           |
| 8   | G     | 0.45         | 0/1382         | 0.65        | 0/1880           |
| 9   | H     | 0.39         | 0/896          | 0.62        | 0/1219           |
| 10  | I     | 0.38         | 0/241          | 0.56        | 0/324            |
| 11  | J     | 0.48         | 0/1246         | 0.81        | 2/1686 (0.1%)    |
| 12  | K     | 0.49         | 0/1135         | 0.70        | 0/1530           |
| 13  | L     | 0.46         | 0/1003         | 0.76        | 0/1351           |
| 14  | M     | 0.49         | 0/1126         | 0.76        | 0/1504           |
| 15  | N     | 0.61         | 0/1633         | 0.83        | 2/2180 (0.1%)    |
| 16  | O     | 0.40         | 0/1473         | 0.71        | 0/1999           |
| 17  | P     | 0.47         | 0/873          | 0.70        | 0/1181           |
| 18  | Q     | 0.44         | 0/1143         | 0.62        | 0/1521           |
| 19  | R     | 0.44         | 0/748          | 0.75        | 1/1005 (0.1%)    |
| 20  | S     | 0.49         | 0/1172         | 0.73        | 0/1578           |
| 21  | T     | 0.41         | 0/648          | 0.65        | 0/875            |
| 22  | U     | 0.39         | 0/957          | 0.70        | 0/1289           |
| 23  | V     | 0.58         | 0/417          | 0.74        | 1/562 (0.2%)     |
| 24  | W     | 0.38         | 0/502          | 0.60        | 0/675            |
| 25  | X     | 0.50         | 0/1218         | 0.72        | 0/1655           |
| 26  | Y     | 0.46         | 0/664          | 0.71        | 0/895            |
| 27  | Z     | 0.48         | 0/1146         | 0.71        | 0/1536           |
| 28  | 1     | 0.77         | 0/575          | 0.84        | 0/763            |
| 29  | 2     | 0.55         | 0/437          | 0.77        | 0/578            |
| 30  | 3     | 0.44         | 0/398          | 0.61        | 0/527            |
| 31  | 4     | 0.93         | 0/771          | 0.80        | 0/1024           |
| All | All   | 0.56         | 3/98298 (0.0%) | 0.75        | 38/147091 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A     | 1                   | 143                 |
| 2   | B     | 1                   | 4                   |
| All | All   | 2                   | 147                 |

All (3) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|---------|-------|-------------|----------|
| 1   | A     | 1206 | U    | N1-C2   | 5.33  | 1.43        | 1.38     |
| 1   | A     | 1206 | U    | C3'-O3' | -5.24 | 1.34        | 1.42     |
| 3   | 5     | 75   | C    | C4'-C3' | -5.04 | 1.47        | 1.52     |

All (38) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|--------|-------------|----------|
| 1   | A     | 1164 | U    | OP1-P-O3'   | -18.53 | 64.43       | 105.20   |
| 1   | A     | 1164 | U    | OP2-P-O3'   | -18.53 | 64.44       | 105.20   |
| 1   | A     | 1165 | G    | O5'-P-OP1   | -11.90 | 94.99       | 105.70   |
| 2   | B     | 3024 | U    | C2'-C3'-O3' | 9.55   | 130.52      | 109.50   |
| 1   | A     | 1563 | G    | C2'-C3'-O3' | 9.10   | 129.51      | 109.50   |
| 1   | A     | 1979 | G    | C2'-C3'-O3' | 8.54   | 128.28      | 109.50   |
| 1   | A     | 1206 | U    | O5'-P-OP1   | -8.21  | 98.31       | 105.70   |
| 1   | A     | 1942 | A    | C5'-C4'-C3' | 7.54   | 128.07      | 116.00   |
| 2   | B     | 3003 | A    | O5'-P-OP1   | 7.40   | 119.58      | 110.70   |
| 1   | A     | 1942 | A    | C5'-C4'-O4' | 7.19   | 117.73      | 109.10   |
| 2   | B     | 3103 | A    | C5'-C4'-O4' | 7.07   | 117.59      | 109.10   |
| 1   | A     | 871  | G    | C5'-C4'-O4' | -6.56  | 101.23      | 109.10   |
| 1   | A     | 1504 | A    | C1'-O4'-C4' | -6.30  | 104.86      | 109.90   |
| 2   | B     | 3039 | U    | N1-C1'-C2'  | 6.18   | 122.03      | 114.00   |
| 1   | A     | 1165 | G    | OP1-P-OP2   | 6.10   | 128.75      | 119.60   |
| 1   | A     | 1120 | U    | C5'-C4'-C3' | -6.07  | 106.29      | 116.00   |
| 1   | A     | 1165 | G    | O5'-P-OP2   | -6.02  | 100.28      | 105.70   |
| 1   | A     | 389  | G    | C5'-C4'-C3' | -6.02  | 106.38      | 116.00   |
| 23  | V     | 36   | CYS  | CA-CB-SG    | -6.00  | 103.21      | 114.00   |
| 1   | A     | 2419 | U    | N1-C1'-C2'  | 5.98   | 121.77      | 114.00   |
| 1   | A     | 2313 | C    | C5'-C4'-O4' | 5.89   | 116.17      | 109.10   |
| 1   | A     | 2012 | U    | N1-C1'-C2'  | 5.88   | 121.65      | 114.00   |
| 1   | A     | 2467 | A    | O5'-P-OP1   | -5.79  | 100.49      | 105.70   |
| 1   | A     | 2726 | U    | N1-C1'-C2'  | 5.66   | 121.35      | 114.00   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | A     | 1738 | C    | O4'-C4'-C3' | -5.61 | 98.39       | 104.00   |
| 11  | J     | 74   | ASN  | N-CA-C      | -5.56 | 95.98       | 111.00   |
| 1   | A     | 129  | A    | C2'-C3'-O3' | 5.54  | 122.56      | 113.70   |
| 1   | A     | 2096 | A    | N9-C1'-C2'  | 5.42  | 121.05      | 114.00   |
| 11  | J     | 156  | THR  | N-CA-C      | -5.38 | 96.49       | 111.00   |
| 15  | N     | 73   | ARG  | N-CA-C      | -5.35 | 96.55       | 111.00   |
| 19  | R     | 68   | GLY  | N-CA-C      | -5.28 | 99.90       | 113.10   |
| 1   | A     | 921  | G    | N9-C1'-C2'  | 5.12  | 120.65      | 114.00   |
| 1   | A     | 192  | A    | N9-C1'-C2'  | 5.09  | 120.62      | 114.00   |
| 1   | A     | 658  | C    | N1-C1'-C2'  | -5.08 | 106.41      | 112.00   |
| 1   | A     | 2468 | A    | N9-C1'-C2'  | 5.04  | 120.56      | 114.00   |
| 15  | N     | 74   | ARG  | N-CA-C      | 5.04  | 124.60      | 111.00   |
| 1   | A     | 917  | U    | C5'-C4'-C3' | 5.01  | 124.01      | 116.00   |
| 1   | A     | 1819 | G    | C5'-C4'-C3' | 5.01  | 124.01      | 116.00   |

All (2) chirality outliers are listed below:

| Mol | Chain | Res  | Type | Atom |
|-----|-------|------|------|------|
| 1   | A     | 1563 | G    | C3'  |
| 2   | B     | 3024 | U    | C3'  |

All (147) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 1   | A     | 1007 | A    | Sidechain |
| 1   | A     | 1027 | G    | Sidechain |
| 1   | A     | 1030 | U    | Sidechain |
| 1   | A     | 1038 | G    | Sidechain |
| 1   | A     | 1125 | U    | Sidechain |
| 1   | A     | 115  | U    | Sidechain |
| 1   | A     | 1191 | A    | Sidechain |
| 1   | A     | 1206 | U    | Sidechain |
| 1   | A     | 1226 | G    | Sidechain |
| 1   | A     | 1236 | A    | Sidechain |
| 1   | A     | 1244 | U    | Sidechain |
| 1   | A     | 1260 | G    | Sidechain |
| 1   | A     | 1261 | A    | Sidechain |
| 1   | A     | 1266 | U    | Sidechain |
| 1   | A     | 1297 | U    | Sidechain |
| 1   | A     | 1298 | U    | Sidechain |
| 1   | A     | 1309 | U    | Sidechain |
| 1   | A     | 1332 | C    | Sidechain |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>Group</b> |
|------------|--------------|------------|-------------|--------------|
| 1          | A            | 1347       | U           | Sidechain    |
| 1          | A            | 1368       | U           | Sidechain    |
| 1          | A            | 1376       | G           | Sidechain    |
| 1          | A            | 1387       | G           | Sidechain    |
| 1          | A            | 1412       | U           | Sidechain    |
| 1          | A            | 1417       | G           | Sidechain    |
| 1          | A            | 1430       | G           | Sidechain    |
| 1          | A            | 1467       | C           | Sidechain    |
| 1          | A            | 1478       | U           | Sidechain    |
| 1          | A            | 1503       | U           | Sidechain    |
| 1          | A            | 1531       | U           | Sidechain    |
| 1          | A            | 1635       | U           | Sidechain    |
| 1          | A            | 1645       | U           | Sidechain    |
| 1          | A            | 1647       | G           | Sidechain    |
| 1          | A            | 1681       | G           | Sidechain    |
| 1          | A            | 1684       | A           | Sidechain    |
| 1          | A            | 1688       | G           | Sidechain    |
| 1          | A            | 1696       | U           | Sidechain    |
| 1          | A            | 1701       | A           | Sidechain    |
| 1          | A            | 1706       | G           | Sidechain    |
| 1          | A            | 171        | C           | Sidechain    |
| 1          | A            | 1736       | A           | Sidechain    |
| 1          | A            | 1750       | C           | Sidechain    |
| 1          | A            | 176        | U           | Sidechain    |
| 1          | A            | 1777       | G           | Sidechain    |
| 1          | A            | 1818       | C           | Sidechain    |
| 1          | A            | 182        | G           | Sidechain    |
| 1          | A            | 1826       | C           | Sidechain    |
| 1          | A            | 1828       | G           | Sidechain    |
| 1          | A            | 1835       | U           | Sidechain    |
| 1          | A            | 1839       | A           | Sidechain    |
| 1          | A            | 1846       | U           | Sidechain    |
| 1          | A            | 1848       | G           | Sidechain    |
| 1          | A            | 1878       | G           | Sidechain    |
| 1          | A            | 1933       | G           | Sidechain    |
| 1          | A            | 1972       | U           | Sidechain    |
| 1          | A            | 1978       | A           | Sidechain    |
| 1          | A            | 2022       | A           | Sidechain    |
| 1          | A            | 2026       | C           | Sidechain    |
| 1          | A            | 2063       | U           | Sidechain    |
| 1          | A            | 2102       | G           | Sidechain    |
| 1          | A            | 211        | U           | Sidechain    |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>Group</b> |
|------------|--------------|------------|-------------|--------------|
| 1          | A            | 2110       | G           | Sidechain    |
| 1          | A            | 2119       | C           | Sidechain    |
| 1          | A            | 2124       | G           | Sidechain    |
| 1          | A            | 214        | U           | Sidechain    |
| 1          | A            | 22         | U           | Sidechain    |
| 1          | A            | 224        | U           | Sidechain    |
| 1          | A            | 2279       | G           | Sidechain    |
| 1          | A            | 2306       | U           | Sidechain    |
| 1          | A            | 2308       | U           | Sidechain    |
| 1          | A            | 2313       | C           | Sidechain    |
| 1          | A            | 2336       | G           | Sidechain    |
| 1          | A            | 2390       | U           | Sidechain    |
| 1          | A            | 2421       | G           | Sidechain    |
| 1          | A            | 2429       | A           | Sidechain    |
| 1          | A            | 2433       | A           | Sidechain    |
| 1          | A            | 2434       | A           | Sidechain    |
| 1          | A            | 246        | G           | Sidechain    |
| 1          | A            | 2461       | U           | Sidechain    |
| 1          | A            | 2492       | U           | Sidechain    |
| 1          | A            | 2493       | C           | Sidechain    |
| 1          | A            | 2524       | G           | Sidechain    |
| 1          | A            | 2526       | C           | Sidechain    |
| 1          | A            | 2535       | U           | Sidechain    |
| 1          | A            | 2590       | U           | Sidechain    |
| 1          | A            | 26         | U           | Sidechain    |
| 1          | A            | 2620       | U           | Sidechain    |
| 1          | A            | 2621       | U           | Sidechain    |
| 1          | A            | 2630       | G           | Sidechain    |
| 1          | A            | 2634       | G           | Sidechain    |
| 1          | A            | 265        | U           | Sidechain    |
| 1          | A            | 2663       | U           | Sidechain    |
| 1          | A            | 2673       | U           | Sidechain    |
| 1          | A            | 2692       | G           | Sidechain    |
| 1          | A            | 2736       | U           | Sidechain    |
| 1          | A            | 2774       | U           | Sidechain    |
| 1          | A            | 2790       | C           | Sidechain    |
| 1          | A            | 2793       | A           | Sidechain    |
| 1          | A            | 28         | G           | Sidechain    |
| 1          | A            | 2800       | A           | Sidechain    |
| 1          | A            | 2840       | A           | Sidechain    |
| 1          | A            | 2842       | G           | Sidechain    |
| 1          | A            | 315        | G           | Sidechain    |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>Group</b> |
|------------|--------------|------------|-------------|--------------|
| 1          | A            | 321        | A           | Sidechain    |
| 1          | A            | 333        | G           | Sidechain    |
| 1          | A            | 344        | C           | Sidechain    |
| 1          | A            | 395        | A           | Sidechain    |
| 1          | A            | 396        | U           | Sidechain    |
| 1          | A            | 407        | A           | Sidechain    |
| 1          | A            | 435        | A           | Sidechain    |
| 1          | A            | 436        | A           | Sidechain    |
| 1          | A            | 458        | G           | Sidechain    |
| 1          | A            | 459        | A           | Sidechain    |
| 1          | A            | 48         | A           | Sidechain    |
| 1          | A            | 483        | C           | Sidechain    |
| 1          | A            | 502        | A           | Sidechain    |
| 1          | A            | 506        | G           | Sidechain    |
| 1          | A            | 518        | G           | Sidechain    |
| 1          | A            | 548        | U           | Sidechain    |
| 1          | A            | 55         | U           | Sidechain    |
| 1          | A            | 614        | U           | Sidechain    |
| 1          | A            | 619        | U           | Sidechain    |
| 1          | A            | 640        | G           | Sidechain    |
| 1          | A            | 664        | U           | Sidechain    |
| 1          | A            | 676        | C           | Sidechain    |
| 1          | A            | 722        | G           | Sidechain    |
| 1          | A            | 734        | U           | Sidechain    |
| 1          | A            | 743        | G           | Sidechain    |
| 1          | A            | 761        | A           | Sidechain    |
| 1          | A            | 764        | C           | Sidechain    |
| 1          | A            | 775        | G           | Sidechain    |
| 1          | A            | 815        | U           | Sidechain    |
| 1          | A            | 816        | G           | Sidechain    |
| 1          | A            | 818        | A           | Sidechain    |
| 1          | A            | 854        | G           | Sidechain    |
| 1          | A            | 873        | G           | Sidechain    |
| 1          | A            | 888        | U           | Sidechain    |
| 1          | A            | 897        | A           | Sidechain    |
| 1          | A            | 898        | G           | Sidechain    |
| 1          | A            | 906        | C           | Sidechain    |
| 1          | A            | 919        | U           | Sidechain    |
| 1          | A            | 932        | U           | Sidechain    |
| 1          | A            | 950        | G           | Sidechain    |
| 1          | A            | 954        | U           | Sidechain    |
| 2          | B            | 3022       | G           | Sidechain    |

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| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 2   | B     | 3024 | U    | Sidechain |
| 2   | B     | 3065 | A    | Sidechain |
| 2   | B     | 3099 | U    | Sidechain |

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

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 59017 | 0        | 29798    | 1217    | 0            |
| 2   | B     | 2600  | 0        | 1326     | 82      | 0            |
| 3   | 5     | 40    | 0        | 22       | 5       | 0            |
| 4   | C     | 1754  | 0        | 1763     | 125     | 0            |
| 5   | D     | 2624  | 0        | 2533     | 189     | 0            |
| 6   | E     | 1858  | 0        | 1816     | 137     | 0            |
| 7   | F     | 1094  | 0        | 1085     | 137     | 0            |
| 8   | G     | 1357  | 0        | 1266     | 83      | 0            |
| 9   | H     | 885   | 0        | 854      | 57      | 0            |
| 10  | I     | 240   | 0        | 231      | 25      | 0            |
| 11  | J     | 1215  | 0        | 1215     | 155     | 0            |
| 12  | K     | 1119  | 0        | 1098     | 70      | 0            |
| 13  | L     | 993   | 0        | 1027     | 67      | 0            |
| 14  | M     | 1114  | 0        | 1072     | 67      | 0            |
| 15  | N     | 1605  | 0        | 1676     | 179     | 0            |
| 16  | O     | 1444  | 0        | 1401     | 142     | 0            |
| 17  | P     | 864   | 0        | 873      | 40      | 0            |
| 18  | Q     | 1133  | 0        | 1127     | 60      | 0            |
| 19  | R     | 734   | 0        | 728      | 28      | 0            |
| 20  | S     | 1149  | 0        | 1122     | 56      | 0            |
| 21  | T     | 641   | 0        | 605      | 28      | 0            |
| 22  | U     | 949   | 0        | 923      | 49      | 0            |
| 23  | V     | 410   | 0        | 368      | 36      | 0            |
| 24  | W     | 499   | 0        | 511      | 27      | 0            |
| 25  | X     | 1195  | 0        | 1137     | 99      | 0            |
| 26  | Y     | 654   | 0        | 653      | 51      | 0            |
| 27  | Z     | 1130  | 0        | 1133     | 63      | 0            |
| 28  | 1     | 563   | 0        | 601      | 80      | 0            |
| 29  | 2     | 430   | 0        | 426      | 39      | 0            |
| 30  | 3     | 393   | 0        | 406      | 30      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 31  | 4     | 755   | 0        | 732      | 62      | 0            |
| 32  | 1     | 1     | 0        | 0        | 0       | 0            |
| 32  | 4     | 1     | 0        | 0        | 0       | 0            |
| 32  | A     | 109   | 0        | 0        | 2       | 0            |
| 32  | B     | 1     | 0        | 0        | 0       | 0            |
| 32  | C     | 1     | 0        | 0        | 0       | 0            |
| 32  | D     | 1     | 0        | 0        | 0       | 0            |
| 32  | L     | 1     | 0        | 0        | 0       | 0            |
| 32  | U     | 1     | 0        | 0        | 0       | 0            |
| 32  | Z     | 1     | 0        | 0        | 0       | 0            |
| 33  | A     | 2     | 0        | 0        | 0       | 0            |
| 34  | 4     | 1     | 0        | 0        | 0       | 0            |
| 34  | A     | 71    | 0        | 0        | 0       | 0            |
| 34  | B     | 2     | 0        | 0        | 0       | 0            |
| 34  | C     | 1     | 0        | 0        | 0       | 0            |
| 34  | E     | 1     | 0        | 0        | 0       | 0            |
| 34  | J     | 2     | 0        | 0        | 0       | 0            |
| 34  | K     | 1     | 0        | 0        | 0       | 0            |
| 34  | M     | 1     | 0        | 0        | 0       | 0            |
| 34  | N     | 1     | 0        | 0        | 0       | 0            |
| 34  | R     | 1     | 0        | 0        | 0       | 0            |
| 34  | S     | 2     | 0        | 0        | 0       | 0            |
| 34  | T     | 1     | 0        | 0        | 0       | 0            |
| 34  | U     | 1     | 0        | 0        | 0       | 0            |
| 35  | 4     | 1     | 0        | 0        | 1       | 0            |
| 35  | A     | 7     | 0        | 0        | 0       | 0            |
| 35  | C     | 1     | 0        | 0        | 0       | 0            |
| 35  | D     | 1     | 0        | 0        | 0       | 0            |
| 35  | K     | 4     | 0        | 0        | 0       | 0            |
| 35  | M     | 1     | 0        | 0        | 0       | 0            |
| 35  | N     | 1     | 0        | 0        | 2       | 0            |
| 35  | O     | 1     | 0        | 0        | 1       | 0            |
| 35  | P     | 1     | 0        | 0        | 0       | 0            |
| 35  | R     | 1     | 0        | 0        | 0       | 0            |
| 35  | S     | 1     | 0        | 0        | 0       | 0            |
| 35  | Z     | 2     | 0        | 0        | 1       | 0            |
| 36  | 5     | 37    | 0        | 28       | 4       | 0            |
| 37  | 1     | 1     | 0        | 0        | 0       | 0            |
| 37  | 2     | 1     | 0        | 0        | 0       | 0            |
| 37  | 4     | 1     | 0        | 0        | 0       | 0            |
| 37  | P     | 1     | 0        | 0        | 0       | 0            |
| 37  | V     | 1     | 0        | 0        | 0       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 38  | 1     | 36    | 0        | 0        | 13      | 0            |
| 38  | 2     | 58    | 0        | 0        | 4       | 0            |
| 38  | 3     | 37    | 0        | 0        | 4       | 0            |
| 38  | 4     | 70    | 0        | 0        | 11      | 0            |
| 38  | 5     | 1     | 0        | 0        | 0       | 0            |
| 38  | A     | 5860  | 0        | 0        | 268     | 0            |
| 38  | B     | 146   | 0        | 0        | 15      | 0            |
| 38  | C     | 140   | 0        | 0        | 15      | 0            |
| 38  | D     | 146   | 0        | 0        | 32      | 0            |
| 38  | E     | 176   | 0        | 0        | 34      | 0            |
| 38  | F     | 52    | 0        | 0        | 20      | 0            |
| 38  | G     | 45    | 0        | 0        | 11      | 0            |
| 38  | H     | 32    | 0        | 0        | 9       | 0            |
| 38  | I     | 22    | 0        | 0        | 8       | 0            |
| 38  | J     | 78    | 0        | 0        | 20      | 0            |
| 38  | K     | 54    | 0        | 0        | 4       | 0            |
| 38  | L     | 64    | 0        | 0        | 16      | 0            |
| 38  | M     | 86    | 0        | 0        | 15      | 0            |
| 38  | N     | 138   | 0        | 0        | 27      | 0            |
| 38  | O     | 64    | 0        | 0        | 19      | 0            |
| 38  | P     | 44    | 0        | 0        | 12      | 0            |
| 38  | Q     | 70    | 0        | 0        | 11      | 0            |
| 38  | R     | 57    | 0        | 0        | 4       | 0            |
| 38  | S     | 83    | 0        | 0        | 10      | 0            |
| 38  | T     | 36    | 0        | 0        | 5       | 0            |
| 38  | U     | 38    | 0        | 0        | 2       | 0            |
| 38  | V     | 22    | 0        | 0        | 6       | 0            |
| 38  | W     | 16    | 0        | 0        | 3       | 0            |
| 38  | X     | 67    | 0        | 0        | 10      | 0            |
| 38  | Y     | 28    | 0        | 0        | 6       | 0            |
| 38  | Z     | 100   | 0        | 0        | 16      | 0            |
| All | All   | 98593 | 0        | 59556    | 3185    | 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 21.

All (3185) 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) |
|------------------|-------------------|--------------------------|-------------------|
| 11:J:165:GLY:HA3 | 38:J:8398:HOH:O   | 1.43                     | 1.15              |
| 11:J:86:ARG:NH1  | 11:J:133:ILE:HG13 | 1.63                     | 1.13              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 15:N:164:THR:HG22 | 15:N:167:GLY:H    | 1.10                     | 1.12              |
| 1:A:1751:G:H2'    | 1:A:1752:G:H5''   | 1.30                     | 1.10              |
| 28:1:46:LYS:HD3   | 28:1:59:HIS:HB2   | 1.30                     | 1.10              |
| 6:E:236:THR:HG22  | 6:E:239:ALA:H     | 1.01                     | 1.09              |
| 6:E:5:ILE:HD11    | 6:E:16:VAL:HG23   | 1.34                     | 1.08              |
| 7:F:134:LEU:HD11  | 7:F:166:ILE:HD11  | 1.34                     | 1.08              |
| 28:1:39:CYS:SG    | 28:1:47:LEU:HD21  | 1.93                     | 1.08              |
| 22:U:71:VAL:HG11  | 22:U:90:PRO:HB3   | 1.34                     | 1.08              |
| 1:A:2121:G:OP2    | 38:A:3007:HOH:O   | 1.69                     | 1.06              |
| 24:W:12:THR:HG22  | 24:W:15:GLU:HG3   | 1.38                     | 1.06              |
| 1:A:1160:G:H5'    | 1:A:1161:A:H5'    | 1.36                     | 1.04              |
| 27:Z:200:THR:HG22 | 27:Z:201:GLU:HG3  | 1.39                     | 1.04              |
| 1:A:1134:G:H4'    | 11:J:151:MET:HE1  | 1.41                     | 1.03              |
| 1:A:156:C:H5''    | 15:N:171:ARG:HD3  | 1.39                     | 1.03              |
| 28:1:40:PRO:HD3   | 28:1:47:LEU:HD11  | 1.39                     | 1.03              |
| 1:A:870:G:H2'     | 1:A:871:G:H5''    | 1.40                     | 1.02              |
| 11:J:45:GLN:HB3   | 11:J:163:PRO:HD2  | 1.40                     | 1.02              |
| 1:A:2426:G:H1'    | 38:A:5552:HOH:O   | 1.57                     | 1.02              |
| 15:N:74:ARG:O     | 15:N:88:VAL:HG13  | 1.56                     | 1.02              |
| 25:X:88:THR:HB    | 38:X:6679:HOH:O   | 1.60                     | 1.01              |
| 1:A:1835:U:H5     | 1:A:1840:A:N7     | 1.58                     | 1.00              |
| 15:N:87:MET:HG2   | 31:4:46:ILE:HG21  | 1.39                     | 1.00              |
| 7:F:105:SER:HB2   | 7:F:131:THR:HG23  | 1.43                     | 1.00              |
| 6:E:127:ARG:NH2   | 6:E:225:PRO:HG2   | 1.77                     | 0.99              |
| 1:A:2466:G:H5''   | 38:A:3142:HOH:O   | 1.61                     | 0.99              |
| 6:E:115:LEU:HD13  | 6:E:223:LEU:HD21  | 1.42                     | 0.98              |
| 5:D:86:ALA:HA     | 38:D:8583:HOH:O   | 1.64                     | 0.98              |
| 15:N:35:PRO:HG2   | 15:N:38:VAL:HG23  | 1.42                     | 0.98              |
| 1:A:1886:A:N3     | 38:A:4297:HOH:O   | 1.95                     | 0.97              |
| 11:J:86:ARG:HH11  | 11:J:133:ILE:CG1  | 1.77                     | 0.97              |
| 11:J:86:ARG:HH11  | 11:J:133:ILE:HG13 | 0.82                     | 0.97              |
| 14:M:68:GLU:HA    | 38:M:8548:HOH:O   | 1.62                     | 0.97              |
| 1:A:1474:C:H6     | 1:A:1474:C:H5'    | 1.30                     | 0.97              |
| 2:B:3056:A:H2'    | 2:B:3057:A:H5''   | 1.45                     | 0.96              |
| 21:T:57:THR:HG22  | 21:T:59:ASP:H     | 1.24                     | 0.96              |
| 13:L:10:GLN:NE2   | 13:L:10:GLN:H     | 1.62                     | 0.96              |
| 1:A:2717:C:H2'    | 1:A:2718:C:H5''   | 1.47                     | 0.96              |
| 18:Q:115:SER:H    | 18:Q:118:GLN:HE21 | 0.99                     | 0.96              |
| 1:A:2467:A:H2'    | 38:A:4927:HOH:O   | 1.64                     | 0.95              |
| 5:D:321:PRO:HA    | 38:D:8657:HOH:O   | 1.66                     | 0.95              |
| 1:A:962:C:H1'     | 16:O:5:ARG:NH1    | 1.82                     | 0.94              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:871:G:H5'     | 1:A:871:G:H8      | 1.31                     | 0.94              |
| 16:O:47:LEU:HD11  | 16:O:127:LEU:HD21 | 1.50                     | 0.94              |
| 38:A:4337:HOH:O   | 15:N:14:ARG:HG2   | 1.65                     | 0.93              |
| 21:T:57:THR:HG22  | 21:T:59:ASP:N     | 1.82                     | 0.93              |
| 11:J:142:VAL:HG13 | 38:J:8381:HOH:O   | 1.68                     | 0.93              |
| 26:Y:37:LEU:HD13  | 26:Y:85:VAL:HG21  | 1.47                     | 0.93              |
| 7:F:25:MET:HE2    | 7:F:41:LEU:HG     | 1.50                     | 0.93              |
| 2:B:3006:C:H5''   | 16:O:37:ARG:NH1   | 1.83                     | 0.93              |
| 1:A:2533:C:H6     | 1:A:2533:C:H5'    | 1.32                     | 0.93              |
| 2:B:3023:U:H4'    | 2:B:3024:U:OP2    | 1.69                     | 0.93              |
| 6:E:104:ASP:HA    | 6:E:107:ARG:HH12  | 1.33                     | 0.93              |
| 13:L:29:LEU:HB3   | 13:L:55:VAL:HG11  | 1.49                     | 0.92              |
| 1:A:856:G:H2'     | 38:A:4898:HOH:O   | 1.68                     | 0.92              |
| 1:A:1116:U:HO2'   | 1:A:1118:A:H2     | 0.92                     | 0.91              |
| 4:C:211:LYS:HB3   | 4:C:212:PRO:HD2   | 1.52                     | 0.91              |
| 11:J:150:LYS:HB2  | 11:J:157:ILE:HD12 | 1.52                     | 0.91              |
| 11:J:162:SER:HB2  | 11:J:163:PRO:HD3  | 1.53                     | 0.91              |
| 20:S:99:ALA:HB1   | 20:S:109:MET:HE1  | 1.50                     | 0.91              |
| 13:L:10:GLN:H     | 13:L:10:GLN:HE21  | 1.10                     | 0.91              |
| 6:E:2:GLN:HB3     | 38:E:8338:HOH:O   | 1.70                     | 0.91              |
| 6:E:236:THR:HG22  | 6:E:239:ALA:N     | 1.85                     | 0.90              |
| 15:N:35:PRO:CG    | 15:N:38:VAL:HG23  | 2.01                     | 0.90              |
| 27:Z:212:ARG:HD2  | 38:Z:8605:HOH:O   | 1.70                     | 0.90              |
| 12:K:19:MET:HE3   | 12:K:132:LEU:HD11 | 1.53                     | 0.90              |
| 1:A:1372:A:H3'    | 38:A:6651:HOH:O   | 1.68                     | 0.90              |
| 13:L:14:LYS:HB2   | 13:L:45:PRO:HG2   | 1.54                     | 0.90              |
| 26:Y:78:GLU:HG2   | 26:Y:79:GLU:H     | 1.36                     | 0.90              |
| 15:N:69:LYS:O     | 15:N:73:ARG:NH2   | 2.04                     | 0.90              |
| 1:A:871:G:H5'     | 1:A:871:G:C8      | 2.06                     | 0.90              |
| 1:A:2122:C:OP2    | 38:A:6038:HOH:O   | 1.88                     | 0.90              |
| 15:N:87:MET:CG    | 31:4:46:ILE:HG21  | 2.02                     | 0.90              |
| 2:B:3076:G:H3'    | 2:B:3077:A:H5''   | 1.54                     | 0.89              |
| 1:A:506:G:H22     | 1:A:509:A:H5'     | 1.35                     | 0.89              |
| 11:J:27:LYS:H     | 11:J:58:HIS:HD2   | 1.14                     | 0.89              |
| 5:D:264:GLU:HG2   | 5:D:267:LYS:HE2   | 1.51                     | 0.89              |
| 16:O:49:THR:HG22  | 16:O:56:ASP:HB2   | 1.55                     | 0.89              |
| 1:A:2780:C:H1'    | 8:G:143:GLN:HE21  | 1.38                     | 0.89              |
| 11:J:29:ALA:HB3   | 11:J:65:ARG:HH12  | 1.38                     | 0.89              |
| 26:Y:25:ARG:HD2   | 38:Y:3861:HOH:O   | 1.73                     | 0.88              |
| 1:A:1679:C:H5'    | 38:A:8834:HOH:O   | 1.74                     | 0.88              |
| 30:3:41:HIS:H     | 30:3:45:ASN:HD22  | 1.20                     | 0.88              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 11:J:26:LYS:HD2   | 11:J:28:ILE:HD12  | 1.54                     | 0.88              |
| 25:X:122:ARG:HH21 | 25:X:154:ARG:HD2  | 1.37                     | 0.88              |
| 1:A:2717:C:C2'    | 1:A:2718:C:H5''   | 2.04                     | 0.88              |
| 6:E:132:ASP:HB3   | 38:E:8364:HOH:O   | 1.74                     | 0.88              |
| 10:I:23:ILE:HD13  | 10:I:67:LEU:HD23  | 1.56                     | 0.88              |
| 15:N:164:THR:HG22 | 15:N:167:GLY:N    | 1.88                     | 0.87              |
| 5:D:212:GLN:HB2   | 5:D:257:THR:HG21  | 1.56                     | 0.87              |
| 16:O:144:GLY:O    | 16:O:147:ILE:HG22 | 1.73                     | 0.87              |
| 5:D:62:ARG:HA     | 5:D:65:MET:HE3    | 1.56                     | 0.87              |
| 1:A:1242:A:H5'    | 12:K:82:THR:HG23  | 1.53                     | 0.87              |
| 4:C:223:ARG:HG3   | 38:C:8616:HOH:O   | 1.73                     | 0.87              |
| 11:J:13:ALA:HA    | 11:J:91:HIS:HE1   | 1.38                     | 0.87              |
| 25:X:88:THR:HG22  | 25:X:89:ASP:H     | 1.39                     | 0.87              |
| 1:A:2123:A:OP2    | 38:A:4762:HOH:O   | 1.91                     | 0.86              |
| 6:E:236:THR:HG21  | 38:E:8375:HOH:O   | 1.74                     | 0.86              |
| 26:Y:15:ARG:HB3   | 26:Y:15:ARG:HH11  | 1.40                     | 0.86              |
| 12:K:19:MET:CE    | 12:K:132:LEU:HD11 | 2.05                     | 0.86              |
| 18:Q:115:SER:OG   | 18:Q:118:GLN:HG3  | 1.75                     | 0.86              |
| 2:B:3025:G:H3'    | 2:B:3026:C:H5'    | 1.55                     | 0.86              |
| 1:A:21:G:H5'      | 20:S:2:ILE:HA     | 1.56                     | 0.86              |
| 1:A:1166:A:H1'    | 1:A:1192:A:C2     | 2.10                     | 0.86              |
| 1:A:542:A:H5'     | 1:A:542:A:H8      | 1.38                     | 0.86              |
| 1:A:545:G:H5'     | 1:A:545:G:H8      | 1.40                     | 0.86              |
| 1:A:870:G:C2'     | 1:A:871:G:H5''    | 2.06                     | 0.86              |
| 1:A:1116:U:H3     | 1:A:1246:A:H62    | 1.23                     | 0.86              |
| 20:S:9:ASP:O      | 20:S:13:THR:HB    | 1.76                     | 0.86              |
| 28:1:39:CYS:HA    | 28:1:47:LEU:HD11  | 1.57                     | 0.86              |
| 6:E:5:ILE:HD11    | 6:E:16:VAL:CG2    | 2.06                     | 0.85              |
| 1:A:1244:U:OP1    | 12:K:18:ILE:HD13  | 1.76                     | 0.85              |
| 5:D:140:LEU:HA    | 38:D:8583:HOH:O   | 1.75                     | 0.85              |
| 1:A:2420:G:O2'    | 1:A:2421:G:H5'    | 1.75                     | 0.85              |
| 15:N:74:ARG:HH11  | 15:N:74:ARG:HG3   | 1.41                     | 0.85              |
| 18:Q:115:SER:H    | 18:Q:118:GLN:NE2  | 1.74                     | 0.85              |
| 31:4:25:VAL:HG22  | 31:4:68:LYS:HG3   | 1.58                     | 0.85              |
| 1:A:1474:C:H5'    | 1:A:1474:C:C6     | 2.12                     | 0.85              |
| 15:N:164:THR:HG23 | 15:N:165:SER:N    | 1.90                     | 0.85              |
| 16:O:87:LEU:HD12  | 16:O:186:LEU:HD21 | 1.57                     | 0.85              |
| 6:E:246:ARG:HB3   | 6:E:246:ARG:NH1   | 1.91                     | 0.85              |
| 11:J:162:SER:HB2  | 11:J:163:PRO:CD   | 2.07                     | 0.85              |
| 1:A:506:G:H22     | 1:A:509:A:C5'     | 1.88                     | 0.84              |
| 15:N:102:GLU:OE1  | 15:N:164:THR:HG21 | 1.77                     | 0.84              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:645:U:OP2     | 14:M:4:LYS:HE2    | 1.77                     | 0.84              |
| 1:A:1450:C:H4'    | 1:A:1451:C:OP2    | 1.76                     | 0.84              |
| 6:E:140:VAL:HB    | 38:E:8457:HOH:O   | 1.77                     | 0.84              |
| 2:B:3025:G:H3'    | 2:B:3026:C:C5'    | 2.07                     | 0.84              |
| 15:N:52:LEU:HD11  | 38:N:8616:HOH:O   | 1.76                     | 0.84              |
| 16:O:83:LEU:HD13  | 16:O:175:LEU:HD23 | 1.60                     | 0.84              |
| 25:X:122:ARG:NH2  | 25:X:154:ARG:HD2  | 1.92                     | 0.84              |
| 29:2:8:GLN:HE22   | 29:2:11:LYS:NZ    | 1.74                     | 0.84              |
| 38:B:8459:HOH:O   | 19:R:25:PRO:HB2   | 1.78                     | 0.84              |
| 11:J:59:ASN:H     | 11:J:59:ASN:HD22  | 1.21                     | 0.84              |
| 13:L:81:ARG:HB2   | 13:L:87:ARG:HH11  | 1.40                     | 0.84              |
| 25:X:88:THR:HG23  | 25:X:110:GLN:NE2  | 1.93                     | 0.83              |
| 29:2:8:GLN:HE22   | 29:2:11:LYS:HZ2   | 1.23                     | 0.83              |
| 28:1:42:CYS:SG    | 28:1:44:PHE:HB2   | 2.17                     | 0.83              |
| 1:A:2459:G:P      | 31:4:64:LYS:HB2   | 2.18                     | 0.83              |
| 38:A:3219:HOH:O   | 15:N:157:LEU:HD11 | 1.77                     | 0.83              |
| 11:J:13:ALA:HA    | 11:J:91:HIS:CE1   | 2.13                     | 0.83              |
| 14:M:79:ASP:HB3   | 38:M:8564:HOH:O   | 1.78                     | 0.83              |
| 1:A:960:G:H4'     | 38:A:6886:HOH:O   | 1.76                     | 0.83              |
| 27:Z:187:VAL:HG23 | 27:Z:192:ASP:HB2  | 1.61                     | 0.83              |
| 5:D:201:ASP:HB2   | 5:D:312:ARG:HD2   | 1.59                     | 0.83              |
| 31:4:70:ARG:HG2   | 31:4:77:ALA:HB2   | 1.60                     | 0.83              |
| 25:X:6:GLN:HB2    | 25:X:26:ILE:HD12  | 1.59                     | 0.83              |
| 7:F:27:ILE:HG22   | 7:F:28:GLY:H      | 1.43                     | 0.83              |
| 13:L:10:GLN:HE21  | 13:L:10:GLN:N     | 1.77                     | 0.83              |
| 1:A:1603:A:H5'    | 1:A:1605:G:O4'    | 1.78                     | 0.82              |
| 15:N:74:ARG:NH2   | 38:N:8632:HOH:O   | 2.11                     | 0.82              |
| 16:O:7:LYS:HE3    | 19:R:21:ARG:O     | 1.79                     | 0.82              |
| 4:C:121:ALA:O     | 4:C:124:VAL:HG22  | 1.79                     | 0.82              |
| 12:K:76:ASP:HA    | 38:K:5907:HOH:O   | 1.79                     | 0.82              |
| 16:O:113:SER:HB2  | 38:O:8556:HOH:O   | 1.77                     | 0.82              |
| 28:1:46:LYS:HB2   | 28:1:57:CYS:SG    | 2.19                     | 0.82              |
| 7:F:154:LYS:H     | 7:F:154:LYS:HD2   | 1.44                     | 0.82              |
| 16:O:86:LEU:HD12  | 16:O:125:ALA:HB2  | 1.60                     | 0.82              |
| 38:A:7015:HOH:O   | 31:4:60:LYS:HG3   | 1.79                     | 0.81              |
| 38:A:8631:HOH:O   | 15:N:82:ARG:HD2   | 1.80                     | 0.81              |
| 29:2:25:LYS:HE2   | 38:3:7213:HOH:O   | 1.79                     | 0.81              |
| 5:D:18:ARG:HG3    | 5:D:256:GLN:HG3   | 1.61                     | 0.81              |
| 8:G:100:ASP:HB2   | 38:G:2789:HOH:O   | 1.79                     | 0.81              |
| 11:J:26:LYS:HG2   | 11:J:28:ILE:H     | 1.44                     | 0.81              |
| 1:A:2506:A:HO2'   | 1:A:2507:G:H8     | 0.81                     | 0.81              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1184:C:H1'    | 38:A:6922:HOH:O   | 1.81                     | 0.81              |
| 1:A:1835:U:C5     | 1:A:1840:A:N7     | 2.48                     | 0.81              |
| 38:A:4426:HOH:O   | 2:B:3103:A:H4'    | 1.81                     | 0.81              |
| 11:J:55:GLN:HE21  | 11:J:124:ARG:HE   | 1.28                     | 0.81              |
| 11:J:2:PRO:HB2    | 38:J:8365:HOH:O   | 1.81                     | 0.80              |
| 4:C:192:VAL:HB    | 38:C:8606:HOH:O   | 1.81                     | 0.80              |
| 7:F:20:LYS:HA     | 7:F:75:LEU:O      | 1.82                     | 0.80              |
| 27:Z:187:VAL:HG23 | 27:Z:192:ASP:CB   | 2.12                     | 0.80              |
| 28:1:38:LYS:HG2   | 28:1:45:LYS:HG2   | 1.62                     | 0.80              |
| 1:A:1974:G:OP1    | 38:A:6321:HOH:O   | 1.99                     | 0.80              |
| 1:A:2506:A:O2'    | 1:A:2507:G:H8     | 1.62                     | 0.80              |
| 11:J:5:MET:HG3    | 38:J:8365:HOH:O   | 1.80                     | 0.80              |
| 28:1:47:LEU:HD23  | 28:1:57:CYS:HB2   | 1.63                     | 0.80              |
| 1:A:560:C:H42     | 1:A:597:A:H61     | 1.29                     | 0.80              |
| 1:A:1205:U:H2'    | 1:A:1206:U:H5'    | 1.62                     | 0.80              |
| 4:C:69:LEU:HD21   | 4:C:120:ARG:HB3   | 1.62                     | 0.80              |
| 9:H:91:VAL:HG12   | 9:H:92:GLY:H      | 1.47                     | 0.80              |
| 23:V:9:CYS:SG     | 23:V:11:THR:HG23  | 2.21                     | 0.79              |
| 1:A:289:G:H22     | 1:A:363:A:H2      | 1.30                     | 0.79              |
| 1:A:1118:A:C8     | 1:A:1118:A:H3'    | 2.18                     | 0.79              |
| 1:A:1684:A:H1'    | 30:3:43:ARG:HH22  | 1.47                     | 0.79              |
| 1:A:2586:U:H3     | 1:A:2592:G:H22    | 1.30                     | 0.79              |
| 1:A:1165:G:H4'    | 1:A:1174:A:O2'    | 1.81                     | 0.79              |
| 1:A:2466:G:OP1    | 38:A:3142:HOH:O   | 2.00                     | 0.79              |
| 14:M:133:VAL:HA   | 38:M:8577:HOH:O   | 1.80                     | 0.79              |
| 1:A:346:U:H4'     | 38:A:6302:HOH:O   | 1.83                     | 0.79              |
| 12:K:26:VAL:HG13  | 12:K:36:VAL:HG11  | 1.65                     | 0.79              |
| 38:A:3278:HOH:O   | 15:N:189:VAL:HG21 | 1.83                     | 0.78              |
| 1:A:31:C:H4'      | 38:A:6880:HOH:O   | 1.83                     | 0.78              |
| 13:L:30:LYS:O     | 13:L:55:VAL:HG13  | 1.82                     | 0.78              |
| 38:A:6460:HOH:O   | 19:R:9:GLY:HA2    | 1.82                     | 0.78              |
| 6:E:246:ARG:HB3   | 6:E:246:ARG:HH11  | 1.45                     | 0.78              |
| 12:K:99:GLU:HA    | 38:K:7377:HOH:O   | 1.84                     | 0.78              |
| 26:Y:76:ARG:HH11  | 26:Y:76:ARG:HG3   | 1.49                     | 0.78              |
| 1:A:381:G:H5''    | 38:A:3807:HOH:O   | 1.84                     | 0.78              |
| 7:F:19:GLU:O      | 7:F:20:LYS:HG2    | 1.84                     | 0.78              |
| 6:E:47:GLY:HA2    | 6:E:92:PRO:HB2    | 1.65                     | 0.78              |
| 13:L:74:VAL:HG13  | 13:L:113:ILE:HG23 | 1.65                     | 0.78              |
| 27:Z:185:VAL:HA   | 38:Z:8566:HOH:O   | 1.84                     | 0.78              |
| 5:D:145:HIS:HD2   | 5:D:146:THR:O     | 1.67                     | 0.78              |
| 11:J:3:GLY:HA2    | 11:J:57:ARG:HH12  | 1.48                     | 0.78              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 11:J:139:ASP:N    | 11:J:140:PRO:HD3  | 1.98                     | 0.78              |
| 15:N:87:MET:HG2   | 31:4:46:ILE:CG2   | 2.14                     | 0.78              |
| 27:Z:216:ARG:HD3  | 38:Z:8574:HOH:O   | 1.83                     | 0.78              |
| 6:E:107:ARG:NH1   | 6:E:107:ARG:HB3   | 1.99                     | 0.77              |
| 1:A:2468:A:H61    | 31:4:48:ASN:HD21  | 1.27                     | 0.77              |
| 1:A:2812:A:H2     | 1:A:2814:A:H62    | 1.32                     | 0.77              |
| 11:J:150:LYS:HE2  | 38:J:8383:HOH:O   | 1.84                     | 0.77              |
| 12:K:74:ARG:HB3   | 12:K:74:ARG:HH11  | 1.48                     | 0.77              |
| 25:X:4:LEU:HD22   | 25:X:52:VAL:HG21  | 1.66                     | 0.77              |
| 1:A:288:A:H61     | 1:A:364:C:H42     | 1.32                     | 0.77              |
| 1:A:1160:G:C5'    | 1:A:1161:A:H5'    | 2.14                     | 0.77              |
| 9:H:91:VAL:HG12   | 9:H:92:GLY:N      | 2.00                     | 0.77              |
| 38:A:5753:HOH:O   | 7:F:99:ASP:HA     | 1.84                     | 0.77              |
| 9:H:96:ALA:HA     | 38:H:3111:HOH:O   | 1.84                     | 0.77              |
| 12:K:103:VAL:HG12 | 38:K:5907:HOH:O   | 1.84                     | 0.77              |
| 15:N:157:LEU:HA   | 35:N:8518:CL:CL   | 2.22                     | 0.77              |
| 1:A:1118:A:H3'    | 1:A:1118:A:H8     | 1.48                     | 0.77              |
| 11:J:130:HIS:CD2  | 11:J:133:ILE:HD11 | 2.20                     | 0.77              |
| 27:Z:220:GLU:HG2  | 38:Z:8553:HOH:O   | 1.85                     | 0.77              |
| 1:A:338:C:H4'     | 6:E:174:ILE:CD1   | 2.15                     | 0.76              |
| 12:K:133:GLY:O    | 12:K:137:GLU:HG3  | 1.85                     | 0.76              |
| 8:G:97:VAL:HG12   | 38:G:4191:HOH:O   | 1.84                     | 0.76              |
| 26:Y:71:ARG:HB3   | 26:Y:88:GLU:OE1   | 1.85                     | 0.76              |
| 2:B:3014:G:H5'    | 2:B:3014:G:H8     | 1.50                     | 0.76              |
| 2:B:3023:U:H6     | 2:B:3023:U:H5''   | 1.50                     | 0.76              |
| 18:Q:59:ARG:NH2   | 18:Q:66:GLN:HE22  | 1.82                     | 0.76              |
| 1:A:1058:A:H2'    | 1:A:1060:C:H5''   | 1.68                     | 0.76              |
| 18:Q:115:SER:N    | 18:Q:118:GLN:HE21 | 1.80                     | 0.76              |
| 1:A:450:C:OP1     | 6:E:184:ARG:NH2   | 2.17                     | 0.76              |
| 1:A:559:U:H6      | 1:A:559:U:H5'     | 1.51                     | 0.76              |
| 1:A:871:G:H8      | 1:A:871:G:C5'     | 1.98                     | 0.76              |
| 1:A:962:C:H1'     | 16:O:5:ARG:HH12   | 1.50                     | 0.76              |
| 1:A:2466:G:C5'    | 38:A:3142:HOH:O   | 2.23                     | 0.76              |
| 2:B:3023:U:H3'    | 38:B:8482:HOH:O   | 1.85                     | 0.76              |
| 28:1:29:VAL:O     | 28:1:33:HIS:HB2   | 1.86                     | 0.76              |
| 11:J:59:ASN:HD22  | 11:J:59:ASN:N     | 1.83                     | 0.76              |
| 1:A:2578:G:H5'    | 1:A:2578:G:H8     | 1.49                     | 0.76              |
| 5:D:258:GLY:H     | 5:D:260:HIS:CE1   | 2.03                     | 0.76              |
| 11:J:141:ASN:HA   | 38:J:8366:HOH:O   | 1.84                     | 0.76              |
| 1:A:31:C:H2'      | 38:A:7147:HOH:O   | 1.86                     | 0.76              |
| 25:X:68:THR:HG23  | 25:X:69:ARG:HG2   | 1.67                     | 0.76              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:X:21:LEU:HD22  | 25:X:26:ILE:CD1   | 2.16                     | 0.76              |
| 1:A:2271:G:OP2    | 38:A:8940:HOH:O   | 2.05                     | 0.75              |
| 1:A:2467:A:H3'    | 38:A:4927:HOH:O   | 1.85                     | 0.75              |
| 9:H:50:VAL:HG21   | 9:H:63:ILE:HG21   | 1.65                     | 0.75              |
| 8:G:6:GLU:HA      | 8:G:46:THR:HG22   | 1.69                     | 0.75              |
| 14:M:120:LEU:HD12 | 14:M:133:VAL:HG21 | 1.69                     | 0.75              |
| 1:A:282:C:H1'     | 1:A:368:C:N4      | 2.00                     | 0.75              |
| 1:A:1741:U:O2'    | 1:A:2723:G:H4'    | 1.87                     | 0.75              |
| 4:C:88:ILE:HD13   | 4:C:100:PRO:HD3   | 1.68                     | 0.75              |
| 11:J:27:LYS:N     | 11:J:58:HIS:HD2   | 1.84                     | 0.75              |
| 20:S:99:ALA:HB1   | 20:S:109:MET:CE   | 2.15                     | 0.75              |
| 1:A:711:G:H1'     | 38:A:6554:HOH:O   | 1.87                     | 0.75              |
| 4:C:35:GLY:O      | 4:C:36:ASP:HB3    | 1.86                     | 0.75              |
| 7:F:146:LYS:NZ    | 16:O:107:ASN:HD21 | 1.85                     | 0.75              |
| 13:L:39:GLY:HA2   | 38:L:4183:HOH:O   | 1.86                     | 0.75              |
| 25:X:72:PRO:HG2   | 25:X:77:ALA:HB3   | 1.67                     | 0.75              |
| 1:A:1771:U:H4'    | 28:1:20:LEU:HD21  | 1.67                     | 0.75              |
| 24:W:1:THR:HG23   | 24:W:2:VAL:H      | 1.51                     | 0.75              |
| 1:A:2094:G:H4'    | 5:D:245:SER:HB3   | 1.66                     | 0.75              |
| 1:A:1191:A:H3'    | 1:A:1192:A:H5''   | 1.68                     | 0.75              |
| 1:A:2508:C:H2'    | 38:A:6213:HOH:O   | 1.86                     | 0.75              |
| 28:1:46:LYS:HB2   | 28:1:57:CYS:HG    | 1.52                     | 0.75              |
| 1:A:2433:A:H2'    | 1:A:2434:A:C8     | 2.22                     | 0.75              |
| 2:B:3069:U:OP1    | 16:O:4:PRO:HG3    | 1.86                     | 0.75              |
| 6:E:76:ARG:HD2    | 38:E:8439:HOH:O   | 1.85                     | 0.75              |
| 8:G:107:PHE:CE2   | 8:G:108:LEU:HD13  | 2.22                     | 0.75              |
| 11:J:28:ILE:HA    | 11:J:62:GLU:OE1   | 1.87                     | 0.75              |
| 14:M:67:ARG:O     | 14:M:71:GLU:HG3   | 1.87                     | 0.74              |
| 28:1:18:TYR:HB3   | 28:1:22:ILE:HG21  | 1.68                     | 0.74              |
| 1:A:1751:G:C2'    | 1:A:1752:G:H5''   | 2.11                     | 0.74              |
| 20:S:8:ALA:HB1    | 20:S:13:THR:HG21  | 1.69                     | 0.74              |
| 15:N:87:MET:CB    | 31:4:46:ILE:HG21  | 2.17                     | 0.74              |
| 8:G:166:VAL:HG12  | 38:G:3134:HOH:O   | 1.87                     | 0.74              |
| 28:1:38:LYS:HE2   | 28:1:45:LYS:HE2   | 1.68                     | 0.74              |
| 31:4:65:THR:HG23  | 31:4:67:LEU:HG    | 1.69                     | 0.74              |
| 1:A:2812:A:N7     | 38:A:6974:HOH:O   | 2.20                     | 0.74              |
| 15:N:152:ARG:HG3  | 38:N:8559:HOH:O   | 1.87                     | 0.74              |
| 23:V:13:ILE:HG12  | 23:V:32:CYS:CB    | 2.17                     | 0.74              |
| 6:E:162:VAL:HG12  | 6:E:192:ILE:HD11  | 1.69                     | 0.74              |
| 7:F:95:THR:O      | 7:F:97:GLN:N      | 2.18                     | 0.74              |
| 38:B:8467:HOH:O   | 16:O:147:ILE:HD12 | 1.88                     | 0.74              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:3056:A:C2'    | 2:B:3057:A:H5''   | 2.18                     | 0.73              |
| 28:1:49:ARG:HD2   | 38:1:8426:HOH:O   | 1.87                     | 0.73              |
| 4:C:36:ASP:OD2    | 4:C:85:ASP:HB2    | 1.87                     | 0.73              |
| 1:A:2755:G:H1'    | 38:A:4164:HOH:O   | 1.88                     | 0.73              |
| 15:N:173:LEU:HD23 | 15:N:183:VAL:HG12 | 1.70                     | 0.73              |
| 16:O:61:ALA:HB3   | 16:O:88:ALA:HB2   | 1.71                     | 0.73              |
| 23:V:47:ARG:HG3   | 38:V:4381:HOH:O   | 1.88                     | 0.73              |
| 1:A:2748:G:H2'    | 38:A:6999:HOH:O   | 1.88                     | 0.73              |
| 25:X:137:GLN:HE21 | 25:X:141:HIS:HE1  | 1.36                     | 0.73              |
| 1:A:820:G:OP1     | 28:1:17:ARG:NH2   | 2.20                     | 0.73              |
| 1:A:1209:C:H4'    | 38:A:4753:HOH:O   | 1.88                     | 0.73              |
| 1:A:1701:A:H5'    | 38:A:5741:HOH:O   | 1.87                     | 0.73              |
| 15:N:79:LYS:HD3   | 38:N:8563:HOH:O   | 1.88                     | 0.73              |
| 1:A:1130:U:H2'    | 1:A:1131:G:O4'    | 1.89                     | 0.73              |
| 1:A:1829:A:H61    | 28:1:18:TYR:HA    | 1.54                     | 0.73              |
| 5:D:71:VAL:HG11   | 5:D:296:LEU:HB3   | 1.70                     | 0.73              |
| 25:X:122:ARG:HG2  | 25:X:122:ARG:HH11 | 1.52                     | 0.73              |
| 13:L:62:PRO:HG3   | 13:L:65:ARG:HH21  | 1.54                     | 0.73              |
| 2:B:3024:U:O2'    | 2:B:3025:G:H4'    | 1.88                     | 0.73              |
| 1:A:1160:G:H5'    | 1:A:1161:A:C5'    | 2.15                     | 0.72              |
| 38:A:3951:HOH:O   | 15:N:146:GLN:HG2  | 1.89                     | 0.72              |
| 7:F:35:ALA:N      | 38:F:5576:HOH:O   | 2.22                     | 0.72              |
| 1:A:2404:G:O3'    | 38:A:6058:HOH:O   | 2.06                     | 0.72              |
| 4:C:135:VAL:HG21  | 4:C:147:ARG:NH1   | 2.04                     | 0.72              |
| 11:J:56:ILE:HG22  | 11:J:61:LEU:HD22  | 1.71                     | 0.72              |
| 16:O:11:ARG:HG3   | 16:O:14:ARG:NH1   | 2.03                     | 0.72              |
| 20:S:39:THR:HG23  | 20:S:107:GLU:O    | 1.89                     | 0.72              |
| 31:4:74:CYS:SG    | 31:4:76:LYS:HB2   | 2.28                     | 0.72              |
| 10:I:12:ILE:N     | 10:I:13:PRO:HD3   | 2.04                     | 0.72              |
| 15:N:87:MET:CB    | 31:4:46:ILE:HD13  | 2.20                     | 0.72              |
| 1:A:182:G:H5'     | 38:A:4632:HOH:O   | 1.87                     | 0.72              |
| 38:A:4311:HOH:O   | 12:K:47:THR:HB    | 1.89                     | 0.72              |
| 8:G:101:GLU:HB2   | 8:G:116:THR:O     | 1.90                     | 0.72              |
| 5:D:179:LEU:O     | 5:D:183:GLU:HG2   | 1.90                     | 0.72              |
| 15:N:72:SER:O     | 38:N:8655:HOH:O   | 2.06                     | 0.72              |
| 1:A:1666:C:H2'    | 1:A:1667:A:H5'    | 1.70                     | 0.72              |
| 1:A:2620:U:O2'    | 38:A:6629:HOH:O   | 2.06                     | 0.72              |
| 11:J:137:ASN:O    | 11:J:139:ASP:N    | 2.22                     | 0.72              |
| 20:S:39:THR:HG22  | 20:S:42:GLU:H     | 1.53                     | 0.72              |
| 1:A:113:A:OP2     | 1:A:114:A:H2'     | 1.89                     | 0.72              |
| 1:A:172:U:OP2     | 38:A:5669:HOH:O   | 2.07                     | 0.72              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:D:141:ARG:HG2   | 5:D:165:ARG:HA    | 1.70                     | 0.72              |
| 12:K:75:PRO:HG2   | 12:K:105:LEU:HD21 | 1.71                     | 0.72              |
| 15:N:139:PRO:O    | 15:N:140:ALA:HB3  | 1.89                     | 0.72              |
| 14:M:114:VAL:HG11 | 38:M:8577:HOH:O   | 1.89                     | 0.72              |
| 15:N:59:GLY:HA3   | 15:N:141:ILE:CD1  | 2.19                     | 0.72              |
| 38:A:6880:HOH:O   | 22:U:9:LYS:HB2    | 1.89                     | 0.72              |
| 19:R:64:GLU:HG3   | 19:R:74:ASP:OD2   | 1.89                     | 0.72              |
| 1:A:272:A:H3'     | 38:A:6987:HOH:O   | 1.88                     | 0.71              |
| 1:A:2346:C:O5'    | 1:A:2346:C:H6     | 1.73                     | 0.71              |
| 8:G:11:VAL:HG12   | 8:G:12:ASP:N      | 2.05                     | 0.71              |
| 10:I:12:ILE:HA    | 38:I:4499:HOH:O   | 1.89                     | 0.71              |
| 13:L:106:GLY:HA3  | 38:L:5264:HOH:O   | 1.89                     | 0.71              |
| 15:N:68:ARG:O     | 15:N:68:ARG:HD3   | 1.89                     | 0.71              |
| 17:P:32:ARG:O     | 17:P:32:ARG:HD3   | 1.87                     | 0.71              |
| 17:P:47:ARG:HH11  | 17:P:47:ARG:HG3   | 1.55                     | 0.71              |
| 1:A:2467:A:C2'    | 38:A:4927:HOH:O   | 2.31                     | 0.71              |
| 1:A:284:C:H4'     | 1:A:285:A:O5'     | 1.88                     | 0.71              |
| 15:N:106:ASN:HD22 | 15:N:114:VAL:HG23 | 1.56                     | 0.71              |
| 24:W:12:THR:HG22  | 24:W:15:GLU:CG    | 2.19                     | 0.71              |
| 4:C:179:MET:HG2   | 4:C:186:TRP:CB    | 2.20                     | 0.71              |
| 11:J:162:SER:CB   | 11:J:163:PRO:HD3  | 2.20                     | 0.71              |
| 28:1:30:GLU:HA    | 28:1:33:HIS:HB3   | 1.73                     | 0.71              |
| 4:C:76:VAL:HG23   | 28:1:63:LYS:HB3   | 1.73                     | 0.71              |
| 11:J:139:ASP:HA   | 38:J:8370:HOH:O   | 1.88                     | 0.71              |
| 1:A:2291:A:C8     | 1:A:2309:C:H5'    | 2.25                     | 0.71              |
| 1:A:2310:G:OP2    | 11:J:114:PRO:HD2  | 1.89                     | 0.71              |
| 1:A:2638:G:H1'    | 38:A:7218:HOH:O   | 1.90                     | 0.71              |
| 2:B:3006:C:OP1    | 16:O:37:ARG:NH1   | 2.22                     | 0.71              |
| 5:D:190:MET:HE2   | 5:D:194:PHE:CD1   | 2.25                     | 0.71              |
| 11:J:33:MET:HB2   | 11:J:83:PHE:HB3   | 1.72                     | 0.71              |
| 1:A:1701:A:H4'    | 1:A:1702:U:H5''   | 1.72                     | 0.71              |
| 6:E:12:THR:HB     | 38:E:8447:HOH:O   | 1.89                     | 0.71              |
| 38:A:3555:HOH:O   | 5:D:27:ASN:HB2    | 1.90                     | 0.71              |
| 23:V:13:ILE:HG12  | 23:V:32:CYS:HB3   | 1.70                     | 0.71              |
| 1:A:877:G:H5'     | 1:A:878:G:OP1     | 1.91                     | 0.71              |
| 1:A:1118:A:H62    | 1:A:1244:U:H3     | 1.39                     | 0.71              |
| 14:M:34:GLY:HA3   | 14:M:38:HIS:CE1   | 2.25                     | 0.71              |
| 14:M:143:THR:HG22 | 14:M:144:ASP:N    | 2.05                     | 0.71              |
| 25:X:81:ASP:OD1   | 25:X:92:ASP:HB2   | 1.91                     | 0.71              |
| 1:A:113:A:H3'     | 1:A:114:A:H5''    | 1.71                     | 0.71              |
| 13:L:81:ARG:HB2   | 13:L:87:ARG:NH1   | 2.04                     | 0.71              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1741:U:H5'   | 1:A:1742:A:OP1    | 1.90                     | 0.70              |
| 1:A:2346:C:O2'   | 7:F:52:THR:HG21   | 1.91                     | 0.70              |
| 1:A:2502:C:C2'   | 1:A:2503:A:H5'    | 2.21                     | 0.70              |
| 6:E:46:TYR:CE2   | 6:E:98:ARG:NH1    | 2.59                     | 0.70              |
| 16:O:48:VAL:CG1  | 16:O:55:ASP:HB3   | 2.20                     | 0.70              |
| 1:A:1666:C:O2'   | 1:A:1667:A:H5''   | 1.91                     | 0.70              |
| 1:A:2421:G:H4'   | 38:A:4257:HOH:O   | 1.91                     | 0.70              |
| 38:A:5258:HOH:O  | 15:N:170:CYS:SG   | 2.48                     | 0.70              |
| 5:D:162:MET:HE3  | 5:D:308:LEU:HD21  | 1.72                     | 0.70              |
| 15:N:122:GLU:OE2 | 15:N:127:LYS:HE2  | 1.91                     | 0.70              |
| 6:E:104:ASP:HA   | 6:E:107:ARG:NH1   | 2.06                     | 0.70              |
| 6:E:236:THR:H    | 6:E:239:ALA:HB3   | 1.55                     | 0.70              |
| 7:F:91:ALA:HB1   | 38:F:5198:HOH:O   | 1.91                     | 0.70              |
| 15:N:164:THR:CG2 | 15:N:167:GLY:H    | 1.95                     | 0.70              |
| 18:Q:10:ALA:HA   | 18:Q:13:VAL:HG12  | 1.73                     | 0.70              |
| 20:S:18:LEU:HB2  | 20:S:143:VAL:HG12 | 1.72                     | 0.70              |
| 1:A:1119:G:N2    | 1:A:1246:A:C2     | 2.59                     | 0.70              |
| 1:A:1164:U:H3    | 1:A:1192:A:H2     | 1.38                     | 0.70              |
| 1:A:2467:A:OP1   | 38:A:8560:HOH:O   | 2.09                     | 0.70              |
| 11:J:14:TYR:H    | 11:J:91:HIS:CE1   | 2.09                     | 0.70              |
| 23:V:9:CYS:HA    | 23:V:52:THR:HG23  | 1.72                     | 0.70              |
| 25:X:4:LEU:HD22  | 25:X:52:VAL:CG2   | 2.21                     | 0.70              |
| 1:A:2281:C:C2'   | 1:A:2282:U:H5'    | 2.20                     | 0.70              |
| 2:B:3006:C:H5''  | 16:O:37:ARG:HH12  | 1.55                     | 0.70              |
| 9:H:53:ASP:OD1   | 9:H:80:GLN:HB2    | 1.91                     | 0.70              |
| 11:J:75:SER:O    | 11:J:79:ALA:HB2   | 1.92                     | 0.70              |
| 38:A:9293:HOH:O  | 13:L:39:GLY:HA3   | 1.90                     | 0.70              |
| 6:E:25:PRO:HG2   | 38:E:8325:HOH:O   | 1.92                     | 0.70              |
| 6:E:78:ARG:HG3   | 6:E:78:ARG:HH11   | 1.56                     | 0.70              |
| 2:B:3023:U:H5''  | 2:B:3023:U:C6     | 2.27                     | 0.70              |
| 11:J:26:LYS:HD3  | 11:J:89:PRO:HG3   | 1.73                     | 0.70              |
| 26:Y:18:ARG:NH1  | 38:Y:4132:HOH:O   | 2.16                     | 0.70              |
| 11:J:27:LYS:H    | 11:J:58:HIS:CD2   | 2.04                     | 0.70              |
| 11:J:140:PRO:HB3 | 38:J:8381:HOH:O   | 1.92                     | 0.70              |
| 12:K:107:ASN:ND2 | 12:K:109:TYR:H    | 1.90                     | 0.70              |
| 15:N:12:TRP:CE2  | 15:N:20:ILE:HD11  | 2.27                     | 0.70              |
| 15:N:74:ARG:HG3  | 15:N:74:ARG:NH1   | 2.02                     | 0.70              |
| 1:A:299:U:H5'    | 38:A:6794:HOH:O   | 1.92                     | 0.69              |
| 1:A:2837:U:H2'   | 38:A:6298:HOH:O   | 1.92                     | 0.69              |
| 38:A:6913:HOH:O  | 6:E:188:ARG:HD3   | 1.92                     | 0.69              |
| 9:H:63:ILE:HB    | 9:H:64:PRO:HD3    | 1.72                     | 0.69              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:2526:C:O2'   | 1:A:2527:U:H5'    | 1.92                     | 0.69              |
| 5:D:148:PRO:HD2  | 38:D:8584:HOH:O   | 1.91                     | 0.69              |
| 20:S:39:THR:HB   | 20:S:42:GLU:HG3   | 1.73                     | 0.69              |
| 1:A:461:C:H2'    | 38:A:3491:HOH:O   | 1.92                     | 0.69              |
| 1:A:541:C:C2'    | 1:A:542:A:H5''    | 2.22                     | 0.69              |
| 1:A:1080:C:H4'   | 1:A:1081:A:OP1    | 1.90                     | 0.69              |
| 1:A:1377:C:H6    | 1:A:1377:C:H5'    | 1.57                     | 0.69              |
| 1:A:2249:G:OP2   | 38:A:4912:HOH:O   | 2.10                     | 0.69              |
| 1:A:1625:U:H4'   | 38:A:4149:HOH:O   | 1.92                     | 0.69              |
| 6:E:139:VAL:HG13 | 38:E:8454:HOH:O   | 1.90                     | 0.69              |
| 1:A:182:G:H4'    | 15:N:157:LEU:HD13 | 1.75                     | 0.69              |
| 4:C:199:HIS:CD2  | 4:C:201:PHE:H     | 2.10                     | 0.69              |
| 11:J:55:GLN:HE22 | 11:J:91:HIS:CD2   | 2.10                     | 0.69              |
| 1:A:1380:U:OP1   | 38:A:7331:HOH:O   | 2.09                     | 0.69              |
| 1:A:2433:A:H2'   | 1:A:2434:A:H8     | 1.56                     | 0.69              |
| 16:O:164:ASP:CG  | 16:O:167:ASP:HA   | 2.13                     | 0.69              |
| 25:X:88:THR:HG22 | 25:X:89:ASP:N     | 2.08                     | 0.69              |
| 1:A:541:C:H2'    | 1:A:542:A:C5'     | 2.22                     | 0.69              |
| 4:C:33:GLU:O     | 4:C:34:ASP:HB2    | 1.92                     | 0.69              |
| 1:A:2100:A:H5'   | 38:A:6844:HOH:O   | 1.92                     | 0.69              |
| 2:B:3048:C:H4'   | 16:O:141:ARG:HH21 | 1.57                     | 0.69              |
| 7:F:88:LEU:HB2   | 7:F:89:PRO:HD3    | 1.75                     | 0.69              |
| 15:N:139:PRO:O   | 15:N:140:ALA:CB   | 2.41                     | 0.69              |
| 16:O:159:TYR:HB3 | 16:O:162:ASP:HB2  | 1.74                     | 0.69              |
| 24:W:39:ALA:N    | 24:W:40:PRO:HD2   | 2.08                     | 0.69              |
| 1:A:69:A:H5'     | 1:A:69:A:C8       | 2.28                     | 0.69              |
| 1:A:214:U:H5'    | 38:A:5600:HOH:O   | 1.91                     | 0.69              |
| 2:B:3025:G:C3'   | 2:B:3026:C:H5'    | 2.22                     | 0.69              |
| 17:P:47:ARG:NH1  | 38:P:4564:HOH:O   | 2.24                     | 0.69              |
| 22:U:9:LYS:HE3   | 22:U:13:ARG:NH1   | 2.08                     | 0.69              |
| 26:Y:72:VAL:HG22 | 26:Y:85:VAL:HG12  | 1.75                     | 0.69              |
| 30:3:39:ARG:HG2  | 38:3:3143:HOH:O   | 1.93                     | 0.69              |
| 1:A:447:A:OP1    | 22:U:2:LYS:HG2    | 1.92                     | 0.69              |
| 9:H:110:GLU:HG2  | 38:H:6926:HOH:O   | 1.92                     | 0.69              |
| 11:J:69:ASN:O    | 11:J:72:VAL:HG12  | 1.92                     | 0.69              |
| 38:A:6913:HOH:O  | 6:E:188:ARG:CD    | 2.41                     | 0.68              |
| 11:J:41:THR:HA   | 38:J:8396:HOH:O   | 1.91                     | 0.68              |
| 1:A:1160:G:N3    | 38:A:5102:HOH:O   | 2.26                     | 0.68              |
| 1:A:1743:G:N7    | 38:A:8768:HOH:O   | 2.25                     | 0.68              |
| 5:D:254:GLN:HG3  | 38:D:8530:HOH:O   | 1.92                     | 0.68              |
| 28:1:47:LEU:CD2  | 28:1:57:CYS:HB2   | 2.23                     | 0.68              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 30:3:41:HIS:N     | 30:3:45:ASN:HD22 | 1.89                     | 0.68              |
| 1:A:371:U:H2'     | 1:A:372:A:H8     | 1.58                     | 0.68              |
| 1:A:542:A:H5'     | 1:A:542:A:C8     | 2.27                     | 0.68              |
| 1:A:2467:A:C3'    | 38:A:4927:HOH:O  | 2.42                     | 0.68              |
| 2:B:3039:U:H1'    | 2:B:3044:A:H61   | 1.57                     | 0.68              |
| 16:O:151:ASP:O    | 16:O:154:LEU:HB2 | 1.94                     | 0.68              |
| 21:T:51:GLN:HE21  | 21:T:53:ASN:HD21 | 1.41                     | 0.68              |
| 1:A:1909:A:N1     | 1:A:2128:G:H1'   | 2.08                     | 0.68              |
| 15:N:37:VAL:HG21  | 15:N:108:LYS:HG3 | 1.74                     | 0.68              |
| 26:Y:78:GLU:CG    | 26:Y:79:GLU:H    | 2.06                     | 0.68              |
| 1:A:2316:G:H8     | 38:A:5124:HOH:O  | 1.76                     | 0.68              |
| 6:E:242:GLU:HG3   | 38:E:8383:HOH:O  | 1.92                     | 0.68              |
| 1:A:516:A:OP2     | 38:A:5115:HOH:O  | 2.10                     | 0.68              |
| 22:U:61:GLU:HG3   | 38:U:3851:HOH:O  | 1.93                     | 0.68              |
| 25:X:6:GLN:HB2    | 25:X:26:ILE:CD1  | 2.23                     | 0.68              |
| 25:X:13:MET:HE1   | 25:X:18:GLN:HA   | 1.75                     | 0.68              |
| 25:X:21:LEU:HD22  | 25:X:26:ILE:HD11 | 1.76                     | 0.68              |
| 1:A:541:C:H2'     | 1:A:542:A:H5''   | 1.75                     | 0.68              |
| 16:O:164:ASP:OD2  | 16:O:167:ASP:HA  | 1.94                     | 0.68              |
| 21:T:37:VAL:O     | 21:T:41:VAL:HG23 | 1.93                     | 0.68              |
| 28:1:62:TYR:CE2   | 28:1:64:ILE:HG23 | 2.29                     | 0.68              |
| 1:A:21:G:C5'      | 20:S:2:ILE:HA    | 2.23                     | 0.68              |
| 1:A:2301:A:H5''   | 1:A:2302:A:H5'   | 1.75                     | 0.68              |
| 1:A:2716:G:H5''   | 5:D:206:THR:HG21 | 1.76                     | 0.68              |
| 1:A:485:A:N3      | 1:A:487:G:H5''   | 2.09                     | 0.68              |
| 1:A:2830:U:H3'    | 38:A:4703:HOH:O  | 1.92                     | 0.68              |
| 2:B:3013:A:O2'    | 2:B:3014:G:H5''  | 1.94                     | 0.68              |
| 9:H:99:THR:HA     | 38:H:3461:HOH:O  | 1.94                     | 0.68              |
| 25:X:22:GLU:HG2   | 25:X:27:HIS:CD2  | 2.28                     | 0.68              |
| 1:A:739:G:C5      | 38:A:7001:HOH:O  | 2.47                     | 0.67              |
| 12:K:107:ASN:HD21 | 12:K:109:TYR:HB2 | 1.59                     | 0.67              |
| 1:A:545:G:H5'     | 1:A:545:G:C8     | 2.28                     | 0.67              |
| 1:A:918:G:N7      | 38:A:9993:HOH:O  | 2.27                     | 0.67              |
| 2:B:3092:G:H2'    | 2:B:3093:A:C8    | 2.29                     | 0.67              |
| 15:N:78:ASN:ND2   | 38:N:8651:HOH:O  | 2.26                     | 0.67              |
| 27:Z:155:ARG:NH1  | 38:Z:8562:HOH:O  | 2.26                     | 0.67              |
| 1:A:69:A:H5'      | 1:A:69:A:H8      | 1.59                     | 0.67              |
| 1:A:689:G:N3      | 38:A:8933:HOH:O  | 2.26                     | 0.67              |
| 1:A:2748:G:H5'    | 38:A:6999:HOH:O  | 1.94                     | 0.67              |
| 5:D:7:ARG:HG2     | 5:D:7:ARG:HH11   | 1.58                     | 0.67              |
| 7:F:22:VAL:HG22   | 7:F:74:THR:HG22  | 1.76                     | 0.67              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:281:U:H2'    | 1:A:282:C:O4'     | 1.95                     | 0.67              |
| 1:A:1172:G:H1'   | 38:A:4448:HOH:O   | 1.93                     | 0.67              |
| 1:A:2464:C:H5''  | 1:A:2465:A:OP1    | 1.93                     | 0.67              |
| 16:O:73:ALA:N    | 38:O:8563:HOH:O   | 2.28                     | 0.67              |
| 16:O:119:GLN:O   | 16:O:123:ILE:HG13 | 1.94                     | 0.67              |
| 26:Y:41:PHE:O    | 26:Y:43:VAL:HG23  | 1.94                     | 0.67              |
| 7:F:105:SER:CB   | 7:F:131:THR:HG23  | 2.21                     | 0.67              |
| 15:N:89:ASN:HA   | 38:N:8557:HOH:O   | 1.94                     | 0.67              |
| 17:P:42:GLU:HB2  | 38:P:2176:HOH:O   | 1.92                     | 0.67              |
| 1:A:544:G:H2'    | 1:A:545:G:H5''    | 1.77                     | 0.67              |
| 4:C:8:ARG:HG2    | 38:C:8558:HOH:O   | 1.94                     | 0.67              |
| 12:K:19:MET:HE2  | 12:K:79:PHE:HA    | 1.76                     | 0.67              |
| 17:P:38:ARG:NH1  | 38:P:7674:HOH:O   | 2.27                     | 0.67              |
| 22:U:63:ILE:HD11 | 22:U:75:GLU:HB2   | 1.77                     | 0.67              |
| 1:A:236:A:H4'    | 1:A:237:G:H5'     | 1.77                     | 0.67              |
| 5:D:314:ALA:HB3  | 5:D:317:PRO:HG3   | 1.77                     | 0.67              |
| 1:A:902:G:N7     | 14:M:18:HIS:HD2   | 1.92                     | 0.67              |
| 1:A:1209:C:H2'   | 1:A:1210:G:H8     | 1.58                     | 0.67              |
| 1:A:1874:U:H2'   | 4:C:120:ARG:HG3   | 1.75                     | 0.67              |
| 7:F:97:GLN:HG2   | 7:F:97:GLN:O      | 1.95                     | 0.67              |
| 23:V:14:GLU:O    | 23:V:17:THR:HB    | 1.95                     | 0.67              |
| 13:L:55:VAL:HG12 | 13:L:56:SER:N     | 2.09                     | 0.67              |
| 1:A:2851:G:O2'   | 1:A:2852:A:H5'    | 1.94                     | 0.67              |
| 5:D:297:VAL:HB   | 38:D:8606:HOH:O   | 1.95                     | 0.67              |
| 15:N:169:ARG:HD2 | 38:N:8591:HOH:O   | 1.95                     | 0.67              |
| 1:A:2502:C:H2'   | 1:A:2503:A:H5'    | 1.77                     | 0.66              |
| 1:A:2635:A:O2'   | 1:A:2636:C:H5'    | 1.94                     | 0.66              |
| 11:J:127:GLY:O   | 11:J:128:ALA:HB3  | 1.95                     | 0.66              |
| 25:X:88:THR:HG23 | 25:X:110:GLN:HE21 | 1.58                     | 0.66              |
| 1:A:111:C:O2'    | 29:2:20:ARG:HG2   | 1.95                     | 0.66              |
| 5:D:51:VAL:HG23  | 5:D:329:TYR:O     | 1.95                     | 0.66              |
| 7:F:55:LYS:HA    | 38:F:6752:HOH:O   | 1.95                     | 0.66              |
| 16:O:71:TRP:CE3  | 16:O:175:LEU:HD22 | 2.30                     | 0.66              |
| 1:A:1667:A:H5'   | 1:A:1667:A:H8     | 1.60                     | 0.66              |
| 1:A:2533:C:H5'   | 1:A:2533:C:C6     | 2.23                     | 0.66              |
| 5:D:41:PHE:HA    | 5:D:79:MET:HE2    | 1.76                     | 0.66              |
| 13:L:115:ARG:HG3 | 13:L:116:GLU:N    | 2.08                     | 0.66              |
| 15:N:164:THR:CG2 | 15:N:165:SER:N    | 2.58                     | 0.66              |
| 1:A:2459:G:OP2   | 31:4:64:LYS:HD2   | 1.94                     | 0.66              |
| 1:A:2780:C:H1'   | 8:G:143:GLN:NE2   | 2.09                     | 0.66              |
| 5:D:329:TYR:CE2  | 23:V:15:PRO:HG2   | 2.30                     | 0.66              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 13:L:34:VAL:HG22 | 13:L:47:ALA:HB2   | 1.76                     | 0.66              |
| 1:A:1829:A:N6    | 28:1:18:TYR:HA    | 2.10                     | 0.66              |
| 4:C:94:LEU:N     | 4:C:94:LEU:HD23   | 2.10                     | 0.66              |
| 9:H:2:VAL:HG22   | 9:H:57:GLU:OE1    | 1.94                     | 0.66              |
| 25:X:149:LEU:HG  | 25:X:153:MET:HE2  | 1.78                     | 0.66              |
| 13:L:74:VAL:HG11 | 13:L:113:ILE:HG12 | 1.76                     | 0.66              |
| 15:N:172:GLY:O   | 15:N:183:VAL:HG11 | 1.96                     | 0.66              |
| 7:F:64:ARG:HG2   | 7:F:67:ASP:HB3    | 1.77                     | 0.66              |
| 5:D:141:ARG:HD2  | 5:D:163:GLU:OE2   | 1.95                     | 0.66              |
| 7:F:51:ARG:HD3   | 38:F:7636:HOH:O   | 1.96                     | 0.66              |
| 18:Q:38:GLU:HA   | 18:Q:41:ARG:HH11  | 1.60                     | 0.66              |
| 1:A:1119:G:H22   | 1:A:1246:A:H2     | 1.42                     | 0.66              |
| 1:A:1874:U:OP1   | 38:A:3810:HOH:O   | 2.14                     | 0.66              |
| 1:A:2502:C:H4'   | 11:J:151:MET:HG2  | 1.78                     | 0.66              |
| 1:A:2505:G:O2'   | 1:A:2506:A:H5'    | 1.95                     | 0.66              |
| 1:A:2768:A:H2'   | 1:A:2769:C:O4'    | 1.94                     | 0.66              |
| 20:S:44:VAL:O    | 20:S:48:GLU:HG3   | 1.96                     | 0.66              |
| 28:1:53:GLY:HA2  | 28:1:67:GLY:O     | 1.96                     | 0.66              |
| 1:A:282:C:O2'    | 1:A:283:U:H5'     | 1.96                     | 0.65              |
| 1:A:2271:G:P     | 38:A:8940:HOH:O   | 2.54                     | 0.65              |
| 13:L:28:GLU:OE2  | 13:L:58:THR:HG21  | 1.96                     | 0.65              |
| 1:A:814:G:H4'    | 38:A:9628:HOH:O   | 1.96                     | 0.65              |
| 2:B:3001:U:O3'   | 2:B:3003:A:H5''   | 1.96                     | 0.65              |
| 4:C:153:ARG:HB2  | 4:C:153:ARG:HH11  | 1.61                     | 0.65              |
| 6:E:1:MET:HG2    | 6:E:2:GLN:H       | 1.61                     | 0.65              |
| 11:J:3:GLY:HA2   | 11:J:57:ARG:NH1   | 2.10                     | 0.65              |
| 11:J:47:GLU:HB3  | 11:J:133:ILE:HD13 | 1.78                     | 0.65              |
| 28:1:30:GLU:HA   | 28:1:33:HIS:CB    | 2.26                     | 0.65              |
| 1:A:1130:U:H5'   | 38:A:7130:HOH:O   | 1.95                     | 0.65              |
| 1:A:1681:G:H5''  | 1:A:1682:A:H5'    | 1.79                     | 0.65              |
| 2:B:3014:G:H5'   | 2:B:3014:G:C8     | 2.31                     | 0.65              |
| 5:D:238:ASN:HD22 | 5:D:240:GLY:H     | 1.44                     | 0.65              |
| 15:N:30:GLU:O    | 15:N:34:GLU:HG3   | 1.97                     | 0.65              |
| 18:Q:98:ILE:HD12 | 18:Q:102:ARG:NE   | 2.12                     | 0.65              |
| 27:Z:142:SER:OG  | 38:Z:8616:HOH:O   | 2.15                     | 0.65              |
| 4:C:191:GLY:HA2  | 4:C:194:MET:CE    | 2.27                     | 0.65              |
| 7:F:136:ARG:HD2  | 7:F:155:HIS:O     | 1.95                     | 0.65              |
| 1:A:1477:C:O2'   | 1:A:1478:U:H5'    | 1.96                     | 0.65              |
| 1:A:2363:G:O3'   | 19:R:11:ARG:NH1   | 2.28                     | 0.65              |
| 13:L:27:ARG:HD2  | 38:L:4747:HOH:O   | 1.97                     | 0.65              |
| 15:N:37:VAL:HG21 | 15:N:108:LYS:CG   | 2.26                     | 0.65              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 16:O:91:ARG:HG3   | 16:O:186:LEU:HD23 | 1.79                     | 0.65              |
| 18:Q:87:ARG:HG2   | 38:Q:190:HOH:O    | 1.96                     | 0.65              |
| 22:U:50:VAL:HG12  | 22:U:56:ALA:HA    | 1.78                     | 0.65              |
| 25:X:149:LEU:HG   | 25:X:153:MET:CE   | 2.27                     | 0.65              |
| 1:A:2414:A:H2'    | 1:A:2415:A:C8     | 2.31                     | 0.65              |
| 4:C:94:LEU:HG     | 4:C:99:ILE:HD11   | 1.77                     | 0.65              |
| 5:D:140:LEU:HD23  | 38:D:8583:HOH:O   | 1.96                     | 0.65              |
| 6:E:127:ARG:HG2   | 6:E:127:ARG:HH11  | 1.61                     | 0.65              |
| 13:L:62:PRO:HG3   | 13:L:65:ARG:NH2   | 2.11                     | 0.65              |
| 15:N:87:MET:HB2   | 15:N:91:ILE:HD11  | 1.78                     | 0.65              |
| 1:A:1886:A:H4'    | 38:1:8405:HOH:O   | 1.97                     | 0.65              |
| 1:A:2618:G:N7     | 38:A:3140:HOH:O   | 2.30                     | 0.65              |
| 7:F:41:LEU:HA     | 7:F:44:ILE:HG22   | 1.78                     | 0.65              |
| 31:4:11:CYS:SG    | 38:4:8534:HOH:O   | 2.54                     | 0.65              |
| 1:A:2432:C:O2'    | 1:A:2433:A:H5'    | 1.96                     | 0.65              |
| 11:J:118:PRO:HD2  | 38:J:8340:HOH:O   | 1.97                     | 0.65              |
| 15:N:84:LYS:HA    | 31:4:46:ILE:O     | 1.96                     | 0.65              |
| 20:S:106:GLY:HA2  | 20:S:109:MET:HE3  | 1.77                     | 0.65              |
| 27:Z:189:ASN:HD22 | 27:Z:189:ASN:C    | 2.00                     | 0.65              |
| 1:A:2064:U:H5'    | 1:A:2652:U:O3'    | 1.97                     | 0.65              |
| 1:A:733:U:OP2     | 38:A:5671:HOH:O   | 2.14                     | 0.64              |
| 2:B:3029:C:H2'    | 2:B:3030:C:H5'    | 1.77                     | 0.64              |
| 20:S:18:LEU:HB2   | 20:S:143:VAL:CG1  | 2.27                     | 0.64              |
| 25:X:4:LEU:HD23   | 25:X:54:PHE:HB3   | 1.79                     | 0.64              |
| 26:Y:78:GLU:HG2   | 26:Y:79:GLU:N     | 2.11                     | 0.64              |
| 1:A:2054:A:N3     | 20:S:128:ARG:NH2  | 2.45                     | 0.64              |
| 1:A:2276:U:H2'    | 1:A:2277:U:C6     | 2.33                     | 0.64              |
| 8:G:11:VAL:HG13   | 8:G:23:GLU:O      | 1.97                     | 0.64              |
| 18:Q:38:GLU:HA    | 18:Q:41:ARG:NH1   | 2.12                     | 0.64              |
| 27:Z:141:THR:HG23 | 38:Z:8594:HOH:O   | 1.96                     | 0.64              |
| 1:A:2064:U:H4'    | 1:A:2653:A:OP1    | 1.97                     | 0.64              |
| 28:1:42:CYS:SG    | 28:1:43:GLY:N     | 2.70                     | 0.64              |
| 1:A:2428:G:C5     | 38:A:3276:HOH:O   | 2.50                     | 0.64              |
| 4:C:88:ILE:HG22   | 4:C:88:ILE:O      | 1.97                     | 0.64              |
| 12:K:74:ARG:HH11  | 12:K:74:ARG:CB    | 2.10                     | 0.64              |
| 28:1:30:GLU:HB2   | 38:1:8413:HOH:O   | 1.98                     | 0.64              |
| 1:A:777:U:OP1     | 38:A:6954:HOH:O   | 2.14                     | 0.64              |
| 1:A:1187:U:H2'    | 38:A:6356:HOH:O   | 1.98                     | 0.64              |
| 1:A:1773:G:C8     | 28:1:16:PRO:HA    | 2.32                     | 0.64              |
| 15:N:87:MET:HB3   | 31:4:46:ILE:HG21  | 1.80                     | 0.64              |
| 25:X:65:VAL:HA    | 25:X:68:THR:HG22  | 1.80                     | 0.64              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 28:1:31:ILE:O     | 28:1:35:LYS:HG3   | 1.98                     | 0.64              |
| 1:A:558:C:O2'     | 1:A:559:U:H5''    | 1.97                     | 0.64              |
| 1:A:2769:C:H2'    | 1:A:2770:G:O4'    | 1.98                     | 0.64              |
| 2:B:3023:U:H3'    | 2:B:3024:U:H5''   | 1.78                     | 0.64              |
| 5:D:248:ARG:NH2   | 38:D:8524:HOH:O   | 2.31                     | 0.64              |
| 13:L:22:ASP:HB2   | 38:L:5264:HOH:O   | 1.96                     | 0.64              |
| 13:L:34:VAL:CG2   | 13:L:47:ALA:HB2   | 2.27                     | 0.64              |
| 1:A:1441:G:O2'    | 1:A:1442:A:H5'    | 1.98                     | 0.64              |
| 1:A:2119:C:O2'    | 1:A:2120:U:H5'    | 1.97                     | 0.64              |
| 29:2:21:ARG:HD2   | 29:2:37:CYS:SG    | 2.38                     | 0.64              |
| 1:A:1942:A:H3'    | 38:A:6804:HOH:O   | 1.98                     | 0.64              |
| 1:A:2314:G:C2'    | 1:A:2315:C:H5'    | 2.28                     | 0.64              |
| 4:C:93:THR:C      | 4:C:94:LEU:HD23   | 2.18                     | 0.64              |
| 6:E:115:LEU:O     | 6:E:118:THR:HB    | 1.97                     | 0.64              |
| 11:J:71:TYR:C     | 11:J:73:GLN:H     | 2.01                     | 0.64              |
| 15:N:59:GLY:HA3   | 15:N:141:ILE:HD11 | 1.78                     | 0.64              |
| 4:C:131:HIS:O     | 4:C:132:ASP:HB2   | 1.96                     | 0.63              |
| 5:D:36:PRO:HA     | 5:D:168:GLY:HA3   | 1.80                     | 0.63              |
| 7:F:101:THR:HG22  | 38:F:7400:HOH:O   | 1.97                     | 0.63              |
| 13:L:58:THR:HG22  | 13:L:59:LYS:HG3   | 1.80                     | 0.63              |
| 14:M:89:PHE:N     | 38:M:8575:HOH:O   | 2.32                     | 0.63              |
| 15:N:84:LYS:HE2   | 38:N:8580:HOH:O   | 1.97                     | 0.63              |
| 20:S:18:LEU:HD12  | 20:S:143:VAL:HG11 | 1.79                     | 0.63              |
| 25:X:38:THR:HG22  | 38:X:3580:HOH:O   | 1.97                     | 0.63              |
| 2:B:3049:G:H5''   | 38:B:8467:HOH:O   | 1.99                     | 0.63              |
| 7:F:23:VAL:HG22   | 7:F:73:VAL:HB     | 1.78                     | 0.63              |
| 11:J:58:HIS:HA    | 11:J:61:LEU:HD23  | 1.80                     | 0.63              |
| 13:L:92:ASP:OD1   | 38:L:5638:HOH:O   | 2.15                     | 0.63              |
| 27:Z:200:THR:HG22 | 27:Z:201:GLU:CG   | 2.20                     | 0.63              |
| 1:A:544:G:C2'     | 1:A:545:G:H5''    | 2.28                     | 0.63              |
| 1:A:1923:G:H4'    | 31:4:31:THR:O     | 1.98                     | 0.63              |
| 1:A:2465:A:H3'    | 38:A:3142:HOH:O   | 1.97                     | 0.63              |
| 8:G:79:GLY:HA3    | 38:G:7046:HOH:O   | 1.98                     | 0.63              |
| 15:N:60:ILE:C     | 15:N:61:ILE:HD12  | 2.17                     | 0.63              |
| 24:W:64:GLY:O     | 24:W:65:ASP:HB2   | 1.99                     | 0.63              |
| 26:Y:31:ILE:O     | 26:Y:35:GLU:HG3   | 1.98                     | 0.63              |
| 30:3:22:PRO:HG2   | 30:3:25:VAL:HG23  | 1.80                     | 0.63              |
| 31:4:55:VAL:HG22  | 38:4:8510:HOH:O   | 1.99                     | 0.63              |
| 1:A:157:G:H4'     | 15:N:95:LYS:HE3   | 1.80                     | 0.63              |
| 1:A:1329:A:H2     | 38:A:4165:HOH:O   | 1.80                     | 0.63              |
| 32:A:8011:MG:MG   | 38:A:3800:HOH:O   | 1.40                     | 0.63              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:C:101:GLU:OE2   | 4:C:131:HIS:HB2   | 1.99                     | 0.63              |
| 6:E:168:ARG:NH2   | 6:E:190:ALA:O     | 2.31                     | 0.63              |
| 7:F:69:ILE:HG22   | 7:F:69:ILE:O      | 1.97                     | 0.63              |
| 12:K:45:VAL:HG21  | 12:K:129:PHE:CD1  | 2.34                     | 0.63              |
| 15:N:37:VAL:HG13  | 15:N:63:VAL:HG11  | 1.79                     | 0.63              |
| 28:1:37:HIS:HB2   | 28:1:47:LEU:HB2   | 1.79                     | 0.63              |
| 1:A:2467:A:P      | 38:A:8560:HOH:O   | 2.57                     | 0.63              |
| 5:D:280:VAL:CG1   | 5:D:334:SER:HA    | 2.29                     | 0.63              |
| 8:G:7:ILE:HG22    | 8:G:45:ASP:O      | 1.98                     | 0.63              |
| 9:H:107:VAL:O     | 9:H:111:ILE:HG13  | 1.98                     | 0.63              |
| 11:J:53:PRO:HG3   | 11:J:127:GLY:H    | 1.63                     | 0.63              |
| 17:P:87:THR:O     | 17:P:91:GLN:HG3   | 1.99                     | 0.63              |
| 1:A:1595:G:O2'    | 1:A:1596:U:H5'    | 1.98                     | 0.63              |
| 2:B:3028:U:H5''   | 16:O:40:ASN:ND2   | 2.14                     | 0.63              |
| 7:F:25:MET:HE1    | 7:F:37:ALA:HB1    | 1.80                     | 0.63              |
| 15:N:34:GLU:HB3   | 15:N:35:PRO:HD2   | 1.80                     | 0.63              |
| 1:A:396:U:OP2     | 31:4:38:ARG:NH1   | 2.32                     | 0.63              |
| 8:G:20:ILE:CD1    | 8:G:33:LEU:HD12   | 2.29                     | 0.63              |
| 14:M:143:THR:HG22 | 14:M:145:LEU:H    | 1.63                     | 0.63              |
| 1:A:2890:A:H1'    | 23:V:56:ARG:NH2   | 2.14                     | 0.63              |
| 8:G:23:GLU:HG2    | 8:G:28:SER:HB3    | 1.81                     | 0.63              |
| 11:J:47:GLU:HB3   | 11:J:133:ILE:CD1  | 2.28                     | 0.63              |
| 15:N:185:PRO:HG2  | 15:N:189:VAL:HG11 | 1.81                     | 0.63              |
| 21:T:23:LYS:HE2   | 38:T:8330:HOH:O   | 1.99                     | 0.63              |
| 1:A:2105:C:H2'    | 1:A:2106:C:C6     | 2.33                     | 0.63              |
| 5:D:138:GLY:O     | 5:D:139:ASP:O     | 2.16                     | 0.63              |
| 5:D:175:LEU:HD23  | 5:D:175:LEU:C     | 2.19                     | 0.63              |
| 18:Q:103:THR:HA   | 18:Q:106:ARG:NH1  | 2.14                     | 0.63              |
| 22:U:71:VAL:HG11  | 22:U:90:PRO:CB    | 2.22                     | 0.63              |
| 30:3:35:ARG:HB2   | 38:3:2691:HOH:O   | 1.98                     | 0.63              |
| 12:K:131:THR:HG22 | 12:K:134:GLU:H    | 1.63                     | 0.62              |
| 1:A:2548:C:OP2    | 5:D:5:ARG:NH2     | 2.32                     | 0.62              |
| 6:E:233:THR:HG22  | 6:E:234:VAL:N     | 2.13                     | 0.62              |
| 11:J:166:ASN:N    | 11:J:166:ASN:HD22 | 1.96                     | 0.62              |
| 12:K:45:VAL:HG23  | 12:K:130:VAL:O    | 1.98                     | 0.62              |
| 15:N:114:VAL:HG21 | 15:N:159:THR:HG21 | 1.80                     | 0.62              |
| 27:Z:187:VAL:CG2  | 27:Z:192:ASP:HB2  | 2.29                     | 0.62              |
| 1:A:240:C:H4'     | 15:N:146:GLN:NE2  | 2.15                     | 0.62              |
| 1:A:1116:U:O2'    | 1:A:1118:A:H2     | 1.72                     | 0.62              |
| 1:A:2004:U:H4'    | 38:A:4780:HOH:O   | 1.98                     | 0.62              |
| 7:F:25:MET:HE1    | 7:F:37:ALA:O      | 1.99                     | 0.62              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 10:I:12:ILE:N    | 10:I:13:PRO:CD    | 2.63                     | 0.62              |
| 27:Z:235:GLU:H   | 27:Z:235:GLU:CD   | 2.03                     | 0.62              |
| 38:C:8627:HOH:O  | 28:1:75:ALA:HB3   | 1.98                     | 0.62              |
| 6:E:78:ARG:HG3   | 6:E:78:ARG:NH1    | 2.13                     | 0.62              |
| 7:F:23:VAL:HG23  | 7:F:23:VAL:O      | 1.99                     | 0.62              |
| 9:H:46:GLU:N     | 38:H:3461:HOH:O   | 2.32                     | 0.62              |
| 38:A:4556:HOH:O  | 5:D:216:LYS:HA    | 2.00                     | 0.62              |
| 6:E:107:ARG:HB3  | 6:E:107:ARG:HH11  | 1.64                     | 0.62              |
| 15:N:91:ILE:HG23 | 38:N:8649:HOH:O   | 1.99                     | 0.62              |
| 20:S:104:PHE:HB2 | 20:S:109:MET:HE1  | 1.81                     | 0.62              |
| 1:A:56:G:H5''    | 24:W:50:ARG:NH1   | 2.13                     | 0.62              |
| 1:A:189:A:OP1    | 15:N:171:ARG:NH2  | 2.32                     | 0.62              |
| 1:A:714:U:H3'    | 38:A:6403:HOH:O   | 2.00                     | 0.62              |
| 7:F:37:ALA:O     | 7:F:40:ILE:HG12   | 1.99                     | 0.62              |
| 15:N:64:ARG:HD2  | 38:N:8587:HOH:O   | 1.98                     | 0.62              |
| 20:S:17:MET:HE1  | 20:S:19:ARG:NH2   | 2.15                     | 0.62              |
| 1:A:1594:C:OP2   | 18:Q:120:ARG:HD2  | 2.00                     | 0.62              |
| 5:D:41:PHE:HB3   | 5:D:190:MET:HE1   | 1.82                     | 0.62              |
| 15:N:104:ARG:O   | 15:N:108:LYS:HE2  | 2.00                     | 0.62              |
| 16:O:183:ASP:OD2 | 16:O:186:LEU:HD12 | 1.99                     | 0.62              |
| 26:Y:37:LEU:CD1  | 26:Y:85:VAL:HG21  | 2.28                     | 0.62              |
| 1:A:280:C:H2'    | 1:A:281:U:O4'     | 2.00                     | 0.62              |
| 1:A:488:U:H2'    | 38:A:3497:HOH:O   | 1.99                     | 0.62              |
| 22:U:48:VAL:HG22 | 22:U:97:ARG:O     | 2.00                     | 0.62              |
| 29:2:28:HIS:HD2  | 29:2:30:LYS:H     | 1.48                     | 0.62              |
| 32:A:8011:MG:MG  | 38:A:3470:HOH:O   | 1.42                     | 0.62              |
| 5:D:145:HIS:CD2  | 5:D:146:THR:O     | 2.52                     | 0.62              |
| 15:N:52:LEU:HD13 | 15:N:116:ASN:HB3  | 1.82                     | 0.62              |
| 16:O:61:ALA:CB   | 16:O:88:ALA:HB2   | 2.30                     | 0.62              |
| 25:X:26:ILE:HG13 | 25:X:26:ILE:O     | 1.97                     | 0.62              |
| 1:A:558:C:H5'    | 38:A:4732:HOH:O   | 1.99                     | 0.62              |
| 1:A:1213:C:O2'   | 1:A:1214:G:H5'    | 2.00                     | 0.62              |
| 1:A:1713:G:H1'   | 38:A:4547:HOH:O   | 2.00                     | 0.62              |
| 28:1:23:ARG:NH1  | 38:1:8404:HOH:O   | 2.32                     | 0.62              |
| 1:A:603:A:H5''   | 1:A:604:G:OP1     | 1.99                     | 0.61              |
| 1:A:1534:C:N3    | 38:A:8988:HOH:O   | 2.31                     | 0.61              |
| 1:A:2421:G:H3'   | 1:A:2422:U:H5''   | 1.82                     | 0.61              |
| 1:A:2506:A:O2'   | 1:A:2507:G:O5'    | 2.18                     | 0.61              |
| 23:V:44:ARG:HB3  | 38:V:3805:HOH:O   | 1.99                     | 0.61              |
| 1:A:56:G:H5''    | 24:W:50:ARG:HH12  | 1.63                     | 0.61              |
| 1:A:671:A:O2'    | 1:A:672:G:H2'     | 2.00                     | 0.61              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1669:A:H2'    | 1:A:1670:G:C8     | 2.35                     | 0.61              |
| 1:A:2281:C:H2'    | 1:A:2282:U:H5'    | 1.80                     | 0.61              |
| 9:H:50:VAL:CG2    | 9:H:63:ILE:HG21   | 2.30                     | 0.61              |
| 24:W:42:ASN:HB3   | 38:W:7247:HOH:O   | 2.00                     | 0.61              |
| 1:A:1120:U:C6     | 1:A:1120:U:H5''   | 2.36                     | 0.61              |
| 5:D:36:PRO:HA     | 5:D:168:GLY:CA    | 2.31                     | 0.61              |
| 28:1:30:GLU:HB3   | 28:1:34:LYS:HE3   | 1.81                     | 0.61              |
| 1:A:183:A:H5'     | 15:N:157:LEU:HD12 | 1.82                     | 0.61              |
| 1:A:948:G:N7      | 38:A:5313:HOH:O   | 2.30                     | 0.61              |
| 1:A:1886:A:O2'    | 28:1:20:LEU:HB2   | 1.99                     | 0.61              |
| 8:G:20:ILE:HD11   | 8:G:40:VAL:HG11   | 1.81                     | 0.61              |
| 11:J:84:ARG:NH2   | 11:J:135:TRP:HH2  | 1.98                     | 0.61              |
| 18:Q:94:TRP:CZ2   | 18:Q:98:ILE:HG13  | 2.35                     | 0.61              |
| 27:Z:117:LEU:HD12 | 27:Z:174:VAL:HG11 | 1.83                     | 0.61              |
| 1:A:1086:A:C6     | 25:X:11:VAL:HG11  | 2.34                     | 0.61              |
| 1:A:1234:U:N3     | 5:D:244:PRO:HB3   | 2.16                     | 0.61              |
| 1:A:1884:G:O6     | 4:C:190:ARG:HD2   | 2.00                     | 0.61              |
| 7:F:25:MET:CE     | 7:F:37:ALA:HB1    | 2.31                     | 0.61              |
| 11:J:62:GLU:O     | 11:J:66:VAL:HG23  | 2.00                     | 0.61              |
| 14:M:21:ARG:N     | 38:M:8534:HOH:O   | 2.34                     | 0.61              |
| 15:N:155:HIS:CE1  | 15:N:158:ARG:HE   | 2.18                     | 0.61              |
| 5:D:217:ARG:HG3   | 5:D:257:THR:HG22  | 1.81                     | 0.61              |
| 10:I:12:ILE:HD12  | 38:I:692:HOH:O    | 2.00                     | 0.61              |
| 11:J:141:ASN:CA   | 38:J:8366:HOH:O   | 2.46                     | 0.61              |
| 16:O:80:SER:HB2   | 38:O:8536:HOH:O   | 2.01                     | 0.61              |
| 18:Q:143:ALA:HA   | 38:Q:170:HOH:O    | 2.00                     | 0.61              |
| 21:T:80:ARG:HG2   | 38:T:8337:HOH:O   | 2.01                     | 0.61              |
| 9:H:50:VAL:HG13   | 9:H:60:VAL:HG11   | 1.82                     | 0.61              |
| 16:O:89:GLY:O     | 16:O:92:ALA:HB3   | 2.00                     | 0.61              |
| 26:Y:15:ARG:HB3   | 26:Y:15:ARG:NH1   | 2.15                     | 0.61              |
| 28:1:39:CYS:CB    | 28:1:47:LEU:HD21  | 2.30                     | 0.61              |
| 1:A:338:C:H4'     | 6:E:174:ILE:HD11  | 1.83                     | 0.61              |
| 1:A:1862:C:H1'    | 38:A:6681:HOH:O   | 2.00                     | 0.61              |
| 1:A:1878:G:H1'    | 38:A:5581:HOH:O   | 2.01                     | 0.61              |
| 2:B:3039:U:H1'    | 2:B:3044:A:N6     | 2.15                     | 0.61              |
| 4:C:191:GLY:HA2   | 4:C:194:MET:HE3   | 1.83                     | 0.61              |
| 5:D:204:GLY:HA3   | 38:D:8653:HOH:O   | 2.00                     | 0.61              |
| 5:D:305:ASP:O     | 5:D:306:LYS:HB2   | 2.01                     | 0.61              |
| 6:E:118:THR:O     | 6:E:136:VAL:HG13  | 2.01                     | 0.61              |
| 11:J:55:GLN:NE2   | 11:J:124:ARG:HE   | 1.98                     | 0.61              |
| 28:1:19:GLY:O     | 28:1:23:ARG:HG2   | 2.01                     | 0.61              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1972:U:H2'    | 1:A:1973:A:H5'    | 1.82                     | 0.61              |
| 5:D:154:VAL:HG12  | 5:D:156:LYS:HG2   | 1.83                     | 0.61              |
| 5:D:312:ARG:HD3   | 5:D:315:VAL:HG13  | 1.83                     | 0.61              |
| 6:E:219:ASN:O     | 6:E:222:ASP:OD1   | 2.18                     | 0.61              |
| 8:G:7:ILE:HD11    | 8:G:11:VAL:C      | 2.21                     | 0.61              |
| 8:G:7:ILE:HD11    | 8:G:11:VAL:O      | 2.01                     | 0.61              |
| 8:G:15:GLN:HG3    | 8:G:20:ILE:HG12   | 1.83                     | 0.61              |
| 13:L:32:ILE:HD11  | 13:L:56:SER:HB3   | 1.83                     | 0.61              |
| 22:U:55:PHE:CD2   | 22:U:77:VAL:HG13  | 2.36                     | 0.61              |
| 1:A:1919:A:H4'    | 38:A:4324:HOH:O   | 1.99                     | 0.61              |
| 2:B:3002:U:OP2    | 2:B:3002:U:H4'    | 2.01                     | 0.61              |
| 12:K:74:ARG:O     | 12:K:78:ILE:HG12  | 2.00                     | 0.61              |
| 20:S:132:ARG:HG2  | 20:S:133:ALA:N    | 2.16                     | 0.61              |
| 11:J:136:VAL:HG22 | 11:J:137:ASN:O    | 2.00                     | 0.60              |
| 11:J:150:LYS:CB   | 11:J:157:ILE:HD12 | 2.27                     | 0.60              |
| 15:N:149:TRP:O    | 15:N:152:ARG:HG2  | 1.99                     | 0.60              |
| 25:X:84:VAL:HG12  | 38:X:6679:HOH:O   | 2.01                     | 0.60              |
| 1:A:2717:C:H2'    | 1:A:2718:C:C5'    | 2.27                     | 0.60              |
| 1:A:2827:A:H2'    | 1:A:2828:G:O4'    | 2.00                     | 0.60              |
| 11:J:26:LYS:HD2   | 11:J:28:ILE:CD1   | 2.30                     | 0.60              |
| 22:U:49:GLU:OE2   | 22:U:97:ARG:HD2   | 2.01                     | 0.60              |
| 1:A:871:G:C8      | 1:A:871:G:C5'     | 2.77                     | 0.60              |
| 1:A:2405:C:P      | 38:A:6058:HOH:O   | 2.58                     | 0.60              |
| 2:B:3007:G:H4'    | 16:O:55:ASP:OD2   | 2.00                     | 0.60              |
| 15:N:55:LYS:HB2   | 15:N:60:ILE:CD1   | 2.31                     | 0.60              |
| 31:4:48:ASN:ND2   | 31:4:50:GLY:H     | 1.99                     | 0.60              |
| 1:A:558:C:C2'     | 1:A:559:U:H5''    | 2.31                     | 0.60              |
| 1:A:2710:U:H1'    | 38:A:7082:HOH:O   | 2.01                     | 0.60              |
| 4:C:105:VAL:HG13  | 4:C:155:THR:O     | 2.02                     | 0.60              |
| 5:D:81:ALA:O      | 5:D:186:GLY:HA3   | 2.01                     | 0.60              |
| 5:D:221:GLN:HE22  | 13:L:42:ASN:HD22  | 1.49                     | 0.60              |
| 12:K:75:PRO:HG2   | 12:K:105:LEU:CD2  | 2.31                     | 0.60              |
| 1:A:553:G:P       | 27:Z:204:ARG:HH22 | 2.24                     | 0.60              |
| 38:B:8477:HOH:O   | 16:O:23:ARG:HD3   | 2.00                     | 0.60              |
| 5:D:85:ARG:NH1    | 38:D:8634:HOH:O   | 2.34                     | 0.60              |
| 7:F:38:GLU:HB3    | 7:F:49:PRO:HG2    | 1.83                     | 0.60              |
| 22:U:69:LYS:O     | 22:U:71:VAL:HG23  | 2.02                     | 0.60              |
| 25:X:26:ILE:O     | 25:X:26:ILE:CG1   | 2.49                     | 0.60              |
| 28:1:39:CYS:HA    | 28:1:47:LEU:CD1   | 2.29                     | 0.60              |
| 1:A:659:A:H5''    | 38:A:6557:HOH:O   | 2.00                     | 0.60              |
| 18:Q:78:GLY:O     | 38:Q:157:HOH:O    | 2.17                     | 0.60              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:285:A:H2'     | 1:A:286:U:O4'     | 2.01                     | 0.60              |
| 1:A:2089:A:O2'    | 1:A:2090:G:H5'    | 2.01                     | 0.60              |
| 1:A:2419:U:H5''   | 1:A:2420:G:H5'    | 1.84                     | 0.60              |
| 1:A:2908:A:H2'    | 1:A:2909:G:O4'    | 2.01                     | 0.60              |
| 7:F:23:VAL:HG21   | 7:F:45:THR:HG21   | 1.81                     | 0.60              |
| 8:G:23:GLU:HG2    | 8:G:28:SER:CB     | 2.32                     | 0.60              |
| 1:A:1182:C:H1'    | 1:A:1192:A:H8     | 1.67                     | 0.60              |
| 1:A:1185:U:H2'    | 1:A:1186:C:C6     | 2.36                     | 0.60              |
| 1:A:1730:G:H5'    | 1:A:1731:C:C5     | 2.36                     | 0.60              |
| 15:N:138:HIS:ND1  | 15:N:139:PRO:O    | 2.32                     | 0.60              |
| 25:X:21:LEU:HD21  | 25:X:48:VAL:HG11  | 1.84                     | 0.60              |
| 1:A:134:U:C2      | 1:A:145:A:C2      | 2.90                     | 0.60              |
| 1:A:282:C:H1'     | 1:A:368:C:H42     | 1.65                     | 0.60              |
| 1:A:2019:A:H5'    | 38:A:4024:HOH:O   | 2.01                     | 0.60              |
| 1:A:2690:U:O2'    | 8:G:111:LYS:HE3   | 2.00                     | 0.60              |
| 6:E:104:ASP:O     | 6:E:108:GLN:HG3   | 2.02                     | 0.60              |
| 7:F:50:VAL:O      | 7:F:71:ALA:HA     | 2.02                     | 0.60              |
| 9:H:58:GLU:HA     | 9:H:61:MET:HG3    | 1.82                     | 0.60              |
| 15:N:52:LEU:HD21  | 38:N:8616:HOH:O   | 2.01                     | 0.60              |
| 15:N:74:ARG:O     | 15:N:88:VAL:CG1   | 2.43                     | 0.60              |
| 1:A:281:U:H3'     | 38:A:6668:HOH:O   | 2.02                     | 0.60              |
| 1:A:821:U:H2'     | 1:A:822:C:H6      | 1.67                     | 0.60              |
| 7:F:57:THR:HG23   | 7:F:63:ILE:HG22   | 1.83                     | 0.60              |
| 12:K:39:VAL:HG13  | 12:K:106:GLY:O    | 2.01                     | 0.60              |
| 22:U:48:VAL:HG23  | 22:U:98:VAL:HA    | 1.84                     | 0.60              |
| 24:W:4:HIS:HB3    | 38:W:6622:HOH:O   | 2.02                     | 0.60              |
| 1:A:349:U:O2'     | 1:A:350:C:H5'     | 2.02                     | 0.59              |
| 38:A:9444:HOH:O   | 26:Y:23:HIS:HD2   | 1.84                     | 0.59              |
| 7:F:25:MET:CE     | 7:F:41:LEU:HG     | 2.29                     | 0.59              |
| 13:L:109:LEU:HD13 | 13:L:113:ILE:HD11 | 1.84                     | 0.59              |
| 1:A:263:U:O4'     | 9:H:59:ILE:HD13   | 2.03                     | 0.59              |
| 1:A:639:A:H2'     | 1:A:640:G:C8      | 2.37                     | 0.59              |
| 16:O:12:ARG:HD3   | 16:O:18:THR:OG1   | 2.01                     | 0.59              |
| 23:V:9:CYS:CA     | 23:V:52:THR:HG23  | 2.32                     | 0.59              |
| 25:X:4:LEU:O      | 25:X:32:CYS:HA    | 2.02                     | 0.59              |
| 1:A:2408:A:H2     | 38:A:9595:HOH:O   | 1.84                     | 0.59              |
| 5:D:1:PRO:O       | 5:D:2:GLN:HB2     | 2.01                     | 0.59              |
| 6:E:115:LEU:HD21  | 6:E:243:VAL:HG13  | 1.83                     | 0.59              |
| 6:E:180:SER:HB2   | 38:E:8451:HOH:O   | 2.02                     | 0.59              |
| 8:G:81:GLU:HG2    | 8:G:134:SER:HB3   | 1.83                     | 0.59              |
| 13:L:28:GLU:HG2   | 13:L:58:THR:HB    | 1.84                     | 0.59              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 15:N:87:MET:HB3  | 31:4:46:ILE:HD13  | 1.83                     | 0.59              |
| 1:A:824:G:C8     | 38:A:3800:HOH:O   | 2.51                     | 0.59              |
| 5:D:2:GLN:HA     | 38:D:8622:HOH:O   | 2.02                     | 0.59              |
| 5:D:43:GLY:O     | 5:D:308:LEU:HD12  | 2.02                     | 0.59              |
| 9:H:46:GLU:O     | 9:H:73:PRO:HD2    | 2.02                     | 0.59              |
| 16:O:48:VAL:HG11 | 16:O:55:ASP:HB3   | 1.84                     | 0.59              |
| 22:U:47:THR:HB   | 22:U:100:ASP:HB3  | 1.83                     | 0.59              |
| 1:A:289:G:N2     | 1:A:363:A:H2      | 1.98                     | 0.59              |
| 1:A:2428:G:O6    | 1:A:2464:C:H1'    | 2.03                     | 0.59              |
| 4:C:109:GLU:HG2  | 4:C:116:GLY:N     | 2.17                     | 0.59              |
| 7:F:135:VAL:HG22 | 7:F:136:ARG:H     | 1.66                     | 0.59              |
| 12:K:80:LYS:HE2  | 12:K:98:PHE:CZ    | 2.38                     | 0.59              |
| 16:O:37:ARG:NE   | 38:O:8534:HOH:O   | 2.34                     | 0.59              |
| 24:W:39:ALA:C    | 24:W:41:GLU:H     | 2.06                     | 0.59              |
| 25:X:141:HIS:HB2 | 25:X:146:ILE:HG12 | 1.84                     | 0.59              |
| 26:Y:66:THR:HG23 | 26:Y:67:PRO:HD2   | 1.84                     | 0.59              |
| 1:A:182:G:O3'    | 15:N:157:LEU:CD1  | 2.51                     | 0.59              |
| 1:A:738:G:H3'    | 38:A:6507:HOH:O   | 2.03                     | 0.59              |
| 11:J:35:ASN:ND2  | 11:J:80:ASN:HA    | 2.18                     | 0.59              |
| 16:O:182:GLY:N   | 38:O:8567:HOH:O   | 2.32                     | 0.59              |
| 25:X:106:THR:OG1 | 25:X:109:GLU:HG3  | 2.02                     | 0.59              |
| 1:A:1170:U:O2'   | 1:A:1172:G:N7     | 2.27                     | 0.59              |
| 14:M:37:LYS:O    | 38:M:8525:HOH:O   | 2.17                     | 0.59              |
| 14:M:54:PRO:HG2  | 14:M:57:VAL:CG2   | 2.33                     | 0.59              |
| 28:1:28:ASP:O    | 28:1:31:ILE:HG22  | 2.02                     | 0.59              |
| 1:A:20:G:H21     | 20:S:117:HIS:HD2  | 1.51                     | 0.59              |
| 1:A:2429:A:O2'   | 1:A:2430:A:H5'    | 2.03                     | 0.59              |
| 38:A:4990:HOH:O  | 5:D:298:LYS:HD3   | 2.02                     | 0.59              |
| 7:F:11:HIS:O     | 7:F:12:GLU:HB3    | 2.02                     | 0.59              |
| 14:M:136:ALA:HB3 | 38:M:8577:HOH:O   | 2.03                     | 0.59              |
| 16:O:154:LEU:O   | 16:O:155:GLU:HB3  | 2.03                     | 0.59              |
| 22:U:24:ARG:HH21 | 22:U:39:ASN:HD22  | 1.50                     | 0.59              |
| 1:A:449:A:N7     | 6:E:43:LYS:HG2    | 2.18                     | 0.59              |
| 1:A:775:G:OP1    | 29:2:16:HIS:HE1   | 1.85                     | 0.59              |
| 2:B:3040:C:N4    | 7:F:51:ARG:HB2    | 2.18                     | 0.59              |
| 7:F:170:TYR:O    | 7:F:171:ASP:HB3   | 2.01                     | 0.59              |
| 22:U:52:ARG:HB2  | 22:U:95:ASN:HB3   | 1.85                     | 0.59              |
| 1:A:1666:C:C2'   | 1:A:1667:A:H5'    | 2.32                     | 0.59              |
| 1:A:1918:U:OP2   | 38:A:3513:HOH:O   | 2.17                     | 0.59              |
| 1:A:2896:A:H5''  | 38:A:5559:HOH:O   | 2.02                     | 0.59              |
| 38:A:6333:HOH:O  | 15:N:178:LYS:HB2  | 2.02                     | 0.59              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:C:100:PRO:HG2   | 4:C:103:VAL:HG21  | 1.83                     | 0.59              |
| 10:I:64:ASN:HD22  | 10:I:64:ASN:N     | 2.00                     | 0.59              |
| 15:N:59:GLY:HA3   | 15:N:141:ILE:HD12 | 1.85                     | 0.59              |
| 16:O:152:GLU:C    | 16:O:154:LEU:H    | 2.05                     | 0.59              |
| 27:Z:144:ARG:CZ   | 38:Z:8616:HOH:O   | 2.51                     | 0.59              |
| 1:A:157:G:H4'     | 15:N:95:LYS:CE    | 2.33                     | 0.58              |
| 1:A:2413:A:N7     | 16:O:109:PRO:HB3  | 2.18                     | 0.58              |
| 5:D:195:ARG:HG2   | 5:D:323:LEU:HD22  | 1.85                     | 0.58              |
| 1:A:1183:C:N4     | 38:A:3888:HOH:O   | 2.32                     | 0.58              |
| 7:F:64:ARG:CG     | 7:F:67:ASP:HB3    | 2.33                     | 0.58              |
| 11:J:56:ILE:HG22  | 11:J:61:LEU:CD2   | 2.32                     | 0.58              |
| 14:M:125:PHE:CZ   | 14:M:140:VAL:HG13 | 2.37                     | 0.58              |
| 16:O:163:PHE:HA   | 38:O:8520:HOH:O   | 2.02                     | 0.58              |
| 20:S:132:ARG:NH2  | 38:S:8582:HOH:O   | 2.35                     | 0.58              |
| 24:W:49:LEU:O     | 24:W:53:ILE:HG13  | 2.03                     | 0.58              |
| 29:2:10:LYS:HG3   | 38:2:2979:HOH:O   | 2.02                     | 0.58              |
| 1:A:120:A:H2'     | 1:A:120:A:N3      | 2.18                     | 0.58              |
| 1:A:371:U:H2'     | 1:A:372:A:C8      | 2.37                     | 0.58              |
| 15:N:72:SER:OG    | 15:N:74:ARG:HB2   | 2.02                     | 0.58              |
| 1:A:1759:A:N3     | 1:A:1818:C:H2'    | 2.17                     | 0.58              |
| 38:A:3680:HOH:O   | 27:Z:186:ARG:HD2  | 2.03                     | 0.58              |
| 2:B:3044:A:O4'    | 7:F:76:ARG:NE     | 2.36                     | 0.58              |
| 2:B:3057:A:N6     | 38:B:8444:HOH:O   | 2.36                     | 0.58              |
| 5:D:264:GLU:HG2   | 5:D:267:LYS:CE    | 2.28                     | 0.58              |
| 6:E:107:ARG:HH11  | 6:E:107:ARG:CB    | 2.16                     | 0.58              |
| 13:L:37:TYR:CD2   | 38:L:7169:HOH:O   | 2.52                     | 0.58              |
| 15:N:48:ARG:NH2   | 38:N:8567:HOH:O   | 2.35                     | 0.58              |
| 27:Z:187:VAL:HB   | 38:Z:8575:HOH:O   | 2.03                     | 0.58              |
| 1:A:567:U:H5''    | 38:A:5862:HOH:O   | 2.03                     | 0.58              |
| 4:C:25:ALA:HA     | 38:C:8573:HOH:O   | 2.03                     | 0.58              |
| 6:E:237:GLU:HB2   | 38:E:8436:HOH:O   | 2.01                     | 0.58              |
| 27:Z:187:VAL:HG23 | 27:Z:192:ASP:HB3  | 1.85                     | 0.58              |
| 1:A:184:G:H5''    | 15:N:153:THR:HG22 | 1.86                     | 0.58              |
| 1:A:739:G:N7      | 38:A:7001:HOH:O   | 2.36                     | 0.58              |
| 1:A:1168:C:H2'    | 1:A:1169:U:O4'    | 2.03                     | 0.58              |
| 2:B:3047:A:C2     | 2:B:3048:C:C2     | 2.91                     | 0.58              |
| 5:D:62:ARG:HA     | 5:D:65:MET:CE     | 2.33                     | 0.58              |
| 6:E:103:ASN:HB3   | 38:E:8308:HOH:O   | 2.02                     | 0.58              |
| 7:F:38:GLU:OE2    | 7:F:51:ARG:CZ     | 2.52                     | 0.58              |
| 20:S:14:ALA:HB3   | 20:S:147:LEU:HB2  | 1.86                     | 0.58              |
| 1:A:29:C:O2'      | 1:A:30:U:H5'      | 2.04                     | 0.58              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:661:G:C5      | 1:A:686:A:C2     | 2.91                     | 0.58              |
| 1:A:2462:G:N7     | 31:4:60:LYS:NZ   | 2.45                     | 0.58              |
| 1:A:2578:G:H5'    | 1:A:2578:G:C8    | 2.36                     | 0.58              |
| 7:F:99:ASP:HB2    | 7:F:103:ASN:HB2  | 1.84                     | 0.58              |
| 16:O:169:PRO:O    | 16:O:172:PHE:HB3 | 2.04                     | 0.58              |
| 1:A:646:G:H2'     | 1:A:647:U:C6     | 2.38                     | 0.58              |
| 2:B:3006:C:C5'    | 16:O:37:ARG:NH1  | 2.61                     | 0.58              |
| 2:B:3051:A:H5'    | 16:O:160:SER:HB3 | 1.86                     | 0.58              |
| 5:D:307:ARG:HH11  | 5:D:307:ARG:HB2  | 1.68                     | 0.58              |
| 11:J:75:SER:C     | 11:J:79:ALA:HB2  | 2.24                     | 0.58              |
| 12:K:130:VAL:HG12 | 12:K:131:THR:N   | 2.18                     | 0.58              |
| 18:Q:10:ALA:HA    | 18:Q:13:VAL:CG1  | 2.32                     | 0.58              |
| 1:A:820:G:C6      | 4:C:171:LYS:HB2  | 2.39                     | 0.58              |
| 1:A:1053:G:OP1    | 11:J:12:PRO:HG3  | 2.02                     | 0.58              |
| 1:A:1123:A:C6     | 1:A:1238:C:H5'   | 2.39                     | 0.58              |
| 1:A:1351:G:O2'    | 38:A:4032:HOH:O  | 2.17                     | 0.58              |
| 1:A:2073:G:OP2    | 1:A:2490:A:H5'   | 2.02                     | 0.58              |
| 1:A:2274:A:H1'    | 15:N:86:MET:SD   | 2.43                     | 0.58              |
| 1:A:2316:G:H2'    | 38:A:4385:HOH:O  | 2.02                     | 0.58              |
| 8:G:3:VAL:HG22    | 8:G:49:ILE:HB    | 1.86                     | 0.58              |
| 18:Q:64:GLU:HG2   | 38:Q:171:HOH:O   | 2.04                     | 0.58              |
| 27:Z:184:GLU:OE1  | 27:Z:204:ARG:NH1 | 2.36                     | 0.58              |
| 1:A:542:A:H1'     | 38:A:4158:HOH:O  | 2.04                     | 0.58              |
| 1:A:2427:C:OP2    | 31:4:84:ARG:HD2  | 2.03                     | 0.58              |
| 1:A:2676:C:H4'    | 12:K:70:PHE:CE1  | 2.39                     | 0.58              |
| 1:A:2878:U:H2'    | 1:A:2879:A:O4'   | 2.04                     | 0.58              |
| 11:J:44:ALA:HA    | 11:J:163:PRO:O   | 2.03                     | 0.58              |
| 16:O:184:ILE:HG22 | 16:O:185:GLU:HG3 | 1.84                     | 0.58              |
| 18:Q:59:ARG:HH22  | 18:Q:66:GLN:HE22 | 1.51                     | 0.58              |
| 1:A:1942:A:O2'    | 1:A:1943:C:H5'   | 2.04                     | 0.57              |
| 5:D:205:VAL:O     | 5:D:307:ARG:NE   | 2.37                     | 0.57              |
| 9:H:47:LEU:HB2    | 9:H:108:LEU:HD11 | 1.86                     | 0.57              |
| 11:J:26:LYS:HD3   | 11:J:89:PRO:CG   | 2.33                     | 0.57              |
| 15:N:35:PRO:O     | 38:N:8539:HOH:O  | 2.17                     | 0.57              |
| 1:A:1819:G:H2'    | 1:A:1820:G:H4'   | 1.85                     | 0.57              |
| 38:B:8477:HOH:O   | 16:O:20:TYR:CE2  | 2.53                     | 0.57              |
| 4:C:109:GLU:HG2   | 4:C:116:GLY:H    | 1.69                     | 0.57              |
| 5:D:82:VAL:O      | 5:D:82:VAL:HG12  | 2.04                     | 0.57              |
| 6:E:162:VAL:HG13  | 6:E:232:LEU:HD21 | 1.85                     | 0.57              |
| 15:N:61:ILE:HG13  | 38:N:8624:HOH:O  | 2.03                     | 0.57              |
| 7:F:166:ILE:HD12  | 38:F:6326:HOH:O  | 2.04                     | 0.57              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1162:G:H2'    | 38:A:6045:HOH:O   | 2.04                     | 0.57              |
| 1:A:2763:G:OP1    | 13:L:9:THR:OG1    | 2.20                     | 0.57              |
| 4:C:192:VAL:HG12  | 4:C:207:GLN:HB3   | 1.86                     | 0.57              |
| 14:M:104:ASP:O    | 14:M:105:TYR:HB3  | 2.04                     | 0.57              |
| 15:N:186:SER:O    | 15:N:189:VAL:HG12 | 2.03                     | 0.57              |
| 16:O:141:ARG:HB3  | 38:O:8566:HOH:O   | 2.05                     | 0.57              |
| 1:A:128:A:H3'     | 1:A:128:A:C8      | 2.38                     | 0.57              |
| 1:A:820:G:C5      | 4:C:171:LYS:HB2   | 2.40                     | 0.57              |
| 1:A:2324:G:H4'    | 1:A:2418:G:O2'    | 2.04                     | 0.57              |
| 1:A:2421:G:H3'    | 1:A:2422:U:C5'    | 2.35                     | 0.57              |
| 1:A:2866:U:C2     | 38:A:6955:HOH:O   | 2.53                     | 0.57              |
| 4:C:179:MET:HG2   | 4:C:186:TRP:HB2   | 1.86                     | 0.57              |
| 14:M:143:THR:CG2  | 14:M:144:ASP:N    | 2.67                     | 0.57              |
| 21:T:43:GLU:HB3   | 38:T:8345:HOH:O   | 2.04                     | 0.57              |
| 1:A:1528:A:H2'    | 1:A:1529:G:O4'    | 2.04                     | 0.57              |
| 1:A:1753:C:O2     | 5:D:229:ARG:NH2   | 2.38                     | 0.57              |
| 1:A:2011:A:P      | 38:A:5418:HOH:O   | 2.63                     | 0.57              |
| 1:A:2783:A:H3'    | 38:A:4707:HOH:O   | 2.02                     | 0.57              |
| 9:H:57:GLU:O      | 9:H:61:MET:HG3    | 2.05                     | 0.57              |
| 25:X:21:LEU:HD22  | 25:X:26:ILE:HD13  | 1.86                     | 0.57              |
| 25:X:137:GLN:HE21 | 25:X:141:HIS:CE1  | 2.21                     | 0.57              |
| 1:A:1119:G:H2'    | 12:K:52:GLN:NE2   | 2.19                     | 0.57              |
| 1:A:1474:C:H6     | 1:A:1474:C:C5'    | 2.11                     | 0.57              |
| 1:A:1497:G:H4'    | 1:A:1627:G:O2'    | 2.04                     | 0.57              |
| 1:A:1500:U:P      | 18:Q:41:ARG:HH22  | 2.27                     | 0.57              |
| 1:A:2365:G:H4'    | 19:R:45:PRO:O     | 2.04                     | 0.57              |
| 38:A:9660:HOH:O   | 15:N:87:MET:HE3   | 2.03                     | 0.57              |
| 4:C:29:HIS:CE1    | 4:C:107:ASN:ND2   | 2.73                     | 0.57              |
| 4:C:211:LYS:NZ    | 38:C:8635:HOH:O   | 2.38                     | 0.57              |
| 5:D:320:GLN:HG3   | 5:D:321:PRO:HD2   | 1.87                     | 0.57              |
| 17:P:59:VAL:HG23  | 17:P:111:VAL:HG23 | 1.86                     | 0.57              |
| 1:A:1299:G:O6     | 14:M:6:ARG:HD3    | 2.05                     | 0.57              |
| 1:A:1669:A:H2'    | 1:A:1670:G:H8     | 1.69                     | 0.57              |
| 10:I:12:ILE:HG13  | 38:I:6833:HOH:O   | 2.04                     | 0.57              |
| 15:N:106:ASN:ND2  | 35:N:8518:CL:CL   | 2.74                     | 0.57              |
| 16:O:49:THR:CG2   | 16:O:56:ASP:HB2   | 2.33                     | 0.57              |
| 16:O:90:LEU:HB2   | 16:O:186:LEU:HD22 | 1.86                     | 0.57              |
| 28:1:47:LEU:HD23  | 28:1:57:CYS:CB    | 2.34                     | 0.57              |
| 1:A:138:U:H5''    | 1:A:139:C:OP2     | 2.05                     | 0.57              |
| 11:J:85:ILE:HB    | 11:J:132:PHE:CE2  | 2.40                     | 0.57              |
| 1:A:105:G:O2'     | 1:A:106:A:H5'     | 2.04                     | 0.57              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:638:C:H2'    | 1:A:639:A:C8      | 2.40                     | 0.57              |
| 38:A:4879:HOH:O  | 4:C:164:ARG:NE    | 2.36                     | 0.57              |
| 25:X:4:LEU:HD21  | 25:X:52:VAL:HG11  | 1.87                     | 0.57              |
| 27:Z:115:ARG:NE  | 38:Z:8560:HOH:O   | 2.37                     | 0.57              |
| 29:2:52:SER:HA   | 38:2:4248:HOH:O   | 2.04                     | 0.57              |
| 1:A:396:U:H1'    | 38:A:7089:HOH:O   | 2.03                     | 0.56              |
| 1:A:825:U:H5''   | 1:A:826:U:OP1     | 2.05                     | 0.56              |
| 1:A:1086:A:N6    | 25:X:11:VAL:HG11  | 2.20                     | 0.56              |
| 1:A:1118:A:C8    | 1:A:1118:A:C3'    | 2.85                     | 0.56              |
| 1:A:1766:U:O2    | 1:A:1778:A:H5'    | 2.05                     | 0.56              |
| 1:A:2359:G:N7    | 38:A:3196:HOH:O   | 2.32                     | 0.56              |
| 1:A:2793:A:N3    | 38:A:3982:HOH:O   | 2.33                     | 0.56              |
| 9:H:21:GLU:O     | 9:H:24:ARG:HG3    | 2.05                     | 0.56              |
| 9:H:110:GLU:O    | 9:H:114:LYS:HG3   | 2.04                     | 0.56              |
| 15:N:186:SER:OG  | 15:N:189:VAL:HG12 | 2.05                     | 0.56              |
| 16:O:33:ARG:NH1  | 16:O:103:ASP:OD2  | 2.30                     | 0.56              |
| 30:3:18:ASN:HD21 | 30:3:40:ARG:H     | 1.52                     | 0.56              |
| 4:C:211:LYS:HB3  | 4:C:212:PRO:CD    | 2.30                     | 0.56              |
| 5:D:30:PRO:HB2   | 5:D:39:GLN:NE2    | 2.18                     | 0.56              |
| 6:E:27:ARG:HG3   | 6:E:29:ASP:OD1    | 2.05                     | 0.56              |
| 8:G:69:ILE:HA    | 8:G:72:MET:CE     | 2.35                     | 0.56              |
| 12:K:39:VAL:HG11 | 12:K:107:ASN:HB2  | 1.85                     | 0.56              |
| 16:O:139:TRP:HA  | 16:O:139:TRP:CE3  | 2.39                     | 0.56              |
| 24:W:12:THR:CG2  | 24:W:15:GLU:HG3   | 2.25                     | 0.56              |
| 28:1:11:THR:CG2  | 28:1:23:ARG:HB2   | 2.35                     | 0.56              |
| 1:A:595:U:O2'    | 1:A:596:C:H5'     | 2.05                     | 0.56              |
| 1:A:2314:G:H2'   | 1:A:2315:C:H5'    | 1.87                     | 0.56              |
| 1:A:2694:A:H4'   | 8:G:91:PHE:CE1    | 2.40                     | 0.56              |
| 4:C:88:ILE:HD13  | 4:C:100:PRO:CD    | 2.35                     | 0.56              |
| 5:D:55:ASN:HB3   | 5:D:64:GLY:H      | 1.70                     | 0.56              |
| 11:J:13:ALA:CA   | 11:J:91:HIS:HE1   | 2.15                     | 0.56              |
| 11:J:130:HIS:CG  | 11:J:133:ILE:HD11 | 2.40                     | 0.56              |
| 14:M:104:ASP:HB3 | 38:M:8570:HOH:O   | 2.05                     | 0.56              |
| 21:T:51:GLN:NE2  | 21:T:53:ASN:HD21  | 2.03                     | 0.56              |
| 24:W:39:ALA:N    | 24:W:40:PRO:CD    | 2.69                     | 0.56              |
| 25:X:38:THR:HB   | 38:X:5390:HOH:O   | 2.06                     | 0.56              |
| 25:X:60:GLU:O    | 25:X:63:GLU:HB2   | 2.05                     | 0.56              |
| 30:3:41:HIS:H    | 30:3:45:ASN:ND2   | 1.96                     | 0.56              |
| 1:A:383:A:H4'    | 38:A:4801:HOH:O   | 2.06                     | 0.56              |
| 21:T:51:GLN:HE21 | 21:T:53:ASN:ND2   | 2.03                     | 0.56              |
| 27:Z:186:ARG:HG2 | 27:Z:186:ARG:HH11 | 1.71                     | 0.56              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 31:4:38:ARG:O    | 31:4:42:ARG:HB2   | 2.06                     | 0.56              |
| 1:A:272:A:H5'    | 1:A:273:G:OP2     | 2.05                     | 0.56              |
| 1:A:1181:A:H2'   | 1:A:1182:C:O4'    | 2.05                     | 0.56              |
| 1:A:2241:C:O2'   | 1:A:2242:U:H5'    | 2.05                     | 0.56              |
| 1:A:2529:G:O2'   | 1:A:2530:C:H5'    | 2.05                     | 0.56              |
| 1:A:2620:U:O4    | 36:5:76:PPU:C     | 2.54                     | 0.56              |
| 1:A:2718:C:H6    | 1:A:2718:C:H5'    | 1.70                     | 0.56              |
| 1:A:2814:A:OP2   | 38:A:4548:HOH:O   | 2.17                     | 0.56              |
| 6:E:133:ARG:HD2  | 38:E:8414:HOH:O   | 2.05                     | 0.56              |
| 6:E:162:VAL:HG12 | 6:E:162:VAL:O     | 2.04                     | 0.56              |
| 16:O:154:LEU:HG  | 16:O:155:GLU:H    | 1.70                     | 0.56              |
| 18:Q:103:THR:O   | 18:Q:107:GLU:HG3  | 2.06                     | 0.56              |
| 20:S:29:LYS:HB3  | 38:S:8531:HOH:O   | 2.05                     | 0.56              |
| 24:W:58:THR:O    | 24:W:62:GLU:HG3   | 2.05                     | 0.56              |
| 1:A:168:C:O2'    | 1:A:169:A:H5'     | 2.06                     | 0.56              |
| 1:A:283:U:H5''   | 1:A:284:C:P       | 2.45                     | 0.56              |
| 1:A:316:A:H5'    | 22:U:54:ASP:OD2   | 2.05                     | 0.56              |
| 6:E:214:THR:HG21 | 38:E:8407:HOH:O   | 2.05                     | 0.56              |
| 7:F:44:ILE:HG12  | 7:F:83:PHE:HE1    | 1.69                     | 0.56              |
| 9:H:19:ALA:O     | 9:H:22:VAL:HG22   | 2.06                     | 0.56              |
| 14:M:148:GLU:HA  | 38:M:8576:HOH:O   | 2.05                     | 0.56              |
| 18:Q:58:SER:HB3  | 38:Q:186:HOH:O    | 2.04                     | 0.56              |
| 18:Q:105:LEU:CD2 | 18:Q:137:LEU:HD21 | 2.36                     | 0.56              |
| 2:B:3049:G:O2'   | 2:B:3050:G:H5'    | 2.06                     | 0.56              |
| 5:D:207:LYS:HG2  | 5:D:304:PRO:HB3   | 1.88                     | 0.56              |
| 16:O:58:LEU:HD12 | 16:O:58:LEU:N     | 2.21                     | 0.56              |
| 16:O:80:SER:CB   | 38:O:8536:HOH:O   | 2.53                     | 0.56              |
| 31:4:74:CYS:SG   | 31:4:76:LYS:CB    | 2.94                     | 0.56              |
| 1:A:2502:C:C4'   | 11:J:151:MET:HG2  | 2.35                     | 0.56              |
| 5:D:280:VAL:HG13 | 5:D:334:SER:HA    | 1.88                     | 0.56              |
| 7:F:44:ILE:HG23  | 7:F:45:THR:HG23   | 1.88                     | 0.56              |
| 12:K:19:MET:HE1  | 12:K:132:LEU:HD11 | 1.85                     | 0.56              |
| 1:A:154:C:H2'    | 1:A:155:C:H6      | 1.70                     | 0.56              |
| 1:A:2093:G:H5''  | 38:D:8526:HOH:O   | 2.06                     | 0.56              |
| 1:A:2664:A:H8    | 1:A:2664:A:OP1    | 1.89                     | 0.56              |
| 8:G:31:ARG:NH1   | 38:G:5919:HOH:O   | 2.38                     | 0.56              |
| 15:N:87:MET:CG   | 31:4:46:ILE:HD13  | 2.36                     | 0.56              |
| 22:U:48:VAL:HG22 | 22:U:97:ARG:C     | 2.27                     | 0.56              |
| 29:2:8:GLN:NE2   | 29:2:11:LYS:NZ    | 2.52                     | 0.56              |
| 1:A:2507:G:H2'   | 1:A:2510:C:H42    | 1.71                     | 0.56              |
| 1:A:2721:U:H4'   | 13:L:87:ARG:HG3   | 1.88                     | 0.56              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 7:F:144:ARG:NH2  | 38:F:3839:HOH:O   | 2.39                     | 0.56              |
| 11:J:39:GLY:O    | 11:J:41:THR:N     | 2.39                     | 0.56              |
| 11:J:59:ASN:H    | 11:J:59:ASN:ND2   | 1.97                     | 0.56              |
| 12:K:126:ASN:O   | 12:K:129:PHE:HE2  | 1.89                     | 0.56              |
| 16:O:34:LEU:HA   | 16:O:47:LEU:HD23  | 1.87                     | 0.56              |
| 17:P:7:LEU:HD22  | 38:P:5650:HOH:O   | 2.05                     | 0.56              |
| 22:U:9:LYS:HE3   | 22:U:13:ARG:HH11  | 1.71                     | 0.56              |
| 1:A:121:U:OP2    | 30:3:10:ARG:NH2   | 2.39                     | 0.55              |
| 1:A:2672:C:H1'   | 38:D:8634:HOH:O   | 2.06                     | 0.55              |
| 9:H:107:VAL:HG23 | 38:H:6617:HOH:O   | 2.05                     | 0.55              |
| 21:T:32:ALA:HA   | 21:T:36:GLU:OE1   | 2.06                     | 0.55              |
| 1:A:113:A:H3'    | 1:A:114:A:C5'     | 2.36                     | 0.55              |
| 8:G:21:THR:HG23  | 8:G:30:THR:OG1    | 2.06                     | 0.55              |
| 8:G:133:VAL:HG12 | 8:G:141:VAL:HG13  | 1.88                     | 0.55              |
| 15:N:104:ARG:O   | 15:N:108:LYS:HG2  | 2.06                     | 0.55              |
| 18:Q:109:ARG:NH1 | 18:Q:119:TYR:CE2  | 2.74                     | 0.55              |
| 26:Y:43:VAL:HG12 | 26:Y:44:ASP:N     | 2.21                     | 0.55              |
| 1:A:558:C:H2'    | 1:A:559:U:C5'     | 2.36                     | 0.55              |
| 1:A:1682:A:H5''  | 38:A:8961:HOH:O   | 2.06                     | 0.55              |
| 2:B:3028:U:H2'   | 2:B:3029:C:C6     | 2.42                     | 0.55              |
| 4:C:215:ILE:HG13 | 4:C:216:SER:N     | 2.22                     | 0.55              |
| 6:E:236:THR:CG2  | 6:E:239:ALA:H     | 1.95                     | 0.55              |
| 14:M:1:THR:HA    | 38:M:8526:HOH:O   | 2.06                     | 0.55              |
| 16:O:71:TRP:HE3  | 16:O:175:LEU:HD22 | 1.72                     | 0.55              |
| 16:O:143:ARG:HA  | 16:O:172:PHE:CD2  | 2.41                     | 0.55              |
| 31:4:44:SER:HA   | 31:4:49:ASP:OD1   | 2.06                     | 0.55              |
| 1:A:1209:C:H2'   | 1:A:1210:G:C8     | 2.41                     | 0.55              |
| 1:A:1393:A:H2'   | 1:A:1394:C:C6     | 2.41                     | 0.55              |
| 14:M:90:ARG:NH2  | 14:M:121:ILE:HD11 | 2.20                     | 0.55              |
| 25:X:108:ARG:HE  | 25:X:114:PRO:HG3  | 1.71                     | 0.55              |
| 1:A:338:C:H5''   | 38:E:8426:HOH:O   | 2.06                     | 0.55              |
| 1:A:2904:U:H4'   | 26:Y:8:ARG:NH1    | 2.20                     | 0.55              |
| 4:C:95:PRO:HG2   | 4:C:98:GLU:HG2    | 1.88                     | 0.55              |
| 7:F:27:ILE:HG22  | 7:F:28:GLY:N      | 2.15                     | 0.55              |
| 23:V:33:SER:O    | 23:V:37:GLU:HG3   | 2.07                     | 0.55              |
| 27:Z:133:HIS:HD2 | 38:Z:8588:HOH:O   | 1.88                     | 0.55              |
| 27:Z:216:ARG:CD  | 38:Z:8574:HOH:O   | 2.47                     | 0.55              |
| 1:A:506:G:N2     | 1:A:509:A:H5'     | 2.16                     | 0.55              |
| 1:A:635:A:H2'    | 1:A:636:G:H5''    | 1.87                     | 0.55              |
| 5:D:195:ARG:HD2  | 5:D:324:ASP:OD1   | 2.06                     | 0.55              |
| 15:N:114:VAL:HB  | 15:N:159:THR:HG23 | 1.87                     | 0.55              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 24:W:64:GLY:O     | 24:W:65:ASP:CB    | 2.55                     | 0.55              |
| 29:2:2:GLY:O      | 29:2:6:PRO:HG2    | 2.07                     | 0.55              |
| 1:A:57:C:H5''     | 38:A:6218:HOH:O   | 2.06                     | 0.55              |
| 1:A:182:G:O3'     | 15:N:157:LEU:HD13 | 2.07                     | 0.55              |
| 1:A:1659:A:H2'    | 1:A:1660:G:O4'    | 2.07                     | 0.55              |
| 1:A:2361:A:H5''   | 38:A:8523:HOH:O   | 2.06                     | 0.55              |
| 5:D:119:HIS:O     | 5:D:121:PRO:HD3   | 2.06                     | 0.55              |
| 9:H:100:ASP:HB3   | 38:H:5691:HOH:O   | 2.07                     | 0.55              |
| 14:M:145:LEU:O    | 14:M:148:GLU:HG3  | 2.07                     | 0.55              |
| 19:R:11:ARG:HD3   | 38:R:5620:HOH:O   | 2.07                     | 0.55              |
| 30:3:22:PRO:HG2   | 30:3:25:VAL:CG2   | 2.35                     | 0.55              |
| 31:4:34:LYS:HB2   | 31:4:37:ASP:OD2   | 2.06                     | 0.55              |
| 1:A:1166:A:H1'    | 1:A:1192:A:N1     | 2.21                     | 0.55              |
| 1:A:1191:A:C3'    | 1:A:1192:A:H5''   | 2.37                     | 0.55              |
| 1:A:2326:U:H4'    | 1:A:2412:G:C4'    | 2.37                     | 0.55              |
| 4:C:140:LEU:HB3   | 4:C:141:PRO:HD2   | 1.88                     | 0.55              |
| 6:E:236:THR:O     | 6:E:237:GLU:C     | 2.45                     | 0.55              |
| 7:F:140:ARG:O     | 7:F:144:ARG:HG2   | 2.06                     | 0.55              |
| 1:A:777:U:O2'     | 29:2:11:LYS:HG2   | 2.06                     | 0.55              |
| 2:B:3029:C:C2'    | 2:B:3030:C:H5'    | 2.36                     | 0.55              |
| 4:C:211:LYS:NZ    | 38:C:8582:HOH:O   | 2.39                     | 0.55              |
| 7:F:23:VAL:CG2    | 7:F:73:VAL:HB     | 2.36                     | 0.55              |
| 8:G:34:TRP:O      | 12:K:127:ILE:HD11 | 2.06                     | 0.55              |
| 16:O:73:ALA:HB2   | 16:O:163:PHE:CZ   | 2.42                     | 0.55              |
| 20:S:82:GLU:O     | 20:S:86:LYS:HG3   | 2.07                     | 0.55              |
| 1:A:970:U:H2'     | 38:A:5786:HOH:O   | 2.06                     | 0.55              |
| 1:A:2478:U:H2'    | 1:A:2479:A:C8     | 2.41                     | 0.55              |
| 11:J:48:LEU:HG    | 11:J:157:ILE:HG21 | 1.89                     | 0.55              |
| 16:O:62:HIS:HB3   | 16:O:65:ASP:OD1   | 2.07                     | 0.55              |
| 21:T:6:LYS:HB2    | 21:T:27:ALA:O     | 2.06                     | 0.55              |
| 22:U:37:GLN:OE1   | 22:U:118:SER:HA   | 2.06                     | 0.55              |
| 26:Y:21:PRO:HG2   | 26:Y:24:LYS:HD3   | 1.88                     | 0.55              |
| 1:A:125:U:H2'     | 38:A:3261:HOH:O   | 2.07                     | 0.54              |
| 1:A:1159:G:P      | 38:A:3782:HOH:O   | 2.65                     | 0.54              |
| 1:A:1165:G:OP1    | 1:A:1165:G:H3'    | 2.08                     | 0.54              |
| 2:B:3023:U:H6     | 2:B:3023:U:C5'    | 2.20                     | 0.54              |
| 8:G:11:VAL:CG1    | 8:G:12:ASP:N      | 2.70                     | 0.54              |
| 18:Q:105:LEU:HD21 | 18:Q:137:LEU:HD21 | 1.88                     | 0.54              |
| 31:4:3:MET:O      | 31:4:90:PHE:HA    | 2.07                     | 0.54              |
| 1:A:514:G:H8      | 1:A:514:G:O5'     | 1.90                     | 0.54              |
| 1:A:962:C:C1'     | 16:O:5:ARG:NH1    | 2.64                     | 0.54              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1187:U:O2'    | 1:A:1189:A:H2     | 1.91                     | 0.54              |
| 1:A:1512:G:O2'    | 1:A:1513:C:H5'    | 2.06                     | 0.54              |
| 1:A:2415:A:N3     | 16:O:26:LEU:HD13  | 2.22                     | 0.54              |
| 4:C:192:VAL:HG12  | 4:C:192:VAL:O     | 2.07                     | 0.54              |
| 4:C:192:VAL:CG1   | 4:C:207:GLN:HB3   | 2.38                     | 0.54              |
| 11:J:46:VAL:HG12  | 11:J:146:TRP:HZ3  | 1.72                     | 0.54              |
| 11:J:147:ARG:HA   | 11:J:150:LYS:NZ   | 2.23                     | 0.54              |
| 13:L:4:LEU:HD22   | 13:L:116:GLU:HB3  | 1.89                     | 0.54              |
| 16:O:132:ASN:O    | 16:O:135:VAL:HG12 | 2.06                     | 0.54              |
| 20:S:132:ARG:CZ   | 38:S:8582:HOH:O   | 2.55                     | 0.54              |
| 26:Y:15:ARG:HH11  | 26:Y:15:ARG:CB    | 2.15                     | 0.54              |
| 5:D:51:VAL:CG2    | 5:D:327:VAL:HG13  | 2.36                     | 0.54              |
| 5:D:314:ALA:CB    | 5:D:317:PRO:HG3   | 2.37                     | 0.54              |
| 12:K:42:GLU:O     | 12:K:131:THR:HG23 | 2.07                     | 0.54              |
| 15:N:46:LEU:HG    | 38:N:8622:HOH:O   | 2.07                     | 0.54              |
| 15:N:61:ILE:HD12  | 15:N:61:ILE:N     | 2.21                     | 0.54              |
| 22:U:32:ARG:NH1   | 22:U:38:ARG:HH12  | 2.05                     | 0.54              |
| 1:A:21:G:H4'      | 20:S:2:ILE:HG22   | 1.88                     | 0.54              |
| 1:A:204:A:H2'     | 1:A:205:U:H5'     | 1.88                     | 0.54              |
| 1:A:711:G:C2      | 1:A:718:C:C2      | 2.96                     | 0.54              |
| 1:A:1422:U:H2'    | 1:A:1423:C:C6     | 2.42                     | 0.54              |
| 1:A:1500:U:OP2    | 18:Q:41:ARG:NH2   | 2.40                     | 0.54              |
| 1:A:2320:U:H4'    | 1:A:2321:A:O4'    | 2.08                     | 0.54              |
| 2:B:3023:U:C3'    | 2:B:3024:U:H5''   | 2.38                     | 0.54              |
| 2:B:3042:C:H2'    | 38:B:8505:HOH:O   | 2.07                     | 0.54              |
| 4:C:199:HIS:HD2   | 4:C:201:PHE:H     | 1.52                     | 0.54              |
| 5:D:75:GLU:C      | 5:D:77:PRO:HD3    | 2.28                     | 0.54              |
| 7:F:41:LEU:HA     | 7:F:44:ILE:CG2    | 2.36                     | 0.54              |
| 9:H:101:ALA:HA    | 38:H:5413:HOH:O   | 2.07                     | 0.54              |
| 19:R:40:HIS:HD2   | 19:R:60:THR:OG1   | 1.90                     | 0.54              |
| 1:A:1120:U:H5''   | 1:A:1120:U:H6     | 1.70                     | 0.54              |
| 1:A:2547:C:OP2    | 5:D:5:ARG:NH1     | 2.40                     | 0.54              |
| 2:B:3020:G:O2'    | 2:B:3021:G:H5'    | 2.07                     | 0.54              |
| 8:G:126:ILE:HB    | 8:G:131:LEU:CD2   | 2.37                     | 0.54              |
| 11:J:136:VAL:HG23 | 38:J:8344:HOH:O   | 2.07                     | 0.54              |
| 14:M:149:ARG:O    | 14:M:150:GLN:HB2  | 2.07                     | 0.54              |
| 17:P:14:LEU:HD23  | 17:P:102:ILE:HD11 | 1.88                     | 0.54              |
| 1:A:541:C:H2'     | 1:A:542:A:H5'     | 1.88                     | 0.54              |
| 1:A:824:G:N7      | 38:A:3800:HOH:O   | 2.39                     | 0.54              |
| 1:A:1951:G:N2     | 38:A:5718:HOH:O   | 2.40                     | 0.54              |
| 1:A:2429:A:H2'    | 1:A:2430:A:C8     | 2.42                     | 0.54              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 38:A:6231:HOH:O   | 16:O:4:PRO:HD2   | 2.07                     | 0.54              |
| 4:C:164:ARG:HA    | 28:1:69:TYR:CE1  | 2.43                     | 0.54              |
| 22:U:9:LYS:CE     | 22:U:13:ARG:NH1  | 2.71                     | 0.54              |
| 25:X:35:VAL:HG23  | 25:X:41:TYR:CD2  | 2.42                     | 0.54              |
| 28:1:42:CYS:SG    | 28:1:44:PHE:N    | 2.61                     | 0.54              |
| 1:A:951:A:C2'     | 1:A:952:G:H5'    | 2.38                     | 0.54              |
| 1:A:2349:G:OP1    | 7:F:20:LYS:NZ    | 2.36                     | 0.54              |
| 1:A:2761:A:C4     | 1:A:2763:G:C8    | 2.95                     | 0.54              |
| 4:C:173:GLY:O     | 4:C:176:HIS:HB3  | 2.07                     | 0.54              |
| 6:E:16:VAL:HG12   | 6:E:17:ASP:N     | 2.22                     | 0.54              |
| 10:I:64:ASN:O     | 10:I:68:GLU:HG3  | 2.08                     | 0.54              |
| 31:4:87:ARG:HG3   | 38:4:8570:HOH:O  | 2.06                     | 0.54              |
| 1:A:2437:A:H2'    | 1:A:2438:G:C8    | 2.43                     | 0.54              |
| 1:A:2758:G:H2'    | 1:A:2759:C:C6    | 2.43                     | 0.54              |
| 5:D:66:GLU:OE1    | 5:D:328:ARG:HD2  | 2.08                     | 0.54              |
| 8:G:126:ILE:HB    | 8:G:131:LEU:HD23 | 1.89                     | 0.54              |
| 1:A:2015:A:H2'    | 1:A:2016:U:O4'   | 2.07                     | 0.54              |
| 1:A:2329:C:O2'    | 1:A:2330:U:H5'   | 2.08                     | 0.54              |
| 1:A:2717:C:O2'    | 1:A:2718:C:H5''  | 2.06                     | 0.54              |
| 5:D:55:ASN:HB3    | 5:D:63:GLU:HA    | 1.89                     | 0.54              |
| 5:D:168:GLY:N     | 5:D:174:ARG:HD3  | 2.22                     | 0.54              |
| 11:J:166:ASN:N    | 11:J:166:ASN:ND2 | 2.56                     | 0.54              |
| 12:K:131:THR:HG22 | 12:K:133:GLY:N   | 2.23                     | 0.54              |
| 15:N:164:THR:HB   | 38:N:8520:HOH:O  | 2.08                     | 0.54              |
| 23:V:44:ARG:CB    | 38:V:3805:HOH:O  | 2.54                     | 0.54              |
| 1:A:506:G:H22     | 1:A:509:A:H5''   | 1.70                     | 0.54              |
| 1:A:1527:A:H1'    | 1:A:1528:A:C8    | 2.43                     | 0.54              |
| 1:A:1713:G:C2'    | 38:A:4547:HOH:O  | 2.56                     | 0.54              |
| 1:A:1829:A:H5''   | 38:A:9578:HOH:O  | 2.07                     | 0.54              |
| 1:A:1887:U:OP1    | 28:1:21:LYS:HG3  | 2.08                     | 0.54              |
| 38:A:5970:HOH:O   | 30:3:1:GLY:HA3   | 2.07                     | 0.54              |
| 38:A:7138:HOH:O   | 15:N:154:ARG:HB2 | 2.07                     | 0.54              |
| 2:B:3035:C:H5''   | 38:B:8456:HOH:O  | 2.08                     | 0.54              |
| 6:E:236:THR:HA    | 38:E:8457:HOH:O  | 2.08                     | 0.54              |
| 7:F:65:GLU:HG3    | 38:F:6752:HOH:O  | 2.06                     | 0.54              |
| 11:J:45:GLN:HE21  | 11:J:135:TRP:HE1 | 1.56                     | 0.54              |
| 13:L:34:VAL:HB    | 38:L:7169:HOH:O  | 2.08                     | 0.54              |
| 25:X:5:VAL:HG22   | 25:X:32:CYS:HB2  | 1.90                     | 0.54              |
| 26:Y:76:ARG:HG3   | 26:Y:76:ARG:NH1  | 2.21                     | 0.54              |
| 1:A:329:A:OP2     | 6:E:206:ASN:HB2  | 2.08                     | 0.53              |
| 1:A:447:A:O2'     | 1:A:448:G:H5'    | 2.08                     | 0.53              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:778:C:C4     | 1:A:779:U:C4      | 2.96                     | 0.53              |
| 1:A:1174:A:C5    | 1:A:1201:C:H4'    | 2.43                     | 0.53              |
| 1:A:1641:A:H2'   | 1:A:1642:A:H5'    | 1.89                     | 0.53              |
| 1:A:2265:U:H2'   | 1:A:2266:A:C8     | 2.43                     | 0.53              |
| 6:E:43:LYS:NZ    | 38:E:8392:HOH:O   | 2.41                     | 0.53              |
| 7:F:64:ARG:CD    | 7:F:67:ASP:HB3    | 2.38                     | 0.53              |
| 13:L:75:ARG:CZ   | 38:L:4172:HOH:O   | 2.56                     | 0.53              |
| 15:N:87:MET:SD   | 31:4:46:ILE:HD13  | 2.48                     | 0.53              |
| 17:P:39:THR:O    | 17:P:115:ARG:NH2  | 2.41                     | 0.53              |
| 25:X:110:GLN:NE2 | 25:X:110:GLN:HA   | 2.24                     | 0.53              |
| 1:A:558:C:H2'    | 1:A:559:U:H5'     | 1.91                     | 0.53              |
| 1:A:816:G:H5'    | 1:A:1598:A:H4'    | 1.90                     | 0.53              |
| 1:A:1250:C:O2'   | 1:A:1251:C:H5'    | 2.08                     | 0.53              |
| 4:C:164:ARG:HB2  | 28:1:68:CYS:SG    | 2.48                     | 0.53              |
| 6:E:200:PRO:HB3  | 6:E:212:VAL:HG23  | 1.90                     | 0.53              |
| 10:I:12:ILE:N    | 38:I:4714:HOH:O   | 2.41                     | 0.53              |
| 10:I:12:ILE:HG22 | 10:I:12:ILE:O     | 2.08                     | 0.53              |
| 15:N:172:GLY:C   | 15:N:183:VAL:HG11 | 2.29                     | 0.53              |
| 17:P:4:ASN:HB3   | 17:P:7:LEU:HB3    | 1.90                     | 0.53              |
| 21:T:57:THR:CG2  | 21:T:58:MET:N     | 2.71                     | 0.53              |
| 23:V:9:CYS:HA    | 23:V:52:THR:CG2   | 2.38                     | 0.53              |
| 1:A:113:A:OP1    | 38:A:9242:HOH:O   | 2.19                     | 0.53              |
| 1:A:644:G:N3     | 1:A:644:G:H5'     | 2.24                     | 0.53              |
| 1:A:1097:A:H5''  | 25:X:125:HIS:NE2  | 2.24                     | 0.53              |
| 1:A:1909:A:H2'   | 1:A:1910:A:C8     | 2.42                     | 0.53              |
| 5:D:72:THR:HB    | 38:D:8606:HOH:O   | 2.09                     | 0.53              |
| 5:D:248:ARG:O    | 5:D:251:VAL:CG1   | 2.56                     | 0.53              |
| 8:G:69:ILE:HA    | 8:G:72:MET:HE3    | 1.90                     | 0.53              |
| 22:U:24:ARG:HH21 | 22:U:39:ASN:ND2   | 2.06                     | 0.53              |
| 25:X:1:MET:HB2   | 25:X:103:GLU:HG2  | 1.90                     | 0.53              |
| 27:Z:126:PRO:HG2 | 27:Z:128:PHE:CE1  | 2.43                     | 0.53              |
| 29:2:25:LYS:HD2  | 30:3:49:GLU:H     | 1.72                     | 0.53              |
| 1:A:1666:C:O2'   | 1:A:1667:A:C5'    | 2.56                     | 0.53              |
| 1:A:1730:G:H5'   | 1:A:1731:C:C6     | 2.44                     | 0.53              |
| 1:A:2028:U:H2'   | 1:A:2029:C:C6     | 2.43                     | 0.53              |
| 1:A:2791:U:H1'   | 1:A:2792:A:H5''   | 1.90                     | 0.53              |
| 4:C:105:VAL:HG11 | 4:C:154:ALA:HB1   | 1.89                     | 0.53              |
| 7:F:99:ASP:CB    | 7:F:103:ASN:H     | 2.22                     | 0.53              |
| 8:G:86:VAL:CG1   | 8:G:129:GLU:HA    | 2.38                     | 0.53              |
| 9:H:28:ALA:HB3   | 9:H:99:THR:O      | 2.08                     | 0.53              |
| 38:L:408:HOH:O   | 23:V:37:GLU:HB3   | 2.08                     | 0.53              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 14:M:54:PRO:HG2  | 14:M:57:VAL:HG21  | 1.89                     | 0.53              |
| 16:O:43:VAL:HG13 | 16:O:118:ILE:HD11 | 1.89                     | 0.53              |
| 20:S:18:LEU:HD12 | 20:S:143:VAL:CG1  | 2.39                     | 0.53              |
| 1:A:42:C:H1'     | 38:A:4157:HOH:O   | 2.08                     | 0.53              |
| 1:A:681:G:H5'    | 1:A:681:G:N3      | 2.24                     | 0.53              |
| 1:A:1617:C:C4    | 1:A:1643:C:H4'    | 2.43                     | 0.53              |
| 4:C:95:PRO:HA    | 4:C:153:ARG:HA    | 1.91                     | 0.53              |
| 4:C:105:VAL:CG1  | 4:C:154:ALA:HB1   | 2.39                     | 0.53              |
| 9:H:91:VAL:CG1   | 9:H:92:GLY:H      | 2.18                     | 0.53              |
| 23:V:46:ALA:HB1  | 23:V:52:THR:HG21  | 1.90                     | 0.53              |
| 1:A:344:C:H2'    | 1:A:345:G:O4'     | 2.08                     | 0.53              |
| 1:A:1192:A:H3'   | 1:A:1193:A:H5'    | 1.90                     | 0.53              |
| 1:A:1268:C:O2'   | 1:A:1269:G:H5'    | 2.09                     | 0.53              |
| 1:A:1362:U:H5'   | 38:A:9762:HOH:O   | 2.09                     | 0.53              |
| 1:A:2326:U:H4'   | 1:A:2412:G:H4'    | 1.90                     | 0.53              |
| 4:C:37:VAL:HG22  | 38:C:8610:HOH:O   | 2.08                     | 0.53              |
| 7:F:54:ALA:HB2   | 7:F:69:ILE:HD12   | 1.90                     | 0.53              |
| 9:H:91:VAL:CG1   | 9:H:92:GLY:N      | 2.70                     | 0.53              |
| 11:J:147:ARG:HA  | 11:J:150:LYS:HZ2  | 1.73                     | 0.53              |
| 15:N:61:ILE:HA   | 38:N:8624:HOH:O   | 2.09                     | 0.53              |
| 15:N:108:LYS:HE3 | 38:N:8614:HOH:O   | 2.08                     | 0.53              |
| 24:W:44:GLY:O    | 24:W:48:GLU:HG2   | 2.08                     | 0.53              |
| 1:A:538:C:OP2    | 27:Z:134:HIS:HE1  | 1.92                     | 0.53              |
| 1:A:902:G:N7     | 14:M:18:HIS:CD2   | 2.75                     | 0.53              |
| 1:A:1200:A:H4'   | 38:A:6798:HOH:O   | 2.09                     | 0.53              |
| 1:A:1242:A:OP2   | 12:K:60:ARG:NH2   | 2.38                     | 0.53              |
| 4:C:217:ARG:HG2  | 4:C:229:ALA:HB2   | 1.91                     | 0.53              |
| 5:D:74:ILE:HD13  | 5:D:309:VAL:HG21  | 1.91                     | 0.53              |
| 9:H:99:THR:O     | 9:H:100:ASP:HB2   | 2.08                     | 0.53              |
| 10:I:12:ILE:HB   | 38:I:4714:HOH:O   | 2.07                     | 0.53              |
| 1:A:1185:U:H5'   | 38:A:6922:HOH:O   | 2.09                     | 0.53              |
| 38:A:5778:HOH:O  | 7:F:55:LYS:HB2    | 2.07                     | 0.53              |
| 13:L:55:VAL:HG12 | 13:L:56:SER:H     | 1.73                     | 0.53              |
| 18:Q:10:ALA:CA   | 18:Q:13:VAL:HG12  | 2.39                     | 0.53              |
| 24:W:39:ALA:O    | 24:W:41:GLU:N     | 2.41                     | 0.53              |
| 1:A:212:A:O4'    | 1:A:214:U:C6      | 2.62                     | 0.53              |
| 1:A:703:G:O2'    | 1:A:704:C:H5'     | 2.09                     | 0.53              |
| 1:A:1180:U:H2'   | 1:A:1181:A:O4'    | 2.09                     | 0.53              |
| 1:A:2256:G:H2'   | 1:A:2257:G:H5'    | 1.91                     | 0.53              |
| 1:A:2459:G:OP1   | 31:4:64:LYS:N     | 2.21                     | 0.53              |
| 38:A:4311:HOH:O  | 12:K:47:THR:CB    | 2.51                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:E:77:ALA:O     | 6:E:78:ARG:HG3   | 2.08                     | 0.53              |
| 15:N:87:MET:HB2  | 15:N:91:ILE:CD1  | 2.39                     | 0.53              |
| 18:Q:16:VAL:HG12 | 18:Q:17:GLY:N    | 2.24                     | 0.53              |
| 1:A:776:A:OP1    | 29:2:28:HIS:HE1  | 1.92                     | 0.53              |
| 1:A:1328:A:OP1   | 27:Z:169:ARG:HD2 | 2.08                     | 0.53              |
| 1:A:2594:C:O2'   | 1:A:2595:U:H5'   | 2.09                     | 0.53              |
| 38:A:9566:HOH:O  | 20:S:83:LYS:HB3  | 2.08                     | 0.53              |
| 38:A:9733:HOH:O  | 4:C:221:PRO:HA   | 2.07                     | 0.53              |
| 5:D:315:VAL:HG23 | 5:D:316:ARG:HG2  | 1.91                     | 0.53              |
| 7:F:11:HIS:C     | 7:F:13:MET:H     | 2.12                     | 0.53              |
| 9:H:100:ASP:O    | 9:H:101:ALA:O    | 2.27                     | 0.53              |
| 12:K:131:THR:HB  | 12:K:134:GLU:HG3 | 1.91                     | 0.53              |
| 16:O:157:PRO:HA  | 38:O:8526:HOH:O  | 2.09                     | 0.53              |
| 18:Q:115:SER:O   | 18:Q:117:SER:N   | 2.42                     | 0.53              |
| 25:X:90:TYR:CE2  | 25:X:99:ALA:HB2  | 2.44                     | 0.53              |
| 27:Z:178:HIS:CG  | 27:Z:179:PRO:HD2 | 2.44                     | 0.53              |
| 1:A:1014:A:H5''  | 2:B:3101:G:O2'   | 2.09                     | 0.52              |
| 1:A:1060:C:H6    | 1:A:1060:C:H5'   | 1.73                     | 0.52              |
| 1:A:2107:U:O2'   | 1:A:2108:A:H5'   | 2.09                     | 0.52              |
| 5:D:27:ASN:HD22  | 5:D:27:ASN:H     | 1.57                     | 0.52              |
| 5:D:42:ALA:HB1   | 5:D:308:LEU:HD11 | 1.90                     | 0.52              |
| 6:E:95:GLU:OE1   | 6:E:95:GLU:N     | 2.39                     | 0.52              |
| 7:F:174:VAL:HG13 | 38:F:6555:HOH:O  | 2.08                     | 0.52              |
| 8:G:31:ARG:NH1   | 8:G:68:HIS:CG    | 2.77                     | 0.52              |
| 15:N:65:VAL:HG21 | 15:N:105:ALA:HB2 | 1.91                     | 0.52              |
| 28:1:10:ARG:HG3  | 28:1:11:THR:N    | 2.25                     | 0.52              |
| 31:4:40:ARG:HD2  | 38:4:8547:HOH:O  | 2.07                     | 0.52              |
| 1:A:1701:A:H4'   | 1:A:1702:U:C5'   | 2.39                     | 0.52              |
| 1:A:1819:G:H2'   | 1:A:1820:G:C5'   | 2.39                     | 0.52              |
| 1:A:2478:U:H2'   | 1:A:2479:A:H8    | 1.74                     | 0.52              |
| 8:G:20:ILE:HD12  | 8:G:33:LEU:CD1   | 2.40                     | 0.52              |
| 11:J:4:ALA:HB3   | 38:J:8365:HOH:O  | 2.08                     | 0.52              |
| 20:S:82:GLU:HG3  | 20:S:83:LYS:N    | 2.24                     | 0.52              |
| 25:X:125:HIS:HE1 | 38:X:3071:HOH:O  | 1.92                     | 0.52              |
| 1:A:88:G:H5'     | 1:A:88:G:H8      | 1.75                     | 0.52              |
| 1:A:256:C:H2'    | 1:A:257:G:O4'    | 2.09                     | 0.52              |
| 1:A:559:U:H2'    | 1:A:560:C:O4'    | 2.10                     | 0.52              |
| 1:A:1333:U:H2'   | 1:A:1334:C:C6    | 2.44                     | 0.52              |
| 1:A:1505:U:H6    | 1:A:1505:U:H5'   | 1.73                     | 0.52              |
| 1:A:1834:C:H2'   | 1:A:1840:A:N6    | 2.24                     | 0.52              |
| 1:A:2123:A:H5'   | 15:N:89:ASN:HD21 | 1.74                     | 0.52              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:2435:U:H1'    | 38:A:4900:HOH:O   | 2.08                     | 0.52              |
| 2:B:3041:C:H4'    | 7:F:48:MET:HB2    | 1.90                     | 0.52              |
| 4:C:18:ALA:O      | 4:C:20:SER:N      | 2.39                     | 0.52              |
| 5:D:62:ARG:CA     | 5:D:65:MET:HE3    | 2.33                     | 0.52              |
| 7:F:58:VAL:HG12   | 7:F:59:GLY:N      | 2.24                     | 0.52              |
| 11:J:117:LYS:O    | 11:J:119:VAL:HG13 | 2.09                     | 0.52              |
| 28:1:26:VAL:O     | 28:1:30:GLU:HG3   | 2.09                     | 0.52              |
| 28:1:46:LYS:NZ    | 38:1:8439:HOH:O   | 2.43                     | 0.52              |
| 1:A:1015:C:H2'    | 1:A:1016:U:C6     | 2.44                     | 0.52              |
| 1:A:1159:G:H21    | 1:A:1189:A:H8     | 1.56                     | 0.52              |
| 1:A:1205:U:H2'    | 1:A:1206:U:C5'    | 2.38                     | 0.52              |
| 2:B:3025:G:H5''   | 2:B:3026:C:C6     | 2.45                     | 0.52              |
| 10:I:69:ARG:NH1   | 38:I:3513:HOH:O   | 2.42                     | 0.52              |
| 11:J:150:LYS:NZ   | 38:J:8379:HOH:O   | 2.40                     | 0.52              |
| 15:N:184:ARG:HG3  | 15:N:185:PRO:HA   | 1.92                     | 0.52              |
| 16:O:159:TYR:HE2  | 16:O:163:PHE:HE2  | 1.57                     | 0.52              |
| 17:P:96:VAL:HA    | 38:P:4258:HOH:O   | 2.08                     | 0.52              |
| 20:S:61:GLN:NE2   | 38:S:8539:HOH:O   | 2.42                     | 0.52              |
| 28:1:50:ALA:HB3   | 28:1:54:ILE:HG22  | 1.91                     | 0.52              |
| 1:A:380:A:OP2     | 15:N:9:ARG:HD2    | 2.09                     | 0.52              |
| 1:A:401:C:H2'     | 1:A:402:U:C6      | 2.45                     | 0.52              |
| 1:A:622:G:O2'     | 1:A:623:U:H5'     | 2.09                     | 0.52              |
| 1:A:657:G:OP1     | 6:E:27:ARG:NH2    | 2.40                     | 0.52              |
| 1:A:1008:C:O2'    | 1:A:1009:U:H5'    | 2.09                     | 0.52              |
| 1:A:1189:A:O2'    | 1:A:1208:C:H2'    | 2.09                     | 0.52              |
| 1:A:2276:U:H2'    | 1:A:2277:U:H6     | 1.74                     | 0.52              |
| 1:A:2467:A:O2'    | 1:A:2468:A:H2'    | 2.08                     | 0.52              |
| 1:A:2587:U:H2'    | 1:A:2589:U:H5''   | 1.91                     | 0.52              |
| 6:E:127:ARG:HG2   | 6:E:127:ARG:NH1   | 2.24                     | 0.52              |
| 6:E:150:THR:HA    | 6:E:203:ALA:O     | 2.09                     | 0.52              |
| 7:F:146:LYS:NZ    | 16:O:107:ASN:ND2  | 2.57                     | 0.52              |
| 27:Z:99:ALA:HB2   | 27:Z:233:TYR:CZ   | 2.44                     | 0.52              |
| 27:Z:172:THR:HG22 | 27:Z:173:ALA:N    | 2.24                     | 0.52              |
| 1:A:566:A:H2'     | 1:A:567:U:O4'     | 2.09                     | 0.52              |
| 1:A:1176:C:H1'    | 38:A:3422:HOH:O   | 2.10                     | 0.52              |
| 1:A:2064:U:H5'    | 1:A:2652:U:H4'    | 1.90                     | 0.52              |
| 1:A:2694:A:H4'    | 8:G:91:PHE:HE1    | 1.74                     | 0.52              |
| 1:A:2769:C:C2'    | 1:A:2770:G:H5'    | 2.40                     | 0.52              |
| 5:D:305:ASP:O     | 5:D:306:LYS:CB    | 2.56                     | 0.52              |
| 5:D:307:ARG:HH11  | 5:D:307:ARG:CG    | 2.22                     | 0.52              |
| 8:G:11:VAL:HG12   | 8:G:12:ASP:H      | 1.74                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 13:L:74:VAL:CG1  | 13:L:113:ILE:HG12 | 2.40                     | 0.52              |
| 28:1:38:LYS:HE2  | 28:1:45:LYS:CE    | 2.38                     | 0.52              |
| 1:A:513:A:N3     | 38:A:3157:HOH:O   | 2.33                     | 0.52              |
| 1:A:797:A:O4'    | 28:1:10:ARG:N     | 2.42                     | 0.52              |
| 5:D:162:MET:CE   | 5:D:308:LEU:HD21  | 2.40                     | 0.52              |
| 5:D:217:ARG:HG3  | 5:D:257:THR:CG2   | 2.39                     | 0.52              |
| 6:E:37:ALA:HB2   | 38:E:8382:HOH:O   | 2.09                     | 0.52              |
| 6:E:142:ASP:OD1  | 6:E:236:THR:HG23  | 2.09                     | 0.52              |
| 9:H:58:GLU:OE1   | 15:N:27:ARG:NH2   | 2.39                     | 0.52              |
| 12:K:93:ARG:HB3  | 12:K:93:ARG:HH11  | 1.74                     | 0.52              |
| 14:M:73:VAL:HG23 | 14:M:74:THR:H     | 1.73                     | 0.52              |
| 16:O:64:SER:C    | 16:O:66:LEU:H     | 2.12                     | 0.52              |
| 1:A:401:C:P      | 38:A:5258:HOH:O   | 2.68                     | 0.52              |
| 1:A:1450:C:C4'   | 1:A:1451:C:OP2    | 2.54                     | 0.52              |
| 1:A:1718:G:OP2   | 18:Q:20:ARG:HD2   | 2.09                     | 0.52              |
| 1:A:2505:G:H8    | 38:A:5108:HOH:O   | 1.93                     | 0.52              |
| 1:A:2630:G:O6    | 4:C:206:ARG:NH2   | 2.43                     | 0.52              |
| 4:C:199:HIS:HD2  | 4:C:201:PHE:HB2   | 1.75                     | 0.52              |
| 5:D:144:THR:HG22 | 5:D:145:HIS:N     | 2.25                     | 0.52              |
| 7:F:54:ALA:CB    | 7:F:69:ILE:HD12   | 2.40                     | 0.52              |
| 11:J:46:VAL:O    | 11:J:146:TRP:HH2  | 1.93                     | 0.52              |
| 11:J:86:ARG:HD3  | 11:J:130:HIS:HD2  | 1.74                     | 0.52              |
| 1:A:431:G:P      | 15:N:48:ARG:HH12  | 2.33                     | 0.52              |
| 1:A:625:U:H5''   | 1:A:1044:C:N4     | 2.25                     | 0.52              |
| 1:A:1188:A:C5    | 1:A:1189:A:C2     | 2.98                     | 0.52              |
| 1:A:1654:U:H2'   | 4:C:47:HIS:CD2    | 2.45                     | 0.52              |
| 1:A:2715:G:N2    | 5:D:264:GLU:OE1   | 2.43                     | 0.52              |
| 4:C:81:GLN:HB2   | 4:C:92:ASN:ND2    | 2.24                     | 0.52              |
| 4:C:99:ILE:O     | 4:C:131:HIS:CE1   | 2.63                     | 0.52              |
| 11:J:144:GLU:OE1 | 11:J:144:GLU:HA   | 2.10                     | 0.52              |
| 17:P:25:VAL:HG23 | 17:P:26:TRP:N     | 2.25                     | 0.52              |
| 25:X:88:THR:CG2  | 25:X:89:ASP:H     | 2.19                     | 0.52              |
| 28:1:37:HIS:O    | 28:1:45:LYS:HA    | 2.10                     | 0.52              |
| 30:3:40:ARG:HG2  | 30:3:40:ARG:HH11  | 1.74                     | 0.52              |
| 1:A:218:C:OP2    | 1:A:220:C:N4      | 2.42                     | 0.52              |
| 1:A:832:U:H2'    | 1:A:833:G:C8      | 2.45                     | 0.52              |
| 5:D:162:MET:CE   | 5:D:310:ARG:HD3   | 2.40                     | 0.52              |
| 11:J:48:LEU:CD1  | 11:J:157:ILE:HG21 | 2.39                     | 0.52              |
| 11:J:139:ASP:N   | 11:J:140:PRO:CD   | 2.72                     | 0.52              |
| 14:M:35:ARG:O    | 14:M:40:PHE:HA    | 2.10                     | 0.52              |
| 14:M:53:ARG:NH2  | 14:M:57:VAL:HG12  | 2.25                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 16:O:154:LEU:HG  | 16:O:155:GLU:N   | 2.24                     | 0.52              |
| 1:A:1055:G:OP2   | 11:J:94:ARG:NH1  | 2.43                     | 0.51              |
| 1:A:1654:U:H2'   | 4:C:47:HIS:HD2   | 1.74                     | 0.51              |
| 1:A:2724:U:H2'   | 1:A:2725:G:O4'   | 2.10                     | 0.51              |
| 1:A:2781:U:H2'   | 1:A:2782:G:H5'   | 1.91                     | 0.51              |
| 1:A:2896:A:H2'   | 1:A:2896:A:N3    | 2.25                     | 0.51              |
| 7:F:92:GLU:O     | 7:F:93:LEU:O     | 2.28                     | 0.51              |
| 10:I:23:ILE:O    | 10:I:27:ILE:HG13 | 2.10                     | 0.51              |
| 13:L:125:ALA:C   | 13:L:127:ALA:H   | 2.12                     | 0.51              |
| 1:A:920:C:H5''   | 1:A:921:G:O5'    | 2.10                     | 0.51              |
| 1:A:2115:U:H2'   | 1:A:2116:U:C6    | 2.45                     | 0.51              |
| 1:A:2307:A:C2    | 1:A:2308:U:N3    | 2.78                     | 0.51              |
| 1:A:2524:G:H21   | 1:A:2526:C:N4    | 2.08                     | 0.51              |
| 1:A:2756:U:H3    | 1:A:2896:A:H2    | 1.56                     | 0.51              |
| 6:E:178:GLN:O    | 6:E:179:GLY:C    | 2.48                     | 0.51              |
| 11:J:127:GLY:O   | 11:J:128:ALA:CB  | 2.58                     | 0.51              |
| 14:M:57:VAL:HG12 | 14:M:57:VAL:O    | 2.10                     | 0.51              |
| 23:V:14:GLU:OE1  | 23:V:15:PRO:HD2  | 2.10                     | 0.51              |
| 25:X:90:TYR:N    | 25:X:90:TYR:CD1  | 2.78                     | 0.51              |
| 25:X:122:ARG:HG2 | 25:X:152:ALA:O   | 2.09                     | 0.51              |
| 1:A:542:A:H2'    | 1:A:543:G:O4'    | 2.10                     | 0.51              |
| 1:A:2533:C:H6    | 1:A:2533:C:C5'   | 2.15                     | 0.51              |
| 4:C:125:ASN:ND2  | 38:C:8542:HOH:O  | 2.39                     | 0.51              |
| 9:H:48:VAL:HG23  | 9:H:74:PHE:CB    | 2.41                     | 0.51              |
| 22:U:111:ARG:HB3 | 22:U:119:ALA:HB2 | 1.93                     | 0.51              |
| 25:X:21:LEU:HD21 | 25:X:48:VAL:CG1  | 2.40                     | 0.51              |
| 1:A:136:C:H2'    | 1:A:137:U:O4'    | 2.10                     | 0.51              |
| 1:A:911:G:H5'    | 1:A:932:U:OP1    | 2.10                     | 0.51              |
| 1:A:926:A:O2'    | 14:M:41:HIS:CD2  | 2.63                     | 0.51              |
| 1:A:1056:U:H2'   | 1:A:1057:A:O4'   | 2.11                     | 0.51              |
| 1:A:1874:U:P     | 4:C:51:ARG:HD2   | 2.50                     | 0.51              |
| 1:A:2121:G:O2'   | 31:4:47:GLY:HA2  | 2.11                     | 0.51              |
| 1:A:2432:C:H2'   | 1:A:2433:A:H8    | 1.75                     | 0.51              |
| 1:A:2749:U:O2'   | 1:A:2751:C:OP2   | 2.17                     | 0.51              |
| 7:F:169:THR:O    | 7:F:170:TYR:HB2  | 2.11                     | 0.51              |
| 25:X:154:ARG:C   | 38:X:4276:HOH:O  | 2.47                     | 0.51              |
| 31:4:39:GLN:HA   | 31:4:42:ARG:NH2  | 2.26                     | 0.51              |
| 1:A:797:A:C4'    | 28:1:10:ARG:N    | 2.73                     | 0.51              |
| 1:A:1568:G:O2'   | 1:A:1569:U:H5'   | 2.09                     | 0.51              |
| 1:A:2039:A:H4'   | 1:A:2760:C:O2'   | 2.11                     | 0.51              |
| 1:A:2270:G:H4'   | 4:C:223:ARG:HH12 | 1.75                     | 0.51              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 38:A:6167:HOH:O  | 27:Z:165:GLU:HB3  | 2.10                     | 0.51              |
| 2:B:3030:C:OP1   | 7:F:137:PRO:O     | 2.28                     | 0.51              |
| 4:C:192:VAL:O    | 4:C:207:GLN:HG2   | 2.10                     | 0.51              |
| 11:J:150:LYS:HA  | 11:J:153:VAL:HG22 | 1.92                     | 0.51              |
| 16:O:162:ASP:O   | 38:O:8520:HOH:O   | 2.18                     | 0.51              |
| 16:O:180:LEU:O   | 16:O:181:ASP:HB3  | 2.10                     | 0.51              |
| 20:S:25:PHE:CE2  | 20:S:29:LYS:HE2   | 2.46                     | 0.51              |
| 23:V:52:THR:HG22 | 23:V:54:THR:N     | 2.26                     | 0.51              |
| 26:Y:43:VAL:CG1  | 26:Y:47:ALA:HB3   | 2.41                     | 0.51              |
| 1:A:111:C:H2'    | 1:A:112:G:O4'     | 2.11                     | 0.51              |
| 1:A:245:C:H2'    | 1:A:246:G:H5'     | 1.92                     | 0.51              |
| 1:A:289:G:O2'    | 1:A:290:C:H5'     | 2.11                     | 0.51              |
| 1:A:711:G:N2     | 1:A:718:C:C2      | 2.79                     | 0.51              |
| 1:A:2081:A:H4'   | 12:K:69:TYR:CE1   | 2.46                     | 0.51              |
| 1:A:2256:G:C2'   | 1:A:2257:G:H5'    | 2.41                     | 0.51              |
| 1:A:2787:C:H5    | 38:A:4115:HOH:O   | 1.93                     | 0.51              |
| 6:E:39:GLN:O     | 6:E:43:LYS:HD3    | 2.11                     | 0.51              |
| 7:F:135:VAL:HG22 | 7:F:136:ARG:N     | 2.25                     | 0.51              |
| 8:G:5:LEU:HD21   | 8:G:66:GLN:HG3    | 1.91                     | 0.51              |
| 8:G:7:ILE:CG2    | 8:G:45:ASP:O      | 2.58                     | 0.51              |
| 10:I:66:LEU:O    | 10:I:69:ARG:HB3   | 2.10                     | 0.51              |
| 15:N:59:GLY:CA   | 15:N:141:ILE:HD11 | 2.41                     | 0.51              |
| 23:V:52:THR:HG22 | 23:V:54:THR:H     | 1.76                     | 0.51              |
| 25:X:14:HIS:HB2  | 25:X:17:ILE:HG13  | 1.93                     | 0.51              |
| 26:Y:72:VAL:HG22 | 26:Y:85:VAL:CG1   | 2.38                     | 0.51              |
| 28:1:25:ARG:O    | 28:1:29:VAL:HG23  | 2.10                     | 0.51              |
| 1:A:306:A:P      | 22:U:38:ARG:HH21  | 2.33                     | 0.51              |
| 1:A:470:U:O2'    | 29:2:16:HIS:HD2   | 1.93                     | 0.51              |
| 1:A:1052:G:N3    | 1:A:1052:G:H2'    | 2.24                     | 0.51              |
| 1:A:1589:G:N2    | 1:A:1605:G:H1'    | 2.26                     | 0.51              |
| 1:A:1882:C:O2'   | 1:A:2012:U:OP2    | 2.26                     | 0.51              |
| 1:A:2055:A:H4'   | 20:S:132:ARG:NH2  | 2.25                     | 0.51              |
| 1:A:2363:G:O2'   | 19:R:11:ARG:HG3   | 2.11                     | 0.51              |
| 5:D:204:GLY:C    | 38:D:8653:HOH:O   | 2.49                     | 0.51              |
| 7:F:10:PHE:CG    | 7:F:11:HIS:N      | 2.79                     | 0.51              |
| 8:G:92:PRO:HB2   | 38:G:4917:HOH:O   | 2.11                     | 0.51              |
| 9:H:99:THR:O     | 9:H:99:THR:HG23   | 2.10                     | 0.51              |
| 15:N:113:ARG:NH2 | 15:N:156:ARG:HG2  | 2.26                     | 0.51              |
| 28:1:57:CYS:O    | 28:1:61:GLY:N     | 2.41                     | 0.51              |
| 29:2:25:LYS:HD2  | 30:3:49:GLU:N     | 2.25                     | 0.51              |
| 29:2:25:LYS:HG3  | 30:3:49:GLU:H     | 1.76                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1787:C:H4'   | 1:A:2883:A:O4'   | 2.10                     | 0.51              |
| 1:A:2897:C:H2'   | 1:A:2898:G:H8    | 1.75                     | 0.51              |
| 5:D:211:THR:HA   | 5:D:255:GLY:O    | 2.11                     | 0.51              |
| 7:F:86:THR:O     | 7:F:90:LEU:HG    | 2.11                     | 0.51              |
| 11:J:56:ILE:HG21 | 11:J:61:LEU:HD13 | 1.93                     | 0.51              |
| 25:X:31:HIS:HB3  | 38:X:5420:HOH:O  | 2.11                     | 0.51              |
| 1:A:305:A:C5     | 1:A:329:A:C2     | 2.99                     | 0.51              |
| 1:A:960:G:H2'    | 1:A:960:G:N3     | 2.26                     | 0.51              |
| 1:A:1008:C:OP1   | 11:J:16:ARG:NH2  | 2.40                     | 0.51              |
| 38:A:4879:HOH:O  | 4:C:164:ARG:CZ   | 2.59                     | 0.51              |
| 5:D:125:GLU:O    | 5:D:129:ARG:HG3  | 2.10                     | 0.51              |
| 5:D:329:TYR:HE2  | 23:V:15:PRO:HG2  | 1.74                     | 0.51              |
| 6:E:140:VAL:HG12 | 6:E:141:SER:N    | 2.26                     | 0.51              |
| 9:H:101:ALA:HB2  | 9:H:108:LEU:HD22 | 1.93                     | 0.51              |
| 16:O:82:TYR:OH   | 16:O:176:ARG:NH1 | 2.44                     | 0.51              |
| 19:R:30:VAL:O    | 19:R:30:VAL:HG12 | 2.11                     | 0.51              |
| 20:S:29:LYS:HD3  | 38:S:8531:HOH:O  | 2.11                     | 0.51              |
| 21:T:58:MET:SD   | 30:3:8:LYS:HE3   | 2.50                     | 0.51              |
| 1:A:737:A:H2'    | 1:A:738:G:O4'    | 2.11                     | 0.51              |
| 1:A:2779:G:H21   | 8:G:143:GLN:NE2  | 2.09                     | 0.51              |
| 5:D:32:ASP:HA    | 38:D:8575:HOH:O  | 2.10                     | 0.51              |
| 11:J:83:PHE:HZ   | 11:J:146:TRP:HE1 | 1.55                     | 0.51              |
| 16:O:3:GLY:HA3   | 38:O:8512:HOH:O  | 2.10                     | 0.51              |
| 16:O:139:TRP:HA  | 16:O:139:TRP:HE3 | 1.76                     | 0.51              |
| 31:4:24:LYS:HG2  | 35:4:8504:CL:CL  | 2.48                     | 0.51              |
| 1:A:204:A:C2'    | 1:A:205:U:H5'    | 2.40                     | 0.50              |
| 1:A:1197:G:N2    | 38:A:5692:HOH:O  | 2.43                     | 0.50              |
| 1:A:1699:C:H4'   | 38:A:5901:HOH:O  | 2.10                     | 0.50              |
| 1:A:2094:G:C4'   | 5:D:245:SER:HB3  | 2.39                     | 0.50              |
| 1:A:2112:A:H2'   | 1:A:2113:G:C8    | 2.46                     | 0.50              |
| 1:A:2795:C:O2'   | 1:A:2796:U:H5'   | 2.11                     | 0.50              |
| 5:D:235:ARG:HA   | 38:D:8596:HOH:O  | 2.10                     | 0.50              |
| 6:E:33:LYS:HE2   | 38:E:8361:HOH:O  | 2.10                     | 0.50              |
| 11:J:71:TYR:C    | 11:J:73:GLN:N    | 2.63                     | 0.50              |
| 21:T:57:THR:CG2  | 21:T:59:ASP:HB2  | 2.40                     | 0.50              |
| 28:1:58:GLY:HA3  | 38:1:8437:HOH:O  | 2.10                     | 0.50              |
| 1:A:2897:C:O2'   | 1:A:2898:G:H5'   | 2.11                     | 0.50              |
| 5:D:189:ALA:HB1  | 38:D:8566:HOH:O  | 2.10                     | 0.50              |
| 26:Y:20:GLU:CD   | 26:Y:21:PRO:HD2  | 2.31                     | 0.50              |
| 31:4:69:TYR:HB2  | 31:4:78:HIS:CE1  | 2.46                     | 0.50              |
| 1:A:192:A:N6     | 1:A:194:A:C2     | 2.80                     | 0.50              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:821:U:O2'     | 1:A:822:C:H5'     | 2.12                     | 0.50              |
| 1:A:1119:G:H8     | 12:K:52:GLN:HE22  | 1.59                     | 0.50              |
| 1:A:1559:A:H1'    | 38:A:5328:HOH:O   | 2.11                     | 0.50              |
| 1:A:2004:U:H1'    | 38:A:9690:HOH:O   | 2.10                     | 0.50              |
| 1:A:2266:A:H2'    | 1:A:2267:G:H8     | 1.76                     | 0.50              |
| 38:A:4057:HOH:O   | 15:N:83:SER:HA    | 2.10                     | 0.50              |
| 38:A:5651:HOH:O   | 30:3:44:ARG:HG2   | 2.11                     | 0.50              |
| 6:E:5:ILE:CD1     | 6:E:16:VAL:HG23   | 2.24                     | 0.50              |
| 6:E:127:ARG:HD2   | 6:E:229:PRO:O     | 2.11                     | 0.50              |
| 8:G:15:GLN:HG2    | 8:G:19:ASP:O      | 2.11                     | 0.50              |
| 15:N:24:MET:HE2   | 15:N:28:MET:HE3   | 1.94                     | 0.50              |
| 26:Y:8:ARG:NH1    | 38:Y:2479:HOH:O   | 2.23                     | 0.50              |
| 1:A:220:C:OP2     | 1:A:2431:C:H1'    | 2.12                     | 0.50              |
| 1:A:564:G:H1'     | 38:A:5768:HOH:O   | 2.12                     | 0.50              |
| 1:A:1015:C:H6     | 1:A:1015:C:O5'    | 1.93                     | 0.50              |
| 1:A:1205:U:C2'    | 1:A:1206:U:H5'    | 2.36                     | 0.50              |
| 1:A:2266:A:H2'    | 1:A:2267:G:C8     | 2.46                     | 0.50              |
| 7:F:49:PRO:HG3    | 38:F:5828:HOH:O   | 2.10                     | 0.50              |
| 7:F:64:ARG:O      | 7:F:67:ASP:OD2    | 2.29                     | 0.50              |
| 7:F:95:THR:C      | 7:F:97:GLN:H      | 2.07                     | 0.50              |
| 8:G:20:ILE:CD1    | 8:G:40:VAL:HG11   | 2.41                     | 0.50              |
| 11:J:47:GLU:CB    | 11:J:133:ILE:HD13 | 2.41                     | 0.50              |
| 14:M:72:ASN:O     | 14:M:76:LEU:HG    | 2.11                     | 0.50              |
| 15:N:52:LEU:HD13  | 15:N:116:ASN:CG   | 2.31                     | 0.50              |
| 15:N:173:LEU:HD23 | 15:N:183:VAL:CG1  | 2.41                     | 0.50              |
| 23:V:52:THR:CG2   | 23:V:54:THR:HB    | 2.42                     | 0.50              |
| 25:X:11:VAL:O     | 25:X:12:ASN:HB2   | 2.11                     | 0.50              |
| 1:A:858:U:H2'     | 1:A:859:C:C6      | 2.47                     | 0.50              |
| 1:A:1768:C:H2'    | 1:A:1769:C:O4'    | 2.10                     | 0.50              |
| 1:A:1829:A:C8     | 1:A:1885:A:C8     | 2.99                     | 0.50              |
| 4:C:94:LEU:HG     | 4:C:99:ILE:CD1    | 2.42                     | 0.50              |
| 4:C:191:GLY:HA2   | 4:C:194:MET:HE2   | 1.94                     | 0.50              |
| 6:E:79:ARG:O      | 6:E:87:ARG:HG2    | 2.11                     | 0.50              |
| 7:F:41:LEU:CA     | 7:F:44:ILE:HG22   | 2.40                     | 0.50              |
| 14:M:73:VAL:HG23  | 14:M:74:THR:N     | 2.26                     | 0.50              |
| 20:S:119:VAL:O    | 20:S:119:VAL:HG12 | 2.11                     | 0.50              |
| 31:4:18:GLN:OE1   | 31:4:73:GLU:HB3   | 2.12                     | 0.50              |
| 1:A:646:G:H2'     | 1:A:647:U:H6      | 1.77                     | 0.50              |
| 1:A:1523:G:H2'    | 1:A:1524:U:C6     | 2.47                     | 0.50              |
| 1:A:1787:C:OP1    | 18:Q:68:LYS:HE2   | 2.11                     | 0.50              |
| 2:B:3076:G:C3'    | 2:B:3077:A:H5''   | 2.35                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:G:37:ASP:OD1   | 12:K:125:SER:HB3 | 2.11                     | 0.50              |
| 9:H:48:VAL:CG2   | 9:H:74:PHE:HB3   | 2.40                     | 0.50              |
| 1:A:128:A:H3'    | 1:A:128:A:H8     | 1.77                     | 0.50              |
| 1:A:419:A:C2     | 1:A:2449:G:C2    | 3.00                     | 0.50              |
| 1:A:1804:A:H2'   | 1:A:1805:G:C8    | 2.46                     | 0.50              |
| 4:C:51:ARG:HB2   | 38:C:8620:HOH:O  | 2.11                     | 0.50              |
| 5:D:103:ASP:HB2  | 38:D:8594:HOH:O  | 2.11                     | 0.50              |
| 9:H:32:GLY:N     | 38:H:3111:HOH:O  | 2.44                     | 0.50              |
| 18:Q:80:ARG:HG2  | 18:Q:87:ARG:CZ   | 2.41                     | 0.50              |
| 20:S:96:VAL:HG13 | 20:S:106:GLY:HA3 | 1.93                     | 0.50              |
| 29:2:25:LYS:HG2  | 29:2:25:LYS:O    | 2.12                     | 0.50              |
| 1:A:702:G:O2'    | 1:A:703:G:H5'    | 2.12                     | 0.50              |
| 1:A:858:U:H2'    | 1:A:859:C:H6     | 1.77                     | 0.50              |
| 1:A:1557:G:O2'   | 1:A:1558:C:H5'   | 2.12                     | 0.50              |
| 1:A:1636:G:O2'   | 1:A:1637:A:H5'   | 2.11                     | 0.50              |
| 1:A:2256:G:H2'   | 1:A:2257:G:C5'   | 2.42                     | 0.50              |
| 1:A:2382:A:H5'   | 38:4:8531:HOH:O  | 2.11                     | 0.50              |
| 1:A:2404:G:OP1   | 19:R:69:ASP:N    | 2.38                     | 0.50              |
| 1:A:2531:U:O2'   | 1:A:2532:A:H5'   | 2.12                     | 0.50              |
| 4:C:75:GLY:HA2   | 28:1:63:LYS:O    | 2.12                     | 0.50              |
| 5:D:4:SER:O      | 5:D:5:ARG:HB2    | 2.12                     | 0.50              |
| 7:F:65:GLU:HA    | 38:F:6752:HOH:O  | 2.12                     | 0.50              |
| 8:G:93:MET:HE1   | 8:G:165:GLY:N    | 2.27                     | 0.50              |
| 11:J:65:ARG:NH1  | 38:J:8385:HOH:O  | 2.44                     | 0.50              |
| 15:N:85:ARG:NE   | 38:N:8519:HOH:O  | 2.34                     | 0.50              |
| 22:U:19:ARG:HD3  | 22:U:67:LEU:O    | 2.11                     | 0.50              |
| 31:4:7:PHE:HE2   | 31:4:22:VAL:HG21 | 1.76                     | 0.50              |
| 1:A:303:C:O2'    | 1:A:304:G:H5'    | 2.12                     | 0.50              |
| 1:A:832:U:H2'    | 1:A:833:G:H8     | 1.76                     | 0.50              |
| 1:A:2304:G:H5'   | 38:R:1719:HOH:O  | 2.10                     | 0.50              |
| 1:A:2911:C:H2'   | 1:A:2912:C:C6    | 2.47                     | 0.50              |
| 7:F:23:VAL:HG21  | 7:F:45:THR:CG2   | 2.42                     | 0.50              |
| 9:H:27:GLY:HA3   | 38:H:5413:HOH:O  | 2.12                     | 0.50              |
| 9:H:117:GLU:C    | 9:H:119:ARG:H    | 2.15                     | 0.50              |
| 21:T:53:ASN:ND2  | 38:T:8321:HOH:O  | 2.44                     | 0.50              |
| 21:T:81:ILE:HG23 | 38:T:8337:HOH:O  | 2.11                     | 0.50              |
| 24:W:11:MET:HB3  | 24:W:15:GLU:HB2  | 1.93                     | 0.50              |
| 25:X:122:ARG:CG  | 25:X:152:ALA:O   | 2.60                     | 0.50              |
| 1:A:119:A:H2'    | 1:A:120:A:H5''   | 1.94                     | 0.49              |
| 1:A:656:G:OP2    | 17:P:37:ARG:HD2  | 2.11                     | 0.49              |
| 1:A:2278:U:H2'   | 38:A:7060:HOH:O  | 2.11                     | 0.49              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:2361:A:H2'    | 1:A:2362:A:C8    | 2.47                     | 0.49              |
| 4:C:53:ALA:HB3    | 38:C:8620:HOH:O  | 2.11                     | 0.49              |
| 4:C:105:VAL:HG12  | 4:C:106:CYS:N    | 2.27                     | 0.49              |
| 5:D:56:ASP:OD1    | 5:D:322:ARG:HB3  | 2.10                     | 0.49              |
| 5:D:132:HIS:CE1   | 5:D:171:VAL:HG21 | 2.46                     | 0.49              |
| 5:D:223:ARG:HG3   | 5:D:232:TRP:O    | 2.12                     | 0.49              |
| 8:G:18:LEU:HD13   | 8:G:34:TRP:CD1   | 2.47                     | 0.49              |
| 9:H:34:ASN:HA     | 15:N:4:ALA:HB2   | 1.94                     | 0.49              |
| 13:L:72:VAL:HG11  | 13:L:121:PHE:CD1 | 2.47                     | 0.49              |
| 14:M:140:VAL:HG23 | 38:M:8562:HOH:O  | 2.11                     | 0.49              |
| 18:Q:7:LYS:HD3    | 18:Q:21:VAL:HG21 | 1.94                     | 0.49              |
| 20:S:39:THR:HB    | 20:S:42:GLU:CG   | 2.41                     | 0.49              |
| 1:A:734:U:O2'     | 1:A:737:A:N6     | 2.45                     | 0.49              |
| 1:A:820:G:O2'     | 1:A:856:G:H4'    | 2.12                     | 0.49              |
| 1:A:821:U:H2'     | 1:A:822:C:C6     | 2.47                     | 0.49              |
| 1:A:883:U:O2      | 1:A:883:U:C2'    | 2.60                     | 0.49              |
| 1:A:922:A:N7      | 1:A:2281:C:H5'   | 2.27                     | 0.49              |
| 1:A:1127:C:H2'    | 1:A:1128:U:H5'   | 1.93                     | 0.49              |
| 1:A:1887:U:OP1    | 28:1:21:LYS:HE3  | 2.12                     | 0.49              |
| 6:E:246:ARG:HH11  | 6:E:246:ARG:CB   | 2.18                     | 0.49              |
| 19:R:24:SER:O     | 38:R:2847:HOH:O  | 2.19                     | 0.49              |
| 23:V:39:ASN:ND2   | 23:V:44:ARG:HH11 | 2.10                     | 0.49              |
| 1:A:1495:C:H1'    | 1:A:1573:A:H1'   | 1.94                     | 0.49              |
| 1:A:2453:G:H5'    | 38:A:4173:HOH:O  | 2.11                     | 0.49              |
| 2:B:3031:C:H1'    | 38:B:8392:HOH:O  | 2.11                     | 0.49              |
| 8:G:116:THR:HG22  | 8:G:151:LEU:HD22 | 1.93                     | 0.49              |
| 10:I:63:ARG:N     | 38:I:2569:HOH:O  | 2.45                     | 0.49              |
| 11:J:59:ASN:N     | 11:J:59:ASN:ND2  | 2.56                     | 0.49              |
| 15:N:122:GLU:HB2  | 15:N:126:HIS:O   | 2.12                     | 0.49              |
| 1:A:61:G:OP1      | 30:3:17:GLN:HG2  | 2.12                     | 0.49              |
| 1:A:484:A:N1      | 1:A:506:G:H4'    | 2.28                     | 0.49              |
| 1:A:920:C:H4'     | 1:A:921:G:C2     | 2.47                     | 0.49              |
| 1:A:1015:C:H2'    | 1:A:1016:U:H6    | 1.75                     | 0.49              |
| 6:E:162:VAL:CG1   | 6:E:192:ILE:HD11 | 2.42                     | 0.49              |
| 12:K:39:VAL:HG12  | 12:K:40:ASN:ND2  | 2.26                     | 0.49              |
| 12:K:52:GLN:HG3   | 12:K:53:ILE:N    | 2.28                     | 0.49              |
| 14:M:143:THR:HG22 | 14:M:144:ASP:H   | 1.77                     | 0.49              |
| 20:S:119:VAL:HG21 | 20:S:142:ASP:CG  | 2.32                     | 0.49              |
| 26:Y:36:HIS:CE1   | 26:Y:40:HIS:CD2  | 3.01                     | 0.49              |
| 1:A:251:C:H1'     | 15:N:58:GLN:HE22 | 1.76                     | 0.49              |
| 1:A:921:G:H4'     | 1:A:924:G:C6     | 2.47                     | 0.49              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1116:U:H3    | 1:A:1246:A:N6     | 2.00                     | 0.49              |
| 1:A:1160:G:HO2'  | 1:A:1190:G:H8     | 1.61                     | 0.49              |
| 1:A:1762:C:H4'   | 38:A:4138:HOH:O   | 2.11                     | 0.49              |
| 1:A:1778:A:H2'   | 1:A:1779:A:H5'    | 1.94                     | 0.49              |
| 1:A:1819:G:H5'   | 38:A:5281:HOH:O   | 2.12                     | 0.49              |
| 1:A:2004:U:O2    | 1:A:2004:U:H2'    | 2.11                     | 0.49              |
| 1:A:2123:A:H3'   | 1:A:2124:G:H8     | 1.77                     | 0.49              |
| 1:A:2419:U:H5''  | 1:A:2420:G:C5'    | 2.41                     | 0.49              |
| 1:A:2505:G:C2'   | 1:A:2506:A:H5'    | 2.42                     | 0.49              |
| 4:C:57:ALA:HA    | 4:C:67:LEU:HD23   | 1.94                     | 0.49              |
| 15:N:52:LEU:HD13 | 15:N:116:ASN:CB   | 2.42                     | 0.49              |
| 21:T:29:ASP:OD2  | 21:T:31:ARG:NH1   | 2.46                     | 0.49              |
| 1:A:283:U:H5''   | 1:A:284:C:OP2     | 2.13                     | 0.49              |
| 1:A:1132:A:N6    | 1:A:1229:C:H2'    | 2.28                     | 0.49              |
| 38:A:9103:HOH:O  | 15:N:165:SER:HB3  | 2.12                     | 0.49              |
| 5:D:2:GLN:CD     | 38:D:8622:HOH:O   | 2.50                     | 0.49              |
| 6:E:118:THR:HG23 | 38:E:8305:HOH:O   | 2.12                     | 0.49              |
| 9:H:6:PHE:CD1    | 9:H:6:PHE:O       | 2.66                     | 0.49              |
| 9:H:13:GLU:OE2   | 9:H:78:GLU:HG2    | 2.12                     | 0.49              |
| 12:K:74:ARG:NH1  | 12:K:76:ASP:HB2   | 2.27                     | 0.49              |
| 12:K:142:ASN:O   | 12:K:144:THR:N    | 2.45                     | 0.49              |
| 15:N:95:LYS:HG2  | 15:N:99:ARG:HB3   | 1.94                     | 0.49              |
| 17:P:77:ALA:HA   | 17:P:96:VAL:O     | 2.13                     | 0.49              |
| 21:T:57:THR:C    | 21:T:59:ASP:H     | 2.15                     | 0.49              |
| 29:2:21:ARG:HD2  | 29:2:39:PHE:HB2   | 1.94                     | 0.49              |
| 31:4:62:THR:HB   | 38:4:8549:HOH:O   | 2.11                     | 0.49              |
| 31:4:84:ARG:HB3  | 38:4:8549:HOH:O   | 2.11                     | 0.49              |
| 1:A:219:G:O5'    | 1:A:220:C:H5''    | 2.13                     | 0.49              |
| 1:A:228:C:H2'    | 1:A:229:G:H5'     | 1.95                     | 0.49              |
| 1:A:500:G:H21    | 20:S:98:ASN:HD21  | 1.60                     | 0.49              |
| 1:A:1125:U:H2'   | 1:A:1126:C:H5'    | 1.95                     | 0.49              |
| 1:A:1189:A:H1'   | 1:A:1209:C:C1'    | 2.43                     | 0.49              |
| 1:A:1883:U:O2'   | 1:A:1884:G:H5'    | 2.13                     | 0.49              |
| 1:A:2712:G:H5'   | 38:L:4183:HOH:O   | 2.13                     | 0.49              |
| 6:E:141:SER:HB3  | 38:E:8421:HOH:O   | 2.13                     | 0.49              |
| 8:G:43:ASP:HA    | 38:G:5864:HOH:O   | 2.12                     | 0.49              |
| 12:K:79:PHE:HB3  | 12:K:103:VAL:HG11 | 1.94                     | 0.49              |
| 16:O:34:LEU:HD13 | 16:O:47:LEU:HD21  | 1.94                     | 0.49              |
| 23:V:52:THR:HG22 | 23:V:54:THR:HB    | 1.95                     | 0.49              |
| 25:X:6:GLN:CB    | 25:X:26:ILE:HD12  | 2.38                     | 0.49              |
| 1:A:541:C:C2'    | 1:A:542:A:C5'     | 2.88                     | 0.49              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:553:G:O4'     | 1:A:1325:G:H5'    | 2.13                     | 0.49              |
| 5:D:304:PRO:HD2   | 5:D:307:ARG:HD2   | 1.95                     | 0.49              |
| 7:F:35:ALA:HB1    | 38:F:3279:HOH:O   | 2.12                     | 0.49              |
| 16:O:170:GLU:O    | 16:O:174:GLU:HG3  | 2.13                     | 0.49              |
| 20:S:111:ILE:HG23 | 20:S:145:LEU:HD11 | 1.95                     | 0.49              |
| 23:V:35:LYS:NZ    | 38:V:6621:HOH:O   | 2.39                     | 0.49              |
| 25:X:3:ALA:O      | 25:X:54:PHE:HA    | 2.12                     | 0.49              |
| 25:X:139:GLY:O    | 25:X:141:HIS:HD2  | 1.95                     | 0.49              |
| 29:2:17:THR:N     | 29:2:27:TYR:O     | 2.38                     | 0.49              |
| 1:A:834:G:H4'     | 1:A:835:U:OP2     | 2.13                     | 0.49              |
| 1:A:1164:U:C4'    | 1:A:1165:G:OP1    | 2.54                     | 0.49              |
| 1:A:1535:G:H2'    | 1:A:1536:C:C6     | 2.48                     | 0.49              |
| 1:A:1651:C:OP1    | 38:A:4986:HOH:O   | 2.20                     | 0.49              |
| 1:A:1813:U:O2'    | 18:Q:81:LYS:HE3   | 2.13                     | 0.49              |
| 1:A:2262:C:O5'    | 1:A:2262:C:H6     | 1.95                     | 0.49              |
| 1:A:2815:G:N7     | 12:K:80:LYS:NZ    | 2.61                     | 0.49              |
| 6:E:129:HIS:CE1   | 6:E:231:ARG:HA    | 2.48                     | 0.49              |
| 14:M:65:ASP:CG    | 14:M:111:ALA:HB3  | 2.33                     | 0.49              |
| 15:N:157:LEU:HB3  | 15:N:160:PHE:HD1  | 1.76                     | 0.49              |
| 28:1:11:THR:OG1   | 28:1:23:ARG:HB2   | 2.13                     | 0.49              |
| 1:A:314:G:N2      | 1:A:316:A:H3'     | 2.27                     | 0.49              |
| 1:A:558:C:C2'     | 1:A:559:U:C5'     | 2.91                     | 0.49              |
| 1:A:1218:U:H2'    | 1:A:1219:U:C6     | 2.48                     | 0.49              |
| 1:A:1299:G:N2     | 38:A:4165:HOH:O   | 2.46                     | 0.49              |
| 38:A:6913:HOH:O   | 6:E:188:ARG:HD2   | 2.11                     | 0.49              |
| 4:C:36:ASP:HA     | 4:C:83:GLY:HA3    | 1.95                     | 0.49              |
| 8:G:80:TRP:O      | 8:G:134:SER:HA    | 2.12                     | 0.49              |
| 10:I:20:VAL:O     | 10:I:24:VAL:HG23  | 2.13                     | 0.49              |
| 11:J:81:TYR:CD1   | 11:J:81:TYR:C     | 2.86                     | 0.49              |
| 20:S:114:VAL:O    | 20:S:114:VAL:HG13 | 2.13                     | 0.49              |
| 27:Z:144:ARG:NH2  | 38:Z:8616:HOH:O   | 2.45                     | 0.49              |
| 29:2:26:SER:HB3   | 29:2:35:SER:OG    | 2.11                     | 0.49              |
| 30:3:48:ASP:O     | 30:3:49:GLU:HB2   | 2.13                     | 0.49              |
| 31:4:73:GLU:HB3   | 38:4:8559:HOH:O   | 2.12                     | 0.49              |
| 1:A:65:C:O2'      | 1:A:66:G:H5'      | 2.13                     | 0.48              |
| 1:A:401:C:C5'     | 38:A:5258:HOH:O   | 2.61                     | 0.48              |
| 1:A:1735:C:O2'    | 1:A:1736:A:H5'    | 2.13                     | 0.48              |
| 5:D:44:TYR:OH     | 5:D:148:PRO:HG3   | 2.13                     | 0.48              |
| 5:D:108:GLU:HB3   | 5:D:111:ARG:HD2   | 1.94                     | 0.48              |
| 8:G:20:ILE:HD11   | 8:G:33:LEU:HD12   | 1.93                     | 0.48              |
| 15:N:77:PHE:HD2   | 38:N:8526:HOH:O   | 1.96                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 16:O:18:THR:HA    | 38:O:8525:HOH:O   | 2.12                     | 0.48              |
| 16:O:154:LEU:O    | 16:O:155:GLU:CB   | 2.61                     | 0.48              |
| 23:V:31:PHE:CG    | 23:V:37:GLU:HG2   | 2.48                     | 0.48              |
| 25:X:6:GLN:HA     | 25:X:52:VAL:HG23  | 1.93                     | 0.48              |
| 1:A:278:A:H2'     | 1:A:279:C:O4'     | 2.14                     | 0.48              |
| 1:A:926:A:O2'     | 14:M:41:HIS:HD2   | 1.96                     | 0.48              |
| 1:A:1733:A:H4'    | 5:D:212:GLN:HA    | 1.94                     | 0.48              |
| 1:A:2010:A:H2'    | 38:A:5418:HOH:O   | 2.12                     | 0.48              |
| 1:A:2053:G:OP1    | 20:S:138:SER:OG   | 2.27                     | 0.48              |
| 1:A:2251:G:H2'    | 1:A:2252:A:C8     | 2.49                     | 0.48              |
| 1:A:2559:C:H4'    | 38:A:6714:HOH:O   | 2.13                     | 0.48              |
| 2:B:3025:G:N2     | 38:B:8512:HOH:O   | 2.45                     | 0.48              |
| 5:D:177:HIS:O     | 5:D:181:ILE:HG13  | 2.13                     | 0.48              |
| 8:G:132:THR:O     | 8:G:132:THR:HG23  | 2.12                     | 0.48              |
| 9:H:47:LEU:HD22   | 9:H:108:LEU:CD1   | 2.44                     | 0.48              |
| 13:L:86:THR:HG22  | 13:L:87:ARG:N     | 2.29                     | 0.48              |
| 14:M:101:ASP:C    | 14:M:103:ALA:H    | 2.15                     | 0.48              |
| 14:M:143:THR:CG2  | 14:M:144:ASP:H    | 2.26                     | 0.48              |
| 25:X:122:ARG:HH22 | 25:X:154:ARG:C    | 2.17                     | 0.48              |
| 31:4:42:ARG:HH11  | 31:4:42:ARG:HG3   | 1.78                     | 0.48              |
| 1:A:1164:U:O4'    | 1:A:1165:G:OP1    | 2.31                     | 0.48              |
| 1:A:1166:A:H61    | 1:A:1180:U:H3     | 1.60                     | 0.48              |
| 1:A:1494:A:H1'    | 1:A:1495:C:C6     | 2.48                     | 0.48              |
| 1:A:2542:C:H5''   | 1:A:2608:C:N4     | 2.27                     | 0.48              |
| 5:D:148:PRO:HB2   | 5:D:156:LYS:O     | 2.13                     | 0.48              |
| 7:F:35:ALA:O      | 7:F:37:ALA:N      | 2.46                     | 0.48              |
| 7:F:49:PRO:HA     | 7:F:73:VAL:HG22   | 1.95                     | 0.48              |
| 7:F:62:ASP:HA     | 38:F:4233:HOH:O   | 2.13                     | 0.48              |
| 7:F:154:LYS:H     | 7:F:154:LYS:CD    | 2.19                     | 0.48              |
| 11:J:48:LEU:HD13  | 11:J:146:TRP:HB3  | 1.95                     | 0.48              |
| 11:J:75:SER:HB3   | 11:J:79:ALA:HB1   | 1.95                     | 0.48              |
| 28:1:77:LYS:HA    | 28:1:80:MET:CE    | 2.43                     | 0.48              |
| 1:A:338:C:H4'     | 6:E:174:ILE:HD12  | 1.95                     | 0.48              |
| 1:A:1119:G:H2'    | 12:K:52:GLN:HE22  | 1.77                     | 0.48              |
| 1:A:1706:G:C5     | 1:A:1707:G:C6     | 3.02                     | 0.48              |
| 1:A:2620:U:H1'    | 38:A:6629:HOH:O   | 2.13                     | 0.48              |
| 1:A:2906:A:H5'    | 1:A:2907:C:O4'    | 2.13                     | 0.48              |
| 5:D:251:VAL:HG23  | 5:D:252:PRO:HD2   | 1.95                     | 0.48              |
| 7:F:36:ASN:HA     | 38:F:7500:HOH:O   | 2.12                     | 0.48              |
| 7:F:146:LYS:HZ3   | 16:O:107:ASN:HD21 | 1.58                     | 0.48              |
| 15:N:154:ARG:HD3  | 38:N:8646:HOH:O   | 2.12                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 16:O:32:PRO:HD2   | 16:O:99:GLU:O     | 2.14                     | 0.48              |
| 16:O:155:GLU:O    | 16:O:156:GLU:HG3  | 2.14                     | 0.48              |
| 19:R:32:GLU:HA    | 19:R:71:TYR:OH    | 2.13                     | 0.48              |
| 27:Z:189:ASN:HA   | 27:Z:217:ILE:HD11 | 1.95                     | 0.48              |
| 28:1:56:MET:HA    | 28:1:62:TYR:O     | 2.14                     | 0.48              |
| 31:4:11:CYS:HB2   | 31:4:20:HIS:CE1   | 2.48                     | 0.48              |
| 1:A:107:U:H2'     | 1:A:108:U:H5'     | 1.96                     | 0.48              |
| 1:A:870:G:C3'     | 1:A:871:G:H5''    | 2.43                     | 0.48              |
| 38:A:9264:HOH:O   | 14:M:41:HIS:HE1   | 1.96                     | 0.48              |
| 2:B:3054:A:O2'    | 2:B:3055:U:H5'    | 2.13                     | 0.48              |
| 7:F:86:THR:C      | 7:F:89:PRO:HD2    | 2.33                     | 0.48              |
| 7:F:146:LYS:HZ1   | 16:O:107:ASN:HD21 | 1.59                     | 0.48              |
| 12:K:107:ASN:C    | 12:K:107:ASN:HD22 | 2.17                     | 0.48              |
| 22:U:24:ARG:NH2   | 22:U:39:ASN:HD22  | 2.10                     | 0.48              |
| 23:V:13:ILE:HG12  | 23:V:32:CYS:HB2   | 1.95                     | 0.48              |
| 26:Y:76:ARG:O     | 26:Y:77:PHE:HB3   | 2.12                     | 0.48              |
| 1:A:488:U:C2'     | 38:A:3497:HOH:O   | 2.57                     | 0.48              |
| 1:A:1116:U:O2'    | 1:A:1118:A:C2     | 2.57                     | 0.48              |
| 1:A:1120:U:H5'    | 1:A:1121:G:OP2    | 2.13                     | 0.48              |
| 1:A:1503:U:H2'    | 1:A:1504:A:O4'    | 2.14                     | 0.48              |
| 1:A:1574:C:H6     | 1:A:1574:C:O5'    | 1.96                     | 0.48              |
| 1:A:2679:G:H2'    | 1:A:2681:A:OP2    | 2.13                     | 0.48              |
| 38:A:7167:HOH:O   | 6:E:94:THR:HG21   | 2.14                     | 0.48              |
| 6:E:54:LEU:HD21   | 6:E:87:ARG:HD2    | 1.95                     | 0.48              |
| 13:L:55:VAL:CG1   | 13:L:56:SER:N     | 2.77                     | 0.48              |
| 16:O:182:GLY:O    | 16:O:183:ASP:O    | 2.31                     | 0.48              |
| 18:Q:3:LEU:HA     | 18:Q:6:GLN:OE1    | 2.13                     | 0.48              |
| 22:U:75:GLU:O     | 22:U:76:ASP:HB2   | 2.13                     | 0.48              |
| 30:3:40:ARG:HG3   | 30:3:45:ASN:CB    | 2.44                     | 0.48              |
| 1:A:221:G:H2'     | 1:A:222:A:C8      | 2.48                     | 0.48              |
| 1:A:1687:C:O2     | 29:2:9:GLY:HA2    | 2.14                     | 0.48              |
| 1:A:2720:C:O2     | 13:L:87:ARG:NH2   | 2.46                     | 0.48              |
| 38:A:6603:HOH:O   | 29:2:1:THR:HB     | 2.12                     | 0.48              |
| 38:A:6862:HOH:O   | 22:U:2:LYS:HE2    | 2.13                     | 0.48              |
| 5:D:156:LYS:HE3   | 38:D:8630:HOH:O   | 2.13                     | 0.48              |
| 5:D:320:GLN:HG3   | 5:D:321:PRO:CD    | 2.43                     | 0.48              |
| 6:E:19:PRO:HG2    | 6:E:22:PHE:CD1    | 2.49                     | 0.48              |
| 12:K:39:VAL:CG1   | 12:K:107:ASN:HB2  | 2.42                     | 0.48              |
| 13:L:82:ARG:NH2   | 13:L:115:ARG:HG2  | 2.29                     | 0.48              |
| 15:N:38:VAL:C     | 15:N:63:VAL:HG13  | 2.34                     | 0.48              |
| 15:N:115:LEU:HD13 | 15:N:116:ASN:HB2  | 1.96                     | 0.48              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 20:S:39:THR:O     | 20:S:40:ALA:C    | 2.50                     | 0.48              |
| 25:X:126:ASP:HB3  | 25:X:135:GLY:O   | 2.14                     | 0.48              |
| 27:Z:107:PRO:HB3  | 27:Z:182:PHE:CE2 | 2.49                     | 0.48              |
| 1:A:420:U:H2'     | 1:A:421:C:C6     | 2.48                     | 0.48              |
| 1:A:1211:G:O2'    | 1:A:1212:C:H5'   | 2.13                     | 0.48              |
| 1:A:1269:G:H2'    | 1:A:1270:U:C6    | 2.49                     | 0.48              |
| 1:A:1434:A:H2'    | 1:A:1436:C:C5    | 2.49                     | 0.48              |
| 1:A:1562:C:O2     | 1:A:1562:C:H2'   | 2.14                     | 0.48              |
| 1:A:1788:U:C2     | 1:A:1805:G:N2    | 2.81                     | 0.48              |
| 1:A:2256:G:O2'    | 1:A:2257:G:H5'   | 2.13                     | 0.48              |
| 1:A:2428:G:C6     | 1:A:2464:C:H1'   | 2.48                     | 0.48              |
| 1:A:2472:C:O2'    | 1:A:2634:G:H4'   | 2.12                     | 0.48              |
| 3:5:75:C:N4       | 36:5:76:PPU:H102 | 2.28                     | 0.48              |
| 5:D:24:PRO:CG     | 5:D:204:GLY:HA2  | 2.44                     | 0.48              |
| 5:D:27:ASN:HB3    | 38:D:8628:HOH:O  | 2.12                     | 0.48              |
| 11:J:139:ASP:H    | 11:J:140:PRO:HD3 | 1.73                     | 0.48              |
| 12:K:107:ASN:HD22 | 12:K:109:TYR:H   | 1.59                     | 0.48              |
| 16:O:67:ALA:HA    | 16:O:71:TRP:HB3  | 1.96                     | 0.48              |
| 18:Q:7:LYS:CD     | 18:Q:21:VAL:CG2  | 2.92                     | 0.48              |
| 24:W:56:ILE:O     | 24:W:60:GLN:HG3  | 2.12                     | 0.48              |
| 1:A:60:A:C2       | 1:A:61:G:C8      | 3.02                     | 0.48              |
| 1:A:283:U:H5      | 1:A:284:C:N4     | 2.11                     | 0.48              |
| 1:A:1006:A:N1     | 1:A:2311:A:H1'   | 2.29                     | 0.48              |
| 1:A:1543:G:N1     | 1:A:1641:A:OP2   | 2.36                     | 0.48              |
| 1:A:1819:G:H2'    | 1:A:1820:G:C4'   | 2.44                     | 0.48              |
| 1:A:2089:A:C2'    | 1:A:2090:G:H5'   | 2.44                     | 0.48              |
| 5:D:55:ASN:HB3    | 5:D:64:GLY:N     | 2.28                     | 0.48              |
| 5:D:307:ARG:HH11  | 5:D:307:ARG:CB   | 2.26                     | 0.48              |
| 7:F:159:PRO:O     | 7:F:163:VAL:HG23 | 2.14                     | 0.48              |
| 8:G:11:VAL:CG1    | 8:G:12:ASP:H     | 2.27                     | 0.48              |
| 13:L:18:ILE:HG22  | 13:L:93:ASN:HB2  | 1.96                     | 0.48              |
| 15:N:67:ILE:HG21  | 15:N:97:ILE:HG23 | 1.96                     | 0.48              |
| 16:O:22:GLN:HG2   | 16:O:26:LEU:HD22 | 1.94                     | 0.48              |
| 25:X:13:MET:HE3   | 25:X:17:ILE:HG22 | 1.95                     | 0.48              |
| 1:A:128:A:C8      | 1:A:128:A:C3'    | 2.97                     | 0.48              |
| 1:A:422:G:C6      | 1:A:2446:G:C6    | 3.02                     | 0.48              |
| 1:A:1308:A:O4'    | 6:E:226:GLY:HA3  | 2.14                     | 0.48              |
| 1:A:1525:G:H5'    | 1:A:1526:A:OP2   | 2.14                     | 0.48              |
| 1:A:2729:C:O2'    | 1:A:2730:G:H5'   | 2.14                     | 0.48              |
| 1:A:2768:A:O2'    | 1:A:2769:C:H5'   | 2.14                     | 0.48              |
| 4:C:69:LEU:CD2    | 4:C:120:ARG:HB3  | 2.38                     | 0.48              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 4:C:88:ILE:CD1   | 4:C:100:PRO:HD3   | 2.43                     | 0.48              |
| 5:D:76:THR:N     | 5:D:77:PRO:HD3    | 2.28                     | 0.48              |
| 15:N:81:ARG:HB3  | 15:N:86:MET:HG2   | 1.96                     | 0.48              |
| 17:P:25:VAL:HG23 | 17:P:26:TRP:H     | 1.79                     | 0.48              |
| 25:X:21:LEU:HB3  | 25:X:26:ILE:HG12  | 1.95                     | 0.48              |
| 1:A:282:C:H2'    | 1:A:283:U:O4'     | 2.13                     | 0.47              |
| 1:A:1878:G:O2'   | 1:A:1879:U:C6     | 2.66                     | 0.47              |
| 1:A:2281:C:O2'   | 1:A:2282:U:H5'    | 2.14                     | 0.47              |
| 1:A:2456:A:H5'   | 38:A:5164:HOH:O   | 2.13                     | 0.47              |
| 38:A:8728:HOH:O  | 4:C:11:ARG:HD3    | 2.13                     | 0.47              |
| 6:E:133:ARG:NH2  | 38:E:8431:HOH:O   | 2.46                     | 0.47              |
| 8:G:18:LEU:HD13  | 8:G:34:TRP:CG     | 2.48                     | 0.47              |
| 18:Q:18:LYS:O    | 18:Q:21:VAL:HG22  | 2.13                     | 0.47              |
| 18:Q:27:ARG:HA   | 38:Q:177:HOH:O    | 2.13                     | 0.47              |
| 26:Y:25:ARG:HG2  | 38:Y:5356:HOH:O   | 2.12                     | 0.47              |
| 29:2:25:LYS:HD2  | 30:3:48:ASP:HA    | 1.95                     | 0.47              |
| 1:A:195:C:H2'    | 1:A:196:G:H5'     | 1.96                     | 0.47              |
| 1:A:639:A:H2'    | 1:A:640:G:H8      | 1.77                     | 0.47              |
| 1:A:1666:C:C2'   | 1:A:1667:A:C5'    | 2.92                     | 0.47              |
| 1:A:2120:U:H2'   | 1:A:2121:G:O4'    | 2.14                     | 0.47              |
| 1:A:2900:G:H2'   | 1:A:2901:C:O4'    | 2.14                     | 0.47              |
| 38:A:9041:HOH:O  | 18:Q:81:LYS:HG2   | 2.13                     | 0.47              |
| 5:D:54:VAL:HB    | 38:D:8613:HOH:O   | 2.14                     | 0.47              |
| 5:D:221:GLN:HE22 | 13:L:42:ASN:ND2   | 2.11                     | 0.47              |
| 6:E:61:PHE:HB3   | 38:E:8450:HOH:O   | 2.13                     | 0.47              |
| 13:L:9:THR:O     | 13:L:10:GLN:C     | 2.52                     | 0.47              |
| 20:S:113:HIS:O   | 20:S:145:LEU:HD12 | 2.13                     | 0.47              |
| 23:V:17:THR:HG22 | 23:V:18:GLY:N     | 2.28                     | 0.47              |
| 25:X:64:THR:O    | 25:X:68:THR:HG22  | 2.14                     | 0.47              |
| 1:A:1205:U:C2'   | 1:A:1206:U:C5'    | 2.92                     | 0.47              |
| 1:A:1377:C:H5'   | 1:A:1377:C:C6     | 2.44                     | 0.47              |
| 1:A:2300:A:H4'   | 1:A:2301:A:O5'    | 2.14                     | 0.47              |
| 1:A:2445:U:H2'   | 1:A:2446:G:C8     | 2.49                     | 0.47              |
| 38:A:4446:HOH:O  | 11:J:57:ARG:HG3   | 2.14                     | 0.47              |
| 4:C:192:VAL:CG1  | 4:C:192:VAL:O     | 2.62                     | 0.47              |
| 5:D:85:ARG:NH2   | 5:D:99:GLU:OE2    | 2.40                     | 0.47              |
| 6:E:162:VAL:O    | 6:E:162:VAL:CG1   | 2.61                     | 0.47              |
| 16:O:24:LEU:O    | 16:O:28:LYS:HG2   | 2.14                     | 0.47              |
| 1:A:240:C:O2     | 1:A:240:C:H2'     | 2.15                     | 0.47              |
| 1:A:694:A:H2'    | 1:A:695:C:H5'     | 1.96                     | 0.47              |
| 1:A:2243:C:HO2'  | 1:A:2244:A:H8     | 1.61                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:C:132:ASP:OD1   | 4:C:133:ARG:N     | 2.47                     | 0.47              |
| 5:D:16:ARG:NE     | 38:D:8553:HOH:O   | 2.25                     | 0.47              |
| 8:G:107:PHE:CZ    | 8:G:108:LEU:HD13  | 2.49                     | 0.47              |
| 1:A:39:G:N2       | 1:A:444:C:C2      | 2.83                     | 0.47              |
| 1:A:432:G:O2'     | 1:A:433:C:H5'     | 2.13                     | 0.47              |
| 1:A:1515:A:H2'    | 1:A:1516:C:C6     | 2.49                     | 0.47              |
| 1:A:2676:C:H4'    | 12:K:70:PHE:HE1   | 1.76                     | 0.47              |
| 1:A:2715:G:O2'    | 5:D:262:ARG:HD2   | 2.14                     | 0.47              |
| 1:A:2748:G:C5'    | 38:A:6999:HOH:O   | 2.58                     | 0.47              |
| 38:A:9067:HOH:O   | 5:D:267:LYS:HD3   | 2.14                     | 0.47              |
| 4:C:165:THR:O     | 4:C:165:THR:HG22  | 2.13                     | 0.47              |
| 6:E:20:ASP:O      | 6:E:23:GLU:HB2    | 2.15                     | 0.47              |
| 18:Q:10:ALA:O     | 18:Q:13:VAL:HG12  | 2.14                     | 0.47              |
| 26:Y:74:ALA:CB    | 26:Y:85:VAL:HG22  | 2.45                     | 0.47              |
| 27:Z:203:VAL:HG12 | 27:Z:228:VAL:HG22 | 1.96                     | 0.47              |
| 1:A:169:A:HO2'    | 1:A:170:U:H6      | 1.62                     | 0.47              |
| 1:A:398:U:H2'     | 1:A:399:C:C6      | 2.50                     | 0.47              |
| 1:A:816:G:C6      | 1:A:817:G:N1      | 2.82                     | 0.47              |
| 1:A:1494:A:C4     | 1:A:1495:C:C5     | 3.03                     | 0.47              |
| 1:A:2010:A:C2'    | 38:A:5418:HOH:O   | 2.63                     | 0.47              |
| 1:A:2781:U:H2'    | 1:A:2782:G:C5'    | 2.45                     | 0.47              |
| 1:A:2894:C:O2'    | 1:A:2895:C:H5'    | 2.14                     | 0.47              |
| 2:B:3042:C:O2     | 7:F:76:ARG:NH1    | 2.47                     | 0.47              |
| 4:C:96:LEU:HD22   | 4:C:128:LEU:HD13  | 1.95                     | 0.47              |
| 23:V:38:ASN:O     | 23:V:42:LEU:HG    | 2.15                     | 0.47              |
| 27:Z:154:ARG:NH1  | 27:Z:155:ARG:HG3  | 2.30                     | 0.47              |
| 1:A:154:C:H2'     | 1:A:155:C:C6      | 2.49                     | 0.47              |
| 1:A:654:A:OP2     | 17:P:38:ARG:HD3   | 2.15                     | 0.47              |
| 1:A:1072:G:OP2    | 27:Z:154:ARG:NH2  | 2.41                     | 0.47              |
| 1:A:1268:C:H2'    | 1:A:1269:G:H8     | 1.79                     | 0.47              |
| 1:A:1565:C:O4'    | 1:A:2738:G:H1'    | 2.15                     | 0.47              |
| 1:A:2407:G:O2'    | 1:A:2408:A:H5'    | 2.14                     | 0.47              |
| 1:A:2697:A:H2'    | 1:A:2698:G:O4'    | 2.14                     | 0.47              |
| 4:C:39:ALA:HB3    | 4:C:61:GLU:OE2    | 2.15                     | 0.47              |
| 5:D:41:PHE:CZ     | 5:D:79:MET:HG3    | 2.49                     | 0.47              |
| 6:E:1:MET:HG2     | 6:E:2:GLN:NE2     | 2.30                     | 0.47              |
| 6:E:25:PRO:HD2    | 38:E:8434:HOH:O   | 2.14                     | 0.47              |
| 6:E:233:THR:CG2   | 6:E:234:VAL:N     | 2.78                     | 0.47              |
| 9:H:60:VAL:O      | 9:H:61:MET:C      | 2.52                     | 0.47              |
| 13:L:118:ALA:C    | 13:L:120:ARG:H    | 2.18                     | 0.47              |
| 14:M:97:VAL:HG12  | 14:M:98:GLU:O     | 2.14                     | 0.47              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 15:N:69:LYS:O     | 15:N:73:ARG:CZ   | 2.62                     | 0.47              |
| 18:Q:11:ALA:HB2   | 18:Q:18:LYS:HA   | 1.97                     | 0.47              |
| 25:X:88:THR:HG23  | 25:X:110:GLN:HB3 | 1.97                     | 0.47              |
| 26:Y:85:VAL:HG12  | 26:Y:86:GLU:N    | 2.29                     | 0.47              |
| 28:1:47:LEU:HD13  | 28:1:64:ILE:HD11 | 1.97                     | 0.47              |
| 1:A:12:U:H2'      | 1:A:13:G:H5'     | 1.97                     | 0.47              |
| 1:A:474:C:O3'     | 6:E:73:LEU:HD21  | 2.14                     | 0.47              |
| 1:A:926:A:H1'     | 14:M:38:HIS:O    | 2.14                     | 0.47              |
| 1:A:1189:A:H1'    | 1:A:1209:C:H1'   | 1.97                     | 0.47              |
| 1:A:2271:G:H2'    | 1:A:2271:G:N3    | 2.29                     | 0.47              |
| 1:A:2866:U:H4'    | 1:A:2867:G:H5'   | 1.97                     | 0.47              |
| 5:D:63:GLU:O      | 5:D:63:GLU:HG3   | 2.14                     | 0.47              |
| 5:D:322:ARG:HB2   | 38:D:8608:HOH:O  | 2.14                     | 0.47              |
| 6:E:236:THR:C     | 38:E:8454:HOH:O  | 2.52                     | 0.47              |
| 9:H:21:GLU:HA     | 9:H:24:ARG:HE    | 1.79                     | 0.47              |
| 12:K:45:VAL:HG22  | 12:K:46:ILE:N    | 2.29                     | 0.47              |
| 15:N:46:LEU:HB2   | 38:N:8607:HOH:O  | 2.15                     | 0.47              |
| 15:N:184:ARG:HB2  | 15:N:184:ARG:CZ  | 2.45                     | 0.47              |
| 16:O:73:ALA:HB1   | 16:O:74:PRO:HD2  | 1.96                     | 0.47              |
| 21:T:29:ASP:OD1   | 21:T:31:ARG:NH1  | 2.47                     | 0.47              |
| 23:V:47:ARG:CG    | 38:V:4381:HOH:O  | 2.56                     | 0.47              |
| 25:X:21:LEU:HD13  | 25:X:26:ILE:HD11 | 1.97                     | 0.47              |
| 25:X:122:ARG:HH11 | 25:X:122:ARG:CG  | 2.24                     | 0.47              |
| 29:2:18:LYS:HB2   | 30:3:49:GLU:HG2  | 1.97                     | 0.47              |
| 1:A:331:A:C6      | 1:A:332:G:C4     | 3.02                     | 0.47              |
| 1:A:383:A:C6      | 1:A:407:A:C8     | 3.03                     | 0.47              |
| 1:A:929:A:H8      | 1:A:929:A:O5'    | 1.98                     | 0.47              |
| 1:A:1189:A:H1'    | 1:A:1209:C:O4'   | 2.15                     | 0.47              |
| 1:A:1342:C:O2'    | 1:A:1343:C:H5'   | 2.15                     | 0.47              |
| 1:A:2016:U:O5'    | 1:A:2016:U:H6    | 1.97                     | 0.47              |
| 7:F:29:HIS:C      | 38:F:5858:HOH:O  | 2.53                     | 0.47              |
| 16:O:184:ILE:HG22 | 16:O:185:GLU:N   | 2.30                     | 0.47              |
| 18:Q:115:SER:C    | 18:Q:117:SER:H   | 2.18                     | 0.47              |
| 20:S:119:VAL:CG2  | 20:S:142:ASP:HB2 | 2.44                     | 0.47              |
| 26:Y:75:ALA:O     | 26:Y:83:ALA:HA   | 2.15                     | 0.47              |
| 29:2:21:ARG:HD3   | 29:2:45:ARG:NE   | 2.30                     | 0.47              |
| 1:A:84:G:O2'      | 1:A:85:C:H5'     | 2.15                     | 0.47              |
| 1:A:392:U:O2'     | 15:N:182:LYS:HE2 | 2.14                     | 0.47              |
| 1:A:731:U:H2'     | 1:A:732:C:C6     | 2.50                     | 0.47              |
| 1:A:1119:G:N2     | 1:A:1246:A:H2    | 2.08                     | 0.47              |
| 1:A:2104:C:O2     | 1:A:2486:A:C2    | 2.68                     | 0.47              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:2346:C:H4'   | 7:F:52:THR:HG22   | 1.97                     | 0.47              |
| 1:A:2781:U:C2'   | 1:A:2782:G:H5'    | 2.45                     | 0.47              |
| 1:A:2834:G:OP1   | 26:Y:39:LYS:HE2   | 2.15                     | 0.47              |
| 4:C:135:VAL:HG21 | 4:C:147:ARG:CZ    | 2.45                     | 0.47              |
| 6:E:7:ASP:OD1    | 6:E:11:ASN:O      | 2.33                     | 0.47              |
| 6:E:35:VAL:HG21  | 6:E:227:GLY:HA2   | 1.95                     | 0.47              |
| 11:J:162:SER:CB  | 11:J:163:PRO:CD   | 2.80                     | 0.47              |
| 27:Z:235:GLU:CD  | 27:Z:235:GLU:N    | 2.68                     | 0.47              |
| 1:A:544:G:H2'    | 1:A:545:G:C5'     | 2.45                     | 0.46              |
| 1:A:797:A:H4'    | 28:1:10:ARG:N     | 2.30                     | 0.46              |
| 1:A:1845:A:OP2   | 4:C:190:ARG:NH1   | 2.45                     | 0.46              |
| 4:C:9:ARG:HG2    | 4:C:16:PHE:CD2    | 2.50                     | 0.46              |
| 5:D:7:ARG:HH11   | 5:D:7:ARG:CG      | 2.25                     | 0.46              |
| 5:D:87:TYR:O     | 5:D:138:GLY:N     | 2.42                     | 0.46              |
| 6:E:65:ARG:HG3   | 6:E:67:GLN:HB2    | 1.98                     | 0.46              |
| 9:H:37:THR:O     | 9:H:41:GLU:HG3    | 2.15                     | 0.46              |
| 10:I:16:LYS:O    | 10:I:20:VAL:HG23  | 2.15                     | 0.46              |
| 15:N:47:ASP:CG   | 15:N:48:ARG:N     | 2.68                     | 0.46              |
| 17:P:96:VAL:HG13 | 17:P:100:GLN:HB2  | 1.97                     | 0.46              |
| 18:Q:37:ARG:O    | 18:Q:40:VAL:HB    | 2.15                     | 0.46              |
| 18:Q:143:ALA:HA  | 38:Q:197:HOH:O    | 2.15                     | 0.46              |
| 25:X:88:THR:CG2  | 25:X:110:GLN:NE2  | 2.72                     | 0.46              |
| 1:A:171:C:C2'    | 1:A:172:U:H5'     | 2.45                     | 0.46              |
| 1:A:175:G:H2'    | 15:N:192:ALA:HB3  | 1.96                     | 0.46              |
| 1:A:188:C:H5''   | 15:N:163:LEU:HD21 | 1.97                     | 0.46              |
| 1:A:288:A:H2'    | 1:A:289:G:C8      | 2.50                     | 0.46              |
| 1:A:383:A:C2     | 1:A:407:A:C4      | 3.03                     | 0.46              |
| 1:A:1007:A:H2'   | 11:J:19:TYR:CZ    | 2.50                     | 0.46              |
| 1:A:1249:U:H2'   | 1:A:1250:C:C6     | 2.51                     | 0.46              |
| 1:A:1331:A:OP2   | 27:Z:142:SER:OG   | 2.25                     | 0.46              |
| 1:A:1730:G:H4'   | 1:A:1731:C:O5'    | 2.15                     | 0.46              |
| 1:A:2247:C:H5''  | 38:A:6802:HOH:O   | 2.15                     | 0.46              |
| 1:A:2279:G:OP1   | 38:A:4571:HOH:O   | 2.21                     | 0.46              |
| 2:B:3041:C:O4'   | 7:F:50:VAL:HG23   | 2.16                     | 0.46              |
| 2:B:3049:G:H2'   | 2:B:3050:G:O4'    | 2.15                     | 0.46              |
| 4:C:211:LYS:HD3  | 38:C:8625:HOH:O   | 2.14                     | 0.46              |
| 7:F:103:ASN:ND2  | 7:F:134:LEU:H     | 2.12                     | 0.46              |
| 8:G:22:VAL:O     | 8:G:28:SER:HA     | 2.15                     | 0.46              |
| 9:H:50:VAL:CG1   | 9:H:60:VAL:HG11   | 2.45                     | 0.46              |
| 12:K:19:MET:HE1  | 12:K:132:LEU:CD1  | 2.45                     | 0.46              |
| 16:O:5:ARG:HG3   | 19:R:18:PRO:CB    | 2.45                     | 0.46              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 22:U:71:VAL:HG12 | 22:U:72:ILE:N     | 2.30                     | 0.46              |
| 31:4:74:CYS:SG   | 31:4:76:LYS:CG    | 3.03                     | 0.46              |
| 1:A:177:A:H2'    | 1:A:178:U:O4'     | 2.16                     | 0.46              |
| 1:A:407:A:H2'    | 1:A:408:A:C8      | 2.51                     | 0.46              |
| 1:A:1304:U:H2'   | 1:A:1305:C:C6     | 2.51                     | 0.46              |
| 1:A:1684:A:O2'   | 1:A:1685:A:H5''   | 2.15                     | 0.46              |
| 1:A:2451:G:O6    | 38:A:9891:HOH:O   | 2.19                     | 0.46              |
| 2:B:3092:G:C6    | 2:B:3093:A:C6     | 3.04                     | 0.46              |
| 11:J:95:GLU:HB3  | 11:J:119:VAL:HG11 | 1.96                     | 0.46              |
| 11:J:140:PRO:HA  | 11:J:142:VAL:HG12 | 1.98                     | 0.46              |
| 16:O:93:GLN:HG2  | 38:O:8554:HOH:O   | 2.13                     | 0.46              |
| 1:A:281:U:O2'    | 1:A:282:C:H5'     | 2.16                     | 0.46              |
| 1:A:2428:G:N7    | 38:A:3276:HOH:O   | 2.46                     | 0.46              |
| 2:B:3064:C:H2'   | 2:B:3065:A:H5'    | 1.98                     | 0.46              |
| 5:D:24:PRO:HG2   | 5:D:204:GLY:HA2   | 1.96                     | 0.46              |
| 8:G:10:ASP:HA    | 38:G:3707:HOH:O   | 2.15                     | 0.46              |
| 11:J:14:TYR:N    | 11:J:91:HIS:CE1   | 2.81                     | 0.46              |
| 17:P:47:ARG:HG3  | 17:P:47:ARG:NH1   | 2.27                     | 0.46              |
| 31:4:11:CYS:HB2  | 31:4:20:HIS:HE1   | 1.80                     | 0.46              |
| 1:A:317:A:H5''   | 22:U:52:ARG:HD2   | 1.97                     | 0.46              |
| 1:A:952:G:OP1    | 19:R:42:LYS:HE2   | 2.15                     | 0.46              |
| 1:A:1342:C:C2'   | 1:A:1343:C:H5'    | 2.46                     | 0.46              |
| 1:A:1504:A:O2'   | 1:A:1506:U:OP2    | 2.31                     | 0.46              |
| 1:A:1713:G:C1'   | 38:A:4547:HOH:O   | 2.60                     | 0.46              |
| 1:A:1776:A:C8    | 1:A:1778:A:O4'    | 2.68                     | 0.46              |
| 1:A:2265:U:H2'   | 1:A:2266:A:H8     | 1.81                     | 0.46              |
| 5:D:310:ARG:HD2  | 38:D:8648:HOH:O   | 2.15                     | 0.46              |
| 11:J:113:ALA:N   | 11:J:114:PRO:HD3  | 2.31                     | 0.46              |
| 11:J:157:ILE:CG2 | 11:J:158:ASN:N    | 2.78                     | 0.46              |
| 25:X:35:VAL:HA   | 25:X:36:PRO:HD3   | 1.78                     | 0.46              |
| 29:2:29:THR:O    | 29:2:32:LYS:CE    | 2.64                     | 0.46              |
| 1:A:1161:A:H8    | 1:A:1161:A:O5'    | 1.99                     | 0.46              |
| 1:A:1850:U:H2'   | 1:A:1851:G:H8     | 1.80                     | 0.46              |
| 1:A:2121:G:C2'   | 1:A:2122:C:H5'    | 2.44                     | 0.46              |
| 1:A:2840:A:OP1   | 5:D:211:THR:HG23  | 2.16                     | 0.46              |
| 7:F:99:ASP:HB3   | 7:F:103:ASN:H     | 1.80                     | 0.46              |
| 7:F:169:THR:C    | 7:F:170:TYR:HD1   | 2.18                     | 0.46              |
| 16:O:58:LEU:N    | 16:O:58:LEU:CD1   | 2.78                     | 0.46              |
| 17:P:32:ARG:NE   | 38:P:3360:HOH:O   | 2.48                     | 0.46              |
| 1:A:95:A:H5''    | 1:A:97:G:O4'      | 2.16                     | 0.46              |
| 1:A:1930:A:H2'   | 1:A:1931:A:C8     | 2.51                     | 0.46              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:2769:C:O2'    | 1:A:2770:G:H5'   | 2.16                     | 0.46              |
| 7:F:57:THR:HG23   | 7:F:63:ILE:CB    | 2.45                     | 0.46              |
| 15:N:153:THR:O    | 15:N:156:ARG:HG3 | 2.15                     | 0.46              |
| 20:S:39:THR:CB    | 20:S:42:GLU:HG3  | 2.42                     | 0.46              |
| 23:V:9:CYS:HG     | 23:V:11:THR:HG23 | 1.80                     | 0.46              |
| 30:3:18:ASN:ND2   | 30:3:40:ARG:H    | 2.14                     | 0.46              |
| 1:A:169:A:C6      | 1:A:2469:A:C6    | 3.04                     | 0.46              |
| 1:A:660:A:H4'     | 1:A:661:G:O5'    | 2.16                     | 0.46              |
| 1:A:815:U:C4      | 1:A:816:G:C6     | 3.03                     | 0.46              |
| 1:A:1754:A:H2'    | 1:A:1755:A:O4'   | 2.15                     | 0.46              |
| 1:A:2028:U:H2'    | 1:A:2029:C:H6    | 1.79                     | 0.46              |
| 1:A:2432:C:H4'    | 31:4:36:ILE:HG12 | 1.97                     | 0.46              |
| 1:A:2443:C:H3'    | 38:A:9970:HOH:O  | 2.16                     | 0.46              |
| 38:A:5155:HOH:O   | 16:O:21:HIS:HE1  | 1.99                     | 0.46              |
| 7:F:23:VAL:O      | 7:F:23:VAL:CG2   | 2.63                     | 0.46              |
| 11:J:43:PRO:HD2   | 11:J:137:ASN:HA  | 1.97                     | 0.46              |
| 11:J:72:VAL:HG11  | 11:J:81:TYR:CZ   | 2.51                     | 0.46              |
| 11:J:157:ILE:HG22 | 11:J:158:ASN:N   | 2.30                     | 0.46              |
| 15:N:114:VAL:HG21 | 15:N:159:THR:CG2 | 2.46                     | 0.46              |
| 1:A:1306:U:OP1    | 6:E:184:ARG:HD2  | 2.16                     | 0.46              |
| 1:A:2362:A:H2'    | 1:A:2363:G:C8    | 2.51                     | 0.46              |
| 1:A:2672:C:O2'    | 1:A:2673:U:H5'   | 2.16                     | 0.46              |
| 1:A:2777:G:O2'    | 1:A:2778:A:H5'   | 2.15                     | 0.46              |
| 1:A:2781:U:H1'    | 8:G:139:GLU:OE2  | 2.15                     | 0.46              |
| 3:5:74:C:H2'      | 3:5:75:C:C5'     | 2.46                     | 0.46              |
| 5:D:42:ALA:HB3    | 5:D:79:MET:SD    | 2.56                     | 0.46              |
| 5:D:185:GLY:HA2   | 38:D:8633:HOH:O  | 2.16                     | 0.46              |
| 6:E:34:ALA:HB3    | 6:E:220:THR:HG21 | 1.98                     | 0.46              |
| 7:F:86:THR:HG23   | 38:F:7477:HOH:O  | 2.15                     | 0.46              |
| 15:N:49:ALA:C     | 15:N:54:TYR:HB3  | 2.36                     | 0.46              |
| 22:U:12:ARG:O     | 22:U:19:ARG:NH2  | 2.48                     | 0.46              |
| 27:Z:117:LEU:HD12 | 27:Z:174:VAL:CG1 | 2.45                     | 0.46              |
| 28:1:10:ARG:HA    | 38:1:8413:HOH:O  | 2.16                     | 0.46              |
| 30:3:40:ARG:HA    | 30:3:45:ASN:ND2  | 2.30                     | 0.46              |
| 1:A:392:U:H4'     | 15:N:193:LYS:HB3 | 1.98                     | 0.46              |
| 1:A:941:G:O2'     | 1:A:942:U:H5'    | 2.16                     | 0.46              |
| 38:A:5700:HOH:O   | 4:C:22:ARG:HG2   | 2.16                     | 0.46              |
| 7:F:95:THR:C      | 7:F:97:GLN:N     | 2.67                     | 0.46              |
| 9:H:39:SER:HB3    | 9:H:45:ALA:HB2   | 1.97                     | 0.46              |
| 10:I:12:ILE:O     | 10:I:13:PRO:C    | 2.53                     | 0.46              |
| 17:P:32:ARG:HE    | 17:P:35:LYS:HD2  | 1.81                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 27:Z:112:GLU:OE1 | 27:Z:112:GLU:HA  | 2.16                     | 0.46              |
| 27:Z:189:ASN:ND2 | 27:Z:192:ASP:H   | 2.13                     | 0.46              |
| 1:A:407:A:H5'    | 38:A:5485:HOH:O  | 2.16                     | 0.45              |
| 1:A:419:A:C2     | 1:A:2449:G:N3    | 2.84                     | 0.45              |
| 1:A:1151:G:OP1   | 10:I:16:LYS:NZ   | 2.40                     | 0.45              |
| 1:A:1592:G:O2'   | 1:A:1593:C:O5'   | 2.34                     | 0.45              |
| 1:A:1634:G:H3'   | 38:A:3386:HOH:O  | 2.14                     | 0.45              |
| 1:A:1644:C:H2'   | 1:A:1645:U:H6    | 1.81                     | 0.45              |
| 2:B:3041:C:C6    | 7:F:50:VAL:HG21  | 2.51                     | 0.45              |
| 6:E:118:THR:CG2  | 6:E:137:PRO:HB3  | 2.45                     | 0.45              |
| 6:E:218:VAL:HG12 | 38:E:8429:HOH:O  | 2.16                     | 0.45              |
| 7:F:135:VAL:HG21 | 7:F:139:TYR:CD1  | 2.51                     | 0.45              |
| 8:G:20:ILE:HD12  | 8:G:33:LEU:HD12  | 1.95                     | 0.45              |
| 13:L:6:ALA:HB3   | 13:L:116:GLU:HG2 | 1.98                     | 0.45              |
| 13:L:130:MET:SD  | 23:V:25:ASP:O    | 2.73                     | 0.45              |
| 15:N:68:ARG:O    | 15:N:68:ARG:CD   | 2.63                     | 0.45              |
| 21:T:73:ASP:OD1  | 21:T:75:GLN:HB2  | 2.16                     | 0.45              |
| 22:U:96:VAL:CG1  | 22:U:97:ARG:N    | 2.79                     | 0.45              |
| 25:X:121:PRO:HA  | 25:X:153:MET:HG2 | 1.98                     | 0.45              |
| 30:3:40:ARG:HG2  | 30:3:40:ARG:NH1  | 2.30                     | 0.45              |
| 1:A:541:C:O2'    | 1:A:542:A:H5''   | 2.16                     | 0.45              |
| 1:A:677:C:H4'    | 6:E:246:ARG:NH2  | 2.32                     | 0.45              |
| 1:A:1200:A:C4'   | 38:A:6798:HOH:O  | 2.64                     | 0.45              |
| 1:A:1246:A:O2'   | 1:A:1247:A:H3'   | 2.16                     | 0.45              |
| 1:A:1667:A:H5'   | 1:A:1667:A:C8    | 2.48                     | 0.45              |
| 1:A:1902:G:H2'   | 1:A:1903:U:O4'   | 2.16                     | 0.45              |
| 1:A:2266:A:P     | 38:A:5323:HOH:O  | 2.73                     | 0.45              |
| 1:A:2785:C:H4'   | 1:A:2786:G:OP2   | 2.17                     | 0.45              |
| 4:C:101:GLU:HG2  | 4:C:131:HIS:ND1  | 2.31                     | 0.45              |
| 4:C:112:PRO:HD3  | 4:C:152:CYS:SG   | 2.56                     | 0.45              |
| 4:C:217:ARG:HH11 | 4:C:217:ARG:CG   | 2.29                     | 0.45              |
| 5:D:254:GLN:HG2  | 5:D:255:GLY:N    | 2.31                     | 0.45              |
| 13:L:74:VAL:HG12 | 13:L:75:ARG:HG3  | 1.97                     | 0.45              |
| 13:L:99:ASP:OD1  | 13:L:101:ASN:N   | 2.49                     | 0.45              |
| 14:M:104:ASP:HB2 | 38:M:8580:HOH:O  | 2.16                     | 0.45              |
| 19:R:28:ARG:NH1  | 38:R:6206:HOH:O  | 2.43                     | 0.45              |
| 25:X:75:GLY:HA3  | 38:X:5763:HOH:O  | 2.17                     | 0.45              |
| 26:Y:25:ARG:NH1  | 38:Y:3861:HOH:O  | 2.49                     | 0.45              |
| 27:Z:115:ARG:HG3 | 35:Z:8517:CL:CL  | 2.53                     | 0.45              |
| 38:A:4393:HOH:O  | 15:N:14:ARG:HB3  | 2.16                     | 0.45              |
| 5:D:7:ARG:CD     | 5:D:9:GLY:O      | 2.65                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:E:178:GLN:C     | 6:E:180:SER:N     | 2.67                     | 0.45              |
| 12:K:70:PHE:CD2   | 12:K:70:PHE:O     | 2.69                     | 0.45              |
| 18:Q:28:GLN:N     | 38:Q:203:HOH:O    | 2.50                     | 0.45              |
| 27:Z:136:LYS:HE2  | 27:Z:138:ARG:NH1  | 2.31                     | 0.45              |
| 1:A:380:A:H5''    | 15:N:48:ARG:NH2   | 2.31                     | 0.45              |
| 1:A:451:C:O2'     | 1:A:452:G:H5'     | 2.16                     | 0.45              |
| 1:A:466:A:H2'     | 1:A:467:G:O4'     | 2.16                     | 0.45              |
| 1:A:590:A:H2'     | 1:A:591:A:H5'     | 1.99                     | 0.45              |
| 1:A:603:A:H4'     | 1:A:604:G:O5'     | 2.16                     | 0.45              |
| 1:A:790:A:H2'     | 1:A:791:A:O4'     | 2.16                     | 0.45              |
| 1:A:1336:U:C2     | 1:A:1337:A:C8     | 3.04                     | 0.45              |
| 1:A:1351:G:OP1    | 6:E:96:LYS:NZ     | 2.39                     | 0.45              |
| 1:A:1384:C:H5'    | 26:Y:30:MET:HG2   | 1.99                     | 0.45              |
| 1:A:1440:U:P      | 38:A:3954:HOH:O   | 2.73                     | 0.45              |
| 1:A:1609:C:H2'    | 1:A:1610:G:H8     | 1.81                     | 0.45              |
| 7:F:58:VAL:CG1    | 7:F:59:GLY:N      | 2.78                     | 0.45              |
| 7:F:84:LEU:C      | 7:F:86:THR:H      | 2.19                     | 0.45              |
| 7:F:173:GLU:O     | 7:F:174:VAL:C     | 2.54                     | 0.45              |
| 15:N:37:VAL:CG2   | 15:N:108:LYS:HG3  | 2.45                     | 0.45              |
| 15:N:59:GLY:C     | 15:N:141:ILE:HD11 | 2.37                     | 0.45              |
| 23:V:9:CYS:SG     | 23:V:11:THR:N     | 2.83                     | 0.45              |
| 1:A:291:C:H2'     | 1:A:292:G:O4'     | 2.16                     | 0.45              |
| 1:A:382:U:C5      | 1:A:406:G:N2      | 2.84                     | 0.45              |
| 1:A:628:A:C8      | 1:A:2071:C:N4     | 2.85                     | 0.45              |
| 1:A:818:A:O2'     | 28:I:13:ARG:HD3   | 2.16                     | 0.45              |
| 1:A:1057:A:C6     | 1:A:1058:A:C6     | 3.05                     | 0.45              |
| 1:A:1279:U:H5''   | 38:A:9093:HOH:O   | 2.16                     | 0.45              |
| 1:A:2044:G:OP1    | 26:Y:23:HIS:HE1   | 2.00                     | 0.45              |
| 1:A:2314:G:O2'    | 1:A:2315:C:H5'    | 2.16                     | 0.45              |
| 1:A:2353:A:H4'    | 1:A:2354:A:O5'    | 2.16                     | 0.45              |
| 1:A:2819:C:O4'    | 5:D:96:PRO:HB2    | 2.16                     | 0.45              |
| 4:C:153:ARG:HH11  | 4:C:153:ARG:CB    | 2.29                     | 0.45              |
| 5:D:162:MET:HE2   | 5:D:310:ARG:HD3   | 1.98                     | 0.45              |
| 6:E:235:PHE:HE2   | 6:E:243:VAL:HG21  | 1.80                     | 0.45              |
| 7:F:25:MET:SD     | 7:F:40:ILE:HD11   | 2.56                     | 0.45              |
| 7:F:67:ASP:O      | 7:F:69:ILE:HG13   | 2.16                     | 0.45              |
| 8:G:157:LYS:NZ    | 38:G:2401:HOH:O   | 2.49                     | 0.45              |
| 10:I:73:ASP:C     | 38:I:2994:HOH:O   | 2.54                     | 0.45              |
| 15:N:184:ARG:HB2  | 15:N:184:ARG:NH1  | 2.32                     | 0.45              |
| 25:X:146:ILE:HG23 | 25:X:150:LEU:CD1  | 2.47                     | 0.45              |
| 27:Z:186:ARG:HG2  | 27:Z:186:ARG:NH1  | 2.31                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 28:1:59:HIS:HA    | 38:1:8439:HOH:O   | 2.15                     | 0.45              |
| 1:A:1225:C:H4'    | 38:A:8903:HOH:O   | 2.16                     | 0.45              |
| 1:A:1805:G:H2'    | 1:A:1806:G:H8     | 1.81                     | 0.45              |
| 4:C:8:ARG:NH1     | 38:C:8558:HOH:O   | 2.42                     | 0.45              |
| 5:D:248:ARG:O     | 5:D:251:VAL:HG13  | 2.17                     | 0.45              |
| 10:I:64:ASN:N     | 10:I:64:ASN:ND2   | 2.64                     | 0.45              |
| 12:K:130:VAL:CG1  | 12:K:131:THR:N    | 2.79                     | 0.45              |
| 13:L:27:ARG:CD    | 38:L:4747:HOH:O   | 2.61                     | 0.45              |
| 14:M:121:ILE:HG12 | 14:M:141:GLU:HB2  | 1.97                     | 0.45              |
| 1:A:247:A:C8      | 1:A:262:A:N6      | 2.85                     | 0.45              |
| 1:A:2050:G:H5''   | 20:S:80:TYR:O     | 2.17                     | 0.45              |
| 1:A:2385:G:H2'    | 1:A:2386:U:C6     | 2.51                     | 0.45              |
| 1:A:2670:G:O2'    | 1:A:2671:U:H5'    | 2.16                     | 0.45              |
| 16:O:25:ARG:HA    | 16:O:28:LYS:HG3   | 1.97                     | 0.45              |
| 29:2:25:LYS:CG    | 30:3:49:GLU:H     | 2.29                     | 0.45              |
| 1:A:222:A:H2'     | 1:A:223:G:O4'     | 2.16                     | 0.45              |
| 1:A:1677:U:OP2    | 30:3:8:LYS:NZ     | 2.50                     | 0.45              |
| 1:A:1878:G:C1'    | 38:A:5581:HOH:O   | 2.63                     | 0.45              |
| 1:A:2116:U:C4     | 1:A:2271:G:C6     | 3.05                     | 0.45              |
| 1:A:2299:G:O6     | 19:R:1:PRO:HA     | 2.16                     | 0.45              |
| 1:A:2434:A:O3'    | 31:4:28:GLY:HA3   | 2.16                     | 0.45              |
| 2:B:3055:U:H4'    | 2:B:3056:A:C8     | 2.52                     | 0.45              |
| 38:E:8358:HOH:O   | 17:P:3:THR:HG21   | 2.17                     | 0.45              |
| 9:H:28:ALA:CB     | 9:H:99:THR:HG23   | 2.46                     | 0.45              |
| 11:J:6:TYR:HE2    | 11:J:94:ARG:O     | 2.00                     | 0.45              |
| 11:J:86:ARG:NH1   | 11:J:130:HIS:CD2  | 2.85                     | 0.45              |
| 14:M:38:HIS:CD2   | 14:M:39:GLU:HG3   | 2.51                     | 0.45              |
| 16:O:19:ASP:N     | 38:O:8525:HOH:O   | 2.15                     | 0.45              |
| 17:P:26:TRP:HA    | 17:P:26:TRP:CE3   | 2.52                     | 0.45              |
| 25:X:38:THR:HG22  | 25:X:39:ASP:N     | 2.32                     | 0.45              |
| 1:A:758:A:H2'     | 1:A:759:C:O4'     | 2.17                     | 0.45              |
| 1:A:2432:C:H2'    | 1:A:2433:A:C8     | 2.51                     | 0.45              |
| 1:A:2468:A:C8     | 31:4:54:LYS:HE2   | 2.51                     | 0.45              |
| 1:A:2591:C:H2'    | 1:A:2592:G:O4'    | 2.17                     | 0.45              |
| 1:A:2656:G:O2'    | 1:A:2657:G:H5'    | 2.17                     | 0.45              |
| 2:B:3008:G:O6     | 16:O:11:ARG:NH1   | 2.48                     | 0.45              |
| 2:B:3034:A:H1'    | 16:O:153:GLN:HE22 | 1.82                     | 0.45              |
| 8:G:16:ASP:O      | 8:G:17:HIS:HB2    | 2.17                     | 0.45              |
| 11:J:163:PRO:HG2  | 38:J:8339:HOH:O   | 2.16                     | 0.45              |
| 12:K:6:PHE:HB3    | 12:K:109:TYR:OH   | 2.17                     | 0.45              |
| 13:L:87:ARG:CZ    | 38:L:4854:HOH:O   | 2.65                     | 0.45              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 14:M:140:VAL:CG2  | 38:M:8562:HOH:O  | 2.64                     | 0.45              |
| 15:N:49:ALA:HB1   | 15:N:54:TYR:CB   | 2.47                     | 0.45              |
| 16:O:73:ALA:HB1   | 16:O:74:PRO:CD   | 2.47                     | 0.45              |
| 17:P:39:THR:HB    | 38:P:3360:HOH:O  | 2.16                     | 0.45              |
| 28:1:22:ILE:HG22  | 28:1:23:ARG:N    | 2.32                     | 0.45              |
| 1:A:92:G:H4'      | 24:W:44:GLY:HA3  | 1.98                     | 0.45              |
| 1:A:101:C:H2'     | 1:A:102:A:H8     | 1.82                     | 0.45              |
| 1:A:392:U:C5'     | 15:N:193:LYS:HB3 | 2.47                     | 0.45              |
| 1:A:496:G:C6      | 1:A:498:A:C6     | 3.05                     | 0.45              |
| 1:A:553:G:H5'     | 38:A:9994:HOH:O  | 2.15                     | 0.45              |
| 1:A:831:U:O2      | 38:A:3936:HOH:O  | 2.21                     | 0.45              |
| 1:A:1014:A:H2'    | 1:A:1015:C:H5'   | 1.99                     | 0.45              |
| 1:A:1427:A:N6     | 38:A:6184:HOH:O  | 2.40                     | 0.45              |
| 1:A:1613:C:H2'    | 1:A:1614:G:O4'   | 2.17                     | 0.45              |
| 4:C:199:HIS:CE1   | 4:C:225:VAL:HG11 | 2.52                     | 0.45              |
| 5:D:8:LYS:HG3     | 5:D:220:VAL:HG12 | 1.98                     | 0.45              |
| 5:D:41:PHE:CD1    | 5:D:79:MET:HE2   | 2.51                     | 0.45              |
| 5:D:101:TRP:HB2   | 5:D:119:HIS:CD2  | 2.52                     | 0.45              |
| 6:E:192:ILE:CG2   | 6:E:234:VAL:HG12 | 2.48                     | 0.45              |
| 8:G:116:THR:CG2   | 8:G:151:LEU:HD22 | 2.47                     | 0.45              |
| 13:L:29:LEU:HB3   | 13:L:55:VAL:CG1  | 2.35                     | 0.45              |
| 14:M:7:GLN:HB3    | 14:M:13:HIS:CE1  | 2.52                     | 0.45              |
| 15:N:69:LYS:HD3   | 15:N:125:ARG:HA  | 1.98                     | 0.45              |
| 16:O:15:GLU:HB2   | 16:O:17:ARG:HG3  | 1.99                     | 0.45              |
| 16:O:141:ARG:N    | 38:O:8566:HOH:O  | 2.50                     | 0.45              |
| 17:P:21:SER:OG    | 17:P:106:PRO:HB2 | 2.17                     | 0.45              |
| 18:Q:14:LEU:HD13  | 18:Q:51:ALA:HB2  | 1.98                     | 0.45              |
| 19:R:41:LEU:HB3   | 19:R:52:PHE:CZ   | 2.51                     | 0.45              |
| 21:T:11:THR:H     | 21:T:14:ALA:HB3  | 1.81                     | 0.45              |
| 25:X:139:GLY:O    | 25:X:141:HIS:CD2 | 2.70                     | 0.45              |
| 27:Z:154:ARG:HH12 | 27:Z:155:ARG:HG3 | 1.82                     | 0.45              |
| 1:A:696:C:C2'     | 1:A:697:G:H5'    | 2.48                     | 0.44              |
| 1:A:821:U:H5''    | 38:A:9546:HOH:O  | 2.16                     | 0.44              |
| 1:A:1886:A:C2'    | 38:A:4297:HOH:O  | 2.65                     | 0.44              |
| 1:A:2356:A:H2'    | 1:A:2357:G:O4'   | 2.16                     | 0.44              |
| 1:A:2435:U:OP1    | 31:4:28:GLY:HA3  | 2.16                     | 0.44              |
| 38:A:6880:HOH:O   | 22:U:9:LYS:HD2   | 2.17                     | 0.44              |
| 5:D:52:VAL:O      | 5:D:53:LEU:HD12  | 2.16                     | 0.44              |
| 5:D:238:ASN:ND2   | 5:D:240:GLY:H    | 2.14                     | 0.44              |
| 7:F:173:GLU:HG3   | 7:F:174:VAL:N    | 2.32                     | 0.44              |
| 15:N:35:PRO:CG    | 15:N:38:VAL:CG2  | 2.87                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 16:O:163:PHE:O   | 16:O:164:ASP:O    | 2.34                     | 0.44              |
| 28:1:57:CYS:O    | 28:1:61:GLY:HA2   | 2.17                     | 0.44              |
| 1:A:553:G:H2'    | 1:A:554:G:H5'     | 1.98                     | 0.44              |
| 1:A:876:A:N3     | 1:A:876:A:H2'     | 2.32                     | 0.44              |
| 1:A:2122:C:H3'   | 38:A:4762:HOH:O   | 2.17                     | 0.44              |
| 1:A:2547:C:H2'   | 1:A:2548:C:H6     | 1.81                     | 0.44              |
| 4:C:66:ARG:HB2   | 4:C:66:ARG:HH11   | 1.80                     | 0.44              |
| 6:E:237:GLU:N    | 38:E:8454:HOH:O   | 2.50                     | 0.44              |
| 11:J:149:ALA:C   | 11:J:151:MET:H    | 2.20                     | 0.44              |
| 11:J:150:LYS:HE2 | 38:J:8379:HOH:O   | 2.16                     | 0.44              |
| 16:O:38:LYS:HE3  | 16:O:38:LYS:HB2   | 1.76                     | 0.44              |
| 16:O:67:ALA:C    | 16:O:69:TYR:N     | 2.70                     | 0.44              |
| 17:P:14:LEU:CD2  | 17:P:102:ILE:HD11 | 2.46                     | 0.44              |
| 20:S:39:THR:CG2  | 20:S:42:GLU:HG3   | 2.48                     | 0.44              |
| 27:Z:144:ARG:NE  | 38:Z:8616:HOH:O   | 2.49                     | 0.44              |
| 1:A:584:U:H3'    | 38:A:5555:HOH:O   | 2.17                     | 0.44              |
| 1:A:1461:U:H2'   | 1:A:1462:C:C6     | 2.51                     | 0.44              |
| 1:A:1523:G:C6    | 1:A:1524:U:O4     | 2.70                     | 0.44              |
| 1:A:1827:G:H2'   | 1:A:1828:G:C8     | 2.52                     | 0.44              |
| 1:A:1921:A:C6    | 1:A:1922:A:C2     | 3.06                     | 0.44              |
| 1:A:1970:G:C5'   | 38:A:6529:HOH:O   | 2.65                     | 0.44              |
| 5:D:258:GLY:N    | 5:D:260:HIS:CE1   | 2.78                     | 0.44              |
| 5:D:280:VAL:CG1  | 5:D:281:ASP:N     | 2.80                     | 0.44              |
| 11:J:45:GLN:NE2  | 11:J:135:TRP:HE1  | 2.16                     | 0.44              |
| 16:O:108:SER:HA  | 16:O:109:PRO:HD3  | 1.81                     | 0.44              |
| 20:S:125:ARG:HG2 | 38:S:8541:HOH:O   | 2.16                     | 0.44              |
| 22:U:73:HIS:CD2  | 22:U:88:PRO:HG3   | 2.52                     | 0.44              |
| 23:V:49:LEU:O    | 23:V:55:ALA:CB    | 2.65                     | 0.44              |
| 25:X:121:PRO:CA  | 25:X:153:MET:HG2  | 2.48                     | 0.44              |
| 28:1:77:LYS:HA   | 28:1:80:MET:HE2   | 1.98                     | 0.44              |
| 29:2:29:THR:O    | 29:2:32:LYS:HE2   | 2.18                     | 0.44              |
| 31:4:7:PHE:HE2   | 31:4:22:VAL:CG2   | 2.30                     | 0.44              |
| 31:4:7:PHE:CE1   | 31:4:9:THR:HB     | 2.52                     | 0.44              |
| 1:A:407:A:C2     | 1:A:408:A:C4      | 3.05                     | 0.44              |
| 1:A:602:A:O2'    | 1:A:605:C:H4'     | 2.17                     | 0.44              |
| 1:A:661:G:C4     | 1:A:686:A:C2      | 3.06                     | 0.44              |
| 1:A:1189:A:N3    | 38:A:7139:HOH:O   | 2.50                     | 0.44              |
| 1:A:2055:A:H5'   | 20:S:134:SER:HB2  | 2.00                     | 0.44              |
| 1:A:2503:A:OP1   | 11:J:147:ARG:NH2  | 2.38                     | 0.44              |
| 1:A:2766:A:O2'   | 5:D:265:LEU:O     | 2.30                     | 0.44              |
| 5:D:154:VAL:CG1  | 5:D:156:LYS:HG2   | 2.47                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:F:27:ILE:HD11   | 7:F:37:ALA:CB     | 2.47                     | 0.44              |
| 7:F:81:GLU:O      | 7:F:85:GLN:HG3    | 2.17                     | 0.44              |
| 8:G:9:GLU:HG3     | 8:G:10:ASP:N      | 2.33                     | 0.44              |
| 16:O:143:ARG:HH12 | 16:O:173:ASP:CG   | 2.21                     | 0.44              |
| 20:S:129:ALA:O    | 20:S:130:MET:HB2  | 2.17                     | 0.44              |
| 22:U:38:ARG:HH11  | 22:U:38:ARG:HG3   | 1.81                     | 0.44              |
| 25:X:149:LEU:HG   | 25:X:153:MET:HE1  | 1.99                     | 0.44              |
| 1:A:696:C:HO2'    | 1:A:697:G:H5'     | 1.82                     | 0.44              |
| 1:A:1134:G:C4'    | 11:J:151:MET:HE1  | 2.28                     | 0.44              |
| 1:A:1423:C:O2'    | 1:A:1424:A:H5'    | 2.18                     | 0.44              |
| 5:D:17:LYS:O      | 5:D:260:HIS:HD2   | 2.01                     | 0.44              |
| 7:F:57:THR:HG23   | 7:F:63:ILE:CG2    | 2.46                     | 0.44              |
| 10:I:71:LEU:C     | 10:I:73:ASP:H     | 2.21                     | 0.44              |
| 14:M:142:LEU:HG   | 14:M:146:GLY:HA3  | 2.00                     | 0.44              |
| 16:O:67:ALA:HA    | 16:O:71:TRP:H     | 1.81                     | 0.44              |
| 16:O:104:ILE:O    | 16:O:107:ASN:HB2  | 2.17                     | 0.44              |
| 19:R:75:ILE:CD1   | 19:R:84:ILE:HD11  | 2.48                     | 0.44              |
| 25:X:4:LEU:HD23   | 25:X:4:LEU:HA     | 1.82                     | 0.44              |
| 1:A:716:G:H2'     | 1:A:717:C:O5'     | 2.18                     | 0.44              |
| 1:A:764:C:H2'     | 1:A:765:G:O4'     | 2.18                     | 0.44              |
| 1:A:1041:U:H2'    | 1:A:1042:U:H5'    | 2.00                     | 0.44              |
| 1:A:1313:A:H5'    | 27:Z:208:LYS:O    | 2.17                     | 0.44              |
| 1:A:1462:C:H2'    | 1:A:1463:A:C8     | 2.53                     | 0.44              |
| 1:A:1829:A:H61    | 28:1:18:TYR:CA    | 2.26                     | 0.44              |
| 1:A:1859:A:H8     | 1:A:1859:A:O5'    | 2.01                     | 0.44              |
| 1:A:2466:G:P      | 38:A:3142:HOH:O   | 2.73                     | 0.44              |
| 1:A:2635:A:C2'    | 1:A:2636:C:H5'    | 2.46                     | 0.44              |
| 38:A:3472:HOH:O   | 31:4:57:GLY:HA2   | 2.17                     | 0.44              |
| 38:A:4009:HOH:O   | 15:N:94:LYS:HE3   | 2.18                     | 0.44              |
| 2:B:3092:G:H22    | 11:J:52:LYS:NZ    | 2.15                     | 0.44              |
| 4:C:199:HIS:CD2   | 4:C:201:PHE:HB2   | 2.52                     | 0.44              |
| 15:N:123:ASP:C    | 15:N:123:ASP:OD1  | 2.55                     | 0.44              |
| 16:O:161:GLY:O    | 16:O:162:ASP:C    | 2.55                     | 0.44              |
| 26:Y:9:VAL:HG13   | 26:Y:88:GLU:OE2   | 2.18                     | 0.44              |
| 27:Z:213:LYS:O    | 27:Z:217:ILE:HG13 | 2.18                     | 0.44              |
| 1:A:40:C:H4'      | 38:A:6462:HOH:O   | 2.17                     | 0.44              |
| 1:A:1189:A:C4     | 38:A:7139:HOH:O   | 2.56                     | 0.44              |
| 1:A:1299:G:N7     | 14:M:6:ARG:NH1    | 2.65                     | 0.44              |
| 1:A:1644:C:O2'    | 1:A:1645:U:H5'    | 2.17                     | 0.44              |
| 1:A:2387:U:H2'    | 1:A:2388:C:C6     | 2.53                     | 0.44              |
| 1:A:2873:C:N4     | 1:A:2874:G:C6     | 2.86                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 4:C:94:LEU:N     | 4:C:94:LEU:CD2    | 2.81                     | 0.44              |
| 8:G:84:MET:HE1   | 8:G:148:ILE:HD12  | 1.99                     | 0.44              |
| 11:J:165:GLY:C   | 11:J:166:ASN:HD22 | 2.21                     | 0.44              |
| 12:K:39:VAL:HG11 | 12:K:107:ASN:CB   | 2.48                     | 0.44              |
| 12:K:46:ILE:HG12 | 12:K:53:ILE:HD13  | 1.99                     | 0.44              |
| 16:O:71:TRP:N    | 38:O:8539:HOH:O   | 2.50                     | 0.44              |
| 16:O:152:GLU:C   | 16:O:154:LEU:N    | 2.71                     | 0.44              |
| 19:R:88:ALA:O    | 19:R:90:HIS:N     | 2.51                     | 0.44              |
| 28:1:48:LYS:HG2  | 38:1:8429:HOH:O   | 2.18                     | 0.44              |
| 1:A:1008:C:H2'   | 1:A:1009:U:C6     | 2.53                     | 0.44              |
| 1:A:1135:G:H5'   | 38:A:5388:HOH:O   | 2.17                     | 0.44              |
| 1:A:2620:U:O4    | 36:5:76:PPU:O     | 2.36                     | 0.44              |
| 1:A:2909:G:H2'   | 1:A:2910:A:H8     | 1.83                     | 0.44              |
| 6:E:7:ASP:OD2    | 6:E:9:ASP:HB2     | 2.18                     | 0.44              |
| 8:G:162:PHE:CD1  | 8:G:162:PHE:N     | 2.85                     | 0.44              |
| 12:K:39:VAL:CG1  | 12:K:40:ASN:N     | 2.81                     | 0.44              |
| 13:L:80:ILE:O    | 13:L:80:ILE:HG13  | 2.17                     | 0.44              |
| 17:P:44:ASN:HA   | 17:P:65:LEU:O     | 2.18                     | 0.44              |
| 31:4:60:LYS:HD2  | 31:4:61:PRO:HD2   | 1.99                     | 0.44              |
| 1:A:716:G:C2'    | 1:A:717:C:O5'     | 2.66                     | 0.44              |
| 1:A:1637:A:H2'   | 1:A:1638:U:C6     | 2.53                     | 0.44              |
| 1:A:1874:U:OP1   | 4:C:51:ARG:HD2    | 2.18                     | 0.44              |
| 1:A:2123:A:OP1   | 15:N:89:ASN:ND2   | 2.51                     | 0.44              |
| 11:J:26:LYS:HG3  | 11:J:58:HIS:HB2   | 2.00                     | 0.44              |
| 11:J:47:GLU:HG2  | 11:J:133:ILE:HD12 | 1.99                     | 0.44              |
| 13:L:45:PRO:HB2  | 38:L:7169:HOH:O   | 2.17                     | 0.44              |
| 21:T:29:ASP:OD1  | 21:T:31:ARG:HG3   | 2.17                     | 0.44              |
| 27:Z:126:PRO:HG2 | 27:Z:128:PHE:CZ   | 2.53                     | 0.44              |
| 27:Z:197:ASP:C   | 27:Z:197:ASP:OD1  | 2.55                     | 0.44              |
| 28:1:33:HIS:HE1  | 28:1:49:ARG:NE    | 2.16                     | 0.44              |
| 28:1:40:PRO:CD   | 28:1:47:LEU:HD11  | 2.29                     | 0.44              |
| 29:2:8:GLN:NE2   | 29:2:11:LYS:HZ2   | 2.02                     | 0.44              |
| 1:A:656:G:H2'    | 1:A:657:G:H8      | 1.83                     | 0.43              |
| 1:A:883:U:O2     | 1:A:883:U:H2'     | 2.17                     | 0.43              |
| 1:A:1391:G:H2'   | 1:A:1392:A:H5'    | 2.00                     | 0.43              |
| 1:A:1711:A:O2'   | 1:A:1712:A:H5'    | 2.18                     | 0.43              |
| 1:A:1825:U:O2'   | 1:A:1826:C:H5'    | 2.18                     | 0.43              |
| 2:B:3057:A:H2'   | 2:B:3058:G:H5'    | 2.00                     | 0.43              |
| 5:D:248:ARG:O    | 5:D:251:VAL:HG12  | 2.18                     | 0.43              |
| 5:D:274:GLU:HA   | 5:D:292:GLY:O     | 2.18                     | 0.43              |
| 6:E:218:VAL:CG1  | 38:E:8429:HOH:O   | 2.66                     | 0.43              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:G:36:PRO:HD3   | 12:K:127:ILE:HD12 | 2.00                     | 0.43              |
| 11:J:151:MET:HA  | 11:J:151:MET:CE   | 2.48                     | 0.43              |
| 13:L:98:VAL:HG22 | 13:L:102:GLU:C    | 2.38                     | 0.43              |
| 16:O:78:MET:HB2  | 16:O:79:PRO:HD3   | 1.99                     | 0.43              |
| 16:O:86:LEU:HD12 | 16:O:125:ALA:CB   | 2.40                     | 0.43              |
| 17:P:26:TRP:N    | 38:P:3062:HOH:O   | 2.49                     | 0.43              |
| 17:P:26:TRP:HA   | 17:P:26:TRP:HE3   | 1.82                     | 0.43              |
| 22:U:96:VAL:HG13 | 22:U:97:ARG:N     | 2.32                     | 0.43              |
| 28:1:10:ARG:CG   | 28:1:11:THR:N     | 2.81                     | 0.43              |
| 28:1:38:LYS:HD3  | 38:1:8423:HOH:O   | 2.17                     | 0.43              |
| 28:1:57:CYS:O    | 28:1:61:GLY:CA    | 2.65                     | 0.43              |
| 1:A:24:G:N2      | 1:A:518:G:H1'     | 2.33                     | 0.43              |
| 1:A:860:U:H2'    | 1:A:861:A:C8      | 2.53                     | 0.43              |
| 1:A:1265:G:H1'   | 38:A:4475:HOH:O   | 2.17                     | 0.43              |
| 1:A:1385:G:O3'   | 26:Y:49:ARG:NH1   | 2.52                     | 0.43              |
| 1:A:1471:A:H2'   | 1:A:1472:C:C6     | 2.53                     | 0.43              |
| 1:A:1730:G:C5'   | 1:A:1731:C:H6     | 2.31                     | 0.43              |
| 1:A:2255:A:C6    | 1:A:2256:G:C5     | 3.06                     | 0.43              |
| 1:A:2438:G:H2'   | 1:A:2439:C:O4'    | 2.18                     | 0.43              |
| 1:A:2779:G:O2'   | 1:A:2780:C:H5'    | 2.18                     | 0.43              |
| 38:A:6486:HOH:O  | 4:C:211:LYS:HG2   | 2.17                     | 0.43              |
| 2:B:3107:C:H5    | 38:B:8437:HOH:O   | 2.00                     | 0.43              |
| 3:5:74:C:H2'     | 3:5:75:C:H5'      | 2.01                     | 0.43              |
| 5:D:88:GLU:O     | 5:D:88:GLU:HG3    | 2.18                     | 0.43              |
| 6:E:7:ASP:C      | 6:E:9:ASP:H       | 2.22                     | 0.43              |
| 6:E:84:VAL:O     | 6:E:85:LYS:HB2    | 2.18                     | 0.43              |
| 7:F:19:GLU:HG3   | 38:F:6165:HOH:O   | 2.18                     | 0.43              |
| 9:H:26:THR:HB    | 9:H:102:GLY:HA3   | 1.99                     | 0.43              |
| 12:K:77:GLY:O    | 12:K:78:ILE:C     | 2.57                     | 0.43              |
| 14:M:62:ALA:HB2  | 14:M:103:ALA:CB   | 2.48                     | 0.43              |
| 16:O:34:LEU:HA   | 16:O:47:LEU:CD2   | 2.48                     | 0.43              |
| 16:O:116:PHE:CB  | 38:O:8556:HOH:O   | 2.66                     | 0.43              |
| 24:W:5:VAL:HG23  | 38:W:2271:HOH:O   | 2.18                     | 0.43              |
| 26:Y:76:ARG:NH1  | 26:Y:76:ARG:CG    | 2.80                     | 0.43              |
| 1:A:295:C:H2'    | 1:A:296:G:O4'     | 2.18                     | 0.43              |
| 1:A:567:U:C5'    | 38:A:5862:HOH:O   | 2.65                     | 0.43              |
| 1:A:886:A:OP2    | 1:A:2113:G:H5'    | 2.19                     | 0.43              |
| 1:A:1119:G:H8    | 12:K:52:GLN:NE2   | 2.15                     | 0.43              |
| 1:A:1329:A:C2    | 38:A:4165:HOH:O   | 2.57                     | 0.43              |
| 1:A:1624:A:H4'   | 1:A:1626:A:H5''   | 2.01                     | 0.43              |
| 1:A:1925:G:O2'   | 1:A:1926:G:H5'    | 2.19                     | 0.43              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:2123:A:H5'    | 15:N:89:ASN:ND2  | 2.34                     | 0.43              |
| 1:A:2621:U:H5     | 38:A:9479:HOH:O  | 2.01                     | 0.43              |
| 4:C:223:ARG:CG    | 38:C:8616:HOH:O  | 2.48                     | 0.43              |
| 7:F:170:TYR:N     | 7:F:170:TYR:CD1  | 2.87                     | 0.43              |
| 8:G:112:ALA:HA    | 8:G:113:PRO:HD3  | 1.88                     | 0.43              |
| 18:Q:83:LYS:O     | 18:Q:86:ALA:HB3  | 2.18                     | 0.43              |
| 20:S:33:ARG:NH1   | 38:S:8542:HOH:O  | 2.51                     | 0.43              |
| 21:T:10:VAL:O     | 21:T:10:VAL:HG22 | 2.19                     | 0.43              |
| 25:X:85:ALA:HB2   | 25:X:91:ASP:O    | 2.18                     | 0.43              |
| 25:X:122:ARG:NH1  | 25:X:152:ALA:O   | 2.51                     | 0.43              |
| 26:Y:9:VAL:HG22   | 26:Y:88:GLU:OE2  | 2.18                     | 0.43              |
| 27:Z:234:VAL:HG12 | 27:Z:235:GLU:N   | 2.33                     | 0.43              |
| 31:4:73:GLU:HB2   | 38:4:8525:HOH:O  | 2.18                     | 0.43              |
| 1:A:171:C:OP2     | 15:N:84:LYS:HG3  | 2.18                     | 0.43              |
| 1:A:401:C:H2'     | 1:A:402:U:H6     | 1.81                     | 0.43              |
| 1:A:2461:U:O2     | 1:A:2466:G:H1'   | 2.18                     | 0.43              |
| 4:C:195:ASN:O     | 4:C:196:ALA:C    | 2.56                     | 0.43              |
| 7:F:99:ASP:O      | 7:F:159:PRO:HG3  | 2.18                     | 0.43              |
| 7:F:151:ILE:HA    | 7:F:152:PRO:HD3  | 1.80                     | 0.43              |
| 9:H:61:MET:SD     | 15:N:23:LEU:HD11 | 2.58                     | 0.43              |
| 11:J:112:ARG:O    | 11:J:113:ALA:C   | 2.57                     | 0.43              |
| 13:L:37:TYR:HD2   | 38:L:7169:HOH:O  | 1.92                     | 0.43              |
| 16:O:82:TYR:CD2   | 16:O:82:TYR:C    | 2.91                     | 0.43              |
| 18:Q:16:VAL:HG13  | 18:Q:20:ARG:NH1  | 2.33                     | 0.43              |
| 18:Q:115:SER:C    | 18:Q:117:SER:N   | 2.71                     | 0.43              |
| 22:U:48:VAL:CG2   | 22:U:98:VAL:HA   | 2.48                     | 0.43              |
| 26:Y:70:ILE:O     | 26:Y:70:ILE:HG23 | 2.17                     | 0.43              |
| 28:1:46:LYS:CB    | 28:1:57:CYS:HG   | 2.24                     | 0.43              |
| 31:4:22:VAL:HG12  | 31:4:90:PHE:HE2  | 1.83                     | 0.43              |
| 1:A:101:C:H2'     | 1:A:102:A:C8     | 2.53                     | 0.43              |
| 1:A:160:A:C4      | 1:A:177:A:C2     | 3.06                     | 0.43              |
| 1:A:482:G:H4'     | 1:A:508:A:N1     | 2.34                     | 0.43              |
| 1:A:536:A:H3'     | 38:A:4525:HOH:O  | 2.17                     | 0.43              |
| 1:A:1624:A:H5'    | 1:A:1626:A:O4'   | 2.19                     | 0.43              |
| 1:A:2321:A:O2'    | 1:A:2322:U:H3'   | 2.18                     | 0.43              |
| 1:A:2780:C:C1'    | 8:G:143:GLN:NE2  | 2.81                     | 0.43              |
| 38:A:9957:HOH:O   | 12:K:46:ILE:HD12 | 2.18                     | 0.43              |
| 2:B:3045:A:C8     | 2:B:3046:C:C5    | 3.07                     | 0.43              |
| 3:5:74:C:H2'      | 3:5:75:C:O4'     | 2.17                     | 0.43              |
| 6:E:5:ILE:HG12    | 38:E:8436:HOH:O  | 2.19                     | 0.43              |
| 7:F:15:GLU:HA     | 7:F:16:PRO:HD3   | 1.85                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 11:J:163:PRO:O    | 11:J:164:ALA:HB2  | 2.18                     | 0.43              |
| 16:O:77:ASN:OD1   | 16:O:80:SER:HB2   | 2.18                     | 0.43              |
| 28:1:13:ARG:NH1   | 38:1:8419:HOH:O   | 2.50                     | 0.43              |
| 28:1:40:PRO:HG2   | 28:1:64:ILE:HD13  | 2.01                     | 0.43              |
| 29:2:45:ARG:HB3   | 38:2:988:HOH:O    | 2.18                     | 0.43              |
| 1:A:97:G:C2       | 22:U:107:LYS:HD2  | 2.53                     | 0.43              |
| 1:A:812:A:H2'     | 1:A:813:C:O4'     | 2.19                     | 0.43              |
| 1:A:844:A:C6      | 1:A:882:A:C5      | 3.06                     | 0.43              |
| 1:A:913:A:N3      | 1:A:1042:U:O2'    | 2.44                     | 0.43              |
| 1:A:962:C:H5'     | 38:A:6424:HOH:O   | 2.19                     | 0.43              |
| 1:A:1058:A:H2'    | 1:A:1060:C:C5'    | 2.42                     | 0.43              |
| 1:A:1159:G:H1     | 1:A:1208:C:H42    | 1.67                     | 0.43              |
| 1:A:1311:G:C2     | 1:A:1312:G:C8     | 3.07                     | 0.43              |
| 1:A:1572:A:H2'    | 1:A:1573:A:C8     | 2.53                     | 0.43              |
| 1:A:2450:C:O5'    | 1:A:2450:C:H6     | 2.02                     | 0.43              |
| 38:A:3911:HOH:O   | 31:4:34:LYS:HD3   | 2.18                     | 0.43              |
| 13:L:40:THR:O     | 13:L:41:LYS:C     | 2.57                     | 0.43              |
| 15:N:37:VAL:CG1   | 15:N:63:VAL:HG11  | 2.47                     | 0.43              |
| 15:N:96:ASN:ND2   | 38:N:8541:HOH:O   | 2.49                     | 0.43              |
| 16:O:90:LEU:CB    | 16:O:186:LEU:HD22 | 2.49                     | 0.43              |
| 20:S:15:LYS:HE3   | 38:S:8577:HOH:O   | 2.18                     | 0.43              |
| 21:T:57:THR:HG21  | 21:T:59:ASP:HB2   | 2.01                     | 0.43              |
| 27:Z:187:VAL:HG12 | 27:Z:205:ILE:HA   | 2.00                     | 0.43              |
| 1:A:559:U:H5'     | 1:A:559:U:C6      | 2.42                     | 0.43              |
| 1:A:675:U:H2'     | 1:A:676:C:H5'     | 2.00                     | 0.43              |
| 1:A:860:U:H2'     | 38:A:5151:HOH:O   | 2.19                     | 0.43              |
| 1:A:1164:U:C1'    | 1:A:1165:G:OP1    | 2.67                     | 0.43              |
| 1:A:1592:G:H2'    | 1:A:1593:C:C6     | 2.54                     | 0.43              |
| 1:A:1644:C:C2     | 1:A:1645:U:C6     | 3.07                     | 0.43              |
| 1:A:2106:C:H2'    | 1:A:2107:U:C6     | 2.53                     | 0.43              |
| 1:A:2247:C:C5'    | 38:A:6802:HOH:O   | 2.67                     | 0.43              |
| 1:A:2851:G:C2'    | 1:A:2852:A:H5'    | 2.49                     | 0.43              |
| 2:B:3003:A:N6     | 2:B:3022:G:H1'    | 2.33                     | 0.43              |
| 2:B:3065:A:O2'    | 2:B:3066:G:P      | 2.75                     | 0.43              |
| 8:G:7:ILE:HA      | 8:G:8:PRO:HD3     | 1.92                     | 0.43              |
| 15:N:39:ARG:NH2   | 38:N:8624:HOH:O   | 2.51                     | 0.43              |
| 16:O:47:LEU:HD13  | 16:O:97:VAL:HG11  | 2.01                     | 0.43              |
| 17:P:39:THR:CB    | 38:P:3360:HOH:O   | 2.66                     | 0.43              |
| 20:S:40:ALA:O     | 20:S:44:VAL:HG23  | 2.18                     | 0.43              |
| 22:U:38:ARG:HG3   | 22:U:38:ARG:NH1   | 2.33                     | 0.43              |
| 27:Z:187:VAL:O    | 27:Z:187:VAL:HG13 | 2.17                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:290:C:O2'    | 1:A:291:C:H5'    | 2.18                     | 0.43              |
| 1:A:326:G:O2'    | 1:A:327:A:H5'    | 2.18                     | 0.43              |
| 1:A:661:G:C6     | 1:A:686:A:C2     | 3.06                     | 0.43              |
| 1:A:731:U:O2'    | 1:A:732:C:H5'    | 2.18                     | 0.43              |
| 1:A:885:G:H5''   | 1:A:886:A:H5'    | 1.99                     | 0.43              |
| 1:A:955:A:C2     | 1:A:1013:A:C4    | 3.06                     | 0.43              |
| 1:A:1167:G:O2'   | 1:A:1168:C:H5'   | 2.19                     | 0.43              |
| 1:A:1422:U:H2'   | 1:A:1423:C:H6    | 1.80                     | 0.43              |
| 1:A:2563:U:H2'   | 1:A:2565:C:O5'   | 2.19                     | 0.43              |
| 2:B:3039:U:H3'   | 2:B:3040:C:H5''  | 1.99                     | 0.43              |
| 4:C:36:ASP:O     | 4:C:37:VAL:C     | 2.56                     | 0.43              |
| 5:D:71:VAL:CG1   | 5:D:296:LEU:HB3  | 2.46                     | 0.43              |
| 5:D:204:GLY:CA   | 38:D:8653:HOH:O  | 2.61                     | 0.43              |
| 7:F:19:GLU:O     | 7:F:133:ASN:HB3  | 2.19                     | 0.43              |
| 11:J:83:PHE:CD1  | 11:J:134:ALA:HB2 | 2.54                     | 0.43              |
| 13:L:10:GLN:NE2  | 13:L:10:GLN:N    | 2.43                     | 0.43              |
| 16:O:47:LEU:HD12 | 16:O:92:ALA:HB1  | 2.00                     | 0.43              |
| 25:X:26:ILE:HB   | 38:X:5420:HOH:O  | 2.17                     | 0.43              |
| 25:X:38:THR:CB   | 38:X:5390:HOH:O  | 2.66                     | 0.43              |
| 25:X:41:TYR:CD2  | 25:X:44:MET:HE3  | 2.54                     | 0.43              |
| 1:A:696:C:O2'    | 1:A:697:G:H5'    | 2.19                     | 0.43              |
| 1:A:1269:G:H2'   | 1:A:1270:U:H6    | 1.84                     | 0.43              |
| 1:A:1714:C:O2'   | 1:A:1715:C:H5'   | 2.18                     | 0.43              |
| 1:A:2113:G:C6    | 1:A:2114:C:C4    | 3.06                     | 0.43              |
| 1:A:2577:A:H5'   | 38:A:7211:HOH:O  | 2.19                     | 0.43              |
| 7:F:60:GLU:C     | 7:F:62:ASP:N     | 2.72                     | 0.43              |
| 11:J:31:PHE:HA   | 11:J:85:ILE:CG2  | 2.49                     | 0.43              |
| 11:J:62:GLU:HA   | 38:J:8385:HOH:O  | 2.18                     | 0.43              |
| 21:T:33:SER:O    | 21:T:37:VAL:HG23 | 2.18                     | 0.43              |
| 21:T:57:THR:HG22 | 21:T:59:ASP:HB2  | 2.01                     | 0.43              |
| 1:A:319:A:H4'    | 1:A:338:C:C5     | 2.53                     | 0.43              |
| 1:A:440:C:H2'    | 1:A:441:A:C8     | 2.54                     | 0.43              |
| 1:A:588:G:O6     | 25:X:154:ARG:NH1 | 2.52                     | 0.43              |
| 1:A:818:A:H5''   | 38:A:6050:HOH:O  | 2.19                     | 0.43              |
| 1:A:952:G:N3     | 1:A:2302:A:H2'   | 2.33                     | 0.43              |
| 1:A:1051:C:H2'   | 1:A:1052:G:O4'   | 2.19                     | 0.43              |
| 1:A:2515:C:H2'   | 1:A:2516:G:O4'   | 2.18                     | 0.43              |
| 1:A:2604:A:H5'   | 38:A:5256:HOH:O  | 2.18                     | 0.43              |
| 38:A:6363:HOH:O  | 8:G:157:LYS:HD3  | 2.18                     | 0.43              |
| 2:B:3003:A:H2'   | 38:B:8421:HOH:O  | 2.19                     | 0.43              |
| 2:B:3031:C:H2'   | 2:B:3032:G:O4'   | 2.19                     | 0.43              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 4:C:135:VAL:HG11  | 4:C:147:ARG:NH2  | 2.34                     | 0.43              |
| 6:E:1:MET:HG2     | 6:E:2:GLN:N      | 2.32                     | 0.43              |
| 6:E:200:PRO:HB3   | 6:E:212:VAL:CG2  | 2.49                     | 0.43              |
| 7:F:76:ARG:O      | 7:F:77:ASP:HB2   | 2.19                     | 0.43              |
| 16:O:67:ALA:C     | 16:O:69:TYR:H    | 2.22                     | 0.43              |
| 17:P:96:VAL:CG1   | 17:P:100:GLN:HB2 | 2.48                     | 0.43              |
| 18:Q:59:ARG:HH22  | 18:Q:66:GLN:NE2  | 2.17                     | 0.43              |
| 25:X:65:VAL:HA    | 25:X:68:THR:CG2  | 2.49                     | 0.43              |
| 1:A:622:G:P       | 27:Z:148:GLY:HA3 | 2.59                     | 0.42              |
| 1:A:854:G:N7      | 38:A:3800:HOH:O  | 2.36                     | 0.42              |
| 1:A:968:G:O2'     | 1:A:969:G:H5'    | 2.19                     | 0.42              |
| 1:A:1236:A:H2'    | 1:A:1237:U:O4'   | 2.19                     | 0.42              |
| 1:A:2359:G:H3'    | 38:A:5160:HOH:O  | 2.19                     | 0.42              |
| 1:A:2502:C:H2'    | 1:A:2503:A:C5'   | 2.46                     | 0.42              |
| 4:C:70:ALA:HA     | 4:C:71:PRO:HD3   | 1.91                     | 0.42              |
| 5:D:11:LEU:C      | 38:D:8617:HOH:O  | 2.57                     | 0.42              |
| 5:D:215:VAL:O     | 5:D:219:GLY:HA2  | 2.18                     | 0.42              |
| 6:E:246:ARG:NE    | 38:E:8429:HOH:O  | 2.51                     | 0.42              |
| 12:K:104:TYR:HA   | 38:K:2238:HOH:O  | 2.19                     | 0.42              |
| 14:M:146:GLY:C    | 14:M:148:GLU:H   | 2.22                     | 0.42              |
| 17:P:24:ALA:N     | 38:P:3062:HOH:O  | 2.52                     | 0.42              |
| 18:Q:13:VAL:HG21  | 18:Q:41:ARG:HG2  | 2.01                     | 0.42              |
| 25:X:110:GLN:HE21 | 25:X:110:GLN:HA  | 1.83                     | 0.42              |
| 1:A:128:A:O2'     | 1:A:129:A:H5'    | 2.18                     | 0.42              |
| 1:A:426:G:H2'     | 1:A:427:C:O4'    | 2.18                     | 0.42              |
| 1:A:1182:C:H1'    | 1:A:1192:A:C8    | 2.51                     | 0.42              |
| 1:A:1667:A:H2'    | 1:A:1668:U:C6    | 2.54                     | 0.42              |
| 1:A:1771:U:O2'    | 28:1:23:ARG:NH2  | 2.50                     | 0.42              |
| 1:A:2673:U:C2'    | 1:A:2674:G:H5'   | 2.49                     | 0.42              |
| 1:A:2735:U:H2'    | 1:A:2736:U:C6    | 2.54                     | 0.42              |
| 38:A:3159:HOH:O   | 15:N:79:LYS:HD2  | 2.18                     | 0.42              |
| 5:D:132:HIS:CE1   | 5:D:171:VAL:CG2  | 3.02                     | 0.42              |
| 5:D:212:GLN:HB2   | 5:D:257:THR:CG2  | 2.38                     | 0.42              |
| 6:E:107:ARG:NH1   | 6:E:107:ARG:CB   | 2.73                     | 0.42              |
| 6:E:129:HIS:HD2   | 6:E:165:ASP:OD2  | 2.01                     | 0.42              |
| 7:F:77:ASP:HB3    | 7:F:78:GLU:H     | 1.57                     | 0.42              |
| 7:F:99:ASP:CB     | 7:F:103:ASN:HB2  | 2.49                     | 0.42              |
| 14:M:24:ALA:HB2   | 14:M:30:ARG:HD2  | 2.00                     | 0.42              |
| 15:N:38:VAL:O     | 15:N:38:VAL:HG12 | 2.17                     | 0.42              |
| 15:N:133:LEU:HD12 | 15:N:133:LEU:N   | 2.33                     | 0.42              |
| 16:O:110:THR:HA   | 16:O:111:PRO:HD3 | 1.90                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 18:Q:58:SER:CB   | 38:Q:186:HOH:O   | 2.66                     | 0.42              |
| 18:Q:134:VAL:O   | 18:Q:137:LEU:HB3 | 2.19                     | 0.42              |
| 26:Y:74:ALA:HB2  | 26:Y:85:VAL:HG13 | 2.00                     | 0.42              |
| 29:2:28:HIS:CE1  | 29:2:31:LYS:HE2  | 2.54                     | 0.42              |
| 1:A:1298:U:H2'   | 1:A:1299:G:C8    | 2.54                     | 0.42              |
| 1:A:1389:G:H1'   | 1:A:1435:U:O2    | 2.19                     | 0.42              |
| 1:A:1681:G:H5''  | 1:A:1682:A:OP1   | 2.19                     | 0.42              |
| 1:A:1730:G:C5'   | 1:A:1731:C:C6    | 3.03                     | 0.42              |
| 1:A:1907:U:C4    | 1:A:1908:G:C5    | 3.07                     | 0.42              |
| 1:A:2247:C:O2'   | 1:A:2248:C:H5'   | 2.20                     | 0.42              |
| 1:A:2453:G:H3'   | 38:A:5380:HOH:O  | 2.18                     | 0.42              |
| 2:B:3025:G:C8    | 2:B:3026:C:H5'   | 2.55                     | 0.42              |
| 4:C:36:ASP:HB2   | 4:C:85:ASP:H     | 1.84                     | 0.42              |
| 5:D:7:ARG:NH1    | 5:D:11:LEU:HD22  | 2.34                     | 0.42              |
| 5:D:53:LEU:HD21  | 5:D:270:ILE:HD12 | 2.00                     | 0.42              |
| 13:L:130:MET:SD  | 23:V:26:GLY:HA3  | 2.59                     | 0.42              |
| 17:P:96:VAL:HG12 | 17:P:97:SER:O    | 2.18                     | 0.42              |
| 25:X:119:HIS:HD2 | 25:X:120:PRO:O   | 2.02                     | 0.42              |
| 26:Y:43:VAL:CG1  | 26:Y:44:ASP:N    | 2.81                     | 0.42              |
| 1:A:35:U:O2'     | 1:A:36:C:H5'     | 2.20                     | 0.42              |
| 1:A:321:A:O2'    | 1:A:322:G:H5'    | 2.19                     | 0.42              |
| 1:A:332:G:H4'    | 22:U:2:LYS:O     | 2.19                     | 0.42              |
| 1:A:553:G:C2'    | 1:A:554:G:H5'    | 2.49                     | 0.42              |
| 1:A:951:A:H2'    | 1:A:952:G:H5'    | 2.01                     | 0.42              |
| 1:A:1494:A:C2    | 1:A:1495:C:C4    | 3.07                     | 0.42              |
| 1:A:1657:A:H2'   | 1:A:1658:A:C8    | 2.54                     | 0.42              |
| 1:A:1871:U:O4'   | 1:A:1873:G:C8    | 2.73                     | 0.42              |
| 1:A:1896:G:C6    | 1:A:1897:U:C4    | 3.07                     | 0.42              |
| 1:A:2122:C:P     | 38:A:6038:HOH:O  | 2.67                     | 0.42              |
| 1:A:2573:G:N3    | 38:A:6756:HOH:O  | 2.36                     | 0.42              |
| 1:A:2911:C:H2'   | 1:A:2912:C:H6    | 1.84                     | 0.42              |
| 2:B:3045:A:C5    | 2:B:3046:C:C4    | 3.07                     | 0.42              |
| 2:B:3045:A:C5    | 2:B:3046:C:C5    | 3.07                     | 0.42              |
| 5:D:277:GLU:N    | 5:D:278:PRO:CD   | 2.82                     | 0.42              |
| 7:F:94:ALA:HB3   | 7:F:174:VAL:HA   | 2.01                     | 0.42              |
| 8:G:31:ARG:HH12  | 8:G:68:HIS:CG    | 2.37                     | 0.42              |
| 9:H:34:ASN:O     | 9:H:38:LYS:HG3   | 2.19                     | 0.42              |
| 13:L:28:GLU:HB3  | 13:L:59:LYS:HB2  | 2.01                     | 0.42              |
| 15:N:25:TRP:HE3  | 15:N:26:HIS:HD2  | 1.66                     | 0.42              |
| 15:N:38:VAL:O    | 15:N:63:VAL:HG13 | 2.20                     | 0.42              |
| 21:T:29:ASP:CG   | 21:T:31:ARG:NH1  | 2.73                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 22:U:19:ARG:NH1  | 22:U:68:ASP:O     | 2.52                     | 0.42              |
| 25:X:80:ASP:O    | 25:X:84:VAL:HG23  | 2.18                     | 0.42              |
| 26:Y:71:ARG:HD3  | 38:Y:2171:HOH:O   | 2.18                     | 0.42              |
| 1:A:1134:G:H4'   | 11:J:151:MET:CE   | 2.29                     | 0.42              |
| 1:A:1314:U:H5''  | 1:A:1316:G:O4'    | 2.18                     | 0.42              |
| 1:A:1324:G:C2    | 1:A:1334:C:O2     | 2.73                     | 0.42              |
| 1:A:1566:C:H2'   | 1:A:1567:A:H8     | 1.85                     | 0.42              |
| 1:A:1701:A:H5''  | 1:A:1702:U:H3'    | 2.02                     | 0.42              |
| 1:A:1869:A:H2'   | 1:A:1870:C:O4'    | 2.20                     | 0.42              |
| 1:A:2112:A:H2'   | 1:A:2113:G:H8     | 1.84                     | 0.42              |
| 1:A:2530:C:O2'   | 1:A:2531:U:H5'    | 2.20                     | 0.42              |
| 1:A:2634:G:O2'   | 1:A:2635:A:H5'    | 2.19                     | 0.42              |
| 1:A:2637:A:H5'   | 38:A:8784:HOH:O   | 2.20                     | 0.42              |
| 1:A:2883:A:H2'   | 1:A:2884:G:O4'    | 2.20                     | 0.42              |
| 2:B:3003:A:H2    | 2:B:3021:G:N3     | 2.17                     | 0.42              |
| 4:C:200:PRO:HG2  | 4:C:225:VAL:HG21  | 2.01                     | 0.42              |
| 5:D:7:ARG:NH2    | 5:D:250:THR:O     | 2.53                     | 0.42              |
| 5:D:275:GLY:O    | 5:D:291:ASP:HA    | 2.19                     | 0.42              |
| 6:E:76:ARG:HG2   | 6:E:78:ARG:NH1    | 2.34                     | 0.42              |
| 6:E:212:VAL:HG23 | 6:E:212:VAL:O     | 2.20                     | 0.42              |
| 9:H:22:VAL:HG21  | 9:H:104:ALA:HB2   | 2.01                     | 0.42              |
| 11:J:49:VAL:O    | 11:J:157:ILE:HG23 | 2.20                     | 0.42              |
| 11:J:57:ARG:C    | 11:J:59:ASN:N     | 2.70                     | 0.42              |
| 11:J:84:ARG:CZ   | 11:J:135:TRP:HH2  | 2.32                     | 0.42              |
| 15:N:84:LYS:O    | 15:N:87:MET:HG2   | 2.20                     | 0.42              |
| 16:O:86:LEU:O    | 16:O:90:LEU:HG    | 2.19                     | 0.42              |
| 18:Q:7:LYS:HD3   | 18:Q:21:VAL:CG2   | 2.49                     | 0.42              |
| 18:Q:16:VAL:HG12 | 18:Q:20:ARG:HB2   | 2.00                     | 0.42              |
| 22:U:55:PHE:HB2  | 38:U:6384:HOH:O   | 2.20                     | 0.42              |
| 1:A:23:G:O2'     | 1:A:24:G:H5'      | 2.19                     | 0.42              |
| 1:A:877:G:C5'    | 1:A:878:G:OP1     | 2.64                     | 0.42              |
| 1:A:950:G:O2'    | 1:A:951:A:H5'     | 2.18                     | 0.42              |
| 1:A:960:G:N3     | 1:A:960:G:C2'     | 2.82                     | 0.42              |
| 1:A:1010:C:H4'   | 16:O:4:PRO:HB2    | 2.02                     | 0.42              |
| 1:A:1044:C:H5''  | 38:A:8542:HOH:O   | 2.19                     | 0.42              |
| 1:A:1943:C:O4'   | 4:C:212:PRO:HA    | 2.19                     | 0.42              |
| 1:A:2252:A:C5    | 1:A:2253:G:H1'    | 2.54                     | 0.42              |
| 1:A:2443:C:O3'   | 14:M:56:LYS:HE3   | 2.19                     | 0.42              |
| 4:C:110:SER:N    | 4:C:114:ASP:OD2   | 2.52                     | 0.42              |
| 4:C:173:GLY:O    | 4:C:177:HIS:CD2   | 2.72                     | 0.42              |
| 5:D:7:ARG:HD3    | 5:D:9:GLY:O       | 2.20                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:E:184:ARG:NE   | 38:E:8415:HOH:O   | 2.43                     | 0.42              |
| 6:E:236:THR:O    | 6:E:239:ALA:N     | 2.53                     | 0.42              |
| 8:G:15:GLN:NE2   | 8:G:40:VAL:O      | 2.53                     | 0.42              |
| 11:J:53:PRO:HA   | 11:J:125:VAL:O    | 2.20                     | 0.42              |
| 11:J:84:ARG:CZ   | 11:J:135:TRP:CH2  | 3.02                     | 0.42              |
| 12:K:79:PHE:O    | 12:K:79:PHE:HD2   | 2.01                     | 0.42              |
| 14:M:53:ARG:HH22 | 14:M:57:VAL:HG12  | 1.83                     | 0.42              |
| 14:M:55:GLN:HA   | 14:M:58:GLN:NE2   | 2.33                     | 0.42              |
| 15:N:63:VAL:O    | 15:N:130:GLU:HA   | 2.19                     | 0.42              |
| 16:O:47:LEU:HD23 | 16:O:47:LEU:HA    | 1.72                     | 0.42              |
| 19:R:53:HIS:O    | 19:R:55:ARG:N     | 2.53                     | 0.42              |
| 25:X:65:VAL:HG12 | 25:X:116:LEU:HD13 | 2.01                     | 0.42              |
| 28:1:38:LYS:HG2  | 38:1:8408:HOH:O   | 2.20                     | 0.42              |
| 1:A:171:C:O2'    | 1:A:172:U:H5'     | 2.20                     | 0.42              |
| 1:A:2004:U:H5''  | 1:A:2005:G:C8     | 2.54                     | 0.42              |
| 1:A:2335:C:C2    | 1:A:2350:G:C2     | 3.07                     | 0.42              |
| 2:B:3055:U:H4'   | 2:B:3056:A:H8     | 1.83                     | 0.42              |
| 2:B:3078:G:O2'   | 2:B:3079:U:P      | 2.78                     | 0.42              |
| 4:C:125:ASN:HB3  | 4:C:158:VAL:HG12  | 2.02                     | 0.42              |
| 4:C:169:PHE:O    | 4:C:170:VAL:HB    | 2.20                     | 0.42              |
| 5:D:82:VAL:HG12  | 5:D:101:TRP:CE3   | 2.54                     | 0.42              |
| 7:F:59:GLY:C     | 7:F:61:PHE:H      | 2.23                     | 0.42              |
| 8:G:101:GLU:OE2  | 8:G:115:ARG:HD3   | 2.19                     | 0.42              |
| 15:N:185:PRO:CG  | 15:N:189:VAL:HG11 | 2.48                     | 0.42              |
| 16:O:107:ASN:OD1 | 35:O:8507:CL:CL   | 2.75                     | 0.42              |
| 20:S:4:TYR:N     | 38:S:8546:HOH:O   | 2.52                     | 0.42              |
| 22:U:28:SER:O    | 22:U:32:ARG:HG3   | 2.18                     | 0.42              |
| 23:V:9:CYS:SG    | 38:V:6796:HOH:O   | 2.62                     | 0.42              |
| 25:X:73:LEU:HD12 | 25:X:73:LEU:HA    | 1.88                     | 0.42              |
| 1:A:67:A:H5''    | 1:A:69:A:C8       | 2.55                     | 0.42              |
| 1:A:251:C:O2'    | 1:A:252:C:H5'     | 2.19                     | 0.42              |
| 1:A:419:A:H1'    | 1:A:1921:A:C2     | 2.55                     | 0.42              |
| 1:A:553:G:P      | 27:Z:204:ARG:NH2  | 2.92                     | 0.42              |
| 1:A:949:U:O2'    | 19:R:40:HIS:HE1   | 2.03                     | 0.42              |
| 1:A:1268:C:H2'   | 1:A:1269:G:C8     | 2.54                     | 0.42              |
| 1:A:1483:C:O2'   | 1:A:1484:G:H5'    | 2.20                     | 0.42              |
| 1:A:1603:A:H4'   | 1:A:1605:G:C8     | 2.55                     | 0.42              |
| 1:A:1743:G:H1'   | 38:A:4365:HOH:O   | 2.19                     | 0.42              |
| 1:A:1855:G:H8    | 4:C:144:GLU:OE2   | 2.03                     | 0.42              |
| 1:A:2346:C:H4'   | 7:F:52:THR:CG2    | 2.48                     | 0.42              |
| 38:A:3626:HOH:O  | 26:Y:59:TRP:HB2   | 2.19                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 38:A:5000:HOH:O  | 15:N:58:GLN:HG3  | 2.19                     | 0.42              |
| 2:B:3048:C:H4'   | 16:O:141:ARG:NH2 | 2.27                     | 0.42              |
| 9:H:4:VAL:HG13   | 9:H:76:PHE:CE1   | 2.54                     | 0.42              |
| 17:P:26:TRP:HB2  | 38:P:3062:HOH:O  | 2.20                     | 0.42              |
| 26:Y:85:VAL:HG12 | 26:Y:86:GLU:H    | 1.85                     | 0.42              |
| 29:2:12:ASN:HB3  | 38:2:5389:HOH:O  | 2.19                     | 0.42              |
| 31:4:54:LYS:NZ   | 38:4:8526:HOH:O  | 2.52                     | 0.42              |
| 1:A:10:U:HO2'    | 1:A:11:A:P       | 2.43                     | 0.42              |
| 1:A:303:C:H2'    | 1:A:304:G:O4'    | 2.20                     | 0.42              |
| 1:A:1501:A:C6    | 1:A:1502:A:C6    | 3.07                     | 0.42              |
| 1:A:2311:A:H5''  | 11:J:115:PHE:CD2 | 2.54                     | 0.42              |
| 1:A:2452:G:OP2   | 38:A:6202:HOH:O  | 2.21                     | 0.42              |
| 1:A:2456:A:H2'   | 1:A:2457:U:C6    | 2.55                     | 0.42              |
| 1:A:2607:U:C4    | 5:D:242:TRP:CZ2  | 3.07                     | 0.42              |
| 1:A:2896:A:OP1   | 26:Y:15:ARG:NH1  | 2.52                     | 0.42              |
| 1:A:2909:G:O2'   | 1:A:2910:A:H5'   | 2.20                     | 0.42              |
| 4:C:128:LEU:HG   | 38:C:8583:HOH:O  | 2.19                     | 0.42              |
| 5:D:132:HIS:HB2  | 5:D:137:LEU:HD22 | 2.02                     | 0.42              |
| 5:D:277:GLU:N    | 5:D:278:PRO:HD2  | 2.34                     | 0.42              |
| 8:G:24:GLY:HA3   | 8:G:76:VAL:HB    | 2.02                     | 0.42              |
| 8:G:64:THR:HG22  | 8:G:68:HIS:CD2   | 2.55                     | 0.42              |
| 8:G:145:ALA:HB1  | 8:G:168:ILE:CD1  | 2.50                     | 0.42              |
| 12:K:4:ALA:O     | 12:K:5:GLU:O     | 2.38                     | 0.42              |
| 13:L:121:PHE:HB3 | 38:L:2659:HOH:O  | 2.19                     | 0.42              |
| 15:N:40:ILE:HG13 | 15:N:40:ILE:O    | 2.20                     | 0.42              |
| 16:O:116:PHE:HB2 | 38:O:8556:HOH:O  | 2.18                     | 0.42              |
| 16:O:162:ASP:HB3 | 16:O:163:PHE:H   | 1.61                     | 0.42              |
| 19:R:16:ASN:HD22 | 19:R:16:ASN:HA   | 1.59                     | 0.42              |
| 24:W:45:ARG:C    | 24:W:47:LYS:N    | 2.73                     | 0.42              |
| 25:X:28:HIS:HD2  | 25:X:31:HIS:CE1  | 2.38                     | 0.42              |
| 25:X:76:ASP:O    | 25:X:77:ALA:C    | 2.59                     | 0.42              |
| 1:A:111:C:O2'    | 1:A:112:G:H5'    | 2.20                     | 0.42              |
| 1:A:221:G:C6     | 1:A:222:A:C6     | 3.08                     | 0.42              |
| 1:A:319:A:H4'    | 1:A:338:C:C4     | 2.55                     | 0.42              |
| 1:A:449:A:C8     | 6:E:43:LYS:HG2   | 2.54                     | 0.42              |
| 1:A:1242:A:H5'   | 12:K:82:THR:CG2  | 2.39                     | 0.42              |
| 1:A:2655:U:C4    | 1:A:2656:G:N7    | 2.88                     | 0.42              |
| 38:A:8592:HOH:O  | 5:D:214:PRO:HD2  | 2.20                     | 0.42              |
| 2:B:3012:C:H5'   | 2:B:3070:U:O4'   | 2.20                     | 0.42              |
| 6:E:115:LEU:HD12 | 6:E:115:LEU:HA   | 1.90                     | 0.42              |
| 7:F:55:LYS:O     | 7:F:56:ARG:HB2   | 2.20                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:G:69:ILE:HA    | 8:G:72:MET:HE2    | 2.01                     | 0.42              |
| 11:J:71:TYR:O    | 11:J:73:GLN:N     | 2.53                     | 0.42              |
| 14:M:90:ARG:NH1  | 14:M:119:THR:HG21 | 2.35                     | 0.42              |
| 1:A:155:C:OP2    | 15:N:188:ARG:HD3  | 2.20                     | 0.41              |
| 1:A:512:G:O3'    | 1:A:513:A:H8      | 2.03                     | 0.41              |
| 1:A:758:A:OP1    | 14:M:31:GLY:N     | 2.50                     | 0.41              |
| 1:A:795:G:HO2'   | 1:A:796:A:P       | 2.43                     | 0.41              |
| 1:A:876:A:N3     | 1:A:876:A:C2'     | 2.83                     | 0.41              |
| 1:A:1384:C:H6    | 1:A:1384:C:O5'    | 2.03                     | 0.41              |
| 1:A:2430:A:H2'   | 1:A:2431:C:C6     | 2.54                     | 0.41              |
| 4:C:43:VAL:O     | 4:C:44:ASP:HB2    | 2.20                     | 0.41              |
| 4:C:103:VAL:HA   | 4:C:104:PRO:HD3   | 1.80                     | 0.41              |
| 5:D:146:THR:O    | 5:D:159:PRO:HB3   | 2.19                     | 0.41              |
| 5:D:190:MET:HE2  | 5:D:194:PHE:HD1   | 1.83                     | 0.41              |
| 5:D:224:LYS:HD3  | 5:D:224:LYS:HA    | 1.75                     | 0.41              |
| 8:G:35:TYR:HA    | 12:K:127:ILE:HD12 | 2.02                     | 0.41              |
| 9:H:109:GLU:O    | 9:H:112:ALA:HB3   | 2.21                     | 0.41              |
| 11:J:45:GLN:HG3  | 11:J:135:TRP:NE1  | 2.35                     | 0.41              |
| 13:L:115:ARG:CG  | 13:L:116:GLU:N    | 2.79                     | 0.41              |
| 14:M:73:VAL:HG21 | 14:M:116:HIS:CD2  | 2.55                     | 0.41              |
| 16:O:91:ARG:HG3  | 16:O:186:LEU:CD2  | 2.48                     | 0.41              |
| 18:Q:11:ALA:HB1  | 18:Q:16:VAL:O     | 2.20                     | 0.41              |
| 18:Q:121:ASP:HB2 | 38:Q:201:HOH:O    | 2.19                     | 0.41              |
| 20:S:25:PHE:N    | 38:S:8508:HOH:O   | 2.51                     | 0.41              |
| 30:3:49:GLU:CD   | 38:3:719:HOH:O    | 2.58                     | 0.41              |
| 1:A:699:C:C2     | 1:A:744:G:C2      | 3.08                     | 0.41              |
| 1:A:1192:A:O2'   | 1:A:1193:A:OP1    | 2.29                     | 0.41              |
| 1:A:1562:C:H42   | 1:A:2738:G:H1     | 1.67                     | 0.41              |
| 1:A:1930:A:H1'   | 1:A:2128:G:H5'    | 2.02                     | 0.41              |
| 1:A:1973:A:H5'   | 1:A:1973:A:H8     | 1.84                     | 0.41              |
| 1:A:2385:G:H2'   | 1:A:2386:U:H6     | 1.85                     | 0.41              |
| 1:A:2506:A:O2'   | 1:A:2507:G:P      | 2.78                     | 0.41              |
| 1:A:2865:G:HO2'  | 1:A:2866:U:H5     | 1.67                     | 0.41              |
| 3:5:74:C:C4      | 3:5:75:C:C2       | 3.08                     | 0.41              |
| 5:D:205:VAL:O    | 5:D:307:ARG:CD    | 2.68                     | 0.41              |
| 6:E:36:ARG:NH1   | 38:E:8400:HOH:O   | 2.53                     | 0.41              |
| 7:F:158:ASN:HB2  | 7:F:161:ASP:OD2   | 2.20                     | 0.41              |
| 9:H:26:THR:HB    | 9:H:102:GLY:C     | 2.41                     | 0.41              |
| 12:K:135:ILE:O   | 12:K:139:LEU:HG   | 2.20                     | 0.41              |
| 15:N:133:LEU:O   | 15:N:134:ILE:HD13 | 2.21                     | 0.41              |
| 16:O:69:TYR:HE2  | 16:O:183:ASP:OD2  | 2.03                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:X:146:ILE:HG23 | 25:X:150:LEU:HD12 | 2.02                     | 0.41              |
| 26:Y:43:VAL:HG12  | 26:Y:47:ALA:HB3   | 2.01                     | 0.41              |
| 1:A:182:G:C4'     | 15:N:157:LEU:HD13 | 2.47                     | 0.41              |
| 1:A:183:A:C5'     | 15:N:157:LEU:HD12 | 2.50                     | 0.41              |
| 1:A:209:G:C6      | 1:A:210:U:N3      | 2.89                     | 0.41              |
| 1:A:245:C:C2'     | 1:A:246:G:H5'     | 2.50                     | 0.41              |
| 1:A:1448:A:C6     | 1:A:1451:C:C2     | 3.09                     | 0.41              |
| 1:A:1545:C:H2'    | 1:A:1546:G:O4'    | 2.20                     | 0.41              |
| 1:A:1851:G:O2'    | 1:A:1852:A:H5'    | 2.20                     | 0.41              |
| 1:A:2108:A:C2     | 1:A:2110:G:C8     | 3.08                     | 0.41              |
| 1:A:2388:C:O2'    | 1:A:2389:U:H5'    | 2.20                     | 0.41              |
| 1:A:2769:C:H2'    | 1:A:2770:G:C5'    | 2.50                     | 0.41              |
| 5:D:69:VAL:HA     | 5:D:70:PRO:HD3    | 1.95                     | 0.41              |
| 5:D:279:THR:HG22  | 5:D:280:VAL:O     | 2.21                     | 0.41              |
| 6:E:191:SER:OG    | 6:E:192:ILE:N     | 2.53                     | 0.41              |
| 8:G:172:PRO:HB3   | 38:G:6931:HOH:O   | 2.20                     | 0.41              |
| 11:J:65:ARG:CZ    | 38:J:8385:HOH:O   | 2.68                     | 0.41              |
| 11:J:111:MET:O    | 11:J:114:PRO:HD3  | 2.20                     | 0.41              |
| 15:N:93:ARG:H     | 15:N:93:ARG:HG2   | 1.54                     | 0.41              |
| 15:N:155:HIS:ND1  | 15:N:158:ARG:NE   | 2.55                     | 0.41              |
| 16:O:67:ALA:O     | 16:O:69:TYR:N     | 2.54                     | 0.41              |
| 24:W:39:ALA:C     | 24:W:41:GLU:N     | 2.73                     | 0.41              |
| 1:A:590:A:C2'     | 1:A:591:A:H5'     | 2.51                     | 0.41              |
| 1:A:596:C:H2'     | 1:A:597:A:C8      | 2.55                     | 0.41              |
| 1:A:638:C:H2'     | 1:A:639:A:H8      | 1.85                     | 0.41              |
| 1:A:710:G:OP1     | 17:P:24:ALA:HB3   | 2.20                     | 0.41              |
| 1:A:1217:G:H2'    | 1:A:1218:U:C6     | 2.55                     | 0.41              |
| 1:A:1506:U:H6     | 1:A:1506:U:H5'    | 1.86                     | 0.41              |
| 1:A:1513:C:O2'    | 1:A:1514:C:H5'    | 2.19                     | 0.41              |
| 38:A:3268:HOH:O   | 23:V:17:THR:CG2   | 2.69                     | 0.41              |
| 4:C:36:ASP:CB     | 4:C:85:ASP:H      | 2.32                     | 0.41              |
| 4:C:42:VAL:HG11   | 4:C:75:GLY:O      | 2.21                     | 0.41              |
| 5:D:238:ASN:HD22  | 5:D:240:GLY:N     | 2.14                     | 0.41              |
| 13:L:78:LYS:HA    | 13:L:79:PRO:HD3   | 1.88                     | 0.41              |
| 13:L:118:ALA:O    | 13:L:120:ARG:N    | 2.54                     | 0.41              |
| 14:M:93:VAL:HG12  | 14:M:97:VAL:HG23  | 2.03                     | 0.41              |
| 16:O:37:ARG:HD3   | 16:O:37:ARG:HA    | 1.84                     | 0.41              |
| 17:P:80:ASP:OD1   | 17:P:81:PHE:N     | 2.53                     | 0.41              |
| 26:Y:12:ILE:HG23  | 26:Y:36:HIS:CG    | 2.55                     | 0.41              |
| 1:A:292:G:N2      | 38:A:5231:HOH:O   | 2.30                     | 0.41              |
| 1:A:736:A:H2'     | 1:A:737:A:O4'     | 2.20                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:920:C:H5'    | 1:A:921:G:C4     | 2.55                     | 0.41              |
| 1:A:1524:U:O2'   | 1:A:1525:G:P     | 2.78                     | 0.41              |
| 1:A:1600:G:H8    | 1:A:1600:G:OP2   | 2.03                     | 0.41              |
| 1:A:2346:C:O3'   | 7:F:52:THR:HG23  | 2.20                     | 0.41              |
| 1:A:2547:C:H2'   | 1:A:2548:C:C6    | 2.56                     | 0.41              |
| 5:D:280:VAL:HG13 | 5:D:333:GLU:O    | 2.20                     | 0.41              |
| 5:D:280:VAL:HG11 | 5:D:335:ASN:H    | 1.86                     | 0.41              |
| 7:F:101:THR:HG22 | 7:F:101:THR:O    | 2.20                     | 0.41              |
| 12:K:6:PHE:O     | 12:K:8:ALA:N     | 2.53                     | 0.41              |
| 15:N:74:ARG:HD3  | 15:N:88:VAL:HA   | 2.03                     | 0.41              |
| 15:N:87:MET:HE1  | 38:N:8531:HOH:O  | 2.21                     | 0.41              |
| 16:O:164:ASP:C   | 16:O:164:ASP:OD1 | 2.58                     | 0.41              |
| 22:U:71:VAL:CG1  | 22:U:72:ILE:N    | 2.83                     | 0.41              |
| 25:X:29:VAL:O    | 25:X:30:ASN:HB2  | 2.21                     | 0.41              |
| 27:Z:107:PRO:HB3 | 27:Z:182:PHE:CD2 | 2.56                     | 0.41              |
| 1:A:64:G:H2'     | 1:A:65:C:O4'     | 2.21                     | 0.41              |
| 1:A:840:U:C2     | 1:A:2648:U:O4    | 2.73                     | 0.41              |
| 1:A:1023:C:O2'   | 1:A:1024:G:H5'   | 2.21                     | 0.41              |
| 1:A:1059:G:C8    | 1:A:2491:G:H4'   | 2.55                     | 0.41              |
| 1:A:1161:A:O5'   | 1:A:1161:A:C8    | 2.73                     | 0.41              |
| 1:A:1749:U:O2    | 1:A:1751:G:C8    | 2.74                     | 0.41              |
| 1:A:1795:G:H2'   | 1:A:1796:A:O4'   | 2.21                     | 0.41              |
| 1:A:2460:A:OP1   | 31:4:60:LYS:HB2  | 2.21                     | 0.41              |
| 1:A:2837:U:H1'   | 5:D:307:ARG:HH12 | 1.85                     | 0.41              |
| 1:A:2880:A:H2'   | 1:A:2881:C:O4'   | 2.20                     | 0.41              |
| 6:E:40:ALA:CB    | 6:E:100:LEU:HD12 | 2.51                     | 0.41              |
| 7:F:60:GLU:O     | 7:F:62:ASP:N     | 2.53                     | 0.41              |
| 7:F:163:VAL:HA   | 38:F:6326:HOH:O  | 2.20                     | 0.41              |
| 8:G:158:ASP:OD1  | 8:G:160:ARG:HB2  | 2.20                     | 0.41              |
| 9:H:4:VAL:HG13   | 9:H:76:PHE:CD1   | 2.55                     | 0.41              |
| 10:I:65:THR:O    | 10:I:69:ARG:HB2  | 2.20                     | 0.41              |
| 11:J:26:LYS:CD   | 11:J:28:ILE:HB   | 2.51                     | 0.41              |
| 24:W:27:LEU:HA   | 24:W:49:LEU:HD13 | 2.02                     | 0.41              |
| 1:A:328:U:O4'    | 6:E:202:THR:HG22 | 2.20                     | 0.41              |
| 1:A:333:G:O2'    | 1:A:334:G:H5'    | 2.21                     | 0.41              |
| 1:A:470:U:O2'    | 29:2:16:HIS:CD2  | 2.73                     | 0.41              |
| 1:A:697:G:H4'    | 1:A:730:G:O3'    | 2.21                     | 0.41              |
| 1:A:731:U:OP2    | 38:A:3515:HOH:O  | 2.22                     | 0.41              |
| 1:A:1352:A:N1    | 6:E:48:SER:HB3   | 2.35                     | 0.41              |
| 1:A:1383:U:H2'   | 1:A:1384:C:C6    | 2.56                     | 0.41              |
| 1:A:1616:A:H5''  | 1:A:1617:C:OP1   | 2.20                     | 0.41              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1767:A:O2'   | 1:A:1768:C:H5'    | 2.21                     | 0.41              |
| 1:A:1916:C:C2    | 1:A:1924:A:C2     | 3.08                     | 0.41              |
| 1:A:2134:G:C6    | 1:A:2258:A:C8     | 3.09                     | 0.41              |
| 1:A:2445:U:H2'   | 1:A:2446:G:H8     | 1.84                     | 0.41              |
| 1:A:2651:C:H2'   | 1:A:2652:U:O4'    | 2.20                     | 0.41              |
| 1:A:2825:C:H4'   | 1:A:2826:G:O5'    | 2.20                     | 0.41              |
| 5:D:144:THR:CG2  | 5:D:145:HIS:N     | 2.83                     | 0.41              |
| 5:D:168:GLY:H    | 5:D:174:ARG:HD3   | 1.83                     | 0.41              |
| 6:E:114:ALA:HB1  | 6:E:223:LEU:HB3   | 2.02                     | 0.41              |
| 7:F:35:ALA:C     | 7:F:37:ALA:N      | 2.74                     | 0.41              |
| 7:F:94:ALA:O     | 7:F:95:THR:O      | 2.38                     | 0.41              |
| 8:G:149:GLU:OE1  | 8:G:168:ILE:HG12  | 2.21                     | 0.41              |
| 11:J:31:PHE:CD2  | 11:J:85:ILE:HG23  | 2.56                     | 0.41              |
| 14:M:72:ASN:OD1  | 14:M:75:LEU:HD12  | 2.21                     | 0.41              |
| 25:X:130:HIS:O   | 25:X:136:GLY:HA3  | 2.20                     | 0.41              |
| 27:Z:109:LEU:HA  | 38:Z:8576:HOH:O   | 2.21                     | 0.41              |
| 29:2:5:THR:N     | 29:2:6:PRO:HD2    | 2.35                     | 0.41              |
| 30:3:36:ASN:HB3  | 30:3:39:ARG:NE    | 2.36                     | 0.41              |
| 1:A:316:A:N3     | 1:A:336:G:O2'     | 2.49                     | 0.41              |
| 1:A:397:A:P      | 38:A:3833:HOH:O   | 2.78                     | 0.41              |
| 1:A:688:A:H62    | 14:M:111:ALA:HB2  | 1.85                     | 0.41              |
| 1:A:920:C:H4'    | 1:A:921:G:N2      | 2.35                     | 0.41              |
| 1:A:1477:C:H5'   | 1:A:1868:G:C5'    | 2.50                     | 0.41              |
| 1:A:1603:A:H5'   | 1:A:1605:G:C4'    | 2.49                     | 0.41              |
| 1:A:1855:G:O6    | 4:C:141:PRO:HG2   | 2.21                     | 0.41              |
| 1:A:1880:C:C2    | 1:A:1881:A:C8     | 3.09                     | 0.41              |
| 7:F:146:LYS:HE2  | 16:O:107:ASN:ND2  | 2.36                     | 0.41              |
| 11:J:1:LYS:HA    | 11:J:2:PRO:HD3    | 1.81                     | 0.41              |
| 11:J:132:PHE:O   | 11:J:133:ILE:HD13 | 2.20                     | 0.41              |
| 15:N:43:PRO:HG3  | 15:N:62:VAL:HG21  | 2.03                     | 0.41              |
| 16:O:110:THR:HB  | 16:O:113:SER:OG   | 2.20                     | 0.41              |
| 18:Q:115:SER:HG  | 18:Q:118:GLN:HG3  | 1.83                     | 0.41              |
| 22:U:40:VAL:HA   | 22:U:119:ALA:O    | 2.21                     | 0.41              |
| 24:W:12:THR:HG23 | 24:W:14:ALA:H     | 1.85                     | 0.41              |
| 25:X:154:ARG:HE  | 25:X:154:ARG:HB3  | 1.64                     | 0.41              |
| 26:Y:78:GLU:CG   | 26:Y:79:GLU:N     | 2.72                     | 0.41              |
| 27:Z:116:LEU:HA  | 27:Z:116:LEU:HD23 | 1.82                     | 0.41              |
| 28:1:39:CYS:SG   | 28:1:47:LEU:CD2   | 2.85                     | 0.41              |
| 29:2:29:THR:O    | 29:2:32:LYS:NZ    | 2.53                     | 0.41              |
| 29:2:31:LYS:O    | 29:2:32:LYS:HB2   | 2.21                     | 0.41              |
| 1:A:10:U:O4      | 1:A:532:A:OP2     | 2.38                     | 0.41              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:79:G:H22     | 1:A:97:G:H1'      | 1.86                     | 0.41              |
| 1:A:123:U:O2'    | 1:A:124:C:H5'     | 2.21                     | 0.41              |
| 1:A:151:A:C2     | 1:A:442:A:C8      | 3.09                     | 0.41              |
| 1:A:154:C:O2'    | 1:A:155:C:H5'     | 2.20                     | 0.41              |
| 1:A:861:A:H2'    | 1:A:862:U:C6      | 2.55                     | 0.41              |
| 1:A:951:A:O2'    | 1:A:952:G:H5'     | 2.21                     | 0.41              |
| 1:A:1003:U:O2    | 11:J:90:PHE:CZ    | 2.73                     | 0.41              |
| 1:A:1162:G:H2'   | 1:A:1162:G:N3     | 2.36                     | 0.41              |
| 1:A:1166:A:N3    | 1:A:1166:A:H2'    | 2.35                     | 0.41              |
| 1:A:1218:U:H2'   | 1:A:1219:U:H6     | 1.85                     | 0.41              |
| 1:A:1463:A:H2'   | 1:A:1464:U:C6     | 2.56                     | 0.41              |
| 1:A:1566:C:O2'   | 1:A:1567:A:H5'    | 2.21                     | 0.41              |
| 1:A:1609:C:H2'   | 1:A:1610:G:C8     | 2.56                     | 0.41              |
| 1:A:1706:G:C6    | 1:A:1707:G:C6     | 3.08                     | 0.41              |
| 1:A:1969:A:N7    | 1:A:1970:G:C6     | 2.88                     | 0.41              |
| 1:A:2257:G:H4'   | 1:A:2259:C:C2     | 2.56                     | 0.41              |
| 1:A:2398:A:H2'   | 1:A:2399:G:O4'    | 2.21                     | 0.41              |
| 1:A:2473:U:O3'   | 1:A:2474:A:H3'    | 2.20                     | 0.41              |
| 1:A:2501:G:H1'   | 38:A:4029:HOH:O   | 2.20                     | 0.41              |
| 1:A:2506:A:H1'   | 38:A:5515:HOH:O   | 2.21                     | 0.41              |
| 1:A:2834:G:C4    | 1:A:2847:G:N2     | 2.89                     | 0.41              |
| 1:A:2839:C:H6    | 1:A:2839:C:O5'    | 2.04                     | 0.41              |
| 4:C:165:THR:O    | 4:C:165:THR:CG2   | 2.69                     | 0.41              |
| 4:C:217:ARG:CG   | 4:C:217:ARG:NH1   | 2.84                     | 0.41              |
| 4:C:231:LYS:O    | 4:C:232:ARG:HB3   | 2.21                     | 0.41              |
| 5:D:14:GLY:HA3   | 38:D:8609:HOH:O   | 2.20                     | 0.41              |
| 6:E:142:ASP:OD1  | 6:E:237:GLU:HB3   | 2.21                     | 0.41              |
| 7:F:57:THR:HA    | 7:F:63:ILE:HA     | 2.01                     | 0.41              |
| 7:F:99:ASP:HB2   | 7:F:103:ASN:H     | 1.86                     | 0.41              |
| 8:G:154:ILE:HG13 | 8:G:156:ASP:OD1   | 2.21                     | 0.41              |
| 9:H:115:VAL:O    | 9:H:118:LEU:N     | 2.54                     | 0.41              |
| 11:J:26:LYS:HD2  | 11:J:28:ILE:CG1   | 2.50                     | 0.41              |
| 11:J:129:ASN:N   | 11:J:129:ASN:HD22 | 2.18                     | 0.41              |
| 13:L:37:TYR:CE2  | 13:L:45:PRO:HA    | 2.55                     | 0.41              |
| 25:X:122:ARG:HG2 | 25:X:122:ARG:NH1  | 2.27                     | 0.41              |
| 25:X:122:ARG:CG  | 25:X:122:ARG:NH1  | 2.83                     | 0.41              |
| 28:1:46:LYS:O    | 28:1:57:CYS:HA    | 2.20                     | 0.41              |
| 31:4:42:ARG:HH11 | 31:4:42:ARG:CG    | 2.33                     | 0.41              |
| 1:A:21:G:H5''    | 20:S:1:GLY:O      | 2.21                     | 0.41              |
| 1:A:453:A:H4'    | 1:A:455:A:N7      | 2.36                     | 0.41              |
| 1:A:658:C:O2'    | 1:A:662:U:OP1     | 2.34                     | 0.41              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1121:G:H21   | 1:A:1248:A:C4'    | 2.34                     | 0.41              |
| 1:A:1151:G:OP1   | 10:I:63:ARG:NH1   | 2.54                     | 0.41              |
| 1:A:1345:A:H2'   | 1:A:1346:U:C6     | 2.56                     | 0.41              |
| 1:A:1656:A:H2'   | 1:A:1657:A:O4'    | 2.21                     | 0.41              |
| 1:A:2462:G:O6    | 31:4:61:PRO:HG3   | 2.20                     | 0.41              |
| 1:A:2786:G:O2'   | 1:A:2787:C:H5'    | 2.21                     | 0.41              |
| 38:A:9692:HOH:O  | 14:M:4:LYS:HG3    | 2.21                     | 0.41              |
| 38:B:8386:HOH:O  | 19:R:25:PRO:HB3   | 2.20                     | 0.41              |
| 38:B:8525:HOH:O  | 16:O:107:ASN:HB3  | 2.21                     | 0.41              |
| 4:C:179:MET:HG2  | 4:C:186:TRP:CG    | 2.56                     | 0.41              |
| 6:E:118:THR:HG22 | 6:E:137:PRO:HB3   | 2.03                     | 0.41              |
| 7:F:67:ASP:N     | 7:F:67:ASP:OD1    | 2.54                     | 0.41              |
| 14:M:125:PHE:CE1 | 14:M:140:VAL:HG13 | 2.56                     | 0.41              |
| 15:N:169:ARG:NH1 | 38:N:8576:HOH:O   | 2.54                     | 0.41              |
| 17:P:35:LYS:HD3  | 38:P:3360:HOH:O   | 2.20                     | 0.41              |
| 19:R:25:PRO:HA   | 19:R:26:PRO:HD3   | 1.86                     | 0.41              |
| 19:R:40:HIS:CE1  | 19:R:94:GLN:HA    | 2.56                     | 0.41              |
| 21:T:10:VAL:HG11 | 24:W:36:ALA:HA    | 2.02                     | 0.41              |
| 22:U:14:ALA:HA   | 22:U:15:PRO:HD3   | 1.93                     | 0.41              |
| 1:A:78:G:C6      | 1:A:79:G:C6       | 3.09                     | 0.40              |
| 1:A:164:G:C6     | 1:A:165:A:C5      | 3.08                     | 0.40              |
| 1:A:243:A:H61    | 1:A:269:G:H1'     | 1.86                     | 0.40              |
| 1:A:506:G:N2     | 1:A:509:A:C5'     | 2.71                     | 0.40              |
| 1:A:593:A:N7     | 38:A:3887:HOH:O   | 2.53                     | 0.40              |
| 1:A:724:G:O2'    | 1:A:725:C:H5'     | 2.21                     | 0.40              |
| 1:A:1191:A:N1    | 1:A:1206:U:O4     | 2.54                     | 0.40              |
| 1:A:1611:G:O2'   | 1:A:1612:A:H5'    | 2.22                     | 0.40              |
| 1:A:1861:C:H4'   | 4:C:6:GLY:O       | 2.21                     | 0.40              |
| 1:A:2047:C:H5'   | 38:A:9316:HOH:O   | 2.21                     | 0.40              |
| 1:A:2090:G:H2'   | 1:A:2091:G:C8     | 2.56                     | 0.40              |
| 1:A:2588:G:H2'   | 1:A:2589:U:H4'    | 2.03                     | 0.40              |
| 1:A:2846:C:OP1   | 5:D:158:LYS:HD3   | 2.21                     | 0.40              |
| 5:D:60:SER:C     | 5:D:62:ARG:H      | 2.23                     | 0.40              |
| 5:D:222:LYS:HE2  | 38:D:8547:HOH:O   | 2.21                     | 0.40              |
| 5:D:265:LEU:CD2  | 5:D:316:ARG:HD3   | 2.51                     | 0.40              |
| 6:E:120:ASP:C    | 6:E:120:ASP:OD1   | 2.60                     | 0.40              |
| 6:E:127:ARG:NH2  | 6:E:225:PRO:O     | 2.53                     | 0.40              |
| 7:F:168:SER:O    | 7:F:168:SER:OG    | 2.35                     | 0.40              |
| 8:G:132:THR:HB   | 38:G:2227:HOH:O   | 2.21                     | 0.40              |
| 11:J:26:LYS:HD2  | 11:J:28:ILE:HB    | 2.03                     | 0.40              |
| 11:J:62:GLU:OE2  | 11:J:66:VAL:CG2   | 2.69                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 11:J:113:ALA:N   | 11:J:114:PRO:CD  | 2.84                     | 0.40              |
| 15:N:97:ILE:CD1  | 15:N:127:LYS:HD2 | 2.51                     | 0.40              |
| 17:P:49:GLU:HB2  | 17:P:70:LEU:HD12 | 2.03                     | 0.40              |
| 20:S:106:GLY:HA2 | 20:S:109:MET:CE  | 2.48                     | 0.40              |
| 22:U:55:PHE:O    | 22:U:56:ALA:C    | 2.59                     | 0.40              |
| 26:Y:30:MET:CE   | 26:Y:58:ALA:HB3  | 2.52                     | 0.40              |
| 1:A:88:G:H2'     | 1:A:89:G:C8      | 2.55                     | 0.40              |
| 1:A:329:A:C5     | 1:A:347:A:C2     | 3.10                     | 0.40              |
| 1:A:585:C:H6     | 38:A:5555:HOH:O  | 2.04                     | 0.40              |
| 1:A:587:A:H5''   | 38:A:6745:HOH:O  | 2.19                     | 0.40              |
| 1:A:958:G:O2'    | 1:A:959:C:H5'    | 2.21                     | 0.40              |
| 1:A:1498:G:O2'   | 1:A:1499:U:H5'   | 2.21                     | 0.40              |
| 1:A:1594:C:C2    | 1:A:1601:G:C2    | 3.09                     | 0.40              |
| 1:A:1850:U:H2'   | 1:A:1851:G:C8    | 2.56                     | 0.40              |
| 1:A:1886:A:C5'   | 38:1:8405:HOH:O  | 2.69                     | 0.40              |
| 1:A:2004:U:H2'   | 1:A:2005:G:OP1   | 2.21                     | 0.40              |
| 1:A:2364:A:H5''  | 19:R:15:LYS:HD3  | 2.03                     | 0.40              |
| 1:A:2590:U:H2'   | 1:A:2591:C:H5'   | 2.03                     | 0.40              |
| 1:A:2620:U:O4    | 36:5:76:PPU:CA   | 2.69                     | 0.40              |
| 1:A:2649:A:H5'   | 1:A:2649:A:H8    | 1.86                     | 0.40              |
| 1:A:2868:C:H2'   | 1:A:2869:G:O4'   | 2.21                     | 0.40              |
| 38:A:8866:HOH:O  | 29:2:1:THR:HA    | 2.20                     | 0.40              |
| 2:B:3050:G:OP1   | 16:O:147:ILE:CD1 | 2.68                     | 0.40              |
| 2:B:3078:G:O2'   | 2:B:3079:U:OP2   | 2.39                     | 0.40              |
| 4:C:105:VAL:HG11 | 4:C:154:ALA:CB   | 2.51                     | 0.40              |
| 5:D:265:LEU:HD21 | 5:D:316:ARG:HD3  | 2.02                     | 0.40              |
| 6:E:85:LYS:CE    | 38:E:8328:HOH:O  | 2.67                     | 0.40              |
| 9:H:66:LEU:HA    | 9:H:66:LEU:HD12  | 1.85                     | 0.40              |
| 11:J:14:TYR:HB2  | 38:J:8353:HOH:O  | 2.21                     | 0.40              |
| 11:J:35:ASN:HD21 | 11:J:80:ASN:HA   | 1.83                     | 0.40              |
| 15:N:137:ASP:HA  | 15:N:142:LYS:HE3 | 2.03                     | 0.40              |
| 24:W:57:LYS:HA   | 24:W:60:GLN:HE21 | 1.85                     | 0.40              |
| 25:X:151:GLU:O   | 25:X:154:ARG:HB3 | 2.20                     | 0.40              |
| 26:Y:14:LEU:HD12 | 26:Y:67:PRO:O    | 2.21                     | 0.40              |
| 1:A:39:G:C2      | 1:A:444:C:C2     | 3.10                     | 0.40              |
| 1:A:138:U:OP2    | 1:A:139:C:H5     | 2.04                     | 0.40              |
| 1:A:590:A:H2'    | 1:A:591:A:O4'    | 2.21                     | 0.40              |
| 1:A:860:U:C2'    | 38:A:5151:HOH:O  | 2.69                     | 0.40              |
| 1:A:1309:U:OP2   | 6:E:189:PRO:HA   | 2.21                     | 0.40              |
| 1:A:1517:U:C2    | 1:A:1670:G:N2    | 2.89                     | 0.40              |
| 1:A:1815:A:H4'   | 1:A:2751:C:O4'   | 2.22                     | 0.40              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:2355:G:H5''   | 1:A:2356:A:OP2    | 2.22                     | 0.40              |
| 1:A:2541:U:O2'    | 1:A:2542:C:H5'    | 2.21                     | 0.40              |
| 38:A:3897:HOH:O   | 4:C:11:ARG:CZ     | 2.70                     | 0.40              |
| 2:B:3034:A:H2'    | 2:B:3035:C:O4'    | 2.21                     | 0.40              |
| 7:F:48:MET:HA     | 7:F:49:PRO:HD3    | 1.81                     | 0.40              |
| 7:F:128:LEU:N     | 38:F:5495:HOH:O   | 2.54                     | 0.40              |
| 11:J:31:PHE:HE2   | 11:J:87:LYS:O     | 2.04                     | 0.40              |
| 11:J:35:ASN:ND2   | 11:J:79:ALA:O     | 2.54                     | 0.40              |
| 14:M:107:LYS:HD2  | 14:M:124:ASP:OD2  | 2.21                     | 0.40              |
| 15:N:69:LYS:HD3   | 15:N:124:GLY:O    | 2.21                     | 0.40              |
| 18:Q:143:ALA:CA   | 38:Q:197:HOH:O    | 2.70                     | 0.40              |
| 22:U:101:LEU:HD13 | 22:U:112:LEU:HD11 | 2.03                     | 0.40              |
| 27:Z:144:ARG:NH1  | 38:Z:8581:HOH:O   | 2.51                     | 0.40              |
| 1:A:220:C:C4'     | 38:A:5208:HOH:O   | 2.69                     | 0.40              |
| 1:A:269:G:C2      | 1:A:270:U:O4      | 2.73                     | 0.40              |
| 1:A:682:A:H2'     | 1:A:683:G:O4'     | 2.21                     | 0.40              |
| 1:A:690:G:H4'     | 1:A:741:C:O2      | 2.22                     | 0.40              |
| 1:A:1235:G:C1'    | 12:K:63:ILE:HG23  | 2.51                     | 0.40              |
| 1:A:1816:C:H2'    | 1:A:1817:U:O4'    | 2.21                     | 0.40              |
| 1:A:1972:U:H2'    | 1:A:1973:A:C5'    | 2.49                     | 0.40              |
| 1:A:2011:A:H4'    | 1:A:2012:U:O5'    | 2.22                     | 0.40              |
| 1:A:2255:A:H2'    | 1:A:2256:G:O4'    | 2.21                     | 0.40              |
| 1:A:2481:G:C3'    | 1:A:2482:G:H5''   | 2.51                     | 0.40              |
| 1:A:2533:C:O2'    | 1:A:2534:C:H5'    | 2.21                     | 0.40              |
| 1:A:2821:C:H4'    | 5:D:116:PRO:HB3   | 2.03                     | 0.40              |
| 5:D:16:ARG:NH1    | 38:D:8617:HOH:O   | 2.53                     | 0.40              |
| 5:D:224:LYS:O     | 5:D:227:HIS:HB2   | 2.22                     | 0.40              |
| 5:D:279:THR:OG1   | 5:D:290:VAL:HB    | 2.22                     | 0.40              |
| 6:E:80:VAL:HA     | 6:E:81:PRO:HD3    | 1.94                     | 0.40              |
| 6:E:123:LEU:HD23  | 6:E:123:LEU:HA    | 1.92                     | 0.40              |
| 13:L:66:ARG:HG2   | 13:L:66:ARG:HH11  | 1.86                     | 0.40              |
| 16:O:5:ARG:HG3    | 19:R:18:PRO:HB3   | 2.02                     | 0.40              |
| 16:O:37:ARG:CZ    | 38:O:8534:HOH:O   | 2.69                     | 0.40              |
| 17:P:59:VAL:CG2   | 17:P:111:VAL:HG23 | 2.52                     | 0.40              |
| 17:P:63:LYS:HG3   | 17:P:80:ASP:O     | 2.22                     | 0.40              |
| 18:Q:131:PHE:CD1  | 18:Q:137:LEU:HD13 | 2.56                     | 0.40              |
| 27:Z:189:ASN:C    | 27:Z:189:ASN:ND2  | 2.70                     | 0.40              |
| 29:2:25:LYS:CD    | 30:3:49:GLU:H     | 2.33                     | 0.40              |
| 1:A:101:C:O2'     | 1:A:102:A:H5'     | 2.21                     | 0.40              |
| 1:A:299:U:C5'     | 38:A:6794:HOH:O   | 2.60                     | 0.40              |
| 1:A:382:U:C5      | 1:A:406:G:C2      | 3.09                     | 0.40              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:545:G:H2'    | 1:A:546:C:O4'     | 2.21                     | 0.40              |
| 1:A:853:C:H2'    | 1:A:854:G:O4'     | 2.21                     | 0.40              |
| 1:A:953:G:H2'    | 38:A:7145:HOH:O   | 2.22                     | 0.40              |
| 1:A:1215:A:O3'   | 1:A:1216:G:C4'    | 2.69                     | 0.40              |
| 1:A:1252:A:H2'   | 1:A:1253:C:O4'    | 2.21                     | 0.40              |
| 1:A:1266:U:H4'   | 27:Z:115:ARG:HH21 | 1.85                     | 0.40              |
| 1:A:1316:G:H1'   | 1:A:1340:G:N2     | 2.37                     | 0.40              |
| 1:A:2123:A:P     | 15:N:89:ASN:ND2   | 2.95                     | 0.40              |
| 1:A:2269:C:C2'   | 1:A:2270:G:H5'    | 2.51                     | 0.40              |
| 1:A:2348:C:C5'   | 7:F:22:VAL:HG21   | 2.51                     | 0.40              |
| 1:A:2554:U:C6    | 1:A:2577:A:N6     | 2.90                     | 0.40              |
| 2:B:3058:G:H3'   | 2:B:3059:C:C6     | 2.56                     | 0.40              |
| 5:D:215:VAL:HA   | 5:D:220:VAL:HG22  | 2.02                     | 0.40              |
| 6:E:3:ALA:N      | 6:E:16:VAL:O      | 2.53                     | 0.40              |
| 6:E:7:ASP:O      | 6:E:9:ASP:N       | 2.55                     | 0.40              |
| 7:F:51:ARG:HA    | 38:F:7636:HOH:O   | 2.22                     | 0.40              |
| 8:G:108:LEU:HD11 | 8:G:164:ASP:HB2   | 2.04                     | 0.40              |
| 10:I:23:ILE:CD1  | 10:I:67:LEU:HD23  | 2.41                     | 0.40              |
| 11:J:73:GLN:OE1  | 11:J:73:GLN:CA    | 2.69                     | 0.40              |
| 38:L:1387:HOH:O  | 23:V:20:MET:HE1   | 2.22                     | 0.40              |
| 14:M:72:ASN:HB2  | 38:M:8585:HOH:O   | 2.21                     | 0.40              |
| 15:N:77:PHE:O    | 15:N:77:PHE:CD1   | 2.75                     | 0.40              |
| 16:O:114:LYS:O   | 16:O:117:ALA:HB3  | 2.21                     | 0.40              |
| 16:O:167:ASP:O   | 16:O:168:LEU:HD23 | 2.22                     | 0.40              |
| 18:Q:16:VAL:CG1  | 18:Q:17:GLY:N     | 2.85                     | 0.40              |
| 31:4:70:ARG:HD3  | 38:4:8537:HOH:O   | 2.21                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [\(i\)](#)

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

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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 |     |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 4   | C     | 235/239 (98%)   | 202 (86%)  | 29 (12%) | 4 (2%)   | 9           | 36  |
| 5   | D     | 335/337 (99%)   | 299 (89%)  | 28 (8%)  | 8 (2%)   | 6           | 27  |
| 6   | E     | 244/246 (99%)   | 222 (91%)  | 21 (9%)  | 1 (0%)   | 34          | 70  |
| 7   | F     | 134/176 (76%)   | 93 (69%)   | 29 (22%) | 12 (9%)  | 1           | 3   |
| 8   | G     | 170/177 (96%)   | 158 (93%)  | 11 (6%)  | 1 (1%)   | 25          | 61  |
| 9   | H     | 117/119 (98%)   | 100 (86%)  | 14 (12%) | 3 (3%)   | 5           | 25  |
| 10  | I     | 25/348 (7%)     | 23 (92%)   | 1 (4%)   | 1 (4%)   | 3           | 15  |
| 11  | J     | 152/167 (91%)   | 130 (86%)  | 17 (11%) | 5 (3%)   | 4           | 19  |
| 12  | K     | 140/145 (97%)   | 129 (92%)  | 6 (4%)   | 5 (4%)   | 3           | 17  |
| 13  | L     | 130/132 (98%)   | 118 (91%)  | 10 (8%)  | 2 (2%)   | 10          | 39  |
| 14  | M     | 141/164 (86%)   | 122 (86%)  | 18 (13%) | 1 (1%)   | 22          | 58  |
| 15  | N     | 192/194 (99%)   | 173 (90%)  | 18 (9%)  | 1 (0%)   | 29          | 66  |
| 16  | O     | 184/186 (99%)   | 163 (89%)  | 13 (7%)  | 8 (4%)   | 2           | 14  |
| 17  | P     | 113/115 (98%)   | 107 (95%)  | 6 (5%)   | 0        | 100         | 100 |
| 18  | Q     | 141/148 (95%)   | 135 (96%)  | 5 (4%)   | 1 (1%)   | 22          | 58  |
| 19  | R     | 93/95 (98%)     | 85 (91%)   | 5 (5%)   | 3 (3%)   | 4           | 20  |
| 20  | S     | 148/154 (96%)   | 135 (91%)  | 12 (8%)  | 1 (1%)   | 22          | 58  |
| 21  | T     | 79/84 (94%)     | 74 (94%)   | 5 (6%)   | 0        | 100         | 100 |
| 22  | U     | 117/119 (98%)   | 110 (94%)  | 7 (6%)   | 0        | 100         | 100 |
| 23  | V     | 51/66 (77%)     | 47 (92%)   | 4 (8%)   | 0        | 100         | 100 |
| 24  | W     | 63/70 (90%)     | 58 (92%)   | 3 (5%)   | 2 (3%)   | 4           | 20  |
| 25  | X     | 152/154 (99%)   | 143 (94%)  | 7 (5%)   | 2 (1%)   | 12          | 43  |
| 26  | Y     | 80/91 (88%)     | 71 (89%)   | 6 (8%)   | 3 (4%)   | 3           | 16  |
| 27  | Z     | 140/240 (58%)   | 138 (99%)  | 2 (1%)   | 0        | 100         | 100 |
| 28  | 1     | 71/73 (97%)     | 63 (89%)   | 6 (8%)   | 2 (3%)   | 5           | 23  |
| 29  | 2     | 54/56 (96%)     | 52 (96%)   | 2 (4%)   | 0        | 100         | 100 |
| 30  | 3     | 42/48 (88%)     | 42 (100%)  | 0        | 0        | 100         | 100 |
| 31  | 4     | 90/92 (98%)     | 84 (93%)   | 4 (4%)   | 2 (2%)   | 6           | 29  |
| All | All   | 3633/4235 (86%) | 3276 (90%) | 289 (8%) | 68 (2%)  | 8           | 33  |

All (68) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5   | D     | 139 | ASP  |
| 7   | F     | 93  | LEU  |
| 7   | F     | 95  | THR  |
| 7   | F     | 137 | PRO  |
| 7   | F     | 173 | GLU  |
| 9   | H     | 101 | ALA  |
| 11  | J     | 162 | SER  |
| 14  | M     | 80  | ASP  |
| 16  | O     | 154 | LEU  |
| 16  | O     | 162 | ASP  |
| 16  | O     | 164 | ASP  |
| 16  | O     | 183 | ASP  |
| 26  | Y     | 87  | ALA  |
| 4   | C     | 34  | ASP  |
| 5   | D     | 34  | GLY  |
| 5   | D     | 169 | GLY  |
| 6   | E     | 8   | LEU  |
| 7   | F     | 36  | ASN  |
| 11  | J     | 138 | PRO  |
| 11  | J     | 164 | ALA  |
| 12  | K     | 5   | GLU  |
| 12  | K     | 143 | LYS  |
| 13  | L     | 119 | GLN  |
| 16  | O     | 167 | ASP  |
| 18  | Q     | 116 | SER  |
| 19  | R     | 89  | ALA  |
| 24  | W     | 43  | PRO  |
| 25  | X     | 77  | ALA  |
| 28  | 1     | 81  | LYS  |
| 31  | 4     | 57  | GLY  |
| 4   | C     | 132 | ASP  |
| 5   | D     | 184 | ASP  |
| 7   | F     | 16  | PRO  |
| 7   | F     | 20  | LYS  |
| 7   | F     | 61  | PHE  |
| 7   | F     | 171 | ASP  |
| 8   | G     | 44  | GLY  |
| 11  | J     | 40  | PRO  |
| 12  | K     | 76  | ASP  |
| 15  | N     | 140 | ALA  |
| 16  | O     | 181 | ASP  |
| 25  | X     | 49  | ASN  |
| 26  | Y     | 77  | PHE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 31  | 4     | 56  | PRO  |
| 4   | C     | 62  | ASP  |
| 5   | D     | 107 | SER  |
| 7   | F     | 11  | HIS  |
| 7   | F     | 96  | SER  |
| 7   | F     | 170 | TYR  |
| 10  | I     | 72  | ASP  |
| 13  | L     | 126 | SER  |
| 26  | Y     | 78  | GLU  |
| 5   | D     | 2   | GLN  |
| 5   | D     | 185 | GLY  |
| 9   | H     | 64  | PRO  |
| 12  | K     | 7   | ASP  |
| 12  | K     | 50  | GLU  |
| 16  | O     | 68  | GLU  |
| 16  | O     | 155 | GLU  |
| 4   | C     | 37  | VAL  |
| 9   | H     | 61  | MET  |
| 19  | R     | 18  | PRO  |
| 19  | R     | 54  | PRO  |
| 24  | W     | 40  | PRO  |
| 11  | J     | 72  | VAL  |
| 20  | S     | 106 | GLY  |
| 28  | 1     | 41  | VAL  |
| 5   | D     | 5   | ARG  |

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

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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 |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 4   | C     | 179/181 (99%)  | 167 (93%) | 12 (7%)  | 16          | 47 |
| 5   | D     | 282/282 (100%) | 264 (94%) | 18 (6%)  | 17          | 49 |
| 6   | E     | 193/193 (100%) | 176 (91%) | 17 (9%)  | 10          | 34 |
| 7   | F     | 117/147 (80%)  | 107 (92%) | 10 (8%)  | 10          | 36 |
| 8   | G     | 152/155 (98%)  | 148 (97%) | 4 (3%)   | 46          | 76 |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|-------------|-----|
| 9   | H     | 92/92 (100%)    | 91 (99%)   | 1 (1%)   | 73          | 90  |
| 10  | I     | 27/283 (10%)    | 27 (100%)  | 0        | 100         | 100 |
| 11  | J     | 122/122 (100%)  | 110 (90%)  | 12 (10%) | 8           | 29  |
| 12  | K     | 118/121 (98%)   | 107 (91%)  | 11 (9%)  | 9           | 31  |
| 13  | L     | 106/106 (100%)  | 103 (97%)  | 3 (3%)   | 43          | 75  |
| 14  | M     | 112/126 (89%)   | 108 (96%)  | 4 (4%)   | 35          | 68  |
| 15  | N     | 166/166 (100%)  | 157 (95%)  | 9 (5%)   | 22          | 55  |
| 16  | O     | 149/149 (100%)  | 143 (96%)  | 6 (4%)   | 31          | 66  |
| 17  | P     | 93/93 (100%)    | 89 (96%)   | 4 (4%)   | 29          | 64  |
| 18  | Q     | 113/116 (97%)   | 110 (97%)  | 3 (3%)   | 44          | 75  |
| 19  | R     | 79/79 (100%)    | 75 (95%)   | 4 (5%)   | 24          | 57  |
| 20  | S     | 117/121 (97%)   | 113 (97%)  | 4 (3%)   | 37          | 70  |
| 21  | T     | 71/73 (97%)     | 70 (99%)   | 1 (1%)   | 67          | 86  |
| 22  | U     | 105/105 (100%)  | 102 (97%)  | 3 (3%)   | 42          | 74  |
| 23  | V     | 44/52 (85%)     | 42 (96%)   | 2 (4%)   | 27          | 62  |
| 24  | W     | 51/56 (91%)     | 49 (96%)   | 2 (4%)   | 32          | 66  |
| 25  | X     | 130/130 (100%)  | 121 (93%)  | 9 (7%)   | 15          | 46  |
| 26  | Y     | 66/73 (90%)     | 61 (92%)   | 5 (8%)   | 13          | 41  |
| 27  | Z     | 120/195 (62%)   | 112 (93%)  | 8 (7%)   | 16          | 47  |
| 28  | 1     | 56/56 (100%)    | 50 (89%)   | 6 (11%)  | 6           | 24  |
| 29  | 2     | 46/46 (100%)    | 46 (100%)  | 0        | 100         | 100 |
| 30  | 3     | 42/44 (96%)     | 41 (98%)   | 1 (2%)   | 49          | 78  |
| 31  | 4     | 79/79 (100%)    | 73 (92%)   | 6 (8%)   | 13          | 41  |
| All | All   | 3027/3441 (88%) | 2862 (94%) | 165 (6%) | 21          | 55  |

All (165) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | C     | 3   | ARG  |
| 4   | C     | 33  | GLU  |
| 4   | C     | 36  | ASP  |
| 4   | C     | 55  | VAL  |
| 4   | C     | 68  | ILE  |
| 4   | C     | 69  | LEU  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 4          | C            | 94         | LEU         |
| 4          | C            | 120        | ARG         |
| 4          | C            | 131        | HIS         |
| 4          | C            | 153        | ARG         |
| 4          | C            | 179        | MET         |
| 4          | C            | 217        | ARG         |
| 5          | D            | 7          | ARG         |
| 5          | D            | 11         | LEU         |
| 5          | D            | 27         | ASN         |
| 5          | D            | 33         | ASP         |
| 5          | D            | 63         | GLU         |
| 5          | D            | 97         | LEU         |
| 5          | D            | 98         | THR         |
| 5          | D            | 103        | ASP         |
| 5          | D            | 162        | MET         |
| 5          | D            | 195        | ARG         |
| 5          | D            | 245        | SER         |
| 5          | D            | 251        | VAL         |
| 5          | D            | 254        | GLN         |
| 5          | D            | 256        | GLN         |
| 5          | D            | 264        | GLU         |
| 5          | D            | 304        | PRO         |
| 5          | D            | 307        | ARG         |
| 5          | D            | 312        | ARG         |
| 6          | E            | 2          | GLN         |
| 6          | E            | 27         | ARG         |
| 6          | E            | 67         | GLN         |
| 6          | E            | 76         | ARG         |
| 6          | E            | 91         | PRO         |
| 6          | E            | 94         | THR         |
| 6          | E            | 101        | ASP         |
| 6          | E            | 115        | LEU         |
| 6          | E            | 136        | VAL         |
| 6          | E            | 187        | ARG         |
| 6          | E            | 214        | THR         |
| 6          | E            | 222        | ASP         |
| 6          | E            | 223        | LEU         |
| 6          | E            | 234        | VAL         |
| 6          | E            | 236        | THR         |
| 6          | E            | 240        | LEU         |
| 6          | E            | 246        | ARG         |
| 7          | F            | 24         | HIS         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 7          | F            | 50         | VAL         |
| 7          | F            | 61         | PHE         |
| 7          | F            | 99         | ASP         |
| 7          | F            | 100        | ASP         |
| 7          | F            | 131        | THR         |
| 7          | F            | 133        | ASN         |
| 7          | F            | 136        | ARG         |
| 7          | F            | 137        | PRO         |
| 7          | F            | 149        | ARG         |
| 8          | G            | 7          | ILE         |
| 8          | G            | 54         | ASP         |
| 8          | G            | 102        | VAL         |
| 8          | G            | 164        | ASP         |
| 9          | H            | 12         | LEU         |
| 11         | J            | 1          | LYS         |
| 11         | J            | 59         | ASN         |
| 11         | J            | 61         | LEU         |
| 11         | J            | 72         | VAL         |
| 11         | J            | 73         | GLN         |
| 11         | J            | 82         | LYS         |
| 11         | J            | 85         | ILE         |
| 11         | J            | 86         | ARG         |
| 11         | J            | 94         | ARG         |
| 11         | J            | 142        | VAL         |
| 11         | J            | 150        | LYS         |
| 11         | J            | 166        | ASN         |
| 12         | K            | 46         | ILE         |
| 12         | K            | 52         | GLN         |
| 12         | K            | 74         | ARG         |
| 12         | K            | 76         | ASP         |
| 12         | K            | 79         | PHE         |
| 12         | K            | 107        | ASN         |
| 12         | K            | 112        | ASP         |
| 12         | K            | 120        | SER         |
| 12         | K            | 125        | SER         |
| 12         | K            | 127        | ILE         |
| 12         | K            | 131        | THR         |
| 13         | L            | 7          | ASP         |
| 13         | L            | 10         | GLN         |
| 13         | L            | 98         | VAL         |
| 14         | M            | 30         | ARG         |
| 14         | M            | 35         | ARG         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 14         | M            | 80         | ASP         |
| 14         | M            | 117        | GLU         |
| 15         | N            | 38         | VAL         |
| 15         | N            | 46         | LEU         |
| 15         | N            | 68         | ARG         |
| 15         | N            | 81         | ARG         |
| 15         | N            | 87         | MET         |
| 15         | N            | 93         | ARG         |
| 15         | N            | 99         | ARG         |
| 15         | N            | 136        | PRO         |
| 15         | N            | 164        | THR         |
| 16         | O            | 26         | LEU         |
| 16         | O            | 47         | LEU         |
| 16         | O            | 127        | LEU         |
| 16         | O            | 128        | ASP         |
| 16         | O            | 152        | GLU         |
| 16         | O            | 163        | PHE         |
| 17         | P            | 3          | THR         |
| 17         | P            | 28         | ASP         |
| 17         | P            | 98         | LEU         |
| 17         | P            | 111        | VAL         |
| 18         | Q            | 52         | LYS         |
| 18         | Q            | 91         | LYS         |
| 18         | Q            | 98         | ILE         |
| 19         | R            | 11         | ARG         |
| 19         | R            | 16         | ASN         |
| 19         | R            | 57         | ASP         |
| 19         | R            | 95         | GLU         |
| 20         | S            | 13         | THR         |
| 20         | S            | 39         | THR         |
| 20         | S            | 82         | GLU         |
| 20         | S            | 132        | ARG         |
| 21         | T            | 10         | VAL         |
| 22         | U            | 39         | ASN         |
| 22         | U            | 48         | VAL         |
| 22         | U            | 73         | HIS         |
| 23         | V            | 9          | CYS         |
| 23         | V            | 32         | CYS         |
| 24         | W            | 43         | PRO         |
| 24         | W            | 65         | ASP         |
| 25         | X            | 4          | LEU         |
| 25         | X            | 35         | VAL         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 25  | X     | 52  | VAL  |
| 25  | X     | 73  | LEU  |
| 25  | X     | 120 | PRO  |
| 25  | X     | 122 | ARG  |
| 25  | X     | 142 | ASP  |
| 25  | X     | 146 | ILE  |
| 25  | X     | 154 | ARG  |
| 26  | Y     | 15  | ARG  |
| 26  | Y     | 27  | ASP  |
| 26  | Y     | 44  | ASP  |
| 26  | Y     | 52  | PRO  |
| 26  | Y     | 72  | VAL  |
| 27  | Z     | 154 | ARG  |
| 27  | Z     | 163 | THR  |
| 27  | Z     | 172 | THR  |
| 27  | Z     | 186 | ARG  |
| 27  | Z     | 189 | ASN  |
| 27  | Z     | 200 | THR  |
| 27  | Z     | 203 | VAL  |
| 27  | Z     | 235 | GLU  |
| 28  | 1     | 11  | THR  |
| 28  | 1     | 32  | LYS  |
| 28  | 1     | 42  | CYS  |
| 28  | 1     | 60  | CYS  |
| 28  | 1     | 64  | ILE  |
| 28  | 1     | 68  | CYS  |
| 30  | 3     | 18  | ASN  |
| 31  | 4     | 3   | MET  |
| 31  | 4     | 14  | CYS  |
| 31  | 4     | 42  | ARG  |
| 31  | 4     | 56  | PRO  |
| 31  | 4     | 65  | THR  |
| 31  | 4     | 74  | CYS  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (87) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | C     | 47  | HIS  |
| 4   | C     | 92  | ASN  |
| 4   | C     | 127 | GLN  |
| 4   | C     | 199 | HIS  |
| 5   | D     | 27  | ASN  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 5          | D            | 145        | HIS         |
| 5          | D            | 221        | GLN         |
| 5          | D            | 238        | ASN         |
| 5          | D            | 256        | GLN         |
| 5          | D            | 260        | HIS         |
| 5          | D            | 332        | ASN         |
| 6          | E            | 2          | GLN         |
| 6          | E            | 39         | GLN         |
| 6          | E            | 129        | HIS         |
| 7          | F            | 85         | GLN         |
| 7          | F            | 103        | ASN         |
| 7          | F            | 133        | ASN         |
| 8          | G            | 106        | ASN         |
| 8          | G            | 143        | GLN         |
| 10         | I            | 17         | GLN         |
| 10         | I            | 64         | ASN         |
| 11         | J            | 35         | ASN         |
| 11         | J            | 55         | GLN         |
| 11         | J            | 58         | HIS         |
| 11         | J            | 59         | ASN         |
| 11         | J            | 69         | ASN         |
| 11         | J            | 74         | ASN         |
| 11         | J            | 91         | HIS         |
| 11         | J            | 129        | ASN         |
| 11         | J            | 130        | HIS         |
| 11         | J            | 166        | ASN         |
| 12         | K            | 52         | GLN         |
| 12         | K            | 107        | ASN         |
| 13         | L            | 10         | GLN         |
| 14         | M            | 18         | HIS         |
| 14         | M            | 41         | HIS         |
| 14         | M            | 58         | GLN         |
| 14         | M            | 116        | HIS         |
| 15         | N            | 26         | HIS         |
| 15         | N            | 58         | GLN         |
| 15         | N            | 89         | ASN         |
| 15         | N            | 176        | GLN         |
| 16         | O            | 93         | GLN         |
| 16         | O            | 107        | ASN         |
| 16         | O            | 119        | GLN         |
| 16         | O            | 140        | GLN         |
| 16         | O            | 153        | GLN         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 18  | Q     | 50  | GLN  |
| 18  | Q     | 66  | GLN  |
| 18  | Q     | 73  | HIS  |
| 18  | Q     | 118 | GLN  |
| 19  | R     | 16  | ASN  |
| 19  | R     | 40  | HIS  |
| 20  | S     | 61  | GLN  |
| 20  | S     | 94  | ASN  |
| 20  | S     | 98  | ASN  |
| 20  | S     | 113 | HIS  |
| 20  | S     | 117 | HIS  |
| 20  | S     | 123 | GLN  |
| 21  | T     | 53  | ASN  |
| 22  | U     | 39  | ASN  |
| 22  | U     | 73  | HIS  |
| 23  | V     | 39  | ASN  |
| 23  | V     | 48  | ASN  |
| 24  | W     | 60  | GLN  |
| 25  | X     | 27  | HIS  |
| 25  | X     | 28  | HIS  |
| 25  | X     | 87  | HIS  |
| 25  | X     | 110 | GLN  |
| 25  | X     | 119 | HIS  |
| 25  | X     | 125 | HIS  |
| 25  | X     | 141 | HIS  |
| 26  | Y     | 23  | HIS  |
| 27  | Z     | 134 | HIS  |
| 27  | Z     | 149 | GLN  |
| 27  | Z     | 189 | ASN  |
| 28  | 1     | 70  | GLN  |
| 29  | 2     | 8   | GLN  |
| 29  | 2     | 16  | HIS  |
| 29  | 2     | 28  | HIS  |
| 30  | 3     | 16  | ASN  |
| 30  | 3     | 18  | ASN  |
| 30  | 3     | 37  | HIS  |
| 30  | 3     | 41  | HIS  |
| 30  | 3     | 45  | ASN  |
| 31  | 4     | 30  | GLN  |
| 31  | 4     | 48  | ASN  |

### 5.3.3 RNA [i](#)

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | A     | 2747/2922 (94%) | 248 (9%)          | 36 (1%)         |
| 2   | B     | 121/122 (99%)   | 18 (14%)          | 5 (4%)          |
| 3   | 5     | 1/2 (50%)       | 0                 | 0               |
| All | All   | 2869/3046 (94%) | 266 (9%)          | 41 (1%)         |

All (266) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 11  | A    |
| 1   | A     | 31  | C    |
| 1   | A     | 60  | A    |
| 1   | A     | 67  | A    |
| 1   | A     | 69  | A    |
| 1   | A     | 70  | A    |
| 1   | A     | 71  | G    |
| 1   | A     | 87  | C    |
| 1   | A     | 88  | G    |
| 1   | A     | 114 | A    |
| 1   | A     | 115 | U    |
| 1   | A     | 120 | A    |
| 1   | A     | 130 | C    |
| 1   | A     | 139 | C    |
| 1   | A     | 141 | C    |
| 1   | A     | 151 | A    |
| 1   | A     | 166 | A    |
| 1   | A     | 169 | A    |
| 1   | A     | 186 | A    |
| 1   | A     | 191 | A    |
| 1   | A     | 192 | A    |
| 1   | A     | 200 | U    |
| 1   | A     | 219 | G    |
| 1   | A     | 237 | G    |
| 1   | A     | 271 | C    |
| 1   | A     | 272 | A    |
| 1   | A     | 273 | G    |
| 1   | A     | 283 | U    |
| 1   | A     | 284 | C    |
| 1   | A     | 285 | A    |
| 1   | A     | 308 | U    |
| 1   | A     | 309 | C    |
| 1   | A     | 318 | C    |
| 1   | A     | 336 | G    |
| 1   | A     | 337 | A    |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 345        | G           |
| 1          | A            | 358        | G           |
| 1          | A            | 381        | G           |
| 1          | A            | 397        | A           |
| 1          | A            | 417        | G           |
| 1          | A            | 461        | C           |
| 1          | A            | 487        | G           |
| 1          | A            | 498        | A           |
| 1          | A            | 510        | U           |
| 1          | A            | 511        | A           |
| 1          | A            | 514        | G           |
| 1          | A            | 537        | G           |
| 1          | A            | 538        | C           |
| 1          | A            | 539        | G           |
| 1          | A            | 542        | A           |
| 1          | A            | 545        | G           |
| 1          | A            | 553        | G           |
| 1          | A            | 559        | U           |
| 1          | A            | 588        | G           |
| 1          | A            | 604        | G           |
| 1          | A            | 620        | A           |
| 1          | A            | 632        | A           |
| 1          | A            | 644        | G           |
| 1          | A            | 660        | A           |
| 1          | A            | 688        | A           |
| 1          | A            | 701        | U           |
| 1          | A            | 717        | C           |
| 1          | A            | 759        | C           |
| 1          | A            | 777        | U           |
| 1          | A            | 809        | G           |
| 1          | A            | 821        | U           |
| 1          | A            | 835        | U           |
| 1          | A            | 840        | U           |
| 1          | A            | 857        | A           |
| 1          | A            | 858        | U           |
| 1          | A            | 868        | G           |
| 1          | A            | 869        | G           |
| 1          | A            | 871        | G           |
| 1          | A            | 872        | U           |
| 1          | A            | 875        | A           |
| 1          | A            | 877        | G           |
| 1          | A            | 878        | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 882        | A           |
| 1          | A            | 884        | C           |
| 1          | A            | 885        | G           |
| 1          | A            | 898        | G           |
| 1          | A            | 905        | C           |
| 1          | A            | 920        | C           |
| 1          | A            | 921        | G           |
| 1          | A            | 923        | A           |
| 1          | A            | 953        | G           |
| 1          | A            | 960        | G           |
| 1          | A            | 961        | A           |
| 1          | A            | 1006       | A           |
| 1          | A            | 1008       | C           |
| 1          | A            | 1029       | U           |
| 1          | A            | 1045       | G           |
| 1          | A            | 1059       | G           |
| 1          | A            | 1060       | C           |
| 1          | A            | 1072       | G           |
| 1          | A            | 1081       | A           |
| 1          | A            | 1088       | A           |
| 1          | A            | 1109       | U           |
| 1          | A            | 1110       | G           |
| 1          | A            | 1119       | G           |
| 1          | A            | 1130       | U           |
| 1          | A            | 1137       | G           |
| 1          | A            | 1161       | A           |
| 1          | A            | 1162       | G           |
| 1          | A            | 1164       | U           |
| 1          | A            | 1165       | G           |
| 1          | A            | 1166       | A           |
| 1          | A            | 1171       | A           |
| 1          | A            | 1174       | A           |
| 1          | A            | 1175       | G           |
| 1          | A            | 1177       | A           |
| 1          | A            | 1185       | U           |
| 1          | A            | 1192       | A           |
| 1          | A            | 1193       | A           |
| 1          | A            | 1206       | U           |
| 1          | A            | 1208       | C           |
| 1          | A            | 1216       | G           |
| 1          | A            | 1237       | U           |
| 1          | A            | 1238       | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 1239       | G           |
| 1          | A            | 1279       | U           |
| 1          | A            | 1289       | C           |
| 1          | A            | 1342       | C           |
| 1          | A            | 1353       | C           |
| 1          | A            | 1360       | C           |
| 1          | A            | 1377       | C           |
| 1          | A            | 1380       | U           |
| 1          | A            | 1407       | A           |
| 1          | A            | 1409       | G           |
| 1          | A            | 1451       | C           |
| 1          | A            | 1474       | C           |
| 1          | A            | 1485       | A           |
| 1          | A            | 1488       | U           |
| 1          | A            | 1505       | U           |
| 1          | A            | 1506       | U           |
| 1          | A            | 1524       | U           |
| 1          | A            | 1525       | G           |
| 1          | A            | 1526       | A           |
| 1          | A            | 1528       | A           |
| 1          | A            | 1564       | C           |
| 1          | A            | 1580       | A           |
| 1          | A            | 1592       | G           |
| 1          | A            | 1625       | U           |
| 1          | A            | 1626       | A           |
| 1          | A            | 1633       | C           |
| 1          | A            | 1634       | G           |
| 1          | A            | 1656       | A           |
| 1          | A            | 1667       | A           |
| 1          | A            | 1682       | A           |
| 1          | A            | 1684       | A           |
| 1          | A            | 1685       | A           |
| 1          | A            | 1692       | C           |
| 1          | A            | 1701       | A           |
| 1          | A            | 1710       | A           |
| 1          | A            | 1722       | U           |
| 1          | A            | 1723       | G           |
| 1          | A            | 1725       | C           |
| 1          | A            | 1731       | C           |
| 1          | A            | 1737       | A           |
| 1          | A            | 1752       | G           |
| 1          | A            | 1778       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 1798       | C           |
| 1          | A            | 1820       | G           |
| 1          | A            | 1829       | A           |
| 1          | A            | 1856       | C           |
| 1          | A            | 1879       | U           |
| 1          | A            | 1904       | A           |
| 1          | A            | 1919       | A           |
| 1          | A            | 1942       | A           |
| 1          | A            | 1971       | G           |
| 1          | A            | 1973       | A           |
| 1          | A            | 1974       | G           |
| 1          | A            | 1978       | A           |
| 1          | A            | 1979       | G           |
| 1          | A            | 1980       | U           |
| 1          | A            | 1982       | C           |
| 1          | A            | 1996       | U           |
| 1          | A            | 2004       | U           |
| 1          | A            | 2006       | C           |
| 1          | A            | 2008       | U           |
| 1          | A            | 2011       | A           |
| 1          | A            | 2012       | U           |
| 1          | A            | 2013       | G           |
| 1          | A            | 2033       | G           |
| 1          | A            | 2034       | U           |
| 1          | A            | 2064       | U           |
| 1          | A            | 2072       | G           |
| 1          | A            | 2073       | G           |
| 1          | A            | 2074       | A           |
| 1          | A            | 2096       | A           |
| 1          | A            | 2101       | A           |
| 1          | A            | 2102       | G           |
| 1          | A            | 2110       | G           |
| 1          | A            | 2238       | A           |
| 1          | A            | 2258       | A           |
| 1          | A            | 2271       | G           |
| 1          | A            | 2272       | G           |
| 1          | A            | 2317       | C           |
| 1          | A            | 2321       | A           |
| 1          | A            | 2346       | C           |
| 1          | A            | 2354       | A           |
| 1          | A            | 2361       | A           |
| 1          | A            | 2369       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 2422       | U           |
| 1          | A            | 2462       | G           |
| 1          | A            | 2466       | G           |
| 1          | A            | 2467       | A           |
| 1          | A            | 2469       | A           |
| 1          | A            | 2476       | C           |
| 1          | A            | 2480       | G           |
| 1          | A            | 2483       | A           |
| 1          | A            | 2507       | G           |
| 1          | A            | 2511       | A           |
| 1          | A            | 2533       | C           |
| 1          | A            | 2537       | G           |
| 1          | A            | 2541       | U           |
| 1          | A            | 2553       | A           |
| 1          | A            | 2564       | G           |
| 1          | A            | 2589       | U           |
| 1          | A            | 2590       | U           |
| 1          | A            | 2601       | A           |
| 1          | A            | 2602       | G           |
| 1          | A            | 2608       | C           |
| 1          | A            | 2613       | G           |
| 1          | A            | 2638       | G           |
| 1          | A            | 2649       | A           |
| 1          | A            | 2664       | A           |
| 1          | A            | 2681       | A           |
| 1          | A            | 2682       | C           |
| 1          | A            | 2726       | U           |
| 1          | A            | 2747       | C           |
| 1          | A            | 2748       | G           |
| 1          | A            | 2749       | U           |
| 1          | A            | 2750       | G           |
| 1          | A            | 2762       | C           |
| 1          | A            | 2768       | A           |
| 1          | A            | 2786       | G           |
| 1          | A            | 2792       | A           |
| 1          | A            | 2800       | A           |
| 1          | A            | 2811       | A           |
| 1          | A            | 2812       | A           |
| 1          | A            | 2825       | C           |
| 1          | A            | 2840       | A           |
| 1          | A            | 2850       | C           |
| 1          | A            | 2876       | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 2890       | A           |
| 1          | A            | 2896       | A           |
| 1          | A            | 2914       | A           |
| 2          | B            | 3002       | U           |
| 2          | B            | 3003       | A           |
| 2          | B            | 3007       | G           |
| 2          | B            | 3014       | G           |
| 2          | B            | 3022       | G           |
| 2          | B            | 3023       | U           |
| 2          | B            | 3024       | U           |
| 2          | B            | 3025       | G           |
| 2          | B            | 3026       | C           |
| 2          | B            | 3041       | C           |
| 2          | B            | 3043       | G           |
| 2          | B            | 3044       | A           |
| 2          | B            | 3052       | A           |
| 2          | B            | 3057       | A           |
| 2          | B            | 3066       | G           |
| 2          | B            | 3077       | A           |
| 2          | B            | 3114       | G           |
| 2          | B            | 3122       | C           |

All (41) RNA pucker outliers are listed below:

| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 10         | U           |
| 1          | A            | 69         | A           |
| 1          | A            | 129        | A           |
| 1          | A            | 284        | C           |
| 1          | A            | 338        | C           |
| 1          | A            | 603        | A           |
| 1          | A            | 644        | G           |
| 1          | A            | 699        | C           |
| 1          | A            | 716        | G           |
| 1          | A            | 834        | G           |
| 1          | A            | 857        | A           |
| 1          | A            | 871        | G           |
| 1          | A            | 877        | G           |
| 1          | A            | 898        | G           |
| 1          | A            | 1080       | C           |
| 1          | A            | 1164       | U           |
| 1          | A            | 1237       | U           |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 1246 | A    |
| 1   | A     | 1352 | A    |
| 1   | A     | 1377 | C    |
| 1   | A     | 1450 | C    |
| 1   | A     | 1563 | G    |
| 1   | A     | 1685 | A    |
| 1   | A     | 1856 | C    |
| 1   | A     | 1942 | A    |
| 1   | A     | 1979 | G    |
| 1   | A     | 2011 | A    |
| 1   | A     | 2313 | C    |
| 1   | A     | 2466 | G    |
| 1   | A     | 2467 | A    |
| 1   | A     | 2526 | C    |
| 1   | A     | 2536 | C    |
| 1   | A     | 2649 | A    |
| 1   | A     | 2718 | C    |
| 1   | A     | 2761 | A    |
| 1   | A     | 2791 | U    |
| 2   | B     | 3023 | U    |
| 2   | B     | 3024 | U    |
| 2   | B     | 3043 | G    |
| 2   | B     | 3065 | A    |
| 2   | B     | 3103 | A    |

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

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

#### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

#### 5.6 Ligand geometry [i](#)

Of 233 ligands modelled in this entry, 232 are monoatomic - leaving 1 for Mogul analysis.

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 |
| 36  | PPU  | 5     | 76  | 3    | 32,40,41     | 2.22 | 12 (37%) | 33,57,60    | 1.72 | 6 (18%)  |

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   |
|-----|------|-------|-----|------|---------|------------|---------|
| 36  | PPU  | 5     | 76  | 3    | -       | 2/21/43/44 | 0/4/4/4 |

All (12) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 36  | 5     | 76  | PPU  | CB-CG   | 4.78  | 1.62        | 1.51     |
| 36  | 5     | 76  | PPU  | C-N3'   | 4.39  | 1.43        | 1.34     |
| 36  | 5     | 76  | PPU  | C10-N6  | -4.04 | 1.36        | 1.45     |
| 36  | 5     | 76  | PPU  | CE2-CD2 | -3.75 | 1.31        | 1.38     |
| 36  | 5     | 76  | PPU  | O-C     | 3.58  | 1.30        | 1.23     |
| 36  | 5     | 76  | PPU  | C9-N6   | -3.56 | 1.37        | 1.45     |
| 36  | 5     | 76  | PPU  | CD1-CG  | -3.50 | 1.31        | 1.38     |
| 36  | 5     | 76  | PPU  | CE1-CD1 | -3.00 | 1.33        | 1.38     |
| 36  | 5     | 76  | PPU  | CE1-CZ  | 2.42  | 1.43        | 1.38     |
| 36  | 5     | 76  | PPU  | O2'-C2' | -2.41 | 1.37        | 1.43     |
| 36  | 5     | 76  | PPU  | CA-N    | 2.33  | 1.61        | 1.48     |
| 36  | 5     | 76  | PPU  | C2-N1   | 2.31  | 1.38        | 1.33     |

All (6) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 36  | 5     | 76  | PPU  | CA-C-N3'    | -4.23 | 110.28      | 116.15   |
| 36  | 5     | 76  | PPU  | C3'-N3'-C   | -4.06 | 117.09      | 123.21   |
| 36  | 5     | 76  | PPU  | CG-CB-CA    | -3.92 | 105.98      | 114.13   |
| 36  | 5     | 76  | PPU  | CM-OC-CZ    | 3.20  | 124.45      | 117.51   |
| 36  | 5     | 76  | PPU  | O4'-C1'-C2' | 2.99  | 111.29      | 106.93   |
| 36  | 5     | 76  | PPU  | CE2-CZ-CE1  | -2.15 | 116.86      | 120.18   |

There are no chirality outliers.

All (2) torsion outliers are listed below:

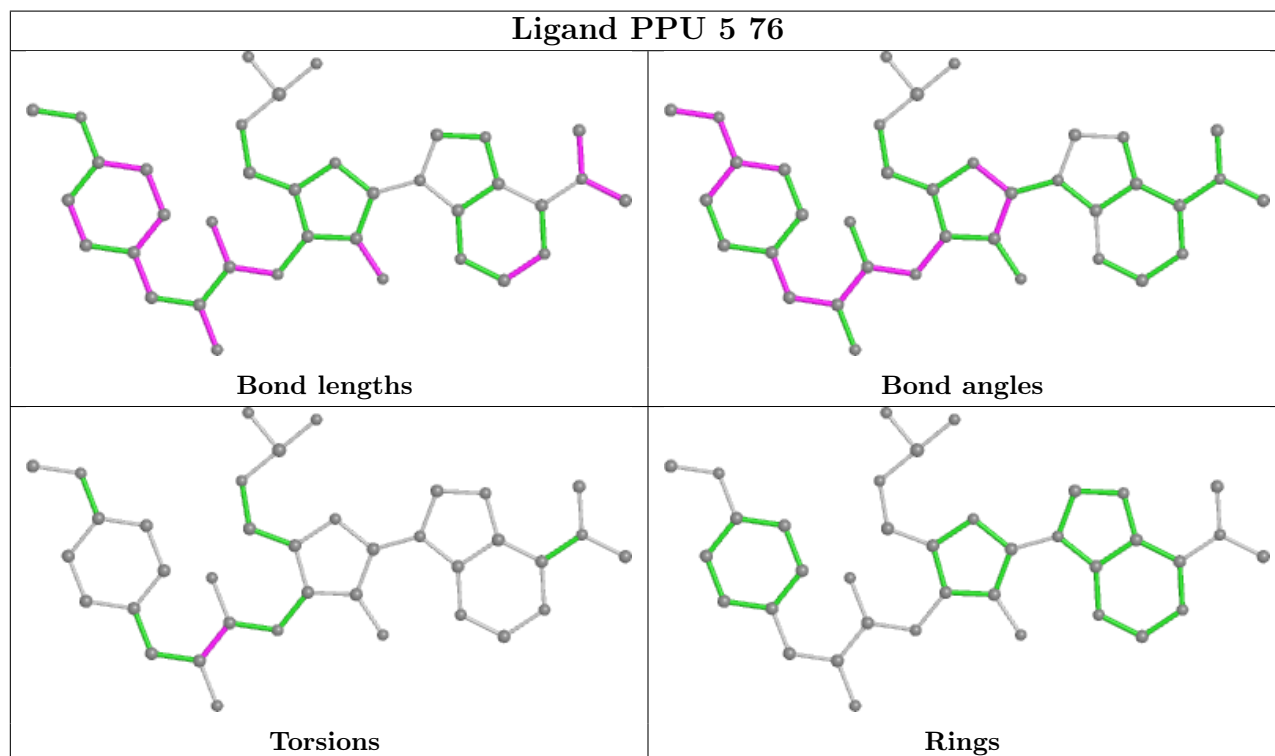
| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 36  | 5     | 76  | PPU  | O-C-CA-CB   |
| 36  | 5     | 76  | PPU  | N3'-C-CA-CB |

There are no ring outliers.

1 monomer is involved in 4 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 36  | 5     | 76  | PPU  | 4       | 0            |

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



## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

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

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed        | <RSRZ> | #RSRZ>2       | OWAB(Å <sup>2</sup> ) | Q<0.9 |
|-----|-------|-----------------|--------|---------------|-----------------------|-------|
| 1   | A     | 2754/2922 (94%) | 0.09   | 83 (3%) 50 31 | 19, 45, 94, 144       | 0     |
| 2   | B     | 122/122 (100%)  | 0.48   | 6 (4%) 29 17  | 33, 67, 97, 147       | 0     |
| 3   | 5     | 2/2 (100%)      | 2.10   | 1 (50%) 0 0   | 65, 65, 65, 87        | 0     |
| 4   | C     | 237/239 (99%)   | 0.59   | 26 (10%) 5 3  | 30, 62, 97, 109       | 0     |
| 5   | D     | 337/337 (100%)  | 0.18   | 6 (1%) 68 48  | 22, 50, 77, 89        | 0     |
| 6   | E     | 246/246 (100%)  | 0.06   | 5 (2%) 65 45  | 20, 44, 69, 78        | 0     |
| 7   | F     | 140/176 (79%)   | 2.16   | 66 (47%) 0 0  | 65, 101, 122, 128     | 0     |
| 8   | G     | 172/177 (97%)   | 0.94   | 17 (9%) 7 4   | 38, 62, 84, 89        | 0     |
| 9   | H     | 119/119 (100%)  | 0.96   | 24 (20%) 1 0  | 51, 76, 99, 107       | 0     |
| 10  | I     | 29/348 (8%)     | 2.38   | 17 (58%) 0 0  | 66, 87, 95, 99        | 0     |
| 11  | J     | 156/167 (93%)   | 0.76   | 16 (10%) 6 3  | 35, 59, 82, 89        | 0     |
| 12  | K     | 142/145 (97%)   | 0.08   | 2 (1%) 75 57  | 32, 44, 67, 78        | 0     |
| 13  | L     | 132/132 (100%)  | 0.26   | 2 (1%) 73 54  | 33, 49, 75, 82        | 0     |
| 14  | M     | 145/164 (88%)   | 1.29   | 40 (27%) 0 0  | 26, 79, 106, 111      | 0     |
| 15  | N     | 194/194 (100%)  | 0.63   | 22 (11%) 5 3  | 28, 47, 106, 118      | 0     |
| 16  | O     | 186/186 (100%)  | 1.10   | 35 (18%) 1 0  | 46, 73, 112, 125      | 0     |
| 17  | P     | 115/115 (100%)  | 0.26   | 1 (0%) 84 69  | 36, 53, 68, 72        | 0     |
| 18  | Q     | 143/148 (96%)   | 0.56   | 8 (5%) 24 13  | 34, 53, 76, 85        | 0     |
| 19  | R     | 95/95 (100%)    | 0.21   | 3 (3%) 47 29  | 36, 47, 63, 82        | 0     |
| 20  | S     | 150/154 (97%)   | -0.00  | 0 100 100     | 26, 40, 61, 72        | 0     |
| 21  | T     | 81/84 (96%)     | 0.52   | 4 (4%) 29 17  | 44, 62, 82, 88        | 0     |
| 22  | U     | 119/119 (100%)  | 0.82   | 11 (9%) 9 5   | 40, 55, 84, 104       | 0     |
| 23  | V     | 53/66 (80%)     | 2.37   | 29 (54%) 0 0  | 77, 92, 100, 108      | 0     |
| 24  | W     | 65/70 (92%)     | 1.43   | 21 (32%) 0 0  | 46, 76, 111, 115      | 0     |

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| Mol | Chain | Analysed        | <RSRZ> | #RSRZ>2       | OWAB(Å <sup>2</sup> ) | Q<0.9 |
|-----|-------|-----------------|--------|---------------|-----------------------|-------|
| 25  | X     | 154/154 (100%)  | 0.08   | 0 100 100     | 28, 42, 59, 70        | 0     |
| 26  | Y     | 82/91 (90%)     | 0.71   | 10 (12%) 4 2  | 37, 53, 77, 91        | 0     |
| 27  | Z     | 142/240 (59%)   | 0.17   | 6 (4%) 36 21  | 25, 40, 64, 82        | 0     |
| 28  | 1     | 73/73 (100%)    | 5.61   | 53 (72%) 0 0  | 93, 115, 125, 127     | 0     |
| 29  | 2     | 56/56 (100%)    | -0.25  | 0 100 100     | 22, 32, 40, 45        | 0     |
| 30  | 3     | 46/48 (95%)     | 0.88   | 7 (15%) 2 1   | 34, 63, 96, 105       | 0     |
| 31  | 4     | 92/92 (100%)    | 8.87   | 92 (100%) 0 0 | 110, 125, 133, 136    | 0     |
| All | All   | 6579/7281 (90%) | 0.56   | 613 (9%) 8 5  | 19, 52, 105, 147      | 0     |

All (613) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 31  | 4     | 82  | GLY  | 29.1 |
| 28  | 1     | 11  | THR  | 19.9 |
| 31  | 4     | 37  | ASP  | 18.9 |
| 31  | 4     | 83  | TRP  | 18.6 |
| 31  | 4     | 62  | THR  | 17.9 |
| 28  | 1     | 26  | VAL  | 16.0 |
| 31  | 4     | 11  | CYS  | 15.0 |
| 31  | 4     | 1   | MET  | 14.9 |
| 28  | 1     | 20  | LEU  | 13.7 |
| 31  | 4     | 38  | ARG  | 13.6 |
| 31  | 4     | 31  | THR  | 13.1 |
| 28  | 1     | 15  | GLY  | 13.1 |
| 31  | 4     | 20  | HIS  | 13.1 |
| 31  | 4     | 10  | TYR  | 13.0 |
| 31  | 4     | 14  | CYS  | 13.0 |
| 31  | 4     | 91  | GLN  | 12.9 |
| 28  | 1     | 12  | GLY  | 12.8 |
| 31  | 4     | 39  | GLN  | 12.6 |
| 31  | 4     | 71  | CYS  | 12.4 |
| 31  | 4     | 76  | LYS  | 12.3 |
| 31  | 4     | 33  | MET  | 12.1 |
| 31  | 4     | 35  | TRP  | 12.0 |
| 28  | 1     | 30  | GLU  | 12.0 |
| 15  | N     | 71  | SER  | 11.8 |
| 31  | 4     | 36  | ILE  | 11.7 |
| 24  | W     | 1   | THR  | 11.6 |
| 28  | 1     | 19  | GLY  | 11.6 |
| 28  | 1     | 34  | LYS  | 11.6 |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 31  | 4     | 78   | HIS  | 11.5 |
| 28  | 1     | 23   | ARG  | 11.2 |
| 31  | 4     | 44   | SER  | 11.2 |
| 31  | 4     | 34   | LYS  | 11.1 |
| 31  | 4     | 22   | VAL  | 11.0 |
| 31  | 4     | 41   | GLU  | 10.9 |
| 28  | 1     | 14   | PHE  | 10.8 |
| 31  | 4     | 4    | PRO  | 10.7 |
| 31  | 4     | 85   | ALA  | 10.6 |
| 28  | 1     | 16   | PRO  | 10.6 |
| 28  | 1     | 31   | ILE  | 10.6 |
| 31  | 4     | 9    | THR  | 10.4 |
| 31  | 4     | 59   | ASP  | 10.3 |
| 31  | 4     | 65   | THR  | 10.3 |
| 31  | 4     | 84   | ARG  | 10.2 |
| 31  | 4     | 16   | GLU  | 10.2 |
| 28  | 1     | 22   | ILE  | 10.1 |
| 31  | 4     | 18   | GLN  | 10.0 |
| 31  | 4     | 15   | ASN  | 10.0 |
| 31  | 4     | 67   | LEU  | 10.0 |
| 28  | 1     | 39   | CYS  | 10.0 |
| 31  | 4     | 27   | SER  | 9.6  |
| 31  | 4     | 86   | GLY  | 9.6  |
| 31  | 4     | 23   | GLU  | 9.6  |
| 31  | 4     | 17   | HIS  | 9.6  |
| 28  | 1     | 35   | LYS  | 9.6  |
| 31  | 4     | 68   | LYS  | 9.5  |
| 15  | N     | 89   | ASN  | 9.5  |
| 28  | 1     | 28   | ASP  | 9.4  |
| 31  | 4     | 74   | CYS  | 9.4  |
| 28  | 1     | 44   | PHE  | 9.3  |
| 31  | 4     | 3    | MET  | 9.1  |
| 31  | 4     | 13   | HIS  | 9.1  |
| 31  | 4     | 42   | ARG  | 9.0  |
| 28  | 1     | 45   | LYS  | 9.0  |
| 31  | 4     | 77   | ALA  | 9.0  |
| 2   | B     | 3001 | U    | 8.8  |
| 31  | 4     | 60   | LYS  | 8.8  |
| 31  | 4     | 8    | ASN  | 8.6  |
| 31  | 4     | 88   | LEU  | 8.6  |
| 28  | 1     | 33   | HIS  | 8.5  |
| 31  | 4     | 32   | GLY  | 8.5  |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 31  | 4     | 2   | GLN  | 8.5  |
| 31  | 4     | 21  | GLU  | 8.2  |
| 28  | 1     | 25  | ARG  | 8.1  |
| 31  | 4     | 81  | GLU  | 8.1  |
| 7   | F     | 69  | ILE  | 8.1  |
| 28  | 1     | 24  | VAL  | 8.0  |
| 31  | 4     | 61  | PRO  | 8.0  |
| 15  | N     | 80  | GLY  | 7.9  |
| 7   | F     | 57  | THR  | 7.9  |
| 31  | 4     | 43  | ASN  | 7.7  |
| 28  | 1     | 32  | LYS  | 7.7  |
| 31  | 4     | 56  | PRO  | 7.6  |
| 31  | 4     | 51  | LYS  | 7.6  |
| 28  | 1     | 18  | TYR  | 7.5  |
| 7   | F     | 63  | ILE  | 7.5  |
| 31  | 4     | 47  | GLY  | 7.3  |
| 15  | N     | 78  | ASN  | 7.2  |
| 28  | 1     | 42  | CYS  | 7.2  |
| 31  | 4     | 80  | ARG  | 7.1  |
| 28  | 1     | 57  | CYS  | 7.0  |
| 28  | 1     | 27  | ALA  | 7.0  |
| 31  | 4     | 75  | GLY  | 7.0  |
| 31  | 4     | 12  | PRO  | 7.0  |
| 31  | 4     | 6   | ARG  | 7.0  |
| 31  | 4     | 30  | GLN  | 6.9  |
| 28  | 1     | 10  | ARG  | 6.9  |
| 28  | 1     | 29  | VAL  | 6.8  |
| 31  | 4     | 63  | LYS  | 6.7  |
| 31  | 4     | 69  | TYR  | 6.7  |
| 28  | 1     | 21  | LYS  | 6.7  |
| 15  | N     | 70  | GLY  | 6.7  |
| 31  | 4     | 19  | GLU  | 6.6  |
| 31  | 4     | 53  | SER  | 6.5  |
| 10  | I     | 27  | ILE  | 6.5  |
| 28  | 1     | 43  | GLY  | 6.4  |
| 31  | 4     | 45  | GLY  | 6.4  |
| 1   | A     | 735 | C    | 6.2  |
| 31  | 4     | 58  | GLY  | 6.1  |
| 28  | 1     | 13  | ARG  | 6.1  |
| 31  | 4     | 90  | PHE  | 6.0  |
| 31  | 4     | 72  | GLY  | 6.0  |
| 7   | F     | 56  | ARG  | 6.0  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 31  | 4     | 52   | PHE  | 6.0  |
| 16  | O     | 179  | LEU  | 5.9  |
| 31  | 4     | 46   | ILE  | 5.9  |
| 31  | 4     | 70   | ARG  | 5.8  |
| 28  | 1     | 41   | VAL  | 5.8  |
| 31  | 4     | 40   | ARG  | 5.8  |
| 31  | 4     | 48   | ASN  | 5.8  |
| 1   | A     | 1198 | U    | 5.8  |
| 31  | 4     | 92   | GLU  | 5.8  |
| 14  | M     | 44   | GLU  | 5.7  |
| 31  | 4     | 26   | ARG  | 5.7  |
| 7   | F     | 10   | PHE  | 5.7  |
| 7   | F     | 66   | GLY  | 5.6  |
| 14  | M     | 36   | ASP  | 5.6  |
| 14  | M     | 60   | GLU  | 5.6  |
| 23  | V     | 52   | THR  | 5.6  |
| 15  | N     | 81   | ARG  | 5.5  |
| 15  | N     | 83   | SER  | 5.5  |
| 28  | 1     | 17   | ARG  | 5.4  |
| 16  | O     | 162  | ASP  | 5.4  |
| 15  | N     | 77   | PHE  | 5.4  |
| 31  | 4     | 66   | ASP  | 5.3  |
| 16  | O     | 186  | LEU  | 5.3  |
| 14  | M     | 42   | ASN  | 5.3  |
| 28  | 1     | 38   | LYS  | 5.3  |
| 16  | O     | 138  | ASP  | 5.2  |
| 2   | B     | 3025 | G    | 5.2  |
| 15  | N     | 90   | ARG  | 5.2  |
| 31  | 4     | 55   | VAL  | 5.2  |
| 23  | V     | 48   | ASN  | 5.1  |
| 28  | 1     | 40   | PRO  | 5.1  |
| 1   | A     | 1173 | A    | 5.1  |
| 23  | V     | 54   | THR  | 5.1  |
| 31  | 4     | 87   | ARG  | 5.0  |
| 22  | U     | 119  | ALA  | 5.0  |
| 16  | O     | 184  | ILE  | 5.0  |
| 11  | J     | 83   | PHE  | 5.0  |
| 16  | O     | 160  | SER  | 5.0  |
| 30  | 3     | 36   | ASN  | 5.0  |
| 31  | 4     | 89   | GLU  | 5.0  |
| 28  | 1     | 37   | HIS  | 5.0  |
| 30  | 3     | 39   | ARG  | 5.0  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 10  | I     | 23   | ILE  | 4.9  |
| 7   | F     | 87   | ALA  | 4.9  |
| 24  | W     | 39   | ALA  | 4.9  |
| 7   | F     | 64   | ARG  | 4.9  |
| 1   | A     | 1177 | A    | 4.8  |
| 7   | F     | 27   | ILE  | 4.8  |
| 7   | F     | 88   | LEU  | 4.8  |
| 1   | A     | 1171 | A    | 4.8  |
| 23  | V     | 55   | ALA  | 4.8  |
| 31  | 4     | 29   | ARG  | 4.8  |
| 14  | M     | 133  | VAL  | 4.8  |
| 23  | V     | 51   | TRP  | 4.7  |
| 31  | 4     | 28   | GLY  | 4.7  |
| 31  | 4     | 49   | ASP  | 4.7  |
| 15  | N     | 72   | SER  | 4.7  |
| 15  | N     | 88   | VAL  | 4.6  |
| 23  | V     | 9    | CYS  | 4.6  |
| 31  | 4     | 64   | LYS  | 4.6  |
| 15  | N     | 74   | ARG  | 4.6  |
| 31  | 4     | 5    | ARG  | 4.6  |
| 28  | 1     | 79   | VAL  | 4.5  |
| 7   | F     | 25   | MET  | 4.5  |
| 16  | O     | 163  | PHE  | 4.5  |
| 15  | N     | 82   | ARG  | 4.5  |
| 26  | Y     | 88   | GLU  | 4.4  |
| 15  | N     | 75   | THR  | 4.4  |
| 14  | M     | 34   | GLY  | 4.4  |
| 14  | M     | 80   | ASP  | 4.4  |
| 31  | 4     | 24   | LYS  | 4.4  |
| 7   | F     | 75   | LEU  | 4.4  |
| 28  | 1     | 53   | GLY  | 4.4  |
| 31  | 4     | 73   | GLU  | 4.3  |
| 7   | F     | 90   | LEU  | 4.3  |
| 14  | M     | 46   | LEU  | 4.3  |
| 28  | 1     | 47   | LEU  | 4.3  |
| 28  | 1     | 58   | GLY  | 4.3  |
| 15  | N     | 73   | ARG  | 4.3  |
| 31  | 4     | 79   | LEU  | 4.3  |
| 16  | O     | 167  | ASP  | 4.2  |
| 1   | A     | 1199 | A    | 4.2  |
| 1   | A     | 1951 | G    | 4.2  |
| 2   | B     | 3002 | U    | 4.2  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 7   | F     | 166  | ILE  | 4.2  |
| 7   | F     | 61   | PHE  | 4.1  |
| 28  | 1     | 55   | TRP  | 4.1  |
| 9   | H     | 106  | THR  | 4.1  |
| 8   | G     | 45   | ASP  | 4.1  |
| 11  | J     | 135  | TRP  | 4.1  |
| 16  | O     | 147  | ILE  | 4.1  |
| 4   | C     | 37   | VAL  | 4.1  |
| 28  | 1     | 36   | LYS  | 4.1  |
| 23  | V     | 53   | ASP  | 4.0  |
| 31  | 4     | 50   | GLY  | 4.0  |
| 21  | T     | 81   | ILE  | 4.0  |
| 23  | V     | 46   | ALA  | 4.0  |
| 1   | A     | 2237 | G    | 4.0  |
| 14  | M     | 47   | GLY  | 4.0  |
| 14  | M     | 45   | PRO  | 4.0  |
| 23  | V     | 47   | ARG  | 4.0  |
| 28  | 1     | 46   | LYS  | 3.9  |
| 16  | O     | 159  | TYR  | 3.9  |
| 28  | 1     | 82   | ALA  | 3.9  |
| 7   | F     | 86   | THR  | 3.9  |
| 7   | F     | 26   | GLY  | 3.9  |
| 31  | 4     | 7    | PHE  | 3.9  |
| 14  | M     | 130  | ARG  | 3.9  |
| 7   | F     | 96   | SER  | 3.9  |
| 19  | R     | 95   | GLU  | 3.9  |
| 23  | V     | 11   | THR  | 3.9  |
| 7   | F     | 47   | GLN  | 3.8  |
| 7   | F     | 134  | LEU  | 3.8  |
| 23  | V     | 6    | CYS  | 3.8  |
| 7   | F     | 44   | ILE  | 3.8  |
| 10  | I     | 26   | MET  | 3.8  |
| 7   | F     | 18   | ILE  | 3.8  |
| 28  | 1     | 59   | HIS  | 3.8  |
| 28  | 1     | 80   | MET  | 3.8  |
| 31  | 4     | 57   | GLY  | 3.8  |
| 16  | O     | 185  | GLU  | 3.8  |
| 1   | A     | 1172 | G    | 3.8  |
| 7   | F     | 58   | VAL  | 3.7  |
| 16  | O     | 80   | SER  | 3.7  |
| 16  | O     | 78   | MET  | 3.7  |
| 7   | F     | 92   | GLU  | 3.7  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 7   | F     | 83   | PHE  | 3.7  |
| 1   | A     | 282  | C    | 3.6  |
| 18  | Q     | 137  | LEU  | 3.6  |
| 14  | M     | 124  | ASP  | 3.6  |
| 7   | F     | 93   | LEU  | 3.6  |
| 14  | M     | 73   | VAL  | 3.6  |
| 10  | I     | 15   | TRP  | 3.6  |
| 18  | Q     | 110  | ASP  | 3.6  |
| 9   | H     | 107  | VAL  | 3.6  |
| 16  | O     | 172  | PHE  | 3.6  |
| 24  | W     | 40   | PRO  | 3.6  |
| 1   | A     | 1181 | A    | 3.6  |
| 10  | I     | 20   | VAL  | 3.5  |
| 8   | G     | 100  | ASP  | 3.5  |
| 14  | M     | 104  | ASP  | 3.5  |
| 9   | H     | 19   | ALA  | 3.5  |
| 7   | F     | 49   | PRO  | 3.5  |
| 7   | F     | 171  | ASP  | 3.5  |
| 1   | A     | 1175 | G    | 3.5  |
| 9   | H     | 16   | ALA  | 3.4  |
| 24  | W     | 61   | GLY  | 3.4  |
| 4   | C     | 82   | VAL  | 3.4  |
| 15  | N     | 87   | MET  | 3.4  |
| 4   | C     | 60   | PHE  | 3.4  |
| 10  | I     | 65   | THR  | 3.4  |
| 3   | 5     | 74   | C    | 3.4  |
| 14  | M     | 106  | VAL  | 3.4  |
| 23  | V     | 39   | ASN  | 3.4  |
| 10  | I     | 67   | LEU  | 3.4  |
| 24  | W     | 8    | ILE  | 3.4  |
| 4   | C     | 91   | GLY  | 3.4  |
| 7   | F     | 130  | VAL  | 3.4  |
| 7   | F     | 11   | HIS  | 3.4  |
| 4   | C     | 36   | ASP  | 3.4  |
| 9   | H     | 17   | LEU  | 3.3  |
| 24  | W     | 37   | GLY  | 3.3  |
| 14  | M     | 105  | TYR  | 3.3  |
| 23  | V     | 43   | GLY  | 3.3  |
| 2   | B     | 3122 | C    | 3.3  |
| 14  | M     | 38   | HIS  | 3.3  |
| 14  | M     | 59   | GLU  | 3.3  |
| 1   | A     | 970  | U    | 3.3  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 23  | V     | 49   | LEU  | 3.3  |
| 5   | D     | 1    | PRO  | 3.3  |
| 10  | I     | 71   | LEU  | 3.3  |
| 4   | C     | 38   | ILE  | 3.3  |
| 28  | 1     | 60   | CYS  | 3.3  |
| 14  | M     | 43   | HIS  | 3.3  |
| 1   | A     | 736  | A    | 3.2  |
| 8   | G     | 108  | LEU  | 3.2  |
| 23  | V     | 40   | ALA  | 3.2  |
| 6   | E     | 135  | GLU  | 3.2  |
| 24  | W     | 38   | GLY  | 3.2  |
| 16  | O     | 139  | TRP  | 3.2  |
| 7   | F     | 170  | TYR  | 3.2  |
| 14  | M     | 81   | VAL  | 3.2  |
| 15  | N     | 79   | LYS  | 3.2  |
| 23  | V     | 50   | GLU  | 3.2  |
| 1   | A     | 2345 | A    | 3.2  |
| 11  | J     | 146  | TRP  | 3.2  |
| 7   | F     | 84   | LEU  | 3.2  |
| 9   | H     | 119  | ARG  | 3.2  |
| 11  | J     | 139  | ASP  | 3.2  |
| 7   | F     | 24   | HIS  | 3.1  |
| 22  | U     | 112  | LEU  | 3.1  |
| 28  | 1     | 56   | MET  | 3.1  |
| 7   | F     | 62   | ASP  | 3.1  |
| 1   | A     | 1947 | G    | 3.1  |
| 14  | M     | 123  | ASP  | 3.1  |
| 2   | B     | 3023 | U    | 3.1  |
| 1   | A     | 1169 | U    | 3.1  |
| 1   | A     | 2004 | U    | 3.1  |
| 9   | H     | 22   | VAL  | 3.1  |
| 4   | C     | 85   | ASP  | 3.1  |
| 7   | F     | 65   | GLU  | 3.1  |
| 1   | A     | 1163 | G    | 3.1  |
| 10  | I     | 66   | LEU  | 3.1  |
| 14  | M     | 41   | HIS  | 3.1  |
| 23  | V     | 56   | ARG  | 3.1  |
| 24  | W     | 52   | ALA  | 3.1  |
| 1   | A     | 1182 | C    | 3.1  |
| 27  | Z     | 108  | ASP  | 3.1  |
| 9   | H     | 44   | SER  | 3.1  |
| 7   | F     | 54   | ALA  | 3.1  |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 24  | W     | 3    | LEU  | 3.1  |
| 22  | U     | 116  | ASP  | 3.1  |
| 1   | A     | 1948 | G    | 3.1  |
| 4   | C     | 237  | GLY  | 3.1  |
| 16  | O     | 74   | PRO  | 3.1  |
| 16  | O     | 75   | THR  | 3.1  |
| 4   | C     | 133  | ARG  | 3.0  |
| 9   | H     | 26   | THR  | 3.0  |
| 1   | A     | 1170 | U    | 3.0  |
| 30  | 3     | 35   | ARG  | 3.0  |
| 16  | O     | 127  | LEU  | 3.0  |
| 16  | O     | 158  | LEU  | 3.0  |
| 1   | A     | 1190 | G    | 3.0  |
| 14  | M     | 140  | VAL  | 3.0  |
| 4   | C     | 96   | LEU  | 3.0  |
| 23  | V     | 13   | ILE  | 3.0  |
| 8   | G     | 22   | VAL  | 3.0  |
| 7   | F     | 68   | PRO  | 3.0  |
| 18  | Q     | 116  | SER  | 3.0  |
| 9   | H     | 20   | LEU  | 2.9  |
| 4   | C     | 31   | LYS  | 2.9  |
| 11  | J     | 36   | ASN  | 2.9  |
| 1   | A     | 1168 | C    | 2.9  |
| 1   | A     | 1202 | A    | 2.9  |
| 7   | F     | 50   | VAL  | 2.9  |
| 14  | M     | 48   | LYS  | 2.9  |
| 14  | M     | 118  | LEU  | 2.9  |
| 7   | F     | 23   | VAL  | 2.9  |
| 9   | H     | 102  | GLY  | 2.9  |
| 23  | V     | 36   | CYS  | 2.9  |
| 26  | Y     | 7    | GLU  | 2.9  |
| 15  | N     | 68   | ARG  | 2.9  |
| 26  | Y     | 82   | GLU  | 2.9  |
| 1   | A     | 2344 | G    | 2.9  |
| 1   | A     | 1162 | G    | 2.9  |
| 7   | F     | 22   | VAL  | 2.9  |
| 4   | C     | 84   | VAL  | 2.9  |
| 22  | U     | 37   | GLN  | 2.9  |
| 11  | J     | 35   | ASN  | 2.9  |
| 23  | V     | 12   | ASP  | 2.9  |
| 7   | F     | 51   | ARG  | 2.9  |
| 15  | N     | 86   | MET  | 2.9  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 7          | F            | 28         | GLY         | 2.8         |
| 14         | M            | 89         | PHE         | 2.8         |
| 9          | H            | 98         | VAL         | 2.8         |
| 21         | T            | 77         | VAL         | 2.8         |
| 1          | A            | 1200       | A           | 2.8         |
| 14         | M            | 102        | ASP         | 2.8         |
| 16         | O            | 175        | LEU         | 2.8         |
| 7          | F            | 85         | GLN         | 2.8         |
| 11         | J            | 81         | TYR         | 2.8         |
| 7          | F            | 43         | GLU         | 2.8         |
| 1          | A            | 2239       | C           | 2.8         |
| 1          | A            | 960        | G           | 2.8         |
| 8          | G            | 131        | LEU         | 2.8         |
| 11         | J            | 70         | ARG         | 2.8         |
| 7          | F            | 128        | LEU         | 2.8         |
| 7          | F            | 17         | ARG         | 2.8         |
| 9          | H            | 15         | ASP         | 2.8         |
| 26         | Y            | 80         | GLU         | 2.8         |
| 1          | A            | 281        | U           | 2.8         |
| 31         | 4            | 25         | VAL         | 2.8         |
| 7          | F            | 45         | THR         | 2.8         |
| 24         | W            | 62         | GLU         | 2.7         |
| 7          | F            | 159        | PRO         | 2.7         |
| 26         | Y            | 10         | VAL         | 2.7         |
| 1          | A            | 1525       | G           | 2.7         |
| 15         | N            | 76         | ARG         | 2.7         |
| 22         | U            | 27         | LEU         | 2.7         |
| 1          | A            | 2637       | A           | 2.7         |
| 1          | A            | 1180       | U           | 2.7         |
| 23         | V            | 29         | THR         | 2.7         |
| 1          | A            | 1000       | C           | 2.7         |
| 4          | C            | 80         | LEU         | 2.7         |
| 7          | F            | 67         | ASP         | 2.7         |
| 10         | I            | 24         | VAL         | 2.7         |
| 16         | O            | 155        | GLU         | 2.7         |
| 24         | W            | 2          | VAL         | 2.7         |
| 10         | I            | 68         | GLU         | 2.7         |
| 22         | U            | 42         | VAL         | 2.7         |
| 7          | F            | 42         | GLY         | 2.7         |
| 9          | H            | 101        | ALA         | 2.7         |
| 1          | A            | 1192       | A           | 2.6         |
| 1          | A            | 2238       | A           | 2.6         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 1          | A            | 2433       | A           | 2.6         |
| 9          | H            | 18         | GLU         | 2.6         |
| 30         | 3            | 37         | HIS         | 2.6         |
| 1          | A            | 806        | A           | 2.6         |
| 1          | A            | 1929       | G           | 2.6         |
| 1          | A            | 1950       | G           | 2.6         |
| 1          | A            | 280        | C           | 2.6         |
| 23         | V            | 4          | ARG         | 2.6         |
| 1          | A            | 1913       | C           | 2.6         |
| 1          | A            | 2508       | C           | 2.6         |
| 8          | G            | 129        | GLU         | 2.6         |
| 16         | O            | 142        | THR         | 2.6         |
| 16         | O            | 178        | THR         | 2.5         |
| 27         | Z            | 235        | GLU         | 2.5         |
| 14         | M            | 37         | LYS         | 2.5         |
| 9          | H            | 103        | ALA         | 2.5         |
| 22         | U            | 99         | THR         | 2.5         |
| 1          | A            | 10         | U           | 2.5         |
| 4          | C            | 64         | ASP         | 2.5         |
| 23         | V            | 45         | GLU         | 2.5         |
| 24         | W            | 11         | MET         | 2.5         |
| 24         | W            | 41         | GLU         | 2.5         |
| 10         | I            | 69         | ARG         | 2.5         |
| 4          | C            | 58         | VAL         | 2.5         |
| 18         | Q            | 1          | THR         | 2.5         |
| 9          | H            | 90         | GLU         | 2.5         |
| 28         | 1            | 62         | TYR         | 2.5         |
| 14         | M            | 69         | ILE         | 2.5         |
| 23         | V            | 22         | VAL         | 2.5         |
| 1          | A            | 1925       | G           | 2.5         |
| 1          | A            | 2250       | G           | 2.5         |
| 30         | 3            | 48         | ASP         | 2.5         |
| 4          | C            | 62         | ASP         | 2.5         |
| 11         | J            | 32         | ASP         | 2.5         |
| 1          | A            | 1167       | G           | 2.5         |
| 7          | F            | 80         | ALA         | 2.5         |
| 16         | O            | 81         | ALA         | 2.5         |
| 10         | I            | 63         | ARG         | 2.5         |
| 7          | F            | 55         | LYS         | 2.5         |
| 1          | A            | 2249       | G           | 2.5         |
| 23         | V            | 33         | SER         | 2.4         |
| 23         | V            | 44         | ARG         | 2.4         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 1          | A            | 1166       | A           | 2.4         |
| 1          | A            | 1626       | A           | 2.4         |
| 7          | F            | 71         | ALA         | 2.4         |
| 5          | D            | 329        | TYR         | 2.4         |
| 24         | W            | 59         | ILE         | 2.4         |
| 1          | A            | 368        | C           | 2.4         |
| 27         | Z            | 98         | GLN         | 2.4         |
| 1          | A            | 138        | U           | 2.4         |
| 1          | A            | 1165       | G           | 2.4         |
| 8          | G            | 6          | GLU         | 2.4         |
| 16         | O            | 68         | GLU         | 2.4         |
| 31         | 4            | 54         | LYS         | 2.4         |
| 21         | T            | 49         | VAL         | 2.4         |
| 22         | U            | 40         | VAL         | 2.4         |
| 22         | U            | 117        | ASP         | 2.4         |
| 24         | W            | 63         | GLU         | 2.4         |
| 4          | C            | 128        | LEU         | 2.4         |
| 9          | H            | 75         | ILE         | 2.4         |
| 9          | H            | 49         | PHE         | 2.4         |
| 11         | J            | 142        | VAL         | 2.4         |
| 27         | Z            | 234        | VAL         | 2.4         |
| 7          | F            | 73         | VAL         | 2.4         |
| 8          | G            | 1          | PRO         | 2.4         |
| 14         | M            | 108        | VAL         | 2.4         |
| 8          | G            | 43         | ASP         | 2.4         |
| 5          | D            | 117        | GLU         | 2.4         |
| 22         | U            | 80         | GLU         | 2.4         |
| 1          | A            | 1185       | U           | 2.4         |
| 1          | A            | 285        | A           | 2.4         |
| 14         | M            | 120        | LEU         | 2.4         |
| 30         | 3            | 44         | ARG         | 2.4         |
| 1          | A            | 1204       | C           | 2.4         |
| 1          | A            | 1949       | G           | 2.3         |
| 1          | A            | 130        | C           | 2.3         |
| 16         | O            | 157        | PRO         | 2.3         |
| 24         | W            | 45         | ARG         | 2.3         |
| 10         | I            | 64         | ASN         | 2.3         |
| 7          | F            | 70         | GLY         | 2.3         |
| 26         | Y            | 85         | VAL         | 2.3         |
| 4          | C            | 112        | PRO         | 2.3         |
| 11         | J            | 114        | PRO         | 2.3         |
| 14         | M            | 39         | GLU         | 2.3         |

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| Mol | Chain | Res  | Type | RSRZ |
|-----|-------|------|------|------|
| 18  | Q     | 141  | ILE  | 2.3  |
| 30  | 3     | 49   | GLU  | 2.3  |
| 7   | F     | 158  | ASN  | 2.3  |
| 1   | A     | 1527 | A    | 2.3  |
| 4   | C     | 129  | LEU  | 2.3  |
| 7   | F     | 102  | GLY  | 2.3  |
| 7   | F     | 89   | PRO  | 2.3  |
| 8   | G     | 85   | GLU  | 2.3  |
| 10  | I     | 13   | PRO  | 2.3  |
| 26  | Y     | 74   | ALA  | 2.3  |
| 5   | D     | 169  | GLY  | 2.3  |
| 18  | Q     | 120  | ARG  | 2.3  |
| 8   | G     | 95   | VAL  | 2.3  |
| 13  | L     | 119  | GLN  | 2.3  |
| 4   | C     | 88   | ILE  | 2.3  |
| 24  | W     | 6    | GLN  | 2.3  |
| 4   | C     | 135  | VAL  | 2.3  |
| 14  | M     | 101  | ASP  | 2.3  |
| 16  | O     | 83   | LEU  | 2.3  |
| 4   | C     | 99   | ILE  | 2.3  |
| 8   | G     | 20   | ILE  | 2.3  |
| 11  | J     | 85   | ILE  | 2.3  |
| 19  | R     | 75   | ILE  | 2.3  |
| 7   | F     | 81   | GLU  | 2.3  |
| 22  | U     | 118  | SER  | 2.3  |
| 11  | J     | 84   | ARG  | 2.3  |
| 23  | V     | 10   | GLY  | 2.3  |
| 1   | A     | 1665 | G    | 2.3  |
| 1   | A     | 1971 | G    | 2.3  |
| 9   | H     | 47   | LEU  | 2.2  |
| 14  | M     | 40   | PHE  | 2.2  |
| 21  | T     | 45   | TYR  | 2.2  |
| 16  | O     | 115  | VAL  | 2.2  |
| 24  | W     | 9    | ARG  | 2.2  |
| 1   | A     | 2507 | G    | 2.2  |
| 2   | B     | 3024 | U    | 2.2  |
| 9   | H     | 100  | ASP  | 2.2  |
| 23  | V     | 8    | TYR  | 2.2  |
| 1   | A     | 999  | C    | 2.2  |
| 4   | C     | 65   | ARG  | 2.2  |
| 1   | A     | 2252 | A    | 2.2  |
| 8   | G     | 10   | ASP  | 2.2  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 1          | A            | 1195       | G           | 2.2         |
| 14         | M            | 129        | ALA         | 2.2         |
| 1          | A            | 284        | C           | 2.2         |
| 1          | A            | 283        | U           | 2.2         |
| 1          | A            | 1279       | U           | 2.2         |
| 9          | H            | 28         | ALA         | 2.2         |
| 24         | W            | 4          | HIS         | 2.2         |
| 28         | 1            | 61         | GLY         | 2.2         |
| 8          | G            | 87         | PHE         | 2.2         |
| 27         | Z            | 226        | ILE         | 2.2         |
| 17         | P            | 51         | TYR         | 2.2         |
| 16         | O            | 71         | TRP         | 2.2         |
| 5          | D            | 104        | GLU         | 2.2         |
| 9          | H            | 71         | GLY         | 2.2         |
| 28         | 1            | 51         | GLY         | 2.2         |
| 23         | V            | 41         | ASP         | 2.2         |
| 18         | Q            | 77         | ALA         | 2.2         |
| 1          | A            | 1189       | A           | 2.2         |
| 1          | A            | 1919       | A           | 2.2         |
| 11         | J            | 163        | PRO         | 2.2         |
| 1          | A            | 805        | G           | 2.2         |
| 15         | N            | 152        | ARG         | 2.2         |
| 1          | A            | 1967       | U           | 2.2         |
| 24         | W            | 46         | ILE         | 2.2         |
| 28         | 1            | 54         | ILE         | 2.2         |
| 6          | E            | 244        | ALA         | 2.2         |
| 12         | K            | 8          | ALA         | 2.2         |
| 26         | Y            | 72         | VAL         | 2.2         |
| 8          | G            | 118        | ILE         | 2.1         |
| 28         | 1            | 49         | ARG         | 2.1         |
| 7          | F            | 15         | GLU         | 2.1         |
| 14         | M            | 35         | ARG         | 2.1         |
| 16         | O            | 143        | ARG         | 2.1         |
| 24         | W            | 7          | GLU         | 2.1         |
| 1          | A            | 601        | G           | 2.1         |
| 16         | O            | 150        | TYR         | 2.1         |
| 18         | Q            | 114        | LEU         | 2.1         |
| 1          | A            | 2432       | C           | 2.1         |
| 15         | N            | 165        | SER         | 2.1         |
| 7          | F            | 156        | ARG         | 2.1         |
| 26         | Y            | 77         | PHE         | 2.1         |
| 14         | M            | 99         | GLU         | 2.1         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 8          | G            | 73         | PHE         | 2.1         |
| 6          | E            | 132        | ASP         | 2.1         |
| 16         | O            | 152        | GLU         | 2.1         |
| 13         | L            | 21         | ALA         | 2.1         |
| 1          | A            | 737        | A           | 2.1         |
| 7          | F            | 13         | MET         | 2.1         |
| 6          | E            | 245        | GLU         | 2.1         |
| 16         | O            | 180        | LEU         | 2.1         |
| 4          | C            | 34         | ASP         | 2.1         |
| 6          | E            | 101        | ASP         | 2.1         |
| 16         | O            | 151        | ASP         | 2.1         |
| 12         | K            | 39         | VAL         | 2.1         |
| 14         | M            | 90         | ARG         | 2.1         |
| 8          | G            | 46         | THR         | 2.1         |
| 1          | A            | 370        | G           | 2.1         |
| 7          | F            | 16         | PRO         | 2.1         |
| 1          | A            | 128        | A           | 2.1         |
| 1          | A            | 1188       | A           | 2.1         |
| 4          | C            | 110        | SER         | 2.1         |
| 7          | F            | 104        | PHE         | 2.1         |
| 27         | Z            | 97         | LEU         | 2.1         |
| 7          | F            | 153        | THR         | 2.1         |
| 1          | A            | 1161       | A           | 2.0         |
| 1          | A            | 1184       | C           | 2.0         |
| 14         | M            | 150        | GLN         | 2.0         |
| 1          | A            | 1193       | A           | 2.0         |
| 11         | J            | 34         | GLY         | 2.0         |
| 11         | J            | 79         | ALA         | 2.0         |
| 19         | R            | 81         | GLU         | 2.0         |
| 4          | C            | 111        | SER         | 2.0         |
| 5          | D            | 183        | GLU         | 2.0         |
| 1          | A            | 1174       | A           | 2.0         |
| 14         | M            | 114        | VAL         | 2.0         |
| 16         | O            | 176        | ARG         | 2.0         |
| 10         | I            | 12         | ILE         | 2.0         |
| 10         | I            | 72         | ASP         | 2.0         |
| 7          | F            | 52         | THR         | 2.0         |
| 26         | Y            | 76         | ARG         | 2.0         |
| 9          | H            | 12         | LEU         | 2.0         |

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

| Mol | Type | Chain | Res  | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|------|-------|------|------|----------------------------|-------|
| 34  | NA   | A     | 8384 | 1/1   | 0.14 | 0.75 | 82,82,82,82                | 0     |
| 32  | MG   | A     | 8049 | 1/1   | 0.33 | 0.69 | 95,95,95,95                | 0     |
| 32  | MG   | A     | 8076 | 1/1   | 0.34 | 0.17 | 79,79,79,79                | 0     |
| 32  | MG   | A     | 8024 | 1/1   | 0.37 | 0.60 | 110,110,110,110            | 0     |
| 34  | NA   | T     | 8312 | 1/1   | 0.39 | 0.57 | 80,80,80,80                | 0     |
| 35  | CL   | 4     | 8504 | 1/1   | 0.40 | 0.36 | 101,101,101,101            | 0     |
| 35  | CL   | M     | 8510 | 1/1   | 0.41 | 0.43 | 97,97,97,97                | 0     |
| 34  | NA   | A     | 8382 | 1/1   | 0.47 | 0.52 | 79,79,79,79                | 0     |
| 34  | NA   | A     | 8371 | 1/1   | 0.53 | 0.60 | 54,54,54,54                | 0     |
| 34  | NA   | A     | 8329 | 1/1   | 0.53 | 0.35 | 61,61,61,61                | 0     |
| 34  | NA   | A     | 8340 | 1/1   | 0.53 | 0.59 | 58,58,58,58                | 0     |
| 34  | NA   | B     | 8351 | 1/1   | 0.56 | 0.39 | 75,75,75,75                | 0     |
| 34  | NA   | A     | 8365 | 1/1   | 0.56 | 0.55 | 46,46,46,46                | 0     |
| 34  | NA   | A     | 8363 | 1/1   | 0.58 | 0.78 | 48,48,48,48                | 0     |
| 32  | MG   | 1     | 8105 | 1/1   | 0.59 | 0.72 | 58,58,58,58                | 0     |
| 34  | NA   | S     | 8386 | 1/1   | 0.62 | 0.53 | 70,70,70,70                | 0     |
| 32  | MG   | A     | 8102 | 1/1   | 0.62 | 1.13 | 135,135,135,135            | 0     |
| 34  | NA   | S     | 8337 | 1/1   | 0.64 | 0.25 | 52,52,52,52                | 0     |
| 34  | NA   | A     | 8372 | 1/1   | 0.65 | 0.54 | 80,80,80,80                | 0     |
| 34  | NA   | R     | 8348 | 1/1   | 0.69 | 0.21 | 57,57,57,57                | 0     |
| 34  | NA   | B     | 8383 | 1/1   | 0.69 | 0.94 | 77,77,77,77                | 0     |
| 32  | MG   | A     | 8114 | 1/1   | 0.70 | 1.03 | 124,124,124,124            | 0     |
| 34  | NA   | A     | 8373 | 1/1   | 0.70 | 0.27 | 54,54,54,54                | 0     |
| 34  | NA   | A     | 8328 | 1/1   | 0.71 | 0.57 | 47,47,47,47                | 0     |
| 34  | NA   | A     | 8385 | 1/1   | 0.72 | 0.34 | 46,46,46,46                | 0     |
| 34  | NA   | A     | 8381 | 1/1   | 0.73 | 0.16 | 46,46,46,46                | 0     |

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| Mol | Type | Chain | Res  | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|------|-------|------|------|----------------------------|-------|
| 37  | CD   | 1     | 8403 | 1/1   | 0.73 | 0.31 | 203,203,203,203            | 0     |
| 32  | MG   | A     | 8092 | 1/1   | 0.74 | 0.47 | 91,91,91,91                | 0     |
| 37  | CD   | 4     | 8404 | 1/1   | 0.74 | 0.42 | 203,203,203,203            | 0     |
| 34  | NA   | A     | 8357 | 1/1   | 0.76 | 0.10 | 49,49,49,49                | 0     |
| 32  | MG   | A     | 8113 | 1/1   | 0.76 | 0.32 | 54,54,54,54                | 0     |
| 34  | NA   | A     | 8310 | 1/1   | 0.76 | 0.53 | 40,40,40,40                | 0     |
| 34  | NA   | A     | 8326 | 1/1   | 0.76 | 0.64 | 60,60,60,60                | 0     |
| 34  | NA   | A     | 8327 | 1/1   | 0.77 | 0.20 | 40,40,40,40                | 0     |
| 34  | NA   | A     | 8307 | 1/1   | 0.77 | 0.64 | 58,58,58,58                | 0     |
| 34  | NA   | A     | 8352 | 1/1   | 0.78 | 0.33 | 39,39,39,39                | 0     |
| 34  | NA   | 4     | 8369 | 1/1   | 0.79 | 0.33 | 66,66,66,66                | 0     |
| 35  | CL   | A     | 8522 | 1/1   | 0.79 | 0.62 | 83,83,83,83                | 0     |
| 34  | NA   | A     | 8368 | 1/1   | 0.79 | 0.24 | 56,56,56,56                | 0     |
| 32  | MG   | A     | 8093 | 1/1   | 0.80 | 0.23 | 44,44,44,44                | 0     |
| 34  | NA   | A     | 8319 | 1/1   | 0.80 | 0.15 | 44,44,44,44                | 0     |
| 34  | NA   | A     | 8332 | 1/1   | 0.80 | 0.46 | 68,68,68,68                | 0     |
| 35  | CL   | K     | 8502 | 1/1   | 0.80 | 0.19 | 71,71,71,71                | 0     |
| 35  | CL   | D     | 8519 | 1/1   | 0.81 | 0.40 | 70,70,70,70                | 0     |
| 32  | MG   | D     | 8055 | 1/1   | 0.82 | 0.15 | 81,81,81,81                | 0     |
| 34  | NA   | A     | 8374 | 1/1   | 0.82 | 0.65 | 60,60,60,60                | 0     |
| 34  | NA   | A     | 8355 | 1/1   | 0.82 | 0.62 | 64,64,64,64                | 0     |
| 32  | MG   | A     | 8045 | 1/1   | 0.82 | 0.13 | 50,50,50,50                | 0     |
| 34  | NA   | A     | 8301 | 1/1   | 0.82 | 0.14 | 31,31,31,31                | 0     |
| 35  | CL   | R     | 8511 | 1/1   | 0.83 | 0.38 | 67,67,67,67                | 0     |
| 32  | MG   | A     | 8046 | 1/1   | 0.83 | 0.10 | 53,53,53,53                | 0     |
| 32  | MG   | B     | 8095 | 1/1   | 0.83 | 0.08 | 72,72,72,72                | 0     |
| 35  | CL   | C     | 8509 | 1/1   | 0.83 | 0.32 | 86,86,86,86                | 0     |
| 34  | NA   | J     | 8322 | 1/1   | 0.84 | 0.37 | 72,72,72,72                | 0     |
| 32  | MG   | A     | 8089 | 1/1   | 0.84 | 0.22 | 82,82,82,82                | 0     |
| 34  | NA   | A     | 8378 | 1/1   | 0.84 | 0.55 | 52,52,52,52                | 0     |
| 32  | MG   | U     | 8073 | 1/1   | 0.84 | 0.21 | 48,48,48,48                | 0     |
| 34  | NA   | A     | 8303 | 1/1   | 0.84 | 0.36 | 51,51,51,51                | 0     |
| 32  | MG   | A     | 8085 | 1/1   | 0.85 | 0.16 | 95,95,95,95                | 0     |
| 32  | MG   | A     | 8088 | 1/1   | 0.85 | 0.15 | 65,65,65,65                | 0     |
| 35  | CL   | A     | 8505 | 1/1   | 0.85 | 0.25 | 74,74,74,74                | 0     |
| 34  | NA   | A     | 8356 | 1/1   | 0.85 | 0.81 | 57,57,57,57                | 0     |
| 34  | NA   | A     | 8377 | 1/1   | 0.85 | 0.33 | 86,86,86,86                | 0     |
| 32  | MG   | A     | 8115 | 1/1   | 0.85 | 0.09 | 59,59,59,59                | 0     |
| 35  | CL   | K     | 8516 | 1/1   | 0.86 | 0.27 | 61,61,61,61                | 0     |
| 34  | NA   | A     | 8354 | 1/1   | 0.86 | 0.38 | 51,51,51,51                | 0     |
| 34  | NA   | K     | 8346 | 1/1   | 0.86 | 0.19 | 37,37,37,37                | 0     |
| 34  | NA   | A     | 8341 | 1/1   | 0.87 | 0.17 | 55,55,55,55                | 0     |

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| Mol | Type | Chain | Res  | Atoms | RSCC | RSR  | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|------|-------|------|------|-----------------------------|-------|
| 35  | CL   | O     | 8507 | 1/1   | 0.87 | 0.23 | 65,65,65,65                 | 0     |
| 32  | MG   | A     | 8101 | 1/1   | 0.87 | 0.10 | 50,50,50,50                 | 0     |
| 34  | NA   | A     | 8316 | 1/1   | 0.88 | 0.21 | 45,45,45,45                 | 0     |
| 34  | NA   | A     | 8353 | 1/1   | 0.88 | 0.22 | 53,53,53,53                 | 0     |
| 32  | MG   | A     | 8099 | 1/1   | 0.88 | 0.24 | 68,68,68,68                 | 0     |
| 32  | MG   | A     | 8064 | 1/1   | 0.88 | 0.24 | 24,24,24,24                 | 0     |
| 32  | MG   | Z     | 8109 | 1/1   | 0.89 | 0.15 | 38,38,38,38                 | 0     |
| 34  | NA   | A     | 8364 | 1/1   | 0.89 | 0.34 | 54,54,54,54                 | 0     |
| 32  | MG   | A     | 8051 | 1/1   | 0.89 | 0.11 | 86,86,86,86                 | 0     |
| 32  | MG   | A     | 8103 | 1/1   | 0.89 | 0.23 | 45,45,45,45                 | 0     |
| 34  | NA   | A     | 8358 | 1/1   | 0.89 | 0.45 | 105,105,105,105             | 0     |
| 34  | NA   | A     | 8335 | 1/1   | 0.90 | 0.26 | 57,57,57,57                 | 0     |
| 34  | NA   | A     | 8302 | 1/1   | 0.90 | 0.20 | 31,31,31,31                 | 0     |
| 32  | MG   | A     | 8112 | 1/1   | 0.90 | 0.21 | 57,57,57,57                 | 0     |
| 34  | NA   | A     | 8375 | 1/1   | 0.90 | 0.26 | 55,55,55,55                 | 0     |
| 35  | CL   | N     | 8518 | 1/1   | 0.90 | 0.19 | 46,46,46,46                 | 0     |
| 34  | NA   | A     | 8366 | 1/1   | 0.90 | 0.43 | 47,47,47,47                 | 0     |
| 35  | CL   | A     | 8503 | 1/1   | 0.90 | 0.24 | 57,57,57,57                 | 0     |
| 32  | MG   | A     | 8071 | 1/1   | 0.90 | 0.07 | 93,93,93,93                 | 0     |
| 34  | NA   | A     | 8308 | 1/1   | 0.90 | 0.15 | 63,63,63,63                 | 0     |
| 34  | NA   | N     | 8347 | 1/1   | 0.90 | 0.11 | 24,24,24,24                 | 0     |
| 32  | MG   | A     | 8053 | 1/1   | 0.91 | 0.19 | 41,41,41,41                 | 0     |
| 34  | NA   | A     | 8311 | 1/1   | 0.91 | 0.13 | 31,31,31,31                 | 0     |
| 35  | CL   | A     | 8515 | 1/1   | 0.91 | 0.31 | 68,68,68,68                 | 0     |
| 32  | MG   | A     | 8116 | 1/1   | 0.91 | 0.16 | 55,55,55,55                 | 0     |
| 34  | NA   | E     | 8304 | 1/1   | 0.91 | 0.14 | 25,25,25,25                 | 0     |
| 35  | CL   | S     | 8506 | 1/1   | 0.91 | 0.20 | 60,60,60,60                 | 0     |
| 32  | MG   | A     | 8047 | 1/1   | 0.91 | 0.16 | 31,31,31,31                 | 0     |
| 36  | PPU  | 5     | 76   | 37/38 | 0.91 | 0.27 | 60,64,69,71                 | 0     |
| 35  | CL   | K     | 8501 | 1/1   | 0.91 | 0.17 | 58,58,58,58                 | 0     |
| 34  | NA   | A     | 8370 | 1/1   | 0.91 | 0.32 | 52,52,52,52                 | 0     |
| 34  | NA   | A     | 8362 | 1/1   | 0.92 | 0.20 | 74,74,74,74                 | 0     |
| 32  | MG   | A     | 8041 | 1/1   | 0.92 | 0.17 | 55,55,55,55                 | 0     |
| 33  | K    | A     | 8202 | 1/1   | 0.92 | 0.15 | 89,89,89,89                 | 0     |
| 34  | NA   | J     | 8309 | 1/1   | 0.92 | 0.18 | 42,42,42,42                 | 0     |
| 32  | MG   | A     | 8104 | 1/1   | 0.92 | 0.20 | 52,52,52,52                 | 0     |
| 32  | MG   | A     | 8108 | 1/1   | 0.92 | 0.06 | 53,53,53,53                 | 0     |
| 35  | CL   | Z     | 8520 | 1/1   | 0.92 | 0.15 | 35,35,35,35                 | 0     |
| 34  | NA   | A     | 8331 | 1/1   | 0.92 | 0.15 | 76,76,76,76                 | 0     |
| 32  | MG   | A     | 8016 | 1/1   | 0.92 | 0.13 | 36,36,36,36                 | 0     |
| 34  | NA   | A     | 8306 | 1/1   | 0.92 | 0.62 | 44,44,44,44                 | 0     |
| 34  | NA   | A     | 8324 | 1/1   | 0.92 | 0.25 | 51,51,51,51                 | 0     |

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| Mol | Type | Chain | Res  | Atoms | RSCC | RSR  | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|------|-------|------|------|-----------------------------|-------|
| 32  | MG   | A     | 8082 | 1/1   | 0.93 | 0.16 | 56,56,56,56                 | 0     |
| 32  | MG   | A     | 8027 | 1/1   | 0.93 | 0.05 | 54,54,54,54                 | 0     |
| 35  | CL   | K     | 8521 | 1/1   | 0.93 | 0.24 | 60,60,60,60                 | 0     |
| 32  | MG   | A     | 8106 | 1/1   | 0.93 | 0.20 | 76,76,76,76                 | 0     |
| 32  | MG   | A     | 8094 | 1/1   | 0.93 | 0.17 | 65,65,65,65                 | 0     |
| 32  | MG   | A     | 8096 | 1/1   | 0.93 | 0.07 | 51,51,51,51                 | 0     |
| 32  | MG   | A     | 8059 | 1/1   | 0.93 | 0.10 | 47,47,47,47                 | 0     |
| 32  | MG   | 4     | 8078 | 1/1   | 0.93 | 0.19 | 74,74,74,74                 | 0     |
| 34  | NA   | A     | 8333 | 1/1   | 0.93 | 0.08 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8063 | 1/1   | 0.93 | 0.11 | 85,85,85,85                 | 0     |
| 34  | NA   | A     | 8336 | 1/1   | 0.93 | 0.10 | 49,49,49,49                 | 0     |
| 34  | NA   | M     | 8380 | 1/1   | 0.93 | 0.17 | 65,65,65,65                 | 0     |
| 32  | MG   | A     | 8090 | 1/1   | 0.93 | 0.19 | 70,70,70,70                 | 0     |
| 34  | NA   | A     | 8325 | 1/1   | 0.94 | 0.25 | 40,40,40,40                 | 0     |
| 34  | NA   | A     | 8359 | 1/1   | 0.94 | 0.45 | 60,60,60,60                 | 0     |
| 34  | NA   | A     | 8361 | 1/1   | 0.94 | 0.45 | 62,62,62,62                 | 0     |
| 32  | MG   | A     | 8077 | 1/1   | 0.94 | 0.06 | 32,32,32,32                 | 0     |
| 32  | MG   | A     | 8079 | 1/1   | 0.94 | 0.07 | 48,48,48,48                 | 0     |
| 32  | MG   | A     | 8043 | 1/1   | 0.94 | 0.10 | 32,32,32,32                 | 0     |
| 32  | MG   | A     | 8056 | 1/1   | 0.94 | 0.15 | 56,56,56,56                 | 0     |
| 34  | NA   | A     | 8330 | 1/1   | 0.94 | 0.20 | 35,35,35,35                 | 0     |
| 32  | MG   | A     | 8057 | 1/1   | 0.94 | 0.17 | 46,46,46,46                 | 0     |
| 35  | CL   | A     | 8514 | 1/1   | 0.94 | 0.27 | 50,50,50,50                 | 0     |
| 32  | MG   | A     | 8010 | 1/1   | 0.94 | 0.05 | 30,30,30,30                 | 0     |
| 32  | MG   | A     | 8062 | 1/1   | 0.94 | 0.14 | 49,49,49,49                 | 0     |
| 34  | NA   | A     | 8334 | 1/1   | 0.94 | 0.09 | 46,46,46,46                 | 0     |
| 32  | MG   | A     | 8013 | 1/1   | 0.94 | 0.11 | 42,42,42,42                 | 0     |
| 32  | MG   | A     | 8035 | 1/1   | 0.94 | 0.06 | 48,48,48,48                 | 0     |
| 34  | NA   | A     | 8339 | 1/1   | 0.94 | 0.09 | 30,30,30,30                 | 0     |
| 32  | MG   | A     | 8066 | 1/1   | 0.94 | 0.16 | 65,65,65,65                 | 0     |
| 32  | MG   | A     | 8008 | 1/1   | 0.94 | 0.08 | 42,42,42,42                 | 0     |
| 34  | NA   | A     | 8342 | 1/1   | 0.94 | 0.14 | 28,28,28,28                 | 0     |
| 34  | NA   | A     | 8344 | 1/1   | 0.94 | 0.07 | 27,27,27,27                 | 0     |
| 34  | NA   | A     | 8349 | 1/1   | 0.94 | 0.23 | 67,67,67,67                 | 0     |
| 34  | NA   | A     | 8350 | 1/1   | 0.94 | 0.16 | 37,37,37,37                 | 0     |
| 34  | NA   | A     | 8313 | 1/1   | 0.94 | 0.10 | 74,74,74,74                 | 0     |
| 32  | MG   | A     | 8075 | 1/1   | 0.94 | 0.12 | 45,45,45,45                 | 0     |
| 32  | MG   | A     | 8100 | 1/1   | 0.94 | 0.14 | 79,79,79,79                 | 0     |
| 34  | NA   | A     | 8321 | 1/1   | 0.94 | 0.42 | 48,48,48,48                 | 0     |
| 37  | CD   | P     | 8405 | 1/1   | 0.94 | 0.07 | 89,89,89,89                 | 0     |
| 34  | NA   | A     | 8323 | 1/1   | 0.94 | 0.22 | 45,45,45,45                 | 0     |
| 32  | MG   | A     | 8042 | 1/1   | 0.94 | 0.17 | 34,34,34,34                 | 0     |

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| Mol | Type | Chain | Res  | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|------|-------|------|------|----------------------------|-------|
| 32  | MG   | A     | 8070 | 1/1   | 0.95 | 0.78 | 69,69,69,69                | 0     |
| 32  | MG   | A     | 8052 | 1/1   | 0.95 | 0.08 | 51,51,51,51                | 0     |
| 32  | MG   | A     | 8030 | 1/1   | 0.95 | 0.12 | 34,34,34,34                | 0     |
| 34  | NA   | A     | 8314 | 1/1   | 0.95 | 0.10 | 43,43,43,43                | 0     |
| 32  | MG   | A     | 8097 | 1/1   | 0.95 | 0.20 | 32,32,32,32                | 0     |
| 34  | NA   | C     | 8345 | 1/1   | 0.95 | 0.12 | 35,35,35,35                | 0     |
| 34  | NA   | A     | 8317 | 1/1   | 0.95 | 0.06 | 32,32,32,32                | 0     |
| 32  | MG   | A     | 8044 | 1/1   | 0.95 | 0.15 | 54,54,54,54                | 0     |
| 34  | NA   | A     | 8320 | 1/1   | 0.95 | 0.23 | 42,42,42,42                | 0     |
| 32  | MG   | A     | 8034 | 1/1   | 0.95 | 0.05 | 36,36,36,36                | 0     |
| 32  | MG   | A     | 8004 | 1/1   | 0.95 | 0.07 | 53,53,53,53                | 0     |
| 32  | MG   | A     | 8081 | 1/1   | 0.95 | 0.08 | 39,39,39,39                | 0     |
| 32  | MG   | A     | 8060 | 1/1   | 0.95 | 0.19 | 44,44,44,44                | 0     |
| 32  | MG   | A     | 8039 | 1/1   | 0.95 | 0.05 | 51,51,51,51                | 0     |
| 32  | MG   | A     | 8087 | 1/1   | 0.95 | 0.09 | 49,49,49,49                | 0     |
| 32  | MG   | A     | 8018 | 1/1   | 0.95 | 0.08 | 42,42,42,42                | 0     |
| 34  | NA   | U     | 8343 | 1/1   | 0.95 | 0.09 | 27,27,27,27                | 0     |
| 32  | MG   | A     | 8050 | 1/1   | 0.95 | 0.10 | 52,52,52,52                | 0     |
| 32  | MG   | A     | 8029 | 1/1   | 0.95 | 0.10 | 38,38,38,38                | 0     |
| 32  | MG   | A     | 8068 | 1/1   | 0.95 | 0.11 | 46,46,46,46                | 0     |
| 32  | MG   | C     | 8065 | 1/1   | 0.96 | 0.13 | 68,68,68,68                | 0     |
| 34  | NA   | A     | 8367 | 1/1   | 0.96 | 0.14 | 43,43,43,43                | 0     |
| 32  | MG   | A     | 8040 | 1/1   | 0.96 | 0.13 | 100,100,100,100            | 0     |
| 32  | MG   | A     | 8028 | 1/1   | 0.96 | 0.07 | 37,37,37,37                | 0     |
| 32  | MG   | A     | 8067 | 1/1   | 0.96 | 0.14 | 41,41,41,41                | 0     |
| 32  | MG   | A     | 8061 | 1/1   | 0.96 | 0.06 | 45,45,45,45                | 0     |
| 34  | NA   | A     | 8360 | 1/1   | 0.96 | 0.73 | 61,61,61,61                | 0     |
| 35  | CL   | A     | 8513 | 1/1   | 0.96 | 0.12 | 56,56,56,56                | 0     |
| 35  | CL   | Z     | 8517 | 1/1   | 0.96 | 0.31 | 61,61,61,61                | 0     |
| 32  | MG   | A     | 8091 | 1/1   | 0.96 | 0.10 | 67,67,67,67                | 0     |
| 32  | MG   | A     | 8023 | 1/1   | 0.96 | 0.12 | 45,45,45,45                | 0     |
| 32  | MG   | A     | 8058 | 1/1   | 0.96 | 0.08 | 39,39,39,39                | 0     |
| 32  | MG   | A     | 8072 | 1/1   | 0.96 | 0.07 | 53,53,53,53                | 0     |
| 37  | CD   | V     | 8401 | 1/1   | 0.96 | 0.15 | 129,129,129,129            | 0     |
| 34  | NA   | A     | 8379 | 1/1   | 0.96 | 0.24 | 48,48,48,48                | 0     |
| 34  | NA   | A     | 8338 | 1/1   | 0.96 | 0.09 | 44,44,44,44                | 0     |
| 32  | MG   | A     | 8111 | 1/1   | 0.97 | 0.07 | 61,61,61,61                | 0     |
| 32  | MG   | A     | 8083 | 1/1   | 0.97 | 0.08 | 37,37,37,37                | 0     |
| 35  | CL   | A     | 8512 | 1/1   | 0.97 | 0.10 | 31,31,31,31                | 0     |
| 32  | MG   | A     | 8021 | 1/1   | 0.97 | 0.11 | 32,32,32,32                | 0     |
| 32  | MG   | A     | 8022 | 1/1   | 0.97 | 0.05 | 32,32,32,32                | 0     |
| 34  | NA   | A     | 8318 | 1/1   | 0.97 | 0.28 | 43,43,43,43                | 0     |

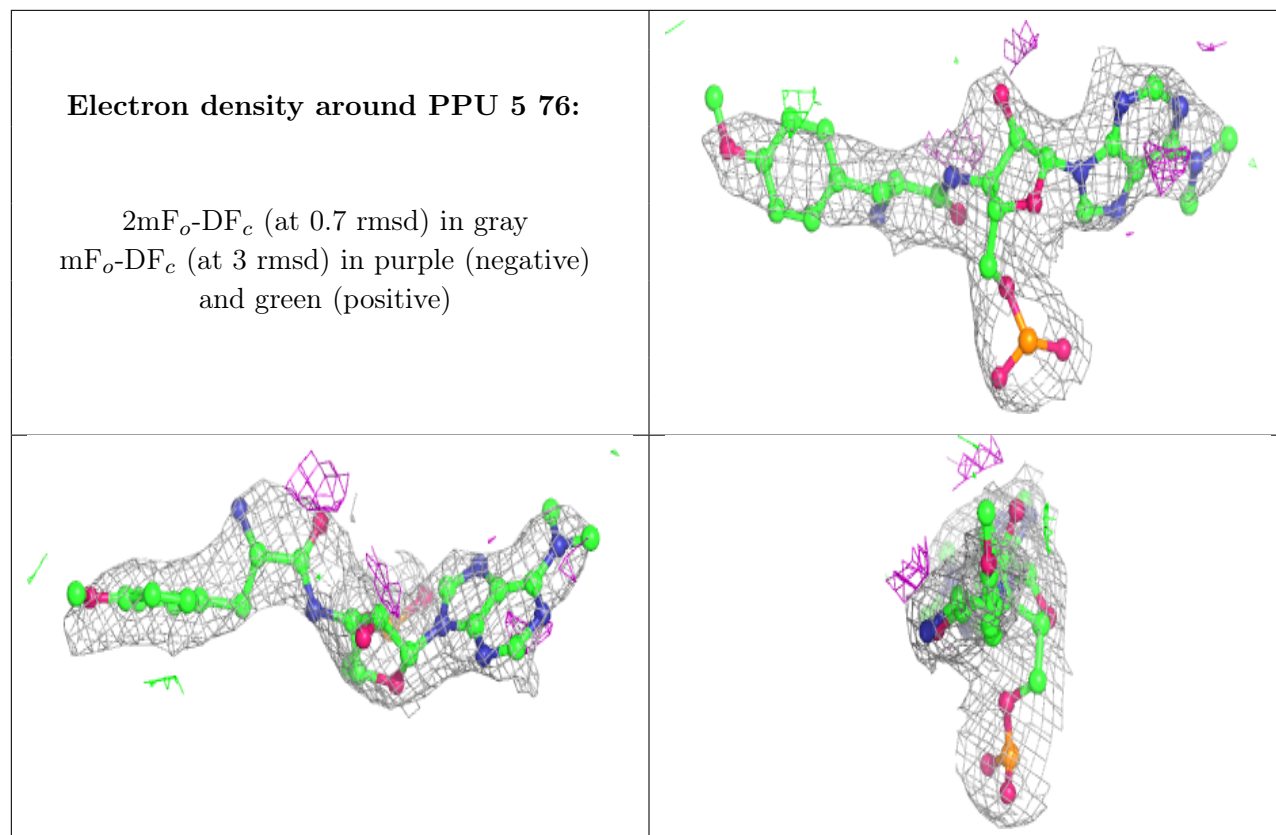
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| Mol | Type | Chain | Res  | Atoms | RSCC | RSR  | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|------|-------|------|------|-----------------------------|-------|
| 32  | MG   | A     | 8002 | 1/1   | 0.97 | 0.05 | 36,36,36,36                 | 0     |
| 32  | MG   | A     | 8009 | 1/1   | 0.97 | 0.06 | 32,32,32,32                 | 0     |
| 32  | MG   | A     | 8117 | 1/1   | 0.97 | 0.08 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8003 | 1/1   | 0.97 | 0.07 | 23,23,23,23                 | 0     |
| 32  | MG   | A     | 8012 | 1/1   | 0.97 | 0.10 | 44,44,44,44                 | 0     |
| 32  | MG   | A     | 8001 | 1/1   | 0.97 | 0.09 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8014 | 1/1   | 0.97 | 0.07 | 20,20,20,20                 | 0     |
| 32  | MG   | A     | 8048 | 1/1   | 0.97 | 0.07 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8031 | 1/1   | 0.97 | 0.04 | 32,32,32,32                 | 0     |
| 32  | MG   | A     | 8032 | 1/1   | 0.97 | 0.06 | 34,34,34,34                 | 0     |
| 33  | K    | A     | 8201 | 1/1   | 0.97 | 0.24 | 71,71,71,71                 | 0     |
| 32  | MG   | A     | 8033 | 1/1   | 0.97 | 0.12 | 25,25,25,25                 | 0     |
| 32  | MG   | A     | 8074 | 1/1   | 0.97 | 0.05 | 42,42,42,42                 | 0     |
| 32  | MG   | A     | 8006 | 1/1   | 0.97 | 0.09 | 57,57,57,57                 | 0     |
| 32  | MG   | A     | 8017 | 1/1   | 0.97 | 0.05 | 35,35,35,35                 | 0     |
| 32  | MG   | A     | 8054 | 1/1   | 0.97 | 0.06 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8037 | 1/1   | 0.97 | 0.09 | 43,43,43,43                 | 0     |
| 32  | MG   | A     | 8038 | 1/1   | 0.97 | 0.05 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8007 | 1/1   | 0.97 | 0.03 | 28,28,28,28                 | 0     |
| 32  | MG   | A     | 8110 | 1/1   | 0.97 | 0.07 | 30,30,30,30                 | 0     |
| 35  | CL   | P     | 8508 | 1/1   | 0.98 | 0.32 | 82,82,82,82                 | 0     |
| 32  | MG   | L     | 8069 | 1/1   | 0.98 | 0.09 | 81,81,81,81                 | 0     |
| 34  | NA   | A     | 8376 | 1/1   | 0.98 | 0.17 | 79,79,79,79                 | 0     |
| 32  | MG   | A     | 8020 | 1/1   | 0.98 | 0.05 | 46,46,46,46                 | 0     |
| 32  | MG   | A     | 8015 | 1/1   | 0.98 | 0.05 | 50,50,50,50                 | 0     |
| 34  | NA   | A     | 8315 | 1/1   | 0.98 | 0.16 | 43,43,43,43                 | 0     |
| 34  | NA   | A     | 8305 | 1/1   | 0.98 | 0.09 | 27,27,27,27                 | 0     |
| 32  | MG   | A     | 8098 | 1/1   | 0.98 | 0.18 | 33,33,33,33                 | 0     |
| 32  | MG   | A     | 8084 | 1/1   | 0.98 | 0.05 | 50,50,50,50                 | 0     |
| 32  | MG   | A     | 8036 | 1/1   | 0.98 | 0.06 | 38,38,38,38                 | 0     |
| 32  | MG   | A     | 8107 | 1/1   | 0.98 | 0.06 | 36,36,36,36                 | 0     |
| 32  | MG   | A     | 8011 | 1/1   | 0.99 | 0.13 | 24,24,24,24                 | 0     |
| 32  | MG   | A     | 8005 | 1/1   | 0.99 | 0.07 | 38,38,38,38                 | 0     |
| 32  | MG   | A     | 8086 | 1/1   | 0.99 | 0.09 | 49,49,49,49                 | 0     |
| 32  | MG   | A     | 8080 | 1/1   | 0.99 | 0.06 | 35,35,35,35                 | 0     |
| 32  | MG   | A     | 8025 | 1/1   | 0.99 | 0.06 | 40,40,40,40                 | 0     |
| 32  | MG   | A     | 8026 | 1/1   | 0.99 | 0.05 | 33,33,33,33                 | 0     |
| 37  | CD   | 2     | 8402 | 1/1   | 0.99 | 0.07 | 57,57,57,57                 | 0     |
| 32  | MG   | A     | 8019 | 1/1   | 0.99 | 0.07 | 30,30,30,30                 | 0     |

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different

orientation to approximate a three-dimensional view.



## 6.5 Other polymers [i](#)

There are no such residues in this entry.