



## Full wwPDB EM Validation Report ⓘ

Mar 5, 2026 – 03:57 PM UTC

PDB ID : 8EUI / pdb\_00008eui  
EMDB ID : EMD-24423  
Title : Ytm1 associated nascent 60S ribosome (-fkbp39) State 3  
Authors : Zhou, X.; Bilokapic, S.; Deshmukh, A.A.; Halic, M.  
Deposited on : 2022-10-18  
Resolution : 3.10 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

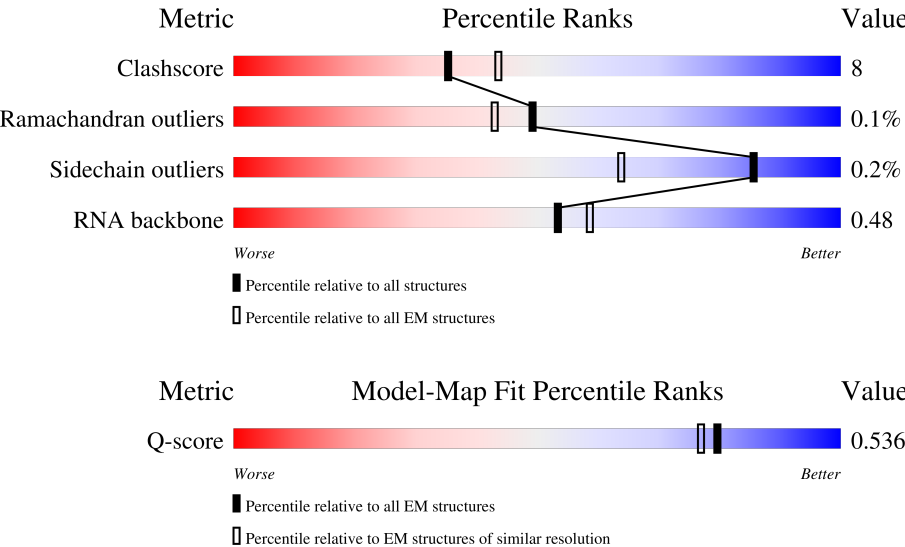
EMDB validation analysis : 0.0.1.dev132  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins)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

# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.10 Å.

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



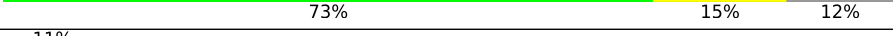
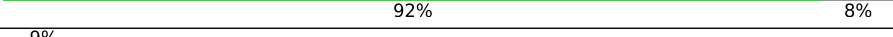
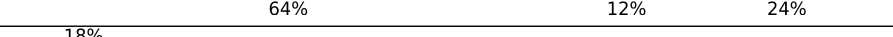
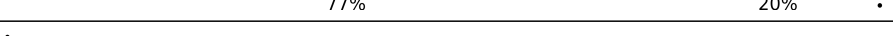
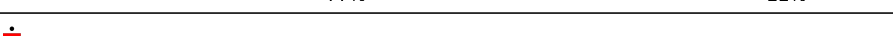
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 229148                      | 23984                       | -                                                        |
| Ramachandran outliers | 224038                      | 23583                       | -                                                        |
| Sidechain outliers    | 223484                      | 23102                       | -                                                        |
| RNA backbone          | 8273                        | 3508                        | -                                                        |
| Q-score               | -                           | 25397                       | 14724 ( 2.60 - 3.60 )                                    |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | 1     | 3498   |                  |
| 2   | 2     | 165    |                  |
| 3   | 3     | 302    |                  |

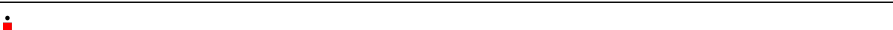
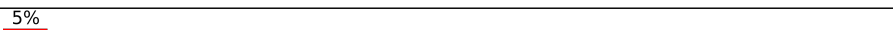
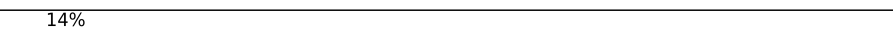
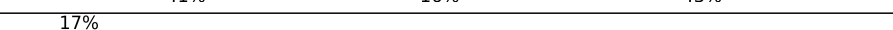
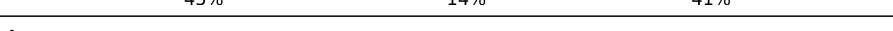
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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 4   | 8     | 51     |    |
| 5   | 9     | 229    |    |
| 6   | A     | 253    |    |
| 7   | B     | 388    |    |
| 8   | C     | 363    |    |
| 9   | D     | 294    |    |
| 10  | E     | 195    |    |
| 11  | F     | 250    |    |
| 12  | G     | 259    |    |
| 13  | H     | 190    |    |
| 14  | I     | 221    |    |
| 15  | J     | 174    |   |
| 16  | K     | 94     |  |
| 17  | L     | 208    |  |
| 18  | M     | 134    |  |
| 19  | N     | 201    |  |
| 20  | O     | 197    |  |
| 21  | P     | 187    |  |
| 22  | Q     | 187    |  |
| 23  | R     | 193    |  |
| 24  | S     | 176    |  |
| 25  | T     | 160    |  |
| 26  | U     | 117    |  |
| 27  | V     | 139    |  |
| 28  | X     | 141    |  |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 29  | Y     | 126    |    |
| 30  | Z     | 136    |    |
| 31  | a     | 148    |    |
| 32  | b     | 61     |    |
| 33  | c     | 117    |    |
| 34  | d     | 113    |    |
| 35  | e     | 127    |    |
| 36  | f     | 108    |    |
| 37  | g     | 112    |    |
| 38  | h     | 122    |    |
| 39  | i     | 99     |    |
| 40  | j     | 91     |    |
| 41  | k     | 74     |  |
| 42  | m     | 740    |  |
| 43  | n     | 607    |  |
| 44  | o     | 106    |  |
| 45  | p     | 440    |  |
| 46  | u     | 192    |  |

## 2 Entry composition [i](#)

There are 47 unique types of molecules in this entry. The entry contains 122892 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called RNA (2863-MER).

| Mol | Chain | Residues | Atoms |       |       |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| 1   | 1     | 2855     | Total | C     | N     | O     | P    | 0       | 0     |
|     |       |          | 61093 | 27299 | 11065 | 19874 | 2855 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference    |
|-------|---------|----------|--------|----------|--------------|
| 1     | 1746    | C        | U      | conflict | GB 157310483 |
| 1     | 2185    | U        | C      | conflict | GB 157310483 |

- Molecule 2 is a RNA chain called RNA (152-MER).

| Mol | Chain | Residues | Atoms |      |     |      |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|-----|---------|-------|
| 2   | 2     | 158      | Total | C    | N   | O    | P   | 0       | 0     |
|     |       |          | 3354  | 1501 | 588 | 1107 | 158 |         |       |

- Molecule 3 is a protein called Protein mak16.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 3   | 3     | 123      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1042  | 657 | 199 | 180 | 6 |         |       |

- Molecule 4 is a protein called 60S ribosomal protein L39.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 4   | 8     | 50       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 437   | 273 | 98 | 65 | 1 |         |       |

- Molecule 5 is a RNA chain called RNA (118-MER).

| Mol | Chain | Residues | Atoms |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 5   | 9     | 118      | Total | C    | N   | O   | P   | 0       | 0     |
|     |       |          | 2519  | 1124 | 452 | 825 | 118 |         |       |

- Molecule 6 is a protein called 60S ribosomal protein L2-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 6   | A     | 245      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1858  | 1158 | 374 | 321 | 5 |         |       |

- Molecule 7 is a protein called 60S ribosomal protein L3-A.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 7   | B     | 377      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3003  | 1901 | 567 | 525 | 10 |         |       |

- Molecule 8 is a protein called 60S ribosomal protein L4-B.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 8   | C     | 359      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2795  | 1765 | 536 | 491 | 3 |         |       |

- Molecule 9 is a protein called 60S ribosomal protein L5-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 9   | D     | 284      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2287  | 1447 | 406 | 430 | 4 |         |       |

- Molecule 10 is a protein called 60S ribosomal protein L6.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 10  | E     | 183      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1415  | 907 | 259 | 245 | 4 |         |       |

- Molecule 11 is a protein called 60S ribosomal protein L7-B.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 11  | F     | 214      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1745  | 1124 | 320 | 298 | 3 |         |       |

- Molecule 12 is a protein called 60S ribosomal protein L8.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 12  | G     | 229      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1804  | 1154 | 332 | 315 | 3 |         |       |

- Molecule 13 is a protein called 60S ribosomal protein L9-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 13  | H     | 175      | Total | C   | N   | O   |         |       |
|     |       |          | 862   | 512 | 175 | 175 | 0       | 0     |

- Molecule 14 is a protein called 60S ribosomal protein L10-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 14  | I     | 168      | Total | C   | N   | O   | S |         |       |
|     |       |          | 1354  | 858 | 251 | 240 | 5 | 0       | 0     |

- Molecule 15 is a protein called 60S ribosomal protein L11-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | J     | 169      | Total | C   | N   | O   | S |         |       |
|     |       |          | 1359  | 860 | 255 | 239 | 5 | 0       | 0     |

- Molecule 16 is a protein called 60S ribosomal protein L43-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16  | K     | 90       | Total | C   | N   | O   | S |         |       |
|     |       |          | 695   | 428 | 144 | 117 | 6 | 0       | 0     |

- Molecule 17 is a protein called 60S ribosomal protein L13.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 17  | L     | 202      | Total | C    | N   | O   | S |         |       |
|     |       |          | 1612  | 1008 | 321 | 282 | 1 | 0       | 0     |

- Molecule 18 is a protein called 60S ribosomal protein L14.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 18  | M     | 125      | Total | C   | N   | O   | S |         |       |
|     |       |          | 1007  | 644 | 191 | 168 | 4 | 0       | 0     |

- Molecule 19 is a protein called 60S ribosomal protein L15-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 19  | N     | 200      | Total | C    | N   | O   | S |         |       |
|     |       |          | 1676  | 1050 | 348 | 275 | 3 | 0       | 0     |

- Molecule 20 is a protein called 60S ribosomal protein L16-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20  | O     | 196      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1557  | 999 | 297 | 257 | 4 |         |       |

- Molecule 21 is a protein called 60S ribosomal protein L17-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21  | P     | 173      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1369  | 865 | 264 | 237 | 3 |         |       |

- Molecule 22 is a protein called 60S ribosomal protein L18-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 22  | Q     | 186      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1487  | 934 | 300 | 252 | 1 |         |       |

- Molecule 23 is a protein called 60S ribosomal protein L19-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 23  | R     | 149      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1229  | 765 | 261 | 198 | 5 |         |       |

- Molecule 24 is a protein called 60S ribosomal protein L20-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 24  | S     | 168      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1408  | 909 | 263 | 231 | 5 |         |       |

- Molecule 25 is a protein called 60S ribosomal protein L21-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 25  | T     | 159      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1289  | 812 | 248 | 226 | 3 |         |       |

- Molecule 26 is a protein called 60S ribosomal protein L22.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 26  | U     | 98       | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 791   | 513 | 137 | 141 |         |       |

- Molecule 27 is a protein called 60S ribosomal protein L23-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 27  | V     | 136      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1015  | 638 | 189 | 180 | 8 |         |       |

- Molecule 28 is a protein called 60S ribosomal protein L25-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 28  | X     | 117      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 939   | 599 | 173 | 166 | 1 |         |       |

- Molecule 29 is a protein called 60S ribosomal protein L26.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 29  | Y     | 125      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 998   | 622 | 201 | 173 | 2 |         |       |

- Molecule 30 is a protein called 60S ribosomal protein L27-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 30  | Z     | 134      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1072  | 693 | 199 | 178 | 2 |         |       |

- Molecule 31 is a protein called 60S ribosomal protein L28-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 31  | a     | 147      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1169  | 740 | 235 | 192 | 2 |         |       |

- Molecule 32 is a protein called 60S ribosomal protein L29.

| Mol | Chain | Residues | Atoms |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---------|-------|
| 32  | b     | 56       | Total | C   | N   | O  | 0       | 0     |
|     |       |          | 471   | 284 | 107 | 80 |         |       |

- Molecule 33 is a protein called 60S ribosomal protein L30-2.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 33  | c     | 95       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 712   | 453 | 124 | 131 | 4 |         |       |

- Molecule 34 is a protein called 60S ribosomal protein L31.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 34  | d     | 97       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 810   | 512 | 159 | 136 | 3 |         |       |

- Molecule 35 is a protein called 60S ribosomal protein L32-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 35  | e     | 117      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 939   | 588 | 190 | 156 | 5 |         |       |

- Molecule 36 is a protein called 60S ribosomal protein L33-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 36  | f     | 106      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 839   | 534 | 162 | 140 | 3 |         |       |

- Molecule 37 is a protein called 60S ribosomal protein L34-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 37  | g     | 106      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 861   | 540 | 177 | 142 | 2 |         |       |

- Molecule 38 is a protein called 60S ribosomal protein L35.

| Mol | Chain | Residues | Atoms |     |     |     |  | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|--|---------|-------|
| 38  | h     | 121      | Total | C   | N   | O   |  | 0       | 0     |
|     |       |          | 999   | 629 | 194 | 176 |  |         |       |

- Molecule 39 is a protein called 60S ribosomal protein L36-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 39  | i     | 96       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 767   | 478 | 160 | 128 | 1 |         |       |

- Molecule 40 is a protein called 60S ribosomal protein L37-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 40  | j     | 83       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 657   | 402 | 141 | 107 | 7 |         |       |

- Molecule 41 is a protein called 60S ribosomal protein L38-1.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 41  | k     | 70       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 564   | 357 | 104 | 102 | 1 |         |       |

- Molecule 42 is a protein called Ribosome biogenesis protein erb1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 42  | m     | 425      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3376  | 2168 | 592 | 605 | 11 |         |       |

- Molecule 43 is a protein called Pescadillo homolog.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 43  | n     | 361      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2966  | 1933 | 511 | 510 | 12 |         |       |

- Molecule 44 is a protein called 60S ribosomal protein L42.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 44  | o     | 98       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 796   | 502 | 159 | 130 | 5 |         |       |

- Molecule 45 is a protein called Ribosome biogenesis protein ytm1.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 45  | p     | 284      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1401  | 833 | 284 | 284 |         |       |

- Molecule 46 is a protein called Ribosome biogenesis protein rlp24.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 46  | u     | 59       | Total | C   | N   | O  | S | 0       | 0     |
|     |       |          | 493   | 315 | 100 | 72 | 6 |         |       |

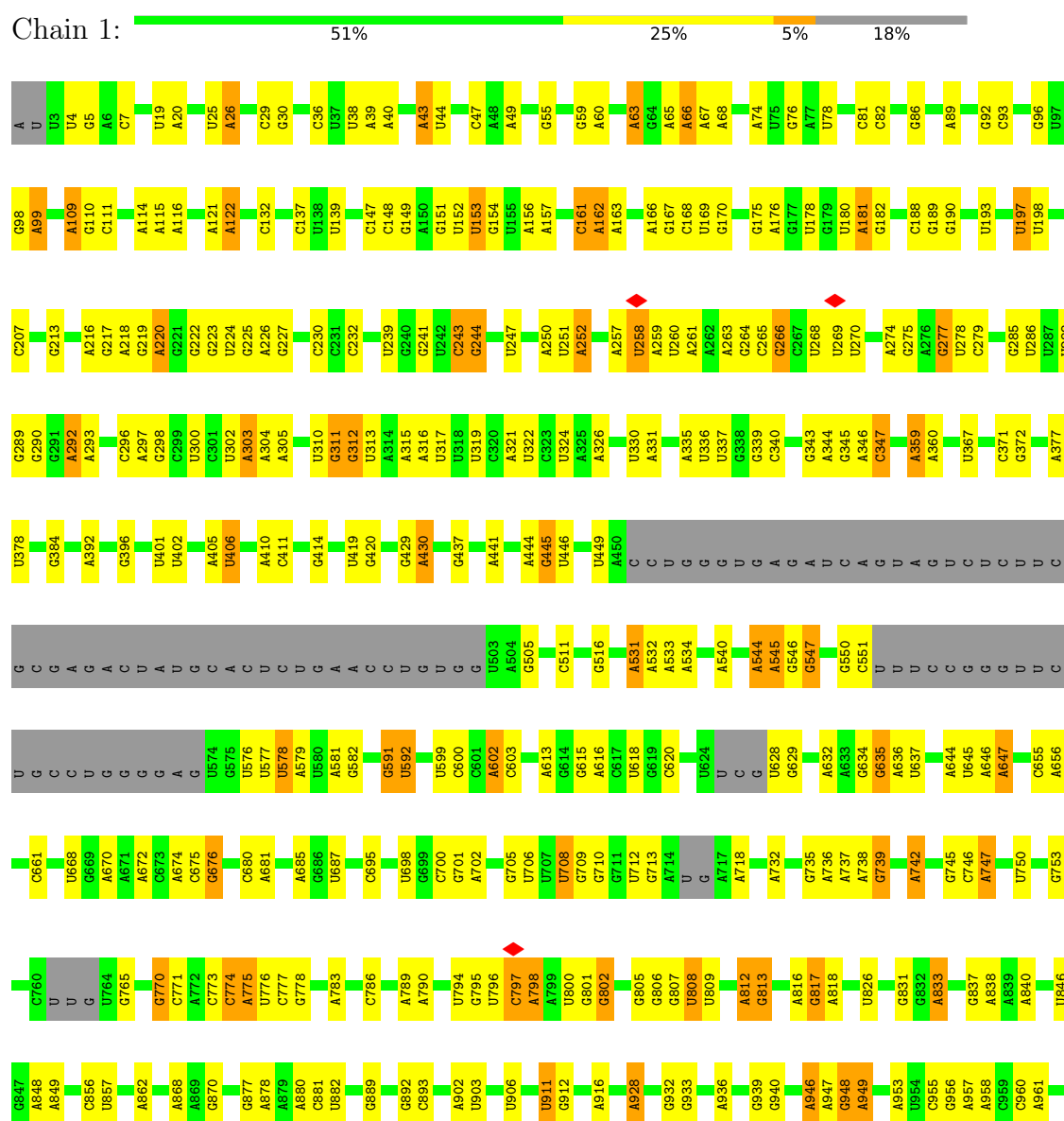
- Molecule 47 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 47  | j     | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |

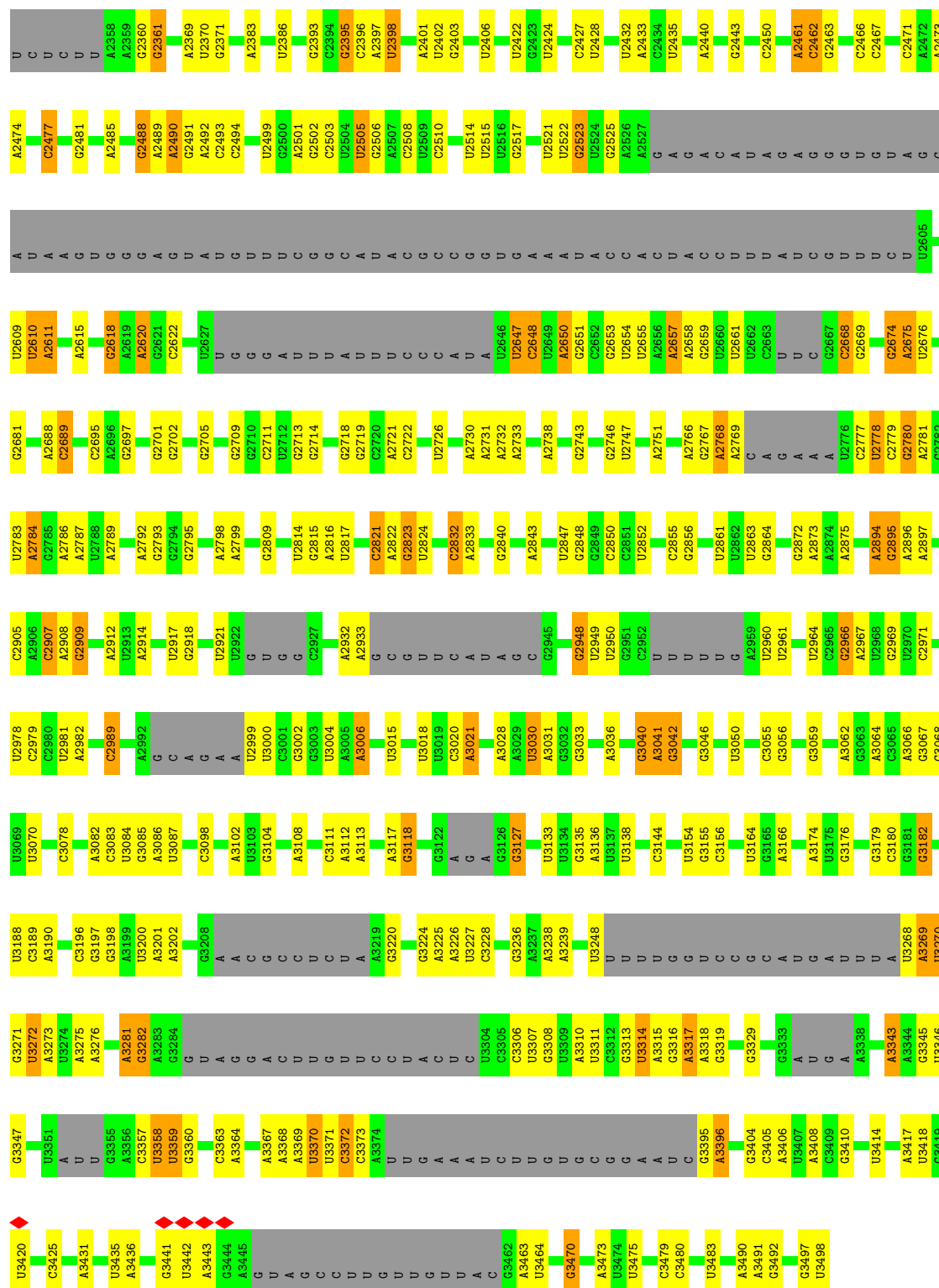
### 3 Residue-property plots

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

#### • Molecule 1: RNA (2863-MER)

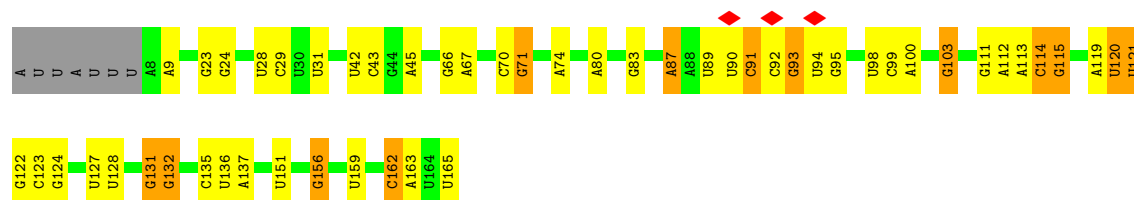


|       |       |       |       |       |       |       |       |   |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|---|-------|-------|-------|
| A2183 | G2204 | G1903 | U1818 | U1722 | C     | G1517 | U1402 | C | U1156 | A     | A965  |
| A2188 | U2005 | C1904 | G1819 | U1723 | C     | G1521 | G1408 | C | G1157 | G     | A968  |
| C2189 | U     | A1905 | G1820 | U1724 | U1617 | G1521 | G     | U | U1158 | A     | G969  |
| U2190 | U     | G1821 | G1821 | U     | A1618 | G1526 | G1414 | C | A1160 | A     | C970  |
| U2191 | U     | C1829 | G1829 | U1728 | A1622 | G1526 | G1417 | C | A1161 | U     | U971  |
| A2195 | U     | G1834 | G1834 | A1739 | A1623 | G1527 | G     | A | G1162 | U     | C976  |
| C2196 | C     | U1835 | U1835 | U     | A1624 | U1528 | G1421 | A | A1166 | C     | C981  |
| U2197 | C     | G1836 | G1836 | U     | G1627 | C1531 | U1422 | G | G1171 | C     | C982  |
| C2198 | U     | U1837 | U1837 | G     | A1628 | U1532 | G1423 | A | A1174 | A     | G985  |
| G2199 | U     | A1838 | A1838 | A     | A1629 | U1533 | A1424 | C | U1175 | C     | U986  |
| U2200 | U     | A1839 | A1839 | C     | U1639 | G1534 | C1425 | A | A1177 | A     | G985  |
| C2201 | G     | U1842 | U1842 | C1746 | A1640 | U1535 | G1426 | C | A1178 | A     | U986  |
| C2202 | G     | C1843 | C1843 | U1751 | A1644 | G1536 | A1427 | G | U1179 | A1063 | C989  |
| G2203 | C     | U1844 | U1844 | U     | C1644 | A1537 | U1433 | G | A1184 | U1073 | C990  |
| A2204 | U     | A1845 | A1845 | A1764 | C1645 | A1538 | G1434 | U | A1185 | A1079 | C991  |
| C2205 | U     | G1848 | G1848 | A1765 | G1649 | G1541 | U1438 | C | C1187 | A1080 | U992  |
| U2206 | U     | U1852 | U1852 | U1766 | C1655 | C1542 | G     | C | G1188 | C1081 | C993  |
| A2207 | G     | G1852 | G1852 | U1767 | U1655 | A1543 | A1441 | C | A1189 | A1085 | A994  |
| C2208 | C     | A     | A     | U1768 | C1655 | G1544 | A1441 | A | A1190 | A     | G995  |
| G2209 | C     | U1852 | U1852 | U1769 | A1660 | G1547 | C1444 | U | A1200 | A1094 | G996  |
| U2210 | C     | G     | G     | C1765 | A1664 | G1547 | C1444 | G | A1201 | A1095 | A997  |
| A2214 | U     | U1852 | U1852 | U1766 | A1664 | G1547 | C1444 | G | G1202 | A1096 | A1002 |
| U2215 | U     | U1852 | U1852 | U1766 | A1664 | G1547 | C1444 | G | G1203 | C1097 | G1003 |
| A2219 | C     | C1940 | C1940 | A1769 | A1665 | U1560 | A1452 | A | G1204 | A1004 | A1004 |
| U2225 | G     | A1941 | A1941 | G1770 | C1666 | C1561 | A1453 | A | G1205 | U1102 | A1005 |
| A2226 | C     | G1944 | G1944 | C     | A1667 | A1571 | G1456 | C | G1209 | U1103 | A1006 |
| U2227 | C     | G1944 | G1944 | U1778 | C1668 | G1572 | G1457 | C | A1210 | C1007 | C1007 |
| A2228 | G     | U1952 | U1952 | U1779 | G1669 | A1573 | C1458 | G | A1211 | U1108 | U1008 |
| U2229 | U     | C1952 | C1952 | G1780 | G1670 | A1577 | U1459 | A | U1212 | A1112 | C1009 |
| C2230 | C     | U1952 | U1952 | G1781 | C1674 | G1577 | G1465 | U | U1219 | U1113 | G1010 |
| A2231 | C     | G1952 | G1952 | U1786 | C1674 | G1581 | C1466 | C | U1222 | A1117 | A1012 |
| U2232 | C     | U1952 | U1952 | U1787 | A1677 | G1581 | A1467 | C | G1223 | G1118 | U1013 |
| C2233 | C     | C1952 | C1952 | G1788 | A1678 | U1587 | G1468 | G | A1231 | G1119 | U1017 |
| U2234 | C     | U1952 | U1952 | A1789 | A1679 | A1588 | A1469 | C | G1232 | U1126 | A1024 |
| A2235 | C     | U1952 | U1952 | U1790 | A1683 | U1589 | U1489 | A | A1233 | U1127 | G1025 |
| U2236 | C     | U1871 | U1871 | G1791 | A1683 | G1590 | C1471 | U | A1234 | G1128 | G1026 |
| C2237 | C     | U1872 | U1872 | A1792 | A1683 | G1590 | C1471 | A | A1235 | G1129 | U1027 |
| U2238 | C     | U1873 | U1873 | U1795 | A1691 | G1594 | G1477 | G | A1236 | A1034 | A1034 |
| A2243 | C     | U1874 | U1874 | U1795 | C1692 | U     | G     | C | G1237 | G1133 | A1035 |
| G2244 | C     | U1875 | U1875 | G1800 | C1693 | U     | G     | A | G1238 | A1134 | G1042 |
| A2246 | C     | U1876 | U1876 | C     | U1694 | G1597 | G1484 | G | U1239 | G1135 | U1046 |
| C2251 | C     | A1880 | A1880 | U     | C1695 | C1600 | A1487 | C | G1240 | U1139 | C     |
| U2256 | C     | G1885 | G1885 | U     | G1696 | G1601 | U1489 | U | U1241 | C1141 | U     |
| G2257 | C     | A1890 | A1890 | A     | G1697 | A1602 | A1490 | G | U1242 | G1146 | G     |
| C2259 | C     | C1891 | C1891 | G1807 | G1701 | U1603 | A1499 | U | A1243 | G1147 | G     |
| U2260 | C     | U1897 | U1897 | U     | A1702 | U1604 | G1500 | A | G1243 | G1148 | A     |
| A2264 | C     | A1897 | A1897 | A1811 | G1710 | U1605 | C1503 | C | U1244 | U     | U     |
| G2265 | C     | C1899 | C1899 | A1812 | A1711 | U1606 | G1510 | A | U1245 | U     | U     |
| U2266 | C     | U1900 | U1900 | U1813 | A1712 | C1608 | A1515 | C | C1247 | U     | A     |
| A2266 | C     | A1902 | A1902 | G1816 | G1713 | G1609 | A1516 | C | A     | U     | A     |

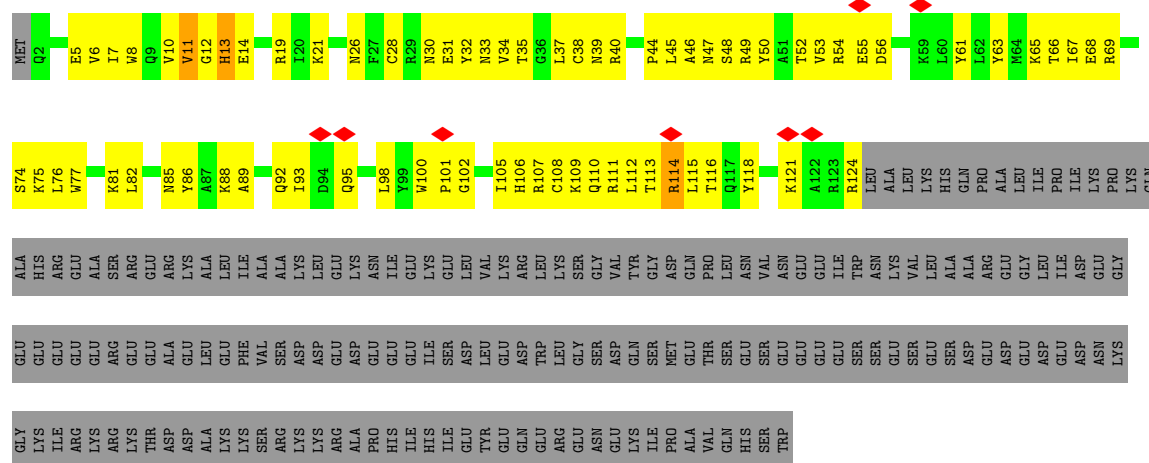


• Molecule 2: RNA (152-MER)

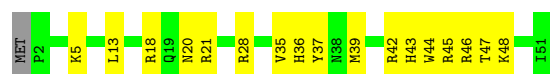
Chain 2: 64% 24% 8%



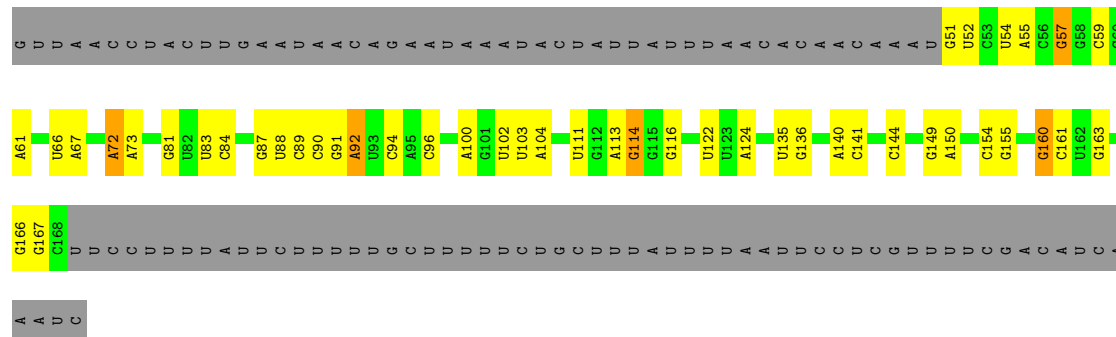
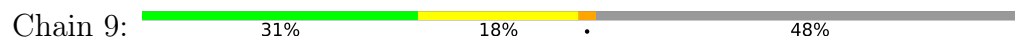
• Molecule 3: Protein mak16



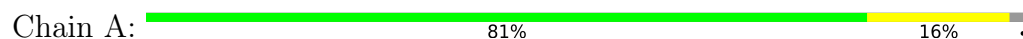
• Molecule 4: 60S ribosomal protein L39

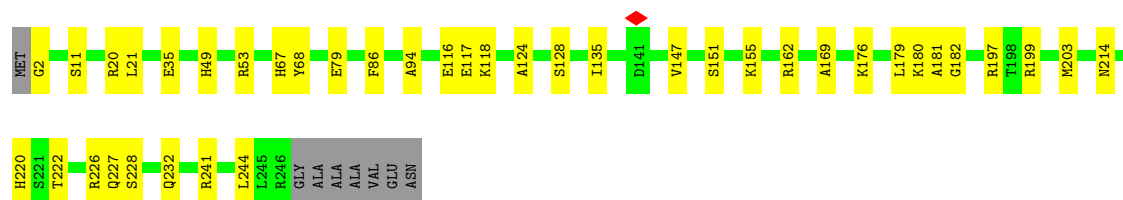


• Molecule 5: RNA (118-MER)



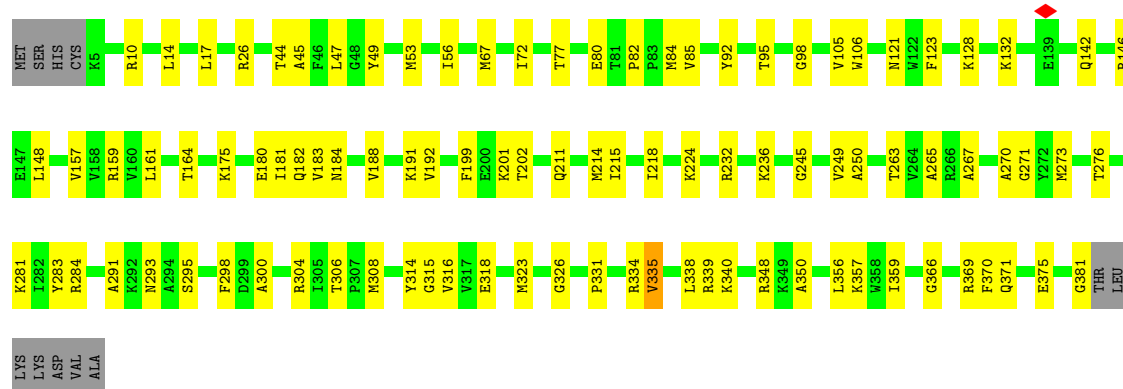
• Molecule 6: 60S ribosomal protein L2-A





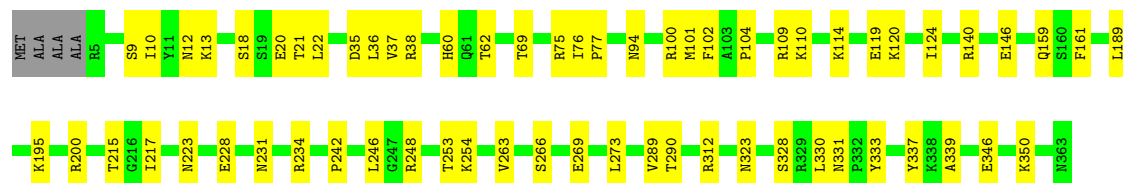
• Molecule 7: 60S ribosomal protein L3-A

Chain B: 72% 24% .



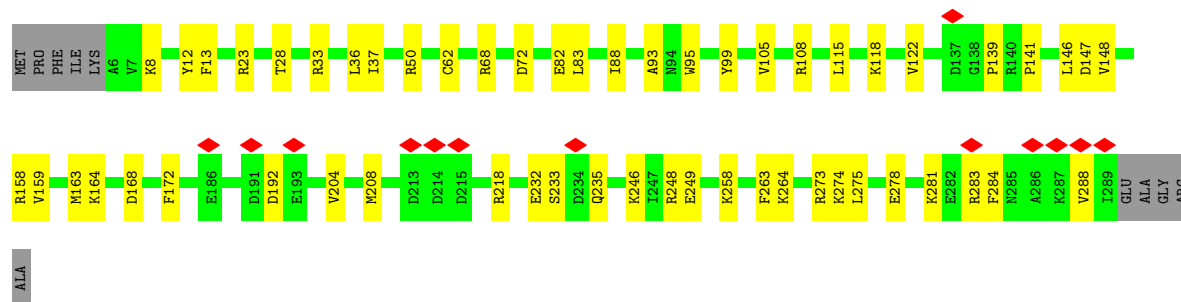
• Molecule 8: 60S ribosomal protein L4-B

Chain C: 82% 17% .



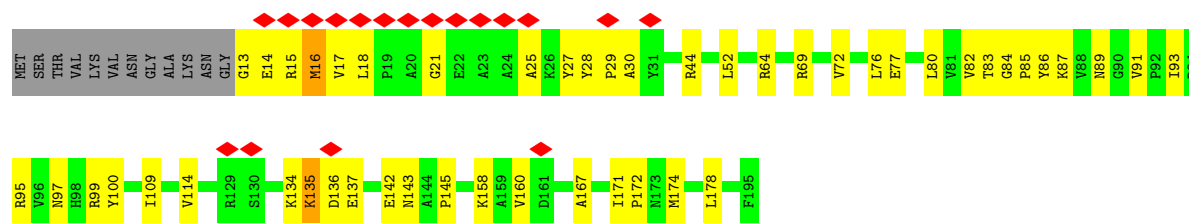
• Molecule 9: 60S ribosomal protein L5-A

Chain D: 78% 19% .



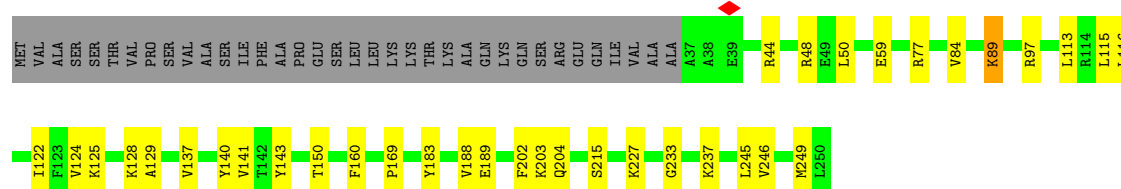
• Molecule 10: 60S ribosomal protein L6

Chain E: 9% 69% 24% 6% .



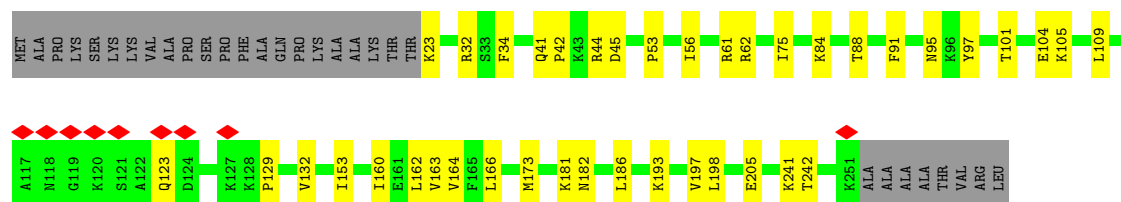
- Molecule 11: 60S ribosomal protein L7-B

Chain F: 71% 14% 14%



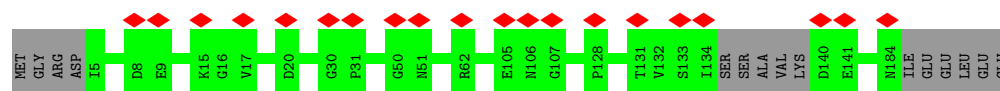
- Molecule 12: 60S ribosomal protein L8

Chain G: 73% 15% 12%



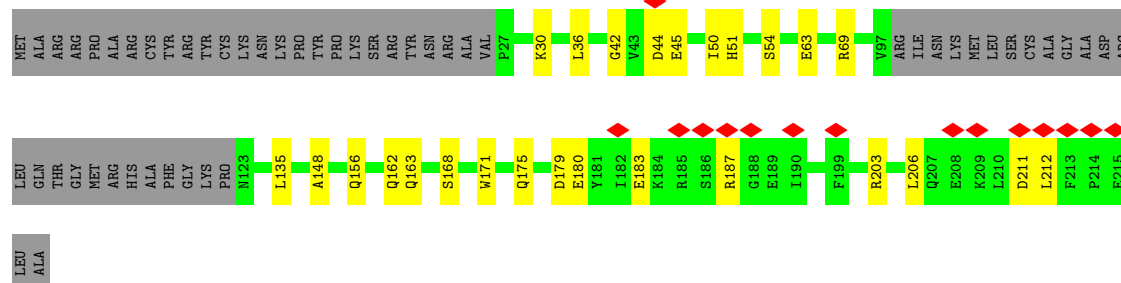
- Molecule 13: 60S ribosomal protein L9-A

Chain H: 11% 92% 8%

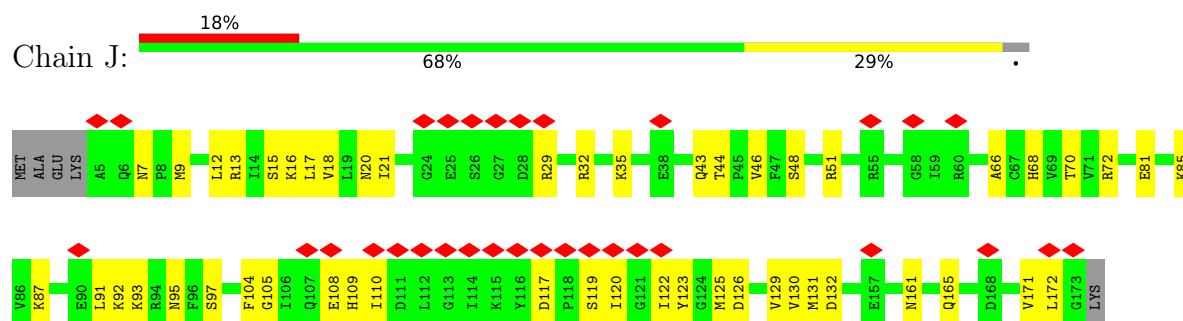


- Molecule 14: 60S ribosomal protein L10-A

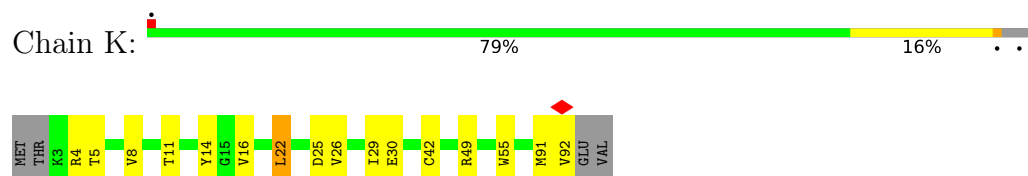
Chain I: 9% 64% 12% 24%



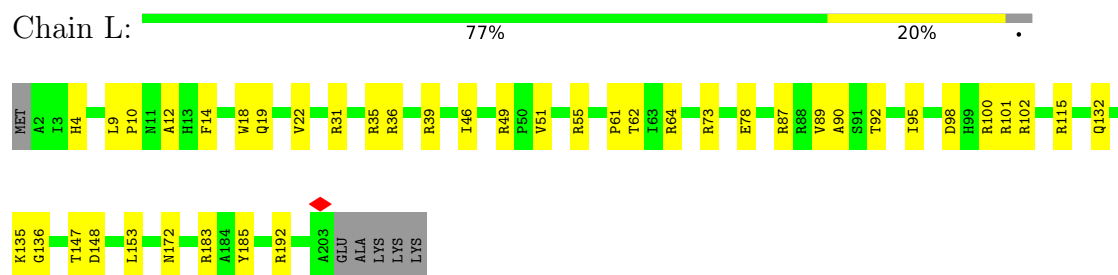
- Molecule 15: 60S ribosomal protein L11-A



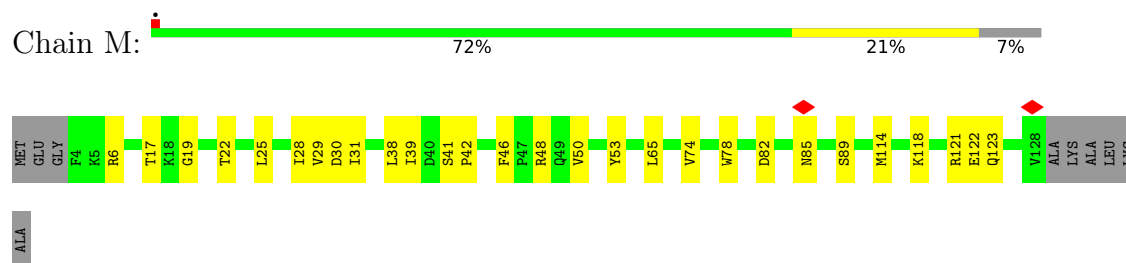
- Molecule 16: 60S ribosomal protein L43-A



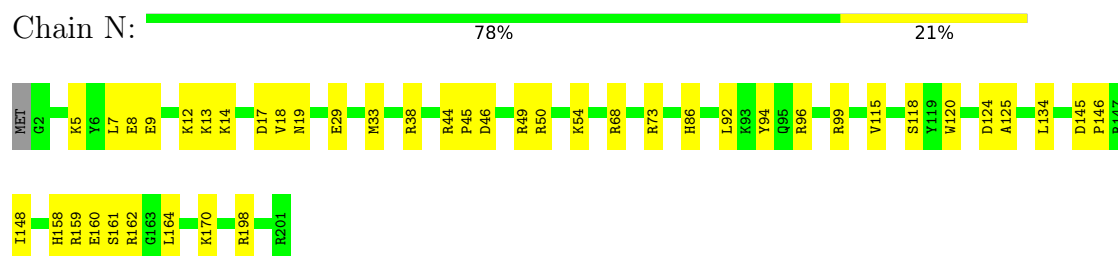
- Molecule 17: 60S ribosomal protein L13



- Molecule 18: 60S ribosomal protein L14

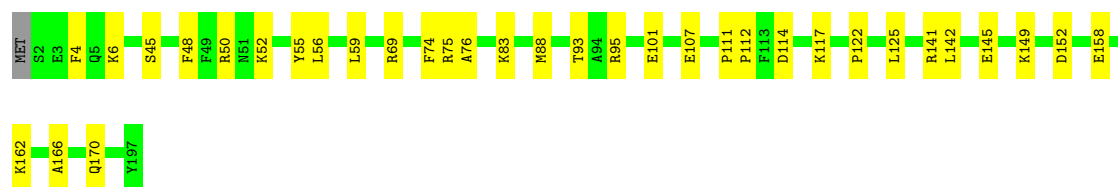


- Molecule 19: 60S ribosomal protein L15-A



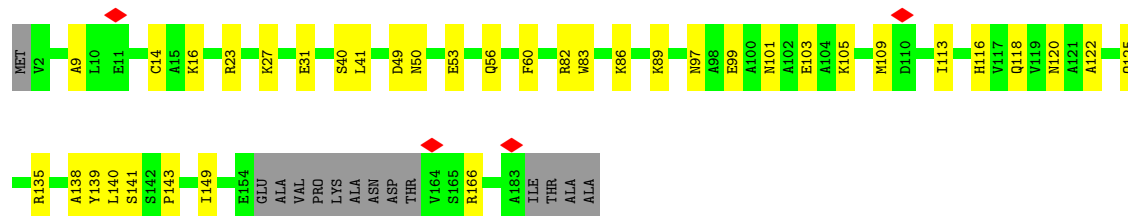
- Molecule 20: 60S ribosomal protein L16-B

Chain O:  82% 17%



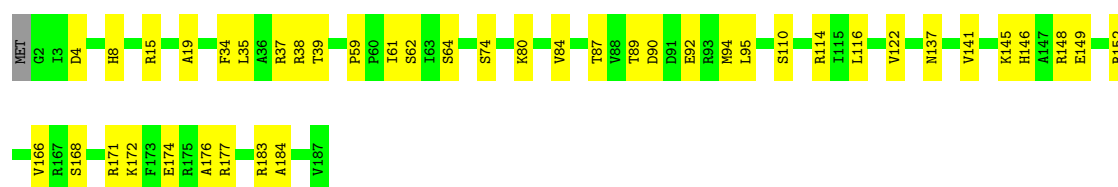
- Molecule 21: 60S ribosomal protein L17-A

Chain P:  73% 20% 7%



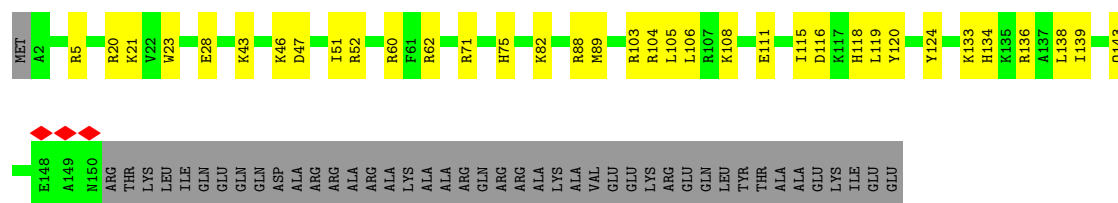
- Molecule 22: 60S ribosomal protein L18-A

Chain Q:  77% 22%



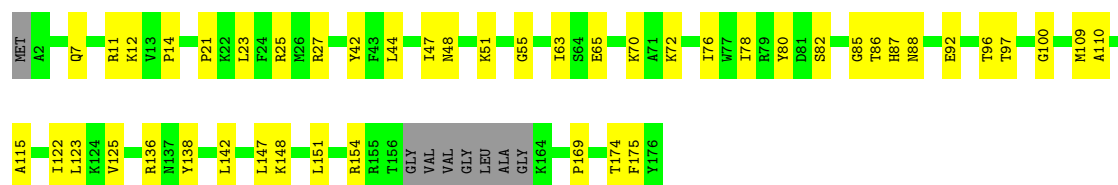
- Molecule 23: 60S ribosomal protein L19-A

Chain R:  59% 18% 23%

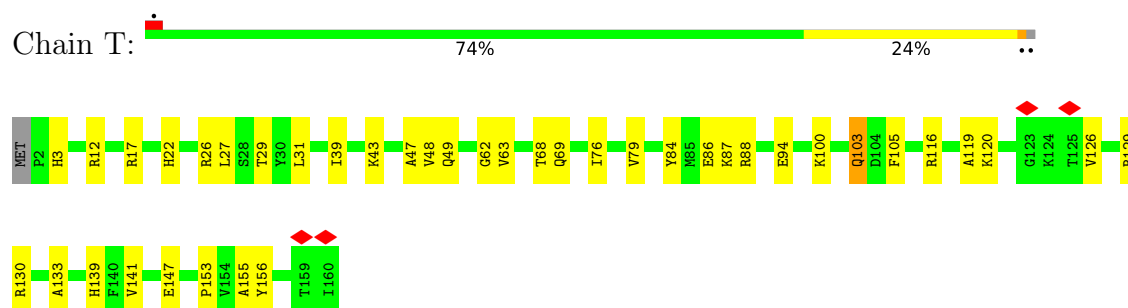


- Molecule 24: 60S ribosomal protein L20-A

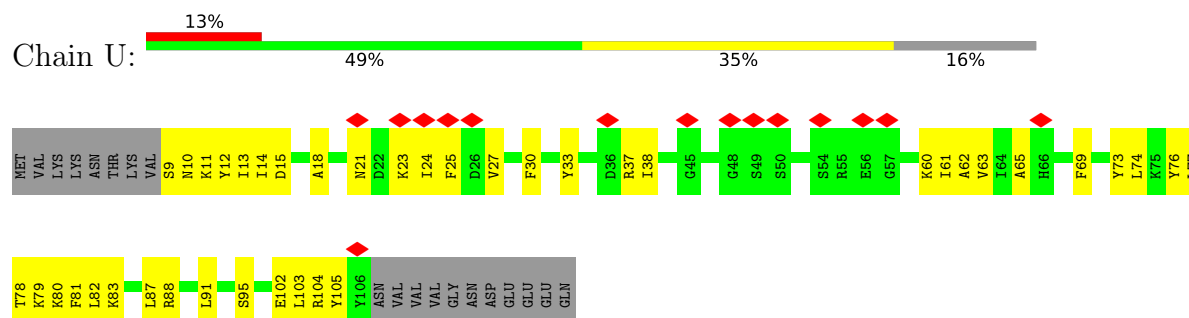
Chain S:  69% 26% 5%



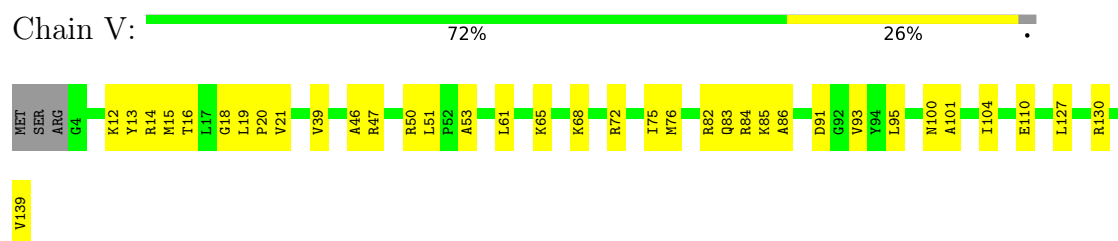
- Molecule 25: 60S ribosomal protein L21-A



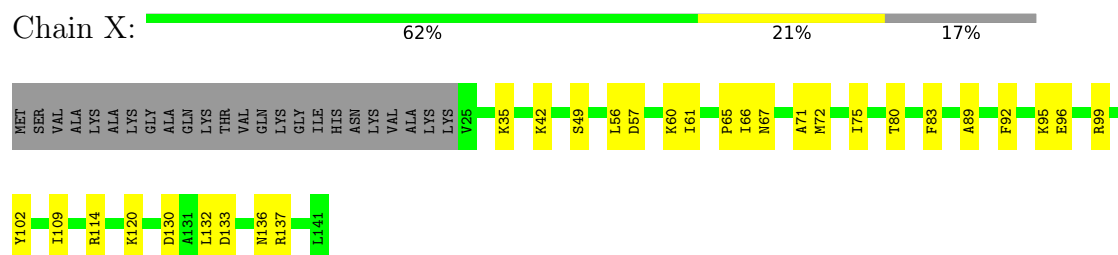
- Molecule 26: 60S ribosomal protein L22



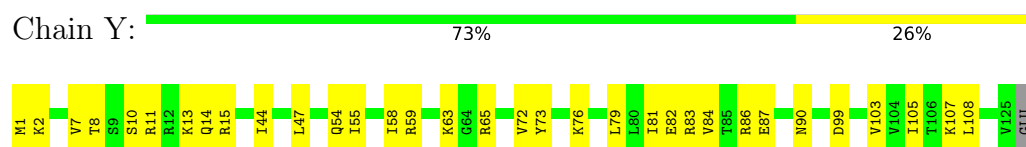
- Molecule 27: 60S ribosomal protein L23-A



- Molecule 28: 60S ribosomal protein L25-A

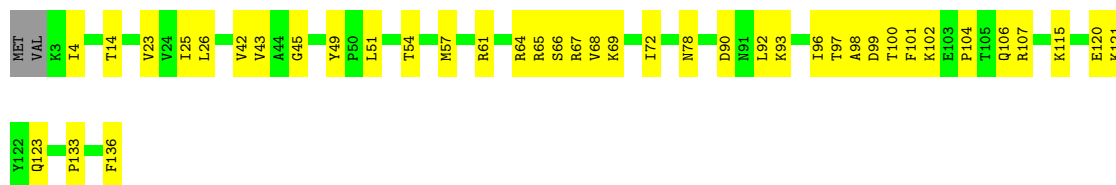


- Molecule 29: 60S ribosomal protein L26



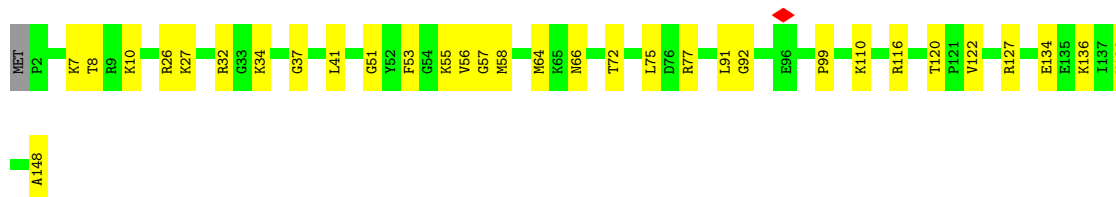
- Molecule 30: 60S ribosomal protein L27-A

Chain Z:  69% 29% .



- Molecule 31: 60S ribosomal protein L28-A

Chain a:  78% 22% .



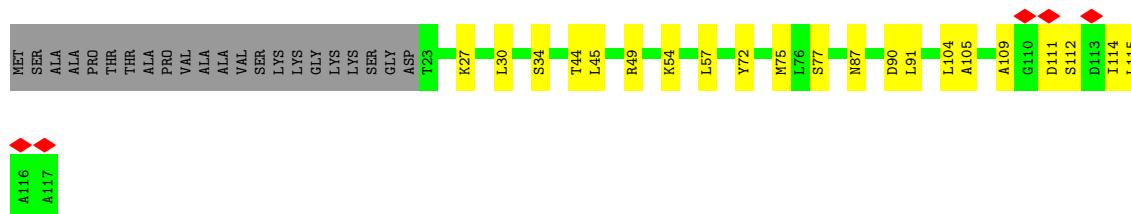
- Molecule 32: 60S ribosomal protein L29

Chain b:  64% 26% 8% .



- Molecule 33: 60S ribosomal protein L30-2

Chain c:  63% 18% 19% .



- Molecule 34: 60S ribosomal protein L31

Chain d:  65% 20% 14% .

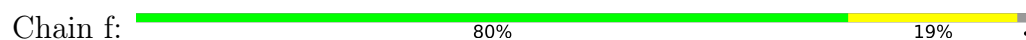


- Molecule 35: 60S ribosomal protein L32-A

Chain e:  74% 18% 8% .



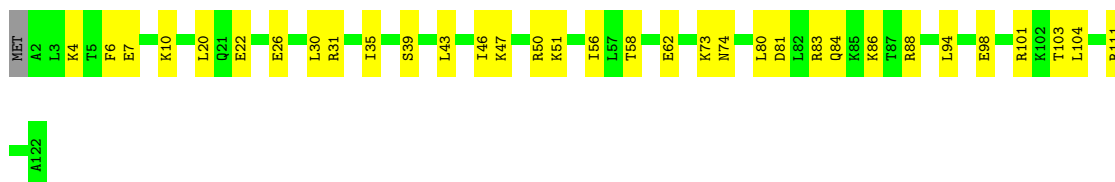
- Molecule 36: 60S ribosomal protein L33-B



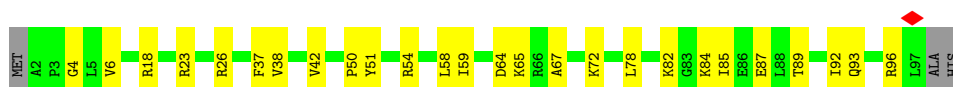
- Molecule 37: 60S ribosomal protein L34-A



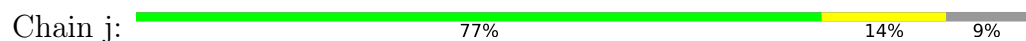
- Molecule 38: 60S ribosomal protein L35



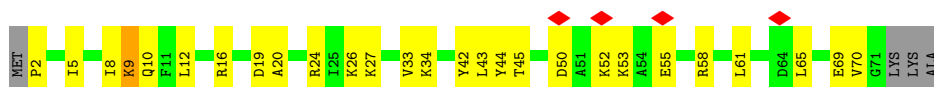
- Molecule 39: 60S ribosomal protein L36-B



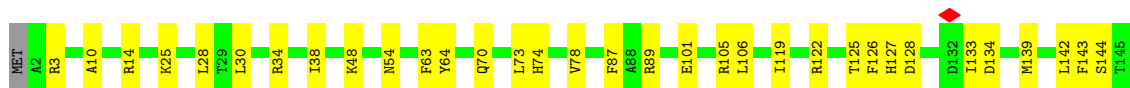
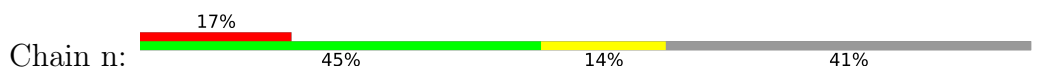
- Molecule 40: 60S ribosomal protein L37-B



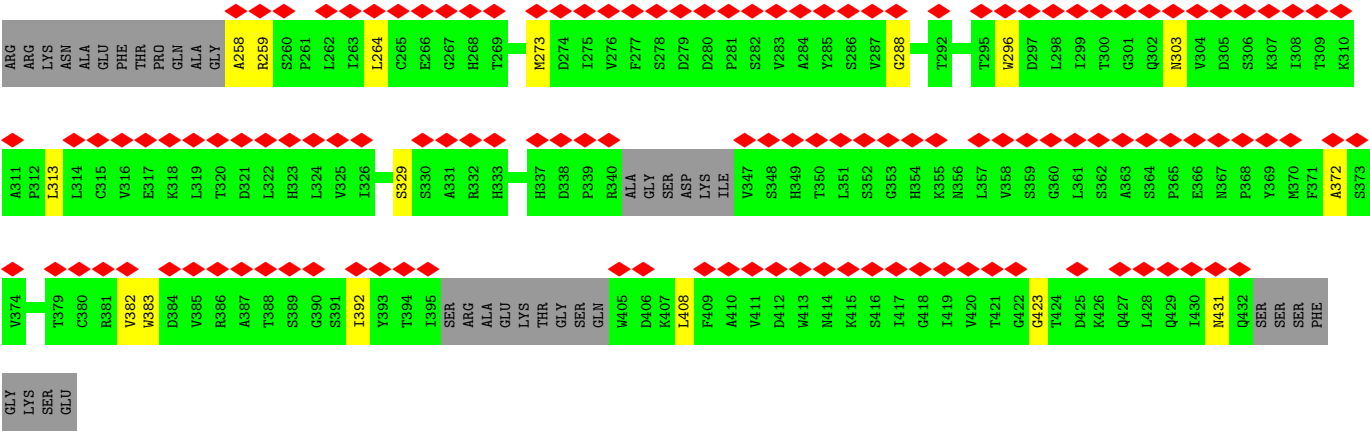
- Molecule 41: 60S ribosomal protein L38-1



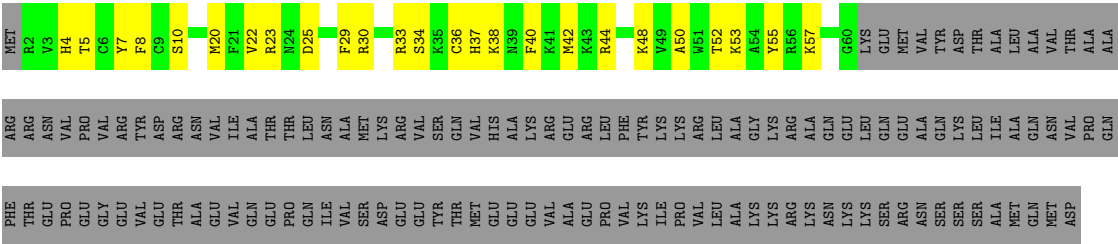
Chain m: 







● Molecule 46: Ribosome biogenesis protein rlp24



## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 59000                                   | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | TFS KRIOS                               | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 90                                      | Depositor |
| Minimum defocus (nm)                 | 750                                     | Depositor |
| Maximum defocus (nm)                 | 2500                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | GATAN K3 (6k x 4k)                      | Depositor |
| Maximum map value                    | 0.589                                   | Depositor |
| Minimum map value                    | -0.293                                  | Depositor |
| Average map value                    | 0.001                                   | Depositor |
| Map value standard deviation         | 0.012                                   | Depositor |
| Recommended contour level            | 0.05                                    | Depositor |
| Map size ( $\text{\AA}$ )            | 542.72, 542.72, 542.72                  | wwPDB     |
| Map dimensions                       | 512, 512, 512                           | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.06, 1.06, 1.06                        | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section:  
ZN

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   | 1     | 0.21         | 0/68374     | 0.28        | 0/106528    |
| 2   | 2     | 0.23         | 0/3748      | 0.27        | 0/5835      |
| 3   | 3     | 0.29         | 0/1064      | 0.43        | 0/1431      |
| 4   | 8     | 0.23         | 0/448       | 0.29        | 0/597       |
| 5   | 9     | 0.13         | 0/2816      | 0.18        | 0/4388      |
| 6   | A     | 0.20         | 0/1896      | 0.33        | 0/2556      |
| 7   | B     | 0.18         | 0/3069      | 0.29        | 0/4130      |
| 8   | C     | 0.21         | 0/2848      | 0.32        | 0/3842      |
| 9   | D     | 0.13         | 0/2336      | 0.24        | 0/3142      |
| 10  | E     | 0.15         | 0/1444      | 0.32        | 0/1948      |
| 11  | F     | 0.21         | 0/1781      | 0.32        | 0/2389      |
| 12  | G     | 0.19         | 0/1833      | 0.28        | 0/2467      |
| 13  | H     | 0.08         | 0/860       | 0.23        | 0/1193      |
| 14  | I     | 0.10         | 0/1379      | 0.21        | 0/1848      |
| 15  | J     | 0.16         | 0/1382      | 0.31        | 0/1850      |
| 16  | K     | 0.18         | 0/704       | 0.33        | 0/941       |
| 17  | L     | 0.19         | 0/1644      | 0.29        | 0/2215      |
| 18  | M     | 0.14         | 0/1024      | 0.28        | 0/1375      |
| 19  | N     | 0.24         | 0/1717      | 0.32        | 0/2304      |
| 20  | O     | 0.19         | 0/1588      | 0.31        | 0/2128      |
| 21  | P     | 0.19         | 0/1393      | 0.30        | 0/1866      |
| 22  | Q     | 0.20         | 0/1511      | 0.31        | 0/2019      |
| 23  | R     | 0.17         | 0/1248      | 0.26        | 0/1661      |
| 24  | S     | 0.16         | 0/1444      | 0.28        | 0/1939      |
| 25  | T     | 0.20         | 0/1317      | 0.31        | 0/1772      |
| 26  | U     | 0.16         | 0/805       | 0.31        | 0/1080      |
| 27  | V     | 0.20         | 0/1031      | 0.29        | 0/1388      |
| 28  | X     | 0.21         | 0/955       | 0.30        | 0/1285      |
| 29  | Y     | 0.16         | 0/1008      | 0.29        | 0/1341      |
| 30  | Z     | 0.16         | 0/1095      | 0.29        | 0/1467      |
| 31  | a     | 0.21         | 0/1198      | 0.32        | 0/1608      |
| 32  | b     | 0.23         | 0/479       | 0.38        | 0/634       |

| Mol | Chain | Bond lengths |          | Bond angles |          |
|-----|-------|--------------|----------|-------------|----------|
|     |       | RMSZ         | # Z  >5  | RMSZ        | # Z  >5  |
| 33  | c     | 0.14         | 0/721    | 0.24        | 0/969    |
| 34  | d     | 0.17         | 0/824    | 0.25        | 0/1106   |
| 35  | e     | 0.21         | 0/953    | 0.28        | 0/1271   |
| 36  | f     | 0.19         | 0/859    | 0.29        | 0/1152   |
| 37  | g     | 0.24         | 0/873    | 0.33        | 0/1170   |
| 38  | h     | 0.20         | 0/1008   | 0.30        | 0/1340   |
| 39  | i     | 0.17         | 0/774    | 0.31        | 0/1028   |
| 40  | j     | 0.24         | 0/671    | 0.32        | 0/888    |
| 41  | k     | 0.21         | 0/570    | 0.34        | 0/762    |
| 42  | m     | 0.15         | 0/3471   | 0.29        | 0/4715   |
| 43  | n     | 0.12         | 0/3037   | 0.27        | 0/4087   |
| 44  | o     | 0.14         | 0/810    | 0.26        | 0/1074   |
| 45  | p     | 0.06         | 0/1396   | 0.20        | 0/1935   |
| 46  | u     | 0.39         | 0/509    | 0.48        | 0/678    |
| All | All   | 0.20         | 0/131915 | 0.28        | 0/193342 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | 1     | 61093 | 0        | 30730    | 560     | 0            |
| 2   | 2     | 3354  | 0        | 1695     | 30      | 0            |
| 3   | 3     | 1042  | 0        | 1046     | 91      | 0            |
| 4   | 8     | 437   | 0        | 463      | 13      | 0            |
| 5   | 9     | 2519  | 0        | 1273     | 32      | 0            |
| 6   | A     | 1858  | 0        | 1904     | 44      | 0            |
| 7   | B     | 3003  | 0        | 3086     | 77      | 0            |
| 8   | C     | 2795  | 0        | 2918     | 46      | 0            |
| 9   | D     | 2287  | 0        | 2252     | 49      | 0            |
| 10  | E     | 1415  | 0        | 1495     | 41      | 0            |
| 11  | F     | 1745  | 0        | 1818     | 27      | 0            |

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| Mol | Chain | Non-H  | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|--------|----------|----------|---------|--------------|
| 12  | G     | 1804   | 0        | 1929     | 33      | 0            |
| 13  | H     | 862    | 0        | 372      | 0       | 0            |
| 14  | I     | 1354   | 0        | 1376     | 18      | 0            |
| 15  | J     | 1359   | 0        | 1402     | 48      | 0            |
| 16  | K     | 695    | 0        | 733      | 15      | 0            |
| 17  | L     | 1612   | 0        | 1655     | 32      | 0            |
| 18  | M     | 1007   | 0        | 1072     | 21      | 0            |
| 19  | N     | 1676   | 0        | 1712     | 35      | 0            |
| 20  | O     | 1557   | 0        | 1652     | 27      | 0            |
| 21  | P     | 1369   | 0        | 1414     | 29      | 0            |
| 22  | Q     | 1487   | 0        | 1592     | 33      | 0            |
| 23  | R     | 1229   | 0        | 1314     | 32      | 0            |
| 24  | S     | 1408   | 0        | 1462     | 37      | 0            |
| 25  | T     | 1289   | 0        | 1316     | 40      | 0            |
| 26  | U     | 791    | 0        | 825      | 35      | 0            |
| 27  | V     | 1015   | 0        | 1063     | 28      | 0            |
| 28  | X     | 939    | 0        | 999      | 26      | 0            |
| 29  | Y     | 998    | 0        | 1090     | 25      | 0            |
| 30  | Z     | 1072   | 0        | 1145     | 32      | 0            |
| 31  | a     | 1169   | 0        | 1215     | 29      | 0            |
| 32  | b     | 471    | 0        | 473      | 20      | 0            |
| 33  | c     | 712    | 0        | 754      | 12      | 0            |
| 34  | d     | 810    | 0        | 852      | 16      | 0            |
| 35  | e     | 939    | 0        | 1000     | 17      | 0            |
| 36  | f     | 839    | 0        | 866      | 15      | 0            |
| 37  | g     | 861    | 0        | 930      | 23      | 0            |
| 38  | h     | 999    | 0        | 1092     | 24      | 0            |
| 39  | i     | 767    | 0        | 851      | 19      | 0            |
| 40  | j     | 657    | 0        | 668      | 14      | 0            |
| 41  | k     | 564    | 0        | 611      | 24      | 0            |
| 42  | m     | 3376   | 0        | 3370     | 87      | 0            |
| 43  | n     | 2966   | 0        | 3043     | 71      | 0            |
| 44  | o     | 796    | 0        | 860      | 16      | 0            |
| 45  | p     | 1401   | 0        | 618      | 16      | 0            |
| 46  | u     | 493    | 0        | 497      | 33      | 0            |
| 47  | j     | 1      | 0        | 0        | 0       | 0            |
| All | All   | 122892 | 0        | 90503    | 1575    | 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 8.

All (1575) 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) |
|-------------------|------------------|--------------------------|-------------------|
| 42:m:687:ARG:HD3  | 42:m:689:TYR:CE1 | 1.84                     | 1.11              |
| 1:1:2198:G:H1     | 1:1:2202:C:H42   | 1.16                     | 0.91              |
| 26:U:87:LEU:H     | 26:U:87:LEU:HD23 | 1.36                     | 0.90              |
| 3:3:35:THR:HB     | 3:3:107:ARG:HD3  | 1.56                     | 0.87              |
| 17:L:62:THR:HG22  | 17:L:64:ARG:H    | 1.42                     | 0.85              |
| 25:T:68:THR:HG22  | 25:T:69:GLN:H    | 1.41                     | 0.85              |
| 8:C:101:MET:HE3   | 8:C:104:PRO:HA   | 1.56                     | 0.84              |
| 10:E:171:ILE:HD12 | 10:E:172:PRO:HD2 | 1.60                     | 0.84              |
| 1:1:3369:A:H5''   | 1:1:3370:U:H3'   | 1.60                     | 0.83              |
| 15:J:7:ASN:OD1    | 15:J:9:MET:HG3   | 1.78                     | 0.83              |
| 1:1:1929:A:N7     | 23:R:20:ARG:NH1  | 2.27                     | 0.82              |
| 41:k:55:GLU:HA    | 41:k:58:ARG:HH12 | 1.45                     | 0.82              |
| 3:3:108:CYS:O     | 3:3:112:LEU:HD22 | 1.81                     | 0.81              |
| 9:D:232:GLU:H     | 9:D:235:GLN:HE22 | 1.25                     | 0.81              |
| 46:u:34:SER:O     | 46:u:38:LYS:HG3  | 1.82                     | 0.80              |
| 2:2:162:C:H2'     | 2:2:163:A:C8     | 2.17                     | 0.78              |
| 3:3:88:LYS:NZ     | 10:E:21:GLY:HA2  | 1.97                     | 0.78              |
| 1:1:396:G:H1'     | 21:P:97:ASN:HD21 | 1.47                     | 0.78              |
| 46:u:34:SER:OG    | 46:u:38:LYS:HE2  | 1.83                     | 0.78              |
| 7:B:369:ARG:HH11  | 46:u:33:ARG:HH22 | 1.28                     | 0.78              |
| 46:u:23:ARG:HG3   | 46:u:29:PHE:HE1  | 1.50                     | 0.77              |
| 7:B:142:GLN:O     | 7:B:146:ARG:HG3  | 1.85                     | 0.77              |
| 1:1:3180:C:H5''   | 46:u:38:LYS:HD2  | 1.64                     | 0.77              |
| 3:3:114:ARG:HD2   | 10:E:29:PRO:HA   | 1.67                     | 0.77              |
| 28:X:67:ASN:HA    | 28:X:72:MET:HE3  | 1.68                     | 0.76              |
| 3:3:12:GLY:C      | 3:3:19:ARG:HH12  | 1.94                     | 0.75              |
| 26:U:33:TYR:CE1   | 26:U:37:ARG:HG3  | 2.20                     | 0.75              |
| 19:N:46:ASP:OD2   | 19:N:50:ARG:NH2  | 2.20                     | 0.75              |
| 26:U:33:TYR:CE2   | 26:U:81:PHE:HB3  | 2.22                     | 0.75              |
| 29:Y:82:GLU:HG2   | 29:Y:83:ARG:HD3  | 1.69                     | 0.75              |
| 7:B:47:LEU:HD22   | 7:B:164:THR:HG21 | 1.69                     | 0.74              |
| 20:O:101:GLU:N    | 20:O:101:GLU:OE1 | 2.21                     | 0.74              |
| 9:D:273:ARG:NH1   | 9:D:275:LEU:HA   | 2.03                     | 0.73              |
| 41:k:55:GLU:HA    | 41:k:58:ARG:NH1  | 2.03                     | 0.73              |
| 5:9:91:G:H1'      | 5:9:94:C:H42     | 1.53                     | 0.73              |
| 7:B:84:MET:HE3    | 7:B:164:THR:HG22 | 1.70                     | 0.72              |
| 7:B:214:MET:SD    | 7:B:281:LYS:HG3  | 2.29                     | 0.72              |
| 2:2:132:G:H1      | 2:2:137:A:H61    | 1.37                     | 0.72              |
| 1:1:856:C:H5''    | 6:A:20:ARG:HG3   | 1.69                     | 0.72              |
| 21:P:122:ALA:HB3  | 21:P:143:PRO:HB2 | 1.71                     | 0.72              |
| 1:1:1674:C:OP2    | 37:g:74:ARG:NH2  | 2.23                     | 0.72              |
| 1:1:2199:G:H4'    | 46:u:48:LYS:NZ   | 2.05                     | 0.72              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:2225:U:OP2    | 1:1:2230:A:N6     | 2.22                     | 0.72              |
| 1:1:2648:C:N3     | 37:g:98:GLN:NE2   | 2.37                     | 0.72              |
| 9:D:273:ARG:HH12  | 9:D:275:LEU:HA    | 1.53                     | 0.72              |
| 35:e:102:ARG:O    | 35:e:106:VAL:HG23 | 1.90                     | 0.72              |
| 43:n:563:MET:HG3  | 43:n:564:MET:H    | 1.54                     | 0.71              |
| 1:1:1108:C:H1'    | 32:b:42:ASN:ND2   | 2.04                     | 0.71              |
| 8:C:37:VAL:HG21   | 8:C:246:LEU:HD21  | 1.73                     | 0.71              |
| 28:X:95:LYS:HG2   | 28:X:99:ARG:HH21  | 1.55                     | 0.71              |
| 1:1:278:U:H3      | 1:1:303:A:H2      | 1.39                     | 0.71              |
| 1:1:3133:U:H5''   | 7:B:348:ARG:HE    | 1.56                     | 0.71              |
| 1:1:2428:U:OP1    | 7:B:236:LYS:NZ    | 2.24                     | 0.71              |
| 1:1:644:A:OP1     | 21:P:166:ARG:NH2  | 2.24                     | 0.71              |
| 3:3:82:LEU:HD11   | 3:3:92:GLN:HG3    | 1.71                     | 0.71              |
| 3:3:5:GLU:HG3     | 8:C:289:VAL:H     | 1.55                     | 0.71              |
| 7:B:298:PHE:HD2   | 7:B:357:LYS:HA    | 1.56                     | 0.71              |
| 36:f:40:GLU:OE2   | 36:f:40:GLU:N     | 2.23                     | 0.71              |
| 27:V:12:LYS:HE2   | 27:V:15:MET:HE3   | 1.72                     | 0.70              |
| 1:1:1944:G:H5'    | 7:B:245:GLY:HA2   | 1.74                     | 0.70              |
| 30:Z:68:VAL:O     | 30:Z:115:LYS:NZ   | 2.23                     | 0.70              |
| 1:1:2329:U:H4'    | 6:A:241:ARG:HG3   | 1.72                     | 0.70              |
| 33:c:54:LYS:HB3   | 33:c:115:LEU:HD11 | 1.74                     | 0.70              |
| 3:3:35:THR:HG23   | 3:3:37:LEU:H      | 1.56                     | 0.70              |
| 12:G:173:MET:HE3  | 39:i:37:PHE:CZ    | 2.27                     | 0.70              |
| 42:m:608:LYS:NZ   | 42:m:643:LEU:O    | 2.24                     | 0.70              |
| 1:1:1388:G:OP1    | 3:3:39:ASN:ND2    | 2.25                     | 0.70              |
| 15:J:92:LYS:N     | 15:J:95:ASN:OD1   | 2.24                     | 0.70              |
| 18:M:38:LEU:HD21  | 18:M:48:ARG:HE    | 1.56                     | 0.69              |
| 11:F:116:LEU:HD22 | 22:Q:4:ASP:O      | 1.92                     | 0.69              |
| 1:1:1346:U:O4     | 20:O:50:ARG:NH1   | 2.25                     | 0.69              |
| 30:Z:54:THR:OG1   | 30:Z:57:MET:HE3   | 1.93                     | 0.69              |
| 1:1:2191:U:OP1    | 23:R:88:ARG:NE    | 2.25                     | 0.69              |
| 7:B:218:ILE:HG12  | 7:B:276:THR:HG23  | 1.72                     | 0.69              |
| 1:1:1379:U:OP1    | 22:Q:38:ARG:NH1   | 2.26                     | 0.69              |
| 3:3:109:LYS:HA    | 3:3:112:LEU:HD23  | 1.75                     | 0.69              |
| 25:T:68:THR:HG22  | 25:T:69:GLN:N     | 2.07                     | 0.69              |
| 42:m:228:SER:HB2  | 42:m:231:GLU:HB2  | 1.74                     | 0.69              |
| 3:3:56:ASP:OD1    | 3:3:81:LYS:NZ     | 2.26                     | 0.68              |
| 46:u:23:ARG:HD2   | 46:u:29:PHE:CE1   | 2.29                     | 0.68              |
| 17:L:46:ILE:HD11  | 17:L:51:VAL:HA    | 1.75                     | 0.68              |
| 24:S:11:ARG:HD2   | 24:S:21:PRO:HG2   | 1.75                     | 0.68              |
| 1:1:1627:G:OP1    | 37:g:58:ARG:NH2   | 2.23                     | 0.68              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:2823:G:N7    | 25:T:87:LYS:NZ    | 2.41                     | 0.68              |
| 1:1:1722:U:H1'   | 26:U:73:TYR:CD2   | 2.28                     | 0.68              |
| 1:1:531:A:OP2    | 11:F:77:ARG:NH1   | 2.27                     | 0.68              |
| 19:N:9:GLU:HB2   | 39:i:42:VAL:HG21  | 1.75                     | 0.68              |
| 21:P:125:GLN:HB2 | 21:P:141:SER:HB2  | 1.76                     | 0.68              |
| 42:m:738:MET:HE2 | 42:m:738:MET:HA   | 1.76                     | 0.68              |
| 41:k:8:ILE:HD12  | 41:k:8:ILE:H      | 1.58                     | 0.68              |
| 1:1:1872:G:O6    | 43:n:568:LYS:NZ   | 2.27                     | 0.68              |
| 1:1:2822:A:OP2   | 1:1:2823:G:N2     | 2.27                     | 0.67              |
| 6:A:79:GLU:HG2   | 6:A:169:ALA:HA    | 1.76                     | 0.67              |
| 10:E:25:ALA:HB3  | 10:E:28:TYR:HE1   | 1.59                     | 0.67              |
| 23:R:43:LYS:NZ   | 23:R:47:ASP:OD1   | 2.27                     | 0.67              |
| 27:V:12:LYS:HB2  | 27:V:127:LEU:HD11 | 1.76                     | 0.67              |
| 42:m:387:ARG:NH1 | 42:m:453:GLN:OE1  | 2.27                     | 0.67              |
| 3:3:86:TYR:HB3   | 3:3:116:THR:HG21  | 1.76                     | 0.67              |
| 29:Y:8:THR:HG22  | 29:Y:10:SER:H     | 1.57                     | 0.67              |
| 42:m:379:PHE:HB2 | 42:m:736:ILE:HB   | 1.76                     | 0.67              |
| 1:1:162:A:N3     | 17:L:87:ARG:NH2   | 2.43                     | 0.67              |
| 1:1:1670:G:N2    | 1:1:1673:A:OP2    | 2.26                     | 0.67              |
| 9:D:232:GLU:N    | 9:D:235:GLN:HE22  | 1.90                     | 0.67              |
| 35:e:39:VAL:O    | 35:e:49:MET:HE2   | 1.95                     | 0.67              |
| 1:1:335:A:OP1    | 17:L:31:ARG:NH2   | 2.27                     | 0.67              |
| 7:B:211:GLN:NE2  | 7:B:283:TYR:O     | 2.28                     | 0.67              |
| 21:P:118:GLN:NE2 | 21:P:120:ASN:OD1  | 2.28                     | 0.67              |
| 43:n:194:PHE:HZ  | 43:n:240:THR:HG21 | 1.59                     | 0.67              |
| 43:n:362:ARG:HG2 | 43:n:385:ILE:HD11 | 1.76                     | 0.67              |
| 26:U:69:PHE:HE2  | 26:U:74:LEU:HD21  | 1.61                     | 0.66              |
| 42:m:365:PRO:HG3 | 43:n:556:GLU:HG2  | 1.76                     | 0.66              |
| 19:N:68:ARG:NH1  | 19:N:124:ASP:O    | 2.24                     | 0.66              |
| 17:L:132:GLN:OE1 | 17:L:132:GLN:N    | 2.29                     | 0.66              |
| 1:1:2235:A:OP2   | 6:A:199:ARG:NH1   | 2.29                     | 0.66              |
| 1:1:2264:U:OP1   | 6:A:53:ARG:NH2    | 2.26                     | 0.66              |
| 7:B:26:ARG:HD2   | 7:B:47:LEU:HD11   | 1.78                     | 0.66              |
| 3:3:32:TYR:HA    | 3:3:52:THR:HG21   | 1.76                     | 0.66              |
| 3:3:32:TYR:HB3   | 3:3:44:PRO:HG2    | 1.78                     | 0.66              |
| 4:8:20:ASN:ND2   | 4:8:42:ARG:O      | 2.28                     | 0.66              |
| 42:m:687:ARG:HD3 | 42:m:689:TYR:CZ   | 2.30                     | 0.66              |
| 1:1:2427:C:OP1   | 27:V:50:ARG:NH1   | 2.28                     | 0.66              |
| 7:B:148:LEU:HD12 | 7:B:192:VAL:HG13  | 1.77                     | 0.66              |
| 12:G:62:ARG:NH1  | 19:N:29:GLU:OE2   | 2.25                     | 0.65              |
| 23:R:116:ASP:OD2 | 23:R:118:HIS:ND1  | 2.23                     | 0.65              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:533:A:OP1     | 8:C:350:LYS:NZ    | 2.26                     | 0.65              |
| 1:1:2383:A:H1'    | 27:V:75:ILE:HD11  | 1.78                     | 0.65              |
| 17:L:9:LEU:HB3    | 31:a:34:LYS:HD3   | 1.77                     | 0.65              |
| 7:B:214:MET:HE2   | 7:B:350:ALA:CB    | 2.26                     | 0.65              |
| 1:1:316:A:H5''    | 39:i:78:LEU:HD12  | 1.78                     | 0.65              |
| 7:B:92:TYR:HB2    | 7:B:157:VAL:HB    | 1.78                     | 0.65              |
| 10:E:15:ARG:HH21  | 10:E:18:LEU:HD11  | 1.61                     | 0.65              |
| 1:1:2768:A:P      | 15:J:95:ASN:HA    | 2.37                     | 0.65              |
| 43:n:565:MET:HE1  | 43:n:569:GLN:H    | 1.62                     | 0.65              |
| 6:A:20:ARG:HE     | 6:A:21:LEU:HG     | 1.61                     | 0.65              |
| 19:N:73:ARG:HE    | 19:N:92:LEU:HD11  | 1.62                     | 0.65              |
| 43:n:370:GLU:HG2  | 43:n:380:VAL:HG11 | 1.78                     | 0.65              |
| 1:1:371:C:OP2     | 40:j:56:ARG:NH2   | 2.27                     | 0.65              |
| 1:1:808:U:H3      | 32:b:44:LYS:NZ    | 1.94                     | 0.65              |
| 36:f:53:VAL:HG12  | 36:f:67:VAL:HG22  | 1.77                     | 0.65              |
| 1:1:710:G:OP1     | 17:L:39:ARG:NH2   | 2.30                     | 0.64              |
| 1:1:1108:C:C1'    | 32:b:42:ASN:ND2   | 2.61                     | 0.64              |
| 2:2:71:G:O2'      | 38:h:51:LYS:NZ    | 2.30                     | 0.64              |
| 43:n:230:MET:HE3  | 43:n:230:MET:O    | 1.98                     | 0.64              |
| 1:1:1667:A:OP1    | 30:Z:69:LYS:NZ    | 2.31                     | 0.64              |
| 9:D:208:MET:HE2   | 9:D:233:SER:HB3   | 1.79                     | 0.64              |
| 14:I:30:LYS:HG3   | 14:I:63:GLU:HG3   | 1.79                     | 0.64              |
| 1:1:1438:G:N2     | 1:1:1441:A:OP2    | 2.25                     | 0.64              |
| 1:1:2298:G:N2     | 1:1:2323:C:O2     | 2.31                     | 0.64              |
| 1:1:3136:A:H5'    | 27:V:14:ARG:HB2   | 1.80                     | 0.64              |
| 7:B:183:VAL:O     | 7:B:191:LYS:NZ    | 2.30                     | 0.64              |
| 3:3:50:TYR:H      | 3:3:65:LYS:HD3    | 1.62                     | 0.64              |
| 27:V:47:ARG:HD3   | 27:V:50:ARG:HD3   | 1.79                     | 0.64              |
| 1:1:285:G:H5'     | 44:o:49:GLY:HA2   | 1.80                     | 0.64              |
| 1:1:2779:C:O2'    | 1:1:2780:G:O5'    | 2.16                     | 0.64              |
| 27:V:139:VAL:HG11 | 46:u:22:VAL:HG11  | 1.79                     | 0.64              |
| 1:1:1108:C:H1'    | 32:b:42:ASN:HD22  | 1.64                     | 0.63              |
| 42:m:687:ARG:CZ   | 42:m:689:TYR:OH   | 2.46                     | 0.63              |
| 1:1:243:C:O2'     | 1:1:244:G:O5'     | 2.14                     | 0.63              |
| 19:N:13:LYS:O     | 19:N:19:ASN:ND2   | 2.31                     | 0.63              |
| 24:S:11:ARG:HH12  | 24:S:14:PRO:HD3   | 1.64                     | 0.63              |
| 26:U:79:LYS:HE2   | 26:U:88:ARG:HH22  | 1.63                     | 0.63              |
| 42:m:365:PRO:HA   | 42:m:368:LEU:HD23 | 1.78                     | 0.63              |
| 1:1:2840:G:N2     | 1:1:2843:A:OP2    | 2.28                     | 0.63              |
| 21:P:16:LYS:O     | 21:P:101:ASN:ND2  | 2.30                     | 0.63              |
| 34:d:56:VAL:HG13  | 34:d:60:LEU:HD23  | 1.79                     | 0.63              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 10:E:72:VAL:HA   | 10:E:82:VAL:HG23  | 1.80                     | 0.63              |
| 1:1:936:A:OP2    | 40:j:30:GLN:NE2   | 2.29                     | 0.63              |
| 9:D:235:GLN:OE1  | 9:D:235:GLN:N     | 2.23                     | 0.63              |
| 46:u:34:SER:OG   | 46:u:38:LYS:CE    | 2.46                     | 0.63              |
| 6:A:116:GLU:OE2  | 6:A:162:ARG:NE    | 2.24                     | 0.63              |
| 19:N:5:LYS:NZ    | 19:N:9:GLU:OE2    | 2.32                     | 0.63              |
| 33:c:91:LEU:HD21 | 33:c:104:LEU:HD23 | 1.80                     | 0.63              |
| 3:3:121:LYS:HA   | 3:3:124:ARG:HG2   | 1.80                     | 0.63              |
| 1:1:870:G:O6     | 16:K:4:ARG:NH1    | 2.32                     | 0.63              |
| 12:G:91:PHE:O    | 12:G:95:ASN:ND2   | 2.27                     | 0.63              |
| 31:a:99:PRO:HG2  | 31:a:122:VAL:HG23 | 1.80                     | 0.63              |
| 38:h:84:GLN:OE1  | 38:h:86:LYS:NZ    | 2.31                     | 0.62              |
| 1:1:620:C:OP1    | 11:F:44:ARG:NH1   | 2.33                     | 0.62              |
| 1:1:3198:G:H1    | 1:1:3228:C:H42    | 1.47                     | 0.62              |
| 38:h:98:GLU:HA   | 38:h:101:ARG:HG2  | 1.80                     | 0.62              |
| 3:3:7:ILE:O      | 3:3:11:VAL:HG22   | 1.98                     | 0.62              |
| 1:1:2832:C:OP1   | 25:T:68:THR:HG22  | 1.99                     | 0.62              |
| 17:L:10:PRO:O    | 31:a:34:LYS:NZ    | 2.30                     | 0.62              |
| 1:1:644:A:H5'    | 21:P:166:ARG:HH22 | 1.64                     | 0.62              |
| 1:1:3166:A:OP1   | 23:R:62:ARG:NH1   | 2.31                     | 0.62              |
| 4:8:42:ARG:HG3   | 4:8:47:THR:HG23   | 1.80                     | 0.62              |
| 1:1:745:G:OP1    | 31:a:116:ARG:NH2  | 2.32                     | 0.62              |
| 28:X:133:ASP:HA  | 28:X:136:ASN:HD22 | 1.64                     | 0.62              |
| 3:3:32:TYR:HH    | 3:3:77:TRP:CG     | 2.18                     | 0.62              |
| 43:n:175:ASN:O   | 43:n:178:ARG:NH2  | 2.32                     | 0.62              |
| 1:1:833:A:OP1    | 31:a:27:LYS:NZ    | 2.23                     | 0.62              |
| 21:P:14:CYS:O    | 21:P:105:LYS:NZ   | 2.33                     | 0.62              |
| 1:1:359:A:H62    | 4:8:35:VAL:HG13   | 1.64                     | 0.62              |
| 5:9:167:G:OP2    | 9:D:258:LYS:NZ    | 2.33                     | 0.61              |
| 7:B:56:ILE:HD12  | 7:B:356:LEU:HD22  | 1.81                     | 0.61              |
| 7:B:308:MET:HE2  | 7:B:370:PHE:O     | 1.99                     | 0.61              |
| 17:L:55:ARG:NH1  | 17:L:73:ARG:O     | 2.30                     | 0.61              |
| 1:1:3164:U:OP2   | 23:R:62:ARG:NH2   | 2.28                     | 0.61              |
| 3:3:32:TYR:HE2   | 3:3:77:TRP:CD1    | 2.18                     | 0.61              |
| 20:O:76:ALA:HB1  | 20:O:107:GLU:OE1  | 2.00                     | 0.61              |
| 26:U:91:LEU:HD12 | 26:U:103:LEU:HB3  | 1.82                     | 0.61              |
| 30:Z:72:ILE:HD11 | 30:Z:107:ARG:HG3  | 1.81                     | 0.61              |
| 1:1:1915:G:O2'   | 23:R:60:ARG:NH1   | 2.34                     | 0.61              |
| 4:8:28:ARG:NH1   | 4:8:36:HIS:O      | 2.33                     | 0.61              |
| 7:B:284:ARG:NH1  | 7:B:293:ASN:O     | 2.33                     | 0.61              |
| 28:X:67:ASN:HA   | 28:X:72:MET:CE    | 2.30                     | 0.61              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 43:n:54:ASN:HB2   | 43:n:63:PHE:HZ    | 1.65                     | 0.61              |
| 45:p:273:MET:H    | 45:p:288:GLY:HA2  | 1.65                     | 0.61              |
| 21:P:103:GLU:OE1  | 21:P:109:MET:HE2  | 2.00                     | 0.61              |
| 1:1:946:A:C6      | 6:A:203:MET:HE2   | 2.35                     | 0.61              |
| 1:1:1928:U:OP2    | 23:R:20:ARG:NH2   | 2.34                     | 0.61              |
| 1:1:2200:U:H5'    | 46:u:44:ARG:HH12  | 1.65                     | 0.61              |
| 1:1:3315:A:OP2    | 18:M:118:LYS:NZ   | 2.27                     | 0.61              |
| 29:Y:54:GLN:HB3   | 29:Y:107:LYS:HB3  | 1.82                     | 0.61              |
| 29:Y:72:VAL:HG12  | 29:Y:79:LEU:HD22  | 1.80                     | 0.61              |
| 1:1:1236:A:H61    | 1:1:1330:U:H3     | 1.48                     | 0.61              |
| 1:1:1728:U:OP1    | 37:g:28:ASN:ND2   | 2.32                     | 0.61              |
| 1:1:2189:C:H5''   | 23:R:71:ARG:NH2   | 2.16                     | 0.61              |
| 1:1:2647:U:O4     | 6:A:94:ALA:N      | 2.30                     | 0.61              |
| 1:1:2855:C:N3     | 44:o:63:LYS:NZ    | 2.48                     | 0.61              |
| 7:B:304:ARG:NH2   | 7:B:318:GLU:OE1   | 2.33                     | 0.61              |
| 3:3:93:ILE:HG13   | 3:3:112:LEU:HD21  | 1.81                     | 0.61              |
| 15:J:18:VAL:HG22  | 15:J:70:THR:HG23  | 1.83                     | 0.61              |
| 42:m:537:HIS:HB2  | 42:m:542:TYR:HB2  | 1.81                     | 0.61              |
| 1:1:1205:G:N2     | 20:O:88:MET:SD    | 2.74                     | 0.61              |
| 1:1:2272:U:OP2    | 6:A:197:ARG:NH2   | 2.34                     | 0.61              |
| 10:E:114:VAL:HG21 | 10:E:160:VAL:HG23 | 1.83                     | 0.61              |
| 15:J:32:ARG:NH1   | 15:J:119:SER:O    | 2.25                     | 0.61              |
| 29:Y:87:GLU:HA    | 29:Y:87:GLU:OE1   | 2.00                     | 0.61              |
| 7:B:308:MET:HE1   | 7:B:370:PHE:HB2   | 1.82                     | 0.60              |
| 26:U:21:ASN:O     | 26:U:23:LYS:NZ    | 2.26                     | 0.60              |
| 2:2:114:C:H4'     | 2:2:115:G:H5''    | 1.83                     | 0.60              |
| 8:C:10:ILE:HD13   | 8:C:254:LYS:HG3   | 1.83                     | 0.60              |
| 43:n:235:PHE:O    | 43:n:239:ASN:ND2  | 2.32                     | 0.60              |
| 2:2:111:G:OP2     | 2:2:113:A:O2'     | 2.20                     | 0.60              |
| 43:n:127:HIS:ND1  | 43:n:196:GLU:OE2  | 2.33                     | 0.60              |
| 43:n:144:SER:HB2  | 43:n:161:GLU:HG3  | 1.82                     | 0.60              |
| 3:3:115:LEU:HD11  | 35:e:83:LEU:HD21  | 1.84                     | 0.60              |
| 15:J:125:MET:HE2  | 15:J:126:ASP:N    | 2.16                     | 0.60              |
| 28:X:57:ASP:OD1   | 28:X:60:LYS:NZ    | 2.33                     | 0.60              |
| 1:1:970:C:OP2     | 31:a:26:ARG:NH1   | 2.34                     | 0.60              |
| 17:L:46:ILE:O     | 17:L:49:ARG:HG2   | 2.01                     | 0.60              |
| 43:n:172:ILE:HD11 | 43:n:371:PHE:HA   | 1.83                     | 0.60              |
| 1:1:343:G:OP1     | 29:Y:8:THR:OG1    | 2.20                     | 0.60              |
| 1:1:545:A:N6      | 1:1:547:G:N3      | 2.49                     | 0.60              |
| 15:J:12:LEU:HB3   | 15:J:131:MET:HE2  | 1.82                     | 0.60              |
| 22:Q:171:ARG:HD3  | 31:a:56:VAL:O     | 2.01                     | 0.60              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 15:J:93:LYS:N     | 15:J:172:LEU:O    | 2.31                     | 0.60              |
| 42:m:585:MET:HG3  | 42:m:586:PRO:HD2  | 1.84                     | 0.60              |
| 44:o:36:LEU:O     | 44:o:41:ARG:NH1   | 2.35                     | 0.60              |
| 1:1:347:C:OP1     | 1:1:1414:G:O2'    | 2.20                     | 0.60              |
| 1:1:1398:C:O2'    | 22:Q:8:HIS:NE2    | 2.35                     | 0.60              |
| 1:1:1918:G:N1     | 1:1:1921:C:OP2    | 2.34                     | 0.60              |
| 1:1:3480:C:H4'    | 7:B:315:GLY:HA2   | 1.82                     | 0.60              |
| 42:m:372:PRO:HG2  | 42:m:683:VAL:HG11 | 1.84                     | 0.60              |
| 4:8:44:TRP:CZ3    | 4:8:45:ARG:HD3    | 2.37                     | 0.59              |
| 9:D:258:LYS:HB2   | 9:D:263:PHE:HE2   | 1.67                     | 0.59              |
| 42:m:651:LYS:HG3  | 42:m:698:ILE:HD12 | 1.84                     | 0.59              |
| 26:U:33:TYR:CD2   | 26:U:81:PHE:HB3   | 2.37                     | 0.59              |
| 26:U:87:LEU:HD23  | 26:U:87:LEU:N     | 2.13                     | 0.59              |
| 7:B:67:MET:CE     | 7:B:72:ILE:HG22   | 2.32                     | 0.59              |
| 24:S:97:THR:HG23  | 24:S:100:GLY:H    | 1.67                     | 0.59              |
| 1:1:109:A:N1      | 1:1:330:U:O2'     | 2.35                     | 0.59              |
| 1:1:2265:G:N2     | 6:A:117:GLU:OE2   | 2.35                     | 0.59              |
| 46:u:23:ARG:CG    | 46:u:29:PHE:HE1   | 2.13                     | 0.59              |
| 1:1:76:G:O6       | 17:L:102:ARG:NH1  | 2.35                     | 0.59              |
| 1:1:1807:G:N7     | 23:R:46:LYS:NZ    | 2.46                     | 0.59              |
| 3:3:8:TRP:HB2     | 3:3:46:ALA:HB1    | 1.85                     | 0.59              |
| 7:B:232:ARG:HG3   | 7:B:270:ALA:HB2   | 1.85                     | 0.59              |
| 1:1:2609:U:H5''   | 12:G:242:THR:HG21 | 1.85                     | 0.59              |
| 30:Z:23:VAL:HG12  | 30:Z:45:GLY:HA3   | 1.85                     | 0.59              |
| 1:1:1457:C:H4'    | 3:3:21:LYS:HB2    | 1.84                     | 0.59              |
| 1:1:1459:U:H4'    | 8:C:38:ARG:HD2    | 1.84                     | 0.59              |
| 1:1:1590:G:N2     | 1:1:1590:G:OP1    | 2.35                     | 0.59              |
| 1:1:1903:G:H5'    | 4:8:45:ARG:NH2    | 2.17                     | 0.59              |
| 1:1:2778:U:H5''   | 15:J:18:VAL:HG21  | 1.84                     | 0.59              |
| 7:B:214:MET:HE2   | 7:B:350:ALA:HB2   | 1.85                     | 0.59              |
| 1:1:1597:G:N7     | 28:X:35:LYS:NZ    | 2.46                     | 0.59              |
| 18:M:53:TYR:HB3   | 24:S:151:LEU:HD11 | 1.84                     | 0.59              |
| 27:V:82:ARG:HB2   | 27:V:101:ALA:HB3  | 1.85                     | 0.59              |
| 11:F:115:LEU:HD21 | 11:F:122:ILE:HG12 | 1.84                     | 0.59              |
| 20:O:117:LYS:NZ   | 24:S:169:PRO:O    | 2.36                     | 0.59              |
| 37:g:41:ILE:O     | 37:g:43:ARG:NH1   | 2.36                     | 0.59              |
| 44:o:22:VAL:O     | 44:o:75:VAL:HG13  | 2.02                     | 0.59              |
| 43:n:422:GLN:NE2  | 43:n:446:PRO:O    | 2.35                     | 0.58              |
| 1:1:668:U:O2'     | 1:1:1184:A:N1     | 2.31                     | 0.58              |
| 1:1:1820:C:C5     | 23:R:89:MET:HE1   | 2.38                     | 0.58              |
| 1:1:3182:G:H4'    | 7:B:366:GLY:HA2   | 1.84                     | 0.58              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 42:m:582:HIS:NE2 | 42:m:626:GLY:O    | 2.32                     | 0.58              |
| 45:p:192:LEU:O   | 45:p:258:ALA:N    | 2.37                     | 0.58              |
| 1:1:968:A:O2'    | 1:1:970:C:N4      | 2.36                     | 0.58              |
| 7:B:85:VAL:HG22  | 7:B:202:THR:HG22  | 1.84                     | 0.58              |
| 38:h:4:LYS:HB2   | 38:h:7:GLU:HG3    | 1.85                     | 0.58              |
| 46:u:8:PHE:HB3   | 46:u:36:CYS:HB3   | 1.84                     | 0.58              |
| 1:1:38:U:H4'     | 31:a:32:ARG:HD2   | 1.84                     | 0.58              |
| 28:X:95:LYS:HG2  | 28:X:99:ARG:NH2   | 2.17                     | 0.58              |
| 1:1:1117:A:H1'   | 32:b:43:GLN:NE2   | 2.18                     | 0.58              |
| 8:C:76:ILE:HG13  | 8:C:77:PRO:HD2    | 1.84                     | 0.58              |
| 12:G:123:GLN:HG2 | 42:m:227:PRO:HG3  | 1.84                     | 0.58              |
| 15:J:109:HIS:CD2 | 15:J:123:TYR:H    | 2.21                     | 0.58              |
| 1:1:1129:G:N7    | 25:T:116:ARG:NH2  | 2.52                     | 0.58              |
| 7:B:159:ARG:HG2  | 7:B:182:GLN:HA    | 1.85                     | 0.58              |
| 19:N:159:ARG:HB3 | 19:N:164:LEU:HB2  | 1.86                     | 0.58              |
| 46:u:23:ARG:HB2  | 46:u:25:ASP:OD1   | 2.03                     | 0.58              |
| 1:1:2668:C:OP2   | 30:Z:61:ARG:NH1   | 2.37                     | 0.58              |
| 1:1:3144:C:H5'   | 7:B:53:MET:HE3    | 1.85                     | 0.58              |
| 22:Q:80:LYS:HE2  | 22:Q:137:ASN:HA   | 1.85                     | 0.58              |
| 1:1:82:C:H5''    | 19:N:198:ARG:HH21 | 1.69                     | 0.58              |
| 1:1:2653:G:OP1   | 6:A:68:TYR:OH     | 2.21                     | 0.58              |
| 1:1:1010:A:H1'   | 1:1:1011:G:H21    | 1.69                     | 0.58              |
| 1:1:2777:C:OP2   | 15:J:51:ARG:NH1   | 2.37                     | 0.58              |
| 18:M:19:GLY:O    | 18:M:22:THR:OG1   | 2.21                     | 0.58              |
| 33:c:44:THR:HG23 | 33:c:105:ALA:HB2  | 1.86                     | 0.58              |
| 1:1:1011:G:H1'   | 1:1:1012:A:C8     | 2.39                     | 0.57              |
| 1:1:1158:G:N2    | 1:1:1161:A:OP2    | 2.34                     | 0.57              |
| 1:1:1665:A:N6    | 1:1:1852:G:O6     | 2.37                     | 0.57              |
| 1:1:2856:G:H1'   | 1:1:2895:G:N2     | 2.18                     | 0.57              |
| 1:1:3138:U:H5''  | 27:V:47:ARG:HD2   | 1.86                     | 0.57              |
| 3:3:52:THR:HG23  | 3:3:63:TYR:HD2    | 1.68                     | 0.57              |
| 11:F:215:SER:O   | 11:F:249:MET:HE2  | 2.04                     | 0.57              |
| 20:O:55:TYR:OH   | 20:O:74:PHE:O     | 2.22                     | 0.57              |
| 27:V:110:GLU:HG3 | 27:V:130:ARG:HE   | 1.67                     | 0.57              |
| 29:Y:55:ILE:HD11 | 29:Y:81:ILE:HD11  | 1.86                     | 0.57              |
| 45:p:313:LEU:HA  | 45:p:329:SER:HA   | 1.85                     | 0.57              |
| 7:B:44:THR:HG22  | 7:B:340:LYS:HD3   | 1.86                     | 0.57              |
| 8:C:330:LEU:HD23 | 11:F:188:VAL:HG21 | 1.86                     | 0.57              |
| 39:i:72:LYS:HD2  | 39:i:78:LEU:HG    | 1.87                     | 0.57              |
| 1:1:932:G:H1'    | 1:1:1624:A:N6     | 2.19                     | 0.57              |
| 24:S:78:ILE:HG22 | 24:S:122:ILE:HA   | 1.84                     | 0.57              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:1444:C:O2'    | 35:e:92:GLU:OE1   | 2.22                     | 0.57              |
| 1:1:2432:U:H2'    | 1:1:2433:A:C8     | 2.40                     | 0.57              |
| 2:2:74:A:H4'      | 40:j:82:LYS:HZ3   | 1.69                     | 0.57              |
| 42:m:612:THR:HA   | 42:m:641:PHE:HZ   | 1.68                     | 0.57              |
| 43:n:357:THR:HG22 | 43:n:379:LYS:HE2  | 1.87                     | 0.57              |
| 12:G:53:PRO:HD2   | 12:G:56:ILE:HD12  | 1.85                     | 0.57              |
| 1:1:516:G:OP1     | 8:C:323:ASN:ND2   | 2.37                     | 0.57              |
| 1:1:742:A:N1      | 1:1:813:G:O2'     | 2.36                     | 0.57              |
| 1:1:1026:G:O2'    | 1:1:1085:A:N6     | 2.36                     | 0.57              |
| 1:1:3104:G:OP2    | 20:O:75:ARG:NH1   | 2.34                     | 0.57              |
| 1:1:1679:A:N7     | 37:g:68:ASN:ND2   | 2.38                     | 0.57              |
| 1:1:2189:C:H5''   | 23:R:71:ARG:HH21  | 1.70                     | 0.57              |
| 11:F:128:LYS:HB2  | 25:T:133:ALA:HB3  | 1.87                     | 0.57              |
| 41:k:10:GLN:HB3   | 42:m:645:PHE:O    | 2.05                     | 0.57              |
| 1:1:831:G:O2'     | 17:L:18:TRP:NE1   | 2.36                     | 0.57              |
| 9:D:146:LEU:HD21  | 9:D:159:VAL:HG12  | 1.86                     | 0.57              |
| 12:G:205:GLU:H    | 12:G:205:GLU:CD   | 2.13                     | 0.57              |
| 15:J:109:HIS:HD2  | 15:J:123:TYR:O    | 1.88                     | 0.57              |
| 41:k:9:LYS:HB2    | 42:m:645:PHE:HA   | 1.87                     | 0.57              |
| 42:m:331:LYS:NZ   | 42:m:335:GLU:OE2  | 2.38                     | 0.57              |
| 43:n:563:MET:CG   | 43:n:564:MET:H    | 2.17                     | 0.57              |
| 1:1:2989:C:N4     | 1:1:3002:G:O6     | 2.37                     | 0.57              |
| 4:8:18:ARG:O      | 4:8:21:ARG:HG2    | 2.05                     | 0.57              |
| 5:9:72:A:H2'      | 5:9:73:A:H8       | 1.70                     | 0.57              |
| 7:B:215:ILE:HD12  | 7:B:338:LEU:HB3   | 1.87                     | 0.57              |
| 35:e:79:VAL:HG12  | 35:e:112:LEU:HD12 | 1.86                     | 0.57              |
| 39:i:89:THR:O     | 39:i:93:GLN:HG3   | 2.05                     | 0.57              |
| 7:B:188:VAL:HA    | 7:B:191:LYS:HD2   | 1.87                     | 0.56              |
| 9:D:273:ARG:HH22  | 9:D:275:LEU:HD23  | 1.70                     | 0.56              |
| 27:V:76:MET:HG3   | 27:V:104:ILE:HD12 | 1.87                     | 0.56              |
| 1:1:67:A:N6       | 1:1:279:C:O2'     | 2.35                     | 0.56              |
| 1:1:3475:U:OP1    | 34:d:20:HIS:NE2   | 2.35                     | 0.56              |
| 4:8:44:TRP:O      | 4:8:48:LYS:NZ     | 2.36                     | 0.56              |
| 20:O:122:PRO:HA   | 20:O:125:LEU:HD12 | 1.87                     | 0.56              |
| 42:m:573:LYS:HB3  | 42:m:597:ARG:HH12 | 1.69                     | 0.56              |
| 1:1:789:A:N6      | 1:1:802:G:O2'     | 2.39                     | 0.56              |
| 1:1:2833:A:OP1    | 25:T:69:GLN:NE2   | 2.38                     | 0.56              |
| 8:C:159:GLN:HG3   | 8:C:253:THR:HG21  | 1.87                     | 0.56              |
| 24:S:7:GLN:HB2    | 24:S:63:ILE:HD11  | 1.88                     | 0.56              |
| 27:V:91:ASP:OD1   | 27:V:93:VAL:HG23  | 2.05                     | 0.56              |
| 37:g:71:THR:OG1   | 37:g:72:VAL:N     | 2.38                     | 0.56              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 28:X:66:ILE:HD12  | 28:X:120:LYS:HG3  | 1.86                     | 0.56              |
| 46:u:23:ARG:CG    | 46:u:29:PHE:CE1   | 2.89                     | 0.56              |
| 43:n:230:MET:HE3  | 43:n:230:MET:CA   | 2.35                     | 0.56              |
| 3:3:12:GLY:CA     | 3:3:19:ARG:HH12   | 2.19                     | 0.56              |
| 14:I:36:LEU:HD21  | 14:I:69:ARG:HH11  | 1.71                     | 0.56              |
| 42:m:359:LEU:HD22 | 43:n:565:MET:HA   | 1.88                     | 0.56              |
| 1:1:2611:A:OP1    | 12:G:61:ARG:NH2   | 2.39                     | 0.56              |
| 8:C:10:ILE:HD12   | 8:C:20:GLU:HG3    | 1.88                     | 0.56              |
| 14:I:183:GLU:OE2  | 14:I:187:ARG:NH1  | 2.38                     | 0.56              |
| 1:1:1188:G:O2'    | 1:1:1200:A:N3     | 2.37                     | 0.56              |
| 27:V:20:PRO:HA    | 27:V:53:ALA:HA    | 1.88                     | 0.56              |
| 46:u:20:MET:HB2   | 46:u:30:ARG:HD3   | 1.88                     | 0.56              |
| 1:1:1712:A:H5'    | 26:U:95:SER:OG    | 2.06                     | 0.56              |
| 7:B:10:ARG:NH2    | 7:B:263:THR:O     | 2.38                     | 0.56              |
| 9:D:83:LEU:HB3    | 9:D:88:ILE:HB     | 1.88                     | 0.56              |
| 15:J:16:LYS:HE3   | 15:J:130:VAL:HG21 | 1.88                     | 0.56              |
| 1:1:745:G:OP2     | 1:1:745:G:N2      | 2.38                     | 0.55              |
| 19:N:158:HIS:HB3  | 19:N:161:SER:HB2  | 1.88                     | 0.55              |
| 1:1:81:C:HO2'     | 1:1:708:U:HO2'    | 1.53                     | 0.55              |
| 5:9:61:A:N1       | 5:9:116:G:O2'     | 2.31                     | 0.55              |
| 46:u:50:ALA:HA    | 46:u:55:TYR:CE2   | 2.41                     | 0.55              |
| 8:C:331:ASN:ND2   | 11:F:189:GLU:OE2  | 2.40                     | 0.55              |
| 24:S:86:THR:HG23  | 25:T:156:TYR:CE2  | 2.41                     | 0.55              |
| 34:d:14:THR:HG23  | 34:d:111:VAL:HG23 | 1.88                     | 0.55              |
| 26:U:78:THR:O     | 26:U:82:LEU:HG    | 2.06                     | 0.55              |
| 42:m:671:LEU:HD13 | 42:m:685:HIS:HA   | 1.88                     | 0.55              |
| 43:n:25:LYS:HE3   | 43:n:73:LEU:HD11  | 1.89                     | 0.55              |
| 1:1:2726:U:OP1    | 1:1:2852:U:O2'    | 2.24                     | 0.55              |
| 1:1:3343:A:H4'    | 7:B:95:THR:HG22   | 1.88                     | 0.55              |
| 2:2:162:C:H5'     | 12:G:181:LYS:HD3  | 1.89                     | 0.55              |
| 17:L:185:TYR:O    | 17:L:192:ARG:NH2  | 2.39                     | 0.55              |
| 41:k:9:LYS:HE2    | 42:m:644:ASP:O    | 2.06                     | 0.55              |
| 3:3:32:TYR:HE2    | 3:3:77:TRP:NE1    | 2.03                     | 0.55              |
| 5:9:155:G:OP2     | 14:I:203:ARG:NH2  | 2.39                     | 0.55              |
| 12:G:186:LEU:HB3  | 12:G:198:LEU:HD13 | 1.89                     | 0.55              |
| 1:1:1728:U:HO2'   | 1:1:1813:U:HO2'   | 1.49                     | 0.55              |
| 3:3:39:ASN:OD1    | 3:3:40:ARG:N      | 2.39                     | 0.55              |
| 3:3:88:LYS:HZ1    | 10:E:21:GLY:HA2   | 1.69                     | 0.55              |
| 25:T:86:GLU:OE2   | 25:T:86:GLU:N     | 2.35                     | 0.55              |
| 41:k:8:ILE:HD12   | 41:k:8:ILE:N      | 2.22                     | 0.55              |
| 1:1:1603:U:O2'    | 43:n:217:ARG:NH1  | 2.40                     | 0.55              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:2:80:A:N6       | 2:2:87:A:N1       | 2.54                     | 0.55              |
| 8:C:333:TYR:HE2   | 11:F:59:GLU:HG3   | 1.71                     | 0.55              |
| 9:D:122:VAL:O     | 9:D:248:ARG:NH2   | 2.40                     | 0.55              |
| 1:1:1454:C:OP2    | 8:C:195:LYS:NZ    | 2.39                     | 0.55              |
| 1:1:2659:G:OP1    | 12:G:23:LYS:NZ    | 2.40                     | 0.55              |
| 41:k:9:LYS:HE2    | 42:m:644:ASP:C    | 2.32                     | 0.55              |
| 42:m:600:ASN:OD1  | 42:m:603:LYS:HG2  | 2.06                     | 0.55              |
| 44:o:4:ILE:HD13   | 44:o:91:PHE:HE1   | 1.72                     | 0.55              |
| 43:n:230:MET:HE3  | 43:n:230:MET:HA   | 1.89                     | 0.55              |
| 3:3:11:VAL:O      | 3:3:12:GLY:C      | 2.49                     | 0.54              |
| 1:1:3179:G:H4'    | 46:u:42:MET:HE1   | 1.89                     | 0.54              |
| 9:D:36:LEU:HD13   | 9:D:50:ARG:HD2    | 1.88                     | 0.54              |
| 1:1:857:U:OP2     | 6:A:20:ARG:NH1    | 2.40                     | 0.54              |
| 1:1:1818:U:O2'    | 1:1:1819:G:H5'    | 2.07                     | 0.54              |
| 1:1:2843:A:H1'    | 9:D:36:LEU:HD23   | 1.90                     | 0.54              |
| 3:3:53:VAL:HG21   | 3:3:112:LEU:CD1   | 2.37                     | 0.54              |
| 12:G:162:LEU:HD23 | 19:N:7:LEU:HD11   | 1.89                     | 0.54              |
| 15:J:15:SER:OG    | 15:J:130:VAL:O    | 2.24                     | 0.54              |
| 1:1:2948:G:OP1    | 14:I:63:GLU:HG2   | 2.07                     | 0.54              |
| 5:9:57:G:OP1      | 9:D:33:ARG:NH1    | 2.40                     | 0.54              |
| 11:F:113:LEU:O    | 11:F:122:ILE:HD13 | 2.07                     | 0.54              |
| 15:J:15:SER:HB3   | 15:J:132:ASP:CG   | 2.33                     | 0.54              |
| 42:m:409:ILE:HB   | 42:m:419:TRP:HB3  | 1.89                     | 0.54              |
| 45:p:372:ALA:HA   | 45:p:382:VAL:HA   | 1.89                     | 0.54              |
| 1:1:2198:G:H1     | 1:1:2202:C:N4     | 1.98                     | 0.54              |
| 1:1:2243:G:HO2'   | 6:A:226:ARG:HH12  | 1.52                     | 0.54              |
| 3:3:31:GLU:N      | 3:3:31:GLU:OE1    | 2.40                     | 0.54              |
| 3:3:65:LYS:HG2    | 3:3:77:TRP:CD1    | 2.43                     | 0.54              |
| 7:B:67:MET:HE3    | 7:B:72:ILE:HG22   | 1.88                     | 0.54              |
| 11:F:150:THR:HG23 | 11:F:246:VAL:HG11 | 1.89                     | 0.54              |
| 22:Q:92:GLU:OE2   | 31:a:77:ARG:NH1   | 2.41                     | 0.54              |
| 30:Z:101:PHE:HD1  | 30:Z:107:ARG:HH21 | 1.54                     | 0.54              |
| 1:1:615:G:N2      | 1:1:637:U:OP1     | 2.38                     | 0.54              |
| 25:T:100:LYS:HA   | 25:T:103:GLN:HG2  | 1.88                     | 0.54              |
| 1:1:1795:U:OP1    | 23:R:52:ARG:NH2   | 2.39                     | 0.54              |
| 6:A:135:ILE:HD13  | 6:A:147:VAL:HG12  | 1.90                     | 0.54              |
| 10:E:142:GLU:HG3  | 10:E:143:ASN:H    | 1.72                     | 0.54              |
| 15:J:48:SER:HB2   | 15:J:66:ALA:HB3   | 1.90                     | 0.54              |
| 31:a:148:ALA:HA   | 39:i:6:VAL:HG23   | 1.90                     | 0.54              |
| 42:m:333:LYS:HG3  | 43:n:142:LEU:HD22 | 1.90                     | 0.54              |
| 1:1:1836:U:H2'    | 6:A:49:HIS:ND1    | 2.23                     | 0.54              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:B:44:THR:HG21   | 7:B:184:ASN:ND2   | 2.22                     | 0.54              |
| 26:U:69:PHE:CE2   | 26:U:74:LEU:HD21  | 2.42                     | 0.54              |
| 34:d:21:MET:HE1   | 34:d:40:GLU:HB2   | 1.89                     | 0.54              |
| 41:k:12:LEU:HD23  | 41:k:16:ARG:NH2   | 2.23                     | 0.54              |
| 1:1:1919:A:H5'    | 23:R:88:ARG:HG2   | 1.89                     | 0.54              |
| 10:E:52:LEU:HD13  | 10:E:80:LEU:HD11  | 1.89                     | 0.54              |
| 25:T:68:THR:CG2   | 25:T:69:GLN:H     | 2.17                     | 0.54              |
| 26:U:9:SER:N      | 26:U:65:ALA:O     | 2.41                     | 0.54              |
| 45:p:222:GLY:HA2  | 45:p:264:LEU:HA   | 1.90                     | 0.54              |
| 9:D:148:VAL:HG12  | 9:D:159:VAL:HG11  | 1.90                     | 0.54              |
| 26:U:11:LYS:HE2   | 26:U:62:ALA:HB1   | 1.89                     | 0.54              |
| 1:1:36:C:N4       | 1:1:47:C:O2'      | 2.41                     | 0.53              |
| 1:1:1117:A:H1'    | 32:b:43:GLN:HE22  | 1.73                     | 0.53              |
| 3:3:95:GLN:HA     | 3:3:98:LEU:HD23   | 1.89                     | 0.53              |
| 34:d:57:ASP:OD1   | 34:d:95:TYR:OH    | 2.26                     | 0.53              |
| 45:p:383:TRP:HA   | 45:p:392:ILE:H    | 1.73                     | 0.53              |
| 1:1:26:A:N3       | 1:1:336:U:O2'     | 2.40                     | 0.53              |
| 38:h:73:LYS:O     | 38:h:74:ASN:OD1   | 2.25                     | 0.53              |
| 41:k:50:ASP:OD2   | 41:k:52:LYS:HG2   | 2.08                     | 0.53              |
| 42:m:369:ARG:NH1  | 42:m:370:PRO:HA   | 2.23                     | 0.53              |
| 1:1:739:G:H5'     | 17:L:183:ARG:HE   | 1.74                     | 0.53              |
| 1:1:817:G:OP2     | 22:Q:62:SER:OG    | 2.21                     | 0.53              |
| 18:M:82:ASP:OD1   | 18:M:82:ASP:O     | 2.25                     | 0.53              |
| 33:c:109:ALA:HB2  | 33:c:115:LEU:HD23 | 1.91                     | 0.53              |
| 1:1:1417:G:O3'    | 8:C:140:ARG:NH1   | 2.34                     | 0.53              |
| 1:1:2730:A:N1     | 25:T:3:HIS:NE2    | 2.56                     | 0.53              |
| 7:B:45:ALA:HB3    | 7:B:181:ILE:HG23  | 1.91                     | 0.53              |
| 28:X:67:ASN:CA    | 28:X:72:MET:HE3   | 2.36                     | 0.53              |
| 10:E:109:ILE:HD11 | 10:E:174:MET:HE3  | 1.90                     | 0.53              |
| 30:Z:104:PRO:HA   | 30:Z:107:ARG:HB3  | 1.89                     | 0.53              |
| 42:m:738:MET:HE2  | 42:m:738:MET:CA   | 2.38                     | 0.53              |
| 45:p:231:GLU:HA   | 45:p:259:ARG:HA   | 1.90                     | 0.53              |
| 1:1:2856:G:H1'    | 1:1:2895:G:H21    | 1.74                     | 0.53              |
| 1:1:3372:C:P      | 10:E:95:ARG:HH21  | 2.31                     | 0.53              |
| 1:1:317:U:OP1     | 39:i:82:LYS:NZ    | 2.30                     | 0.53              |
| 1:1:1975:U:O2'    | 1:1:1987:A:N7     | 2.38                     | 0.53              |
| 1:1:2494:C:O2'    | 1:1:2714:G:N2     | 2.41                     | 0.53              |
| 24:S:123:LEU:HA   | 25:T:153:PRO:HG2  | 1.91                     | 0.53              |
| 36:f:7:ARG:HH12   | 36:f:11:LYS:HE2   | 1.73                     | 0.53              |
| 41:k:50:ASP:HB3   | 41:k:53:LYS:HE3   | 1.91                     | 0.53              |
| 1:1:993:C:O2'     | 1:1:2711:C:OP1    | 2.22                     | 0.53              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:3:76:LEU:HD22   | 3:3:77:TRP:NE1    | 2.24                     | 0.53              |
| 17:L:89:VAL:O     | 17:L:92:THR:OG1   | 2.25                     | 0.53              |
| 42:m:687:ARG:NH1  | 42:m:689:TYR:CE2  | 2.76                     | 0.53              |
| 1:1:632:A:OP1     | 10:E:44:ARG:NH2   | 2.41                     | 0.53              |
| 1:1:1531:C:H2'    | 1:1:1532:A:C8     | 2.43                     | 0.53              |
| 1:1:1602:A:N6     | 43:n:213:ASP:O    | 2.36                     | 0.53              |
| 1:1:1683:A:H62    | 1:1:1848:G:H21    | 1.56                     | 0.53              |
| 46:u:53:LYS:HE2   | 46:u:57:LYS:HG3   | 1.91                     | 0.53              |
| 7:B:49:TYR:HH     | 7:B:164:THR:HG1   | 1.55                     | 0.53              |
| 38:h:31:ARG:HH22  | 38:h:50:ARG:HD3   | 1.74                     | 0.53              |
| 1:1:1628:A:O2'    | 1:1:1629:A:OP1    | 2.23                     | 0.52              |
| 1:1:2674:G:H5''   | 1:1:2675:A:H2'    | 1.89                     | 0.52              |
| 3:3:12:GLY:HA2    | 3:3:19:ARG:HH22   | 1.73                     | 0.52              |
| 24:S:47:ILE:HG22  | 24:S:48:ASN:OD1   | 2.10                     | 0.52              |
| 1:1:1034:A:H2'    | 1:1:1035:A:H8     | 1.74                     | 0.52              |
| 1:1:1394:C:H5''   | 8:C:312:ARG:HG2   | 1.92                     | 0.52              |
| 1:1:2199:G:H4'    | 46:u:48:LYS:HZ1   | 1.74                     | 0.52              |
| 1:1:2273:G:O2'    | 1:1:2402:U:OP2    | 2.26                     | 0.52              |
| 3:3:109:LYS:NZ    | 10:E:13:GLY:O     | 2.42                     | 0.52              |
| 8:C:228:GLU:OE1   | 8:C:248:ARG:NH1   | 2.37                     | 0.52              |
| 2:2:66:G:O6       | 40:j:63:ARG:NH1   | 2.42                     | 0.52              |
| 29:Y:65:ARG:HG2   | 29:Y:84:VAL:HG22  | 1.91                     | 0.52              |
| 43:n:143:PHE:CD2  | 43:n:223:LEU:HD11 | 2.44                     | 0.52              |
| 3:3:32:TYR:HE2    | 3:3:77:TRP:CE2    | 2.27                     | 0.52              |
| 11:F:50:LEU:HD12  | 11:F:50:LEU:O     | 2.10                     | 0.52              |
| 17:L:12:ALA:HB1   | 17:L:14:PHE:HD2   | 1.75                     | 0.52              |
| 18:M:41:SER:HB3   | 18:M:46:PHE:HB3   | 1.92                     | 0.52              |
| 23:R:111:GLU:OE2  | 23:R:111:GLU:HA   | 2.10                     | 0.52              |
| 42:m:413:MET:SD   | 42:m:413:MET:N    | 2.82                     | 0.52              |
| 46:u:23:ARG:CD    | 46:u:29:PHE:CE1   | 2.91                     | 0.52              |
| 1:1:29:C:O2'      | 19:N:162:ARG:O    | 2.27                     | 0.52              |
| 1:1:892:G:C5      | 6:A:180:LYS:HB2   | 2.44                     | 0.52              |
| 1:1:1764:U:H1'    | 1:1:1765:C:C6     | 2.45                     | 0.52              |
| 1:1:1923:G:N2     | 1:1:2206:C:O2     | 2.43                     | 0.52              |
| 1:1:2297:U:H4'    | 1:1:2298:G:H5'    | 1.90                     | 0.52              |
| 1:1:3357:C:N4     | 1:1:3358:U:O4     | 2.43                     | 0.52              |
| 3:3:12:GLY:HA2    | 3:3:19:ARG:HH12   | 1.74                     | 0.52              |
| 5:9:52:U:H3       | 5:9:167:G:H1      | 1.58                     | 0.52              |
| 14:I:162:GLN:OE1  | 14:I:162:GLN:HA   | 2.09                     | 0.52              |
| 1:1:2651:G:O2'    | 30:Z:136:PHE:O    | 2.28                     | 0.52              |
| 12:G:101:THR:HG23 | 12:G:104:GLU:H    | 1.74                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 45:p:194:VAL:H   | 45:p:259:ARG:H    | 1.57                     | 0.52              |
| 46:u:7:TYR:CE2   | 46:u:40:PHE:HD2   | 2.28                     | 0.52              |
| 46:u:10:SER:HB2  | 46:u:53:LYS:HB3   | 1.90                     | 0.52              |
| 1:1:2766:A:N6    | 1:1:2767:G:O6     | 2.43                     | 0.52              |
| 3:3:65:LYS:HG2   | 3:3:77:TRP:HD1    | 1.75                     | 0.52              |
| 21:P:53:GLU:HG3  | 21:P:53:GLU:O     | 2.09                     | 0.52              |
| 42:m:652:ASN:O   | 43:n:562:LYS:NZ   | 2.28                     | 0.52              |
| 1:1:1547:G:OP1   | 23:R:5:ARG:NH1    | 2.43                     | 0.52              |
| 1:1:3367:A:H2'   | 10:E:86:TYR:OH    | 2.10                     | 0.52              |
| 3:3:85:ASN:HB3   | 3:3:88:LYS:HG2    | 1.91                     | 0.52              |
| 7:B:80:GLU:HG2   | 7:B:82:PRO:HD3    | 1.91                     | 0.52              |
| 15:J:13:ARG:N    | 15:J:131:MET:HE1  | 2.24                     | 0.52              |
| 7:B:77:THR:OG1   | 7:B:326:GLY:O     | 2.26                     | 0.52              |
| 7:B:224:LYS:HB2  | 7:B:270:ALA:O     | 2.10                     | 0.52              |
| 24:S:76:ILE:HG12 | 24:S:125:VAL:HG22 | 1.91                     | 0.52              |
| 26:U:12:TYR:HB2  | 26:U:63:VAL:HG22  | 1.92                     | 0.52              |
| 35:e:32:PRO:HG3  | 35:e:39:VAL:HG23  | 1.91                     | 0.52              |
| 43:n:38:ILE:O    | 43:n:122:ARG:NH1  | 2.41                     | 0.52              |
| 1:1:1995:G:H21   | 1:1:3463:A:H8     | 1.58                     | 0.51              |
| 3:3:12:GLY:O     | 3:3:14:GLU:N      | 2.44                     | 0.51              |
| 7:B:331:PRO:HD2  | 7:B:334:ARG:HD2   | 1.92                     | 0.51              |
| 31:a:72:THR:HG22 | 31:a:110:LYS:HB3  | 1.91                     | 0.51              |
| 41:k:69:GLU:HG3  | 41:k:70:VAL:H     | 1.73                     | 0.51              |
| 1:1:43:A:N1      | 1:1:2508:C:O2'    | 2.33                     | 0.51              |
| 1:1:1679:A:OP1   | 1:1:1875:U:O2'    | 2.25                     | 0.51              |
| 1:1:1755:A:H4'   | 1:1:1756:U:H5'    | 1.91                     | 0.51              |
| 1:1:2651:G:O6    | 37:g:99:LYS:NZ    | 2.42                     | 0.51              |
| 1:1:2821:C:O2'   | 1:1:2822:A:H2'    | 2.10                     | 0.51              |
| 9:D:284:PHE:O    | 9:D:288:VAL:HG23  | 2.11                     | 0.51              |
| 38:h:73:LYS:C    | 38:h:74:ASN:OD1   | 2.54                     | 0.51              |
| 1:1:2443:G:H5'   | 21:P:139:TYR:CE2  | 2.46                     | 0.51              |
| 3:3:69:ARG:HD2   | 3:3:75:LYS:HD2    | 1.92                     | 0.51              |
| 3:3:93:ILE:HG13  | 3:3:112:LEU:CD2   | 2.40                     | 0.51              |
| 16:K:91:MET:CE   | 16:K:92:VAL:HG23  | 2.41                     | 0.51              |
| 15:J:17:LEU:HD13 | 15:J:129:VAL:HG22 | 1.93                     | 0.51              |
| 21:P:116:HIS:HB3 | 21:P:149:ILE:HB   | 1.91                     | 0.51              |
| 27:V:21:VAL:HG12 | 27:V:51:LEU:HD13  | 1.93                     | 0.51              |
| 30:Z:97:THR:O    | 30:Z:100:THR:OG1  | 2.21                     | 0.51              |
| 1:1:137:C:O2     | 1:1:139:U:O2'     | 2.21                     | 0.51              |
| 1:1:870:G:N7     | 16:K:4:ARG:NH2    | 2.55                     | 0.51              |
| 1:1:1871:U:OP1   | 43:n:571:LYS:HB2  | 2.10                     | 0.51              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:3:6:VAL:O       | 3:3:10:VAL:HG23   | 2.10                     | 0.51              |
| 3:3:12:GLY:O      | 3:3:13:HIS:C      | 2.54                     | 0.51              |
| 3:3:61:TYR:CE1    | 3:3:63:TYR:OH     | 2.61                     | 0.51              |
| 5:9:149:G:N7      | 24:S:51:LYS:NZ    | 2.43                     | 0.51              |
| 19:N:145:ASP:HB3  | 19:N:148:ILE:HG22 | 1.92                     | 0.51              |
| 28:X:92:PHE:O     | 28:X:96:GLU:HG2   | 2.10                     | 0.51              |
| 38:h:20:LEU:HB2   | 38:h:56:ILE:HG21  | 1.92                     | 0.51              |
| 38:h:80:LEU:HA    | 38:h:83:ARG:HD2   | 1.92                     | 0.51              |
| 42:m:364:THR:OG1  | 42:m:367:GLU:OE2  | 2.28                     | 0.51              |
| 46:u:50:ALA:HA    | 46:u:55:TYR:CD2   | 2.45                     | 0.51              |
| 1:1:928:A:H5''    | 6:A:182:GLY:HA2   | 1.92                     | 0.51              |
| 3:3:102:GLY:O     | 3:3:105:ILE:HG12  | 2.11                     | 0.51              |
| 22:Q:116:LEU:HD21 | 22:Q:122:VAL:HG22 | 1.92                     | 0.51              |
| 1:1:1818:U:H2'    | 1:1:1819:G:C8     | 2.46                     | 0.51              |
| 1:1:2332:A:O2'    | 6:A:222:THR:HG22  | 2.10                     | 0.51              |
| 1:1:2618:G:H22    | 6:A:67:HIS:CD2    | 2.29                     | 0.51              |
| 5:9:102:U:O2'     | 15:J:7:ASN:ND2    | 2.43                     | 0.51              |
| 12:G:105:LYS:HE2  | 42:m:234:ARG:NH1  | 2.26                     | 0.51              |
| 38:h:94:LEU:HD22  | 38:h:98:GLU:HG3   | 1.93                     | 0.51              |
| 1:1:222:G:H5''    | 29:Y:11:ARG:HG3   | 1.92                     | 0.51              |
| 1:1:1424:A:N6     | 1:1:1452:A:O2'    | 2.43                     | 0.51              |
| 43:n:125:THR:HG23 | 43:n:128:ASP:H    | 1.76                     | 0.51              |
| 1:1:1769:A:N6     | 16:K:42:CYS:HA    | 2.25                     | 0.51              |
| 1:1:1820:C:N4     | 23:R:89:MET:HE2   | 2.26                     | 0.51              |
| 3:3:50:TYR:HD1    | 3:3:100:TRP:HH2   | 1.59                     | 0.51              |
| 3:3:66:THR:OG1    | 3:3:68:GLU:OE1    | 2.29                     | 0.51              |
| 5:9:51:G:C8       | 9:D:264:LYS:HG2   | 2.46                     | 0.51              |
| 5:9:144:C:OP1     | 24:S:42:TYR:OH    | 2.26                     | 0.51              |
| 27:V:83:GLN:HE21  | 27:V:85:LYS:HB3   | 1.76                     | 0.51              |
| 29:Y:2:LYS:HD3    | 29:Y:7:VAL:HG13   | 1.91                     | 0.51              |
| 29:Y:8:THR:O      | 29:Y:14:GLN:NE2   | 2.33                     | 0.51              |
| 42:m:665:TYR:CD1  | 42:m:672:PHE:HB3  | 2.45                     | 0.51              |
| 43:n:28:LEU:HD21  | 43:n:78:VAL:HG13  | 1.91                     | 0.51              |
| 41:k:19:ASP:OD1   | 41:k:20:ALA:N     | 2.43                     | 0.50              |
| 1:1:695:C:P       | 22:Q:148:ARG:HH22 | 2.34                     | 0.50              |
| 1:1:1112:A:H5'    | 9:D:139:PRO:HB3   | 1.93                     | 0.50              |
| 1:1:2521:U:H1'    | 19:N:125:ALA:HB2  | 1.92                     | 0.50              |
| 1:1:3098:C:O2'    | 7:B:180:GLU:OE2   | 2.27                     | 0.50              |
| 19:N:94:TYR:CE2   | 19:N:96:ARG:HB2   | 2.46                     | 0.50              |
| 20:O:48:PHE:HE1   | 20:O:142:LEU:HA   | 1.76                     | 0.50              |
| 21:P:60:PHE:CE1   | 21:P:82:ARG:HB2   | 2.46                     | 0.50              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 29:Y:55:ILE:HD12  | 29:Y:103:VAL:HG21 | 1.92                     | 0.50              |
| 1:1:311:G:O2'     | 1:1:312:G:OP2     | 2.29                     | 0.50              |
| 1:1:736:A:H1'     | 31:a:57:GLY:HA2   | 1.93                     | 0.50              |
| 1:1:1174:A:H5'    | 1:1:1402:U:H1'    | 1.94                     | 0.50              |
| 1:1:2199:G:H4'    | 46:u:48:LYS:HZ3   | 1.76                     | 0.50              |
| 1:1:713:G:O6      | 17:L:36:ARG:NH2   | 2.45                     | 0.50              |
| 3:3:47:ASN:CG     | 3:3:48:SER:N      | 2.69                     | 0.50              |
| 9:D:95:TRP:HA     | 9:D:158:ARG:HG3   | 1.94                     | 0.50              |
| 43:n:383:ASP:HB3  | 43:n:386:LEU:HD23 | 1.93                     | 0.50              |
| 1:1:2002:G:OP1    | 23:R:136:ARG:HD3  | 2.12                     | 0.50              |
| 1:1:2336:C:H3'    | 1:1:2361:G:C8     | 2.47                     | 0.50              |
| 1:1:2515:U:H5'    | 6:A:227:GLN:HE22  | 1.75                     | 0.50              |
| 42:m:614:VAL:HG11 | 42:m:633:SER:HB2  | 1.92                     | 0.50              |
| 1:1:251:U:H2'     | 1:1:252:A:C8      | 2.47                     | 0.50              |
| 1:1:2243:G:O3'    | 6:A:226:ARG:NH2   | 2.43                     | 0.50              |
| 5:9:66:U:H2'      | 5:9:67:A:C8       | 2.47                     | 0.50              |
| 10:E:85:PRO:HD2   | 10:E:178:LEU:HD23 | 1.94                     | 0.50              |
| 11:F:227:LYS:HB2  | 11:F:233:GLY:HA3  | 1.93                     | 0.50              |
| 15:J:29:ARG:HA    | 15:J:32:ARG:HE    | 1.77                     | 0.50              |
| 1:1:1577:G:HO2'   | 1:1:2256:A:HO2'   | 1.56                     | 0.50              |
| 1:1:2795:G:H5''   | 25:T:17:ARG:HG2   | 1.93                     | 0.50              |
| 2:2:45:A:OP2      | 38:h:88:ARG:NH1   | 2.44                     | 0.50              |
| 3:3:89:ALA:O      | 3:3:93:ILE:HG12   | 2.12                     | 0.50              |
| 12:G:34:PHE:CD1   | 12:G:42:PRO:HD3   | 2.47                     | 0.50              |
| 14:I:51:HIS:CD2   | 14:I:168:SER:HB2  | 2.46                     | 0.50              |
| 20:O:158:GLU:HG3  | 20:O:162:LYS:HE2  | 1.93                     | 0.50              |
| 1:1:444:A:H2'     | 1:1:445:G:C8      | 2.47                     | 0.50              |
| 1:1:1127:U:N1     | 25:T:129:ARG:HD3  | 2.27                     | 0.50              |
| 5:9:84:C:H42      | 5:9:96:C:H1'      | 1.75                     | 0.50              |
| 16:K:25:ASP:N     | 16:K:25:ASP:OD1   | 2.43                     | 0.50              |
| 19:N:115:VAL:HA   | 19:N:134:LEU:HD23 | 1.94                     | 0.50              |
| 21:P:41:LEU:HD21  | 21:P:99:GLU:HB3   | 1.94                     | 0.50              |
| 22:Q:177:ARG:HB2  | 31:a:53:PHE:O     | 2.12                     | 0.50              |
| 26:U:27:VAL:HA    | 26:U:30:PHE:HD2   | 1.76                     | 0.50              |
| 28:X:133:ASP:HA   | 28:X:136:ASN:ND2  | 2.26                     | 0.50              |
| 36:f:46:LEU:HD11  | 36:f:75:PRO:HD3   | 1.93                     | 0.50              |
| 1:1:775:A:H2'     | 1:1:776:U:O4'     | 2.12                     | 0.50              |
| 1:1:1787:G:H21    | 41:k:2:PRO:HA     | 1.75                     | 0.50              |
| 1:1:2477:C:O2'    | 1:1:3408:A:N1     | 2.44                     | 0.50              |
| 16:K:91:MET:HE3   | 16:K:92:VAL:HG23  | 1.93                     | 0.50              |
| 36:f:7:ARG:HG2    | 36:f:9:TYR:CZ     | 2.46                     | 0.50              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 39:i:23:ARG:HB2   | 39:i:26:ARG:HG3   | 1.93                     | 0.50              |
| 42:m:532:LYS:HB2  | 42:m:548:PRO:HD3  | 1.93                     | 0.50              |
| 43:n:244:ARG:H    | 43:n:244:ARG:HD3  | 1.76                     | 0.50              |
| 1:1:774:C:OP1     | 22:Q:146:HIS:ND1  | 2.45                     | 0.49              |
| 20:O:48:PHE:CE1   | 20:O:142:LEU:HA   | 2.47                     | 0.49              |
| 24:S:65:GLU:OE2   | 24:S:72:LYS:NZ    | 2.42                     | 0.49              |
| 37:g:41:ILE:HG13  | 37:g:56:ALA:HB2   | 1.94                     | 0.49              |
| 38:h:58:THR:O     | 38:h:62:GLU:HG3   | 2.12                     | 0.49              |
| 1:1:837:G:H5''    | 8:C:77:PRO:HD3    | 1.94                     | 0.49              |
| 1:1:1018:U:O2'    | 11:F:129:ALA:O    | 2.31                     | 0.49              |
| 1:1:1603:U:H5'    | 43:n:30:LEU:HD22  | 1.94                     | 0.49              |
| 3:3:32:TYR:OH     | 3:3:77:TRP:CG     | 2.65                     | 0.49              |
| 10:E:93:ILE:HD11  | 10:E:160:VAL:HG11 | 1.93                     | 0.49              |
| 15:J:12:LEU:HD12  | 15:J:131:MET:CE   | 2.42                     | 0.49              |
| 22:Q:166:VAL:HG12 | 22:Q:168:SER:H    | 1.77                     | 0.49              |
| 25:T:47:ALA:O     | 25:T:49:GLN:NE2   | 2.45                     | 0.49              |
| 1:1:414:G:H1'     | 2:2:24:G:N2       | 2.27                     | 0.49              |
| 1:1:1127:U:C2     | 25:T:129:ARG:HD3  | 2.47                     | 0.49              |
| 1:1:1751:U:OP1    | 30:Z:78:ASN:ND2   | 2.45                     | 0.49              |
| 5:9:92:A:H1'      | 15:J:72:ARG:HH11  | 1.76                     | 0.49              |
| 19:N:160:GLU:HG2  | 19:N:161:SER:N    | 2.27                     | 0.49              |
| 21:P:50:ASN:ND2   | 21:P:56:GLN:OE1   | 2.34                     | 0.49              |
| 25:T:39:ILE:HD13  | 25:T:63:VAL:HG22  | 1.93                     | 0.49              |
| 42:m:405:GLY:HA2  | 42:m:452:ILE:HG13 | 1.94                     | 0.49              |
| 1:1:701:G:O6      | 22:Q:87:THR:HG21  | 2.12                     | 0.49              |
| 2:2:123:C:OP1     | 43:n:3:ARG:NH2    | 2.46                     | 0.49              |
| 3:3:52:THR:CG2    | 3:3:63:TYR:HD2    | 2.25                     | 0.49              |
| 18:M:122:GLU:OE2  | 18:M:123:GLN:N    | 2.45                     | 0.49              |
| 24:S:25:ARG:HH22  | 24:S:27:ARG:HD2   | 1.77                     | 0.49              |
| 24:S:82:SER:H     | 24:S:85:GLY:HA2   | 1.77                     | 0.49              |
| 1:1:288:U:O2'     | 1:1:290:G:N7      | 2.31                     | 0.49              |
| 1:1:547:G:H1      | 1:1:576:U:H2'     | 1.76                     | 0.49              |
| 1:1:3395:G:O2'    | 1:1:3396:A:O5'    | 2.27                     | 0.49              |
| 15:J:12:LEU:HD12  | 15:J:131:MET:HE3  | 1.93                     | 0.49              |
| 28:X:61:ILE:HD12  | 28:X:89:ALA:HB2   | 1.94                     | 0.49              |
| 33:c:30:LEU:HG    | 33:c:112:SER:HB2  | 1.93                     | 0.49              |
| 1:1:1357:A:O2'    | 36:f:78:ASN:OD1   | 2.23                     | 0.49              |
| 1:1:3059:G:N2     | 1:1:3062:A:OP2    | 2.36                     | 0.49              |
| 15:J:125:MET:SD   | 15:J:125:MET:C    | 2.95                     | 0.49              |
| 20:O:166:ALA:O    | 20:O:170:GLN:HG2  | 2.12                     | 0.49              |
| 22:Q:34:PHE:HD1   | 22:Q:37:ARG:HH21  | 1.60                     | 0.49              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:1209:G:N3    | 1:1:1359:C:O2'    | 2.45                     | 0.49              |
| 3:3:76:LEU:HD22  | 3:3:77:TRP:CD1    | 2.48                     | 0.49              |
| 24:S:154:ARG:NH1 | 24:S:174:THR:O    | 2.42                     | 0.49              |
| 42:m:535:SER:HB3 | 42:m:544:ALA:HB3  | 1.95                     | 0.49              |
| 42:m:687:ARG:CZ  | 42:m:689:TYR:CZ   | 2.96                     | 0.49              |
| 1:1:790:A:N6     | 1:1:801:G:O2'     | 2.44                     | 0.49              |
| 1:1:2395:G:O2'   | 1:1:2398:U:OP2    | 2.30                     | 0.49              |
| 20:O:152:ASP:OD1 | 20:O:152:ASP:N    | 2.44                     | 0.49              |
| 34:d:99:VAL:HG12 | 34:d:101:VAL:HG13 | 1.94                     | 0.49              |
| 43:n:170:TYR:CE1 | 43:n:237:LEU:HB3  | 2.48                     | 0.49              |
| 1:1:808:U:H3     | 32:b:44:LYS:HZ3   | 1.61                     | 0.49              |
| 1:1:933:G:OP1    | 40:j:13:ASN:ND2   | 2.41                     | 0.49              |
| 1:1:1370:C:OP1   | 35:e:58:LYS:HG3   | 2.12                     | 0.49              |
| 1:1:1525:A:H5''  | 40:j:14:LYS:HE2   | 1.94                     | 0.49              |
| 1:1:3268:U:O2'   | 1:1:3269:A:O5'    | 2.27                     | 0.49              |
| 2:2:132:G:H1     | 2:2:137:A:N6      | 2.07                     | 0.49              |
| 7:B:323:MET:HE1  | 7:B:359:ILE:HD13  | 1.95                     | 0.49              |
| 45:p:408:LEU:HA  | 45:p:423:GLY:HA3  | 1.94                     | 0.49              |
| 1:1:401:U:O3'    | 29:Y:86:ARG:NH2   | 2.46                     | 0.49              |
| 1:1:1538:A:OP1   | 21:P:23:ARG:NH1   | 2.46                     | 0.49              |
| 9:D:93:ALA:O     | 9:D:158:ARG:NH1   | 2.46                     | 0.49              |
| 14:I:179:ASP:OD1 | 14:I:180:GLU:N    | 2.46                     | 0.49              |
| 19:N:73:ARG:NE   | 19:N:92:LEU:HD11  | 2.27                     | 0.49              |
| 22:Q:64:SER:HA   | 22:Q:94:MET:HE1   | 1.93                     | 0.49              |
| 26:U:15:ASP:HB3  | 26:U:102:GLU:HB3  | 1.95                     | 0.49              |
| 35:e:86:ASN:OD1  | 35:e:86:ASN:N     | 2.43                     | 0.49              |
| 1:1:970:C:O2     | 1:1:2908:A:O2'    | 2.27                     | 0.48              |
| 1:1:2238:G:H4'   | 16:K:22:LEU:HD11  | 1.93                     | 0.48              |
| 1:1:3030:U:H5    | 27:V:46:ALA:HB2   | 1.77                     | 0.48              |
| 10:E:84:GLY:HA3  | 10:E:89:ASN:HD21  | 1.77                     | 0.48              |
| 20:O:141:ARG:O   | 20:O:145:GLU:HG3  | 2.12                     | 0.48              |
| 28:X:57:ASP:O    | 28:X:61:ILE:HG12  | 2.12                     | 0.48              |
| 43:n:150:ASP:OD1 | 43:n:150:ASP:N    | 2.46                     | 0.48              |
| 1:1:86:G:N2      | 1:1:99:A:OP2      | 2.25                     | 0.48              |
| 15:J:109:HIS:NE2 | 15:J:122:ILE:HA   | 2.28                     | 0.48              |
| 30:Z:4:ILE:HG21  | 33:c:77:SER:OG    | 2.13                     | 0.48              |
| 1:1:3470:G:H22   | 7:B:381:GLY:H     | 1.60                     | 0.48              |
| 21:P:141:SER:O   | 21:P:143:PRO:HD3  | 2.13                     | 0.48              |
| 28:X:132:LEU:O   | 28:X:136:ASN:ND2  | 2.46                     | 0.48              |
| 41:k:50:ASP:HB3  | 41:k:53:LYS:CE    | 2.42                     | 0.48              |
| 1:1:1108:C:N1    | 32:b:42:ASN:ND2   | 2.60                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:E:167:ALA:O    | 10:E:171:ILE:HG22 | 2.12                     | 0.48              |
| 24:S:147:LEU:HD12 | 24:S:148:LYS:N    | 2.28                     | 0.48              |
| 36:f:13:LYS:NZ    | 36:f:98:SER:OG    | 2.46                     | 0.48              |
| 37:g:13:TYR:O     | 37:g:15:THR:HG23  | 2.13                     | 0.48              |
| 42:m:721:HIS:HB2  | 42:m:726:TRP:HB2  | 1.95                     | 0.48              |
| 1:1:263:A:H2'     | 1:1:264:G:C8      | 2.48                     | 0.48              |
| 1:1:812:A:N6      | 22:Q:174:GLU:O    | 2.47                     | 0.48              |
| 33:c:27:LYS:HE3   | 33:c:114:ILE:HD12 | 1.96                     | 0.48              |
| 39:i:50:PRO:O     | 39:i:54:ARG:HG3   | 2.13                     | 0.48              |
| 1:1:1042:G:N2     | 1:1:1073:U:O2     | 2.46                     | 0.48              |
| 1:1:1219:U:OP1    | 1:1:1241:U:O2'    | 2.30                     | 0.48              |
| 30:Z:90:ASP:HA    | 30:Z:93:LYS:HZ3   | 1.77                     | 0.48              |
| 42:m:267:HIS:ND1  | 42:m:268:ASP:O    | 2.46                     | 0.48              |
| 45:p:201:GLU:H    | 45:p:216:SER:HA   | 1.79                     | 0.48              |
| 1:1:275:G:OP2     | 1:1:326:A:N6      | 2.46                     | 0.48              |
| 3:3:5:GLU:OE2     | 8:C:290:THR:OG1   | 2.31                     | 0.48              |
| 7:B:80:GLU:OE1    | 7:B:314:TYR:OH    | 2.29                     | 0.48              |
| 9:D:208:MET:HE2   | 9:D:233:SER:CA    | 2.43                     | 0.48              |
| 12:G:166:LEU:HD13 | 12:G:197:VAL:HG11 | 1.96                     | 0.48              |
| 22:Q:177:ARG:N    | 31:a:51:GLY:HA2   | 2.29                     | 0.48              |
| 28:X:71:ALA:O     | 28:X:75:ILE:HG12  | 2.13                     | 0.48              |
| 42:m:389:LEU:HD12 | 42:m:398:LEU:HD21 | 1.94                     | 0.48              |
| 46:u:7:TYR:CE2    | 46:u:40:PHE:CD2   | 3.01                     | 0.48              |
| 1:1:1094:A:N3     | 25:T:130:ARG:NH2  | 2.61                     | 0.48              |
| 1:1:1930:G:OP2    | 23:R:20:ARG:HG2   | 2.14                     | 0.48              |
| 1:1:2461:A:O2'    | 1:1:2918:G:N2     | 2.40                     | 0.48              |
| 1:1:2767:G:O2'    | 1:1:2768:A:O5'    | 2.28                     | 0.48              |
| 1:1:701:G:O2'     | 1:1:818:A:N1      | 2.37                     | 0.48              |
| 1:1:911:U:O2'     | 21:P:135:ARG:NH2  | 2.47                     | 0.48              |
| 1:1:1408:G:O6     | 31:a:10:LYS:HE3   | 2.13                     | 0.48              |
| 1:1:2281:U:H5''   | 1:1:2282:G:H5'    | 1.95                     | 0.48              |
| 1:1:2284:C:H2'    | 1:1:2330:A:H61    | 1.79                     | 0.48              |
| 1:1:2618:G:N2     | 1:1:2620:A:N1     | 2.61                     | 0.48              |
| 11:F:183:TYR:CZ   | 11:F:204:GLN:HG2  | 2.48                     | 0.48              |
| 22:Q:176:ALA:O    | 22:Q:183:ARG:HB2  | 2.14                     | 0.48              |
| 30:Z:120:GLU:OE1  | 30:Z:121:LYS:N    | 2.47                     | 0.48              |
| 31:a:37:GLY:HA2   | 31:a:41:LEU:HB2   | 1.95                     | 0.48              |
| 32:b:55:ARG:HG2   | 32:b:56:GLN:OE1   | 2.14                     | 0.48              |
| 40:j:4:GLY:O      | 40:j:8:PHE:HD1    | 1.97                     | 0.48              |
| 42:m:411:GLU:OE2  | 42:m:416:ARG:HB2  | 2.14                     | 0.48              |
| 43:n:54:ASN:HB2   | 43:n:63:PHE:CZ    | 2.47                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:181:A:H2'     | 1:1:182:G:C8      | 2.49                     | 0.48              |
| 1:1:1969:G:O2'    | 23:R:82:LYS:O     | 2.29                     | 0.48              |
| 1:1:3042:G:N3     | 7:B:250:ALA:HB1   | 2.29                     | 0.48              |
| 2:2:162:C:H2'     | 2:2:163:A:H8      | 1.72                     | 0.48              |
| 3:3:28:CYS:HB3    | 3:3:33:ASN:HD22   | 1.79                     | 0.48              |
| 3:3:55:GLU:HB2    | 3:3:115:LEU:HD23  | 1.95                     | 0.48              |
| 20:O:48:PHE:CZ    | 20:O:52:LYS:HB2   | 2.49                     | 0.48              |
| 46:u:7:TYR:CZ     | 46:u:40:PHE:HD2   | 2.32                     | 0.48              |
| 1:1:1389:A:H4'    | 1:1:1390:A:H5''   | 1.95                     | 0.47              |
| 1:1:2792:A:H2'    | 1:1:2793:G:C8     | 2.49                     | 0.47              |
| 1:1:3414:U:H5'    | 7:B:175:LYS:HD3   | 1.95                     | 0.47              |
| 3:3:11:VAL:HG23   | 3:3:12:GLY:N      | 2.28                     | 0.47              |
| 1:1:1234:A:N3     | 1:1:2950:U:O2'    | 2.42                     | 0.47              |
| 1:1:3202:A:H61    | 1:1:3224:G:H1'    | 1.78                     | 0.47              |
| 1:1:3315:A:H5'    | 18:M:114:MET:CE   | 2.44                     | 0.47              |
| 5:9:154:C:OP1     | 14:I:203:ARG:NH1  | 2.46                     | 0.47              |
| 26:U:25:PHE:CZ    | 26:U:87:LEU:HD21  | 2.49                     | 0.47              |
| 30:Z:42:VAL:HG21  | 30:Z:96:ILE:HG21  | 1.95                     | 0.47              |
| 42:m:684:PHE:CD1  | 42:m:700:PRO:HA   | 2.49                     | 0.47              |
| 1:1:7:C:H5''      | 12:G:193:LYS:HB3  | 1.97                     | 0.47              |
| 1:1:197:U:H2'     | 29:Y:59:ARG:HH22  | 1.80                     | 0.47              |
| 1:1:224:U:O2'     | 29:Y:99:ASP:OD2   | 2.22                     | 0.47              |
| 1:1:1944:G:H5'    | 7:B:245:GLY:CA    | 2.42                     | 0.47              |
| 2:2:131:G:O2'     | 2:2:132:G:OP1     | 2.28                     | 0.47              |
| 12:G:45:ASP:C     | 12:G:45:ASP:OD1   | 2.58                     | 0.47              |
| 14:I:44:ASP:HA    | 14:I:171:TRP:HZ2  | 1.79                     | 0.47              |
| 15:J:161:ASN:O    | 15:J:165:GLN:HG2  | 2.14                     | 0.47              |
| 30:Z:14:THR:HB    | 37:g:86:LYS:HG3   | 1.94                     | 0.47              |
| 42:m:386:VAL:HB   | 42:m:730:ALA:HB1  | 1.95                     | 0.47              |
| 1:1:441:A:OP1     | 36:f:58:LYS:HE2   | 2.14                     | 0.47              |
| 1:1:1590:G:H2'    | 1:1:2257:G:N2     | 2.30                     | 0.47              |
| 1:1:2681:G:C6     | 12:G:241:LYS:HB2  | 2.49                     | 0.47              |
| 1:1:3368:A:H5''   | 10:E:64:ARG:NH1   | 2.30                     | 0.47              |
| 5:9:160:G:H2'     | 5:9:161:C:C6      | 2.49                     | 0.47              |
| 23:R:105:LEU:HD23 | 23:R:138:LEU:HD23 | 1.96                     | 0.47              |
| 33:c:34:SER:HB2   | 33:c:111:ASP:H    | 1.80                     | 0.47              |
| 42:m:689:TYR:HD2  | 42:m:694:ALA:CB   | 2.28                     | 0.47              |
| 46:u:4:HIS:ND1    | 46:u:5:THR:N      | 2.62                     | 0.47              |
| 1:1:591:G:H4'     | 1:1:592:U:H2'     | 1.97                     | 0.47              |
| 1:1:737:A:H1'     | 31:a:58:MET:HE3   | 1.96                     | 0.47              |
| 1:1:2299:U:H3     | 1:1:2321:A:H62    | 1.61                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 8:C:140:ARG:NH2   | 8:C:242:PRO:HG2   | 2.29                     | 0.47              |
| 9:D:37:ILE:HD11   | 25:T:27:LEU:HD12  | 1.96                     | 0.47              |
| 15:J:20:ASN:C     | 15:J:20:ASN:OD1   | 2.57                     | 0.47              |
| 19:N:44:ARG:NH1   | 19:N:120:TRP:O    | 2.47                     | 0.47              |
| 1:1:1761:U:OP2    | 23:R:124:TYR:OH   | 2.28                     | 0.47              |
| 1:1:3359:U:H4'    | 1:1:3360:G:H5'    | 1.96                     | 0.47              |
| 8:C:328:SER:O     | 11:F:48:ARG:NH2   | 2.48                     | 0.47              |
| 12:G:163:VAL:HG12 | 12:G:166:LEU:HD12 | 1.96                     | 0.47              |
| 46:u:23:ARG:HD2   | 46:u:29:PHE:CZ    | 2.50                     | 0.47              |
| 1:1:838:A:N3      | 1:1:2907:C:O2'    | 2.43                     | 0.47              |
| 1:1:1425:C:C2     | 35:e:100:ARG:HD2  | 2.50                     | 0.47              |
| 1:1:2440:A:H5''   | 21:P:83:TRP:O     | 2.15                     | 0.47              |
| 1:1:2488:G:N7     | 1:1:2489:A:N6     | 2.62                     | 0.47              |
| 10:E:97:ASN:HB3   | 10:E:100:TYR:HD1  | 1.79                     | 0.47              |
| 14:I:156:GLN:HG2  | 14:I:163:GLN:HB2  | 1.97                     | 0.47              |
| 26:U:25:PHE:HZ    | 26:U:87:LEU:HD21  | 1.78                     | 0.47              |
| 26:U:102:GLU:OE2  | 26:U:104:ARG:NH2  | 2.48                     | 0.47              |
| 27:V:86:ALA:HA    | 27:V:95:LEU:O     | 2.15                     | 0.47              |
| 42:m:467:ALA:HB3  | 42:m:534:LEU:HD21 | 1.97                     | 0.47              |
| 45:p:97:TYR:HA    | 45:p:431:ASN:HA   | 1.96                     | 0.47              |
| 46:u:55:TYR:CD1   | 46:u:55:TYR:C     | 2.93                     | 0.47              |
| 1:1:602:A:N6      | 11:F:59:GLU:OE2   | 2.36                     | 0.47              |
| 1:1:1160:A:N3     | 1:1:2921:U:O2'    | 2.47                     | 0.47              |
| 3:3:100:TRP:CD2   | 3:3:101:PRO:HD2   | 2.50                     | 0.47              |
| 5:9:81:G:O2'      | 9:D:218:ARG:NH1   | 2.39                     | 0.47              |
| 11:F:97:ARG:HD2   | 11:F:140:TYR:HD1  | 1.80                     | 0.47              |
| 18:M:17:THR:C     | 18:M:22:THR:HG23  | 2.39                     | 0.47              |
| 26:U:38:ILE:HD11  | 26:U:69:PHE:HZ    | 1.78                     | 0.47              |
| 31:a:148:ALA:HB2  | 39:i:4:GLY:HA2    | 1.95                     | 0.47              |
| 1:1:157:A:H4'     | 38:h:104:LEU:HD23 | 1.95                     | 0.47              |
| 1:1:166:A:H61     | 1:1:268:U:H3      | 1.62                     | 0.47              |
| 1:1:216:A:N3      | 8:C:223:ASN:ND2   | 2.59                     | 0.47              |
| 1:1:892:G:C6      | 6:A:180:LYS:HB2   | 2.50                     | 0.47              |
| 1:1:3040:G:H5'    | 1:1:3042:G:N7     | 2.30                     | 0.47              |
| 3:3:113:THR:OG1   | 10:E:27:TYR:HD1   | 1.98                     | 0.47              |
| 15:J:29:ARG:HG2   | 15:J:32:ARG:HH21  | 1.80                     | 0.47              |
| 15:J:87:LYS:HE3   | 15:J:104:PHE:HB2  | 1.97                     | 0.47              |
| 17:L:62:THR:HG21  | 31:a:66:ASN:HB3   | 1.96                     | 0.47              |
| 21:P:86:LYS:HA    | 21:P:89:LYS:HE2   | 1.97                     | 0.47              |
| 23:R:106:LEU:HB3  | 23:R:120:TYR:CE1  | 2.50                     | 0.47              |
| 30:Z:66:SER:HB3   | 30:Z:123:GLN:HE22 | 1.80                     | 0.47              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 36:f:56:SER:OG   | 36:f:66:ARG:NE    | 2.43                     | 0.47              |
| 37:g:5:VAL:HG21  | 37:g:32:TYR:CZ    | 2.49                     | 0.47              |
| 42:m:381:GLY:O   | 42:m:408:ARG:NH2  | 2.48                     | 0.47              |
| 43:n:126:PHE:HB3 | 43:n:236:LYS:NZ   | 2.29                     | 0.47              |
| 44:o:23:HIS:HB3  | 44:o:72:LEU:HB3   | 1.95                     | 0.47              |
| 1:1:1500:G:N2    | 1:1:1544:G:H5''   | 2.30                     | 0.47              |
| 1:1:1516:A:H5''  | 1:1:1913:A:C6     | 2.50                     | 0.47              |
| 1:1:3154:U:C2    | 34:d:30:PHE:CZ    | 3.03                     | 0.47              |
| 7:B:142:GLN:H    | 7:B:142:GLN:CD    | 2.23                     | 0.47              |
| 15:J:125:MET:HE1 | 15:J:126:ASP:C    | 2.40                     | 0.47              |
| 20:O:48:PHE:CE2  | 20:O:52:LYS:HB2   | 2.50                     | 0.47              |
| 28:X:95:LYS:CG   | 28:X:99:ARG:HH21  | 2.26                     | 0.47              |
| 32:b:52:GLU:O    | 32:b:56:GLN:HG2   | 2.15                     | 0.47              |
| 40:j:27:PHE:HA   | 40:j:34:CYS:HA    | 1.97                     | 0.47              |
| 42:m:488:GLU:HG3 | 42:m:491:LYS:HZ1  | 1.80                     | 0.47              |
| 43:n:101:GLU:OE2 | 43:n:105:ARG:NH1  | 2.48                     | 0.47              |
| 1:1:735:G:N2     | 1:1:738:A:OP2     | 2.36                     | 0.46              |
| 1:1:797:C:O2'    | 1:1:798:A:O4'     | 2.33                     | 0.46              |
| 1:1:1202:G:H2'   | 1:1:1203:G:O4'    | 2.15                     | 0.46              |
| 1:1:1717:U:OP2   | 26:U:83:LYS:NZ    | 2.43                     | 0.46              |
| 1:1:2501:A:H2'   | 1:1:2502:G:C8     | 2.50                     | 0.46              |
| 5:9:88:U:N3      | 5:9:91:G:OP2      | 2.43                     | 0.46              |
| 17:L:100:ARG:O   | 17:L:102:ARG:NH2  | 2.48                     | 0.46              |
| 22:Q:35:LEU:O    | 22:Q:39:THR:OG1   | 2.21                     | 0.46              |
| 1:1:303:A:H2'    | 1:1:304:A:O4'     | 2.15                     | 0.46              |
| 1:1:960:C:H2'    | 1:1:961:A:C8      | 2.51                     | 0.46              |
| 1:1:1763:A:P     | 23:R:103:ARG:HH22 | 2.38                     | 0.46              |
| 1:1:2999:U:H5'   | 1:1:3000:U:OP2    | 2.15                     | 0.46              |
| 7:B:271:GLY:H    | 7:B:273:MET:HE2   | 1.80                     | 0.46              |
| 23:R:133:LYS:HE3 | 23:R:134:HIS:CD2  | 2.50                     | 0.46              |
| 24:S:80:TYR:CD1  | 24:S:109:MET:HE1  | 2.50                     | 0.46              |
| 45:p:296:TRP:HA  | 45:p:303:ASN:HA   | 1.96                     | 0.46              |
| 1:1:445:G:H1     | 1:1:647:A:H61     | 1.62                     | 0.46              |
| 1:1:1130:A:O2'   | 25:T:130:ARG:O    | 2.26                     | 0.46              |
| 1:1:1678:A:H8    | 1:1:1679:A:C2     | 2.34                     | 0.46              |
| 1:1:1710:G:O2'   | 1:1:1711:A:H5'    | 2.15                     | 0.46              |
| 1:1:2198:G:O2'   | 1:1:2199:G:OP1    | 2.31                     | 0.46              |
| 3:3:121:LYS:O    | 35:e:110:ARG:NH2  | 2.47                     | 0.46              |
| 7:B:369:ARG:NH1  | 46:u:33:ARG:HH22  | 2.05                     | 0.46              |
| 20:O:93:THR:HG22 | 20:O:95:ARG:H     | 1.81                     | 0.46              |
| 25:T:84:TYR:HB2  | 32:b:23:ARG:HA    | 1.98                     | 0.46              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 27:V:91:ASP:OD1   | 27:V:91:ASP:C     | 2.57                     | 0.46              |
| 38:h:6:PHE:O      | 38:h:10:LYS:HG2   | 2.16                     | 0.46              |
| 43:n:210:VAL:HG22 | 43:n:212:THR:H    | 1.80                     | 0.46              |
| 46:u:37:HIS:CD2   | 46:u:37:HIS:C     | 2.94                     | 0.46              |
| 1:1:152:U:H4'     | 1:1:153:U:H5''    | 1.98                     | 0.46              |
| 1:1:263:A:H2'     | 1:1:264:G:H8      | 1.80                     | 0.46              |
| 1:1:372:G:OP1     | 8:C:62:THR:OG1    | 2.20                     | 0.46              |
| 1:1:1433:U:H5'    | 1:1:1434:G:OP2    | 2.16                     | 0.46              |
| 1:1:1490:A:N1     | 1:1:1510:G:O2'    | 2.47                     | 0.46              |
| 1:1:1728:U:O2'    | 1:1:1813:U:O2'    | 2.26                     | 0.46              |
| 2:2:74:A:H4'      | 40:j:82:LYS:NZ    | 2.31                     | 0.46              |
| 5:9:87:G:N2       | 5:9:91:G:N3       | 2.64                     | 0.46              |
| 12:G:109:LEU:HD21 | 42:m:234:ARG:HD3  | 1.97                     | 0.46              |
| 24:S:11:ARG:HH21  | 25:T:141:VAL:HG22 | 1.80                     | 0.46              |
| 42:m:459:PRO:HG3  | 42:m:537:HIS:O    | 2.15                     | 0.46              |
| 1:1:182:G:H1      | 1:1:250:A:H61     | 1.62                     | 0.46              |
| 1:1:916:A:OP2     | 1:1:2227:A:N6     | 2.48                     | 0.46              |
| 1:1:1952:G:O2'    | 27:V:18:GLY:O     | 2.32                     | 0.46              |
| 1:1:1982:G:N7     | 16:K:16:VAL:HG23  | 2.31                     | 0.46              |
| 1:1:2718:G:H3'    | 1:1:2719:G:H8     | 1.80                     | 0.46              |
| 1:1:3112:A:H2'    | 1:1:3113:A:C8     | 2.51                     | 0.46              |
| 42:m:494:PHE:HB3  | 42:m:560:LEU:HB3  | 1.97                     | 0.46              |
| 1:1:746:C:O2'     | 1:1:747:A:O5'     | 2.30                     | 0.46              |
| 1:1:1787:G:O3'    | 41:k:45:THR:HG21  | 2.16                     | 0.46              |
| 1:1:2861:U:O2'    | 44:o:33:ASP:OD1   | 2.32                     | 0.46              |
| 19:N:8:GLU:HB2    | 19:N:50:ARG:HH12  | 1.81                     | 0.46              |
| 24:S:11:ARG:HD3   | 24:S:23:LEU:CD1   | 2.45                     | 0.46              |
| 24:S:12:LYS:HA    | 24:S:55:GLY:HA2   | 1.96                     | 0.46              |
| 1:1:712:U:O4      | 17:L:36:ARG:NH1   | 2.49                     | 0.46              |
| 1:1:2301:A:OP2    | 1:1:2319:C:N4     | 2.47                     | 0.46              |
| 1:1:3368:A:OP2    | 10:E:145:PRO:HG3  | 2.15                     | 0.46              |
| 8:C:215:THR:HG22  | 8:C:215:THR:O     | 2.15                     | 0.46              |
| 28:X:75:ILE:HD13  | 28:X:80:THR:O     | 2.15                     | 0.46              |
| 1:1:1027:U:H4'    | 1:1:2731:A:H5''   | 1.98                     | 0.46              |
| 1:1:1717:U:C5     | 26:U:83:LYS:HD2   | 2.51                     | 0.46              |
| 1:1:2798:A:OP2    | 9:D:23:ARG:NE     | 2.40                     | 0.46              |
| 24:S:92:GLU:HB2   | 24:S:136:ARG:HG3  | 1.98                     | 0.46              |
| 25:T:79:VAL:HG22  | 25:T:84:TYR:CE1   | 2.51                     | 0.46              |
| 28:X:56:LEU:HD12  | 28:X:56:LEU:HA    | 1.86                     | 0.46              |
| 35:e:116:VAL:HB   | 35:e:119:ALA:HB2  | 1.98                     | 0.46              |
| 1:1:93:C:C2       | 31:a:55:LYS:HE2   | 2.51                     | 0.46              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:302:U:H5'    | 39:i:51:TYR:CE1   | 2.50                     | 0.46              |
| 1:1:3281:A:H5''  | 24:S:175:PHE:CE1  | 2.51                     | 0.46              |
| 28:X:114:ARG:HD3 | 28:X:120:LYS:HE3  | 1.98                     | 0.46              |
| 42:m:596:VAL:HB  | 42:m:610:LEU:HB2  | 1.97                     | 0.46              |
| 44:o:28:TYR:HB3  | 44:o:69:VAL:HB    | 1.98                     | 0.46              |
| 45:p:151:TRP:HA  | 45:p:158:PHE:HA   | 1.97                     | 0.46              |
| 1:1:1834:C:N4    | 6:A:176:LYS:O     | 2.38                     | 0.46              |
| 1:1:1967:U:N3    | 1:1:2210:G:OP2    | 2.40                     | 0.46              |
| 1:1:3015:U:H3    | 1:1:3021:A:H61    | 1.63                     | 0.46              |
| 7:B:298:PHE:CD2  | 7:B:357:LYS:HA    | 2.44                     | 0.46              |
| 11:F:143:TYR:CE2 | 11:F:237:LYS:HB3  | 2.51                     | 0.46              |
| 16:K:11:THR:HG23 | 16:K:14:TYR:HD2   | 1.80                     | 0.46              |
| 18:M:38:LEU:HD21 | 18:M:48:ARG:NE    | 2.29                     | 0.46              |
| 21:P:49:ASP:OD1  | 21:P:49:ASP:C     | 2.59                     | 0.46              |
| 23:R:23:TRP:CZ3  | 23:R:51:ILE:HD12  | 2.51                     | 0.46              |
| 25:T:48:VAL:HG21 | 25:T:94:GLU:HG2   | 1.98                     | 0.46              |
| 27:V:76:MET:HG3  | 27:V:104:ILE:CD1  | 2.46                     | 0.46              |
| 39:i:92:ILE:O    | 39:i:96:ARG:HG3   | 2.16                     | 0.46              |
| 1:1:1623:A:N6    | 4:8:5:LYS:O       | 2.49                     | 0.45              |
| 1:1:1683:A:H62   | 1:1:1848:G:N2     | 2.14                     | 0.45              |
| 1:1:2784:A:N3    | 1:1:2784:A:H2'    | 2.31                     | 0.45              |
| 1:1:3315:A:H5'   | 18:M:114:MET:HE2  | 1.98                     | 0.45              |
| 8:C:60:HIS:CE1   | 8:C:100:ARG:HE    | 2.35                     | 0.45              |
| 15:J:46:VAL:HB   | 15:J:68:HIS:CE1   | 2.51                     | 0.45              |
| 20:O:56:LEU:HD23 | 20:O:59:LEU:HD12  | 1.98                     | 0.45              |
| 20:O:111:PRO:HA  | 20:O:114:ASP:OD2  | 2.16                     | 0.45              |
| 22:Q:59:PRO:HG3  | 22:Q:145:LYS:HA   | 1.98                     | 0.45              |
| 30:Z:100:THR:HA  | 30:Z:106:GLN:HB2  | 1.98                     | 0.45              |
| 35:e:93:ILE:HG12 | 35:e:105:ILE:HG21 | 1.98                     | 0.45              |
| 39:i:64:ASP:OD1  | 39:i:65:LYS:N     | 2.49                     | 0.45              |
| 42:m:603:LYS:HE2 | 42:m:605:GLU:HG2  | 1.98                     | 0.45              |
| 43:n:126:PHE:HB3 | 43:n:236:LYS:HZ2  | 1.82                     | 0.45              |
| 1:1:1541:G:H1'   | 21:P:139:TYR:CZ   | 2.52                     | 0.45              |
| 1:1:2462:C:N4    | 1:1:3036:A:O4'    | 2.49                     | 0.45              |
| 1:1:2969:G:H2'   | 1:1:3040:G:H1     | 1.81                     | 0.45              |
| 1:1:3316:G:N1    | 1:1:3359:U:OP1    | 2.46                     | 0.45              |
| 9:D:273:ARG:NH1  | 9:D:274:LYS:O     | 2.49                     | 0.45              |
| 19:N:5:LYS:HG3   | 39:i:38:VAL:HG11  | 1.97                     | 0.45              |
| 25:T:26:ARG:HG3  | 25:T:29:THR:HG23  | 1.98                     | 0.45              |
| 25:T:62:GLY:HA3  | 25:T:76:ILE:HD13  | 1.98                     | 0.45              |
| 37:g:62:PHE:O    | 37:g:70:LYS:HD3   | 2.17                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 42:m:582:HIS:HB3  | 42:m:585:MET:O    | 2.16                     | 0.45              |
| 43:n:133:ILE:HD11 | 43:n:230:MET:SD   | 2.56                     | 0.45              |
| 1:1:300:U:OP2     | 19:N:68:ARG:NH2   | 2.50                     | 0.45              |
| 1:1:971:U:OP2     | 31:a:26:ARG:NH2   | 2.40                     | 0.45              |
| 1:1:1046:U:H3     | 1:1:1068:A:H61    | 1.64                     | 0.45              |
| 1:1:2783:U:OP1    | 9:D:12:TYR:OH     | 2.32                     | 0.45              |
| 21:P:40:SER:HA    | 21:P:113:ILE:HA   | 1.98                     | 0.45              |
| 25:T:147:GLU:OE2  | 25:T:147:GLU:HA   | 2.16                     | 0.45              |
| 28:X:56:LEU:HG    | 28:X:61:ILE:HD11  | 1.98                     | 0.45              |
| 39:i:59:ILE:HD11  | 39:i:85:ILE:HD12  | 1.98                     | 0.45              |
| 42:m:687:ARG:NH1  | 42:m:689:TYR:CZ   | 2.84                     | 0.45              |
| 1:1:148:C:H2'     | 1:1:149:G:O4'     | 2.16                     | 0.45              |
| 1:1:1649:C:OP1    | 41:k:42:TYR:OH    | 2.29                     | 0.45              |
| 18:M:29:VAL:HB    | 18:M:38:LEU:HD23  | 1.98                     | 0.45              |
| 19:N:33:MET:HE2   | 19:N:33:MET:HB3   | 1.85                     | 0.45              |
| 34:d:79:ARG:HH21  | 34:d:111:VAL:HG11 | 1.80                     | 0.45              |
| 38:h:35:ILE:HD12  | 38:h:35:ILE:HA    | 1.86                     | 0.45              |
| 2:2:91:C:OP1      | 2:2:93:G:N2       | 2.49                     | 0.45              |
| 9:D:204:VAL:O     | 9:D:208:MET:HG3   | 2.17                     | 0.45              |
| 10:E:76:LEU:HG    | 10:E:77:GLU:H     | 1.81                     | 0.45              |
| 1:1:180:U:H2'     | 1:1:181:A:C8      | 2.51                     | 0.45              |
| 1:1:2331:A:C8     | 6:A:244:LEU:HD23  | 2.51                     | 0.45              |
| 1:1:2657:A:H3'    | 30:Z:54:THR:HG23  | 1.98                     | 0.45              |
| 1:1:3118:G:O2'    | 1:1:3127:G:O6     | 2.25                     | 0.45              |
| 1:1:3404:G:O2'    | 1:1:3406:A:N6     | 2.45                     | 0.45              |
| 9:D:99:TYR:OH     | 9:D:168:ASP:OD2   | 2.25                     | 0.45              |
| 15:J:12:LEU:HB3   | 15:J:131:MET:CE   | 2.45                     | 0.45              |
| 41:k:5:ILE:HD11   | 41:k:44:TYR:HD2   | 1.80                     | 0.45              |
| 42:m:687:ARG:NE   | 42:m:689:TYR:OH   | 2.49                     | 0.45              |
| 42:m:738:MET:HA   | 42:m:738:MET:CE   | 2.42                     | 0.45              |
| 1:1:826:U:OP1     | 31:a:7:LYS:N      | 2.50                     | 0.45              |
| 1:1:1701:G:H2'    | 1:1:1702:A:C8     | 2.52                     | 0.45              |
| 1:1:3363:C:H2'    | 1:1:3364:A:H8     | 1.81                     | 0.45              |
| 9:D:99:TYR:HE2    | 9:D:164:LYS:HG3   | 1.82                     | 0.45              |
| 21:P:9:ALA:HA     | 21:P:14:CYS:SG    | 2.56                     | 0.45              |
| 29:Y:8:THR:HG21   | 29:Y:13:LYS:HB2   | 1.98                     | 0.45              |
| 1:1:296:C:H5''    | 19:N:170:LYS:O    | 2.16                     | 0.45              |
| 1:1:392:A:H1'     | 1:1:1499:A:C8     | 2.52                     | 0.45              |
| 1:1:592:U:N3      | 8:C:346:GLU:O     | 2.50                     | 0.45              |
| 1:1:1423:G:H5''   | 35:e:98:SER:OG    | 2.16                     | 0.45              |
| 1:1:3282:G:N3     | 24:S:175:PHE:HD2  | 2.13                     | 0.45              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 3:3:49:ARG:HA    | 3:3:65:LYS:HB2    | 1.98                     | 0.45              |
| 41:k:9:LYS:HB2   | 41:k:9:LYS:HE2    | 1.65                     | 0.45              |
| 1:1:114:A:H2'    | 1:1:115:A:O4'     | 2.17                     | 0.45              |
| 1:1:2969:G:H3'   | 1:1:3040:G:H22    | 1.82                     | 0.45              |
| 3:3:5:GLU:OE1    | 3:3:40:ARG:NH1    | 2.49                     | 0.45              |
| 3:3:32:TYR:CE2   | 3:3:77:TRP:CE2    | 3.05                     | 0.45              |
| 3:3:48:SER:OG    | 3:3:49:ARG:N      | 2.49                     | 0.45              |
| 10:E:142:GLU:OE1 | 10:E:142:GLU:HA   | 2.17                     | 0.45              |
| 12:G:160:ILE:O   | 12:G:164:VAL:HG23 | 2.17                     | 0.45              |
| 24:S:109:MET:HE3 | 24:S:109:MET:HB3  | 1.80                     | 0.45              |
| 44:o:70:LEU:HD11 | 44:o:85:LEU:HD11  | 1.98                     | 0.45              |
| 1:1:402:U:P      | 29:Y:86:ARG:HH22  | 2.39                     | 0.45              |
| 1:1:405:A:H4'    | 1:1:406:U:H3'     | 1.99                     | 0.45              |
| 1:1:2197:U:H2'   | 1:1:2198:G:C8     | 2.52                     | 0.45              |
| 1:1:2907:C:H2'   | 1:1:2908:A:C8     | 2.52                     | 0.45              |
| 1:1:2981:U:O2    | 1:1:3006:A:N6     | 2.50                     | 0.45              |
| 1:1:3306:C:O2    | 18:M:6:ARG:NH2    | 2.49                     | 0.45              |
| 10:E:14:GLU:OE2  | 10:E:17:VAL:HG23  | 2.17                     | 0.45              |
| 39:i:84:LYS:HD3  | 39:i:87:GLU:OE2   | 2.17                     | 0.45              |
| 43:n:234:ASN:HB3 | 43:n:245:TYR:CE1  | 2.52                     | 0.45              |
| 1:1:230:C:OP1    | 1:1:232:C:N4      | 2.45                     | 0.44              |
| 1:1:359:A:N7     | 4:8:35:VAL:HG22   | 2.32                     | 0.44              |
| 1:1:647:A:OP1    | 36:f:61:ARG:NH1   | 2.50                     | 0.44              |
| 1:1:698:U:O2'    | 8:C:119:GLU:OE2   | 2.29                     | 0.44              |
| 1:1:1335:A:N1    | 1:1:3033:G:O2'    | 2.41                     | 0.44              |
| 1:1:1427:A:N3    | 1:1:1453:A:O2'    | 2.46                     | 0.44              |
| 1:1:2286:A:N6    | 1:1:2334:G:H21    | 2.15                     | 0.44              |
| 1:1:3144:C:C5'   | 7:B:53:MET:HE3    | 2.47                     | 0.44              |
| 2:2:29:C:OP1     | 8:C:195:LYS:HE2   | 2.17                     | 0.44              |
| 3:3:74:SER:HA    | 8:C:146:GLU:HA    | 1.99                     | 0.44              |
| 10:E:83:THR:HB   | 10:E:93:ILE:HA    | 1.99                     | 0.44              |
| 24:S:154:ARG:NH1 | 24:S:175:PHE:HD1  | 2.15                     | 0.44              |
| 34:d:30:PHE:HB3  | 34:d:70:ARG:HG3   | 1.99                     | 0.44              |
| 1:1:680:C:H2'    | 1:1:681:A:C8      | 2.52                     | 0.44              |
| 1:1:981:C:OP1    | 22:Q:8:HIS:ND1    | 2.50                     | 0.44              |
| 1:1:1346:U:OP2   | 20:O:45:SER:OG    | 2.22                     | 0.44              |
| 1:1:1669:G:OP1   | 30:Z:107:ARG:NH1  | 2.49                     | 0.44              |
| 1:1:2514:U:H2'   | 1:1:2515:U:C6     | 2.52                     | 0.44              |
| 16:K:49:ARG:HB2  | 16:K:55:TRP:CZ3   | 2.52                     | 0.44              |
| 17:L:172:ASN:OD1 | 17:L:172:ASN:O    | 2.35                     | 0.44              |
| 19:N:99:ARG:NH2  | 19:N:118:SER:O    | 2.49                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 22:Q:95:LEU:HD13  | 31:a:91:LEU:HD21  | 1.99                     | 0.44              |
| 26:U:73:TYR:HD1   | 26:U:73:TYR:O     | 2.00                     | 0.44              |
| 42:m:704:LEU:HD13 | 42:m:739:TRP:CD2  | 2.52                     | 0.44              |
| 1:1:1012:A:H2'    | 1:1:1013:U:C6     | 2.52                     | 0.44              |
| 1:1:2798:A:N6     | 9:D:28:THR:O      | 2.38                     | 0.44              |
| 2:2:103:G:O2'     | 40:j:81:GLY:O     | 2.31                     | 0.44              |
| 12:G:153:ILE:HA   | 12:G:197:VAL:HG12 | 2.00                     | 0.44              |
| 1:1:2266:A:H5''   | 6:A:128:SER:HB2   | 1.99                     | 0.44              |
| 7:B:371:GLN:N     | 7:B:375:GLU:OE2   | 2.51                     | 0.44              |
| 8:C:13:LYS:HD3    | 8:C:161:PHE:CE1   | 2.53                     | 0.44              |
| 10:E:69:ARG:O     | 10:E:89:ASN:ND2   | 2.50                     | 0.44              |
| 22:Q:149:GLU:OE2  | 22:Q:152:ARG:NH1  | 2.49                     | 0.44              |
| 26:U:9:SER:OG     | 26:U:10:ASN:N     | 2.51                     | 0.44              |
| 43:n:87:PHE:HE1   | 43:n:106:LEU:HB3  | 1.82                     | 0.44              |
| 43:n:235:PHE:HD1  | 43:n:245:TYR:HB3  | 1.83                     | 0.44              |
| 1:1:1188:G:H2'    | 1:1:1189:A:O4'    | 2.17                     | 0.44              |
| 1:1:1891:C:O2'    | 1:1:1897:A:N1     | 2.38                     | 0.44              |
| 1:1:2713:G:C8     | 1:1:2960:U:H5''   | 2.53                     | 0.44              |
| 1:1:2832:C:O2'    | 32:b:36:ASP:OD1   | 2.28                     | 0.44              |
| 8:C:266:SER:OG    | 8:C:269:GLU:HG2   | 2.16                     | 0.44              |
| 9:D:208:MET:HE2   | 9:D:233:SER:CB    | 2.44                     | 0.44              |
| 11:F:160:PHE:CD2  | 11:F:169:PRO:HD3  | 2.52                     | 0.44              |
| 24:S:138:TYR:O    | 24:S:142:LEU:HG   | 2.18                     | 0.44              |
| 32:b:48:ARG:HG3   | 32:b:48:ARG:HH11  | 1.82                     | 0.44              |
| 42:m:377:ASN:C    | 42:m:377:ASN:OD1  | 2.59                     | 0.44              |
| 1:1:89:A:N7       | 22:Q:172:LYS:NZ   | 2.64                     | 0.44              |
| 1:1:635:G:N7      | 8:C:312:ARG:NH2   | 2.65                     | 0.44              |
| 1:1:868:A:OP2     | 16:K:4:ARG:HD2    | 2.18                     | 0.44              |
| 1:1:1344:G:OP1    | 20:O:83:LYS:NZ    | 2.48                     | 0.44              |
| 1:1:2778:U:H2'    | 1:1:2779:C:C6     | 2.53                     | 0.44              |
| 1:1:2966:G:H5''   | 1:1:2967:A:H5''   | 2.00                     | 0.44              |
| 2:2:28:U:H2'      | 2:2:29:C:O4'      | 2.17                     | 0.44              |
| 21:P:9:ALA:HB2    | 21:P:149:ILE:HG21 | 2.00                     | 0.44              |
| 38:h:22:GLU:O     | 38:h:26:GLU:HG3   | 2.16                     | 0.44              |
| 1:1:645:U:O2'     | 36:f:61:ARG:NH1   | 2.51                     | 0.44              |
| 1:1:2188:A:N1     | 1:1:2189:C:N4     | 2.66                     | 0.44              |
| 2:2:162:C:H1'     | 12:G:182:ASN:OD1  | 2.17                     | 0.44              |
| 3:3:105:ILE:HG13  | 3:3:106:HIS:N     | 2.33                     | 0.44              |
| 9:D:278:GLU:O     | 9:D:281:LYS:HG3   | 2.18                     | 0.44              |
| 14:I:211:ASP:OD1  | 14:I:212:LEU:N    | 2.51                     | 0.44              |
| 1:1:151:G:OP2     | 12:G:193:LYS:NZ   | 2.41                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:1655:G:H5'   | 43:n:48:LYS:HG2   | 2.00                     | 0.44              |
| 1:1:2978:U:H2'   | 1:1:2979:C:C6     | 2.53                     | 0.44              |
| 1:1:3133:U:H4'   | 7:B:348:ARG:NH2   | 2.33                     | 0.44              |
| 3:3:30:ASN:HD21  | 3:3:45:LEU:HG     | 1.82                     | 0.44              |
| 12:G:75:ILE:HD11 | 19:N:18:VAL:HG13  | 2.00                     | 0.44              |
| 18:M:65:LEU:HD21 | 18:M:74:VAL:HG22  | 2.00                     | 0.44              |
| 24:S:70:LYS:O    | 24:S:72:LYS:HE2   | 2.17                     | 0.44              |
| 26:U:14:ILE:HD11 | 26:U:74:LEU:HD12  | 2.00                     | 0.44              |
| 26:U:79:LYS:HE2  | 26:U:88:ARG:NH2   | 2.32                     | 0.44              |
| 37:g:67:HIS:O    | 37:g:71:THR:HG22  | 2.18                     | 0.44              |
| 43:n:134:ASP:OD1 | 43:n:134:ASP:N    | 2.50                     | 0.44              |
| 43:n:565:MET:HE2 | 43:n:570:ARG:H    | 1.83                     | 0.44              |
| 1:1:340:C:HO2'   | 40:j:71:HIS:HE2   | 1.63                     | 0.44              |
| 1:1:1666:C:H5''  | 1:1:1667:A:H5''   | 1.99                     | 0.44              |
| 1:1:1968:G:N3    | 1:1:2208:A:H2'    | 2.32                     | 0.44              |
| 1:1:3281:A:H5''  | 24:S:175:PHE:HE1  | 1.83                     | 0.44              |
| 5:9:135:U:H2'    | 5:9:136:G:H8      | 1.83                     | 0.44              |
| 7:B:306:THR:HG21 | 7:B:316:VAL:HG22  | 1.99                     | 0.44              |
| 10:E:135:LYS:HZ3 | 21:P:166:ARG:HB3  | 1.82                     | 0.44              |
| 29:Y:58:ILE:O    | 29:Y:63:LYS:HG3   | 2.18                     | 0.44              |
| 31:a:92:GLY:H    | 31:a:120:THR:HG21 | 1.83                     | 0.44              |
| 43:n:143:PHE:CD1 | 43:n:146:MET:SD   | 3.11                     | 0.44              |
| 1:1:121:A:C2     | 12:G:129:PRO:HB3  | 2.53                     | 0.43              |
| 1:1:709:G:H5'    | 17:L:35:ARG:NH1   | 2.33                     | 0.43              |
| 1:1:946:A:N1     | 6:A:203:MET:HE2   | 2.33                     | 0.43              |
| 1:1:3190:A:OP1   | 27:V:16:THR:OG1   | 2.32                     | 0.43              |
| 7:B:218:ILE:HD11 | 7:B:339:ARG:HD3   | 2.00                     | 0.43              |
| 9:D:273:ARG:HD2  | 9:D:274:LYS:O     | 2.18                     | 0.43              |
| 18:M:85:ASN:O    | 18:M:89:SER:OG    | 2.35                     | 0.43              |
| 42:m:616:TRP:HB3 | 42:m:634:TYR:HB2  | 2.00                     | 0.43              |
| 42:m:631:ILE:HB  | 42:m:639:CYS:HB2  | 2.00                     | 0.43              |
| 1:1:1844:C:H2'   | 1:1:1845:A:C8     | 2.53                     | 0.43              |
| 1:1:2655:U:P     | 12:G:32:ARG:HH22  | 2.41                     | 0.43              |
| 1:1:2863:U:H2'   | 1:1:2864:G:C8     | 2.52                     | 0.43              |
| 3:3:112:LEU:HD22 | 3:3:112:LEU:H     | 1.82                     | 0.43              |
| 5:9:163:G:N2     | 9:D:72:ASP:O      | 2.41                     | 0.43              |
| 18:M:30:ASP:OD1  | 18:M:31:ILE:N     | 2.48                     | 0.43              |
| 22:Q:64:SER:HB3  | 22:Q:94:MET:HE2   | 2.00                     | 0.43              |
| 29:Y:73:TYR:CE1  | 29:Y:76:LYS:HG3   | 2.53                     | 0.43              |
| 41:k:24:ARG:HH22 | 41:k:43:LEU:HD11  | 1.83                     | 0.43              |
| 1:1:1396:G:H2'   | 1:1:1397:A:C8     | 2.53                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:1639:U:H4'    | 1:1:1890:A:H4'    | 2.00                     | 0.43              |
| 1:1:2908:A:H2'    | 1:1:2909:G:O4'    | 2.19                     | 0.43              |
| 17:L:132:GLN:N    | 17:L:132:GLN:CD   | 2.75                     | 0.43              |
| 42:m:722:PRO:HB2  | 42:m:723:LYS:HD3  | 2.00                     | 0.43              |
| 43:n:34:ARG:NH1   | 43:n:64:TYR:OH    | 2.52                     | 0.43              |
| 44:o:2:VAL:N      | 44:o:90:HIS:O     | 2.51                     | 0.43              |
| 45:p:128:VAL:O    | 45:p:136:LYS:N    | 2.41                     | 0.43              |
| 1:1:992:U:H4'     | 1:1:995:G:C2      | 2.53                     | 0.43              |
| 1:1:997:A:H5''    | 17:L:4:HIS:HB3    | 2.00                     | 0.43              |
| 1:1:1094:A:H4'    | 25:T:105:PHE:CE1  | 2.53                     | 0.43              |
| 1:1:1222:U:OP2    | 20:O:50:ARG:HD2   | 2.18                     | 0.43              |
| 1:1:3041:A:H5''   | 1:1:3042:G:H5'    | 2.00                     | 0.43              |
| 3:3:32:TYR:CE2    | 3:3:77:TRP:CD1    | 3.03                     | 0.43              |
| 3:3:53:VAL:HG11   | 3:3:112:LEU:HD13  | 2.00                     | 0.43              |
| 5:9:54:U:H2'      | 5:9:55:A:H8       | 1.83                     | 0.43              |
| 6:A:35:GLU:OE2    | 6:A:162:ARG:NH1   | 2.31                     | 0.43              |
| 9:D:208:MET:HE3   | 9:D:208:MET:HB3   | 1.83                     | 0.43              |
| 35:e:80:GLU:HA    | 35:e:112:LEU:HD11 | 2.00                     | 0.43              |
| 1:1:1081:C:OP2    | 25:T:12:ARG:NH2   | 2.50                     | 0.43              |
| 1:1:1133:G:OP2    | 11:F:203:LYS:HE3  | 2.19                     | 0.43              |
| 1:1:2767:G:H5'    | 15:J:97:SER:HA    | 2.00                     | 0.43              |
| 35:e:118:ASN:OD1  | 35:e:118:ASN:N    | 2.51                     | 0.43              |
| 43:n:190:GLN:HE22 | 43:n:197:GLN:HG3  | 1.83                     | 0.43              |
| 45:p:200:VAL:HA   | 45:p:216:SER:HA   | 2.00                     | 0.43              |
| 1:1:1140:U:H2'    | 1:1:1141:C:C6     | 2.54                     | 0.43              |
| 1:1:1976:A:OP2    | 1:1:1985:A:N6     | 2.41                     | 0.43              |
| 1:1:2370:U:OP1    | 1:1:3068:G:O2'    | 2.29                     | 0.43              |
| 1:1:2777:C:H5''   | 15:J:68:HIS:HD2   | 1.83                     | 0.43              |
| 1:1:3042:G:C2     | 7:B:250:ALA:HB1   | 2.53                     | 0.43              |
| 1:1:3272:U:O4'    | 20:O:6:LYS:HE2    | 2.17                     | 0.43              |
| 2:2:120:U:H5'     | 2:2:121:U:OP2     | 2.17                     | 0.43              |
| 3:3:52:THR:HG22   | 3:3:63:TYR:HB2    | 2.01                     | 0.43              |
| 4:8:43:HIS:HB3    | 4:8:46:ARG:HG3    | 1.99                     | 0.43              |
| 7:B:95:THR:OG1    | 7:B:98:GLY:O      | 2.29                     | 0.43              |
| 18:M:118:LYS:HA   | 18:M:121:ARG:HG2  | 2.01                     | 0.43              |
| 23:R:28:GLU:HA    | 23:R:28:GLU:OE1   | 2.18                     | 0.43              |
| 37:g:14:ASN:HA    | 37:g:18:ASN:HB3   | 2.00                     | 0.43              |
| 41:k:61:LEU:HD23  | 41:k:65:LEU:HD23  | 1.98                     | 0.43              |
| 43:n:148:VAL:HG22 | 43:n:157:VAL:HG21 | 2.00                     | 0.43              |
| 1:1:114:A:OP1     | 19:N:54:LYS:NZ    | 2.47                     | 0.43              |
| 1:1:2503:C:OP1    | 6:A:2:GLY:HA3     | 2.17                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:3111:C:H2'    | 1:1:3112:A:C8     | 2.54                     | 0.43              |
| 10:E:97:ASN:HB3   | 10:E:100:TYR:CD1  | 2.53                     | 0.43              |
| 23:R:104:ARG:O    | 23:R:108:LYS:HG2  | 2.18                     | 0.43              |
| 24:S:11:ARG:HD3   | 24:S:23:LEU:HD11  | 2.00                     | 0.43              |
| 29:Y:90:ASN:C     | 29:Y:90:ASN:OD1   | 2.61                     | 0.43              |
| 32:b:44:LYS:HE3   | 32:b:45:PHE:CE1   | 2.53                     | 0.43              |
| 1:1:292:A:H2      | 44:o:36:LEU:HD13  | 1.84                     | 0.43              |
| 1:1:770:G:OP2     | 22:Q:74:SER:OG    | 2.34                     | 0.43              |
| 1:1:2260:G:H1'    | 6:A:11:SER:O      | 2.19                     | 0.43              |
| 3:3:33:ASN:OD1    | 3:3:34:VAL:N      | 2.51                     | 0.43              |
| 3:3:113:THR:HG21  | 10:E:28:TYR:H     | 1.83                     | 0.43              |
| 5:9:59:C:OP1      | 25:T:26:ARG:HB2   | 2.19                     | 0.43              |
| 9:D:62:CYS:HB3    | 9:D:105:VAL:HG21  | 2.00                     | 0.43              |
| 10:E:134:LYS:HD2  | 10:E:134:LYS:HA   | 1.73                     | 0.43              |
| 14:I:42:GLY:N     | 14:I:45:GLU:OE2   | 2.51                     | 0.43              |
| 26:U:80:LYS:HB3   | 26:U:80:LYS:HE3   | 1.82                     | 0.43              |
| 27:V:65:LYS:HA    | 27:V:65:LYS:HD2   | 1.89                     | 0.43              |
| 29:Y:44:ILE:HG21  | 29:Y:47:LEU:HG    | 2.01                     | 0.43              |
| 42:m:314:PRO:HB2  | 42:m:315:LYS:H    | 1.63                     | 0.43              |
| 43:n:119:ILE:HD12 | 43:n:229:LEU:HD13 | 2.00                     | 0.43              |
| 43:n:179:LYS:HE2  | 43:n:451:PRO:HB2  | 1.99                     | 0.43              |
| 43:n:565:MET:CE   | 43:n:569:GLN:H    | 2.29                     | 0.43              |
| 1:1:161:C:H5''    | 1:1:162:A:H2'     | 2.01                     | 0.43              |
| 1:1:430:A:N1      | 1:1:2450:C:O2'    | 2.42                     | 0.43              |
| 1:1:1237:G:H2'    | 1:1:1238:G:H5'    | 2.00                     | 0.43              |
| 1:1:2245:G:O3'    | 6:A:155:LYS:NZ    | 2.51                     | 0.43              |
| 1:1:2689:C:O2     | 1:1:2689:C:O4'    | 2.36                     | 0.43              |
| 1:1:3004:U:O2'    | 1:1:3201:A:N3     | 2.42                     | 0.43              |
| 1:1:3431:A:H4'    | 7:B:366:GLY:HA3   | 2.00                     | 0.43              |
| 2:2:128:U:P       | 43:n:74:HIS:HE2   | 2.42                     | 0.43              |
| 7:B:142:GLN:OE1   | 7:B:142:GLN:N     | 2.50                     | 0.43              |
| 9:D:246:LYS:HA    | 9:D:249:GLU:HG2   | 2.01                     | 0.43              |
| 15:J:117:ASP:HB3  | 15:J:120:ILE:HB   | 2.01                     | 0.43              |
| 19:N:9:GLU:HA     | 19:N:12:LYS:HD3   | 2.01                     | 0.43              |
| 22:Q:15:ARG:NH2   | 22:Q:19:ALA:H     | 2.15                     | 0.43              |
| 37:g:98:GLN:O     | 37:g:101:VAL:HG12 | 2.19                     | 0.43              |
| 42:m:676:SER:OG   | 42:m:677:ASP:N    | 2.51                     | 0.43              |
| 42:m:727:LEU:HD23 | 42:m:727:LEU:HA   | 1.80                     | 0.43              |
| 1:1:38:U:H2'      | 1:1:39:A:O4'      | 2.19                     | 0.43              |
| 1:1:66:A:N6       | 1:1:76:G:H1'      | 2.34                     | 0.43              |
| 1:1:176:A:OP2     | 38:h:111:ARG:HD3  | 2.19                     | 0.43              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:2615:A:H4'   | 6:A:118:LYS:NZ    | 2.34                     | 0.43              |
| 1:1:2817:U:O2'   | 25:T:88:ARG:O     | 2.25                     | 0.43              |
| 2:2:151:U:OP1    | 19:N:38:ARG:NH2   | 2.45                     | 0.43              |
| 2:2:156:G:OP2    | 43:n:89:ARG:NH2   | 2.52                     | 0.43              |
| 3:3:47:ASN:OD1   | 3:3:50:TYR:CE2    | 2.71                     | 0.43              |
| 28:X:65:PRO:HA   | 28:X:83:PHE:HA    | 2.01                     | 0.43              |
| 41:k:8:ILE:H     | 41:k:8:ILE:CD1    | 2.28                     | 0.43              |
| 43:n:179:LYS:NZ  | 43:n:451:PRO:O    | 2.43                     | 0.43              |
| 1:1:753:G:N2     | 1:1:771:C:OP2     | 2.40                     | 0.42              |
| 1:1:1102:U:H2'   | 1:1:1103:U:O4'    | 2.19                     | 0.42              |
| 1:1:1156:U:O2'   | 1:1:2738:A:N1     | 2.43                     | 0.42              |
| 1:1:2202:C:H5''  | 1:1:2204:G:C8     | 2.54                     | 0.42              |
| 1:1:3083:C:OP1   | 20:O:69:ARG:HD2   | 2.19                     | 0.42              |
| 7:B:105:VAL:HG21 | 7:B:148:LEU:HD22  | 2.00                     | 0.42              |
| 7:B:249:VAL:HG21 | 7:B:265:ALA:HB3   | 2.01                     | 0.42              |
| 9:D:68:ARG:C     | 25:T:31:LEU:HD23  | 2.44                     | 0.42              |
| 9:D:141:PRO:HB2  | 9:D:172:PHE:HB2   | 2.01                     | 0.42              |
| 16:K:26:VAL:O    | 16:K:30:GLU:HB2   | 2.18                     | 0.42              |
| 34:d:15:ARG:HD3  | 34:d:110:VAL:HG22 | 2.01                     | 0.42              |
| 42:m:726:TRP:CD1 | 42:m:740:THR:HG22 | 2.53                     | 0.42              |
| 44:o:11:TYR:HA   | 44:o:20:HIS:HA    | 2.01                     | 0.42              |
| 46:u:8:PHE:CE1   | 46:u:52:THR:HG21  | 2.54                     | 0.42              |
| 1:1:705:G:O2'    | 8:C:114:LYS:NZ    | 2.46                     | 0.42              |
| 1:1:1694:U:H2'   | 1:1:1695:C:C6     | 2.54                     | 0.42              |
| 3:3:50:TYR:HA    | 3:3:100:TRP:CH2   | 2.54                     | 0.42              |
| 7:B:106:TRP:CH2  | 7:B:161:LEU:HD13  | 2.54                     | 0.42              |
| 9:D:50:ARG:HG2   | 9:D:147:ASP:HB2   | 2.01                     | 0.42              |
| 15:J:21:ILE:HG12 | 15:J:125:MET:CB   | 2.48                     | 0.42              |
| 17:L:78:GLU:CD   | 39:i:18:ARG:HH12  | 2.27                     | 0.42              |
| 28:X:49:SER:OG   | 38:h:81:ASP:OD2   | 2.28                     | 0.42              |
| 30:Z:99:ASP:OD1  | 30:Z:100:THR:N    | 2.52                     | 0.42              |
| 30:Z:123:GLN:HA  | 30:Z:123:GLN:OE1  | 2.19                     | 0.42              |
| 38:h:6:PHE:O     | 38:h:10:LYS:HE2   | 2.19                     | 0.42              |
| 41:k:27:LYS:NZ   | 41:k:33:VAL:HG22  | 2.34                     | 0.42              |
| 42:m:642:ASP:HB3 | 42:m:645:PHE:HB2  | 2.01                     | 0.42              |
| 42:m:702:LYS:HA  | 42:m:702:LYS:HD2  | 1.78                     | 0.42              |
| 43:n:190:GLN:NE2 | 43:n:197:GLN:HG3  | 2.34                     | 0.42              |
| 46:u:23:ARG:HG3  | 46:u:29:PHE:CE1   | 2.39                     | 0.42              |
| 1:1:372:G:O6     | 40:j:56:ARG:HD3   | 2.19                     | 0.42              |
| 1:1:1010:A:O2'   | 1:1:1011:G:N3     | 2.44                     | 0.42              |
| 1:1:2505:U:H5''  | 6:A:220:HIS:HE1   | 1.85                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:2648:C:C2    | 37:g:98:GLN:NE2   | 2.87                     | 0.42              |
| 3:3:114:ARG:NH1  | 10:E:30:ALA:H     | 2.17                     | 0.42              |
| 5:9:113:A:H5'    | 5:9:114:G:H5''    | 2.01                     | 0.42              |
| 7:B:47:LEU:HD21  | 7:B:335:VAL:HG23  | 2.01                     | 0.42              |
| 7:B:105:VAL:HG11 | 7:B:148:LEU:HD21  | 1.99                     | 0.42              |
| 19:N:17:ASP:OD1  | 19:N:17:ASP:N     | 2.51                     | 0.42              |
| 30:Z:98:ALA:O    | 30:Z:102:LYS:HG2  | 2.19                     | 0.42              |
| 42:m:385:ARG:NH2 | 42:m:387:ARG:HH21 | 2.18                     | 0.42              |
| 43:n:173:ARG:NH2 | 43:n:238:TYR:HA   | 2.34                     | 0.42              |
| 43:n:235:PHE:CD1 | 43:n:245:TYR:HB3  | 2.54                     | 0.42              |
| 44:o:38:GLN:OE1  | 44:o:41:ARG:NH2   | 2.52                     | 0.42              |
| 1:1:1017:U:H2'   | 1:1:1018:U:C6     | 2.53                     | 0.42              |
| 1:1:2777:C:H5''  | 15:J:68:HIS:CD2   | 2.54                     | 0.42              |
| 1:1:3055:C:H2'   | 1:1:3056:G:C8     | 2.54                     | 0.42              |
| 3:3:19:ARG:NH1   | 3:3:38:CYS:SG     | 2.93                     | 0.42              |
| 8:C:12:ASN:OD1   | 8:C:18:SER:HB3    | 2.19                     | 0.42              |
| 8:C:94:ASN:HD22  | 8:C:102:PHE:HB2   | 1.84                     | 0.42              |
| 10:E:83:THR:OG1  | 10:E:91:VAL:O     | 2.38                     | 0.42              |
| 12:G:41:GLN:OE1  | 12:G:44:ARG:NH1   | 2.49                     | 0.42              |
| 12:G:97:TYR:O    | 12:G:132:VAL:HG23 | 2.20                     | 0.42              |
| 15:J:125:MET:CE  | 15:J:126:ASP:C    | 2.92                     | 0.42              |
| 27:V:19:LEU:HD11 | 27:V:100:ASN:HB3  | 2.00                     | 0.42              |
| 31:a:134:GLU:OE1 | 31:a:138:LYS:HD2  | 2.20                     | 0.42              |
| 43:n:181:PHE:CE2 | 43:n:183:SER:HB2  | 2.54                     | 0.42              |
| 1:1:446:U:OP1    | 35:e:115:LYS:HE2  | 2.19                     | 0.42              |
| 1:1:1025:G:N3    | 1:1:2732:A:H2'    | 2.34                     | 0.42              |
| 1:1:1534:G:H2'   | 1:1:1535:U:O4'    | 2.19                     | 0.42              |
| 1:1:1665:A:N6    | 30:Z:64:ARG:HE    | 2.18                     | 0.42              |
| 1:1:2863:U:H2'   | 1:1:2864:G:H8     | 1.85                     | 0.42              |
| 1:1:3102:A:H62   | 1:1:3236:G:N2     | 2.16                     | 0.42              |
| 1:1:3317:A:H2'   | 1:1:3317:A:N3     | 2.34                     | 0.42              |
| 6:A:117:GLU:HG3  | 6:A:124:ALA:HB3   | 2.01                     | 0.42              |
| 15:J:21:ILE:HG12 | 15:J:125:MET:HB3  | 2.02                     | 0.42              |
| 17:L:19:GLN:HA   | 17:L:22:VAL:HG23  | 2.01                     | 0.42              |
| 17:L:90:ALA:HB1  | 17:L:95:ILE:HB    | 2.02                     | 0.42              |
| 22:Q:90:ASP:OD2  | 22:Q:110:SER:OG   | 2.27                     | 0.42              |
| 1:1:223:G:OP1    | 29:Y:15:ARG:NH1   | 2.52                     | 0.42              |
| 1:1:414:G:H1'    | 2:2:24:G:H22      | 1.84                     | 0.42              |
| 1:1:419:U:H2'    | 1:1:420:G:C8      | 2.54                     | 0.42              |
| 1:1:971:U:O2'    | 1:1:2490:A:N1     | 2.48                     | 0.42              |
| 1:1:1559:G:H5'   | 1:1:1885:G:OP2    | 2.20                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:1952:G:H5''  | 27:V:84:ARG:HG2   | 2.02                     | 0.42              |
| 1:1:2238:G:O2'   | 1:1:2277:U:OP1    | 2.32                     | 0.42              |
| 1:1:2914:A:OP1   | 1:1:2961:U:O2'    | 2.24                     | 0.42              |
| 1:1:3363:C:H2'   | 1:1:3364:A:C8     | 2.54                     | 0.42              |
| 3:3:21:LYS:HG2   | 3:3:26:ASN:HB3    | 2.02                     | 0.42              |
| 6:A:176:LYS:HB2  | 16:K:29:ILE:HD13  | 2.01                     | 0.42              |
| 8:C:9:SER:HA     | 8:C:21:THR:HG22   | 2.00                     | 0.42              |
| 8:C:159:GLN:HA   | 8:C:217:ILE:HB    | 2.02                     | 0.42              |
| 18:M:25:LEU:HD12 | 18:M:25:LEU:HA    | 1.86                     | 0.42              |
| 23:R:21:LYS:HA   | 23:R:21:LYS:HD3   | 1.89                     | 0.42              |
| 30:Z:25:ILE:HD13 | 30:Z:43:VAL:HG12  | 2.02                     | 0.42              |
| 33:c:57:LEU:HB2  | 33:c:104:LEU:HG   | 2.00                     | 0.42              |
| 35:e:29:TRP:CE2  | 35:e:50:PRO:HD2   | 2.55                     | 0.42              |
| 37:g:5:VAL:CG2   | 37:g:32:TYR:CZ    | 3.03                     | 0.42              |
| 1:1:44:U:O2'     | 44:o:46:LYS:HE2   | 2.19                     | 0.42              |
| 1:1:511:C:H5''   | 10:E:99:ARG:HG3   | 2.01                     | 0.42              |
| 1:1:2296:A:H5''  | 1:1:2297:U:H5     | 1.85                     | 0.42              |
| 1:1:3269:A:H5'   | 1:1:3270:U:OP2    | 2.19                     | 0.42              |
| 7:B:10:ARG:HH21  | 7:B:14:LEU:HD21   | 1.84                     | 0.42              |
| 9:D:288:VAL:HG22 | 14:I:206:LEU:HD21 | 2.02                     | 0.42              |
| 17:L:135:LYS:HG3 | 17:L:136:GLY:H    | 1.85                     | 0.42              |
| 19:N:45:PRO:O    | 19:N:49:ARG:HG3   | 2.19                     | 0.42              |
| 26:U:24:ILE:HG22 | 26:U:25:PHE:CD2   | 2.55                     | 0.42              |
| 32:b:32:LEU:O    | 32:b:35:ARG:HB2   | 2.20                     | 0.42              |
| 36:f:53:VAL:HG21 | 36:f:100:ARG:CZ   | 2.49                     | 0.42              |
| 1:1:243:C:O2'    | 1:1:244:G:H8      | 2.02                     | 0.42              |
| 1:1:2302:A:N1    | 1:1:2517:G:O2'    | 2.46                     | 0.42              |
| 1:1:2681:G:O6    | 12:G:242:THR:HG23 | 2.19                     | 0.42              |
| 1:1:3359:U:OP1   | 1:1:3359:U:H2'    | 2.20                     | 0.42              |
| 2:2:99:C:H2'     | 2:2:100:A:C8      | 2.54                     | 0.42              |
| 7:B:121:ASN:HB3  | 7:B:123:PHE:CE1   | 2.55                     | 0.42              |
| 8:C:337:TYR:CE2  | 8:C:339:ALA:HB2   | 2.54                     | 0.42              |
| 10:E:18:LEU:HD12 | 10:E:18:LEU:O     | 2.20                     | 0.42              |
| 12:G:84:LYS:O    | 12:G:88:THR:HG22  | 2.20                     | 0.42              |
| 23:R:139:ILE:O   | 23:R:143:GLN:HG2  | 2.20                     | 0.42              |
| 26:U:73:TYR:CE1  | 26:U:77:LEU:HG    | 2.54                     | 0.42              |
| 33:c:45:LEU:HG   | 33:c:49:ARG:HH21  | 1.85                     | 0.42              |
| 38:h:81:ASP:OD1  | 38:h:81:ASP:N     | 2.53                     | 0.42              |
| 42:m:384:GLY:N   | 42:m:404:ASP:OD2  | 2.53                     | 0.42              |
| 42:m:664:SER:OG  | 42:m:718:THR:O    | 2.32                     | 0.42              |
| 1:1:19:U:H2'     | 1:1:20:A:C8       | 2.55                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:1469:A:H5''  | 1:1:1470:U:H5''   | 2.02                     | 0.42              |
| 1:1:1932:U:H5''  | 1:1:1933:G:O4'    | 2.19                     | 0.42              |
| 1:1:1995:G:OP1   | 23:R:75:HIS:ND1   | 2.52                     | 0.42              |
| 5:9:111:U:O3'    | 9:D:283:ARG:NH1   | 2.47                     | 0.42              |
| 11:F:84:VAL:HG22 | 25:T:139:HIS:O    | 2.20                     | 0.42              |
| 18:M:50:VAL:HG21 | 24:S:96:THR:HG21  | 2.02                     | 0.42              |
| 38:h:47:LYS:O    | 38:h:51:LYS:HG2   | 2.20                     | 0.42              |
| 1:1:544:A:H61    | 1:1:578:U:H5      | 1.67                     | 0.42              |
| 1:1:670:A:N6     | 1:1:2964:U:OP1    | 2.45                     | 0.42              |
| 1:1:986:U:O4     | 1:1:1146:G:H1'    | 2.20                     | 0.42              |
| 1:1:1024:A:H5''  | 25:T:43:LYS:HD2   | 2.02                     | 0.42              |
| 1:1:1746:C:H42   | 1:1:1778:A:H61    | 1.67                     | 0.42              |
| 1:1:3040:G:H5'   | 1:1:3042:G:C8     | 2.54                     | 0.42              |
| 3:3:35:THR:HG21  | 3:3:107:ARG:NH1   | 2.35                     | 0.42              |
| 3:3:115:LEU:O    | 3:3:118:TYR:HB3   | 2.20                     | 0.42              |
| 8:C:69:THR:HG22  | 8:C:75:ARG:HD3    | 2.02                     | 0.42              |
| 14:I:50:ILE:HD12 | 14:I:148:ALA:HB3  | 2.01                     | 0.42              |
| 18:M:28:ILE:HD13 | 18:M:39:ILE:HG22  | 2.02                     | 0.42              |
| 30:Z:49:TYR:CD2  | 30:Z:133:PRO:HB3  | 2.55                     | 0.42              |
| 30:Z:136:PHE:OXT | 37:g:76:TYR:OH    | 2.37                     | 0.42              |
| 43:n:170:TYR:CE2 | 43:n:237:LEU:HD13 | 2.54                     | 0.42              |
| 10:E:136:ASP:OD1 | 10:E:137:GLU:N    | 2.53                     | 0.41              |
| 12:G:62:ARG:HD3  | 19:N:29:GLU:OE2   | 2.20                     | 0.41              |
| 14:I:175:GLN:OE1 | 14:I:175:GLN:HA   | 2.20                     | 0.41              |
| 15:J:81:GLU:HG3  | 15:J:85:LYS:NZ    | 2.35                     | 0.41              |
| 15:J:108:GLU:OE2 | 15:J:110:ILE:HB   | 2.20                     | 0.41              |
| 22:Q:61:ILE:O    | 22:Q:89:THR:N     | 2.52                     | 0.41              |
| 24:S:110:ALA:HA  | 24:S:115:ALA:H    | 1.85                     | 0.41              |
| 27:V:39:VAL:HG22 | 27:V:61:LEU:O     | 2.20                     | 0.41              |
| 30:Z:51:LEU:HB2  | 30:Z:65:ARG:HB3   | 2.02                     | 0.41              |
| 1:1:122:A:O2'    | 1:1:151:G:N2      | 2.53                     | 0.41              |
| 1:1:3135:G:H4'   | 27:V:13:TYR:HE1   | 1.84                     | 0.41              |
| 5:9:89:C:H4'     | 15:J:44:THR:OG1   | 2.20                     | 0.41              |
| 7:B:14:LEU:HD23  | 7:B:17:LEU:HD21   | 2.02                     | 0.41              |
| 9:D:8:LYS:HB3    | 9:D:13:PHE:CZ     | 2.55                     | 0.41              |
| 18:M:42:PRO:HG3  | 18:M:78:TRP:CG    | 2.55                     | 0.41              |
| 21:P:138:ALA:HB1 | 21:P:140:LEU:HD21 | 2.01                     | 0.41              |
| 26:U:76:TYR:O    | 26:U:80:LYS:HG2   | 2.19                     | 0.41              |
| 33:c:87:ASN:OD1  | 33:c:90:ASP:N     | 2.45                     | 0.41              |
| 42:m:299:SER:H   | 42:m:302:PRO:HG2  | 1.85                     | 0.41              |
| 42:m:361:LYS:HG3 | 42:m:362:LEU:H    | 1.86                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 42:m:640:TRP:CD1  | 42:m:650:TYR:HD2  | 2.38                     | 0.41              |
| 1:1:655:C:H2'     | 1:1:656:A:C8      | 2.55                     | 0.41              |
| 1:1:880:A:C5      | 1:1:881:C:H1'     | 2.56                     | 0.41              |
| 1:1:2236:U:O2'    | 6:A:181:ALA:HB2   | 2.21                     | 0.41              |
| 1:1:3064:A:N7     | 6:A:214:ASN:ND2   | 2.68                     | 0.41              |
| 3:3:32:TYR:O      | 3:3:44:PRO:HG2    | 2.20                     | 0.41              |
| 11:F:125:LYS:HG3  | 11:F:202:PHE:CD1  | 2.56                     | 0.41              |
| 11:F:245:LEU:O    | 11:F:249:MET:HG3  | 2.20                     | 0.41              |
| 14:I:36:LEU:HD21  | 14:I:69:ARG:NH1   | 2.36                     | 0.41              |
| 22:Q:61:ILE:HG21  | 22:Q:84:VAL:HG21  | 2.01                     | 0.41              |
| 23:R:115:ILE:HG22 | 23:R:119:LEU:HD23 | 2.01                     | 0.41              |
| 24:S:44:LEU:HD23  | 24:S:44:LEU:HA    | 1.89                     | 0.41              |
| 30:Z:26:LEU:HD23  | 30:Z:26:LEU:HA    | 1.80                     | 0.41              |
| 33:c:72:TYR:O     | 33:c:75:MET:HG3   | 2.21                     | 0.41              |
| 42:m:337:CYS:SG   | 43:n:139:MET:HE1  | 2.60                     | 0.41              |
| 42:m:687:ARG:CD   | 42:m:689:TYR:CE1  | 2.78                     | 0.41              |
| 1:1:613:A:H1'     | 1:1:1368:A:H5''   | 2.01                     | 0.41              |
| 1:1:3156:C:OP1    | 1:1:3473:A:O2'    | 2.34                     | 0.41              |
| 4:8:37:TYR:CE1    | 4:8:39:MET:SD     | 3.13                     | 0.41              |
| 9:D:115:LEU:HD23  | 9:D:118:LYS:HD2   | 2.01                     | 0.41              |
| 14:I:54:SER:HB2   | 14:I:135:LEU:HD11 | 2.03                     | 0.41              |
| 17:L:115:ARG:HG2  | 17:L:153:LEU:HD21 | 2.01                     | 0.41              |
| 20:O:4:PHE:CE2    | 36:f:34:GLU:HB2   | 2.56                     | 0.41              |
| 20:O:111:PRO:N    | 20:O:112:PRO:HD2  | 2.35                     | 0.41              |
| 37:g:92:ALA:O     | 37:g:96:GLU:HG2   | 2.20                     | 0.41              |
| 41:k:26:LYS:HB3   | 41:k:34:LYS:HB3   | 2.02                     | 0.41              |
| 42:m:687:ARG:CD   | 42:m:689:TYR:CZ   | 3.02                     | 0.41              |
| 1:1:773:C:H5'     | 22:Q:146:HIS:CG   | 2.56                     | 0.41              |
| 1:1:1005:A:H2'    | 1:1:1006:A:O4'    | 2.19                     | 0.41              |
| 1:1:1761:U:O2'    | 1:1:1763:A:N7     | 2.41                     | 0.41              |
| 1:1:2615:A:H4'    | 6:A:118:LYS:HZ1   | 1.85                     | 0.41              |
| 3:3:113:THR:OG1   | 10:E:27:TYR:HA    | 2.20                     | 0.41              |
| 5:9:66:U:H2'      | 5:9:67:A:H8       | 1.83                     | 0.41              |
| 7:B:291:ALA:HA    | 7:B:304:ARG:HD3   | 2.03                     | 0.41              |
| 8:C:10:ILE:HD11   | 8:C:22:LEU:HG     | 2.03                     | 0.41              |
| 11:F:122:ILE:HD12 | 11:F:124:VAL:CG2  | 2.50                     | 0.41              |
| 26:U:14:ILE:HB    | 26:U:61:ILE:HB    | 2.02                     | 0.41              |
| 28:X:130:ASP:OD1  | 28:X:133:ASP:HB3  | 2.20                     | 0.41              |
| 34:d:36:ARG:O     | 34:d:40:GLU:HG2   | 2.20                     | 0.41              |
| 42:m:293:PRO:HA   | 42:m:294:PRO:HD3  | 1.86                     | 0.41              |
| 43:n:230:MET:HE3  | 43:n:230:MET:C    | 2.45                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:1871:U:OP1    | 43:n:568:LYS:HG2  | 2.20                     | 0.41              |
| 1:1:2510:C:O5'    | 44:o:52:GLY:HA2   | 2.21                     | 0.41              |
| 1:1:2816:A:H5''   | 32:b:33:LYS:HD2   | 2.02                     | 0.41              |
| 3:3:34:VAL:O      | 3:3:111:ARG:HD2   | 2.20                     | 0.41              |
| 5:9:72:A:H2'      | 5:9:73:A:C8       | 2.52                     | 0.41              |
| 8:C:109:ARG:HG2   | 8:C:110:LYS:N     | 2.36                     | 0.41              |
| 15:J:13:ARG:C     | 15:J:131:MET:HE1  | 2.45                     | 0.41              |
| 29:Y:105:ILE:HG21 | 29:Y:108:LEU:HD23 | 2.02                     | 0.41              |
| 34:d:100:ASP:OD1  | 34:d:100:ASP:N    | 2.45                     | 0.41              |
| 39:i:58:LEU:HB3   | 39:i:67:ALA:HB2   | 2.01                     | 0.41              |
| 42:m:341:TYR:HE2  | 43:n:34:ARG:HD2   | 1.85                     | 0.41              |
| 1:1:265:C:C2'     | 1:1:266:G:H5'     | 2.51                     | 0.41              |
| 1:1:277:G:H5''    | 19:N:14:LYS:HE3   | 2.02                     | 0.41              |
| 1:1:1124:C:H5''   | 25:T:120:LYS:NZ   | 2.36                     | 0.41              |
| 1:1:2650:A:H5''   | 6:A:86:PHE:CZ     | 2.55                     | 0.41              |
| 1:1:3314:U:H5'    | 1:1:3315:A:OP2    | 2.21                     | 0.41              |
| 3:3:30:ASN:HB3    | 3:3:33:ASN:HB2    | 2.02                     | 0.41              |
| 11:F:89:LYS:HE3   | 11:F:89:LYS:HB2   | 1.26                     | 0.41              |
| 22:Q:94:MET:O     | 22:Q:114:ARG:NH2  | 2.33                     | 0.41              |
| 25:T:17:ARG:HB2   | 25:T:22:HIS:CE1   | 2.55                     | 0.41              |
| 32:b:6:ASN:O      | 32:b:7:HIS:HB3    | 2.19                     | 0.41              |
| 1:1:86:G:O2'      | 1:1:98:G:O6       | 2.25                     | 0.41              |
| 1:1:285:G:H2'     | 1:1:286:U:O4'     | 2.21                     | 0.41              |
| 1:1:297:A:H2'     | 1:1:298:G:H8      | 1.86                     | 0.41              |
| 1:1:687:U:OP1     | 31:a:8:THR:OG1    | 2.37                     | 0.41              |
| 3:3:52:THR:OG1    | 3:3:54:ARG:NH1    | 2.53                     | 0.41              |
| 3:3:95:GLN:OE1    | 10:E:16:MET:HE2   | 2.20                     | 0.41              |
| 5:9:91:G:H1'      | 5:9:94:C:N4       | 2.27                     | 0.41              |
| 9:D:192:ASP:OD1   | 9:D:192:ASP:N     | 2.54                     | 0.41              |
| 10:E:158:LYS:HE3  | 10:E:158:LYS:HB2  | 1.87                     | 0.41              |
| 17:L:61:PRO:O     | 17:L:62:THR:OG1   | 2.32                     | 0.41              |
| 21:P:27:LYS:O     | 21:P:31:GLU:HG2   | 2.20                     | 0.41              |
| 34:d:84:ARG:HE    | 34:d:84:ARG:HB3   | 1.58                     | 0.41              |
| 38:h:39:SER:O     | 38:h:43:LEU:HG    | 2.21                     | 0.41              |
| 42:m:301:ASN:OD1  | 42:m:301:ASN:N    | 2.54                     | 0.41              |
| 1:1:220:A:O4'     | 29:Y:1:MET:HA     | 2.21                     | 0.41              |
| 1:1:599:U:H2'     | 1:1:600:C:C6      | 2.56                     | 0.41              |
| 1:1:777:C:H5''    | 32:b:32:LEU:HD12  | 2.02                     | 0.41              |
| 1:1:982:G:H5'     | 1:1:1003:G:OP1    | 2.21                     | 0.41              |
| 1:1:1332:A:H5'    | 1:1:1333:A:C4     | 2.56                     | 0.41              |
| 1:1:1837:G:H5''   | 6:A:21:LEU:HD22   | 2.02                     | 0.41              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:1:1899:C:O2'   | 40:j:8:PHE:O      | 2.32                     | 0.41              |
| 1:1:2251:C:O2    | 1:1:2259:G:N2     | 2.36                     | 0.41              |
| 1:1:3086:A:O2'   | 1:1:3410:G:N7     | 2.48                     | 0.41              |
| 1:1:3190:A:P     | 27:V:14:ARG:HH22  | 2.43                     | 0.41              |
| 1:1:3313:G:N2    | 36:f:4:GLN:OE1    | 2.32                     | 0.41              |
| 1:1:3395:G:OP1   | 7:B:128:LYS:NZ    | 2.39                     | 0.41              |
| 2:2:127:U:OP1    | 43:n:70:GLN:NE2   | 2.32                     | 0.41              |
| 3:3:110:GLN:O    | 3:3:114:ARG:HD3   | 2.21                     | 0.41              |
| 5:9:140:A:O5'    | 5:9:140:A:H8      | 2.03                     | 0.41              |
| 6:A:228:SER:HB2  | 6:A:232:GLN:HB2   | 2.03                     | 0.41              |
| 7:B:49:TYR:OH    | 7:B:164:THR:OG1   | 2.30                     | 0.41              |
| 7:B:132:LYS:HB2  | 7:B:132:LYS:HE2   | 1.84                     | 0.41              |
| 9:D:146:LEU:HD22 | 9:D:163:MET:CE    | 2.51                     | 0.41              |
| 10:E:87:LYS:HE2  | 10:E:87:LYS:HB3   | 1.93                     | 0.41              |
| 24:S:86:THR:HG23 | 25:T:156:TYR:HE2  | 1.84                     | 0.41              |
| 28:X:102:TYR:HB3 | 28:X:137:ARG:HH22 | 1.86                     | 0.41              |
| 30:Z:64:ARG:HA   | 30:Z:67:ARG:NH1   | 2.35                     | 0.41              |
| 34:d:51:THR:OG1  | 34:d:94:THR:OG1   | 2.22                     | 0.41              |
| 37:g:7:TYR:CE1   | 37:g:20:THR:HG21  | 2.56                     | 0.41              |
| 45:p:126:ALA:H   | 45:p:139:SER:H    | 1.69                     | 0.41              |
| 1:1:55:G:OP1     | 40:j:43:LYS:HE3   | 2.20                     | 0.41              |
| 1:1:63:A:N3      | 1:1:78:U:O2'      | 2.44                     | 0.41              |
| 1:1:675:C:H2'    | 1:1:676:G:C8      | 2.56                     | 0.41              |
| 1:1:800:U:H2'    | 1:1:801:G:O4'     | 2.20                     | 0.41              |
| 1:1:1617:U:H3'   | 1:1:1618:A:H5'    | 2.02                     | 0.41              |
| 1:1:2203:G:H22   | 1:1:2208:A:H1'    | 1.85                     | 0.41              |
| 3:3:67:ILE:HG13  | 3:3:68:GLU:H      | 1.85                     | 0.41              |
| 5:9:90:C:H4'     | 15:J:43:GLN:NE2   | 2.36                     | 0.41              |
| 6:A:227:GLN:HA   | 6:A:227:GLN:OE1   | 2.21                     | 0.41              |
| 8:C:35:ASP:OD1   | 8:C:36:LEU:N      | 2.53                     | 0.41              |
| 8:C:231:ASN:HB3  | 8:C:234:ARG:HG2   | 2.03                     | 0.41              |
| 9:D:82:GLU:OE1   | 9:D:108:ARG:NH2   | 2.43                     | 0.41              |
| 16:K:5:THR:HG21  | 16:K:8:VAL:HB     | 2.03                     | 0.41              |
| 19:N:146:PRO:HG2 | 38:h:103:THR:HG22 | 2.03                     | 0.41              |
| 21:P:99:GLU:O    | 21:P:103:GLU:HG2  | 2.21                     | 0.41              |
| 34:d:63:GLU:HA   | 34:d:63:GLU:OE2   | 2.20                     | 0.41              |
| 37:g:5:VAL:HG23  | 37:g:32:TYR:CE2   | 2.56                     | 0.41              |
| 38:h:30:LEU:HB3  | 38:h:46:ILE:HG12  | 2.03                     | 0.41              |
| 1:1:718:A:OP2    | 1:1:718:A:H8      | 2.04                     | 0.40              |
| 1:1:1094:A:H5''  | 1:1:1095:G:H5'    | 2.03                     | 0.40              |
| 1:1:1527:G:H2'   | 4:8:13:LEU:HD22   | 2.02                     | 0.40              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:1:3084:U:O2'    | 7:B:267:ALA:O     | 2.35                     | 0.40              |
| 2:2:23:G:C6       | 2:2:24:G:N1       | 2.89                     | 0.40              |
| 8:C:263:VAL:HG22  | 8:C:273:LEU:HD12  | 2.03                     | 0.40              |
| 15:J:91:LEU:O     | 15:J:171:VAL:HA   | 2.21                     | 0.40              |
| 15:J:105:GLY:HA2  | 15:J:126:ASP:HA   | 2.02                     | 0.40              |
| 19:N:73:ARG:NH2   | 19:N:86:HIS:O     | 2.54                     | 0.40              |
| 30:Z:90:ASP:C     | 30:Z:92:LEU:H     | 2.29                     | 0.40              |
| 42:m:655:TYR:OH   | 43:n:562:LYS:HB2  | 2.21                     | 0.40              |
| 1:1:258:U:C4      | 42:m:236:LEU:HB3  | 2.56                     | 0.40              |
| 1:1:414:G:N3      | 2:2:24:G:C2       | 2.89                     | 0.40              |
| 1:1:750:U:O2'     | 32:b:29:TYR:OH    | 2.21                     | 0.40              |
| 5:9:54:U:H2'      | 5:9:55:A:C8       | 2.56                     | 0.40              |
| 7:B:199:PHE:O     | 7:B:201:LYS:HD2   | 2.20                     | 0.40              |
| 9:D:273:ARG:HE    | 9:D:273:ARG:HB3   | 1.78                     | 0.40              |
| 15:J:32:ARG:HA    | 15:J:35:LYS:HE2   | 2.03                     | 0.40              |
| 17:L:147:THR:OG1  | 17:L:148:ASP:N    | 2.54                     | 0.40              |
| 31:a:75:LEU:HD12  | 31:a:136:LYS:HD2  | 2.02                     | 0.40              |
| 34:d:62:LYS:HB3   | 34:d:62:LYS:NZ    | 2.36                     | 0.40              |
| 37:g:30:ILE:HD13  | 37:g:30:ILE:HA    | 1.89                     | 0.40              |
| 43:n:10:ALA:HA    | 43:n:14:ARG:HB2   | 2.03                     | 0.40              |
| 1:1:986:U:O5'     | 32:b:8:THR:HG22   | 2.22                     | 0.40              |
| 1:1:1234:A:H61    | 1:1:1331:G:H2'    | 1.86                     | 0.40              |
| 1:1:1644:C:H2'    | 1:1:1645:G:C8     | 2.55                     | 0.40              |
| 1:1:2245:G:N7     | 6:A:151:SER:OG    | 2.49                     | 0.40              |
| 3:3:69:ARG:HD2    | 3:3:75:LYS:HG3    | 2.03                     | 0.40              |
| 7:B:295:SER:HB2   | 7:B:300:ALA:O     | 2.21                     | 0.40              |
| 24:S:88:ASN:OD1   | 25:T:155:ALA:HB1  | 2.20                     | 0.40              |
| 26:U:18:ALA:HB1   | 26:U:105:TYR:CE1  | 2.57                     | 0.40              |
| 29:Y:58:ILE:HG22  | 29:Y:59:ARG:HG2   | 2.03                     | 0.40              |
| 42:m:303:PRO:HA   | 42:m:306:TYR:CE1  | 2.57                     | 0.40              |
| 43:n:172:ILE:HD13 | 43:n:374:ARG:HH11 | 1.87                     | 0.40              |
| 1:1:948:G:H5'     | 1:1:949:A:OP1     | 2.22                     | 0.40              |
| 1:1:989:C:H4'     | 1:1:2894:A:C5     | 2.57                     | 0.40              |
| 1:1:1660:A:H5''   | 42:m:637:ARG:HH12 | 1.87                     | 0.40              |
| 1:1:1912:C:N4     | 1:1:1913:A:N6     | 2.69                     | 0.40              |
| 1:1:2393:G:OP2    | 1:1:2393:G:N2     | 2.40                     | 0.40              |
| 8:C:189:LEU:HD12  | 8:C:200:ARG:O     | 2.22                     | 0.40              |
| 24:S:87:HIS:C     | 24:S:88:ASN:HD22  | 2.29                     | 0.40              |
| 30:Z:97:THR:HB    | 30:Z:99:ASP:OD1   | 2.21                     | 0.40              |
| 31:a:64:MET:HE3   | 31:a:64:MET:HB2   | 1.86                     | 0.40              |
| 36:f:54:TYR:HE1   | 36:f:68:ILE:HG13  | 1.87                     | 0.40              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 44:o:4:ILE:HD13  | 44:o:91:PHE:CE1   | 2.55                     | 0.40              |
| 1:1:2523:G:N2    | 1:1:2610:U:O4     | 2.51                     | 0.40              |
| 1:1:3102:A:OP2   | 20:O:149:LYS:NZ   | 2.40                     | 0.40              |
| 3:3:110:GLN:O    | 3:3:113:THR:HG22  | 2.22                     | 0.40              |
| 6:A:179:LEU:HD11 | 16:K:26:VAL:HG11  | 2.03                     | 0.40              |
| 8:C:120:LYS:O    | 8:C:124:ILE:HG12  | 2.21                     | 0.40              |
| 11:F:137:VAL:O   | 11:F:141:VAL:HG22 | 2.22                     | 0.40              |
| 15:J:161:ASN:O   | 15:J:165:GLN:NE2  | 2.47                     | 0.40              |
| 17:L:98:ASP:OD2  | 17:L:101:ARG:HB2  | 2.21                     | 0.40              |
| 22:Q:84:VAL:HG22 | 22:Q:141:VAL:HG23 | 2.03                     | 0.40              |
| 25:T:119:ALA:HB2 | 25:T:126:VAL:HB   | 2.03                     | 0.40              |
| 26:U:15:ASP:OD2  | 26:U:60:LYS:NZ    | 2.43                     | 0.40              |
| 27:V:68:LYS:O    | 27:V:72:ARG:HG3   | 2.21                     | 0.40              |
| 28:X:42:LYS:HD2  | 28:X:42:LYS:HA    | 1.98                     | 0.40              |
| 28:X:95:LYS:HB2  | 28:X:109:ILE:HD11 | 2.03                     | 0.40              |
| 31:a:127:ARG:HG2 | 39:i:6:VAL:HG21   | 2.04                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

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

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

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

| Mol | Chain | Analysed      | Favoured  | Allowed | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|---------|----------|-------------|-----|
| 3   | 3     | 121/302 (40%) | 112 (93%) | 7 (6%)  | 2 (2%)   | 7           | 30  |
| 4   | 8     | 48/51 (94%)   | 46 (96%)  | 2 (4%)  | 0        | 100         | 100 |
| 6   | A     | 243/253 (96%) | 234 (96%) | 9 (4%)  | 0        | 100         | 100 |
| 7   | B     | 375/388 (97%) | 362 (96%) | 13 (4%) | 0        | 100         | 100 |
| 8   | C     | 357/363 (98%) | 338 (95%) | 19 (5%) | 0        | 100         | 100 |
| 9   | D     | 282/294 (96%) | 278 (99%) | 4 (1%)  | 0        | 100         | 100 |
| 10  | E     | 181/195 (93%) | 167 (92%) | 13 (7%) | 1 (1%)   | 21          | 52  |

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| Mol | Chain | Analysed      | Favoured   | Allowed | Outliers | Percentiles |     |
|-----|-------|---------------|------------|---------|----------|-------------|-----|
| 11  | F     | 212/250 (85%) | 206 (97%)  | 6 (3%)  | 0        | 100         | 100 |
| 12  | G     | 227/259 (88%) | 223 (98%)  | 4 (2%)  | 0        | 100         | 100 |
| 13  | H     | 171/190 (90%) | 167 (98%)  | 4 (2%)  | 0        | 100         | 100 |
| 14  | I     | 164/221 (74%) | 161 (98%)  | 3 (2%)  | 0        | 100         | 100 |
| 15  | J     | 167/174 (96%) | 163 (98%)  | 4 (2%)  | 0        | 100         | 100 |
| 16  | K     | 88/94 (94%)   | 84 (96%)   | 4 (4%)  | 0        | 100         | 100 |
| 17  | L     | 200/208 (96%) | 190 (95%)  | 10 (5%) | 0        | 100         | 100 |
| 18  | M     | 123/134 (92%) | 117 (95%)  | 6 (5%)  | 0        | 100         | 100 |
| 19  | N     | 198/201 (98%) | 188 (95%)  | 10 (5%) | 0        | 100         | 100 |
| 20  | O     | 194/197 (98%) | 193 (100%) | 1 (0%)  | 0        | 100         | 100 |
| 21  | P     | 169/187 (90%) | 162 (96%)  | 7 (4%)  | 0        | 100         | 100 |
| 22  | Q     | 184/187 (98%) | 173 (94%)  | 10 (5%) | 1 (0%)   | 24          | 57  |
| 23  | R     | 147/193 (76%) | 146 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 24  | S     | 164/176 (93%) | 153 (93%)  | 11 (7%) | 0        | 100         | 100 |
| 25  | T     | 157/160 (98%) | 154 (98%)  | 3 (2%)  | 0        | 100         | 100 |
| 26  | U     | 96/117 (82%)  | 90 (94%)   | 6 (6%)  | 0        | 100         | 100 |
| 27  | V     | 134/139 (96%) | 131 (98%)  | 3 (2%)  | 0        | 100         | 100 |
| 28  | X     | 115/141 (82%) | 114 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 29  | Y     | 123/126 (98%) | 119 (97%)  | 4 (3%)  | 0        | 100         | 100 |
| 30  | Z     | 132/136 (97%) | 125 (95%)  | 7 (5%)  | 0        | 100         | 100 |
| 31  | a     | 145/148 (98%) | 139 (96%)  | 6 (4%)  | 0        | 100         | 100 |
| 32  | b     | 54/61 (88%)   | 51 (94%)   | 2 (4%)  | 1 (2%)   | 6           | 27  |
| 33  | c     | 93/117 (80%)  | 90 (97%)   | 3 (3%)  | 0        | 100         | 100 |
| 34  | d     | 93/113 (82%)  | 92 (99%)   | 1 (1%)  | 0        | 100         | 100 |
| 35  | e     | 115/127 (91%) | 113 (98%)  | 2 (2%)  | 0        | 100         | 100 |
| 36  | f     | 104/108 (96%) | 99 (95%)   | 5 (5%)  | 0        | 100         | 100 |
| 37  | g     | 104/112 (93%) | 98 (94%)   | 6 (6%)  | 0        | 100         | 100 |
| 38  | h     | 119/122 (98%) | 118 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 39  | i     | 94/99 (95%)   | 90 (96%)   | 4 (4%)  | 0        | 100         | 100 |
| 40  | j     | 81/91 (89%)   | 78 (96%)   | 3 (4%)  | 0        | 100         | 100 |
| 41  | k     | 68/74 (92%)   | 66 (97%)   | 2 (3%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 42  | m     | 409/740 (55%)   | 386 (94%)  | 23 (6%)  | 0        | 100         | 100 |
| 43  | n     | 351/607 (58%)   | 331 (94%)  | 20 (6%)  | 0        | 100         | 100 |
| 44  | o     | 96/106 (91%)    | 93 (97%)   | 3 (3%)   | 0        | 100         | 100 |
| 45  | p     | 274/440 (62%)   | 265 (97%)  | 9 (3%)   | 0        | 100         | 100 |
| 46  | u     | 57/192 (30%)    | 55 (96%)   | 2 (4%)   | 0        | 100         | 100 |
| All | All   | 7029/8593 (82%) | 6760 (96%) | 264 (4%) | 5 (0%)   | 49          | 78  |

All (5) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | 3     | 13  | HIS  |
| 3   | 3     | 11  | VAL  |
| 22  | Q     | 184 | ALA  |
| 32  | b     | 7   | HIS  |
| 10  | E     | 135 | LYS  |

### 5.3.2 Protein sidechains ⓘ

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

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

| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 3   | 3     | 111/271 (41%)  | 110 (99%)  | 1 (1%)   | 70          | 80  |
| 4   | 8     | 46/47 (98%)    | 46 (100%)  | 0        | 100         | 100 |
| 6   | A     | 188/192 (98%)  | 188 (100%) | 0        | 100         | 100 |
| 7   | B     | 316/326 (97%)  | 315 (100%) | 1 (0%)   | 86          | 87  |
| 8   | C     | 296/297 (100%) | 296 (100%) | 0        | 100         | 100 |
| 9   | D     | 234/241 (97%)  | 234 (100%) | 0        | 100         | 100 |
| 10  | E     | 146/155 (94%)  | 145 (99%)  | 1 (1%)   | 76          | 82  |
| 11  | F     | 180/210 (86%)  | 179 (99%)  | 1 (1%)   | 78          | 83  |
| 12  | G     | 191/212 (90%)  | 191 (100%) | 0        | 100         | 100 |
| 14  | I     | 144/187 (77%)  | 144 (100%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed      | Rotameric  | Outliers | Percentiles |     |
|-----|-------|---------------|------------|----------|-------------|-----|
| 15  | J     | 142/146 (97%) | 142 (100%) | 0        | 100         | 100 |
| 16  | K     | 71/75 (95%)   | 70 (99%)   | 1 (1%)   | 59          | 76  |
| 17  | L     | 162/167 (97%) | 162 (100%) | 0        | 100         | 100 |
| 18  | M     | 108/113 (96%) | 108 (100%) | 0        | 100         | 100 |
| 19  | N     | 175/176 (99%) | 175 (100%) | 0        | 100         | 100 |
| 20  | O     | 161/162 (99%) | 161 (100%) | 0        | 100         | 100 |
| 21  | P     | 139/149 (93%) | 139 (100%) | 0        | 100         | 100 |
| 22  | Q     | 158/159 (99%) | 158 (100%) | 0        | 100         | 100 |
| 23  | R     | 127/162 (78%) | 127 (100%) | 0        | 100         | 100 |
| 24  | S     | 150/154 (97%) | 150 (100%) | 0        | 100         | 100 |
| 25  | T     | 138/139 (99%) | 137 (99%)  | 1 (1%)   | 76          | 82  |
| 26  | U     | 85/103 (82%)  | 84 (99%)   | 1 (1%)   | 63          | 78  |
| 27  | V     | 104/107 (97%) | 104 (100%) | 0        | 100         | 100 |
| 28  | X     | 104/122 (85%) | 104 (100%) | 0        | 100         | 100 |
| 29  | Y     | 110/111 (99%) | 110 (100%) | 0        | 100         | 100 |
| 30  | Z     | 113/115 (98%) | 113 (100%) | 0        | 100         | 100 |
| 31  | a     | 121/122 (99%) | 121 (100%) | 0        | 100         | 100 |
| 32  | b     | 47/51 (92%)   | 47 (100%)  | 0        | 100         | 100 |
| 33  | c     | 76/91 (84%)   | 76 (100%)  | 0        | 100         | 100 |
| 34  | d     | 89/102 (87%)  | 89 (100%)  | 0        | 100         | 100 |
| 35  | e     | 100/107 (94%) | 100 (100%) | 0        | 100         | 100 |
| 36  | f     | 89/91 (98%)   | 89 (100%)  | 0        | 100         | 100 |
| 37  | g     | 92/97 (95%)   | 92 (100%)  | 0        | 100         | 100 |
| 38  | h     | 106/107 (99%) | 106 (100%) | 0        | 100         | 100 |
| 39  | i     | 82/84 (98%)   | 82 (100%)  | 0        | 100         | 100 |
| 40  | j     | 68/71 (96%)   | 68 (100%)  | 0        | 100         | 100 |
| 41  | k     | 63/66 (96%)   | 62 (98%)   | 1 (2%)   | 55          | 75  |
| 42  | m     | 378/659 (57%) | 377 (100%) | 1 (0%)   | 86          | 87  |
| 43  | n     | 319/532 (60%) | 319 (100%) | 0        | 100         | 100 |
| 44  | o     | 88/93 (95%)   | 87 (99%)   | 1 (1%)   | 65          | 78  |
| 46  | u     | 52/168 (31%)  | 52 (100%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Rotameric   | Outliers | Percentiles |
|-----|-------|-----------------|-------------|----------|-------------|
| All | All   | 5669/6739 (84%) | 5659 (100%) | 10 (0%)  | 85 89       |

All (10) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | 3     | 114 | ARG  |
| 7   | B     | 335 | VAL  |
| 10  | E     | 16  | MET  |
| 11  | F     | 89  | LYS  |
| 16  | K     | 22  | LEU  |
| 25  | T     | 103 | GLN  |
| 26  | U     | 13  | ILE  |
| 41  | k     | 9   | LYS  |
| 42  | m     | 644 | ASP  |
| 44  | o     | 65  | THR  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7   | B     | 11  | HIS  |
| 7   | B     | 184 | ASN  |
| 8   | C     | 41  | HIS  |
| 8   | C     | 272 | GLN  |
| 9   | D     | 178 | ASN  |
| 10  | E     | 89  | ASN  |
| 11  | F     | 135 | GLN  |
| 11  | F     | 193 | HIS  |
| 14  | I     | 95  | HIS  |
| 15  | J     | 68  | HIS  |
| 16  | K     | 45  | ASN  |
| 18  | M     | 34  | HIS  |
| 18  | M     | 119 | GLN  |
| 18  | M     | 125 | ASN  |
| 19  | N     | 15  | GLN  |
| 19  | N     | 79  | GLN  |
| 19  | N     | 158 | HIS  |
| 19  | N     | 192 | HIS  |
| 21  | P     | 25  | HIS  |
| 21  | P     | 54  | HIS  |
| 21  | P     | 97  | ASN  |
| 22  | Q     | 57  | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 25  | T     | 98  | HIS  |
| 27  | V     | 26  | ASN  |
| 28  | X     | 136 | ASN  |
| 30  | Z     | 78  | ASN  |
| 31  | a     | 4   | HIS  |
| 31  | a     | 125 | GLN  |
| 32  | b     | 42  | ASN  |
| 37  | g     | 67  | HIS  |
| 37  | g     | 98  | GLN  |
| 38  | h     | 15  | ASN  |
| 38  | h     | 106 | GLN  |
| 42  | m     | 559 | GLN  |
| 43  | n     | 6   | GLN  |

### 5.3.3 RNA ⓘ

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | 1     | 2823/3498 (80%) | 580 (20%)         | 10 (0%)         |
| 2   | 2     | 157/165 (95%)   | 33 (21%)          | 1 (0%)          |
| 5   | 9     | 117/229 (51%)   | 14 (11%)          | 0               |
| All | All   | 3097/3892 (79%) | 627 (20%)         | 11 (0%)         |

All (627) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 4   | U    |
| 1   | 1     | 5   | G    |
| 1   | 1     | 25  | U    |
| 1   | 1     | 26  | A    |
| 1   | 1     | 30  | G    |
| 1   | 1     | 40  | A    |
| 1   | 1     | 43  | A    |
| 1   | 1     | 49  | A    |
| 1   | 1     | 59  | G    |
| 1   | 1     | 60  | A    |
| 1   | 1     | 63  | A    |
| 1   | 1     | 65  | A    |
| 1   | 1     | 66  | A    |
| 1   | 1     | 68  | A    |
| 1   | 1     | 74  | A    |
| 1   | 1     | 92  | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 96  | G    |
| 1   | 1     | 99  | A    |
| 1   | 1     | 109 | A    |
| 1   | 1     | 110 | G    |
| 1   | 1     | 111 | C    |
| 1   | 1     | 116 | A    |
| 1   | 1     | 122 | A    |
| 1   | 1     | 132 | C    |
| 1   | 1     | 147 | C    |
| 1   | 1     | 153 | U    |
| 1   | 1     | 154 | G    |
| 1   | 1     | 156 | A    |
| 1   | 1     | 161 | C    |
| 1   | 1     | 162 | A    |
| 1   | 1     | 163 | A    |
| 1   | 1     | 167 | G    |
| 1   | 1     | 168 | C    |
| 1   | 1     | 169 | U    |
| 1   | 1     | 170 | G    |
| 1   | 1     | 175 | G    |
| 1   | 1     | 178 | U    |
| 1   | 1     | 181 | A    |
| 1   | 1     | 188 | C    |
| 1   | 1     | 189 | G    |
| 1   | 1     | 190 | G    |
| 1   | 1     | 193 | U    |
| 1   | 1     | 197 | U    |
| 1   | 1     | 198 | U    |
| 1   | 1     | 207 | C    |
| 1   | 1     | 213 | G    |
| 1   | 1     | 217 | G    |
| 1   | 1     | 218 | A    |
| 1   | 1     | 219 | G    |
| 1   | 1     | 220 | A    |
| 1   | 1     | 225 | G    |
| 1   | 1     | 226 | A    |
| 1   | 1     | 227 | G    |
| 1   | 1     | 239 | U    |
| 1   | 1     | 241 | G    |
| 1   | 1     | 243 | C    |
| 1   | 1     | 244 | G    |
| 1   | 1     | 247 | U    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 252 | A    |
| 1   | 1     | 257 | A    |
| 1   | 1     | 258 | U    |
| 1   | 1     | 259 | A    |
| 1   | 1     | 260 | U    |
| 1   | 1     | 261 | A    |
| 1   | 1     | 266 | G    |
| 1   | 1     | 269 | U    |
| 1   | 1     | 270 | U    |
| 1   | 1     | 274 | A    |
| 1   | 1     | 277 | G    |
| 1   | 1     | 289 | G    |
| 1   | 1     | 292 | A    |
| 1   | 1     | 293 | A    |
| 1   | 1     | 303 | A    |
| 1   | 1     | 305 | A    |
| 1   | 1     | 310 | U    |
| 1   | 1     | 311 | G    |
| 1   | 1     | 312 | G    |
| 1   | 1     | 313 | U    |
| 1   | 1     | 315 | A    |
| 1   | 1     | 319 | U    |
| 1   | 1     | 321 | A    |
| 1   | 1     | 322 | U    |
| 1   | 1     | 324 | U    |
| 1   | 1     | 331 | A    |
| 1   | 1     | 337 | U    |
| 1   | 1     | 339 | G    |
| 1   | 1     | 344 | A    |
| 1   | 1     | 345 | G    |
| 1   | 1     | 346 | A    |
| 1   | 1     | 347 | C    |
| 1   | 1     | 359 | A    |
| 1   | 1     | 360 | A    |
| 1   | 1     | 367 | U    |
| 1   | 1     | 377 | A    |
| 1   | 1     | 378 | U    |
| 1   | 1     | 384 | G    |
| 1   | 1     | 406 | U    |
| 1   | 1     | 410 | A    |
| 1   | 1     | 411 | C    |
| 1   | 1     | 429 | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 430 | A    |
| 1   | 1     | 437 | G    |
| 1   | 1     | 445 | G    |
| 1   | 1     | 449 | U    |
| 1   | 1     | 505 | G    |
| 1   | 1     | 531 | A    |
| 1   | 1     | 532 | A    |
| 1   | 1     | 534 | A    |
| 1   | 1     | 540 | A    |
| 1   | 1     | 544 | A    |
| 1   | 1     | 545 | A    |
| 1   | 1     | 546 | G    |
| 1   | 1     | 547 | G    |
| 1   | 1     | 550 | G    |
| 1   | 1     | 551 | C    |
| 1   | 1     | 577 | U    |
| 1   | 1     | 578 | U    |
| 1   | 1     | 579 | A    |
| 1   | 1     | 581 | A    |
| 1   | 1     | 582 | G    |
| 1   | 1     | 591 | G    |
| 1   | 1     | 592 | U    |
| 1   | 1     | 602 | A    |
| 1   | 1     | 603 | C    |
| 1   | 1     | 616 | A    |
| 1   | 1     | 618 | U    |
| 1   | 1     | 629 | G    |
| 1   | 1     | 634 | G    |
| 1   | 1     | 635 | G    |
| 1   | 1     | 636 | A    |
| 1   | 1     | 646 | A    |
| 1   | 1     | 647 | A    |
| 1   | 1     | 661 | C    |
| 1   | 1     | 672 | A    |
| 1   | 1     | 674 | A    |
| 1   | 1     | 676 | G    |
| 1   | 1     | 685 | A    |
| 1   | 1     | 700 | C    |
| 1   | 1     | 702 | A    |
| 1   | 1     | 706 | U    |
| 1   | 1     | 708 | U    |
| 1   | 1     | 732 | A    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 739 | G    |
| 1   | 1     | 742 | A    |
| 1   | 1     | 747 | A    |
| 1   | 1     | 765 | G    |
| 1   | 1     | 770 | G    |
| 1   | 1     | 774 | C    |
| 1   | 1     | 775 | A    |
| 1   | 1     | 778 | G    |
| 1   | 1     | 783 | A    |
| 1   | 1     | 786 | C    |
| 1   | 1     | 794 | U    |
| 1   | 1     | 795 | G    |
| 1   | 1     | 796 | U    |
| 1   | 1     | 797 | C    |
| 1   | 1     | 798 | A    |
| 1   | 1     | 802 | G    |
| 1   | 1     | 806 | G    |
| 1   | 1     | 807 | G    |
| 1   | 1     | 808 | U    |
| 1   | 1     | 809 | U    |
| 1   | 1     | 812 | A    |
| 1   | 1     | 813 | G    |
| 1   | 1     | 816 | A    |
| 1   | 1     | 817 | G    |
| 1   | 1     | 833 | A    |
| 1   | 1     | 840 | A    |
| 1   | 1     | 846 | U    |
| 1   | 1     | 848 | A    |
| 1   | 1     | 849 | A    |
| 1   | 1     | 862 | A    |
| 1   | 1     | 877 | G    |
| 1   | 1     | 878 | A    |
| 1   | 1     | 882 | U    |
| 1   | 1     | 889 | G    |
| 1   | 1     | 893 | C    |
| 1   | 1     | 902 | A    |
| 1   | 1     | 903 | U    |
| 1   | 1     | 906 | U    |
| 1   | 1     | 911 | U    |
| 1   | 1     | 912 | G    |
| 1   | 1     | 928 | A    |
| 1   | 1     | 939 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 940  | G    |
| 1   | 1     | 946  | A    |
| 1   | 1     | 947  | A    |
| 1   | 1     | 948  | G    |
| 1   | 1     | 949  | A    |
| 1   | 1     | 953  | A    |
| 1   | 1     | 955  | C    |
| 1   | 1     | 956  | G    |
| 1   | 1     | 957  | A    |
| 1   | 1     | 958  | A    |
| 1   | 1     | 965  | A    |
| 1   | 1     | 969  | G    |
| 1   | 1     | 976  | C    |
| 1   | 1     | 985  | G    |
| 1   | 1     | 991  | C    |
| 1   | 1     | 992  | U    |
| 1   | 1     | 993  | C    |
| 1   | 1     | 995  | G    |
| 1   | 1     | 1002 | A    |
| 1   | 1     | 1006 | A    |
| 1   | 1     | 1008 | U    |
| 1   | 1     | 1011 | G    |
| 1   | 1     | 1012 | A    |
| 1   | 1     | 1013 | U    |
| 1   | 1     | 1026 | G    |
| 1   | 1     | 1034 | A    |
| 1   | 1     | 1042 | G    |
| 1   | 1     | 1046 | U    |
| 1   | 1     | 1073 | U    |
| 1   | 1     | 1079 | A    |
| 1   | 1     | 1081 | C    |
| 1   | 1     | 1095 | G    |
| 1   | 1     | 1096 | A    |
| 1   | 1     | 1097 | C    |
| 1   | 1     | 1113 | U    |
| 1   | 1     | 1119 | G    |
| 1   | 1     | 1126 | A    |
| 1   | 1     | 1127 | U    |
| 1   | 1     | 1129 | G    |
| 1   | 1     | 1130 | A    |
| 1   | 1     | 1135 | G    |
| 1   | 1     | 1139 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 1147 | G    |
| 1   | 1     | 1148 | G    |
| 1   | 1     | 1162 | G    |
| 1   | 1     | 1166 | A    |
| 1   | 1     | 1171 | G    |
| 1   | 1     | 1175 | U    |
| 1   | 1     | 1184 | A    |
| 1   | 1     | 1185 | A    |
| 1   | 1     | 1186 | C    |
| 1   | 1     | 1190 | A    |
| 1   | 1     | 1205 | G    |
| 1   | 1     | 1211 | A    |
| 1   | 1     | 1212 | U    |
| 1   | 1     | 1223 | C    |
| 1   | 1     | 1224 | A    |
| 1   | 1     | 1227 | C    |
| 1   | 1     | 1231 | A    |
| 1   | 1     | 1232 | G    |
| 1   | 1     | 1239 | U    |
| 1   | 1     | 1243 | A    |
| 1   | 1     | 1326 | G    |
| 1   | 1     | 1339 | A    |
| 1   | 1     | 1340 | U    |
| 1   | 1     | 1356 | U    |
| 1   | 1     | 1361 | A    |
| 1   | 1     | 1362 | U    |
| 1   | 1     | 1363 | A    |
| 1   | 1     | 1379 | U    |
| 1   | 1     | 1380 | A    |
| 1   | 1     | 1388 | G    |
| 1   | 1     | 1389 | A    |
| 1   | 1     | 1390 | A    |
| 1   | 1     | 1421 | G    |
| 1   | 1     | 1433 | U    |
| 1   | 1     | 1434 | G    |
| 1   | 1     | 1452 | A    |
| 1   | 1     | 1453 | A    |
| 1   | 1     | 1455 | A    |
| 1   | 1     | 1459 | U    |
| 1   | 1     | 1465 | G    |
| 1   | 1     | 1466 | C    |
| 1   | 1     | 1468 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 1471 | C    |
| 1   | 1     | 1477 | G    |
| 1   | 1     | 1484 | G    |
| 1   | 1     | 1487 | A    |
| 1   | 1     | 1489 | U    |
| 1   | 1     | 1503 | C    |
| 1   | 1     | 1515 | A    |
| 1   | 1     | 1516 | A    |
| 1   | 1     | 1517 | G    |
| 1   | 1     | 1521 | G    |
| 1   | 1     | 1525 | A    |
| 1   | 1     | 1528 | U    |
| 1   | 1     | 1536 | G    |
| 1   | 1     | 1537 | A    |
| 1   | 1     | 1542 | C    |
| 1   | 1     | 1561 | C    |
| 1   | 1     | 1571 | A    |
| 1   | 1     | 1573 | A    |
| 1   | 1     | 1581 | G    |
| 1   | 1     | 1587 | U    |
| 1   | 1     | 1588 | A    |
| 1   | 1     | 1589 | U    |
| 1   | 1     | 1590 | G    |
| 1   | 1     | 1600 | C    |
| 1   | 1     | 1602 | A    |
| 1   | 1     | 1603 | U    |
| 1   | 1     | 1604 | U    |
| 1   | 1     | 1606 | U    |
| 1   | 1     | 1608 | C    |
| 1   | 1     | 1609 | G    |
| 1   | 1     | 1618 | A    |
| 1   | 1     | 1622 | A    |
| 1   | 1     | 1624 | A    |
| 1   | 1     | 1629 | A    |
| 1   | 1     | 1640 | A    |
| 1   | 1     | 1655 | G    |
| 1   | 1     | 1664 | A    |
| 1   | 1     | 1666 | C    |
| 1   | 1     | 1677 | A    |
| 1   | 1     | 1678 | A    |
| 1   | 1     | 1691 | A    |
| 1   | 1     | 1692 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 1697 | G    |
| 1   | 1     | 1712 | A    |
| 1   | 1     | 1713 | G    |
| 1   | 1     | 1723 | U    |
| 1   | 1     | 1724 | U    |
| 1   | 1     | 1754 | A    |
| 1   | 1     | 1756 | U    |
| 1   | 1     | 1764 | U    |
| 1   | 1     | 1770 | G    |
| 1   | 1     | 1780 | G    |
| 1   | 1     | 1781 | G    |
| 1   | 1     | 1786 | U    |
| 1   | 1     | 1789 | A    |
| 1   | 1     | 1790 | A    |
| 1   | 1     | 1791 | G    |
| 1   | 1     | 1792 | A    |
| 1   | 1     | 1811 | A    |
| 1   | 1     | 1816 | G    |
| 1   | 1     | 1819 | G    |
| 1   | 1     | 1821 | G    |
| 1   | 1     | 1829 | C    |
| 1   | 1     | 1837 | G    |
| 1   | 1     | 1838 | A    |
| 1   | 1     | 1839 | A    |
| 1   | 1     | 1842 | U    |
| 1   | 1     | 1873 | U    |
| 1   | 1     | 1874 | U    |
| 1   | 1     | 1876 | U    |
| 1   | 1     | 1880 | A    |
| 1   | 1     | 1897 | A    |
| 1   | 1     | 1901 | C    |
| 1   | 1     | 1902 | A    |
| 1   | 1     | 1904 | C    |
| 1   | 1     | 1905 | A    |
| 1   | 1     | 1913 | A    |
| 1   | 1     | 1933 | G    |
| 1   | 1     | 1935 | U    |
| 1   | 1     | 1936 | A    |
| 1   | 1     | 1940 | C    |
| 1   | 1     | 1941 | A    |
| 1   | 1     | 1944 | G    |
| 1   | 1     | 1961 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 1963 | A    |
| 1   | 1     | 1989 | G    |
| 1   | 1     | 1990 | G    |
| 1   | 1     | 1999 | U    |
| 1   | 1     | 2001 | A    |
| 1   | 1     | 2003 | G    |
| 1   | 1     | 2188 | A    |
| 1   | 1     | 2189 | C    |
| 1   | 1     | 2190 | U    |
| 1   | 1     | 2191 | U    |
| 1   | 1     | 2195 | A    |
| 1   | 1     | 2199 | G    |
| 1   | 1     | 2202 | C    |
| 1   | 1     | 2203 | G    |
| 1   | 1     | 2204 | G    |
| 1   | 1     | 2209 | G    |
| 1   | 1     | 2210 | G    |
| 1   | 1     | 2214 | A    |
| 1   | 1     | 2215 | U    |
| 1   | 1     | 2219 | A    |
| 1   | 1     | 2228 | U    |
| 1   | 1     | 2232 | A    |
| 1   | 1     | 2234 | C    |
| 1   | 1     | 2246 | A    |
| 1   | 1     | 2257 | G    |
| 1   | 1     | 2266 | A    |
| 1   | 1     | 2272 | U    |
| 1   | 1     | 2276 | A    |
| 1   | 1     | 2280 | C    |
| 1   | 1     | 2298 | G    |
| 1   | 1     | 2299 | U    |
| 1   | 1     | 2311 | A    |
| 1   | 1     | 2313 | U    |
| 1   | 1     | 2360 | G    |
| 1   | 1     | 2361 | G    |
| 1   | 1     | 2369 | A    |
| 1   | 1     | 2371 | G    |
| 1   | 1     | 2386 | U    |
| 1   | 1     | 2395 | G    |
| 1   | 1     | 2396 | C    |
| 1   | 1     | 2397 | A    |
| 1   | 1     | 2398 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 2401 | A    |
| 1   | 1     | 2403 | G    |
| 1   | 1     | 2406 | U    |
| 1   | 1     | 2422 | U    |
| 1   | 1     | 2424 | U    |
| 1   | 1     | 2435 | U    |
| 1   | 1     | 2461 | A    |
| 1   | 1     | 2462 | C    |
| 1   | 1     | 2463 | G    |
| 1   | 1     | 2466 | C    |
| 1   | 1     | 2467 | C    |
| 1   | 1     | 2471 | C    |
| 1   | 1     | 2473 | A    |
| 1   | 1     | 2474 | A    |
| 1   | 1     | 2477 | C    |
| 1   | 1     | 2481 | G    |
| 1   | 1     | 2485 | A    |
| 1   | 1     | 2488 | G    |
| 1   | 1     | 2490 | A    |
| 1   | 1     | 2491 | G    |
| 1   | 1     | 2492 | A    |
| 1   | 1     | 2493 | C    |
| 1   | 1     | 2499 | U    |
| 1   | 1     | 2505 | U    |
| 1   | 1     | 2506 | G    |
| 1   | 1     | 2522 | U    |
| 1   | 1     | 2523 | G    |
| 1   | 1     | 2525 | G    |
| 1   | 1     | 2610 | U    |
| 1   | 1     | 2611 | A    |
| 1   | 1     | 2618 | G    |
| 1   | 1     | 2620 | A    |
| 1   | 1     | 2622 | C    |
| 1   | 1     | 2647 | U    |
| 1   | 1     | 2648 | C    |
| 1   | 1     | 2650 | A    |
| 1   | 1     | 2654 | U    |
| 1   | 1     | 2657 | A    |
| 1   | 1     | 2658 | A    |
| 1   | 1     | 2661 | U    |
| 1   | 1     | 2668 | C    |
| 1   | 1     | 2669 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 2674 | G    |
| 1   | 1     | 2675 | A    |
| 1   | 1     | 2676 | U    |
| 1   | 1     | 2688 | A    |
| 1   | 1     | 2689 | C    |
| 1   | 1     | 2695 | C    |
| 1   | 1     | 2697 | G    |
| 1   | 1     | 2701 | G    |
| 1   | 1     | 2702 | G    |
| 1   | 1     | 2705 | G    |
| 1   | 1     | 2709 | G    |
| 1   | 1     | 2721 | A    |
| 1   | 1     | 2722 | C    |
| 1   | 1     | 2733 | A    |
| 1   | 1     | 2743 | G    |
| 1   | 1     | 2746 | G    |
| 1   | 1     | 2747 | U    |
| 1   | 1     | 2751 | A    |
| 1   | 1     | 2768 | A    |
| 1   | 1     | 2769 | A    |
| 1   | 1     | 2778 | U    |
| 1   | 1     | 2780 | G    |
| 1   | 1     | 2781 | A    |
| 1   | 1     | 2784 | A    |
| 1   | 1     | 2786 | A    |
| 1   | 1     | 2787 | A    |
| 1   | 1     | 2789 | A    |
| 1   | 1     | 2799 | A    |
| 1   | 1     | 2809 | G    |
| 1   | 1     | 2814 | U    |
| 1   | 1     | 2815 | G    |
| 1   | 1     | 2821 | C    |
| 1   | 1     | 2823 | G    |
| 1   | 1     | 2824 | U    |
| 1   | 1     | 2832 | C    |
| 1   | 1     | 2847 | U    |
| 1   | 1     | 2848 | G    |
| 1   | 1     | 2850 | C    |
| 1   | 1     | 2872 | G    |
| 1   | 1     | 2873 | A    |
| 1   | 1     | 2875 | A    |
| 1   | 1     | 2894 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 2895 | G    |
| 1   | 1     | 2896 | A    |
| 1   | 1     | 2897 | A    |
| 1   | 1     | 2905 | C    |
| 1   | 1     | 2907 | C    |
| 1   | 1     | 2909 | G    |
| 1   | 1     | 2912 | A    |
| 1   | 1     | 2917 | U    |
| 1   | 1     | 2932 | A    |
| 1   | 1     | 2933 | A    |
| 1   | 1     | 2948 | G    |
| 1   | 1     | 2949 | U    |
| 1   | 1     | 2966 | G    |
| 1   | 1     | 2971 | C    |
| 1   | 1     | 2982 | A    |
| 1   | 1     | 2989 | C    |
| 1   | 1     | 3006 | A    |
| 1   | 1     | 3018 | U    |
| 1   | 1     | 3020 | C    |
| 1   | 1     | 3021 | A    |
| 1   | 1     | 3028 | A    |
| 1   | 1     | 3030 | U    |
| 1   | 1     | 3031 | A    |
| 1   | 1     | 3040 | G    |
| 1   | 1     | 3041 | A    |
| 1   | 1     | 3042 | G    |
| 1   | 1     | 3046 | G    |
| 1   | 1     | 3050 | U    |
| 1   | 1     | 3066 | A    |
| 1   | 1     | 3067 | G    |
| 1   | 1     | 3070 | U    |
| 1   | 1     | 3078 | C    |
| 1   | 1     | 3082 | A    |
| 1   | 1     | 3085 | G    |
| 1   | 1     | 3087 | U    |
| 1   | 1     | 3108 | A    |
| 1   | 1     | 3117 | A    |
| 1   | 1     | 3118 | G    |
| 1   | 1     | 3127 | G    |
| 1   | 1     | 3155 | G    |
| 1   | 1     | 3174 | A    |
| 1   | 1     | 3176 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 3182 | G    |
| 1   | 1     | 3188 | U    |
| 1   | 1     | 3189 | C    |
| 1   | 1     | 3196 | C    |
| 1   | 1     | 3197 | G    |
| 1   | 1     | 3200 | U    |
| 1   | 1     | 3220 | G    |
| 1   | 1     | 3225 | A    |
| 1   | 1     | 3226 | A    |
| 1   | 1     | 3227 | U    |
| 1   | 1     | 3238 | A    |
| 1   | 1     | 3239 | A    |
| 1   | 1     | 3248 | U    |
| 1   | 1     | 3269 | A    |
| 1   | 1     | 3270 | U    |
| 1   | 1     | 3271 | G    |
| 1   | 1     | 3272 | U    |
| 1   | 1     | 3273 | A    |
| 1   | 1     | 3275 | A    |
| 1   | 1     | 3276 | A    |
| 1   | 1     | 3281 | A    |
| 1   | 1     | 3282 | G    |
| 1   | 1     | 3307 | U    |
| 1   | 1     | 3308 | G    |
| 1   | 1     | 3310 | A    |
| 1   | 1     | 3311 | U    |
| 1   | 1     | 3314 | U    |
| 1   | 1     | 3317 | A    |
| 1   | 1     | 3318 | A    |
| 1   | 1     | 3319 | G    |
| 1   | 1     | 3329 | G    |
| 1   | 1     | 3343 | A    |
| 1   | 1     | 3345 | G    |
| 1   | 1     | 3346 | U    |
| 1   | 1     | 3347 | G    |
| 1   | 1     | 3358 | U    |
| 1   | 1     | 3359 | U    |
| 1   | 1     | 3370 | U    |
| 1   | 1     | 3371 | U    |
| 1   | 1     | 3372 | C    |
| 1   | 1     | 3373 | C    |
| 1   | 1     | 3396 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 3405 | C    |
| 1   | 1     | 3417 | A    |
| 1   | 1     | 3418 | U    |
| 1   | 1     | 3420 | U    |
| 1   | 1     | 3425 | C    |
| 1   | 1     | 3435 | U    |
| 1   | 1     | 3436 | A    |
| 1   | 1     | 3442 | U    |
| 1   | 1     | 3443 | A    |
| 1   | 1     | 3464 | U    |
| 1   | 1     | 3470 | G    |
| 1   | 1     | 3479 | C    |
| 1   | 1     | 3483 | U    |
| 1   | 1     | 3490 | A    |
| 1   | 1     | 3491 | A    |
| 1   | 1     | 3492 | G    |
| 1   | 1     | 3497 | G    |
| 1   | 1     | 3498 | U    |
| 2   | 2     | 9    | A    |
| 2   | 2     | 31   | U    |
| 2   | 2     | 42   | U    |
| 2   | 2     | 43   | C    |
| 2   | 2     | 67   | A    |
| 2   | 2     | 70   | C    |
| 2   | 2     | 71   | G    |
| 2   | 2     | 83   | G    |
| 2   | 2     | 87   | A    |
| 2   | 2     | 89   | U    |
| 2   | 2     | 90   | U    |
| 2   | 2     | 91   | C    |
| 2   | 2     | 92   | C    |
| 2   | 2     | 93   | G    |
| 2   | 2     | 94   | U    |
| 2   | 2     | 95   | G    |
| 2   | 2     | 98   | U    |
| 2   | 2     | 103  | G    |
| 2   | 2     | 112  | A    |
| 2   | 2     | 114  | C    |
| 2   | 2     | 115  | G    |
| 2   | 2     | 119  | A    |
| 2   | 2     | 120  | U    |
| 2   | 2     | 121  | U    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | 2     | 122 | G    |
| 2   | 2     | 124 | G    |
| 2   | 2     | 132 | G    |
| 2   | 2     | 135 | C    |
| 2   | 2     | 136 | U    |
| 2   | 2     | 156 | G    |
| 2   | 2     | 159 | U    |
| 2   | 2     | 162 | C    |
| 2   | 2     | 165 | U    |
| 5   | 9     | 57  | G    |
| 5   | 9     | 72  | A    |
| 5   | 9     | 83  | U    |
| 5   | 9     | 92  | A    |
| 5   | 9     | 100 | A    |
| 5   | 9     | 103 | U    |
| 5   | 9     | 104 | A    |
| 5   | 9     | 114 | G    |
| 5   | 9     | 122 | U    |
| 5   | 9     | 124 | A    |
| 5   | 9     | 141 | C    |
| 5   | 9     | 150 | A    |
| 5   | 9     | 160 | G    |
| 5   | 9     | 166 | G    |

All (11) RNA pucker outliers are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 1     | 269  | U    |
| 1   | 1     | 311  | G    |
| 1   | 1     | 628  | U    |
| 1   | 1     | 805  | G    |
| 1   | 1     | 948  | G    |
| 1   | 1     | 1388 | G    |
| 1   | 1     | 1628 | A    |
| 1   | 1     | 1640 | A    |
| 1   | 1     | 2198 | G    |
| 1   | 1     | 3441 | G    |
| 2   | 2     | 131  | G    |

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

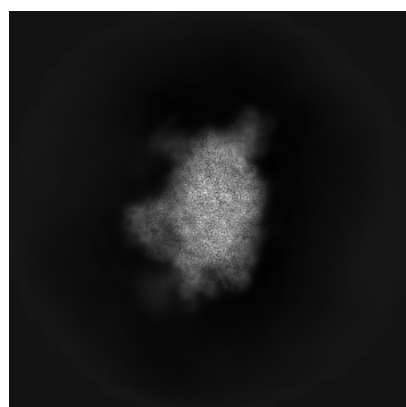
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-24423. These allow visual inspection of the internal detail of the map and identification of artifacts.

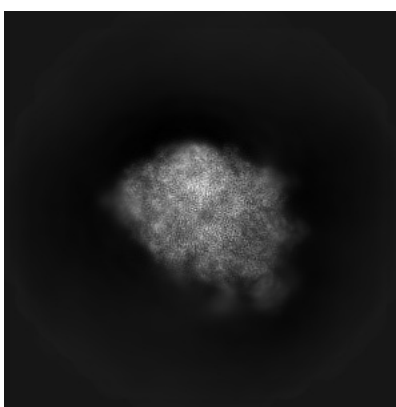
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

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

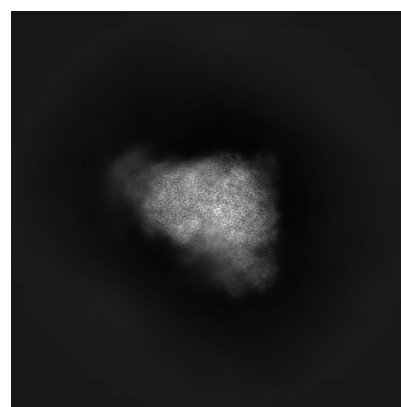
#### 6.1.1 Primary map



X



Y

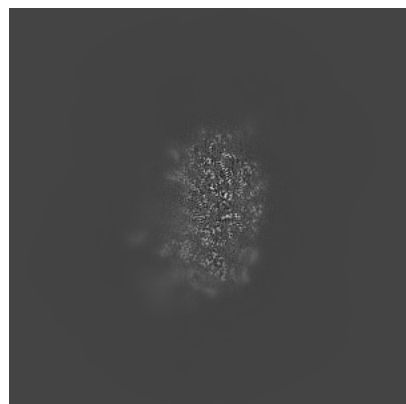


Z

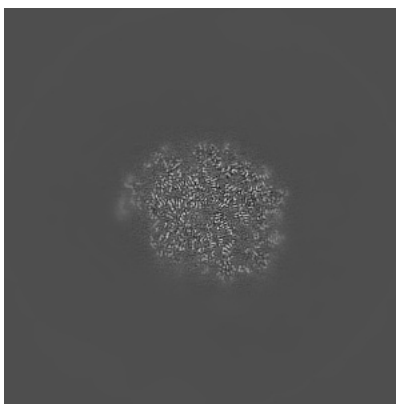
The images above show the map projected in three orthogonal directions.

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

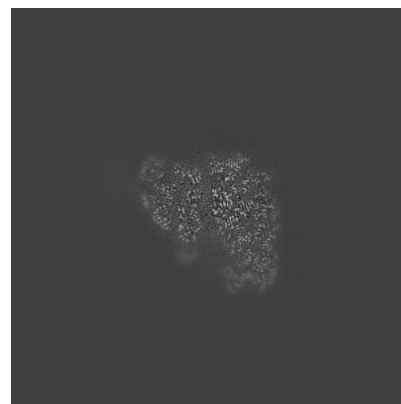
#### 6.2.1 Primary map



X Index: 256



Y Index: 256

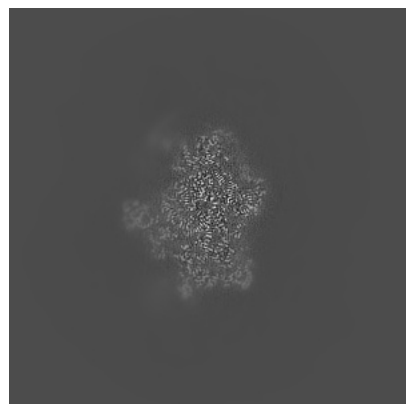


Z Index: 256

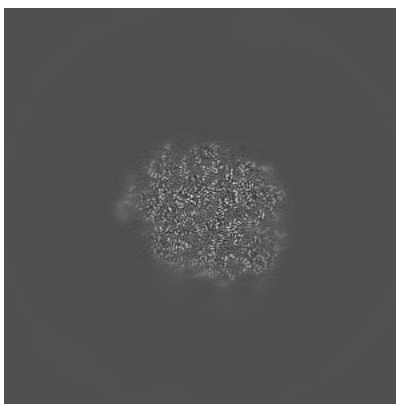
The images above show central slices of the map in three orthogonal directions.

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

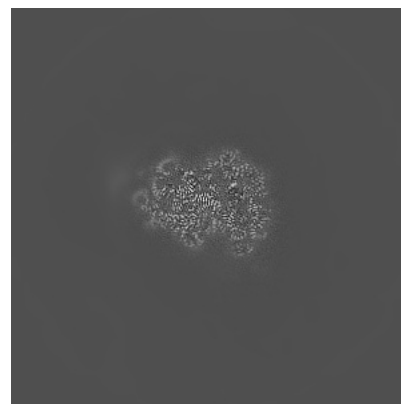
### 6.3.1 Primary map



X Index: 282



Y Index: 262

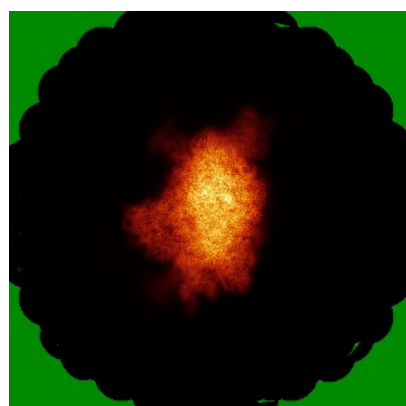


Z Index: 276

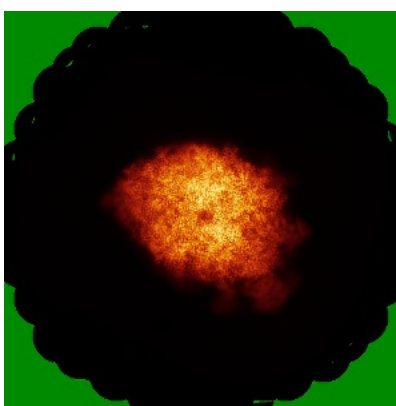
The images above show the largest variance slices of the map in three orthogonal directions.

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

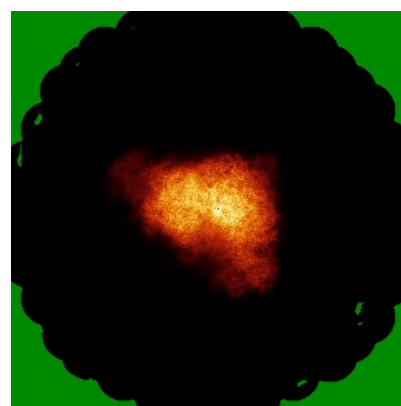
### 6.4.1 Primary map



X



Y



Z

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

## 6.5 Orthogonal surface views

This section was not generated.

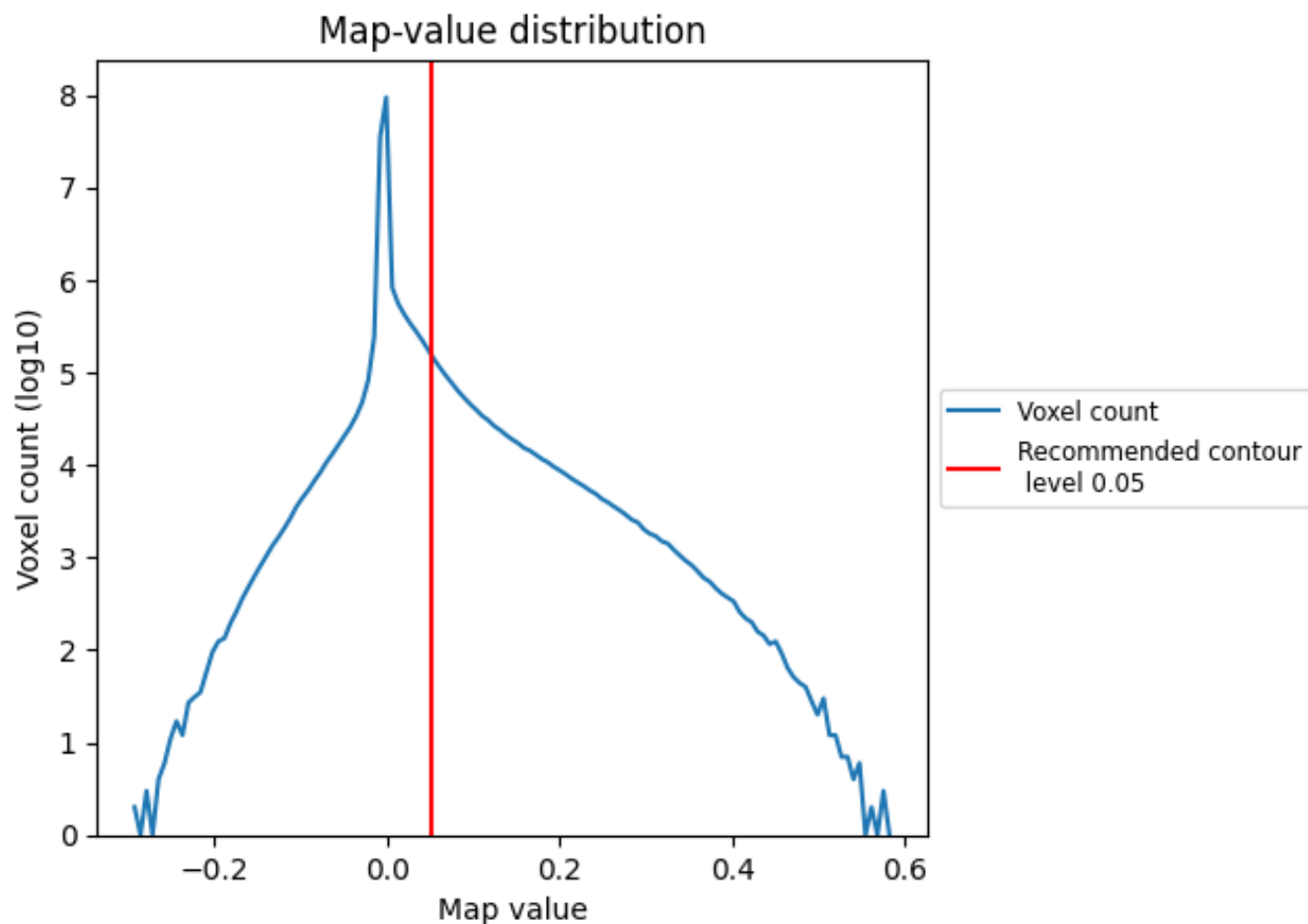
## 6.6 Mask visualisation

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

## 7 Map analysis [i](#)

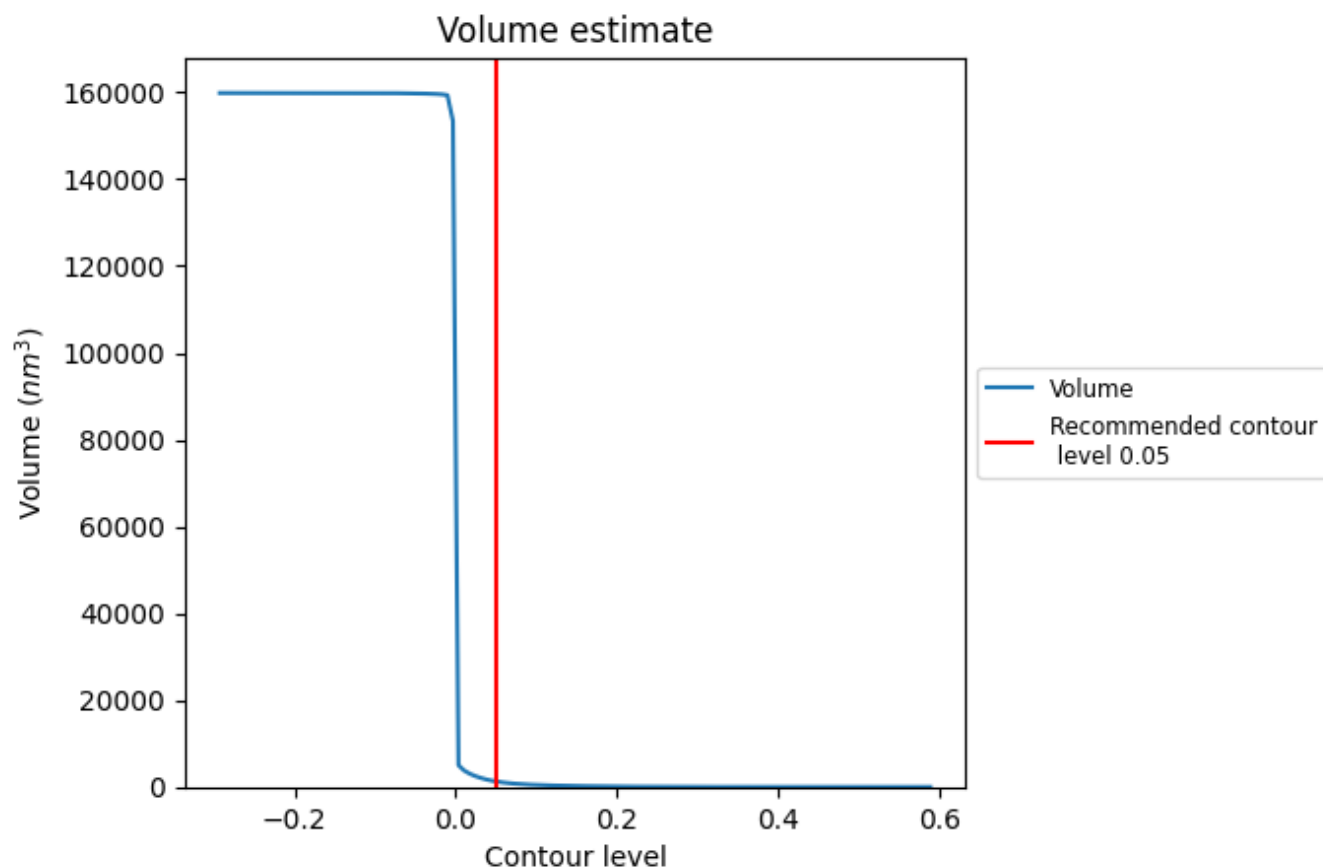
This section contains the results of statistical analysis of the map.

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



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

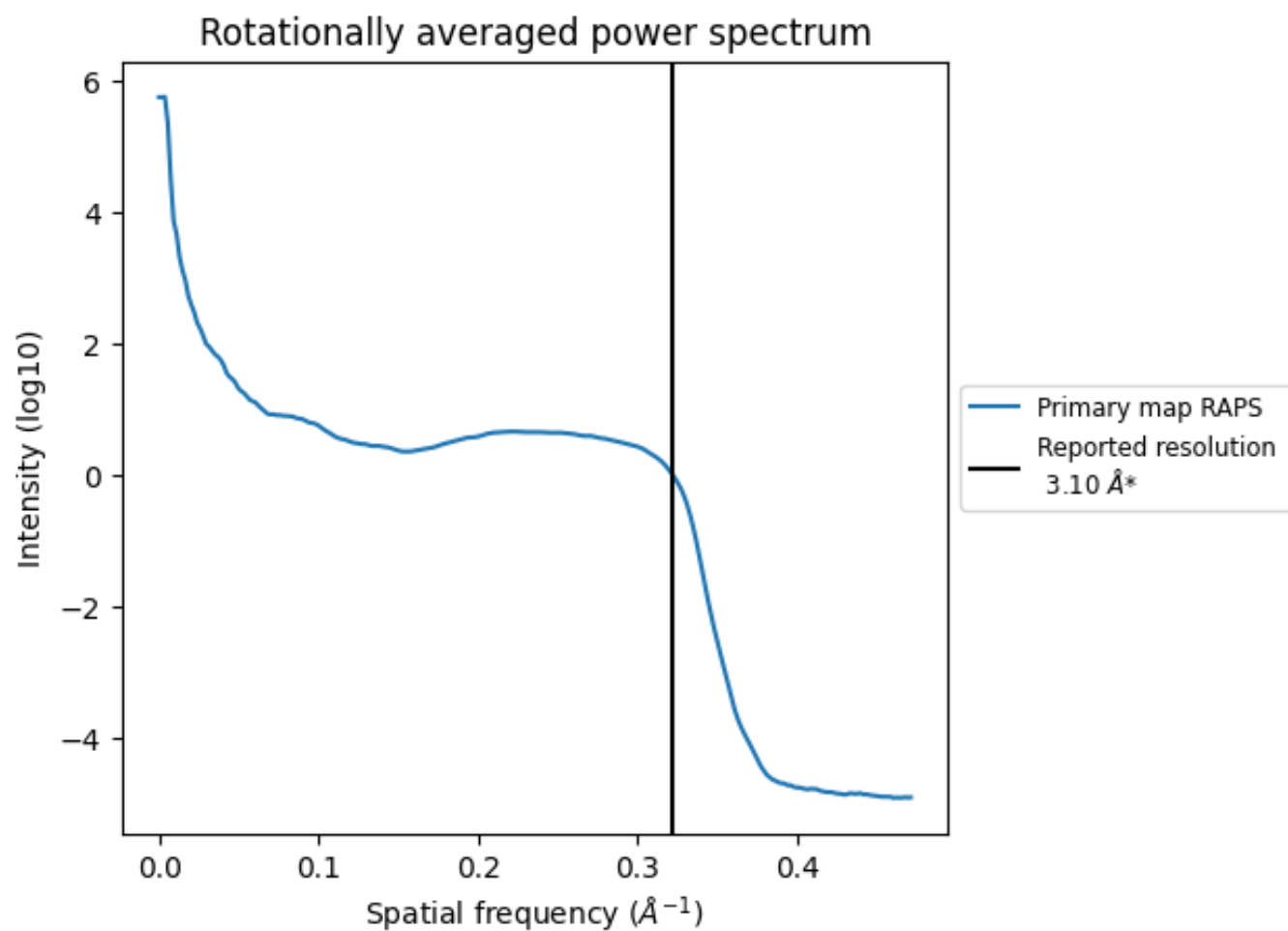
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1266  $\text{nm}^3$ ; this corresponds to an approximate mass of 1144 kDa.

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

### 7.3 Rotationally averaged power spectrum ⓘ



\*Reported resolution corresponds to spatial frequency of 0.323 Å<sup>-1</sup>

## 8 Fourier-Shell correlation

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

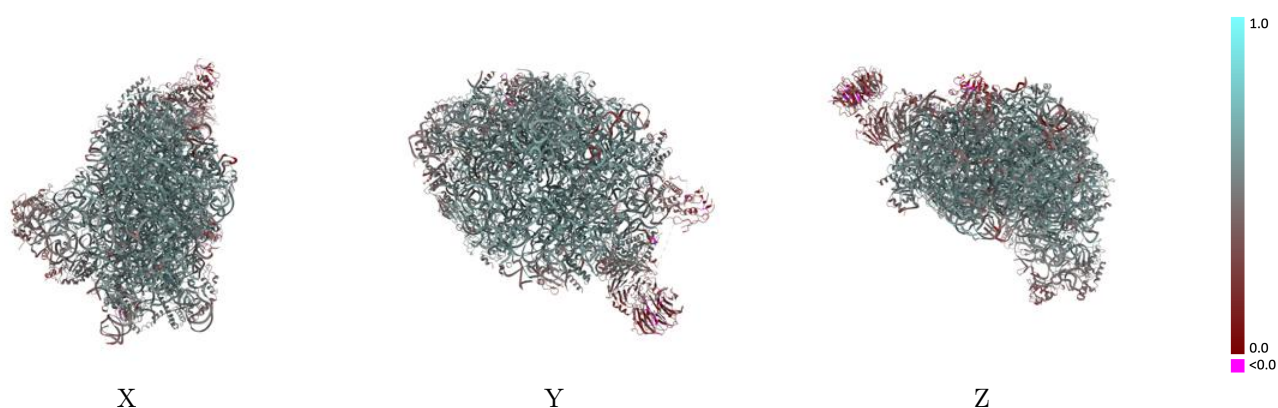
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-24423 and PDB model 8EUI. Per-residue inclusion information can be found in section 3 on page 12.

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

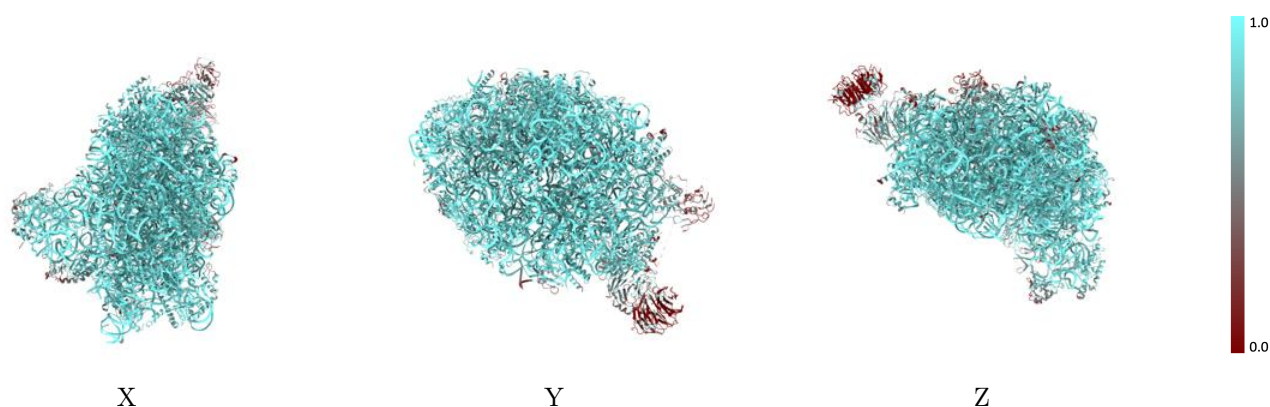
This section was not generated.

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



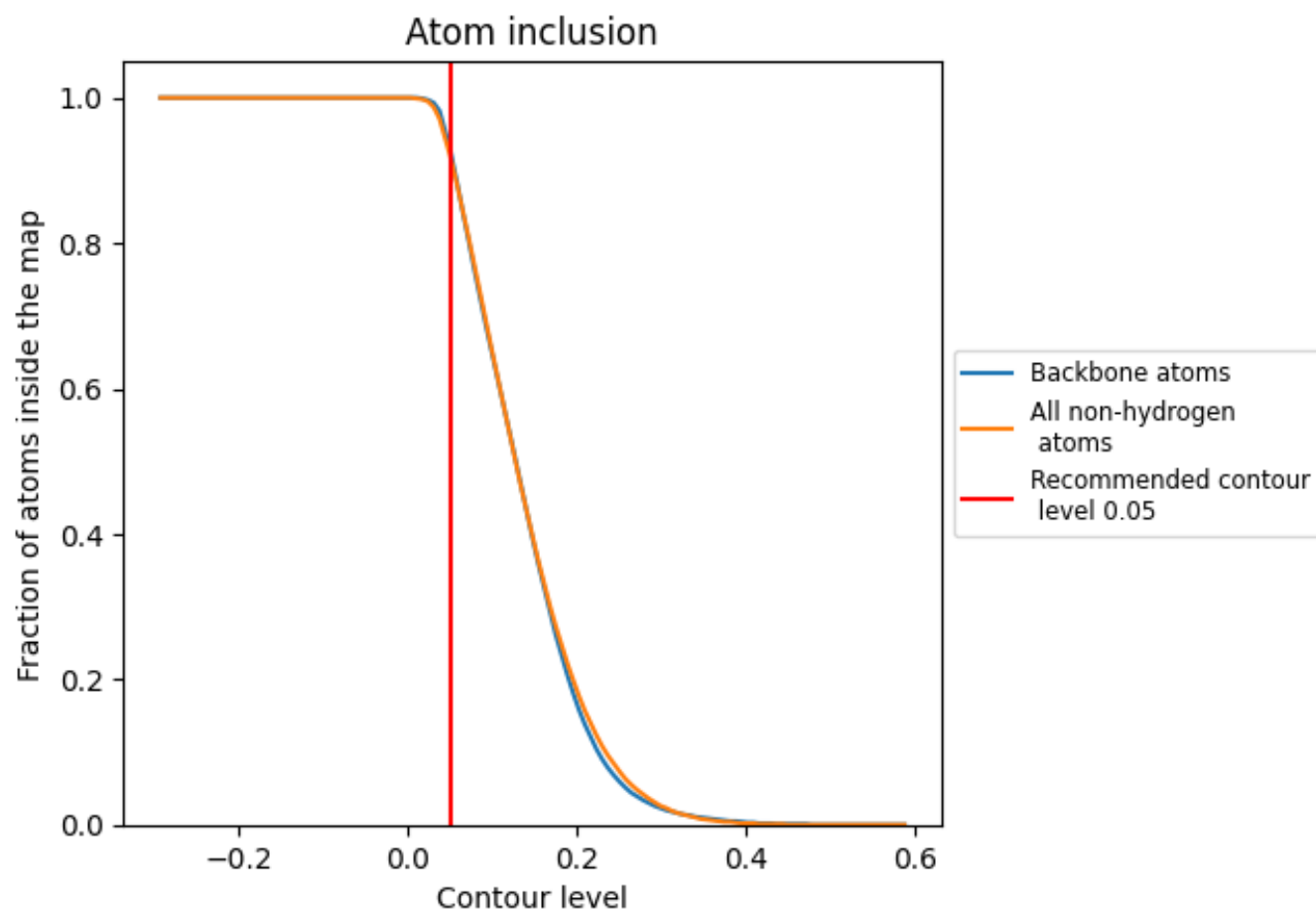
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.05).

## 9.4 Atom inclusion [i](#)



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

## 9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.05) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.9220   |  0.5360   |
| 1     |  0.9820   |  0.5650   |
| 2     |  0.9640   |  0.5680   |
| 3     |  0.7530   |  0.4160   |
| 8     |  0.9760   |  0.5880   |
| 9     |  0.9800   |  0.4840   |
| A     |  0.9560   |  0.5800   |
| B     |  0.9420   |  0.5610   |
| C     |  0.9490   |  0.5700   |
| D     |  0.8230   |  0.4530   |
| E     |  0.7970   |  0.4580   |
| F     |  0.9290   |  0.5540   |
| G     |  0.8890   |  0.5290   |
| H     |  0.8050   |  0.3970   |
| I     |  0.7110  |  0.4400  |
| J     |  0.6420 |  0.3590 |
| K     |  0.9540 |  0.5710 |
| L     |  0.9250 |  0.5650 |
| M     |  0.9220 |  0.4980 |
| N     |  0.9840 |  0.6080 |
| O     |  0.9490 |  0.5530 |
| P     |  0.9190 |  0.5520 |
| Q     |  0.9600 |  0.5710 |
| R     |  0.9420 |  0.5570 |
| S     |  0.9130 |  0.5180 |
| T     |  0.9270 |  0.5490 |
| U     |  0.7060 |  0.4050 |
| V     |  0.9480 |  0.5560 |
| X     |  0.9550 |  0.5750 |
| Y     |  0.9290 |  0.5520 |
| Z     |  0.9110 |  0.5250 |
| a     |  0.9510 |  0.5850 |
| b     |  0.9160 |  0.5410 |
| c     |  0.8400 |  0.4990 |
| d     |  0.9460 |  0.5760 |



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| Chain | Atom inclusion                                                                           | Q-score                                                                                  |
|-------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| e     |  0.9720 |  0.5910 |
| f     |  0.9640 |  0.5720 |
| g     |  0.9500 |  0.5840 |
| h     |  0.9380 |  0.5660 |
| i     |  0.9290 |  0.5410 |
| j     |  0.9890 |  0.6120 |
| k     |  0.8240 |  0.4730 |
| m     |  0.5990 |  0.3460 |
| n     |  0.6160 |  0.3550 |
| o     |  0.8940 |  0.5390 |
| p     |  0.1830 |  0.2420 |
| u     |  0.9120 |  0.4920 |