



Full wwPDB EM Validation Report ⓘ

Dec 11, 2022 – 01:05 pm GMT

PDB ID : 6SPD
EMDB ID : EMD-10282
Title : Pseudomonas aeruginosa 50s ribosome from a clinical isolate
Authors : Halfon, Y.; Jimenez-Fernande, A.; La Ros, R.; Espinos, R.; Krogh Johansen, H.; Matzov, D.; Eyal, Z.; Bashan, A.; Zimmerman, E.; Belousoff, M.; Molin, S.; Yonath, A.
Deposited on : 2019-09-01
Resolution : 3.28 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

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>.

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

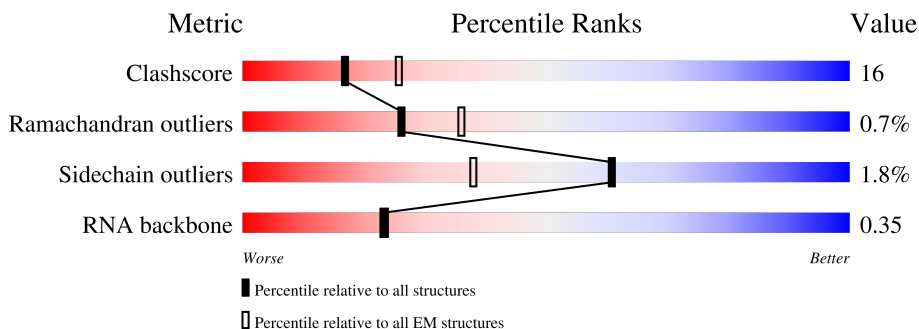
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.3

1 Overall quality at a glance

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

The reported resolution of this entry is 3.28 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 (#Entries) | EM structures (#Entries) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore | 158937 | 4297 |
| 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 ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | A | 2888 | |
| 2 | B | 116 | |
| 3 | C | 271 | |
| 4 | D | 207 | |
| 5 | E | 199 | |
| 6 | F | 175 | |
| 7 | G | 173 | |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|-------------------|
| 8 | H | 147 | 99% 84% 15% |
| 9 | I | 140 | 93% 81% 19% |
| 10 | J | 141 | 92% 8% |
| 11 | K | 120 | 7% 82% 18% |
| 12 | L | 143 | 38% 91% 8% |
| 13 | M | 135 | 93% 7% |
| 14 | N | 118 | 92% 7% |
| 15 | O | 115 | 10% 94% 6% |
| 16 | P | 113 | 5% 86% 12% |
| 17 | Q | 117 | 17% 89% 11% |
| 18 | R | 103 | 26% 79% 19% |
| 19 | S | 109 | 15% 94% 5% |
| 20 | T | 92 | 45% 90% 9% |
| 21 | U | 103 | 53% 88% 12% |
| 22 | V | 188 | 8% 77% 20% |
| 23 | W | 76 | 5% 82% 14% |
| 24 | X | 77 | 66% 81% 19% |
| 25 | Y | 60 | 42% 87% 10% |
| 26 | Z | 57 | 14% 84% 16% |
| 27 | 1 | 31 | 10% 87% 13% |
| 28 | 2 | 53 | 8% 92% 8% |
| 29 | 3 | 50 | 32% 76% 24% |
| 30 | 4 | 44 | 48% 77% 23% |
| 31 | 5 | 63 | 29% 83% 16% |
| 32 | 6 | 38 | 89% 11% |

2 Entry composition [i](#)

There are 32 unique types of molecules in this entry. The entry contains 90352 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 23S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| | | | Total | C | N | O | P | | |
| 1 | A | 2851 | 61164 | 27299 | 11236 | 19786 | 2843 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|---------------|
| A | 361 | A | G | conflict | REF 470469287 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | P | | |
| 2 | B | 116 | 2469 | 1104 | 442 | 808 | 115 | 0 | 0 |

- Molecule 3 is a protein called 50S ribosomal protein L2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 3 | C | 271 | 2067 | 1273 | 425 | 363 | 6 | 0 | 0 |

- Molecule 4 is a protein called 50S ribosomal protein L3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 4 | D | 207 | 1557 | 964 | 297 | 291 | 5 | 0 | 0 |

- Molecule 5 is a protein called 50S ribosomal protein L4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 5 | E | 199 | 1516 | 951 | 282 | 281 | 2 | 0 | 0 |

- Molecule 6 is a protein called 50S ribosomal protein L5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 6 | F | 175 | 1402 | 896 | 248 | 254 | 4 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|----------------|
| F | 7 | LEU | ILE | conflict | UNP A0A072ZMU2 |

- Molecule 7 is a protein called 50S ribosomal protein L6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 7 | G | 173 | 1308 | 823 | 240 | 243 | 2 | 0 | 0 |

- Molecule 8 is a protein called 50S ribosomal protein L9.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 8 | H | 147 | 1086 | 681 | 193 | 212 | 0 | 0 |

- Molecule 9 is a protein called 50S ribosomal protein L11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 9 | I | 140 | 1026 | 642 | 183 | 198 | 3 | 0 | 0 |

- Molecule 10 is a protein called 50S ribosomal protein L13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 10 | J | 141 | 1122 | 713 | 205 | 201 | 3 | 0 | 0 |

- Molecule 11 is a protein called 50S ribosomal protein L14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 11 | K | 120 | 922 | 576 | 178 | 162 | 6 | 0 | 0 |

- Molecule 12 is a protein called 50S ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 12 | L | 143 | 1058 | 649 | 214 | 193 | 2 | 0 | 0 |

- Molecule 13 is a protein called 50S ribosomal protein L16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 13 | M | 135 | 1069 | 679 | 209 | 178 | 3 | 0 | 0 |

- Molecule 14 is a protein called 50S ribosomal protein L17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 14 | N | 118 | 945 | 590 | 190 | 160 | 5 | 0 | 0 |

- Molecule 15 is a protein called 50S ribosomal protein L18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 15 | O | 115 | 881 | 544 | 174 | 161 | 2 | 0 | 0 |

- Molecule 16 is a protein called 50S ribosomal protein L19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 16 | P | 113 | 894 | 564 | 169 | 160 | 1 | 0 | 0 |

- Molecule 17 is a protein called 50S ribosomal protein L20.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 17 | Q | 117 | 936 | 592 | 196 | 148 | 0 | 0 |

- Molecule 18 is a protein called 50S ribosomal protein L21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 18 | R | 103 | 822 | 521 | 156 | 143 | 2 | 0 | 0 |

- Molecule 19 is a protein called 50S ribosomal protein L22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 19 | S | 109 | 825 | 510 | 160 | 152 | 3 | 0 | 0 |

- Molecule 20 is a protein called 50S ribosomal protein L23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 20 | T | 92 | 701 | 449 | 124 | 128 | | 0 | 0 |

- Molecule 21 is a protein called 50S ribosomal protein L24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 21 | U | 103 | 801 | 503 | 152 | 144 | 2 | 0 | 0 |

- Molecule 22 is a protein called 50S ribosomal protein L25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 22 | V | 188 | 1405 | 893 | 255 | 255 | 2 | 0 | 0 |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|----------------|
| V | 6 | VAL | LEU | conflict | UNP A0A072ZBM5 |
| V | 71 | VAL | ALA | conflict | UNP A0A072ZBM5 |

- Molecule 23 is a protein called 50S ribosomal protein L27.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | | |
| 23 | W | 76 | 574 | 365 | 110 | 99 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|----------------|
| W | 40 | LEU | GLN | conflict | UNP A0A071LFT4 |

- Molecule 24 is a protein called 50S ribosomal protein L28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 24 | X | 77 | Total | C | N | O | S | 0 | 0 |
| | | | 630 | 391 | 134 | 103 | 2 | | |

- Molecule 25 is a protein called Ribosomal protein uL29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 25 | Y | 60 | Total | C | N | O | S | 0 | 0 |
| | | | 476 | 290 | 96 | 89 | 1 | | |

- Molecule 26 is a protein called 50S ribosomal protein L30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 26 | Z | 57 | Total | C | N | O | S | 0 | 0 |
| | | | 445 | 277 | 87 | 79 | 2 | | |

- Molecule 27 is a protein called 50S ribosomal protein L31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 27 | 1 | 31 | Total | C | N | O | S | 0 | 0 |
| | | | 232 | 144 | 40 | 45 | 3 | | |

- Molecule 28 is a protein called 50S ribosomal protein L32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 28 | 2 | 53 | Total | C | N | O | S | 0 | 0 |
| | | | 423 | 254 | 90 | 78 | 1 | | |

- Molecule 29 is a protein called 50S ribosomal protein L33.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 29 | 3 | 50 | Total | C | N | O | 0 | 0 |
| | | | 418 | 267 | 77 | 74 | | |

- Molecule 30 is a protein called 50S ribosomal protein L34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 30 | 4 | 44 | Total | C | N | O | S | 0 | 0 |
| | | | 365 | 222 | 87 | 54 | 2 | | |

- Molecule 31 is a protein called 50S ribosomal protein L35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 31 | 5 | 63 | 506 | 314 | 108 | 81 | 3 | 0 | 0 |

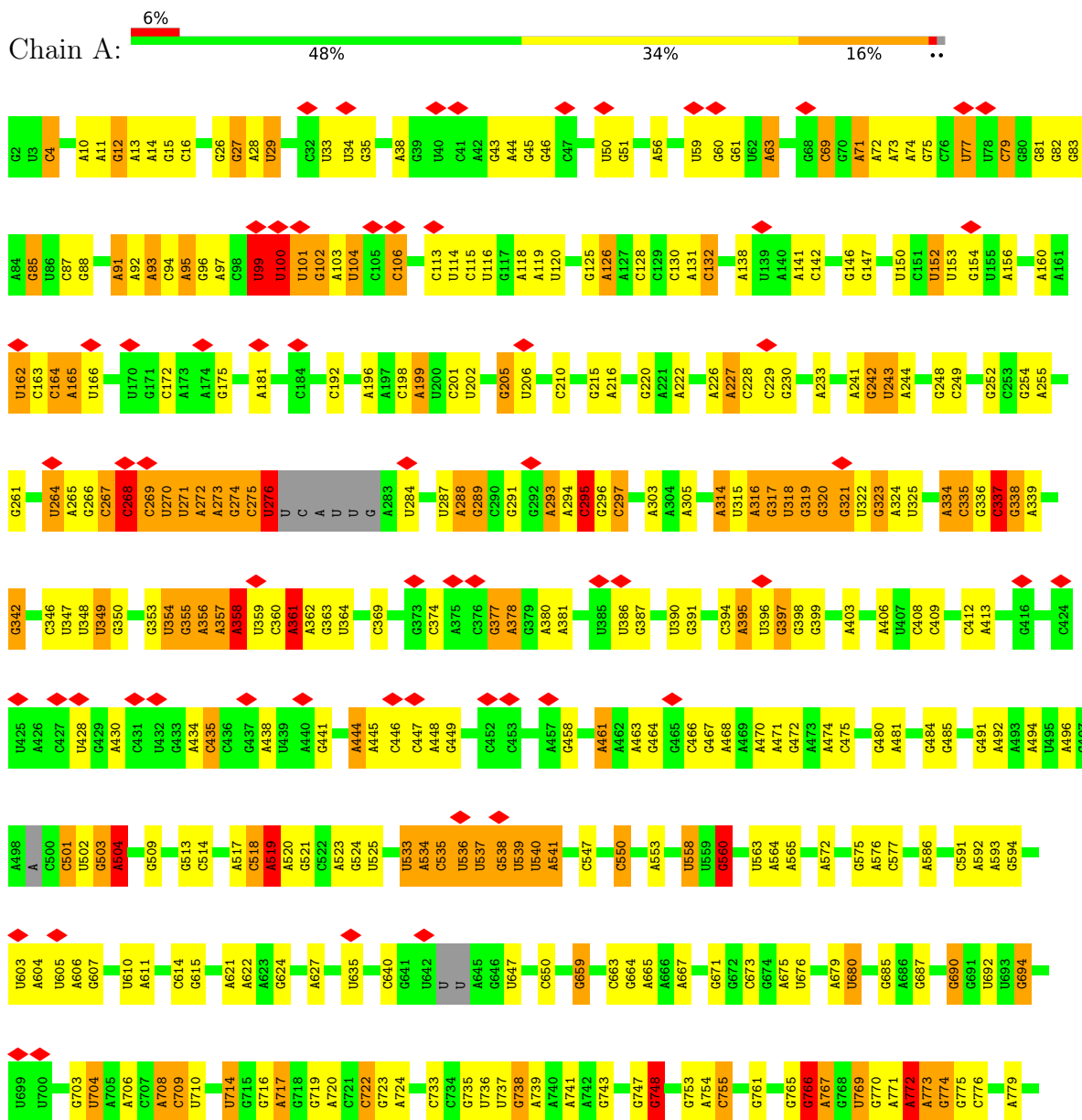
- Molecule 32 is a protein called 50S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 32 | 6 | 38 | 307 | 186 | 69 | 48 | 4 | 0 | 0 |

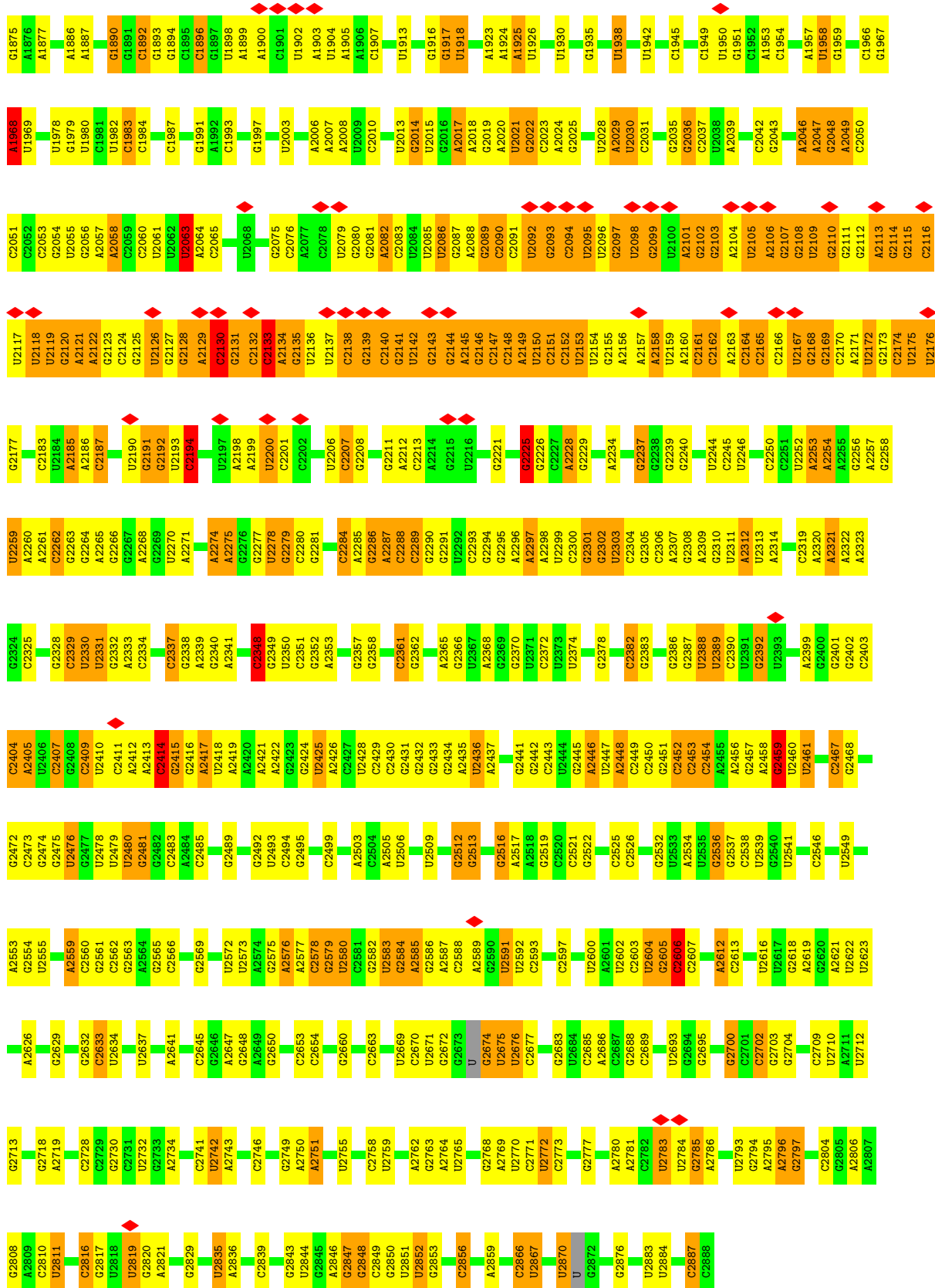
3 Residue-property plots

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.

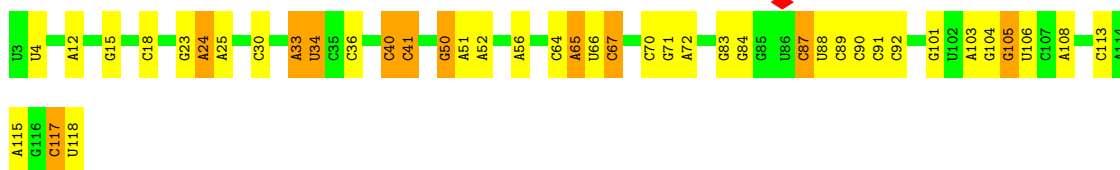
- Molecule 1: 23S ribosomal RNA



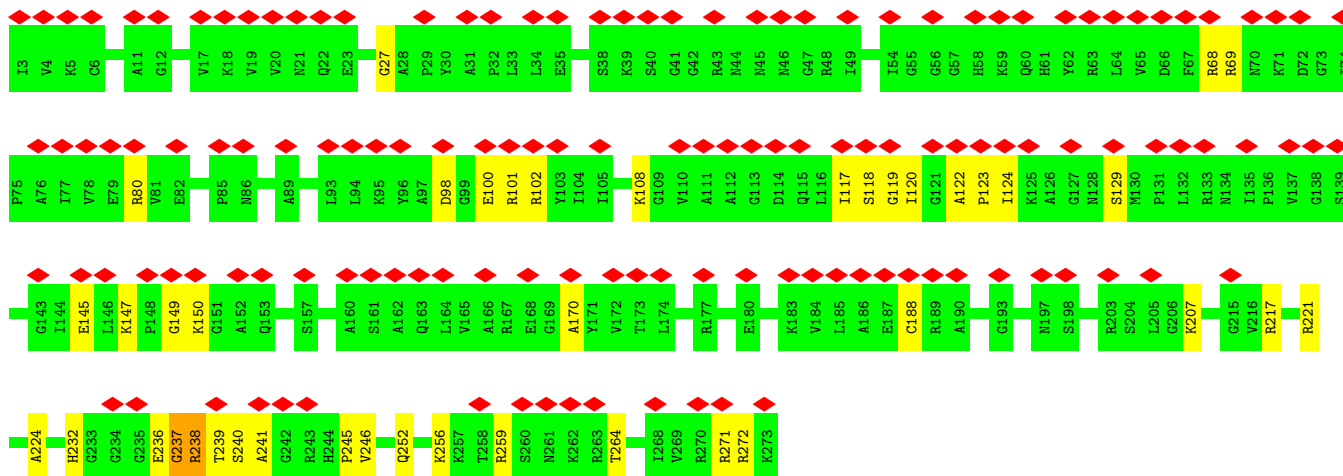
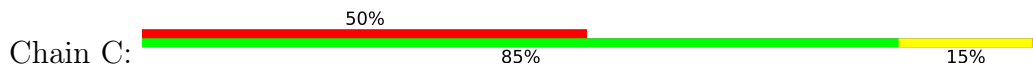
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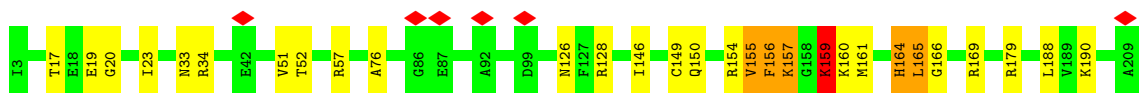
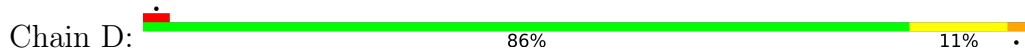
- Molecule 2: 5S ribosomal RNA



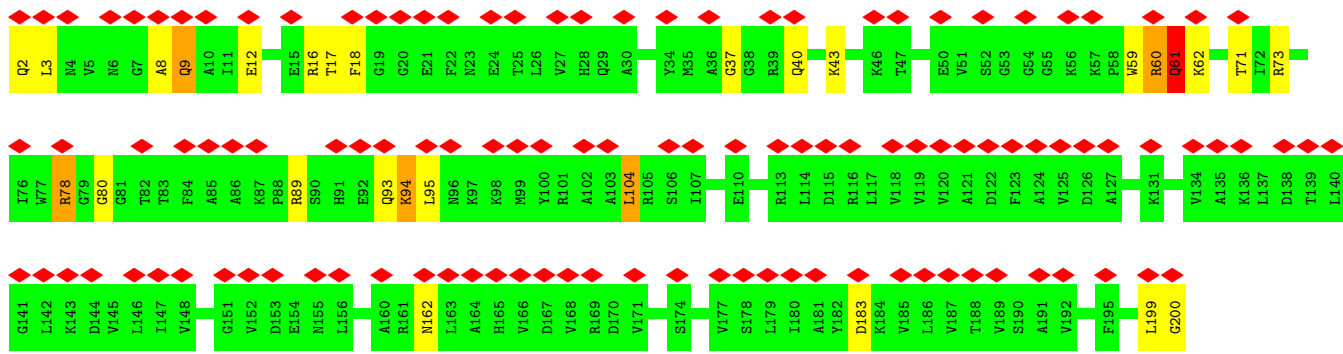
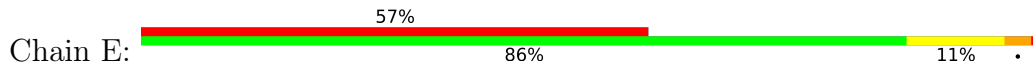
• Molecule 3: 50S ribosomal protein L2



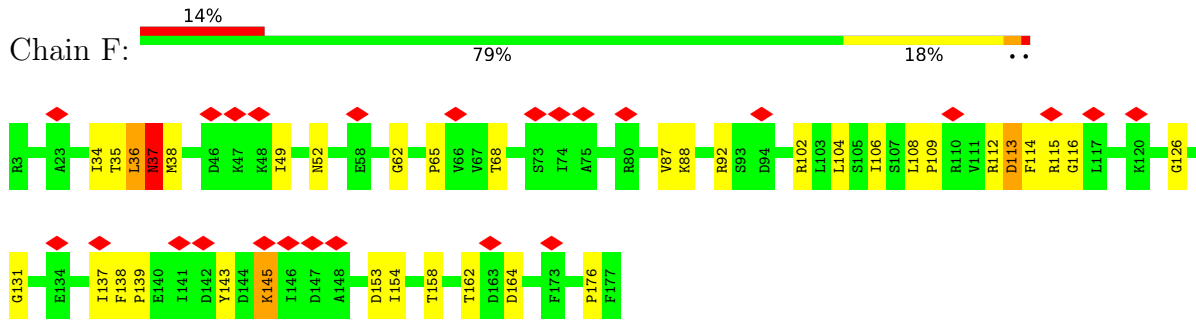
• Molecule 4: 50S ribosomal protein L3



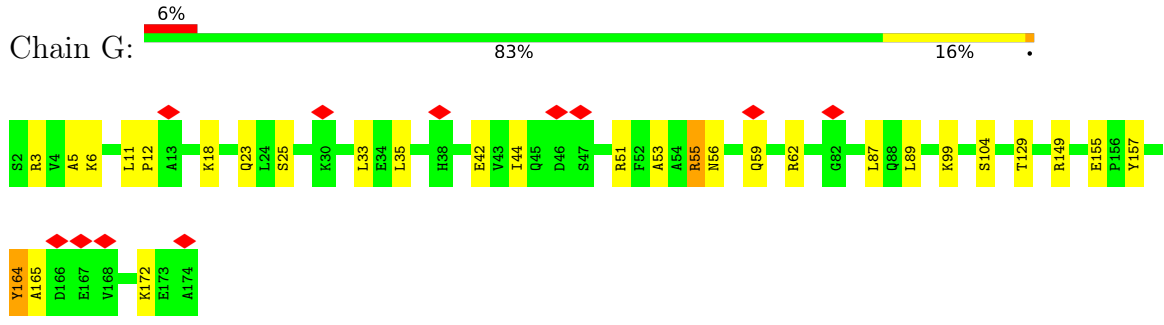
• Molecule 5: 50S ribosomal protein L4



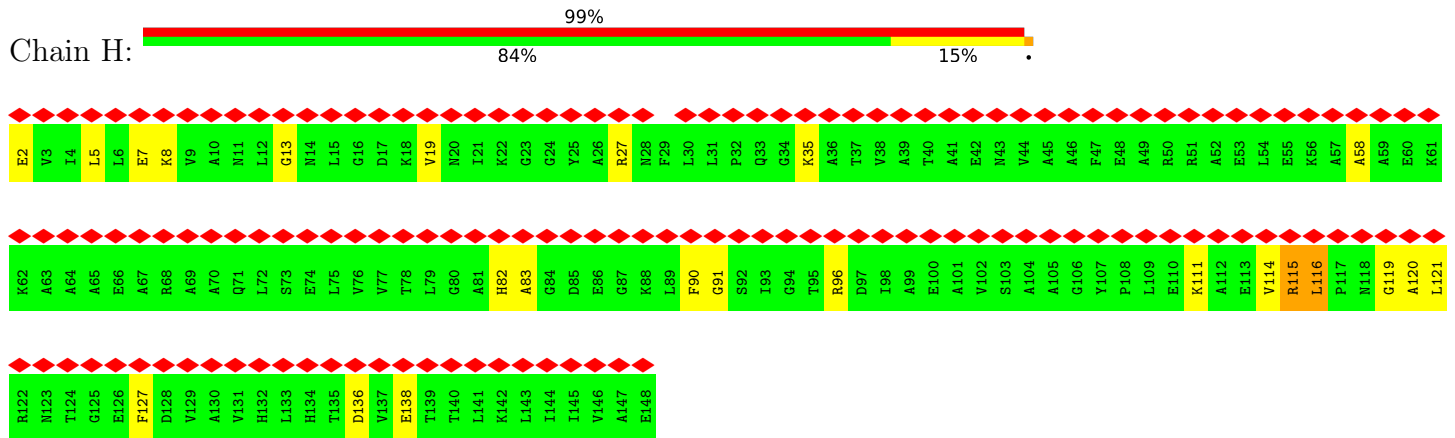
• Molecule 6: 50S ribosomal protein L5



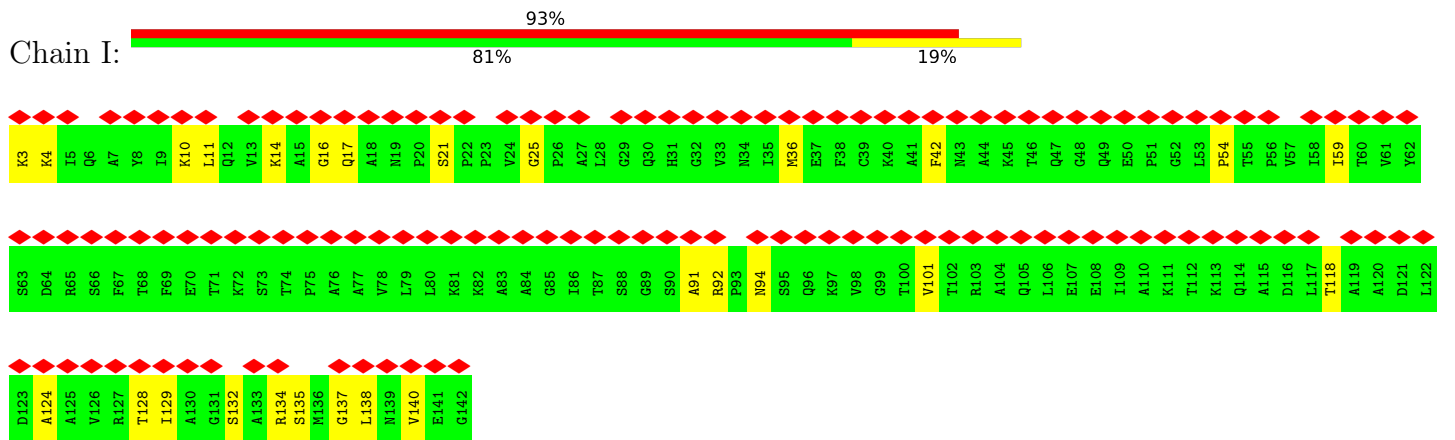
• Molecule 7: 50S ribosomal protein L6



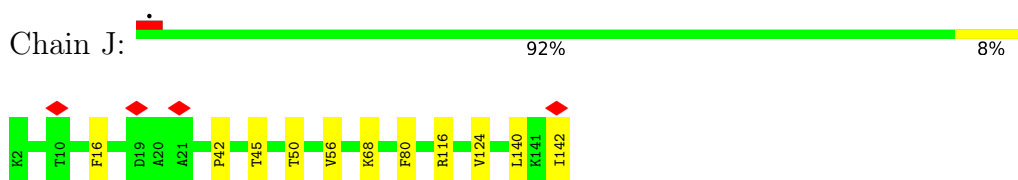
• Molecule 8: 50S ribosomal protein L9



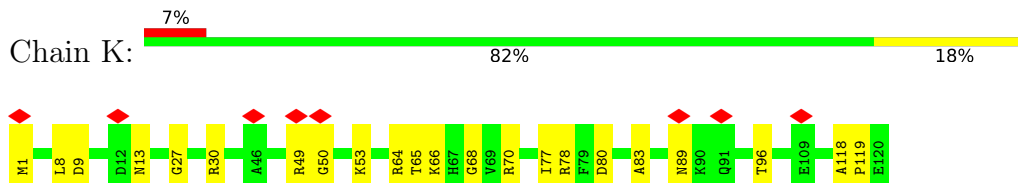
• Molecule 9: 50S ribosomal protein L11



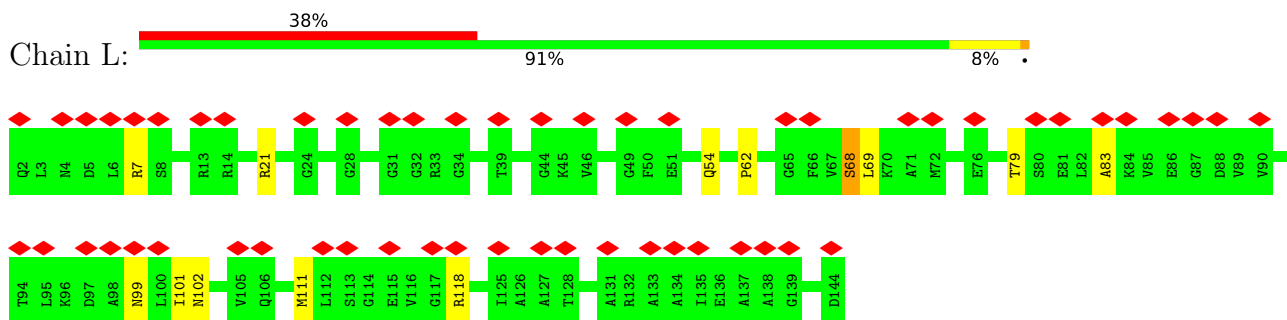
- Molecule 10: 50S ribosomal protein L13



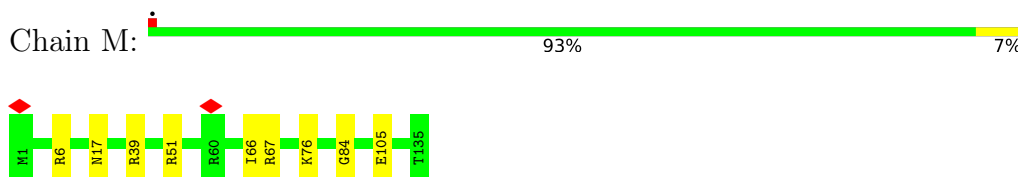
- Molecule 11: 50S ribosomal protein L14



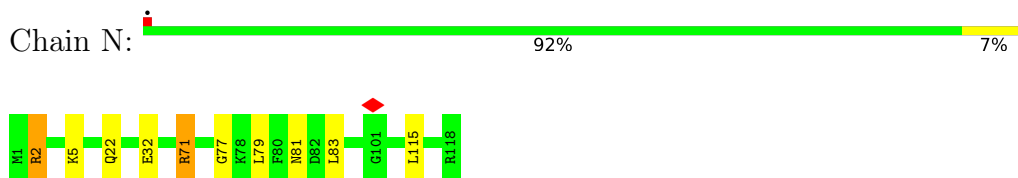
- Molecule 12: 50S ribosomal protein L15



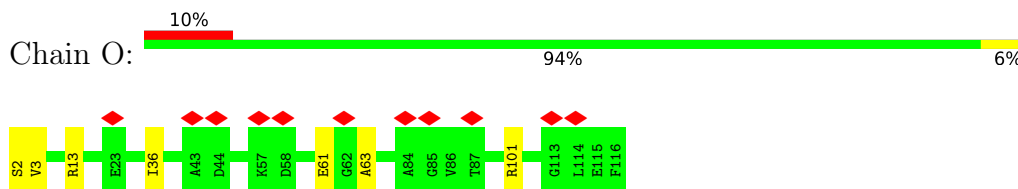
- Molecule 13: 50S ribosomal protein L16



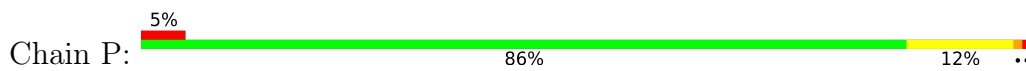
- Molecule 14: 50S ribosomal protein L17



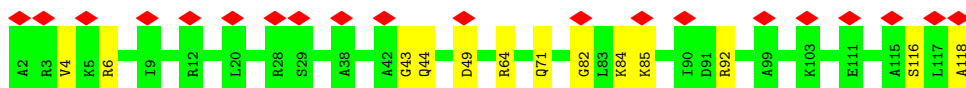
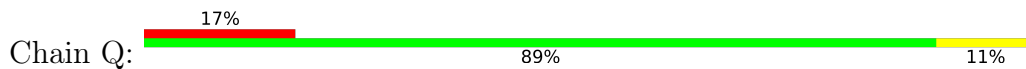
- Molecule 15: 50S ribosomal protein L18



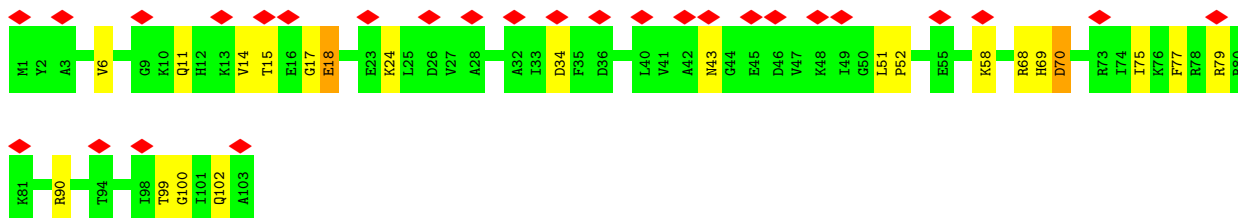
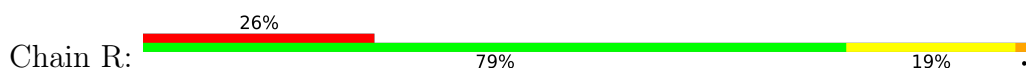
- Molecule 16: 50S ribosomal protein L19



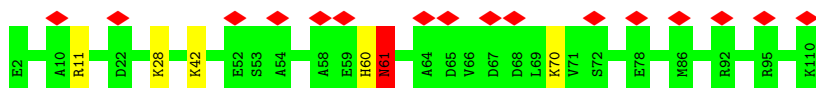
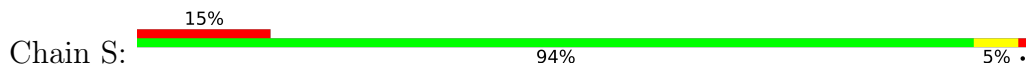
- Molecule 17: 50S ribosomal protein L20



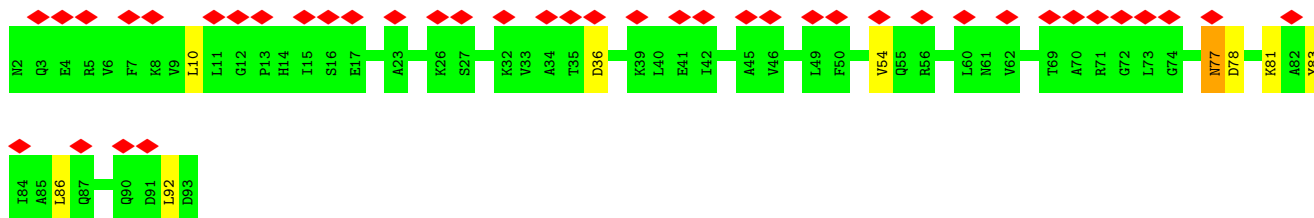
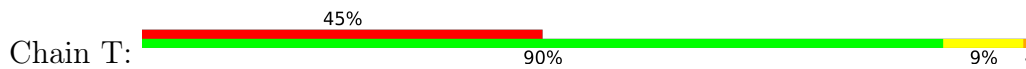
- Molecule 18: 50S ribosomal protein L21



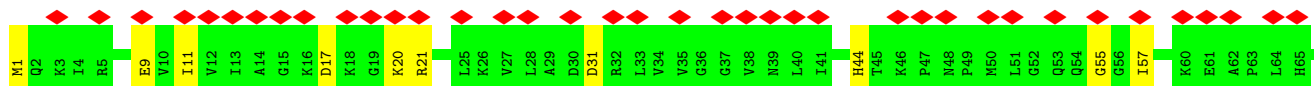
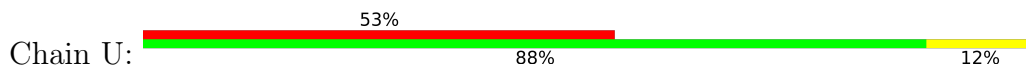
- Molecule 19: 50S ribosomal protein L22

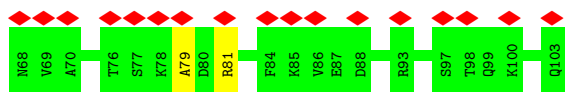


- Molecule 20: 50S ribosomal protein L23

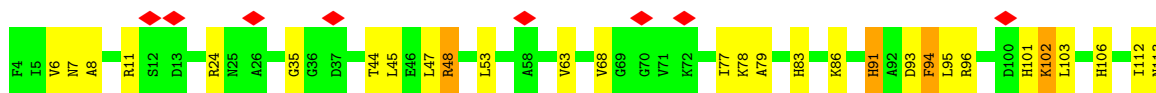
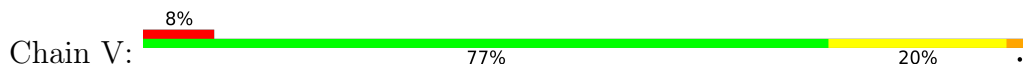


- Molecule 21: 50S ribosomal protein L24

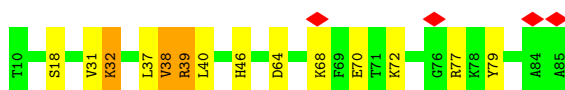
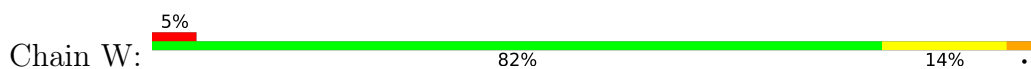




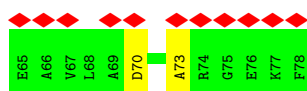
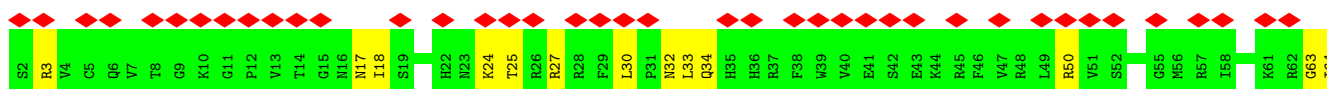
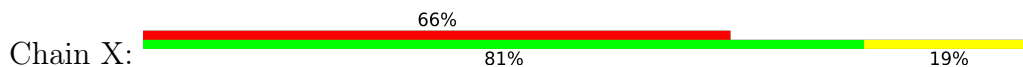
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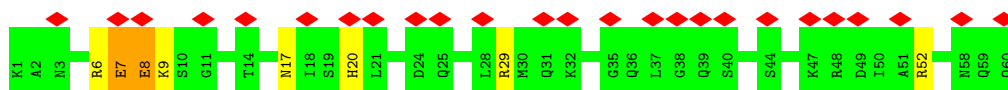
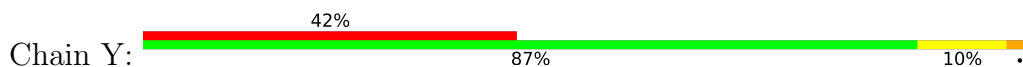
- Molecule 23: 50S ribosomal protein L27



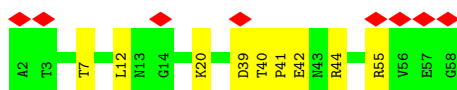
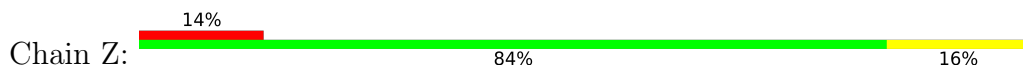
- Molecule 24: 50S ribosomal protein L28



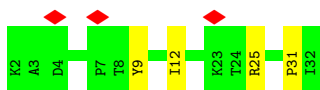
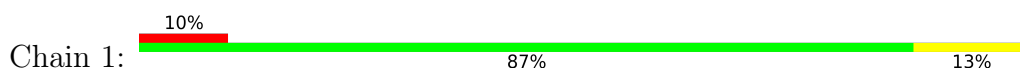
- Molecule 25: Ribosomal protein uL29



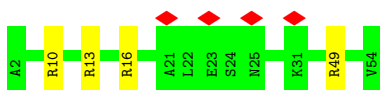
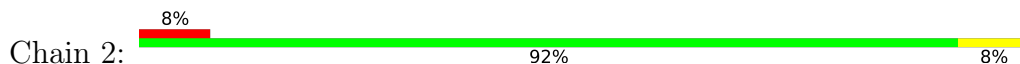
- Molecule 26: 50S ribosomal protein L30



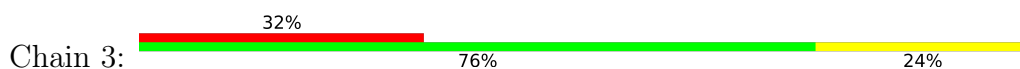
- Molecule 27: 50S ribosomal protein L31



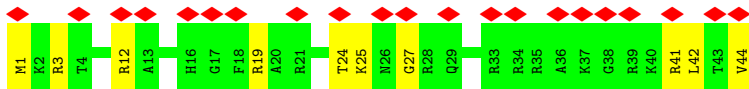
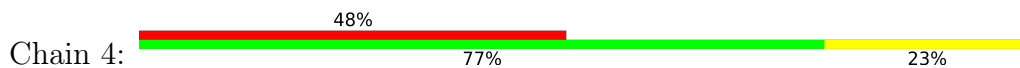
- Molecule 28: 50S ribosomal protein L32



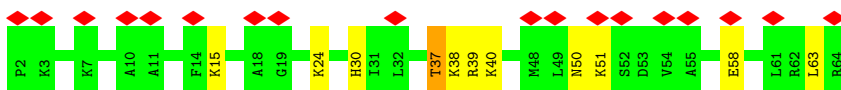
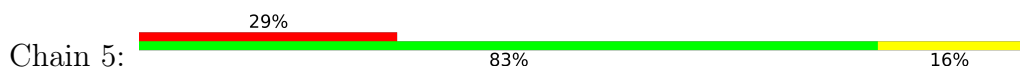
- Molecule 29: 50S ribosomal protein L33



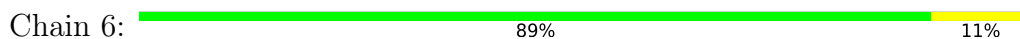
- Molecule 30: 50S ribosomal protein L34



- Molecule 31: 50S ribosomal protein L35



- Molecule 32: 50S ribosomal protein L36



4 Experimental information

| Property | Value | Source |
|--------------------------------------|-------------------------|-----------|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 128795 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | NONE | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/\text{\AA}^2$) | 1.0 | Depositor |
| Minimum defocus (nm) | Not provided | |
| Maximum defocus (nm) | Not provided | |
| Magnification | Not provided | |
| Image detector | FEI FALCON II (4k x 4k) | Depositor |
| Maximum map value | 0.514 | Depositor |
| Minimum map value | -0.233 | Depositor |
| Average map value | 0.001 | Depositor |
| Map value standard deviation | 0.013 | Depositor |
| Recommended contour level | 0.0566 | Depositor |
| Map size (\AA) | 440.0, 440.0, 440.0 | wwPDB |
| Map dimensions | 400, 400, 400 | wwPDB |
| Map angles ($^\circ$) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (\AA) | 1.1, 1.1, 1.1 | Depositor |

5 Model quality i

5.1 Standard geometry i

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|-----------------|-------------|-------------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 1 | A | 1.20 | 26/68494 (0.0%) | 1.21 | 564/106830 (0.5%) |
| 2 | B | 0.94 | 0/2760 | 1.19 | 29/4300 (0.7%) |
| 3 | C | 0.55 | 0/2103 | 0.67 | 0/2824 |
| 4 | D | 0.57 | 0/1580 | 0.69 | 0/2128 |
| 5 | E | 0.50 | 0/1536 | 0.72 | 1/2069 (0.0%) |
| 6 | F | 0.39 | 0/1423 | 0.74 | 1/1911 (0.1%) |
| 7 | G | 0.42 | 0/1326 | 0.65 | 1/1787 (0.1%) |
| 8 | H | 0.29 | 0/1097 | 0.54 | 1/1482 (0.1%) |
| 9 | I | 0.32 | 0/1041 | 0.63 | 0/1408 |
| 10 | J | 0.59 | 0/1148 | 0.62 | 0/1549 |
| 11 | K | 0.51 | 0/931 | 0.71 | 1/1247 (0.1%) |
| 12 | L | 0.49 | 0/1070 | 0.69 | 0/1426 |
| 13 | M | 0.55 | 0/1089 | 0.62 | 0/1456 |
| 14 | N | 0.53 | 0/960 | 0.64 | 0/1282 |
| 15 | O | 0.42 | 0/888 | 0.61 | 0/1183 |
| 16 | P | 0.55 | 0/903 | 0.72 | 1/1207 (0.1%) |
| 17 | Q | 0.66 | 0/946 | 0.64 | 0/1257 |
| 18 | R | 0.48 | 0/835 | 0.72 | 1/1117 (0.1%) |
| 19 | S | 0.47 | 0/829 | 0.65 | 1/1104 (0.1%) |
| 20 | T | 0.52 | 0/710 | 0.66 | 0/953 |
| 21 | U | 0.46 | 0/809 | 0.72 | 1/1079 (0.1%) |
| 22 | V | 0.46 | 0/1428 | 0.70 | 0/1936 |
| 23 | W | 0.57 | 0/582 | 0.93 | 3/773 (0.4%) |
| 24 | X | 0.49 | 0/641 | 0.66 | 1/854 (0.1%) |
| 25 | Y | 0.42 | 0/479 | 0.65 | 0/640 |
| 26 | Z | 0.49 | 0/449 | 0.64 | 0/602 |
| 27 | 1 | 0.37 | 0/235 | 0.60 | 0/318 |
| 28 | 2 | 0.49 | 0/429 | 0.64 | 0/572 |
| 29 | 3 | 0.42 | 0/425 | 0.65 | 0/566 |
| 30 | 4 | 0.59 | 0/368 | 0.73 | 1/482 (0.2%) |
| 31 | 5 | 0.49 | 0/511 | 0.68 | 0/668 |
| 32 | 6 | 0.51 | 0/308 | 0.64 | 0/404 |
| All | All | 1.04 | 26/98333 (0.0%) | 1.10 | 607/147414 (0.4%) |

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 |
|-----|-------|---------------------|---------------------|
| 3 | C | 0 | 5 |
| 4 | D | 0 | 3 |
| 5 | E | 0 | 4 |
| 6 | F | 0 | 5 |
| 7 | G | 0 | 2 |
| 11 | K | 0 | 1 |
| 12 | L | 0 | 1 |
| 16 | P | 0 | 3 |
| 18 | R | 0 | 7 |
| 19 | S | 0 | 1 |
| 22 | V | 0 | 5 |
| 24 | X | 0 | 1 |
| 25 | Y | 0 | 2 |
| 29 | 3 | 0 | 1 |
| All | All | 0 | 41 |

All (26) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1 | A | 519 | A | N9-C4 | -7.40 | 1.33 | 1.37 |
| 1 | A | 838 | A | N9-C4 | -6.92 | 1.33 | 1.37 |
| 1 | A | 2254 | A | N9-C4 | -6.58 | 1.33 | 1.37 |
| 1 | A | 2192 | G | N9-C4 | -6.58 | 1.32 | 1.38 |
| 1 | A | 1234 | A | N9-C4 | -6.46 | 1.33 | 1.37 |
| 1 | A | 2674 | G | C2-N3 | -6.07 | 1.27 | 1.32 |
| 1 | A | 2513 | G | N7-C5 | -6.04 | 1.35 | 1.39 |
| 1 | A | 723 | G | C6-N1 | -5.79 | 1.35 | 1.39 |
| 1 | A | 1197 | G | N9-C4 | -5.78 | 1.33 | 1.38 |
| 1 | A | 2022 | G | N3-C4 | -5.74 | 1.31 | 1.35 |
| 1 | A | 519 | A | N7-C5 | -5.68 | 1.35 | 1.39 |
| 1 | A | 776 | C | N3-C4 | -5.66 | 1.29 | 1.33 |
| 1 | A | 1979 | G | C5-C4 | -5.66 | 1.34 | 1.38 |
| 1 | A | 38 | A | N9-C4 | -5.66 | 1.34 | 1.37 |
| 1 | A | 1128 | G | C6-N1 | -5.51 | 1.35 | 1.39 |
| 1 | A | 991 | A | N9-C4 | -5.51 | 1.34 | 1.37 |
| 1 | A | 519 | A | C5-C6 | -5.46 | 1.36 | 1.41 |
| 1 | A | 572 | A | N9-C4 | -5.46 | 1.34 | 1.37 |
| 1 | A | 2513 | G | N3-C4 | -5.33 | 1.31 | 1.35 |
| 1 | A | 773 | A | N9-C4 | -5.32 | 1.34 | 1.37 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 1 | A | 2710 | U | C2-N3 | -5.17 | 1.34 | 1.37 |
| 1 | A | 772 | A | N7-C5 | -5.07 | 1.36 | 1.39 |
| 1 | A | 2006 | A | N9-C4 | -5.06 | 1.34 | 1.37 |
| 1 | A | 2513 | G | N9-C4 | -5.05 | 1.33 | 1.38 |
| 1 | A | 1983 | C | N1-C6 | -5.02 | 1.34 | 1.37 |
| 1 | A | 1787 | C | N3-C4 | -5.02 | 1.30 | 1.33 |

All (607) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|--------|-------------|----------|
| 1 | A | 2021 | U | N3-C2-O2 | -11.84 | 113.91 | 122.20 |
| 1 | A | 2674 | G | C2-N3-C4 | 11.69 | 117.74 | 111.90 |
| 1 | A | 1510 | U | C2-N1-C1' | 11.62 | 131.65 | 117.70 |
| 1 | A | 1448 | C | C6-N1-C2 | -11.57 | 115.67 | 120.30 |
| 1 | A | 1262 | A | O4'-C1'-N9 | 11.43 | 117.34 | 108.20 |
| 1 | A | 1510 | U | N3-C2-O2 | -11.18 | 114.37 | 122.20 |
| 1 | A | 2021 | U | N1-C2-O2 | 10.90 | 130.43 | 122.80 |
| 1 | A | 2513 | G | N3-C2-N2 | -10.77 | 112.36 | 119.90 |
| 1 | A | 1510 | U | N1-C2-O2 | 10.56 | 130.19 | 122.80 |
| 1 | A | 2674 | G | N3-C4-C5 | -10.43 | 123.38 | 128.60 |
| 1 | A | 1300 | U | N3-C2-O2 | -9.94 | 115.24 | 122.20 |
| 1 | A | 113 | C | N1-C2-O2 | 9.93 | 124.86 | 118.90 |
| 1 | A | 1300 | U | C2-N1-C1' | 9.77 | 129.42 | 117.70 |
| 1 | A | 113 | C | C2-N1-C1' | 9.62 | 129.38 | 118.80 |
| 1 | A | 1300 | U | N1-C2-O2 | 9.59 | 129.51 | 122.80 |
| 1 | A | 1448 | C | C5-C6-N1 | 9.53 | 125.76 | 121.00 |
| 1 | A | 2583 | U | N3-C2-O2 | -9.51 | 115.54 | 122.20 |
| 1 | A | 2259 | U | N3-C2-O2 | -9.51 | 115.55 | 122.20 |
| 1 | A | 2409 | C | C2-N1-C1' | 9.42 | 129.16 | 118.80 |
| 1 | A | 1339 | U | N3-C2-O2 | -9.25 | 115.72 | 122.20 |
| 1 | A | 2741 | C | C2-N1-C1' | 9.25 | 128.97 | 118.80 |
| 1 | A | 2192 | G | N3-C4-N9 | -9.11 | 120.53 | 126.00 |
| 1 | A | 2741 | C | N1-C2-O2 | 9.08 | 124.35 | 118.90 |
| 1 | A | 2513 | G | N1-C2-N2 | 9.04 | 124.34 | 116.20 |
| 2 | B | 40 | C | N1-C2-O2 | 8.94 | 124.26 | 118.90 |
| 1 | A | 1407 | U | N1-C2-O2 | 8.83 | 128.98 | 122.80 |
| 1 | A | 2583 | U | N1-C2-O2 | 8.75 | 128.92 | 122.80 |
| 1 | A | 2741 | C | N3-C2-O2 | -8.69 | 115.82 | 121.90 |
| 1 | A | 2785 | G | C5-C6-O6 | -8.67 | 123.40 | 128.60 |
| 21 | U | 31 | ASP | CB-CG-OD1 | 8.67 | 126.10 | 118.30 |
| 1 | A | 2003 | U | C2-N1-C1' | 8.60 | 128.01 | 117.70 |
| 1 | A | 113 | C | N3-C2-O2 | -8.56 | 115.91 | 121.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1 | A | 1980 | U | C2-N1-C1' | 8.53 | 127.94 | 117.70 |
| 1 | A | 2811 | U | C2-N1-C1' | 8.53 | 127.94 | 117.70 |
| 1 | A | 1363 | C | C6-N1-C2 | -8.48 | 116.91 | 120.30 |
| 1 | A | 1407 | U | N3-C2-O2 | -8.30 | 116.39 | 122.20 |
| 1 | A | 1761 | C | C6-N1-C2 | -8.29 | 116.98 | 120.30 |
| 1 | A | 2887 | C | N1-C2-O2 | 8.21 | 123.83 | 118.90 |
| 1 | A | 1339 | U | N1-C2-O2 | 8.19 | 128.53 | 122.80 |
| 1 | A | 2022 | G | C8-N9-C4 | -8.19 | 103.13 | 106.40 |
| 1 | A | 2549 | U | N3-C2-O2 | -8.16 | 116.49 | 122.20 |
| 1 | A | 99 | U | OP1-P-O3' | 8.09 | 123.00 | 105.20 |
| 1 | A | 2409 | C | N1-C2-O2 | 8.09 | 123.75 | 118.90 |
| 1 | A | 2887 | C | C6-N1-C2 | -8.08 | 117.07 | 120.30 |
| 1 | A | 1054 | C | C5-C6-N1 | 8.06 | 125.03 | 121.00 |
| 1 | A | 802 | C | C6-N1-C2 | -8.05 | 117.08 | 120.30 |
| 6 | F | 36 | LEU | CA-CB-CG | 8.02 | 133.74 | 115.30 |
| 1 | A | 1407 | U | C2-N1-C1' | 7.93 | 127.21 | 117.70 |
| 1 | A | 1634 | C | N1-C2-O2 | 7.90 | 123.64 | 118.90 |
| 1 | A | 2187 | C | C6-N1-C2 | -7.88 | 117.15 | 120.30 |
| 2 | B | 34 | U | C2-N1-C1' | 7.88 | 127.15 | 117.70 |
| 1 | A | 2702 | C | C6-N1-C2 | -7.87 | 117.15 | 120.30 |
| 1 | A | 2192 | G | N3-C4-C5 | 7.83 | 132.51 | 128.60 |
| 1 | A | 2758 | C | C6-N1-C2 | -7.82 | 117.17 | 120.30 |
| 7 | G | 33 | LEU | CA-CB-CG | 7.79 | 133.21 | 115.30 |
| 1 | A | 1814 | U | N3-C2-O2 | -7.73 | 116.79 | 122.20 |
| 1 | A | 1575 | C | N1-C2-O2 | 7.72 | 123.53 | 118.90 |
| 23 | W | 37 | LEU | CA-CB-CG | 7.72 | 133.06 | 115.30 |
| 1 | A | 2460 | U | C2-N1-C1' | 7.71 | 126.95 | 117.70 |
| 1 | A | 99 | U | P-O3'-C3' | 7.67 | 128.91 | 119.70 |
| 1 | A | 2417 | A | C2-N3-C4 | 7.64 | 114.42 | 110.60 |
| 1 | A | 518 | C | C2-N1-C1' | 7.63 | 127.19 | 118.80 |
| 1 | A | 773 | A | C8-N9-C4 | -7.60 | 102.76 | 105.80 |
| 1 | A | 269 | C | C6-N1-C2 | -7.59 | 117.26 | 120.30 |
| 1 | A | 989 | U | N3-C2-O2 | -7.59 | 116.89 | 122.20 |
| 1 | A | 126 | A | C5-N7-C8 | -7.59 | 100.11 | 103.90 |
| 1 | A | 113 | C | C6-N1-C1' | -7.59 | 111.69 | 120.80 |
| 1 | A | 1327 | U | C2-N1-C1' | 7.53 | 126.73 | 117.70 |
| 1 | A | 2409 | C | C5-C6-N1 | 7.51 | 124.76 | 121.00 |
| 2 | B | 40 | C | C2-N1-C1' | 7.50 | 127.06 | 118.80 |
| 1 | A | 2549 | U | N1-C2-O2 | 7.50 | 128.05 | 122.80 |
| 1 | A | 1232 | G | C8-N9-C4 | -7.47 | 103.41 | 106.40 |
| 1 | A | 2022 | G | N7-C8-N9 | 7.47 | 116.83 | 113.10 |
| 2 | B | 34 | U | N1-C2-O2 | 7.43 | 128.00 | 122.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | A | 2709 | C | C6-N1-C2 | -7.42 | 117.33 | 120.30 |
| 1 | A | 1349 | C | C6-N1-C2 | -7.42 | 117.33 | 120.30 |
| 1 | A | 2003 | U | N3-C2-O2 | -7.41 | 117.01 | 122.20 |
| 1 | A | 519 | A | C2-N3-C4 | -7.40 | 106.90 | 110.60 |
| 1 | A | 591 | C | C6-N1-C2 | -7.38 | 117.35 | 120.30 |
| 1 | A | 94 | C | N1-C2-O2 | 7.38 | 123.33 | 118.90 |
| 1 | A | 503 | G | C4-N9-C1' | -7.35 | 116.94 | 126.50 |
| 2 | B | 40 | C | N3-C2-O2 | -7.35 | 116.75 | 121.90 |
| 1 | A | 2065 | C | C6-N1-C2 | -7.35 | 117.36 | 120.30 |
| 1 | A | 1622 | A | N7-C8-N9 | 7.33 | 117.47 | 113.80 |
| 1 | A | 2259 | U | N1-C2-O2 | 7.32 | 127.92 | 122.80 |
| 1 | A | 1745 | U | N1-C2-O2 | 7.32 | 127.92 | 122.80 |
| 1 | A | 1671 | G | N7-C8-N9 | 7.31 | 116.75 | 113.10 |
| 1 | A | 722 | C | N1-C2-O2 | 7.29 | 123.28 | 118.90 |
| 1 | A | 321 | G | O4'-C1'-N9 | 7.29 | 114.03 | 108.20 |
| 1 | A | 2022 | G | O4'-C1'-N9 | 7.26 | 114.01 | 108.20 |
| 1 | A | 269 | C | C2-N1-C1' | 7.25 | 126.78 | 118.80 |
| 1 | A | 2414 | C | C5-C6-N1 | 7.24 | 124.62 | 121.00 |
| 1 | A | 837 | C | N3-C4-C5 | -7.22 | 119.01 | 121.90 |
| 1 | A | 1244 | C | C6-N1-C2 | -7.22 | 117.41 | 120.30 |
| 1 | A | 2207 | C | C6-N1-C1' | 7.21 | 129.45 | 120.80 |
| 23 | W | 39 | ARG | N-CA-C | -7.16 | 91.67 | 111.00 |
| 1 | A | 1232 | G | N7-C8-N9 | 7.15 | 116.68 | 113.10 |
| 1 | A | 989 | U | N1-C2-O2 | 7.15 | 127.80 | 122.80 |
| 1 | A | 2811 | U | N1-C2-O2 | 7.14 | 127.80 | 122.80 |
| 1 | A | 2546 | C | C6-N1-C2 | -7.11 | 117.46 | 120.30 |
| 1 | A | 16 | C | N1-C2-O2 | 7.11 | 123.16 | 118.90 |
| 1 | A | 773 | A | C5-N7-C8 | -7.05 | 100.37 | 103.90 |
| 1 | A | 1980 | U | N1-C2-O2 | 6.99 | 127.69 | 122.80 |
| 1 | A | 1980 | U | N3-C2-O2 | -6.99 | 117.31 | 122.20 |
| 1 | A | 2887 | C | N3-C2-O2 | -6.99 | 117.01 | 121.90 |
| 1 | A | 2674 | G | N3-C2-N2 | -6.98 | 115.01 | 119.90 |
| 1 | A | 2252 | U | N3-C2-O2 | -6.97 | 117.32 | 122.20 |
| 1 | A | 264 | U | P-O3'-C3' | 6.97 | 128.06 | 119.70 |
| 1 | A | 1197 | G | N3-C4-C5 | 6.97 | 132.09 | 128.60 |
| 1 | A | 1510 | U | C6-N1-C1' | -6.97 | 111.44 | 121.20 |
| 1 | A | 369 | C | C6-N1-C2 | -6.96 | 117.52 | 120.30 |
| 1 | A | 2785 | G | C4-C5-N7 | 6.92 | 113.57 | 110.80 |
| 2 | B | 117 | C | N1-C2-O2 | 6.92 | 123.05 | 118.90 |
| 1 | A | 2654 | C | C6-N1-C2 | -6.91 | 117.53 | 120.30 |
| 1 | A | 911 | C | C5-C6-N1 | 6.91 | 124.45 | 121.00 |
| 1 | A | 1590 | C | N1-C2-O2 | 6.91 | 123.05 | 118.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1 | A | 1301 | C | C5-C6-N1 | 6.91 | 124.45 | 121.00 |
| 1 | A | 2887 | C | C5-C6-N1 | 6.91 | 124.45 | 121.00 |
| 1 | A | 2021 | U | C2-N1-C1' | 6.89 | 125.97 | 117.70 |
| 1 | A | 640 | C | C6-N1-C2 | -6.89 | 117.54 | 120.30 |
| 1 | A | 1646 | C | C5-C6-N1 | 6.89 | 124.45 | 121.00 |
| 1 | A | 2674 | G | N1-C2-N2 | 6.89 | 122.40 | 116.20 |
| 1 | A | 1671 | G | C5-N7-C8 | -6.88 | 100.86 | 104.30 |
| 1 | A | 2758 | C | C5-C6-N1 | 6.87 | 124.44 | 121.00 |
| 1 | A | 210 | C | N1-C2-O2 | 6.87 | 123.02 | 118.90 |
| 1 | A | 1282 | C | C6-N1-C2 | -6.85 | 117.56 | 120.30 |
| 1 | A | 295 | C | C5-C6-N1 | 6.85 | 124.42 | 121.00 |
| 1 | A | 1510 | U | C6-N1-C2 | -6.85 | 116.89 | 121.00 |
| 1 | A | 2207 | C | C6-N1-C2 | -6.85 | 117.56 | 120.30 |
| 1 | A | 776 | C | N1-C2-O2 | 6.83 | 123.00 | 118.90 |
| 1 | A | 268 | C | N1-C2-O2 | 6.83 | 123.00 | 118.90 |
| 1 | A | 2187 | C | C5-C6-N1 | 6.83 | 124.41 | 121.00 |
| 1 | A | 2409 | C | C6-N1-C2 | -6.82 | 117.57 | 120.30 |
| 1 | A | 904 | C | C6-N1-C2 | -6.82 | 117.57 | 120.30 |
| 1 | A | 1596 | C | N3-C2-O2 | -6.82 | 117.13 | 121.90 |
| 1 | A | 2284 | C | C6-N1-C2 | -6.81 | 117.58 | 120.30 |
| 1 | A | 2811 | U | N3-C2-O2 | -6.81 | 117.44 | 122.20 |
| 1 | A | 2003 | U | N1-C2-O2 | 6.80 | 127.56 | 122.80 |
| 1 | A | 1761 | C | C5-C6-N1 | 6.80 | 124.40 | 121.00 |
| 1 | A | 503 | G | C8-N9-C1' | 6.80 | 135.84 | 127.00 |
| 1 | A | 1671 | G | C6-C5-N7 | -6.79 | 126.33 | 130.40 |
| 1 | A | 79 | C | N1-C2-O2 | 6.77 | 122.96 | 118.90 |
| 1 | A | 773 | A | N7-C8-N9 | 6.76 | 117.18 | 113.80 |
| 1 | A | 659 | G | C4-N9-C1' | 6.76 | 135.29 | 126.50 |
| 1 | A | 818 | U | N1-C2-O2 | 6.75 | 127.53 | 122.80 |
| 2 | B | 64 | C | N1-C2-O2 | 6.75 | 122.95 | 118.90 |
| 1 | A | 774 | G | P-O3'-C3' | 6.74 | 127.79 | 119.70 |
| 1 | A | 2674 | G | C8-N9-C4 | -6.74 | 103.70 | 106.40 |
| 1 | A | 1634 | C | N3-C2-O2 | -6.74 | 117.18 | 121.90 |
| 1 | A | 2852 | U | P-O3'-C3' | 6.74 | 127.79 | 119.70 |
| 1 | A | 518 | C | C6-N1-C2 | -6.74 | 117.61 | 120.30 |
| 1 | A | 106 | C | C6-N1-C2 | -6.72 | 117.61 | 120.30 |
| 1 | A | 1254 | U | N3-C2-O2 | -6.71 | 117.50 | 122.20 |
| 1 | A | 1301 | C | C6-N1-C2 | -6.71 | 117.62 | 120.30 |
| 1 | A | 2783 | U | P-O3'-C3' | 6.71 | 127.75 | 119.70 |
| 1 | A | 802 | C | C5-C6-N1 | 6.71 | 124.35 | 121.00 |
| 1 | A | 837 | C | C6-N1-C2 | -6.71 | 117.62 | 120.30 |
| 1 | A | 4 | C | C5-C6-N1 | 6.71 | 124.35 | 121.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1 | A | 974 | A | C2'-C3'-O3' | 6.70 | 124.43 | 113.70 |
| 1 | A | 2254 | A | N3-C4-N9 | -6.67 | 122.06 | 127.40 |
| 1 | A | 2583 | U | C2-N1-C1' | 6.67 | 125.71 | 117.70 |
| 1 | A | 766 | G | N1-C6-O6 | -6.67 | 115.90 | 119.90 |
| 1 | A | 769 | U | C5-C6-N1 | 6.66 | 126.03 | 122.70 |
| 1 | A | 2532 | G | N3-C4-C5 | -6.66 | 125.27 | 128.60 |
| 1 | A | 2718 | G | O4'-C1'-N9 | 6.66 | 113.53 | 108.20 |
| 1 | A | 1232 | G | C4-C5-N7 | 6.65 | 113.46 | 110.80 |
| 1 | A | 358 | A | N7-C8-N9 | 6.64 | 117.12 | 113.80 |
| 1 | A | 2674 | G | C4-N9-C1' | 6.63 | 135.13 | 126.50 |
| 1 | A | 818 | U | C2-N1-C1' | 6.63 | 125.66 | 117.70 |
| 1 | A | 519 | A | C5-N7-C8 | -6.62 | 100.59 | 103.90 |
| 1 | A | 2866 | C | C6-N1-C2 | -6.62 | 117.65 | 120.30 |
| 1 | A | 295 | C | N1-C2-O2 | 6.62 | 122.87 | 118.90 |
| 1 | A | 1183 | C | C6-N1-C2 | -6.60 | 117.66 | 120.30 |
| 1 | A | 16 | C | N3-C2-O2 | -6.59 | 117.28 | 121.90 |
| 2 | B | 40 | C | OP1-P-O3' | 6.58 | 119.68 | 105.20 |
| 1 | A | 359 | U | O4'-C1'-N1 | 6.57 | 113.46 | 108.20 |
| 1 | A | 1627 | A | P-O3'-C3' | 6.57 | 127.58 | 119.70 |
| 1 | A | 2022 | G | C5-N7-C8 | -6.57 | 101.02 | 104.30 |
| 1 | A | 2513 | G | N1-C6-O6 | 6.57 | 123.84 | 119.90 |
| 1 | A | 227 | A | P-O3'-C3' | 6.55 | 127.56 | 119.70 |
| 1 | A | 2460 | U | N1-C2-O2 | 6.55 | 127.39 | 122.80 |
| 1 | A | 2785 | G | N1-C6-O6 | 6.55 | 123.83 | 119.90 |
| 1 | A | 2337 | C | N1-C2-O2 | 6.54 | 122.83 | 118.90 |
| 1 | A | 504 | A | O5'-P-OP2 | -6.54 | 99.81 | 105.70 |
| 1 | A | 2606 | C | C2'-C3'-O3' | -6.54 | 95.12 | 109.50 |
| 1 | A | 132 | C | N1-C2-O2 | 6.53 | 122.82 | 118.90 |
| 1 | A | 1814 | U | N1-C2-O2 | 6.53 | 127.37 | 122.80 |
| 1 | A | 2718 | G | N7-C8-N9 | 6.51 | 116.36 | 113.10 |
| 1 | A | 2133 | C | C2-N1-C1' | 6.51 | 125.96 | 118.80 |
| 1 | A | 1968 | A | N7-C8-N9 | 6.50 | 117.05 | 113.80 |
| 1 | A | 2374 | U | N3-C2-O2 | -6.49 | 117.65 | 122.20 |
| 1 | A | 1775 | C | C6-N1-C2 | -6.48 | 117.71 | 120.30 |
| 1 | A | 755 | C | N1-C2-O2 | 6.47 | 122.78 | 118.90 |
| 1 | A | 1745 | U | N3-C2-O2 | -6.47 | 117.67 | 122.20 |
| 1 | A | 2022 | G | C4-N9-C1' | 6.47 | 134.91 | 126.50 |
| 2 | B | 117 | C | C6-N1-C2 | -6.46 | 117.71 | 120.30 |
| 1 | A | 514 | C | C6-N1-C2 | -6.46 | 117.72 | 120.30 |
| 1 | A | 1601 | C | N1-C2-O2 | 6.46 | 122.78 | 118.90 |
| 1 | A | 2856 | C | C6-N1-C2 | -6.45 | 117.72 | 120.30 |
| 1 | A | 441 | G | C5-C6-O6 | -6.45 | 124.73 | 128.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | A | 354 | U | N3-C2-O2 | -6.43 | 117.70 | 122.20 |
| 1 | A | 2252 | U | N1-C2-O2 | 6.43 | 127.30 | 122.80 |
| 1 | A | 441 | G | N1-C6-O6 | 6.42 | 123.75 | 119.90 |
| 1 | A | 935 | A | O4'-C1'-N9 | 6.42 | 113.33 | 108.20 |
| 1 | A | 91 | A | O4'-C1'-N9 | 6.40 | 113.32 | 108.20 |
| 1 | A | 1907 | C | N1-C2-O2 | 6.40 | 122.74 | 118.90 |
| 1 | A | 2461 | U | N3-C2-O2 | -6.39 | 117.73 | 122.20 |
| 1 | A | 774 | G | C6-C5-N7 | -6.38 | 126.57 | 130.40 |
| 1 | A | 1575 | C | N3-C2-O2 | -6.38 | 117.44 | 121.90 |
| 1 | A | 2746 | C | N1-C2-O2 | 6.37 | 122.72 | 118.90 |
| 1 | A | 2252 | U | C2-N1-C1' | 6.36 | 125.33 | 117.70 |
| 1 | A | 2532 | G | C8-N9-C4 | -6.35 | 103.86 | 106.40 |
| 1 | A | 1671 | G | C4-N9-C1' | 6.35 | 134.75 | 126.50 |
| 1 | A | 2741 | C | C6-N1-C1' | -6.34 | 113.19 | 120.80 |
| 1 | A | 1596 | C | N1-C2-O2 | 6.33 | 122.70 | 118.90 |
| 1 | A | 202 | U | C2-N1-C1' | 6.33 | 125.29 | 117.70 |
| 1 | A | 126 | A | N7-C8-N9 | 6.32 | 116.96 | 113.80 |
| 1 | A | 2785 | G | N3-C4-N9 | 6.31 | 129.79 | 126.00 |
| 1 | A | 335 | C | C6-N1-C2 | -6.31 | 117.78 | 120.30 |
| 1 | A | 337 | C | C5-C6-N1 | 6.31 | 124.15 | 121.00 |
| 1 | A | 2257 | A | O4'-C1'-N9 | 6.30 | 113.24 | 108.20 |
| 1 | A | 2685 | C | C5-C6-N1 | 6.30 | 124.15 | 121.00 |
| 1 | A | 954 | C | C6-N1-C2 | -6.29 | 117.78 | 120.30 |
| 1 | A | 126 | A | C4-C5-N7 | 6.28 | 113.84 | 110.70 |
| 1 | A | 2409 | C | C6-N1-C1' | -6.28 | 113.27 | 120.80 |
| 1 | A | 2718 | G | C8-N9-C4 | -6.28 | 103.89 | 106.40 |
| 1 | A | 722 | C | N3-C2-O2 | -6.27 | 117.51 | 121.90 |
| 1 | A | 377 | G | C4-C5-N7 | 6.27 | 113.31 | 110.80 |
| 1 | A | 839 | C | N3-C2-O2 | -6.27 | 117.51 | 121.90 |
| 1 | A | 269 | C | C5-C6-N1 | 6.27 | 124.13 | 121.00 |
| 1 | A | 2702 | C | C5-C6-N1 | 6.26 | 124.13 | 121.00 |
| 1 | A | 198 | C | C6-N1-C2 | -6.25 | 117.80 | 120.30 |
| 1 | A | 337 | C | C6-N1-C2 | -6.25 | 117.80 | 120.30 |
| 2 | B | 117 | C | N3-C2-O2 | -6.25 | 117.53 | 121.90 |
| 1 | A | 2546 | C | C5-C6-N1 | 6.24 | 124.12 | 121.00 |
| 1 | A | 964 | A | N7-C8-N9 | 6.24 | 116.92 | 113.80 |
| 1 | A | 825 | C | C6-N1-C2 | -6.22 | 117.81 | 120.30 |
| 1 | A | 1892 | C | N1-C2-O2 | 6.22 | 122.64 | 118.90 |
| 1 | A | 1622 | A | C5-N7-C8 | -6.21 | 100.79 | 103.90 |
| 1 | A | 1601 | C | N3-C2-O2 | -6.21 | 117.55 | 121.90 |
| 1 | A | 164 | C | N1-C2-O2 | 6.20 | 122.62 | 118.90 |
| 1 | A | 358 | A | O4'-C1'-N9 | 6.20 | 113.16 | 108.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1 | A | 94 | C | N3-C2-O2 | -6.20 | 117.56 | 121.90 |
| 1 | A | 503 | G | O4'-C1'-N9 | 6.20 | 113.16 | 108.20 |
| 1 | A | 1282 | C | N1-C2-O2 | 6.19 | 122.62 | 118.90 |
| 1 | A | 1448 | C | P-O3'-C3' | 6.18 | 127.12 | 119.70 |
| 1 | A | 369 | C | C5-C6-N1 | 6.18 | 124.09 | 121.00 |
| 1 | A | 1784 | C | C6-N1-C2 | -6.18 | 117.83 | 120.30 |
| 1 | A | 2741 | C | C6-N1-C2 | -6.18 | 117.83 | 120.30 |
| 1 | A | 1596 | C | C2-N1-C1' | 6.18 | 125.59 | 118.80 |
| 1 | A | 911 | C | C6-N1-C2 | -6.17 | 117.83 | 120.30 |
| 1 | A | 518 | C | N3-C2-O2 | -6.16 | 117.59 | 121.90 |
| 1 | A | 2200 | U | P-O3'-C3' | 6.16 | 127.09 | 119.70 |
| 1 | A | 2811 | U | C6-N1-C1' | -6.15 | 112.59 | 121.20 |
| 1 | A | 1054 | C | C6-N1-C2 | -6.15 | 117.84 | 120.30 |
| 1 | A | 2003 | U | C6-N1-C1' | -6.15 | 112.60 | 121.20 |
| 1 | A | 2653 | C | C6-N1-C2 | -6.13 | 117.85 | 120.30 |
| 1 | A | 130 | C | C6-N1-C2 | -6.12 | 117.85 | 120.30 |
| 1 | A | 2883 | U | N1-C2-O2 | 6.12 | 127.08 | 122.80 |
| 1 | A | 1938 | U | C2-N1-C1' | 6.10 | 125.02 | 117.70 |
| 1 | A | 79 | C | N3-C2-O2 | -6.10 | 117.63 | 121.90 |
| 1 | A | 1111 | C | N1-C2-O2 | 6.09 | 122.56 | 118.90 |
| 2 | B | 18 | C | N1-C2-O2 | 6.09 | 122.55 | 118.90 |
| 1 | A | 2130 | C | O4'-C1'-C2' | -6.08 | 99.72 | 105.80 |
| 1 | A | 976 | C | N1-C2-O2 | 6.08 | 122.55 | 118.90 |
| 1 | A | 16 | C | C6-N1-C2 | -6.08 | 117.87 | 120.30 |
| 1 | A | 354 | U | N1-C2-O2 | 6.07 | 127.05 | 122.80 |
| 1 | A | 1197 | G | N3-C4-N9 | -6.07 | 122.36 | 126.00 |
| 5 | E | 95 | LEU | CA-CB-CG | 6.07 | 129.25 | 115.30 |
| 1 | A | 1339 | U | C2-N1-C1' | 6.04 | 124.95 | 117.70 |
| 1 | A | 2785 | G | N9-C4-C5 | -6.04 | 102.98 | 105.40 |
| 1 | A | 802 | C | N1-C2-O2 | 6.04 | 122.53 | 118.90 |
| 2 | B | 36 | C | N1-C2-O2 | 6.04 | 122.53 | 118.90 |
| 1 | A | 358 | A | C5-N7-C8 | -6.04 | 100.88 | 103.90 |
| 1 | A | 1602 | C | C6-N1-C2 | -6.04 | 117.89 | 120.30 |
| 1 | A | 2133 | C | O4'-C1'-N1 | 6.03 | 113.02 | 108.20 |
| 1 | A | 2419 | A | O4'-C1'-N9 | 6.02 | 113.02 | 108.20 |
| 1 | A | 776 | C | N3-C2-O2 | -6.01 | 117.69 | 121.90 |
| 1 | A | 1676 | C | N1-C2-O2 | 6.01 | 122.50 | 118.90 |
| 1 | A | 295 | C | C6-N1-C2 | -6.01 | 117.90 | 120.30 |
| 2 | B | 34 | U | N3-C2-O2 | -6.00 | 118.00 | 122.20 |
| 1 | A | 475 | C | C5-C6-N1 | 6.00 | 124.00 | 121.00 |
| 1 | A | 1254 | U | N1-C2-O2 | 6.00 | 127.00 | 122.80 |
| 1 | A | 334 | A | C8-N9-C4 | -6.00 | 103.40 | 105.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | A | 825 | C | C5-C6-N1 | 5.99 | 124.00 | 121.00 |
| 1 | A | 63 | A | C8-N9-C4 | -5.99 | 103.40 | 105.80 |
| 1 | A | 205 | G | O4'-C1'-N9 | 5.98 | 112.98 | 108.20 |
| 1 | A | 1761 | C | N3-C2-O2 | -5.97 | 117.72 | 121.90 |
| 1 | A | 1775 | C | C5-C6-N1 | 5.97 | 123.98 | 121.00 |
| 1 | A | 79 | C | C6-N1-C2 | -5.96 | 117.91 | 120.30 |
| 1 | A | 2194 | C | C5-C6-N1 | 5.96 | 123.98 | 121.00 |
| 1 | A | 1761 | C | C2-N1-C1' | 5.96 | 125.36 | 118.80 |
| 2 | B | 34 | U | C6-N1-C1' | -5.96 | 112.85 | 121.20 |
| 1 | A | 2237 | G | N7-C8-N9 | 5.96 | 116.08 | 113.10 |
| 2 | B | 117 | C | C2-N1-C1' | 5.95 | 125.35 | 118.80 |
| 1 | A | 2751 | A | O4'-C1'-N9 | 5.95 | 112.96 | 108.20 |
| 1 | A | 766 | G | C8-N9-C4 | -5.94 | 104.02 | 106.40 |
| 1 | A | 1510 | U | C5-C6-N1 | 5.94 | 125.67 | 122.70 |
| 1 | A | 2284 | C | C5-C6-N1 | 5.94 | 123.97 | 121.00 |
| 1 | A | 2887 | C | C2-N1-C1' | 5.94 | 125.33 | 118.80 |
| 1 | A | 953 | U | C5-C6-N1 | 5.93 | 125.67 | 122.70 |
| 1 | A | 1232 | G | C6-C5-N7 | -5.93 | 126.84 | 130.40 |
| 1 | A | 27 | G | N3-C2-N2 | -5.93 | 115.75 | 119.90 |
| 1 | A | 2674 | G | C4-C5-N7 | -5.93 | 108.43 | 110.80 |
| 1 | A | 126 | A | O4'-C1'-N9 | 5.93 | 112.94 | 108.20 |
| 1 | A | 1282 | C | N3-C2-O2 | -5.92 | 117.76 | 121.90 |
| 1 | A | 1051 | U | N1-C2-O2 | 5.91 | 126.94 | 122.80 |
| 1 | A | 1659 | A | C4-N9-C1' | 5.90 | 136.92 | 126.30 |
| 1 | A | 838 | A | C2-N3-C4 | -5.90 | 107.65 | 110.60 |
| 1 | A | 1875 | G | C6-C5-N7 | -5.90 | 126.86 | 130.40 |
| 1 | A | 2460 | U | N3-C2-O2 | -5.89 | 118.08 | 122.20 |
| 1 | A | 2280 | C | N1-C2-O2 | 5.89 | 122.43 | 118.90 |
| 1 | A | 2467 | C | N1-C2-O2 | 5.88 | 122.43 | 118.90 |
| 1 | A | 953 | U | C6-N1-C2 | -5.88 | 117.47 | 121.00 |
| 1 | A | 2653 | C | C2-N1-C1' | 5.88 | 125.27 | 118.80 |
| 1 | A | 1646 | C | C6-N1-C2 | -5.87 | 117.95 | 120.30 |
| 1 | A | 1232 | G | C5-N7-C8 | -5.87 | 101.36 | 104.30 |
| 1 | A | 2374 | U | C2-N1-C1' | 5.87 | 124.74 | 117.70 |
| 24 | X | 33 | LEU | CA-CB-CG | 5.87 | 128.80 | 115.30 |
| 1 | A | 783 | A | P-O3'-C3' | 5.87 | 126.74 | 119.70 |
| 1 | A | 199 | A | O4'-C1'-N9 | 5.87 | 112.89 | 108.20 |
| 1 | A | 1054 | C | N3-C4-N4 | 5.86 | 122.10 | 118.00 |
| 1 | A | 2017 | A | N9-C1'-C2' | 5.86 | 121.62 | 114.00 |
| 1 | A | 1300 | U | C6-N1-C1' | -5.86 | 112.99 | 121.20 |
| 1 | A | 1671 | G | O4'-C1'-N9 | 5.86 | 112.88 | 108.20 |
| 1 | A | 1987 | C | C6-N1-C2 | -5.85 | 117.96 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | A | 560 | G | C4-C5-N7 | 5.85 | 113.14 | 110.80 |
| 1 | A | 1071 | U | N1-C2-O2 | 5.84 | 126.89 | 122.80 |
| 1 | A | 514 | C | C5-C6-N1 | 5.83 | 123.92 | 121.00 |
| 1 | A | 1907 | C | C6-N1-C2 | -5.83 | 117.97 | 120.30 |
| 1 | A | 116 | U | N3-C2-O2 | -5.82 | 118.12 | 122.20 |
| 1 | A | 659 | G | C8-N9-C1' | -5.82 | 119.43 | 127.00 |
| 1 | A | 1149 | C | C6-N1-C2 | -5.82 | 117.97 | 120.30 |
| 1 | A | 2674 | G | N3-C4-N9 | 5.81 | 129.49 | 126.00 |
| 1 | A | 2513 | G | N3-C4-N9 | -5.80 | 122.52 | 126.00 |
| 1 | A | 2526 | C | N1-C2-O2 | 5.80 | 122.38 | 118.90 |
| 1 | A | 818 | U | N3-C2-O2 | -5.80 | 118.14 | 122.20 |
| 1 | A | 2337 | C | N3-C2-O2 | -5.80 | 117.84 | 121.90 |
| 1 | A | 2409 | C | O4'-C1'-N1 | 5.80 | 112.84 | 108.20 |
| 1 | A | 1349 | C | C5-C6-N1 | 5.80 | 123.90 | 121.00 |
| 1 | A | 1401 | C | N1-C2-O2 | 5.79 | 122.38 | 118.90 |
| 1 | A | 1089 | G | N7-C8-N9 | 5.78 | 115.99 | 113.10 |
| 1 | A | 1300 | U | C5-C6-N1 | 5.78 | 125.59 | 122.70 |
| 1 | A | 1370 | A | N7-C8-N9 | 5.77 | 116.68 | 113.80 |
| 1 | A | 1629 | C | N3-C2-O2 | -5.76 | 117.86 | 121.90 |
| 1 | A | 85 | G | N3-C2-N2 | -5.76 | 115.87 | 119.90 |
| 1 | A | 2513 | G | C8-N9-C4 | -5.76 | 104.10 | 106.40 |
| 1 | A | 942 | G | N3-C4-N9 | 5.75 | 129.45 | 126.00 |
| 1 | A | 69 | C | N1-C2-O2 | 5.75 | 122.35 | 118.90 |
| 1 | A | 441 | G | C6-C5-N7 | -5.75 | 126.95 | 130.40 |
| 1 | A | 2485 | C | N3-C2-O2 | -5.75 | 117.88 | 121.90 |
| 1 | A | 792 | A | P-O3'-C3' | 5.74 | 126.59 | 119.70 |
| 1 | A | 519 | A | N3-C4-C5 | 5.74 | 130.82 | 126.80 |
| 1 | A | 991 | A | N1-C6-N6 | -5.73 | 115.16 | 118.60 |
| 1 | A | 1051 | U | C2-N1-C1' | 5.71 | 124.56 | 117.70 |
| 1 | A | 836 | U | P-O3'-C3' | 5.70 | 126.54 | 119.70 |
| 1 | A | 2819 | U | C2-N1-C1' | 5.70 | 124.54 | 117.70 |
| 1 | A | 377 | G | C5-N7-C8 | -5.70 | 101.45 | 104.30 |
| 1 | A | 2325 | C | C6-N1-C2 | -5.70 | 118.02 | 120.30 |
| 1 | A | 2485 | C | N1-C2-O2 | 5.70 | 122.32 | 118.90 |
| 1 | A | 1300 | U | C6-N1-C2 | -5.69 | 117.58 | 121.00 |
| 1 | A | 1293 | C | C6-N1-C2 | -5.69 | 118.03 | 120.30 |
| 2 | B | 40 | C | P-O3'-C3' | 5.69 | 126.52 | 119.70 |
| 1 | A | 2017 | A | N1-C6-N6 | -5.69 | 115.19 | 118.60 |
| 1 | A | 2632 | G | C5-N7-C8 | -5.68 | 101.46 | 104.30 |
| 1 | A | 2695 | G | C6-C5-N7 | -5.68 | 126.99 | 130.40 |
| 1 | A | 933 | A | O4'-C1'-N9 | 5.67 | 112.74 | 108.20 |
| 1 | A | 2653 | C | N3-C2-O2 | -5.67 | 117.93 | 121.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | A | 2654 | C | C5-C6-N1 | 5.66 | 123.83 | 121.00 |
| 1 | A | 2718 | G | C5-N7-C8 | -5.66 | 101.47 | 104.30 |
| 1 | A | 1293 | C | C5-C6-N1 | 5.66 | 123.83 | 121.00 |
| 1 | A | 1232 | G | P-O3'-C3' | 5.65 | 126.48 | 119.70 |
| 1 | A | 1968 | A | C8-N9-C4 | -5.65 | 103.54 | 105.80 |
| 1 | A | 2414 | C | C6-N1-C2 | -5.65 | 118.04 | 120.30 |
| 1 | A | 1745 | U | C2-N1-C1' | 5.64 | 124.47 | 117.70 |
| 1 | A | 1071 | U | N3-C2-O2 | -5.64 | 118.25 | 122.20 |
| 1 | A | 2835 | U | C6-N1-C2 | -5.64 | 117.62 | 121.00 |
| 1 | A | 1671 | G | C4-C5-N7 | 5.63 | 113.05 | 110.80 |
| 1 | A | 1676 | C | N3-C2-O2 | -5.63 | 117.96 | 121.90 |
| 23 | W | 38 | VAL | CG1-CB-CG2 | -5.63 | 101.88 | 110.90 |
| 1 | A | 692 | U | C2-N1-C1' | 5.63 | 124.45 | 117.70 |
| 1 | A | 995 | C | N1-C2-O2 | 5.63 | 122.28 | 118.90 |
| 1 | A | 126 | A | N1-C6-N6 | 5.63 | 121.98 | 118.60 |
| 1 | A | 364 | U | N3-C2-O2 | -5.62 | 118.26 | 122.20 |
| 1 | A | 378 | A | O4'-C1'-N9 | 5.62 | 112.69 | 108.20 |
| 1 | A | 2237 | G | C5-N7-C8 | -5.62 | 101.49 | 104.30 |
| 1 | A | 733 | C | C6-N1-C2 | -5.62 | 118.05 | 120.30 |
| 1 | A | 1082 | C | N1-C2-O2 | 5.62 | 122.27 | 118.90 |
| 1 | A | 1054 | C | C5-C4-N4 | -5.60 | 116.28 | 120.20 |
| 1 | A | 2850 | G | N3-C4-C5 | -5.60 | 125.80 | 128.60 |
| 1 | A | 838 | A | N3-C4-N9 | -5.59 | 122.92 | 127.40 |
| 1 | A | 904 | C | N3-C2-O2 | -5.59 | 117.99 | 121.90 |
| 1 | A | 1289 | A | O4'-C1'-N9 | 5.58 | 112.67 | 108.20 |
| 1 | A | 1629 | C | N1-C2-O2 | 5.58 | 122.25 | 118.90 |
| 1 | A | 825 | C | N1-C2-O2 | 5.57 | 122.24 | 118.90 |
| 1 | A | 1672 | G | P-O3'-C3' | 5.56 | 126.38 | 119.70 |
| 1 | A | 501 | C | N1-C2-O2 | 5.56 | 122.24 | 118.90 |
| 1 | A | 2083 | C | N3-C2-O2 | -5.56 | 118.01 | 121.90 |
| 1 | A | 2562 | C | C5-C6-N1 | 5.56 | 123.78 | 121.00 |
| 2 | B | 33 | A | P-O3'-C3' | 5.56 | 126.37 | 119.70 |
| 1 | A | 995 | C | N3-C2-O2 | -5.55 | 118.01 | 121.90 |
| 1 | A | 1282 | C | C5-C6-N1 | 5.55 | 123.78 | 121.00 |
| 1 | A | 2461 | U | C2-N1-C1' | 5.55 | 124.36 | 117.70 |
| 1 | A | 106 | C | C5-C6-N1 | 5.55 | 123.78 | 121.00 |
| 1 | A | 997 | C | C6-N1-C2 | -5.55 | 118.08 | 120.30 |
| 1 | A | 2192 | G | C4-N9-C1' | -5.54 | 119.30 | 126.50 |
| 1 | A | 334 | A | N7-C8-N9 | 5.54 | 116.57 | 113.80 |
| 1 | A | 2348 | C | N3-C2-O2 | -5.53 | 118.03 | 121.90 |
| 1 | A | 748 | G | C6-C5-N7 | -5.53 | 127.08 | 130.40 |
| 1 | A | 1051 | U | C5-C6-N1 | 5.53 | 125.46 | 122.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|------------|-------|-------------|----------|
| 1 | A | 1468 | U | C2-N1-C1' | 5.53 | 124.33 | 117.70 |
| 1 | A | 838 | A | N3-C4-C5 | 5.52 | 130.66 | 126.80 |
| 1 | A | 16 | C | C5-C6-N1 | 5.51 | 123.76 | 121.00 |
| 1 | A | 2460 | U | O4'-C1'-N1 | 5.51 | 112.61 | 108.20 |
| 1 | A | 1078 | A | C2-N3-C4 | 5.50 | 113.35 | 110.60 |
| 1 | A | 210 | C | N3-C2-O2 | -5.50 | 118.05 | 121.90 |
| 1 | A | 591 | C | C5-C6-N1 | 5.49 | 123.75 | 121.00 |
| 1 | A | 2237 | G | C6-C5-N7 | -5.49 | 127.11 | 130.40 |
| 1 | A | 243 | U | P-O3'-C3' | 5.49 | 126.28 | 119.70 |
| 1 | A | 2819 | U | C5-C6-N1 | 5.49 | 125.44 | 122.70 |
| 2 | B | 67 | C | N1-C2-O2 | 5.48 | 122.19 | 118.90 |
| 1 | A | 2461 | U | O4'-C1'-N1 | 5.47 | 112.58 | 108.20 |
| 1 | A | 2228 | A | P-O3'-C3' | 5.47 | 126.26 | 119.70 |
| 1 | A | 2883 | U | N3-C2-O2 | -5.47 | 118.37 | 122.20 |
| 1 | A | 710 | U | N1-C2-O2 | 5.46 | 126.62 | 122.80 |
| 1 | A | 297 | C | C5-C6-N1 | 5.46 | 123.73 | 121.00 |
| 1 | A | 1907 | C | C5-C6-N1 | 5.46 | 123.73 | 121.00 |
| 1 | A | 1987 | C | C5-C6-N1 | 5.46 | 123.73 | 121.00 |
| 1 | A | 364 | U | N1-C2-O2 | 5.46 | 126.62 | 122.80 |
| 1 | A | 976 | C | N3-C2-O2 | -5.45 | 118.08 | 121.90 |
| 1 | A | 2254 | A | N3-C4-C5 | 5.45 | 130.62 | 126.80 |
| 1 | A | 839 | C | C6-N1-C2 | -5.45 | 118.12 | 120.30 |
| 1 | A | 560 | G | C5-N7-C8 | -5.44 | 101.58 | 104.30 |
| 1 | A | 104 | U | N1-C2-O2 | 5.44 | 126.61 | 122.80 |
| 1 | A | 2259 | U | C2-N1-C1' | 5.44 | 124.23 | 117.70 |
| 1 | A | 100 | U | O4'-C1'-N1 | 5.44 | 112.55 | 108.20 |
| 1 | A | 1111 | C | N3-C2-O2 | -5.44 | 118.09 | 121.90 |
| 1 | A | 1642 | A | P-O3'-C3' | 5.43 | 126.22 | 119.70 |
| 1 | A | 2852 | U | OP2-P-O3' | 5.42 | 117.13 | 105.20 |
| 1 | A | 2866 | C | N1-C2-O2 | 5.42 | 122.15 | 118.90 |
| 1 | A | 977 | C | N1-C2-O2 | 5.42 | 122.15 | 118.90 |
| 1 | A | 2494 | C | N1-C2-O2 | 5.42 | 122.15 | 118.90 |
| 1 | A | 1875 | G | C4-C5-N7 | 5.42 | 112.97 | 110.80 |
| 1 | A | 995 | C | C6-N1-C2 | -5.42 | 118.13 | 120.30 |
| 1 | A | 2028 | U | N1-C2-O2 | 5.41 | 126.59 | 122.80 |
| 1 | A | 2633 | C | C6-N1-C2 | -5.41 | 118.14 | 120.30 |
| 1 | A | 1125 | C | N1-C2-O2 | 5.40 | 122.14 | 118.90 |
| 1 | A | 1276 | C | N1-C2-O2 | 5.40 | 122.14 | 118.90 |
| 1 | A | 295 | C | OP1-P-O3' | 5.39 | 117.07 | 105.20 |
| 1 | A | 547 | C | N1-C2-O2 | 5.39 | 122.13 | 118.90 |
| 1 | A | 938 | C | C6-N1-C2 | -5.39 | 118.14 | 120.30 |
| 1 | A | 2417 | A | N3-C4-C5 | -5.39 | 123.03 | 126.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1 | A | 1622 | A | O4'-C1'-N9 | 5.38 | 112.50 | 108.20 |
| 1 | A | 1958 | U | C2-N1-C1' | 5.38 | 124.15 | 117.70 |
| 1 | A | 2718 | G | C6-C5-N7 | -5.38 | 127.17 | 130.40 |
| 1 | A | 2499 | C | C6-N1-C2 | -5.36 | 118.15 | 120.30 |
| 1 | A | 964 | A | C5-N7-C8 | -5.36 | 101.22 | 103.90 |
| 1 | A | 2695 | G | N3-C4-N9 | 5.36 | 129.21 | 126.00 |
| 1 | A | 1892 | C | C2-N1-C1' | 5.34 | 124.68 | 118.80 |
| 1 | A | 741 | A | O4'-C1'-N9 | 5.34 | 112.47 | 108.20 |
| 2 | B | 18 | C | N3-C2-O2 | -5.34 | 118.16 | 121.90 |
| 1 | A | 1913 | U | C2-N1-C1' | 5.34 | 124.10 | 117.70 |
| 1 | A | 104 | U | N3-C2-O2 | -5.33 | 118.47 | 122.20 |
| 1 | A | 1918 | U | C5-C6-N1 | 5.33 | 125.36 | 122.70 |
| 1 | A | 2459 | G | C5-N7-C8 | -5.33 | 101.64 | 104.30 |
| 1 | A | 2562 | C | C6-N1-C2 | -5.33 | 118.17 | 120.30 |
| 1 | A | 1481 | A | O4'-C1'-N9 | 5.32 | 112.45 | 108.20 |
| 1 | A | 1980 | U | C5-C6-N1 | 5.32 | 125.36 | 122.70 |
| 2 | B | 67 | C | N3-C2-O2 | -5.32 | 118.18 | 121.90 |
| 1 | A | 827 | C | C6-N1-C2 | -5.31 | 118.17 | 120.30 |
| 1 | A | 63 | A | N7-C8-N9 | 5.31 | 116.46 | 113.80 |
| 1 | A | 1051 | U | N3-C2-O2 | -5.31 | 118.48 | 122.20 |
| 1 | A | 1050 | U | C5-C4-O4 | 5.31 | 129.09 | 125.90 |
| 1 | A | 2461 | U | N1-C2-O2 | 5.31 | 126.52 | 122.80 |
| 1 | A | 1665 | C | N3-C2-O2 | -5.31 | 118.19 | 121.90 |
| 1 | A | 1221 | U | N1-C2-O2 | 5.31 | 126.51 | 122.80 |
| 1 | A | 2207 | C | C2-N1-C1' | -5.31 | 112.96 | 118.80 |
| 1 | A | 2453 | C | N1-C2-O2 | 5.31 | 122.08 | 118.90 |
| 1 | A | 334 | A | C5-N7-C8 | -5.30 | 101.25 | 103.90 |
| 1 | A | 2867 | U | N3-C2-O2 | -5.30 | 118.49 | 122.20 |
| 2 | B | 87 | C | C2-N1-C1' | 5.30 | 124.64 | 118.80 |
| 1 | A | 1020 | C | N1-C2-O2 | 5.29 | 122.08 | 118.90 |
| 1 | A | 2409 | C | C2-N3-C4 | 5.29 | 122.55 | 119.90 |
| 1 | A | 1913 | U | N1-C2-O2 | 5.29 | 126.50 | 122.80 |
| 2 | B | 40 | C | C6-N1-C1' | -5.29 | 114.45 | 120.80 |
| 1 | A | 1194 | C | N1-C2-O2 | 5.29 | 122.07 | 118.90 |
| 1 | A | 1590 | C | N3-C2-O2 | -5.29 | 118.20 | 121.90 |
| 1 | A | 2130 | C | C4'-C3'-O3' | 5.29 | 123.58 | 113.00 |
| 1 | A | 1064 | G | C4-C5-N7 | 5.29 | 112.91 | 110.80 |
| 1 | A | 1958 | U | N3-C2-O2 | -5.29 | 118.50 | 122.20 |
| 1 | A | 2755 | U | N3-C2-O2 | -5.29 | 118.50 | 122.20 |
| 1 | A | 1244 | C | C5-C6-N1 | 5.28 | 123.64 | 121.00 |
| 1 | A | 361 | A | P-O3'-C3' | 5.27 | 126.03 | 119.70 |
| 1 | A | 2250 | C | C6-N1-C2 | -5.27 | 118.19 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 1 | A | 2459 | G | N7-C8-N9 | 5.27 | 115.74 | 113.10 |
| 2 | B | 105 | G | C4-C5-N7 | 5.27 | 112.91 | 110.80 |
| 1 | A | 1787 | C | N3-C2-O2 | -5.27 | 118.21 | 121.90 |
| 1 | A | 2225 | G | C4-N9-C1' | 5.27 | 133.35 | 126.50 |
| 1 | A | 409 | C | C6-N1-C2 | -5.25 | 118.20 | 120.30 |
| 1 | A | 1369 | G | C4-C5-N7 | 5.25 | 112.90 | 110.80 |
| 16 | P | 94 | ARG | CA-CB-CG | 5.25 | 124.96 | 113.40 |
| 1 | A | 2237 | G | C4-C5-N7 | 5.25 | 112.90 | 110.80 |
| 8 | H | 116 | LEU | CA-CB-CG | 5.25 | 127.37 | 115.30 |
| 1 | A | 267 | C | N1-C2-O2 | 5.25 | 122.05 | 118.90 |
| 1 | A | 1980 | U | C6-N1-C2 | -5.25 | 117.85 | 121.00 |
| 1 | A | 774 | G | O4'-C1'-N9 | 5.24 | 112.39 | 108.20 |
| 1 | A | 2454 | C | C5-C6-N1 | 5.24 | 123.62 | 121.00 |
| 1 | A | 1654 | A | C8-N9-C4 | -5.23 | 103.71 | 105.80 |
| 1 | A | 1600 | A | C5-N7-C8 | -5.23 | 101.29 | 103.90 |
| 1 | A | 614 | C | C6-N1-C2 | -5.22 | 118.21 | 120.30 |
| 1 | A | 2063 | U | C2-N1-C1' | 5.22 | 123.97 | 117.70 |
| 1 | A | 501 | C | C2-N1-C1' | 5.22 | 124.54 | 118.80 |
| 1 | A | 342 | G | C4-N9-C1' | 5.22 | 133.29 | 126.50 |
| 1 | A | 2454 | C | C6-N1-C2 | -5.22 | 118.21 | 120.30 |
| 1 | A | 2192 | G | C8-N9-C1' | 5.22 | 133.78 | 127.00 |
| 1 | A | 2866 | C | N3-C2-O2 | -5.21 | 118.25 | 121.90 |
| 1 | A | 2866 | C | C5-C6-N1 | 5.21 | 123.61 | 121.00 |
| 1 | A | 2718 | G | C4-N9-C1' | 5.21 | 133.27 | 126.50 |
| 19 | S | 61 | ASN | N-CA-CB | -5.21 | 101.23 | 110.60 |
| 1 | A | 337 | C | C5-C4-N4 | -5.20 | 116.56 | 120.20 |
| 1 | A | 501 | C | C5-C6-N1 | 5.20 | 123.60 | 121.00 |
| 1 | A | 741 | A | C5-N7-C8 | -5.20 | 101.30 | 103.90 |
| 1 | A | 2494 | C | C5-C6-N1 | 5.20 | 123.60 | 121.00 |
| 1 | A | 2785 | G | C6-C5-N7 | -5.20 | 127.28 | 130.40 |
| 1 | A | 2467 | C | C5-C6-N1 | 5.19 | 123.59 | 121.00 |
| 1 | A | 2536 | G | C2'-C3'-O3' | 5.19 | 122.00 | 113.70 |
| 1 | A | 1869 | U | N3-C2-O2 | -5.19 | 118.57 | 122.20 |
| 30 | 4 | 42 | LEU | CA-CB-CG | 5.19 | 127.23 | 115.30 |
| 1 | A | 2536 | G | P-O3'-C3' | 5.18 | 125.92 | 119.70 |
| 1 | A | 2695 | G | C4-N9-C1' | 5.18 | 133.24 | 126.50 |
| 1 | A | 152 | U | C2-N1-C1' | 5.18 | 123.92 | 117.70 |
| 1 | A | 2685 | C | C6-N1-C2 | -5.18 | 118.23 | 120.30 |
| 1 | A | 16 | C | C2-N1-C1' | 5.17 | 124.49 | 118.80 |
| 1 | A | 1369 | G | C5-N7-C8 | -5.17 | 101.71 | 104.30 |
| 1 | A | 2663 | C | C6-N1-C2 | -5.17 | 118.23 | 120.30 |
| 2 | B | 91 | C | N3-C2-O2 | -5.17 | 118.28 | 121.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 2 | B | 41 | C | C2-N1-C1' | 5.17 | 124.48 | 118.80 |
| 1 | A | 29 | U | C5-C6-N1 | 5.17 | 125.28 | 122.70 |
| 1 | A | 1243 | G | C4-N9-C1' | 5.16 | 133.21 | 126.50 |
| 1 | A | 2709 | C | C5-C6-N1 | 5.16 | 123.58 | 121.00 |
| 1 | A | 818 | U | C6-N1-C1' | -5.16 | 113.98 | 121.20 |
| 1 | A | 1197 | G | C2-N3-C4 | -5.16 | 109.32 | 111.90 |
| 1 | A | 1446 | G | C4-N9-C1' | 5.16 | 133.20 | 126.50 |
| 1 | A | 837 | C | C4-C5-C6 | 5.15 | 119.97 | 117.40 |
| 1 | A | 2237 | G | C8-N9-C4 | -5.15 | 104.34 | 106.40 |
| 1 | A | 1407 | U | C6-N1-C1' | -5.15 | 114.00 | 121.20 |
| 1 | A | 192 | C | C6-N1-C2 | -5.14 | 118.24 | 120.30 |
| 1 | A | 802 | C | N3-C2-O2 | -5.14 | 118.30 | 121.90 |
| 1 | A | 2348 | C | N1-C2-O2 | 5.14 | 121.98 | 118.90 |
| 1 | A | 2460 | U | C6-N1-C1' | -5.14 | 114.00 | 121.20 |
| 1 | A | 132 | C | N3-C2-O2 | -5.13 | 118.31 | 121.90 |
| 1 | A | 955 | C | C5-C6-N1 | 5.13 | 123.57 | 121.00 |
| 1 | A | 714 | U | N1-C2-O2 | 5.13 | 126.39 | 122.80 |
| 1 | A | 1755 | C | N1-C2-O2 | 5.13 | 121.98 | 118.90 |
| 2 | B | 91 | C | N1-C2-O2 | 5.13 | 121.98 | 118.90 |
| 1 | A | 2883 | U | C2-N1-C1' | 5.13 | 123.85 | 117.70 |
| 1 | A | 550 | C | N1-C2-O2 | 5.12 | 121.97 | 118.90 |
| 1 | A | 1261 | A | C5-N7-C8 | -5.11 | 101.34 | 103.90 |
| 1 | A | 444 | A | P-O3'-C3' | 5.11 | 125.83 | 119.70 |
| 2 | B | 70 | C | N1-C2-O2 | 5.11 | 121.97 | 118.90 |
| 2 | B | 64 | C | N3-C2-O2 | -5.11 | 118.32 | 121.90 |
| 1 | A | 1627 | A | C2'-C3'-O3' | 5.11 | 121.87 | 113.70 |
| 1 | A | 1869 | U | N1-C2-O2 | 5.11 | 126.38 | 122.80 |
| 1 | A | 1938 | U | N3-C2-O2 | -5.11 | 118.62 | 122.20 |
| 1 | A | 709 | C | N1-C2-O2 | 5.10 | 121.96 | 118.90 |
| 1 | A | 2755 | U | N1-C2-O2 | 5.10 | 126.37 | 122.80 |
| 11 | K | 9 | ASP | CB-CG-OD1 | 5.10 | 122.89 | 118.30 |
| 1 | A | 1089 | G | N1-C6-O6 | 5.09 | 122.96 | 119.90 |
| 1 | A | 1191 | A | C6-N1-C2 | 5.09 | 121.66 | 118.60 |
| 1 | A | 2541 | U | C2-N1-C1' | 5.09 | 123.81 | 117.70 |
| 1 | A | 519 | A | N3-C4-N9 | -5.09 | 123.33 | 127.40 |
| 1 | A | 519 | A | N7-C8-N9 | 5.09 | 116.35 | 113.80 |
| 1 | A | 342 | G | C6-C5-N7 | -5.09 | 127.35 | 130.40 |
| 1 | A | 2325 | C | N1-C2-O2 | 5.08 | 121.95 | 118.90 |
| 1 | A | 1627 | A | C8-N9-C4 | -5.08 | 103.77 | 105.80 |
| 2 | B | 65 | A | P-O3'-C3' | 5.08 | 125.80 | 119.70 |
| 1 | A | 755 | C | N3-C2-O2 | -5.08 | 118.35 | 121.90 |
| 1 | A | 1221 | U | N3-C2-O2 | -5.07 | 118.65 | 122.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1 | A | 2133 | C | C6-N1-C1' | -5.07 | 114.71 | 120.80 |
| 1 | A | 2632 | G | C4-C5-N7 | 5.07 | 112.83 | 110.80 |
| 1 | A | 1659 | A | C8-N9-C1' | -5.07 | 118.58 | 127.70 |
| 1 | A | 502 | U | N3-C2-O2 | -5.06 | 118.66 | 122.20 |
| 1 | A | 1089 | G | C6-C5-N7 | -5.06 | 127.36 | 130.40 |
| 1 | A | 1761 | C | N1-C2-O2 | 5.06 | 121.93 | 118.90 |
| 1 | A | 334 | A | C4-C5-N7 | 5.05 | 113.23 | 110.70 |
| 1 | A | 1966 | C | C6-N1-C2 | -5.05 | 118.28 | 120.30 |
| 1 | A | 1622 | A | C6-C5-N7 | -5.05 | 128.76 | 132.30 |
| 1 | A | 723 | G | N1-C6-O6 | -5.05 | 116.87 | 119.90 |
| 1 | A | 2284 | C | C2-N3-C4 | 5.05 | 122.42 | 119.90 |
| 1 | A | 1980 | U | C6-N1-C1' | -5.04 | 114.14 | 121.20 |
| 1 | A | 226 | A | P-O3'-C3' | 5.04 | 125.74 | 119.70 |
| 1 | A | 276 | U | C2-N1-C1' | -5.04 | 111.66 | 117.70 |
| 1 | A | 1183 | C | N3-C2-O2 | -5.04 | 118.38 | 121.90 |
| 1 | A | 1245 | U | N3-C2-O2 | -5.04 | 118.67 | 122.20 |
| 1 | A | 2549 | U | C2-N1-C1' | 5.04 | 123.74 | 117.70 |
| 1 | A | 152 | U | N1-C2-O2 | 5.03 | 126.32 | 122.80 |
| 1 | A | 849 | U | N1-C2-O2 | 5.03 | 126.32 | 122.80 |
| 1 | A | 475 | C | C6-N1-C2 | -5.02 | 118.29 | 120.30 |
| 1 | A | 1896 | C | N1-C2-O2 | 5.02 | 121.91 | 118.90 |
| 1 | A | 267 | C | N3-C2-O2 | -5.02 | 118.39 | 121.90 |
| 1 | A | 910 | C | N1-C2-O2 | 5.02 | 121.91 | 118.90 |
| 1 | A | 1439 | G | C6-C5-N7 | -5.01 | 127.39 | 130.40 |
| 1 | A | 1634 | C | C6-N1-C2 | -5.01 | 118.30 | 120.30 |
| 18 | R | 18 | GLU | N-CA-C | 5.01 | 124.52 | 111.00 |
| 1 | A | 390 | U | C2-N1-C1' | 5.01 | 123.71 | 117.70 |
| 1 | A | 964 | A | C8-N9-C4 | -5.00 | 103.80 | 105.80 |
| 1 | A | 2254 | A | C8-N9-C1' | 5.00 | 136.70 | 127.70 |

There are no chirality outliers.

All (41) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 29 | 3 | 46 | LYS | Peptide |
| 3 | C | 118 | SER | Peptide |
| 3 | C | 119 | GLY | Peptide |
| 3 | C | 122 | ALA | Peptide |
| 3 | C | 123 | PRO | Peptide |
| 3 | C | 27 | GLY | Peptide |
| 4 | D | 126 | ASN | Peptide |
| 4 | D | 165 | LEU | Peptide |

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| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 4 | D | 166 | GLY | Peptide |
| 5 | E | 37 | GLY | Peptide |
| 5 | E | 40 | GLN | Peptide |
| 5 | E | 9 | GLN | Peptide |
| 5 | E | 94 | LYS | Peptide |
| 6 | F | 112 | ARG | Peptide |
| 6 | F | 113 | ASP | Peptide |
| 6 | F | 145 | LYS | Peptide |
| 6 | F | 37 | ASN | Peptide |
| 6 | F | 92 | ARG | Peptide |
| 7 | G | 164 | TYR | Peptide |
| 7 | G | 165 | ALA | Peptide |
| 11 | K | 118 | ALA | Peptide |
| 12 | L | 68 | SER | Peptide |
| 16 | P | 51 | LYS | Peptide |
| 16 | P | 55 | GLY | Peptide |
| 16 | P | 94 | ARG | Peptide |
| 18 | R | 100 | GLY | Peptide |
| 18 | R | 15 | THR | Peptide |
| 18 | R | 17 | GLY | Peptide |
| 18 | R | 51 | LEU | Peptide |
| 18 | R | 69 | HIS | Peptide |
| 18 | R | 70 | ASP | Peptide |
| 18 | R | 99 | THR | Peptide |
| 19 | S | 60 | HIS | Peptide |
| 22 | V | 101 | HIS | Peptide |
| 22 | V | 102 | LYS | Peptide |
| 22 | V | 154 | VAL | Peptide |
| 22 | V | 155 | GLU | Peptide |
| 22 | V | 91 | HIS | Peptide |
| 24 | X | 63 | GLY | Peptide |
| 25 | Y | 7 | GLU | Peptide |
| 25 | Y | 8 | GLU | Peptide |

5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 61164 | 0 | 30774 | 1981 | 0 |
| 2 | B | 2469 | 0 | 1252 | 5 | 0 |
| 3 | C | 2067 | 0 | 2147 | 31 | 0 |
| 4 | D | 1557 | 0 | 1568 | 30 | 0 |
| 5 | E | 1516 | 0 | 1571 | 18 | 0 |
| 6 | F | 1402 | 0 | 1468 | 22 | 0 |
| 7 | G | 1308 | 0 | 1362 | 15 | 0 |
| 8 | H | 1086 | 0 | 1110 | 17 | 0 |
| 9 | I | 1026 | 0 | 1063 | 19 | 0 |
| 10 | J | 1122 | 0 | 1148 | 14 | 0 |
| 11 | K | 922 | 0 | 992 | 12 | 0 |
| 12 | L | 1058 | 0 | 1100 | 6 | 0 |
| 13 | M | 1069 | 0 | 1139 | 4 | 0 |
| 14 | N | 945 | 0 | 989 | 5 | 0 |
| 15 | O | 881 | 0 | 920 | 4 | 0 |
| 16 | P | 894 | 0 | 954 | 10 | 0 |
| 17 | Q | 936 | 0 | 1025 | 11 | 0 |
| 18 | R | 822 | 0 | 858 | 8 | 0 |
| 19 | S | 825 | 0 | 885 | 2 | 0 |
| 20 | T | 701 | 0 | 735 | 7 | 0 |
| 21 | U | 801 | 0 | 864 | 7 | 0 |
| 22 | V | 1405 | 0 | 1432 | 37 | 0 |
| 23 | W | 574 | 0 | 601 | 14 | 0 |
| 24 | X | 630 | 0 | 653 | 6 | 0 |
| 25 | Y | 476 | 0 | 497 | 5 | 0 |
| 26 | Z | 445 | 0 | 472 | 5 | 0 |
| 27 | 1 | 232 | 0 | 238 | 5 | 0 |
| 28 | 2 | 423 | 0 | 420 | 5 | 0 |
| 29 | 3 | 418 | 0 | 445 | 6 | 0 |
| 30 | 4 | 365 | 0 | 409 | 5 | 0 |
| 31 | 5 | 506 | 0 | 569 | 10 | 0 |
| 32 | 6 | 307 | 0 | 345 | 2 | 0 |
| All | All | 90352 | 0 | 60005 | 2230 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 16.

All (2230) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|---------------|--------------------------|-------------------|
| 1:A:2123:G:H2' | 1:A:2124:C:C5 | 1.21 | 1.70 |
| 1:A:1093:A:H3' | 1:A:1094:C:C6 | 1.37 | 1.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:A:1166:G:N2 | 1:A:1167:U:C2 | 1.82 | 1.47 |
| 1:A:2123:G:C2 | 1:A:2124:C:C4 | 2.02 | 1.47 |
| 1:A:2123:G:N3 | 1:A:2124:C:C4 | 1.85 | 1.44 |
| 1:A:2094:C:C2 | 1:A:2095:U:O4 | 1.72 | 1.43 |
| 1:A:1166:G:N2 | 1:A:1167:U:N1 | 1.62 | 1.43 |
| 1:A:2119:U:C1' | 1:A:2120:G:N2 | 1.85 | 1.39 |
| 1:A:2123:G:H2' | 1:A:2124:C:C6 | 1.57 | 1.39 |
| 1:A:887:C:H2' | 1:A:888:A:C8 | 1.56 | 1.39 |
| 1:A:1093:A:C3' | 1:A:1094:C:H6 | 1.31 | 1.38 |
| 1:A:2168:G:O6 | 1:A:2169:G:C2 | 1.75 | 1.36 |
| 1:A:2123:G:N3 | 1:A:2124:C:C5 | 1.92 | 1.36 |
| 1:A:2094:C:O2 | 1:A:2095:U:C4 | 1.79 | 1.36 |
| 1:A:2123:G:C4 | 1:A:2124:C:N4 | 1.97 | 1.32 |
| 1:A:2168:G:O6 | 1:A:2169:G:N2 | 1.59 | 1.32 |
| 1:A:1163:U:H5 | 1:A:1166:G:C6 | 1.48 | 1.31 |
| 1:A:2168:G:N7 | 1:A:2169:G:N3 | 1.75 | 1.31 |
| 1:A:2123:G:C2' | 1:A:2124:C:C5 | 2.11 | 1.31 |
| 1:A:867:A:C2 | 1:A:889:A:C4 | 2.20 | 1.30 |
| 1:A:2137:U:C5 | 1:A:2138:C:C5 | 2.20 | 1.30 |
| 1:A:2173:G:C4 | 1:A:2174:C:C5 | 2.20 | 1.30 |
| 1:A:1040:A:C4 | 1:A:1041:G:C8 | 2.09 | 1.29 |
| 1:A:2301:G:C4 | 1:A:2302:G:C8 | 2.20 | 1.29 |
| 1:A:1166:G:C2 | 1:A:1167:U:C6 | 2.20 | 1.29 |
| 1:A:889:A:C5 | 1:A:890:A:C8 | 2.21 | 1.29 |
| 1:A:871:G:C2 | 1:A:885:A:H2 | 1.50 | 1.28 |
| 1:A:1163:U:C5 | 1:A:1166:G:C6 | 2.20 | 1.28 |
| 1:A:871:G:C2 | 1:A:885:A:C2 | 2.20 | 1.28 |
| 1:A:1729:U:C6 | 1:A:1730:C:C5 | 2.20 | 1.28 |
| 1:A:2142:U:C5 | 1:A:2143:G:C4 | 2.20 | 1.28 |
| 1:A:2119:U:C2' | 1:A:2120:G:N2 | 1.94 | 1.28 |
| 1:A:2123:G:C5 | 1:A:2124:C:N4 | 1.97 | 1.28 |
| 1:A:1168:G:C4 | 1:A:1169:A:C8 | 2.21 | 1.27 |
| 1:A:874:C:C5 | 1:A:875:A:C8 | 2.20 | 1.27 |
| 1:A:2119:U:N1 | 1:A:2120:G:N2 | 1.82 | 1.26 |
| 1:A:1729:U:C6 | 1:A:1730:C:C6 | 2.23 | 1.26 |
| 1:A:2134:A:O5' | 1:A:2135:G:C5' | 1.84 | 1.26 |
| 1:A:2173:G:H2' | 1:A:2174:C:C6 | 1.69 | 1.26 |
| 1:A:865:C:N3 | 1:A:866:U:C2 | 2.04 | 1.25 |
| 1:A:870:G:N7 | 1:A:871:G:O6 | 1.68 | 1.25 |
| 1:A:2123:G:C2' | 1:A:2124:C:H5 | 1.48 | 1.25 |
| 1:A:1093:A:C3' | 1:A:1094:C:C6 | 2.09 | 1.24 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|----------------|--------------------------|-------------------|
| 1:A:871:G:O4' | 1:A:886:C:H1' | 1.32 | 1.24 |
| 1:A:2168:G:N7 | 1:A:2169:G:C4 | 2.03 | 1.23 |
| 1:A:889:A:C4 | 1:A:890:A:C8 | 2.27 | 1.23 |
| 1:A:1729:U:C5 | 1:A:1730:C:C2 | 2.27 | 1.23 |
| 1:A:2134:A:O5' | 1:A:2135:G:H5' | 1.37 | 1.22 |
| 1:A:2123:G:C6 | 1:A:2124:C:N4 | 2.07 | 1.21 |
| 1:A:2153:U:O4 | 1:A:2158:A:N7 | 1.74 | 1.21 |
| 1:A:2087:G:C4 | 1:A:2088:A:C8 | 2.29 | 1.20 |
| 1:A:867:A:C8 | 1:A:868:G:C8 | 2.29 | 1.20 |
| 1:A:2119:U:H2' | 1:A:2120:G:N2 | 1.55 | 1.19 |
| 1:A:2119:U:H2' | 1:A:2120:G:C2 | 1.77 | 1.19 |
| 1:A:2085:U:C4 | 1:A:2086:U:C4 | 2.30 | 1.19 |
| 1:A:2121:A:N6 | 1:A:2145:A:N7 | 1.90 | 1.18 |
| 1:A:1030:A:N1 | 1:A:1105:G:N1 | 1.89 | 1.18 |
| 1:A:2121:A:N6 | 1:A:2143:G:N3 | 1.90 | 1.18 |
| 1:A:2122:A:C6 | 1:A:2123:G:O6 | 1.96 | 1.17 |
| 1:A:2087:G:C2 | 1:A:2088:A:C8 | 2.33 | 1.16 |
| 1:A:2101:A:O2' | 1:A:2102:G:H5' | 1.43 | 1.16 |
| 1:A:961:G:O2' | 1:A:973:A:H8 | 1.23 | 1.15 |
| 1:A:2115:G:N2 | 1:A:2120:G:N7 | 1.93 | 1.15 |
| 1:A:1046:G:N3 | 1:A:1093:A:N6 | 1.94 | 1.14 |
| 1:A:2123:G:C4 | 1:A:2124:C:C5 | 2.34 | 1.14 |
| 1:A:865:C:C2 | 1:A:866:U:O2 | 2.00 | 1.14 |
| 1:A:2123:G:C2 | 1:A:2124:C:N4 | 2.13 | 1.14 |
| 1:A:2088:A:C2 | 1:A:2089:G:C5 | 2.36 | 1.14 |
| 1:A:2122:A:C6 | 1:A:2123:G:C6 | 2.35 | 1.14 |
| 1:A:871:G:H2' | 1:A:872:G:H5'' | 1.20 | 1.14 |
| 1:A:1040:A:C6 | 1:A:1041:G:C5 | 2.32 | 1.14 |
| 1:A:2123:G:C4 | 1:A:2124:C:C4 | 2.34 | 1.14 |
| 1:A:865:C:O2 | 1:A:866:U:O2 | 1.64 | 1.13 |
| 1:A:1166:G:C2 | 1:A:1167:U:C5 | 2.37 | 1.13 |
| 1:A:1701:G:C5 | 1:A:1702:C:C5 | 2.36 | 1.13 |
| 1:A:2310:G:H2' | 1:A:2311:U:H5' | 1.30 | 1.13 |
| 1:A:2142:U:H5 | 1:A:2143:G:C4 | 1.59 | 1.12 |
| 1:A:2143:G:H1' | 1:A:2145:A:H62 | 1.05 | 1.12 |
| 1:A:2137:U:C5 | 1:A:2138:C:H5 | 1.61 | 1.12 |
| 1:A:2137:U:C6 | 1:A:2138:C:C5 | 2.36 | 1.12 |
| 1:A:2121:A:H2' | 1:A:2122:A:C8 | 1.85 | 1.11 |
| 1:A:2122:A:C2 | 1:A:2123:G:C5 | 2.39 | 1.11 |
| 1:A:2121:A:H2' | 1:A:2122:A:H8 | 1.07 | 1.10 |
| 1:A:870:G:H8 | 1:A:871:G:N7 | 1.49 | 1.10 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:886:C:C4 | 1:A:887:C:N3 | 2.20 | 1.10 |
| 1:A:2114:G:N7 | 1:A:2115:G:C5 | 2.19 | 1.10 |
| 1:A:889:A:C4 | 1:A:890:A:H8 | 1.68 | 1.10 |
| 1:A:1074:A:N1 | 1:A:1075:A:C2 | 2.20 | 1.10 |
| 1:A:1702:C:H5'' | 1:A:1703:U:H3' | 1.20 | 1.10 |
| 1:A:2090:C:O2 | 1:A:2173:G:N1 | 1.84 | 1.10 |
| 1:A:867:A:N7 | 1:A:868:G:C8 | 2.20 | 1.09 |
| 1:A:887:C:C2' | 1:A:888:A:C8 | 2.34 | 1.09 |
| 1:A:1074:A:C6 | 1:A:1075:A:N1 | 2.20 | 1.09 |
| 1:A:1168:G:N3 | 1:A:1169:A:C8 | 2.20 | 1.09 |
| 1:A:2087:G:N3 | 1:A:2088:A:C8 | 2.20 | 1.09 |
| 1:A:2088:A:N3 | 1:A:2089:G:C8 | 2.20 | 1.09 |
| 1:A:1163:U:H5 | 1:A:1166:G:N1 | 1.51 | 1.09 |
| 1:A:2087:G:C6 | 1:A:2088:A:N7 | 2.20 | 1.09 |
| 1:A:2148:C:H3' | 1:A:2149:A:H5'' | 1.24 | 1.09 |
| 1:A:870:G:H2' | 1:A:871:G:C8 | 1.87 | 1.09 |
| 1:A:1701:G:N7 | 1:A:1702:C:C5 | 2.20 | 1.09 |
| 1:A:2103:G:N1 | 1:A:2152:C:N3 | 2.01 | 1.09 |
| 1:A:2148:C:H2' | 1:A:2149:A:H3' | 1.12 | 1.09 |
| 1:A:1093:A:H3' | 1:A:1094:C:C5 | 1.86 | 1.08 |
| 1:A:2114:G:N7 | 1:A:2115:G:C6 | 2.21 | 1.08 |
| 1:A:2122:A:N1 | 1:A:2123:G:C6 | 2.21 | 1.08 |
| 1:A:873:U:O2 | 1:A:882:C:N4 | 1.87 | 1.07 |
| 1:A:1030:A:C2 | 1:A:1106:G:C2 | 2.42 | 1.07 |
| 1:A:2121:A:C8 | 1:A:2145:A:H2' | 1.89 | 1.07 |
| 1:A:867:A:C6 | 1:A:889:A:C8 | 2.43 | 1.07 |
| 1:A:1160:A:C2 | 1:A:1168:G:C2 | 2.42 | 1.07 |
| 1:A:2121:A:H2' | 1:A:2122:A:C5' | 1.84 | 1.07 |
| 1:A:2122:A:N6 | 1:A:2123:G:O6 | 1.86 | 1.07 |
| 1:A:1040:A:N6 | 1:A:1041:G:C6 | 2.22 | 1.07 |
| 1:A:2301:G:N3 | 1:A:2302:G:C8 | 2.23 | 1.06 |
| 1:A:1030:A:N6 | 1:A:1105:G:O6 | 1.88 | 1.06 |
| 1:A:1162:G:N2 | 1:A:1167:U:O2' | 1.88 | 1.06 |
| 1:A:1163:U:C5 | 1:A:1166:G:C5 | 2.44 | 1.06 |
| 1:A:1729:U:H5'' | 1:A:1730:C:H5 | 1.17 | 1.06 |
| 1:A:883:U:O2 | 1:A:885:A:N6 | 1.88 | 1.05 |
| 1:A:2302:G:H2' | 1:A:2303:U:C6 | 1.92 | 1.05 |
| 1:A:871:G:H1' | 1:A:886:C:O4' | 1.56 | 1.05 |
| 1:A:1166:G:N2 | 1:A:1167:U:C6 | 2.18 | 1.05 |
| 1:A:2121:A:C2' | 1:A:2122:A:H8 | 1.61 | 1.05 |
| 1:A:871:G:O4' | 1:A:886:C:C1' | 2.03 | 1.05 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:A:867:A:H3' | 1:A:868:G:H5'' | 1.34 | 1.05 |
| 1:A:872:G:C5 | 1:A:873:U:H1' | 1.90 | 1.05 |
| 1:A:2153:U:O4 | 1:A:2158:A:C8 | 2.09 | 1.05 |
| 1:A:2122:A:C4 | 1:A:2123:G:N7 | 2.25 | 1.04 |
| 1:A:2108:G:N3 | 1:A:2109:U:C5 | 2.25 | 1.04 |
| 1:A:665:A:O2' | 5:E:61:GLN:NE2 | 1.88 | 1.04 |
| 1:A:1729:U:C5 | 1:A:1730:C:C4 | 2.45 | 1.04 |
| 1:A:2103:G:O6 | 1:A:2152:C:N4 | 1.88 | 1.04 |
| 1:A:2126:U:H2' | 1:A:2139:G:H1 | 1.15 | 1.04 |
| 1:A:870:G:C8 | 1:A:871:G:N7 | 2.24 | 1.04 |
| 1:A:871:G:N3 | 1:A:885:A:H2 | 1.54 | 1.03 |
| 1:A:2143:G:O2' | 1:A:2145:A:N7 | 1.89 | 1.03 |
| 1:A:873:U:H2' | 1:A:874:C:C5 | 1.93 | 1.03 |
| 1:A:2173:G:C2' | 1:A:2174:C:H6 | 1.71 | 1.03 |
| 1:A:890:A:C2 | 1:A:891:C:C2 | 2.47 | 1.03 |
| 1:A:2035:G:H2' | 1:A:2036:G:H5'' | 1.41 | 1.03 |
| 1:A:2121:A:H2' | 1:A:2122:A:H5'' | 1.06 | 1.03 |
| 1:A:867:A:C4 | 1:A:889:A:C6 | 2.47 | 1.03 |
| 1:A:1160:A:C2 | 1:A:1161:C:C6 | 2.48 | 1.02 |
| 1:A:2168:G:C8 | 1:A:2169:G:C1' | 2.42 | 1.02 |
| 1:A:1040:A:N9 | 1:A:1041:G:C8 | 2.14 | 1.02 |
| 1:A:1160:A:C2 | 1:A:1168:G:N3 | 2.28 | 1.02 |
| 1:A:2123:G:N1 | 1:A:2124:C:N4 | 2.06 | 1.02 |
| 1:A:1701:G:C8 | 1:A:1702:C:C5 | 2.48 | 1.02 |
| 1:A:1729:U:C5 | 1:A:1730:C:C6 | 2.47 | 1.01 |
| 1:A:539:U:H3' | 1:A:540:U:H5'' | 1.40 | 1.01 |
| 1:A:1074:A:C2 | 1:A:1075:A:C2 | 2.48 | 1.01 |
| 1:A:2168:G:C8 | 1:A:2169:G:H1' | 1.95 | 1.00 |
| 1:A:879:C:H3' | 1:A:880:G:C8 | 1.96 | 1.00 |
| 1:A:1727:G:H8 | 1:A:1728:C:C6 | 1.79 | 1.00 |
| 1:A:2088:A:H2' | 1:A:2089:G:H8 | 1.24 | 1.00 |
| 1:A:534:A:C6 | 1:A:535:C:C5 | 2.49 | 1.00 |
| 1:A:867:A:N1 | 1:A:889:A:C8 | 2.29 | 1.00 |
| 1:A:882:C:C2 | 1:A:883:U:C6 | 2.50 | 1.00 |
| 1:A:535:C:H2' | 1:A:536:U:H5' | 1.44 | 0.99 |
| 1:A:1729:U:H5 | 1:A:1730:C:N3 | 1.57 | 0.99 |
| 1:A:2121:A:C2' | 1:A:2122:A:H5'' | 1.90 | 0.99 |
| 1:A:1009:U:H2' | 1:A:1010:A:H5'' | 1.39 | 0.99 |
| 1:A:2119:U:C1' | 1:A:2120:G:H22 | 1.67 | 0.99 |
| 1:A:870:G:H2' | 1:A:871:G:N7 | 1.77 | 0.99 |
| 1:A:2108:G:C2 | 1:A:2109:U:C4 | 2.51 | 0.99 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:2121:A:C6 | 1:A:2145:A:C8 | 2.49 | 0.99 |
| 1:A:2301:G:C5 | 1:A:2302:G:N7 | 2.30 | 0.99 |
| 1:A:2142:U:C5 | 1:A:2143:G:N3 | 2.30 | 0.99 |
| 1:A:2150:U:H4' | 1:A:2159:U:H5 | 1.26 | 0.98 |
| 1:A:2168:G:C6 | 1:A:2169:G:C2 | 2.50 | 0.98 |
| 1:A:867:A:C6 | 1:A:889:A:N7 | 2.31 | 0.98 |
| 1:A:1538:G:O6 | 1:A:1539:G:O6 | 1.81 | 0.98 |
| 1:A:2123:G:C2' | 1:A:2124:C:C6 | 2.39 | 0.98 |
| 1:A:1046:G:HO2' | 1:A:1076:A:H8 | 1.04 | 0.98 |
| 1:A:2122:A:H2' | 1:A:2123:G:C8 | 1.99 | 0.98 |
| 1:A:1708:U:N3 | 1:A:1727:G:O6 | 1.97 | 0.98 |
| 1:A:2382:C:H6 | 1:A:2382:C:H5'' | 1.27 | 0.98 |
| 1:A:2114:G:H3' | 1:A:2115:G:C8 | 1.98 | 0.98 |
| 1:A:865:C:N3 | 1:A:866:U:O2 | 1.92 | 0.98 |
| 1:A:2287:A:H5' | 1:A:2287:A:H8 | 1.26 | 0.98 |
| 1:A:2142:U:H3' | 1:A:2143:G:C8 | 1.99 | 0.98 |
| 1:A:2348:C:H2' | 1:A:2349:G:H5' | 1.44 | 0.97 |
| 1:A:2092:U:H2' | 1:A:2093:G:C8 | 1.98 | 0.97 |
| 1:A:1168:G:C2 | 1:A:1169:A:C4 | 2.52 | 0.97 |
| 1:A:1160:A:N3 | 1:A:1161:C:C6 | 2.32 | 0.97 |
| 1:A:867:A:C4 | 1:A:889:A:C5 | 2.52 | 0.97 |
| 1:A:874:C:C6 | 1:A:875:A:C8 | 2.53 | 0.97 |
| 1:A:1702:C:H3' | 1:A:1703:U:H2' | 1.47 | 0.97 |
| 23:W:38:VAL:HG12 | 23:W:39:ARG:O | 1.62 | 0.97 |
| 1:A:2605:G:H3' | 1:A:2606:C:H5' | 1.47 | 0.97 |
| 1:A:1097:G:C6 | 1:A:1098:U:N3 | 2.32 | 0.96 |
| 1:A:1702:C:H5'' | 1:A:1703:U:C3' | 1.94 | 0.96 |
| 1:A:887:C:C2' | 1:A:888:A:H8 | 1.75 | 0.96 |
| 1:A:2147:C:H2' | 1:A:2148:C:C5 | 2.01 | 0.96 |
| 1:A:841:C:C6 | 1:A:841:C:H5'' | 2.00 | 0.96 |
| 1:A:1041:G:H5'' | 1:A:1042:C:OP2 | 1.66 | 0.96 |
| 1:A:1093:A:C2' | 1:A:1094:C:C6 | 2.47 | 0.96 |
| 1:A:2173:G:C5 | 1:A:2174:C:C5 | 2.54 | 0.96 |
| 1:A:1160:A:C4 | 1:A:1161:C:C6 | 2.54 | 0.95 |
| 1:A:869:G:O6 | 1:A:886:C:N4 | 1.99 | 0.95 |
| 1:A:1729:U:C5 | 1:A:1730:C:N1 | 2.33 | 0.95 |
| 1:A:2087:G:C5 | 1:A:2177:G:C6 | 2.54 | 0.95 |
| 1:A:2092:U:H2' | 1:A:2093:G:H8 | 1.30 | 0.95 |
| 1:A:2123:G:C2 | 1:A:2124:C:N3 | 2.35 | 0.95 |
| 1:A:2115:G:H22 | 1:A:2148:C:H42 | 1.10 | 0.95 |
| 1:A:1097:G:H2' | 1:A:1098:U:H5' | 1.46 | 0.95 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2116:C:O2 | 1:A:2119:U:O2' | 1.85 | 0.95 |
| 1:A:2121:A:C6 | 1:A:2145:A:N7 | 2.35 | 0.95 |
| 1:A:2088:A:C2 | 1:A:2089:G:C4 | 2.55 | 0.95 |
| 1:A:2475:G:H2' | 1:A:2476:U:H5' | 1.49 | 0.95 |
| 1:A:865:C:C2 | 1:A:866:U:C2 | 2.54 | 0.95 |
| 1:A:2176:U:O2' | 1:A:2177:G:O4' | 1.85 | 0.95 |
| 1:A:2475:G:C2' | 1:A:2476:U:H5' | 1.97 | 0.94 |
| 1:A:866:U:H2' | 1:A:867:A:H5' | 1.49 | 0.94 |
| 1:A:1040:A:C6 | 1:A:1041:G:C4 | 2.54 | 0.94 |
| 1:A:537:U:O2' | 1:A:540:U:O4 | 1.85 | 0.94 |
| 1:A:2302:G:C2 | 1:A:2303:U:C4 | 2.56 | 0.94 |
| 1:A:2310:G:C2' | 1:A:2311:U:H5' | 1.97 | 0.94 |
| 1:A:871:G:N3 | 1:A:886:C:C6 | 2.36 | 0.94 |
| 1:A:2106:A:O2' | 1:A:2108:G:OP2 | 1.85 | 0.94 |
| 1:A:2122:A:H2' | 1:A:2123:G:H8 | 1.33 | 0.94 |
| 1:A:2153:U:C2 | 1:A:2154:U:N3 | 2.35 | 0.94 |
| 1:A:2277:G:C2' | 1:A:2278:U:H5' | 1.97 | 0.94 |
| 1:A:883:U:C2 | 1:A:884:U:C5 | 2.56 | 0.94 |
| 1:A:2361:C:H6 | 1:A:2361:C:H5'' | 1.29 | 0.94 |
| 1:A:880:G:H3' | 1:A:881:A:H8 | 1.33 | 0.94 |
| 1:A:2119:U:H1' | 1:A:2120:G:H22 | 1.32 | 0.94 |
| 1:A:1162:G:H21 | 1:A:1167:U:H1' | 1.30 | 0.94 |
| 1:A:841:C:O2' | 1:A:842:U:OP1 | 1.85 | 0.93 |
| 1:A:1009:U:HO2' | 1:A:1011:A:H2 | 1.01 | 0.93 |
| 1:A:1729:U:C5 | 1:A:1730:C:C5 | 2.55 | 0.93 |
| 1:A:2148:C:H5' | 1:A:2148:C:H6 | 1.32 | 0.93 |
| 1:A:2149:A:O2' | 1:A:2150:U:O5' | 1.86 | 0.93 |
| 1:A:974:A:O2' | 1:A:975:C:OP1 | 1.85 | 0.93 |
| 1:A:1030:A:C2 | 1:A:1106:G:N1 | 2.36 | 0.93 |
| 1:A:1729:U:H5'' | 1:A:1730:C:C5 | 2.03 | 0.93 |
| 1:A:871:G:C2' | 1:A:872:G:H5'' | 1.97 | 0.93 |
| 1:A:1046:G:N2 | 1:A:1093:A:H62 | 1.66 | 0.93 |
| 1:A:2088:A:C2 | 1:A:2089:G:C8 | 2.55 | 0.93 |
| 1:A:2110:G:C2 | 1:A:2163:A:C2 | 2.57 | 0.93 |
| 1:A:2445:G:O2' | 1:A:2447:U:O4 | 1.85 | 0.93 |
| 1:A:868:G:H3' | 1:A:869:G:H8 | 1.33 | 0.93 |
| 1:A:2105:U:O2' | 1:A:2106:A:OP2 | 1.85 | 0.93 |
| 1:A:2172:U:H2' | 1:A:2173:G:H8 | 1.31 | 0.93 |
| 1:A:2168:G:H8 | 1:A:2169:G:C1' | 1.78 | 0.92 |
| 1:A:535:C:H2' | 1:A:536:U:C5' | 2.00 | 0.92 |
| 1:A:2142:U:H5 | 1:A:2143:G:C5 | 1.86 | 0.92 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2147:C:O2 | 1:A:2148:C:N4 | 2.02 | 0.92 |
| 1:A:1009:U:C2' | 1:A:1010:A:H5'' | 1.98 | 0.92 |
| 1:A:2847:G:H2' | 1:A:2848:G:H5' | 1.51 | 0.92 |
| 1:A:2119:U:C1' | 1:A:2120:G:H21 | 1.65 | 0.92 |
| 1:A:1701:G:N7 | 1:A:1702:C:H5 | 1.66 | 0.92 |
| 1:A:886:C:C5 | 1:A:887:C:C4 | 2.57 | 0.91 |
| 1:A:2604:U:O2' | 1:A:2605:G:OP1 | 1.88 | 0.91 |
| 1:A:2108:G:H2' | 1:A:2109:U:C5 | 2.05 | 0.91 |
| 1:A:2153:U:O4 | 1:A:2158:A:C5 | 2.23 | 0.91 |
| 1:A:971:A:H8 | 1:A:2014:G:H21 | 1.19 | 0.91 |
| 1:A:2093:G:C4 | 1:A:2094:C:H1' | 2.06 | 0.91 |
| 1:A:1166:G:N1 | 1:A:1167:U:C4 | 2.38 | 0.91 |
| 1:A:1732:G:O2' | 1:A:1733:G:O4' | 1.88 | 0.91 |
| 23:W:38:VAL:CG1 | 23:W:39:ARG:O | 2.19 | 0.91 |
| 1:A:1725:A:O2' | 1:A:1726:A:C2 | 2.24 | 0.90 |
| 1:A:890:A:C2 | 1:A:891:C:N1 | 2.39 | 0.90 |
| 1:A:2115:G:N7 | 1:A:2116:C:N4 | 2.19 | 0.90 |
| 1:A:2118:U:H5'' | 1:A:2119:U:H5' | 1.53 | 0.90 |
| 1:A:868:G:H3' | 1:A:869:G:C8 | 2.06 | 0.90 |
| 1:A:1729:U:C5 | 1:A:1730:C:N3 | 2.34 | 0.90 |
| 1:A:1729:U:H6 | 1:A:1730:C:C5 | 1.74 | 0.90 |
| 1:A:2301:G:C2 | 1:A:2302:G:C4 | 2.60 | 0.90 |
| 1:A:539:U:H3' | 1:A:540:U:C5' | 2.02 | 0.90 |
| 1:A:2103:G:N2 | 1:A:2152:C:O2 | 2.04 | 0.90 |
| 1:A:2153:U:N3 | 1:A:2154:U:N3 | 2.09 | 0.90 |
| 1:A:1702:C:C5' | 1:A:1703:U:H3' | 2.00 | 0.90 |
| 1:A:537:U:O2' | 1:A:538:G:O5' | 1.88 | 0.90 |
| 1:A:1160:A:C2 | 1:A:1161:C:N1 | 2.39 | 0.90 |
| 1:A:2085:U:C4 | 1:A:2086:U:C5 | 2.59 | 0.89 |
| 1:A:2097:G:N2 | 1:A:2167:U:O2 | 2.04 | 0.89 |
| 1:A:2148:C:H5' | 1:A:2148:C:C6 | 2.07 | 0.89 |
| 1:A:889:A:C5 | 1:A:890:A:N7 | 2.39 | 0.89 |
| 1:A:2085:U:O4 | 1:A:2086:U:C4 | 2.26 | 0.89 |
| 1:A:2087:G:C2 | 1:A:2088:A:N9 | 2.39 | 0.89 |
| 1:A:2110:G:C2 | 1:A:2163:A:N3 | 2.40 | 0.89 |
| 1:A:1729:U:H5 | 1:A:1730:C:C4 | 1.84 | 0.89 |
| 1:A:1168:G:C2 | 1:A:1169:A:N9 | 2.40 | 0.89 |
| 1:A:2134:A:O5' | 1:A:2135:G:H5'' | 1.72 | 0.89 |
| 1:A:871:G:N3 | 1:A:885:A:C2 | 2.35 | 0.88 |
| 1:A:1166:G:C2' | 1:A:1167:U:H5' | 2.02 | 0.88 |
| 1:A:2121:A:C1' | 1:A:2145:A:H5'' | 2.03 | 0.88 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2124:C:H3' | 1:A:2125:G:C8 | 2.07 | 0.88 |
| 1:A:2088:A:C2 | 1:A:2089:G:N7 | 2.41 | 0.88 |
| 1:A:2134:A:P | 1:A:2135:G:H5'' | 2.13 | 0.88 |
| 1:A:2173:G:H2' | 1:A:2174:C:H6 | 0.78 | 0.88 |
| 1:A:1160:A:C2' | 1:A:1161:C:H5' | 2.03 | 0.88 |
| 1:A:2090:C:O2 | 1:A:2173:G:C2 | 2.25 | 0.88 |
| 1:A:2604:U:H2' | 1:A:2605:G:O4' | 1.74 | 0.88 |
| 1:A:2300:C:H5'' | 6:F:88:LYS:HD3 | 1.55 | 0.88 |
| 1:A:2144:G:H4' | 1:A:2145:A:OP1 | 1.74 | 0.88 |
| 1:A:1040:A:N9 | 1:A:1041:G:H8 | 1.68 | 0.88 |
| 1:A:2090:C:O2 | 1:A:2173:G:N2 | 2.06 | 0.88 |
| 1:A:2093:G:C6 | 1:A:2094:C:C2 | 2.62 | 0.88 |
| 1:A:2102:G:O2' | 1:A:2154:U:O2 | 1.92 | 0.88 |
| 1:A:870:G:C8 | 1:A:871:G:O6 | 2.28 | 0.87 |
| 1:A:871:G:C4 | 1:A:886:C:C6 | 2.62 | 0.87 |
| 1:A:1162:G:N2 | 1:A:1168:G:O4' | 2.08 | 0.87 |
| 1:A:1701:G:C8 | 1:A:1702:C:H5 | 1.91 | 0.87 |
| 1:A:1735:U:H6 | 1:A:1735:U:H5'' | 1.39 | 0.87 |
| 1:A:2087:G:C4 | 1:A:2088:A:H8 | 1.86 | 0.87 |
| 1:A:968:G:H2' | 1:A:969:A:H5' | 1.55 | 0.87 |
| 1:A:2111:G:C5 | 1:A:2112:G:N7 | 2.42 | 0.87 |
| 1:A:869:G:N1 | 1:A:887:C:O2 | 2.06 | 0.87 |
| 1:A:2170:C:H2' | 1:A:2171:A:N9 | 1.90 | 0.87 |
| 1:A:2088:A:H2' | 1:A:2089:G:C8 | 2.10 | 0.86 |
| 1:A:2137:U:C6 | 1:A:2138:C:H5 | 1.84 | 0.86 |
| 1:A:2287:A:H2' | 1:A:2288:C:O4' | 1.75 | 0.86 |
| 1:A:1045:G:H2' | 1:A:1046:G:O4' | 1.75 | 0.86 |
| 1:A:1157:G:C2' | 1:A:1158:U:H5' | 2.05 | 0.86 |
| 1:A:2118:U:P | 1:A:2119:U:H5' | 2.15 | 0.86 |
| 1:A:2121:A:C5 | 1:A:2145:A:C8 | 2.63 | 0.86 |
| 1:A:887:C:H2' | 1:A:888:A:H8 | 1.24 | 0.86 |
| 1:A:2098:U:O4 | 1:A:2131:G:H4' | 1.75 | 0.86 |
| 1:A:841:C:C2 | 1:A:842:U:C5 | 2.62 | 0.86 |
| 1:A:876:U:N3 | 1:A:880:G:O6 | 2.07 | 0.86 |
| 1:A:1172:C:O3' | 1:A:1173:G:O5' | 1.85 | 0.86 |
| 1:A:2123:G:N1 | 1:A:2141:G:O6 | 2.08 | 0.86 |
| 1:A:887:C:C3' | 1:A:888:A:H8 | 1.87 | 0.86 |
| 1:A:1701:G:C5 | 1:A:1702:C:C4 | 2.64 | 0.86 |
| 1:A:2287:A:H5' | 1:A:2287:A:C8 | 2.10 | 0.86 |
| 1:A:1072:U:H3' | 1:A:1073:U:H6 | 1.41 | 0.86 |
| 1:A:2087:G:N1 | 1:A:2088:A:C5 | 2.43 | 0.86 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|-----------------|--------------------------|-------------------|
| 1:A:2111:G:N7 | 1:A:2112:G:N7 | 2.23 | 0.86 |
| 1:A:867:A:C2 | 1:A:889:A:N9 | 2.44 | 0.86 |
| 1:A:886:C:C4 | 1:A:887:C:C4 | 2.64 | 0.86 |
| 1:A:914:G:H5' | 1:A:914:G:H8 | 1.39 | 0.86 |
| 1:A:866:U:C2' | 1:A:867:A:H5' | 2.04 | 0.86 |
| 1:A:871:G:C1' | 1:A:886:C:C1' | 2.53 | 0.86 |
| 1:A:1538:G:C6 | 1:A:1539:G:C6 | 2.64 | 0.86 |
| 1:A:2110:G:C6 | 1:A:2163:A:C6 | 2.64 | 0.85 |
| 1:A:2135:G:H5' | 1:A:2135:G:C8 | 2.11 | 0.85 |
| 1:A:1074:A:N1 | 1:A:1075:A:N1 | 2.20 | 0.85 |
| 1:A:1729:U:H3' | 1:A:1730:C:H6 | 1.41 | 0.85 |
| 1:A:867:A:N1 | 1:A:889:A:N9 | 2.25 | 0.85 |
| 1:A:961:G:O2' | 1:A:973:A:C8 | 2.11 | 0.85 |
| 1:A:2604:U:C2' | 1:A:2605:G:H5' | 2.05 | 0.85 |
| 1:A:1166:G:N2 | 1:A:1167:U:C1' | 2.39 | 0.85 |
| 1:A:1161:C:H41 | 1:A:1164:A:C2' | 1.89 | 0.85 |
| 1:A:2122:A:C8 | 1:A:2122:A:H5'' | 2.11 | 0.85 |
| 1:A:1727:G:C8 | 1:A:1728:C:C6 | 2.65 | 0.85 |
| 1:A:2115:G:C5 | 1:A:2116:C:N4 | 2.45 | 0.85 |
| 1:A:2301:G:N1 | 1:A:2302:G:C5 | 2.45 | 0.85 |
| 1:A:2118:U:C5' | 1:A:2119:U:H5' | 2.06 | 0.84 |
| 1:A:886:C:H2' | 1:A:887:C:C1' | 2.06 | 0.84 |
| 1:A:1072:U:H3' | 1:A:1073:U:C6 | 2.12 | 0.84 |
| 1:A:1093:A:H2' | 1:A:1094:C:C1' | 2.07 | 0.84 |
| 1:A:1378:U:C6 | 1:A:1381:U:O4 | 2.30 | 0.84 |
| 1:A:2114:G:N2 | 1:A:2150:U:OP2 | 2.10 | 0.84 |
| 1:A:1168:G:N3 | 1:A:1169:A:N9 | 2.25 | 0.84 |
| 1:A:2090:C:O2' | 1:A:2091:C:H5' | 1.76 | 0.84 |
| 1:A:2142:U:C5 | 1:A:2143:G:C2 | 2.66 | 0.84 |
| 1:A:2151:C:OP1 | 1:A:2151:C:H3' | 1.78 | 0.84 |
| 1:A:2301:G:C4 | 1:A:2302:G:N7 | 2.43 | 0.84 |
| 1:A:2143:G:H1' | 1:A:2145:A:N6 | 1.90 | 0.84 |
| 1:A:2302:G:H2' | 1:A:2303:U:H6 | 1.42 | 0.84 |
| 1:A:961:G:HO2' | 1:A:973:A:H8 | 0.86 | 0.84 |
| 1:A:2605:G:H3' | 1:A:2606:C:C5' | 2.07 | 0.84 |
| 1:A:868:G:N1 | 1:A:869:G:C6 | 2.46 | 0.84 |
| 1:A:1097:G:C5 | 1:A:1098:U:N3 | 2.45 | 0.84 |
| 1:A:2142:U:C6 | 1:A:2143:G:C4 | 2.66 | 0.84 |
| 1:A:1729:U:C4 | 1:A:1730:C:C2 | 2.65 | 0.84 |
| 1:A:868:G:C6 | 1:A:888:A:C2 | 2.66 | 0.83 |
| 1:A:882:C:H2' | 1:A:883:U:O4' | 1.77 | 0.83 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:2092:U:O2' | 1:A:2093:G:H5' | 1.78 | 0.83 |
| 1:A:2445:G:H8 | 1:A:2446:A:H62 | 1.25 | 0.83 |
| 1:A:841:C:N3 | 1:A:842:U:C5 | 2.46 | 0.83 |
| 1:A:869:G:O6 | 1:A:887:C:N3 | 2.11 | 0.83 |
| 1:A:1166:G:N3 | 1:A:1167:U:C6 | 2.46 | 0.83 |
| 4:D:146:ILE:HG21 | 4:D:155:VAL:CG2 | 2.09 | 0.83 |
| 1:A:1097:G:C6 | 1:A:1098:U:C2 | 2.66 | 0.83 |
| 1:A:2097:G:OP2 | 1:A:2097:G:H2' | 1.78 | 0.83 |
| 1:A:867:A:C5 | 1:A:889:A:C5 | 2.67 | 0.83 |
| 1:A:2114:G:C8 | 1:A:2115:G:C5 | 2.67 | 0.83 |
| 1:A:880:G:H3' | 1:A:881:A:C8 | 2.13 | 0.83 |
| 1:A:2134:A:C5' | 1:A:2135:G:H5' | 2.09 | 0.83 |
| 1:A:1010:A:N3 | 1:A:1010:A:H5' | 1.94 | 0.83 |
| 1:A:2127:G:C5 | 1:A:2139:G:O6 | 2.32 | 0.83 |
| 1:A:2110:G:C6 | 1:A:2163:A:N1 | 2.46 | 0.83 |
| 1:A:2148:C:C3' | 1:A:2149:A:H5'' | 2.09 | 0.83 |
| 1:A:2153:U:C2 | 1:A:2154:U:C2 | 2.66 | 0.83 |
| 1:A:2087:G:C5 | 1:A:2177:G:N1 | 2.46 | 0.82 |
| 1:A:2140:C:O2' | 1:A:2141:G:OP2 | 1.96 | 0.82 |
| 1:A:884:U:H5' | 1:A:885:A:N6 | 1.94 | 0.82 |
| 1:A:1097:G:N1 | 1:A:1098:U:C2 | 2.46 | 0.82 |
| 1:A:1097:G:N1 | 1:A:1098:U:O2 | 2.12 | 0.82 |
| 1:A:2087:G:C5 | 1:A:2088:A:C8 | 2.66 | 0.82 |
| 1:A:2119:U:C2 | 1:A:2120:G:N2 | 2.47 | 0.82 |
| 1:A:2604:U:O2' | 1:A:2605:G:H5' | 1.79 | 0.82 |
| 1:A:868:G:C2 | 1:A:869:G:C6 | 2.68 | 0.82 |
| 1:A:1539:G:H2' | 1:A:1540:U:H6 | 1.44 | 0.82 |
| 1:A:2087:G:C5 | 1:A:2088:A:N7 | 2.47 | 0.82 |
| 1:A:879:C:H3' | 1:A:880:G:H8 | 1.39 | 0.82 |
| 1:A:1419:G:O2' | 1:A:1420:A:H5' | 1.79 | 0.82 |
| 1:A:2150:U:H4' | 1:A:2159:U:C5 | 2.12 | 0.82 |
| 1:A:2087:G:N1 | 1:A:2088:A:N7 | 2.27 | 0.82 |
| 1:A:865:C:N3 | 1:A:866:U:N3 | 2.27 | 0.82 |
| 1:A:883:U:H2' | 1:A:884:U:H5' | 1.62 | 0.82 |
| 1:A:2129:A:N3 | 1:A:2130:C:H1' | 1.94 | 0.82 |
| 1:A:871:G:C4 | 1:A:885:A:H2 | 1.96 | 0.82 |
| 1:A:1010:A:O2' | 1:A:1011:A:OP2 | 1.97 | 0.82 |
| 1:A:1378:U:C5 | 1:A:1381:U:C5 | 2.67 | 0.82 |
| 1:A:2141:G:N7 | 1:A:2142:U:C2 | 2.47 | 0.82 |
| 1:A:2142:U:C5 | 1:A:2143:G:C5 | 2.64 | 0.82 |
| 1:A:2114:G:O6 | 1:A:2115:G:N1 | 2.11 | 0.81 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2115:G:C8 | 1:A:2115:G:H5'' | 2.14 | 0.81 |
| 22:V:48:ARG:CZ | 22:V:48:ARG:HB3 | 2.09 | 0.81 |
| 1:A:882:C:C2' | 1:A:883:U:H6 | 1.94 | 0.81 |
| 1:A:889:A:N7 | 1:A:890:A:N7 | 2.28 | 0.81 |
| 1:A:914:G:H2' | 1:A:915:A:C8 | 2.15 | 0.81 |
| 1:A:1379:A:H5'' | 1:A:1380:A:C8 | 2.13 | 0.81 |
| 1:A:2046:A:H5'' | 1:A:2047:A:OP2 | 1.80 | 0.81 |
| 1:A:2127:G:C2' | 1:A:2128:G:H5' | 2.10 | 0.81 |
| 1:A:2147:C:H2' | 1:A:2148:C:H5 | 1.45 | 0.81 |
| 1:A:2847:G:C2' | 1:A:2848:G:H5' | 2.10 | 0.81 |
| 1:A:2108:G:C2 | 1:A:2109:U:C5 | 2.69 | 0.81 |
| 1:A:874:C:C5 | 1:A:875:A:N7 | 2.46 | 0.81 |
| 1:A:2114:G:C1' | 1:A:2150:U:H1' | 2.10 | 0.81 |
| 1:A:882:C:H2' | 1:A:883:U:H6 | 1.46 | 0.81 |
| 1:A:1016:U:O2' | 1:A:1017:A:OP1 | 1.99 | 0.81 |
| 1:A:2119:U:H5'' | 1:A:2121:A:OP2 | 1.79 | 0.81 |
| 1:A:1154:G:H2' | 1:A:1155:G:H5' | 1.63 | 0.81 |
| 1:A:1163:U:H3' | 1:A:1163:U:H6 | 1.44 | 0.81 |
| 1:A:2122:A:N1 | 1:A:2123:G:C5 | 2.47 | 0.81 |
| 26:Z:40:THR:HB | 26:Z:41:PRO:HD2 | 1.61 | 0.81 |
| 1:A:883:U:H2' | 1:A:884:U:C5' | 2.11 | 0.81 |
| 1:A:1097:G:C2' | 1:A:1098:U:H5' | 2.11 | 0.81 |
| 1:A:1168:G:H2' | 1:A:1169:A:H8 | 1.46 | 0.81 |
| 1:A:1163:U:C6 | 1:A:1166:G:C6 | 2.69 | 0.81 |
| 1:A:2122:A:N3 | 1:A:2123:G:N7 | 2.28 | 0.81 |
| 1:A:2127:G:O2' | 1:A:2128:G:H5' | 1.79 | 0.81 |
| 1:A:2128:G:O6 | 1:A:2129:A:N6 | 2.14 | 0.81 |
| 1:A:2277:G:H2' | 1:A:2278:U:H5' | 1.61 | 0.80 |
| 1:A:2173:G:N3 | 1:A:2174:C:C6 | 2.49 | 0.80 |
| 1:A:2087:G:O2' | 1:A:2088:A:H5' | 1.82 | 0.80 |
| 1:A:2091:C:O2' | 1:A:2092:U:H5' | 1.80 | 0.80 |
| 1:A:2126:U:H2' | 1:A:2139:G:N1 | 1.96 | 0.80 |
| 1:A:2173:G:C4 | 1:A:2174:C:C6 | 2.68 | 0.80 |
| 1:A:1046:G:H21 | 1:A:1093:A:H62 | 1.29 | 0.80 |
| 1:A:2605:G:C3' | 1:A:2606:C:H5' | 2.11 | 0.80 |
| 1:A:870:G:C8 | 1:A:871:G:C5 | 2.69 | 0.80 |
| 1:A:2114:G:C6 | 1:A:2115:G:N1 | 2.50 | 0.80 |
| 1:A:1040:A:C4 | 1:A:1041:G:N9 | 2.49 | 0.80 |
| 1:A:880:G:N3 | 1:A:881:A:H1' | 1.97 | 0.80 |
| 1:A:1701:G:H2' | 1:A:1702:C:H6 | 1.47 | 0.80 |
| 1:A:534:A:N1 | 1:A:535:C:C5 | 2.50 | 0.79 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:867:A:C2 | 1:A:889:A:C5 | 2.70 | 0.79 |
| 1:A:874:C:H5 | 1:A:875:A:N7 | 1.79 | 0.79 |
| 1:A:2126:U:H6 | 1:A:2126:U:H3' | 1.47 | 0.79 |
| 1:A:872:G:H5' | 1:A:872:G:H8 | 1.46 | 0.79 |
| 1:A:2114:G:C6 | 1:A:2115:G:C2 | 2.71 | 0.79 |
| 1:A:2087:G:C6 | 1:A:2177:G:C6 | 2.70 | 0.79 |
| 1:A:2148:C:H3' | 1:A:2149:A:C5' | 2.09 | 0.79 |
| 1:A:2301:G:C6 | 1:A:2302:G:N7 | 2.50 | 0.79 |
| 1:A:536:U:O2' | 1:A:537:U:OP1 | 1.99 | 0.79 |
| 1:A:2097:G:H1' | 1:A:2107:G:OP2 | 1.81 | 0.79 |
| 1:A:2164:C:H5'' | 1:A:2165:C:OP2 | 1.82 | 0.79 |
| 1:A:2173:G:C6 | 1:A:2174:C:N4 | 2.51 | 0.79 |
| 1:A:2171:A:H5'' | 1:A:2172:U:OP2 | 1.82 | 0.79 |
| 1:A:1168:G:C4 | 1:A:1169:A:N7 | 2.51 | 0.79 |
| 1:A:2123:G:C1' | 1:A:2124:C:H5 | 1.96 | 0.79 |
| 1:A:2036:G:O2' | 1:A:2037:C:H5' | 1.83 | 0.79 |
| 1:A:2349:G:OP1 | 31:5:39:ARG:NE | 2.15 | 0.79 |
| 1:A:871:G:C1' | 1:A:886:C:O4' | 2.31 | 0.78 |
| 1:A:1378:U:C5 | 1:A:1381:U:H5 | 2.01 | 0.78 |
| 1:A:2035:G:C2' | 1:A:2036:G:H5'' | 2.12 | 0.78 |
| 1:A:873:U:H2' | 1:A:874:C:H5 | 1.44 | 0.78 |
| 1:A:1166:G:N1 | 1:A:1167:U:C5 | 2.52 | 0.78 |
| 1:A:2118:U:H5'' | 1:A:2119:U:C5' | 2.13 | 0.78 |
| 1:A:2148:C:C2' | 1:A:2149:A:H3' | 2.06 | 0.78 |
| 1:A:1093:A:H2' | 1:A:1094:C:C6 | 2.16 | 0.78 |
| 4:D:159:LYS:HG3 | 4:D:160:LYS:H | 1.48 | 0.78 |
| 1:A:83:G:H1 | 1:A:101:U:HO2' | 1.29 | 0.78 |
| 1:A:538:G:P | 1:A:538:G:H8 | 2.07 | 0.78 |
| 1:A:1166:G:O2' | 1:A:1167:U:H5' | 1.83 | 0.78 |
| 1:A:870:G:C8 | 1:A:871:G:C6 | 2.71 | 0.78 |
| 1:A:873:U:H3' | 1:A:875:A:N7 | 1.98 | 0.78 |
| 1:A:1168:G:C5 | 1:A:1169:A:N7 | 2.51 | 0.78 |
| 1:A:2115:G:H22 | 1:A:2148:C:N4 | 1.81 | 0.78 |
| 1:A:2119:U:H3' | 1:A:2119:U:H6 | 1.49 | 0.78 |
| 1:A:1168:G:H2' | 1:A:1169:A:C8 | 2.18 | 0.78 |
| 1:A:1041:G:N3 | 1:A:1041:G:H2' | 1.98 | 0.78 |
| 1:A:2361:C:H6 | 1:A:2361:C:C5' | 1.96 | 0.78 |
| 1:A:2512:G:N3 | 1:A:2513:G:N2 | 2.32 | 0.78 |
| 1:A:1426:A:H62 | 1:A:1542:G:H8 | 1.28 | 0.78 |
| 1:A:2142:U:H5 | 1:A:2143:G:C2 | 1.99 | 0.78 |
| 1:A:2173:G:C4 | 1:A:2174:C:H5 | 1.99 | 0.78 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2122:A:N3 | 1:A:2123:G:C8 | 2.51 | 0.77 |
| 1:A:2302:G:N3 | 1:A:2303:U:C5 | 2.51 | 0.77 |
| 1:A:2111:G:C4 | 1:A:2112:G:C8 | 2.72 | 0.77 |
| 1:A:843:G:O6 | 1:A:912:C:N4 | 2.17 | 0.77 |
| 1:A:2101:A:C2' | 1:A:2102:G:H5' | 2.15 | 0.77 |
| 1:A:867:A:N3 | 1:A:889:A:C4 | 2.52 | 0.77 |
| 1:A:880:G:C4 | 1:A:881:A:C8 | 2.72 | 0.77 |
| 1:A:2090:C:C2 | 1:A:2173:G:N1 | 2.45 | 0.77 |
| 1:A:2107:G:H5'' | 1:A:2108:G:OP2 | 1.85 | 0.77 |
| 1:A:870:G:H4' | 1:A:870:G:OP1 | 1.84 | 0.77 |
| 1:A:1044:A:O2' | 1:A:1045:G:H5' | 1.84 | 0.77 |
| 1:A:2167:U:C5 | 1:A:2168:G:C6 | 2.72 | 0.77 |
| 1:A:872:G:H5' | 1:A:872:G:C8 | 2.20 | 0.77 |
| 1:A:874:C:C5 | 1:A:875:A:N9 | 2.52 | 0.77 |
| 1:A:1701:G:C6 | 1:A:1702:C:C4 | 2.72 | 0.77 |
| 1:A:2111:G:C5 | 1:A:2112:G:C8 | 2.73 | 0.77 |
| 1:A:867:A:C5 | 1:A:868:G:N9 | 2.53 | 0.77 |
| 1:A:2148:C:H2' | 1:A:2149:A:C3' | 2.05 | 0.76 |
| 1:A:2301:G:C2 | 1:A:2302:G:C8 | 2.72 | 0.76 |
| 1:A:2110:G:N2 | 1:A:2163:A:C4 | 2.53 | 0.76 |
| 1:A:1160:A:C5 | 1:A:1161:C:C5 | 2.74 | 0.76 |
| 1:A:2087:G:H2' | 1:A:2088:A:O4' | 1.86 | 0.76 |
| 1:A:2796:A:H5'' | 1:A:2797:G:OP2 | 1.86 | 0.76 |
| 1:A:1168:G:C2' | 1:A:1169:A:H8 | 1.97 | 0.76 |
| 1:A:1017:A:O2' | 1:A:1018:A:OP2 | 2.04 | 0.76 |
| 1:A:2113:A:H4' | 1:A:2114:G:H4' | 1.67 | 0.76 |
| 1:A:2168:G:C5 | 1:A:2169:G:N3 | 2.54 | 0.76 |
| 1:A:2121:A:O2' | 1:A:2122:A:O4' | 2.04 | 0.76 |
| 1:A:2301:G:C2 | 1:A:2302:G:C5 | 2.73 | 0.76 |
| 23:W:32:LYS:O | 23:W:64:ASP:OD1 | 2.04 | 0.76 |
| 1:A:872:G:C6 | 1:A:873:U:H1' | 2.20 | 0.75 |
| 1:A:1040:A:N6 | 1:A:1041:G:C5 | 2.50 | 0.75 |
| 1:A:1046:G:O2' | 1:A:1076:A:H8 | 1.69 | 0.75 |
| 1:A:2286:G:C2' | 1:A:2287:A:H5'' | 2.17 | 0.75 |
| 1:A:881:A:H2' | 1:A:881:A:N3 | 2.02 | 0.75 |
| 1:A:1166:G:H2' | 1:A:1167:U:H5' | 1.69 | 0.75 |
| 1:A:2127:G:N7 | 1:A:2139:G:O6 | 2.19 | 0.75 |
| 1:A:2389:U:N3 | 1:A:2392:G:O6 | 2.19 | 0.75 |
| 1:A:867:A:N7 | 1:A:868:G:N7 | 2.34 | 0.75 |
| 1:A:886:C:H2' | 1:A:887:C:H1' | 1.68 | 0.75 |
| 1:A:2172:U:O2' | 1:A:2173:G:H5' | 1.85 | 0.75 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:1157:G:O2' | 1:A:1158:U:H5' | 1.85 | 0.75 |
| 1:A:2149:A:N3 | 1:A:2150:U:H5 | 1.85 | 0.75 |
| 1:A:1161:C:O2 | 1:A:1162:G:H2' | 1.86 | 0.75 |
| 1:A:1726:A:O2' | 1:A:1727:G:N2 | 2.19 | 0.75 |
| 1:A:1096:A:H5'' | 1:A:1097:G:OP2 | 1.86 | 0.75 |
| 1:A:2129:A:N1 | 1:A:2130:C:C2 | 2.55 | 0.75 |
| 1:A:2146:G:H2' | 1:A:2147:C:O4' | 1.86 | 0.75 |
| 1:A:2168:G:O6 | 1:A:2169:G:N1 | 2.19 | 0.75 |
| 1:A:2118:U:H3' | 1:A:2119:U:C5' | 2.17 | 0.74 |
| 3:C:238:ARG:HH11 | 3:C:238:ARG:HG3 | 1.51 | 0.74 |
| 1:A:841:C:C2 | 1:A:842:U:H5 | 2.00 | 0.74 |
| 1:A:867:A:C3' | 1:A:868:G:H5'' | 2.13 | 0.74 |
| 1:A:867:A:H2' | 1:A:868:G:O4' | 1.87 | 0.74 |
| 1:A:2088:A:H2 | 1:A:2089:G:C4 | 2.04 | 0.74 |
| 1:A:2123:G:N2 | 1:A:2124:C:N3 | 2.35 | 0.74 |
| 1:A:887:C:H3' | 1:A:888:A:H8 | 1.51 | 0.74 |
| 1:A:1168:G:H2' | 1:A:1169:A:O4' | 1.88 | 0.74 |
| 1:A:2382:C:H6 | 1:A:2382:C:C5' | 1.99 | 0.74 |
| 1:A:871:G:C4 | 1:A:886:C:C5 | 2.76 | 0.74 |
| 1:A:1094:C:H5'' | 1:A:1095:U:OP2 | 1.87 | 0.74 |
| 1:A:886:C:C2 | 1:A:887:C:C2 | 2.76 | 0.74 |
| 1:A:2121:A:C2' | 1:A:2122:A:C8 | 2.49 | 0.74 |
| 1:A:2604:U:H2' | 1:A:2605:G:H5' | 1.69 | 0.74 |
| 1:A:1379:A:H4' | 1:A:1380:A:OP2 | 1.87 | 0.74 |
| 1:A:1729:U:C5' | 1:A:1730:C:H5 | 1.96 | 0.74 |
| 1:A:2108:G:H2' | 1:A:2109:U:C6 | 2.22 | 0.74 |
| 1:A:1538:G:C6 | 1:A:1539:G:O6 | 2.41 | 0.74 |
| 1:A:2087:G:C2 | 1:A:2088:A:C4 | 2.76 | 0.74 |
| 1:A:2110:G:N2 | 1:A:2163:A:N3 | 2.35 | 0.74 |
| 1:A:2110:G:N1 | 1:A:2163:A:C6 | 2.56 | 0.74 |
| 1:A:1729:U:H3' | 1:A:1730:C:C6 | 2.23 | 0.73 |
| 1:A:2139:G:O2' | 1:A:2140:C:H4' | 1.88 | 0.73 |
| 1:A:1040:A:H2' | 1:A:1041:G:O4' | 1.88 | 0.73 |
| 1:A:2301:G:C6 | 1:A:2302:G:C5 | 2.76 | 0.73 |
| 1:A:867:A:C5 | 1:A:889:A:N7 | 2.56 | 0.73 |
| 1:A:874:C:C2 | 1:A:882:C:C4 | 2.77 | 0.73 |
| 1:A:1160:A:C2 | 1:A:1168:G:C4 | 2.76 | 0.73 |
| 1:A:1727:G:C8 | 1:A:1728:C:C5 | 2.76 | 0.73 |
| 1:A:1093:A:C8 | 1:A:1094:C:C5 | 2.76 | 0.73 |
| 1:A:1097:G:C5 | 1:A:1098:U:C4 | 2.77 | 0.73 |
| 1:A:1538:G:N1 | 1:A:1539:G:C5 | 2.56 | 0.73 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2085:U:C5 | 1:A:2086:U:C5 | 2.76 | 0.73 |
| 1:A:971:A:H8 | 1:A:2014:G:N2 | 1.84 | 0.73 |
| 1:A:1539:G:H2' | 1:A:1540:U:C6 | 2.23 | 0.73 |
| 1:A:2286:G:H2' | 1:A:2287:A:H5'' | 1.71 | 0.73 |
| 1:A:2301:G:H2' | 1:A:2302:G:H8 | 1.53 | 0.73 |
| 1:A:882:C:H3' | 1:A:883:U:C6 | 2.24 | 0.73 |
| 1:A:2115:G:N2 | 1:A:2148:C:H42 | 1.86 | 0.73 |
| 1:A:2126:U:C2' | 1:A:2139:G:H1 | 1.95 | 0.73 |
| 1:A:2170:C:H2' | 1:A:2171:A:C8 | 2.24 | 0.73 |
| 1:A:2301:G:H5'' | 6:F:35:THR:OG1 | 1.88 | 0.73 |
| 1:A:2351:C:O2' | 1:A:2352:G:H5' | 1.88 | 0.73 |
| 1:A:12:G:H2' | 1:A:12:G:N3 | 2.02 | 0.72 |
| 1:A:887:C:C6 | 1:A:888:A:N7 | 2.56 | 0.72 |
| 1:A:1168:G:C2 | 1:A:1169:A:C8 | 2.77 | 0.72 |
| 1:A:1539:G:O2' | 1:A:1540:U:O5' | 2.06 | 0.72 |
| 1:A:2114:G:C8 | 1:A:2115:G:N7 | 2.57 | 0.72 |
| 1:A:2172:U:O2' | 1:A:2173:G:O4' | 2.05 | 0.72 |
| 1:A:2135:G:C2 | 1:A:2136:U:C6 | 2.78 | 0.72 |
| 1:A:2302:G:C4 | 1:A:2303:U:C5 | 2.77 | 0.72 |
| 1:A:880:G:C2 | 1:A:881:A:H1' | 2.24 | 0.72 |
| 1:A:1011:A:H3' | 1:A:1011:A:H8 | 1.54 | 0.72 |
| 1:A:1160:A:N3 | 1:A:1168:G:C2 | 2.57 | 0.72 |
| 1:A:1166:G:C2 | 1:A:1167:U:C4 | 2.77 | 0.72 |
| 1:A:2121:A:C2' | 1:A:2122:A:O4' | 2.37 | 0.72 |
| 1:A:664:G:O6 | 1:A:796:C:N4 | 2.19 | 0.72 |
| 1:A:2125:G:P | 1:A:2125:G:H8 | 2.12 | 0.72 |
| 1:A:27:G:N2 | 1:A:503:G:O2' | 2.22 | 0.72 |
| 1:A:1009:U:H2' | 1:A:1010:A:C5' | 2.18 | 0.72 |
| 1:A:1421:A:N3 | 1:A:1421:A:H5' | 2.05 | 0.72 |
| 1:A:2173:G:N3 | 1:A:2174:C:C5 | 2.57 | 0.72 |
| 1:A:737:U:O2' | 1:A:738:G:OP1 | 2.08 | 0.72 |
| 1:A:889:A:C6 | 1:A:890:A:C8 | 2.77 | 0.72 |
| 1:A:1701:G:C4 | 1:A:1702:C:C5 | 2.78 | 0.72 |
| 1:A:2088:A:N1 | 1:A:2089:G:C5 | 2.56 | 0.72 |
| 1:A:318:U:C6 | 1:A:1192:A:N1 | 2.50 | 0.72 |
| 1:A:1727:G:H8 | 1:A:1728:C:C5 | 2.08 | 0.72 |
| 1:A:2121:A:O4' | 1:A:2145:A:H5'' | 1.89 | 0.72 |
| 1:A:2137:U:C5 | 1:A:2138:C:C4 | 2.78 | 0.72 |
| 1:A:1160:A:C6 | 1:A:1161:C:C5 | 2.77 | 0.72 |
| 1:A:2110:G:N1 | 1:A:2163:A:C2 | 2.58 | 0.72 |
| 1:A:2115:G:C8 | 1:A:2116:C:N4 | 2.56 | 0.72 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:2445:G:H1' | 1:A:2446:A:N7 | 2.05 | 0.72 |
| 1:A:871:G:H2' | 1:A:872:G:C5' | 2.10 | 0.71 |
| 1:A:1725:A:O2' | 1:A:1726:A:N3 | 2.22 | 0.71 |
| 1:A:2129:A:C2 | 1:A:2130:C:C2 | 2.78 | 0.71 |
| 1:A:2382:C:H5'' | 1:A:2382:C:C6 | 2.19 | 0.71 |
| 1:A:535:C:N3 | 1:A:537:U:C6 | 2.58 | 0.71 |
| 1:A:1161:C:H41 | 1:A:1164:A:H2' | 1.53 | 0.71 |
| 1:A:2140:C:H3' | 1:A:2143:G:O6 | 1.91 | 0.71 |
| 4:D:146:ILE:HG23 | 4:D:159:LYS:HD3 | 1.72 | 0.71 |
| 1:A:2096:U:O2 | 1:A:2168:G:N2 | 2.23 | 0.71 |
| 1:A:2348:C:C2' | 1:A:2349:G:H5' | 2.21 | 0.71 |
| 1:A:1157:G:H2' | 1:A:1158:U:H5' | 1.71 | 0.71 |
| 1:A:867:A:C5 | 1:A:868:G:C8 | 2.79 | 0.71 |
| 1:A:2119:U:H3' | 1:A:2121:A:OP2 | 1.91 | 0.71 |
| 16:P:53:ASN:ND2 | 16:P:56:LEU:O | 2.24 | 0.71 |
| 1:A:1037:G:HO2' | 1:A:1100:G:H1 | 1.38 | 0.71 |
| 1:A:1162:G:H21 | 1:A:1167:U:C1' | 2.02 | 0.71 |
| 1:A:2301:G:C2 | 1:A:2302:G:N9 | 2.59 | 0.71 |
| 1:A:1163:U:C5 | 1:A:1166:G:N1 | 2.44 | 0.71 |
| 1:A:2047:A:O2' | 1:A:2048:G:OP2 | 2.09 | 0.70 |
| 1:A:964:A:H8 | 1:A:980:A:H62 | 1.38 | 0.70 |
| 1:A:2311:U:O2' | 1:A:2312:A:OP1 | 2.08 | 0.70 |
| 1:A:1097:G:C2 | 1:A:1098:U:C2 | 2.79 | 0.70 |
| 1:A:2142:U:H5 | 1:A:2143:G:N3 | 1.80 | 0.70 |
| 1:A:575:G:N7 | 17:Q:6:ARG:NH1 | 2.39 | 0.70 |
| 1:A:868:G:C2 | 1:A:869:G:C5 | 2.80 | 0.70 |
| 1:A:1163:U:H3' | 1:A:1163:U:C6 | 2.26 | 0.70 |
| 1:A:2127:G:H2' | 1:A:2128:G:O4' | 1.92 | 0.70 |
| 1:A:2106:A:O2' | 1:A:2107:G:H5'' | 1.92 | 0.70 |
| 1:A:2168:G:H8 | 1:A:2169:G:O4' | 1.74 | 0.70 |
| 1:A:2104:A:H2' | 1:A:2105:U:H6 | 1.54 | 0.70 |
| 1:A:2114:G:C5 | 1:A:2115:G:C6 | 2.79 | 0.70 |
| 1:A:2123:G:HO2' | 1:A:2124:C:H6 | 1.39 | 0.70 |
| 1:A:2118:U:OP1 | 1:A:2119:U:H4' | 1.92 | 0.70 |
| 1:A:1167:U:O2' | 1:A:1168:G:O5' | 2.09 | 0.70 |
| 1:A:1030:A:N1 | 1:A:1106:G:C6 | 2.61 | 0.69 |
| 1:A:2085:U:O4 | 1:A:2086:U:O4 | 2.09 | 0.69 |
| 1:A:2122:A:C2 | 1:A:2123:G:C4 | 2.79 | 0.69 |
| 1:A:886:C:N3 | 1:A:887:C:N3 | 2.41 | 0.69 |
| 1:A:2110:G:C2 | 1:A:2163:A:C4 | 2.81 | 0.69 |
| 1:A:1160:A:H2' | 1:A:1161:C:H5' | 1.75 | 0.69 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2119:U:H1' | 1:A:2120:G:N2 | 1.91 | 0.69 |
| 1:A:2121:A:H2' | 1:A:2122:A:O4' | 1.92 | 0.69 |
| 1:A:1097:G:H3' | 1:A:1098:U:C5 | 2.27 | 0.69 |
| 1:A:2108:G:H2' | 1:A:2109:U:H5 | 1.58 | 0.69 |
| 1:A:2128:G:C8 | 1:A:2129:A:N7 | 2.60 | 0.69 |
| 1:A:2141:G:C5 | 1:A:2142:U:C2 | 2.81 | 0.69 |
| 1:A:1011:A:H3' | 1:A:1011:A:C8 | 2.27 | 0.69 |
| 1:A:2173:G:C6 | 1:A:2174:C:C4 | 2.81 | 0.69 |
| 1:A:867:A:C2 | 1:A:889:A:N3 | 2.60 | 0.69 |
| 1:A:881:A:O2' | 1:A:882:C:H5' | 1.91 | 0.69 |
| 1:A:2771:C:O2' | 1:A:2772:U:H5' | 1.92 | 0.69 |
| 1:A:87:C:H42 | 1:A:95:A:H61 | 1.40 | 0.69 |
| 1:A:1106:G:O2' | 1:A:1107:C:H5' | 1.92 | 0.69 |
| 1:A:2142:U:H5' | 1:A:2143:G:OP2 | 1.93 | 0.69 |
| 1:A:2149:A:C2 | 1:A:2150:U:H5 | 2.10 | 0.69 |
| 1:A:867:A:C8 | 1:A:868:G:H8 | 2.07 | 0.69 |
| 1:A:1162:G:N2 | 1:A:1167:U:H1' | 2.08 | 0.69 |
| 2:B:50:G:N2 | 2:B:51:A:N7 | 2.41 | 0.69 |
| 1:A:2122:A:H8 | 1:A:2122:A:H5'' | 1.58 | 0.69 |
| 1:A:2128:G:N7 | 1:A:2129:A:N7 | 2.41 | 0.69 |
| 1:A:2172:U:O2' | 1:A:2173:G:C5' | 2.40 | 0.68 |
| 1:A:881:A:C2 | 1:A:882:C:C5 | 2.81 | 0.68 |
| 1:A:1030:A:H2 | 1:A:1106:G:C2 | 2.10 | 0.68 |
| 1:A:1701:G:OP2 | 1:A:1704:A:H4' | 1.93 | 0.68 |
| 1:A:2118:U:P | 1:A:2119:U:H4' | 2.33 | 0.68 |
| 1:A:2361:C:H5'' | 1:A:2361:C:C6 | 2.21 | 0.68 |
| 1:A:2093:G:H2' | 1:A:2094:C:C4' | 2.24 | 0.68 |
| 1:A:2111:G:C5 | 1:A:2112:G:C5 | 2.82 | 0.68 |
| 1:A:318:U:O2' | 1:A:319:G:OP1 | 2.11 | 0.68 |
| 1:A:870:G:C5 | 1:A:871:G:O6 | 2.45 | 0.68 |
| 1:A:1731:U:H5'' | 1:A:1732:G:H5' | 1.76 | 0.68 |
| 1:A:2087:G:C8 | 1:A:2177:G:N1 | 2.61 | 0.68 |
| 1:A:2153:U:C4 | 1:A:2158:A:N7 | 2.61 | 0.68 |
| 1:A:2127:G:P | 1:A:2127:G:H8 | 2.17 | 0.68 |
| 1:A:2808:G:OP1 | 4:D:164:HIS:HE1 | 1.77 | 0.68 |
| 1:A:2111:G:C6 | 1:A:2112:G:C5 | 2.81 | 0.68 |
| 1:A:2512:G:H22 | 1:A:2525:C:H42 | 1.41 | 0.68 |
| 1:A:2101:A:O2' | 1:A:2102:G:C5' | 2.34 | 0.68 |
| 1:A:2129:A:C5 | 1:A:2130:C:C6 | 2.82 | 0.68 |
| 1:A:1075:A:C8 | 1:A:1076:A:N1 | 2.62 | 0.67 |
| 1:A:1741:A:H5' | 1:A:1741:A:N3 | 2.09 | 0.67 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:2108:G:N3 | 1:A:2108:G:H2' | 2.09 | 0.67 |
| 1:A:1154:G:C2' | 1:A:1155:G:H5' | 2.23 | 0.67 |
| 1:A:2141:G:H8 | 1:A:2141:G:H3' | 1.58 | 0.67 |
| 1:A:1701:G:C4 | 1:A:1702:C:C6 | 2.82 | 0.67 |
| 1:A:2110:G:N1 | 1:A:2163:A:C5 | 2.63 | 0.67 |
| 1:A:2135:G:C2 | 1:A:2136:U:C5 | 2.82 | 0.67 |
| 1:A:1378:U:H6 | 1:A:1381:U:O4 | 1.76 | 0.67 |
| 1:A:540:U:H4' | 1:A:541:A:OP2 | 1.93 | 0.67 |
| 1:A:1169:A:H2' | 1:A:1169:A:N3 | 2.10 | 0.67 |
| 1:A:2093:G:H2' | 1:A:2094:C:O4' | 1.94 | 0.67 |
| 1:A:2128:G:C6 | 1:A:2129:A:C6 | 2.82 | 0.67 |
| 1:A:2103:G:N7 | 1:A:2104:A:C6 | 2.63 | 0.67 |
| 1:A:968:G:C2' | 1:A:969:A:H5' | 2.25 | 0.67 |
| 1:A:2114:G:H1' | 1:A:2150:U:H1' | 1.76 | 0.67 |
| 22:V:6:VAL:HG12 | 22:V:7:ASN:N | 2.10 | 0.67 |
| 1:A:867:A:N1 | 1:A:889:A:C4 | 2.63 | 0.67 |
| 1:A:1160:A:N3 | 1:A:1168:G:N2 | 2.43 | 0.67 |
| 1:A:1160:A:O2' | 1:A:1161:C:H5' | 1.93 | 0.67 |
| 1:A:2288:C:N4 | 1:A:2289:C:H41 | 1.93 | 0.67 |
| 1:A:2456:A:N6 | 1:A:2468:G:O2' | 2.27 | 0.67 |
| 1:A:874:C:H5 | 1:A:875:A:C5 | 2.12 | 0.67 |
| 1:A:1161:C:H5 | 1:A:1164:A:HO2' | 1.35 | 0.67 |
| 1:A:1167:U:H2' | 1:A:1168:G:H8 | 1.58 | 0.67 |
| 6:F:108:LEU:HB3 | 27:1:31:PRO:HD3 | 1.77 | 0.67 |
| 1:A:881:A:N3 | 1:A:882:C:H5 | 1.93 | 0.67 |
| 1:A:1072:U:O5' | 1:A:1073:U:H5 | 1.78 | 0.67 |
| 1:A:2115:G:H1' | 1:A:2160:A:N3 | 2.09 | 0.67 |
| 1:A:2121:A:C2' | 1:A:2122:A:C5' | 2.63 | 0.67 |
| 22:V:47:LEU:HD23 | 22:V:47:LEU:O | 1.95 | 0.67 |
| 1:A:885:A:N3 | 1:A:885:A:H2' | 2.10 | 0.66 |
| 1:A:1538:G:C6 | 1:A:1539:G:C5 | 2.82 | 0.66 |
| 1:A:2087:G:N1 | 1:A:2088:A:C8 | 2.64 | 0.66 |
| 1:A:2090:C:N3 | 1:A:2173:G:O6 | 2.27 | 0.66 |
| 1:A:2208:G:H5' | 8:H:96:ARG:HE | 1.60 | 0.66 |
| 1:A:2604:U:C2 | 1:A:2605:G:C8 | 2.83 | 0.66 |
| 7:G:155:GLU:HG2 | 7:G:157:TYR:H | 1.61 | 0.66 |
| 1:A:868:G:H5'' | 1:A:868:G:H8 | 1.60 | 0.66 |
| 1:A:866:U:H4' | 1:A:866:U:OP1 | 1.96 | 0.66 |
| 1:A:871:G:C2 | 1:A:886:C:C5 | 2.83 | 0.66 |
| 1:A:877:C:H3' | 1:A:878:C:H5' | 1.78 | 0.66 |
| 4:D:159:LYS:HG3 | 4:D:160:LYS:N | 2.10 | 0.66 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:E:71:THR:HG22 | 5:E:73:ARG:H | 1.60 | 0.66 |
| 23:W:38:VAL:C | 23:W:39:ARG:O | 2.32 | 0.66 |
| 1:A:2135:G:N1 | 1:A:2136:U:C4 | 2.63 | 0.66 |
| 1:A:867:A:N3 | 1:A:889:A:C5 | 2.63 | 0.66 |
| 1:A:2140:C:H3' | 1:A:2143:G:H1 | 1.61 | 0.66 |
| 17:Q:43:GLY:HA3 | 18:R:75:ILE:HD12 | 1.78 | 0.66 |
| 23:W:39:ARG:O | 23:W:40:LEU:HB2 | 1.94 | 0.66 |
| 1:A:867:A:C6 | 1:A:889:A:C5 | 2.83 | 0.66 |
| 1:A:534:A:H61 | 1:A:538:G:H5'' | 1.61 | 0.66 |
| 1:A:538:G:H2' | 1:A:539:U:H5'' | 1.76 | 0.66 |
| 1:A:538:G:H3' | 1:A:540:U:C4 | 2.31 | 0.65 |
| 1:A:665:A:H4' | 5:E:61:GLN:HE22 | 1.62 | 0.65 |
| 1:A:1075:A:C8 | 1:A:1076:A:C6 | 2.84 | 0.65 |
| 1:A:2119:U:C6 | 1:A:2120:G:N2 | 2.47 | 0.65 |
| 1:A:2140:C:H3' | 1:A:2143:G:C6 | 2.30 | 0.65 |
| 1:A:536:U:H1' | 1:A:537:U:OP2 | 1.97 | 0.65 |
| 1:A:881:A:N3 | 1:A:882:C:C5 | 2.65 | 0.65 |
| 1:A:971:A:C8 | 1:A:2014:G:N2 | 2.56 | 0.65 |
| 1:A:2191:G:OP2 | 3:C:147:LYS:NZ | 2.29 | 0.65 |
| 1:A:872:G:N2 | 1:A:883:U:H1' | 2.11 | 0.65 |
| 1:A:2123:G:O2' | 1:A:2124:C:H6 | 1.78 | 0.65 |
| 1:A:2301:G:N3 | 1:A:2302:G:N9 | 2.44 | 0.65 |
| 1:A:882:C:H2' | 1:A:883:U:C6 | 2.31 | 0.65 |
| 1:A:2168:G:N7 | 1:A:2169:G:N9 | 2.44 | 0.65 |
| 1:A:2436:U:H4' | 1:A:2437:A:OP1 | 1.96 | 0.65 |
| 1:A:882:C:H3' | 1:A:883:U:C5 | 2.32 | 0.65 |
| 1:A:2173:G:C5 | 1:A:2174:C:C4 | 2.83 | 0.65 |
| 1:A:2330:U:H2' | 1:A:2331:U:C6 | 2.30 | 0.65 |
| 1:A:1030:A:H5' | 1:A:1031:G:OP2 | 1.96 | 0.65 |
| 1:A:1166:G:N2 | 1:A:1167:U:N3 | 2.44 | 0.65 |
| 1:A:2352:G:O2' | 1:A:2353:A:C8 | 2.50 | 0.65 |
| 1:A:535:C:C2' | 1:A:536:U:H5' | 2.21 | 0.65 |
| 1:A:871:G:C4 | 1:A:885:A:C2 | 2.82 | 0.65 |
| 1:A:2141:G:N7 | 1:A:2142:U:N3 | 2.44 | 0.65 |
| 1:A:884:U:H5' | 1:A:885:A:C6 | 2.32 | 0.65 |
| 14:N:22:GLN:HE21 | 14:N:71:ARG:H | 1.45 | 0.65 |
| 1:A:890:A:H2 | 1:A:891:C:C2 | 2.12 | 0.65 |
| 1:A:1538:G:N1 | 1:A:1539:G:C6 | 2.64 | 0.65 |
| 1:A:1704:A:C6 | 1:A:2844:U:C2 | 2.85 | 0.65 |
| 1:A:2123:G:N9 | 1:A:2124:C:H5 | 1.94 | 0.65 |
| 1:A:2168:G:C5 | 1:A:2169:G:C2 | 2.84 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------|------------------|--------------------------|-------------------|
| 1:A:2300:C:C2' | 1:A:2301:G:H5' | 2.27 | 0.65 |
| 1:A:2302:G:C2 | 1:A:2303:U:C5 | 2.85 | 0.65 |
| 1:A:871:G:N3 | 1:A:886:C:C5 | 2.65 | 0.64 |
| 1:A:435:C:OP1 | 5:E:43:LYS:NZ | 2.29 | 0.64 |
| 1:A:2087:G:N7 | 1:A:2177:G:N1 | 2.45 | 0.64 |
| 1:A:2091:C:C2' | 1:A:2092:U:H5' | 2.27 | 0.64 |
| 1:A:2120:G:H3' | 1:A:2120:G:N3 | 2.12 | 0.64 |
| 1:A:2147:C:C2' | 1:A:2148:C:H5 | 2.10 | 0.64 |
| 1:A:2168:G:N7 | 1:A:2169:G:H1' | 2.12 | 0.64 |
| 1:A:2407:C:C5 | 31:5:30:HIS:HA | 2.31 | 0.64 |
| 1:A:690:G:HO2' | 1:A:1622:A:H8 | 1.46 | 0.64 |
| 1:A:1253:G:OP1 | 28:2:16:ARG:NH2 | 2.31 | 0.64 |
| 1:A:2118:U:H3' | 1:A:2119:U:H5'' | 1.77 | 0.64 |
| 7:G:3:ARG:HG2 | 7:G:5:ALA:H | 1.63 | 0.64 |
| 1:A:1098:U:C5' | 1:A:1098:U:H6 | 2.10 | 0.64 |
| 1:A:2085:U:C4 | 1:A:2086:U:O4 | 2.51 | 0.64 |
| 1:A:2113:A:H2 | 1:A:2151:C:OP2 | 1.81 | 0.64 |
| 1:A:874:C:C5 | 1:A:875:A:C5 | 2.85 | 0.64 |
| 1:A:1078:A:N6 | 9:I:135:SER:OG | 2.30 | 0.64 |
| 1:A:1700:G:H5' | 1:A:1704:A:H1' | 1.79 | 0.64 |
| 1:A:886:C:N3 | 1:A:887:C:C2 | 2.66 | 0.64 |
| 1:A:1074:A:N6 | 1:A:1075:A:N1 | 2.46 | 0.64 |
| 1:A:1378:U:O2' | 1:A:1380:A:OP2 | 2.14 | 0.64 |
| 1:A:1419:G:C2' | 1:A:1420:A:H5' | 2.28 | 0.64 |
| 1:A:1729:U:C6 | 1:A:1730:C:C4 | 2.72 | 0.64 |
| 1:A:2168:G:C6 | 1:A:2169:G:N2 | 2.58 | 0.64 |
| 1:A:534:A:C2 | 1:A:535:C:C6 | 2.85 | 0.64 |
| 1:A:876:U:H3' | 1:A:879:C:OP2 | 1.98 | 0.64 |
| 1:A:882:C:O2' | 1:A:883:U:H5' | 1.98 | 0.64 |
| 1:A:2141:G:H3' | 1:A:2141:G:C8 | 2.32 | 0.63 |
| 1:A:1030:A:N1 | 1:A:1105:G:C6 | 2.66 | 0.63 |
| 1:A:1030:A:H2' | 1:A:1031:G:O4' | 1.97 | 0.63 |
| 1:A:2122:A:C6 | 1:A:2123:G:C5 | 2.84 | 0.63 |
| 1:A:2123:G:C2' | 1:A:2124:C:H6 | 2.06 | 0.63 |
| 1:A:2153:U:N1 | 1:A:2154:U:N3 | 2.36 | 0.63 |
| 21:U:9:GLU:HG3 | 21:U:21:ARG:HH21 | 1.64 | 0.63 |
| 1:A:1075:A:N7 | 1:A:1076:A:C6 | 2.67 | 0.63 |
| 1:A:2122:A:C2 | 1:A:2123:G:N7 | 2.63 | 0.63 |
| 1:A:2088:A:C2 | 1:A:2089:G:N9 | 2.66 | 0.63 |
| 1:A:2115:G:C2 | 1:A:2120:G:N7 | 2.65 | 0.63 |
| 1:A:538:G:O2' | 1:A:539:U:H5'' | 1.99 | 0.63 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2168:G:C8 | 1:A:2169:G:N9 | 2.65 | 0.63 |
| 1:A:318:U:C5 | 1:A:1192:A:N1 | 2.58 | 0.63 |
| 1:A:873:U:H2' | 1:A:874:C:C6 | 2.32 | 0.63 |
| 1:A:2110:G:N1 | 1:A:2163:A:C4 | 2.67 | 0.63 |
| 1:A:2605:G:H2' | 1:A:2606:C:O4' | 1.98 | 0.63 |
| 1:A:872:G:H8 | 1:A:872:G:C5' | 2.11 | 0.63 |
| 1:A:1251:G:OP1 | 28:2:16:ARG:NH1 | 2.32 | 0.63 |
| 1:A:2104:A:N3 | 1:A:2105:U:H5 | 1.97 | 0.63 |
| 1:A:2134:A:P | 1:A:2135:G:C5' | 2.81 | 0.63 |
| 1:A:2173:G:C2' | 1:A:2174:C:C6 | 2.60 | 0.63 |
| 6:F:65:PRO:HB3 | 6:F:87:VAL:HG13 | 1.80 | 0.63 |
| 1:A:868:G:C8 | 1:A:868:G:H5'' | 2.34 | 0.62 |
| 1:A:871:G:N1 | 1:A:885:A:C2 | 2.65 | 0.62 |
| 22:V:138:CYS:SG | 22:V:169:LYS:NZ | 2.71 | 0.62 |
| 1:A:884:U:O5' | 1:A:884:U:H6 | 1.81 | 0.62 |
| 1:A:1163:U:H5 | 1:A:1166:G:C2 | 2.14 | 0.62 |
| 1:A:2093:G:N3 | 1:A:2094:C:H1' | 2.13 | 0.62 |
| 1:A:2126:U:H3' | 1:A:2126:U:C6 | 2.33 | 0.62 |
| 1:A:2140:C:H3' | 1:A:2143:G:N1 | 2.14 | 0.62 |
| 1:A:2142:U:C6 | 1:A:2142:U:H5'' | 2.34 | 0.62 |
| 4:D:157:LYS:HG2 | 10:J:80:PHE:CE1 | 2.34 | 0.62 |
| 1:A:843:G:O6 | 1:A:912:C:N3 | 2.32 | 0.62 |
| 1:A:1163:U:C5 | 1:A:1166:G:C4 | 2.87 | 0.62 |
| 1:A:2119:U:C6 | 1:A:2120:G:H3' | 2.34 | 0.62 |
| 1:A:2111:G:C8 | 1:A:2112:G:N7 | 2.67 | 0.62 |
| 1:A:538:G:C2' | 1:A:539:U:H5'' | 2.30 | 0.62 |
| 1:A:889:A:C2 | 1:A:890:A:H1' | 2.34 | 0.62 |
| 1:A:1075:A:H2' | 1:A:1076:A:C4 | 2.34 | 0.62 |
| 1:A:2120:G:H4' | 1:A:2121:A:OP1 | 1.99 | 0.62 |
| 1:A:867:A:N9 | 1:A:889:A:C6 | 2.68 | 0.62 |
| 1:A:1352:A:OP1 | 24:X:3:ARG:NH2 | 2.33 | 0.62 |
| 1:A:1378:U:C6 | 1:A:1381:U:C4 | 2.88 | 0.62 |
| 1:A:2088:A:C4 | 1:A:2089:G:C8 | 2.88 | 0.62 |
| 1:A:2090:C:C2' | 1:A:2091:C:H5' | 2.30 | 0.62 |
| 1:A:2137:U:C6 | 1:A:2138:C:C6 | 2.87 | 0.62 |
| 4:D:157:LYS:CD | 10:J:80:PHE:HE1 | 2.12 | 0.62 |
| 1:A:2121:A:H2' | 1:A:2122:A:C4' | 2.29 | 0.62 |
| 1:A:2170:C:H2' | 1:A:2171:A:C1' | 2.29 | 0.62 |
| 1:A:2575:G:C2' | 1:A:2576:A:H5' | 2.29 | 0.62 |
| 1:A:2142:U:C6 | 1:A:2143:G:N9 | 2.68 | 0.61 |
| 1:A:2173:G:N9 | 1:A:2174:C:C5 | 2.65 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2350:U:O2' | 1:A:2351:C:H5' | 1.98 | 0.61 |
| 20:T:86:LEU:HD11 | 20:T:92:LEU:HD23 | 1.81 | 0.61 |
| 1:A:841:C:H5'' | 1:A:841:C:H6 | 1.58 | 0.61 |
| 1:A:2129:A:C6 | 1:A:2130:C:C4 | 2.88 | 0.61 |
| 1:A:2587:A:O2' | 1:A:2588:C:H5' | 2.00 | 0.61 |
| 1:A:2605:G:O3' | 1:A:2606:C:H5' | 2.00 | 0.61 |
| 1:A:2148:C:O2 | 1:A:2149:A:O3' | 2.17 | 0.61 |
| 1:A:2287:A:H8 | 1:A:2287:A:C5' | 2.07 | 0.61 |
| 1:A:2302:G:H2' | 1:A:2303:U:C5 | 2.35 | 0.61 |
| 23:W:31:VAL:C | 23:W:32:LYS:HD3 | 2.21 | 0.61 |
| 1:A:866:U:O2 | 1:A:890:A:N6 | 2.33 | 0.61 |
| 1:A:317:G:H2' | 5:E:162:ASN:OD1 | 2.01 | 0.61 |
| 1:A:1702:C:H5'' | 1:A:1703:U:C2' | 2.31 | 0.61 |
| 1:A:1732:G:O2' | 1:A:1733:G:O5' | 2.17 | 0.61 |
| 1:A:2153:U:C2 | 1:A:2154:U:O2 | 2.53 | 0.61 |
| 1:A:2277:G:O2' | 1:A:2278:U:H5' | 2.00 | 0.61 |
| 1:A:2447:U:H6 | 1:A:2447:U:O5' | 1.82 | 0.61 |
| 1:A:519:A:C2 | 1:A:2030:U:H5'' | 2.36 | 0.61 |
| 6:F:131:GLY:HA2 | 6:F:153:ASP:HA | 1.83 | 0.61 |
| 23:W:38:VAL:HG13 | 23:W:39:ARG:O | 2.00 | 0.61 |
| 1:A:748:G:HO2' | 1:A:1968:A:H8 | 1.48 | 0.61 |
| 1:A:1055:U:O2' | 1:A:1063:A:N6 | 2.34 | 0.61 |
| 1:A:534:A:N1 | 1:A:535:C:C6 | 2.68 | 0.61 |
| 1:A:1072:U:C6 | 1:A:1073:U:C5 | 2.88 | 0.61 |
| 1:A:1157:G:H8 | 1:A:1157:G:O5' | 1.82 | 0.61 |
| 1:A:2119:U:H3' | 1:A:2119:U:C6 | 2.34 | 0.61 |
| 1:A:883:U:N3 | 1:A:884:U:C5 | 2.69 | 0.61 |
| 1:A:1093:A:H2' | 1:A:1094:C:N1 | 2.15 | 0.61 |
| 1:A:1731:U:H5'' | 1:A:1732:G:C5' | 2.31 | 0.61 |
| 1:A:2110:G:O6 | 1:A:2163:A:C6 | 2.54 | 0.61 |
| 1:A:2146:G:C2' | 1:A:2147:C:O4' | 2.49 | 0.61 |
| 18:R:14:VAL:HG23 | 18:R:18:GLU:HG3 | 1.81 | 0.60 |
| 1:A:737:U:HO2' | 1:A:738:G:P | 2.24 | 0.60 |
| 1:A:538:G:O5' | 1:A:538:G:H8 | 1.84 | 0.60 |
| 1:A:866:U:H3' | 1:A:866:U:H6 | 1.65 | 0.60 |
| 1:A:867:A:N3 | 1:A:889:A:C2 | 2.69 | 0.60 |
| 1:A:1098:U:H6 | 1:A:1098:U:O5' | 1.82 | 0.60 |
| 1:A:1270:G:N2 | 1:A:1273:A:OP2 | 2.34 | 0.60 |
| 1:A:2102:G:O2' | 1:A:2153:U:O2 | 2.20 | 0.60 |
| 1:A:2115:G:H5' | 1:A:2116:C:OP2 | 2.01 | 0.60 |
| 1:A:2167:U:C4 | 1:A:2168:G:N1 | 2.70 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2295:G:O2' | 1:A:2297:A:OP2 | 2.20 | 0.60 |
| 1:A:1047:A:H62 | 1:A:1078:A:H5'' | 1.67 | 0.60 |
| 1:A:868:G:O3' | 1:A:869:G:O4' | 2.19 | 0.60 |
| 1:A:1701:G:H2' | 1:A:1702:C:C6 | 2.34 | 0.60 |
| 1:A:2311:U:HO2' | 1:A:2312:A:P | 2.24 | 0.60 |
| 4:D:146:ILE:HG21 | 4:D:155:VAL:HG22 | 1.83 | 0.60 |
| 1:A:77:U:O2' | 25:Y:6:ARG:NH2 | 2.34 | 0.60 |
| 1:A:1016:U:O4 | 1:A:1124:A:N6 | 2.34 | 0.60 |
| 1:A:1040:A:N3 | 1:A:1041:G:H1' | 2.17 | 0.60 |
| 1:A:2079:U:OP2 | 8:H:27:ARG:NH2 | 2.35 | 0.60 |
| 1:A:2115:G:H5'' | 1:A:2115:G:H8 | 1.63 | 0.60 |
| 1:A:1701:G:C8 | 1:A:1702:C:C6 | 2.90 | 0.60 |
| 1:A:2122:A:C2' | 1:A:2123:G:H8 | 2.09 | 0.60 |
| 1:A:735:G:O2' | 1:A:738:G:O2' | 2.20 | 0.60 |
| 1:A:1040:A:C5 | 1:A:1041:G:C4 | 2.72 | 0.60 |
| 1:A:1494:C:O2' | 1:A:1496:A:N6 | 2.35 | 0.60 |
| 1:A:868:G:C8 | 1:A:868:G:C5' | 2.85 | 0.59 |
| 1:A:874:C:C2 | 1:A:882:C:C5 | 2.89 | 0.59 |
| 1:A:1168:G:N1 | 1:A:1169:A:C5 | 2.70 | 0.59 |
| 1:A:890:A:C2 | 1:A:891:C:C6 | 2.90 | 0.59 |
| 1:A:969:A:H2' | 1:A:972:C:N4 | 2.17 | 0.59 |
| 1:A:1379:A:C5' | 1:A:1379:A:C8 | 2.86 | 0.59 |
| 1:A:2087:G:C4 | 1:A:2177:G:C2 | 2.91 | 0.59 |
| 1:A:2445:G:H8 | 1:A:2446:A:N6 | 1.96 | 0.59 |
| 9:I:94:ASN:H | 9:I:137:GLY:HA2 | 1.66 | 0.59 |
| 1:A:867:A:C4 | 1:A:868:G:C1' | 2.85 | 0.59 |
| 1:A:877:C:H3' | 1:A:878:C:C5' | 2.32 | 0.59 |
| 1:A:1074:A:C6 | 1:A:1075:A:C6 | 2.90 | 0.59 |
| 1:A:748:G:H21 | 1:A:1968:A:H62 | 1.49 | 0.59 |
| 1:A:874:C:C5 | 1:A:875:A:C4 | 2.91 | 0.59 |
| 1:A:2122:A:C8 | 1:A:2122:A:C5' | 2.86 | 0.59 |
| 1:A:2606:C:H6 | 1:A:2606:C:P | 2.25 | 0.59 |
| 4:D:155:VAL:O | 4:D:156:PHE:HB2 | 2.02 | 0.59 |
| 6:F:49:ILE:HD12 | 6:F:52:ASN:HD22 | 1.67 | 0.59 |
| 7:G:59:GLN:HG3 | 7:G:62:ARG:HH22 | 1.65 | 0.59 |
| 27:1:25:ARG:NH2 | 27:1:31:PRO:O | 2.36 | 0.59 |
| 1:A:889:A:N9 | 1:A:890:A:H8 | 1.99 | 0.59 |
| 1:A:1168:G:H5'' | 1:A:1168:G:C8 | 2.37 | 0.59 |
| 1:A:1727:G:N7 | 1:A:1728:C:C4 | 2.70 | 0.59 |
| 4:D:20:GLY:HA2 | 16:P:80:PRO:HG2 | 1.83 | 0.59 |
| 1:A:665:A:HO2' | 5:E:61:GLN:HE21 | 1.50 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1093:A:O5' | 1:A:1094:C:H5 | 1.86 | 0.59 |
| 1:A:2119:U:C6 | 1:A:2119:U:C3' | 2.85 | 0.59 |
| 1:A:2119:U:H5 | 1:A:2121:A:H4' | 1.67 | 0.59 |
| 3:C:238:ARG:HG3 | 3:C:238:ARG:NH1 | 2.13 | 0.59 |
| 1:A:703:G:H21 | 1:A:708:A:H2 | 1.50 | 0.59 |
| 1:A:872:G:C4 | 1:A:885:A:C6 | 2.90 | 0.59 |
| 1:A:882:C:C2' | 1:A:883:U:H5' | 2.32 | 0.59 |
| 1:A:2087:G:C2 | 1:A:2088:A:C5 | 2.88 | 0.59 |
| 1:A:2126:U:C6 | 1:A:2126:U:C3' | 2.86 | 0.59 |
| 6:F:106:ILE:HG13 | 6:F:137:ILE:HG21 | 1.85 | 0.59 |
| 1:A:1072:U:C6 | 1:A:1073:U:C6 | 2.91 | 0.59 |
| 1:A:1093:A:O3' | 1:A:1094:C:H6 | 1.80 | 0.59 |
| 1:A:1098:U:C5' | 1:A:1098:U:C6 | 2.85 | 0.59 |
| 1:A:1160:A:C4 | 1:A:1161:C:C5 | 2.91 | 0.59 |
| 1:A:2091:C:H2' | 1:A:2092:U:O4' | 2.02 | 0.59 |
| 1:A:2142:U:H5 | 1:A:2143:G:C6 | 2.20 | 0.59 |
| 1:A:2329:C:O5' | 1:A:2329:C:H6 | 1.86 | 0.59 |
| 22:V:138:CYS:SG | 22:V:139:LEU:N | 2.75 | 0.59 |
| 1:A:538:G:P | 1:A:538:G:C8 | 2.94 | 0.58 |
| 1:A:841:C:N3 | 1:A:842:U:H5 | 1.96 | 0.58 |
| 1:A:1497:G:N2 | 1:A:1497:G:OP2 | 2.36 | 0.58 |
| 1:A:2089:G:H2' | 1:A:2090:C:H5' | 1.85 | 0.58 |
| 1:A:2286:G:C3' | 1:A:2287:A:H5'' | 2.33 | 0.58 |
| 1:A:1168:G:C2 | 1:A:1169:A:C5 | 2.90 | 0.58 |
| 1:A:1168:G:C6 | 1:A:1169:A:C5 | 2.91 | 0.58 |
| 1:A:2090:C:N3 | 1:A:2173:G:C6 | 2.71 | 0.58 |
| 1:A:2092:U:C2 | 1:A:2093:G:N7 | 2.72 | 0.58 |
| 1:A:2101:A:HO2' | 1:A:2102:G:H5' | 1.62 | 0.58 |
| 15:O:61:GLU:HG3 | 15:O:63:ALA:H | 1.67 | 0.58 |
| 1:A:887:C:H3' | 1:A:888:A:C8 | 2.34 | 0.58 |
| 1:A:1379:A:H5'' | 1:A:1379:A:H8 | 1.69 | 0.58 |
| 1:A:2286:G:H2' | 1:A:2287:A:C5' | 2.34 | 0.58 |
| 1:A:2605:G:H3' | 1:A:2606:C:OP1 | 2.03 | 0.58 |
| 1:A:1163:U:C6 | 1:A:1163:U:C3' | 2.85 | 0.58 |
| 1:A:1729:U:C4 | 1:A:1730:C:N1 | 2.69 | 0.58 |
| 1:A:2087:G:C4 | 1:A:2177:G:N1 | 2.71 | 0.58 |
| 1:A:2134:A:OP1 | 1:A:2135:G:O4' | 2.21 | 0.58 |
| 1:A:2301:G:H2' | 1:A:2302:G:C8 | 2.37 | 0.58 |
| 6:F:36:LEU:HD12 | 6:F:154:ILE:HA | 1.85 | 0.58 |
| 1:A:1424:C:HO2' | 1:A:1503:G:HO2' | 1.47 | 0.58 |
| 1:A:2114:G:C5 | 1:A:2115:G:C5 | 2.91 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2169:G:H2' | 1:A:2170:C:C6 | 2.38 | 0.58 |
| 19:S:28:LYS:HG2 | 19:S:70:LYS:HG2 | 1.85 | 0.58 |
| 1:A:884:U:C5' | 1:A:885:A:C6 | 2.85 | 0.58 |
| 1:A:1030:A:C2 | 1:A:1106:G:C6 | 2.91 | 0.58 |
| 1:A:1163:U:C5 | 1:A:1166:G:C2 | 2.91 | 0.58 |
| 1:A:2093:G:N1 | 1:A:2094:C:O2 | 2.37 | 0.58 |
| 1:A:2407:C:H5' | 29:3:4:LEU:HD11 | 1.86 | 0.58 |
| 4:D:157:LYS:CD | 10:J:80:PHE:CE1 | 2.86 | 0.58 |
| 1:A:2441:G:C2' | 1:A:2442:G:H5' | 2.33 | 0.58 |
| 1:A:2759:U:OP1 | 4:D:169:ARG:NH1 | 2.36 | 0.58 |
| 1:A:2848:G:O2' | 1:A:2849:C:H5' | 2.04 | 0.58 |
| 1:A:2164:C:O5' | 1:A:2164:C:H6 | 1.86 | 0.58 |
| 22:V:6:VAL:HG11 | 22:V:45:LEU:HD22 | 1.84 | 0.58 |
| 1:A:837:C:N4 | 1:A:923:A:O5' | 2.37 | 0.58 |
| 1:A:1160:A:C2 | 1:A:1161:C:C1' | 2.86 | 0.58 |
| 1:A:2115:G:C8 | 1:A:2115:G:C5' | 2.85 | 0.58 |
| 1:A:2167:U:H5 | 1:A:2169:G:C6 | 2.21 | 0.58 |
| 18:R:6:VAL:HG22 | 18:R:11:GLN:HB3 | 1.85 | 0.58 |
| 1:A:867:A:C5 | 1:A:868:G:C4 | 2.91 | 0.58 |
| 1:A:868:G:N1 | 1:A:869:G:O6 | 2.36 | 0.58 |
| 1:A:2119:U:H6 | 1:A:2119:U:C3' | 2.17 | 0.58 |
| 1:A:2168:G:N7 | 1:A:2169:G:C1' | 2.67 | 0.58 |
| 1:A:2578:C:C2' | 1:A:2579:G:H5' | 2.32 | 0.58 |
| 9:I:14:LYS:HB2 | 9:I:17:GLN:HB3 | 1.86 | 0.58 |
| 1:A:881:A:C2 | 1:A:882:C:N4 | 2.72 | 0.57 |
| 1:A:1083:G:O2' | 1:A:1088:A:N6 | 2.37 | 0.57 |
| 1:A:1168:G:N2 | 1:A:1169:A:C4 | 2.72 | 0.57 |
| 1:A:2605:G:O2' | 4:D:155:VAL:HG12 | 2.04 | 0.57 |
| 1:A:2606:C:P | 1:A:2606:C:C6 | 2.96 | 0.57 |
| 1:A:1703:U:N3 | 1:A:1732:G:N7 | 2.50 | 0.57 |
| 1:A:2302:G:N1 | 1:A:2303:U:C4 | 2.72 | 0.57 |
| 1:A:886:C:N4 | 1:A:887:C:H42 | 2.02 | 0.57 |
| 1:A:2085:U:C2 | 1:A:2086:U:C6 | 2.92 | 0.57 |
| 1:A:2123:G:O2' | 1:A:2124:C:C6 | 2.54 | 0.57 |
| 7:G:87:LEU:HG | 7:G:164:TYR:HB3 | 1.86 | 0.57 |
| 11:K:13:ASN:HD21 | 11:K:96:THR:HB | 1.69 | 0.57 |
| 1:A:914:G:N2 | 1:A:915:A:C2 | 2.73 | 0.57 |
| 1:A:1160:A:C4 | 1:A:1168:G:N2 | 2.73 | 0.57 |
| 1:A:1379:A:C5' | 1:A:1380:A:C8 | 2.87 | 0.57 |
| 1:A:1733:G:C6 | 1:A:1734:C:N4 | 2.73 | 0.57 |
| 1:A:2122:A:N6 | 1:A:2142:U:C4 | 2.73 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2128:G:C6 | 1:A:2129:A:N6 | 2.73 | 0.57 |
| 22:V:120:VAL:HA | 22:V:125:GLY:HA3 | 1.86 | 0.57 |
| 1:A:874:C:N4 | 1:A:875:A:C4 | 2.73 | 0.57 |
| 1:A:889:A:C8 | 1:A:890:A:C8 | 2.92 | 0.57 |
| 1:A:974:A:N3 | 1:A:974:A:H2' | 2.18 | 0.57 |
| 1:A:1728:C:C5 | 1:A:1730:C:N4 | 2.73 | 0.57 |
| 1:A:1741:A:O2' | 1:A:1742:A:OP1 | 2.22 | 0.57 |
| 1:A:2604:U:H2' | 1:A:2605:G:C5' | 2.33 | 0.57 |
| 1:A:866:U:C2 | 1:A:890:A:N6 | 2.73 | 0.57 |
| 1:A:883:U:O2 | 1:A:883:U:H2' | 2.05 | 0.57 |
| 1:A:887:C:H2' | 1:A:888:A:N9 | 2.14 | 0.57 |
| 1:A:1072:U:C3' | 1:A:1073:U:H6 | 2.14 | 0.57 |
| 1:A:1701:G:N2 | 1:A:1735:U:H1' | 2.20 | 0.57 |
| 1:A:2125:G:N2 | 1:A:2141:G:C2 | 2.73 | 0.57 |
| 1:A:2129:A:N6 | 1:A:2130:C:C4 | 2.73 | 0.57 |
| 1:A:540:U:OP2 | 1:A:541:A:H5'' | 2.05 | 0.57 |
| 1:A:867:A:H3' | 1:A:868:G:C5' | 2.21 | 0.57 |
| 1:A:2087:G:N2 | 1:A:2088:A:C4 | 2.73 | 0.57 |
| 1:A:2108:G:N2 | 1:A:2109:U:C4 | 2.73 | 0.57 |
| 1:A:2816:C:H5'' | 4:D:57:ARG:HH12 | 1.68 | 0.57 |
| 1:A:886:C:C5 | 1:A:887:C:N4 | 2.73 | 0.57 |
| 1:A:2036:G:C2' | 1:A:2037:C:H5' | 2.35 | 0.57 |
| 1:A:2087:G:C2' | 1:A:2088:A:H5' | 2.35 | 0.57 |
| 1:A:2102:G:N2 | 1:A:2106:A:C6 | 2.73 | 0.57 |
| 1:A:2141:G:C8 | 1:A:2141:G:C3' | 2.88 | 0.57 |
| 1:A:867:A:C8 | 1:A:889:A:N6 | 2.73 | 0.57 |
| 1:A:882:C:C3' | 1:A:883:U:C6 | 2.88 | 0.57 |
| 1:A:1379:A:C5' | 1:A:1379:A:H8 | 2.17 | 0.57 |
| 1:A:1701:G:C6 | 1:A:1702:C:N4 | 2.73 | 0.57 |
| 1:A:2116:C:H5' | 1:A:2119:U:O2' | 2.05 | 0.57 |
| 1:A:2123:G:C1' | 1:A:2124:C:C5 | 2.80 | 0.57 |
| 1:A:2129:A:H2' | 1:A:2130:C:C1' | 2.35 | 0.57 |
| 1:A:2167:U:C2 | 1:A:2168:G:N2 | 2.73 | 0.57 |
| 1:A:2302:G:N2 | 1:A:2303:U:C2 | 2.73 | 0.57 |
| 1:A:2430:C:O2' | 1:A:2431:G:H5' | 2.05 | 0.57 |
| 1:A:872:G:C2 | 1:A:885:A:N6 | 2.73 | 0.56 |
| 1:A:882:C:C2 | 1:A:883:U:H6 | 2.18 | 0.56 |
| 1:A:1088:A:H3' | 1:A:1089:G:H8 | 1.69 | 0.56 |
| 1:A:1095:U:O2 | 1:A:1095:U:H2' | 2.05 | 0.56 |
| 1:A:1160:A:C4 | 1:A:1161:C:H6 | 2.19 | 0.56 |
| 1:A:1701:G:N9 | 1:A:1702:C:C6 | 2.73 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-----------------|--------------------------|-------------------|
| 1:A:868:G:C3' | 1:A:869:G:C8 | 2.85 | 0.56 |
| 1:A:878:C:C4 | 1:A:879:C:N4 | 2.73 | 0.56 |
| 1:A:2135:G:N2 | 1:A:2136:U:C2 | 2.73 | 0.56 |
| 1:A:2137:U:C4 | 1:A:2138:C:N4 | 2.73 | 0.56 |
| 1:A:2171:A:H3' | 1:A:2172:U:C5 | 2.40 | 0.56 |
| 1:A:2176:U:H2' | 1:A:2177:G:H8 | 1.69 | 0.56 |
| 5:E:2:GLN:N | 5:E:12:GLU:OE2 | 2.38 | 0.56 |
| 26:Z:12:LEU:HD12 | 26:Z:20:LYS:HG3 | 1.87 | 0.56 |
| 1:A:868:G:N2 | 1:A:869:G:C2 | 2.73 | 0.56 |
| 1:A:872:G:C4 | 1:A:885:A:N6 | 2.73 | 0.56 |
| 1:A:880:G:C2 | 1:A:881:A:N9 | 2.73 | 0.56 |
| 1:A:2096:U:C2 | 1:A:2168:G:N2 | 2.73 | 0.56 |
| 1:A:2119:U:C5 | 1:A:2121:A:H4' | 2.40 | 0.56 |
| 1:A:2122:A:O2' | 1:A:2146:G:O3' | 2.22 | 0.56 |
| 1:A:2172:U:H2' | 1:A:2173:G:C8 | 2.24 | 0.56 |
| 1:A:867:A:C6 | 1:A:868:G:C4 | 2.93 | 0.56 |
| 1:A:1011:A:C8 | 1:A:1011:A:C3' | 2.86 | 0.56 |
| 1:A:1046:G:N2 | 1:A:1092:C:C5 | 2.73 | 0.56 |
| 1:A:1168:G:H21 | 1:A:1169:A:H1' | 1.70 | 0.56 |
| 1:A:2128:G:N2 | 1:A:2138:C:C2 | 2.74 | 0.56 |
| 1:A:2300:C:O2' | 1:A:2301:G:H5' | 2.05 | 0.56 |
| 1:A:2591:U:H6 | 1:A:2591:U:H5'' | 1.70 | 0.56 |
| 3:C:236:GLU:O | 3:C:237:GLY:O | 2.23 | 0.56 |
| 17:Q:44:GLN:HE21 | 18:R:77:PHE:HB3 | 1.70 | 0.56 |
| 1:A:275:C:O2 | 1:A:356:A:N6 | 2.37 | 0.56 |
| 1:A:534:A:N6 | 1:A:535:C:C5 | 2.72 | 0.56 |
| 1:A:1030:A:C2 | 1:A:1105:G:N2 | 2.73 | 0.56 |
| 1:A:2135:G:N1 | 1:A:2136:U:C5 | 2.73 | 0.56 |
| 1:A:2670:C:O2 | 11:K:70:ARG:NH2 | 2.38 | 0.56 |
| 1:A:525:U:O2' | 17:Q:49:ASP:OD2 | 2.20 | 0.56 |
| 1:A:621:A:H4' | 31:5:15:LYS:HE3 | 1.87 | 0.56 |
| 1:A:865:C:H2' | 1:A:866:U:O4' | 2.05 | 0.56 |
| 1:A:1030:A:C2 | 1:A:1105:G:N1 | 2.72 | 0.56 |
| 1:A:1034:U:O2' | 1:A:1101:A:N1 | 2.37 | 0.56 |
| 6:F:34:ILE:HG22 | 6:F:36:LEU:HB2 | 1.88 | 0.56 |
| 22:V:142:ASP:OD1 | 22:V:142:ASP:N | 2.37 | 0.56 |
| 1:A:126:A:H5' | 30:4:19:ARG:HG3 | 1.88 | 0.56 |
| 1:A:913:A:N6 | 1:A:914:G:O6 | 2.39 | 0.56 |
| 1:A:1016:U:C4 | 1:A:1124:A:N6 | 2.73 | 0.56 |
| 1:A:1073:U:O2 | 1:A:1076:A:N1 | 2.38 | 0.56 |
| 1:A:2019:G:N2 | 1:A:2559:A:OP1 | 2.36 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2144:G:C4' | 1:A:2145:A:OP1 | 2.51 | 0.56 |
| 1:A:2310:G:C2' | 1:A:2311:U:C5' | 2.81 | 0.56 |
| 1:A:162:U:O2' | 1:A:165:A:N6 | 2.39 | 0.56 |
| 1:A:1060:A:H1' | 9:I:10:LYS:HG2 | 1.88 | 0.56 |
| 1:A:1776:A:OP2 | 3:C:221:ARG:NH1 | 2.38 | 0.56 |
| 1:A:2122:A:C5 | 1:A:2123:G:N7 | 2.72 | 0.56 |
| 1:A:2122:A:N1 | 1:A:2145:A:C2 | 2.74 | 0.56 |
| 7:G:18:LYS:HB3 | 7:G:25:SER:HB3 | 1.87 | 0.56 |
| 1:A:2141:G:H3' | 1:A:2141:G:P | 2.46 | 0.56 |
| 1:A:538:G:H2' | 1:A:539:U:C5' | 2.36 | 0.55 |
| 1:A:843:G:O6 | 1:A:912:C:C4 | 2.59 | 0.55 |
| 1:A:878:C:C5 | 1:A:879:C:N4 | 2.73 | 0.55 |
| 1:A:988:C:OP1 | 17:Q:84:LYS:NZ | 2.33 | 0.55 |
| 1:A:1288:A:H2 | 1:A:1616:G:H21 | 1.54 | 0.55 |
| 1:A:1703:U:H6 | 1:A:1703:U:O5' | 1.89 | 0.55 |
| 1:A:2096:U:O2 | 1:A:2096:U:H2' | 2.06 | 0.55 |
| 1:A:2110:G:N1 | 1:A:2163:A:N1 | 2.54 | 0.55 |
| 7:G:23:GLN:HE21 | 7:G:35:LEU:HD13 | 1.71 | 0.55 |
| 13:M:67:ARG:NH1 | 13:M:105:GLU:OE2 | 2.39 | 0.55 |
| 1:A:890:A:N1 | 1:A:891:C:C2 | 2.75 | 0.55 |
| 1:A:1778:A:N6 | 1:A:1815:G:O2' | 2.38 | 0.55 |
| 1:A:2087:G:C6 | 1:A:2088:A:C5 | 2.91 | 0.55 |
| 1:A:2093:G:C2 | 1:A:2095:U:N3 | 2.73 | 0.55 |
| 1:A:2126:U:H6 | 1:A:2126:U:C3' | 2.18 | 0.55 |
| 1:A:2129:A:C6 | 1:A:2130:C:C2 | 2.94 | 0.55 |
| 4:D:146:ILE:CG2 | 4:D:155:VAL:HG22 | 2.36 | 0.55 |
| 1:A:319:G:H5'' | 1:A:320:G:OP2 | 2.06 | 0.55 |
| 1:A:1643:G:OP1 | 1:A:2808:G:N2 | 2.39 | 0.55 |
| 1:A:1702:C:H2' | 1:A:1702:C:O2 | 2.07 | 0.55 |
| 1:A:2094:C:O2 | 1:A:2095:U:O4 | 0.59 | 0.55 |
| 1:A:2301:G:N2 | 1:A:2302:G:C4 | 2.75 | 0.55 |
| 2:B:30:C:O2' | 2:B:52:A:N6 | 2.39 | 0.55 |
| 1:A:558:U:O2' | 1:A:560:G:N2 | 2.40 | 0.55 |
| 1:A:880:G:N2 | 1:A:881:A:H1' | 2.22 | 0.55 |
| 1:A:1161:C:H42 | 1:A:1165:A:P | 2.29 | 0.55 |
| 1:A:1378:U:O2' | 1:A:1379:A:H5' | 2.05 | 0.55 |
| 1:A:2475:G:O2' | 1:A:2476:U:H5' | 2.05 | 0.55 |
| 1:A:295:C:OP2 | 21:U:81:ARG:NH2 | 2.39 | 0.55 |
| 1:A:534:A:N6 | 1:A:538:G:H5'' | 2.21 | 0.55 |
| 1:A:1016:U:HO2' | 1:A:1017:A:P | 2.27 | 0.55 |
| 1:A:2110:G:O6 | 1:A:2163:A:N6 | 2.39 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:273:A:O2' | 1:A:358:A:N6 | 2.38 | 0.55 |
| 1:A:1162:G:O2' | 1:A:1163:U:O4 | 2.23 | 0.55 |
| 1:A:2128:G:C5 | 1:A:2129:A:C5 | 2.95 | 0.55 |
| 1:A:2151:C:H1' | 1:A:2153:U:OP2 | 2.06 | 0.55 |
| 5:E:104:LEU:HD12 | 5:E:199:LEU:HD11 | 1.88 | 0.55 |
| 1:A:914:G:H2' | 1:A:915:A:C1' | 2.37 | 0.55 |
| 1:A:2124:C:H2' | 1:A:2125:G:C1' | 2.37 | 0.55 |
| 1:A:2129:A:H2' | 1:A:2130:C:O4' | 2.05 | 0.55 |
| 1:A:2289:C:C2 | 1:A:2290:G:C8 | 2.95 | 0.55 |
| 1:A:842:U:O2 | 1:A:842:U:O2' | 2.19 | 0.55 |
| 1:A:890:A:N3 | 1:A:891:C:C6 | 2.74 | 0.55 |
| 1:A:1012:G:O6 | 10:J:68:LYS:NZ | 2.33 | 0.55 |
| 1:A:1174:G:HO2' | 1:A:1175:U:H6 | 1.53 | 0.55 |
| 1:A:2106:A:HO2' | 1:A:2107:G:H5'' | 1.70 | 0.55 |
| 1:A:2122:A:C2' | 1:A:2123:G:C8 | 2.83 | 0.55 |
| 6:F:113:ASP:O | 6:F:115:ARG:NH2 | 2.39 | 0.55 |
| 1:A:869:G:C6 | 1:A:887:C:N3 | 2.74 | 0.55 |
| 1:A:1144:C:OP1 | 17:Q:92:ARG:NH2 | 2.39 | 0.55 |
| 1:A:2089:G:H2' | 1:A:2089:G:N3 | 2.21 | 0.55 |
| 1:A:2121:A:N6 | 1:A:2145:A:C5 | 2.73 | 0.55 |
| 1:A:2137:U:H6 | 1:A:2137:U:H3' | 1.72 | 0.55 |
| 9:I:129:ILE:HA | 9:I:132:SER:HB2 | 1.89 | 0.55 |
| 1:A:871:G:H1' | 1:A:886:C:C1' | 2.25 | 0.54 |
| 1:A:1030:A:N3 | 1:A:1106:G:C2 | 2.75 | 0.54 |
| 1:A:2124:C:C3' | 1:A:2125:G:C8 | 2.85 | 0.54 |
| 1:A:2162:C:H2' | 1:A:2163:A:C5' | 2.36 | 0.54 |
| 1:A:2167:U:C4 | 1:A:2168:G:C6 | 2.95 | 0.54 |
| 4:D:179:ARG:HB3 | 4:D:188:LEU:HD12 | 1.89 | 0.54 |
| 6:F:162:THR:OG1 | 6:F:164:ASP:OD1 | 2.23 | 0.54 |
| 9:I:16:GLY:H | 9:I:42:PHE:HB3 | 1.71 | 0.54 |
| 1:A:318:U:C6 | 1:A:318:U:H5'' | 2.42 | 0.54 |
| 1:A:865:C:C4 | 1:A:866:U:N3 | 2.75 | 0.54 |
| 1:A:867:A:N6 | 1:A:889:A:C8 | 2.73 | 0.54 |
| 1:A:872:G:C8 | 1:A:872:G:C5' | 2.89 | 0.54 |
| 1:A:876:U:N3 | 1:A:880:G:C6 | 2.67 | 0.54 |
| 1:A:1009:U:C3' | 1:A:1010:A:H5'' | 2.36 | 0.54 |
| 1:A:1746:A:HO2' | 1:A:2700:G:HO2' | 1.55 | 0.54 |
| 1:A:2169:G:H4' | 1:A:2169:G:OP1 | 2.07 | 0.54 |
| 1:A:2612:A:H2' | 1:A:2613:C:O4' | 2.07 | 0.54 |
| 1:A:1786:G:OP1 | 3:C:259:ARG:NH1 | 2.38 | 0.54 |
| 1:A:2113:A:H8 | 1:A:2113:A:O5' | 1.91 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2146:G:O2' | 1:A:2147:C:O4' | 2.24 | 0.54 |
| 1:A:2516:G:OP2 | 7:G:172:LYS:NZ | 2.38 | 0.54 |
| 9:I:21:SER:O | 9:I:25:GLY:N | 2.27 | 0.54 |
| 1:A:268:C:H3' | 1:A:358:A:H5'' | 1.89 | 0.54 |
| 1:A:539:U:O2 | 1:A:539:U:H2' | 2.06 | 0.54 |
| 1:A:874:C:C4 | 1:A:875:A:N9 | 2.76 | 0.54 |
| 1:A:1073:U:O2 | 1:A:1073:U:H2' | 2.08 | 0.54 |
| 1:A:1162:G:H22 | 1:A:1168:G:C4' | 2.20 | 0.54 |
| 1:A:1514:G:N1 | 1:A:1534:A:OP2 | 2.37 | 0.54 |
| 1:A:2094:C:H2' | 1:A:2095:U:C5 | 2.21 | 0.54 |
| 1:A:467:G:N1 | 1:A:470:A:OP2 | 2.39 | 0.54 |
| 1:A:771:A:OP1 | 3:C:217:ARG:NH2 | 2.41 | 0.54 |
| 1:A:876:U:H5'' | 1:A:878:C:OP2 | 2.08 | 0.54 |
| 16:P:53:ASN:HA | 16:P:58:SER:H | 1.73 | 0.54 |
| 1:A:766:G:H4' | 1:A:767:A:H5' | 1.90 | 0.54 |
| 1:A:1045:G:H8 | 1:A:1045:G:O5' | 1.91 | 0.54 |
| 1:A:1168:G:N9 | 1:A:1169:A:C8 | 2.73 | 0.54 |
| 1:A:2124:C:H2' | 1:A:2124:C:O2 | 2.08 | 0.54 |
| 1:A:889:A:C2 | 1:A:890:A:C1' | 2.91 | 0.54 |
| 1:A:1046:G:C2 | 1:A:1093:A:N6 | 2.52 | 0.54 |
| 1:A:2388:U:H2' | 1:A:2388:U:O2 | 2.08 | 0.54 |
| 1:A:2403:C:C2' | 1:A:2404:C:H5' | 2.38 | 0.54 |
| 1:A:1061:G:N7 | 9:I:10:LYS:NZ | 2.49 | 0.54 |
| 1:A:2093:G:C4 | 1:A:2094:C:C1' | 2.85 | 0.54 |
| 1:A:2114:G:H5'' | 1:A:2114:G:H8 | 1.73 | 0.54 |
| 1:A:2362:G:N2 | 1:A:2365:A:OP2 | 2.31 | 0.54 |
| 17:Q:82:GLY:HA2 | 17:Q:118:ALA:HB3 | 1.89 | 0.54 |
| 1:A:843:G:C6 | 1:A:912:C:N3 | 2.75 | 0.54 |
| 1:A:1378:U:C5 | 1:A:1381:U:C4 | 2.96 | 0.54 |
| 1:A:2085:U:N3 | 1:A:2086:U:C5 | 2.75 | 0.54 |
| 1:A:2254:A:H62 | 1:A:2259:U:H5 | 1.55 | 0.54 |
| 1:A:2320:A:H4' | 1:A:2321:A:H5' | 1.89 | 0.54 |
| 1:A:874:C:O2 | 1:A:874:C:H2' | 2.08 | 0.53 |
| 1:A:1045:G:N7 | 1:A:1046:G:C5 | 2.77 | 0.53 |
| 1:A:2093:G:N2 | 1:A:2095:U:N3 | 2.56 | 0.53 |
| 1:A:2097:G:H1' | 1:A:2107:G:P | 2.48 | 0.53 |
| 1:A:2118:U:P | 1:A:2119:U:C5' | 2.94 | 0.53 |
| 1:A:2129:A:C5 | 1:A:2130:C:C5 | 2.96 | 0.53 |
| 1:A:2142:U:H6 | 1:A:2143:G:C8 | 2.26 | 0.53 |
| 1:A:2162:C:C4 | 1:A:2163:A:N7 | 2.76 | 0.53 |
| 1:A:2167:U:H3' | 1:A:2167:U:H6 | 1.72 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:2519:G:N2 | 1:A:2650:G:O2' | 2.41 | 0.53 |
| 1:A:807:C:O2' | 1:A:808:G:H5' | 2.09 | 0.53 |
| 1:A:1093:A:H2' | 1:A:1094:C:H1' | 1.90 | 0.53 |
| 1:A:1170:C:O2 | 1:A:1170:C:O2' | 2.22 | 0.53 |
| 1:A:1701:G:O6 | 1:A:1702:C:N4 | 2.40 | 0.53 |
| 1:A:2150:U:O2 | 1:A:2150:U:H2' | 2.08 | 0.53 |
| 1:A:2286:G:C3' | 1:A:2287:A:C5' | 2.85 | 0.53 |
| 10:J:16:PHE:HB3 | 10:J:140:LEU:HD22 | 1.89 | 0.53 |
| 1:A:1075:A:H2' | 1:A:1076:A:N3 | 2.23 | 0.53 |
| 1:A:1167:U:HO2' | 1:A:1168:G:P | 2.30 | 0.53 |
| 1:A:2127:G:H8 | 1:A:2127:G:O5' | 1.91 | 0.53 |
| 6:F:102:ARG:HE | 6:F:139:PRO:HB3 | 1.73 | 0.53 |
| 11:K:66:LYS:HG3 | 11:K:80:ASP:HA | 1.90 | 0.53 |
| 22:V:6:VAL:HG23 | 22:V:53:LEU:HD11 | 1.90 | 0.53 |
| 1:A:842:U:C4 | 1:A:914:G:N1 | 2.76 | 0.53 |
| 1:A:868:G:N1 | 1:A:888:A:C2 | 2.77 | 0.53 |
| 1:A:1074:A:N1 | 1:A:1075:A:H2 | 1.95 | 0.53 |
| 1:A:2087:G:N7 | 1:A:2177:G:C6 | 2.76 | 0.53 |
| 1:A:2088:A:N1 | 1:A:2089:G:C6 | 2.77 | 0.53 |
| 1:A:2137:U:C5 | 1:A:2138:C:N4 | 2.77 | 0.53 |
| 1:A:2141:G:O6 | 1:A:2142:U:N3 | 2.41 | 0.53 |
| 1:A:2147:C:C2 | 1:A:2148:C:N4 | 2.77 | 0.53 |
| 22:V:48:ARG:HB3 | 22:V:48:ARG:NH1 | 2.23 | 0.53 |
| 30:4:24:THR:OG1 | 30:4:25:LYS:N | 2.41 | 0.53 |
| 1:A:880:G:C2 | 1:A:881:A:C1' | 2.90 | 0.53 |
| 1:A:2081:G:N2 | 8:H:136:ASP:O | 2.42 | 0.53 |
| 1:A:2104:A:C2' | 1:A:2105:U:H6 | 2.20 | 0.53 |
| 1:A:2121:A:C6 | 1:A:2143:G:N3 | 2.74 | 0.53 |
| 1:A:2129:A:C4 | 1:A:2130:C:C6 | 2.97 | 0.53 |
| 1:A:842:U:O2' | 1:A:843:G:O5' | 2.26 | 0.53 |
| 1:A:1160:A:H2' | 1:A:1161:C:O4' | 2.08 | 0.53 |
| 1:A:2102:G:H4' | 1:A:2154:U:H1' | 1.90 | 0.53 |
| 22:V:6:VAL:CG1 | 22:V:7:ASN:N | 2.71 | 0.53 |
| 30:4:24:THR:HG23 | 30:4:27:GLY:H | 1.74 | 0.53 |
| 1:A:2175:U:H2' | 1:A:2175:U:O2 | 2.08 | 0.53 |
| 22:V:6:VAL:CG1 | 22:V:45:LEU:HD22 | 2.39 | 0.53 |
| 1:A:1707:G:C5 | 1:A:1708:U:C5 | 2.97 | 0.53 |
| 1:A:2441:G:H2' | 1:A:2442:G:H5' | 1.91 | 0.53 |
| 1:A:1161:C:H2' | 1:A:1162:G:H3' | 1.91 | 0.53 |
| 1:A:2108:G:C2' | 1:A:2109:U:H5 | 2.20 | 0.53 |
| 1:A:2121:A:H1' | 1:A:2145:A:H5'' | 1.87 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 4:D:146:ILE:CG2 | 4:D:155:VAL:CG2 | 2.85 | 0.53 |
| 22:V:79:ALA:HB3 | 22:V:93:ASP:HB3 | 1.91 | 0.53 |
| 1:A:1726:A:H2' | 1:A:1727:G:N2 | 2.25 | 0.53 |
| 1:A:2103:G:C6 | 1:A:2153:U:C2 | 2.97 | 0.53 |
| 1:A:2113:A:O3' | 1:A:2150:U:O2 | 2.27 | 0.53 |
| 1:A:2148:C:C6 | 1:A:2148:C:C5' | 2.86 | 0.53 |
| 1:A:2173:G:C5 | 1:A:2174:C:N4 | 2.77 | 0.53 |
| 26:Z:7:THR:HB | 26:Z:55:ARG:HB3 | 1.89 | 0.53 |
| 1:A:867:A:C4 | 1:A:868:G:H1' | 2.43 | 0.52 |
| 1:A:1160:A:C2 | 1:A:1161:C:C2 | 2.97 | 0.52 |
| 1:A:2114:G:C8 | 1:A:2115:G:C8 | 2.97 | 0.52 |
| 1:A:2141:G:C6 | 1:A:2142:U:C2 | 2.97 | 0.52 |
| 1:A:2152:C:H3' | 1:A:2152:C:C6 | 2.44 | 0.52 |
| 4:D:149:CYS:SG | 4:D:150:GLN:N | 2.81 | 0.52 |
| 5:E:60:ARG:NH2 | 5:E:62:LYS:O | 2.41 | 0.52 |
| 5:E:78:ARG:O | 5:E:80:GLY:N | 2.43 | 0.52 |
| 1:A:867:A:N7 | 1:A:868:G:C5 | 2.77 | 0.52 |
| 1:A:869:G:C6 | 1:A:886:C:N4 | 2.72 | 0.52 |
| 1:A:1052:G:HO2' | 1:A:1053:G:H8 | 1.57 | 0.52 |
| 1:A:1502:A:H5'' | 1:A:1503:G:OP2 | 2.08 | 0.52 |
| 1:A:2150:U:H3' | 1:A:2152:C:OP1 | 2.10 | 0.52 |
| 1:A:2171:A:H5'' | 1:A:2172:U:P | 2.49 | 0.52 |
| 11:K:64:ARG:HH12 | 16:P:69:VAL:HG21 | 1.74 | 0.52 |
| 1:A:880:G:N3 | 1:A:880:G:H2' | 2.23 | 0.52 |
| 1:A:882:C:C3' | 1:A:883:U:H6 | 2.21 | 0.52 |
| 1:A:2108:G:C2' | 1:A:2109:U:C5 | 2.85 | 0.52 |
| 1:A:2138:C:O2 | 1:A:2138:C:H2' | 2.08 | 0.52 |
| 1:A:2161:C:O5' | 1:A:2161:C:H6 | 1.93 | 0.52 |
| 1:A:2173:G:N9 | 1:A:2174:C:H5 | 2.05 | 0.52 |
| 1:A:2351:C:H2' | 1:A:2352:G:O5' | 2.09 | 0.52 |
| 5:E:59:TRP:O | 5:E:60:ARG:O | 2.27 | 0.52 |
| 11:K:77:ILE:HG12 | 16:P:73:ARG:HD3 | 1.92 | 0.52 |
| 1:A:272:A:H2' | 1:A:273:A:H8 | 1.74 | 0.52 |
| 1:A:872:G:H22 | 1:A:883:U:H1' | 1.74 | 0.52 |
| 1:A:885:A:N3 | 1:A:885:A:C2' | 2.73 | 0.52 |
| 1:A:1037:G:O2' | 1:A:1100:G:N1 | 2.34 | 0.52 |
| 1:A:2141:G:N7 | 1:A:2142:U:C4 | 2.77 | 0.52 |
| 1:A:2143:G:H8 | 1:A:2143:G:O5' | 1.92 | 0.52 |
| 1:A:2146:G:H2' | 1:A:2147:C:H5'' | 1.91 | 0.52 |
| 1:A:2170:C:H3' | 1:A:2171:A:C8 | 2.44 | 0.52 |
| 22:V:116:VAL:HG13 | 22:V:121:LYS:HG3 | 1.92 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:535:C:N4 | 1:A:537:U:C2' | 2.73 | 0.52 |
| 1:A:2129:A:C2 | 1:A:2130:C:H1' | 2.44 | 0.52 |
| 1:A:2142:U:C4 | 1:A:2143:G:C2 | 2.98 | 0.52 |
| 1:A:2170:C:C3' | 1:A:2171:A:C8 | 2.92 | 0.52 |
| 11:K:1:MET:HB2 | 11:K:8:LEU:HD22 | 1.92 | 0.52 |
| 1:A:890:A:N3 | 1:A:890:A:H2' | 2.24 | 0.52 |
| 1:A:1168:G:N3 | 1:A:1169:A:C1' | 2.72 | 0.52 |
| 1:A:2057:A:C2 | 1:A:2429:C:C2 | 2.97 | 0.52 |
| 1:A:2285:A:N6 | 1:A:2286:G:C2 | 2.78 | 0.52 |
| 1:A:883:U:C2 | 1:A:884:U:C6 | 2.98 | 0.52 |
| 1:A:1421:A:N3 | 1:A:1421:A:C5' | 2.73 | 0.52 |
| 1:A:2173:G:C5 | 1:A:2174:C:H5 | 2.20 | 0.52 |
| 1:A:1162:G:H21 | 1:A:1167:U:C2' | 2.23 | 0.52 |
| 1:A:1488:G:OP1 | 3:C:101:ARG:NH2 | 2.42 | 0.52 |
| 1:A:1734:C:HO2' | 1:A:1735:U:C5' | 2.23 | 0.52 |
| 1:A:2094:C:C1' | 1:A:2095:U:O4 | 2.58 | 0.52 |
| 1:A:2106:A:N6 | 1:A:2157:A:N1 | 2.58 | 0.52 |
| 1:A:2114:G:N2 | 1:A:2150:U:P | 2.82 | 0.52 |
| 1:A:2120:G:N3 | 1:A:2120:G:C2' | 2.73 | 0.52 |
| 1:A:2153:U:H3' | 1:A:2154:U:C6 | 2.45 | 0.52 |
| 1:A:2161:C:O2 | 1:A:2161:C:H2' | 2.09 | 0.52 |
| 1:A:2301:G:C4 | 1:A:2302:G:H8 | 2.11 | 0.52 |
| 3:C:100:GLU:OE2 | 3:C:102:ARG:NH2 | 2.43 | 0.52 |
| 1:A:288:A:O2' | 1:A:289:G:O4' | 2.26 | 0.52 |
| 1:A:871:G:N2 | 1:A:885:A:C2 | 2.73 | 0.52 |
| 1:A:1048:G:O2' | 9:I:118:THR:O | 2.27 | 0.52 |
| 1:A:1162:G:N2 | 1:A:1167:U:C2' | 2.73 | 0.52 |
| 1:A:2285:A:H2' | 1:A:2286:G:O4' | 2.10 | 0.52 |
| 1:A:2675:U:O2 | 1:A:2676:U:N3 | 2.42 | 0.52 |
| 5:E:17:THR:OG1 | 5:E:200:GLY:O | 2.27 | 0.52 |
| 1:A:1094:C:O2 | 1:A:1094:C:H2' | 2.09 | 0.52 |
| 1:A:2352:G:O2' | 1:A:2353:A:H8 | 1.93 | 0.52 |
| 1:A:889:A:C8 | 1:A:890:A:N7 | 2.78 | 0.51 |
| 1:A:1166:G:N3 | 1:A:1166:G:H2' | 2.23 | 0.51 |
| 1:A:2087:G:C1' | 1:A:2177:G:N2 | 2.73 | 0.51 |
| 1:A:2120:G:N3 | 1:A:2120:G:C3' | 2.73 | 0.51 |
| 4:D:33:ASN:HB3 | 4:D:51:VAL:HG13 | 1.92 | 0.51 |
| 1:A:1735:U:H6 | 1:A:1735:U:C5' | 2.17 | 0.51 |
| 1:A:2870:U:O4' | 28:2:49:ARG:NH2 | 2.43 | 0.51 |
| 6:F:126:GLY:O | 6:F:158:THR:OG1 | 2.29 | 0.51 |
| 1:A:866:U:H3 | 1:A:890:A:N6 | 2.08 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:880:G:N3 | 1:A:881:A:C1' | 2.73 | 0.51 |
| 1:A:1170:C:OP2 | 1:A:1170:C:H6 | 1.94 | 0.51 |
| 1:A:2096:U:C2 | 1:A:2168:G:C2 | 2.98 | 0.51 |
| 1:A:2172:U:C2' | 1:A:2173:G:H8 | 2.15 | 0.51 |
| 1:A:2451:G:H2' | 1:A:2452:C:O4' | 2.10 | 0.51 |
| 1:A:2604:U:HO2' | 1:A:2605:G:P | 2.23 | 0.51 |
| 14:N:2:ARG:HA | 14:N:5:LYS:HD3 | 1.92 | 0.51 |
| 1:A:737:U:O2' | 1:A:738:G:P | 2.69 | 0.51 |
| 1:A:867:A:N3 | 1:A:889:A:C6 | 2.78 | 0.51 |
| 1:A:1726:A:C2' | 1:A:1727:G:N2 | 2.73 | 0.51 |
| 1:A:2092:U:C2' | 1:A:2093:G:C8 | 2.85 | 0.51 |
| 1:A:2173:G:C8 | 1:A:2174:C:H5 | 2.28 | 0.51 |
| 1:A:2382:C:C5' | 1:A:2382:C:C6 | 2.88 | 0.51 |
| 7:G:6:LYS:O | 7:G:51:ARG:NH1 | 2.43 | 0.51 |
| 22:V:6:VAL:HG11 | 22:V:45:LEU:CD2 | 2.41 | 0.51 |
| 1:A:1087:U:O2' | 1:A:1088:A:O4' | 2.28 | 0.51 |
| 1:A:1096:A:H2' | 1:A:1096:A:N3 | 2.26 | 0.51 |
| 1:A:2147:C:C2' | 1:A:2148:C:C5 | 2.84 | 0.51 |
| 1:A:2301:G:H2' | 1:A:2302:G:O4' | 2.11 | 0.51 |
| 3:C:232:HIS:HE1 | 3:C:246:VAL:H | 1.58 | 0.51 |
| 1:A:871:G:H8 | 1:A:871:G:O5' | 1.93 | 0.51 |
| 1:A:914:G:H2' | 1:A:915:A:N9 | 2.25 | 0.51 |
| 1:A:1199:G:O2' | 1:A:1224:A:N6 | 2.43 | 0.51 |
| 1:A:2118:U:H5'' | 1:A:2119:U:O5' | 2.11 | 0.51 |
| 1:A:703:G:O2' | 1:A:708:A:N6 | 2.35 | 0.51 |
| 1:A:867:A:C3' | 1:A:868:G:C5' | 2.86 | 0.51 |
| 1:A:1463:U:N3 | 1:A:1503:G:C6 | 2.79 | 0.51 |
| 1:A:2036:G:H2' | 1:A:2037:C:C5' | 2.41 | 0.51 |
| 6:F:116:GLY:HA3 | 6:F:176:PRO:HD2 | 1.93 | 0.51 |
| 1:A:1046:G:H21 | 1:A:1093:A:N6 | 2.04 | 0.51 |
| 1:A:1710:A:C2 | 1:A:1726:A:N6 | 2.70 | 0.51 |
| 1:A:1727:G:N7 | 1:A:1728:C:N3 | 2.59 | 0.51 |
| 1:A:2162:C:N3 | 1:A:2163:A:C8 | 2.79 | 0.51 |
| 3:C:69:ARG:HE | 3:C:129:SER:HB2 | 1.76 | 0.51 |
| 29:3:33:LYS:HA | 29:3:44:ILE:HA | 1.93 | 0.51 |
| 1:A:1097:G:H5'' | 1:A:1097:G:C8 | 2.45 | 0.51 |
| 1:A:1708:U:O2 | 1:A:1708:U:H2' | 2.11 | 0.51 |
| 1:A:2300:C:H2' | 1:A:2301:G:H5' | 1.93 | 0.51 |
| 1:A:2432:G:O2' | 1:A:2433:G:H5' | 2.10 | 0.51 |
| 1:A:99:U:H4' | 1:A:100:U:H4' | 1.93 | 0.50 |
| 1:A:1735:U:H5'' | 1:A:1735:U:C6 | 2.32 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2061:U:O2' | 1:A:2584:G:H1' | 2.11 | 0.50 |
| 1:A:2087:G:H1' | 1:A:2177:G:N2 | 2.26 | 0.50 |
| 1:A:2130:C:O2 | 1:A:2130:C:H2' | 2.11 | 0.50 |
| 1:A:2162:C:H2' | 1:A:2163:A:H5'' | 1.93 | 0.50 |
| 1:A:2302:G:N3 | 1:A:2303:U:C6 | 2.79 | 0.50 |
| 1:A:102:G:H4' | 1:A:103:A:H5'' | 1.93 | 0.50 |
| 1:A:1045:G:C8 | 1:A:1046:G:C8 | 2.99 | 0.50 |
| 1:A:2148:C:C2 | 1:A:2149:A:H4' | 2.46 | 0.50 |
| 9:I:101:VAL:HG12 | 9:I:138:LEU:HB3 | 1.93 | 0.50 |
| 11:K:27:GLY:H | 11:K:30:ARG:HG3 | 1.76 | 0.50 |
| 1:A:269:C:H1' | 1:A:271:U:H3 | 1.77 | 0.50 |
| 1:A:873:U:C3' | 1:A:875:A:N7 | 2.73 | 0.50 |
| 1:A:874:C:C4 | 1:A:882:C:N4 | 2.79 | 0.50 |
| 1:A:877:C:O5' | 1:A:878:C:H6 | 1.95 | 0.50 |
| 1:A:1155:G:H2' | 1:A:1156:U:C6 | 2.47 | 0.50 |
| 1:A:2302:G:C2 | 1:A:2303:U:N3 | 2.79 | 0.50 |
| 1:A:1186:U:H1' | 17:Q:4:VAL:HG22 | 1.93 | 0.50 |
| 1:A:2108:G:C4 | 1:A:2109:U:C5 | 2.97 | 0.50 |
| 1:A:2480:U:H2' | 1:A:2481:G:O5' | 2.11 | 0.50 |
| 1:A:887:C:C3' | 1:A:888:A:C8 | 2.76 | 0.50 |
| 1:A:1061:G:N2 | 1:A:1079:A:N1 | 2.59 | 0.50 |
| 1:A:1538:G:C2 | 1:A:1539:G:C5 | 2.99 | 0.50 |
| 1:A:1701:G:H2' | 1:A:1702:C:O5' | 2.11 | 0.50 |
| 1:A:2047:A:HO2' | 1:A:2048:G:P | 2.33 | 0.50 |
| 1:A:2096:U:H3 | 1:A:2168:G:H22 | 1.60 | 0.50 |
| 1:A:2106:A:N6 | 1:A:2157:A:C6 | 2.73 | 0.50 |
| 1:A:2107:G:O5' | 1:A:2107:G:H8 | 1.95 | 0.50 |
| 18:R:58:LYS:NZ | 18:R:102:GLN:OE1 | 2.43 | 0.50 |
| 1:A:1042:C:H2' | 1:A:1043:U:O4' | 2.12 | 0.50 |
| 1:A:1161:C:O2 | 1:A:1161:C:H2' | 2.12 | 0.50 |
| 7:G:87:LEU:HA | 7:G:164:TYR:HA | 1.92 | 0.50 |
| 1:A:866:U:O2' | 1:A:867:A:H5' | 2.10 | 0.50 |
| 1:A:874:C:O5' | 1:A:875:A:H8 | 1.94 | 0.50 |
| 1:A:879:C:H2' | 1:A:879:C:O2 | 2.10 | 0.50 |
| 1:A:883:U:N3 | 1:A:884:U:C4 | 2.80 | 0.50 |
| 1:A:1075:A:C8 | 1:A:1076:A:C2 | 3.00 | 0.50 |
| 1:A:2149:A:N3 | 1:A:2150:U:C5 | 2.73 | 0.50 |
| 1:A:871:G:H8 | 1:A:871:G:OP2 | 1.95 | 0.50 |
| 1:A:2169:G:C2 | 1:A:2170:C:N4 | 2.80 | 0.50 |
| 1:A:2170:C:C2' | 1:A:2171:A:C8 | 2.93 | 0.50 |
| 8:H:121:LEU:HD13 | 8:H:127:PHE:HB2 | 1.93 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1168:G:H8 | 1:A:1168:G:H5'' | 1.77 | 0.50 |
| 1:A:2103:G:N1 | 1:A:2153:U:C2 | 2.80 | 0.50 |
| 1:A:2123:G:N2 | 1:A:2124:C:C2 | 2.80 | 0.50 |
| 1:A:2134:A:C3' | 1:A:2135:G:H5' | 2.42 | 0.50 |
| 1:A:2302:G:N2 | 1:A:2303:U:N3 | 2.60 | 0.50 |
| 3:C:145:GLU:HB2 | 3:C:188:CYS:HB3 | 1.94 | 0.50 |
| 1:A:1159:C:O5' | 1:A:1159:C:H6 | 1.95 | 0.49 |
| 1:A:1422:G:C2' | 1:A:1423:G:H5' | 2.42 | 0.49 |
| 1:A:2171:A:H3' | 1:A:2172:U:C6 | 2.47 | 0.49 |
| 21:U:11:ILE:HD11 | 21:U:79:ALA:HB2 | 1.94 | 0.49 |
| 1:A:535:C:N4 | 1:A:537:U:O2' | 2.46 | 0.49 |
| 1:A:890:A:C2 | 1:A:891:C:C1' | 2.95 | 0.49 |
| 1:A:914:G:H5' | 1:A:914:G:C8 | 2.31 | 0.49 |
| 1:A:2125:G:N2 | 1:A:2126:U:N3 | 2.60 | 0.49 |
| 1:A:2575:G:H2' | 1:A:2576:A:H5' | 1.94 | 0.49 |
| 22:V:78:LYS:HD3 | 22:V:95:LEU:HD22 | 1.94 | 0.49 |
| 1:A:314:A:N3 | 5:E:162:ASN:ND2 | 2.59 | 0.49 |
| 1:A:867:A:C2 | 1:A:868:G:H1' | 2.47 | 0.49 |
| 1:A:874:C:H5'' | 1:A:875:A:O5' | 2.11 | 0.49 |
| 1:A:969:A:H2' | 1:A:972:C:H41 | 1.75 | 0.49 |
| 1:A:1378:U:C5 | 1:A:1381:U:O4 | 2.65 | 0.49 |
| 1:A:2103:G:C6 | 1:A:2152:C:N3 | 2.77 | 0.49 |
| 1:A:2289:C:N3 | 1:A:2290:G:N7 | 2.59 | 0.49 |
| 1:A:2143:G:H8 | 1:A:2143:G:P | 2.35 | 0.49 |
| 11:K:65:THR:HG23 | 11:K:68:GLY:H | 1.77 | 0.49 |
| 22:V:6:VAL:CG1 | 22:V:45:LEU:CD2 | 2.90 | 0.49 |
| 1:A:474:A:O2' | 21:U:55:GLY:O | 2.30 | 0.49 |
| 1:A:2014:G:H8 | 1:A:2014:G:H5'' | 1.78 | 0.49 |
| 1:A:2115:G:H8 | 1:A:2115:G:OP2 | 1.95 | 0.49 |
| 1:A:2125:G:N2 | 1:A:2141:G:N1 | 2.60 | 0.49 |
| 1:A:2294:G:H1' | 1:A:2298:A:H62 | 1.78 | 0.49 |
| 1:A:865:C:N4 | 1:A:866:U:N3 | 2.61 | 0.49 |
| 1:A:867:A:N9 | 1:A:889:A:N6 | 2.60 | 0.49 |
| 1:A:1160:A:C4 | 1:A:1168:G:C2 | 3.00 | 0.49 |
| 1:A:1701:G:H2' | 1:A:1702:C:O4' | 2.12 | 0.49 |
| 1:A:2115:G:H8 | 1:A:2115:G:C5' | 2.24 | 0.49 |
| 1:A:2392:G:O2' | 1:A:2399:A:N6 | 2.45 | 0.49 |
| 6:F:113:ASP:OD1 | 6:F:113:ASP:N | 2.44 | 0.49 |
| 1:A:540:U:O2 | 1:A:540:U:H3' | 2.11 | 0.49 |
| 1:A:867:A:C5 | 1:A:868:G:C1' | 2.96 | 0.49 |
| 1:A:884:U:H4' | 1:A:885:A:H5' | 1.95 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:971:A:H2 | 1:A:972:C:C4 | 2.31 | 0.49 |
| 1:A:1045:G:N2 | 1:A:1095:U:N3 | 2.60 | 0.49 |
| 1:A:1731:U:O2' | 1:A:1732:G:N2 | 2.45 | 0.49 |
| 1:A:2125:G:H8 | 1:A:2125:G:O5' | 1.96 | 0.49 |
| 1:A:2141:G:H2' | 1:A:2142:U:O5' | 2.13 | 0.49 |
| 1:A:2168:G:C8 | 1:A:2169:G:C4 | 2.88 | 0.49 |
| 1:A:2169:G:O2' | 1:A:2170:C:H5' | 2.13 | 0.49 |
| 30:4:12:ARG:HH11 | 30:4:44:VAL:HG12 | 1.78 | 0.49 |
| 1:A:888:A:N3 | 1:A:888:A:H2' | 2.27 | 0.49 |
| 1:A:947:C:N4 | 1:A:2446:A:C8 | 2.81 | 0.49 |
| 1:A:1727:G:C8 | 1:A:1728:C:N1 | 2.81 | 0.49 |
| 1:A:2258:G:OP1 | 23:W:18:SER:OG | 2.31 | 0.49 |
| 1:A:2303:U:O2 | 1:A:2303:U:H2' | 2.12 | 0.49 |
| 1:A:2446:A:H2' | 1:A:2447:U:H5' | 1.95 | 0.49 |
| 14:N:77:GLY:O | 14:N:81:ASN:ND2 | 2.42 | 0.49 |
| 1:A:866:U:N3 | 1:A:890:A:N6 | 2.60 | 0.49 |
| 1:A:874:C:C4 | 1:A:875:A:C4 | 3.01 | 0.49 |
| 1:A:1538:G:C5 | 1:A:1539:G:N7 | 2.81 | 0.49 |
| 1:A:2118:U:O2' | 1:A:2144:G:H1' | 2.13 | 0.49 |
| 1:A:2169:G:N1 | 1:A:2170:C:N4 | 2.60 | 0.49 |
| 22:V:35:GLY:HA3 | 22:V:96:ARG:HB2 | 1.94 | 0.49 |
| 31:5:37:THR:O | 31:5:40:LYS:N | 2.42 | 0.49 |
| 1:A:914:G:H2' | 1:A:915:A:O4' | 2.13 | 0.49 |
| 1:A:1067:A:O2' | 9:I:134:ARG:O | 2.31 | 0.49 |
| 1:A:2089:G:C2' | 1:A:2090:C:H5' | 2.42 | 0.49 |
| 1:A:2122:A:N6 | 1:A:2142:U:N3 | 2.60 | 0.49 |
| 1:A:2361:C:C5' | 1:A:2361:C:C6 | 2.85 | 0.49 |
| 1:A:868:G:N2 | 1:A:869:G:N1 | 2.60 | 0.48 |
| 1:A:872:G:C4 | 1:A:873:U:H1' | 2.43 | 0.48 |
| 1:A:884:U:H4' | 1:A:885:A:C5 | 2.48 | 0.48 |
| 1:A:886:C:N4 | 1:A:887:C:N4 | 2.60 | 0.48 |
| 1:A:1168:G:N2 | 1:A:1169:A:H1' | 2.28 | 0.48 |
| 1:A:1379:A:N7 | 1:A:1380:A:C5 | 2.81 | 0.48 |
| 1:A:1707:G:C2 | 1:A:1729:U:C4 | 3.01 | 0.48 |
| 1:A:1923:A:H2 | 1:A:1930:U:H5 | 1.59 | 0.48 |
| 8:H:5:LEU:HD13 | 8:H:13:GLY:HA2 | 1.95 | 0.48 |
| 1:A:665:A:C4' | 5:E:61:GLN:HE22 | 2.25 | 0.48 |
| 1:A:1044:A:N6 | 1:A:1096:A:N6 | 2.60 | 0.48 |
| 1:A:1093:A:H2' | 1:A:1094:C:O4' | 2.13 | 0.48 |
| 1:A:1160:A:N1 | 1:A:1168:G:C4 | 2.80 | 0.48 |
| 1:A:2110:G:C6 | 1:A:2163:A:C2 | 3.00 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2158:A:H1' | 1:A:2159:U:C2 | 2.48 | 0.48 |
| 1:A:2171:A:H2' | 1:A:2172:U:C6 | 2.47 | 0.48 |
| 8:H:8:LYS:NZ | 8:H:58:ALA:O | 2.43 | 0.48 |
| 1:A:880:G:C5 | 1:A:881:A:C8 | 3.01 | 0.48 |
| 1:A:884:U:C4' | 1:A:885:A:C6 | 2.96 | 0.48 |
| 1:A:2091:C:C4 | 1:A:2092:U:C4 | 3.01 | 0.48 |
| 1:A:2101:A:C2' | 1:A:2102:G:C5' | 2.89 | 0.48 |
| 1:A:2121:A:C6 | 1:A:2143:G:N2 | 2.81 | 0.48 |
| 1:A:2128:G:H3' | 1:A:2129:A:H8 | 1.78 | 0.48 |
| 1:A:2152:C:C6 | 1:A:2152:C:C3' | 2.97 | 0.48 |
| 1:A:2843:G:N2 | 1:A:2846:A:OP2 | 2.43 | 0.48 |
| 24:X:70:ASP:HA | 24:X:73:ALA:HB3 | 1.96 | 0.48 |
| 1:A:77:U:OP1 | 25:Y:52:ARG:NH2 | 2.41 | 0.48 |
| 1:A:886:C:C4 | 1:A:887:C:N4 | 2.82 | 0.48 |
| 1:A:972:C:H5'' | 1:A:973:A:OP1 | 2.13 | 0.48 |
| 1:A:1030:A:N3 | 1:A:1106:G:N2 | 2.61 | 0.48 |
| 1:A:1702:C:OP2 | 1:A:1704:A:H5'' | 2.14 | 0.48 |
| 1:A:2151:C:H4' | 1:A:2152:C:H5 | 1.77 | 0.48 |
| 15:O:36:ILE:HD11 | 15:O:101:ARG:HD2 | 1.94 | 0.48 |
| 24:X:17:ASN:HB3 | 24:X:25:THR:HG23 | 1.94 | 0.48 |
| 1:A:293:A:N6 | 1:A:316:A:O2' | 2.46 | 0.48 |
| 1:A:534:A:C6 | 1:A:535:C:H5 | 2.25 | 0.48 |
| 1:A:1160:A:C5 | 1:A:1161:C:C6 | 3.00 | 0.48 |
| 1:A:2162:C:C2' | 1:A:2163:A:O5' | 2.62 | 0.48 |
| 1:A:2338:G:O2' | 1:A:2353:A:N6 | 2.47 | 0.48 |
| 1:A:2351:C:C2' | 1:A:2352:G:O5' | 2.61 | 0.48 |
| 1:A:871:G:H8 | 1:A:871:G:P | 2.36 | 0.48 |
| 1:A:2123:G:N9 | 1:A:2124:C:C5 | 2.71 | 0.48 |
| 1:A:2125:G:N2 | 1:A:2141:G:C6 | 2.82 | 0.48 |
| 1:A:2604:U:C2' | 1:A:2605:G:C5' | 2.85 | 0.48 |
| 1:A:83:G:N1 | 1:A:101:U:O2' | 2.37 | 0.48 |
| 1:A:886:C:H2' | 1:A:887:C:O4' | 2.13 | 0.48 |
| 1:A:1048:G:H21 | 9:I:128:THR:HG23 | 1.79 | 0.48 |
| 1:A:1744:A:H3' | 1:A:1745:U:H5'' | 1.96 | 0.48 |
| 8:H:82:HIS:HB2 | 8:H:91:GLY:HA2 | 1.96 | 0.48 |
| 23:W:31:VAL:O | 23:W:32:LYS:HD3 | 2.14 | 0.48 |
| 29:3:15:HIS:CE1 | 29:3:37:PRO:HG2 | 2.49 | 0.48 |
| 1:A:1016:U:OP1 | 1:A:1124:A:H2' | 2.13 | 0.48 |
| 1:A:2288:C:N4 | 1:A:2289:C:N4 | 2.60 | 0.48 |
| 4:D:52:THR:HG21 | 4:D:76:ALA:HB1 | 1.96 | 0.48 |
| 9:I:14:LYS:HA | 9:I:54:PRO:HA | 1.95 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 20:T:36:ASP:N | 20:T:36:ASP:OD1 | 2.47 | 0.48 |
| 28:2:10:ARG:HG3 | 28:2:13:ARG:HH21 | 1.79 | 0.48 |
| 1:A:873:U:C2' | 1:A:874:C:C6 | 2.97 | 0.48 |
| 1:A:879:C:H3' | 1:A:880:G:N7 | 2.26 | 0.48 |
| 1:A:2089:G:C3' | 1:A:2090:C:H5' | 2.44 | 0.48 |
| 1:A:2098:U:OP1 | 1:A:2132:C:N4 | 2.46 | 0.48 |
| 1:A:2119:U:C5 | 1:A:2120:G:C3' | 2.97 | 0.48 |
| 1:A:2174:C:O2 | 1:A:2174:C:H2' | 2.14 | 0.48 |
| 1:A:2175:U:C2 | 1:A:2176:U:C5 | 3.02 | 0.48 |
| 3:C:236:GLU:O | 3:C:237:GLY:C | 2.51 | 0.48 |
| 6:F:38:MET:HB3 | 6:F:87:VAL:HB | 1.95 | 0.48 |
| 6:F:104:LEU:HD11 | 6:F:176:PRO:HD3 | 1.95 | 0.48 |
| 7:G:99:LYS:HZ1 | 7:G:104:SER:HB2 | 1.79 | 0.48 |
| 1:A:1072:U:H3' | 1:A:1073:U:C5 | 2.46 | 0.47 |
| 1:A:1083:G:N2 | 1:A:1084:U:O4 | 2.46 | 0.47 |
| 1:A:2048:G:O2' | 1:A:2049:A:OP2 | 2.22 | 0.47 |
| 1:A:2118:U:H2' | 1:A:2121:A:H5'' | 1.95 | 0.47 |
| 1:A:2127:G:P | 1:A:2127:G:C8 | 3.02 | 0.47 |
| 22:V:47:LEU:HD23 | 22:V:47:LEU:C | 2.34 | 0.47 |
| 1:A:867:A:H2' | 1:A:868:G:C4' | 2.44 | 0.47 |
| 1:A:1057:A:H3' | 1:A:1058:G:C8 | 2.49 | 0.47 |
| 1:A:1744:A:C2' | 1:A:1745:U:OP1 | 2.62 | 0.47 |
| 1:A:2114:G:C5 | 1:A:2115:G:N1 | 2.83 | 0.47 |
| 1:A:2129:A:C6 | 1:A:2130:C:N3 | 2.82 | 0.47 |
| 1:A:2135:G:C5' | 1:A:2135:G:C8 | 2.86 | 0.47 |
| 1:A:2152:C:O5' | 1:A:2152:C:H6 | 1.97 | 0.47 |
| 1:A:2604:U:H2' | 1:A:2605:G:C4' | 2.45 | 0.47 |
| 1:A:466:C:O2 | 1:A:470:A:N6 | 2.47 | 0.47 |
| 1:A:973:A:HO2' | 1:A:974:A:P | 2.37 | 0.47 |
| 1:A:2093:G:C2 | 1:A:2094:C:H1' | 2.49 | 0.47 |
| 2:B:71:G:H21 | 2:B:103:A:H62 | 1.61 | 0.47 |
| 16:P:34:LYS:HD3 | 16:P:39:GLN:HG3 | 1.94 | 0.47 |
| 1:A:318:U:C6 | 1:A:318:U:C5' | 2.98 | 0.47 |
| 1:A:841:C:HO2' | 1:A:842:U:P | 2.24 | 0.47 |
| 1:A:1045:G:N7 | 1:A:1046:G:C4 | 2.82 | 0.47 |
| 1:A:2290:G:C2 | 1:A:2291:G:C4 | 3.02 | 0.47 |
| 12:L:79:THR:OG1 | 12:L:111:MET:O | 2.28 | 0.47 |
| 22:V:8:ALA:HB3 | 22:V:68:VAL:HA | 1.96 | 0.47 |
| 22:V:181:ASP:N | 22:V:181:ASP:OD1 | 2.48 | 0.47 |
| 31:5:37:THR:O | 31:5:38:LYS:C | 2.51 | 0.47 |
| 1:A:807:C:O2' | 1:A:829:U:OP1 | 2.33 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:881:A:N3 | 1:A:881:A:C2' | 2.77 | 0.47 |
| 1:A:2604:U:C2 | 1:A:2605:G:H8 | 2.28 | 0.47 |
| 1:A:874:C:O5' | 1:A:874:C:H6 | 1.97 | 0.47 |
| 1:A:1053:G:N2 | 9:I:91:ALA:O | 2.48 | 0.47 |
| 1:A:1788:A:OP2 | 3:C:150:LYS:NZ | 2.47 | 0.47 |
| 1:A:2087:G:N3 | 1:A:2088:A:N9 | 2.56 | 0.47 |
| 1:A:2137:U:H2' | 1:A:2138:C:C6 | 2.50 | 0.47 |
| 1:A:2153:U:N1 | 1:A:2154:U:C2 | 2.83 | 0.47 |
| 8:H:83:ALA:HB2 | 8:H:90:PHE:HB3 | 1.97 | 0.47 |
| 1:A:869:G:N1 | 1:A:887:C:C2 | 2.68 | 0.47 |
| 1:A:871:G:C1' | 1:A:886:C:N1 | 2.78 | 0.47 |
| 1:A:889:A:N9 | 1:A:890:A:C8 | 2.75 | 0.47 |
| 1:A:1097:G:H5'' | 1:A:1097:G:H8 | 1.80 | 0.47 |
| 1:A:1160:A:C2 | 1:A:1161:C:H1' | 2.50 | 0.47 |
| 1:A:1273:A:O2' | 1:A:1275:A:OP2 | 2.31 | 0.47 |
| 1:A:1700:G:H2' | 1:A:1701:G:O5' | 2.15 | 0.47 |
| 1:A:1756:U:O2' | 1:A:1945:C:OP1 | 2.33 | 0.47 |
| 1:A:2094:C:C1' | 1:A:2095:U:C4 | 2.85 | 0.47 |
| 1:A:2118:U:C3' | 1:A:2119:U:C5' | 2.90 | 0.47 |
| 3:C:271:ARG:NH1 | 3:C:272:ARG:O | 2.48 | 0.47 |
| 8:H:2:GLU:N | 8:H:19:VAL:O | 2.48 | 0.47 |
| 9:I:134:ARG:HD3 | 9:I:140:VAL:HG23 | 1.97 | 0.47 |
| 22:V:11:ARG:HB2 | 22:V:44:THR:HG23 | 1.97 | 0.47 |
| 22:V:83:HIS:CD2 | 22:V:86:LYS:H | 2.33 | 0.47 |
| 22:V:150:ASP:N | 22:V:150:ASP:OD1 | 2.43 | 0.47 |
| 1:A:694:G:O2' | 1:A:717:A:N6 | 2.47 | 0.47 |
| 1:A:1097:G:N7 | 1:A:1098:U:C4 | 2.83 | 0.47 |
| 1:A:1727:G:C8 | 1:A:1728:C:C4 | 3.02 | 0.47 |
| 1:A:2087:G:N2 | 1:A:2088:A:N9 | 2.62 | 0.47 |
| 1:A:2114:G:C2 | 1:A:2150:U:P | 3.08 | 0.47 |
| 1:A:2141:G:H3' | 1:A:2141:G:OP1 | 2.14 | 0.47 |
| 1:A:2142:U:H3' | 1:A:2143:G:O4' | 2.15 | 0.47 |
| 1:A:2167:U:C5 | 1:A:2168:G:N1 | 2.82 | 0.47 |
| 1:A:2670:C:OP1 | 16:P:56:LEU:N | 2.47 | 0.47 |
| 5:E:8:ALA:HB1 | 5:E:9:GLN:HG2 | 1.97 | 0.47 |
| 1:A:866:U:C2' | 1:A:867:A:C5' | 2.85 | 0.47 |
| 1:A:866:U:H3' | 1:A:866:U:C6 | 2.49 | 0.47 |
| 1:A:2118:U:O5' | 1:A:2119:U:H5' | 2.15 | 0.47 |
| 1:A:2303:U:C2 | 1:A:2304:C:C5 | 3.03 | 0.47 |
| 22:V:83:HIS:HD2 | 22:V:86:LYS:H | 1.61 | 0.47 |
| 23:W:68:LYS:NZ | 23:W:70:GLU:OE1 | 2.42 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:337:C:N3 | 1:A:338:G:H1' | 2.31 | 0.47 |
| 1:A:877:C:C3' | 1:A:878:C:H5' | 2.44 | 0.47 |
| 1:A:886:C:N4 | 1:A:887:C:N3 | 2.59 | 0.47 |
| 1:A:2129:A:N3 | 1:A:2130:C:C1' | 2.73 | 0.47 |
| 17:Q:85:LYS:HD2 | 17:Q:116:SER:HB3 | 1.95 | 0.47 |
| 1:A:337:C:H2' | 1:A:338:G:H4' | 1.96 | 0.46 |
| 1:A:1093:A:C8 | 1:A:1094:C:C4 | 3.02 | 0.46 |
| 1:A:1105:G:O2' | 1:A:1106:G:H5' | 2.15 | 0.46 |
| 1:A:1845:A:N6 | 1:A:1871:G:O2' | 2.48 | 0.46 |
| 1:A:2301:G:N9 | 1:A:2302:G:C8 | 2.78 | 0.46 |
| 22:V:77:ILE:HA | 22:V:94:PHE:HB3 | 1.97 | 0.46 |
| 1:A:1067:A:H4' | 9:I:94:ASN:HB2 | 1.97 | 0.46 |
| 11:K:80:ASP:OD1 | 11:K:80:ASP:N | 2.48 | 0.46 |
| 1:A:1160:A:C6 | 1:A:1168:G:C6 | 3.03 | 0.46 |
| 1:A:2142:U:C6 | 1:A:2142:U:C3' | 2.98 | 0.46 |
| 1:A:535:C:H3' | 1:A:535:C:O2 | 2.16 | 0.46 |
| 1:A:1463:U:C2 | 1:A:1503:G:N1 | 2.83 | 0.46 |
| 1:A:1899:A:OP2 | 1:A:1905:A:N6 | 2.44 | 0.46 |
| 1:A:2119:U:H6 | 1:A:2121:A:OP2 | 1.98 | 0.46 |
| 1:A:2771:C:C2' | 1:A:2772:U:H5' | 2.46 | 0.46 |
| 1:A:882:C:C2' | 1:A:883:U:C6 | 2.85 | 0.46 |
| 1:A:970:A:H5'' | 1:A:971:A:OP2 | 2.14 | 0.46 |
| 1:A:2115:G:H8 | 1:A:2115:G:P | 2.38 | 0.46 |
| 1:A:2142:U:H5'' | 1:A:2142:U:H6 | 1.77 | 0.46 |
| 1:A:841:C:N4 | 1:A:915:A:H61 | 2.14 | 0.46 |
| 1:A:1040:A:N6 | 1:A:1041:G:N1 | 2.61 | 0.46 |
| 1:A:2092:U:HO2' | 1:A:2093:G:H5' | 1.76 | 0.46 |
| 3:C:68:ARG:NH1 | 3:C:149:GLY:O | 2.49 | 0.46 |
| 1:A:883:U:H2' | 1:A:884:U:O5' | 2.15 | 0.46 |
| 1:A:1044:A:H2' | 1:A:1045:G:O5' | 2.16 | 0.46 |
| 1:A:1051:U:O2' | 1:A:1053:G:OP1 | 2.31 | 0.46 |
| 1:A:2111:G:C6 | 1:A:2112:G:C4 | 3.03 | 0.46 |
| 4:D:157:LYS:HG2 | 10:J:80:PHE:CD1 | 2.50 | 0.46 |
| 4:D:157:LYS:HD3 | 10:J:80:PHE:HE1 | 1.79 | 0.46 |
| 1:A:539:U:P | 1:A:540:U:C2 | 3.09 | 0.46 |
| 1:A:663:C:C2' | 1:A:664:G:H5' | 2.45 | 0.46 |
| 1:A:871:G:C2 | 1:A:886:C:H5 | 2.33 | 0.46 |
| 1:A:1093:A:N7 | 1:A:1094:C:C4 | 2.84 | 0.46 |
| 1:A:2091:C:N4 | 1:A:2092:U:O4 | 2.49 | 0.46 |
| 1:A:2120:G:O3' | 1:A:2121:A:H4' | 2.15 | 0.46 |
| 1:A:2152:C:H41 | 1:A:2159:U:H3 | 1.63 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:2176:U:H2' | 1:A:2177:G:C8 | 2.50 | 0.46 |
| 1:A:2274:A:H1' | 1:A:2275:A:OP1 | 2.16 | 0.46 |
| 4:D:157:LYS:CG | 10:J:80:PHE:CE1 | 2.99 | 0.46 |
| 11:K:49:ARG:NH1 | 11:K:50:GLY:O | 2.49 | 0.46 |
| 1:A:533:U:H2' | 1:A:534:A:O5' | 2.16 | 0.46 |
| 1:A:1046:G:H8 | 1:A:1046:G:O5' | 1.98 | 0.46 |
| 1:A:2287:A:C8 | 1:A:2287:A:C5' | 2.90 | 0.46 |
| 1:A:2509:U:O2' | 1:A:2634:U:OP1 | 2.28 | 0.46 |
| 1:A:2621:A:H2' | 1:A:2622:U:H6 | 1.80 | 0.46 |
| 1:A:680:U:O2' | 1:A:770:G:OP1 | 2.34 | 0.46 |
| 1:A:886:C:H41 | 1:A:887:C:H42 | 1.62 | 0.46 |
| 1:A:2119:U:C5 | 1:A:2120:G:H3' | 2.51 | 0.46 |
| 1:A:2449:C:O2' | 1:A:2450:C:H5' | 2.16 | 0.46 |
| 1:A:2605:G:C8 | 1:A:2606:C:OP1 | 2.69 | 0.46 |
| 3:C:232:HIS:CE1 | 3:C:246:VAL:H | 2.33 | 0.46 |
| 22:V:6:VAL:CG2 | 22:V:53:LEU:HD11 | 2.45 | 0.46 |
| 1:A:1161:C:N4 | 1:A:1164:A:O2' | 2.49 | 0.45 |
| 1:A:1538:G:O6 | 1:A:1539:G:C6 | 2.53 | 0.45 |
| 1:A:1728:C:C6 | 1:A:1730:C:N4 | 2.84 | 0.45 |
| 1:A:2036:G:C2' | 1:A:2037:C:C5' | 2.94 | 0.45 |
| 1:A:2097:G:H2' | 1:A:2097:G:P | 2.57 | 0.45 |
| 1:A:2140:C:C3' | 1:A:2143:G:H1 | 2.28 | 0.45 |
| 1:A:2155:G:N1 | 1:A:2158:A:OP2 | 2.34 | 0.45 |
| 11:K:78:ARG:NH2 | 16:P:72:GLU:OE2 | 2.43 | 0.45 |
| 22:V:63:VAL:HG23 | 22:V:143:LEU:HD11 | 1.98 | 0.45 |
| 31:5:58:GLU:HG2 | 31:5:63:LEU:HD12 | 1.97 | 0.45 |
| 1:A:535:C:C5 | 1:A:540:U:C4 | 3.04 | 0.45 |
| 1:A:866:U:C6 | 1:A:866:U:C3' | 2.99 | 0.45 |
| 1:A:1654:A:H61 | 1:A:1983:C:H42 | 1.64 | 0.45 |
| 1:A:2310:G:H2' | 1:A:2311:U:C5' | 2.22 | 0.45 |
| 1:A:2604:U:N3 | 1:A:2605:G:C8 | 2.84 | 0.45 |
| 20:T:78:ASP:OD1 | 20:T:78:ASP:N | 2.46 | 0.45 |
| 1:A:1160:A:N3 | 1:A:1161:C:H6 | 2.08 | 0.45 |
| 1:A:2093:G:H2' | 1:A:2094:C:H4' | 1.98 | 0.45 |
| 1:A:2185:A:OP2 | 8:H:111:LYS:NZ | 2.48 | 0.45 |
| 22:V:135:GLU:H | 22:V:135:GLU:HG3 | 1.59 | 0.45 |
| 1:A:872:G:N3 | 1:A:885:A:N6 | 2.65 | 0.45 |
| 1:A:2035:G:C3' | 1:A:2036:G:H5'' | 2.46 | 0.45 |
| 1:A:2087:G:C6 | 1:A:2088:A:C8 | 2.88 | 0.45 |
| 1:A:2122:A:C4 | 1:A:2123:G:C8 | 2.95 | 0.45 |
| 1:A:2127:G:HO2' | 1:A:2128:G:H5' | 1.77 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2167:U:H5 | 1:A:2169:G:N1 | 2.15 | 0.45 |
| 24:X:18:ILE:HG12 | 24:X:24:LYS:HD3 | 1.98 | 0.45 |
| 1:A:395:A:H5'' | 1:A:397:G:H1' | 1.98 | 0.45 |
| 1:A:871:G:N3 | 1:A:886:C:H6 | 2.04 | 0.45 |
| 1:A:1084:U:H3 | 1:A:1087:U:H2' | 1.81 | 0.45 |
| 4:D:17:THR:HG22 | 4:D:19:GLU:H | 1.81 | 0.45 |
| 1:A:519:A:H2 | 1:A:2030:U:H5'' | 1.78 | 0.45 |
| 1:A:539:U:OP2 | 1:A:540:U:C2 | 2.70 | 0.45 |
| 1:A:890:A:H2 | 1:A:891:C:H1' | 1.81 | 0.45 |
| 1:A:2114:G:H3' | 1:A:2114:G:C8 | 2.52 | 0.45 |
| 1:A:2172:U:O2' | 1:A:2173:G:C4' | 2.64 | 0.45 |
| 1:A:317:G:N3 | 1:A:317:G:H5' | 2.32 | 0.45 |
| 1:A:535:C:C5 | 1:A:540:U:O4 | 2.70 | 0.45 |
| 1:A:890:A:H2 | 1:A:891:C:C1' | 2.30 | 0.45 |
| 1:A:1027:G:C2' | 1:A:1028:G:H5' | 2.46 | 0.45 |
| 1:A:2036:G:H2' | 1:A:2037:C:O5' | 2.16 | 0.45 |
| 1:A:2085:U:C5 | 1:A:2086:U:C4 | 2.94 | 0.45 |
| 1:A:2115:G:C8 | 1:A:2115:G:OP2 | 2.70 | 0.45 |
| 1:A:2512:G:H22 | 1:A:2525:C:N4 | 2.13 | 0.45 |
| 9:I:3:LYS:HG2 | 9:I:4:LYS:HG2 | 1.98 | 0.45 |
| 12:L:83:ALA:HA | 12:L:118:ARG:HD3 | 1.99 | 0.45 |
| 29:3:19:THR:OG1 | 29:3:20:ASP:N | 2.50 | 0.45 |
| 1:A:867:A:N3 | 1:A:889:A:N3 | 2.63 | 0.45 |
| 1:A:875:A:O2' | 1:A:876:U:C2 | 2.70 | 0.45 |
| 1:A:1046:G:O6 | 1:A:1091:U:H5'' | 2.16 | 0.45 |
| 1:A:1085:A:H5'' | 1:A:1086:A:C4 | 2.52 | 0.45 |
| 1:A:1088:A:H3' | 1:A:1089:G:C8 | 2.49 | 0.45 |
| 1:A:1163:U:C6 | 1:A:1163:U:OP2 | 2.70 | 0.45 |
| 1:A:1170:C:OP1 | 1:A:1170:C:C6 | 2.70 | 0.45 |
| 1:A:1727:G:N7 | 1:A:1728:C:C2 | 2.84 | 0.45 |
| 1:A:1744:A:H2' | 1:A:1745:U:OP1 | 2.17 | 0.45 |
| 1:A:2102:G:O2' | 1:A:2153:U:C2 | 2.70 | 0.45 |
| 1:A:2119:U:C5 | 1:A:2119:U:OP1 | 2.70 | 0.45 |
| 1:A:2167:U:C2 | 1:A:2168:G:C2 | 3.05 | 0.45 |
| 1:A:2645:C:O2 | 1:A:2650:G:N2 | 2.42 | 0.45 |
| 4:D:23:ILE:HG23 | 4:D:190:LYS:HG3 | 1.99 | 0.45 |
| 7:G:42:GLU:HB3 | 7:G:53:ALA:HB3 | 1.98 | 0.45 |
| 8:H:114:VAL:HG13 | 8:H:116:LEU:HD22 | 1.99 | 0.45 |
| 1:A:874:C:C6 | 1:A:874:C:O5' | 2.70 | 0.45 |
| 1:A:880:G:C8 | 1:A:880:G:O5' | 2.70 | 0.45 |
| 1:A:881:A:C2 | 1:A:882:C:C4 | 3.05 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:883:U:C6 | 1:A:883:U:OP2 | 2.70 | 0.45 |
| 1:A:1017:A:O2' | 1:A:1116:A:N6 | 2.49 | 0.45 |
| 1:A:1043:U:O2 | 1:A:1097:G:C2 | 2.70 | 0.45 |
| 1:A:1097:G:C3' | 1:A:1098:U:H5' | 2.47 | 0.45 |
| 1:A:1098:U:C6 | 1:A:1098:U:C4' | 3.00 | 0.45 |
| 1:A:1379:A:C8 | 1:A:1379:A:O5' | 2.70 | 0.45 |
| 1:A:1707:G:C6 | 1:A:1729:U:O4 | 2.70 | 0.45 |
| 1:A:2115:G:C2 | 1:A:2120:G:O6 | 2.70 | 0.45 |
| 1:A:2167:U:C5 | 1:A:2168:G:O6 | 2.70 | 0.45 |
| 1:A:867:A:N1 | 1:A:889:A:C5 | 2.85 | 0.45 |
| 1:A:877:C:O5' | 1:A:878:C:C6 | 2.70 | 0.45 |
| 1:A:1057:A:H3' | 1:A:1058:G:H8 | 1.82 | 0.45 |
| 1:A:1094:C:C6 | 1:A:1094:C:OP2 | 2.70 | 0.45 |
| 1:A:1161:C:N4 | 1:A:1165:A:P | 2.90 | 0.45 |
| 1:A:1701:G:C2 | 1:A:1735:U:O2 | 2.70 | 0.45 |
| 1:A:2029:A:H2' | 1:A:2030:U:H5'' | 1.99 | 0.45 |
| 1:A:2118:U:H2' | 1:A:2121:A:C5' | 2.47 | 0.45 |
| 1:A:2161:C:O5' | 1:A:2161:C:C6 | 2.70 | 0.45 |
| 1:A:2176:U:O2 | 1:A:2177:G:C8 | 2.70 | 0.45 |
| 1:A:2302:G:C6 | 1:A:2303:U:O4 | 2.70 | 0.45 |
| 10:J:42:PRO:HD3 | 17:Q:71:GLN:HE22 | 1.82 | 0.45 |
| 1:A:449:G:N2 | 1:A:461:A:OP2 | 2.43 | 0.44 |
| 1:A:536:U:O5' | 1:A:536:U:C6 | 2.70 | 0.44 |
| 1:A:538:G:C8 | 1:A:538:G:OP1 | 2.70 | 0.44 |
| 1:A:841:C:O2 | 1:A:842:U:C6 | 2.70 | 0.44 |
| 1:A:1170:C:OP2 | 1:A:1170:C:C6 | 2.70 | 0.44 |
| 1:A:1422:G:H2' | 1:A:1423:G:H5' | 1.99 | 0.44 |
| 1:A:1732:G:O2' | 1:A:1733:G:C8 | 2.70 | 0.44 |
| 1:A:2063:U:OP2 | 1:A:2225:G:N2 | 2.38 | 0.44 |
| 1:A:2091:C:C4 | 1:A:2092:U:C5 | 3.05 | 0.44 |
| 1:A:2119:U:C6 | 1:A:2121:A:OP2 | 2.70 | 0.44 |
| 1:A:2128:G:C8 | 1:A:2129:A:C8 | 3.05 | 0.44 |
| 1:A:2142:U:H5 | 1:A:2143:G:N1 | 2.16 | 0.44 |
| 1:A:2301:G:C6 | 1:A:2302:G:C6 | 3.05 | 0.44 |
| 1:A:2674:G:H21 | 1:A:2675:U:H5' | 1.82 | 0.44 |
| 1:A:2780:A:H2' | 1:A:2781:A:C8 | 2.53 | 0.44 |
| 20:T:81:LYS:HE2 | 20:T:83:TYR:HE1 | 1.82 | 0.44 |
| 24:X:32:ASN:OD1 | 24:X:34:GLN:NE2 | 2.43 | 0.44 |
| 26:Z:40:THR:HB | 26:Z:41:PRO:CD | 2.40 | 0.44 |
| 1:A:820:G:H4' | 1:A:821:G:OP2 | 2.17 | 0.44 |
| 1:A:880:G:N3 | 1:A:881:A:C8 | 2.85 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:1160:A:C6 | 1:A:1161:C:C4 | 3.04 | 0.44 |
| 1:A:1167:U:C2 | 1:A:1168:G:C8 | 3.06 | 0.44 |
| 1:A:2121:A:N6 | 1:A:2143:G:C2 | 2.78 | 0.44 |
| 1:A:2150:U:OP2 | 1:A:2159:U:C6 | 2.70 | 0.44 |
| 1:A:2167:U:C4 | 1:A:2168:G:O6 | 2.70 | 0.44 |
| 1:A:2404:C:H2' | 1:A:2405:A:O5' | 2.17 | 0.44 |
| 1:A:2796:A:H3' | 1:A:2797:G:O4' | 2.18 | 0.44 |
| 11:K:64:ARG:HB2 | 11:K:83:ALA:HB3 | 1.98 | 0.44 |
| 1:A:772:A:O2' | 3:C:224:ALA:O | 2.35 | 0.44 |
| 1:A:873:U:O2 | 1:A:874:C:C5 | 2.70 | 0.44 |
| 1:A:876:U:C4 | 1:A:880:G:O6 | 2.70 | 0.44 |
| 1:A:1049:G:H3' | 1:A:1050:U:H2' | 1.99 | 0.44 |
| 1:A:1081:G:H1 | 1:A:1090:C:H42 | 1.64 | 0.44 |
| 1:A:1160:A:N1 | 1:A:1168:G:C5 | 2.85 | 0.44 |
| 1:A:1161:C:C6 | 1:A:1161:C:OP2 | 2.70 | 0.44 |
| 1:A:1250:U:H5'' | 28:2:13:ARG:HD3 | 1.99 | 0.44 |
| 1:A:2127:G:C5 | 1:A:2139:G:C6 | 3.05 | 0.44 |
| 1:A:2137:U:C4 | 1:A:2138:C:C4 | 3.06 | 0.44 |
| 1:A:2171:A:C3' | 1:A:2172:U:C6 | 3.00 | 0.44 |
| 1:A:2301:G:C2 | 1:A:2302:G:N7 | 2.84 | 0.44 |
| 1:A:2301:G:N1 | 1:A:2302:G:C6 | 2.84 | 0.44 |
| 1:A:2331:U:C6 | 1:A:2331:U:OP2 | 2.70 | 0.44 |
| 1:A:2606:C:C5 | 1:A:2606:C:OP2 | 2.70 | 0.44 |
| 20:T:10:LEU:O | 25:Y:29:ARG:NH2 | 2.47 | 0.44 |
| 1:A:876:U:O2 | 1:A:880:G:C5 | 2.70 | 0.44 |
| 1:A:883:U:O2 | 1:A:884:U:C6 | 2.70 | 0.44 |
| 1:A:1050:U:N3 | 1:A:1078:A:N7 | 2.65 | 0.44 |
| 1:A:1707:G:C4 | 1:A:1731:U:O4 | 2.70 | 0.44 |
| 1:A:2127:G:C8 | 1:A:2127:G:OP2 | 2.70 | 0.44 |
| 1:A:2303:U:H2' | 1:A:2304:C:H6 | 1.81 | 0.44 |
| 1:A:2742:U:OP2 | 32:6:19:ARG:NE | 2.49 | 0.44 |
| 1:A:876:U:C6 | 1:A:879:C:OP2 | 2.70 | 0.44 |
| 1:A:1045:G:O6 | 1:A:1046:G:C2 | 2.70 | 0.44 |
| 1:A:1162:G:C2 | 1:A:1168:G:O4' | 2.70 | 0.44 |
| 1:A:2120:G:N3 | 1:A:2120:G:H2' | 2.32 | 0.44 |
| 1:A:2141:G:C6 | 1:A:2142:U:O2 | 2.70 | 0.44 |
| 1:A:2173:G:C2 | 1:A:2174:C:C5 | 3.06 | 0.44 |
| 1:A:2389:U:C4 | 1:A:2392:G:O6 | 2.70 | 0.44 |
| 1:A:2458:A:O2' | 1:A:2459:G:H8 | 2.00 | 0.44 |
| 4:D:159:LYS:CG | 4:D:160:LYS:N | 2.79 | 0.44 |
| 9:I:11:LEU:HD23 | 9:I:59:ILE:HG21 | 1.99 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:874:C:O5' | 1:A:875:A:C8 | 2.70 | 0.44 |
| 1:A:876:U:C5 | 1:A:879:C:OP1 | 2.70 | 0.44 |
| 1:A:1163:U:O3' | 1:A:1164:A:O3' | 2.35 | 0.44 |
| 1:A:1284:C:O2' | 1:A:1289:A:N6 | 2.51 | 0.44 |
| 1:A:1703:U:O5' | 1:A:1703:U:C6 | 2.70 | 0.44 |
| 1:A:1732:G:C5 | 1:A:1732:G:OP2 | 2.70 | 0.44 |
| 1:A:2116:C:O5' | 1:A:2116:C:C6 | 2.70 | 0.44 |
| 1:A:2125:G:C8 | 1:A:2125:G:O5' | 2.70 | 0.44 |
| 1:A:2170:C:O3' | 1:A:2171:A:O4' | 2.35 | 0.44 |
| 1:A:2186:A:N1 | 1:A:2213:C:N4 | 2.66 | 0.44 |
| 1:A:2289:C:O2 | 1:A:2290:G:C8 | 2.71 | 0.44 |
| 1:A:2293:C:H3' | 1:A:2294:G:H21 | 1.81 | 0.44 |
| 12:L:62:PRO:HG2 | 31:5:24:LYS:HB3 | 1.99 | 0.44 |
| 23:W:32:LYS:HD3 | 23:W:32:LYS:N | 2.32 | 0.44 |
| 1:A:61:G:H22 | 1:A:93:A:H2 | 1.66 | 0.44 |
| 1:A:886:C:C2 | 1:A:887:C:O2 | 2.70 | 0.44 |
| 1:A:1168:G:C6 | 1:A:1169:A:N7 | 2.86 | 0.44 |
| 1:A:1546:C:O5' | 1:A:1546:C:H6 | 2.00 | 0.44 |
| 1:A:2103:G:C6 | 1:A:2153:U:O2 | 2.70 | 0.44 |
| 1:A:2115:G:C4' | 1:A:2116:C:OP2 | 2.66 | 0.44 |
| 1:A:2141:G:OP2 | 1:A:2143:G:C6 | 2.70 | 0.44 |
| 1:A:2166:C:C2 | 1:A:2167:U:O2 | 2.70 | 0.44 |
| 1:A:2447:U:H2' | 1:A:2448:A:O5' | 2.17 | 0.44 |
| 7:G:11:LEU:HA | 7:G:12:PRO:HD3 | 1.81 | 0.44 |
| 22:V:112:ILE:HD13 | 22:V:148:GLU:HB3 | 1.99 | 0.44 |
| 23:W:72:LYS:HB2 | 23:W:79:TYR:HD2 | 1.83 | 0.44 |
| 1:A:303:A:N3 | 1:A:323:G:O2' | 2.51 | 0.44 |
| 1:A:360:C:H2' | 1:A:361:A:C4 | 2.53 | 0.44 |
| 1:A:876:U:H2' | 1:A:877:C:OP1 | 2.17 | 0.44 |
| 1:A:882:C:O2 | 1:A:883:U:C6 | 2.70 | 0.44 |
| 1:A:883:U:C5 | 1:A:883:U:OP2 | 2.71 | 0.44 |
| 1:A:1045:G:O5' | 1:A:1045:G:C8 | 2.70 | 0.44 |
| 1:A:1045:G:C5 | 1:A:1046:G:C4 | 3.06 | 0.44 |
| 1:A:1161:C:C2 | 1:A:1163:U:OP1 | 2.70 | 0.44 |
| 1:A:1167:U:H2' | 1:A:1168:G:H5'' | 1.99 | 0.44 |
| 1:A:1538:G:C4 | 1:A:1539:G:N7 | 2.85 | 0.44 |
| 1:A:1925:A:C2 | 1:A:2592:U:O2 | 2.70 | 0.44 |
| 1:A:2288:C:C4 | 1:A:2289:C:N4 | 2.86 | 0.44 |
| 1:A:2425:U:H2' | 1:A:2426:A:OP2 | 2.18 | 0.44 |
| 1:A:2447:U:C2' | 1:A:2448:A:O5' | 2.66 | 0.44 |
| 1:A:2476:U:C5' | 1:A:2476:U:H6 | 2.30 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-------------------|--------------------------|-------------------|
| 6:F:62:GLY:HA3 | 27:1:9:TYR:HE1 | 1.83 | 0.44 |
| 13:M:17:ASN:O | 13:M:39:ARG:NH1 | 2.51 | 0.44 |
| 1:A:841:C:C2 | 1:A:842:U:C6 | 3.05 | 0.44 |
| 1:A:883:U:C4 | 1:A:884:U:O4 | 2.70 | 0.44 |
| 1:A:883:U:C4 | 1:A:884:U:C4 | 3.06 | 0.44 |
| 1:A:1049:G:N2 | 1:A:1070:C:O2 | 2.50 | 0.44 |
| 1:A:1075:A:N7 | 1:A:1076:A:N1 | 2.66 | 0.44 |
| 1:A:1166:G:C2 | 1:A:1167:U:C2 | 2.85 | 0.44 |
| 1:A:1525:U:H2' | 1:A:1527:G:C6 | 2.53 | 0.44 |
| 1:A:2114:G:C2 | 1:A:2150:U:OP1 | 2.70 | 0.44 |
| 1:A:2124:C:H2' | 1:A:2125:G:H1' | 2.00 | 0.44 |
| 1:A:2135:G:C6 | 1:A:2136:U:C5 | 3.06 | 0.44 |
| 1:A:2262:C:O2' | 13:M:84:GLY:O | 2.32 | 0.44 |
| 1:A:539:U:OP2 | 1:A:540:U:C6 | 2.70 | 0.43 |
| 1:A:868:G:C6 | 1:A:869:G:O6 | 2.70 | 0.43 |
| 1:A:874:C:H1' | 1:A:882:C:C2 | 2.53 | 0.43 |
| 1:A:1098:U:C6 | 1:A:1098:U:C3' | 3.01 | 0.43 |
| 1:A:2090:C:C2' | 1:A:2091:C:C5' | 2.95 | 0.43 |
| 1:A:2096:U:O2 | 1:A:2168:G:C2 | 2.71 | 0.43 |
| 1:A:2097:G:OP2 | 1:A:2097:G:C8 | 2.71 | 0.43 |
| 1:A:2129:A:H2' | 1:A:2130:C:H1' | 1.99 | 0.43 |
| 1:A:2432:G:H2' | 1:A:2433:G:O5' | 2.18 | 0.43 |
| 31:5:50:ASN:OD1 | 31:5:51:LYS:N | 2.48 | 0.43 |
| 1:A:503:G:HO2' | 1:A:504:A:P | 2.41 | 0.43 |
| 1:A:704:U:O2' | 1:A:706:A:N7 | 2.40 | 0.43 |
| 1:A:884:U:C5' | 1:A:884:U:H6 | 2.30 | 0.43 |
| 1:A:1094:C:C5 | 1:A:1094:C:OP2 | 2.71 | 0.43 |
| 1:A:1168:G:C4 | 1:A:1169:A:H8 | 2.17 | 0.43 |
| 1:A:2088:A:C4 | 1:A:2089:G:N7 | 2.86 | 0.43 |
| 1:A:2114:G:N9 | 1:A:2150:U:H1' | 2.33 | 0.43 |
| 1:A:2151:C:H4' | 1:A:2152:C:C5 | 2.53 | 0.43 |
| 4:D:157:LYS:HD2 | 10:J:80:PHE:CE1 | 2.53 | 0.43 |
| 14:N:32:GLU:HG2 | 14:N:115:LEU:HD12 | 1.99 | 0.43 |
| 1:A:679:A:N3 | 1:A:769:U:O2' | 2.45 | 0.43 |
| 1:A:1093:A:C2' | 1:A:1094:C:O4' | 2.66 | 0.43 |
| 1:A:1096:A:C2 | 1:A:1097:G:C8 | 3.06 | 0.43 |
| 1:A:1097:G:C2 | 1:A:1098:U:O2 | 2.70 | 0.43 |
| 1:A:1170:C:C6 | 1:A:1170:C:P | 3.12 | 0.43 |
| 1:A:1997:G:H5'' | 19:S:42:LYS:HB2 | 2.00 | 0.43 |
| 1:A:2085:U:C6 | 1:A:2086:U:C5 | 3.06 | 0.43 |
| 1:A:2093:G:C2 | 1:A:2095:U:O4 | 2.72 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:2142:U:H3' | 1:A:2142:U:H6 | 1.83 | 0.43 |
| 6:F:109:PRO:HG3 | 27:1:25:ARG:HD2 | 2.01 | 0.43 |
| 1:A:1917:G:HO2' | 1:A:1918:U:H6 | 1.65 | 0.43 |
| 1:A:2093:G:C6 | 1:A:2094:C:O2 | 2.70 | 0.43 |
| 1:A:2123:G:C6 | 1:A:2141:G:O6 | 2.70 | 0.43 |
| 1:A:2300:C:OP1 | 6:F:68:THR:HG21 | 2.18 | 0.43 |
| 1:A:2768:G:H2' | 1:A:2769:A:H5' | 1.99 | 0.43 |
| 1:A:870:G:C2' | 1:A:871:G:N7 | 2.66 | 0.43 |
| 1:A:874:C:O2 | 1:A:882:C:C5 | 2.70 | 0.43 |
| 1:A:1898:U:H3' | 1:A:1905:A:H61 | 1.83 | 0.43 |
| 1:A:2099:G:H5'' | 1:A:2101:A:H62 | 1.83 | 0.43 |
| 1:A:2112:G:H22 | 1:A:2159:U:P | 2.41 | 0.43 |
| 1:A:2142:U:C6 | 1:A:2143:G:C8 | 3.05 | 0.43 |
| 1:A:2142:U:O4 | 1:A:2143:G:C2 | 2.70 | 0.43 |
| 1:A:2147:C:O2' | 1:A:2148:C:H5 | 2.00 | 0.43 |
| 1:A:2149:A:C2 | 1:A:2150:U:C5 | 2.99 | 0.43 |
| 1:A:1040:A:N1 | 1:A:1041:G:C4 | 2.85 | 0.43 |
| 1:A:1042:C:O5' | 1:A:1042:C:H6 | 2.01 | 0.43 |
| 1:A:1046:G:O2' | 1:A:1076:A:C8 | 2.60 | 0.43 |
| 1:A:1075:A:N7 | 1:A:1076:A:N6 | 2.67 | 0.43 |
| 1:A:1158:U:H2' | 1:A:1159:C:C6 | 2.53 | 0.43 |
| 1:A:1160:A:H2' | 1:A:1161:C:H6 | 1.82 | 0.43 |
| 1:A:2107:G:O5' | 1:A:2107:G:C8 | 2.70 | 0.43 |
| 1:A:2582:G:N2 | 1:A:2585:A:OP2 | 2.47 | 0.43 |
| 3:C:170:ALA:HA | 8:H:120:ALA:H | 1.83 | 0.43 |
| 21:U:17:ASP:HB3 | 21:U:20:LYS:HG3 | 2.00 | 0.43 |
| 1:A:877:C:C5 | 1:A:878:C:O4' | 2.70 | 0.43 |
| 1:A:969:A:O2' | 1:A:970:A:OP1 | 2.22 | 0.43 |
| 1:A:1045:G:N2 | 1:A:1095:U:C4 | 2.86 | 0.43 |
| 1:A:1094:C:H6 | 1:A:1094:C:P | 2.42 | 0.43 |
| 1:A:2036:G:C5' | 1:A:2036:G:H8 | 2.32 | 0.43 |
| 1:A:2114:G:C8 | 1:A:2114:G:C3' | 3.01 | 0.43 |
| 1:A:2114:G:C5 | 1:A:2115:G:C2 | 3.05 | 0.43 |
| 1:A:2129:A:C2 | 1:A:2130:C:N1 | 2.86 | 0.43 |
| 1:A:2141:G:OP2 | 1:A:2142:U:C5 | 2.71 | 0.43 |
| 1:A:2430:C:H2' | 1:A:2431:G:O5' | 2.19 | 0.43 |
| 1:A:2473:C:O5' | 1:A:2473:C:H6 | 2.02 | 0.43 |
| 29:3:47:GLU:HG3 | 29:3:48:ALA:H | 1.83 | 0.43 |
| 1:A:533:U:H2' | 1:A:534:A:O4' | 2.19 | 0.43 |
| 1:A:868:G:O6 | 1:A:888:A:C2 | 2.70 | 0.43 |
| 1:A:1538:G:C6 | 1:A:1539:G:N7 | 2.87 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-----------------|--------------------------|-------------------|
| 1:A:2114:G:C3' | 1:A:2115:G:C8 | 2.85 | 0.43 |
| 1:A:2137:U:C6 | 1:A:2137:U:C3' | 3.02 | 0.43 |
| 1:A:2403:C:H2' | 1:A:2404:C:H5' | 2.01 | 0.43 |
| 1:A:2605:G:HO2' | 4:D:155:VAL:H | 1.67 | 0.43 |
| 1:A:2629:G:H4' | 10:J:80:PHE:CE2 | 2.54 | 0.43 |
| 12:L:101:ILE:HG23 | 12:L:102:ASN:H | 1.83 | 0.43 |
| 22:V:106:HIS:HA | 22:V:135:GLU:HA | 2.01 | 0.43 |
| 23:W:46:HIS:CE1 | 23:W:77:ARG:HD2 | 2.54 | 0.43 |
| 25:Y:7:GLU:O | 25:Y:9:LYS:N | 2.49 | 0.43 |
| 1:A:871:G:C8 | 1:A:871:G:OP2 | 2.70 | 0.43 |
| 1:A:974:A:OP2 | 1:A:975:C:H5 | 2.02 | 0.43 |
| 1:A:1154:G:C3' | 1:A:1155:G:H5' | 2.48 | 0.43 |
| 1:A:2102:G:C8 | 1:A:2104:A:OP2 | 2.72 | 0.43 |
| 1:A:2278:U:H2' | 1:A:2279:G:C8 | 2.53 | 0.43 |
| 22:V:6:VAL:CG1 | 22:V:7:ASN:H | 2.31 | 0.43 |
| 1:A:491:G:N1 | 1:A:494:A:OP2 | 2.51 | 0.43 |
| 1:A:871:G:O4' | 1:A:886:C:N1 | 2.47 | 0.43 |
| 1:A:1044:A:C2' | 1:A:1045:G:H5' | 2.48 | 0.43 |
| 1:A:1161:C:C5 | 1:A:1161:C:OP2 | 2.72 | 0.43 |
| 1:A:1726:A:H4' | 1:A:1727:G:OP2 | 2.18 | 0.43 |
| 1:A:1734:C:O2' | 1:A:1735:U:H5'' | 2.19 | 0.43 |
| 1:A:2127:G:O5' | 1:A:2127:G:C8 | 2.70 | 0.43 |
| 1:A:2170:C:C2' | 1:A:2171:A:C1' | 2.97 | 0.43 |
| 1:A:2093:G:C5 | 1:A:2094:C:H1' | 2.52 | 0.42 |
| 1:A:2289:C:C2 | 1:A:2290:G:N7 | 2.87 | 0.42 |
| 3:C:170:ALA:HB2 | 8:H:119:GLY:H | 1.84 | 0.42 |
| 7:G:89:LEU:HD12 | 7:G:129:THR:HA | 2.01 | 0.42 |
| 1:A:871:G:C8 | 1:A:871:G:O5' | 2.70 | 0.42 |
| 1:A:2118:U:OP2 | 1:A:2119:U:H4' | 2.17 | 0.42 |
| 1:A:2137:U:H5 | 1:A:2138:C:H5 | 1.43 | 0.42 |
| 1:A:2150:U:OP2 | 1:A:2159:U:C5 | 2.72 | 0.42 |
| 1:A:2351:C:HO2' | 1:A:2352:G:H5' | 1.82 | 0.42 |
| 1:A:270:U:OP2 | 1:A:274:G:O2' | 2.29 | 0.42 |
| 1:A:534:A:C6 | 1:A:535:C:C4 | 3.06 | 0.42 |
| 1:A:867:A:C8 | 1:A:868:G:N7 | 2.79 | 0.42 |
| 1:A:883:U:O2 | 1:A:884:U:H5' | 2.19 | 0.42 |
| 1:A:1040:A:C2 | 1:A:1041:G:H1' | 2.53 | 0.42 |
| 1:A:1703:U:C4 | 1:A:1732:G:N7 | 2.87 | 0.42 |
| 1:A:1708:U:C2 | 1:A:1727:G:O6 | 2.70 | 0.42 |
| 1:A:2112:G:H21 | 1:A:2160:A:H62 | 1.65 | 0.42 |
| 1:A:2128:G:H5'' | 1:A:2129:A:OP2 | 2.19 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:2149:A:O2' | 1:A:2152:C:C4 | 2.71 | 0.42 |
| 1:A:2253:A:N6 | 1:A:2260:A:OP2 | 2.49 | 0.42 |
| 1:A:2795:A:OP2 | 1:A:2876:G:N1 | 2.34 | 0.42 |
| 1:A:872:G:H1' | 1:A:885:A:C5 | 2.55 | 0.42 |
| 1:A:1009:U:C3' | 1:A:1010:A:C5' | 2.98 | 0.42 |
| 1:A:1040:A:H2' | 1:A:1041:G:C1' | 2.48 | 0.42 |
| 1:A:1071:U:H4' | 9:I:124:ALA:HB1 | 2.00 | 0.42 |
| 1:A:2036:G:H8 | 1:A:2036:G:H5' | 1.84 | 0.42 |
| 1:A:2131:G:N3 | 1:A:2135:G:N1 | 2.56 | 0.42 |
| 1:A:2167:U:C3' | 1:A:2167:U:C6 | 3.03 | 0.42 |
| 1:A:2331:U:OP2 | 1:A:2331:U:H6 | 2.01 | 0.42 |
| 1:A:841:C:O2 | 1:A:841:C:H2' | 2.19 | 0.42 |
| 1:A:1094:C:C6 | 1:A:1094:C:P | 3.11 | 0.42 |
| 1:A:1168:G:C2 | 1:A:1169:A:C1' | 3.02 | 0.42 |
| 1:A:291:G:H1 | 1:A:335:C:N4 | 2.18 | 0.42 |
| 1:A:2093:G:C2 | 1:A:2095:U:C4 | 3.07 | 0.42 |
| 1:A:2104:A:H2' | 1:A:2105:U:C6 | 2.44 | 0.42 |
| 1:A:2109:U:O2 | 1:A:2109:U:H2' | 2.18 | 0.42 |
| 1:A:2137:U:O4 | 1:A:2138:C:N4 | 2.53 | 0.42 |
| 1:A:2142:U:H5' | 1:A:2143:G:C8 | 2.55 | 0.42 |
| 1:A:2148:C:C6 | 1:A:2148:C:C4' | 3.01 | 0.42 |
| 1:A:2579:G:H2' | 1:A:2580:U:O5' | 2.20 | 0.42 |
| 16:P:91:GLY:HA2 | 16:P:115:LEU:HB3 | 2.01 | 0.42 |
| 1:A:663:C:H2' | 1:A:664:G:H5' | 2.00 | 0.42 |
| 1:A:2114:G:C5 | 1:A:2115:G:C4 | 3.07 | 0.42 |
| 1:A:2129:A:C4 | 1:A:2130:C:N1 | 2.88 | 0.42 |
| 8:H:7:GLU:HG2 | 8:H:35:LYS:HB3 | 2.01 | 0.42 |
| 22:V:142:ASP:O | 22:V:169:LYS:NZ | 2.37 | 0.42 |
| 30:4:3:ARG:HA | 30:4:3:ARG:HD3 | 1.81 | 0.42 |
| 31:5:37:THR:C | 31:5:39:ARG:N | 2.73 | 0.42 |
| 1:A:719:G:C6 | 3:C:207:LYS:HB2 | 2.55 | 0.42 |
| 1:A:869:G:C2 | 1:A:887:C:O2 | 2.70 | 0.42 |
| 1:A:1040:A:C5 | 1:A:1041:G:N9 | 2.64 | 0.42 |
| 1:A:1048:G:C2 | 1:A:1071:U:H1' | 2.55 | 0.42 |
| 1:A:1163:U:C6 | 1:A:1166:G:O6 | 2.70 | 0.42 |
| 1:A:1731:U:H5'' | 1:A:1732:G:O5' | 2.19 | 0.42 |
| 1:A:2104:A:N3 | 1:A:2105:U:C5 | 2.83 | 0.42 |
| 1:A:2127:G:H2' | 1:A:2128:G:H5' | 1.98 | 0.42 |
| 1:A:2512:G:N2 | 1:A:2513:G:H1 | 2.18 | 0.42 |
| 5:E:94:LYS:HB2 | 5:E:94:LYS:HE2 | 1.76 | 0.42 |
| 1:A:1160:A:H2' | 1:A:1161:C:C5' | 2.49 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:A:1161:C:C4 | 1:A:1163:U:OP2 | 2.73 | 0.42 |
| 1:A:1168:G:N3 | 1:A:1169:A:H1' | 2.35 | 0.42 |
| 1:A:1540:U:O2 | 1:A:1540:U:H2' | 2.19 | 0.42 |
| 1:A:2130:C:O2 | 1:A:2130:C:C2' | 2.68 | 0.42 |
| 1:A:2211:G:N7 | 8:H:115:ARG:HB2 | 2.34 | 0.42 |
| 6:F:138:PHE:N | 6:F:143:TYR:OH | 2.43 | 0.42 |
| 16:P:51:LYS:HG3 | 16:P:52:ARG:H | 1.85 | 0.42 |
| 1:A:875:A:O2' | 1:A:876:U:N3 | 2.51 | 0.42 |
| 1:A:1573:U:H5'' | 1:A:1575:C:C5 | 2.55 | 0.42 |
| 1:A:2087:G:C5 | 1:A:2177:G:O6 | 2.70 | 0.42 |
| 1:A:2113:A:O5' | 1:A:2113:A:C8 | 2.70 | 0.42 |
| 1:A:2121:A:N9 | 1:A:2145:A:H2' | 2.30 | 0.42 |
| 1:A:2134:A:O5' | 1:A:2135:G:C4' | 2.59 | 0.42 |
| 1:A:2137:U:C6 | 1:A:2137:U:H3' | 2.53 | 0.42 |
| 1:A:2415:G:N2 | 12:L:54:GLN:HE21 | 2.18 | 0.42 |
| 18:R:34:ASP:OD1 | 18:R:34:ASP:N | 2.45 | 0.42 |
| 1:A:360:C:C2 | 1:A:361:A:C2 | 3.07 | 0.41 |
| 1:A:535:C:H5 | 1:A:540:U:O4 | 2.03 | 0.41 |
| 1:A:1055:U:H3 | 1:A:1059:A:H2' | 1.84 | 0.41 |
| 1:A:1741:A:HO2' | 1:A:1742:A:P | 2.43 | 0.41 |
| 1:A:2122:A:C2 | 1:A:2123:G:C8 | 3.05 | 0.41 |
| 1:A:2293:C:O5' | 1:A:2294:G:N2 | 2.53 | 0.41 |
| 1:A:11:A:H3' | 1:A:12:G:C8 | 2.54 | 0.41 |
| 1:A:242:G:O2' | 1:A:254:G:O6 | 2.27 | 0.41 |
| 1:A:2148:C:C3' | 1:A:2149:A:C5' | 2.85 | 0.41 |
| 1:A:2167:U:H3' | 1:A:2167:U:C6 | 2.54 | 0.41 |
| 3:C:232:HIS:HE2 | 3:C:245:PRO:HA | 1.85 | 0.41 |
| 6:F:37:ASN:HB2 | 6:F:153:ASP:HB2 | 2.01 | 0.41 |
| 18:R:68:ARG:O | 18:R:90:ARG:NH2 | 2.53 | 0.41 |
| 1:A:269:C:H3' | 1:A:274:G:H2' | 2.02 | 0.41 |
| 1:A:536:U:O2' | 1:A:537:U:P | 2.78 | 0.41 |
| 1:A:1018:A:H1' | 1:A:2473:C:O2' | 2.20 | 0.41 |
| 1:A:1170:C:O2 | 1:A:1170:C:C2' | 2.68 | 0.41 |
| 1:A:1734:C:O2' | 1:A:1735:U:P | 2.79 | 0.41 |
| 1:A:2148:C:H6 | 1:A:2148:C:C5' | 2.14 | 0.41 |
| 1:A:2149:A:O2' | 1:A:2152:C:C5 | 2.70 | 0.41 |
| 1:A:1074:A:O2' | 1:A:1095:U:O2' | 2.23 | 0.41 |
| 1:A:1154:G:OP1 | 18:R:24:LYS:NZ | 2.47 | 0.41 |
| 1:A:1160:A:N1 | 1:A:1168:G:C2 | 2.86 | 0.41 |
| 1:A:1328:U:OP1 | 1:A:1384:U:N3 | 2.52 | 0.41 |
| 1:A:1517:U:H3 | 1:A:1531:A:H61 | 1.66 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:2137:U:H5 | 1:A:2138:C:C5 | 2.19 | 0.41 |
| 1:A:2140:C:O2' | 1:A:2141:G:P | 2.78 | 0.41 |
| 1:A:2584:G:O2' | 1:A:2585:A:O5' | 2.38 | 0.41 |
| 3:C:108:LYS:HA | 3:C:108:LYS:HD3 | 1.92 | 0.41 |
| 3:C:117:ILE:HG23 | 3:C:129:SER:HB3 | 2.02 | 0.41 |
| 31:5:37:THR:O | 31:5:39:ARG:N | 2.53 | 0.41 |
| 1:A:276:U:H5'' | 1:A:355:G:C8 | 2.56 | 0.41 |
| 1:A:650:C:H5'' | 5:E:93:GLN:HG3 | 2.03 | 0.41 |
| 1:A:882:C:N1 | 1:A:883:U:C6 | 2.85 | 0.41 |
| 1:A:1030:A:N1 | 1:A:1105:G:C2 | 2.81 | 0.41 |
| 1:A:2170:C:P | 1:A:2171:A:OP2 | 2.79 | 0.41 |
| 1:A:2174:C:H3' | 1:A:2175:U:H6 | 1.85 | 0.41 |
| 1:A:2234:A:H61 | 1:A:2244:U:H3 | 1.68 | 0.41 |
| 26:Z:39:ASP:OD2 | 26:Z:44:ARG:NH1 | 2.45 | 0.41 |
| 1:A:535:C:H2' | 1:A:536:U:H5'' | 1.96 | 0.41 |
| 1:A:882:C:H2' | 1:A:882:C:O2 | 2.20 | 0.41 |
| 1:A:2098:U:C4 | 1:A:2131:G:H4' | 2.53 | 0.41 |
| 1:A:2176:U:OP2 | 1:A:2176:U:C6 | 2.73 | 0.41 |
| 4:D:165:LEU:HA | 4:D:165:LEU:HD23 | 1.81 | 0.41 |
| 20:T:77:ASN:HD22 | 20:T:78:ASP:H | 1.67 | 0.41 |
| 21:U:44:HIS:HD2 | 21:U:57:ILE:HG12 | 1.86 | 0.41 |
| 1:A:1725:A:O2' | 1:A:1726:A:C4 | 2.62 | 0.41 |
| 1:A:1890:G:OP1 | 3:C:240:SER:OG | 2.29 | 0.41 |
| 1:A:2087:G:C6 | 1:A:2177:G:O6 | 2.71 | 0.41 |
| 1:A:2121:A:C2' | 1:A:2122:A:C4' | 2.97 | 0.41 |
| 1:A:2183:C:H4' | 8:H:138:GLU:HG3 | 2.02 | 0.41 |
| 1:A:2274:A:C1' | 1:A:2275:A:OP1 | 2.68 | 0.41 |
| 1:A:2289:C:H2' | 1:A:2290:G:H8 | 1.85 | 0.41 |
| 3:C:120:ILE:HD11 | 8:H:82:HIS:CD2 | 2.56 | 0.41 |
| 5:E:3:LEU:HD21 | 5:E:18:PHE:HE2 | 1.85 | 0.41 |
| 10:J:56:VAL:HB | 10:J:124:VAL:HG12 | 2.03 | 0.41 |
| 1:A:317:G:O2' | 1:A:318:U:P | 2.79 | 0.41 |
| 1:A:349:U:H6 | 1:A:349:U:H2' | 1.74 | 0.41 |
| 1:A:540:U:O2 | 1:A:540:U:C2' | 2.69 | 0.41 |
| 1:A:867:A:N6 | 1:A:868:G:C4 | 2.89 | 0.41 |
| 1:A:1160:A:C6 | 1:A:1168:G:N1 | 2.89 | 0.41 |
| 1:A:1701:G:P | 1:A:1704:A:O4' | 2.78 | 0.41 |
| 1:A:1727:G:C8 | 1:A:1728:C:C2 | 3.09 | 0.41 |
| 1:A:2122:A:C4 | 1:A:2123:G:C5 | 3.02 | 0.41 |
| 1:A:2150:U:P | 1:A:2150:U:O4' | 2.79 | 0.41 |
| 1:A:2151:C:C5' | 1:A:2159:U:O4 | 2.68 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:2278:U:O2' | 1:A:2279:G:O5' | 2.31 | 0.41 |
| 1:A:2563:G:O2' | 1:A:2566:C:OP2 | 2.32 | 0.41 |
| 2:B:92:C:OP1 | 22:V:24:ARG:NH1 | 2.54 | 0.41 |
| 1:A:275:C:N3 | 1:A:357:A:O2' | 2.47 | 0.41 |
| 1:A:535:C:C5 | 1:A:540:U:N3 | 2.89 | 0.41 |
| 1:A:536:U:HO2' | 1:A:537:U:P | 2.37 | 0.41 |
| 1:A:841:C:C6 | 1:A:841:C:C5' | 2.87 | 0.41 |
| 1:A:854:C:H42 | 1:A:898:A:H2 | 1.68 | 0.41 |
| 1:A:872:G:O6 | 1:A:873:U:C2 | 2.74 | 0.41 |
| 1:A:1017:A:O2' | 1:A:1018:A:P | 2.78 | 0.41 |
| 1:A:1701:G:C8 | 1:A:1701:G:H3' | 2.56 | 0.41 |
| 1:A:1741:A:O2' | 1:A:1742:A:P | 2.79 | 0.41 |
| 1:A:1741:A:H2' | 1:A:1742:A:O5' | 2.21 | 0.41 |
| 1:A:2047:A:O2' | 1:A:2048:G:P | 2.79 | 0.41 |
| 1:A:2090:C:H2' | 1:A:2091:C:C5' | 2.51 | 0.41 |
| 1:A:2103:G:C6 | 1:A:2152:C:N4 | 2.74 | 0.41 |
| 1:A:2114:G:H3' | 1:A:2115:G:H8 | 1.73 | 0.41 |
| 1:A:2169:G:H2' | 1:A:2170:C:H6 | 1.84 | 0.41 |
| 1:A:2290:G:O2' | 1:A:2291:G:H5' | 2.21 | 0.41 |
| 1:A:2320:A:H1' | 15:O:13:ARG:NH2 | 2.36 | 0.41 |
| 2:B:24:A:H4' | 2:B:25:A:C8 | 2.56 | 0.41 |
| 3:C:252:GLN:HB3 | 3:C:256:LYS:HD2 | 2.02 | 0.41 |
| 15:O:2:SER:OG | 15:O:3:VAL:N | 2.54 | 0.41 |
| 23:W:72:LYS:HB2 | 23:W:79:TYR:CD2 | 2.56 | 0.41 |
| 25:Y:17:ASN:HA | 25:Y:20:HIS:HD2 | 1.85 | 0.41 |
| 1:A:71:A:H4' | 1:A:72:A:H5'' | 2.03 | 0.41 |
| 1:A:1041:G:N3 | 1:A:1041:G:C2' | 2.74 | 0.41 |
| 1:A:1483:A:N3 | 1:A:1567:C:O2' | 2.48 | 0.41 |
| 1:A:1679:A:H2' | 1:A:1680:A:C8 | 2.55 | 0.41 |
| 1:A:1731:U:H5'' | 1:A:1732:G:P | 2.60 | 0.41 |
| 1:A:2096:U:O5' | 1:A:2096:U:C6 | 2.74 | 0.41 |
| 1:A:2129:A:C2 | 1:A:2130:C:O2 | 2.74 | 0.41 |
| 1:A:2296:A:N6 | 1:A:2297:A:N1 | 2.69 | 0.41 |
| 1:A:2605:G:C3' | 1:A:2606:C:C5' | 2.85 | 0.41 |
| 7:G:44:ILE:HD11 | 7:G:51:ARG:HB3 | 2.03 | 0.41 |
| 10:J:45:THR:HG22 | 17:Q:64:ARG:HH21 | 1.86 | 0.41 |
| 13:M:51:ARG:HD3 | 13:M:66:ILE:HD11 | 2.03 | 0.41 |
| 14:N:79:LEU:HD23 | 14:N:83:LEU:HB2 | 2.02 | 0.41 |
| 22:V:6:VAL:HG12 | 22:V:7:ASN:H | 1.83 | 0.41 |
| 27:1:9:TYR:HA | 27:1:12:ILE:HB | 2.03 | 0.41 |
| 1:A:865:C:H42 | 1:A:866:U:H3 | 1.68 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:870:G:O2' | 1:A:871:G:O5' | 2.36 | 0.40 |
| 1:A:1010:A:O2' | 1:A:1011:A:P | 2.79 | 0.40 |
| 1:A:1030:A:C2 | 1:A:1105:G:C2 | 3.09 | 0.40 |
| 1:A:1160:A:H2 | 1:A:1168:G:N3 | 2.04 | 0.40 |
| 1:A:1161:C:N4 | 1:A:1164:A:HO2' | 2.19 | 0.40 |
| 1:A:1787:C:H5 | 1:A:1804:G:H22 | 1.68 | 0.40 |
| 1:A:1856:G:N2 | 1:A:1859:A:OP2 | 2.36 | 0.40 |
| 4:D:157:LYS:HE3 | 4:D:157:LYS:HB2 | 1.67 | 0.40 |
| 10:J:142:ILE:H | 10:J:142:ILE:HG13 | 1.75 | 0.40 |
| 20:T:54:VAL:HB | 20:T:86:LEU:HD23 | 2.03 | 0.40 |
| 22:V:116:VAL:HG22 | 22:V:121:LYS:HE3 | 2.03 | 0.40 |
| 1:A:577:C:OP2 | 12:L:21:ARG:NH1 | 2.40 | 0.40 |
| 1:A:1030:A:C6 | 1:A:1105:G:N1 | 2.77 | 0.40 |
| 1:A:1161:C:O2' | 1:A:1162:G:C5 | 2.70 | 0.40 |
| 1:A:1701:G:O5' | 1:A:1701:G:H8 | 2.04 | 0.40 |
| 1:A:2057:A:C2' | 1:A:2058:A:O5' | 2.69 | 0.40 |
| 1:A:2081:G:O2' | 1:A:2082:A:H8 | 2.04 | 0.40 |
| 1:A:2245:C:O2' | 1:A:2414:C:OP2 | 2.39 | 0.40 |
| 1:A:2302:G:C2' | 1:A:2303:U:H6 | 2.20 | 0.40 |
| 1:A:2621:A:O2' | 1:A:2622:U:H5' | 2.21 | 0.40 |
| 22:V:48:ARG:CZ | 22:V:48:ARG:CB | 2.92 | 0.40 |
| 24:X:3:ARG:HD2 | 24:X:30:LEU:HD12 | 2.04 | 0.40 |
| 29:3:10:SER:OG | 29:3:44:ILE:O | 2.23 | 0.40 |
| 32:6:30:GLU:HA | 32:6:31:PRO:HD3 | 1.88 | 0.40 |
| 1:A:538:G:C2' | 1:A:539:U:C5' | 2.96 | 0.40 |
| 1:A:867:A:C5 | 1:A:868:G:H1' | 2.57 | 0.40 |
| 1:A:869:G:O4' | 1:A:869:G:P | 2.79 | 0.40 |
| 1:A:1094:C:O2 | 1:A:1094:C:C2' | 2.70 | 0.40 |
| 1:A:2120:G:H5' | 1:A:2120:G:C4 | 2.56 | 0.40 |
| 1:A:2142:U:C6 | 1:A:2143:G:C5 | 3.02 | 0.40 |
| 1:A:2193:U:HO2' | 1:A:2194:C:H6 | 1.69 | 0.40 |
| 1:A:2294:G:O2' | 1:A:2298:A:N6 | 2.55 | 0.40 |
| 3:C:232:HIS:HD2 | 3:C:241:ALA:HB1 | 1.86 | 0.40 |
| 3:C:259:ARG:NH2 | 3:C:264:THR:OG1 | 2.54 | 0.40 |
| 1:A:535:C:C2' | 1:A:536:U:C5' | 2.85 | 0.40 |
| 1:A:857:U:H3 | 1:A:898:A:H62 | 1.69 | 0.40 |
| 1:A:1053:G:H2' | 1:A:1054:C:C6 | 2.56 | 0.40 |
| 1:A:2121:A:H61 | 1:A:2143:G:C2' | 2.34 | 0.40 |
| 1:A:2133:C:H4' | 1:A:2135:G:C8 | 2.56 | 0.40 |
| 1:A:83:G:H5'' | 21:U:1:MET:HB2 | 2.03 | 0.40 |
| 1:A:537:U:O2' | 1:A:538:G:P | 2.78 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:889:A:N3 | 1:A:889:A:H2' | 2.37 | 0.40 |
| 1:A:915:A:OP2 | 1:A:915:A:H8 | 2.05 | 0.40 |
| 1:A:1045:G:N2 | 1:A:1095:U:C2 | 2.90 | 0.40 |
| 1:A:1074:A:C2 | 1:A:1075:A:H2 | 2.23 | 0.40 |
| 1:A:1106:G:H2' | 1:A:1107:C:O5' | 2.22 | 0.40 |
| 1:A:2122:A:C2 | 1:A:2145:A:C2 | 3.10 | 0.40 |
| 1:A:2129:A:C3' | 1:A:2130:C:O4' | 2.70 | 0.40 |
| 1:A:2143:G:C2' | 1:A:2145:A:N7 | 2.81 | 0.40 |
| 1:A:2152:C:H3' | 1:A:2152:C:H6 | 1.87 | 0.40 |
| 1:A:2162:C:C2 | 1:A:2163:A:C8 | 3.10 | 0.40 |
| 1:A:2192:G:H5'' | 3:C:68:ARG:HH12 | 1.87 | 0.40 |
| 1:A:2261:A:O2' | 1:A:2263:G:OP1 | 2.37 | 0.40 |
| 3:C:98:ASP:N | 3:C:98:ASP:OD1 | 2.55 | 0.40 |
| 7:G:55:ARG:HB3 | 7:G:56:ASN:H | 1.74 | 0.40 |

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|---------------|-----------|----------|----------|-------------|-----|
| 3 | C | 269/271 (99%) | 240 (89%) | 27 (10%) | 2 (1%) | 22 | 56 |
| 4 | D | 205/207 (99%) | 166 (81%) | 37 (18%) | 2 (1%) | 15 | 48 |
| 5 | E | 197/199 (99%) | 164 (83%) | 29 (15%) | 4 (2%) | 7 | 34 |
| 6 | F | 173/175 (99%) | 140 (81%) | 31 (18%) | 2 (1%) | 13 | 44 |
| 7 | G | 171/173 (99%) | 149 (87%) | 22 (13%) | 0 | 100 | 100 |
| 8 | H | 145/147 (99%) | 131 (90%) | 14 (10%) | 0 | 100 | 100 |
| 9 | I | 138/140 (99%) | 118 (86%) | 20 (14%) | 0 | 100 | 100 |
| 10 | J | 139/141 (99%) | 129 (93%) | 10 (7%) | 0 | 100 | 100 |
| 11 | K | 118/120 (98%) | 107 (91%) | 10 (8%) | 1 (1%) | 19 | 52 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-----------------|------------|-----------|----------|-------------|-----|
| 12 | L | 141/143 (99%) | 117 (83%) | 22 (16%) | 2 (1%) | 11 | 40 |
| 13 | M | 133/135 (98%) | 123 (92%) | 10 (8%) | 0 | 100 | 100 |
| 14 | N | 116/118 (98%) | 100 (86%) | 15 (13%) | 1 (1%) | 17 | 50 |
| 15 | O | 113/115 (98%) | 103 (91%) | 10 (9%) | 0 | 100 | 100 |
| 16 | P | 111/113 (98%) | 90 (81%) | 19 (17%) | 2 (2%) | 8 | 36 |
| 17 | Q | 115/117 (98%) | 108 (94%) | 7 (6%) | 0 | 100 | 100 |
| 18 | R | 101/103 (98%) | 85 (84%) | 14 (14%) | 2 (2%) | 7 | 34 |
| 19 | S | 107/109 (98%) | 103 (96%) | 3 (3%) | 1 (1%) | 17 | 50 |
| 20 | T | 90/92 (98%) | 78 (87%) | 12 (13%) | 0 | 100 | 100 |
| 21 | U | 101/103 (98%) | 94 (93%) | 7 (7%) | 0 | 100 | 100 |
| 22 | V | 186/188 (99%) | 160 (86%) | 23 (12%) | 3 (2%) | 9 | 38 |
| 23 | W | 74/76 (97%) | 48 (65%) | 26 (35%) | 0 | 100 | 100 |
| 24 | X | 75/77 (97%) | 69 (92%) | 5 (7%) | 1 (1%) | 12 | 42 |
| 25 | Y | 58/60 (97%) | 52 (90%) | 5 (9%) | 1 (2%) | 9 | 37 |
| 26 | Z | 55/57 (96%) | 51 (93%) | 4 (7%) | 0 | 100 | 100 |
| 27 | 1 | 29/31 (94%) | 25 (86%) | 4 (14%) | 0 | 100 | 100 |
| 28 | 2 | 51/53 (96%) | 46 (90%) | 5 (10%) | 0 | 100 | 100 |
| 29 | 3 | 48/50 (96%) | 42 (88%) | 6 (12%) | 0 | 100 | 100 |
| 30 | 4 | 42/44 (96%) | 39 (93%) | 3 (7%) | 0 | 100 | 100 |
| 31 | 5 | 61/63 (97%) | 53 (87%) | 8 (13%) | 0 | 100 | 100 |
| 32 | 6 | 36/38 (95%) | 31 (86%) | 5 (14%) | 0 | 100 | 100 |
| All | All | 3398/3458 (98%) | 2961 (87%) | 413 (12%) | 24 (1%) | 26 | 56 |

All (24) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5 | E | 60 | ARG |
| 6 | F | 37 | ASN |
| 16 | P | 95 | LYS |
| 18 | R | 70 | ASP |
| 3 | C | 237 | GLY |
| 5 | E | 61 | GLN |
| 12 | L | 68 | SER |
| 19 | S | 61 | ASN |
| 22 | V | 102 | LYS |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 22 | V | 103 | LEU |
| 22 | V | 155 | GLU |
| 4 | D | 164 | HIS |
| 5 | E | 78 | ARG |
| 6 | F | 114 | PHE |
| 14 | N | 71 | ARG |
| 5 | E | 183 | ASP |
| 12 | L | 99 | ASN |
| 16 | P | 94 | ARG |
| 25 | Y | 8 | GLU |
| 4 | D | 159 | LYS |
| 3 | C | 124 | ILE |
| 24 | X | 64 | ILE |
| 18 | R | 52 | PRO |
| 11 | K | 119 | 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 | C | 212/212 (100%) | 209 (99%) | 3 (1%) | 67 | 82 |
| 4 | D | 159/159 (100%) | 151 (95%) | 8 (5%) | 24 | 55 |
| 5 | E | 157/157 (100%) | 153 (98%) | 4 (2%) | 47 | 72 |
| 6 | F | 150/150 (100%) | 148 (99%) | 2 (1%) | 69 | 82 |
| 7 | G | 137/137 (100%) | 135 (98%) | 2 (2%) | 65 | 81 |
| 8 | H | 106/106 (100%) | 105 (99%) | 1 (1%) | 78 | 87 |
| 9 | I | 108/108 (100%) | 106 (98%) | 2 (2%) | 57 | 77 |
| 10 | J | 118/118 (100%) | 116 (98%) | 2 (2%) | 60 | 78 |
| 11 | K | 100/100 (100%) | 98 (98%) | 2 (2%) | 55 | 76 |
| 12 | L | 105/105 (100%) | 103 (98%) | 2 (2%) | 57 | 77 |
| 13 | M | 108/108 (100%) | 106 (98%) | 2 (2%) | 57 | 77 |
| 14 | N | 97/97 (100%) | 96 (99%) | 1 (1%) | 76 | 85 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|------------------|------------|----------|-------------|-----|
| 15 | O | 86/86 (100%) | 86 (100%) | 0 | 100 | 100 |
| 16 | P | 95/95 (100%) | 95 (100%) | 0 | 100 | 100 |
| 17 | Q | 87/87 (100%) | 87 (100%) | 0 | 100 | 100 |
| 18 | R | 86/86 (100%) | 84 (98%) | 2 (2%) | 50 | 73 |
| 19 | S | 86/86 (100%) | 84 (98%) | 2 (2%) | 50 | 73 |
| 20 | T | 73/77 (95%) | 72 (99%) | 1 (1%) | 67 | 82 |
| 21 | U | 88/88 (100%) | 88 (100%) | 0 | 100 | 100 |
| 22 | V | 146/153 (95%) | 141 (97%) | 5 (3%) | 37 | 65 |
| 23 | W | 56/56 (100%) | 55 (98%) | 1 (2%) | 59 | 78 |
| 24 | X | 66/66 (100%) | 64 (97%) | 2 (3%) | 41 | 68 |
| 25 | Y | 53/53 (100%) | 53 (100%) | 0 | 100 | 100 |
| 26 | Z | 48/48 (100%) | 47 (98%) | 1 (2%) | 53 | 75 |
| 27 | 1 | 27/27 (100%) | 27 (100%) | 0 | 100 | 100 |
| 28 | 2 | 46/46 (100%) | 46 (100%) | 0 | 100 | 100 |
| 29 | 3 | 46/46 (100%) | 45 (98%) | 1 (2%) | 52 | 74 |
| 30 | 4 | 37/37 (100%) | 35 (95%) | 2 (5%) | 22 | 53 |
| 31 | 5 | 54/54 (100%) | 53 (98%) | 1 (2%) | 57 | 77 |
| 32 | 6 | 34/34 (100%) | 33 (97%) | 1 (3%) | 42 | 68 |
| All | All | 2771/2782 (100%) | 2721 (98%) | 50 (2%) | 61 | 78 |

All (50) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | C | 80 | ARG |
| 3 | C | 238 | ARG |
| 3 | C | 239 | THR |
| 4 | D | 34 | ARG |
| 4 | D | 128 | ARG |
| 4 | D | 154 | ARG |
| 4 | D | 155 | VAL |
| 4 | D | 156 | PHE |
| 4 | D | 157 | LYS |
| 4 | D | 159 | LYS |
| 4 | D | 161 | MET |
| 5 | E | 16 | ARG |
| 5 | E | 61 | GLN |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 5 | E | 89 | ARG |
| 5 | E | 104 | LEU |
| 6 | F | 37 | ASN |
| 6 | F | 145 | LYS |
| 7 | G | 55 | ARG |
| 7 | G | 149 | ARG |
| 8 | H | 115 | ARG |
| 9 | I | 36 | MET |
| 9 | I | 92 | ARG |
| 10 | J | 50 | THR |
| 10 | J | 116 | ARG |
| 11 | K | 53 | LYS |
| 11 | K | 89 | ASN |
| 12 | L | 7 | ARG |
| 12 | L | 69 | LEU |
| 13 | M | 6 | ARG |
| 13 | M | 76 | LYS |
| 14 | N | 2 | ARG |
| 18 | R | 43 | ASN |
| 18 | R | 79 | ARG |
| 19 | S | 11 | ARG |
| 19 | S | 61 | ASN |
| 20 | T | 77 | ASN |
| 22 | V | 48 | ARG |
| 22 | V | 91 | HIS |
| 22 | V | 94 | PHE |
| 22 | V | 113 | ASN |
| 22 | V | 169 | LYS |
| 23 | W | 32 | LYS |
| 24 | X | 27 | ARG |
| 24 | X | 50 | ARG |
| 26 | Z | 42 | GLU |
| 29 | 3 | 24 | ARG |
| 30 | 4 | 1 | MET |
| 30 | 4 | 41 | ARG |
| 31 | 5 | 37 | THR |
| 32 | 6 | 8 | LYS |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (29) such sidechains are listed below:

| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | C | 90 | HIS |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4 | D | 33 | ASN |
| 4 | D | 68 | HIS |
| 4 | D | 136 | ASN |
| 4 | D | 164 | HIS |
| 5 | E | 61 | GLN |
| 5 | E | 93 | GLN |
| 6 | F | 37 | ASN |
| 6 | F | 52 | ASN |
| 7 | G | 23 | GLN |
| 9 | I | 17 | GLN |
| 9 | I | 19 | ASN |
| 10 | J | 58 | ASN |
| 10 | J | 77 | HIS |
| 11 | K | 89 | ASN |
| 14 | N | 22 | GLN |
| 17 | Q | 44 | GLN |
| 18 | R | 43 | ASN |
| 18 | R | 69 | HIS |
| 18 | R | 83 | HIS |
| 20 | T | 77 | ASN |
| 21 | U | 44 | HIS |
| 22 | V | 83 | HIS |
| 22 | V | 110 | HIS |
| 22 | V | 113 | ASN |
| 25 | Y | 20 | HIS |
| 25 | Y | 58 | ASN |
| 26 | Z | 33 | HIS |
| 28 | 2 | 41 | HIS |

5.3.3 RNA [i](#)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1 | A | 2840/2888 (98%) | 1042 (36%) | 72 (2%) |
| 2 | B | 115/116 (99%) | 28 (24%) | 2 (1%) |
| All | All | 2955/3004 (98%) | 1070 (36%) | 74 (2%) |

All (1070) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 4 | C |
| 1 | A | 10 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 12 | G |
| 1 | A | 13 | A |
| 1 | A | 14 | A |
| 1 | A | 15 | G |
| 1 | A | 26 | G |
| 1 | A | 28 | A |
| 1 | A | 29 | U |
| 1 | A | 33 | U |
| 1 | A | 34 | U |
| 1 | A | 35 | G |
| 1 | A | 43 | G |
| 1 | A | 44 | A |
| 1 | A | 45 | G |
| 1 | A | 46 | G |
| 1 | A | 50 | U |
| 1 | A | 51 | G |
| 1 | A | 56 | A |
| 1 | A | 59 | U |
| 1 | A | 60 | G |
| 1 | A | 63 | A |
| 1 | A | 69 | C |
| 1 | A | 71 | A |
| 1 | A | 73 | A |
| 1 | A | 74 | A |
| 1 | A | 75 | G |
| 1 | A | 77 | U |
| 1 | A | 79 | C |
| 1 | A | 82 | G |
| 1 | A | 85 | G |
| 1 | A | 88 | G |
| 1 | A | 91 | A |
| 1 | A | 92 | A |
| 1 | A | 93 | A |
| 1 | A | 95 | A |
| 1 | A | 96 | G |
| 1 | A | 97 | A |
| 1 | A | 99 | U |
| 1 | A | 100 | U |
| 1 | A | 101 | U |
| 1 | A | 102 | G |
| 1 | A | 104 | U |
| 1 | A | 106 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 114 | U |
| 1 | A | 115 | C |
| 1 | A | 118 | A |
| 1 | A | 119 | A |
| 1 | A | 120 | U |
| 1 | A | 125 | G |
| 1 | A | 128 | C |
| 1 | A | 131 | A |
| 1 | A | 132 | C |
| 1 | A | 138 | A |
| 1 | A | 141 | A |
| 1 | A | 142 | C |
| 1 | A | 146 | G |
| 1 | A | 147 | G |
| 1 | A | 150 | U |
| 1 | A | 152 | U |
| 1 | A | 153 | U |
| 1 | A | 154 | G |
| 1 | A | 156 | A |
| 1 | A | 160 | A |
| 1 | A | 162 | U |
| 1 | A | 163 | C |
| 1 | A | 164 | C |
| 1 | A | 165 | A |
| 1 | A | 166 | U |
| 1 | A | 172 | C |
| 1 | A | 175 | G |
| 1 | A | 181 | A |
| 1 | A | 196 | A |
| 1 | A | 199 | A |
| 1 | A | 201 | C |
| 1 | A | 205 | G |
| 1 | A | 206 | U |
| 1 | A | 215 | G |
| 1 | A | 216 | A |
| 1 | A | 220 | G |
| 1 | A | 222 | A |
| 1 | A | 227 | A |
| 1 | A | 228 | C |
| 1 | A | 229 | C |
| 1 | A | 230 | G |
| 1 | A | 233 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 241 | A |
| 1 | A | 242 | G |
| 1 | A | 244 | A |
| 1 | A | 248 | G |
| 1 | A | 249 | C |
| 1 | A | 252 | G |
| 1 | A | 255 | A |
| 1 | A | 261 | G |
| 1 | A | 264 | U |
| 1 | A | 265 | A |
| 1 | A | 266 | G |
| 1 | A | 267 | C |
| 1 | A | 268 | C |
| 1 | A | 270 | U |
| 1 | A | 271 | U |
| 1 | A | 272 | A |
| 1 | A | 273 | A |
| 1 | A | 274 | G |
| 1 | A | 275 | C |
| 1 | A | 276 | U |
| 1 | A | 284 | U |
| 1 | A | 287 | U |
| 1 | A | 288 | A |
| 1 | A | 289 | G |
| 1 | A | 293 | A |
| 1 | A | 294 | A |
| 1 | A | 296 | G |
| 1 | A | 297 | C |
| 1 | A | 305 | A |
| 1 | A | 314 | A |
| 1 | A | 315 | U |
| 1 | A | 316 | A |
| 1 | A | 317 | G |
| 1 | A | 318 | U |
| 1 | A | 319 | G |
| 1 | A | 320 | G |
| 1 | A | 321 | G |
| 1 | A | 322 | U |
| 1 | A | 323 | G |
| 1 | A | 324 | A |
| 1 | A | 325 | U |
| 1 | A | 334 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 336 | G |
| 1 | A | 337 | C |
| 1 | A | 338 | G |
| 1 | A | 339 | A |
| 1 | A | 342 | G |
| 1 | A | 346 | C |
| 1 | A | 347 | U |
| 1 | A | 348 | U |
| 1 | A | 349 | U |
| 1 | A | 350 | G |
| 1 | A | 353 | G |
| 1 | A | 354 | U |
| 1 | A | 355 | G |
| 1 | A | 356 | A |
| 1 | A | 357 | A |
| 1 | A | 358 | A |
| 1 | A | 362 | A |
| 1 | A | 363 | G |
| 1 | A | 374 | C |
| 1 | A | 377 | G |
| 1 | A | 378 | A |
| 1 | A | 380 | A |
| 1 | A | 381 | A |
| 1 | A | 386 | U |
| 1 | A | 387 | G |
| 1 | A | 391 | G |
| 1 | A | 394 | C |
| 1 | A | 395 | A |
| 1 | A | 396 | U |
| 1 | A | 397 | G |
| 1 | A | 398 | G |
| 1 | A | 399 | G |
| 1 | A | 403 | A |
| 1 | A | 406 | A |
| 1 | A | 408 | C |
| 1 | A | 412 | C |
| 1 | A | 413 | A |
| 1 | A | 428 | U |
| 1 | A | 430 | A |
| 1 | A | 434 | A |
| 1 | A | 435 | C |
| 1 | A | 438 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 445 | A |
| 1 | A | 446 | C |
| 1 | A | 447 | C |
| 1 | A | 448 | A |
| 1 | A | 458 | G |
| 1 | A | 461 | A |
| 1 | A | 463 | A |
| 1 | A | 464 | G |
| 1 | A | 468 | A |
| 1 | A | 471 | A |
| 1 | A | 472 | G |
| 1 | A | 480 | G |
| 1 | A | 481 | A |
| 1 | A | 484 | G |
| 1 | A | 485 | G |
| 1 | A | 492 | A |
| 1 | A | 496 | A |
| 1 | A | 501 | C |
| 1 | A | 504 | A |
| 1 | A | 509 | G |
| 1 | A | 513 | G |
| 1 | A | 517 | A |
| 1 | A | 518 | C |
| 1 | A | 519 | A |
| 1 | A | 520 | A |
| 1 | A | 521 | G |
| 1 | A | 523 | A |
| 1 | A | 524 | G |
| 1 | A | 533 | U |
| 1 | A | 534 | A |
| 1 | A | 535 | C |
| 1 | A | 536 | U |
| 1 | A | 537 | U |
| 1 | A | 538 | G |
| 1 | A | 539 | U |
| 1 | A | 540 | U |
| 1 | A | 541 | A |
| 1 | A | 550 | C |
| 1 | A | 553 | A |
| 1 | A | 558 | U |
| 1 | A | 560 | G |
| 1 | A | 563 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 564 | A |
| 1 | A | 565 | A |
| 1 | A | 576 | A |
| 1 | A | 586 | A |
| 1 | A | 592 | A |
| 1 | A | 593 | A |
| 1 | A | 594 | G |
| 1 | A | 603 | U |
| 1 | A | 604 | A |
| 1 | A | 605 | U |
| 1 | A | 606 | A |
| 1 | A | 607 | G |
| 1 | A | 610 | U |
| 1 | A | 611 | A |
| 1 | A | 615 | G |
| 1 | A | 622 | A |
| 1 | A | 624 | G |
| 1 | A | 627 | A |
| 1 | A | 635 | U |
| 1 | A | 647 | U |
| 1 | A | 659 | G |
| 1 | A | 667 | A |
| 1 | A | 671 | G |
| 1 | A | 673 | C |
| 1 | A | 675 | A |
| 1 | A | 676 | U |
| 1 | A | 680 | U |
| 1 | A | 685 | G |
| 1 | A | 687 | G |
| 1 | A | 690 | G |
| 1 | A | 694 | G |
| 1 | A | 704 | U |
| 1 | A | 708 | A |
| 1 | A | 709 | C |
| 1 | A | 714 | U |
| 1 | A | 716 | G |
| 1 | A | 717 | A |
| 1 | A | 720 | A |
| 1 | A | 722 | C |
| 1 | A | 724 | A |
| 1 | A | 736 | U |
| 1 | A | 738 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 739 | A |
| 1 | A | 743 | G |
| 1 | A | 747 | G |
| 1 | A | 748 | G |
| 1 | A | 753 | G |
| 1 | A | 754 | A |
| 1 | A | 755 | C |
| 1 | A | 761 | G |
| 1 | A | 765 | G |
| 1 | A | 766 | G |
| 1 | A | 767 | A |
| 1 | A | 772 | A |
| 1 | A | 773 | A |
| 1 | A | 774 | G |
| 1 | A | 775 | G |
| 1 | A | 779 | A |
| 1 | A | 782 | A |
| 1 | A | 783 | A |
| 1 | A | 784 | G |
| 1 | A | 790 | A |
| 1 | A | 793 | U |
| 1 | A | 795 | G |
| 1 | A | 796 | C |
| 1 | A | 797 | U |
| 1 | A | 802 | C |
| 1 | A | 803 | U |
| 1 | A | 806 | U |
| 1 | A | 824 | G |
| 1 | A | 827 | C |
| 1 | A | 833 | G |
| 1 | A | 836 | U |
| 1 | A | 837 | C |
| 1 | A | 839 | C |
| 1 | A | 841 | C |
| 1 | A | 842 | U |
| 1 | A | 843 | G |
| 1 | A | 846 | G |
| 1 | A | 848 | G |
| 1 | A | 850 | A |
| 1 | A | 855 | A |
| 1 | A | 858 | G |
| 1 | A | 866 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 867 | A |
| 1 | A | 868 | G |
| 1 | A | 869 | G |
| 1 | A | 870 | G |
| 1 | A | 871 | G |
| 1 | A | 872 | G |
| 1 | A | 873 | U |
| 1 | A | 874 | C |
| 1 | A | 875 | A |
| 1 | A | 876 | U |
| 1 | A | 877 | C |
| 1 | A | 878 | C |
| 1 | A | 879 | C |
| 1 | A | 881 | A |
| 1 | A | 882 | C |
| 1 | A | 883 | U |
| 1 | A | 884 | U |
| 1 | A | 885 | A |
| 1 | A | 887 | C |
| 1 | A | 888 | A |
| 1 | A | 889 | A |
| 1 | A | 890 | A |
| 1 | A | 892 | C |
| 1 | A | 896 | G |
| 1 | A | 899 | A |
| 1 | A | 904 | C |
| 1 | A | 908 | U |
| 1 | A | 911 | C |
| 1 | A | 913 | A |
| 1 | A | 914 | G |
| 1 | A | 915 | A |
| 1 | A | 924 | G |
| 1 | A | 925 | C |
| 1 | A | 931 | A |
| 1 | A | 935 | A |
| 1 | A | 936 | C |
| 1 | A | 948 | U |
| 1 | A | 949 | A |
| 1 | A | 951 | C |
| 1 | A | 952 | G |
| 1 | A | 954 | C |
| 1 | A | 958 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 961 | G |
| 1 | A | 963 | A |
| 1 | A | 964 | A |
| 1 | A | 969 | A |
| 1 | A | 971 | A |
| 1 | A | 973 | A |
| 1 | A | 974 | A |
| 1 | A | 975 | C |
| 1 | A | 976 | C |
| 1 | A | 979 | G |
| 1 | A | 980 | A |
| 1 | A | 982 | C |
| 1 | A | 986 | A |
| 1 | A | 991 | A |
| 1 | A | 992 | G |
| 1 | A | 993 | G |
| 1 | A | 998 | A |
| 1 | A | 999 | A |
| 1 | A | 1002 | U |
| 1 | A | 1003 | U |
| 1 | A | 1007 | G |
| 1 | A | 1009 | U |
| 1 | A | 1010 | A |
| 1 | A | 1011 | A |
| 1 | A | 1012 | G |
| 1 | A | 1015 | G |
| 1 | A | 1016 | U |
| 1 | A | 1017 | A |
| 1 | A | 1018 | A |
| 1 | A | 1019 | A |
| 1 | A | 1023 | U |
| 1 | A | 1025 | U |
| 1 | A | 1029 | A |
| 1 | A | 1030 | A |
| 1 | A | 1031 | G |
| 1 | A | 1036 | A |
| 1 | A | 1037 | G |
| 1 | A | 1040 | A |
| 1 | A | 1041 | G |
| 1 | A | 1043 | U |
| 1 | A | 1044 | A |
| 1 | A | 1046 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1048 | G |
| 1 | A | 1050 | U |
| 1 | A | 1051 | U |
| 1 | A | 1052 | G |
| 1 | A | 1057 | A |
| 1 | A | 1058 | G |
| 1 | A | 1060 | A |
| 1 | A | 1061 | G |
| 1 | A | 1063 | A |
| 1 | A | 1064 | G |
| 1 | A | 1066 | C |
| 1 | A | 1068 | C |
| 1 | A | 1069 | C |
| 1 | A | 1071 | U |
| 1 | A | 1074 | A |
| 1 | A | 1077 | G |
| 1 | A | 1078 | A |
| 1 | A | 1080 | A |
| 1 | A | 1084 | U |
| 1 | A | 1085 | A |
| 1 | A | 1086 | A |
| 1 | A | 1087 | U |
| 1 | A | 1088 | A |
| 1 | A | 1091 | U |
| 1 | A | 1095 | U |
| 1 | A | 1096 | A |
| 1 | A | 1097 | G |
| 1 | A | 1098 | U |
| 1 | A | 1100 | G |
| 1 | A | 1101 | A |
| 1 | A | 1102 | G |
| 1 | A | 1108 | C |
| 1 | A | 1112 | G |
| 1 | A | 1113 | C |
| 1 | A | 1114 | G |
| 1 | A | 1117 | A |
| 1 | A | 1119 | A |
| 1 | A | 1120 | U |
| 1 | A | 1122 | U |
| 1 | A | 1123 | A |
| 1 | A | 1124 | A |
| 1 | A | 1125 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1129 | G |
| 1 | A | 1138 | A |
| 1 | A | 1141 | C |
| 1 | A | 1146 | A |
| 1 | A | 1147 | A |
| 1 | A | 1148 | G |
| 1 | A | 1149 | C |
| 1 | A | 1155 | G |
| 1 | A | 1156 | U |
| 1 | A | 1160 | A |
| 1 | A | 1161 | C |
| 1 | A | 1162 | G |
| 1 | A | 1163 | U |
| 1 | A | 1164 | A |
| 1 | A | 1165 | A |
| 1 | A | 1166 | G |
| 1 | A | 1167 | U |
| 1 | A | 1168 | G |
| 1 | A | 1170 | C |
| 1 | A | 1171 | G |
| 1 | A | 1172 | C |
| 1 | A | 1174 | G |
| 1 | A | 1177 | G |
| 1 | A | 1191 | A |
| 1 | A | 1192 | A |
| 1 | A | 1193 | G |
| 1 | A | 1197 | G |
| 1 | A | 1198 | U |
| 1 | A | 1199 | G |
| 1 | A | 1202 | G |
| 1 | A | 1214 | A |
| 1 | A | 1221 | U |
| 1 | A | 1223 | G |
| 1 | A | 1225 | G |
| 1 | A | 1228 | A |
| 1 | A | 1229 | U |
| 1 | A | 1232 | G |
| 1 | A | 1233 | A |
| 1 | A | 1234 | A |
| 1 | A | 1237 | G |
| 1 | A | 1238 | C |
| 1 | A | 1240 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1242 | U |
| 1 | A | 1243 | G |
| 1 | A | 1244 | C |
| 1 | A | 1246 | G |
| 1 | A | 1249 | A |
| 1 | A | 1251 | G |
| 1 | A | 1253 | G |
| 1 | A | 1255 | A |
| 1 | A | 1258 | G |
| 1 | A | 1259 | A |
| 1 | A | 1260 | C |
| 1 | A | 1261 | A |
| 1 | A | 1263 | U |
| 1 | A | 1276 | C |
| 1 | A | 1277 | A |
| 1 | A | 1283 | G |
| 1 | A | 1287 | A |
| 1 | A | 1288 | A |
| 1 | A | 1295 | A |
| 1 | A | 1306 | G |
| 1 | A | 1308 | A |
| 1 | A | 1311 | G |
| 1 | A | 1317 | C |
| 1 | A | 1321 | G |
| 1 | A | 1328 | U |
| 1 | A | 1329 | A |
| 1 | A | 1339 | U |
| 1 | A | 1347 | G |
| 1 | A | 1352 | A |
| 1 | A | 1355 | A |
| 1 | A | 1360 | A |
| 1 | A | 1361 | G |
| 1 | A | 1366 | U |
| 1 | A | 1367 | G |
| 1 | A | 1370 | A |
| 1 | A | 1372 | A |
| 1 | A | 1373 | C |
| 1 | A | 1377 | U |
| 1 | A | 1379 | A |
| 1 | A | 1380 | A |
| 1 | A | 1382 | A |
| 1 | A | 1389 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1403 | G |
| 1 | A | 1404 | C |
| 1 | A | 1406 | A |
| 1 | A | 1410 | A |
| 1 | A | 1415 | C |
| 1 | A | 1420 | A |
| 1 | A | 1421 | A |
| 1 | A | 1422 | G |
| 1 | A | 1423 | G |
| 1 | A | 1424 | C |
| 1 | A | 1432 | G |
| 1 | A | 1440 | U |
| 1 | A | 1442 | G |
| 1 | A | 1445 | U |
| 1 | A | 1447 | U |
| 1 | A | 1448 | C |
| 1 | A | 1449 | C |
| 1 | A | 1460 | U |
| 1 | A | 1469 | G |
| 1 | A | 1474 | C |
| 1 | A | 1477 | A |
| 1 | A | 1480 | U |
| 1 | A | 1484 | U |
| 1 | A | 1496 | A |
| 1 | A | 1497 | G |
| 1 | A | 1498 | G |
| 1 | A | 1502 | A |
| 1 | A | 1503 | G |
| 1 | A | 1508 | G |
| 1 | A | 1509 | A |
| 1 | A | 1510 | U |
| 1 | A | 1511 | G |
| 1 | A | 1515 | A |
| 1 | A | 1516 | G |
| 1 | A | 1518 | C |
| 1 | A | 1526 | A |
| 1 | A | 1527 | G |
| 1 | A | 1528 | A |
| 1 | A | 1529 | U |
| 1 | A | 1540 | U |
| 1 | A | 1542 | G |
| 1 | A | 1544 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1545 | G |
| 1 | A | 1547 | C |
| 1 | A | 1548 | A |
| 1 | A | 1556 | A |
| 1 | A | 1557 | A |
| 1 | A | 1558 | G |
| 1 | A | 1559 | A |
| 1 | A | 1560 | A |
| 1 | A | 1568 | U |
| 1 | A | 1572 | C |
| 1 | A | 1573 | U |
| 1 | A | 1574 | U |
| 1 | A | 1575 | C |
| 1 | A | 1576 | A |
| 1 | A | 1580 | A |
| 1 | A | 1583 | C |
| 1 | A | 1585 | G |
| 1 | A | 1590 | C |
| 1 | A | 1592 | U |
| 1 | A | 1593 | A |
| 1 | A | 1597 | C |
| 1 | A | 1598 | A |
| 1 | A | 1599 | A |
| 1 | A | 1600 | A |
| 1 | A | 1602 | C |
| 1 | A | 1603 | G |
| 1 | A | 1606 | A |
| 1 | A | 1608 | A |
| 1 | A | 1609 | G |
| 1 | A | 1624 | A |
| 1 | A | 1628 | C |
| 1 | A | 1629 | C |
| 1 | A | 1634 | C |
| 1 | A | 1636 | C |
| 1 | A | 1637 | U |
| 1 | A | 1638 | U |
| 1 | A | 1639 | G |
| 1 | A | 1643 | G |
| 1 | A | 1658 | A |
| 1 | A | 1663 | G |
| 1 | A | 1664 | G |
| 1 | A | 1667 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1673 | C |
| 1 | A | 1683 | U |
| 1 | A | 1685 | G |
| 1 | A | 1686 | G |
| 1 | A | 1689 | G |
| 1 | A | 1690 | A |
| 1 | A | 1698 | C |
| 1 | A | 1702 | C |
| 1 | A | 1703 | U |
| 1 | A | 1704 | A |
| 1 | A | 1708 | U |
| 1 | A | 1710 | A |
| 1 | A | 1726 | A |
| 1 | A | 1727 | G |
| 1 | A | 1728 | C |
| 1 | A | 1729 | U |
| 1 | A | 1730 | C |
| 1 | A | 1732 | G |
| 1 | A | 1733 | G |
| 1 | A | 1734 | C |
| 1 | A | 1735 | U |
| 1 | A | 1739 | C |
| 1 | A | 1741 | A |
| 1 | A | 1742 | A |
| 1 | A | 1743 | G |
| 1 | A | 1745 | U |
| 1 | A | 1748 | C |
| 1 | A | 1749 | A |
| 1 | A | 1750 | G |
| 1 | A | 1751 | G |
| 1 | A | 1756 | U |
| 1 | A | 1757 | G |
| 1 | A | 1760 | A |
| 1 | A | 1763 | G |
| 1 | A | 1768 | U |
| 1 | A | 1771 | A |
| 1 | A | 1773 | A |
| 1 | A | 1787 | C |
| 1 | A | 1788 | A |
| 1 | A | 1789 | A |
| 1 | A | 1794 | G |
| 1 | A | 1795 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1796 | A |
| 1 | A | 1797 | A |
| 1 | A | 1798 | G |
| 1 | A | 1800 | G |
| 1 | A | 1802 | A |
| 1 | A | 1803 | C |
| 1 | A | 1808 | A |
| 1 | A | 1810 | G |
| 1 | A | 1813 | G |
| 1 | A | 1814 | U |
| 1 | A | 1815 | G |
| 1 | A | 1816 | A |
| 1 | A | 1834 | A |
| 1 | A | 1838 | U |
| 1 | A | 1841 | A |
| 1 | A | 1844 | G |
| 1 | A | 1850 | G |
| 1 | A | 1851 | U |
| 1 | A | 1853 | A |
| 1 | A | 1858 | A |
| 1 | A | 1861 | C |
| 1 | A | 1867 | U |
| 1 | A | 1871 | G |
| 1 | A | 1877 | A |
| 1 | A | 1886 | A |
| 1 | A | 1887 | A |
| 1 | A | 1890 | G |
| 1 | A | 1892 | C |
| 1 | A | 1893 | G |
| 1 | A | 1894 | G |
| 1 | A | 1896 | C |
| 1 | A | 1900 | A |
| 1 | A | 1902 | U |
| 1 | A | 1903 | A |
| 1 | A | 1904 | U |
| 1 | A | 1916 | G |
| 1 | A | 1917 | G |
| 1 | A | 1924 | A |
| 1 | A | 1925 | A |
| 1 | A | 1926 | U |
| 1 | A | 1935 | G |
| 1 | A | 1938 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1942 | U |
| 1 | A | 1950 | U |
| 1 | A | 1951 | G |
| 1 | A | 1953 | A |
| 1 | A | 1954 | C |
| 1 | A | 1957 | A |
| 1 | A | 1958 | U |
| 1 | A | 1959 | G |
| 1 | A | 1967 | G |
| 1 | A | 1968 | A |
| 1 | A | 1969 | U |
| 1 | A | 1978 | U |
| 1 | A | 1982 | U |
| 1 | A | 1984 | C |
| 1 | A | 1991 | G |
| 1 | A | 1993 | C |
| 1 | A | 2007 | A |
| 1 | A | 2008 | A |
| 1 | A | 2010 | C |
| 1 | A | 2013 | U |
| 1 | A | 2014 | G |
| 1 | A | 2015 | U |
| 1 | A | 2017 | A |
| 1 | A | 2018 | A |
| 1 | A | 2020 | A |
| 1 | A | 2021 | U |
| 1 | A | 2022 | G |
| 1 | A | 2023 | C |
| 1 | A | 2024 | A |
| 1 | A | 2025 | G |
| 1 | A | 2030 | U |
| 1 | A | 2031 | C |
| 1 | A | 2036 | G |
| 1 | A | 2039 | A |
| 1 | A | 2042 | C |
| 1 | A | 2043 | G |
| 1 | A | 2046 | A |
| 1 | A | 2047 | A |
| 1 | A | 2048 | G |
| 1 | A | 2049 | A |
| 1 | A | 2050 | C |
| 1 | A | 2051 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2053 | C |
| 1 | A | 2054 | G |
| 1 | A | 2055 | U |
| 1 | A | 2056 | G |
| 1 | A | 2058 | A |
| 1 | A | 2060 | C |
| 1 | A | 2063 | U |
| 1 | A | 2064 | A |
| 1 | A | 2075 | G |
| 1 | A | 2076 | C |
| 1 | A | 2080 | G |
| 1 | A | 2082 | A |
| 1 | A | 2086 | U |
| 1 | A | 2089 | G |
| 1 | A | 2090 | C |
| 1 | A | 2092 | U |
| 1 | A | 2093 | G |
| 1 | A | 2094 | C |
| 1 | A | 2095 | U |
| 1 | A | 2097 | G |
| 1 | A | 2098 | U |
| 1 | A | 2099 | G |
| 1 | A | 2101 | A |
| 1 | A | 2102 | G |
| 1 | A | 2103 | G |
| 1 | A | 2105 | U |
| 1 | A | 2106 | A |
| 1 | A | 2107 | G |
| 1 | A | 2108 | G |
| 1 | A | 2109 | U |
| 1 | A | 2110 | G |
| 1 | A | 2113 | A |
| 1 | A | 2114 | G |
| 1 | A | 2115 | G |
| 1 | A | 2116 | C |
| 1 | A | 2117 | U |
| 1 | A | 2118 | U |
| 1 | A | 2119 | U |
| 1 | A | 2120 | G |
| 1 | A | 2121 | A |
| 1 | A | 2122 | A |
| 1 | A | 2126 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2128 | G |
| 1 | A | 2129 | A |
| 1 | A | 2130 | C |
| 1 | A | 2131 | G |
| 1 | A | 2132 | C |
| 1 | A | 2133 | C |
| 1 | A | 2134 | A |
| 1 | A | 2135 | G |
| 1 | A | 2138 | C |
| 1 | A | 2139 | G |
| 1 | A | 2140 | C |
| 1 | A | 2141 | G |
| 1 | A | 2142 | U |
| 1 | A | 2143 | G |
| 1 | A | 2144 | G |
| 1 | A | 2145 | A |
| 1 | A | 2146 | G |
| 1 | A | 2147 | C |
| 1 | A | 2148 | C |
| 1 | A | 2149 | A |
| 1 | A | 2150 | U |
| 1 | A | 2151 | C |
| 1 | A | 2152 | C |
| 1 | A | 2153 | U |
| 1 | A | 2156 | A |
| 1 | A | 2158 | A |
| 1 | A | 2161 | C |
| 1 | A | 2162 | C |
| 1 | A | 2164 | C |
| 1 | A | 2165 | C |
| 1 | A | 2167 | U |
| 1 | A | 2168 | G |
| 1 | A | 2169 | G |
| 1 | A | 2172 | U |
| 1 | A | 2174 | C |
| 1 | A | 2175 | U |
| 1 | A | 2176 | U |
| 1 | A | 2185 | A |
| 1 | A | 2187 | C |
| 1 | A | 2190 | U |
| 1 | A | 2191 | G |
| 1 | A | 2194 | C |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2198 | A |
| 1 | A | 2199 | A |
| 1 | A | 2200 | U |
| 1 | A | 2201 | C |
| 1 | A | 2206 | U |
| 1 | A | 2207 | C |
| 1 | A | 2212 | A |
| 1 | A | 2221 | G |
| 1 | A | 2225 | G |
| 1 | A | 2226 | G |
| 1 | A | 2229 | G |
| 1 | A | 2237 | G |
| 1 | A | 2239 | G |
| 1 | A | 2240 | G |
| 1 | A | 2246 | U |
| 1 | A | 2253 | A |
| 1 | A | 2256 | G |
| 1 | A | 2264 | G |
| 1 | A | 2265 | A |
| 1 | A | 2266 | G |
| 1 | A | 2268 | A |
| 1 | A | 2270 | U |
| 1 | A | 2271 | A |
| 1 | A | 2274 | A |
| 1 | A | 2275 | A |
| 1 | A | 2278 | U |
| 1 | A | 2279 | G |
| 1 | A | 2281 | G |
| 1 | A | 2284 | C |
| 1 | A | 2286 | G |
| 1 | A | 2287 | A |
| 1 | A | 2288 | C |
| 1 | A | 2289 | C |
| 1 | A | 2297 | A |
| 1 | A | 2299 | U |
| 1 | A | 2301 | G |
| 1 | A | 2302 | G |
| 1 | A | 2303 | U |
| 1 | A | 2305 | G |
| 1 | A | 2306 | C |
| 1 | A | 2307 | A |
| 1 | A | 2308 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2309 | A |
| 1 | A | 2312 | A |
| 1 | A | 2313 | U |
| 1 | A | 2314 | A |
| 1 | A | 2319 | C |
| 1 | A | 2321 | A |
| 1 | A | 2322 | A |
| 1 | A | 2323 | A |
| 1 | A | 2328 | G |
| 1 | A | 2329 | C |
| 1 | A | 2330 | U |
| 1 | A | 2331 | U |
| 1 | A | 2332 | G |
| 1 | A | 2333 | A |
| 1 | A | 2334 | C |
| 1 | A | 2337 | C |
| 1 | A | 2339 | A |
| 1 | A | 2340 | G |
| 1 | A | 2341 | A |
| 1 | A | 2348 | C |
| 1 | A | 2357 | G |
| 1 | A | 2358 | G |
| 1 | A | 2361 | C |
| 1 | A | 2366 | G |
| 1 | A | 2368 | A |
| 1 | A | 2370 | G |
| 1 | A | 2372 | C |
| 1 | A | 2378 | G |
| 1 | A | 2382 | C |
| 1 | A | 2383 | G |
| 1 | A | 2386 | G |
| 1 | A | 2387 | G |
| 1 | A | 2388 | U |
| 1 | A | 2389 | U |
| 1 | A | 2390 | C |
| 1 | A | 2392 | G |
| 1 | A | 2401 | G |
| 1 | A | 2402 | G |
| 1 | A | 2404 | C |
| 1 | A | 2405 | A |
| 1 | A | 2407 | C |
| 1 | A | 2409 | C |

Continued on next page...

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2410 | U |
| 1 | A | 2411 | C |
| 1 | A | 2412 | A |
| 1 | A | 2413 | A |
| 1 | A | 2414 | C |
| 1 | A | 2415 | G |
| 1 | A | 2416 | G |
| 1 | A | 2417 | A |
| 1 | A | 2418 | U |
| 1 | A | 2421 | A |
| 1 | A | 2422 | A |
| 1 | A | 2424 | G |
| 1 | A | 2425 | U |
| 1 | A | 2428 | U |
| 1 | A | 2434 | G |
| 1 | A | 2435 | A |
| 1 | A | 2436 | U |
| 1 | A | 2443 | C |
| 1 | A | 2446 | A |
| 1 | A | 2448 | A |
| 1 | A | 2452 | C |
| 1 | A | 2453 | C |
| 1 | A | 2454 | C |
| 1 | A | 2457 | G |
| 1 | A | 2459 | G |
| 1 | A | 2461 | U |
| 1 | A | 2467 | C |
| 1 | A | 2472 | G |
| 1 | A | 2474 | G |
| 1 | A | 2476 | U |
| 1 | A | 2478 | U |
| 1 | A | 2479 | U |
| 1 | A | 2480 | U |
| 1 | A | 2481 | G |
| 1 | A | 2483 | C |
| 1 | A | 2489 | G |
| 1 | A | 2492 | G |
| 1 | A | 2493 | U |
| 1 | A | 2495 | G |
| 1 | A | 2503 | A |
| 1 | A | 2505 | A |
| 1 | A | 2506 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2512 | G |
| 1 | A | 2516 | G |
| 1 | A | 2517 | A |
| 1 | A | 2521 | C |
| 1 | A | 2522 | G |
| 1 | A | 2534 | A |
| 1 | A | 2537 | G |
| 1 | A | 2538 | C |
| 1 | A | 2539 | U |
| 1 | A | 2553 | A |
| 1 | A | 2554 | G |
| 1 | A | 2555 | U |
| 1 | A | 2559 | A |
| 1 | A | 2560 | C |
| 1 | A | 2561 | G |
| 1 | A | 2565 | G |
| 1 | A | 2569 | G |
| 1 | A | 2572 | U |
| 1 | A | 2573 | U |
| 1 | A | 2576 | A |
| 1 | A | 2577 | A |
| 1 | A | 2578 | C |
| 1 | A | 2579 | G |
| 1 | A | 2580 | U |
| 1 | A | 2583 | U |
| 1 | A | 2584 | G |
| 1 | A | 2585 | A |
| 1 | A | 2586 | G |
| 1 | A | 2589 | A |
| 1 | A | 2591 | U |
| 1 | A | 2593 | C |
| 1 | A | 2597 | C |
| 1 | A | 2600 | U |
| 1 | A | 2602 | U |
| 1 | A | 2603 | C |
| 1 | A | 2604 | U |
| 1 | A | 2605 | G |
| 1 | A | 2607 | C |
| 1 | A | 2612 | A |
| 1 | A | 2616 | U |
| 1 | A | 2618 | G |
| 1 | A | 2619 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2623 | U |
| 1 | A | 2626 | A |
| 1 | A | 2633 | C |
| 1 | A | 2637 | U |
| 1 | A | 2641 | A |
| 1 | A | 2647 | A |
| 1 | A | 2648 | G |
| 1 | A | 2660 | G |
| 1 | A | 2669 | U |
| 1 | A | 2671 | U |
| 1 | A | 2672 | G |
| 1 | A | 2675 | U |
| 1 | A | 2676 | U |
| 1 | A | 2677 | C |
| 1 | A | 2683 | G |
| 1 | A | 2686 | A |
| 1 | A | 2688 | G |
| 1 | A | 2689 | C |
| 1 | A | 2693 | U |
| 1 | A | 2700 | G |
| 1 | A | 2702 | C |
| 1 | A | 2703 | G |
| 1 | A | 2704 | G |
| 1 | A | 2712 | U |
| 1 | A | 2713 | G |
| 1 | A | 2719 | A |
| 1 | A | 2728 | C |
| 1 | A | 2730 | G |
| 1 | A | 2732 | U |
| 1 | A | 2734 | A |
| 1 | A | 2742 | U |
| 1 | A | 2743 | A |
| 1 | A | 2750 | A |
| 1 | A | 2751 | A |
| 1 | A | 2762 | A |
| 1 | A | 2764 | A |
| 1 | A | 2765 | U |
| 1 | A | 2770 | U |
| 1 | A | 2772 | U |
| 1 | A | 2773 | C |
| 1 | A | 2777 | G |
| 1 | A | 2783 | U |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 2784 | U |
| 1 | A | 2785 | G |
| 1 | A | 2786 | A |
| 1 | A | 2793 | U |
| 1 | A | 2794 | G |
| 1 | A | 2796 | A |
| 1 | A | 2797 | G |
| 1 | A | 2804 | C |
| 1 | A | 2806 | A |
| 1 | A | 2810 | C |
| 1 | A | 2811 | U |
| 1 | A | 2816 | C |
| 1 | A | 2817 | G |
| 1 | A | 2819 | U |
| 1 | A | 2820 | G |
| 1 | A | 2821 | A |
| 1 | A | 2829 | G |
| 1 | A | 2835 | U |
| 1 | A | 2836 | A |
| 1 | A | 2839 | C |
| 1 | A | 2847 | G |
| 1 | A | 2848 | G |
| 1 | A | 2851 | U |
| 1 | A | 2852 | U |
| 1 | A | 2853 | G |
| 1 | A | 2856 | C |
| 1 | A | 2859 | A |
| 1 | A | 2866 | C |
| 1 | A | 2867 | U |
| 1 | A | 2870 | U |
| 1 | A | 2884 | U |
| 1 | A | 2887 | C |
| 2 | B | 4 | U |
| 2 | B | 12 | A |
| 2 | B | 15 | G |
| 2 | B | 23 | G |
| 2 | B | 24 | A |
| 2 | B | 34 | U |
| 2 | B | 40 | C |
| 2 | B | 41 | C |
| 2 | B | 50 | G |
| 2 | B | 56 | A |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | B | 66 | U |
| 2 | B | 67 | C |
| 2 | B | 72 | A |
| 2 | B | 83 | G |
| 2 | B | 84 | G |
| 2 | B | 87 | C |
| 2 | B | 88 | U |
| 2 | B | 89 | C |
| 2 | B | 90 | C |
| 2 | B | 101 | G |
| 2 | B | 104 | G |
| 2 | B | 105 | G |
| 2 | B | 106 | U |
| 2 | B | 108 | A |
| 2 | B | 113 | C |
| 2 | B | 115 | A |
| 2 | B | 117 | C |
| 2 | B | 118 | U |

All (74) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 12 | G |
| 1 | A | 81 | G |
| 1 | A | 99 | U |
| 1 | A | 114 | U |
| 1 | A | 227 | A |
| 1 | A | 243 | U |
| 1 | A | 264 | U |
| 1 | A | 295 | C |
| 1 | A | 314 | A |
| 1 | A | 318 | U |
| 1 | A | 349 | U |
| 1 | A | 361 | A |
| 1 | A | 434 | A |
| 1 | A | 444 | A |
| 1 | A | 517 | A |
| 1 | A | 536 | U |
| 1 | A | 537 | U |
| 1 | A | 539 | U |
| 1 | A | 540 | U |
| 1 | A | 774 | G |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 783 | A |
| 1 | A | 792 | A |
| 1 | A | 836 | U |
| 1 | A | 841 | C |
| 1 | A | 868 | G |
| 1 | A | 885 | A |
| 1 | A | 953 | U |
| 1 | A | 974 | A |
| 1 | A | 1016 | U |
| 1 | A | 1051 | U |
| 1 | A | 1097 | G |
| 1 | A | 1098 | U |
| 1 | A | 1124 | A |
| 1 | A | 1163 | U |
| 1 | A | 1165 | A |
| 1 | A | 1166 | G |
| 1 | A | 1168 | G |
| 1 | A | 1232 | G |
| 1 | A | 1378 | U |
| 1 | A | 1379 | A |
| 1 | A | 1448 | C |
| 1 | A | 1589 | C |
| 1 | A | 1627 | A |
| 1 | A | 1642 | A |
| 1 | A | 1672 | G |
| 1 | A | 1732 | G |
| 1 | A | 1741 | A |
| 1 | A | 1925 | A |
| 1 | A | 1949 | C |
| 1 | A | 1968 | A |
| 1 | A | 2029 | A |
| 1 | A | 2105 | U |
| 1 | A | 2116 | C |
| 1 | A | 2120 | G |
| 1 | A | 2122 | A |
| 1 | A | 2130 | C |
| 1 | A | 2139 | G |
| 1 | A | 2149 | A |
| 1 | A | 2200 | U |
| 1 | A | 2228 | A |
| 1 | A | 2262 | C |
| 1 | A | 2274 | A |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 2333 | A |
| 1 | A | 2382 | C |
| 1 | A | 2536 | G |
| 1 | A | 2604 | U |
| 1 | A | 2606 | C |
| 1 | A | 2702 | C |
| 1 | A | 2749 | G |
| 1 | A | 2763 | G |
| 1 | A | 2783 | U |
| 1 | A | 2852 | U |
| 2 | B | 33 | A |
| 2 | B | 65 | A |

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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 |
|-----|-------|------------------|
| 1 | A | 1 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1 | A | 2605:G | O3' | 2606:C | P | 4.42 |

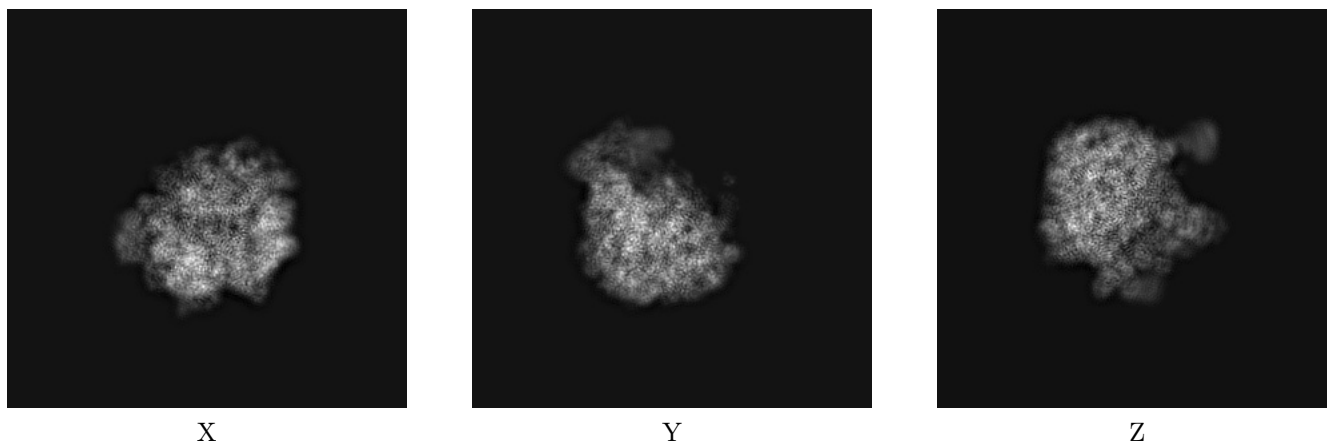
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10282. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections [i](#)

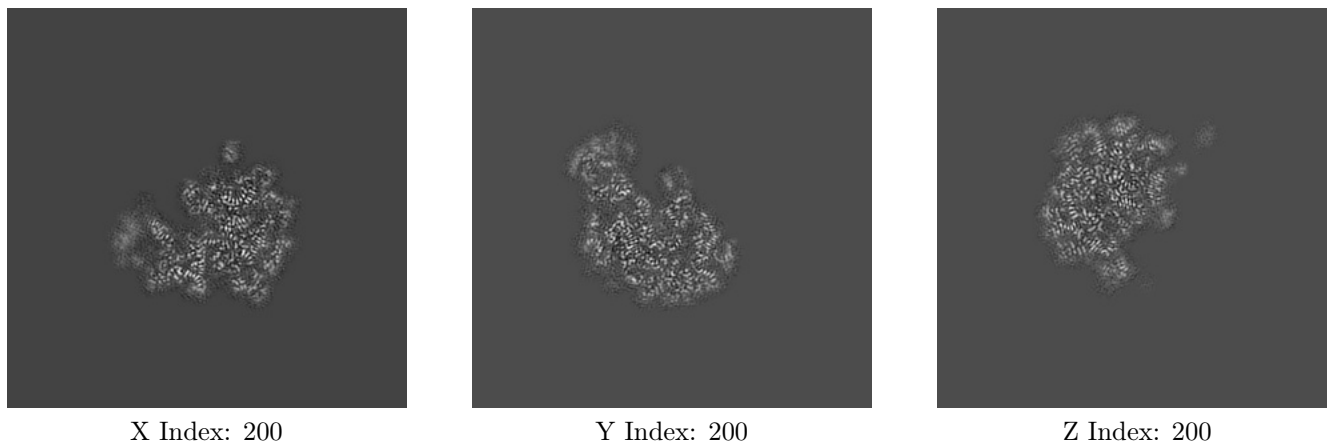
6.1.1 Primary map



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

6.2 Central slices [i](#)

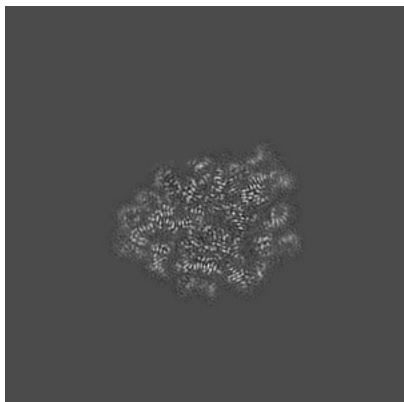
6.2.1 Primary map



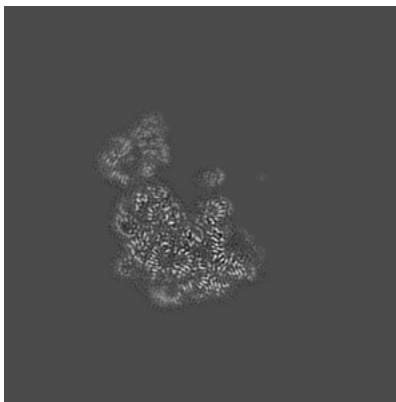
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

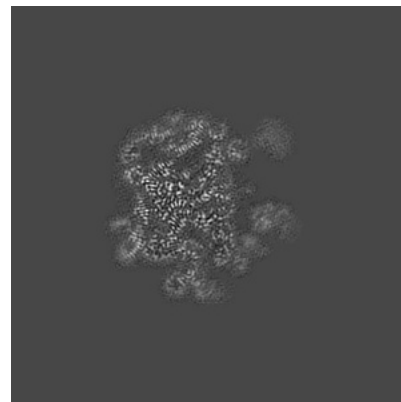
6.3.1 Primary map



X Index: 172



Y Index: 182

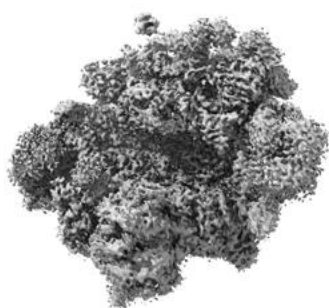


Z Index: 159

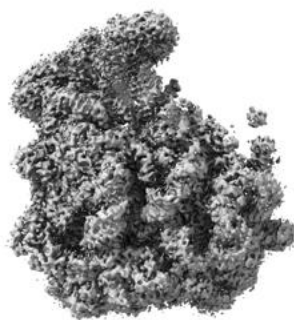
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0566. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

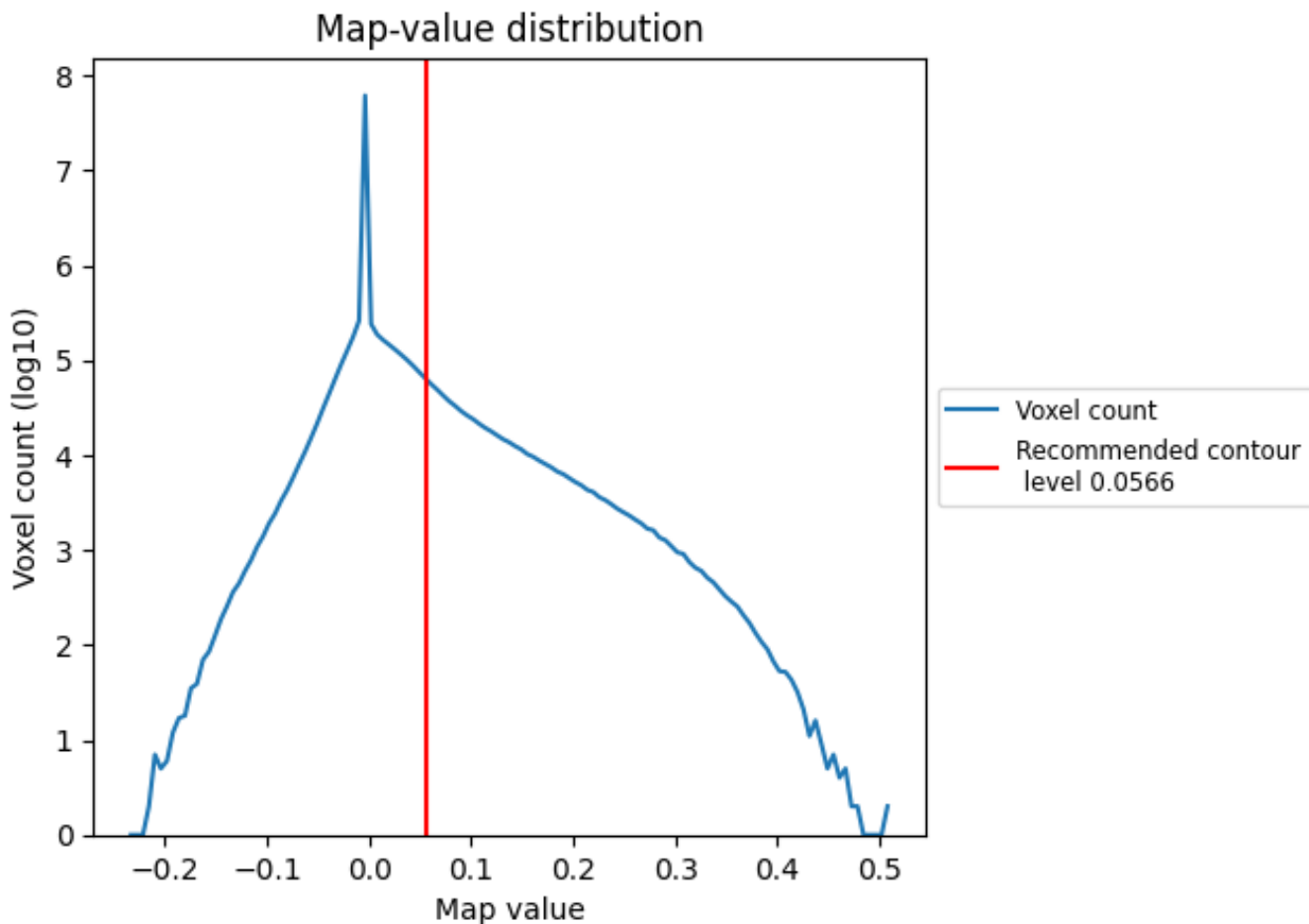
6.5 Mask visualisation

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

7 Map analysis [i](#)

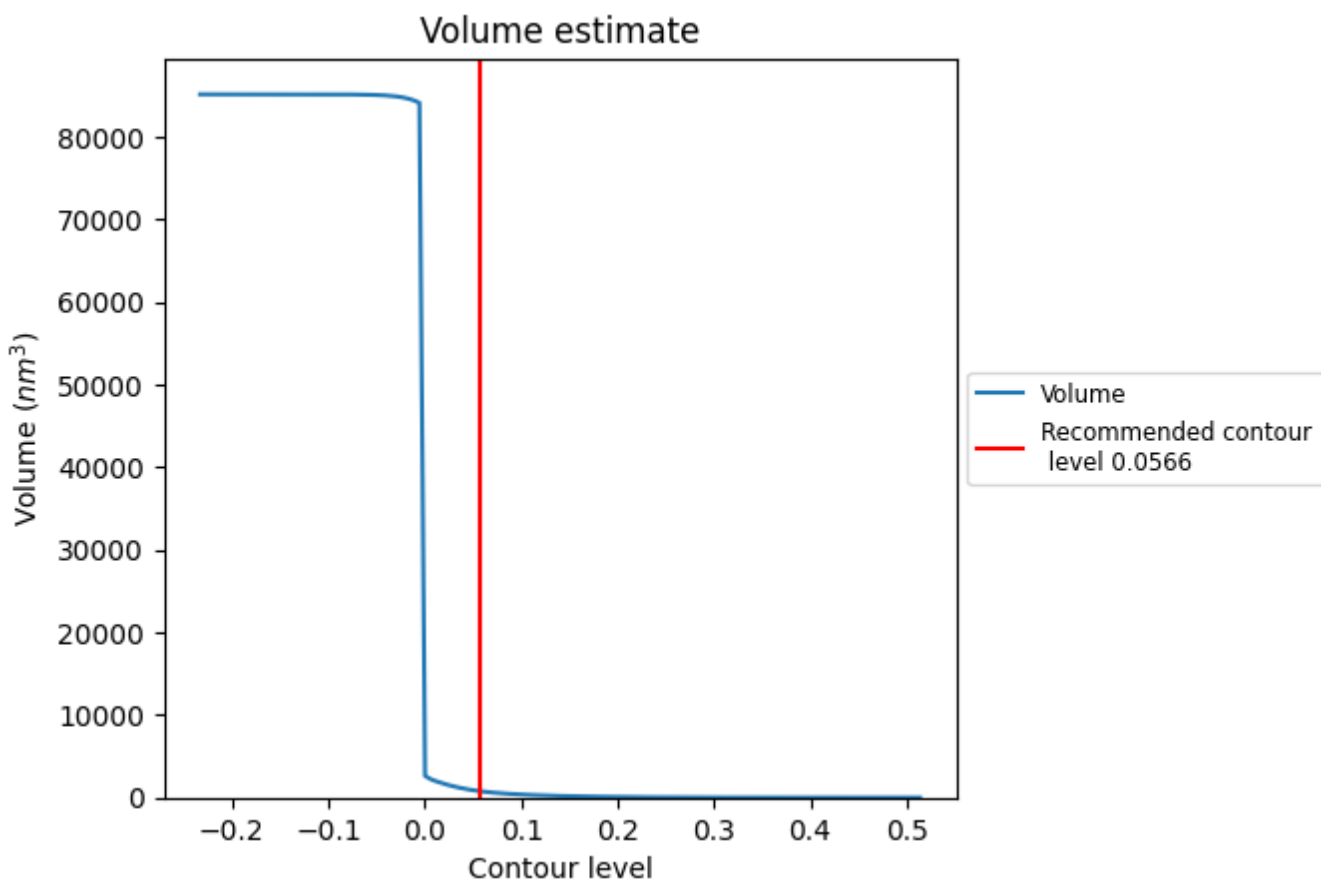
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

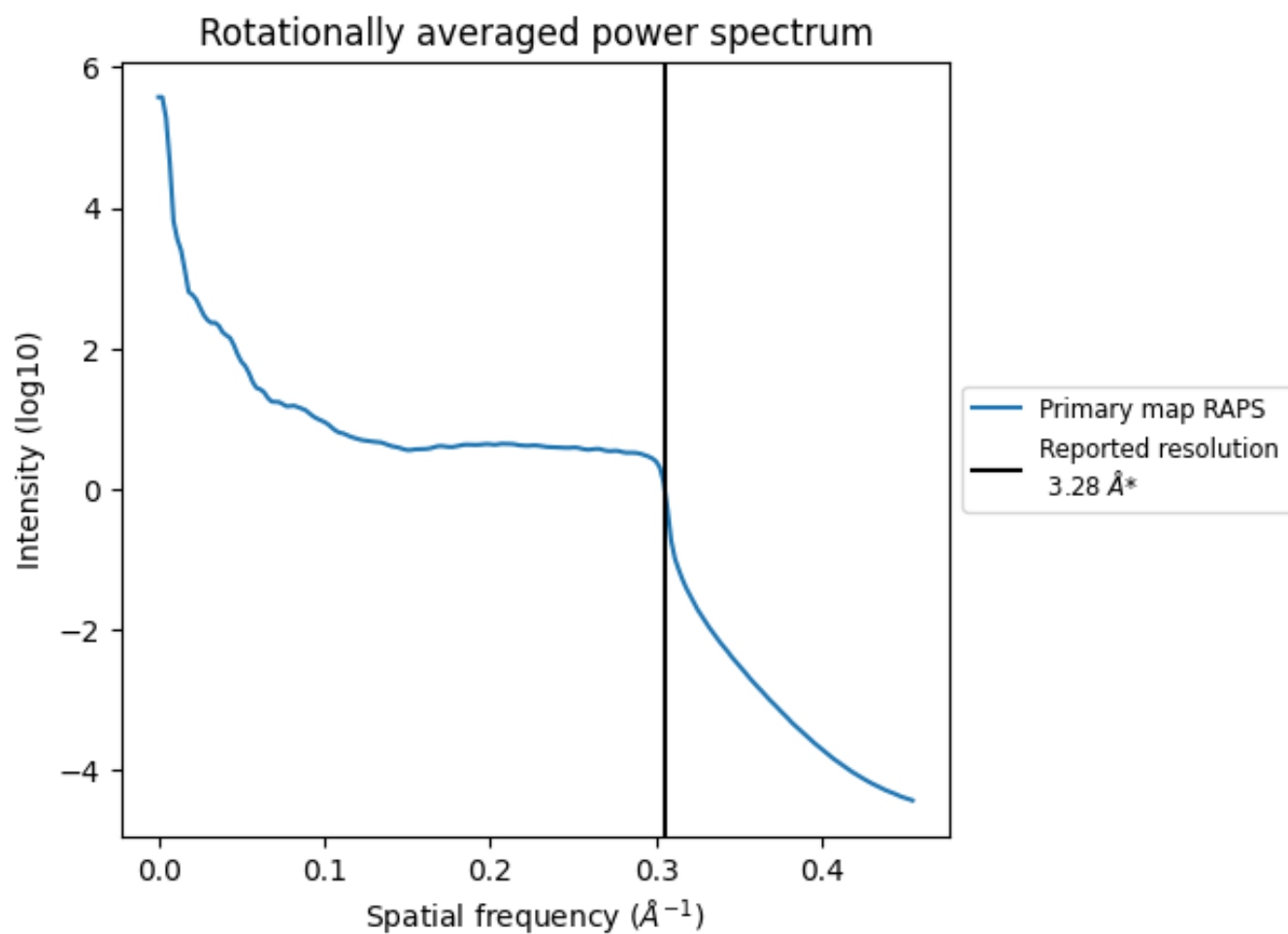
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 783 nm³; this corresponds to an approximate mass of 707 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 0.305 Å⁻¹

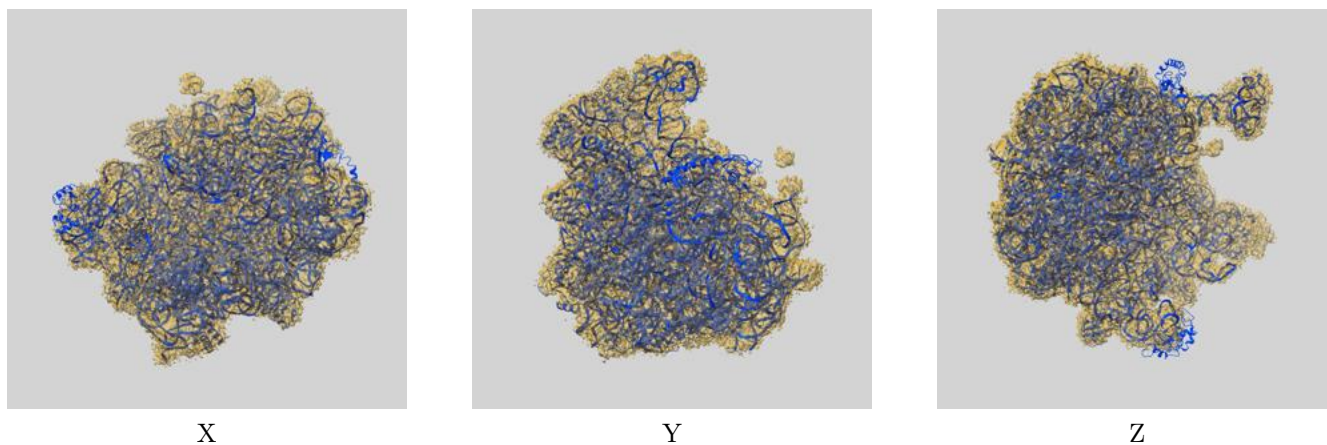
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

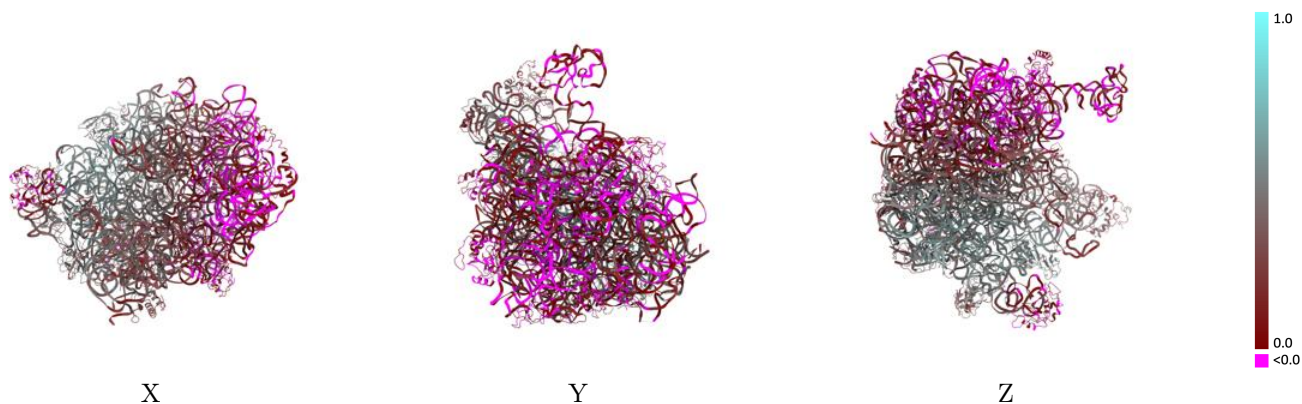
This section contains information regarding the fit between EMDB map EMD-10282 and PDB model 6SPD. Per-residue inclusion information can be found in section 3 on page 10.

9.1 Map-model overlay [i](#)



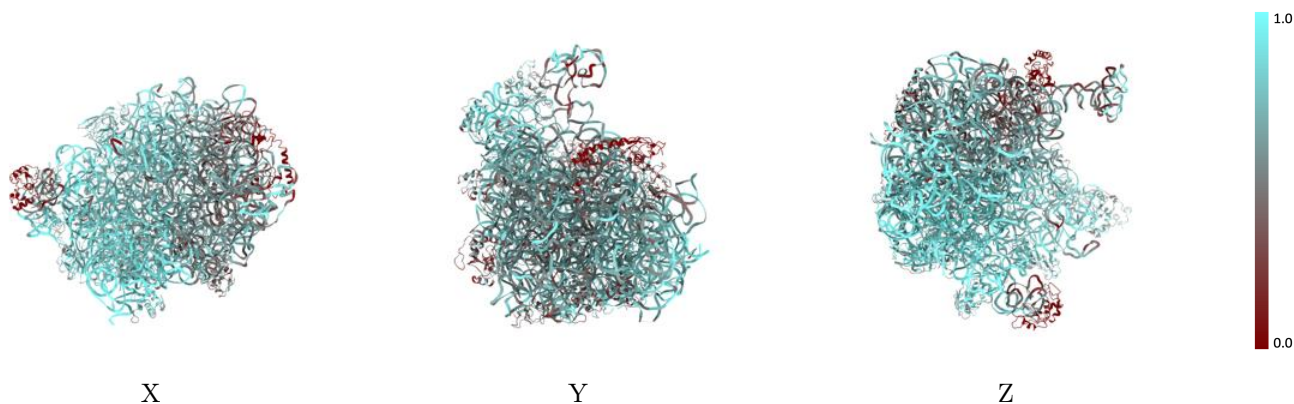
The images above show the 3D surface view of the map at the recommended contour level 0.0566 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



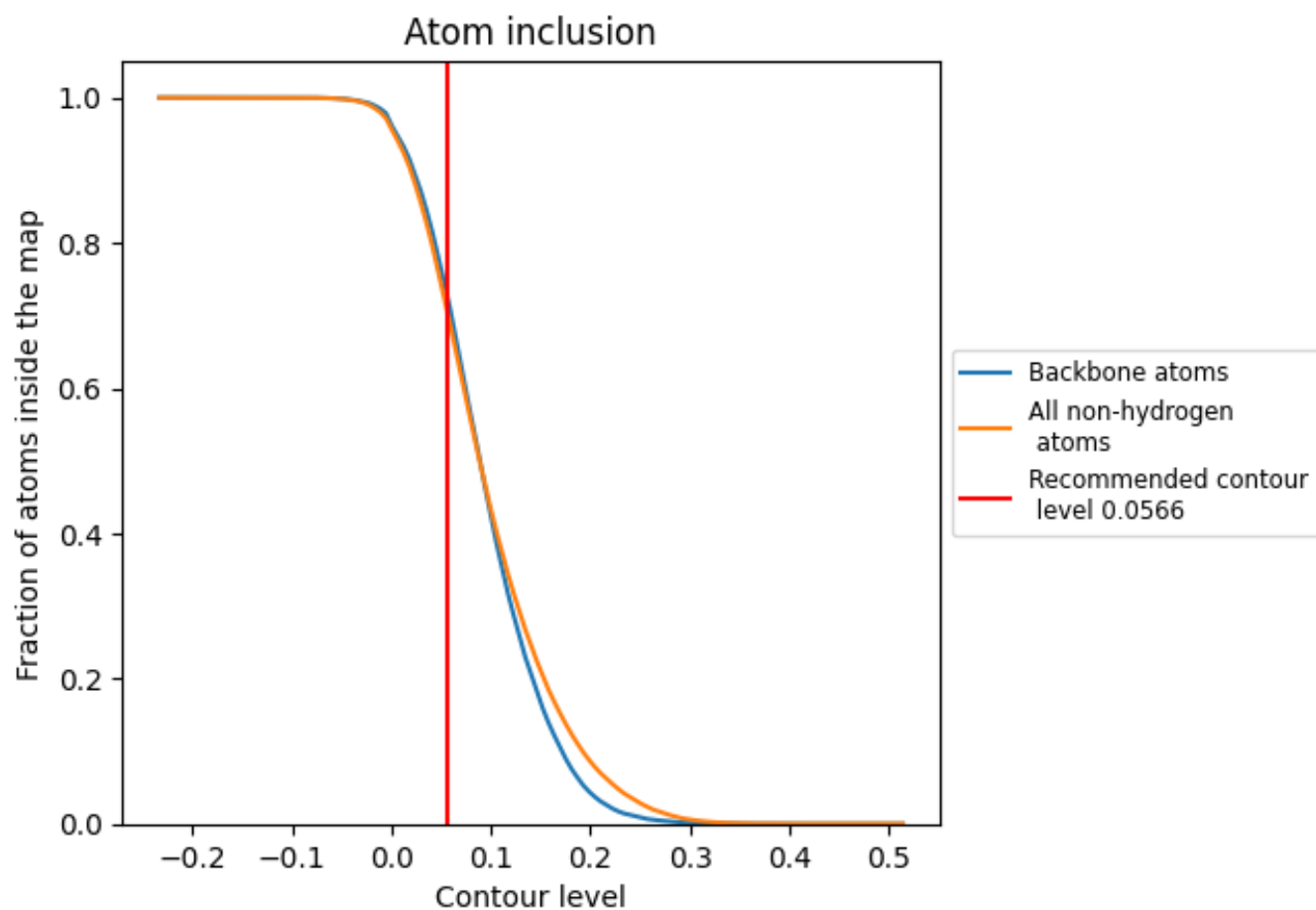
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0566).



































































9.4 Atom inclusion [i](#)



At the recommended contour level, 72% of all backbone atoms, 70% 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 (0.0566) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|--|--|
| All |  0.7024 |  0.2490 |
| 1 |  0.6376 |  0.1720 |
| 2 |  0.7083 |  0.3080 |
| 3 |  0.5209 |  0.1630 |
| 4 |  0.4490 |  0.0840 |
| 5 |  0.5143 |  0.1780 |
| 6 |  0.8464 |  0.5070 |
| A |  0.7472 |  0.2440 |
| B |  0.9202 |  0.4050 |
| C |  0.4176 |  0.0830 |
| D |  0.8255 |  0.4700 |
| E |  0.3858 |  0.0320 |
| F |  0.6364 |  0.2640 |
| G |  0.7301 |  0.3730 |
| H |  0.0243 |  -0.0140 |
| I |  0.0957 |  0.0860 |
| J |  0.7336 |  0.3510 |
| K |  0.7703 |  0.4830 |
| L |  0.4825 |  0.1190 |
| M |  0.8250 |  0.5190 |
| N |  0.8143 |  0.4380 |
| O |  0.7336 |  0.3130 |
| P |  0.7733 |  0.4860 |
| Q |  0.6309 |  0.2300 |
| R |  0.5460 |  0.1660 |
| S |  0.5973 |  0.2540 |
| T |  0.4473 |  0.0790 |
| U |  0.3914 |  0.0230 |
| V |  0.7507 |  0.4350 |
| W |  0.7125 |  0.3460 |
| X |  0.3306 |  0.0010 |
| Y |  0.4421 |  0.0280 |
| Z |  0.6420 |  0.2840 |

