



## Full wwPDB EM Validation Report ⓘ

Aug 25, 2026 – 04:35 PM EDT

PDB ID : 11HE / pdb\_000011he  
EMDB ID : EMD-75687  
Title : Rabbit 60S ribosomal subunit with eEF2 domain IV closed  
Authors : Seraj, Z.; Zottig, X.; Huang, C.H.; Loveland, A.B.; Diggs, S.; Sholi, E.; Grigorieff, N.; Korostelev, A.A.  
Deposited on : 2026-02-24  
Resolution : 2.86 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:

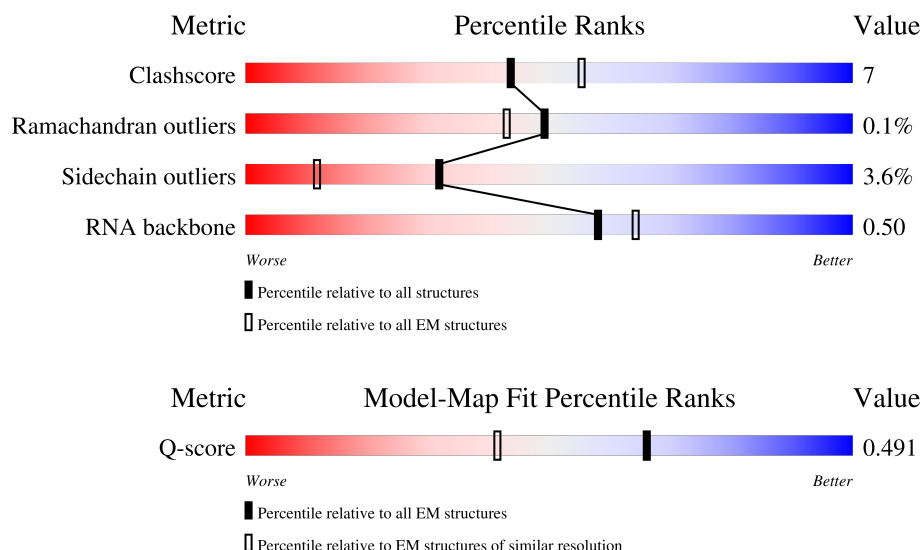
EMDB validation analysis : 0.0.1.dev133  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
Buster-report : wwPDB partial adaption of 1.1.7 (2018)  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (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) : 2.50

# 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 2.86 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.



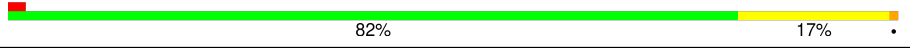
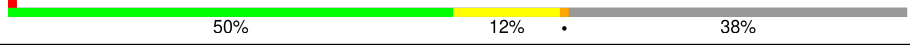
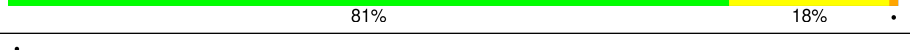
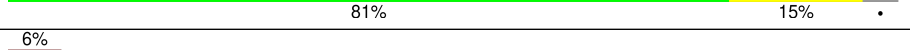
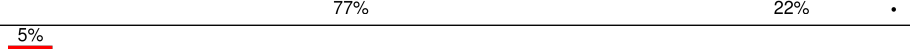
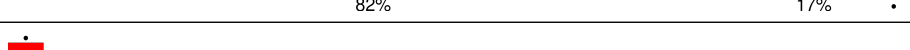
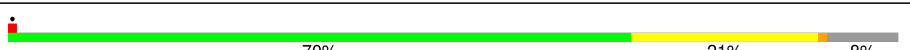
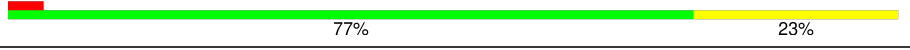
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 229148                      | 23984                       | -                                                        |
| Ramachandran outliers | 224038                      | 23583                       | -                                                        |
| Sidechain outliers    | 223484                      | 23102                       | -                                                        |
| RNA backbone          | 8273                        | 3508                        | -                                                        |
| Q-score               | -                           | 25397                       | 12017 ( 2.36 - 3.36 )                                    |

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   | 58    | 156    |                  |
| 2   | 5     | 120    |                  |
| 3   | L8    | 345    |                  |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 4   | L3    | 394    |    |
| 5   | L4    | 362    |    |
| 6   | L5    | 293    |    |
| 7   | L6    | 347    |    |
| 8   | L7    | 225    |    |
| 9   | aa    | 240    |    |
| 10  | L9    | 190    |    |
| 11  | 10    | 213    |    |
| 12  | 11    | 170    |    |
| 13  | 13    | 210    |    |
| 14  | 14    | 138    |    |
| 15  | 15    | 203    |  |
| 16  | bb    | 199    |  |
| 17  | 17    | 153    |  |
| 18  | 19    | 180    |  |
| 19  | 20    | 192    |  |
| 20  | 21    | 159    |  |
| 21  | 22    | 99     |  |
| 22  | 23    | 131    |  |
| 23  | 24    | 63     |  |
| 24  | cc    | 118    |  |
| 25  | 26    | 134    |  |
| 26  | 27    | 135    |  |
| 27  | dd    | 147    |  |
| 28  | 29    | 245    |  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 29  | 30    | 98     |                  |
| 30  | 31    | 107    |                  |
| 31  | 32    | 128    |                  |
| 32  | ee    | 109    |                  |
| 33  | 34    | 114    |                  |
| 34  | 35    | 122    |                  |
| 35  | 36    | 102    |                  |
| 36  | 37    | 86     |                  |
| 37  | 38    | 69     |                  |
| 38  | 39    | 50     |                  |
| 39  | 40    | 52     |                  |
| 40  | 42    | 104    |                  |
| 41  | ff    | 91     |                  |
| 42  | gg    | 124    |                  |
| 43  | s     | 196    |                  |
| 44  | t     | 153    |                  |
| 45  | EB    | 375    |                  |
| 46  | u     | 206    |                  |
| 47  | Q     | 188    |                  |
| 48  | ES    | 5070   |                  |
| 49  | 28    | 4807   |                  |
| 50  | v     | 857    |                  |

## 2 Entry composition

There are 52 unique types of molecules in this entry. The entry contains 147611 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 5.8S rRNA.

| Mol | Chain | Residues | Atoms |      |     |      |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|-----|---------|-------|
| 1   | 58    | 151      | Total | C    | N   | O    | P   | 0       | 0     |
|     |       |          | 3208  | 1432 | 564 | 1062 | 150 |         |       |

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

| Mol | Chain | Residues | Atoms |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 2   | 5     | 120      | Total | C    | N   | O   | P   | 0       | 0     |
|     |       |          | 2558  | 1141 | 456 | 842 | 119 |         |       |

- Molecule 3 is a protein called 60S ribosomal protein L8.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 3   | L8    | 248      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1898  | 1189 | 389 | 314 | 6 |         |       |

- Molecule 4 is a protein called 60S ribosomal protein L3.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | L3    | 394      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3173  | 2020 | 597 | 543 | 13 |         |       |

- Molecule 5 is a protein called 60S ribosomal protein L4.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 5   | L4    | 362      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2884  | 1812 | 577 | 481 | 14 |         |       |

- Molecule 6 is a protein called 60S ribosomal protein L5.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 6   | L5    | 293      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2392  | 1512 | 438 | 428 | 14 |         |       |

- Molecule 7 is a protein called large ribosomal subunit protein eL6.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 7   | L6    | 216      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1728  | 1115 | 329 | 281 | 3 |         |       |

- Molecule 8 is a protein called 60S ribosomal protein L7.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 8   | L7    | 225      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1875  | 1205 | 358 | 303 | 9 |         |       |

- Molecule 9 is a protein called Large ribosomal subunit protein eL8.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 9   | aa    | 233      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1879  | 1199 | 361 | 315 | 4 |         |       |

- Molecule 10 is a protein called 60S ribosomal protein L9.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 10  | L9    | 190      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1517  | 954 | 284 | 273 | 6 |         |       |

- Molecule 11 is a protein called Ribosomal protein L10.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 11  | 10    | 205      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1664  | 1056 | 321 | 274 | 13 |         |       |

- Molecule 12 is a protein called 60S ribosomal protein L11.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 12  | 11    | 170      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1363  | 861 | 254 | 242 | 6 |         |       |

- Molecule 13 is a protein called Large ribosomal subunit protein eL13.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 13  | 13    | 210      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1702  | 1065 | 354 | 279 | 4 |         |       |

- Molecule 14 is a protein called 60S ribosomal protein L14.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 14  | 14    | 138      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1138  | 727 | 221 | 183 | 7 |         |       |

- Molecule 15 is a protein called 60S ribosomal protein L15.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 15  | 15    | 203      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1701  | 1072 | 359 | 266 | 4 |         |       |

- Molecule 16 is a protein called Large ribosomal subunit protein uL13.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 16  | bb    | 199      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1630  | 1051 | 319 | 255 | 5 |         |       |

- Molecule 17 is a protein called 60S ribosomal protein L17.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 17  | 17    | 153      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1243  | 777 | 241 | 216 | 9 |         |       |

- Molecule 18 is a protein called 60S ribosomal protein L19.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 18  | 19    | 159      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1325  | 825 | 283 | 208 | 9 |         |       |

- Molecule 19 is a protein called Large ribosomal subunit protein eL20.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 19  | 20    | 176      | Total | C   | N   | O   | S  | 0       | 0     |
|     |       |          | 1461  | 930 | 285 | 235 | 11 |         |       |

- Molecule 20 is a protein called 60S ribosomal protein L21.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20  | 21    | 159      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1298  | 823 | 252 | 217 | 6 |         |       |

- Molecule 21 is a protein called Large ribosomal subunit protein eL22.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21  | 22    | 99       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 810   | 519 | 141 | 148 | 2 |         |       |

- Molecule 22 is a protein called 60S ribosomal protein L23.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 22  | 23    | 131      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 979   | 618 | 184 | 172 | 5 |         |       |

- Molecule 23 is a protein called Ribosomal protein L24.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 23  | 24    | 63       | Total | C   | N   | O  | S | 0       | 0     |
|     |       |          | 529   | 337 | 103 | 86 | 3 |         |       |

- Molecule 24 is a protein called Large ribosomal subunit protein uL23.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 24  | cc    | 118      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 967   | 618 | 181 | 167 | 1 |         |       |

- Molecule 25 is a protein called 60S ribosomal protein L26.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 25  | 26    | 134      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1116  | 700 | 226 | 187 | 3 |         |       |

- Molecule 26 is a protein called 60S ribosomal protein L27.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 26  | 27    | 135      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1107  | 714 | 208 | 182 | 3 |         |       |

- Molecule 27 is a protein called 60S ribosomal protein L27a.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 27  | dd    | 147      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1162  | 734 | 239 | 185 | 4 |         |       |

- Molecule 28 is a protein called Large ribosomal subunit protein eL29.



| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 28  | 29    | 104      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 848   | 527 | 189 | 129 | 3 |         |       |

- Molecule 29 is a protein called 60S ribosomal protein L30.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 29  | 30    | 98       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 762   | 481 | 134 | 141 | 6 |         |       |

- Molecule 30 is a protein called 60S ribosomal protein L31.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 30  | 31    | 107      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 889   | 560 | 171 | 156 | 2 |         |       |

- Molecule 31 is a protein called Large ribosomal subunit protein eL32.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 31  | 32    | 128      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1054  | 667 | 216 | 166 | 5 |         |       |

- Molecule 32 is a protein called Large ribosomal subunit protein eL33.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 32  | ee    | 109      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 876   | 555 | 174 | 143 | 4 |         |       |

- Molecule 33 is a protein called 60S ribosomal protein L34.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 33  | 34    | 114      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 907   | 566 | 187 | 148 | 6 |         |       |

- Molecule 34 is a protein called 60S ribosomal protein L35.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 34  | 35    | 122      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1013  | 640 | 204 | 168 | 1 |         |       |

- Molecule 35 is a protein called 60S ribosomal protein L36.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 35  | 36    | 102      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 831   | 520 | 176 | 130 | 5 |         |       |

- Molecule 36 is a protein called 60S ribosomal protein L37.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 36  | 37    | 86       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 706   | 434 | 155 | 112 | 5 |         |       |

- Molecule 37 is a protein called Large ribosomal subunit protein eL38.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 37  | 38    | 69       | Total | C   | N   | O  | S | 0       | 0     |
|     |       |          | 569   | 366 | 103 | 99 | 1 |         |       |

- Molecule 38 is a protein called 60S ribosomal protein L39.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 38  | 39    | 50       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 447   | 286 | 96 | 64 | 1 |         |       |

- Molecule 39 is a protein called Large ribosomal subunit protein eL40.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 39  | 40    | 52       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 429   | 266 | 90 | 67 | 6 |         |       |

- Molecule 40 is a protein called eL42.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 40  | 42    | 104      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 852   | 533 | 174 | 139 | 6 |         |       |

- Molecule 41 is a protein called 60S ribosomal protein L37a.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 41  | ff    | 91       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 708   | 445 | 136 | 120 | 7 |         |       |

- Molecule 42 is a protein called 60S ribosomal protein L28.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 42  | gg    | 124      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 991   | 615 | 202 | 168 | 6 |         |       |

- Molecule 43 is a protein called 60S acidic ribosomal protein P0.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 43  | s     | 196      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1508  | 959 | 263 | 277 | 9 |         |       |

- Molecule 44 is a protein called uL11.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 44  | t     | 153      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1161  | 722 | 218 | 218 | 3 |         |       |

- Molecule 45 is a protein called Proliferation-associated protein 2G4.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 45  | EB    | 375      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2932  | 1844 | 509 | 562 | 17 |         |       |

- Molecule 46 is a protein called 60S ribosomal protein L10a.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 46  | u     | 206      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1655  | 1058 | 297 | 292 | 8 |         |       |

- Molecule 47 is a protein called Large ribosomal subunit protein eL18.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 47  | Q     | 187      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1515  | 946 | 315 | 250 | 4 |         |       |

- Molecule 48 is a RNA chain called ES27L.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 48  | ES    | 67       | Total | C   | N   | O   | P  | 0       | 0     |
|     |       |          | 1444  | 639 | 266 | 472 | 67 |         |       |

- Molecule 49 is a RNA chain called 28S rRNA.

| Mol | Chain | Residues | Atoms |       |       |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| 49  | 28    | 3486     | Total | C     | N     | O     | P    | 0       | 0     |
|     |       |          | 74767 | 33297 | 13700 | 24284 | 3486 |         |       |

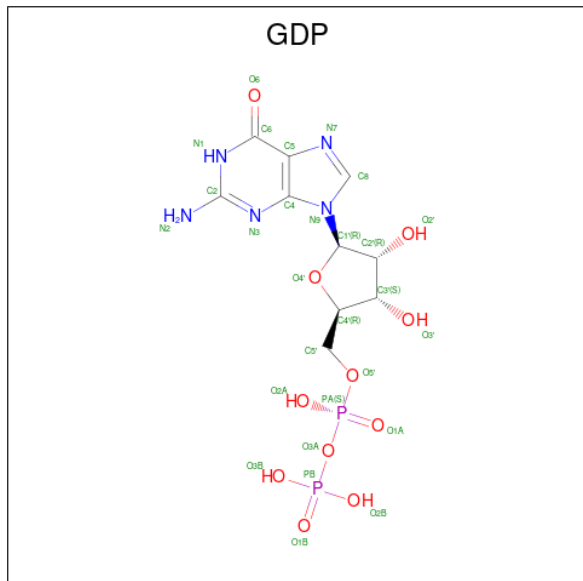
- Molecule 50 is a protein called Elongation factor 2.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 50  | v     | 822      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 6409  | 4073 | 1097 | 1195 | 44 |         |       |

- Molecule 51 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 51  | 34    | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |
| 51  | 37    | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |
| 51  | ff    | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |

- Molecule 52 is GUANOSINE-5'-DIPHOSPHATE (CCD ID: GDP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>11</sub>P<sub>2</sub>).



| Mol | Chain | Residues | Atoms |    |   |    |   | AltConf |
|-----|-------|----------|-------|----|---|----|---|---------|
| 52  | v     | 1        | Total | C  | N | O  | P | 0       |
|     |       |          | 28    | 10 | 5 | 11 | 2 |         |

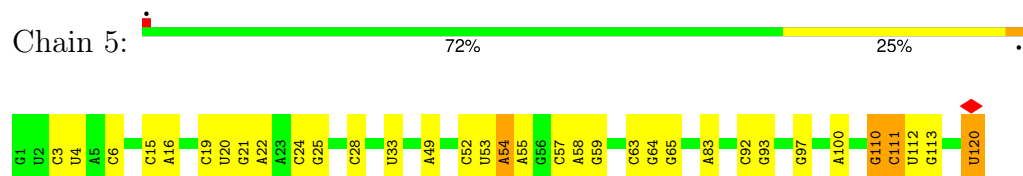
### 3 Residue-property plots

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.

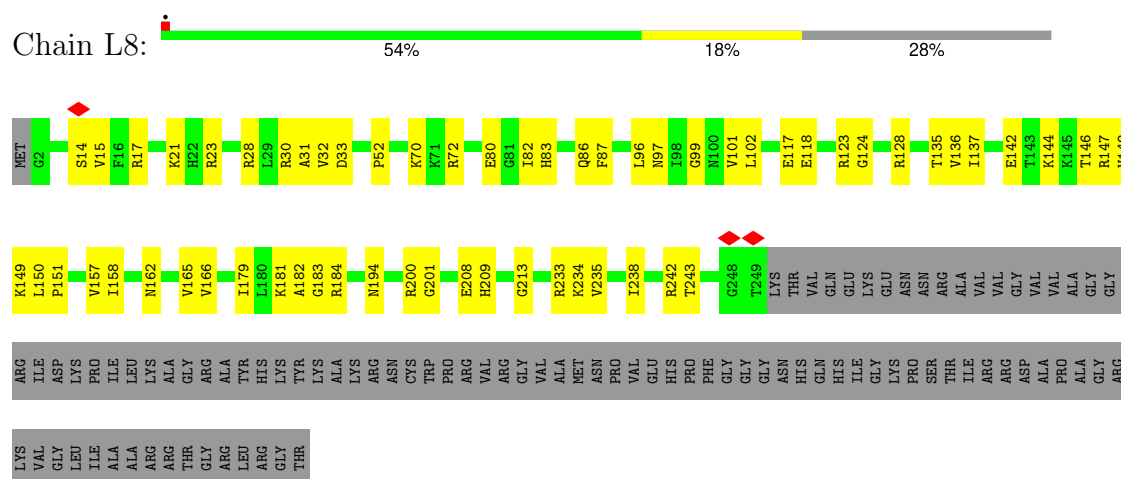
#### • Molecule 1: 5.8S rRNA



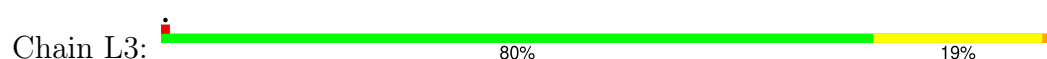
#### • Molecule 2: 5S rRNA



#### • Molecule 3: 60S ribosomal protein L8

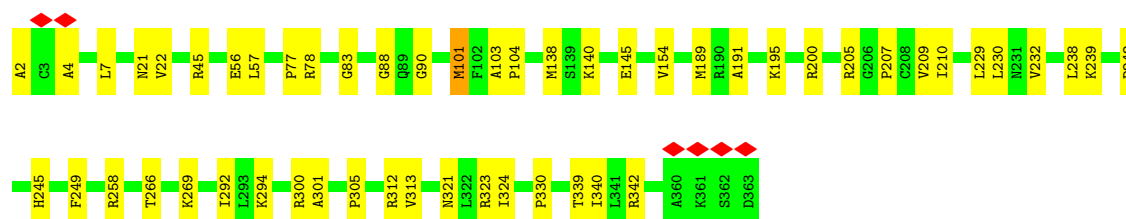
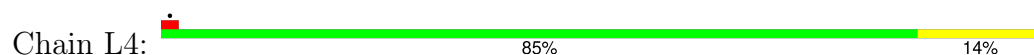


#### • Molecule 4: 60S ribosomal protein L3

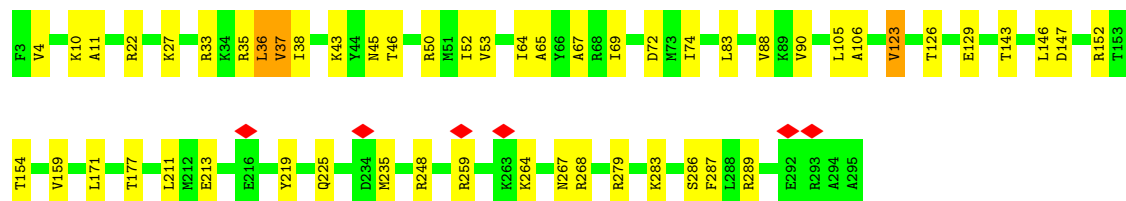
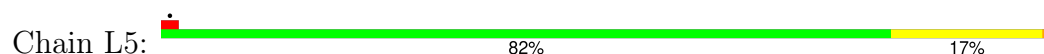




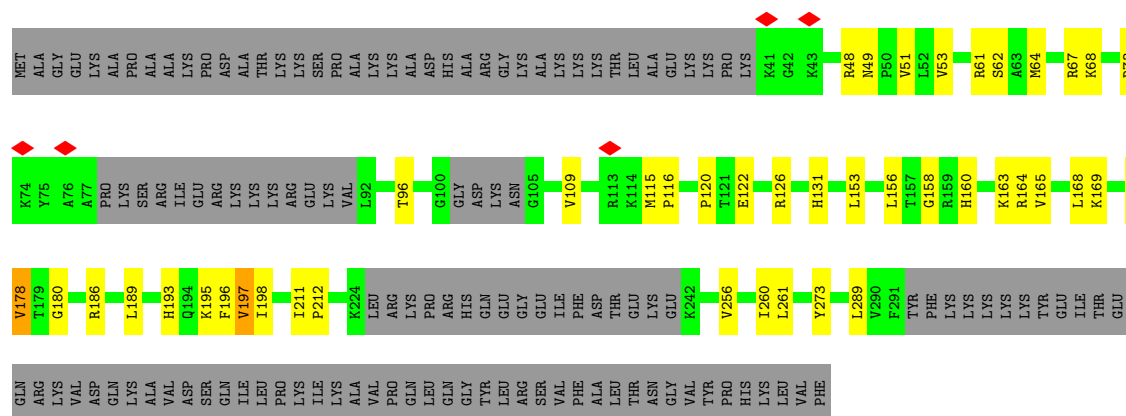
• Molecule 5: 60S ribosomal protein L4



• Molecule 6: 60S ribosomal protein L5

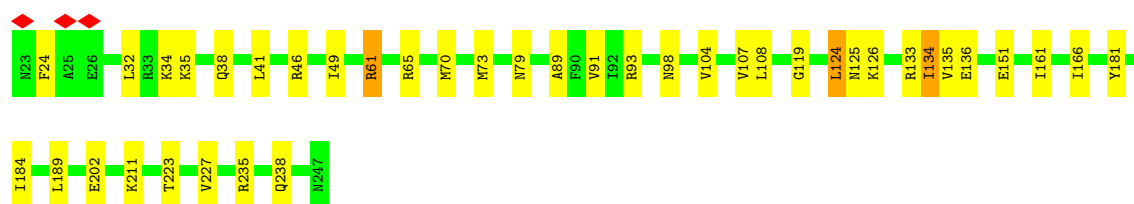


• Molecule 7: large ribosomal subunit protein eL6



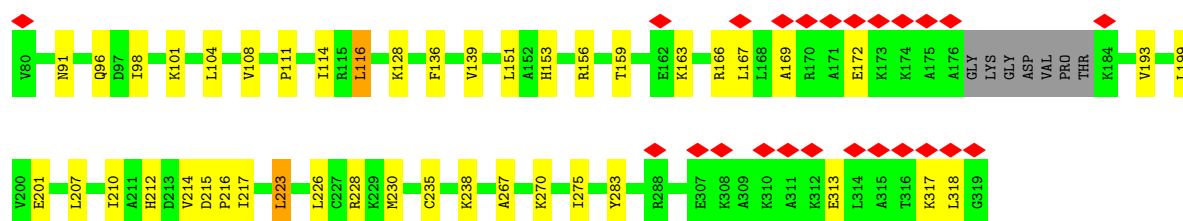
• Molecule 8: 60S ribosomal protein L7

Chain L7: 



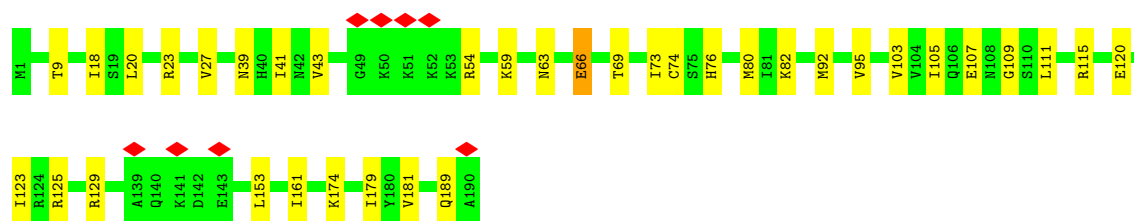
- Molecule 9: Large ribosomal subunit protein eL8

Chain aa: 



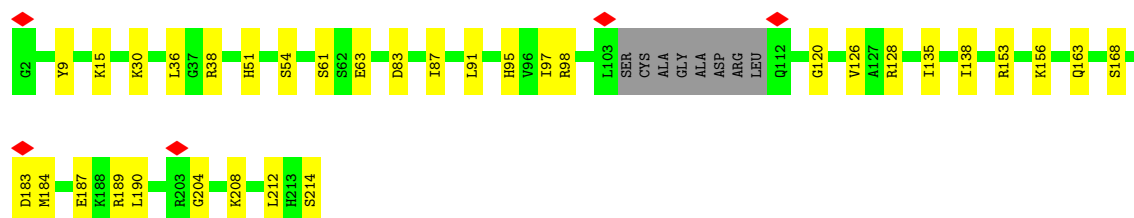
- Molecule 10: 60S ribosomal protein L9

Chain L9: 



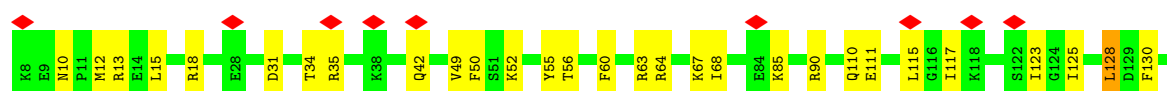
- Molecule 11: Ribosomal protein L10

Chain 10: 



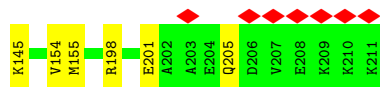
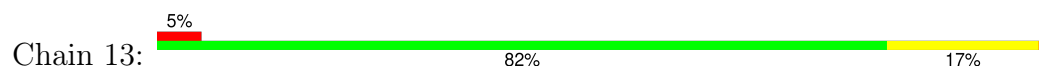
- Molecule 12: 60S ribosomal protein L11

Chain 11: 

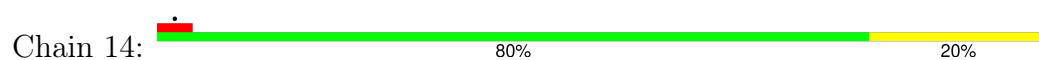




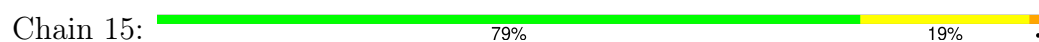
- Molecule 13: Large ribosomal subunit protein eL13



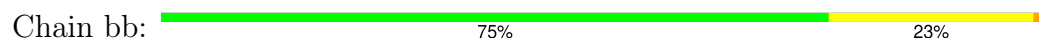
- Molecule 14: 60S ribosomal protein L14



- Molecule 15: 60S ribosomal protein L15



- Molecule 16: Large ribosomal subunit protein uL13

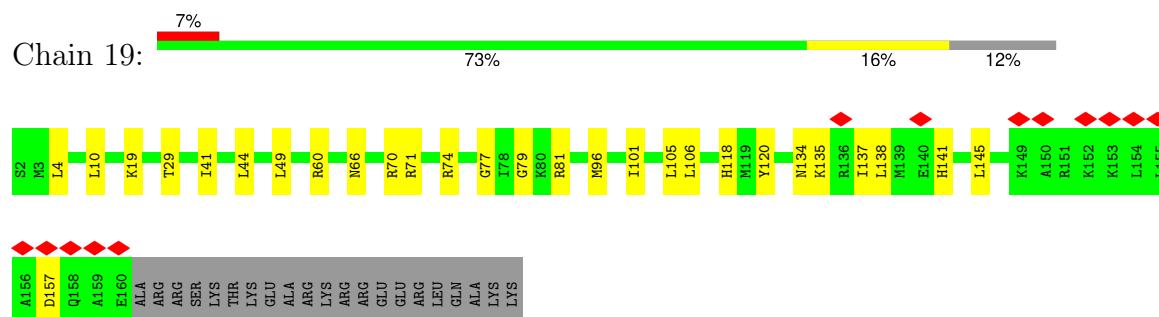


- Molecule 17: 60S ribosomal protein L17

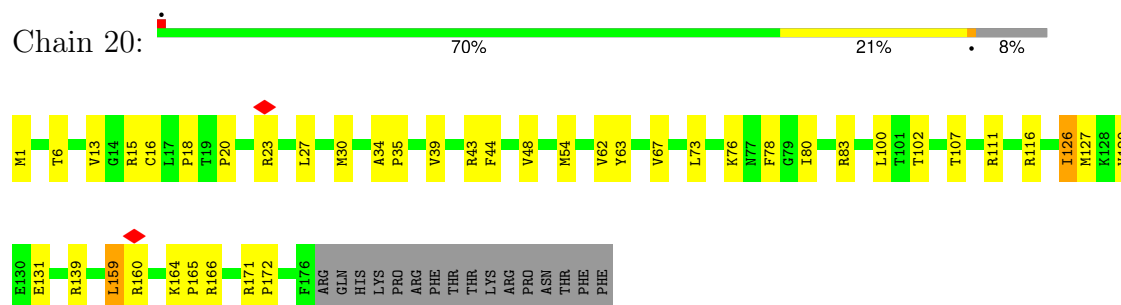




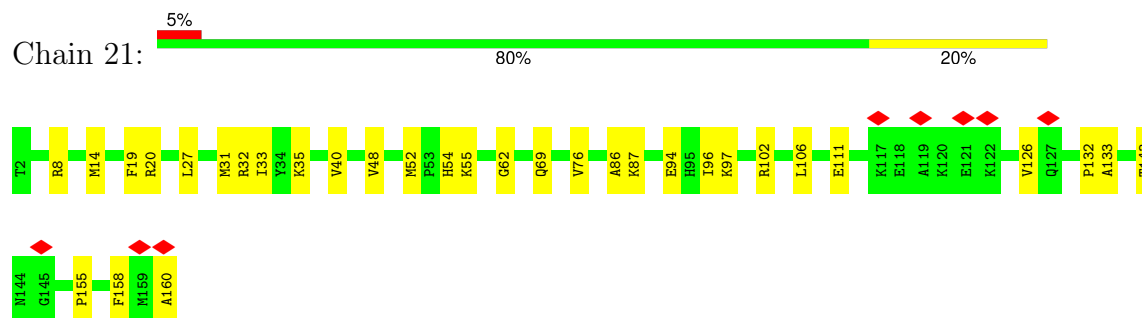
- Molecule 18: 60S ribosomal protein L19



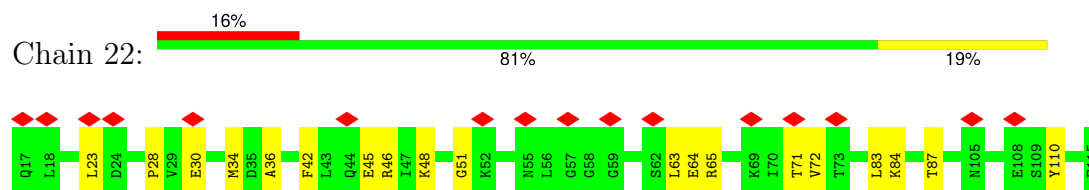
- Molecule 19: Large ribosomal subunit protein eL20



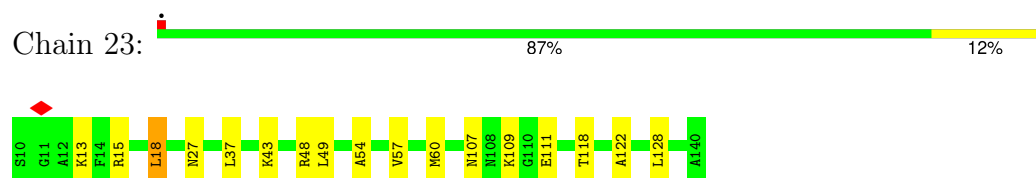
- Molecule 20: 60S ribosomal protein L21



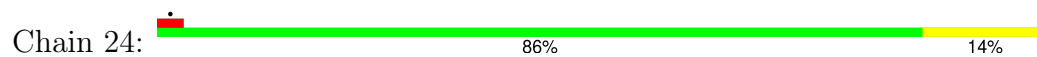
- Molecule 21: Large ribosomal subunit protein eL22



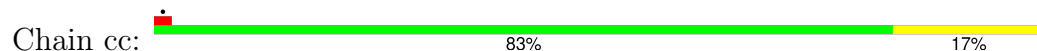
- Molecule 22: 60S ribosomal protein L23



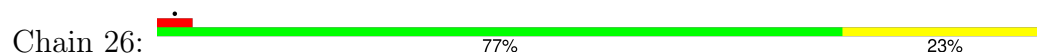
- Molecule 23: Ribosomal protein L24



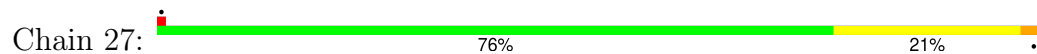
- Molecule 24: Large ribosomal subunit protein uL23



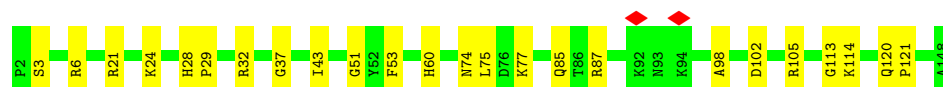
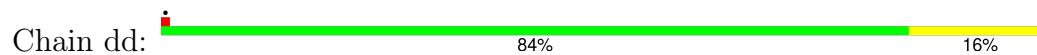
- Molecule 25: 60S ribosomal protein L26



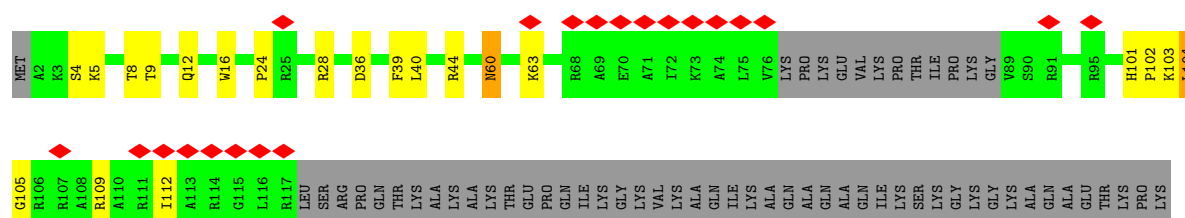
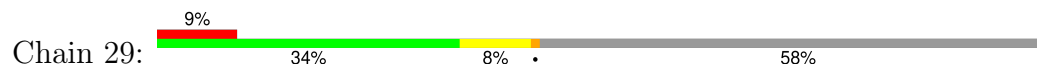
- Molecule 26: 60S ribosomal protein L27



- Molecule 27: 60S ribosomal protein L27a

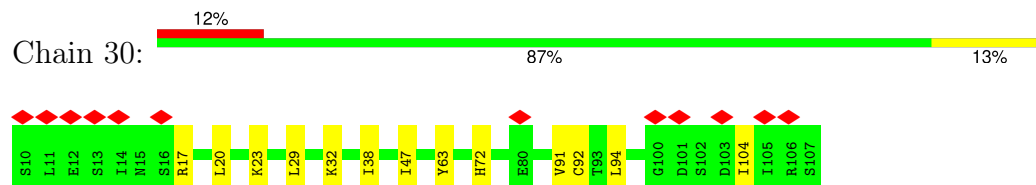


- Molecule 28: Large ribosomal subunit protein eL29

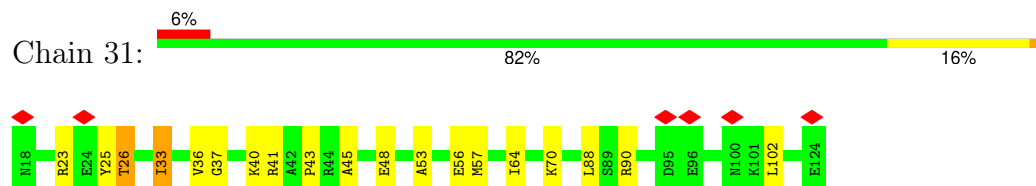


[illegible]

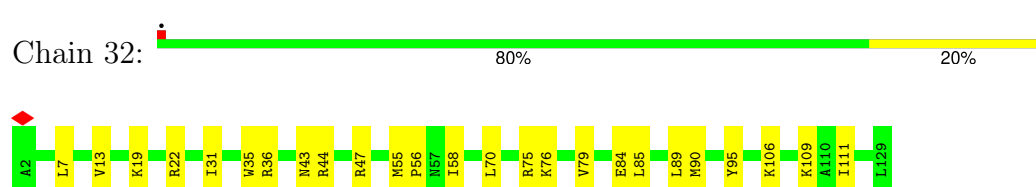
- Molecule 29: 60S ribosomal protein L30



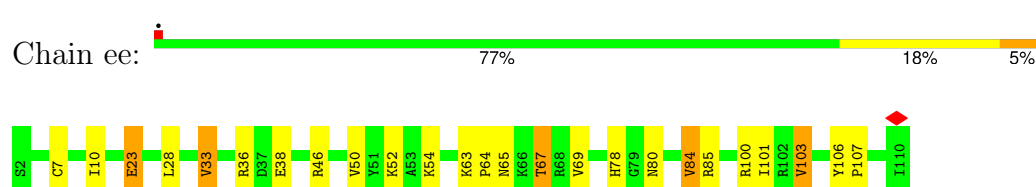
- Molecule 30: 60S ribosomal protein L31



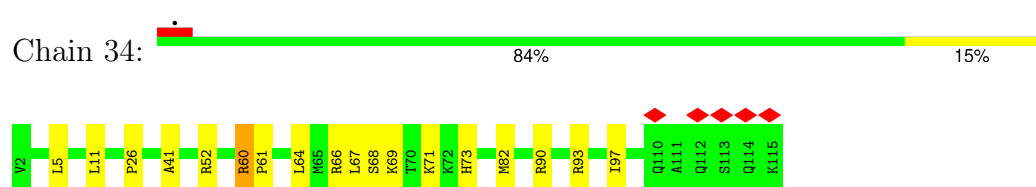
- Molecule 31: Large ribosomal subunit protein eL32



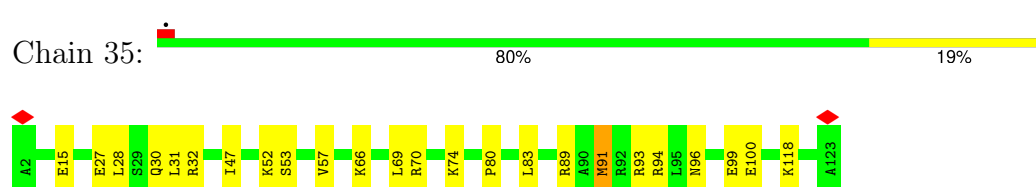
- Molecule 32: Large ribosomal subunit protein eL33



- Molecule 33: 60S ribosomal protein L34

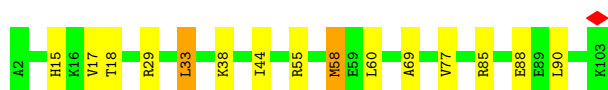


- Molecule 34: 60S ribosomal protein L35



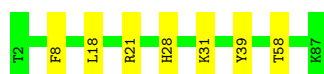
- Molecule 35: 60S ribosomal protein L36

Chain 36:  85% 13%



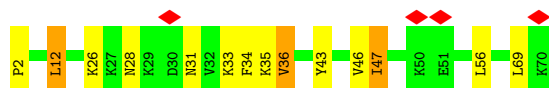
- Molecule 36: 60S ribosomal protein L37

Chain 37:  92% 8%



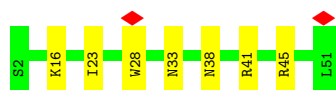
- Molecule 37: Large ribosomal subunit protein eL38

Chain 38:  6% 80% 16%



- Molecule 38: 60S ribosomal protein L39

Chain 39:  86% 14%



- Molecule 39: Large ribosomal subunit protein eL40

Chain 40:  6% 81% 17%



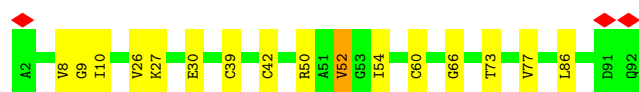
- Molecule 40: eL42

Chain 42:  82% 17%

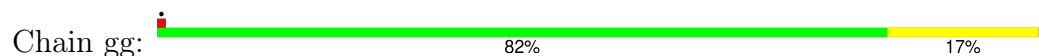


- Molecule 41: 60S ribosomal protein L37a

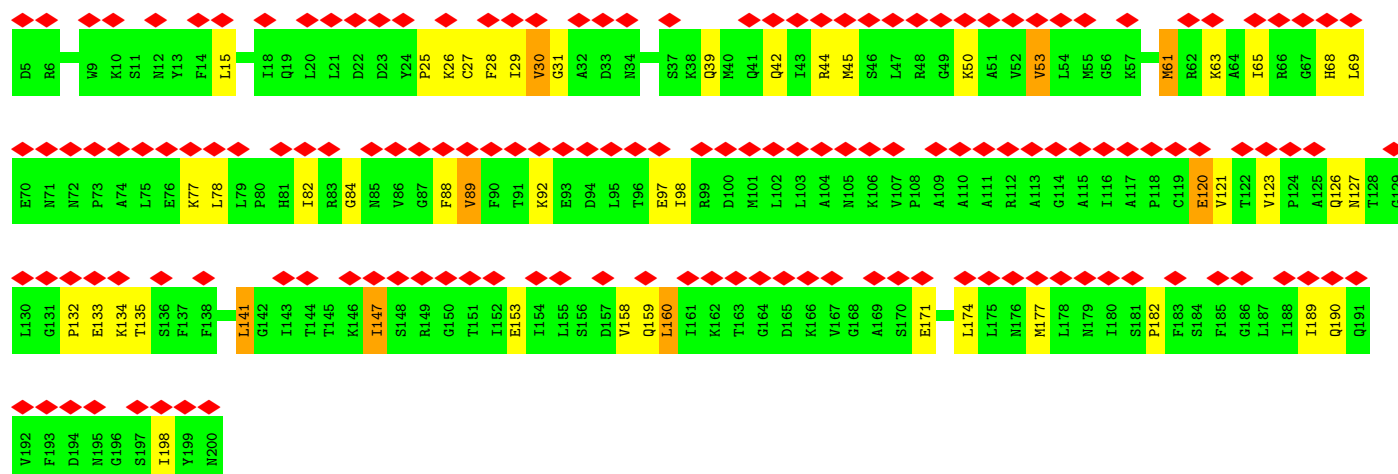
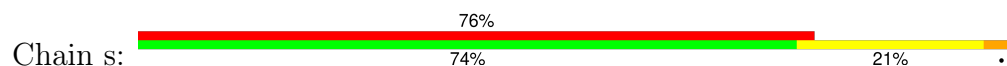
Chain ff:  82% 16%



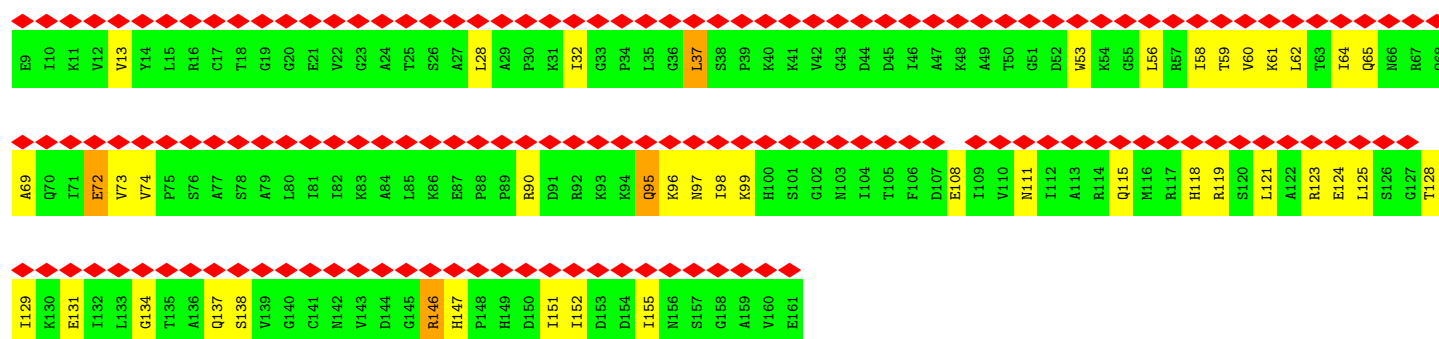
- Molecule 42: 60S ribosomal protein L28



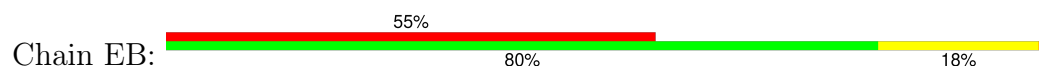
- Molecule 43: 60S acidic ribosomal protein P0

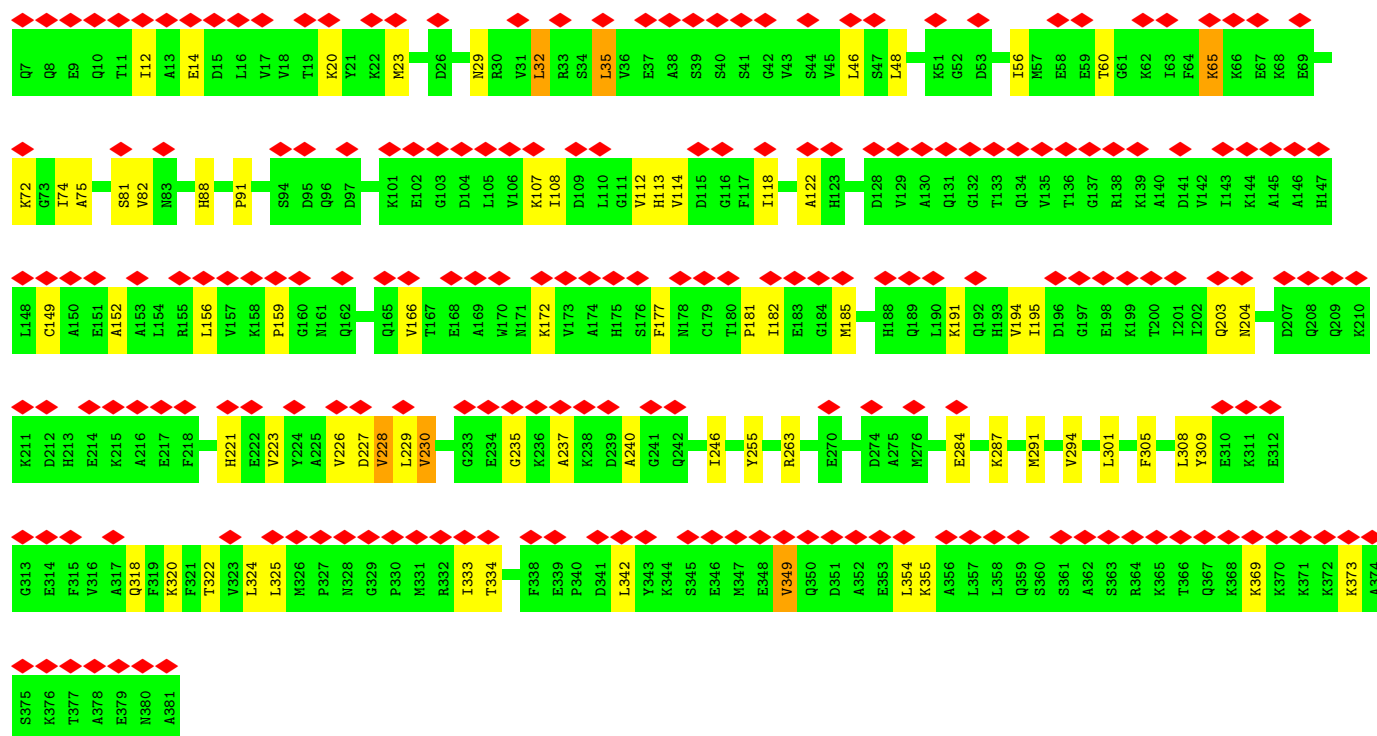


- Molecule 44: uL11

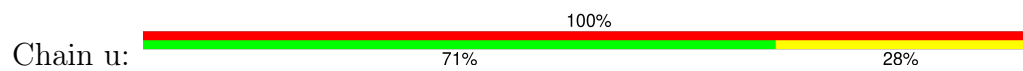


- Molecule 45: Proliferation-associated protein 2G4

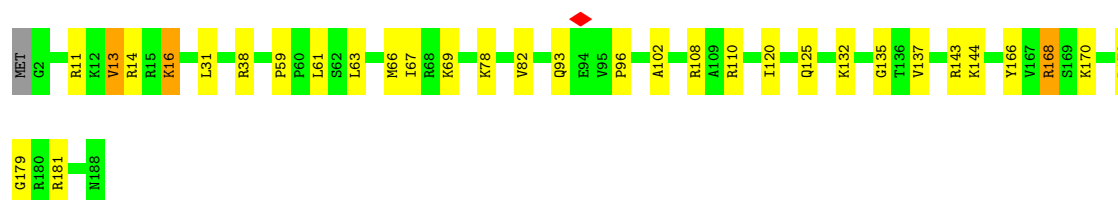
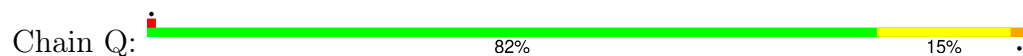




• Molecule 46: 60S ribosomal protein L10a



• Molecule 47: Large ribosomal subunit protein eL18

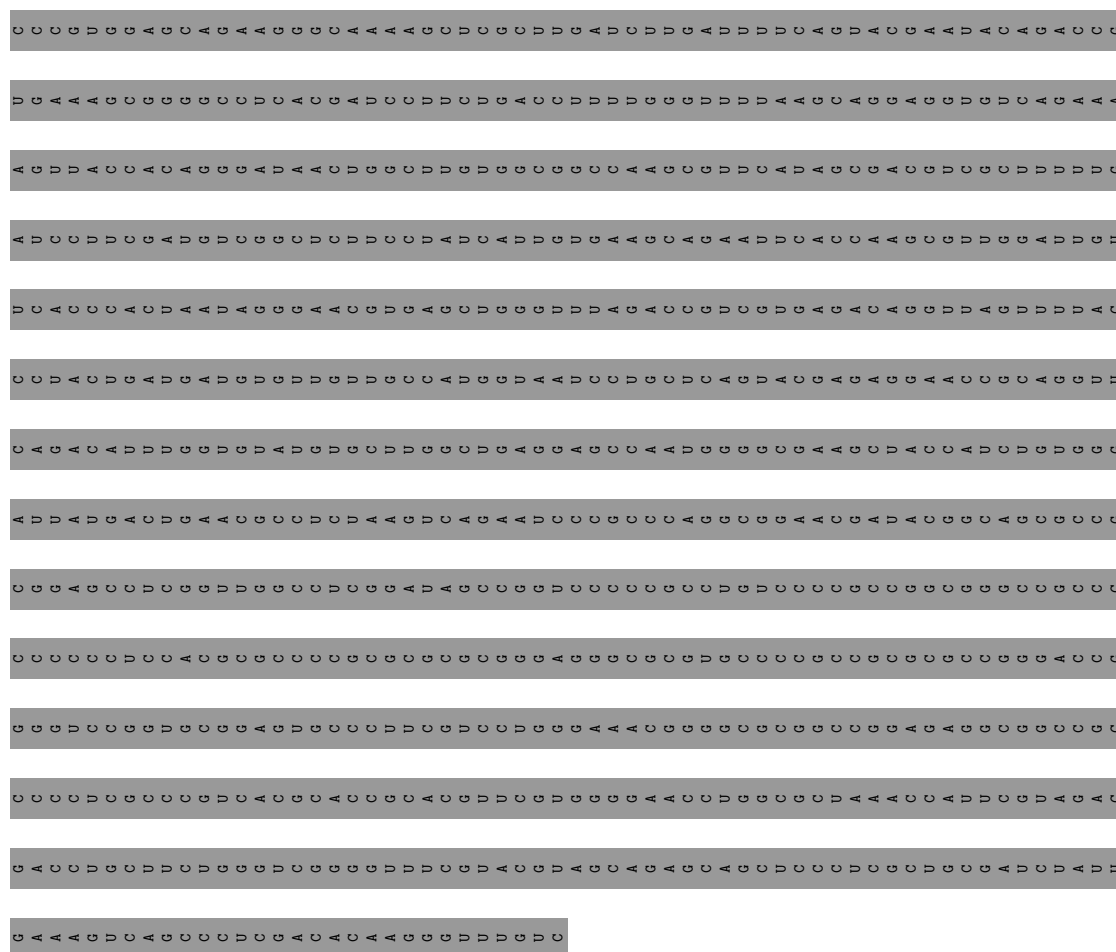


[illegible]



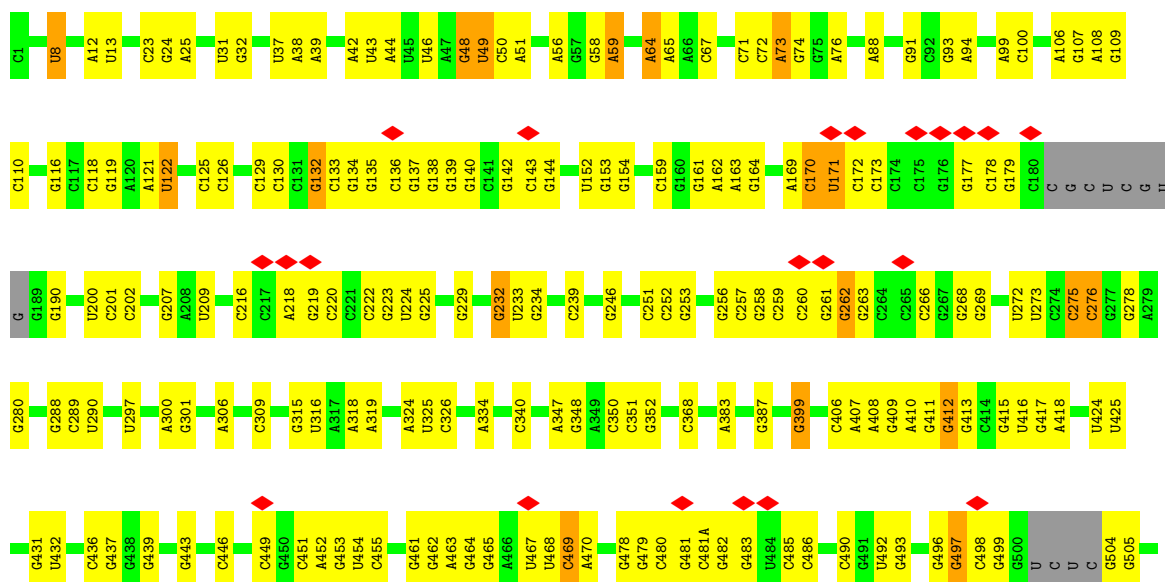


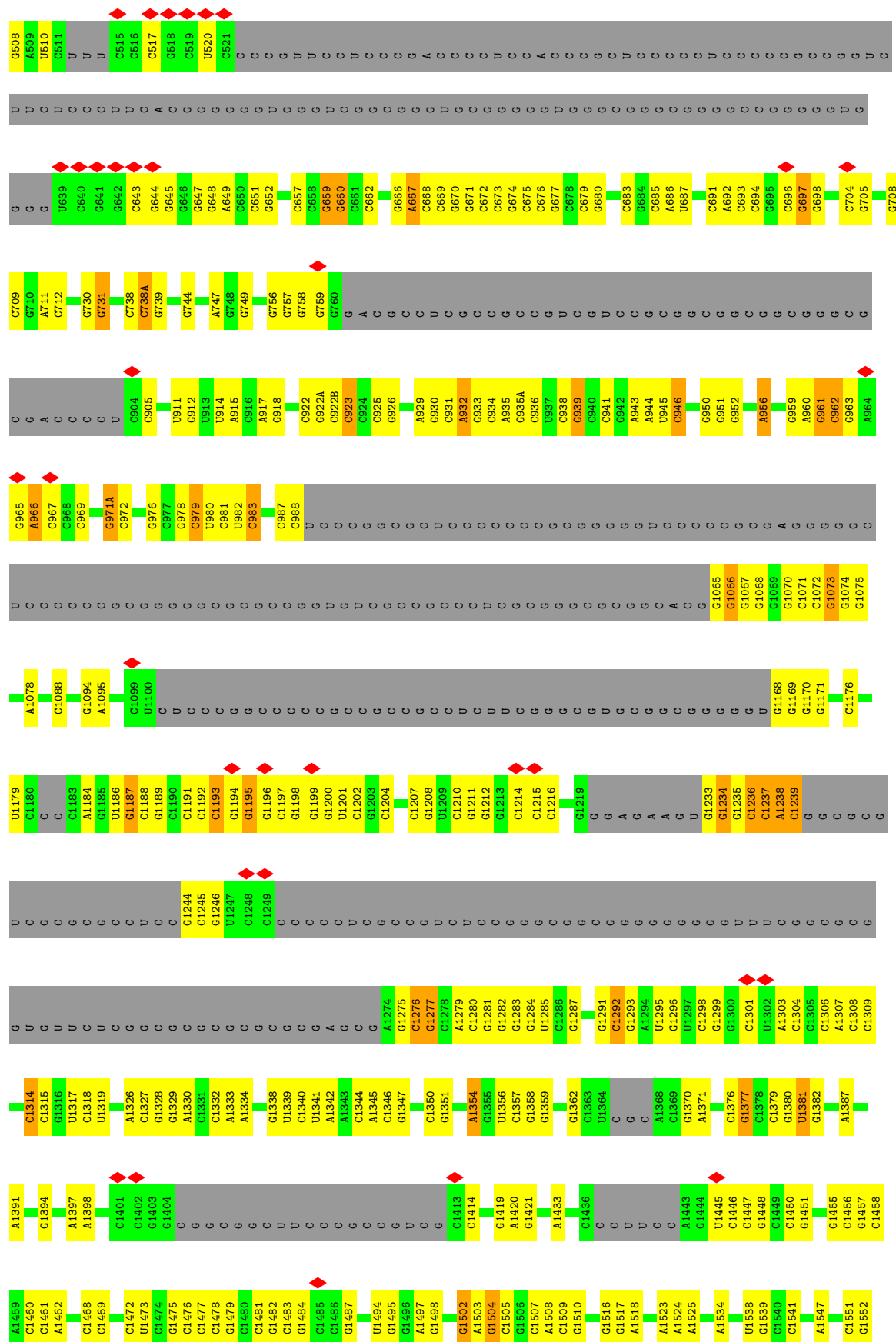




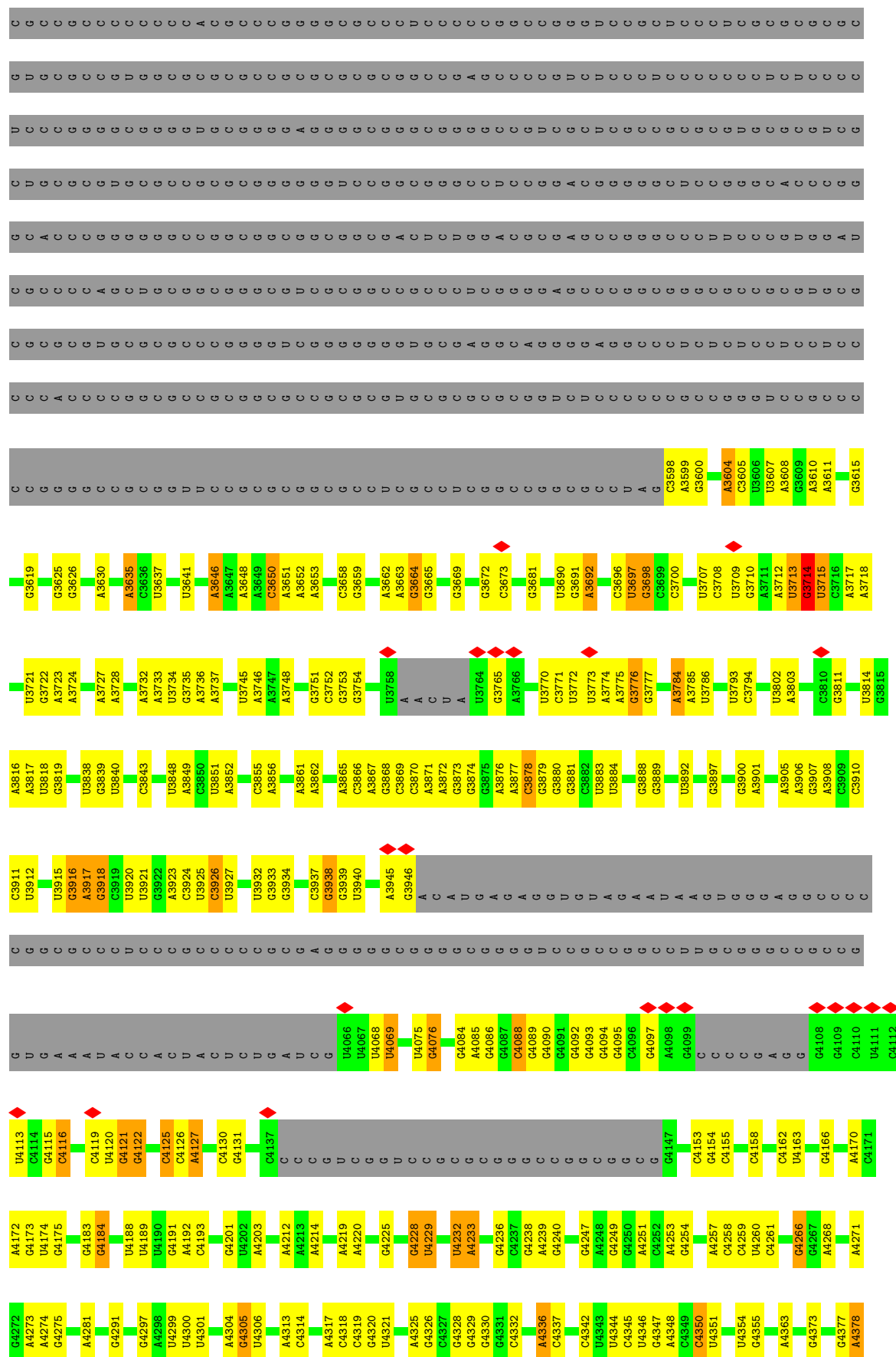
• Molecule 49: 28S rRNA

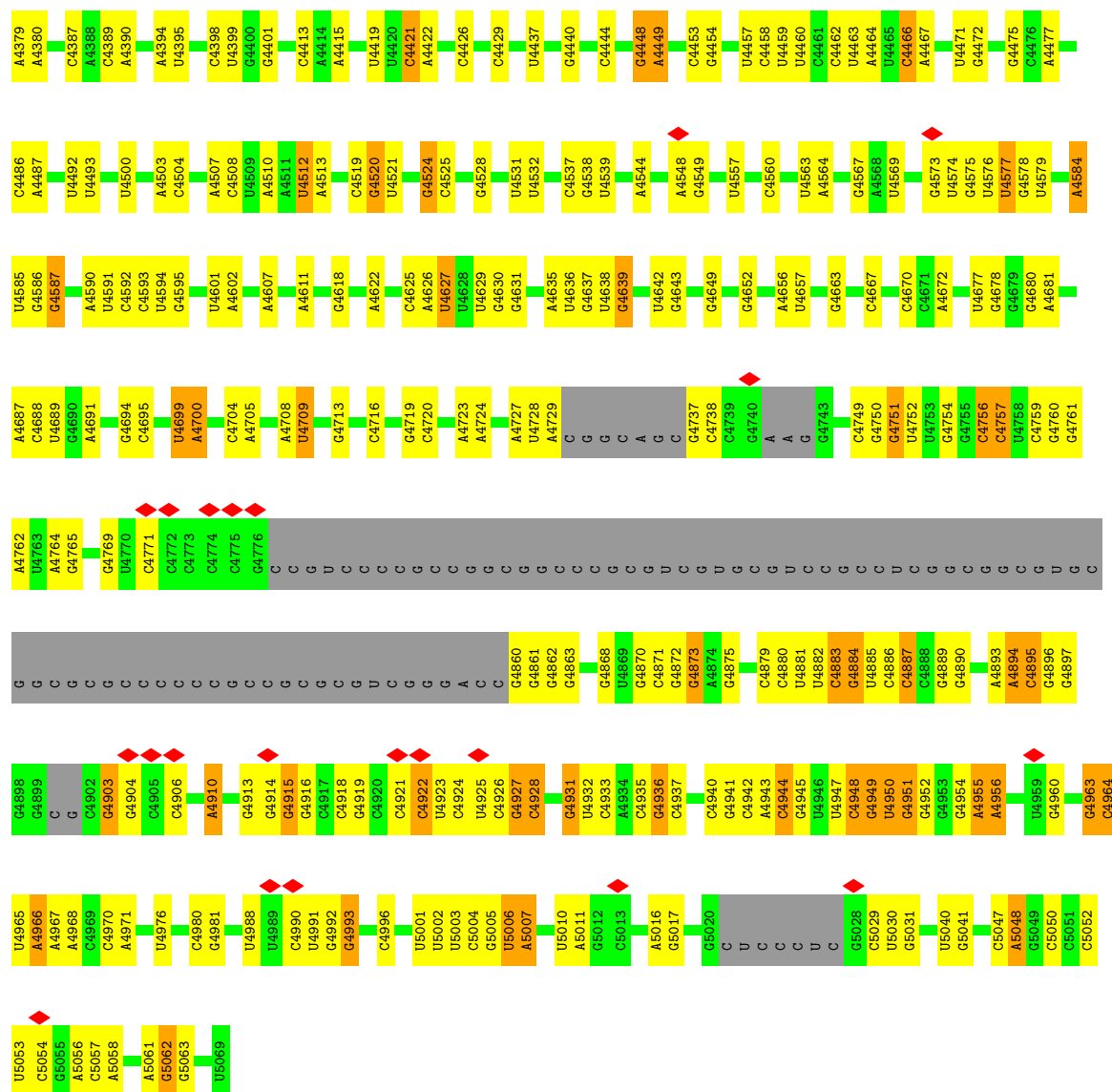
Chain 28: 41% 27% 27%



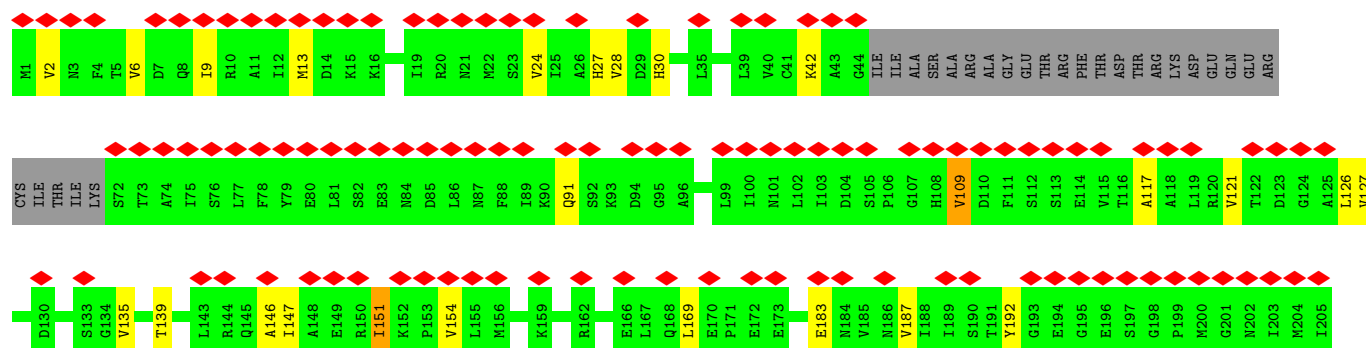
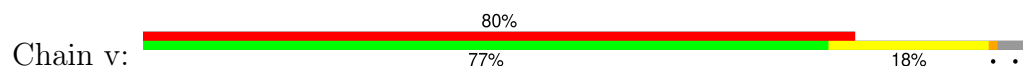








• Molecule 50: Elongation factor 2



|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Q818 | I819 | L820 | P821 | G822 | D823 | P824 | M764 | F825 | D826 | M827 | S828 | S829 | R830 | P831 | S832 | Q833 | V834 | H835 | A836 | E837 | T838 | R839 | K840 | L841 | LYS  | GLY  | LEU  | LYS  | GLU  | ILE  | PRO  | ALA  | L851 | D852 | N853 | F854 | L855 | D856 | K857 | L858 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| G757 | G758 | I759 | V760 | G761 | V762 | L763 | M764 | R765 | K766 | R767 | G768 | F771 | E772 | E773 | S774 | Q775 | V776 | A777 | G778 | T779 | F780 | M781 | F782 | V783 | V784 | K785 | A786 | V787 | L788 | P789 | V790 | M791 | E792 | S793 | F794 | G795 | F796 | T797 | A798 | D799 | L800 | R801 | S802 | T804 | G805 | G806 | Q807 | A808 | F809 | P810 | Q811 | C812 | V813 | F814 | D815 | H816 | W817 |      |      |
| M697 | R698 | G699 | V700 | R701 | F702 | D703 | V704 | H705 | D706 | V707 | T708 | L709 | H710 | A711 | D712 | A713 | H714 | H715 | R716 | G717 | G718 | G719 | Q720 | I721 | I722 | P723 | T724 | A725 | R726 | K727 | C728 | L729 | V730 | A731 | S732 | V733 | L734 | T735 | A736 | Q737 | P738 | R739 | L740 | M741 | P743 | G744 | V745 | L746 | V747 | E748 | I749 | Q750 | C751 | P752 | E753 | Q754 | V755 | V756 |      |
| E637 | K638 | V639 | E640 | M641 | D642 | V643 | A644 | E645 | A646 | R647 | K648 | I649 | V650 | C651 | F652 | G653 | P654 | D655 | G656 | T657 | G658 | P659 | N660 | L661 | L662 | T663 | D664 | T665 | T666 | K667 | G668 | V669 | Q670 | V671 | L672 | K673 | E674 | L675 | K676 | D677 | S678 | V679 | V680 | A681 | G682 | F683 | Q684 | V685 | A686 | T687 | K688 | E689 | A691 | L692 | G693 | E694 | E695 | N696 |      |
| V577 | S578 | V579 | R580 | E581 | T582 | V583 | S584 | E585 | E586 | S587 | N588 | V589 | L590 | C591 | L592 | S593 | K594 | S595 | P596 | N597 | K598 | H599 | N600 | R601 | L602 | T603 | M604 | K605 | A606 | R607 | P608 | F609 | P610 | D611 | G612 | L613 | A614 | E615 | D616 | L617 | D618 | K619 | G620 | E621 | V622 | S623 | A624 | R625 | Q626 | E627 | L628 | K629 | Q630 | R631 | A632 | R633 | Y634 | L635 | A636 |
| L517 | P518 | K519 | V520 | V521 | E522 | G523 | L524 | K525 | R526 | L527 | A528 | K529 | S530 | D531 | P532 | M533 | V534 | Q535 | C536 | I537 | I538 | E539 | E540 | S541 | G542 | E543 | H544 | I545 | I546 | A547 | G548 | A549 | G550 | E551 | L552 | H553 | L554 | E555 | I556 | C557 | L558 | K559 | D560 | L561 | E562 | E563 | D564 | H565 | A566 | C567 | I568 | P569 | I570 | K571 | K572 | S573 | D574 | P575 | V576 |
| V457 | V458 | E459 | P460 | T461 | E462 | D463 | V464 | P465 | C466 | G467 | R468 | I469 | V470 | G471 | L472 | V473 | G474 | V475 | D476 | Q477 | F478 | L479 | V480 | K481 | T482 | G483 | T484 | L485 | T486 | T487 | F488 | E489 | H490 | G491 | H492 | M493 | M494 | R495 | V496 | M497 | K498 | F499 | S500 | V501 | S502 | P503 | V504 | V505 | R506 | V507 | A508 | V509 | E510 | A511 | N512 | P513 | P514 | A515 | D516 |
| Y397 | I398 | S399 | K400 | M401 | V402 | F403 | T404 | S405 | D406 | K407 | G408 | R409 | F410 | Y411 | A412 | F413 | G414 | R415 | V416 | F417 | S418 | G419 | L420 | V421 | S422 | T423 | G424 | L425 | K426 | V427 | R428 | I429 | M430 | G431 | P432 | N433 | Y434 | T435 | P436 | G437 | K438 | L439 | E440 | D441 | L442 | Y443 | L444 | K445 | C388 | D389 | P390 | K391 | G392 | P393 | L394 | M395 | M396 |      |      |
| K333 | P334 | L335 | L336 | K337 | A338 | R342 | M343 | A346 | G347 | D348 | A349 | L350 | M353 | I354 | T355 | I356 | H357 | L358 | P359 | S360 | P361 | V362 | T363 | Q365 | K366 | Y367 | R368 | C369 | E370 | L371 | L372 | Y373 | E374 | G375 | P376 | P377 | D378 | D379 | E380 | A381 | A382 | M383 | G384 | I385 | K386 | S387 | C388 | D389 | P390 | K391 | G392 | P393 | L394 | M395 | M396 |      |      |      |      |
| M270 | G271 | K272 | F273 | S274 | K275 | S276 | A277 | P280 | E281 | G282 | K283 | K284 | L285 | P286 | R287 | C290 | Q291 | L292 | I293 | L294 | D295 | I296 | I297 | F298 | K299 | V300 | F301 | D302 | A303 | I304 | M305 | K308 | K309 | E310 | E311 | T312 | A313 | K314 | L315 | I316 | E317 | K318 | L319 | D320 | I321 | K322 | L323 | D324 | S325 | E326 | D327 | K328 | D329 | K330 | E331 | G332 |      |      |      |
| D206 | P207 | V208 | T211 | V212 | G213 | F214 | G215 | L218 | H219 | G220 | V221 | A222 | F223 | T224 | L225 | K226 | A229 | E230 | M231 | Y232 | V233 | A234 | K235 | F236 | A237 | A238 | K239 | G240 | E241 | G242 | Q243 | L244 | G245 | P246 | A247 | E248 | R249 | A250 | K251 | K252 | V253 | E254 | D255 | M256 | M257 | K258 | K259 | L260 | G261 | G262 | D263 | R264 | D267 | P268 | A269 |      |      |      |      |

## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 22323                                   | 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 ( $e^-/\text{\AA}^2$ ) | 39                                      | Depositor |
| Minimum defocus (nm)                 | 700                                     | Depositor |
| Maximum defocus (nm)                 | 2000                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | OTHER                                   | Depositor |
| Maximum map value                    | 31.991                                  | Depositor |
| Minimum map value                    | -14.192                                 | Depositor |
| Average map value                    | 0.003                                   | Depositor |
| Map value standard deviation         | 1.049                                   | Depositor |
| Recommended contour level            | 3.8                                     | Depositor |
| Map size (Å)                         | 664.0, 664.0, 664.0                     | wwPDB     |
| Map dimensions                       | 800, 800, 800                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 0.83, 0.83, 0.83                        | 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, GDP

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   | 58    | 0.19         | 0/3581      | 0.29        | 0/5577      |
| 2   | 5     | 0.17         | 0/2858      | 0.25        | 0/4455      |
| 3   | L8    | 0.20         | 0/1936      | 0.36        | 0/2596      |
| 4   | L3    | 0.20         | 0/3241      | 0.33        | 0/4339      |
| 5   | L4    | 0.19         | 0/2938      | 0.31        | 0/3946      |
| 6   | L5    | 0.17         | 0/2438      | 0.33        | 0/3264      |
| 7   | L6    | 0.17         | 0/1761      | 0.31        | 0/2362      |
| 8   | L7    | 0.20         | 0/1911      | 0.31        | 0/2549      |
| 9   | aa    | 0.19         | 0/1910      | 0.34        | 0/2569      |
| 10  | L9    | 0.19         | 0/1536      | 0.36        | 0/2063      |
| 11  | 10    | 0.19         | 0/1702      | 0.31        | 0/2272      |
| 12  | 11    | 0.20         | 0/1386      | 0.37        | 0/1852      |
| 13  | 13    | 0.18         | 0/1733      | 0.34        | 0/2316      |
| 14  | 14    | 0.17         | 0/1159      | 0.32        | 0/1547      |
| 15  | 15    | 0.22         | 0/1746      | 0.37        | 0/2338      |
| 16  | bb    | 0.21         | 0/1662      | 0.35        | 0/2222      |
| 17  | 17    | 0.19         | 0/1269      | 0.35        | 0/1700      |
| 18  | 19    | 0.16         | 0/1341      | 0.29        | 0/1776      |
| 19  | 20    | 0.19         | 0/1500      | 0.33        | 0/2012      |
| 20  | 21    | 0.19         | 0/1326      | 0.30        | 0/1770      |
| 21  | 22    | 0.15         | 0/824       | 0.34        | 0/1104      |
| 22  | 23    | 0.19         | 0/993       | 0.32        | 0/1332      |
| 23  | 24    | 0.18         | 0/542       | 0.30        | 0/720       |
| 24  | cc    | 0.18         | 0/984       | 0.30        | 0/1323      |
| 25  | 26    | 0.18         | 0/1133      | 0.34        | 0/1504      |
| 26  | 27    | 0.16         | 0/1130      | 0.29        | 0/1507      |
| 27  | dd    | 0.20         | 0/1191      | 0.31        | 0/1590      |
| 28  | 29    | 0.16         | 0/861       | 0.28        | 0/1138      |
| 29  | 30    | 0.15         | 0/772       | 0.29        | 0/1034      |
| 30  | 31    | 0.19         | 0/904       | 0.33        | 0/1216      |
| 31  | 32    | 0.20         | 0/1072      | 0.34        | 0/1429      |
| 32  | ee    | 0.22         | 0/895       | 0.37        | 0/1198      |

| Mol | Chain | Bond lengths |                 | Bond angles |                 |
|-----|-------|--------------|-----------------|-------------|-----------------|
|     |       | RMSZ         | # Z  >5         | RMSZ        | # Z  >5         |
| 33  | 34    | 0.18         | 0/917           | 0.33        | 0/1220          |
| 34  | 35    | 0.16         | 0/1021          | 0.32        | 0/1348          |
| 35  | 36    | 0.17         | 0/842           | 0.30        | 0/1112          |
| 36  | 37    | 0.20         | 0/721           | 0.31        | 0/952           |
| 37  | 38    | 0.18         | 0/575           | 0.35        | 0/761           |
| 38  | 39    | 0.21         | 0/459           | 0.34        | 0/608           |
| 39  | 40    | 0.17         | 0/435           | 0.33        | 0/575           |
| 40  | 42    | 0.18         | 0/865           | 0.31        | 0/1140          |
| 41  | ff    | 0.18         | 0/718           | 0.35        | 0/953           |
| 42  | gg    | 0.19         | 0/1007          | 0.33        | 0/1349          |
| 43  | s     | 0.15         | 0/1531          | 0.36        | 0/2064          |
| 44  | t     | 0.15         | 0/1175          | 0.40        | 0/1582          |
| 45  | EB    | 0.14         | 0/2979          | 0.30        | 0/4000          |
| 46  | u     | 0.15         | 0/1681          | 0.38        | 0/2255          |
| 47  | Q     | 0.21         | 0/1539          | 0.36        | 0/2054          |
| 48  | ES    | 0.17         | 0/1609          | 0.38        | 0/2502          |
| 49  | 28    | 0.20         | 1/83633 (0.0%)  | 0.32        | 5/130425 (0.0%) |
| 50  | v     | 0.21         | 0/6536          | 0.41        | 0/8828          |
| All | All   | 0.19         | 1/158478 (0.0%) | 0.32        | 5/232348 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 50  | v     | 0                   | 1                   |

All (1) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms | Z      | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|--------|-------------|----------|
| 49  | 28    | 3715 | U    | O3'-P | -12.54 | 1.42        | 1.61     |

All (5) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms     | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|--------|-------------|----------|
| 49  | 28    | 3715 | U    | P-O3'-C3' | 14.39  | 141.79      | 120.20   |
| 49  | 28    | 3714 | G    | O3'-P-O5' | -14.35 | 82.48       | 104.00   |
| 49  | 28    | 3715 | U    | OP2-P-O3' | -9.77  | 78.69       | 108.00   |
| 49  | 28    | 3715 | U    | O3'-P-O5' | 8.50   | 116.75      | 104.00   |
| 49  | 28    | 3714 | G    | P-O3'-C3' | -5.79  | 111.51      | 120.20   |

There are no chirality outliers.

All (1) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 50  | v     | 500 | SER  | Peptide |

## 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   | 58    | 3208  | 0        | 1629     | 39      | 0            |
| 2   | 5     | 2558  | 0        | 1296     | 21      | 0            |
| 3   | L8    | 1898  | 0        | 1993     | 38      | 0            |
| 4   | L3    | 3173  | 0        | 3310     | 53      | 0            |
| 5   | L4    | 2884  | 0        | 3053     | 35      | 0            |
| 6   | L5    | 2392  | 0        | 2424     | 36      | 0            |
| 7   | L6    | 1728  | 0        | 1887     | 31      | 0            |
| 8   | L7    | 1875  | 0        | 1995     | 26      | 0            |
| 9   | aa    | 1879  | 0        | 2027     | 25      | 0            |
| 10  | L9    | 1517  | 0        | 1597     | 22      | 0            |
| 11  | 10    | 1664  | 0        | 1712     | 19      | 0            |
| 12  | 11    | 1363  | 0        | 1399     | 23      | 0            |
| 13  | 13    | 1702  | 0        | 1820     | 23      | 0            |
| 14  | 14    | 1138  | 0        | 1211     | 16      | 0            |
| 15  | 15    | 1701  | 0        | 1749     | 33      | 0            |
| 16  | bb    | 1630  | 0        | 1778     | 33      | 0            |
| 17  | 17    | 1243  | 0        | 1274     | 10      | 0            |
| 18  | 19    | 1325  | 0        | 1457     | 20      | 0            |
| 19  | 20    | 1461  | 0        | 1508     | 32      | 0            |
| 20  | 21    | 1298  | 0        | 1366     | 26      | 0            |
| 21  | 22    | 810   | 0        | 833      | 9       | 0            |
| 22  | 23    | 979   | 0        | 1039     | 10      | 0            |
| 23  | 24    | 529   | 0        | 541      | 5       | 0            |
| 24  | cc    | 967   | 0        | 1040     | 12      | 0            |
| 25  | 26    | 1116  | 0        | 1205     | 17      | 0            |
| 26  | 27    | 1107  | 0        | 1182     | 15      | 0            |
| 27  | dd    | 1162  | 0        | 1209     | 24      | 0            |
| 28  | 29    | 848   | 0        | 920      | 14      | 0            |
| 29  | 30    | 762   | 0        | 794      | 8       | 0            |

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| Mol | Chain | Non-H  | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|--------|----------|----------|---------|--------------|
| 30  | 31    | 889    | 0        | 930      | 15      | 0            |
| 31  | 32    | 1054   | 0        | 1147     | 16      | 0            |
| 32  | ee    | 876    | 0        | 912      | 19      | 0            |
| 33  | 34    | 907    | 0        | 998      | 11      | 0            |
| 34  | 35    | 1013   | 0        | 1147     | 19      | 0            |
| 35  | 36    | 831    | 0        | 916      | 7       | 0            |
| 36  | 37    | 706    | 0        | 737      | 3       | 0            |
| 37  | 38    | 569    | 0        | 637      | 10      | 0            |
| 38  | 39    | 447    | 0        | 480      | 6       | 0            |
| 39  | 40    | 429    | 0        | 469      | 6       | 0            |
| 40  | 42    | 852    | 0        | 924      | 13      | 0            |
| 41  | ff    | 708    | 0        | 756      | 10      | 0            |
| 42  | gg    | 991    | 0        | 1044     | 13      | 0            |
| 43  | s     | 1508   | 0        | 1564     | 27      | 0            |
| 44  | t     | 1161   | 0        | 1218     | 32      | 0            |
| 45  | EB    | 2932   | 0        | 2967     | 40      | 0            |
| 46  | u     | 1655   | 0        | 1760     | 37      | 0            |
| 47  | Q     | 1515   | 0        | 1634     | 25      | 0            |
| 48  | ES    | 1444   | 0        | 735      | 35      | 0            |
| 49  | 28    | 74767  | 0        | 37771    | 800     | 0            |
| 50  | v     | 6409   | 0        | 6476     | 83      | 0            |
| 51  | 34    | 1      | 0        | 0        | 0       | 0            |
| 51  | 37    | 1      | 0        | 0        | 0       | 0            |
| 51  | ff    | 1      | 0        | 0        | 0       | 0            |
| 52  | v     | 28     | 0        | 12       | 0       | 0            |
| All | All   | 147611 | 0        | 110482   | 1677    | 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 7.

All (1677) 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) |
|------------------|------------------|--------------------------|-------------------|
| 41:ff:42:CYS:HB3 | 41:ff:60:CYS:SG  | 1.85                     | 1.17              |
| 49:28:2007:G:H21 | 49:28:2012:A:N6  | 1.47                     | 1.13              |
| 49:28:2007:G:N2  | 49:28:2012:A:H62 | 1.48                     | 1.10              |
| 49:28:4421:C:H42 | 49:28:4475:G:N2  | 1.59                     | 0.99              |
| 49:28:4421:C:N4  | 49:28:4475:G:H22 | 1.64                     | 0.95              |
| 49:28:2638:G:H1  | 49:28:2697:A:H61 | 0.94                     | 0.92              |
| 49:28:2557:G:H1  | 49:28:2570:U:H3  | 0.95                     | 0.90              |
| 49:28:4887:C:H42 | 49:28:4932:U:H3  | 1.19                     | 0.89              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 48:ES:2912:G:H1   | 48:ES:3282:U:H3    | 1.20                     | 0.88              |
| 30:31:57:MET:HG3  | 30:31:90:ARG:HE    | 1.40                     | 0.87              |
| 49:28:4421:C:H42  | 49:28:4475:G:H22   | 1.14                     | 0.87              |
| 49:28:2638:G:H1   | 49:28:2697:A:N6    | 1.74                     | 0.86              |
| 49:28:2638:G:N2   | 49:28:2697:A:N1    | 2.25                     | 0.83              |
| 8:L7:61:ARG:HH22  | 8:L7:65:ARG:HH21   | 1.28                     | 0.82              |
| 49:28:2492:C:H2'  | 49:28:2493:G:H8    | 1.43                     | 0.81              |
| 3:L8:137:ILE:HD11 | 3:L8:149:LYS:HB3   | 1.62                     | 0.81              |
| 16:bb:176:ARG:HD3 | 49:28:4769:G:H5'   | 1.62                     | 0.81              |
| 10:L9:41:ILE:HG21 | 10:L9:73:ILE:HD11  | 1.61                     | 0.81              |
| 20:21:87:LYS:HZ2  | 49:28:4305:G:H1    | 1.29                     | 0.80              |
| 49:28:2845:A:H61  | 49:28:3843:C:H42   | 1.30                     | 0.79              |
| 40:42:69:ARG:HG2  | 40:42:82:MET:HE1   | 1.65                     | 0.78              |
| 49:28:138:G:H2'   | 49:28:139:G:C8     | 2.19                     | 0.77              |
| 5:L4:323:ARG:HG3  | 49:28:1280:C:H2'   | 1.66                     | 0.77              |
| 49:28:4886:C:H42  | 49:28:4933:C:H42   | 1.29                     | 0.77              |
| 7:L6:96:THR:HG22  | 7:L6:109:VAL:HG22  | 1.67                     | 0.76              |
| 8:L7:93:ARG:HE    | 8:L7:108:LEU:HD13  | 1.50                     | 0.76              |
| 27:dd:85:GLN:HE22 | 49:28:508:G:H21    | 1.34                     | 0.76              |
| 37:38:33:LYS:HG2  | 37:38:46:VAL:HG22  | 1.67                     | 0.74              |
| 49:28:966:A:H62   | 49:28:2096:G:H2'   | 1.53                     | 0.74              |
| 50:v:304:ILE:HG21 | 50:v:336:LEU:HB2   | 1.70                     | 0.74              |
| 3:L8:82:ILE:HD11  | 3:L8:99:GLY:HA3    | 1.69                     | 0.74              |
| 49:28:4949:G:H4'  | 49:28:4950:U:H5'   | 1.67                     | 0.73              |
| 9:aa:139:VAL:HG21 | 9:aa:238:LYS:HG3   | 1.71                     | 0.73              |
| 8:L7:227:VAL:HA   | 19:20:39:VAL:HG12  | 1.71                     | 0.72              |
| 15:15:44:ARG:HH11 | 15:15:47:LYS:HB2   | 1.55                     | 0.72              |
| 48:ES:2947:G:H1   | 48:ES:3247:A:H2    | 1.34                     | 0.71              |
| 49:28:1332:C:H2'  | 49:28:1333:A:H8    | 1.52                     | 0.71              |
| 49:28:2647:A:H62  | 49:28:2686:G:H8    | 1.38                     | 0.71              |
| 15:15:125:SER:HB3 | 49:28:3937:C:H1'   | 1.72                     | 0.71              |
| 48:ES:2955:A:H2   | 48:ES:3239:G:H1    | 1.39                     | 0.71              |
| 3:L8:183:GLY:HA2  | 49:28:1613:A:H5''  | 1.72                     | 0.70              |
| 3:L8:117:GLU:HB2  | 3:L8:162:ASN:HB2   | 1.73                     | 0.70              |
| 7:L6:48:ARG:HB3   | 7:L6:67:ARG:HD3    | 1.71                     | 0.70              |
| 42:gg:103:HIS:HD2 | 42:gg:106:LEU:HD22 | 1.55                     | 0.70              |
| 49:28:137:G:H2'   | 49:28:138:G:C8     | 2.27                     | 0.70              |
| 6:L5:83:LEU:HB3   | 6:L5:88:VAL:HB     | 1.73                     | 0.70              |
| 12:11:111:GLU:HB2 | 12:11:125:ILE:HD11 | 1.72                     | 0.70              |
| 17:17:126:ARG:HD3 | 17:17:140:MET:HE1  | 1.74                     | 0.69              |
| 9:aa:111:PRO:HD2  | 9:aa:114:ILE:HD12  | 1.73                     | 0.69              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:4421:C:N4    | 49:28:4475:G:N2    | 2.30                     | 0.69              |
| 49:28:1857:C:H2'   | 49:28:1858:A:H8    | 1.57                     | 0.69              |
| 26:27:46:ILE:HD11  | 26:27:49:TYR:HA    | 1.75                     | 0.69              |
| 5:L4:78:ARG:HB3    | 5:L4:88:GLY:HA2    | 1.74                     | 0.69              |
| 32:ee:78:HIS:HB2   | 32:ee:85:ARG:HG3   | 1.74                     | 0.69              |
| 46:u:148:VAL:HA    | 46:u:151:VAL:HG12  | 1.74                     | 0.69              |
| 19:20:139:ARG:HH21 | 49:28:1952:G:H5'   | 1.58                     | 0.68              |
| 15:15:50:ARG:HH11  | 49:28:278:G:H4'    | 1.58                     | 0.68              |
| 24:cc:81:LEU:HD13  | 24:cc:97:VAL:HG12  | 1.75                     | 0.68              |
| 49:28:4967:A:H2'   | 49:28:4968:A:H8    | 1.58                     | 0.68              |
| 4:L3:95:THR:HG22   | 49:28:4910:A:H4'   | 1.74                     | 0.68              |
| 50:v:327:ASP:HA    | 50:v:330:LYS:HE3   | 1.74                     | 0.68              |
| 49:28:1199:G:H2'   | 49:28:1200:G:H8    | 1.59                     | 0.68              |
| 46:u:39:LYS:HE2    | 46:u:200:ASN:HA    | 1.76                     | 0.68              |
| 48:ES:3284:C:H2'   | 48:ES:3285:G:H8    | 1.58                     | 0.67              |
| 49:28:1970:A:H5''  | 49:28:1971:U:H5'   | 1.77                     | 0.67              |
| 46:u:26:ARG:HH21   | 46:u:210:MET:H     | 1.41                     | 0.67              |
| 19:20:34:ALA:HB1   | 19:20:39:VAL:HG23  | 1.76                     | 0.67              |
| 44:t:59:THR:HG23   | 44:t:74:VAL:HB     | 1.76                     | 0.67              |
| 43:s:25:PRO:HD2    | 43:s:92:LYS:HD2    | 1.76                     | 0.67              |
| 49:28:1503:A:H4'   | 49:28:1504:G:H5'   | 1.76                     | 0.67              |
| 45:EB:191:LYS:HB2  | 45:EB:194:VAL:HB   | 1.77                     | 0.67              |
| 47:Q:108:ARG:HH21  | 49:28:1354:A:H5'   | 1.59                     | 0.67              |
| 48:ES:2945:C:H2'   | 48:ES:2946:G:H8    | 1.60                     | 0.67              |
| 50:v:594:LYS:HG2   | 50:v:595:SER:O     | 1.94                     | 0.67              |
| 4:L3:261:ARG:HB2   | 16:bb:64:THR:HG21  | 1.75                     | 0.67              |
| 16:bb:27:VAL:HG13  | 16:bb:98:ALA:HB1   | 1.76                     | 0.67              |
| 12:11:35:ARG:HB3   | 12:11:123:ILE:HG23 | 1.77                     | 0.66              |
| 49:28:4915:G:H2'   | 49:28:4916:G:H8    | 1.59                     | 0.66              |
| 4:L3:53:MET:HG2    | 4:L3:77:THR:HG22   | 1.76                     | 0.66              |
| 18:19:60:ARG:HH12  | 49:28:2615:C:H5''  | 1.59                     | 0.66              |
| 49:28:4897:G:N2    | 49:28:4923:U:O2    | 2.27                     | 0.66              |
| 49:28:1954:U:H2'   | 49:28:1955:G:H8    | 1.60                     | 0.66              |
| 2:5:92:C:H2'       | 2:5:93:G:H8        | 1.60                     | 0.66              |
| 6:L5:90:VAL:HG11   | 6:L5:225:GLN:HB3   | 1.76                     | 0.66              |
| 49:28:651:C:H2'    | 49:28:652:G:H8     | 1.61                     | 0.66              |
| 42:gg:90:LEU:HG    | 42:gg:111:ILE:HG23 | 1.78                     | 0.66              |
| 49:28:4115:G:H5''  | 49:28:4116:C:H5'   | 1.78                     | 0.65              |
| 50:v:507:VAL:HG23  | 50:v:554:LEU:HD13  | 1.78                     | 0.65              |
| 49:28:93:G:H2'     | 49:28:94:A:C8      | 2.32                     | 0.65              |
| 10:L9:174:LYS:HG3  | 49:28:4477:A:H4'   | 1.79                     | 0.65              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 44:t:137:GLN:HB3  | 44:t:146:ARG:HE    | 1.60                     | 0.65              |
| 49:28:2335:C:H2'  | 49:28:2336:G:H8    | 1.60                     | 0.65              |
| 49:28:2486:G:H2'  | 49:28:2487:G:C8    | 2.32                     | 0.65              |
| 7:L6:49:ASN:H     | 7:L6:64:MET:HE1    | 1.62                     | 0.65              |
| 9:aa:116:LEU:HD11 | 15:15:29:GLN:HG3   | 1.78                     | 0.65              |
| 2:5:6:C:H4'       | 6:L5:52:ILE:HD13   | 1.79                     | 0.64              |
| 45:EB:255:TYR:HB3 | 45:EB:301:LEU:HD21 | 1.78                     | 0.64              |
| 46:u:112:ALA:HB1  | 46:u:116:LEU:HD21  | 1.78                     | 0.64              |
| 49:28:4232:U:H4'  | 49:28:4233:A:O5'   | 1.97                     | 0.64              |
| 49:28:3848:U:H2'  | 49:28:3849:A:H8    | 1.61                     | 0.64              |
| 50:v:654:PRO:HD2  | 50:v:658:GLY:HA3   | 1.79                     | 0.64              |
| 1:58:67:U:H2'     | 1:58:68:G:H8       | 1.62                     | 0.64              |
| 4:L3:240:LEU:HB3  | 4:L3:244:THR:HG21  | 1.80                     | 0.64              |
| 50:v:42:LYS:HG3   | 50:v:347:GLY:HA3   | 1.79                     | 0.64              |
| 5:L4:140:LYS:HE2  | 5:L4:245:HIS:HB2   | 1.79                     | 0.64              |
| 49:28:1066:G:H2'  | 49:28:1067:G:C8    | 2.31                     | 0.64              |
| 50:v:653:GLY:HA2  | 50:v:683:PHE:CE2   | 2.32                     | 0.64              |
| 16:bb:60:LYS:HE2  | 49:28:2046:G:H5'   | 1.79                     | 0.64              |
| 15:15:64:ILE:HD11 | 15:15:102:ALA:HA   | 1.80                     | 0.64              |
| 29:30:29:LEU:HD23 | 29:30:94:LEU:HD13  | 1.80                     | 0.64              |
| 9:aa:163:LYS:HD2  | 9:aa:166:ARG:HH12  | 1.62                     | 0.63              |
| 48:ES:3239:G:H2'  | 48:ES:3240:A:H8    | 1.63                     | 0.63              |
| 7:L6:160:HIS:HB3  | 7:L6:163:LYS:HD2   | 1.80                     | 0.63              |
| 48:ES:2945:C:H2'  | 48:ES:2946:G:C8    | 2.32                     | 0.63              |
| 48:ES:2946:G:H2'  | 48:ES:2947:G:C8    | 2.34                     | 0.63              |
| 49:28:1954:U:H2'  | 49:28:1955:G:C8    | 2.34                     | 0.63              |
| 33:34:93:ARG:O    | 33:34:97:ILE:HG12  | 1.99                     | 0.63              |
| 42:gg:32:LEU:HD23 | 42:gg:32:LEU:H     | 1.63                     | 0.63              |
| 7:L6:196:PHE:HD1  | 32:ee:106:TYR:HB2  | 1.64                     | 0.63              |
| 12:11:35:ARG:HD2  | 12:11:123:ILE:HA   | 1.80                     | 0.63              |
| 21:22:63:LEU:HD12 | 21:22:72:VAL:HG22  | 1.79                     | 0.63              |
| 33:34:68:SER:HB3  | 33:34:71:LYS:HD3   | 1.81                     | 0.63              |
| 3:L8:179:ILE:HG23 | 3:L8:184:ARG:HB2   | 1.80                     | 0.63              |
| 11:10:187:GLU:HG3 | 11:10:189:ARG:HG2  | 1.81                     | 0.63              |
| 49:28:4887:C:N4   | 49:28:4932:U:H3    | 1.96                     | 0.63              |
| 8:L7:126:LYS:HB2  | 20:21:133:ALA:HB3  | 1.81                     | 0.63              |
| 25:26:30:MET:HB3  | 25:26:101:PRO:HG2  | 1.81                     | 0.63              |
| 30:31:64:ILE:HD11 | 49:28:2373:C:H4'   | 1.79                     | 0.63              |
| 14:14:40:GLY:HA3  | 14:14:45:VAL:HB    | 1.80                     | 0.62              |
| 50:v:746:LEU:HB2  | 50:v:815:ASP:HB2   | 1.81                     | 0.62              |
| 45:EB:181:PRO:HA  | 45:EB:230:VAL:HA   | 1.80                     | 0.62              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 49:28:1942:A:H2'  | 49:28:1943:A:C8    | 2.34                     | 0.62              |
| 49:28:1802:A:H5'' | 49:28:1803:G:H5'   | 1.81                     | 0.62              |
| 49:28:4174:U:H2'  | 49:28:4175:G:H8    | 1.64                     | 0.62              |
| 49:28:300:A:H2'   | 49:28:301:G:H8     | 1.64                     | 0.62              |
| 49:28:4238:G:H2'  | 49:28:4239:A:H8    | 1.64                     | 0.62              |
| 50:v:653:GLY:HA3  | 50:v:660:ASN:HB2   | 1.80                     | 0.62              |
| 22:23:15:ARG:HB3  | 49:28:4618:G:H5''  | 1.80                     | 0.62              |
| 30:31:23:ARG:HH22 | 49:28:5058:A:H5'   | 1.65                     | 0.62              |
| 12:11:146:ARG:HG2 | 12:11:147:ARG:HG2  | 1.82                     | 0.62              |
| 49:28:1965:G:H4'  | 49:28:4695:C:H1'   | 1.81                     | 0.62              |
| 49:28:2015:U:H2'  | 49:28:2016:C:H6    | 1.65                     | 0.62              |
| 49:28:5057:C:H2'  | 49:28:5058:A:C8    | 2.35                     | 0.62              |
| 14:14:57:LEU:HD23 | 14:14:57:LEU:H     | 1.65                     | 0.62              |
| 49:28:1306:C:H2'  | 49:28:1307:A:H8    | 1.65                     | 0.62              |
| 6:L5:33:ARG:HH11  | 20:21:27:LEU:HD12  | 1.65                     | 0.62              |
| 18:19:44:LEU:HD22 | 18:19:49:LEU:HD12  | 1.82                     | 0.62              |
| 40:42:24:THR:HG23 | 40:42:69:ARG:HB3   | 1.80                     | 0.61              |
| 49:28:2467:U:H4'  | 49:28:2468:U:H5'   | 1.81                     | 0.61              |
| 47:Q:67:ILE:HD12  | 47:Q:96:PRO:HD2    | 1.82                     | 0.61              |
| 49:28:1332:C:H2'  | 49:28:1333:A:C8    | 2.34                     | 0.61              |
| 49:28:4635:A:H2   | 49:28:4663:G:H21   | 1.46                     | 0.61              |
| 49:28:1333:A:H2'  | 49:28:1334:A:C8    | 2.35                     | 0.61              |
| 49:28:4594:U:H2'  | 49:28:4595:G:H8    | 1.65                     | 0.61              |
| 46:u:93:LEU:HD11  | 46:u:99:LEU:HB2    | 1.83                     | 0.61              |
| 49:28:979:C:H42   | 49:28:1276:C:H42   | 1.48                     | 0.61              |
| 49:28:2520:C:H2'  | 49:28:2521:G:H8    | 1.65                     | 0.61              |
| 2:5:59:G:H4'      | 6:L5:267:ASN:HD21  | 1.64                     | 0.61              |
| 10:L9:43:VAL:HG12 | 10:L9:59:LYS:HD3   | 1.83                     | 0.61              |
| 49:28:976:G:H22   | 49:28:1279:A:H2    | 1.48                     | 0.61              |
| 49:28:1333:A:H2'  | 49:28:1334:A:H8    | 1.66                     | 0.61              |
| 12:11:18:ARG:HG3  | 12:11:135:GLY:HA3  | 1.81                     | 0.61              |
| 49:28:3910:C:H2'  | 49:28:3911:C:H6    | 1.66                     | 0.61              |
| 37:38:35:LYS:HE2  | 49:28:2696:A:H62   | 1.66                     | 0.60              |
| 49:28:2075:G:H2'  | 49:28:2076:G:H8    | 1.66                     | 0.60              |
| 49:28:2745:A:H2'  | 49:28:2746:A:H8    | 1.66                     | 0.60              |
| 49:28:4537:C:H2'  | 49:28:4538:G:H8    | 1.65                     | 0.60              |
| 2:5:28:C:H1'      | 2:5:54:A:H61       | 1.65                     | 0.60              |
| 22:23:13:LYS:HB2  | 22:23:128:LEU:HD21 | 1.82                     | 0.60              |
| 31:32:85:LEU:HD11 | 31:32:111:ILE:HG23 | 1.83                     | 0.60              |
| 49:28:64:A:H1'    | 49:28:76:A:H1'     | 1.83                     | 0.60              |
| 49:28:3664:G:H2'  | 49:28:3665:G:H8    | 1.67                     | 0.60              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 7:L6:122:GLU:HG3  | 31:32:7:LEU:HD22   | 1.82                     | 0.60              |
| 49:28:4095:G:H1   | 49:28:4113:U:H3    | 1.50                     | 0.60              |
| 26:27:51:ARG:HD2  | 26:27:65:ARG:HD2   | 1.83                     | 0.60              |
| 49:28:1818:G:O2'  | 49:28:1819:G:H5'   | 2.00                     | 0.60              |
| 49:28:4459:U:H2'  | 49:28:4460:U:C6    | 2.37                     | 0.60              |
| 49:28:4967:A:H2'  | 49:28:4968:A:C8    | 2.36                     | 0.60              |
| 44:t:97:ASN:HB3   | 44:t:99:LYS:HE2    | 1.84                     | 0.60              |
| 49:28:3599:A:H2'  | 49:28:3600:G:H8    | 1.67                     | 0.60              |
| 49:28:3607:U:H2'  | 49:28:3608:A:H8    | 1.66                     | 0.60              |
| 49:28:4915:G:H2'  | 49:28:4916:G:C8    | 2.37                     | 0.60              |
| 10:L9:41:ILE:HD11 | 10:L9:69:THR:HB    | 1.83                     | 0.60              |
| 19:20:35:PRO:HD2  | 19:20:39:VAL:HG21  | 1.83                     | 0.60              |
| 25:26:27:ARG:HB2  | 25:26:75:ARG:CZ    | 2.32                     | 0.60              |
| 30:31:26:THR:HG23 | 49:28:4996:C:H4'   | 1.84                     | 0.60              |
| 37:38:69:LEU:HD21 | 49:28:2696:A:C5    | 2.37                     | 0.60              |
| 49:28:3717:A:H2'  | 49:28:3718:A:H8    | 1.66                     | 0.60              |
| 49:28:2844:A:O2'  | 49:28:4631:G:H4'   | 2.02                     | 0.59              |
| 49:28:3717:A:H2'  | 49:28:3718:A:C8    | 2.36                     | 0.59              |
| 3:L8:117:GLU:HG2  | 3:L8:124:GLY:H     | 1.67                     | 0.59              |
| 49:28:137:G:H2'   | 49:28:138:G:H8     | 1.66                     | 0.59              |
| 49:28:3648:A:H1'  | 49:28:3785:A:H61   | 1.66                     | 0.59              |
| 19:20:83:ARG:HB2  | 19:20:127:MET:HE3  | 1.83                     | 0.59              |
| 49:28:711:A:H2'   | 49:28:712:C:C6     | 2.38                     | 0.59              |
| 3:L8:147:ARG:HG2  | 3:L8:157:VAL:HG22  | 1.84                     | 0.59              |
| 15:15:40:PRO:HG3  | 49:28:8:U:H5''     | 1.83                     | 0.59              |
| 32:ee:10:ILE:HD11 | 32:ee:100:ARG:HH21 | 1.68                     | 0.59              |
| 49:28:1617:G:H1'  | 49:28:2513:A:N6    | 2.17                     | 0.59              |
| 50:v:354:ILE:HG23 | 50:v:358:LEU:HD12  | 1.85                     | 0.59              |
| 9:aa:139:VAL:HG11 | 9:aa:238:LYS:HE3   | 1.85                     | 0.59              |
| 15:15:98:LEU:HD12 | 15:15:128:LYS:HD2  | 1.82                     | 0.59              |
| 6:L5:287:PHE:HZ   | 11:10:214:SER:HB3  | 1.66                     | 0.59              |
| 21:22:64:GLU:HG2  | 21:22:71:THR:HB    | 1.84                     | 0.59              |
| 48:ES:2953:C:H2'  | 48:ES:2954:G:C8    | 2.37                     | 0.59              |
| 49:28:252:C:H2'   | 49:28:253:G:C8     | 2.37                     | 0.59              |
| 49:28:676:C:H2'   | 49:28:677:G:H8     | 1.66                     | 0.59              |
| 49:28:1073:G:H1   | 49:28:1238:A:H2    | 1.51                     | 0.59              |
| 11:10:98:ARG:HB3  | 11:10:120:GLY:HA3  | 1.85                     | 0.59              |
| 27:dd:32:ARG:HD2  | 49:28:37:U:H4'     | 1.85                     | 0.59              |
| 40:42:68:LEU:HD11 | 40:42:85:ILE:HD11  | 1.85                     | 0.59              |
| 48:ES:3238:C:H2'  | 48:ES:3239:G:H8    | 1.67                     | 0.59              |
| 49:28:1645:C:H2'  | 49:28:1646:A:C8    | 2.37                     | 0.59              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:3774:A:H2'   | 49:28:3775:A:N3    | 2.18                     | 0.59              |
| 16:bb:125:LYS:HG3  | 16:bb:129:LEU:HD12 | 1.85                     | 0.59              |
| 26:27:11:VAL:HG11  | 26:27:80:LEU:HD13  | 1.84                     | 0.59              |
| 27:dd:21:ARG:HG3   | 49:28:2282:A:H4'   | 1.85                     | 0.59              |
| 50:v:594:LYS:HB2   | 50:v:855:LEU:C     | 2.27                     | 0.59              |
| 6:L5:22:ARG:HE     | 6:L5:27:LYS:HB2    | 1.68                     | 0.59              |
| 49:28:1933:G:H2'   | 49:28:1934:A:C8    | 2.38                     | 0.59              |
| 49:28:3873:G:H2'   | 49:28:3874:G:C8    | 2.38                     | 0.59              |
| 49:28:4860:G:H2'   | 49:28:4861:G:H8    | 1.67                     | 0.59              |
| 13:13:8:MET:HG3    | 47:Q:166:TYR:HB3   | 1.85                     | 0.58              |
| 43:s:50:LYS:HZ1    | 43:s:98:ILE:HG13   | 1.68                     | 0.58              |
| 49:28:2735:G:H2'   | 49:28:2736:G:H8    | 1.68                     | 0.58              |
| 49:28:3916:G:H2'   | 49:28:3917:A:H8    | 1.68                     | 0.58              |
| 49:28:3911:C:H2'   | 49:28:3912:U:H6    | 1.67                     | 0.58              |
| 5:L4:45:ARG:HG3    | 5:L4:238:LEU:HD22  | 1.84                     | 0.58              |
| 22:23:57:VAL:HG11  | 22:23:122:ALA:HB3  | 1.84                     | 0.58              |
| 42:gg:46:ARG:HA    | 42:gg:70:GLN:HE22  | 1.67                     | 0.58              |
| 49:28:1538:U:H2'   | 49:28:1539:G:H8    | 1.68                     | 0.58              |
| 49:28:4601:U:H2'   | 49:28:4602:A:H8    | 1.67                     | 0.58              |
| 50:v:432:PRO:HB3   | 50:v:496:VAL:HG21  | 1.84                     | 0.58              |
| 49:28:4088:C:H2'   | 49:28:4089:G:H8    | 1.69                     | 0.58              |
| 7:L6:158:GLY:HA2   | 49:28:4942:C:H5''  | 1.85                     | 0.58              |
| 15:15:44:ARG:NH1   | 15:15:47:LYS:HB2   | 2.18                     | 0.58              |
| 45:EB:56:ILE:HD11  | 45:EB:112:VAL:HB   | 1.86                     | 0.58              |
| 49:28:3610:A:H2'   | 49:28:3611:A:H8    | 1.67                     | 0.58              |
| 18:19:105:LEU:HD23 | 18:19:138:LEU:HD22 | 1.86                     | 0.58              |
| 26:27:53:VAL:HG21  | 26:27:62:ILE:HG23  | 1.84                     | 0.58              |
| 48:ES:2949:U:H3    | 48:ES:3245:G:H1    | 1.51                     | 0.58              |
| 50:v:604:MET:HE1   | 50:v:729:LEU:HD23  | 1.86                     | 0.58              |
| 1:58:141:C:H5'     | 15:15:113:LEU:HD11 | 1.84                     | 0.58              |
| 16:bb:89:PRO:HD3   | 49:28:1914:C:H4'   | 1.86                     | 0.58              |
| 44:t:137:GLN:HE21  | 49:28:1993:C:H1'   | 1.69                     | 0.58              |
| 45:EB:223:VAL:HG22 | 45:EB:324:LEU:HG   | 1.84                     | 0.58              |
| 47:Q:144:LYS:HG2   | 49:28:1460:C:H5''  | 1.86                     | 0.58              |
| 21:22:23:LEU:HD11  | 21:22:83:LEU:HD21  | 1.85                     | 0.58              |
| 38:39:28:TRP:HA    | 38:39:33:ASN:HD22  | 1.69                     | 0.57              |
| 3:L8:87:PHE:CZ     | 49:28:4121:G:H5''  | 2.38                     | 0.57              |
| 8:L7:24:PHE:HB3    | 49:28:966:A:H2'    | 1.86                     | 0.57              |
| 8:L7:46:ARG:NH1    | 49:28:976:G:H5''   | 2.19                     | 0.57              |
| 37:38:36:VAL:HG13  | 37:38:43:TYR:HB2   | 1.87                     | 0.57              |
| 49:28:966:A:N6     | 49:28:2096:G:H2'   | 2.18                     | 0.57              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 17:17:69:ARG:HD2  | 49:28:4981:G:H1'   | 1.85                     | 0.57              |
| 49:28:4894:A:H5'' | 49:28:4895:C:C6    | 2.39                     | 0.57              |
| 17:17:84:PRO:HB2  | 17:17:87:SER:HB3   | 1.86                     | 0.57              |
| 31:32:79:VAL:HG13 | 31:32:84:GLU:HB2   | 1.85                     | 0.57              |
| 37:38:26:LYS:HE2  | 49:28:2696:A:H5'   | 1.87                     | 0.57              |
| 49:28:3861:A:H2'  | 49:28:3862:A:H8    | 1.69                     | 0.57              |
| 49:28:4935:C:H2'  | 49:28:4936:G:H8    | 1.69                     | 0.57              |
| 49:28:4940:C:H5'' | 49:28:4941:G:H5''  | 1.87                     | 0.57              |
| 48:ES:2947:G:O6   | 48:ES:3247:A:N1    | 2.37                     | 0.57              |
| 49:28:3652:A:H2'  | 49:28:3653:A:C8    | 2.40                     | 0.57              |
| 49:28:4238:G:H2'  | 49:28:4239:A:C8    | 2.39                     | 0.57              |
| 16:bb:18:ARG:HH22 | 16:bb:128:ARG:HH21 | 1.53                     | 0.57              |
| 3:L8:181:LYS:HB2  | 49:28:1577:G:C5    | 2.40                     | 0.57              |
| 33:34:69:LYS:HG3  | 33:34:73:HIS:CD2   | 2.39                     | 0.57              |
| 34:35:80:PRO:HD2  | 34:35:83:LEU:HD12  | 1.87                     | 0.57              |
| 49:28:162:A:H2'   | 49:28:163:A:H8     | 1.68                     | 0.57              |
| 49:28:260:C:H2'   | 49:28:261:G:H8     | 1.69                     | 0.57              |
| 49:28:647:G:H3'   | 49:28:648:G:H8     | 1.70                     | 0.57              |
| 49:28:3910:C:H2'  | 49:28:3911:C:C6    | 2.40                     | 0.57              |
| 49:28:4274:A:H2'  | 49:28:4275:G:H8    | 1.69                     | 0.57              |
| 7:L6:115:MET:HE3  | 7:L6:116:PRO:HD2   | 1.86                     | 0.57              |
| 38:39:23:ILE:HG23 | 38:39:38:ASN:HB2   | 1.85                     | 0.57              |
| 49:28:2557:G:O6   | 49:28:2570:U:O4    | 2.23                     | 0.57              |
| 8:L7:46:ARG:HH11  | 49:28:976:G:H5''   | 1.70                     | 0.56              |
| 49:28:956:A:H1'   | 49:28:2076:G:H5''  | 1.86                     | 0.56              |
| 49:28:1292:C:H3'  | 49:28:1293:G:H21   | 1.70                     | 0.56              |
| 49:28:3916:G:H2'  | 49:28:3917:A:C8    | 2.40                     | 0.56              |
| 3:L8:30:ARG:HH12  | 3:L8:33:ASP:CG     | 2.13                     | 0.56              |
| 28:29:5:LYS:HE2   | 28:29:8:THR:HB     | 1.87                     | 0.56              |
| 45:EB:32:LEU:HA   | 45:EB:35:LEU:HD23  | 1.87                     | 0.56              |
| 48:ES:3580:G:H3'  | 48:ES:3581:C:H5''  | 1.87                     | 0.56              |
| 49:28:178:C:H2'   | 49:28:179:G:C8     | 2.40                     | 0.56              |
| 49:28:1857:C:H2'  | 49:28:1858:A:C8    | 2.39                     | 0.56              |
| 50:v:609:PHE:HE1  | 50:v:701:ARG:HB3   | 1.70                     | 0.56              |
| 6:L5:65:ALA:HB2   | 6:L5:74:ILE:HD13   | 1.87                     | 0.56              |
| 18:19:66:ASN:O    | 18:19:70:ARG:HG2   | 2.05                     | 0.56              |
| 43:s:31:GLY:HA3   | 43:s:190:GLN:HE22  | 1.71                     | 0.56              |
| 43:s:132:PRO:HB3  | 43:s:147:ILE:HD11  | 1.86                     | 0.56              |
| 44:t:128:THR:HA   | 44:t:131:GLU:HG2   | 1.88                     | 0.56              |
| 45:EB:75:ALA:HB1  | 45:EB:118:ILE:HG23 | 1.88                     | 0.56              |
| 46:u:180:VAL:HA   | 46:u:183:ILE:HG12  | 1.87                     | 0.56              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:978:G:N2     | 49:28:1277:G:H22   | 2.04                     | 0.56              |
| 49:28:1942:A:H2'   | 49:28:1943:A:H8    | 1.70                     | 0.56              |
| 49:28:3880:G:H2'   | 49:28:3881:G:C8    | 2.40                     | 0.56              |
| 25:26:47:MET:HE2   | 25:26:115:ARG:HD2  | 1.86                     | 0.56              |
| 26:27:54:THR:H     | 26:27:57:MET:HE2   | 1.70                     | 0.56              |
| 36:37:21:ARG:HE    | 36:37:39:TYR:HA    | 1.69                     | 0.56              |
| 45:EB:237:ALA:HB1  | 45:EB:308:LEU:HB3  | 1.87                     | 0.56              |
| 49:28:132:G:C2     | 49:28:133:C:H1'    | 2.41                     | 0.56              |
| 49:28:262:G:H2'    | 49:28:263:G:H8     | 1.70                     | 0.56              |
| 49:28:2539:C:H2'   | 49:28:2540:C:H6    | 1.71                     | 0.56              |
| 10:L9:111:LEU:HD21 | 10:L9:125:ARG:HG3  | 1.87                     | 0.56              |
| 44:t:138:SER:HA    | 49:28:1976:G:H21   | 1.71                     | 0.56              |
| 49:28:2770:C:H2'   | 49:28:2771:G:H8    | 1.70                     | 0.56              |
| 50:v:669:VAL:HG11  | 50:v:707:VAL:HB    | 1.87                     | 0.56              |
| 5:L4:312:ARG:HB3   | 49:28:2274:C:H5'   | 1.88                     | 0.56              |
| 42:gg:108:MET:O    | 42:gg:112:ARG:HG2  | 2.05                     | 0.56              |
| 47:Q:61:LEU:HD21   | 47:Q:66:MET:HB3    | 1.88                     | 0.56              |
| 49:28:697:G:H2'    | 49:28:698:G:H8     | 1.71                     | 0.56              |
| 50:v:527:LEU:HD21  | 50:v:557:CYS:HB3   | 1.87                     | 0.56              |
| 50:v:594:LYS:HA    | 50:v:856:ASP:HB2   | 1.87                     | 0.56              |
| 9:aa:98:ILE:HG21   | 49:28:4125:C:H4'   | 1.88                     | 0.56              |
| 16:bb:168:TYR:CE2  | 16:bb:172:LYS:HD2  | 2.41                     | 0.56              |
| 45:EB:35:LEU:HD11  | 45:EB:108:ILE:HD13 | 1.87                     | 0.56              |
| 48:ES:3239:G:H2'   | 48:ES:3240:A:C8    | 2.40                     | 0.56              |
| 49:28:2520:C:H2'   | 49:28:2521:G:C8    | 2.41                     | 0.56              |
| 49:28:2539:C:H2'   | 49:28:2540:C:C6    | 2.41                     | 0.56              |
| 1:58:148:A:H2'     | 1:58:149:G:C8      | 2.41                     | 0.56              |
| 13:13:21:ARG:HB3   | 15:15:197:THR:HG22 | 1.88                     | 0.56              |
| 49:28:1339:U:H2'   | 49:28:1340:C:C6    | 2.41                     | 0.56              |
| 3:L8:14:SER:H      | 3:L8:17:ARG:HG3    | 1.71                     | 0.55              |
| 8:L7:161:ILE:HB    | 8:L7:166:ILE:HD12  | 1.87                     | 0.55              |
| 11:10:95:HIS:HD2   | 11:10:128:ARG:HD3  | 1.71                     | 0.55              |
| 19:20:127:MET:HE1  | 20:21:155:PRO:HA   | 1.86                     | 0.55              |
| 49:28:1066:G:H2'   | 49:28:1067:G:H8    | 1.71                     | 0.55              |
| 18:19:105:LEU:HD13 | 18:19:135:LYS:HD2  | 1.87                     | 0.55              |
| 20:21:35:LYS:HE2   | 49:28:1824:G:H5''  | 1.88                     | 0.55              |
| 31:32:89:LEU:HD12  | 31:32:90:MET:HG2   | 1.87                     | 0.55              |
| 49:28:3771:C:H2'   | 49:28:3772:U:C6    | 2.42                     | 0.55              |
| 4:L3:47:LEU:HB2    | 4:L3:84:MET:HE3    | 1.89                     | 0.55              |
| 16:bb:27:VAL:HG22  | 16:bb:101:ARG:HB2  | 1.88                     | 0.55              |
| 18:19:105:LEU:HD22 | 18:19:135:LYS:HG3  | 1.89                     | 0.55              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 44:t:137:GLN:NE2  | 49:28:1993:C:H1'   | 2.22                     | 0.55              |
| 45:EB:159:PRO:HD3 | 45:EB:325:LEU:HD11 | 1.88                     | 0.55              |
| 49:28:2793:G:H5'  | 49:28:2794:C:H5''  | 1.89                     | 0.55              |
| 49:28:2845:A:H61  | 49:28:3843:C:N4    | 1.99                     | 0.55              |
| 50:v:587:SER:HB2  | 50:v:605:LYS:HG3   | 1.87                     | 0.55              |
| 5:L4:330:PRO:HD3  | 8:L7:46:ARG:HH21   | 1.71                     | 0.55              |
| 6:L5:67:ALA:HA    | 6:L5:72:ASP:HB3    | 1.88                     | 0.55              |
| 8:L7:104:VAL:HG13 | 8:L7:135:VAL:HG12  | 1.89                     | 0.55              |
| 19:20:164:LYS:HB2 | 19:20:165:PRO:HD3  | 1.88                     | 0.55              |
| 49:28:679:C:H2'   | 49:28:680:G:H8     | 1.72                     | 0.55              |
| 49:28:2386:U:H2'  | 49:28:2387:G:H8    | 1.71                     | 0.55              |
| 49:28:4635:A:H8   | 49:28:5048:A:H61   | 1.55                     | 0.55              |
| 4:L3:89:ILE:HG22  | 4:L3:162:VAL:HG23  | 1.88                     | 0.55              |
| 39:40:92:THR:HG22 | 39:40:94:ASN:H     | 1.72                     | 0.55              |
| 49:28:129:C:H2'   | 49:28:130:C:C6     | 2.42                     | 0.55              |
| 49:28:162:A:H2'   | 49:28:163:A:C8     | 2.42                     | 0.55              |
| 49:28:1450:C:H2'  | 49:28:1451:G:C8    | 2.41                     | 0.55              |
| 49:28:2495:U:H2'  | 49:28:2496:G:H8    | 1.72                     | 0.55              |
| 49:28:3770:U:H2'  | 49:28:3771:C:H6    | 1.71                     | 0.55              |
| 49:28:4889:G:H2'  | 49:28:4890:G:H8    | 1.72                     | 0.55              |
| 8:L7:89:ALA:HB2   | 8:L7:124:LEU:HD21  | 1.88                     | 0.55              |
| 11:10:95:HIS:CD2  | 11:10:128:ARG:HD3  | 2.41                     | 0.55              |
| 43:s:120:GLU:HG3  | 43:s:159:GLN:HE22  | 1.71                     | 0.55              |
| 49:28:3732:A:H2'  | 49:28:3733:A:C8    | 2.42                     | 0.55              |
| 49:28:3945:A:H2'  | 49:28:3946:G:C8    | 2.42                     | 0.55              |
| 50:v:501:VAL:HG11 | 50:v:813:VAL:HB    | 1.88                     | 0.55              |
| 6:L5:35:ARG:HB2   | 49:28:4325:A:C2    | 2.41                     | 0.55              |
| 7:L6:62:SER:HB2   | 49:28:1236:C:O2'   | 2.06                     | 0.55              |
| 11:10:38:ARG:HD3  | 11:10:83:ASP:HB2   | 1.89                     | 0.55              |
| 19:20:13:VAL:HG23 | 19:20:62:VAL:HB    | 1.89                     | 0.55              |
| 49:28:325:U:H2'   | 49:28:326:C:C6     | 2.42                     | 0.55              |
| 49:28:651:C:H2'   | 49:28:652:G:C8     | 2.40                     | 0.55              |
| 49:28:3734:U:H2'  | 49:28:3735:G:O4'   | 2.07                     | 0.55              |
| 7:L6:169:LYS:HG2  | 7:L6:177:LEU:HD23  | 1.89                     | 0.55              |
| 49:28:1509:C:H2'  | 49:28:1510:G:H8    | 1.71                     | 0.55              |
| 49:28:1867:A:H2'  | 49:28:1868:A:C8    | 2.42                     | 0.55              |
| 49:28:2457:G:H21  | 49:28:3672:G:N2    | 2.05                     | 0.55              |
| 49:28:3848:U:H2'  | 49:28:3849:A:C8    | 2.41                     | 0.55              |
| 49:28:4274:A:H2'  | 49:28:4275:G:C8    | 2.41                     | 0.55              |
| 12:11:42:GLN:HE22 | 12:11:117:ILE:HG12 | 1.70                     | 0.54              |
| 27:dd:51:GLY:HA2  | 47:Q:178:ARG:H     | 1.72                     | 0.54              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:2634:C:H2'   | 49:28:2635:U:H6    | 1.72                     | 0.54              |
| 49:28:3648:A:H1'   | 49:28:3785:A:N6    | 2.22                     | 0.54              |
| 49:28:1346:C:H2'   | 49:28:1347:G:H8    | 1.70                     | 0.54              |
| 49:28:1557:C:H2'   | 49:28:1558:A:H8    | 1.72                     | 0.54              |
| 49:28:2745:A:H2'   | 49:28:2746:A:C8    | 2.42                     | 0.54              |
| 49:28:3607:U:H2'   | 49:28:3608:A:C8    | 2.42                     | 0.54              |
| 49:28:3713:U:O2    | 49:28:3715:U:H5    | 1.90                     | 0.54              |
| 49:28:4378:A:O2'   | 49:28:4379:A:H2'   | 2.07                     | 0.54              |
| 3:L8:146:THR:HG22  | 3:L8:148:VAL:HG23  | 1.89                     | 0.54              |
| 11:10:87:ILE:HG12  | 11:10:138:ILE:HG12 | 1.89                     | 0.54              |
| 49:28:962:C:H2'    | 49:28:963:G:C8     | 2.42                     | 0.54              |
| 49:28:4951:G:H2'   | 49:28:4952:G:H8    | 1.73                     | 0.54              |
| 50:v:504:VAL:HG23  | 50:v:505:VAL:HG23  | 1.88                     | 0.54              |
| 9:aa:163:LYS:NZ    | 9:aa:166:ARG:HH22  | 2.05                     | 0.54              |
| 32:ee:69:VAL:HG11  | 49:28:4944:C:H1'   | 1.89                     | 0.54              |
| 49:28:469:C:H2'    | 49:28:470:A:H8     | 1.73                     | 0.54              |
| 49:28:2448:G:H2'   | 49:28:2449:A:C8    | 2.43                     | 0.54              |
| 49:28:3651:A:H2'   | 49:28:3652:A:C8    | 2.43                     | 0.54              |
| 49:28:3651:A:H2'   | 49:28:3652:A:H8    | 1.71                     | 0.54              |
| 49:28:648:G:H2'    | 49:28:649:A:H8     | 1.72                     | 0.54              |
| 49:28:3732:A:H2'   | 49:28:3733:A:H8    | 1.72                     | 0.54              |
| 49:28:3911:C:C2    | 49:28:3912:U:C5    | 2.95                     | 0.54              |
| 4:L3:79:VAL:HB     | 4:L3:331:VAL:HG23  | 1.90                     | 0.54              |
| 18:19:106:LEU:HB3  | 18:19:120:TYR:CE1  | 2.43                     | 0.54              |
| 49:28:3770:U:H2'   | 49:28:3771:C:C6    | 2.43                     | 0.54              |
| 49:28:4537:C:H2'   | 49:28:4538:G:C8    | 2.42                     | 0.54              |
| 50:v:500:SER:H     | 50:v:501:VAL:HG13  | 1.71                     | 0.54              |
| 50:v:742:GLU:HB3   | 50:v:820:LEU:HD12  | 1.89                     | 0.54              |
| 19:20:13:VAL:HG22  | 19:20:63:TYR:HB3   | 1.90                     | 0.54              |
| 34:35:74:LYS:HE2   | 49:28:133:C:C5     | 2.43                     | 0.54              |
| 45:EB:118:ILE:HG13 | 45:EB:195:ILE:HG22 | 1.90                     | 0.54              |
| 48:ES:2955:A:N1    | 48:ES:3239:G:O6    | 2.41                     | 0.54              |
| 49:28:3855:C:H2'   | 49:28:3856:A:H8    | 1.73                     | 0.54              |
| 4:L3:76:VAL:HG12   | 4:L3:334:LYS:HA    | 1.89                     | 0.54              |
| 18:19:79:GLY:O     | 49:28:3619:G:H4'   | 2.08                     | 0.54              |
| 19:20:1:MET:HB2    | 19:20:43:ARG:HH21  | 1.73                     | 0.54              |
| 19:20:160:ARG:HB2  | 49:28:1921:C:H1'   | 1.90                     | 0.54              |
| 33:34:60:ARG:HD3   | 33:34:61:PRO:HD2   | 1.90                     | 0.54              |
| 46:u:59:PRO:HB2    | 46:u:170:GLY:H     | 1.73                     | 0.54              |
| 48:ES:2943:C:H2'   | 48:ES:2944:G:H8    | 1.73                     | 0.54              |
| 1:58:49:G:H5'      | 34:35:47:ILE:HD11  | 1.90                     | 0.54              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 13:13:16:LYS:HG2  | 49:28:46:U:H5''   | 1.90                     | 0.54              |
| 46:u:16:GLU:HA    | 46:u:19:HIS:CD2   | 2.44                     | 0.54              |
| 49:28:1198:G:H2'  | 49:28:1199:G:C8   | 2.42                     | 0.54              |
| 49:28:1732:C:H2'  | 49:28:1733:G:C8   | 2.43                     | 0.54              |
| 5:L4:2:ALA:HB2    | 49:28:667:A:N7    | 2.23                     | 0.53              |
| 18:19:4:LEU:HD11  | 18:19:29:THR:HG23 | 1.89                     | 0.53              |
| 44:t:32:ILE:HG22  | 44:t:37:LEU:HB3   | 1.89                     | 0.53              |
| 45:EB:29:ASN:HD21 | 45:EB:334:THR:HA  | 1.73                     | 0.53              |
| 49:28:4948:C:H2'  | 49:28:4949:G:N2   | 2.23                     | 0.53              |
| 7:L6:61:ARG:HD3   | 49:28:1237:C:C2   | 2.44                     | 0.53              |
| 49:28:1199:G:H2'  | 49:28:1200:G:C8   | 2.42                     | 0.53              |
| 49:28:4126:C:H5'' | 49:28:4127:A:H5'' | 1.90                     | 0.53              |
| 48:ES:2943:C:H2'  | 48:ES:2944:G:C8   | 2.43                     | 0.53              |
| 49:28:3697:U:H5'' | 49:28:3698:G:H5'  | 1.91                     | 0.53              |
| 49:28:5006:U:H4'  | 49:28:5007:A:H5'  | 1.89                     | 0.53              |
| 49:28:4708:A:N3   | 49:28:4709:U:H5'  | 2.24                     | 0.53              |
| 2:5:110:G:H2'     | 2:5:111:C:C6      | 2.43                     | 0.53              |
| 7:L6:73:ARG:HD3   | 49:28:983:C:C6    | 2.44                     | 0.53              |
| 6:L5:64:ILE:HG13  | 6:L5:105:LEU:HD21 | 1.89                     | 0.53              |
| 15:15:68:ARG:HE   | 15:15:128:LYS:HE2 | 1.73                     | 0.53              |
| 29:30:29:LEU:HD22 | 29:30:91:VAL:HG11 | 1.89                     | 0.53              |
| 30:31:37:GLY:O    | 30:31:41:ARG:HG3  | 2.09                     | 0.53              |
| 40:42:17:LYS:HE2  | 40:42:19:GLN:HE21 | 1.74                     | 0.53              |
| 44:t:90:ARG:HD3   | 44:t:95:GLN:H     | 1.74                     | 0.53              |
| 49:28:3932:U:H2'  | 49:28:3933:G:H8   | 1.74                     | 0.53              |
| 49:28:3610:A:H2'  | 49:28:3611:A:C8   | 2.44                     | 0.53              |
| 49:28:4088:C:H2'  | 49:28:4089:G:C8   | 2.44                     | 0.53              |
| 5:L4:305:PRO:HB3  | 47:Q:38:ARG:HH12  | 1.73                     | 0.53              |
| 18:19:71:ARG:HH12 | 49:28:3604:A:H5'' | 1.74                     | 0.53              |
| 44:t:61:LYS:HG2   | 44:t:72:GLU:HG2   | 1.91                     | 0.53              |
| 49:28:496:G:O2'   | 49:28:497:G:H5'   | 2.08                     | 0.53              |
| 49:28:2098:G:H2'  | 49:28:2099:C:C6   | 2.43                     | 0.53              |
| 49:28:2723:U:H2'  | 49:28:2724:G:C8   | 2.43                     | 0.53              |
| 4:L3:220:ILE:HG12 | 4:L3:278:THR:HG23 | 1.89                     | 0.53              |
| 39:40:68:MET:HG2  | 39:40:79:PRO:HA   | 1.90                     | 0.53              |
| 49:28:1893:C:H1'  | 49:28:1937:C:O2   | 2.09                     | 0.53              |
| 49:28:163:A:H2'   | 49:28:164:G:H8    | 1.74                     | 0.53              |
| 49:28:1804:A:H5'' | 49:28:1806:G:C8   | 2.44                     | 0.53              |
| 49:28:2478:C:H2'  | 49:28:2479:G:H8   | 1.74                     | 0.53              |
| 49:28:4756:C:H5'  | 49:28:4757:C:OP1  | 2.09                     | 0.53              |
| 7:L6:165:VAL:HG11 | 7:L6:178:VAL:HG13 | 1.91                     | 0.52              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 10:L9:95:VAL:HG22  | 39:40:56:LEU:HB3   | 1.90                     | 0.52              |
| 15:15:184:ILE:HD12 | 49:28:99:A:H5''    | 1.91                     | 0.52              |
| 47:Q:181:ARG:HH22  | 49:28:1391:A:H5'   | 1.73                     | 0.52              |
| 49:28:3784:A:O2'   | 49:28:3785:A:H3'   | 2.08                     | 0.52              |
| 49:28:4935:C:H2'   | 49:28:4936:G:C8    | 2.44                     | 0.52              |
| 50:v:91:GLN:HE22   | 50:v:359:PRO:HA    | 1.73                     | 0.52              |
| 32:ee:7:CYS:HB2    | 32:ee:103:VAL:HG23 | 1.90                     | 0.52              |
| 43:s:45:MET:HG2    | 44:t:123:ARG:NH1   | 2.25                     | 0.52              |
| 4:L3:154:LYS:HD3   | 4:L3:191:ALA:HA    | 1.91                     | 0.52              |
| 5:L4:77:PRO:O      | 5:L4:90:GLY:HA2    | 2.09                     | 0.52              |
| 9:aa:201:GLU:HA    | 9:aa:230:MET:SD    | 2.49                     | 0.52              |
| 22:23:107:ASN:HD21 | 22:23:111:GLU:HB2  | 1.74                     | 0.52              |
| 49:28:1461:C:H2'   | 49:28:1462:A:H8    | 1.72                     | 0.52              |
| 49:28:2477:A:H2'   | 49:28:2478:C:C6    | 2.44                     | 0.52              |
| 49:28:3700:C:H2'   | 49:28:3746:A:H61   | 1.74                     | 0.52              |
| 49:28:4172:A:H3'   | 49:28:4173:G:H8    | 1.74                     | 0.52              |
| 49:28:4699:U:H1'   | 49:28:4700:A:H5''  | 1.91                     | 0.52              |
| 49:28:4751:G:H1    | 49:28:4948:C:H5    | 1.56                     | 0.52              |
| 1:58:67:U:H2'      | 1:58:68:G:C8       | 2.43                     | 0.52              |
| 16:bb:54:TYR:HD2   | 16:bb:145:VAL:HG21 | 1.75                     | 0.52              |
| 24:cc:81:LEU:HD11  | 24:cc:99:ILE:HG12  | 1.92                     | 0.52              |
| 49:28:4219:A:H2'   | 49:28:4220:A:C8    | 2.45                     | 0.52              |
| 12:11:56:THR:HG23  | 12:11:63:ARG:HA    | 1.91                     | 0.52              |
| 44:t:146:ARG:NH1   | 44:t:146:ARG:HA    | 2.25                     | 0.52              |
| 49:28:461:G:H2'    | 49:28:462:G:C8     | 2.45                     | 0.52              |
| 49:28:1984:A:H2'   | 49:28:2011:C:H5'   | 1.91                     | 0.52              |
| 2:5:92:C:H2'       | 2:5:93:G:C8        | 2.43                     | 0.52              |
| 4:L3:57:VAL:HG22   | 4:L3:73:VAL:HG12   | 1.92                     | 0.52              |
| 16:bb:54:TYR:CD2   | 16:bb:145:VAL:HG21 | 2.45                     | 0.52              |
| 46:u:112:ALA:HB2   | 46:u:135:PRO:HB2   | 1.92                     | 0.52              |
| 49:28:987:C:H2'    | 49:28:988:C:C6     | 2.45                     | 0.52              |
| 5:L4:56:GLU:HG3    | 5:L4:57:LEU:HD22   | 1.91                     | 0.52              |
| 7:L6:153:LEU:HB3   | 7:L6:197:VAL:HG13  | 1.92                     | 0.52              |
| 49:28:138:G:H2'    | 49:28:139:G:H8     | 1.73                     | 0.52              |
| 49:28:1557:C:H2'   | 49:28:1558:A:C8    | 2.45                     | 0.52              |
| 49:28:4130:C:H2'   | 49:28:4131:G:H8    | 1.74                     | 0.52              |
| 4:L3:116:ARG:HD3   | 4:L3:122:TRP:CD2   | 2.44                     | 0.52              |
| 34:35:31:LEU:HB3   | 34:35:47:ILE:HG22  | 1.92                     | 0.52              |
| 49:28:1346:C:H2'   | 49:28:1347:G:C8    | 2.45                     | 0.52              |
| 49:28:2465:C:H1'   | 49:28:3672:G:H22   | 1.74                     | 0.52              |
| 49:28:3641:U:H5    | 49:28:3646:A:N7    | 2.08                     | 0.52              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:3775:A:H2'   | 49:28:3776:G:O4'   | 2.09                     | 0.52              |
| 8:L7:73:MET:HE1    | 49:28:1088:C:O2    | 2.11                     | 0.51              |
| 49:28:1559:G:H2'   | 49:28:1560:A:H8    | 1.75                     | 0.51              |
| 49:28:2762:G:H2'   | 49:28:2764:A:H5''  | 1.91                     | 0.51              |
| 49:28:4737:G:C6    | 49:28:4963:G:C6    | 2.98                     | 0.51              |
| 50:v:682:GLY:HA2   | 50:v:722:ILE:HG23  | 1.91                     | 0.51              |
| 19:20:15:ARG:HH12  | 19:20:18:PRO:HG3   | 1.75                     | 0.51              |
| 32:ee:65:ASN:HB2   | 32:ee:67:THR:HG22  | 1.92                     | 0.51              |
| 44:t:61:LYS:HD2    | 44:t:74:VAL:HG22   | 1.93                     | 0.51              |
| 49:28:1472:C:H2'   | 49:28:1473:U:C6    | 2.45                     | 0.51              |
| 1:58:124:U:H4'     | 1:58:125:C:O5'     | 2.09                     | 0.51              |
| 19:20:107:THR:O    | 19:20:111:ARG:HD3  | 2.10                     | 0.51              |
| 49:28:1884:C:H2'   | 49:28:1885:G:H8    | 1.74                     | 0.51              |
| 19:20:126:ILE:HD11 | 19:20:129:VAL:HG23 | 1.92                     | 0.51              |
| 32:ee:63:LYS:HG2   | 32:ee:64:PRO:HD2   | 1.92                     | 0.51              |
| 49:28:1298:C:H2'   | 49:28:1299:G:H8    | 1.74                     | 0.51              |
| 49:28:1804:A:H4'   | 49:28:1805:A:O5'   | 2.09                     | 0.51              |
| 1:58:2:G:N3        | 1:58:2:G:H2'       | 2.25                     | 0.51              |
| 16:bb:37:ARG:HD2   | 16:bb:108:ILE:HD11 | 1.93                     | 0.51              |
| 15:15:45:PRO:O     | 15:15:49:ARG:HG3   | 2.10                     | 0.51              |
| 27:dd:85:GLN:NE2   | 49:28:508:G:H21    | 2.07                     | 0.51              |
| 44:t:56:LEU:HB2    | 44:t:58:ILE:HD11   | 1.91                     | 0.51              |
| 2:5:55:A:H4'       | 12:11:155:HIS:HB2  | 1.92                     | 0.51              |
| 12:11:85:LYS:HB3   | 12:11:115:LEU:HD12 | 1.92                     | 0.51              |
| 49:28:153:G:H2'    | 49:28:154:G:H8     | 1.75                     | 0.51              |
| 49:28:2607:C:H2'   | 49:28:2608:G:H8    | 1.75                     | 0.51              |
| 49:28:4174:U:H2'   | 49:28:4175:G:C8    | 2.45                     | 0.51              |
| 1:58:96:C:H5''     | 34:35:66:LYS:HG2   | 1.93                     | 0.51              |
| 4:L3:206:PRO:HG2   | 4:L3:209:GLN:HG2   | 1.92                     | 0.51              |
| 15:15:192:TRP:NE1  | 49:28:48:G:H5'     | 2.26                     | 0.51              |
| 16:bb:8:VAL:HG12   | 16:bb:117:ARG:HG3  | 1.93                     | 0.51              |
| 37:38:12:LEU:HD21  | 37:38:56:LEU:HD11  | 1.93                     | 0.51              |
| 38:39:45:ARG:HH21  | 49:28:2796:G:H5'   | 1.75                     | 0.51              |
| 43:s:134:LYS:HE3   | 43:s:177:MET:HE3   | 1.93                     | 0.51              |
| 49:28:4680:G:H2'   | 49:28:4681:A:C8    | 2.46                     | 0.51              |
| 49:28:5003:U:H2'   | 49:28:5004:C:C6    | 2.46                     | 0.51              |
| 4:L3:41:VAL:HA     | 4:L3:187:GLY:HA3   | 1.93                     | 0.51              |
| 12:11:55:TYR:HA    | 12:11:64:ARG:HE    | 1.76                     | 0.51              |
| 24:cc:95:THR:HG22  | 24:cc:139:ARG:HA   | 1.92                     | 0.51              |
| 42:gg:46:ARG:HA    | 42:gg:70:GLN:NE2   | 2.26                     | 0.51              |
| 49:28:1476:C:H2'   | 49:28:1477:C:O4'   | 2.11                     | 0.51              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 49:28:1956:A:O2'  | 49:28:1957:U:H5'   | 2.11                     | 0.51              |
| 49:28:4466:C:H2'  | 49:28:4467:A:H8    | 1.76                     | 0.51              |
| 14:14:129:LYS:O   | 14:14:132:ARG:HG3  | 2.11                     | 0.51              |
| 34:35:28:LEU:HD21 | 34:35:32:ARG:HE    | 1.76                     | 0.51              |
| 45:EB:75:ALA:HB2  | 45:EB:113:HIS:HB3  | 1.92                     | 0.51              |
| 49:28:1633:G:H2'  | 49:28:1641:G:N7    | 2.26                     | 0.51              |
| 49:28:2722:G:H2'  | 49:28:2723:U:C6    | 2.46                     | 0.51              |
| 49:28:3653:A:C2   | 49:28:3692:A:H4'   | 2.46                     | 0.51              |
| 50:v:305:MET:HE3  | 50:v:336:LEU:HD22  | 1.93                     | 0.51              |
| 50:v:722:ILE:HB   | 50:v:723:PRO:HD3   | 1.93                     | 0.51              |
| 3:L8:117:GLU:HG2  | 3:L8:124:GLY:N     | 2.26                     | 0.50              |
| 4:L3:317:LEU:HB2  | 4:L3:372:SER:HB2   | 1.93                     | 0.50              |
| 49:28:1676:C:H41  | 49:28:4378:A:H5''  | 1.75                     | 0.50              |
| 3:L8:234:LYS:HG2  | 3:L8:238:ILE:HD12  | 1.93                     | 0.50              |
| 7:L6:120:PRO:O    | 42:gg:112:ARG:HD2  | 2.12                     | 0.50              |
| 12:11:10:ASN:HB3  | 12:11:13:ARG:HG3   | 1.93                     | 0.50              |
| 17:17:83:TRP:O    | 49:28:3856:A:H5''  | 2.11                     | 0.50              |
| 1:58:4:C:H2'      | 1:58:5:U:H6        | 1.77                     | 0.50              |
| 1:58:9:A:H2'      | 1:58:10:G:H8       | 1.76                     | 0.50              |
| 1:58:19:C:H2'     | 1:58:20:A:H8       | 1.75                     | 0.50              |
| 15:15:120:TRP:HE1 | 15:15:123:GLU:HB3  | 1.77                     | 0.50              |
| 32:ee:28:LEU:HB2  | 32:ee:84:VAL:HG12  | 1.91                     | 0.50              |
| 42:gg:103:HIS:CD2 | 42:gg:106:LEU:HD22 | 2.42                     | 0.50              |
| 45:EB:227:ASP:HB3 | 45:EB:320:LYS:HG3  | 1.94                     | 0.50              |
| 49:28:2824:C:H2'  | 49:28:2825:A:C8    | 2.46                     | 0.50              |
| 49:28:3599:A:H2'  | 49:28:3600:G:C8    | 2.44                     | 0.50              |
| 49:28:4459:U:H2'  | 49:28:4460:U:H6    | 1.74                     | 0.50              |
| 5:L4:242:PRO:HB2  | 49:28:2297:G:H4'   | 1.92                     | 0.50              |
| 32:ee:46:ARG:H    | 32:ee:107:PRO:HG2  | 1.77                     | 0.50              |
| 49:28:4872:G:H4'  | 49:28:4873:G:H5'   | 1.92                     | 0.50              |
| 7:L6:49:ASN:N     | 7:L6:64:MET:HE1    | 2.27                     | 0.50              |
| 12:11:136:ARG:HD2 | 12:11:155:HIS:CE1  | 2.46                     | 0.50              |
| 22:23:43:LYS:HA   | 49:28:4508:C:H4'   | 1.94                     | 0.50              |
| 27:dd:102:ASP:HB3 | 27:dd:105:ARG:HB3  | 1.94                     | 0.50              |
| 39:40:86:LYS:HB3  | 39:40:88:LYS:HG2   | 1.93                     | 0.50              |
| 43:s:63:LYS:HE3   | 49:28:1960:A:C8    | 2.47                     | 0.50              |
| 49:28:3611:A:H2   | 49:28:5016:A:H8    | 1.59                     | 0.50              |
| 49:28:4992:G:H2'  | 49:28:4993:G:C8    | 2.46                     | 0.50              |
| 1:58:37:A:OP2     | 34:35:89:ARG:HD2   | 2.11                     | 0.50              |
| 2:5:57:C:H2'      | 2:5:58:A:H8        | 1.76                     | 0.50              |
| 6:L5:37:VAL:HB    | 6:L5:50:ARG:HD3    | 1.93                     | 0.50              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 12:11:15:LEU:HD21 | 12:11:134:LEU:HB3  | 1.94                     | 0.50              |
| 18:19:106:LEU:HB3 | 18:19:120:TYR:HE1  | 1.77                     | 0.50              |
| 35:36:15:HIS:HD2  | 35:36:17:VAL:HG23  | 1.76                     | 0.50              |
| 49:28:3868:G:H22  | 49:28:3900:G:H1'   | 1.75                     | 0.50              |
| 50:v:594:LYS:HB3  | 50:v:854:PHE:HA    | 1.94                     | 0.50              |
| 8:L7:133:ARG:HA   | 8:L7:136:GLU:HG3   | 1.92                     | 0.50              |
| 20:21:87:LYS:NZ   | 49:28:4305:G:H1    | 2.06                     | 0.50              |
| 48:ES:2947:G:N1   | 48:ES:3247:A:C2    | 2.69                     | 0.50              |
| 49:28:1999:A:H2'  | 49:28:2000:G:C4    | 2.46                     | 0.50              |
| 49:28:4956:A:H8   | 49:28:4956:A:OP2   | 1.95                     | 0.50              |
| 30:31:33:ILE:O    | 30:31:36:VAL:HG22  | 2.12                     | 0.50              |
| 3:L8:242:ARG:HG2  | 49:28:3745:U:H4'   | 1.94                     | 0.50              |
| 4:L3:217:ILE:HD13 | 4:L3:284:ILE:HD11  | 1.94                     | 0.50              |
| 4:L3:293:ILE:HA   | 4:L3:298:LEU:HA    | 1.94                     | 0.50              |
| 13:13:14:PHE:HE1  | 15:15:198:LEU:HD11 | 1.76                     | 0.50              |
| 21:22:42:PHE:CZ   | 21:22:46:ARG:HG3   | 2.47                     | 0.50              |
| 49:28:2743:A:H2'  | 49:28:2744:A:C8    | 2.47                     | 0.50              |
| 49:28:3707:U:H2'  | 49:28:3708:C:C6    | 2.47                     | 0.50              |
| 49:28:4258:C:H2'  | 49:28:4259:C:H6    | 1.76                     | 0.49              |
| 49:28:4538:G:H2'  | 49:28:4539:U:C6    | 2.47                     | 0.49              |
| 50:v:27:HIS:O     | 50:v:30:HIS:HB2    | 2.13                     | 0.49              |
| 14:14:49:ALA:HB2  | 19:20:100:LEU:HD11 | 1.94                     | 0.49              |
| 49:28:451:C:O2'   | 49:28:1293:G:H2'   | 2.13                     | 0.49              |
| 49:28:1472:C:H2'  | 49:28:1473:U:H6    | 1.76                     | 0.49              |
| 50:v:402:VAL:HG13 | 50:v:411:TYR:HB2   | 1.94                     | 0.49              |
| 50:v:505:VAL:O    | 50:v:547:ALA:HA    | 2.12                     | 0.49              |
| 4:L3:60:VAL:HG12  | 4:L3:62:ARG:HG2    | 1.95                     | 0.49              |
| 15:15:53:TYR:HB2  | 15:15:133:ILE:HD13 | 1.95                     | 0.49              |
| 49:28:58:G:H4'    | 49:28:59:A:H4'     | 1.94                     | 0.49              |
| 49:28:1598:C:H2'  | 49:28:1599:G:H8    | 1.76                     | 0.49              |
| 49:28:3713:U:O2   | 49:28:3715:U:C5    | 2.64                     | 0.49              |
| 6:L5:33:ARG:HA    | 6:L5:36:LEU:HB2    | 1.93                     | 0.49              |
| 40:42:63:THR:HG23 | 40:42:87:ARG:HD3   | 1.95                     | 0.49              |
| 45:EB:20:LYS:HA   | 45:EB:23:MET:HG2   | 1.94                     | 0.49              |
| 49:28:1233:G:C2   | 49:28:1234:G:C5    | 3.01                     | 0.49              |
| 49:28:1298:C:H2'  | 49:28:1299:G:C8    | 2.48                     | 0.49              |
| 49:28:2306:G:H1'  | 49:28:2332:A:N6    | 2.27                     | 0.49              |
| 49:28:3861:A:H2'  | 49:28:3862:A:C8    | 2.48                     | 0.49              |
| 4:L3:160:ILE:HD13 | 4:L3:194:LEU:HD13  | 1.94                     | 0.49              |
| 49:28:262:G:H2'   | 49:28:263:G:C8     | 2.46                     | 0.49              |
| 49:28:4260:U:H2'  | 49:28:4261:C:C6    | 2.48                     | 0.49              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:4260:U:H2'   | 49:28:4261:C:H6    | 1.77                     | 0.49              |
| 19:20:76:LYS:HB3   | 19:20:131:GLU:OE1  | 2.12                     | 0.49              |
| 49:28:1314:C:C2    | 49:28:1315:C:C5    | 3.00                     | 0.49              |
| 49:28:1327:C:H2'   | 49:28:1328:G:C8    | 2.47                     | 0.49              |
| 49:28:4413:C:H5    | 49:28:4429:C:H42   | 1.60                     | 0.49              |
| 9:aa:101:LYS:HB3   | 24:cc:42:THR:HG23  | 1.95                     | 0.49              |
| 13:13:142:GLU:HA   | 13:13:145:LYS:HE2  | 1.94                     | 0.49              |
| 17:17:32:THR:HG23  | 17:17:91:LEU:HD21  | 1.94                     | 0.49              |
| 37:38:34:PHE:CE1   | 37:38:47:ILE:HD11  | 2.47                     | 0.49              |
| 45:EB:333:ILE:HG23 | 45:EB:334:THR:HG23 | 1.94                     | 0.49              |
| 49:28:1292:C:H3'   | 49:28:1293:G:N2    | 2.26                     | 0.49              |
| 49:28:2581:A:H1'   | 49:28:2654:C:O2'   | 2.12                     | 0.49              |
| 50:v:224:THR:HG21  | 50:v:353:MET:HG2   | 1.95                     | 0.49              |
| 4:L3:135:LYS:HA    | 4:L3:138:GLN:NE2   | 2.28                     | 0.49              |
| 27:dd:51:GLY:HA2   | 47:Q:178:ARG:N     | 2.28                     | 0.49              |
| 31:32:43:ASN:O     | 31:32:47:ARG:HG2   | 2.12                     | 0.49              |
| 44:t:60:VAL:HG22   | 44:t:73:VAL:HG22   | 1.94                     | 0.49              |
| 46:u:92:LYS:HE3    | 46:u:93:LEU:HD23   | 1.94                     | 0.49              |
| 7:L6:131:HIS:HB2   | 49:28:1281:G:C6    | 2.48                     | 0.49              |
| 9:aa:313:GLU:O     | 9:aa:317:LYS:HG2   | 2.12                     | 0.49              |
| 11:10:61:SER:HA    | 11:10:126:VAL:HG23 | 1.95                     | 0.49              |
| 10:L9:92:MET:HE2   | 10:L9:179:ILE:HG22 | 1.94                     | 0.49              |
| 32:ee:50:VAL:HG22  | 32:ee:69:VAL:HG12  | 1.95                     | 0.49              |
| 49:28:37:U:H2'     | 49:28:38:A:O4'     | 2.13                     | 0.49              |
| 49:28:1939:A:H5'   | 49:28:1940:G:H4'   | 1.95                     | 0.49              |
| 43:s:30:VAL:HB     | 43:s:189:ILE:HG22  | 1.94                     | 0.48              |
| 31:32:70:LEU:HD11  | 31:32:76:LYS:HG2   | 1.95                     | 0.48              |
| 34:35:91:MET:HA    | 34:35:94:ARG:HG3   | 1.95                     | 0.48              |
| 45:EB:246:ILE:HB   | 45:EB:305:PHE:HB2  | 1.95                     | 0.48              |
| 48:ES:3238:C:H2'   | 48:ES:3239:G:C8    | 2.48                     | 0.48              |
| 48:ES:3587:C:H2'   | 48:ES:3588:C:C6    | 2.48                     | 0.48              |
| 49:28:1461:C:H2'   | 49:28:1462:A:C8    | 2.48                     | 0.48              |
| 49:28:1990:A:H3'   | 49:28:1991:A:H5''  | 1.95                     | 0.48              |
| 49:28:4239:A:H2'   | 49:28:4240:G:H8    | 1.77                     | 0.48              |
| 50:v:594:LYS:H     | 50:v:854:PHE:C     | 2.22                     | 0.48              |
| 5:L4:7:LEU:HG      | 5:L4:21:ASN:HB3    | 1.94                     | 0.48              |
| 8:L7:32:LEU:O      | 8:L7:35:LYS:HG3    | 2.13                     | 0.48              |
| 10:L9:174:LYS:HG2  | 39:40:101:VAL:HG21 | 1.94                     | 0.48              |
| 40:42:4:VAL:HG23   | 40:42:93:LEU:HD13  | 1.96                     | 0.48              |
| 45:EB:12:ILE:HD11  | 45:EB:221:HIS:HA   | 1.94                     | 0.48              |
| 45:EB:291:MET:O    | 45:EB:294:VAL:HG12 | 2.14                     | 0.48              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:676:C:H2'    | 49:28:677:G:C8     | 2.47                     | 0.48              |
| 49:28:1955:G:H2'   | 49:28:1956:A:H8    | 1.78                     | 0.48              |
| 50:v:727:ARG:HG2   | 50:v:854:PHE:HB2   | 1.95                     | 0.48              |
| 2:5:3:C:H2'        | 2:5:4:U:C6         | 2.48                     | 0.48              |
| 4:L3:285:TYR:CD1   | 4:L3:363:ILE:HD13  | 2.48                     | 0.48              |
| 8:L7:61:ARG:NH2    | 8:L7:65:ARG:HH21   | 2.05                     | 0.48              |
| 16:bb:58:LEU:HD21  | 16:bb:74:ARG:HH21  | 1.78                     | 0.48              |
| 49:28:709:C:H1'    | 49:28:4942:C:H5    | 1.77                     | 0.48              |
| 49:28:2607:C:H2'   | 49:28:2608:G:C8    | 2.49                     | 0.48              |
| 11:10:204:GLY:HA3  | 11:10:208:LYS:HE2  | 1.95                     | 0.48              |
| 15:15:50:ARG:NH1   | 49:28:278:G:H4'    | 2.26                     | 0.48              |
| 42:gg:52:GLU:HB2   | 42:gg:61:VAL:HG23  | 1.95                     | 0.48              |
| 49:28:643:C:H2'    | 49:28:644:G:H8     | 1.79                     | 0.48              |
| 49:28:1338:G:H4'   | 49:28:1339:U:C6    | 2.49                     | 0.48              |
| 49:28:4467:A:O2'   | 49:28:4510:A:H1'   | 2.11                     | 0.48              |
| 5:L4:301:ALA:HB1   | 47:Q:132:LYS:HE3   | 1.95                     | 0.48              |
| 13:13:19:GLN:HE22  | 49:28:1518:A:H61   | 1.60                     | 0.48              |
| 20:21:87:LYS:HE3   | 49:28:4305:G:H22   | 1.78                     | 0.48              |
| 44:t:64:ILE:HA     | 44:t:69:ALA:HA     | 1.94                     | 0.48              |
| 45:EB:349:VAL:HG11 | 45:EB:355:LYS:HD3  | 1.95                     | 0.48              |
| 46:u:99:LEU:HA     | 46:u:102:LYS:HE2   | 1.95                     | 0.48              |
| 49:28:3911:C:H2'   | 49:28:3912:U:C6    | 2.47                     | 0.48              |
| 49:28:4239:A:H2'   | 49:28:4240:G:C8    | 2.48                     | 0.48              |
| 49:28:4563:U:C2    | 49:28:4564:A:C8    | 3.01                     | 0.48              |
| 50:v:27:HIS:HB2    | 50:v:139:THR:HG23  | 1.95                     | 0.48              |
| 1:58:19:C:H2'      | 1:58:20:A:C8       | 2.49                     | 0.48              |
| 6:L5:211:LEU:HB3   | 6:L5:219:TYR:HB2   | 1.96                     | 0.48              |
| 9:aa:128:LYS:HE2   | 49:28:3940:U:H5''  | 1.96                     | 0.48              |
| 16:bb:18:ARG:NH2   | 16:bb:128:ARG:HH21 | 2.12                     | 0.48              |
| 19:20:20:PRO:HA    | 19:20:23:ARG:HH22  | 1.79                     | 0.48              |
| 23:24:9:SER:HB3    | 23:24:11:TYR:HD2   | 1.78                     | 0.48              |
| 31:32:22:ARG:HE    | 31:32:36:ARG:HG3   | 1.79                     | 0.48              |
| 33:34:90:ARG:HG3   | 49:28:4122:G:H4'   | 1.95                     | 0.48              |
| 40:42:69:ARG:HD3   | 40:42:80:LYS:HD2   | 1.96                     | 0.48              |
| 46:u:124:LEU:HD23  | 46:u:124:LEU:H     | 1.79                     | 0.48              |
| 49:28:1338:G:H4'   | 49:28:1339:U:H6    | 1.77                     | 0.48              |
| 49:28:2845:A:N6    | 49:28:3843:C:H42   | 2.04                     | 0.48              |
| 1:58:141:C:H2'     | 1:58:142:U:C6      | 2.49                     | 0.48              |
| 19:20:116:ARG:HE   | 49:28:1926:C:H5'   | 1.79                     | 0.48              |
| 49:28:1340:C:H2'   | 49:28:1341:U:C6    | 2.49                     | 0.48              |
| 49:28:2409:U:H4'   | 49:28:2428:A:H4'   | 1.96                     | 0.48              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 49:28:4508:C:N3   | 49:28:4512:U:H5    | 2.12                     | 0.48              |
| 10:L9:92:MET:HE1  | 10:L9:161:ILE:HG13 | 1.95                     | 0.48              |
| 20:21:8:ARG:HD2   | 20:21:52:MET:HE1   | 1.96                     | 0.48              |
| 32:ee:54:LYS:HD3  | 49:28:443:G:H5''   | 1.95                     | 0.48              |
| 43:s:26:LYS:HE3   | 43:s:92:LYS:HE3    | 1.96                     | 0.48              |
| 49:28:1447:C:C2   | 49:28:1448:G:C8    | 3.02                     | 0.48              |
| 49:28:2568:C:H2'  | 49:28:2569:G:C8    | 2.49                     | 0.48              |
| 50:v:126:LEU:HD23 | 50:v:154:VAL:HG23  | 1.96                     | 0.48              |
| 1:58:144:U:H2'    | 1:58:145:C:C6      | 2.49                     | 0.48              |
| 6:L5:152:ARG:HG3  | 6:L5:154:THR:HG23  | 1.96                     | 0.48              |
| 8:L7:235:ARG:HB2  | 8:L7:238:GLN:HB2   | 1.96                     | 0.48              |
| 10:L9:41:ILE:HD13 | 10:L9:73:ILE:HD11  | 1.96                     | 0.48              |
| 12:11:60:PHE:HB3  | 49:28:4257:A:C2    | 2.49                     | 0.48              |
| 24:cc:65:ALA:HB2  | 34:35:69:LEU:HD11  | 1.95                     | 0.48              |
| 40:42:61:LYS:NZ   | 40:42:87:ARG:HH12  | 2.12                     | 0.48              |
| 45:EB:172:LYS:HB3 | 45:EB:354:LEU:HD11 | 1.95                     | 0.48              |
| 49:28:1170:G:H2'  | 49:28:1171:G:H8    | 1.78                     | 0.48              |
| 19:20:16:CYS:HB2  | 19:20:54:MET:SD    | 2.54                     | 0.47              |
| 33:34:64:LEU:HD23 | 33:34:67:LEU:HD12  | 1.95                     | 0.47              |
| 46:u:7:ARG:O      | 46:u:10:LEU:HG     | 2.14                     | 0.47              |
| 49:28:1193:C:H2'  | 49:28:1194:G:C8    | 2.49                     | 0.47              |
| 49:28:1911:C:H1'  | 49:28:1917:A:H2'   | 1.96                     | 0.47              |
| 4:L3:14:LEU:HD22  | 4:L3:17:LEU:HD13   | 1.95                     | 0.47              |
| 6:L5:53:VAL:HB    | 6:L5:159:VAL:HG13  | 1.96                     | 0.47              |
| 15:15:187:SER:H   | 15:15:190:ALA:HB3  | 1.77                     | 0.47              |
| 30:31:45:ALA:O    | 30:31:48:GLU:HG2   | 2.14                     | 0.47              |
| 31:32:22:ARG:HD3  | 31:32:31:ILE:HG23  | 1.96                     | 0.47              |
| 49:28:1645:C:H2'  | 49:28:1646:A:H8    | 1.79                     | 0.47              |
| 49:28:3865:A:H2'  | 49:28:3866:C:C6    | 2.49                     | 0.47              |
| 1:58:26:C:H2'     | 1:58:27:U:C6       | 2.49                     | 0.47              |
| 1:58:144:U:H2'    | 1:58:145:C:H6      | 1.79                     | 0.47              |
| 11:10:36:LEU:HD11 | 11:10:87:ILE:HD12  | 1.95                     | 0.47              |
| 26:27:91:LEU:H    | 26:27:117:LYS:HZ3  | 1.60                     | 0.47              |
| 49:28:1733:G:N3   | 49:28:4214:A:H2'   | 2.30                     | 0.47              |
| 49:28:1806:G:H2'  | 49:28:1807:C:H6    | 1.78                     | 0.47              |
| 49:28:2627:C:H41  | 49:28:4649:G:H1    | 1.62                     | 0.47              |
| 49:28:2634:C:H2'  | 49:28:2635:U:C6    | 2.49                     | 0.47              |
| 49:28:2764:A:H2'  | 49:28:2765:A:H8    | 1.79                     | 0.47              |
| 49:28:4727:A:H2'  | 49:28:4728:U:O4'   | 2.15                     | 0.47              |
| 4:L3:252:ALA:HB1  | 49:28:4524:G:N3    | 2.28                     | 0.47              |
| 49:28:4130:C:H2'  | 49:28:4131:G:C8    | 2.48                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:4927:G:H3'   | 49:28:4928:C:O2    | 2.14                     | 0.47              |
| 4:L3:128:LYS:HG3   | 49:28:4966:A:H5'   | 1.96                     | 0.47              |
| 15:15:6:TYR:HA     | 35:36:44:ILE:HD11  | 1.95                     | 0.47              |
| 19:20:78:PHE:CE1   | 19:20:102:THR:HG22 | 2.50                     | 0.47              |
| 21:22:36:ALA:HB3   | 21:22:65:ARG:HE    | 1.80                     | 0.47              |
| 23:24:44:ARG:HD2   | 49:28:3615:G:H1'   | 1.97                     | 0.47              |
| 42:gg:41:ASN:OD1   | 42:gg:44:ILE:HG12  | 2.14                     | 0.47              |
| 45:EB:88:HIS:ND1   | 45:EB:305:PHE:HB3  | 2.29                     | 0.47              |
| 46:u:14:VAL:HA     | 46:u:17:VAL:HG12   | 1.95                     | 0.47              |
| 47:Q:11:ARG:HG3    | 49:28:2081:C:H5''  | 1.97                     | 0.47              |
| 49:28:979:C:H2'    | 49:28:980:U:H6     | 1.79                     | 0.47              |
| 49:28:1195:G:H2'   | 49:28:1196:G:H8    | 1.80                     | 0.47              |
| 49:28:1884:C:H4'   | 49:28:2070:U:C4    | 2.50                     | 0.47              |
| 49:28:2503:G:H2'   | 49:28:2504:C:C6    | 2.49                     | 0.47              |
| 49:28:2521:G:H2'   | 49:28:2522:G:C8    | 2.49                     | 0.47              |
| 49:28:3721:U:H2'   | 49:28:3722:G:H8    | 1.80                     | 0.47              |
| 6:L5:129:GLU:HG3   | 6:L5:177:THR:HG21  | 1.95                     | 0.47              |
| 16:bb:12:ARG:HE    | 19:20:171:ARG:HH22 | 1.62                     | 0.47              |
| 20:21:14:MET:HE1   | 20:21:55:LYS:HB2   | 1.97                     | 0.47              |
| 23:24:35:LYS:HE2   | 23:24:51:TRP:CZ2   | 2.49                     | 0.47              |
| 32:ee:33:VAL:HG23  | 32:ee:38:GLU:HB2   | 1.96                     | 0.47              |
| 49:28:923:C:H4'    | 49:28:923:C:OP1    | 2.14                     | 0.47              |
| 49:28:2765:A:H2'   | 49:28:2766:A:H8    | 1.80                     | 0.47              |
| 49:28:4903:G:H2'   | 49:28:4904:G:H8    | 1.80                     | 0.47              |
| 49:28:5004:C:H2'   | 49:28:5005:G:O4'   | 2.13                     | 0.47              |
| 50:v:253:VAL:O     | 50:v:257:MET:HG2   | 2.15                     | 0.47              |
| 5:L4:101:MET:HE3   | 49:28:2343:G:C4    | 2.50                     | 0.47              |
| 27:dd:28:HIS:CD2   | 27:dd:32:ARG:HG2   | 2.50                     | 0.47              |
| 29:30:38:ILE:HG21  | 29:30:63:TYR:HB3   | 1.96                     | 0.47              |
| 31:32:75:ARG:HB2   | 31:32:95:TYR:HD1   | 1.79                     | 0.47              |
| 43:s:61:MET:O      | 43:s:65:ILE:HG12   | 2.14                     | 0.47              |
| 45:EB:156:LEU:HD13 | 45:EB:166:VAL:HA   | 1.97                     | 0.47              |
| 49:28:23:C:H2'     | 49:28:24:G:O4'     | 2.15                     | 0.47              |
| 49:28:48:G:O6      | 49:28:290:U:H5'    | 2.15                     | 0.47              |
| 49:28:1524:A:H61   | 49:28:1651:G:H22   | 1.63                     | 0.47              |
| 49:28:2386:U:H2'   | 49:28:2387:G:C8    | 2.49                     | 0.47              |
| 49:28:2478:C:H2'   | 49:28:2479:G:C8    | 2.50                     | 0.47              |
| 49:28:3723:A:H2'   | 49:28:3724:A:H8    | 1.79                     | 0.47              |
| 49:28:3933:G:H2'   | 49:28:3934:G:H8    | 1.78                     | 0.47              |
| 50:v:365:GLN:HA    | 50:v:368:ARG:HB2   | 1.97                     | 0.47              |
| 50:v:653:GLY:HA2   | 50:v:683:PHE:CZ    | 2.50                     | 0.47              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 15:15:77:LYS:HD3   | 49:28:3669:G:OP2   | 2.15                     | 0.47              |
| 25:26:52:ASP:O     | 25:26:110:LYS:HB2  | 2.14                     | 0.47              |
| 28:29:112:ILE:H    | 28:29:112:ILE:HD12 | 1.79                     | 0.47              |
| 49:28:922(B):C:H3' | 49:28:923:C:H5''   | 1.97                     | 0.47              |
| 49:28:1376:C:H5''  | 49:28:1377:G:OP2   | 2.14                     | 0.47              |
| 49:28:3870:C:H2'   | 49:28:3871:A:H8    | 1.79                     | 0.47              |
| 49:28:4896:G:H2'   | 49:28:4897:G:H8    | 1.80                     | 0.47              |
| 3:L8:21:LYS:HG2    | 49:28:1541:C:H5''  | 1.96                     | 0.47              |
| 7:L6:168:LEU:HD21  | 7:L6:260:ILE:HD11  | 1.96                     | 0.47              |
| 8:L7:125:ASN:HB2   | 20:21:132:PRO:HB2  | 1.97                     | 0.47              |
| 9:aa:163:LYS:HZ1   | 9:aa:166:ARG:HH22  | 1.62                     | 0.47              |
| 12:11:50:PHE:CG    | 12:11:67:LYS:HD3   | 2.49                     | 0.47              |
| 49:28:106:A:H2'    | 49:28:107:G:O4'    | 2.15                     | 0.47              |
| 11:10:91:LEU:HD12  | 11:10:135:ILE:HG23 | 1.97                     | 0.47              |
| 30:31:53:ALA:HA    | 30:31:88:LEU:HD21  | 1.96                     | 0.47              |
| 43:s:77:LYS:HD2    | 43:s:198:ILE:HD11  | 1.96                     | 0.47              |
| 48:ES:2950:G:O6    | 48:ES:3244:U:O4    | 2.33                     | 0.47              |
| 49:28:1191:C:H2'   | 49:28:1192:C:C6    | 2.50                     | 0.47              |
| 49:28:2639:U:H2'   | 49:28:2694:G:N1    | 2.30                     | 0.47              |
| 49:28:4236:G:H4'   | 49:28:4328:G:O2'   | 2.15                     | 0.47              |
| 49:28:4591:U:H2'   | 49:28:4592:C:C6    | 2.50                     | 0.47              |
| 49:28:4941:G:O2'   | 49:28:4942:C:H5'   | 2.15                     | 0.47              |
| 49:28:5056:A:H2'   | 49:28:5057:C:H6    | 1.80                     | 0.47              |
| 23:24:8:PHE:CD1    | 23:24:46:PRO:HG3   | 2.50                     | 0.46              |
| 40:42:9:ARG:HA     | 40:42:20:PRO:HA    | 1.96                     | 0.46              |
| 46:u:14:VAL:HG21   | 46:u:179:LEU:HD12  | 1.97                     | 0.46              |
| 49:28:325:U:H2'    | 49:28:326:C:H6     | 1.79                     | 0.46              |
| 49:28:922:C:H2'    | 49:28:922(A):G:H8  | 1.79                     | 0.46              |
| 49:28:978:G:H22    | 49:28:1277:G:H22   | 1.63                     | 0.46              |
| 49:28:2786:C:H5''  | 49:28:2787:A:H5'   | 1.98                     | 0.46              |
| 49:28:4749:C:H2'   | 49:28:4750:G:O4'   | 2.15                     | 0.46              |
| 1:58:8:U:H2'       | 1:58:9:A:C8        | 2.50                     | 0.46              |
| 2:5:15:C:H2'       | 2:5:16:A:H8        | 1.80                     | 0.46              |
| 7:L6:64:MET:HG3    | 7:L6:68:LYS:HE2    | 1.97                     | 0.46              |
| 15:15:49:ARG:HH12  | 49:28:152:U:P      | 2.37                     | 0.46              |
| 16:bb:157:GLU:HA   | 16:bb:160:ARG:HG2  | 1.97                     | 0.46              |
| 24:cc:83:THR:HG22  | 24:cc:85:SER:H     | 1.81                     | 0.46              |
| 38:39:28:TRP:HA    | 38:39:33:ASN:ND2   | 2.30                     | 0.46              |
| 43:s:28:PHE:HB2    | 43:s:89:VAL:HG13   | 1.98                     | 0.46              |
| 43:s:121:VAL:HG22  | 43:s:182:PRO:HG2   | 1.95                     | 0.46              |
| 49:28:223:G:H4'    | 49:28:225:G:N7     | 2.29                     | 0.46              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 49:28:318:A:H2'   | 49:28:319:A:H8     | 1.80                     | 0.46              |
| 49:28:2007:G:H21  | 49:28:2012:A:H62   | 0.66                     | 0.46              |
| 49:28:2079:G:H2'  | 49:28:2080:U:C6    | 2.51                     | 0.46              |
| 49:28:2540:C:H2'  | 49:28:2541:G:H8    | 1.81                     | 0.46              |
| 14:14:15:VAL:HG22 | 14:14:50:MET:HE1   | 1.98                     | 0.46              |
| 43:s:50:LYS:NZ    | 43:s:98:ILE:HG13   | 2.30                     | 0.46              |
| 48:ES:3284:C:H2'  | 48:ES:3285:G:C8    | 2.45                     | 0.46              |
| 49:28:2411:C:H2'  | 49:28:2412:A:H8    | 1.80                     | 0.46              |
| 49:28:4507:A:H2'  | 49:28:4508:C:C6    | 2.48                     | 0.46              |
| 4:L3:81:THR:OG1   | 4:L3:207:VAL:HG21  | 2.16                     | 0.46              |
| 24:cc:77:ILE:HD12 | 24:cc:116:LEU:HD12 | 1.96                     | 0.46              |
| 49:28:673:C:H2'   | 49:28:674:G:H8     | 1.81                     | 0.46              |
| 49:28:1196:G:H2'  | 49:28:1197:C:C6    | 2.50                     | 0.46              |
| 49:28:1350:C:H2'  | 49:28:1351:G:C8    | 2.51                     | 0.46              |
| 49:28:3752:C:O2'  | 49:28:3776:G:H1'   | 2.15                     | 0.46              |
| 49:28:4228:G:H5'' | 49:28:4229:U:O4'   | 2.16                     | 0.46              |
| 49:28:4750:G:H2'  | 49:28:4751:G:C8    | 2.50                     | 0.46              |
| 50:v:385:ILE:HD11 | 50:v:395:MET:HG2   | 1.96                     | 0.46              |
| 50:v:502:SER:H    | 50:v:814:PHE:HB3   | 1.81                     | 0.46              |
| 50:v:601:ARG:HH12 | 50:v:858:LEU:HD23  | 1.79                     | 0.46              |
| 1:58:92:U:H2'     | 1:58:93:C:O4'      | 2.15                     | 0.46              |
| 3:L8:136:VAL:HA   | 3:L8:148:VAL:HG22  | 1.98                     | 0.46              |
| 3:L8:233:ARG:HB2  | 49:28:4184:G:H5'   | 1.98                     | 0.46              |
| 14:14:89:THR:HG22 | 14:14:91:TRP:H     | 1.80                     | 0.46              |
| 31:32:106:LYS:HA  | 31:32:109:LYS:HG2  | 1.97                     | 0.46              |
| 46:u:69:GLY:HA2   | 46:u:113:SER:HB3   | 1.97                     | 0.46              |
| 49:28:1188:C:H2'  | 49:28:1189:G:H8    | 1.80                     | 0.46              |
| 49:28:1685:G:H2'  | 49:28:1686:C:H6    | 1.81                     | 0.46              |
| 49:28:1732:C:O2'  | 49:28:1733:G:H5'   | 2.15                     | 0.46              |
| 49:28:1870:C:H2'  | 49:28:1871:A:H8    | 1.81                     | 0.46              |
| 49:28:3650:C:H2'  | 49:28:3651:A:H8    | 1.80                     | 0.46              |
| 49:28:3802:U:O2'  | 49:28:3803:A:H5'   | 2.15                     | 0.46              |
| 21:22:84:LYS:O    | 21:22:87:THR:HG22  | 2.15                     | 0.46              |
| 35:36:85:ARG:O    | 35:36:88:GLU:HG2   | 2.15                     | 0.46              |
| 48:ES:3245:G:H2'  | 48:ES:3246:G:H8    | 1.81                     | 0.46              |
| 49:28:347:A:H2'   | 49:28:348:G:C8     | 2.50                     | 0.46              |
| 49:28:3938:G:H4'  | 49:28:3939:G:O5'   | 2.15                     | 0.46              |
| 49:28:4448:G:H5'' | 49:28:4449:A:H5'   | 1.98                     | 0.46              |
| 49:28:4625:C:O2'  | 49:28:4626:A:H5'   | 2.16                     | 0.46              |
| 49:28:4723:A:H2'  | 49:28:4724:A:C8    | 2.50                     | 0.46              |
| 1:58:14:U:H5''    | 17:17:123:PRO:HG3  | 1.98                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 6:L5:123:VAL:HG22  | 6:L5:248:ARG:NH2   | 2.30                     | 0.46              |
| 11:10:30:LYS:HG3   | 11:10:63:GLU:HG2   | 1.98                     | 0.46              |
| 12:11:68:ILE:HD11  | 49:28:4258:C:H5'   | 1.97                     | 0.46              |
| 13:13:129:ARG:HH22 | 49:28:173:C:H5''   | 1.81                     | 0.46              |
| 14:14:60:PHE:HE1   | 14:14:85:LYS:HE2   | 1.81                     | 0.46              |
| 19:20:15:ARG:HB3   | 19:20:27:LEU:HD13  | 1.96                     | 0.46              |
| 35:36:58:MET:SD    | 35:36:90:LEU:HD22  | 2.55                     | 0.46              |
| 46:u:67:VAL:HG12   | 46:u:111:LEU:HB3   | 1.98                     | 0.46              |
| 46:u:171:HIS:H     | 46:u:174:MET:HE3   | 1.81                     | 0.46              |
| 49:28:48:G:H1'     | 49:28:49:U:OP2     | 2.16                     | 0.46              |
| 49:28:121:A:H5'    | 49:28:122:U:OP2    | 2.15                     | 0.46              |
| 49:28:2412:A:H2'   | 49:28:2413:U:C6    | 2.51                     | 0.46              |
| 49:28:2765:A:H2'   | 49:28:2766:A:C8    | 2.51                     | 0.46              |
| 49:28:3736:A:H2'   | 49:28:3737:A:C8    | 2.51                     | 0.46              |
| 49:28:4678:G:N2    | 49:28:4713:G:H1'   | 2.31                     | 0.46              |
| 49:28:5056:A:H2'   | 49:28:5057:C:C6    | 2.51                     | 0.46              |
| 50:v:117:ALA:HB1   | 50:v:399:SER:HB2   | 1.98                     | 0.46              |
| 2:5:49:A:OP1       | 6:L5:225:GLN:HB2   | 2.16                     | 0.46              |
| 5:L4:4:ALA:HA      | 49:28:490:C:O2'    | 2.16                     | 0.46              |
| 6:L5:4:VAL:HG11    | 49:28:4247:G:H5'   | 1.98                     | 0.46              |
| 20:21:27:LEU:O     | 20:21:31:MET:HG2   | 2.16                     | 0.46              |
| 26:27:50:PRO:HD3   | 26:27:68:ILE:HG12  | 1.98                     | 0.46              |
| 49:28:424:U:H2'    | 49:28:425:U:C6     | 2.50                     | 0.46              |
| 49:28:1340:C:H2'   | 49:28:1341:U:H6    | 1.81                     | 0.46              |
| 49:28:1494:U:H2'   | 49:28:1495:G:C8    | 2.51                     | 0.46              |
| 49:28:2810:U:H2'   | 49:28:2811:G:O4'   | 2.16                     | 0.46              |
| 50:v:481:LYS:HE3   | 50:v:532:PRO:HG3   | 1.98                     | 0.46              |
| 34:35:74:LYS:HE2   | 49:28:133:C:H5     | 1.80                     | 0.46              |
| 43:s:44:ARG:HH11   | 49:28:1997:U:H4'   | 1.81                     | 0.46              |
| 44:t:13:VAL:HG12   | 44:t:62:LEU:HB2    | 1.97                     | 0.46              |
| 49:28:288:G:H2'    | 49:28:289:C:C6     | 2.51                     | 0.46              |
| 49:28:1662:C:H2'   | 49:28:1663:C:C6    | 2.50                     | 0.46              |
| 50:v:252:LYS:HA    | 50:v:255:ASP:OD2   | 2.16                     | 0.46              |
| 1:58:5:U:H2'       | 1:58:6:C:H6        | 1.81                     | 0.46              |
| 6:L5:43:LYS:HB3    | 6:L5:46:THR:HB     | 1.96                     | 0.46              |
| 6:L5:268:ARG:NH2   | 49:28:1176:C:H5''  | 2.31                     | 0.46              |
| 27:dd:87:ARG:HG2   | 27:dd:120:GLN:HE22 | 1.81                     | 0.46              |
| 29:30:17:ARG:HB3   | 29:30:104:ILE:HB   | 1.98                     | 0.46              |
| 43:s:27:CYS:SG     | 43:s:88:PHE:HB3    | 2.56                     | 0.46              |
| 48:ES:2908:U:H3    | 48:ES:3586:G:H1    | 1.64                     | 0.46              |
| 49:28:418:A:H4'    | 49:28:2311:C:H5'   | 1.97                     | 0.46              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:1616:U:H2'   | 49:28:1617:G:H8    | 1.81                     | 0.46              |
| 49:28:1771:U:H2'   | 49:28:1772:C:C6    | 2.51                     | 0.46              |
| 4:L3:229:LYS:HA    | 49:28:2836:A:H4'   | 1.98                     | 0.45              |
| 7:L6:126:ARG:HH22  | 49:28:971(A):G:N2  | 2.14                     | 0.45              |
| 7:L6:164:ARG:HD3   | 7:L6:273:TYR:CZ    | 2.50                     | 0.45              |
| 10:L9:18:ILE:HG22  | 10:L9:27:VAL:HG22  | 1.99                     | 0.45              |
| 15:15:35:ALA:HA    | 15:15:65:ARG:HG2   | 1.98                     | 0.45              |
| 15:15:182:HIS:HA   | 15:15:195:ARG:HH12 | 1.81                     | 0.45              |
| 16:bb:80:PHE:O     | 16:bb:83:THR:HG22  | 2.16                     | 0.45              |
| 20:21:62:GLY:HA3   | 20:21:76:VAL:HG12  | 1.99                     | 0.45              |
| 43:s:39:GLN:O      | 43:s:42:GLN:HG3    | 2.16                     | 0.45              |
| 49:28:170:C:H2'    | 49:28:171:U:H4'    | 1.98                     | 0.45              |
| 49:28:1789:C:H2'   | 49:28:1790:U:C6    | 2.51                     | 0.45              |
| 49:28:2485:U:H2'   | 49:28:2486:G:C8    | 2.50                     | 0.45              |
| 49:28:4538:G:H2'   | 49:28:4539:U:H6    | 1.81                     | 0.45              |
| 49:28:4576:U:H2'   | 49:28:4577:U:C6    | 2.51                     | 0.45              |
| 49:28:4578:G:H2'   | 49:28:4579:U:C6    | 2.51                     | 0.45              |
| 49:28:4594:U:H2'   | 49:28:4595:G:C8    | 2.48                     | 0.45              |
| 2:5:52:C:H1'       | 12:11:12:MET:HE2   | 1.98                     | 0.45              |
| 10:L9:129:ARG:HG2  | 10:L9:153:LEU:HD22 | 1.98                     | 0.45              |
| 49:28:2465:C:H2'   | 49:28:2466:G:O4'   | 2.15                     | 0.45              |
| 49:28:2491:C:H2'   | 49:28:2492:C:C6    | 2.51                     | 0.45              |
| 49:28:2639:U:H2'   | 49:28:2694:G:H1    | 1.81                     | 0.45              |
| 49:28:4068:U:H2'   | 49:28:4069:U:O4'   | 2.16                     | 0.45              |
| 1:58:4:C:H2'       | 1:58:5:U:C6        | 2.51                     | 0.45              |
| 10:L9:120:GLU:HG2  | 49:28:4611:A:H2    | 1.80                     | 0.45              |
| 49:28:1794:A:H5''  | 49:28:4214:A:H61   | 1.81                     | 0.45              |
| 49:28:2358:G:H2'   | 49:28:2359:U:O4'   | 2.16                     | 0.45              |
| 49:28:4258:C:H2'   | 49:28:4259:C:C6    | 2.51                     | 0.45              |
| 49:28:4761:G:H2'   | 49:28:4762:A:H8    | 1.80                     | 0.45              |
| 1:58:7:U:H2'       | 1:58:8:U:C6        | 2.51                     | 0.45              |
| 3:L8:194:ASN:HB2   | 49:28:1539:G:H4'   | 1.98                     | 0.45              |
| 5:L4:103:ALA:HA    | 49:28:1517:G:H22   | 1.81                     | 0.45              |
| 5:L4:200:ARG:HH22  | 25:26:11:ARG:CZ    | 2.29                     | 0.45              |
| 49:28:2029:A:H2'   | 49:28:2030:A:C8    | 2.51                     | 0.45              |
| 49:28:2421:G:OP2   | 49:28:2828:U:H1'   | 2.15                     | 0.45              |
| 49:28:2521:G:H2'   | 49:28:2522:G:H8    | 1.81                     | 0.45              |
| 3:L8:183:GLY:CA    | 49:28:1613:A:H5''  | 2.44                     | 0.45              |
| 14:14:9:VAL:HG11   | 14:14:66:HIS:HA    | 1.98                     | 0.45              |
| 16:bb:119:VAL:HG21 | 19:20:171:ARG:HE   | 1.81                     | 0.45              |
| 22:23:18:LEU:HD13  | 22:23:54:ALA:HB3   | 1.97                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 25:26:44:VAL:HG21  | 25:26:119:LEU:HD13 | 1.98                     | 0.45              |
| 49:28:275:C:H2'    | 49:28:276:C:C6     | 2.52                     | 0.45              |
| 49:28:922(A):G:H2' | 49:28:922(B):C:C6  | 2.52                     | 0.45              |
| 1:58:16:G:N2       | 49:28:417:G:H1'    | 2.32                     | 0.45              |
| 4:L3:94:GLU:HB2    | 4:L3:158:GLN:HG3   | 1.99                     | 0.45              |
| 7:L6:189:LEU:HD21  | 7:L6:256:VAL:HG21  | 1.99                     | 0.45              |
| 10:L9:9:THR:HG21   | 10:L9:54:ARG:HD2   | 1.99                     | 0.45              |
| 22:23:48:ARG:NH1   | 22:23:49:LEU:HB3   | 2.32                     | 0.45              |
| 37:38:34:PHE:HE1   | 37:38:47:ILE:HD11  | 1.80                     | 0.45              |
| 45:EB:203:GLN:HE22 | 45:EB:229:LEU:H    | 1.64                     | 0.45              |
| 49:28:1758:G:H2'   | 49:28:1759:G:H8    | 1.81                     | 0.45              |
| 49:28:2546:G:H4'   | 49:28:2547:G:OP1   | 2.17                     | 0.45              |
| 49:28:3871:A:H2'   | 49:28:3872:A:C8    | 2.52                     | 0.45              |
| 49:28:4389:C:H2'   | 49:28:4390:A:C8    | 2.51                     | 0.45              |
| 49:28:4760:G:H2'   | 49:28:4761:G:O4'   | 2.16                     | 0.45              |
| 49:28:4954:G:H2'   | 49:28:4955:A:C8    | 2.51                     | 0.45              |
| 50:v:593:SER:O     | 50:v:856:ASP:HB2   | 2.16                     | 0.45              |
| 4:L3:107:ALA:HB1   | 4:L3:202:GLU:HG3   | 1.99                     | 0.45              |
| 15:15:85:VAL:HG23  | 49:28:43:U:OP1     | 2.16                     | 0.45              |
| 17:17:131:ARG:HG3  | 17:17:137:ASN:ND2  | 2.32                     | 0.45              |
| 34:35:96:ASN:HB2   | 34:35:99:GLU:HG3   | 1.99                     | 0.45              |
| 47:Q:82:VAL:O      | 47:Q:102:ALA:HA    | 2.15                     | 0.45              |
| 49:28:648:G:H2'    | 49:28:649:A:C8     | 2.50                     | 0.45              |
| 49:28:731:G:C6     | 49:28:932:A:C4     | 3.04                     | 0.45              |
| 49:28:1317:U:H2'   | 49:28:1318:C:C6    | 2.51                     | 0.45              |
| 49:28:1604:G:H2'   | 49:28:1605:G:C8    | 2.50                     | 0.45              |
| 49:28:1794:A:H5''  | 49:28:4214:A:N6    | 2.32                     | 0.45              |
| 50:v:594:LYS:HA    | 50:v:856:ASP:CB    | 2.46                     | 0.45              |
| 1:58:64:U:C2       | 1:58:65:A:C8       | 3.05                     | 0.45              |
| 2:5:120:U:H3'      | 6:L5:259:ARG:HE    | 1.82                     | 0.45              |
| 3:L8:182:ALA:HB2   | 49:28:3652:A:O2'   | 2.16                     | 0.45              |
| 4:L3:229:LYS:HG3   | 4:L3:272:LYS:HD3   | 1.99                     | 0.45              |
| 5:L4:292:ILE:HG21  | 47:Q:31:LEU:HD11   | 1.99                     | 0.45              |
| 7:L6:153:LEU:HD13  | 7:L6:197:VAL:HG11  | 1.99                     | 0.45              |
| 8:L7:79:ASN:HA     | 20:21:143:THR:HG22 | 1.99                     | 0.45              |
| 10:L9:82:LYS:HB3   | 10:L9:82:LYS:HE2   | 1.77                     | 0.45              |
| 16:bb:10:ASP:OD1   | 16:bb:37:ARG:HD3   | 2.16                     | 0.45              |
| 16:bb:36:VAL:HG22  | 16:bb:107:GLY:O    | 2.16                     | 0.45              |
| 18:19:96:MET:HG2   | 49:28:2667:C:O4'   | 2.16                     | 0.45              |
| 20:21:54:HIS:CD2   | 49:28:4301:U:H4'   | 2.51                     | 0.45              |
| 27:dd:87:ARG:HE    | 47:Q:93:GLN:HG2    | 1.81                     | 0.45              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 46:u:100:VAL:HG11  | 46:u:128:LEU:HD13  | 1.99                     | 0.45              |
| 49:28:139:G:H2'    | 49:28:140:G:H8     | 1.82                     | 0.45              |
| 49:28:478:G:H2'    | 49:28:479:G:H8     | 1.82                     | 0.45              |
| 49:28:1073:G:H2'   | 49:28:1074:G:H8    | 1.82                     | 0.45              |
| 49:28:2373:C:H2'   | 49:28:2374:A:C8    | 2.52                     | 0.45              |
| 49:28:2777:G:H5''  | 49:28:2778:G:H5'   | 1.98                     | 0.45              |
| 49:28:4075:U:O3'   | 49:28:4076:G:H2'   | 2.17                     | 0.45              |
| 50:v:154:VAL:HG22  | 50:v:358:LEU:HD21  | 1.98                     | 0.45              |
| 4:L3:189:THR:HG22  | 4:L3:192:GLU:HG2   | 1.99                     | 0.45              |
| 7:L6:165:VAL:HG13  | 7:L6:180:GLY:N     | 2.32                     | 0.45              |
| 14:14:96:GLU:O     | 14:14:99:GLU:HG2   | 2.17                     | 0.45              |
| 19:20:164:LYS:HA   | 19:20:164:LYS:HD3  | 1.79                     | 0.45              |
| 44:t:53:TRP:HE3    | 44:t:56:LEU:HD12   | 1.82                     | 0.45              |
| 49:28:436:C:H2'    | 49:28:437:G:H8     | 1.82                     | 0.45              |
| 49:28:2080:U:H2'   | 49:28:2081:C:C6    | 2.51                     | 0.45              |
| 49:28:2483:G:H1    | 49:28:2495:U:H3    | 1.65                     | 0.45              |
| 49:28:2634:C:C2    | 49:28:2635:U:C5    | 3.04                     | 0.45              |
| 49:28:2671:C:H2'   | 49:28:2672:C:C6    | 2.52                     | 0.45              |
| 49:28:4458:C:H2'   | 49:28:4459:U:C6    | 2.51                     | 0.45              |
| 49:28:4563:U:H2'   | 49:28:4564:A:H8    | 1.80                     | 0.45              |
| 49:28:4601:U:H2'   | 49:28:4602:A:C8    | 2.50                     | 0.45              |
| 49:28:4879:C:H2'   | 49:28:4880:C:O2    | 2.16                     | 0.45              |
| 9:aa:215:ASP:HB2   | 9:aa:216:PRO:HD3   | 1.99                     | 0.45              |
| 10:L9:115:ARG:HG2  | 10:L9:123:ILE:HG22 | 1.98                     | 0.45              |
| 16:bb:117:ARG:HH22 | 16:bb:160:ARG:HH22 | 1.65                     | 0.45              |
| 48:ES:3242:U:H2'   | 48:ES:3243:C:C6    | 2.52                     | 0.45              |
| 49:28:3690:U:H2'   | 49:28:3691:G:O4'   | 2.17                     | 0.45              |
| 49:28:3727:A:H2'   | 49:28:3728:A:C8    | 2.52                     | 0.45              |
| 49:28:5062:G:C2    | 49:28:5063:G:C8    | 3.05                     | 0.45              |
| 50:v:628:LEU:HD11  | 50:v:647:ARG:HA    | 1.99                     | 0.45              |
| 5:L4:266:THR:HG22  | 5:L4:269:LYS:HB3   | 1.98                     | 0.44              |
| 8:L7:107:VAL:HG21  | 8:L7:134:ILE:HG21  | 1.99                     | 0.44              |
| 47:Q:110:ARG:HB2   | 47:Q:120:ILE:HD13  | 2.00                     | 0.44              |
| 49:28:674:G:H2'    | 49:28:675:C:C6     | 2.51                     | 0.44              |
| 49:28:1306:C:H2'   | 49:28:1307:A:C8    | 2.50                     | 0.44              |
| 4:L3:167:GLN:HE21  | 4:L3:169:ARG:HH22  | 1.64                     | 0.44              |
| 8:L7:34:LYS:HE3    | 8:L7:34:LYS:HB3    | 1.78                     | 0.44              |
| 11:10:153:ARG:HA   | 11:10:156:LYS:HE2  | 1.99                     | 0.44              |
| 16:bb:14:HIS:CE1   | 16:bb:119:VAL:HG13 | 2.53                     | 0.44              |
| 16:bb:121:PRO:HD2  | 19:20:166:ARG:O    | 2.17                     | 0.44              |
| 19:20:159:LEU:HD22 | 19:20:172:PRO:HB2  | 1.99                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 25:26:33:PRO:HD3  | 49:28:239:C:H5'   | 1.99                     | 0.44              |
| 45:EB:240:ALA:HB3 | 45:EB:309:TYR:HD2 | 1.82                     | 0.44              |
| 49:28:1318:C:H2'  | 49:28:1319:U:O4'  | 2.17                     | 0.44              |
| 49:28:1356:U:H2'  | 49:28:1357:C:C6   | 2.53                     | 0.44              |
| 49:28:4093:G:H2'  | 49:28:4094:G:H8   | 1.81                     | 0.44              |
| 49:28:4903:G:H2'  | 49:28:4904:G:C8   | 2.52                     | 0.44              |
| 1:58:154:G:H2'    | 1:58:155:C:C6     | 2.52                     | 0.44              |
| 3:L8:118:GLU:O    | 3:L8:158:ILE:HD11 | 2.18                     | 0.44              |
| 4:L3:154:LYS:HG2  | 4:L3:194:LEU:HD23 | 1.98                     | 0.44              |
| 14:14:60:PHE:CE1  | 14:14:85:LYS:HE2  | 2.51                     | 0.44              |
| 15:15:159:ARG:HB3 | 15:15:164:LEU:HB2 | 1.98                     | 0.44              |
| 16:bb:66:PRO:HG2  | 49:28:4587:G:H5'' | 1.99                     | 0.44              |
| 34:35:52:LYS:HD3  | 34:35:52:LYS:HA   | 1.79                     | 0.44              |
| 41:ff:52:VAL:HG21 | 49:28:2739:C:H4'  | 2.00                     | 0.44              |
| 49:28:922:C:H2'   | 49:28:922(A):G:C8 | 2.52                     | 0.44              |
| 49:28:1186:U:H2'  | 49:28:1187:G:N3   | 2.32                     | 0.44              |
| 49:28:4584:A:H2'  | 49:28:4585:U:O4'  | 2.17                     | 0.44              |
| 50:v:733:VAL:O    | 50:v:738:PRO:HG3  | 2.17                     | 0.44              |
| 50:v:788:LEU:HD12 | 50:v:789:PRO:HD2  | 1.99                     | 0.44              |
| 1:58:26:C:H2'     | 1:58:27:U:H6      | 1.83                     | 0.44              |
| 7:L6:193:HIS:HD2  | 7:L6:195:LYS:HB3  | 1.83                     | 0.44              |
| 13:13:64:VAL:HG23 | 13:13:67:HIS:CD2  | 2.53                     | 0.44              |
| 19:20:44:PHE:CZ   | 19:20:48:VAL:HG21 | 2.52                     | 0.44              |
| 37:38:28:ASN:OD1  | 37:38:31:ASN:HB2  | 2.17                     | 0.44              |
| 41:ff:39:CYS:HB3  | 41:ff:42:CYS:SG   | 2.57                     | 0.44              |
| 49:28:50:C:C2     | 49:28:51:A:C8     | 3.05                     | 0.44              |
| 49:28:318:A:H2'   | 49:28:319:A:C8    | 2.52                     | 0.44              |
| 49:28:416:U:H4'   | 49:28:2330:G:H4'  | 1.99                     | 0.44              |
| 49:28:956:A:N6    | 49:28:1283:G:H1'  | 2.32                     | 0.44              |
| 49:28:1194:G:C6   | 49:28:1195:G:C8   | 3.05                     | 0.44              |
| 49:28:2727:C:H2'  | 49:28:2728:U:C6   | 2.52                     | 0.44              |
| 49:28:4336:A:H5'  | 49:28:4337:C:O4'  | 2.17                     | 0.44              |
| 50:v:652:PHE:HA   | 50:v:660:ASN:O    | 2.17                     | 0.44              |
| 9:aa:214:VAL:HG13 | 9:aa:217:ILE:HD12 | 1.98                     | 0.44              |
| 12:11:31:ASP:HA   | 12:11:34:THR:HG22 | 1.99                     | 0.44              |
| 43:s:78:LEU:O     | 43:s:82:ILE:HG13  | 2.18                     | 0.44              |
| 49:28:670:G:H2'   | 49:28:671:G:H8    | 1.82                     | 0.44              |
| 49:28:1094:G:H2'  | 49:28:1095:A:H8   | 1.83                     | 0.44              |
| 49:28:4453:C:H2'  | 49:28:4454:G:O4'  | 2.17                     | 0.44              |
| 49:28:4688:C:H2'  | 49:28:4689:U:C6   | 2.52                     | 0.44              |
| 46:u:196:LYS:HG3  | 46:u:200:ASN:HB2  | 1.99                     | 0.44              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 49:28:161:G:H2'   | 49:28:162:A:H8     | 1.83                     | 0.44              |
| 49:28:1198:G:H2'  | 49:28:1199:G:H8    | 1.81                     | 0.44              |
| 49:28:3713:U:H4'  | 49:28:3714:G:OP1   | 2.17                     | 0.44              |
| 5:L4:207:PRO:HB3  | 5:L4:249:PHE:CD2   | 2.53                     | 0.44              |
| 9:aa:104:LEU:O    | 9:aa:108:VAL:HG23  | 2.17                     | 0.44              |
| 13:13:80:GLU:HG2  | 13:13:110:LEU:HD12 | 1.99                     | 0.44              |
| 25:26:59:ARG:HG3  | 25:26:103:LYS:HD2  | 2.00                     | 0.44              |
| 26:27:28:ASN:HB2  | 26:27:77:TYR:OH    | 2.18                     | 0.44              |
| 26:27:73:LYS:HG2  | 26:27:75:TYR:CZ    | 2.52                     | 0.44              |
| 30:31:33:ILE:HG12 | 30:31:48:GLU:OE2   | 2.18                     | 0.44              |
| 32:ee:106:TYR:CD2 | 32:ee:107:PRO:HD3  | 2.52                     | 0.44              |
| 43:s:135:THR:HG21 | 50:v:187:VAL:HG21  | 2.00                     | 0.44              |
| 45:EB:122:ALA:HB3 | 45:EB:320:LYS:N    | 2.32                     | 0.44              |
| 49:28:1308:C:H2'  | 49:28:1309:C:C6    | 2.53                     | 0.44              |
| 49:28:2020:U:H2'  | 49:28:2021:G:H8    | 1.83                     | 0.44              |
| 49:28:2032:U:H2'  | 49:28:2033:A:C8    | 2.53                     | 0.44              |
| 49:28:2492:C:H2'  | 49:28:2493:G:C8    | 2.35                     | 0.44              |
| 49:28:3650:C:C2   | 49:28:3651:A:C8    | 3.06                     | 0.44              |
| 49:28:4188:U:H2'  | 49:28:4189:U:C6    | 2.53                     | 0.44              |
| 49:28:4492:U:H5'' | 49:28:4493:U:H5'   | 2.00                     | 0.44              |
| 49:28:4970:C:C2   | 49:28:4971:A:C8    | 3.05                     | 0.44              |
| 50:v:531:ASP:HB3  | 50:v:534:VAL:HG22  | 2.00                     | 0.44              |
| 1:58:124:U:H4'    | 1:58:125:C:C5'     | 2.48                     | 0.44              |
| 3:L8:128:ARG:HG3  | 49:28:3681:G:H2'   | 1.99                     | 0.44              |
| 4:L3:252:ALA:HB3  | 49:28:4457:U:O2    | 2.17                     | 0.44              |
| 4:L3:261:ARG:HB3  | 49:28:4564:A:O2'   | 2.18                     | 0.44              |
| 4:L3:262:VAL:HG21 | 4:L3:268:ARG:NH1   | 2.33                     | 0.44              |
| 14:14:47:ARG:HG2  | 19:20:73:LEU:HD13  | 2.00                     | 0.44              |
| 21:22:48:LYS:HD3  | 21:22:51:GLY:HA2   | 1.99                     | 0.44              |
| 22:23:109:LYS:HG3 | 22:23:111:GLU:OE1  | 2.17                     | 0.44              |
| 40:42:44:LYS:HE2  | 40:42:52:THR:HB    | 1.98                     | 0.44              |
| 45:EB:185:MET:HG3 | 45:EB:229:LEU:HD13 | 1.99                     | 0.44              |
| 49:28:163:A:H2'   | 49:28:164:G:C8     | 2.52                     | 0.44              |
| 49:28:1195:G:H2'  | 49:28:1196:G:C8    | 2.53                     | 0.44              |
| 49:28:2461:G:H2'  | 49:28:2462:C:C6    | 2.53                     | 0.44              |
| 49:28:3722:G:H2'  | 49:28:3723:A:H8    | 1.82                     | 0.44              |
| 49:28:3751:G:H21  | 49:28:3775:A:H8    | 1.65                     | 0.44              |
| 49:28:3793:U:H2'  | 49:28:3794:C:H6    | 1.83                     | 0.44              |
| 49:28:4094:G:H2'  | 49:28:4095:G:C8    | 2.53                     | 0.44              |
| 50:v:331:GLU:O    | 50:v:334:PRO:HD2   | 2.18                     | 0.44              |
| 50:v:364:ALA:O    | 50:v:368:ARG:HG3   | 2.18                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 50:v:428:ARG:NH2  | 50:v:489:GLU:HA   | 2.33                     | 0.44              |
| 50:v:738:PRO:HB2  | 50:v:739:ARG:H    | 1.62                     | 0.44              |
| 5:L4:230:LEU:HD21 | 5:L4:239:LYS:HD2  | 2.00                     | 0.44              |
| 6:L5:36:LEU:HD23  | 6:L5:36:LEU:HA    | 1.90                     | 0.44              |
| 6:L5:43:LYS:HE2   | 49:28:1817:U:H4'  | 2.00                     | 0.44              |
| 32:ee:23:GLU:HG3  | 49:28:439:G:O2'   | 2.18                     | 0.44              |
| 34:35:53:SER:O    | 34:35:57:VAL:HG23 | 2.18                     | 0.44              |
| 44:t:152:ILE:HD12 | 44:t:155:ILE:HB   | 1.99                     | 0.44              |
| 47:Q:59:PRO:HG3   | 47:Q:143:ARG:HA   | 2.00                     | 0.44              |
| 49:28:222:C:H2'   | 49:28:223:G:O4'   | 2.18                     | 0.44              |
| 49:28:258:G:H2'   | 49:28:259:C:C6    | 2.53                     | 0.44              |
| 49:28:288:G:H2'   | 49:28:289:C:H6    | 1.82                     | 0.44              |
| 49:28:1959:U:O4'  | 49:28:1961:G:H1'  | 2.18                     | 0.44              |
| 49:28:4607:A:O5'  | 49:28:4607:A:H8   | 2.00                     | 0.44              |
| 50:v:147:ILE:HG12 | 50:v:192:TYR:HB3  | 2.00                     | 0.44              |
| 50:v:675:ILE:HD11 | 50:v:721:ILE:HG13 | 2.00                     | 0.44              |
| 2:5:65:G:O3'      | 6:L5:10:LYS:HE2   | 2.18                     | 0.43              |
| 9:aa:136:PHE:HB3  | 9:aa:212:HIS:HB2  | 2.00                     | 0.43              |
| 9:aa:169:ALA:O    | 9:aa:172:GLU:HG3  | 2.18                     | 0.43              |
| 18:19:60:ARG:NH1  | 49:28:2615:C:H5'' | 2.30                     | 0.43              |
| 33:34:82:MET:HE1  | 33:34:90:ARG:HE   | 1.83                     | 0.43              |
| 44:t:90:ARG:CZ    | 44:t:98:ILE:HD13  | 2.48                     | 0.43              |
| 46:u:26:ARG:HH22  | 46:u:208:SER:HB2  | 1.82                     | 0.43              |
| 49:28:1381:U:H5'  | 49:28:1382:G:OP2  | 2.18                     | 0.43              |
| 49:28:2411:C:H2'  | 49:28:2412:A:C8   | 2.53                     | 0.43              |
| 49:28:4980:C:H3'  | 49:28:4981:G:H21  | 1.82                     | 0.43              |
| 3:L8:96:LEU:HD12  | 3:L8:166:VAL:HG21 | 2.00                     | 0.43              |
| 5:L4:195:LYS:HE3  | 49:28:2333:G:H5'' | 1.99                     | 0.43              |
| 6:L5:36:LEU:HB3   | 6:L5:37:VAL:H     | 1.60                     | 0.43              |
| 13:13:42:ARG:O    | 13:13:46:ILE:HG12 | 2.17                     | 0.43              |
| 15:15:178:HIS:HA  | 15:15:181:HIS:NE2 | 2.33                     | 0.43              |
| 26:27:105:ALA:HA  | 26:27:108:ARG:HE  | 1.83                     | 0.43              |
| 28:29:12:GLN:HB3  | 28:29:16:TRP:CZ2  | 2.54                     | 0.43              |
| 40:42:36:GLN:HB2  | 49:28:4363:A:H5'' | 2.00                     | 0.43              |
| 44:t:28:LEU:O     | 44:t:32:ILE:HG13  | 2.18                     | 0.43              |
| 45:EB:65:LYS:N    | 45:EB:65:LYS:HD3  | 2.33                     | 0.43              |
| 49:28:1933:G:O5'  | 49:28:1933:G:H8   | 2.00                     | 0.43              |
| 49:28:4862:G:H2'  | 49:28:4863:G:H8   | 1.82                     | 0.43              |
| 2:5:3:C:H2'       | 2:5:4:U:H6        | 1.83                     | 0.43              |
| 4:L3:135:LYS:HD3  | 4:L3:138:GLN:HE21 | 1.84                     | 0.43              |
| 5:L4:205:ARG:HG3  | 49:28:2297:G:H5'  | 2.00                     | 0.43              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 10:L9:59:LYS:HE3   | 10:L9:66:GLU:HB3   | 1.98                     | 0.43              |
| 11:10:51:HIS:CD2   | 11:10:168:SER:HB2  | 2.53                     | 0.43              |
| 12:11:128:LEU:HD11 | 12:11:130:PHE:CE1  | 2.54                     | 0.43              |
| 13:13:120:TYR:HB2  | 13:13:155:MET:HE1  | 2.00                     | 0.43              |
| 13:13:135:LYS:HD3  | 13:13:135:LYS:HA   | 1.87                     | 0.43              |
| 18:19:101:ILE:HD13 | 49:28:2897:G:H4'   | 2.00                     | 0.43              |
| 19:20:54:MET:HE3   | 19:20:54:MET:HB3   | 1.92                     | 0.43              |
| 28:29:105:GLY:O    | 28:29:109:ARG:HG2  | 2.18                     | 0.43              |
| 33:34:69:LYS:HD3   | 49:28:2769:U:N3    | 2.33                     | 0.43              |
| 35:36:33:LEU:HD21  | 35:36:38:LYS:HB2   | 2.00                     | 0.43              |
| 46:u:45:LYS:HD3    | 46:u:45:LYS:HA     | 1.92                     | 0.43              |
| 48:ES:2947:G:C6    | 48:ES:3247:A:N1    | 2.86                     | 0.43              |
| 49:28:177:G:H2'    | 49:28:178:C:C6     | 2.52                     | 0.43              |
| 49:28:259:C:H2'    | 49:28:260:C:C6     | 2.54                     | 0.43              |
| 49:28:691:C:H2'    | 49:28:692:A:C8     | 2.53                     | 0.43              |
| 49:28:693:C:H2'    | 49:28:694:C:H6     | 1.83                     | 0.43              |
| 49:28:2751:G:H2'   | 49:28:2752:G:H8    | 1.84                     | 0.43              |
| 49:28:4893:A:H2'   | 49:28:4894:A:C4    | 2.54                     | 0.43              |
| 49:28:4922:C:H2'   | 49:28:4923:U:C6    | 2.53                     | 0.43              |
| 49:28:4991:U:H2'   | 49:28:4992:G:H8    | 1.83                     | 0.43              |
| 50:v:6:VAL:O       | 50:v:9:ILE:HG13    | 2.19                     | 0.43              |
| 4:L3:204:GLN:HE21  | 4:L3:204:GLN:HB3   | 1.61                     | 0.43              |
| 4:L3:258:HIS:NE2   | 49:28:3878:C:N3    | 2.67                     | 0.43              |
| 6:L5:11:ALA:HB1    | 49:28:1743:A:H5'   | 2.00                     | 0.43              |
| 9:aa:153:HIS:CE1   | 9:aa:156:ARG:HH11  | 2.35                     | 0.43              |
| 11:10:54:SER:HB2   | 11:10:135:ILE:HD11 | 2.00                     | 0.43              |
| 16:bb:62:MET:HA    | 49:28:2045:G:C5    | 2.54                     | 0.43              |
| 20:21:102:ARG:HG3  | 20:21:106:LEU:HD23 | 1.99                     | 0.43              |
| 49:28:2710:C:H2'   | 49:28:2712:G:H5''  | 1.99                     | 0.43              |
| 49:28:4266:G:H2'   | 49:28:4266:G:N3    | 2.33                     | 0.43              |
| 49:28:4860:G:H2'   | 49:28:4861:G:C8    | 2.50                     | 0.43              |
| 49:28:4862:G:H2'   | 49:28:4863:G:C8    | 2.54                     | 0.43              |
| 4:L3:30:LYS:HG3    | 49:28:4716:C:OP2   | 2.18                     | 0.43              |
| 4:L3:112:ASP:O     | 4:L3:116:ARG:HG2   | 2.19                     | 0.43              |
| 5:L4:101:MET:SD    | 5:L4:104:PRO:HA    | 2.58                     | 0.43              |
| 9:aa:235:CYS:HB3   | 9:aa:275:ILE:HD13  | 2.00                     | 0.43              |
| 19:20:80:ILE:HG12  | 19:20:129:VAL:HG22 | 2.01                     | 0.43              |
| 28:29:101:HIS:CE1  | 28:29:103:LYS:HB2  | 2.53                     | 0.43              |
| 44:t:115:GLN:HA    | 44:t:118:HIS:ND1   | 2.33                     | 0.43              |
| 48:ES:2949:U:H2'   | 48:ES:2950:G:C8    | 2.53                     | 0.43              |
| 49:28:1065:G:H2'   | 49:28:1066:G:C8    | 2.53                     | 0.43              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 49:28:1509:C:H2'  | 49:28:1510:G:C8    | 2.52                     | 0.43              |
| 49:28:3932:U:H2'  | 49:28:3933:G:C8    | 2.54                     | 0.43              |
| 50:v:9:ILE:O      | 50:v:13:MET:HG3    | 2.19                     | 0.43              |
| 16:bb:135:PHE:HE2 | 16:bb:137:TYR:CZ   | 2.36                     | 0.43              |
| 30:31:25:TYR:CZ   | 30:31:56:GLU:HG2   | 2.54                     | 0.43              |
| 32:ee:46:ARG:HD2  | 32:ee:106:TYR:HE2  | 1.84                     | 0.43              |
| 49:28:1239:C:O2'  | 49:28:1244:G:H5'   | 2.18                     | 0.43              |
| 49:28:1964:A:H3'  | 49:28:1965:G:H8    | 1.83                     | 0.43              |
| 49:28:4299:U:H2'  | 49:28:4300:U:H6    | 1.84                     | 0.43              |
| 49:28:4897:G:C2   | 49:28:4923:U:O2    | 2.71                     | 0.43              |
| 4:L3:122:TRP:CE2  | 4:L3:127:LYS:HE3   | 2.54                     | 0.43              |
| 17:17:69:ARG:CD   | 49:28:4981:G:H1'   | 2.48                     | 0.43              |
| 25:26:56:GLN:HB2  | 25:26:105:VAL:HG13 | 1.99                     | 0.43              |
| 27:dd:43:ILE:HD12 | 49:28:1682:A:H2    | 1.83                     | 0.43              |
| 39:40:71:ARG:HE   | 39:40:96:ARG:HB3   | 1.83                     | 0.43              |
| 49:28:2373:C:H2'  | 49:28:2374:A:H8    | 1.84                     | 0.43              |
| 50:v:650:TRP:CD1  | 50:v:676:LYS:HE3   | 2.54                     | 0.43              |
| 1:58:27:U:H2'     | 1:58:28:C:C6       | 2.54                     | 0.43              |
| 7:L6:73:ARG:HD3   | 49:28:983:C:C5     | 2.54                     | 0.43              |
| 9:aa:267:ALA:O    | 9:aa:270:LYS:HG3   | 2.18                     | 0.43              |
| 15:15:48:ALA:HB1  | 15:15:53:TYR:HB3   | 2.01                     | 0.43              |
| 18:19:19:LYS:HG2  | 49:28:2823:G:OP1   | 2.19                     | 0.43              |
| 28:29:28:ARG:HB3  | 49:28:1805:A:C4    | 2.54                     | 0.43              |
| 44:t:99:LYS:HB2   | 44:t:99:LYS:HE3    | 1.80                     | 0.43              |
| 45:EB:149:CYS:HB3 | 45:EB:228:VAL:HG11 | 2.00                     | 0.43              |
| 49:28:979:C:H2'   | 49:28:980:U:C6     | 2.53                     | 0.43              |
| 49:28:1662:C:H2'  | 49:28:1663:C:H6    | 1.83                     | 0.43              |
| 49:28:2079:G:H2'  | 49:28:2080:U:H6    | 1.83                     | 0.43              |
| 49:28:2453:A:H1'  | 49:28:2507:A:N1    | 2.33                     | 0.43              |
| 49:28:3883:U:H2'  | 49:28:3884:U:C6    | 2.52                     | 0.43              |
| 49:28:4642:U:H2'  | 49:28:4643:G:H8    | 1.83                     | 0.43              |
| 50:v:146:ALA:HB1  | 50:v:151:ILE:HG23  | 2.01                     | 0.43              |
| 50:v:512:LYS:HE3  | 50:v:569:PRO:HD2   | 2.01                     | 0.43              |
| 2:5:112:U:H2'     | 2:5:113:G:H8       | 1.84                     | 0.43              |
| 3:L8:209:HIS:CE1  | 3:L8:235:VAL:HG11  | 2.54                     | 0.43              |
| 7:L6:156:LEU:HD11 | 7:L6:198:ILE:HG13  | 2.00                     | 0.43              |
| 13:13:48:PRO:HG3  | 34:35:118:LYS:HE3  | 2.01                     | 0.43              |
| 13:13:63:THR:O    | 13:13:65:ARG:N     | 2.52                     | 0.43              |
| 25:26:10:ASP:HB3  | 25:26:13:LYS:HB2   | 2.00                     | 0.43              |
| 26:27:74:VAL:HG23 | 26:27:101:PHE:CZ   | 2.54                     | 0.43              |
| 34:35:89:ARG:O    | 34:35:93:ARG:HD3   | 2.19                     | 0.43              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 35:36:60:LEU:HB3  | 35:36:69:ALA:HB2   | 2.00                     | 0.43              |
| 44:t:108:GLU:HA   | 44:t:111:ASN:ND2   | 2.34                     | 0.43              |
| 49:28:251:C:H2'   | 49:28:252:C:C6     | 2.53                     | 0.43              |
| 49:28:697:G:H2'   | 49:28:698:G:C8     | 2.51                     | 0.43              |
| 49:28:1341:U:H2'  | 49:28:1342:A:C8    | 2.54                     | 0.43              |
| 50:v:594:LYS:HB2  | 50:v:856:ASP:N     | 2.33                     | 0.43              |
| 3:L8:213:GLY:HA3  | 49:28:4544:A:H5''  | 2.00                     | 0.43              |
| 4:L3:56:ILE:HD12  | 4:L3:56:ILE:HA     | 1.80                     | 0.43              |
| 11:10:183:ASP:O   | 11:10:187:GLU:HG2  | 2.18                     | 0.43              |
| 12:11:52:LYS:H    | 12:11:52:LYS:HG2   | 1.72                     | 0.43              |
| 13:13:58:ILE:HG23 | 13:13:70:VAL:HG11  | 2.00                     | 0.43              |
| 28:29:101:HIS:HE1 | 28:29:103:LYS:HB2  | 1.84                     | 0.43              |
| 32:ee:36:ARG:HG3  | 32:ee:80:ASN:HA    | 2.00                     | 0.43              |
| 34:35:70:ARG:HB3  | 34:35:83:LEU:HD22  | 2.00                     | 0.43              |
| 44:t:119:ARG:H    | 44:t:119:ARG:HD3   | 1.84                     | 0.43              |
| 45:EB:152:ALA:O   | 45:EB:156:LEU:HB2  | 2.19                     | 0.43              |
| 46:u:46:ASP:C     | 46:u:47:LYS:HG3    | 2.44                     | 0.43              |
| 46:u:194:LEU:HB3  | 46:u:200:ASN:HD22  | 1.84                     | 0.43              |
| 49:28:981:C:H2'   | 49:28:982:U:C6     | 2.54                     | 0.43              |
| 49:28:1199:G:C2   | 49:28:1200:G:C5    | 3.07                     | 0.43              |
| 49:28:2636:U:H2'  | 49:28:2637:U:C6    | 2.54                     | 0.43              |
| 49:28:2861:C:H2'  | 49:28:2862:G:O4'   | 2.19                     | 0.43              |
| 49:28:3650:C:H2'  | 49:28:3651:A:C8    | 2.53                     | 0.43              |
| 49:28:4344:U:H2'  | 49:28:4345:C:H6    | 1.83                     | 0.43              |
| 50:v:538:ILE:HG22 | 50:v:544:HIS:CD2   | 2.54                     | 0.43              |
| 28:29:4:SER:HB2   | 49:28:1855:G:OP1   | 2.18                     | 0.42              |
| 30:31:33:ILE:HD13 | 30:31:33:ILE:HA    | 1.77                     | 0.42              |
| 41:ff:73:THR:O    | 41:ff:77:VAL:HG23  | 2.19                     | 0.42              |
| 46:u:16:GLU:HA    | 46:u:19:HIS:HD2    | 1.84                     | 0.42              |
| 46:u:62:LYS:HE3   | 46:u:62:LYS:HB3    | 1.90                     | 0.42              |
| 46:u:98:LYS:HG2   | 46:u:102:LYS:NZ    | 2.32                     | 0.42              |
| 49:28:272:U:H2'   | 49:28:273:U:C6     | 2.54                     | 0.42              |
| 49:28:1073:G:H2'  | 49:28:1074:G:C8    | 2.53                     | 0.42              |
| 49:28:2264:C:H2'  | 49:28:2265:G:O4'   | 2.18                     | 0.42              |
| 49:28:2749:C:H2'  | 49:28:2750:G:C8    | 2.54                     | 0.42              |
| 49:28:3635:A:N7   | 49:28:3692:A:H1'   | 2.34                     | 0.42              |
| 49:28:3867:A:H2'  | 49:28:3868:G:C8    | 2.54                     | 0.42              |
| 49:28:4708:A:C2   | 49:28:4709:U:H5'   | 2.54                     | 0.42              |
| 4:L3:37:PRO:O     | 4:L3:188:GLY:HA2   | 2.19                     | 0.42              |
| 6:L5:279:ARG:HD3  | 6:L5:283:LYS:HE3   | 2.01                     | 0.42              |
| 25:26:50:ARG:HB2  | 25:26:115:ARG:HH21 | 1.84                     | 0.42              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 31:32:35:TRP:CZ2   | 31:32:56:PRO:HD2  | 2.54                     | 0.42              |
| 41:ff:86:LEU:HD13  | 41:ff:86:LEU:HA   | 1.93                     | 0.42              |
| 44:t:124:GLU:O     | 44:t:128:THR:HG23 | 2.19                     | 0.42              |
| 49:28:1074:G:H2'   | 49:28:1075:G:C8   | 2.53                     | 0.42              |
| 49:28:1468:C:H2'   | 49:28:1469:C:C6   | 2.53                     | 0.42              |
| 49:28:1848:C:H2'   | 49:28:1849:U:O4'  | 2.19                     | 0.42              |
| 49:28:2051:C:H2'   | 49:28:2052:G:O4'  | 2.19                     | 0.42              |
| 49:28:2080:U:H2'   | 49:28:2081:C:H6   | 1.84                     | 0.42              |
| 4:L3:252:ALA:HB1   | 49:28:4524:G:C2   | 2.54                     | 0.42              |
| 4:L3:373:LYS:HE2   | 49:28:4627:U:H4'  | 2.01                     | 0.42              |
| 5:L4:138:MET:HE1   | 5:L4:145:GLU:HG3  | 2.00                     | 0.42              |
| 12:11:152:GLY:O    | 12:11:156:ARG:HG3 | 2.19                     | 0.42              |
| 13:13:103:ARG:HH12 | 49:28:73:A:N6     | 2.17                     | 0.42              |
| 32:ee:46:ARG:HD2   | 32:ee:106:TYR:CE2 | 2.55                     | 0.42              |
| 43:s:84:GLY:C      | 49:28:2021:G:H4'  | 2.45                     | 0.42              |
| 46:u:89:ALA:HA     | 46:u:92:LYS:HE2   | 2.00                     | 0.42              |
| 48:ES:3245:G:H2'   | 48:ES:3246:G:C8   | 2.55                     | 0.42              |
| 49:28:268:G:H2'    | 49:28:269:G:H8    | 1.84                     | 0.42              |
| 49:28:1350:C:H2'   | 49:28:1351:G:H8   | 1.83                     | 0.42              |
| 49:28:1504:G:H2'   | 49:28:1505:C:C6   | 2.54                     | 0.42              |
| 49:28:3598:C:H2'   | 49:28:3599:A:C8   | 2.54                     | 0.42              |
| 49:28:3920:U:H2'   | 49:28:3921:U:C6   | 2.54                     | 0.42              |
| 1:58:6:C:H2'       | 1:58:7:U:C6       | 2.54                     | 0.42              |
| 1:58:70:G:H5''     | 25:26:27:ARG:CZ   | 2.49                     | 0.42              |
| 5:L4:83:GLY:H      | 49:28:368:C:H1'   | 1.83                     | 0.42              |
| 8:L7:98:ASN:OD1    | 49:28:1897:A:H5'' | 2.19                     | 0.42              |
| 12:11:90:ARG:HA    | 12:11:90:ARG:HD3  | 1.82                     | 0.42              |
| 26:27:100:VAL:HG13 | 26:27:106:LEU:HB3 | 2.00                     | 0.42              |
| 27:dd:77:LYS:HE2   | 49:28:1502:G:H22  | 1.84                     | 0.42              |
| 28:29:60:ASN:O     | 28:29:63:LYS:HG3  | 2.19                     | 0.42              |
| 29:30:20:LEU:HA    | 29:30:23:LYS:HG2  | 2.02                     | 0.42              |
| 43:s:160:LEU:HD23  | 43:s:160:LEU:H    | 1.84                     | 0.42              |
| 46:u:91:LYS:HD3    | 46:u:91:LYS:HA    | 1.85                     | 0.42              |
| 47:Q:13:VAL:HG11   | 49:28:1690:C:C5   | 2.55                     | 0.42              |
| 47:Q:14:ARG:HH12   | 47:Q:16:LYS:HE2   | 1.84                     | 0.42              |
| 49:28:169:A:H2'    | 49:28:170:C:C2    | 2.54                     | 0.42              |
| 49:28:951:G:H2'    | 49:28:952:G:H8    | 1.84                     | 0.42              |
| 49:28:1558:A:H2'   | 49:28:1559:G:H8   | 1.84                     | 0.42              |
| 49:28:2686:G:H5'   | 49:28:2687:U:OP1  | 2.19                     | 0.42              |
| 49:28:4861:G:H2'   | 49:28:4862:G:H8   | 1.84                     | 0.42              |
| 1:58:71:A:H4'      | 1:58:72:A:O5'     | 2.19                     | 0.42              |

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| Atom-1            | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|--------------------|--------------------------|-------------------|
| 4:L3:56:ILE:O     | 4:L3:73:VAL:HA     | 2.20                     | 0.42              |
| 6:L5:264:LYS:HE3  | 6:L5:264:LYS:HB2   | 1.92                     | 0.42              |
| 10:L9:92:MET:HG2  | 10:L9:181:VAL:HA   | 2.01                     | 0.42              |
| 24:cc:146:ALA:HA  | 24:cc:149:VAL:HG22 | 2.02                     | 0.42              |
| 29:30:47:ILE:HB   | 29:30:94:LEU:HB3   | 2.01                     | 0.42              |
| 45:EB:81:SER:OG   | 45:EB:107:LYS:HE2  | 2.19                     | 0.42              |
| 49:28:643:C:H2'   | 49:28:644:G:C8     | 2.53                     | 0.42              |
| 49:28:1494:U:H2'  | 49:28:1495:G:H8    | 1.84                     | 0.42              |
| 49:28:1957:U:O2'  | 49:28:1958:A:H8    | 2.03                     | 0.42              |
| 49:28:2680:G:H2'  | 49:28:2681:G:O4'   | 2.20                     | 0.42              |
| 49:28:2735:G:H2'  | 49:28:2736:G:C8    | 2.52                     | 0.42              |
| 49:28:3698:G:C8   | 49:28:3698:G:OP2   | 2.72                     | 0.42              |
| 49:28:4192:A:H2'  | 49:28:4193:C:H6    | 1.85                     | 0.42              |
| 49:28:4520:G:H2'  | 49:28:4521:U:O4'   | 2.19                     | 0.42              |
| 50:v:109:VAL:HG11 | 50:v:809:PHE:CE1   | 2.54                     | 0.42              |
| 50:v:461:ILE:HD12 | 50:v:461:ILE:HA    | 1.95                     | 0.42              |
| 2:5:58:A:H2'      | 2:5:59:G:H8        | 1.84                     | 0.42              |
| 3:L8:142:GLU:C    | 3:L8:144:LYS:H     | 2.27                     | 0.42              |
| 6:L5:106:ALA:HB1  | 6:L5:171:LEU:HD13  | 2.02                     | 0.42              |
| 30:31:70:LYS:HE2  | 49:28:2389:A:H5'   | 2.02                     | 0.42              |
| 32:ee:28:LEU:HD21 | 32:ee:101:ILE:HD11 | 2.01                     | 0.42              |
| 40:42:37:GLY:HA3  | 49:28:4342:C:O3'   | 2.19                     | 0.42              |
| 45:EB:60:THR:HG22 | 45:EB:72:LYS:HD2   | 2.01                     | 0.42              |
| 49:28:2528:G:H4'  | 49:28:2783:A:H4'   | 2.02                     | 0.42              |
| 49:28:4344:U:H2'  | 49:28:4345:C:C6    | 2.55                     | 0.42              |
| 1:58:140:C:H2'    | 1:58:141:C:C6      | 2.54                     | 0.42              |
| 3:L8:158:ILE:HD12 | 3:L8:158:ILE:HA    | 1.86                     | 0.42              |
| 6:L5:146:LEU:HD23 | 6:L5:147:ASP:N     | 2.35                     | 0.42              |
| 10:L9:23:ARG:NH1  | 10:L9:39:ASN:HA    | 2.34                     | 0.42              |
| 13:13:8:MET:HE3   | 47:Q:168:ARG:HB3   | 2.01                     | 0.42              |
| 16:bb:47:PHE:HA   | 16:bb:136:ALA:HB2  | 2.02                     | 0.42              |
| 27:dd:77:LYS:H    | 27:dd:77:LYS:HG2   | 1.71                     | 0.42              |
| 46:u:60:ARG:CZ    | 46:u:168:ALA:HB1   | 2.50                     | 0.42              |
| 48:ES:2957:G:N7   | 48:ES:3237:G:C6    | 2.87                     | 0.42              |
| 49:28:300:A:H2'   | 49:28:301:G:C8     | 2.49                     | 0.42              |
| 49:28:950:G:H2'   | 49:28:951:G:H8     | 1.84                     | 0.42              |
| 49:28:983:C:H42   | 49:28:1071:C:H42   | 1.66                     | 0.42              |
| 49:28:3664:G:H2'  | 49:28:3665:G:C8    | 2.51                     | 0.42              |
| 49:28:4462:C:O2'  | 49:28:4463:U:H5'   | 2.20                     | 0.42              |
| 49:28:4578:G:H2'  | 49:28:4579:U:H6    | 1.85                     | 0.42              |
| 49:28:4948:C:H3'  | 49:28:4949:G:H5''  | 2.02                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 50:v:27:HIS:HD2    | 50:v:28:VAL:H      | 1.68                     | 0.42              |
| 50:v:630:GLN:O     | 50:v:633:ARG:HG2   | 2.19                     | 0.42              |
| 4:L3:62:ARG:HG3    | 4:L3:65:SER:OG     | 2.19                     | 0.42              |
| 7:L6:131:HIS:HE1   | 49:28:1282:G:OP2   | 2.02                     | 0.42              |
| 8:L7:91:VAL:O      | 8:L7:119:GLY:HA2   | 2.19                     | 0.42              |
| 14:14:93:LYS:O     | 14:14:96:GLU:HG3   | 2.20                     | 0.42              |
| 20:21:86:ALA:HB2   | 28:29:24:PRO:HG3   | 2.01                     | 0.42              |
| 21:22:28:PRO:HB2   | 21:22:34:MET:HG2   | 2.01                     | 0.42              |
| 27:dd:29:PRO:HA    | 49:28:1654:G:H5'   | 2.01                     | 0.42              |
| 30:31:90:ARG:HD3   | 30:31:102:LEU:HD13 | 2.01                     | 0.42              |
| 45:EB:46:LEU:HB3   | 45:EB:91:PRO:HG2   | 2.01                     | 0.42              |
| 49:28:1507:C:H2'   | 49:28:1508:A:H8    | 1.85                     | 0.42              |
| 49:28:1789:C:H2'   | 49:28:1790:U:H6    | 1.85                     | 0.42              |
| 49:28:1995:G:H2'   | 49:28:1996:C:C6    | 2.55                     | 0.42              |
| 49:28:2015:U:H2'   | 49:28:2016:C:C6    | 2.51                     | 0.42              |
| 49:28:2056:G:C8    | 49:28:2058:G:C8    | 3.07                     | 0.42              |
| 50:v:775:GLN:HB2   | 50:v:782:PHE:CZ    | 2.54                     | 0.42              |
| 50:v:776:VAL:HG21  | 50:v:781:MET:HE3   | 2.00                     | 0.42              |
| 5:L4:191:ALA:HB2   | 49:28:2334:C:C5    | 2.55                     | 0.42              |
| 22:23:43:LYS:HD3   | 22:23:60:MET:HE3   | 2.01                     | 0.42              |
| 24:cc:100:VAL:HG21 | 24:cc:109:ILE:HD11 | 2.01                     | 0.42              |
| 27:dd:3:SER:HA     | 27:dd:6:ARG:HH11   | 1.84                     | 0.42              |
| 27:dd:37:GLY:HA3   | 27:dd:53:PHE:HZ    | 1.85                     | 0.42              |
| 27:dd:51:GLY:HA2   | 47:Q:179:GLY:H     | 1.85                     | 0.42              |
| 49:28:1468:C:H2'   | 49:28:1469:C:H6    | 1.84                     | 0.42              |
| 49:28:1538:U:H2'   | 49:28:1539:G:C8    | 2.52                     | 0.42              |
| 49:28:1551:C:H2'   | 49:28:1552:G:O4'   | 2.20                     | 0.42              |
| 49:28:2749:C:H2'   | 49:28:2750:G:H8    | 1.83                     | 0.42              |
| 49:28:3653:A:H8    | 49:28:3653:A:P     | 2.43                     | 0.42              |
| 1:58:5:U:H2'       | 1:58:6:C:C6        | 2.54                     | 0.42              |
| 1:58:77:A:C6       | 1:58:78:G:C6       | 3.08                     | 0.42              |
| 1:58:140:C:H2'     | 1:58:141:C:H6      | 1.85                     | 0.42              |
| 2:5:24:C:H2'       | 2:5:25:G:O4'       | 2.19                     | 0.42              |
| 3:L8:28:ARG:HB2    | 3:L8:123:ARG:HH11  | 1.85                     | 0.42              |
| 4:L3:248:LEU:H     | 4:L3:248:LEU:HG    | 1.78                     | 0.42              |
| 8:L7:181:TYR:CZ    | 8:L7:202:GLU:HG2   | 2.55                     | 0.42              |
| 9:aa:91:ASN:HB3    | 9:aa:96:GLN:HG2    | 2.02                     | 0.42              |
| 14:14:24:LEU:HD11  | 14:14:86:TRP:CD2   | 2.55                     | 0.42              |
| 16:bb:119:VAL:HG11 | 19:20:171:ARG:HD3  | 2.01                     | 0.42              |
| 20:21:48:VAL:HG21  | 20:21:94:GLU:HG2   | 2.02                     | 0.42              |
| 24:cc:64:SER:HB2   | 34:35:69:LEU:HD13  | 2.02                     | 0.42              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 24:cc:76:ILE:HG23  | 24:cc:77:ILE:HG13  | 2.02                     | 0.42              |
| 26:27:128:LYS:HE2  | 26:27:128:LYS:HB3  | 1.88                     | 0.42              |
| 28:29:40:LEU:O     | 28:29:44:ARG:HG3   | 2.19                     | 0.42              |
| 45:EB:322:THR:O    | 45:EB:333:ILE:HG22 | 2.19                     | 0.42              |
| 48:ES:3244:U:H2'   | 48:ES:3245:G:H8    | 1.85                     | 0.42              |
| 49:28:351:C:H2'    | 49:28:352:G:O4'    | 2.19                     | 0.42              |
| 49:28:1078:A:C6    | 49:28:1233:G:C6    | 3.07                     | 0.42              |
| 49:28:1197:C:H2'   | 49:28:1198:G:C8    | 2.55                     | 0.42              |
| 49:28:1726:U:H2'   | 49:28:1727:U:H6    | 1.84                     | 0.42              |
| 49:28:2009:A:N3    | 49:28:2009:A:H2'   | 2.35                     | 0.42              |
| 49:28:4347:G:O2'   | 49:28:4348:A:H5'   | 2.20                     | 0.42              |
| 49:28:4524:G:H4'   | 49:28:4524:G:OP2   | 2.20                     | 0.42              |
| 49:28:4593:C:H2'   | 49:28:4594:U:H6    | 1.84                     | 0.42              |
| 4:L3:287:ILE:HG12  | 4:L3:331:VAL:HG12  | 2.02                     | 0.41              |
| 13:13:5:ARG:HH12   | 49:28:1849:U:H3'   | 1.85                     | 0.41              |
| 15:15:192:TRP:CD1  | 49:28:48:G:H5'     | 2.55                     | 0.41              |
| 26:27:23:ALA:HA    | 26:27:45:GLY:HA2   | 2.02                     | 0.41              |
| 28:29:102:PRO:HA   | 28:29:109:ARG:HH22 | 1.85                     | 0.41              |
| 44:t:137:GLN:HB3   | 44:t:146:ARG:NE    | 2.30                     | 0.41              |
| 46:u:117:ILE:H     | 46:u:117:ILE:HG13  | 1.71                     | 0.41              |
| 46:u:195:LYS:HG3   | 46:u:196:LYS:HG2   | 2.02                     | 0.41              |
| 49:28:961:G:O6     | 49:28:971(A):G:C6  | 2.73                     | 0.41              |
| 49:28:1168:G:H2'   | 49:28:1169:G:H8    | 1.84                     | 0.41              |
| 49:28:2384:U:H2'   | 49:28:2385:U:H6    | 1.84                     | 0.41              |
| 49:28:4883:C:H2'   | 49:28:4884:G:H8    | 1.84                     | 0.41              |
| 5:L4:339:THR:HG22  | 5:L4:342:ARG:CZ    | 2.50                     | 0.41              |
| 8:L7:70:MET:O      | 8:L7:73:MET:HG2    | 2.19                     | 0.41              |
| 18:19:10:LEU:HB3   | 18:19:41:ILE:HG13  | 2.01                     | 0.41              |
| 25:26:109:LEU:HD22 | 25:26:115:ARG:NH1  | 2.36                     | 0.41              |
| 27:dd:98:ALA:HB2   | 27:dd:121:PRO:HB2  | 2.02                     | 0.41              |
| 37:38:2:PRO:HD2    | 49:28:2642:A:C2    | 2.55                     | 0.41              |
| 48:ES:2950:G:H1    | 48:ES:3244:U:H3    | 1.67                     | 0.41              |
| 49:28:3723:A:H2'   | 49:28:3724:A:C8    | 2.55                     | 0.41              |
| 49:28:3870:C:H2'   | 49:28:3871:A:C8    | 2.55                     | 0.41              |
| 49:28:4503:A:H2'   | 49:28:4504:C:C6    | 2.55                     | 0.41              |
| 7:L6:193:HIS:CD2   | 7:L6:195:LYS:HB3   | 2.56                     | 0.41              |
| 13:13:55:ILE:O     | 13:13:56:ARG:HD3   | 2.20                     | 0.41              |
| 13:13:198:ARG:HA   | 13:13:201:GLU:OE2  | 2.19                     | 0.41              |
| 15:15:140:LYS:HD3  | 15:15:140:LYS:HA   | 1.74                     | 0.41              |
| 20:21:87:LYS:CE    | 49:28:4305:G:H22   | 2.33                     | 0.41              |
| 20:21:158:PHE:CE1  | 20:21:160:ALA:HB3  | 2.55                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 22:23:48:ARG:HH11 | 22:23:49:LEU:HB3  | 1.85                     | 0.41              |
| 25:26:11:ARG:HG3  | 49:28:229:G:H5''  | 2.00                     | 0.41              |
| 30:31:23:ARG:HG3  | 30:31:25:TYR:CE2  | 2.56                     | 0.41              |
| 33:34:41:ALA:O    | 33:34:52:ARG:HD3  | 2.20                     | 0.41              |
| 41:ff:50:ARG:HB3  | 41:ff:54:ILE:HG13 | 2.02                     | 0.41              |
| 44:t:134:GLY:O    | 44:t:137:GLN:HG2  | 2.19                     | 0.41              |
| 46:u:110:PHE:CD2  | 46:u:133:LYS:HD3  | 2.54                     | 0.41              |
| 47:Q:63:LEU:O     | 47:Q:67:ILE:HG12  | 2.21                     | 0.41              |
| 47:Q:69:LYS:HD2   | 49:28:1458:C:H5'' | 2.03                     | 0.41              |
| 49:28:1742:A:H2'  | 49:28:1743:A:H8   | 1.85                     | 0.41              |
| 49:28:2293:U:H2'  | 49:28:2294:G:C8   | 2.56                     | 0.41              |
| 50:v:552:LEU:O    | 50:v:556:ILE:HG13 | 2.20                     | 0.41              |
| 3:L8:201:GLY:HA3  | 3:L8:209:HIS:CE1  | 2.55                     | 0.41              |
| 4:L3:46:PHE:CZ    | 4:L3:207:VAL:HG22 | 2.56                     | 0.41              |
| 8:L7:49:ILE:HD11  | 8:L7:184:ILE:HG13 | 2.01                     | 0.41              |
| 17:17:122:ALA:HB3 | 17:17:143:PRO:HG2 | 2.02                     | 0.41              |
| 38:39:16:LYS:HD3  | 38:39:16:LYS:HA   | 1.92                     | 0.41              |
| 45:EB:181:PRO:HG2 | 45:EB:204:ASN:CG  | 2.46                     | 0.41              |
| 47:Q:78:LYS:HG2   | 47:Q:137:VAL:HG23 | 2.02                     | 0.41              |
| 49:28:31:U:H2'    | 49:28:32:G:O4'    | 2.20                     | 0.41              |
| 49:28:408:A:H4'   | 49:28:409:G:H3'   | 2.02                     | 0.41              |
| 49:28:1341:U:H2'  | 49:28:1342:A:H8   | 1.85                     | 0.41              |
| 49:28:2439:G:H5'  | 49:28:2778:G:OP2  | 2.20                     | 0.41              |
| 49:28:2732:G:H2'  | 49:28:2733:C:C6   | 2.55                     | 0.41              |
| 49:28:2764:A:H2'  | 49:28:2765:A:C8   | 2.56                     | 0.41              |
| 49:28:3925:U:H2'  | 49:28:3926:C:O4'  | 2.20                     | 0.41              |
| 49:28:4963:G:C5   | 49:28:4964:C:N4   | 2.89                     | 0.41              |
| 50:v:718:GLY:O    | 50:v:722:ILE:HG13 | 2.20                     | 0.41              |
| 3:L8:200:ARG:HG2  | 49:28:3651:A:OP1  | 2.20                     | 0.41              |
| 5:L4:323:ARG:HB2  | 49:28:1281:G:H5'  | 2.02                     | 0.41              |
| 14:14:137:LYS:HD3 | 14:14:137:LYS:HA  | 1.91                     | 0.41              |
| 23:24:46:PRO:HB2  | 23:24:54:LEU:HD12 | 2.02                     | 0.41              |
| 28:29:104:LEU:H   | 28:29:104:LEU:HG  | 1.69                     | 0.41              |
| 29:30:47:ILE:HD13 | 29:30:72:HIS:HB3  | 2.02                     | 0.41              |
| 41:ff:9:GLY:H     | 41:ff:27:LYS:HE2  | 1.85                     | 0.41              |
| 42:gg:84:LYS:HE2  | 42:gg:88:ALA:HB1  | 2.02                     | 0.41              |
| 43:s:133:GLU:HG2  | 43:s:134:LYS:HG3  | 2.03                     | 0.41              |
| 44:t:98:ILE:HD12  | 44:t:98:ILE:HA    | 1.93                     | 0.41              |
| 46:u:187:VAL:O    | 46:u:191:VAL:HG23 | 2.20                     | 0.41              |
| 49:28:1207:C:H2'  | 49:28:1208:G:H8   | 1.86                     | 0.41              |
| 49:28:2081:C:H2'  | 49:28:2082:G:C8   | 2.55                     | 0.41              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 49:28:4094:G:C2    | 49:28:4095:G:C5   | 3.09                     | 0.41              |
| 10:L9:63:ASN:H     | 10:L9:66:GLU:HG3  | 1.84                     | 0.41              |
| 15:15:188:ARG:HE   | 15:15:188:ARG:HB2 | 1.56                     | 0.41              |
| 16:bb:5:GLN:HE21   | 16:bb:6:VAL:HG23  | 1.85                     | 0.41              |
| 45:EB:263:ARG:HH21 | 49:28:2709:C:H5'' | 1.84                     | 0.41              |
| 45:EB:369:LYS:HD2  | 48:ES:3238:C:N4   | 2.35                     | 0.41              |
| 49:28:49:U:H2'     | 49:28:50:C:H6     | 1.84                     | 0.41              |
| 49:28:1756:U:H2'   | 49:28:1757:U:C6   | 2.55                     | 0.41              |
| 49:28:2402:G:C2    | 49:28:2403:A:C8   | 3.09                     | 0.41              |
| 49:28:2488:C:H3'   | 49:28:2490:U:O4   | 2.20                     | 0.41              |
| 49:28:2611:A:O5'   | 49:28:2688:G:H4'  | 2.21                     | 0.41              |
| 49:28:3816:A:OP1   | 49:28:3818:U:H5   | 2.04                     | 0.41              |
| 49:28:3923:A:H2'   | 49:28:3924:C:C6   | 2.56                     | 0.41              |
| 1:58:30:U:H2'      | 1:58:31:G:H8      | 1.86                     | 0.41              |
| 2:5:19:C:H2'       | 2:5:20:U:C6       | 2.55                     | 0.41              |
| 3:L8:23:ARG:HA     | 3:L8:52:PRO:HD2   | 2.02                     | 0.41              |
| 5:L4:340:ILE:HD11  | 49:28:946:C:O2'   | 2.20                     | 0.41              |
| 33:34:26:PRO:HD2   | 49:28:2521:G:H4'  | 2.03                     | 0.41              |
| 41:ff:8:VAL:HG22   | 49:28:2876:G:OP1  | 2.21                     | 0.41              |
| 48:ES:3587:C:H2'   | 48:ES:3588:C:H6   | 1.86                     | 0.41              |
| 49:28:644:G:H2'    | 49:28:645:G:H8    | 1.85                     | 0.41              |
| 49:28:1196:G:C6    | 49:28:1197:C:C4   | 3.09                     | 0.41              |
| 49:28:1478:C:H2'   | 49:28:1479:G:C8   | 2.56                     | 0.41              |
| 49:28:2519:U:H1'   | 49:28:2520:C:C6   | 2.55                     | 0.41              |
| 49:28:2676:A:C5    | 49:28:2677:G:C8   | 3.09                     | 0.41              |
| 49:28:2727:C:H2'   | 49:28:2728:U:H6   | 1.84                     | 0.41              |
| 49:28:5030:U:H2'   | 49:28:5031:G:H8   | 1.84                     | 0.41              |
| 50:v:296:PRO:O     | 50:v:300:VAL:HG23 | 2.20                     | 0.41              |
| 50:v:445:LYS:HD2   | 50:v:446:PRO:HD2  | 2.03                     | 0.41              |
| 50:v:729:LEU:O     | 50:v:733:VAL:HG13 | 2.21                     | 0.41              |
| 3:L8:83:HIS:CD2    | 3:L8:86:GLN:HB2   | 2.56                     | 0.41              |
| 3:L8:150:LEU:HB3   | 3:L8:151:PRO:HD2  | 2.03                     | 0.41              |
| 4:L3:223:THR:HA    | 4:L3:338:VAL:HG22 | 2.03                     | 0.41              |
| 9:aa:207:LEU:HD11  | 9:aa:275:ILE:HD12 | 2.03                     | 0.41              |
| 16:bb:10:ASP:HB2   | 16:bb:117:ARG:HB3 | 2.02                     | 0.41              |
| 18:19:77:GLY:O     | 18:19:81:ARG:HG3  | 2.21                     | 0.41              |
| 20:21:97:LYS:HB2   | 20:21:97:LYS:HE3  | 1.86                     | 0.41              |
| 24:cc:90:ILE:HG23  | 24:cc:146:ALA:HB1 | 2.03                     | 0.41              |
| 25:26:22:PRO:O     | 25:26:26:ARG:HG2  | 2.20                     | 0.41              |
| 27:dd:74:ASN:HB3   | 27:dd:114:LYS:HB3 | 2.03                     | 0.41              |
| 28:29:36:ASP:OD1   | 28:29:39:PHE:HB3  | 2.20                     | 0.41              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 30:31:40:LYS:C     | 30:31:43:PRO:HD2   | 2.45                     | 0.41              |
| 44:t:146:ARG:HG3   | 44:t:147:HIS:H     | 1.85                     | 0.41              |
| 45:EB:229:LEU:HG   | 45:EB:318:GLN:HG2  | 2.02                     | 0.41              |
| 49:28:411:G:H4'    | 49:28:412:G:H5''   | 2.03                     | 0.41              |
| 49:28:1955:G:H2'   | 49:28:1956:A:C8    | 2.55                     | 0.41              |
| 49:28:2560:C:H2'   | 49:28:2561:C:C6    | 2.56                     | 0.41              |
| 49:28:2870:A:H2'   | 49:28:2871:A:H8    | 1.85                     | 0.41              |
| 49:28:3658:C:H2'   | 49:28:3659:G:H8    | 1.86                     | 0.41              |
| 49:28:4486:C:H2'   | 49:28:4487:A:O4'   | 2.21                     | 0.41              |
| 1:58:33:G:H5''     | 1:58:34:U:OP1      | 2.21                     | 0.41              |
| 3:L8:70:LYS:HD3    | 3:L8:72:ARG:NH1    | 2.35                     | 0.41              |
| 4:L3:13:SER:HB2    | 49:28:4622:A:H4'   | 2.02                     | 0.41              |
| 5:L4:210:ILE:HA    | 5:L4:230:LEU:O     | 2.20                     | 0.41              |
| 5:L4:321:ASN:OD1   | 5:L4:324:ILE:HG12  | 2.21                     | 0.41              |
| 6:L5:45:ASN:OD1    | 20:21:33:ILE:HD13  | 2.21                     | 0.41              |
| 6:L5:286:SER:HA    | 6:L5:289:ARG:HG2   | 2.02                     | 0.41              |
| 9:aa:210:ILE:HD11  | 9:aa:223:LEU:HD22  | 2.02                     | 0.41              |
| 9:aa:318:LEU:HD13  | 9:aa:318:LEU:HA    | 1.94                     | 0.41              |
| 10:L9:76:HIS:O     | 10:L9:80:MET:HG3   | 2.21                     | 0.41              |
| 11:10:9:TYR:CG     | 11:10:97:ILE:HG12  | 2.56                     | 0.41              |
| 13:13:129:ARG:HH12 | 49:28:173:C:H5''   | 1.85                     | 0.41              |
| 14:14:69:ARG:HH21  | 49:28:738(A):C:H4' | 1.86                     | 0.41              |
| 15:15:177:GLY:HA2  | 49:28:67:C:O3'     | 2.20                     | 0.41              |
| 18:19:118:HIS:HA   | 49:28:2663:G:OP1   | 2.20                     | 0.41              |
| 18:19:141:HIS:CE1  | 18:19:145:LEU:HD11 | 2.56                     | 0.41              |
| 21:22:84:LYS:HD2   | 21:22:110:TYR:OH   | 2.20                     | 0.41              |
| 25:26:89:LYS:HG2   | 25:26:90:ALA:H     | 1.85                     | 0.41              |
| 27:dd:75:LEU:HG    | 27:dd:113:GLY:HA2  | 2.03                     | 0.41              |
| 29:30:32:LYS:HB2   | 29:30:32:LYS:HE3   | 1.90                     | 0.41              |
| 31:32:35:TRP:HH2   | 31:32:55:MET:HG2   | 1.86                     | 0.41              |
| 31:32:58:ILE:HD12  | 31:32:58:ILE:HA    | 1.89                     | 0.41              |
| 35:36:55:ARG:HA    | 35:36:58:MET:HE2   | 2.03                     | 0.41              |
| 41:ff:10:ILE:HG21  | 41:ff:30:GLU:HB3   | 2.03                     | 0.41              |
| 43:s:141:LEU:HD11  | 43:s:171:GLU:HG3   | 2.03                     | 0.41              |
| 45:EB:65:LYS:HB2   | 48:ES:3247:A:OP1   | 2.21                     | 0.41              |
| 46:u:18:LEU:HD23   | 46:u:18:LEU:HA     | 1.94                     | 0.41              |
| 46:u:174:MET:SD    | 46:u:179:LEU:HD23  | 2.61                     | 0.41              |
| 49:28:674:G:H2'    | 49:28:675:C:H6     | 1.86                     | 0.41              |
| 49:28:693:C:H2'    | 49:28:694:C:C6     | 2.56                     | 0.41              |
| 49:28:756:G:O2'    | 49:28:757:G:H5'    | 2.21                     | 0.41              |
| 49:28:932:A:C2     | 49:28:939:G:C8     | 3.09                     | 0.41              |

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| Atom-1             | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|-------------------|--------------------------|-------------------|
| 49:28:1245:C:H2'   | 49:28:1246:G:H8   | 1.85                     | 0.41              |
| 49:28:1344:C:H2'   | 49:28:1345:A:C8   | 2.56                     | 0.41              |
| 49:28:1962:A:N3    | 49:28:1962:A:H2'  | 2.36                     | 0.41              |
| 49:28:2032:U:H2'   | 49:28:2033:A:H8   | 1.84                     | 0.41              |
| 49:28:2540:C:H2'   | 49:28:2541:G:C8   | 2.56                     | 0.41              |
| 49:28:4320:G:H2'   | 49:28:4321:U:C6   | 2.56                     | 0.41              |
| 49:28:4737:G:C6    | 49:28:4738:C:C4   | 3.08                     | 0.41              |
| 49:28:5010:U:H2'   | 49:28:5011:A:H8   | 1.85                     | 0.41              |
| 50:v:604:MET:HG2   | 50:v:728:CYS:SG   | 2.60                     | 0.41              |
| 5:L4:209:VAL:HB    | 5:L4:229:LEU:HD13 | 2.02                     | 0.41              |
| 10:L9:105:ILE:HG21 | 10:L9:109:GLY:HA2 | 2.03                     | 0.41              |
| 16:bb:61:ARG:HA    | 16:bb:70:PRO:HD2  | 2.03                     | 0.41              |
| 26:27:122:TYR:HB2  | 26:27:131:PHE:CE1 | 2.56                     | 0.41              |
| 31:32:22:ARG:HD3   | 31:32:31:ILE:CG2  | 2.50                     | 0.41              |
| 32:ee:52:LYS:HE2   | 32:ee:52:LYS:HB3  | 1.87                     | 0.41              |
| 34:35:27:GLU:O     | 34:35:30:GLN:HG2  | 2.21                     | 0.41              |
| 36:37:8:PHE:HE2    | 49:28:1638:A:C6   | 2.39                     | 0.41              |
| 40:42:61:LYS:HB3   | 40:42:61:LYS:HE2  | 1.64                     | 0.41              |
| 48:ES:3236:G:O2'   | 48:ES:3237:G:H8   | 2.03                     | 0.41              |
| 49:28:1757:U:H2'   | 49:28:1758:G:C8   | 2.56                     | 0.41              |
| 49:28:2561:C:H2'   | 49:28:2562:G:C8   | 2.56                     | 0.41              |
| 49:28:4153:C:H2'   | 49:28:4154:G:H8   | 1.86                     | 0.41              |
| 49:28:4642:U:H2'   | 49:28:4643:G:C8   | 2.56                     | 0.41              |
| 50:v:680:VAL:O     | 50:v:684:GLN:HG2  | 2.21                     | 0.41              |
| 2:5:120:U:H3'      | 6:L5:259:ARG:HH21 | 1.85                     | 0.40              |
| 3:L8:80:GLU:HG3    | 41:ff:66:GLY:HA2  | 2.02                     | 0.40              |
| 13:13:91:ALA:HB1   | 13:13:96:ILE:HB   | 2.04                     | 0.40              |
| 14:14:110:TYR:OH   | 14:14:114:LYS:HE3 | 2.21                     | 0.40              |
| 20:21:87:LYS:NZ    | 49:28:4305:G:H22  | 2.19                     | 0.40              |
| 20:21:96:ILE:HD13  | 20:21:96:ILE:HA   | 1.85                     | 0.40              |
| 27:dd:21:ARG:HB3   | 49:28:1318:C:OP1  | 2.21                     | 0.40              |
| 27:dd:77:LYS:HE3   | 27:dd:77:LYS:HB3  | 1.92                     | 0.40              |
| 42:gg:122:LYS:HG2  | 42:gg:123:PRO:HD2 | 2.03                     | 0.40              |
| 49:28:659:G:O2'    | 49:28:660:G:H5'   | 2.21                     | 0.40              |
| 49:28:1620:U:H2'   | 49:28:1621:A:H8   | 1.86                     | 0.40              |
| 49:28:2479:G:H2'   | 49:28:2480:G:H8   | 1.85                     | 0.40              |
| 49:28:2542:G:H2'   | 49:28:2543:A:C8   | 2.56                     | 0.40              |
| 49:28:2644:G:H2'   | 49:28:2645:G:C8   | 2.56                     | 0.40              |
| 49:28:3651:A:C4    | 49:28:3652:A:C8   | 3.09                     | 0.40              |
| 49:28:4089:G:H2'   | 49:28:4090:G:H8   | 1.86                     | 0.40              |
| 49:28:4398:C:H2'   | 49:28:4399:U:H6   | 1.85                     | 0.40              |

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| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 49:28:4704:C:H2'   | 49:28:4705:A:H8    | 1.86                     | 0.40              |
| 50:v:721:ILE:HD13  | 50:v:721:ILE:HA    | 1.85                     | 0.40              |
| 9:aa:228:ARG:HG3   | 9:aa:283:TYR:CG    | 2.55                     | 0.40              |
| 11:10:15:LYS:HG3   | 49:28:1863:U:OP1   | 2.21                     | 0.40              |
| 16:bb:47:PHE:CE1   | 16:bb:140:ARG:HG2  | 2.56                     | 0.40              |
| 18:19:134:ASN:OD1  | 18:19:137:ILE:HG22 | 2.20                     | 0.40              |
| 19:20:30:MET:HE2   | 19:20:30:MET:HB3   | 1.96                     | 0.40              |
| 20:21:19:PHE:CE2   | 20:21:20:ARG:HG3   | 2.56                     | 0.40              |
| 27:dd:60:HIS:O     | 49:28:88:A:H5'     | 2.21                     | 0.40              |
| 31:32:19:LYS:HE3   | 49:28:2318:G:O6    | 2.21                     | 0.40              |
| 38:39:41:ARG:HD2   | 38:39:41:ARG:HA    | 1.94                     | 0.40              |
| 43:s:44:ARG:HE     | 43:s:53:VAL:HG13   | 1.86                     | 0.40              |
| 43:s:127:ASN:HB2   | 43:s:153:GLU:OE1   | 2.21                     | 0.40              |
| 44:t:32:ILE:CG2    | 44:t:37:LEU:HB3    | 2.52                     | 0.40              |
| 47:Q:78:LYS:HG3    | 47:Q:135:GLY:O     | 2.21                     | 0.40              |
| 49:28:232:G:O4'    | 49:28:383:A:H1'    | 2.21                     | 0.40              |
| 49:28:911:U:H2'    | 49:28:912:G:O4'    | 2.21                     | 0.40              |
| 49:28:3714:G:H2'   | 49:28:3715:U:O4'   | 2.21                     | 0.40              |
| 49:28:4629:U:C2    | 49:28:4630:G:C8    | 3.09                     | 0.40              |
| 49:28:4915:G:C2    | 49:28:4916:G:C5    | 3.09                     | 0.40              |
| 2:5:83:A:H4'       | 8:L7:223:THR:HB    | 2.02                     | 0.40              |
| 3:L8:15:VAL:HG12   | 3:L8:194:ASN:HD22  | 1.86                     | 0.40              |
| 5:L4:22:VAL:HG22   | 5:L4:258:ARG:HE    | 1.87                     | 0.40              |
| 25:26:13:LYS:O     | 25:26:17:ARG:HG2   | 2.22                     | 0.40              |
| 34:35:15:GLU:H     | 34:35:15:GLU:HG3   | 1.77                     | 0.40              |
| 36:37:28:HIS:ND1   | 36:37:31:LYS:HE2   | 2.36                     | 0.40              |
| 42:gg:93:ILE:HD11  | 42:gg:111:ILE:HA   | 2.03                     | 0.40              |
| 44:t:119:ARG:NH1   | 44:t:121:LEU:H     | 2.20                     | 0.40              |
| 45:EB:182:ILE:HD13 | 45:EB:235:GLY:HA2  | 2.02                     | 0.40              |
| 49:28:99:A:H2'     | 49:28:100:C:O2     | 2.20                     | 0.40              |
| 49:28:324:A:H2'    | 49:28:325:U:C6     | 2.56                     | 0.40              |
| 49:28:1669:A:H4'   | 49:28:1685:G:N2    | 2.36                     | 0.40              |
| 49:28:2864:A:H2'   | 49:28:2865:U:C6    | 2.56                     | 0.40              |
| 50:v:596:PRO:HD2   | 50:v:720:GLN:HB3   | 2.03                     | 0.40              |
| 3:L8:31:ALA:HB2    | 3:L8:123:ARG:HH21  | 1.86                     | 0.40              |
| 4:L3:4:ARG:HH21    | 49:28:4459:U:H5    | 1.69                     | 0.40              |
| 5:L4:294:LYS:HE2   | 5:L4:294:LYS:HB3   | 1.75                     | 0.40              |
| 11:10:184:MET:HE2  | 11:10:190:LEU:HG   | 2.03                     | 0.40              |
| 17:17:18:ARG:O     | 49:28:399:G:H4'    | 2.21                     | 0.40              |
| 27:dd:53:PHE:O     | 47:Q:178:ARG:HB2   | 2.21                     | 0.40              |
| 43:s:45:MET:HE3    | 43:s:45:MET:HB3    | 1.92                     | 0.40              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 49:28:257:C:H2'   | 49:28:258:G:C8    | 2.56                     | 0.40              |
| 49:28:469:C:H2'   | 49:28:470:A:C8    | 2.54                     | 0.40              |
| 49:28:1201:U:H2'  | 49:28:1202:C:C6   | 2.56                     | 0.40              |
| 49:28:3637:U:O4   | 49:28:3651:A:H2   | 2.05                     | 0.40              |
| 49:28:3917:A:H2'  | 49:28:3918:G:H8   | 1.85                     | 0.40              |
| 49:28:4889:G:C6   | 49:28:4931:G:C6   | 3.09                     | 0.40              |
| 50:v:772:GLU:HB3  | 50:v:785:LYS:HB2  | 2.03                     | 0.40              |
| 1:58:106:G:H4'    | 1:58:137:A:H5'    | 2.04                     | 0.40              |
| 6:L5:69:ILE:HD11  | 20:21:32:ARG:NH2  | 2.36                     | 0.40              |
| 7:L6:186:ARG:HD2  | 7:L6:186:ARG:HA   | 1.97                     | 0.40              |
| 7:L6:211:ILE:HD12 | 7:L6:212:PRO:HD2  | 2.04                     | 0.40              |
| 12:11:110:GLN:HG2 | 12:11:111:GLU:HG2 | 2.04                     | 0.40              |
| 13:13:39:ARG:CZ   | 49:28:1362:G:H5'  | 2.51                     | 0.40              |
| 15:15:39:ALA:HB3  | 15:15:61:ILE:HD12 | 2.03                     | 0.40              |
| 20:21:126:VAL:O   | 49:28:1834:U:H5   | 2.05                     | 0.40              |
| 31:32:90:MET:HE2  | 31:32:90:MET:HA   | 2.03                     | 0.40              |
| 33:34:11:LEU:HG   | 49:28:2513:A:OP1  | 2.21                     | 0.40              |
| 46:u:63:PHE:CE1   | 46:u:108:ASP:HB2  | 2.56                     | 0.40              |
| 49:28:679:C:H2'   | 49:28:680:G:C8    | 2.55                     | 0.40              |
| 49:28:980:U:H2'   | 49:28:981:C:H6    | 1.86                     | 0.40              |
| 49:28:1846:G:H2'  | 49:28:1847:C:H6   | 1.87                     | 0.40              |
| 49:28:1882:U:C4   | 49:28:2279:A:C2   | 3.09                     | 0.40              |
| 49:28:2267:U:O2   | 49:28:2270:G:H4'  | 2.22                     | 0.40              |
| 49:28:3851:U:H2'  | 49:28:3852:A:O4'  | 2.22                     | 0.40              |
| 49:28:4345:C:H2'  | 49:28:4346:U:H6   | 1.86                     | 0.40              |
| 49:28:4350:C:C2   | 49:28:4351:U:C5   | 3.09                     | 0.40              |
| 49:28:4638:U:H2'  | 49:28:4639:G:N3   | 2.36                     | 0.40              |
| 49:28:5001:U:H2'  | 49:28:5002:U:O4'  | 2.21                     | 0.40              |
| 50:v:222:ALA:HB3  | 50:v:346:ALA:HA   | 2.03                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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

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

| Mol | Chain | Analysed       | Favoured   | Allowed | Outliers | Percentiles |     |
|-----|-------|----------------|------------|---------|----------|-------------|-----|
| 3   | L8    | 246/345 (71%)  | 236 (96%)  | 10 (4%) | 0        | 100         | 100 |
| 4   | L3    | 392/394 (100%) | 383 (98%)  | 9 (2%)  | 0        | 100         | 100 |
| 5   | L4    | 360/362 (99%)  | 350 (97%)  | 10 (3%) | 0        | 100         | 100 |
| 6   | L5    | 291/293 (99%)  | 275 (94%)  | 14 (5%) | 2 (1%)   | 18          | 35  |
| 7   | L6    | 208/347 (60%)  | 200 (96%)  | 8 (4%)  | 0        | 100         | 100 |
| 8   | L7    | 223/225 (99%)  | 215 (96%)  | 8 (4%)  | 0        | 100         | 100 |
| 9   | aa    | 229/240 (95%)  | 224 (98%)  | 5 (2%)  | 0        | 100         | 100 |
| 10  | L9    | 188/190 (99%)  | 184 (98%)  | 4 (2%)  | 0        | 100         | 100 |
| 11  | 10    | 201/213 (94%)  | 196 (98%)  | 5 (2%)  | 0        | 100         | 100 |
| 12  | 11    | 168/170 (99%)  | 166 (99%)  | 2 (1%)  | 0        | 100         | 100 |
| 13  | 13    | 208/210 (99%)  | 199 (96%)  | 8 (4%)  | 1 (0%)   | 24          | 42  |
| 14  | 14    | 136/138 (99%)  | 134 (98%)  | 2 (2%)  | 0        | 100         | 100 |
| 15  | 15    | 201/203 (99%)  | 192 (96%)  | 8 (4%)  | 1 (0%)   | 24          | 42  |
| 16  | bb    | 197/199 (99%)  | 192 (98%)  | 5 (2%)  | 0        | 100         | 100 |
| 17  | 17    | 151/153 (99%)  | 149 (99%)  | 2 (1%)  | 0        | 100         | 100 |
| 18  | 19    | 157/180 (87%)  | 155 (99%)  | 2 (1%)  | 0        | 100         | 100 |
| 19  | 20    | 174/192 (91%)  | 169 (97%)  | 5 (3%)  | 0        | 100         | 100 |
| 20  | 21    | 157/159 (99%)  | 151 (96%)  | 6 (4%)  | 0        | 100         | 100 |
| 21  | 22    | 97/99 (98%)    | 95 (98%)   | 2 (2%)  | 0        | 100         | 100 |
| 22  | 23    | 129/131 (98%)  | 128 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 23  | 24    | 61/63 (97%)    | 59 (97%)   | 2 (3%)  | 0        | 100         | 100 |
| 24  | cc    | 116/118 (98%)  | 113 (97%)  | 3 (3%)  | 0        | 100         | 100 |
| 25  | 26    | 132/134 (98%)  | 130 (98%)  | 2 (2%)  | 0        | 100         | 100 |
| 26  | 27    | 133/135 (98%)  | 127 (96%)  | 6 (4%)  | 0        | 100         | 100 |
| 27  | dd    | 145/147 (99%)  | 135 (93%)  | 10 (7%) | 0        | 100         | 100 |
| 28  | 29    | 100/245 (41%)  | 96 (96%)   | 4 (4%)  | 0        | 100         | 100 |
| 29  | 30    | 96/98 (98%)    | 96 (100%)  | 0       | 0        | 100         | 100 |
| 30  | 31    | 105/107 (98%)  | 100 (95%)  | 5 (5%)  | 0        | 100         | 100 |
| 31  | 32    | 126/128 (98%)  | 123 (98%)  | 3 (2%)  | 0        | 100         | 100 |
| 32  | ee    | 107/109 (98%)  | 105 (98%)  | 2 (2%)  | 0        | 100         | 100 |
| 33  | 34    | 112/114 (98%)  | 112 (100%) | 0       | 0        | 100         | 100 |
| 34  | 35    | 120/122 (98%)  | 117 (98%)  | 3 (2%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 35  | 36    | 100/102 (98%)   | 96 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 36  | 37    | 84/86 (98%)     | 84 (100%)  | 0        | 0        | 100         | 100 |
| 37  | 38    | 67/69 (97%)     | 67 (100%)  | 0        | 0        | 100         | 100 |
| 38  | 39    | 48/50 (96%)     | 45 (94%)   | 3 (6%)   | 0        | 100         | 100 |
| 39  | 40    | 50/52 (96%)     | 49 (98%)   | 1 (2%)   | 0        | 100         | 100 |
| 40  | 42    | 102/104 (98%)   | 97 (95%)   | 5 (5%)   | 0        | 100         | 100 |
| 41  | ff    | 89/91 (98%)     | 85 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 42  | gg    | 122/124 (98%)   | 120 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 43  | s     | 194/196 (99%)   | 183 (94%)  | 11 (6%)  | 0        | 100         | 100 |
| 44  | t     | 151/153 (99%)   | 135 (89%)  | 16 (11%) | 0        | 100         | 100 |
| 45  | EB    | 373/375 (100%)  | 364 (98%)  | 9 (2%)   | 0        | 100         | 100 |
| 46  | u     | 204/206 (99%)   | 189 (93%)  | 15 (7%)  | 0        | 100         | 100 |
| 47  | Q     | 185/188 (98%)   | 180 (97%)  | 5 (3%)   | 0        | 100         | 100 |
| 50  | v     | 816/857 (95%)   | 800 (98%)  | 14 (2%)  | 2 (0%)   | 43          | 62  |
| All | All   | 8051/8616 (93%) | 7800 (97%) | 245 (3%) | 6 (0%)   | 49          | 68  |

All (6) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 15  | 15    | 77  | LYS  |
| 50  | v     | 738 | PRO  |
| 50  | v     | 739 | ARG  |
| 13  | 13    | 64  | VAL  |
| 6   | L5    | 36  | LEU  |
| 6   | L5    | 37  | VAL  |

### 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   | L8    | 190/263 (72%) | 182 (96%) | 8 (4%)   | 26          | 51 |

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| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |    |
|-----|-------|----------------|-----------|----------|-------------|----|
| 4   | L3    | 342/342 (100%) | 330 (96%) | 12 (4%)  | 32          | 57 |
| 5   | L4    | 302/302 (100%) | 296 (98%) | 6 (2%)   | 48          | 71 |
| 6   | L5    | 247/247 (100%) | 241 (98%) | 6 (2%)   | 43          | 67 |
| 7   | L6    | 190/302 (63%)  | 184 (97%) | 6 (3%)   | 34          | 59 |
| 8   | L7    | 196/196 (100%) | 188 (96%) | 8 (4%)   | 27          | 52 |
| 9   | aa    | 200/205 (98%)  | 192 (96%) | 8 (4%)   | 28          | 53 |
| 10  | L9    | 169/169 (100%) | 163 (96%) | 6 (4%)   | 31          | 56 |
| 11  | 10    | 175/180 (97%)  | 173 (99%) | 2 (1%)   | 65          | 81 |
| 12  | 11    | 143/143 (100%) | 139 (97%) | 4 (3%)   | 38          | 62 |
| 13  | 13    | 175/175 (100%) | 168 (96%) | 7 (4%)   | 28          | 53 |
| 14  | 14    | 117/117 (100%) | 114 (97%) | 3 (3%)   | 40          | 65 |
| 15  | 15    | 171/171 (100%) | 164 (96%) | 7 (4%)   | 27          | 52 |
| 16  | bb    | 171/171 (100%) | 162 (95%) | 9 (5%)   | 20          | 42 |
| 17  | 17    | 134/134 (100%) | 131 (98%) | 3 (2%)   | 45          | 69 |
| 18  | 19    | 141/159 (89%)  | 139 (99%) | 2 (1%)   | 59          | 78 |
| 19  | 20    | 157/173 (91%)  | 153 (98%) | 4 (2%)   | 42          | 66 |
| 20  | 21    | 139/139 (100%) | 136 (98%) | 3 (2%)   | 45          | 69 |
| 21  | 22    | 89/89 (100%)   | 87 (98%)  | 2 (2%)   | 45          | 69 |
| 22  | 23    | 101/101 (100%) | 97 (96%)  | 4 (4%)   | 28          | 53 |
| 23  | 24    | 55/55 (100%)   | 54 (98%)  | 1 (2%)   | 51          | 73 |
| 24  | cc    | 106/106 (100%) | 104 (98%) | 2 (2%)   | 50          | 72 |
| 25  | 26    | 124/124 (100%) | 118 (95%) | 6 (5%)   | 23          | 46 |
| 26  | 27    | 117/117 (100%) | 110 (94%) | 7 (6%)   | 17          | 36 |
| 27  | dd    | 119/119 (100%) | 118 (99%) | 1 (1%)   | 73          | 86 |
| 28  | 29    | 84/184 (46%)   | 81 (96%)  | 3 (4%)   | 31          | 56 |
| 29  | 30    | 84/84 (100%)   | 83 (99%)  | 1 (1%)   | 63          | 80 |
| 30  | 31    | 98/98 (100%)   | 96 (98%)  | 2 (2%)   | 48          | 71 |
| 31  | 32    | 114/114 (100%) | 112 (98%) | 2 (2%)   | 51          | 73 |
| 32  | ee    | 88/88 (100%)   | 83 (94%)  | 5 (6%)   | 18          | 39 |
| 33  | 34    | 98/98 (100%)   | 95 (97%)  | 3 (3%)   | 35          | 60 |
| 34  | 35    | 109/109 (100%) | 107 (98%) | 2 (2%)   | 51          | 73 |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|-------------|-----|
| 35  | 36    | 86/86 (100%)    | 81 (94%)   | 5 (6%)   | 18          | 38  |
| 36  | 37    | 73/73 (100%)    | 71 (97%)   | 2 (3%)   | 39          | 63  |
| 37  | 38    | 64/64 (100%)    | 61 (95%)   | 3 (5%)   | 23          | 47  |
| 38  | 39    | 47/47 (100%)    | 47 (100%)  | 0        | 100         | 100 |
| 39  | 40    | 48/48 (100%)    | 47 (98%)   | 1 (2%)   | 47          | 70  |
| 40  | 42    | 92/92 (100%)    | 91 (99%)   | 1 (1%)   | 65          | 81  |
| 41  | ff    | 74/74 (100%)    | 72 (97%)   | 2 (3%)   | 39          | 63  |
| 42  | gg    | 107/108 (99%)   | 102 (95%)  | 5 (5%)   | 23          | 47  |
| 43  | s     | 164/164 (100%)  | 147 (90%)  | 17 (10%) | 7           | 14  |
| 44  | t     | 126/126 (100%)  | 117 (93%)  | 9 (7%)   | 13          | 28  |
| 45  | EB    | 321/321 (100%)  | 304 (95%)  | 17 (5%)  | 20          | 42  |
| 46  | u     | 186/186 (100%)  | 177 (95%)  | 9 (5%)   | 23          | 46  |
| 47  | Q     | 164/165 (99%)   | 159 (97%)  | 5 (3%)   | 36          | 61  |
| 50  | v     | 701/730 (96%)   | 667 (95%)  | 34 (5%)  | 22          | 45  |
| All | All   | 6998/7358 (95%) | 6743 (96%) | 255 (4%) | 32          | 56  |

All (255) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | L8    | 32  | VAL  |
| 3   | L8    | 97  | ASN  |
| 3   | L8    | 101 | VAL  |
| 3   | L8    | 102 | LEU  |
| 3   | L8    | 135 | THR  |
| 3   | L8    | 165 | VAL  |
| 3   | L8    | 208 | GLU  |
| 3   | L8    | 243 | THR  |
| 4   | L3    | 43  | LEU  |
| 4   | L3    | 47  | LEU  |
| 4   | L3    | 56  | ILE  |
| 4   | L3    | 90  | VAL  |
| 4   | L3    | 94  | GLU  |
| 4   | L3    | 101 | THR  |
| 4   | L3    | 146 | LEU  |
| 4   | L3    | 207 | VAL  |
| 4   | L3    | 240 | LEU  |
| 4   | L3    | 248 | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | L3    | 254 | ILE  |
| 4   | L3    | 262 | VAL  |
| 5   | L4    | 101 | MET  |
| 5   | L4    | 154 | VAL  |
| 5   | L4    | 189 | MET  |
| 5   | L4    | 232 | VAL  |
| 5   | L4    | 300 | ARG  |
| 5   | L4    | 313 | VAL  |
| 6   | L5    | 38  | ILE  |
| 6   | L5    | 123 | VAL  |
| 6   | L5    | 126 | THR  |
| 6   | L5    | 143 | THR  |
| 6   | L5    | 213 | GLU  |
| 6   | L5    | 235 | MET  |
| 7   | L6    | 51  | VAL  |
| 7   | L6    | 53  | VAL  |
| 7   | L6    | 178 | VAL  |
| 7   | L6    | 197 | VAL  |
| 7   | L6    | 261 | LEU  |
| 7   | L6    | 289 | LEU  |
| 8   | L7    | 38  | GLN  |
| 8   | L7    | 41  | LEU  |
| 8   | L7    | 61  | ARG  |
| 8   | L7    | 124 | LEU  |
| 8   | L7    | 134 | ILE  |
| 8   | L7    | 151 | GLU  |
| 8   | L7    | 189 | LEU  |
| 8   | L7    | 211 | LYS  |
| 9   | aa    | 116 | LEU  |
| 9   | aa    | 151 | LEU  |
| 9   | aa    | 159 | THR  |
| 9   | aa    | 167 | LEU  |
| 9   | aa    | 193 | VAL  |
| 9   | aa    | 199 | LEU  |
| 9   | aa    | 223 | LEU  |
| 9   | aa    | 226 | LEU  |
| 10  | L9    | 20  | LEU  |
| 10  | L9    | 66  | GLU  |
| 10  | L9    | 74  | CYS  |
| 10  | L9    | 103 | VAL  |
| 10  | L9    | 107 | GLU  |
| 10  | L9    | 189 | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 11  | 10    | 163 | GLN  |
| 11  | 10    | 212 | LEU  |
| 12  | 11    | 49  | VAL  |
| 12  | 11    | 128 | LEU  |
| 12  | 11    | 148 | THR  |
| 12  | 11    | 175 | LEU  |
| 13  | 13    | 59  | VAL  |
| 13  | 13    | 67  | HIS  |
| 13  | 13    | 71  | ARG  |
| 13  | 13    | 124 | LEU  |
| 13  | 13    | 144 | LEU  |
| 13  | 13    | 154 | VAL  |
| 13  | 13    | 205 | GLN  |
| 14  | 14    | 38  | VAL  |
| 14  | 14    | 62  | LEU  |
| 14  | 14    | 105 | THR  |
| 15  | 15    | 44  | ARG  |
| 15  | 15    | 50  | ARG  |
| 15  | 15    | 61  | ILE  |
| 15  | 15    | 64  | ILE  |
| 15  | 15    | 75  | VAL  |
| 15  | 15    | 77  | LYS  |
| 15  | 15    | 89  | VAL  |
| 16  | bb    | 27  | VAL  |
| 16  | bb    | 36  | VAL  |
| 16  | bb    | 42  | ASN  |
| 16  | bb    | 52  | LEU  |
| 16  | bb    | 72  | HIS  |
| 16  | bb    | 144 | GLU  |
| 16  | bb    | 145 | VAL  |
| 16  | bb    | 182 | GLU  |
| 16  | bb    | 188 | LYS  |
| 17  | 17    | 91  | LEU  |
| 17  | 17    | 104 | LEU  |
| 17  | 17    | 114 | ILE  |
| 18  | 19    | 74  | ARG  |
| 18  | 19    | 157 | ASP  |
| 19  | 20    | 6   | THR  |
| 19  | 20    | 67  | VAL  |
| 19  | 20    | 126 | ILE  |
| 19  | 20    | 159 | LEU  |
| 20  | 21    | 40  | VAL  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 20  | 21    | 69  | GLN  |
| 20  | 21    | 111 | GLU  |
| 21  | 22    | 30  | GLU  |
| 21  | 22    | 45  | GLU  |
| 22  | 23    | 18  | LEU  |
| 22  | 23    | 27  | ASN  |
| 22  | 23    | 37  | LEU  |
| 22  | 23    | 118 | THR  |
| 23  | 24    | 30  | GLN  |
| 24  | cc    | 120 | ASP  |
| 24  | cc    | 133 | GLU  |
| 25  | 26    | 8   | THR  |
| 25  | 26    | 40  | GLN  |
| 25  | 26    | 79  | VAL  |
| 25  | 26    | 82  | ILE  |
| 25  | 26    | 104 | VAL  |
| 25  | 26    | 120 | GLU  |
| 26  | 27    | 11  | VAL  |
| 26  | 27    | 46  | ILE  |
| 26  | 27    | 72  | VAL  |
| 26  | 27    | 76  | ASN  |
| 26  | 27    | 77  | TYR  |
| 26  | 27    | 91  | LEU  |
| 26  | 27    | 120 | GLU  |
| 27  | dd    | 24  | LYS  |
| 28  | 29    | 9   | THR  |
| 28  | 29    | 60  | ASN  |
| 28  | 29    | 104 | LEU  |
| 29  | 30    | 92  | CYS  |
| 30  | 31    | 26  | THR  |
| 30  | 31    | 33  | ILE  |
| 31  | 32    | 13  | VAL  |
| 31  | 32    | 44  | ARG  |
| 32  | ee    | 23  | GLU  |
| 32  | ee    | 33  | VAL  |
| 32  | ee    | 67  | THR  |
| 32  | ee    | 84  | VAL  |
| 32  | ee    | 103 | VAL  |
| 33  | 34    | 5   | LEU  |
| 33  | 34    | 60  | ARG  |
| 33  | 34    | 66  | ARG  |
| 34  | 35    | 91  | MET  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 34  | 35    | 100 | GLU  |
| 35  | 36    | 18  | THR  |
| 35  | 36    | 29  | ARG  |
| 35  | 36    | 33  | LEU  |
| 35  | 36    | 58  | MET  |
| 35  | 36    | 77  | VAL  |
| 36  | 37    | 18  | LEU  |
| 36  | 37    | 58  | THR  |
| 37  | 38    | 12  | LEU  |
| 37  | 38    | 36  | VAL  |
| 37  | 38    | 47  | ILE  |
| 39  | 40    | 101 | VAL  |
| 40  | 42    | 85  | ILE  |
| 41  | ff    | 26  | VAL  |
| 41  | ff    | 52  | VAL  |
| 42  | gg    | 18  | ILE  |
| 42  | gg    | 75  | THR  |
| 42  | gg    | 78  | VAL  |
| 42  | gg    | 103 | HIS  |
| 42  | gg    | 124 | VAL  |
| 43  | s     | 15  | LEU  |
| 43  | s     | 29  | ILE  |
| 43  | s     | 30  | VAL  |
| 43  | s     | 53  | VAL  |
| 43  | s     | 61  | MET  |
| 43  | s     | 68  | HIS  |
| 43  | s     | 69  | LEU  |
| 43  | s     | 89  | VAL  |
| 43  | s     | 97  | GLU  |
| 43  | s     | 120 | GLU  |
| 43  | s     | 123 | VAL  |
| 43  | s     | 126 | GLN  |
| 43  | s     | 141 | LEU  |
| 43  | s     | 147 | ILE  |
| 43  | s     | 158 | VAL  |
| 43  | s     | 160 | LEU  |
| 43  | s     | 174 | LEU  |
| 44  | t     | 37  | LEU  |
| 44  | t     | 65  | GLN  |
| 44  | t     | 72  | GLU  |
| 44  | t     | 95  | GLN  |
| 44  | t     | 96  | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 44  | t     | 125 | LEU  |
| 44  | t     | 129 | ILE  |
| 44  | t     | 146 | ARG  |
| 44  | t     | 151 | ILE  |
| 45  | EB    | 14  | GLU  |
| 45  | EB    | 32  | LEU  |
| 45  | EB    | 35  | LEU  |
| 45  | EB    | 48  | LEU  |
| 45  | EB    | 65  | LYS  |
| 45  | EB    | 74  | ILE  |
| 45  | EB    | 82  | VAL  |
| 45  | EB    | 114 | VAL  |
| 45  | EB    | 177 | PHE  |
| 45  | EB    | 226 | VAL  |
| 45  | EB    | 228 | VAL  |
| 45  | EB    | 230 | VAL  |
| 45  | EB    | 284 | GLU  |
| 45  | EB    | 287 | LYS  |
| 45  | EB    | 342 | LEU  |
| 45  | EB    | 349 | VAL  |
| 45  | EB    | 373 | LYS  |
| 46  | u     | 9   | THR  |
| 46  | u     | 21  | ASN  |
| 46  | u     | 38  | LEU  |
| 46  | u     | 80  | VAL  |
| 46  | u     | 93  | LEU  |
| 46  | u     | 116 | LEU  |
| 46  | u     | 117 | ILE  |
| 46  | u     | 173 | LYS  |
| 46  | u     | 201 | VAL  |
| 47  | Q     | 13  | VAL  |
| 47  | Q     | 16  | LYS  |
| 47  | Q     | 125 | GLN  |
| 47  | Q     | 168 | ARG  |
| 47  | Q     | 170 | LYS  |
| 50  | v     | 2   | VAL  |
| 50  | v     | 24  | VAL  |
| 50  | v     | 109 | VAL  |
| 50  | v     | 121 | VAL  |
| 50  | v     | 127 | VAL  |
| 50  | v     | 135 | VAL  |
| 50  | v     | 151 | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 50  | v     | 169 | LEU  |
| 50  | v     | 183 | GLU  |
| 50  | v     | 218 | LEU  |
| 50  | v     | 225 | LEU  |
| 50  | v     | 241 | GLU  |
| 50  | v     | 256 | MET  |
| 50  | v     | 396 | MET  |
| 50  | v     | 401 | MET  |
| 50  | v     | 402 | VAL  |
| 50  | v     | 416 | VAL  |
| 50  | v     | 449 | ARG  |
| 50  | v     | 462 | GLU  |
| 50  | v     | 473 | VAL  |
| 50  | v     | 477 | GLN  |
| 50  | v     | 479 | LEU  |
| 50  | v     | 480 | VAL  |
| 50  | v     | 487 | THR  |
| 50  | v     | 497 | MET  |
| 50  | v     | 499 | PHE  |
| 50  | v     | 524 | LEU  |
| 50  | v     | 580 | ARG  |
| 50  | v     | 692 | LEU  |
| 50  | v     | 728 | CYS  |
| 50  | v     | 741 | MET  |
| 50  | v     | 747 | VAL  |
| 50  | v     | 790 | VAL  |
| 50  | v     | 813 | VAL  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (124) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | L8    | 8   | GLN  |
| 3   | L8    | 97  | ASN  |
| 3   | L8    | 194 | ASN  |
| 3   | L8    | 215 | ASN  |
| 3   | L8    | 216 | HIS  |
| 4   | L3    | 109 | HIS  |
| 4   | L3    | 138 | GLN  |
| 4   | L3    | 167 | GLN  |
| 4   | L3    | 179 | HIS  |
| 4   | L3    | 184 | GLN  |
| 4   | L3    | 203 | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | L3    | 204 | GLN  |
| 4   | L3    | 209 | GLN  |
| 4   | L3    | 376 | HIS  |
| 5   | L4    | 61  | GLN  |
| 5   | L4    | 119 | GLN  |
| 5   | L4    | 329 | ASN  |
| 5   | L4    | 338 | ASN  |
| 5   | L4    | 346 | ASN  |
| 6   | L5    | 122 | GLN  |
| 6   | L5    | 138 | GLN  |
| 6   | L5    | 202 | GLN  |
| 7   | L6    | 131 | HIS  |
| 7   | L6    | 193 | HIS  |
| 8   | L7    | 115 | GLN  |
| 8   | L7    | 205 | ASN  |
| 9   | aa    | 119 | GLN  |
| 9   | aa    | 138 | GLN  |
| 9   | aa    | 165 | GLN  |
| 9   | aa    | 261 | ASN  |
| 9   | aa    | 278 | ASN  |
| 10  | L9    | 63  | ASN  |
| 10  | L9    | 79  | ASN  |
| 10  | L9    | 189 | GLN  |
| 12  | 11    | 23  | ASN  |
| 12  | 11    | 42  | GLN  |
| 12  | 11    | 46  | GLN  |
| 12  | 11    | 104 | ASN  |
| 12  | 11    | 168 | GLN  |
| 13  | 13    | 19  | GLN  |
| 13  | 13    | 149 | GLN  |
| 13  | 13    | 205 | GLN  |
| 14  | 14    | 48  | GLN  |
| 14  | 14    | 70  | GLN  |
| 14  | 14    | 83  | ASN  |
| 15  | 15    | 29  | GLN  |
| 15  | 15    | 149 | GLN  |
| 15  | 15    | 201 | HIS  |
| 16  | bb    | 50  | ASN  |
| 16  | bb    | 150 | GLN  |
| 17  | 17    | 25  | HIS  |
| 17  | 17    | 34  | GLN  |
| 17  | 17    | 80  | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 17  | 17    | 116 | HIS  |
| 17  | 17    | 137 | ASN  |
| 18  | 19    | 118 | HIS  |
| 18  | 19    | 141 | HIS  |
| 19  | 20    | 156 | HIS  |
| 20  | 21    | 3   | ASN  |
| 20  | 21    | 69  | GLN  |
| 20  | 21    | 90  | ASN  |
| 20  | 21    | 112 | ASN  |
| 20  | 21    | 127 | GLN  |
| 20  | 21    | 131 | GLN  |
| 21  | 22    | 38  | ASN  |
| 22  | 23    | 36  | ASN  |
| 23  | 24    | 30  | GLN  |
| 24  | cc    | 57  | GLN  |
| 25  | 26    | 20  | ASN  |
| 25  | 26    | 61  | HIS  |
| 25  | 26    | 65  | GLN  |
| 25  | 26    | 127 | GLN  |
| 26  | 27    | 76  | ASN  |
| 27  | dd    | 17  | HIS  |
| 27  | dd    | 85  | GLN  |
| 27  | dd    | 120 | GLN  |
| 28  | 29    | 6   | ASN  |
| 28  | 29    | 17  | HIS  |
| 28  | 29    | 61  | ASN  |
| 31  | 32    | 34  | ASN  |
| 31  | 32    | 63  | ASN  |
| 31  | 32    | 107 | ASN  |
| 32  | ee    | 56  | ASN  |
| 33  | 34    | 112 | GLN  |
| 34  | 35    | 68  | ASN  |
| 35  | 36    | 15  | HIS  |
| 36  | 37    | 57  | ASN  |
| 36  | 37    | 66  | HIS  |
| 38  | 39    | 4   | HIS  |
| 38  | 39    | 33  | ASN  |
| 40  | 42    | 51  | GLN  |
| 41  | ff    | 92  | GLN  |
| 42  | gg    | 70  | GLN  |
| 42  | gg    | 103 | HIS  |
| 43  | s     | 58  | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 43  | s     | 126 | GLN  |
| 43  | s     | 190 | GLN  |
| 44  | t     | 156 | ASN  |
| 45  | EB    | 113 | HIS  |
| 45  | EB    | 134 | GLN  |
| 45  | EB    | 147 | HIS  |
| 45  | EB    | 171 | ASN  |
| 45  | EB    | 193 | HIS  |
| 45  | EB    | 203 | GLN  |
| 45  | EB    | 221 | HIS  |
| 45  | EB    | 299 | HIS  |
| 46  | u     | 19  | HIS  |
| 46  | u     | 22  | GLN  |
| 46  | u     | 84  | HIS  |
| 46  | u     | 158 | GLN  |
| 46  | u     | 184 | HIS  |
| 46  | u     | 199 | GLN  |
| 47  | Q     | 57  | ASN  |
| 47  | Q     | 93  | GLN  |
| 47  | Q     | 160 | HIS  |
| 50  | v     | 27  | HIS  |
| 50  | v     | 101 | ASN  |
| 50  | v     | 184 | ASN  |
| 50  | v     | 291 | GLN  |
| 50  | v     | 544 | HIS  |
| 50  | v     | 660 | ASN  |
| 50  | v     | 715 | HIS  |
| 50  | v     | 803 | ASN  |
| 50  | v     | 816 | HIS  |

### 5.3.3 RNA ⓘ

| Mol | Chain | Analysed         | Backbone Outliers | Pucker Outliers |
|-----|-------|------------------|-------------------|-----------------|
| 1   | 58    | 149/156 (95%)    | 31 (20%)          | 1 (0%)          |
| 2   | 5     | 119/120 (99%)    | 12 (10%)          | 0               |
| 48  | ES    | 63/5070 (1%)     | 14 (22%)          | 1 (1%)          |
| 49  | 28    | 3460/4807 (71%)  | 720 (20%)         | 45 (1%)         |
| All | All   | 3791/10153 (37%) | 777 (20%)         | 47 (1%)         |

All (777) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 58    | 2   | G    |
| 1   | 58    | 16  | G    |
| 1   | 58    | 23  | C    |
| 1   | 58    | 34  | U    |
| 1   | 58    | 35  | C    |
| 1   | 58    | 38  | U    |
| 1   | 58    | 51  | U    |
| 1   | 58    | 52  | A    |
| 1   | 58    | 59  | A    |
| 1   | 58    | 62  | A    |
| 1   | 58    | 63  | U    |
| 1   | 58    | 75  | G    |
| 1   | 58    | 77  | A    |
| 1   | 58    | 94  | G    |
| 1   | 58    | 95  | A    |
| 1   | 58    | 103 | A    |
| 1   | 58    | 105 | C    |
| 1   | 58    | 109 | C    |
| 1   | 58    | 110 | U    |
| 1   | 58    | 111 | U    |
| 1   | 58    | 113 | C    |
| 1   | 58    | 114 | G    |
| 1   | 58    | 122 | G    |
| 1   | 58    | 125 | C    |
| 1   | 58    | 126 | C    |
| 1   | 58    | 127 | U    |
| 1   | 58    | 128 | C    |
| 1   | 58    | 147 | G    |
| 1   | 58    | 151 | G    |
| 1   | 58    | 153 | C    |
| 1   | 58    | 156 | U    |
| 2   | 5     | 21  | G    |
| 2   | 5     | 22  | A    |
| 2   | 5     | 33  | U    |
| 2   | 5     | 53  | U    |
| 2   | 5     | 54  | A    |
| 2   | 5     | 63  | C    |
| 2   | 5     | 64  | G    |
| 2   | 5     | 97  | G    |
| 2   | 5     | 100 | A    |
| 2   | 5     | 110 | G    |
| 2   | 5     | 111 | C    |
| 2   | 5     | 120 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 48  | ES    | 2912 | G    |
| 48  | ES    | 2941 | G    |
| 48  | ES    | 2942 | C    |
| 48  | ES    | 2943 | C    |
| 48  | ES    | 2948 | C    |
| 48  | ES    | 2958 | C    |
| 48  | ES    | 3237 | G    |
| 48  | ES    | 3247 | A    |
| 48  | ES    | 3283 | G    |
| 48  | ES    | 3288 | G    |
| 48  | ES    | 3581 | C    |
| 48  | ES    | 3582 | C    |
| 48  | ES    | 3583 | U    |
| 48  | ES    | 3591 | C    |
| 49  | 28    | 8    | U    |
| 49  | 28    | 12   | A    |
| 49  | 28    | 13   | U    |
| 49  | 28    | 25   | A    |
| 49  | 28    | 39   | A    |
| 49  | 28    | 42   | A    |
| 49  | 28    | 44   | A    |
| 49  | 28    | 49   | U    |
| 49  | 28    | 56   | A    |
| 49  | 28    | 59   | A    |
| 49  | 28    | 64   | A    |
| 49  | 28    | 65   | A    |
| 49  | 28    | 71   | C    |
| 49  | 28    | 72   | C    |
| 49  | 28    | 73   | A    |
| 49  | 28    | 74   | G    |
| 49  | 28    | 91   | G    |
| 49  | 28    | 108  | A    |
| 49  | 28    | 109  | G    |
| 49  | 28    | 110  | C    |
| 49  | 28    | 116  | G    |
| 49  | 28    | 118  | C    |
| 49  | 28    | 119  | G    |
| 49  | 28    | 122  | U    |
| 49  | 28    | 126  | C    |
| 49  | 28    | 132  | G    |
| 49  | 28    | 134  | G    |
| 49  | 28    | 135  | G    |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 49  | 28    | 136 | C    |
| 49  | 28    | 142 | G    |
| 49  | 28    | 143 | C    |
| 49  | 28    | 144 | G    |
| 49  | 28    | 159 | C    |
| 49  | 28    | 170 | C    |
| 49  | 28    | 171 | U    |
| 49  | 28    | 172 | C    |
| 49  | 28    | 190 | G    |
| 49  | 28    | 200 | U    |
| 49  | 28    | 201 | C    |
| 49  | 28    | 202 | C    |
| 49  | 28    | 207 | G    |
| 49  | 28    | 209 | U    |
| 49  | 28    | 216 | C    |
| 49  | 28    | 218 | A    |
| 49  | 28    | 219 | G    |
| 49  | 28    | 220 | C    |
| 49  | 28    | 224 | U    |
| 49  | 28    | 232 | G    |
| 49  | 28    | 233 | U    |
| 49  | 28    | 234 | G    |
| 49  | 28    | 246 | G    |
| 49  | 28    | 256 | G    |
| 49  | 28    | 262 | G    |
| 49  | 28    | 266 | C    |
| 49  | 28    | 275 | C    |
| 49  | 28    | 276 | C    |
| 49  | 28    | 280 | G    |
| 49  | 28    | 297 | U    |
| 49  | 28    | 306 | A    |
| 49  | 28    | 309 | C    |
| 49  | 28    | 315 | G    |
| 49  | 28    | 316 | U    |
| 49  | 28    | 334 | A    |
| 49  | 28    | 340 | C    |
| 49  | 28    | 350 | C    |
| 49  | 28    | 387 | G    |
| 49  | 28    | 399 | G    |
| 49  | 28    | 407 | A    |
| 49  | 28    | 410 | A    |
| 49  | 28    | 412 | G    |

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| Mol | Chain | Res    | Type |
|-----|-------|--------|------|
| 49  | 28    | 413    | G    |
| 49  | 28    | 415    | G    |
| 49  | 28    | 431    | G    |
| 49  | 28    | 432    | U    |
| 49  | 28    | 446    | C    |
| 49  | 28    | 449    | C    |
| 49  | 28    | 452    | A    |
| 49  | 28    | 453    | G    |
| 49  | 28    | 454    | U    |
| 49  | 28    | 455    | C    |
| 49  | 28    | 463    | A    |
| 49  | 28    | 464    | G    |
| 49  | 28    | 465    | G    |
| 49  | 28    | 467    | U    |
| 49  | 28    | 468    | U    |
| 49  | 28    | 469    | C    |
| 49  | 28    | 481    | G    |
| 49  | 28    | 481(A) | C    |
| 49  | 28    | 482    | G    |
| 49  | 28    | 483    | G    |
| 49  | 28    | 485    | C    |
| 49  | 28    | 486    | C    |
| 49  | 28    | 492    | U    |
| 49  | 28    | 493    | G    |
| 49  | 28    | 497    | G    |
| 49  | 28    | 498    | C    |
| 49  | 28    | 499    | G    |
| 49  | 28    | 505    | G    |
| 49  | 28    | 510    | U    |
| 49  | 28    | 517    | C    |
| 49  | 28    | 520    | U    |
| 49  | 28    | 657    | C    |
| 49  | 28    | 659    | G    |
| 49  | 28    | 660    | G    |
| 49  | 28    | 662    | C    |
| 49  | 28    | 666    | G    |
| 49  | 28    | 667    | A    |
| 49  | 28    | 668    | C    |
| 49  | 28    | 669    | C    |
| 49  | 28    | 672    | C    |
| 49  | 28    | 683    | C    |
| 49  | 28    | 685    | C    |

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| Mol | Chain | Res    | Type |
|-----|-------|--------|------|
| 49  | 28    | 686    | A    |
| 49  | 28    | 687    | U    |
| 49  | 28    | 696    | C    |
| 49  | 28    | 697    | G    |
| 49  | 28    | 704    | C    |
| 49  | 28    | 705    | G    |
| 49  | 28    | 708    | G    |
| 49  | 28    | 730    | G    |
| 49  | 28    | 731    | G    |
| 49  | 28    | 738    | C    |
| 49  | 28    | 738(A) | C    |
| 49  | 28    | 739    | G    |
| 49  | 28    | 744    | G    |
| 49  | 28    | 747    | A    |
| 49  | 28    | 749    | G    |
| 49  | 28    | 758    | G    |
| 49  | 28    | 759    | G    |
| 49  | 28    | 905    | C    |
| 49  | 28    | 914    | U    |
| 49  | 28    | 915    | A    |
| 49  | 28    | 917    | A    |
| 49  | 28    | 918    | G    |
| 49  | 28    | 923    | C    |
| 49  | 28    | 925    | C    |
| 49  | 28    | 926    | G    |
| 49  | 28    | 929    | A    |
| 49  | 28    | 931    | C    |
| 49  | 28    | 932    | A    |
| 49  | 28    | 933    | G    |
| 49  | 28    | 934    | C    |
| 49  | 28    | 935    | A    |
| 49  | 28    | 935(A) | G    |
| 49  | 28    | 936    | C    |
| 49  | 28    | 938    | C    |
| 49  | 28    | 939    | G    |
| 49  | 28    | 941    | C    |
| 49  | 28    | 943    | A    |
| 49  | 28    | 944    | A    |
| 49  | 28    | 945    | U    |
| 49  | 28    | 946    | C    |
| 49  | 28    | 956    | A    |
| 49  | 28    | 959    | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 960  | A    |
| 49  | 28    | 961  | G    |
| 49  | 28    | 962  | C    |
| 49  | 28    | 965  | G    |
| 49  | 28    | 966  | A    |
| 49  | 28    | 967  | C    |
| 49  | 28    | 969  | C    |
| 49  | 28    | 972  | C    |
| 49  | 28    | 979  | C    |
| 49  | 28    | 983  | C    |
| 49  | 28    | 1066 | G    |
| 49  | 28    | 1068 | G    |
| 49  | 28    | 1070 | G    |
| 49  | 28    | 1072 | C    |
| 49  | 28    | 1073 | G    |
| 49  | 28    | 1179 | U    |
| 49  | 28    | 1184 | A    |
| 49  | 28    | 1187 | G    |
| 49  | 28    | 1193 | C    |
| 49  | 28    | 1195 | G    |
| 49  | 28    | 1204 | C    |
| 49  | 28    | 1210 | C    |
| 49  | 28    | 1211 | G    |
| 49  | 28    | 1212 | G    |
| 49  | 28    | 1214 | C    |
| 49  | 28    | 1215 | C    |
| 49  | 28    | 1216 | C    |
| 49  | 28    | 1234 | G    |
| 49  | 28    | 1235 | G    |
| 49  | 28    | 1236 | C    |
| 49  | 28    | 1237 | C    |
| 49  | 28    | 1238 | A    |
| 49  | 28    | 1239 | C    |
| 49  | 28    | 1275 | G    |
| 49  | 28    | 1276 | C    |
| 49  | 28    | 1277 | G    |
| 49  | 28    | 1284 | G    |
| 49  | 28    | 1285 | U    |
| 49  | 28    | 1287 | G    |
| 49  | 28    | 1292 | C    |
| 49  | 28    | 1295 | U    |
| 49  | 28    | 1296 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 1301 | C    |
| 49  | 28    | 1303 | A    |
| 49  | 28    | 1304 | C    |
| 49  | 28    | 1314 | C    |
| 49  | 28    | 1326 | A    |
| 49  | 28    | 1330 | A    |
| 49  | 28    | 1354 | A    |
| 49  | 28    | 1358 | G    |
| 49  | 28    | 1359 | G    |
| 49  | 28    | 1371 | A    |
| 49  | 28    | 1377 | G    |
| 49  | 28    | 1379 | C    |
| 49  | 28    | 1380 | G    |
| 49  | 28    | 1381 | U    |
| 49  | 28    | 1387 | A    |
| 49  | 28    | 1394 | G    |
| 49  | 28    | 1397 | A    |
| 49  | 28    | 1398 | A    |
| 49  | 28    | 1414 | C    |
| 49  | 28    | 1419 | G    |
| 49  | 28    | 1420 | A    |
| 49  | 28    | 1421 | G    |
| 49  | 28    | 1433 | A    |
| 49  | 28    | 1445 | U    |
| 49  | 28    | 1446 | C    |
| 49  | 28    | 1456 | C    |
| 49  | 28    | 1457 | G    |
| 49  | 28    | 1475 | G    |
| 49  | 28    | 1481 | C    |
| 49  | 28    | 1482 | G    |
| 49  | 28    | 1483 | C    |
| 49  | 28    | 1484 | G    |
| 49  | 28    | 1487 | G    |
| 49  | 28    | 1497 | A    |
| 49  | 28    | 1498 | G    |
| 49  | 28    | 1502 | G    |
| 49  | 28    | 1504 | G    |
| 49  | 28    | 1516 | G    |
| 49  | 28    | 1523 | A    |
| 49  | 28    | 1525 | A    |
| 49  | 28    | 1534 | A    |
| 49  | 28    | 1547 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 1563 | A    |
| 49  | 28    | 1566 | C    |
| 49  | 28    | 1574 | G    |
| 49  | 28    | 1578 | U    |
| 49  | 28    | 1586 | G    |
| 49  | 28    | 1591 | U    |
| 49  | 28    | 1596 | U    |
| 49  | 28    | 1612 | G    |
| 49  | 28    | 1613 | A    |
| 49  | 28    | 1624 | G    |
| 49  | 28    | 1625 | G    |
| 49  | 28    | 1631 | A    |
| 49  | 28    | 1633 | G    |
| 49  | 28    | 1634 | A    |
| 49  | 28    | 1638 | A    |
| 49  | 28    | 1640 | C    |
| 49  | 28    | 1641 | G    |
| 49  | 28    | 1654 | G    |
| 49  | 28    | 1661 | C    |
| 49  | 28    | 1676 | C    |
| 49  | 28    | 1677 | U    |
| 49  | 28    | 1684 | A    |
| 49  | 28    | 1740 | C    |
| 49  | 28    | 1742 | A    |
| 49  | 28    | 1751 | A    |
| 49  | 28    | 1752 | G    |
| 49  | 28    | 1754 | U    |
| 49  | 28    | 1755 | C    |
| 49  | 28    | 1756 | U    |
| 49  | 28    | 1757 | U    |
| 49  | 28    | 1761 | G    |
| 49  | 28    | 1764 | G    |
| 49  | 28    | 1765 | A    |
| 49  | 28    | 1768 | C    |
| 49  | 28    | 1772 | C    |
| 49  | 28    | 1773 | U    |
| 49  | 28    | 1775 | A    |
| 49  | 28    | 1776 | A    |
| 49  | 28    | 1781 | U    |
| 49  | 28    | 1787 | A    |
| 49  | 28    | 1797 | G    |
| 49  | 28    | 1803 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 1804 | A    |
| 49  | 28    | 1805 | A    |
| 49  | 28    | 1806 | G    |
| 49  | 28    | 1808 | C    |
| 49  | 28    | 1812 | C    |
| 49  | 28    | 1815 | G    |
| 49  | 28    | 1818 | G    |
| 49  | 28    | 1820 | U    |
| 49  | 28    | 1821 | G    |
| 49  | 28    | 1828 | C    |
| 49  | 28    | 1836 | G    |
| 49  | 28    | 1837 | A    |
| 49  | 28    | 1842 | G    |
| 49  | 28    | 1855 | G    |
| 49  | 28    | 1869 | G    |
| 49  | 28    | 1882 | U    |
| 49  | 28    | 1897 | A    |
| 49  | 28    | 1910 | G    |
| 49  | 28    | 1918 | U    |
| 49  | 28    | 1920 | C    |
| 49  | 28    | 1921 | C    |
| 49  | 28    | 1922 | G    |
| 49  | 28    | 1931 | C    |
| 49  | 28    | 1935 | C    |
| 49  | 28    | 1940 | G    |
| 49  | 28    | 1947 | U    |
| 49  | 28    | 1948 | G    |
| 49  | 28    | 1951 | G    |
| 49  | 28    | 1957 | U    |
| 49  | 28    | 1958 | A    |
| 49  | 28    | 1961 | G    |
| 49  | 28    | 1962 | A    |
| 49  | 28    | 1964 | A    |
| 49  | 28    | 1972 | G    |
| 49  | 28    | 1974 | U    |
| 49  | 28    | 1975 | G    |
| 49  | 28    | 1976 | G    |
| 49  | 28    | 1978 | C    |
| 49  | 28    | 1980 | U    |
| 49  | 28    | 1984 | A    |
| 49  | 28    | 1985 | G    |
| 49  | 28    | 1987 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 1991 | A    |
| 49  | 28    | 1992 | U    |
| 49  | 28    | 1997 | U    |
| 49  | 28    | 2001 | G    |
| 49  | 28    | 2002 | A    |
| 49  | 28    | 2003 | G    |
| 49  | 28    | 2004 | U    |
| 49  | 28    | 2007 | G    |
| 49  | 28    | 2011 | C    |
| 49  | 28    | 2021 | G    |
| 49  | 28    | 2025 | A    |
| 49  | 28    | 2026 | A    |
| 49  | 28    | 2046 | G    |
| 49  | 28    | 2047 | A    |
| 49  | 28    | 2048 | U    |
| 49  | 28    | 2052 | G    |
| 49  | 28    | 2055 | G    |
| 49  | 28    | 2056 | G    |
| 49  | 28    | 2062 | C    |
| 49  | 28    | 2064 | G    |
| 49  | 28    | 2069 | A    |
| 49  | 28    | 2070 | U    |
| 49  | 28    | 2084 | U    |
| 49  | 28    | 2090 | U    |
| 49  | 28    | 2092 | G    |
| 49  | 28    | 2093 | G    |
| 49  | 28    | 2094 | C    |
| 49  | 28    | 2095 | A    |
| 49  | 28    | 2097 | A    |
| 49  | 28    | 2098 | G    |
| 49  | 28    | 2100 | G    |
| 49  | 28    | 2102 | G    |
| 49  | 28    | 2104 | A    |
| 49  | 28    | 2105 | A    |
| 49  | 28    | 2107 | A    |
| 49  | 28    | 2108 | G    |
| 49  | 28    | 2110 | G    |
| 49  | 28    | 2267 | U    |
| 49  | 28    | 2268 | A    |
| 49  | 28    | 2275 | G    |
| 49  | 28    | 2289 | C    |
| 49  | 28    | 2300 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 2301 | G    |
| 49  | 28    | 2306 | G    |
| 49  | 28    | 2313 | A    |
| 49  | 28    | 2314 | G    |
| 49  | 28    | 2316 | G    |
| 49  | 28    | 2331 | G    |
| 49  | 28    | 2333 | G    |
| 49  | 28    | 2348 | G    |
| 49  | 28    | 2351 | C    |
| 49  | 28    | 2360 | A    |
| 49  | 28    | 2395 | A    |
| 49  | 28    | 2398 | U    |
| 49  | 28    | 2402 | G    |
| 49  | 28    | 2417 | A    |
| 49  | 28    | 2422 | C    |
| 49  | 28    | 2425 | U    |
| 49  | 28    | 2433 | G    |
| 49  | 28    | 2434 | G    |
| 49  | 28    | 2441 | C    |
| 49  | 28    | 2450 | G    |
| 49  | 28    | 2475 | G    |
| 49  | 28    | 2488 | C    |
| 49  | 28    | 2489 | C    |
| 49  | 28    | 2490 | U    |
| 49  | 28    | 2491 | C    |
| 49  | 28    | 2503 | G    |
| 49  | 28    | 2504 | C    |
| 49  | 28    | 2505 | C    |
| 49  | 28    | 2506 | G    |
| 49  | 28    | 2513 | A    |
| 49  | 28    | 2520 | C    |
| 49  | 28    | 2529 | A    |
| 49  | 28    | 2530 | U    |
| 49  | 28    | 2537 | A    |
| 49  | 28    | 2544 | G    |
| 49  | 28    | 2545 | U    |
| 49  | 28    | 2546 | G    |
| 49  | 28    | 2547 | G    |
| 49  | 28    | 2549 | G    |
| 49  | 28    | 2553 | A    |
| 49  | 28    | 2554 | U    |
| 49  | 28    | 2575 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 2583 | C    |
| 49  | 28    | 2586 | G    |
| 49  | 28    | 2587 | A    |
| 49  | 28    | 2589 | C    |
| 49  | 28    | 2602 | G    |
| 49  | 28    | 2623 | A    |
| 49  | 28    | 2627 | C    |
| 49  | 28    | 2638 | G    |
| 49  | 28    | 2640 | G    |
| 49  | 28    | 2647 | A    |
| 49  | 28    | 2649 | G    |
| 49  | 28    | 2653 | C    |
| 49  | 28    | 2659 | A    |
| 49  | 28    | 2661 | U    |
| 49  | 28    | 2662 | G    |
| 49  | 28    | 2669 | C    |
| 49  | 28    | 2686 | G    |
| 49  | 28    | 2687 | U    |
| 49  | 28    | 2695 | A    |
| 49  | 28    | 2696 | A    |
| 49  | 28    | 2703 | G    |
| 49  | 28    | 2704 | C    |
| 49  | 28    | 2705 | G    |
| 49  | 28    | 2707 | U    |
| 49  | 28    | 2708 | U    |
| 49  | 28    | 2710 | C    |
| 49  | 28    | 2711 | G    |
| 49  | 28    | 2712 | G    |
| 49  | 28    | 2714 | G    |
| 49  | 28    | 2717 | G    |
| 49  | 28    | 2719 | C    |
| 49  | 28    | 2721 | G    |
| 49  | 28    | 2724 | G    |
| 49  | 28    | 2725 | A    |
| 49  | 28    | 2726 | G    |
| 49  | 28    | 2740 | U    |
| 49  | 28    | 2743 | A    |
| 49  | 28    | 2744 | A    |
| 49  | 28    | 2753 | G    |
| 49  | 28    | 2754 | G    |
| 49  | 28    | 2758 | G    |
| 49  | 28    | 2759 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 2760 | G    |
| 49  | 28    | 2761 | U    |
| 49  | 28    | 2763 | U    |
| 49  | 28    | 2764 | A    |
| 49  | 28    | 2769 | U    |
| 49  | 28    | 2787 | A    |
| 49  | 28    | 2788 | U    |
| 49  | 28    | 2790 | U    |
| 49  | 28    | 2796 | G    |
| 49  | 28    | 2798 | A    |
| 49  | 28    | 2806 | A    |
| 49  | 28    | 2814 | C    |
| 49  | 28    | 2826 | U    |
| 49  | 28    | 2827 | G    |
| 49  | 28    | 2837 | U    |
| 49  | 28    | 2838 | G    |
| 49  | 28    | 2842 | G    |
| 49  | 28    | 2848 | G    |
| 49  | 28    | 2855 | G    |
| 49  | 28    | 2856 | C    |
| 49  | 28    | 2875 | C    |
| 49  | 28    | 2898 | G    |
| 49  | 28    | 3604 | A    |
| 49  | 28    | 3605 | C    |
| 49  | 28    | 3625 | G    |
| 49  | 28    | 3626 | G    |
| 49  | 28    | 3630 | A    |
| 49  | 28    | 3635 | A    |
| 49  | 28    | 3646 | A    |
| 49  | 28    | 3650 | C    |
| 49  | 28    | 3662 | A    |
| 49  | 28    | 3663 | A    |
| 49  | 28    | 3664 | G    |
| 49  | 28    | 3673 | C    |
| 49  | 28    | 3692 | A    |
| 49  | 28    | 3696 | C    |
| 49  | 28    | 3698 | G    |
| 49  | 28    | 3709 | U    |
| 49  | 28    | 3710 | G    |
| 49  | 28    | 3712 | A    |
| 49  | 28    | 3713 | U    |
| 49  | 28    | 3714 | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 3748 | A    |
| 49  | 28    | 3753 | G    |
| 49  | 28    | 3754 | G    |
| 49  | 28    | 3765 | G    |
| 49  | 28    | 3773 | U    |
| 49  | 28    | 3776 | G    |
| 49  | 28    | 3777 | G    |
| 49  | 28    | 3784 | A    |
| 49  | 28    | 3786 | U    |
| 49  | 28    | 3811 | G    |
| 49  | 28    | 3814 | U    |
| 49  | 28    | 3817 | A    |
| 49  | 28    | 3819 | G    |
| 49  | 28    | 3838 | U    |
| 49  | 28    | 3839 | G    |
| 49  | 28    | 3840 | U    |
| 49  | 28    | 3869 | C    |
| 49  | 28    | 3876 | A    |
| 49  | 28    | 3877 | A    |
| 49  | 28    | 3878 | C    |
| 49  | 28    | 3879 | G    |
| 49  | 28    | 3889 | G    |
| 49  | 28    | 3892 | U    |
| 49  | 28    | 3897 | G    |
| 49  | 28    | 3901 | A    |
| 49  | 28    | 3905 | A    |
| 49  | 28    | 3906 | A    |
| 49  | 28    | 3907 | G    |
| 49  | 28    | 3908 | A    |
| 49  | 28    | 3915 | U    |
| 49  | 28    | 3916 | G    |
| 49  | 28    | 3917 | A    |
| 49  | 28    | 3918 | G    |
| 49  | 28    | 3926 | C    |
| 49  | 28    | 3927 | U    |
| 49  | 28    | 3938 | G    |
| 49  | 28    | 4069 | U    |
| 49  | 28    | 4076 | G    |
| 49  | 28    | 4084 | G    |
| 49  | 28    | 4085 | A    |
| 49  | 28    | 4086 | G    |
| 49  | 28    | 4088 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 4092 | G    |
| 49  | 28    | 4097 | G    |
| 49  | 28    | 4116 | C    |
| 49  | 28    | 4119 | C    |
| 49  | 28    | 4120 | U    |
| 49  | 28    | 4121 | G    |
| 49  | 28    | 4122 | G    |
| 49  | 28    | 4125 | C    |
| 49  | 28    | 4127 | A    |
| 49  | 28    | 4155 | C    |
| 49  | 28    | 4158 | C    |
| 49  | 28    | 4162 | C    |
| 49  | 28    | 4163 | U    |
| 49  | 28    | 4166 | G    |
| 49  | 28    | 4170 | A    |
| 49  | 28    | 4183 | G    |
| 49  | 28    | 4184 | G    |
| 49  | 28    | 4191 | G    |
| 49  | 28    | 4201 | G    |
| 49  | 28    | 4203 | A    |
| 49  | 28    | 4212 | A    |
| 49  | 28    | 4225 | G    |
| 49  | 28    | 4228 | G    |
| 49  | 28    | 4229 | U    |
| 49  | 28    | 4233 | A    |
| 49  | 28    | 4249 | G    |
| 49  | 28    | 4251 | A    |
| 49  | 28    | 4253 | A    |
| 49  | 28    | 4254 | G    |
| 49  | 28    | 4266 | G    |
| 49  | 28    | 4268 | A    |
| 49  | 28    | 4271 | A    |
| 49  | 28    | 4273 | A    |
| 49  | 28    | 4281 | A    |
| 49  | 28    | 4291 | G    |
| 49  | 28    | 4297 | G    |
| 49  | 28    | 4304 | A    |
| 49  | 28    | 4305 | G    |
| 49  | 28    | 4306 | U    |
| 49  | 28    | 4313 | A    |
| 49  | 28    | 4314 | C    |
| 49  | 28    | 4317 | A    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 4318 | C    |
| 49  | 28    | 4319 | C    |
| 49  | 28    | 4326 | G    |
| 49  | 28    | 4329 | G    |
| 49  | 28    | 4330 | G    |
| 49  | 28    | 4332 | C    |
| 49  | 28    | 4336 | A    |
| 49  | 28    | 4350 | C    |
| 49  | 28    | 4354 | U    |
| 49  | 28    | 4355 | G    |
| 49  | 28    | 4373 | G    |
| 49  | 28    | 4377 | G    |
| 49  | 28    | 4378 | A    |
| 49  | 28    | 4380 | A    |
| 49  | 28    | 4387 | C    |
| 49  | 28    | 4394 | A    |
| 49  | 28    | 4395 | U    |
| 49  | 28    | 4401 | G    |
| 49  | 28    | 4415 | A    |
| 49  | 28    | 4419 | U    |
| 49  | 28    | 4421 | C    |
| 49  | 28    | 4422 | A    |
| 49  | 28    | 4426 | C    |
| 49  | 28    | 4437 | U    |
| 49  | 28    | 4440 | G    |
| 49  | 28    | 4444 | C    |
| 49  | 28    | 4448 | G    |
| 49  | 28    | 4449 | A    |
| 49  | 28    | 4464 | A    |
| 49  | 28    | 4466 | C    |
| 49  | 28    | 4471 | U    |
| 49  | 28    | 4472 | G    |
| 49  | 28    | 4500 | U    |
| 49  | 28    | 4512 | U    |
| 49  | 28    | 4513 | A    |
| 49  | 28    | 4519 | C    |
| 49  | 28    | 4520 | G    |
| 49  | 28    | 4524 | G    |
| 49  | 28    | 4525 | C    |
| 49  | 28    | 4528 | G    |
| 49  | 28    | 4531 | U    |
| 49  | 28    | 4532 | U    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 4548 | A    |
| 49  | 28    | 4549 | G    |
| 49  | 28    | 4557 | U    |
| 49  | 28    | 4560 | C    |
| 49  | 28    | 4567 | G    |
| 49  | 28    | 4569 | U    |
| 49  | 28    | 4573 | G    |
| 49  | 28    | 4574 | U    |
| 49  | 28    | 4575 | G    |
| 49  | 28    | 4577 | U    |
| 49  | 28    | 4584 | A    |
| 49  | 28    | 4586 | G    |
| 49  | 28    | 4587 | G    |
| 49  | 28    | 4590 | A    |
| 49  | 28    | 4627 | U    |
| 49  | 28    | 4636 | U    |
| 49  | 28    | 4637 | G    |
| 49  | 28    | 4639 | G    |
| 49  | 28    | 4652 | G    |
| 49  | 28    | 4656 | A    |
| 49  | 28    | 4657 | U    |
| 49  | 28    | 4667 | C    |
| 49  | 28    | 4670 | C    |
| 49  | 28    | 4672 | A    |
| 49  | 28    | 4677 | U    |
| 49  | 28    | 4687 | A    |
| 49  | 28    | 4691 | A    |
| 49  | 28    | 4694 | G    |
| 49  | 28    | 4700 | A    |
| 49  | 28    | 4709 | U    |
| 49  | 28    | 4719 | G    |
| 49  | 28    | 4720 | C    |
| 49  | 28    | 4729 | A    |
| 49  | 28    | 4751 | G    |
| 49  | 28    | 4752 | U    |
| 49  | 28    | 4754 | G    |
| 49  | 28    | 4756 | C    |
| 49  | 28    | 4757 | C    |
| 49  | 28    | 4759 | C    |
| 49  | 28    | 4764 | A    |
| 49  | 28    | 4765 | G    |
| 49  | 28    | 4771 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 4868 | G    |
| 49  | 28    | 4870 | G    |
| 49  | 28    | 4871 | C    |
| 49  | 28    | 4873 | G    |
| 49  | 28    | 4875 | G    |
| 49  | 28    | 4881 | U    |
| 49  | 28    | 4882 | U    |
| 49  | 28    | 4883 | C    |
| 49  | 28    | 4885 | U    |
| 49  | 28    | 4887 | C    |
| 49  | 28    | 4894 | A    |
| 49  | 28    | 4895 | C    |
| 49  | 28    | 4903 | G    |
| 49  | 28    | 4906 | C    |
| 49  | 28    | 4910 | A    |
| 49  | 28    | 4913 | G    |
| 49  | 28    | 4914 | G    |
| 49  | 28    | 4915 | G    |
| 49  | 28    | 4918 | C    |
| 49  | 28    | 4919 | G    |
| 49  | 28    | 4921 | C    |
| 49  | 28    | 4922 | C    |
| 49  | 28    | 4924 | C    |
| 49  | 28    | 4925 | U    |
| 49  | 28    | 4926 | C    |
| 49  | 28    | 4927 | G    |
| 49  | 28    | 4928 | C    |
| 49  | 28    | 4931 | G    |
| 49  | 28    | 4937 | C    |
| 49  | 28    | 4943 | A    |
| 49  | 28    | 4944 | C    |
| 49  | 28    | 4945 | G    |
| 49  | 28    | 4947 | U    |
| 49  | 28    | 4948 | C    |
| 49  | 28    | 4949 | G    |
| 49  | 28    | 4950 | U    |
| 49  | 28    | 4951 | G    |
| 49  | 28    | 4955 | A    |
| 49  | 28    | 4956 | A    |
| 49  | 28    | 4960 | G    |
| 49  | 28    | 4963 | G    |
| 49  | 28    | 4964 | C    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 4965 | U    |
| 49  | 28    | 4966 | A    |
| 49  | 28    | 4976 | U    |
| 49  | 28    | 4988 | U    |
| 49  | 28    | 4990 | C    |
| 49  | 28    | 4993 | G    |
| 49  | 28    | 5006 | U    |
| 49  | 28    | 5007 | A    |
| 49  | 28    | 5017 | G    |
| 49  | 28    | 5029 | C    |
| 49  | 28    | 5040 | U    |
| 49  | 28    | 5041 | G    |
| 49  | 28    | 5047 | C    |
| 49  | 28    | 5048 | A    |
| 49  | 28    | 5050 | C    |
| 49  | 28    | 5052 | C    |
| 49  | 28    | 5053 | U    |
| 49  | 28    | 5054 | C    |
| 49  | 28    | 5061 | A    |
| 49  | 28    | 5062 | G    |

All (47) RNA pucker outliers are listed below:

| Mol | Chain | Res    | Type |
|-----|-------|--------|------|
| 1   | 58    | 124    | U    |
| 48  | ES    | 3236   | G    |
| 49  | 28    | 12     | A    |
| 49  | 28    | 48     | G    |
| 49  | 28    | 125    | C    |
| 49  | 28    | 142    | G    |
| 49  | 28    | 275    | C    |
| 49  | 28    | 406    | C    |
| 49  | 28    | 480    | C    |
| 49  | 28    | 485    | C    |
| 49  | 28    | 492    | U    |
| 49  | 28    | 504    | G    |
| 49  | 28    | 696    | C    |
| 49  | 28    | 930    | G    |
| 49  | 28    | 966    | A    |
| 49  | 28    | 971(A) | G    |
| 49  | 28    | 1072   | C    |
| 49  | 28    | 1211   | G    |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 49  | 28    | 1238 | A    |
| 49  | 28    | 1291 | G    |
| 49  | 28    | 1329 | G    |
| 49  | 28    | 1370 | G    |
| 49  | 28    | 1445 | U    |
| 49  | 28    | 1455 | G    |
| 49  | 28    | 1804 | A    |
| 49  | 28    | 1979 | A    |
| 49  | 28    | 2046 | G    |
| 49  | 28    | 2089 | G    |
| 49  | 28    | 2266 | C    |
| 49  | 28    | 2502 | A    |
| 49  | 28    | 2546 | G    |
| 49  | 28    | 2639 | U    |
| 49  | 28    | 2661 | U    |
| 49  | 28    | 2695 | A    |
| 49  | 28    | 3625 | G    |
| 49  | 28    | 3697 | U    |
| 49  | 28    | 3876 | A    |
| 49  | 28    | 3888 | G    |
| 49  | 28    | 4119 | C    |
| 49  | 28    | 4232 | U    |
| 49  | 28    | 4448 | G    |
| 49  | 28    | 4699 | U    |
| 49  | 28    | 4719 | G    |
| 49  | 28    | 4884 | G    |
| 49  | 28    | 4925 | U    |
| 49  | 28    | 4936 | G    |
| 49  | 28    | 4947 | U    |

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 4 ligands modelled in this entry, 3 are monoatomic - leaving 1 for Mogul analysis.

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

| Mol | Type | Chain | Res | Link | Bond lengths |      |             | Bond angles |      |             |
|-----|------|-------|-----|------|--------------|------|-------------|-------------|------|-------------|
|     |      |       |     |      | Counts       | RMSZ | $\# Z  > 2$ | Counts      | RMSZ | $\# Z  > 2$ |
| 52  | GDP  | v     | 900 | -    | 29,30,30     | 3.59 | 13 (44%)    | 45,47,47    | 2.17 | 13 (28%)    |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|-----|------|---------|------------|---------|
| 52  | GDP  | v     | 900 | -    | -       | 4/16/32/32 | 0/3/3/3 |

All (13) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 52  | v     | 900 | GDP  | O6-C6   | 9.62  | 1.41        | 1.23     |
| 52  | v     | 900 | GDP  | C2'-C3' | -8.47 | 1.30        | 1.53     |
| 52  | v     | 900 | GDP  | O4'-C4' | -7.09 | 1.29        | 1.45     |
| 52  | v     | 900 | GDP  | O4'-C1' | 6.08  | 1.56        | 1.42     |
| 52  | v     | 900 | GDP  | C2-N2   | 4.88  | 1.45        | 1.34     |
| 52  | v     | 900 | GDP  | C1'-N9  | -4.56 | 1.34        | 1.47     |
| 52  | v     | 900 | GDP  | C3'-C4' | 4.09  | 1.63        | 1.53     |
| 52  | v     | 900 | GDP  | PA-O3A  | 3.61  | 1.63        | 1.59     |
| 52  | v     | 900 | GDP  | O2'-C2' | 3.41  | 1.51        | 1.43     |
| 52  | v     | 900 | GDP  | C6-N1   | -2.86 | 1.33        | 1.38     |
| 52  | v     | 900 | GDP  | C5-N7   | -2.54 | 1.34        | 1.39     |
| 52  | v     | 900 | GDP  | C2-N1   | -2.37 | 1.31        | 1.37     |
| 52  | v     | 900 | GDP  | C8-N9   | -2.32 | 1.32        | 1.37     |

All (13) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 52  | v     | 900 | GDP  | C5-C4-N3    | -6.93 | 117.36      | 128.39   |
| 52  | v     | 900 | GDP  | C2-N3-C4    | 5.86  | 122.39      | 112.30   |
| 52  | v     | 900 | GDP  | N9-C4-N3    | 4.90  | 135.74      | 125.95   |
| 52  | v     | 900 | GDP  | C2'-C3'-C4' | 4.31  | 110.93      | 102.61   |

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| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 52  | v     | 900 | GDP  | C8-N7-C5    | 3.28  | 110.10      | 104.26   |
| 52  | v     | 900 | GDP  | N9-C8-N7    | -3.00 | 107.83      | 113.40   |
| 52  | v     | 900 | GDP  | C4-C5-N7    | -2.94 | 106.01      | 110.67   |
| 52  | v     | 900 | GDP  | C2-N1-C6    | -2.81 | 120.02      | 125.11   |
| 52  | v     | 900 | GDP  | O6-C6-C5    | -2.76 | 119.25      | 126.53   |
| 52  | v     | 900 | GDP  | C6-C5-N7    | 2.49  | 134.82      | 130.29   |
| 52  | v     | 900 | GDP  | C3'-C2'-C1' | 2.46  | 106.12      | 101.46   |
| 52  | v     | 900 | GDP  | C5-C6-N1    | 2.35  | 119.24      | 113.25   |
| 52  | v     | 900 | GDP  | O3B-PB-O3A  | 2.00  | 111.36      | 104.64   |

There are no chirality outliers.

All (4) torsion outliers are listed below:

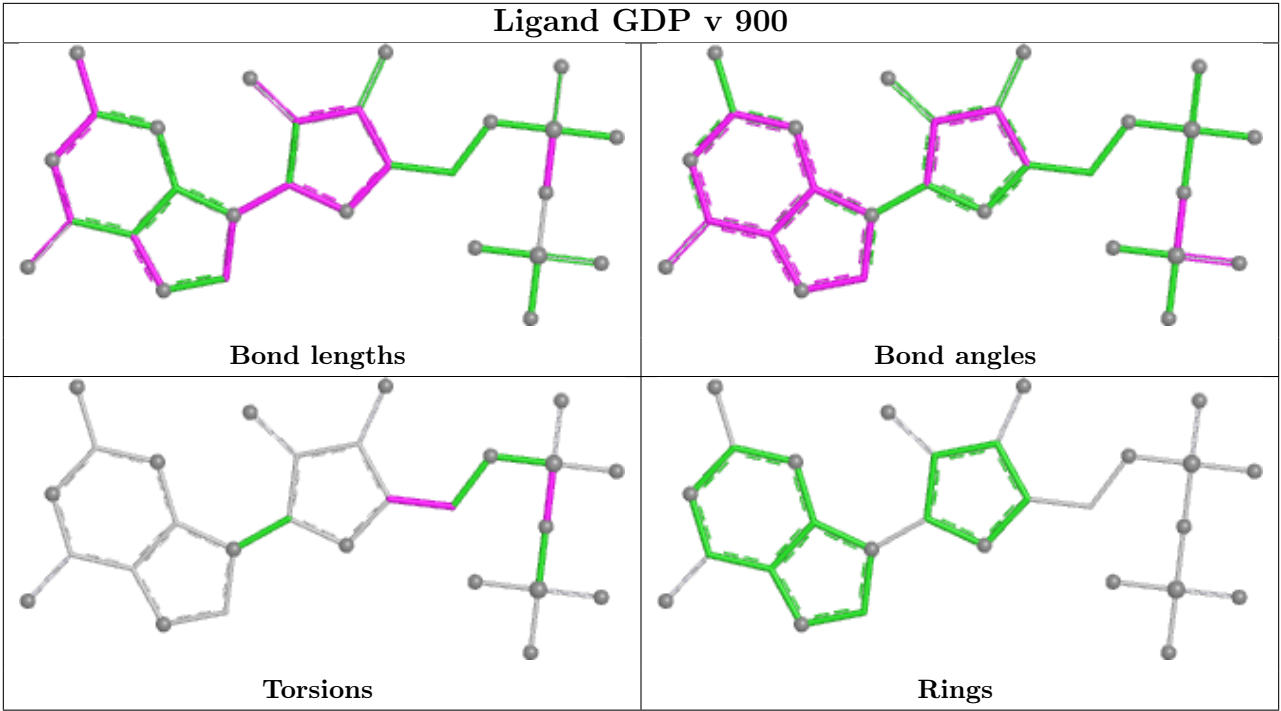
| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 52  | v     | 900 | GDP  | C3'-C4'-C5'-O5' |
| 52  | v     | 900 | GDP  | O4'-C4'-C5'-O5' |
| 52  | v     | 900 | GDP  | PB-O3A-PA-O2A   |
| 52  | v     | 900 | GDP  | PB-O3A-PA-O1A   |

There are no ring outliers.

No monomer is involved in short contacts.

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





5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 49  | 28    | 2                |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | 28    | 3944:G    | O3'    | 3945:A    | P      | 4.51         |
| 1     | 28    | 2025:A    | O3'    | 2026:A    | P      | 3.18         |

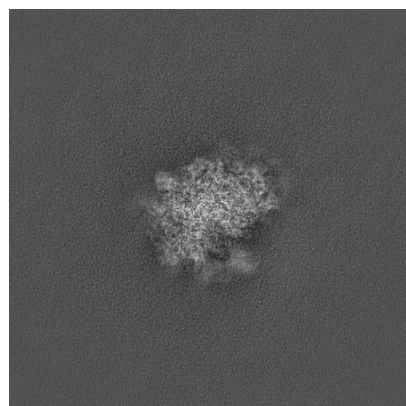
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-75687. These allow visual inspection of the internal detail of the map and identification of artifacts.

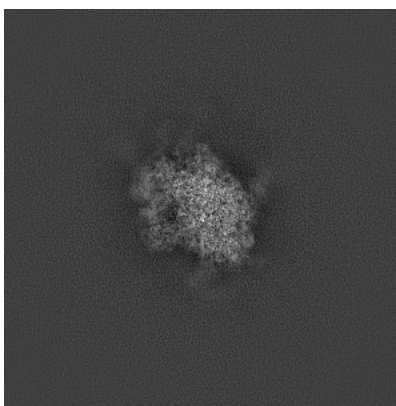
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

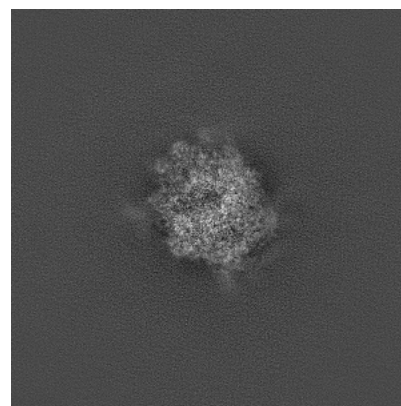
#### 6.1.1 Primary map



X

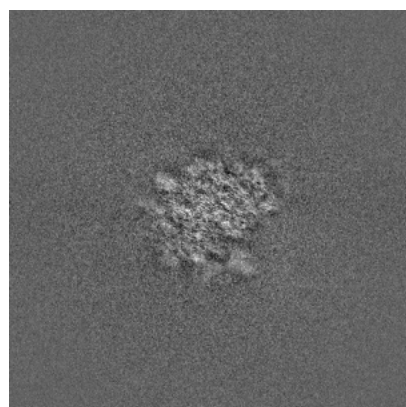


Y

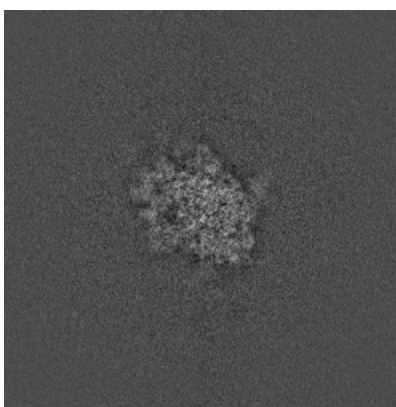


Z

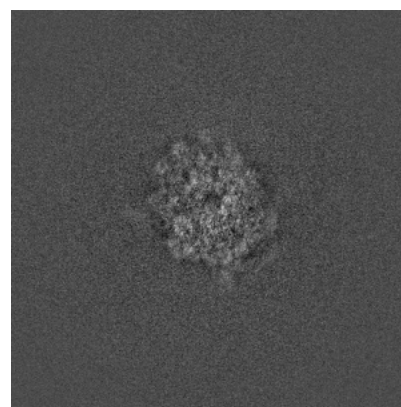
#### 6.1.2 Raw map



X



Y

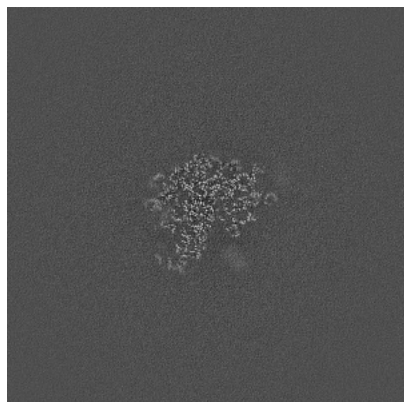


Z

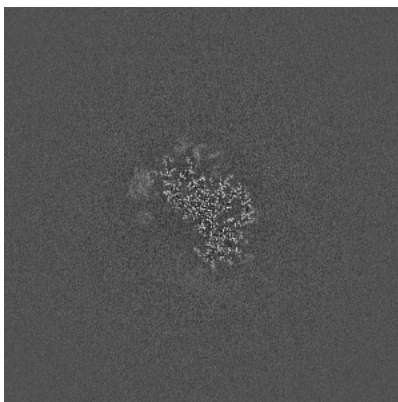
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

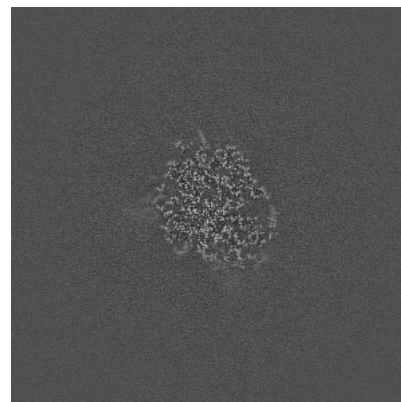
### 6.2.1 Primary map



X Index: 400

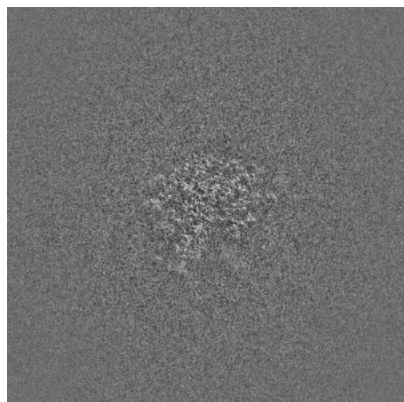


Y Index: 400

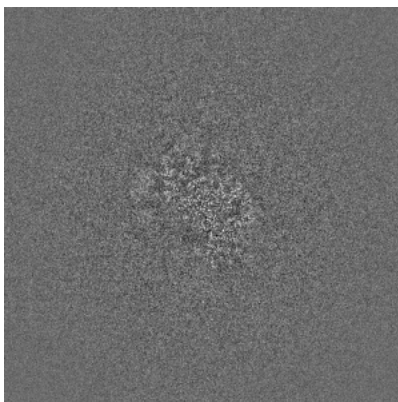


Z Index: 400

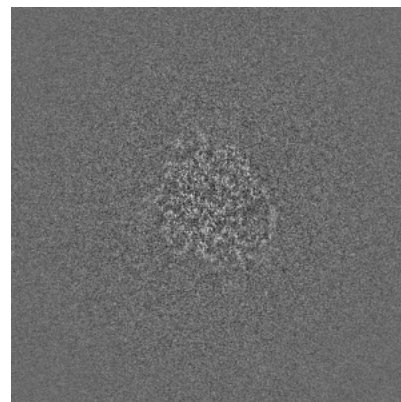
### 6.2.2 Raw map



X Index: 400



Y Index: 400

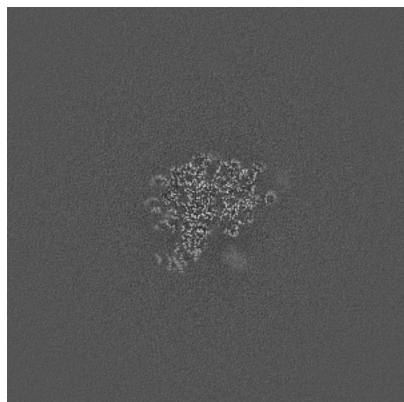


Z Index: 400

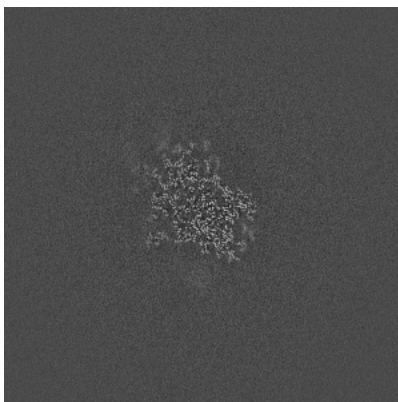
The images above show central slices of the map in three orthogonal directions.

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

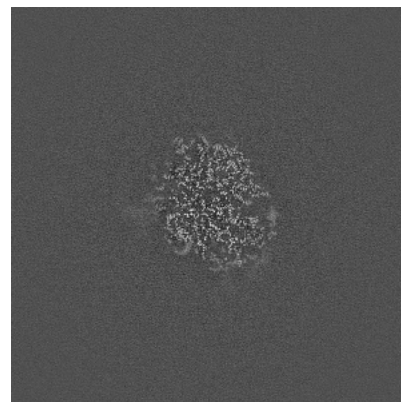
### 6.3.1 Primary map



X Index: 397

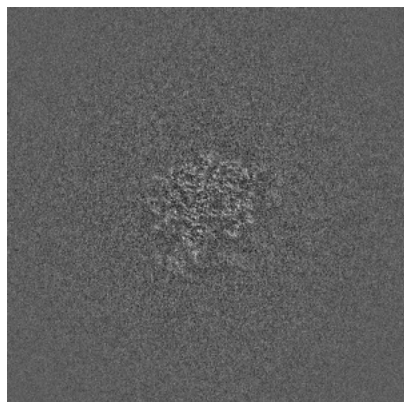


Y Index: 380

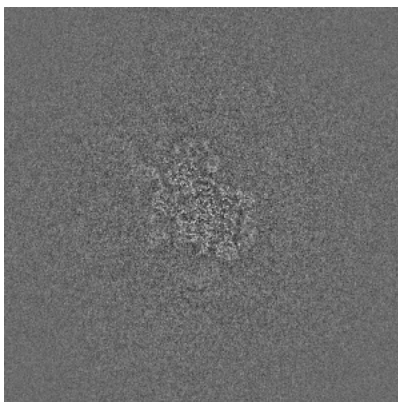


Z Index: 403

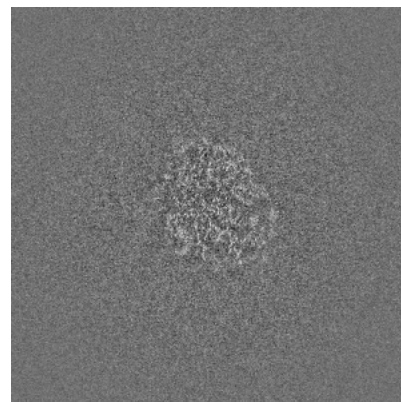
### 6.3.2 Raw map



X Index: 396



Y Index: 384



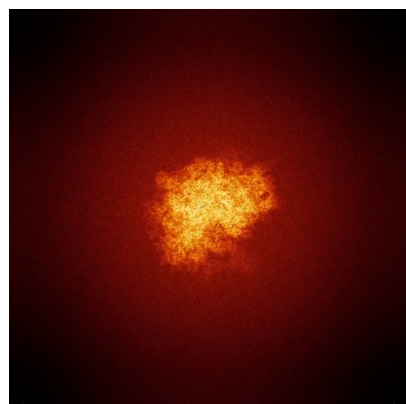
Z Index: 403

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

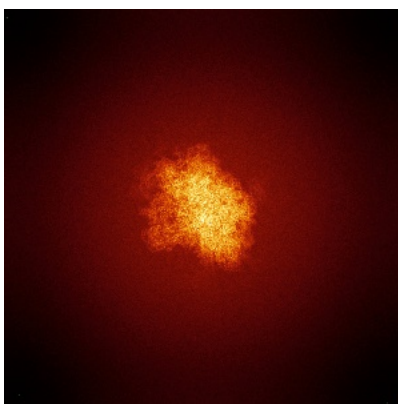


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

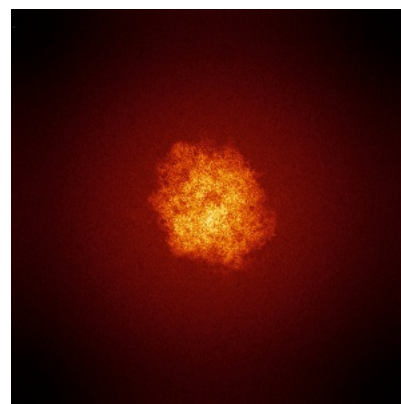
### 6.4.1 Primary map



X

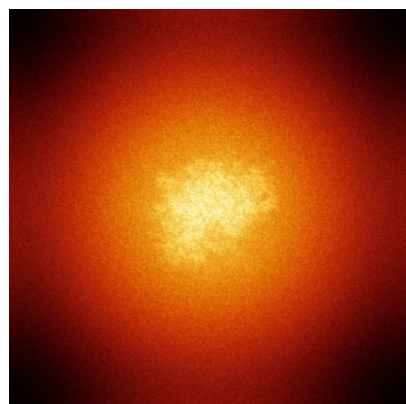


Y

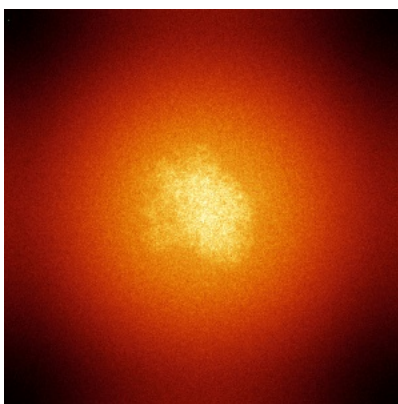


Z

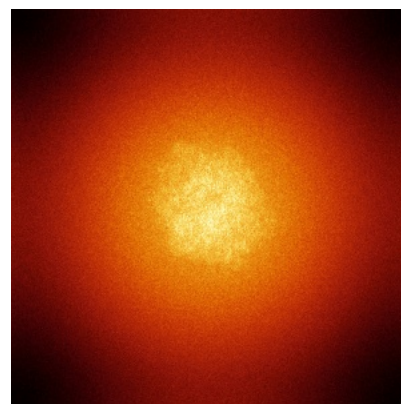
### 6.4.2 Raw map



X



Y

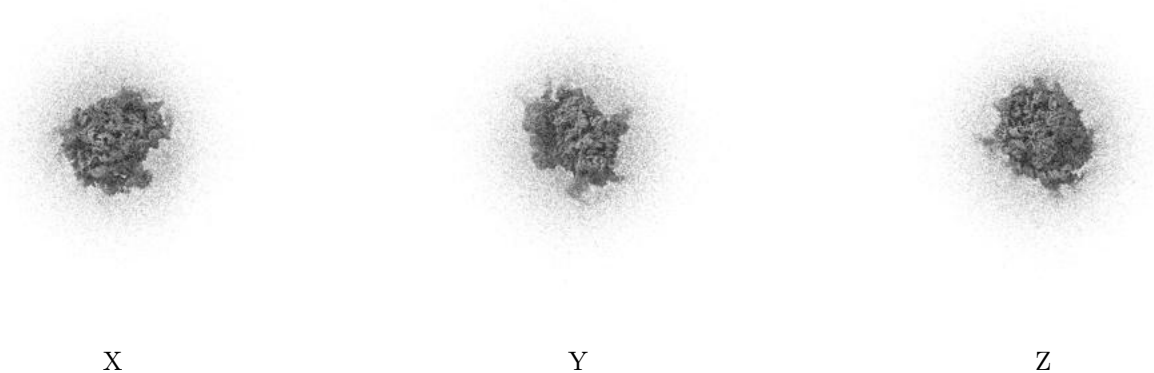


Z

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

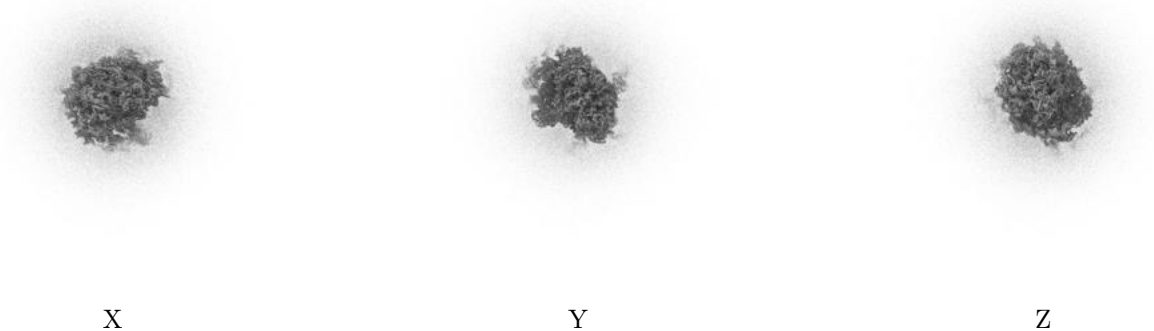
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 3.8. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

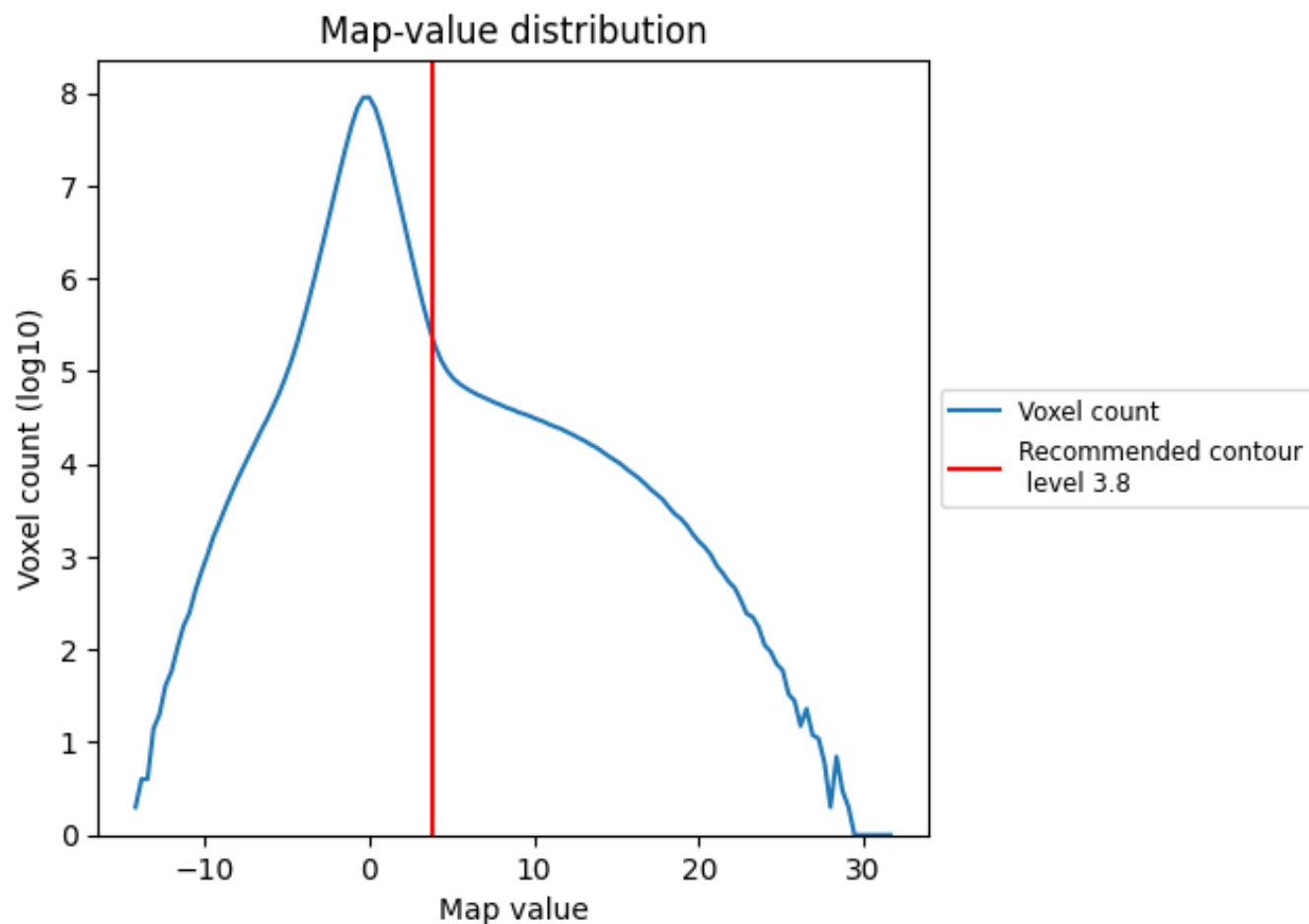
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

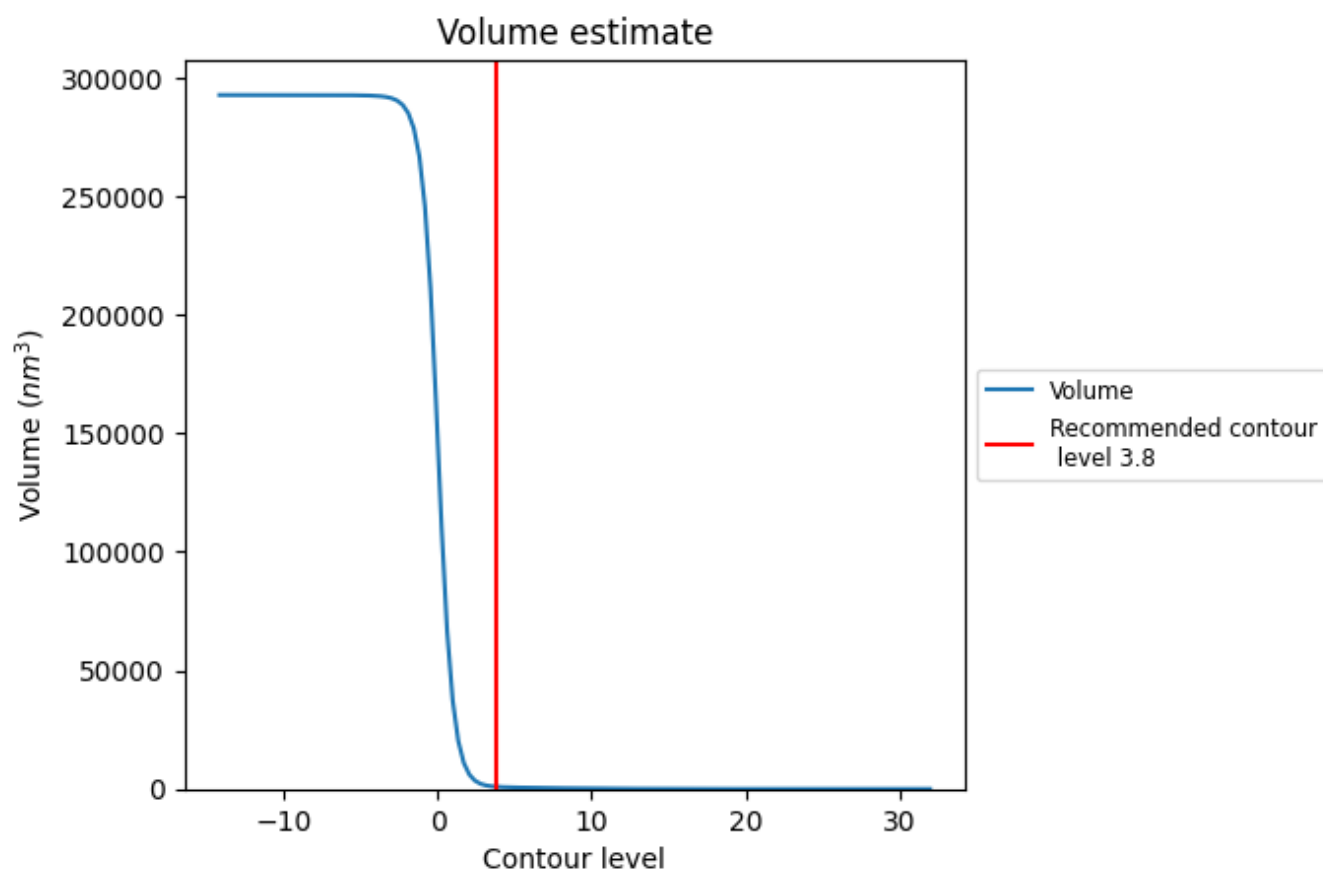
This section contains the results of statistical analysis of the map.

### 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](#)

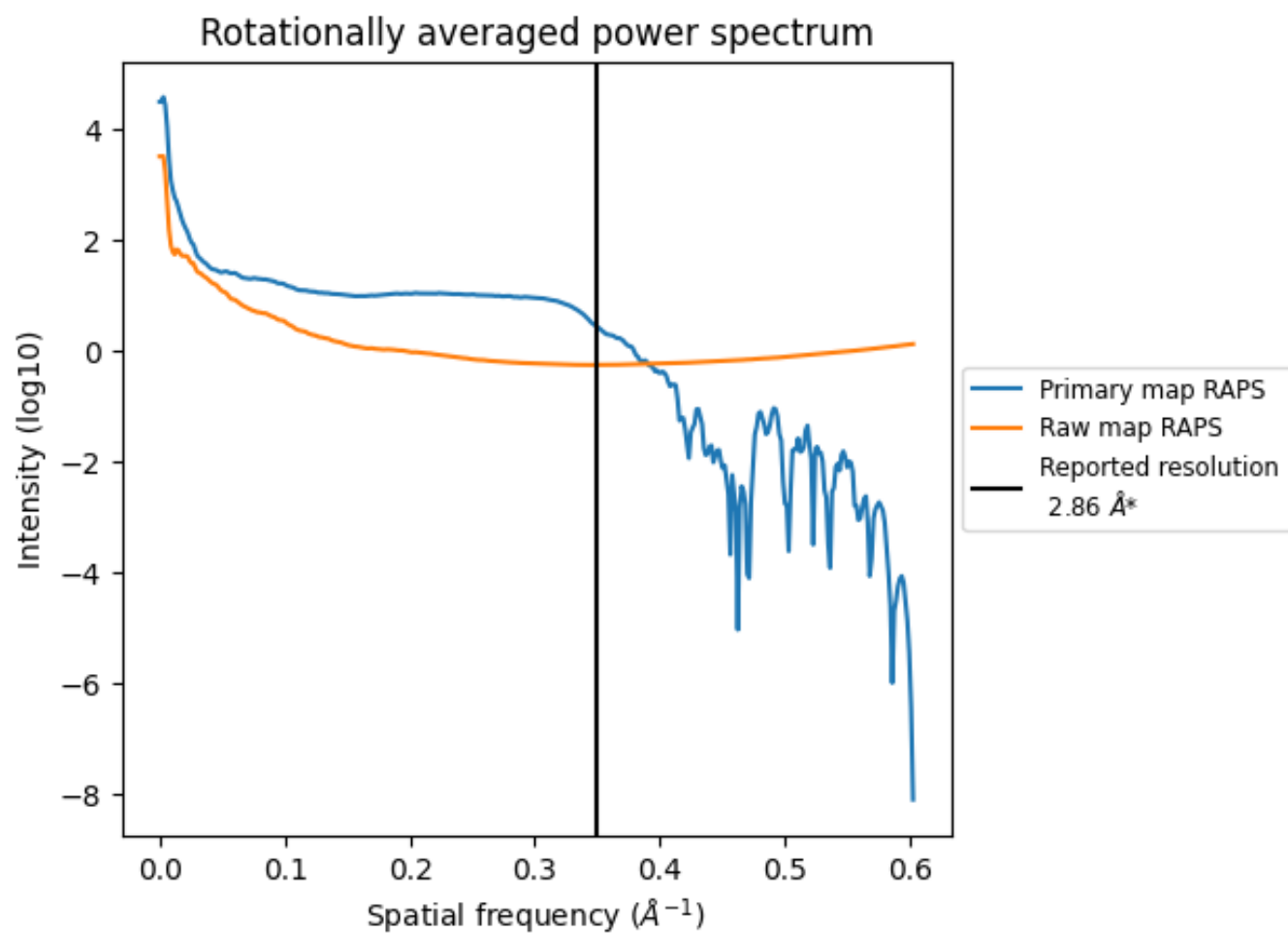


The volume at the recommended contour level is 940 nm<sup>3</sup>; this corresponds to an approximate mass of 849 kDa.

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 ⓘ

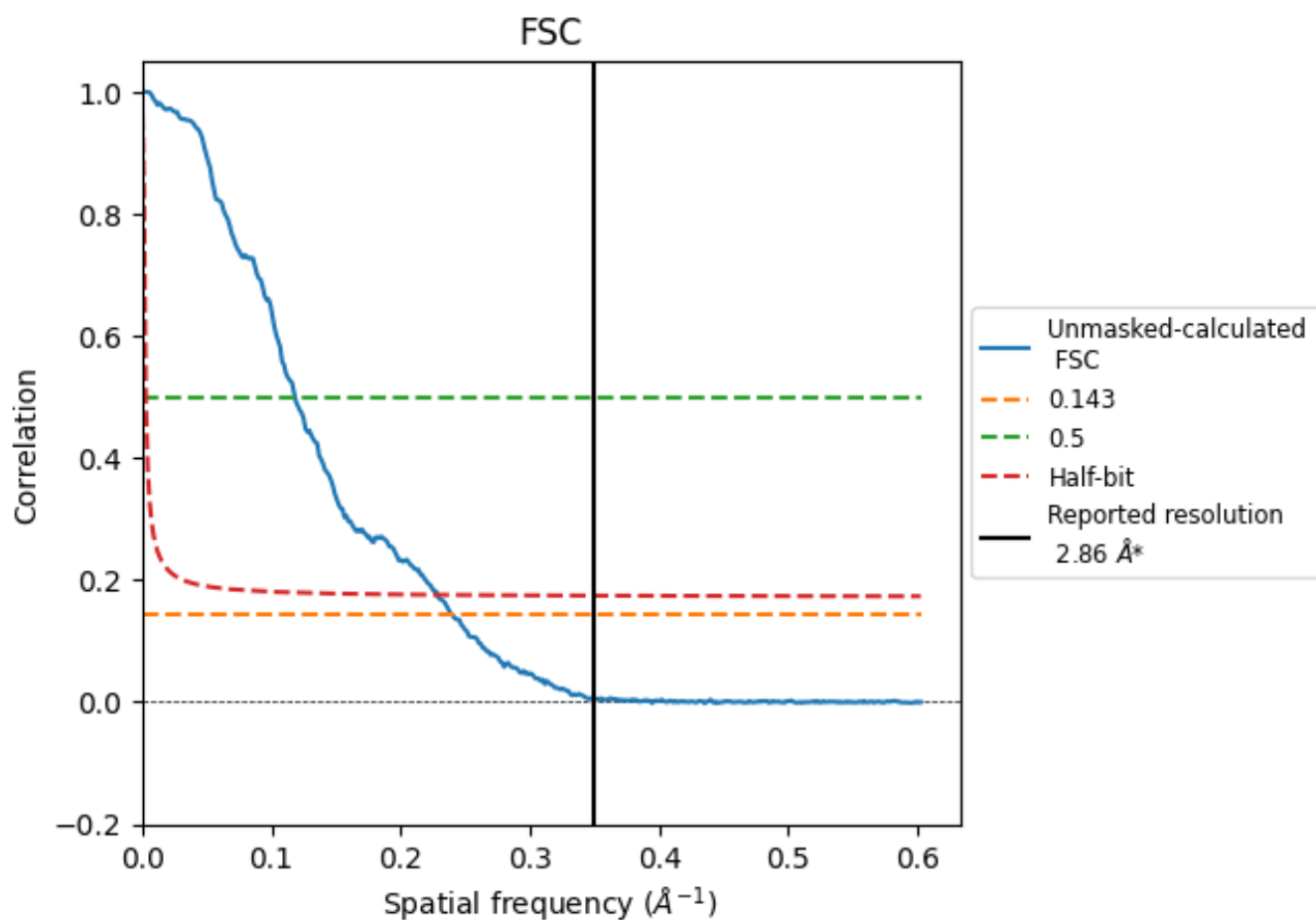


\*Reported resolution corresponds to spatial frequency of  $0.350 \text{ \AA}^{-1}$

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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.350 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

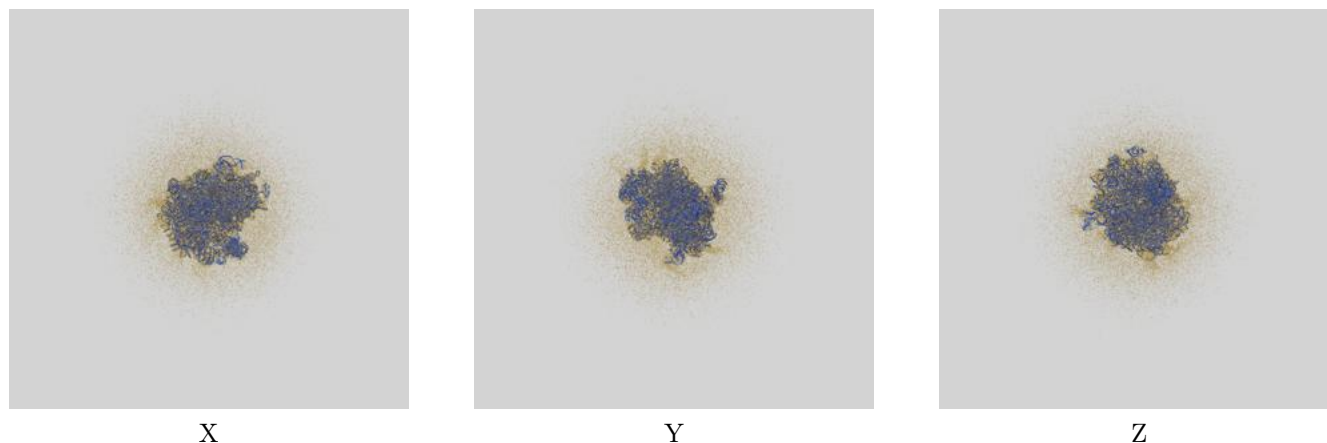
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 2.86                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 4.18                               | 8.45 | 4.38     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.18 differs from the reported value 2.86 by more than 10 %

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

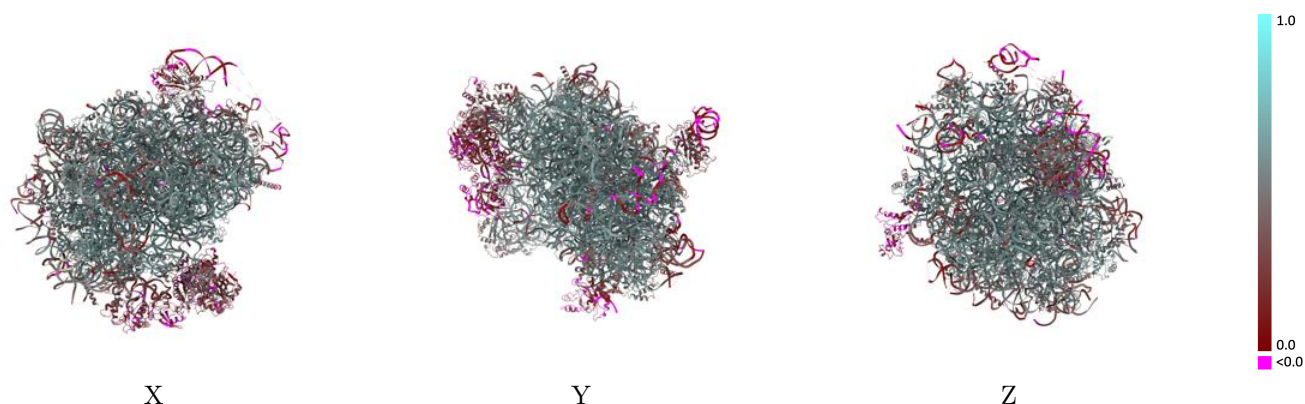
This section contains information regarding the fit between EMDB map EMD-75687 and PDB model 11HE. Per-residue inclusion information can be found in section [3](#) on page [13](#).

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



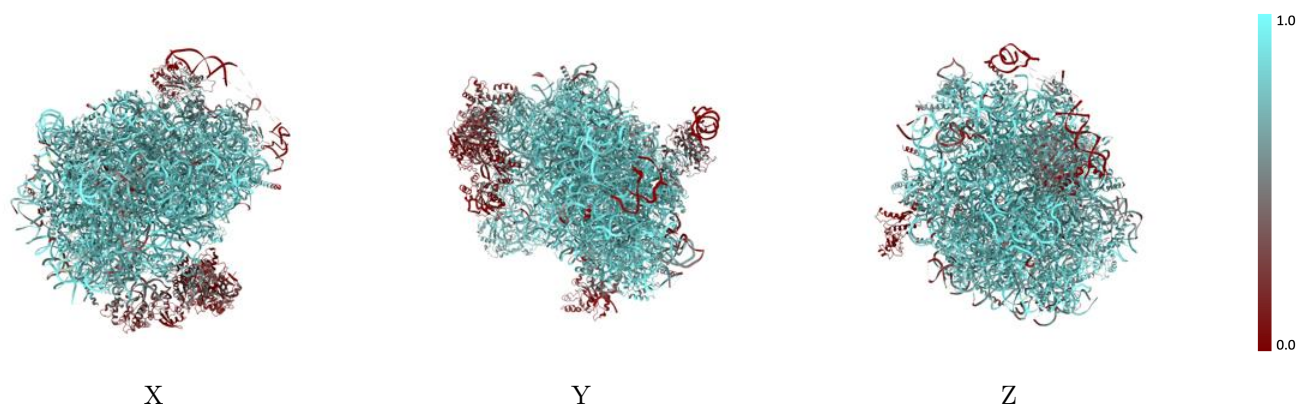
The images above show the 3D surface view of the map at the recommended contour level 3.8 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



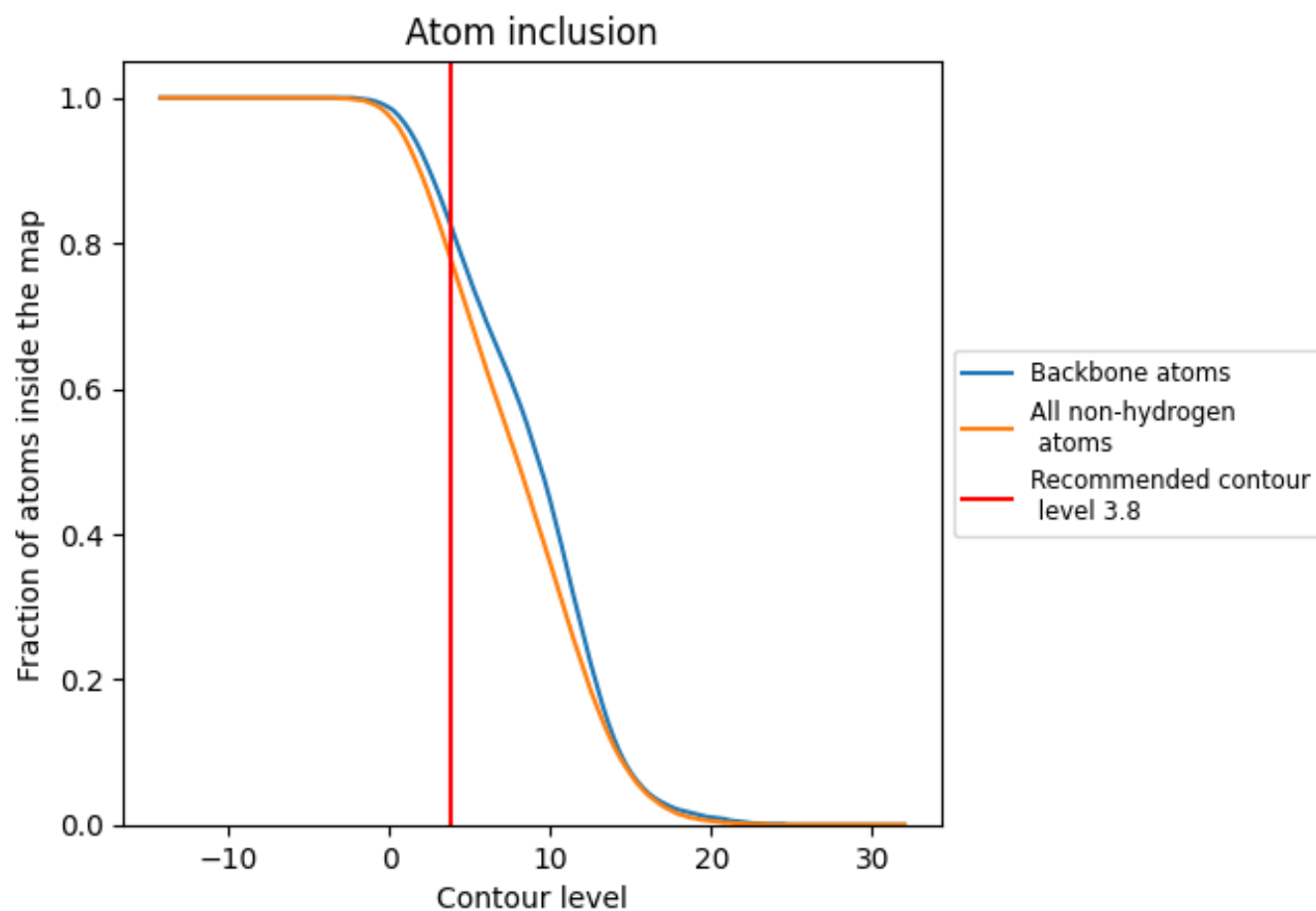
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (3.8).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 83% of all backbone atoms, 78% 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 (3.8) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.7800   |  0.4910   |
| 10    |  0.8120   |  0.5290   |
| 11    |  0.6750   |  0.4140   |
| 13    |  0.8000   |  0.5200   |
| 14    |  0.8330   |  0.5300   |
| 15    |  0.8860   |  0.5860   |
| 17    |  0.8530   |  0.5620   |
| 19    |  0.7660   |  0.5020   |
| 20    |  0.8570   |  0.5590   |
| 21    |  0.8020   |  0.5310   |
| 22    |  0.6170   |  0.3860   |
| 23    |  0.8190   |  0.5540   |
| 24    |  0.8080   |  0.5360   |
| 26    |  0.8250   |  0.5310   |
| 27    |  0.7880  |  0.5120  |
| 28    |  0.8670 |  0.5200 |
| 29    |  0.6660 |  0.4380 |
| 30    |  0.7030 |  0.4640 |
| 31    |  0.7870 |  0.5160 |
| 32    |  0.8570 |  0.5760 |
| 34    |  0.8040 |  0.5470 |
| 35    |  0.7810 |  0.5200 |
| 36    |  0.7950 |  0.5090 |
| 37    |  0.8740 |  0.5750 |
| 38    |  0.6710 |  0.4450 |
| 39    |  0.8240 |  0.5500 |
| 40    |  0.7810 |  0.5100 |
| 42    |  0.8090 |  0.5250 |
| 5     |  0.9250 |  0.5650 |
| 58    |  0.8840 |  0.5410 |
| EB    |  0.3820 |  0.2900 |
| ES    |  0.0310 |  0.0430 |
| L3    |  0.8390 |  0.5540 |
| L4    |  0.8440 |  0.5550 |
| L5    |  0.7840 |  0.5010 |



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| Chain | Atom inclusion                                                                           | Q-score                                                                                  |
|-------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| L6    |  0.7990 |  0.5120 |
| L7    |  0.8560 |  0.5660 |
| L8    |  0.8540 |  0.5700 |
| L9    |  0.7600 |  0.5110 |
| Q     |  0.8690 |  0.5710 |
| aa    |  0.7340 |  0.4710 |
| bb    |  0.8540 |  0.5640 |
| cc    |  0.8080 |  0.5330 |
| dd    |  0.8720 |  0.5770 |
| ee    |  0.8790 |  0.5800 |
| ff    |  0.8100 |  0.5390 |
| gg    |  0.8600 |  0.5640 |
| s     |  0.2790 |  0.2310 |
| t     |  0.0760 |  0.0790 |
| u     |  0.0310 |  0.0530 |
| v     |  0.2000 |  0.2160 |