



## Full wwPDB EM Validation Report ⓘ

Dec 19, 2022 – 02:32 am GMT

PDB ID : 7B7D  
EMDB ID : EMD-12081  
Title : Yeast 80S ribosome bound to eEF3 and A/A- and P/P-tRNAs  
Authors : Ranjan, N.; Pochopien, A.A.; Wu, C.C.; Beckert, B.; Blanchet, S.; Green, R.;  
Rodnina, M.V.; Wilson, D.N.  
Deposited on : 2020-12-10  
Resolution : 3.30 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:

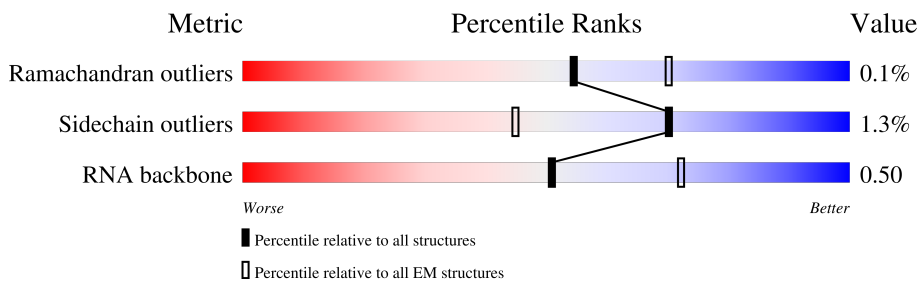
EMDB validation analysis : 0.0.1.dev43  
Mogul : 1.8.4, CSD as541be (2020)  
MolProbity : 4.02b-467  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.9  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.31.3

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 3.30 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) |
|-----------------------|-----------------------------|-----------------------------|
| Ramachandran outliers | 154571                      | 4023                        |
| Sidechain outliers    | 154315                      | 3826                        |
| RNA backbone          | 4643                        | 859                         |

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   | 2     | 1771   |                  |
| 2   | 1     | 7      |                  |
| 3   | P     | 206    |                  |
| 4   | Q     | 232    |                  |
| 5   | E     | 117    |                  |
| 6   | R     | 216    |                  |
| 7   | A     | 222    |                  |
| 8   | S     | 258    |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 9   | B     | 206    | 17%<br>98%       |
| 10  | T     | 228    | 58%<br>99%       |
| 11  | U     | 184    | 46%<br>96%       |
| 12  | V     | 198    | 15%<br>93%<br>6% |
| 13  | W     | 184    | 44%<br>97%       |
| 14  | C     | 92     | 29%<br>98%       |
| 15  | X     | 142    | 24%<br>99%       |
| 16  | D     | 121    | 88%<br>91%<br>7% |
| 17  | Y     | 150    | 15%<br>98%       |
| 18  | Z     | 127    | 7%<br>94%<br>6%  |
| 19  | F     | 141    | 9%<br>96%        |
| 20  | G     | 125    | 25%<br>93%       |
| 21  | H     | 145    | 10%<br>97%       |
| 22  | I     | 143    | 9%<br>97%        |
| 23  | J     | 100    | 30%<br>99%       |
| 24  | a     | 87     | 17%<br>99%       |
| 25  | b     | 129    | 9%<br>98%        |
| 26  | c     | 144    | 22%<br>99%       |
| 27  | d     | 134    | 51%<br>99%       |
| 28  | K     | 82     | 32%<br>98%       |
| 29  | e     | 97     | 9%<br>98%        |
| 30  | f     | 81     | 30%<br>98%       |
| 31  | M     | 53     | 6%<br>100%       |
| 32  | g     | 60     | 47%<br>95%<br>5% |
| 33  | N     | 73     | 70%<br>96%       |

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| Mol | Chain | Length | Quality of chain       |
|-----|-------|--------|------------------------|
| 34  | O     | 312    | 38%<br>97%             |
| 35  | L     | 63     | 22%<br>94%<br>6%       |
| 36  | LA    | 3223   | 7%<br>66%<br>29%<br>5% |
| 37  | LB    | 121    | 78%<br>21%             |
| 38  | LC    | 158    | 70%<br>27%             |
| 39  | LD    | 251    | 97%                    |
| 40  | LE    | 386    | 98%                    |
| 41  | LF    | 361    | 97%                    |
| 42  | LG    | 294    | 7%<br>97%              |
| 43  | LH    | 175    | 17%<br>93%<br>5%       |
| 44  | LI    | 222    | 99%                    |
| 45  | LJ    | 233    | 12%<br>96%             |
| 46  | LK    | 191    | 6%<br>96%              |
| 47  | LL    | 218    | 13%<br>99%             |
| 48  | LM    | 169    | 5%<br>98%              |
| 49  | LN    | 193    | 9%<br>97%              |
| 50  | LO    | 136    | 97%                    |
| 51  | LP    | 203    | 98%                    |
| 52  | LQ    | 197    | 99%                    |
| 53  | LR    | 183    | 8%<br>100%             |
| 54  | Lm    | 185    | 95%<br>5%              |
| 55  | Ln    | 188    | 14%<br>97%             |
| 56  | Lo    | 171    | 99%                    |
| 57  | Lp    | 159    | 6%<br>98%              |
| 58  | Lq    | 100    | 16%<br>98%             |

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| Mol | Chain | Length | Quality of chain        |
|-----|-------|--------|-------------------------|
| 59  | Lr    | 136    | 10%<br>99%              |
| 60  | LS    | 126    | 48%<br>99%              |
| 61  | LT    | 121    | 100%                    |
| 62  | LU    | 125    | 99%                     |
| 63  | LV    | 135    | 6%<br>98%               |
| 64  | LW    | 148    | 97%                     |
| 65  | LX    | 58     | 9%<br>95%<br>5%         |
| 66  | LY    | 96     | 8%<br>95%<br>5%         |
| 67  | LZ    | 109    | 12%<br>97%              |
| 68  | La    | 127    | 98%                     |
| 69  | Lb    | 106    | 99%                     |
| 70  | Lc    | 112    | 11%<br>97%              |
| 71  | Ld    | 119    | 97%                     |
| 72  | Le    | 99     | 7%<br>100%              |
| 73  | Lf    | 81     | 98%                     |
| 74  | Lg    | 77     | 12%<br>96%              |
| 75  | Lh    | 50     | 6%<br>98%               |
| 76  | Li    | 52     | 8%<br>100%              |
| 77  | Lj    | 25     | 12%<br>92%<br>8%        |
| 78  | Lk    | 103    | 5%<br>98%               |
| 79  | Ll    | 91     | 5%<br>98%               |
| 80  | Sm    | 75     | 59%<br>52%<br>40%<br>8% |
| 80  | Sn    | 75     | 16%<br>57%<br>33%<br>9% |
| 81  | EF    | 1044   | 30%<br>92%<br>6%        |

## 2 Entry composition [i](#)

There are 82 unique types of molecules in this entry. The entry contains 211144 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 18S rRNA.

| Mol | Chain | Residues | Atoms |       |      |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|------|-------|------|---------|-------|
|     |       |          | Total | C     | N    | O     | P    |         |       |
| 1   | 2     | 1771     | 37739 | 16872 | 6683 | 12413 | 1771 | 0       | 0     |

- Molecule 2 is a RNA chain called mRNA.

| Mol | Chain | Residues | Atoms |    |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---|---------|-------|
|     |       |          | Total | C  | N  | O  | P |         |       |
| 2   | 1     | 7        | 149   | 67 | 26 | 49 | 7 | 0       | 0     |

- Molecule 3 is a protein called 40S ribosomal protein S0-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 3   | P     | 206      | 1603  | 1030 | 284 | 287 | 2 | 0       | 0     |

- Molecule 4 is a protein called 40S ribosomal protein S1-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 4   | Q     | 226      | 1798  | 1139 | 330 | 325 | 4 | 0       | 0     |

- Molecule 5 is a protein called 40S ribosomal protein S15.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 5   | E     | 117      | 916   | 583 | 171 | 155 | 7 | 0       | 0     |

- Molecule 6 is a protein called 40S ribosomal protein S2.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 6   | R     | 216      | 1626  | 1042 | 287 | 295 | 2 | 0       | 0     |

- Molecule 7 is a protein called 40S ribosomal protein S3.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 7   | A     | 222      | 1729  | 1098 | 312 | 313 | 6 | 0       | 0     |

- Molecule 8 is a protein called 40S ribosomal protein S4-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 8   | S     | 258      | 2056  | 1308 | 387 | 358 | 3 | 0       | 0     |

- Molecule 9 is a protein called 40S ribosomal protein S5.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 9   | B     | 206      | 1605  | 1005 | 299 | 298 | 3 | 0       | 0     |

- Molecule 10 is a protein called 40S ribosomal protein S6-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 10  | T     | 228      | 1815  | 1138 | 351 | 323 | 3 | 0       | 0     |

- Molecule 11 is a protein called 40S ribosomal protein S7-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 11  | U     | 184      | 1473  | 946 | 263 | 264 | 0       | 0     |

- Molecule 12 is a protein called 40S ribosomal protein S8-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 12  | V     | 187      | 1476  | 916 | 295 | 263 | 2 | 0       | 0     |

- Molecule 13 is a protein called 40S ribosomal protein S9-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 13  | W     | 184      | 1479  | 935 | 285 | 258 | 1 | 0       | 0     |

- Molecule 14 is a protein called 40S ribosomal protein S10-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 14  | C     | 92       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 752   | 487 | 122 | 141 | 2 |         |       |

- Molecule 15 is a protein called 40S ribosomal protein S11-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15  | X     | 142      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1142  | 733 | 217 | 189 | 3 |         |       |

- Molecule 16 is a protein called 40S ribosomal protein S12.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16  | D     | 121      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 875   | 551 | 153 | 169 | 2 |         |       |

- Molecule 17 is a protein called 40S ribosomal protein S13.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 17  | Y     | 150      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1192  | 759 | 224 | 207 | 2 |         |       |

- Molecule 18 is a protein called 40S ribosomal protein S14-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 18  | Z     | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 923   | 568 | 185 | 167 | 3 |         |       |

- Molecule 19 is a protein called 40S ribosomal protein S16-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 19  | F     | 141      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1105  | 708 | 203 | 194 |         |       |

- Molecule 20 is a protein called 40S ribosomal protein S17-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20  | G     | 121      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 948   | 596 | 179 | 171 | 2 |         |       |

- Molecule 21 is a protein called 40S ribosomal protein S18-A.



| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21  | H     | 145      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1188  | 741 | 237 | 208 | 2 |         |       |

- Molecule 22 is a protein called 40S ribosomal protein S19-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 22  | I     | 143      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1112  | 694 | 208 | 208 | 2 |         |       |

- Molecule 23 is a protein called 40S ribosomal protein S20.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 23  | J     | 100      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 797   | 506 | 144 | 146 | 1 |         |       |

- Molecule 24 is a protein called 40S ribosomal protein S21-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 24  | a     | 87       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 673   | 415 | 125 | 131 | 2 |         |       |

- Molecule 25 is a protein called 40S ribosomal protein S22-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 25  | b     | 129      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1021  | 650 | 188 | 180 | 3 |         |       |

- Molecule 26 is a protein called 40S ribosomal protein S23-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 26  | c     | 144      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1121  | 708 | 220 | 191 | 2 |         |       |

- Molecule 27 is a protein called 40S ribosomal protein S24-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 27  | d     | 134      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1073  | 676 | 208 | 189 |         |       |

- Molecule 28 is a protein called 40S ribosomal protein S25-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 28  | K     | 82       | 651   | 416 | 123 | 112 | 0       | 0     |

- Molecule 29 is a protein called 40S ribosomal protein S26-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 29  | e     | 97       | 765   | 473 | 160 | 127 | 5 | 0       | 0     |

- Molecule 30 is a protein called 40S ribosomal protein S27-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 30  | f     | 81       | 610   | 382 | 110 | 113 | 5 | 0       | 0     |

- Molecule 31 is a protein called 40S ribosomal protein S29-A.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |       |
| 31  | M     | 53       | 442   | 274 | 92 | 72 | 4 | 0       | 0     |

- Molecule 32 is a protein called 40S ribosomal protein S30-A.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |       |
| 32  | g     | 60       | 472   | 298 | 97 | 76 | 1 | 0       | 0     |

- Molecule 33 is a protein called Ubiquitin-40S ribosomal protein S31.

| Mol | Chain | Residues | Atoms |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
|     |       |          | Total | C   | N   | O  | S |         |       |
| 33  | N     | 73       | 556   | 352 | 105 | 95 | 4 | 0       | 0     |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| N     | 97      | ALA      | LYS    | conflict | UNP P05759 |

- Molecule 34 is a protein called Guanine nucleotide-binding protein subunit beta-like protein.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 34  | O     | 312      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2383  | 1514 | 409 | 452 | 8 |         |       |

- Molecule 35 is a protein called 40S ribosomal protein S28-A.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 35  | L     | 63       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 491   | 303 | 96 | 91 | 1 |         |       |

- Molecule 36 is a RNA chain called 25S rRNA.

| Mol | Chain | Residues | Atoms |       |       |       |      | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| 36  | LA    | 3223     | Total | C     | N     | O     | P    | 0       | 0     |
|     |       |          | 68931 | 30790 | 12416 | 22502 | 3223 |         |       |

- Molecule 37 is a RNA chain called 5S rRNA.

| Mol | Chain | Residues | Atoms |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 37  | LB    | 121      | Total | C    | N   | O   | P   | 0       | 0     |
|     |       |          | 2579  | 1152 | 461 | 845 | 121 |         |       |

- Molecule 38 is a RNA chain called 5.8S rRNA.

| Mol | Chain | Residues | Atoms |      |     |      |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|-----|---------|-------|
| 38  | LC    | 158      | Total | C    | N   | O    | P   | 0       | 0     |
|     |       |          | 3353  | 1500 | 586 | 1109 | 158 |         |       |

- Molecule 39 is a protein called 60S ribosomal protein L2-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 39  | LD    | 251      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1899  | 1182 | 385 | 331 | 1 |         |       |

- Molecule 40 is a protein called 60S ribosomal protein L3.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 40  | LE    | 386      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 3075  | 1950 | 584 | 533 | 8 |         |       |

- Molecule 41 is a protein called 60S ribosomal protein L4-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 41  | LF    | 361      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2748  | 1729 | 522 | 494 | 3 |         |       |

- Molecule 42 is a protein called 60S ribosomal protein L5.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 42  | LG    | 294      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 2351  | 1484 | 410 | 455 | 2 |         |       |

- Molecule 43 is a protein called 60S ribosomal protein L6-B.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 43  | LH    | 167      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1307  | 843 | 234 | 230 |         |       |

- Molecule 44 is a protein called 60S ribosomal protein L7-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 44  | LI    | 222      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1784  | 1151 | 324 | 308 | 1 |         |       |

- Molecule 45 is a protein called 60S ribosomal protein L8-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 45  | LJ    | 233      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1804  | 1151 | 323 | 327 | 3 |         |       |

- Molecule 46 is a protein called 60S ribosomal protein L9-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 46  | LK    | 191      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1508  | 957 | 274 | 273 | 4 |         |       |

- Molecule 47 is a protein called 60S ribosomal protein L10.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 47  | LL    | 218      | Total | C    | N   | O   | S | 0       | 0     |
|     |       |          | 1764  | 1117 | 334 | 306 | 7 |         |       |

- Molecule 48 is a protein called 60S ribosomal protein L11-B.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 48  | LM    | 169      | 1346  | 843 | 252 | 247 | 4 | 0       | 0     |

- Molecule 49 is a protein called 60S ribosomal protein L13-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 49  | LN    | 193      | 1543  | 962 | 315 | 266 |   | 0       | 0     |

- Molecule 50 is a protein called 60S ribosomal protein L14-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 50  | LO    | 136      | 1053  | 675 | 199 | 177 | 2 | 0       | 0     |

- Molecule 51 is a protein called 60S ribosomal protein L15-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 51  | LP    | 203      | 1720  | 1077 | 361 | 281 | 1 | 0       | 0     |

- Molecule 52 is a protein called 60S ribosomal protein L16-A.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 52  | LQ    | 197      | 1555  | 1003 | 289 | 262 | 1 | 197     | 0     |

- Molecule 53 is a protein called 60S ribosomal protein L17-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 53  | LR    | 183      | 1416  | 879 | 284 | 253 |   | 0       | 0     |

- Molecule 54 is a protein called 60S ribosomal protein L18-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 54  | Lm    | 185      | 1441  | 908 | 290 | 241 | 2 | 0       | 0     |

- Molecule 55 is a protein called 60S ribosomal protein L19-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 55  | Ln    | 188      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1515  | 932 | 323 | 260 |         |       |

- Molecule 56 is a protein called 60S ribosomal protein L20-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 56  | Lo    | 171      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1437  | 925 | 266 | 243 | 3 |         |       |

- Molecule 57 is a protein called 60S ribosomal protein L21-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 57  | Lp    | 159      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1272  | 802 | 245 | 221 | 4 |         |       |

- Molecule 58 is a protein called 60S ribosomal protein L22-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 58  | Lq    | 100      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 796   | 516 | 131 | 149 |         |       |

- Molecule 59 is a protein called 60S ribosomal protein L23-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 59  | Lr    | 136      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1003  | 628 | 189 | 179 | 7 |         |       |

- Molecule 60 is a protein called 60S ribosomal protein L24-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 60  | LS    | 126      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 836   | 525 | 165 | 145 | 1 |         |       |

- Molecule 61 is a protein called 60S ribosomal protein L25.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 61  | LT    | 121      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 964   | 620 | 169 | 173 | 2 |         |       |

- Molecule 62 is a protein called 60S ribosomal protein L26-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 62  | LU    | 125      | 984   | 620 | 191 | 173 | 0       | 0     |

- Molecule 63 is a protein called 60S ribosomal protein L27-A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 63  | LV    | 135      | 1080  | 701 | 199 | 180 | 0       | 0     |

- Molecule 64 is a protein called 60S ribosomal protein L28.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 64  | LW    | 148      | 1169  | 747 | 231 | 188 | 3 | 0       | 0     |

- Molecule 65 is a protein called 60S ribosomal protein L29.

| Mol | Chain | Residues | Atoms |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---------|-------|
|     |       |          | Total | C   | N   | O  |         |       |
| 65  | LX    | 58       | 462   | 289 | 100 | 73 | 0       | 0     |

- Molecule 66 is a protein called 60S ribosomal protein L30.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 66  | LY    | 96       | 737   | 476 | 123 | 137 | 1 | 0       | 0     |

- Molecule 67 is a protein called 60S ribosomal protein L31-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 67  | LZ    | 109      | 876   | 556 | 167 | 152 | 1 | 0       | 0     |

- Molecule 68 is a protein called 60S ribosomal protein L32.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 68  | La    | 127      | 1013  | 642 | 205 | 165 | 1 | 0       | 0     |

- Molecule 69 is a protein called 60S ribosomal protein L33-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 69  | Lb    | 106      | 850   | 540 | 165 | 144 | 1 | 0       | 0     |

- Molecule 70 is a protein called 60S ribosomal protein L34-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 70  | Lc    | 112      | 880   | 545 | 179 | 152 | 4 | 0       | 0     |

- Molecule 71 is a protein called 60S ribosomal protein L35-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 71  | Ld    | 119      | 969   | 615 | 186 | 167 | 1 | 0       | 0     |

- Molecule 72 is a protein called 60S ribosomal protein L36-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 72  | Le    | 99       | 766   | 478 | 154 | 132 | 2 | 0       | 0     |

- Molecule 73 is a protein called 60S ribosomal protein L37-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |       |
| 73  | Lf    | 81       | 645   | 393 | 141 | 106 | 5 | 0       | 0     |

- Molecule 74 is a protein called 60S ribosomal protein L38.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 74  | Lg    | 77       | 612   | 391 | 115 | 106 | 0       | 0     |

- Molecule 75 is a protein called 60S ribosomal protein L39.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
|     |       |          | Total | C   | N  | O  | S |         |       |
| 75  | Lh    | 50       | 436   | 272 | 97 | 65 | 2 | 0       | 0     |

- Molecule 76 is a protein called Ubiquitin-60S ribosomal protein L40.



| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 76  | Li    | 52       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 410   | 254 | 86 | 65 | 5 |         |       |

- Molecule 77 is a protein called 60S ribosomal protein L41-B.

| Mol | Chain | Residues | Atoms |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 77  | Lj    | 25       | Total | C   | N  | O  | S | 0       | 0     |
|     |       |          | 229   | 139 | 62 | 27 | 1 |         |       |

- Molecule 78 is a protein called 60S ribosomal protein L42-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 78  | Lk    | 103      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 824   | 517 | 167 | 135 | 5 |         |       |

- Molecule 79 is a protein called 60S ribosomal protein L43-A.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 79  | Ll    | 91       | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 694   | 429 | 138 | 121 | 6 |         |       |

- Molecule 80 is a RNA chain called tRNA.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 80  | Sn    | 75       | Total | C   | N   | O   | P  | 0       | 0     |
|     |       |          | 1606  | 716 | 297 | 518 | 75 |         |       |
| 80  | Sm    | 75       | Total | C   | N   | O   | P  | 0       | 0     |
|     |       |          | 1605  | 716 | 297 | 517 | 75 |         |       |

- Molecule 81 is a protein called Elongation factor 3A.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |   |
|-----|-------|----------|-------|------|------|------|----|---------|-------|---|
| 81  | EF    | 977      | Total | C    | N    | O    | S  | Se      | 0     | 0 |
|     |       |          | 7479  | 4729 | 1294 | 1419 | 32 | 5       |       |   |

There are 5 discrepancies between the modelled and reference sequences:

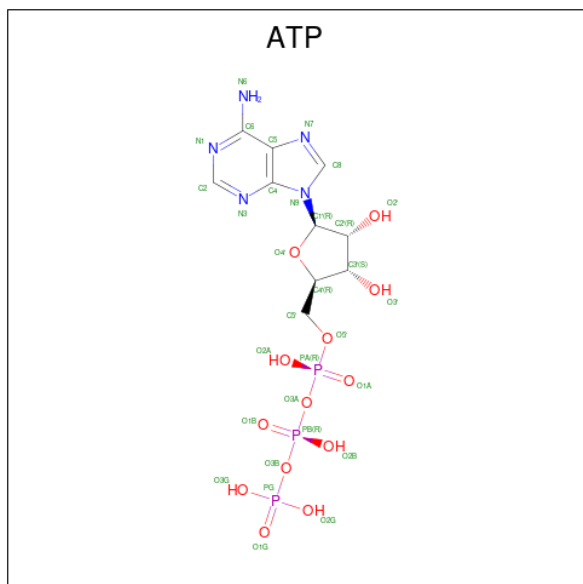
| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| EF    | 24      | ASP      | ASN    | conflict | UNP P16521 |
| EF    | 152     | PHE      | ILE    | conflict | UNP P16521 |
| EF    | 331     | LEU      | VAL    | conflict | UNP P16521 |
| EF    | 541     | GLY      | SER    | conflict | UNP P16521 |

*Continued on next page...*

*Continued from previous page...*

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| EF    | 542     | SER      | ALA    | conflict | UNP P16521 |

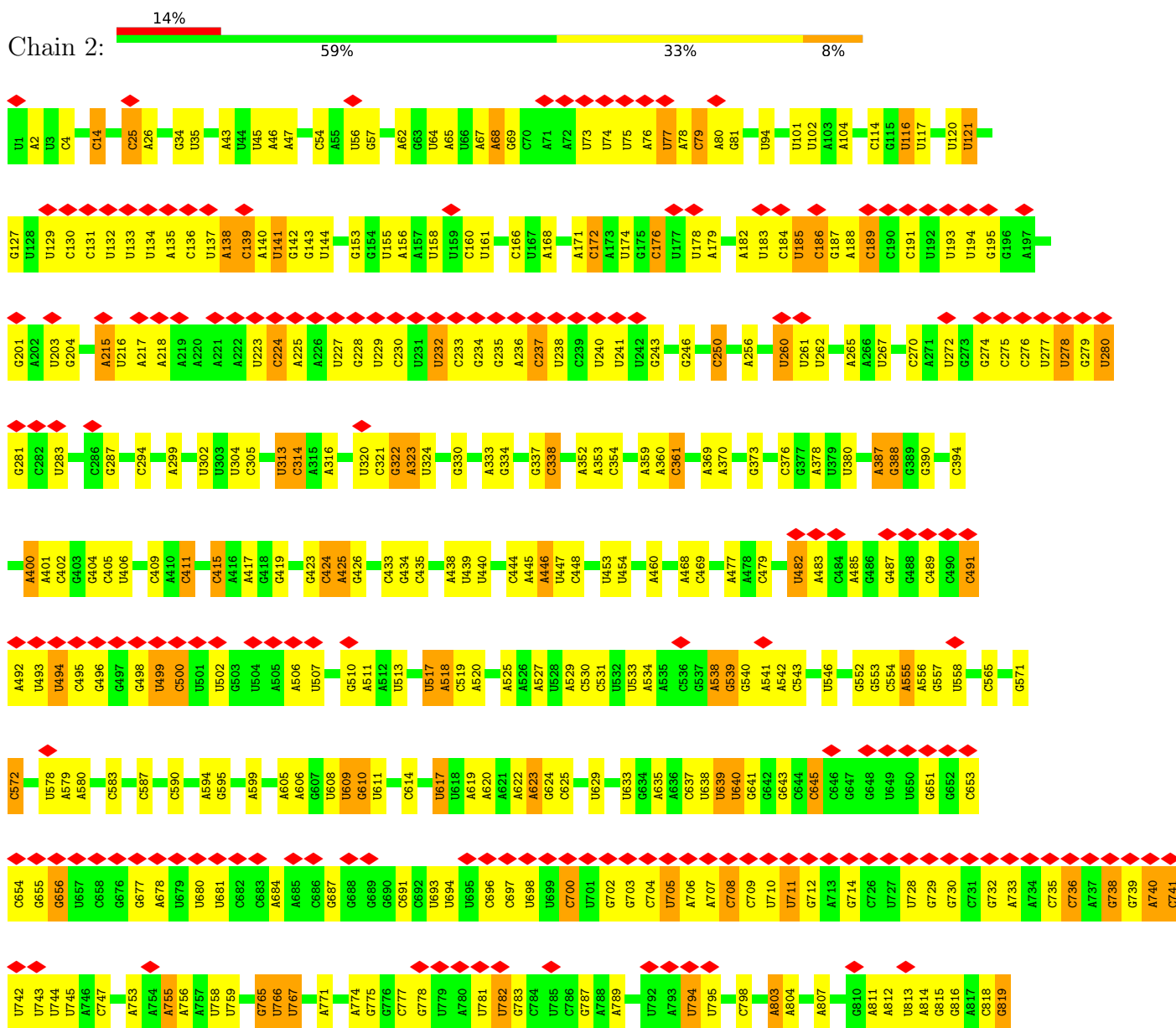
- Molecule 82 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula:  $C_{10}H_{16}N_5O_{13}P_3$ ).

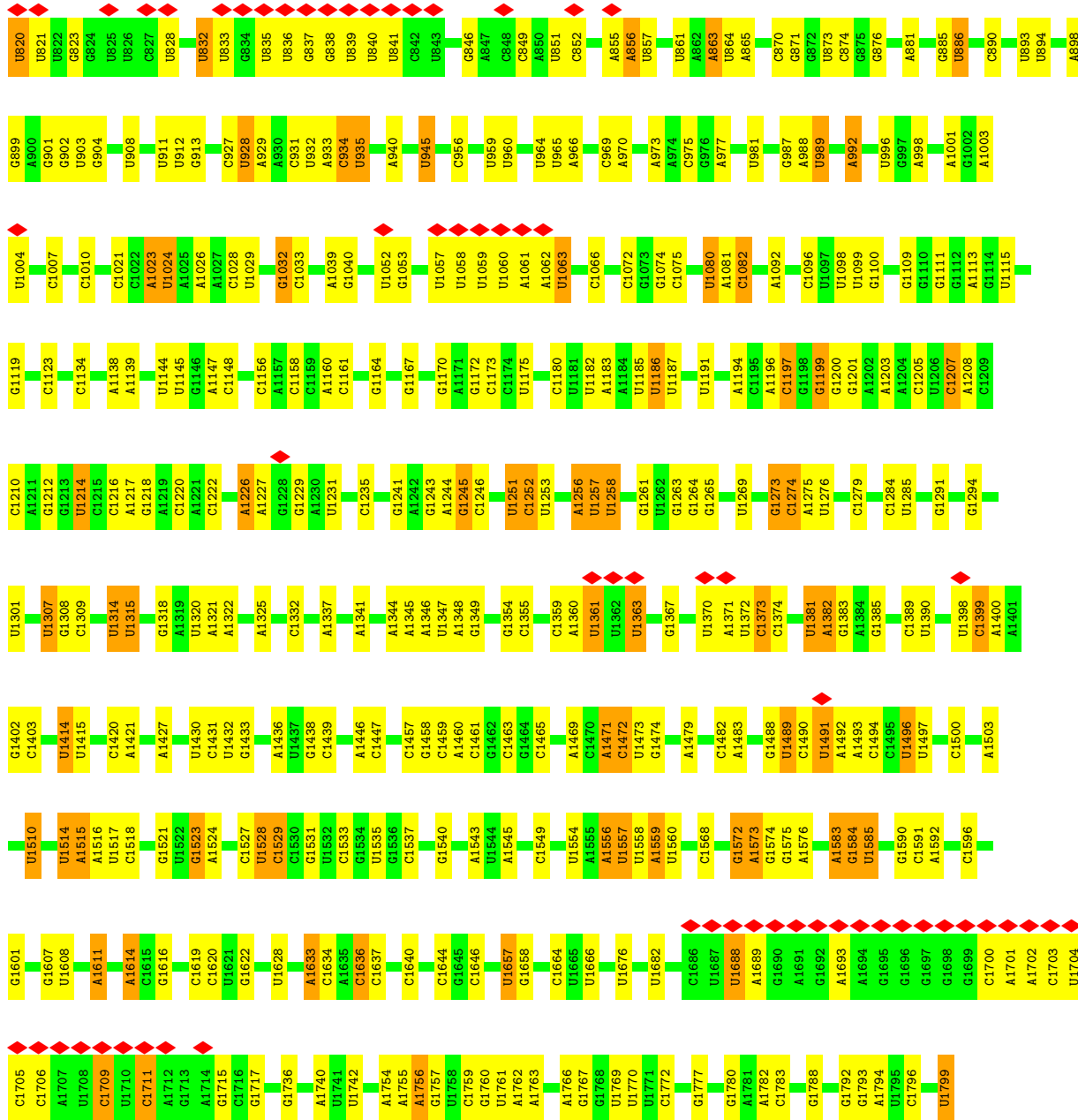


### 3 Residue-property plots

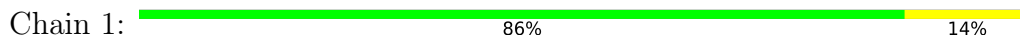
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: 18S rRNA



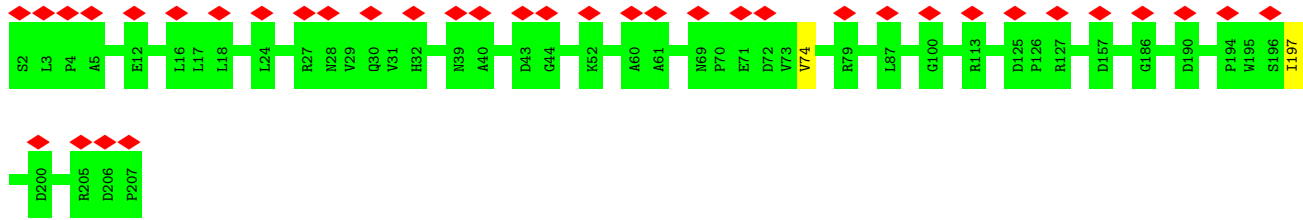


• Molecule 2: mRNA

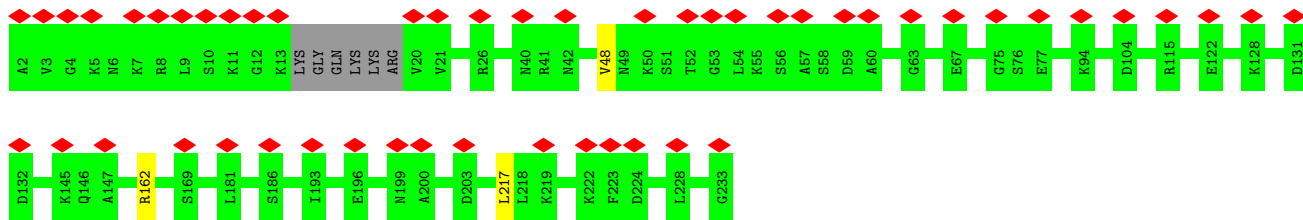


• Molecule 3: 40S ribosomal protein S0-A

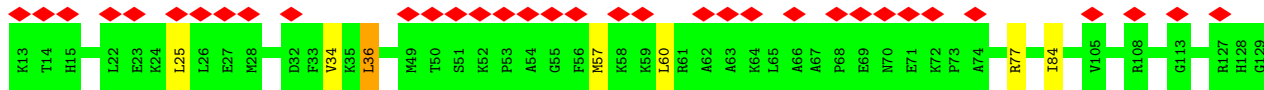
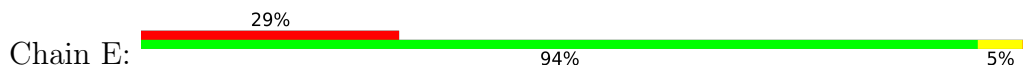




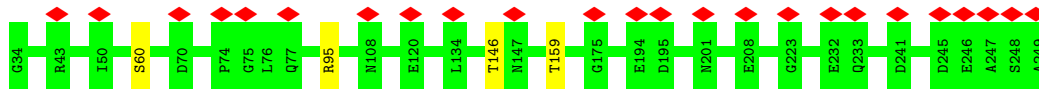
- Molecule 4: 40S ribosomal protein S1-A



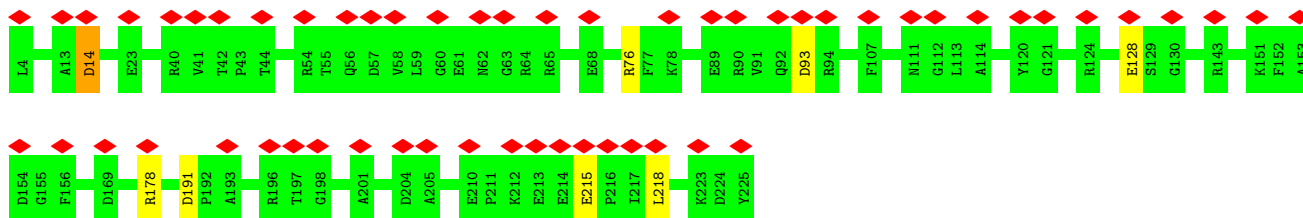
- Molecule 5: 40S ribosomal protein S15



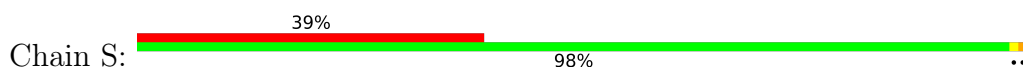
- Molecule 6: 40S ribosomal protein S2

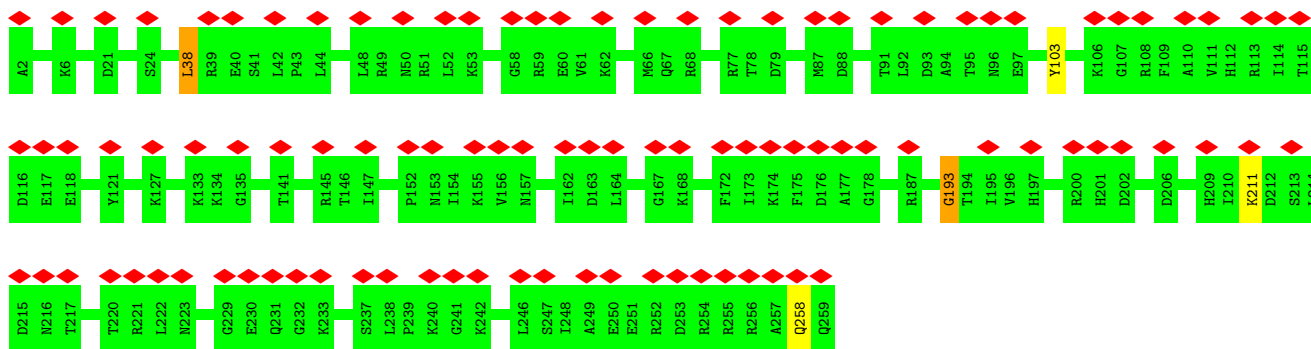


- Molecule 7: 40S ribosomal protein S3

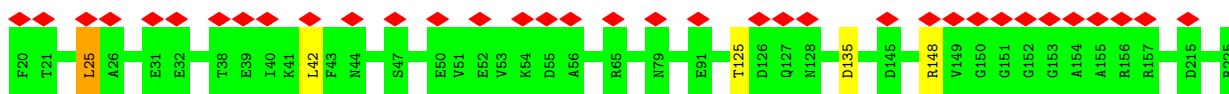


- Molecule 8: 40S ribosomal protein S4-A

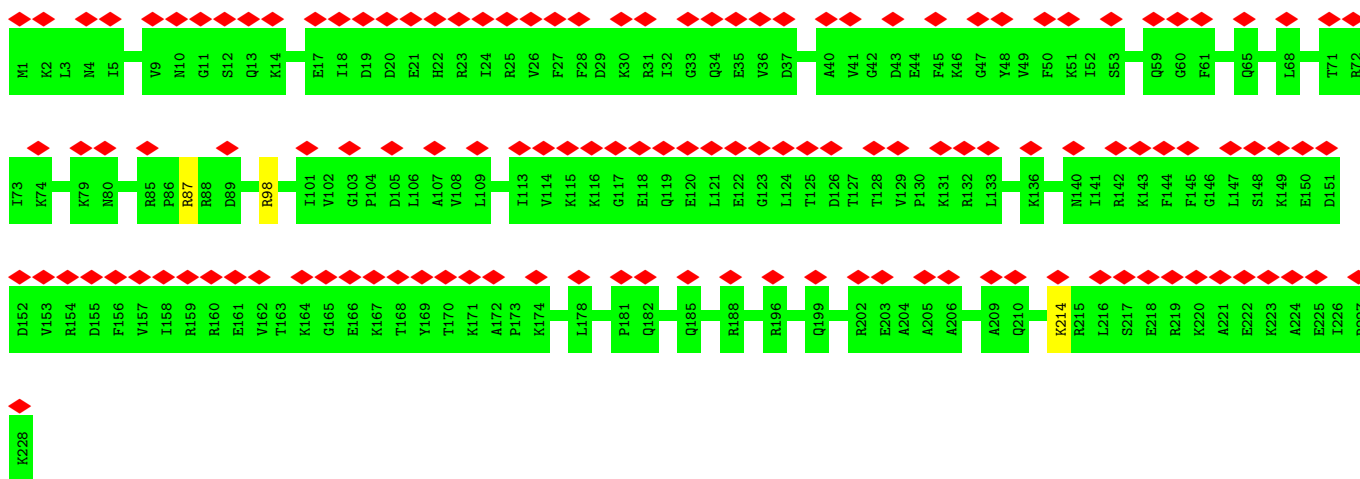




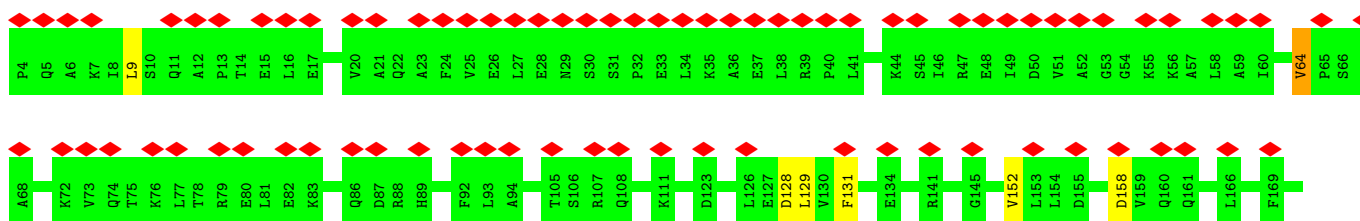
• Molecule 9: 40S ribosomal protein S5

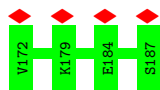


• Molecule 10: 40S ribosomal protein S6-A

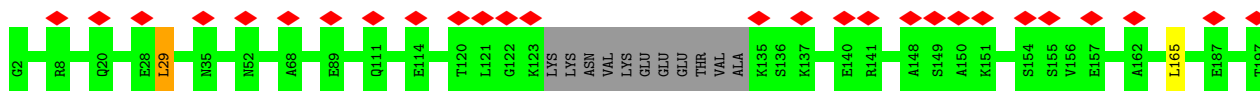
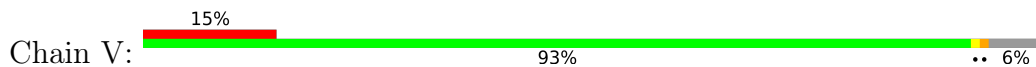


• Molecule 11: 40S ribosomal protein S7-A

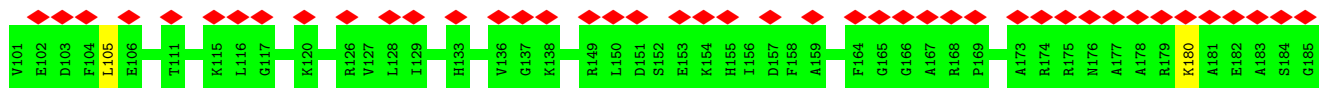
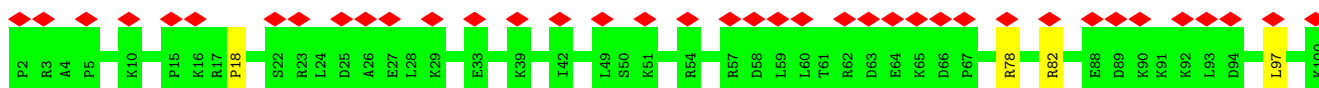
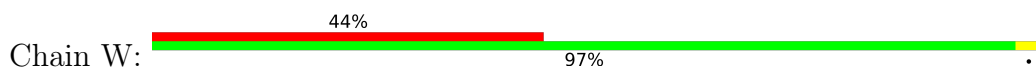




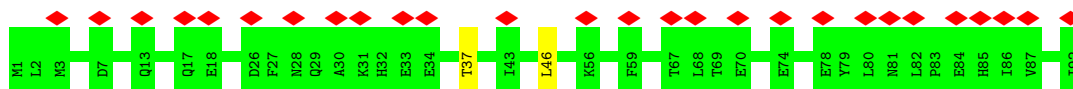
- Molecule 12: 40S ribosomal protein S8-A



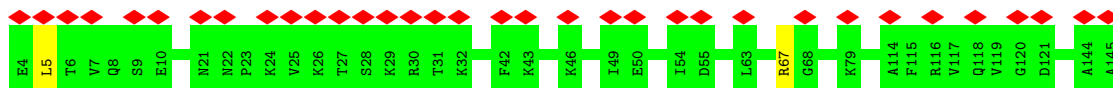
- Molecule 13: 40S ribosomal protein S9-A



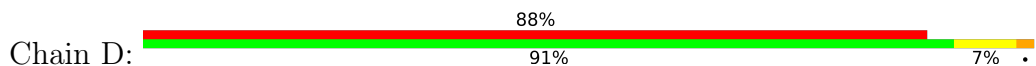
- Molecule 14: 40S ribosomal protein S10-A

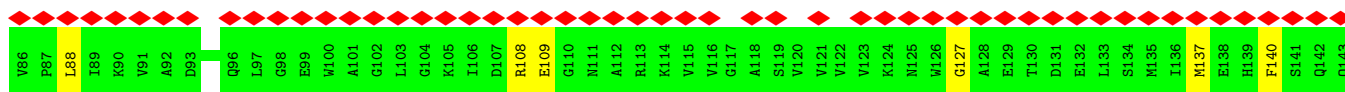


- Molecule 15: 40S ribosomal protein S11-A

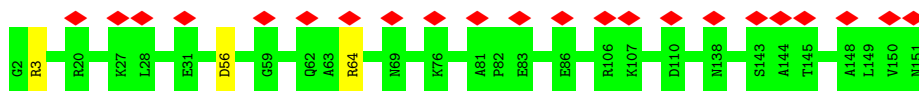


- Molecule 16: 40S ribosomal protein S12

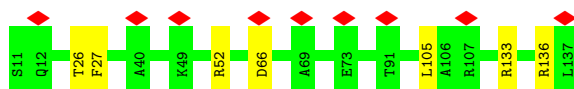
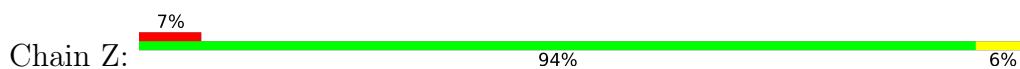




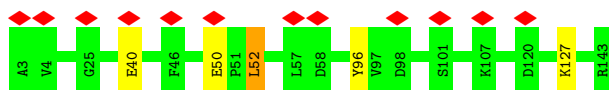
- Molecule 17: 40S ribosomal protein S13



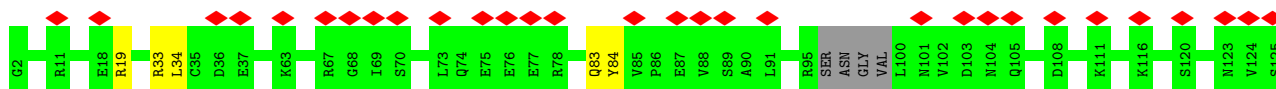
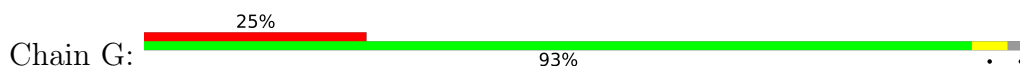
- Molecule 18: 40S ribosomal protein S14-B



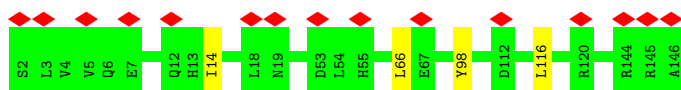
- Molecule 19: 40S ribosomal protein S16-A



- Molecule 20: 40S ribosomal protein S17-B



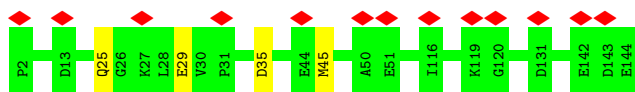
- Molecule 21: 40S ribosomal protein S18-A



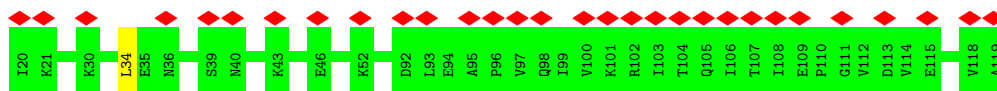
- Molecule 22: 40S ribosomal protein S19-A



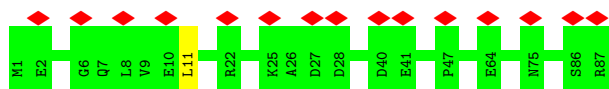




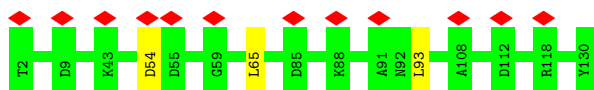
- Molecule 23: 40S ribosomal protein S20



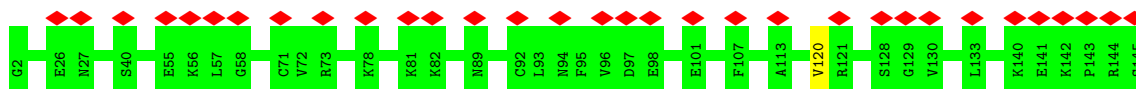
- Molecule 24: 40S ribosomal protein S21-A



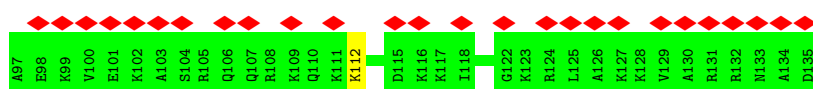
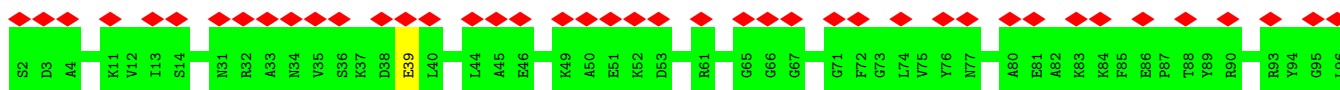
- Molecule 25: 40S ribosomal protein S22-A



- Molecule 26: 40S ribosomal protein S23-A

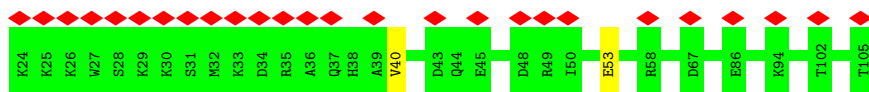


- Molecule 27: 40S ribosomal protein S24-A

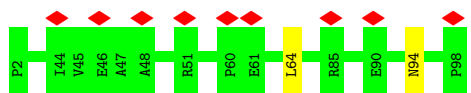


- Molecule 28: 40S ribosomal protein S25-A

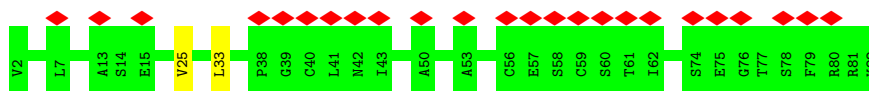




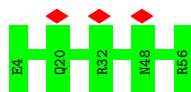
- Molecule 29: 40S ribosomal protein S26-B



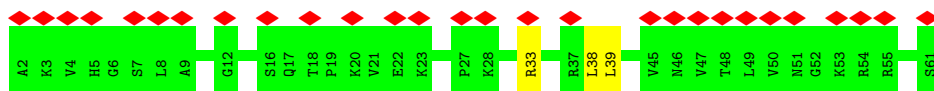
- Molecule 30: 40S ribosomal protein S27-A



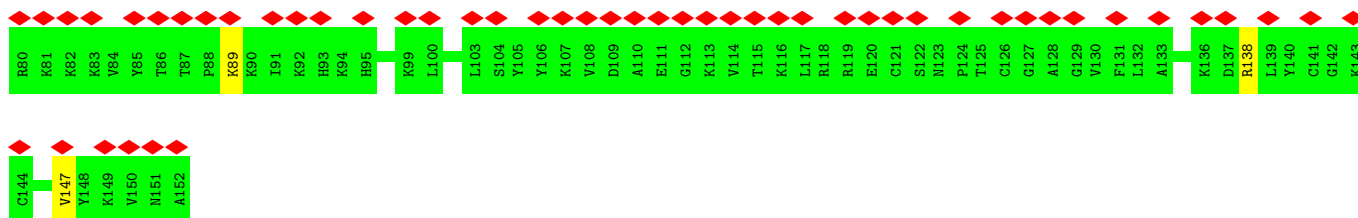
- Molecule 31: 40S ribosomal protein S29-A



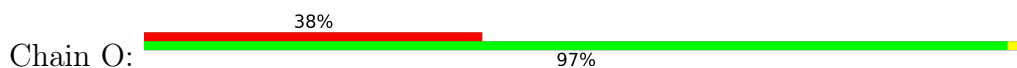
- Molecule 32: 40S ribosomal protein S30-A

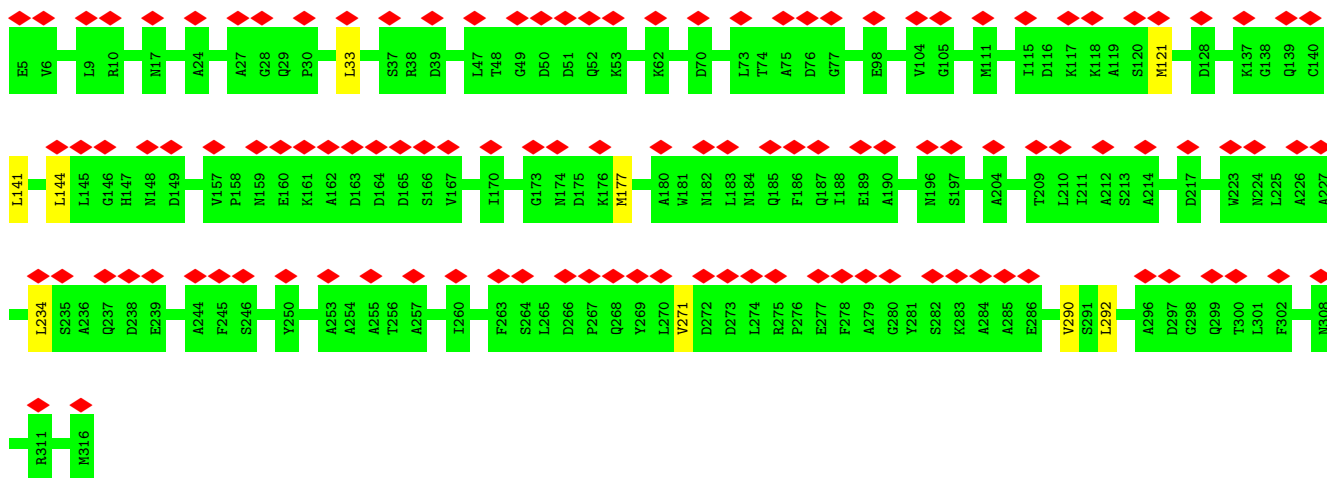


- Molecule 33: Ubiquitin-40S ribosomal protein S31

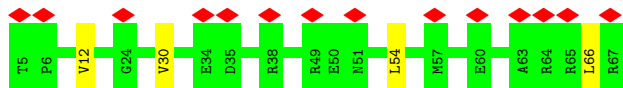
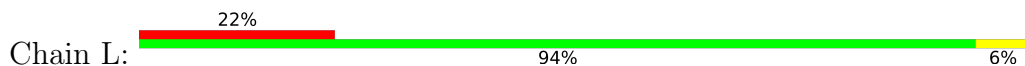


- Molecule 34: Guanine nucleotide-binding protein subunit beta-like protein

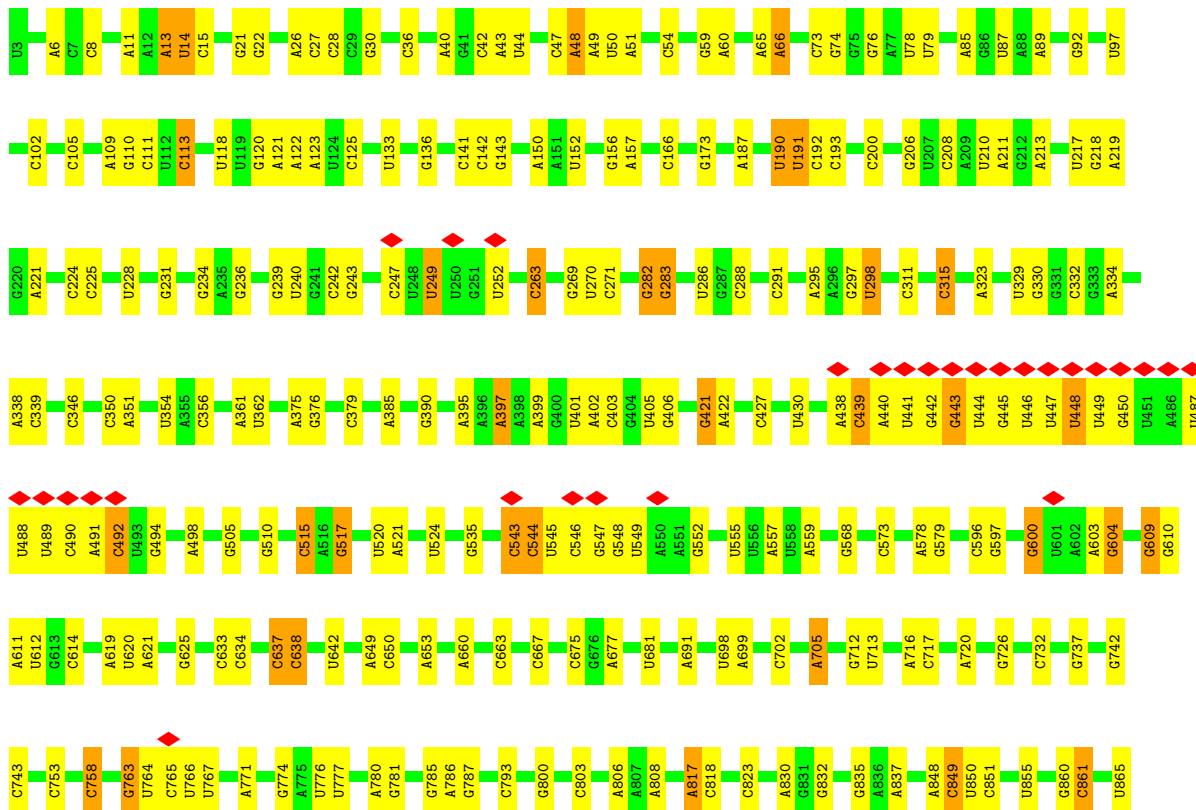


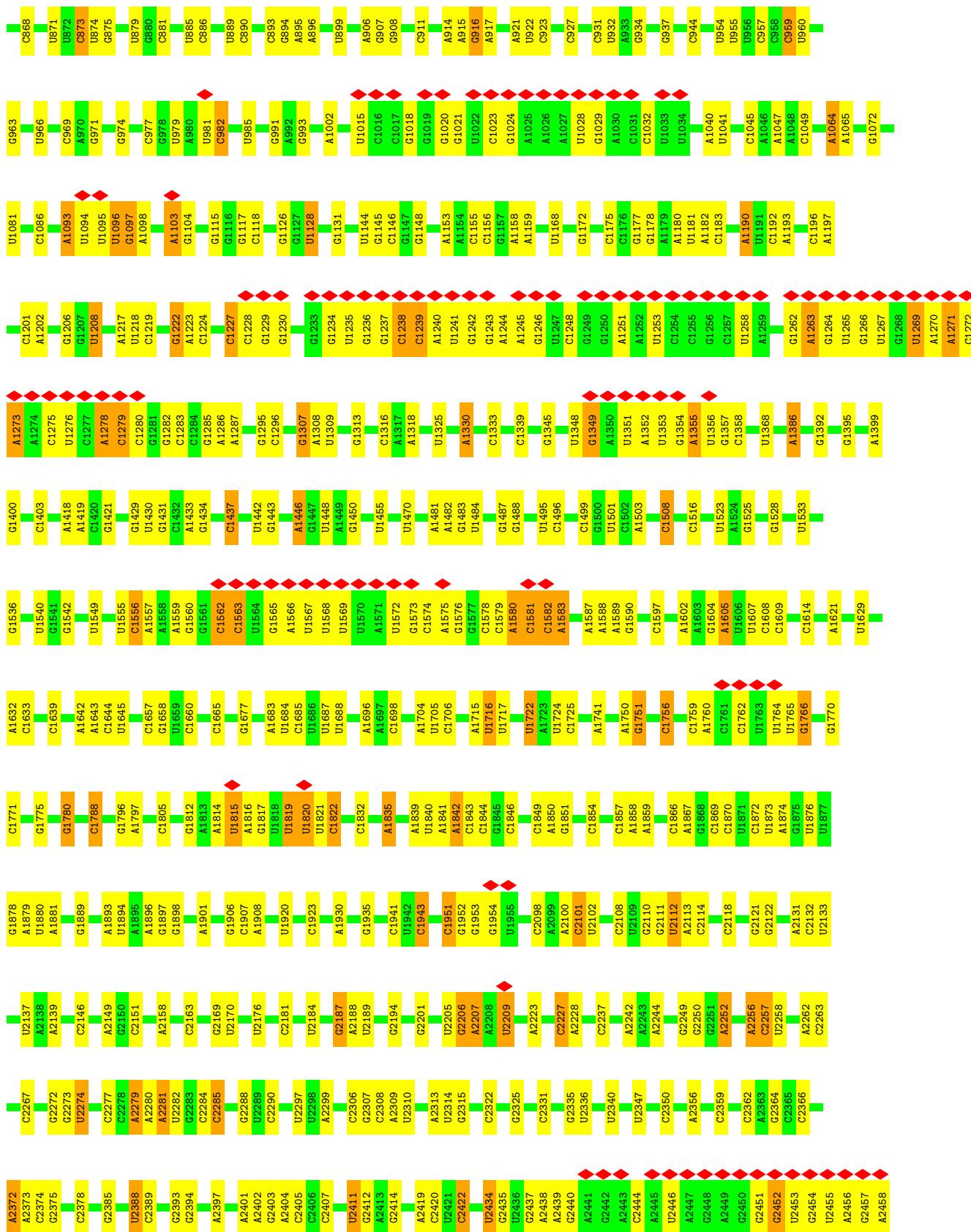


• Molecule 35: 40S ribosomal protein S28-A



• Molecule 36: 25S rRNA

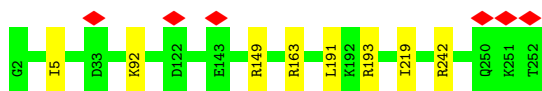




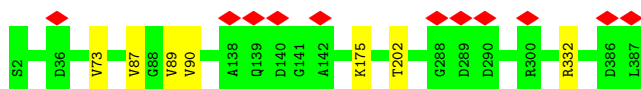




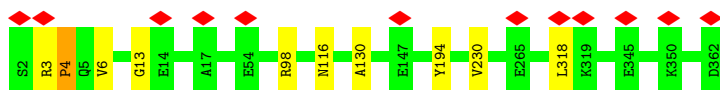
- Molecule 39: 60S ribosomal protein L2-A



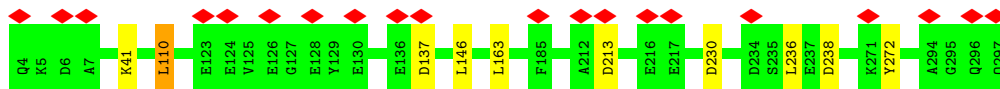
- Molecule 40: 60S ribosomal protein L3



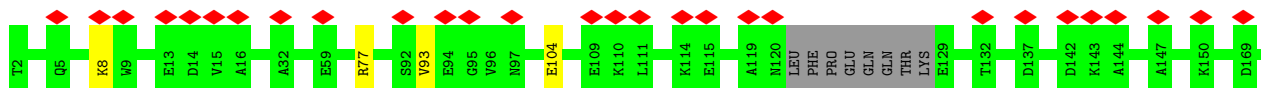
- Molecule 41: 60S ribosomal protein L4-A



- Molecule 42: 60S ribosomal protein L5

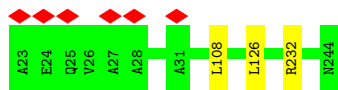


- Molecule 43: 60S ribosomal protein L6-B

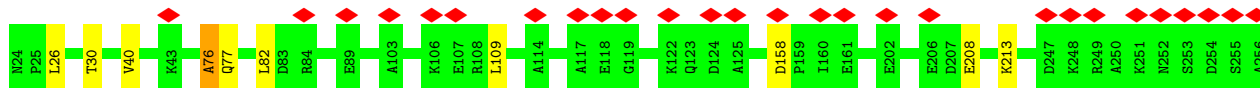


- Molecule 44: 60S ribosomal protein L7-A

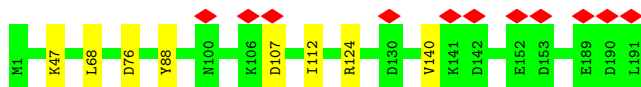




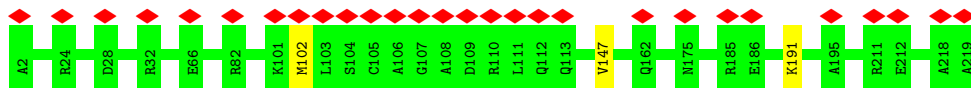
- Molecule 45: 60S ribosomal protein L8-A



- Molecule 46: 60S ribosomal protein L9-A



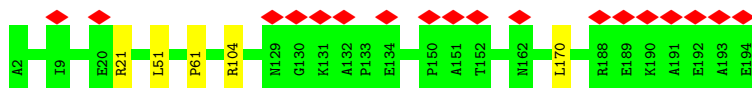
- Molecule 47: 60S ribosomal protein L10



- Molecule 48: 60S ribosomal protein L11-B



- Molecule 49: 60S ribosomal protein L13-A



- Molecule 50: 60S ribosomal protein L14-A



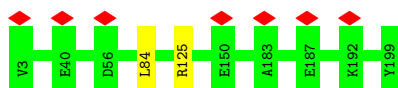
- Molecule 51: 60S ribosomal protein L15-A

Chain LP:  98%



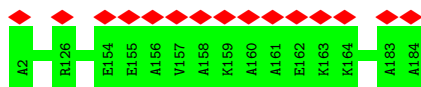
- Molecule 52: 60S ribosomal protein L16-A

Chain LQ:  99%



- Molecule 53: 60S ribosomal protein L17-A

Chain LR:  100%



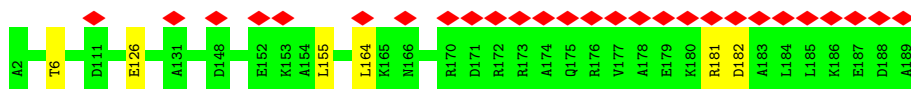
- Molecule 54: 60S ribosomal protein L18-A

Chain Lm:  95%



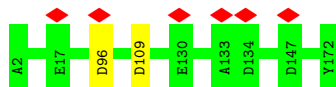
- Molecule 55: 60S ribosomal protein L19-A

Chain Ln:  97%



- Molecule 56: 60S ribosomal protein L20-A

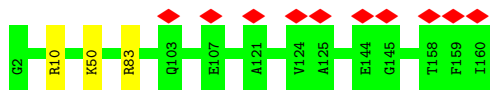
Chain Lo:  99%



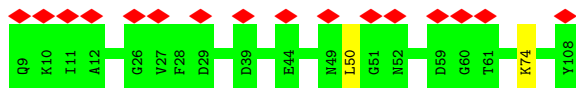
- Molecule 57: 60S ribosomal protein L21-A

Chain Lp:  98%

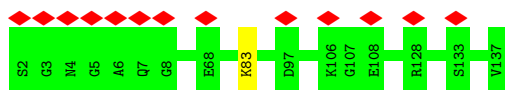




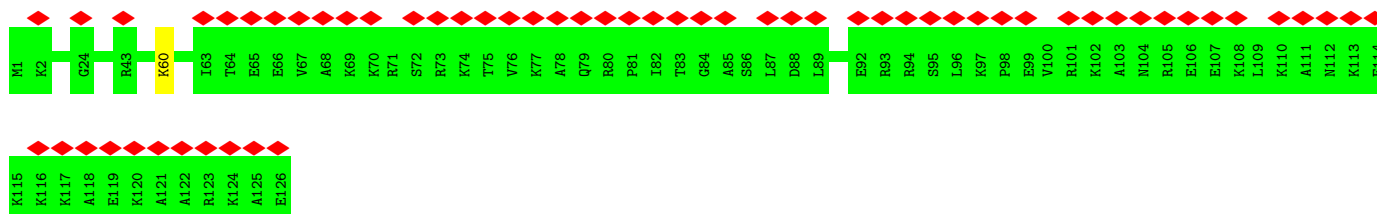
- Molecule 58: 60S ribosomal protein L22-A



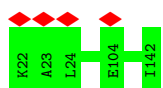
- Molecule 59: 60S ribosomal protein L23-A



- Molecule 60: 60S ribosomal protein L24-A



- Molecule 61: 60S ribosomal protein L25

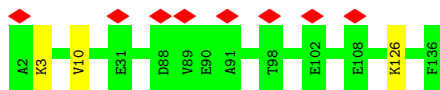


- Molecule 62: 60S ribosomal protein L26-A

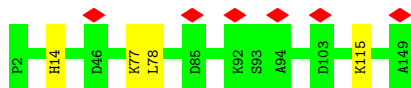


- Molecule 63: 60S ribosomal protein L27-A

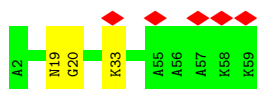




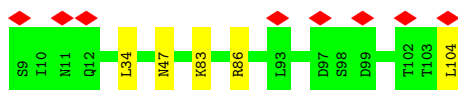
- Molecule 64: 60S ribosomal protein L28



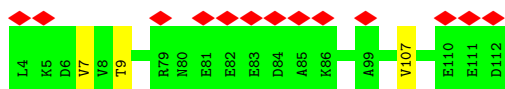
- Molecule 65: 60S ribosomal protein L29



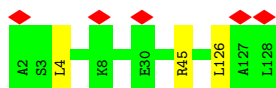
- Molecule 66: 60S ribosomal protein L30



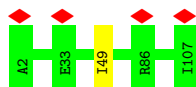
- Molecule 67: 60S ribosomal protein L31-A



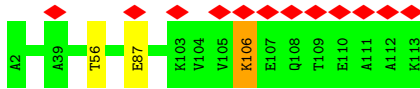
- Molecule 68: 60S ribosomal protein L32



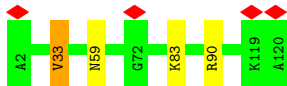
- Molecule 69: 60S ribosomal protein L33-A



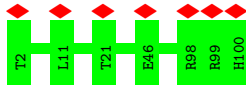
- Molecule 70: 60S ribosomal protein L34-A



- Molecule 71: 60S ribosomal protein L35-A



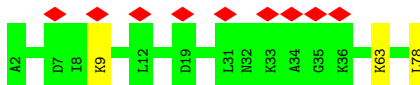
- Molecule 72: 60S ribosomal protein L36-A



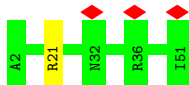
- Molecule 73: 60S ribosomal protein L37-A



- Molecule 74: 60S ribosomal protein L38



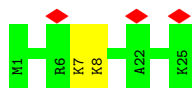
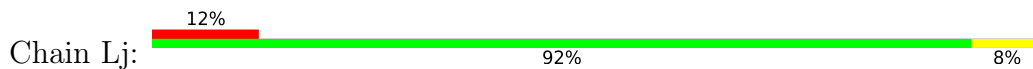
- Molecule 75: 60S ribosomal protein L39



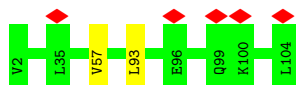
- Molecule 76: Ubiquitin-60S ribosomal protein L40



• Molecule 77: 60S ribosomal protein L41-B



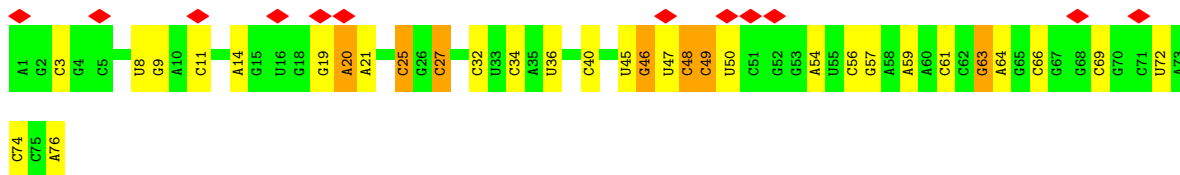
• Molecule 78: 60S ribosomal protein L42-A



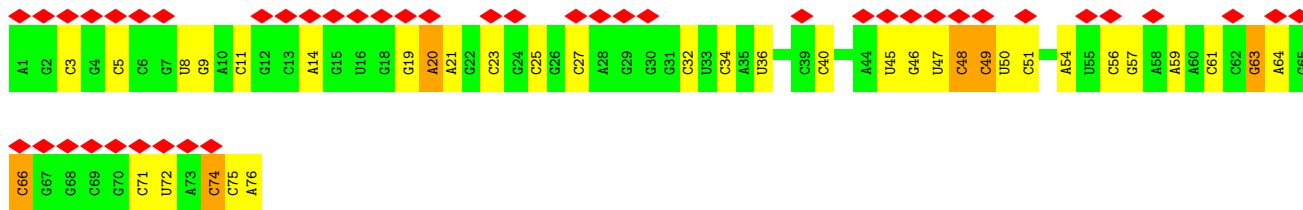
• Molecule 79: 60S ribosomal protein L43-A



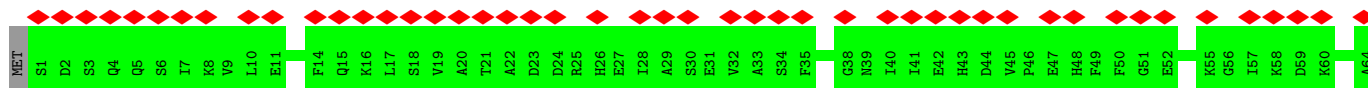
• Molecule 80: tRNA



• Molecule 80: tRNA



• Molecule 81: Elongation factor 3A



|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| M65  | A66  | M67  | Q68  | A69  | V70  | A71  | H72  | N75  | Q76  | S77  | N78  | L79  | S80  | P81  | S82  | V83  | E84  | V88  | Q89  | L90  | C95  | N100 | K101 | D102 | K103 | S110 | I116 | V117 | N118 | A119 | P122 | I125 | K126 | A127 | L128 | N134 | N140 | Q143 | A151 | F152 | S153 | A154 | D157 | A158 | D161 |      |      |      |      |      |      |      |      |      |      |
| E169 | E176 | D180 | A196 | D201 | N202 | K203 | D204 | I205 | E206 | R207 | P210 | A217 | L229 | A236 | E237 | V238 | S244 | R257 | E258 | D270 | I282 | A283 | L286 | G287 | K288 | E307 | E324 | D325 | D326 | A327 | I328 | P329 | E330 | L331 | S332 | H333 | A334 | G335 | S153 | D336 | V337 | S338 | Q342 |      |      |      |      |      |      |      |      |      |      |      |      |
| V343 | V344 | N345 | E346 | L347 | L348 | K349 | D350 | E351 | T352 | V353 | A354 | P355 | R356 | F357 | K358 | E362 | Y363 | I364 | A365 | A366 | A369 | D370 | L371 | I372 | H375 | I376 | I377 | D378 | Q379 | Q380 | A381 | W382 | F383 | T384 | H385 | Y389 | M390 | T391 | I392 | F393 | L394 | H395 | E396 | K397 | K398 | A399 | K400 | D401 | I402 | L403 | D404 | E405 | F406 | R407 | K408 |
| R409 | A410 | V411 | D412 | N413 | I414 | P415 | V416 | G417 | P418 | N419 | F420 | D421 | D422 | E423 | E424 | D425 | E426 | G427 | E428 | D429 | L452 | A455 | R456 | R457 | Y458 | G462 | P463 | N464 | G465 | K468 | R473 | A474 | D481 | G482 | F483 | Q486 | E487 | R490 | E495 | H496 | D497 | I498 | T501 | H502 | S503 | D504 | V507 | L508 |      |      |      |      |      |      |      |
| E513 | S514 | G515 | V516 | G517 | T518 | K519 | E520 | D524 | I527 | E528 | F529 | D533 | E534 | M535 | I536 | A537 | M538 | G541 | G541 | K550 | A554 | R555 | R559 | M560 | A561 | D562 | I563 | D567 | E568 | M583 | Y584 | L585 | G589 | I590 | T591 | S592 | I593 | T594 | I595 | S596 | N604 | I609 | I610 | N611 | Y612 | E613 | G614 |      |      |      |      |      |      |      |      |
| L615 | K621 | G622 | N623 | F624 | T625 | E626 | F627 | V628 | K629 | K630 | A633 | A634 | K635 | A636 | Y637 | E638 | E639 | L640 | S641 | N642 | T643 | D644 | L645 | E646 | K663 | S679 | L692 | L718 | E728 | F740 | Q760 | T761 | G762 | E763 | D764 | D769 | Q774 | I775 | N776 | D779 | A780 | E781 | A782 | M783 | M784 | K785 |      |      |      |      |      |      |      |      |      |
| K788 | I789 | E790 | G791 | T792 | L817 | G818 | E819 | N820 | I821 | G822 | H823 | R824 | S825 | E826 | R827 | D835 | E846 | A862 | L869 | G882 | L883 | D884 | G896 | L906 | D927 | A928 | D929 | E953 | F954 | T955 | L958 | T959 | E960 | D967 | G968 | R969 | S973 | G974 | H975 | I976 | N977 | VAL  | SER  | GLY  | GLN  | GLY  |      |      |      |      |      |      |      |      |      |
| ALA  | GLY  | PRO  | ARG  | ILE  | GLU  | LYS  | GLU  | ASP  | GLU  | GLU  | ASP  | LYS  | PHE  | G822 | ASP  | ALA  | MET  | GLY  | ASN  | LYS  | ILE  | ALA  | GLY  | LYS  | LYS  | LYS  | LEU  | SER  | SER  | ALA  | GLU  | LEU  | ARG  | LYS  | LYS  | LYS  | LYS  | LEU  | GLY  | ASP  | ALA  | TYR  | VAL  | SER  | SER  | ASP  | GLU  | GLU  |      |      |      |      |      |      |      |

PHE

## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|---|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 45000                                   | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | FEI TITAN KRIOS                         | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 25                                      | Depositor |
| Minimum defocus (nm)                 | Not provided                            |           |
| Maximum defocus (nm)                 | Not provided                            |           |
| Magnification                        | Not provided                            |           |
| Image detector                       | FEI FALCON III (4k x 4k)                | Depositor |
| Maximum map value                    | 0.391                                   | Depositor |
| Minimum map value                    | -0.234                                  | Depositor |
| Average map value                    | 0.001                                   | Depositor |
| Map value standard deviation         | 0.011                                   | Depositor |
| Recommended contour level            | 0.04                                    | Depositor |
| Map size (Å)                         | 455.28, 455.28, 455.28                  | wwPDB     |
| Map dimensions                       | 420, 420, 420                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 1.084, 1.084, 1.084                     | Depositor |

## 5 Model quality

### 5.1 Standard geometry

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

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   | 2     | 0.83         | 1/42211 (0.0%) | 1.38        | 575/65773 (0.9%) |
| 2   | 1     | 0.68         | 0/166          | 1.03        | 0/256            |
| 3   | P     | 0.47         | 1/1644 (0.1%)  | 0.80        | 1/2249 (0.0%)    |
| 4   | Q     | 0.45         | 0/1823         | 0.90        | 1/2447 (0.0%)    |
| 5   | E     | 0.54         | 0/936          | 1.02        | 8/1259 (0.6%)    |
| 6   | R     | 0.51         | 1/1656 (0.1%)  | 0.84        | 0/2251           |
| 7   | A     | 0.47         | 0/1754         | 0.97        | 5/2361 (0.2%)    |
| 8   | S     | 0.43         | 0/2097         | 0.89        | 3/2823 (0.1%)    |
| 9   | B     | 0.45         | 0/1625         | 0.86        | 3/2197 (0.1%)    |
| 10  | T     | 0.39         | 0/1839         | 0.85        | 0/2460           |
| 11  | U     | 0.43         | 0/1498         | 0.91        | 7/2019 (0.3%)    |
| 12  | V     | 0.45         | 0/1501         | 0.85        | 3/2006 (0.1%)    |
| 13  | W     | 0.41         | 0/1504         | 0.87        | 2/2016 (0.1%)    |
| 14  | C     | 0.53         | 0/769          | 0.90        | 1/1039 (0.1%)    |
| 15  | X     | 0.48         | 0/1168         | 0.80        | 1/1575 (0.1%)    |
| 16  | D     | 0.47         | 1/883 (0.1%)   | 1.07        | 7/1199 (0.6%)    |
| 17  | Y     | 0.50         | 0/1215         | 0.85        | 2/1638 (0.1%)    |
| 18  | Z     | 0.51         | 0/934          | 0.95        | 5/1257 (0.4%)    |
| 19  | F     | 0.56         | 0/1125         | 0.96        | 4/1510 (0.3%)    |
| 20  | G     | 0.44         | 0/957          | 0.91        | 4/1283 (0.3%)    |
| 21  | H     | 0.49         | 0/1207         | 0.93        | 3/1623 (0.2%)    |
| 22  | I     | 0.57         | 0/1130         | 0.95        | 2/1517 (0.1%)    |
| 23  | J     | 0.53         | 0/807          | 0.89        | 1/1091 (0.1%)    |
| 24  | a     | 0.47         | 0/682          | 0.85        | 1/921 (0.1%)     |
| 25  | b     | 0.48         | 0/1038         | 0.87        | 2/1395 (0.1%)    |
| 26  | c     | 0.48         | 0/1139         | 0.87        | 0/1518           |
| 27  | d     | 0.42         | 0/1087         | 0.88        | 1/1449 (0.1%)    |
| 28  | K     | 0.46         | 0/661          | 0.96        | 1/888 (0.1%)     |
| 29  | e     | 0.50         | 0/778          | 0.87        | 0/1042           |
| 30  | f     | 0.41         | 0/620          | 0.90        | 1/838 (0.1%)     |
| 31  | M     | 0.54         | 0/452          | 0.88        | 0/600            |
| 32  | g     | 0.42         | 0/480          | 0.92        | 1/639 (0.2%)     |

| Mol | Chain | Bond lengths |                | Bond angles |                   |
|-----|-------|--------------|----------------|-------------|-------------------|
|     |       | RMSZ         | # Z  >5        | RMSZ        | # Z  >5           |
| 33  | N     | 0.40         | 0/567          | 0.92        | 0/764             |
| 34  | O     | 0.43         | 0/2436         | 0.91        | 5/3318 (0.2%)     |
| 35  | L     | 0.56         | 1/493 (0.2%)   | 1.21        | 2/663 (0.3%)      |
| 36  | LA    | 1.06         | 8/77157 (0.0%) | 1.32        | 878/120295 (0.7%) |
| 37  | LB    | 0.97         | 0/2883         | 1.28        | 23/4491 (0.5%)    |
| 38  | LC    | 1.01         | 0/3746         | 1.26        | 31/5832 (0.5%)    |
| 39  | LD    | 0.64         | 1/1933 (0.1%)  | 0.87        | 3/2598 (0.1%)     |
| 40  | LE    | 0.58         | 1/3146 (0.0%)  | 0.82        | 1/4228 (0.0%)     |
| 41  | LF    | 0.55         | 1/2800 (0.0%)  | 0.81        | 1/3790 (0.0%)     |
| 42  | LG    | 0.57         | 0/2400         | 0.91        | 12/3239 (0.4%)    |
| 43  | LH    | 0.48         | 0/1329         | 0.87        | 1/1794 (0.1%)     |
| 44  | LI    | 0.58         | 1/1821 (0.1%)  | 0.77        | 1/2451 (0.0%)     |
| 45  | LJ    | 0.56         | 1/1836 (0.1%)  | 0.84        | 4/2481 (0.2%)     |
| 46  | LK    | 0.56         | 0/1529         | 0.93        | 4/2060 (0.2%)     |
| 47  | LL    | 0.55         | 0/1801         | 0.83        | 1/2416 (0.0%)     |
| 48  | LM    | 0.53         | 0/1367         | 0.90        | 4/1834 (0.2%)     |
| 49  | LN    | 0.55         | 0/1568         | 0.80        | 2/2106 (0.1%)     |
| 50  | LO    | 0.48         | 0/1068         | 0.82        | 1/1438 (0.1%)     |
| 51  | LP    | 0.67         | 0/1757         | 0.83        | 1/2354 (0.0%)     |
| 52  | LQ    | 0.54         | 0/1585         | 0.78        | 1/2128 (0.0%)     |
| 53  | LR    | 0.56         | 0/1439         | 0.79        | 0/1938            |
| 54  | Lm    | 0.56         | 0/1465         | 0.88        | 4/1965 (0.2%)     |
| 55  | Ln    | 0.53         | 0/1532         | 0.83        | 4/2043 (0.2%)     |
| 56  | Lo    | 0.56         | 0/1473         | 0.80        | 1/1980 (0.1%)     |
| 57  | Lp    | 0.60         | 0/1296         | 0.83        | 0/1739            |
| 58  | Lq    | 0.52         | 0/812          | 0.81        | 1/1099 (0.1%)     |
| 59  | Lr    | 0.55         | 0/1018         | 0.86        | 1/1369 (0.1%)     |
| 60  | LS    | 0.44         | 0/850          | 0.70        | 0/1152            |
| 61  | LT    | 0.59         | 0/979          | 0.81        | 0/1321            |
| 62  | LU    | 0.50         | 0/995          | 0.76        | 0/1329            |
| 63  | LV    | 0.54         | 1/1106 (0.1%)  | 0.78        | 0/1485            |
| 64  | LW    | 0.59         | 0/1200         | 0.81        | 1/1607 (0.1%)     |
| 65  | LX    | 0.48         | 0/473          | 0.71        | 0/629             |
| 66  | LY    | 0.52         | 0/745          | 0.79        | 2/1001 (0.2%)     |
| 67  | LZ    | 0.55         | 0/890          | 0.81        | 0/1196            |
| 68  | La    | 0.50         | 0/1034         | 0.78        | 1/1385 (0.1%)     |
| 69  | Lb    | 0.62         | 0/868          | 0.88        | 1/1168 (0.1%)     |
| 70  | Lc    | 0.63         | 0/890          | 0.85        | 1/1189 (0.1%)     |
| 71  | Ld    | 0.47         | 0/978          | 0.75        | 1/1301 (0.1%)     |
| 72  | Le    | 0.46         | 0/772          | 0.76        | 0/1026            |
| 73  | Lf    | 0.68         | 0/660          | 0.93        | 1/875 (0.1%)      |
| 74  | Lg    | 0.50         | 0/618          | 0.86        | 1/826 (0.1%)      |
| 75  | Lh    | 0.57         | 0/443          | 0.93        | 0/588             |



| Mol | Chain | Bond lengths |                  | Bond angles |                    |
|-----|-------|--------------|------------------|-------------|--------------------|
|     |       | RMSZ         | # Z  >5          | RMSZ        | # Z  >5            |
| 76  | Li    | 0.55         | 0/416            | 0.82        | 0/553              |
| 77  | Lj    | 0.48         | 0/230            | 0.75        | 0/296              |
| 78  | Lk    | 0.58         | 0/836            | 0.84        | 1/1104 (0.1%)      |
| 79  | Ll    | 0.66         | 0/701            | 0.72        | 0/934              |
| 80  | Sm    | 0.58         | 0/1795           | 1.43        | 32/2797 (1.1%)     |
| 80  | Sn    | 0.70         | 0/1796           | 1.52        | 35/2799 (1.3%)     |
| 81  | EF    | 0.37         | 0/7610           | 0.66        | 7/10311 (0.1%)     |
| All | All   | 0.81         | 19/226528 (0.0%) | 1.17        | 1716/332424 (0.5%) |

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 |
|-----|-------|---------------------|---------------------|
| 8   | S     | 0                   | 1                   |
| 9   | B     | 0                   | 2                   |
| 11  | U     | 0                   | 1                   |
| 16  | D     | 0                   | 1                   |
| 19  | F     | 0                   | 1                   |
| 25  | b     | 0                   | 1                   |
| 33  | N     | 0                   | 1                   |
| 36  | LA    | 0                   | 1                   |
| 41  | LF    | 0                   | 3                   |
| 44  | LI    | 0                   | 1                   |
| 45  | LJ    | 0                   | 3                   |
| 54  | Lm    | 0                   | 1                   |
| 64  | LW    | 0                   | 2                   |
| 65  | LX    | 0                   | 2                   |
| 66  | LY    | 0                   | 1                   |
| 67  | LZ    | 0                   | 1                   |
| 71  | Ld    | 0                   | 1                   |
| 81  | EF    | 0                   | 6                   |
| All | All   | 0                   | 30                  |

All (19) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms  | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|--------|-------|-------------|----------|
| 6   | R     | 60   | SER  | C-N    | -6.79 | 1.18        | 1.34     |
| 45  | LJ    | 40   | VAL  | C-N    | -6.67 | 1.18        | 1.34     |
| 35  | L     | 12   | VAL  | CB-CG1 | -6.55 | 1.39        | 1.52     |
| 36  | LA    | 1263 | A    | N9-C4  | 6.33  | 1.41        | 1.37     |

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| Mol | Chain | Res  | Type | Atoms  | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|--------|-------|-------------|----------|
| 1   | 2     | 1471 | A    | N9-C4  | -6.24 | 1.34        | 1.37     |
| 63  | LV    | 10   | VAL  | CB-CG1 | -6.18 | 1.39        | 1.52     |
| 40  | LE    | 73   | VAL  | CB-CG1 | -5.80 | 1.40        | 1.52     |
| 39  | LD    | 149  | ARG  | C-N    | -5.58 | 1.21        | 1.34     |
| 36  | LA    | 1330 | A    | N9-C4  | -5.56 | 1.34        | 1.37     |
| 36  | LA    | 361  | A    | N9-C4  | -5.51 | 1.34        | 1.37     |
| 36  | LA    | 361  | A    | N7-C5  | -5.47 | 1.35        | 1.39     |
| 36  | LA    | 1103 | A    | N9-C4  | 5.40  | 1.41        | 1.37     |
| 41  | LF    | 230  | VAL  | CB-CG2 | -5.34 | 1.41        | 1.52     |
| 36  | LA    | 2714 | G    | N9-C4  | -5.33 | 1.33        | 1.38     |
| 36  | LA    | 66   | A    | N9-C4  | -5.32 | 1.34        | 1.37     |
| 36  | LA    | 860  | G    | C2-N3  | -5.26 | 1.28        | 1.32     |
| 3   | P     | 197  | ILE  | C-N    | -5.25 | 1.22        | 1.34     |
| 44  | LI    | 108  | LEU  | CA-CB  | -5.16 | 1.41        | 1.53     |
| 16  | D     | 81   | ASP  | C-N    | 5.09  | 1.44        | 1.34     |

All (1716) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms     | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|--------|-------------|----------|
| 36  | LA    | 3217 | C    | C2-N1-C1' | 12.76  | 132.83      | 118.80   |
| 80  | Sn    | 48   | C    | C6-N1-C2  | -12.56 | 115.28      | 120.30   |
| 80  | Sn    | 49   | C    | C6-N1-C2  | -12.37 | 115.35      | 120.30   |
| 1   | 2     | 934  | C    | C2-N1-C1' | 12.16  | 132.18      | 118.80   |
| 80  | Sm    | 49   | C    | C6-N1-C2  | -12.03 | 115.49      | 120.30   |
| 36  | LA    | 837  | A    | O5'-P-OP2 | -12.01 | 94.89       | 105.70   |
| 36  | LA    | 2928 | C    | C6-N1-C2  | -11.88 | 115.55      | 120.30   |
| 36  | LA    | 3217 | C    | N1-C2-O2  | 11.85  | 126.01      | 118.90   |
| 7   | A     | 218  | LEU  | CA-CB-CG  | 11.43  | 141.58      | 115.30   |
| 36  | LA    | 1273 | A    | C8-N9-C4  | -11.40 | 101.24      | 105.80   |
| 35  | L     | 54   | LEU  | CA-CB-CG  | 11.18  | 141.01      | 115.30   |
| 35  | L     | 66   | LEU  | CA-CB-CG  | 11.01  | 140.62      | 115.30   |
| 80  | Sn    | 49   | C    | C5-C6-N1  | 10.92  | 126.46      | 121.00   |
| 1   | 2     | 555  | A    | N7-C8-N9  | 10.89  | 119.25      | 113.80   |
| 36  | LA    | 14   | U    | O5'-P-OP2 | -10.80 | 95.98       | 105.70   |
| 36  | LA    | 1283 | C    | N1-C2-O2  | 10.76  | 125.35      | 118.90   |
| 1   | 2     | 1032 | G    | O5'-P-OP2 | -10.72 | 96.05       | 105.70   |
| 36  | LA    | 2928 | C    | C5-C6-N1  | 10.71  | 126.36      | 121.00   |
| 80  | Sm    | 48   | C    | C6-N1-C2  | -10.63 | 116.05      | 120.30   |
| 1   | 2     | 186  | C    | C2-N1-C1' | 10.62  | 130.49      | 118.80   |
| 1   | 2     | 555  | A    | C8-N9-C4  | -10.38 | 101.65      | 105.80   |
| 7   | A     | 14   | ASP  | CB-CG-OD1 | 10.36  | 127.62      | 118.30   |
| 36  | LA    | 1283 | C    | N3-C2-O2  | -10.35 | 114.65      | 121.90   |

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| Mol | Chain | Res  | Type | Atoms      | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|--------|-------------|----------|
| 80  | Sn    | 48   | C    | N1-C2-O2   | 10.33  | 125.10      | 118.90   |
| 36  | LA    | 2846 | U    | N3-C2-O2   | -10.15 | 115.09      | 122.20   |
| 80  | Sn    | 48   | C    | N3-C2-O2   | -10.12 | 114.82      | 121.90   |
| 36  | LA    | 2366 | C    | C6-N1-C2   | -10.12 | 116.25      | 120.30   |
| 1   | 2     | 874  | C    | C6-N1-C2   | -10.00 | 116.30      | 120.30   |
| 1   | 2     | 1257 | U    | N3-C2-O2   | -9.87  | 115.29      | 122.20   |
| 36  | LA    | 922  | U    | C2-N1-C1'  | 9.87   | 129.55      | 117.70   |
| 1   | 2     | 934  | C    | N1-C2-O2   | 9.83   | 124.80      | 118.90   |
| 36  | LA    | 3306 | U    | N3-C2-O2   | -9.83  | 115.32      | 122.20   |
| 37  | LB    | 34   | C    | C6-N1-C2   | -9.81  | 116.38      | 120.30   |
| 36  | LA    | 596  | C    | C6-N1-C2   | -9.74  | 116.40      | 120.30   |
| 1   | 2     | 1258 | U    | N3-C2-O2   | -9.70  | 115.41      | 122.20   |
| 1   | 2     | 1389 | C    | C2-N1-C1'  | 9.58   | 129.34      | 118.80   |
| 1   | 2     | 934  | C    | C6-N1-C1'  | -9.52  | 109.38      | 120.80   |
| 36  | LA    | 3344 | A    | O4'-C1'-N9 | 9.43   | 115.75      | 108.20   |
| 36  | LA    | 3275 | U    | OP1-P-O3'  | 9.42   | 125.92      | 105.20   |
| 46  | LK    | 107  | ASP  | CB-CG-OD1  | 9.41   | 126.77      | 118.30   |
| 80  | Sm    | 49   | C    | C5-C6-N1   | 9.40   | 125.70      | 121.00   |
| 36  | LA    | 3181 | C    | C2-N1-C1'  | 9.38   | 129.12      | 118.80   |
| 36  | LA    | 3317 | U    | N1-C2-O2   | 9.36   | 129.35      | 122.80   |
| 1   | 2     | 965  | U    | N1-C2-O2   | 9.35   | 129.34      | 122.80   |
| 36  | LA    | 3217 | C    | C6-N1-C1'  | -9.34  | 109.60      | 120.80   |
| 80  | Sm    | 48   | C    | N1-C2-O2   | 9.31   | 124.49      | 118.90   |
| 36  | LA    | 2531 | C    | C6-N1-C2   | -9.25  | 116.60      | 120.30   |
| 54  | Lm    | 66   | ARG  | NE-CZ-NH2  | -9.25  | 115.68      | 120.30   |
| 36  | LA    | 3278 | C    | N3-C2-O2   | -9.24  | 115.43      | 121.90   |
| 80  | Sm    | 48   | C    | N3-C2-O2   | -9.24  | 115.44      | 121.90   |
| 1   | 2     | 861  | U    | C2-N1-C1'  | 9.22   | 128.77      | 117.70   |
| 7   | A     | 93   | ASP  | CB-CG-OD1  | 9.20   | 126.58      | 118.30   |
| 36  | LA    | 15   | C    | C6-N1-C2   | -9.11  | 116.66      | 120.30   |
| 1   | 2     | 1258 | U    | N1-C2-O2   | 9.10   | 129.17      | 122.80   |
| 1   | 2     | 1560 | U    | N3-C2-O2   | -9.09  | 115.84      | 122.20   |
| 36  | LA    | 2263 | C    | C5-C6-N1   | 9.08   | 125.54      | 121.00   |
| 38  | LC    | 64   | U    | N3-C2-O2   | -9.08  | 115.85      | 122.20   |
| 1   | 2     | 1082 | C    | C6-N1-C2   | -9.07  | 116.67      | 120.30   |
| 36  | LA    | 1279 | C    | C6-N1-C2   | -9.07  | 116.67      | 120.30   |
| 36  | LA    | 3317 | U    | N3-C2-O2   | -9.04  | 115.87      | 122.20   |
| 1   | 2     | 590  | C    | C6-N1-C2   | -9.03  | 116.69      | 120.30   |
| 36  | LA    | 2526 | C    | C5-C6-N1   | 9.03   | 125.51      | 121.00   |
| 36  | LA    | 282  | G    | C8-N9-C4   | -9.02  | 102.79      | 106.40   |
| 38  | LC    | 127  | U    | N1-C2-O2   | 9.02   | 129.11      | 122.80   |
| 1   | 2     | 116  | U    | N3-C2-O2   | -8.98  | 115.92      | 122.20   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 22  | I     | 35   | ASP  | CB-CG-OD1 | 8.97  | 126.37      | 118.30   |
| 36  | LA    | 544  | C    | N3-C2-O2  | -8.96 | 115.63      | 121.90   |
| 36  | LA    | 2446 | U    | C5-C6-N1  | 8.96  | 127.18      | 122.70   |
| 7   | A     | 191  | ASP  | CB-CG-OD1 | 8.95  | 126.35      | 118.30   |
| 1   | 2     | 1389 | C    | N1-C2-O2  | 8.89  | 124.24      | 118.90   |
| 1   | 2     | 965  | U    | C2-N1-C1' | 8.88  | 128.35      | 117.70   |
| 1   | 2     | 1585 | U    | N1-C2-O2  | 8.88  | 129.01      | 122.80   |
| 36  | LA    | 2617 | U    | N3-C2-O2  | -8.87 | 116.00      | 122.20   |
| 1   | 2     | 1235 | C    | C6-N1-C2  | -8.84 | 116.77      | 120.30   |
| 5   | E     | 36   | LEU  | CA-CB-CG  | 8.80  | 135.55      | 115.30   |
| 1   | 2     | 1527 | C    | C2-N1-C1' | 8.77  | 128.44      | 118.80   |
| 1   | 2     | 1585 | U    | C2-N3-C4  | 8.75  | 132.25      | 127.00   |
| 37  | LB    | 39   | C    | N3-C2-O2  | -8.75 | 115.78      | 121.90   |
| 48  | LM    | 168  | ASP  | CB-CG-OD1 | 8.70  | 126.13      | 118.30   |
| 36  | LA    | 2359 | C    | C5-C6-N1  | 8.68  | 125.34      | 121.00   |
| 38  | LC    | 127  | U    | N3-C2-O2  | -8.68 | 116.12      | 122.20   |
| 37  | LB    | 34   | C    | C5-C6-N1  | 8.67  | 125.34      | 121.00   |
| 46  | LK    | 76   | ASP  | CB-CG-OD1 | 8.66  | 126.10      | 118.30   |
| 36  | LA    | 609  | G    | O5'-P-OP2 | -8.64 | 97.92       | 105.70   |
| 36  | LA    | 3120 | C    | C6-N1-C2  | -8.64 | 116.84      | 120.30   |
| 36  | LA    | 1496 | C    | C6-N1-C2  | -8.64 | 116.84      | 120.30   |
| 36  | LA    | 2146 | C    | C6-N1-C2  | -8.64 | 116.84      | 120.30   |
| 1   | 2     | 1161 | C    | C5-C6-N1  | 8.64  | 125.32      | 121.00   |
| 36  | LA    | 1854 | C    | C6-N1-C2  | -8.63 | 116.85      | 120.30   |
| 36  | LA    | 2112 | U    | P-O3'-C3' | 8.63  | 130.06      | 119.70   |
| 36  | LA    | 1614 | C    | C6-N1-C2  | -8.63 | 116.85      | 120.30   |
| 1   | 2     | 1082 | C    | C2-N1-C1' | 8.60  | 128.26      | 118.80   |
| 36  | LA    | 2366 | C    | C5-C6-N1  | 8.60  | 125.30      | 121.00   |
| 42  | LG    | 230  | ASP  | CB-CG-OD1 | 8.60  | 126.04      | 118.30   |
| 36  | LA    | 2772 | C    | C2-N1-C1' | 8.56  | 128.22      | 118.80   |
| 1   | 2     | 583  | C    | C2-N1-C1' | 8.54  | 128.20      | 118.80   |
| 1   | 2     | 283  | U    | N3-C2-O2  | -8.52 | 116.23      | 122.20   |
| 36  | LA    | 2541 | U    | P-O3'-C3' | 8.52  | 129.92      | 119.70   |
| 36  | LA    | 1499 | C    | C6-N1-C2  | -8.49 | 116.90      | 120.30   |
| 36  | LA    | 1227 | C    | N1-C2-O2  | 8.49  | 124.00      | 118.90   |
| 1   | 2     | 160  | C    | N1-C2-O2  | 8.48  | 123.99      | 118.90   |
| 16  | D     | 36   | LEU  | CA-CB-CG  | 8.47  | 134.78      | 115.30   |
| 36  | LA    | 927  | C    | C6-N1-C2  | -8.46 | 116.92      | 120.30   |
| 1   | 2     | 500  | C    | N3-C2-O2  | -8.44 | 115.99      | 121.90   |
| 36  | LA    | 1269 | U    | C2-N1-C1' | 8.43  | 127.82      | 117.70   |
| 27  | d     | 39   | GLU  | CA-CB-CG  | 8.42  | 131.92      | 113.40   |
| 36  | LA    | 3181 | C    | N1-C2-O2  | 8.41  | 123.95      | 118.90   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 186  | C    | N1-C2-O2   | 8.41  | 123.95      | 118.90   |
| 1   | 2     | 1145 | U    | C2-N1-C1'  | 8.37  | 127.74      | 117.70   |
| 1   | 2     | 645  | C    | C6-N1-C2   | -8.36 | 116.95      | 120.30   |
| 1   | 2     | 959  | U    | N3-C2-O2   | -8.35 | 116.35      | 122.20   |
| 36  | LA    | 1907 | C    | N1-C2-O2   | 8.35  | 123.91      | 118.90   |
| 36  | LA    | 2836 | C    | N3-C2-O2   | -8.35 | 116.06      | 121.90   |
| 1   | 2     | 992  | A    | O4'-C1'-N9 | 8.33  | 114.86      | 108.20   |
| 37  | LB    | 39   | C    | N1-C2-O2   | 8.32  | 123.89      | 118.90   |
| 36  | LA    | 2531 | C    | N1-C2-O2   | 8.32  | 123.89      | 118.90   |
| 36  | LA    | 2537 | U    | P-O3'-C3'  | 8.31  | 129.67      | 119.70   |
| 1   | 2     | 538  | A    | O5'-P-OP2  | -8.29 | 98.23       | 105.70   |
| 36  | LA    | 1349 | G    | N3-C4-C5   | -8.29 | 124.45      | 128.60   |
| 1   | 2     | 1458 | G    | C4-N9-C1'  | 8.29  | 137.27      | 126.50   |
| 36  | LA    | 2434 | U    | C2-N1-C1'  | 8.28  | 127.64      | 117.70   |
| 36  | LA    | 1269 | U    | N1-C2-O2   | 8.27  | 128.59      | 122.80   |
| 80  | Sn    | 48   | C    | C5-C6-N1   | 8.27  | 125.14      | 121.00   |
| 1   | 2     | 656  | G    | C4-N9-C1'  | 8.26  | 137.24      | 126.50   |
| 1   | 2     | 1560 | U    | C2-N1-C1'  | 8.26  | 127.61      | 117.70   |
| 37  | LB    | 68   | C    | C6-N1-C2   | -8.26 | 117.00      | 120.30   |
| 36  | LA    | 1496 | C    | C5-C6-N1   | 8.25  | 125.13      | 121.00   |
| 36  | LA    | 1788 | C    | C6-N1-C2   | -8.25 | 117.00      | 120.30   |
| 36  | LA    | 2133 | U    | N3-C2-O2   | -8.25 | 116.42      | 122.20   |
| 1   | 2     | 322  | G    | P-O3'-C3'  | 8.24  | 129.59      | 119.70   |
| 8   | S     | 38   | LEU  | CA-CB-CG   | 8.23  | 134.23      | 115.30   |
| 36  | LA    | 2277 | C    | C6-N1-C2   | -8.22 | 117.01      | 120.30   |
| 1   | 2     | 1463 | C    | C6-N1-C2   | -8.22 | 117.01      | 120.30   |
| 1   | 2     | 927  | C    | C6-N1-C2   | -8.21 | 117.02      | 120.30   |
| 36  | LA    | 2552 | C    | N1-C2-O2   | 8.21  | 123.82      | 118.90   |
| 36  | LA    | 3278 | C    | N1-C2-O2   | 8.18  | 123.81      | 118.90   |
| 36  | LA    | 3217 | C    | N3-C2-O2   | -8.17 | 116.18      | 121.90   |
| 36  | LA    | 225  | C    | C6-N1-C2   | -8.16 | 117.03      | 120.30   |
| 36  | LA    | 1269 | U    | N3-C2-O2   | -8.16 | 116.49      | 122.20   |
| 36  | LA    | 2163 | C    | C6-N1-C2   | -8.15 | 117.04      | 120.30   |
| 1   | 2     | 992  | A    | C4-N9-C1'  | 8.14  | 140.96      | 126.30   |
| 1   | 2     | 1742 | U    | C5-C6-N1   | 8.14  | 126.77      | 122.70   |
| 36  | LA    | 1604 | G    | N3-C4-N9   | 8.14  | 130.89      | 126.00   |
| 1   | 2     | 965  | U    | N3-C2-O2   | -8.13 | 116.51      | 122.20   |
| 36  | LA    | 1872 | C    | N1-C2-O2   | 8.12  | 123.77      | 118.90   |
| 36  | LA    | 2531 | C    | C5-C6-N1   | 8.11  | 125.05      | 121.00   |
| 1   | 2     | 553  | G    | N3-C4-N9   | -8.09 | 121.14      | 126.00   |
| 1   | 2     | 886  | U    | C5-C6-N1   | 8.09  | 126.75      | 122.70   |
| 36  | LA    | 1907 | C    | N3-C2-O2   | -8.08 | 116.24      | 121.90   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 36  | LA    | 1155 | C    | C5-C6-N1  | 8.07  | 125.04      | 121.00   |
| 1   | 2     | 583  | C    | C6-N1-C2  | -8.07 | 117.07      | 120.30   |
| 36  | LA    | 2836 | C    | C2-N1-C1' | 8.07  | 127.68      | 118.80   |
| 36  | LA    | 2434 | U    | N3-C2-O2  | -8.06 | 116.56      | 122.20   |
| 36  | LA    | 3196 | U    | C2-N1-C1' | 8.06  | 127.37      | 117.70   |
| 36  | LA    | 1349 | G    | C4-N9-C1' | 8.03  | 136.94      | 126.50   |
| 36  | LA    | 3217 | C    | C5-C6-N1  | 8.03  | 125.01      | 121.00   |
| 36  | LA    | 3306 | U    | C2-N1-C1' | 8.03  | 127.33      | 117.70   |
| 36  | LA    | 717  | C    | O5'-P-OP2 | -8.02 | 98.48       | 105.70   |
| 20  | G     | 84   | TYR  | CB-CG-CD2 | 8.02  | 125.81      | 121.00   |
| 36  | LA    | 1716 | U    | P-O3'-C3' | 8.02  | 129.32      | 119.70   |
| 36  | LA    | 1263 | A    | C2-N3-C4  | 8.00  | 114.60      | 110.60   |
| 36  | LA    | 2666 | C    | C6-N1-C2  | -8.00 | 117.10      | 120.30   |
| 36  | LA    | 1496 | C    | C2-N1-C1' | 8.00  | 127.60      | 118.80   |
| 42  | LG    | 238  | ASP  | CB-CG-OD1 | 7.99  | 125.49      | 118.30   |
| 1   | 2     | 424  | C    | C5-C6-N1  | 7.97  | 124.99      | 121.00   |
| 36  | LA    | 1349 | G    | N3-C4-N9  | 7.96  | 130.78      | 126.00   |
| 36  | LA    | 1579 | C    | N3-C2-O2  | -7.94 | 116.34      | 121.90   |
| 38  | LC    | 127  | U    | C2-N1-C1' | 7.93  | 127.22      | 117.70   |
| 42  | LG    | 272  | TYR  | CB-CG-CD1 | -7.93 | 116.24      | 121.00   |
| 36  | LA    | 2873 | U    | N3-C2-O2  | -7.90 | 116.67      | 122.20   |
| 36  | LA    | 2101 | C    | P-O3'-C3' | 7.89  | 129.17      | 119.70   |
| 36  | LA    | 2664 | C    | C6-N1-C2  | -7.88 | 117.15      | 120.30   |
| 36  | LA    | 969  | C    | C6-N1-C2  | -7.88 | 117.15      | 120.30   |
| 80  | Sn    | 56   | C    | C6-N1-C2  | -7.88 | 117.15      | 120.30   |
| 36  | LA    | 3214 | U    | C2-N1-C1' | 7.87  | 127.14      | 117.70   |
| 1   | 2     | 1161 | C    | C6-N1-C2  | -7.87 | 117.15      | 120.30   |
| 36  | LA    | 890  | C    | C6-N1-C2  | -7.86 | 117.16      | 120.30   |
| 1   | 2     | 1257 | U    | N1-C2-O2  | 7.85  | 128.30      | 122.80   |
| 36  | LA    | 977  | C    | C6-N1-C2  | -7.84 | 117.16      | 120.30   |
| 36  | LA    | 2285 | C    | C6-N1-C2  | -7.84 | 117.17      | 120.30   |
| 1   | 2     | 572  | C    | N3-C2-O2  | -7.83 | 116.42      | 121.90   |
| 80  | Sn    | 63   | G    | OP1-P-O3' | 7.83  | 122.42      | 105.20   |
| 1   | 2     | 1182 | U    | C2-N1-C1' | 7.82  | 127.08      | 117.70   |
| 38  | LC    | 64   | U    | N1-C2-O2  | 7.82  | 128.27      | 122.80   |
| 1   | 2     | 959  | U    | C2-N1-C1' | 7.82  | 127.08      | 117.70   |
| 1   | 2     | 1332 | C    | C6-N1-C2  | -7.79 | 117.18      | 120.30   |
| 80  | Sn    | 69   | C    | C6-N1-C2  | -7.79 | 117.19      | 120.30   |
| 36  | LA    | 758  | C    | C6-N1-C2  | -7.78 | 117.19      | 120.30   |
| 36  | LA    | 492  | C    | C6-N1-C2  | -7.77 | 117.19      | 120.30   |
| 36  | LA    | 2422 | C    | C6-N1-C2  | -7.76 | 117.20      | 120.30   |
| 36  | LA    | 36   | C    | N3-C2-O2  | -7.75 | 116.47      | 121.90   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 36  | LA    | 2277 | C    | C5-C6-N1  | 7.74  | 124.87      | 121.00   |
| 1   | 2     | 1458 | G    | N3-C4-C5  | -7.74 | 124.73      | 128.60   |
| 36  | LA    | 2652 | U    | N3-C2-O2  | -7.74 | 116.78      | 122.20   |
| 36  | LA    | 1495 | U    | C4-C5-C6  | 7.73  | 124.34      | 119.70   |
| 20  | G     | 84   | TYR  | CB-CG-CD1 | -7.71 | 116.38      | 121.00   |
| 1   | 2     | 1560 | U    | N1-C2-O2  | 7.69  | 128.18      | 122.80   |
| 1   | 2     | 992  | A    | N7-C8-N9  | 7.69  | 117.64      | 113.80   |
| 36  | LA    | 36   | C    | N1-C2-O2  | 7.68  | 123.51      | 118.90   |
| 36  | LA    | 2285 | C    | C5-C6-N1  | 7.68  | 124.84      | 121.00   |
| 1   | 2     | 354  | C    | C6-N1-C2  | -7.67 | 117.23      | 120.30   |
| 36  | LA    | 977  | C    | C5-C6-N1  | 7.67  | 124.83      | 121.00   |
| 36  | LA    | 332  | C    | C6-N1-C2  | -7.66 | 117.24      | 120.30   |
| 1   | 2     | 639  | U    | P-O3'-C3' | 7.66  | 128.89      | 119.70   |
| 36  | LA    | 2815 | G    | N1-C6-O6  | -7.65 | 115.31      | 119.90   |
| 36  | LA    | 2531 | C    | C2-N1-C1' | 7.65  | 127.21      | 118.80   |
| 1   | 2     | 849  | C    | C6-N1-C2  | -7.64 | 117.25      | 120.30   |
| 36  | LA    | 15   | C    | C5-C6-N1  | 7.63  | 124.82      | 121.00   |
| 11  | U     | 131  | PHE  | CB-CG-CD2 | 7.63  | 126.14      | 120.80   |
| 1   | 2     | 945  | U    | C5-C6-N1  | 7.62  | 126.51      | 122.70   |
| 1   | 2     | 1374 | C    | C6-N1-C2  | -7.62 | 117.25      | 120.30   |
| 36  | LA    | 2389 | C    | C6-N1-C2  | -7.62 | 117.25      | 120.30   |
| 38  | LC    | 28   | C    | C6-N1-C2  | -7.62 | 117.25      | 120.30   |
| 36  | LA    | 1279 | C    | C5-C6-N1  | 7.60  | 124.80      | 121.00   |
| 1   | 2     | 1527 | C    | N1-C2-O2  | 7.60  | 123.46      | 118.90   |
| 36  | LA    | 78   | U    | N3-C2-O2  | -7.60 | 116.88      | 122.20   |
| 1   | 2     | 1463 | C    | C5-C6-N1  | 7.59  | 124.79      | 121.00   |
| 36  | LA    | 515  | C    | C6-N1-C2  | -7.58 | 117.27      | 120.30   |
| 36  | LA    | 609  | G    | N3-C4-N9  | 7.58  | 130.55      | 126.00   |
| 36  | LA    | 2505 | U    | N3-C2-O2  | -7.57 | 116.90      | 122.20   |
| 37  | LB    | 44   | C    | C6-N1-C2  | -7.57 | 117.27      | 120.30   |
| 36  | LA    | 3120 | C    | C5-C6-N1  | 7.56  | 124.78      | 121.00   |
| 36  | LA    | 2263 | C    | C6-N1-C2  | -7.55 | 117.28      | 120.30   |
| 36  | LA    | 515  | C    | C5-C6-N1  | 7.55  | 124.78      | 121.00   |
| 36  | LA    | 3344 | A    | N7-C8-N9  | 7.54  | 117.57      | 113.80   |
| 1   | 2     | 1256 | A    | P-O3'-C3' | 7.53  | 128.73      | 119.70   |
| 11  | U     | 131  | PHE  | CB-CG-CD1 | -7.53 | 115.53      | 120.80   |
| 36  | LA    | 492  | C    | N1-C2-O2  | 7.52  | 123.41      | 118.90   |
| 36  | LA    | 1756 | C    | C5-C6-N1  | 7.52  | 124.76      | 121.00   |
| 36  | LA    | 2098 | C    | C6-N1-C2  | -7.51 | 117.29      | 120.30   |
| 1   | 2     | 186  | C    | C6-N1-C1' | -7.51 | 111.79      | 120.80   |
| 36  | LA    | 1815 | U    | P-O3'-C3' | 7.50  | 128.70      | 119.70   |
| 36  | LA    | 3120 | C    | O5'-P-OP2 | -7.50 | 98.95       | 105.70   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1705 | C    | C6-N1-C2   | -7.50 | 117.30      | 120.30   |
| 80  | Sn    | 46   | G    | C8-N9-C4   | -7.50 | 103.40      | 106.40   |
| 36  | LA    | 3218 | A    | OP2-P-O3'  | 7.48  | 121.66      | 105.20   |
| 36  | LA    | 927  | C    | C5-C6-N1   | 7.47  | 124.74      | 121.00   |
| 36  | LA    | 3317 | U    | C2-N1-C1'  | 7.47  | 126.67      | 117.70   |
| 1   | 2     | 400  | A    | P-O3'-C3'  | 7.47  | 128.66      | 119.70   |
| 1   | 2     | 166  | C    | N1-C2-O2   | 7.46  | 123.38      | 118.90   |
| 36  | LA    | 2849 | C    | C6-N1-C2   | -7.45 | 117.32      | 120.30   |
| 1   | 2     | 934  | C    | N3-C2-O2   | -7.43 | 116.70      | 121.90   |
| 36  | LA    | 2983 | C    | C6-N1-C2   | -7.42 | 117.33      | 120.30   |
| 36  | LA    | 379  | C    | C6-N1-C2   | -7.42 | 117.33      | 120.30   |
| 1   | 2     | 959  | U    | N1-C2-O2   | 7.42  | 127.99      | 122.80   |
| 1   | 2     | 1705 | C    | C5-C6-N1   | 7.41  | 124.70      | 121.00   |
| 1   | 2     | 1528 | U    | O5'-P-OP2  | -7.41 | 99.03       | 105.70   |
| 36  | LA    | 1563 | C    | C6-N1-C2   | -7.41 | 117.34      | 120.30   |
| 5   | E     | 60   | LEU  | CB-CG-CD1  | -7.40 | 98.41       | 111.00   |
| 1   | 2     | 969  | C    | C6-N1-C2   | -7.40 | 117.34      | 120.30   |
| 36  | LA    | 544  | C    | C6-N1-C2   | -7.40 | 117.34      | 120.30   |
| 36  | LA    | 2359 | C    | C6-N1-C2   | -7.39 | 117.34      | 120.30   |
| 38  | LC    | 110  | C    | N1-C2-O2   | 7.39  | 123.33      | 118.90   |
| 54  | Lm    | 66   | ARG  | NE-CZ-NH1  | 7.38  | 123.99      | 120.30   |
| 1   | 2     | 189  | C    | C6-N1-C2   | -7.38 | 117.35      | 120.30   |
| 80  | Sn    | 69   | C    | C5-C6-N1   | 7.38  | 124.69      | 121.00   |
| 1   | 2     | 1382 | A    | P-O3'-C3'  | 7.38  | 128.55      | 119.70   |
| 1   | 2     | 1633 | A    | P-O3'-C3'  | 7.38  | 128.55      | 119.70   |
| 36  | LA    | 2873 | U    | C2-N1-C1'  | 7.37  | 126.55      | 117.70   |
| 36  | LA    | 1604 | G    | C4-N9-C1'  | 7.37  | 136.08      | 126.50   |
| 1   | 2     | 819  | G    | P-O3'-C3'  | 7.36  | 128.53      | 119.70   |
| 1   | 2     | 215  | A    | P-O3'-C3'  | 7.35  | 128.52      | 119.70   |
| 36  | LA    | 2495 | C    | N1-C2-O2   | 7.35  | 123.31      | 118.90   |
| 36  | LA    | 439  | C    | N3-C2-O2   | -7.35 | 116.76      | 121.90   |
| 36  | LA    | 3078 | U    | OP2-P-O3'  | 7.34  | 121.35      | 105.20   |
| 36  | LA    | 524  | U    | N1-C2-O2   | 7.34  | 127.94      | 122.80   |
| 1   | 2     | 629  | U    | N3-C2-O2   | -7.33 | 117.07      | 122.20   |
| 1   | 2     | 1611 | A    | O4'-C1'-N9 | 7.33  | 114.06      | 108.20   |
| 36  | LA    | 1608 | C    | N1-C2-O2   | 7.33  | 123.30      | 118.90   |
| 36  | LA    | 3217 | C    | C6-N1-C2   | -7.33 | 117.37      | 120.30   |
| 1   | 2     | 969  | C    | C5-C6-N1   | 7.32  | 124.66      | 121.00   |
| 36  | LA    | 2496 | C    | N1-C2-O2   | 7.32  | 123.29      | 118.90   |
| 80  | Sn    | 50   | U    | O5'-P-OP2  | -7.32 | 99.12       | 105.70   |
| 36  | LA    | 263  | C    | C6-N1-C2   | -7.31 | 117.38      | 120.30   |
| 36  | LA    | 2133 | U    | N1-C2-O2   | 7.31  | 127.91      | 122.80   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 36  | LA    | 1869 | C    | C5-C6-N1  | 7.30  | 124.65      | 121.00   |
| 1   | 2     | 262  | U    | N1-C2-O2  | 7.30  | 127.91      | 122.80   |
| 1   | 2     | 1023 | A    | OP2-P-O3' | 7.30  | 121.25      | 105.20   |
| 1   | 2     | 1257 | U    | C2-N1-C1' | 7.30  | 126.45      | 117.70   |
| 36  | LA    | 663  | C    | C6-N1-C2  | -7.30 | 117.38      | 120.30   |
| 45  | LJ    | 109  | LEU  | CA-CB-CG  | 7.30  | 132.08      | 115.30   |
| 1   | 2     | 1273 | G    | P-O3'-C3' | 7.29  | 128.45      | 119.70   |
| 36  | LA    | 3058 | U    | C2-N1-C1' | 7.29  | 126.44      | 117.70   |
| 36  | LA    | 2237 | C    | N3-C2-O2  | -7.28 | 116.80      | 121.90   |
| 36  | LA    | 2407 | C    | C6-N1-C2  | -7.28 | 117.39      | 120.30   |
| 36  | LA    | 2846 | U    | N1-C2-O2  | 7.28  | 127.89      | 122.80   |
| 36  | LA    | 3344 | A    | C5-N7-C8  | -7.28 | 100.26      | 103.90   |
| 36  | LA    | 2526 | C    | C6-N1-C2  | -7.26 | 117.39      | 120.30   |
| 36  | LA    | 3278 | C    | C2-N1-C1' | 7.26  | 126.79      | 118.80   |
| 36  | LA    | 1437 | C    | C6-N1-C2  | -7.26 | 117.39      | 120.30   |
| 36  | LA    | 439  | C    | N1-C2-O2  | 7.26  | 123.25      | 118.90   |
| 80  | Sm    | 48   | C    | C5-C6-N1  | 7.26  | 124.63      | 121.00   |
| 1   | 2     | 453  | U    | N3-C2-O2  | -7.25 | 117.12      | 122.20   |
| 1   | 2     | 354  | C    | C5-C6-N1  | 7.25  | 124.62      | 121.00   |
| 1   | 2     | 1644 | C    | C6-N1-C2  | -7.25 | 117.40      | 120.30   |
| 1   | 2     | 656  | G    | N3-C4-C5  | -7.25 | 124.98      | 128.60   |
| 1   | 2     | 798  | C    | C6-N1-C2  | -7.25 | 117.40      | 120.30   |
| 1   | 2     | 637  | C    | C6-N1-C2  | -7.24 | 117.40      | 120.30   |
| 1   | 2     | 992  | A    | C8-N9-C1' | -7.24 | 114.67      | 127.70   |
| 36  | LA    | 2664 | C    | C5-C6-N1  | 7.24  | 124.62      | 121.00   |
| 38  | LC    | 35   | C    | C6-N1-C2  | -7.24 | 117.40      | 120.30   |
| 1   | 2     | 1309 | C    | C6-N1-C2  | -7.23 | 117.41      | 120.30   |
| 36  | LA    | 2846 | U    | C2-N1-C1' | 7.22  | 126.36      | 117.70   |
| 36  | LA    | 818  | C    | C6-N1-C2  | -7.21 | 117.42      | 120.30   |
| 36  | LA    | 1556 | C    | C2-N1-C1' | 7.21  | 126.73      | 118.80   |
| 80  | Sm    | 63   | G    | OP1-P-O3' | 7.21  | 121.06      | 105.20   |
| 1   | 2     | 738  | G    | P-O3'-C3' | 7.20  | 128.34      | 119.70   |
| 36  | LA    | 2585 | G    | N3-C4-C5  | -7.20 | 125.00      | 128.60   |
| 1   | 2     | 555  | A    | P-O3'-C3' | 7.20  | 128.34      | 119.70   |
| 1   | 2     | 1258 | U    | C2-N1-C1' | 7.20  | 126.34      | 117.70   |
| 1   | 2     | 1799 | U    | C2-N1-C1' | 7.20  | 126.34      | 117.70   |
| 36  | LA    | 1263 | A    | N1-C6-N6  | -7.19 | 114.29      | 118.60   |
| 36  | LA    | 1499 | C    | C5-C6-N1  | 7.18  | 124.59      | 121.00   |
| 1   | 2     | 14   | C    | C6-N1-C2  | -7.17 | 117.43      | 120.30   |
| 36  | LA    | 142  | C    | C6-N1-C2  | -7.17 | 117.43      | 120.30   |
| 36  | LA    | 2594 | C    | N1-C2-O2  | 7.17  | 123.20      | 118.90   |
| 36  | LA    | 982  | C    | N1-C2-O2  | 7.17  | 123.20      | 118.90   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1   | 2     | 77   | U    | P-O3'-C3' | 7.16  | 128.30      | 119.70   |
| 36  | LA    | 1716 | U    | OP1-P-O3' | 7.16  | 120.94      | 105.20   |
| 1   | 2     | 1523 | G    | C4-N9-C1' | 7.15  | 135.80      | 126.50   |
| 1   | 2     | 1024 | U    | C5-C6-N1  | 7.14  | 126.27      | 122.70   |
| 13  | W     | 105  | LEU  | CB-CG-CD1 | 7.14  | 123.14      | 111.00   |
| 36  | LA    | 803  | C    | C6-N1-C2  | -7.13 | 117.45      | 120.30   |
| 16  | D     | 39   | ASP  | CB-CG-OD1 | 7.13  | 124.72      | 118.30   |
| 1   | 2     | 1098 | U    | O5'-P-OP1 | -7.13 | 99.28       | 105.70   |
| 37  | LB    | 58   | C    | C6-N1-C2  | -7.12 | 117.45      | 120.30   |
| 36  | LA    | 1437 | C    | C2-N1-C1' | 7.11  | 126.62      | 118.80   |
| 1   | 2     | 224  | C    | P-O3'-C3' | 7.10  | 128.22      | 119.70   |
| 80  | Sn    | 40   | C    | C6-N1-C2  | -7.10 | 117.46      | 120.30   |
| 1   | 2     | 415  | C    | C5-C6-N1  | 7.09  | 124.55      | 121.00   |
| 1   | 2     | 911  | U    | N3-C2-O2  | -7.09 | 117.24      | 122.20   |
| 36  | LA    | 1103 | A    | C2-N3-C4  | 7.09  | 114.14      | 110.60   |
| 1   | 2     | 453  | U    | C5-C6-N1  | 7.08  | 126.24      | 122.70   |
| 36  | LA    | 505  | G    | O5'-P-OP1 | -7.08 | 99.33       | 105.70   |
| 38  | LC    | 117  | C    | C6-N1-C2  | -7.08 | 117.47      | 120.30   |
| 36  | LA    | 1208 | U    | N1-C2-O2  | 7.06  | 127.75      | 122.80   |
| 1   | 2     | 160  | C    | C2-N1-C1' | 7.06  | 126.57      | 118.80   |
| 36  | LA    | 1582 | C    | OP1-P-O3' | 7.06  | 120.74      | 105.20   |
| 80  | Sm    | 49   | C    | N1-C2-O2  | 7.06  | 123.14      | 118.90   |
| 1   | 2     | 989  | U    | N1-C2-O2  | 7.06  | 127.74      | 122.80   |
| 36  | LA    | 1227 | C    | C6-N1-C2  | -7.06 | 117.48      | 120.30   |
| 36  | LA    | 2434 | U    | N1-C2-O2  | 7.06  | 127.74      | 122.80   |
| 36  | LA    | 3181 | C    | N3-C2-O2  | -7.06 | 116.96      | 121.90   |
| 1   | 2     | 278  | U    | P-O3'-C3' | 7.05  | 128.16      | 119.70   |
| 36  | LA    | 50   | U    | N1-C2-O2  | 7.05  | 127.74      | 122.80   |
| 36  | LA    | 1614 | C    | C5-C6-N1  | 7.05  | 124.53      | 121.00   |
| 1   | 2     | 553  | G    | N9-C4-C5  | 7.05  | 108.22      | 105.40   |
| 34  | O     | 292  | LEU  | CA-CB-CG  | 7.05  | 131.52      | 115.30   |
| 36  | LA    | 3277 | U    | N3-C2-O2  | -7.05 | 117.26      | 122.20   |
| 36  | LA    | 793  | C    | C6-N1-C2  | -7.05 | 117.48      | 120.30   |
| 36  | LA    | 1495 | U    | N1-C2-N3  | 7.05  | 119.13      | 114.90   |
| 1   | 2     | 160  | C    | N3-C2-O2  | -7.04 | 116.97      | 121.90   |
| 36  | LA    | 1273 | A    | N7-C8-N9  | 7.04  | 117.32      | 113.80   |
| 1   | 2     | 608  | U    | C2-N1-C1' | 7.03  | 126.13      | 117.70   |
| 1   | 2     | 1235 | C    | N3-C2-O2  | -7.02 | 116.99      | 121.90   |
| 21  | H     | 66   | LEU  | CA-CB-CG  | 7.01  | 131.43      | 115.30   |
| 36  | LA    | 2405 | C    | C6-N1-C2  | -7.00 | 117.50      | 120.30   |
| 1   | 2     | 903  | U    | N3-C2-O2  | -7.00 | 117.30      | 122.20   |
| 1   | 2     | 1007 | C    | C6-N1-C2  | -7.00 | 117.50      | 120.30   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 663  | C    | C5-C6-N1   | 7.00  | 124.50      | 121.00   |
| 36  | LA    | 1608 | C    | C2-N1-C1'  | 7.00  | 126.49      | 118.80   |
| 36  | LA    | 444  | U    | N3-C2-O2   | -6.99 | 117.31      | 122.20   |
| 81  | EF    | 869  | LEU  | CA-CB-CG   | 6.99  | 131.38      | 115.30   |
| 34  | O     | 177  | MET  | CA-CB-CG   | 6.99  | 125.17      | 113.30   |
| 36  | LA    | 922  | U    | N1-C2-O2   | 6.99  | 127.69      | 122.80   |
| 1   | 2     | 1145 | U    | N3-C2-O2   | -6.98 | 117.31      | 122.20   |
| 1   | 2     | 79   | C    | C6-N1-C2   | -6.98 | 117.51      | 120.30   |
| 1   | 2     | 935  | U    | N3-C2-O2   | -6.98 | 117.31      | 122.20   |
| 1   | 2     | 992  | A    | C8-N9-C4   | -6.98 | 103.01      | 105.80   |
| 80  | Sm    | 49   | C    | N3-C2-O2   | -6.97 | 117.02      | 121.90   |
| 1   | 2     | 121  | U    | N3-C2-O2   | -6.97 | 117.32      | 122.20   |
| 36  | LA    | 2772 | C    | N1-C2-O2   | 6.97  | 123.08      | 118.90   |
| 36  | LA    | 2189 | U    | N1-C2-O2   | 6.97  | 127.68      | 122.80   |
| 36  | LA    | 1756 | C    | C6-N1-C2   | -6.97 | 117.51      | 120.30   |
| 80  | Sn    | 74   | C    | C5-C6-N1   | 6.96  | 124.48      | 121.00   |
| 36  | LA    | 2894 | C    | C6-N1-C2   | -6.96 | 117.52      | 120.30   |
| 45  | LJ    | 82   | LEU  | CA-CB-CG   | 6.95  | 131.29      | 115.30   |
| 1   | 2     | 639  | U    | N3-C2-O2   | -6.95 | 117.33      | 122.20   |
| 36  | LA    | 1222 | G    | O4'-C1'-N9 | 6.95  | 113.76      | 108.20   |
| 37  | LB    | 26   | C    | C6-N1-C2   | -6.95 | 117.52      | 120.30   |
| 1   | 2     | 1620 | C    | C6-N1-C2   | -6.95 | 117.52      | 120.30   |
| 36  | LA    | 3043 | C    | C6-N1-C2   | -6.94 | 117.52      | 120.30   |
| 36  | LA    | 1582 | C    | P-O3'-C3'  | 6.94  | 128.02      | 119.70   |
| 36  | LA    | 1872 | C    | N3-C2-O2   | -6.93 | 117.05      | 121.90   |
| 36  | LA    | 982  | C    | C2-N1-C1'  | 6.92  | 126.42      | 118.80   |
| 36  | LA    | 2836 | C    | N1-C2-O2   | 6.92  | 123.06      | 118.90   |
| 1   | 2     | 623  | A    | O4'-C1'-N9 | 6.92  | 113.74      | 108.20   |
| 36  | LA    | 225  | C    | C5-C6-N1   | 6.91  | 124.45      | 121.00   |
| 36  | LA    | 3358 | U    | N3-C2-O2   | -6.91 | 117.36      | 122.20   |
| 36  | LA    | 969  | C    | N3-C2-O2   | -6.91 | 117.06      | 121.90   |
| 1   | 2     | 1279 | C    | C6-N1-C2   | -6.89 | 117.54      | 120.30   |
| 36  | LA    | 2849 | C    | C5-C6-N1   | 6.89  | 124.45      | 121.00   |
| 36  | LA    | 283  | G    | N3-C4-C5   | -6.89 | 125.15      | 128.60   |
| 1   | 2     | 415  | C    | C6-N1-C2   | -6.89 | 117.55      | 120.30   |
| 36  | LA    | 2505 | U    | N1-C2-O2   | 6.88  | 127.62      | 122.80   |
| 19  | F     | 96   | TYR  | CB-CG-CD1  | -6.88 | 116.87      | 121.00   |
| 36  | LA    | 1644 | C    | C6-N1-C2   | -6.88 | 117.55      | 120.30   |
| 36  | LA    | 1706 | C    | C6-N1-C2   | -6.88 | 117.55      | 120.30   |
| 36  | LA    | 2495 | C    | C6-N1-C2   | -6.88 | 117.55      | 120.30   |
| 36  | LA    | 3350 | C    | P-O3'-C3'  | 6.88  | 127.95      | 119.70   |
| 19  | F     | 50   | GLU  | CA-CB-CG   | 6.87  | 128.52      | 113.40   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 2258 | U    | C5-C6-N1   | 6.87  | 126.14      | 122.70   |
| 5   | E     | 60   | LEU  | CA-CB-CG   | 6.87  | 131.09      | 115.30   |
| 36  | LA    | 444  | U    | N1-C2-O2   | 6.87  | 127.61      | 122.80   |
| 1   | 2     | 975  | C    | C6-N1-C2   | -6.86 | 117.56      | 120.30   |
| 1   | 2     | 314  | C    | C6-N1-C2   | -6.86 | 117.56      | 120.30   |
| 1   | 2     | 1497 | U    | N3-C2-O2   | -6.85 | 117.40      | 122.20   |
| 1   | 2     | 989  | U    | N3-C2-O2   | -6.85 | 117.41      | 122.20   |
| 1   | 2     | 1620 | C    | N1-C2-O2   | 6.85  | 123.01      | 118.90   |
| 36  | LA    | 2764 | C    | C6-N1-C2   | -6.85 | 117.56      | 120.30   |
| 36  | LA    | 2983 | C    | N3-C2-O2   | -6.85 | 117.11      | 121.90   |
| 36  | LA    | 1283 | C    | C2-N1-C1'  | 6.84  | 126.33      | 118.80   |
| 36  | LA    | 763  | G    | P-O3'-C3'  | 6.84  | 127.91      | 119.70   |
| 36  | LA    | 1355 | A    | OP2-P-O3'  | 6.84  | 120.25      | 105.20   |
| 36  | LA    | 444  | U    | C5-C6-N1   | 6.84  | 126.12      | 122.70   |
| 1   | 2     | 908  | U    | N3-C2-O2   | -6.83 | 117.42      | 122.20   |
| 36  | LA    | 2913 | C    | C6-N1-C2   | -6.83 | 117.57      | 120.30   |
| 36  | LA    | 1227 | C    | C5-C6-N1   | 6.83  | 124.41      | 121.00   |
| 39  | LD    | 191  | LEU  | CA-CB-CG   | -6.83 | 99.59       | 115.30   |
| 36  | LA    | 3131 | U    | C2-N1-C1'  | 6.83  | 125.89      | 117.70   |
| 1   | 2     | 499  | U    | O4'-C1'-N1 | 6.82  | 113.66      | 108.20   |
| 36  | LA    | 713  | U    | N3-C2-O2   | -6.82 | 117.43      | 122.20   |
| 36  | LA    | 3181 | C    | C6-N1-C1'  | -6.82 | 112.62      | 120.80   |
| 36  | LA    | 922  | U    | C6-N1-C1'  | -6.81 | 111.66      | 121.20   |
| 36  | LA    | 2552 | C    | N3-C2-O2   | -6.80 | 117.14      | 121.90   |
| 16  | D     | 74   | LEU  | CA-CB-CG   | 6.80  | 130.93      | 115.30   |
| 36  | LA    | 2541 | U    | C2-N1-C1'  | 6.80  | 125.86      | 117.70   |
| 36  | LA    | 1032 | C    | C6-N1-C2   | -6.79 | 117.58      | 120.30   |
| 1   | 2     | 1203 | A    | C8-N9-C4   | -6.79 | 103.08      | 105.80   |
| 1   | 2     | 590  | C    | C5-C6-N1   | 6.79  | 124.39      | 121.00   |
| 1   | 2     | 139  | C    | P-O3'-C3'  | 6.79  | 127.84      | 119.70   |
| 1   | 2     | 782  | U    | C5-C6-N1   | 6.79  | 126.09      | 122.70   |
| 36  | LA    | 1155 | C    | N1-C2-O2   | 6.79  | 122.97      | 118.90   |
| 36  | LA    | 3057 | U    | N3-C2-O2   | -6.79 | 117.45      | 122.20   |
| 36  | LA    | 982  | C    | C6-N1-C2   | -6.78 | 117.59      | 120.30   |
| 80  | Sm    | 32   | C    | C5-C6-N1   | 6.78  | 124.39      | 121.00   |
| 1   | 2     | 517  | U    | N1-C2-O2   | 6.77  | 127.54      | 122.80   |
| 36  | LA    | 881  | C    | C6-N1-C2   | -6.77 | 117.59      | 120.30   |
| 54  | Lm    | 41   | ASP  | CB-CG-OD1  | 6.77  | 124.39      | 118.30   |
| 1   | 2     | 453  | U    | C6-N1-C2   | -6.76 | 116.94      | 121.00   |
| 36  | LA    | 886  | C    | C6-N1-C2   | -6.76 | 117.59      | 120.30   |
| 1   | 2     | 1115 | U    | N1-C2-O2   | 6.76  | 127.53      | 122.80   |
| 36  | LA    | 3306 | U    | N1-C2-O2   | 6.76  | 127.53      | 122.80   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1201 | G    | OP1-P-O3'  | 6.75  | 120.05      | 105.20   |
| 36  | LA    | 2496 | C    | C2-N1-C1'  | 6.75  | 126.22      | 118.80   |
| 1   | 2     | 1458 | G    | N3-C4-N9   | 6.74  | 130.05      | 126.00   |
| 36  | LA    | 1869 | C    | C6-N1-C2   | -6.74 | 117.60      | 120.30   |
| 1   | 2     | 185  | U    | N3-C2-O2   | -6.74 | 117.48      | 122.20   |
| 1   | 2     | 394  | C    | C5-C6-N1   | 6.74  | 124.37      | 121.00   |
| 9   | B     | 25   | LEU  | CA-CB-CG   | 6.73  | 130.79      | 115.30   |
| 14  | C     | 46   | LEU  | CA-CB-CG   | -6.73 | 99.82       | 115.30   |
| 1   | 2     | 183  | U    | C5-C6-N1   | 6.73  | 126.07      | 122.70   |
| 37  | LB    | 78   | U    | C5-C6-N1   | 6.73  | 126.06      | 122.70   |
| 36  | LA    | 397  | A    | O4'-C1'-N9 | -6.72 | 102.82      | 108.20   |
| 36  | LA    | 3195 | U    | N1-C2-O2   | 6.72  | 127.51      | 122.80   |
| 1   | 2     | 1186 | U    | O5'-P-OP2  | -6.71 | 99.66       | 105.70   |
| 1   | 2     | 1314 | U    | OP2-P-O3'  | 6.71  | 119.97      | 105.20   |
| 80  | Sm    | 71   | C    | C6-N1-C2   | -6.71 | 117.62      | 120.30   |
| 1   | 2     | 1274 | C    | P-O3'-C3'  | 6.71  | 127.75      | 119.70   |
| 36  | LA    | 1604 | G    | C8-N9-C1'  | -6.71 | 118.28      | 127.00   |
| 1   | 2     | 614  | C    | C5-C6-N1   | 6.70  | 124.35      | 121.00   |
| 1   | 2     | 640  | U    | P-O3'-C3'  | 6.70  | 127.74      | 119.70   |
| 21  | H     | 14   | ILE  | CG1-CB-CG2 | -6.70 | 96.66       | 111.40   |
| 36  | LA    | 2531 | C    | N3-C2-O2   | -6.70 | 117.21      | 121.90   |
| 38  | LC    | 55   | U    | C5-C6-N1   | 6.70  | 126.05      | 122.70   |
| 36  | LA    | 13   | A    | OP2-P-O3'  | 6.69  | 119.92      | 105.20   |
| 1   | 2     | 530  | C    | N1-C2-O2   | 6.69  | 122.91      | 118.90   |
| 1   | 2     | 625  | C    | C6-N1-C2   | -6.69 | 117.62      | 120.30   |
| 42  | LG    | 110  | LEU  | CB-CG-CD1  | 6.69  | 122.37      | 111.00   |
| 1   | 2     | 629  | U    | N1-C2-O2   | 6.69  | 127.48      | 122.80   |
| 36  | LA    | 803  | C    | C5-C6-N1   | 6.68  | 124.34      | 121.00   |
| 36  | LA    | 3089 | C    | C6-N1-C2   | -6.68 | 117.63      | 120.30   |
| 1   | 2     | 1414 | U    | N1-C2-O2   | 6.68  | 127.48      | 122.80   |
| 1   | 2     | 1381 | U    | C2-N1-C1'  | 6.68  | 125.71      | 117.70   |
| 1   | 2     | 1389 | C    | C6-N1-C1'  | -6.67 | 112.79      | 120.80   |
| 1   | 2     | 1573 | A    | P-O3'-C3'  | 6.67  | 127.70      | 119.70   |
| 1   | 2     | 405  | C    | C6-N1-C2   | -6.67 | 117.63      | 120.30   |
| 36  | LA    | 2446 | U    | C6-N1-C2   | -6.67 | 117.00      | 121.00   |
| 36  | LA    | 2495 | C    | N3-C2-O2   | -6.67 | 117.23      | 121.90   |
| 36  | LA    | 2756 | C    | C6-N1-C2   | -6.67 | 117.63      | 120.30   |
| 36  | LA    | 2389 | C    | C5-C6-N1   | 6.67  | 124.33      | 121.00   |
| 36  | LA    | 1263 | A    | C8-N9-C4   | -6.67 | 103.13      | 105.80   |
| 1   | 2     | 1799 | U    | N1-C2-O2   | 6.66  | 127.46      | 122.80   |
| 1   | 2     | 1523 | G    | C8-N9-C1'  | -6.66 | 118.34      | 127.00   |
| 1   | 2     | 1148 | C    | C6-N1-C2   | -6.66 | 117.64      | 120.30   |

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| Mol | Chain | Res   | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-------|------|------------|-------|-------------|----------|
| 1   | 2     | 1489  | U    | C2-N1-C1'  | 6.66  | 125.69      | 117.70   |
| 1   | 2     | 1273  | G    | OP2-P-O3'  | 6.65  | 119.84      | 105.20   |
| 1   | 2     | 1527  | C    | C5-C6-N1   | 6.65  | 124.33      | 121.00   |
| 36  | LA    | 2600  | C    | C5-C6-N1   | 6.65  | 124.33      | 121.00   |
| 1   | 2     | 479   | C    | C6-N1-C2   | -6.65 | 117.64      | 120.30   |
| 36  | LA    | 543   | C    | N3-C2-O2   | -6.65 | 117.25      | 121.90   |
| 36  | LA    | 1660  | C    | C5-C6-N1   | 6.65  | 124.32      | 121.00   |
| 36  | LA    | 2137  | U    | C2-N1-C1'  | 6.64  | 125.67      | 117.70   |
| 1   | 2     | 864   | U    | N3-C2-O2   | -6.64 | 117.55      | 122.20   |
| 1   | 2     | 1633  | A    | OP2-P-O3'  | 6.64  | 119.81      | 105.20   |
| 11  | U     | 158   | ASP  | CB-CG-OD1  | 6.64  | 124.28      | 118.30   |
| 36  | LA    | 1608  | C    | C5-C6-N1   | 6.64  | 124.32      | 121.00   |
| 51  | LP    | 113   | LEU  | CA-CB-CG   | 6.64  | 130.57      | 115.30   |
| 1   | 2     | 1497  | U    | N1-C2-O2   | 6.63  | 127.44      | 122.80   |
| 1   | 2     | 433   | C    | C6-N1-C2   | -6.63 | 117.65      | 120.30   |
| 36  | LA    | 311   | C    | C6-N1-C2   | -6.63 | 117.65      | 120.30   |
| 36  | LA    | 2960  | C    | C6-N1-C2   | -6.62 | 117.65      | 120.30   |
| 19  | F     | 52    | LEU  | CA-CB-CG   | 6.61  | 130.50      | 115.30   |
| 36  | LA    | 1788  | C    | C5-C6-N1   | 6.61  | 124.31      | 121.00   |
| 1   | 2     | 849   | C    | C5-C6-N1   | 6.61  | 124.30      | 121.00   |
| 52  | LQ    | 84[A] | LEU  | CB-CG-CD1  | -6.61 | 99.77       | 111.00   |
| 36  | LA    | 444   | U    | C6-N1-C2   | -6.61 | 117.04      | 121.00   |
| 36  | LA    | 1349  | G    | C8-N9-C1'  | -6.61 | 118.41      | 127.00   |
| 36  | LA    | 2281  | A    | O4'-C1'-N9 | 6.61  | 113.48      | 108.20   |
| 1   | 2     | 1389  | C    | C5-C6-N1   | 6.60  | 124.30      | 121.00   |
| 42  | LG    | 163   | LEU  | CB-CG-CD2  | -6.60 | 99.78       | 111.00   |
| 1   | 2     | 965   | U    | C6-N1-C1'  | -6.60 | 111.96      | 121.20   |
| 1   | 2     | 1251  | U    | P-O3'-C3'  | 6.60  | 127.62      | 119.70   |
| 36  | LA    | 42    | C    | C5-C6-N1   | 6.60  | 124.30      | 121.00   |
| 36  | LA    | 3214  | U    | N3-C2-O2   | -6.59 | 117.59      | 122.20   |
| 1   | 2     | 911   | U    | N1-C2-O2   | 6.59  | 127.41      | 122.80   |
| 5   | E     | 25    | LEU  | CA-CB-CG   | 6.58  | 130.44      | 115.30   |
| 36  | LA    | 2112  | U    | OP2-P-O3'  | 6.57  | 119.66      | 105.20   |
| 36  | LA    | 379   | C    | C5-C6-N1   | 6.57  | 124.28      | 121.00   |
| 1   | 2     | 494   | U    | C2-N1-C1'  | 6.57  | 125.58      | 117.70   |
| 1   | 2     | 1063  | U    | N1-C2-O2   | 6.57  | 127.40      | 122.80   |
| 36  | LA    | 2495  | C    | C2-N1-C1'  | 6.57  | 126.02      | 118.80   |
| 36  | LA    | 2422  | C    | C5-C6-N1   | 6.56  | 124.28      | 121.00   |
| 36  | LA    | 2737  | C    | C6-N1-C2   | -6.56 | 117.67      | 120.30   |
| 36  | LA    | 3155  | U    | N3-C2-O2   | -6.56 | 117.61      | 122.20   |
| 36  | LA    | 2842  | U    | N1-C2-O2   | 6.56  | 127.39      | 122.80   |
| 1   | 2     | 186   | C    | C6-N1-C2   | -6.56 | 117.68      | 120.30   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 80  | Sn    | 46   | G    | O4'-C1'-N9 | 6.55  | 113.44      | 108.20   |
| 36  | LA    | 1854 | C    | C5-C6-N1   | 6.55  | 124.28      | 121.00   |
| 1   | 2     | 1584 | G    | P-O3'-C3'  | 6.54  | 127.55      | 119.70   |
| 36  | LA    | 87   | U    | C2-N1-C1'  | 6.54  | 125.55      | 117.70   |
| 36  | LA    | 2132 | C    | N3-C2-O2   | -6.54 | 117.32      | 121.90   |
| 80  | Sn    | 3    | C    | C6-N1-C2   | -6.54 | 117.68      | 120.30   |
| 1   | 2     | 874  | C    | C5-C6-N1   | 6.54  | 124.27      | 121.00   |
| 36  | LA    | 3195 | U    | C2-N1-C1'  | 6.54  | 125.55      | 117.70   |
| 36  | LA    | 2550 | U    | N3-C2-O2   | -6.53 | 117.63      | 122.20   |
| 36  | LA    | 3034 | C    | N1-C2-O2   | 6.53  | 122.82      | 118.90   |
| 36  | LA    | 931  | C    | C6-N1-C2   | -6.53 | 117.69      | 120.30   |
| 36  | LA    | 1684 | U    | N3-C2-O2   | -6.53 | 117.63      | 122.20   |
| 36  | LA    | 118  | U    | N3-C2-O2   | -6.53 | 117.63      | 122.20   |
| 36  | LA    | 3058 | U    | N1-C2-O2   | 6.52  | 127.37      | 122.80   |
| 36  | LA    | 2504 | U    | P-O3'-C3'  | 6.52  | 127.53      | 119.70   |
| 36  | LA    | 1819 | U    | C2-N1-C1'  | 6.52  | 125.52      | 117.70   |
| 16  | D     | 88   | LEU  | CA-CB-CG   | 6.51  | 130.28      | 115.30   |
| 36  | LA    | 1155 | C    | C2-N1-C1'  | 6.51  | 125.96      | 118.80   |
| 36  | LA    | 524  | U    | N3-C2-O2   | -6.51 | 117.64      | 122.20   |
| 36  | LA    | 675  | C    | C6-N1-C2   | -6.50 | 117.70      | 120.30   |
| 36  | LA    | 2553 | U    | C2-N1-C1'  | 6.50  | 125.50      | 117.70   |
| 1   | 2     | 1145 | U    | C6-N1-C1'  | -6.50 | 112.10      | 121.20   |
| 36  | LA    | 283  | G    | N3-C4-N9   | 6.50  | 129.90      | 126.00   |
| 36  | LA    | 2151 | C    | C6-N1-C2   | -6.50 | 117.70      | 120.30   |
| 1   | 2     | 141  | U    | P-O3'-C3'  | 6.49  | 127.48      | 119.70   |
| 1   | 2     | 294  | C    | C6-N1-C2   | -6.49 | 117.70      | 120.30   |
| 36  | LA    | 609  | G    | OP2-P-O3'  | 6.49  | 119.47      | 105.20   |
| 80  | Sn    | 34   | C    | N1-C2-O2   | 6.48  | 122.79      | 118.90   |
| 36  | LA    | 1276 | U    | C6-N1-C2   | -6.48 | 117.11      | 121.00   |
| 36  | LA    | 2189 | U    | N3-C2-O2   | -6.48 | 117.67      | 122.20   |
| 80  | Sn    | 72   | U    | N1-C2-O2   | 6.48  | 127.33      | 122.80   |
| 36  | LA    | 1556 | C    | C6-N1-C2   | -6.48 | 117.71      | 120.30   |
| 36  | LA    | 1562 | C    | P-O3'-C3'  | 6.48  | 127.47      | 119.70   |
| 1   | 2     | 794  | U    | N3-C2-O2   | -6.47 | 117.67      | 122.20   |
| 36  | LA    | 1579 | C    | N1-C2-O2   | 6.47  | 122.78      | 118.90   |
| 1   | 2     | 1620 | C    | C2-N1-C1'  | 6.47  | 125.92      | 118.80   |
| 36  | LA    | 954  | U    | N3-C2-O2   | -6.47 | 117.67      | 122.20   |
| 1   | 2     | 1180 | C    | C6-N1-C2   | -6.47 | 117.71      | 120.30   |
| 36  | LA    | 2992 | U    | N3-C2-O2   | -6.46 | 117.68      | 122.20   |
| 1   | 2     | 572  | C    | C6-N1-C2   | -6.46 | 117.72      | 120.30   |
| 36  | LA    | 979  | U    | N3-C2-O2   | -6.46 | 117.68      | 122.20   |
| 36  | LA    | 2763 | U    | N3-C2-O2   | -6.46 | 117.68      | 122.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 553  | G    | C8-N9-C1'  | 6.46  | 135.40      | 127.00   |
| 1   | 2     | 184  | C    | C6-N1-C2   | -6.46 | 117.72      | 120.30   |
| 1   | 2     | 538  | A    | O4'-C1'-N9 | -6.46 | 103.03      | 108.20   |
| 1   | 2     | 1458 | G    | C8-N9-C1'  | -6.46 | 118.60      | 127.00   |
| 36  | LA    | 957  | C    | C5-C6-N1   | 6.46  | 124.23      | 121.00   |
| 36  | LA    | 1660 | C    | C6-N1-C2   | -6.46 | 117.72      | 120.30   |
| 1   | 2     | 1220 | C    | C6-N1-C2   | -6.46 | 117.72      | 120.30   |
| 37  | LB    | 98   | C    | C5-C6-N1   | 6.46  | 124.23      | 121.00   |
| 36  | LA    | 3155 | U    | N1-C2-O2   | 6.45  | 127.32      | 122.80   |
| 36  | LA    | 2842 | U    | N3-C2-O2   | -6.45 | 117.69      | 122.20   |
| 38  | LC    | 151  | C    | C6-N1-C2   | -6.45 | 117.72      | 120.30   |
| 36  | LA    | 3218 | A    | P-O3'-C3'  | 6.45  | 127.44      | 119.70   |
| 36  | LA    | 2100 | A    | O4'-C1'-N9 | 6.44  | 113.36      | 108.20   |
| 36  | LA    | 3235 | C    | C2-N1-C1'  | 6.44  | 125.89      | 118.80   |
| 1   | 2     | 500  | C    | N1-C2-O2   | 6.44  | 122.76      | 118.90   |
| 1   | 2     | 262  | U    | C2-N1-C1'  | 6.44  | 125.42      | 117.70   |
| 1   | 2     | 283  | U    | N1-C2-O2   | 6.43  | 127.30      | 122.80   |
| 36  | LA    | 1146 | C    | C6-N1-C2   | -6.43 | 117.73      | 120.30   |
| 42  | LG    | 236  | LEU  | CA-CB-CG   | 6.43  | 130.09      | 115.30   |
| 1   | 2     | 1010 | C    | C5-C6-N1   | 6.43  | 124.21      | 121.00   |
| 1   | 2     | 614  | C    | C6-N1-C2   | -6.42 | 117.73      | 120.30   |
| 1   | 2     | 656  | G    | C8-N9-C1'  | -6.42 | 118.65      | 127.00   |
| 80  | Sm    | 32   | C    | C6-N1-C2   | -6.42 | 117.73      | 120.30   |
| 81  | EF    | 418  | PRO  | N-CA-CB    | 6.42  | 111.00      | 103.30   |
| 38  | LC    | 141  | C    | C6-N1-C2   | -6.41 | 117.73      | 120.30   |
| 36  | LA    | 2146 | C    | C5-C6-N1   | 6.41  | 124.21      | 121.00   |
| 36  | LA    | 2867 | C    | C6-N1-C2   | -6.41 | 117.74      | 120.30   |
| 36  | LA    | 966  | U    | C5-C6-N1   | 6.41  | 125.90      | 122.70   |
| 36  | LA    | 2622 | C    | N1-C2-O2   | 6.40  | 122.74      | 118.90   |
| 1   | 2     | 185  | U    | N1-C2-O2   | 6.40  | 127.28      | 122.80   |
| 36  | LA    | 1540 | U    | N3-C2-O2   | -6.40 | 117.72      | 122.20   |
| 1   | 2     | 1010 | C    | C6-N1-C2   | -6.40 | 117.74      | 120.30   |
| 1   | 2     | 139  | C    | OP2-P-O3'  | 6.39  | 119.27      | 105.20   |
| 1   | 2     | 1754 | A    | O4'-C1'-N9 | -6.39 | 103.09      | 108.20   |
| 80  | Sm    | 40   | C    | N3-C2-O2   | -6.39 | 117.43      | 121.90   |
| 18  | Z     | 66   | ASP  | CB-CG-OD1  | 6.39  | 124.05      | 118.30   |
| 1   | 2     | 120  | U    | C2-N1-C1'  | 6.39  | 125.36      | 117.70   |
| 80  | Sn    | 25   | C    | C6-N1-C2   | -6.38 | 117.75      | 120.30   |
| 1   | 2     | 517  | U    | N3-C2-O2   | -6.38 | 117.73      | 122.20   |
| 1   | 2     | 555  | A    | C4-N9-C1'  | 6.38  | 137.79      | 126.30   |
| 19  | F     | 96   | TYR  | CB-CG-CD2  | 6.38  | 124.83      | 121.00   |
| 1   | 2     | 645  | C    | C5-C6-N1   | 6.38  | 124.19      | 121.00   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 37  | LB    | 58   | C    | C5-C6-N1  | 6.38  | 124.19      | 121.00   |
| 1   | 2     | 1556 | A    | P-O3'-C3' | 6.37  | 127.35      | 119.70   |
| 1   | 2     | 1066 | C    | C6-N1-C2  | -6.37 | 117.75      | 120.30   |
| 36  | LA    | 1820 | U    | P-O3'-C3' | 6.37  | 127.34      | 119.70   |
| 36  | LA    | 2714 | G    | N3-C4-C5  | 6.37  | 131.78      | 128.60   |
| 36  | LA    | 2765 | C    | C6-N1-C2  | -6.36 | 117.75      | 120.30   |
| 68  | La    | 4    | LEU  | CA-CB-CG  | 6.36  | 129.94      | 115.30   |
| 1   | 2     | 186  | C    | N3-C2-O2  | -6.36 | 117.45      | 121.90   |
| 8   | S     | 193  | GLY  | N-CA-C    | 6.36  | 129.00      | 113.10   |
| 36  | LA    | 354  | U    | N1-C2-O2  | 6.36  | 127.25      | 122.80   |
| 36  | LA    | 3097 | C    | C5-C6-N1  | 6.36  | 124.18      | 121.00   |
| 36  | LA    | 2132 | C    | N1-C2-O2  | 6.36  | 122.71      | 118.90   |
| 1   | 2     | 1527 | C    | C6-N1-C2  | -6.36 | 117.76      | 120.30   |
| 36  | LA    | 2763 | U    | N1-C2-O2  | 6.35  | 127.25      | 122.80   |
| 1   | 2     | 313  | U    | P-O3'-C3' | 6.35  | 127.32      | 119.70   |
| 1   | 2     | 705  | U    | P-O3'-C3' | 6.35  | 127.32      | 119.70   |
| 1   | 2     | 1756 | A    | P-O3'-C3' | 6.35  | 127.32      | 119.70   |
| 36  | LA    | 573  | C    | C6-N1-C2  | -6.35 | 117.76      | 120.30   |
| 36  | LA    | 2773 | C    | C6-N1-C2  | -6.35 | 117.76      | 120.30   |
| 1   | 2     | 1585 | U    | C5-C6-N1  | 6.35  | 125.87      | 122.70   |
| 38  | LC    | 30   | C    | C6-N1-C2  | -6.34 | 117.77      | 120.30   |
| 36  | LA    | 543  | C    | N1-C2-O2  | 6.33  | 122.70      | 118.90   |
| 1   | 2     | 387  | A    | P-O3'-C3' | 6.33  | 127.30      | 119.70   |
| 1   | 2     | 1307 | U    | N3-C2-O2  | -6.33 | 117.77      | 122.20   |
| 36  | LA    | 2256 | A    | O5'-P-OP2 | -6.33 | 100.00      | 105.70   |
| 80  | Sn    | 32   | C    | N1-C2-O2  | 6.33  | 122.70      | 118.90   |
| 1   | 2     | 1033 | C    | C6-N1-C2  | -6.33 | 117.77      | 120.30   |
| 36  | LA    | 3300 | U    | N3-C2-O2  | -6.33 | 117.77      | 122.20   |
| 1   | 2     | 758  | U    | N1-C2-O2  | 6.33  | 127.23      | 122.80   |
| 36  | LA    | 3277 | U    | C2-N1-C1' | 6.33  | 125.29      | 117.70   |
| 1   | 2     | 1799 | U    | N3-C2-O2  | -6.32 | 117.77      | 122.20   |
| 36  | LA    | 1556 | C    | N3-C2-O2  | -6.32 | 117.47      | 121.90   |
| 36  | LA    | 3111 | U    | C5-C6-N1  | 6.32  | 125.86      | 122.70   |
| 1   | 2     | 1389 | C    | C6-N1-C2  | -6.32 | 117.77      | 120.30   |
| 36  | LA    | 271  | C    | N3-C2-O2  | -6.32 | 117.48      | 121.90   |
| 36  | LA    | 2585 | G    | N3-C4-N9  | 6.32  | 129.79      | 126.00   |
| 36  | LA    | 1583 | A    | O5'-P-OP1 | -6.32 | 100.02      | 105.70   |
| 1   | 2     | 755  | A    | P-O3'-C3' | 6.32  | 127.28      | 119.70   |
| 36  | LA    | 1155 | C    | C6-N1-C2  | -6.32 | 117.77      | 120.30   |
| 38  | LC    | 100  | U    | N1-C2-O2  | 6.31  | 127.22      | 122.80   |
| 42  | LG    | 272  | TYR  | CB-CG-CD2 | 6.31  | 124.78      | 121.00   |
| 36  | LA    | 2795 | U    | O5'-P-OP2 | -6.30 | 100.03      | 105.70   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 656  | G    | N3-C4-N9   | 6.30  | 129.78      | 126.00   |
| 1   | 2     | 928  | U    | P-O3'-C3'  | 6.30  | 127.26      | 119.70   |
| 36  | LA    | 969  | C    | N1-C2-O2   | 6.30  | 122.68      | 118.90   |
| 36  | LA    | 1525 | G    | C4-N9-C1'  | 6.30  | 134.69      | 126.50   |
| 1   | 2     | 1596 | C    | N3-C2-O2   | -6.29 | 117.50      | 121.90   |
| 36  | LA    | 1496 | C    | N1-C2-O2   | 6.29  | 122.68      | 118.90   |
| 36  | LA    | 2378 | C    | C2-N1-C1'  | 6.29  | 125.72      | 118.80   |
| 1   | 2     | 1439 | C    | C6-N1-C2   | -6.29 | 117.78      | 120.30   |
| 36  | LA    | 1355 | A    | P-O3'-C3'  | 6.29  | 127.25      | 119.70   |
| 36  | LA    | 1722 | U    | N3-C2-O2   | -6.29 | 117.80      | 122.20   |
| 37  | LB    | 39   | C    | C6-N1-C2   | -6.29 | 117.78      | 120.30   |
| 1   | 2     | 1557 | U    | P-O3'-C3'  | 6.29  | 127.25      | 119.70   |
| 36  | LA    | 1115 | G    | O5'-P-OP1  | -6.28 | 100.05      | 105.70   |
| 1   | 2     | 394  | C    | C6-N1-C2   | -6.28 | 117.79      | 120.30   |
| 1   | 2     | 1657 | U    | C2-N1-C1'  | 6.28  | 125.24      | 117.70   |
| 36  | LA    | 2899 | C    | C2-N1-C1'  | 6.28  | 125.71      | 118.80   |
| 38  | LC    | 26   | U    | C5-C6-N1   | 6.28  | 125.84      | 122.70   |
| 36  | LA    | 1448 | U    | C2-N1-C1'  | 6.28  | 125.23      | 117.70   |
| 36  | LA    | 1604 | G    | C6-C5-N7   | -6.28 | 126.63      | 130.40   |
| 1   | 2     | 583  | C    | C5-C6-N1   | 6.28  | 124.14      | 121.00   |
| 1   | 2     | 1082 | C    | N3-C2-O2   | -6.27 | 117.51      | 121.90   |
| 36  | LA    | 743  | C    | C6-N1-C2   | -6.27 | 117.79      | 120.30   |
| 1   | 2     | 765  | G    | O4'-C1'-N9 | 6.27  | 113.21      | 108.20   |
| 36  | LA    | 2137 | U    | O4'-C1'-N1 | 6.27  | 113.21      | 108.20   |
| 1   | 2     | 1389 | C    | N3-C2-O2   | -6.27 | 117.51      | 121.90   |
| 1   | 2     | 803  | A    | P-O3'-C3'  | 6.26  | 127.22      | 119.70   |
| 36  | LA    | 861  | C    | C5-C6-N1   | 6.26  | 124.13      | 121.00   |
| 36  | LA    | 1097 | G    | P-O3'-C3'  | 6.26  | 127.22      | 119.70   |
| 1   | 2     | 1585 | U    | N3-C2-O2   | -6.26 | 117.82      | 122.20   |
| 36  | LA    | 963  | G    | C6-C5-N7   | -6.26 | 126.65      | 130.40   |
| 1   | 2     | 1620 | C    | N3-C2-O2   | -6.25 | 117.53      | 121.90   |
| 1   | 2     | 736  | C    | N1-C2-O2   | 6.24  | 122.64      | 118.90   |
| 36  | LA    | 191  | U    | O5'-P-OP2  | -6.24 | 100.08      | 105.70   |
| 36  | LA    | 1685 | C    | C6-N1-C2   | -6.24 | 117.80      | 120.30   |
| 36  | LA    | 1951 | C    | C6-N1-C2   | -6.24 | 117.81      | 120.30   |
| 1   | 2     | 583  | C    | N1-C2-O2   | 6.24  | 122.64      | 118.90   |
| 80  | Sm    | 56   | C    | N1-C2-O2   | 6.23  | 122.64      | 118.90   |
| 1   | 2     | 552  | G    | N3-C4-N9   | 6.23  | 129.74      | 126.00   |
| 36  | LA    | 1516 | C    | C6-N1-C2   | -6.23 | 117.81      | 120.30   |
| 36  | LA    | 1858 | A    | O4'-C1'-N9 | 6.23  | 113.18      | 108.20   |
| 36  | LA    | 3259 | U    | C5-C6-N1   | 6.22  | 125.81      | 122.70   |
| 36  | LA    | 492  | C    | N3-C2-O2   | -6.22 | 117.55      | 121.90   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 469  | C    | C6-N1-C2   | -6.22 | 117.81      | 120.30   |
| 1   | 2     | 736  | C    | N3-C2-O2   | -6.22 | 117.55      | 121.90   |
| 36  | LA    | 3222 | U    | C5-C6-N1   | 6.22  | 125.81      | 122.70   |
| 36  | LA    | 915  | A    | C4-N9-C1'  | 6.21  | 137.49      | 126.30   |
| 36  | LA    | 1580 | A    | O4'-C1'-N9 | 6.21  | 113.17      | 108.20   |
| 36  | LA    | 2444 | C    | N1-C2-O2   | 6.21  | 122.63      | 118.90   |
| 36  | LA    | 3269 | U    | P-O3'-C3'  | 6.21  | 127.15      | 119.70   |
| 1   | 2     | 453  | U    | C2-N1-C1'  | 6.21  | 125.15      | 117.70   |
| 80  | Sm    | 5    | C    | N1-C2-O2   | 6.21  | 122.62      | 118.90   |
| 36  | LA    | 3084 | C    | C6-N1-C2   | -6.21 | 117.82      | 120.30   |
| 1   | 2     | 185  | U    | C6-N1-C2   | -6.20 | 117.28      | 121.00   |
| 36  | LA    | 2984 | C    | C5-C6-N1   | 6.20  | 124.10      | 121.00   |
| 1   | 2     | 767  | U    | N3-C2-O2   | -6.20 | 117.86      | 122.20   |
| 1   | 2     | 794  | U    | N1-C2-O2   | 6.20  | 127.14      | 122.80   |
| 1   | 2     | 861  | U    | C6-N1-C1'  | -6.20 | 112.52      | 121.20   |
| 16  | D     | 28   | LEU  | CA-CB-CG   | 6.20  | 129.56      | 115.30   |
| 36  | LA    | 3217 | C    | C2-N3-C4   | 6.20  | 123.00      | 119.90   |
| 80  | Sm    | 3    | C    | C6-N1-C2   | -6.20 | 117.82      | 120.30   |
| 1   | 2     | 1207 | C    | P-O3'-C3'  | 6.20  | 127.14      | 119.70   |
| 1   | 2     | 262  | U    | N3-C2-O2   | -6.19 | 117.86      | 122.20   |
| 36  | LA    | 1227 | C    | N3-C2-O2   | -6.19 | 117.56      | 121.90   |
| 56  | Lo    | 109  | ASP  | CB-CG-OD1  | 6.19  | 123.87      | 118.30   |
| 36  | LA    | 1878 | G    | C4-N9-C1'  | 6.18  | 134.54      | 126.50   |
| 1   | 2     | 1145 | U    | N1-C2-O2   | 6.18  | 127.13      | 122.80   |
| 18  | Z     | 27   | PHE  | CB-CG-CD1  | 6.18  | 125.12      | 120.80   |
| 1   | 2     | 1596 | C    | C2-N1-C1'  | 6.18  | 125.60      | 118.80   |
| 36  | LA    | 544  | C    | N1-C2-O2   | 6.18  | 122.61      | 118.90   |
| 36  | LA    | 3214 | U    | N1-C2-O2   | 6.17  | 127.12      | 122.80   |
| 1   | 2     | 185  | U    | C5-C6-N1   | 6.17  | 125.78      | 122.70   |
| 1   | 2     | 405  | C    | C5-C6-N1   | 6.17  | 124.08      | 121.00   |
| 36  | LA    | 2594 | C    | C2-N1-C1'  | 6.17  | 125.59      | 118.80   |
| 36  | LA    | 288  | C    | C6-N1-C2   | -6.17 | 117.83      | 120.30   |
| 80  | Sm    | 40   | C    | N1-C2-O2   | 6.17  | 122.60      | 118.90   |
| 1   | 2     | 767  | U    | C2-N1-C1'  | 6.16  | 125.09      | 117.70   |
| 36  | LA    | 702  | C    | C6-N1-C2   | -6.16 | 117.84      | 120.30   |
| 1   | 2     | 864  | U    | N1-C2-O2   | 6.16  | 127.11      | 122.80   |
| 1   | 2     | 1172 | G    | N7-C8-N9   | 6.16  | 116.18      | 113.10   |
| 37  | LB    | 100  | C    | C6-N1-C2   | -6.16 | 117.84      | 120.30   |
| 1   | 2     | 499  | U    | C6-N1-C2   | -6.15 | 117.31      | 121.00   |
| 36  | LA    | 1208 | U    | N3-C2-O2   | -6.15 | 117.89      | 122.20   |
| 36  | LA    | 2638 | C    | N1-C2-O2   | 6.15  | 122.59      | 118.90   |
| 36  | LA    | 2322 | C    | C6-N1-C2   | -6.14 | 117.84      | 120.30   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 1578 | C    | C5-C6-N1   | 6.14  | 124.07      | 121.00   |
| 37  | LB    | 78   | U    | C2-N1-C1'  | 6.14  | 125.07      | 117.70   |
| 36  | LA    | 297  | G    | O4'-C1'-N9 | 6.13  | 113.11      | 108.20   |
| 36  | LA    | 911  | C    | C6-N1-C2   | -6.13 | 117.85      | 120.30   |
| 1   | 2     | 1568 | C    | C6-N1-C2   | -6.13 | 117.85      | 120.30   |
| 36  | LA    | 1835 | A    | C6-N1-C2   | 6.13  | 122.28      | 118.60   |
| 80  | Sn    | 72   | U    | N3-C2-O2   | -6.12 | 117.92      | 122.20   |
| 1   | 2     | 1494 | C    | C6-N1-C2   | -6.12 | 117.85      | 120.30   |
| 36  | LA    | 2237 | C    | N1-C2-O2   | 6.12  | 122.57      | 118.90   |
| 36  | LA    | 2773 | C    | C5-C6-N1   | 6.12  | 124.06      | 121.00   |
| 36  | LA    | 1307 | G    | P-O3'-C3'  | 6.12  | 127.04      | 119.70   |
| 1   | 2     | 267  | U    | N3-C2-O2   | -6.12 | 117.92      | 122.20   |
| 36  | LA    | 1604 | G    | C4-C5-N7   | 6.12  | 113.25      | 110.80   |
| 55  | Ln    | 155  | LEU  | CA-CB-CG   | 6.12  | 129.37      | 115.30   |
| 1   | 2     | 453  | U    | N1-C2-O2   | 6.11  | 127.08      | 122.80   |
| 1   | 2     | 1458 | G    | C8-N9-C4   | -6.11 | 103.96      | 106.40   |
| 36  | LA    | 1901 | A    | C8-N9-C4   | -6.11 | 103.36      | 105.80   |
| 36  | LA    | 271  | C    | N1-C2-O2   | 6.10  | 122.56      | 118.90   |
| 36  | LA    | 818  | C    | C5-C6-N1   | 6.10  | 124.05      | 121.00   |
| 36  | LA    | 36   | C    | C6-N1-C2   | -6.10 | 117.86      | 120.30   |
| 36  | LA    | 427  | C    | C6-N1-C2   | -6.10 | 117.86      | 120.30   |
| 36  | LA    | 3309 | G    | N3-C4-N9   | 6.10  | 129.66      | 126.00   |
| 1   | 2     | 1115 | U    | N3-C2-O2   | -6.10 | 117.93      | 122.20   |
| 36  | LA    | 118  | U    | C2-N1-C1'  | 6.10  | 125.02      | 117.70   |
| 36  | LA    | 1604 | G    | N3-C4-C5   | -6.10 | 125.55      | 128.60   |
| 36  | LA    | 152  | U    | O5'-P-OP2  | -6.09 | 100.22      | 105.70   |
| 36  | LA    | 2551 | U    | C2-N1-C1'  | 6.09  | 125.01      | 117.70   |
| 80  | Sn    | 72   | U    | C2-N1-C1'  | 6.09  | 125.01      | 117.70   |
| 1   | 2     | 766  | U    | C2-N1-C1'  | 6.09  | 125.00      | 117.70   |
| 1   | 2     | 553  | G    | N1-C6-O6   | -6.09 | 116.25      | 119.90   |
| 36  | LA    | 3096 | C    | C6-N1-C2   | -6.09 | 117.86      | 120.30   |
| 1   | 2     | 184  | C    | C5-C6-N1   | 6.08  | 124.04      | 121.00   |
| 1   | 2     | 323  | A    | C8-N9-C4   | -6.08 | 103.37      | 105.80   |
| 38  | LC    | 35   | C    | C5-C6-N1   | 6.08  | 124.04      | 121.00   |
| 1   | 2     | 553  | G    | C4-C5-N7   | -6.08 | 108.37      | 110.80   |
| 36  | LA    | 1283 | C    | C6-N1-C2   | -6.08 | 117.87      | 120.30   |
| 80  | Sn    | 34   | C    | N3-C2-O2   | -6.08 | 117.64      | 121.90   |
| 1   | 2     | 388  | G    | O5'-P-OP1  | -6.08 | 100.23      | 105.70   |
| 25  | b     | 93   | LEU  | CA-CB-CG   | 6.08  | 129.27      | 115.30   |
| 36  | LA    | 2683 | U    | N3-C2-O2   | -6.08 | 117.95      | 122.20   |
| 47  | LL    | 102  | MET  | CG-SD-CE   | 6.07  | 109.92      | 100.20   |
| 36  | LA    | 50   | U    | N3-C2-O2   | -6.07 | 117.95      | 122.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 2257 | C    | O5'-P-OP2  | -6.07 | 100.24      | 105.70   |
| 36  | LA    | 2137 | U    | C5-C6-N1   | 6.07  | 125.73      | 122.70   |
| 1   | 2     | 992  | A    | C5-N7-C8   | -6.07 | 100.87      | 103.90   |
| 1   | 2     | 1024 | U    | C6-N1-C2   | -6.07 | 117.36      | 121.00   |
| 1   | 2     | 1528 | U    | N3-C2-O2   | -6.07 | 117.95      | 122.20   |
| 1   | 2     | 1500 | C    | C6-N1-C2   | -6.06 | 117.87      | 120.30   |
| 1   | 2     | 1075 | C    | C6-N1-C2   | -6.06 | 117.88      | 120.30   |
| 1   | 2     | 1596 | C    | C6-N1-C2   | -6.06 | 117.88      | 120.30   |
| 36  | LA    | 105  | C    | C6-N1-C2   | -6.06 | 117.88      | 120.30   |
| 36  | LA    | 922  | U    | N3-C2-O2   | -6.06 | 117.96      | 122.20   |
| 36  | LA    | 2783 | U    | N3-C2-O2   | -6.06 | 117.96      | 122.20   |
| 36  | LA    | 614  | C    | C6-N1-C2   | -6.05 | 117.88      | 120.30   |
| 1   | 2     | 820  | U    | N3-C2-O2   | -6.05 | 117.97      | 122.20   |
| 36  | LA    | 1698 | C    | C6-N1-C2   | -6.05 | 117.88      | 120.30   |
| 36  | LA    | 224  | C    | C6-N1-C2   | -6.04 | 117.88      | 120.30   |
| 36  | LA    | 3320 | A    | O5'-P-OP1  | -6.04 | 100.26      | 105.70   |
| 36  | LA    | 2983 | C    | C2-N1-C1'  | 6.03  | 125.43      | 118.80   |
| 36  | LA    | 2114 | C    | C6-N1-C2   | -6.03 | 117.89      | 120.30   |
| 36  | LA    | 2836 | C    | C6-N1-C2   | -6.03 | 117.89      | 120.30   |
| 36  | LA    | 2941 | A    | O5'-P-OP1  | -6.03 | 100.27      | 105.70   |
| 1   | 2     | 1363 | U    | C5-C6-N1   | 6.02  | 125.71      | 122.70   |
| 36  | LA    | 705  | A    | O4'-C1'-N9 | -6.02 | 103.38      | 108.20   |
| 69  | Lb    | 49   | ILE  | CG1-CB-CG2 | -6.02 | 98.15       | 111.40   |
| 1   | 2     | 400  | A    | OP2-P-O3'  | 6.02  | 118.44      | 105.20   |
| 42  | LG    | 137  | ASP  | CB-CG-OD1  | 6.01  | 123.71      | 118.30   |
| 1   | 2     | 820  | U    | N1-C2-O2   | 6.01  | 127.01      | 122.80   |
| 36  | LA    | 354  | U    | C2-N1-C1'  | 6.01  | 124.91      | 117.70   |
| 36  | LA    | 3338 | C    | C6-N1-C2   | -6.01 | 117.90      | 120.30   |
| 36  | LA    | 2714 | G    | N3-C4-N9   | -6.01 | 122.40      | 126.00   |
| 1   | 2     | 1173 | C    | C6-N1-C2   | -6.00 | 117.90      | 120.30   |
| 36  | LA    | 443  | G    | N9-C1'-C2' | -5.99 | 105.41      | 112.00   |
| 36  | LA    | 282  | G    | P-O3'-C3'  | 5.99  | 126.89      | 119.70   |
| 1   | 2     | 302  | U    | N3-C2-O2   | -5.99 | 118.01      | 122.20   |
| 1   | 2     | 1274 | C    | OP2-P-O3'  | 5.99  | 118.37      | 105.20   |
| 36  | LA    | 2509 | U    | P-O3'-C3'  | 5.99  | 126.88      | 119.70   |
| 1   | 2     | 172  | C    | C2-N1-C1'  | 5.98  | 125.38      | 118.80   |
| 1   | 2     | 482  | U    | N3-C2-O2   | -5.98 | 118.01      | 122.20   |
| 36  | LA    | 332  | C    | C5-C6-N1   | 5.98  | 123.99      | 121.00   |
| 12  | V     | 165  | LEU  | CA-CB-CG   | 5.98  | 129.06      | 115.30   |
| 1   | 2     | 758  | U    | N3-C2-O2   | -5.98 | 118.01      | 122.20   |
| 36  | LA    | 1896 | A    | C2-N3-C4   | 5.98  | 113.59      | 110.60   |
| 38  | LC    | 115  | C    | C6-N1-C2   | -5.98 | 117.91      | 120.30   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1363 | U    | N1-C2-O2   | 5.98  | 126.98      | 122.80   |
| 38  | LC    | 100  | U    | C2-N1-C1'  | 5.98  | 124.87      | 117.70   |
| 36  | LA    | 1556 | C    | N1-C2-O2   | 5.97  | 122.48      | 118.90   |
| 1   | 2     | 424  | C    | C4-C5-C6   | -5.97 | 114.41      | 117.40   |
| 30  | f     | 33   | LEU  | CA-CB-CG   | 5.97  | 129.04      | 115.30   |
| 37  | LB    | 52   | G    | P-O3'-C3'  | 5.97  | 126.87      | 119.70   |
| 1   | 2     | 1664 | C    | C6-N1-C2   | -5.97 | 117.91      | 120.30   |
| 1   | 2     | 1414 | U    | N3-C2-O2   | -5.97 | 118.02      | 122.20   |
| 1   | 2     | 1657 | U    | N1-C2-O2   | 5.96  | 126.97      | 122.80   |
| 1   | 2     | 552  | G    | C4-N9-C1'  | 5.96  | 134.24      | 126.50   |
| 1   | 2     | 553  | G    | C4-N9-C1'  | -5.96 | 118.76      | 126.50   |
| 36  | LA    | 2788 | C    | C6-N1-C2   | -5.96 | 117.92      | 120.30   |
| 8   | S     | 103  | TYR  | CB-CG-CD2  | -5.95 | 117.43      | 121.00   |
| 37  | LB    | 26   | C    | C5-C6-N1   | 5.95  | 123.98      | 121.00   |
| 36  | LA    | 1333 | C    | C5-C6-N1   | 5.95  | 123.98      | 121.00   |
| 1   | 2     | 1214 | U    | C2-N1-C1'  | 5.95  | 124.84      | 117.70   |
| 36  | LA    | 2664 | C    | C2-N1-C1'  | 5.95  | 125.35      | 118.80   |
| 36  | LA    | 3058 | U    | N3-C2-O2   | -5.95 | 118.03      | 122.20   |
| 36  | LA    | 3153 | U    | N3-C2-O2   | -5.95 | 118.04      | 122.20   |
| 4   | Q     | 217  | LEU  | CA-CB-CG   | 5.94  | 128.97      | 115.30   |
| 36  | LA    | 911  | C    | C5-C6-N1   | 5.94  | 123.97      | 121.00   |
| 36  | LA    | 1923 | C    | C6-N1-C2   | -5.93 | 117.93      | 120.30   |
| 1   | 2     | 120  | U    | N3-C2-O2   | -5.92 | 118.06      | 122.20   |
| 36  | LA    | 1275 | C    | C6-N1-C2   | -5.92 | 117.93      | 120.30   |
| 46  | LK    | 112  | ILE  | CG1-CB-CG2 | -5.92 | 98.38       | 111.40   |
| 1   | 2     | 121  | U    | C2-N1-C1'  | 5.92  | 124.80      | 117.70   |
| 36  | LA    | 125  | C    | C6-N1-C2   | -5.92 | 117.93      | 120.30   |
| 23  | J     | 34   | LEU  | CB-CG-CD2  | -5.92 | 100.94      | 111.00   |
| 1   | 2     | 1123 | C    | C5-C6-N1   | 5.91  | 123.96      | 121.00   |
| 1   | 2     | 1461 | C    | C5-C6-N1   | 5.91  | 123.96      | 121.00   |
| 36  | LA    | 1235 | U    | N3-C4-O4   | -5.91 | 115.26      | 119.40   |
| 36  | LA    | 2451 | G    | P-O3'-C3'  | 5.91  | 126.79      | 119.70   |
| 1   | 2     | 1245 | G    | P-O3'-C3'  | 5.91  | 126.79      | 119.70   |
| 36  | LA    | 609  | G    | C4-C5-N7   | 5.91  | 113.16      | 110.80   |
| 1   | 2     | 587  | C    | C6-N1-C2   | -5.91 | 117.94      | 120.30   |
| 1   | 2     | 935  | U    | N1-C2-O2   | 5.91  | 126.93      | 122.80   |
| 1   | 2     | 1381 | U    | C5-C6-N1   | 5.91  | 125.65      | 122.70   |
| 36  | LA    | 3363 | U    | N3-C2-O2   | -5.91 | 118.07      | 122.20   |
| 81  | EF    | 415  | PRO  | N-CA-CB    | 5.90  | 110.39      | 103.30   |
| 36  | LA    | 224  | C    | O5'-P-OP1  | -5.90 | 100.39      | 105.70   |
| 36  | LA    | 1835 | A    | N1-C2-N3   | -5.90 | 126.35      | 129.30   |
| 36  | LA    | 2772 | C    | C6-N1-C1'  | -5.90 | 113.72      | 120.80   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 36  | LA    | 1446 | A    | O5'-P-OP1   | -5.90 | 100.39      | 105.70   |
| 1   | 2     | 1614 | A    | O4'-C1'-N9  | 5.90  | 112.92      | 108.20   |
| 36  | LA    | 979  | U    | N1-C2-O2    | 5.90  | 126.93      | 122.80   |
| 36  | LA    | 2274 | U    | N1-C2-O2    | 5.90  | 126.93      | 122.80   |
| 36  | LA    | 1832 | C    | C6-N1-C2    | -5.90 | 117.94      | 120.30   |
| 36  | LA    | 2176 | U    | N1-C2-O2    | 5.89  | 126.92      | 122.80   |
| 1   | 2     | 1072 | C    | C6-N1-C2    | -5.89 | 117.94      | 120.30   |
| 36  | LA    | 2242 | A    | C8-N9-C4    | -5.89 | 103.44      | 105.80   |
| 36  | LA    | 1771 | C    | C6-N1-C2    | -5.89 | 117.94      | 120.30   |
| 36  | LA    | 2132 | C    | C6-N1-C2    | -5.88 | 117.95      | 120.30   |
| 1   | 2     | 1527 | C    | C6-N1-C1'   | -5.88 | 113.75      | 120.80   |
| 36  | LA    | 3076 | C    | C6-N1-C2    | -5.88 | 117.95      | 120.30   |
| 1   | 2     | 803  | A    | OP2-P-O3'   | 5.87  | 118.12      | 105.20   |
| 36  | LA    | 2206 | G    | N3-C4-C5    | -5.87 | 125.66      | 128.60   |
| 22  | I     | 45   | MET  | CA-CB-CG    | 5.87  | 123.28      | 113.30   |
| 36  | LA    | 2611 | U    | C6-N1-C2    | -5.87 | 117.48      | 121.00   |
| 1   | 2     | 1465 | C    | C5-C6-N1    | 5.87  | 123.93      | 121.00   |
| 36  | LA    | 270  | U    | N3-C2-O2    | -5.87 | 118.09      | 122.20   |
| 36  | LA    | 311  | C    | C5-C6-N1    | 5.87  | 123.93      | 121.00   |
| 36  | LA    | 1276 | U    | N3-C2-O2    | -5.86 | 118.10      | 122.20   |
| 1   | 2     | 1640 | C    | C6-N1-C2    | -5.86 | 117.96      | 120.30   |
| 36  | LA    | 1644 | C    | C5-C6-N1    | 5.86  | 123.93      | 121.00   |
| 1   | 2     | 101  | U    | N1-C2-O2    | 5.86  | 126.90      | 122.80   |
| 36  | LA    | 2585 | G    | C4-N9-C1'   | 5.86  | 134.12      | 126.50   |
| 36  | LA    | 2552 | C    | C2-N1-C1'   | 5.86  | 125.24      | 118.80   |
| 36  | LA    | 2828 | G    | N3-C4-C5    | -5.86 | 125.67      | 128.60   |
| 36  | LA    | 217  | U    | OP1-P-O3'   | 5.85  | 118.07      | 105.20   |
| 1   | 2     | 1182 | U    | N1-C2-O2    | 5.84  | 126.89      | 122.80   |
| 1   | 2     | 1471 | A    | C5'-C4'-C3' | -5.84 | 106.65      | 116.00   |
| 36  | LA    | 1495 | U    | C5-C6-N1    | -5.84 | 119.78      | 122.70   |
| 1   | 2     | 176  | C    | C5-C6-N1    | 5.84  | 123.92      | 121.00   |
| 36  | LA    | 1276 | U    | C5-C6-N1    | 5.84  | 125.62      | 122.70   |
| 36  | LA    | 2279 | A    | C2-N3-C4    | 5.84  | 113.52      | 110.60   |
| 36  | LA    | 1581 | C    | C6-N1-C2    | -5.84 | 117.97      | 120.30   |
| 1   | 2     | 143  | G    | O5'-P-OP2   | -5.83 | 100.45      | 105.70   |
| 36  | LA    | 1278 | A    | C8-N9-C4    | -5.83 | 103.47      | 105.80   |
| 80  | Sm    | 74   | C    | O3'-P-O5'   | 5.83  | 115.08      | 104.00   |
| 36  | LA    | 637  | C    | OP1-P-O3'   | 5.82  | 118.01      | 105.20   |
| 1   | 2     | 711  | U    | P-O3'-C3'   | 5.82  | 126.69      | 119.70   |
| 36  | LA    | 406  | G    | N1-C6-O6    | -5.82 | 116.41      | 119.90   |
| 1   | 2     | 530  | C    | N3-C2-O2    | -5.82 | 117.83      | 121.90   |
| 1   | 2     | 1438 | G    | N3-C4-C5    | -5.82 | 125.69      | 128.60   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1363 | U    | C2-N1-C1'  | 5.81  | 124.68      | 117.70   |
| 1   | 2     | 1461 | C    | C6-N1-C2   | -5.81 | 117.97      | 120.30   |
| 36  | LA    | 653  | A    | O5'-P-OP2  | -5.81 | 100.47      | 105.70   |
| 45  | LJ    | 76   | ALA  | N-CA-CB    | 5.81  | 118.23      | 110.10   |
| 36  | LA    | 2617 | U    | N1-C2-O2   | 5.80  | 126.86      | 122.80   |
| 36  | LA    | 2420 | C    | C5-C6-N1   | 5.80  | 123.90      | 121.00   |
| 36  | LA    | 2988 | C    | C5-C6-N1   | 5.80  | 123.90      | 121.00   |
| 36  | LA    | 113  | C    | C6-N1-C2   | -5.80 | 117.98      | 120.30   |
| 38  | LC    | 110  | C    | N3-C2-O2   | -5.80 | 117.84      | 121.90   |
| 1   | 2     | 1527 | C    | N3-C2-O2   | -5.80 | 117.84      | 121.90   |
| 36  | LA    | 1822 | C    | C6-N1-C2   | -5.80 | 117.98      | 120.30   |
| 36  | LA    | 2541 | U    | C6-N1-C1'  | -5.80 | 113.09      | 121.20   |
| 1   | 2     | 1253 | U    | C5-C6-N1   | 5.79  | 125.60      | 122.70   |
| 36  | LA    | 421  | G    | C4-N9-C1'  | 5.79  | 134.03      | 126.50   |
| 1   | 2     | 552  | G    | N3-C4-C5   | -5.79 | 125.70      | 128.60   |
| 36  | LA    | 430  | U    | N1-C2-O2   | 5.79  | 126.85      | 122.80   |
| 36  | LA    | 3153 | U    | N1-C2-O2   | 5.79  | 126.85      | 122.80   |
| 1   | 2     | 740  | A    | N7-C8-N9   | 5.79  | 116.69      | 113.80   |
| 1   | 2     | 1082 | C    | O4'-C1'-N1 | 5.79  | 112.83      | 108.20   |
| 36  | LA    | 2750 | U    | C6-N1-C2   | -5.78 | 117.53      | 121.00   |
| 36  | LA    | 2350 | C    | C6-N1-C2   | -5.78 | 117.99      | 120.30   |
| 80  | Sm    | 56   | C    | N3-C2-O2   | -5.78 | 117.85      | 121.90   |
| 1   | 2     | 886  | U    | C2-N1-C1'  | 5.78  | 124.64      | 117.70   |
| 1   | 2     | 1688 | U    | C2-N1-C1'  | 5.78  | 124.64      | 117.70   |
| 36  | LA    | 405  | U    | O5'-P-OP1  | -5.78 | 100.50      | 105.70   |
| 37  | LB    | 105  | C    | N1-C2-O2   | 5.78  | 122.37      | 118.90   |
| 36  | LA    | 315  | C    | C6-N1-C2   | -5.77 | 117.99      | 120.30   |
| 1   | 2     | 1583 | A    | O4'-C1'-N9 | 5.77  | 112.81      | 108.20   |
| 36  | LA    | 2444 | C    | N3-C2-O2   | -5.76 | 117.87      | 121.90   |
| 1   | 2     | 25   | C    | N1-C2-O2   | 5.76  | 122.36      | 118.90   |
| 1   | 2     | 518  | A    | P-O3'-C3'  | 5.76  | 126.61      | 119.70   |
| 1   | 2     | 553  | G    | C6-C5-N7   | 5.76  | 133.85      | 130.40   |
| 36  | LA    | 549  | U    | C5-C6-N1   | 5.76  | 125.58      | 122.70   |
| 1   | 2     | 1458 | G    | N7-C8-N9   | 5.76  | 115.98      | 113.10   |
| 36  | LA    | 2756 | C    | C5-C6-N1   | 5.76  | 123.88      | 121.00   |
| 36  | LA    | 1128 | U    | C5-C6-N1   | 5.76  | 125.58      | 122.70   |
| 1   | 2     | 250  | C    | C5-C6-N1   | 5.75  | 123.88      | 121.00   |
| 36  | LA    | 634  | C    | C6-N1-C2   | -5.75 | 118.00      | 120.30   |
| 36  | LA    | 835  | G    | O4'-C1'-N9 | 5.75  | 112.80      | 108.20   |
| 36  | LA    | 957  | C    | C6-N1-C2   | -5.75 | 118.00      | 120.30   |
| 36  | LA    | 2646 | C    | C6-N1-C2   | -5.75 | 118.00      | 120.30   |
| 36  | LA    | 3196 | U    | O4'-C1'-N1 | 5.75  | 112.80      | 108.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 49  | LN    | 170  | LEU  | CB-CG-CD2  | -5.75 | 101.22      | 111.00   |
| 48  | LM    | 117  | ASP  | CB-CG-OD1  | 5.75  | 123.47      | 118.30   |
| 1   | 2     | 1175 | U    | C5-C6-N1   | 5.75  | 125.57      | 122.70   |
| 1   | 2     | 322  | G    | OP2-P-O3'  | 5.74  | 117.84      | 105.20   |
| 1   | 2     | 931  | C    | OP1-P-O3'  | 5.74  | 117.83      | 105.20   |
| 36  | LA    | 2638 | C    | C6-N1-C2   | -5.74 | 118.00      | 120.30   |
| 1   | 2     | 1688 | U    | N1-C2-O2   | 5.74  | 126.82      | 122.80   |
| 1   | 2     | 656  | G    | C8-N9-C4   | -5.74 | 104.11      | 106.40   |
| 36  | LA    | 637  | C    | P-O3'-C3'  | 5.74  | 126.59      | 119.70   |
| 36  | LA    | 2825 | C    | C6-N1-C2   | -5.74 | 118.00      | 120.30   |
| 80  | Sm    | 72   | U    | N1-C2-O2   | 5.74  | 126.82      | 122.80   |
| 36  | LA    | 3298 | C    | C6-N1-C2   | -5.74 | 118.01      | 120.30   |
| 36  | LA    | 27   | C    | N1-C2-O2   | 5.73  | 122.34      | 118.90   |
| 1   | 2     | 54   | C    | C6-N1-C2   | -5.73 | 118.01      | 120.30   |
| 1   | 2     | 1709 | C    | N1-C2-O2   | 5.73  | 122.34      | 118.90   |
| 36  | LA    | 87   | U    | N1-C2-O2   | 5.73  | 126.81      | 122.80   |
| 1   | 2     | 121  | U    | C6-N1-C2   | -5.73 | 117.56      | 121.00   |
| 36  | LA    | 3174 | A    | O4'-C1'-N9 | 5.73  | 112.78      | 108.20   |
| 1   | 2     | 1231 | U    | C5-C6-N1   | 5.73  | 125.56      | 122.70   |
| 1   | 2     | 1066 | C    | C2-N1-C1'  | 5.73  | 125.10      | 118.80   |
| 36  | LA    | 2290 | C    | C6-N1-C2   | -5.73 | 118.01      | 120.30   |
| 36  | LA    | 702  | C    | C5-C6-N1   | 5.72  | 123.86      | 121.00   |
| 36  | LA    | 2101 | C    | C6-N1-C2   | -5.72 | 118.01      | 120.30   |
| 36  | LA    | 2889 | C    | C5-C6-N1   | 5.72  | 123.86      | 121.00   |
| 1   | 2     | 934  | C    | C5-C6-N1   | 5.72  | 123.86      | 121.00   |
| 36  | LA    | 1307 | G    | OP2-P-O3'  | 5.72  | 117.78      | 105.20   |
| 36  | LA    | 638  | C    | O5'-P-OP2  | -5.72 | 100.56      | 105.70   |
| 36  | LA    | 1333 | C    | C6-N1-C2   | -5.72 | 118.01      | 120.30   |
| 1   | 2     | 121  | U    | N1-C2-O2   | 5.71  | 126.80      | 122.80   |
| 1   | 2     | 1706 | C    | N3-C2-O2   | -5.71 | 117.90      | 121.90   |
| 36  | LA    | 2929 | C    | C6-N1-C2   | -5.71 | 118.02      | 120.30   |
| 70  | Lc    | 106  | LYS  | CA-CB-CG   | 5.71  | 125.97      | 113.40   |
| 1   | 2     | 747  | C    | C2-N1-C1'  | 5.71  | 125.08      | 118.80   |
| 36  | LA    | 3269 | U    | C2-N1-C1'  | 5.71  | 124.55      | 117.70   |
| 36  | LA    | 2325 | G    | O5'-P-OP2  | -5.71 | 100.56      | 105.70   |
| 36  | LA    | 2906 | C    | C6-N1-C2   | -5.71 | 118.02      | 120.30   |
| 1   | 2     | 908  | U    | N1-C2-O2   | 5.70  | 126.79      | 122.80   |
| 36  | LA    | 633  | C    | C6-N1-C2   | -5.70 | 118.02      | 120.30   |
| 36  | LA    | 2411 | U    | N3-C2-O2   | -5.70 | 118.21      | 122.20   |
| 36  | LA    | 3344 | A    | C8-N9-C4   | -5.70 | 103.52      | 105.80   |
| 1   | 2     | 1274 | C    | N1-C2-O2   | 5.70  | 122.32      | 118.90   |
| 1   | 2     | 1688 | U    | N3-C2-O2   | -5.70 | 118.21      | 122.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1777 | G    | N3-C4-N9   | 5.70  | 129.42      | 126.00   |
| 36  | LA    | 2873 | U    | N1-C2-O2   | 5.70  | 126.79      | 122.80   |
| 9   | B     | 148  | ARG  | CA-CB-CG   | 5.70  | 125.93      | 113.40   |
| 36  | LA    | 2388 | U    | N3-C2-O2   | -5.70 | 118.21      | 122.20   |
| 38  | LC    | 85   | G    | P-O3'-C3'  | 5.69  | 126.53      | 119.70   |
| 38  | LC    | 100  | U    | N3-C2-O2   | -5.69 | 118.21      | 122.20   |
| 1   | 2     | 609  | U    | P-O3'-C3'  | 5.69  | 126.53      | 119.70   |
| 1   | 2     | 1399 | C    | C6-N1-C2   | -5.69 | 118.02      | 120.30   |
| 1   | 2     | 1763 | A    | O5'-P-OP2  | -5.69 | 100.58      | 105.70   |
| 36  | LA    | 141  | C    | C6-N1-C2   | -5.69 | 118.02      | 120.30   |
| 36  | LA    | 208  | C    | C6-N1-C2   | -5.69 | 118.02      | 120.30   |
| 36  | LA    | 849  | C    | P-O3'-C3'  | 5.69  | 126.52      | 119.70   |
| 36  | LA    | 1941 | C    | C6-N1-C2   | -5.69 | 118.03      | 120.30   |
| 80  | Sn    | 50   | U    | C5-C6-N1   | 5.69  | 125.54      | 122.70   |
| 1   | 2     | 864  | U    | C2-N1-C1'  | 5.68  | 124.52      | 117.70   |
| 1   | 2     | 890  | C    | C6-N1-C2   | -5.68 | 118.03      | 120.30   |
| 1   | 2     | 94   | U    | C6-N1-C2   | -5.68 | 117.59      | 121.00   |
| 1   | 2     | 338  | C    | C6-N1-C2   | -5.68 | 118.03      | 120.30   |
| 36  | LA    | 28   | C    | C6-N1-C2   | -5.68 | 118.03      | 120.30   |
| 36  | LA    | 1103 | A    | N3-C4-N9   | 5.68  | 131.94      | 127.40   |
| 1   | 2     | 1636 | C    | P-O3'-C3'  | 5.68  | 126.52      | 119.70   |
| 12  | V     | 29   | LEU  | CB-CG-CD2  | 5.68  | 120.65      | 111.00   |
| 36  | LA    | 886  | C    | C5-C6-N1   | 5.68  | 123.84      | 121.00   |
| 36  | LA    | 1271 | A    | P-O3'-C3'  | 5.68  | 126.52      | 119.70   |
| 36  | LA    | 2279 | A    | N1-C6-N6   | -5.68 | 115.19      | 118.60   |
| 36  | LA    | 2101 | C    | OP1-P-O3'  | 5.68  | 117.69      | 105.20   |
| 1   | 2     | 1666 | U    | N1-C2-O2   | 5.67  | 126.77      | 122.80   |
| 36  | LA    | 3165 | A    | N7-C8-N9   | 5.67  | 116.64      | 113.80   |
| 1   | 2     | 1549 | C    | C6-N1-C2   | -5.67 | 118.03      | 120.30   |
| 1   | 2     | 116  | U    | N1-C2-O2   | 5.66  | 126.77      | 122.80   |
| 1   | 2     | 411  | C    | C6-N1-C2   | -5.66 | 118.03      | 120.30   |
| 1   | 2     | 531  | C    | N3-C2-O2   | -5.66 | 117.94      | 121.90   |
| 1   | 2     | 553  | G    | C5-C6-O6   | 5.66  | 132.00      | 128.60   |
| 1   | 2     | 1706 | C    | N1-C2-O2   | 5.66  | 122.30      | 118.90   |
| 36  | LA    | 27   | C    | N3-C2-O2   | -5.66 | 117.94      | 121.90   |
| 36  | LA    | 375  | A    | OP1-P-O3'  | 5.66  | 117.66      | 105.20   |
| 1   | 2     | 120  | U    | N1-C2-O2   | 5.66  | 126.76      | 122.80   |
| 36  | LA    | 1901 | A    | N7-C8-N9   | 5.66  | 116.63      | 113.80   |
| 36  | LA    | 2550 | U    | C2-N1-C1'  | 5.66  | 124.49      | 117.70   |
| 36  | LA    | 800  | G    | N3-C4-C5   | -5.66 | 125.77      | 128.60   |
| 80  | Sm    | 66   | C    | O4'-C1'-N1 | 5.66  | 112.72      | 108.20   |
| 36  | LA    | 860  | G    | N3-C2-N2   | -5.65 | 115.94      | 119.90   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 3   | P     | 74   | VAL  | CA-CB-CG1  | 5.65  | 119.38      | 110.90   |
| 36  | LA    | 922  | U    | C5-C6-N1   | 5.65  | 125.53      | 122.70   |
| 1   | 2     | 1205 | C    | C5-C6-N1   | 5.65  | 123.83      | 121.00   |
| 36  | LA    | 2894 | C    | C5-C6-N1   | 5.65  | 123.83      | 121.00   |
| 32  | g     | 39   | LEU  | CB-CG-CD1  | 5.65  | 120.60      | 111.00   |
| 36  | LA    | 873  | C    | P-O3'-C3'  | 5.65  | 126.48      | 119.70   |
| 36  | LA    | 881  | C    | C2-N1-C1'  | 5.64  | 125.01      | 118.80   |
| 36  | LA    | 1238 | C    | C6-N1-C2   | -5.64 | 118.04      | 120.30   |
| 36  | LA    | 2181 | C    | C6-N1-C2   | -5.64 | 118.04      | 120.30   |
| 36  | LA    | 2505 | U    | O4'-C1'-N1 | 5.64  | 112.71      | 108.20   |
| 36  | LA    | 1832 | C    | C5-C6-N1   | 5.64  | 123.82      | 121.00   |
| 74  | Lg    | 78   | LEU  | CA-CB-CG   | 5.64  | 128.27      | 115.30   |
| 36  | LA    | 2913 | C    | C5-C6-N1   | 5.64  | 123.82      | 121.00   |
| 36  | LA    | 1064 | A    | OP2-P-O3'  | 5.64  | 117.60      | 105.20   |
| 36  | LA    | 2274 | U    | C2-N1-C1'  | 5.64  | 124.46      | 117.70   |
| 41  | LF    | 4    | PRO  | C-N-CA     | 5.64  | 135.79      | 121.70   |
| 20  | G     | 33   | ARG  | NE-CZ-NH2  | -5.63 | 117.48      | 120.30   |
| 36  | LA    | 1579 | C    | C6-N1-C2   | -5.63 | 118.05      | 120.30   |
| 48  | LM    | 108  | GLU  | CA-CB-CG   | 5.63  | 125.80      | 113.40   |
| 1   | 2     | 1533 | C    | N3-C2-O2   | -5.63 | 117.96      | 121.90   |
| 34  | O     | 234  | LEU  | CA-CB-CG   | 5.63  | 128.25      | 115.30   |
| 36  | LA    | 3214 | U    | O4'-C1'-N1 | 5.63  | 112.70      | 108.20   |
| 1   | 2     | 1199 | G    | C2-N3-C4   | 5.63  | 114.72      | 111.90   |
| 36  | LA    | 982  | C    | C5-C6-N1   | 5.63  | 123.81      | 121.00   |
| 36  | LA    | 1368 | U    | C2-N1-C1'  | 5.63  | 124.45      | 117.70   |
| 1   | 2     | 795  | U    | N1-C2-O2   | 5.63  | 126.74      | 122.80   |
| 36  | LA    | 1762 | C    | C6-N1-C2   | -5.63 | 118.05      | 120.30   |
| 37  | LB    | 44   | C    | N3-C2-O2   | -5.62 | 117.96      | 121.90   |
| 1   | 2     | 1332 | C    | C2-N1-C1'  | 5.62  | 124.99      | 118.80   |
| 36  | LA    | 142  | C    | N1-C2-O2   | 5.62  | 122.28      | 118.90   |
| 1   | 2     | 275  | C    | C5-C6-N1   | 5.62  | 123.81      | 121.00   |
| 25  | b     | 65   | LEU  | CA-CB-CG   | 5.62  | 128.23      | 115.30   |
| 36  | LA    | 955  | U    | N3-C2-O2   | -5.62 | 118.27      | 122.20   |
| 36  | LA    | 1103 | A    | N3-C4-C5   | -5.62 | 122.86      | 126.80   |
| 36  | LA    | 2712 | U    | C2-N1-C1'  | 5.62  | 124.44      | 117.70   |
| 80  | Sm    | 72   | U    | N3-C2-O2   | -5.62 | 118.27      | 122.20   |
| 1   | 2     | 305  | C    | C6-N1-C2   | -5.62 | 118.05      | 120.30   |
| 36  | LA    | 2681 | U    | C5-C6-N1   | 5.62  | 125.51      | 122.70   |
| 36  | LA    | 2707 | C    | C6-N1-C2   | -5.62 | 118.05      | 120.30   |
| 36  | LA    | 1126 | G    | C6-C5-N7   | -5.61 | 127.03      | 130.40   |
| 36  | LA    | 1219 | C    | N1-C2-O2   | 5.61  | 122.27      | 118.90   |
| 36  | LA    | 2772 | C    | N3-C2-O2   | -5.61 | 117.97      | 121.90   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 46  | LK    | 140  | VAL  | CA-CB-CG2  | 5.61  | 119.32      | 110.90   |
| 36  | LA    | 2401 | A    | O5'-P-OP2  | -5.61 | 100.65      | 105.70   |
| 1   | 2     | 861  | U    | C5-C6-N1   | 5.61  | 125.50      | 122.70   |
| 1   | 2     | 1216 | C    | N3-C2-O2   | -5.61 | 117.97      | 121.90   |
| 36  | LA    | 356  | C    | C5-C6-N1   | 5.61  | 123.80      | 121.00   |
| 36  | LA    | 1296 | C    | C5-C6-N1   | 5.61  | 123.80      | 121.00   |
| 1   | 2     | 1361 | U    | N3-C2-O2   | -5.61 | 118.28      | 122.20   |
| 36  | LA    | 2710 | C    | C6-N1-C2   | -5.60 | 118.06      | 120.30   |
| 36  | LA    | 1156 | C    | C6-N1-C2   | -5.60 | 118.06      | 120.30   |
| 80  | Sm    | 5    | C    | N3-C2-O2   | -5.60 | 117.98      | 121.90   |
| 1   | 2     | 280  | U    | P-O3'-C3'  | 5.59  | 126.41      | 119.70   |
| 36  | LA    | 3196 | U    | C6-N1-C1'  | -5.59 | 113.37      | 121.20   |
| 1   | 2     | 14   | C    | C5-C6-N1   | 5.59  | 123.80      | 121.00   |
| 36  | LA    | 2772 | C    | C6-N1-C2   | -5.59 | 118.06      | 120.30   |
| 36  | LA    | 2340 | U    | C5-C6-N1   | 5.59  | 125.49      | 122.70   |
| 1   | 2     | 1226 | A    | P-O3'-C3'  | 5.59  | 126.40      | 119.70   |
| 1   | 2     | 1347 | U    | N1-C2-O2   | 5.59  | 126.71      | 122.80   |
| 11  | U     | 128  | ASP  | CB-CG-OD1  | 5.58  | 123.33      | 118.30   |
| 36  | LA    | 3269 | U    | N1-C2-O2   | 5.58  | 126.71      | 122.80   |
| 18  | Z     | 52   | ARG  | CB-CA-C    | -5.58 | 99.24       | 110.40   |
| 36  | LA    | 2331 | C    | C6-N1-C2   | -5.58 | 118.07      | 120.30   |
| 1   | 2     | 555  | A    | C5-N7-C8   | -5.58 | 101.11      | 103.90   |
| 1   | 2     | 1503 | A    | O4'-C1'-N9 | 5.58  | 112.66      | 108.20   |
| 50  | LO    | 65   | LEU  | CB-CG-CD1  | 5.58  | 120.48      | 111.00   |
| 80  | Sn    | 49   | C    | N1-C2-O2   | 5.58  | 122.25      | 118.90   |
| 36  | LA    | 3039 | C    | C6-N1-C2   | -5.58 | 118.07      | 120.30   |
| 36  | LA    | 2710 | C    | C5-C6-N1   | 5.57  | 123.79      | 121.00   |
| 1   | 2     | 64   | U    | N3-C2-O2   | -5.57 | 118.30      | 122.20   |
| 1   | 2     | 1472 | C    | C6-N1-C2   | -5.57 | 118.07      | 120.30   |
| 1   | 2     | 1628 | U    | C5-C6-N1   | 5.57  | 125.49      | 122.70   |
| 1   | 2     | 499  | U    | C5-C6-N1   | 5.57  | 125.48      | 122.70   |
| 36  | LA    | 2986 | U    | C5-C6-N1   | 5.57  | 125.48      | 122.70   |
| 37  | LB    | 68   | C    | C5-C6-N1   | 5.56  | 123.78      | 121.00   |
| 36  | LA    | 3309 | G    | N3-C4-C5   | -5.56 | 125.82      | 128.60   |
| 1   | 2     | 1216 | C    | N1-C2-O2   | 5.56  | 122.24      | 118.90   |
| 36  | LA    | 1759 | C    | C6-N1-C2   | -5.56 | 118.08      | 120.30   |
| 1   | 2     | 1611 | A    | C2-N3-C4   | -5.56 | 107.82      | 110.60   |
| 36  | LA    | 3228 | C    | OP2-P-O3'  | 5.56  | 117.43      | 105.20   |
| 36  | LA    | 1448 | U    | C5-C6-N1   | 5.55  | 125.48      | 122.70   |
| 36  | LA    | 492  | C    | C5-C6-N1   | 5.55  | 123.78      | 121.00   |
| 36  | LA    | 2297 | U    | N1-C2-N3   | 5.55  | 118.23      | 114.90   |
| 36  | LA    | 3155 | U    | C2-N1-C1'  | 5.55  | 124.36      | 117.70   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 34  | O     | 141  | LEU  | CA-CB-CG   | 5.55  | 128.07      | 115.30   |
| 36  | LA    | 54   | C    | C6-N1-C2   | -5.55 | 118.08      | 120.30   |
| 39  | LD    | 219  | ILE  | CG1-CB-CG2 | -5.55 | 99.19       | 111.40   |
| 36  | LA    | 2689 | A    | C8-N9-C4   | -5.55 | 103.58      | 105.80   |
| 36  | LA    | 1898 | G    | O4'-C1'-N9 | 5.55  | 112.64      | 108.20   |
| 1   | 2     | 1355 | C    | C6-N1-C2   | -5.54 | 118.08      | 120.30   |
| 36  | LA    | 2267 | C    | C6-N1-C2   | -5.54 | 118.08      | 120.30   |
| 36  | LA    | 288  | C    | C5-C6-N1   | 5.54  | 123.77      | 121.00   |
| 36  | LA    | 1722 | U    | N1-C2-O2   | 5.54  | 126.68      | 122.80   |
| 44  | LI    | 126  | LEU  | CA-CB-CG   | 5.54  | 128.05      | 115.30   |
| 36  | LA    | 3181 | C    | C6-N1-C2   | -5.54 | 118.08      | 120.30   |
| 36  | LA    | 2256 | A    | O4'-C1'-N9 | 5.54  | 112.63      | 108.20   |
| 80  | Sn    | 25   | C    | N1-C2-O2   | 5.54  | 122.22      | 118.90   |
| 36  | LA    | 102  | C    | C6-N1-C2   | -5.54 | 118.08      | 120.30   |
| 36  | LA    | 1273 | A    | C8-N9-C1'  | -5.54 | 117.73      | 127.70   |
| 36  | LA    | 142  | C    | C5-C6-N1   | 5.54  | 123.77      | 121.00   |
| 36  | LA    | 2606 | G    | N3-C4-C5   | -5.54 | 125.83      | 128.60   |
| 81  | EF    | 692  | LEU  | CA-CB-CG   | 5.54  | 128.03      | 115.30   |
| 1   | 2     | 1251 | U    | C6-N1-C2   | -5.53 | 117.68      | 121.00   |
| 36  | LA    | 2405 | C    | C5-C6-N1   | 5.53  | 123.77      | 121.00   |
| 38  | LC    | 143  | U    | C5-C6-N1   | 5.53  | 125.47      | 122.70   |
| 7   | A     | 14   | ASP  | CB-CG-OD2  | -5.53 | 113.32      | 118.30   |
| 1   | 2     | 1515 | A    | C8-N9-C4   | -5.53 | 103.59      | 105.80   |
| 36  | LA    | 2331 | C    | C5-C6-N1   | 5.53  | 123.77      | 121.00   |
| 1   | 2     | 1007 | C    | C5-C6-N1   | 5.53  | 123.77      | 121.00   |
| 18  | Z     | 105  | LEU  | CA-CB-CG   | 5.53  | 128.02      | 115.30   |
| 1   | 2     | 610  | G    | C4-N9-C1'  | 5.53  | 133.69      | 126.50   |
| 36  | LA    | 2961 | G    | C8-N9-C4   | -5.53 | 104.19      | 106.40   |
| 36  | LA    | 1183 | C    | C5-C6-N1   | 5.53  | 123.76      | 121.00   |
| 36  | LA    | 1820 | U    | OP2-P-O3'  | 5.53  | 117.36      | 105.20   |
| 36  | LA    | 3097 | C    | C6-N1-C2   | -5.53 | 118.09      | 120.30   |
| 1   | 2     | 1284 | C    | C2-N1-C1'  | 5.52  | 124.88      | 118.80   |
| 1   | 2     | 1210 | C    | C6-N1-C2   | -5.52 | 118.09      | 120.30   |
| 1   | 2     | 1420 | C    | C6-N1-C2   | -5.52 | 118.09      | 120.30   |
| 36  | LA    | 1190 | A    | C4-N9-C1'  | 5.52  | 136.24      | 126.30   |
| 1   | 2     | 740  | A    | C8-N9-C4   | -5.52 | 103.59      | 105.80   |
| 1   | 2     | 1199 | G    | N3-C4-C5   | -5.52 | 125.84      | 128.60   |
| 36  | LA    | 1759 | C    | C5-C6-N1   | 5.52  | 123.76      | 121.00   |
| 36  | LA    | 548  | G    | O4'-C1'-N9 | 5.52  | 112.61      | 108.20   |
| 36  | LA    | 753  | C    | C6-N1-C2   | -5.52 | 118.09      | 120.30   |
| 1   | 2     | 700  | C    | C6-N1-C2   | -5.51 | 118.09      | 120.30   |
| 36  | LA    | 8    | C    | C6-N1-C2   | -5.51 | 118.09      | 120.30   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 42  | LG    | 110  | LEU  | CA-CB-CG   | 5.51  | 127.98      | 115.30   |
| 36  | LA    | 3363 | U    | N1-C2-O2   | 5.51  | 126.66      | 122.80   |
| 1   | 2     | 1646 | C    | N1-C2-O2   | 5.51  | 122.21      | 118.90   |
| 36  | LA    | 915  | A    | C8-N9-C1'  | -5.51 | 117.78      | 127.70   |
| 36  | LA    | 2828 | G    | N3-C4-N9   | 5.51  | 129.31      | 126.00   |
| 1   | 2     | 863  | A    | C8-N9-C4   | -5.51 | 103.60      | 105.80   |
| 36  | LA    | 2257 | C    | C2-N1-C1'  | 5.51  | 124.86      | 118.80   |
| 36  | LA    | 2652 | U    | N1-C2-O2   | 5.51  | 126.66      | 122.80   |
| 37  | LB    | 116  | C    | C6-N1-C2   | -5.51 | 118.10      | 120.30   |
| 58  | Lq    | 50   | LEU  | CA-CB-CG   | 5.51  | 127.97      | 115.30   |
| 80  | Sn    | 27   | C    | C6-N1-C2   | -5.51 | 118.10      | 120.30   |
| 55  | Ln    | 182  | ASP  | CB-CG-OD1  | 5.50  | 123.25      | 118.30   |
| 36  | LA    | 982  | C    | N3-C2-O2   | -5.50 | 118.05      | 121.90   |
| 36  | LA    | 1265 | U    | N1-C2-O2   | 5.50  | 126.65      | 122.80   |
| 36  | LA    | 1844 | C    | C6-N1-C2   | -5.50 | 118.10      | 120.30   |
| 1   | 2     | 708  | C    | C6-N1-C2   | -5.50 | 118.10      | 120.30   |
| 1   | 2     | 1082 | C    | C6-N1-C1'  | -5.50 | 114.20      | 120.80   |
| 36  | LA    | 2420 | C    | C6-N1-C2   | -5.50 | 118.10      | 120.30   |
| 36  | LA    | 2996 | U    | C2-N1-C1'  | 5.50  | 124.30      | 117.70   |
| 36  | LA    | 2617 | U    | C5-C4-O4   | 5.50  | 129.20      | 125.90   |
| 1   | 2     | 691  | C    | C6-N1-C2   | -5.50 | 118.10      | 120.30   |
| 1   | 2     | 160  | C    | C6-N1-C2   | -5.49 | 118.10      | 120.30   |
| 17  | Y     | 56   | ASP  | CB-CG-OD1  | 5.49  | 123.24      | 118.30   |
| 1   | 2     | 856  | A    | P-O3'-C3'  | 5.49  | 126.29      | 119.70   |
| 1   | 2     | 1201 | G    | N3-C4-N9   | -5.49 | 122.71      | 126.00   |
| 37  | LB    | 33   | U    | C2-N1-C1'  | -5.49 | 111.11      | 117.70   |
| 36  | LA    | 1907 | C    | C6-N1-C2   | -5.49 | 118.10      | 120.30   |
| 36  | LA    | 793  | C    | C5-C6-N1   | 5.49  | 123.74      | 121.00   |
| 36  | LA    | 1227 | C    | C2-N1-C1'  | 5.49  | 124.83      | 118.80   |
| 36  | LA    | 2689 | A    | C4-N9-C1'  | 5.48  | 136.17      | 126.30   |
| 1   | 2     | 893  | U    | N3-C2-O2   | -5.48 | 118.36      | 122.20   |
| 36  | LA    | 3228 | C    | P-O3'-C3'  | 5.48  | 126.28      | 119.70   |
| 36  | LA    | 3277 | U    | N1-C2-O2   | 5.48  | 126.64      | 122.80   |
| 1   | 2     | 237  | C    | N3-C2-O2   | -5.48 | 118.06      | 121.90   |
| 36  | LA    | 2110 | G    | O4'-C1'-N9 | 5.48  | 112.58      | 108.20   |
| 36  | LA    | 2622 | C    | N3-C2-O2   | -5.48 | 118.07      | 121.90   |
| 36  | LA    | 1263 | A    | N3-C4-C5   | -5.48 | 122.97      | 126.80   |
| 36  | LA    | 3275 | U    | N1-C2-O2   | 5.48  | 126.63      | 122.80   |
| 1   | 2     | 885  | G    | C8-N9-C4   | -5.47 | 104.21      | 106.40   |
| 36  | LA    | 889  | U    | C5-C6-N1   | 5.47  | 125.44      | 122.70   |
| 36  | LA    | 1633 | C    | C5-C6-N1   | 5.47  | 123.73      | 121.00   |
| 36  | LA    | 1605 | A    | O4'-C1'-N9 | 5.47  | 112.57      | 108.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 3269 | U    | OP2-P-O3'  | 5.47  | 117.23      | 105.20   |
| 36  | LA    | 3285 | C    | C6-N1-C2   | -5.47 | 118.11      | 120.30   |
| 1   | 2     | 981  | U    | N3-C2-O2   | -5.46 | 118.38      | 122.20   |
| 36  | LA    | 448  | U    | C5-C6-N1   | 5.46  | 125.43      | 122.70   |
| 36  | LA    | 1780 | G    | C4-N9-C1'  | 5.46  | 133.60      | 126.50   |
| 36  | LA    | 1842 | A    | O4'-C1'-N9 | -5.46 | 103.83      | 108.20   |
| 1   | 2     | 835  | U    | C5-C6-N1   | 5.46  | 125.43      | 122.70   |
| 1   | 2     | 101  | U    | N3-C2-O2   | -5.46 | 118.38      | 122.20   |
| 36  | LA    | 47   | C    | C6-N1-C2   | -5.45 | 118.12      | 120.30   |
| 36  | LA    | 875  | G    | N3-C4-N9   | 5.45  | 129.27      | 126.00   |
| 36  | LA    | 955  | U    | N1-C2-O2   | 5.45  | 126.62      | 122.80   |
| 1   | 2     | 425  | A    | OP2-P-O3'  | 5.45  | 117.19      | 105.20   |
| 1   | 2     | 1596 | C    | N1-C2-O2   | 5.45  | 122.17      | 118.90   |
| 36  | LA    | 3350 | C    | O4'-C1'-N1 | 5.45  | 112.56      | 108.20   |
| 1   | 2     | 361  | C    | C6-N1-C2   | -5.45 | 118.12      | 120.30   |
| 1   | 2     | 35   | U    | N3-C2-O2   | -5.44 | 118.39      | 122.20   |
| 1   | 2     | 166  | C    | N3-C2-O2   | -5.44 | 118.09      | 121.90   |
| 1   | 2     | 184  | C    | C2-N1-C1'  | 5.44  | 124.79      | 118.80   |
| 1   | 2     | 250  | C    | C6-N1-C2   | -5.44 | 118.12      | 120.30   |
| 1   | 2     | 1307 | U    | N1-C2-O2   | 5.44  | 126.61      | 122.80   |
| 36  | LA    | 2257 | C    | N1-C2-O2   | 5.44  | 122.17      | 118.90   |
| 36  | LA    | 192  | C    | C6-N1-C2   | -5.44 | 118.12      | 120.30   |
| 36  | LA    | 3233 | C    | C6-N1-C2   | -5.44 | 118.12      | 120.30   |
| 36  | LA    | 1470 | U    | N3-C2-O2   | -5.44 | 118.39      | 122.20   |
| 36  | LA    | 1609 | C    | C6-N1-C2   | -5.44 | 118.12      | 120.30   |
| 1   | 2     | 304  | U    | N3-C2-O2   | -5.43 | 118.40      | 122.20   |
| 18  | Z     | 27   | PHE  | CB-CG-CD2  | -5.43 | 117.00      | 120.80   |
| 36  | LA    | 985  | U    | N3-C2-O2   | -5.43 | 118.39      | 122.20   |
| 1   | 2     | 477  | A    | O5'-P-OP1  | -5.43 | 100.81      | 105.70   |
| 1   | 2     | 1205 | C    | C2-N1-C1'  | 5.43  | 124.78      | 118.80   |
| 36  | LA    | 1665 | C    | C5-C6-N1   | 5.43  | 123.72      | 121.00   |
| 36  | LA    | 3298 | C    | C5-C6-N1   | 5.43  | 123.72      | 121.00   |
| 36  | LA    | 1907 | C    | C2-N1-C1'  | 5.43  | 124.77      | 118.80   |
| 9   | B     | 135  | ASP  | CB-CG-OD1  | 5.43  | 123.19      | 118.30   |
| 36  | LA    | 2961 | G    | N7-C8-N9   | 5.43  | 115.81      | 113.10   |
| 36  | LA    | 600  | G    | C6-C5-N7   | -5.43 | 127.14      | 130.40   |
| 1   | 2     | 599  | A    | O5'-P-OP1  | 5.42  | 117.21      | 110.70   |
| 36  | LA    | 492  | C    | C2-N1-C1'  | 5.42  | 124.77      | 118.80   |
| 36  | LA    | 3105 | U    | N3-C2-O2   | -5.42 | 118.40      | 122.20   |
| 1   | 2     | 1003 | A    | O4'-C1'-N9 | 5.42  | 112.54      | 108.20   |
| 1   | 2     | 1308 | G    | C4-N9-C1'  | 5.42  | 133.55      | 126.50   |
| 36  | LA    | 881  | C    | C5-C6-N1   | 5.42  | 123.71      | 121.00   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 2622 | C    | C6-N1-C2   | -5.42 | 118.13      | 120.30   |
| 1   | 2     | 469  | C    | C5-C6-N1   | 5.42  | 123.71      | 121.00   |
| 1   | 2     | 186  | C    | C5-C6-N1   | 5.42  | 123.71      | 121.00   |
| 1   | 2     | 446  | A    | C4-N9-C1'  | 5.42  | 136.05      | 126.30   |
| 36  | LA    | 3214 | U    | C6-N1-C1'  | -5.42 | 113.62      | 121.20   |
| 80  | Sn    | 3    | C    | C5-C6-N1   | 5.42  | 123.71      | 121.00   |
| 1   | 2     | 1688 | U    | C5-C6-N1   | 5.42  | 125.41      | 122.70   |
| 36  | LA    | 698  | U    | C5-C6-N1   | 5.42  | 125.41      | 122.70   |
| 36  | LA    | 855  | U    | C2-N1-C1'  | 5.41  | 124.20      | 117.70   |
| 1   | 2     | 609  | U    | OP2-P-O3'  | 5.41  | 117.11      | 105.20   |
| 36  | LA    | 228  | U    | C6-N1-C2   | -5.41 | 117.75      | 121.00   |
| 36  | LA    | 191  | U    | C5-C6-N1   | 5.41  | 125.41      | 122.70   |
| 54  | Lm    | 89   | ASP  | CB-CG-OD1  | 5.41  | 123.17      | 118.30   |
| 55  | Ln    | 181  | ARG  | CA-CB-CG   | 5.41  | 125.30      | 113.40   |
| 1   | 2     | 871  | G    | N3-C4-C5   | -5.41 | 125.90      | 128.60   |
| 36  | LA    | 3057 | U    | N1-C2-O2   | 5.41  | 126.58      | 122.80   |
| 42  | LG    | 213  | ASP  | CB-CG-OD1  | 5.41  | 123.17      | 118.30   |
| 1   | 2     | 1182 | U    | N3-C2-O2   | -5.41 | 118.42      | 122.20   |
| 36  | LA    | 1843 | C    | C6-N1-C2   | -5.41 | 118.14      | 120.30   |
| 36  | LA    | 2501 | U    | N1-C2-O2   | 5.41  | 126.58      | 122.80   |
| 36  | LA    | 3068 | U    | OP1-P-O3'  | 5.41  | 117.09      | 105.20   |
| 1   | 2     | 1491 | U    | C2-N1-C1'  | 5.40  | 124.18      | 117.70   |
| 36  | LA    | 2356 | A    | C5-N7-C8   | -5.40 | 101.20      | 103.90   |
| 1   | 2     | 1403 | C    | C6-N1-C2   | -5.40 | 118.14      | 120.30   |
| 17  | Y     | 3    | ARG  | CB-CG-CD   | 5.40  | 125.64      | 111.60   |
| 36  | LA    | 2407 | C    | C5-C6-N1   | 5.40  | 123.70      | 121.00   |
| 1   | 2     | 1620 | C    | C5-C6-N1   | 5.40  | 123.70      | 121.00   |
| 36  | LA    | 823  | C    | C5-C6-N1   | 5.40  | 123.70      | 121.00   |
| 36  | LA    | 1224 | C    | C6-N1-C2   | -5.40 | 118.14      | 120.30   |
| 80  | Sn    | 32   | C    | N3-C2-O2   | -5.40 | 118.12      | 121.90   |
| 36  | LA    | 282  | G    | N7-C8-N9   | 5.40  | 115.80      | 113.10   |
| 36  | LA    | 1446 | A    | O4'-C1'-N9 | -5.40 | 103.88      | 108.20   |
| 36  | LA    | 247  | C    | C6-N1-C2   | -5.39 | 118.14      | 120.30   |
| 36  | LA    | 3193 | C    | C6-N1-C2   | -5.39 | 118.14      | 120.30   |
| 1   | 2     | 1359 | C    | C5-C6-N1   | 5.39  | 123.69      | 121.00   |
| 1   | 2     | 1706 | C    | C6-N1-C2   | -5.39 | 118.14      | 120.30   |
| 36  | LA    | 2619 | G    | C6-C5-N7   | -5.39 | 127.17      | 130.40   |
| 28  | K     | 53   | GLU  | CA-CB-CG   | 5.39  | 125.26      | 113.40   |
| 36  | LA    | 1578 | C    | C6-N1-C2   | -5.39 | 118.14      | 120.30   |
| 38  | LC    | 115  | C    | C5-C6-N1   | 5.39  | 123.69      | 121.00   |
| 43  | LH    | 77   | ARG  | N-CA-CB    | 5.39  | 120.30      | 110.60   |
| 80  | Sm    | 50   | U    | O5'-P-OP2  | -5.39 | 100.85      | 105.70   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 36  | LA    | 596  | C    | N3-C2-O2    | -5.39 | 118.13      | 121.90   |
| 36  | LA    | 2356 | A    | C4-C5-N7    | 5.39  | 113.39      | 110.70   |
| 36  | LA    | 3253 | G    | O4'-C1'-N9  | 5.39  | 112.51      | 108.20   |
| 1   | 2     | 1491 | U    | N1-C2-O2    | 5.38  | 126.57      | 122.80   |
| 36  | LA    | 2970 | C    | C6-N1-C1'   | 5.38  | 127.26      | 120.80   |
| 42  | LG    | 146  | LEU  | CB-CG-CD1   | -5.38 | 101.85      | 111.00   |
| 1   | 2     | 741  | C    | C6-N1-C2    | -5.38 | 118.15      | 120.30   |
| 1   | 2     | 1261 | G    | N3-C4-C5    | -5.38 | 125.91      | 128.60   |
| 1   | 2     | 1320 | U    | N3-C2-O2    | -5.38 | 118.44      | 122.20   |
| 36  | LA    | 2712 | U    | N1-C2-O2    | 5.38  | 126.56      | 122.80   |
| 36  | LA    | 2405 | C    | C2-N1-C1'   | 5.37  | 124.71      | 118.80   |
| 36  | LA    | 2810 | C    | C6-N1-C2    | -5.37 | 118.15      | 120.30   |
| 36  | LA    | 1581 | C    | N1-C2-O2    | 5.37  | 122.12      | 118.90   |
| 80  | Sm    | 34   | C    | N3-C2-O2    | -5.37 | 118.14      | 121.90   |
| 1   | 2     | 409  | C    | C6-N1-C2    | -5.37 | 118.15      | 120.30   |
| 1   | 2     | 1182 | U    | C6-N1-C1'   | -5.37 | 113.69      | 121.20   |
| 36  | LA    | 193  | C    | C6-N1-C2    | -5.37 | 118.15      | 120.30   |
| 36  | LA    | 427  | C    | C5-C6-N1    | 5.37  | 123.68      | 121.00   |
| 36  | LA    | 2726 | C    | C2-N1-C1'   | 5.37  | 124.70      | 118.80   |
| 36  | LA    | 2846 | U    | C6-N1-C2    | -5.37 | 117.78      | 121.00   |
| 36  | LA    | 800  | G    | C8-N9-C4    | -5.36 | 104.25      | 106.40   |
| 1   | 2     | 747  | C    | N1-C2-O2    | 5.36  | 122.12      | 118.90   |
| 1   | 2     | 533  | U    | C5-C6-N1    | 5.36  | 125.38      | 122.70   |
| 1   | 2     | 1510 | U    | C5-C6-N1    | 5.36  | 125.38      | 122.70   |
| 36  | LA    | 1278 | A    | O4'-C1'-N9  | 5.36  | 112.49      | 108.20   |
| 36  | LA    | 1562 | C    | C3'-C2'-C1' | 5.36  | 105.79      | 101.50   |
| 36  | LA    | 609  | G    | C5-C6-O6    | -5.36 | 125.39      | 128.60   |
| 36  | LA    | 1920 | U    | OP2-P-O3'   | 5.36  | 116.99      | 105.20   |
| 49  | LN    | 51   | LEU  | CA-CB-CG    | 5.36  | 127.62      | 115.30   |
| 1   | 2     | 1528 | U    | C2-N1-C1'   | 5.36  | 124.13      | 117.70   |
| 36  | LA    | 3089 | C    | C5-C6-N1    | 5.36  | 123.68      | 121.00   |
| 1   | 2     | 1308 | G    | C8-N9-C1'   | -5.35 | 120.04      | 127.00   |
| 1   | 2     | 1657 | U    | N3-C2-O2    | -5.35 | 118.45      | 122.20   |
| 1   | 2     | 956  | C    | C6-N1-C2    | -5.35 | 118.16      | 120.30   |
| 36  | LA    | 3138 | U    | O5'-P-OP2   | -5.35 | 100.88      | 105.70   |
| 1   | 2     | 1535 | U    | C2-N1-C1'   | 5.35  | 124.12      | 117.70   |
| 36  | LA    | 315  | C    | C2-N1-C1'   | 5.35  | 124.69      | 118.80   |
| 37  | LB    | 98   | C    | C6-N1-C2    | -5.35 | 118.16      | 120.30   |
| 1   | 2     | 323  | A    | C2-N3-C4    | 5.35  | 113.27      | 110.60   |
| 36  | LA    | 2836 | C    | C6-N1-C1'   | -5.35 | 114.38      | 120.80   |
| 36  | LA    | 732  | C    | C6-N1-C2    | -5.34 | 118.16      | 120.30   |
| 66  | LY    | 104  | LEU  | CA-CB-CG    | 5.34  | 127.59      | 115.30   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1   | 2     | 861  | U    | N1-C2-O2    | 5.34  | 126.54      | 122.80   |
| 5   | E     | 57   | MET  | CB-CG-SD    | 5.34  | 128.43      | 112.40   |
| 1   | 2     | 260  | U    | C6-N1-C2    | -5.34 | 117.80      | 121.00   |
| 1   | 2     | 546  | U    | O4'-C1'-N1  | 5.34  | 112.47      | 108.20   |
| 36  | LA    | 1657 | C    | C6-N1-C2    | -5.34 | 118.16      | 120.30   |
| 36  | LA    | 3195 | U    | N3-C2-O2    | -5.34 | 118.46      | 122.20   |
| 80  | Sm    | 20   | A    | C8-N9-C4    | -5.34 | 103.66      | 105.80   |
| 36  | LA    | 1943 | C    | C6-N1-C2    | -5.34 | 118.17      | 120.30   |
| 36  | LA    | 1859 | A    | C8-N9-C4    | -5.34 | 103.67      | 105.80   |
| 36  | LA    | 2476 | C    | C6-N1-C2    | -5.34 | 118.17      | 120.30   |
| 36  | LA    | 2773 | C    | C2-N1-C1'   | 5.33  | 124.67      | 118.80   |
| 1   | 2     | 433  | C    | C5-C6-N1    | 5.33  | 123.67      | 121.00   |
| 36  | LA    | 421  | G    | C8-N9-C1'   | -5.33 | 120.07      | 127.00   |
| 36  | LA    | 1269 | U    | C6-N1-C1'   | -5.33 | 113.74      | 121.20   |
| 36  | LA    | 1843 | C    | N1-C2-O2    | 5.33  | 122.10      | 118.90   |
| 36  | LA    | 2765 | C    | C5-C6-N1    | 5.33  | 123.67      | 121.00   |
| 36  | LA    | 3306 | U    | O4'-C1'-N1  | 5.33  | 112.46      | 108.20   |
| 36  | LA    | 1172 | G    | C8-N9-C4    | -5.33 | 104.27      | 106.40   |
| 1   | 2     | 1235 | C    | C2-N1-C1'   | 5.33  | 124.66      | 118.80   |
| 36  | LA    | 2594 | C    | C5-C6-N1    | 5.32  | 123.66      | 121.00   |
| 1   | 2     | 494  | U    | N1-C2-O2    | 5.32  | 126.53      | 122.80   |
| 36  | LA    | 915  | A    | N7-C8-N9    | 5.32  | 116.46      | 113.80   |
| 36  | LA    | 3034 | C    | C6-N1-C2    | -5.32 | 118.17      | 120.30   |
| 36  | LA    | 517  | G    | N3-C4-N9    | 5.32  | 129.19      | 126.00   |
| 36  | LA    | 1741 | A    | O4'-C1'-N9  | 5.32  | 112.45      | 108.20   |
| 36  | LA    | 3121 | U    | O5'-P-OP1   | -5.31 | 100.92      | 105.70   |
| 36  | LA    | 2712 | U    | N3-C2-O2    | -5.31 | 118.48      | 122.20   |
| 36  | LA    | 1851 | G    | C6-C5-N7    | -5.31 | 127.22      | 130.40   |
| 36  | LA    | 2726 | C    | N3-C2-O2    | -5.31 | 118.19      | 121.90   |
| 1   | 2     | 530  | C    | C2-N1-C1'   | 5.30  | 124.64      | 118.80   |
| 36  | LA    | 2594 | C    | N3-C2-O2    | -5.30 | 118.19      | 121.90   |
| 36  | LA    | 3278 | C    | C6-N1-C1'   | -5.30 | 114.44      | 120.80   |
| 36  | LA    | 2497 | U    | C5'-C4'-O4' | -5.30 | 102.74      | 109.10   |
| 80  | Sm    | 56   | C    | C6-N1-C2    | -5.30 | 118.18      | 120.30   |
| 36  | LA    | 2274 | U    | N3-C2-O2    | -5.30 | 118.49      | 122.20   |
| 1   | 2     | 1646 | C    | N3-C2-O2    | -5.30 | 118.19      | 121.90   |
| 36  | LA    | 2194 | G    | C4-N9-C1'   | 5.30  | 133.39      | 126.50   |
| 36  | LA    | 1604 | G    | C2-N3-C4    | 5.30  | 114.55      | 111.90   |
| 1   | 2     | 185  | U    | C2-N1-C1'   | 5.29  | 124.05      | 117.70   |
| 1   | 2     | 387  | A    | OP2-P-O3'   | 5.29  | 116.84      | 105.20   |
| 36  | LA    | 1296 | C    | C6-N1-C2    | -5.29 | 118.18      | 120.30   |
| 36  | LA    | 614  | C    | C5-C6-N1    | 5.29  | 123.65      | 121.00   |

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| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 36  | LA    | 79   | U    | C5-C6-N1    | 5.29  | 125.34      | 122.70   |
| 36  | LA    | 609  | G    | N9-C4-C5    | -5.29 | 103.28      | 105.40   |
| 36  | LA    | 1386 | A    | O5'-P-OP2   | -5.29 | 100.94      | 105.70   |
| 38  | LC    | 127  | U    | C5-C6-N1    | 5.29  | 125.34      | 122.70   |
| 1   | 2     | 633  | U    | N3-C2-O2    | -5.29 | 118.50      | 122.20   |
| 36  | LA    | 283  | G    | C4-N9-C1'   | 5.29  | 133.38      | 126.50   |
| 36  | LA    | 800  | G    | C4-N9-C1'   | 5.29  | 133.38      | 126.50   |
| 36  | LA    | 1339 | C    | C6-N1-C2    | -5.29 | 118.18      | 120.30   |
| 36  | LA    | 2714 | G    | C2-N3-C4    | -5.28 | 109.26      | 111.90   |
| 36  | LA    | 2925 | C    | C6-N1-C2    | -5.28 | 118.19      | 120.30   |
| 36  | LA    | 959  | C    | P-O3'-C3'   | 5.28  | 126.03      | 119.70   |
| 36  | LA    | 2501 | U    | N3-C2-O2    | -5.28 | 118.50      | 122.20   |
| 36  | LA    | 1943 | C    | C5-C6-N1    | 5.28  | 123.64      | 121.00   |
| 36  | LA    | 3275 | U    | P-O3'-C3'   | 5.28  | 126.03      | 119.70   |
| 1   | 2     | 1491 | U    | N3-C2-O2    | -5.28 | 118.51      | 122.20   |
| 36  | LA    | 517  | G    | N3-C4-C5    | -5.28 | 125.96      | 128.60   |
| 36  | LA    | 1766 | G    | N3-C4-N9    | 5.28  | 129.16      | 126.00   |
| 80  | Sm    | 72   | U    | C5'-C4'-C3' | 5.28  | 124.44      | 116.00   |
| 36  | LA    | 1230 | G    | N3-C4-N9    | 5.27  | 129.16      | 126.00   |
| 36  | LA    | 1581 | C    | C5-C6-N1    | 5.27  | 123.64      | 121.00   |
| 36  | LA    | 3384 | U    | C5-C6-N1    | 5.27  | 125.34      | 122.70   |
| 80  | Sm    | 75   | C    | C6-N1-C2    | -5.27 | 118.19      | 120.30   |
| 36  | LA    | 1433 | A    | O4'-C1'-N9  | -5.27 | 103.98      | 108.20   |
| 36  | LA    | 2619 | G    | C4-N9-C1'   | 5.27  | 133.35      | 126.50   |
| 1   | 2     | 1759 | C    | C6-N1-C2    | -5.27 | 118.19      | 120.30   |
| 1   | 2     | 172  | C    | C6-N1-C2    | -5.27 | 118.19      | 120.30   |
| 1   | 2     | 1080 | U    | C2-N1-C1'   | 5.27  | 124.02      | 117.70   |
| 36  | LA    | 2187 | G    | N1-C6-O6    | -5.27 | 116.74      | 119.90   |
| 1   | 2     | 1279 | C    | C5-C6-N1    | 5.26  | 123.63      | 121.00   |
| 36  | LA    | 1501 | U    | C5-C6-N1    | 5.26  | 125.33      | 122.70   |
| 36  | LA    | 439  | C    | C6-N1-C2    | -5.26 | 118.19      | 120.30   |
| 1   | 2     | 189  | C    | C5-C6-N1    | 5.26  | 123.63      | 121.00   |
| 1   | 2     | 894  | U    | N3-C2-O2    | -5.26 | 118.52      | 122.20   |
| 36  | LA    | 1751 | G    | C4-N9-C1'   | -5.26 | 119.66      | 126.50   |
| 1   | 2     | 1214 | U    | C5-C6-N1    | 5.26  | 125.33      | 122.70   |
| 36  | LA    | 861  | C    | C6-N1-C2    | -5.26 | 118.20      | 120.30   |
| 1   | 2     | 539  | G    | P-O3'-C3'   | 5.25  | 126.00      | 119.70   |
| 1   | 2     | 828  | U    | N3-C2-O2    | -5.25 | 118.52      | 122.20   |
| 1   | 2     | 1572 | G    | O4'-C1'-N9  | 5.25  | 112.40      | 108.20   |
| 36  | LA    | 1023 | C    | C5-C6-N1    | 5.25  | 123.63      | 121.00   |
| 36  | LA    | 2551 | U    | C6-N1-C2    | -5.25 | 117.85      | 121.00   |
| 1   | 2     | 1510 | U    | N3-C2-O2    | -5.25 | 118.52      | 122.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 20  | G     | 34   | LEU  | CA-CB-CG   | 5.25  | 127.38      | 115.30   |
| 36  | LA    | 1183 | C    | C6-N1-C2   | -5.25 | 118.20      | 120.30   |
| 1   | 2     | 1585 | U    | C6-N1-C2   | -5.25 | 117.85      | 121.00   |
| 36  | LA    | 3255 | U    | C5-C6-N1   | 5.25  | 125.33      | 122.70   |
| 80  | Sn    | 74   | C    | C6-N1-C2   | -5.25 | 118.20      | 120.30   |
| 36  | LA    | 298  | U    | N1-C2-O2   | 5.25  | 126.47      | 122.80   |
| 36  | LA    | 439  | C    | P-O3'-C3'  | 5.25  | 126.00      | 119.70   |
| 36  | LA    | 2274 | U    | C5-C6-N1   | 5.25  | 125.32      | 122.70   |
| 1   | 2     | 25   | C    | N3-C2-O2   | -5.24 | 118.23      | 121.90   |
| 36  | LA    | 2983 | C    | O4'-C1'-N1 | 5.24  | 112.39      | 108.20   |
| 73  | Lf    | 72   | ARG  | CG-CD-NE   | 5.24  | 122.81      | 111.80   |
| 1   | 2     | 54   | C    | C5-C6-N1   | 5.24  | 123.62      | 121.00   |
| 1   | 2     | 1535 | U    | N3-C2-O2   | -5.24 | 118.53      | 122.20   |
| 1   | 2     | 1172 | G    | C8-N9-C4   | -5.24 | 104.30      | 106.40   |
| 1   | 2     | 1291 | G    | C4-N9-C1'  | 5.24  | 133.31      | 126.50   |
| 1   | 2     | 1556 | A    | OP2-P-O3'  | 5.24  | 116.72      | 105.20   |
| 36  | LA    | 3350 | C    | C6-N1-C2   | -5.24 | 118.20      | 120.30   |
| 1   | 2     | 759  | U    | N3-C2-O2   | -5.24 | 118.53      | 122.20   |
| 36  | LA    | 2209 | U    | N1-C2-O2   | 5.24  | 126.46      | 122.80   |
| 36  | LA    | 2982 | A    | C4-C5-N7   | 5.24  | 113.32      | 110.70   |
| 36  | LA    | 193  | C    | C5-C6-N1   | 5.23  | 123.62      | 121.00   |
| 1   | 2     | 1214 | U    | N1-C2-O2   | 5.23  | 126.46      | 122.80   |
| 36  | LA    | 2844 | C    | C6-N1-C2   | -5.23 | 118.21      | 120.30   |
| 36  | LA    | 3137 | C    | C6-N1-C2   | -5.23 | 118.21      | 120.30   |
| 36  | LA    | 3196 | U    | C5-C6-N1   | 5.23  | 125.31      | 122.70   |
| 42  | LG    | 41   | LYS  | CA-CB-CG   | 5.23  | 124.91      | 113.40   |
| 45  | LJ    | 26   | LEU  | CA-CB-CG   | 5.23  | 127.33      | 115.30   |
| 36  | LA    | 291  | C    | C5-C6-N1   | 5.23  | 123.61      | 121.00   |
| 36  | LA    | 3049 | A    | C2-N3-C4   | 5.23  | 113.22      | 110.60   |
| 1   | 2     | 838  | G    | P-O3'-C3'  | 5.23  | 125.97      | 119.70   |
| 5   | E     | 77   | ARG  | CG-CD-NE   | 5.23  | 122.77      | 111.80   |
| 1   | 2     | 777  | C    | C6-N1-C2   | -5.22 | 118.21      | 120.30   |
| 36  | LA    | 2434 | U    | C6-N1-C1'  | -5.22 | 113.89      | 121.20   |
| 1   | 2     | 795  | U    | C2-N1-C1'  | 5.22  | 123.97      | 117.70   |
| 1   | 2     | 795  | U    | C5-C6-N1   | 5.22  | 125.31      | 122.70   |
| 80  | Sn    | 20   | A    | OP2-P-O3'  | 5.22  | 116.69      | 105.20   |
| 36  | LA    | 1876 | U    | C5-C6-N1   | 5.22  | 125.31      | 122.70   |
| 1   | 2     | 587  | C    | C5-C6-N1   | 5.22  | 123.61      | 121.00   |
| 37  | LB    | 33   | U    | C6-N1-C1'  | 5.22  | 128.50      | 121.20   |
| 1   | 2     | 1222 | C    | C6-N1-C2   | -5.22 | 118.21      | 120.30   |
| 1   | 2     | 68   | A    | P-O3'-C3'  | 5.21  | 125.96      | 119.70   |
| 1   | 2     | 1471 | A    | OP1-P-O3'  | 5.21  | 116.67      | 105.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 48  | LM    | 167  | TYR  | CB-CG-CD1  | -5.21 | 117.87      | 121.00   |
| 1   | 2     | 681  | U    | O5'-P-OP2  | -5.21 | 101.01      | 105.70   |
| 36  | LA    | 1764 | U    | P-O3'-C3'  | 5.21  | 125.95      | 119.70   |
| 36  | LA    | 3157 | U    | P-O3'-C3'  | 5.21  | 125.96      | 119.70   |
| 1   | 2     | 1063 | U    | N3-C2-O2   | -5.21 | 118.55      | 122.20   |
| 1   | 2     | 1559 | A    | O5'-P-OP2  | -5.21 | 101.01      | 105.70   |
| 36  | LA    | 1870 | C    | C6-N1-C2   | -5.21 | 118.22      | 120.30   |
| 66  | LY    | 34   | LEU  | CA-CB-CG   | 5.21  | 127.28      | 115.30   |
| 1   | 2     | 552  | G    | C8-N9-C1'  | -5.21 | 120.23      | 127.00   |
| 36  | LA    | 1086 | C    | C6-N1-C2   | -5.21 | 118.22      | 120.30   |
| 36  | LA    | 1873 | U    | N1-C2-O2   | 5.21  | 126.44      | 122.80   |
| 36  | LA    | 3121 | U    | OP1-P-O3'  | 5.21  | 116.66      | 105.20   |
| 36  | LA    | 1238 | C    | N1-C2-O2   | 5.21  | 122.02      | 118.90   |
| 36  | LA    | 1093 | A    | O4'-C1'-N9 | -5.20 | 104.04      | 108.20   |
| 36  | LA    | 1819 | U    | N3-C2-O2   | -5.20 | 118.56      | 122.20   |
| 38  | LC    | 125  | U    | O4'-C1'-N1 | 5.20  | 112.36      | 108.20   |
| 1   | 2     | 440  | U    | N1-C2-N3   | 5.20  | 118.02      | 114.90   |
| 36  | LA    | 1358 | C    | C6-N1-C2   | -5.20 | 118.22      | 120.30   |
| 36  | LA    | 1822 | C    | C5-C6-N1   | 5.20  | 123.60      | 121.00   |
| 36  | LA    | 2829 | U    | C5-C6-N1   | 5.20  | 125.30      | 122.70   |
| 1   | 2     | 1235 | C    | C5-C6-N1   | 5.20  | 123.60      | 121.00   |
| 36  | LA    | 713  | U    | C6-N1-C2   | -5.20 | 117.88      | 121.00   |
| 36  | LA    | 1228 | C    | N1-C2-O2   | 5.20  | 122.02      | 118.90   |
| 36  | LA    | 2809 | C    | C5-C6-N1   | 5.20  | 123.60      | 121.00   |
| 36  | LA    | 2207 | A    | C5-C6-N6   | -5.20 | 119.54      | 123.70   |
| 1   | 2     | 304  | U    | N1-C2-O2   | 5.20  | 126.44      | 122.80   |
| 36  | LA    | 893  | C    | C6-N1-C2   | -5.20 | 118.22      | 120.30   |
| 36  | LA    | 2889 | C    | C6-N1-C2   | -5.20 | 118.22      | 120.30   |
| 38  | LC    | 90   | U    | C5-C6-N1   | 5.20  | 125.30      | 122.70   |
| 36  | LA    | 1230 | G    | C6-C5-N7   | -5.19 | 127.28      | 130.40   |
| 36  | LA    | 1878 | G    | C8-N9-C1'  | -5.19 | 120.25      | 127.00   |
| 36  | LA    | 3023 | U    | N1-C2-O2   | 5.19  | 126.44      | 122.80   |
| 36  | LA    | 3023 | U    | N3-C2-O2   | -5.19 | 118.56      | 122.20   |
| 39  | LD    | 5    | ILE  | CG1-CB-CG2 | -5.19 | 99.97       | 111.40   |
| 1   | 2     | 1252 | C    | C6-N1-C2   | -5.19 | 118.22      | 120.30   |
| 1   | 2     | 1560 | U    | C6-N1-C1'  | -5.19 | 113.93      | 121.20   |
| 36  | LA    | 604  | G    | C4-C5-N7   | 5.19  | 112.88      | 110.80   |
| 36  | LA    | 1275 | C    | N3-C2-O2   | -5.19 | 118.27      | 121.90   |
| 36  | LA    | 3207 | U    | O4'-C1'-N1 | 5.19  | 112.35      | 108.20   |
| 36  | LA    | 2924 | U    | N3-C2-O2   | -5.19 | 118.57      | 122.20   |
| 1   | 2     | 1197 | C    | C6-N1-C2   | -5.19 | 118.22      | 120.30   |
| 36  | LA    | 2510 | U    | O4'-C1'-N1 | 5.19  | 112.35      | 108.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 81  | EF    | 967  | ASP  | CB-CG-OD1  | 5.19  | 122.97      | 118.30   |
| 1   | 2     | 446  | A    | C8-N9-C1'  | -5.19 | 118.36      | 127.70   |
| 1   | 2     | 1591 | C    | C6-N1-C2   | -5.19 | 118.22      | 120.30   |
| 36  | LA    | 354  | U    | C5-C6-N1   | 5.19  | 125.29      | 122.70   |
| 36  | LA    | 2551 | U    | N3-C2-O2   | -5.19 | 118.57      | 122.20   |
| 36  | LA    | 2742 | C    | C6-N1-C2   | -5.19 | 118.22      | 120.30   |
| 80  | Sm    | 63   | G    | P-O3'-C3'  | 5.19  | 125.92      | 119.70   |
| 1   | 2     | 928  | U    | OP2-P-O3'  | 5.18  | 116.61      | 105.20   |
| 36  | LA    | 102  | C    | C5-C6-N1   | 5.18  | 123.59      | 121.00   |
| 1   | 2     | 121  | U    | C5-C6-N1   | 5.18  | 125.29      | 122.70   |
| 1   | 2     | 1144 | U    | C5-C6-N1   | 5.18  | 125.29      | 122.70   |
| 1   | 2     | 1465 | C    | C6-N1-C2   | -5.18 | 118.23      | 120.30   |
| 36  | LA    | 125  | C    | C5-C6-N1   | 5.18  | 123.59      | 121.00   |
| 36  | LA    | 2207 | A    | N9-C4-C5   | -5.18 | 103.73      | 105.80   |
| 1   | 2     | 1023 | A    | P-O3'-C3'  | 5.18  | 125.92      | 119.70   |
| 36  | LA    | 1665 | C    | C6-N1-C2   | -5.18 | 118.23      | 120.30   |
| 1   | 2     | 138  | A    | C2-N3-C4   | 5.18  | 113.19      | 110.60   |
| 36  | LA    | 1273 | A    | C4-N9-C1'  | 5.18  | 135.62      | 126.30   |
| 1   | 2     | 1514 | U    | C2-N1-C1'  | 5.18  | 123.91      | 117.70   |
| 11  | U     | 64   | VAL  | CA-CB-CG1  | 5.18  | 118.67      | 110.90   |
| 1   | 2     | 553  | G    | OP1-P-O3'  | 5.17  | 116.58      | 105.20   |
| 1   | 2     | 1711 | C    | C6-N1-C2   | -5.17 | 118.23      | 120.30   |
| 1   | 2     | 735  | C    | N3-C2-O2   | -5.17 | 118.28      | 121.90   |
| 36  | LA    | 1023 | C    | C6-N1-C2   | -5.17 | 118.23      | 120.30   |
| 1   | 2     | 1119 | G    | N3-C4-N9   | 5.17  | 129.10      | 126.00   |
| 13  | W     | 97   | LEU  | CA-CB-CG   | 5.17  | 127.19      | 115.30   |
| 36  | LA    | 1146 | C    | C5-C6-N1   | 5.17  | 123.58      | 121.00   |
| 36  | LA    | 2815 | G    | C5-C6-O6   | 5.17  | 131.70      | 128.60   |
| 36  | LA    | 2899 | C    | O4'-C1'-N1 | 5.17  | 112.33      | 108.20   |
| 1   | 2     | 1436 | A    | C8-N9-C4   | -5.16 | 103.74      | 105.80   |
| 36  | LA    | 2567 | C    | C2-N1-C1'  | 5.16  | 124.48      | 118.80   |
| 24  | a     | 11   | LEU  | CB-CG-CD1  | 5.16  | 119.77      | 111.00   |
| 36  | LA    | 3269 | U    | N3-C2-O2   | -5.16 | 118.59      | 122.20   |
| 1   | 2     | 530  | C    | C6-N1-C2   | -5.16 | 118.24      | 120.30   |
| 1   | 2     | 1528 | U    | N1-C2-O2   | 5.16  | 126.41      | 122.80   |
| 16  | D     | 140  | PHE  | CB-CG-CD1  | -5.16 | 117.19      | 120.80   |
| 36  | LA    | 142  | C    | N3-C2-O2   | -5.16 | 118.29      | 121.90   |
| 36  | LA    | 1064 | A    | P-O3'-C3'  | 5.15  | 125.89      | 119.70   |
| 80  | Sn    | 25   | C    | C5-C6-N1   | 5.15  | 123.58      | 121.00   |
| 36  | LA    | 1609 | C    | C5-C6-N1   | 5.15  | 123.58      | 121.00   |
| 1   | 2     | 1307 | U    | C2-N1-C1'  | 5.15  | 123.88      | 117.70   |
| 1   | 2     | 1399 | C    | C6-N1-C1'  | 5.15  | 126.98      | 120.80   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 11  | U     | 9    | LEU  | CA-CB-CG   | 5.15  | 127.14      | 115.30   |
| 36  | LA    | 2989 | U    | N3-C2-O2   | -5.15 | 118.60      | 122.20   |
| 36  | LA    | 15   | C    | N3-C2-O2   | -5.15 | 118.30      | 121.90   |
| 36  | LA    | 2541 | U    | N1-C2-O2   | 5.15  | 126.40      | 122.80   |
| 36  | LA    | 3317 | U    | C5-C6-N1   | 5.14  | 125.27      | 122.70   |
| 1   | 2     | 283  | U    | C2-N1-C1'  | 5.14  | 123.87      | 117.70   |
| 36  | LA    | 2876 | C    | C5-C6-N1   | 5.14  | 123.57      | 121.00   |
| 36  | LA    | 1168 | U    | N3-C2-O2   | -5.14 | 118.60      | 122.20   |
| 36  | LA    | 2452 | G    | P-O5'-C5'  | 5.14  | 129.12      | 120.90   |
| 1   | 2     | 1021 | C    | C6-N1-C2   | -5.14 | 118.25      | 120.30   |
| 11  | U     | 129  | LEU  | CA-CB-CG   | 5.14  | 127.12      | 115.30   |
| 36  | LA    | 1597 | C    | C6-N1-C2   | -5.14 | 118.25      | 120.30   |
| 36  | LA    | 1889 | G    | C4-N9-C1'  | 5.13  | 133.18      | 126.50   |
| 1   | 2     | 625  | C    | C5-C6-N1   | 5.13  | 123.57      | 121.00   |
| 1   | 2     | 1381 | U    | C6-N1-C1'  | -5.13 | 114.01      | 121.20   |
| 12  | V     | 29   | LEU  | CA-CB-CG   | 5.13  | 127.10      | 115.30   |
| 36  | LA    | 249  | U    | O5'-P-OP2  | -5.13 | 101.08      | 105.70   |
| 36  | LA    | 2434 | U    | C6-N1-C2   | -5.13 | 117.92      | 121.00   |
| 1   | 2     | 881  | A    | N9-C4-C5   | -5.13 | 103.75      | 105.80   |
| 5   | E     | 84   | ILE  | CG1-CB-CG2 | -5.13 | 100.11      | 111.40   |
| 40  | LE    | 87   | VAL  | CG1-CB-CG2 | -5.13 | 102.69      | 110.90   |
| 1   | 2     | 935  | U    | O5'-P-OP2  | -5.13 | 101.08      | 105.70   |
| 36  | LA    | 963  | G    | N3-C4-N9   | 5.13  | 129.08      | 126.00   |
| 36  | LA    | 2227 | C    | C6-N1-C2   | -5.13 | 118.25      | 120.30   |
| 34  | O     | 33   | LEU  | CA-CB-CG   | 5.13  | 127.09      | 115.30   |
| 36  | LA    | 87   | U    | C5-C6-N1   | 5.13  | 125.26      | 122.70   |
| 36  | LA    | 1126 | G    | C4-C5-N7   | 5.13  | 112.85      | 110.80   |
| 36  | LA    | 1879 | A    | C8-N9-C4   | -5.13 | 103.75      | 105.80   |
| 1   | 2     | 491  | C    | C6-N1-C2   | -5.12 | 118.25      | 120.30   |
| 1   | 2     | 965  | U    | OP1-P-O3'  | 5.12  | 116.47      | 105.20   |
| 36  | LA    | 855  | U    | N1-C2-O2   | 5.12  | 126.39      | 122.80   |
| 36  | LA    | 1235 | U    | C5-C4-O4   | 5.12  | 128.97      | 125.90   |
| 1   | 2     | 1082 | C    | N1-C2-O2   | 5.12  | 121.97      | 118.90   |
| 36  | LA    | 2948 | C    | C6-N1-C2   | -5.12 | 118.25      | 120.30   |
| 36  | LA    | 2600 | C    | C6-N1-C2   | -5.12 | 118.25      | 120.30   |
| 36  | LA    | 2638 | C    | C5-C6-N1   | 5.12  | 123.56      | 121.00   |
| 36  | LA    | 1805 | C    | C6-N1-C2   | -5.12 | 118.25      | 120.30   |
| 36  | LA    | 3277 | U    | O4'-C1'-N1 | 5.12  | 112.29      | 108.20   |
| 36  | LA    | 1228 | C    | C6-N1-C2   | -5.12 | 118.25      | 120.30   |
| 36  | LA    | 1395 | G    | N3-C4-C5   | -5.12 | 126.04      | 128.60   |
| 1   | 2     | 605  | A    | OP1-P-O3'  | 5.11  | 116.45      | 105.20   |
| 36  | LA    | 2961 | G    | C4-N9-C1'  | 5.11  | 133.15      | 126.50   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 36  | LA    | 1706 | C    | C5-C6-N1   | 5.11  | 123.56      | 121.00   |
| 36  | LA    | 1879 | A    | O4'-C1'-N9 | 5.11  | 112.29      | 108.20   |
| 38  | LC    | 118  | C    | C6-N1-C2   | -5.11 | 118.26      | 120.30   |
| 36  | LA    | 604  | G    | C5-C6-O6   | -5.11 | 125.53      | 128.60   |
| 36  | LA    | 2414 | G    | N3-C4-N9   | 5.11  | 129.07      | 126.00   |
| 1   | 2     | 617  | U    | C2-N1-C1'  | 5.11  | 123.83      | 117.70   |
| 36  | LA    | 190  | U    | OP2-P-O3'  | 5.11  | 116.44      | 105.20   |
| 36  | LA    | 2906 | C    | C5-C6-N1   | 5.11  | 123.55      | 121.00   |
| 36  | LA    | 3131 | U    | N3-C2-O2   | -5.11 | 118.62      | 122.20   |
| 1   | 2     | 176  | C    | C4-C5-C6   | -5.11 | 114.85      | 117.40   |
| 80  | Sn    | 49   | C    | C2-N3-C4   | 5.11  | 122.45      | 119.90   |
| 36  | LA    | 3058 | U    | C6-N1-C1'  | -5.10 | 114.06      | 121.20   |
| 38  | LC    | 28   | C    | C5-C6-N1   | 5.10  | 123.55      | 121.00   |
| 80  | Sm    | 23   | C    | C6-N1-C2   | -5.10 | 118.26      | 120.30   |
| 36  | LA    | 2567 | C    | C6-N1-C2   | -5.10 | 118.26      | 120.30   |
| 36  | LA    | 242  | C    | N1-C2-O2   | 5.09  | 121.96      | 118.90   |
| 1   | 2     | 1148 | C    | C5-C6-N1   | 5.09  | 123.55      | 121.00   |
| 36  | LA    | 97   | U    | N3-C2-O2   | -5.09 | 118.64      | 122.20   |
| 1   | 2     | 832  | U    | OP2-P-O3'  | 5.09  | 116.39      | 105.20   |
| 36  | LA    | 1540 | U    | N1-C2-O2   | 5.09  | 126.36      | 122.80   |
| 36  | LA    | 2378 | C    | N1-C2-O2   | 5.09  | 121.95      | 118.90   |
| 36  | LA    | 2726 | C    | C6-N1-C2   | -5.09 | 118.27      | 120.30   |
| 38  | LC    | 153  | U    | N3-C2-O2   | -5.09 | 118.64      | 122.20   |
| 1   | 2     | 1274 | C    | N3-C2-O2   | -5.08 | 118.34      | 121.90   |
| 36  | LA    | 1403 | C    | C6-N1-C2   | -5.08 | 118.27      | 120.30   |
| 1   | 2     | 555  | A    | C4-C5-C6   | 5.08  | 119.54      | 117.00   |
| 1   | 2     | 583  | C    | C6-N1-C1'  | -5.08 | 114.70      | 120.80   |
| 36  | LA    | 1901 | A    | C4-N9-C1'  | 5.08  | 135.44      | 126.30   |
| 36  | LA    | 2362 | C    | C5-C6-N1   | 5.08  | 123.54      | 121.00   |
| 1   | 2     | 1205 | C    | C6-N1-C2   | -5.08 | 118.27      | 120.30   |
| 36  | LA    | 916  | G    | P-O3'-C3'  | 5.08  | 125.80      | 119.70   |
| 36  | LA    | 1279 | C    | N3-C4-N4   | 5.08  | 121.56      | 118.00   |
| 1   | 2     | 376  | C    | C6-N1-C2   | -5.08 | 118.27      | 120.30   |
| 36  | LA    | 42   | C    | C6-N1-C2   | -5.08 | 118.27      | 120.30   |
| 36  | LA    | 362  | U    | N3-C2-O2   | -5.08 | 118.65      | 122.20   |
| 36  | LA    | 817  | A    | C2-N3-C4   | 5.08  | 113.14      | 110.60   |
| 36  | LA    | 1190 | A    | C8-N9-C1'  | -5.08 | 118.56      | 127.70   |
| 36  | LA    | 1751 | G    | C8-N9-C1'  | 5.08  | 133.60      | 127.00   |
| 36  | LA    | 2146 | C    | C2-N1-C1'  | 5.08  | 124.39      | 118.80   |
| 36  | LA    | 2619 | G    | C8-N9-C1'  | -5.08 | 120.40      | 127.00   |
| 1   | 2     | 1024 | U    | O4'-C1'-N1 | 5.08  | 112.26      | 108.20   |
| 1   | 2     | 1772 | C    | C6-N1-C2   | -5.08 | 118.27      | 120.30   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1496 | U    | N1-C2-O2   | 5.07  | 126.35      | 122.80   |
| 36  | LA    | 1764 | U    | OP1-P-O3'  | 5.07  | 116.36      | 105.20   |
| 1   | 2     | 870  | C    | C6-N1-C2   | -5.07 | 118.27      | 120.30   |
| 36  | LA    | 2184 | U    | C5-C6-N1   | 5.07  | 125.23      | 122.70   |
| 80  | Sn    | 32   | C    | C6-N1-C2   | -5.07 | 118.27      | 120.30   |
| 1   | 2     | 415  | C    | C2-N1-C1'  | 5.07  | 124.38      | 118.80   |
| 1   | 2     | 1147 | A    | N7-C8-N9   | 5.07  | 116.33      | 113.80   |
| 1   | 2     | 1704 | U    | N3-C2-O2   | -5.07 | 118.65      | 122.20   |
| 36  | LA    | 439  | C    | OP1-P-O3'  | 5.07  | 116.35      | 105.20   |
| 36  | LA    | 1096 | U    | O4'-C1'-N1 | -5.07 | 104.15      | 108.20   |
| 36  | LA    | 1126 | G    | N9-C4-C5   | -5.07 | 103.37      | 105.40   |
| 80  | Sm    | 51   | C    | C6-N1-C2   | -5.06 | 118.27      | 120.30   |
| 1   | 2     | 975  | C    | C5-C6-N1   | 5.06  | 123.53      | 121.00   |
| 1   | 2     | 117  | U    | C5-C6-N1   | 5.06  | 125.23      | 122.70   |
| 36  | LA    | 354  | U    | N3-C2-O2   | -5.06 | 118.66      | 122.20   |
| 36  | LA    | 600  | G    | C4-C5-N7   | 5.06  | 112.82      | 110.80   |
| 1   | 2     | 1274 | C    | C2-N1-C1'  | 5.06  | 124.36      | 118.80   |
| 36  | LA    | 283  | G    | C2-N3-C4   | 5.06  | 114.43      | 111.90   |
| 38  | LC    | 151  | C    | C5-C6-N1   | 5.06  | 123.53      | 121.00   |
| 1   | 2     | 166  | C    | C6-N1-C2   | -5.06 | 118.28      | 120.30   |
| 36  | LA    | 3276 | G    | O5'-P-OP1  | -5.06 | 101.15      | 105.70   |
| 64  | LW    | 78   | LEU  | CA-CB-CG   | 5.05  | 126.92      | 115.30   |
| 1   | 2     | 1119 | G    | N3-C4-C5   | -5.05 | 126.08      | 128.60   |
| 1   | 2     | 1514 | U    | C6-N1-C1'  | -5.05 | 114.13      | 121.20   |
| 36  | LA    | 609  | G    | N3-C4-C5   | -5.05 | 126.08      | 128.60   |
| 36  | LA    | 2553 | U    | C6-N1-C1'  | -5.05 | 114.13      | 121.20   |
| 16  | D     | 137  | MET  | CA-CB-CG   | 5.05  | 121.88      | 113.30   |
| 36  | LA    | 2252 | A    | N7-C8-N9   | 5.05  | 116.32      | 113.80   |
| 36  | LA    | 2867 | C    | C5-C6-N1   | 5.05  | 123.52      | 121.00   |
| 1   | 2     | 102  | U    | C5-C6-N1   | 5.05  | 125.22      | 122.70   |
| 36  | LA    | 2471 | U    | N1-C2-O2   | 5.05  | 126.33      | 122.80   |
| 1   | 2     | 237  | C    | OP2-P-O3'  | 5.04  | 116.30      | 105.20   |
| 1   | 2     | 583  | C    | N3-C2-O2   | -5.04 | 118.37      | 121.90   |
| 36  | LA    | 3319 | U    | OP1-P-O3'  | 5.04  | 116.30      | 105.20   |
| 1   | 2     | 747  | C    | C6-N1-C2   | -5.04 | 118.28      | 120.30   |
| 1   | 2     | 1235 | C    | N1-C2-O2   | 5.04  | 121.93      | 118.90   |
| 1   | 2     | 1666 | U    | N3-C2-O2   | -5.04 | 118.67      | 122.20   |
| 36  | LA    | 1819 | U    | N1-C2-O2   | 5.04  | 126.33      | 122.80   |
| 36  | LA    | 2108 | C    | C6-N1-C2   | -5.04 | 118.28      | 120.30   |
| 36  | LA    | 2252 | A    | C8-N9-C4   | -5.04 | 103.78      | 105.80   |
| 80  | Sn    | 49   | C    | C2-N1-C1'  | 5.04  | 124.35      | 118.80   |
| 1   | 2     | 1761 | U    | N3-C2-O2   | -5.04 | 118.67      | 122.20   |

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| Mol | Chain | Res  | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1   | 2     | 1554 | U    | N1-C2-O2   | 5.04  | 126.33      | 122.80   |
| 36  | LA    | 2496 | C    | C6-N1-C1'  | -5.04 | 114.75      | 120.80   |
| 55  | Ln    | 126  | GLU  | CA-CB-CG   | 5.04  | 124.48      | 113.40   |
| 1   | 2     | 934  | C    | C6-N1-C2   | -5.04 | 118.28      | 120.30   |
| 1   | 2     | 1529 | C    | C6-N1-C2   | -5.04 | 118.28      | 120.30   |
| 36  | LA    | 1894 | U    | N1-C2-N3   | 5.04  | 117.92      | 114.90   |
| 36  | LA    | 2689 | A    | N7-C8-N9   | 5.04  | 116.32      | 113.80   |
| 59  | Lr    | 83   | LYS  | CB-CG-CD   | 5.04  | 124.69      | 111.60   |
| 81  | EF    | 508  | LEU  | CA-CB-CG   | 5.04  | 126.88      | 115.30   |
| 1   | 2     | 1438 | G    | N3-C4-N9   | 5.03  | 129.02      | 126.00   |
| 36  | LA    | 1175 | C    | C6-N1-C2   | -5.03 | 118.29      | 120.30   |
| 36  | LA    | 2585 | G    | C2-N3-C4   | 5.03  | 114.42      | 111.90   |
| 1   | 2     | 229  | U    | N3-C2-O2   | -5.03 | 118.68      | 122.20   |
| 1   | 2     | 1134 | C    | C6-N1-C2   | -5.03 | 118.29      | 120.30   |
| 1   | 2     | 1373 | C    | N1-C2-O2   | 5.03  | 121.92      | 118.90   |
| 36  | LA    | 600  | G    | C5-C6-O6   | -5.03 | 125.58      | 128.60   |
| 1   | 2     | 176  | C    | C6-N1-C2   | -5.03 | 118.29      | 120.30   |
| 1   | 2     | 959  | U    | C6-N1-C2   | -5.03 | 117.98      | 121.00   |
| 5   | E     | 34   | VAL  | CA-CB-CG1  | 5.03  | 118.44      | 110.90   |
| 36  | LA    | 600  | G    | N1-C6-O6   | 5.03  | 122.92      | 119.90   |
| 36  | LA    | 15   | C    | N1-C2-O2   | 5.03  | 121.92      | 118.90   |
| 36  | LA    | 1368 | U    | C5-C6-N1   | 5.03  | 125.21      | 122.70   |
| 36  | LA    | 2118 | C    | C5-C6-N1   | 5.03  | 123.51      | 121.00   |
| 1   | 2     | 144  | U    | C5-C4-O4   | -5.02 | 122.89      | 125.90   |
| 78  | Lk    | 93   | LEU  | CA-CB-CG   | 5.02  | 126.86      | 115.30   |
| 36  | LA    | 123  | A    | C5-C6-N1   | 5.02  | 120.21      | 117.70   |
| 36  | LA    | 885  | U    | N3-C2-O2   | -5.02 | 118.69      | 122.20   |
| 36  | LA    | 283  | G    | OP1-P-O3'  | 5.02  | 116.25      | 105.20   |
| 36  | LA    | 548  | G    | N1-C2-N2   | -5.02 | 111.68      | 116.20   |
| 36  | LA    | 1508 | C    | N1-C2-O2   | 5.02  | 121.91      | 118.90   |
| 38  | LC    | 82   | U    | OP1-P-O3'  | 5.02  | 116.24      | 105.20   |
| 1   | 2     | 232  | U    | O4'-C1'-N1 | 5.02  | 112.22      | 108.20   |
| 1   | 2     | 1315 | U    | N1-C2-O2   | 5.02  | 126.31      | 122.80   |
| 36  | LA    | 2372 | A    | O4'-C1'-N9 | -5.02 | 104.19      | 108.20   |
| 36  | LA    | 2496 | C    | N3-C2-O2   | -5.02 | 118.39      | 121.90   |
| 1   | 2     | 735  | C    | N1-C2-O2   | 5.01  | 121.91      | 118.90   |
| 36  | LA    | 1239 | C    | N1-C2-O2   | 5.01  | 121.91      | 118.90   |
| 36  | LA    | 1857 | C    | C5-C6-N1   | 5.01  | 123.51      | 121.00   |
| 36  | LA    | 1889 | G    | C8-N9-C1'  | -5.01 | 120.48      | 127.00   |
| 36  | LA    | 2209 | U    | C2-N1-C1'  | 5.01  | 123.72      | 117.70   |
| 1   | 2     | 1608 | U    | N3-C2-O2   | -5.01 | 118.69      | 122.20   |
| 15  | X     | 5    | LEU  | CA-CB-CG   | 5.01  | 126.83      | 115.30   |

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| Mol | Chain | Res  | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 36  | LA    | 609  | G    | C2-N3-C4  | 5.01  | 114.41      | 111.90   |
| 36  | LA    | 48   | A    | O5'-P-OP2 | -5.01 | 101.19      | 105.70   |
| 81  | EF    | 331  | LEU  | CA-CB-CG  | 5.01  | 126.82      | 115.30   |
| 21  | H     | 116  | LEU  | CB-CG-CD1 | 5.01  | 119.52      | 111.00   |
| 36  | LA    | 787  | G    | O5'-P-OP1 | -5.01 | 101.19      | 105.70   |
| 71  | Ld    | 33   | VAL  | CA-CB-CG1 | 5.01  | 118.42      | 110.90   |
| 1   | 2     | 1474 | G    | C8-N9-C4  | -5.01 | 104.40      | 106.40   |
| 36  | LA    | 2505 | U    | P-O3'-C3' | 5.01  | 125.71      | 119.70   |
| 36  | LA    | 3086 | A    | N7-C8-N9  | 5.01  | 116.30      | 113.80   |
| 36  | LA    | 1751 | G    | N3-C4-N9  | -5.01 | 123.00      | 126.00   |
| 1   | 2     | 424  | C    | C6-N1-C2  | -5.00 | 118.30      | 120.30   |
| 1   | 2     | 445  | A    | C2-N3-C4  | 5.00  | 113.10      | 110.60   |
| 1   | 2     | 1347 | U    | C2-N1-C1' | 5.00  | 123.70      | 117.70   |

There are no chirality outliers.

All (30) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group     |
|-----|-------|------|------|-----------|
| 9   | B     | 125  | THR  | Peptide   |
| 9   | B     | 42   | LEU  | Peptide   |
| 16  | D     | 108  | ARG  | Peptide   |
| 81  | EF    | 465  | GLY  | Peptide   |
| 81  | EF    | 663  | LYS  | Peptide   |
| 81  | EF    | 760  | GLN  | Peptide   |
| 81  | EF    | 78   | ASN  | Peptide   |
| 81  | EF    | 80   | SER  | Peptide   |
| 81  | EF    | 955  | THR  | Peptide   |
| 19  | F     | 40   | GLU  | Peptide   |
| 36  | LA    | 1273 | A    | Sidechain |
| 41  | LF    | 13   | GLY  | Peptide   |
| 41  | LF    | 3    | ARG  | Peptide   |
| 41  | LF    | 318  | LEU  | Peptide   |
| 44  | LI    | 232  | ARG  | Peptide   |
| 45  | LJ    | 30   | THR  | Peptide   |
| 45  | LJ    | 76   | ALA  | Peptide   |
| 45  | LJ    | 77   | GLN  | Peptide   |
| 64  | LW    | 115  | LYS  | Peptide   |
| 64  | LW    | 14   | HIS  | Peptide   |
| 65  | LX    | 19   | ASN  | Peptide   |
| 65  | LX    | 20   | GLY  | Peptide   |
| 66  | LY    | 47   | ASN  | Peptide   |
| 67  | LZ    | 7    | VAL  | Peptide   |

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| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 71  | Ld    | 83  | LYS  | Peptide |
| 54  | Lm    | 161 | LYS  | Peptide |
| 33  | N     | 147 | VAL  | Peptide |
| 8   | S     | 193 | GLY  | Peptide |
| 11  | U     | 64  | VAL  | Peptide |
| 25  | b     | 54  | ASP  | Peptide |

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

Due to software issues we are unable to calculate clashes - this section is therefore empty.

## 5.3 Torsion angles [i](#)

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

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

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

| Mol | Chain | Analysed      | Favoured  | Allowed  | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|----------|----------|-------------|-----|
| 3   | P     | 204/206 (99%) | 182 (89%) | 22 (11%) | 0        | 100         | 100 |
| 4   | Q     | 222/232 (96%) | 196 (88%) | 26 (12%) | 0        | 100         | 100 |
| 5   | E     | 115/117 (98%) | 100 (87%) | 15 (13%) | 0        | 100         | 100 |
| 6   | R     | 214/216 (99%) | 188 (88%) | 26 (12%) | 0        | 100         | 100 |
| 7   | A     | 220/222 (99%) | 209 (95%) | 11 (5%)  | 0        | 100         | 100 |
| 8   | S     | 256/258 (99%) | 229 (90%) | 27 (10%) | 0        | 100         | 100 |
| 9   | B     | 204/206 (99%) | 188 (92%) | 16 (8%)  | 0        | 100         | 100 |
| 10  | T     | 226/228 (99%) | 212 (94%) | 14 (6%)  | 0        | 100         | 100 |
| 11  | U     | 182/184 (99%) | 162 (89%) | 20 (11%) | 0        | 100         | 100 |
| 12  | V     | 183/198 (92%) | 168 (92%) | 15 (8%)  | 0        | 100         | 100 |
| 13  | W     | 182/184 (99%) | 165 (91%) | 16 (9%)  | 1 (0%)   | 29          | 61  |
| 14  | C     | 90/92 (98%)   | 79 (88%)  | 11 (12%) | 0        | 100         | 100 |
| 15  | X     | 140/142 (99%) | 124 (89%) | 16 (11%) | 0        | 100         | 100 |
| 16  | D     | 119/121 (98%) | 90 (76%)  | 27 (23%) | 2 (2%)   | 9           | 35  |

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| Mol | Chain | Analysed       | Favoured  | Allowed  | Outliers | Percentiles |     |
|-----|-------|----------------|-----------|----------|----------|-------------|-----|
| 17  | Y     | 148/150 (99%)  | 134 (90%) | 14 (10%) | 0        | 100         | 100 |
| 18  | Z     | 125/127 (98%)  | 110 (88%) | 15 (12%) | 0        | 100         | 100 |
| 19  | F     | 139/141 (99%)  | 127 (91%) | 12 (9%)  | 0        | 100         | 100 |
| 20  | G     | 117/125 (94%)  | 112 (96%) | 5 (4%)   | 0        | 100         | 100 |
| 21  | H     | 143/145 (99%)  | 130 (91%) | 13 (9%)  | 0        | 100         | 100 |
| 22  | I     | 141/143 (99%)  | 129 (92%) | 10 (7%)  | 2 (1%)   | 11          | 38  |
| 23  | J     | 98/100 (98%)   | 89 (91%)  | 9 (9%)   | 0        | 100         | 100 |
| 24  | a     | 85/87 (98%)    | 71 (84%)  | 14 (16%) | 0        | 100         | 100 |
| 25  | b     | 127/129 (98%)  | 113 (89%) | 14 (11%) | 0        | 100         | 100 |
| 26  | c     | 142/144 (99%)  | 125 (88%) | 17 (12%) | 0        | 100         | 100 |
| 27  | d     | 132/134 (98%)  | 124 (94%) | 8 (6%)   | 0        | 100         | 100 |
| 28  | K     | 80/82 (98%)    | 70 (88%)  | 10 (12%) | 0        | 100         | 100 |
| 29  | e     | 95/97 (98%)    | 86 (90%)  | 9 (10%)  | 0        | 100         | 100 |
| 30  | f     | 79/81 (98%)    | 70 (89%)  | 9 (11%)  | 0        | 100         | 100 |
| 31  | M     | 51/53 (96%)    | 50 (98%)  | 1 (2%)   | 0        | 100         | 100 |
| 32  | g     | 58/60 (97%)    | 49 (84%)  | 9 (16%)  | 0        | 100         | 100 |
| 33  | N     | 71/73 (97%)    | 51 (72%)  | 20 (28%) | 0        | 100         | 100 |
| 34  | O     | 310/312 (99%)  | 269 (87%) | 41 (13%) | 0        | 100         | 100 |
| 35  | L     | 61/63 (97%)    | 56 (92%)  | 5 (8%)   | 0        | 100         | 100 |
| 39  | LD    | 249/251 (99%)  | 222 (89%) | 27 (11%) | 0        | 100         | 100 |
| 40  | LE    | 384/386 (100%) | 357 (93%) | 27 (7%)  | 0        | 100         | 100 |
| 41  | LF    | 359/361 (99%)  | 324 (90%) | 33 (9%)  | 2 (1%)   | 25          | 57  |
| 42  | LG    | 292/294 (99%)  | 266 (91%) | 26 (9%)  | 0        | 100         | 100 |
| 43  | LH    | 163/175 (93%)  | 146 (90%) | 17 (10%) | 0        | 100         | 100 |
| 44  | LI    | 220/222 (99%)  | 206 (94%) | 14 (6%)  | 0        | 100         | 100 |
| 45  | LJ    | 231/233 (99%)  | 210 (91%) | 21 (9%)  | 0        | 100         | 100 |
| 46  | LK    | 189/191 (99%)  | 172 (91%) | 17 (9%)  | 0        | 100         | 100 |
| 47  | LL    | 216/218 (99%)  | 190 (88%) | 26 (12%) | 0        | 100         | 100 |
| 48  | LM    | 167/169 (99%)  | 153 (92%) | 14 (8%)  | 0        | 100         | 100 |
| 49  | LN    | 191/193 (99%)  | 171 (90%) | 19 (10%) | 1 (0%)   | 29          | 61  |
| 50  | LO    | 134/136 (98%)  | 120 (90%) | 13 (10%) | 1 (1%)   | 22          | 54  |

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| Mol | Chain | Analysed          | Favoured    | Allowed   | Outliers | Percentiles |     |
|-----|-------|-------------------|-------------|-----------|----------|-------------|-----|
| 51  | LP    | 201/203 (99%)     | 181 (90%)   | 19 (10%)  | 1 (0%)   | 29          | 61  |
| 52  | LQ    | 195/197 (99%)     | 187 (96%)   | 8 (4%)    | 0        | 100         | 100 |
| 53  | LR    | 181/183 (99%)     | 168 (93%)   | 13 (7%)   | 0        | 100         | 100 |
| 54  | Lm    | 183/185 (99%)     | 168 (92%)   | 15 (8%)   | 0        | 100         | 100 |
| 55  | Ln    | 186/188 (99%)     | 180 (97%)   | 6 (3%)    | 0        | 100         | 100 |
| 56  | Lo    | 169/171 (99%)     | 155 (92%)   | 14 (8%)   | 0        | 100         | 100 |
| 57  | Lp    | 157/159 (99%)     | 143 (91%)   | 14 (9%)   | 0        | 100         | 100 |
| 58  | Lq    | 98/100 (98%)      | 92 (94%)    | 6 (6%)    | 0        | 100         | 100 |
| 59  | Lr    | 134/136 (98%)     | 128 (96%)   | 6 (4%)    | 0        | 100         | 100 |
| 60  | LS    | 124/126 (98%)     | 109 (88%)   | 15 (12%)  | 0        | 100         | 100 |
| 61  | LT    | 119/121 (98%)     | 111 (93%)   | 8 (7%)    | 0        | 100         | 100 |
| 62  | LU    | 123/125 (98%)     | 117 (95%)   | 6 (5%)    | 0        | 100         | 100 |
| 63  | LV    | 133/135 (98%)     | 117 (88%)   | 16 (12%)  | 0        | 100         | 100 |
| 64  | LW    | 146/148 (99%)     | 127 (87%)   | 19 (13%)  | 0        | 100         | 100 |
| 65  | LX    | 56/58 (97%)       | 48 (86%)    | 8 (14%)   | 0        | 100         | 100 |
| 66  | LY    | 94/96 (98%)       | 92 (98%)    | 2 (2%)    | 0        | 100         | 100 |
| 67  | LZ    | 107/109 (98%)     | 92 (86%)    | 15 (14%)  | 0        | 100         | 100 |
| 68  | La    | 125/127 (98%)     | 115 (92%)   | 10 (8%)   | 0        | 100         | 100 |
| 69  | Lb    | 104/106 (98%)     | 98 (94%)    | 6 (6%)    | 0        | 100         | 100 |
| 70  | Lc    | 110/112 (98%)     | 105 (96%)   | 5 (4%)    | 0        | 100         | 100 |
| 71  | Ld    | 117/119 (98%)     | 109 (93%)   | 8 (7%)    | 0        | 100         | 100 |
| 72  | Le    | 97/99 (98%)       | 92 (95%)    | 5 (5%)    | 0        | 100         | 100 |
| 73  | Lf    | 79/81 (98%)       | 70 (89%)    | 9 (11%)   | 0        | 100         | 100 |
| 74  | Lg    | 75/77 (97%)       | 73 (97%)    | 2 (3%)    | 0        | 100         | 100 |
| 75  | Lh    | 48/50 (96%)       | 45 (94%)    | 3 (6%)    | 0        | 100         | 100 |
| 76  | Li    | 50/52 (96%)       | 44 (88%)    | 6 (12%)   | 0        | 100         | 100 |
| 77  | Lj    | 23/25 (92%)       | 23 (100%)   | 0         | 0        | 100         | 100 |
| 78  | Lk    | 101/103 (98%)     | 94 (93%)    | 7 (7%)    | 0        | 100         | 100 |
| 79  | Ll    | 89/91 (98%)       | 87 (98%)    | 2 (2%)    | 0        | 100         | 100 |
| 81  | EF    | 975/1044 (93%)    | 857 (88%)   | 117 (12%) | 1 (0%)   | 51          | 81  |
| All | All   | 11953/12207 (98%) | 10821 (90%) | 1121 (9%) | 11 (0%)  | 54          | 81  |

All (11) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 81  | EF    | 418 | PRO  |
| 16  | D     | 109 | GLU  |
| 22  | I     | 25  | GLN  |
| 22  | I     | 29  | GLU  |
| 41  | LF    | 4   | PRO  |
| 41  | LF    | 130 | ALA  |
| 50  | LO    | 135 | LEU  |
| 51  | LP    | 146 | ALA  |
| 49  | LN    | 61  | PRO  |
| 16  | D     | 127 | GLY  |
| 13  | W     | 18  | PRO  |

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

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

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

| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 3   | P     | 170/173 (98%)  | 170 (100%) | 0        | 100         | 100 |
| 4   | Q     | 200/205 (98%)  | 198 (99%)  | 2 (1%)   | 76          | 86  |
| 5   | E     | 95/98 (97%)    | 94 (99%)   | 1 (1%)   | 73          | 85  |
| 6   | R     | 175/175 (100%) | 172 (98%)  | 3 (2%)   | 60          | 78  |
| 7   | A     | 182/182 (100%) | 177 (97%)  | 5 (3%)   | 44          | 71  |
| 8   | S     | 220/220 (100%) | 217 (99%)  | 3 (1%)   | 67          | 82  |
| 9   | B     | 172/173 (99%)  | 171 (99%)  | 1 (1%)   | 86          | 91  |
| 10  | T     | 189/195 (97%)  | 186 (98%)  | 3 (2%)   | 62          | 79  |
| 11  | U     | 163/165 (99%)  | 162 (99%)  | 1 (1%)   | 86          | 91  |
| 12  | V     | 148/159 (93%)  | 147 (99%)  | 1 (1%)   | 84          | 90  |
| 13  | W     | 156/157 (99%)  | 153 (98%)  | 3 (2%)   | 57          | 77  |
| 14  | C     | 77/85 (91%)    | 76 (99%)   | 1 (1%)   | 69          | 82  |
| 15  | X     | 126/127 (99%)  | 125 (99%)  | 1 (1%)   | 81          | 89  |
| 16  | D     | 88/98 (90%)    | 86 (98%)   | 2 (2%)   | 50          | 73  |

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| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 17  | Y     | 127/127 (100%) | 126 (99%)  | 1 (1%)   | 81          | 89  |
| 18  | Z     | 90/96 (94%)    | 87 (97%)   | 3 (3%)   | 38          | 66  |
| 19  | F     | 117/117 (100%) | 115 (98%)  | 2 (2%)   | 60          | 78  |
| 20  | G     | 101/113 (89%)  | 99 (98%)   | 2 (2%)   | 55          | 76  |
| 21  | H     | 127/128 (99%)  | 126 (99%)  | 1 (1%)   | 81          | 89  |
| 22  | I     | 115/115 (100%) | 115 (100%) | 0        | 100         | 100 |
| 23  | J     | 93/93 (100%)   | 93 (100%)  | 0        | 100         | 100 |
| 24  | a     | 71/74 (96%)    | 71 (100%)  | 0        | 100         | 100 |
| 25  | b     | 110/110 (100%) | 110 (100%) | 0        | 100         | 100 |
| 26  | c     | 119/119 (100%) | 118 (99%)  | 1 (1%)   | 81          | 89  |
| 27  | d     | 112/112 (100%) | 111 (99%)  | 1 (1%)   | 78          | 87  |
| 28  | K     | 67/73 (92%)    | 66 (98%)   | 1 (2%)   | 65          | 81  |
| 29  | e     | 82/83 (99%)    | 80 (98%)   | 2 (2%)   | 49          | 73  |
| 30  | f     | 70/70 (100%)   | 69 (99%)   | 1 (1%)   | 67          | 82  |
| 31  | M     | 47/47 (100%)   | 47 (100%)  | 0        | 100         | 100 |
| 32  | g     | 50/51 (98%)    | 48 (96%)   | 2 (4%)   | 31          | 61  |
| 33  | N     | 56/63 (89%)    | 54 (96%)   | 2 (4%)   | 35          | 63  |
| 34  | O     | 250/257 (97%)  | 246 (98%)  | 4 (2%)   | 62          | 79  |
| 35  | L     | 55/56 (98%)    | 54 (98%)   | 1 (2%)   | 59          | 78  |
| 39  | LD    | 190/193 (98%)  | 186 (98%)  | 4 (2%)   | 53          | 75  |
| 40  | LE    | 321/322 (100%) | 316 (98%)  | 5 (2%)   | 62          | 79  |
| 41  | LF    | 288/288 (100%) | 284 (99%)  | 4 (1%)   | 67          | 82  |
| 42  | LG    | 241/243 (99%)  | 240 (100%) | 1 (0%)   | 91          | 95  |
| 43  | LH    | 139/154 (90%)  | 136 (98%)  | 3 (2%)   | 52          | 74  |
| 44  | LI    | 186/186 (100%) | 186 (100%) | 0        | 100         | 100 |
| 45  | LJ    | 187/191 (98%)  | 184 (98%)  | 3 (2%)   | 62          | 79  |
| 46  | LK    | 168/171 (98%)  | 164 (98%)  | 4 (2%)   | 49          | 73  |
| 47  | LL    | 185/185 (100%) | 183 (99%)  | 2 (1%)   | 73          | 85  |
| 48  | LM    | 145/147 (99%)  | 145 (100%) | 0        | 100         | 100 |
| 49  | LN    | 154/154 (100%) | 152 (99%)  | 2 (1%)   | 69          | 82  |
| 50  | LO    | 107/107 (100%) | 105 (98%)  | 2 (2%)   | 57          | 77  |

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| Mol | Chain | Analysed         | Rotameric  | Outliers | Percentiles |     |
|-----|-------|------------------|------------|----------|-------------|-----|
| 51  | LP    | 175/175 (100%)   | 172 (98%)  | 3 (2%)   | 60          | 78  |
| 52  | LQ    | 160/160 (100%)   | 159 (99%)  | 1 (1%)   | 86          | 91  |
| 53  | LR    | 138/145 (95%)    | 138 (100%) | 0        | 100         | 100 |
| 54  | Lm    | 150/150 (100%)   | 145 (97%)  | 5 (3%)   | 38          | 66  |
| 55  | Ln    | 152/153 (99%)    | 150 (99%)  | 2 (1%)   | 69          | 82  |
| 56  | Lo    | 155/155 (100%)   | 154 (99%)  | 1 (1%)   | 86          | 91  |
| 57  | Lp    | 135/136 (99%)    | 132 (98%)  | 3 (2%)   | 52          | 74  |
| 58  | Lq    | 87/87 (100%)     | 86 (99%)   | 1 (1%)   | 73          | 85  |
| 59  | Lr    | 104/104 (100%)   | 104 (100%) | 0        | 100         | 100 |
| 60  | LS    | 56/108 (52%)     | 55 (98%)   | 1 (2%)   | 59          | 78  |
| 61  | LT    | 104/105 (99%)    | 104 (100%) | 0        | 100         | 100 |
| 62  | LU    | 108/108 (100%)   | 107 (99%)  | 1 (1%)   | 78          | 87  |
| 63  | LV    | 112/115 (97%)    | 110 (98%)  | 2 (2%)   | 59          | 78  |
| 64  | LW    | 117/118 (99%)    | 116 (99%)  | 1 (1%)   | 78          | 87  |
| 65  | LX    | 46/46 (100%)     | 45 (98%)   | 1 (2%)   | 52          | 74  |
| 66  | LY    | 81/81 (100%)     | 79 (98%)   | 2 (2%)   | 47          | 72  |
| 67  | LZ    | 92/96 (96%)      | 90 (98%)   | 2 (2%)   | 52          | 74  |
| 68  | La    | 107/109 (98%)    | 105 (98%)  | 2 (2%)   | 57          | 77  |
| 69  | Lb    | 90/90 (100%)     | 90 (100%)  | 0        | 100         | 100 |
| 70  | Lc    | 95/95 (100%)     | 92 (97%)   | 3 (3%)   | 39          | 67  |
| 71  | Ld    | 104/104 (100%)   | 101 (97%)  | 3 (3%)   | 42          | 69  |
| 72  | Le    | 80/81 (99%)      | 80 (100%)  | 0        | 100         | 100 |
| 73  | Lf    | 67/67 (100%)     | 66 (98%)   | 1 (2%)   | 65          | 81  |
| 74  | Lg    | 68/68 (100%)     | 66 (97%)   | 2 (3%)   | 42          | 69  |
| 75  | Lh    | 45/45 (100%)     | 44 (98%)   | 1 (2%)   | 52          | 74  |
| 76  | Li    | 45/47 (96%)      | 45 (100%)  | 0        | 100         | 100 |
| 77  | Lj    | 22/23 (96%)      | 20 (91%)   | 2 (9%)   | 9           | 31  |
| 78  | Lk    | 87/88 (99%)      | 86 (99%)   | 1 (1%)   | 73          | 85  |
| 79  | Ll    | 71/71 (100%)     | 69 (97%)   | 2 (3%)   | 43          | 70  |
| 81  | EF    | 789/885 (89%)    | 782 (99%)  | 7 (1%)   | 78          | 87  |
| All | All   | 9973/10272 (97%) | 9842 (99%) | 131 (1%) | 70          | 82  |

All (131) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | Q     | 48  | VAL  |
| 4   | Q     | 162 | ARG  |
| 5   | E     | 36  | LEU  |
| 6   | R     | 95  | ARG  |
| 6   | R     | 146 | THR  |
| 6   | R     | 159 | THR  |
| 7   | A     | 14  | ASP  |
| 7   | A     | 76  | ARG  |
| 7   | A     | 128 | GLU  |
| 7   | A     | 178 | ARG  |
| 7   | A     | 215 | GLU  |
| 8   | S     | 38  | LEU  |
| 8   | S     | 211 | LYS  |
| 8   | S     | 258 | GLN  |
| 9   | B     | 25  | LEU  |
| 10  | T     | 87  | ARG  |
| 10  | T     | 98  | ARG  |
| 10  | T     | 214 | LYS  |
| 11  | U     | 152 | VAL  |
| 12  | V     | 29  | LEU  |
| 13  | W     | 78  | ARG  |
| 13  | W     | 82  | ARG  |
| 13  | W     | 180 | LYS  |
| 14  | C     | 37  | THR  |
| 15  | X     | 67  | ARG  |
| 16  | D     | 28  | LEU  |
| 16  | D     | 74  | LEU  |
| 17  | Y     | 64  | ARG  |
| 18  | Z     | 26  | THR  |
| 18  | Z     | 133 | ARG  |
| 18  | Z     | 136 | ARG  |
| 19  | F     | 52  | LEU  |
| 19  | F     | 127 | LYS  |
| 20  | G     | 19  | ARG  |
| 20  | G     | 83  | GLN  |
| 21  | H     | 98  | TYR  |
| 26  | c     | 120 | VAL  |
| 27  | d     | 112 | LYS  |
| 28  | K     | 40  | VAL  |
| 29  | e     | 64  | LEU  |
| 29  | e     | 94  | ASN  |
| 30  | f     | 25  | VAL  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 32         | g            | 33         | ARG         |
| 32         | g            | 38         | LEU         |
| 33         | N            | 89         | LYS         |
| 33         | N            | 138        | ARG         |
| 34         | O            | 121        | MET         |
| 34         | O            | 144        | LEU         |
| 34         | O            | 271        | VAL         |
| 34         | O            | 290        | VAL         |
| 35         | L            | 30         | VAL         |
| 39         | LD           | 92         | LYS         |
| 39         | LD           | 163        | ARG         |
| 39         | LD           | 193        | ARG         |
| 39         | LD           | 242        | ARG         |
| 40         | LE           | 89         | VAL         |
| 40         | LE           | 90         | VAL         |
| 40         | LE           | 175        | LYS         |
| 40         | LE           | 202        | THR         |
| 40         | LE           | 332        | ARG         |
| 41         | LF           | 6          | VAL         |
| 41         | LF           | 98         | ARG         |
| 41         | LF           | 116        | ASN         |
| 41         | LF           | 194        | TYR         |
| 42         | LG           | 110        | LEU         |
| 43         | LH           | 8          | LYS         |
| 43         | LH           | 93         | VAL         |
| 43         | LH           | 104        | GLU         |
| 45         | LJ           | 158        | ASP         |
| 45         | LJ           | 208        | GLU         |
| 45         | LJ           | 213        | LYS         |
| 46         | LK           | 47         | LYS         |
| 46         | LK           | 68         | LEU         |
| 46         | LK           | 88         | TYR         |
| 46         | LK           | 124        | ARG         |
| 47         | LL           | 147        | VAL         |
| 47         | LL           | 191        | LYS         |
| 49         | LN           | 21         | ARG         |
| 49         | LN           | 104        | ARG         |
| 50         | LO           | 78         | THR         |
| 50         | LO           | 117        | ARG         |
| 51         | LP           | 62         | TYR         |
| 51         | LP           | 138        | GLN         |
| 51         | LP           | 153        | ASP         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 52         | LQ           | 125[A]     | ARG         |
| 54         | Lm           | 12         | ARG         |
| 54         | Lm           | 31         | LYS         |
| 54         | Lm           | 147        | ARG         |
| 54         | Lm           | 159        | LYS         |
| 54         | Lm           | 176        | ARG         |
| 55         | Ln           | 6          | THR         |
| 55         | Ln           | 164        | LEU         |
| 56         | Lo           | 96         | ASP         |
| 57         | Lp           | 10         | ARG         |
| 57         | Lp           | 50         | LYS         |
| 57         | Lp           | 83         | ARG         |
| 58         | Lq           | 74         | LYS         |
| 60         | LS           | 60         | LYS         |
| 62         | LU           | 13         | ARG         |
| 63         | LV           | 3          | LYS         |
| 63         | LV           | 126        | LYS         |
| 64         | LW           | 77         | LYS         |
| 65         | LX           | 33         | LYS         |
| 66         | LY           | 83         | LYS         |
| 66         | LY           | 86         | ARG         |
| 67         | LZ           | 9          | THR         |
| 67         | LZ           | 107        | VAL         |
| 68         | La           | 45         | ARG         |
| 68         | La           | 126        | LEU         |
| 70         | Lc           | 56         | THR         |
| 70         | Lc           | 87         | GLU         |
| 70         | Lc           | 106        | LYS         |
| 71         | Ld           | 33         | VAL         |
| 71         | Ld           | 59         | ASN         |
| 71         | Ld           | 90         | ARG         |
| 73         | Lf           | 45         | ARG         |
| 74         | Lg           | 9          | LYS         |
| 74         | Lg           | 63         | LYS         |
| 75         | Lh           | 21         | ARG         |
| 77         | Lj           | 7          | LYS         |
| 77         | Lj           | 8          | LYS         |
| 78         | Lk           | 57         | VAL         |
| 79         | Ll           | 17         | ARG         |
| 79         | Ll           | 57         | CYS         |
| 81         | EF           | 257        | ARG         |
| 81         | EF           | 407        | ARG         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 81  | EF    | 457 | ARG  |
| 81  | EF    | 464 | ASN  |
| 81  | EF    | 604 | ASN  |
| 81  | EF    | 611 | ASN  |
| 81  | EF    | 976 | ASN  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (64) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | P     | 23  | HIS  |
| 8   | S     | 258 | GLN  |
| 9   | B     | 63  | GLN  |
| 9   | B     | 104 | ASN  |
| 10  | T     | 182 | GLN  |
| 11  | U     | 86  | GLN  |
| 14  | C     | 9   | ASN  |
| 15  | X     | 14  | GLN  |
| 15  | X     | 81  | HIS  |
| 17  | Y     | 58  | HIS  |
| 17  | Y     | 105 | ASN  |
| 17  | Y     | 123 | HIS  |
| 19  | F     | 83  | GLN  |
| 22  | I     | 12  | GLN  |
| 22  | I     | 101 | ASN  |
| 24  | a     | 29  | HIS  |
| 27  | d     | 22  | GLN  |
| 27  | d     | 29  | HIS  |
| 29  | e     | 94  | ASN  |
| 33  | N     | 123 | ASN  |
| 34  | O     | 16  | HIS  |
| 34  | O     | 198 | ASN  |
| 34  | O     | 308 | ASN  |
| 35  | L     | 27  | GLN  |
| 35  | L     | 43  | ASN  |
| 39  | LD    | 47  | GLN  |
| 39  | LD    | 132 | ASN  |
| 40  | LE    | 273 | HIS  |
| 40  | LE    | 319 | ASN  |
| 41  | LF    | 48  | GLN  |
| 41  | LF    | 110 | ASN  |
| 41  | LF    | 296 | GLN  |
| 43  | LH    | 102 | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 44  | LI    | 93  | ASN  |
| 44  | LI    | 172 | ASN  |
| 45  | LJ    | 59  | GLN  |
| 45  | LJ    | 192 | GLN  |
| 46  | LK    | 51  | GLN  |
| 46  | LK    | 58  | HIS  |
| 46  | LK    | 125 | ASN  |
| 47  | LL    | 23  | ASN  |
| 51  | LP    | 11  | GLN  |
| 51  | LP    | 117 | ASN  |
| 53  | LR    | 97  | ASN  |
| 55  | Ln    | 166 | ASN  |
| 56  | Lo    | 142 | GLN  |
| 63  | LV    | 40  | HIS  |
| 65  | LX    | 43  | HIS  |
| 68  | La    | 104 | ASN  |
| 75  | Lh    | 43  | ASN  |
| 78  | Lk    | 82  | GLN  |
| 81  | EF    | 97  | ASN  |
| 81  | EF    | 100 | ASN  |
| 81  | EF    | 255 | ASN  |
| 81  | EF    | 296 | ASN  |
| 81  | EF    | 395 | HIS  |
| 81  | EF    | 464 | ASN  |
| 81  | EF    | 486 | GLN  |
| 81  | EF    | 496 | HIS  |
| 81  | EF    | 577 | ASN  |
| 81  | EF    | 611 | ASN  |
| 81  | EF    | 727 | HIS  |
| 81  | EF    | 729 | ASN  |
| 81  | EF    | 976 | ASN  |

### 5.3.3 RNA [i](#)

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1   | 2     | 1768/1771 (99%) | 534 (30%)         | 54 (3%)         |
| 2   | 1     | 6/7 (85%)       | 1 (16%)           | 0               |
| 36  | LA    | 3220/3223 (99%) | 751 (23%)         | 42 (1%)         |
| 37  | LB    | 120/121 (99%)   | 15 (12%)          | 1 (0%)          |
| 38  | LC    | 157/158 (99%)   | 32 (20%)          | 3 (1%)          |
| 80  | Sm    | 74/75 (98%)     | 24 (32%)          | 0               |

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| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 80  | Sn    | 74/75 (98%)     | 23 (31%)          | 0               |
| All | All   | 5419/5430 (99%) | 1380 (25%)        | 100 (1%)        |

All (1380) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 2     | 2   | A    |
| 1   | 2     | 4   | C    |
| 1   | 2     | 14  | C    |
| 1   | 2     | 25  | C    |
| 1   | 2     | 26  | A    |
| 1   | 2     | 34  | G    |
| 1   | 2     | 43  | A    |
| 1   | 2     | 45  | U    |
| 1   | 2     | 46  | A    |
| 1   | 2     | 47  | A    |
| 1   | 2     | 56  | U    |
| 1   | 2     | 57  | G    |
| 1   | 2     | 62  | A    |
| 1   | 2     | 65  | A    |
| 1   | 2     | 67  | A    |
| 1   | 2     | 68  | A    |
| 1   | 2     | 69  | G    |
| 1   | 2     | 73  | U    |
| 1   | 2     | 74  | U    |
| 1   | 2     | 75  | U    |
| 1   | 2     | 76  | A    |
| 1   | 2     | 78  | A    |
| 1   | 2     | 79  | C    |
| 1   | 2     | 80  | A    |
| 1   | 2     | 81  | G    |
| 1   | 2     | 104 | A    |
| 1   | 2     | 114 | C    |
| 1   | 2     | 116 | U    |
| 1   | 2     | 121 | U    |
| 1   | 2     | 127 | G    |
| 1   | 2     | 129 | U    |
| 1   | 2     | 130 | C    |
| 1   | 2     | 131 | C    |
| 1   | 2     | 132 | U    |
| 1   | 2     | 133 | U    |
| 1   | 2     | 134 | U    |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 135        | A           |
| 1          | 2            | 136        | C           |
| 1          | 2            | 137        | U           |
| 1          | 2            | 138        | A           |
| 1          | 2            | 140        | A           |
| 1          | 2            | 141        | U           |
| 1          | 2            | 142        | G           |
| 1          | 2            | 153        | G           |
| 1          | 2            | 155        | U           |
| 1          | 2            | 156        | A           |
| 1          | 2            | 158        | U           |
| 1          | 2            | 161        | U           |
| 1          | 2            | 168        | A           |
| 1          | 2            | 171        | A           |
| 1          | 2            | 172        | C           |
| 1          | 2            | 174        | U           |
| 1          | 2            | 176        | C           |
| 1          | 2            | 178        | U           |
| 1          | 2            | 179        | A           |
| 1          | 2            | 182        | A           |
| 1          | 2            | 185        | U           |
| 1          | 2            | 186        | C           |
| 1          | 2            | 187        | G           |
| 1          | 2            | 188        | A           |
| 1          | 2            | 189        | C           |
| 1          | 2            | 191        | C           |
| 1          | 2            | 193        | U           |
| 1          | 2            | 194        | U           |
| 1          | 2            | 195        | G           |
| 1          | 2            | 201        | G           |
| 1          | 2            | 203        | U           |
| 1          | 2            | 204        | G           |
| 1          | 2            | 216        | U           |
| 1          | 2            | 217        | A           |
| 1          | 2            | 218        | A           |
| 1          | 2            | 223        | U           |
| 1          | 2            | 224        | C           |
| 1          | 2            | 225        | A           |
| 1          | 2            | 227        | U           |
| 1          | 2            | 228        | G           |
| 1          | 2            | 230        | C           |
| 1          | 2            | 232        | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 233        | C           |
| 1          | 2            | 234        | G           |
| 1          | 2            | 235        | G           |
| 1          | 2            | 236        | A           |
| 1          | 2            | 238        | U           |
| 1          | 2            | 240        | U           |
| 1          | 2            | 241        | U           |
| 1          | 2            | 243        | G           |
| 1          | 2            | 246        | G           |
| 1          | 2            | 250        | C           |
| 1          | 2            | 256        | A           |
| 1          | 2            | 260        | U           |
| 1          | 2            | 261        | U           |
| 1          | 2            | 265        | A           |
| 1          | 2            | 270        | C           |
| 1          | 2            | 272        | U           |
| 1          | 2            | 274        | G           |
| 1          | 2            | 276        | C           |
| 1          | 2            | 277        | U           |
| 1          | 2            | 278        | U           |
| 1          | 2            | 279        | G           |
| 1          | 2            | 280        | U           |
| 1          | 2            | 281        | G           |
| 1          | 2            | 287        | G           |
| 1          | 2            | 299        | A           |
| 1          | 2            | 313        | U           |
| 1          | 2            | 314        | C           |
| 1          | 2            | 316        | A           |
| 1          | 2            | 320        | U           |
| 1          | 2            | 321        | C           |
| 1          | 2            | 322        | G           |
| 1          | 2            | 323        | A           |
| 1          | 2            | 324        | U           |
| 1          | 2            | 330        | G           |
| 1          | 2            | 333        | A           |
| 1          | 2            | 334        | G           |
| 1          | 2            | 337        | G           |
| 1          | 2            | 338        | C           |
| 1          | 2            | 352        | A           |
| 1          | 2            | 353        | A           |
| 1          | 2            | 359        | A           |
| 1          | 2            | 360        | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 361        | C           |
| 1          | 2            | 369        | A           |
| 1          | 2            | 370        | A           |
| 1          | 2            | 373        | G           |
| 1          | 2            | 378        | A           |
| 1          | 2            | 380        | U           |
| 1          | 2            | 388        | G           |
| 1          | 2            | 390        | G           |
| 1          | 2            | 400        | A           |
| 1          | 2            | 401        | A           |
| 1          | 2            | 402        | C           |
| 1          | 2            | 404        | G           |
| 1          | 2            | 406        | U           |
| 1          | 2            | 411        | C           |
| 1          | 2            | 415        | C           |
| 1          | 2            | 417        | A           |
| 1          | 2            | 419        | G           |
| 1          | 2            | 423        | G           |
| 1          | 2            | 424        | C           |
| 1          | 2            | 425        | A           |
| 1          | 2            | 426        | G           |
| 1          | 2            | 434        | G           |
| 1          | 2            | 435        | C           |
| 1          | 2            | 438        | A           |
| 1          | 2            | 439        | U           |
| 1          | 2            | 444        | C           |
| 1          | 2            | 446        | A           |
| 1          | 2            | 448        | C           |
| 1          | 2            | 454        | U           |
| 1          | 2            | 460        | A           |
| 1          | 2            | 468        | A           |
| 1          | 2            | 482        | U           |
| 1          | 2            | 483        | A           |
| 1          | 2            | 485        | A           |
| 1          | 2            | 487        | G           |
| 1          | 2            | 489        | C           |
| 1          | 2            | 491        | C           |
| 1          | 2            | 492        | A           |
| 1          | 2            | 493        | U           |
| 1          | 2            | 494        | U           |
| 1          | 2            | 495        | C           |
| 1          | 2            | 496        | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 498        | G           |
| 1          | 2            | 499        | U           |
| 1          | 2            | 500        | C           |
| 1          | 2            | 502        | U           |
| 1          | 2            | 506        | A           |
| 1          | 2            | 507        | U           |
| 1          | 2            | 510        | G           |
| 1          | 2            | 511        | A           |
| 1          | 2            | 513        | U           |
| 1          | 2            | 517        | U           |
| 1          | 2            | 518        | A           |
| 1          | 2            | 519        | C           |
| 1          | 2            | 520        | A           |
| 1          | 2            | 525        | A           |
| 1          | 2            | 527        | A           |
| 1          | 2            | 529        | A           |
| 1          | 2            | 534        | A           |
| 1          | 2            | 538        | A           |
| 1          | 2            | 539        | G           |
| 1          | 2            | 540        | G           |
| 1          | 2            | 541        | A           |
| 1          | 2            | 542        | A           |
| 1          | 2            | 543        | C           |
| 1          | 2            | 554        | C           |
| 1          | 2            | 555        | A           |
| 1          | 2            | 556        | A           |
| 1          | 2            | 557        | G           |
| 1          | 2            | 558        | U           |
| 1          | 2            | 565        | C           |
| 1          | 2            | 571        | G           |
| 1          | 2            | 572        | C           |
| 1          | 2            | 578        | U           |
| 1          | 2            | 579        | A           |
| 1          | 2            | 580        | A           |
| 1          | 2            | 594        | A           |
| 1          | 2            | 595        | G           |
| 1          | 2            | 606        | A           |
| 1          | 2            | 609        | U           |
| 1          | 2            | 610        | G           |
| 1          | 2            | 611        | U           |
| 1          | 2            | 617        | U           |
| 1          | 2            | 619        | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 620        | A           |
| 1          | 2            | 622        | A           |
| 1          | 2            | 623        | A           |
| 1          | 2            | 624        | G           |
| 1          | 2            | 635        | A           |
| 1          | 2            | 638        | U           |
| 1          | 2            | 639        | U           |
| 1          | 2            | 640        | U           |
| 1          | 2            | 641        | G           |
| 1          | 2            | 643        | G           |
| 1          | 2            | 645        | C           |
| 1          | 2            | 651        | G           |
| 1          | 2            | 653        | C           |
| 1          | 2            | 654        | C           |
| 1          | 2            | 655        | G           |
| 1          | 2            | 656        | G           |
| 1          | 2            | 677        | G           |
| 1          | 2            | 678        | A           |
| 1          | 2            | 680        | U           |
| 1          | 2            | 684        | A           |
| 1          | 2            | 687        | G           |
| 1          | 2            | 693        | U           |
| 1          | 2            | 694        | U           |
| 1          | 2            | 696        | C           |
| 1          | 2            | 697        | C           |
| 1          | 2            | 698        | U           |
| 1          | 2            | 700        | C           |
| 1          | 2            | 702        | G           |
| 1          | 2            | 703        | G           |
| 1          | 2            | 704        | C           |
| 1          | 2            | 705        | U           |
| 1          | 2            | 706        | A           |
| 1          | 2            | 707        | A           |
| 1          | 2            | 708        | C           |
| 1          | 2            | 709        | C           |
| 1          | 2            | 710        | U           |
| 1          | 2            | 711        | U           |
| 1          | 2            | 712        | G           |
| 1          | 2            | 714        | G           |
| 1          | 2            | 728        | U           |
| 1          | 2            | 729        | G           |
| 1          | 2            | 730        | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 732        | G           |
| 1          | 2            | 733        | A           |
| 1          | 2            | 736        | C           |
| 1          | 2            | 738        | G           |
| 1          | 2            | 739        | G           |
| 1          | 2            | 741        | C           |
| 1          | 2            | 742        | U           |
| 1          | 2            | 743        | U           |
| 1          | 2            | 744        | U           |
| 1          | 2            | 745        | U           |
| 1          | 2            | 753        | A           |
| 1          | 2            | 755        | A           |
| 1          | 2            | 756        | A           |
| 1          | 2            | 765        | G           |
| 1          | 2            | 766        | U           |
| 1          | 2            | 767        | U           |
| 1          | 2            | 771        | A           |
| 1          | 2            | 774        | A           |
| 1          | 2            | 775        | G           |
| 1          | 2            | 778        | G           |
| 1          | 2            | 781        | U           |
| 1          | 2            | 782        | U           |
| 1          | 2            | 783        | G           |
| 1          | 2            | 787        | G           |
| 1          | 2            | 789        | A           |
| 1          | 2            | 794        | U           |
| 1          | 2            | 804        | A           |
| 1          | 2            | 807        | A           |
| 1          | 2            | 811        | A           |
| 1          | 2            | 812        | A           |
| 1          | 2            | 813        | U           |
| 1          | 2            | 814        | A           |
| 1          | 2            | 815        | G           |
| 1          | 2            | 816        | G           |
| 1          | 2            | 818        | C           |
| 1          | 2            | 819        | G           |
| 1          | 2            | 820        | U           |
| 1          | 2            | 821        | U           |
| 1          | 2            | 823        | G           |
| 1          | 2            | 832        | U           |
| 1          | 2            | 833        | U           |
| 1          | 2            | 836        | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 837        | G           |
| 1          | 2            | 839        | U           |
| 1          | 2            | 840        | U           |
| 1          | 2            | 841        | U           |
| 1          | 2            | 846        | G           |
| 1          | 2            | 851        | U           |
| 1          | 2            | 852        | C           |
| 1          | 2            | 855        | A           |
| 1          | 2            | 856        | A           |
| 1          | 2            | 857        | U           |
| 1          | 2            | 863        | A           |
| 1          | 2            | 865        | A           |
| 1          | 2            | 873        | U           |
| 1          | 2            | 876        | G           |
| 1          | 2            | 886        | U           |
| 1          | 2            | 898        | A           |
| 1          | 2            | 899        | G           |
| 1          | 2            | 901        | G           |
| 1          | 2            | 902        | G           |
| 1          | 2            | 904        | G           |
| 1          | 2            | 912        | U           |
| 1          | 2            | 913        | G           |
| 1          | 2            | 929        | A           |
| 1          | 2            | 932        | U           |
| 1          | 2            | 933        | A           |
| 1          | 2            | 934        | C           |
| 1          | 2            | 935        | U           |
| 1          | 2            | 940        | A           |
| 1          | 2            | 945        | U           |
| 1          | 2            | 960        | U           |
| 1          | 2            | 964        | U           |
| 1          | 2            | 966        | A           |
| 1          | 2            | 970        | A           |
| 1          | 2            | 973        | A           |
| 1          | 2            | 977        | A           |
| 1          | 2            | 988        | A           |
| 1          | 2            | 989        | U           |
| 1          | 2            | 992        | A           |
| 1          | 2            | 996        | U           |
| 1          | 2            | 998        | A           |
| 1          | 2            | 1001       | A           |
| 1          | 2            | 1004       | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 1024       | U           |
| 1          | 2            | 1026       | A           |
| 1          | 2            | 1028       | C           |
| 1          | 2            | 1029       | U           |
| 1          | 2            | 1032       | G           |
| 1          | 2            | 1039       | A           |
| 1          | 2            | 1040       | G           |
| 1          | 2            | 1052       | U           |
| 1          | 2            | 1053       | G           |
| 1          | 2            | 1057       | U           |
| 1          | 2            | 1058       | U           |
| 1          | 2            | 1059       | U           |
| 1          | 2            | 1060       | U           |
| 1          | 2            | 1061       | A           |
| 1          | 2            | 1062       | A           |
| 1          | 2            | 1063       | U           |
| 1          | 2            | 1074       | G           |
| 1          | 2            | 1080       | U           |
| 1          | 2            | 1081       | A           |
| 1          | 2            | 1082       | C           |
| 1          | 2            | 1092       | A           |
| 1          | 2            | 1096       | C           |
| 1          | 2            | 1099       | U           |
| 1          | 2            | 1100       | G           |
| 1          | 2            | 1109       | G           |
| 1          | 2            | 1111       | G           |
| 1          | 2            | 1113       | A           |
| 1          | 2            | 1138       | A           |
| 1          | 2            | 1139       | A           |
| 1          | 2            | 1156       | C           |
| 1          | 2            | 1158       | C           |
| 1          | 2            | 1160       | A           |
| 1          | 2            | 1164       | G           |
| 1          | 2            | 1167       | G           |
| 1          | 2            | 1170       | G           |
| 1          | 2            | 1183       | A           |
| 1          | 2            | 1185       | U           |
| 1          | 2            | 1186       | U           |
| 1          | 2            | 1187       | U           |
| 1          | 2            | 1191       | U           |
| 1          | 2            | 1194       | A           |
| 1          | 2            | 1196       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 1197       | C           |
| 1          | 2            | 1199       | G           |
| 1          | 2            | 1200       | G           |
| 1          | 2            | 1208       | A           |
| 1          | 2            | 1212       | G           |
| 1          | 2            | 1214       | U           |
| 1          | 2            | 1217       | A           |
| 1          | 2            | 1218       | G           |
| 1          | 2            | 1227       | A           |
| 1          | 2            | 1229       | G           |
| 1          | 2            | 1241       | G           |
| 1          | 2            | 1243       | G           |
| 1          | 2            | 1244       | A           |
| 1          | 2            | 1245       | G           |
| 1          | 2            | 1246       | C           |
| 1          | 2            | 1252       | C           |
| 1          | 2            | 1256       | A           |
| 1          | 2            | 1257       | U           |
| 1          | 2            | 1258       | U           |
| 1          | 2            | 1263       | G           |
| 1          | 2            | 1264       | G           |
| 1          | 2            | 1265       | G           |
| 1          | 2            | 1269       | U           |
| 1          | 2            | 1273       | G           |
| 1          | 2            | 1274       | C           |
| 1          | 2            | 1275       | A           |
| 1          | 2            | 1276       | U           |
| 1          | 2            | 1285       | U           |
| 1          | 2            | 1294       | G           |
| 1          | 2            | 1301       | U           |
| 1          | 2            | 1307       | U           |
| 1          | 2            | 1314       | U           |
| 1          | 2            | 1315       | U           |
| 1          | 2            | 1318       | G           |
| 1          | 2            | 1321       | A           |
| 1          | 2            | 1322       | A           |
| 1          | 2            | 1325       | A           |
| 1          | 2            | 1337       | A           |
| 1          | 2            | 1341       | A           |
| 1          | 2            | 1344       | A           |
| 1          | 2            | 1345       | A           |
| 1          | 2            | 1346       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 1348       | A           |
| 1          | 2            | 1349       | G           |
| 1          | 2            | 1354       | G           |
| 1          | 2            | 1360       | A           |
| 1          | 2            | 1361       | U           |
| 1          | 2            | 1363       | U           |
| 1          | 2            | 1367       | G           |
| 1          | 2            | 1370       | U           |
| 1          | 2            | 1371       | A           |
| 1          | 2            | 1372       | U           |
| 1          | 2            | 1373       | C           |
| 1          | 2            | 1381       | U           |
| 1          | 2            | 1382       | A           |
| 1          | 2            | 1383       | G           |
| 1          | 2            | 1385       | G           |
| 1          | 2            | 1390       | U           |
| 1          | 2            | 1398       | U           |
| 1          | 2            | 1399       | C           |
| 1          | 2            | 1400       | A           |
| 1          | 2            | 1402       | G           |
| 1          | 2            | 1414       | U           |
| 1          | 2            | 1415       | U           |
| 1          | 2            | 1421       | A           |
| 1          | 2            | 1427       | A           |
| 1          | 2            | 1431       | C           |
| 1          | 2            | 1432       | U           |
| 1          | 2            | 1433       | G           |
| 1          | 2            | 1446       | A           |
| 1          | 2            | 1447       | C           |
| 1          | 2            | 1457       | C           |
| 1          | 2            | 1459       | C           |
| 1          | 2            | 1460       | A           |
| 1          | 2            | 1469       | A           |
| 1          | 2            | 1471       | A           |
| 1          | 2            | 1472       | C           |
| 1          | 2            | 1473       | U           |
| 1          | 2            | 1479       | A           |
| 1          | 2            | 1482       | C           |
| 1          | 2            | 1483       | A           |
| 1          | 2            | 1488       | G           |
| 1          | 2            | 1489       | U           |
| 1          | 2            | 1490       | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 1491       | U           |
| 1          | 2            | 1492       | A           |
| 1          | 2            | 1493       | A           |
| 1          | 2            | 1496       | U           |
| 1          | 2            | 1510       | U           |
| 1          | 2            | 1514       | U           |
| 1          | 2            | 1515       | A           |
| 1          | 2            | 1516       | A           |
| 1          | 2            | 1517       | U           |
| 1          | 2            | 1518       | C           |
| 1          | 2            | 1521       | G           |
| 1          | 2            | 1523       | G           |
| 1          | 2            | 1524       | A           |
| 1          | 2            | 1528       | U           |
| 1          | 2            | 1529       | C           |
| 1          | 2            | 1531       | G           |
| 1          | 2            | 1537       | C           |
| 1          | 2            | 1540       | G           |
| 1          | 2            | 1543       | A           |
| 1          | 2            | 1545       | A           |
| 1          | 2            | 1556       | A           |
| 1          | 2            | 1557       | U           |
| 1          | 2            | 1558       | U           |
| 1          | 2            | 1559       | A           |
| 1          | 2            | 1572       | G           |
| 1          | 2            | 1573       | A           |
| 1          | 2            | 1574       | G           |
| 1          | 2            | 1575       | G           |
| 1          | 2            | 1576       | A           |
| 1          | 2            | 1583       | A           |
| 1          | 2            | 1584       | G           |
| 1          | 2            | 1585       | U           |
| 1          | 2            | 1590       | G           |
| 1          | 2            | 1592       | A           |
| 1          | 2            | 1601       | G           |
| 1          | 2            | 1607       | G           |
| 1          | 2            | 1611       | A           |
| 1          | 2            | 1614       | A           |
| 1          | 2            | 1616       | G           |
| 1          | 2            | 1619       | C           |
| 1          | 2            | 1622       | G           |
| 1          | 2            | 1634       | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 1637       | C           |
| 1          | 2            | 1657       | U           |
| 1          | 2            | 1658       | G           |
| 1          | 2            | 1676       | U           |
| 1          | 2            | 1682       | U           |
| 1          | 2            | 1688       | U           |
| 1          | 2            | 1689       | A           |
| 1          | 2            | 1693       | A           |
| 1          | 2            | 1700       | C           |
| 1          | 2            | 1701       | A           |
| 1          | 2            | 1702       | A           |
| 1          | 2            | 1703       | C           |
| 1          | 2            | 1709       | C           |
| 1          | 2            | 1711       | C           |
| 1          | 2            | 1715       | G           |
| 1          | 2            | 1717       | G           |
| 1          | 2            | 1736       | G           |
| 1          | 2            | 1740       | A           |
| 1          | 2            | 1755       | A           |
| 1          | 2            | 1756       | A           |
| 1          | 2            | 1757       | G           |
| 1          | 2            | 1760       | G           |
| 1          | 2            | 1762       | A           |
| 1          | 2            | 1766       | A           |
| 1          | 2            | 1767       | G           |
| 1          | 2            | 1769       | U           |
| 1          | 2            | 1770       | U           |
| 1          | 2            | 1780       | G           |
| 1          | 2            | 1782       | A           |
| 1          | 2            | 1783       | C           |
| 1          | 2            | 1788       | G           |
| 1          | 2            | 1792       | G           |
| 1          | 2            | 1793       | G           |
| 1          | 2            | 1794       | A           |
| 1          | 2            | 1796       | C           |
| 1          | 2            | 1799       | U           |
| 2          | 1            | 4          | A           |
| 36         | LA           | 6          | A           |
| 36         | LA           | 11         | A           |
| 36         | LA           | 14         | U           |
| 36         | LA           | 21         | G           |
| 36         | LA           | 22         | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 26         | A           |
| 36         | LA           | 30         | G           |
| 36         | LA           | 40         | A           |
| 36         | LA           | 43         | A           |
| 36         | LA           | 44         | U           |
| 36         | LA           | 48         | A           |
| 36         | LA           | 49         | A           |
| 36         | LA           | 51         | A           |
| 36         | LA           | 59         | G           |
| 36         | LA           | 60         | A           |
| 36         | LA           | 65         | A           |
| 36         | LA           | 66         | A           |
| 36         | LA           | 73         | C           |
| 36         | LA           | 74         | G           |
| 36         | LA           | 76         | G           |
| 36         | LA           | 85         | A           |
| 36         | LA           | 89         | A           |
| 36         | LA           | 92         | G           |
| 36         | LA           | 109        | A           |
| 36         | LA           | 110        | G           |
| 36         | LA           | 111        | C           |
| 36         | LA           | 113        | C           |
| 36         | LA           | 120        | G           |
| 36         | LA           | 121        | A           |
| 36         | LA           | 122        | A           |
| 36         | LA           | 133        | U           |
| 36         | LA           | 136        | G           |
| 36         | LA           | 143        | G           |
| 36         | LA           | 150        | A           |
| 36         | LA           | 156        | G           |
| 36         | LA           | 157        | A           |
| 36         | LA           | 166        | C           |
| 36         | LA           | 173        | G           |
| 36         | LA           | 187        | A           |
| 36         | LA           | 190        | U           |
| 36         | LA           | 191        | U           |
| 36         | LA           | 200        | C           |
| 36         | LA           | 206        | G           |
| 36         | LA           | 210        | U           |
| 36         | LA           | 211        | A           |
| 36         | LA           | 213        | A           |
| 36         | LA           | 218        | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 219        | A           |
| 36         | LA           | 221        | A           |
| 36         | LA           | 231        | G           |
| 36         | LA           | 234        | G           |
| 36         | LA           | 236        | G           |
| 36         | LA           | 239        | G           |
| 36         | LA           | 240        | U           |
| 36         | LA           | 243        | G           |
| 36         | LA           | 249        | U           |
| 36         | LA           | 252        | U           |
| 36         | LA           | 263        | C           |
| 36         | LA           | 269        | G           |
| 36         | LA           | 282        | G           |
| 36         | LA           | 283        | G           |
| 36         | LA           | 286        | U           |
| 36         | LA           | 295        | A           |
| 36         | LA           | 298        | U           |
| 36         | LA           | 315        | C           |
| 36         | LA           | 323        | A           |
| 36         | LA           | 329        | U           |
| 36         | LA           | 330        | G           |
| 36         | LA           | 334        | A           |
| 36         | LA           | 338        | A           |
| 36         | LA           | 339        | C           |
| 36         | LA           | 346        | C           |
| 36         | LA           | 350        | C           |
| 36         | LA           | 351        | A           |
| 36         | LA           | 376        | G           |
| 36         | LA           | 385        | A           |
| 36         | LA           | 390        | G           |
| 36         | LA           | 395        | A           |
| 36         | LA           | 397        | A           |
| 36         | LA           | 399        | A           |
| 36         | LA           | 401        | U           |
| 36         | LA           | 402        | A           |
| 36         | LA           | 403        | C           |
| 36         | LA           | 421        | G           |
| 36         | LA           | 422        | A           |
| 36         | LA           | 438        | A           |
| 36         | LA           | 440        | A           |
| 36         | LA           | 441        | U           |
| 36         | LA           | 442        | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 443        | G           |
| 36         | LA           | 445        | G           |
| 36         | LA           | 446        | U           |
| 36         | LA           | 447        | U           |
| 36         | LA           | 448        | U           |
| 36         | LA           | 449        | U           |
| 36         | LA           | 450        | G           |
| 36         | LA           | 487        | U           |
| 36         | LA           | 488        | U           |
| 36         | LA           | 489        | U           |
| 36         | LA           | 490        | C           |
| 36         | LA           | 491        | A           |
| 36         | LA           | 492        | C           |
| 36         | LA           | 494        | G           |
| 36         | LA           | 498        | A           |
| 36         | LA           | 510        | G           |
| 36         | LA           | 515        | C           |
| 36         | LA           | 517        | G           |
| 36         | LA           | 520        | U           |
| 36         | LA           | 521        | A           |
| 36         | LA           | 535        | G           |
| 36         | LA           | 543        | C           |
| 36         | LA           | 544        | C           |
| 36         | LA           | 545        | U           |
| 36         | LA           | 546        | C           |
| 36         | LA           | 547        | G           |
| 36         | LA           | 552        | G           |
| 36         | LA           | 555        | U           |
| 36         | LA           | 557        | A           |
| 36         | LA           | 559        | A           |
| 36         | LA           | 568        | G           |
| 36         | LA           | 578        | A           |
| 36         | LA           | 579        | G           |
| 36         | LA           | 597        | G           |
| 36         | LA           | 600        | G           |
| 36         | LA           | 603        | A           |
| 36         | LA           | 604        | G           |
| 36         | LA           | 609        | G           |
| 36         | LA           | 610        | G           |
| 36         | LA           | 611        | A           |
| 36         | LA           | 612        | U           |
| 36         | LA           | 619        | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 620        | U           |
| 36         | LA           | 621        | A           |
| 36         | LA           | 625        | G           |
| 36         | LA           | 637        | C           |
| 36         | LA           | 638        | C           |
| 36         | LA           | 642        | U           |
| 36         | LA           | 649        | A           |
| 36         | LA           | 650        | C           |
| 36         | LA           | 660        | A           |
| 36         | LA           | 667        | C           |
| 36         | LA           | 677        | A           |
| 36         | LA           | 681        | U           |
| 36         | LA           | 691        | A           |
| 36         | LA           | 699        | A           |
| 36         | LA           | 705        | A           |
| 36         | LA           | 712        | G           |
| 36         | LA           | 716        | A           |
| 36         | LA           | 720        | A           |
| 36         | LA           | 726        | G           |
| 36         | LA           | 737        | G           |
| 36         | LA           | 742        | G           |
| 36         | LA           | 758        | C           |
| 36         | LA           | 763        | G           |
| 36         | LA           | 764        | U           |
| 36         | LA           | 765        | C           |
| 36         | LA           | 766        | U           |
| 36         | LA           | 767        | U           |
| 36         | LA           | 771        | A           |
| 36         | LA           | 774        | G           |
| 36         | LA           | 776        | U           |
| 36         | LA           | 777        | U           |
| 36         | LA           | 780        | A           |
| 36         | LA           | 781        | G           |
| 36         | LA           | 785        | G           |
| 36         | LA           | 786        | A           |
| 36         | LA           | 806        | A           |
| 36         | LA           | 808        | A           |
| 36         | LA           | 817        | A           |
| 36         | LA           | 830        | A           |
| 36         | LA           | 832        | G           |
| 36         | LA           | 848        | A           |
| 36         | LA           | 849        | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 850        | U           |
| 36         | LA           | 851        | C           |
| 36         | LA           | 861        | C           |
| 36         | LA           | 865        | U           |
| 36         | LA           | 868        | C           |
| 36         | LA           | 871        | U           |
| 36         | LA           | 874        | U           |
| 36         | LA           | 879        | U           |
| 36         | LA           | 894        | G           |
| 36         | LA           | 895        | A           |
| 36         | LA           | 896        | A           |
| 36         | LA           | 899        | U           |
| 36         | LA           | 906        | A           |
| 36         | LA           | 907        | G           |
| 36         | LA           | 908        | G           |
| 36         | LA           | 914        | A           |
| 36         | LA           | 916        | G           |
| 36         | LA           | 917        | A           |
| 36         | LA           | 921        | A           |
| 36         | LA           | 923        | C           |
| 36         | LA           | 932        | U           |
| 36         | LA           | 934        | G           |
| 36         | LA           | 937        | G           |
| 36         | LA           | 944        | C           |
| 36         | LA           | 959        | C           |
| 36         | LA           | 960        | U           |
| 36         | LA           | 971        | G           |
| 36         | LA           | 974        | G           |
| 36         | LA           | 981        | U           |
| 36         | LA           | 982        | C           |
| 36         | LA           | 991        | G           |
| 36         | LA           | 1002       | A           |
| 36         | LA           | 1015       | U           |
| 36         | LA           | 1018       | G           |
| 36         | LA           | 1020       | G           |
| 36         | LA           | 1021       | G           |
| 36         | LA           | 1024       | G           |
| 36         | LA           | 1028       | U           |
| 36         | LA           | 1029       | G           |
| 36         | LA           | 1040       | A           |
| 36         | LA           | 1041       | U           |
| 36         | LA           | 1045       | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 1047       | A           |
| 36         | LA           | 1049       | C           |
| 36         | LA           | 1064       | A           |
| 36         | LA           | 1065       | A           |
| 36         | LA           | 1072       | G           |
| 36         | LA           | 1081       | U           |
| 36         | LA           | 1093       | A           |
| 36         | LA           | 1094       | U           |
| 36         | LA           | 1095       | U           |
| 36         | LA           | 1096       | U           |
| 36         | LA           | 1097       | G           |
| 36         | LA           | 1098       | A           |
| 36         | LA           | 1103       | A           |
| 36         | LA           | 1104       | G           |
| 36         | LA           | 1117       | G           |
| 36         | LA           | 1118       | C           |
| 36         | LA           | 1128       | U           |
| 36         | LA           | 1131       | G           |
| 36         | LA           | 1144       | U           |
| 36         | LA           | 1145       | G           |
| 36         | LA           | 1148       | G           |
| 36         | LA           | 1153       | A           |
| 36         | LA           | 1158       | A           |
| 36         | LA           | 1159       | A           |
| 36         | LA           | 1177       | G           |
| 36         | LA           | 1178       | G           |
| 36         | LA           | 1180       | A           |
| 36         | LA           | 1181       | U           |
| 36         | LA           | 1182       | A           |
| 36         | LA           | 1190       | A           |
| 36         | LA           | 1192       | C           |
| 36         | LA           | 1193       | A           |
| 36         | LA           | 1196       | C           |
| 36         | LA           | 1197       | A           |
| 36         | LA           | 1201       | C           |
| 36         | LA           | 1202       | A           |
| 36         | LA           | 1206       | G           |
| 36         | LA           | 1208       | U           |
| 36         | LA           | 1217       | A           |
| 36         | LA           | 1218       | U           |
| 36         | LA           | 1222       | G           |
| 36         | LA           | 1223       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 1227       | C           |
| 36         | LA           | 1229       | G           |
| 36         | LA           | 1234       | G           |
| 36         | LA           | 1236       | G           |
| 36         | LA           | 1237       | G           |
| 36         | LA           | 1238       | C           |
| 36         | LA           | 1239       | C           |
| 36         | LA           | 1240       | A           |
| 36         | LA           | 1241       | U           |
| 36         | LA           | 1242       | G           |
| 36         | LA           | 1243       | G           |
| 36         | LA           | 1244       | A           |
| 36         | LA           | 1245       | A           |
| 36         | LA           | 1246       | G           |
| 36         | LA           | 1248       | C           |
| 36         | LA           | 1251       | A           |
| 36         | LA           | 1253       | U           |
| 36         | LA           | 1258       | U           |
| 36         | LA           | 1262       | G           |
| 36         | LA           | 1263       | A           |
| 36         | LA           | 1264       | G           |
| 36         | LA           | 1266       | G           |
| 36         | LA           | 1267       | U           |
| 36         | LA           | 1269       | U           |
| 36         | LA           | 1270       | A           |
| 36         | LA           | 1271       | A           |
| 36         | LA           | 1272       | C           |
| 36         | LA           | 1278       | A           |
| 36         | LA           | 1279       | C           |
| 36         | LA           | 1280       | C           |
| 36         | LA           | 1282       | G           |
| 36         | LA           | 1285       | G           |
| 36         | LA           | 1286       | A           |
| 36         | LA           | 1287       | A           |
| 36         | LA           | 1295       | G           |
| 36         | LA           | 1307       | G           |
| 36         | LA           | 1308       | A           |
| 36         | LA           | 1309       | U           |
| 36         | LA           | 1313       | G           |
| 36         | LA           | 1316       | C           |
| 36         | LA           | 1318       | A           |
| 36         | LA           | 1325       | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 1330       | A           |
| 36         | LA           | 1345       | G           |
| 36         | LA           | 1348       | U           |
| 36         | LA           | 1349       | G           |
| 36         | LA           | 1351       | U           |
| 36         | LA           | 1352       | A           |
| 36         | LA           | 1353       | U           |
| 36         | LA           | 1354       | G           |
| 36         | LA           | 1355       | A           |
| 36         | LA           | 1356       | U           |
| 36         | LA           | 1357       | G           |
| 36         | LA           | 1386       | A           |
| 36         | LA           | 1392       | G           |
| 36         | LA           | 1399       | A           |
| 36         | LA           | 1400       | G           |
| 36         | LA           | 1418       | A           |
| 36         | LA           | 1419       | A           |
| 36         | LA           | 1421       | G           |
| 36         | LA           | 1429       | G           |
| 36         | LA           | 1430       | U           |
| 36         | LA           | 1431       | G           |
| 36         | LA           | 1434       | G           |
| 36         | LA           | 1437       | C           |
| 36         | LA           | 1442       | U           |
| 36         | LA           | 1443       | G           |
| 36         | LA           | 1446       | A           |
| 36         | LA           | 1450       | G           |
| 36         | LA           | 1455       | U           |
| 36         | LA           | 1481       | A           |
| 36         | LA           | 1482       | A           |
| 36         | LA           | 1483       | G           |
| 36         | LA           | 1484       | U           |
| 36         | LA           | 1487       | G           |
| 36         | LA           | 1488       | G           |
| 36         | LA           | 1503       | A           |
| 36         | LA           | 1508       | C           |
| 36         | LA           | 1523       | U           |
| 36         | LA           | 1528       | G           |
| 36         | LA           | 1533       | U           |
| 36         | LA           | 1536       | G           |
| 36         | LA           | 1542       | G           |
| 36         | LA           | 1549       | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 1555       | U           |
| 36         | LA           | 1556       | C           |
| 36         | LA           | 1557       | A           |
| 36         | LA           | 1559       | A           |
| 36         | LA           | 1560       | G           |
| 36         | LA           | 1562       | C           |
| 36         | LA           | 1563       | C           |
| 36         | LA           | 1565       | G           |
| 36         | LA           | 1566       | A           |
| 36         | LA           | 1567       | U           |
| 36         | LA           | 1568       | U           |
| 36         | LA           | 1569       | U           |
| 36         | LA           | 1572       | U           |
| 36         | LA           | 1573       | G           |
| 36         | LA           | 1574       | C           |
| 36         | LA           | 1575       | A           |
| 36         | LA           | 1576       | G           |
| 36         | LA           | 1580       | A           |
| 36         | LA           | 1581       | C           |
| 36         | LA           | 1582       | C           |
| 36         | LA           | 1583       | A           |
| 36         | LA           | 1587       | A           |
| 36         | LA           | 1588       | A           |
| 36         | LA           | 1589       | A           |
| 36         | LA           | 1590       | G           |
| 36         | LA           | 1602       | A           |
| 36         | LA           | 1605       | A           |
| 36         | LA           | 1607       | U           |
| 36         | LA           | 1621       | A           |
| 36         | LA           | 1629       | U           |
| 36         | LA           | 1632       | A           |
| 36         | LA           | 1639       | C           |
| 36         | LA           | 1642       | A           |
| 36         | LA           | 1643       | A           |
| 36         | LA           | 1645       | U           |
| 36         | LA           | 1658       | G           |
| 36         | LA           | 1677       | G           |
| 36         | LA           | 1683       | A           |
| 36         | LA           | 1687       | U           |
| 36         | LA           | 1688       | U           |
| 36         | LA           | 1696       | A           |
| 36         | LA           | 1704       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 1705       | U           |
| 36         | LA           | 1715       | A           |
| 36         | LA           | 1716       | U           |
| 36         | LA           | 1717       | U           |
| 36         | LA           | 1722       | U           |
| 36         | LA           | 1724       | U           |
| 36         | LA           | 1725       | C           |
| 36         | LA           | 1750       | A           |
| 36         | LA           | 1751       | G           |
| 36         | LA           | 1756       | C           |
| 36         | LA           | 1760       | A           |
| 36         | LA           | 1765       | U           |
| 36         | LA           | 1766       | G           |
| 36         | LA           | 1770       | G           |
| 36         | LA           | 1775       | G           |
| 36         | LA           | 1780       | G           |
| 36         | LA           | 1788       | C           |
| 36         | LA           | 1796       | G           |
| 36         | LA           | 1797       | A           |
| 36         | LA           | 1812       | G           |
| 36         | LA           | 1814       | A           |
| 36         | LA           | 1816       | A           |
| 36         | LA           | 1817       | G           |
| 36         | LA           | 1819       | U           |
| 36         | LA           | 1820       | U           |
| 36         | LA           | 1821       | U           |
| 36         | LA           | 1822       | C           |
| 36         | LA           | 1835       | A           |
| 36         | LA           | 1839       | A           |
| 36         | LA           | 1840       | U           |
| 36         | LA           | 1841       | A           |
| 36         | LA           | 1842       | A           |
| 36         | LA           | 1846       | C           |
| 36         | LA           | 1849       | C           |
| 36         | LA           | 1850       | A           |
| 36         | LA           | 1866       | C           |
| 36         | LA           | 1867       | A           |
| 36         | LA           | 1874       | A           |
| 36         | LA           | 1880       | U           |
| 36         | LA           | 1881       | A           |
| 36         | LA           | 1893       | A           |
| 36         | LA           | 1897       | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 1906       | G           |
| 36         | LA           | 1908       | A           |
| 36         | LA           | 1930       | A           |
| 36         | LA           | 1935       | G           |
| 36         | LA           | 1943       | C           |
| 36         | LA           | 1951       | C           |
| 36         | LA           | 1952       | G           |
| 36         | LA           | 1953       | G           |
| 36         | LA           | 1954       | G           |
| 36         | LA           | 2101       | C           |
| 36         | LA           | 2102       | U           |
| 36         | LA           | 2111       | G           |
| 36         | LA           | 2113       | A           |
| 36         | LA           | 2121       | G           |
| 36         | LA           | 2122       | G           |
| 36         | LA           | 2131       | A           |
| 36         | LA           | 2139       | A           |
| 36         | LA           | 2149       | A           |
| 36         | LA           | 2158       | A           |
| 36         | LA           | 2169       | G           |
| 36         | LA           | 2170       | U           |
| 36         | LA           | 2187       | G           |
| 36         | LA           | 2188       | A           |
| 36         | LA           | 2201       | G           |
| 36         | LA           | 2205       | U           |
| 36         | LA           | 2206       | G           |
| 36         | LA           | 2207       | A           |
| 36         | LA           | 2209       | U           |
| 36         | LA           | 2223       | A           |
| 36         | LA           | 2228       | A           |
| 36         | LA           | 2244       | A           |
| 36         | LA           | 2249       | G           |
| 36         | LA           | 2250       | G           |
| 36         | LA           | 2252       | A           |
| 36         | LA           | 2256       | A           |
| 36         | LA           | 2257       | C           |
| 36         | LA           | 2262       | A           |
| 36         | LA           | 2272       | G           |
| 36         | LA           | 2273       | G           |
| 36         | LA           | 2274       | U           |
| 36         | LA           | 2279       | A           |
| 36         | LA           | 2280       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 2281       | A           |
| 36         | LA           | 2282       | U           |
| 36         | LA           | 2284       | C           |
| 36         | LA           | 2285       | C           |
| 36         | LA           | 2288       | G           |
| 36         | LA           | 2299       | A           |
| 36         | LA           | 2306       | C           |
| 36         | LA           | 2307       | G           |
| 36         | LA           | 2308       | C           |
| 36         | LA           | 2309       | A           |
| 36         | LA           | 2310       | U           |
| 36         | LA           | 2313       | A           |
| 36         | LA           | 2314       | U           |
| 36         | LA           | 2315       | G           |
| 36         | LA           | 2335       | G           |
| 36         | LA           | 2336       | U           |
| 36         | LA           | 2347       | U           |
| 36         | LA           | 2364       | G           |
| 36         | LA           | 2372       | A           |
| 36         | LA           | 2373       | A           |
| 36         | LA           | 2374       | C           |
| 36         | LA           | 2375       | G           |
| 36         | LA           | 2385       | G           |
| 36         | LA           | 2388       | U           |
| 36         | LA           | 2393       | G           |
| 36         | LA           | 2394       | G           |
| 36         | LA           | 2397       | A           |
| 36         | LA           | 2402       | A           |
| 36         | LA           | 2403       | G           |
| 36         | LA           | 2404       | A           |
| 36         | LA           | 2411       | U           |
| 36         | LA           | 2412       | G           |
| 36         | LA           | 2419       | A           |
| 36         | LA           | 2422       | C           |
| 36         | LA           | 2434       | U           |
| 36         | LA           | 2435       | G           |
| 36         | LA           | 2437       | G           |
| 36         | LA           | 2438       | A           |
| 36         | LA           | 2439       | A           |
| 36         | LA           | 2440       | G           |
| 36         | LA           | 2452       | G           |
| 36         | LA           | 2453       | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 2454       | G           |
| 36         | LA           | 2455       | U           |
| 36         | LA           | 2456       | A           |
| 36         | LA           | 2457       | G           |
| 36         | LA           | 2458       | A           |
| 36         | LA           | 2459       | A           |
| 36         | LA           | 2461       | A           |
| 36         | LA           | 2462       | A           |
| 36         | LA           | 2463       | G           |
| 36         | LA           | 2466       | G           |
| 36         | LA           | 2467       | G           |
| 36         | LA           | 2468       | A           |
| 36         | LA           | 2469       | G           |
| 36         | LA           | 2471       | U           |
| 36         | LA           | 2474       | G           |
| 36         | LA           | 2477       | G           |
| 36         | LA           | 2480       | A           |
| 36         | LA           | 2484       | A           |
| 36         | LA           | 2487       | U           |
| 36         | LA           | 2488       | A           |
| 36         | LA           | 2489       | C           |
| 36         | LA           | 2491       | A           |
| 36         | LA           | 2492       | C           |
| 36         | LA           | 2493       | U           |
| 36         | LA           | 2494       | A           |
| 36         | LA           | 2496       | C           |
| 36         | LA           | 2497       | U           |
| 36         | LA           | 2498       | U           |
| 36         | LA           | 2499       | U           |
| 36         | LA           | 2500       | A           |
| 36         | LA           | 2501       | U           |
| 36         | LA           | 2503       | G           |
| 36         | LA           | 2505       | U           |
| 36         | LA           | 2506       | U           |
| 36         | LA           | 2507       | C           |
| 36         | LA           | 2510       | U           |
| 36         | LA           | 2514       | U           |
| 36         | LA           | 2515       | A           |
| 36         | LA           | 2522       | G           |
| 36         | LA           | 2523       | A           |
| 36         | LA           | 2524       | A           |
| 36         | LA           | 2525       | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 2526       | C           |
| 36         | LA           | 2531       | C           |
| 36         | LA           | 2532       | U           |
| 36         | LA           | 2537       | U           |
| 36         | LA           | 2538       | U           |
| 36         | LA           | 2539       | C           |
| 36         | LA           | 2540       | A           |
| 36         | LA           | 2541       | U           |
| 36         | LA           | 2542       | U           |
| 36         | LA           | 2543       | U           |
| 36         | LA           | 2546       | C           |
| 36         | LA           | 2548       | C           |
| 36         | LA           | 2549       | G           |
| 36         | LA           | 2552       | C           |
| 36         | LA           | 2554       | A           |
| 36         | LA           | 2561       | A           |
| 36         | LA           | 2569       | A           |
| 36         | LA           | 2570       | U           |
| 36         | LA           | 2571       | U           |
| 36         | LA           | 2572       | C           |
| 36         | LA           | 2573       | G           |
| 36         | LA           | 2576       | G           |
| 36         | LA           | 2585       | G           |
| 36         | LA           | 2589       | G           |
| 36         | LA           | 2593       | A           |
| 36         | LA           | 2594       | C           |
| 36         | LA           | 2595       | A           |
| 36         | LA           | 2606       | G           |
| 36         | LA           | 2607       | G           |
| 36         | LA           | 2614       | G           |
| 36         | LA           | 2626       | A           |
| 36         | LA           | 2629       | U           |
| 36         | LA           | 2636       | A           |
| 36         | LA           | 2648       | G           |
| 36         | LA           | 2652       | U           |
| 36         | LA           | 2656       | A           |
| 36         | LA           | 2672       | G           |
| 36         | LA           | 2674       | A           |
| 36         | LA           | 2677       | G           |
| 36         | LA           | 2689       | A           |
| 36         | LA           | 2691       | A           |
| 36         | LA           | 2694       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 2696       | A           |
| 36         | LA           | 2703       | A           |
| 36         | LA           | 2704       | A           |
| 36         | LA           | 2714       | G           |
| 36         | LA           | 2719       | U           |
| 36         | LA           | 2728       | G           |
| 36         | LA           | 2748       | A           |
| 36         | LA           | 2749       | G           |
| 36         | LA           | 2752       | U           |
| 36         | LA           | 2753       | G           |
| 36         | LA           | 2755       | C           |
| 36         | LA           | 2777       | G           |
| 36         | LA           | 2778       | G           |
| 36         | LA           | 2796       | G           |
| 36         | LA           | 2800       | G           |
| 36         | LA           | 2801       | A           |
| 36         | LA           | 2802       | A           |
| 36         | LA           | 2803       | A           |
| 36         | LA           | 2804       | A           |
| 36         | LA           | 2805       | G           |
| 36         | LA           | 2810       | C           |
| 36         | LA           | 2817       | A           |
| 36         | LA           | 2818       | U           |
| 36         | LA           | 2821       | C           |
| 36         | LA           | 2838       | A           |
| 36         | LA           | 2842       | U           |
| 36         | LA           | 2844       | C           |
| 36         | LA           | 2845       | A           |
| 36         | LA           | 2847       | A           |
| 36         | LA           | 2849       | C           |
| 36         | LA           | 2856       | G           |
| 36         | LA           | 2861       | U           |
| 36         | LA           | 2867       | C           |
| 36         | LA           | 2871       | G           |
| 36         | LA           | 2872       | A           |
| 36         | LA           | 2873       | U           |
| 36         | LA           | 2875       | U           |
| 36         | LA           | 2876       | C           |
| 36         | LA           | 2887       | A           |
| 36         | LA           | 2894       | C           |
| 36         | LA           | 2899       | C           |
| 36         | LA           | 2910       | A           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 2916       | U           |
| 36         | LA           | 2918       | G           |
| 36         | LA           | 2923       | U           |
| 36         | LA           | 2928       | C           |
| 36         | LA           | 2933       | A           |
| 36         | LA           | 2935       | U           |
| 36         | LA           | 2936       | A           |
| 36         | LA           | 2941       | A           |
| 36         | LA           | 2942       | C           |
| 36         | LA           | 2947       | G           |
| 36         | LA           | 2954       | U           |
| 36         | LA           | 2955       | U           |
| 36         | LA           | 2957       | G           |
| 36         | LA           | 2971       | A           |
| 36         | LA           | 2983       | C           |
| 36         | LA           | 2990       | G           |
| 36         | LA           | 2996       | U           |
| 36         | LA           | 2997       | G           |
| 36         | LA           | 3003       | G           |
| 36         | LA           | 3012       | A           |
| 36         | LA           | 3030       | G           |
| 36         | LA           | 3055       | U           |
| 36         | LA           | 3056       | U           |
| 36         | LA           | 3058       | U           |
| 36         | LA           | 3059       | G           |
| 36         | LA           | 3078       | U           |
| 36         | LA           | 3079       | U           |
| 36         | LA           | 3080       | G           |
| 36         | LA           | 3086       | A           |
| 36         | LA           | 3092       | C           |
| 36         | LA           | 3101       | G           |
| 36         | LA           | 3104       | U           |
| 36         | LA           | 3115       | C           |
| 36         | LA           | 3116       | G           |
| 36         | LA           | 3118       | C           |
| 36         | LA           | 3119       | U           |
| 36         | LA           | 3122       | A           |
| 36         | LA           | 3129       | A           |
| 36         | LA           | 3130       | A           |
| 36         | LA           | 3131       | U           |
| 36         | LA           | 3142       | A           |
| 36         | LA           | 3143       | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 3151       | U           |
| 36         | LA           | 3154       | C           |
| 36         | LA           | 3155       | U           |
| 36         | LA           | 3156       | U           |
| 36         | LA           | 3157       | U           |
| 36         | LA           | 3158       | G           |
| 36         | LA           | 3165       | A           |
| 36         | LA           | 3170       | A           |
| 36         | LA           | 3172       | A           |
| 36         | LA           | 3173       | G           |
| 36         | LA           | 3174       | A           |
| 36         | LA           | 3175       | U           |
| 36         | LA           | 3176       | G           |
| 36         | LA           | 3180       | A           |
| 36         | LA           | 3181       | C           |
| 36         | LA           | 3187       | A           |
| 36         | LA           | 3196       | U           |
| 36         | LA           | 3199       | G           |
| 36         | LA           | 3207       | U           |
| 36         | LA           | 3210       | A           |
| 36         | LA           | 3216       | G           |
| 36         | LA           | 3217       | C           |
| 36         | LA           | 3218       | A           |
| 36         | LA           | 3219       | G           |
| 36         | LA           | 3222       | U           |
| 36         | LA           | 3229       | G           |
| 36         | LA           | 3235       | C           |
| 36         | LA           | 3239       | G           |
| 36         | LA           | 3242       | G           |
| 36         | LA           | 3243       | A           |
| 36         | LA           | 3244       | A           |
| 36         | LA           | 3245       | A           |
| 36         | LA           | 3247       | G           |
| 36         | LA           | 3259       | U           |
| 36         | LA           | 3260       | G           |
| 36         | LA           | 3263       | G           |
| 36         | LA           | 3269       | U           |
| 36         | LA           | 3270       | U           |
| 36         | LA           | 3272       | C           |
| 36         | LA           | 3273       | A           |
| 36         | LA           | 3276       | G           |
| 36         | LA           | 3277       | U           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 36         | LA           | 3281       | U           |
| 36         | LA           | 3286       | G           |
| 36         | LA           | 3287       | U           |
| 36         | LA           | 3288       | G           |
| 36         | LA           | 3289       | G           |
| 36         | LA           | 3294       | A           |
| 36         | LA           | 3295       | A           |
| 36         | LA           | 3304       | U           |
| 36         | LA           | 3313       | U           |
| 36         | LA           | 3316       | A           |
| 36         | LA           | 3318       | G           |
| 36         | LA           | 3319       | U           |
| 36         | LA           | 3320       | A           |
| 36         | LA           | 3334       | U           |
| 36         | LA           | 3341       | U           |
| 36         | LA           | 3345       | G           |
| 36         | LA           | 3347       | A           |
| 36         | LA           | 3351       | U           |
| 36         | LA           | 3352       | U           |
| 36         | LA           | 3353       | G           |
| 36         | LA           | 3354       | U           |
| 36         | LA           | 3355       | U           |
| 36         | LA           | 3356       | G           |
| 36         | LA           | 3368       | U           |
| 36         | LA           | 3369       | G           |
| 36         | LA           | 3378       | C           |
| 36         | LA           | 3381       | U           |
| 36         | LA           | 3382       | U           |
| 36         | LA           | 3386       | G           |
| 36         | LA           | 3389       | U           |
| 36         | LA           | 3390       | G           |
| 36         | LA           | 3396       | U           |
| 37         | LB           | 7          | G           |
| 37         | LB           | 10         | C           |
| 37         | LB           | 17         | A           |
| 37         | LB           | 22         | A           |
| 37         | LB           | 35         | C           |
| 37         | LB           | 52         | G           |
| 37         | LB           | 53         | U           |
| 37         | LB           | 54         | U           |
| 37         | LB           | 65         | G           |
| 37         | LB           | 74         | C           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 37         | LB           | 76         | A           |
| 37         | LB           | 99         | G           |
| 37         | LB           | 102        | A           |
| 37         | LB           | 112        | G           |
| 37         | LB           | 121        | U           |
| 38         | LC           | 16         | G           |
| 38         | LC           | 25         | G           |
| 38         | LC           | 34         | U           |
| 38         | LC           | 35         | C           |
| 38         | LC           | 38         | U           |
| 38         | LC           | 59         | A           |
| 38         | LC           | 62         | C           |
| 38         | LC           | 63         | G           |
| 38         | LC           | 80         | A           |
| 38         | LC           | 81         | U           |
| 38         | LC           | 82         | U           |
| 38         | LC           | 83         | C           |
| 38         | LC           | 84         | C           |
| 38         | LC           | 85         | G           |
| 38         | LC           | 86         | U           |
| 38         | LC           | 87         | G           |
| 38         | LC           | 90         | U           |
| 38         | LC           | 95         | G           |
| 38         | LC           | 97         | A           |
| 38         | LC           | 99         | C           |
| 38         | LC           | 104        | A           |
| 38         | LC           | 106        | C           |
| 38         | LC           | 111        | A           |
| 38         | LC           | 112        | U           |
| 38         | LC           | 113        | U           |
| 38         | LC           | 125        | U           |
| 38         | LC           | 126        | A           |
| 38         | LC           | 138        | A           |
| 38         | LC           | 148        | G           |
| 38         | LC           | 152        | G           |
| 38         | LC           | 157        | U           |
| 38         | LC           | 158        | U           |
| 80         | Sn           | 8          | U           |
| 80         | Sn           | 9          | G           |
| 80         | Sn           | 11         | C           |
| 80         | Sn           | 14         | A           |
| 80         | Sn           | 19         | G           |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 80         | Sn           | 20         | A           |
| 80         | Sn           | 21         | A           |
| 80         | Sn           | 25         | C           |
| 80         | Sn           | 27         | C           |
| 80         | Sn           | 36         | U           |
| 80         | Sn           | 45         | U           |
| 80         | Sn           | 46         | G           |
| 80         | Sn           | 47         | U           |
| 80         | Sn           | 48         | C           |
| 80         | Sn           | 49         | C           |
| 80         | Sn           | 54         | A           |
| 80         | Sn           | 57         | G           |
| 80         | Sn           | 59         | A           |
| 80         | Sn           | 61         | C           |
| 80         | Sn           | 63         | G           |
| 80         | Sn           | 64         | A           |
| 80         | Sn           | 66         | C           |
| 80         | Sn           | 76         | A           |
| 80         | Sm           | 8          | U           |
| 80         | Sm           | 9          | G           |
| 80         | Sm           | 11         | C           |
| 80         | Sm           | 14         | A           |
| 80         | Sm           | 19         | G           |
| 80         | Sm           | 20         | A           |
| 80         | Sm           | 21         | A           |
| 80         | Sm           | 25         | C           |
| 80         | Sm           | 27         | C           |
| 80         | Sm           | 36         | U           |
| 80         | Sm           | 45         | U           |
| 80         | Sm           | 46         | G           |
| 80         | Sm           | 47         | U           |
| 80         | Sm           | 48         | C           |
| 80         | Sm           | 49         | C           |
| 80         | Sm           | 54         | A           |
| 80         | Sm           | 57         | G           |
| 80         | Sm           | 59         | A           |
| 80         | Sm           | 61         | C           |
| 80         | Sm           | 63         | G           |
| 80         | Sm           | 64         | A           |
| 80         | Sm           | 66         | C           |
| 80         | Sm           | 74         | C           |
| 80         | Sm           | 76         | A           |

All (100) RNA pucker outliers are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | 2     | 68   | A    |
| 1   | 2     | 77   | U    |
| 1   | 2     | 139  | C    |
| 1   | 2     | 141  | U    |
| 1   | 2     | 215  | A    |
| 1   | 2     | 224  | C    |
| 1   | 2     | 237  | C    |
| 1   | 2     | 278  | U    |
| 1   | 2     | 280  | U    |
| 1   | 2     | 313  | U    |
| 1   | 2     | 322  | G    |
| 1   | 2     | 352  | A    |
| 1   | 2     | 387  | A    |
| 1   | 2     | 400  | A    |
| 1   | 2     | 447  | U    |
| 1   | 2     | 518  | A    |
| 1   | 2     | 539  | G    |
| 1   | 2     | 541  | A    |
| 1   | 2     | 555  | A    |
| 1   | 2     | 609  | U    |
| 1   | 2     | 639  | U    |
| 1   | 2     | 640  | U    |
| 1   | 2     | 705  | U    |
| 1   | 2     | 711  | U    |
| 1   | 2     | 740  | A    |
| 1   | 2     | 755  | A    |
| 1   | 2     | 803  | A    |
| 1   | 2     | 819  | G    |
| 1   | 2     | 912  | U    |
| 1   | 2     | 928  | U    |
| 1   | 2     | 987  | G    |
| 1   | 2     | 1023 | A    |
| 1   | 2     | 1207 | C    |
| 1   | 2     | 1226 | A    |
| 1   | 2     | 1245 | G    |
| 1   | 2     | 1251 | U    |
| 1   | 2     | 1256 | A    |
| 1   | 2     | 1273 | G    |
| 1   | 2     | 1274 | C    |
| 1   | 2     | 1314 | U    |
| 1   | 2     | 1344 | A    |
| 1   | 2     | 1348 | A    |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 2            | 1382       | A           |
| 1          | 2            | 1399       | C           |
| 1          | 2            | 1430       | U           |
| 1          | 2            | 1471       | A           |
| 1          | 2            | 1556       | A           |
| 1          | 2            | 1557       | U           |
| 1          | 2            | 1573       | A           |
| 1          | 2            | 1584       | G           |
| 1          | 2            | 1633       | A           |
| 1          | 2            | 1636       | C           |
| 1          | 2            | 1700       | C           |
| 1          | 2            | 1755       | A           |
| 36         | LA           | 13         | A           |
| 36         | LA           | 282        | G           |
| 36         | LA           | 439        | C           |
| 36         | LA           | 637        | C           |
| 36         | LA           | 763        | G           |
| 36         | LA           | 849        | C           |
| 36         | LA           | 873        | C           |
| 36         | LA           | 896        | A           |
| 36         | LA           | 916        | G           |
| 36         | LA           | 993        | G           |
| 36         | LA           | 1064       | A           |
| 36         | LA           | 1097       | G           |
| 36         | LA           | 1271       | A           |
| 36         | LA           | 1307       | G           |
| 36         | LA           | 1355       | A           |
| 36         | LA           | 1562       | C           |
| 36         | LA           | 1572       | U           |
| 36         | LA           | 1582       | C           |
| 36         | LA           | 1716       | U           |
| 36         | LA           | 1815       | U           |
| 36         | LA           | 1820       | U           |
| 36         | LA           | 2101       | C           |
| 36         | LA           | 2112       | U           |
| 36         | LA           | 2227       | C           |
| 36         | LA           | 2256       | A           |
| 36         | LA           | 2500       | A           |
| 36         | LA           | 2504       | U           |
| 36         | LA           | 2505       | U           |
| 36         | LA           | 2509       | U           |
| 36         | LA           | 2525       | G           |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 36  | LA    | 2537 | U    |
| 36  | LA    | 2538 | U    |
| 36  | LA    | 2541 | U    |
| 36  | LA    | 3055 | U    |
| 36  | LA    | 3078 | U    |
| 36  | LA    | 3121 | U    |
| 36  | LA    | 3218 | A    |
| 36  | LA    | 3228 | C    |
| 36  | LA    | 3269 | U    |
| 36  | LA    | 3275 | U    |
| 36  | LA    | 3319 | U    |
| 36  | LA    | 3350 | C    |
| 37  | LB    | 52   | G    |
| 38  | LC    | 82   | U    |
| 38  | LC    | 85   | G    |
| 38  | LC    | 125  | 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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

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

| Mol | Type | Chain | Res  | Link | Bond lengths |      |             | Bond angles |      |             |
|-----|------|-------|------|------|--------------|------|-------------|-------------|------|-------------|
|     |      |       |      |      | Counts       | RMSZ | $\# Z  > 2$ | Counts      | RMSZ | $\# Z  > 2$ |
| 82  | ATP  | EF    | 1102 | 81   | 26,33,33     | 0.90 | 1 (3%)      | 31,52,52    | 1.45 | 4 (12%)     |
| 82  | ATP  | EF    | 1101 | 81   | 26,33,33     | 0.92 | 1 (3%)      | 31,52,52    | 1.67 | 6 (19%)     |

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   |
|-----|------|-------|------|------|---------|------------|---------|
| 82  | ATP  | EF    | 1102 | 81   | -       | 0/18/38/38 | 0/3/3/3 |
| 82  | ATP  | EF    | 1101 | 81   | -       | 3/18/38/38 | 0/3/3/3 |

All (2) bond length outliers are listed below:

| Mol | Chain | Res  | Type | Atoms | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|------|-------------|----------|
| 82  | EF    | 1101 | ATP  | C5-C4 | 2.21 | 1.46        | 1.40     |
| 82  | EF    | 1102 | ATP  | C5-C4 | 2.08 | 1.46        | 1.40     |

All (10) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 82  | EF    | 1101 | ATP  | PB-O3B-PG   | -4.33 | 117.97      | 132.83   |
| 82  | EF    | 1101 | ATP  | C3'-C2'-C1' | 3.71  | 106.56      | 100.98   |
| 82  | EF    | 1101 | ATP  | PA-O3A-PB   | -3.21 | 121.82      | 132.83   |
| 82  | EF    | 1101 | ATP  | N3-C2-N1    | -3.13 | 123.78      | 128.68   |
| 82  | EF    | 1102 | ATP  | N3-C2-N1    | -3.05 | 123.91      | 128.68   |
| 82  | EF    | 1102 | ATP  | C4-C5-N7    | -2.89 | 106.38      | 109.40   |
| 82  | EF    | 1102 | ATP  | PB-O3B-PG   | -2.67 | 123.67      | 132.83   |
| 82  | EF    | 1101 | ATP  | C4-C5-N7    | -2.58 | 106.71      | 109.40   |
| 82  | EF    | 1102 | ATP  | PA-O3A-PB   | -2.51 | 124.22      | 132.83   |
| 82  | EF    | 1101 | ATP  | O2A-PA-O1A  | 2.11  | 122.65      | 112.24   |

There are no chirality outliers.

All (3) torsion outliers are listed below:

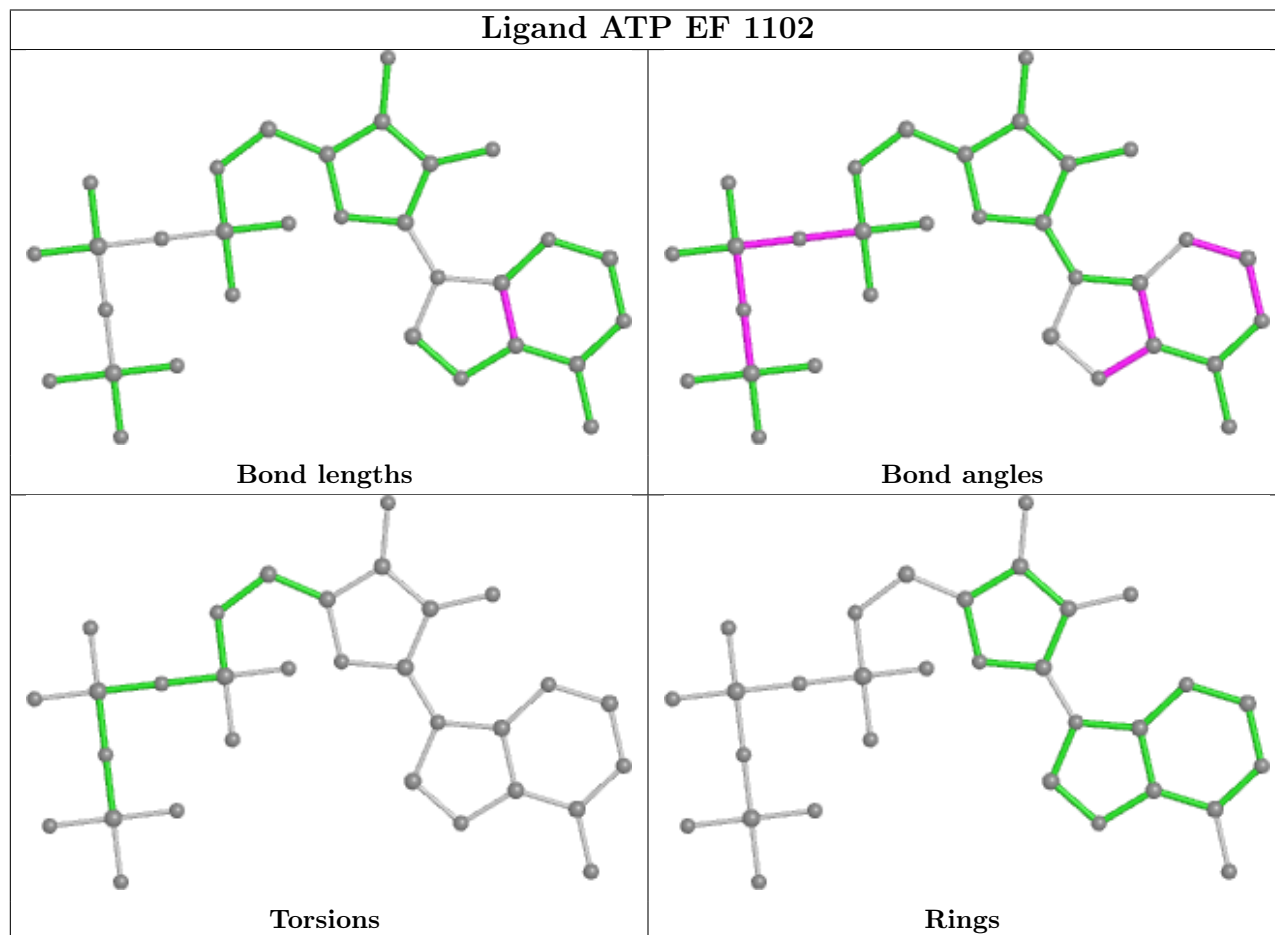
| Mol | Chain | Res  | Type | Atoms           |
|-----|-------|------|------|-----------------|
| 82  | EF    | 1101 | ATP  | C5'-O5'-PA-O2A  |
| 82  | EF    | 1101 | ATP  | C5'-O5'-PA-O3A  |
| 82  | EF    | 1101 | ATP  | O4'-C4'-C5'-O5' |

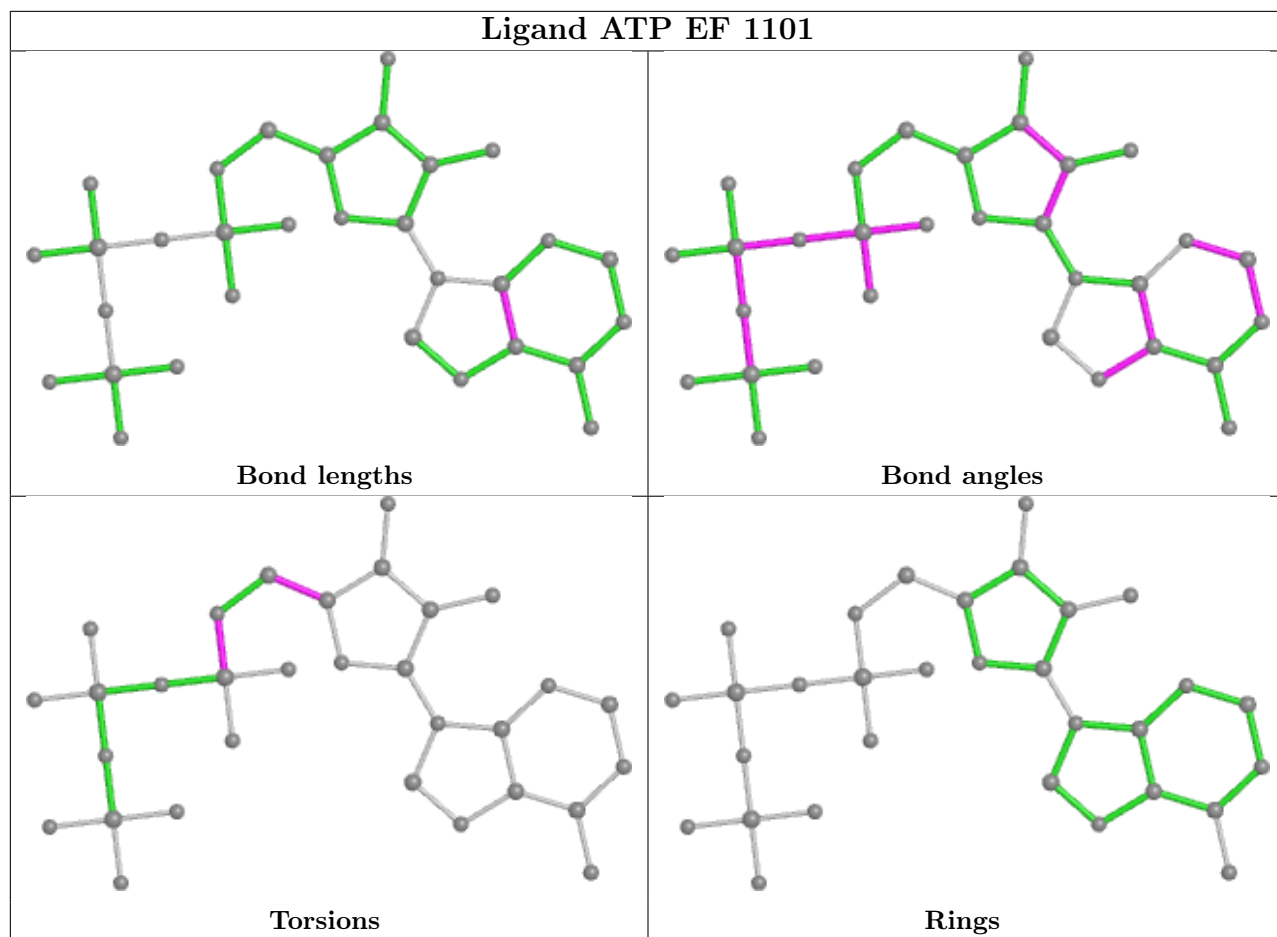
There are no ring outliers.

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 [i](#)

There are no such residues in this entry.

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

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 36  | LA    | 2                |
| 1   | 2     | 2                |
| 6   | R     | 1                |
| 45  | LJ    | 1                |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | LA    | 1955:U    | O3'    | 2093:A    | P      | 27.27        |
| 1     | 2     | 658:C     | O3'    | 676:G     | P      | 15.54        |

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| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | LA    | 451:U     | O3'    | 486:A     | P      | 11.17        |
| 1     | 2     | 714:G     | O3'    | 726:C     | P      | 10.44        |
| 1     | R     | 60:SER    | C      | 61:LEU    | N      | 1.18         |
| 1     | LJ    | 40:VAL    | C      | 41:GLN    | N      | 1.18         |

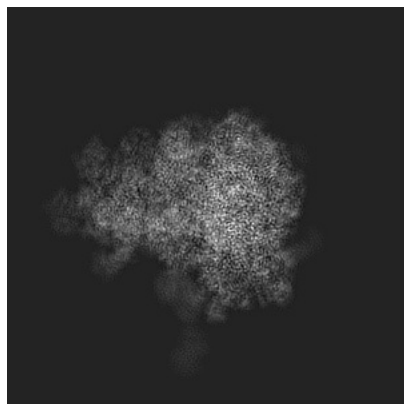
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-12081. These allow visual inspection of the internal detail of the map and identification of artifacts.

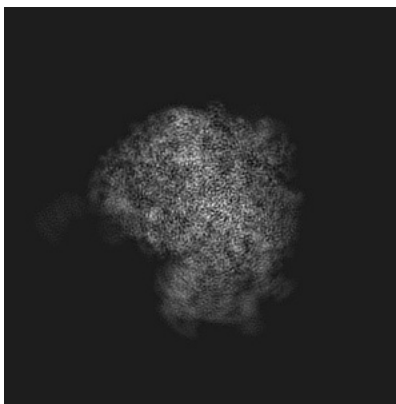
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

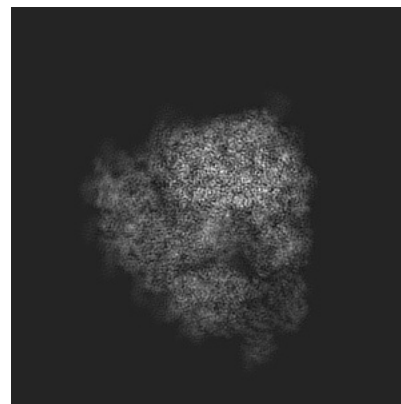
#### 6.1.1 Primary map



X

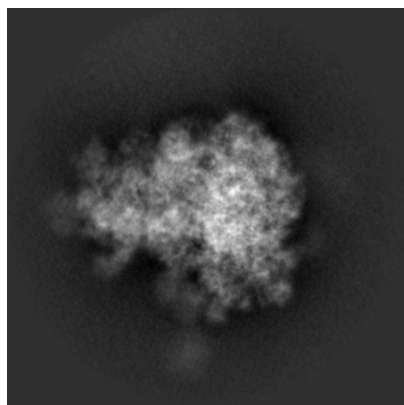


Y

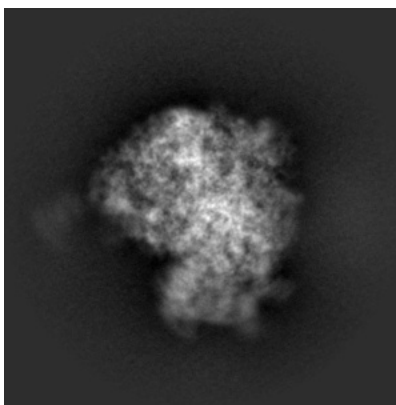


Z

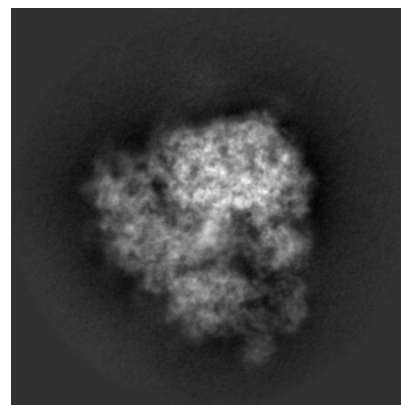
#### 6.1.2 Raw map



X



Y

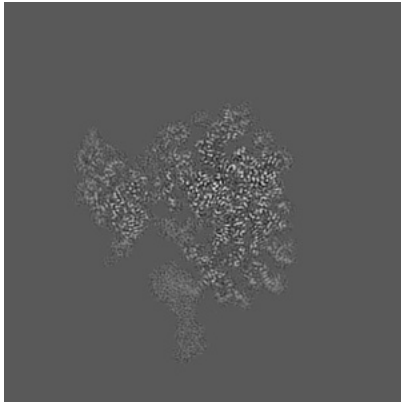


Z

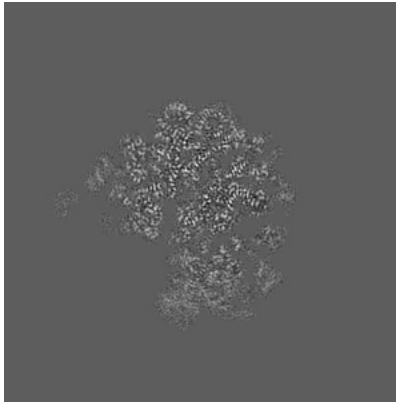
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

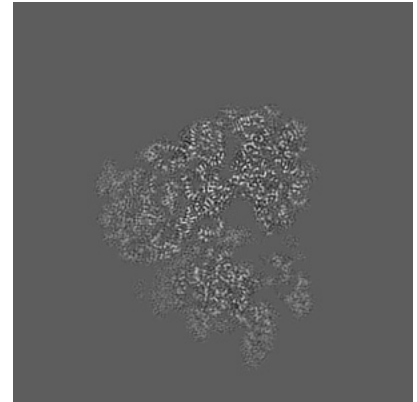
### 6.2.1 Primary map



X Index: 210

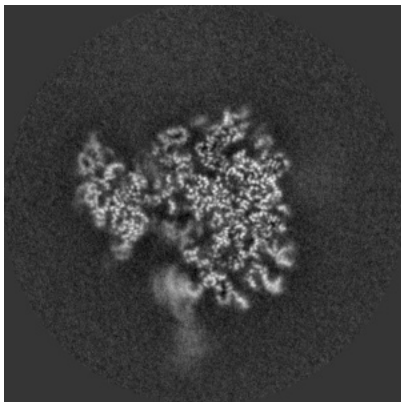


Y Index: 210

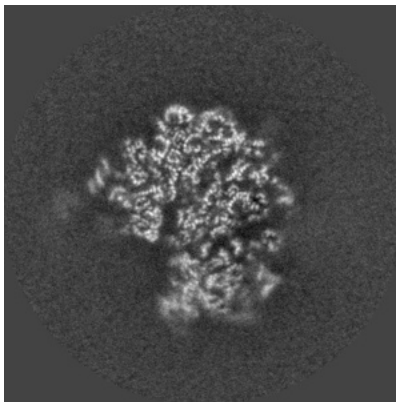


Z Index: 210

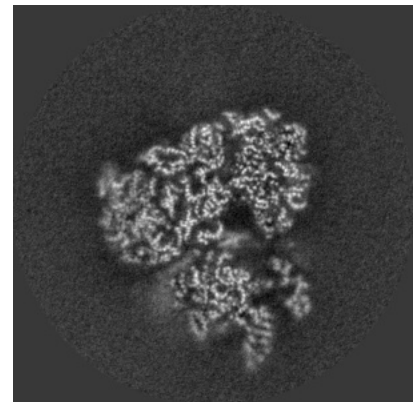
### 6.2.2 Raw map



X Index: 210



Y Index: 210



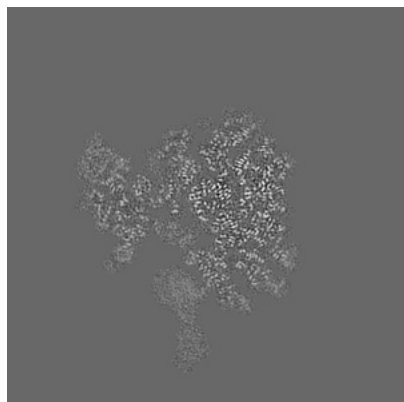
Z Index: 210

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

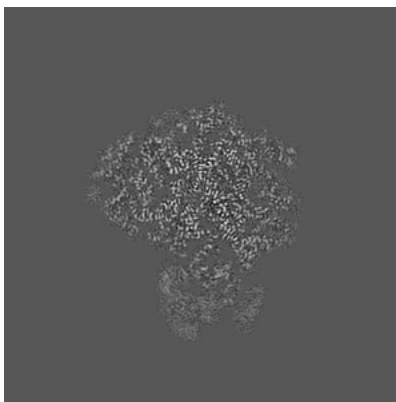


## 6.3 Largest variance slices [i](#)

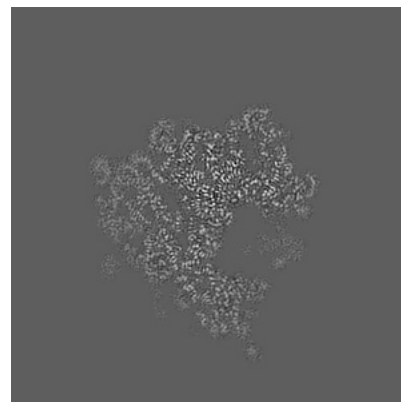
### 6.3.1 Primary map



X Index: 207

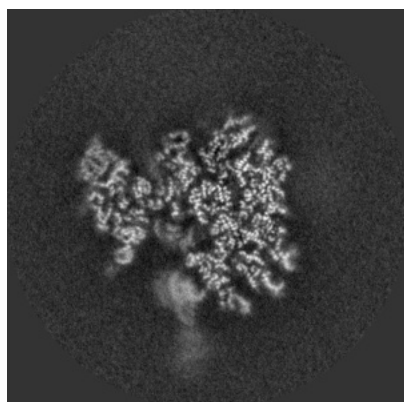


Y Index: 228

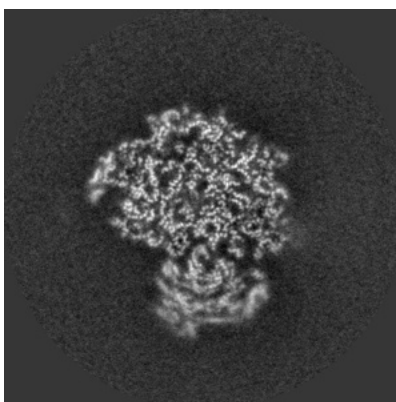


Z Index: 228

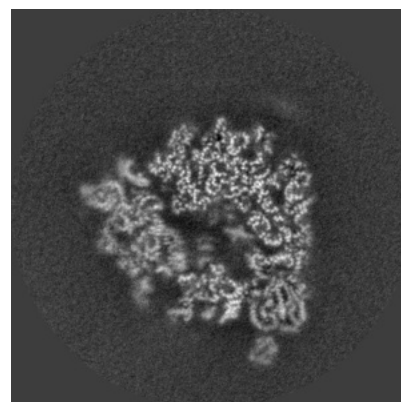
### 6.3.2 Raw map



X Index: 207



Y Index: 219

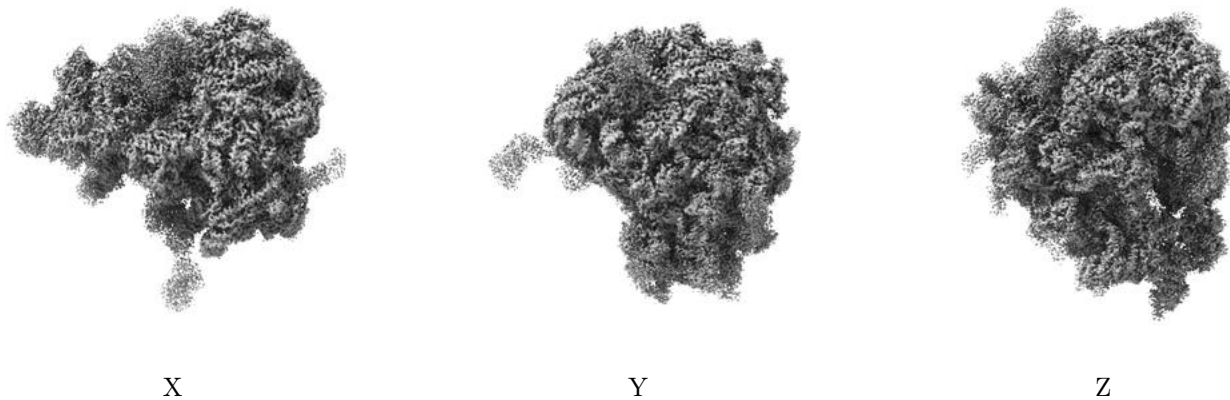


Z Index: 192

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

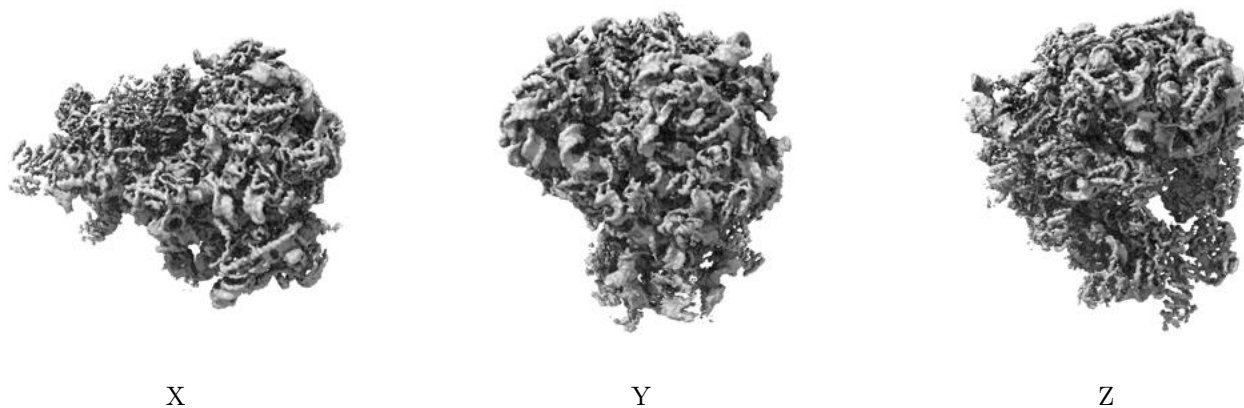
## 6.4 Orthogonal surface views [i](#)

### 6.4.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.04. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.4.2 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.

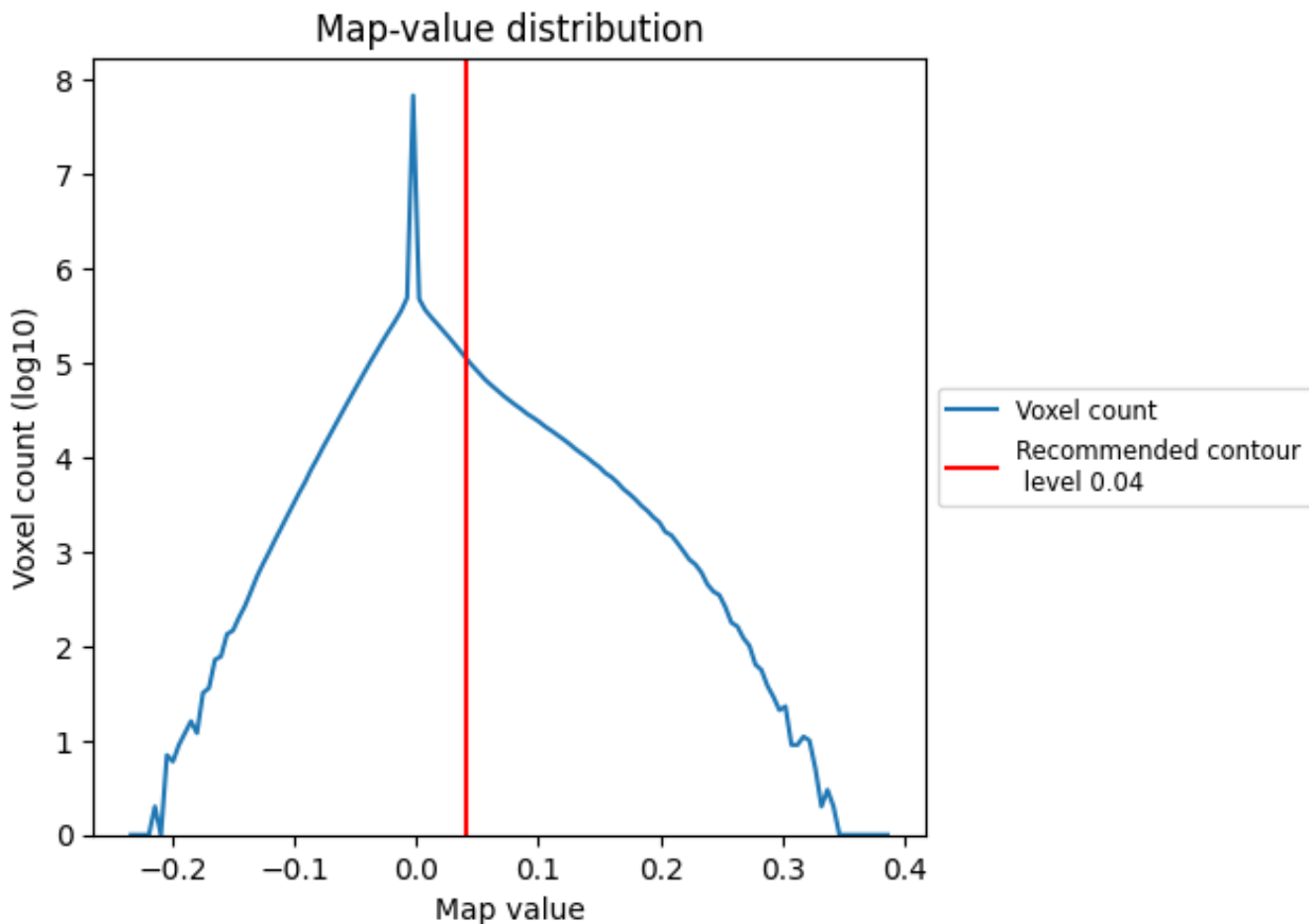
## 6.5 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

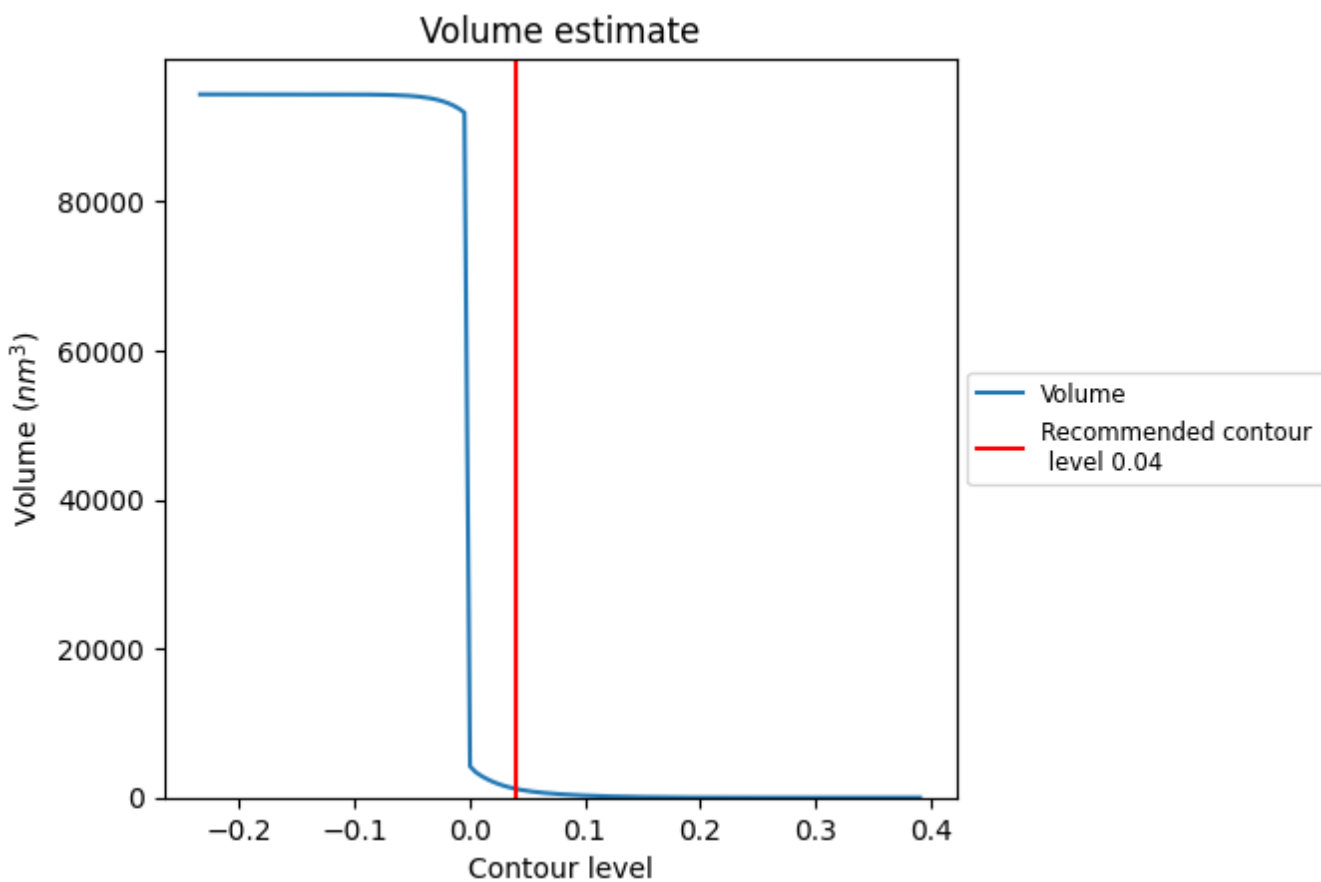
This section contains the results of statistical analysis of the map.

### 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.

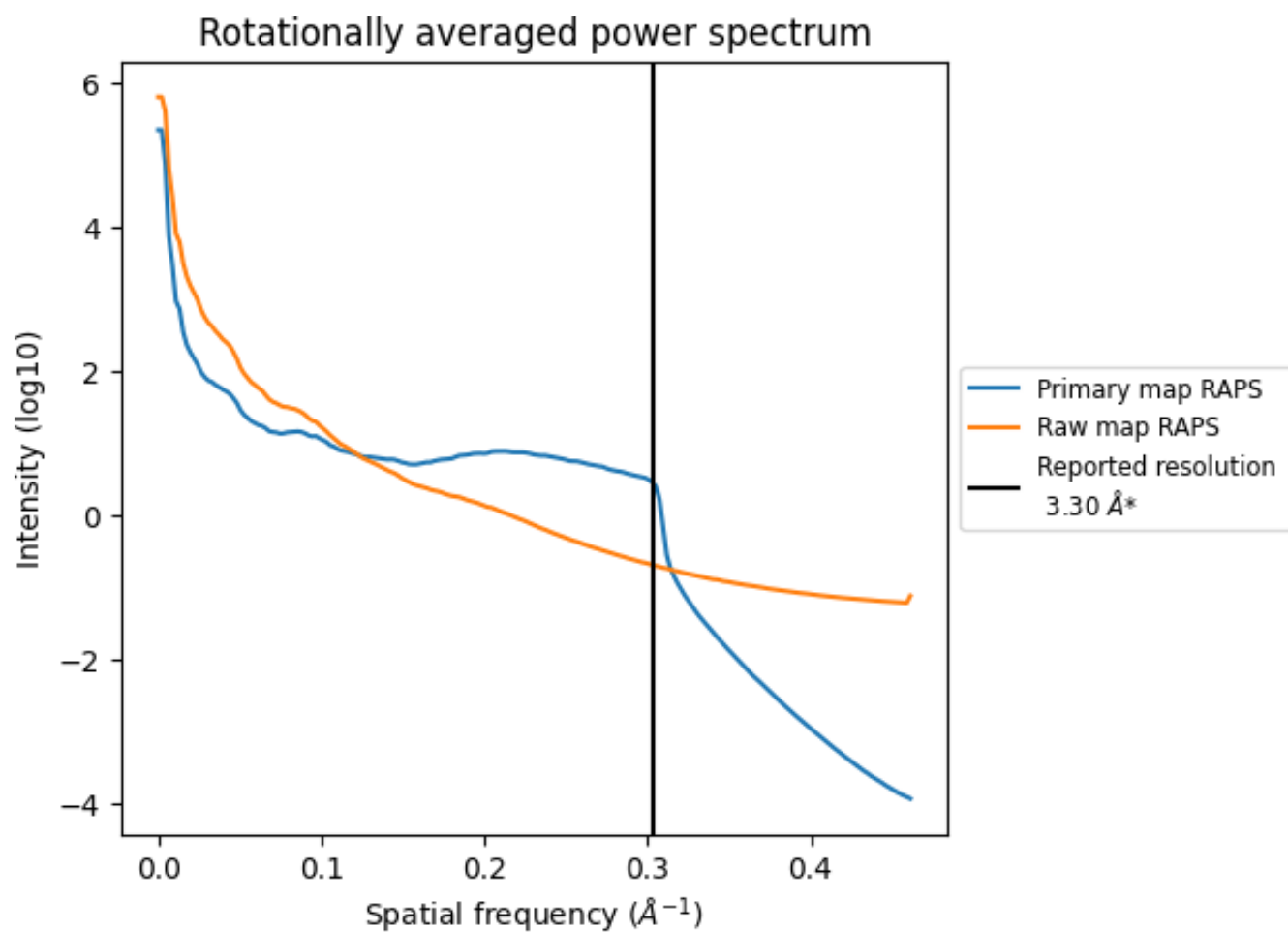
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1176  $\text{nm}^3$ ; this corresponds to an approximate mass of 1062 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 [i](#)

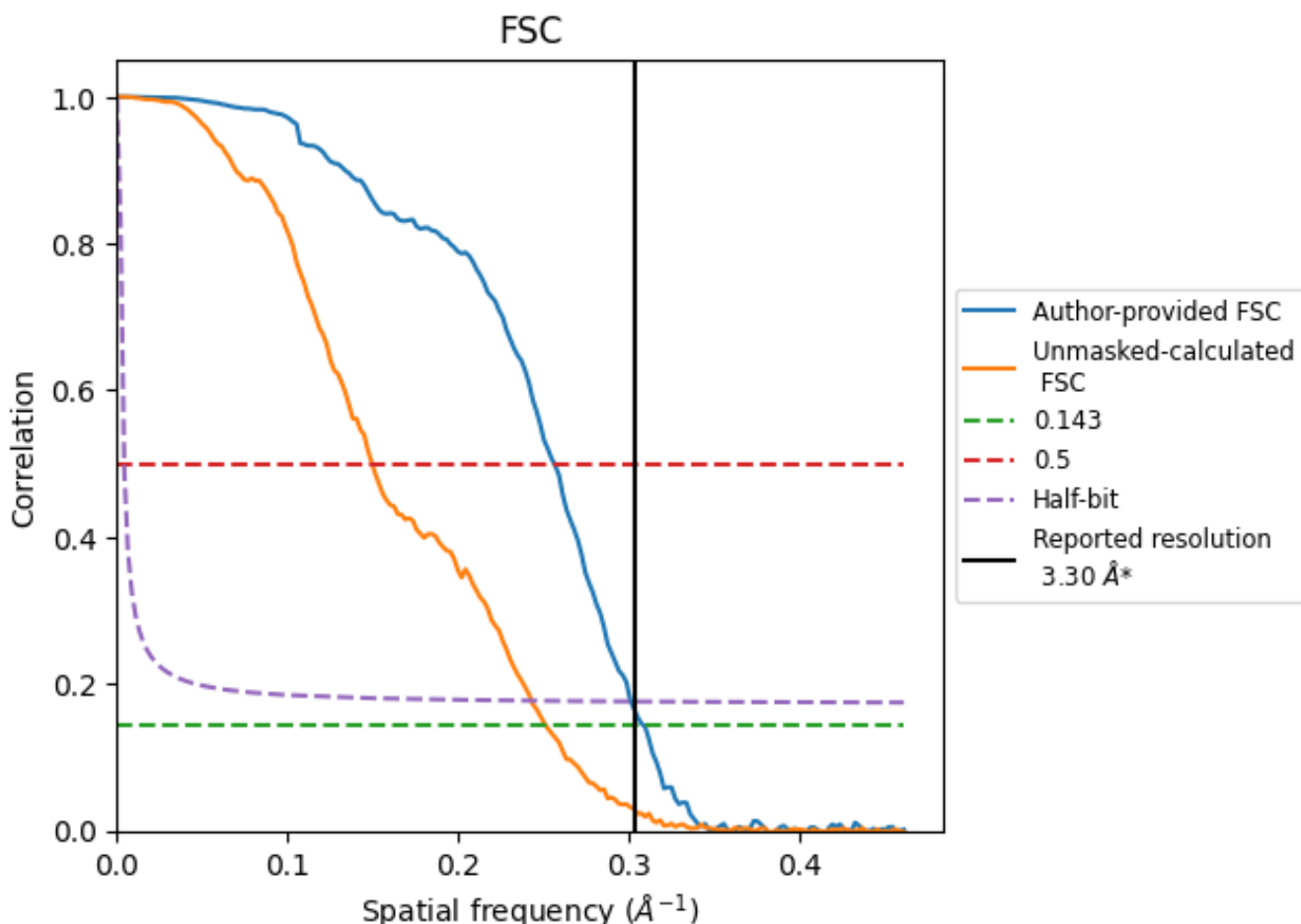


\*Reported resolution corresponds to spatial frequency of 0.303 Å<sup>-1</sup>

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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.303 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

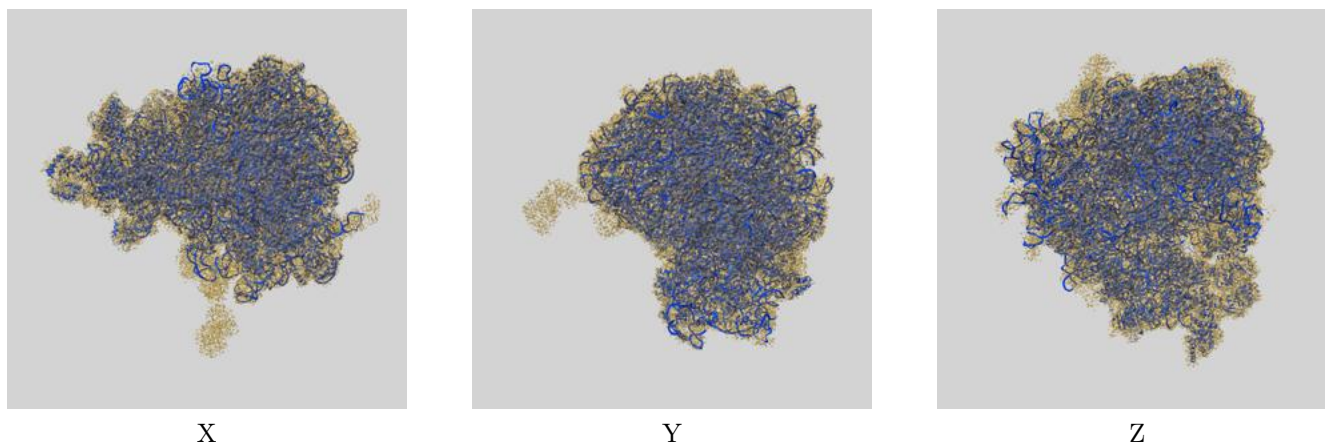
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.30                               | -    | -        |
| Author-provided FSC curve | 3.24                               | 3.90 | 3.32     |
| Unmasked-calculated*      | 3.98                               | 6.68 | 4.12     |

\*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 3.98 differs from the reported value 3.3 by more than 10 %

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

This section contains information regarding the fit between EMDB map EMD-12081 and PDB model 7B7D. Per-residue inclusion information can be found in section 3 on page 19.

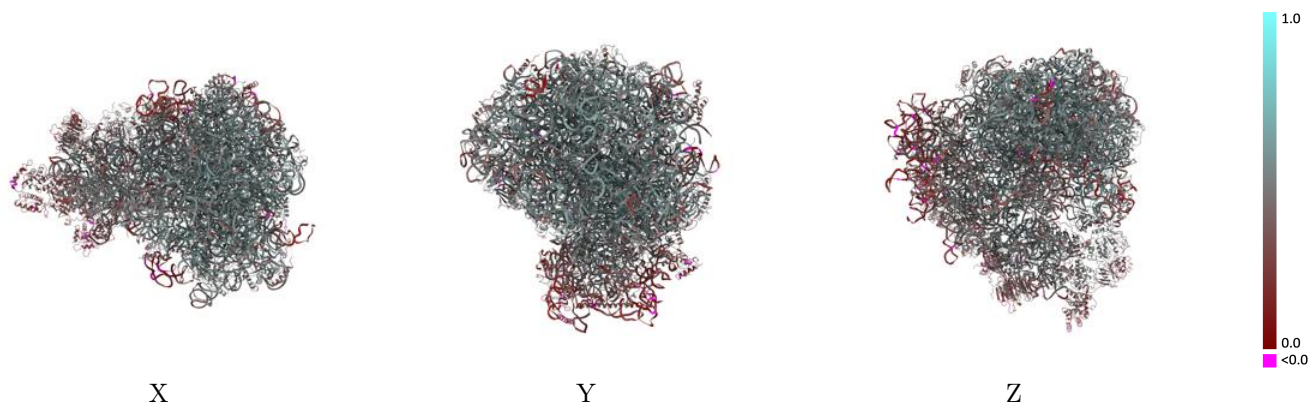
### 9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.04 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

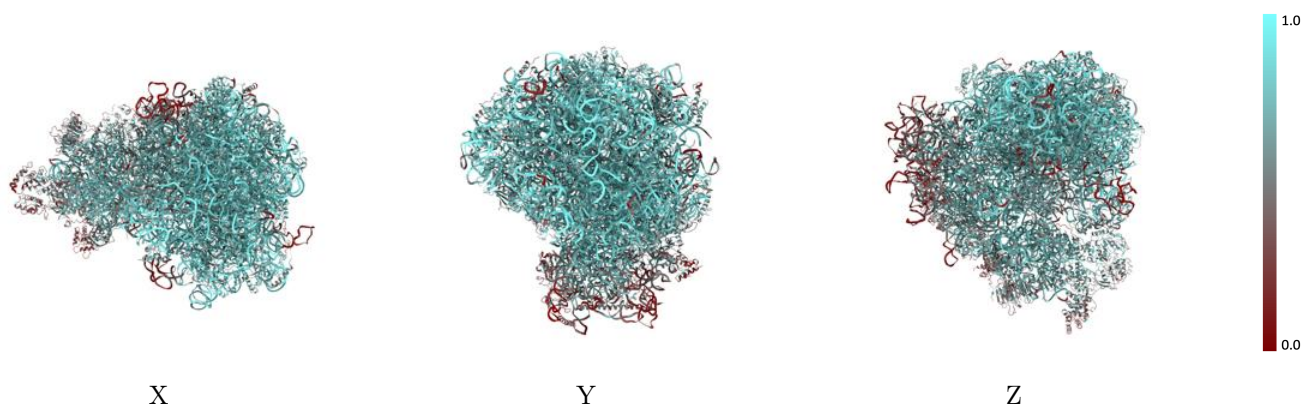


## 9.2 Q-score mapped to coordinate model [i](#)



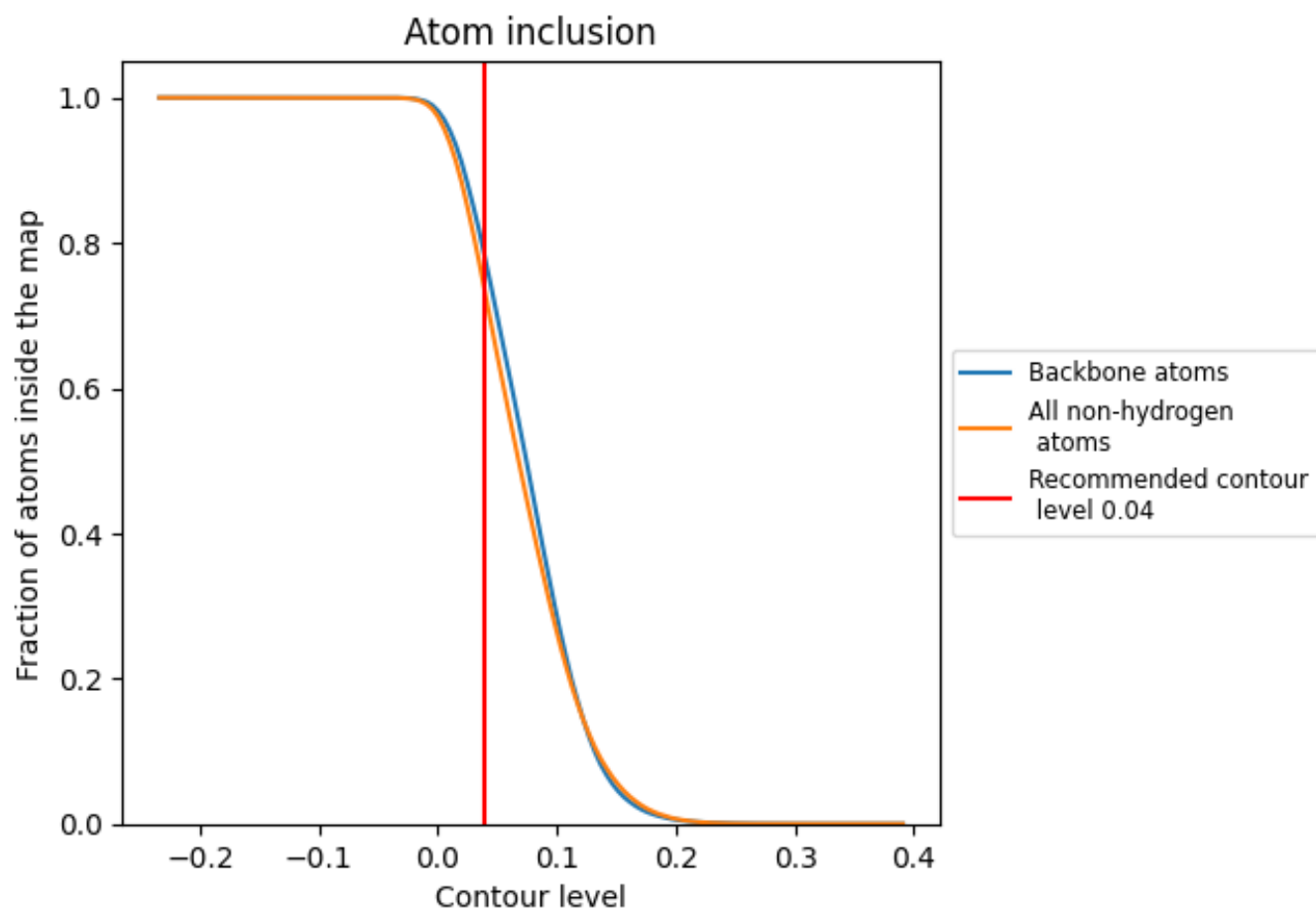
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.04).







































































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 78% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary





















































































The table lists the average atom inclusion at the recommended contour level (0.04) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| All   |  0.7293   |  0.4640   |
| 1     |  0.7919   |  0.5060   |
| 2     |  0.7207   |  0.4320   |
| A     |  0.5505   |  0.3880   |
| B     |  0.6254   |  0.4200   |
| C     |  0.5244   |  0.3600   |
| D     |  0.1780   |  0.1740   |
| E     |  0.5955   |  0.3720   |
| EF    |  0.5296   |  0.3800   |
| F     |  0.6830   |  0.4600   |
| G     |  0.5618   |  0.3970   |
| H     |  0.6626   |  0.4310   |
| I     |  0.6901   |  0.4610   |
| J     |  0.5550   |  0.3880   |
| K     |  0.5506  |  0.3510  |
| L     |  0.5729 |  0.3960 |
| LA    |  0.8458 |  0.5110 |
| LB    |  0.9015 |  0.5280 |
| LC    |  0.8834 |  0.5340 |
| LD    |  0.8059 |  0.5400 |
| LE    |  0.7766 |  0.5110 |
| LF    |  0.7669 |  0.5080 |
| LG    |  0.7203 |  0.4630 |
| LH    |  0.6573 |  0.4420 |
| LI    |  0.7675 |  0.5060 |
| LJ    |  0.6716 |  0.4510 |
| LK    |  0.7142 |  0.4790 |
| LL    |  0.6817 |  0.4670 |
| LM    |  0.7087 |  0.4590 |
| LN    |  0.7384 |  0.5010 |
| LO    |  0.7242 |  0.4810 |
| LP    |  0.8137 |  0.5480 |
| LQ    |  0.7649 |  0.5150 |
| LR    |  0.7686 |  0.5070 |
| LS    |  0.5134 |  0.3850 |















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| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| LT    |  0.7527   |  0.5070   |
| LU    |  0.7471   |  0.5030   |
| LV    |  0.7139   |  0.4740   |
| LW    |  0.7953   |  0.5280   |
| LX    |  0.7212   |  0.4960   |
| LY    |  0.6731   |  0.4670   |
| LZ    |  0.7212   |  0.4880   |
| La    |  0.7690   |  0.5240   |
| Lb    |  0.7978   |  0.5420   |
| Lc    |  0.7227   |  0.5140   |
| Ld    |  0.7211   |  0.4930   |
| Le    |  0.6824   |  0.4630   |
| Lf    |  0.8401   |  0.5520   |
| Lg    |  0.6327   |  0.4260   |
| Lh    |  0.7663   |  0.5160   |
| Li    |  0.7197   |  0.4920   |
| Lj    |  0.6683   |  0.4970   |
| Lk    |  0.7578  |  0.5130  |
| Ll    |  0.7399 |  0.5190 |
| Lm    |  0.7634 |  0.5190 |
| Ln    |  0.7010 |  0.4730 |
| Lo    |  0.7504 |  0.5100 |
| Lp    |  0.7476 |  0.5080 |
| Lq    |  0.6611 |  0.4310 |
| Lr    |  0.7099 |  0.4990 |
| M     |  0.7565 |  0.4810 |
| N     |  0.2836 |  0.2210 |
| O     |  0.4887 |  0.3320 |
| P     |  0.6061 |  0.4190 |
| Q     |  0.5685 |  0.4120 |
| R     |  0.6366 |  0.4490 |
| S     |  0.4665 |  0.3650 |
| Sm    |  0.3713 |  0.3140 |
| Sn    |  0.5747 |  0.3680 |
| T     |  0.3778 |  0.2810 |
| U     |  0.4307 |  0.3330 |
| V     |  0.6212 |  0.4270 |
| W     |  0.4409 |  0.3450 |
| X     |  0.5833 |  0.4370 |
| Y     |  0.6329 |  0.4370 |
| Z     |  0.6663 |  0.4590 |
| a     |  0.6095 |  0.4220 |

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| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| b     |  0.6784 |  0.4810 |
| c     |  0.5631 |  0.4070 |
| d     |  0.4092 |  0.3280 |
| e     |  0.7116 |  0.4760 |
| f     |  0.5491 |  0.3830 |
| g     |  0.4101 |  0.2890 |