# Full wwPDB EM Validation Report

Jan 10, 2026 – 02:13 PM EST

| | | |
|---|---|---|
| PDB ID | : | 9YPO / pdb_00009ypo |
| EMDB ID | : | EMD-73302 |
| Title | : | GTPBP1*GCP*Phe-tRNA*ribosome in the open state, Structure IIa |
| Authors | : | Susorov, D.; Korostelev, A.A. |
| Deposited on | : | 2025-10-14 |
| Resolution | : | 3.00 Å(reported) |
| Based on initial model | : | 5LZS |

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.

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

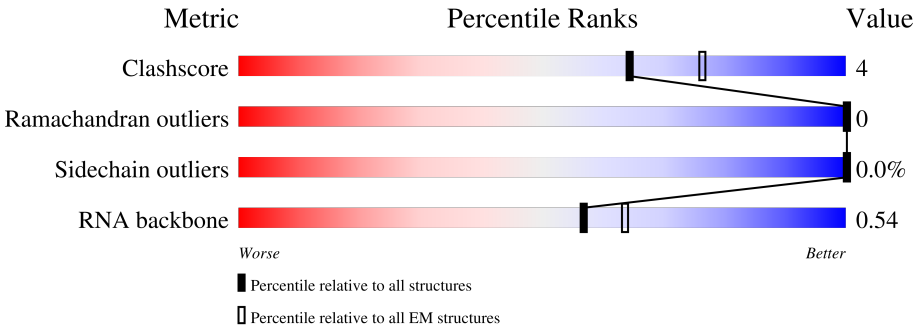
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev129 |
| Mogul | : | 2022.3.0, CSD as543be (2022) |
| MolProbity | : | 4-5-2 with Phenix2.0 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| EM percentile statistics | : | 202505.v01 (Using data in the EMDB archive up until May 2025) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.47 |

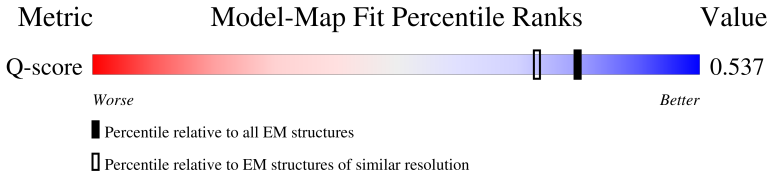
# 1 Overall quality at a glance

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

The reported resolution of this entry is 3.00 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) | Similar EM resolution (#Entries, resolution range(Å)) |
|---|---|---|---|
| Clashscore | 210492 | 15764 | - |
| Ramachandran outliers | 207382 | 16835 | - |
| Sidechain outliers | 206894 | 16415 | - |
| RNA backbone | 6643 | 2191 | - |
| Q-score | - | 25397 | 14081 ( 2.50 - 3.50 ) |

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 <=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 | 5 | 3601 | 68% 27% 5% |
| 2 | 7 | 120 | 85% 13% |
| 3 | 8 | 156 | 72% 23% |

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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 4 | 9 | 1869 | 5% 60% 26% 9% |
| 5 | A | 257 | 88% 9% |
| 6 | B | 403 | 90% 8% |
| 7 | C | 425 | 80% 5% 15% |
| 8 | D | 297 | 93% 5% |
| 9 | E | 291 | 68% 6% 26% |
| 10 | G | 319 | 6% 66% 7% 27% |
| 11 | H | 192 | 93% 6% |
| 12 | I | 214 | 92% |
| 13 | J | 178 | 89% 6% |
| 14 | K | 247 | 84% 7% 9% |
| 15 | L | 211 | 5% 94% 5% |
| 16 | M | 218 | 60% 37% |
| 17 | N | 204 | 87% 13% |
| 18 | O | 203 | 91% 7% |
| 19 | P | 184 | 73% 10% 17% |
| 20 | Q | 188 | 91% 9% |
| 21 | R | 196 | 8% 87% 5% 8% |
| 22 | S | 176 | 93% 6% |
| 23 | T | 160 | 94% |
| 24 | U | 128 | 76% 23% |
| 25 | V | 140 | 81% 11% 8% |
| 26 | W | 157 | 21% 63% 32% |
| 27 | X | 156 | 71% 5% 24% |
| 28 | Y | 145 | 90% 8% |

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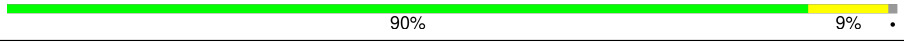
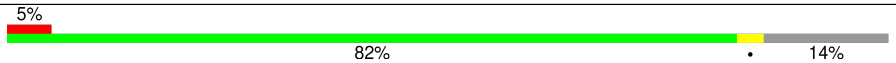
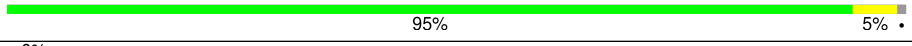
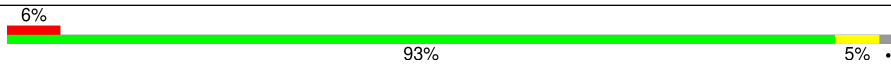
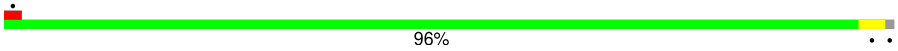
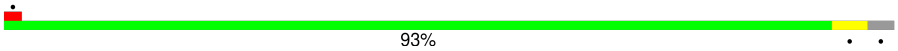
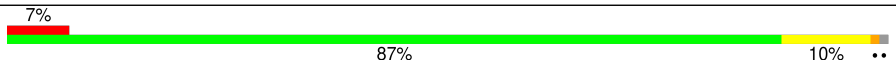
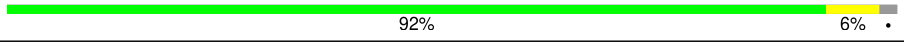
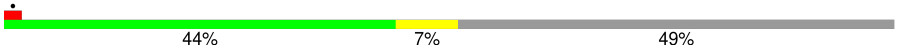
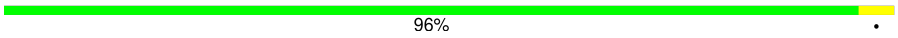
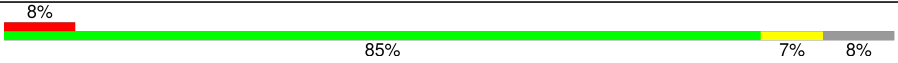
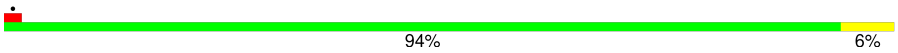
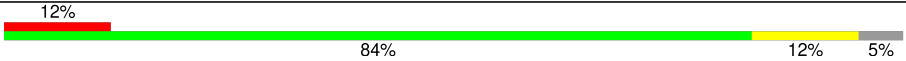
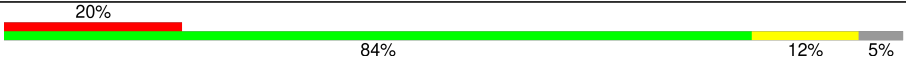
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 29 | Z | 136 | |
| 30 | a | 148 |   |
| 31 | b | 245 | |
| 32 | c | 115 | |
| 33 | d | 125 |   |
| 34 | e | 135 | |
| 35 | f | 110 |   |
| 36 | g | 116 |   |
| 37 | h | 123 |   |
| 38 | i | 105 |   |
| 39 | k | 70 |   |
| 40 | l | 51 |   |
| 41 | m | 102 |   |
| 42 | n | 25 |   |
| 43 | o | 106 | |
| 44 | p | 92 | |
| 45 | r | 137 | |
| 46 | AA | 295 | |
| 47 | BB | 264 | |
| 48 | CC | 293 | |
| 49 | DD | 243 |   |
| 50 | EE | 263 |   |
| 51 | FF | 204 | |
| 52 | GG | 249 |   |
| 53 | HH | 194 |   |

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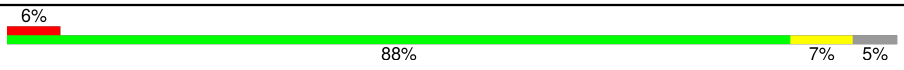
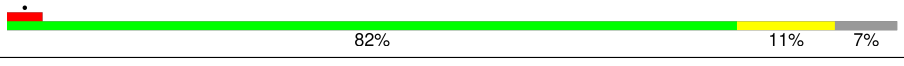
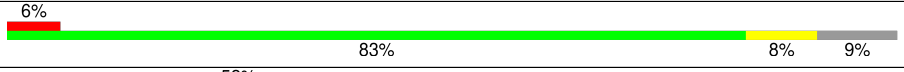
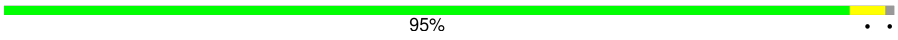
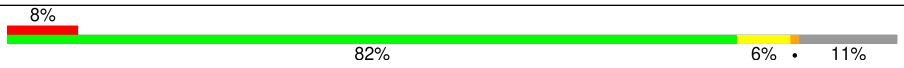
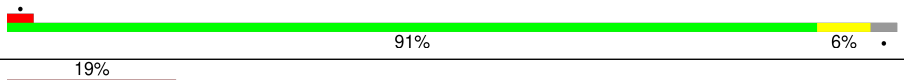
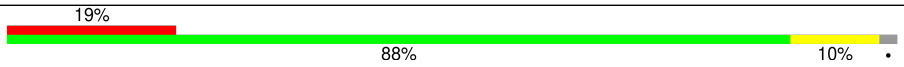
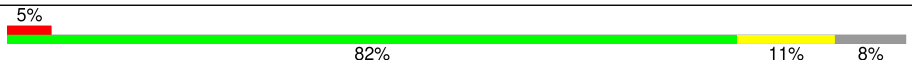
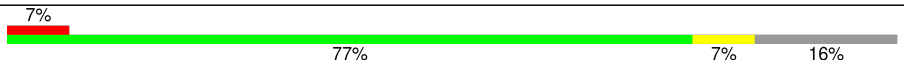
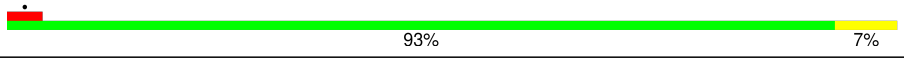
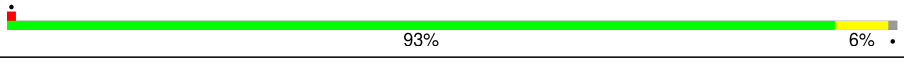
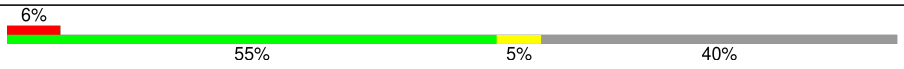
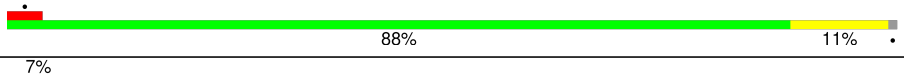
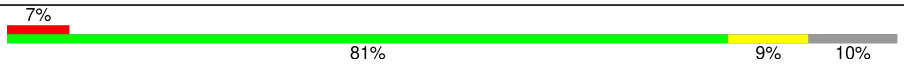
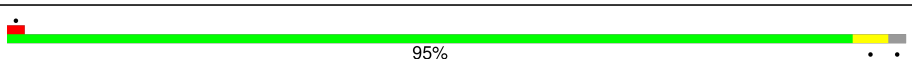
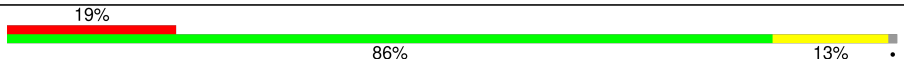
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 54 | II | 208 |   |
| 55 | JJ | 194 |   |
| 56 | KK | 165 | |
| 57 | LL | 158 |   |
| 58 | MM | 132 | |
| 59 | NN | 151 |   |
| 60 | OO | 168 | |
| 61 | PP | 145 |   |
| 62 | QQ | 146 |   |
| 63 | RR | 135 |   |
| 64 | SS | 152 |   |
| 65 | TT | 145 | |
| 66 | UU | 119 |   |
| 67 | VV | 83 |   |
| 68 | WW | 130 |   |
| 69 | XX | 143 | |
| 70 | YY | 130 | |
| 71 | ZZ | 125 |   |
| 72 | aa | 115 | |
| 73 | bb | 84 |   |
| 74 | cc | 69 |   |
| 75 | dd | 56 |   |
| 76 | ee | 133 | |
| 77 | ff | 156 | |
| 78 | gg | 317 |   |

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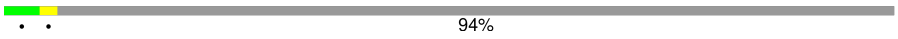
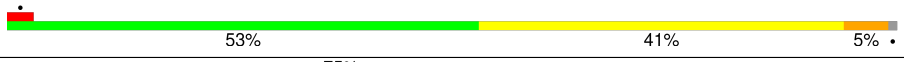
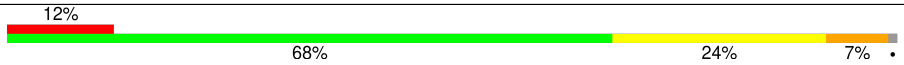
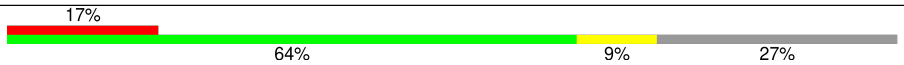
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 79 | 10 | 185 |   |
| 80 | 12 | 76 |   |
| 81 | 11 | 75 | |
| 81 | 13 | 75 |   |
| 82 | j | 97 | |
| 83 | jj | 703 |   |

# 2 Entry composition (i)

There are 92 unique types of molecules in this entry. The entry contains 219555 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 28S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 1 | 5 | 3601 | 77221 | 34390 | 14143 | 25087 | 3601 | 0 | 0 |

There are 59 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 5 | 1 | C | N | conflict | GB 5LZS_5 |
| 5 | 3948 | C | - | insertion | GB 5LZS_5 |
| 5 | 3949 | A | - | insertion | GB 5LZS_5 |
| 5 | 3950 | U | - | insertion | GB 5LZS_5 |
| 5 | 3951 | G | - | insertion | GB 5LZS_5 |
| 5 | 3952 | A | - | insertion | GB 5LZS_5 |
| 5 | 3953 | G | - | insertion | GB 5LZS_5 |
| 5 | 3954 | A | - | insertion | GB 5LZS_5 |
| 5 | 3955 | G | - | insertion | GB 5LZS_5 |
| 5 | 3956 | G | - | insertion | GB 5LZS_5 |
| 5 | 3957 | U | - | insertion | GB 5LZS_5 |
| 5 | 3958 | G | - | insertion | GB 5LZS_5 |
| 5 | 3959 | U | - | insertion | GB 5LZS_5 |
| 5 | 3960 | A | - | insertion | GB 5LZS_5 |
| 5 | 3961 | G | - | insertion | GB 5LZS_5 |
| 5 | 3962 | A | - | insertion | GB 5LZS_5 |
| 5 | 3963 | A | - | insertion | GB 5LZS_5 |
| 5 | 3964 | U | - | insertion | GB 5LZS_5 |
| 5 | 3965 | A | - | insertion | GB 5LZS_5 |
| 5 | 3966 | A | - | insertion | GB 5LZS_5 |
| 5 | 3967 | G | - | insertion | GB 5LZS_5 |
| 5 | 3968 | U | - | insertion | GB 5LZS_5 |
| 5 | 3969 | G | - | insertion | GB 5LZS_5 |
| 5 | 3970 | G | - | insertion | GB 5LZS_5 |
| 5 | 3971 | G | - | insertion | GB 5LZS_5 |
| 5 | 3972 | A | - | insertion | GB 5LZS_5 |
| 5 | 3973 | G | - | insertion | GB 5LZS_5 |
| 5 | 3974 | G | - | insertion | GB 5LZS_5 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 5 | 3975 | C | - | insertion | GB 5LZS_5 |
| 5 | 3976 | C | - | insertion | GB 5LZS_5 |
| 5 | 4035 | G | - | insertion | GB 5LZS_5 |
| 5 | 4036 | G | - | insertion | GB 5LZS_5 |
| 5 | 4037 | C | - | insertion | GB 5LZS_5 |
| 5 | 4038 | C | - | insertion | GB 5LZS_5 |
| 5 | 4039 | G | - | insertion | GB 5LZS_5 |
| 5 | 4040 | C | - | insertion | GB 5LZS_5 |
| 5 | 4041 | C | - | insertion | GB 5LZS_5 |
| 5 | 4042 | G | - | insertion | GB 5LZS_5 |
| 5 | 4043 | G | - | insertion | GB 5LZS_5 |
| 5 | 4044 | U | - | insertion | GB 5LZS_5 |
| 5 | 4045 | G | - | insertion | GB 5LZS_5 |
| 5 | 4046 | A | - | insertion | GB 5LZS_5 |
| 5 | 4047 | A | - | insertion | GB 5LZS_5 |
| 5 | 4048 | A | - | insertion | GB 5LZS_5 |
| 5 | 4049 | U | - | insertion | GB 5LZS_5 |
| 5 | 4050 | A | - | insertion | GB 5LZS_5 |
| 5 | 4051 | C | - | insertion | GB 5LZS_5 |
| 5 | 4052 | C | - | insertion | GB 5LZS_5 |
| 5 | 4053 | A | - | insertion | GB 5LZS_5 |
| 5 | 4054 | C | - | insertion | GB 5LZS_5 |
| 5 | 4055 | U | - | insertion | GB 5LZS_5 |
| 5 | 4056 | A | - | insertion | GB 5LZS_5 |
| 5 | 4057 | C | - | insertion | GB 5LZS_5 |
| 5 | 4058 | U | - | insertion | GB 5LZS_5 |
| 5 | 4059 | C | - | insertion | GB 5LZS_5 |
| 5 | 4060 | U | - | insertion | GB 5LZS_5 |
| 5 | 4061 | G | - | insertion | GB 5LZS_5 |
| 5 | 4062 | A | - | insertion | GB 5LZS_5 |
| 5 | 4063 | U | - | insertion | GB 5LZS_5 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 7 | 119 | Total | C | N | O | P | 0 | 0 |
| | | | 2538 | 1132 | 454 | 834 | 118 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 7 | 120 | U | - | insertion | GB XR_011385821 |

- Molecule 3 is a RNA chain called 5.8S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 8 | 151 | Total | C | N | O | P | 0 | 0 |
| | | | 3208 | 1432 | 564 | 1062 | 150 | | |

There are 3 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 8 | 1 | C | - | insertion | GB XR_011385890 |
| 8 | 155 | C | - | insertion | GB XR_011385890 |
| 8 | 156 | U | - | insertion | GB XR_011385890 |

- Molecule 4 is a RNA chain called 18S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 9 | 1697 | Total | C | N | O | P | 0 | 0 |
| | | | 36229 | 16171 | 6507 | 11855 | 1696 | | |

- Molecule 5 is a protein called Ribosomal protein L8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 5 | A | 248 | Total | C | N | O | S | 0 | 0 |
| | | | 1898 | 1189 | 389 | 314 | 6 | | |

- Molecule 6 is a protein called Ribosomal protein L3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 6 | B | 394 | Total | C | N | O | S | 0 | 0 |
| | | | 3172 | 2020 | 597 | 542 | 13 | | |

- Molecule 7 is a protein called 60S ribosomal protein L4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | C | 362 | Total | C | N | O | S | 0 | 0 |
| | | | 2883 | 1812 | 577 | 480 | 14 | | |

There are 12 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| C | 378 | LYS | - | insertion | UNP G1SVW5 |
| C | 379 | VAL | - | insertion | UNP G1SVW5 |
| C | 380 | LYS | - | insertion | UNP G1SVW5 |
| C | 381 | LYS | - | insertion | UNP G1SVW5 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| C | 382 | PRO | - | insertion | UNP G1SVW5 |
| C | 383 | ARG | - | insertion | UNP G1SVW5 |
| C | 384 | ALA | - | insertion | UNP G1SVW5 |
| C | 385 | VAL | - | insertion | UNP G1SVW5 |
| C | 386 | GLY | - | insertion | UNP G1SVW5 |
| C | 387 | ILE | - | insertion | UNP G1SVW5 |
| C | 388 | LYS | - | insertion | UNP G1SVW5 |
| C | 389 | GLN | - | insertion | UNP G1SVW5 |

- Molecule 8 is a protein called Large ribosomal subunit protein uL18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | D | 293 | Total | C | N | O | S | 0 | 0 |
| | | | 2391 | 1512 | 438 | 427 | 14 | | |

- Molecule 9 is a protein called 60S ribosomal protein L6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | E | 216 | Total | C | N | O | S | 0 | 0 |
| | | | 1729 | 1115 | 329 | 282 | 3 | | |

- Molecule 10 is a protein called 60S ribosomal protein L7a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | G | 233 | Total | C | N | O | S | 0 | 0 |
| | | | 1879 | 1199 | 361 | 315 | 4 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| G | 244 | GLY | CYS | conflict | UNP G1STW0 |

- Molecule 11 is a protein called 60S ribosomal protein L9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | H | 190 | Total | C | N | O | S | 0 | 0 |
| | | | 1516 | 954 | 284 | 272 | 6 | | |

- Molecule 12 is a protein called 60S ribosomal protein L10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | I | 205 | Total | C | N | O | S | 0 | 0 |
| | | | 1664 | 1056 | 321 | 274 | 13 | | |

- Molecule 13 is a protein called Ribosomal protein L11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | J | 170 | Total | C | N | O | S | 0 | 0 |
| | | | 1362 | 861 | 254 | 241 | 6 | | |

- Molecule 14 is a protein called 60S ribosomal protein L7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | K | 225 | Total | C | N | O | S | 0 | 0 |
| | | | 1875 | 1205 | 358 | 303 | 9 | | |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| K | 61 | ARG | GLY | conflict | UNP G1TUB1 |
| K | 93 | ARG | GLY | conflict | UNP G1TUB1 |
| K | 131 | MET | VAL | conflict | UNP G1TUB1 |
| K | 153 | ILE | VAL | conflict | UNP G1TUB1 |

- Molecule 15 is a protein called 60S ribosomal protein L13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | L | 210 | Total | C | N | O | S | 0 | 0 |
| | | | 1702 | 1065 | 354 | 279 | 4 | | |

There are 9 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| L | 46 | ILE | - | insertion | UNP G1TPV0 |
| L | 47 | ALA | - | insertion | UNP G1TPV0 |
| L | 48 | PRO | - | insertion | UNP G1TPV0 |
| L | 49 | ARG | - | insertion | UNP G1TPV0 |
| L | 50 | PRO | - | insertion | UNP G1TPV0 |
| L | 51 | ALA | - | insertion | UNP G1TPV0 |
| L | 52 | ALA | - | insertion | UNP G1TPV0 |
| L | 53 | GLY | - | insertion | UNP G1TPV0 |
| L | 54 | PRO | - | insertion | UNP G1TPV0 |

- Molecule 16 is a protein called 60S ribosomal protein L14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | M | 138 | Total | C | N | O | S | 0 | 0 |
| | | | 1137 | 727 | 221 | 182 | 7 | | |

- Molecule 17 is a protein called Ribosomal protein L15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | N | 203 | Total | C | N | O | S | 0 | 0 |
| | | | 1701 | 1072 | 359 | 266 | 4 | | |

- Molecule 18 is a protein called Large ribosomal subunit protein uL13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | O | 199 | Total | C | N | O | S | 0 | 0 |
| | | | 1630 | 1051 | 319 | 255 | 5 | | |

- Molecule 19 is a protein called Large ribosomal subunit protein uL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | P | 153 | Total | C | N | O | S | 0 | 0 |
| | | | 1242 | 777 | 241 | 215 | 9 | | |

- Molecule 20 is a protein called Ribosomal protein L18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | Q | 187 | Total | C | N | O | S | 0 | 0 |
| | | | 1515 | 946 | 315 | 250 | 4 | | |

There are 12 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| Q | 4 | ASP | ASN | conflict | UNP G1TFE0 |
| Q | 14 | ARG | TRP | conflict | UNP G1TFE0 |
| Q | 53 | MET | LEU | conflict | UNP G1TFE0 |
| Q | 58 | ARG | TRP | conflict | UNP G1TFE0 |
| Q | 75 | ARG | GLN | conflict | UNP G1TFE0 |
| Q | 80 | ALA | PRO | conflict | UNP G1TFE0 |
| Q | 86 | VAL | ILE | conflict | UNP G1TFE0 |
| Q | 104 | ARG | HIS | conflict | UNP G1TFE0 |
| Q | 110 | ARG | CYS | conflict | UNP G1TFE0 |
| Q | 137 | VAL | GLY | conflict | UNP G1TFE0 |
| Q | 157 | GLY | ARG | conflict | UNP G1TFE0 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| Q | 181 | ARG | TRP | conflict | UNP G1TFE0 |

- Molecule 21 is a protein called Ribosomal protein L19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | R | 180 | Total | C | N | O | S | 0 | 0 |
| | | | 1508 | 933 | 328 | 238 | 9 | | |

There are 3 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| R | 38 | ARG | CYS | conflict | UNP G1TJR3 |
| R | 64 | ARG | GLN | conflict | UNP G1TJR3 |
| R | 94 | THR | LYS | conflict | UNP G1TJR3 |

- Molecule 22 is a protein called 60S ribosomal protein L18a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | S | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1462 | 930 | 285 | 236 | 11 | | |

There are 23 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| S | 1 | MET | THR | conflict | UNP G1TTY7 |
| S | 18 | PRO | - | insertion | UNP G1TTY7 |
| S | 19 | THR | - | insertion | UNP G1TTY7 |
| S | 20 | PRO | SER | conflict | UNP G1TTY7 |
| S | 22 | CYS | SER | conflict | UNP G1TTY7 |
| S | 23 | ARG | PRO | conflict | UNP G1TTY7 |
| S | 24 | THR | ALA | conflict | UNP G1TTY7 |
| S | 49 | SER | LEU | conflict | UNP G1TTY7 |
| S | 50 | GLN | GLU | conflict | UNP G1TTY7 |
| S | 95 | ARG | HIS | conflict | UNP G1TTY7 |
| S | 101 | THR | ILE | conflict | UNP G1TTY7 |
| S | 102 | THR | MET | conflict | UNP G1TTY7 |
| S | 104 | GLY | SER | conflict | UNP G1TTY7 |
| S | 126 | ILE | VAL | conflict | UNP G1TTY7 |
| S | 132 | ILE | MET | conflict | UNP G1TTY7 |
| S | 135 | SER | ALA | conflict | UNP G1TTY7 |
| S | 136 | LYS | ARG | conflict | UNP G1TTY7 |
| S | 138 | ARG | PRO | conflict | UNP G1TTY7 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| S | 149 | LYS | ARG | conflict | UNP G1TTY7 |
| S | 151 | LYS | ARG | conflict | UNP G1TTY7 |
| S | 168 | THR | TYR | conflict | UNP G1TTY7 |
| S | 169 | THR | ALA | conflict | UNP G1TTY7 |
| S | 176 | PHE | - | insertion | UNP G1TTY7 |

- Molecule 23 is a protein called eL21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 23 | T | 159 | Total | C | N | O | S | 0 | 0 |
| | | | 1298 | 823 | 252 | 217 | 6 | | |

- Molecule 24 is a protein called eL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | U | 99 | Total | C | N | O | S | 0 | 0 |
| | | | 809 | 519 | 141 | 147 | 2 | | |

There are 11 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| U | 18 | LEU | VAL | conflict | UNP G1TSG1 |
| U | 32 | GLY | ARG | conflict | UNP G1TSG1 |
| U | 36 | ALA | GLU | conflict | UNP G1TSG1 |
| U | 39 | PHE | SER | conflict | UNP G1TSG1 |
| U | 54 | GLY | ARG | conflict | UNP G1TSG1 |
| U | 60 | VAL | ALA | conflict | UNP G1TSG1 |
| U | 62 | SER | THR | conflict | UNP G1TSG1 |
| U | 63 | LEU | ILE | conflict | UNP G1TSG1 |
| U | 97 | ARG | HIS | conflict | UNP G1TSG1 |
| U | 106 | THR | SER | conflict | UNP G1TSG1 |
| U | 126 | GLU | ASP | conflict | UNP G1TSG1 |

- Molecule 25 is a protein called Ribosomal protein L23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | V | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 969 | 613 | 182 | 169 | 5 | | |

- Molecule 26 is a protein called eL24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | W | 106 | Total | C | N | O | S | 0 | 0 |
| | | | 860 | 538 | 174 | 144 | 4 | | |

- Molecule 27 is a protein called eL23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | X | 118 | Total | C | N | O | S | 0 | 0 |
| | | | 967 | 618 | 181 | 167 | 1 | | |

- Molecule 28 is a protein called uL24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 28 | Y | 134 | Total | C | N | O | S | 0 | 0 |
| | | | 1115 | 700 | 226 | 186 | 3 | | |

- Molecule 29 is a protein called 60S ribosomal protein L27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 29 | Z | 135 | Total | C | N | O | S | 0 | 0 |
| | | | 1107 | 714 | 208 | 182 | 3 | | |

- Molecule 30 is a protein called 60S ribosomal protein L27a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | a | 147 | Total | C | N | O | S | 0 | 0 |
| | | | 1162 | 734 | 239 | 185 | 4 | | |

- Molecule 31 is a protein called Large ribosomal subunit protein eL29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 31 | b | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 806 | 498 | 182 | 123 | 3 | | |

- Molecule 32 is a protein called eL30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | c | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 761 | 481 | 134 | 140 | 6 | | |

- Molecule 33 is a protein called eL31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 33 | d | 107 | Total | C | N | O | S | 0 | 0 |
| | | | 888 | 560 | 171 | 155 | 2 | | |

- Molecule 34 is a protein called Ribosomal protein L32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 34 | e | 128 | Total | C | N | O | S | 0 | 0 |
| | | | 1053 | 667 | 216 | 165 | 5 | | |

- Molecule 35 is a protein called eL33.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | f | 109 | Total | C | N | O | S | 0 | 0 |
| | | | 876 | 555 | 174 | 143 | 4 | | |

- Molecule 36 is a protein called Large ribosomal subunit protein eL34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 36 | g | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 906 | 566 | 187 | 147 | 6 | | |

- Molecule 37 is a protein called eL35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 37 | h | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 1013 | 640 | 204 | 168 | 1 | | |

- Molecule 38 is a protein called 60S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 38 | i | 102 | Total | C | N | O | S | 0 | 0 |
| | | | 830 | 520 | 176 | 129 | 5 | | |

- Molecule 39 is a protein called eL38.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 39 | k | 69 | Total | C | N | O | S | 0 | 0 |
| | | | 569 | 366 | 103 | 99 | 1 | | |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| k | 3 | ARG | GLN | conflict | UNP G1U3J0 |
| k | 38 | CYS | TYR | conflict | UNP G1U3J0 |
| k | 48 | THR | MET | conflict | UNP G1U3J0 |
| k | 66 | VAL | MET | conflict | UNP G1U3J0 |

- Molecule 40 is a protein called eL39.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 40 | l | 50 | Total | C | N | O | S | 0 | 0 |
| | | | 447 | 286 | 96 | 64 | 1 | | |

- Molecule 41 is a protein called Ubiquitin-ribosomal protein eL40 fusion protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 41 | m | 52 | Total | C | N | O | S | 0 | 0 |
| | | | 429 | 266 | 90 | 67 | 6 | | |

There are 9 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| m | 1 | MET | - | insertion | UNP P0DXC2 |
| m | 2 | GLY | - | insertion | UNP P0DXC2 |
| m | 3 | ASP | - | insertion | UNP P0DXC2 |
| m | 4 | PRO | - | insertion | UNP P0DXC2 |
| m | 5 | GLU | - | insertion | UNP P0DXC2 |
| m | 6 | SER | - | insertion | UNP P0DXC2 |
| m | 7 | GLY | - | insertion | UNP P0DXC2 |
| m | 8 | GLY | - | insertion | UNP P0DXC2 |
| m | 9 | CYS | - | insertion | UNP P0DXC2 |

- Molecule 42 is a protein called eL41.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | n | 25 | Total | C | N | O | S | 0 | 0 |
| | | | 240 | 145 | 64 | 28 | 3 | | |

- Molecule 43 is a protein called Large ribosomal subunit protein eL42.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 43 | o | 104 | Total | C | N | O | S | 0 | 0 |
| | | | 851 | 533 | 174 | 138 | 6 | | |

There are 6 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| o | 101 | GLY | - | insertion | UNP G1T040 |
| o | 102 | GLN | - | insertion | UNP G1T040 |
| o | 103 | VAL | - | insertion | UNP G1T040 |
| o | 104 | ILE | - | insertion | UNP G1T040 |
| o | 105 | GLN | - | insertion | UNP G1T040 |
| o | 106 | PHE | - | insertion | UNP G1T040 |

- Molecule 44 is a protein called eL43.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | p | 91 | Total | C | N | O | S | 0 | 0 |
| | | | 708 | 445 | 136 | 120 | 7 | | |

- Molecule 45 is a protein called eL28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 45 | r | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 994 | 616 | 205 | 167 | 6 | | |

- Molecule 46 is a protein called uS2 (SA).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 46 | AA | 217 | Total | C | N | O | S | 0 | 0 |
| | | | 1710 | 1086 | 300 | 316 | 8 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| AA | 114 | THR | ALA | conflict | UNP G1TLT8 |

- Molecule 47 is a protein called 40S ribosomal protein S3a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 47 | BB | 213 | Total | C | N | O | S | 0 | 0 |
| | | | 1729 | 1098 | 309 | 308 | 14 | | |

- Molecule 48 is a protein called Small ribosomal subunit protein uS5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 48 | CC | 221 | Total | C | N | O | S | 0 | 0 |
| | | | 1716 | 1111 | 295 | 301 | 9 | | |

There are 11 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| CC | 13 | ASP | GLY | conflict | UNP G1SWM1 |
| CC | 19 | ILE | MET | conflict | UNP G1SWM1 |
| CC | 33 | VAL | ILE | conflict | UNP G1SWM1 |
| CC | 97 | PHE | CYS | conflict | UNP G1SWM1 |
| CC | 101 | SER | ALA | conflict | UNP G1SWM1 |
| CC | 141 | VAL | LEU | conflict | UNP G1SWM1 |
| CC | 181 | PRO | LEU | conflict | UNP G1SWM1 |
| CC | 191 | VAL | - | insertion | UNP G1SWM1 |
| CC | 215 | MET | LEU | conflict | UNP G1SWM1 |
| CC | 271 | ASP | ASN | conflict | UNP G1SWM1 |
| CC | 274 | VAL | MET | conflict | UNP G1SWM1 |

- Molecule 49 is a protein called Ribosomal protein S3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 49 | DD | 224 | Total | C | N | O | S | 0 | 0 |
| | | | 1739 | 1108 | 313 | 311 | 7 | | |

- Molecule 50 is a protein called eS4 (S4 X isoform).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 50 | EE | 262 | Total | C | N | O | S | 0 | 0 |
| | | | 2076 | 1324 | 386 | 358 | 8 | | |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| EE | 25 | GLY | SER | conflict | UNP G1TK17 |
| EE | 51 | ARG | LYS | conflict | UNP G1TK17 |
| EE | 78 | THR | ALA | conflict | UNP G1TK17 |
| EE | 156 | VAL | MET | conflict | UNP G1TK17 |

- Molecule 51 is a protein called Ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 51 | FF | 184 | Total | C | N | O | S | 0 | 0 |
| | | | 1460 | 915 | 273 | 265 | 7 | | |

- Molecule 52 is a protein called 40S ribosomal protein S6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 52 | GG | 237 | Total | C | N | O | S | 0 | 0 |
| | | | 1923 | 1200 | 387 | 329 | 7 | | |

- Molecule 53 is a protein called 40S ribosomal protein S7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 53 | HH | 185 | Total | C | N | O | S | 0 | 0 |
| | | | 1489 | 952 | 271 | 265 | 1 | | |

- Molecule 54 is a protein called 40S ribosomal protein S8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 54 | II | 198 | Total | C | N | O | S | 0 | 0 |
| | | | 1628 | 1021 | 322 | 280 | 5 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| II | 47 | ARG | GLY | conflict | UNP G1TJW1 |

- Molecule 55 is a protein called Ribosomal protein S9 (Predicted).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 55 | JJ | 181 | Total | C | N | O | S | 0 | 0 |
| | | | 1508 | 960 | 302 | 244 | 2 | | |

- Molecule 56 is a protein called Small ribosomal subunit protein eS10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 56 | KK | 96 | Total | C | N | O | S | 0 | 0 |
| | | | 810 | 530 | 143 | 131 | 6 | | |

- Molecule 57 is a protein called Ribosomal protein S11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 57 | LL | 143 | Total | C | N | O | S | 0 | 0 |
| | | | 1175 | 749 | 222 | 198 | 6 | | |

- Molecule 58 is a protein called 40S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 58 | MM | 112 | Total | C | N | O | S | 0 | 0 |
| | | | 871 | 551 | 155 | 158 | 7 | | |

- Molecule 59 is a protein called Ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 59 | NN | 149 | Total | C | N | O | S | 0 | 0 |
| | | | 1202 | 770 | 228 | 203 | 1 | | |

- Molecule 60 is a protein called Small ribosomal subunit protein uS11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 60 | OO | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1016 | 621 | 199 | 190 | 6 | | |

- Molecule 61 is a protein called uS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 61 | PP | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1058 | 670 | 201 | 180 | 7 | | |

- Molecule 62 is a protein called uS9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 62 | QQ | 142 | Total | C | N | O | S | 0 | 0 |
| | | | 1128 | 717 | 213 | 195 | 3 | | |

- Molecule 63 is a protein called eS17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 63 | RR | 132 | Total | C | N | O | S | 0 | 0 |
| | | | 1068 | 670 | 199 | 195 | 4 | | |

- Molecule 64 is a protein called uS13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 64 | SS | 140 | Total | C | N | O | S | 0 | 0 |
| | | | 1157 | 728 | 231 | 197 | 1 | | |

- Molecule 65 is a protein called eS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 65 | TT | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1097 | 688 | 211 | 195 | 3 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| TT | 119 | GLY | TRP | conflict | UNP G1TN62 |

- Molecule 66 is a protein called uS10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 66 | UU | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 795 | 498 | 152 | 141 | 4 | | |

- Molecule 67 is a protein called eS21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 67 | VV | 83 | Total | C | N | O | S | 0 | 0 |
| | | | 637 | 393 | 117 | 122 | 5 | | |

There are 7 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| VV | 3 | ASN | SER | conflict | UNP G1TM82 |
| VV | 4 | ASP | ASN | conflict | UNP G1TM82 |
| VV | 33 | GLN | PRO | conflict | UNP G1TM82 |
| VV | 50 | PHE | SER | conflict | UNP G1TM82 |
| VV | 75 | ALA | SER | conflict | UNP G1TM82 |
| VV | 76 | ASP | HIS | conflict | UNP G1TM82 |
| VV | 81 | LYS | GLN | conflict | UNP G1TM82 |

- Molecule 68 is a protein called Ribosomal protein S15a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 68 | WW | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1034 | 659 | 193 | 176 | 6 | | |

- Molecule 69 is a protein called uS12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 69 | XX | 140 | Total | C | N | O | S | 0 | 0 |
| | | | 1087 | 687 | 215 | 182 | 3 | | |

- Molecule 70 is a protein called 40S ribosomal protein S24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 70 | YY | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 1011 | 640 | 198 | 168 | 5 | | |

- Molecule 71 is a protein called eS25.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 71 | ZZ | 75 | Total | C | N | O | S | 0 | 0 |
| | | | 598 | 382 | 111 | 104 | 1 | | |

- Molecule 72 is a protein called 40S ribosomal protein S26.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 72 | aa | 101 | Total | C | N | O | S | 0 | 0 |
| | | | 814 | 507 | 170 | 132 | 5 | | |

There are 3 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| aa | 28 | ARG | CYS | conflict | UNP G1TFE8 |
| aa | 56 | ALA | VAL | conflict | UNP G1TFE8 |
| aa | 109 | ARG | PRO | conflict | UNP G1TFE8 |

- Molecule 73 is a protein called 40S ribosomal protein S27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 73 | bb | 83 | Total | C | N | O | S | 0 | 0 |
| | | | 651 | 408 | 121 | 115 | 7 | | |

- Molecule 74 is a protein called Ribosomal protein S28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 74 | cc | 62 | Total | C | N | O | S | 0 | 0 |
| | | | 488 | 297 | 97 | 92 | 2 | | |

- Molecule 75 is a protein called eS29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 75 | dd | 55 | Total | C | N | O | S | 0 | 0 |
| | | | 459 | 286 | 94 | 74 | 5 | | |

- Molecule 76 is a protein called 40S ribosomal protein S30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 76 | ee | 57 | Total | C | N | O | S | 0 | 0 |
| | | | 457 | 282 | 101 | 73 | 1 | | |

- Molecule 77 is a protein called Ribosomal protein S27a.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 77 | ff | 68 | Total | C | N | O | S | 0 | 0 |
| | | | 555 | 351 | 103 | 94 | 7 | | |

- Molecule 78 is a protein called RACK1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 78 | gg | 313 | Total | C | N | O | S | 0 | 0 |
| | | | 2436 | 1535 | 424 | 465 | 12 | | |

- Molecule 79 is a RNA chain called MF mRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 79 | 10 | 11 | Total | C | N | O | P | 0 | 0 |
| | | | 234 | 105 | 41 | 77 | 11 | | |

- Molecule 80 is a RNA chain called Phe-tRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 80 | 12 | 75 | Total | C | N | O | P | 0 | 0 |
| | | | 1599 | 714 | 286 | 524 | 75 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| 12 | 37 | C | G | conflict | GB 176419 |

- Molecule 81 is a RNA chain called Met-tRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 81 | 13 | 74 | Total | C | N | O | P | 0 | 0 |
| | | | 1585 | 707 | 293 | 511 | 74 | | |
| 81 | 11 | 74 | Total | C | N | O | P | 0 | 0 |
| | | | 1585 | 707 | 293 | 511 | 74 | | |

- Molecule 82 is a protein called Ribosomal protein L37.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 82 | j | 86 | Total | C | N | O | S | 0 | 0 |
| | | | 705 | 434 | 155 | 111 | 5 | | |

- Molecule 83 is a protein called GTP-binding protein 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 83 | jj | 513 | Total | C | N | O | S | 0 | 0 |
| | | | 3982 | 2508 | 702 | 748 | 24 | | |

There are 34 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| jj | -33 | MET | - | expression tag | UNP O00178 |
| jj | -32 | GLY | - | expression tag | UNP O00178 |
| jj | -31 | SER | - | expression tag | UNP O00178 |
| jj | -30 | SER | - | expression tag | UNP O00178 |
| jj | -29 | HIS | - | expression tag | UNP O00178 |
| jj | -28 | HIS | - | expression tag | UNP O00178 |
| jj | -27 | HIS | - | expression tag | UNP O00178 |
| jj | -26 | HIS | - | expression tag | UNP O00178 |
| jj | -25 | HIS | - | expression tag | UNP O00178 |
| jj | -24 | HIS | - | expression tag | UNP O00178 |
| jj | -23 | SER | - | expression tag | UNP O00178 |
| jj | -22 | SER | - | expression tag | UNP O00178 |
| jj | -21 | GLY | - | expression tag | UNP O00178 |
| jj | -20 | LEU | - | expression tag | UNP O00178 |
| jj | -19 | VAL | - | expression tag | UNP O00178 |
| jj | -18 | PRO | - | expression tag | UNP O00178 |
| jj | -17 | ARG | - | expression tag | UNP O00178 |
| jj | -16 | GLY | - | expression tag | UNP O00178 |
| jj | -15 | SER | - | expression tag | UNP O00178 |
| jj | -14 | HIS | - | expression tag | UNP O00178 |
| jj | -13 | MET | - | expression tag | UNP O00178 |
| jj | -12 | ALA | - | expression tag | UNP O00178 |
| jj | -11 | SER | - | expression tag | UNP O00178 |

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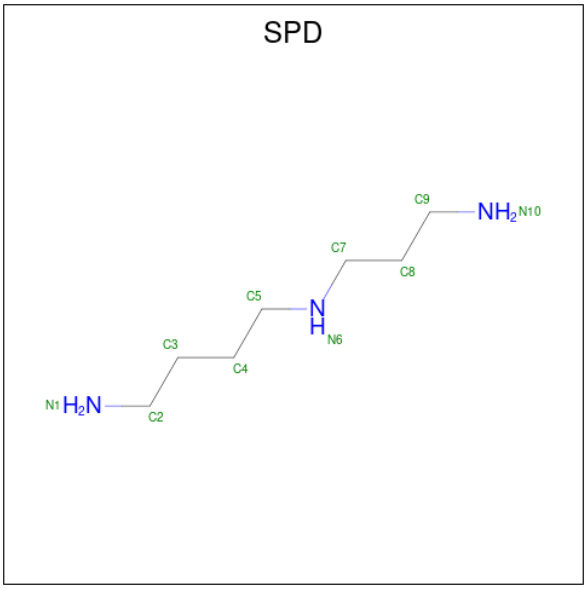
| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| jj | -10 | MET | - | expression tag | UNP O00178 |
| jj | -9 | THR | - | expression tag | UNP O00178 |
| jj | -8 | GLY | - | expression tag | UNP O00178 |
| jj | -7 | GLY | - | expression tag | UNP O00178 |
| jj | -6 | GLN | - | expression tag | UNP O00178 |
| jj | -5 | GLN | - | expression tag | UNP O00178 |
| jj | -4 | MET | - | expression tag | UNP O00178 |
| jj | -3 | GLY | - | expression tag | UNP O00178 |
| jj | -2 | ARG | - | expression tag | UNP O00178 |
| jj | -1 | GLY | - | expression tag | UNP O00178 |
| jj | 0 | SER | - | expression tag | UNP O00178 |

- Molecule 84 is SPERMIDINE (CCD ID: SPD) (formula: $C_7H_{19}N_3$).




| Mol | Chain | Residues | Atoms | | | AltConf |
|---|---|---|---|---|---|---|
| 84 | 5 | 1 | Total | C | N | 0 |
| | | | 10 | 7 | 3 | |

- Molecule 85 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 85 | g | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 85 | m | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |

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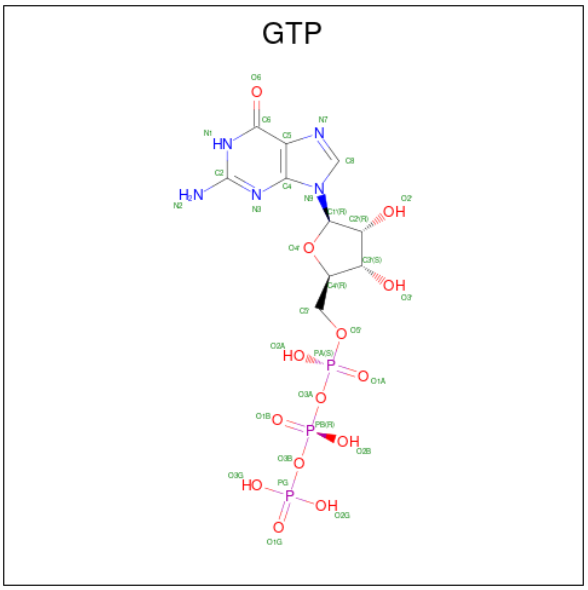
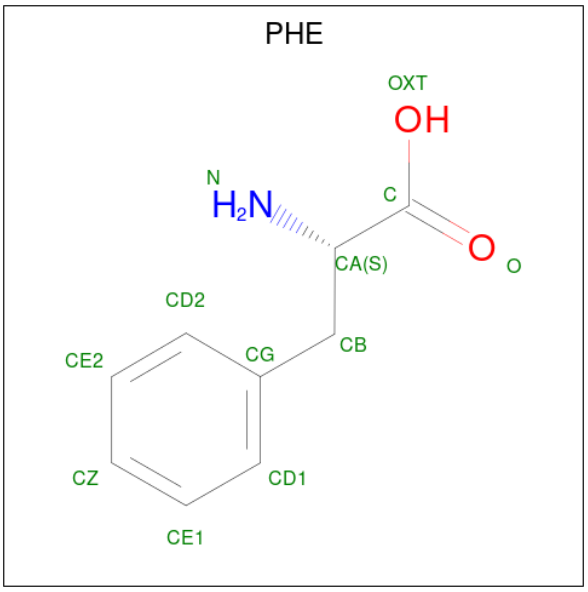
| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 85 | o | 1 | Total Zn<br>1 1 | 0 |
| 85 | p | 1 | Total Zn<br>1 1 | 0 |
| 85 | dd | 1 | Total Zn<br>1 1 | 0 |
| 85 | j | 1 | Total Zn<br>1 1 | 0 |

- Molecule 86 is GUANOSINE-5'-TRIPHOSPHATE (CCD ID: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



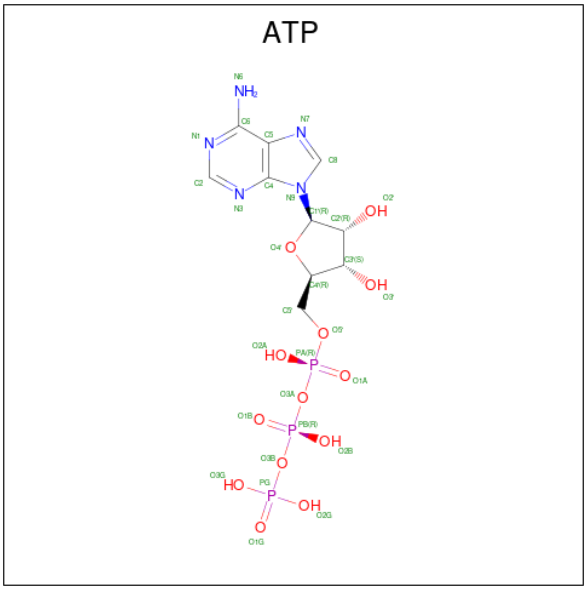

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 86 | 12 | 1 | Total C N O P<br>32 10 5 14 3 | 0 |

- Molecule 87 is PHENYLALANINE (CCD ID: PHE) (formula: $C_9H_{11}NO_2$).



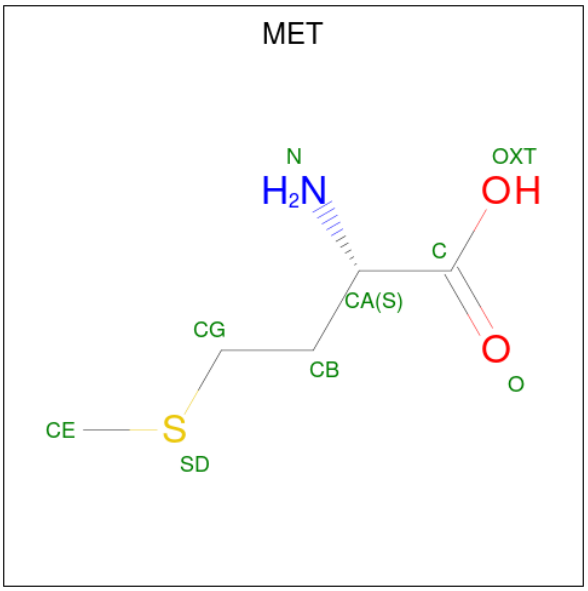

| Mol | Chain | Residues | Atoms | | | | AltConf |
|---|---|---|---|---|---|---|---|
| 87 | 12 | 1 | Total | C | N | O | 0 |
| | | | 11 | 9 | 1 | 1 | |

- Molecule 88 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



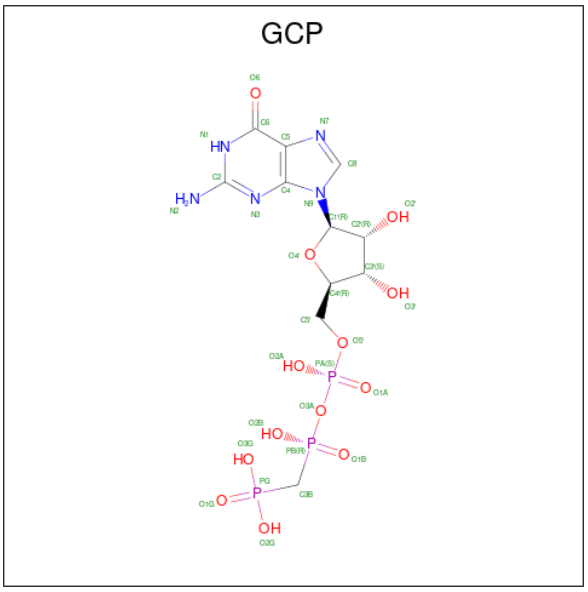

| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 88 | 13 | 1 | Total | C | N | O | P | 0 |
| | | | 31 | 10 | 5 | 13 | 3 | |
| 88 | 11 | 1 | Total | C | N | O | P | 0 |
| | | | 31 | 10 | 5 | 13 | 3 | |

- Molecule 89 is METHIONINE (CCD ID: MET) (formula: $C_5H_{11}NO_2S$).




| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 89 | 13 | 1 | Total | C | N | O | S | 0 |
| | | | 8 | 5 | 1 | 1 | 1 | |

- Molecule 90 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (CCD ID: GCP) (formula: $C_{11}H_{18}N_5O_{13}P_3$) (labeled as "Ligand of Interest" by depositor).




| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 90 | jj | 1 | Total | C | N | O | P | 0 |
| | | | 32 | 11 | 5 | 13 | 3 | |

- Molecule 91 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 91 | jj | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |

- Molecule 92 is POTASSIUM ION (CCD ID: K) (formula: K) (labeled as "Ligand of Interest" by depositor).

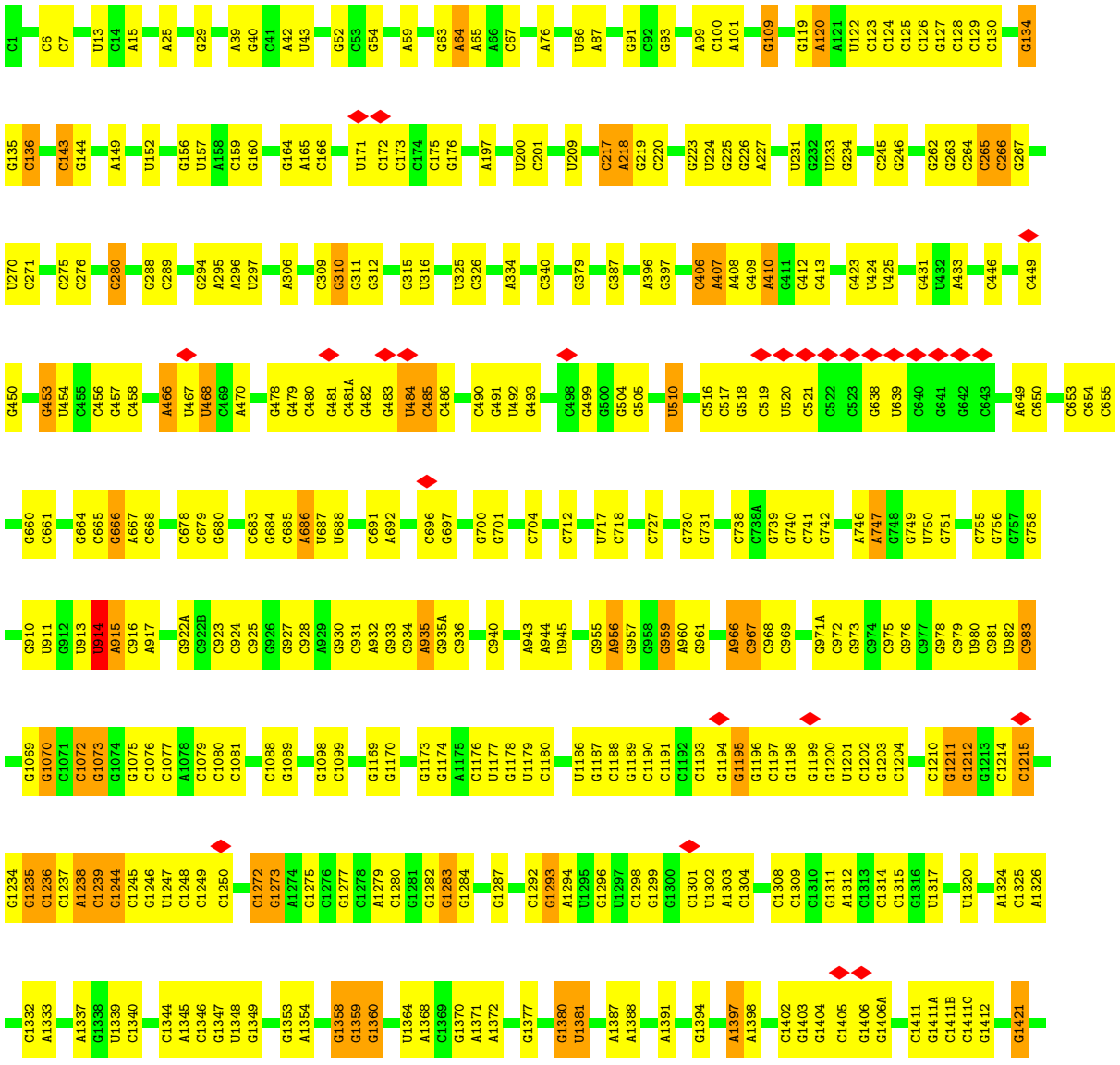
| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 92 | jj | 1 | Total | K | 0 |
| | | | 1 | 1 | |

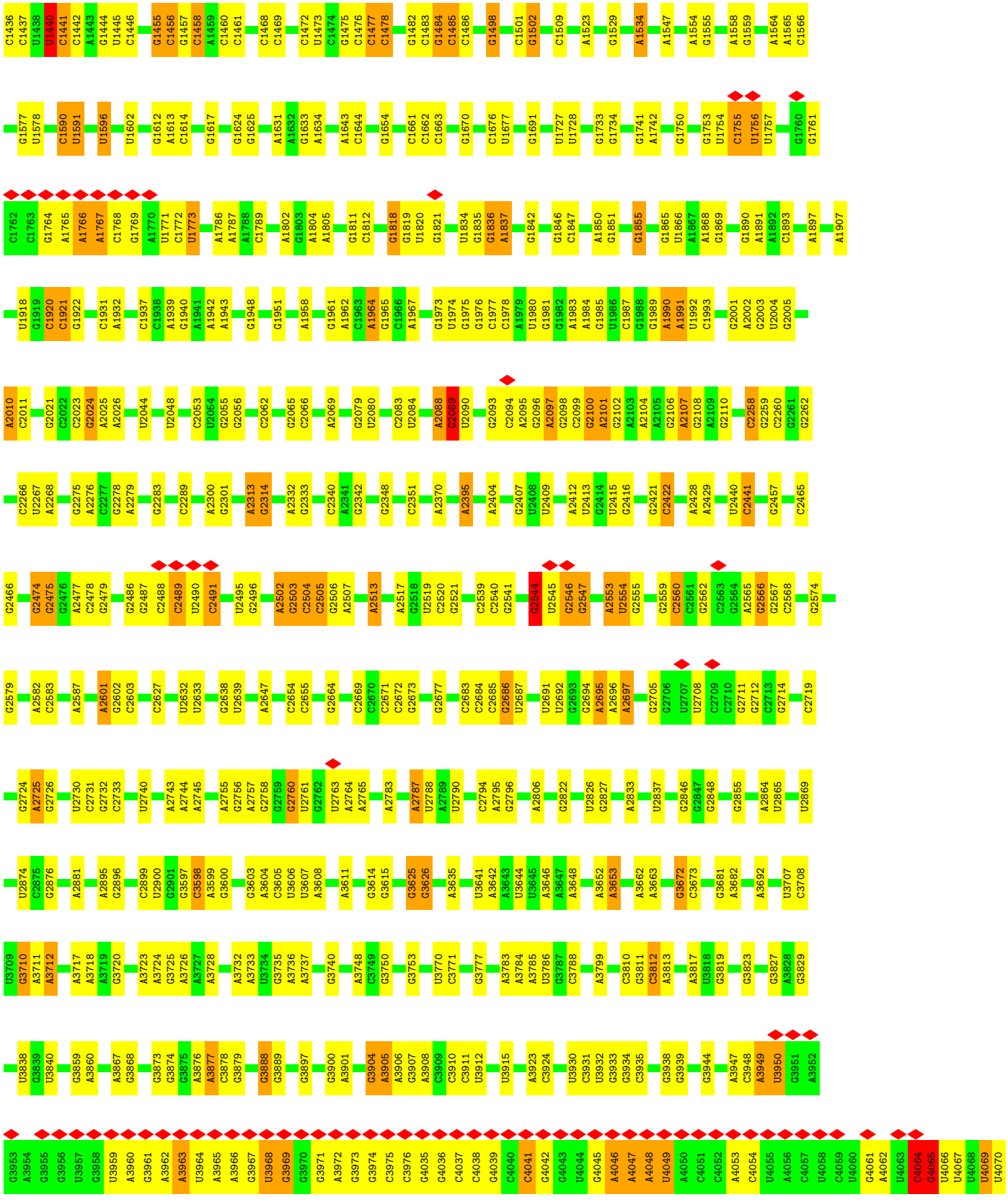
# 3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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: 28S ribosomal RNA

Chain 5:




C1436 C1437 U1438 U1440 C1441 C1442 A1443 G1444 U1445 C1446
G1455 C1456 G1457 C1458 A1459 C1460 C1461
C1468 C1469
C1472 U1473 C1474 G1475 C1476 C1477 C1478
G1482 C1483 G1484 C1485 C1486
G1498
C1501 G1502
C1509
A1523
G1529
A1534
A1547
A1554 G1555
A1558 G1559
A1564 A1565 C1566
G1577 U1578
C1590 U1591
U1596
U1602
G1612 A1613 C1614
G1617
G1624 G1625
A1631 A1632 G1633 A1634
A1643 C1644
G1654
C1661 C1662 C1663
G1670
C1676 U1677
G1691
U1727 U1728
G1733 G1734
G1741 A1742
G1750
G1753 U1754 C1755 U1756 U1757 G1760 G1761
C1762 C1763 G1764 A1765 A1766 A1767 C1768 G1769 A1770 U1771 C1772 U1773
A1786 A1787 A1788 C1789
A1802 G1803 A1804 A1805
G1811 C1812
G1818 G1819 U1820 G1821
U1834 G1835 G1836 A1837
G1842
G1846 C1847
A1850 G1851
G1855
G1865 U1866 A1867 A1868 G1869
G1890 A1891 A1892 C1893 A1897 A1907
U1918 G1919 C1920 C1921 G1922
C1931 A1932
C1937 C1938 A1939 G1940 A1941 A1942 A1943
G1948
G1951
A1958
G1961 A1962 C1963 A1964 G1965 C1966 A1967
G1973 U1974 G1975 G1976 C1977 C1978 A1979 U1980 G1981 G1982 A1983 A1984 G1985 U1986 C1987 G1988 G1989 A1990 A1991 U1992 C1993
G2001 A2002 G2003 U2004 G2005
A2010 C2011 G2021 C2022 C2023 G2024 A2025 A2026
U2044
U2048
C2053 U2054 G2055 C2056
C2062
G2065 C2066
A2069
G2079 U2080
C2083 U2084
A2088 G2089 U2090
G2093 C2094 A2095 G2096 A2097 G2098 C2099 G2100 A2101 G2102 A2103 A2104 A2105 G2106 A2107 G2108 A2109 G2110
C2258 G2259 C2260 G2261 G2262
C2266 U2267 A2268 G2275 A2276 C2277 G2278 A2279
G2283
C2289
A2300 G2301
A2313 G2314
A2332 G2333
C2340 A2341 G2342
G2348
C2351
A2370
A2395
A2404
G2407 U2408 U2409
A2412 U2413 G2414 U2415 G2416
G2421 C2422
A2428 A2429
U2440 C2441
G2457
C2465
G2466 G2474 G2475 G2476 A2477 C2478 G2479 G2486 G2487 C2488 C2489 U2490 C2491
U2495 G2496
A2502 G2503 C2504 C2505 G2506 A2507
A2513
A2517 G2518 U2519 C2520 G2521
C2539 C2540 G2541
G2544 U2545 G2546 G2547
A2553 U2554 G2555
G2559 C2560 C2561 G2562 C2563 G2564 A2565 G2566 G2567 C2568
G2574
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G2724 A2725 G2726 U2730 C2731 G2732 C2733 U2740 A2743 A2744 A2745 A2755 C2756 A2757 G2758 G2759 G2760 U2761 G2762 U2763 A2764 A2765 A2783 A2787 U2788 A2789 U2790 C2794 A2795 G2796 A2806 G2822 U2826 G2827 A2833 U2837 G2846 G2847 G2848 G2855 A2864 U2865 U2869
U2874 C2875 G2876 A2881 A2895 G2896 C2899 U2900 G2901 G3597 G3598 A3599 G3600 G3603 A3604 C3605 U3606 U3607 A3608 A3611 G3614 G3615 G3625 G3626 A3635 U3641 A3642 A3643 U3644 U3645 A3646 A3647 A3648 A3652 A3653 A3662 A3663 G3672 C3673 G3681 A3682 A3692 U3707 C3708
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U3838 G3839 U3840 G3859 A3860 A3867 G3868 G3873 G3874 G3875 A3876 A3877 C3878 G3879 G3888 G3889 G3897 G3900 A3901 G3904 A3905 A3906 G3907 A3908 C3909 C3910 C3911 U3912 U3915 A3923 C3924 U3930 C3931 U3932 G3933 G3934 C3935 G3938 G3939 G3944 A3947 C3948 A3949 U3950 G3951 A3952
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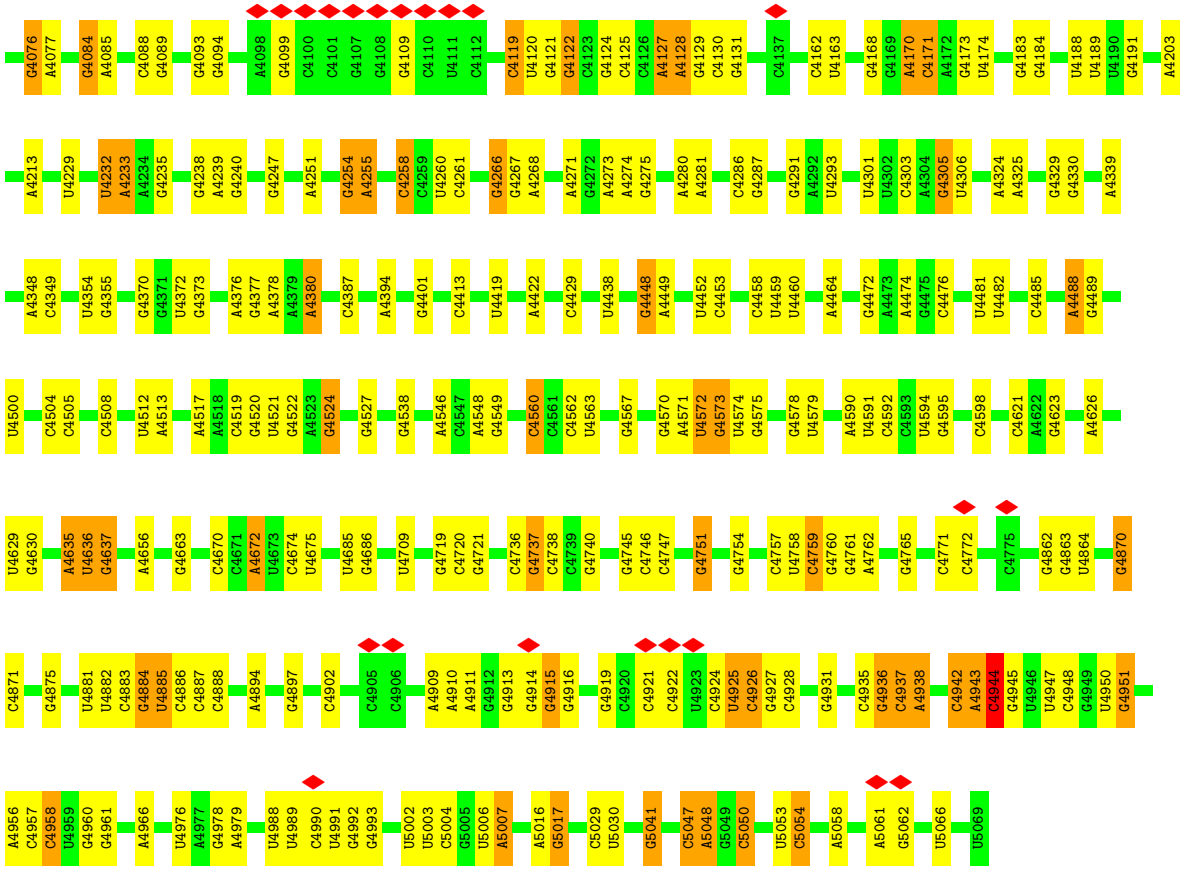
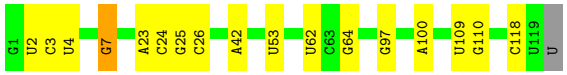


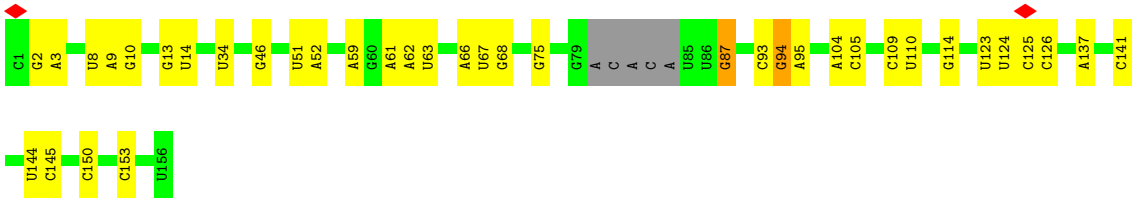
• Molecule 2: 5S ribosomal RNA

Chain 7:



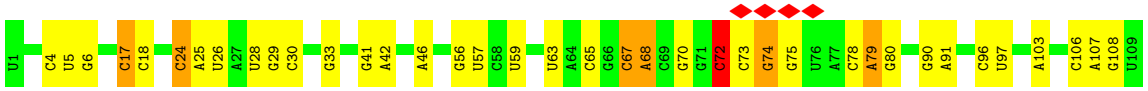
• Molecule 3: 5.8S ribosomal RNA

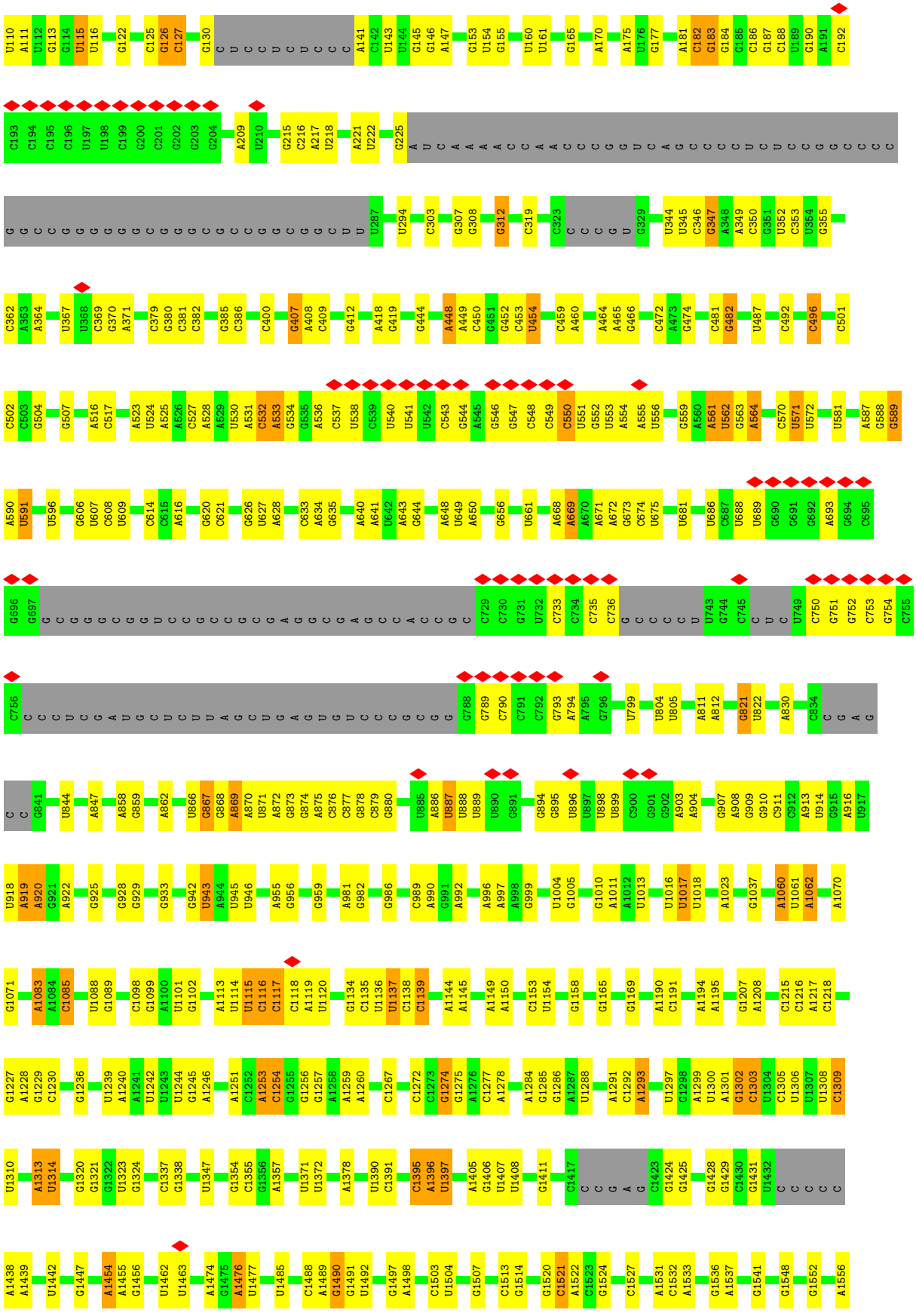
Chain 8:

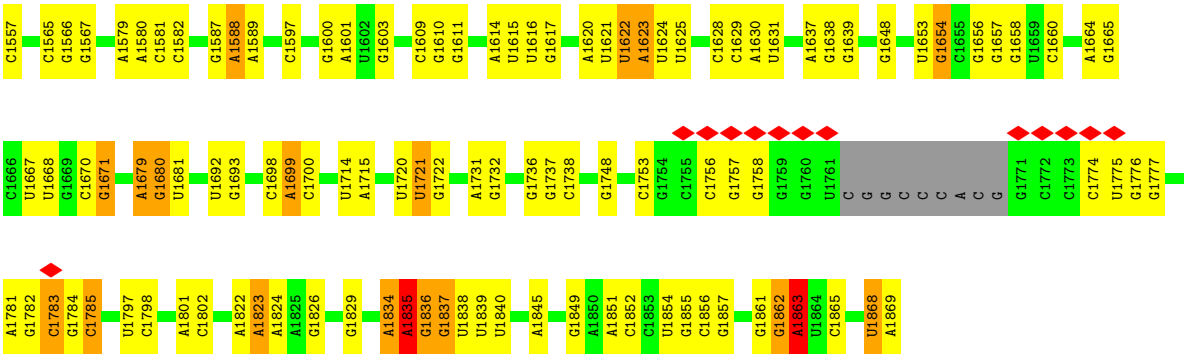


• Molecule 4: 18S ribosomal RNA

Chain 9:





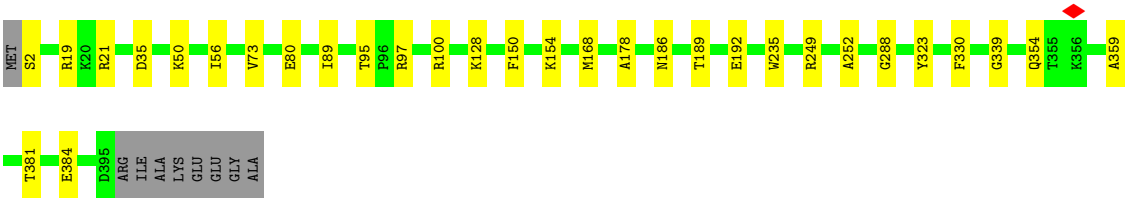



• Molecule 5: Ribosomal protein L8

Chain A:

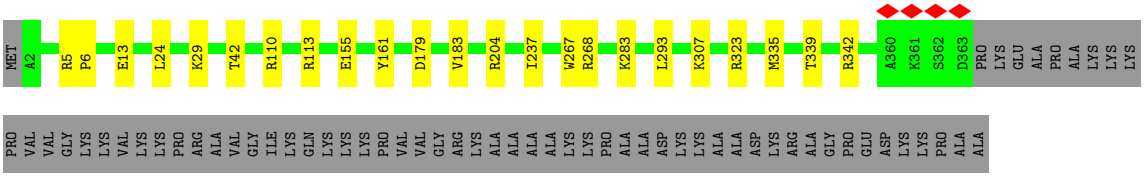
• Molecule 6: Ribosomal protein L3

Chain B:



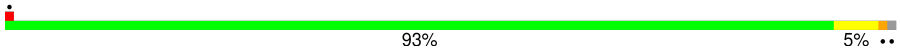

• Molecule 7: 60S ribosomal protein L4

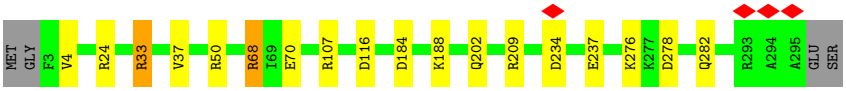
Chain C:




• Molecule 8: Large ribosomal subunit protein uL18

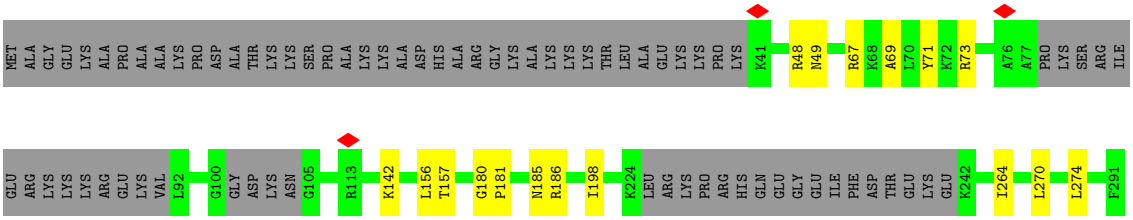
Chain D:




• Molecule 9: 60S ribosomal protein L6

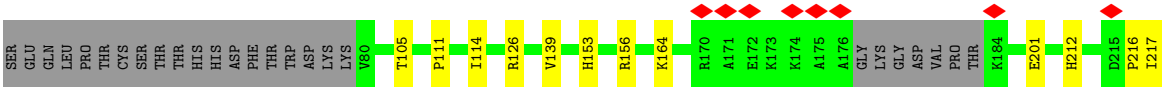
Chain E:

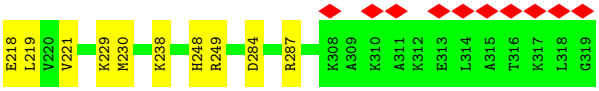




• Molecule 10: 60S ribosomal protein L7a

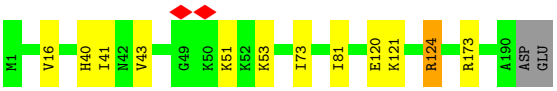
Chain G:





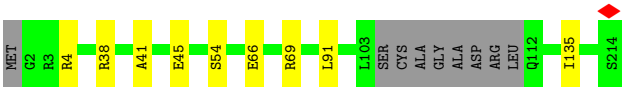
• Molecule 11: 60S ribosomal protein L9

Chain H:



• Molecule 12: 60S ribosomal protein L10

Chain I:

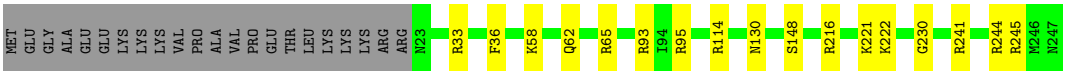


• Molecule 13: Ribosomal protein L11

Chain J:

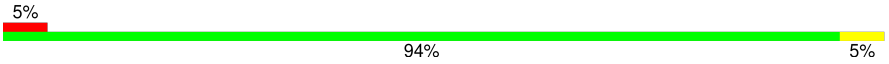
• Molecule 14: 60S ribosomal protein L7

Chain K:



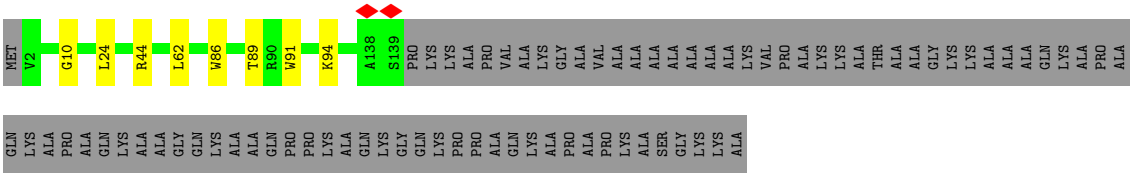
• Molecule 15: 60S ribosomal protein L13

Chain L:



• Molecule 16: 60S ribosomal protein L14

Chain M:

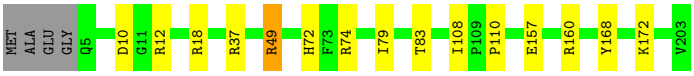



• Molecule 17: Ribosomal protein L15

Chain N:

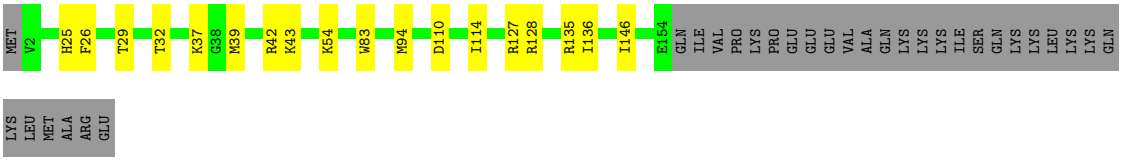
• Molecule 18: Large ribosomal subunit protein uL13

Chain O:



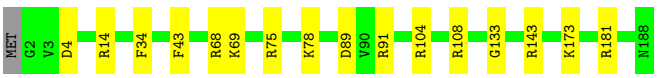

• Molecule 19: Large ribosomal subunit protein uL22

Chain P:



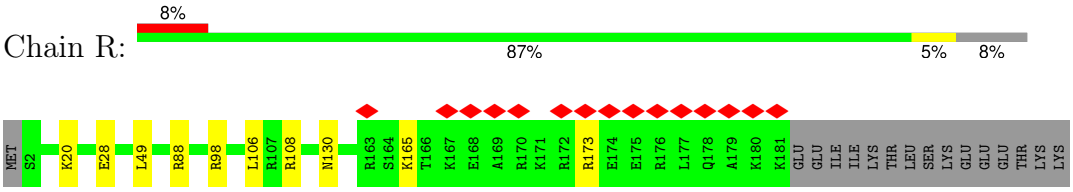

• Molecule 20: Ribosomal protein L18

Chain Q:



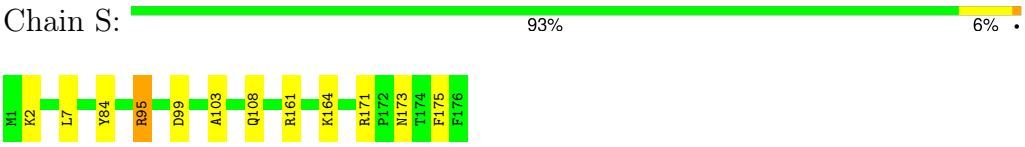

• Molecule 21: Ribosomal protein L19

Chain R:



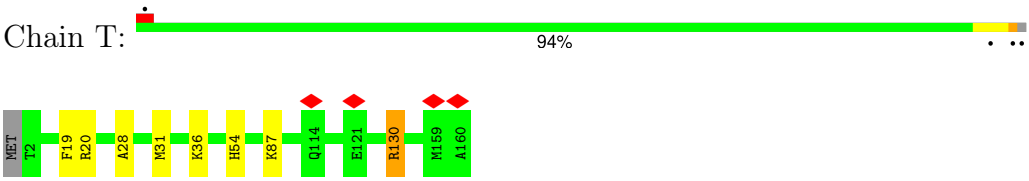

• Molecule 22: 60S ribosomal protein L18a

Chain S:



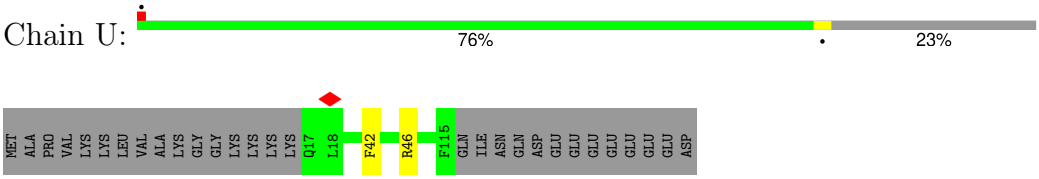

• Molecule 23: eL21

Chain T:



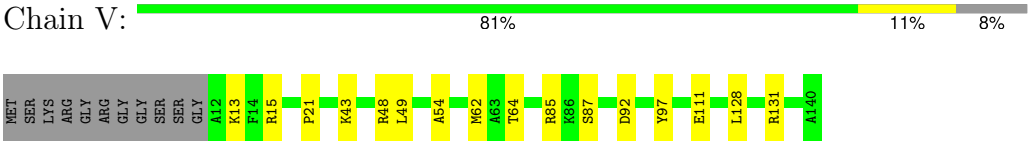

• Molecule 24: eL22

Chain U:



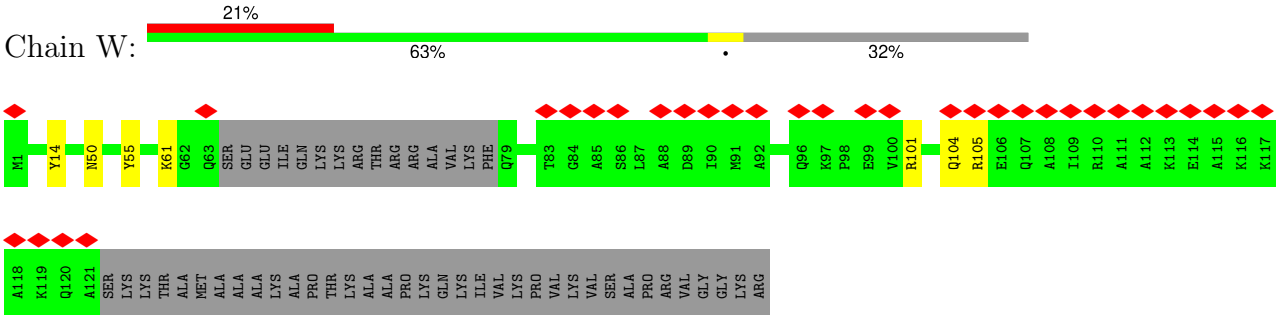

• Molecule 25: Ribosomal protein L23

Chain V:



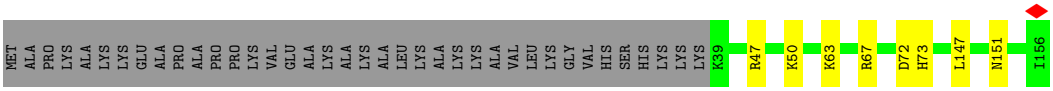

• Molecule 26: eL24

Chain W:



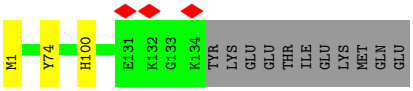

• Molecule 27: eL23

Chain X:




• Molecule 28: uL24

Chain Y:

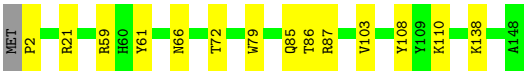



• Molecule 29: 60S ribosomal protein L27

Chain Z:

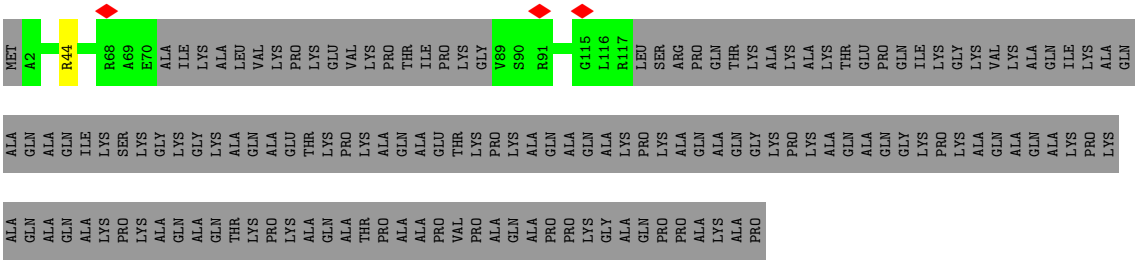
• Molecule 30: 60S ribosomal protein L27a

Chain a:



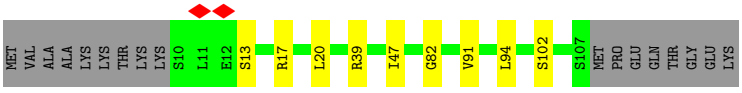

• Molecule 31: Large ribosomal subunit protein eL29

Chain b:



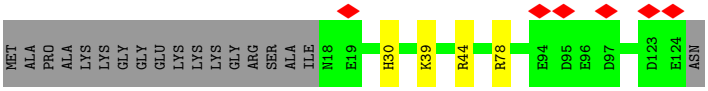

• Molecule 32: eL30

Chain c:

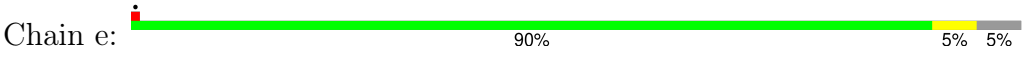


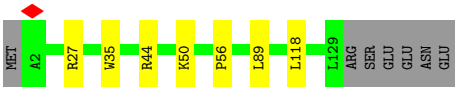

• Molecule 33: eL31

Chain d:

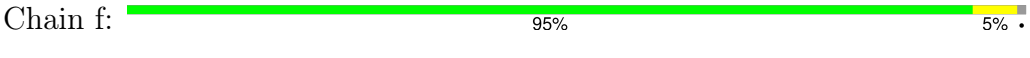


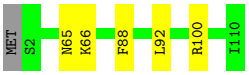

• Molecule 34: Ribosomal protein L32



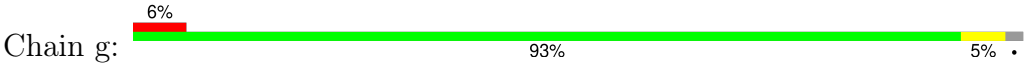



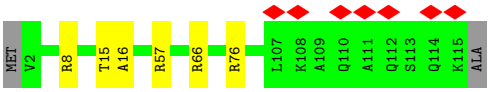

• Molecule 35: eL33



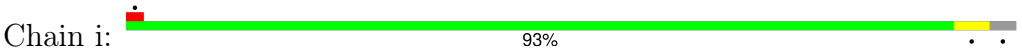

• Molecule 36: Large ribosomal subunit protein eL34

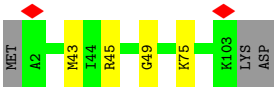


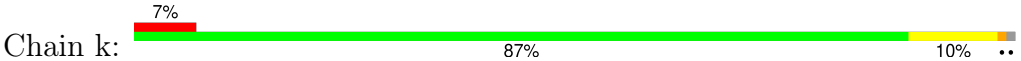

• Molecule 37: eL35

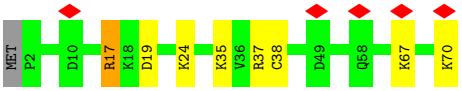
• Molecule 38: 60S ribosomal protein L36




• Molecule 39: eL38



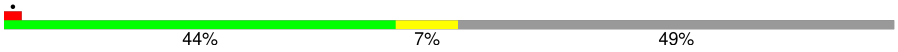



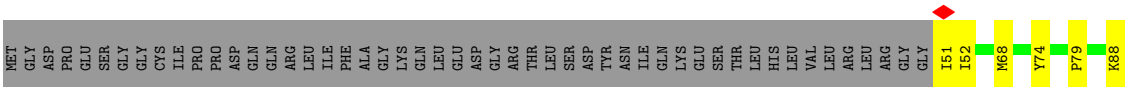

• Molecule 40: eL39

Chain l:

• Molecule 41: Ubiquitin-ribosomal protein eL40 fusion protein

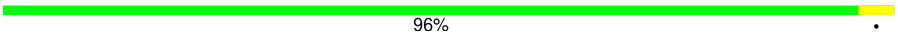
Chain m:



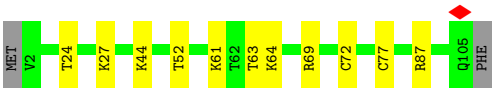
• Molecule 42: eL41

Chain n:



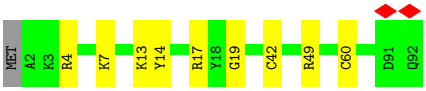
• Molecule 43: Large ribosomal subunit protein eL42

Chain o:



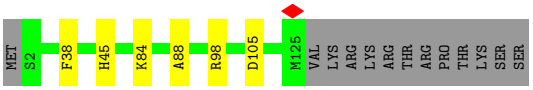

• Molecule 44: eL43

Chain p:



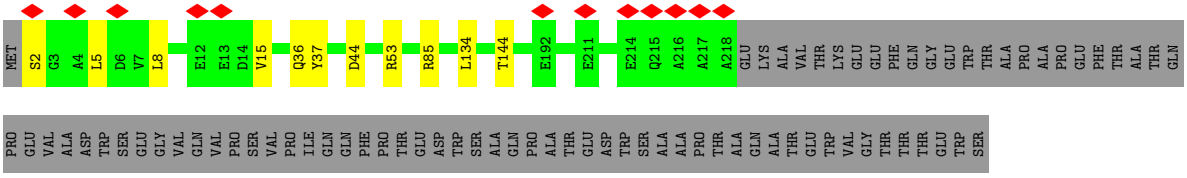

• Molecule 45: eL28

Chain r:



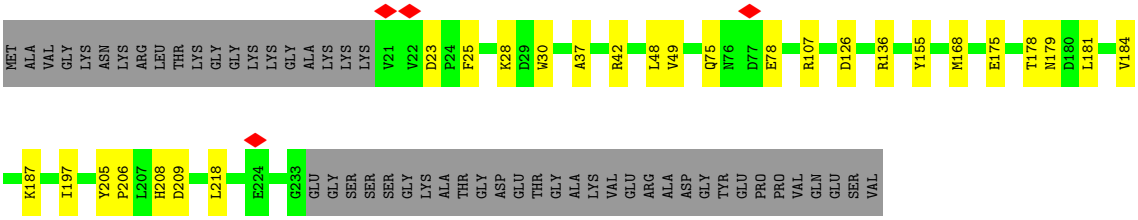

• Molecule 46: uS2 (SA)

Chain AA:



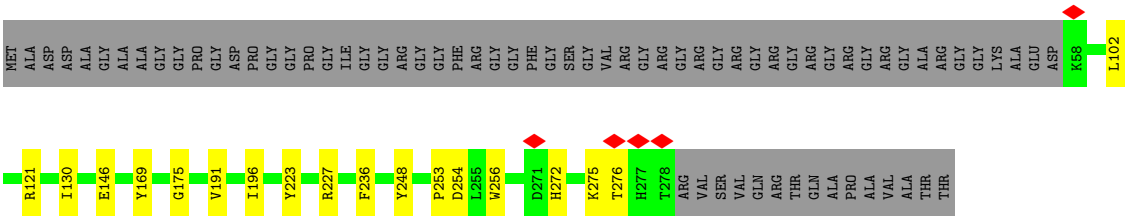

• Molecule 47: 40S ribosomal protein S3a

Chain BB:



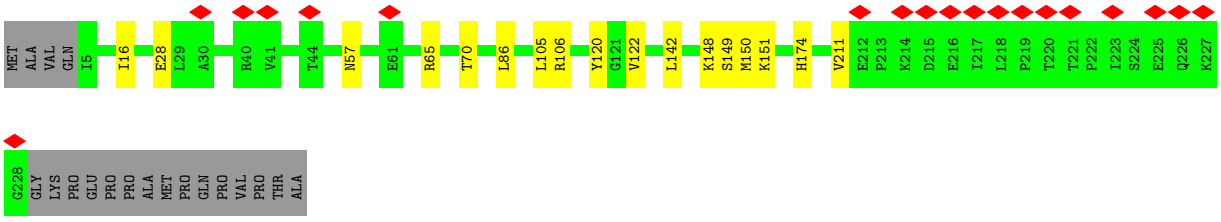

• Molecule 48: Small ribosomal subunit protein uS5

Chain CC:



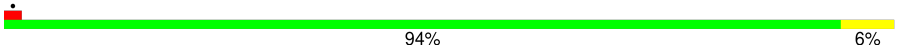

• Molecule 49: Ribosomal protein S3

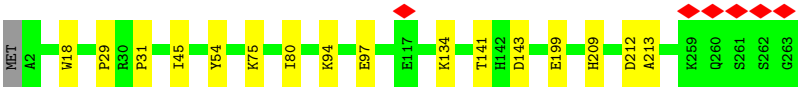
Chain DD:




• Molecule 50: eS4 (S4 X isoform)

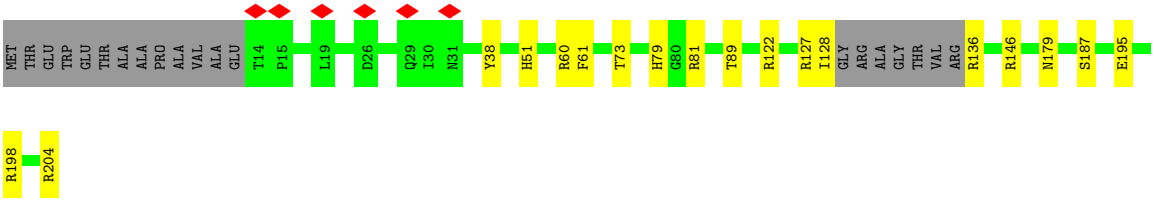
Chain EE:



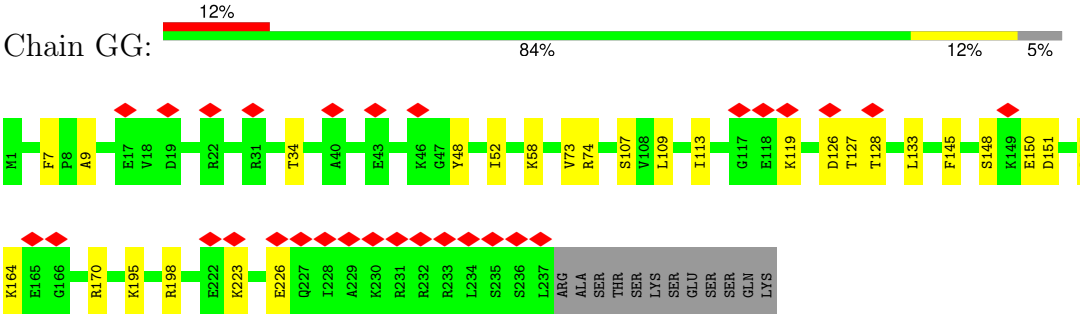




• Molecule 51: Ribosomal protein S5

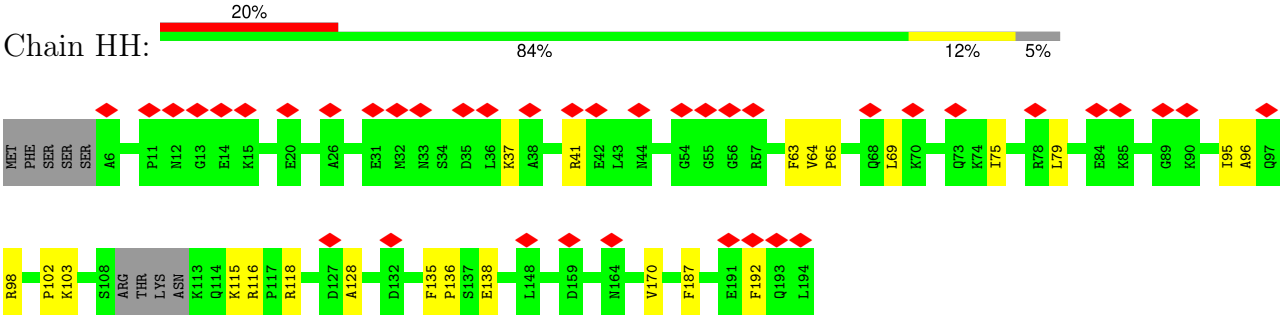
Chain FF:



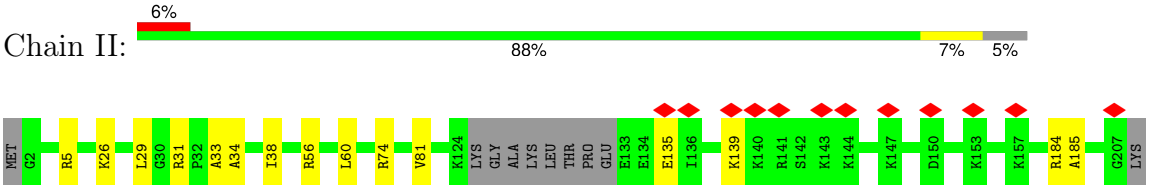

• Molecule 52: 40S ribosomal protein S6



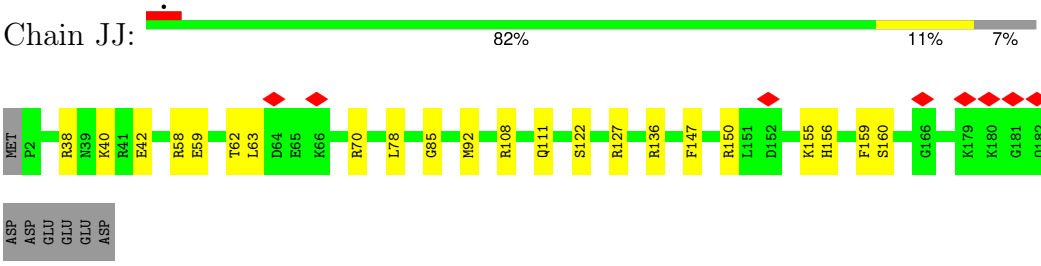

• Molecule 53: 40S ribosomal protein S7



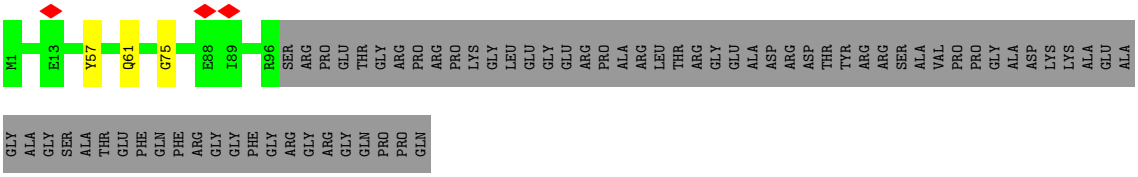

• Molecule 54: 40S ribosomal protein S8




• Molecule 55: Ribosomal protein S9 (Predicted)



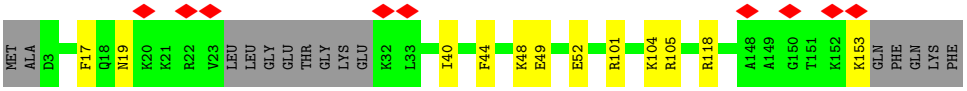

• Molecule 56: Small ribosomal subunit protein eS10





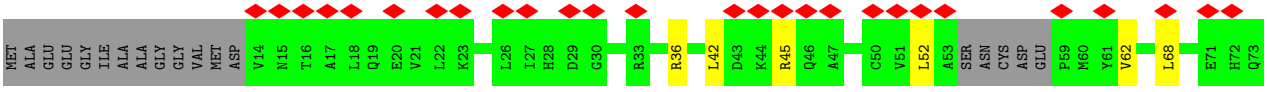
• Molecule 57: Ribosomal protein S11

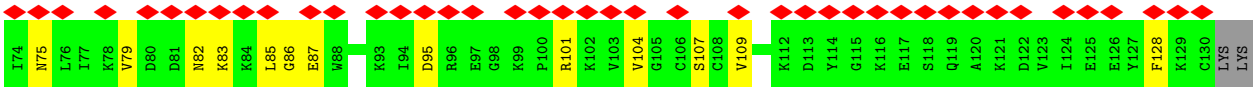
Chain LL:



• Molecule 58: 40S ribosomal protein S12

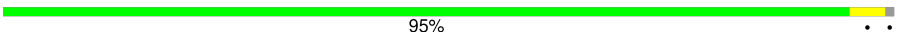
Chain MM:





• Molecule 59: Ribosomal protein S13

Chain NN:

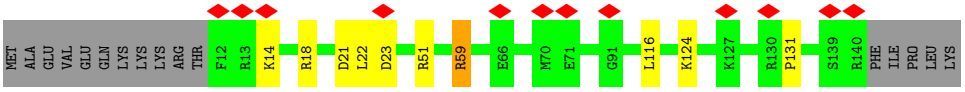


• Molecule 60: Small ribosomal subunit protein uS11

Chain OO:

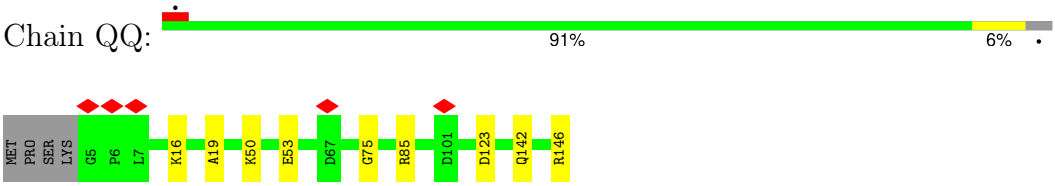
• Molecule 61: uS19

Chain PP:



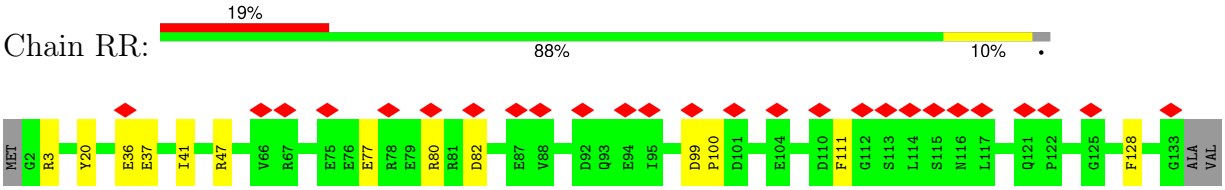
• Molecule 62: uS9

Chain QQ:



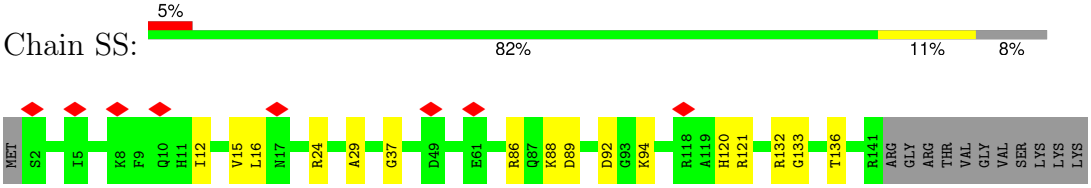

• Molecule 63: eS17

Chain RR:



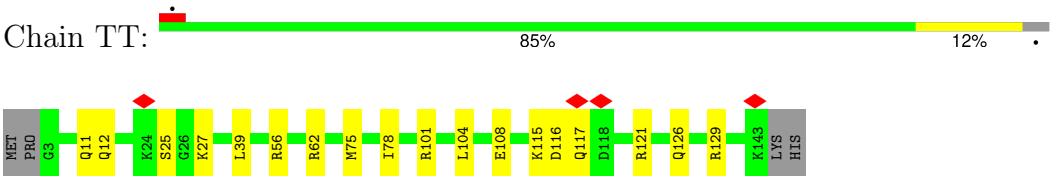

• Molecule 64: uS13

Chain SS:



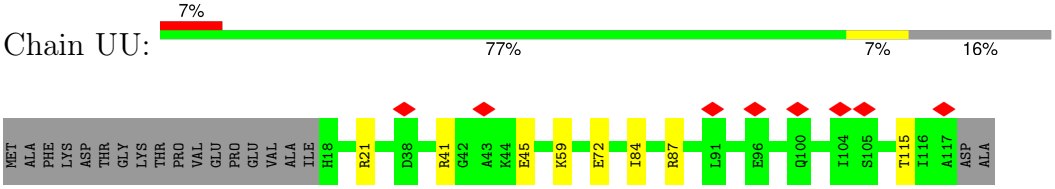

• Molecule 65: eS19

Chain TT:



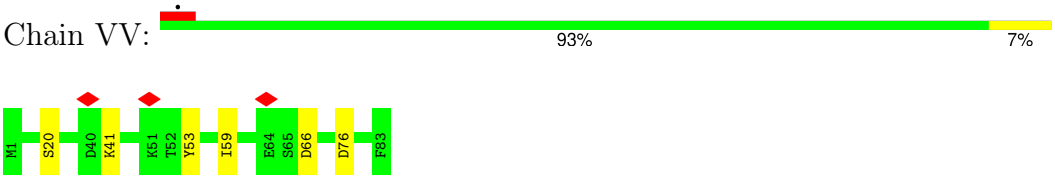

• Molecule 66: uS10

Chain UU:



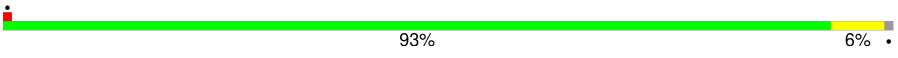

• Molecule 67: eS21

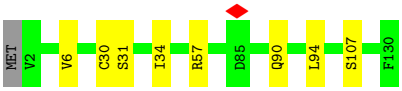
Chain VV:




• Molecule 68: Ribosomal protein S15a

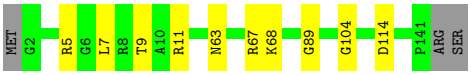
Chain WW:





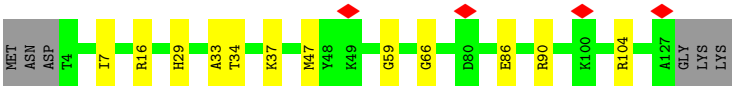

• Molecule 69: uS12

Chain XX:



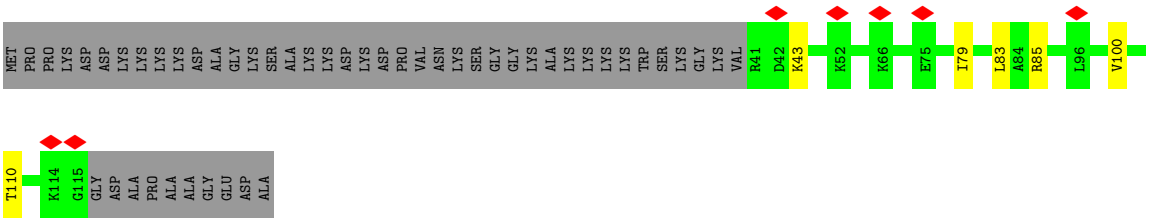

• Molecule 70: 40S ribosomal protein S24

Chain YY:



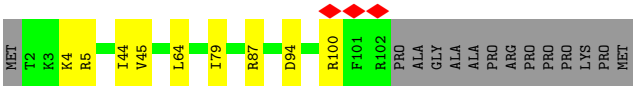

• Molecule 71: eS25

Chain ZZ:



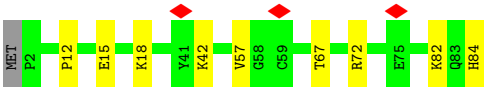

• Molecule 72: 40S ribosomal protein S26

Chain aa:



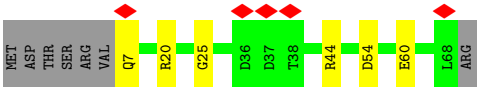

• Molecule 73: 40S ribosomal protein S27

Chain bb:



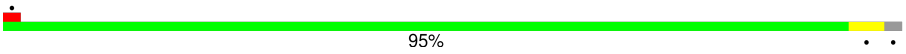

• Molecule 74: Ribosomal protein S28

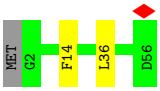
Chain cc:




• Molecule 75: eS29

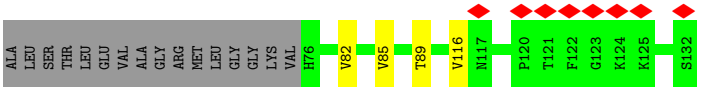
Chain dd:



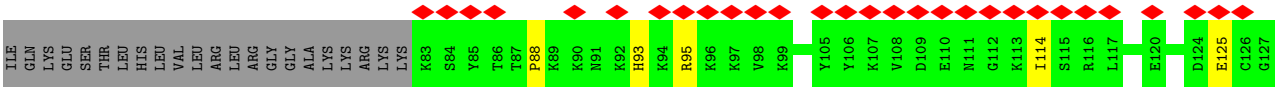

• Molecule 76: 40S ribosomal protein S30

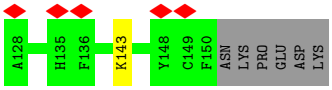
Chain ee:




• Molecule 77: Ribosomal protein S27a

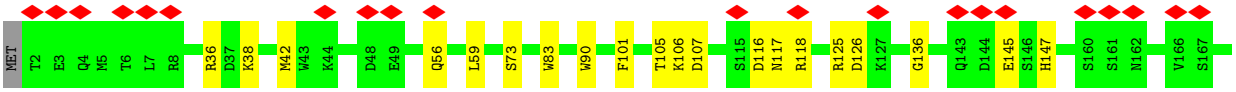
Chain ff:

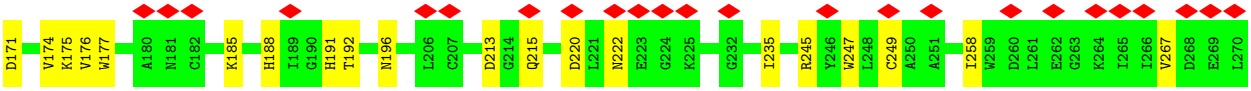


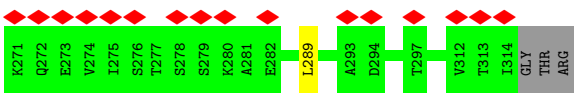




• Molecule 78: RACK1

Chain gg:

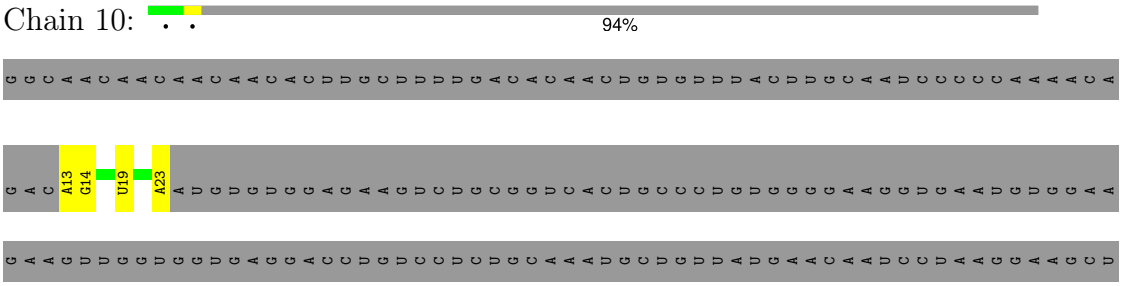


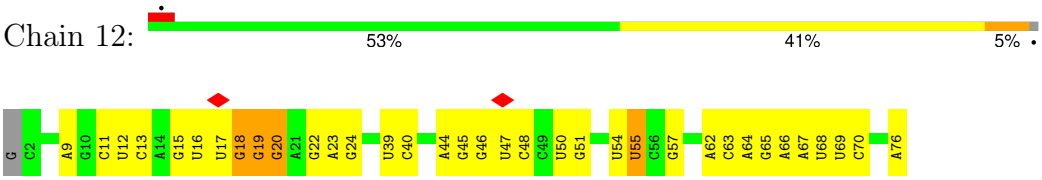

• Molecule 79: MF mRNA

Chain 10:



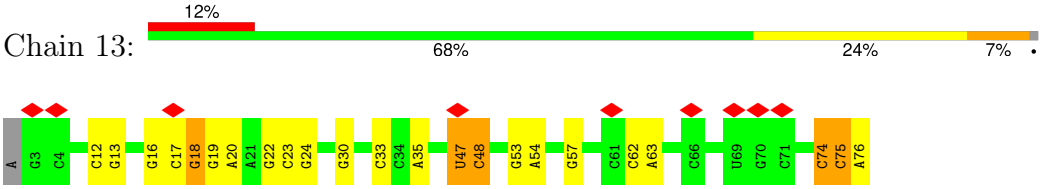

• Molecule 80: Phe-tRNA

Chain 12:



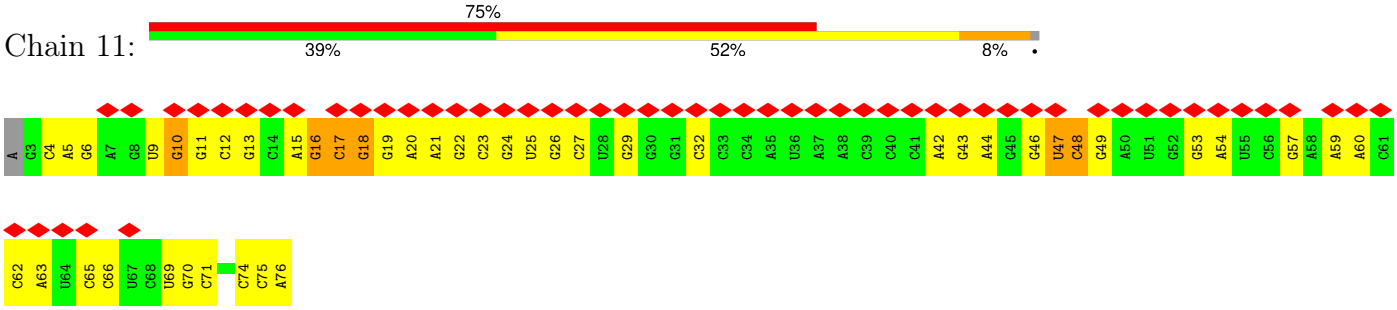

• Molecule 81: Met-tRNA

Chain 13:



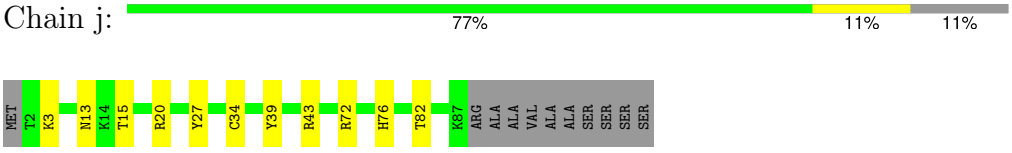

• Molecule 81: Met-tRNA

Chain 11:



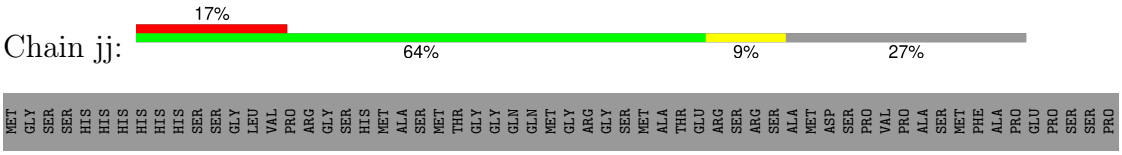

• Molecule 82: Ribosomal protein L37

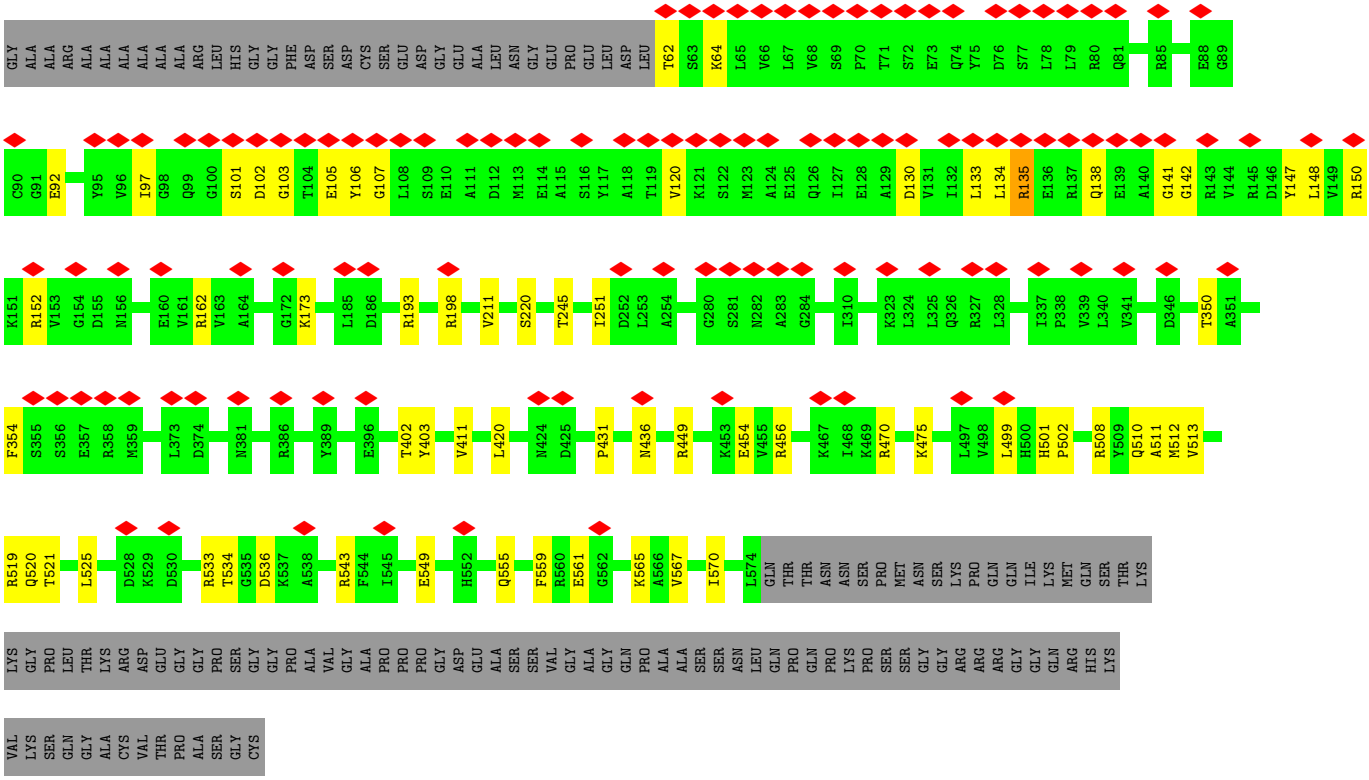
Chain j:




• Molecule 83: GTP-binding protein 1

Chain jj:




GLY ALA ALA ARG ALA ALA ALA ALA ALA ARG LEU HIS GLY GLY PHE ASP SER ASP CYS SER GLU ASP GLY GLU ALA LEU ASN GLY GLU PRO GLU LEU ASP LEU T62 S63 K64 L65 V66 L67 V68 S69 P70 T71 S72 E73 Q74 Y75 D76 S77 L78 L79 R80 Q81 R85 E88 G89
C90 G91 E92 Y95 V96 I97 G98 Q99 G100 S101 D102 G103 T104 E105 Y106 G107 L108 S109 E110 A111 D112 M113 E114 A115 S116 Y117 A118 T119 V120 K121 S122 M123 A124 E125 Q126 I127 E128 A129 D130 V131 I132 L133 L134 R135 E136 R137 Q138 E139 A140 G141 G142 R143 V144 R145 D146 Y147 L148 V149 R150
K151 R152 V153 G154 D155 M156 E160 V161 R162 V163 A164 G172 K173 L185 D186 R193 R198 V211 S220 T245 I251 D252 L253 A254 G280 S281 N282 A283 G284 I310 K323 L324 L325 Q326 R327 L328 I337 P338 V339 L340 V341 D346 T350 A351
F354 S355 S356 E357 R358 M359 L373 D374 N381 R386 Y389 E396 T402 Y403 V411 L420 N424 D425 P431 N436 R449 K453 E454 V455 R456 K467 I468 K469 R470 K475 L497 V498 L499 H500 H501 P502 R508 Y509 Q510 A511 M512 V513
R519 Q520 T521 L525 D528 K529 D530 R533 T534 G535 D536 K537 A538 R543 F544 I545 E549 H552 Q555 F559 R560 E561 G562 K565 A566 V567 I570 L574 GLN THR THR ASN ASN SER PRO MET ASN SER LYS PRO GLN GLN ILE LYS MET GLN SER THR LYS
LYS GLY PRO LEU THR LYS ARG ASP GLU GLY GLY GLY PRO SER GLY GLY PRO ALA VAL GLY ALA PRO PRO PRO GLY ASP GLU ALA SER SER VAL GLY ALA GLY GLN PRO ALA ALA SER SER ASN LEU GLN PRO GLN PRO LYS PRO SER SER GLY GLY ARG ARG ARG GLY GLY GLN ARG HIS LYS
VAL LYS SER GLN GLY ALA CYS VAL THR PRO ALA SER GLY CYS

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 8005 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | TFS KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 29.7955 | Depositor |
| Minimum defocus (nm) | 500 | Depositor |
| Maximum defocus (nm) | 1500 | Depositor |
| Magnification | Not provided | |
| Image detector | GATAN K3 BIOQUANTUM (6k x 4k) | Depositor |
| Maximum map value | 0.100 | Depositor |
| Minimum map value | -0.030 | Depositor |
| Average map value | 0.000 | Depositor |
| Map value standard deviation | 0.005 | Depositor |
| Recommended contour level | 0.015 | Depositor |
| Map size (Å) | 464.8, 464.8, 464.8 | wwPDB |
| Map dimensions | 400, 400, 400 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.162, 1.162, 1.162 | Depositor |

# 5 Model quality

## 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ATP, K, GCP, ZN, MG, SPD, GTP

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 | 5 | 0.47 | 0/86380 | 0.68 | 14/134721 (0.0%) |
| 2 | 7 | 0.45 | 0/2836 | 0.61 | 0/4421 |
| 3 | 8 | 0.46 | 0/3581 | 0.65 | 0/5577 |
| 4 | 9 | 0.41 | 0/40509 | 0.66 | 8/63128 (0.0%) |
| 5 | A | 0.37 | 0/1936 | 0.53 | 0/2596 |
| 6 | B | 0.34 | 0/3240 | 0.53 | 0/4339 |
| 7 | C | 0.36 | 0/2937 | 0.54 | 0/3946 |
| 8 | D | 0.32 | 0/2437 | 0.49 | 0/3264 |
| 9 | E | 0.30 | 0/1762 | 0.54 | 0/2362 |
| 10 | G | 0.31 | 0/1910 | 0.52 | 0/2569 |
| 11 | H | 0.32 | 0/1535 | 0.48 | 0/2063 |
| 12 | I | 0.33 | 0/1702 | 0.48 | 0/2272 |
| 13 | J | 0.28 | 0/1385 | 0.48 | 0/1852 |
| 14 | K | 0.37 | 0/1911 | 0.52 | 0/2549 |
| 15 | L | 0.33 | 0/1733 | 0.50 | 0/2316 |
| 16 | M | 0.32 | 0/1158 | 0.51 | 0/1547 |
| 17 | N | 0.40 | 0/1746 | 0.55 | 0/2338 |
| 18 | O | 0.37 | 0/1662 | 0.55 | 1/2222 (0.0%) |
| 19 | P | 0.36 | 0/1268 | 0.55 | 0/1700 |
| 20 | Q | 0.38 | 0/1539 | 0.53 | 0/2054 |
| 21 | R | 0.33 | 0/1524 | 0.53 | 0/2013 |
| 22 | S | 0.36 | 0/1501 | 0.49 | 0/2012 |
| 23 | T | 0.34 | 0/1326 | 0.50 | 0/1770 |
| 24 | U | 0.29 | 0/823 | 0.51 | 0/1104 |
| 25 | V | 0.35 | 0/983 | 0.53 | 0/1319 |
| 26 | W | 0.31 | 0/873 | 0.52 | 0/1158 |
| 27 | X | 0.31 | 0/984 | 0.48 | 0/1323 |
| 28 | Y | 0.33 | 0/1132 | 0.49 | 0/1504 |
| 29 | Z | 0.34 | 0/1130 | 0.49 | 0/1507 |
| 30 | a | 0.38 | 0/1191 | 0.56 | 0/1590 |
| 31 | b | 0.31 | 0/819 | 0.54 | 0/1081 |
| 32 | c | 0.36 | 0/771 | 0.53 | 0/1034 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 33 | d | 0.37 | 0/903 | 0.54 | 0/1216 |
| 34 | e | 0.39 | 0/1071 | 0.58 | 0/1429 |
| 35 | f | 0.39 | 0/895 | 0.49 | 0/1198 |
| 36 | g | 0.34 | 0/916 | 0.52 | 0/1220 |
| 37 | h | 0.34 | 0/1021 | 0.53 | 0/1348 |
| 38 | i | 0.30 | 0/841 | 0.60 | 0/1112 |
| 39 | k | 0.30 | 0/575 | 0.47 | 0/761 |
| 40 | l | 0.39 | 0/459 | 0.57 | 0/608 |
| 41 | m | 0.34 | 0/435 | 0.48 | 0/575 |
| 42 | n | 0.37 | 0/241 | 0.56 | 0/305 |
| 43 | o | 0.34 | 0/864 | 0.49 | 0/1140 |
| 44 | p | 0.36 | 0/718 | 0.59 | 0/953 |
| 45 | r | 0.35 | 0/1010 | 0.56 | 0/1354 |
| 46 | AA | 0.28 | 0/1747 | 0.50 | 0/2374 |
| 47 | BB | 0.30 | 0/1756 | 0.51 | 0/2350 |
| 48 | CC | 0.31 | 0/1753 | 0.52 | 0/2369 |
| 49 | DD | 0.27 | 0/1767 | 0.49 | 0/2378 |
| 50 | EE | 0.26 | 0/2118 | 0.50 | 0/2849 |
| 51 | FF | 0.27 | 0/1481 | 0.50 | 0/1991 |
| 52 | GG | 0.24 | 0/1946 | 0.52 | 0/2590 |
| 53 | HH | 0.23 | 0/1511 | 0.48 | 0/2022 |
| 54 | II | 0.28 | 0/1655 | 0.51 | 0/2205 |
| 55 | JJ | 0.26 | 0/1533 | 0.51 | 0/2047 |
| 56 | KK | 0.26 | 0/834 | 0.46 | 0/1125 |
| 57 | LL | 0.30 | 0/1195 | 0.53 | 0/1597 |
| 58 | MM | 0.20 | 0/880 | 0.57 | 0/1179 |
| 59 | NN | 0.29 | 0/1226 | 0.52 | 0/1649 |
| 60 | OO | 0.32 | 0/1029 | 0.56 | 0/1380 |
| 61 | PP | 0.24 | 0/1079 | 0.55 | 0/1441 |
| 62 | QQ | 0.27 | 0/1146 | 0.51 | 0/1534 |
| 63 | RR | 0.25 | 0/1082 | 0.54 | 0/1452 |
| 64 | SS | 0.26 | 0/1175 | 0.52 | 0/1575 |
| 65 | TT | 0.25 | 0/1115 | 0.53 | 0/1493 |
| 66 | UU | 0.25 | 0/805 | 0.45 | 0/1081 |
| 67 | VV | 0.27 | 0/644 | 0.43 | 0/860 |
| 68 | WW | 0.34 | 0/1051 | 0.50 | 0/1406 |
| 69 | XX | 0.31 | 0/1105 | 0.51 | 0/1476 |
| 70 | YY | 0.23 | 0/1028 | 0.47 | 0/1366 |
| 71 | ZZ | 0.23 | 0/604 | 0.46 | 0/810 |
| 72 | aa | 0.32 | 0/828 | 0.50 | 0/1109 |
| 73 | bb | 0.25 | 0/665 | 0.45 | 0/891 |
| 74 | cc | 0.25 | 0/490 | 0.42 | 0/656 |
| 75 | dd | 0.32 | 0/470 | 0.57 | 0/623 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | $\#\|Z\| > 5$ | RMSZ | $\#\|Z\| > 5$ |
| 76 | ee | 0.24 | 0/462 | 0.56 | 0/607 |
| 77 | ff | 0.16 | 0/567 | 0.56 | 0/753 |
| 78 | gg | 0.22 | 0/2493 | 0.48 | 0/3394 |
| 79 | 10 | 0.38 | 0/261 | 0.53 | 0/404 |
| 80 | 12 | 0.31 | 0/1787 | 0.66 | 0/2783 |
| 81 | 11 | 0.26 | 0/1773 | 0.67 | 0/2763 |
| 81 | 13 | 0.31 | 0/1773 | 0.66 | 0/2763 |
| 82 | j | 0.38 | 0/720 | 0.53 | 0/952 |
| 83 | jj | 0.21 | 0/4047 | 0.49 | 0/5462 |
| All | All | 0.40 | 0/235774 | 0.62 | 23/346229 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 1 | 5 | 0 | 1 |
| 5 | A | 0 | 1 |
| 6 | B | 0 | 1 |
| 7 | C | 0 | 1 |
| 8 | D | 0 | 3 |
| 9 | E | 0 | 1 |
| 11 | H | 0 | 2 |
| 15 | L | 0 | 1 |
| 18 | O | 0 | 1 |
| 20 | Q | 0 | 3 |
| 22 | S | 0 | 1 |
| 23 | T | 0 | 1 |
| 27 | X | 0 | 2 |
| 29 | Z | 0 | 2 |
| 31 | b | 0 | 1 |
| 34 | e | 0 | 1 |
| 35 | f | 0 | 1 |
| 36 | g | 0 | 1 |
| 39 | k | 0 | 1 |
| 44 | p | 0 | 1 |
| 51 | FF | 0 | 1 |
| 54 | II | 0 | 2 |
| 60 | OO | 0 | 1 |
| 61 | PP | 0 | 1 |
| 77 | ff | 0 | 1 |

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 83 | jj | 0 | 2 |
| All | All | 0 | 35 |

There are no bond length outliers.

All (23) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 4 | 9 | 1835 | A | C2'-C3'-O3' | 7.03 | 120.04 | 109.50 |
| 1 | 5 | 2544 | G | C8-N9-C1' | -6.55 | 107.34 | 127.00 |
| 1 | 5 | 1440 | U | C2'-C3'-O3' | 6.47 | 119.20 | 109.50 |
| 1 | 5 | 914 | U | C2'-C3'-O3' | 6.09 | 118.64 | 109.50 |
| 1 | 5 | 4119 | C | C2'-C3'-O3' | 5.97 | 118.46 | 109.50 |
| 1 | 5 | 2544 | G | C4-N9-C1' | 5.79 | 143.87 | 126.50 |
| 1 | 5 | 4064 | C | P-O3'-C3' | 5.70 | 128.75 | 120.20 |
| 1 | 5 | 4170 | A | C4'-C3'-O3' | 5.54 | 117.71 | 109.40 |
| 1 | 5 | 4944 | C | C1'-O4'-C4' | -5.53 | 104.17 | 109.70 |
| 4 | 9 | 1863 | A | C1'-O4'-C4' | -5.37 | 104.33 | 109.70 |
| 4 | 9 | 532 | C | C2'-C3'-O3' | 5.35 | 121.72 | 113.70 |
| 1 | 5 | 3888 | G | C2'-C3'-O3' | 5.32 | 121.67 | 113.70 |
| 4 | 9 | 72 | C | P-O3'-C3' | 5.26 | 128.10 | 120.20 |
| 18 | O | 110 | PRO | N-CA-C | 5.25 | 117.10 | 110.70 |
| 4 | 9 | 24 | C | C2'-C3'-O3' | 5.13 | 121.40 | 113.70 |
| 1 | 5 | 1485 | C | C2'-C3'-O3' | 5.08 | 117.11 | 109.50 |
| 4 | 9 | 1060 | A | C3'-C2'-C1' | -5.08 | 96.42 | 101.50 |
| 1 | 5 | 406 | C | C2'-C3'-O3' | 5.05 | 121.28 | 113.70 |
| 4 | 9 | 918 | U | N1-C1'-C2' | 5.04 | 119.57 | 112.00 |
| 1 | 5 | 4448 | G | C4'-C3'-O3' | 5.04 | 120.55 | 113.00 |
| 1 | 5 | 4065 | G | N9-C1'-C2' | 5.02 | 119.53 | 112.00 |
| 4 | 9 | 532 | C | C5'-C4'-O4' | 5.01 | 117.32 | 109.80 |
| 1 | 5 | 2089 | G | C4'-C3'-O3' | 5.01 | 116.92 | 109.40 |

There are no chirality outliers.

All (35) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | 5 | 2544 | G | Sidechain |
| 5 | A | 123 | ARG | Sidechain |
| 6 | B | 21 | ARG | Sidechain |
| 7 | C | 204 | ARG | Sidechain |
| 8 | D | 24 | ARG | Sidechain |
| 8 | D | 33 | ARG | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 8 | D | 68 | ARG | Sidechain |
| 9 | E | 67 | ARG | Sidechain |
| 51 | FF | 204 | ARG | Sidechain |
| 11 | H | 124 | ARG | Sidechain |
| 11 | H | 173 | ARG | Sidechain |
| 54 | II | 5 | ARG | Sidechain |
| 54 | II | 74 | ARG | Sidechain |
| 15 | L | 71 | ARG | Sidechain |
| 18 | O | 49 | ARG | Sidechain |
| 60 | OO | 137 | SER | Peptide |
| 61 | PP | 59 | ARG | Sidechain |
| 20 | Q | 108 | ARG | Sidechain |
| 20 | Q | 143 | ARG | Sidechain |
| 20 | Q | 91 | ARG | Sidechain |
| 22 | S | 95 | ARG | Sidechain |
| 23 | T | 130 | ARG | Sidechain |
| 27 | X | 47 | ARG | Sidechain |
| 27 | X | 67 | ARG | Sidechain |
| 29 | Z | 21 | ARG | Sidechain |
| 29 | Z | 65 | ARG | Sidechain |
| 31 | b | 44 | ARG | Sidechain |
| 34 | e | 27 | ARG | Sidechain |
| 35 | f | 100 | ARG | Sidechain |
| 77 | ff | 114 | ILE | Peptide |
| 36 | g | 8 | ARG | Sidechain |
| 83 | jj | 135 | ARG | Sidechain |
| 83 | jj | 519 | ARG | Sidechain |
| 39 | k | 17 | ARG | Sidechain |
| 44 | p | 49 | ARG | Sidechain |

## 5.2 Too-close contacts (i)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | 5 | 77221 | 0 | 39013 | 600 | 0 |
| 2 | 7 | 2538 | 0 | 1286 | 8 | 0 |
| 3 | 8 | 3208 | 0 | 1629 | 18 | 0 |
| 4 | 9 | 36229 | 0 | 18300 | 326 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 5 | A | 1898 | 0 | 1993 | 15 | 0 |
| 6 | B | 3172 | 0 | 3310 | 22 | 0 |
| 7 | C | 2883 | 0 | 3053 | 17 | 0 |
| 8 | D | 2391 | 0 | 2424 | 11 | 0 |
| 9 | E | 1729 | 0 | 1887 | 13 | 0 |
| 10 | G | 1879 | 0 | 2027 | 19 | 0 |
| 11 | H | 1516 | 0 | 1597 | 8 | 0 |
| 12 | I | 1664 | 0 | 1712 | 6 | 0 |
| 13 | J | 1362 | 0 | 1399 | 8 | 0 |
| 14 | K | 1875 | 0 | 1995 | 14 | 0 |
| 15 | L | 1702 | 0 | 1820 | 9 | 0 |
| 16 | M | 1137 | 0 | 1211 | 6 | 0 |
| 17 | N | 1701 | 0 | 1749 | 22 | 0 |
| 18 | O | 1630 | 0 | 1778 | 9 | 0 |
| 19 | P | 1242 | 0 | 1274 | 13 | 0 |
| 20 | Q | 1515 | 0 | 1634 | 12 | 0 |
| 21 | R | 1508 | 0 | 1664 | 9 | 0 |
| 22 | S | 1462 | 0 | 1508 | 7 | 0 |
| 23 | T | 1298 | 0 | 1366 | 6 | 0 |
| 24 | U | 809 | 0 | 833 | 1 | 0 |
| 25 | V | 969 | 0 | 1031 | 13 | 0 |
| 26 | W | 860 | 0 | 903 | 6 | 0 |
| 27 | X | 967 | 0 | 1040 | 5 | 0 |
| 28 | Y | 1115 | 0 | 1205 | 3 | 0 |
| 29 | Z | 1107 | 0 | 1182 | 16 | 0 |
| 30 | a | 1162 | 0 | 1209 | 12 | 0 |
| 31 | b | 806 | 0 | 866 | 0 | 0 |
| 32 | c | 761 | 0 | 794 | 6 | 0 |
| 33 | d | 888 | 0 | 930 | 4 | 0 |
| 34 | e | 1053 | 0 | 1147 | 4 | 0 |
| 35 | f | 876 | 0 | 912 | 2 | 0 |
| 36 | g | 906 | 0 | 998 | 5 | 0 |
| 37 | h | 1013 | 0 | 1147 | 4 | 0 |
| 38 | i | 830 | 0 | 916 | 3 | 0 |
| 39 | k | 569 | 0 | 637 | 5 | 0 |
| 40 | l | 447 | 0 | 480 | 3 | 0 |
| 41 | m | 429 | 0 | 465 | 8 | 0 |
| 42 | n | 240 | 0 | 289 | 1 | 0 |
| 43 | o | 851 | 0 | 920 | 7 | 0 |
| 44 | p | 708 | 0 | 756 | 8 | 0 |
| 45 | r | 994 | 0 | 1051 | 5 | 0 |
| 46 | AA | 1710 | 0 | 1708 | 8 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 47 | BB | 1729 | 0 | 1803 | 17 | 0 |
| 48 | CC | 1716 | 0 | 1806 | 11 | 0 |
| 49 | DD | 1739 | 0 | 1832 | 11 | 0 |
| 50 | EE | 2076 | 0 | 2177 | 10 | 0 |
| 51 | FF | 1460 | 0 | 1509 | 13 | 0 |
| 52 | GG | 1923 | 0 | 2089 | 23 | 0 |
| 53 | HH | 1489 | 0 | 1582 | 15 | 0 |
| 54 | II | 1628 | 0 | 1706 | 10 | 0 |
| 55 | JJ | 1508 | 0 | 1626 | 16 | 0 |
| 56 | KK | 810 | 0 | 836 | 2 | 0 |
| 57 | LL | 1175 | 0 | 1249 | 9 | 0 |
| 58 | MM | 871 | 0 | 913 | 14 | 0 |
| 59 | NN | 1202 | 0 | 1289 | 6 | 0 |
| 60 | OO | 1016 | 0 | 1039 | 12 | 0 |
| 61 | PP | 1058 | 0 | 1104 | 9 | 0 |
| 62 | QQ | 1128 | 0 | 1195 | 7 | 0 |
| 63 | RR | 1068 | 0 | 1121 | 10 | 0 |
| 64 | SS | 1157 | 0 | 1213 | 13 | 0 |
| 65 | TT | 1097 | 0 | 1132 | 11 | 0 |
| 66 | UU | 795 | 0 | 862 | 6 | 0 |
| 67 | VV | 637 | 0 | 637 | 4 | 0 |
| 68 | WW | 1034 | 0 | 1080 | 5 | 0 |
| 69 | XX | 1087 | 0 | 1154 | 12 | 0 |
| 70 | YY | 1011 | 0 | 1083 | 12 | 0 |
| 71 | ZZ | 598 | 0 | 656 | 4 | 0 |
| 72 | aa | 814 | 0 | 867 | 7 | 0 |
| 73 | bb | 651 | 0 | 672 | 6 | 0 |
| 74 | cc | 488 | 0 | 514 | 4 | 0 |
| 75 | dd | 459 | 0 | 448 | 3 | 0 |
| 76 | ee | 457 | 0 | 502 | 6 | 0 |
| 77 | ff | 555 | 0 | 567 | 4 | 0 |
| 78 | gg | 2436 | 0 | 2393 | 22 | 0 |
| 79 | 10 | 234 | 0 | 118 | 1 | 0 |
| 80 | 12 | 1599 | 0 | 808 | 20 | 0 |
| 81 | 11 | 1585 | 0 | 804 | 32 | 0 |
| 81 | 13 | 1585 | 0 | 803 | 14 | 0 |
| 82 | j | 705 | 0 | 737 | 9 | 0 |
| 83 | jj | 3982 | 0 | 4069 | 42 | 0 |
| 84 | 5 | 10 | 0 | 19 | 0 | 0 |
| 85 | dd | 1 | 0 | 0 | 0 | 0 |
| 85 | g | 1 | 0 | 0 | 0 | 0 |
| 85 | j | 1 | 0 | 0 | 0 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 85 | m | 1 | 0 | 0 | 0 | 0 |
| 85 | o | 1 | 0 | 0 | 0 | 0 |
| 85 | p | 1 | 0 | 0 | 0 | 0 |
| 86 | 12 | 32 | 0 | 11 | 1 | 0 |
| 87 | 12 | 11 | 0 | 8 | 0 | 0 |
| 88 | 11 | 31 | 0 | 11 | 1 | 0 |
| 88 | 13 | 31 | 0 | 11 | 0 | 0 |
| 89 | 13 | 8 | 0 | 8 | 0 | 0 |
| 90 | jj | 32 | 0 | 14 | 2 | 0 |
| 91 | jj | 1 | 0 | 0 | 0 | 0 |
| 92 | jj | 1 | 0 | 0 | 0 | 0 |
| All | All | 219555 | 0 | 163125 | 1457 | 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 4.

All (1457) 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) |
|---|---|---|---|
| 1:5:2638:G:N2 | 1:5:2697:A:N1 | 2.09 | 0.99 |
| 1:5:2395:A:O2' | 1:5:2806:A:H1' | 1.72 | 0.89 |
| 44:p:42:CYS:HB3 | 44:p:60:CYS:SG | 2.15 | 0.87 |
| 1:5:982:U:H3 | 1:5:1273:G:H1 | 1.23 | 0.86 |
| 4:9:1272:C:O2' | 4:9:1274:G:N2 | 2.10 | 0.85 |
| 1:5:980:U:H3 | 1:5:1275:G:H1 | 1.23 | 0.83 |
| 1:5:978:G:H22 | 1:5:1277:G:H1 | 1.26 | 0.83 |
| 1:5:978:G:N2 | 1:5:1277:G:H1 | 1.78 | 0.82 |
| 83:jj:198:ARG:NH1 | 83:jj:211:VAL:O | 2.14 | 0.81 |
| 4:9:1299:A:OP1 | 61:PP:59:ARG:NH1 | 2.14 | 0.80 |
| 4:9:919:A:OP2 | 59:NN:64:ARG:NH2 | 2.14 | 0.80 |
| 1:5:2262:G:OP2 | 45:r:98:ARG:NH2 | 2.12 | 0.80 |
| 1:5:29:G:N7 | 17:N:189:ARG:NH2 | 2.27 | 0.80 |
| 1:5:4039:G:N7 | 1:5:4041:C:N4 | 2.29 | 0.80 |
| 1:5:173:C:OP1 | 15:L:129:ARG:NH1 | 2.15 | 0.79 |
| 41:m:51:ILE:HG23 | 41:m:52:ILE:H | 1.49 | 0.78 |
| 1:5:1073:G:H22 | 1:5:1238:A:H2 | 1.32 | 0.78 |
| 1:5:1976:G:O6 | 1:5:1991:A:N6 | 2.17 | 0.78 |
| 4:9:1600:G:H4' | 71:ZZ:43:LYS:HE3 | 1.66 | 0.77 |
| 1:5:453:G:N2 | 1:5:1293:G:O6 | 2.17 | 0.77 |
| 1:5:2457:G:H21 | 1:5:3672:G:H21 | 1.33 | 0.77 |
| 44:p:42:CYS:CB | 44:p:60:CYS:SG | 2.71 | 0.77 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 8:D:107:ARG:NH2 | 8:D:116:ASP:OD1 | 2.19 | 0.76 |
| 51:FF:195:GLU:OE1 | 51:FF:198:ARG:NH1 | 2.19 | 0.76 |
| 55:JJ:63:LEU:O | 55:JJ:70:ARG:NH1 | 2.19 | 0.75 |
| 78:gg:83:TRP:HA | 78:gg:107:ASP:HB2 | 1.68 | 0.75 |
| 1:5:1555:G:O6 | 44:p:4:ARG:NH2 | 2.21 | 0.74 |
| 4:9:908:A:OP2 | 21:R:165:LYS:NZ | 2.20 | 0.74 |
| 1:5:3717:A:H2' | 1:5:3718:A:C8 | 2.22 | 0.73 |
| 1:5:4635:A:H2 | 1:5:4663:G:H21 | 1.35 | 0.73 |
| 4:9:1228:A:H2' | 4:9:1229:G:C8 | 2.24 | 0.73 |
| 7:C:110:ARG:O | 7:C:113:ARG:NH1 | 2.22 | 0.73 |
| 1:5:2457:G:H21 | 1:5:3672:G:N2 | 1.86 | 0.72 |
| 1:5:29:G:OP2 | 17:N:189:ARG:NH1 | 2.21 | 0.72 |
| 1:5:2313:A:O2' | 1:5:2314:G:OP1 | 2.07 | 0.72 |
| 1:5:2407:G:O6 | 40:l:2:SER:N | 2.23 | 0.72 |
| 4:9:959:G:OP2 | 60:OO:38:ASN:ND2 | 2.17 | 0.72 |
| 4:9:536:A:H61 | 4:9:547:G:H22 | 1.37 | 0.72 |
| 1:5:1802:A:N3 | 23:T:130:ARG:NH2 | 2.38 | 0.71 |
| 26:W:104:GLN:NE2 | 52:GG:155:GLN:OE1 | 2.23 | 0.71 |
| 1:5:87:A:OP2 | 20:Q:173:LYS:NZ | 2.24 | 0.71 |
| 4:9:1834:A:H2 | 4:9:1837:G:H1 | 1.38 | 0.71 |
| 83:jj:134:LEU:O | 83:jj:135:ARG:NH1 | 2.22 | 0.71 |
| 1:5:1444:G:H21 | 1:5:2110:G:H1 | 1.39 | 0.71 |
| 53:HH:138:GLU:OE2 | 59:NN:19:ARG:NH1 | 2.24 | 0.70 |
| 81:11:16:G:OP2 | 81:11:17:C:N4 | 2.24 | 0.70 |
| 1:5:4099:G:H1 | 1:5:4109:G:H22 | 1.37 | 0.70 |
| 4:9:1293:A:H62 | 4:9:1306:U:H3 | 1.38 | 0.70 |
| 1:5:1771:U:H2' | 1:5:1772:C:C6 | 2.27 | 0.70 |
| 1:5:4635:A:H8 | 1:5:5048:A:H61 | 1.40 | 0.69 |
| 1:5:1577:G:OP1 | 44:p:17:ARG:NH1 | 2.25 | 0.69 |
| 3:8:94:G:OP2 | 82:j:72:ARG:NH1 | 2.26 | 0.69 |
| 82:j:20:ARG:NH2 | 82:j:39:TYR:OH | 2.25 | 0.69 |
| 65:TT:108:GLU:OE2 | 65:TT:121:ARG:NH1 | 2.25 | 0.69 |
| 4:9:1565:C:OP2 | 65:TT:101:ARG:NH1 | 2.25 | 0.69 |
| 1:5:3932:U:H2' | 1:5:3933:G:H8 | 1.57 | 0.68 |
| 4:9:1488:C:O2' | 4:9:1490:G:OP2 | 2.08 | 0.68 |
| 1:5:1188:C:H2' | 1:5:1189:G:H8 | 1.58 | 0.68 |
| 21:R:98:ARG:NH2 | 21:R:130:ASN:OD1 | 2.25 | 0.68 |
| 62:QQ:146:ARG:NH2 | 81:13:33:C:OP2 | 2.25 | 0.68 |
| 74:cc:44:ARG:NH2 | 74:cc:60:GLU:O | 2.26 | 0.68 |
| 78:gg:73:SER:OG | 78:gg:117:ASN:ND2 | 2.23 | 0.68 |
| 4:9:127:C:O2 | 50:EE:134:LYS:NZ | 2.24 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 55:JJ:136:ARG:NH1 | 55:JJ:159:PHE:O | 2.27 | 0.68 |
| 4:9:190:G:O2' | 4:9:209:A:N6 | 2.26 | 0.68 |
| 4:9:367:U:H4' | 4:9:371:A:C8 | 2.29 | 0.68 |
| 4:9:686:U:O2 | 53:HH:118:ARG:NH2 | 2.23 | 0.68 |
| 1:5:983:C:C5 | 9:E:73:ARG:HD3 | 2.28 | 0.68 |
| 69:XX:67:ARG:NH2 | 69:XX:114:ASP:OD2 | 2.27 | 0.67 |
| 25:V:13:LYS:HD3 | 25:V:128:LEU:HD11 | 1.75 | 0.67 |
| 1:5:2758:G:O2' | 1:5:2765:A:N3 | 2.24 | 0.67 |
| 4:9:1144:A:H2' | 4:9:1145:A:C8 | 2.30 | 0.67 |
| 49:DD:106:ARG:NH1 | 49:DD:174:HIS:O | 2.27 | 0.67 |
| 1:5:1075:G:H1 | 1:5:1235:G:N2 | 1.93 | 0.67 |
| 1:5:1317:U:OP1 | 30:a:21:ARG:NH2 | 2.28 | 0.67 |
| 1:5:3974:G:OP2 | 1:5:3975:C:N4 | 2.26 | 0.67 |
| 1:5:1075:G:H1 | 1:5:1235:G:H22 | 1.42 | 0.67 |
| 1:5:1976:G:N1 | 1:5:1991:A:N7 | 2.43 | 0.66 |
| 4:9:448:A:N6 | 54:II:29:LEU:HD13 | 2.10 | 0.66 |
| 1:5:143:C:OP2 | 10:G:164:LYS:NZ | 2.29 | 0.66 |
| 1:5:1364:U:OP2 | 15:L:36:ARG:NH2 | 2.23 | 0.66 |
| 3:8:87:G:OP2 | 37:h:7:ARG:NH2 | 2.25 | 0.66 |
| 65:TT:25:SER:HB3 | 65:TT:27:LYS:HE2 | 1.78 | 0.66 |
| 47:BB:37:ALA:HA | 47:BB:42:ARG:HD3 | 1.78 | 0.66 |
| 1:5:3599:A:H2' | 1:5:3600:G:C8 | 2.30 | 0.66 |
| 1:5:4076:G:OP1 | 10:G:126:ARG:NH1 | 2.27 | 0.66 |
| 15:L:79:GLU:OE1 | 15:L:82:ARG:NH1 | 2.28 | 0.66 |
| 1:5:1197:C:H2' | 1:5:1198:G:C8 | 2.31 | 0.66 |
| 1:5:3710:G:H1' | 1:5:3712:A:N6 | 2.10 | 0.66 |
| 1:5:517:C:H2' | 1:5:518:G:H8 | 1.61 | 0.66 |
| 81:11:69:U:H2' | 81:11:70:G:H8 | 1.60 | 0.65 |
| 1:5:4925:U:H4' | 1:5:4926:C:H5' | 1.78 | 0.65 |
| 4:9:903:A:H2' | 4:9:904:A:H8 | 1.62 | 0.65 |
| 4:9:546:G:H2' | 4:9:547:G:C8 | 2.31 | 0.65 |
| 4:9:928:G:H2' | 4:9:929:G:C8 | 2.32 | 0.65 |
| 17:N:155:VAL:O | 17:N:162:ARG:NH2 | 2.30 | 0.65 |
| 1:5:456:C:H2' | 1:5:457:G:H8 | 1.61 | 0.65 |
| 1:5:910:G:H2' | 1:5:911:U:C6 | 2.31 | 0.65 |
| 10:G:139:VAL:HG12 | 10:G:212:HIS:NE2 | 2.12 | 0.65 |
| 11:H:41:ILE:HG21 | 11:H:73:ILE:HD11 | 1.79 | 0.65 |
| 4:9:303:C:O2 | 54:II:184:ARG:NH2 | 2.28 | 0.65 |
| 15:L:28:GLN:OE1 | 17:N:202:ARG:NH1 | 2.29 | 0.65 |
| 22:S:99:ASP:OD2 | 22:S:108:GLN:NE2 | 2.29 | 0.65 |
| 54:II:135:GLU:OE2 | 54:II:139:LYS:NZ | 2.25 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 81:11:53:G:H2' | 81:11:54:A:H8 | 1.62 | 0.64 |
| 13:J:151:ILE:HD11 | 13:J:156:ARG:HG2 | 1.80 | 0.64 |
| 80:12:51:G:OP1 | 83:jj:508:ARG:NH1 | 2.30 | 0.64 |
| 4:9:1060:A:O2' | 4:9:1062:A:N7 | 2.29 | 0.64 |
| 1:5:1198:G:H2' | 1:5:1199:G:C8 | 2.32 | 0.64 |
| 1:5:2725:A:N6 | 21:R:88:ARG:O | 2.31 | 0.64 |
| 32:c:82:GLY:HA2 | 32:c:91:VAL:HG12 | 1.79 | 0.64 |
| 1:5:2395:A:HO2' | 1:5:2806:A:H1' | 1.63 | 0.64 |
| 83:jj:220:SER:HB3 | 83:jj:245:THR:HG21 | 1.79 | 0.64 |
| 10:G:139:VAL:HG12 | 10:G:212:HIS:CE1 | 2.32 | 0.64 |
| 1:5:4035:G:H2' | 1:5:4036:G:C8 | 2.33 | 0.64 |
| 4:9:750:C:N4 | 4:9:751:G:O6 | 2.30 | 0.64 |
| 4:9:925:G:H1 | 4:9:1017:U:H3 | 1.45 | 0.64 |
| 1:5:2760:G:O6 | 29:Z:64:LYS:NZ | 2.30 | 0.64 |
| 78:gg:191:HIS:NE2 | 78:gg:215:GLN:O | 2.30 | 0.64 |
| 1:5:265:C:O2 | 1:5:266:C:N4 | 2.31 | 0.63 |
| 1:5:4737:G:H2' | 1:5:4738:C:C6 | 2.33 | 0.63 |
| 1:5:1072:C:N4 | 1:5:1239:C:H42 | 1.96 | 0.63 |
| 1:5:976:G:H1 | 1:5:1279:A:H2 | 1.46 | 0.63 |
| 1:5:4122:G:O2' | 29:Z:136:PHE:OXT | 2.17 | 0.63 |
| 4:9:1297:U:O4 | 61:PP:59:ARG:NH2 | 2.32 | 0.63 |
| 4:9:552:G:H5' | 76:ee:116:VAL:HG11 | 1.81 | 0.63 |
| 83:jj:62:THR:HG1 | 83:jj:101:SER:HG | 1.40 | 0.63 |
| 1:5:4303:C:H2' | 1:5:4305:G:H8 | 1.63 | 0.63 |
| 4:9:536:A:H61 | 4:9:547:G:H1 | 1.47 | 0.63 |
| 1:5:1942:A:H2' | 1:5:1943:A:C8 | 2.33 | 0.62 |
| 1:5:3911:C:H2' | 1:5:3912:U:H6 | 1.62 | 0.62 |
| 55:JJ:85:GLY:O | 55:JJ:108:ARG:NH1 | 2.33 | 0.62 |
| 1:5:1440:U:OP2 | 14:K:33:ARG:NH1 | 2.32 | 0.62 |
| 1:5:4084:G:O6 | 5:A:72:ARG:NH2 | 2.33 | 0.62 |
| 2:7:3:C:H2' | 2:7:4:U:H6 | 1.65 | 0.62 |
| 81:13:53:G:H2' | 81:13:54:A:H8 | 1.63 | 0.62 |
| 4:9:536:A:N6 | 4:9:547:G:H1 | 1.97 | 0.62 |
| 7:C:13:GLU:OE2 | 7:C:161:TYR:OH | 2.14 | 0.62 |
| 81:11:43:G:H2' | 81:11:44:A:C8 | 2.35 | 0.62 |
| 83:jj:106:TYR:O | 83:jj:141:GLY:N | 2.29 | 0.62 |
| 1:5:3599:A:H2' | 1:5:3600:G:H8 | 1.64 | 0.62 |
| 4:9:898:U:H2' | 4:9:899:U:H6 | 1.65 | 0.62 |
| 4:9:1834:A:H2 | 4:9:1837:G:N1 | 1.98 | 0.62 |
| 1:5:76:A:OP2 | 15:L:74:ARG:NH1 | 2.30 | 0.61 |
| 4:9:444:G:O6 | 54:II:26:LYS:NZ | 2.31 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:2553:A:H2 | 1:5:2765:A:H62 | 1.48 | 0.61 |
| 4:9:115:U:H2' | 4:9:116:U:C6 | 2.36 | 0.61 |
| 1:5:510:U:OP2 | 30:a:85:GLN:NE2 | 2.28 | 0.61 |
| 1:5:2899:C:P | 21:R:108:ARG:HH22 | 2.23 | 0.61 |
| 3:8:8:U:H2' | 3:8:9:A:C8 | 2.36 | 0.61 |
| 4:9:1354:G:N2 | 4:9:1357:A:OP2 | 2.29 | 0.61 |
| 1:5:1441:C:H2' | 1:5:1442:C:C6 | 2.35 | 0.61 |
| 1:5:2562:G:N2 | 1:5:2565:A:OP2 | 2.28 | 0.61 |
| 1:5:1411:C:H2' | 1:5:1411(A):G:C8 | 2.34 | 0.61 |
| 4:9:1447:G:P | 66:UU:87:ARG:HH22 | 2.24 | 0.61 |
| 1:5:2583:C:OP2 | 36:g:76:ARG:NH1 | 2.30 | 0.61 |
| 14:K:93:ARG:NH1 | 14:K:95:ARG:O | 2.31 | 0.61 |
| 1:5:956:A:H8 | 1:5:957:G:C8 | 2.19 | 0.61 |
| 1:5:2639:U:HO2' | 1:5:2694:G:H1 | 0.68 | 0.61 |
| 4:9:533:A:H2' | 4:9:534:G:H8 | 1.64 | 0.61 |
| 4:9:1616:U:H3 | 4:9:1620:A:H2 | 1.46 | 0.61 |
| 1:5:2647:A:H62 | 1:5:2686:G:H8 | 1.48 | 0.61 |
| 1:5:3932:U:H2' | 1:5:3933:G:C8 | 2.36 | 0.61 |
| 17:N:124:ASP:OD1 | 17:N:125:SER:N | 2.30 | 0.60 |
| 48:CC:146:GLU:OE1 | 49:DD:120:TYR:OH | 2.14 | 0.60 |
| 66:UU:41:ARG:NH1 | 66:UU:45:GLU:OE2 | 2.34 | 0.60 |
| 1:5:3938:G:N2 | 1:5:4171:C:OP2 | 2.33 | 0.60 |
| 10:G:218:GLU:OE1 | 17:N:26:ARG:NH2 | 2.29 | 0.60 |
| 4:9:689:U:OP1 | 53:HH:103:LYS:NZ | 2.34 | 0.60 |
| 1:5:4061:G:H2' | 1:5:4062:A:H8 | 1.65 | 0.60 |
| 4:9:570:C:O2 | 70:YY:34:THR:OG1 | 2.17 | 0.60 |
| 68:WW:90:GLN:HG3 | 68:WW:94:LEU:HD12 | 1.82 | 0.60 |
| 4:9:1653:U:H2' | 4:9:1654:G:C8 | 2.35 | 0.60 |
| 1:5:4188:U:H2' | 1:5:4189:U:C6 | 2.36 | 0.60 |
| 1:5:4570:G:H2' | 1:5:4571:A:H8 | 1.66 | 0.60 |
| 4:9:507:G:OP2 | 70:YY:104:ARG:NH2 | 2.35 | 0.60 |
| 4:9:903:A:H2' | 4:9:904:A:C8 | 2.36 | 0.60 |
| 57:LL:104:LYS:O | 69:XX:11:ARG:NH2 | 2.34 | 0.60 |
| 78:gg:145:GLU:O | 78:gg:175:LYS:NZ | 2.32 | 0.60 |
| 81:13:62:C:H2' | 81:13:63:A:C8 | 2.37 | 0.60 |
| 4:9:453:C:H2' | 4:9:454:U:H5' | 1.84 | 0.60 |
| 5:A:29:LEU:O | 5:A:123:ARG:NH1 | 2.34 | 0.60 |
| 11:H:120:GLU:OE1 | 11:H:124:ARG:NH2 | 2.30 | 0.60 |
| 1:5:914:U:O2' | 1:5:915:A:OP2 | 2.18 | 0.60 |
| 1:5:1865:G:N2 | 1:5:1868:A:OP2 | 2.34 | 0.59 |
| 1:5:4936:G:O2' | 1:5:4937:C:OP1 | 2.19 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:9:533:A:H2' | 4:9:534:G:C8 | 2.37 | 0.59 |
| 4:9:1119:A:H2' | 4:9:1120:U:C6 | 2.37 | 0.59 |
| 81:13:62:C:H2' | 81:13:63:A:H8 | 1.67 | 0.59 |
| 1:5:910:G:H2' | 1:5:911:U:H6 | 1.67 | 0.59 |
| 18:O:72:HIS:O | 18:O:74:ARG:NH1 | 2.35 | 0.59 |
| 1:5:3910:C:H2' | 1:5:3911:C:C6 | 2.38 | 0.59 |
| 74:cc:20:ARG:NH1 | 74:cc:25:GLY:O | 2.28 | 0.59 |
| 1:5:1339:U:H2' | 1:5:1340:C:C6 | 2.37 | 0.59 |
| 1:5:3961:G:C6 | 1:5:3963:A:H2' | 2.37 | 0.59 |
| 1:5:4992:G:H2' | 1:5:4993:G:C8 | 2.37 | 0.59 |
| 3:8:67:U:H2' | 3:8:68:G:H8 | 1.66 | 0.59 |
| 1:5:1756:U:H2' | 1:5:1757:U:C6 | 2.36 | 0.59 |
| 83:jj:511:ALA:HB3 | 83:jj:559:PHE:CZ | 2.37 | 0.59 |
| 4:9:5:U:H2' | 4:9:6:G:H8 | 1.67 | 0.59 |
| 1:5:2546:G:O2' | 1:5:2547:G:OP1 | 2.18 | 0.59 |
| 4:9:107:A:H2' | 4:9:108:G:C8 | 2.37 | 0.59 |
| 81:11:69:U:H2' | 81:11:70:G:C8 | 2.38 | 0.59 |
| 83:jj:533:ARG:N | 83:jj:536:ASP:OD2 | 2.33 | 0.59 |
| 81:13:23:C:H2' | 81:13:24:G:C8 | 2.38 | 0.58 |
| 1:5:746:A:O2' | 1:5:747:A:H5' | 2.03 | 0.58 |
| 1:5:1188:C:H2' | 1:5:1189:G:C8 | 2.38 | 0.58 |
| 1:5:1989:G:H2' | 1:5:1990:A:H8 | 1.68 | 0.58 |
| 3:8:8:U:H2' | 3:8:9:A:H8 | 1.69 | 0.58 |
| 4:9:898:U:H2' | 4:9:899:U:C6 | 2.39 | 0.58 |
| 4:9:1597:C:OP2 | 71:ZZ:85:ARG:NH2 | 2.29 | 0.58 |
| 29:Z:5:MET:HG3 | 29:Z:77:TYR:OH | 2.04 | 0.58 |
| 32:c:13:SER:O | 32:c:17:ARG:NE | 2.36 | 0.58 |
| 1:5:2685:C:OP1 | 36:g:57:ARG:NH1 | 2.36 | 0.58 |
| 1:5:2822:G:N7 | 21:R:20:LYS:NZ | 2.49 | 0.58 |
| 1:5:4239:A:H2' | 1:5:4240:G:C8 | 2.39 | 0.58 |
| 1:5:4960:G:H2' | 1:5:4961:G:H8 | 1.68 | 0.58 |
| 4:9:1239:U:H5" | 61:PP:124:LYS:HE2 | 1.86 | 0.58 |
| 1:5:1190:C:H2' | 1:5:1191:C:C6 | 2.39 | 0.58 |
| 1:5:4039:G:H4' | 1:5:4049:U:H2' | 1.85 | 0.58 |
| 4:9:656:G:O2' | 48:CC:227:ARG:NH1 | 2.35 | 0.58 |
| 4:9:1424:G:H2' | 4:9:1425:G:H8 | 1.69 | 0.58 |
| 49:DD:70:THR:HG22 | 49:DD:86:LEU:HD13 | 1.85 | 0.58 |
| 1:5:456:C:H2' | 1:5:457:G:C8 | 2.38 | 0.58 |
| 4:9:1337:C:H2' | 4:9:1338:G:H8 | 1.69 | 0.58 |
| 83:jj:402:THR:O | 83:jj:470:ARG:NH2 | 2.34 | 0.58 |
| 83:jj:512:MET:HA | 83:jj:521:THR:HA | 1.86 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:3904:G:O2' | 1:5:3905:A:OP1 | 2.20 | 0.57 |
| 2:7:3:C:H2' | 2:7:4:U:C6 | 2.39 | 0.57 |
| 7:C:335:MET:O | 7:C:339:THR:HG23 | 2.04 | 0.57 |
| 63:RR:37:GLU:OE2 | 78:gg:106:LYS:NZ | 2.30 | 0.57 |
| 1:5:280:G:H5" | 17:N:14:LYS:HE2 | 1.85 | 0.57 |
| 17:N:178:HIS:HA | 17:N:181:HIS:NE2 | 2.18 | 0.57 |
| 4:9:1228:A:H2' | 4:9:1229:G:H8 | 1.68 | 0.57 |
| 4:9:1658:G:OP2 | 4:9:1660:C:N4 | 2.37 | 0.57 |
| 58:MM:75:ASN:HB3 | 58:MM:128:PHE:CZ | 2.39 | 0.57 |
| 1:5:54:G:OP1 | 82:j:43:ARG:NH1 | 2.38 | 0.57 |
| 80:12:66:A:H2' | 80:12:67:A:C8 | 2.39 | 0.57 |
| 4:9:866:U:H2' | 4:9:867:G:C8 | 2.39 | 0.57 |
| 4:9:1293:A:N6 | 4:9:1306:U:H3 | 2.01 | 0.57 |
| 1:5:1238:A:O2' | 1:5:1239:C:OP1 | 2.17 | 0.57 |
| 1:5:4077:A:N1 | 1:5:4171:C:N4 | 2.52 | 0.57 |
| 4:9:649:U:H2' | 4:9:650:A:H8 | 1.70 | 0.57 |
| 1:5:3877:A:N3 | 1:5:4401:G:O2' | 2.30 | 0.57 |
| 78:gg:42:MET:SD | 78:gg:56:GLN:NE2 | 2.74 | 0.57 |
| 1:5:217:C:H4' | 1:5:218:A:C8 | 2.40 | 0.57 |
| 1:5:1818:G:OP2 | 1:5:1818:G:N2 | 2.29 | 0.57 |
| 1:5:457:G:H2' | 1:5:458:C:C6 | 2.40 | 0.57 |
| 1:5:1411:C:H2' | 1:5:1411(A):G:H8 | 1.70 | 0.57 |
| 1:5:165:A:H2' | 1:5:166:C:C6 | 2.40 | 0.56 |
| 1:5:3961:G:N1 | 1:5:3963:A:H2' | 2.20 | 0.56 |
| 4:9:1227:G:C2 | 4:9:1228:A:C8 | 2.92 | 0.56 |
| 1:5:4942:C:H4' | 1:5:4943:A:OP1 | 2.03 | 0.56 |
| 71:ZZ:79:ILE:HB | 71:ZZ:83:LEU:HD23 | 1.86 | 0.56 |
| 1:5:478:G:H2' | 1:5:479:G:H8 | 1.70 | 0.56 |
| 1:5:2465:C:H1' | 1:5:3672:G:H22 | 1.70 | 0.56 |
| 1:5:3740:G:O2' | 81:11:70:G:O2' | 2.24 | 0.56 |
| 1:5:4239:A:H2' | 1:5:4240:G:H8 | 1.71 | 0.56 |
| 1:5:4286:C:H2' | 1:5:4287:G:H8 | 1.70 | 0.56 |
| 4:9:1101:U:H2' | 4:9:1102:G:C8 | 2.41 | 0.56 |
| 10:G:229:LYS:HD3 | 38:i:43:MET:HE1 | 1.87 | 0.56 |
| 17:N:184:ILE:O | 17:N:194:ARG:NH2 | 2.33 | 0.56 |
| 29:Z:5:MET:HG3 | 29:Z:77:TYR:CE2 | 2.39 | 0.56 |
| 47:BB:75:GLN:HG2 | 47:BB:78:GLU:OE2 | 2.06 | 0.56 |
| 83:jj:130:ASP:OD1 | 83:jj:152:ARG:NH2 | 2.38 | 0.56 |
| 1:5:264:C:H5" | 1:5:265:C:OP2 | 2.04 | 0.56 |
| 1:5:3692:A:H62 | 1:5:3823:G:N2 | 2.03 | 0.56 |
| 3:8:93:C:OP1 | 82:j:76:HIS:HE1 | 1.88 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 29:Z:4:PHE:CD2 | 29:Z:5:MET:HG2 | 2.40 | 0.56 |
| 49:DD:211:VAL:O | 63:RR:20:TYR:OH | 2.21 | 0.56 |
| 86:12:101:GTP:O1B | 83:jj:475:LYS:NZ | 2.27 | 0.56 |
| 1:5:3770:U:H2' | 1:5:3771:C:C6 | 2.41 | 0.56 |
| 4:9:1868:U:O2' | 72:aa:100:ARG:NH1 | 2.28 | 0.56 |
| 48:CC:196:ILE:HB | 48:CC:223:TYR:HB2 | 1.87 | 0.56 |
| 50:EE:212:ASP:OD1 | 50:EE:213:ALA:N | 2.37 | 0.56 |
| 1:5:1193:C:H2' | 1:5:1194:G:C8 | 2.41 | 0.56 |
| 6:B:50:LYS:NZ | 6:B:339:GLY:O | 2.29 | 0.56 |
| 41:m:68:MET:HG2 | 41:m:79:PRO:HA | 1.87 | 0.56 |
| 1:5:1961:G:O2' | 1:5:2025:A:N6 | 2.39 | 0.56 |
| 1:5:3641:U:H5 | 1:5:3646:A:N7 | 2.04 | 0.56 |
| 1:5:3663:A:N6 | 1:5:4168:G:O2' | 2.38 | 0.56 |
| 5:A:36:GLU:OE1 | 5:A:163:ARG:NH1 | 2.39 | 0.56 |
| 80:12:23:A:H2' | 80:12:24:G:C8 | 2.40 | 0.56 |
| 1:5:2275:G:H2' | 1:5:2276:A:C8 | 2.41 | 0.56 |
| 1:5:2478:C:N4 | 1:5:2479:G:O6 | 2.39 | 0.56 |
| 1:5:2503:G:N2 | 1:5:4084:G:O4' | 2.39 | 0.56 |
| 1:5:2601:A:N6 | 1:5:2744:A:OP2 | 2.38 | 0.56 |
| 47:BB:107:ARG:NH1 | 60:OO:133:THR:O | 2.35 | 0.56 |
| 1:5:1440:U:H2' | 1:5:1441:C:C6 | 2.42 | 0.55 |
| 1:5:1558:A:H2' | 1:5:1559:G:H8 | 1.71 | 0.55 |
| 1:5:1391:A:P | 20:Q:181:ARG:HH22 | 2.29 | 0.55 |
| 1:5:1405:C:H2' | 1:5:1406:G:C8 | 2.41 | 0.55 |
| 1:5:4459:U:H2' | 1:5:4460:U:C6 | 2.42 | 0.55 |
| 22:S:161:ARG:NH1 | 22:S:164:LYS:O | 2.39 | 0.55 |
| 81:13:23:C:H2' | 81:13:24:G:H8 | 1.70 | 0.55 |
| 1:5:517:C:H2' | 1:5:518:G:C8 | 2.41 | 0.55 |
| 1:5:2520:C:H2' | 1:5:2521:G:C8 | 2.40 | 0.55 |
| 4:9:981:A:H2' | 4:9:982:G:C8 | 2.40 | 0.55 |
| 4:9:1395:C:O2' | 4:9:1396:A:OP1 | 2.21 | 0.55 |
| 57:LL:49:GLU:HG2 | 57:LL:118:ARG:HE | 1.72 | 0.55 |
| 1:5:3707:U:H2' | 1:5:3708:C:C6 | 2.42 | 0.55 |
| 4:9:1693:G:N2 | 4:9:1834:A:H8 | 2.05 | 0.55 |
| 62:QQ:16:LYS:NZ | 62:QQ:123:ASP:OD2 | 2.40 | 0.55 |
| 67:VV:53:TYR:OH | 67:VV:76:ASP:OD2 | 2.21 | 0.55 |
| 80:12:11:C:H2' | 80:12:12:U:C6 | 2.41 | 0.55 |
| 4:9:649:U:H2' | 4:9:650:A:C8 | 2.42 | 0.55 |
| 4:9:1305:C:OP2 | 77:ff:93:HIS:ND1 | 2.30 | 0.55 |
| 10:G:284:ASP:OD1 | 10:G:287:ARG:NH2 | 2.34 | 0.55 |
| 83:jj:350:THR:O | 83:jj:354:PHE:N | 2.38 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:1311:G:H4' | 34:e:50:LYS:HE2 | 1.89 | 0.55 |
| 30:a:72:THR:HG22 | 30:a:110:LYS:HB3 | 1.89 | 0.55 |
| 83:jj:555:GLN:HB3 | 83:jj:570:ILE:HD12 | 1.88 | 0.55 |
| 46:AA:36:GLN:O | 46:AA:53:ARG:NH1 | 2.34 | 0.55 |
| 1:5:1195:G:H2' | 1:5:1196:G:C8 | 2.42 | 0.55 |
| 4:9:674:C:H2' | 4:9:675:U:C6 | 2.42 | 0.55 |
| 48:CC:275:LYS:HG3 | 48:CC:276:THR:HG23 | 1.89 | 0.55 |
| 1:5:1766:A:O2' | 1:5:1767:A:O5' | 2.20 | 0.54 |
| 1:5:4053:A:H2' | 1:5:4054:C:C6 | 2.42 | 0.54 |
| 4:9:540:U:O2' | 4:9:543:C:N4 | 2.41 | 0.54 |
| 63:RR:77:GLU:OE2 | 63:RR:80:ARG:NH2 | 2.39 | 0.54 |
| 1:5:2489:C:O2' | 1:5:2491:C:N4 | 2.41 | 0.54 |
| 1:5:4303:C:H2' | 1:5:4305:G:C8 | 2.43 | 0.54 |
| 4:9:862:A:C8 | 68:WW:107:SER:HA | 2.42 | 0.54 |
| 26:W:105:ARG:NH2 | 52:GG:150:GLU:OE1 | 2.37 | 0.54 |
| 55:JJ:78:LEU:HB3 | 55:JJ:92:MET:HG3 | 1.88 | 0.54 |
| 62:QQ:19:ALA:HB2 | 62:QQ:75:GLY:HA3 | 1.88 | 0.54 |
| 3:8:75:G:OP2 | 28:Y:74:TYR:OH | 2.22 | 0.54 |
| 4:9:536:A:H61 | 4:9:547:G:N2 | 2.05 | 0.54 |
| 29:Z:5:MET:HE2 | 29:Z:77:TYR:CE2 | 2.42 | 0.54 |
| 83:jj:501:HIS:H | 83:jj:534:THR:HG22 | 1.72 | 0.54 |
| 1:5:1890:G:N2 | 1:5:1939:A:H61 | 2.05 | 0.54 |
| 61:PP:21:ASP:OD1 | 61:PP:22:LEU:N | 2.41 | 0.54 |
| 10:G:201:GLU:OE2 | 17:N:6:TYR:OH | 2.20 | 0.54 |
| 1:5:2097:A:OP1 | 1:5:2107:A:N6 | 2.41 | 0.54 |
| 1:5:3648:A:H1' | 1:5:3785:A:N6 | 2.23 | 0.54 |
| 43:o:27:LYS:NZ | 88:11:101:ATP:O2G | 2.40 | 0.54 |
| 78:gg:116:ASP:OD2 | 78:gg:118:ARG:NH1 | 2.40 | 0.54 |
| 1:5:1177:U:H2' | 1:5:1178:G:C8 | 2.42 | 0.54 |
| 1:5:2899:C:OP1 | 21:R:108:ARG:NH2 | 2.37 | 0.54 |
| 1:5:4260:U:H2' | 1:5:4261:C:C6 | 2.43 | 0.54 |
| 1:5:679:C:OP1 | 45:r:84:LYS:NZ | 2.33 | 0.54 |
| 1:5:981:C:P | 9:E:48:ARG:HH22 | 2.30 | 0.54 |
| 1:5:1368:A:H1' | 28:Y:1:MET:HE2 | 1.90 | 0.54 |
| 4:9:804:U:H2' | 4:9:805:U:C6 | 2.43 | 0.54 |
| 4:9:1454:A:C2 | 4:9:1476:A:H1' | 2.42 | 0.54 |
| 13:J:113:ILE:HD12 | 13:J:119:TYR:HB2 | 1.89 | 0.54 |
| 1:5:976:G:H21 | 7:C:323:ARG:CD | 2.20 | 0.54 |
| 1:5:2477:A:H2' | 1:5:2478:C:C6 | 2.43 | 0.54 |
| 1:5:4943:A:OP1 | 9:E:157:THR:HG22 | 2.08 | 0.54 |
| 4:9:1098:C:H2' | 4:9:1099:G:C8 | 2.43 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:9:1588:A:H2' | 4:9:1589:A:C8 | 2.43 | 0.54 |
| 19:P:54:LYS:HA | 19:P:83:TRP:CD1 | 2.43 | 0.54 |
| 71:ZZ:100:VAL:HG21 | 71:ZZ:110:THR:HG23 | 1.89 | 0.54 |
| 1:5:1772:C:H2' | 1:5:1773:U:O4' | 2.08 | 0.54 |
| 1:5:4064:C:H2' | 1:5:4065:G:C8 | 2.42 | 0.54 |
| 4:9:1037:G:H4' | 4:9:1845:A:H4' | 1.90 | 0.54 |
| 1:5:3868:G:H22 | 1:5:3900:G:H1' | 1.73 | 0.53 |
| 12:I:66:GLU:OE1 | 12:I:69:ARG:NH1 | 2.36 | 0.53 |
| 1:5:1475:G:H2' | 1:5:1476:C:C6 | 2.43 | 0.53 |
| 1:5:3968:U:O2' | 1:5:3969:G:OP1 | 2.23 | 0.53 |
| 1:5:4258:C:H5' | 13:J:68:ILE:HD11 | 1.90 | 0.53 |
| 1:5:4870:G:H2' | 16:M:91:TRP:CZ2 | 2.43 | 0.53 |
| 16:M:89:THR:HG22 | 16:M:91:TRP:H | 1.73 | 0.53 |
| 18:O:10:ASP:OD1 | 18:O:37:ARG:HD3 | 2.09 | 0.53 |
| 52:GG:223:LYS:NZ | 52:GG:226:GLU:OE1 | 2.38 | 0.53 |
| 4:9:453:C:C2' | 4:9:454:U:H5' | 2.38 | 0.53 |
| 14:K:58:LYS:NZ | 14:K:62:GLN:OE1 | 2.30 | 0.53 |
| 1:5:5029:C:H2' | 1:5:5030:U:C6 | 2.44 | 0.53 |
| 4:9:165:G:OP2 | 4:9:165:G:N2 | 2.39 | 0.53 |
| 4:9:1438:A:H2' | 4:9:1439:A:C8 | 2.43 | 0.53 |
| 4:9:942:G:H2' | 4:9:943:U:C6 | 2.43 | 0.53 |
| 1:5:1200:G:H2' | 1:5:1201:U:C6 | 2.44 | 0.53 |
| 4:9:527:C:H2' | 4:9:528:A:H8 | 1.73 | 0.53 |
| 5:A:30:ARG:NH2 | 5:A:33:ASP:OD2 | 2.36 | 0.53 |
| 43:o:63:THR:O | 43:o:87:ARG:NH1 | 2.41 | 0.53 |
| 80:12:66:A:H2' | 80:12:67:A:H8 | 1.73 | 0.53 |
| 1:5:1198:G:H2' | 1:5:1199:G:H8 | 1.74 | 0.53 |
| 1:5:4474:A:H5" | 41:m:99:LYS:HG3 | 1.89 | 0.53 |
| 1:5:4935:C:H2' | 1:5:4936:G:C8 | 2.44 | 0.53 |
| 4:9:5:U:H2' | 4:9:6:G:C8 | 2.43 | 0.53 |
| 67:VV:20:SER:HB3 | 67:VV:59:ILE:HD11 | 1.91 | 0.53 |
| 4:9:1300:U:O2 | 61:PP:51:ARG:NH2 | 2.41 | 0.53 |
| 7:C:237:ILE:HD12 | 7:C:237:ILE:H | 1.74 | 0.53 |
| 29:Z:77:TYR:CD1 | 29:Z:77:TYR:C | 2.86 | 0.53 |
| 78:gg:105:THR:N | 78:gg:126:ASP:OD2 | 2.37 | 0.53 |
| 1:5:4546:A:N7 | 5:A:215:ASN:ND2 | 2.57 | 0.53 |
| 1:5:4578:G:H2' | 1:5:4579:U:C6 | 2.43 | 0.53 |
| 4:9:945:U:H2' | 4:9:946:U:C6 | 2.44 | 0.53 |
| 10:G:217:ILE:O | 10:G:221:VAL:HG13 | 2.08 | 0.53 |
| 70:YY:86:GLU:OE2 | 70:YY:90:ARG:NH1 | 2.31 | 0.53 |
| 1:5:979:C:OP1 | 9:E:49:ASN:ND2 | 2.42 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:9:688:U:OP1 | 53:HH:116:ARG:NH2 | 2.28 | 0.53 |
| 4:9:1303:C:O2 | 4:9:1303:C:H5' | 2.09 | 0.53 |
| 4:9:1610:G:OP2 | 64:SS:132:ARG:NH1 | 2.42 | 0.53 |
| 78:gg:107:ASP:OD2 | 78:gg:125:ARG:NH1 | 2.41 | 0.53 |
| 1:5:2415:U:H2' | 1:5:2416:G:C8 | 2.43 | 0.52 |
| 1:5:2864:A:H2' | 1:5:2865:U:C6 | 2.43 | 0.52 |
| 1:5:3717:A:H2' | 1:5:3718:A:H8 | 1.71 | 0.52 |
| 4:9:1776:G:H2' | 4:9:1777:G:H8 | 1.73 | 0.52 |
| 29:Z:88:ASP:OD1 | 29:Z:121:ARG:NH2 | 2.32 | 0.52 |
| 80:12:18:G:O2' | 80:12:57:G:N2 | 2.32 | 0.52 |
| 81:11:25:U:C2 | 81:11:26:G:C8 | 2.97 | 0.52 |
| 1:5:1246:G:N7 | 1:5:1247:U:N3 | 2.57 | 0.52 |
| 4:9:1692:U:H2' | 4:9:1693:G:C8 | 2.43 | 0.52 |
| 65:TT:104:LEU:HD22 | 65:TT:121:ARG:HG3 | 1.90 | 0.52 |
| 1:5:1298:C:H2' | 1:5:1299:G:H8 | 1.73 | 0.52 |
| 1:5:3923:A:H2' | 1:5:3924:C:C6 | 2.44 | 0.52 |
| 4:9:1628:C:H2' | 4:9:1629:C:C6 | 2.45 | 0.52 |
| 10:G:248:HIS:O | 10:G:249:ARG:NH1 | 2.39 | 0.52 |
| 1:5:2478:C:H2' | 1:5:2479:G:C8 | 2.45 | 0.52 |
| 1:5:152:U:P | 17:N:49:ARG:HH12 | 2.33 | 0.52 |
| 1:5:1951:G:O2' | 22:S:95:ARG:NH2 | 2.25 | 0.52 |
| 1:5:2755:A:P | 29:Z:65:ARG:HH22 | 2.32 | 0.52 |
| 4:9:688:U:C5 | 53:HH:102:PRO:HA | 2.44 | 0.52 |
| 4:9:1236:G:O2' | 61:PP:131:PRO:O | 2.19 | 0.52 |
| 4:9:1253:A:H4' | 4:9:1254:C:H5" | 1.92 | 0.52 |
| 80:12:69:U:H2' | 80:12:70:C:C6 | 2.45 | 0.52 |
| 81:11:18:G:H21 | 81:11:57:G:H2' | 1.74 | 0.52 |
| 1:5:136:C:H42 | 37:h:79:LYS:HE3 | 1.75 | 0.52 |
| 1:5:4238:G:H2' | 1:5:4239:A:H8 | 1.74 | 0.52 |
| 83:jj:520:GLN:NE2 | 83:jj:549:GLU:OE2 | 2.42 | 0.52 |
| 47:BB:175:GLU:O | 47:BB:187:LYS:NZ | 2.43 | 0.52 |
| 50:EE:94:LYS:O | 70:YY:16:ARG:NH2 | 2.29 | 0.52 |
| 1:5:100:C:H2' | 1:5:101:A:H8 | 1.73 | 0.52 |
| 1:5:1643:A:H2' | 1:5:1644:C:C6 | 2.45 | 0.52 |
| 1:5:4481:U:H2' | 1:5:4482:U:C6 | 2.45 | 0.52 |
| 1:5:5053:U:H5' | 1:5:5054:C:C5 | 2.44 | 0.52 |
| 4:9:507:G:P | 70:YY:104:ARG:HH22 | 2.33 | 0.52 |
| 29:Z:100:VAL:HG13 | 29:Z:107:LYS:HA | 1.92 | 0.52 |
| 73:bb:15:GLU:OE2 | 73:bb:18:LYS:NZ | 2.34 | 0.52 |
| 1:5:1244:G:H2' | 1:5:1245:C:C6 | 2.44 | 0.52 |
| 1:5:2079:G:H2' | 1:5:2080:U:C6 | 2.44 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:3720:G:OP1 | 38:i:75:LYS:NZ | 2.42 | 0.52 |
| 1:5:396:A:H2' | 1:5:397:G:C8 | 2.45 | 0.51 |
| 1:5:2486:G:H2' | 1:5:2487:G:C8 | 2.45 | 0.51 |
| 1:5:4370:G:H5" | 43:o:64:LYS:HD2 | 1.91 | 0.51 |
| 1:5:4572:U:H2' | 1:5:4573:G:C8 | 2.45 | 0.51 |
| 4:9:1527:C:OP1 | 62:QQ:142:GLN:NE2 | 2.30 | 0.51 |
| 6:B:80:GLU:OE1 | 6:B:323:TYR:OH | 2.18 | 0.51 |
| 25:V:21:PRO:HA | 25:V:54:ALA:HA | 1.91 | 0.51 |
| 69:XX:68:LYS:HE2 | 76:ee:82:VAL:HG22 | 1.91 | 0.51 |
| 1:5:1617:G:H1' | 1:5:2513:A:N6 | 2.26 | 0.51 |
| 1:5:156:G:N2 | 1:5:157:U:O4 | 2.42 | 0.51 |
| 1:5:4130:C:H2' | 1:5:4131:G:H8 | 1.75 | 0.51 |
| 4:9:986:G:C8 | 60:OO:137:SER:O | 2.63 | 0.51 |
| 60:OO:103:ASN:HB3 | 60:OO:139:SER:OG | 2.10 | 0.51 |
| 1:5:1558:A:H2' | 1:5:1559:G:C8 | 2.44 | 0.51 |
| 1:5:1942:A:H2' | 1:5:1943:A:H8 | 1.75 | 0.51 |
| 1:5:2412:A:H2' | 1:5:2413:U:C6 | 2.45 | 0.51 |
| 1:5:4233:A:C8 | 1:5:4235:G:C8 | 2.98 | 0.51 |
| 1:5:4623:G:OP1 | 6:B:19:ARG:NH2 | 2.43 | 0.51 |
| 4:9:186:C:H2' | 4:9:187:G:H8 | 1.75 | 0.51 |
| 4:9:910:G:OP2 | 21:R:173:ARG:NH1 | 2.43 | 0.51 |
| 1:5:3944:G:H1 | 1:5:4069:U:H3 | 1.58 | 0.51 |
| 59:NN:25:TRP:CG | 73:bb:82:LYS:HE2 | 2.45 | 0.51 |
| 1:5:1990:A:H2' | 1:5:1991:A:H5" | 1.93 | 0.51 |
| 1:5:4061:G:H2' | 1:5:4062:A:C8 | 2.44 | 0.51 |
| 1:5:4950:U:O2' | 1:5:4951:G:OP1 | 2.22 | 0.51 |
| 3:8:46:G:OP1 | 40:l:18:LYS:NZ | 2.32 | 0.51 |
| 4:9:65:C:N4 | 52:GG:133:LEU:HB3 | 2.25 | 0.51 |
| 4:9:530:U:H3' | 4:9:531:A:H8 | 1.75 | 0.51 |
| 58:MM:83:LYS:NZ | 58:MM:87:GLU:OE2 | 2.37 | 0.51 |
| 78:gg:176:VAL:O | 78:gg:185:LYS:N | 2.36 | 0.51 |
| 1:5:1564:A:H2' | 1:5:1565:A:C8 | 2.46 | 0.51 |
| 1:5:4274:A:H2' | 1:5:4275:G:C8 | 2.45 | 0.51 |
| 4:9:886:A:H3' | 4:9:887:U:H5" | 1.91 | 0.51 |
| 58:MM:42:LEU:O | 58:MM:45:ARG:NH1 | 2.44 | 0.51 |
| 1:5:4966:A:H5" | 6:B:128:LYS:HG3 | 1.93 | 0.51 |
| 4:9:1144:A:H5' | 4:9:1355:C:H41 | 1.76 | 0.51 |
| 4:9:1736:G:H2' | 4:9:1737:G:H8 | 1.76 | 0.51 |
| 1:5:4064:C:H2' | 1:5:4065:G:O4' | 2.11 | 0.51 |
| 4:9:1541:G:N3 | 65:TT:12:GLN:NE2 | 2.58 | 0.51 |
| 4:9:1614:A:H2' | 4:9:1615:U:H6 | 1.74 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:B:354:GLN:HG3 | 6:B:359:ALA:HB1 | 1.93 | 0.51 |
| 46:AA:5:LEU:HD21 | 67:VV:41:LYS:HA | 1.92 | 0.51 |
| 1:5:1200:G:H2' | 1:5:1201:U:H6 | 1.76 | 0.50 |
| 1:5:3948:C:H5" | 1:5:3949:A:OP2 | 2.11 | 0.50 |
| 1:5:4301:U:H4' | 23:T:54:HIS:CD2 | 2.45 | 0.50 |
| 4:9:895:G:H2' | 4:9:896:U:C6 | 2.46 | 0.50 |
| 4:9:1115:U:O2' | 4:9:1116:C:OP2 | 2.22 | 0.50 |
| 66:UU:21:ARG:HB3 | 66:UU:115:THR:HB | 1.94 | 0.50 |
| 1:5:86:U:H2' | 1:5:87:A:C8 | 2.46 | 0.50 |
| 78:gg:101:PHE:CE2 | 78:gg:136:GLY:HA2 | 2.46 | 0.50 |
| 83:jj:513:VAL:N | 83:jj:520:GLN:O | 2.41 | 0.50 |
| 1:5:668:C:H4' | 7:C:6:PRO:HB3 | 1.92 | 0.50 |
| 1:5:2520:C:H2' | 1:5:2521:G:H8 | 1.75 | 0.50 |
| 1:5:4925:U:H4' | 1:5:4926:C:C5' | 2.41 | 0.50 |
| 4:9:125:C:OP1 | 4:9:127:C:N4 | 2.44 | 0.50 |
| 57:LL:101:ARG:HB2 | 69:XX:7:LEU:O | 2.12 | 0.50 |
| 1:5:1088:C:H2' | 1:5:1089:G:H8 | 1.77 | 0.50 |
| 1:5:1932:A:OP2 | 18:O:49:ARG:NH2 | 2.39 | 0.50 |
| 3:8:141:C:OP1 | 17:N:38:ARG:NH1 | 2.45 | 0.50 |
| 46:AA:85:ARG:NH2 | 63:RR:82:ASP:O | 2.38 | 0.50 |
| 73:bb:67:THR:HG21 | 73:bb:72:ARG:HH11 | 1.77 | 0.50 |
| 1:5:1989:G:H2' | 1:5:1990:A:C8 | 2.47 | 0.50 |
| 1:5:2566:G:H2' | 1:5:2567:G:C8 | 2.46 | 0.50 |
| 1:5:4045:G:H2' | 1:5:4046:A:H3' | 1.93 | 0.50 |
| 2:7:26:C:O2' | 13:J:147:ARG:NH1 | 2.43 | 0.50 |
| 4:9:1693:G:H21 | 4:9:1834:A:H8 | 1.60 | 0.50 |
| 61:PP:18:ARG:NH1 | 64:SS:88:LYS:O | 2.41 | 0.50 |
| 70:YY:7:ILE:HB | 70:YY:47:MET:HE1 | 1.93 | 0.50 |
| 3:8:67:U:H2' | 3:8:68:G:C8 | 2.45 | 0.50 |
| 4:9:877:C:H2' | 4:9:878:G:C8 | 2.46 | 0.50 |
| 81:11:23:C:H2' | 81:11:24:G:C8 | 2.47 | 0.50 |
| 13:J:109:ILE:HD13 | 13:J:115:LEU:HD21 | 1.93 | 0.50 |
| 29:Z:5:MET:SD | 29:Z:82:PRO:HB3 | 2.52 | 0.50 |
| 49:DD:16:ILE:HD11 | 75:dd:36:LEU:HD23 | 1.94 | 0.50 |
| 1:5:973:G:N2 | 1:5:1282:G:C8 | 2.80 | 0.50 |
| 1:5:1077:C:OP1 | 1:5:1215:C:O2' | 2.21 | 0.50 |
| 1:5:1244:G:C6 | 1:5:1245:C:N4 | 2.79 | 0.50 |
| 4:9:1291:A:OP2 | 4:9:1302:G:O2' | 2.29 | 0.50 |
| 4:9:1407:U:H2' | 4:9:1408:U:C6 | 2.46 | 0.50 |
| 4:9:1862:G:O2' | 72:aa:5:ARG:NH2 | 2.45 | 0.50 |
| 1:5:1195:G:H2' | 1:5:1196:G:H8 | 1.75 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:2083:C:OP2 | 20:Q:14:ARG:NH2 | 2.42 | 0.50 |
| 1:5:2313:A:HO2' | 1:5:2314:G:P | 2.34 | 0.50 |
| 1:5:4037:C:H2' | 1:5:4038:C:C6 | 2.47 | 0.50 |
| 1:5:4508:C:OP1 | 25:V:43:LYS:NZ | 2.44 | 0.50 |
| 4:9:63:U:O2' | 4:9:170:A:N3 | 2.41 | 0.50 |
| 4:9:821:G:C6 | 55:JJ:150:ARG:HG3 | 2.47 | 0.50 |
| 83:jj:64:LYS:NZ | 83:jj:105:GLU:OE2 | 2.44 | 0.50 |
| 1:5:2079:G:H2' | 1:5:2080:U:H6 | 1.77 | 0.49 |
| 4:9:1313:A:H4' | 4:9:1314:U:O5' | 2.12 | 0.49 |
| 6:B:381:THR:HG23 | 6:B:384:GLU:H | 1.77 | 0.49 |
| 9:E:69:ALA:HA | 9:E:71:TYR:CE2 | 2.46 | 0.49 |
| 49:DD:142:LEU:HD13 | 49:DD:150:MET:HG3 | 1.93 | 0.49 |
| 1:5:3947:A:H2' | 1:5:3948:C:C6 | 2.47 | 0.49 |
| 1:5:4238:G:H2' | 1:5:4239:A:C8 | 2.48 | 0.49 |
| 4:9:878:G:H1 | 4:9:908:A:H61 | 1.58 | 0.49 |
| 4:9:1285:G:O6 | 58:MM:82:ASN:ND2 | 2.44 | 0.49 |
| 4:9:1720:U:H3' | 4:9:1721:U:H5" | 1.95 | 0.49 |
| 12:I:38:ARG:NH1 | 12:I:45:GLU:OE1 | 2.43 | 0.49 |
| 25:V:48:ARG:HD2 | 25:V:49:LEU:H | 1.77 | 0.49 |
| 59:NN:55:ARG:NH1 | 59:NN:56:ASP:OD1 | 2.45 | 0.49 |
| 1:5:424:U:H2' | 1:5:425:U:C6 | 2.46 | 0.49 |
| 1:5:1402:C:H2' | 1:5:1403:G:H8 | 1.76 | 0.49 |
| 1:5:4286:C:H2' | 1:5:4287:G:C8 | 2.46 | 0.49 |
| 4:9:581:U:H4' | 70:YY:66:GLY:CA | 2.43 | 0.49 |
| 4:9:1285:G:OP1 | 58:MM:107:SER:OG | 2.25 | 0.49 |
| 54:II:38:ILE:HD11 | 54:II:81:VAL:HG23 | 1.94 | 0.49 |
| 81:11:53:G:H2' | 81:11:54:A:C8 | 2.43 | 0.49 |
| 4:9:344:U:H2' | 4:9:345:U:C6 | 2.47 | 0.49 |
| 4:9:1337:C:H2' | 4:9:1338:G:C8 | 2.48 | 0.49 |
| 4:9:1801:A:H2' | 4:9:1802:C:C6 | 2.48 | 0.49 |
| 14:K:216:ARG:O | 14:K:245:ARG:NH1 | 2.41 | 0.49 |
| 1:5:520:U:H2' | 1:5:521:C:C6 | 2.47 | 0.49 |
| 1:5:1358:G:H2' | 1:5:1360:G:O6 | 2.12 | 0.49 |
| 1:5:3606:U:H2' | 1:5:3607:U:C6 | 2.48 | 0.49 |
| 1:5:3930:U:H2' | 1:5:3931:C:C6 | 2.48 | 0.49 |
| 4:9:1855:G:OP2 | 60:OO:147:ARG:NH1 | 2.44 | 0.49 |
| 83:jj:501:HIS:ND1 | 83:jj:502:PRO:HD2 | 2.28 | 0.49 |
| 1:5:2503:G:H5" | 1:5:2503:G:H8 | 1.78 | 0.49 |
| 1:5:2504:C:O2' | 1:5:2505:C:O2 | 2.25 | 0.49 |
| 1:5:2664:G:H4' | 1:5:2677:G:H4' | 1.94 | 0.49 |
| 1:5:4926:C:H5' | 1:5:4926:C:O2 | 2.12 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 16:M:10:GLY:O | 16:M:62:LEU:N | 2.43 | 0.49 |
| 50:EE:199:GLU:OE2 | 50:EE:209:HIS:NE2 | 2.43 | 0.49 |
| 81:13:18:G:H21 | 81:13:57:G:H2' | 1.78 | 0.49 |
| 1:5:2409:U:H5 | 1:5:2783:A:N1 | 2.11 | 0.49 |
| 1:5:4038:C:H2' | 1:5:4039:G:C8 | 2.47 | 0.49 |
| 1:5:4099:G:H22 | 1:5:4109:G:N2 | 2.11 | 0.49 |
| 4:9:107:A:H2' | 4:9:108:G:H8 | 1.78 | 0.49 |
| 8:D:202:GLN:NE2 | 8:D:237:GLU:OE1 | 2.44 | 0.49 |
| 59:NN:19:ARG:NH2 | 73:bb:84:HIS:OXT | 2.44 | 0.49 |
| 62:QQ:146:ARG:NH1 | 81:13:35:A:OP2 | 2.46 | 0.49 |
| 1:5:490:C:H2' | 1:5:491:G:C8 | 2.48 | 0.49 |
| 1:5:1509:C:H5" | 30:a:2:PRO:HD2 | 1.94 | 0.49 |
| 58:MM:85:LEU:HD21 | 58:MM:109:VAL:HG23 | 1.94 | 0.49 |
| 1:5:655:C:P | 7:C:268:ARG:HE | 2.35 | 0.49 |
| 1:5:1380:G:H4' | 1:5:1381:U:O2 | 2.12 | 0.49 |
| 1:5:1967:A:C2 | 1:5:2021:G:C5 | 3.01 | 0.49 |
| 1:5:2567:G:H2' | 1:5:2568:C:C6 | 2.48 | 0.49 |
| 1:5:2602:G:H2' | 1:5:2603:C:C6 | 2.47 | 0.49 |
| 1:5:3860:A:H61 | 1:5:4560:C:H5 | 1.59 | 0.49 |
| 1:5:4504:C:H2' | 1:5:4505:C:C6 | 2.48 | 0.49 |
| 1:5:4911:A:OP2 | 6:B:100:ARG:NH1 | 2.40 | 0.49 |
| 1:5:4935:C:H2' | 1:5:4936:G:H8 | 1.77 | 0.49 |
| 1:5:1402:C:H2' | 1:5:1403:G:C8 | 2.47 | 0.49 |
| 1:5:2062:C:OP1 | 22:S:2:LYS:HG3 | 2.13 | 0.49 |
| 1:5:4772:C:N4 | 1:5:4864:U:O2 | 2.42 | 0.49 |
| 4:9:29:G:H2' | 4:9:30:C:C6 | 2.48 | 0.49 |
| 4:9:1698:C:O2' | 4:9:1699:A:OP1 | 2.29 | 0.49 |
| 19:P:42:ARG:NH1 | 19:P:110:ASP:OD1 | 2.46 | 0.49 |
| 1:5:1332:C:H2' | 1:5:1333:A:C8 | 2.48 | 0.48 |
| 1:5:1332:C:H2' | 1:5:1333:A:H8 | 1.78 | 0.48 |
| 1:5:2895:A:H2' | 1:5:2896:G:C8 | 2.48 | 0.48 |
| 1:5:3736:A:H2' | 1:5:3737:A:C8 | 2.48 | 0.48 |
| 1:5:3949:A:H2' | 1:5:3950:U:C6 | 2.48 | 0.48 |
| 4:9:571:U:H5' | 70:YY:37:LYS:HE2 | 1.95 | 0.48 |
| 6:B:56:ILE:O | 6:B:73:VAL:HA | 2.13 | 0.48 |
| 10:G:139:VAL:HG11 | 10:G:238:LYS:HE3 | 1.95 | 0.48 |
| 36:g:15:THR:HG22 | 36:g:16:ALA:H | 1.78 | 0.48 |
| 55:JJ:155:LYS:HE3 | 55:JJ:156:HIS:CE1 | 2.48 | 0.48 |
| 1:5:981:C:OP2 | 9:E:48:ARG:NH2 | 2.43 | 0.48 |
| 1:5:1920:C:H3' | 1:5:1921:C:H5" | 1.95 | 0.48 |
| 1:5:2440:U:O2' | 1:5:2441:C:OP1 | 2.30 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:2517:A:O2' | 36:g:66:ARG:NH2 | 2.45 | 0.48 |
| 1:5:4188:U:H2' | 1:5:4189:U:H6 | 1.77 | 0.48 |
| 4:9:186:C:H2' | 4:9:187:G:C8 | 2.48 | 0.48 |
| 4:9:1597:C:H4' | 4:9:1603:G:O6 | 2.12 | 0.48 |
| 4:9:1856:C:H2' | 4:9:1857:G:C8 | 2.48 | 0.48 |
| 83:jj:173:LYS:NZ | 90:jj:700:GCP:O2G | 2.33 | 0.48 |
| 1:5:2053:C:O3' | 18:O:18:ARG:NH1 | 2.44 | 0.48 |
| 1:5:4099:G:H1 | 1:5:4109:G:N2 | 2.09 | 0.48 |
| 4:9:126:G:OP1 | 52:GG:198:ARG:NH1 | 2.33 | 0.48 |
| 4:9:1781:A:H2' | 4:9:1782:G:C8 | 2.48 | 0.48 |
| 4:9:1854:U:OP1 | 60:OO:150:ARG:NH2 | 2.45 | 0.48 |
| 19:P:39:MET:O | 19:P:114:ILE:HG22 | 2.13 | 0.48 |
| 78:gg:258:ILE:O | 78:gg:267:VAL:N | 2.35 | 0.48 |
| 1:5:3873:G:H2' | 1:5:3874:G:C8 | 2.49 | 0.48 |
| 1:5:5066:U:OP1 | 19:P:43:LYS:NZ | 2.44 | 0.48 |
| 4:9:72:C:H41 | 52:GG:170:ARG:NH1 | 2.11 | 0.48 |
| 63:RR:99:ASP:HB2 | 63:RR:100:PRO:HD2 | 1.96 | 0.48 |
| 68:WW:6:VAL:HG12 | 68:WW:34:ILE:HD11 | 1.95 | 0.48 |
| 1:5:3911:C:H2' | 1:5:3912:U:C6 | 2.47 | 0.48 |
| 4:9:1292:C:H2' | 4:9:1293:A:H5" | 1.95 | 0.48 |
| 4:9:1507:G:H1 | 77:ff:88:PRO:HA | 1.79 | 0.48 |
| 14:K:114:ARG:NH1 | 20:Q:4:ASP:O | 2.43 | 0.48 |
| 47:BB:168:MET:HG2 | 47:BB:197:ILE:HG21 | 1.95 | 0.48 |
| 53:HH:170:VAL:HG13 | 53:HH:187:PHE:HB2 | 1.95 | 0.48 |
| 1:5:433:A:C2 | 1:5:3867:A:H4' | 2.48 | 0.48 |
| 1:5:1534:A:C8 | 82:j:15:THR:HG23 | 2.48 | 0.48 |
| 1:5:3681:G:N1 | 5:A:118:GLU:OE2 | 2.46 | 0.48 |
| 2:7:7:G:OP1 | 8:D:33:ARG:NE | 2.30 | 0.48 |
| 4:9:1736:G:H2' | 4:9:1737:G:C8 | 2.49 | 0.48 |
| 81:11:70:G:H2' | 81:11:71:C:C6 | 2.47 | 0.48 |
| 1:5:470:A:H61 | 1:5:684:G:H1' | 1.78 | 0.48 |
| 1:5:1964:A:H3' | 1:5:1965:G:H8 | 1.78 | 0.48 |
| 1:5:2088:A:C5' | 1:5:2089:G:H3' | 2.44 | 0.48 |
| 1:5:4594:U:H2' | 1:5:4595:G:H8 | 1.78 | 0.48 |
| 8:D:278:ASP:OD2 | 8:D:282:GLN:NE2 | 2.41 | 0.48 |
| 55:JJ:136:ARG:HD3 | 55:JJ:160:SER:HA | 1.95 | 0.48 |
| 1:5:1075:G:H22 | 1:5:1235:G:N2 | 2.12 | 0.48 |
| 1:5:4481:U:H2' | 1:5:4482:U:H6 | 1.79 | 0.48 |
| 1:5:5003:U:H2' | 1:5:5004:C:C6 | 2.48 | 0.48 |
| 4:9:106:C:H2' | 4:9:107:A:H8 | 1.79 | 0.48 |
| 4:9:496:C:OP1 | 50:EE:29:PRO:HD3 | 2.13 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 9:E:156:LEU:HD11 | 9:E:198:ILE:HG13 | 1.96 | 0.48 |
| 32:c:47:ILE:HD12 | 32:c:94:LEU:HD12 | 1.95 | 0.48 |
| 1:5:1502:G:O6 | 20:Q:89:ASP:HA | 2.14 | 0.48 |
| 1:5:3692:A:H62 | 1:5:3823:G:H21 | 1.62 | 0.48 |
| 1:5:4520:G:H2' | 1:5:4521:U:O4' | 2.14 | 0.48 |
| 4:9:57:U:OP1 | 4:9:504:G:O2' | 2.25 | 0.48 |
| 4:9:1623:A:H5" | 64:SS:133:GLY:HA3 | 1.96 | 0.48 |
| 8:D:68:ARG:NH1 | 8:D:70:GLU:OE1 | 2.47 | 0.48 |
| 29:Z:5:MET:HG3 | 29:Z:77:TYR:CZ | 2.48 | 0.48 |
| 39:k:24:LYS:HA | 39:k:67:LYS:O | 2.13 | 0.48 |
| 52:GG:48:TYR:OH | 52:GG:119:LYS:O | 2.29 | 0.48 |
| 53:HH:75:ILE:HG22 | 53:HH:79:LEU:HB2 | 1.96 | 0.48 |
| 1:5:691:C:H2' | 1:5:692:A:C8 | 2.48 | 0.48 |
| 1:5:3965:A:N1 | 1:5:4047:A:H2' | 2.29 | 0.48 |
| 1:5:4266:G:N3 | 1:5:4266:G:H2' | 2.29 | 0.48 |
| 4:9:412:G:O2' | 4:9:812:A:N6 | 2.46 | 0.48 |
| 15:L:21:ARG:HB3 | 17:N:197:THR:HG22 | 1.96 | 0.48 |
| 51:FF:73:THR:O | 51:FF:89:THR:HG21 | 2.14 | 0.48 |
| 83:jj:420:LEU:HD13 | 83:jj:456:ARG:HG2 | 1.96 | 0.48 |
| 1:5:660:G:H2' | 1:5:661:C:C6 | 2.48 | 0.47 |
| 1:5:1961:G:O2' | 1:5:2024:G:N2 | 2.46 | 0.47 |
| 1:5:2695:A:OP1 | 39:k:35:LYS:NZ | 2.34 | 0.47 |
| 1:5:2714:G:OP2 | 39:k:70:LYS:NZ | 2.39 | 0.47 |
| 6:B:384:GLU:OE2 | 26:W:14:TYR:OH | 2.30 | 0.47 |
| 17:N:80:THR:HB | 17:N:87:HIS:HB3 | 1.96 | 0.47 |
| 43:o:24:THR:O | 43:o:69:ARG:N | 2.45 | 0.47 |
| 47:BB:208:HIS:CG | 47:BB:209:ASP:H | 2.32 | 0.47 |
| 53:HH:192:PHE:CD2 | 73:bb:12:PRO:HB3 | 2.48 | 0.47 |
| 72:aa:45:VAL:HG21 | 72:aa:64:LEU:HD13 | 1.96 | 0.47 |
| 1:5:86:U:H2' | 1:5:87:A:H8 | 1.78 | 0.47 |
| 1:5:1457:G:O2' | 1:5:1458:C:H5" | 2.14 | 0.47 |
| 1:5:4957:C:H3' | 1:5:4958:C:H5" | 1.96 | 0.47 |
| 4:9:68:A:OP2 | 52:GG:164:LYS:NZ | 2.32 | 0.47 |
| 47:BB:136:ARG:HB2 | 47:BB:218:LEU:HD11 | 1.96 | 0.47 |
| 48:CC:169:TYR:OH | 48:CC:175:GLY:O | 2.31 | 0.47 |
| 1:5:1811:G:H2' | 1:5:1812:C:C6 | 2.48 | 0.47 |
| 1:5:3799:A:OP1 | 25:V:64:THR:HG21 | 2.14 | 0.47 |
| 1:5:4621:C:OP1 | 25:V:48:ARG:NH1 | 2.38 | 0.47 |
| 10:G:153:HIS:CE1 | 10:G:156:ARG:HH11 | 2.32 | 0.47 |
| 18:O:168:TYR:CE2 | 18:O:172:LYS:HE3 | 2.50 | 0.47 |
| 51:FF:179:ASN:HB3 | 51:FF:187:SER:HB3 | 1.97 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 72:aa:87:ARG:NH2 | 72:aa:94:ASP:O | 2.33 | 0.47 |
| 1:5:407:A:O2' | 1:5:410:A:OP1 | 2.32 | 0.47 |
| 1:5:660:G:H2' | 1:5:661:C:H6 | 1.80 | 0.47 |
| 1:5:1472:C:H2' | 1:5:1473:U:C6 | 2.50 | 0.47 |
| 1:5:2673:G:N3 | 1:5:2673:G:H5' | 2.29 | 0.47 |
| 4:9:1017:U:H2' | 4:9:1018:U:H6 | 1.78 | 0.47 |
| 51:FF:38:TYR:OH | 74:cc:54:ASP:OD1 | 2.20 | 0.47 |
| 1:5:1406:G:H2' | 1:5:1406(A):G:H8 | 1.79 | 0.47 |
| 1:5:2415:U:H2' | 1:5:2416:G:N9 | 2.30 | 0.47 |
| 1:5:2638:G:H1 | 1:5:2697:A:H61 | 1.63 | 0.47 |
| 4:9:1277:C:H2' | 4:9:1278:A:H8 | 1.80 | 0.47 |
| 20:Q:69:LYS:O | 20:Q:75:ARG:NH1 | 2.47 | 0.47 |
| 57:LL:40:ILE:HD11 | 57:LL:44:PHE:HB2 | 1.96 | 0.47 |
| 80:12:63:C:H2' | 80:12:64:A:H8 | 1.79 | 0.47 |
| 1:5:2478:C:H2' | 1:5:2479:G:H8 | 1.79 | 0.47 |
| 1:5:4485:C:O2' | 41:m:88:LYS:NZ | 2.43 | 0.47 |
| 4:9:225:G:O5' | 4:9:225:G:H8 | 1.97 | 0.47 |
| 4:9:693:A:H61 | 4:9:733:C:N4 | 2.13 | 0.47 |
| 48:CC:254:ASP:N | 48:CC:254:ASP:OD1 | 2.46 | 0.47 |
| 52:GG:126:ASP:OD1 | 52:GG:127:THR:N | 2.47 | 0.47 |
| 61:PP:14:LYS:NZ | 61:PP:23:ASP:OD2 | 2.45 | 0.47 |
| 81:11:43:G:H2' | 81:11:44:A:H8 | 1.78 | 0.47 |
| 1:5:325:U:H2' | 1:5:326:C:C6 | 2.50 | 0.47 |
| 1:5:1397:A:N1 | 1:5:1498:G:O2' | 2.45 | 0.47 |
| 1:5:2088:A:H5" | 1:5:2089:G:H3' | 1.97 | 0.47 |
| 1:5:2574:G:N7 | 1:5:2760:G:N2 | 2.62 | 0.47 |
| 1:5:4572:U:H2' | 1:5:4573:G:H8 | 1.80 | 0.47 |
| 4:9:74:G:N2 | 4:9:78:C:OP2 | 2.38 | 0.47 |
| 4:9:1503:C:H2' | 4:9:1504:U:C6 | 2.49 | 0.47 |
| 4:9:1839:U:H1' | 4:9:1863:A:H2 | 1.79 | 0.47 |
| 18:O:37:ARG:HD2 | 18:O:108:ILE:HD11 | 1.96 | 0.47 |
| 39:k:37:ARG:HD3 | 39:k:38:CYS:O | 2.15 | 0.47 |
| 49:DD:105:LEU:HB2 | 49:DD:122:VAL:HG21 | 1.97 | 0.47 |
| 52:GG:52:ILE:HG23 | 52:GG:52:ILE:O | 2.15 | 0.47 |
| 1:5:1344:C:H2' | 1:5:1345:A:C8 | 2.50 | 0.47 |
| 1:5:1727:U:H2' | 1:5:1728:U:C6 | 2.50 | 0.47 |
| 4:9:527:C:H2' | 4:9:528:A:C8 | 2.50 | 0.47 |
| 4:9:640:A:H2' | 4:9:641:A:C8 | 2.50 | 0.47 |
| 78:gg:249:CYS:SG | 78:gg:289:LEU:HD13 | 2.54 | 0.47 |
| 81:13:18:G:N2 | 81:13:57:G:H2' | 2.30 | 0.47 |
| 1:5:136:C:N4 | 37:h:79:LYS:HE3 | 2.30 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:1440:U:H2' | 1:5:1441:C:C5 | 2.50 | 0.47 |
| 1:5:2404:A:H61 | 1:5:2787:A:H61 | 1.63 | 0.47 |
| 1:5:2404:A:H61 | 1:5:2787:A:N6 | 2.13 | 0.47 |
| 1:5:2876:G:OP1 | 44:p:7:LYS:N | 2.37 | 0.47 |
| 4:9:141:A:H61 | 4:9:177:G:H1' | 1.80 | 0.47 |
| 4:9:221:A:H2' | 4:9:222:U:C6 | 2.49 | 0.47 |
| 4:9:1134:G:H2' | 4:9:1135:C:C6 | 2.50 | 0.47 |
| 4:9:1774:C:H2' | 4:9:1775:U:C6 | 2.50 | 0.47 |
| 18:O:79:ILE:O | 18:O:83:THR:HG23 | 2.15 | 0.47 |
| 45:r:105:ASP:OD1 | 45:r:105:ASP:N | 2.47 | 0.47 |
| 52:GG:7:PHE:HB2 | 52:GG:113:ILE:HD12 | 1.97 | 0.47 |
| 64:SS:92:ASP:HB3 | 64:SS:94:LYS:HE2 | 1.97 | 0.47 |
| 78:gg:245:ARG:HD3 | 78:gg:247:TRP:CH2 | 2.50 | 0.47 |
| 1:5:980:U:O2 | 1:5:1275:G:N2 | 2.32 | 0.47 |
| 1:5:1405:C:H2' | 1:5:1406:G:H8 | 1.80 | 0.47 |
| 1:5:3961:G:H2' | 1:5:3962:A:H2' | 1.97 | 0.47 |
| 1:5:4591:U:H2' | 1:5:4592:C:C6 | 2.50 | 0.47 |
| 80:12:65:G:H2' | 80:12:66:A:H8 | 1.79 | 0.47 |
| 1:5:1358:G:N2 | 1:5:1381:U:O4 | 2.48 | 0.46 |
| 4:9:1347:U:OP1 | 48:CC:121:ARG:NH2 | 2.33 | 0.46 |
| 4:9:1782:G:H5" | 4:9:1783:C:OP2 | 2.15 | 0.46 |
| 49:DD:28:GLU:OE1 | 56:KK:61:GLN:NE2 | 2.43 | 0.46 |
| 58:MM:52:LEU:HD21 | 58:MM:62:VAL:HG13 | 1.97 | 0.46 |
| 83:jj:135:ARG:HH11 | 83:jj:135:ARG:HA | 1.80 | 0.46 |
| 1:5:262:G:H2' | 1:5:263:G:H8 | 1.80 | 0.46 |
| 1:5:519:C:H2' | 1:5:520:U:C6 | 2.51 | 0.46 |
| 1:5:1818:G:H2' | 1:5:1820:U:OP2 | 2.16 | 0.46 |
| 11:H:40:HIS:ND1 | 11:H:41:ILE:HG13 | 2.29 | 0.46 |
| 47:BB:23:ASP:OD2 | 60:OO:16:SER:OG | 2.27 | 0.46 |
| 1:5:1411(C):C:H2' | 1:5:1412:G:C8 | 2.50 | 0.46 |
| 4:9:894:G:H2' | 4:9:895:G:C8 | 2.51 | 0.46 |
| 4:9:1614:A:H2' | 4:9:1615:U:C6 | 2.50 | 0.46 |
| 5:A:137:ILE:HD11 | 5:A:149:LYS:HB2 | 1.97 | 0.46 |
| 13:J:43:LEU:HD13 | 13:J:117:ILE:HD11 | 1.98 | 0.46 |
| 46:AA:44:ASP:HA | 63:RR:128:PHE:HB3 | 1.97 | 0.46 |
| 1:5:100:C:H2' | 1:5:101:A:C8 | 2.51 | 0.46 |
| 4:9:869:A:N6 | 53:HH:115:LYS:O | 2.43 | 0.46 |
| 7:C:339:THR:HG22 | 7:C:342:ARG:HH22 | 1.80 | 0.46 |
| 27:X:72:ASP:OD1 | 27:X:73:HIS:N | 2.43 | 0.46 |
| 1:5:134:G:C8 | 1:5:134:G:H5' | 2.50 | 0.46 |
| 1:5:678:C:H2' | 1:5:679:C:C6 | 2.50 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:1502:G:H5” | 1:5:1502:G:H8 | 1.81 | 0.46 |
| 1:5:2540:C:H2’ | 1:5:2541:G:H8 | 1.81 | 0.46 |
| 1:5:5006:U:H4’ | 1:5:5007:A:H5’ | 1.97 | 0.46 |
| 4:9:547:G:O5’ | 4:9:547:G:H8 | 1.98 | 0.46 |
| 46:AA:134:LEU:CD2 | 46:AA:144:THR:HG21 | 2.46 | 0.46 |
| 52:GG:58:LYS:HA | 52:GG:107:SER:HB2 | 1.97 | 0.46 |
| 55:JJ:59:GLU:O | 55:JJ:62:THR:OG1 | 2.32 | 0.46 |
| 65:TT:126:GLN:OE1 | 65:TT:129:ARG:NH1 | 2.48 | 0.46 |
| 72:aa:44:ILE:HG13 | 72:aa:45:VAL:HG23 | 1.98 | 0.46 |
| 1:5:1098:G:C6 | 1:5:1198:G:N2 | 2.84 | 0.46 |
| 1:5:2732:G:H2’ | 1:5:2733:C:C6 | 2.51 | 0.46 |
| 1:5:4862:G:H2’ | 1:5:4863:G:C8 | 2.51 | 0.46 |
| 1:5:4927:G:H3’ | 1:5:4928:C:O2 | 2.15 | 0.46 |
| 4:9:221:A:H2’ | 4:9:222:U:H6 | 1.80 | 0.46 |
| 4:9:907:G:H2’ | 4:9:908:A:C8 | 2.51 | 0.46 |
| 11:H:51:LYS:HB2 | 11:H:53:LYS:HG2 | 1.97 | 0.46 |
| 58:MM:75:ASN:HB3 | 58:MM:128:PHE:CE2 | 2.51 | 0.46 |
| 81:11:5:A:H2’ | 81:11:6:G:H8 | 1.80 | 0.46 |
| 1:5:1173:G:H2’ | 1:5:1174:G:C8 | 2.50 | 0.46 |
| 1:5:1468:C:H2’ | 1:5:1469:C:C6 | 2.51 | 0.46 |
| 1:5:4254:G:O2’ | 1:5:4255:A:OP1 | 2.32 | 0.46 |
| 1:5:4746:C:H2’ | 1:5:4747:C:C6 | 2.51 | 0.46 |
| 1:5:4960:G:H2’ | 1:5:4961:G:C8 | 2.48 | 0.46 |
| 4:9:1485:U:OP1 | 49:DD:151:LYS:NZ | 2.48 | 0.46 |
| 1:5:1198:G:N2 | 1:5:1199:G:C6 | 2.84 | 0.46 |
| 1:5:1596:U:O2’ | 19:P:135:ARG:NH2 | 2.31 | 0.46 |
| 1:5:4751:G:H1 | 1:5:4948:C:H5 | 1.62 | 0.46 |
| 4:9:1447:G:O5’ | 66:UU:87:ARG:NH2 | 2.47 | 0.46 |
| 4:9:1622:U:OP1 | 64:SS:120:HIS:ND1 | 2.40 | 0.46 |
| 4:9:1737:G:H2’ | 4:9:1738:C:C6 | 2.51 | 0.46 |
| 29:Z:9:LYS:HB2 | 29:Z:25:ILE:HD12 | 1.97 | 0.46 |
| 1:5:4760:G:H2’ | 1:5:4761:G:O4’ | 2.16 | 0.46 |
| 4:9:17:C:H2’ | 4:9:18:C:C6 | 2.51 | 0.46 |
| 4:9:616:A:OP1 | 69:XX:68:LYS:NZ | 2.47 | 0.46 |
| 4:9:804:U:H2’ | 4:9:805:U:H6 | 1.81 | 0.46 |
| 4:9:1863:A:H1’ | 72:aa:79:ILE:HD13 | 1.97 | 0.46 |
| 51:FF:136:ARG:CZ | 81:11:32:C:H4’ | 2.46 | 0.46 |
| 80:12:9:A:N6 | 80:12:22:G:N7 | 2.63 | 0.46 |
| 81:13:47:U:H3’ | 81:13:48:C:H5’ | 1.98 | 0.46 |
| 81:11:48:C:C4 | 81:11:59:A:C8 | 3.03 | 0.46 |
| 1:5:664:G:H2’ | 1:5:665:C:C6 | 2.51 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:2089:G:O2' | 7:C:307:LYS:NZ | 2.36 | 0.46 |
| 1:5:3859:G:OP2 | 19:P:25:HIS:HE1 | 1.99 | 0.46 |
| 4:9:1397:U:O2 | 4:9:1397:U:H2' | 2.16 | 0.46 |
| 55:JJ:58:ARG:O | 55:JJ:62:THR:HG23 | 2.16 | 0.46 |
| 80:12:50:U:O2' | 83:jj:510:GLN:OE1 | 2.34 | 0.46 |
| 1:5:982:U:O2 | 1:5:1273:G:N2 | 2.25 | 0.45 |
| 4:9:1004:U:H2' | 4:9:1005:G:H8 | 1.81 | 0.45 |
| 50:EE:45:ILE:HD12 | 50:EE:80:ILE:HD12 | 1.98 | 0.45 |
| 63:RR:36:GLU:OE2 | 63:RR:47:ARG:NH1 | 2.42 | 0.45 |
| 1:5:164:G:H2' | 1:5:165:A:C8 | 2.51 | 0.45 |
| 1:5:1298:C:H2' | 1:5:1299:G:C8 | 2.51 | 0.45 |
| 1:5:1577:G:O5' | 5:A:181:LYS:NZ | 2.49 | 0.45 |
| 4:9:633:C:H1' | 76:ee:89:THR:HG21 | 1.97 | 0.45 |
| 4:9:1169:G:OP1 | 42:n:6:ARG:NH2 | 2.48 | 0.45 |
| 6:B:288:GLY:HA3 | 6:B:330:PHE:CZ | 2.52 | 0.45 |
| 11:H:16:VAL:HG21 | 11:H:81:ILE:HG23 | 1.97 | 0.45 |
| 35:f:88:PHE:CE1 | 35:f:92:LEU:HD11 | 2.50 | 0.45 |
| 49:DD:57:ASN:O | 49:DD:65:ARG:NH1 | 2.45 | 0.45 |
| 1:5:1406:G:H2' | 1:5:1406(A):G:C8 | 2.51 | 0.45 |
| 1:5:2864:A:H2' | 1:5:2865:U:H6 | 1.81 | 0.45 |
| 1:5:3652:A:H2' | 1:5:3653:A:C5 | 2.51 | 0.45 |
| 1:5:3827:G:O2' | 1:5:3829:G:OP2 | 2.30 | 0.45 |
| 4:9:74:G:O6 | 52:GG:159:ARG:NH2 | 2.48 | 0.45 |
| 4:9:145:G:C5 | 4:9:175:A:C2 | 3.03 | 0.45 |
| 4:9:626:G:H3' | 4:9:627:U:C5' | 2.47 | 0.45 |
| 4:9:989:C:OP2 | 47:BB:155:TYR:OH | 2.33 | 0.45 |
| 4:9:1088:U:H4' | 4:9:1089:G:OP2 | 2.17 | 0.45 |
| 4:9:1119:A:H2' | 4:9:1120:U:H6 | 1.80 | 0.45 |
| 24:U:42:PHE:CZ | 24:U:46:ARG:HG3 | 2.51 | 0.45 |
| 46:AA:2:SER:O | 46:AA:8:LEU:HB2 | 2.17 | 0.45 |
| 54:II:34:ALA:HB2 | 54:II:56:ARG:HD2 | 1.98 | 0.45 |
| 78:gg:36:ARG:C | 78:gg:38:LYS:H | 2.24 | 0.45 |
| 1:5:638:G:H2' | 1:5:639:U:C6 | 2.51 | 0.45 |
| 1:5:1421:G:OP1 | 20:Q:68:ARG:NH2 | 2.45 | 0.45 |
| 6:B:89:ILE:HD11 | 6:B:150:PHE:CE1 | 2.52 | 0.45 |
| 48:CC:191:VAL:HG11 | 48:CC:236:PHE:HA | 1.98 | 0.45 |
| 81:11:4:C:H2' | 81:11:5:A:C8 | 2.52 | 0.45 |
| 4:9:536:A:N6 | 4:9:547:G:H22 | 2.11 | 0.45 |
| 4:9:880:G:C6 | 4:9:907:G:C6 | 3.04 | 0.45 |
| 4:9:1863:A:OP2 | 72:aa:4:LYS:NZ | 2.42 | 0.45 |
| 5:A:180:LEU:HD23 | 5:A:180:LEU:HA | 1.84 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 17:N:84:PRO:HA | 17:N:87:HIS:NE2 | 2.31 | 0.45 |
| 53:HH:37:LYS:O | 53:HH:41:ARG:HB2 | 2.16 | 0.45 |
| 81:11:15:A:H61 | 81:11:21:A:H2 | 1.64 | 0.45 |
| 1:5:1411(B):C:H2' | 1:5:1411(C):C:C6 | 2.51 | 0.45 |
| 1:5:2833:A:OP2 | 33:d:44:ARG:NH2 | 2.41 | 0.45 |
| 1:5:2869:U:O2' | 1:5:2881:A:N7 | 2.48 | 0.45 |
| 1:5:4413:C:H5 | 1:5:4429:C:H42 | 1.64 | 0.45 |
| 1:5:4761:G:H2' | 1:5:4762:A:C8 | 2.52 | 0.45 |
| 4:9:1004:U:H2' | 4:9:1005:G:C8 | 2.51 | 0.45 |
| 4:9:1240:A:H8 | 4:9:1267:C:O2' | 2.00 | 0.45 |
| 36:g:15:THR:HG22 | 36:g:16:ALA:N | 2.31 | 0.45 |
| 81:11:48:C:H6 | 81:11:48:C:O5' | 1.99 | 0.45 |
| 1:5:223:G:H4' | 1:5:225:G:N7 | 2.32 | 0.45 |
| 1:5:2579:G:N2 | 1:5:2582:A:OP2 | 2.33 | 0.45 |
| 1:5:3642:A:C4 | 82:j:3:LYS:HB3 | 2.51 | 0.45 |
| 1:5:3788:C:N4 | 1:5:3812:C:OP2 | 2.41 | 0.45 |
| 3:8:150:C:N4 | 10:G:105:THR:O | 2.49 | 0.45 |
| 4:9:145:G:H2' | 4:9:146:G:C8 | 2.50 | 0.45 |
| 4:9:1229:G:H2' | 4:9:1230:C:O4' | 2.17 | 0.45 |
| 4:9:1839:U:H2' | 4:9:1840:U:C6 | 2.52 | 0.45 |
| 8:D:37:VAL:HG12 | 8:D:50:ARG:HD2 | 1.99 | 0.45 |
| 64:SS:86:ARG:NH2 | 64:SS:89:ASP:OD1 | 2.35 | 0.45 |
| 83:jj:162:ARG:HB3 | 83:jj:251:ILE:HD11 | 1.99 | 0.45 |
| 1:5:1314:C:C2 | 1:5:1315:C:C5 | 3.05 | 0.45 |
| 1:5:2065:G:H2' | 1:5:2066:C:O4' | 2.17 | 0.45 |
| 1:5:2671:C:H2' | 1:5:2672:C:C6 | 2.52 | 0.45 |
| 1:5:2837:U:OP1 | 6:B:249:ARG:NH1 | 2.46 | 0.45 |
| 1:5:3682:A:H5" | 5:A:132:ASN:OD1 | 2.16 | 0.45 |
| 1:5:3934:G:H2' | 1:5:3935:C:C6 | 2.52 | 0.45 |
| 4:9:153:G:C2 | 4:9:154:U:C4 | 3.05 | 0.45 |
| 4:9:1611:G:OP2 | 64:SS:121:ARG:NH2 | 2.32 | 0.45 |
| 17:N:80:THR:HB | 17:N:87:HIS:CB | 2.47 | 0.45 |
| 26:W:101:ARG:NH2 | 52:GG:145:PHE:O | 2.49 | 0.45 |
| 58:MM:95:ASP:OD2 | 58:MM:101:ARG:NE | 2.36 | 0.45 |
| 1:5:127:G:H2' | 1:5:128:C:C6 | 2.52 | 0.45 |
| 1:5:510:U:H5" | 30:a:86:THR:HG22 | 1.99 | 0.45 |
| 1:5:653:C:H2' | 1:5:654:C:C6 | 2.51 | 0.45 |
| 1:5:3607:U:H2' | 1:5:3608:A:H8 | 1.81 | 0.45 |
| 1:5:4562:C:H2' | 1:5:4563:U:C6 | 2.52 | 0.45 |
| 4:9:106:C:H2' | 4:9:107:A:C8 | 2.52 | 0.45 |
| 4:9:1284:A:H5' | 4:9:1286:G:H5' | 1.99 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 32:c:20:LEU:HD23 | 32:c:102:SER:HA | 1.99 | 0.45 |
| 62:QQ:53:GLU:OE1 | 62:QQ:85:ARG:NH1 | 2.46 | 0.45 |
| 65:TT:75:MET:HA | 65:TT:78:ILE:HG22 | 1.99 | 0.45 |
| 80:12:54:U:H5" | 80:12:55:U:OP2 | 2.17 | 0.45 |
| 1:5:717:U:H2' | 1:5:718:C:C6 | 2.52 | 0.45 |
| 1:5:2566:G:H2' | 1:5:2567:G:H8 | 1.80 | 0.45 |
| 1:5:3607:U:H2' | 1:5:3608:A:C8 | 2.52 | 0.45 |
| 1:5:3625:G:O2' | 1:5:3626:G:OP1 | 2.33 | 0.45 |
| 1:5:4127:A:N3 | 1:5:4128:A:C8 | 2.85 | 0.45 |
| 1:5:4737:G:H2' | 1:5:4738:C:H6 | 1.79 | 0.45 |
| 4:9:96:C:H2' | 4:9:97:U:C6 | 2.52 | 0.45 |
| 1:5:175:C:H2' | 1:5:176:G:C8 | 2.53 | 0.44 |
| 1:5:1210:C:H42 | 14:K:65:ARG:NH2 | 2.14 | 0.44 |
| 1:5:1236:C:H2' | 1:5:1238:A:C8 | 2.52 | 0.44 |
| 1:5:2683:C:H2' | 1:5:2684:C:C6 | 2.52 | 0.44 |
| 4:9:996:A:H2' | 4:9:997:A:C8 | 2.52 | 0.44 |
| 14:K:148:SER:HA | 14:K:244:ARG:NH2 | 2.31 | 0.44 |
| 64:SS:24:ARG:HB2 | 64:SS:29:ALA:HB2 | 1.98 | 0.44 |
| 81:11:23:C:H2' | 81:11:24:G:H8 | 1.81 | 0.44 |
| 81:11:62:C:H2' | 81:11:63:A:H8 | 1.82 | 0.44 |
| 83:jj:130:ASP:CG | 83:jj:152:ARG:HE | 2.25 | 0.44 |
| 1:5:1786:A:H2' | 1:5:1789:C:C5 | 2.51 | 0.44 |
| 1:5:4130:C:H2' | 1:5:4131:G:C8 | 2.53 | 0.44 |
| 4:9:1776:G:H2' | 4:9:1777:G:C8 | 2.53 | 0.44 |
| 10:G:111:PRO:HD2 | 10:G:114:ILE:HD12 | 1.99 | 0.44 |
| 69:XX:68:LYS:HG2 | 76:ee:82:VAL:HG22 | 1.98 | 0.44 |
| 1:5:2899:C:H2' | 1:5:2900:U:C6 | 2.52 | 0.44 |
| 1:5:4629:U:C2 | 1:5:4630:G:C8 | 3.06 | 0.44 |
| 2:7:62:U:OP2 | 8:D:276:LYS:NZ | 2.45 | 0.44 |
| 4:9:928:G:H1 | 4:9:1013:U:H3 | 1.65 | 0.44 |
| 4:9:1070:A:H2' | 4:9:1071:G:O4' | 2.17 | 0.44 |
| 41:m:51:ILE:CG2 | 41:m:52:ILE:H | 2.26 | 0.44 |
| 73:bb:42:LYS:HD2 | 73:bb:57:VAL:HG11 | 1.99 | 0.44 |
| 81:13:74:C:O2' | 81:13:75:C:OP1 | 2.30 | 0.44 |
| 4:9:17:C:O2' | 4:9:1194:A:N1 | 2.45 | 0.44 |
| 4:9:381:C:H2' | 4:9:382:C:C6 | 2.52 | 0.44 |
| 4:9:1217:A:H2' | 4:9:1218:C:C6 | 2.53 | 0.44 |
| 4:9:1679:A:OP1 | 51:FF:60:ARG:NH2 | 2.46 | 0.44 |
| 7:C:29:LYS:HB2 | 7:C:267:TRP:HH2 | 1.81 | 0.44 |
| 51:FF:127:ARG:NH1 | 51:FF:128:ILE:O | 2.50 | 0.44 |
| 60:OO:43:HIS:CD2 | 60:OO:52:THR:HG1 | 2.31 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:1662:C:H2' | 1:5:1663:C:C6 | 2.52 | 0.44 |
| 1:5:2429:A:H5" | 40:l:43:HIS:NE2 | 2.33 | 0.44 |
| 3:8:144:U:H2' | 3:8:145:C:C6 | 2.53 | 0.44 |
| 4:9:122:G:OP1 | 50:EE:75:LYS:NZ | 2.35 | 0.44 |
| 10:G:230:MET:HE2 | 10:G:230:MET:HA | 2.00 | 0.44 |
| 25:V:43:LYS:HE2 | 25:V:62:MET:SD | 2.58 | 0.44 |
| 51:FF:51:HIS:O | 62:QQ:50:LYS:HE3 | 2.17 | 0.44 |
| 53:HH:69:LEU:HD22 | 53:HH:96:ALA:HB2 | 2.00 | 0.44 |
| 78:gg:192:THR:OG1 | 78:gg:213:ASP:OD2 | 2.21 | 0.44 |
| 1:5:1727:U:OP1 | 14:K:130:ASN:ND2 | 2.50 | 0.44 |
| 1:5:2100:G:O2' | 1:5:2101:A:OP2 | 2.33 | 0.44 |
| 1:5:2340:C:H5' | 7:C:42:THR:HG21 | 1.99 | 0.44 |
| 1:5:2730:U:H2' | 1:5:2731:C:C6 | 2.52 | 0.44 |
| 1:5:2874:U:O2 | 44:p:19:GLY:HA2 | 2.17 | 0.44 |
| 1:5:4173:G:H2' | 1:5:4174:U:C6 | 2.53 | 0.44 |
| 4:9:349:A:H2' | 4:9:350:C:C6 | 2.53 | 0.44 |
| 4:9:735:C:H2' | 4:9:736:C:C6 | 2.52 | 0.44 |
| 4:9:920:A:H4' | 68:WW:57:ARG:HG2 | 2.00 | 0.44 |
| 4:9:955:A:N3 | 4:9:956:G:H1' | 2.33 | 0.44 |
| 4:9:1822:A:H2' | 4:9:1823:A:H5" | 1.99 | 0.44 |
| 18:O:157:GLU:OE1 | 18:O:160:ARG:NH1 | 2.51 | 0.44 |
| 52:GG:148:SER:N | 52:GG:151:ASP:OD2 | 2.33 | 0.44 |
| 58:MM:36:ARG:HA | 58:MM:36:ARG:HD2 | 1.79 | 0.44 |
| 1:5:478:G:H2' | 1:5:479:G:C8 | 2.51 | 0.44 |
| 1:5:727:C:OP1 | 14:K:65:ARG:NH2 | 2.42 | 0.44 |
| 1:5:1772:C:H5" | 1:5:1773:U:OP2 | 2.17 | 0.44 |
| 1:5:1893:C:H1' | 1:5:1937:C:O2 | 2.17 | 0.44 |
| 1:5:3725:G:N2 | 1:5:3728:A:OP2 | 2.40 | 0.44 |
| 1:5:4740:G:N2 | 1:5:4960:G:C5 | 2.86 | 0.44 |
| 1:5:4944:C:OP1 | 1:5:4944:C:H4' | 2.17 | 0.44 |
| 4:9:1117:C:O2 | 4:9:1117:C:H2' | 2.18 | 0.44 |
| 4:9:1597:C:H4' | 4:9:1603:G:C6 | 2.53 | 0.44 |
| 1:5:2495:U:H2' | 1:5:2496:G:H8 | 1.83 | 0.44 |
| 4:9:346:C:H5" | 4:9:347:G:OP2 | 2.18 | 0.44 |
| 4:9:878:G:H2' | 4:9:879:C:H6 | 1.82 | 0.44 |
| 4:9:910:G:H2' | 4:9:911:C:C6 | 2.53 | 0.44 |
| 4:9:1454:A:H2 | 4:9:1476:A:H1' | 1.83 | 0.44 |
| 4:9:1670:C:H2' | 4:9:1671:G:C8 | 2.53 | 0.44 |
| 30:a:103:VAL:CG1 | 30:a:108:TYR:HB2 | 2.48 | 0.44 |
| 48:CC:272:HIS:NE2 | 48:CC:276:THR:HG21 | 2.32 | 0.44 |
| 81:11:62:C:H2' | 81:11:63:A:C8 | 2.53 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:231:U:H4' | 28:Y:100:HIS:CD2 | 2.53 | 0.44 |
| 1:5:1245:C:N4 | 1:5:1246:G:O6 | 2.51 | 0.44 |
| 1:5:4293:U:O4 | 1:5:4329:G:H8 | 2.01 | 0.44 |
| 1:5:4508:C:H5" | 25:V:43:LYS:HD3 | 2.00 | 0.44 |
| 2:7:23:A:N3 | 2:7:118:C:O2' | 2.40 | 0.44 |
| 4:9:407:G:H2' | 4:9:407:G:N3 | 2.32 | 0.44 |
| 16:M:91:TRP:HA | 16:M:94:LYS:HE3 | 1.99 | 0.44 |
| 30:a:59:ARG:HH11 | 30:a:59:ARG:HG3 | 1.83 | 0.44 |
| 38:i:45:ARG:NH1 | 38:i:49:GLY:O | 2.49 | 0.44 |
| 80:12:62:A:H2' | 80:12:63:C:C6 | 2.53 | 0.44 |
| 81:11:12:C:H2' | 81:11:13:G:H8 | 1.83 | 0.44 |
| 83:jj:499:LEU:HD11 | 83:jj:567:VAL:HG13 | 1.99 | 0.44 |
| 83:jj:501:HIS:CG | 83:jj:502:PRO:HD2 | 2.53 | 0.44 |
| 83:jj:561:GLU:HB3 | 83:jj:565:LYS:HG3 | 1.99 | 0.44 |
| 1:5:1346:C:H2' | 1:5:1347:G:H8 | 1.83 | 0.43 |
| 1:5:2632:U:H2' | 1:5:2633:U:C6 | 2.53 | 0.43 |
| 1:5:3732:A:H2' | 1:5:3733:A:C8 | 2.53 | 0.43 |
| 4:9:216:C:C4 | 4:9:217:A:N7 | 2.86 | 0.43 |
| 17:N:94:PHE:CE2 | 17:N:96:ARG:HB2 | 2.53 | 0.43 |
| 30:a:79:TRP:CE3 | 30:a:87:ARG:HG2 | 2.53 | 0.43 |
| 54:II:60:LEU:HD23 | 54:II:185:ALA:HB2 | 2.00 | 0.43 |
| 60:OO:21:VAL:HG22 | 60:OO:25:GLU:HB3 | 2.00 | 0.43 |
| 80:12:15:G:H2' | 80:12:16:U:C6 | 2.53 | 0.43 |
| 81:11:65:C:H2' | 81:11:66:C:C6 | 2.53 | 0.43 |
| 83:jj:403:TYR:N | 83:jj:411:VAL:O | 2.40 | 0.43 |
| 1:5:129:C:H2' | 1:5:130:C:C6 | 2.53 | 0.43 |
| 1:5:270:U:H2' | 1:5:271:C:C6 | 2.53 | 0.43 |
| 1:5:940:C:OP1 | 14:K:241:ARG:NH2 | 2.49 | 0.43 |
| 1:5:1372:A:OP1 | 17:N:202:ARG:NH2 | 2.48 | 0.43 |
| 1:5:2342:G:OP2 | 30:a:2:PRO:HA | 2.19 | 0.43 |
| 1:5:5016:A:H5" | 1:5:5017:G:OP2 | 2.17 | 0.43 |
| 4:9:312:G:OP2 | 52:GG:195:LYS:NZ | 2.38 | 0.43 |
| 4:9:1260:A:C2 | 4:9:1620:A:C8 | 3.06 | 0.43 |
| 13:J:119:TYR:CE1 | 64:SS:12:ILE:HD12 | 2.53 | 0.43 |
| 1:5:2275:G:H2' | 1:5:2276:A:H8 | 1.82 | 0.43 |
| 1:5:4472:G:O2' | 41:m:74:TYR:O | 2.30 | 0.43 |
| 1:5:4524:G:N3 | 6:B:252:ALA:HB1 | 2.33 | 0.43 |
| 81:11:9:U:H5' | 81:11:49:G:H5' | 2.01 | 0.43 |
| 1:5:52:G:H4' | 1:5:1529:G:H4' | 1.99 | 0.43 |
| 1:5:1069:G:H5" | 1:5:1070:G:OP2 | 2.18 | 0.43 |
| 4:9:352:U:H2' | 4:9:353:C:C6 | 2.53 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:9:561:A:H2' | 4:9:562:U:C6 | 2.53 | 0.43 |
| 4:9:916:A:C5 | 59:NN:73:ARG:HD3 | 2.53 | 0.43 |
| 4:9:1323:U:H2' | 4:9:1324:G:C8 | 2.52 | 0.43 |
| 4:9:1390:U:H2' | 4:9:1391:C:C6 | 2.53 | 0.43 |
| 4:9:1536:G:H2' | 4:9:1537:A:C8 | 2.53 | 0.43 |
| 19:P:128:ARG:HD2 | 19:P:136:ILE:HG21 | 2.01 | 0.43 |
| 29:Z:77:TYR:CZ | 32:c:39:ARG:HG3 | 2.54 | 0.43 |
| 65:TT:11:GLN:OE1 | 65:TT:62:ARG:NH1 | 2.41 | 0.43 |
| 83:jj:64:LYS:NZ | 83:jj:107:GLY:O | 2.46 | 0.43 |
| 1:5:6:C:H2' | 1:5:7:C:C6 | 2.53 | 0.43 |
| 1:5:1484:G:N3 | 1:5:1484:G:H2' | 2.33 | 0.43 |
| 1:5:1501:C:C6 | 20:Q:68:ARG:HD2 | 2.54 | 0.43 |
| 1:5:1851:G:H4' | 1:5:2283:G:H5' | 2.00 | 0.43 |
| 1:5:2258:C:H5' | 1:5:2258:C:C6 | 2.54 | 0.43 |
| 1:5:4488:A:H4' | 1:5:4489:G:H8 | 1.83 | 0.43 |
| 3:8:153:C:OP1 | 10:G:238:LYS:NZ | 2.44 | 0.43 |
| 4:9:379:C:H5' | 54:II:33:ALA:HA | 1.99 | 0.43 |
| 4:9:1513:C:H2' | 4:9:1514:G:H8 | 1.83 | 0.43 |
| 4:9:1630:A:H5" | 64:SS:37:GLY:H | 1.83 | 0.43 |
| 4:9:1797:U:H2' | 4:9:1798:C:C6 | 2.53 | 0.43 |
| 10:G:156:ARG:HH21 | 10:G:248:HIS:CE1 | 2.36 | 0.43 |
| 11:H:41:ILE:HG22 | 11:H:43:VAL:HG13 | 2.01 | 0.43 |
| 43:o:44:LYS:HE3 | 43:o:52:THR:HB | 2.01 | 0.43 |
| 52:GG:34:THR:O | 52:GG:52:ILE:HG22 | 2.19 | 0.43 |
| 57:LL:48:LYS:NZ | 57:LL:52:GLU:OE1 | 2.42 | 0.43 |
| 81:11:29:G:C6 | 81:11:42:A:C6 | 3.07 | 0.43 |
| 1:5:966:A:H5' | 1:5:967:C:H2' | 2.01 | 0.43 |
| 1:5:1202:C:H2' | 1:5:1203:G:H8 | 1.84 | 0.43 |
| 1:5:3968:U:HO2' | 1:5:3969:G:P | 2.41 | 0.43 |
| 1:5:5047:C:O2' | 1:5:5050:C:OP2 | 2.28 | 0.43 |
| 4:9:1617:G:H4' | 75:dd:14:PHE:CZ | 2.53 | 0.43 |
| 4:9:1731:A:H2' | 4:9:1732:G:C8 | 2.53 | 0.43 |
| 12:I:91:LEU:HD12 | 12:I:135:ILE:HG23 | 2.01 | 0.43 |
| 37:h:4:ILE:HD12 | 37:h:53:SER:HB2 | 2.00 | 0.43 |
| 46:AA:15:VAL:HG21 | 63:RR:111:PHE:CD2 | 2.54 | 0.43 |
| 58:MM:86:GLY:HA3 | 58:MM:104:VAL:O | 2.17 | 0.43 |
| 64:SS:15:VAL:HG12 | 64:SS:16:LEU:HG | 2.00 | 0.43 |
| 78:gg:196:ASN:HD21 | 78:gg:235:ILE:HD11 | 1.83 | 0.43 |
| 81:11:47:U:H3' | 81:11:48:C:H5' | 1.99 | 0.43 |
| 1:5:120:A:H2' | 1:5:149:A:N6 | 2.32 | 0.43 |
| 1:5:665:C:H5" | 1:5:666:G:O5' | 2.18 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:679:C:H2' | 1:5:680:G:H8 | 1.82 | 0.43 |
| 1:5:742:G:C6 | 1:5:922(A):G:C6 | 3.07 | 0.43 |
| 1:5:935:A:N3 | 16:M:44:ARG:HA | 2.34 | 0.43 |
| 1:5:1502:G:H5" | 1:5:1502:G:C8 | 2.54 | 0.43 |
| 1:5:4751:G:H22 | 1:5:4948:C:H5 | 1.66 | 0.43 |
| 4:9:562:U:H2' | 4:9:563:G:C8 | 2.54 | 0.43 |
| 4:9:908:A:H2' | 4:9:909:G:O4' | 2.18 | 0.43 |
| 53:HH:64:VAL:HG13 | 53:HH:65:PRO:HD2 | 2.00 | 0.43 |
| 57:LL:101:ARG:NH1 | 69:XX:5:ARG:O | 2.51 | 0.43 |
| 81:13:12:C:H2' | 81:13:13:G:C8 | 2.53 | 0.43 |
| 81:11:5:A:H2' | 81:11:6:G:C8 | 2.54 | 0.43 |
| 1:5:2095:A:H2' | 1:5:2096:G:C8 | 2.54 | 0.43 |
| 1:5:2519:U:C2 | 1:5:2520:C:C5 | 3.07 | 0.43 |
| 1:5:3723:A:H2' | 1:5:3724:A:C8 | 2.53 | 0.43 |
| 1:5:5041:G:OP2 | 26:W:61:LYS:NZ | 2.45 | 0.43 |
| 4:9:1667:U:H2' | 4:9:1668:U:C6 | 2.53 | 0.43 |
| 29:Z:115:LYS:NZ | 29:Z:119:GLU:OE2 | 2.50 | 0.43 |
| 44:p:13:LYS:HE3 | 44:p:14:TYR:CZ | 2.53 | 0.43 |
| 47:BB:126:ASP:OD1 | 47:BB:136:ARG:HD3 | 2.19 | 0.43 |
| 51:FF:122:ARG:HA | 51:FF:146:ARG:HD3 | 1.99 | 0.43 |
| 80:12:63:C:H2' | 80:12:64:A:C8 | 2.54 | 0.43 |
| 83:jj:133:LEU:HA | 83:jj:147:TYR:CD1 | 2.54 | 0.43 |
| 1:5:1302:U:C5 | 1:5:1303:A:C6 | 3.06 | 0.43 |
| 1:5:1320:U:O2' | 1:5:1891:A:N1 | 2.43 | 0.43 |
| 1:5:1468:C:H2' | 1:5:1469:C:H6 | 1.84 | 0.43 |
| 1:5:1973:G:H2' | 1:5:1974:U:C6 | 2.54 | 0.43 |
| 1:5:3710:G:H1' | 1:5:3712:A:H61 | 1.79 | 0.43 |
| 1:5:4088:C:H2' | 1:5:4089:G:C8 | 2.54 | 0.43 |
| 1:5:4088:C:H2' | 1:5:4089:G:H8 | 1.84 | 0.43 |
| 4:9:181:A:H5" | 4:9:182:C:OP2 | 2.19 | 0.43 |
| 4:9:1113:A:H2' | 4:9:1114:U:C6 | 2.54 | 0.43 |
| 4:9:1624:U:H2' | 4:9:1625:U:C6 | 2.54 | 0.43 |
| 52:GG:7:PHE:CZ | 52:GG:9:ALA:HB3 | 2.54 | 0.43 |
| 77:ff:125:GLU:O | 77:ff:143:LYS:NZ | 2.28 | 0.43 |
| 1:5:67:C:OP2 | 1:5:312:G:N2 | 2.52 | 0.43 |
| 1:5:217:C:H6 | 1:5:217:C:H2' | 1.72 | 0.43 |
| 1:5:484:U:O2' | 1:5:485:C:OP1 | 2.29 | 0.43 |
| 1:5:4458:C:H2' | 1:5:4459:U:C6 | 2.53 | 0.43 |
| 4:9:523:A:P | 55:JJ:127:ARG:HH21 | 2.41 | 0.43 |
| 4:9:1101:U:H2' | 4:9:1102:G:H8 | 1.81 | 0.43 |
| 4:9:1531:A:H2' | 4:9:1532:C:C6 | 2.54 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 9:E:185:ASN:ND2 | 9:E:274:LEU:O | 2.51 | 0.43 |
| 19:P:29:THR:HA | 19:P:32:THR:HG22 | 2.00 | 0.43 |
| 34:e:35:TRP:CE2 | 34:e:56:PRO:HD2 | 2.54 | 0.43 |
| 43:o:72:CYS:HB3 | 43:o:77:CYS:O | 2.19 | 0.43 |
| 80:12:19:G:O3' | 80:12:20:G:N2 | 2.52 | 0.43 |
| 1:5:975:C:H2' | 1:5:976:G:C8 | 2.53 | 0.42 |
| 1:5:1088:C:H2' | 1:5:1089:G:C8 | 2.53 | 0.42 |
| 1:5:1455:G:H2' | 1:5:1456:C:C6 | 2.54 | 0.42 |
| 1:5:3653:A:H4' | 5:A:179:ILE:O | 2.18 | 0.42 |
| 1:5:4978:G:H2' | 1:5:4979:A:H5" | 2.01 | 0.42 |
| 3:8:9:A:H2' | 3:8:10:G:H8 | 1.83 | 0.42 |
| 4:9:65:C:C5 | 52:GG:133:LEU:HD13 | 2.54 | 0.42 |
| 4:9:1246:A:O2' | 66:UU:72:GLU:OE2 | 2.31 | 0.42 |
| 34:e:89:LEU:HD13 | 34:e:118:LEU:HD22 | 2.01 | 0.42 |
| 57:LL:17:PHE:CZ | 57:LL:19:ASN:HB2 | 2.53 | 0.42 |
| 58:MM:52:LEU:O | 58:MM:79:VAL:N | 2.45 | 0.42 |
| 80:12:76:A:OP1 | 83:jj:449:ARG:NH2 | 2.44 | 0.42 |
| 1:5:63:G:P | 17:N:169:ARG:HH22 | 2.42 | 0.42 |
| 1:5:99:A:H2' | 1:5:100:C:O2 | 2.19 | 0.42 |
| 1:5:1766:A:O2' | 1:5:1767:A:P | 2.77 | 0.42 |
| 1:5:1846:G:H2' | 1:5:1847:C:C6 | 2.54 | 0.42 |
| 1:5:4048:A:O2' | 1:5:4049:U:OP2 | 2.35 | 0.42 |
| 4:9:533:A:C6 | 4:9:552:G:C6 | 3.07 | 0.42 |
| 4:9:1566:G:O3' | 4:9:1567:G:N2 | 2.52 | 0.42 |
| 7:C:293:LEU:HD22 | 20:Q:34:PHE:CD2 | 2.54 | 0.42 |
| 17:N:51:LEU:HD11 | 17:N:119:TYR:HB3 | 2.01 | 0.42 |
| 23:T:28:ALA:HA | 23:T:31:MET:HG2 | 2.01 | 0.42 |
| 52:GG:127:THR:HG22 | 52:GG:128:THR:N | 2.34 | 0.42 |
| 69:XX:63:ASN:ND2 | 69:XX:114:ASP:OD1 | 2.45 | 0.42 |
| 82:j:27:TYR:HA | 82:j:34:CYS:HA | 2.01 | 0.42 |
| 1:5:40:G:N2 | 1:5:4380:A:H62 | 2.17 | 0.42 |
| 1:5:1836:G:H4' | 1:5:1837:A:O5' | 2.19 | 0.42 |
| 1:5:1975:G:N2 | 1:5:1983:A:OP1 | 2.37 | 0.42 |
| 1:5:2475:G:C2 | 27:X:50:LYS:HE2 | 2.54 | 0.42 |
| 1:5:3611:A:H2 | 1:5:5016:A:C8 | 2.37 | 0.42 |
| 4:9:28:U:H2' | 4:9:29:G:H8 | 1.85 | 0.42 |
| 4:9:217:A:C6 | 4:9:218:U:C5 | 3.07 | 0.42 |
| 4:9:1397:U:C6 | 4:9:1442:U:H4' | 2.55 | 0.42 |
| 4:9:1567:G:P | 4:9:1567:G:H21 | 2.41 | 0.42 |
| 4:9:1776:G:C2 | 4:9:1777:G:C5 | 3.07 | 0.42 |
| 8:D:37:VAL:HG12 | 8:D:50:ARG:CD | 2.49 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 22:S:173:ASN:ND2 | 22:S:175:PHE:O | 2.49 | 0.42 |
| 25:V:87:SER:HA | 25:V:97:TYR:HB3 | 2.01 | 0.42 |
| 39:k:17:ARG:NH1 | 39:k:19:ASP:OD1 | 2.51 | 0.42 |
| 70:YY:29:HIS:O | 70:YY:29:HIS:CG | 2.73 | 0.42 |
| 1:5:1344:C:H2' | 1:5:1345:A:H8 | 1.84 | 0.42 |
| 1:5:2517:A:N3 | 1:5:2539:C:O2' | 2.51 | 0.42 |
| 1:5:2638:G:H22 | 1:5:2697:A:N6 | 2.16 | 0.42 |
| 1:5:4636:U:O4 | 33:d:78:ARG:NE | 2.52 | 0.42 |
| 1:5:4674:C:H2' | 1:5:4675:U:C6 | 2.55 | 0.42 |
| 1:5:4759:C:H2' | 1:5:4760:G:C8 | 2.55 | 0.42 |
| 4:9:563:G:C4 | 4:9:564:A:C8 | 3.07 | 0.42 |
| 4:9:1136:U:H2' | 4:9:1137:U:C6 | 2.55 | 0.42 |
| 4:9:1190:A:H2' | 4:9:1191:C:O4' | 2.19 | 0.42 |
| 4:9:1309:C:H2' | 4:9:1310:U:C6 | 2.55 | 0.42 |
| 4:9:1603:G:N3 | 4:9:1603:G:H5' | 2.34 | 0.42 |
| 17:N:193:ARG:O | 17:N:197:THR:HG23 | 2.19 | 0.42 |
| 51:FF:79:HIS:O | 51:FF:81:ARG:N | 2.52 | 0.42 |
| 1:5:956:A:C8 | 1:5:957:G:C8 | 3.05 | 0.42 |
| 1:5:1907:A:H4' | 14:K:222:LYS:HE3 | 2.00 | 0.42 |
| 1:5:2756:G:C6 | 1:5:2757:A:C6 | 3.08 | 0.42 |
| 1:5:2848:G:O2' | 1:5:3838:U:O4 | 2.28 | 0.42 |
| 1:5:3598:C:H2' | 1:5:3599:A:C8 | 2.55 | 0.42 |
| 1:5:3717:A:OP2 | 1:5:3735:G:N2 | 2.52 | 0.42 |
| 1:5:4573:G:H2' | 1:5:4574:U:C6 | 2.54 | 0.42 |
| 4:9:355:G:OP1 | 57:LL:105:ARG:NH1 | 2.46 | 0.42 |
| 4:9:1320:G:H2' | 4:9:1321:G:O4' | 2.19 | 0.42 |
| 4:9:1455:A:C2 | 4:9:1456:G:C8 | 3.07 | 0.42 |
| 51:FF:179:ASN:CB | 51:FF:187:SER:HB3 | 2.50 | 0.42 |
| 65:TT:39:LEU:HD23 | 65:TT:56:ARG:CZ | 2.50 | 0.42 |
| 78:gg:220:ASP:OD1 | 78:gg:222:ASN:N | 2.53 | 0.42 |
| 80:12:67:A:C6 | 80:12:68:U:C4 | 3.07 | 0.42 |
| 1:5:288:G:H2' | 1:5:289:C:C6 | 2.54 | 0.42 |
| 1:5:1353:G:N7 | 20:Q:104:ARG:NH2 | 2.65 | 0.42 |
| 1:5:4274:A:H2' | 1:5:4275:G:H8 | 1.83 | 0.42 |
| 4:9:380:G:O5' | 4:9:380:G:H8 | 2.03 | 0.42 |
| 4:9:871:U:OP1 | 57:LL:153:LYS:NZ | 2.45 | 0.42 |
| 4:9:1139:C:H5 | 4:9:1149:A:N6 | 2.18 | 0.42 |
| 20:Q:43:PHE:CD1 | 20:Q:133:GLY:HA3 | 2.54 | 0.42 |
| 50:EE:18:TRP:HH2 | 50:EE:31:PRO:HD3 | 1.84 | 0.42 |
| 1:5:2559:G:H2' | 1:5:2560:C:C6 | 2.55 | 0.42 |
| 1:5:2691:U:H2' | 1:5:2692:U:C6 | 2.54 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:3813:A:N3 | 1:5:4538:G:O2' | 2.47 | 0.42 |
| 4:9:581:U:H4' | 70:YY:66:GLY:HA3 | 2.01 | 0.42 |
| 4:9:1491:G:H2' | 4:9:1492:U:C6 | 2.55 | 0.42 |
| 4:9:1692:U:H2' | 4:9:1693:G:H8 | 1.84 | 0.42 |
| 49:DD:148:LYS:HG3 | 49:DD:149:SER:H | 1.85 | 0.42 |
| 65:TT:108:GLU:OE2 | 65:TT:115:LYS:NZ | 2.36 | 0.42 |
| 78:gg:174:VAL:HB | 78:gg:188:HIS:HB2 | 2.02 | 0.42 |
| 1:5:457:G:H2' | 1:5:458:C:H6 | 1.84 | 0.42 |
| 1:5:976:G:H21 | 7:C:323:ARG:HD3 | 1.83 | 0.42 |
| 1:5:1534:A:C4 | 82:j:13:ASN:O | 2.72 | 0.42 |
| 1:5:1727:U:H2' | 1:5:1728:U:H6 | 1.84 | 0.42 |
| 1:5:4524:G:C2 | 6:B:252:ALA:HB1 | 2.55 | 0.42 |
| 1:5:4761:G:H2' | 1:5:4762:A:H8 | 1.84 | 0.42 |
| 1:5:4897:G:C6 | 1:5:4924:C:N3 | 2.88 | 0.42 |
| 4:9:459:C:H2' | 4:9:460:A:C8 | 2.54 | 0.42 |
| 4:9:793:G:H2' | 4:9:794:A:H8 | 1.84 | 0.42 |
| 4:9:1144:A:H5' | 4:9:1355:C:N4 | 2.35 | 0.42 |
| 5:A:101:VAL:HG22 | 5:A:165:VAL:HG22 | 2.01 | 0.42 |
| 14:K:148:SER:HA | 14:K:244:ARG:HH22 | 1.84 | 0.42 |
| 25:V:111:GLU:OE2 | 25:V:131:ARG:NH1 | 2.45 | 0.42 |
| 65:TT:116:ASP:CG | 65:TT:117:GLN:H | 2.26 | 0.42 |
| 80:12:16:U:H4' | 80:12:17:U:O4 | 2.20 | 0.42 |
| 1:5:64:A:C4 | 1:5:109:G:N7 | 2.88 | 0.42 |
| 1:5:1238:A:HO2' | 1:5:1239:C:P | 2.37 | 0.42 |
| 1:5:1850:A:H2' | 1:5:1851:G:C8 | 2.55 | 0.42 |
| 1:5:1890:G:H22 | 1:5:1939:A:H61 | 1.68 | 0.42 |
| 4:9:549:C:H5" | 4:9:550:C:OP2 | 2.19 | 0.42 |
| 4:9:1411:G:C6 | 4:9:1431:G:C6 | 3.08 | 0.42 |
| 4:9:1630:A:C6 | 4:9:1631:U:C4 | 3.08 | 0.42 |
| 4:9:1656:G:C2 | 4:9:1657:G:C8 | 3.08 | 0.42 |
| 4:9:1700:C:C2 | 4:9:1834:A:N6 | 2.88 | 0.42 |
| 4:9:1784:G:C6 | 4:9:1785:C:C4 | 3.08 | 0.42 |
| 5:A:207:VAL:HG13 | 5:A:208:GLU:HG3 | 2.02 | 0.42 |
| 8:D:184:ASP:O | 8:D:188:LYS:N | 2.53 | 0.42 |
| 50:EE:54:TYR:OH | 50:EE:97:GLU:OE1 | 2.35 | 0.42 |
| 83:jj:92:GLU:CG | 83:jj:148:LEU:HD11 | 2.50 | 0.42 |
| 83:jj:102:ASP:OD1 | 83:jj:103:GLY:N | 2.53 | 0.42 |
| 83:jj:138:GLN:HE22 | 83:jj:142:GLY:HA2 | 1.85 | 0.42 |
| 83:jj:431:PRO:HA | 83:jj:436:ASN:O | 2.19 | 0.42 |
| 1:5:1460:C:H2' | 1:5:1461:C:C6 | 2.55 | 0.42 |
| 1:5:1670:G:H2' | 1:5:1855:G:H5" | 2.02 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:4488:A:H4' | 1:5:4489:G:C8 | 2.55 | 0.42 |
| 1:5:4884:G:H2' | 1:5:4885:U:O4' | 2.20 | 0.42 |
| 1:5:4938:A:OP1 | 9:E:186:ARG:NE | 2.40 | 0.42 |
| 4:9:67:C:C5 | 52:GG:162:LEU:HG | 2.54 | 0.42 |
| 4:9:793:G:H2' | 4:9:794:A:C8 | 2.54 | 0.42 |
| 4:9:1083:A:H4' | 4:9:1085:C:C4 | 2.55 | 0.42 |
| 6:B:35:ASP:HB3 | 6:B:186:ASN:CG | 2.45 | 0.42 |
| 19:P:94:MET:HE1 | 19:P:146:ILE:HB | 2.01 | 0.42 |
| 47:BB:181:LEU:HA | 47:BB:184:VAL:HG22 | 2.01 | 0.42 |
| 1:5:1211:G:O2' | 1:5:1212:G:OP1 | 2.32 | 0.41 |
| 1:5:1983:A:H1' | 1:5:2010:A:H4' | 2.02 | 0.41 |
| 1:5:2475:G:C6 | 27:X:50:LYS:HG3 | 2.55 | 0.41 |
| 3:8:46:G:O2' | 3:8:61:A:N1 | 2.52 | 0.41 |
| 4:9:634:A:H2' | 4:9:635:G:H8 | 1.84 | 0.41 |
| 4:9:1609:C:OP2 | 64:SS:132:ARG:HD3 | 2.20 | 0.41 |
| 7:C:5:ARG:NH1 | 7:C:24:LEU:O | 2.51 | 0.41 |
| 7:C:13:GLU:HG3 | 7:C:155:GLU:OE2 | 2.20 | 0.41 |
| 7:C:179:ASP:O | 7:C:183:VAL:HG23 | 2.20 | 0.41 |
| 47:BB:25:PHE:HA | 47:BB:28:LYS:HG2 | 2.02 | 0.41 |
| 47:BB:30:TRP:CE2 | 47:BB:48:LEU:HD13 | 2.55 | 0.41 |
| 81:11:65:C:H2' | 81:11:66:C:H6 | 1.85 | 0.41 |
| 83:jj:97:ILE:HD11 | 83:jj:120:VAL:HG21 | 2.02 | 0.41 |
| 1:5:2370:A:N7 | 33:d:39:LYS:NZ | 2.63 | 0.41 |
| 1:5:2502:A:H4' | 1:5:2503:G:OP1 | 2.20 | 0.41 |
| 1:5:2553:A:H1' | 1:5:2554:U:O4' | 2.20 | 0.41 |
| 1:5:5029:C:H2' | 1:5:5030:U:H6 | 1.83 | 0.41 |
| 4:9:1395:C:H1' | 4:9:1474:A:C5 | 2.55 | 0.41 |
| 4:9:1405:A:H2' | 4:9:1406:G:O4' | 2.20 | 0.41 |
| 5:A:117:GLU:HG2 | 5:A:124:GLY:N | 2.35 | 0.41 |
| 6:B:89:ILE:HD11 | 6:B:150:PHE:HE1 | 1.85 | 0.41 |
| 29:Z:5:MET:HG3 | 29:Z:77:TYR:HE2 | 1.85 | 0.41 |
| 45:r:84:LYS:HD3 | 45:r:88:ALA:HB1 | 2.02 | 0.41 |
| 46:AA:37:TYR:OH | 67:VV:66:ASP:OD2 | 2.30 | 0.41 |
| 47:BB:205:TYR:CD1 | 47:BB:206:PRO:HD2 | 2.54 | 0.41 |
| 60:OO:95:ILE:HB | 60:OO:129:ILE:HG23 | 2.02 | 0.41 |
| 69:XX:89:GLY:HA2 | 76:ee:82:VAL:HG12 | 2.03 | 0.41 |
| 78:gg:59:LEU:HD13 | 78:gg:90:TRP:CG | 2.55 | 0.41 |
| 80:12:39:U:H2' | 80:12:40:C:C6 | 2.55 | 0.41 |
| 83:jj:193:ARG:NH1 | 90:jj:700:GCP:O2A | 2.35 | 0.41 |
| 83:jj:420:LEU:HD11 | 83:jj:454:GLU:HB2 | 2.02 | 0.41 |
| 1:5:516:C:H2' | 1:5:517:C:C6 | 2.55 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:1554:A:OP2 | 44:p:4:ARG:NH1 | 2.40 | 0.41 |
| 1:5:2099:C:H4' | 1:5:2100:G:OP2 | 2.19 | 0.41 |
| 1:5:4247:G:H5' | 8:D:4:VAL:HG21 | 2.01 | 0.41 |
| 1:5:4517:A:N7 | 6:B:2:SER:N | 2.67 | 0.41 |
| 1:5:4887:C:H2' | 1:5:4888:C:C6 | 2.54 | 0.41 |
| 4:9:1424:G:H2' | 4:9:1425:G:C8 | 2.51 | 0.41 |
| 6:B:189:THR:HG23 | 6:B:192:GLU:H | 1.85 | 0.41 |
| 12:I:54:SER:HB2 | 12:I:135:ILE:HD11 | 2.01 | 0.41 |
| 23:T:36:LYS:HE2 | 23:T:36:LYS:HB3 | 1.87 | 0.41 |
| 26:W:50:ASN:HA | 26:W:55:TYR:CG | 2.55 | 0.41 |
| 27:X:63:LYS:HE2 | 27:X:63:LYS:HB3 | 1.88 | 0.41 |
| 35:f:65:ASN:OD1 | 35:f:66:LYS:N | 2.53 | 0.41 |
| 83:jj:402:THR:HG22 | 83:jj:470:ARG:HG3 | 2.02 | 0.41 |
| 1:5:740:G:H2' | 1:5:741:C:C6 | 2.56 | 0.41 |
| 1:5:975:C:H2' | 1:5:976:G:H8 | 1.85 | 0.41 |
| 1:5:1169:G:H2' | 1:5:1170:G:H8 | 1.85 | 0.41 |
| 1:5:4093:G:N1 | 1:5:4094:G:C5 | 2.88 | 0.41 |
| 1:5:4128:A:H3' | 1:5:4129:G:H8 | 1.84 | 0.41 |
| 3:8:94:G:H1' | 82:j:82:THR:O | 2.20 | 0.41 |
| 4:9:30:C:O2' | 4:9:596:U:OP1 | 2.33 | 0.41 |
| 8:D:209:ARG:NH2 | 8:D:234:ASP:OD1 | 2.38 | 0.41 |
| 9:E:264:ILE:HG23 | 9:E:270:LEU:HD23 | 2.02 | 0.41 |
| 45:r:38:PHE:O | 45:r:45:HIS:HE1 | 2.03 | 0.41 |
| 48:CC:102:LEU:HG | 48:CC:130:ILE:HG12 | 2.01 | 0.41 |
| 48:CC:253:PRO:HA | 48:CC:256:TRP:CD1 | 2.56 | 0.41 |
| 1:5:927:G:C6 | 1:5:928:C:C4 | 3.09 | 0.41 |
| 1:5:959:G:C8 | 1:5:959:G:H5' | 2.54 | 0.41 |
| 1:5:978:G:N2 | 1:5:1277:G:N1 | 2.58 | 0.41 |
| 1:5:2422:C:P | 19:P:127:ARG:HH22 | 2.44 | 0.41 |
| 1:5:2654:C:H2' | 1:5:2655:C:C6 | 2.55 | 0.41 |
| 1:5:2744:A:H2' | 1:5:2745:A:C8 | 2.56 | 0.41 |
| 3:8:66:A:H2' | 3:8:67:U:C6 | 2.55 | 0.41 |
| 4:9:589:G:O6 | 4:9:591:U:O2' | 2.36 | 0.41 |
| 4:9:1017:U:H2' | 4:9:1018:U:C6 | 2.55 | 0.41 |
| 4:9:1244:U:H2' | 4:9:1245:G:H8 | 1.86 | 0.41 |
| 6:B:19:ARG:HD2 | 6:B:235:TRP:CH2 | 2.56 | 0.41 |
| 15:L:63:THR:HG21 | 30:a:66:ASN:HD22 | 1.85 | 0.41 |
| 15:L:174:LYS:O | 30:a:138:LYS:HE2 | 2.20 | 0.41 |
| 60:OO:95:ILE:HD11 | 60:OO:126:ILE:HD12 | 2.02 | 0.41 |
| 61:PP:116:LEU:HD23 | 61:PP:116:LEU:HA | 1.85 | 0.41 |
| 63:RR:41:ILE:HD13 | 63:RR:47:ARG:HA | 2.02 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 78:gg:147:HIS:HD1 | 78:gg:171:ASP:CG | 2.29 | 0.41 |
| 81:13:53:G:H2' | 81:13:54:A:C8 | 2.50 | 0.41 |
| 81:11:10:G:N1 | 81:11:46:G:C6 | 2.88 | 0.41 |
| 83:jj:92:GLU:OE2 | 83:jj:150:ARG:NH2 | 2.44 | 0.41 |
| 1:5:54:G:HO2' | 17:N:108:ARG:HH22 | 1.68 | 0.41 |
| 1:5:1098:G:C6 | 1:5:1099:C:C4 | 3.09 | 0.41 |
| 1:5:1765:A:C4 | 1:5:1766:A:C8 | 3.09 | 0.41 |
| 1:5:1975:G:H22 | 1:5:1983:A:P | 2.41 | 0.41 |
| 1:5:3611:A:C2 | 1:5:5016:A:H8 | 2.39 | 0.41 |
| 1:5:4594:U:H2' | 1:5:4595:G:C8 | 2.54 | 0.41 |
| 4:9:501:C:H2' | 4:9:502:C:H5" | 2.03 | 0.41 |
| 4:9:641:A:OP1 | 55:JJ:40:LYS:HD2 | 2.20 | 0.41 |
| 4:9:1158:G:OP1 | 69:XX:5:ARG:NH2 | 2.53 | 0.41 |
| 4:9:1288:U:H5" | 77:ff:95:ARG:HH22 | 1.86 | 0.41 |
| 4:9:1835:A:HO2' | 4:9:1836:G:P | 2.44 | 0.41 |
| 12:I:38:ARG:HD2 | 12:I:41:ALA:HB2 | 2.01 | 0.41 |
| 14:K:221:LYS:HB3 | 14:K:230:GLY:HA2 | 2.01 | 0.41 |
| 22:S:7:LEU:O | 22:S:103:ALA:HB1 | 2.21 | 0.41 |
| 25:V:92:ASP:OD1 | 25:V:92:ASP:N | 2.53 | 0.41 |
| 32:c:82:GLY:CA | 32:c:91:VAL:HG12 | 2.50 | 0.41 |
| 51:FF:60:ARG:HD3 | 51:FF:61:PHE:CE1 | 2.56 | 0.41 |
| 53:HH:98:ARG:CZ | 53:HH:128:ALA:HB1 | 2.51 | 0.41 |
| 56:KK:57:TYR:HB3 | 56:KK:75:GLY:HA2 | 2.03 | 0.41 |
| 1:5:700:G:H2' | 1:5:701:G:H8 | 1.86 | 0.41 |
| 1:5:1176:C:H2' | 1:5:1177:U:H6 | 1.86 | 0.41 |
| 1:5:1308:C:H2' | 1:5:1309:C:C6 | 2.56 | 0.41 |
| 1:5:4372:U:OP2 | 43:o:61:LYS:HG2 | 2.20 | 0.41 |
| 1:5:5002:U:H2' | 1:5:5003:U:C6 | 2.55 | 0.41 |
| 2:7:24:C:H2' | 2:7:25:G:O4' | 2.20 | 0.41 |
| 4:9:1010:G:H2' | 4:9:1011:A:C8 | 2.55 | 0.41 |
| 4:9:1524:G:O2' | 81:13:30:G:OP1 | 2.34 | 0.41 |
| 4:9:1698:C:HO2' | 4:9:1699:A:P | 2.42 | 0.41 |
| 10:G:139:VAL:HG11 | 10:G:238:LYS:CE | 2.50 | 0.41 |
| 15:L:9:ILE:HG23 | 15:L:9:ILE:O | 2.21 | 0.41 |
| 18:O:12:ARG:O | 22:S:171:ARG:NH2 | 2.52 | 0.41 |
| 47:BB:30:TRP:CZ2 | 47:BB:48:LEU:HD13 | 2.56 | 0.41 |
| 47:BB:178:THR:C | 47:BB:179:ASN:HD22 | 2.27 | 0.41 |
| 1:5:128:C:H2' | 1:5:129:C:C6 | 2.56 | 0.41 |
| 1:5:1477:C:O2' | 1:5:1478:C:OP1 | 2.37 | 0.41 |
| 1:5:1755:C:O2' | 1:5:1757:U:OP2 | 2.20 | 0.41 |
| 1:5:2474:G:O2' | 1:5:2475:G:OP1 | 2.34 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:2846:G:OP1 | 25:V:85:ARG:NH2 | 2.53 | 0.41 |
| 1:5:4637:G:OP1 | 33:d:30:HIS:HE1 | 2.03 | 0.41 |
| 4:9:141:A:N6 | 4:9:177:G:H1' | 2.35 | 0.41 |
| 4:9:524:U:H5" | 4:9:525:A:O4' | 2.21 | 0.41 |
| 4:9:789:G:H2' | 4:9:790:C:C6 | 2.56 | 0.41 |
| 4:9:1520:G:H2' | 4:9:1520:G:N3 | 2.35 | 0.41 |
| 4:9:1656:G:H2' | 4:9:1657:G:H8 | 1.85 | 0.41 |
| 4:9:1680:G:H2' | 4:9:1681:U:C6 | 2.55 | 0.41 |
| 16:M:24:LEU:HD11 | 16:M:86:TRP:CG | 2.56 | 0.41 |
| 20:Q:75:ARG:HA | 20:Q:78:LYS:HE2 | 2.02 | 0.41 |
| 21:R:28:GLU:HG3 | 21:R:49:LEU:HD22 | 2.03 | 0.41 |
| 81:11:12:C:H2' | 81:11:13:G:C8 | 2.55 | 0.41 |
| 1:5:310:G:C4 | 1:5:311:G:C8 | 3.08 | 0.41 |
| 1:5:1176:C:H2' | 1:5:1177:U:C6 | 2.55 | 0.41 |
| 1:5:1272:C:H4' | 14:K:36:PHE:CG | 2.56 | 0.41 |
| 1:5:2466:G:O5' | 1:5:2466:G:H8 | 2.03 | 0.41 |
| 1:5:3597:G:O2' | 1:5:3598:C:OP1 | 2.35 | 0.41 |
| 1:5:3717:A:N1 | 1:5:3933:G:H1' | 2.36 | 0.41 |
| 1:5:4915:G:N1 | 1:5:4916:G:C5 | 2.89 | 0.41 |
| 3:8:13:G:C5 | 3:8:14:U:C4 | 3.08 | 0.41 |
| 4:9:419:G:N2 | 4:9:661:U:O2 | 2.54 | 0.41 |
| 4:9:648:A:H4' | 69:XX:104:GLY:O | 2.20 | 0.41 |
| 4:9:681:U:H4' | 69:XX:9:THR:HG22 | 2.03 | 0.41 |
| 6:B:154:LYS:HE3 | 6:B:154:LYS:HB2 | 1.86 | 0.41 |
| 19:P:37:LYS:O | 19:P:114:ILE:HG23 | 2.21 | 0.41 |
| 19:P:54:LYS:HB3 | 19:P:54:LYS:HE2 | 1.87 | 0.41 |
| 30:a:59:ARG:NH2 | 30:a:61:TYR:OH | 2.54 | 0.41 |
| 41:m:51:ILE:HG23 | 41:m:52:ILE:N | 2.25 | 0.41 |
| 53:HH:135:PHE:CG | 53:HH:136:PRO:HA | 2.56 | 0.41 |
| 58:MM:85:LEU:HD11 | 58:MM:109:VAL:HG21 | 2.03 | 0.41 |
| 68:WW:30:CYS:SG | 68:WW:31:SER:N | 2.93 | 0.41 |
| 70:YY:29:HIS:HE1 | 70:YY:33:ALA:O | 2.04 | 0.41 |
| 83:jj:525:LEU:HD11 | 83:jj:543:ARG:HB2 | 2.02 | 0.41 |
| 1:5:123:C:H2' | 1:5:124:C:C6 | 2.56 | 0.41 |
| 1:5:1198:G:N2 | 1:5:1199:G:O6 | 2.54 | 0.41 |
| 1:5:2895:A:H2' | 1:5:2896:G:H8 | 1.85 | 0.41 |
| 1:5:4065:G:C6 | 1:5:4066:U:C4 | 3.09 | 0.41 |
| 1:5:4232:U:H4' | 1:5:4233:A:O5' | 2.21 | 0.41 |
| 1:5:4305:G:H22 | 23:T:87:LYS:CD | 2.34 | 0.41 |
| 1:5:4598:C:O2' | 11:H:121:LYS:HE2 | 2.21 | 0.41 |
| 1:5:4685:U:H2' | 1:5:4686:G:C8 | 2.56 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:7:2:U:H2' | 2:7:3:C:C6 | 2.56 | 0.41 |
| 4:9:616:A:H1' | 76:ee:85:VAL:HG23 | 2.03 | 0.41 |
| 4:9:669:A:H5' | 4:9:669:A:H8 | 1.84 | 0.41 |
| 4:9:693:A:H61 | 4:9:733:C:H42 | 1.69 | 0.41 |
| 4:9:1454:A:C8 | 63:RR:3:ARG:HD3 | 2.56 | 0.41 |
| 4:9:1521:C:OP2 | 64:SS:136:THR:OG1 | 2.29 | 0.41 |
| 4:9:1714:U:H2' | 4:9:1715:A:C8 | 2.56 | 0.41 |
| 27:X:147:LEU:O | 27:X:151:ASN:ND2 | 2.40 | 0.41 |
| 78:gg:175:LYS:HE2 | 78:gg:177:TRP:CH2 | 2.56 | 0.41 |
| 79:10:13:A:H2' | 79:10:14:G:H8 | 1.86 | 0.41 |
| 1:5:750:U:H2' | 1:5:751:G:O4' | 2.21 | 0.40 |
| 1:5:1247:U:C2 | 1:5:1248:C:H5 | 2.39 | 0.40 |
| 1:5:1404:G:H2' | 1:5:1405:C:C6 | 2.56 | 0.40 |
| 1:5:1985:G:H1' | 1:5:2003:G:H2' | 2.03 | 0.40 |
| 1:5:2544:G:C2 | 1:5:2545:U:C4 | 3.09 | 0.40 |
| 1:5:3726:A:O5' | 1:5:3726:A:H8 | 2.03 | 0.40 |
| 4:9:79:A:H3' | 4:9:80:G:H8 | 1.86 | 0.40 |
| 4:9:216:C:C2 | 4:9:217:A:C8 | 3.09 | 0.40 |
| 4:9:547:G:N3 | 4:9:548:C:H5 | 2.20 | 0.40 |
| 4:9:1656:G:N3 | 4:9:1657:G:C8 | 2.89 | 0.40 |
| 7:C:283:LYS:HE3 | 7:C:283:LYS:HB2 | 1.91 | 0.40 |
| 52:GG:52:ILE:HD11 | 52:GG:109:LEU:HD21 | 2.03 | 0.40 |
| 55:JJ:111:GLN:NE2 | 55:JJ:127:ARG:HB2 | 2.36 | 0.40 |
| 74:cc:7:GLN:N | 74:cc:7:GLN:OE1 | 2.54 | 0.40 |
| 81:11:26:G:C5 | 81:11:27:C:C5 | 3.09 | 0.40 |
| 1:5:165:A:H2' | 1:5:166:C:H6 | 1.84 | 0.40 |
| 1:5:686:A:C8 | 1:5:688:U:C4 | 3.09 | 0.40 |
| 1:5:1348:U:H2' | 1:5:1349:G:H8 | 1.86 | 0.40 |
| 1:5:1358:G:O2' | 1:5:1359:G:O5' | 2.36 | 0.40 |
| 1:5:1590:C:H5" | 1:5:1591:U:O5' | 2.22 | 0.40 |
| 1:5:3969:G:C6 | 1:5:4053:A:C2 | 3.10 | 0.40 |
| 4:9:1679:A:C2 | 51:FF:60:ARG:HA | 2.56 | 0.40 |
| 6:B:168:MET:HG2 | 6:B:178:ALA:HA | 2.02 | 0.40 |
| 9:E:180:GLY:O | 9:E:181:PRO:C | 2.65 | 0.40 |
| 13:J:86:GLY:HA2 | 13:J:109:ILE:HD11 | 2.03 | 0.40 |
| 52:GG:73:VAL:HG12 | 52:GG:74:ARG:N | 2.36 | 0.40 |
| 53:HH:63:PHE:HA | 53:HH:95:ILE:O | 2.20 | 0.40 |
| 1:5:423:G:H5' | 19:P:26:PHE:HZ | 1.86 | 0.40 |
| 1:5:983:C:C6 | 9:E:73:ARG:HD3 | 2.56 | 0.40 |
| 1:5:1186:U:H2' | 1:5:1187:G:N3 | 2.36 | 0.40 |
| 1:5:1973:G:H2' | 1:5:1974:U:C5 | 2.56 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:5:2503:G:H3' | 1:5:2504:C:O4' | 2.22 | 0.40 |
| 1:5:4672:A:OP1 | 25:V:15:ARG:NH2 | 2.54 | 0.40 |
| 4:9:70:G:H1' | 4:9:79:A:H61 | 1.86 | 0.40 |
| 4:9:379:C:H4' | 54:II:31:ARG:O | 2.21 | 0.40 |
| 4:9:448:A:H62 | 54:II:29:LEU:HD13 | 1.82 | 0.40 |
| 4:9:527:C:OP1 | 55:JJ:122:SER:OG | 2.31 | 0.40 |
| 4:9:537:C:C2 | 4:9:538:U:C5 | 3.10 | 0.40 |
| 4:9:821:G:C6 | 55:JJ:147:PHE:CZ | 3.10 | 0.40 |
| 4:9:894:G:H2' | 4:9:895:G:H8 | 1.87 | 0.40 |
| 21:R:106:LEU:HD23 | 21:R:106:LEU:HA | 1.90 | 0.40 |
| 66:UU:59:LYS:HD2 | 66:UU:84:ILE:HD11 | 2.03 | 0.40 |
| 1:5:466:A:C6 | 1:5:468:U:C4 | 3.10 | 0.40 |
| 1:5:712:C:OP1 | 9:E:142:LYS:HE2 | 2.22 | 0.40 |
| 1:5:956:A:N6 | 1:5:1283:G:O2' | 2.45 | 0.40 |
| 1:5:1080:C:H2' | 1:5:1081:C:C6 | 2.55 | 0.40 |
| 1:5:1866:U:OP1 | 12:I:4:ARG:NH1 | 2.44 | 0.40 |
| 1:5:4066:U:H2' | 1:5:4067:U:C6 | 2.56 | 0.40 |
| 1:5:4324:A:H2' | 1:5:4325:A:C8 | 2.57 | 0.40 |
| 1:5:4474:A:H5" | 41:m:99:LYS:CG | 2.52 | 0.40 |
| 4:9:1617:G:H4' | 75:dd:14:PHE:CE2 | 2.56 | 0.40 |
| 6:B:95:THR:HG22 | 6:B:97:ARG:H | 1.86 | 0.40 |
| 11:H:40:HIS:CE1 | 11:H:41:ILE:HG13 | 2.56 | 0.40 |
| 47:BB:49:VAL:HA | 60:OO:51:GLU:OE2 | 2.22 | 0.40 |
| 1:5:755:C:C2 | 1:5:756:G:C8 | 3.09 | 0.40 |
| 1:5:966:A:H1' | 1:5:968:C:N4 | 2.37 | 0.40 |
| 1:5:1169:G:H2' | 1:5:1170:G:C8 | 2.56 | 0.40 |
| 1:5:1196:G:C6 | 1:5:1197:C:N4 | 2.90 | 0.40 |
| 1:5:1312:A:O2' | 34:e:44:ARG:NH2 | 2.54 | 0.40 |
| 1:5:4886:C:H2' | 1:5:4887:C:C6 | 2.57 | 0.40 |
| 4:9:90:G:H2' | 4:9:91:A:O4' | 2.21 | 0.40 |
| 4:9:182:C:H5' | 4:9:183:G:C8 | 2.56 | 0.40 |
| 4:9:481:C:H5" | 4:9:482:G:OP2 | 2.21 | 0.40 |
| 4:9:572:U:OP1 | 70:YY:59:GLY:N | 2.54 | 0.40 |
| 5:A:10:LYS:HA | 5:A:16:PHE:CD2 | 2.57 | 0.40 |
| 10:G:216:PRO:HG2 | 10:G:219:LEU:HD12 | 2.04 | 0.40 |
| 23:T:19:PHE:CE2 | 23:T:20:ARG:HD3 | 2.57 | 0.40 |
| 50:EE:141:THR:OG1 | 50:EE:143:ASP:OD1 | 2.32 | 0.40 |
| 55:JJ:38:ARG:N | 55:JJ:42:GLU:OE1 | 2.33 | 0.40 |
| 55:JJ:155:LYS:HG3 | 55:JJ:156:HIS:CD2 | 2.56 | 0.40 |
| 58:MM:42:LEU:HD12 | 58:MM:68:LEU:HD23 | 2.03 | 0.40 |
| 81:11:59:A:H2' | 81:11:60:A:C8 | 2.56 | 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 | |
|---|---|---|---|---|---|---|---|
| 5 | A | 246/257 (96%) | 237 (96%) | 9 (4%) | 0 | 100 | 100 |
| 6 | B | 392/403 (97%) | 379 (97%) | 13 (3%) | 0 | 100 | 100 |
| 7 | C | 360/425 (85%) | 354 (98%) | 6 (2%) | 0 | 100 | 100 |
| 8 | D | 291/297 (98%) | 285 (98%) | 6 (2%) | 0 | 100 | 100 |
| 9 | E | 208/291 (72%) | 200 (96%) | 8 (4%) | 0 | 100 | 100 |
| 10 | G | 229/319 (72%) | 222 (97%) | 7 (3%) | 0 | 100 | 100 |
| 11 | H | 188/192 (98%) | 182 (97%) | 6 (3%) | 0 | 100 | 100 |
| 12 | I | 201/214 (94%) | 196 (98%) | 5 (2%) | 0 | 100 | 100 |
| 13 | J | 168/178 (94%) | 166 (99%) | 2 (1%) | 0 | 100 | 100 |
| 14 | K | 223/247 (90%) | 217 (97%) | 6 (3%) | 0 | 100 | 100 |
| 15 | L | 208/211 (99%) | 203 (98%) | 5 (2%) | 0 | 100 | 100 |
| 16 | M | 136/218 (62%) | 134 (98%) | 2 (2%) | 0 | 100 | 100 |
| 17 | N | 201/204 (98%) | 195 (97%) | 6 (3%) | 0 | 100 | 100 |
| 18 | O | 197/203 (97%) | 190 (96%) | 7 (4%) | 0 | 100 | 100 |
| 19 | P | 151/184 (82%) | 147 (97%) | 4 (3%) | 0 | 100 | 100 |
| 20 | Q | 185/188 (98%) | 177 (96%) | 8 (4%) | 0 | 100 | 100 |
| 21 | R | 178/196 (91%) | 177 (99%) | 1 (1%) | 0 | 100 | 100 |
| 22 | S | 174/176 (99%) | 172 (99%) | 2 (1%) | 0 | 100 | 100 |
| 23 | T | 157/160 (98%) | 155 (99%) | 2 (1%) | 0 | 100 | 100 |
| 24 | U | 97/128 (76%) | 92 (95%) | 5 (5%) | 0 | 100 | 100 |
| 25 | V | 127/140 (91%) | 125 (98%) | 2 (2%) | 0 | 100 | 100 |
| 26 | W | 102/157 (65%) | 101 (99%) | 1 (1%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 27 | X | 116/156 (74%) | 114 (98%) | 2 (2%) | 0 | 100 | 100 |
| 28 | Y | 132/145 (91%) | 130 (98%) | 2 (2%) | 0 | 100 | 100 |
| 29 | Z | 133/136 (98%) | 128 (96%) | 5 (4%) | 0 | 100 | 100 |
| 30 | a | 145/148 (98%) | 137 (94%) | 8 (6%) | 0 | 100 | 100 |
| 31 | b | 94/245 (38%) | 92 (98%) | 2 (2%) | 0 | 100 | 100 |
| 32 | c | 96/115 (84%) | 93 (97%) | 3 (3%) | 0 | 100 | 100 |
| 33 | d | 105/125 (84%) | 99 (94%) | 6 (6%) | 0 | 100 | 100 |
| 34 | e | 126/135 (93%) | 123 (98%) | 3 (2%) | 0 | 100 | 100 |
| 35 | f | 107/110 (97%) | 105 (98%) | 2 (2%) | 0 | 100 | 100 |
| 36 | g | 112/116 (97%) | 112 (100%) | 0 | 0 | 100 | 100 |
| 37 | h | 120/123 (98%) | 118 (98%) | 2 (2%) | 0 | 100 | 100 |
| 38 | i | 100/105 (95%) | 98 (98%) | 2 (2%) | 0 | 100 | 100 |
| 39 | k | 67/70 (96%) | 67 (100%) | 0 | 0 | 100 | 100 |
| 40 | l | 48/51 (94%) | 48 (100%) | 0 | 0 | 100 | 100 |
| 41 | m | 50/102 (49%) | 46 (92%) | 4 (8%) | 0 | 100 | 100 |
| 42 | n | 23/25 (92%) | 23 (100%) | 0 | 0 | 100 | 100 |
| 43 | o | 102/106 (96%) | 97 (95%) | 5 (5%) | 0 | 100 | 100 |
| 44 | p | 89/92 (97%) | 85 (96%) | 4 (4%) | 0 | 100 | 100 |
| 45 | r | 122/137 (89%) | 120 (98%) | 2 (2%) | 0 | 100 | 100 |
| 46 | AA | 215/295 (73%) | 207 (96%) | 8 (4%) | 0 | 100 | 100 |
| 47 | BB | 211/264 (80%) | 203 (96%) | 8 (4%) | 0 | 100 | 100 |
| 48 | CC | 219/293 (75%) | 214 (98%) | 5 (2%) | 0 | 100 | 100 |
| 49 | DD | 222/243 (91%) | 218 (98%) | 4 (2%) | 0 | 100 | 100 |
| 50 | EE | 260/263 (99%) | 253 (97%) | 7 (3%) | 0 | 100 | 100 |
| 51 | FF | 180/204 (88%) | 171 (95%) | 9 (5%) | 0 | 100 | 100 |
| 52 | GG | 235/249 (94%) | 225 (96%) | 10 (4%) | 0 | 100 | 100 |
| 53 | HH | 181/194 (93%) | 178 (98%) | 3 (2%) | 0 | 100 | 100 |
| 54 | II | 194/208 (93%) | 193 (100%) | 1 (0%) | 0 | 100 | 100 |
| 55 | JJ | 179/194 (92%) | 175 (98%) | 4 (2%) | 0 | 100 | 100 |
| 56 | KK | 94/165 (57%) | 92 (98%) | 2 (2%) | 0 | 100 | 100 |
| 57 | LL | 139/158 (88%) | 137 (99%) | 2 (1%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 58 | MM | 108/132 (82%) | 105 (97%) | 3 (3%) | 0 | 100 | 100 |
| 59 | NN | 147/151 (97%) | 144 (98%) | 3 (2%) | 0 | 100 | 100 |
| 60 | OO | 134/168 (80%) | 132 (98%) | 2 (2%) | 0 | 100 | 100 |
| 61 | PP | 127/145 (88%) | 124 (98%) | 3 (2%) | 0 | 100 | 100 |
| 62 | QQ | 140/146 (96%) | 137 (98%) | 3 (2%) | 0 | 100 | 100 |
| 63 | RR | 130/135 (96%) | 128 (98%) | 2 (2%) | 0 | 100 | 100 |
| 64 | SS | 138/152 (91%) | 134 (97%) | 4 (3%) | 0 | 100 | 100 |
| 65 | TT | 139/145 (96%) | 136 (98%) | 3 (2%) | 0 | 100 | 100 |
| 66 | UU | 98/119 (82%) | 94 (96%) | 4 (4%) | 0 | 100 | 100 |
| 67 | VV | 81/83 (98%) | 80 (99%) | 1 (1%) | 0 | 100 | 100 |
| 68 | WW | 127/130 (98%) | 125 (98%) | 2 (2%) | 0 | 100 | 100 |
| 69 | XX | 138/143 (96%) | 135 (98%) | 3 (2%) | 0 | 100 | 100 |
| 70 | YY | 122/130 (94%) | 119 (98%) | 3 (2%) | 0 | 100 | 100 |
| 71 | ZZ | 73/125 (58%) | 72 (99%) | 1 (1%) | 0 | 100 | 100 |
| 72 | aa | 99/115 (86%) | 96 (97%) | 3 (3%) | 0 | 100 | 100 |
| 73 | bb | 81/84 (96%) | 76 (94%) | 5 (6%) | 0 | 100 | 100 |
| 74 | cc | 60/69 (87%) | 59 (98%) | 1 (2%) | 0 | 100 | 100 |
| 75 | dd | 53/56 (95%) | 49 (92%) | 4 (8%) | 0 | 100 | 100 |
| 76 | ee | 55/133 (41%) | 53 (96%) | 2 (4%) | 0 | 100 | 100 |
| 77 | ff | 66/156 (42%) | 63 (96%) | 3 (4%) | 0 | 100 | 100 |
| 78 | gg | 311/317 (98%) | 297 (96%) | 14 (4%) | 0 | 100 | 100 |
| 82 | j | 84/97 (87%) | 81 (96%) | 3 (4%) | 0 | 100 | 100 |
| 83 | jj | 511/703 (73%) | 498 (98%) | 13 (2%) | 0 | 100 | 100 |
| All | All | 11657/13594 (86%) | 11344 (97%) | 313 (3%) | 0 | 100 | 100 |

There are no Ramachandran outliers to report.

### 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 | |
|---|---|---|---|---|---|---|
| 5 | A | 190/199 (96%) | 190 (100%) | 0 | 100 | 100 |
| 6 | B | 342/348 (98%) | 342 (100%) | 0 | 100 | 100 |
| 7 | C | 302/347 (87%) | 302 (100%) | 0 | 100 | 100 |
| 8 | D | 247/250 (99%) | 247 (100%) | 0 | 100 | 100 |
| 9 | E | 190/251 (76%) | 190 (100%) | 0 | 100 | 100 |
| 10 | G | 200/272 (74%) | 200 (100%) | 0 | 100 | 100 |
| 11 | H | 169/171 (99%) | 169 (100%) | 0 | 100 | 100 |
| 12 | I | 175/181 (97%) | 175 (100%) | 0 | 100 | 100 |
| 13 | J | 143/149 (96%) | 143 (100%) | 0 | 100 | 100 |
| 14 | K | 196/215 (91%) | 196 (100%) | 0 | 100 | 100 |
| 15 | L | 175/176 (99%) | 175 (100%) | 0 | 100 | 100 |
| 16 | M | 117/161 (73%) | 117 (100%) | 0 | 100 | 100 |
| 17 | N | 171/172 (99%) | 171 (100%) | 0 | 100 | 100 |
| 18 | O | 171/173 (99%) | 171 (100%) | 0 | 100 | 100 |
| 19 | P | 134/163 (82%) | 134 (100%) | 0 | 100 | 100 |
| 20 | Q | 164/165 (99%) | 164 (100%) | 0 | 100 | 100 |
| 21 | R | 159/175 (91%) | 159 (100%) | 0 | 100 | 100 |
| 22 | S | 157/157 (100%) | 156 (99%) | 1 (1%) | 84 | 93 |
| 23 | T | 139/140 (99%) | 139 (100%) | 0 | 100 | 100 |
| 24 | U | 89/114 (78%) | 89 (100%) | 0 | 100 | 100 |
| 25 | V | 100/107 (94%) | 100 (100%) | 0 | 100 | 100 |
| 26 | W | 86/126 (68%) | 86 (100%) | 0 | 100 | 100 |
| 27 | X | 106/134 (79%) | 106 (100%) | 0 | 100 | 100 |
| 28 | Y | 124/135 (92%) | 124 (100%) | 0 | 100 | 100 |
| 29 | Z | 117/118 (99%) | 117 (100%) | 0 | 100 | 100 |
| 30 | a | 119/120 (99%) | 119 (100%) | 0 | 100 | 100 |
| 31 | b | 80/184 (44%) | 80 (100%) | 0 | 100 | 100 |
| 32 | c | 84/98 (86%) | 84 (100%) | 0 | 100 | 100 |
| 33 | d | 98/110 (89%) | 98 (100%) | 0 | 100 | 100 |
| 34 | e | 114/121 (94%) | 114 (100%) | 0 | 100 | 100 |
| 35 | f | 88/89 (99%) | 88 (100%) | 0 | 100 | 100 |
| 36 | g | 98/99 (99%) | 98 (100%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|---|---|---|---|---|---|---|
| 37 | h | 109/110 (99%) | 109 (100%) | 0 | 100 | 100 |
| 38 | i | 86/89 (97%) | 86 (100%) | 0 | 100 | 100 |
| 39 | k | 64/65 (98%) | 64 (100%) | 0 | 100 | 100 |
| 40 | l | 47/48 (98%) | 47 (100%) | 0 | 100 | 100 |
| 41 | m | 48/90 (53%) | 48 (100%) | 0 | 100 | 100 |
| 42 | n | 24/24 (100%) | 24 (100%) | 0 | 100 | 100 |
| 43 | o | 92/94 (98%) | 92 (100%) | 0 | 100 | 100 |
| 44 | p | 74/75 (99%) | 74 (100%) | 0 | 100 | 100 |
| 45 | r | 108/121 (89%) | 108 (100%) | 0 | 100 | 100 |
| 46 | AA | 180/245 (74%) | 180 (100%) | 0 | 100 | 100 |
| 47 | BB | 194/231 (84%) | 194 (100%) | 0 | 100 | 100 |
| 48 | CC | 187/225 (83%) | 186 (100%) | 1 (0%) | 86 | 94 |
| 49 | DD | 187/202 (93%) | 187 (100%) | 0 | 100 | 100 |
| 50 | EE | 224/225 (100%) | 224 (100%) | 0 | 100 | 100 |
| 51 | FF | 157/170 (92%) | 157 (100%) | 0 | 100 | 100 |
| 52 | GG | 207/218 (95%) | 207 (100%) | 0 | 100 | 100 |
| 53 | HH | 165/174 (95%) | 165 (100%) | 0 | 100 | 100 |
| 54 | II | 172/180 (96%) | 172 (100%) | 0 | 100 | 100 |
| 55 | JJ | 161/168 (96%) | 161 (100%) | 0 | 100 | 100 |
| 56 | KK | 87/136 (64%) | 87 (100%) | 0 | 100 | 100 |
| 57 | LL | 130/142 (92%) | 130 (100%) | 0 | 100 | 100 |
| 58 | MM | 94/108 (87%) | 94 (100%) | 0 | 100 | 100 |
| 59 | NN | 130/131 (99%) | 130 (100%) | 0 | 100 | 100 |
| 60 | OO | 106/130 (82%) | 106 (100%) | 0 | 100 | 100 |
| 61 | PP | 115/130 (88%) | 115 (100%) | 0 | 100 | 100 |
| 62 | QQ | 117/121 (97%) | 117 (100%) | 0 | 100 | 100 |
| 63 | RR | 119/121 (98%) | 119 (100%) | 0 | 100 | 100 |
| 64 | SS | 122/132 (92%) | 122 (100%) | 0 | 100 | 100 |
| 65 | TT | 111/115 (96%) | 111 (100%) | 0 | 100 | 100 |
| 66 | UU | 92/107 (86%) | 92 (100%) | 0 | 100 | 100 |
| 67 | VV | 67/67 (100%) | 67 (100%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|---|---|---|---|---|---|---|
| 68 | WW | 112/113 (99%) | 112 (100%) | 0 | 100 | 100 |
| 69 | XX | 112/115 (97%) | 112 (100%) | 0 | 100 | 100 |
| 70 | YY | 107/112 (96%) | 107 (100%) | 0 | 100 | 100 |
| 71 | ZZ | 66/103 (64%) | 66 (100%) | 0 | 100 | 100 |
| 72 | aa | 88/98 (90%) | 88 (100%) | 0 | 100 | 100 |
| 73 | bb | 75/76 (99%) | 75 (100%) | 0 | 100 | 100 |
| 74 | cc | 55/62 (89%) | 55 (100%) | 0 | 100 | 100 |
| 75 | dd | 48/49 (98%) | 48 (100%) | 0 | 100 | 100 |
| 76 | ee | 47/106 (44%) | 47 (100%) | 0 | 100 | 100 |
| 77 | ff | 61/140 (44%) | 61 (100%) | 0 | 100 | 100 |
| 78 | gg | 272/275 (99%) | 272 (100%) | 0 | 100 | 100 |
| 82 | j | 73/80 (91%) | 73 (100%) | 0 | 100 | 100 |
| 83 | jj | 445/586 (76%) | 445 (100%) | 0 | 100 | 100 |
| All | All | 10181/11529 (88%) | 10179 (100%) | 2 (0%) | 100 | 100 |

All (2) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 22 | S | 84 | TYR |
| 48 | CC | 248 | TYR |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (111) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 5 | A | 216 | HIS |
| 6 | B | 11 | HIS |
| 6 | B | 55 | HIS |
| 6 | B | 109 | HIS |
| 6 | B | 167 | GLN |
| 6 | B | 204 | GLN |
| 6 | B | 276 | HIS |
| 6 | B | 376 | HIS |
| 7 | C | 21 | ASN |
| 7 | C | 89 | GLN |
| 7 | C | 245 | HIS |
| 7 | C | 346 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 9 | E | 131 | HIS |
| 9 | E | 185 | ASN |
| 9 | E | 194 | GLN |
| 9 | E | 253 | GLN |
| 10 | G | 96 | GLN |
| 10 | G | 134 | ASN |
| 10 | G | 202 | ASN |
| 11 | H | 8 | GLN |
| 11 | H | 78 | GLN |
| 11 | H | 98 | HIS |
| 12 | I | 59 | GLN |
| 12 | I | 73 | ASN |
| 12 | I | 144 | ASN |
| 12 | I | 202 | ASN |
| 13 | J | 98 | ASN |
| 13 | J | 104 | ASN |
| 14 | K | 55 | HIS |
| 14 | K | 79 | ASN |
| 14 | K | 199 | HIS |
| 16 | M | 20 | HIS |
| 16 | M | 70 | GLN |
| 17 | N | 8 | GLN |
| 17 | N | 87 | HIS |
| 18 | O | 50 | ASN |
| 18 | O | 150 | GLN |
| 19 | P | 25 | HIS |
| 19 | P | 34 | GLN |
| 19 | P | 116 | HIS |
| 20 | Q | 7 | HIS |
| 20 | Q | 57 | ASN |
| 20 | Q | 160 | HIS |
| 21 | R | 141 | HIS |
| 22 | S | 50 | GLN |
| 22 | S | 156 | HIS |
| 23 | T | 98 | HIS |
| 25 | V | 77 | HIS |
| 26 | W | 59 | HIS |
| 26 | W | 63 | GLN |
| 27 | X | 73 | HIS |
| 28 | Y | 72 | GLN |
| 30 | a | 14 | HIS |
| 30 | a | 34 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 30 | a | 39 | HIS |
| 30 | a | 120 | GLN |
| 31 | b | 58 | GLN |
| 33 | d | 30 | HIS |
| 35 | f | 24 | HIS |
| 37 | h | 65 | GLN |
| 38 | i | 20 | ASN |
| 38 | i | 80 | HIS |
| 39 | k | 31 | ASN |
| 43 | o | 90 | HIS |
| 45 | r | 30 | ASN |
| 45 | r | 45 | HIS |
| 46 | AA | 169 | HIS |
| 47 | BB | 179 | ASN |
| 49 | DD | 145 | GLN |
| 49 | DD | 159 | HIS |
| 49 | DD | 174 | HIS |
| 49 | DD | 226 | GLN |
| 50 | EE | 188 | ASN |
| 50 | EE | 201 | HIS |
| 51 | FF | 65 | GLN |
| 51 | FF | 203 | ASN |
| 52 | GG | 146 | ASN |
| 52 | GG | 225 | GLN |
| 53 | HH | 186 | ASN |
| 54 | II | 165 | GLN |
| 55 | JJ | 111 | GLN |
| 55 | JJ | 124 | HIS |
| 57 | LL | 11 | GLN |
| 57 | LL | 94 | HIS |
| 57 | LL | 106 | HIS |
| 58 | MM | 19 | GLN |
| 59 | NN | 5 | HIS |
| 59 | NN | 36 | GLN |
| 59 | NN | 69 | ASN |
| 59 | NN | 105 | ASN |
| 62 | QQ | 80 | GLN |
| 63 | RR | 62 | GLN |
| 64 | SS | 11 | HIS |
| 64 | SS | 135 | HIS |
| 68 | WW | 113 | HIS |
| 68 | WW | 120 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 69 | XX | 16 | HIS |
| 70 | YY | 29 | HIS |
| 70 | YY | 94 | HIS |
| 72 | aa | 17 | HIS |
| 74 | cc | 7 | GLN |
| 74 | cc | 29 | GLN |
| 74 | cc | 45 | ASN |
| 76 | ee | 131 | ASN |
| 78 | gg | 133 | ASN |
| 82 | j | 57 | ASN |
| 82 | j | 66 | HIS |
| 82 | j | 76 | HIS |
| 83 | jj | 99 | GLN |
| 83 | jj | 138 | GLN |
| 83 | jj | 367 | ASN |

### 5.3.3 RNA (i)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 1 | 5 | 3580/3601 (99%) | 537 (15%) | 165 (4%) |
| 2 | 7 | 118/120 (98%) | 7 (5%) | 1 (0%) |
| 3 | 8 | 149/156 (95%) | 21 (14%) | 4 (2%) |
| 4 | 9 | 1685/1869 (90%) | 233 (13%) | 57 (3%) |
| 79 | 10 | 10/185 (5%) | 2 (20%) | 0 |
| 80 | 12 | 74/76 (97%) | 8 (10%) | 3 (4%) |
| 81 | 11 | 73/75 (97%) | 11 (15%) | 4 (5%) |
| 81 | 13 | 73/75 (97%) | 9 (12%) | 3 (4%) |
| All | All | 5762/6157 (93%) | 828 (14%) | 237 (4%) |

All (828) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 13 | U |
| 1 | 5 | 15 | A |
| 1 | 5 | 25 | A |
| 1 | 5 | 39 | A |
| 1 | 5 | 42 | A |
| 1 | 5 | 43 | U |
| 1 | 5 | 59 | A |
| 1 | 5 | 65 | A |
| 1 | 5 | 91 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 93 | G |
| 1 | 5 | 109 | G |
| 1 | 5 | 119 | G |
| 1 | 5 | 120 | A |
| 1 | 5 | 122 | U |
| 1 | 5 | 126 | C |
| 1 | 5 | 134 | G |
| 1 | 5 | 135 | G |
| 1 | 5 | 136 | C |
| 1 | 5 | 143 | C |
| 1 | 5 | 144 | G |
| 1 | 5 | 159 | C |
| 1 | 5 | 160 | G |
| 1 | 5 | 171 | U |
| 1 | 5 | 172 | C |
| 1 | 5 | 197 | A |
| 1 | 5 | 200 | U |
| 1 | 5 | 201 | C |
| 1 | 5 | 209 | U |
| 1 | 5 | 217 | C |
| 1 | 5 | 218 | A |
| 1 | 5 | 219 | G |
| 1 | 5 | 220 | C |
| 1 | 5 | 224 | U |
| 1 | 5 | 226 | G |
| 1 | 5 | 227 | A |
| 1 | 5 | 233 | U |
| 1 | 5 | 234 | G |
| 1 | 5 | 246 | G |
| 1 | 5 | 265 | C |
| 1 | 5 | 266 | C |
| 1 | 5 | 267 | G |
| 1 | 5 | 275 | C |
| 1 | 5 | 276 | C |
| 1 | 5 | 280 | G |
| 1 | 5 | 295 | A |
| 1 | 5 | 296 | A |
| 1 | 5 | 297 | U |
| 1 | 5 | 306 | A |
| 1 | 5 | 309 | C |
| 1 | 5 | 310 | G |
| 1 | 5 | 315 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 316 | U |
| 1 | 5 | 334 | A |
| 1 | 5 | 340 | C |
| 1 | 5 | 379 | G |
| 1 | 5 | 387 | G |
| 1 | 5 | 407 | A |
| 1 | 5 | 408 | A |
| 1 | 5 | 409 | G |
| 1 | 5 | 410 | A |
| 1 | 5 | 412 | G |
| 1 | 5 | 413 | G |
| 1 | 5 | 431 | G |
| 1 | 5 | 446 | C |
| 1 | 5 | 449 | C |
| 1 | 5 | 450 | G |
| 1 | 5 | 453 | G |
| 1 | 5 | 454 | U |
| 1 | 5 | 466 | A |
| 1 | 5 | 467 | U |
| 1 | 5 | 468 | U |
| 1 | 5 | 481 | G |
| 1 | 5 | 481(A) | C |
| 1 | 5 | 482 | G |
| 1 | 5 | 483 | G |
| 1 | 5 | 484 | U |
| 1 | 5 | 485 | C |
| 1 | 5 | 486 | C |
| 1 | 5 | 492 | U |
| 1 | 5 | 493 | G |
| 1 | 5 | 499 | G |
| 1 | 5 | 505 | G |
| 1 | 5 | 510 | U |
| 1 | 5 | 649 | A |
| 1 | 5 | 650 | C |
| 1 | 5 | 666 | G |
| 1 | 5 | 683 | C |
| 1 | 5 | 685 | C |
| 1 | 5 | 686 | A |
| 1 | 5 | 687 | U |
| 1 | 5 | 696 | C |
| 1 | 5 | 697 | G |
| 1 | 5 | 704 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 730 | G |
| 1 | 5 | 731 | G |
| 1 | 5 | 738 | C |
| 1 | 5 | 739 | G |
| 1 | 5 | 747 | A |
| 1 | 5 | 749 | G |
| 1 | 5 | 758 | G |
| 1 | 5 | 913 | U |
| 1 | 5 | 914 | U |
| 1 | 5 | 915 | A |
| 1 | 5 | 917 | A |
| 1 | 5 | 923 | C |
| 1 | 5 | 924 | C |
| 1 | 5 | 925 | C |
| 1 | 5 | 931 | C |
| 1 | 5 | 932 | A |
| 1 | 5 | 934 | C |
| 1 | 5 | 935 | A |
| 1 | 5 | 935(A) | G |
| 1 | 5 | 936 | C |
| 1 | 5 | 943 | A |
| 1 | 5 | 944 | A |
| 1 | 5 | 945 | U |
| 1 | 5 | 959 | G |
| 1 | 5 | 960 | A |
| 1 | 5 | 961 | G |
| 1 | 5 | 967 | C |
| 1 | 5 | 969 | C |
| 1 | 5 | 971(A) | G |
| 1 | 5 | 972 | C |
| 1 | 5 | 983 | C |
| 1 | 5 | 1070 | G |
| 1 | 5 | 1072 | C |
| 1 | 5 | 1073 | G |
| 1 | 5 | 1076 | C |
| 1 | 5 | 1079 | C |
| 1 | 5 | 1179 | U |
| 1 | 5 | 1180 | C |
| 1 | 5 | 1195 | G |
| 1 | 5 | 1204 | C |
| 1 | 5 | 1211 | G |
| 1 | 5 | 1212 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1214 | C |
| 1 | 5 | 1215 | C |
| 1 | 5 | 1234 | G |
| 1 | 5 | 1235 | G |
| 1 | 5 | 1236 | C |
| 1 | 5 | 1237 | C |
| 1 | 5 | 1238 | A |
| 1 | 5 | 1239 | C |
| 1 | 5 | 1244 | G |
| 1 | 5 | 1249 | C |
| 1 | 5 | 1250 | C |
| 1 | 5 | 1272 | C |
| 1 | 5 | 1273 | G |
| 1 | 5 | 1280 | C |
| 1 | 5 | 1284 | G |
| 1 | 5 | 1287 | G |
| 1 | 5 | 1292 | C |
| 1 | 5 | 1293 | G |
| 1 | 5 | 1296 | G |
| 1 | 5 | 1301 | C |
| 1 | 5 | 1304 | C |
| 1 | 5 | 1326 | A |
| 1 | 5 | 1337 | A |
| 1 | 5 | 1354 | A |
| 1 | 5 | 1359 | G |
| 1 | 5 | 1360 | G |
| 1 | 5 | 1370 | G |
| 1 | 5 | 1371 | A |
| 1 | 5 | 1377 | G |
| 1 | 5 | 1380 | G |
| 1 | 5 | 1381 | U |
| 1 | 5 | 1387 | A |
| 1 | 5 | 1388 | A |
| 1 | 5 | 1394 | G |
| 1 | 5 | 1397 | A |
| 1 | 5 | 1398 | A |
| 1 | 5 | 1421 | G |
| 1 | 5 | 1436 | C |
| 1 | 5 | 1441 | C |
| 1 | 5 | 1445 | U |
| 1 | 5 | 1446 | C |
| 1 | 5 | 1456 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1458 | C |
| 1 | 5 | 1477 | C |
| 1 | 5 | 1478 | C |
| 1 | 5 | 1482 | G |
| 1 | 5 | 1483 | C |
| 1 | 5 | 1484 | G |
| 1 | 5 | 1485 | C |
| 1 | 5 | 1486 | C |
| 1 | 5 | 1498 | G |
| 1 | 5 | 1502 | G |
| 1 | 5 | 1523 | A |
| 1 | 5 | 1534 | A |
| 1 | 5 | 1547 | A |
| 1 | 5 | 1566 | C |
| 1 | 5 | 1578 | U |
| 1 | 5 | 1591 | U |
| 1 | 5 | 1596 | U |
| 1 | 5 | 1602 | U |
| 1 | 5 | 1612 | G |
| 1 | 5 | 1613 | A |
| 1 | 5 | 1614 | C |
| 1 | 5 | 1624 | G |
| 1 | 5 | 1625 | G |
| 1 | 5 | 1631 | A |
| 1 | 5 | 1633 | G |
| 1 | 5 | 1634 | A |
| 1 | 5 | 1654 | G |
| 1 | 5 | 1661 | C |
| 1 | 5 | 1676 | C |
| 1 | 5 | 1677 | U |
| 1 | 5 | 1691 | G |
| 1 | 5 | 1734 | G |
| 1 | 5 | 1741 | G |
| 1 | 5 | 1742 | A |
| 1 | 5 | 1750 | G |
| 1 | 5 | 1753 | G |
| 1 | 5 | 1754 | U |
| 1 | 5 | 1755 | C |
| 1 | 5 | 1756 | U |
| 1 | 5 | 1761 | G |
| 1 | 5 | 1764 | G |
| 1 | 5 | 1766 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1767 | A |
| 1 | 5 | 1768 | C |
| 1 | 5 | 1769 | G |
| 1 | 5 | 1773 | U |
| 1 | 5 | 1787 | A |
| 1 | 5 | 1805 | A |
| 1 | 5 | 1819 | G |
| 1 | 5 | 1821 | G |
| 1 | 5 | 1834 | U |
| 1 | 5 | 1836 | G |
| 1 | 5 | 1837 | A |
| 1 | 5 | 1842 | G |
| 1 | 5 | 1855 | G |
| 1 | 5 | 1869 | G |
| 1 | 5 | 1897 | A |
| 1 | 5 | 1918 | U |
| 1 | 5 | 1920 | C |
| 1 | 5 | 1921 | C |
| 1 | 5 | 1922 | G |
| 1 | 5 | 1931 | C |
| 1 | 5 | 1940 | G |
| 1 | 5 | 1948 | G |
| 1 | 5 | 1958 | A |
| 1 | 5 | 1962 | A |
| 1 | 5 | 1964 | A |
| 1 | 5 | 1977 | C |
| 1 | 5 | 1978 | C |
| 1 | 5 | 1980 | U |
| 1 | 5 | 1981 | G |
| 1 | 5 | 1984 | A |
| 1 | 5 | 1987 | C |
| 1 | 5 | 1991 | A |
| 1 | 5 | 1993 | C |
| 1 | 5 | 2001 | G |
| 1 | 5 | 2002 | A |
| 1 | 5 | 2004 | U |
| 1 | 5 | 2005 | G |
| 1 | 5 | 2011 | C |
| 1 | 5 | 2023 | C |
| 1 | 5 | 2024 | G |
| 1 | 5 | 2026 | A |
| 1 | 5 | 2044 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2048 | U |
| 1 | 5 | 2055 | G |
| 1 | 5 | 2056 | G |
| 1 | 5 | 2069 | A |
| 1 | 5 | 2084 | U |
| 1 | 5 | 2089 | G |
| 1 | 5 | 2090 | U |
| 1 | 5 | 2093 | G |
| 1 | 5 | 2094 | C |
| 1 | 5 | 2097 | A |
| 1 | 5 | 2098 | G |
| 1 | 5 | 2100 | G |
| 1 | 5 | 2101 | A |
| 1 | 5 | 2102 | G |
| 1 | 5 | 2104 | A |
| 1 | 5 | 2106 | G |
| 1 | 5 | 2107 | A |
| 1 | 5 | 2108 | G |
| 1 | 5 | 2259 | G |
| 1 | 5 | 2260 | C |
| 1 | 5 | 2266 | C |
| 1 | 5 | 2267 | U |
| 1 | 5 | 2268 | A |
| 1 | 5 | 2279 | A |
| 1 | 5 | 2289 | C |
| 1 | 5 | 2300 | A |
| 1 | 5 | 2301 | G |
| 1 | 5 | 2313 | A |
| 1 | 5 | 2314 | G |
| 1 | 5 | 2332 | A |
| 1 | 5 | 2333 | G |
| 1 | 5 | 2348 | G |
| 1 | 5 | 2351 | C |
| 1 | 5 | 2395 | A |
| 1 | 5 | 2422 | C |
| 1 | 5 | 2441 | C |
| 1 | 5 | 2475 | G |
| 1 | 5 | 2488 | C |
| 1 | 5 | 2489 | C |
| 1 | 5 | 2490 | U |
| 1 | 5 | 2491 | C |
| 1 | 5 | 2503 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2504 | C |
| 1 | 5 | 2505 | C |
| 1 | 5 | 2506 | G |
| 1 | 5 | 2507 | A |
| 1 | 5 | 2513 | A |
| 1 | 5 | 2546 | G |
| 1 | 5 | 2547 | G |
| 1 | 5 | 2553 | A |
| 1 | 5 | 2554 | U |
| 1 | 5 | 2555 | G |
| 1 | 5 | 2560 | C |
| 1 | 5 | 2566 | G |
| 1 | 5 | 2587 | A |
| 1 | 5 | 2601 | A |
| 1 | 5 | 2627 | C |
| 1 | 5 | 2669 | C |
| 1 | 5 | 2686 | G |
| 1 | 5 | 2687 | U |
| 1 | 5 | 2695 | A |
| 1 | 5 | 2696 | A |
| 1 | 5 | 2697 | A |
| 1 | 5 | 2705 | G |
| 1 | 5 | 2708 | U |
| 1 | 5 | 2711 | G |
| 1 | 5 | 2712 | G |
| 1 | 5 | 2719 | C |
| 1 | 5 | 2724 | G |
| 1 | 5 | 2725 | A |
| 1 | 5 | 2726 | G |
| 1 | 5 | 2740 | U |
| 1 | 5 | 2743 | A |
| 1 | 5 | 2760 | G |
| 1 | 5 | 2761 | U |
| 1 | 5 | 2763 | U |
| 1 | 5 | 2764 | A |
| 1 | 5 | 2787 | A |
| 1 | 5 | 2788 | U |
| 1 | 5 | 2790 | U |
| 1 | 5 | 2794 | C |
| 1 | 5 | 2795 | A |
| 1 | 5 | 2796 | G |
| 1 | 5 | 2826 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2827 | G |
| 1 | 5 | 2855 | G |
| 1 | 5 | 3598 | C |
| 1 | 5 | 3604 | A |
| 1 | 5 | 3605 | C |
| 1 | 5 | 3614 | G |
| 1 | 5 | 3615 | G |
| 1 | 5 | 3625 | G |
| 1 | 5 | 3626 | G |
| 1 | 5 | 3635 | A |
| 1 | 5 | 3644 | U |
| 1 | 5 | 3653 | A |
| 1 | 5 | 3662 | A |
| 1 | 5 | 3672 | G |
| 1 | 5 | 3673 | C |
| 1 | 5 | 3711 | A |
| 1 | 5 | 3712 | A |
| 1 | 5 | 3748 | A |
| 1 | 5 | 3750 | G |
| 1 | 5 | 3753 | G |
| 1 | 5 | 3777 | G |
| 1 | 5 | 3783 | A |
| 1 | 5 | 3784 | A |
| 1 | 5 | 3786 | U |
| 1 | 5 | 3811 | G |
| 1 | 5 | 3812 | C |
| 1 | 5 | 3817 | A |
| 1 | 5 | 3819 | G |
| 1 | 5 | 3840 | U |
| 1 | 5 | 3877 | A |
| 1 | 5 | 3878 | C |
| 1 | 5 | 3879 | G |
| 1 | 5 | 3888 | G |
| 1 | 5 | 3889 | G |
| 1 | 5 | 3897 | G |
| 1 | 5 | 3901 | A |
| 1 | 5 | 3905 | A |
| 1 | 5 | 3906 | A |
| 1 | 5 | 3907 | G |
| 1 | 5 | 3908 | A |
| 1 | 5 | 3915 | U |
| 1 | 5 | 3939 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 3949 | A |
| 1 | 5 | 3950 | U |
| 1 | 5 | 3960 | A |
| 1 | 5 | 3963 | A |
| 1 | 5 | 3964 | U |
| 1 | 5 | 3966 | A |
| 1 | 5 | 3967 | G |
| 1 | 5 | 3969 | G |
| 1 | 5 | 3971 | G |
| 1 | 5 | 3972 | A |
| 1 | 5 | 3973 | G |
| 1 | 5 | 3976 | C |
| 1 | 5 | 4041 | C |
| 1 | 5 | 4042 | G |
| 1 | 5 | 4046 | A |
| 1 | 5 | 4047 | A |
| 1 | 5 | 4048 | A |
| 1 | 5 | 4049 | U |
| 1 | 5 | 4065 | G |
| 1 | 5 | 4069 | U |
| 1 | 5 | 4070 | U |
| 1 | 5 | 4076 | G |
| 1 | 5 | 4084 | G |
| 1 | 5 | 4085 | A |
| 1 | 5 | 4119 | C |
| 1 | 5 | 4120 | U |
| 1 | 5 | 4122 | G |
| 1 | 5 | 4125 | C |
| 1 | 5 | 4127 | A |
| 1 | 5 | 4128 | A |
| 1 | 5 | 4163 | U |
| 1 | 5 | 4170 | A |
| 1 | 5 | 4171 | C |
| 1 | 5 | 4183 | G |
| 1 | 5 | 4184 | G |
| 1 | 5 | 4191 | G |
| 1 | 5 | 4203 | A |
| 1 | 5 | 4213 | A |
| 1 | 5 | 4229 | U |
| 1 | 5 | 4233 | A |
| 1 | 5 | 4251 | A |
| 1 | 5 | 4255 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4258 | C |
| 1 | 5 | 4266 | G |
| 1 | 5 | 4267 | G |
| 1 | 5 | 4268 | A |
| 1 | 5 | 4271 | A |
| 1 | 5 | 4273 | A |
| 1 | 5 | 4280 | A |
| 1 | 5 | 4281 | A |
| 1 | 5 | 4291 | G |
| 1 | 5 | 4305 | G |
| 1 | 5 | 4306 | U |
| 1 | 5 | 4330 | G |
| 1 | 5 | 4339 | A |
| 1 | 5 | 4349 | C |
| 1 | 5 | 4354 | U |
| 1 | 5 | 4355 | G |
| 1 | 5 | 4373 | G |
| 1 | 5 | 4376 | A |
| 1 | 5 | 4377 | G |
| 1 | 5 | 4378 | A |
| 1 | 5 | 4380 | A |
| 1 | 5 | 4387 | C |
| 1 | 5 | 4394 | A |
| 1 | 5 | 4419 | U |
| 1 | 5 | 4422 | A |
| 1 | 5 | 4438 | U |
| 1 | 5 | 4448 | G |
| 1 | 5 | 4449 | A |
| 1 | 5 | 4452 | U |
| 1 | 5 | 4453 | C |
| 1 | 5 | 4464 | A |
| 1 | 5 | 4476 | C |
| 1 | 5 | 4488 | A |
| 1 | 5 | 4500 | U |
| 1 | 5 | 4512 | U |
| 1 | 5 | 4513 | A |
| 1 | 5 | 4519 | C |
| 1 | 5 | 4522 | G |
| 1 | 5 | 4524 | G |
| 1 | 5 | 4548 | A |
| 1 | 5 | 4549 | G |
| 1 | 5 | 4560 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4567 | G |
| 1 | 5 | 4572 | U |
| 1 | 5 | 4573 | G |
| 1 | 5 | 4575 | G |
| 1 | 5 | 4590 | A |
| 1 | 5 | 4635 | A |
| 1 | 5 | 4636 | U |
| 1 | 5 | 4637 | G |
| 1 | 5 | 4656 | A |
| 1 | 5 | 4670 | C |
| 1 | 5 | 4672 | A |
| 1 | 5 | 4709 | U |
| 1 | 5 | 4719 | G |
| 1 | 5 | 4720 | C |
| 1 | 5 | 4721 | G |
| 1 | 5 | 4736 | C |
| 1 | 5 | 4737 | G |
| 1 | 5 | 4745 | G |
| 1 | 5 | 4751 | G |
| 1 | 5 | 4754 | G |
| 1 | 5 | 4757 | C |
| 1 | 5 | 4758 | U |
| 1 | 5 | 4759 | C |
| 1 | 5 | 4765 | G |
| 1 | 5 | 4771 | C |
| 1 | 5 | 4870 | G |
| 1 | 5 | 4871 | C |
| 1 | 5 | 4875 | G |
| 1 | 5 | 4882 | U |
| 1 | 5 | 4883 | C |
| 1 | 5 | 4885 | U |
| 1 | 5 | 4902 | C |
| 1 | 5 | 4909 | A |
| 1 | 5 | 4910 | A |
| 1 | 5 | 4913 | G |
| 1 | 5 | 4914 | G |
| 1 | 5 | 4915 | G |
| 1 | 5 | 4919 | G |
| 1 | 5 | 4921 | C |
| 1 | 5 | 4922 | C |
| 1 | 5 | 4925 | U |
| 1 | 5 | 4926 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4931 | G |
| 1 | 5 | 4937 | C |
| 1 | 5 | 4943 | A |
| 1 | 5 | 4944 | C |
| 1 | 5 | 4945 | G |
| 1 | 5 | 4947 | U |
| 1 | 5 | 4951 | G |
| 1 | 5 | 4956 | A |
| 1 | 5 | 4958 | C |
| 1 | 5 | 4976 | U |
| 1 | 5 | 4988 | U |
| 1 | 5 | 4989 | U |
| 1 | 5 | 4990 | C |
| 1 | 5 | 4991 | U |
| 1 | 5 | 5007 | A |
| 1 | 5 | 5017 | G |
| 1 | 5 | 5041 | G |
| 1 | 5 | 5047 | C |
| 1 | 5 | 5048 | A |
| 1 | 5 | 5050 | C |
| 1 | 5 | 5054 | C |
| 1 | 5 | 5058 | A |
| 1 | 5 | 5061 | A |
| 1 | 5 | 5062 | G |
| 2 | 7 | 7 | G |
| 2 | 7 | 42 | A |
| 2 | 7 | 53 | U |
| 2 | 7 | 64 | G |
| 2 | 7 | 97 | G |
| 2 | 7 | 100 | A |
| 2 | 7 | 110 | G |
| 3 | 8 | 2 | G |
| 3 | 8 | 3 | A |
| 3 | 8 | 34 | U |
| 3 | 8 | 51 | U |
| 3 | 8 | 52 | A |
| 3 | 8 | 59 | A |
| 3 | 8 | 62 | A |
| 3 | 8 | 63 | U |
| 3 | 8 | 87 | G |
| 3 | 8 | 94 | G |
| 3 | 8 | 95 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | 8 | 104 | A |
| 3 | 8 | 105 | C |
| 3 | 8 | 109 | C |
| 3 | 8 | 110 | U |
| 3 | 8 | 114 | G |
| 3 | 8 | 123 | U |
| 3 | 8 | 124 | U |
| 3 | 8 | 125 | C |
| 3 | 8 | 126 | C |
| 3 | 8 | 137 | A |
| 4 | 9 | 4 | C |
| 4 | 9 | 17 | C |
| 4 | 9 | 25 | A |
| 4 | 9 | 26 | U |
| 4 | 9 | 33 | G |
| 4 | 9 | 41 | G |
| 4 | 9 | 42 | A |
| 4 | 9 | 46 | A |
| 4 | 9 | 56 | G |
| 4 | 9 | 59 | U |
| 4 | 9 | 67 | C |
| 4 | 9 | 68 | A |
| 4 | 9 | 72 | C |
| 4 | 9 | 73 | C |
| 4 | 9 | 74 | G |
| 4 | 9 | 75 | G |
| 4 | 9 | 79 | A |
| 4 | 9 | 103 | A |
| 4 | 9 | 111 | A |
| 4 | 9 | 113 | G |
| 4 | 9 | 115 | U |
| 4 | 9 | 126 | G |
| 4 | 9 | 127 | C |
| 4 | 9 | 130 | G |
| 4 | 9 | 143 | U |
| 4 | 9 | 147 | A |
| 4 | 9 | 155 | G |
| 4 | 9 | 161 | U |
| 4 | 9 | 182 | C |
| 4 | 9 | 183 | G |
| 4 | 9 | 184 | G |
| 4 | 9 | 188 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | 9 | 192 | C |
| 4 | 9 | 215 | G |
| 4 | 9 | 294 | U |
| 4 | 9 | 307 | G |
| 4 | 9 | 308 | G |
| 4 | 9 | 312 | G |
| 4 | 9 | 319 | C |
| 4 | 9 | 347 | G |
| 4 | 9 | 362 | C |
| 4 | 9 | 364 | A |
| 4 | 9 | 369 | C |
| 4 | 9 | 370 | G |
| 4 | 9 | 385 | G |
| 4 | 9 | 386 | C |
| 4 | 9 | 400 | C |
| 4 | 9 | 407 | G |
| 4 | 9 | 408 | A |
| 4 | 9 | 409 | C |
| 4 | 9 | 418 | A |
| 4 | 9 | 448 | A |
| 4 | 9 | 449 | A |
| 4 | 9 | 450 | C |
| 4 | 9 | 452 | G |
| 4 | 9 | 454 | U |
| 4 | 9 | 464 | A |
| 4 | 9 | 465 | A |
| 4 | 9 | 466 | G |
| 4 | 9 | 472 | C |
| 4 | 9 | 474 | G |
| 4 | 9 | 482 | G |
| 4 | 9 | 487 | U |
| 4 | 9 | 492 | C |
| 4 | 9 | 496 | C |
| 4 | 9 | 516 | A |
| 4 | 9 | 517 | C |
| 4 | 9 | 532 | C |
| 4 | 9 | 533 | A |
| 4 | 9 | 541 | U |
| 4 | 9 | 544 | G |
| 4 | 9 | 550 | C |
| 4 | 9 | 551 | U |
| 4 | 9 | 554 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | 9 | 555 | A |
| 4 | 9 | 556 | U |
| 4 | 9 | 559 | G |
| 4 | 9 | 561 | A |
| 4 | 9 | 562 | U |
| 4 | 9 | 564 | A |
| 4 | 9 | 571 | U |
| 4 | 9 | 587 | A |
| 4 | 9 | 588 | G |
| 4 | 9 | 589 | G |
| 4 | 9 | 590 | A |
| 4 | 9 | 591 | U |
| 4 | 9 | 606 | G |
| 4 | 9 | 607 | U |
| 4 | 9 | 608 | C |
| 4 | 9 | 609 | U |
| 4 | 9 | 614 | C |
| 4 | 9 | 620 | G |
| 4 | 9 | 621 | C |
| 4 | 9 | 628 | A |
| 4 | 9 | 643 | A |
| 4 | 9 | 644 | G |
| 4 | 9 | 668 | A |
| 4 | 9 | 669 | A |
| 4 | 9 | 671 | A |
| 4 | 9 | 672 | A |
| 4 | 9 | 673 | G |
| 4 | 9 | 752 | G |
| 4 | 9 | 753 | C |
| 4 | 9 | 754 | G |
| 4 | 9 | 799 | U |
| 4 | 9 | 811 | A |
| 4 | 9 | 821 | G |
| 4 | 9 | 822 | U |
| 4 | 9 | 830 | A |
| 4 | 9 | 844 | U |
| 4 | 9 | 847 | A |
| 4 | 9 | 859 | G |
| 4 | 9 | 867 | G |
| 4 | 9 | 868 | G |
| 4 | 9 | 869 | A |
| 4 | 9 | 870 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | 9 | 872 | A |
| 4 | 9 | 873 | G |
| 4 | 9 | 874 | G |
| 4 | 9 | 875 | A |
| 4 | 9 | 876 | C |
| 4 | 9 | 887 | U |
| 4 | 9 | 888 | U |
| 4 | 9 | 889 | U |
| 4 | 9 | 913 | A |
| 4 | 9 | 914 | U |
| 4 | 9 | 920 | A |
| 4 | 9 | 922 | A |
| 4 | 9 | 933 | G |
| 4 | 9 | 943 | U |
| 4 | 9 | 990 | A |
| 4 | 9 | 992 | A |
| 4 | 9 | 999 | G |
| 4 | 9 | 1017 | U |
| 4 | 9 | 1023 | A |
| 4 | 9 | 1062 | A |
| 4 | 9 | 1083 | A |
| 4 | 9 | 1085 | C |
| 4 | 9 | 1115 | U |
| 4 | 9 | 1116 | C |
| 4 | 9 | 1117 | C |
| 4 | 9 | 1118 | C |
| 4 | 9 | 1138 | C |
| 4 | 9 | 1139 | C |
| 4 | 9 | 1150 | A |
| 4 | 9 | 1153 | C |
| 4 | 9 | 1154 | U |
| 4 | 9 | 1195 | A |
| 4 | 9 | 1207 | G |
| 4 | 9 | 1208 | A |
| 4 | 9 | 1215 | C |
| 4 | 9 | 1216 | C |
| 4 | 9 | 1242 | U |
| 4 | 9 | 1251 | A |
| 4 | 9 | 1253 | A |
| 4 | 9 | 1254 | C |
| 4 | 9 | 1256 | G |
| 4 | 9 | 1257 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | 9 | 1259 | A |
| 4 | 9 | 1274 | G |
| 4 | 9 | 1275 | G |
| 4 | 9 | 1293 | A |
| 4 | 9 | 1301 | A |
| 4 | 9 | 1302 | G |
| 4 | 9 | 1303 | C |
| 4 | 9 | 1309 | C |
| 4 | 9 | 1314 | U |
| 4 | 9 | 1371 | U |
| 4 | 9 | 1372 | U |
| 4 | 9 | 1378 | A |
| 4 | 9 | 1396 | A |
| 4 | 9 | 1397 | U |
| 4 | 9 | 1428 | G |
| 4 | 9 | 1429 | G |
| 4 | 9 | 1454 | A |
| 4 | 9 | 1462 | U |
| 4 | 9 | 1463 | U |
| 4 | 9 | 1476 | A |
| 4 | 9 | 1477 | U |
| 4 | 9 | 1490 | G |
| 4 | 9 | 1497 | G |
| 4 | 9 | 1498 | A |
| 4 | 9 | 1521 | C |
| 4 | 9 | 1522 | A |
| 4 | 9 | 1533 | A |
| 4 | 9 | 1548 | G |
| 4 | 9 | 1552 | G |
| 4 | 9 | 1556 | A |
| 4 | 9 | 1557 | C |
| 4 | 9 | 1579 | A |
| 4 | 9 | 1580 | A |
| 4 | 9 | 1581 | C |
| 4 | 9 | 1582 | C |
| 4 | 9 | 1587 | G |
| 4 | 9 | 1588 | A |
| 4 | 9 | 1601 | A |
| 4 | 9 | 1621 | U |
| 4 | 9 | 1623 | A |
| 4 | 9 | 1637 | A |
| 4 | 9 | 1638 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | 9 | 1639 | G |
| 4 | 9 | 1648 | G |
| 4 | 9 | 1654 | G |
| 4 | 9 | 1665 | G |
| 4 | 9 | 1671 | G |
| 4 | 9 | 1680 | G |
| 4 | 9 | 1699 | A |
| 4 | 9 | 1721 | U |
| 4 | 9 | 1722 | G |
| 4 | 9 | 1748 | G |
| 4 | 9 | 1753 | C |
| 4 | 9 | 1756 | C |
| 4 | 9 | 1757 | G |
| 4 | 9 | 1758 | G |
| 4 | 9 | 1783 | C |
| 4 | 9 | 1785 | C |
| 4 | 9 | 1823 | A |
| 4 | 9 | 1824 | A |
| 4 | 9 | 1826 | G |
| 4 | 9 | 1829 | G |
| 4 | 9 | 1834 | A |
| 4 | 9 | 1835 | A |
| 4 | 9 | 1836 | G |
| 4 | 9 | 1837 | G |
| 4 | 9 | 1838 | U |
| 4 | 9 | 1849 | G |
| 4 | 9 | 1851 | A |
| 4 | 9 | 1852 | C |
| 4 | 9 | 1861 | G |
| 4 | 9 | 1862 | G |
| 4 | 9 | 1863 | A |
| 4 | 9 | 1865 | C |
| 4 | 9 | 1869 | A |
| 79 | 10 | 19 | U |
| 79 | 10 | 23 | A |
| 80 | 12 | 13 | C |
| 80 | 12 | 18 | G |
| 80 | 12 | 19 | G |
| 80 | 12 | 20 | G |
| 80 | 12 | 45 | G |
| 80 | 12 | 47 | U |
| 80 | 12 | 48 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 80 | 12 | 55 | U |
| 81 | 13 | 17 | C |
| 81 | 13 | 18 | G |
| 81 | 13 | 20 | A |
| 81 | 13 | 22 | G |
| 81 | 13 | 47 | U |
| 81 | 13 | 48 | C |
| 81 | 13 | 74 | C |
| 81 | 13 | 75 | C |
| 81 | 13 | 76 | A |
| 81 | 11 | 10 | G |
| 81 | 11 | 11 | G |
| 81 | 11 | 17 | C |
| 81 | 11 | 18 | G |
| 81 | 11 | 20 | A |
| 81 | 11 | 22 | G |
| 81 | 11 | 47 | U |
| 81 | 11 | 48 | C |
| 81 | 11 | 74 | C |
| 81 | 11 | 75 | C |
| 81 | 11 | 76 | A |

All (237) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 42 | A |
| 1 | 5 | 64 | A |
| 1 | 5 | 125 | C |
| 1 | 5 | 134 | G |
| 1 | 5 | 200 | U |
| 1 | 5 | 217 | C |
| 1 | 5 | 218 | A |
| 1 | 5 | 219 | G |
| 1 | 5 | 224 | U |
| 1 | 5 | 226 | G |
| 1 | 5 | 245 | C |
| 1 | 5 | 265 | C |
| 1 | 5 | 266 | C |
| 1 | 5 | 275 | C |
| 1 | 5 | 294 | G |
| 1 | 5 | 296 | A |
| 1 | 5 | 309 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 315 | G |
| 1 | 5 | 406 | C |
| 1 | 5 | 408 | A |
| 1 | 5 | 449 | C |
| 1 | 5 | 466 | A |
| 1 | 5 | 480 | C |
| 1 | 5 | 481 | G |
| 1 | 5 | 484 | U |
| 1 | 5 | 492 | U |
| 1 | 5 | 504 | G |
| 1 | 5 | 649 | A |
| 1 | 5 | 667 | A |
| 1 | 5 | 685 | C |
| 1 | 5 | 696 | C |
| 1 | 5 | 913 | U |
| 1 | 5 | 914 | U |
| 1 | 5 | 916 | C |
| 1 | 5 | 924 | C |
| 1 | 5 | 930 | G |
| 1 | 5 | 933 | G |
| 1 | 5 | 935(A) | G |
| 1 | 5 | 955 | G |
| 1 | 5 | 956 | A |
| 1 | 5 | 959 | G |
| 1 | 5 | 966 | A |
| 1 | 5 | 971(A) | G |
| 1 | 5 | 1072 | C |
| 1 | 5 | 1211 | G |
| 1 | 5 | 1214 | C |
| 1 | 5 | 1236 | C |
| 1 | 5 | 1237 | C |
| 1 | 5 | 1238 | A |
| 1 | 5 | 1249 | C |
| 1 | 5 | 1283 | G |
| 1 | 5 | 1292 | C |
| 1 | 5 | 1294 | A |
| 1 | 5 | 1324 | A |
| 1 | 5 | 1325 | C |
| 1 | 5 | 1358 | G |
| 1 | 5 | 1359 | G |
| 1 | 5 | 1370 | G |
| 1 | 5 | 1380 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1387 | A |
| 1 | 5 | 1437 | C |
| 1 | 5 | 1440 | U |
| 1 | 5 | 1445 | U |
| 1 | 5 | 1455 | G |
| 1 | 5 | 1477 | C |
| 1 | 5 | 1485 | C |
| 1 | 5 | 1502 | G |
| 1 | 5 | 1578 | U |
| 1 | 5 | 1590 | C |
| 1 | 5 | 1613 | A |
| 1 | 5 | 1633 | G |
| 1 | 5 | 1654 | G |
| 1 | 5 | 1733 | G |
| 1 | 5 | 1753 | G |
| 1 | 5 | 1766 | A |
| 1 | 5 | 1773 | U |
| 1 | 5 | 1804 | A |
| 1 | 5 | 1818 | G |
| 1 | 5 | 1835 | G |
| 1 | 5 | 1836 | G |
| 1 | 5 | 1918 | U |
| 1 | 5 | 1921 | C |
| 1 | 5 | 1977 | C |
| 1 | 5 | 1990 | A |
| 1 | 5 | 1992 | U |
| 1 | 5 | 2001 | G |
| 1 | 5 | 2010 | A |
| 1 | 5 | 2023 | C |
| 1 | 5 | 2088 | A |
| 1 | 5 | 2089 | G |
| 1 | 5 | 2093 | G |
| 1 | 5 | 2106 | G |
| 1 | 5 | 2258 | C |
| 1 | 5 | 2266 | C |
| 1 | 5 | 2267 | U |
| 1 | 5 | 2278 | G |
| 1 | 5 | 2313 | A |
| 1 | 5 | 2333 | G |
| 1 | 5 | 2421 | G |
| 1 | 5 | 2428 | A |
| 1 | 5 | 2474 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2490 | U |
| 1 | 5 | 2502 | A |
| 1 | 5 | 2505 | C |
| 1 | 5 | 2506 | G |
| 1 | 5 | 2546 | G |
| 1 | 5 | 2553 | A |
| 1 | 5 | 2587 | A |
| 1 | 5 | 2696 | A |
| 1 | 5 | 2724 | G |
| 1 | 5 | 2761 | U |
| 1 | 5 | 2763 | U |
| 1 | 5 | 2794 | C |
| 1 | 5 | 3603 | G |
| 1 | 5 | 3614 | G |
| 1 | 5 | 3625 | G |
| 1 | 5 | 3672 | G |
| 1 | 5 | 3710 | G |
| 1 | 5 | 3810 | C |
| 1 | 5 | 3876 | A |
| 1 | 5 | 3888 | G |
| 1 | 5 | 3904 | G |
| 1 | 5 | 3949 | A |
| 1 | 5 | 3959 | U |
| 1 | 5 | 3966 | A |
| 1 | 5 | 3968 | U |
| 1 | 5 | 3972 | A |
| 1 | 5 | 4041 | C |
| 1 | 5 | 4046 | A |
| 1 | 5 | 4047 | A |
| 1 | 5 | 4064 | C |
| 1 | 5 | 4069 | U |
| 1 | 5 | 4119 | C |
| 1 | 5 | 4121 | G |
| 1 | 5 | 4124 | G |
| 1 | 5 | 4127 | A |
| 1 | 5 | 4162 | C |
| 1 | 5 | 4170 | A |
| 1 | 5 | 4232 | U |
| 1 | 5 | 4254 | G |
| 1 | 5 | 4266 | G |
| 1 | 5 | 4291 | G |
| 1 | 5 | 4348 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4448 | G |
| 1 | 5 | 4452 | U |
| 1 | 5 | 4488 | A |
| 1 | 5 | 4527 | G |
| 1 | 5 | 4572 | U |
| 1 | 5 | 4626 | A |
| 1 | 5 | 4635 | A |
| 1 | 5 | 4719 | G |
| 1 | 5 | 4881 | U |
| 1 | 5 | 4882 | U |
| 1 | 5 | 4884 | G |
| 1 | 5 | 4894 | A |
| 1 | 5 | 4909 | A |
| 1 | 5 | 4913 | G |
| 1 | 5 | 4921 | C |
| 1 | 5 | 4925 | U |
| 1 | 5 | 4936 | G |
| 1 | 5 | 4938 | A |
| 1 | 5 | 4942 | C |
| 1 | 5 | 4944 | C |
| 1 | 5 | 5047 | C |
| 1 | 5 | 5061 | A |
| 2 | 7 | 109 | U |
| 3 | 8 | 2 | G |
| 3 | 8 | 51 | U |
| 3 | 8 | 94 | G |
| 3 | 8 | 124 | U |
| 4 | 9 | 24 | C |
| 4 | 9 | 33 | G |
| 4 | 9 | 41 | G |
| 4 | 9 | 72 | C |
| 4 | 9 | 110 | U |
| 4 | 9 | 126 | G |
| 4 | 9 | 160 | U |
| 4 | 9 | 182 | C |
| 4 | 9 | 407 | G |
| 4 | 9 | 448 | A |
| 4 | 9 | 465 | A |
| 4 | 9 | 516 | A |
| 4 | 9 | 532 | C |
| 4 | 9 | 553 | U |
| 4 | 9 | 555 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | 9 | 561 | A |
| 4 | 9 | 606 | G |
| 4 | 9 | 620 | G |
| 4 | 9 | 752 | G |
| 4 | 9 | 821 | G |
| 4 | 9 | 858 | A |
| 4 | 9 | 867 | G |
| 4 | 9 | 869 | A |
| 4 | 9 | 870 | A |
| 4 | 9 | 872 | A |
| 4 | 9 | 875 | A |
| 4 | 9 | 919 | A |
| 4 | 9 | 1016 | U |
| 4 | 9 | 1061 | U |
| 4 | 9 | 1137 | U |
| 4 | 9 | 1138 | C |
| 4 | 9 | 1165 | G |
| 4 | 9 | 1215 | C |
| 4 | 9 | 1253 | A |
| 4 | 9 | 1274 | G |
| 4 | 9 | 1303 | C |
| 4 | 9 | 1308 | U |
| 4 | 9 | 1313 | A |
| 4 | 9 | 1395 | C |
| 4 | 9 | 1396 | A |
| 4 | 9 | 1428 | G |
| 4 | 9 | 1454 | A |
| 4 | 9 | 1476 | A |
| 4 | 9 | 1489 | A |
| 4 | 9 | 1497 | G |
| 4 | 9 | 1580 | A |
| 4 | 9 | 1581 | C |
| 4 | 9 | 1622 | U |
| 4 | 9 | 1637 | A |
| 4 | 9 | 1638 | G |
| 4 | 9 | 1664 | A |
| 4 | 9 | 1679 | A |
| 4 | 9 | 1757 | G |
| 4 | 9 | 1835 | A |
| 4 | 9 | 1837 | G |
| 4 | 9 | 1863 | A |
| 4 | 9 | 1868 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 80 | 12 | 19 | G |
| 80 | 12 | 44 | A |
| 80 | 12 | 46 | G |
| 81 | 13 | 16 | G |
| 81 | 13 | 19 | G |
| 81 | 13 | 74 | C |
| 81 | 11 | 10 | G |
| 81 | 11 | 16 | G |
| 81 | 11 | 19 | G |
| 81 | 11 | 74 | C |

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

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

## 5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 15 ligands modelled in this entry, 8 are monoatomic - leaving 7 for Mogul analysis.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 90 | GCP | jj | 700 | 91 | 27,34,34 | 2.38 | 4 (14%) | 35,54,54 | 2.42 | 8 (22%) |
| 88 | ATP | 13 | 101 | 81 | 28,33,33 | 0.71 | 0 | 34,52,52 | 0.78 | 1 (2%) |
| 86 | GTP | 12 | 101 | 80 | 29,34,34 | 1.17 | 2 (6%) | 35,54,54 | 1.28 | 4 (11%) |
| 87 | PHE | 12 | 102 | 80 | 10,11,12 | 0.37 | 0 | 8,13,15 | 0.23 | 0 |
| 88 | ATP | 11 | 101 | 81 | 28,33,33 | 0.69 | 0 | 34,52,52 | 0.79 | 1 (2%) |
| 84 | SPD | 5 | 5101 | - | 9,9,9 | 0.35 | 0 | 8,8,8 | 0.81 | 0 |
| 89 | MET | 13 | 102 | 81 | 6,7,8 | 0.55 | 0 | 2,7,9 | 0.30 | 0 |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 90 | GCP | jj | 700 | 91 | - | 1/15/38/38 | 0/3/3/3 |
| 88 | ATP | 13 | 101 | 81 | - | 4/18/38/38 | 0/3/3/3 |
| 86 | GTP | 12 | 101 | 80 | - | 4/18/38/38 | 0/3/3/3 |
| 87 | PHE | 12 | 102 | 80 | - | 2/5/6/8 | 0/1/1/1 |
| 88 | ATP | 11 | 101 | 81 | - | 3/18/38/38 | 0/3/3/3 |
| 84 | SPD | 5 | 5101 | - | - | 1/7/7/7 | - |
| 89 | MET | 13 | 102 | 81 | - | 0/5/6/8 | - |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 90 | jj | 700 | GCP | PB-O3A | 9.95 | 1.69 | 1.58 |
| 86 | 12 | 101 | GTP | C5-C6 | -4.24 | 1.39 | 1.47 |
| 90 | jj | 700 | GCP | C6-N1 | 4.12 | 1.40 | 1.33 |
| 90 | jj | 700 | GCP | C8-N7 | -2.51 | 1.30 | 1.34 |
| 90 | jj | 700 | GCP | PB-O2B | -2.34 | 1.50 | 1.56 |
| 86 | 12 | 101 | GTP | C2-N3 | 2.07 | 1.38 | 1.33 |

All (14) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 90 | jj | 700 | GCP | C5-C6-N1 | -9.77 | 110.36 | 123.42 |
| 90 | jj | 700 | GCP | C2-N1-C6 | 7.18 | 125.94 | 115.96 |
| 86 | 12 | 101 | GTP | C8-N7-C5 | 3.66 | 108.78 | 102.55 |
| 90 | jj | 700 | GCP | O2B-PB-C3B | 3.25 | 120.20 | 106.73 |
| 86 | 12 | 101 | GTP | C2-N1-C6 | -3.09 | 119.45 | 125.11 |
| 90 | jj | 700 | GCP | N3-C2-N1 | -2.93 | 123.48 | 127.21 |
| 86 | 12 | 101 | GTP | C5-C6-N1 | 2.93 | 119.66 | 114.07 |
| 90 | jj | 700 | GCP | C2-N3-C4 | -2.58 | 112.71 | 115.48 |
| 90 | jj | 700 | GCP | O2A-PA-O3A | 2.49 | 114.00 | 107.27 |
| 88 | 11 | 101 | ATP | C5-C6-N6 | 2.34 | 123.87 | 120.31 |
| 88 | 13 | 101 | ATP | C5-C6-N6 | 2.27 | 123.77 | 120.31 |
| 90 | jj | 700 | GCP | O1G-PG-C3B | -2.27 | 106.42 | 111.37 |
| 86 | 12 | 101 | GTP | O6-C6-C5 | -2.09 | 120.18 | 124.32 |
| 90 | jj | 700 | GCP | O2B-PB-O1B | 2.08 | 116.72 | 109.95 |

There are no chirality outliers.

All (15) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 86 | 12 | 101 | GTP | PB-O3B-PG-O2G |
| 86 | 12 | 101 | GTP | C5'-O5'-PA-O2A |
| 88 | 13 | 101 | ATP | C5'-O5'-PA-O3A |
| 88 | 11 | 101 | ATP | C5'-O5'-PA-O1A |
| 88 | 11 | 101 | ATP | C5'-O5'-PA-O2A |
| 88 | 11 | 101 | ATP | C5'-O5'-PA-O3A |
| 90 | jj | 700 | GCP | PG-C3B-PB-O1B |
| 84 | 5 | 5101 | SPD | N6-C7-C8-C9 |
| 87 | 12 | 102 | PHE | CA-CB-CG-CD1 |
| 87 | 12 | 102 | PHE | CA-CB-CG-CD2 |
| 86 | 12 | 101 | GTP | C5'-O5'-PA-O3A |
| 86 | 12 | 101 | GTP | C5'-O5'-PA-O1A |
| 88 | 13 | 101 | ATP | C5'-O5'-PA-O1A |
| 88 | 13 | 101 | ATP | PB-O3A-PA-O1A |
| 88 | 13 | 101 | ATP | PB-O3A-PA-O2A |

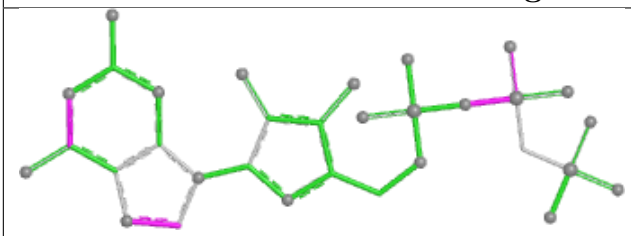
There are no ring outliers.

3 monomers are involved in 4 short contacts:

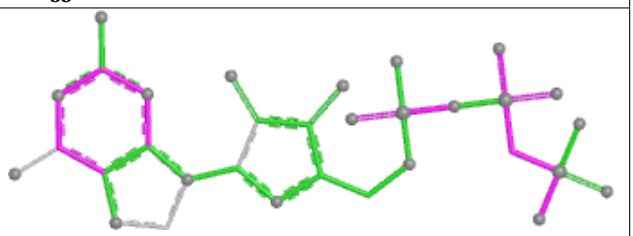
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 90 | jj | 700 | GCP | 2 | 0 |
| 86 | 12 | 101 | GTP | 1 | 0 |
| 88 | 11 | 101 | ATP | 1 | 0 |

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

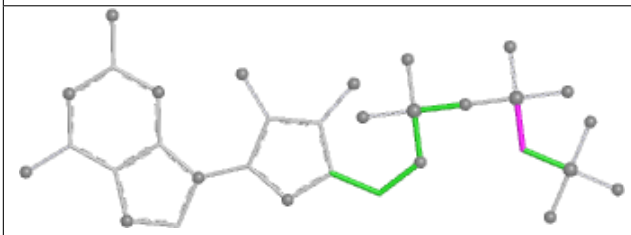
**Ligand GCP jj 700**



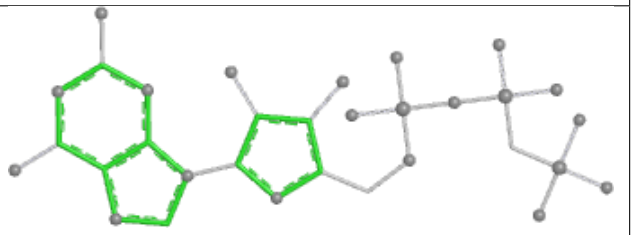
Bond lengths



Bond angles

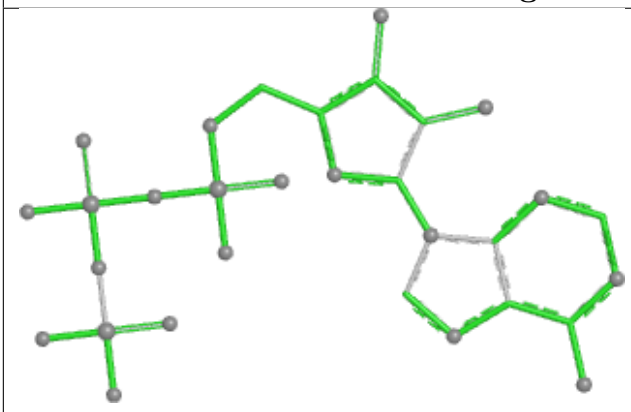


Torsions

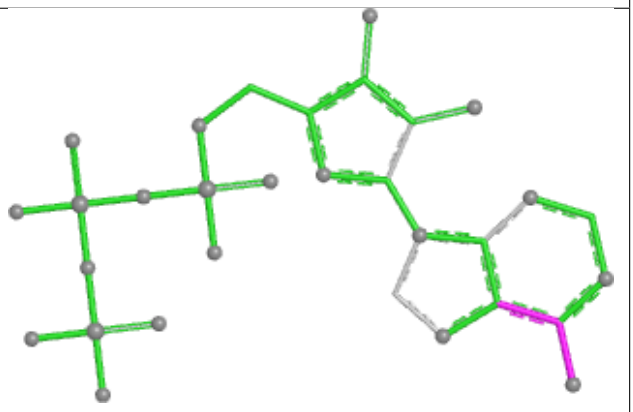


Rings

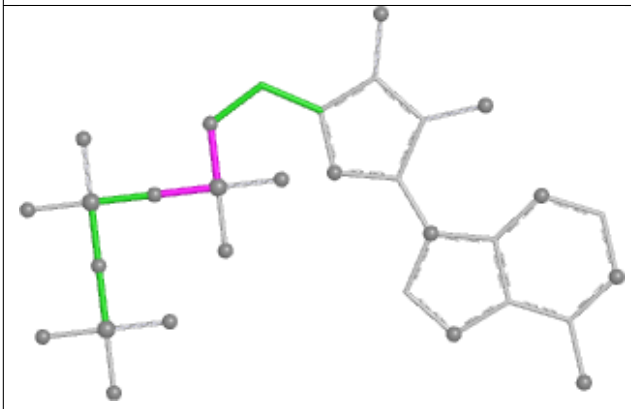
**Ligand ATP 13 101**



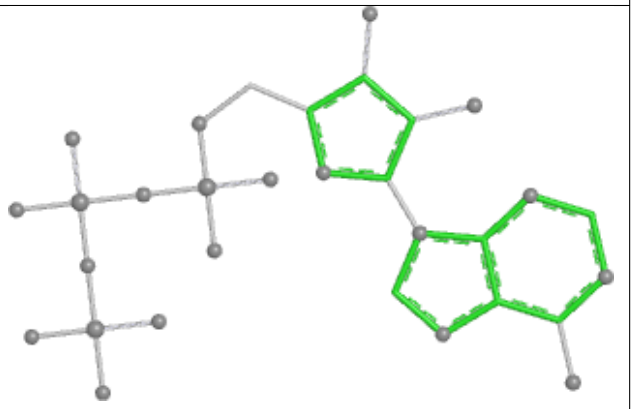
Bond lengths



Bond angles

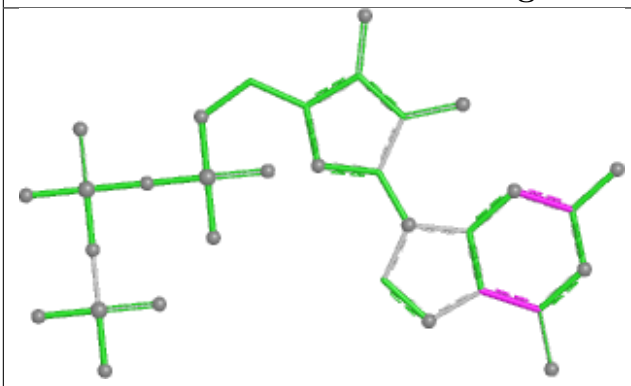


Torsions

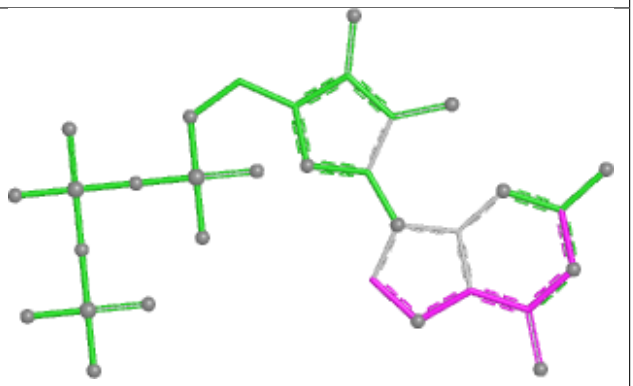


Rings

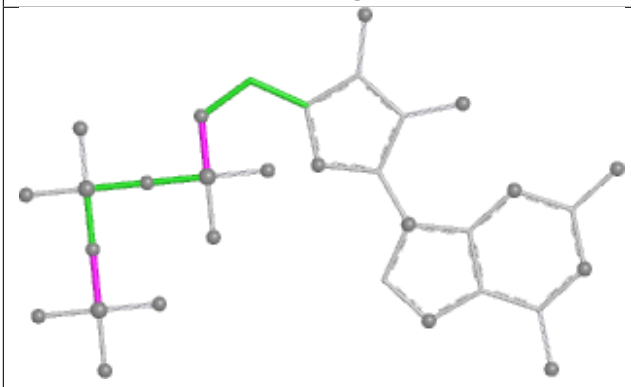
**Ligand GTP 12 101**



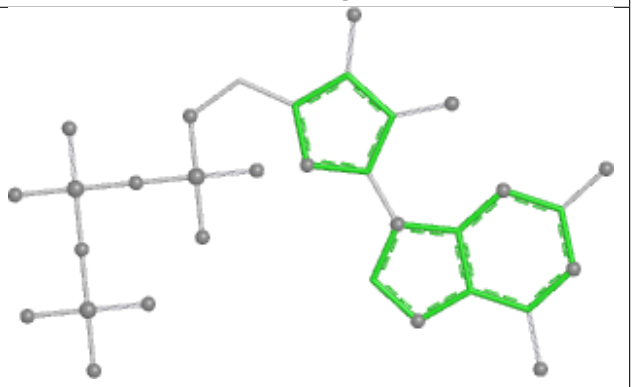
Bond lengths



Bond angles

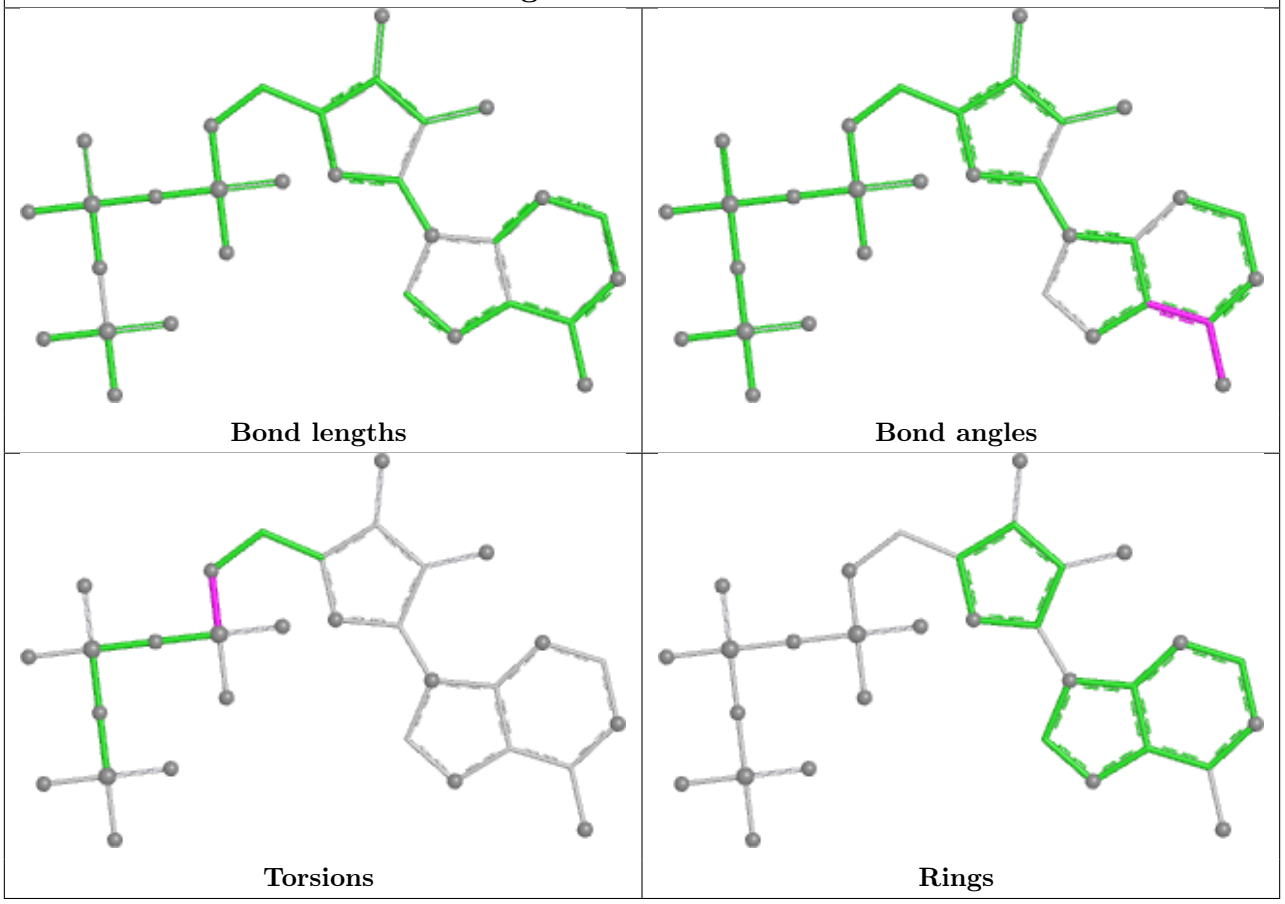


Torsions



Rings

**Ligand ATP 11 101**




## 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 | 5 | 23 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | 5 | 2113:G | O3' | 2258:C | P | 42.08 |
| 1 | 5 | 1252:C | O3' | 1271:G | P | 35.85 |
| 1 | 5 | 1219:G | O3' | 1233:G | P | 21.05 |
| 1 | 5 | 1406(C):G | O3' | 1411:C | P | 17.84 |
| 1 | 5 | 4101:C | O3' | 4107:G | P | 17.51 |

*Continued on next page...*

*Continued from previous page...*

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | 5 | 3976:C | O3' | 4035:G | P | 16.47 |
| 1 | 5 | 4777:C | O3' | 4859:C | P | 16.37 |
| 1 | 5 | 523:C | O3' | 638:G | P | 16.35 |
| 1 | 5 | 990:C | O3' | 1064:G | P | 16.22 |
| 1 | 5 | 4138:C | O3' | 4146:G | P | 15.98 |
| 1 | 5 | 760:G | O3' | 904:C | P | 15.31 |
| 1 | 5 | 182:G | O3' | 189:G | P | 14.89 |
| 1 | 5 | 1696:C | O3' | 1720:C | P | 14.40 |
| 1 | 5 | 1364:U | O3' | 1368:A | P | 14.28 |
| 1 | 5 | 5022:U | O3' | 5028:G | P | 14.08 |
| 1 | 5 | 2901:G | O3' | 3597:G | P | 12.71 |
| 1 | 5 | 1180:C | O3' | 1183:C | P | 9.74 |
| 1 | 5 | 4729:A | O3' | 4735:G | P | 9.59 |
| 1 | 5 | 512:U | O3' | 515:C | P | 7.55 |
| 1 | 5 | 4740:G | O3' | 4743:G | P | 7.19 |
| 1 | 5 | 500:G | O3' | 504:G | P | 6.31 |
| 1 | 5 | 1100:U | O3' | 1168:G | P | 6.31 |
| 1 | 5 | 4899:G | O3' | 4902:C | P | 3.24 |

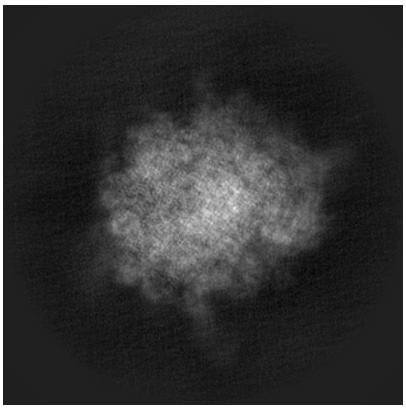
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-73302. These allow visual inspection of the internal detail of the map and identification of artifacts.

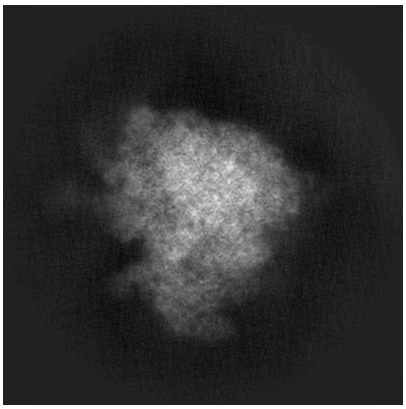
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections

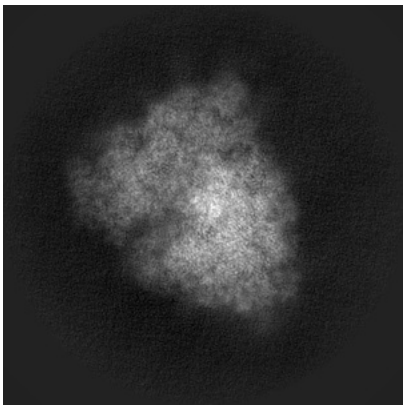
### 6.1.1 Primary map



X

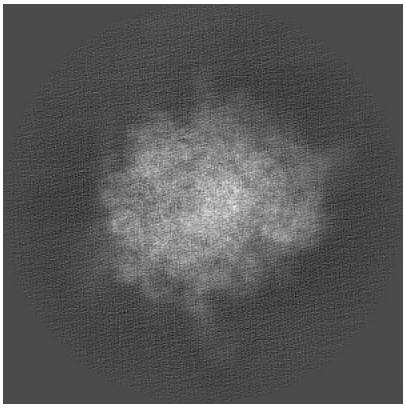


Y

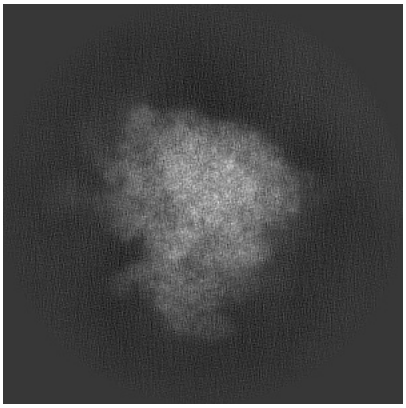


Z

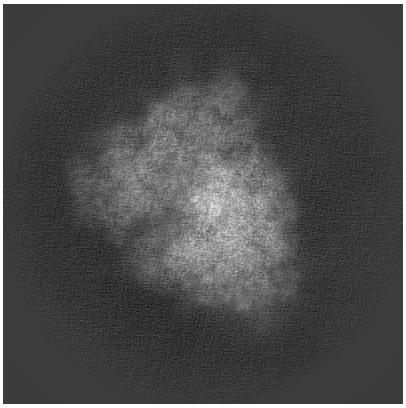
### 6.1.2 Raw map



X



Y

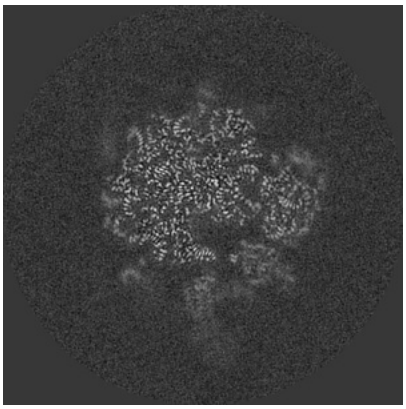


Z

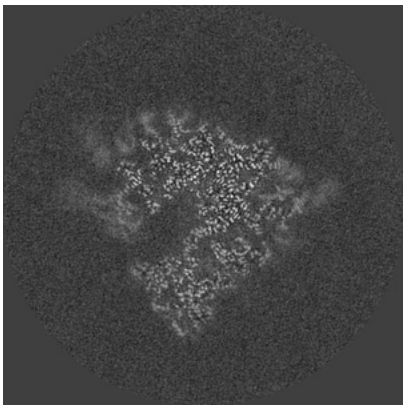
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices (i)

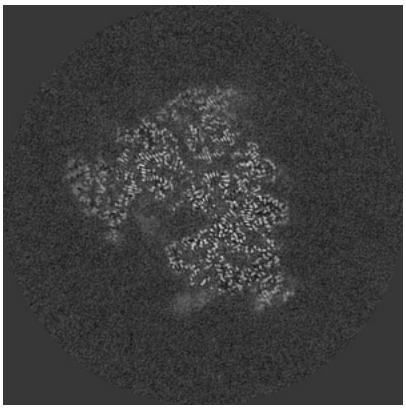
### 6.2.1 Primary map



X Index: 200

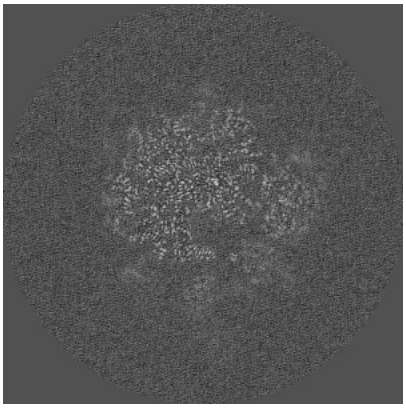


Y Index: 200

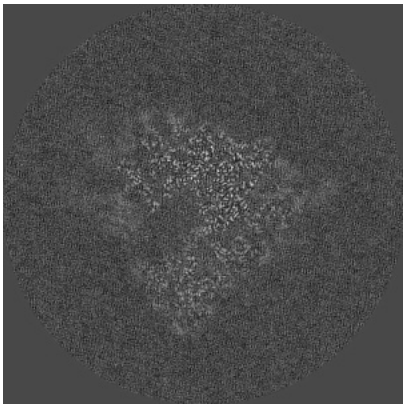


Z Index: 200

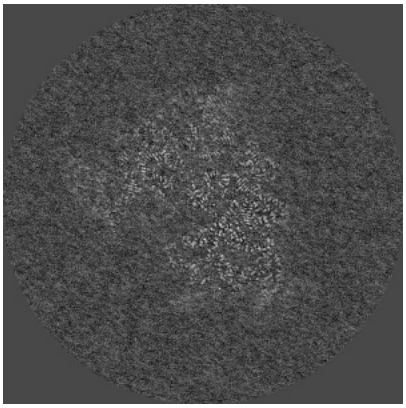
### 6.2.2 Raw map



X Index: 200



Y Index: 200

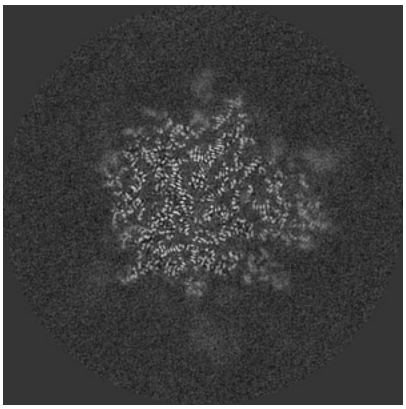


Z Index: 200

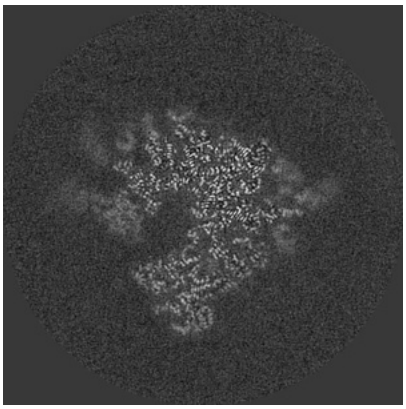
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

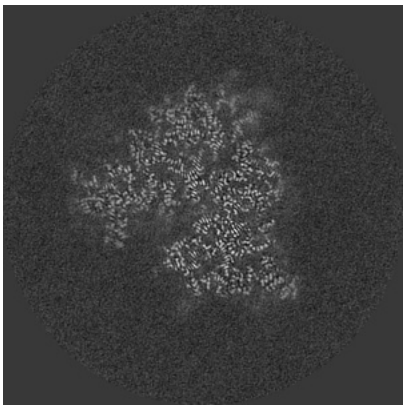
### 6.3.1 Primary map



X Index: 215

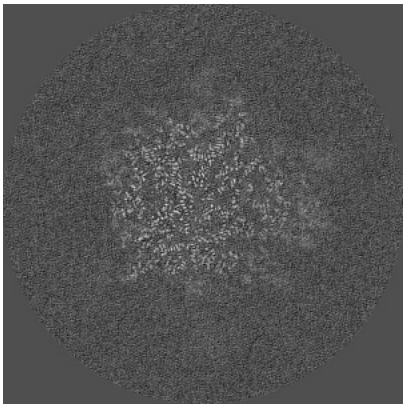


Y Index: 203

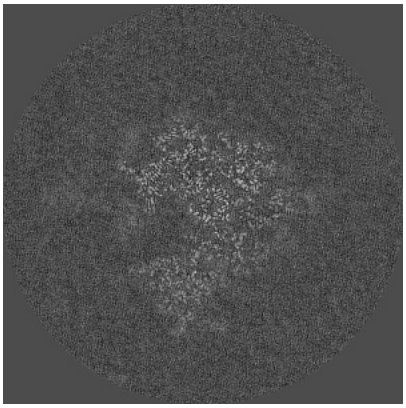


Z Index: 192

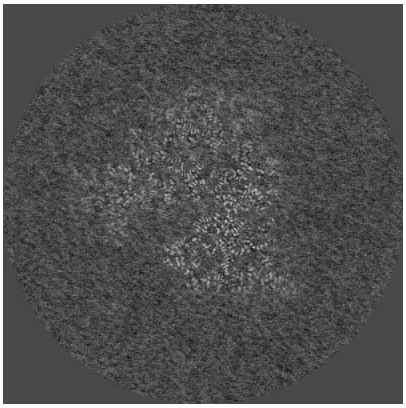
### 6.3.2 Raw map



X Index: 215



Y Index: 209

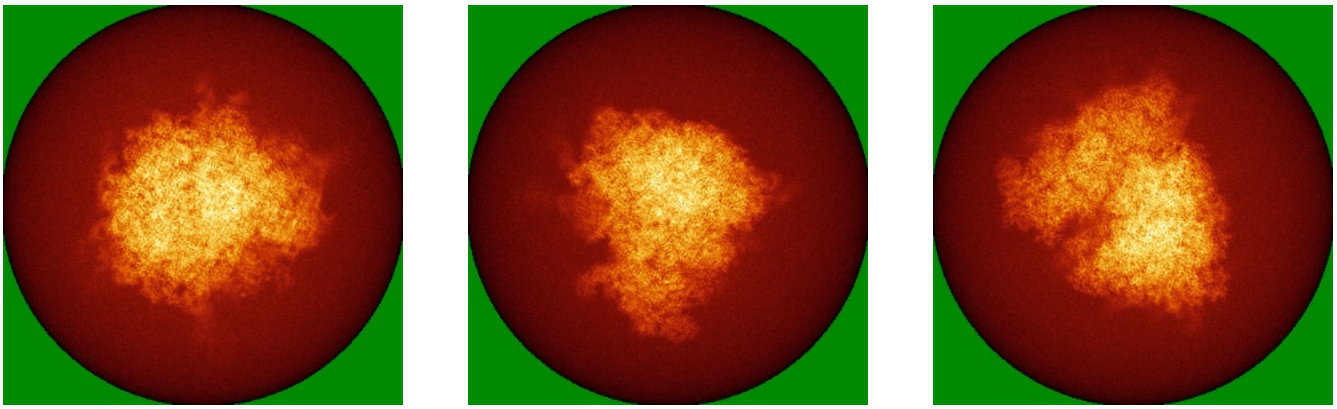


Z Index: 192

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

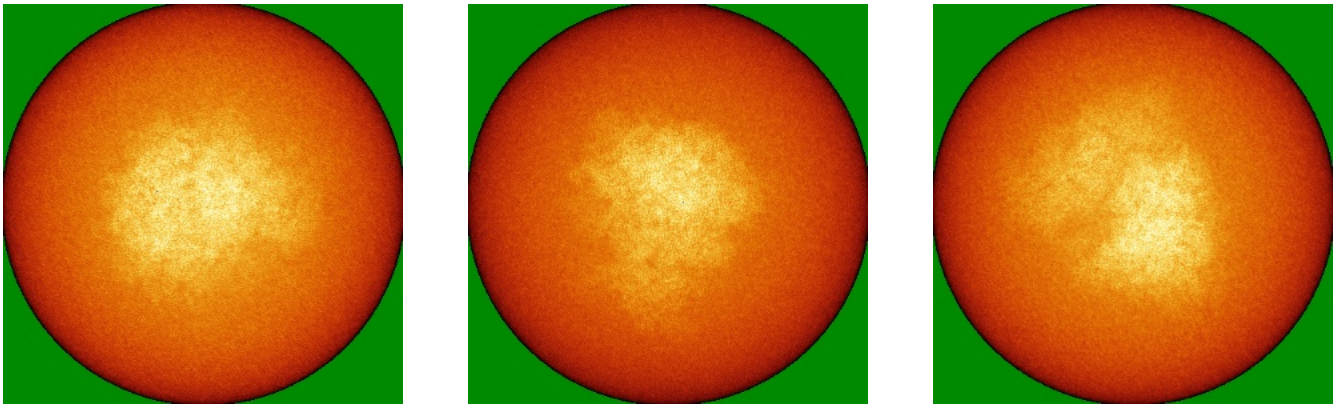
## 6.4 Orthogonal standard-deviation projections (False-color) (i)

### 6.4.1 Primary map



X Y Z

### 6.4.2 Raw map



X Y Z

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

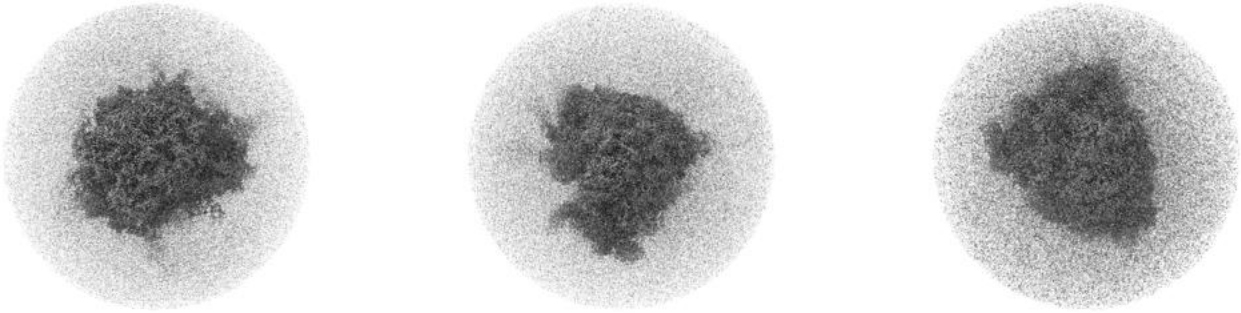
## 6.5 Orthogonal surface views (i)

### 6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.015. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



X Y Z

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

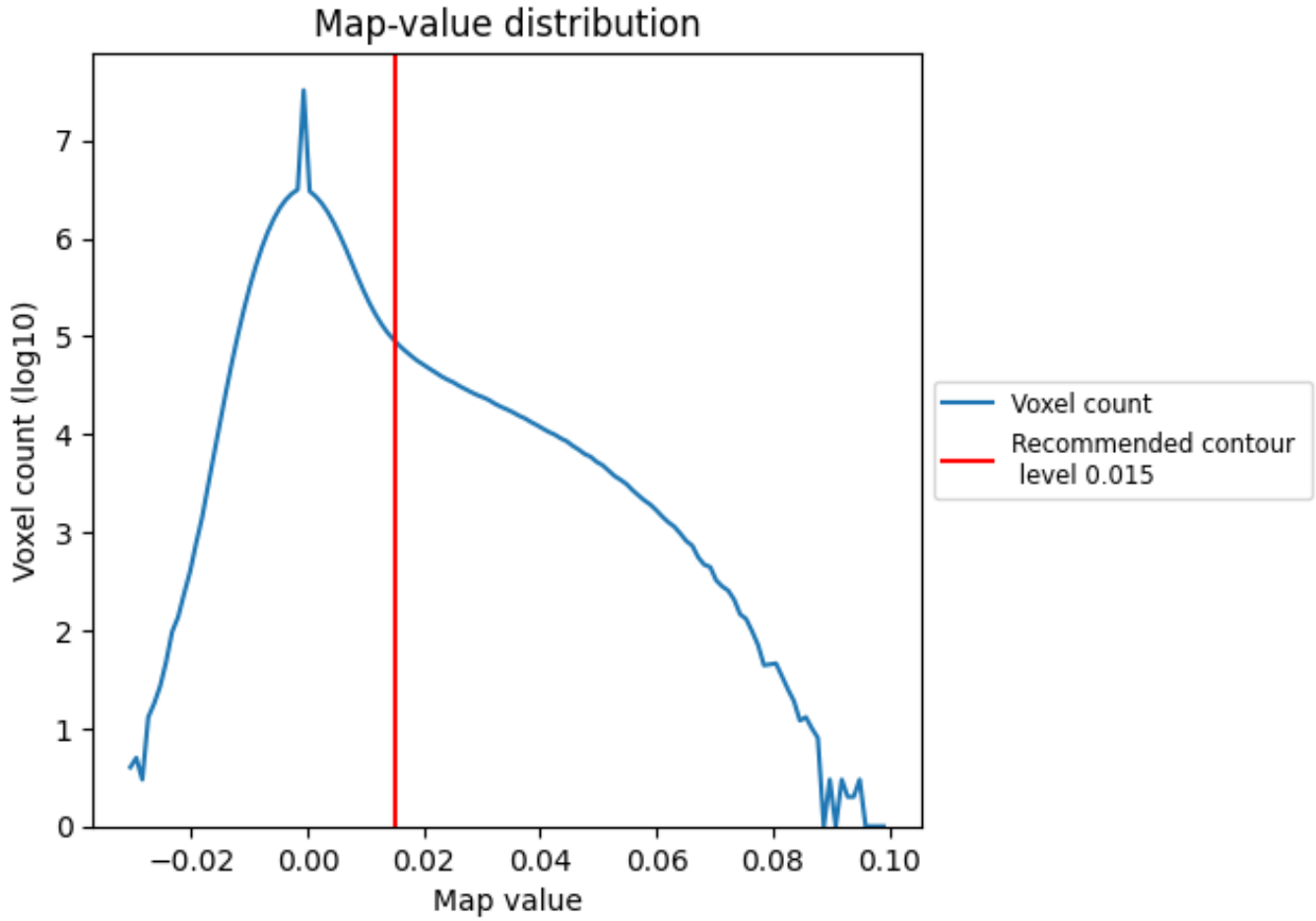
## 6.6 Mask visualisation (i)

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

# 7 Map analysis

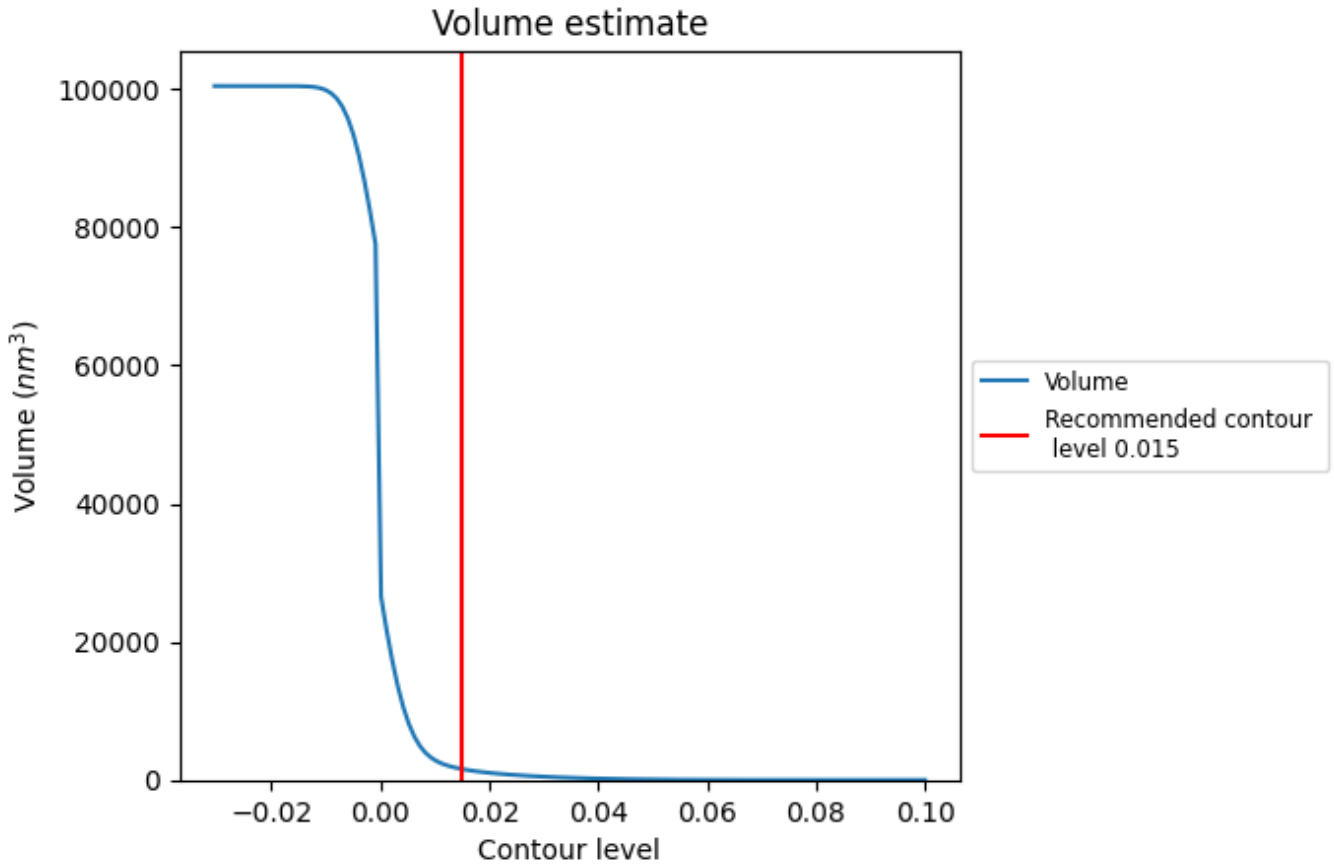
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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.

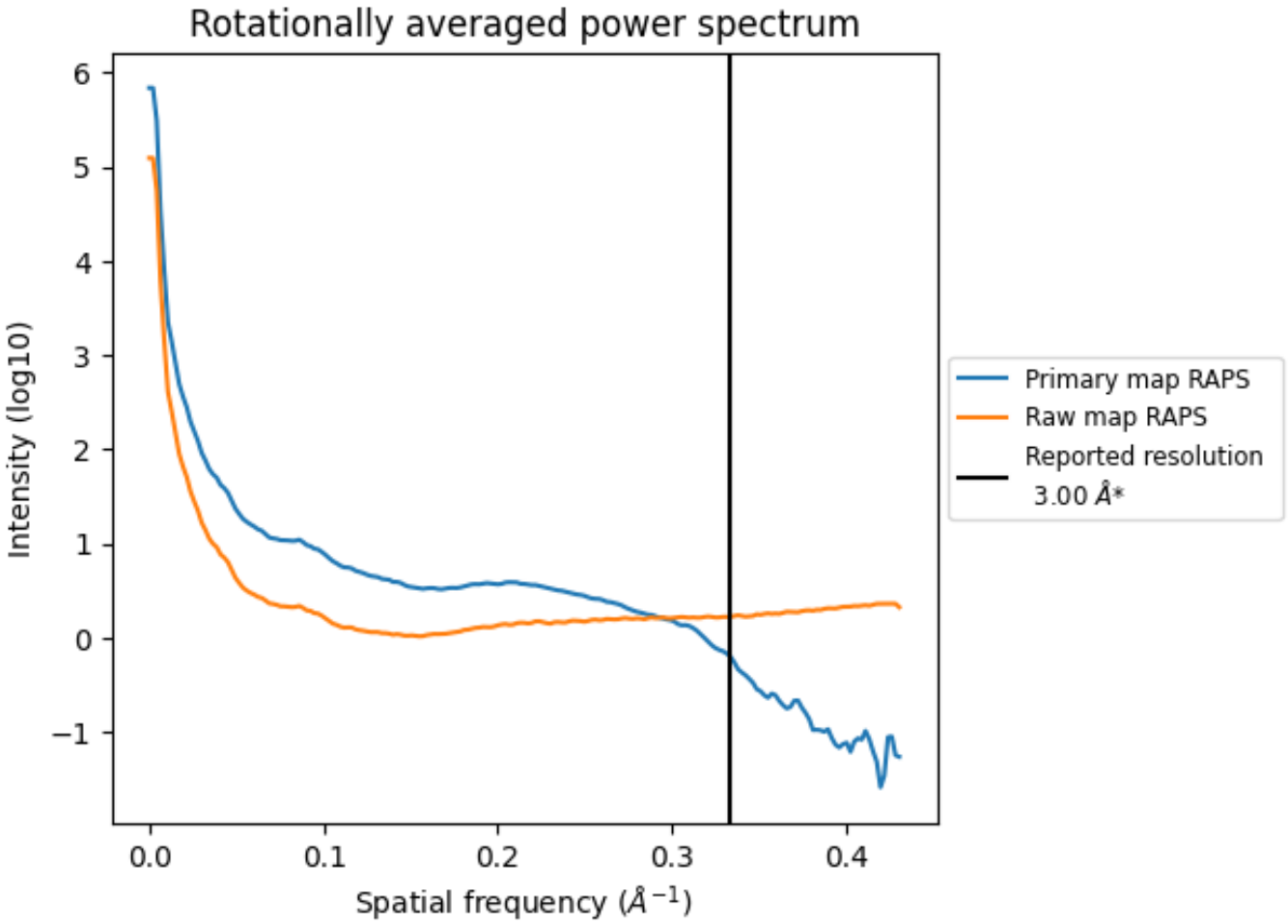
## 7.2 Volume estimate




The volume at the recommended contour level is 1580 $nm^3$; this corresponds to an approximate mass of 1427 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)

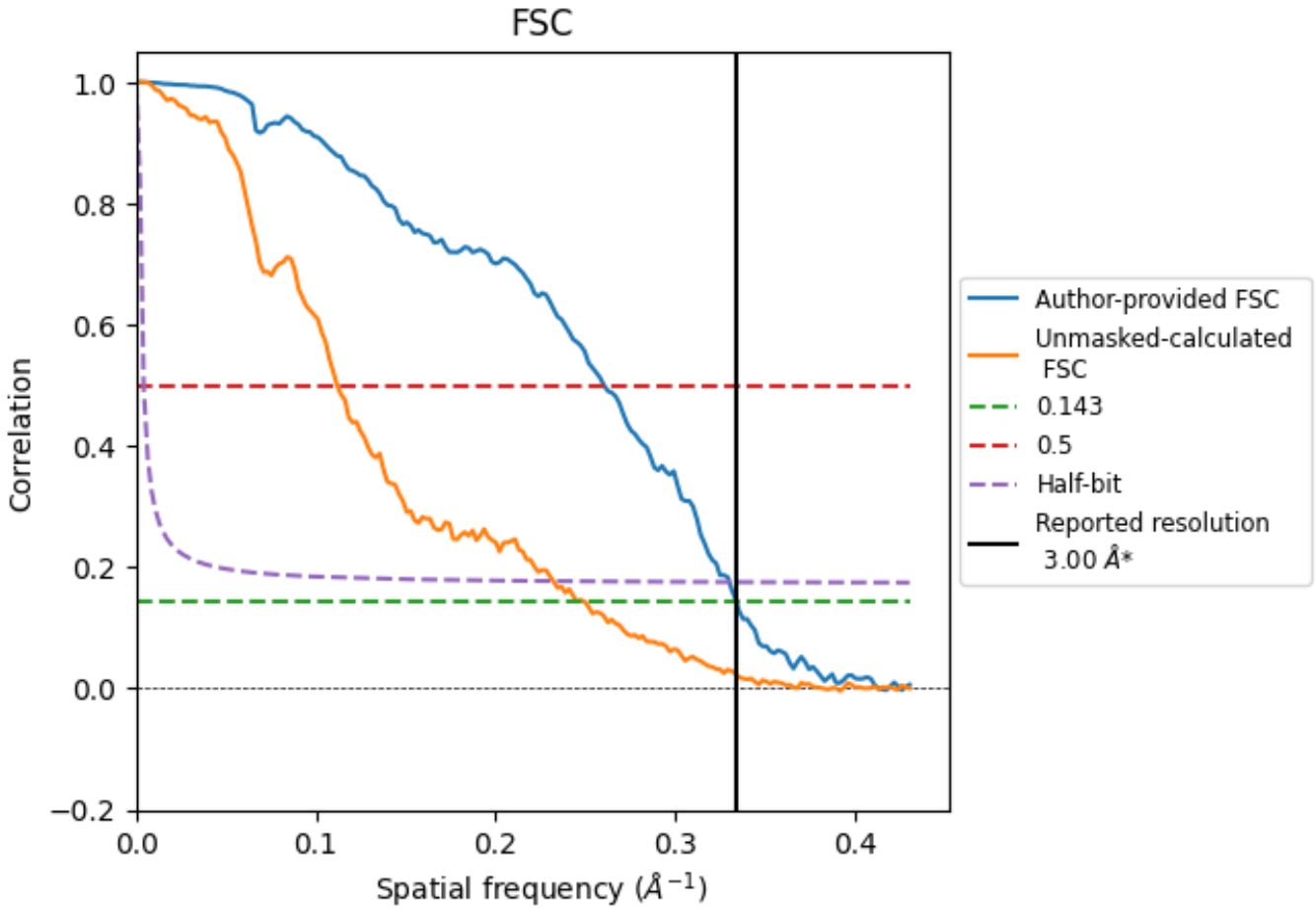



*Reported resolution corresponds to spatial frequency of 0.333 Å$^{-1}$

# 8 Fourier-Shell correlation

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

## 8.1 FSC




*Reported resolution corresponds to spatial frequency of 0.333 Å$^{-1}$

## 8.2 Resolution estimates (i)

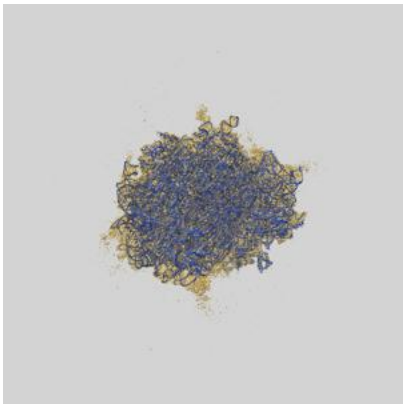
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 3.00 | - | - |
| Author-provided FSC curve | 2.99 | 3.84 | 3.03 |
| Unmasked-calculated* | 4.01 | 8.94 | 4.31 |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.01 differs from the reported value 3.0 by more than 10 %

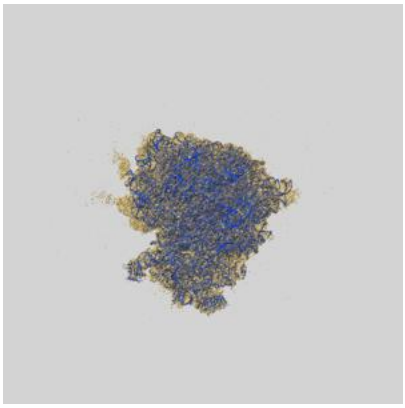
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-73302 and PDB model 9YPO. Per-residue inclusion information can be found in section 3 on page 31.

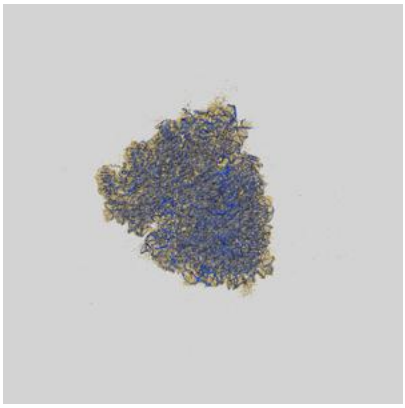
## 9.1 Map-model overlay



X



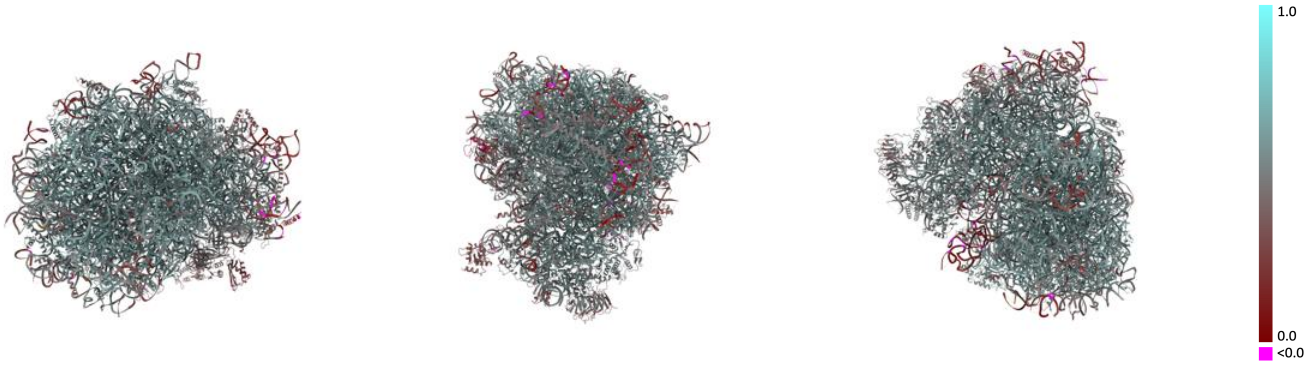
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.015 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.

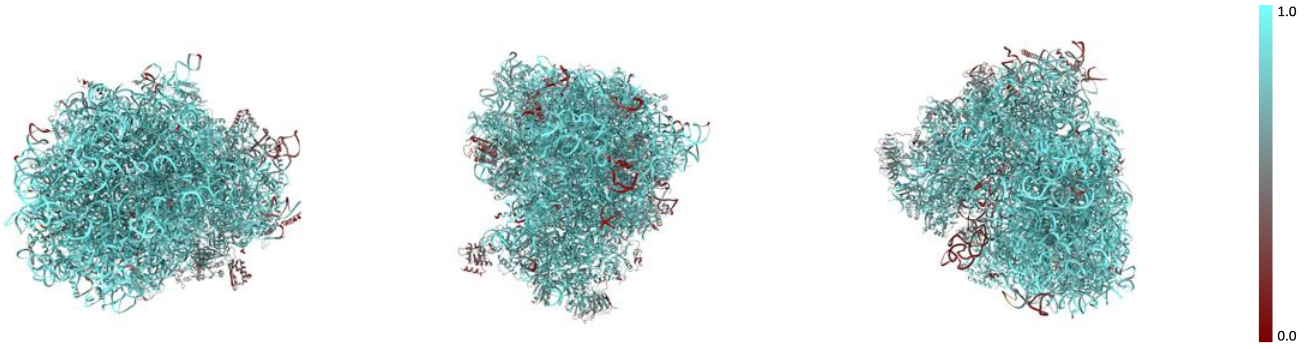
## 9.2 Q-score mapped to coordinate model (i)




X Y Z

The images above show the model with each residue coloured according 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.

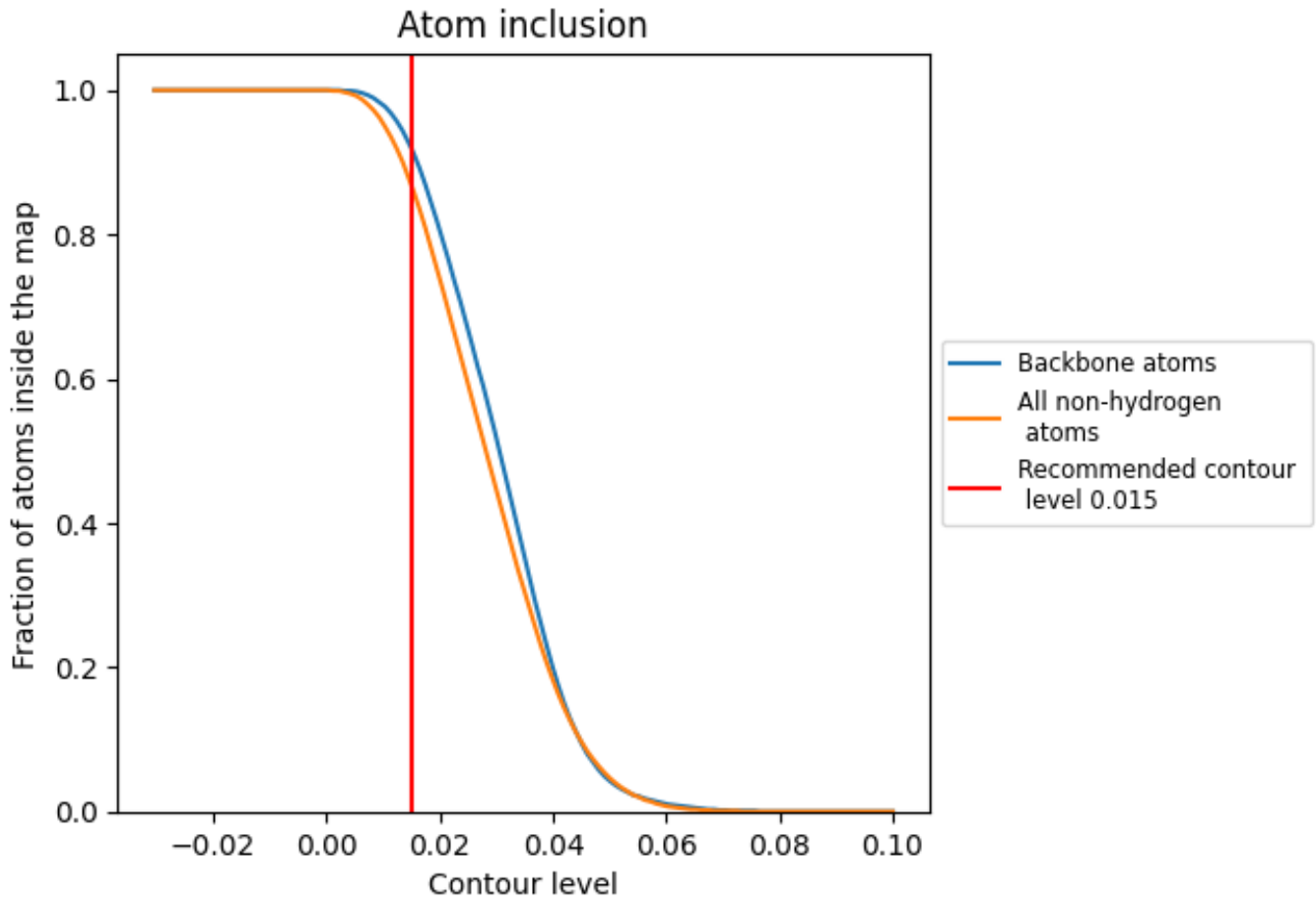
## 9.3 Atom inclusion mapped to coordinate model (i)




X Y Z

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 (0.015).

## 9.4 Atom inclusion (i)




At the recommended contour level, 92% of all backbone atoms, 87% 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 (0.015) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.8680 | 0.5370 |
| 10 | 0.9490 | 0.5630 |
| 11 | 0.3330 | 0.2410 |
| 12 | 0.8810 | 0.4700 |
| 13 | 0.6800 | 0.4420 |
| 5 | 0.9290 | 0.5490 |
| 7 | 0.9910 | 0.5970 |
| 8 | 0.9610 | 0.5760 |
| 9 | 0.9110 | 0.5260 |
| A | 0.9390 | 0.6060 |
| AA | 0.7690 | 0.5270 |
| B | 0.8880 | 0.5850 |
| BB | 0.8120 | 0.5460 |
| C | 0.9050 | 0.5850 |
| CC | 0.8390 | 0.5500 |
| D | 0.8500 | 0.5530 |
| DD | 0.7450 | 0.5110 |
| E | 0.8390 | 0.5490 |
| EE | 0.7980 | 0.5130 |
| FF | 0.7760 | 0.5180 |
| G | 0.7730 | 0.5250 |
| GG | 0.6750 | 0.4590 |
| H | 0.8350 | 0.5640 |
| HH | 0.5990 | 0.4650 |
| I | 0.8790 | 0.5790 |
| II | 0.7890 | 0.5230 |
| J | 0.8050 | 0.5320 |
| JJ | 0.7690 | 0.4910 |
| K | 0.9110 | 0.5900 |
| KK | 0.7560 | 0.4890 |
| L | 0.8330 | 0.5540 |
| LL | 0.8190 | 0.5520 |
| M | 0.8710 | 0.5600 |
| MM | 0.3310 | 0.3030 |
| N | 0.9480 | 0.6020 |

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| Chain | Atom inclusion | Q-score |
|---|---|---|
| NN | 0.8440 | 0.5580 |
| O | 0.9090 | 0.5910 |
| OO | 0.8490 | 0.5510 |
| P | 0.9050 | 0.5930 |
| PP | 0.7160 | 0.4860 |
| Q | 0.9050 | 0.5920 |
| QQ | 0.7890 | 0.5220 |
| R | 0.8280 | 0.5460 |
| RR | 0.6490 | 0.4930 |
| S | 0.9030 | 0.5920 |
| SS | 0.7500 | 0.4980 |
| T | 0.8610 | 0.5680 |
| TT | 0.7660 | 0.5060 |
| U | 0.7650 | 0.5000 |
| UU | 0.7160 | 0.4820 |
| V | 0.8960 | 0.5910 |
| VV | 0.7660 | 0.5200 |
| W | 0.6570 | 0.4660 |
| WW | 0.8650 | 0.5700 |
| X | 0.8610 | 0.5630 |
| XX | 0.8720 | 0.5690 |
| Y | 0.8640 | 0.5700 |
| YY | 0.7320 | 0.4860 |
| Z | 0.8580 | 0.5590 |
| ZZ | 0.6790 | 0.4770 |
| a | 0.9240 | 0.5930 |
| aa | 0.8390 | 0.5530 |
| b | 0.8160 | 0.5390 |
| bb | 0.7620 | 0.5220 |
| c | 0.8480 | 0.5610 |
| cc | 0.7550 | 0.5250 |
| d | 0.8290 | 0.5600 |
| dd | 0.8760 | 0.5600 |
| e | 0.9230 | 0.5990 |
| ee | 0.6960 | 0.4700 |
| f | 0.9330 | 0.6080 |
| ff | 0.4150 | 0.3580 |
| g | 0.8770 | 0.5740 |
| gg | 0.6100 | 0.4340 |
| h | 0.8490 | 0.5530 |
| i | 0.8430 | 0.5480 |
| j | 0.9500 | 0.6030 |

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| Chain | Atom inclusion | Q-score |
|---|---|---|
| jj | 0.5690 | 0.3990 |
| k | 0.7420 | 0.5180 |
| l | 0.9160 | 0.5830 |
| m | 0.8680 | 0.5780 |
| n | 0.9360 | 0.5840 |
| o | 0.8830 | 0.5820 |
| p | 0.8720 | 0.5780 |
| r | 0.9140 | 0.5890 |