# Full wwPDB EM Validation Report ⓘ

Nov 13, 2024 – 01:58 PM EST

| | | |
|---|---|---|
| PDB ID | : | 3J7P |
| EMDB ID | : | EMD-2646 |
| Title | : | Structure of the 80S mammalian ribosome bound to eEF2 |
| Authors | : | Voorhees, R.M.; Fernandez, I.S.; Scheres, S.H.W.; Hegde, R.S. |
| Deposited on | : | 2014-08-01 |
| Resolution | : | 3.50 Å(reported) |
| Based on initial models | : | 3J3B, 3J3D, 3J3F, 3J3A |

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

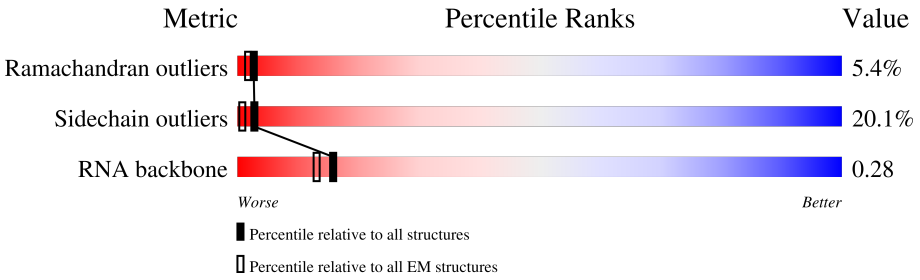
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev113 |
| MolProbity | : | 4.02b-467 |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.39 |

# 1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.50 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) |
|---|---|---|
| Ramachandran outliers | 207382 | 16835 |
| Sidechain outliers | 206894 | 16415 |
| RNA backbone | 6643 | 2191 |

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 | 3664 | 5% 47% 40% 10% • |
| 2 | 7 | 120 | 69% 24% 6% • |
| 3 | 8 | 156 | • 53% 33% 8% 5% |
| 4 | A | 257 | 71% 18% 5% • 5% |
| 5 | B | 394 | 74% 21% • • |
| 6 | C | 367 | • 77% 19% • • |
| 7 | D | 297 | 68% 25% • • • |
| 8 | E | 236 | 7% 64% 26% 9% • |

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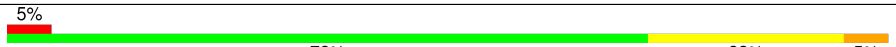
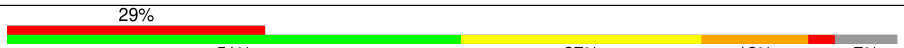
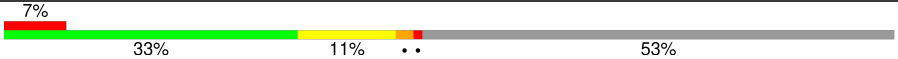
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 9 | F | 225 |   |
| 10 | G | 266 |   |
| 11 | H | 192 |   |
| 12 | I | 213 |   |
| 13 | J | 178 |   |
| 14 | K | 163 |   |
| 15 | L | 211 |   |
| 16 | M | 213 |   |
| 17 | N | 204 |   |
| 18 | O | 204 |   |
| 19 | P | 153 |   |
| 20 | Q | 188 |   |
| 21 | R | 196 |   |
| 22 | S | 224 |   |
| 23 | T | 160 |   |
| 24 | U | 128 |   |
| 25 | V | 140 |   |
| 26 | W | 157 |   |
| 27 | X | 156 |   |
| 28 | Y | 145 |   |
| 29 | Z | 136 |   |
| 30 | a | 148 |   |
| 31 | b | 160 |   |
| 32 | c | 115 |   |
| 33 | d | 125 |   |

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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 34 | e | 135 | 68% 23% 5% |
| 35 | f | 110 | 78% 15% 5% |
| 36 | g | 117 | 77% 19% |
| 37 | h | 123 | 80% 12% 6% |
| 38 | i | 105 | 76% 17% |
| 39 | j | 86 | 73% 21% 6% |
| 40 | k | 70 | 71% 27% |
| 41 | l | 51 | 76% 18% |
| 42 | m | 128 | 30% 10% 59% |
| 43 | n | 25 | 72% 20% 8% |
| 44 | o | 106 | 69% 23% 6% |
| 45 | p | 91 | 82% 15% |
| 46 | q | 202 | 15% 59% 28% 11% |
| 47 | r | 125 | 74% 22% |
| 48 | 4 | 856 | 22% 74% 20% 5% |
| 49 | S2 | 1742 | 5% 48% 41% 8% |
| 50 | SA | 295 | 56% 14% 29% |
| 51 | SB | 264 | 62% 15% 19% |
| 52 | SC | 218 | 79% 17% |
| 53 | SD | 243 | 9% 76% 14% 7% |
| 54 | SE | 263 | 76% 20% |
| 55 | SF | 204 | 15% 70% 23% 6% |
| 56 | SG | 249 | 5% 77% 15% 5% |
| 57 | SH | 194 | 5% 79% 15% |
| 58 | SI | 208 | 7% 76% 19% |

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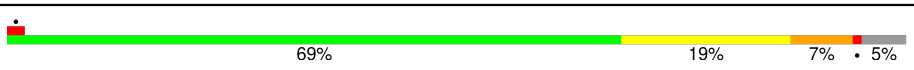
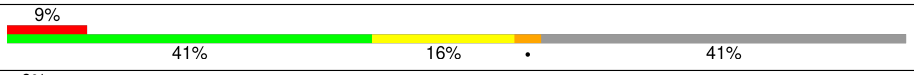
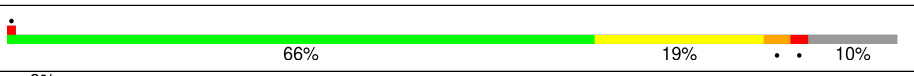
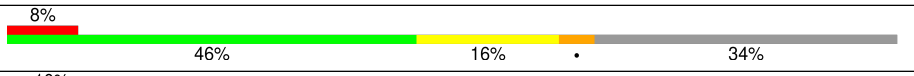
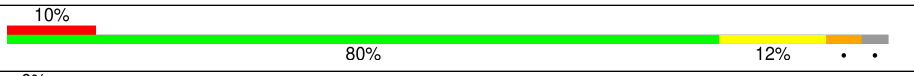
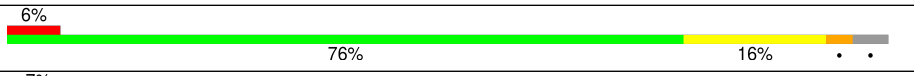
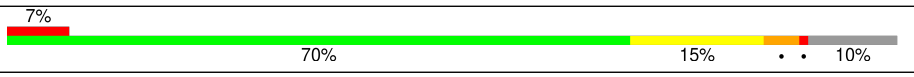
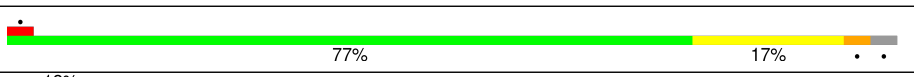
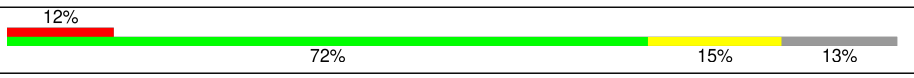
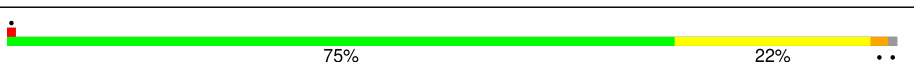
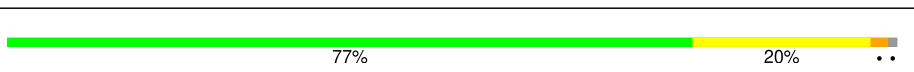
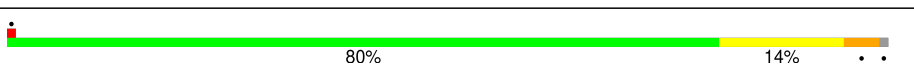
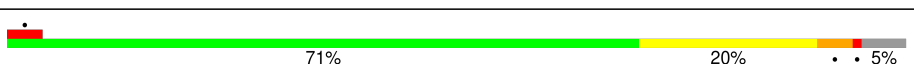
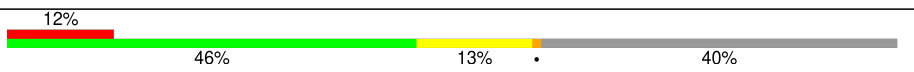
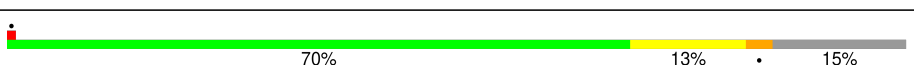
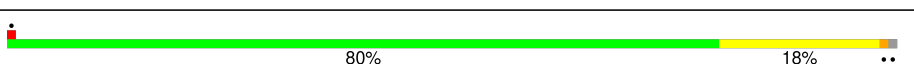
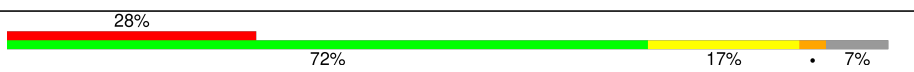
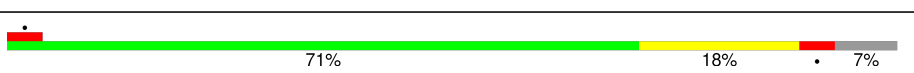
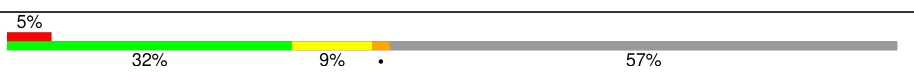
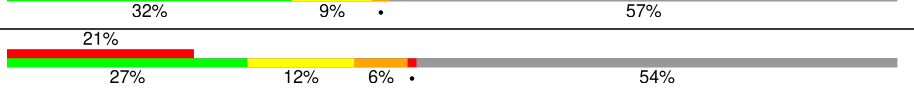
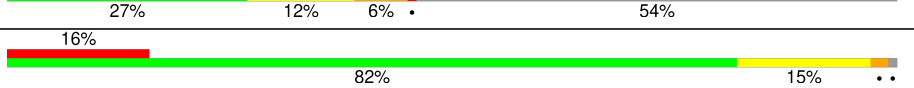
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 59 | SJ | 194 |   |
| 60 | SK | 165 |   |
| 61 | SL | 158 |   |
| 62 | SM | 124 |   |
| 63 | SN | 151 |   |
| 64 | SO | 151 |   |
| 65 | SP | 145 |   |
| 66 | SQ | 146 |   |
| 67 | SR | 135 |   |
| 68 | SS | 152 |   |
| 69 | ST | 145 |   |
| 70 | SU | 119 |   |
| 71 | SV | 83 |   |
| 72 | SW | 130 |   |
| 73 | SX | 143 |   |
| 74 | SY | 132 |   |
| 75 | SZ | 125 |   |
| 76 | Sa | 115 |   |
| 77 | Sb | 84 |   |
| 78 | Sc | 69 |   |
| 79 | Sd | 56 |   |
| 80 | Se | 133 |   |
| 81 | Sf | 156 |   |
| 82 | Sg | 317 |   |

# 2 Entry composition (i)

There are 84 unique types of molecules in this entry. The entry contains 221686 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 | 3662 | 78486 | 34947 | 14363 | 25515 | 3661 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 2 | 7 | 120 | 2558 | 1141 | 456 | 842 | 119 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 3 | 8 | 156 | 3314 | 1480 | 585 | 1094 | 155 | 0 | 0 |

- Molecule 4 is a protein called Ribosomal protein uL2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 4 | A | 244 | 1868 | 1171 | 382 | 309 | 6 | 0 | 0 |

- Molecule 5 is a protein called Ribosomal protein uL3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 5 | B | 394 | 3147 | 2005 | 591 | 538 | 13 | 0 | 0 |

- Molecule 6 is a protein called Ribosomal protein uL4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 6 | C | 367 | 2919 | 1836 | 582 | 486 | 15 | 0 | 0 |

- Molecule 7 is a protein called Ribosomal protein uL18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | D | 292 | Total | C | N | O | S | 0 | 0 |
| | | | 2380 | 1508 | 434 | 426 | 12 | | |

- Molecule 8 is a protein called Ribosomal protein eL6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | E | 236 | Total | C | N | O | S | 0 | 0 |
| | | | 1904 | 1219 | 364 | 316 | 5 | | |

- Molecule 9 is a protein called Ribosomal protein uL30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | F | 225 | Total | C | N | O | S | 0 | 0 |
| | | | 1870 | 1202 | 358 | 301 | 9 | | |

- Molecule 10 is a protein called Ribosomal protein eL8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | G | 241 | Total | C | N | O | S | 0 | 0 |
| | | | 1934 | 1232 | 372 | 326 | 4 | | |

- Molecule 11 is a protein called Ribosomal protein uL6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | H | 190 | Total | C | N | O | S | 0 | 0 |
| | | | 1518 | 956 | 284 | 272 | 6 | | |

- Molecule 12 is a protein called Ribosomal protein uL16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | I | 213 | Total | C | N | O | S | 0 | 0 |
| | | | 1713 | 1083 | 331 | 284 | 15 | | |

- Molecule 13 is a protein called Ribosomal protein uL5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | J | 170 | Total | C | N | O | S | 0 | 0 |
| | | | 1359 | 856 | 256 | 241 | 6 | | |

- Molecule 14 is a protein called Ribosomal protein uL11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | K | 151 | Total | C | N | O | S | 0 | 0 |
| | | | 1140 | 708 | 215 | 213 | 4 | | |

- Molecule 15 is a protein called Ribosomal protein eL13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | L | 210 | Total | C | N | O | S | 0 | 0 |
| | | | 1703 | 1064 | 354 | 280 | 5 | | |

- Molecule 16 is a protein called Ribosomal protein eL14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | M | 138 | Total | C | N | O | S | 0 | 0 |
| | | | 1131 | 727 | 216 | 181 | 7 | | |

- Molecule 17 is a protein called Ribosomal protein eL15.

| 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 Ribosomal protein uL13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | O | 201 | Total | C | N | O | S | 0 | 0 |
| | | | 1651 | 1063 | 323 | 260 | 5 | | |

- Molecule 19 is a protein called Ribosomal protein uL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 19 | P | 153 | Total | C | N | O | S | 0 | 0 |
| | | | 1242 | 776 | 241 | 216 | 9 | | |

- Molecule 20 is a protein called Ribosomal protein eL18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | Q | 187 | Total | C | N | O | S | 0 | 0 |
| | | | 1506 | 941 | 311 | 249 | 5 | | |

- Molecule 21 is a protein called Ribosomal protein eL19.

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

- Molecule 22 is a protein called Ribosomal protein eL20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | S | 175 | Total | C | N | O | S | 0 | 0 |
| | | | 1454 | 925 | 284 | 235 | 10 | | |

- Molecule 23 is a protein called Ribosomal protein 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 Ribosomal protein eL22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | U | 99 | Total | C | N | O | S | 0 | 0 |
| | | | 808 | 518 | 141 | 147 | 2 | | |

- Molecule 25 is a protein called Ribosomal protein uL14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | V | 131 | Total | C | N | O | S | 0 | 0 |
| | | | 979 | 618 | 184 | 172 | 5 | | |

- Molecule 26 is a protein called Ribosomal protein eL24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | W | 63 | Total | C | N | O | S | 0 | 0 |
| | | | 528 | 337 | 103 | 85 | 3 | | |

- Molecule 27 is a protein called Ribosomal protein uL23.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | X | 119 | Total | C | N | O | S | 0 | 0 |
| | | | 976 | 624 | 183 | 168 | 1 | | |

- Molecule 28 is a protein called Ribosomal protein 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 Ribosomal protein eL27.

| 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 Ribosomal protein uL15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | a | 147 | Total | C | N | O | S | 0 | 0 |
| | | | 1163 | 735 | 239 | 185 | 4 | | |

- Molecule 31 is a protein called Ribosomal protein eL29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 31 | b | 75 | Total | C | N | O | S | 0 | 0 |
| | | | 610 | 378 | 130 | 99 | 3 | | |

- Molecule 32 is a protein called Ribosomal protein eL30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | c | 94 | Total | C | N | O | S | 0 | 0 |
| | | | 732 | 465 | 130 | 131 | 6 | | |

- Molecule 33 is a protein called Ribosomal protein 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 eL32.

| 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 Ribosomal protein eL33.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | f | 109 | Total | C | N | O | S | 0 | 0 |
| | | | 876 | 555 | 174 | 144 | 3 | | |

- Molecule 36 is a protein called Ribosomal 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 Ribosomal protein uL29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 37 | h | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 1015 | 642 | 205 | 167 | 1 | | |

- Molecule 38 is a protein called Ribosomal protein eL36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 38 | i | 102 | Total | C | N | O | S | 0 | 0 |
| | | | 832 | 521 | 177 | 129 | 5 | | |

- Molecule 39 is a protein called Ribosomal protein eL37.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 39 | j | 86 | Total | C | N | O | S | 0 | 0 |
| | | | 706 | 436 | 155 | 110 | 5 | | |

- Molecule 40 is a protein called Ribosomal protein eL38.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 40 | k | 69 | Total | C | N | O | S | 0 | 0 |
| | | | 569 | 366 | 103 | 99 | 1 | | |

- Molecule 41 is a protein called Ribosomal protein eL39.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 41 | l | 50 | Total | C | N | O | S | 0 | 0 |
| | | | 444 | 281 | 98 | 64 | 1 | | |

- Molecule 42 is a protein called Ribosomal protein eL40.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | m | 52 | Total | C | N | O | S | 0 | 0 |
| | | | 429 | 266 | 90 | 67 | 6 | | |

- Molecule 43 is a protein called Ribosomal protein eL41.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 43 | n | 23 | Total | C | N | O | S | 0 | 0 |
| | | | 222 | 134 | 61 | 25 | 2 | | |

- Molecule 44 is a protein called Ribosomal protein eL42.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | o | 104 | Total | C | N | O | S | 0 | 0 |
| | | | 851 | 533 | 174 | 138 | 6 | | |

- Molecule 45 is a protein called Ribosomal protein eL43.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 45 | p | 91 | Total | C | N | O | S | 0 | 0 |
| | | | 708 | 445 | 136 | 120 | 7 | | |

- Molecule 46 is a protein called Ribosomal protein uL10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 46 | q | 202 | Total | C | N | O | S | 0 | 0 |
| | | | 1556 | 989 | 272 | 286 | 9 | | |

- Molecule 47 is a protein called Ribosomal protein eL28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 47 | r | 125 | Total | C | N | O | S | 0 | 0 |
| | | | 1001 | 622 | 206 | 168 | 5 | | |

- Molecule 48 is a protein called Eukaryotic elongation factor 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 48 | 4 | 856 | Total | C | N | O | S | 0 | 0 |
| | | | 6673 | 4234 | 1148 | 1247 | 44 | | |

- Molecule 49 is a RNA chain called 18S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 49 | S2 | 1742 | Total | C | N | O | P | 0 | 0 |
| | | | 36900 | 16458 | 6595 | 12106 | 1741 | | |

- Molecule 50 is a protein called Ribosomal protein uS2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 50 | SA | 208 | Total | C | N | O | S | 0 | 0 |
| | | | 1642 | 1045 | 289 | 300 | 8 | | |

- Molecule 51 is a protein called Ribosomal protein eS1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 51 | SB | 213 | Total | C | N | O | S | 0 | 0 |
| | | | 1725 | 1093 | 311 | 308 | 13 | | |

- Molecule 52 is a protein called Ribosomal protein uS5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 52 | SC | 218 | Total | C | N | O | S | 0 | 0 |
| | | | 1690 | 1094 | 289 | 297 | 10 | | |

- Molecule 53 is a protein called Ribosomal protein uS3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 53 | SD | 227 | Total | C | N | O | S | 0 | 0 |
| | | | 1765 | 1125 | 317 | 315 | 8 | | |

- Molecule 54 is a protein called Ribosomal protein eS4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 54 | SE | 262 | Total | C | N | O | S | 0 | 0 |
| | | | 2076 | 1324 | 386 | 358 | 8 | | |

- Molecule 55 is a protein called Ribosomal protein uS7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 55 | SF | 191 | Total | C | N | O | S | 0 | 0 |
| | | | 1509 | 943 | 286 | 273 | 7 | | |

- Molecule 56 is a protein called Ribosomal protein eS6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 56 | SG | 237 | Total | C | N | O | S | 0 | 0 |
| | | | 1923 | 1200 | 387 | 329 | 7 | | |

- Molecule 57 is a protein called Ribosomal protein eS7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 57 | SH | 189 | Total | C | N | O | S | 0 | 0 |
| | | | 1521 | 969 | 280 | 271 | 1 | | |

- Molecule 58 is a protein called Ribosomal protein eS8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 58 | SI | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1686 | 1058 | 332 | 291 | 5 | | |

- Molecule 59 is a protein called Ribosomal protein uS4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 59 | SJ | 185 | Total | C | N | O | S | 0 | 0 |
| | | | 1525 | 969 | 306 | 248 | 2 | | |

- Molecule 60 is a protein called Ribosomal protein eS10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 60 | SK | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 827 | 539 | 148 | 134 | 6 | | |

- Molecule 61 is a protein called Ribosomal protein uS17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 61 | SL | 152 | Total | C | N | O | S | 0 | 0 |
| | | | 1238 | 788 | 232 | 212 | 6 | | |

- Molecule 62 is a protein called Ribosomal protein eS12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 62 | SM | 124 | Total | C | N | O | S | 0 | 0 |
| | | | 960 | 600 | 171 | 181 | 8 | | |

- Molecule 63 is a protein called Ribosomal protein uS15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 63 | SN | 150 | Total | C | N | O | S | 0 | 0 |
| | | | 1208 | 773 | 229 | 205 | 1 | | |

- Molecule 64 is a protein called Ribosomal protein uS11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 64 | SO | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1016 | 621 | 199 | 190 | 6 | | |

- Molecule 65 is a protein called Ribosomal protein uS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 65 | SP | 96 | Total | C | N | O | S | 0 | 0 |
| | | | 805 | 506 | 158 | 135 | 6 | | |

- Molecule 66 is a protein called Ribosomal protein uS9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 66 | SQ | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1124 | 715 | 212 | 194 | 3 | | |

- Molecule 67 is a protein called Ribosomal protein eS17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 67 | SR | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1047 | 658 | 193 | 191 | 5 | | |

- Molecule 68 is a protein called Ribosomal protein uS13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 68 | SS | 137 | Total | C | N | O | S | 0 | 0 |
| | | | 1139 | 714 | 231 | 193 | 1 | | |

- Molecule 69 is a protein called Ribosomal protein eS19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 69 | ST | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1101 | 690 | 212 | 196 | 3 | | |

- Molecule 70 is a protein called Ribosomal protein uS10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 70 | SU | 104 | Total | C | N | O | S | 0 | 0 |
| | | | 818 | 513 | 153 | 148 | 4 | | |

- Molecule 71 is a protein called Ribosomal protein eS21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 71 | SV | 82 | Total | C | N | O | S | 0 | 0 |
| | | | 625 | 384 | 116 | 120 | 5 | | |

- Molecule 72 is a protein called Ribosomal protein uS8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 72 | SW | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 1034 | 659 | 193 | 176 | 6 | | |

- Molecule 73 is a protein called Ribosomal protein uS12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 73 | SX | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1099 | 694 | 220 | 182 | 3 | | |

- Molecule 74 is a protein called Ribosomal protein eS24.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 74 | SY | 126 | Total | C | N | O | S | 0 | 0 |
| | | | 1023 | 646 | 200 | 172 | 5 | | |

- Molecule 75 is a protein called Ribosomal protein es25.

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

- Molecule 76 is a protein called Ribosomal protein eS26.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 76 | Sa | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 781 | 486 | 161 | 129 | 5 | | |

- Molecule 77 is a protein called Ribosomal protein eS27.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 77 | Sb | 83 | Total | C | N | O | S | 0 | 0 |
| | | | 651 | 408 | 121 | 115 | 7 | | |

- Molecule 78 is a protein called Ribosomal protein eS28.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 78 | Sc | 64 | Total | C | N | O | S | 0 | 0 |
| | | | 506 | 308 | 102 | 94 | 2 | | |

- Molecule 79 is a protein called Ribosomal protein uS14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 79 | Sd | 52 | Total | C | N | O | S | 0 | 0 |
| | | | 434 | 273 | 87 | 69 | 5 | | |

- Molecule 80 is a protein called Ribosomal protein eS30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 80 | Se | 57 | Total | C | N | O | S | 0 | 0 |
| | | | 452 | 279 | 99 | 73 | 1 | | |

- Molecule 81 is a protein called Ribosomal protein eS31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 81 | Sf | 71 | Total | C | N | O | S | 0 | 0 |
| | | | 581 | 367 | 109 | 98 | 7 | | |

- Molecule 82 is a protein called Ribosomal protein RACK1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 82 | Sg | 313 | Total | C | N | O | S | 0 | 0 |
| | | | 2436 | 1535 | 424 | 465 | 12 | | |

- Molecule 83 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 83 | 5 | 118 | Total | Mg | 0 |
| | | | 118 | 118 | |
| 83 | 7 | 5 | Total | Mg | 0 |
| | | | 5 | 5 | |
| 83 | 8 | 4 | Total | Mg | 0 |
| | | | 4 | 4 | |

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| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 83 | P | 1 | Total Mg<br>1 1 | 0 |
| 83 | V | 1 | Total Mg<br>1 1 | 0 |
| 83 | 4 | 1 | Total Mg<br>1 1 | 0 |
| 83 | S2 | 36 | Total Mg<br>36 36 | 0 |

- Molecule 84 is ZINC ION (three-letter code: ZN) (formula: Zn).

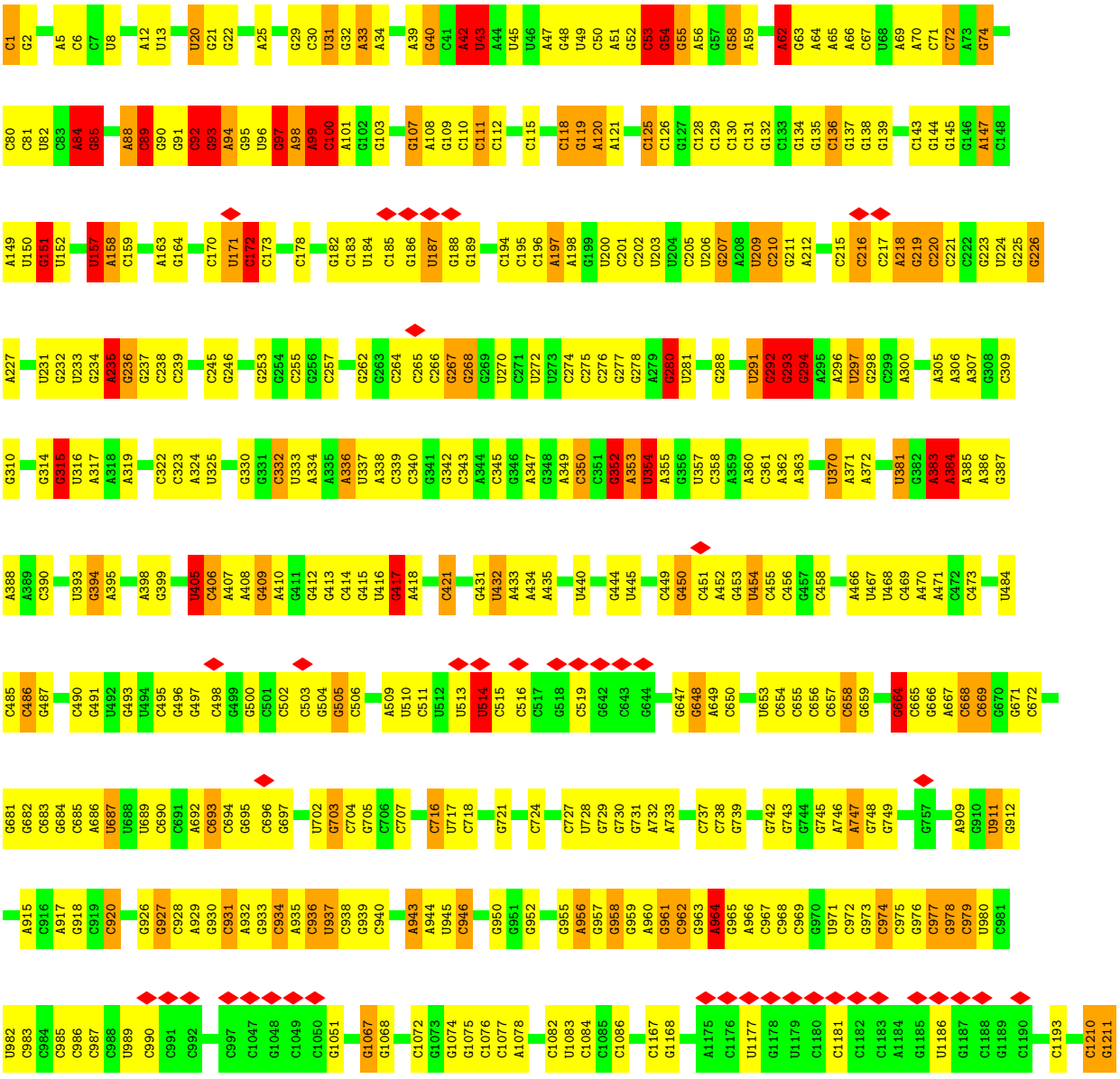
| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 84 | j | 1 | Total Zn<br>1 1 | 0 |
| 84 | m | 1 | Total Zn<br>1 1 | 0 |
| 84 | o | 1 | Total Zn<br>1 1 | 0 |
| 84 | Sa | 1 | Total Zn<br>1 1 | 0 |

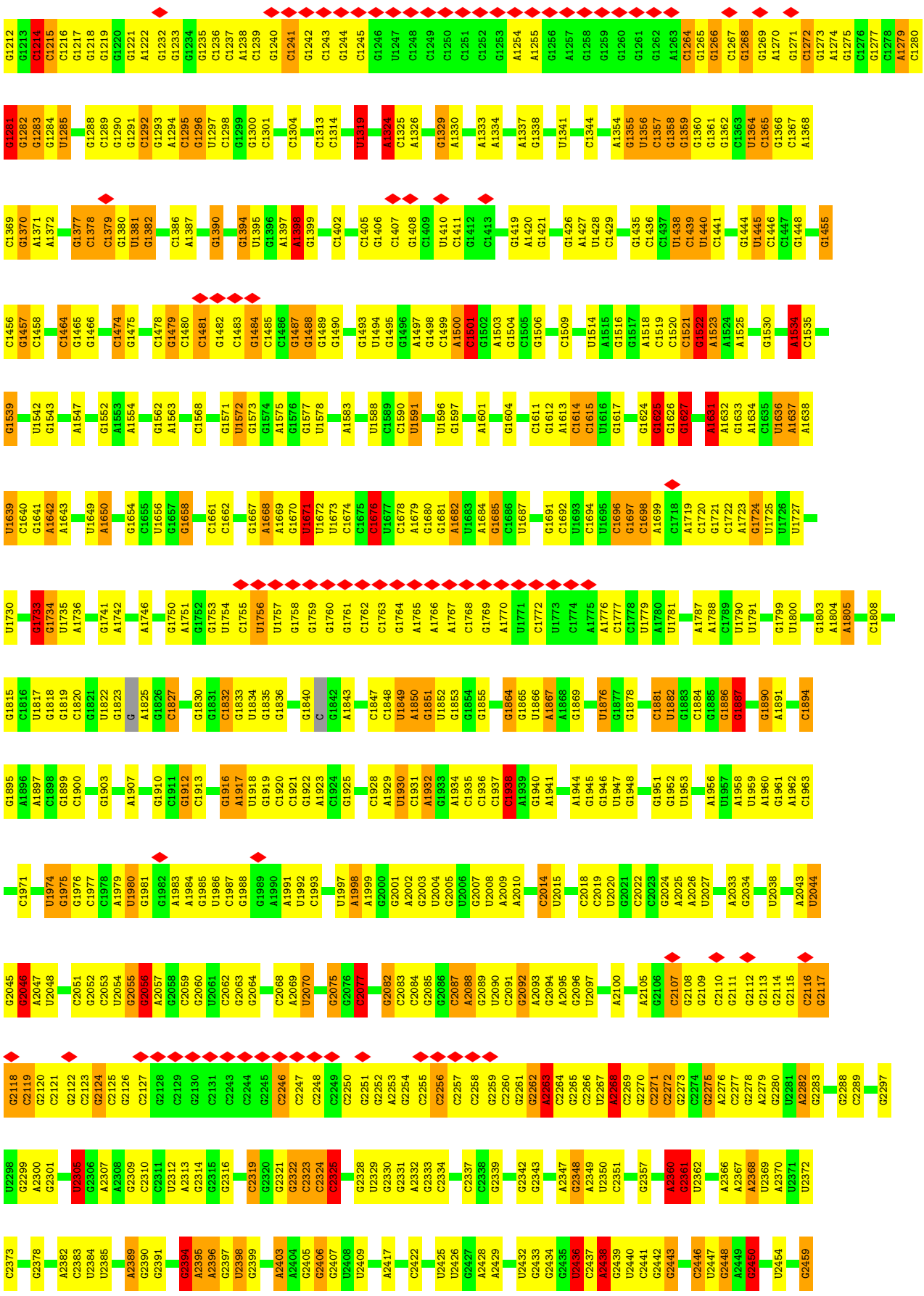
# 3 Residue-property plots (i)

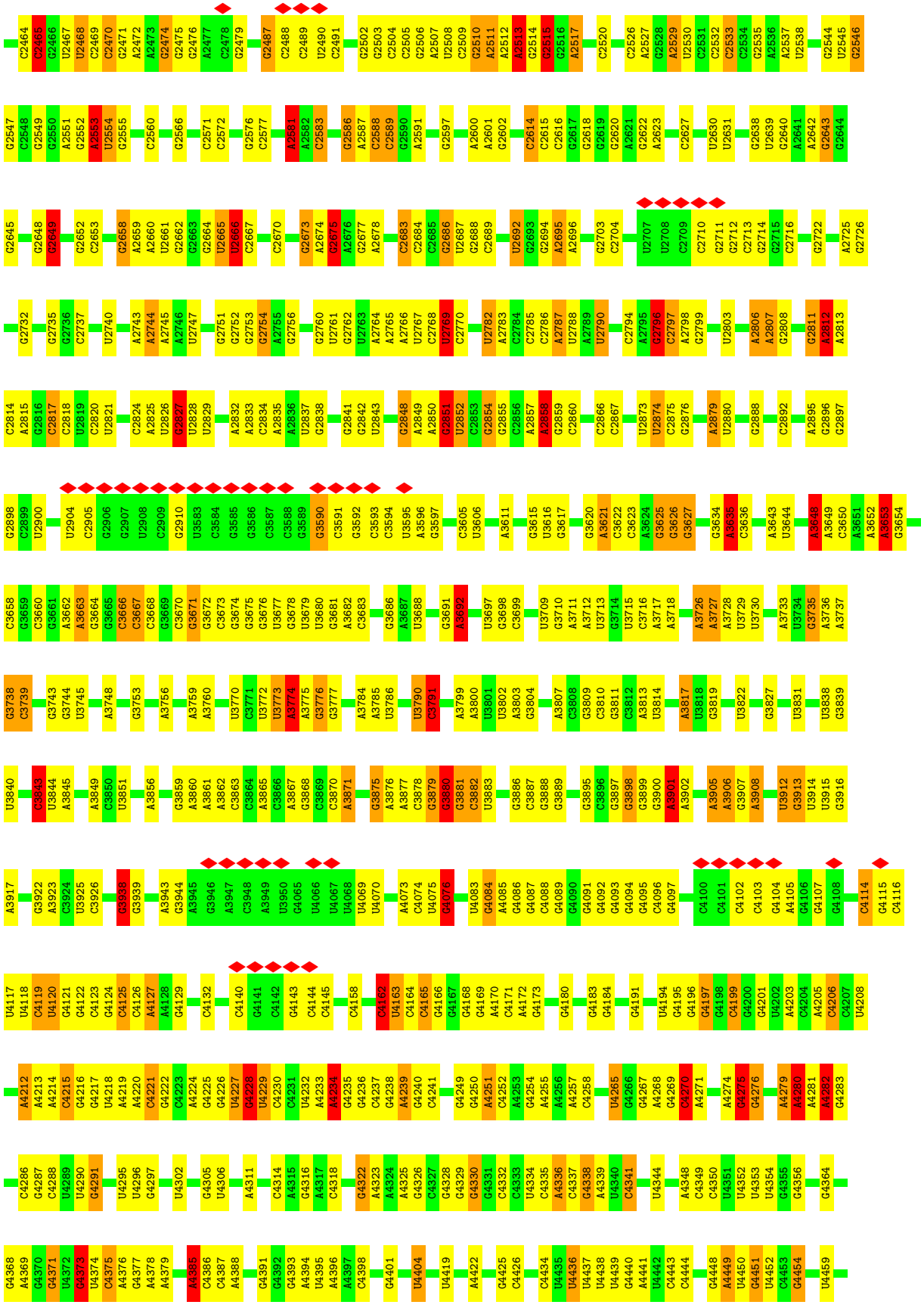
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

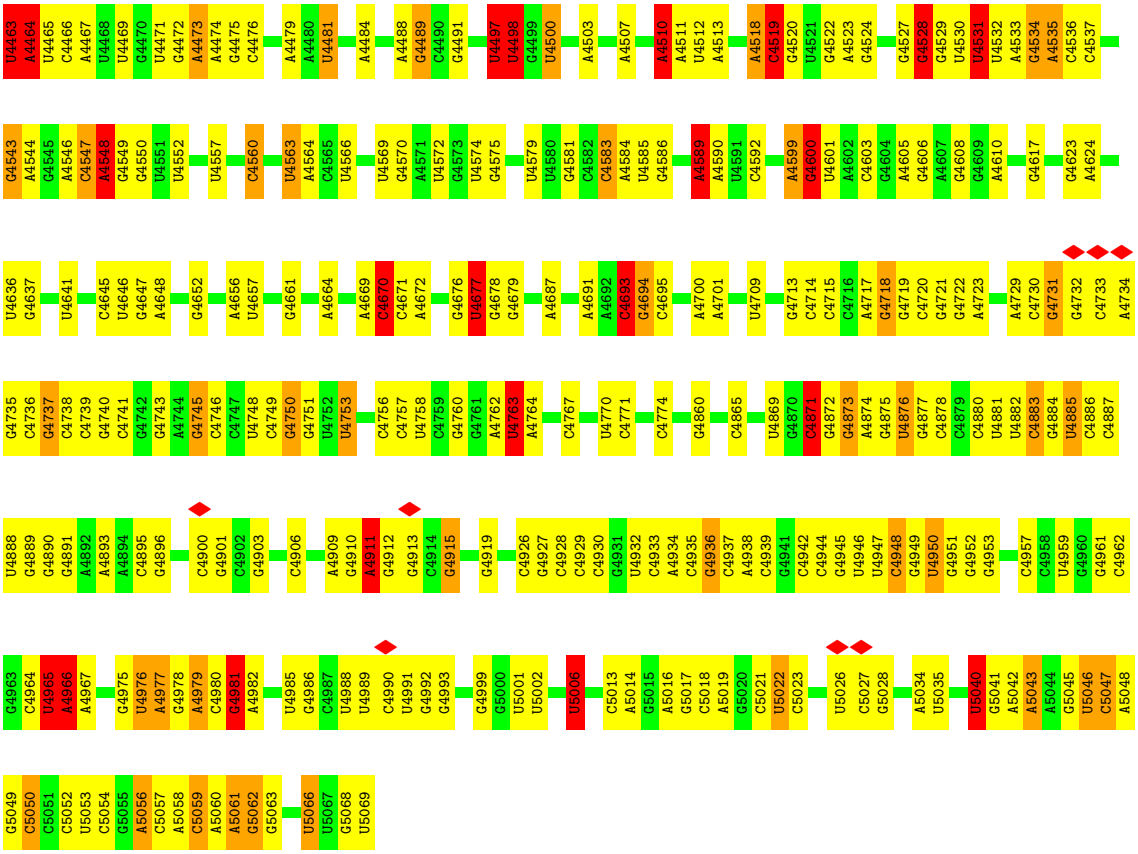
- Molecule 1: 28S ribosomal RNA

Chain 5:

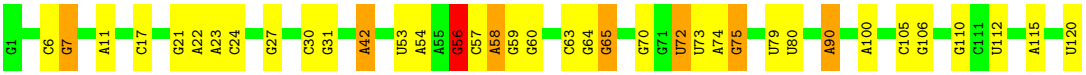






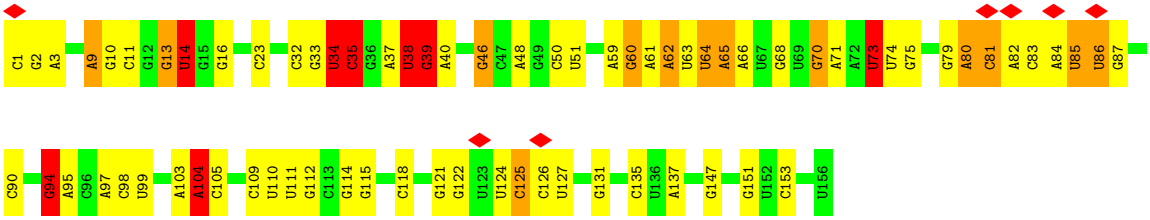
• Molecule 2: 5S ribosomal RNA

Chain 7:

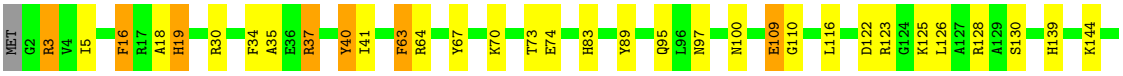
• Molecule 3: 5.8S ribosomal RNA

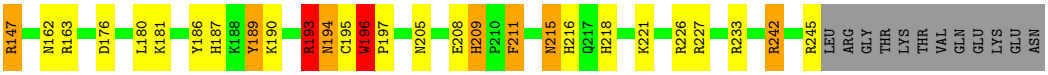
Chain 8:

• Molecule 4: Ribosomal protein uL2

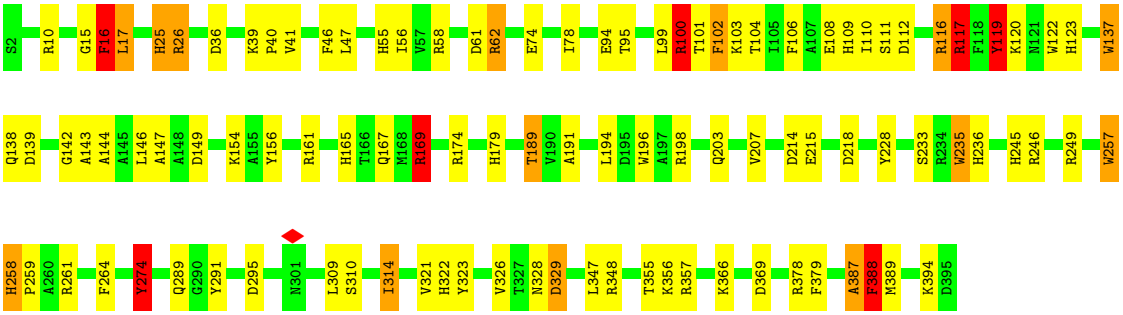
Chain A:



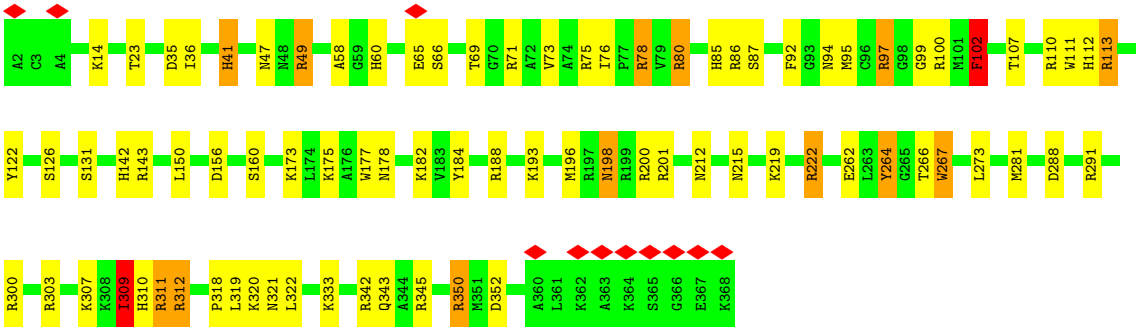

• Molecule 5: Ribosomal protein uL3

Chain B:

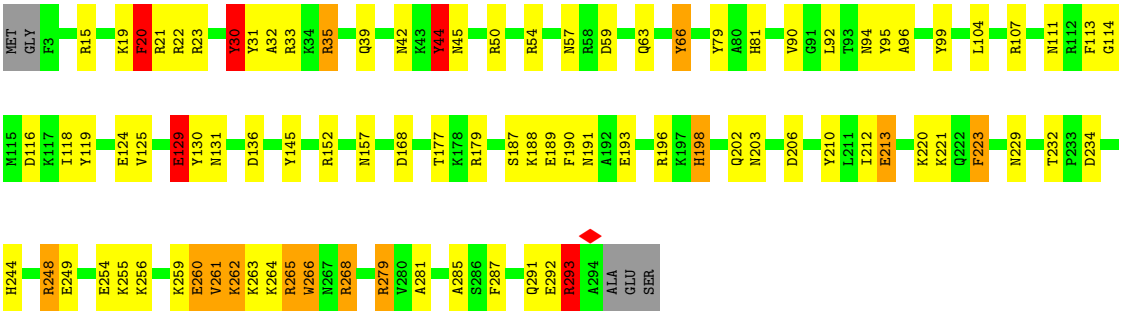

• Molecule 6: Ribosomal protein uL4

Chain C:

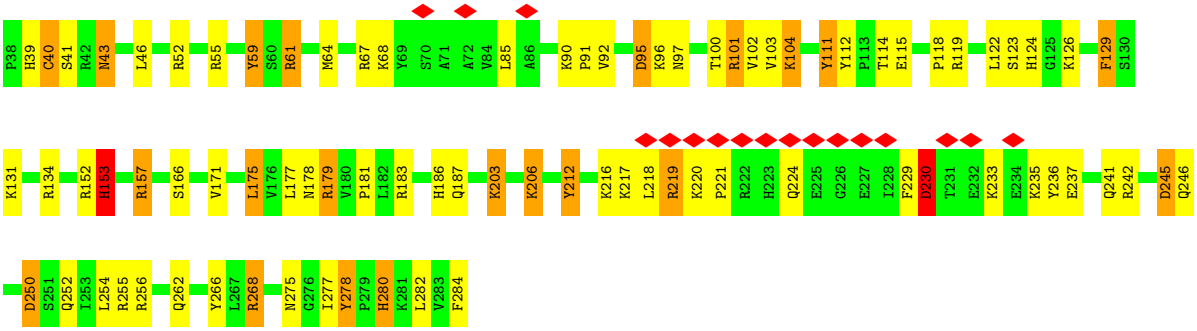

• Molecule 7: Ribosomal protein uL18

Chain D:

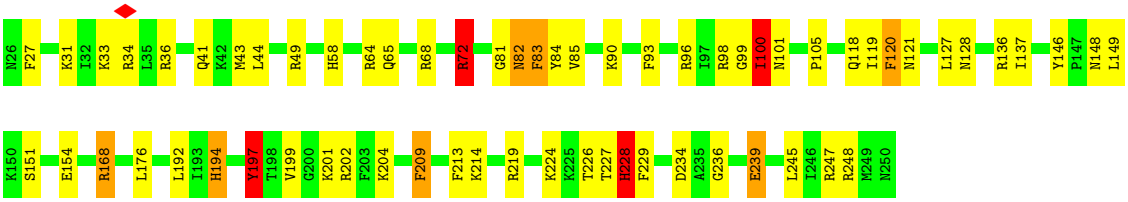




• Molecule 8: Ribosomal protein eL6

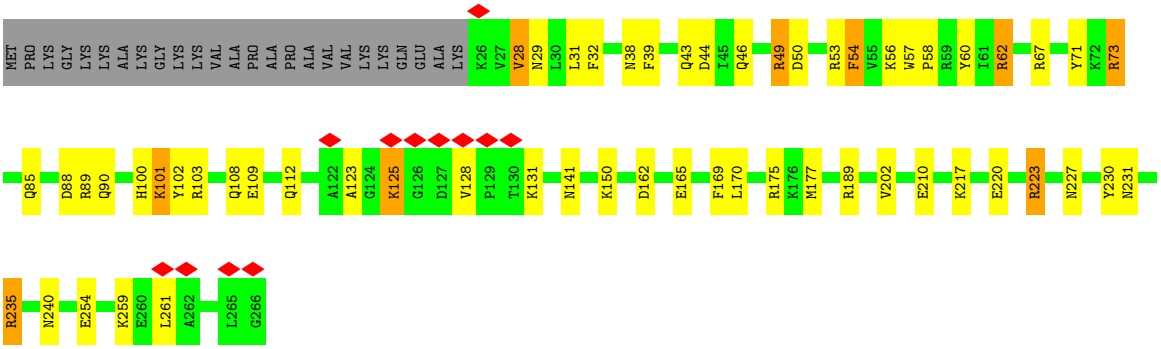
Chain E:



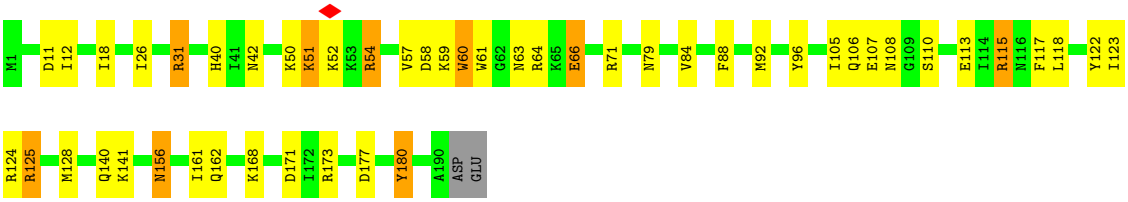

• Molecule 9: Ribosomal protein uL30

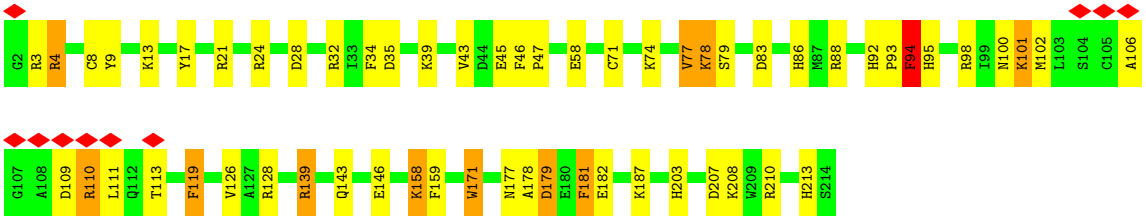

• Molecule 10: Ribosomal protein eL8


• Molecule 11: Ribosomal protein uL6

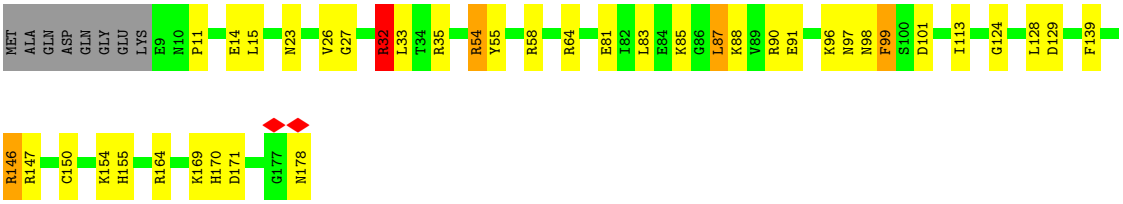




• Molecule 12: Ribosomal protein uL16



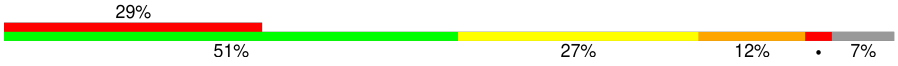
• Molecule 13: Ribosomal protein uL5

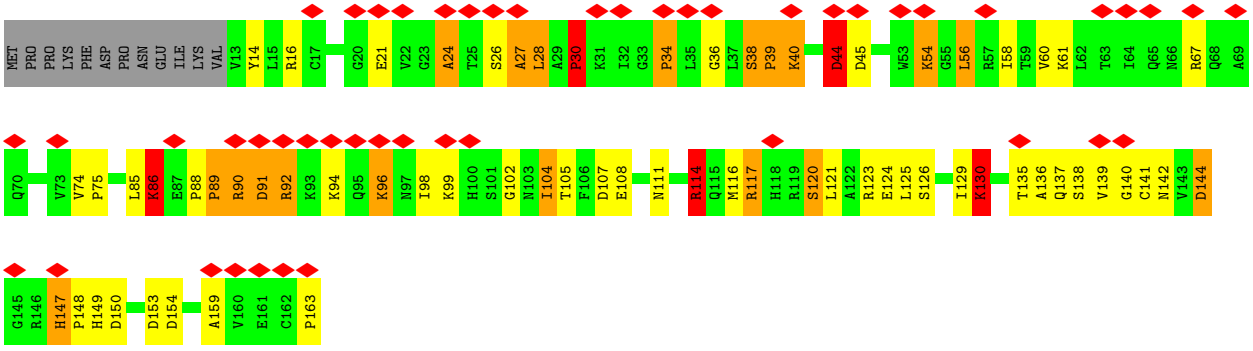
Chain J:

• Molecule 14: Ribosomal protein uL11

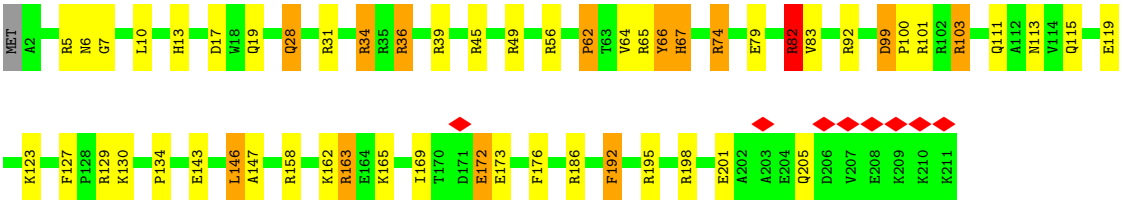
Chain K:



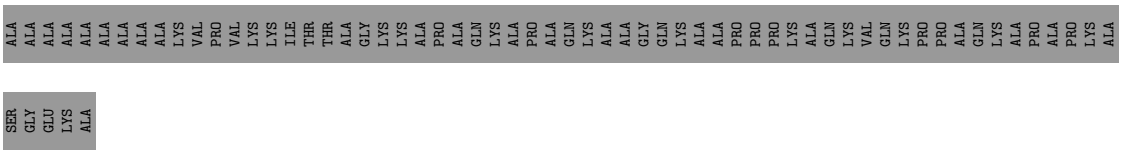
• Molecule 15: Ribosomal protein eL13

Chain L:

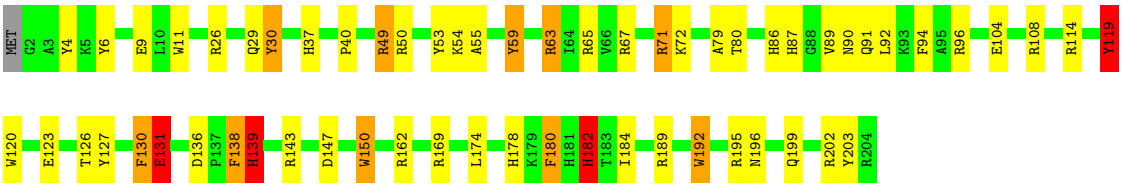
• Molecule 16: Ribosomal protein eL14

Chain M:

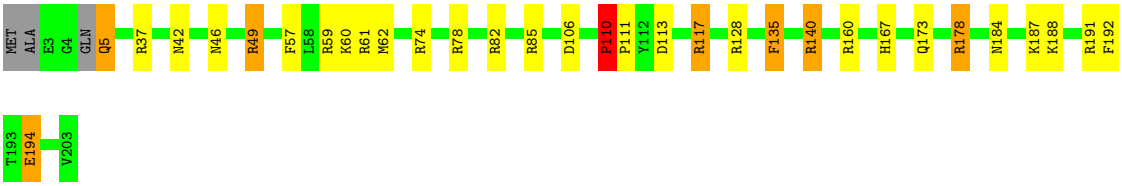

• Molecule 17: Ribosomal protein eL15

Chain N:

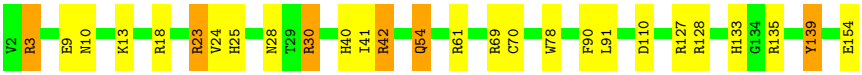

• Molecule 18: Ribosomal protein uL13

Chain O:

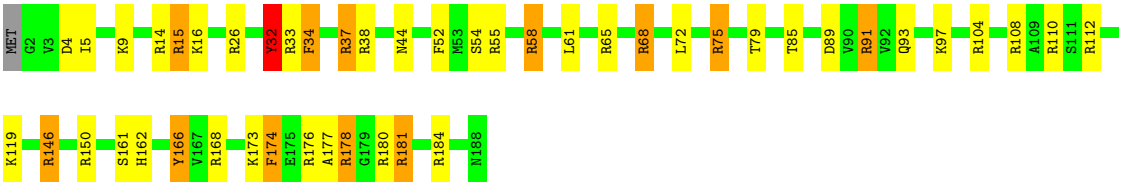

• Molecule 19: Ribosomal protein uL22

Chain P:

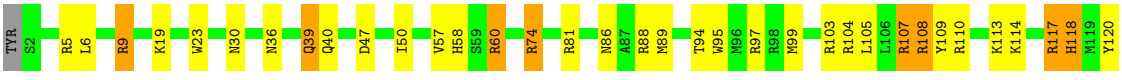

• Molecule 20: Ribosomal protein eL18

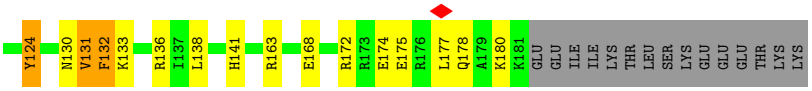
Chain Q:


• Molecule 21: Ribosomal protein eL19

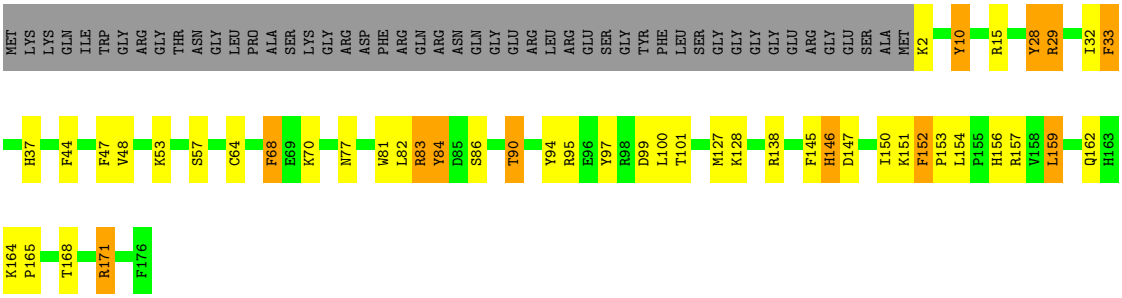
Chain R:



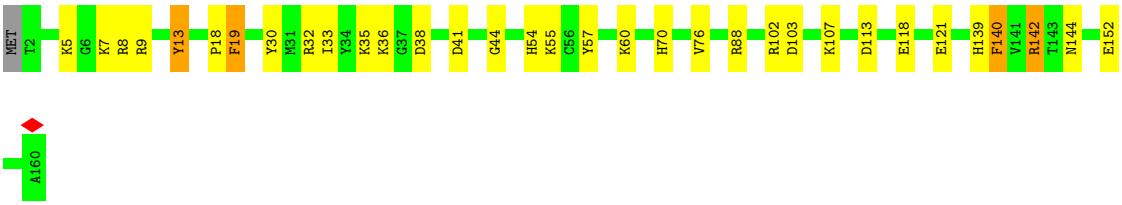

• Molecule 22: Ribosomal protein eL20

Chain S:

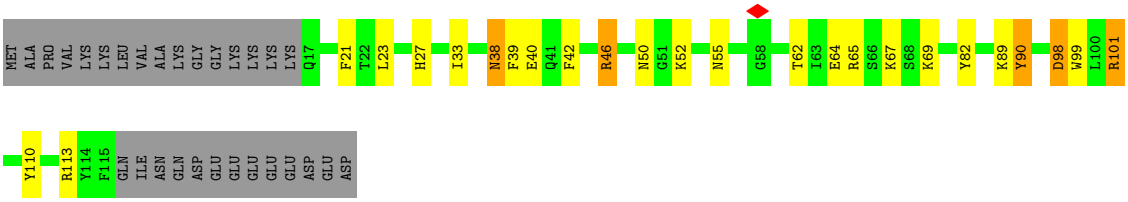

• Molecule 23: Ribosomal protein eL21

Chain T:


• Molecule 24: Ribosomal protein eL22

Chain U:

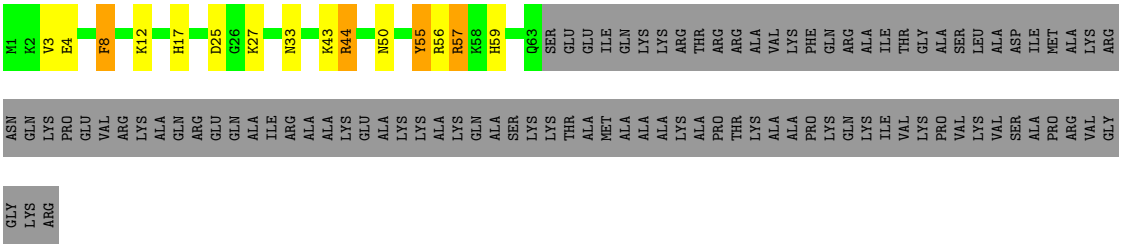

• Molecule 25: Ribosomal protein uL14

Chain V:



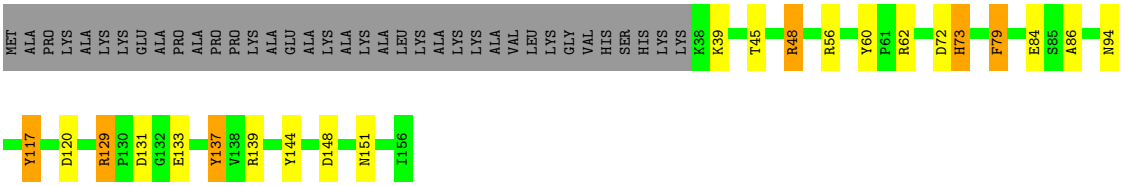
• Molecule 26: Ribosomal protein eL24

Chain W:



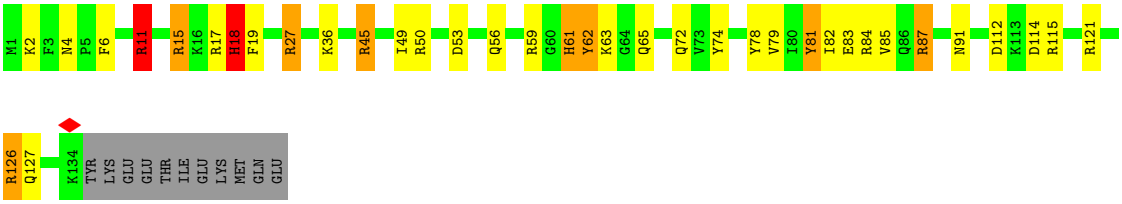

• Molecule 27: Ribosomal protein uL23

Chain X:


• Molecule 28: Ribosomal protein uL24

Chain Y:

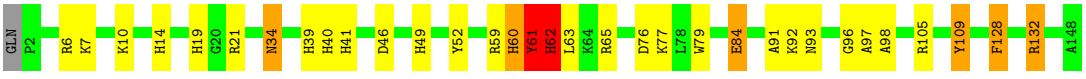

• Molecule 29: Ribosomal protein eL27

Chain Z:



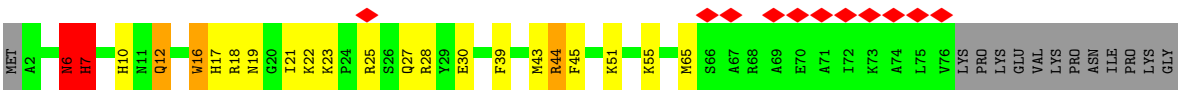
• Molecule 30: Ribosomal protein uL15

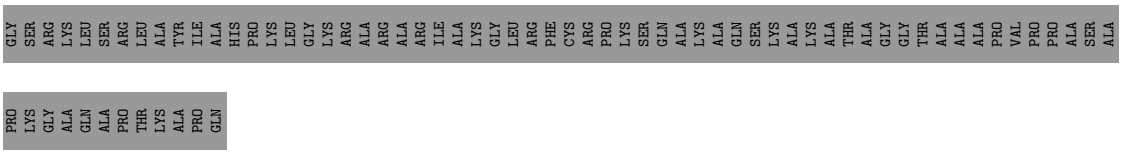
Chain a:


• Molecule 31: Ribosomal protein eL29

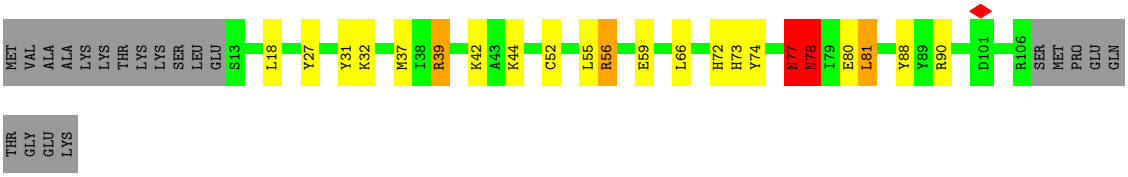
Chain b:



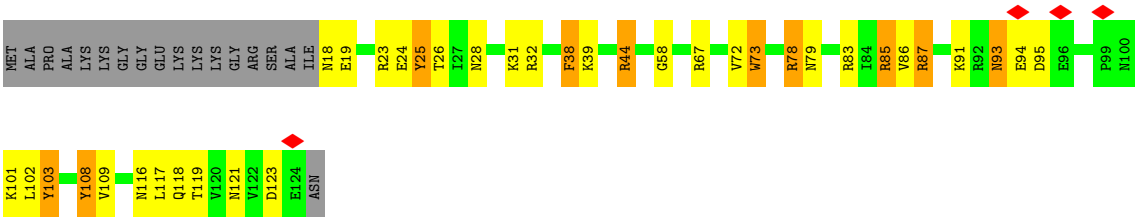

• Molecule 32: Ribosomal protein eL30

Chain c:

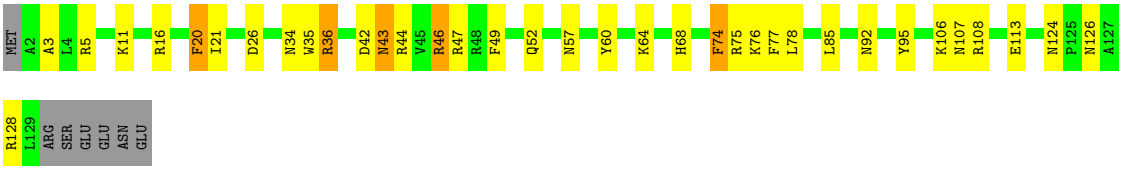

• Molecule 33: Ribosomal protein eL31

Chain d:

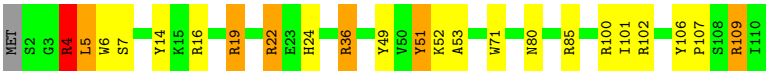

• Molecule 34: Ribosomal protein eL32

Chain e:

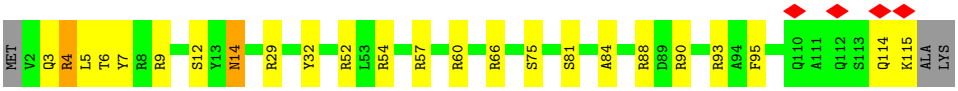

• Molecule 35: Ribosomal protein eL33

Chain f:

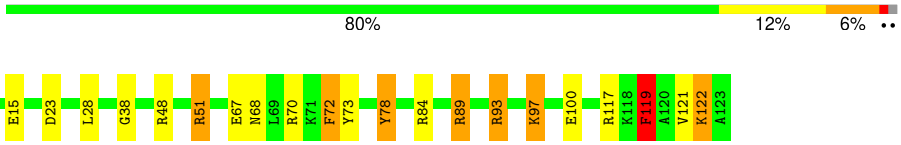

• Molecule 36: Ribosomal protein eL34

Chain g:

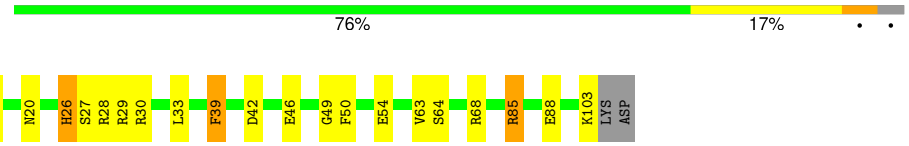
• Molecule 37: Ribosomal protein uL29

Chain h:



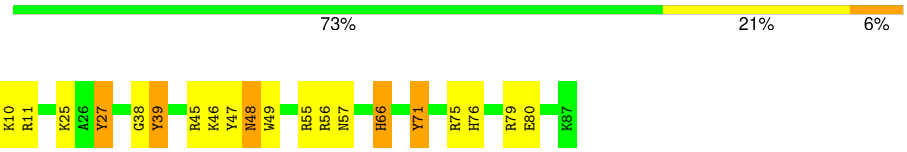

• Molecule 38: Ribosomal protein eL36

Chain i:



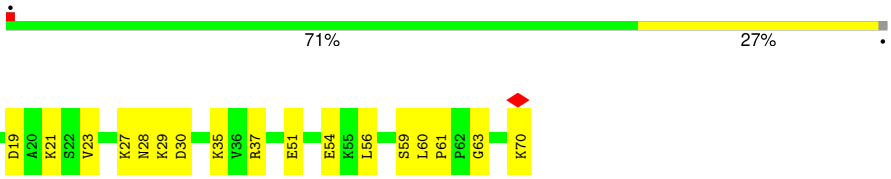

• Molecule 39: Ribosomal protein eL37

Chain j:




• Molecule 40: Ribosomal protein eL38

Chain k:

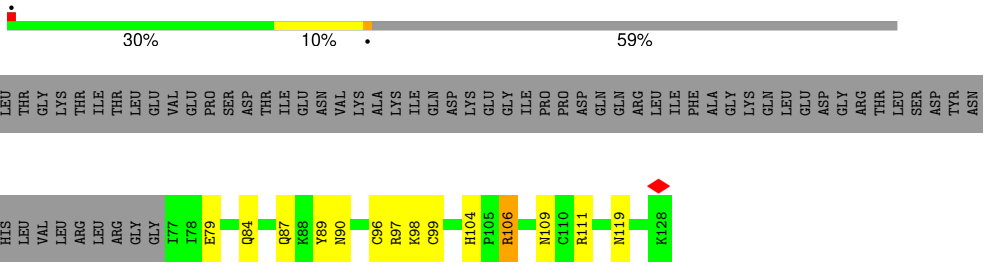



• Molecule 41: Ribosomal protein eL39

Chain l:

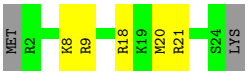

• Molecule 42: Ribosomal protein eL40

Chain m:



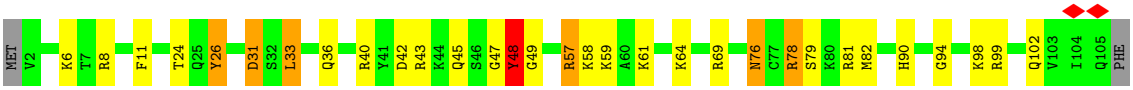

• Molecule 43: Ribosomal protein eL41

Chain n:



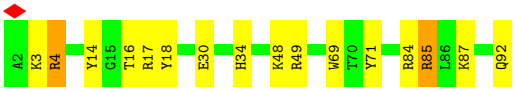

• Molecule 44: Ribosomal protein eL42

Chain o:

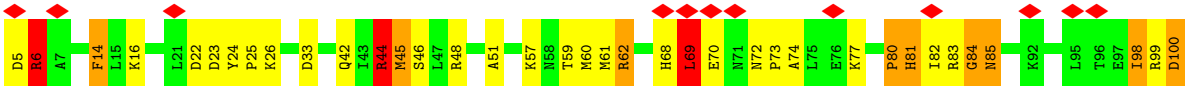

• Molecule 45: Ribosomal protein eL43

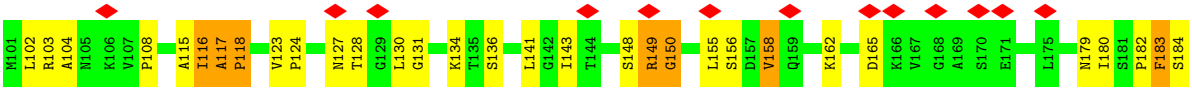
Chain p:


• Molecule 46: Ribosomal protein uL10

Chain q:

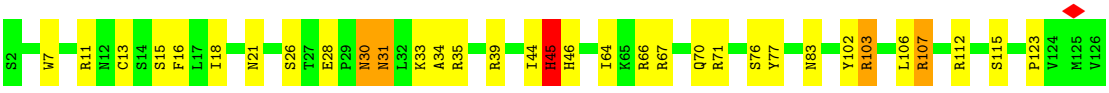





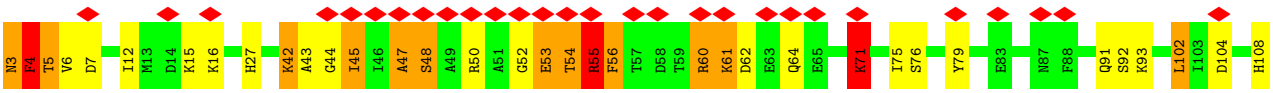
• Molecule 47: Ribosomal protein eL28

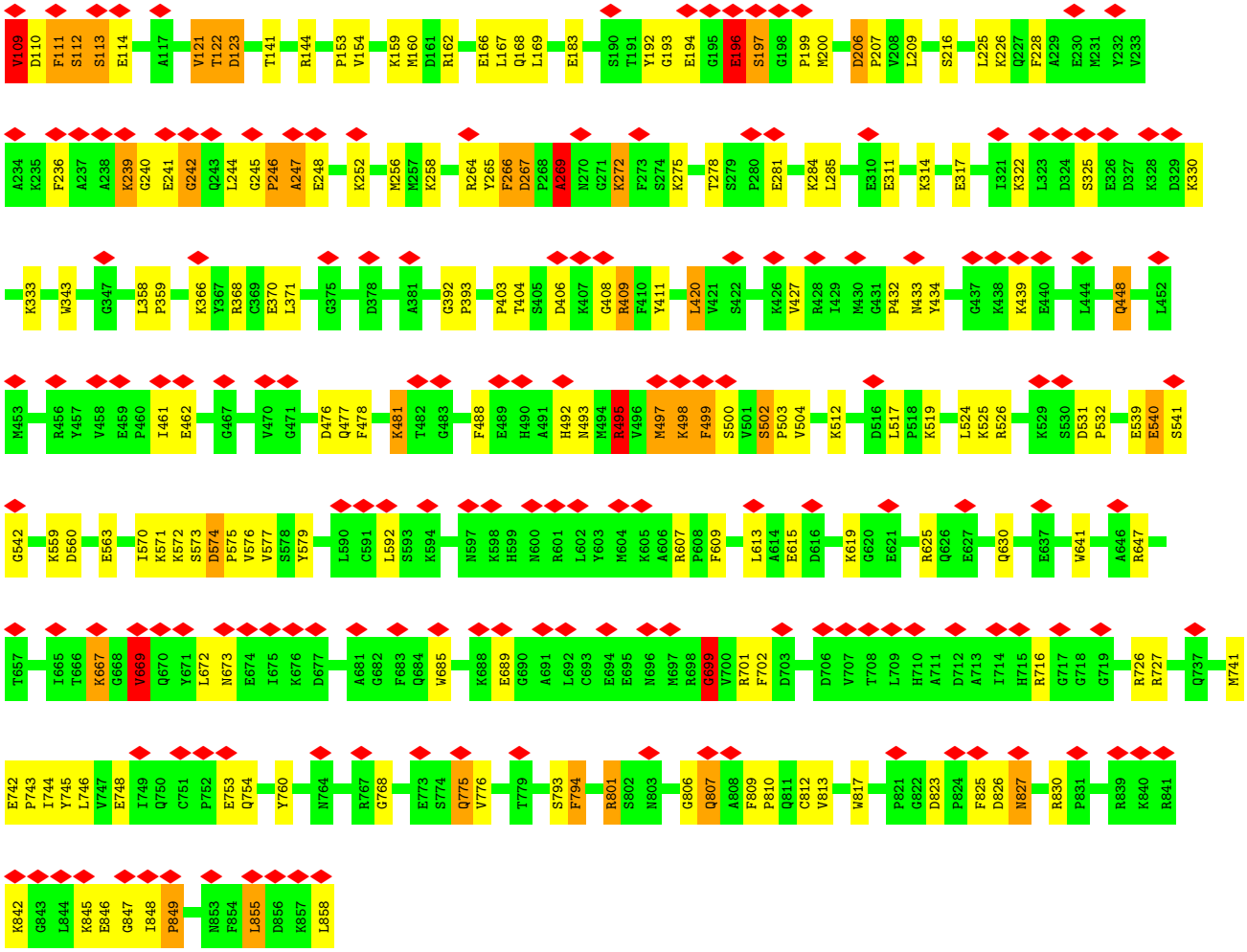
Chain r:


• Molecule 48: Eukaryotic elongation factor 2

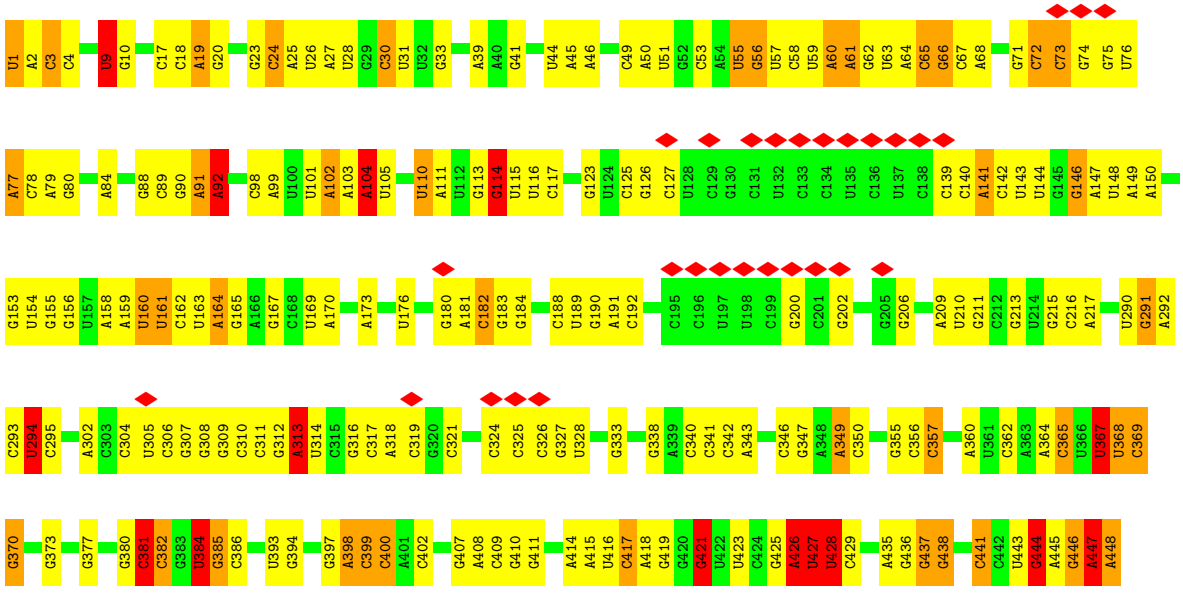
Chain 4:

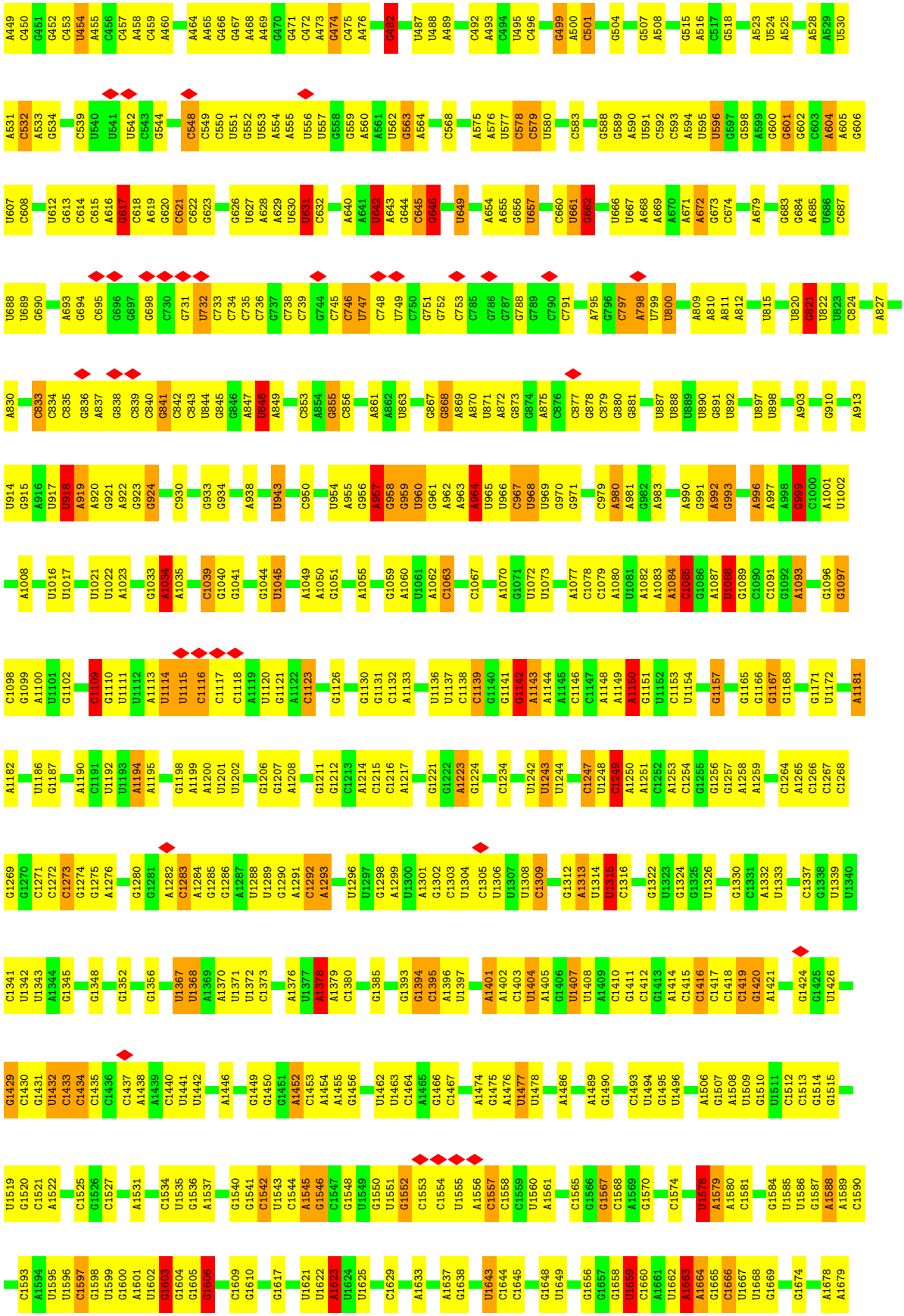



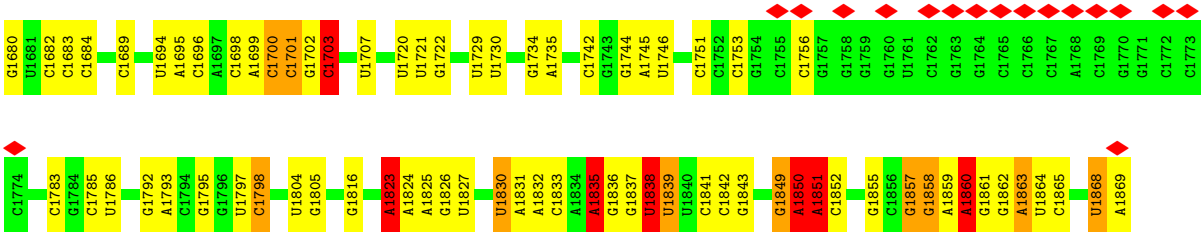


• Molecule 49: 18S ribosomal RNA

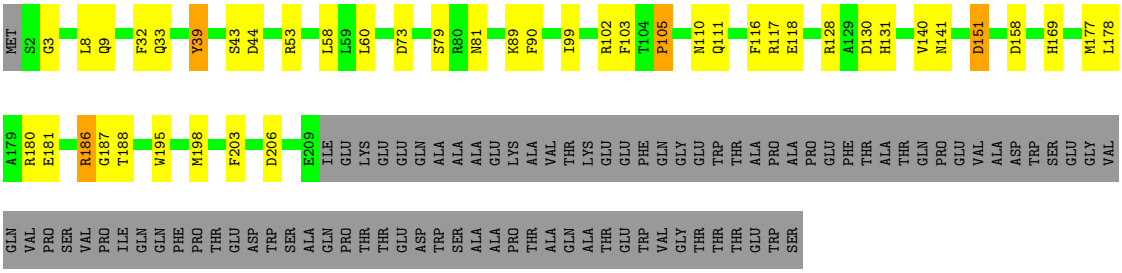
Chain S2:

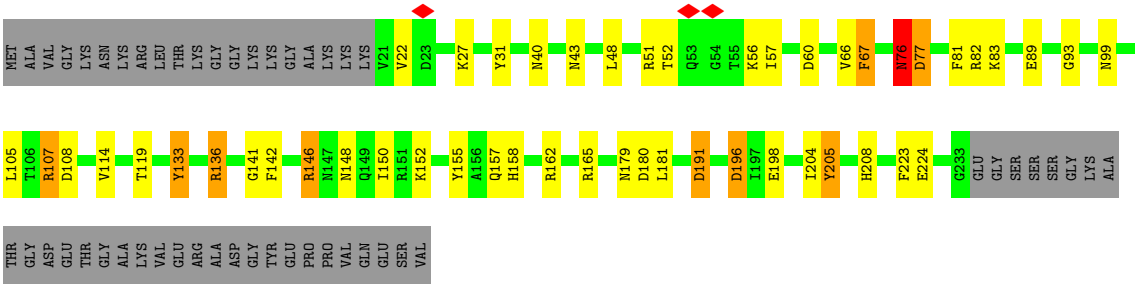




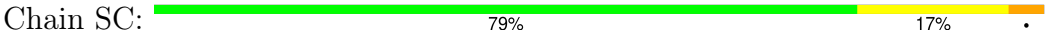

• Molecule 50: Ribosomal protein uS2

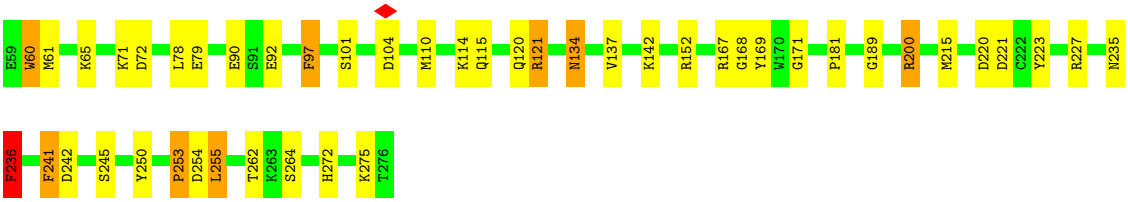




• Molecule 51: Ribosomal protein eS1

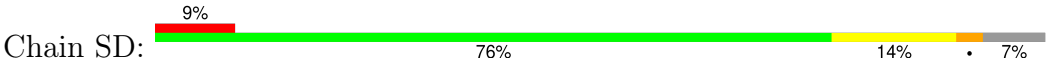



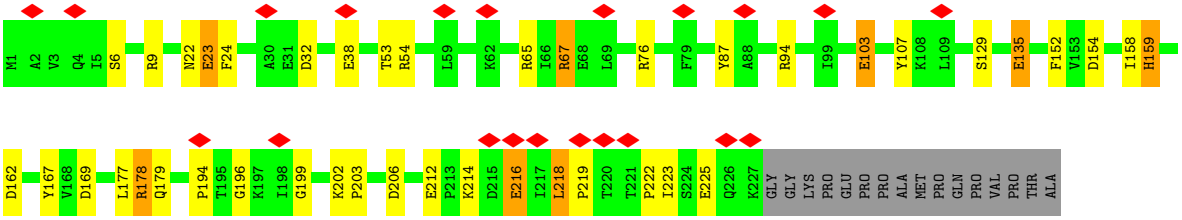

• Molecule 52: Ribosomal protein uS5



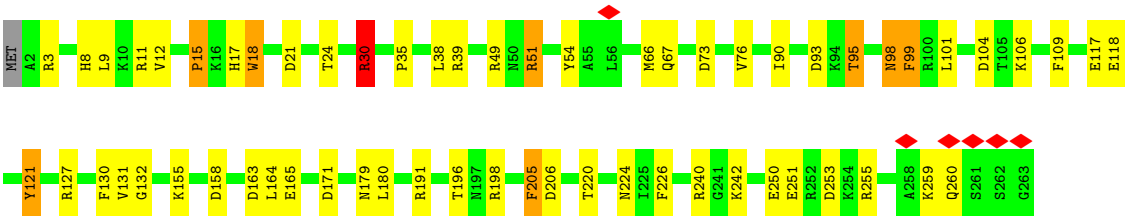

• Molecule 53: Ribosomal protein uS3





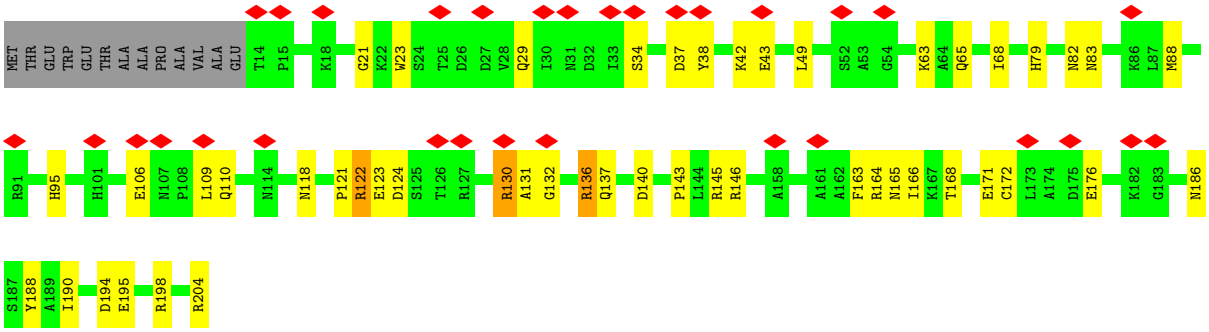
• Molecule 54: Ribosomal protein eS4

Chain SE:

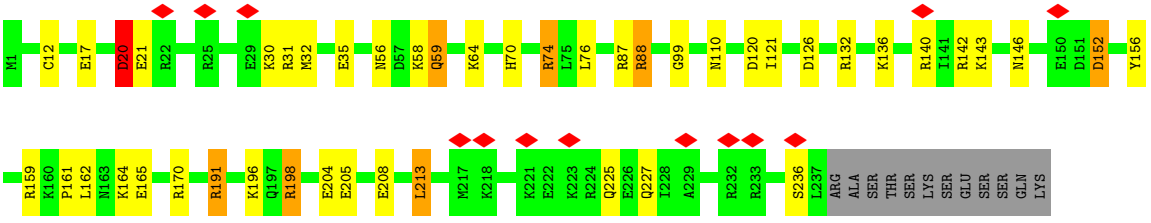
• Molecule 55: Ribosomal protein uS7

Chain SF:

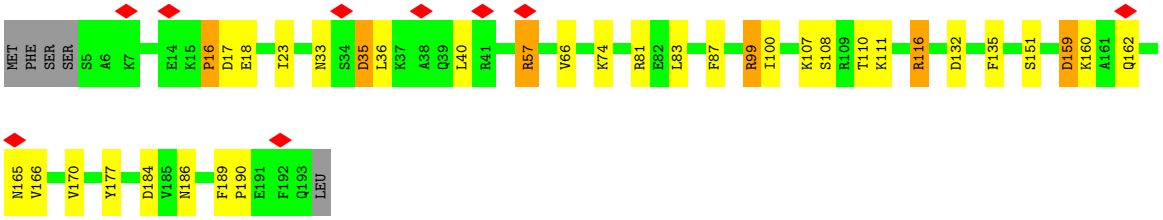
• Molecule 56: Ribosomal protein eS6

Chain SG:

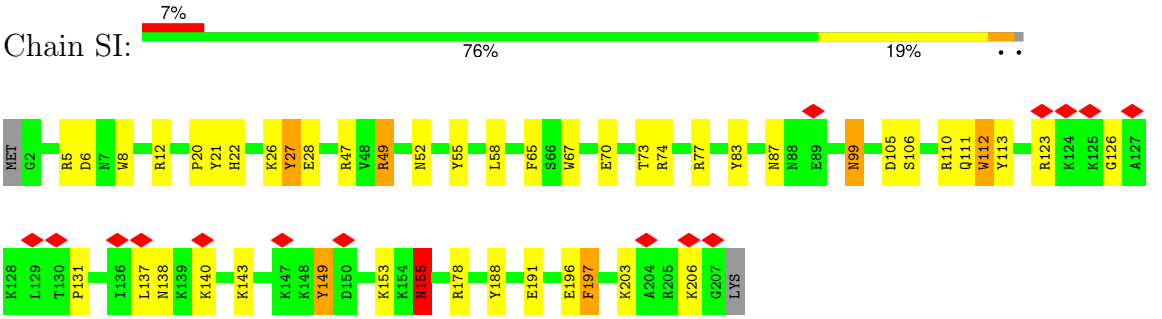



• Molecule 57: Ribosomal protein eS7

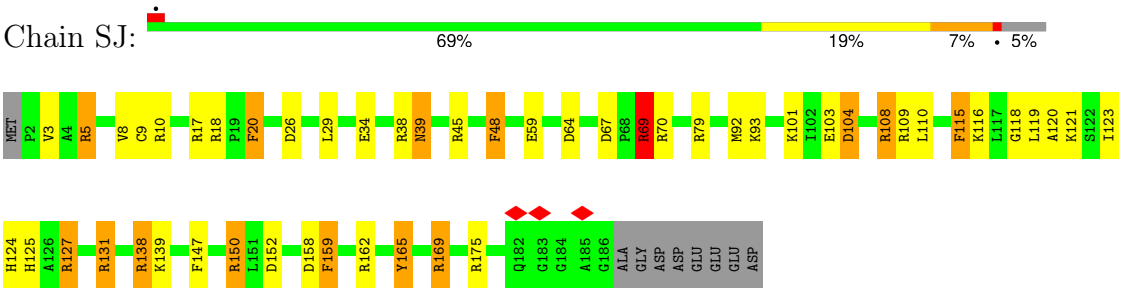
Chain SH:



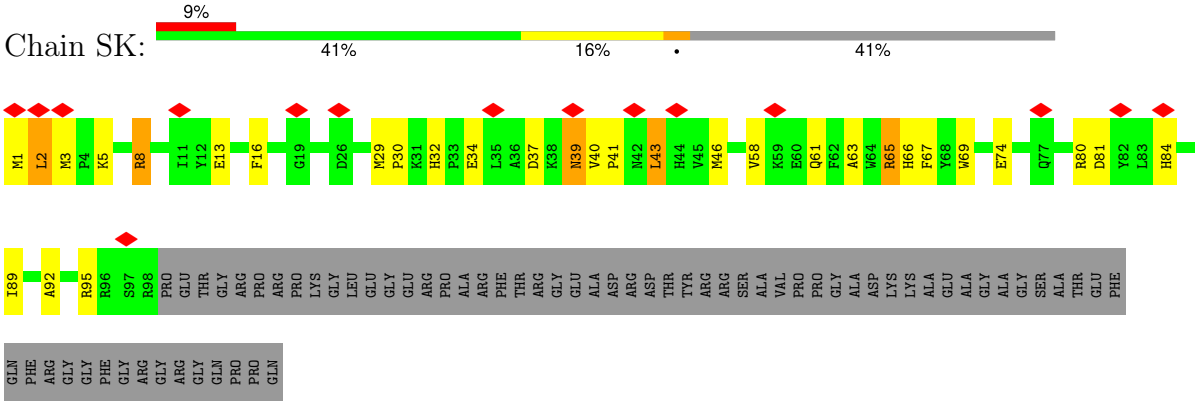

• Molecule 58: Ribosomal protein eS8



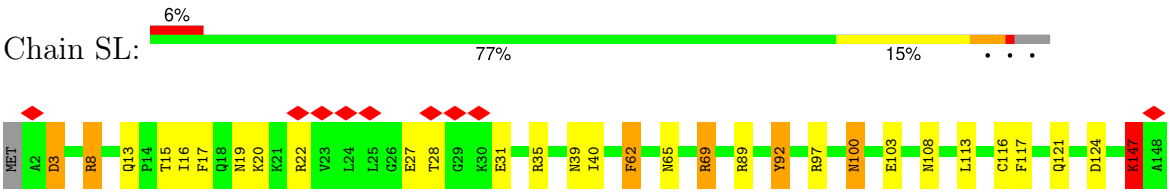

• Molecule 59: Ribosomal protein uS4

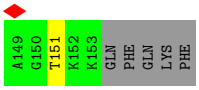



• Molecule 60: Ribosomal protein eS10



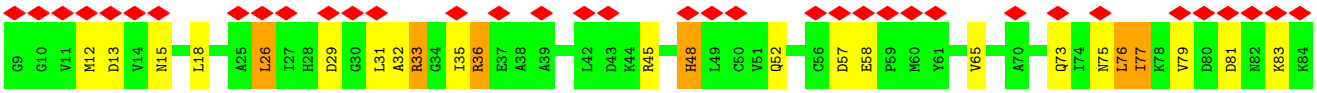

• Molecule 61: Ribosomal protein uS17






• Molecule 62: Ribosomal protein eS12

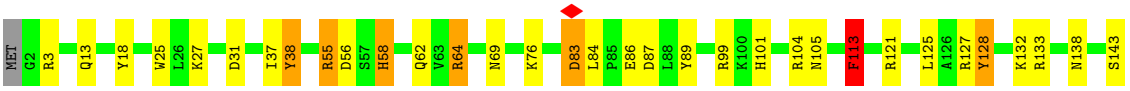
Chain SM:



• Molecule 63: Ribosomal protein uS15

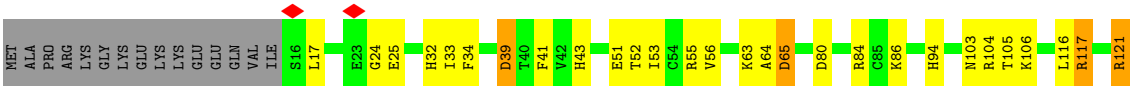
Chain SN:



• Molecule 64: Ribosomal protein uS11

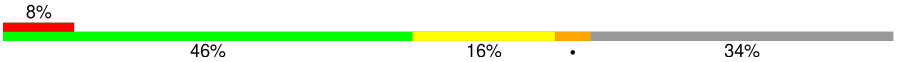
Chain SO:

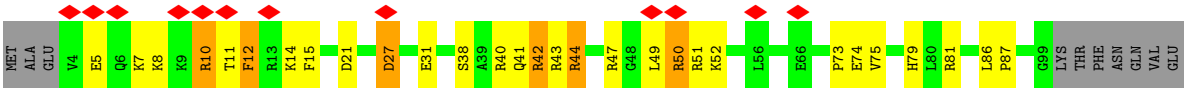





• Molecule 65: Ribosomal protein uS19

Chain SP:

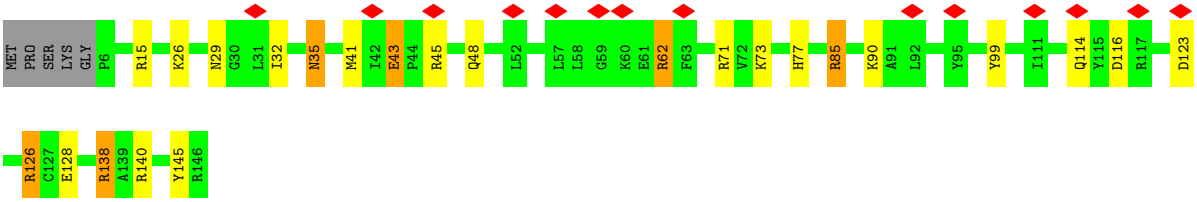


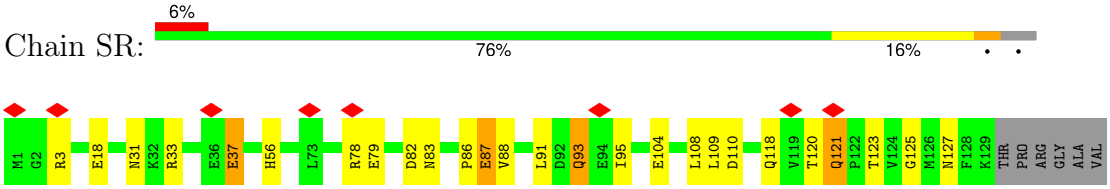


• Molecule 66: Ribosomal protein uS9

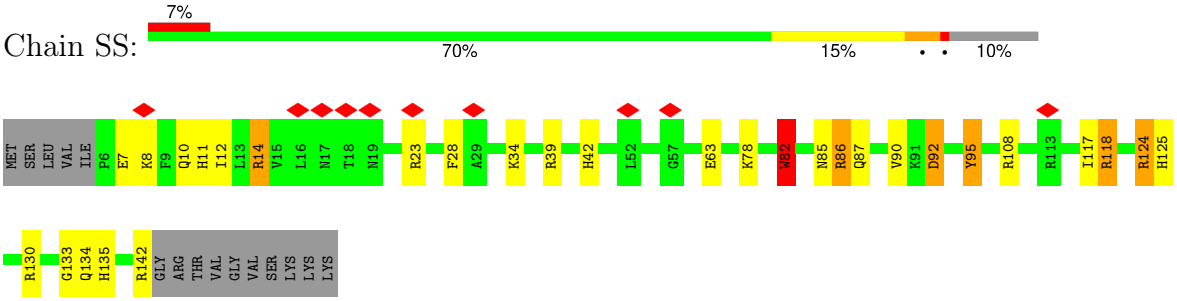
Chain SQ:



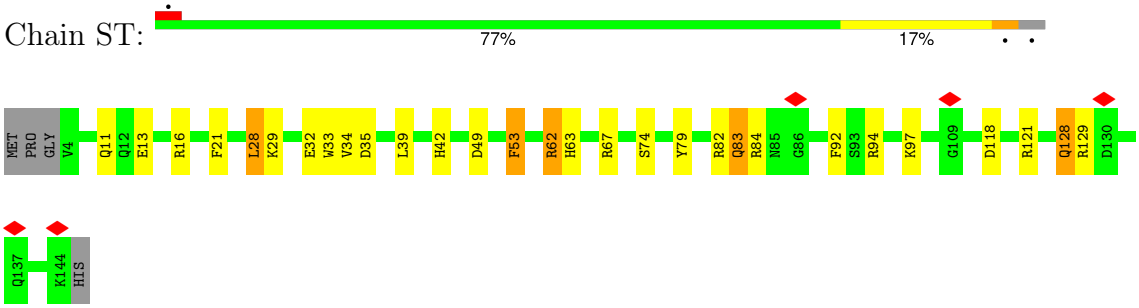

• Molecule 67: Ribosomal protein eS17



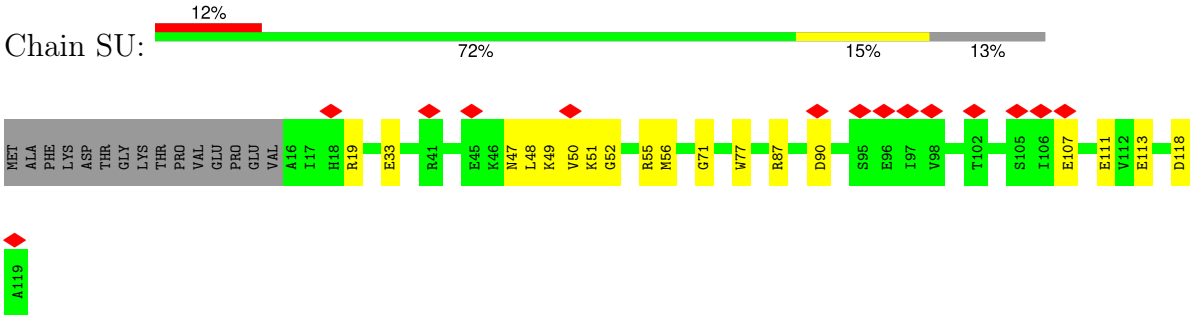

• Molecule 68: Ribosomal protein uS13




• Molecule 69: Ribosomal protein eS19

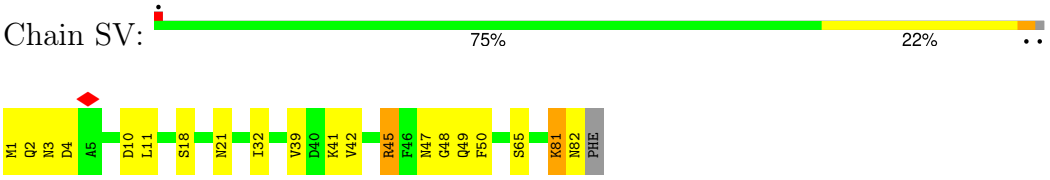



• Molecule 70: Ribosomal protein uS10



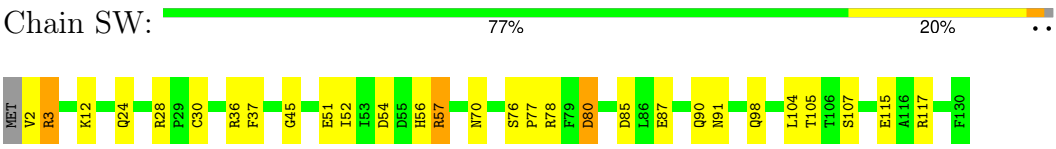

• Molecule 71: Ribosomal protein eS21

Chain SV:



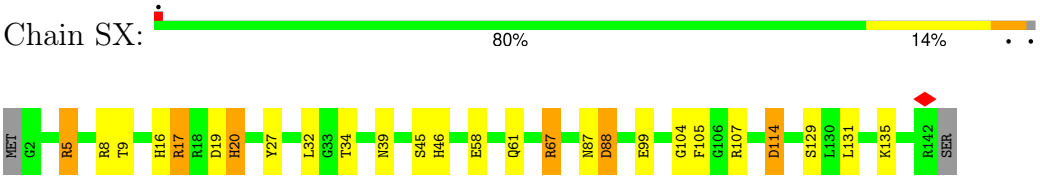

• Molecule 72: Ribosomal protein uS8

Chain SW:



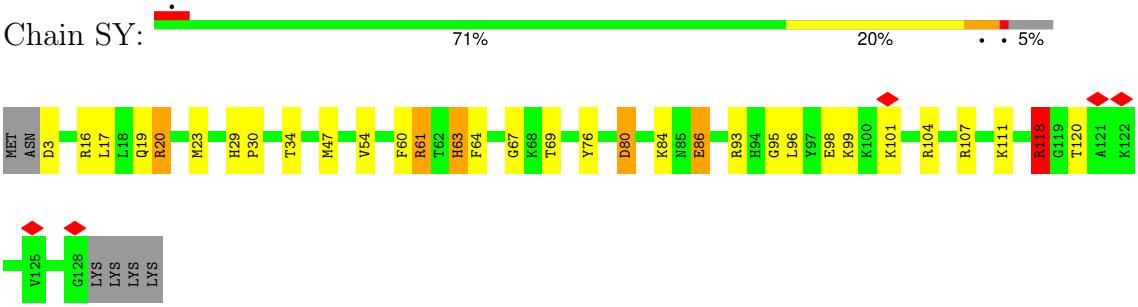

• Molecule 73: Ribosomal protein uS12

Chain SX:



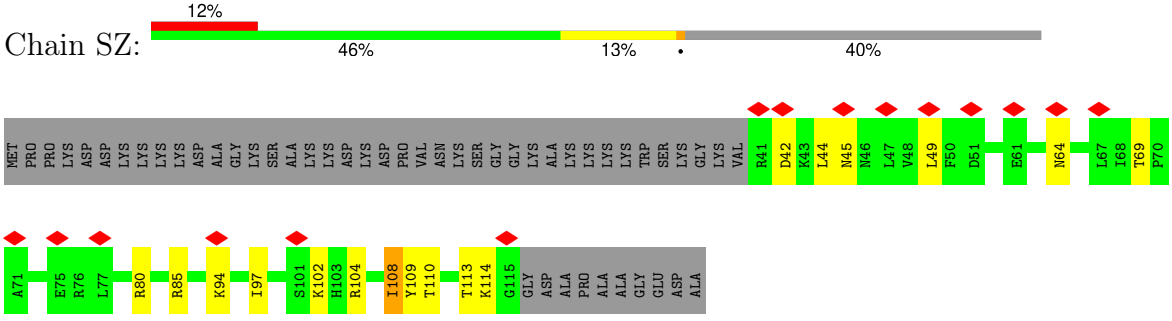

• Molecule 74: Ribosomal protein eS24

Chain SY:



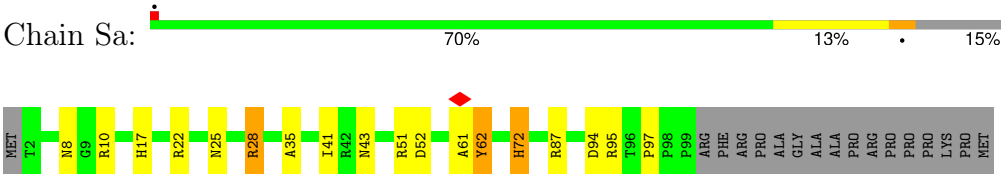

• Molecule 75: Ribosomal protein es25

Chain SZ:




• Molecule 76: Ribosomal protein eS26

Chain Sa:



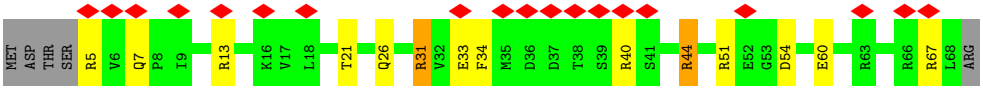
• Molecule 77: Ribosomal protein eS27

Chain Sb:



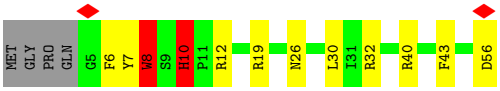
• Molecule 78: Ribosomal protein eS28

Chain Sc:


• Molecule 79: Ribosomal protein uS14

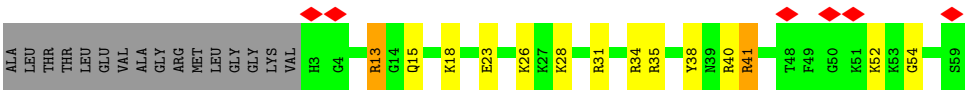
Chain Sd:


• Molecule 80: Ribosomal protein eS30

Chain Se:

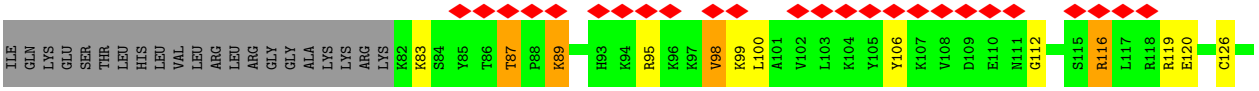


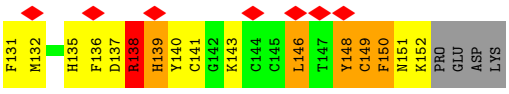



• Molecule 81: Ribosomal protein eS31

Chain Sf:

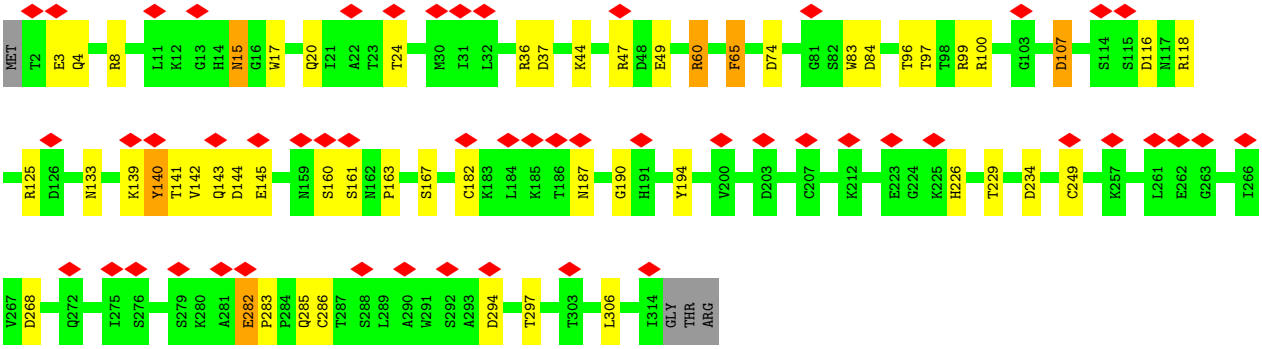





• Molecule 82: Ribosomal protein RACK1

Chain Sg:


MET T2 E3 Q4 R8 L11 K12 G13 H14 N15 G16 W17 Q20 I21 A22 T23 T24 M30 I31 L32 R36 D37 K44 R47 D48 E49 R60 F65 D74 G81 S82 W83 D84 T96 T97 T98 R99 R100 G103 D107 S114 S115 D116 N117 R118
R125 D126 N133 K139 Y140 T141 V142 Q143 D144 E145 N159 S160 S161 N162 P163 S167 C182 K183 L184 K185 T186 N187 G190 H191 Y194 V200 D203 C207 K212 E223 G224 K225 H226 T229 D234 C249 K257 L261 E262 G263 I266
V267 D268 Q272 I275 S276 S279 K280 A281 E282 P283 P284 Q285 C286 T287 S288 L289 A290 W291 S292 A293 D294 T297 T303 L306 I314 GLY THR ARG

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 36667 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | Each particle | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 27 | Depositor |
| Minimum defocus (nm) | 2500 | Depositor |
| Maximum defocus (nm) | 3500 | Depositor |
| Magnification | 104478 | Depositor |
| Image detector | FEI FALCON II (4k x 4k) | Depositor |
| Maximum map value | 0.913 | Depositor |
| Minimum map value | -0.580 | Depositor |
| Average map value | 0.001 | Depositor |
| Map value standard deviation | 0.025 | Depositor |
| Recommended contour level | 0.065 | Depositor |
| Map size (Å) | 562.8, 562.8, 562.8 | wwPDB |
| Map dimensions | 420, 420, 420 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.3399999, 1.3399999, 1.3399999 | Depositor |

# 5 Model quality

## 5.1 Standard geometry

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

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 | 0.64 | 75/87792 (0.1%) | 1.12 | 729/136945 (0.5%) |
| 2 | 7 | 0.54 | 1/2858 (0.0%) | 0.96 | 9/4455 (0.2%) |
| 3 | 8 | 0.68 | 3/3701 (0.1%) | 1.19 | 42/5766 (0.7%) |
| 4 | A | 0.80 | 3/1906 (0.2%) | 1.26 | 21/2556 (0.8%) |
| 5 | B | 0.81 | 8/3214 (0.2%) | 1.16 | 25/4308 (0.6%) |
| 6 | C | 0.73 | 3/2973 (0.1%) | 1.12 | 18/3990 (0.5%) |
| 7 | D | 0.73 | 2/2426 (0.1%) | 1.23 | 26/3252 (0.8%) |
| 8 | E | 0.73 | 5/1941 (0.3%) | 1.21 | 20/2601 (0.8%) |
| 9 | F | 0.80 | 2/1905 (0.1%) | 1.27 | 27/2539 (1.1%) |
| 10 | G | 0.76 | 4/1966 (0.2%) | 1.09 | 14/2645 (0.5%) |
| 11 | H | 0.77 | 3/1537 (0.2%) | 1.17 | 10/2066 (0.5%) |
| 12 | I | 0.66 | 1/1753 (0.1%) | 1.11 | 12/2343 (0.5%) |
| 13 | J | 0.63 | 1/1382 (0.1%) | 1.04 | 12/1849 (0.6%) |
| 14 | K | 1.04 | 11/1154 (1.0%) | 1.78 | 54/1555 (3.5%) |
| 15 | L | 0.70 | 2/1734 (0.1%) | 1.12 | 15/2318 (0.6%) |
| 16 | M | 0.76 | 2/1152 (0.2%) | 1.11 | 5/1539 (0.3%) |
| 17 | N | 0.84 | 4/1746 (0.2%) | 1.33 | 23/2338 (1.0%) |
| 18 | O | 0.72 | 3/1684 (0.2%) | 1.10 | 12/2251 (0.5%) |
| 19 | P | 0.74 | 2/1268 (0.2%) | 1.10 | 9/1701 (0.5%) |
| 20 | Q | 0.69 | 0/1530 | 1.35 | 31/2041 (1.5%) |
| 21 | R | 0.79 | 3/1524 (0.2%) | 1.27 | 20/2013 (1.0%) |
| 22 | S | 0.95 | 8/1493 (0.5%) | 1.30 | 19/2002 (0.9%) |
| 23 | T | 0.67 | 1/1326 (0.1%) | 1.04 | 7/1770 (0.4%) |
| 24 | U | 0.63 | 1/822 (0.1%) | 1.03 | 3/1103 (0.3%) |
| 25 | V | 0.89 | 4/993 (0.4%) | 1.11 | 7/1332 (0.5%) |
| 26 | W | 0.71 | 0/541 | 1.23 | 5/720 (0.7%) |
| 27 | X | 0.64 | 0/993 | 1.09 | 10/1334 (0.7%) |
| 28 | Y | 0.72 | 0/1132 | 1.24 | 19/1504 (1.3%) |
| 29 | Z | 0.63 | 0/1130 | 1.11 | 10/1507 (0.7%) |
| 30 | a | 0.93 | 6/1192 (0.5%) | 1.37 | 17/1591 (1.1%) |
| 31 | b | 0.88 | 2/620 (0.3%) | 1.17 | 5/819 (0.6%) |
| 32 | c | 0.70 | 0/742 | 1.14 | 5/996 (0.5%) |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 33 | d | 0.84 | 3/903 (0.3%) | 1.37 | 16/1216 (1.3%) |
| 34 | e | 0.90 | 3/1071 (0.3%) | 1.23 | 15/1429 (1.0%) |
| 35 | f | 1.01 | 2/895 (0.2%) | 1.34 | 17/1198 (1.4%) |
| 36 | g | 0.65 | 0/916 | 1.08 | 5/1220 (0.4%) |
| 37 | h | 0.63 | 0/1023 | 1.21 | 14/1350 (1.0%) |
| 38 | i | 0.63 | 0/843 | 1.20 | 8/1115 (0.7%) |
| 39 | j | 0.97 | 1/721 (0.1%) | 1.43 | 11/953 (1.2%) |
| 40 | k | 0.59 | 0/575 | 0.97 | 1/761 (0.1%) |
| 41 | l | 0.70 | 0/454 | 1.14 | 4/599 (0.7%) |
| 42 | m | 0.55 | 0/435 | 0.95 | 1/575 (0.2%) |
| 43 | n | 0.49 | 0/223 | 1.01 | 0/284 |
| 44 | o | 0.64 | 0/864 | 1.27 | 8/1140 (0.7%) |
| 45 | p | 0.64 | 1/718 (0.1%) | 1.01 | 3/953 (0.3%) |
| 46 | q | 0.81 | 7/1580 (0.4%) | 1.35 | 37/2133 (1.7%) |
| 47 | r | 0.68 | 0/1017 | 1.12 | 8/1365 (0.6%) |
| 48 | 4 | 0.99 | 20/6804 (0.3%) | 1.41 | 93/9189 (1.0%) |
| 49 | S2 | 0.65 | 37/41243 (0.1%) | 1.14 | 330/64257 (0.5%) |
| 50 | SA | 0.94 | 4/1679 (0.2%) | 1.06 | 6/2283 (0.3%) |
| 51 | SB | 0.89 | 6/1753 (0.3%) | 1.15 | 14/2350 (0.6%) |
| 52 | SC | 0.99 | 8/1726 (0.5%) | 1.11 | 9/2332 (0.4%) |
| 53 | SD | 1.39 | 12/1793 (0.7%) | 1.10 | 9/2414 (0.4%) |
| 54 | SE | 0.83 | 8/2118 (0.4%) | 0.98 | 7/2849 (0.2%) |
| 55 | SF | 0.74 | 1/1531 (0.1%) | 1.08 | 9/2059 (0.4%) |
| 56 | SG | 0.97 | 9/1946 (0.5%) | 1.03 | 9/2590 (0.3%) |
| 57 | SH | 0.73 | 2/1544 (0.1%) | 1.02 | 8/2068 (0.4%) |
| 58 | SI | 0.97 | 8/1715 (0.5%) | 1.12 | 12/2287 (0.5%) |
| 59 | SJ | 1.07 | 12/1550 (0.8%) | 1.28 | 16/2069 (0.8%) |
| 60 | SK | 0.75 | 1/851 (0.1%) | 1.00 | 3/1147 (0.3%) |
| 61 | SL | 0.85 | 5/1259 (0.4%) | 1.09 | 7/1684 (0.4%) |
| 62 | SM | 2.22 | 2/970 (0.2%) | 1.21 | 8/1300 (0.6%) |
| 63 | SN | 0.82 | 4/1232 (0.3%) | 1.15 | 10/1656 (0.6%) |
| 64 | SO | 1.18 | 7/1029 (0.7%) | 1.38 | 12/1380 (0.9%) |
| 65 | SP | 1.52 | 6/816 (0.7%) | 1.29 | 8/1084 (0.7%) |
| 66 | SQ | 0.72 | 2/1142 (0.2%) | 1.01 | 8/1528 (0.5%) |
| 67 | SR | 0.81 | 5/1060 (0.5%) | 1.02 | 2/1421 (0.1%) |
| 68 | SS | 0.66 | 1/1157 (0.1%) | 1.18 | 13/1548 (0.8%) |
| 69 | ST | 0.67 | 2/1119 (0.2%) | 1.08 | 7/1499 (0.5%) |
| 70 | SU | 0.94 | 4/828 (0.5%) | 0.96 | 1/1112 (0.1%) |
| 71 | SV | 0.73 | 0/631 | 0.97 | 0/844 |
| 72 | SW | 1.06 | 6/1051 (0.6%) | 1.22 | 5/1406 (0.4%) |
| 73 | SX | 0.99 | 6/1118 (0.5%) | 1.12 | 12/1493 (0.8%) |
| 74 | SY | 1.63 | 5/1040 (0.5%) | 1.11 | 9/1382 (0.7%) |
| 75 | SZ | 0.56 | 0/604 | 0.87 | 0/810 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 76 | Sa | 0.81 | 1/794 (0.1%) | 1.25 | 5/1065 (0.5%) |
| 77 | Sb | 0.59 | 0/665 | 0.90 | 0/891 |
| 78 | Sc | 0.68 | 0/508 | 1.13 | 4/680 (0.6%) |
| 79 | Sd | 0.79 | 0/445 | 1.12 | 1/589 (0.2%) |
| 80 | Se | 0.72 | 1/458 (0.2%) | 1.16 | 5/602 (0.8%) |
| 81 | Sf | 1.08 | 6/593 (1.0%) | 1.57 | 12/786 (1.5%) |
| 82 | Sg | 0.80 | 11/2493 (0.4%) | 0.89 | 8/3394 (0.2%) |
| All | All | 0.75 | 379/237633 (0.2%) | 1.15 | 2051/348088 (0.6%) |

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 | 154 |
| 2 | 7 | 0 | 2 |
| 3 | 8 | 0 | 11 |
| 4 | A | 0 | 6 |
| 5 | B | 0 | 13 |
| 6 | C | 0 | 5 |
| 7 | D | 0 | 8 |
| 8 | E | 0 | 12 |
| 9 | F | 0 | 5 |
| 10 | G | 0 | 3 |
| 11 | H | 0 | 3 |
| 12 | I | 0 | 4 |
| 13 | J | 0 | 2 |
| 14 | K | 0 | 5 |
| 15 | L | 0 | 5 |
| 16 | M | 0 | 4 |
| 17 | N | 0 | 11 |
| 18 | O | 0 | 3 |
| 19 | P | 0 | 1 |
| 20 | Q | 0 | 5 |
| 21 | R | 0 | 6 |
| 22 | S | 0 | 11 |
| 23 | T | 0 | 2 |
| 24 | U | 0 | 2 |
| 25 | V | 0 | 3 |
| 26 | W | 0 | 1 |
| 27 | X | 0 | 1 |

*Continued on next page...*

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 28 | Y | 0 | 4 |
| 30 | a | 0 | 9 |
| 31 | b | 0 | 1 |
| 32 | c | 0 | 2 |
| 33 | d | 0 | 4 |
| 34 | e | 0 | 4 |
| 35 | f | 0 | 2 |
| 36 | g | 0 | 1 |
| 37 | h | 0 | 3 |
| 38 | i | 0 | 3 |
| 39 | j | 0 | 4 |
| 40 | k | 0 | 1 |
| 44 | o | 0 | 6 |
| 45 | p | 0 | 1 |
| 46 | q | 0 | 7 |
| 47 | r | 0 | 5 |
| 48 | 4 | 0 | 40 |
| 49 | S2 | 1 | 66 |
| 50 | SA | 0 | 2 |
| 51 | SB | 0 | 4 |
| 52 | SC | 0 | 4 |
| 53 | SD | 0 | 3 |
| 54 | SE | 0 | 2 |
| 55 | SF | 0 | 1 |
| 57 | SH | 0 | 1 |
| 58 | SI | 0 | 6 |
| 59 | SJ | 0 | 2 |
| 60 | SK | 0 | 1 |
| 61 | SL | 0 | 4 |
| 62 | SM | 0 | 3 |
| 63 | SN | 0 | 1 |
| 64 | SO | 0 | 1 |
| 65 | SP | 0 | 1 |
| 66 | SQ | 0 | 1 |
| 67 | SR | 0 | 2 |
| 70 | SU | 0 | 1 |
| 71 | SV | 0 | 2 |
| 72 | SW | 0 | 2 |
| 73 | SX | 0 | 2 |
| 74 | SY | 0 | 1 |
| 75 | SZ | 0 | 1 |
| 76 | Sa | 0 | 1 |

*Continued on next page...*

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 77 | Sb | 0 | 1 |
| 79 | Sd | 0 | 2 |
| 81 | Sf | 0 | 4 |
| All | All | 1 | 507 |

All (379) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 62 | SM | 58 | GLU | CD-OE1 | 64.43 | 1.96 | 1.25 |
| 53 | SD | 216 | GLU | CD-OE1 | 43.67 | 1.73 | 1.25 |
| 1 | 5 | 1823 | G | O3'-P | 41.55 | 2.11 | 1.61 |
| 74 | SY | 86 | GLU | CD-OE2 | 39.60 | 1.69 | 1.25 |
| 65 | SP | 21 | ASP | CG-OD1 | 30.90 | 1.96 | 1.25 |
| 74 | SY | 86 | GLU | CG-CD | 22.60 | 1.85 | 1.51 |
| 56 | SG | 205 | GLU | CD-OE1 | 21.22 | 1.49 | 1.25 |
| 64 | SO | 130 | GLU | CD-OE1 | 17.40 | 1.44 | 1.25 |
| 72 | SW | 117 | ARG | NE-CZ | 16.50 | 1.54 | 1.33 |
| 10 | G | 109 | GLU | CD-OE2 | 16.17 | 1.43 | 1.25 |
| 11 | H | 66 | GLU | CD-OE1 | 15.81 | 1.43 | 1.25 |
| 59 | SJ | 59 | GLU | CG-CD | 15.74 | 1.75 | 1.51 |
| 35 | f | 6 | TRP | CB-CG | -15.69 | 1.22 | 1.50 |
| 48 | 4 | 267 | ASP | N-CA | 15.35 | 1.77 | 1.46 |
| 54 | SE | 251 | GLU | CD-OE1 | 14.43 | 1.41 | 1.25 |
| 50 | SA | 118 | GLU | CG-CD | 13.75 | 1.72 | 1.51 |
| 48 | 4 | 267 | ASP | CA-C | 13.58 | 1.88 | 1.52 |
| 31 | b | 16 | TRP | CB-CG | -13.52 | 1.25 | 1.50 |
| 56 | SG | 205 | GLU | CD-OE2 | 13.45 | 1.40 | 1.25 |
| 59 | SJ | 34 | GLU | CG-CD | 13.17 | 1.71 | 1.51 |
| 64 | SO | 130 | GLU | CD-OE2 | 12.85 | 1.39 | 1.25 |
| 65 | SP | 31 | GLU | CD-OE2 | 12.79 | 1.39 | 1.25 |
| 50 | SA | 151 | ASP | CB-CG | 12.77 | 1.78 | 1.51 |
| 65 | SP | 31 | GLU | CD-OE1 | 12.46 | 1.39 | 1.25 |
| 50 | SA | 118 | GLU | CD-OE2 | 12.23 | 1.39 | 1.25 |
| 64 | SO | 104 | ARG | CZ-NH1 | 12.19 | 1.48 | 1.33 |
| 70 | SU | 33 | GLU | CD-OE1 | 12.13 | 1.39 | 1.25 |
| 21 | R | 95 | TRP | CB-CG | -12.07 | 1.28 | 1.50 |
| 25 | V | 97 | TYR | CB-CG | -11.86 | 1.33 | 1.51 |
| 57 | SH | 132 | ASP | CG-OD2 | 11.76 | 1.52 | 1.25 |
| 48 | 4 | 269 | ALA | C-N | 11.65 | 1.60 | 1.34 |
| 58 | SI | 111 | GLN | CD-NE2 | 11.63 | 1.61 | 1.32 |
| 58 | SI | 188 | TYR | CE1-CZ | 11.54 | 1.53 | 1.38 |
| 14 | K | 163 | PRO | C-O | -11.44 | 1.00 | 1.23 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 52 | SC | 90 | GLU | CD-OE1 | 11.28 | 1.38 | 1.25 |
| 73 | SX | 58 | GLU | CD-OE1 | 11.16 | 1.38 | 1.25 |
| 51 | SB | 198 | GLU | CG-CD | 11.03 | 1.68 | 1.51 |
| 54 | SE | 250 | GLU | CD-OE2 | 10.89 | 1.37 | 1.25 |
| 74 | SY | 118 | ARG | CZ-NH1 | 10.62 | 1.46 | 1.33 |
| 49 | S2 | 1433 | C | O3'-P | 10.60 | 1.73 | 1.61 |
| 82 | Sg | 107 | ASP | CB-CG | 10.42 | 1.73 | 1.51 |
| 58 | SI | 188 | TYR | CG-CD1 | 10.38 | 1.52 | 1.39 |
| 82 | Sg | 60 | ARG | CZ-NH1 | 10.31 | 1.46 | 1.33 |
| 34 | e | 35 | TRP | CB-CG | -10.24 | 1.31 | 1.50 |
| 73 | SX | 39 | ASN | CG-ND2 | 10.24 | 1.58 | 1.32 |
| 64 | SO | 130 | GLU | CG-CD | 10.01 | 1.67 | 1.51 |
| 74 | SY | 80 | ASP | CB-CG | 9.94 | 1.72 | 1.51 |
| 10 | G | 54 | PHE | CB-CG | -9.92 | 1.34 | 1.51 |
| 70 | SU | 90 | ASP | CB-CG | 9.83 | 1.72 | 1.51 |
| 58 | SI | 188 | TYR | CG-CD2 | 9.80 | 1.51 | 1.39 |
| 53 | SD | 38 | GLU | CD-OE2 | 9.79 | 1.36 | 1.25 |
| 73 | SX | 88 | ASP | CG-OD2 | 9.60 | 1.47 | 1.25 |
| 49 | S2 | 619 | A | O3'-P | -9.53 | 1.49 | 1.61 |
| 53 | SD | 162 | ASP | CG-OD1 | 9.48 | 1.47 | 1.25 |
| 58 | SI | 99 | ASN | CG-OD1 | 9.45 | 1.44 | 1.24 |
| 52 | SC | 220 | ASP | CG-OD2 | 9.39 | 1.47 | 1.25 |
| 52 | SC | 90 | GLU | CG-CD | 9.38 | 1.66 | 1.51 |
| 61 | SL | 100 | ASN | CB-CG | 9.36 | 1.72 | 1.51 |
| 70 | SU | 113 | GLU | CD-OE2 | 9.35 | 1.35 | 1.25 |
| 17 | N | 192 | TRP | CB-CG | -9.29 | 1.33 | 1.50 |
| 65 | SP | 21 | ASP | CB-CG | 9.25 | 1.71 | 1.51 |
| 14 | K | 114 | ARG | CD-NE | 9.14 | 1.61 | 1.46 |
| 52 | SC | 121 | ARG | CZ-NH1 | 9.08 | 1.44 | 1.33 |
| 67 | SR | 87 | GLU | CD-OE1 | 9.02 | 1.35 | 1.25 |
| 55 | SF | 130 | ARG | CZ-NH1 | 8.96 | 1.44 | 1.33 |
| 16 | M | 6 | PHE | CB-CG | -8.92 | 1.36 | 1.51 |
| 5 | B | 215 | GLU | CD-OE1 | 8.83 | 1.35 | 1.25 |
| 59 | SJ | 64 | ASP | CG-OD2 | 8.81 | 1.45 | 1.25 |
| 49 | S2 | 1291 | A | O3'-P | 8.81 | 1.71 | 1.61 |
| 25 | V | 97 | TYR | CA-CB | 8.62 | 1.73 | 1.53 |
| 54 | SE | 250 | GLU | CD-OE1 | 8.62 | 1.35 | 1.25 |
| 48 | 4 | 267 | ASP | C-N | 8.62 | 1.50 | 1.34 |
| 53 | SD | 216 | GLU | CD-OE2 | 8.57 | 1.35 | 1.25 |
| 56 | SG | 208 | GLU | CG-CD | 8.48 | 1.64 | 1.51 |
| 8 | E | 278 | TYR | CA-CB | 8.48 | 1.72 | 1.53 |
| 30 | a | 109 | TYR | CA-CB | 8.40 | 1.72 | 1.53 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 58 | SI | 188 | TYR | CE2-CZ | 8.35 | 1.49 | 1.38 |
| 1 | 5 | 4547 | C | O3'-P | 8.29 | 1.71 | 1.61 |
| 61 | SL | 31 | GLU | CD-OE1 | 8.28 | 1.34 | 1.25 |
| 81 | Sf | 120 | GLU | CG-CD | 8.28 | 1.64 | 1.51 |
| 59 | SJ | 158 | ASP | CG-OD2 | 8.26 | 1.44 | 1.25 |
| 49 | S2 | 1292 | C | O3'-P | 8.23 | 1.71 | 1.61 |
| 14 | K | 130 | LYS | CA-CB | 8.23 | 1.72 | 1.53 |
| 22 | S | 81 | TRP | CA-CB | 8.09 | 1.71 | 1.53 |
| 22 | S | 10 | TYR | CB-CG | -8.07 | 1.39 | 1.51 |
| 53 | SD | 38 | GLU | CG-CD | 8.06 | 1.64 | 1.51 |
| 1 | 5 | 45 | U | O3'-P | -8.04 | 1.51 | 1.61 |
| 1 | 5 | 3652 | A | O3'-P | 7.92 | 1.70 | 1.61 |
| 8 | E | 278 | TYR | CB-CG | -7.87 | 1.39 | 1.51 |
| 21 | R | 132 | PHE | CB-CG | -7.87 | 1.38 | 1.51 |
| 53 | SD | 135 | GLU | CD-OE1 | 7.87 | 1.34 | 1.25 |
| 53 | SD | 23 | GLU | CD-OE2 | 7.85 | 1.34 | 1.25 |
| 66 | SQ | 85 | ARG | CZ-NH1 | 7.82 | 1.43 | 1.33 |
| 30 | a | 84 | GLU | CD-OE1 | 7.82 | 1.34 | 1.25 |
| 59 | SJ | 38 | ARG | CZ-NH1 | 7.77 | 1.43 | 1.33 |
| 49 | S2 | 1309 | C | O3'-P | 7.73 | 1.70 | 1.61 |
| 56 | SG | 204 | GLU | CD-OE1 | 7.71 | 1.34 | 1.25 |
| 53 | SD | 216 | GLU | CG-CD | 7.70 | 1.63 | 1.51 |
| 30 | a | 109 | TYR | CB-CG | -7.62 | 1.40 | 1.51 |
| 48 | 4 | 76 | SER | C-N | 7.55 | 1.51 | 1.34 |
| 53 | SD | 162 | ASP | CG-OD2 | 7.51 | 1.42 | 1.25 |
| 59 | SJ | 104 | ASP | CG-OD2 | 7.47 | 1.42 | 1.25 |
| 49 | S2 | 1142 | G | O3'-P | 7.45 | 1.70 | 1.61 |
| 56 | SG | 35 | GLU | CD-OE1 | 7.38 | 1.33 | 1.25 |
| 1 | 5 | 4566 | U | O3'-P | -7.35 | 1.52 | 1.61 |
| 35 | f | 6 | TRP | CA-CB | 7.35 | 1.70 | 1.53 |
| 54 | SE | 104 | ASP | CG-OD2 | 7.30 | 1.42 | 1.25 |
| 49 | S2 | 1378 | A | O3'-P | 7.24 | 1.69 | 1.61 |
| 1 | 5 | 2510 | G | O3'-P | -7.22 | 1.52 | 1.61 |
| 76 | Sa | 22 | ARG | CZ-NH1 | 7.20 | 1.42 | 1.33 |
| 67 | SR | 87 | GLU | CD-OE2 | 7.18 | 1.33 | 1.25 |
| 59 | SJ | 158 | ASP | CG-OD1 | 7.16 | 1.41 | 1.25 |
| 1 | 5 | 2361 | G | O3'-P | 7.15 | 1.69 | 1.61 |
| 50 | SA | 33 | GLN | CD-NE2 | 7.06 | 1.50 | 1.32 |
| 56 | SG | 20 | ASP | CG-OD2 | 7.04 | 1.41 | 1.25 |
| 6 | C | 267 | TRP | CB-CG | -7.03 | 1.37 | 1.50 |
| 53 | SD | 135 | GLU | CG-CD | 7.00 | 1.62 | 1.51 |
| 22 | S | 81 | TRP | CB-CG | -6.99 | 1.37 | 1.50 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 65 | SP | 27 | ASP | CG-OD1 | 6.99 | 1.41 | 1.25 |
| 1 | 5 | 1851 | G | O3'-P | -6.97 | 1.52 | 1.61 |
| 14 | K | 137 | GLN | N-CA | 6.97 | 1.60 | 1.46 |
| 1 | 5 | 1849 | U | O3'-P | -6.92 | 1.52 | 1.61 |
| 5 | B | 119 | TYR | CB-CG | -6.91 | 1.41 | 1.51 |
| 13 | J | 14 | GLU | CD-OE1 | 6.88 | 1.33 | 1.25 |
| 49 | S2 | 1839 | U | O3'-P | 6.83 | 1.69 | 1.61 |
| 72 | SW | 87 | GLU | CD-OE1 | 6.83 | 1.33 | 1.25 |
| 30 | a | 128 | PHE | CB-CG | -6.82 | 1.39 | 1.51 |
| 23 | T | 13 | TYR | CB-CG | -6.82 | 1.41 | 1.51 |
| 1 | 5 | 4693 | C | O3'-P | 6.81 | 1.69 | 1.61 |
| 49 | S2 | 1290 | G | O3'-P | 6.78 | 1.69 | 1.61 |
| 1 | 5 | 1364 | U | O3'-P | 6.76 | 1.69 | 1.61 |
| 39 | j | 49 | TRP | CB-CG | -6.74 | 1.38 | 1.50 |
| 73 | SX | 88 | ASP | CG-OD1 | 6.73 | 1.40 | 1.25 |
| 59 | SJ | 103 | GLU | CD-OE2 | 6.73 | 1.33 | 1.25 |
| 82 | Sg | 83 | TRP | CB-CG | -6.72 | 1.38 | 1.50 |
| 1 | 5 | 2692 | U | O3'-P | -6.71 | 1.53 | 1.61 |
| 48 | 4 | 154 | VAL | C-N | 6.70 | 1.49 | 1.34 |
| 54 | SE | 104 | ASP | CG-OD1 | 6.70 | 1.40 | 1.25 |
| 49 | S2 | 1079 | C | O3'-P | -6.69 | 1.53 | 1.61 |
| 1 | 5 | 514 | U | O3'-P | 6.69 | 1.69 | 1.61 |
| 5 | B | 274 | TYR | CA-CB | 6.68 | 1.68 | 1.53 |
| 61 | SL | 13 | GLN | CD-NE2 | 6.68 | 1.49 | 1.32 |
| 1 | 5 | 2053 | C | O3'-P | -6.67 | 1.53 | 1.61 |
| 14 | K | 130 | LYS | CA-C | -6.65 | 1.35 | 1.52 |
| 72 | SW | 51 | GLU | CD-OE1 | 6.64 | 1.32 | 1.25 |
| 1 | 5 | 964 | A | O3'-P | 6.63 | 1.69 | 1.61 |
| 33 | d | 25 | TYR | CB-CG | -6.63 | 1.41 | 1.51 |
| 49 | S2 | 1835 | A | O3'-P | 6.63 | 1.69 | 1.61 |
| 52 | SC | 220 | ASP | CG-OD1 | 6.62 | 1.40 | 1.25 |
| 70 | SU | 33 | GLU | CG-CD | 6.61 | 1.61 | 1.51 |
| 67 | SR | 37 | GLU | CG-CD | 6.61 | 1.61 | 1.51 |
| 1 | 5 | 3692 | A | O3'-P | 6.59 | 1.69 | 1.61 |
| 12 | I | 171 | TRP | CB-CG | -6.58 | 1.38 | 1.50 |
| 48 | 4 | 768 | GLY | C-N | 6.55 | 1.49 | 1.34 |
| 22 | S | 33 | PHE | CB-CG | -6.52 | 1.40 | 1.51 |
| 1 | 5 | 1912 | G | O3'-P | -6.51 | 1.53 | 1.61 |
| 82 | Sg | 187 | ASN | CG-OD1 | 6.50 | 1.38 | 1.24 |
| 1 | 5 | 1522 | G | O3'-P | 6.49 | 1.69 | 1.61 |
| 48 | 4 | 56 | PHE | CB-CG | 6.49 | 1.62 | 1.51 |
| 1 | 5 | 4375 | C | O3'-P | -6.48 | 1.53 | 1.61 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 69 | ST | 32 | GLU | CD-OE2 | 6.48 | 1.32 | 1.25 |
| 6 | C | 111 | TRP | CB-CG | -6.47 | 1.38 | 1.50 |
| 2 | 7 | 90 | A | O3'-P | -6.47 | 1.53 | 1.61 |
| 1 | 5 | 2442 | G | O3'-P | -6.45 | 1.53 | 1.61 |
| 18 | O | 194 | GLU | CD-OE1 | 6.44 | 1.32 | 1.25 |
| 49 | S2 | 646 | G | O3'-P | 6.43 | 1.68 | 1.61 |
| 73 | SX | 39 | ASN | CG-OD1 | 6.43 | 1.38 | 1.24 |
| 49 | S2 | 1833 | C | O3'-P | -6.41 | 1.53 | 1.61 |
| 81 | Sf | 146 | LEU | CA-CB | 6.41 | 1.68 | 1.53 |
| 15 | L | 17 | ASP | CG-OD2 | 6.40 | 1.40 | 1.25 |
| 61 | SL | 89 | ARG | CZ-NH1 | 6.40 | 1.41 | 1.33 |
| 49 | S2 | 1858 | G | O3'-P | 6.38 | 1.68 | 1.61 |
| 69 | ST | 32 | GLU | CD-OE1 | 6.37 | 1.32 | 1.25 |
| 10 | G | 54 | PHE | CA-CB | 6.36 | 1.68 | 1.53 |
| 48 | 4 | 669 | VAL | CA-CB | 6.35 | 1.68 | 1.54 |
| 1 | 5 | 207 | G | O3'-P | -6.30 | 1.53 | 1.61 |
| 8 | E | 101 | ARG | CZ-NH2 | 6.29 | 1.41 | 1.33 |
| 7 | D | 213 | GLU | CG-CD | 6.26 | 1.61 | 1.51 |
| 1 | 5 | 1669 | A | O3'-P | -6.26 | 1.53 | 1.61 |
| 63 | SN | 13 | GLN | CD-NE2 | 6.25 | 1.48 | 1.32 |
| 22 | S | 10 | TYR | CA-CB | 6.22 | 1.67 | 1.53 |
| 18 | O | 106 | ASP | CG-OD2 | 6.21 | 1.39 | 1.25 |
| 57 | SH | 177 | TYR | CB-CG | -6.21 | 1.42 | 1.51 |
| 82 | Sg | 36 | ARG | CZ-NH1 | 6.19 | 1.41 | 1.33 |
| 11 | H | 61 | TRP | CB-CG | -6.17 | 1.39 | 1.50 |
| 1 | 5 | 1756 | U | C4-O4 | -6.17 | 1.18 | 1.23 |
| 48 | 4 | 825 | PHE | CB-CG | -6.16 | 1.40 | 1.51 |
| 1 | 5 | 171 | U | O3'-P | -6.16 | 1.53 | 1.61 |
| 49 | S2 | 9 | U | O3'-P | 6.14 | 1.68 | 1.61 |
| 48 | 4 | 109 | VAL | CA-CB | -6.13 | 1.41 | 1.54 |
| 9 | F | 120 | PHE | CB-CG | -6.12 | 1.41 | 1.51 |
| 82 | Sg | 4 | GLN | CD-OE1 | 6.12 | 1.37 | 1.24 |
| 46 | q | 205 | ASP | C-N | 6.09 | 1.48 | 1.34 |
| 59 | SJ | 48 | PHE | CB-CG | -6.08 | 1.41 | 1.51 |
| 58 | SI | 99 | ASN | CG-ND2 | 6.08 | 1.48 | 1.32 |
| 72 | SW | 115 | GLU | CD-OE2 | 6.07 | 1.32 | 1.25 |
| 49 | S2 | 1139 | C | O3'-P | -6.06 | 1.53 | 1.61 |
| 48 | 4 | 111 | PHE | CA-CB | 6.05 | 1.67 | 1.53 |
| 1 | 5 | 1591 | U | O3'-P | -6.05 | 1.53 | 1.61 |
| 7 | D | 44 | TYR | CA-CB | 6.05 | 1.67 | 1.53 |
| 1 | 5 | 1636 | U | O3'-P | -6.04 | 1.53 | 1.61 |
| 1 | 5 | 2589 | C | O3'-P | 6.02 | 1.68 | 1.61 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 3901 | A | O3'-P | -6.02 | 1.53 | 1.61 |
| 64 | SO | 104 | ARG | NE-CZ | 6.01 | 1.40 | 1.33 |
| 1 | 5 | 4464 | A | O3'-P | 5.99 | 1.68 | 1.61 |
| 49 | S2 | 922 | A | O3'-P | -5.97 | 1.53 | 1.61 |
| 49 | S2 | 1055 | A | O3'-P | -5.95 | 1.54 | 1.61 |
| 60 | SK | 34 | GLU | CD-OE1 | 5.95 | 1.32 | 1.25 |
| 24 | U | 99 | TRP | CB-CG | -5.94 | 1.39 | 1.50 |
| 54 | SE | 251 | GLU | CD-OE2 | 5.94 | 1.32 | 1.25 |
| 63 | SN | 128 | TYR | CG-CD2 | -5.94 | 1.31 | 1.39 |
| 22 | S | 152 | PHE | CB-CG | -5.93 | 1.41 | 1.51 |
| 49 | S2 | 1838 | U | O3'-P | 5.92 | 1.68 | 1.61 |
| 81 | Sf | 150 | PHE | CB-CG | 5.92 | 1.61 | 1.51 |
| 51 | SB | 157 | GLN | CG-CD | 5.92 | 1.64 | 1.51 |
| 1 | 5 | 2520 | C | O3'-P | -5.91 | 1.54 | 1.61 |
| 19 | P | 139 | TYR | CB-CG | -5.88 | 1.42 | 1.51 |
| 54 | SE | 121 | TYR | CB-CG | -5.88 | 1.42 | 1.51 |
| 33 | d | 73 | TRP | CB-CG | -5.88 | 1.39 | 1.50 |
| 52 | SC | 236 | PHE | CA-CB | 5.87 | 1.66 | 1.53 |
| 31 | b | 16 | TRP | CA-CB | 5.86 | 1.66 | 1.53 |
| 14 | K | 137 | GLN | CA-C | 5.86 | 1.68 | 1.52 |
| 5 | B | 119 | TYR | CA-CB | 5.86 | 1.66 | 1.53 |
| 1 | 5 | 1395 | U | O3'-P | -5.84 | 1.54 | 1.61 |
| 81 | Sf | 120 | GLU | CD-OE1 | -5.84 | 1.19 | 1.25 |
| 64 | SO | 147 | ARG | CG-CD | 5.84 | 1.66 | 1.51 |
| 51 | SB | 89 | GLU | CD-OE2 | 5.83 | 1.32 | 1.25 |
| 82 | Sg | 145 | GLU | CG-CD | 5.83 | 1.60 | 1.51 |
| 53 | SD | 103 | GLU | CD-OE1 | 5.82 | 1.32 | 1.25 |
| 19 | P | 139 | TYR | CA-CB | 5.82 | 1.66 | 1.53 |
| 14 | K | 114 | ARG | C-N | -5.81 | 1.20 | 1.34 |
| 1 | 5 | 2811 | G | O3'-P | 5.81 | 1.68 | 1.61 |
| 59 | SJ | 48 | PHE | CA-CB | 5.81 | 1.66 | 1.53 |
| 5 | B | 274 | TYR | CB-CG | -5.80 | 1.43 | 1.51 |
| 49 | S2 | 1190 | A | O3'-P | -5.80 | 1.54 | 1.61 |
| 52 | SC | 236 | PHE | CB-CG | -5.79 | 1.41 | 1.51 |
| 49 | S2 | 1798 | C | O3'-P | -5.78 | 1.54 | 1.61 |
| 53 | SD | 38 | GLU | CD-OE1 | 5.78 | 1.32 | 1.25 |
| 1 | 5 | 1357 | C | O3'-P | 5.77 | 1.68 | 1.61 |
| 49 | S2 | 397 | G | O3'-P | -5.76 | 1.54 | 1.61 |
| 67 | SR | 82 | ASP | CG-OD1 | 5.75 | 1.38 | 1.25 |
| 48 | 4 | 794 | PHE | CD1-CE1 | -5.72 | 1.27 | 1.39 |
| 64 | SO | 25 | GLU | CG-CD | 5.72 | 1.60 | 1.51 |
| 45 | p | 18 | TYR | CB-CG | -5.70 | 1.43 | 1.51 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 798 | A | O3'-P | 5.70 | 1.68 | 1.61 |
| 25 | V | 97 | TYR | CD2-CE2 | -5.70 | 1.30 | 1.39 |
| 48 | 4 | 478 | PHE | CD1-CE1 | -5.70 | 1.27 | 1.39 |
| 14 | K | 114 | ARG | CA-C | -5.68 | 1.38 | 1.52 |
| 15 | L | 173 | GLU | CD-OE2 | 5.68 | 1.31 | 1.25 |
| 66 | SQ | 29 | ASN | CG-ND2 | 5.67 | 1.47 | 1.32 |
| 1 | 5 | 2394 | G | O3'-P | -5.66 | 1.54 | 1.61 |
| 1 | 5 | 90 | G | O3'-P | -5.66 | 1.54 | 1.61 |
| 1 | 5 | 2325 | C | O3'-P | 5.66 | 1.68 | 1.61 |
| 56 | SG | 142 | ARG | CZ-NH1 | 5.66 | 1.40 | 1.33 |
| 1 | 5 | 2055 | G | O3'-P | 5.66 | 1.68 | 1.61 |
| 1 | 5 | 32 | G | O3'-P | -5.65 | 1.54 | 1.61 |
| 1 | 5 | 3635 | A | O3'-P | 5.64 | 1.68 | 1.61 |
| 33 | d | 25 | TYR | CA-CB | 5.63 | 1.66 | 1.53 |
| 63 | SN | 83 | ASP | CB-CG | 5.63 | 1.63 | 1.51 |
| 1 | 5 | 147 | A | O3'-P | -5.63 | 1.54 | 1.61 |
| 5 | B | 235 | TRP | CG-CD1 | -5.63 | 1.28 | 1.36 |
| 51 | SB | 198 | GLU | CD-OE2 | 5.63 | 1.31 | 1.25 |
| 1 | 5 | 2649 | G | O3'-P | -5.63 | 1.54 | 1.61 |
| 49 | S2 | 92 | A | O3'-P | 5.61 | 1.67 | 1.61 |
| 49 | S2 | 1851 | A | O3'-P | -5.61 | 1.54 | 1.61 |
| 46 | q | 62 | ARG | N-CA | -5.61 | 1.35 | 1.46 |
| 1 | 5 | 1627 | G | O3'-P | 5.59 | 1.67 | 1.61 |
| 1 | 5 | 2051 | C | O3'-P | 5.58 | 1.67 | 1.61 |
| 17 | N | 119 | TYR | CB-CG | -5.57 | 1.43 | 1.51 |
| 1 | 5 | 2535 | G | O3'-P | -5.57 | 1.54 | 1.61 |
| 1 | 5 | 1282 | G | O3'-P | -5.56 | 1.54 | 1.61 |
| 1 | 5 | 4239 | A | O3'-P | 5.56 | 1.67 | 1.61 |
| 72 | SW | 80 | ASP | CB-CG | 5.56 | 1.63 | 1.51 |
| 72 | SW | 115 | GLU | CD-OE1 | 5.54 | 1.31 | 1.25 |
| 49 | S2 | 657 | U | O3'-P | -5.53 | 1.54 | 1.61 |
| 73 | SX | 58 | GLU | CD-OE2 | 5.53 | 1.31 | 1.25 |
| 1 | 5 | 5001 | U | O3'-P | -5.52 | 1.54 | 1.61 |
| 48 | 4 | 196 | GLU | CG-CD | 5.52 | 1.60 | 1.51 |
| 52 | SC | 241 | PHE | CB-CG | -5.52 | 1.42 | 1.51 |
| 49 | S2 | 640 | A | O3'-P | -5.50 | 1.54 | 1.61 |
| 1 | 5 | 53 | C | O3'-P | 5.50 | 1.67 | 1.61 |
| 1 | 5 | 332 | C | O3'-P | -5.50 | 1.54 | 1.61 |
| 30 | a | 79 | TRP | CB-CG | -5.50 | 1.40 | 1.50 |
| 1 | 5 | 3875 | G | O3'-P | 5.49 | 1.67 | 1.61 |
| 1 | 5 | 4276 | G | O3'-P | 5.49 | 1.67 | 1.61 |
| 56 | SG | 204 | GLU | CG-CD | 5.49 | 1.60 | 1.51 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 10 | G | 109 | GLU | CG-CD | 5.48 | 1.60 | 1.51 |
| 49 | S2 | 848 | U | N3-C4 | 5.47 | 1.43 | 1.38 |
| 22 | S | 29 | ARG | CG-CD | 5.46 | 1.65 | 1.51 |
| 65 | SP | 27 | ASP | CG-OD2 | 5.45 | 1.37 | 1.25 |
| 16 | M | 6 | PHE | CA-CB | 5.44 | 1.66 | 1.53 |
| 1 | 5 | 4326 | G | O3'-P | -5.43 | 1.54 | 1.61 |
| 49 | S2 | 1843 | G | O3'-P | -5.42 | 1.54 | 1.61 |
| 63 | SN | 83 | ASP | CG-OD1 | 5.41 | 1.37 | 1.25 |
| 1 | 5 | 1381 | U | O3'-P | -5.40 | 1.54 | 1.61 |
| 48 | 4 | 801 | ARG | NE-CZ | 5.39 | 1.40 | 1.33 |
| 51 | SB | 224 | GLU | CD-OE2 | 5.38 | 1.31 | 1.25 |
| 61 | SL | 3 | ASP | CB-CG | 5.38 | 1.63 | 1.51 |
| 3 | 8 | 64 | U | O3'-P | 5.38 | 1.67 | 1.61 |
| 81 | Sf | 151 | ASN | CA-C | 5.38 | 1.67 | 1.52 |
| 51 | SB | 205 | TYR | CE2-CZ | 5.38 | 1.45 | 1.38 |
| 56 | SG | 17 | GLU | CD-OE2 | 5.37 | 1.31 | 1.25 |
| 46 | q | 25 | PRO | N-CD | 5.37 | 1.55 | 1.47 |
| 46 | q | 201 | PRO | N-CD | 5.36 | 1.55 | 1.47 |
| 1 | 5 | 372 | A | O3'-P | -5.35 | 1.54 | 1.61 |
| 49 | S2 | 357 | C | O3'-P | 5.35 | 1.67 | 1.61 |
| 80 | Se | 23 | GLU | CG-CD | 5.35 | 1.59 | 1.51 |
| 18 | O | 106 | ASP | CG-OD1 | 5.33 | 1.37 | 1.25 |
| 1 | 5 | 89 | C | O3'-P | -5.32 | 1.54 | 1.61 |
| 34 | e | 74 | PHE | CB-CG | -5.32 | 1.42 | 1.51 |
| 48 | 4 | 266 | PHE | C-N | 5.32 | 1.46 | 1.34 |
| 67 | SR | 104 | GLU | CD-OE2 | 5.30 | 1.31 | 1.25 |
| 1 | 5 | 937 | U | O3'-P | -5.29 | 1.54 | 1.61 |
| 1 | 5 | 2297 | G | O3'-P | -5.29 | 1.54 | 1.61 |
| 1 | 5 | 4548 | A | O5'-C5' | 5.28 | 1.52 | 1.44 |
| 8 | E | 250 | ASP | CG-OD2 | 5.28 | 1.37 | 1.25 |
| 48 | 4 | 4 | PHE | CD2-CE2 | -5.28 | 1.28 | 1.39 |
| 1 | 5 | 4237 | C | O3'-P | -5.27 | 1.54 | 1.61 |
| 59 | SJ | 104 | ASP | CG-OD1 | 5.27 | 1.37 | 1.25 |
| 82 | Sg | 3 | GLU | CD-OE2 | 5.27 | 1.31 | 1.25 |
| 1 | 5 | 943 | A | O3'-P | -5.27 | 1.54 | 1.61 |
| 4 | A | 211 | PHE | CA-CB | 5.26 | 1.65 | 1.53 |
| 1 | 5 | 2043 | A | O3'-P | -5.26 | 1.54 | 1.61 |
| 58 | SI | 27 | TYR | CB-CG | -5.24 | 1.43 | 1.51 |
| 4 | A | 40 | TYR | CA-CB | 5.24 | 1.65 | 1.53 |
| 14 | K | 34 | PRO | N-CD | 5.24 | 1.55 | 1.47 |
| 1 | 5 | 2368 | A | O3'-P | -5.22 | 1.54 | 1.61 |
| 1 | 5 | 1917 | A | O3'-P | -5.21 | 1.54 | 1.61 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 8 | E | 97 | ASN | CG-ND2 | 5.21 | 1.45 | 1.32 |
| 49 | S2 | 1293 | A | O3'-P | 5.20 | 1.67 | 1.61 |
| 46 | q | 124 | PRO | N-CD | 5.20 | 1.55 | 1.47 |
| 1 | 5 | 4977 | A | O3'-P | -5.20 | 1.54 | 1.61 |
| 5 | B | 137 | TRP | CB-CG | -5.20 | 1.40 | 1.50 |
| 82 | Sg | 285 | GLN | CD-NE2 | 5.19 | 1.45 | 1.32 |
| 21 | R | 132 | PHE | CA-CB | 5.19 | 1.65 | 1.53 |
| 25 | V | 98 | PHE | CB-CG | -5.19 | 1.42 | 1.51 |
| 17 | N | 120 | TRP | CE3-CZ3 | -5.18 | 1.29 | 1.38 |
| 17 | N | 130 | PHE | CB-CG | -5.17 | 1.42 | 1.51 |
| 46 | q | 68 | HIS | C-N | 5.17 | 1.46 | 1.34 |
| 48 | 4 | 478 | PHE | CD2-CE2 | -5.17 | 1.28 | 1.39 |
| 14 | K | 148 | PRO | N-CD | 5.16 | 1.55 | 1.47 |
| 4 | A | 209 | HIS | CA-CB | 5.16 | 1.65 | 1.53 |
| 74 | SY | 80 | ASP | CG-OD2 | 5.15 | 1.37 | 1.25 |
| 82 | Sg | 116 | ASP | CG-OD1 | 5.15 | 1.37 | 1.25 |
| 1 | 5 | 4275 | G | O3'-P | 5.15 | 1.67 | 1.61 |
| 11 | H | 66 | GLU | CD-OE2 | 5.14 | 1.31 | 1.25 |
| 1 | 5 | 381 | U | O3'-P | -5.14 | 1.54 | 1.61 |
| 68 | SS | 130 | ARG | CZ-NH1 | 5.14 | 1.39 | 1.33 |
| 49 | S2 | 999 | G | O3'-P | 5.13 | 1.67 | 1.61 |
| 1 | 5 | 4489 | G | O3'-P | 5.12 | 1.67 | 1.61 |
| 54 | SE | 251 | GLU | CG-CD | 5.12 | 1.59 | 1.51 |
| 1 | 5 | 1457 | G | O3'-P | -5.11 | 1.55 | 1.61 |
| 82 | Sg | 60 | ARG | NE-CZ | 5.11 | 1.39 | 1.33 |
| 3 | 8 | 80 | A | O3'-P | 5.11 | 1.67 | 1.61 |
| 5 | B | 257 | TRP | CE3-CZ3 | -5.11 | 1.29 | 1.38 |
| 46 | q | 118 | PRO | N-CD | 5.10 | 1.54 | 1.47 |
| 34 | e | 35 | TRP | CG-CD1 | -5.09 | 1.29 | 1.36 |
| 1 | 5 | 1283 | G | O3'-P | -5.09 | 1.55 | 1.61 |
| 9 | F | 228 | HIS | CA-CB | 5.09 | 1.65 | 1.53 |
| 48 | 4 | 794 | PHE | CD2-CE2 | -5.09 | 1.29 | 1.39 |
| 1 | 5 | 2406 | G | O3'-P | 5.09 | 1.67 | 1.61 |
| 49 | S2 | 1039 | C | O3'-P | 5.08 | 1.67 | 1.61 |
| 1 | 5 | 97 | G | O3'-P | 5.08 | 1.67 | 1.61 |
| 62 | SM | 58 | GLU | CD-OE2 | 5.08 | 1.31 | 1.25 |
| 1 | 5 | 1682 | A | C6-N6 | -5.07 | 1.29 | 1.33 |
| 1 | 5 | 2054 | U | O3'-P | -5.07 | 1.55 | 1.61 |
| 49 | S2 | 1552 | G | O3'-P | 5.07 | 1.67 | 1.61 |
| 14 | K | 30 | PRO | CA-C | -5.06 | 1.42 | 1.52 |
| 49 | S2 | 672 | A | O3'-P | -5.05 | 1.55 | 1.61 |
| 1 | 5 | 4206 | C | O3'-P | -5.05 | 1.55 | 1.61 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 6 | C | 102 | PHE | CG-CD2 | -5.05 | 1.31 | 1.38 |
| 22 | S | 152 | PHE | CG-CD2 | -5.04 | 1.31 | 1.38 |
| 49 | S2 | 1168 | G | O3'-P | -5.04 | 1.55 | 1.61 |
| 49 | S2 | 957 | A | O3'-P | -5.03 | 1.55 | 1.61 |
| 1 | 5 | 2324 | C | O3'-P | 5.03 | 1.67 | 1.61 |
| 30 | a | 79 | TRP | CA-CB | 5.03 | 1.65 | 1.53 |
| 59 | SJ | 108 | ARG | CZ-NH1 | 5.03 | 1.39 | 1.33 |
| 81 | Sf | 149 | CYS | N-CA | 5.03 | 1.56 | 1.46 |
| 3 | 8 | 73 | U | O3'-P | 5.00 | 1.67 | 1.61 |

All (2051) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 48 | 4 | 699 | GLY | CA-C-N | -32.10 | 46.58 | 117.20 |
| 48 | 4 | 699 | GLY | C-N-CA | -28.33 | 50.88 | 121.70 |
| 48 | 4 | 768 | GLY | O-C-N | 21.39 | 156.93 | 122.70 |
| 72 | SW | 117 | ARG | NE-CZ-NH2 | -20.64 | 109.98 | 120.30 |
| 46 | q | 205 | ASP | CA-C-N | -20.22 | 72.71 | 117.20 |
| 65 | SP | 21 | ASP | CB-CG-OD1 | -19.19 | 101.03 | 118.30 |
| 46 | q | 205 | ASP | O-C-N | 18.05 | 151.59 | 122.70 |
| 14 | K | 114 | ARG | NE-CZ-NH1 | 17.38 | 128.99 | 120.30 |
| 81 | Sf | 146 | LEU | CA-CB-CG | 16.59 | 153.47 | 115.30 |
| 48 | 4 | 768 | GLY | CA-C-N | -16.39 | 81.15 | 117.20 |
| 3 | 8 | 60 | G | N9-C1'-C2' | 16.18 | 135.04 | 114.00 |
| 48 | 4 | 154 | VAL | CB-CA-C | 16.12 | 142.02 | 111.40 |
| 14 | K | 114 | ARG | CD-NE-CZ | 16.11 | 146.16 | 123.60 |
| 64 | SO | 146 | ARG | NE-CZ-NH1 | 15.24 | 127.92 | 120.30 |
| 76 | Sa | 28 | ARG | NE-CZ-NH1 | 14.82 | 127.71 | 120.30 |
| 49 | S2 | 1109 | C | O4'-C1'-N1 | 14.31 | 119.65 | 108.20 |
| 48 | 4 | 266 | PHE | O-C-N | -13.93 | 100.41 | 122.70 |
| 48 | 4 | 121 | VAL | O-C-N | -13.86 | 100.52 | 122.70 |
| 49 | S2 | 1823 | A | N9-C1'-C2' | 13.82 | 131.97 | 114.00 |
| 39 | j | 11 | ARG | NE-CZ-NH2 | -13.79 | 113.40 | 120.30 |
| 48 | 4 | 269 | ALA | O-C-N | -13.70 | 100.78 | 122.70 |
| 64 | SO | 104 | ARG | NE-CZ-NH2 | -13.40 | 113.60 | 120.30 |
| 49 | S2 | 1434 | C | O5'-P-OP1 | -12.95 | 94.05 | 105.70 |
| 14 | K | 111 | ASN | N-CA-CB | 12.81 | 133.66 | 110.60 |
| 20 | Q | 37 | ARG | NE-CZ-NH2 | 12.80 | 126.70 | 120.30 |
| 14 | K | 130 | LYS | CB-CA-C | -12.73 | 84.94 | 110.40 |
| 1 | 5 | 92 | C | N1-C1'-C2' | -12.63 | 97.59 | 114.00 |
| 49 | S2 | 1433 | C | O5'-P-OP2 | -12.40 | 94.54 | 105.70 |
| 49 | S2 | 1838 | U | O4'-C1'-N1 | -12.39 | 98.28 | 108.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 1109 | C | N1-C1'-C2' | 12.34 | 130.04 | 114.00 |
| 64 | SO | 146 | ARG | NE-CZ-NH2 | -12.34 | 114.13 | 120.30 |
| 12 | I | 139 | ARG | CG-CD-NE | 12.32 | 137.68 | 111.80 |
| 49 | S2 | 1838 | U | N1-C1'-C2' | 12.03 | 129.64 | 114.00 |
| 1 | 5 | 1214 | C | N1-C1'-C2' | 11.94 | 129.52 | 114.00 |
| 48 | 4 | 278 | THR | O-C-N | -11.86 | 103.72 | 122.70 |
| 4 | A | 3 | ARG | NE-CZ-NH1 | 11.84 | 126.22 | 120.30 |
| 1 | 5 | 1 | C | N1-C1'-C2' | 11.83 | 129.38 | 114.00 |
| 14 | K | 24 | ALA | O-C-N | -11.77 | 103.88 | 122.70 |
| 48 | 4 | 768 | GLY | C-N-CA | -11.51 | 92.93 | 121.70 |
| 65 | SP | 21 | ASP | CB-CG-OD2 | 11.41 | 128.57 | 118.30 |
| 33 | d | 44 | ARG | NE-CZ-NH1 | 11.38 | 125.99 | 120.30 |
| 58 | SI | 49 | ARG | NE-CZ-NH1 | 11.28 | 125.94 | 120.30 |
| 74 | SY | 80 | ASP | CB-CG-OD2 | -11.22 | 108.20 | 118.30 |
| 37 | h | 93 | ARG | NE-CZ-NH1 | 11.18 | 125.89 | 120.30 |
| 1 | 5 | 4693 | C | O4'-C1'-N1 | -11.13 | 99.29 | 108.20 |
| 21 | R | 132 | PHE | CB-CA-C | 11.13 | 132.67 | 110.40 |
| 48 | 4 | 4 | PHE | N-CA-C | 11.12 | 141.03 | 111.00 |
| 7 | D | 265 | ARG | NE-CZ-NH1 | 11.12 | 125.86 | 120.30 |
| 1 | 5 | 4373 | G | N9-C1'-C2' | 11.11 | 128.44 | 114.00 |
| 1 | 5 | 4275 | G | N9-C1'-C2' | -11.10 | 99.57 | 114.00 |
| 61 | SL | 89 | ARG | NE-CZ-NH2 | -11.04 | 114.78 | 120.30 |
| 1 | 5 | 2361 | G | N9-C1'-C2' | -10.98 | 99.73 | 114.00 |
| 30 | a | 61 | TYR | CA-CB-CG | 10.96 | 134.22 | 113.40 |
| 48 | 4 | 742 | GLU | C-N-CD | -10.89 | 96.65 | 120.60 |
| 49 | S2 | 1293 | A | N9-C1'-C2' | 10.87 | 128.13 | 114.00 |
| 21 | R | 108 | ARG | NE-CZ-NH1 | 10.87 | 125.73 | 120.30 |
| 1 | 5 | 4871 | C | N1-C1'-C2' | 10.85 | 128.11 | 114.00 |
| 1 | 5 | 1938 | C | N1-C1'-C2' | 10.83 | 128.08 | 114.00 |
| 46 | q | 14 | PHE | CB-CG-CD2 | -10.81 | 113.23 | 120.80 |
| 16 | M | 6 | PHE | CB-CG-CD2 | -10.77 | 113.26 | 120.80 |
| 1 | 5 | 151 | G | N9-C1'-C2' | -10.77 | 100.00 | 114.00 |
| 17 | N | 192 | TRP | CA-CB-CG | 10.62 | 133.87 | 113.70 |
| 28 | Y | 87 | ARG | NE-CZ-NH2 | 10.61 | 125.61 | 120.30 |
| 30 | a | 132 | ARG | NE-CZ-NH1 | 10.59 | 125.59 | 120.30 |
| 48 | 4 | 539 | GLU | C-N-CA | -10.57 | 95.26 | 121.70 |
| 49 | S2 | 848 | U | N1-C1'-C2' | 10.56 | 127.72 | 114.00 |
| 76 | Sa | 28 | ARG | NE-CZ-NH2 | -10.55 | 115.03 | 120.30 |
| 17 | N | 131 | GLU | CA-CB-CG | 10.55 | 136.60 | 113.40 |
| 48 | 4 | 111 | PHE | CA-CB-CG | 10.54 | 139.21 | 113.90 |
| 53 | SD | 216 | GLU | CG-CD-OE1 | -10.54 | 97.22 | 118.30 |
| 49 | S2 | 642 | U | C4'-C3'-O3' | 10.53 | 134.07 | 113.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 4528 | G | C2'-C3'-O3' | 10.52 | 132.65 | 109.50 |
| 55 | SF | 130 | ARG | NE-CZ-NH2 | -10.51 | 115.04 | 120.30 |
| 1 | 5 | 2513 | A | N9-C1'-C2' | 10.51 | 127.66 | 114.00 |
| 49 | S2 | 1378 | A | N9-C1'-C2' | 10.50 | 127.64 | 114.00 |
| 1 | 5 | 4163 | U | C4'-C3'-O3' | 10.48 | 133.95 | 113.00 |
| 48 | 4 | 154 | VAL | CA-CB-CG1 | 10.46 | 126.58 | 110.90 |
| 49 | S2 | 642 | U | N1-C1'-C2' | -10.44 | 100.42 | 114.00 |
| 38 | i | 85 | ARG | NE-CZ-NH1 | 10.39 | 125.49 | 120.30 |
| 49 | S2 | 1114 | U | N1-C1'-C2' | 10.38 | 127.49 | 114.00 |
| 74 | SY | 118 | ARG | NE-CZ-NH2 | -10.36 | 115.12 | 120.30 |
| 3 | 8 | 34 | U | C4'-C3'-O3' | -10.35 | 87.66 | 109.40 |
| 48 | 4 | 123 | ASP | O-C-N | -10.34 | 105.62 | 123.20 |
| 1 | 5 | 1211 | G | C2'-C3'-O3' | 10.33 | 132.23 | 109.50 |
| 49 | S2 | 1835 | A | O4'-C1'-N9 | -10.32 | 99.94 | 108.20 |
| 59 | SJ | 38 | ARG | NE-CZ-NH2 | -10.27 | 115.17 | 120.30 |
| 49 | S2 | 24 | C | C2'-C3'-O3' | 10.27 | 132.09 | 109.50 |
| 62 | SM | 58 | GLU | OE1-CD-OE2 | 10.24 | 135.59 | 123.30 |
| 30 | a | 109 | TYR | CA-CB-CG | -10.22 | 93.98 | 113.40 |
| 1 | 5 | 62 | A | N9-C1'-C2' | 10.22 | 127.28 | 114.00 |
| 1 | 5 | 1329 | G | C2'-C3'-O3' | 10.21 | 131.97 | 109.50 |
| 44 | o | 78 | ARG | NE-CZ-NH2 | 10.19 | 125.40 | 120.30 |
| 66 | SQ | 85 | ARG | NE-CZ-NH2 | -10.19 | 115.20 | 120.30 |
| 1 | 5 | 2436 | U | N1-C1'-C2' | 10.12 | 127.16 | 114.00 |
| 74 | SY | 86 | GLU | CG-CD-OE2 | -10.11 | 98.07 | 118.30 |
| 14 | K | 34 | PRO | CA-N-CD | -10.10 | 97.36 | 111.50 |
| 1 | 5 | 2586 | G | N9-C1'-C2' | 10.09 | 127.12 | 114.00 |
| 1 | 5 | 664 | G | O4'-C1'-N9 | 10.09 | 116.27 | 108.20 |
| 14 | K | 38 | SER | C-N-CD | -10.08 | 98.42 | 120.60 |
| 1 | 5 | 1358 | G | C4'-C3'-O3' | 10.06 | 133.12 | 113.00 |
| 49 | S2 | 645 | C | N1-C1'-C2' | -10.05 | 100.93 | 114.00 |
| 11 | H | 54 | ARG | NE-CZ-NH1 | 10.04 | 125.32 | 120.30 |
| 49 | S2 | 92 | A | N9-C1'-C2' | 10.03 | 127.04 | 114.00 |
| 1 | 5 | 1890 | G | N9-C1'-C2' | -10.02 | 100.97 | 114.00 |
| 1 | 5 | 4518 | A | O5'-P-OP2 | -10.02 | 96.68 | 105.70 |
| 1 | 5 | 2389 | A | C2'-C3'-O3' | 10.02 | 131.54 | 109.50 |
| 1 | 5 | 1887 | G | N9-C1'-C2' | -10.00 | 101.00 | 112.00 |
| 33 | d | 25 | TYR | CA-CB-CG | -9.99 | 94.41 | 113.40 |
| 50 | SA | 117 | ARG | CG-CD-NE | 9.98 | 132.76 | 111.80 |
| 10 | G | 54 | PHE | CB-CG-CD1 | -9.96 | 113.83 | 120.80 |
| 48 | 4 | 807 | GLN | N-CA-C | -9.95 | 84.12 | 111.00 |
| 8 | E | 278 | TYR | CA-CB-CG | -9.95 | 94.50 | 113.40 |
| 1 | 5 | 1974 | U | N1-C1'-C2' | 9.93 | 126.91 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1379 | C | O4'-C1'-N1 | 9.92 | 116.14 | 108.20 |
| 76 | Sa | 22 | ARG | NE-CZ-NH2 | -9.84 | 115.38 | 120.30 |
| 49 | S2 | 428 | U | N1-C1'-C2' | 9.83 | 126.78 | 114.00 |
| 1 | 5 | 2666 | U | N1-C1'-C2' | -9.82 | 101.19 | 112.00 |
| 21 | R | 132 | PHE | CB-CG-CD1 | -9.80 | 113.94 | 120.80 |
| 14 | K | 30 | PRO | CA-N-CD | -9.78 | 97.81 | 111.50 |
| 1 | 5 | 4693 | C | N1-C1'-C2' | 9.76 | 126.69 | 114.00 |
| 30 | a | 128 | PHE | CB-CG-CD1 | -9.73 | 113.99 | 120.80 |
| 1 | 5 | 2046 | G | O4'-C1'-N9 | 9.72 | 115.98 | 108.20 |
| 26 | W | 44 | ARG | NE-CZ-NH1 | 9.71 | 125.16 | 120.30 |
| 1 | 5 | 1398 | A | N9-C1'-C2' | 9.70 | 126.61 | 114.00 |
| 8 | E | 278 | TYR | CB-CA-C | 9.70 | 129.80 | 110.40 |
| 3 | 8 | 14 | U | N1-C1'-C2' | 9.68 | 126.58 | 114.00 |
| 49 | S2 | 367 | U | N1-C1'-C2' | -9.68 | 101.36 | 112.00 |
| 49 | S2 | 291 | G | C4'-C3'-O3' | -9.67 | 89.09 | 109.40 |
| 30 | a | 61 | TYR | CB-CG-CD2 | -9.67 | 115.20 | 121.00 |
| 49 | S2 | 1063 | C | N1-C1'-C2' | -9.66 | 101.38 | 112.00 |
| 1 | 5 | 4464 | A | O4'-C1'-N9 | -9.65 | 100.48 | 108.20 |
| 1 | 5 | 2394 | G | N9-C1'-C2' | -9.64 | 101.40 | 112.00 |
| 52 | SC | 121 | ARG | NE-CZ-NH2 | -9.63 | 115.48 | 120.30 |
| 35 | f | 36 | ARG | NE-CZ-NH1 | 9.63 | 125.12 | 120.30 |
| 64 | SO | 104 | ARG | NE-CZ-NH1 | 9.62 | 125.11 | 120.30 |
| 1 | 5 | 4750 | G | N9-C1'-C2' | -9.62 | 101.42 | 112.00 |
| 68 | SS | 124 | ARG | NE-CZ-NH1 | 9.60 | 125.10 | 120.30 |
| 49 | S2 | 28 | U | O5'-P-OP1 | -9.60 | 97.06 | 105.70 |
| 59 | SJ | 131 | ARG | NE-CZ-NH2 | -9.59 | 115.50 | 120.30 |
| 1 | 5 | 4677 | U | N1-C1'-C2' | -9.57 | 101.47 | 112.00 |
| 46 | q | 68 | HIS | CA-C-O | -9.57 | 100.00 | 120.10 |
| 1 | 5 | 4162 | C | N1-C1'-C2' | 9.56 | 126.44 | 114.00 |
| 1 | 5 | 514 | U | N1-C1'-C2' | -9.56 | 101.48 | 112.00 |
| 49 | S2 | 1835 | A | C2'-C3'-O3' | 9.55 | 130.52 | 109.50 |
| 80 | Se | 13 | ARG | NE-CZ-NH1 | 9.52 | 125.06 | 120.30 |
| 15 | L | 34 | ARG | NE-CZ-NH1 | 9.52 | 125.06 | 120.30 |
| 1 | 5 | 5040 | U | N1-C1'-C2' | 9.51 | 126.36 | 114.00 |
| 29 | Z | 36 | ARG | NE-CZ-NH1 | 9.51 | 125.05 | 120.30 |
| 57 | SH | 177 | TYR | CB-CG-CD2 | -9.50 | 115.30 | 121.00 |
| 11 | H | 31 | ARG | NE-CZ-NH1 | 9.50 | 125.05 | 120.30 |
| 49 | S2 | 747 | U | C2'-C3'-O3' | 9.49 | 130.39 | 109.50 |
| 1 | 5 | 1501 | C | O4'-C1'-N1 | 9.49 | 115.79 | 108.20 |
| 1 | 5 | 172 | C | O4'-C1'-N1 | 9.49 | 115.79 | 108.20 |
| 39 | j | 66 | HIS | N-CA-CB | 9.46 | 127.62 | 110.60 |
| 1 | 5 | 2438 | A | N9-C1'-C2' | -9.45 | 101.60 | 112.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 46 | q | 85 | ASN | N-CA-CB | 9.45 | 127.61 | 110.60 |
| 1 | 5 | 1501 | C | N1-C1'-C2' | 9.45 | 126.28 | 114.00 |
| 21 | R | 95 | TRP | N-CA-CB | 9.43 | 127.57 | 110.60 |
| 1 | 5 | 315 | G | O4'-C1'-N9 | 9.42 | 115.74 | 108.20 |
| 7 | D | 54 | ARG | CG-CD-NE | -9.41 | 92.04 | 111.80 |
| 1 | 5 | 42 | A | O4'-C1'-N9 | 9.40 | 115.72 | 108.20 |
| 55 | SF | 130 | ARG | NE-CZ-NH1 | 9.40 | 125.00 | 120.30 |
| 1 | 5 | 294 | G | O4'-C1'-N9 | 9.40 | 115.72 | 108.20 |
| 49 | S2 | 447 | A | O4'-C1'-N9 | 9.38 | 115.71 | 108.20 |
| 13 | J | 32 | ARG | NE-CZ-NH2 | -9.36 | 115.62 | 120.30 |
| 53 | SD | 67 | ARG | NE-CZ-NH1 | 9.36 | 124.98 | 120.30 |
| 60 | SK | 2 | LEU | CA-CB-CG | 9.34 | 136.79 | 115.30 |
| 64 | SO | 147 | ARG | CA-CB-CG | 9.34 | 133.96 | 113.40 |
| 12 | I | 171 | TRP | CA-CB-CG | -9.34 | 95.96 | 113.70 |
| 52 | SC | 200 | ARG | NE-CZ-NH2 | 9.33 | 124.97 | 120.30 |
| 49 | S2 | 1433 | C | C4'-C3'-O3' | 9.33 | 131.65 | 113.00 |
| 62 | SM | 33 | ARG | NE-CZ-NH1 | 9.31 | 124.95 | 120.30 |
| 18 | O | 178 | ARG | NE-CZ-NH1 | 9.29 | 124.94 | 120.30 |
| 17 | N | 49 | ARG | NE-CZ-NH1 | 9.27 | 124.94 | 120.30 |
| 48 | 4 | 825 | PHE | C-N-CA | -9.27 | 98.53 | 121.70 |
| 48 | 4 | 267 | ASP | N-CA-C | 9.26 | 136.01 | 111.00 |
| 1 | 5 | 5059 | C | C2'-C3'-O3' | 9.25 | 129.84 | 109.50 |
| 1 | 5 | 4280 | A | N9-C1'-C2' | -9.25 | 101.83 | 112.00 |
| 14 | K | 75 | PRO | CA-N-CD | -9.24 | 98.56 | 111.50 |
| 78 | Sc | 31 | ARG | NE-CZ-NH1 | 9.23 | 124.92 | 120.30 |
| 46 | q | 68 | HIS | O-C-N | 9.22 | 137.45 | 122.70 |
| 48 | 4 | 206 | ASP | C-N-CD | -9.22 | 100.32 | 120.60 |
| 28 | Y | 27 | ARG | NE-CZ-NH2 | 9.22 | 124.91 | 120.30 |
| 1 | 5 | 1534 | A | N9-C1'-C2' | 9.18 | 125.93 | 114.00 |
| 46 | q | 204 | LEU | O-C-N | 9.18 | 137.39 | 122.70 |
| 20 | Q | 91 | ARG | NE-CZ-NH2 | 9.17 | 124.89 | 120.30 |
| 49 | S2 | 631 | U | N1-C1'-C2' | 9.17 | 125.92 | 114.00 |
| 1 | 5 | 280 | G | O4'-C1'-N9 | 9.14 | 115.51 | 108.20 |
| 46 | q | 80 | PRO | CA-N-CD | -9.14 | 98.70 | 111.50 |
| 1 | 5 | 4228 | G | N9-C1'-C2' | -9.12 | 101.97 | 112.00 |
| 1 | 5 | 2406 | G | N9-C1'-C2' | -9.11 | 101.97 | 112.00 |
| 49 | S2 | 1552 | G | C2'-C3'-O3' | 9.11 | 129.53 | 109.50 |
| 1 | 5 | 1685 | G | N9-C1'-C2' | 9.10 | 125.83 | 114.00 |
| 69 | ST | 53 | PHE | CB-CG-CD2 | -9.09 | 114.44 | 120.80 |
| 1 | 5 | 2553 | A | N9-C1'-C2' | 9.09 | 125.81 | 114.00 |
| 5 | B | 100 | ARG | NE-CZ-NH2 | -9.08 | 115.76 | 120.30 |
| 1 | 5 | 1474 | C | C2'-C3'-O3' | 9.07 | 129.45 | 109.50 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 1578 | U | N1-C1'-C2' | 9.07 | 125.79 | 114.00 |
| 46 | q | 14 | PHE | CB-CG-CD1 | 9.06 | 127.14 | 120.80 |
| 5 | B | 119 | TYR | CB-CG-CD1 | -9.04 | 115.58 | 121.00 |
| 1 | 5 | 2658 | G | N9-C1'-C2' | -9.03 | 102.07 | 112.00 |
| 33 | d | 85 | ARG | NE-CZ-NH1 | 9.03 | 124.81 | 120.30 |
| 30 | a | 79 | TRP | CA-CB-CG | -9.02 | 96.57 | 113.70 |
| 14 | K | 88 | PRO | CA-N-CD | -9.00 | 98.90 | 111.50 |
| 28 | Y | 126 | ARG | NE-CZ-NH1 | 9.00 | 124.80 | 120.30 |
| 1 | 5 | 1882 | U | O5'-P-OP1 | -8.99 | 97.61 | 105.70 |
| 46 | q | 69 | LEU | O-C-N | -8.97 | 108.35 | 122.70 |
| 69 | ST | 62 | ARG | NE-CZ-NH2 | 8.97 | 124.78 | 120.30 |
| 25 | V | 97 | TYR | CB-CG-CD2 | -8.97 | 115.62 | 121.00 |
| 6 | C | 78 | ARG | NE-CZ-NH1 | 8.96 | 124.78 | 120.30 |
| 34 | e | 46 | ARG | NE-CZ-NH1 | 8.96 | 124.78 | 120.30 |
| 6 | C | 267 | TRP | CA-CB-CG | 8.96 | 130.72 | 113.70 |
| 38 | i | 4 | ARG | NE-CZ-NH1 | 8.95 | 124.78 | 120.30 |
| 81 | Sf | 146 | LEU | CB-CG-CD1 | 8.95 | 126.21 | 111.00 |
| 48 | 4 | 197 | SER | C-N-CA | 8.92 | 141.02 | 122.30 |
| 3 | 8 | 94 | G | O4'-C1'-N9 | -8.91 | 101.07 | 108.20 |
| 1 | 5 | 4911 | A | O4'-C1'-N9 | 8.91 | 115.32 | 108.20 |
| 1 | 5 | 4385 | A | N9-C1'-C2' | -8.90 | 102.21 | 112.00 |
| 1 | 5 | 4965 | U | N1-C1'-C2' | -8.90 | 102.21 | 112.00 |
| 45 | p | 85 | ARG | NE-CZ-NH1 | 8.89 | 124.75 | 120.30 |
| 49 | S2 | 833 | C | C2'-C3'-O3' | 8.89 | 129.07 | 109.50 |
| 14 | K | 136 | ALA | O-C-N | -8.88 | 108.50 | 122.70 |
| 1 | 5 | 125 | C | C2'-C3'-O3' | 8.87 | 129.02 | 109.50 |
| 33 | d | 25 | TYR | CB-CA-C | 8.86 | 128.13 | 110.40 |
| 49 | S2 | 437 | G | N9-C1'-C2' | 8.85 | 125.50 | 114.00 |
| 1 | 5 | 1815 | G | N9-C1'-C2' | 8.82 | 125.46 | 114.00 |
| 49 | S2 | 1088 | U | N1-C1'-C2' | 8.81 | 125.45 | 114.00 |
| 1 | 5 | 977 | C | C2'-C3'-O3' | 8.80 | 128.86 | 109.50 |
| 1 | 5 | 1998 | A | N9-C1'-C2' | 8.80 | 125.44 | 114.00 |
| 82 | Sg | 60 | ARG | NE-CZ-NH2 | -8.79 | 115.90 | 120.30 |
| 8 | E | 119 | ARG | NE-CZ-NH1 | 8.79 | 124.69 | 120.30 |
| 65 | SP | 10 | ARG | NE-CZ-NH1 | 8.79 | 124.69 | 120.30 |
| 1 | 5 | 2268 | A | N9-C1'-C2' | 8.77 | 125.41 | 114.00 |
| 1 | 5 | 1356 | U | C2'-C3'-O3' | 8.77 | 128.78 | 109.50 |
| 49 | S2 | 313 | A | O4'-C1'-N9 | 8.77 | 115.21 | 108.20 |
| 1 | 5 | 1668 | A | N9-C1'-C2' | 8.76 | 125.39 | 114.00 |
| 18 | O | 135 | PHE | N-CA-C | 8.76 | 134.65 | 111.00 |
| 23 | T | 13 | TYR | CB-CG-CD2 | -8.75 | 115.75 | 121.00 |
| 72 | SW | 57 | ARG | NE-CZ-NH1 | 8.75 | 124.67 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1534 | A | O4'-C1'-N9 | -8.74 | 101.20 | 108.20 |
| 1 | 5 | 978 | G | C2'-C3'-O3' | 8.73 | 128.71 | 109.50 |
| 14 | K | 163 | PRO | CA-N-CD | -8.73 | 99.28 | 111.50 |
| 1 | 5 | 1359 | G | C2'-C3'-O3' | 8.73 | 128.71 | 109.50 |
| 1 | 5 | 31 | U | N1-C1'-C2' | 8.72 | 125.34 | 114.00 |
| 1 | 5 | 4976 | U | O4'-C1'-N1 | -8.72 | 101.22 | 108.20 |
| 22 | S | 81 | TRP | CB-CA-C | 8.72 | 127.84 | 110.40 |
| 49 | S2 | 1859 | A | C8-N9-C1' | -8.72 | 112.00 | 127.70 |
| 6 | C | 311 | ARG | NE-CZ-NH2 | -8.71 | 115.94 | 120.30 |
| 49 | S2 | 3 | C | N1-C1'-C2' | 8.70 | 125.31 | 114.00 |
| 49 | S2 | 1429 | G | C2'-C3'-O3' | 8.70 | 128.63 | 109.50 |
| 20 | Q | 58 | ARG | NE-CZ-NH1 | 8.69 | 124.64 | 120.30 |
| 1 | 5 | 4234 | A | N9-C1'-C2' | 8.68 | 125.28 | 114.00 |
| 19 | P | 54 | GLN | CA-CB-CG | 8.68 | 132.49 | 113.40 |
| 14 | K | 104 | ILE | CG1-CB-CG2 | 8.67 | 130.47 | 111.40 |
| 29 | Z | 121 | ARG | NE-CZ-NH1 | 8.66 | 124.63 | 120.30 |
| 1 | 5 | 2305 | U | O4'-C1'-N1 | -8.65 | 101.28 | 108.20 |
| 1 | 5 | 2517 | A | N9-C1'-C2' | 8.65 | 125.25 | 114.00 |
| 1 | 5 | 2446 | C | N1-C1'-C2' | 8.65 | 125.24 | 114.00 |
| 22 | S | 81 | TRP | CA-CB-CG | -8.65 | 97.27 | 113.70 |
| 10 | G | 62 | ARG | NE-CZ-NH2 | -8.64 | 115.98 | 120.30 |
| 82 | Sg | 60 | ARG | NE-CZ-NH1 | 8.64 | 124.62 | 120.30 |
| 37 | h | 117 | ARG | CG-CD-NE | -8.62 | 93.70 | 111.80 |
| 4 | A | 193 | ARG | CG-CD-NE | -8.62 | 93.71 | 111.80 |
| 1 | 5 | 4221 | C | N1-C1'-C2' | -8.60 | 102.54 | 112.00 |
| 1 | 5 | 4404 | U | N1-C1'-C2' | -8.60 | 102.54 | 112.00 |
| 1 | 5 | 1637 | A | N9-C1'-C2' | -8.59 | 102.55 | 112.00 |
| 44 | o | 31 | ASP | CB-CA-C | 8.59 | 127.57 | 110.40 |
| 81 | Sf | 138 | ARG | NE-CZ-NH1 | 8.58 | 124.59 | 120.30 |
| 18 | O | 140 | ARG | NE-CZ-NH2 | 8.58 | 124.59 | 120.30 |
| 2 | 7 | 56 | G | N9-C1'-C2' | 8.57 | 125.14 | 114.00 |
| 49 | S2 | 110 | U | C2'-C3'-O3' | 8.56 | 128.34 | 109.50 |
| 1 | 5 | 1980 | U | O4'-C1'-N1 | 8.56 | 115.05 | 108.20 |
| 48 | 4 | 794 | PHE | CB-CA-C | 8.56 | 127.52 | 110.40 |
| 51 | SB | 165 | ARG | NE-CZ-NH2 | 8.56 | 124.58 | 120.30 |
| 1 | 5 | 2851 | G | N9-C1'-C2' | -8.55 | 102.60 | 112.00 |
| 68 | SS | 95 | TYR | CA-CB-CG | 8.54 | 129.62 | 113.40 |
| 14 | K | 111 | ASN | CB-CA-C | -8.54 | 93.33 | 110.40 |
| 1 | 5 | 352 | G | N9-C1'-C2' | -8.52 | 102.62 | 112.00 |
| 49 | S2 | 1859 | A | C4-N9-C1' | 8.52 | 141.63 | 126.30 |
| 1 | 5 | 1733 | G | N9-C1'-C2' | -8.49 | 102.66 | 112.00 |
| 1 | 5 | 1439 | C | C4'-C3'-O3' | -8.49 | 91.58 | 109.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 3790 | U | N1-C1'-C2' | 8.49 | 125.03 | 114.00 |
| 1 | 5 | 1296 | G | O4'-C1'-N9 | 8.48 | 114.98 | 108.20 |
| 15 | L | 74 | ARG | NE-CZ-NH1 | 8.47 | 124.54 | 120.30 |
| 48 | 4 | 392 | GLY | C-N-CD | -8.46 | 101.98 | 120.60 |
| 27 | X | 73 | HIS | CB-CA-C | 8.46 | 127.32 | 110.40 |
| 1 | 5 | 4563 | U | N1-C1'-C2' | 8.45 | 124.99 | 114.00 |
| 34 | e | 35 | TRP | CA-CB-CG | -8.44 | 97.66 | 113.70 |
| 49 | S2 | 798 | A | C2'-C3'-O3' | 8.44 | 128.07 | 109.50 |
| 4 | A | 67 | TYR | CA-CB-CG | 8.43 | 129.42 | 113.40 |
| 58 | SI | 197 | PHE | CB-CA-C | -8.42 | 93.55 | 110.40 |
| 73 | SX | 67 | ARG | NE-CZ-NH2 | 8.41 | 124.50 | 120.30 |
| 49 | S2 | 622 | C | N1-C1'-C2' | -8.41 | 102.75 | 112.00 |
| 1 | 5 | 1937 | C | N1-C1'-C2' | 8.40 | 124.92 | 114.00 |
| 9 | F | 120 | PHE | CB-CA-C | 8.40 | 127.21 | 110.40 |
| 3 | 8 | 85 | U | C2'-C3'-O3' | 8.40 | 127.98 | 109.50 |
| 1 | 5 | 4119 | C | C2'-C3'-O3' | 8.39 | 127.97 | 109.50 |
| 14 | K | 89 | PRO | CA-N-CD | -8.39 | 99.75 | 111.50 |
| 22 | S | 29 | ARG | CA-CB-CG | 8.39 | 131.85 | 113.40 |
| 59 | SJ | 127 | ARG | NE-CZ-NH1 | 8.39 | 124.49 | 120.30 |
| 49 | S2 | 421 | G | N9-C1'-C2' | 8.37 | 124.88 | 114.00 |
| 37 | h | 78 | TYR | CA-CB-CG | -8.37 | 97.50 | 113.40 |
| 21 | R | 74 | ARG | NE-CZ-NH1 | -8.36 | 116.12 | 120.30 |
| 57 | SH | 177 | TYR | CB-CA-C | -8.36 | 93.69 | 110.40 |
| 44 | o | 48 | TYR | CB-CA-C | 8.35 | 127.10 | 110.40 |
| 14 | K | 102 | GLY | N-CA-C | 8.33 | 133.93 | 113.10 |
| 57 | SH | 177 | TYR | CA-CB-CG | 8.32 | 129.22 | 113.40 |
| 8 | E | 268 | ARG | NE-CZ-NH1 | 8.32 | 124.46 | 120.30 |
| 49 | S2 | 294 | U | N1-C1'-C2' | 8.30 | 124.79 | 114.00 |
| 49 | S2 | 1835 | A | C4-N9-C1' | -8.29 | 111.38 | 126.30 |
| 80 | Se | 41 | ARG | NE-CZ-NH1 | 8.28 | 124.44 | 120.30 |
| 1 | 5 | 292 | G | N9-C1'-C2' | 8.28 | 124.76 | 114.00 |
| 49 | S2 | 1407 | U | N1-C1'-C2' | 8.28 | 124.76 | 114.00 |
| 68 | SS | 86 | ARG | NE-CZ-NH1 | -8.28 | 116.16 | 120.30 |
| 1 | 5 | 958 | G | C2'-C3'-O3' | 8.26 | 127.67 | 109.50 |
| 37 | h | 78 | TYR | CB-CA-C | 8.26 | 126.92 | 110.40 |
| 3 | 8 | 70 | G | N9-C1'-C2' | -8.25 | 102.92 | 112.00 |
| 10 | G | 53 | ARG | NE-CZ-NH2 | -8.23 | 116.18 | 120.30 |
| 22 | S | 29 | ARG | CG-CD-NE | -8.23 | 94.52 | 111.80 |
| 22 | S | 10 | TYR | CA-CB-CG | -8.22 | 97.78 | 113.40 |
| 1 | 5 | 2087 | C | N1-C1'-C2' | -8.21 | 102.97 | 112.00 |
| 1 | 5 | 3938 | G | N9-C1'-C2' | 8.21 | 124.67 | 114.00 |
| 1 | 5 | 3879 | G | N9-C1'-C2' | -8.20 | 102.98 | 112.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 21 | R | 132 | PHE | N-CA-C | -8.20 | 88.86 | 111.00 |
| 1 | 5 | 3653 | A | N9-C1'-C2' | -8.19 | 102.99 | 112.00 |
| 50 | SA | 151 | ASP | CB-CG-OD2 | 8.19 | 125.67 | 118.30 |
| 1 | 5 | 93 | G | N9-C1'-C2' | 8.18 | 124.64 | 114.00 |
| 49 | S2 | 594 | A | N9-C1'-C2' | -8.18 | 103.00 | 112.00 |
| 1 | 5 | 2553 | A | O4'-C1'-N9 | 8.18 | 114.74 | 108.20 |
| 49 | S2 | 1623 | A | C2'-C3'-O3' | 8.17 | 127.48 | 109.50 |
| 35 | f | 85 | ARG | NE-CZ-NH2 | -8.16 | 116.22 | 120.30 |
| 1 | 5 | 4498 | U | N1-C1'-C2' | -8.16 | 103.02 | 112.00 |
| 1 | 5 | 2797 | C | N1-C1'-C2' | -8.15 | 103.03 | 112.00 |
| 49 | S2 | 1408 | U | N1-C1'-C2' | 8.15 | 124.60 | 114.00 |
| 31 | b | 44 | ARG | NE-CZ-NH1 | 8.15 | 124.37 | 120.30 |
| 7 | D | 268 | ARG | NE-CZ-NH1 | 8.14 | 124.37 | 120.30 |
| 18 | O | 37 | ARG | NE-CZ-NH2 | -8.13 | 116.23 | 120.30 |
| 49 | S2 | 381 | C | N1-C1'-C2' | 8.13 | 124.57 | 114.00 |
| 35 | f | 4 | ARG | CA-CB-CG | 8.12 | 131.28 | 113.40 |
| 1 | 5 | 2465 | C | N1-C1'-C2' | 8.12 | 124.56 | 114.00 |
| 1 | 5 | 2246 | C | C2'-C3'-O3' | 8.11 | 127.34 | 109.50 |
| 1 | 5 | 4723 | A | C4-N9-C1' | 8.11 | 140.89 | 126.30 |
| 1 | 5 | 2806 | A | N9-C1'-C2' | -8.10 | 103.08 | 112.00 |
| 3 | 8 | 34 | U | C2'-C3'-O3' | 8.10 | 127.33 | 109.50 |
| 44 | o | 57 | ARG | NE-CZ-NH1 | 8.10 | 124.35 | 120.30 |
| 1 | 5 | 3635 | A | N9-C1'-C2' | -8.10 | 103.09 | 112.00 |
| 1 | 5 | 1867 | A | N9-C1'-C2' | 8.09 | 124.52 | 114.00 |
| 9 | F | 58 | HIS | CB-CA-C | -8.09 | 94.23 | 110.40 |
| 1 | 5 | 3735 | G | C2'-C3'-O3' | 8.07 | 127.26 | 109.50 |
| 66 | SQ | 126 | ARG | NE-CZ-NH2 | 8.07 | 124.34 | 120.30 |
| 14 | K | 24 | ALA | CA-C-N | 8.06 | 134.94 | 117.20 |
| 1 | 5 | 3773 | U | C4'-C3'-O3' | 8.06 | 129.12 | 113.00 |
| 25 | V | 98 | PHE | CB-CG-CD1 | -8.05 | 115.16 | 120.80 |
| 1 | 5 | 235 | A | O4'-C1'-N9 | 8.05 | 114.64 | 108.20 |
| 3 | 8 | 94 | G | C2'-C3'-O3' | 8.04 | 127.19 | 109.50 |
| 7 | D | 44 | TYR | CB-CA-C | 8.04 | 126.49 | 110.40 |
| 1 | 5 | 2683 | C | C2'-C3'-O3' | 8.04 | 127.19 | 109.50 |
| 1 | 5 | 3908 | A | N9-C1'-C2' | 8.03 | 124.44 | 114.00 |
| 35 | f | 22 | ARG | NE-CZ-NH1 | 8.03 | 124.31 | 120.30 |
| 7 | D | 248 | ARG | NE-CZ-NH2 | -8.03 | 116.29 | 120.30 |
| 1 | 5 | 3905 | A | C2'-C3'-O3' | 8.02 | 127.15 | 109.50 |
| 17 | N | 139 | HIS | N-CA-CB | 8.01 | 125.02 | 110.60 |
| 1 | 5 | 4600 | G | N9-C1'-C2' | -8.01 | 103.19 | 112.00 |
| 3 | 8 | 34 | U | C5'-C4'-O4' | 8.01 | 118.71 | 109.10 |
| 64 | SO | 147 | ARG | CG-CD-NE | -8.00 | 95.00 | 111.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 5 | B | 62 | ARG | NE-CZ-NH1 | 8.00 | 124.30 | 120.30 |
| 1 | 5 | 4497 | U | N1-C1'-C2' | -8.00 | 103.20 | 112.00 |
| 55 | SF | 136 | ARG | NE-CZ-NH1 | 7.99 | 124.29 | 120.30 |
| 17 | N | 143 | ARG | CG-CD-NE | -7.98 | 95.04 | 111.80 |
| 48 | 4 | 285 | LEU | C-N-CD | -7.98 | 103.05 | 120.60 |
| 48 | 4 | 278 | THR | CA-C-N | 7.97 | 134.73 | 117.20 |
| 1 | 5 | 4885 | U | C2'-C3'-O3' | 7.97 | 127.03 | 109.50 |
| 5 | B | 169 | ARG | NE-CZ-NH1 | 7.96 | 124.28 | 120.30 |
| 1 | 5 | 2394 | G | O4'-C1'-N9 | 7.95 | 114.56 | 108.20 |
| 1 | 5 | 3692 | A | C2'-C3'-O3' | 7.95 | 126.99 | 109.50 |
| 48 | 4 | 267 | ASP | CA-C-N | 7.95 | 139.34 | 117.10 |
| 20 | Q | 174 | PHE | CB-CA-C | 7.93 | 126.27 | 110.40 |
| 18 | O | 110 | PRO | C-N-CD | -7.93 | 103.15 | 120.60 |
| 49 | S2 | 964 | A | N9-C1'-C2' | 7.93 | 124.31 | 114.00 |
| 1 | 5 | 4163 | U | N1-C1'-C2' | -7.93 | 103.28 | 112.00 |
| 12 | I | 119 | PHE | CB-CG-CD1 | 7.92 | 126.35 | 120.80 |
| 19 | P | 3 | ARG | NE-CZ-NH1 | 7.92 | 124.26 | 120.30 |
| 1 | 5 | 315 | G | C1'-O4'-C4' | -7.92 | 103.57 | 109.90 |
| 49 | S2 | 1292 | C | C4'-C3'-O3' | 7.92 | 128.83 | 113.00 |
| 49 | S2 | 399 | C | N1-C1'-C2' | -7.91 | 103.30 | 112.00 |
| 1 | 5 | 4723 | A | C8-N9-C1' | -7.90 | 113.48 | 127.70 |
| 4 | A | 193 | ARG | NE-CZ-NH2 | -7.90 | 116.35 | 120.30 |
| 1 | 5 | 4371 | G | O4'-C1'-N9 | 7.90 | 114.52 | 108.20 |
| 49 | S2 | 968 | U | N1-C1'-C2' | -7.89 | 103.31 | 112.00 |
| 51 | SB | 146 | ARG | NE-CZ-NH2 | -7.88 | 116.36 | 120.30 |
| 68 | SS | 42 | HIS | CB-CA-C | -7.88 | 94.65 | 110.40 |
| 1 | 5 | 2263 | A | O4'-C1'-N9 | -7.87 | 101.91 | 108.20 |
| 14 | K | 39 | PRO | CA-N-CD | -7.86 | 100.49 | 111.50 |
| 67 | SR | 82 | ASP | CB-CG-OD2 | -7.86 | 111.22 | 118.30 |
| 1 | 5 | 668 | C | C2'-C3'-O3' | 7.86 | 126.78 | 109.50 |
| 1 | 5 | 2263 | A | C5'-C4'-O4' | 7.86 | 118.53 | 109.10 |
| 78 | Sc | 44 | ARG | NE-CZ-NH2 | 7.85 | 124.22 | 120.30 |
| 49 | S2 | 1703 | C | N1-C1'-C2' | -7.84 | 103.37 | 112.00 |
| 49 | S2 | 1835 | A | C5'-C4'-O4' | 7.84 | 118.51 | 109.10 |
| 66 | SQ | 126 | ARG | NE-CZ-NH1 | -7.84 | 116.38 | 120.30 |
| 4 | A | 37 | ARG | NE-CZ-NH2 | -7.84 | 116.38 | 120.30 |
| 48 | 4 | 76 | SER | O-C-N | 7.84 | 135.24 | 122.70 |
| 1 | 5 | 716 | C | C2'-C3'-O3' | 7.83 | 126.72 | 109.50 |
| 1 | 5 | 353 | A | N9-C1'-C2' | -7.82 | 103.39 | 112.00 |
| 16 | M | 119 | ARG | NE-CZ-NH2 | 7.82 | 124.21 | 120.30 |
| 1 | 5 | 1805 | A | N9-C1'-C2' | 7.82 | 124.17 | 114.00 |
| 1 | 5 | 962 | C | N1-C1'-C2' | 7.81 | 124.15 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | Y | 11 | ARG | NE-CZ-NH2 | -7.80 | 116.40 | 120.30 |
| 3 | 8 | 64 | U | N1-C1'-C2' | 7.80 | 124.14 | 114.00 |
| 49 | S2 | 164 | A | N9-C1'-C2' | -7.80 | 103.42 | 112.00 |
| 1 | 5 | 964 | A | C4'-C3'-O3' | 7.78 | 128.56 | 113.00 |
| 23 | T | 13 | TYR | N-CA-CB | -7.78 | 96.60 | 110.60 |
| 73 | SX | 67 | ARG | NE-CZ-NH1 | -7.76 | 116.42 | 120.30 |
| 1 | 5 | 4463 | U | N1-C1'-C2' | -7.75 | 103.47 | 112.00 |
| 1 | 5 | 43 | U | N1-C1'-C2' | -7.75 | 103.47 | 112.00 |
| 1 | 5 | 157 | U | O4'-C1'-N1 | 7.74 | 114.40 | 108.20 |
| 7 | D | 198 | HIS | CB-CA-C | 7.74 | 125.89 | 110.40 |
| 1 | 5 | 4282 | A | N9-C1'-C2' | 7.73 | 124.05 | 114.00 |
| 48 | 4 | 495 | ARG | O-C-N | -7.72 | 110.35 | 122.70 |
| 1 | 5 | 5066 | U | N1-C1'-C2' | 7.72 | 124.03 | 114.00 |
| 9 | F | 168 | ARG | CG-CD-NE | -7.71 | 95.61 | 111.80 |
| 52 | SC | 241 | PHE | N-CA-CB | 7.70 | 124.46 | 110.60 |
| 1 | 5 | 4194 | U | N1-C1'-C2' | -7.69 | 103.54 | 112.00 |
| 30 | a | 128 | PHE | CB-CA-C | 7.67 | 125.75 | 110.40 |
| 1 | 5 | 4238 | G | N9-C1'-C2' | -7.67 | 103.57 | 112.00 |
| 1 | 5 | 294 | G | C1'-O4'-C4' | -7.66 | 103.77 | 109.90 |
| 59 | SJ | 48 | PHE | N-CA-CB | 7.66 | 124.38 | 110.60 |
| 1 | 5 | 292 | G | O4'-C1'-N9 | -7.65 | 102.08 | 108.20 |
| 1 | 5 | 1522 | G | N9-C1'-C2' | -7.65 | 103.59 | 112.00 |
| 35 | f | 4 | ARG | CG-CD-NE | -7.64 | 95.75 | 111.80 |
| 49 | S2 | 1701 | C | N1-C1'-C2' | 7.64 | 123.94 | 114.00 |
| 4 | A | 211 | PHE | CB-CA-C | 7.63 | 125.66 | 110.40 |
| 14 | K | 30 | PRO | CB-CA-C | 7.63 | 131.08 | 112.00 |
| 5 | B | 116 | ARG | CG-CD-NE | 7.63 | 127.82 | 111.80 |
| 63 | SN | 83 | ASP | CB-CG-OD2 | -7.62 | 111.44 | 118.30 |
| 1 | 5 | 53 | C | C2'-C3'-O3' | 7.62 | 126.25 | 109.50 |
| 1 | 5 | 2790 | U | N1-C1'-C2' | 7.62 | 123.90 | 114.00 |
| 49 | S2 | 1395 | C | C2'-C3'-O3' | 7.62 | 126.26 | 109.50 |
| 3 | 8 | 94 | G | C5'-C4'-O4' | 7.61 | 118.23 | 109.10 |
| 7 | D | 210 | TYR | CA-CB-CG | -7.60 | 98.96 | 113.40 |
| 72 | SW | 117 | ARG | NH1-CZ-NH2 | 7.60 | 127.76 | 119.40 |
| 9 | F | 36 | ARG | NE-CZ-NH2 | 7.60 | 124.10 | 120.30 |
| 49 | S2 | 349 | A | C2'-C3'-O3' | 7.59 | 126.21 | 109.50 |
| 1 | 5 | 1916 | G | N9-C1'-C2' | 7.59 | 123.87 | 114.00 |
| 73 | SX | 8 | ARG | NE-CZ-NH1 | -7.59 | 116.50 | 120.30 |
| 37 | h | 119 | PHE | CB-CA-C | -7.59 | 95.22 | 110.40 |
| 52 | SC | 236 | PHE | N-CA-CB | 7.58 | 124.25 | 110.60 |
| 63 | SN | 113 | PHE | CB-CA-C | -7.58 | 95.23 | 110.40 |
| 1 | 5 | 4464 | A | C5'-C4'-O4' | 7.58 | 118.19 | 109.10 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1575 | A | N9-C1'-C2' | 7.57 | 123.84 | 114.00 |
| 48 | 4 | 104 | ASP | CB-CA-C | 7.57 | 125.54 | 110.40 |
| 70 | SU | 90 | ASP | CB-CG-OD1 | 7.56 | 125.11 | 118.30 |
| 12 | I | 4 | ARG | CG-CD-NE | -7.56 | 95.93 | 111.80 |
| 1 | 5 | 4583 | C | N1-C1'-C2' | -7.55 | 103.69 | 112.00 |
| 1 | 5 | 1377 | G | C2'-C3'-O3' | 7.55 | 126.11 | 109.50 |
| 1 | 5 | 4548 | A | O4'-C1'-N9 | -7.55 | 102.16 | 108.20 |
| 1 | 5 | 4911 | A | C1'-O4'-C4' | -7.55 | 103.86 | 109.90 |
| 49 | S2 | 1114 | U | O4'-C1'-N1 | 7.54 | 114.24 | 108.20 |
| 1 | 5 | 158 | A | N9-C1'-C2' | -7.54 | 103.70 | 112.00 |
| 49 | S2 | 1664 | A | C2'-C3'-O3' | 7.54 | 126.09 | 109.50 |
| 3 | 8 | 38 | U | O4'-C1'-N1 | 7.53 | 114.22 | 108.20 |
| 14 | K | 104 | ILE | CA-CB-CG2 | -7.53 | 95.84 | 110.90 |
| 1 | 5 | 2588 | C | C4'-C3'-O3' | 7.52 | 128.04 | 113.00 |
| 1 | 5 | 5046 | U | C2'-C3'-O3' | 7.52 | 126.05 | 109.50 |
| 7 | D | 35 | ARG | NE-CZ-NH1 | 7.52 | 124.06 | 120.30 |
| 46 | q | 44 | ARG | NE-CZ-NH1 | 7.52 | 124.06 | 120.30 |
| 3 | 8 | 104 | A | O4'-C1'-N9 | -7.52 | 102.19 | 108.20 |
| 1 | 5 | 354 | U | N1-C1'-C2' | -7.51 | 103.73 | 112.00 |
| 14 | K | 130 | LYS | CA-CB-CG | 7.51 | 129.93 | 113.40 |
| 9 | F | 228 | HIS | N-CA-CB | 7.51 | 124.12 | 110.60 |
| 30 | a | 79 | TRP | CB-CA-C | 7.51 | 125.42 | 110.40 |
| 49 | S2 | 1835 | A | C4'-C3'-O3' | -7.51 | 93.63 | 109.40 |
| 1 | 5 | 4737 | G | N9-C1'-C2' | 7.51 | 123.76 | 114.00 |
| 49 | S2 | 1863 | A | N9-C1'-C2' | 7.51 | 123.76 | 114.00 |
| 1 | 5 | 1881 | C | N1-C1'-C2' | 7.50 | 123.75 | 114.00 |
| 12 | I | 171 | TRP | N-CA-CB | 7.50 | 124.09 | 110.60 |
| 82 | Sg | 125 | ARG | NE-CZ-NH2 | -7.49 | 116.55 | 120.30 |
| 1 | 5 | 1724 | G | O4'-C4'-C3' | -7.49 | 96.51 | 104.00 |
| 38 | i | 28 | ARG | CG-CD-NE | -7.49 | 96.08 | 111.80 |
| 46 | q | 80 | PRO | C-N-CA | -7.49 | 102.99 | 121.70 |
| 6 | C | 222 | ARG | NE-CZ-NH1 | 7.48 | 124.04 | 120.30 |
| 49 | S2 | 1142 | G | N9-C1'-C2' | -7.48 | 103.77 | 112.00 |
| 49 | S2 | 732 | U | C2'-C3'-O3' | 7.48 | 125.95 | 109.50 |
| 1 | 5 | 1382 | G | N9-C1'-C2' | 7.47 | 123.72 | 114.00 |
| 49 | S2 | 9 | U | N1-C1'-C2' | -7.47 | 103.78 | 112.00 |
| 1 | 5 | 3868 | G | N9-C1'-C2' | -7.47 | 103.78 | 112.00 |
| 8 | E | 179 | ARG | NE-CZ-NH1 | 7.47 | 124.03 | 120.30 |
| 14 | K | 137 | GLN | N-CA-C | 7.47 | 131.16 | 111.00 |
| 1 | 5 | 4693 | C | C5'-C4'-O4' | 7.46 | 118.05 | 109.10 |
| 58 | SI | 113 | TYR | CA-CB-CG | 7.46 | 127.57 | 113.40 |
| 17 | N | 131 | GLU | CB-CG-CD | -7.46 | 94.06 | 114.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 157 | U | N1-C1'-C2' | -7.46 | 103.80 | 112.00 |
| 1 | 5 | 1378 | C | N1-C1'-C2' | 7.45 | 123.69 | 114.00 |
| 49 | S2 | 1542 | C | N1-C1'-C2' | 7.45 | 123.69 | 114.00 |
| 1 | 5 | 4535 | A | C2'-C3'-O3' | 7.44 | 125.87 | 109.50 |
| 48 | 4 | 123 | ASP | CA-C-N | 7.44 | 131.09 | 116.20 |
| 73 | SX | 88 | ASP | CB-CG-OD2 | -7.44 | 111.60 | 118.30 |
| 49 | S2 | 1113 | A | N9-C1'-C2' | 7.44 | 123.67 | 114.00 |
| 1 | 5 | 4212 | A | N9-C1'-C2' | 7.44 | 123.67 | 114.00 |
| 1 | 5 | 2092 | G | N9-C1'-C2' | 7.44 | 123.67 | 114.00 |
| 20 | Q | 34 | PHE | N-CA-CB | 7.43 | 123.97 | 110.60 |
| 49 | S2 | 384 | U | N1-C1'-C2' | -7.43 | 103.83 | 112.00 |
| 5 | B | 117 | ARG | NE-CZ-NH2 | -7.43 | 116.59 | 120.30 |
| 49 | S2 | 1 | U | C5'-C4'-O4' | 7.43 | 118.01 | 109.10 |
| 1 | 5 | 1266 | G | C2'-C3'-O3' | 7.42 | 125.83 | 109.50 |
| 1 | 5 | 1445 | U | C2'-C3'-O3' | 7.42 | 125.82 | 109.50 |
| 1 | 5 | 4120 | U | N1-C1'-C2' | -7.42 | 103.84 | 112.00 |
| 49 | S2 | 427 | U | N1-C1'-C2' | 7.41 | 123.64 | 114.00 |
| 1 | 5 | 2046 | G | C1'-O4'-C4' | -7.41 | 103.97 | 109.90 |
| 1 | 5 | 1521 | C | N1-C1'-C2' | -7.41 | 103.85 | 112.00 |
| 1 | 5 | 4322 | G | N9-C1'-C2' | -7.41 | 103.86 | 112.00 |
| 81 | Sf | 143 | LYS | CD-CE-NZ | 7.41 | 128.73 | 111.70 |
| 81 | Sf | 116 | ARG | NE-CZ-NH1 | 7.40 | 124.00 | 120.30 |
| 17 | N | 180 | PHE | CB-CA-C | 7.39 | 125.19 | 110.40 |
| 49 | S2 | 1606 | G | N9-C1'-C2' | -7.39 | 103.86 | 112.00 |
| 7 | D | 223 | PHE | CB-CG-CD2 | -7.39 | 115.62 | 120.80 |
| 30 | a | 34 | ASN | CB-CA-C | 7.39 | 125.19 | 110.40 |
| 1 | 5 | 4464 | A | N9-C1'-C2' | 7.39 | 123.60 | 114.00 |
| 1 | 5 | 394 | G | N9-C1'-C2' | -7.38 | 103.88 | 112.00 |
| 1 | 5 | 3938 | G | O4'-C1'-N9 | -7.38 | 102.30 | 108.20 |
| 4 | A | 242 | ARG | NE-CZ-NH1 | 7.38 | 123.99 | 120.30 |
| 1 | 5 | 4981 | G | N9-C1'-C2' | -7.38 | 103.89 | 112.00 |
| 1 | 5 | 2124 | G | C2'-C3'-O3' | 7.37 | 125.72 | 109.50 |
| 1 | 5 | 3871 | A | N9-C1'-C2' | 7.37 | 123.58 | 114.00 |
| 1 | 5 | 55 | G | N9-C1'-C2' | -7.37 | 103.89 | 112.00 |
| 1 | 5 | 450 | G | N9-C1'-C2' | -7.37 | 103.89 | 112.00 |
| 3 | 8 | 73 | U | N1-C1'-C2' | -7.37 | 103.89 | 112.00 |
| 7 | D | 210 | TYR | N-CA-CB | 7.37 | 123.86 | 110.60 |
| 1 | 5 | 4251 | A | N9-C1'-C2' | 7.36 | 123.57 | 114.00 |
| 68 | SS | 86 | ARG | CG-CD-NE | -7.36 | 96.33 | 111.80 |
| 1 | 5 | 5061 | A | C2'-C3'-O3' | 7.36 | 125.69 | 109.50 |
| 1 | 5 | 1370 | G | N9-C1'-C2' | 7.36 | 123.57 | 114.00 |
| 1 | 5 | 3843 | C | N1-C1'-C2' | 7.36 | 123.57 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 1249 | C | N1-C1'-C2' | -7.36 | 103.91 | 112.00 |
| 51 | SB | 136 | ARG | NE-CZ-NH2 | 7.36 | 123.98 | 120.30 |
| 1 | 5 | 1440 | U | C2'-C3'-O3' | 7.36 | 125.69 | 109.50 |
| 59 | SJ | 69 | ARG | NE-CZ-NH2 | 7.36 | 123.98 | 120.30 |
| 4 | A | 189 | TYR | CA-CB-CG | 7.35 | 127.36 | 113.40 |
| 1 | 5 | 974 | C | C2'-C3'-O3' | 7.34 | 125.66 | 109.50 |
| 1 | 5 | 4531 | U | N1-C1'-C2' | 7.34 | 123.54 | 114.00 |
| 49 | S2 | 1623 | A | N9-C1'-C2' | -7.34 | 103.93 | 112.00 |
| 49 | S2 | 1659 | U | N1-C1'-C2' | -7.34 | 103.93 | 112.00 |
| 1 | 5 | 979 | C | C2'-C3'-O3' | 7.33 | 125.63 | 109.50 |
| 1 | 5 | 2769 | U | N1-C1'-C2' | -7.33 | 103.94 | 112.00 |
| 49 | S2 | 1115 | U | N1-C1'-C2' | 7.33 | 123.52 | 114.00 |
| 49 | S2 | 1486 | A | N9-C1'-C2' | -7.32 | 103.95 | 112.00 |
| 57 | SH | 99 | ARG | NE-CZ-NH2 | 7.30 | 123.95 | 120.30 |
| 53 | SD | 159 | HIS | CB-CA-C | 7.30 | 124.99 | 110.40 |
| 1 | 5 | 147 | A | N9-C1'-C2' | 7.29 | 123.48 | 114.00 |
| 1 | 5 | 406 | C | C2'-C3'-O3' | 7.29 | 125.55 | 109.50 |
| 1 | 5 | 1601 | A | N9-C1'-C2' | -7.29 | 103.98 | 112.00 |
| 1 | 5 | 2848 | G | N9-C1'-C2' | -7.29 | 103.98 | 112.00 |
| 1 | 5 | 1379 | C | C1'-O4'-C4' | -7.29 | 104.07 | 109.90 |
| 1 | 5 | 97 | G | N9-C1'-C2' | -7.29 | 103.98 | 112.00 |
| 1 | 5 | 486 | C | C2'-C3'-O3' | 7.29 | 125.54 | 109.50 |
| 14 | K | 74 | VAL | C-N-CD | -7.29 | 104.57 | 120.60 |
| 13 | J | 64 | ARG | NE-CZ-NH2 | 7.29 | 123.94 | 120.30 |
| 14 | K | 130 | LYS | CB-CG-CD | 7.28 | 130.53 | 111.60 |
| 1 | 5 | 4084 | G | C2'-C3'-O3' | 7.28 | 125.50 | 109.50 |
| 1 | 5 | 4519 | C | N1-C1'-C2' | -7.27 | 104.00 | 112.00 |
| 1 | 5 | 2280 | G | N9-C1'-C2' | 7.27 | 123.45 | 114.00 |
| 10 | G | 235 | ARG | NE-CZ-NH1 | 7.26 | 123.93 | 120.30 |
| 51 | SB | 82 | ARG | CG-CD-NE | -7.26 | 96.55 | 111.80 |
| 1 | 5 | 2796 | G | N9-C1'-C2' | 7.25 | 123.43 | 114.00 |
| 1 | 5 | 4750 | G | O4'-C1'-N9 | 7.25 | 114.00 | 108.20 |
| 1 | 5 | 1481 | C | C2'-C3'-O3' | 7.25 | 125.45 | 109.50 |
| 27 | X | 48 | ARG | NE-CZ-NH1 | 7.24 | 123.92 | 120.30 |
| 1 | 5 | 4966 | A | N9-C1'-C2' | 7.24 | 123.41 | 114.00 |
| 1 | 5 | 2812 | A | N9-C1'-C2' | 7.23 | 123.40 | 114.00 |
| 1 | 5 | 664 | G | C1'-O4'-C4' | -7.22 | 104.13 | 109.90 |
| 49 | S2 | 1419 | C | N1-C1'-C2' | -7.21 | 104.07 | 112.00 |
| 46 | q | 84 | GLY | N-CA-C | 7.20 | 131.10 | 113.10 |
| 39 | j | 11 | ARG | NE-CZ-NH1 | 7.20 | 123.90 | 120.30 |
| 49 | S2 | 24 | C | N1-C1'-C2' | -7.20 | 104.08 | 112.00 |
| 1 | 5 | 100 | C | N1-C1'-C2' | -7.20 | 104.08 | 112.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 48 | 4 | 269 | ALA | C-N-CA | -7.20 | 103.71 | 121.70 |
| 49 | S2 | 1339 | U | N1-C1'-C2' | -7.19 | 104.09 | 112.00 |
| 59 | SJ | 115 | PHE | CB-CG-CD2 | -7.19 | 115.77 | 120.80 |
| 37 | h | 89 | ARG | NE-CZ-NH1 | 7.19 | 123.89 | 120.30 |
| 39 | j | 71 | TYR | CA-CB-CG | 7.18 | 127.05 | 113.40 |
| 30 | a | 109 | TYR | CB-CA-C | 7.18 | 124.76 | 110.40 |
| 1 | 5 | 1534 | A | C5'-C4'-O4' | 7.18 | 117.71 | 109.10 |
| 1 | 5 | 2511 | A | C4'-C3'-O3' | -7.17 | 94.34 | 109.40 |
| 53 | SD | 216 | GLU | CG-CD-OE2 | 7.17 | 132.63 | 118.30 |
| 4 | A | 3 | ARG | NE-CZ-NH2 | -7.16 | 116.72 | 120.30 |
| 33 | d | 73 | TRP | N-CA-CB | -7.16 | 97.71 | 110.60 |
| 14 | K | 28 | LEU | CB-CG-CD1 | 7.16 | 123.17 | 111.00 |
| 49 | S2 | 1404 | U | C4'-C3'-O3' | -7.16 | 94.36 | 109.40 |
| 1 | 5 | 1359 | G | C4'-C3'-O3' | -7.16 | 94.36 | 109.40 |
| 1 | 5 | 4279 | A | N9-C1'-C2' | -7.16 | 104.13 | 112.00 |
| 49 | S2 | 798 | A | N9-C1'-C2' | -7.16 | 104.13 | 112.00 |
| 49 | S2 | 402 | C | N1-C1'-C2' | -7.16 | 104.13 | 112.00 |
| 6 | C | 41 | HIS | N-CA-CB | 7.14 | 123.46 | 110.60 |
| 38 | i | 39 | PHE | N-CA-CB | 7.14 | 123.44 | 110.60 |
| 59 | SJ | 115 | PHE | CB-CG-CD1 | 7.13 | 125.79 | 120.80 |
| 1 | 5 | 157 | U | C1'-O4'-C4' | -7.13 | 104.20 | 109.90 |
| 1 | 5 | 350 | C | N1-C1'-C2' | 7.13 | 123.26 | 114.00 |
| 14 | K | 114 | ARG | CG-CD-NE | 7.12 | 126.76 | 111.80 |
| 73 | SX | 20 | HIS | CB-CA-C | 7.12 | 124.65 | 110.40 |
| 1 | 5 | 383 | A | C1'-C2'-O2' | -7.12 | 89.23 | 110.60 |
| 22 | S | 28 | TYR | CB-CG-CD1 | 7.12 | 125.27 | 121.00 |
| 15 | L | 82 | ARG | NE-CZ-NH2 | -7.11 | 116.74 | 120.30 |
| 30 | a | 62 | HIS | N-CA-CB | 7.11 | 123.40 | 110.60 |
| 55 | SF | 122 | ARG | NE-CZ-NH1 | 7.11 | 123.86 | 120.30 |
| 54 | SE | 104 | ASP | CB-CG-OD2 | -7.11 | 111.90 | 118.30 |
| 1 | 5 | 29 | G | N9-C1'-C2' | 7.11 | 123.24 | 114.00 |
| 49 | S2 | 1645 | C | N1-C1'-C2' | 7.11 | 123.24 | 114.00 |
| 1 | 5 | 1500 | A | C4'-C3'-O3' | 7.10 | 127.20 | 113.00 |
| 37 | h | 51 | ARG | NE-CZ-NH1 | 7.10 | 123.85 | 120.30 |
| 1 | 5 | 2324 | C | C2'-C3'-O3' | 7.10 | 125.12 | 109.50 |
| 3 | 8 | 38 | U | C1'-O4'-C4' | -7.10 | 104.22 | 109.90 |
| 1 | 5 | 669 | C | O4'-C1'-N1 | 7.09 | 113.87 | 108.20 |
| 1 | 5 | 4500 | U | O5'-P-OP1 | -7.09 | 99.32 | 105.70 |
| 39 | j | 27 | TYR | CA-CB-CG | -7.09 | 99.92 | 113.40 |
| 3 | 8 | 94 | G | N9-C1'-C2' | 7.09 | 123.21 | 114.00 |
| 9 | F | 194 | HIS | CB-CA-C | -7.09 | 96.23 | 110.40 |
| 1 | 5 | 4750 | G | C1'-O4'-C4' | -7.08 | 104.23 | 109.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 27 | X | 48 | ARG | NE-CZ-NH2 | -7.08 | 116.76 | 120.30 |
| 1 | 5 | 4341 | C | N1-C1'-C2' | -7.08 | 104.22 | 112.00 |
| 1 | 5 | 4464 | A | C2'-C3'-O3' | 7.07 | 125.06 | 109.50 |
| 1 | 5 | 30 | C | N1-C1'-C2' | 7.07 | 123.19 | 114.00 |
| 1 | 5 | 4519 | C | O4'-C1'-N1 | 7.06 | 113.85 | 108.20 |
| 1 | 5 | 1355 | G | N9-C1'-C2' | 7.06 | 123.18 | 114.00 |
| 26 | W | 8 | PHE | CB-CG-CD1 | 7.05 | 125.74 | 120.80 |
| 48 | 4 | 495 | ARG | C-N-CA | -7.05 | 104.08 | 121.70 |
| 1 | 5 | 291 | U | N1-C1'-C2' | 7.05 | 123.16 | 114.00 |
| 11 | H | 156 | ASN | N-CA-CB | 7.04 | 123.27 | 110.60 |
| 48 | 4 | 113 | SER | N-CA-C | -7.04 | 91.99 | 111.00 |
| 49 | S2 | 384 | U | C2'-C3'-O3' | 7.04 | 124.98 | 109.50 |
| 1 | 5 | 2046 | G | C2'-C3'-O3' | 7.03 | 124.97 | 109.50 |
| 49 | S2 | 863 | U | N1-C1'-C2' | 7.03 | 123.14 | 114.00 |
| 1 | 5 | 1479 | G | N9-C1'-C2' | 7.03 | 123.14 | 114.00 |
| 1 | 5 | 1552 | G | N9-C1'-C2' | -7.03 | 104.27 | 112.00 |
| 8 | E | 219 | ARG | NE-CZ-NH1 | 7.03 | 123.81 | 120.30 |
| 18 | O | 49 | ARG | NE-CZ-NH1 | 7.03 | 123.81 | 120.30 |
| 33 | d | 25 | TYR | CB-CG-CD1 | -7.03 | 116.78 | 121.00 |
| 49 | S2 | 821 | G | O4'-C1'-N9 | -7.03 | 102.58 | 108.20 |
| 51 | SB | 205 | TYR | CA-CB-CG | -7.03 | 100.05 | 113.40 |
| 1 | 5 | 1455 | G | C2'-C3'-O3' | 7.02 | 124.95 | 109.50 |
| 1 | 5 | 514 | U | C2'-C3'-O3' | 7.02 | 124.94 | 109.50 |
| 53 | SD | 67 | ARG | NE-CZ-NH2 | -7.02 | 116.79 | 120.30 |
| 49 | S2 | 1378 | A | O4'-C1'-N9 | -7.01 | 102.59 | 108.20 |
| 66 | SQ | 85 | ARG | CG-CD-NE | -7.01 | 97.07 | 111.80 |
| 3 | 8 | 34 | U | O4'-C1'-N1 | -7.01 | 102.59 | 108.20 |
| 1 | 5 | 2695 | A | C2'-C3'-O3' | 7.00 | 124.91 | 109.50 |
| 1 | 5 | 3817 | A | N9-C1'-C2' | 7.00 | 123.10 | 114.00 |
| 49 | S2 | 1157 | G | N9-C1'-C2' | -7.00 | 104.30 | 112.00 |
| 1 | 5 | 235 | A | N9-C1'-C2' | -7.00 | 104.30 | 112.00 |
| 1 | 5 | 4531 | U | O4'-C1'-N1 | -7.00 | 102.60 | 108.20 |
| 1 | 5 | 4510 | A | O4'-C1'-N9 | -7.00 | 102.60 | 108.20 |
| 48 | 4 | 741 | MET | CA-CB-CG | 7.00 | 125.19 | 113.30 |
| 49 | S2 | 427 | U | O4'-C1'-N1 | -7.00 | 102.60 | 108.20 |
| 1 | 5 | 42 | A | C1'-O4'-C4' | -6.99 | 104.31 | 109.90 |
| 48 | 4 | 801 | ARG | N-CA-CB | 6.99 | 123.19 | 110.60 |
| 1 | 5 | 4589 | A | O4'-C1'-N9 | -6.99 | 102.61 | 108.20 |
| 6 | C | 35 | ASP | CB-CG-OD1 | 6.99 | 124.59 | 118.30 |
| 1 | 5 | 1676 | C | C1'-C2'-O2' | -6.99 | 89.64 | 110.60 |
| 9 | F | 197 | TYR | CB-CA-C | -6.99 | 96.42 | 110.40 |
| 49 | S2 | 1839 | U | C2-N1-C1' | 6.98 | 126.08 | 117.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 44 | o | 48 | TYR | CA-CB-CG | -6.98 | 100.14 | 113.40 |
| 48 | 4 | 701 | ARG | NE-CZ-NH1 | 6.98 | 123.79 | 120.30 |
| 1 | 5 | 2851 | G | C2'-C3'-O3' | 6.97 | 124.85 | 113.70 |
| 1 | 5 | 4265 | U | N1-C1'-C2' | 6.97 | 123.06 | 114.00 |
| 48 | 4 | 54 | THR | N-CA-C | 6.97 | 129.81 | 111.00 |
| 1 | 5 | 332 | C | N1-C1'-C2' | 6.97 | 123.06 | 114.00 |
| 1 | 5 | 4270 | C | N1-C1'-C2' | -6.96 | 104.34 | 112.00 |
| 80 | Se | 13 | ARG | NE-CZ-NH2 | -6.96 | 116.82 | 120.30 |
| 49 | S2 | 448 | A | N9-C1'-C2' | -6.96 | 104.34 | 112.00 |
| 1 | 5 | 1625 | G | N9-C1'-C2' | 6.96 | 123.05 | 114.00 |
| 1 | 5 | 2589 | C | C2'-C3'-O3' | 6.96 | 124.83 | 113.70 |
| 49 | S2 | 104 | A | C2'-C3'-O3' | 6.96 | 124.83 | 113.70 |
| 34 | e | 74 | PHE | CB-CG-CD1 | -6.95 | 115.93 | 120.80 |
| 59 | SJ | 138 | ARG | NE-CZ-NH1 | 6.95 | 123.78 | 120.30 |
| 49 | S2 | 1022 | U | O4'-C1'-N1 | 6.95 | 113.76 | 108.20 |
| 37 | h | 93 | ARG | NE-CZ-NH2 | -6.95 | 116.83 | 120.30 |
| 49 | S2 | 617 | G | N9-C1'-C2' | -6.95 | 104.36 | 112.00 |
| 1 | 5 | 209 | U | O4'-C1'-N1 | 6.95 | 113.76 | 108.20 |
| 13 | J | 32 | ARG | NE-CZ-NH1 | 6.95 | 123.77 | 120.30 |
| 13 | J | 146 | ARG | CG-CD-NE | -6.95 | 97.21 | 111.80 |
| 25 | V | 97 | TYR | N-CA-C | -6.94 | 92.25 | 111.00 |
| 48 | 4 | 121 | VAL | C-N-CA | 6.94 | 139.06 | 121.70 |
| 1 | 5 | 4589 | A | N9-C1'-C2' | 6.94 | 123.02 | 114.00 |
| 21 | R | 74 | ARG | NE-CZ-NH2 | 6.93 | 123.77 | 120.30 |
| 49 | S2 | 1143 | A | O5'-P-OP1 | -6.92 | 99.47 | 105.70 |
| 5 | B | 100 | ARG | NE-CZ-NH1 | 6.90 | 123.75 | 120.30 |
| 9 | F | 219 | ARG | NE-CZ-NH1 | 6.90 | 123.75 | 120.30 |
| 21 | R | 88 | ARG | NE-CZ-NH1 | 6.90 | 123.75 | 120.30 |
| 1 | 5 | 54 | G | N9-C1'-C2' | -6.89 | 104.42 | 112.00 |
| 10 | G | 49 | ARG | NE-CZ-NH2 | -6.89 | 116.85 | 120.30 |
| 49 | S2 | 104 | A | N9-C1'-C2' | -6.88 | 104.43 | 112.00 |
| 11 | H | 156 | ASN | N-CA-C | -6.88 | 92.42 | 111.00 |
| 35 | f | 4 | ARG | N-CA-CB | 6.88 | 122.99 | 110.60 |
| 49 | S2 | 923 | G | C2'-C3'-O3' | 6.88 | 124.71 | 113.70 |
| 1 | 5 | 454 | U | C2'-C3'-O3' | 6.87 | 124.70 | 113.70 |
| 49 | S2 | 55 | U | N1-C1'-C2' | 6.87 | 122.94 | 114.00 |
| 1 | 5 | 1832 | C | C2'-C3'-O3' | 6.87 | 124.69 | 113.70 |
| 48 | 4 | 427 | VAL | CB-CA-C | -6.87 | 98.34 | 111.40 |
| 20 | Q | 75 | ARG | NE-CZ-NH1 | 6.87 | 123.73 | 120.30 |
| 49 | S2 | 77 | A | N9-C1'-C2' | -6.87 | 104.44 | 112.00 |
| 1 | 5 | 226 | G | N9-C1'-C2' | -6.86 | 104.45 | 112.00 |
| 49 | S2 | 674 | C | O5'-P-OP2 | -6.86 | 99.52 | 105.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 943 | A | N9-C1'-C2' | -6.86 | 104.45 | 112.00 |
| 1 | 5 | 1631 | A | O4'-C1'-N9 | -6.86 | 102.71 | 108.20 |
| 8 | E | 179 | ARG | NE-CZ-NH2 | -6.86 | 116.87 | 120.30 |
| 1 | 5 | 5001 | U | N1-C1'-C2' | 6.86 | 122.91 | 114.00 |
| 5 | B | 274 | TYR | CA-CB-CG | -6.85 | 100.39 | 113.40 |
| 1 | 5 | 1319 | U | N1-C1'-C2' | -6.84 | 104.47 | 112.00 |
| 58 | SI | 197 | PHE | CB-CG-CD2 | -6.84 | 116.01 | 120.80 |
| 35 | f | 85 | ARG | NE-CZ-NH1 | 6.83 | 123.72 | 120.30 |
| 49 | S2 | 182 | C | C2'-C3'-O3' | 6.83 | 124.63 | 113.70 |
| 1 | 5 | 1815 | G | O4'-C1'-N9 | 6.83 | 113.66 | 108.20 |
| 49 | S2 | 73 | C | O4'-C1'-N1 | 6.83 | 113.66 | 108.20 |
| 1 | 5 | 2271 | C | N1-C1'-C2' | 6.83 | 122.87 | 114.00 |
| 49 | S2 | 1039 | C | C2'-C3'-O3' | 6.83 | 124.62 | 113.70 |
| 49 | S2 | 1247 | C | N1-C1'-C2' | 6.83 | 122.87 | 114.00 |
| 1 | 5 | 3625 | G | C2'-C3'-O3' | 6.82 | 124.61 | 113.70 |
| 48 | 4 | 285 | LEU | O-C-N | -6.82 | 108.14 | 121.10 |
| 20 | Q | 37 | ARG | NE-CZ-NH1 | -6.82 | 116.89 | 120.30 |
| 3 | 8 | 64 | U | C2'-C3'-O3' | 6.82 | 124.61 | 113.70 |
| 1 | 5 | 964 | A | O4'-C1'-C2' | -6.81 | 98.99 | 105.80 |
| 1 | 5 | 5047 | C | O5'-P-OP2 | -6.81 | 99.57 | 105.70 |
| 46 | q | 6 | ARG | N-CA-C | 6.81 | 129.38 | 111.00 |
| 49 | S2 | 992 | A | N9-C1'-C2' | -6.80 | 104.52 | 112.00 |
| 63 | SN | 18 | TYR | N-CA-CB | 6.80 | 122.85 | 110.60 |
| 17 | N | 49 | ARG | NE-CZ-NH2 | -6.80 | 116.90 | 120.30 |
| 1 | 5 | 4518 | A | O5'-P-OP1 | 6.80 | 118.86 | 110.70 |
| 1 | 5 | 1 | C | O4'-C1'-N1 | 6.79 | 113.64 | 108.20 |
| 1 | 5 | 2319 | C | N1-C1'-C2' | 6.79 | 122.83 | 114.00 |
| 62 | SM | 127 | TYR | CA-CB-CG | 6.79 | 126.30 | 113.40 |
| 19 | P | 42 | ARG | NE-CZ-NH1 | 6.78 | 123.69 | 120.30 |
| 1 | 5 | 3611 | A | N9-C1'-C2' | 6.78 | 122.81 | 114.00 |
| 2 | 7 | 72 | U | C2'-C3'-O3' | 6.78 | 124.55 | 113.70 |
| 29 | Z | 65 | ARG | CG-CD-NE | -6.78 | 97.57 | 111.80 |
| 10 | G | 73 | ARG | NE-CZ-NH1 | 6.78 | 123.69 | 120.30 |
| 25 | V | 97 | TYR | CA-CB-CG | -6.78 | 100.53 | 113.40 |
| 1 | 5 | 1292 | C | C2'-C3'-O3' | 6.77 | 124.53 | 113.70 |
| 13 | J | 99 | PHE | CB-CA-C | 6.77 | 123.94 | 110.40 |
| 48 | 4 | 825 | PHE | N-CA-C | 6.76 | 129.24 | 111.00 |
| 48 | 4 | 42 | LYS | CA-C-N | -6.75 | 102.35 | 117.20 |
| 49 | S2 | 61 | A | C4'-C3'-O3' | -6.75 | 95.22 | 109.40 |
| 49 | S2 | 1198 | G | C2'-C3'-O3' | 6.75 | 124.50 | 113.70 |
| 20 | Q | 33 | ARG | CG-CD-NE | -6.74 | 97.64 | 111.80 |
| 49 | S2 | 1114 | U | C1'-O4'-C4' | -6.74 | 104.51 | 109.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 2395 | A | N9-C1'-C2' | -6.74 | 104.59 | 112.00 |
| 49 | S2 | 1838 | U | O4'-C4'-C3' | -6.74 | 97.26 | 104.00 |
| 20 | Q | 15 | ARG | NE-CZ-NH2 | -6.74 | 116.93 | 120.30 |
| 10 | G | 54 | PHE | CB-CG-CD2 | -6.73 | 116.09 | 120.80 |
| 49 | S2 | 596 | U | N1-C1'-C2' | 6.73 | 122.75 | 114.00 |
| 48 | 4 | 76 | SER | CA-C-N | -6.72 | 102.41 | 117.20 |
| 8 | E | 101 | ARG | NE-CZ-NH1 | -6.72 | 116.94 | 120.30 |
| 1 | 5 | 1364 | U | C2'-C3'-O3' | 6.72 | 124.45 | 113.70 |
| 1 | 5 | 3875 | G | N9-C1'-C2' | -6.72 | 104.61 | 112.00 |
| 1 | 5 | 4936 | G | N9-C1'-C2' | -6.72 | 104.61 | 112.00 |
| 8 | E | 278 | TYR | N-CA-C | -6.72 | 92.87 | 111.00 |
| 1 | 5 | 4230 | C | O5'-P-OP1 | -6.71 | 99.66 | 105.70 |
| 1 | 5 | 4197 | G | N9-C1'-C2' | -6.71 | 104.62 | 112.00 |
| 49 | S2 | 313 | A | C1'-O4'-C4' | -6.71 | 104.53 | 109.90 |
| 49 | S2 | 1433 | C | C5'-C4'-C3' | 6.71 | 126.73 | 116.00 |
| 1 | 5 | 84 | A | O4'-C1'-N9 | -6.71 | 102.83 | 108.20 |
| 1 | 5 | 58 | G | N9-C1'-C2' | 6.70 | 122.71 | 114.00 |
| 48 | 4 | 197 | SER | CA-C-N | -6.70 | 102.80 | 116.20 |
| 14 | K | 111 | ASN | CA-CB-CG | 6.70 | 128.14 | 113.40 |
| 52 | SC | 200 | ARG | NE-CZ-NH1 | -6.70 | 116.95 | 120.30 |
| 49 | S2 | 983 | A | C8-N9-C1' | -6.70 | 115.64 | 127.70 |
| 1 | 5 | 2305 | U | N1-C1'-C2' | 6.70 | 122.70 | 114.00 |
| 14 | K | 26 | SER | C-N-CA | 6.70 | 138.44 | 121.70 |
| 59 | SJ | 108 | ARG | NE-CZ-NH2 | -6.69 | 116.96 | 120.30 |
| 49 | S2 | 983 | A | C4-N9-C1' | 6.69 | 138.33 | 126.30 |
| 49 | S2 | 824 | C | N1-C1'-C2' | 6.68 | 122.69 | 114.00 |
| 62 | SM | 33 | ARG | CG-CD-NE | 6.68 | 125.83 | 111.80 |
| 1 | 5 | 2675 | G | N9-C1'-C2' | -6.68 | 104.66 | 112.00 |
| 29 | Z | 38 | TYR | CB-CA-C | 6.67 | 123.75 | 110.40 |
| 9 | F | 168 | ARG | NE-CZ-NH2 | -6.67 | 116.97 | 120.30 |
| 1 | 5 | 4280 | A | C2'-C3'-O3' | 6.67 | 124.37 | 113.70 |
| 49 | S2 | 1201 | U | N1-C1'-C2' | -6.67 | 104.67 | 112.00 |
| 33 | d | 87 | ARG | N-CA-C | -6.67 | 93.00 | 111.00 |
| 46 | q | 204 | LEU | CA-C-N | -6.67 | 102.54 | 117.20 |
| 48 | 4 | 122 | THR | N-CA-CB | -6.66 | 97.64 | 110.30 |
| 49 | S2 | 1838 | U | C5'-C4'-O4' | 6.66 | 117.10 | 109.10 |
| 1 | 5 | 3901 | A | O4'-C1'-N9 | -6.66 | 102.87 | 108.20 |
| 48 | 4 | 801 | ARG | NE-CZ-NH2 | -6.66 | 116.97 | 120.30 |
| 49 | S2 | 918 | U | N1-C1'-C2' | 6.66 | 122.65 | 114.00 |
| 1 | 5 | 3882 | C | N1-C1'-C2' | 6.65 | 122.65 | 114.00 |
| 49 | S2 | 415 | A | C4-N9-C1' | -6.65 | 114.33 | 126.30 |
| 31 | b | 7 | HIS | CB-CA-C | -6.65 | 97.10 | 110.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 33 | d | 73 | TRP | CA-CB-CG | 6.65 | 126.34 | 113.70 |
| 11 | H | 125 | ARG | NE-CZ-NH1 | 6.65 | 123.62 | 120.30 |
| 57 | SH | 116 | ARG | NE-CZ-NH2 | -6.65 | 116.98 | 120.30 |
| 62 | SM | 33 | ARG | NE-CZ-NH2 | -6.64 | 116.98 | 120.30 |
| 49 | S2 | 532 | C | C2'-C3'-O3' | 6.64 | 124.33 | 113.70 |
| 49 | S2 | 1663 | A | O4'-C1'-N9 | 6.64 | 113.51 | 108.20 |
| 1 | 5 | 1631 | A | N9-C1'-C2' | 6.64 | 122.63 | 114.00 |
| 1 | 5 | 4693 | C | C2'-C3'-O3' | 6.64 | 124.32 | 113.70 |
| 49 | S2 | 620 | G | O5'-P-OP1 | 6.63 | 118.66 | 110.70 |
| 49 | S2 | 1667 | U | N1-C1'-C2' | 6.63 | 122.62 | 114.00 |
| 1 | 5 | 5022 | U | C2'-C3'-O3' | 6.63 | 124.31 | 113.70 |
| 1 | 5 | 336 | A | O4'-C1'-N9 | 6.63 | 113.50 | 108.20 |
| 74 | SY | 76 | TYR | CA-CB-CG | -6.63 | 100.81 | 113.40 |
| 1 | 5 | 3790 | U | O4'-C1'-N1 | -6.62 | 102.90 | 108.20 |
| 1 | 5 | 2827 | G | O4'-C1'-N9 | -6.61 | 102.91 | 108.20 |
| 1 | 5 | 4325 | A | N9-C1'-C2' | 6.61 | 122.60 | 114.00 |
| 1 | 5 | 4518 | A | C2'-C3'-O3' | -6.61 | 94.96 | 109.50 |
| 49 | S2 | 1452 | A | N9-C1'-C2' | 6.61 | 122.59 | 114.00 |
| 49 | S2 | 1401 | A | C2'-C3'-O3' | 6.60 | 124.26 | 113.70 |
| 3 | 8 | 1 | C | C5'-C4'-O4' | 6.60 | 117.02 | 109.10 |
| 3 | 8 | 81 | C | C1'-O4'-C4' | -6.59 | 104.62 | 109.90 |
| 1 | 5 | 514 | U | C5'-C4'-O4' | 6.59 | 117.01 | 109.10 |
| 1 | 5 | 964 | A | N9-C1'-C2' | -6.59 | 104.75 | 112.00 |
| 1 | 5 | 3883 | U | N1-C1'-C2' | 6.59 | 122.57 | 114.00 |
| 5 | B | 26 | ARG | CG-CD-NE | -6.59 | 97.96 | 111.80 |
| 69 | ST | 62 | ARG | NE-CZ-NH1 | -6.59 | 117.01 | 120.30 |
| 49 | S2 | 631 | U | O4'-C1'-N1 | -6.59 | 102.93 | 108.20 |
| 1 | 5 | 927 | G | C2'-C3'-O3' | 6.58 | 124.23 | 113.70 |
| 28 | Y | 81 | TYR | CA-CB-CG | -6.58 | 100.89 | 113.40 |
| 1 | 5 | 314 | G | N9-C1'-C2' | -6.57 | 104.77 | 112.00 |
| 49 | S2 | 1434 | C | N1-C1'-C2' | 6.57 | 122.55 | 114.00 |
| 49 | S2 | 1835 | A | O4'-C4'-C3' | -6.57 | 97.43 | 104.00 |
| 1 | 5 | 505 | G | C2'-C3'-O3' | 6.56 | 124.20 | 113.70 |
| 49 | S2 | 415 | A | C8-N9-C1' | 6.56 | 139.51 | 127.70 |
| 1 | 5 | 2782 | U | C4'-C3'-O3' | 6.56 | 126.12 | 113.00 |
| 49 | S2 | 1394 | G | C2'-C3'-O3' | 6.56 | 124.20 | 113.70 |
| 1 | 5 | 1930 | U | N1-C1'-C2' | 6.56 | 122.52 | 114.00 |
| 35 | f | 109 | ARG | NE-CZ-NH1 | 6.56 | 123.58 | 120.30 |
| 1 | 5 | 4336 | A | N9-C1'-C2' | -6.55 | 104.79 | 112.00 |
| 1 | 5 | 187 | U | C2'-C3'-O3' | 6.55 | 124.18 | 113.70 |
| 49 | S2 | 160 | U | C2'-C3'-O3' | 6.55 | 124.18 | 113.70 |
| 62 | SM | 26 | LEU | CB-CG-CD2 | 6.55 | 122.14 | 111.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 39 | j | 27 | TYR | CB-CG-CD1 | -6.55 | 117.07 | 121.00 |
| 48 | 4 | 122 | THR | CB-CA-C | 6.55 | 129.28 | 111.60 |
| 17 | N | 150 | TRP | CA-CB-CG | 6.54 | 126.14 | 113.70 |
| 50 | SA | 9 | GLN | CA-CB-CG | 6.54 | 127.80 | 113.40 |
| 53 | SD | 162 | ASP | CB-CG-OD2 | -6.54 | 112.41 | 118.30 |
| 1 | 5 | 1671 | U | O4'-C1'-C2' | -6.54 | 99.26 | 105.80 |
| 49 | S2 | 1830 | U | N1-C1'-C2' | -6.54 | 104.81 | 112.00 |
| 19 | P | 23 | ARG | NE-CZ-NH1 | 6.54 | 123.57 | 120.30 |
| 36 | g | 14 | ASN | N-CA-CB | 6.54 | 122.36 | 110.60 |
| 1 | 5 | 3827 | G | N9-C1'-C2' | -6.53 | 104.81 | 112.00 |
| 33 | d | 85 | ARG | NE-CZ-NH2 | -6.53 | 117.03 | 120.30 |
| 1 | 5 | 1215 | C | O5'-P-OP2 | -6.53 | 99.83 | 105.70 |
| 1 | 5 | 1650 | A | O4'-C1'-N9 | -6.53 | 102.98 | 108.20 |
| 1 | 5 | 384 | A | N9-C1'-C2' | 6.52 | 122.48 | 114.00 |
| 1 | 5 | 119 | G | O4'-C4'-C3' | -6.52 | 97.48 | 104.00 |
| 48 | 4 | 154 | VAL | N-CA-C | -6.52 | 93.40 | 111.00 |
| 58 | SI | 55 | TYR | CA-CB-CG | -6.52 | 101.02 | 113.40 |
| 16 | M | 109 | ARG | NE-CZ-NH2 | 6.51 | 123.56 | 120.30 |
| 1 | 5 | 2075 | G | C2'-C3'-O3' | 6.51 | 124.11 | 113.70 |
| 1 | 5 | 5043 | A | N9-C1'-C2' | 6.50 | 122.45 | 114.00 |
| 1 | 5 | 432 | U | N1-C1'-C2' | -6.50 | 104.85 | 112.00 |
| 49 | S2 | 499 | G | C2'-C3'-O3' | 6.50 | 124.10 | 113.70 |
| 49 | S2 | 1272 | C | O5'-P-OP1 | -6.50 | 99.85 | 105.70 |
| 1 | 5 | 946 | C | O4'-C1'-N1 | 6.50 | 113.40 | 108.20 |
| 1 | 5 | 98 | A | N9-C1'-C2' | -6.49 | 104.86 | 112.00 |
| 1 | 5 | 1887 | G | C2'-C3'-O3' | 6.49 | 124.09 | 113.70 |
| 73 | SX | 27 | TYR | CA-CB-CG | 6.49 | 125.73 | 113.40 |
| 1 | 5 | 4227 | U | C2'-C3'-O3' | 6.49 | 124.08 | 113.70 |
| 10 | G | 223 | ARG | NE-CZ-NH1 | 6.49 | 123.54 | 120.30 |
| 19 | P | 25 | HIS | CB-CA-C | 6.48 | 123.37 | 110.40 |
| 56 | SG | 88 | ARG | NE-CZ-NH1 | 6.48 | 123.54 | 120.30 |
| 49 | S2 | 149 | A | N9-C1'-C2' | 6.48 | 122.43 | 114.00 |
| 1 | 5 | 209 | U | C4'-C3'-O3' | 6.48 | 125.95 | 113.00 |
| 49 | S2 | 1838 | U | C2-N1-C1' | -6.47 | 109.93 | 117.70 |
| 49 | S2 | 427 | U | C5'-C4'-O4' | 6.47 | 116.87 | 109.10 |
| 50 | SA | 186 | ARG | NE-CZ-NH1 | 6.47 | 123.53 | 120.30 |
| 1 | 5 | 1379 | C | N1-C1'-C2' | 6.47 | 122.41 | 114.00 |
| 48 | 4 | 269 | ALA | CA-C-N | 6.47 | 131.43 | 117.20 |
| 1 | 5 | 2118 | G | C4'-C3'-O3' | 6.46 | 125.93 | 113.00 |
| 9 | F | 209 | PHE | N-CA-CB | 6.46 | 122.23 | 110.60 |
| 1 | 5 | 307 | A | N9-C1'-C2' | 6.46 | 122.40 | 114.00 |
| 3 | 8 | 86 | U | O4'-C1'-C2' | -6.46 | 99.34 | 105.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 63 | SN | 18 | TYR | CA-CB-CG | -6.46 | 101.13 | 113.40 |
| 1 | 5 | 136 | C | N1-C1'-C2' | -6.46 | 104.90 | 112.00 |
| 64 | SO | 147 | ARG | NE-CZ-NH2 | -6.46 | 117.07 | 120.30 |
| 1 | 5 | 1853 | G | N9-C1'-C2' | -6.46 | 104.90 | 112.00 |
| 68 | SS | 14 | ARG | NE-CZ-NH1 | 6.46 | 123.53 | 120.30 |
| 3 | 8 | 64 | U | C5'-C4'-O4' | 6.45 | 116.84 | 109.10 |
| 49 | S2 | 1291 | A | P-O3'-C3' | 6.45 | 127.44 | 119.70 |
| 1 | 5 | 4076 | G | N9-C1'-C2' | -6.45 | 104.90 | 112.00 |
| 1 | 5 | 4199 | C | C4'-C3'-O3' | 6.45 | 125.89 | 113.00 |
| 1 | 5 | 1573 | G | N9-C1'-C2' | 6.44 | 122.37 | 114.00 |
| 20 | Q | 181 | ARG | CA-CB-CG | 6.44 | 127.57 | 113.40 |
| 49 | S2 | 1850 | A | N9-C1'-C2' | 6.44 | 122.37 | 114.00 |
| 30 | a | 109 | TYR | CB-CG-CD2 | -6.44 | 117.14 | 121.00 |
| 49 | S2 | 1116 | C | O5'-P-OP1 | -6.44 | 99.91 | 105.70 |
| 1 | 5 | 1572 | U | N1-C1'-C2' | 6.44 | 122.37 | 114.00 |
| 14 | K | 129 | ILE | O-C-N | -6.43 | 112.41 | 122.70 |
| 23 | T | 13 | TYR | CA-CB-CG | 6.43 | 125.62 | 113.40 |
| 49 | S2 | 1059 | G | N9-C1'-C2' | 6.43 | 122.36 | 114.00 |
| 63 | SN | 64 | ARG | NE-CZ-NH2 | -6.43 | 117.09 | 120.30 |
| 49 | S2 | 848 | U | C2-N1-C1' | 6.43 | 125.41 | 117.70 |
| 47 | r | 31 | ASN | N-CA-CB | 6.42 | 122.16 | 110.60 |
| 49 | S2 | 427 | U | P-O5'-C5' | 6.42 | 131.18 | 120.90 |
| 49 | S2 | 1860 | A | N9-C1'-C2' | -6.42 | 104.94 | 112.00 |
| 78 | Sc | 44 | ARG | CG-CD-NE | 6.42 | 125.28 | 111.80 |
| 1 | 5 | 4338 | G | N9-C1'-C2' | -6.42 | 104.94 | 112.00 |
| 64 | SO | 147 | ARG | NE-CZ-NH1 | 6.42 | 123.51 | 120.30 |
| 1 | 5 | 2665 | U | C2'-C3'-O3' | 6.41 | 123.95 | 113.70 |
| 46 | q | 45 | MET | CA-CB-CG | -6.41 | 102.41 | 113.30 |
| 1 | 5 | 4976 | U | N1-C1'-C2' | 6.41 | 122.33 | 114.00 |
| 1 | 5 | 4534 | G | N9-C1'-C2' | -6.40 | 104.96 | 112.00 |
| 7 | D | 293 | ARG | NE-CZ-NH1 | 6.40 | 123.50 | 120.30 |
| 1 | 5 | 4127 | A | O4'-C1'-N9 | 6.40 | 113.32 | 108.20 |
| 1 | 5 | 2546 | G | C4'-C3'-O3' | 6.40 | 125.80 | 113.00 |
| 1 | 5 | 2649 | G | N9-C1'-C2' | 6.40 | 122.32 | 114.00 |
| 48 | 4 | 278 | THR | C-N-CA | 6.40 | 137.69 | 121.70 |
| 1 | 5 | 2088 | A | C2'-C3'-O3' | 6.39 | 123.93 | 113.70 |
| 3 | 8 | 35 | C | N1-C1'-C2' | 6.39 | 122.31 | 114.00 |
| 49 | S2 | 654 | A | N9-C1'-C2' | -6.39 | 104.97 | 112.00 |
| 18 | O | 37 | ARG | NE-CZ-NH1 | 6.39 | 123.50 | 120.30 |
| 9 | F | 168 | ARG | CB-CG-CD | 6.39 | 128.21 | 111.60 |
| 1 | 5 | 1980 | U | C1'-O4'-C4' | -6.39 | 104.79 | 109.90 |
| 26 | W | 8 | PHE | CB-CG-CD2 | -6.39 | 116.33 | 120.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 28 | Y | 81 | TYR | CB-CA-C | 6.38 | 123.17 | 110.40 |
| 7 | D | 223 | PHE | CB-CG-CD1 | 6.38 | 125.27 | 120.80 |
| 4 | A | 37 | ARG | NE-CZ-NH1 | 6.38 | 123.49 | 120.30 |
| 1 | 5 | 1724 | G | C4'-C3'-O3' | -6.38 | 96.00 | 109.40 |
| 49 | S2 | 1082 | A | N9-C1'-C2' | 6.38 | 122.29 | 114.00 |
| 49 | S2 | 1249 | C | C2'-C3'-O3' | 6.38 | 123.91 | 113.70 |
| 1 | 5 | 1241 | C | C2'-C3'-O3' | 6.37 | 123.90 | 113.70 |
| 48 | 4 | 404 | THR | N-CA-CB | 6.37 | 122.41 | 110.30 |
| 49 | S2 | 1851 | A | N9-C1'-C2' | 6.37 | 122.28 | 114.00 |
| 1 | 5 | 336 | A | C1'-O4'-C4' | -6.36 | 104.81 | 109.90 |
| 48 | 4 | 497 | MET | C-N-CA | 6.36 | 137.61 | 121.70 |
| 1 | 5 | 1642 | A | C4'-C3'-O3' | -6.36 | 96.05 | 109.40 |
| 6 | C | 143 | ARG | NE-CZ-NH2 | -6.36 | 117.12 | 120.30 |
| 1 | 5 | 1272 | C | O4'-C1'-N1 | 6.36 | 113.28 | 108.20 |
| 4 | A | 63 | PHE | CB-CG-CD1 | 6.36 | 125.25 | 120.80 |
| 49 | S2 | 1109 | C | C1'-O4'-C4' | -6.36 | 104.81 | 109.90 |
| 1 | 5 | 417 | G | O4'-C1'-N9 | 6.35 | 113.28 | 108.20 |
| 1 | 5 | 2554 | U | C2'-C3'-O3' | 6.34 | 123.85 | 113.70 |
| 49 | S2 | 1584 | G | N9-C1'-C2' | 6.34 | 122.24 | 114.00 |
| 49 | S2 | 91 | A | N9-C1'-C2' | -6.34 | 105.03 | 112.00 |
| 1 | 5 | 1615 | C | C2'-C3'-O3' | 6.34 | 123.84 | 113.70 |
| 1 | 5 | 4519 | C | C2'-C3'-O3' | 6.34 | 123.84 | 113.70 |
| 1 | 5 | 2511 | A | O4'-C1'-N9 | -6.33 | 103.13 | 108.20 |
| 1 | 5 | 3901 | A | C5'-C4'-O4' | 6.33 | 116.70 | 109.10 |
| 9 | F | 36 | ARG | NE-CZ-NH1 | -6.33 | 117.13 | 120.30 |
| 1 | 5 | 294 | G | N9-C1'-C2' | 6.33 | 122.23 | 114.00 |
| 1 | 5 | 2581 | A | N9-C1'-C2' | 6.33 | 122.23 | 114.00 |
| 1 | 5 | 84 | A | N9-C1'-C2' | 6.33 | 122.23 | 114.00 |
| 28 | Y | 78 | TYR | CB-CA-C | 6.33 | 123.05 | 110.40 |
| 46 | q | 44 | ARG | CD-NE-CZ | 6.33 | 132.46 | 123.60 |
| 1 | 5 | 4911 | A | O5'-P-OP2 | -6.32 | 100.01 | 105.70 |
| 49 | S2 | 1292 | C | P-O5'-C5' | 6.32 | 131.01 | 120.90 |
| 1 | 5 | 4519 | C | O4'-C4'-C3' | -6.32 | 97.69 | 104.00 |
| 49 | S2 | 960 | U | C2'-C3'-O3' | 6.32 | 123.80 | 113.70 |
| 19 | P | 139 | TYR | CA-CB-CG | -6.31 | 101.41 | 113.40 |
| 9 | F | 136 | ARG | NE-CZ-NH2 | -6.31 | 117.14 | 120.30 |
| 10 | G | 235 | ARG | CG-CD-NE | 6.30 | 125.04 | 111.80 |
| 12 | I | 34 | PHE | CB-CG-CD1 | -6.30 | 116.39 | 120.80 |
| 49 | S2 | 1597 | C | N1-C1'-C2' | 6.30 | 122.19 | 114.00 |
| 1 | 5 | 3671 | G | N9-C1'-C2' | 6.29 | 122.18 | 114.00 |
| 49 | S2 | 1194 | A | N9-C1'-C2' | -6.29 | 105.08 | 112.00 |
| 1 | 5 | 1282 | G | O5'-P-OP1 | -6.29 | 100.04 | 105.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1724 | G | N9-C1'-C2' | 6.29 | 122.17 | 114.00 |
| 7 | D | 35 | ARG | CG-CD-NE | 6.29 | 125.00 | 111.80 |
| 1 | 5 | 1672 | U | C2-N1-C1' | 6.28 | 125.24 | 117.70 |
| 3 | 8 | 104 | A | N9-C1'-C2' | 6.28 | 122.17 | 114.00 |
| 66 | SQ | 138 | ARG | NE-CZ-NH1 | 6.28 | 123.44 | 120.30 |
| 14 | K | 129 | ILE | C-N-CA | 6.28 | 137.40 | 121.70 |
| 49 | S2 | 1519 | U | N1-C1'-C2' | 6.28 | 122.16 | 114.00 |
| 7 | D | 145 | TYR | CB-CA-C | 6.28 | 122.95 | 110.40 |
| 1 | 5 | 3653 | A | O5'-P-OP1 | -6.27 | 100.05 | 105.70 |
| 11 | H | 31 | ARG | NE-CZ-NH2 | -6.27 | 117.16 | 120.30 |
| 1 | 5 | 219 | G | O5'-P-OP2 | -6.27 | 100.06 | 105.70 |
| 22 | S | 83 | ARG | CG-CD-NE | 6.27 | 124.97 | 111.80 |
| 1 | 5 | 2827 | G | N9-C1'-C2' | 6.27 | 122.15 | 114.00 |
| 1 | 5 | 2511 | A | C2'-C3'-O3' | 6.27 | 123.73 | 113.70 |
| 1 | 5 | 4519 | C | C4'-C3'-C2' | -6.27 | 96.33 | 102.60 |
| 49 | S2 | 475 | C | O5'-P-OP1 | -6.26 | 100.06 | 105.70 |
| 7 | D | 30 | TYR | CB-CA-C | 6.26 | 122.92 | 110.40 |
| 1 | 5 | 3648 | A | O4'-C1'-N9 | 6.25 | 113.20 | 108.20 |
| 49 | S2 | 1669 | G | N9-C1'-C2' | 6.25 | 122.13 | 114.00 |
| 34 | e | 5 | ARG | NE-CZ-NH1 | 6.25 | 123.42 | 120.30 |
| 3 | 8 | 62 | A | C8-N9-C1' | 6.25 | 138.95 | 127.70 |
| 1 | 5 | 3880 | G | N9-C1'-C2' | 6.25 | 122.12 | 114.00 |
| 20 | Q | 33 | ARG | NE-CZ-NH2 | -6.25 | 117.18 | 120.30 |
| 49 | S2 | 1855 | G | O5'-P-OP2 | -6.25 | 100.08 | 105.70 |
| 1 | 5 | 1279 | A | C2'-C3'-O3' | 6.25 | 123.69 | 113.70 |
| 49 | S2 | 841 | G | O4'-C1'-C2' | -6.25 | 99.56 | 105.80 |
| 1 | 5 | 2874 | U | O4'-C1'-N1 | -6.24 | 103.21 | 108.20 |
| 1 | 5 | 2673 | G | O4'-C1'-C2' | -6.24 | 99.56 | 105.80 |
| 49 | S2 | 41 | G | N9-C1'-C2' | -6.24 | 105.14 | 112.00 |
| 49 | S2 | 66 | G | N9-C1'-C2' | -6.24 | 105.14 | 112.00 |
| 1 | 5 | 4548 | A | P-O5'-C5' | 6.24 | 130.88 | 120.90 |
| 1 | 5 | 4718 | G | N9-C1'-C2' | -6.24 | 105.14 | 112.00 |
| 55 | SF | 165 | ASN | N-CA-CB | 6.24 | 121.83 | 110.60 |
| 1 | 5 | 2403 | A | N9-C1'-C2' | 6.24 | 122.11 | 114.00 |
| 81 | Sf | 148 | TYR | CA-CB-CG | 6.23 | 125.24 | 113.40 |
| 82 | Sg | 140 | TYR | CA-CB-CG | -6.23 | 101.56 | 113.40 |
| 1 | 5 | 5056 | A | N9-C1'-C2' | 6.23 | 122.10 | 114.00 |
| 49 | S2 | 1022 | U | C1'-O4'-C4' | -6.23 | 104.92 | 109.90 |
| 65 | SP | 44 | ARG | NE-CZ-NH1 | 6.23 | 123.42 | 120.30 |
| 26 | W | 55 | TYR | CB-CG-CD1 | 6.23 | 124.74 | 121.00 |
| 76 | Sa | 10 | ARG | CG-CD-NE | -6.23 | 98.72 | 111.80 |
| 1 | 5 | 4677 | U | C3'-C2'-C1' | 6.22 | 106.48 | 101.50 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 15 | L | 192 | PHE | N-CA-CB | 6.22 | 121.80 | 110.60 |
| 62 | SM | 127 | TYR | CB-CG-CD1 | 6.22 | 124.73 | 121.00 |
| 1 | 5 | 220 | C | C2'-C3'-O3' | 6.22 | 123.66 | 113.70 |
| 1 | 5 | 3791 | C | O4'-C1'-N1 | -6.22 | 103.22 | 108.20 |
| 49 | S2 | 1 | U | C5'-C4'-C3' | 6.22 | 125.95 | 116.00 |
| 6 | C | 80 | ARG | NE-CZ-NH1 | 6.22 | 123.41 | 120.30 |
| 1 | 5 | 409 | G | N9-C1'-C2' | -6.22 | 105.16 | 112.00 |
| 1 | 5 | 2082 | G | N9-C1'-C2' | 6.22 | 122.08 | 114.00 |
| 51 | SB | 165 | ARG | NE-CZ-NH1 | -6.22 | 117.19 | 120.30 |
| 1 | 5 | 1934 | A | N9-C1'-C2' | -6.21 | 105.16 | 112.00 |
| 7 | D | 44 | TYR | CA-CB-CG | -6.21 | 101.60 | 113.40 |
| 10 | G | 54 | PHE | CB-CA-C | 6.21 | 122.82 | 110.40 |
| 55 | SF | 146 | ARG | NE-CZ-NH1 | 6.21 | 123.41 | 120.30 |
| 49 | S2 | 1420 | G | O5'-P-OP2 | -6.21 | 100.11 | 105.70 |
| 49 | S2 | 980 | A | C2'-C3'-O3' | 6.21 | 123.63 | 113.70 |
| 5 | B | 137 | TRP | CA-CB-CG | -6.20 | 101.92 | 113.70 |
| 6 | C | 311 | ARG | NE-CZ-NH1 | 6.20 | 123.40 | 120.30 |
| 39 | j | 11 | ARG | CG-CD-NE | -6.20 | 98.79 | 111.80 |
| 49 | S2 | 1453 | C | O4'-C1'-N1 | 6.20 | 113.16 | 108.20 |
| 49 | S2 | 1857 | G | N9-C1'-C2' | -6.20 | 105.19 | 112.00 |
| 49 | S2 | 1617 | G | N9-C1'-C2' | -6.19 | 105.19 | 112.00 |
| 61 | SL | 89 | ARG | NE-CZ-NH1 | 6.19 | 123.40 | 120.30 |
| 1 | 5 | 4560 | C | O4'-C1'-N1 | -6.19 | 103.25 | 108.20 |
| 20 | Q | 4 | ASP | CB-CA-C | 6.19 | 122.78 | 110.40 |
| 26 | W | 57 | ARG | NE-CZ-NH1 | 6.19 | 123.39 | 120.30 |
| 1 | 5 | 747 | A | C2'-C3'-O3' | 6.19 | 123.60 | 113.70 |
| 37 | h | 89 | ARG | CG-CD-NE | 6.19 | 124.79 | 111.80 |
| 15 | L | 82 | ARG | NE-CZ-NH1 | 6.19 | 123.39 | 120.30 |
| 32 | c | 90 | ARG | CA-CB-CG | 6.19 | 127.01 | 113.40 |
| 46 | q | 150 | GLY | C-N-CA | -6.18 | 106.24 | 121.70 |
| 48 | 4 | 806 | GLY | C-N-CA | -6.18 | 106.24 | 121.70 |
| 1 | 5 | 3727 | A | N9-C1'-C2' | 6.18 | 122.04 | 114.00 |
| 49 | S2 | 963 | A | N9-C1'-C2' | 6.18 | 122.04 | 114.00 |
| 14 | K | 136 | ALA | CA-C-N | 6.18 | 130.80 | 117.20 |
| 36 | g | 90 | ARG | CG-CD-NE | -6.18 | 98.82 | 111.80 |
| 35 | f | 19 | ARG | NE-CZ-NH2 | -6.18 | 117.21 | 120.30 |
| 1 | 5 | 2666 | U | C4'-C3'-C2' | -6.18 | 96.42 | 102.60 |
| 81 | Sf | 146 | LEU | N-CA-CB | 6.18 | 122.75 | 110.40 |
| 1 | 5 | 99 | A | N9-C1'-C2' | -6.17 | 105.21 | 112.00 |
| 1 | 5 | 219 | G | O4'-C1'-C2' | -6.17 | 99.62 | 105.80 |
| 1 | 5 | 962 | C | C4'-C3'-O3' | -6.17 | 96.43 | 109.40 |
| 28 | Y | 126 | ARG | NE-CZ-NH2 | -6.17 | 117.21 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 44 | o | 78 | ARG | NE-CZ-NH1 | -6.17 | 117.21 | 120.30 |
| 49 | S2 | 1668 | U | N1-C1'-C2' | 6.17 | 122.02 | 114.00 |
| 9 | F | 98 | ARG | NE-CZ-NH2 | -6.17 | 117.22 | 120.30 |
| 30 | a | 61 | TYR | CB-CG-CD1 | 6.17 | 124.70 | 121.00 |
| 48 | 4 | 432 | PRO | C-N-CA | -6.17 | 106.28 | 121.70 |
| 9 | F | 239 | GLU | CA-CB-CG | 6.16 | 126.96 | 113.40 |
| 18 | O | 117 | ARG | NE-CZ-NH1 | 6.16 | 123.38 | 120.30 |
| 49 | S2 | 1839 | U | C6-N1-C1' | -6.16 | 112.58 | 121.20 |
| 1 | 5 | 5006 | U | N1-C1'-C2' | -6.16 | 105.23 | 112.00 |
| 46 | q | 6 | ARG | C-N-CA | 6.16 | 137.10 | 121.70 |
| 1 | 5 | 2470 | C | O4'-C1'-C2' | -6.16 | 99.64 | 105.80 |
| 1 | 5 | 4579 | U | C2-N1-C1' | 6.16 | 125.09 | 117.70 |
| 9 | F | 168 | ARG | NE-CZ-NH1 | 6.15 | 123.38 | 120.30 |
| 1 | 5 | 2107 | C | C2'-C3'-O3' | 6.15 | 123.54 | 113.70 |
| 1 | 5 | 4976 | U | C5'-C4'-O4' | 6.15 | 116.48 | 109.10 |
| 1 | 5 | 2854 | G | N9-C1'-C2' | -6.15 | 105.24 | 112.00 |
| 32 | c | 39 | ARG | CG-CD-NE | -6.15 | 98.89 | 111.80 |
| 1 | 5 | 1379 | C | C5'-C4'-O4' | 6.14 | 116.47 | 109.10 |
| 1 | 5 | 1379 | C | P-O5'-C5' | 6.14 | 130.73 | 120.90 |
| 3 | 8 | 62 | A | C4-N9-C1' | -6.14 | 115.24 | 126.30 |
| 6 | C | 35 | ASP | CB-CG-OD2 | -6.14 | 112.77 | 118.30 |
| 48 | 4 | 793 | SER | C-N-CA | -6.14 | 106.34 | 121.70 |
| 49 | S2 | 1603 | G | O4'-C1'-N9 | -6.14 | 103.29 | 108.20 |
| 1 | 5 | 4239 | A | C2'-C3'-O3' | 6.14 | 123.52 | 113.70 |
| 47 | r | 45 | HIS | CB-CA-C | -6.14 | 98.12 | 110.40 |
| 33 | d | 87 | ARG | CA-CB-CG | 6.13 | 126.89 | 113.40 |
| 28 | Y | 15 | ARG | NE-CZ-NH1 | -6.13 | 117.23 | 120.30 |
| 49 | S2 | 1123 | C | O5'-P-OP1 | -6.13 | 100.18 | 105.70 |
| 1 | 5 | 4451 | G | N9-C1'-C2' | 6.13 | 121.97 | 114.00 |
| 49 | S2 | 1021 | U | N1-C1'-C2' | 6.13 | 121.97 | 114.00 |
| 73 | SX | 8 | ARG | NE-CZ-NH2 | 6.13 | 123.36 | 120.30 |
| 49 | S2 | 1735 | A | N9-C1'-C2' | 6.12 | 121.96 | 114.00 |
| 46 | q | 69 | LEU | CA-C-N | 6.12 | 130.67 | 117.20 |
| 21 | R | 9 | ARG | NE-CZ-NH1 | 6.12 | 123.36 | 120.30 |
| 49 | S2 | 1223 | A | N9-C1'-C2' | -6.12 | 105.27 | 112.00 |
| 55 | SF | 164 | ARG | CG-CD-NE | -6.12 | 98.95 | 111.80 |
| 1 | 5 | 2854 | G | C2'-C3'-O3' | 6.12 | 123.48 | 113.70 |
| 49 | S2 | 19 | A | C2'-C3'-O3' | 6.12 | 123.48 | 113.70 |
| 1 | 5 | 4880 | C | N1-C1'-C2' | 6.11 | 121.95 | 114.00 |
| 49 | S2 | 1545 | A | N9-C1'-C2' | 6.11 | 121.95 | 114.00 |
| 17 | N | 96 | ARG | NE-CZ-NH1 | -6.11 | 117.24 | 120.30 |
| 60 | SK | 8 | ARG | NE-CZ-NH1 | 6.11 | 123.36 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1614 | C | C2'-C3'-O3' | 6.11 | 123.47 | 113.70 |
| 3 | 8 | 66 | A | N9-C1'-C2' | 6.11 | 121.94 | 114.00 |
| 3 | 8 | 81 | C | O4'-C1'-N1 | 6.11 | 113.08 | 108.20 |
| 48 | 4 | 153 | PRO | O-C-N | 6.10 | 132.46 | 122.70 |
| 5 | B | 102 | PHE | CB-CA-C | -6.10 | 98.20 | 110.40 |
| 8 | E | 59 | TYR | N-CA-C | -6.10 | 94.53 | 111.00 |
| 21 | R | 107 | ARG | NE-CZ-NH1 | 6.10 | 123.35 | 120.30 |
| 1 | 5 | 514 | U | C4'-C3'-C2' | -6.10 | 96.50 | 102.60 |
| 7 | D | 145 | TYR | CA-CB-CG | -6.10 | 101.81 | 113.40 |
| 63 | SN | 128 | TYR | CB-CG-CD1 | 6.09 | 124.66 | 121.00 |
| 80 | Se | 41 | ARG | CG-CD-NE | 6.09 | 124.60 | 111.80 |
| 49 | S2 | 531 | A | C2'-C3'-O3' | 6.09 | 123.45 | 113.70 |
| 14 | K | 85 | LEU | C-N-CA | 6.09 | 136.93 | 121.70 |
| 1 | 5 | 4876 | U | N1-C1'-C2' | 6.09 | 121.92 | 114.00 |
| 33 | d | 87 | ARG | CG-CD-NE | -6.09 | 99.01 | 111.80 |
| 49 | S2 | 313 | A | N9-C1'-C2' | 6.09 | 121.92 | 114.00 |
| 1 | 5 | 1488 | G | C2'-C3'-O3' | 6.09 | 123.44 | 113.70 |
| 21 | R | 108 | ARG | NE-CZ-NH2 | -6.08 | 117.26 | 120.30 |
| 15 | L | 36 | ARG | NE-CZ-NH1 | 6.08 | 123.34 | 120.30 |
| 1 | 5 | 1214 | C | O4'-C1'-N1 | -6.08 | 103.34 | 108.20 |
| 1 | 5 | 5040 | U | C4'-C3'-O3' | -6.08 | 96.64 | 109.40 |
| 1 | 5 | 2119 | C | O4'-C1'-N1 | 6.07 | 113.06 | 108.20 |
| 1 | 5 | 1649 | U | N1-C1'-C2' | 6.07 | 121.89 | 114.00 |
| 1 | 5 | 3738 | G | N9-C1'-C2' | -6.07 | 105.33 | 112.00 |
| 59 | SJ | 20 | PHE | CB-CG-CD1 | 6.07 | 125.05 | 120.80 |
| 1 | 5 | 4948 | C | C2'-C3'-O3' | 6.06 | 123.40 | 113.70 |
| 48 | 4 | 531 | ASP | C-N-CD | 6.06 | 141.13 | 128.40 |
| 48 | 4 | 760 | TYR | CB-CG-CD2 | -6.06 | 117.36 | 121.00 |
| 49 | S2 | 1552 | G | N9-C1'-C2' | -6.06 | 105.33 | 112.00 |
| 14 | K | 130 | LYS | CD-CE-NZ | 6.06 | 125.63 | 111.70 |
| 4 | A | 83 | HIS | N-CA-C | -6.05 | 94.65 | 111.00 |
| 39 | j | 39 | TYR | CB-CA-C | -6.05 | 98.30 | 110.40 |
| 49 | S2 | 9 | U | C2'-C3'-O3' | 6.05 | 123.38 | 113.70 |
| 49 | S2 | 943 | U | C2-N1-C1' | 6.05 | 124.96 | 117.70 |
| 17 | N | 71 | ARG | NE-CZ-NH1 | 6.04 | 123.32 | 120.30 |
| 1 | 5 | 4270 | C | C2'-C3'-O3' | 6.04 | 123.37 | 113.70 |
| 1 | 5 | 4519 | C | C1'-O4'-C4' | -6.04 | 105.07 | 109.90 |
| 20 | Q | 181 | ARG | CG-CD-NE | -6.04 | 99.11 | 111.80 |
| 20 | Q | 58 | ARG | NE-CZ-NH2 | -6.04 | 117.28 | 120.30 |
| 49 | S2 | 959 | G | C2'-C3'-O3' | 6.04 | 123.36 | 113.70 |
| 1 | 5 | 235 | A | C1'-O4'-C4' | -6.04 | 105.07 | 109.90 |
| 69 | ST | 53 | PHE | CB-CG-CD1 | 6.04 | 125.03 | 120.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 35 | f | 36 | ARG | NE-CZ-NH2 | -6.03 | 117.28 | 120.30 |
| 49 | S2 | 1433 | C | C4'-C3'-C2' | -6.03 | 96.57 | 102.60 |
| 49 | S2 | 1419 | C | C2'-C3'-O3' | 6.03 | 123.35 | 113.70 |
| 49 | S2 | 1588 | A | N9-C1'-C2' | 6.03 | 121.84 | 114.00 |
| 1 | 5 | 4986 | G | N9-C1'-C2' | 6.03 | 121.84 | 114.00 |
| 14 | K | 30 | PRO | CA-C-O | -6.03 | 105.73 | 120.20 |
| 6 | C | 78 | ARG | NE-CZ-NH2 | -6.03 | 117.29 | 120.30 |
| 49 | S2 | 398 | A | N9-C1'-C2' | -6.03 | 105.37 | 112.00 |
| 1 | 5 | 3843 | C | O4'-C1'-N1 | -6.02 | 103.38 | 108.20 |
| 46 | q | 81 | HIS | CB-CA-C | 6.02 | 122.44 | 110.40 |
| 8 | E | 157 | ARG | NE-CZ-NH1 | -6.01 | 117.29 | 120.30 |
| 49 | S2 | 1433 | C | O4'-C4'-C3' | -6.01 | 97.99 | 104.00 |
| 1 | 5 | 1210 | C | N1-C1'-C2' | 6.01 | 121.81 | 114.00 |
| 1 | 5 | 4599 | A | N9-C1'-C2' | 6.01 | 121.81 | 114.00 |
| 32 | c | 56 | ARG | NE-CZ-NH1 | 6.01 | 123.31 | 120.30 |
| 49 | S2 | 1858 | G | C2'-C3'-O3' | 6.01 | 123.31 | 113.70 |
| 51 | SB | 107 | ARG | NE-CZ-NH1 | 6.00 | 123.30 | 120.30 |
| 1 | 5 | 4731 | G | O4'-C1'-N9 | 6.00 | 113.00 | 108.20 |
| 14 | K | 28 | LEU | N-CA-CB | 6.00 | 122.41 | 110.40 |
| 44 | o | 40 | ARG | NE-CZ-NH1 | 6.00 | 123.30 | 120.30 |
| 6 | C | 312 | ARG | CG-CD-NE | -6.00 | 99.20 | 111.80 |
| 19 | P | 127 | ARG | NE-CZ-NH2 | -6.00 | 117.30 | 120.30 |
| 1 | 5 | 67 | C | N1-C1'-C2' | -6.00 | 105.40 | 112.00 |
| 66 | SQ | 62 | ARG | NE-CZ-NH1 | 6.00 | 123.30 | 120.30 |
| 3 | 8 | 13 | G | N9-C1'-C2' | 6.00 | 121.80 | 114.00 |
| 2 | 7 | 58 | A | N9-C1'-C2' | -6.00 | 105.41 | 112.00 |
| 38 | i | 85 | ARG | NE-CZ-NH2 | -5.99 | 117.30 | 120.30 |
| 1 | 5 | 4694 | G | O5'-P-OP1 | -5.99 | 100.31 | 105.70 |
| 49 | S2 | 918 | U | C1'-O4'-C4' | -5.99 | 105.11 | 109.90 |
| 49 | S2 | 400 | C | N1-C1'-C2' | -5.99 | 105.41 | 112.00 |
| 1 | 5 | 1658 | G | N9-C1'-C2' | 5.99 | 121.78 | 114.00 |
| 1 | 5 | 3739 | C | O4'-C1'-C2' | -5.99 | 99.81 | 105.80 |
| 1 | 5 | 3913 | G | C2'-C3'-O3' | 5.99 | 123.28 | 113.70 |
| 1 | 5 | 2744 | A | N9-C1'-C2' | 5.98 | 121.78 | 114.00 |
| 3 | 8 | 64 | U | C2-N1-C1' | 5.98 | 124.88 | 117.70 |
| 1 | 5 | 1697 | G | O5'-P-OP2 | 5.98 | 117.88 | 110.70 |
| 49 | S2 | 1084 | A | N9-C1'-C2' | -5.98 | 105.42 | 112.00 |
| 49 | S2 | 855 | G | N9-C1'-C2' | -5.98 | 105.42 | 112.00 |
| 37 | h | 84 | ARG | CG-CD-NE | -5.98 | 99.25 | 111.80 |
| 1 | 5 | 52 | G | C2'-C3'-O3' | 5.97 | 123.26 | 113.70 |
| 1 | 5 | 1523 | A | O5'-P-OP1 | -5.97 | 100.32 | 105.70 |
| 1 | 5 | 4979 | A | N9-C1'-C2' | 5.97 | 121.77 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 2 | 7 | 58 | A | C2'-C3'-O3' | 5.97 | 123.25 | 113.70 |
| 1 | 5 | 1495 | G | N9-C1'-C2' | 5.97 | 121.76 | 114.00 |
| 1 | 5 | 4871 | C | O4'-C1'-N1 | -5.97 | 103.42 | 108.20 |
| 14 | K | 124 | GLU | N-CA-C | -5.97 | 94.89 | 111.00 |
| 51 | SB | 82 | ARG | NE-CZ-NH1 | -5.96 | 117.32 | 120.30 |
| 7 | D | 54 | ARG | CB-CG-CD | 5.96 | 127.10 | 111.60 |
| 47 | r | 103 | ARG | NE-CZ-NH1 | 5.96 | 123.28 | 120.30 |
| 65 | SP | 42 | ARG | NE-CZ-NH1 | 5.96 | 123.28 | 120.30 |
| 56 | SG | 191 | ARG | NE-CZ-NH1 | 5.96 | 123.28 | 120.30 |
| 48 | 4 | 267 | ASP | C-N-CD | 5.96 | 140.92 | 128.40 |
| 20 | Q | 166 | TYR | CB-CG-CD1 | 5.96 | 124.58 | 121.00 |
| 30 | a | 65 | ARG | CG-CD-NE | -5.96 | 99.28 | 111.80 |
| 1 | 5 | 4473 | A | C4-N9-C1' | 5.96 | 137.02 | 126.30 |
| 34 | e | 46 | ARG | NE-CZ-NH2 | -5.96 | 117.32 | 120.30 |
| 49 | S2 | 73 | C | N1-C1'-C2' | 5.96 | 121.74 | 114.00 |
| 49 | S2 | 1420 | G | C2'-C3'-O3' | 5.95 | 123.22 | 113.70 |
| 16 | M | 90 | ARG | CG-CD-NE | -5.95 | 99.31 | 111.80 |
| 1 | 5 | 2307 | A | N9-C1'-C2' | 5.95 | 121.73 | 114.00 |
| 63 | SN | 55 | ARG | CG-CD-NE | 5.95 | 124.28 | 111.80 |
| 49 | S2 | 1114 | U | C2'-C3'-O3' | 5.94 | 123.21 | 113.70 |
| 1 | 5 | 2323 | C | N1-C1'-C2' | -5.94 | 105.46 | 112.00 |
| 14 | K | 85 | LEU | CD1-CG-CD2 | 5.94 | 128.33 | 110.50 |
| 1 | 5 | 231 | U | C4'-C3'-O3' | -5.94 | 96.92 | 109.40 |
| 30 | a | 132 | ARG | NE-CZ-NH2 | -5.94 | 117.33 | 120.30 |
| 5 | B | 258 | HIS | N-CA-C | 5.94 | 127.03 | 111.00 |
| 48 | 4 | 71 | LYS | C-N-CA | -5.94 | 106.85 | 121.70 |
| 1 | 5 | 2070 | U | N1-C1'-C2' | 5.94 | 121.72 | 114.00 |
| 1 | 5 | 669 | C | C1'-O4'-C4' | -5.93 | 105.16 | 109.90 |
| 23 | T | 57 | TYR | CA-CB-CG | 5.93 | 124.67 | 113.40 |
| 1 | 5 | 3774 | A | N9-C1'-C2' | 5.93 | 121.71 | 114.00 |
| 6 | C | 102 | PHE | N-CA-CB | 5.93 | 121.27 | 110.60 |
| 49 | S2 | 482 | G | N9-C1'-C2' | -5.92 | 105.48 | 112.00 |
| 1 | 5 | 936 | C | C4'-C3'-O3' | 5.92 | 124.84 | 113.00 |
| 15 | L | 82 | ARG | CG-CD-NE | -5.92 | 99.37 | 111.80 |
| 49 | S2 | 1416 | C | C2'-C3'-O3' | 5.92 | 123.17 | 113.70 |
| 14 | K | 86 | LYS | CB-CA-C | -5.92 | 98.56 | 110.40 |
| 1 | 5 | 2515 | G | N9-C1'-C2' | -5.92 | 105.49 | 112.00 |
| 1 | 5 | 4291 | G | N9-C1'-C2' | 5.92 | 121.69 | 114.00 |
| 1 | 5 | 4479 | A | N9-C1'-C2' | -5.92 | 105.49 | 112.00 |
| 49 | S2 | 417 | C | C2'-C3'-O3' | 5.92 | 123.17 | 113.70 |
| 49 | S2 | 1823 | A | C2'-C3'-O3' | 5.92 | 123.17 | 113.70 |
| 49 | S2 | 1857 | G | C2'-C3'-O3' | 5.92 | 123.17 | 113.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 795 | A | N9-C1'-C2' | 5.92 | 121.69 | 114.00 |
| 61 | SL | 92 | TYR | CA-CB-CG | 5.92 | 124.64 | 113.40 |
| 1 | 5 | 1894 | C | N1-C1'-C2' | 5.91 | 121.69 | 114.00 |
| 34 | e | 20 | PHE | CB-CG-CD1 | -5.91 | 116.66 | 120.80 |
| 1 | 5 | 4449 | A | N9-C1'-C2' | -5.91 | 105.50 | 112.00 |
| 16 | M | 6 | PHE | CB-CA-C | 5.91 | 122.22 | 110.40 |
| 49 | S2 | 848 | U | C2-N3-C4 | -5.91 | 123.45 | 127.00 |
| 49 | S2 | 65 | C | O4'-C1'-N1 | 5.91 | 112.93 | 108.20 |
| 49 | S2 | 1309 | C | C4'-C3'-O3' | 5.90 | 124.81 | 113.00 |
| 1 | 5 | 1930 | U | O4'-C1'-N1 | -5.90 | 103.48 | 108.20 |
| 32 | c | 56 | ARG | CD-NE-CZ | 5.90 | 131.86 | 123.60 |
| 49 | S2 | 446 | G | C2'-C3'-O3' | 5.90 | 123.14 | 113.70 |
| 1 | 5 | 1398 | A | O5'-P-OP2 | -5.90 | 100.39 | 105.70 |
| 1 | 5 | 2305 | U | O4'-C4'-C3' | -5.90 | 98.10 | 104.00 |
| 1 | 5 | 2373 | C | N1-C1'-C2' | 5.90 | 121.67 | 114.00 |
| 1 | 5 | 33 | A | N9-C1'-C2' | 5.90 | 121.66 | 114.00 |
| 66 | SQ | 71 | ARG | NE-CZ-NH1 | 5.90 | 123.25 | 120.30 |
| 33 | d | 78 | ARG | NE-CZ-NH1 | 5.89 | 123.25 | 120.30 |
| 49 | S2 | 474 | G | C2'-C3'-O3' | 5.89 | 123.13 | 113.70 |
| 48 | 4 | 196 | GLU | N-CA-C | -5.89 | 95.10 | 111.00 |
| 1 | 5 | 4510 | A | N9-C1'-C2' | 5.89 | 121.65 | 114.00 |
| 1 | 5 | 2305 | U | C5'-C4'-O4' | 5.89 | 116.16 | 109.10 |
| 1 | 5 | 2322 | G | C2'-C3'-O3' | 5.89 | 123.12 | 113.70 |
| 1 | 5 | 4201 | G | N9-C1'-C2' | 5.89 | 121.65 | 114.00 |
| 1 | 5 | 1324 | A | N9-C1'-C2' | 5.88 | 121.65 | 114.00 |
| 49 | S2 | 365 | C | N1-C1'-C2' | -5.88 | 105.53 | 112.00 |
| 73 | SX | 17 | ARG | CG-CD-NE | -5.88 | 99.44 | 111.80 |
| 49 | S2 | 993 | G | C5'-C4'-O4' | 5.88 | 116.16 | 109.10 |
| 1 | 5 | 4670 | C | O4'-C1'-N1 | -5.88 | 103.50 | 108.20 |
| 8 | E | 275 | ASN | N-CA-CB | 5.88 | 121.19 | 110.60 |
| 49 | S2 | 1273 | C | N1-C1'-C2' | -5.88 | 105.53 | 112.00 |
| 1 | 5 | 53 | C | N1-C1'-C2' | -5.88 | 105.53 | 112.00 |
| 1 | 5 | 4763 | U | O4'-C1'-N1 | 5.88 | 112.90 | 108.20 |
| 61 | SL | 62 | PHE | CB-CA-C | 5.88 | 122.15 | 110.40 |
| 49 | S2 | 1477 | U | C2'-C3'-O3' | 5.88 | 123.10 | 113.70 |
| 72 | SW | 3 | ARG | CG-CD-NE | -5.87 | 99.47 | 111.80 |
| 1 | 5 | 1487 | G | C2'-C3'-O3' | 5.87 | 123.09 | 113.70 |
| 49 | S2 | 1313 | A | N9-C1'-C2' | 5.87 | 121.63 | 114.00 |
| 1 | 5 | 2642 | A | N9-C1'-C2' | -5.87 | 105.55 | 112.00 |
| 49 | S2 | 26 | U | C2'-C3'-O3' | 5.87 | 123.08 | 113.70 |
| 56 | SG | 213 | LEU | CA-CB-CG | 5.86 | 128.79 | 115.30 |
| 1 | 5 | 4074 | C | N1-C1'-C2' | 5.86 | 121.62 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 1367 | U | C2'-C3'-O3' | 5.86 | 123.08 | 113.70 |
| 1 | 5 | 1815 | G | C1'-O4'-C4' | -5.86 | 105.21 | 109.90 |
| 53 | SD | 67 | ARG | CG-CD-NE | 5.86 | 124.11 | 111.80 |
| 48 | 4 | 247 | ALA | N-CA-CB | 5.86 | 118.30 | 110.10 |
| 1 | 5 | 4199 | C | O4'-C1'-C2' | -5.86 | 99.94 | 105.80 |
| 51 | SB | 67 | PHE | N-CA-CB | -5.85 | 100.06 | 110.60 |
| 48 | 4 | 432 | PRO | O-C-N | -5.85 | 113.34 | 122.70 |
| 49 | S2 | 1868 | U | N1-C1'-C2' | 5.85 | 121.61 | 114.00 |
| 11 | H | 54 | ARG | NE-CZ-NH2 | -5.85 | 117.38 | 120.30 |
| 48 | 4 | 60 | ARG | NE-CZ-NH1 | -5.85 | 117.38 | 120.30 |
| 49 | S2 | 1356 | G | N9-C1'-C2' | 5.85 | 121.60 | 114.00 |
| 59 | SJ | 45 | ARG | NE-CZ-NH2 | -5.85 | 117.38 | 120.30 |
| 15 | L | 34 | ARG | NE-CZ-NH2 | -5.84 | 117.38 | 120.30 |
| 1 | 5 | 920 | C | C5'-C4'-O4' | 5.84 | 116.11 | 109.10 |
| 74 | SY | 76 | TYR | CB-CG-CD1 | -5.84 | 117.50 | 121.00 |
| 1 | 5 | 657 | C | C2'-C3'-O3' | 5.84 | 123.04 | 113.70 |
| 49 | S2 | 30 | C | N1-C1'-C2' | 5.84 | 121.59 | 114.00 |
| 1 | 5 | 40 | G | N9-C1'-C2' | 5.83 | 121.58 | 114.00 |
| 1 | 5 | 2448 | G | N9-C1'-C2' | 5.83 | 121.58 | 114.00 |
| 1 | 5 | 72 | C | C1'-O4'-C4' | -5.83 | 105.23 | 109.90 |
| 1 | 5 | 2586 | G | O4'-C1'-N9 | 5.83 | 112.86 | 108.20 |
| 1 | 5 | 4481 | U | C5'-C4'-O4' | 5.83 | 116.10 | 109.10 |
| 12 | I | 119 | PHE | CB-CG-CD2 | -5.83 | 116.72 | 120.80 |
| 1 | 5 | 4215 | C | O4'-C1'-C2' | -5.82 | 99.98 | 105.80 |
| 46 | q | 68 | HIS | N-CA-CB | 5.82 | 121.08 | 110.60 |
| 49 | S2 | 441 | C | C4'-C3'-O3' | -5.82 | 97.17 | 109.40 |
| 1 | 5 | 934 | C | O4'-C1'-N1 | -5.82 | 103.55 | 108.20 |
| 7 | D | 265 | ARG | NE-CZ-NH2 | -5.82 | 117.39 | 120.30 |
| 49 | S2 | 92 | A | O4'-C1'-N9 | -5.82 | 103.55 | 108.20 |
| 59 | SJ | 108 | ARG | NE-CZ-NH1 | 5.82 | 123.21 | 120.30 |
| 49 | S2 | 1835 | A | N9-C1'-C2' | 5.81 | 121.56 | 114.00 |
| 1 | 5 | 85 | G | N9-C1'-C2' | -5.81 | 105.61 | 112.00 |
| 49 | S2 | 1658 | G | N9-C1'-C2' | -5.81 | 105.61 | 112.00 |
| 49 | S2 | 548 | C | C2'-C3'-O3' | 5.81 | 123.00 | 113.70 |
| 1 | 5 | 2268 | A | O4'-C1'-N9 | -5.81 | 103.55 | 108.20 |
| 1 | 5 | 4463 | U | O4'-C1'-N1 | 5.81 | 112.85 | 108.20 |
| 49 | S2 | 454 | U | N1-C1'-C2' | 5.80 | 121.55 | 114.00 |
| 54 | SE | 121 | TYR | CA-CB-CG | -5.80 | 102.37 | 113.40 |
| 59 | SJ | 48 | PHE | CB-CG-CD1 | -5.80 | 116.74 | 120.80 |
| 12 | I | 94 | PHE | CB-CG-CD2 | -5.80 | 116.74 | 120.80 |
| 34 | e | 60 | TYR | CB-CA-C | 5.80 | 122.00 | 110.40 |
| 4 | A | 63 | PHE | CB-CG-CD2 | -5.80 | 116.74 | 120.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 918 | U | O4'-C1'-N1 | 5.80 | 112.84 | 108.20 |
| 1 | 5 | 1341 | U | N1-C1'-C2' | 5.79 | 121.53 | 114.00 |
| 1 | 5 | 4548 | A | C5'-C4'-O4' | 5.79 | 116.05 | 109.10 |
| 22 | S | 84 | TYR | CB-CG-CD1 | 5.79 | 124.48 | 121.00 |
| 49 | S2 | 649 | U | O5'-P-OP1 | -5.79 | 100.49 | 105.70 |
| 1 | 5 | 1506 | G | N9-C1'-C2' | -5.79 | 105.63 | 112.00 |
| 1 | 5 | 1650 | A | C4-N9-C1' | -5.79 | 115.88 | 126.30 |
| 1 | 5 | 4473 | A | C8-N9-C1' | -5.79 | 117.28 | 127.70 |
| 49 | S2 | 563 | G | N9-C1'-C2' | -5.79 | 105.63 | 112.00 |
| 3 | 8 | 34 | U | C3'-C2'-C1' | 5.79 | 106.13 | 101.50 |
| 52 | SC | 241 | PHE | CB-CG-CD2 | -5.79 | 116.75 | 120.80 |
| 58 | SI | 112 | TRP | CA-CB-CG | 5.79 | 124.69 | 113.70 |
| 49 | S2 | 621 | C | N1-C1'-C2' | -5.78 | 105.64 | 112.00 |
| 1 | 5 | 4481 | U | N1-C1'-C2' | 5.78 | 121.51 | 114.00 |
| 4 | A | 147 | ARG | NE-CZ-NH1 | 5.78 | 123.19 | 120.30 |
| 1 | 5 | 197 | A | N9-C1'-C2' | 5.78 | 121.51 | 114.00 |
| 3 | 8 | 81 | C | C5'-C4'-C3' | 5.78 | 125.24 | 116.00 |
| 5 | B | 117 | ARG | CG-CD-NE | -5.77 | 99.67 | 111.80 |
| 48 | 4 | 5 | THR | C-N-CA | -5.77 | 107.27 | 121.70 |
| 1 | 5 | 2807 | A | C2'-C3'-O3' | 5.77 | 122.94 | 113.70 |
| 28 | Y | 121 | ARG | NE-CZ-NH1 | 5.77 | 123.19 | 120.30 |
| 45 | p | 14 | TYR | CB-CA-C | 5.77 | 121.94 | 110.40 |
| 51 | SB | 205 | TYR | CB-CG-CD1 | -5.77 | 117.54 | 121.00 |
| 3 | 8 | 115 | G | C2'-C3'-O3' | 5.77 | 122.93 | 113.70 |
| 17 | N | 30 | TYR | N-CA-CB | -5.77 | 100.22 | 110.60 |
| 1 | 5 | 292 | G | C4-N9-C1' | -5.77 | 119.00 | 126.50 |
| 51 | SB | 133 | TYR | CA-CB-CG | 5.76 | 124.35 | 113.40 |
| 35 | f | 6 | TRP | N-CA-C | -5.76 | 95.45 | 111.00 |
| 1 | 5 | 2769 | U | O4'-C1'-N1 | 5.76 | 112.81 | 108.20 |
| 1 | 5 | 3691 | G | N9-C1'-C2' | 5.76 | 121.48 | 114.00 |
| 22 | S | 97 | TYR | CA-CB-CG | -5.75 | 102.47 | 113.40 |
| 7 | D | 35 | ARG | NE-CZ-NH2 | -5.75 | 117.42 | 120.30 |
| 49 | S2 | 662 | G | O4'-C1'-N9 | -5.75 | 103.60 | 108.20 |
| 49 | S2 | 848 | U | C6-N1-C1' | -5.75 | 113.14 | 121.20 |
| 57 | SH | 189 | PHE | CB-CA-C | 5.75 | 121.91 | 110.40 |
| 48 | 4 | 685 | TRP | CB-CG-CD2 | -5.75 | 119.12 | 126.60 |
| 79 | Sd | 40 | ARG | NE-CZ-NH1 | 5.75 | 123.17 | 120.30 |
| 68 | SS | 86 | ARG | NE-CZ-NH2 | 5.75 | 123.17 | 120.30 |
| 49 | S2 | 495 | U | C1'-C2'-O2' | -5.75 | 93.36 | 110.60 |
| 54 | SE | 99 | PHE | CB-CG-CD1 | 5.75 | 124.82 | 120.80 |
| 20 | Q | 32 | TYR | CA-CB-CG | 5.74 | 124.31 | 113.40 |
| 49 | S2 | 855 | G | C2'-C3'-O3' | 5.74 | 122.89 | 113.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 1832 | A | O5'-P-OP2 | -5.74 | 100.53 | 105.70 |
| 1 | 5 | 1398 | A | O5'-P-OP1 | 5.74 | 117.58 | 110.70 |
| 48 | 4 | 3 | ASN | N-CA-C | -5.74 | 95.51 | 111.00 |
| 76 | Sa | 87 | ARG | NE-CZ-NH2 | 5.74 | 123.17 | 120.30 |
| 1 | 5 | 2405 | G | N9-C1'-C2' | -5.74 | 105.69 | 112.00 |
| 1 | 5 | 111 | C | N1-C1'-C2' | -5.73 | 105.70 | 112.00 |
| 49 | S2 | 662 | G | N9-C1'-C2' | 5.73 | 121.45 | 114.00 |
| 49 | S2 | 594 | A | C8-N9-C1' | -5.73 | 117.39 | 127.70 |
| 1 | 5 | 2360 | A | N9-C1'-C2' | 5.72 | 121.44 | 114.00 |
| 28 | Y | 18 | HIS | N-CA-CB | 5.72 | 120.90 | 110.60 |
| 54 | SE | 18 | TRP | CB-CA-C | 5.72 | 121.85 | 110.40 |
| 1 | 5 | 88 | A | N9-C1'-C2' | 5.72 | 121.44 | 114.00 |
| 68 | SS | 82 | TRP | CA-CB-CG | 5.72 | 124.57 | 113.70 |
| 1 | 5 | 4385 | A | C2'-C3'-O3' | -5.72 | 96.92 | 109.50 |
| 8 | E | 278 | TYR | CB-CG-CD1 | -5.72 | 117.57 | 121.00 |
| 1 | 5 | 703 | G | C1'-O4'-C4' | -5.72 | 105.33 | 109.90 |
| 1 | 5 | 1438 | U | C2'-C3'-O3' | 5.72 | 122.85 | 113.70 |
| 3 | 8 | 79 | G | N9-C1'-C2' | 5.71 | 121.43 | 114.00 |
| 1 | 5 | 1285 | U | O4'-C1'-N1 | 5.71 | 112.77 | 108.20 |
| 37 | h | 119 | PHE | CB-CG-CD2 | -5.71 | 116.80 | 120.80 |
| 1 | 5 | 236 | G | N9-C1'-C2' | 5.71 | 121.42 | 114.00 |
| 48 | 4 | 669 | VAL | CB-CA-C | 5.71 | 122.25 | 111.40 |
| 1 | 5 | 1696 | C | C2'-C3'-O3' | 5.71 | 122.83 | 113.70 |
| 1 | 5 | 2119 | C | C1'-O4'-C4' | -5.71 | 105.33 | 109.90 |
| 1 | 5 | 2643 | G | C2'-C3'-O3' | 5.71 | 122.83 | 113.70 |
| 1 | 5 | 4125 | C | C4'-C3'-O3' | -5.71 | 97.41 | 109.40 |
| 9 | F | 136 | ARG | CG-CD-NE | -5.71 | 99.81 | 111.80 |
| 68 | SS | 130 | ARG | NE-CZ-NH2 | -5.71 | 117.45 | 120.30 |
| 74 | SY | 63 | HIS | N-CA-CB | 5.71 | 120.87 | 110.60 |
| 49 | S2 | 146 | G | N9-C1'-C2' | -5.70 | 105.73 | 112.00 |
| 1 | 5 | 2553 | A | C1'-O4'-C4' | -5.70 | 105.34 | 109.90 |
| 3 | 8 | 135 | C | N1-C1'-C2' | 5.70 | 121.41 | 114.00 |
| 9 | F | 100 | ILE | CG1-CB-CG2 | 5.70 | 123.94 | 111.40 |
| 4 | A | 34 | PHE | N-CA-CB | 5.70 | 120.85 | 110.60 |
| 22 | S | 10 | TYR | CB-CG-CD1 | -5.70 | 117.58 | 121.00 |
| 1 | 5 | 3686 | G | N9-C1'-C2' | -5.69 | 105.74 | 112.00 |
| 1 | 5 | 84 | A | C4-N9-C1' | -5.69 | 116.06 | 126.30 |
| 1 | 5 | 1281 | G | C5'-C4'-O4' | 5.69 | 115.93 | 109.10 |
| 28 | Y | 61 | HIS | N-CA-CB | 5.69 | 120.84 | 110.60 |
| 1 | 5 | 2118 | G | O4'-C4'-C3' | -5.69 | 98.31 | 104.00 |
| 82 | Sg | 83 | TRP | CA-CB-CG | -5.68 | 102.90 | 113.70 |
| 49 | S2 | 1842 | C | N1-C1'-C2' | 5.68 | 121.39 | 114.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1642 | A | P-O3'-C3' | 5.68 | 126.52 | 119.70 |
| 1 | 5 | 1849 | U | O5'-P-OP1 | 5.68 | 117.52 | 110.70 |
| 1 | 5 | 1494 | U | N1-C1'-C2' | 5.68 | 121.38 | 114.00 |
| 48 | 4 | 420 | LEU | CB-CG-CD2 | -5.68 | 101.34 | 111.00 |
| 21 | R | 110 | ARG | NE-CZ-NH1 | 5.68 | 123.14 | 120.30 |
| 31 | b | 17 | HIS | CB-CA-C | -5.68 | 99.05 | 110.40 |
| 2 | 7 | 7 | G | C5'-C4'-O4' | 5.67 | 115.91 | 109.10 |
| 4 | A | 37 | ARG | CG-CD-NE | -5.67 | 99.89 | 111.80 |
| 8 | E | 268 | ARG | NE-CZ-NH2 | -5.67 | 117.46 | 120.30 |
| 49 | S2 | 504 | G | N9-C1'-C2' | 5.67 | 121.38 | 114.00 |
| 56 | SG | 156 | TYR | CA-CB-CG | -5.67 | 102.62 | 113.40 |
| 1 | 5 | 2282 | A | N9-C1'-C2' | 5.67 | 121.37 | 114.00 |
| 54 | SE | 99 | PHE | CB-CG-CD2 | -5.67 | 116.83 | 120.80 |
| 49 | S2 | 369 | C | N1-C1'-C2' | 5.67 | 121.36 | 114.00 |
| 49 | S2 | 1546 | G | N9-C1'-C2' | 5.67 | 121.36 | 114.00 |
| 1 | 5 | 85 | G | O4'-C1'-C2' | -5.66 | 100.14 | 105.80 |
| 1 | 5 | 1264 | C | C2'-C3'-O3' | 5.66 | 122.76 | 113.70 |
| 41 | l | 12 | PHE | CB-CG-CD2 | -5.66 | 116.84 | 120.80 |
| 48 | 4 | 358 | LEU | C-N-CD | -5.66 | 108.14 | 120.60 |
| 1 | 5 | 100 | C | C5'-C4'-O4' | 5.66 | 115.89 | 109.10 |
| 20 | Q | 32 | TYR | CB-CG-CD2 | -5.66 | 117.60 | 121.00 |
| 49 | S2 | 1243 | U | C2'-C3'-O3' | 5.66 | 122.76 | 113.70 |
| 8 | E | 101 | ARG | NE-CZ-NH2 | 5.66 | 123.13 | 120.30 |
| 48 | 4 | 112 | SER | CA-C-N | -5.66 | 104.75 | 117.20 |
| 21 | R | 97 | ARG | CG-CD-NE | -5.66 | 99.92 | 111.80 |
| 49 | S2 | 1291 | A | C3'-C2'-C1' | 5.66 | 106.03 | 101.50 |
| 1 | 5 | 1398 | A | O4'-C1'-N9 | 5.66 | 112.72 | 108.20 |
| 1 | 5 | 3776 | G | N9-C1'-C2' | -5.66 | 105.78 | 112.00 |
| 1 | 5 | 2088 | A | N9-C1'-C2' | -5.65 | 105.78 | 112.00 |
| 1 | 5 | 2383 | C | N1-C1'-C2' | 5.65 | 121.34 | 114.00 |
| 61 | SL | 89 | ARG | CG-CD-NE | -5.65 | 99.93 | 111.80 |
| 1 | 5 | 4693 | C | O4'-C4'-C3' | -5.65 | 98.35 | 104.00 |
| 6 | C | 200 | ARG | NE-CZ-NH2 | -5.65 | 117.48 | 120.30 |
| 34 | e | 75 | ARG | CG-CD-NE | -5.65 | 99.94 | 111.80 |
| 1 | 5 | 4966 | A | C8-N9-C1' | -5.64 | 117.54 | 127.70 |
| 49 | S2 | 1395 | C | O4'-C1'-C2' | -5.64 | 100.16 | 105.80 |
| 11 | H | 180 | TYR | CA-CB-CG | 5.64 | 124.12 | 113.40 |
| 74 | SY | 61 | ARG | CG-CD-NE | -5.64 | 99.95 | 111.80 |
| 5 | B | 246 | ARG | NE-CZ-NH1 | 5.64 | 123.12 | 120.30 |
| 27 | X | 137 | TYR | CB-CG-CD1 | 5.64 | 124.38 | 121.00 |
| 49 | S2 | 382 | C | N1-C1'-C2' | 5.64 | 121.33 | 114.00 |
| 20 | Q | 104 | ARG | NE-CZ-NH1 | 5.64 | 123.12 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1639 | U | N1-C1'-C2' | 5.63 | 121.32 | 114.00 |
| 48 | 4 | 56 | PHE | N-CA-CB | 5.63 | 120.74 | 110.60 |
| 49 | S2 | 746 | C | C2'-C3'-O3' | 5.63 | 122.72 | 113.70 |
| 1 | 5 | 1876 | U | C2'-C3'-O3' | 5.63 | 122.71 | 113.70 |
| 73 | SX | 17 | ARG | NE-CZ-NH1 | -5.63 | 117.48 | 120.30 |
| 20 | Q | 176 | ARG | CG-CD-NE | -5.63 | 99.97 | 111.80 |
| 39 | j | 27 | TYR | N-CA-CB | 5.63 | 120.74 | 110.60 |
| 1 | 5 | 514 | U | C4'-C3'-O3' | 5.63 | 124.26 | 113.00 |
| 1 | 5 | 370 | U | N1-C1'-C2' | 5.63 | 121.32 | 114.00 |
| 1 | 5 | 118 | C | C2'-C3'-O3' | 5.63 | 122.70 | 113.70 |
| 1 | 5 | 5062 | G | P-O5'-C5' | 5.63 | 129.90 | 120.90 |
| 5 | B | 169 | ARG | CG-CD-NE | 5.62 | 123.61 | 111.80 |
| 46 | q | 24 | TYR | C-N-CD | 5.62 | 140.21 | 128.40 |
| 49 | S2 | 1085 | C | N1-C1'-C2' | 5.62 | 121.31 | 114.00 |
| 1 | 5 | 3773 | U | N1-C1'-C2' | -5.62 | 105.81 | 112.00 |
| 6 | C | 311 | ARG | CG-CD-NE | -5.62 | 99.99 | 111.80 |
| 49 | S2 | 649 | U | N1-C1'-C2' | 5.62 | 121.31 | 114.00 |
| 49 | S2 | 943 | U | C5'-C4'-O4' | 5.62 | 115.84 | 109.10 |
| 1 | 5 | 2686 | G | N9-C1'-C2' | -5.62 | 105.82 | 112.00 |
| 49 | S2 | 60 | A | C1'-C2'-O2' | -5.62 | 93.74 | 110.60 |
| 68 | SS | 124 | ARG | NE-CZ-NH2 | -5.62 | 117.49 | 120.30 |
| 1 | 5 | 2077 | C | N1-C1'-C2' | -5.61 | 105.83 | 112.00 |
| 6 | C | 350 | ARG | NE-CZ-NH2 | -5.61 | 117.49 | 120.30 |
| 48 | 4 | 478 | PHE | CB-CA-C | 5.61 | 121.63 | 110.40 |
| 1 | 5 | 4753 | U | C2'-C3'-O3' | 5.61 | 122.68 | 113.70 |
| 15 | L | 7 | GLY | N-CA-C | -5.61 | 99.07 | 113.10 |
| 1 | 5 | 1539 | G | C2'-C3'-O3' | 5.61 | 122.67 | 113.70 |
| 14 | K | 147 | HIS | C-N-CD | 5.61 | 140.18 | 128.40 |
| 22 | S | 94 | TYR | CA-CB-CG | -5.61 | 102.74 | 113.40 |
| 39 | j | 66 | HIS | CA-CB-CG | -5.61 | 104.07 | 113.60 |
| 10 | G | 57 | TRP | CA-CB-CG | -5.61 | 103.05 | 113.70 |
| 1 | 5 | 1932 | A | N9-C1'-C2' | 5.60 | 121.28 | 114.00 |
| 20 | Q | 68 | ARG | NE-CZ-NH2 | -5.60 | 117.50 | 120.30 |
| 1 | 5 | 2857 | A | C1'-C2'-O2' | -5.60 | 93.80 | 110.60 |
| 49 | S2 | 821 | G | O4'-C4'-C3' | -5.60 | 98.40 | 104.00 |
| 1 | 5 | 2450 | G | N9-C1'-C2' | -5.60 | 105.84 | 112.00 |
| 47 | r | 21 | ASN | CB-CA-C | 5.60 | 121.59 | 110.40 |
| 64 | SO | 121 | ARG | NE-CZ-NH1 | 5.60 | 123.10 | 120.30 |
| 65 | SP | 81 | ARG | NE-CZ-NH1 | 5.60 | 123.10 | 120.30 |
| 1 | 5 | 2665 | U | N1-C1'-C2' | -5.59 | 105.85 | 112.00 |
| 1 | 5 | 2474 | G | C2'-C3'-O3' | 5.59 | 122.64 | 113.70 |
| 1 | 5 | 2487 | G | C2'-C3'-O3' | 5.59 | 122.64 | 113.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | 8 | 39 | G | N9-C1'-C2' | -5.59 | 105.85 | 112.00 |
| 1 | 5 | 85 | G | O4'-C1'-N9 | 5.59 | 112.67 | 108.20 |
| 1 | 5 | 977 | C | C4'-C3'-C2' | -5.59 | 97.01 | 102.60 |
| 1 | 5 | 1295 | C | N1-C1'-C2' | 5.59 | 121.26 | 114.00 |
| 36 | g | 9 | ARG | CG-CD-NE | -5.58 | 100.07 | 111.80 |
| 1 | 5 | 4114 | C | N1-C1'-C2' | 5.58 | 121.26 | 114.00 |
| 46 | q | 200 | ASN | C-N-CD | 5.58 | 140.13 | 128.40 |
| 1 | 5 | 1501 | C | C1'-O4'-C4' | -5.58 | 105.43 | 109.90 |
| 29 | Z | 121 | ARG | NE-CZ-NH2 | -5.58 | 117.51 | 120.30 |
| 5 | B | 169 | ARG | NE-CZ-NH2 | -5.58 | 117.51 | 120.30 |
| 1 | 5 | 490 | C | N1-C1'-C2' | 5.58 | 121.25 | 114.00 |
| 15 | L | 6 | ASN | N-CA-CB | 5.58 | 120.64 | 110.60 |
| 49 | S2 | 26 | U | O4'-C1'-C2' | -5.58 | 100.22 | 105.80 |
| 57 | SH | 116 | ARG | NE-CZ-NH1 | 5.58 | 123.09 | 120.30 |
| 80 | Se | 38 | TYR | CA-CB-CG | 5.58 | 124.00 | 113.40 |
| 1 | 5 | 1632 | A | O4'-C1'-N9 | 5.57 | 112.66 | 108.20 |
| 49 | S2 | 1376 | A | C2'-C3'-O3' | 5.57 | 122.62 | 113.70 |
| 1 | 5 | 3773 | U | C4'-C3'-C2' | -5.57 | 97.03 | 102.60 |
| 20 | Q | 178 | ARG | CG-CD-NE | -5.57 | 100.10 | 111.80 |
| 15 | L | 163 | ARG | NE-CZ-NH1 | 5.57 | 123.08 | 120.30 |
| 51 | SB | 196 | ASP | CB-CG-OD1 | 5.57 | 123.31 | 118.30 |
| 1 | 5 | 4950 | U | N1-C1'-C2' | 5.57 | 121.24 | 114.00 |
| 12 | I | 213 | HIS | CB-CA-C | 5.57 | 121.53 | 110.40 |
| 9 | F | 72 | ARG | NE-CZ-NH2 | -5.56 | 117.52 | 120.30 |
| 46 | q | 123 | VAL | C-N-CD | 5.56 | 140.07 | 128.40 |
| 1 | 5 | 1521 | C | C2'-C3'-O3' | 5.56 | 122.59 | 113.70 |
| 1 | 5 | 4076 | G | C1'-O4'-C4' | -5.56 | 105.45 | 109.90 |
| 1 | 5 | 4767 | C | C2'-C3'-O3' | 5.56 | 122.59 | 113.70 |
| 54 | SE | 51 | ARG | NE-CZ-NH1 | -5.56 | 117.52 | 120.30 |
| 59 | SJ | 150 | ARG | NE-CZ-NH1 | 5.56 | 123.08 | 120.30 |
| 49 | S2 | 642 | U | O5'-P-OP2 | -5.55 | 100.70 | 105.70 |
| 11 | H | 115 | ARG | CG-CD-NE | -5.55 | 100.14 | 111.80 |
| 1 | 5 | 1614 | C | N1-C1'-C2' | -5.55 | 105.90 | 112.00 |
| 17 | N | 182 | HIS | N-CA-CB | 5.55 | 120.59 | 110.60 |
| 1 | 5 | 1631 | A | C5'-C4'-O4' | 5.55 | 115.76 | 109.10 |
| 7 | D | 210 | TYR | CB-CG-CD1 | -5.55 | 117.67 | 121.00 |
| 29 | Z | 28 | ASN | N-CA-C | -5.55 | 96.03 | 111.00 |
| 48 | 4 | 855 | LEU | C-N-CA | 5.54 | 135.56 | 121.70 |
| 49 | S2 | 661 | U | N1-C1'-C2' | -5.54 | 105.90 | 112.00 |
| 1 | 5 | 2396 | A | N9-C1'-C2' | 5.54 | 121.20 | 114.00 |
| 1 | 5 | 4723 | A | C5'-C4'-O4' | 5.54 | 115.75 | 109.10 |
| 1 | 5 | 1672 | U | C6-N1-C1' | -5.54 | 113.45 | 121.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 45 | p | 18 | TYR | CA-CB-CG | 5.54 | 123.92 | 113.40 |
| 9 | F | 98 | ARG | NE-CZ-NH1 | 5.54 | 123.07 | 120.30 |
| 49 | S2 | 457 | C | N1-C1'-C2' | -5.54 | 105.91 | 112.00 |
| 1 | 5 | 956 | A | N9-C1'-C2' | -5.53 | 105.91 | 112.00 |
| 1 | 5 | 1398 | A | C2'-C3'-O3' | 5.53 | 122.56 | 113.70 |
| 48 | 4 | 52 | GLY | C-N-CA | 5.53 | 135.53 | 121.70 |
| 1 | 5 | 687 | U | N1-C1'-C2' | -5.53 | 105.92 | 112.00 |
| 1 | 5 | 2468 | U | C4'-C3'-O3' | 5.53 | 124.06 | 113.00 |
| 1 | 5 | 4975 | G | O4'-C1'-N9 | 5.53 | 112.62 | 108.20 |
| 2 | 7 | 75 | G | O4'-C1'-N9 | 5.53 | 112.62 | 108.20 |
| 34 | e | 35 | TRP | CB-CG-CD1 | -5.53 | 119.81 | 127.00 |
| 1 | 5 | 3735 | G | C4'-C3'-O3' | -5.53 | 97.79 | 109.40 |
| 49 | S2 | 844 | U | C1'-O4'-C4' | -5.53 | 105.48 | 109.90 |
| 49 | S2 | 393 | U | O4'-C1'-N1 | 5.53 | 112.62 | 108.20 |
| 1 | 5 | 4944 | C | N1-C1'-C2' | 5.52 | 121.18 | 114.00 |
| 1 | 5 | 1359 | G | N9-C1'-C2' | 5.52 | 121.18 | 114.00 |
| 24 | U | 90 | TYR | CB-CA-C | -5.52 | 99.36 | 110.40 |
| 56 | SG | 191 | ARG | NE-CZ-NH2 | -5.52 | 117.54 | 120.30 |
| 20 | Q | 184 | ARG | CB-CG-CD | 5.52 | 125.95 | 111.60 |
| 30 | a | 61 | TYR | N-CA-C | -5.52 | 96.10 | 111.00 |
| 49 | S2 | 924 | G | N9-C1'-C2' | -5.52 | 105.93 | 112.00 |
| 1 | 5 | 2385 | U | N1-C1'-C2' | 5.52 | 121.17 | 114.00 |
| 34 | e | 47 | ARG | NE-CZ-NH2 | -5.52 | 117.54 | 120.30 |
| 1 | 5 | 2398 | U | C2'-C3'-O3' | 5.52 | 122.53 | 113.70 |
| 14 | K | 44 | ASP | CB-CG-OD2 | -5.51 | 113.34 | 118.30 |
| 1 | 5 | 4326 | G | N9-C1'-C2' | 5.51 | 121.17 | 114.00 |
| 51 | SB | 198 | GLU | OE1-CD-OE2 | -5.51 | 116.69 | 123.30 |
| 1 | 5 | 1282 | G | O5'-P-OP2 | 5.51 | 117.31 | 110.70 |
| 55 | SF | 204 | ARG | NE-CZ-NH1 | 5.51 | 123.06 | 120.30 |
| 1 | 5 | 3663 | A | O4'-C1'-N9 | -5.51 | 103.79 | 108.20 |
| 8 | E | 278 | TYR | CB-CG-CD2 | -5.51 | 117.69 | 121.00 |
| 1 | 5 | 421 | C | C2'-C3'-O3' | 5.51 | 122.51 | 113.70 |
| 49 | S2 | 839 | C | N1-C1'-C2' | 5.51 | 121.16 | 114.00 |
| 65 | SP | 47 | ARG | NE-CZ-NH1 | 5.51 | 123.05 | 120.30 |
| 1 | 5 | 1534 | A | P-O5'-C5' | 5.50 | 129.70 | 120.90 |
| 1 | 5 | 3667 | C | C2'-C3'-O3' | 5.50 | 122.51 | 113.70 |
| 14 | K | 85 | LEU | N-CA-CB | 5.50 | 121.41 | 110.40 |
| 47 | r | 45 | HIS | N-CA-CB | -5.50 | 100.70 | 110.60 |
| 1 | 5 | 2583 | C | C2'-C3'-O3' | 5.50 | 122.50 | 113.70 |
| 1 | 5 | 2754 | G | N9-C1'-C2' | -5.50 | 105.95 | 112.00 |
| 1 | 5 | 1827 | C | N1-C1'-C2' | 5.50 | 121.15 | 114.00 |
| 24 | U | 101 | ARG | NE-CZ-NH1 | 5.50 | 123.05 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 3905 | A | N9-C1'-C2' | -5.49 | 105.96 | 112.00 |
| 1 | 5 | 4909 | A | C1'-O4'-C4' | -5.49 | 105.50 | 109.90 |
| 1 | 5 | 4978 | G | N9-C1'-C2' | 5.49 | 121.14 | 114.00 |
| 20 | Q | 26 | ARG | NE-CZ-NH1 | 5.49 | 123.05 | 120.30 |
| 8 | E | 153 | HIS | N-CA-CB | -5.49 | 100.72 | 110.60 |
| 1 | 5 | 2852 | U | O4'-C1'-C2' | -5.49 | 100.31 | 105.80 |
| 48 | 4 | 267 | ASP | CA-C-O | -5.49 | 108.57 | 120.10 |
| 49 | S2 | 447 | A | C1'-O4'-C4' | -5.49 | 105.51 | 109.90 |
| 1 | 5 | 3634 | G | C2'-C3'-O3' | 5.49 | 122.48 | 113.70 |
| 10 | G | 235 | ARG | NE-CZ-NH2 | -5.48 | 117.56 | 120.30 |
| 32 | c | 78 | ASN | N-CA-CB | 5.48 | 120.47 | 110.60 |
| 49 | S2 | 1292 | C | O4'-C4'-C3' | -5.48 | 98.52 | 104.00 |
| 1 | 5 | 1734 | G | N9-C1'-C2' | -5.48 | 105.97 | 112.00 |
| 20 | Q | 75 | ARG | NE-CZ-NH2 | -5.48 | 117.56 | 120.30 |
| 49 | S2 | 1432 | U | N1-C1'-C2' | 5.48 | 121.12 | 114.00 |
| 1 | 5 | 210 | C | N1-C1'-C2' | 5.48 | 121.12 | 114.00 |
| 1 | 5 | 3912 | U | C1'-C2'-O2' | -5.48 | 94.17 | 110.60 |
| 1 | 5 | 4731 | G | N9-C1'-C2' | 5.48 | 121.12 | 114.00 |
| 35 | f | 6 | TRP | CB-CA-C | 5.48 | 121.36 | 110.40 |
| 68 | SS | 11 | HIS | CB-CA-C | 5.48 | 121.35 | 110.40 |
| 1 | 5 | 2268 | A | C2'-C3'-O3' | 5.47 | 122.46 | 113.70 |
| 1 | 5 | 2858 | A | N9-C1'-C2' | 5.47 | 121.12 | 114.00 |
| 1 | 5 | 1211 | G | N9-C1'-C2' | -5.47 | 105.98 | 112.00 |
| 1 | 5 | 2360 | A | O4'-C1'-N9 | -5.47 | 103.82 | 108.20 |
| 1 | 5 | 4713 | G | C2'-C3'-O3' | 5.47 | 122.46 | 113.70 |
| 14 | K | 114 | ARG | NE-CZ-NH2 | -5.47 | 117.56 | 120.30 |
| 49 | S2 | 868 | G | N9-C1'-C2' | -5.47 | 105.98 | 112.00 |
| 52 | SC | 97 | PHE | CB-CG-CD2 | -5.47 | 116.97 | 120.80 |
| 1 | 5 | 2056 | G | N9-C1'-C2' | -5.47 | 105.98 | 112.00 |
| 21 | R | 60 | ARG | NE-CZ-NH1 | 5.47 | 123.04 | 120.30 |
| 4 | A | 211 | PHE | CB-CG-CD2 | -5.47 | 116.97 | 120.80 |
| 49 | S2 | 1419 | C | O5'-P-OP2 | -5.47 | 100.78 | 105.70 |
| 1 | 5 | 3886 | G | N9-C1'-C2' | -5.47 | 105.98 | 112.00 |
| 1 | 5 | 4873 | G | N9-C1'-C2' | 5.46 | 121.10 | 114.00 |
| 49 | S2 | 381 | C | C3'-C2'-C1' | 5.46 | 105.87 | 101.50 |
| 1 | 5 | 2117 | G | O4'-C4'-C3' | -5.46 | 98.54 | 104.00 |
| 1 | 5 | 3906 | A | N9-C1'-C2' | -5.46 | 105.99 | 112.00 |
| 63 | SN | 64 | ARG | NE-CZ-NH1 | 5.46 | 123.03 | 120.30 |
| 64 | SO | 128 | ARG | NE-CZ-NH2 | -5.46 | 117.57 | 120.30 |
| 41 | l | 45 | ARG | CB-CG-CD | 5.46 | 125.79 | 111.60 |
| 1 | 5 | 1626 | G | N9-C1'-C2' | -5.46 | 106.00 | 112.00 |
| 1 | 5 | 4909 | A | O4'-C1'-N9 | 5.46 | 112.56 | 108.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 53 | SD | 65 | ARG | NE-CZ-NH1 | 5.46 | 123.03 | 120.30 |
| 22 | S | 152 | PHE | CB-CG-CD2 | -5.45 | 116.98 | 120.80 |
| 49 | S2 | 31 | U | N1-C1'-C2' | 5.45 | 121.09 | 114.00 |
| 49 | S2 | 1698 | C | N1-C1'-C2' | 5.45 | 121.08 | 114.00 |
| 1 | 5 | 977 | C | C5'-C4'-O4' | 5.45 | 115.64 | 109.10 |
| 49 | S2 | 604 | A | C2'-C3'-O3' | 5.45 | 122.42 | 113.70 |
| 27 | X | 129 | ARG | NE-CZ-NH2 | 5.45 | 123.02 | 120.30 |
| 34 | e | 43 | ASN | CB-CA-C | 5.44 | 121.29 | 110.40 |
| 1 | 5 | 1464 | C | N1-C1'-C2' | -5.44 | 106.01 | 112.00 |
| 1 | 5 | 4076 | G | O4'-C1'-N9 | 5.44 | 112.56 | 108.20 |
| 38 | i | 26 | HIS | N-CA-CB | 5.44 | 120.39 | 110.60 |
| 49 | S2 | 1315 | U | C2'-C3'-O3' | 5.44 | 122.40 | 113.70 |
| 22 | S | 171 | ARG | CG-CD-NE | 5.44 | 123.22 | 111.80 |
| 1 | 5 | 2054 | U | C1'-O4'-C4' | -5.44 | 105.55 | 109.90 |
| 34 | e | 36 | ARG | NE-CZ-NH1 | -5.44 | 117.58 | 120.30 |
| 49 | S2 | 619 | A | C3'-C2'-C1' | -5.44 | 97.15 | 101.50 |
| 5 | B | 117 | ARG | NE-CZ-NH1 | 5.44 | 123.02 | 120.30 |
| 1 | 5 | 1852 | U | N1-C1'-C2' | -5.43 | 106.02 | 112.00 |
| 1 | 5 | 2673 | G | C1'-O4'-C4' | -5.43 | 105.55 | 109.90 |
| 14 | K | 28 | LEU | N-CA-C | -5.43 | 96.33 | 111.00 |
| 1 | 5 | 372 | A | N9-C1'-C2' | 5.43 | 121.06 | 114.00 |
| 1 | 5 | 398 | A | N9-C1'-C2' | 5.43 | 121.06 | 114.00 |
| 4 | A | 16 | PHE | CB-CA-C | 5.43 | 121.26 | 110.40 |
| 14 | K | 114 | ARG | NH1-CZ-NH2 | -5.43 | 113.42 | 119.40 |
| 27 | X | 117 | TYR | CB-CA-C | 5.43 | 121.27 | 110.40 |
| 34 | e | 36 | ARG | NE-CZ-NH2 | 5.43 | 123.02 | 120.30 |
| 1 | 5 | 1365 | C | C4'-C3'-O3' | 5.43 | 123.86 | 113.00 |
| 1 | 5 | 3875 | G | C2'-C3'-O3' | 5.43 | 122.39 | 113.70 |
| 61 | SL | 100 | ASN | N-CA-C | 5.43 | 125.66 | 111.00 |
| 38 | i | 29 | ARG | NE-CZ-NH1 | 5.43 | 123.01 | 120.30 |
| 47 | r | 103 | ARG | NE-CZ-NH2 | -5.43 | 117.59 | 120.30 |
| 49 | S2 | 1557 | C | N1-C1'-C2' | -5.43 | 106.03 | 112.00 |
| 1 | 5 | 2325 | C | O4'-C1'-C2' | -5.42 | 100.38 | 105.80 |
| 1 | 5 | 4579 | U | C6-N1-C1' | -5.42 | 113.61 | 121.20 |
| 1 | 5 | 4745 | G | N9-C1'-C2' | 5.42 | 121.05 | 114.00 |
| 5 | B | 119 | TYR | CB-CA-C | 5.42 | 121.25 | 110.40 |
| 1 | 5 | 1724 | G | C8-N9-C1' | -5.42 | 119.95 | 127.00 |
| 37 | h | 70 | ARG | NE-CZ-NH2 | 5.42 | 123.01 | 120.30 |
| 8 | E | 129 | PHE | CB-CG-CD1 | 5.42 | 124.60 | 120.80 |
| 46 | q | 69 | LEU | C-N-CA | 5.42 | 135.25 | 121.70 |
| 1 | 5 | 280 | G | C1'-O4'-C4' | -5.42 | 105.56 | 109.90 |
| 1 | 5 | 4915 | G | C2'-C3'-O3' | 5.42 | 122.37 | 113.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 579 | C | N1-C1'-C2' | -5.42 | 106.04 | 112.00 |
| 22 | S | 28 | TYR | CA-CB-CG | 5.41 | 123.69 | 113.40 |
| 1 | 5 | 1667 | G | C2'-C3'-O3' | 5.41 | 122.36 | 113.70 |
| 1 | 5 | 3898 | G | C2'-C3'-O3' | 5.41 | 122.36 | 113.70 |
| 18 | O | 128 | ARG | NE-CZ-NH2 | 5.41 | 123.01 | 120.30 |
| 25 | V | 14 | PHE | CB-CG-CD2 | -5.41 | 117.01 | 120.80 |
| 64 | SO | 117 | ARG | NE-CZ-NH1 | -5.41 | 117.59 | 120.30 |
| 1 | 5 | 4481 | U | C2-N1-C1' | 5.41 | 124.19 | 117.70 |
| 31 | b | 6 | ASN | CB-CA-C | 5.41 | 121.22 | 110.40 |
| 1 | 5 | 1272 | C | O4'-C1'-C2' | -5.41 | 100.39 | 105.80 |
| 1 | 5 | 2014 | C | C2'-C3'-O3' | 5.41 | 122.35 | 113.70 |
| 10 | G | 49 | ARG | CG-CD-NE | -5.40 | 100.45 | 111.80 |
| 48 | 4 | 760 | TYR | CB-CA-C | -5.40 | 99.59 | 110.40 |
| 1 | 5 | 3648 | A | C1'-O4'-C4' | -5.40 | 105.58 | 109.90 |
| 44 | o | 26 | TYR | CB-CG-CD1 | 5.40 | 124.24 | 121.00 |
| 1 | 5 | 693 | C | C2'-C3'-O3' | 5.39 | 122.33 | 113.70 |
| 1 | 5 | 4280 | A | C4'-C3'-C2' | -5.39 | 97.21 | 102.60 |
| 21 | R | 108 | ARG | CD-NE-CZ | 5.39 | 131.15 | 123.60 |
| 49 | S2 | 1643 | U | C1'-C2'-O2' | -5.39 | 94.43 | 110.60 |
| 1 | 5 | 293 | G | C2'-C3'-O3' | 5.39 | 122.32 | 113.70 |
| 49 | S2 | 578 | C | C2'-C3'-O3' | 5.39 | 122.32 | 113.70 |
| 19 | P | 42 | ARG | CG-CD-NE | 5.38 | 123.11 | 111.80 |
| 49 | S2 | 444 | G | O4'-C1'-C2' | -5.38 | 100.42 | 105.80 |
| 49 | S2 | 1662 | U | N1-C1'-C2' | -5.38 | 106.08 | 112.00 |
| 1 | 5 | 2348 | G | O4'-C1'-N9 | -5.38 | 103.89 | 108.20 |
| 42 | m | 106 | ARG | NE-CZ-NH1 | 5.38 | 122.99 | 120.30 |
| 17 | N | 192 | TRP | N-CA-CB | -5.38 | 100.92 | 110.60 |
| 20 | Q | 174 | PHE | CB-CG-CD1 | -5.38 | 117.04 | 120.80 |
| 49 | S2 | 1415 | C | N1-C1'-C2' | 5.38 | 120.99 | 114.00 |
| 1 | 5 | 2272 | C | C1'-C2'-O2' | -5.37 | 94.48 | 110.60 |
| 69 | ST | 67 | ARG | NE-CZ-NH1 | 5.37 | 122.99 | 120.30 |
| 1 | 5 | 1588 | U | N1-C1'-C2' | 5.37 | 120.98 | 114.00 |
| 1 | 5 | 4975 | G | N9-C1'-C2' | -5.37 | 106.09 | 112.00 |
| 3 | 8 | 68 | G | N9-C1'-C2' | 5.37 | 120.97 | 114.00 |
| 13 | J | 32 | ARG | CG-CD-NE | -5.37 | 100.53 | 111.80 |
| 22 | S | 81 | TRP | N-CA-C | -5.37 | 96.51 | 111.00 |
| 2 | 7 | 59 | G | N9-C1'-C2' | -5.36 | 106.10 | 112.00 |
| 8 | E | 236 | TYR | CA-CB-CG | -5.36 | 103.21 | 113.40 |
| 38 | i | 39 | PHE | CB-CG-CD1 | -5.36 | 117.05 | 120.80 |
| 49 | S2 | 426 | A | C4'-C3'-O3' | 5.36 | 123.72 | 113.00 |
| 1 | 5 | 1975 | G | O4'-C1'-N9 | -5.36 | 103.91 | 108.20 |
| 1 | 5 | 3625 | G | C4'-C3'-O3' | -5.36 | 98.15 | 109.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 59 | SJ | 64 | ASP | CB-CG-OD1 | -5.36 | 113.48 | 118.30 |
| 4 | A | 19 | HIS | N-CA-CB | -5.35 | 100.96 | 110.60 |
| 49 | S2 | 1567 | G | C1'-O4'-C4' | -5.35 | 105.62 | 109.90 |
| 49 | S2 | 1292 | C | C5'-C4'-C3' | 5.35 | 124.56 | 116.00 |
| 1 | 5 | 3590 | G | C2'-C3'-O3' | 5.35 | 122.26 | 113.70 |
| 1 | 5 | 4228 | G | O4'-C1'-N9 | 5.35 | 112.48 | 108.20 |
| 49 | S2 | 1136 | U | N1-C1'-C2' | 5.35 | 120.95 | 114.00 |
| 1 | 5 | 703 | G | N9-C1'-C2' | -5.34 | 106.12 | 112.00 |
| 1 | 5 | 82 | U | N1-C1'-C2' | -5.34 | 106.12 | 112.00 |
| 3 | 8 | 34 | U | C2-N1-C1' | -5.34 | 111.29 | 117.70 |
| 49 | S2 | 56 | G | N9-C1'-C2' | 5.34 | 120.94 | 114.00 |
| 1 | 5 | 1390 | G | N9-C1'-C2' | -5.34 | 106.13 | 112.00 |
| 1 | 5 | 3626 | G | N9-C1'-C2' | -5.34 | 106.13 | 112.00 |
| 1 | 5 | 4302 | U | N1-C1'-C2' | -5.34 | 106.13 | 112.00 |
| 11 | H | 115 | ARG | CA-CB-CG | 5.34 | 125.15 | 113.40 |
| 1 | 5 | 911 | U | C2'-C3'-O3' | 5.34 | 122.24 | 113.70 |
| 1 | 5 | 4883 | C | O4'-C1'-N1 | 5.33 | 112.47 | 108.20 |
| 7 | D | 20 | PHE | CB-CA-C | 5.33 | 121.06 | 110.40 |
| 12 | I | 139 | ARG | CB-CG-CD | -5.33 | 97.73 | 111.60 |
| 63 | SN | 55 | ARG | NE-CZ-NH1 | 5.33 | 122.97 | 120.30 |
| 1 | 5 | 416 | U | N1-C1'-C2' | 5.33 | 120.93 | 114.00 |
| 5 | B | 62 | ARG | NE-CZ-NH2 | -5.33 | 117.63 | 120.30 |
| 40 | k | 16 | ARG | NE-CZ-NH1 | 5.33 | 122.97 | 120.30 |
| 49 | S2 | 438 | G | N9-C1'-C2' | 5.33 | 120.93 | 114.00 |
| 49 | S2 | 1666 | C | N1-C1'-C2' | 5.33 | 120.93 | 114.00 |
| 1 | 5 | 215 | C | C4'-C3'-O3' | -5.33 | 98.22 | 109.40 |
| 1 | 5 | 3726 | A | N9-C1'-C2' | 5.33 | 120.92 | 114.00 |
| 23 | T | 140 | PHE | CB-CA-C | -5.33 | 99.75 | 110.40 |
| 81 | Sf | 148 | TYR | C-N-CA | 5.33 | 135.02 | 121.70 |
| 9 | F | 136 | ARG | CA-CB-CG | 5.32 | 125.11 | 113.40 |
| 74 | SY | 20 | ARG | NE-CZ-NH2 | 5.32 | 122.96 | 120.30 |
| 73 | SX | 17 | ARG | NE-CZ-NH2 | 5.32 | 122.96 | 120.30 |
| 37 | h | 72 | PHE | CB-CG-CD2 | -5.32 | 117.08 | 120.80 |
| 49 | S2 | 553 | U | N1-C1'-C2' | 5.32 | 120.92 | 114.00 |
| 78 | Sc | 44 | ARG | CD-NE-CZ | 5.32 | 131.05 | 123.60 |
| 27 | X | 79 | PHE | CB-CG-CD1 | 5.32 | 124.52 | 120.80 |
| 67 | SR | 33 | ARG | CG-CD-NE | -5.32 | 100.64 | 111.80 |
| 7 | D | 66 | TYR | CB-CG-CD1 | 5.32 | 124.19 | 121.00 |
| 46 | q | 165 | ASP | CB-CG-OD2 | 5.31 | 123.08 | 118.30 |
| 49 | S2 | 1034 | A | N9-C1'-C2' | 5.31 | 120.91 | 114.00 |
| 17 | N | 192 | TRP | CB-CG-CD1 | -5.31 | 120.10 | 127.00 |
| 49 | S2 | 646 | G | N9-C1'-C2' | -5.31 | 106.16 | 112.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 8 | E | 212 | TYR | CA-CB-CG | 5.31 | 123.49 | 113.40 |
| 12 | I | 98 | ARG | NE-CZ-NH2 | 5.31 | 122.95 | 120.30 |
| 25 | V | 97 | TYR | CB-CA-C | 5.31 | 121.02 | 110.40 |
| 13 | J | 147 | ARG | NE-CZ-NH2 | -5.30 | 117.65 | 120.30 |
| 1 | 5 | 1632 | A | N9-C1'-C2' | -5.30 | 106.17 | 112.00 |
| 14 | K | 44 | ASP | CB-CG-OD1 | 5.30 | 123.07 | 118.30 |
| 17 | N | 143 | ARG | NE-CZ-NH2 | -5.30 | 117.65 | 120.30 |
| 47 | r | 77 | TYR | CB-CG-CD2 | -5.30 | 117.82 | 121.00 |
| 48 | 4 | 55 | ARG | C-N-CA | 5.30 | 134.95 | 121.70 |
| 62 | SM | 26 | LEU | CA-CB-CG | 5.30 | 127.49 | 115.30 |
| 1 | 5 | 2056 | G | P-O5'-C5' | -5.30 | 112.42 | 120.90 |
| 1 | 5 | 4528 | G | O4'-C1'-C2' | -5.30 | 100.50 | 105.80 |
| 15 | L | 198 | ARG | NE-CZ-NH2 | -5.30 | 117.65 | 120.30 |
| 1 | 5 | 3753 | G | C2'-C3'-O3' | 5.29 | 122.17 | 113.70 |
| 50 | SA | 39 | TYR | CA-CB-CG | 5.29 | 123.46 | 113.40 |
| 1 | 5 | 212 | A | N9-C1'-C2' | 5.29 | 120.88 | 114.00 |
| 48 | 4 | 826 | ASP | N-CA-C | -5.29 | 96.70 | 111.00 |
| 49 | S2 | 1202 | U | C2'-C3'-O3' | 5.29 | 122.17 | 113.70 |
| 41 | l | 45 | ARG | CG-CD-NE | -5.29 | 100.69 | 111.80 |
| 69 | ST | 83 | GLN | CA-CB-CG | 5.29 | 125.04 | 113.40 |
| 52 | SC | 236 | PHE | CB-CG-CD1 | -5.29 | 117.10 | 120.80 |
| 58 | SI | 49 | ARG | NE-CZ-NH2 | -5.29 | 117.66 | 120.30 |
| 1 | 5 | 2817 | C | C2'-C3'-O3' | 5.29 | 122.16 | 113.70 |
| 6 | C | 110 | ARG | NE-CZ-NH1 | 5.29 | 122.94 | 120.30 |
| 49 | S2 | 114 | G | N9-C1'-C2' | -5.29 | 106.19 | 112.00 |
| 20 | Q | 75 | ARG | CG-CD-NE | 5.28 | 122.89 | 111.80 |
| 61 | SL | 17 | PHE | N-CA-CB | 5.28 | 120.11 | 110.60 |
| 1 | 5 | 3692 | A | N9-C1'-C2' | -5.28 | 106.19 | 112.00 |
| 49 | S2 | 983 | A | C5'-C4'-O4' | 5.28 | 115.44 | 109.10 |
| 1 | 5 | 3739 | C | C2'-C3'-O3' | 5.28 | 122.15 | 113.70 |
| 49 | S2 | 800 | U | O4'-C4'-C3' | -5.28 | 98.72 | 104.00 |
| 1 | 5 | 2263 | A | C2'-C3'-O3' | 5.28 | 122.14 | 113.70 |
| 9 | F | 228 | HIS | CA-CB-CG | -5.28 | 104.63 | 113.60 |
| 5 | B | 246 | ARG | NE-CZ-NH2 | -5.28 | 117.66 | 120.30 |
| 82 | Sg | 15 | ASN | CB-CA-C | 5.28 | 120.95 | 110.40 |
| 5 | B | 274 | TYR | CB-CG-CD1 | -5.27 | 117.84 | 121.00 |
| 27 | X | 137 | TYR | CA-CB-CG | 5.27 | 123.42 | 113.40 |
| 33 | d | 44 | ARG | NE-CZ-NH2 | -5.27 | 117.66 | 120.30 |
| 48 | 4 | 409 | ARG | CB-CA-C | 5.27 | 120.94 | 110.40 |
| 60 | SK | 43 | LEU | CA-CB-CG | 5.27 | 127.42 | 115.30 |
| 63 | SN | 55 | ARG | NE-CZ-NH2 | -5.27 | 117.66 | 120.30 |
| 1 | 5 | 1211 | G | C4'-C3'-C2' | -5.27 | 97.33 | 102.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1390 | G | C2'-C3'-O3' | 5.27 | 122.13 | 113.70 |
| 1 | 5 | 4497 | U | C2'-C3'-O3' | 5.27 | 122.13 | 113.70 |
| 13 | J | 54 | ARG | NE-CZ-NH1 | 5.26 | 122.93 | 120.30 |
| 35 | f | 102 | ARG | NE-CZ-NH1 | 5.26 | 122.93 | 120.30 |
| 49 | S2 | 1243 | U | O5'-P-OP2 | -5.26 | 100.96 | 105.70 |
| 74 | SY | 86 | GLU | CB-CG-CD | -5.26 | 99.99 | 114.20 |
| 35 | f | 19 | ARG | CG-CD-NE | -5.26 | 100.75 | 111.80 |
| 46 | q | 204 | LEU | C-N-CA | -5.26 | 108.55 | 121.70 |
| 1 | 5 | 4736 | C | N1-C1'-C2' | 5.26 | 120.84 | 114.00 |
| 13 | J | 147 | ARG | NE-CZ-NH1 | 5.26 | 122.93 | 120.30 |
| 49 | S2 | 1097 | G | C2'-C3'-O3' | 5.26 | 122.11 | 113.70 |
| 9 | F | 136 | ARG | NE-CZ-NH1 | 5.25 | 122.93 | 120.30 |
| 46 | q | 22 | ASP | CB-CG-OD2 | 5.25 | 123.03 | 118.30 |
| 1 | 5 | 216 | C | C2'-C3'-O3' | 5.25 | 122.10 | 113.70 |
| 48 | 4 | 542 | GLY | N-CA-C | -5.25 | 99.98 | 113.10 |
| 51 | SB | 67 | PHE | CB-CG-CD2 | -5.25 | 117.13 | 120.80 |
| 1 | 5 | 4463 | U | O4'-C1'-C2' | -5.25 | 100.55 | 105.80 |
| 25 | V | 128 | LEU | CA-CB-CG | 5.25 | 127.37 | 115.30 |
| 58 | SI | 188 | TYR | CB-CG-CD1 | -5.24 | 117.86 | 121.00 |
| 48 | 4 | 102 | LEU | N-CA-C | -5.24 | 96.85 | 111.00 |
| 5 | B | 119 | TYR | CA-CB-CG | -5.24 | 103.45 | 113.40 |
| 49 | S2 | 943 | U | C6-N1-C1' | -5.24 | 113.86 | 121.20 |
| 17 | N | 114 | ARG | NE-CZ-NH2 | -5.24 | 117.68 | 120.30 |
| 49 | S2 | 501 | C | O4'-C1'-C2' | -5.24 | 100.56 | 105.80 |
| 56 | SG | 198 | ARG | NE-CZ-NH1 | 5.24 | 122.92 | 120.30 |
| 36 | g | 14 | ASN | N-CA-C | -5.24 | 96.86 | 111.00 |
| 19 | P | 30 | ARG | NE-CZ-NH2 | -5.23 | 117.68 | 120.30 |
| 1 | 5 | 2753 | G | C2'-C3'-O3' | 5.23 | 122.07 | 113.70 |
| 1 | 5 | 3666 | C | N1-C1'-C2' | -5.23 | 106.24 | 112.00 |
| 46 | q | 117 | ALA | C-N-CD | 5.23 | 139.39 | 128.40 |
| 48 | 4 | 47 | ALA | O-C-N | 5.23 | 131.07 | 122.70 |
| 69 | ST | 53 | PHE | N-CA-CB | -5.23 | 101.18 | 110.60 |
| 28 | Y | 87 | ARG | CD-NE-CZ | 5.23 | 130.92 | 123.60 |
| 49 | S2 | 368 | U | C2'-C3'-O3' | 5.23 | 122.07 | 113.70 |
| 56 | SG | 74 | ARG | NE-CZ-NH1 | 5.23 | 122.92 | 120.30 |
| 35 | f | 19 | ARG | CA-CB-CG | 5.23 | 124.90 | 113.40 |
| 48 | 4 | 123 | ASP | C-N-CA | 5.22 | 133.27 | 122.30 |
| 49 | S2 | 1578 | U | O4'-C1'-N1 | -5.22 | 104.02 | 108.20 |
| 49 | S2 | 1663 | A | C1'-O4'-C4' | -5.22 | 105.72 | 109.90 |
| 1 | 5 | 4328 | G | N9-C1'-C2' | -5.22 | 106.26 | 112.00 |
| 5 | B | 25 | HIS | CB-CA-C | 5.22 | 120.84 | 110.40 |
| 1 | 5 | 1886 | G | N9-C1'-C2' | -5.22 | 106.26 | 112.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 4966 | A | C4-N9-C1' | 5.22 | 135.69 | 126.30 |
| 4 | A | 89 | TYR | CB-CA-C | 5.22 | 120.84 | 110.40 |
| 9 | F | 58 | HIS | N-CA-CB | 5.22 | 120.00 | 110.60 |
| 49 | S2 | 1093 | A | C5'-C4'-O4' | 5.22 | 115.36 | 109.10 |
| 1 | 5 | 2325 | C | C2'-C3'-O3' | 5.22 | 122.05 | 113.70 |
| 1 | 5 | 1 | C | C3'-C2'-C1' | -5.22 | 97.33 | 101.50 |
| 14 | K | 144 | ASP | CB-CG-OD2 | 5.22 | 123.00 | 118.30 |
| 20 | Q | 38 | ARG | NE-CZ-NH2 | -5.21 | 117.69 | 120.30 |
| 49 | S2 | 1542 | C | C1'-C2'-O2' | -5.21 | 94.96 | 110.60 |
| 28 | Y | 45 | ARG | NE-CZ-NH1 | 5.21 | 122.91 | 120.30 |
| 49 | S2 | 65 | C | C2'-C3'-O3' | 5.21 | 122.04 | 113.70 |
| 1 | 5 | 1484 | G | O4'-C4'-C3' | -5.21 | 98.79 | 104.00 |
| 49 | S2 | 1167 | G | N9-C1'-C2' | 5.21 | 120.78 | 114.00 |
| 1 | 5 | 223 | G | N9-C1'-C2' | -5.21 | 106.27 | 112.00 |
| 1 | 5 | 2262 | G | N9-C1'-C2' | 5.21 | 120.77 | 114.00 |
| 1 | 5 | 1642 | A | C5'-C4'-O4' | 5.21 | 115.35 | 109.10 |
| 33 | d | 24 | GLU | CA-CB-CG | 5.21 | 124.86 | 113.40 |
| 1 | 5 | 2467 | U | N1-C1'-C2' | -5.20 | 106.28 | 112.00 |
| 21 | R | 108 | ARG | CG-CD-NE | 5.20 | 122.73 | 111.80 |
| 56 | SG | 156 | TYR | CB-CA-C | 5.20 | 120.81 | 110.40 |
| 1 | 5 | 931 | C | N1-C1'-C2' | 5.20 | 120.76 | 114.00 |
| 20 | Q | 168 | ARG | NE-CZ-NH1 | 5.20 | 122.90 | 120.30 |
| 1 | 5 | 1698 | C | O5'-P-OP1 | -5.20 | 101.02 | 105.70 |
| 46 | q | 72 | ASN | C-N-CD | -5.20 | 109.16 | 120.60 |
| 1 | 5 | 267 | G | C2'-C3'-O3' | 5.20 | 122.02 | 113.70 |
| 28 | Y | 87 | ARG | NE-CZ-NH1 | -5.20 | 117.70 | 120.30 |
| 1 | 5 | 2310 | C | C2'-C3'-O3' | 5.20 | 122.01 | 113.70 |
| 18 | O | 178 | ARG | NE-CZ-NH2 | -5.20 | 117.70 | 120.30 |
| 49 | S2 | 1579 | A | C2'-C3'-O3' | 5.20 | 122.01 | 113.70 |
| 54 | SE | 30 | ARG | NE-CZ-NH1 | 5.20 | 122.90 | 120.30 |
| 68 | SS | 124 | ARG | CG-CD-NE | 5.20 | 122.71 | 111.80 |
| 21 | R | 124 | TYR | CA-CB-CG | 5.19 | 123.27 | 113.40 |
| 1 | 5 | 63 | G | N9-C1'-C2' | 5.19 | 120.75 | 114.00 |
| 1 | 5 | 1394 | G | N9-C1'-C2' | 5.19 | 120.75 | 114.00 |
| 14 | K | 154 | ASP | CB-CG-OD2 | 5.19 | 122.97 | 118.30 |
| 49 | S2 | 672 | A | C3'-C2'-C1' | -5.19 | 97.35 | 101.50 |
| 1 | 5 | 272 | U | N1-C1'-C2' | 5.18 | 120.74 | 114.00 |
| 17 | N | 63 | ARG | NE-CZ-NH2 | -5.18 | 117.71 | 120.30 |
| 48 | 4 | 196 | GLU | N-CA-CB | 5.18 | 119.93 | 110.60 |
| 49 | S2 | 594 | A | C4'-C3'-O3' | 5.18 | 123.37 | 113.00 |
| 14 | K | 44 | ASP | CA-C-O | -5.18 | 109.22 | 120.10 |
| 35 | f | 51 | TYR | CA-CB-CG | 5.18 | 123.25 | 113.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 46 | q | 118 | PRO | CA-N-CD | -5.18 | 104.24 | 111.50 |
| 68 | SS | 95 | TYR | CB-CG-CD2 | -5.18 | 117.89 | 121.00 |
| 1 | 5 | 194 | C | N1-C1'-C2' | -5.18 | 106.30 | 112.00 |
| 48 | 4 | 794 | PHE | N-CA-C | -5.18 | 97.02 | 111.00 |
| 49 | S2 | 1292 | C | C5'-C4'-O4' | 5.18 | 115.31 | 109.10 |
| 1 | 5 | 172 | C | O4'-C1'-C2' | -5.18 | 100.62 | 105.80 |
| 17 | N | 65 | ARG | NE-CZ-NH2 | 5.18 | 122.89 | 120.30 |
| 53 | SD | 159 | HIS | CA-CB-CG | -5.18 | 104.80 | 113.60 |
| 39 | j | 76 | HIS | CB-CA-C | 5.17 | 120.75 | 110.40 |
| 41 | l | 21 | ARG | NE-CZ-NH1 | 5.17 | 122.89 | 120.30 |
| 49 | S2 | 919 | A | C2'-C3'-O3' | -5.17 | 98.12 | 109.50 |
| 1 | 5 | 268 | G | C2'-C3'-O3' | 5.17 | 121.97 | 113.70 |
| 1 | 5 | 2443 | G | N9-C1'-C2' | 5.17 | 120.72 | 114.00 |
| 15 | L | 99 | ASP | CB-CG-OD1 | -5.17 | 113.65 | 118.30 |
| 55 | SF | 188 | TYR | CA-CB-CG | -5.17 | 103.58 | 113.40 |
| 1 | 5 | 4165 | C | C2'-C3'-O3' | 5.17 | 121.97 | 113.70 |
| 1 | 5 | 4543 | G | N9-C1'-C2' | 5.17 | 120.72 | 114.00 |
| 10 | G | 53 | ARG | NE-CZ-NH1 | 5.17 | 122.88 | 120.30 |
| 22 | S | 29 | ARG | CB-CA-C | 5.17 | 120.74 | 110.40 |
| 49 | S2 | 1150 | A | N9-C1'-C2' | 5.17 | 120.72 | 114.00 |
| 1 | 5 | 2597 | G | N9-C1'-C2' | 5.16 | 120.71 | 114.00 |
| 21 | R | 103 | ARG | NE-CZ-NH1 | 5.16 | 122.88 | 120.30 |
| 1 | 5 | 2256 | C | N1-C1'-C2' | 5.16 | 120.71 | 114.00 |
| 17 | N | 59 | TYR | CA-CB-CG | 5.16 | 123.21 | 113.40 |
| 1 | 5 | 961 | G | C4'-C3'-O3' | 5.16 | 123.32 | 113.00 |
| 2 | 7 | 6 | C | C2'-C3'-O3' | 5.16 | 121.96 | 113.70 |
| 2 | 7 | 65 | G | C2'-C3'-O3' | 5.16 | 121.95 | 113.70 |
| 7 | D | 268 | ARG | CG-CD-NE | 5.16 | 122.64 | 111.80 |
| 1 | 5 | 664 | G | C4'-C3'-O3' | 5.16 | 123.32 | 113.00 |
| 3 | 8 | 1 | C | C5'-C4'-C3' | 5.16 | 124.25 | 116.00 |
| 35 | f | 6 | TRP | CA-CB-CG | -5.16 | 103.90 | 113.70 |
| 48 | 4 | 448 | GLN | CB-CA-C | -5.16 | 100.08 | 110.40 |
| 23 | T | 8 | ARG | NE-CZ-NH1 | 5.16 | 122.88 | 120.30 |
| 1 | 5 | 2323 | C | C2'-C3'-O3' | 5.16 | 121.95 | 113.70 |
| 7 | D | 130 | TYR | CA-CB-CG | -5.16 | 103.60 | 113.40 |
| 46 | q | 131 | GLY | C-N-CD | 5.16 | 139.23 | 128.40 |
| 81 | Sf | 138 | ARG | CD-NE-CZ | 5.15 | 130.81 | 123.60 |
| 30 | a | 6 | ARG | NE-CZ-NH1 | 5.15 | 122.88 | 120.30 |
| 58 | SI | 188 | TYR | CD1-CG-CD2 | 5.15 | 123.56 | 117.90 |
| 22 | S | 77 | ASN | CB-CA-C | 5.15 | 120.70 | 110.40 |
| 1 | 5 | 2879 | A | N9-C1'-C2' | 5.14 | 120.69 | 114.00 |
| 9 | F | 197 | TYR | N-CA-CB | 5.14 | 119.86 | 110.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 1394 | G | O4'-C1'-C2' | -5.14 | 100.66 | 105.80 |
| 1 | 5 | 4436 | U | N1-C1'-C2' | -5.14 | 106.34 | 112.00 |
| 1 | 5 | 1850 | A | N9-C1'-C2' | 5.14 | 120.68 | 114.00 |
| 49 | S2 | 1603 | G | N9-C1'-C2' | 5.14 | 120.68 | 114.00 |
| 20 | Q | 68 | ARG | CG-CD-NE | -5.14 | 101.01 | 111.80 |
| 1 | 5 | 107 | G | N9-C1'-C2' | -5.14 | 106.35 | 112.00 |
| 1 | 5 | 2044 | U | C3'-C2'-C1' | 5.14 | 105.61 | 101.50 |
| 1 | 5 | 4163 | U | C4'-C3'-C2' | -5.14 | 97.46 | 102.60 |
| 1 | 5 | 2785 | C | N1-C1'-C2' | 5.13 | 120.67 | 114.00 |
| 1 | 5 | 2787 | A | N9-C1'-C2' | -5.13 | 106.35 | 112.00 |
| 1 | 5 | 405 | U | C2'-C3'-O3' | 5.13 | 121.91 | 113.70 |
| 34 | e | 47 | ARG | N-CA-C | -5.13 | 97.14 | 111.00 |
| 48 | 4 | 272 | LYS | C-N-CA | 5.13 | 134.53 | 121.70 |
| 1 | 5 | 703 | G | O4'-C1'-N9 | 5.13 | 112.30 | 108.20 |
| 1 | 5 | 1577 | G | N9-C1'-C2' | -5.13 | 106.36 | 112.00 |
| 18 | O | 140 | ARG | NE-CZ-NH1 | -5.13 | 117.73 | 120.30 |
| 5 | B | 161 | ARG | NE-CZ-NH1 | 5.13 | 122.86 | 120.30 |
| 31 | b | 45 | PHE | CB-CG-CD1 | -5.13 | 117.21 | 120.80 |
| 49 | S2 | 996 | A | C4-N9-C1' | -5.13 | 117.07 | 126.30 |
| 3 | 8 | 46 | G | N9-C1'-C2' | 5.12 | 120.66 | 114.00 |
| 17 | N | 130 | PHE | CB-CA-C | 5.12 | 120.65 | 110.40 |
| 48 | 4 | 699 | GLY | O-C-N | 5.12 | 130.90 | 122.70 |
| 1 | 5 | 2529 | A | O4'-C1'-N9 | 5.12 | 112.30 | 108.20 |
| 7 | D | 248 | ARG | NE-CZ-NH1 | 5.12 | 122.86 | 120.30 |
| 81 | Sf | 138 | ARG | CG-CD-NE | 5.12 | 122.56 | 111.80 |
| 1 | 5 | 1615 | C | N1-C1'-C2' | -5.12 | 106.37 | 112.00 |
| 15 | L | 99 | ASP | N-CA-C | -5.12 | 97.18 | 111.00 |
| 36 | g | 4 | ARG | NE-CZ-NH2 | -5.12 | 117.74 | 120.30 |
| 46 | q | 205 | ASP | CB-CG-OD2 | 5.12 | 122.91 | 118.30 |
| 49 | S2 | 1567 | G | N9-C1'-C2' | 5.12 | 120.65 | 114.00 |
| 29 | Z | 51 | ARG | NE-CZ-NH1 | 5.12 | 122.86 | 120.30 |
| 47 | r | 77 | TYR | N-CA-CB | -5.12 | 101.39 | 110.60 |
| 1 | 5 | 648 | G | C2'-C3'-O3' | 5.11 | 121.88 | 113.70 |
| 1 | 5 | 658 | C | C2'-C3'-O3' | 5.11 | 121.88 | 113.70 |
| 1 | 5 | 2075 | G | N9-C1'-C2' | -5.11 | 106.37 | 112.00 |
| 49 | S2 | 102 | A | C2'-C3'-O3' | 5.11 | 121.88 | 113.70 |
| 22 | S | 10 | TYR | CB-CA-C | 5.11 | 120.62 | 110.40 |
| 29 | Z | 36 | ARG | NE-CZ-NH2 | -5.11 | 117.74 | 120.30 |
| 49 | S2 | 797 | C | O4'-C1'-C2' | -5.11 | 100.69 | 105.80 |
| 21 | R | 9 | ARG | CG-CD-NE | 5.11 | 122.53 | 111.80 |
| 49 | S2 | 141 | A | C2'-C3'-O3' | 5.11 | 121.88 | 113.70 |
| 29 | Z | 51 | ARG | NE-CZ-NH2 | -5.11 | 117.75 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 72 | C | O4'-C1'-N1 | 5.11 | 112.29 | 108.20 |
| 1 | 5 | 297 | U | N1-C1'-C2' | -5.11 | 106.38 | 112.00 |
| 1 | 5 | 3880 | G | C1'-C2'-O2' | -5.11 | 95.28 | 110.60 |
| 1 | 5 | 2538 | U | O5'-P-OP1 | -5.11 | 101.11 | 105.70 |
| 1 | 5 | 4276 | G | N9-C1'-C2' | -5.11 | 106.38 | 112.00 |
| 65 | SP | 10 | ARG | NE-CZ-NH2 | -5.11 | 117.75 | 120.30 |
| 14 | K | 91 | ASP | N-CA-C | 5.10 | 124.78 | 111.00 |
| 46 | q | 45 | MET | CB-CA-C | 5.10 | 120.61 | 110.40 |
| 6 | C | 143 | ARG | NE-CZ-NH1 | 5.10 | 122.85 | 120.30 |
| 46 | q | 68 | HIS | C-N-CA | 5.10 | 134.45 | 121.70 |
| 48 | 4 | 539 | GLU | O-C-N | -5.10 | 114.54 | 122.70 |
| 33 | d | 85 | ARG | CG-CD-NE | 5.10 | 122.50 | 111.80 |
| 48 | 4 | 239 | LYS | CD-CE-NZ | -5.10 | 99.98 | 111.70 |
| 50 | SA | 9 | GLN | CB-CG-CD | -5.10 | 98.35 | 111.60 |
| 82 | Sg | 36 | ARG | NE-CZ-NH2 | -5.10 | 117.75 | 120.30 |
| 21 | R | 117 | ARG | CB-CA-C | 5.10 | 120.59 | 110.40 |
| 48 | 4 | 433 | ASN | CB-CA-C | 5.09 | 120.59 | 110.40 |
| 56 | SG | 205 | GLU | OE1-CD-OE2 | 5.09 | 129.41 | 123.30 |
| 1 | 5 | 3666 | C | C2'-C3'-O3' | 5.09 | 121.84 | 113.70 |
| 3 | 8 | 125 | C | O4'-C1'-N1 | -5.09 | 104.13 | 108.20 |
| 14 | K | 153 | ASP | CB-CG-OD2 | 5.09 | 122.88 | 118.30 |
| 9 | F | 72 | ARG | NE-CZ-NH1 | 5.09 | 122.84 | 120.30 |
| 33 | d | 87 | ARG | N-CA-CB | 5.09 | 119.76 | 110.60 |
| 1 | 5 | 2117 | G | C1'-O4'-C4' | -5.08 | 105.83 | 109.90 |
| 1 | 5 | 218 | A | N9-C1'-C2' | -5.08 | 106.41 | 112.00 |
| 1 | 5 | 3870 | C | N1-C1'-C2' | 5.08 | 120.61 | 114.00 |
| 3 | 8 | 104 | A | P-O5'-C5' | 5.08 | 129.03 | 120.90 |
| 24 | U | 46 | ARG | NE-CZ-NH1 | 5.08 | 122.84 | 120.30 |
| 49 | S2 | 73 | C | O4'-C1'-C2' | -5.08 | 100.72 | 105.80 |
| 49 | S2 | 853 | C | C2'-C3'-O3' | 5.08 | 121.83 | 113.70 |
| 1 | 5 | 1361 | G | C2'-C3'-O3' | 5.08 | 121.83 | 113.70 |
| 1 | 5 | 3667 | C | N1-C1'-C2' | -5.08 | 106.41 | 112.00 |
| 14 | K | 45 | ASP | CB-CG-OD2 | 5.08 | 122.87 | 118.30 |
| 28 | Y | 126 | ARG | CD-NE-CZ | 5.08 | 130.71 | 123.60 |
| 28 | Y | 126 | ARG | CG-CD-NE | 5.08 | 122.46 | 111.80 |
| 49 | S2 | 1700 | C | N1-C1'-C2' | -5.08 | 106.42 | 112.00 |
| 27 | X | 137 | TYR | CB-CG-CD2 | -5.07 | 117.96 | 121.00 |
| 28 | Y | 87 | ARG | CG-CD-NE | 5.07 | 122.45 | 111.80 |
| 1 | 5 | 1359 | G | O4'-C4'-C3' | -5.07 | 98.93 | 104.00 |
| 1 | 5 | 4975 | G | C1'-O4'-C4' | -5.07 | 105.84 | 109.90 |
| 1 | 5 | 2614 | C | N1-C1'-C2' | -5.07 | 106.42 | 112.00 |
| 15 | L | 103 | ARG | CA-CB-CG | 5.07 | 124.56 | 113.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 49 | S2 | 524 | U | C2'-C3'-O3' | 5.07 | 121.81 | 113.70 |
| 1 | 5 | 3627 | G | C2'-C3'-O3' | 5.07 | 121.81 | 113.70 |
| 49 | S2 | 410 | G | O5'-P-OP1 | -5.07 | 101.14 | 105.70 |
| 1 | 5 | 336 | A | N9-C1'-C2' | -5.07 | 106.43 | 112.00 |
| 29 | Z | 36 | ARG | CG-CD-NE | 5.07 | 122.44 | 111.80 |
| 49 | S2 | 1080 | A | O4'-C1'-N9 | 5.07 | 112.25 | 108.20 |
| 1 | 5 | 3804 | G | N9-C1'-C2' | -5.06 | 106.43 | 112.00 |
| 1 | 5 | 3863 | C | N1-C1'-C2' | 5.06 | 120.58 | 114.00 |
| 1 | 5 | 4936 | G | C4'-C3'-O3' | 5.06 | 123.12 | 113.00 |
| 1 | 5 | 1887 | G | C4'-C3'-C2' | -5.06 | 97.54 | 102.60 |
| 1 | 5 | 4563 | U | C2-N1-C1' | 5.06 | 123.77 | 117.70 |
| 46 | q | 23 | ASP | CB-CG-OD2 | 5.06 | 122.85 | 118.30 |
| 13 | J | 170 | HIS | CB-CA-C | 5.06 | 120.52 | 110.40 |
| 14 | K | 150 | ASP | CB-CG-OD2 | 5.06 | 122.85 | 118.30 |
| 49 | S2 | 798 | A | C4'-C3'-C2' | -5.06 | 97.54 | 102.60 |
| 1 | 5 | 1672 | U | N1-C1'-C2' | 5.06 | 120.57 | 114.00 |
| 1 | 5 | 4404 | U | C3'-C2'-C1' | 5.06 | 105.54 | 101.50 |
| 17 | N | 143 | ARG | CB-CG-CD | 5.06 | 124.75 | 111.60 |
| 28 | Y | 74 | TYR | N-CA-CB | 5.06 | 119.70 | 110.60 |
| 1 | 5 | 2459 | G | N9-C1'-C2' | -5.05 | 106.44 | 112.00 |
| 14 | K | 27 | ALA | N-CA-C | 5.05 | 124.65 | 111.00 |
| 59 | SJ | 175 | ARG | NE-CZ-NH1 | 5.05 | 122.83 | 120.30 |
| 1 | 5 | 4670 | C | P-O5'-C5' | 5.05 | 128.99 | 120.90 |
| 20 | Q | 33 | ARG | CB-CG-CD | 5.05 | 124.74 | 111.60 |
| 1 | 5 | 1268 | G | N9-C1'-C2' | 5.05 | 120.57 | 114.00 |
| 1 | 5 | 1895 | G | N9-C1'-C2' | 5.05 | 120.57 | 114.00 |
| 1 | 5 | 2054 | U | N1-C1'-C2' | 5.05 | 120.57 | 114.00 |
| 1 | 5 | 54 | G | C2'-C3'-O3' | 5.05 | 121.78 | 113.70 |
| 1 | 5 | 4498 | U | C1'-C2'-O2' | 5.05 | 125.75 | 110.60 |
| 4 | A | 209 | HIS | CA-CB-CG | -5.05 | 105.02 | 113.60 |
| 49 | S2 | 1368 | U | N1-C1'-C2' | -5.05 | 106.45 | 112.00 |
| 48 | 4 | 242 | GLY | C-N-CA | 5.05 | 134.32 | 121.70 |
| 82 | Sg | 125 | ARG | CG-CD-NE | -5.04 | 101.21 | 111.80 |
| 1 | 5 | 20 | U | N1-C1'-C2' | -5.04 | 106.45 | 112.00 |
| 1 | 5 | 3773 | U | O4'-C4'-C3' | -5.04 | 98.96 | 104.00 |
| 5 | B | 257 | TRP | N-CA-CB | 5.04 | 119.68 | 110.60 |
| 12 | I | 181 | PHE | CB-CG-CD1 | 5.04 | 124.33 | 120.80 |
| 72 | SW | 57 | ARG | CG-CD-NE | 5.04 | 122.39 | 111.80 |
| 1 | 5 | 4398 | C | C2'-C3'-O3' | 5.04 | 121.76 | 113.70 |
| 13 | J | 99 | PHE | CB-CG-CD2 | -5.04 | 117.27 | 120.80 |
| 58 | SI | 28 | GLU | N-CA-C | -5.04 | 97.39 | 111.00 |
| 1 | 5 | 1067 | G | C2'-C3'-O3' | 5.04 | 121.76 | 113.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 88 | A | C1'-C2'-O2' | -5.04 | 95.49 | 110.60 |
| 23 | T | 19 | PHE | CB-CA-C | -5.04 | 100.33 | 110.40 |
| 1 | 5 | 74 | G | N9-C1'-C2' | 5.03 | 120.54 | 114.00 |
| 1 | 5 | 2361 | G | P-O3'-C3' | 5.03 | 125.74 | 119.70 |
| 81 | Sf | 146 | LEU | N-CA-C | -5.03 | 97.41 | 111.00 |
| 14 | K | 44 | ASP | CA-CB-CG | 5.03 | 124.47 | 113.40 |
| 57 | SH | 99 | ARG | CG-CD-NE | 5.03 | 122.37 | 111.80 |
| 1 | 5 | 1398 | A | C3'-C2'-C1' | -5.03 | 97.48 | 101.50 |
| 1 | 5 | 2116 | C | C2'-C3'-O3' | 5.03 | 121.75 | 113.70 |
| 49 | S2 | 385 | G | N9-C1'-C2' | 5.03 | 120.54 | 114.00 |
| 58 | SI | 5 | ARG | NE-CZ-NH1 | 5.03 | 122.81 | 120.30 |
| 73 | SX | 20 | HIS | CA-CB-CG | -5.03 | 105.05 | 113.60 |
| 1 | 5 | 4373 | G | C3'-C2'-C1' | -5.03 | 97.48 | 101.50 |
| 27 | X | 56 | ARG | CG-CD-NE | -5.03 | 101.24 | 111.80 |
| 1 | 5 | 2275 | G | C2'-C3'-O3' | 5.03 | 121.74 | 113.70 |
| 64 | SO | 55 | ARG | NE-CZ-NH2 | -5.03 | 117.79 | 120.30 |
| 34 | e | 44 | ARG | NE-CZ-NH1 | 5.03 | 122.81 | 120.30 |
| 81 | Sf | 150 | PHE | CB-CG-CD1 | 5.03 | 124.32 | 120.80 |
| 1 | 5 | 514 | U | O4'-C4'-C3' | -5.02 | 98.98 | 104.00 |
| 1 | 5 | 1216 | C | C2'-C3'-O3' | 5.02 | 121.73 | 113.70 |
| 13 | J | 146 | ARG | NE-CZ-NH1 | -5.02 | 117.79 | 120.30 |
| 22 | S | 28 | TYR | CB-CG-CD2 | -5.02 | 117.99 | 121.00 |
| 73 | SX | 5 | ARG | NE-CZ-NH2 | 5.02 | 122.81 | 120.30 |
| 1 | 5 | 352 | G | C3'-C2'-C1' | 5.02 | 105.51 | 101.50 |
| 1 | 5 | 1953 | U | N1-C1'-C2' | 5.02 | 120.52 | 114.00 |
| 1 | 5 | 2533 | C | N1-C1'-C2' | 5.01 | 120.52 | 114.00 |
| 17 | N | 6 | TYR | CA-CB-CG | -5.01 | 103.87 | 113.40 |
| 49 | S2 | 370 | G | O5'-P-OP1 | -5.01 | 101.19 | 105.70 |
| 1 | 5 | 2827 | G | O4'-C4'-C3' | -5.01 | 98.99 | 104.00 |
| 20 | Q | 33 | ARG | N-CA-CB | 5.01 | 119.62 | 110.60 |
| 1 | 5 | 1281 | G | C3'-C2'-C1' | 5.01 | 105.51 | 101.50 |
| 1 | 5 | 1591 | U | N1-C1'-C2' | 5.01 | 120.52 | 114.00 |
| 1 | 5 | 4224 | A | N9-C1'-C2' | -5.01 | 106.49 | 112.00 |
| 52 | SC | 223 | TYR | CB-CG-CD1 | -5.01 | 117.99 | 121.00 |
| 1 | 5 | 1272 | C | C5'-C4'-O4' | 5.01 | 115.11 | 109.10 |
| 1 | 5 | 1864 | G | C2'-C3'-O3' | 5.01 | 121.71 | 113.70 |
| 49 | S2 | 161 | U | N1-C1'-C2' | 5.01 | 120.51 | 114.00 |
| 58 | SI | 77 | ARG | NE-CZ-NH1 | 5.01 | 122.80 | 120.30 |
| 1 | 5 | 1440 | U | C4'-C3'-C2' | -5.01 | 97.59 | 102.60 |
| 18 | O | 117 | ARG | NE-CZ-NH2 | -5.01 | 117.80 | 120.30 |
| 66 | SQ | 138 | ARG | CG-CD-NE | 5.01 | 122.31 | 111.80 |
| 9 | F | 83 | PHE | N-CA-CB | -5.00 | 101.59 | 110.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | 5 | 1479 | G | C1'-C2'-O2' | -5.00 | 95.59 | 110.60 |
| 1 | 5 | 1398 | A | P-O3'-C3' | 5.00 | 125.70 | 119.70 |
| 1 | 5 | 4454 | G | C2'-C3'-O3' | 5.00 | 121.70 | 113.70 |
| 37 | h | 72 | PHE | CB-CG-CD1 | 5.00 | 124.30 | 120.80 |
| 49 | S2 | 28 | U | C4'-C3'-O3' | 5.00 | 123.00 | 113.00 |
| 49 | S2 | 967 | C | N1-C1'-C2' | -5.00 | 106.50 | 112.00 |

All (1) chirality outliers are listed below:

| Mol | Chain | Res | Type | Atom |
|---|---|---|---|---|
| 49 | S2 | 1109 | C | C1' |

All (507) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 48 | 4 | 102 | LEU | Mainchain |
| 48 | 4 | 108 | HIS | Peptide |
| 48 | 4 | 111 | PHE | Sidechain |
| 48 | 4 | 112 | SER | Mainchain,Peptide |
| 48 | 4 | 121 | VAL | Mainchain |
| 48 | 4 | 123 | ASP | Mainchain |
| 48 | 4 | 193 | GLY | Mainchain |
| 48 | 4 | 196 | GLU | Peptide |
| 48 | 4 | 197 | SER | Peptide |
| 48 | 4 | 199 | PRO | Peptide |
| 48 | 4 | 242 | GLY | Mainchain,Peptide |
| 48 | 4 | 245 | GLY | Peptide |
| 48 | 4 | 246 | PRO | Peptide |
| 48 | 4 | 247 | ALA | Peptide |
| 48 | 4 | 266 | PHE | Mainchain,Peptide |
| 48 | 4 | 269 | ALA | Mainchain |
| 48 | 4 | 272 | LYS | Peptide |
| 48 | 4 | 325 | SER | Peptide |
| 48 | 4 | 4 | PHE | Peptide |
| 48 | 4 | 403 | PRO | Peptide |
| 48 | 4 | 406 | ASP | Peptide |
| 48 | 4 | 408 | GLY | Peptide |
| 48 | 4 | 42 | LYS | Mainchain |
| 48 | 4 | 495 | ARG | Mainchain,Peptide |
| 48 | 4 | 540 | GLU | Peptide |
| 48 | 4 | 55 | ARG | Peptide |
| 48 | 4 | 573 | SER | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 48 | 4 | 574 | ASP | Peptide |
| 48 | 4 | 575 | PRO | Mainchain |
| 48 | 4 | 667 | LYS | Peptide |
| 48 | 4 | 669 | VAL | Peptide |
| 48 | 4 | 699 | GLY | Mainchain |
| 48 | 4 | 702 | PHE | Sidechain |
| 48 | 4 | 775 | GLN | Peptide |
| 48 | 4 | 827 | ASN | Peptide |
| 48 | 4 | 847 | GLY | Peptide |
| 1 | 5 | 100 | C | Sidechain |
| 1 | 5 | 103 | G | Sidechain |
| 1 | 5 | 1167 | C | Sidechain |
| 1 | 5 | 120 | A | Sidechain |
| 1 | 5 | 1214 | C | Sidechain |
| 1 | 5 | 1281 | G | Sidechain |
| 1 | 5 | 1319 | U | Sidechain |
| 1 | 5 | 1324 | A | Sidechain |
| 1 | 5 | 1355 | G | Sidechain |
| 1 | 5 | 1398 | A | Sidechain |
| 1 | 5 | 147 | A | Sidechain |
| 1 | 5 | 1501 | C | Sidechain |
| 1 | 5 | 151 | G | Sidechain |
| 1 | 5 | 1522 | G | Sidechain |
| 1 | 5 | 1534 | A | Sidechain |
| 1 | 5 | 157 | U | Sidechain |
| 1 | 5 | 1625 | G | Sidechain |
| 1 | 5 | 1627 | G | Sidechain |
| 1 | 5 | 1631 | A | Sidechain |
| 1 | 5 | 1658 | G | Sidechain |
| 1 | 5 | 1668 | A | Sidechain |
| 1 | 5 | 1671 | U | Sidechain |
| 1 | 5 | 1676 | C | Sidechain |
| 1 | 5 | 172 | C | Sidechain |
| 1 | 5 | 1733 | G | Sidechain |
| 1 | 5 | 1887 | G | Sidechain |
| 1 | 5 | 1894 | C | Sidechain |
| 1 | 5 | 1938 | C | Sidechain |
| 1 | 5 | 2046 | G | Sidechain |
| 1 | 5 | 2056 | G | Sidechain |
| 1 | 5 | 2077 | C | Sidechain |
| 1 | 5 | 2082 | G | Sidechain |
| 1 | 5 | 2087 | C | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | 5 | 22 | G | Sidechain |
| 1 | 5 | 2263 | A | Sidechain |
| 1 | 5 | 2268 | A | Sidechain |
| 1 | 5 | 2271 | C | Sidechain |
| 1 | 5 | 2305 | U | Sidechain |
| 1 | 5 | 2325 | C | Sidechain |
| 1 | 5 | 235 | A | Sidechain |
| 1 | 5 | 2360 | A | Sidechain |
| 1 | 5 | 2361 | G | Sidechain |
| 1 | 5 | 2394 | G | Sidechain |
| 1 | 5 | 2403 | A | Sidechain |
| 1 | 5 | 2406 | G | Sidechain |
| 1 | 5 | 2436 | U | Sidechain |
| 1 | 5 | 2438 | A | Sidechain |
| 1 | 5 | 2446 | C | Sidechain |
| 1 | 5 | 2450 | G | Sidechain |
| 1 | 5 | 2465 | C | Sidechain |
| 1 | 5 | 2513 | A | Sidechain |
| 1 | 5 | 2515 | G | Sidechain |
| 1 | 5 | 2517 | A | Sidechain |
| 1 | 5 | 2553 | A | Sidechain |
| 1 | 5 | 2581 | A | Sidechain |
| 1 | 5 | 2649 | G | Sidechain |
| 1 | 5 | 2666 | U | Sidechain |
| 1 | 5 | 2675 | G | Sidechain |
| 1 | 5 | 2769 | U | Sidechain |
| 1 | 5 | 2796 | G | Sidechain |
| 1 | 5 | 280 | G | Sidechain |
| 1 | 5 | 2812 | A | Sidechain |
| 1 | 5 | 2827 | G | Sidechain |
| 1 | 5 | 2851 | G | Sidechain |
| 1 | 5 | 2858 | A | Sidechain |
| 1 | 5 | 291 | U | Sidechain |
| 1 | 5 | 292 | G | Sidechain |
| 1 | 5 | 293 | G | Sidechain |
| 1 | 5 | 294 | G | Sidechain |
| 1 | 5 | 31 | U | Sidechain |
| 1 | 5 | 315 | G | Sidechain |
| 1 | 5 | 332 | C | Sidechain |
| 1 | 5 | 336 | A | Sidechain |
| 1 | 5 | 352 | G | Sidechain |
| 1 | 5 | 354 | U | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | 5 | 3621 | A | Sidechain |
| 1 | 5 | 3635 | A | Sidechain |
| 1 | 5 | 3648 | A | Sidechain |
| 1 | 5 | 3653 | A | Sidechain |
| 1 | 5 | 3692 | A | Sidechain |
| 1 | 5 | 3726 | A | Sidechain |
| 1 | 5 | 3774 | A | Sidechain |
| 1 | 5 | 3790 | U | Sidechain |
| 1 | 5 | 3791 | C | Sidechain |
| 1 | 5 | 383 | A | Sidechain |
| 1 | 5 | 384 | A | Sidechain |
| 1 | 5 | 3843 | C | Sidechain |
| 1 | 5 | 3844 | U | Sidechain |
| 1 | 5 | 3871 | A | Sidechain |
| 1 | 5 | 3880 | G | Sidechain |
| 1 | 5 | 3881 | G | Sidechain |
| 1 | 5 | 3901 | A | Sidechain |
| 1 | 5 | 3938 | G | Sidechain |
| 1 | 5 | 405 | U | Sidechain |
| 1 | 5 | 4076 | G | Sidechain |
| 1 | 5 | 4162 | C | Sidechain |
| 1 | 5 | 417 | G | Sidechain |
| 1 | 5 | 42 | A | Sidechain |
| 1 | 5 | 4228 | G | Sidechain |
| 1 | 5 | 4229 | U | Sidechain |
| 1 | 5 | 4234 | A | Sidechain |
| 1 | 5 | 4270 | C | Sidechain |
| 1 | 5 | 4275 | G | Sidechain |
| 1 | 5 | 4280 | A | Sidechain |
| 1 | 5 | 4282 | A | Sidechain |
| 1 | 5 | 43 | U | Sidechain |
| 1 | 5 | 4330 | G | Sidechain |
| 1 | 5 | 4341 | C | Sidechain |
| 1 | 5 | 4371 | G | Sidechain |
| 1 | 5 | 4373 | G | Sidechain |
| 1 | 5 | 4385 | A | Sidechain |
| 1 | 5 | 4404 | U | Sidechain |
| 1 | 5 | 4463 | U | Sidechain |
| 1 | 5 | 4464 | A | Sidechain |
| 1 | 5 | 4497 | U | Sidechain |
| 1 | 5 | 4498 | U | Sidechain |
| 1 | 5 | 4510 | A | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | 5 | 4519 | C | Sidechain |
| 1 | 5 | 4528 | G | Sidechain |
| 1 | 5 | 4531 | U | Sidechain |
| 1 | 5 | 4548 | A | Sidechain |
| 1 | 5 | 4563 | U | Sidechain |
| 1 | 5 | 4564 | A | Sidechain |
| 1 | 5 | 4589 | A | Sidechain |
| 1 | 5 | 4600 | G | Sidechain |
| 1 | 5 | 4670 | C | Sidechain |
| 1 | 5 | 4677 | U | Sidechain |
| 1 | 5 | 4693 | C | Sidechain |
| 1 | 5 | 4763 | U | Sidechain |
| 1 | 5 | 4871 | C | Sidechain |
| 1 | 5 | 4911 | A | Sidechain |
| 1 | 5 | 4965 | U | Sidechain |
| 1 | 5 | 4966 | A | Sidechain |
| 1 | 5 | 4976 | U | Sidechain |
| 1 | 5 | 4981 | G | Sidechain |
| 1 | 5 | 5006 | U | Sidechain |
| 1 | 5 | 5040 | U | Sidechain |
| 1 | 5 | 5043 | A | Sidechain |
| 1 | 5 | 5050 | C | Sidechain |
| 1 | 5 | 5066 | U | Sidechain |
| 1 | 5 | 514 | U | Sidechain |
| 1 | 5 | 53 | C | Sidechain |
| 1 | 5 | 54 | G | Sidechain |
| 1 | 5 | 62 | A | Sidechain |
| 1 | 5 | 664 | G | Sidechain |
| 1 | 5 | 84 | A | Sidechain |
| 1 | 5 | 85 | G | Sidechain |
| 1 | 5 | 89 | C | Sidechain |
| 1 | 5 | 92 | C | Sidechain |
| 1 | 5 | 93 | G | Sidechain |
| 1 | 5 | 94 | A | Sidechain |
| 1 | 5 | 964 | A | Sidechain |
| 1 | 5 | 97 | G | Sidechain |
| 1 | 5 | 99 | A | Sidechain |
| 2 | 7 | 42 | A | Sidechain |
| 2 | 7 | 56 | G | Sidechain |
| 3 | 8 | 104 | A | Sidechain |
| 3 | 8 | 14 | U | Sidechain |
| 3 | 8 | 34 | U | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 3 | 8 | 35 | C | Sidechain |
| 3 | 8 | 38 | U | Sidechain |
| 3 | 8 | 39 | G | Sidechain |
| 3 | 8 | 60 | G | Sidechain |
| 3 | 8 | 65 | A | Sidechain |
| 3 | 8 | 73 | U | Sidechain |
| 3 | 8 | 9 | A | Sidechain |
| 3 | 8 | 94 | G | Sidechain |
| 4 | A | 18 | ALA | Peptide |
| 4 | A | 194 | ASN | Peptide |
| 4 | A | 196 | TRP | Peptide |
| 4 | A | 209 | HIS | Sidechain |
| 4 | A | 211 | PHE | Sidechain |
| 4 | A | 215 | ASN | Peptide |
| 5 | B | 100 | ARG | Sidechain |
| 5 | B | 102 | PHE | Peptide |
| 5 | B | 117 | ARG | Sidechain |
| 5 | B | 119 | TYR | Sidechain |
| 5 | B | 142 | GLY | Peptide |
| 5 | B | 15 | GLY | Peptide |
| 5 | B | 16 | PHE | Peptide |
| 5 | B | 179 | HIS | Sidechain |
| 5 | B | 274 | TYR | Sidechain |
| 5 | B | 322 | HIS | Peptide |
| 5 | B | 379 | PHE | Peptide |
| 5 | B | 387 | ALA | Peptide |
| 5 | B | 388 | PHE | Peptide |
| 6 | C | 102 | PHE | Sidechain |
| 6 | C | 113 | ARG | Peptide |
| 6 | C | 264 | TYR | Peptide |
| 6 | C | 309 | ILE | Peptide |
| 6 | C | 41 | HIS | Sidechain |
| 7 | D | 129 | GLU | Peptide |
| 7 | D | 190 | PHE | Peptide |
| 7 | D | 198 | HIS | Sidechain |
| 7 | D | 20 | PHE | Peptide |
| 7 | D | 261 | VAL | Peptide |
| 7 | D | 266 | TRP | Peptide |
| 7 | D | 30 | TYR | Peptide |
| 7 | D | 44 | TYR | Sidechain |
| 8 | E | 102 | VAL | Peptide |
| 8 | E | 103 | VAL | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 8 | E | 111 | TYR | Peptide |
| 8 | E | 123 | SER | Peptide |
| 8 | E | 152 | ARG | Peptide |
| 8 | E | 177 | LEU | Peptide |
| 8 | E | 216 | LYS | Peptide |
| 8 | E | 224 | GLN | Peptide |
| 8 | E | 230 | ASP | Peptide |
| 8 | E | 235 | LYS | Peptide |
| 8 | E | 278 | TYR | Sidechain |
| 8 | E | 41 | SER | Peptide |
| 9 | F | 127 | LEU | Peptide |
| 9 | F | 197 | TYR | Peptide |
| 9 | F | 228 | HIS | Sidechain |
| 9 | F | 81 | GLY | Peptide |
| 9 | F | 82 | ASN | Peptide |
| 10 | G | 101 | LYS | Peptide |
| 10 | G | 261 | LEU | Peptide |
| 10 | G | 54 | PHE | Sidechain |
| 11 | H | 156 | ASN | Sidechain,Peptide |
| 11 | H | 50 | LYS | Peptide |
| 12 | I | 113 | THR | Peptide |
| 12 | I | 139 | ARG | Sidechain |
| 12 | I | 77 | VAL | Peptide |
| 12 | I | 93 | PRO | Peptide |
| 13 | J | 87 | LEU | Peptide |
| 13 | J | 99 | PHE | Sidechain |
| 14 | K | 114 | ARG | Mainchain |
| 14 | K | 130 | LYS | Mainchain |
| 14 | K | 27 | ALA | Peptide |
| 14 | K | 44 | ASP | Mainchain |
| 14 | K | 86 | LYS | Peptide |
| 15 | L | 146 | LEU | Peptide |
| 15 | L | 147 | ALA | Peptide |
| 15 | L | 192 | PHE | Sidechain |
| 15 | L | 62 | PRO | Peptide |
| 15 | L | 66 | TYR | Peptide |
| 16 | M | 6 | PHE | Sidechain |
| 16 | M | 65 | PRO | Peptide |
| 16 | M | 79 | LYS | Peptide |
| 16 | M | 94 | LYS | Peptide |
| 17 | N | 119 | TYR | Sidechain |
| 17 | N | 130 | PHE | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 17 | N | 131 | GLU | Sidechain |
| 17 | N | 138 | PHE | Peptide |
| 17 | N | 139 | HIS | Sidechain |
| 17 | N | 180 | PHE | Sidechain |
| 17 | N | 184 | ILE | Peptide |
| 17 | N | 202 | ARG | Peptide |
| 17 | N | 37 | HIS | Sidechain |
| 17 | N | 90 | ASN | Peptide |
| 17 | N | 94 | PHE | Sidechain |
| 18 | O | 110 | PRO | Peptide |
| 18 | O | 117 | ARG | Peptide |
| 18 | O | 135 | PHE | Sidechain |
| 19 | P | 139 | TYR | Sidechain |
| 20 | Q | 161 | SER | Peptide |
| 20 | Q | 162 | HIS | Peptide |
| 20 | Q | 174 | PHE | Sidechain |
| 20 | Q | 32 | TYR | Peptide |
| 20 | Q | 34 | PHE | Sidechain |
| 21 | R | 118 | HIS | Sidechain |
| 21 | R | 132 | PHE | Sidechain |
| 21 | R | 174 | GLU | Peptide |
| 21 | R | 19 | LYS | Peptide |
| 21 | R | 57 | VAL | Peptide |
| 21 | R | 94 | THR | Peptide |
| 22 | S | 10 | TYR | Sidechain |
| 22 | S | 145 | PHE | Sidechain,Peptide |
| 22 | S | 152 | PHE | Peptide |
| 22 | S | 154 | LEU | Peptide |
| 22 | S | 159 | LEU | Peptide |
| 22 | S | 164 | LYS | Peptide |
| 22 | S | 32 | ILE | Peptide |
| 22 | S | 33 | PHE | Peptide |
| 22 | S | 68 | PHE | Peptide |
| 22 | S | 90 | THR | Peptide |
| 49 | S2 | 1034 | A | Sidechain |
| 49 | S2 | 104 | A | Sidechain |
| 49 | S2 | 1045 | U | Sidechain |
| 49 | S2 | 1063 | C | Sidechain |
| 49 | S2 | 1085 | C | Sidechain |
| 49 | S2 | 1088 | U | Sidechain |
| 49 | S2 | 1109 | C | Sidechain |
| 49 | S2 | 114 | G | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 49 | S2 | 1142 | G | Sidechain |
| 49 | S2 | 1150 | A | Sidechain |
| 49 | S2 | 1167 | G | Sidechain |
| 49 | S2 | 1181 | A | Sidechain |
| 49 | S2 | 1249 | C | Sidechain |
| 49 | S2 | 1283 | C | Sidechain |
| 49 | S2 | 1315 | U | Sidechain |
| 49 | S2 | 1378 | A | Sidechain |
| 49 | S2 | 1565 | C | Sidechain |
| 49 | S2 | 1578 | U | Sidechain |
| 49 | S2 | 1603 | G | Sidechain |
| 49 | S2 | 1606 | G | Sidechain |
| 49 | S2 | 1623 | A | Sidechain |
| 49 | S2 | 1659 | U | Sidechain |
| 49 | S2 | 1663 | A | Sidechain |
| 49 | S2 | 1703 | C | Sidechain |
| 49 | S2 | 1823 | A | Sidechain |
| 49 | S2 | 1835 | A | Sidechain |
| 49 | S2 | 1838 | U | Sidechain |
| 49 | S2 | 1849 | G | Sidechain |
| 49 | S2 | 1850 | A | Sidechain |
| 49 | S2 | 1851 | A | Sidechain |
| 49 | S2 | 1860 | A | Sidechain |
| 49 | S2 | 294 | U | Sidechain |
| 49 | S2 | 30 | C | Sidechain |
| 49 | S2 | 313 | A | Sidechain |
| 49 | S2 | 367 | U | Sidechain |
| 49 | S2 | 381 | C | Sidechain |
| 49 | S2 | 384 | U | Sidechain |
| 49 | S2 | 399 | C | Sidechain |
| 49 | S2 | 421 | G | Sidechain |
| 49 | S2 | 423 | U | Sidechain |
| 49 | S2 | 426 | A | Sidechain |
| 49 | S2 | 427 | U | Sidechain |
| 49 | S2 | 428 | U | Sidechain |
| 49 | S2 | 437 | G | Sidechain |
| 49 | S2 | 444 | G | Sidechain |
| 49 | S2 | 447 | A | Sidechain |
| 49 | S2 | 482 | G | Sidechain |
| 49 | S2 | 601 | G | Sidechain |
| 49 | S2 | 617 | G | Sidechain |
| 49 | S2 | 631 | U | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 49 | S2 | 642 | U | Sidechain |
| 49 | S2 | 645 | C | Sidechain |
| 49 | S2 | 646 | G | Sidechain |
| 49 | S2 | 661 | U | Sidechain |
| 49 | S2 | 662 | G | Sidechain |
| 49 | S2 | 685 | A | Sidechain |
| 49 | S2 | 821 | G | Sidechain |
| 49 | S2 | 848 | U | Sidechain |
| 49 | S2 | 849 | A | Sidechain |
| 49 | S2 | 9 | U | Sidechain |
| 49 | S2 | 918 | U | Sidechain |
| 49 | S2 | 92 | A | Sidechain |
| 49 | S2 | 957 | A | Sidechain |
| 49 | S2 | 958 | G | Sidechain |
| 49 | S2 | 964 | A | Sidechain |
| 49 | S2 | 999 | G | Sidechain |
| 50 | SA | 103 | PHE | Sidechain |
| 50 | SA | 131 | HIS | Peptide |
| 51 | SB | 141 | GLY | Peptide |
| 51 | SB | 40 | ASN | Peptide |
| 51 | SB | 66 | VAL | Peptide |
| 51 | SB | 76 | ASN | Peptide |
| 52 | SC | 168 | GLY | Peptide |
| 52 | SC | 236 | PHE | Sidechain |
| 52 | SC | 241 | PHE | Sidechain |
| 52 | SC | 60 | TRP | Peptide |
| 53 | SD | 159 | HIS | Sidechain |
| 53 | SD | 196 | GLY | Peptide |
| 53 | SD | 203 | PRO | Peptide |
| 54 | SE | 17 | HIS | Peptide |
| 54 | SE | 205 | PHE | Peptide |
| 55 | SF | 43 | GLU | Peptide |
| 57 | SH | 108 | SER | Peptide |
| 58 | SI | 149 | TYR | Peptide |
| 58 | SI | 153 | LYS | Peptide |
| 58 | SI | 155 | ASN | Peptide |
| 58 | SI | 26 | LYS | Peptide |
| 58 | SI | 65 | PHE | Peptide |
| 58 | SI | 99 | ASN | Sidechain |
| 59 | SJ | 165 | TYR | Peptide |
| 59 | SJ | 48 | PHE | Sidechain |
| 60 | SK | 29 | MET | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 61 | SL | 147 | LYS | Peptide |
| 61 | SL | 15 | THR | Peptide |
| 61 | SL | 151 | THR | Peptide |
| 61 | SL | 62 | PHE | Sidechain |
| 62 | SM | 100 | PRO | Peptide |
| 62 | SM | 107 | SER | Peptide |
| 62 | SM | 32 | ALA | Peptide |
| 63 | SN | 113 | PHE | Peptide |
| 64 | SO | 147 | ARG | Sidechain |
| 65 | SP | 11 | THR | Peptide |
| 66 | SQ | 43 | GLU | Peptide |
| 67 | SR | 108 | LEU | Peptide |
| 67 | SR | 125 | GLY | Peptide |
| 70 | SU | 71 | GLY | Peptide |
| 71 | SV | 32 | ILE | Peptide |
| 71 | SV | 48 | GLY | Peptide |
| 72 | SW | 54 | ASP | Peptide |
| 72 | SW | 76 | SER | Peptide |
| 73 | SX | 16 | HIS | Sidechain |
| 73 | SX | 20 | HIS | Sidechain |
| 74 | SY | 86 | GLU | Sidechain |
| 75 | SZ | 108 | ILE | Peptide |
| 76 | Sa | 17 | HIS | Sidechain |
| 77 | Sb | 81 | ARG | Peptide |
| 79 | Sd | 10 | HIS | Peptide |
| 79 | Sd | 8 | TRP | Peptide |
| 81 | Sf | 132 | MET | Peptide |
| 81 | Sf | 135 | HIS | Peptide |
| 81 | Sf | 138 | ARG | Peptide |
| 81 | Sf | 139 | HIS | Peptide |
| 23 | T | 140 | PHE | Sidechain |
| 23 | T | 142 | ARG | Peptide |
| 24 | U | 110 | TYR | Peptide |
| 24 | U | 55 | ASN | Peptide |
| 25 | V | 108 | ASN | Peptide |
| 25 | V | 97 | TYR | Sidechain |
| 25 | V | 98 | PHE | Sidechain |
| 26 | W | 27 | LYS | Peptide |
| 27 | X | 73 | HIS | Sidechain |
| 28 | Y | 18 | HIS | Sidechain |
| 28 | Y | 61 | HIS | Sidechain |
| 28 | Y | 62 | TYR | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 28 | Y | 81 | TYR | Sidechain |
| 30 | a | 109 | TYR | Sidechain |
| 30 | a | 128 | PHE | Sidechain |
| 30 | a | 34 | ASN | Sidechain |
| 30 | a | 39 | HIS | Peptide |
| 30 | a | 60 | HIS | Sidechain |
| 30 | a | 61 | TYR | Sidechain,Peptide |
| 30 | a | 62 | HIS | Sidechain |
| 30 | a | 91 | ALA | Peptide |
| 31 | b | 6 | ASN | Sidechain |
| 32 | c | 77 | ASN | Peptide |
| 32 | c | 78 | ASN | Sidechain |
| 33 | d | 103 | TYR | Peptide |
| 33 | d | 108 | TYR | Peptide |
| 33 | d | 25 | TYR | Sidechain |
| 33 | d | 72 | VAL | Peptide |
| 34 | e | 20 | PHE | Sidechain |
| 34 | e | 3 | ALA | Peptide |
| 34 | e | 74 | PHE | Sidechain |
| 34 | e | 76 | LYS | Peptide |
| 35 | f | 100 | ARG | Peptide |
| 35 | f | 53 | ALA | Peptide |
| 36 | g | 6 | THR | Peptide |
| 37 | h | 121 | VAL | Peptide |
| 37 | h | 78 | TYR | Sidechain |
| 37 | h | 97 | LYS | Peptide |
| 38 | i | 26 | HIS | Sidechain |
| 38 | i | 39 | PHE | Sidechain |
| 38 | i | 49 | GLY | Peptide |
| 39 | j | 46 | LYS | Peptide |
| 39 | j | 48 | ASN | Peptide |
| 39 | j | 66 | HIS | Sidechain |
| 39 | j | 8 | PHE | Sidechain |
| 40 | k | 28 | ASN | Peptide |
| 44 | o | 31 | ASP | Sidechain,Peptide |
| 44 | o | 43 | ARG | Peptide |
| 44 | o | 47 | GLY | Peptide |
| 44 | o | 48 | TYR | Sidechain |
| 44 | o | 76 | ASN | Peptide |
| 45 | p | 17 | ARG | Peptide |
| 46 | q | 108 | PRO | Peptide |
| 46 | q | 148 | SER | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 46 | q | 205 | ASP | Mainchain,Peptide |
| 46 | q | 44 | ARG | Sidechain |
| 46 | q | 6 | ARG | Peptide |
| 46 | q | 99 | ARG | Sidechain |
| 47 | r | 30 | ASN | Peptide |
| 47 | r | 31 | ASN | Sidechain |
| 47 | r | 45 | HIS | Sidechain |
| 47 | r | 70 | GLN | Peptide |
| 47 | r | 76 | SER | Peptide |

## 5.2 Too-close contacts (i)

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

## 5.3 Torsion angles (i)

### 5.3.1 Protein backbone (i)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 4 | A | 242/257 (94%) | 203 (84%) | 30 (12%) | 9 (4%) | 2 22 |
| 5 | B | 392/394 (100%) | 319 (81%) | 40 (10%) | 33 (8%) | 0 8 |
| 6 | C | 365/367 (100%) | 304 (83%) | 46 (13%) | 15 (4%) | 2 20 |
| 7 | D | 290/297 (98%) | 235 (81%) | 33 (11%) | 22 (8%) | 1 9 |
| 8 | E | 232/236 (98%) | 150 (65%) | 51 (22%) | 31 (13%) | 0 3 |
| 9 | F | 223/225 (99%) | 190 (85%) | 23 (10%) | 10 (4%) | 2 18 |
| 10 | G | 239/266 (90%) | 200 (84%) | 32 (13%) | 7 (3%) | 3 27 |
| 11 | H | 188/192 (98%) | 164 (87%) | 20 (11%) | 4 (2%) | 5 32 |
| 12 | I | 211/213 (99%) | 166 (79%) | 31 (15%) | 14 (7%) | 1 11 |
| 13 | J | 168/178 (94%) | 137 (82%) | 23 (14%) | 8 (5%) | 2 17 |
| 14 | K | 147/163 (90%) | 83 (56%) | 31 (21%) | 33 (22%) | 0 1 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 15 | L | 208/211 (99%) | 172 (83%) | 25 (12%) | 11 (5%) | 1 14 |
| 16 | M | 136/213 (64%) | 118 (87%) | 16 (12%) | 2 (2%) | 8 39 |
| 17 | N | 201/204 (98%) | 172 (86%) | 23 (11%) | 6 (3%) | 3 26 |
| 18 | O | 199/204 (98%) | 182 (92%) | 14 (7%) | 3 (2%) | 8 39 |
| 19 | P | 151/153 (99%) | 140 (93%) | 9 (6%) | 2 (1%) | 10 41 |
| 20 | Q | 185/188 (98%) | 160 (86%) | 20 (11%) | 5 (3%) | 4 28 |
| 21 | R | 178/196 (91%) | 153 (86%) | 21 (12%) | 4 (2%) | 5 31 |
| 22 | S | 173/224 (77%) | 146 (84%) | 24 (14%) | 3 (2%) | 7 36 |
| 23 | T | 157/160 (98%) | 128 (82%) | 26 (17%) | 3 (2%) | 6 34 |
| 24 | U | 97/128 (76%) | 74 (76%) | 21 (22%) | 2 (2%) | 5 32 |
| 25 | V | 129/140 (92%) | 112 (87%) | 14 (11%) | 3 (2%) | 5 31 |
| 26 | W | 61/157 (39%) | 57 (93%) | 3 (5%) | 1 (2%) | 8 38 |
| 27 | X | 117/156 (75%) | 108 (92%) | 7 (6%) | 2 (2%) | 7 36 |
| 28 | Y | 132/145 (91%) | 112 (85%) | 14 (11%) | 6 (4%) | 2 18 |
| 29 | Z | 133/136 (98%) | 113 (85%) | 15 (11%) | 5 (4%) | 2 21 |
| 30 | a | 145/148 (98%) | 111 (77%) | 26 (18%) | 8 (6%) | 1 14 |
| 31 | b | 73/160 (46%) | 58 (80%) | 11 (15%) | 4 (6%) | 1 14 |
| 32 | c | 92/115 (80%) | 78 (85%) | 10 (11%) | 4 (4%) | 2 19 |
| 33 | d | 105/125 (84%) | 85 (81%) | 16 (15%) | 4 (4%) | 2 21 |
| 34 | e | 126/135 (93%) | 110 (87%) | 15 (12%) | 1 (1%) | 16 51 |
| 35 | f | 107/110 (97%) | 95 (89%) | 7 (6%) | 5 (5%) | 2 17 |
| 36 | g | 112/117 (96%) | 103 (92%) | 7 (6%) | 2 (2%) | 7 35 |
| 37 | h | 120/123 (98%) | 102 (85%) | 15 (12%) | 3 (2%) | 4 29 |
| 38 | i | 100/105 (95%) | 91 (91%) | 7 (7%) | 2 (2%) | 6 33 |
| 39 | j | 84/86 (98%) | 67 (80%) | 13 (16%) | 4 (5%) | 2 17 |
| 40 | k | 67/70 (96%) | 55 (82%) | 7 (10%) | 5 (8%) | 1 9 |
| 41 | l | 48/51 (94%) | 42 (88%) | 4 (8%) | 2 (4%) | 2 19 |
| 42 | m | 50/128 (39%) | 44 (88%) | 6 (12%) | 0 | 100 100 |
| 43 | n | 21/25 (84%) | 21 (100%) | 0 | 0 | 100 100 |
| 44 | o | 102/106 (96%) | 85 (83%) | 11 (11%) | 6 (6%) | 1 13 |
| 45 | p | 89/91 (98%) | 79 (89%) | 9 (10%) | 1 (1%) | 12 45 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 46 | q | 200/202 (99%) | 133 (66%) | 27 (14%) | 40 (20%) | 0 1 |
| 47 | r | 123/125 (98%) | 97 (79%) | 20 (16%) | 6 (5%) | 2 16 |
| 48 | 4 | 854/856 (100%) | 754 (88%) | 58 (7%) | 42 (5%) | 2 16 |
| 50 | SA | 206/295 (70%) | 176 (85%) | 24 (12%) | 6 (3%) | 3 27 |
| 51 | SB | 211/264 (80%) | 170 (81%) | 27 (13%) | 14 (7%) | 1 11 |
| 52 | SC | 216/218 (99%) | 189 (88%) | 19 (9%) | 8 (4%) | 2 22 |
| 53 | SD | 225/243 (93%) | 170 (76%) | 44 (20%) | 11 (5%) | 2 16 |
| 54 | SE | 260/263 (99%) | 202 (78%) | 41 (16%) | 17 (6%) | 1 12 |
| 55 | SF | 189/204 (93%) | 160 (85%) | 19 (10%) | 10 (5%) | 1 14 |
| 56 | SG | 235/249 (94%) | 194 (83%) | 35 (15%) | 6 (3%) | 4 28 |
| 57 | SH | 187/194 (96%) | 143 (76%) | 29 (16%) | 15 (8%) | 1 8 |
| 58 | SI | 204/208 (98%) | 176 (86%) | 21 (10%) | 7 (3%) | 3 24 |
| 59 | SJ | 183/194 (94%) | 145 (79%) | 24 (13%) | 14 (8%) | 1 9 |
| 60 | SK | 96/165 (58%) | 60 (62%) | 26 (27%) | 10 (10%) | 0 6 |
| 61 | SL | 150/158 (95%) | 122 (81%) | 21 (14%) | 7 (5%) | 2 17 |
| 62 | SM | 122/124 (98%) | 77 (63%) | 25 (20%) | 20 (16%) | 0 2 |
| 63 | SN | 148/151 (98%) | 115 (78%) | 28 (19%) | 5 (3%) | 3 24 |
| 64 | SO | 134/151 (89%) | 102 (76%) | 18 (13%) | 14 (10%) | 0 6 |
| 65 | SP | 94/145 (65%) | 65 (69%) | 18 (19%) | 11 (12%) | 0 5 |
| 66 | SQ | 139/146 (95%) | 112 (81%) | 21 (15%) | 6 (4%) | 2 19 |
| 67 | SR | 127/135 (94%) | 95 (75%) | 24 (19%) | 8 (6%) | 1 12 |
| 68 | SS | 135/152 (89%) | 104 (77%) | 23 (17%) | 8 (6%) | 1 13 |
| 69 | ST | 139/145 (96%) | 116 (84%) | 17 (12%) | 6 (4%) | 2 19 |
| 70 | SU | 102/119 (86%) | 80 (78%) | 18 (18%) | 4 (4%) | 2 21 |
| 71 | SV | 80/83 (96%) | 63 (79%) | 10 (12%) | 7 (9%) | 0 7 |
| 72 | SW | 127/130 (98%) | 112 (88%) | 11 (9%) | 4 (3%) | 3 26 |
| 73 | SX | 139/143 (97%) | 116 (84%) | 18 (13%) | 5 (4%) | 3 22 |
| 74 | SY | 124/132 (94%) | 92 (74%) | 23 (18%) | 9 (7%) | 1 9 |
| 75 | SZ | 73/125 (58%) | 54 (74%) | 13 (18%) | 6 (8%) | 1 8 |
| 76 | Sa | 96/115 (84%) | 74 (77%) | 15 (16%) | 7 (7%) | 1 9 |
| 77 | Sb | 81/84 (96%) | 61 (75%) | 15 (18%) | 5 (6%) | 1 12 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 78 | Sc | 62/69 (90%) | 46 (74%) | 16 (26%) | 0 | 100 100 |
| 79 | Sd | 50/56 (89%) | 38 (76%) | 9 (18%) | 3 (6%) | 1 13 |
| 80 | Se | 55/133 (41%) | 40 (73%) | 14 (26%) | 1 (2%) | 7 35 |
| 81 | Sf | 69/156 (44%) | 39 (56%) | 21 (30%) | 9 (13%) | 0 4 |
| 82 | Sg | 311/317 (98%) | 250 (80%) | 45 (14%) | 16 (5%) | 1 16 |
| All | All | 12341/13747 (90%) | 10066 (82%) | 1613 (13%) | 662 (5%) | 3 14 |

All (662) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | A | 19 | HIS |
| 4 | A | 197 | PRO |
| 5 | B | 16 | PHE |
| 5 | B | 40 | PRO |
| 5 | B | 108 | GLU |
| 5 | B | 109 | HIS |
| 5 | B | 111 | SER |
| 5 | B | 120 | LYS |
| 5 | B | 138 | GLN |
| 5 | B | 143 | ALA |
| 5 | B | 169 | ARG |
| 5 | B | 191 | ALA |
| 5 | B | 196 | TRP |
| 5 | B | 388 | PHE |
| 5 | B | 389 | MET |
| 6 | C | 69 | THR |
| 6 | C | 99 | GLY |
| 6 | C | 309 | ILE |
| 6 | C | 318 | PRO |
| 6 | C | 319 | LEU |
| 7 | D | 19 | LYS |
| 7 | D | 212 | ILE |
| 7 | D | 262 | LYS |
| 7 | D | 285 | ALA |
| 8 | E | 55 | ARG |
| 8 | E | 59 | TYR |
| 8 | E | 96 | LYS |
| 8 | E | 131 | LYS |
| 8 | E | 175 | LEU |
| 8 | E | 221 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | E | 230 | ASP |
| 8 | E | 280 | HIS |
| 9 | F | 72 | ARG |
| 9 | F | 128 | ASN |
| 9 | F | 236 | GLY |
| 10 | G | 128 | VAL |
| 11 | H | 60 | TRP |
| 12 | I | 78 | LYS |
| 12 | I | 79 | SER |
| 12 | I | 178 | ALA |
| 12 | I | 179 | ASP |
| 12 | I | 187 | LYS |
| 13 | J | 91 | GLU |
| 14 | K | 28 | LEU |
| 14 | K | 30 | PRO |
| 14 | K | 38 | SER |
| 14 | K | 39 | PRO |
| 14 | K | 58 | ILE |
| 14 | K | 86 | LYS |
| 14 | K | 89 | PRO |
| 14 | K | 92 | ARG |
| 14 | K | 98 | ILE |
| 14 | K | 105 | THR |
| 14 | K | 117 | ARG |
| 14 | K | 120 | SER |
| 14 | K | 126 | SER |
| 14 | K | 135 | THR |
| 14 | K | 141 | CYS |
| 14 | K | 142 | ASN |
| 14 | K | 144 | ASP |
| 14 | K | 149 | HIS |
| 14 | K | 159 | ALA |
| 15 | L | 62 | PRO |
| 15 | L | 64 | VAL |
| 15 | L | 67 | HIS |
| 15 | L | 82 | ARG |
| 15 | L | 83 | VAL |
| 15 | L | 134 | PRO |
| 16 | M | 7 | VAL |
| 17 | N | 30 | TYR |
| 17 | N | 89 | VAL |
| 18 | O | 5 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 18 | O | 111 | PRO |
| 19 | P | 41 | ILE |
| 20 | Q | 177 | ALA |
| 21 | R | 36 | ASN |
| 22 | S | 146 | HIS |
| 22 | S | 165 | PRO |
| 25 | V | 14 | PHE |
| 25 | V | 99 | GLU |
| 27 | X | 131 | ASP |
| 30 | a | 76 | ASP |
| 30 | a | 92 | LYS |
| 30 | a | 96 | GLY |
| 31 | b | 7 | HIS |
| 31 | b | 12 | GLN |
| 35 | f | 4 | ARG |
| 36 | g | 7 | TYR |
| 37 | h | 119 | PHE |
| 38 | i | 64 | SER |
| 40 | k | 23 | VAL |
| 40 | k | 59 | SER |
| 41 | l | 22 | PRO |
| 44 | o | 90 | HIS |
| 44 | o | 94 | GLY |
| 46 | q | 51 | ALA |
| 46 | q | 60 | MET |
| 46 | q | 69 | LEU |
| 46 | q | 70 | GLU |
| 46 | q | 73 | PRO |
| 46 | q | 74 | ALA |
| 46 | q | 98 | ILE |
| 46 | q | 100 | ASP |
| 46 | q | 104 | ALA |
| 46 | q | 118 | PRO |
| 46 | q | 136 | SER |
| 46 | q | 149 | ARG |
| 46 | q | 150 | GLY |
| 46 | q | 182 | PRO |
| 46 | q | 183 | PHE |
| 46 | q | 184 | SER |
| 46 | q | 185 | PHE |
| 47 | r | 34 | ALA |
| 47 | r | 45 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 47 | r | 107 | ARG |
| 48 | 4 | 4 | PHE |
| 48 | 4 | 43 | ALA |
| 48 | 4 | 44 | GLY |
| 48 | 4 | 45 | ILE |
| 48 | 4 | 47 | ALA |
| 48 | 4 | 61 | LYS |
| 48 | 4 | 71 | LYS |
| 48 | 4 | 206 | ASP |
| 48 | 4 | 207 | PRO |
| 48 | 4 | 240 | GLY |
| 48 | 4 | 241 | GLU |
| 48 | 4 | 481 | LYS |
| 48 | 4 | 498 | LYS |
| 48 | 4 | 499 | PHE |
| 48 | 4 | 500 | SER |
| 48 | 4 | 504 | VAL |
| 48 | 4 | 576 | VAL |
| 48 | 4 | 577 | VAL |
| 48 | 4 | 716 | ARG |
| 48 | 4 | 743 | PRO |
| 48 | 4 | 744 | ILE |
| 48 | 4 | 753 | GLU |
| 48 | 4 | 776 | VAL |
| 48 | 4 | 812 | CYS |
| 48 | 4 | 813 | VAL |
| 48 | 4 | 849 | PRO |
| 50 | SA | 3 | GLY |
| 51 | SB | 57 | ILE |
| 51 | SB | 179 | ASN |
| 51 | SB | 191 | ASP |
| 51 | SB | 223 | PHE |
| 52 | SC | 253 | PRO |
| 52 | SC | 254 | ASP |
| 53 | SD | 54 | ARG |
| 53 | SD | 202 | LYS |
| 53 | SD | 223 | ILE |
| 54 | SE | 12 | VAL |
| 54 | SE | 95 | THR |
| 54 | SE | 101 | LEU |
| 54 | SE | 196 | THR |
| 55 | SF | 34 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 55 | SF | 37 | ASP |
| 57 | SH | 16 | PRO |
| 57 | SH | 17 | ASP |
| 57 | SH | 18 | GLU |
| 57 | SH | 66 | VAL |
| 57 | SH | 116 | ARG |
| 57 | SH | 170 | VAL |
| 57 | SH | 190 | PRO |
| 58 | SI | 155 | ASN |
| 59 | SJ | 3 | VAL |
| 59 | SJ | 69 | ARG |
| 59 | SJ | 70 | ARG |
| 59 | SJ | 119 | LEU |
| 59 | SJ | 121 | LYS |
| 59 | SJ | 159 | PHE |
| 60 | SK | 30 | PRO |
| 60 | SK | 58 | VAL |
| 61 | SL | 19 | ASN |
| 61 | SL | 100 | ASN |
| 62 | SM | 15 | ASN |
| 62 | SM | 77 | ILE |
| 62 | SM | 91 | LEU |
| 62 | SM | 96 | ARG |
| 62 | SM | 102 | LYS |
| 62 | SM | 114 | TYR |
| 63 | SN | 143 | SER |
| 64 | SO | 56 | VAL |
| 64 | SO | 65 | ASP |
| 64 | SO | 140 | THR |
| 65 | SP | 14 | LYS |
| 65 | SP | 38 | SER |
| 66 | SQ | 48 | GLN |
| 66 | SQ | 77 | HIS |
| 67 | SR | 88 | VAL |
| 68 | SS | 12 | ILE |
| 68 | SS | 90 | VAL |
| 68 | SS | 118 | ARG |
| 69 | ST | 29 | LYS |
| 70 | SU | 50 | VAL |
| 70 | SU | 107 | GLU |
| 71 | SV | 41 | LYS |
| 71 | SV | 65 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 72 | SW | 77 | PRO |
| 72 | SW | 107 | SER |
| 73 | SX | 34 | THR |
| 73 | SX | 129 | SER |
| 75 | SZ | 113 | THR |
| 81 | Sf | 89 | LYS |
| 81 | Sf | 98 | VAL |
| 81 | Sf | 137 | ASP |
| 82 | Sg | 96 | THR |
| 82 | Sg | 142 | VAL |
| 82 | Sg | 161 | SER |
| 82 | Sg | 182 | CYS |
| 82 | Sg | 282 | GLU |
| 4 | A | 110 | GLY |
| 5 | B | 47 | LEU |
| 5 | B | 147 | ALA |
| 5 | B | 274 | TYR |
| 5 | B | 314 | ILE |
| 5 | B | 394 | LYS |
| 6 | C | 58 | ALA |
| 6 | C | 66 | SER |
| 6 | C | 320 | LYS |
| 7 | D | 21 | ARG |
| 7 | D | 57 | ASN |
| 7 | D | 96 | ALA |
| 7 | D | 220 | LYS |
| 7 | D | 260 | GLU |
| 7 | D | 279 | ARG |
| 7 | D | 281 | ALA |
| 7 | D | 293 | ARG |
| 8 | E | 43 | ASN |
| 8 | E | 91 | PRO |
| 8 | E | 181 | PRO |
| 8 | E | 220 | LYS |
| 9 | F | 31 | LYS |
| 9 | F | 168 | ARG |
| 9 | F | 229 | PHE |
| 10 | G | 28 | VAL |
| 11 | H | 64 | ARG |
| 12 | I | 101 | LYS |
| 12 | I | 158 | LYS |
| 12 | I | 210 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 13 | J | 26 | VAL |
| 13 | J | 88 | LYS |
| 13 | J | 169 | LYS |
| 14 | K | 24 | ALA |
| 14 | K | 34 | PRO |
| 14 | K | 60 | VAL |
| 14 | K | 94 | LYS |
| 14 | K | 140 | GLY |
| 15 | L | 143 | GLU |
| 16 | M | 87 | ALA |
| 17 | N | 79 | ALA |
| 20 | Q | 178 | ARG |
| 21 | R | 39 | GLN |
| 23 | T | 18 | PRO |
| 23 | T | 44 | GLY |
| 23 | T | 55 | LYS |
| 27 | X | 86 | ALA |
| 28 | Y | 6 | PHE |
| 29 | Z | 91 | LEU |
| 30 | a | 60 | HIS |
| 30 | a | 62 | HIS |
| 30 | a | 97 | ALA |
| 32 | c | 32 | LYS |
| 32 | c | 80 | GLU |
| 32 | c | 81 | LEU |
| 33 | d | 93 | ASN |
| 34 | e | 34 | ASN |
| 37 | h | 122 | LYS |
| 40 | k | 61 | PRO |
| 44 | o | 33 | LEU |
| 44 | o | 98 | LYS |
| 46 | q | 46 | SER |
| 46 | q | 84 | GLY |
| 46 | q | 128 | THR |
| 46 | q | 158 | VAL |
| 46 | q | 179 | ASN |
| 46 | q | 180 | ILE |
| 46 | q | 202 | GLU |
| 46 | q | 203 | VAL |
| 47 | r | 123 | PRO |
| 48 | 4 | 48 | SER |
| 48 | 4 | 53 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 48 | 4 | 54 | THR |
| 48 | 4 | 62 | ASP |
| 48 | 4 | 532 | PRO |
| 50 | SA | 110 | ASN |
| 50 | SA | 187 | GLY |
| 51 | SB | 83 | LYS |
| 51 | SB | 108 | ASP |
| 51 | SB | 152 | LYS |
| 51 | SB | 204 | ILE |
| 52 | SC | 134 | ASN |
| 52 | SC | 255 | LEU |
| 53 | SD | 219 | PRO |
| 54 | SE | 76 | VAL |
| 54 | SE | 98 | ASN |
| 54 | SE | 109 | PHE |
| 55 | SF | 21 | GLY |
| 55 | SF | 121 | PRO |
| 56 | SG | 99 | GLY |
| 57 | SH | 160 | LYS |
| 58 | SI | 126 | GLY |
| 58 | SI | 137 | LEU |
| 58 | SI | 138 | ASN |
| 59 | SJ | 5 | ARG |
| 59 | SJ | 118 | GLY |
| 61 | SL | 3 | ASP |
| 62 | SM | 35 | ILE |
| 62 | SM | 48 | HIS |
| 62 | SM | 79 | VAL |
| 63 | SN | 38 | TYR |
| 64 | SO | 32 | HIS |
| 64 | SO | 33 | ILE |
| 64 | SO | 64 | ALA |
| 64 | SO | 105 | THR |
| 64 | SO | 129 | ILE |
| 64 | SO | 146 | ARG |
| 65 | SP | 12 | PHE |
| 66 | SQ | 32 | ILE |
| 66 | SQ | 35 | ASN |
| 67 | SR | 93 | GLN |
| 67 | SR | 95 | ILE |
| 67 | SR | 110 | ASP |
| 67 | SR | 123 | THR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 68 | SS | 7 | GLU |
| 68 | SS | 133 | GLY |
| 69 | ST | 28 | LEU |
| 69 | ST | 34 | VAL |
| 69 | ST | 39 | LEU |
| 69 | ST | 49 | ASP |
| 72 | SW | 45 | GLY |
| 73 | SX | 99 | GLU |
| 74 | SY | 60 | PHE |
| 74 | SY | 84 | LYS |
| 74 | SY | 118 | ARG |
| 74 | SY | 120 | THR |
| 75 | SZ | 42 | ASP |
| 75 | SZ | 102 | LYS |
| 75 | SZ | 104 | ARG |
| 75 | SZ | 108 | ILE |
| 76 | Sa | 8 | ASN |
| 76 | Sa | 25 | ASN |
| 77 | Sb | 6 | ASP |
| 77 | Sb | 59 | CYS |
| 81 | Sf | 112 | GLY |
| 82 | Sg | 97 | THR |
| 82 | Sg | 139 | LYS |
| 82 | Sg | 141 | THR |
| 4 | A | 180 | LEU |
| 4 | A | 196 | TRP |
| 5 | B | 295 | ASP |
| 6 | C | 73 | VAL |
| 6 | C | 97 | ARG |
| 6 | C | 266 | THR |
| 6 | C | 273 | LEU |
| 7 | D | 129 | GLU |
| 7 | D | 152 | ARG |
| 7 | D | 187 | SER |
| 7 | D | 188 | LYS |
| 8 | E | 61 | ARG |
| 8 | E | 92 | VAL |
| 8 | E | 95 | ASP |
| 8 | E | 104 | LYS |
| 8 | E | 153 | HIS |
| 8 | E | 206 | LYS |
| 8 | E | 218 | LEU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | E | 255 | ARG |
| 9 | F | 105 | PRO |
| 12 | I | 94 | PHE |
| 12 | I | 106 | ALA |
| 13 | J | 124 | GLY |
| 14 | K | 56 | LEU |
| 14 | K | 67 | ARG |
| 14 | K | 90 | ARG |
| 14 | K | 139 | VAL |
| 15 | L | 172 | GLU |
| 19 | P | 54 | GLN |
| 20 | Q | 52 | PHE |
| 20 | Q | 146 | ARG |
| 21 | R | 130 | ASN |
| 22 | S | 153 | PRO |
| 24 | U | 38 | ASN |
| 28 | Y | 11 | ARG |
| 28 | Y | 18 | HIS |
| 29 | Z | 8 | GLY |
| 29 | Z | 33 | THR |
| 30 | a | 93 | ASN |
| 33 | d | 38 | PHE |
| 35 | f | 80 | ASN |
| 35 | f | 107 | PRO |
| 41 | l | 47 | THR |
| 44 | o | 49 | GLY |
| 46 | q | 115 | ALA |
| 48 | 4 | 269 | ALA |
| 48 | 4 | 434 | TYR |
| 48 | 4 | 810 | PRO |
| 50 | SA | 105 | PRO |
| 51 | SB | 43 | ASN |
| 52 | SC | 264 | SER |
| 53 | SD | 178 | ARG |
| 53 | SD | 179 | GLN |
| 54 | SE | 24 | THR |
| 54 | SE | 163 | ASP |
| 54 | SE | 171 | ASP |
| 55 | SF | 163 | PHE |
| 57 | SH | 107 | LYS |
| 57 | SH | 110 | THR |
| 58 | SI | 143 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 60 | SK | 63 | ALA |
| 60 | SK | 92 | ALA |
| 61 | SL | 28 | THR |
| 62 | SM | 36 | ARG |
| 62 | SM | 65 | VAL |
| 62 | SM | 95 | ASP |
| 62 | SM | 103 | VAL |
| 62 | SM | 116 | LYS |
| 62 | SM | 117 | GLU |
| 64 | SO | 128 | ARG |
| 65 | SP | 50 | ARG |
| 65 | SP | 73 | PRO |
| 65 | SP | 74 | GLU |
| 65 | SP | 87 | PRO |
| 67 | SR | 127 | ASN |
| 68 | SS | 92 | ASP |
| 69 | ST | 128 | GLN |
| 71 | SV | 3 | ASN |
| 72 | SW | 30 | CYS |
| 73 | SX | 114 | ASP |
| 74 | SY | 104 | ARG |
| 75 | SZ | 80 | ARG |
| 76 | Sa | 61 | ALA |
| 76 | Sa | 62 | TYR |
| 76 | Sa | 97 | PRO |
| 79 | Sd | 7 | TYR |
| 81 | Sf | 83 | LYS |
| 81 | Sf | 99 | LYS |
| 81 | Sf | 100 | LEU |
| 82 | Sg | 65 | PHE |
| 82 | Sg | 144 | ASP |
| 82 | Sg | 283 | PRO |
| 4 | A | 35 | ALA |
| 4 | A | 109 | GLU |
| 4 | A | 193 | ARG |
| 5 | B | 117 | ARG |
| 5 | B | 189 | THR |
| 5 | B | 310 | SER |
| 5 | B | 329 | ASP |
| 6 | C | 23 | THR |
| 6 | C | 49 | ARG |
| 7 | D | 20 | PHE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 7 | D | 32 | ALA |
| 8 | E | 85 | LEU |
| 8 | E | 118 | PRO |
| 8 | E | 122 | LEU |
| 8 | E | 183 | ARG |
| 8 | E | 203 | LYS |
| 8 | E | 254 | LEU |
| 10 | G | 43 | GLN |
| 10 | G | 165 | GLU |
| 11 | H | 51 | LYS |
| 12 | I | 77 | VAL |
| 12 | I | 109 | ASP |
| 14 | K | 40 | LYS |
| 14 | K | 54 | LYS |
| 17 | N | 182 | HIS |
| 20 | Q | 55 | ARG |
| 21 | R | 131 | VAL |
| 24 | U | 98 | ASP |
| 25 | V | 110 | GLY |
| 26 | W | 43 | LYS |
| 30 | a | 98 | ALA |
| 31 | b | 10 | HIS |
| 32 | c | 77 | ASN |
| 33 | d | 58 | GLY |
| 33 | d | 102 | LEU |
| 35 | f | 5 | LEU |
| 40 | k | 29 | LYS |
| 44 | o | 8 | ARG |
| 46 | q | 61 | MET |
| 46 | q | 130 | LEU |
| 46 | q | 134 | LYS |
| 46 | q | 156 | SER |
| 46 | q | 191 | GLN |
| 46 | q | 199 | TYR |
| 46 | q | 201 | PRO |
| 48 | 4 | 502 | SER |
| 50 | SA | 188 | THR |
| 51 | SB | 77 | ASP |
| 53 | SD | 218 | LEU |
| 54 | SE | 132 | GLY |
| 55 | SF | 131 | ALA |
| 55 | SF | 132 | GLY |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 55 | SF | 143 | PRO |
| 56 | SG | 146 | ASN |
| 56 | SG | 152 | ASP |
| 57 | SH | 35 | ASP |
| 57 | SH | 57 | ARG |
| 57 | SH | 111 | LYS |
| 59 | SJ | 39 | ASN |
| 59 | SJ | 92 | MET |
| 59 | SJ | 120 | ALA |
| 59 | SJ | 125 | HIS |
| 60 | SK | 3 | MET |
| 60 | SK | 65 | ARG |
| 61 | SL | 8 | ARG |
| 62 | SM | 76 | LEU |
| 62 | SM | 119 | GLN |
| 65 | SP | 8 | LYS |
| 65 | SP | 75 | VAL |
| 66 | SQ | 116 | ASP |
| 71 | SV | 10 | ASP |
| 74 | SY | 30 | PRO |
| 74 | SY | 34 | THR |
| 76 | Sa | 35 | ALA |
| 77 | Sb | 75 | GLU |
| 79 | Sd | 8 | TRP |
| 81 | Sf | 87 | THR |
| 82 | Sg | 37 | ASP |
| 82 | Sg | 160 | SER |
| 82 | Sg | 286 | CYS |
| 4 | A | 130 | SER |
| 5 | B | 137 | TRP |
| 5 | B | 139 | ASP |
| 5 | B | 194 | LEU |
| 5 | B | 387 | ALA |
| 7 | D | 125 | VAL |
| 7 | D | 263 | LYS |
| 8 | E | 229 | PHE |
| 8 | E | 245 | ASP |
| 9 | F | 99 | GLY |
| 10 | G | 123 | ALA |
| 10 | G | 125 | LYS |
| 11 | H | 110 | SER |
| 13 | J | 11 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 13 | J | 32 | ARG |
| 14 | K | 36 | GLY |
| 14 | K | 96 | LYS |
| 17 | N | 40 | PRO |
| 17 | N | 55 | ALA |
| 28 | Y | 85 | VAL |
| 29 | Z | 124 | THR |
| 31 | b | 21 | ILE |
| 35 | f | 106 | TYR |
| 36 | g | 84 | ALA |
| 39 | j | 5 | THR |
| 39 | j | 38 | GLY |
| 45 | p | 4 | ARG |
| 46 | q | 82 | ILE |
| 48 | 4 | 246 | PRO |
| 48 | 4 | 574 | ASP |
| 51 | SB | 76 | ASN |
| 51 | SB | 93 | GLY |
| 52 | SC | 181 | PRO |
| 52 | SC | 189 | GLY |
| 53 | SD | 199 | GLY |
| 53 | SD | 214 | LYS |
| 54 | SE | 38 | LEU |
| 55 | SF | 68 | ILE |
| 56 | SG | 20 | ASP |
| 57 | SH | 100 | ILE |
| 57 | SH | 159 | ASP |
| 60 | SK | 39 | ASN |
| 60 | SK | 67 | PHE |
| 60 | SK | 69 | TRP |
| 61 | SL | 147 | LYS |
| 62 | SM | 81 | ASP |
| 63 | SN | 58 | HIS |
| 63 | SN | 138 | ASN |
| 64 | SO | 39 | ASP |
| 64 | SO | 149 | ARG |
| 66 | SQ | 43 | GLU |
| 68 | SS | 82 | TRP |
| 70 | SU | 118 | ASP |
| 71 | SV | 42 | VAL |
| 71 | SV | 45 | ARG |
| 76 | Sa | 72 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 79 | Sd | 10 | HIS |
| 81 | Sf | 138 | ARG |
| 5 | B | 17 | LEU |
| 5 | B | 112 | ASP |
| 5 | B | 144 | ALA |
| 6 | C | 198 | ASN |
| 8 | E | 40 | CYS |
| 8 | E | 100 | THR |
| 12 | I | 110 | ARG |
| 13 | J | 27 | GLY |
| 14 | K | 138 | SER |
| 15 | L | 169 | ILE |
| 18 | O | 110 | PRO |
| 28 | Y | 63 | LYS |
| 28 | Y | 79 | VAL |
| 29 | Z | 4 | PHE |
| 39 | j | 9 | GLY |
| 39 | j | 75 | ARG |
| 46 | q | 85 | ASN |
| 46 | q | 198 | ILE |
| 47 | r | 103 | ARG |
| 48 | 4 | 7 | ASP |
| 48 | 4 | 503 | PRO |
| 50 | SA | 43 | SER |
| 51 | SB | 22 | VAL |
| 53 | SD | 222 | PRO |
| 54 | SE | 30 | ARG |
| 54 | SE | 35 | PRO |
| 56 | SG | 59 | GLN |
| 58 | SI | 131 | PRO |
| 60 | SK | 41 | PRO |
| 61 | SL | 69 | ARG |
| 65 | SP | 27 | ASP |
| 65 | SP | 49 | LEU |
| 67 | SR | 121 | GLN |
| 68 | SS | 117 | ILE |
| 71 | SV | 81 | LYS |
| 73 | SX | 104 | GLY |
| 77 | Sb | 48 | SER |
| 5 | B | 110 | ILE |
| 5 | B | 259 | PRO |
| 7 | D | 114 | GLY |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 40 | k | 63 | GLY |
| 46 | q | 196 | GLY |
| 48 | 4 | 517 | LEU |
| 48 | 4 | 699 | GLY |
| 52 | SC | 171 | GLY |
| 55 | SF | 166 | ILE |
| 74 | SY | 95 | GLY |
| 82 | Sg | 190 | GLY |
| 15 | L | 100 | PRO |
| 46 | q | 80 | PRO |
| 46 | q | 116 | ILE |
| 48 | 4 | 109 | VAL |
| 54 | SE | 15 | PRO |
| 56 | SG | 161 | PRO |
| 63 | SN | 37 | ILE |
| 80 | Se | 54 | GLY |
| 7 | D | 261 | VAL |
| 12 | I | 47 | PRO |
| 37 | h | 38 | GLY |
| 53 | SD | 194 | PRO |
| 54 | SE | 131 | VAL |
| 59 | SJ | 8 | VAL |
| 59 | SJ | 169 | ARG |
| 62 | SM | 94 | ILE |
| 67 | SR | 86 | PRO |
| 70 | SU | 52 | GLY |
| 74 | SY | 67 | GLY |
| 77 | Sb | 58 | GLY |
| 82 | Sg | 163 | PRO |
| 5 | B | 321 | VAL |
| 8 | E | 90 | LYS |
| 9 | F | 100 | ILE |
| 10 | G | 58 | PRO |
| 15 | L | 28 | GLN |
| 38 | i | 63 | VAL |
| 47 | r | 44 | ILE |
| 51 | SB | 114 | VAL |
| 54 | SE | 90 | ILE |
| 62 | SM | 104 | VAL |
| 64 | SO | 24 | GLY |
| 64 | SO | 53 | ILE |
| 9 | F | 199 | VAL |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 46 | q | 117 | ALA |
| 58 | SI | 20 | PRO |

### 5.3.2 Protein sidechains (i)

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 4 | A | 187/199 (94%) | 139 (74%) | 48 (26%) | 0 3 |
| 5 | B | 335/335 (100%) | 265 (79%) | 70 (21%) | 1 5 |
| 6 | C | 305/305 (100%) | 239 (78%) | 66 (22%) | 1 4 |
| 7 | D | 246/250 (98%) | 178 (72%) | 68 (28%) | 0 2 |
| 8 | E | 209/209 (100%) | 158 (76%) | 51 (24%) | 0 3 |
| 9 | F | 194/194 (100%) | 145 (75%) | 49 (25%) | 0 3 |
| 10 | G | 206/226 (91%) | 158 (77%) | 48 (23%) | 0 3 |
| 11 | H | 169/171 (99%) | 125 (74%) | 44 (26%) | 0 3 |
| 12 | I | 180/180 (100%) | 135 (75%) | 45 (25%) | 0 3 |
| 13 | J | 143/149 (96%) | 115 (80%) | 28 (20%) | 1 6 |
| 14 | K | 124/136 (91%) | 98 (79%) | 26 (21%) | 1 5 |
| 15 | L | 176/177 (99%) | 135 (77%) | 41 (23%) | 0 3 |
| 16 | M | 116/160 (72%) | 95 (82%) | 21 (18%) | 1 7 |
| 17 | N | 171/172 (99%) | 129 (75%) | 42 (25%) | 0 3 |
| 18 | O | 172/174 (99%) | 146 (85%) | 26 (15%) | 2 14 |
| 19 | P | 134/134 (100%) | 112 (84%) | 22 (16%) | 2 11 |
| 20 | Q | 163/164 (99%) | 132 (81%) | 31 (19%) | 1 6 |
| 21 | R | 159/175 (91%) | 120 (76%) | 39 (24%) | 0 3 |
| 22 | S | 156/192 (81%) | 121 (78%) | 35 (22%) | 1 4 |
| 23 | T | 139/140 (99%) | 112 (81%) | 27 (19%) | 1 6 |
| 24 | U | 89/114 (78%) | 67 (75%) | 22 (25%) | 0 3 |
| 25 | V | 101/107 (94%) | 77 (76%) | 24 (24%) | 0 3 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 26 | W | 55/126 (44%) | 42 (76%) | 13 (24%) | 0 3 |
| 27 | X | 107/133 (80%) | 89 (83%) | 18 (17%) | 1 10 |
| 28 | Y | 124/135 (92%) | 96 (77%) | 28 (23%) | 1 4 |
| 29 | Z | 117/118 (99%) | 94 (80%) | 23 (20%) | 1 6 |
| 30 | a | 119/120 (99%) | 102 (86%) | 17 (14%) | 2 16 |
| 31 | b | 63/123 (51%) | 45 (71%) | 18 (29%) | 0 2 |
| 32 | c | 79/97 (81%) | 60 (76%) | 19 (24%) | 0 3 |
| 33 | d | 98/110 (89%) | 66 (67%) | 32 (33%) | 0 2 |
| 34 | e | 114/121 (94%) | 89 (78%) | 25 (22%) | 1 4 |
| 35 | f | 88/89 (99%) | 73 (83%) | 15 (17%) | 1 10 |
| 36 | g | 98/100 (98%) | 79 (81%) | 19 (19%) | 1 6 |
| 37 | h | 109/110 (99%) | 92 (84%) | 17 (16%) | 2 13 |
| 38 | i | 86/89 (97%) | 71 (83%) | 15 (17%) | 1 9 |
| 39 | j | 73/73 (100%) | 60 (82%) | 13 (18%) | 1 8 |
| 40 | k | 64/65 (98%) | 52 (81%) | 12 (19%) | 1 6 |
| 41 | l | 47/48 (98%) | 39 (83%) | 8 (17%) | 1 10 |
| 42 | m | 48/116 (41%) | 34 (71%) | 14 (29%) | 0 2 |
| 43 | n | 22/24 (92%) | 17 (77%) | 5 (23%) | 0 4 |
| 44 | o | 92/94 (98%) | 70 (76%) | 22 (24%) | 0 3 |
| 45 | p | 74/74 (100%) | 61 (82%) | 13 (18%) | 1 8 |
| 46 | q | 170/170 (100%) | 133 (78%) | 37 (22%) | 1 4 |
| 47 | r | 109/109 (100%) | 86 (79%) | 23 (21%) | 1 5 |
| 48 | 4 | 728/728 (100%) | 586 (80%) | 142 (20%) | 1 6 |
| 50 | SA | 174/245 (71%) | 141 (81%) | 33 (19%) | 1 6 |
| 51 | SB | 194/231 (84%) | 164 (84%) | 30 (16%) | 2 13 |
| 52 | SC | 184/184 (100%) | 148 (80%) | 36 (20%) | 1 6 |
| 53 | SD | 190/202 (94%) | 163 (86%) | 27 (14%) | 2 16 |
| 54 | SE | 224/225 (100%) | 180 (80%) | 44 (20%) | 1 6 |
| 55 | SF | 161/170 (95%) | 128 (80%) | 33 (20%) | 1 5 |
| 56 | SG | 207/218 (95%) | 171 (83%) | 36 (17%) | 1 9 |
| 57 | SH | 169/174 (97%) | 149 (88%) | 20 (12%) | 4 21 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 58 | SI | 178/180 (99%) | 148 (83%) | 30 (17%) | 1 10 |
| 59 | SJ | 161/168 (96%) | 128 (80%) | 33 (20%) | 1 5 |
| 60 | SK | 89/136 (65%) | 68 (76%) | 21 (24%) | 0 3 |
| 61 | SL | 136/142 (96%) | 116 (85%) | 20 (15%) | 2 15 |
| 62 | SM | 104/104 (100%) | 76 (73%) | 28 (27%) | 0 2 |
| 63 | SN | 130/131 (99%) | 101 (78%) | 29 (22%) | 1 4 |
| 64 | SO | 106/119 (89%) | 83 (78%) | 23 (22%) | 1 4 |
| 65 | SP | 88/130 (68%) | 73 (83%) | 15 (17%) | 1 10 |
| 66 | SQ | 117/121 (97%) | 100 (86%) | 17 (14%) | 2 15 |
| 67 | SR | 117/121 (97%) | 102 (87%) | 15 (13%) | 3 18 |
| 68 | SS | 119/132 (90%) | 97 (82%) | 22 (18%) | 1 7 |
| 69 | ST | 112/115 (97%) | 89 (80%) | 23 (20%) | 1 5 |
| 70 | SU | 94/107 (88%) | 84 (89%) | 10 (11%) | 5 25 |
| 71 | SV | 66/67 (98%) | 53 (80%) | 13 (20%) | 1 6 |
| 72 | SW | 112/113 (99%) | 93 (83%) | 19 (17%) | 1 10 |
| 73 | SX | 113/115 (98%) | 97 (86%) | 16 (14%) | 2 16 |
| 74 | SY | 108/114 (95%) | 86 (80%) | 22 (20%) | 1 5 |
| 75 | SZ | 66/103 (64%) | 55 (83%) | 11 (17%) | 2 10 |
| 76 | Sa | 85/98 (87%) | 76 (89%) | 9 (11%) | 5 25 |
| 77 | Sb | 75/76 (99%) | 64 (85%) | 11 (15%) | 2 15 |
| 78 | Sc | 57/62 (92%) | 43 (75%) | 14 (25%) | 0 3 |
| 79 | Sd | 45/48 (94%) | 35 (78%) | 10 (22%) | 1 4 |
| 80 | Se | 46/105 (44%) | 35 (76%) | 11 (24%) | 0 3 |
| 81 | Sf | 64/140 (46%) | 45 (70%) | 19 (30%) | 0 2 |
| 82 | Sg | 272/275 (99%) | 242 (89%) | 30 (11%) | 5 24 |
| All | All | 10721/11706 (92%) | 8570 (80%) | 2151 (20%) | 3 5 |

All (2151) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | A | 3 | ARG |
| 4 | A | 5 | ILE |
| 4 | A | 16 | PHE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | A | 30 | ARG |
| 4 | A | 37 | ARG |
| 4 | A | 40 | TYR |
| 4 | A | 41 | ILE |
| 4 | A | 63 | PHE |
| 4 | A | 64 | ARG |
| 4 | A | 70 | LYS |
| 4 | A | 73 | THR |
| 4 | A | 74 | GLU |
| 4 | A | 95 | GLN |
| 4 | A | 97 | ASN |
| 4 | A | 100 | ASN |
| 4 | A | 109 | GLU |
| 4 | A | 116 | LEU |
| 4 | A | 122 | ASP |
| 4 | A | 123 | ARG |
| 4 | A | 125 | LYS |
| 4 | A | 126 | LEU |
| 4 | A | 128 | ARG |
| 4 | A | 139 | HIS |
| 4 | A | 144 | LYS |
| 4 | A | 147 | ARG |
| 4 | A | 162 | ASN |
| 4 | A | 163 | ARG |
| 4 | A | 176 | ASP |
| 4 | A | 181 | LYS |
| 4 | A | 186 | TYR |
| 4 | A | 187 | HIS |
| 4 | A | 189 | TYR |
| 4 | A | 190 | LYS |
| 4 | A | 193 | ARG |
| 4 | A | 194 | ASN |
| 4 | A | 195 | CYS |
| 4 | A | 196 | TRP |
| 4 | A | 205 | ASN |
| 4 | A | 208 | GLU |
| 4 | A | 215 | ASN |
| 4 | A | 216 | HIS |
| 4 | A | 218 | HIS |
| 4 | A | 221 | LYS |
| 4 | A | 226 | ARG |
| 4 | A | 227 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | A | 233 | ARG |
| 4 | A | 242 | ARG |
| 4 | A | 245 | ARG |
| 5 | B | 10 | ARG |
| 5 | B | 16 | PHE |
| 5 | B | 17 | LEU |
| 5 | B | 25 | HIS |
| 5 | B | 26 | ARG |
| 5 | B | 36 | ASP |
| 5 | B | 39 | LYS |
| 5 | B | 41 | VAL |
| 5 | B | 46 | PHE |
| 5 | B | 55 | HIS |
| 5 | B | 56 | ILE |
| 5 | B | 58 | ARG |
| 5 | B | 61 | ASP |
| 5 | B | 62 | ARG |
| 5 | B | 74 | GLU |
| 5 | B | 78 | ILE |
| 5 | B | 94 | GLU |
| 5 | B | 95 | THR |
| 5 | B | 99 | LEU |
| 5 | B | 100 | ARG |
| 5 | B | 101 | THR |
| 5 | B | 103 | LYS |
| 5 | B | 104 | THR |
| 5 | B | 106 | PHE |
| 5 | B | 116 | ARG |
| 5 | B | 117 | ARG |
| 5 | B | 119 | TYR |
| 5 | B | 122 | TRP |
| 5 | B | 123 | HIS |
| 5 | B | 146 | LEU |
| 5 | B | 149 | ASP |
| 5 | B | 154 | LYS |
| 5 | B | 156 | TYR |
| 5 | B | 165 | HIS |
| 5 | B | 167 | GLN |
| 5 | B | 169 | ARG |
| 5 | B | 174 | ARG |
| 5 | B | 189 | THR |
| 5 | B | 198 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 5 | B | 203 | GLN |
| 5 | B | 207 | VAL |
| 5 | B | 214 | ASP |
| 5 | B | 218 | ASP |
| 5 | B | 228 | TYR |
| 5 | B | 233 | SER |
| 5 | B | 235 | TRP |
| 5 | B | 236 | HIS |
| 5 | B | 245 | HIS |
| 5 | B | 249 | ARG |
| 5 | B | 257 | TRP |
| 5 | B | 258 | HIS |
| 5 | B | 261 | ARG |
| 5 | B | 264 | PHE |
| 5 | B | 289 | GLN |
| 5 | B | 291 | TYR |
| 5 | B | 309 | LEU |
| 5 | B | 314 | ILE |
| 5 | B | 323 | TYR |
| 5 | B | 326 | VAL |
| 5 | B | 328 | ASN |
| 5 | B | 329 | ASP |
| 5 | B | 347 | LEU |
| 5 | B | 348 | ARG |
| 5 | B | 355 | THR |
| 5 | B | 356 | LYS |
| 5 | B | 357 | ARG |
| 5 | B | 366 | LYS |
| 5 | B | 369 | ASP |
| 5 | B | 378 | ARG |
| 5 | B | 388 | PHE |
| 6 | C | 14 | LYS |
| 6 | C | 36 | ILE |
| 6 | C | 47 | ASN |
| 6 | C | 49 | ARG |
| 6 | C | 60 | HIS |
| 6 | C | 65 | GLU |
| 6 | C | 71 | ARG |
| 6 | C | 75 | ARG |
| 6 | C | 76 | ILE |
| 6 | C | 78 | ARG |
| 6 | C | 80 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | C | 85 | HIS |
| 6 | C | 86 | ARG |
| 6 | C | 87 | SER |
| 6 | C | 92 | PHE |
| 6 | C | 94 | ASN |
| 6 | C | 95 | MET |
| 6 | C | 97 | ARG |
| 6 | C | 100 | ARG |
| 6 | C | 102 | PHE |
| 6 | C | 107 | THR |
| 6 | C | 112 | HIS |
| 6 | C | 113 | ARG |
| 6 | C | 122 | TYR |
| 6 | C | 126 | SER |
| 6 | C | 131 | SER |
| 6 | C | 142 | HIS |
| 6 | C | 150 | LEU |
| 6 | C | 156 | ASP |
| 6 | C | 160 | SER |
| 6 | C | 173 | LYS |
| 6 | C | 175 | LYS |
| 6 | C | 177 | TRP |
| 6 | C | 178 | ASN |
| 6 | C | 182 | LYS |
| 6 | C | 184 | TYR |
| 6 | C | 188 | ARG |
| 6 | C | 193 | LYS |
| 6 | C | 196 | MET |
| 6 | C | 198 | ASN |
| 6 | C | 201 | ARG |
| 6 | C | 212 | ASN |
| 6 | C | 215 | ASN |
| 6 | C | 219 | LYS |
| 6 | C | 222 | ARG |
| 6 | C | 262 | GLU |
| 6 | C | 264 | TYR |
| 6 | C | 267 | TRP |
| 6 | C | 281 | MET |
| 6 | C | 288 | ASP |
| 6 | C | 291 | ARG |
| 6 | C | 300 | ARG |
| 6 | C | 303 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | C | 307 | LYS |
| 6 | C | 309 | ILE |
| 6 | C | 310 | HIS |
| 6 | C | 311 | ARG |
| 6 | C | 312 | ARG |
| 6 | C | 321 | ASN |
| 6 | C | 322 | LEU |
| 6 | C | 333 | LYS |
| 6 | C | 342 | ARG |
| 6 | C | 343 | GLN |
| 6 | C | 345 | ARG |
| 6 | C | 350 | ARG |
| 6 | C | 352 | ASP |
| 7 | D | 15 | ARG |
| 7 | D | 22 | ARG |
| 7 | D | 23 | ARG |
| 7 | D | 30 | TYR |
| 7 | D | 31 | TYR |
| 7 | D | 33 | ARG |
| 7 | D | 35 | ARG |
| 7 | D | 39 | GLN |
| 7 | D | 42 | ASN |
| 7 | D | 44 | TYR |
| 7 | D | 45 | ASN |
| 7 | D | 50 | ARG |
| 7 | D | 59 | ASP |
| 7 | D | 63 | GLN |
| 7 | D | 66 | TYR |
| 7 | D | 79 | TYR |
| 7 | D | 81 | HIS |
| 7 | D | 90 | VAL |
| 7 | D | 92 | LEU |
| 7 | D | 94 | ASN |
| 7 | D | 95 | TYR |
| 7 | D | 99 | TYR |
| 7 | D | 104 | LEU |
| 7 | D | 107 | ARG |
| 7 | D | 111 | ASN |
| 7 | D | 113 | PHE |
| 7 | D | 116 | ASP |
| 7 | D | 118 | ILE |
| 7 | D | 119 | TYR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 7 | D | 124 | GLU |
| 7 | D | 129 | GLU |
| 7 | D | 131 | ASN |
| 7 | D | 136 | ASP |
| 7 | D | 157 | ASN |
| 7 | D | 168 | ASP |
| 7 | D | 177 | THR |
| 7 | D | 179 | ARG |
| 7 | D | 189 | GLU |
| 7 | D | 191 | ASN |
| 7 | D | 193 | GLU |
| 7 | D | 196 | ARG |
| 7 | D | 202 | GLN |
| 7 | D | 203 | ASN |
| 7 | D | 206 | ASP |
| 7 | D | 213 | GLU |
| 7 | D | 221 | LYS |
| 7 | D | 223 | PHE |
| 7 | D | 229 | ASN |
| 7 | D | 232 | THR |
| 7 | D | 234 | ASP |
| 7 | D | 244 | HIS |
| 7 | D | 248 | ARG |
| 7 | D | 249 | GLU |
| 7 | D | 254 | GLU |
| 7 | D | 255 | LYS |
| 7 | D | 256 | LYS |
| 7 | D | 259 | LYS |
| 7 | D | 260 | GLU |
| 7 | D | 262 | LYS |
| 7 | D | 264 | LYS |
| 7 | D | 265 | ARG |
| 7 | D | 266 | TRP |
| 7 | D | 268 | ARG |
| 7 | D | 279 | ARG |
| 7 | D | 287 | PHE |
| 7 | D | 291 | GLN |
| 7 | D | 292 | GLU |
| 7 | D | 293 | ARG |
| 8 | E | 39 | HIS |
| 8 | E | 40 | CYS |
| 8 | E | 43 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | E | 46 | LEU |
| 8 | E | 52 | ARG |
| 8 | E | 61 | ARG |
| 8 | E | 64 | MET |
| 8 | E | 67 | ARG |
| 8 | E | 68 | LYS |
| 8 | E | 95 | ASP |
| 8 | E | 101 | ARG |
| 8 | E | 104 | LYS |
| 8 | E | 111 | TYR |
| 8 | E | 112 | TYR |
| 8 | E | 114 | THR |
| 8 | E | 115 | GLU |
| 8 | E | 124 | HIS |
| 8 | E | 126 | LYS |
| 8 | E | 129 | PHE |
| 8 | E | 134 | ARG |
| 8 | E | 153 | HIS |
| 8 | E | 157 | ARG |
| 8 | E | 166 | SER |
| 8 | E | 171 | VAL |
| 8 | E | 175 | LEU |
| 8 | E | 178 | ASN |
| 8 | E | 179 | ARG |
| 8 | E | 186 | HIS |
| 8 | E | 187 | GLN |
| 8 | E | 203 | LYS |
| 8 | E | 206 | LYS |
| 8 | E | 212 | TYR |
| 8 | E | 217 | LYS |
| 8 | E | 219 | ARG |
| 8 | E | 230 | ASP |
| 8 | E | 233 | LYS |
| 8 | E | 237 | GLU |
| 8 | E | 241 | GLN |
| 8 | E | 242 | ARG |
| 8 | E | 245 | ASP |
| 8 | E | 246 | GLN |
| 8 | E | 250 | ASP |
| 8 | E | 252 | GLN |
| 8 | E | 256 | ARG |
| 8 | E | 262 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | E | 266 | TYR |
| 8 | E | 268 | ARG |
| 8 | E | 277 | ILE |
| 8 | E | 280 | HIS |
| 8 | E | 282 | LEU |
| 8 | E | 284 | PHE |
| 9 | F | 27 | PHE |
| 9 | F | 33 | LYS |
| 9 | F | 34 | ARG |
| 9 | F | 41 | GLN |
| 9 | F | 43 | MET |
| 9 | F | 44 | LEU |
| 9 | F | 49 | ARG |
| 9 | F | 64 | ARG |
| 9 | F | 65 | GLN |
| 9 | F | 68 | ARG |
| 9 | F | 72 | ARG |
| 9 | F | 82 | ASN |
| 9 | F | 83 | PHE |
| 9 | F | 84 | TYR |
| 9 | F | 85 | VAL |
| 9 | F | 90 | LYS |
| 9 | F | 93 | PHE |
| 9 | F | 96 | ARG |
| 9 | F | 100 | ILE |
| 9 | F | 101 | ASN |
| 9 | F | 118 | GLN |
| 9 | F | 119 | ILE |
| 9 | F | 120 | PHE |
| 9 | F | 121 | ASN |
| 9 | F | 137 | ILE |
| 9 | F | 146 | TYR |
| 9 | F | 148 | ASN |
| 9 | F | 149 | LEU |
| 9 | F | 151 | SER |
| 9 | F | 154 | GLU |
| 9 | F | 176 | LEU |
| 9 | F | 192 | LEU |
| 9 | F | 194 | HIS |
| 9 | F | 197 | TYR |
| 9 | F | 201 | LYS |
| 9 | F | 202 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 9 | F | 204 | LYS |
| 9 | F | 209 | PHE |
| 9 | F | 213 | PHE |
| 9 | F | 214 | LYS |
| 9 | F | 224 | LYS |
| 9 | F | 226 | THR |
| 9 | F | 227 | THR |
| 9 | F | 228 | HIS |
| 9 | F | 234 | ASP |
| 9 | F | 239 | GLU |
| 9 | F | 245 | LEU |
| 9 | F | 247 | ARG |
| 9 | F | 248 | ARG |
| 10 | G | 28 | VAL |
| 10 | G | 29 | ASN |
| 10 | G | 31 | LEU |
| 10 | G | 32 | PHE |
| 10 | G | 38 | ASN |
| 10 | G | 39 | PHE |
| 10 | G | 44 | ASP |
| 10 | G | 46 | GLN |
| 10 | G | 49 | ARG |
| 10 | G | 50 | ASP |
| 10 | G | 56 | LYS |
| 10 | G | 60 | TYR |
| 10 | G | 62 | ARG |
| 10 | G | 67 | ARG |
| 10 | G | 71 | TYR |
| 10 | G | 73 | ARG |
| 10 | G | 85 | GLN |
| 10 | G | 88 | ASP |
| 10 | G | 89 | ARG |
| 10 | G | 90 | GLN |
| 10 | G | 100 | HIS |
| 10 | G | 101 | LYS |
| 10 | G | 102 | TYR |
| 10 | G | 103 | ARG |
| 10 | G | 108 | GLN |
| 10 | G | 112 | GLN |
| 10 | G | 125 | LYS |
| 10 | G | 131 | LYS |
| 10 | G | 141 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 10 | G | 150 | LYS |
| 10 | G | 162 | ASP |
| 10 | G | 169 | PHE |
| 10 | G | 170 | LEU |
| 10 | G | 175 | ARG |
| 10 | G | 177 | MET |
| 10 | G | 189 | ARG |
| 10 | G | 202 | VAL |
| 10 | G | 210 | GLU |
| 10 | G | 217 | LYS |
| 10 | G | 220 | GLU |
| 10 | G | 223 | ARG |
| 10 | G | 227 | ASN |
| 10 | G | 230 | TYR |
| 10 | G | 231 | ASN |
| 10 | G | 235 | ARG |
| 10 | G | 240 | ASN |
| 10 | G | 254 | GLU |
| 10 | G | 259 | LYS |
| 11 | H | 11 | ASP |
| 11 | H | 12 | ILE |
| 11 | H | 18 | ILE |
| 11 | H | 26 | ILE |
| 11 | H | 31 | ARG |
| 11 | H | 40 | HIS |
| 11 | H | 42 | ASN |
| 11 | H | 51 | LYS |
| 11 | H | 52 | LYS |
| 11 | H | 54 | ARG |
| 11 | H | 57 | VAL |
| 11 | H | 58 | ASP |
| 11 | H | 59 | LYS |
| 11 | H | 60 | TRP |
| 11 | H | 63 | ASN |
| 11 | H | 66 | GLU |
| 11 | H | 71 | ARG |
| 11 | H | 79 | ASN |
| 11 | H | 84 | VAL |
| 11 | H | 88 | PHE |
| 11 | H | 92 | MET |
| 11 | H | 96 | TYR |
| 11 | H | 105 | ILE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 11 | H | 106 | GLN |
| 11 | H | 107 | GLU |
| 11 | H | 108 | ASN |
| 11 | H | 113 | GLU |
| 11 | H | 115 | ARG |
| 11 | H | 117 | PHE |
| 11 | H | 118 | LEU |
| 11 | H | 122 | TYR |
| 11 | H | 123 | ILE |
| 11 | H | 124 | ARG |
| 11 | H | 125 | ARG |
| 11 | H | 128 | MET |
| 11 | H | 140 | GLN |
| 11 | H | 141 | LYS |
| 11 | H | 161 | ILE |
| 11 | H | 162 | GLN |
| 11 | H | 168 | LYS |
| 11 | H | 171 | ASP |
| 11 | H | 173 | ARG |
| 11 | H | 177 | ASP |
| 11 | H | 180 | TYR |
| 12 | I | 3 | ARG |
| 12 | I | 4 | ARG |
| 12 | I | 8 | CYS |
| 12 | I | 9 | TYR |
| 12 | I | 13 | LYS |
| 12 | I | 17 | TYR |
| 12 | I | 21 | ARG |
| 12 | I | 24 | ARG |
| 12 | I | 28 | ASP |
| 12 | I | 32 | ARG |
| 12 | I | 35 | ASP |
| 12 | I | 39 | LYS |
| 12 | I | 43 | VAL |
| 12 | I | 45 | GLU |
| 12 | I | 46 | PHE |
| 12 | I | 58 | GLU |
| 12 | I | 71 | CYS |
| 12 | I | 74 | LYS |
| 12 | I | 78 | LYS |
| 12 | I | 83 | ASP |
| 12 | I | 86 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 12 | I | 88 | ARG |
| 12 | I | 92 | HIS |
| 12 | I | 94 | PHE |
| 12 | I | 95 | HIS |
| 12 | I | 100 | ASN |
| 12 | I | 101 | LYS |
| 12 | I | 102 | MET |
| 12 | I | 110 | ARG |
| 12 | I | 111 | LEU |
| 12 | I | 119 | PHE |
| 12 | I | 126 | VAL |
| 12 | I | 128 | ARG |
| 12 | I | 143 | GLN |
| 12 | I | 146 | GLU |
| 12 | I | 158 | LYS |
| 12 | I | 159 | PHE |
| 12 | I | 171 | TRP |
| 12 | I | 177 | ASN |
| 12 | I | 179 | ASP |
| 12 | I | 181 | PHE |
| 12 | I | 182 | GLU |
| 12 | I | 203 | HIS |
| 12 | I | 207 | ASP |
| 12 | I | 208 | LYS |
| 13 | J | 15 | LEU |
| 13 | J | 23 | ASN |
| 13 | J | 32 | ARG |
| 13 | J | 33 | LEU |
| 13 | J | 35 | ARG |
| 13 | J | 54 | ARG |
| 13 | J | 55 | TYR |
| 13 | J | 58 | ARG |
| 13 | J | 81 | GLU |
| 13 | J | 83 | LEU |
| 13 | J | 85 | LYS |
| 13 | J | 87 | LEU |
| 13 | J | 90 | ARG |
| 13 | J | 96 | LYS |
| 13 | J | 97 | ASN |
| 13 | J | 98 | ASN |
| 13 | J | 101 | ASP |
| 13 | J | 113 | ILE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 13 | J | 128 | LEU |
| 13 | J | 129 | ASP |
| 13 | J | 139 | PHE |
| 13 | J | 146 | ARG |
| 13 | J | 150 | CYS |
| 13 | J | 154 | LYS |
| 13 | J | 155 | HIS |
| 13 | J | 164 | ARG |
| 13 | J | 171 | ASP |
| 13 | J | 178 | ASN |
| 14 | K | 14 | TYR |
| 14 | K | 16 | ARG |
| 14 | K | 21 | GLU |
| 14 | K | 30 | PRO |
| 14 | K | 40 | LYS |
| 14 | K | 44 | ASP |
| 14 | K | 54 | LYS |
| 14 | K | 56 | LEU |
| 14 | K | 61 | LYS |
| 14 | K | 90 | ARG |
| 14 | K | 91 | ASP |
| 14 | K | 92 | ARG |
| 14 | K | 96 | LYS |
| 14 | K | 99 | LYS |
| 14 | K | 104 | ILE |
| 14 | K | 107 | ASP |
| 14 | K | 108 | GLU |
| 14 | K | 114 | ARG |
| 14 | K | 116 | MET |
| 14 | K | 117 | ARG |
| 14 | K | 120 | SER |
| 14 | K | 121 | LEU |
| 14 | K | 123 | ARG |
| 14 | K | 125 | LEU |
| 14 | K | 130 | LYS |
| 14 | K | 147 | HIS |
| 15 | L | 5 | ARG |
| 15 | L | 10 | LEU |
| 15 | L | 13 | HIS |
| 15 | L | 19 | GLN |
| 15 | L | 28 | GLN |
| 15 | L | 31 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 15 | L | 34 | ARG |
| 15 | L | 36 | ARG |
| 15 | L | 39 | ARG |
| 15 | L | 45 | ARG |
| 15 | L | 49 | ARG |
| 15 | L | 56 | ARG |
| 15 | L | 65 | ARG |
| 15 | L | 66 | TYR |
| 15 | L | 67 | HIS |
| 15 | L | 74 | ARG |
| 15 | L | 79 | GLU |
| 15 | L | 82 | ARG |
| 15 | L | 92 | ARG |
| 15 | L | 99 | ASP |
| 15 | L | 101 | ARG |
| 15 | L | 103 | ARG |
| 15 | L | 111 | GLN |
| 15 | L | 113 | ASN |
| 15 | L | 115 | GLN |
| 15 | L | 119 | GLU |
| 15 | L | 123 | LYS |
| 15 | L | 127 | PHE |
| 15 | L | 129 | ARG |
| 15 | L | 130 | LYS |
| 15 | L | 146 | LEU |
| 15 | L | 158 | ARG |
| 15 | L | 162 | LYS |
| 15 | L | 163 | ARG |
| 15 | L | 165 | LYS |
| 15 | L | 172 | GLU |
| 15 | L | 176 | PHE |
| 15 | L | 186 | ARG |
| 15 | L | 195 | ARG |
| 15 | L | 201 | GLU |
| 15 | L | 205 | GLN |
| 16 | M | 8 | GLU |
| 16 | M | 11 | ARG |
| 16 | M | 17 | PHE |
| 16 | M | 29 | ASP |
| 16 | M | 32 | ASP |
| 16 | M | 33 | GLN |
| 16 | M | 34 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 16 | M | 38 | VAL |
| 16 | M | 47 | ARG |
| 16 | M | 56 | GLN |
| 16 | M | 57 | LEU |
| 16 | M | 59 | ASP |
| 16 | M | 61 | ILE |
| 16 | M | 66 | HIS |
| 16 | M | 70 | GLN |
| 16 | M | 79 | LYS |
| 16 | M | 89 | THR |
| 16 | M | 90 | ARG |
| 16 | M | 91 | TRP |
| 16 | M | 98 | ARG |
| 16 | M | 119 | ARG |
| 17 | N | 4 | TYR |
| 17 | N | 9 | GLU |
| 17 | N | 11 | TRP |
| 17 | N | 26 | ARG |
| 17 | N | 29 | GLN |
| 17 | N | 49 | ARG |
| 17 | N | 50 | ARG |
| 17 | N | 53 | TYR |
| 17 | N | 54 | LYS |
| 17 | N | 59 | TYR |
| 17 | N | 63 | ARG |
| 17 | N | 67 | ARG |
| 17 | N | 71 | ARG |
| 17 | N | 72 | LYS |
| 17 | N | 80 | THR |
| 17 | N | 86 | HIS |
| 17 | N | 87 | HIS |
| 17 | N | 91 | GLN |
| 17 | N | 92 | LEU |
| 17 | N | 104 | GLU |
| 17 | N | 108 | ARG |
| 17 | N | 119 | TYR |
| 17 | N | 123 | GLU |
| 17 | N | 126 | THR |
| 17 | N | 127 | TYR |
| 17 | N | 131 | GLU |
| 17 | N | 136 | ASP |
| 17 | N | 138 | PHE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 17 | N | 139 | HIS |
| 17 | N | 147 | ASP |
| 17 | N | 150 | TRP |
| 17 | N | 162 | ARG |
| 17 | N | 169 | ARG |
| 17 | N | 174 | LEU |
| 17 | N | 178 | HIS |
| 17 | N | 182 | HIS |
| 17 | N | 189 | ARG |
| 17 | N | 192 | TRP |
| 17 | N | 195 | ARG |
| 17 | N | 196 | ASN |
| 17 | N | 199 | GLN |
| 17 | N | 203 | TYR |
| 18 | O | 5 | GLN |
| 18 | O | 42 | ASN |
| 18 | O | 46 | ASN |
| 18 | O | 49 | ARG |
| 18 | O | 57 | PHE |
| 18 | O | 59 | ARG |
| 18 | O | 60 | LYS |
| 18 | O | 61 | ARG |
| 18 | O | 62 | MET |
| 18 | O | 74 | ARG |
| 18 | O | 78 | ARG |
| 18 | O | 82 | ARG |
| 18 | O | 85 | ARG |
| 18 | O | 110 | PRO |
| 18 | O | 113 | ASP |
| 18 | O | 140 | ARG |
| 18 | O | 160 | ARG |
| 18 | O | 167 | HIS |
| 18 | O | 173 | GLN |
| 18 | O | 178 | ARG |
| 18 | O | 184 | ASN |
| 18 | O | 187 | LYS |
| 18 | O | 188 | LYS |
| 18 | O | 191 | ARG |
| 18 | O | 192 | PHE |
| 18 | O | 194 | GLU |
| 19 | P | 3 | ARG |
| 19 | P | 9 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 19 | P | 10 | ASN |
| 19 | P | 13 | LYS |
| 19 | P | 18 | ARG |
| 19 | P | 23 | ARG |
| 19 | P | 24 | VAL |
| 19 | P | 28 | ASN |
| 19 | P | 30 | ARG |
| 19 | P | 40 | HIS |
| 19 | P | 42 | ARG |
| 19 | P | 61 | ARG |
| 19 | P | 69 | ARG |
| 19 | P | 70 | CYS |
| 19 | P | 78 | TRP |
| 19 | P | 90 | PHE |
| 19 | P | 91 | LEU |
| 19 | P | 110 | ASP |
| 19 | P | 128 | ARG |
| 19 | P | 133 | HIS |
| 19 | P | 135 | ARG |
| 19 | P | 154 | GLU |
| 20 | Q | 5 | ILE |
| 20 | Q | 9 | LYS |
| 20 | Q | 14 | ARG |
| 20 | Q | 15 | ARG |
| 20 | Q | 16 | LYS |
| 20 | Q | 32 | TYR |
| 20 | Q | 37 | ARG |
| 20 | Q | 44 | ASN |
| 20 | Q | 54 | SER |
| 20 | Q | 58 | ARG |
| 20 | Q | 61 | LEU |
| 20 | Q | 65 | ARG |
| 20 | Q | 68 | ARG |
| 20 | Q | 72 | LEU |
| 20 | Q | 75 | ARG |
| 20 | Q | 79 | THR |
| 20 | Q | 85 | THR |
| 20 | Q | 89 | ASP |
| 20 | Q | 91 | ARG |
| 20 | Q | 93 | GLN |
| 20 | Q | 97 | LYS |
| 20 | Q | 108 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 20 | Q | 110 | ARG |
| 20 | Q | 112 | ARG |
| 20 | Q | 119 | LYS |
| 20 | Q | 146 | ARG |
| 20 | Q | 150 | ARG |
| 20 | Q | 166 | TYR |
| 20 | Q | 173 | LYS |
| 20 | Q | 180 | ARG |
| 20 | Q | 181 | ARG |
| 21 | R | 5 | ARG |
| 21 | R | 6 | LEU |
| 21 | R | 9 | ARG |
| 21 | R | 23 | TRP |
| 21 | R | 30 | ASN |
| 21 | R | 39 | GLN |
| 21 | R | 40 | GLN |
| 21 | R | 47 | ASP |
| 21 | R | 50 | ILE |
| 21 | R | 58 | HIS |
| 21 | R | 60 | ARG |
| 21 | R | 74 | ARG |
| 21 | R | 81 | ARG |
| 21 | R | 86 | ASN |
| 21 | R | 89 | MET |
| 21 | R | 99 | MET |
| 21 | R | 104 | ARG |
| 21 | R | 105 | LEU |
| 21 | R | 107 | ARG |
| 21 | R | 108 | ARG |
| 21 | R | 109 | TYR |
| 21 | R | 113 | LYS |
| 21 | R | 114 | LYS |
| 21 | R | 117 | ARG |
| 21 | R | 118 | HIS |
| 21 | R | 120 | TYR |
| 21 | R | 124 | TYR |
| 21 | R | 131 | VAL |
| 21 | R | 133 | LYS |
| 21 | R | 136 | ARG |
| 21 | R | 138 | LEU |
| 21 | R | 141 | HIS |
| 21 | R | 163 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 21 | R | 168 | GLU |
| 21 | R | 172 | ARG |
| 21 | R | 175 | GLU |
| 21 | R | 177 | LEU |
| 21 | R | 178 | GLN |
| 21 | R | 180 | LYS |
| 22 | S | 2 | LYS |
| 22 | S | 15 | ARG |
| 22 | S | 28 | TYR |
| 22 | S | 29 | ARG |
| 22 | S | 37 | HIS |
| 22 | S | 44 | PHE |
| 22 | S | 47 | PHE |
| 22 | S | 48 | VAL |
| 22 | S | 53 | LYS |
| 22 | S | 57 | SER |
| 22 | S | 64 | CYS |
| 22 | S | 68 | PHE |
| 22 | S | 70 | LYS |
| 22 | S | 82 | LEU |
| 22 | S | 83 | ARG |
| 22 | S | 84 | TYR |
| 22 | S | 86 | SER |
| 22 | S | 90 | THR |
| 22 | S | 95 | ARG |
| 22 | S | 99 | ASP |
| 22 | S | 100 | LEU |
| 22 | S | 101 | THR |
| 22 | S | 127 | MET |
| 22 | S | 128 | LYS |
| 22 | S | 138 | ARG |
| 22 | S | 146 | HIS |
| 22 | S | 147 | ASP |
| 22 | S | 150 | ILE |
| 22 | S | 151 | LYS |
| 22 | S | 156 | HIS |
| 22 | S | 157 | ARG |
| 22 | S | 159 | LEU |
| 22 | S | 162 | GLN |
| 22 | S | 168 | THR |
| 22 | S | 171 | ARG |
| 23 | T | 5 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | T | 7 | LYS |
| 23 | T | 9 | ARG |
| 23 | T | 13 | TYR |
| 23 | T | 19 | PHE |
| 23 | T | 30 | TYR |
| 23 | T | 32 | ARG |
| 23 | T | 33 | ILE |
| 23 | T | 35 | LYS |
| 23 | T | 36 | LYS |
| 23 | T | 38 | ASP |
| 23 | T | 41 | ASP |
| 23 | T | 54 | HIS |
| 23 | T | 60 | LYS |
| 23 | T | 70 | HIS |
| 23 | T | 76 | VAL |
| 23 | T | 88 | ARG |
| 23 | T | 102 | ARG |
| 23 | T | 103 | ASP |
| 23 | T | 107 | LYS |
| 23 | T | 113 | ASP |
| 23 | T | 118 | GLU |
| 23 | T | 121 | GLU |
| 23 | T | 139 | HIS |
| 23 | T | 142 | ARG |
| 23 | T | 144 | ASN |
| 23 | T | 152 | GLU |
| 24 | U | 21 | PHE |
| 24 | U | 23 | LEU |
| 24 | U | 27 | HIS |
| 24 | U | 33 | ILE |
| 24 | U | 38 | ASN |
| 24 | U | 39 | PHE |
| 24 | U | 40 | GLU |
| 24 | U | 42 | PHE |
| 24 | U | 46 | ARG |
| 24 | U | 50 | ASN |
| 24 | U | 52 | LYS |
| 24 | U | 62 | THR |
| 24 | U | 64 | GLU |
| 24 | U | 65 | ARG |
| 24 | U | 67 | LYS |
| 24 | U | 69 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 24 | U | 82 | TYR |
| 24 | U | 89 | LYS |
| 24 | U | 90 | TYR |
| 24 | U | 98 | ASP |
| 24 | U | 101 | ARG |
| 24 | U | 113 | ARG |
| 25 | V | 13 | LYS |
| 25 | V | 14 | PHE |
| 25 | V | 15 | ARG |
| 25 | V | 18 | LEU |
| 25 | V | 27 | ASN |
| 25 | V | 30 | ASP |
| 25 | V | 36 | ASN |
| 25 | V | 46 | LYS |
| 25 | V | 48 | ARG |
| 25 | V | 50 | ASN |
| 25 | V | 51 | ARG |
| 25 | V | 59 | ASP |
| 25 | V | 60 | MET |
| 25 | V | 73 | ARG |
| 25 | V | 77 | HIS |
| 25 | V | 84 | GLN |
| 25 | V | 91 | LYS |
| 25 | V | 98 | PHE |
| 25 | V | 100 | ASP |
| 25 | V | 107 | ASN |
| 25 | V | 109 | LYS |
| 25 | V | 111 | GLU |
| 25 | V | 123 | LYS |
| 25 | V | 128 | LEU |
| 26 | W | 3 | VAL |
| 26 | W | 4 | GLU |
| 26 | W | 8 | PHE |
| 26 | W | 12 | LYS |
| 26 | W | 17 | HIS |
| 26 | W | 25 | ASP |
| 26 | W | 33 | ASN |
| 26 | W | 44 | ARG |
| 26 | W | 50 | ASN |
| 26 | W | 55 | TYR |
| 26 | W | 56 | ARG |
| 26 | W | 57 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 26 | W | 59 | HIS |
| 27 | X | 39 | LYS |
| 27 | X | 45 | THR |
| 27 | X | 48 | ARG |
| 27 | X | 60 | TYR |
| 27 | X | 62 | ARG |
| 27 | X | 72 | ASP |
| 27 | X | 79 | PHE |
| 27 | X | 84 | GLU |
| 27 | X | 94 | ASN |
| 27 | X | 117 | TYR |
| 27 | X | 120 | ASP |
| 27 | X | 129 | ARG |
| 27 | X | 133 | GLU |
| 27 | X | 137 | TYR |
| 27 | X | 139 | ARG |
| 27 | X | 144 | TYR |
| 27 | X | 148 | ASP |
| 27 | X | 151 | ASN |
| 28 | Y | 2 | LYS |
| 28 | Y | 4 | ASN |
| 28 | Y | 11 | ARG |
| 28 | Y | 15 | ARG |
| 28 | Y | 17 | ARG |
| 28 | Y | 18 | HIS |
| 28 | Y | 19 | PHE |
| 28 | Y | 27 | ARG |
| 28 | Y | 36 | LYS |
| 28 | Y | 45 | ARG |
| 28 | Y | 49 | ILE |
| 28 | Y | 50 | ARG |
| 28 | Y | 53 | ASP |
| 28 | Y | 56 | GLN |
| 28 | Y | 59 | ARG |
| 28 | Y | 62 | TYR |
| 28 | Y | 65 | GLN |
| 28 | Y | 72 | GLN |
| 28 | Y | 82 | ILE |
| 28 | Y | 83 | GLU |
| 28 | Y | 84 | ARG |
| 28 | Y | 87 | ARG |
| 28 | Y | 91 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 28 | Y | 112 | ASP |
| 28 | Y | 114 | ASP |
| 28 | Y | 115 | ARG |
| 28 | Y | 126 | ARG |
| 28 | Y | 127 | GLN |
| 29 | Z | 4 | PHE |
| 29 | Z | 17 | ARG |
| 29 | Z | 21 | ARG |
| 29 | Z | 27 | LYS |
| 29 | Z | 30 | ASP |
| 29 | Z | 36 | ARG |
| 29 | Z | 38 | TYR |
| 29 | Z | 54 | THR |
| 29 | Z | 57 | MET |
| 29 | Z | 60 | LYS |
| 29 | Z | 64 | LYS |
| 29 | Z | 78 | ASN |
| 29 | Z | 88 | ASP |
| 29 | Z | 92 | ASP |
| 29 | Z | 93 | LYS |
| 29 | Z | 98 | LYS |
| 29 | Z | 102 | ARG |
| 29 | Z | 108 | ARG |
| 29 | Z | 109 | LYS |
| 29 | Z | 112 | ARG |
| 29 | Z | 121 | ARG |
| 29 | Z | 122 | TYR |
| 29 | Z | 136 | PHE |
| 30 | a | 7 | LYS |
| 30 | a | 10 | LYS |
| 30 | a | 14 | HIS |
| 30 | a | 19 | HIS |
| 30 | a | 21 | ARG |
| 30 | a | 40 | HIS |
| 30 | a | 41 | HIS |
| 30 | a | 46 | ASP |
| 30 | a | 49 | HIS |
| 30 | a | 52 | TYR |
| 30 | a | 59 | ARG |
| 30 | a | 61 | TYR |
| 30 | a | 63 | LEU |
| 30 | a | 77 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 30 | a | 84 | GLU |
| 30 | a | 105 | ARG |
| 30 | a | 132 | ARG |
| 31 | b | 6 | ASN |
| 31 | b | 7 | HIS |
| 31 | b | 12 | GLN |
| 31 | b | 16 | TRP |
| 31 | b | 18 | ARG |
| 31 | b | 19 | ASN |
| 31 | b | 22 | LYS |
| 31 | b | 23 | LYS |
| 31 | b | 25 | ARG |
| 31 | b | 27 | GLN |
| 31 | b | 28 | ARG |
| 31 | b | 30 | GLU |
| 31 | b | 39 | PHE |
| 31 | b | 43 | MET |
| 31 | b | 44 | ARG |
| 31 | b | 51 | LYS |
| 31 | b | 55 | LYS |
| 31 | b | 65 | MET |
| 32 | c | 18 | LEU |
| 32 | c | 27 | TYR |
| 32 | c | 31 | TYR |
| 32 | c | 37 | MET |
| 32 | c | 39 | ARG |
| 32 | c | 42 | LYS |
| 32 | c | 44 | LYS |
| 32 | c | 52 | CYS |
| 32 | c | 55 | LEU |
| 32 | c | 56 | ARG |
| 32 | c | 59 | GLU |
| 32 | c | 66 | LEU |
| 32 | c | 72 | HIS |
| 32 | c | 73 | HIS |
| 32 | c | 74 | TYR |
| 32 | c | 77 | ASN |
| 32 | c | 78 | ASN |
| 32 | c | 81 | LEU |
| 32 | c | 88 | TYR |
| 33 | d | 18 | ASN |
| 33 | d | 19 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 33 | d | 23 | ARG |
| 33 | d | 26 | THR |
| 33 | d | 28 | ASN |
| 33 | d | 31 | LYS |
| 33 | d | 32 | ARG |
| 33 | d | 38 | PHE |
| 33 | d | 39 | LYS |
| 33 | d | 44 | ARG |
| 33 | d | 67 | ARG |
| 33 | d | 73 | TRP |
| 33 | d | 78 | ARG |
| 33 | d | 79 | ASN |
| 33 | d | 83 | ARG |
| 33 | d | 85 | ARG |
| 33 | d | 86 | VAL |
| 33 | d | 87 | ARG |
| 33 | d | 91 | LYS |
| 33 | d | 93 | ASN |
| 33 | d | 94 | GLU |
| 33 | d | 95 | ASP |
| 33 | d | 101 | LYS |
| 33 | d | 103 | TYR |
| 33 | d | 108 | TYR |
| 33 | d | 109 | VAL |
| 33 | d | 116 | ASN |
| 33 | d | 117 | LEU |
| 33 | d | 118 | GLN |
| 33 | d | 119 | THR |
| 33 | d | 121 | ASN |
| 33 | d | 123 | ASP |
| 34 | e | 11 | LYS |
| 34 | e | 16 | ARG |
| 34 | e | 21 | ILE |
| 34 | e | 26 | ASP |
| 34 | e | 36 | ARG |
| 34 | e | 42 | ASP |
| 34 | e | 43 | ASN |
| 34 | e | 46 | ARG |
| 34 | e | 49 | PHE |
| 34 | e | 52 | GLN |
| 34 | e | 57 | ASN |
| 34 | e | 64 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 34 | e | 68 | HIS |
| 34 | e | 77 | PHE |
| 34 | e | 78 | LEU |
| 34 | e | 85 | LEU |
| 34 | e | 92 | ASN |
| 34 | e | 95 | TYR |
| 34 | e | 106 | LYS |
| 34 | e | 107 | ASN |
| 34 | e | 108 | ARG |
| 34 | e | 113 | GLU |
| 34 | e | 124 | ASN |
| 34 | e | 126 | ASN |
| 34 | e | 128 | ARG |
| 35 | f | 4 | ARG |
| 35 | f | 5 | LEU |
| 35 | f | 7 | SER |
| 35 | f | 14 | TYR |
| 35 | f | 16 | ARG |
| 35 | f | 19 | ARG |
| 35 | f | 22 | ARG |
| 35 | f | 24 | HIS |
| 35 | f | 36 | ARG |
| 35 | f | 49 | TYR |
| 35 | f | 51 | TYR |
| 35 | f | 52 | LYS |
| 35 | f | 71 | TRP |
| 35 | f | 101 | ILE |
| 35 | f | 109 | ARG |
| 36 | g | 3 | GLN |
| 36 | g | 4 | ARG |
| 36 | g | 5 | LEU |
| 36 | g | 12 | SER |
| 36 | g | 14 | ASN |
| 36 | g | 29 | ARG |
| 36 | g | 32 | TYR |
| 36 | g | 52 | ARG |
| 36 | g | 54 | ARG |
| 36 | g | 57 | ARG |
| 36 | g | 60 | ARG |
| 36 | g | 66 | ARG |
| 36 | g | 75 | SER |
| 36 | g | 81 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 36 | g | 88 | ARG |
| 36 | g | 93 | ARG |
| 36 | g | 95 | PHE |
| 36 | g | 114 | GLN |
| 36 | g | 115 | LYS |
| 37 | h | 8 | ASP |
| 37 | h | 10 | ARG |
| 37 | h | 15 | GLU |
| 37 | h | 23 | ASP |
| 37 | h | 28 | LEU |
| 37 | h | 48 | ARG |
| 37 | h | 51 | ARG |
| 37 | h | 67 | GLU |
| 37 | h | 68 | ASN |
| 37 | h | 72 | PHE |
| 37 | h | 73 | TYR |
| 37 | h | 89 | ARG |
| 37 | h | 93 | ARG |
| 37 | h | 97 | LYS |
| 37 | h | 100 | GLU |
| 37 | h | 119 | PHE |
| 37 | h | 122 | LYS |
| 38 | i | 3 | LEU |
| 38 | i | 4 | ARG |
| 38 | i | 12 | ASN |
| 38 | i | 20 | ASN |
| 38 | i | 27 | SER |
| 38 | i | 30 | ARG |
| 38 | i | 33 | LEU |
| 38 | i | 42 | ASP |
| 38 | i | 46 | GLU |
| 38 | i | 50 | PHE |
| 38 | i | 54 | GLU |
| 38 | i | 68 | ARG |
| 38 | i | 85 | ARG |
| 38 | i | 88 | GLU |
| 38 | i | 103 | LYS |
| 39 | j | 10 | LYS |
| 39 | j | 25 | LYS |
| 39 | j | 27 | TYR |
| 39 | j | 39 | TYR |
| 39 | j | 45 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 39 | j | 47 | TYR |
| 39 | j | 48 | ASN |
| 39 | j | 55 | ARG |
| 39 | j | 56 | ARG |
| 39 | j | 57 | ASN |
| 39 | j | 71 | TYR |
| 39 | j | 79 | ARG |
| 39 | j | 80 | GLU |
| 40 | k | 14 | THR |
| 40 | k | 19 | ASP |
| 40 | k | 21 | LYS |
| 40 | k | 27 | LYS |
| 40 | k | 30 | ASP |
| 40 | k | 35 | LYS |
| 40 | k | 37 | ARG |
| 40 | k | 51 | GLU |
| 40 | k | 54 | GLU |
| 40 | k | 56 | LEU |
| 40 | k | 60 | LEU |
| 40 | k | 70 | LYS |
| 41 | l | 11 | ARG |
| 41 | l | 12 | PHE |
| 41 | l | 16 | LYS |
| 41 | l | 17 | GLN |
| 41 | l | 21 | ARG |
| 41 | l | 36 | ARG |
| 41 | l | 46 | ARG |
| 41 | l | 49 | LEU |
| 42 | m | 79 | GLU |
| 42 | m | 84 | GLN |
| 42 | m | 87 | GLN |
| 42 | m | 89 | TYR |
| 42 | m | 90 | ASN |
| 42 | m | 96 | CYS |
| 42 | m | 97 | ARG |
| 42 | m | 98 | LYS |
| 42 | m | 99 | CYS |
| 42 | m | 104 | HIS |
| 42 | m | 106 | ARG |
| 42 | m | 109 | ASN |
| 42 | m | 111 | ARG |
| 42 | m | 119 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 43 | n | 8 | LYS |
| 43 | n | 9 | ARG |
| 43 | n | 18 | ARG |
| 43 | n | 20 | MET |
| 43 | n | 21 | ARG |
| 44 | o | 6 | LYS |
| 44 | o | 11 | PHE |
| 44 | o | 24 | THR |
| 44 | o | 26 | TYR |
| 44 | o | 33 | LEU |
| 44 | o | 36 | GLN |
| 44 | o | 42 | ASP |
| 44 | o | 45 | GLN |
| 44 | o | 48 | TYR |
| 44 | o | 57 | ARG |
| 44 | o | 58 | LYS |
| 44 | o | 59 | LYS |
| 44 | o | 61 | LYS |
| 44 | o | 64 | LYS |
| 44 | o | 69 | ARG |
| 44 | o | 76 | ASN |
| 44 | o | 78 | ARG |
| 44 | o | 79 | SER |
| 44 | o | 81 | ARG |
| 44 | o | 82 | MET |
| 44 | o | 99 | ARG |
| 44 | o | 102 | GLN |
| 45 | p | 3 | LYS |
| 45 | p | 4 | ARG |
| 45 | p | 16 | THR |
| 45 | p | 30 | GLU |
| 45 | p | 34 | HIS |
| 45 | p | 48 | LYS |
| 45 | p | 49 | ARG |
| 45 | p | 69 | TRP |
| 45 | p | 71 | TYR |
| 45 | p | 84 | ARG |
| 45 | p | 85 | ARG |
| 45 | p | 87 | LYS |
| 45 | p | 92 | GLN |
| 46 | q | 5 | ASP |
| 46 | q | 6 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 46 | q | 14 | PHE |
| 46 | q | 16 | LYS |
| 46 | q | 26 | LYS |
| 46 | q | 33 | ASP |
| 46 | q | 42 | GLN |
| 46 | q | 44 | ARG |
| 46 | q | 45 | MET |
| 46 | q | 48 | ARG |
| 46 | q | 57 | LYS |
| 46 | q | 59 | THR |
| 46 | q | 62 | ARG |
| 46 | q | 69 | LEU |
| 46 | q | 77 | LYS |
| 46 | q | 81 | HIS |
| 46 | q | 83 | ARG |
| 46 | q | 98 | ILE |
| 46 | q | 100 | ASP |
| 46 | q | 102 | LEU |
| 46 | q | 103 | ARG |
| 46 | q | 116 | ILE |
| 46 | q | 127 | ASN |
| 46 | q | 141 | LEU |
| 46 | q | 143 | ILE |
| 46 | q | 149 | ARG |
| 46 | q | 155 | LEU |
| 46 | q | 158 | VAL |
| 46 | q | 162 | LYS |
| 46 | q | 183 | PHE |
| 46 | q | 185 | PHE |
| 46 | q | 191 | GLN |
| 46 | q | 194 | ASP |
| 46 | q | 197 | SER |
| 46 | q | 202 | GLU |
| 46 | q | 203 | VAL |
| 46 | q | 206 | ILE |
| 47 | r | 7 | TRP |
| 47 | r | 11 | ARG |
| 47 | r | 13 | CYS |
| 47 | r | 15 | SER |
| 47 | r | 16 | PHE |
| 47 | r | 18 | ILE |
| 47 | r | 26 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 47 | r | 28 | GLU |
| 47 | r | 30 | ASN |
| 47 | r | 33 | LYS |
| 47 | r | 35 | ARG |
| 47 | r | 39 | ARG |
| 47 | r | 46 | HIS |
| 47 | r | 64 | ILE |
| 47 | r | 66 | ARG |
| 47 | r | 67 | ARG |
| 47 | r | 71 | ARG |
| 47 | r | 83 | ASN |
| 47 | r | 102 | TYR |
| 47 | r | 106 | LEU |
| 47 | r | 107 | ARG |
| 47 | r | 112 | ARG |
| 47 | r | 115 | SER |
| 48 | 4 | 3 | ASN |
| 48 | 4 | 4 | PHE |
| 48 | 4 | 5 | THR |
| 48 | 4 | 6 | VAL |
| 48 | 4 | 12 | ILE |
| 48 | 4 | 15 | LYS |
| 48 | 4 | 16 | LYS |
| 48 | 4 | 27 | HIS |
| 48 | 4 | 45 | ILE |
| 48 | 4 | 48 | SER |
| 48 | 4 | 50 | ARG |
| 48 | 4 | 53 | GLU |
| 48 | 4 | 55 | ARG |
| 48 | 4 | 56 | PHE |
| 48 | 4 | 60 | ARG |
| 48 | 4 | 61 | LYS |
| 48 | 4 | 64 | GLN |
| 48 | 4 | 71 | LYS |
| 48 | 4 | 75 | ILE |
| 48 | 4 | 79 | TYR |
| 48 | 4 | 91 | GLN |
| 48 | 4 | 92 | SER |
| 48 | 4 | 93 | LYS |
| 48 | 4 | 109 | VAL |
| 48 | 4 | 110 | ASP |
| 48 | 4 | 113 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 48 | 4 | 114 | GLU |
| 48 | 4 | 122 | THR |
| 48 | 4 | 141 | THR |
| 48 | 4 | 144 | ARG |
| 48 | 4 | 159 | LYS |
| 48 | 4 | 160 | MET |
| 48 | 4 | 162 | ARG |
| 48 | 4 | 166 | GLU |
| 48 | 4 | 167 | LEU |
| 48 | 4 | 168 | GLN |
| 48 | 4 | 169 | LEU |
| 48 | 4 | 183 | GLU |
| 48 | 4 | 192 | TYR |
| 48 | 4 | 194 | GLU |
| 48 | 4 | 196 | GLU |
| 48 | 4 | 200 | MET |
| 48 | 4 | 209 | LEU |
| 48 | 4 | 216 | SER |
| 48 | 4 | 225 | LEU |
| 48 | 4 | 226 | LYS |
| 48 | 4 | 228 | PHE |
| 48 | 4 | 236 | PHE |
| 48 | 4 | 239 | LYS |
| 48 | 4 | 244 | LEU |
| 48 | 4 | 248 | GLU |
| 48 | 4 | 252 | LYS |
| 48 | 4 | 256 | MET |
| 48 | 4 | 258 | LYS |
| 48 | 4 | 264 | ARG |
| 48 | 4 | 265 | TYR |
| 48 | 4 | 267 | ASP |
| 48 | 4 | 275 | LYS |
| 48 | 4 | 281 | GLU |
| 48 | 4 | 284 | LYS |
| 48 | 4 | 311 | GLU |
| 48 | 4 | 314 | LYS |
| 48 | 4 | 317 | GLU |
| 48 | 4 | 322 | LYS |
| 48 | 4 | 330 | LYS |
| 48 | 4 | 333 | LYS |
| 48 | 4 | 343 | TRP |
| 48 | 4 | 359 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 48 | 4 | 366 | LYS |
| 48 | 4 | 368 | ARG |
| 48 | 4 | 370 | GLU |
| 48 | 4 | 371 | LEU |
| 48 | 4 | 393 | PRO |
| 48 | 4 | 409 | ARG |
| 48 | 4 | 411 | TYR |
| 48 | 4 | 420 | LEU |
| 48 | 4 | 439 | LYS |
| 48 | 4 | 448 | GLN |
| 48 | 4 | 461 | ILE |
| 48 | 4 | 462 | GLU |
| 48 | 4 | 476 | ASP |
| 48 | 4 | 477 | GLN |
| 48 | 4 | 481 | LYS |
| 48 | 4 | 488 | PHE |
| 48 | 4 | 492 | HIS |
| 48 | 4 | 493 | ASN |
| 48 | 4 | 495 | ARG |
| 48 | 4 | 497 | MET |
| 48 | 4 | 498 | LYS |
| 48 | 4 | 499 | PHE |
| 48 | 4 | 502 | SER |
| 48 | 4 | 512 | LYS |
| 48 | 4 | 519 | LYS |
| 48 | 4 | 524 | LEU |
| 48 | 4 | 525 | LYS |
| 48 | 4 | 526 | ARG |
| 48 | 4 | 540 | GLU |
| 48 | 4 | 541 | SER |
| 48 | 4 | 559 | LYS |
| 48 | 4 | 560 | ASP |
| 48 | 4 | 563 | GLU |
| 48 | 4 | 570 | ILE |
| 48 | 4 | 571 | LYS |
| 48 | 4 | 572 | LYS |
| 48 | 4 | 579 | TYR |
| 48 | 4 | 592 | LEU |
| 48 | 4 | 607 | ARG |
| 48 | 4 | 609 | PHE |
| 48 | 4 | 613 | LEU |
| 48 | 4 | 615 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 48 | 4 | 619 | LYS |
| 48 | 4 | 625 | ARG |
| 48 | 4 | 630 | GLN |
| 48 | 4 | 641 | TRP |
| 48 | 4 | 647 | ARG |
| 48 | 4 | 667 | LYS |
| 48 | 4 | 669 | VAL |
| 48 | 4 | 672 | LEU |
| 48 | 4 | 673 | ASN |
| 48 | 4 | 689 | GLU |
| 48 | 4 | 726 | ARG |
| 48 | 4 | 727 | ARG |
| 48 | 4 | 745 | TYR |
| 48 | 4 | 746 | LEU |
| 48 | 4 | 748 | GLU |
| 48 | 4 | 754 | GLN |
| 48 | 4 | 775 | GLN |
| 48 | 4 | 794 | PHE |
| 48 | 4 | 801 | ARG |
| 48 | 4 | 807 | GLN |
| 48 | 4 | 809 | PHE |
| 48 | 4 | 817 | TRP |
| 48 | 4 | 823 | ASP |
| 48 | 4 | 827 | ASN |
| 48 | 4 | 830 | ARG |
| 48 | 4 | 842 | LYS |
| 48 | 4 | 845 | LYS |
| 48 | 4 | 846 | GLU |
| 48 | 4 | 848 | ILE |
| 48 | 4 | 849 | PRO |
| 48 | 4 | 855 | LEU |
| 48 | 4 | 858 | LEU |
| 50 | SA | 8 | LEU |
| 50 | SA | 32 | PHE |
| 50 | SA | 39 | TYR |
| 50 | SA | 44 | ASP |
| 50 | SA | 53 | ARG |
| 50 | SA | 58 | LEU |
| 50 | SA | 60 | LEU |
| 50 | SA | 73 | ASP |
| 50 | SA | 79 | SER |
| 50 | SA | 81 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 50 | SA | 89 | LYS |
| 50 | SA | 90 | PHE |
| 50 | SA | 99 | ILE |
| 50 | SA | 102 | ARG |
| 50 | SA | 105 | PRO |
| 50 | SA | 111 | GLN |
| 50 | SA | 116 | PHE |
| 50 | SA | 128 | ARG |
| 50 | SA | 130 | ASP |
| 50 | SA | 140 | VAL |
| 50 | SA | 141 | ASN |
| 50 | SA | 151 | ASP |
| 50 | SA | 158 | ASP |
| 50 | SA | 169 | HIS |
| 50 | SA | 177 | MET |
| 50 | SA | 178 | LEU |
| 50 | SA | 180 | ARG |
| 50 | SA | 181 | GLU |
| 50 | SA | 186 | ARG |
| 50 | SA | 195 | TRP |
| 50 | SA | 198 | MET |
| 50 | SA | 203 | PHE |
| 50 | SA | 206 | ASP |
| 51 | SB | 27 | LYS |
| 51 | SB | 31 | TYR |
| 51 | SB | 48 | LEU |
| 51 | SB | 51 | ARG |
| 51 | SB | 52 | THR |
| 51 | SB | 56 | LYS |
| 51 | SB | 60 | ASP |
| 51 | SB | 67 | PHE |
| 51 | SB | 76 | ASN |
| 51 | SB | 77 | ASP |
| 51 | SB | 81 | PHE |
| 51 | SB | 99 | ASN |
| 51 | SB | 105 | LEU |
| 51 | SB | 107 | ARG |
| 51 | SB | 119 | THR |
| 51 | SB | 133 | TYR |
| 51 | SB | 136 | ARG |
| 51 | SB | 142 | PHE |
| 51 | SB | 146 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 51 | SB | 148 | ASN |
| 51 | SB | 150 | ILE |
| 51 | SB | 155 | TYR |
| 51 | SB | 158 | HIS |
| 51 | SB | 162 | ARG |
| 51 | SB | 180 | ASP |
| 51 | SB | 181 | LEU |
| 51 | SB | 191 | ASP |
| 51 | SB | 196 | ASP |
| 51 | SB | 205 | TYR |
| 51 | SB | 208 | HIS |
| 52 | SC | 60 | TRP |
| 52 | SC | 61 | MET |
| 52 | SC | 65 | LYS |
| 52 | SC | 71 | LYS |
| 52 | SC | 72 | ASP |
| 52 | SC | 78 | LEU |
| 52 | SC | 79 | GLU |
| 52 | SC | 92 | GLU |
| 52 | SC | 97 | PHE |
| 52 | SC | 101 | SER |
| 52 | SC | 104 | ASP |
| 52 | SC | 110 | MET |
| 52 | SC | 114 | LYS |
| 52 | SC | 115 | GLN |
| 52 | SC | 120 | GLN |
| 52 | SC | 121 | ARG |
| 52 | SC | 134 | ASN |
| 52 | SC | 137 | VAL |
| 52 | SC | 142 | LYS |
| 52 | SC | 152 | ARG |
| 52 | SC | 167 | ARG |
| 52 | SC | 169 | TYR |
| 52 | SC | 200 | ARG |
| 52 | SC | 215 | MET |
| 52 | SC | 221 | ASP |
| 52 | SC | 227 | ARG |
| 52 | SC | 235 | ASN |
| 52 | SC | 236 | PHE |
| 52 | SC | 242 | ASP |
| 52 | SC | 245 | SER |
| 52 | SC | 250 | TYR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 52 | SC | 253 | PRO |
| 52 | SC | 255 | LEU |
| 52 | SC | 262 | THR |
| 52 | SC | 272 | HIS |
| 52 | SC | 275 | LYS |
| 53 | SD | 6 | SER |
| 53 | SD | 9 | ARG |
| 53 | SD | 22 | ASN |
| 53 | SD | 23 | GLU |
| 53 | SD | 24 | PHE |
| 53 | SD | 32 | ASP |
| 53 | SD | 53 | THR |
| 53 | SD | 67 | ARG |
| 53 | SD | 76 | ARG |
| 53 | SD | 87 | TYR |
| 53 | SD | 94 | ARG |
| 53 | SD | 103 | GLU |
| 53 | SD | 107 | TYR |
| 53 | SD | 129 | SER |
| 53 | SD | 135 | GLU |
| 53 | SD | 152 | PHE |
| 53 | SD | 154 | ASP |
| 53 | SD | 158 | ILE |
| 53 | SD | 167 | TYR |
| 53 | SD | 169 | ASP |
| 53 | SD | 177 | LEU |
| 53 | SD | 178 | ARG |
| 53 | SD | 206 | ASP |
| 53 | SD | 212 | GLU |
| 53 | SD | 216 | GLU |
| 53 | SD | 218 | LEU |
| 53 | SD | 225 | GLU |
| 54 | SE | 3 | ARG |
| 54 | SE | 8 | HIS |
| 54 | SE | 9 | LEU |
| 54 | SE | 11 | ARG |
| 54 | SE | 15 | PRO |
| 54 | SE | 18 | TRP |
| 54 | SE | 21 | ASP |
| 54 | SE | 30 | ARG |
| 54 | SE | 39 | ARG |
| 54 | SE | 49 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 54 | SE | 51 | ARG |
| 54 | SE | 54 | TYR |
| 54 | SE | 66 | MET |
| 54 | SE | 67 | GLN |
| 54 | SE | 73 | ASP |
| 54 | SE | 93 | ASP |
| 54 | SE | 95 | THR |
| 54 | SE | 98 | ASN |
| 54 | SE | 99 | PHE |
| 54 | SE | 106 | LYS |
| 54 | SE | 117 | GLU |
| 54 | SE | 118 | GLU |
| 54 | SE | 121 | TYR |
| 54 | SE | 127 | ARG |
| 54 | SE | 130 | PHE |
| 54 | SE | 155 | LYS |
| 54 | SE | 158 | ASP |
| 54 | SE | 164 | LEU |
| 54 | SE | 165 | GLU |
| 54 | SE | 179 | ASN |
| 54 | SE | 180 | LEU |
| 54 | SE | 191 | ARG |
| 54 | SE | 198 | ARG |
| 54 | SE | 205 | PHE |
| 54 | SE | 206 | ASP |
| 54 | SE | 220 | THR |
| 54 | SE | 224 | ASN |
| 54 | SE | 226 | PHE |
| 54 | SE | 240 | ARG |
| 54 | SE | 242 | LYS |
| 54 | SE | 253 | ASP |
| 54 | SE | 255 | ARG |
| 54 | SE | 259 | LYS |
| 54 | SE | 260 | GLN |
| 55 | SF | 23 | TRP |
| 55 | SF | 29 | GLN |
| 55 | SF | 38 | TYR |
| 55 | SF | 42 | LYS |
| 55 | SF | 49 | LEU |
| 55 | SF | 63 | LYS |
| 55 | SF | 65 | GLN |
| 55 | SF | 79 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 55 | SF | 82 | ASN |
| 55 | SF | 83 | ASN |
| 55 | SF | 88 | MET |
| 55 | SF | 95 | HIS |
| 55 | SF | 106 | GLU |
| 55 | SF | 109 | LEU |
| 55 | SF | 110 | GLN |
| 55 | SF | 118 | ASN |
| 55 | SF | 122 | ARG |
| 55 | SF | 123 | GLU |
| 55 | SF | 124 | ASP |
| 55 | SF | 130 | ARG |
| 55 | SF | 136 | ARG |
| 55 | SF | 137 | GLN |
| 55 | SF | 140 | ASP |
| 55 | SF | 145 | ARG |
| 55 | SF | 168 | THR |
| 55 | SF | 171 | GLU |
| 55 | SF | 172 | CYS |
| 55 | SF | 176 | GLU |
| 55 | SF | 186 | ASN |
| 55 | SF | 190 | ILE |
| 55 | SF | 194 | ASP |
| 55 | SF | 195 | GLU |
| 55 | SF | 198 | ARG |
| 56 | SG | 12 | CYS |
| 56 | SG | 20 | ASP |
| 56 | SG | 21 | GLU |
| 56 | SG | 30 | LYS |
| 56 | SG | 31 | ARG |
| 56 | SG | 32 | MET |
| 56 | SG | 56 | ASN |
| 56 | SG | 58 | LYS |
| 56 | SG | 59 | GLN |
| 56 | SG | 64 | LYS |
| 56 | SG | 70 | HIS |
| 56 | SG | 74 | ARG |
| 56 | SG | 76 | LEU |
| 56 | SG | 87 | ARG |
| 56 | SG | 88 | ARG |
| 56 | SG | 110 | ASN |
| 56 | SG | 120 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 56 | SG | 121 | ILE |
| 56 | SG | 126 | ASP |
| 56 | SG | 132 | ARG |
| 56 | SG | 136 | LYS |
| 56 | SG | 140 | ARG |
| 56 | SG | 143 | LYS |
| 56 | SG | 152 | ASP |
| 56 | SG | 159 | ARG |
| 56 | SG | 162 | LEU |
| 56 | SG | 164 | LYS |
| 56 | SG | 165 | GLU |
| 56 | SG | 170 | ARG |
| 56 | SG | 191 | ARG |
| 56 | SG | 196 | LYS |
| 56 | SG | 198 | ARG |
| 56 | SG | 213 | LEU |
| 56 | SG | 225 | GLN |
| 56 | SG | 227 | GLN |
| 56 | SG | 236 | SER |
| 57 | SH | 16 | PRO |
| 57 | SH | 23 | ILE |
| 57 | SH | 33 | ASN |
| 57 | SH | 35 | ASP |
| 57 | SH | 36 | LEU |
| 57 | SH | 40 | LEU |
| 57 | SH | 57 | ARG |
| 57 | SH | 74 | LYS |
| 57 | SH | 81 | ARG |
| 57 | SH | 83 | LEU |
| 57 | SH | 87 | PHE |
| 57 | SH | 99 | ARG |
| 57 | SH | 135 | PHE |
| 57 | SH | 151 | SER |
| 57 | SH | 159 | ASP |
| 57 | SH | 162 | GLN |
| 57 | SH | 165 | ASN |
| 57 | SH | 166 | VAL |
| 57 | SH | 184 | ASP |
| 57 | SH | 186 | ASN |
| 58 | SI | 6 | ASP |
| 58 | SI | 8 | TRP |
| 58 | SI | 12 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 58 | SI | 21 | TYR |
| 58 | SI | 22 | HIS |
| 58 | SI | 27 | TYR |
| 58 | SI | 47 | ARG |
| 58 | SI | 49 | ARG |
| 58 | SI | 52 | ASN |
| 58 | SI | 58 | LEU |
| 58 | SI | 67 | TRP |
| 58 | SI | 70 | GLU |
| 58 | SI | 73 | THR |
| 58 | SI | 74 | ARG |
| 58 | SI | 83 | TYR |
| 58 | SI | 87 | ASN |
| 58 | SI | 105 | ASP |
| 58 | SI | 106 | SER |
| 58 | SI | 110 | ARG |
| 58 | SI | 112 | TRP |
| 58 | SI | 123 | ARG |
| 58 | SI | 140 | LYS |
| 58 | SI | 149 | TYR |
| 58 | SI | 155 | ASN |
| 58 | SI | 178 | ARG |
| 58 | SI | 191 | GLU |
| 58 | SI | 196 | GLU |
| 58 | SI | 197 | PHE |
| 58 | SI | 203 | LYS |
| 58 | SI | 206 | LYS |
| 59 | SJ | 5 | ARG |
| 59 | SJ | 9 | CYS |
| 59 | SJ | 10 | ARG |
| 59 | SJ | 17 | ARG |
| 59 | SJ | 18 | ARG |
| 59 | SJ | 20 | PHE |
| 59 | SJ | 26 | ASP |
| 59 | SJ | 29 | LEU |
| 59 | SJ | 39 | ASN |
| 59 | SJ | 67 | ASP |
| 59 | SJ | 69 | ARG |
| 59 | SJ | 79 | ARG |
| 59 | SJ | 93 | LYS |
| 59 | SJ | 101 | LYS |
| 59 | SJ | 104 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 59 | SJ | 108 | ARG |
| 59 | SJ | 109 | ARG |
| 59 | SJ | 110 | LEU |
| 59 | SJ | 115 | PHE |
| 59 | SJ | 116 | LYS |
| 59 | SJ | 123 | ILE |
| 59 | SJ | 124 | HIS |
| 59 | SJ | 127 | ARG |
| 59 | SJ | 131 | ARG |
| 59 | SJ | 138 | ARG |
| 59 | SJ | 139 | LYS |
| 59 | SJ | 147 | PHE |
| 59 | SJ | 150 | ARG |
| 59 | SJ | 152 | ASP |
| 59 | SJ | 159 | PHE |
| 59 | SJ | 162 | ARG |
| 59 | SJ | 165 | TYR |
| 59 | SJ | 169 | ARG |
| 60 | SK | 1 | MET |
| 60 | SK | 2 | LEU |
| 60 | SK | 5 | LYS |
| 60 | SK | 8 | ARG |
| 60 | SK | 13 | GLU |
| 60 | SK | 16 | PHE |
| 60 | SK | 32 | HIS |
| 60 | SK | 37 | ASP |
| 60 | SK | 39 | ASN |
| 60 | SK | 40 | VAL |
| 60 | SK | 43 | LEU |
| 60 | SK | 46 | MET |
| 60 | SK | 61 | GLN |
| 60 | SK | 65 | ARG |
| 60 | SK | 66 | HIS |
| 60 | SK | 74 | GLU |
| 60 | SK | 80 | ARG |
| 60 | SK | 81 | ASP |
| 60 | SK | 84 | HIS |
| 60 | SK | 89 | ILE |
| 60 | SK | 95 | ARG |
| 61 | SL | 8 | ARG |
| 61 | SL | 16 | ILE |
| 61 | SL | 20 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 61 | SL | 22 | ARG |
| 61 | SL | 27 | GLU |
| 61 | SL | 35 | ARG |
| 61 | SL | 39 | ASN |
| 61 | SL | 40 | ILE |
| 61 | SL | 65 | ASN |
| 61 | SL | 69 | ARG |
| 61 | SL | 92 | TYR |
| 61 | SL | 97 | ARG |
| 61 | SL | 103 | GLU |
| 61 | SL | 108 | ASN |
| 61 | SL | 113 | LEU |
| 61 | SL | 116 | CYS |
| 61 | SL | 117 | PHE |
| 61 | SL | 121 | GLN |
| 61 | SL | 124 | ASP |
| 61 | SL | 147 | LYS |
| 62 | SM | 12 | MET |
| 62 | SM | 13 | ASP |
| 62 | SM | 18 | LEU |
| 62 | SM | 26 | LEU |
| 62 | SM | 29 | ASP |
| 62 | SM | 31 | LEU |
| 62 | SM | 33 | ARG |
| 62 | SM | 36 | ARG |
| 62 | SM | 45 | ARG |
| 62 | SM | 48 | HIS |
| 62 | SM | 52 | GLN |
| 62 | SM | 57 | ASP |
| 62 | SM | 73 | GLN |
| 62 | SM | 75 | ASN |
| 62 | SM | 76 | LEU |
| 62 | SM | 77 | ILE |
| 62 | SM | 83 | LYS |
| 62 | SM | 88 | TRP |
| 62 | SM | 91 | LEU |
| 62 | SM | 95 | ASP |
| 62 | SM | 96 | ARG |
| 62 | SM | 99 | ASN |
| 62 | SM | 101 | ARG |
| 62 | SM | 102 | LYS |
| 62 | SM | 104 | VAL |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 62 | SM | 113 | ASP |
| 62 | SM | 114 | TYR |
| 62 | SM | 127 | TYR |
| 63 | SN | 3 | ARG |
| 63 | SN | 25 | TRP |
| 63 | SN | 27 | LYS |
| 63 | SN | 31 | ASP |
| 63 | SN | 38 | TYR |
| 63 | SN | 55 | ARG |
| 63 | SN | 56 | ASP |
| 63 | SN | 58 | HIS |
| 63 | SN | 62 | GLN |
| 63 | SN | 64 | ARG |
| 63 | SN | 69 | ASN |
| 63 | SN | 76 | LYS |
| 63 | SN | 83 | ASP |
| 63 | SN | 84 | LEU |
| 63 | SN | 86 | GLU |
| 63 | SN | 87 | ASP |
| 63 | SN | 89 | TYR |
| 63 | SN | 99 | ARG |
| 63 | SN | 101 | HIS |
| 63 | SN | 104 | ARG |
| 63 | SN | 105 | ASN |
| 63 | SN | 113 | PHE |
| 63 | SN | 121 | ARG |
| 63 | SN | 125 | LEU |
| 63 | SN | 127 | ARG |
| 63 | SN | 128 | TYR |
| 63 | SN | 132 | LYS |
| 63 | SN | 133 | ARG |
| 63 | SN | 144 | SER |
| 64 | SO | 17 | LEU |
| 64 | SO | 34 | PHE |
| 64 | SO | 39 | ASP |
| 64 | SO | 41 | PHE |
| 64 | SO | 43 | HIS |
| 64 | SO | 51 | GLU |
| 64 | SO | 52 | THR |
| 64 | SO | 63 | LYS |
| 64 | SO | 65 | ASP |
| 64 | SO | 80 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 64 | SO | 84 | ARG |
| 64 | SO | 86 | LYS |
| 64 | SO | 94 | HIS |
| 64 | SO | 103 | ASN |
| 64 | SO | 106 | LYS |
| 64 | SO | 116 | LEU |
| 64 | SO | 117 | ARG |
| 64 | SO | 121 | ARG |
| 64 | SO | 128 | ARG |
| 64 | SO | 130 | GLU |
| 64 | SO | 146 | ARG |
| 64 | SO | 147 | ARG |
| 64 | SO | 150 | ARG |
| 65 | SP | 5 | GLU |
| 65 | SP | 7 | LYS |
| 65 | SP | 10 | ARG |
| 65 | SP | 12 | PHE |
| 65 | SP | 15 | PHE |
| 65 | SP | 40 | ARG |
| 65 | SP | 41 | GLN |
| 65 | SP | 42 | ARG |
| 65 | SP | 43 | ARG |
| 65 | SP | 44 | ARG |
| 65 | SP | 50 | ARG |
| 65 | SP | 51 | ARG |
| 65 | SP | 52 | LYS |
| 65 | SP | 79 | HIS |
| 65 | SP | 86 | LEU |
| 66 | SQ | 15 | ARG |
| 66 | SQ | 26 | LYS |
| 66 | SQ | 35 | ASN |
| 66 | SQ | 41 | MET |
| 66 | SQ | 45 | ARG |
| 66 | SQ | 62 | ARG |
| 66 | SQ | 73 | LYS |
| 66 | SQ | 85 | ARG |
| 66 | SQ | 90 | LYS |
| 66 | SQ | 99 | TYR |
| 66 | SQ | 114 | GLN |
| 66 | SQ | 123 | ASP |
| 66 | SQ | 126 | ARG |
| 66 | SQ | 128 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 66 | SQ | 138 | ARG |
| 66 | SQ | 140 | ARG |
| 66 | SQ | 145 | TYR |
| 67 | SR | 3 | ARG |
| 67 | SR | 18 | GLU |
| 67 | SR | 31 | ASN |
| 67 | SR | 37 | GLU |
| 67 | SR | 56 | HIS |
| 67 | SR | 78 | ARG |
| 67 | SR | 79 | GLU |
| 67 | SR | 83 | ASN |
| 67 | SR | 87 | GLU |
| 67 | SR | 91 | LEU |
| 67 | SR | 93 | GLN |
| 67 | SR | 109 | LEU |
| 67 | SR | 118 | GLN |
| 67 | SR | 120 | THR |
| 67 | SR | 121 | GLN |
| 68 | SS | 8 | LYS |
| 68 | SS | 10 | GLN |
| 68 | SS | 14 | ARG |
| 68 | SS | 23 | ARG |
| 68 | SS | 28 | PHE |
| 68 | SS | 34 | LYS |
| 68 | SS | 39 | ARG |
| 68 | SS | 63 | GLU |
| 68 | SS | 78 | LYS |
| 68 | SS | 82 | TRP |
| 68 | SS | 85 | ASN |
| 68 | SS | 86 | ARG |
| 68 | SS | 87 | GLN |
| 68 | SS | 92 | ASP |
| 68 | SS | 95 | TYR |
| 68 | SS | 108 | ARG |
| 68 | SS | 118 | ARG |
| 68 | SS | 124 | ARG |
| 68 | SS | 125 | HIS |
| 68 | SS | 134 | GLN |
| 68 | SS | 135 | HIS |
| 68 | SS | 142 | ARG |
| 69 | ST | 11 | GLN |
| 69 | ST | 13 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 69 | ST | 16 | ARG |
| 69 | ST | 21 | PHE |
| 69 | ST | 28 | LEU |
| 69 | ST | 33 | TRP |
| 69 | ST | 35 | ASP |
| 69 | ST | 42 | HIS |
| 69 | ST | 53 | PHE |
| 69 | ST | 62 | ARG |
| 69 | ST | 63 | HIS |
| 69 | ST | 74 | SER |
| 69 | ST | 79 | TYR |
| 69 | ST | 82 | ARG |
| 69 | ST | 83 | GLN |
| 69 | ST | 84 | ARG |
| 69 | ST | 92 | PHE |
| 69 | ST | 94 | ARG |
| 69 | ST | 97 | LYS |
| 69 | ST | 118 | ASP |
| 69 | ST | 121 | ARG |
| 69 | ST | 128 | GLN |
| 69 | ST | 129 | ARG |
| 70 | SU | 19 | ARG |
| 70 | SU | 47 | ASN |
| 70 | SU | 48 | LEU |
| 70 | SU | 49 | LYS |
| 70 | SU | 51 | LYS |
| 70 | SU | 55 | ARG |
| 70 | SU | 56 | MET |
| 70 | SU | 77 | TRP |
| 70 | SU | 87 | ARG |
| 70 | SU | 111 | GLU |
| 71 | SV | 1 | MET |
| 71 | SV | 2 | GLN |
| 71 | SV | 4 | ASP |
| 71 | SV | 11 | LEU |
| 71 | SV | 18 | SER |
| 71 | SV | 21 | ASN |
| 71 | SV | 39 | VAL |
| 71 | SV | 45 | ARG |
| 71 | SV | 47 | ASN |
| 71 | SV | 49 | GLN |
| 71 | SV | 50 | PHE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 71 | SV | 81 | LYS |
| 71 | SV | 82 | ASN |
| 72 | SW | 2 | VAL |
| 72 | SW | 3 | ARG |
| 72 | SW | 12 | LYS |
| 72 | SW | 24 | GLN |
| 72 | SW | 28 | ARG |
| 72 | SW | 36 | ARG |
| 72 | SW | 37 | PHE |
| 72 | SW | 52 | ILE |
| 72 | SW | 56 | HIS |
| 72 | SW | 57 | ARG |
| 72 | SW | 70 | ASN |
| 72 | SW | 78 | ARG |
| 72 | SW | 80 | ASP |
| 72 | SW | 85 | ASP |
| 72 | SW | 90 | GLN |
| 72 | SW | 91 | ASN |
| 72 | SW | 98 | GLN |
| 72 | SW | 104 | LEU |
| 72 | SW | 105 | THR |
| 73 | SX | 5 | ARG |
| 73 | SX | 9 | THR |
| 73 | SX | 17 | ARG |
| 73 | SX | 19 | ASP |
| 73 | SX | 32 | LEU |
| 73 | SX | 45 | SER |
| 73 | SX | 46 | HIS |
| 73 | SX | 61 | GLN |
| 73 | SX | 67 | ARG |
| 73 | SX | 87 | ASN |
| 73 | SX | 88 | ASP |
| 73 | SX | 105 | PHE |
| 73 | SX | 107 | ARG |
| 73 | SX | 114 | ASP |
| 73 | SX | 131 | LEU |
| 73 | SX | 135 | LYS |
| 74 | SY | 3 | ASP |
| 74 | SY | 16 | ARG |
| 74 | SY | 17 | LEU |
| 74 | SY | 19 | GLN |
| 74 | SY | 20 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 74 | SY | 23 | MET |
| 74 | SY | 29 | HIS |
| 74 | SY | 47 | MET |
| 74 | SY | 54 | VAL |
| 74 | SY | 61 | ARG |
| 74 | SY | 63 | HIS |
| 74 | SY | 64 | PHE |
| 74 | SY | 69 | THR |
| 74 | SY | 80 | ASP |
| 74 | SY | 93 | ARG |
| 74 | SY | 96 | LEU |
| 74 | SY | 98 | GLU |
| 74 | SY | 99 | LYS |
| 74 | SY | 101 | LYS |
| 74 | SY | 107 | ARG |
| 74 | SY | 111 | LYS |
| 74 | SY | 118 | ARG |
| 75 | SZ | 44 | LEU |
| 75 | SZ | 45 | ASN |
| 75 | SZ | 49 | LEU |
| 75 | SZ | 64 | ASN |
| 75 | SZ | 69 | THR |
| 75 | SZ | 85 | ARG |
| 75 | SZ | 94 | LYS |
| 75 | SZ | 97 | ILE |
| 75 | SZ | 109 | TYR |
| 75 | SZ | 110 | THR |
| 75 | SZ | 114 | LYS |
| 76 | Sa | 28 | ARG |
| 76 | Sa | 41 | ILE |
| 76 | Sa | 43 | ASN |
| 76 | Sa | 51 | ARG |
| 76 | Sa | 52 | ASP |
| 76 | Sa | 62 | TYR |
| 76 | Sa | 72 | HIS |
| 76 | Sa | 94 | ASP |
| 76 | Sa | 95 | ARG |
| 77 | Sb | 14 | GLU |
| 77 | Sb | 17 | ARG |
| 77 | Sb | 26 | GLN |
| 77 | Sb | 34 | ASP |
| 77 | Sb | 37 | CYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 77 | Sb | 47 | PHE |
| 77 | Sb | 59 | CYS |
| 77 | Sb | 72 | ARG |
| 77 | Sb | 78 | SER |
| 77 | Sb | 83 | GLN |
| 77 | Sb | 84 | HIS |
| 78 | Sc | 5 | ARG |
| 78 | Sc | 7 | GLN |
| 78 | Sc | 13 | ARG |
| 78 | Sc | 21 | THR |
| 78 | Sc | 26 | GLN |
| 78 | Sc | 31 | ARG |
| 78 | Sc | 33 | GLU |
| 78 | Sc | 34 | PHE |
| 78 | Sc | 40 | ARG |
| 78 | Sc | 44 | ARG |
| 78 | Sc | 51 | ARG |
| 78 | Sc | 54 | ASP |
| 78 | Sc | 60 | GLU |
| 78 | Sc | 67 | ARG |
| 79 | Sd | 6 | PHE |
| 79 | Sd | 8 | TRP |
| 79 | Sd | 10 | HIS |
| 79 | Sd | 12 | ARG |
| 79 | Sd | 19 | ARG |
| 79 | Sd | 26 | ASN |
| 79 | Sd | 30 | LEU |
| 79 | Sd | 32 | ARG |
| 79 | Sd | 43 | PHE |
| 79 | Sd | 56 | ASP |
| 80 | Se | 13 | ARG |
| 80 | Se | 15 | GLN |
| 80 | Se | 18 | LYS |
| 80 | Se | 26 | LYS |
| 80 | Se | 28 | LYS |
| 80 | Se | 31 | ARG |
| 80 | Se | 34 | ARG |
| 80 | Se | 35 | ARG |
| 80 | Se | 40 | ARG |
| 80 | Se | 41 | ARG |
| 80 | Se | 52 | LYS |
| 81 | Sf | 87 | THR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 81 | Sf | 89 | LYS |
| 81 | Sf | 95 | ARG |
| 81 | Sf | 98 | VAL |
| 81 | Sf | 106 | TYR |
| 81 | Sf | 116 | ARG |
| 81 | Sf | 119 | ARG |
| 81 | Sf | 126 | CYS |
| 81 | Sf | 131 | PHE |
| 81 | Sf | 136 | PHE |
| 81 | Sf | 138 | ARG |
| 81 | Sf | 139 | HIS |
| 81 | Sf | 140 | TYR |
| 81 | Sf | 141 | CYS |
| 81 | Sf | 146 | LEU |
| 81 | Sf | 148 | TYR |
| 81 | Sf | 149 | CYS |
| 81 | Sf | 150 | PHE |
| 81 | Sf | 152 | LYS |
| 82 | Sg | 8 | ARG |
| 82 | Sg | 15 | ASN |
| 82 | Sg | 17 | TRP |
| 82 | Sg | 20 | GLN |
| 82 | Sg | 24 | THR |
| 82 | Sg | 44 | LYS |
| 82 | Sg | 47 | ARG |
| 82 | Sg | 49 | GLU |
| 82 | Sg | 60 | ARG |
| 82 | Sg | 65 | PHE |
| 82 | Sg | 74 | ASP |
| 82 | Sg | 84 | ASP |
| 82 | Sg | 99 | ARG |
| 82 | Sg | 100 | ARG |
| 82 | Sg | 107 | ASP |
| 82 | Sg | 118 | ARG |
| 82 | Sg | 133 | ASN |
| 82 | Sg | 140 | TYR |
| 82 | Sg | 143 | GLN |
| 82 | Sg | 167 | SER |
| 82 | Sg | 194 | TYR |
| 82 | Sg | 226 | HIS |
| 82 | Sg | 229 | THR |
| 82 | Sg | 234 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 82 | Sg | 249 | CYS |
| 82 | Sg | 268 | ASP |
| 82 | Sg | 282 | GLU |
| 82 | Sg | 294 | ASP |
| 82 | Sg | 297 | THR |
| 82 | Sg | 306 | LEU |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (296) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | A | 19 | HIS |
| 4 | A | 100 | ASN |
| 4 | A | 132 | ASN |
| 4 | A | 194 | ASN |
| 4 | A | 209 | HIS |
| 4 | A | 215 | ASN |
| 5 | B | 123 | HIS |
| 5 | B | 167 | GLN |
| 5 | B | 179 | HIS |
| 5 | B | 203 | GLN |
| 5 | B | 258 | HIS |
| 5 | B | 275 | HIS |
| 5 | B | 276 | HIS |
| 5 | B | 301 | ASN |
| 5 | B | 302 | ASN |
| 5 | B | 322 | HIS |
| 5 | B | 380 | GLN |
| 6 | C | 50 | GLN |
| 6 | C | 85 | HIS |
| 6 | C | 94 | ASN |
| 6 | C | 112 | HIS |
| 6 | C | 142 | HIS |
| 6 | C | 178 | ASN |
| 6 | C | 198 | ASN |
| 6 | C | 203 | GLN |
| 6 | C | 223 | ASN |
| 6 | C | 286 | ASN |
| 6 | C | 338 | ASN |
| 6 | C | 343 | GLN |
| 7 | D | 45 | ASN |
| 7 | D | 94 | ASN |
| 7 | D | 111 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 7 | D | 122 | GLN |
| 7 | D | 131 | ASN |
| 7 | D | 157 | ASN |
| 7 | D | 191 | ASN |
| 7 | D | 195 | HIS |
| 7 | D | 198 | HIS |
| 7 | D | 202 | GLN |
| 7 | D | 244 | HIS |
| 7 | D | 250 | ASN |
| 7 | D | 282 | GLN |
| 8 | E | 124 | HIS |
| 8 | E | 153 | HIS |
| 8 | E | 178 | ASN |
| 8 | E | 186 | HIS |
| 8 | E | 224 | GLN |
| 8 | E | 246 | GLN |
| 9 | F | 58 | HIS |
| 9 | F | 82 | ASN |
| 9 | F | 153 | ASN |
| 9 | F | 165 | ASN |
| 9 | F | 174 | ASN |
| 9 | F | 194 | HIS |
| 9 | F | 237 | ASN |
| 9 | F | 250 | ASN |
| 10 | G | 29 | ASN |
| 10 | G | 64 | GLN |
| 10 | G | 81 | ASN |
| 10 | G | 108 | GLN |
| 10 | G | 112 | GLN |
| 10 | G | 153 | GLN |
| 10 | G | 227 | ASN |
| 10 | G | 231 | ASN |
| 11 | H | 40 | HIS |
| 11 | H | 63 | ASN |
| 11 | H | 106 | GLN |
| 12 | I | 59 | GLN |
| 12 | I | 100 | ASN |
| 12 | I | 144 | ASN |
| 12 | I | 163 | GLN |
| 12 | I | 213 | HIS |
| 13 | J | 155 | HIS |
| 14 | K | 149 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 15 | L | 6 | ASN |
| 15 | L | 28 | GLN |
| 15 | L | 104 | ASN |
| 15 | L | 113 | ASN |
| 15 | L | 159 | ASN |
| 16 | M | 33 | GLN |
| 16 | M | 34 | ASN |
| 16 | M | 48 | GLN |
| 16 | M | 66 | HIS |
| 17 | N | 8 | GLN |
| 17 | N | 90 | ASN |
| 17 | N | 178 | HIS |
| 17 | N | 181 | HIS |
| 17 | N | 182 | HIS |
| 17 | N | 196 | ASN |
| 17 | N | 201 | HIS |
| 18 | O | 65 | ASN |
| 18 | O | 96 | GLN |
| 18 | O | 173 | GLN |
| 19 | P | 25 | HIS |
| 19 | P | 28 | ASN |
| 19 | P | 54 | GLN |
| 19 | P | 64 | ASN |
| 19 | P | 72 | GLN |
| 19 | P | 80 | GLN |
| 19 | P | 97 | ASN |
| 19 | P | 133 | HIS |
| 19 | P | 145 | HIS |
| 20 | Q | 7 | HIS |
| 20 | Q | 40 | ASN |
| 20 | Q | 57 | ASN |
| 21 | R | 66 | ASN |
| 21 | R | 75 | HIS |
| 21 | R | 118 | HIS |
| 21 | R | 143 | HIS |
| 22 | S | 37 | HIS |
| 22 | S | 91 | HIS |
| 22 | S | 92 | ASN |
| 22 | S | 122 | HIS |
| 22 | S | 125 | GLN |
| 22 | S | 163 | HIS |
| 23 | T | 58 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 23 | T | 70 | HIS |
| 23 | T | 139 | HIS |
| 24 | U | 55 | ASN |
| 25 | V | 36 | ASN |
| 26 | W | 17 | HIS |
| 26 | W | 59 | HIS |
| 27 | X | 93 | ASN |
| 27 | X | 111 | GLN |
| 28 | Y | 24 | HIS |
| 28 | Y | 56 | GLN |
| 28 | Y | 72 | GLN |
| 28 | Y | 86 | GLN |
| 28 | Y | 100 | HIS |
| 28 | Y | 127 | GLN |
| 29 | Z | 79 | HIS |
| 30 | a | 41 | HIS |
| 30 | a | 62 | HIS |
| 30 | a | 66 | ASN |
| 30 | a | 67 | GLN |
| 31 | b | 6 | ASN |
| 31 | b | 7 | HIS |
| 31 | b | 12 | GLN |
| 31 | b | 19 | ASN |
| 31 | b | 27 | GLN |
| 31 | b | 42 | ASN |
| 32 | c | 19 | GLN |
| 32 | c | 40 | GLN |
| 32 | c | 73 | HIS |
| 32 | c | 77 | ASN |
| 33 | d | 30 | HIS |
| 33 | d | 93 | ASN |
| 33 | d | 100 | ASN |
| 34 | e | 24 | GLN |
| 34 | e | 43 | ASN |
| 34 | e | 126 | ASN |
| 35 | f | 21 | GLN |
| 35 | f | 24 | HIS |
| 35 | f | 55 | ASN |
| 35 | f | 80 | ASN |
| 36 | g | 18 | ASN |
| 36 | g | 110 | GLN |
| 36 | g | 112 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 37 | h | 68 | ASN |
| 37 | h | 98 | HIS |
| 39 | j | 16 | HIS |
| 39 | j | 48 | ASN |
| 41 | l | 19 | GLN |
| 42 | m | 84 | GLN |
| 42 | m | 87 | GLN |
| 42 | m | 109 | ASN |
| 44 | o | 21 | HIS |
| 44 | o | 25 | GLN |
| 44 | o | 45 | GLN |
| 44 | o | 76 | ASN |
| 44 | o | 90 | HIS |
| 46 | q | 41 | GLN |
| 46 | q | 58 | ASN |
| 46 | q | 68 | HIS |
| 46 | q | 126 | GLN |
| 46 | q | 139 | GLN |
| 46 | q | 191 | GLN |
| 46 | q | 200 | ASN |
| 47 | r | 6 | GLN |
| 47 | r | 12 | ASN |
| 47 | r | 21 | ASN |
| 47 | r | 31 | ASN |
| 47 | r | 36 | ASN |
| 47 | r | 41 | ASN |
| 47 | r | 70 | GLN |
| 47 | r | 83 | ASN |
| 48 | 4 | 3 | ASN |
| 48 | 4 | 21 | ASN |
| 48 | 4 | 27 | HIS |
| 48 | 4 | 64 | GLN |
| 48 | 4 | 158 | ASN |
| 48 | 4 | 168 | GLN |
| 48 | 4 | 179 | GLN |
| 48 | 4 | 448 | GLN |
| 48 | 4 | 477 | GLN |
| 48 | 4 | 493 | ASN |
| 48 | 4 | 684 | GLN |
| 48 | 4 | 705 | HIS |
| 48 | 4 | 710 | HIS |
| 48 | 4 | 715 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 48 | 4 | 737 | GLN |
| 48 | 4 | 803 | ASN |
| 48 | 4 | 807 | GLN |
| 48 | 4 | 811 | GLN |
| 48 | 4 | 816 | HIS |
| 48 | 4 | 827 | ASN |
| 50 | SA | 24 | HIS |
| 50 | SA | 33 | GLN |
| 50 | SA | 84 | GLN |
| 50 | SA | 141 | ASN |
| 50 | SA | 169 | HIS |
| 51 | SB | 40 | ASN |
| 51 | SB | 99 | ASN |
| 51 | SB | 118 | GLN |
| 51 | SB | 124 | HIS |
| 51 | SB | 148 | ASN |
| 52 | SC | 113 | GLN |
| 52 | SC | 115 | GLN |
| 52 | SC | 120 | GLN |
| 52 | SC | 134 | ASN |
| 52 | SC | 272 | HIS |
| 53 | SD | 4 | GLN |
| 53 | SD | 22 | ASN |
| 53 | SD | 159 | HIS |
| 54 | SE | 36 | HIS |
| 54 | SE | 138 | HIS |
| 54 | SE | 161 | GLN |
| 55 | SF | 29 | GLN |
| 55 | SF | 65 | GLN |
| 55 | SF | 82 | ASN |
| 55 | SF | 95 | HIS |
| 55 | SF | 137 | GLN |
| 55 | SF | 186 | ASN |
| 55 | SF | 203 | ASN |
| 56 | SG | 59 | GLN |
| 56 | SG | 65 | GLN |
| 56 | SG | 110 | ASN |
| 58 | SI | 9 | HIS |
| 58 | SI | 44 | HIS |
| 58 | SI | 155 | ASN |
| 58 | SI | 165 | GLN |
| 59 | SJ | 111 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 59 | SJ | 177 | ASN |
| 60 | SK | 28 | HIS |
| 60 | SK | 39 | ASN |
| 61 | SL | 19 | ASN |
| 61 | SL | 106 | HIS |
| 61 | SL | 141 | ASN |
| 62 | SM | 19 | GLN |
| 62 | SM | 48 | HIS |
| 62 | SM | 99 | ASN |
| 63 | SN | 5 | HIS |
| 63 | SN | 69 | ASN |
| 65 | SP | 41 | GLN |
| 65 | SP | 46 | ASN |
| 65 | SP | 79 | HIS |
| 66 | SQ | 48 | GLN |
| 66 | SQ | 114 | GLN |
| 66 | SQ | 142 | GLN |
| 67 | SR | 83 | ASN |
| 68 | SS | 10 | GLN |
| 68 | SS | 17 | ASN |
| 68 | SS | 42 | HIS |
| 68 | SS | 120 | HIS |
| 68 | SS | 125 | HIS |
| 68 | SS | 135 | HIS |
| 69 | ST | 51 | ASN |
| 69 | ST | 63 | HIS |
| 70 | SU | 47 | ASN |
| 71 | SV | 29 | HIS |
| 71 | SV | 47 | ASN |
| 71 | SV | 49 | GLN |
| 72 | SW | 64 | ASN |
| 72 | SW | 82 | GLN |
| 72 | SW | 98 | GLN |
| 73 | SX | 20 | HIS |
| 73 | SX | 23 | HIS |
| 73 | SX | 61 | GLN |
| 73 | SX | 87 | ASN |
| 73 | SX | 97 | ASN |
| 74 | SY | 85 | ASN |
| 74 | SY | 94 | HIS |
| 75 | SZ | 103 | HIS |
| 76 | Sa | 17 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 76 | Sa | 72 | HIS |
| 77 | Sb | 19 | HIS |
| 78 | Sc | 7 | GLN |
| 78 | Sc | 24 | GLN |
| 78 | Sc | 26 | GLN |
| 79 | Sd | 10 | HIS |
| 79 | Sd | 26 | ASN |
| 79 | Sd | 28 | HIS |
| 81 | Sf | 111 | ASN |
| 82 | Sg | 119 | GLN |
| 82 | Sg | 181 | ASN |
| 82 | Sg | 215 | GLN |

### 5.3.3 RNA

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 1 | 5 | 3647/3664 (99%) | 1616 (44%) | 621 (17%) |
| 2 | 7 | 119/120 (99%) | 31 (26%) | 9 (7%) |
| 3 | 8 | 155/156 (99%) | 61 (39%) | 22 (14%) |
| 49 | S2 | 1717/1742 (98%) | 745 (43%) | 269 (15%) |
| All | All | 5638/5682 (99%) | 2453 (43%) | 921 (16%) |

All (2453) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2 | G |
| 1 | 5 | 5 | A |
| 1 | 5 | 6 | C |
| 1 | 5 | 8 | U |
| 1 | 5 | 12 | A |
| 1 | 5 | 13 | U |
| 1 | 5 | 20 | U |
| 1 | 5 | 21 | G |
| 1 | 5 | 25 | A |
| 1 | 5 | 33 | A |
| 1 | 5 | 34 | A |
| 1 | 5 | 39 | A |
| 1 | 5 | 40 | G |
| 1 | 5 | 42 | A |
| 1 | 5 | 43 | U |
| 1 | 5 | 47 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 48 | G |
| 1 | 5 | 49 | U |
| 1 | 5 | 50 | C |
| 1 | 5 | 51 | A |
| 1 | 5 | 54 | G |
| 1 | 5 | 55 | G |
| 1 | 5 | 56 | A |
| 1 | 5 | 58 | G |
| 1 | 5 | 59 | A |
| 1 | 5 | 64 | A |
| 1 | 5 | 65 | A |
| 1 | 5 | 66 | A |
| 1 | 5 | 69 | A |
| 1 | 5 | 70 | A |
| 1 | 5 | 71 | C |
| 1 | 5 | 72 | C |
| 1 | 5 | 74 | G |
| 1 | 5 | 80 | C |
| 1 | 5 | 81 | C |
| 1 | 5 | 84 | A |
| 1 | 5 | 85 | G |
| 1 | 5 | 88 | A |
| 1 | 5 | 89 | C |
| 1 | 5 | 91 | G |
| 1 | 5 | 92 | C |
| 1 | 5 | 93 | G |
| 1 | 5 | 94 | A |
| 1 | 5 | 95 | G |
| 1 | 5 | 96 | U |
| 1 | 5 | 98 | A |
| 1 | 5 | 99 | A |
| 1 | 5 | 101 | A |
| 1 | 5 | 107 | G |
| 1 | 5 | 108 | A |
| 1 | 5 | 109 | G |
| 1 | 5 | 110 | C |
| 1 | 5 | 111 | C |
| 1 | 5 | 112 | C |
| 1 | 5 | 115 | C |
| 1 | 5 | 118 | C |
| 1 | 5 | 119 | G |
| 1 | 5 | 120 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 121 | A |
| 1 | 5 | 126 | C |
| 1 | 5 | 128 | C |
| 1 | 5 | 129 | C |
| 1 | 5 | 130 | C |
| 1 | 5 | 131 | C |
| 1 | 5 | 132 | G |
| 1 | 5 | 134 | G |
| 1 | 5 | 135 | G |
| 1 | 5 | 136 | C |
| 1 | 5 | 137 | G |
| 1 | 5 | 138 | G |
| 1 | 5 | 139 | G |
| 1 | 5 | 143 | C |
| 1 | 5 | 144 | G |
| 1 | 5 | 145 | G |
| 1 | 5 | 150 | U |
| 1 | 5 | 152 | U |
| 1 | 5 | 157 | U |
| 1 | 5 | 158 | A |
| 1 | 5 | 159 | C |
| 1 | 5 | 164 | G |
| 1 | 5 | 170 | C |
| 1 | 5 | 171 | U |
| 1 | 5 | 172 | C |
| 1 | 5 | 173 | C |
| 1 | 5 | 178 | C |
| 1 | 5 | 182 | G |
| 1 | 5 | 183 | C |
| 1 | 5 | 184 | U |
| 1 | 5 | 185 | C |
| 1 | 5 | 186 | G |
| 1 | 5 | 187 | U |
| 1 | 5 | 188 | G |
| 1 | 5 | 189 | G |
| 1 | 5 | 195 | C |
| 1 | 5 | 196 | C |
| 1 | 5 | 197 | A |
| 1 | 5 | 198 | A |
| 1 | 5 | 200 | U |
| 1 | 5 | 201 | C |
| 1 | 5 | 202 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 203 | U |
| 1 | 5 | 205 | C |
| 1 | 5 | 206 | U |
| 1 | 5 | 210 | C |
| 1 | 5 | 211 | G |
| 1 | 5 | 216 | C |
| 1 | 5 | 217 | C |
| 1 | 5 | 218 | A |
| 1 | 5 | 219 | G |
| 1 | 5 | 220 | C |
| 1 | 5 | 221 | C |
| 1 | 5 | 224 | U |
| 1 | 5 | 225 | G |
| 1 | 5 | 226 | G |
| 1 | 5 | 227 | A |
| 1 | 5 | 232 | G |
| 1 | 5 | 233 | U |
| 1 | 5 | 234 | G |
| 1 | 5 | 235 | A |
| 1 | 5 | 236 | G |
| 1 | 5 | 238 | C |
| 1 | 5 | 239 | C |
| 1 | 5 | 245 | C |
| 1 | 5 | 246 | G |
| 1 | 5 | 255 | C |
| 1 | 5 | 257 | C |
| 1 | 5 | 262 | G |
| 1 | 5 | 264 | C |
| 1 | 5 | 265 | C |
| 1 | 5 | 266 | C |
| 1 | 5 | 267 | G |
| 1 | 5 | 270 | U |
| 1 | 5 | 274 | C |
| 1 | 5 | 275 | C |
| 1 | 5 | 276 | C |
| 1 | 5 | 277 | G |
| 1 | 5 | 278 | G |
| 1 | 5 | 280 | G |
| 1 | 5 | 281 | U |
| 1 | 5 | 288 | G |
| 1 | 5 | 292 | G |
| 1 | 5 | 293 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 294 | G |
| 1 | 5 | 296 | A |
| 1 | 5 | 297 | U |
| 1 | 5 | 300 | A |
| 1 | 5 | 305 | A |
| 1 | 5 | 306 | A |
| 1 | 5 | 309 | C |
| 1 | 5 | 310 | G |
| 1 | 5 | 315 | G |
| 1 | 5 | 316 | U |
| 1 | 5 | 317 | A |
| 1 | 5 | 319 | A |
| 1 | 5 | 322 | C |
| 1 | 5 | 323 | C |
| 1 | 5 | 324 | A |
| 1 | 5 | 325 | U |
| 1 | 5 | 330 | G |
| 1 | 5 | 334 | A |
| 1 | 5 | 337 | U |
| 1 | 5 | 338 | A |
| 1 | 5 | 339 | C |
| 1 | 5 | 340 | C |
| 1 | 5 | 342 | G |
| 1 | 5 | 343 | C |
| 1 | 5 | 345 | C |
| 1 | 5 | 347 | A |
| 1 | 5 | 349 | A |
| 1 | 5 | 350 | C |
| 1 | 5 | 352 | G |
| 1 | 5 | 353 | A |
| 1 | 5 | 354 | U |
| 1 | 5 | 355 | A |
| 1 | 5 | 357 | U |
| 1 | 5 | 358 | C |
| 1 | 5 | 360 | A |
| 1 | 5 | 361 | C |
| 1 | 5 | 362 | A |
| 1 | 5 | 363 | A |
| 1 | 5 | 370 | U |
| 1 | 5 | 381 | U |
| 1 | 5 | 383 | A |
| 1 | 5 | 384 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 385 | A |
| 1 | 5 | 386 | A |
| 1 | 5 | 387 | G |
| 1 | 5 | 388 | A |
| 1 | 5 | 390 | C |
| 1 | 5 | 395 | A |
| 1 | 5 | 399 | G |
| 1 | 5 | 406 | C |
| 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 | 414 | C |
| 1 | 5 | 415 | G |
| 1 | 5 | 417 | G |
| 1 | 5 | 418 | A |
| 1 | 5 | 431 | G |
| 1 | 5 | 432 | U |
| 1 | 5 | 433 | A |
| 1 | 5 | 434 | A |
| 1 | 5 | 440 | U |
| 1 | 5 | 444 | G |
| 1 | 5 | 445 | U |
| 1 | 5 | 449 | C |
| 1 | 5 | 450 | G |
| 1 | 5 | 451 | C |
| 1 | 5 | 452 | A |
| 1 | 5 | 453 | G |
| 1 | 5 | 454 | U |
| 1 | 5 | 455 | C |
| 1 | 5 | 456 | C |
| 1 | 5 | 458 | C |
| 1 | 5 | 466 | A |
| 1 | 5 | 467 | U |
| 1 | 5 | 468 | U |
| 1 | 5 | 469 | C |
| 1 | 5 | 470 | A |
| 1 | 5 | 471 | A |
| 1 | 5 | 473 | C |
| 1 | 5 | 484 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 485 | C |
| 1 | 5 | 486 | C |
| 1 | 5 | 487 | G |
| 1 | 5 | 491 | G |
| 1 | 5 | 496 | G |
| 1 | 5 | 498 | C |
| 1 | 5 | 500 | G |
| 1 | 5 | 502 | C |
| 1 | 5 | 503 | C |
| 1 | 5 | 504 | G |
| 1 | 5 | 506 | C |
| 1 | 5 | 509 | A |
| 1 | 5 | 510 | U |
| 1 | 5 | 511 | C |
| 1 | 5 | 513 | U |
| 1 | 5 | 514 | U |
| 1 | 5 | 515 | C |
| 1 | 5 | 516 | C |
| 1 | 5 | 519 | C |
| 1 | 5 | 647 | G |
| 1 | 5 | 648 | G |
| 1 | 5 | 649 | A |
| 1 | 5 | 650 | C |
| 1 | 5 | 653 | U |
| 1 | 5 | 654 | C |
| 1 | 5 | 656 | C |
| 1 | 5 | 658 | C |
| 1 | 5 | 664 | G |
| 1 | 5 | 665 | C |
| 1 | 5 | 666 | G |
| 1 | 5 | 667 | A |
| 1 | 5 | 668 | C |
| 1 | 5 | 669 | C |
| 1 | 5 | 671 | G |
| 1 | 5 | 672 | C |
| 1 | 5 | 681 | G |
| 1 | 5 | 682 | G |
| 1 | 5 | 683 | C |
| 1 | 5 | 684 | G |
| 1 | 5 | 685 | C |
| 1 | 5 | 686 | A |
| 1 | 5 | 687 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 689 | U |
| 1 | 5 | 690 | C |
| 1 | 5 | 692 | A |
| 1 | 5 | 694 | C |
| 1 | 5 | 695 | G |
| 1 | 5 | 696 | C |
| 1 | 5 | 697 | G |
| 1 | 5 | 702 | U |
| 1 | 5 | 703 | G |
| 1 | 5 | 704 | C |
| 1 | 5 | 705 | G |
| 1 | 5 | 707 | C |
| 1 | 5 | 716 | C |
| 1 | 5 | 717 | U |
| 1 | 5 | 718 | C |
| 1 | 5 | 721 | G |
| 1 | 5 | 724 | C |
| 1 | 5 | 727 | C |
| 1 | 5 | 728 | U |
| 1 | 5 | 729 | G |
| 1 | 5 | 730 | G |
| 1 | 5 | 731 | G |
| 1 | 5 | 732 | A |
| 1 | 5 | 737 | C |
| 1 | 5 | 739 | G |
| 1 | 5 | 742 | G |
| 1 | 5 | 743 | G |
| 1 | 5 | 745 | G |
| 1 | 5 | 746 | A |
| 1 | 5 | 747 | A |
| 1 | 5 | 748 | G |
| 1 | 5 | 749 | G |
| 1 | 5 | 912 | G |
| 1 | 5 | 915 | A |
| 1 | 5 | 917 | A |
| 1 | 5 | 918 | G |
| 1 | 5 | 926 | G |
| 1 | 5 | 927 | G |
| 1 | 5 | 928 | C |
| 1 | 5 | 929 | A |
| 1 | 5 | 930 | G |
| 1 | 5 | 931 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 932 | A |
| 1 | 5 | 933 | G |
| 1 | 5 | 934 | C |
| 1 | 5 | 935 | A |
| 1 | 5 | 936 | C |
| 1 | 5 | 937 | U |
| 1 | 5 | 938 | C |
| 1 | 5 | 939 | G |
| 1 | 5 | 940 | C |
| 1 | 5 | 944 | A |
| 1 | 5 | 945 | U |
| 1 | 5 | 946 | C |
| 1 | 5 | 950 | G |
| 1 | 5 | 952 | G |
| 1 | 5 | 955 | G |
| 1 | 5 | 956 | A |
| 1 | 5 | 957 | G |
| 1 | 5 | 958 | G |
| 1 | 5 | 959 | G |
| 1 | 5 | 960 | A |
| 1 | 5 | 961 | G |
| 1 | 5 | 962 | C |
| 1 | 5 | 963 | G |
| 1 | 5 | 964 | A |
| 1 | 5 | 965 | G |
| 1 | 5 | 966 | A |
| 1 | 5 | 967 | C |
| 1 | 5 | 968 | C |
| 1 | 5 | 969 | C |
| 1 | 5 | 971 | U |
| 1 | 5 | 972 | C |
| 1 | 5 | 973 | G |
| 1 | 5 | 974 | C |
| 1 | 5 | 975 | C |
| 1 | 5 | 976 | G |
| 1 | 5 | 977 | C |
| 1 | 5 | 978 | G |
| 1 | 5 | 979 | C |
| 1 | 5 | 980 | U |
| 1 | 5 | 982 | U |
| 1 | 5 | 983 | C |
| 1 | 5 | 985 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 990 | C |
| 1 | 5 | 1051 | G |
| 1 | 5 | 1072 | C |
| 1 | 5 | 1075 | G |
| 1 | 5 | 1076 | C |
| 1 | 5 | 1077 | C |
| 1 | 5 | 1078 | A |
| 1 | 5 | 1082 | C |
| 1 | 5 | 1083 | U |
| 1 | 5 | 1084 | C |
| 1 | 5 | 1086 | C |
| 1 | 5 | 1168 | G |
| 1 | 5 | 1177 | U |
| 1 | 5 | 1181 | C |
| 1 | 5 | 1193 | C |
| 1 | 5 | 1210 | C |
| 1 | 5 | 1211 | G |
| 1 | 5 | 1212 | G |
| 1 | 5 | 1214 | C |
| 1 | 5 | 1215 | C |
| 1 | 5 | 1218 | G |
| 1 | 5 | 1219 | G |
| 1 | 5 | 1221 | G |
| 1 | 5 | 1222 | A |
| 1 | 5 | 1233 | G |
| 1 | 5 | 1235 | G |
| 1 | 5 | 1236 | C |
| 1 | 5 | 1237 | C |
| 1 | 5 | 1238 | A |
| 1 | 5 | 1239 | C |
| 1 | 5 | 1240 | G |
| 1 | 5 | 1242 | G |
| 1 | 5 | 1243 | C |
| 1 | 5 | 1244 | G |
| 1 | 5 | 1245 | C |
| 1 | 5 | 1255 | A |
| 1 | 5 | 1264 | C |
| 1 | 5 | 1265 | G |
| 1 | 5 | 1266 | G |
| 1 | 5 | 1267 | C |
| 1 | 5 | 1268 | G |
| 1 | 5 | 1269 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1270 | A |
| 1 | 5 | 1271 | G |
| 1 | 5 | 1272 | C |
| 1 | 5 | 1273 | G |
| 1 | 5 | 1274 | A |
| 1 | 5 | 1275 | G |
| 1 | 5 | 1277 | G |
| 1 | 5 | 1279 | A |
| 1 | 5 | 1280 | C |
| 1 | 5 | 1282 | G |
| 1 | 5 | 1283 | G |
| 1 | 5 | 1284 | G |
| 1 | 5 | 1285 | U |
| 1 | 5 | 1288 | G |
| 1 | 5 | 1289 | C |
| 1 | 5 | 1290 | G |
| 1 | 5 | 1291 | G |
| 1 | 5 | 1292 | C |
| 1 | 5 | 1293 | G |
| 1 | 5 | 1294 | A |
| 1 | 5 | 1295 | C |
| 1 | 5 | 1296 | G |
| 1 | 5 | 1297 | U |
| 1 | 5 | 1298 | C |
| 1 | 5 | 1300 | G |
| 1 | 5 | 1301 | C |
| 1 | 5 | 1304 | C |
| 1 | 5 | 1313 | C |
| 1 | 5 | 1314 | C |
| 1 | 5 | 1319 | U |
| 1 | 5 | 1325 | C |
| 1 | 5 | 1326 | A |
| 1 | 5 | 1330 | A |
| 1 | 5 | 1333 | A |
| 1 | 5 | 1337 | A |
| 1 | 5 | 1338 | G |
| 1 | 5 | 1344 | C |
| 1 | 5 | 1354 | A |
| 1 | 5 | 1357 | C |
| 1 | 5 | 1358 | G |
| 1 | 5 | 1359 | G |
| 1 | 5 | 1360 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1362 | G |
| 1 | 5 | 1364 | U |
| 1 | 5 | 1365 | C |
| 1 | 5 | 1366 | G |
| 1 | 5 | 1367 | C |
| 1 | 5 | 1368 | A |
| 1 | 5 | 1369 | C |
| 1 | 5 | 1370 | G |
| 1 | 5 | 1371 | A |
| 1 | 5 | 1372 | A |
| 1 | 5 | 1377 | G |
| 1 | 5 | 1378 | C |
| 1 | 5 | 1379 | C |
| 1 | 5 | 1380 | G |
| 1 | 5 | 1381 | U |
| 1 | 5 | 1382 | G |
| 1 | 5 | 1387 | A |
| 1 | 5 | 1390 | G |
| 1 | 5 | 1394 | G |
| 1 | 5 | 1397 | A |
| 1 | 5 | 1398 | A |
| 1 | 5 | 1399 | G |
| 1 | 5 | 1402 | C |
| 1 | 5 | 1407 | C |
| 1 | 5 | 1408 | G |
| 1 | 5 | 1410 | U |
| 1 | 5 | 1411 | C |
| 1 | 5 | 1420 | A |
| 1 | 5 | 1421 | G |
| 1 | 5 | 1426 | G |
| 1 | 5 | 1427 | A |
| 1 | 5 | 1428 | U |
| 1 | 5 | 1429 | C |
| 1 | 5 | 1435 | G |
| 1 | 5 | 1436 | C |
| 1 | 5 | 1439 | C |
| 1 | 5 | 1440 | U |
| 1 | 5 | 1441 | C |
| 1 | 5 | 1444 | G |
| 1 | 5 | 1445 | U |
| 1 | 5 | 1446 | C |
| 1 | 5 | 1448 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1455 | G |
| 1 | 5 | 1456 | C |
| 1 | 5 | 1457 | G |
| 1 | 5 | 1458 | C |
| 1 | 5 | 1465 | G |
| 1 | 5 | 1466 | G |
| 1 | 5 | 1474 | C |
| 1 | 5 | 1475 | G |
| 1 | 5 | 1478 | C |
| 1 | 5 | 1479 | G |
| 1 | 5 | 1480 | C |
| 1 | 5 | 1481 | C |
| 1 | 5 | 1482 | G |
| 1 | 5 | 1483 | C |
| 1 | 5 | 1484 | G |
| 1 | 5 | 1485 | C |
| 1 | 5 | 1487 | G |
| 1 | 5 | 1488 | G |
| 1 | 5 | 1489 | G |
| 1 | 5 | 1490 | G |
| 1 | 5 | 1493 | G |
| 1 | 5 | 1497 | A |
| 1 | 5 | 1498 | G |
| 1 | 5 | 1499 | C |
| 1 | 5 | 1500 | A |
| 1 | 5 | 1501 | C |
| 1 | 5 | 1503 | A |
| 1 | 5 | 1504 | G |
| 1 | 5 | 1514 | U |
| 1 | 5 | 1516 | G |
| 1 | 5 | 1518 | A |
| 1 | 5 | 1519 | C |
| 1 | 5 | 1520 | C |
| 1 | 5 | 1522 | G |
| 1 | 5 | 1523 | A |
| 1 | 5 | 1525 | A |
| 1 | 5 | 1530 | G |
| 1 | 5 | 1534 | A |
| 1 | 5 | 1535 | C |
| 1 | 5 | 1542 | U |
| 1 | 5 | 1543 | G |
| 1 | 5 | 1547 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1562 | G |
| 1 | 5 | 1563 | A |
| 1 | 5 | 1568 | C |
| 1 | 5 | 1571 | G |
| 1 | 5 | 1572 | U |
| 1 | 5 | 1578 | U |
| 1 | 5 | 1583 | A |
| 1 | 5 | 1590 | C |
| 1 | 5 | 1591 | U |
| 1 | 5 | 1596 | U |
| 1 | 5 | 1597 | G |
| 1 | 5 | 1604 | G |
| 1 | 5 | 1611 | C |
| 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 | 1636 | U |
| 1 | 5 | 1637 | A |
| 1 | 5 | 1638 | A |
| 1 | 5 | 1639 | U |
| 1 | 5 | 1640 | C |
| 1 | 5 | 1641 | G |
| 1 | 5 | 1642 | A |
| 1 | 5 | 1643 | A |
| 1 | 5 | 1650 | A |
| 1 | 5 | 1654 | G |
| 1 | 5 | 1656 | U |
| 1 | 5 | 1661 | C |
| 1 | 5 | 1662 | C |
| 1 | 5 | 1670 | G |
| 1 | 5 | 1671 | U |
| 1 | 5 | 1673 | U |
| 1 | 5 | 1674 | C |
| 1 | 5 | 1676 | C |
| 1 | 5 | 1678 | C |
| 1 | 5 | 1679 | A |
| 1 | 5 | 1680 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1681 | G |
| 1 | 5 | 1684 | A |
| 1 | 5 | 1685 | G |
| 1 | 5 | 1687 | U |
| 1 | 5 | 1691 | G |
| 1 | 5 | 1692 | C |
| 1 | 5 | 1694 | C |
| 1 | 5 | 1696 | C |
| 1 | 5 | 1697 | G |
| 1 | 5 | 1698 | C |
| 1 | 5 | 1699 | A |
| 1 | 5 | 1719 | A |
| 1 | 5 | 1720 | C |
| 1 | 5 | 1721 | G |
| 1 | 5 | 1722 | C |
| 1 | 5 | 1723 | A |
| 1 | 5 | 1724 | G |
| 1 | 5 | 1725 | U |
| 1 | 5 | 1727 | U |
| 1 | 5 | 1730 | U |
| 1 | 5 | 1733 | G |
| 1 | 5 | 1734 | G |
| 1 | 5 | 1735 | U |
| 1 | 5 | 1736 | A |
| 1 | 5 | 1741 | G |
| 1 | 5 | 1742 | A |
| 1 | 5 | 1746 | A |
| 1 | 5 | 1750 | G |
| 1 | 5 | 1751 | A |
| 1 | 5 | 1753 | G |
| 1 | 5 | 1754 | U |
| 1 | 5 | 1755 | C |
| 1 | 5 | 1756 | U |
| 1 | 5 | 1757 | U |
| 1 | 5 | 1758 | G |
| 1 | 5 | 1759 | G |
| 1 | 5 | 1760 | G |
| 1 | 5 | 1761 | G |
| 1 | 5 | 1762 | C |
| 1 | 5 | 1764 | G |
| 1 | 5 | 1765 | A |
| 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 | 1770 | A |
| 1 | 5 | 1772 | C |
| 1 | 5 | 1776 | A |
| 1 | 5 | 1777 | C |
| 1 | 5 | 1779 | U |
| 1 | 5 | 1781 | U |
| 1 | 5 | 1787 | A |
| 1 | 5 | 1788 | A |
| 1 | 5 | 1790 | U |
| 1 | 5 | 1791 | U |
| 1 | 5 | 1799 | G |
| 1 | 5 | 1800 | U |
| 1 | 5 | 1803 | G |
| 1 | 5 | 1804 | A |
| 1 | 5 | 1805 | A |
| 1 | 5 | 1817 | U |
| 1 | 5 | 1818 | G |
| 1 | 5 | 1819 | G |
| 1 | 5 | 1820 | C |
| 1 | 5 | 1822 | U |
| 1 | 5 | 1825 | A |
| 1 | 5 | 1827 | C |
| 1 | 5 | 1830 | G |
| 1 | 5 | 1832 | C |
| 1 | 5 | 1833 | G |
| 1 | 5 | 1834 | U |
| 1 | 5 | 1835 | G |
| 1 | 5 | 1836 | G |
| 1 | 5 | 1840 | G |
| 1 | 5 | 1843 | A |
| 1 | 5 | 1847 | C |
| 1 | 5 | 1848 | C |
| 1 | 5 | 1849 | U |
| 1 | 5 | 1850 | A |
| 1 | 5 | 1851 | G |
| 1 | 5 | 1855 | G |
| 1 | 5 | 1864 | G |
| 1 | 5 | 1866 | U |
| 1 | 5 | 1867 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1869 | G |
| 1 | 5 | 1878 | G |
| 1 | 5 | 1881 | C |
| 1 | 5 | 1882 | U |
| 1 | 5 | 1886 | G |
| 1 | 5 | 1890 | G |
| 1 | 5 | 1891 | A |
| 1 | 5 | 1897 | A |
| 1 | 5 | 1899 | G |
| 1 | 5 | 1900 | C |
| 1 | 5 | 1903 | G |
| 1 | 5 | 1907 | A |
| 1 | 5 | 1910 | G |
| 1 | 5 | 1912 | G |
| 1 | 5 | 1913 | C |
| 1 | 5 | 1916 | G |
| 1 | 5 | 1917 | A |
| 1 | 5 | 1918 | U |
| 1 | 5 | 1919 | G |
| 1 | 5 | 1920 | C |
| 1 | 5 | 1921 | C |
| 1 | 5 | 1922 | G |
| 1 | 5 | 1923 | A |
| 1 | 5 | 1925 | G |
| 1 | 5 | 1929 | A |
| 1 | 5 | 1930 | U |
| 1 | 5 | 1931 | C |
| 1 | 5 | 1932 | A |
| 1 | 5 | 1935 | C |
| 1 | 5 | 1936 | C |
| 1 | 5 | 1938 | C |
| 1 | 5 | 1940 | G |
| 1 | 5 | 1941 | A |
| 1 | 5 | 1944 | A |
| 1 | 5 | 1945 | G |
| 1 | 5 | 1946 | G |
| 1 | 5 | 1947 | U |
| 1 | 5 | 1948 | G |
| 1 | 5 | 1951 | G |
| 1 | 5 | 1952 | G |
| 1 | 5 | 1956 | A |
| 1 | 5 | 1958 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1959 | U |
| 1 | 5 | 1960 | A |
| 1 | 5 | 1961 | G |
| 1 | 5 | 1962 | A |
| 1 | 5 | 1963 | C |
| 1 | 5 | 1971 | C |
| 1 | 5 | 1974 | U |
| 1 | 5 | 1975 | G |
| 1 | 5 | 1976 | G |
| 1 | 5 | 1977 | C |
| 1 | 5 | 1979 | A |
| 1 | 5 | 1980 | U |
| 1 | 5 | 1981 | G |
| 1 | 5 | 1983 | A |
| 1 | 5 | 1984 | A |
| 1 | 5 | 1985 | G |
| 1 | 5 | 1986 | U |
| 1 | 5 | 1987 | C |
| 1 | 5 | 1988 | G |
| 1 | 5 | 1991 | A |
| 1 | 5 | 1992 | U |
| 1 | 5 | 1993 | C |
| 1 | 5 | 1997 | U |
| 1 | 5 | 1998 | A |
| 1 | 5 | 1999 | A |
| 1 | 5 | 2001 | G |
| 1 | 5 | 2002 | A |
| 1 | 5 | 2003 | G |
| 1 | 5 | 2004 | U |
| 1 | 5 | 2005 | G |
| 1 | 5 | 2007 | G |
| 1 | 5 | 2008 | U |
| 1 | 5 | 2009 | A |
| 1 | 5 | 2010 | A |
| 1 | 5 | 2015 | U |
| 1 | 5 | 2018 | C |
| 1 | 5 | 2019 | C |
| 1 | 5 | 2020 | U |
| 1 | 5 | 2022 | C |
| 1 | 5 | 2024 | G |
| 1 | 5 | 2025 | A |
| 1 | 5 | 2026 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2027 | U |
| 1 | 5 | 2033 | A |
| 1 | 5 | 2034 | G |
| 1 | 5 | 2038 | U |
| 1 | 5 | 2044 | U |
| 1 | 5 | 2045 | G |
| 1 | 5 | 2046 | G |
| 1 | 5 | 2047 | A |
| 1 | 5 | 2048 | U |
| 1 | 5 | 2052 | G |
| 1 | 5 | 2055 | G |
| 1 | 5 | 2056 | G |
| 1 | 5 | 2057 | A |
| 1 | 5 | 2059 | C |
| 1 | 5 | 2060 | G |
| 1 | 5 | 2062 | C |
| 1 | 5 | 2063 | G |
| 1 | 5 | 2064 | G |
| 1 | 5 | 2069 | A |
| 1 | 5 | 2070 | U |
| 1 | 5 | 2077 | C |
| 1 | 5 | 2083 | C |
| 1 | 5 | 2084 | C |
| 1 | 5 | 2085 | G |
| 1 | 5 | 2088 | A |
| 1 | 5 | 2089 | G |
| 1 | 5 | 2090 | U |
| 1 | 5 | 2091 | C |
| 1 | 5 | 2092 | G |
| 1 | 5 | 2093 | A |
| 1 | 5 | 2094 | G |
| 1 | 5 | 2095 | A |
| 1 | 5 | 2096 | G |
| 1 | 5 | 2097 | U |
| 1 | 5 | 2100 | A |
| 1 | 5 | 2105 | A |
| 1 | 5 | 2107 | C |
| 1 | 5 | 2108 | G |
| 1 | 5 | 2109 | G |
| 1 | 5 | 2110 | C |
| 1 | 5 | 2111 | G |
| 1 | 5 | 2112 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2113 | G |
| 1 | 5 | 2114 | G |
| 1 | 5 | 2115 | G |
| 1 | 5 | 2116 | C |
| 1 | 5 | 2117 | G |
| 1 | 5 | 2118 | G |
| 1 | 5 | 2119 | C |
| 1 | 5 | 2120 | G |
| 1 | 5 | 2121 | C |
| 1 | 5 | 2122 | G |
| 1 | 5 | 2123 | C |
| 1 | 5 | 2124 | G |
| 1 | 5 | 2125 | C |
| 1 | 5 | 2126 | G |
| 1 | 5 | 2127 | C |
| 1 | 5 | 2247 | C |
| 1 | 5 | 2248 | C |
| 1 | 5 | 2250 | C |
| 1 | 5 | 2251 | G |
| 1 | 5 | 2252 | G |
| 1 | 5 | 2253 | A |
| 1 | 5 | 2254 | G |
| 1 | 5 | 2255 | C |
| 1 | 5 | 2256 | C |
| 1 | 5 | 2257 | C |
| 1 | 5 | 2258 | C |
| 1 | 5 | 2259 | G |
| 1 | 5 | 2260 | C |
| 1 | 5 | 2261 | G |
| 1 | 5 | 2262 | G |
| 1 | 5 | 2263 | A |
| 1 | 5 | 2264 | C |
| 1 | 5 | 2265 | G |
| 1 | 5 | 2266 | C |
| 1 | 5 | 2267 | U |
| 1 | 5 | 2268 | A |
| 1 | 5 | 2269 | C |
| 1 | 5 | 2270 | G |
| 1 | 5 | 2273 | G |
| 1 | 5 | 2275 | G |
| 1 | 5 | 2277 | C |
| 1 | 5 | 2279 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2282 | A |
| 1 | 5 | 2283 | G |
| 1 | 5 | 2288 | G |
| 1 | 5 | 2289 | C |
| 1 | 5 | 2299 | G |
| 1 | 5 | 2300 | A |
| 1 | 5 | 2301 | G |
| 1 | 5 | 2305 | U |
| 1 | 5 | 2309 | G |
| 1 | 5 | 2312 | U |
| 1 | 5 | 2313 | A |
| 1 | 5 | 2314 | G |
| 1 | 5 | 2316 | G |
| 1 | 5 | 2319 | C |
| 1 | 5 | 2321 | G |
| 1 | 5 | 2322 | G |
| 1 | 5 | 2324 | C |
| 1 | 5 | 2325 | C |
| 1 | 5 | 2328 | G |
| 1 | 5 | 2329 | U |
| 1 | 5 | 2330 | G |
| 1 | 5 | 2331 | G |
| 1 | 5 | 2332 | A |
| 1 | 5 | 2333 | G |
| 1 | 5 | 2334 | C |
| 1 | 5 | 2337 | C |
| 1 | 5 | 2339 | G |
| 1 | 5 | 2342 | G |
| 1 | 5 | 2343 | G |
| 1 | 5 | 2347 | A |
| 1 | 5 | 2348 | G |
| 1 | 5 | 2349 | A |
| 1 | 5 | 2350 | U |
| 1 | 5 | 2351 | C |
| 1 | 5 | 2357 | G |
| 1 | 5 | 2360 | A |
| 1 | 5 | 2361 | G |
| 1 | 5 | 2362 | U |
| 1 | 5 | 2366 | A |
| 1 | 5 | 2367 | A |
| 1 | 5 | 2368 | A |
| 1 | 5 | 2369 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2370 | A |
| 1 | 5 | 2372 | U |
| 1 | 5 | 2378 | G |
| 1 | 5 | 2382 | A |
| 1 | 5 | 2384 | U |
| 1 | 5 | 2389 | A |
| 1 | 5 | 2390 | G |
| 1 | 5 | 2391 | G |
| 1 | 5 | 2395 | A |
| 1 | 5 | 2396 | A |
| 1 | 5 | 2397 | G |
| 1 | 5 | 2398 | U |
| 1 | 5 | 2399 | G |
| 1 | 5 | 2407 | G |
| 1 | 5 | 2409 | U |
| 1 | 5 | 2417 | A |
| 1 | 5 | 2422 | C |
| 1 | 5 | 2425 | U |
| 1 | 5 | 2426 | U |
| 1 | 5 | 2428 | A |
| 1 | 5 | 2429 | A |
| 1 | 5 | 2432 | U |
| 1 | 5 | 2433 | G |
| 1 | 5 | 2434 | G |
| 1 | 5 | 2437 | C |
| 1 | 5 | 2438 | A |
| 1 | 5 | 2439 | G |
| 1 | 5 | 2440 | U |
| 1 | 5 | 2441 | C |
| 1 | 5 | 2443 | G |
| 1 | 5 | 2447 | U |
| 1 | 5 | 2448 | G |
| 1 | 5 | 2450 | G |
| 1 | 5 | 2454 | U |
| 1 | 5 | 2464 | C |
| 1 | 5 | 2465 | C |
| 1 | 5 | 2468 | U |
| 1 | 5 | 2469 | C |
| 1 | 5 | 2470 | C |
| 1 | 5 | 2471 | G |
| 1 | 5 | 2472 | A |
| 1 | 5 | 2474 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2475 | G |
| 1 | 5 | 2476 | G |
| 1 | 5 | 2487 | G |
| 1 | 5 | 2488 | C |
| 1 | 5 | 2489 | C |
| 1 | 5 | 2490 | U |
| 1 | 5 | 2491 | C |
| 1 | 5 | 2502 | G |
| 1 | 5 | 2503 | G |
| 1 | 5 | 2504 | C |
| 1 | 5 | 2505 | C |
| 1 | 5 | 2506 | G |
| 1 | 5 | 2507 | A |
| 1 | 5 | 2508 | U |
| 1 | 5 | 2509 | C |
| 1 | 5 | 2510 | G |
| 1 | 5 | 2511 | A |
| 1 | 5 | 2512 | A |
| 1 | 5 | 2513 | A |
| 1 | 5 | 2514 | G |
| 1 | 5 | 2526 | C |
| 1 | 5 | 2527 | A |
| 1 | 5 | 2529 | A |
| 1 | 5 | 2530 | U |
| 1 | 5 | 2532 | C |
| 1 | 5 | 2537 | A |
| 1 | 5 | 2544 | G |
| 1 | 5 | 2545 | U |
| 1 | 5 | 2546 | G |
| 1 | 5 | 2547 | G |
| 1 | 5 | 2549 | G |
| 1 | 5 | 2551 | A |
| 1 | 5 | 2552 | G |
| 1 | 5 | 2553 | A |
| 1 | 5 | 2554 | U |
| 1 | 5 | 2555 | G |
| 1 | 5 | 2560 | C |
| 1 | 5 | 2566 | G |
| 1 | 5 | 2571 | C |
| 1 | 5 | 2572 | C |
| 1 | 5 | 2577 | C |
| 1 | 5 | 2581 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2583 | C |
| 1 | 5 | 2586 | G |
| 1 | 5 | 2587 | A |
| 1 | 5 | 2588 | C |
| 1 | 5 | 2589 | C |
| 1 | 5 | 2600 | A |
| 1 | 5 | 2601 | A |
| 1 | 5 | 2602 | G |
| 1 | 5 | 2615 | C |
| 1 | 5 | 2616 | C |
| 1 | 5 | 2620 | G |
| 1 | 5 | 2623 | A |
| 1 | 5 | 2627 | C |
| 1 | 5 | 2630 | U |
| 1 | 5 | 2631 | U |
| 1 | 5 | 2638 | G |
| 1 | 5 | 2639 | U |
| 1 | 5 | 2640 | G |
| 1 | 5 | 2643 | G |
| 1 | 5 | 2645 | G |
| 1 | 5 | 2648 | G |
| 1 | 5 | 2649 | G |
| 1 | 5 | 2653 | C |
| 1 | 5 | 2658 | G |
| 1 | 5 | 2659 | A |
| 1 | 5 | 2660 | A |
| 1 | 5 | 2661 | U |
| 1 | 5 | 2662 | G |
| 1 | 5 | 2664 | G |
| 1 | 5 | 2666 | U |
| 1 | 5 | 2667 | C |
| 1 | 5 | 2670 | C |
| 1 | 5 | 2673 | G |
| 1 | 5 | 2674 | A |
| 1 | 5 | 2675 | G |
| 1 | 5 | 2678 | A |
| 1 | 5 | 2684 | C |
| 1 | 5 | 2687 | U |
| 1 | 5 | 2688 | G |
| 1 | 5 | 2689 | C |
| 1 | 5 | 2692 | U |
| 1 | 5 | 2694 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2696 | A |
| 1 | 5 | 2704 | C |
| 1 | 5 | 2710 | C |
| 1 | 5 | 2711 | G |
| 1 | 5 | 2712 | G |
| 1 | 5 | 2713 | C |
| 1 | 5 | 2714 | G |
| 1 | 5 | 2716 | C |
| 1 | 5 | 2722 | G |
| 1 | 5 | 2725 | A |
| 1 | 5 | 2726 | G |
| 1 | 5 | 2735 | G |
| 1 | 5 | 2737 | C |
| 1 | 5 | 2740 | U |
| 1 | 5 | 2743 | A |
| 1 | 5 | 2744 | A |
| 1 | 5 | 2745 | A |
| 1 | 5 | 2747 | U |
| 1 | 5 | 2751 | G |
| 1 | 5 | 2752 | G |
| 1 | 5 | 2754 | G |
| 1 | 5 | 2756 | G |
| 1 | 5 | 2760 | G |
| 1 | 5 | 2762 | G |
| 1 | 5 | 2764 | A |
| 1 | 5 | 2765 | A |
| 1 | 5 | 2766 | A |
| 1 | 5 | 2767 | U |
| 1 | 5 | 2768 | C |
| 1 | 5 | 2769 | U |
| 1 | 5 | 2770 | C |
| 1 | 5 | 2783 | A |
| 1 | 5 | 2786 | C |
| 1 | 5 | 2787 | A |
| 1 | 5 | 2788 | U |
| 1 | 5 | 2790 | U |
| 1 | 5 | 2794 | C |
| 1 | 5 | 2796 | G |
| 1 | 5 | 2797 | C |
| 1 | 5 | 2798 | A |
| 1 | 5 | 2799 | G |
| 1 | 5 | 2806 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2807 | A |
| 1 | 5 | 2808 | G |
| 1 | 5 | 2812 | A |
| 1 | 5 | 2813 | A |
| 1 | 5 | 2814 | C |
| 1 | 5 | 2815 | A |
| 1 | 5 | 2818 | C |
| 1 | 5 | 2820 | C |
| 1 | 5 | 2821 | U |
| 1 | 5 | 2824 | C |
| 1 | 5 | 2826 | U |
| 1 | 5 | 2827 | G |
| 1 | 5 | 2828 | U |
| 1 | 5 | 2829 | U |
| 1 | 5 | 2832 | A |
| 1 | 5 | 2833 | A |
| 1 | 5 | 2834 | C |
| 1 | 5 | 2835 | A |
| 1 | 5 | 2838 | G |
| 1 | 5 | 2841 | G |
| 1 | 5 | 2842 | G |
| 1 | 5 | 2848 | G |
| 1 | 5 | 2849 | A |
| 1 | 5 | 2850 | A |
| 1 | 5 | 2852 | U |
| 1 | 5 | 2854 | G |
| 1 | 5 | 2855 | G |
| 1 | 5 | 2858 | A |
| 1 | 5 | 2859 | G |
| 1 | 5 | 2860 | C |
| 1 | 5 | 2866 | C |
| 1 | 5 | 2867 | C |
| 1 | 5 | 2873 | U |
| 1 | 5 | 2874 | U |
| 1 | 5 | 2875 | C |
| 1 | 5 | 2876 | G |
| 1 | 5 | 2879 | A |
| 1 | 5 | 2880 | U |
| 1 | 5 | 2888 | G |
| 1 | 5 | 2892 | C |
| 1 | 5 | 2897 | G |
| 1 | 5 | 2898 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2900 | U |
| 1 | 5 | 2904 | U |
| 1 | 5 | 2905 | C |
| 1 | 5 | 2910 | G |
| 1 | 5 | 3591 | C |
| 1 | 5 | 3592 | G |
| 1 | 5 | 3594 | C |
| 1 | 5 | 3595 | U |
| 1 | 5 | 3596 | A |
| 1 | 5 | 3597 | G |
| 1 | 5 | 3605 | C |
| 1 | 5 | 3606 | U |
| 1 | 5 | 3615 | G |
| 1 | 5 | 3616 | U |
| 1 | 5 | 3617 | G |
| 1 | 5 | 3620 | G |
| 1 | 5 | 3621 | A |
| 1 | 5 | 3623 | C |
| 1 | 5 | 3625 | G |
| 1 | 5 | 3626 | G |
| 1 | 5 | 3627 | G |
| 1 | 5 | 3635 | A |
| 1 | 5 | 3636 | C |
| 1 | 5 | 3643 | A |
| 1 | 5 | 3644 | U |
| 1 | 5 | 3649 | A |
| 1 | 5 | 3650 | C |
| 1 | 5 | 3658 | C |
| 1 | 5 | 3660 | C |
| 1 | 5 | 3662 | A |
| 1 | 5 | 3663 | A |
| 1 | 5 | 3664 | G |
| 1 | 5 | 3667 | C |
| 1 | 5 | 3668 | C |
| 1 | 5 | 3670 | C |
| 1 | 5 | 3671 | G |
| 1 | 5 | 3672 | G |
| 1 | 5 | 3673 | C |
| 1 | 5 | 3674 | G |
| 1 | 5 | 3675 | G |
| 1 | 5 | 3677 | U |
| 1 | 5 | 3678 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 3679 | U |
| 1 | 5 | 3680 | U |
| 1 | 5 | 3681 | G |
| 1 | 5 | 3682 | A |
| 1 | 5 | 3688 | U |
| 1 | 5 | 3692 | A |
| 1 | 5 | 3698 | G |
| 1 | 5 | 3699 | C |
| 1 | 5 | 3709 | U |
| 1 | 5 | 3710 | G |
| 1 | 5 | 3711 | A |
| 1 | 5 | 3712 | A |
| 1 | 5 | 3713 | U |
| 1 | 5 | 3715 | U |
| 1 | 5 | 3716 | C |
| 1 | 5 | 3717 | A |
| 1 | 5 | 3718 | A |
| 1 | 5 | 3727 | A |
| 1 | 5 | 3728 | A |
| 1 | 5 | 3729 | U |
| 1 | 5 | 3733 | A |
| 1 | 5 | 3735 | G |
| 1 | 5 | 3736 | A |
| 1 | 5 | 3737 | A |
| 1 | 5 | 3738 | G |
| 1 | 5 | 3739 | C |
| 1 | 5 | 3743 | G |
| 1 | 5 | 3744 | G |
| 1 | 5 | 3745 | U |
| 1 | 5 | 3748 | A |
| 1 | 5 | 3756 | A |
| 1 | 5 | 3759 | A |
| 1 | 5 | 3760 | A |
| 1 | 5 | 3770 | U |
| 1 | 5 | 3772 | U |
| 1 | 5 | 3773 | U |
| 1 | 5 | 3774 | A |
| 1 | 5 | 3775 | A |
| 1 | 5 | 3776 | G |
| 1 | 5 | 3777 | G |
| 1 | 5 | 3784 | A |
| 1 | 5 | 3785 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 3786 | U |
| 1 | 5 | 3791 | C |
| 1 | 5 | 3799 | A |
| 1 | 5 | 3800 | A |
| 1 | 5 | 3802 | U |
| 1 | 5 | 3803 | A |
| 1 | 5 | 3807 | A |
| 1 | 5 | 3809 | G |
| 1 | 5 | 3810 | C |
| 1 | 5 | 3811 | G |
| 1 | 5 | 3813 | A |
| 1 | 5 | 3814 | U |
| 1 | 5 | 3817 | A |
| 1 | 5 | 3819 | G |
| 1 | 5 | 3822 | U |
| 1 | 5 | 3831 | U |
| 1 | 5 | 3838 | U |
| 1 | 5 | 3839 | G |
| 1 | 5 | 3840 | U |
| 1 | 5 | 3843 | C |
| 1 | 5 | 3849 | A |
| 1 | 5 | 3851 | U |
| 1 | 5 | 3859 | G |
| 1 | 5 | 3861 | A |
| 1 | 5 | 3865 | A |
| 1 | 5 | 3867 | A |
| 1 | 5 | 3876 | A |
| 1 | 5 | 3877 | A |
| 1 | 5 | 3878 | C |
| 1 | 5 | 3879 | G |
| 1 | 5 | 3880 | G |
| 1 | 5 | 3881 | G |
| 1 | 5 | 3882 | C |
| 1 | 5 | 3887 | C |
| 1 | 5 | 3889 | G |
| 1 | 5 | 3895 | G |
| 1 | 5 | 3897 | G |
| 1 | 5 | 3898 | G |
| 1 | 5 | 3899 | G |
| 1 | 5 | 3900 | G |
| 1 | 5 | 3901 | A |
| 1 | 5 | 3902 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 3905 | A |
| 1 | 5 | 3906 | A |
| 1 | 5 | 3907 | G |
| 1 | 5 | 3908 | A |
| 1 | 5 | 3912 | U |
| 1 | 5 | 3913 | G |
| 1 | 5 | 3914 | U |
| 1 | 5 | 3915 | U |
| 1 | 5 | 3916 | G |
| 1 | 5 | 3917 | A |
| 1 | 5 | 3923 | A |
| 1 | 5 | 3925 | U |
| 1 | 5 | 3926 | C |
| 1 | 5 | 3938 | G |
| 1 | 5 | 3939 | G |
| 1 | 5 | 3943 | A |
| 1 | 5 | 4069 | U |
| 1 | 5 | 4070 | U |
| 1 | 5 | 4073 | A |
| 1 | 5 | 4075 | U |
| 1 | 5 | 4076 | G |
| 1 | 5 | 4083 | U |
| 1 | 5 | 4084 | G |
| 1 | 5 | 4085 | A |
| 1 | 5 | 4086 | G |
| 1 | 5 | 4087 | G |
| 1 | 5 | 4088 | C |
| 1 | 5 | 4089 | G |
| 1 | 5 | 4091 | G |
| 1 | 5 | 4092 | G |
| 1 | 5 | 4093 | G |
| 1 | 5 | 4094 | G |
| 1 | 5 | 4095 | G |
| 1 | 5 | 4097 | G |
| 1 | 5 | 4104 | G |
| 1 | 5 | 4105 | A |
| 1 | 5 | 4107 | G |
| 1 | 5 | 4114 | C |
| 1 | 5 | 4115 | G |
| 1 | 5 | 4116 | C |
| 1 | 5 | 4117 | U |
| 1 | 5 | 4118 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4119 | C |
| 1 | 5 | 4120 | U |
| 1 | 5 | 4121 | G |
| 1 | 5 | 4122 | G |
| 1 | 5 | 4125 | C |
| 1 | 5 | 4126 | C |
| 1 | 5 | 4127 | A |
| 1 | 5 | 4129 | G |
| 1 | 5 | 4132 | C |
| 1 | 5 | 4140 | C |
| 1 | 5 | 4143 | G |
| 1 | 5 | 4145 | C |
| 1 | 5 | 4158 | C |
| 1 | 5 | 4162 | C |
| 1 | 5 | 4164 | C |
| 1 | 5 | 4166 | G |
| 1 | 5 | 4168 | G |
| 1 | 5 | 4169 | G |
| 1 | 5 | 4171 | C |
| 1 | 5 | 4172 | A |
| 1 | 5 | 4173 | G |
| 1 | 5 | 4180 | G |
| 1 | 5 | 4183 | G |
| 1 | 5 | 4184 | G |
| 1 | 5 | 4191 | G |
| 1 | 5 | 4195 | G |
| 1 | 5 | 4196 | G |
| 1 | 5 | 4197 | G |
| 1 | 5 | 4199 | C |
| 1 | 5 | 4203 | A |
| 1 | 5 | 4205 | A |
| 1 | 5 | 4206 | C |
| 1 | 5 | 4208 | U |
| 1 | 5 | 4212 | A |
| 1 | 5 | 4213 | A |
| 1 | 5 | 4214 | A |
| 1 | 5 | 4215 | C |
| 1 | 5 | 4216 | G |
| 1 | 5 | 4217 | G |
| 1 | 5 | 4218 | U |
| 1 | 5 | 4219 | A |
| 1 | 5 | 4220 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4221 | C |
| 1 | 5 | 4222 | G |
| 1 | 5 | 4225 | G |
| 1 | 5 | 4226 | G |
| 1 | 5 | 4228 | G |
| 1 | 5 | 4229 | U |
| 1 | 5 | 4232 | U |
| 1 | 5 | 4233 | A |
| 1 | 5 | 4234 | A |
| 1 | 5 | 4235 | G |
| 1 | 5 | 4236 | G |
| 1 | 5 | 4239 | A |
| 1 | 5 | 4241 | C |
| 1 | 5 | 4249 | G |
| 1 | 5 | 4251 | A |
| 1 | 5 | 4252 | C |
| 1 | 5 | 4254 | G |
| 1 | 5 | 4255 | A |
| 1 | 5 | 4257 | A |
| 1 | 5 | 4258 | C |
| 1 | 5 | 4265 | U |
| 1 | 5 | 4267 | G |
| 1 | 5 | 4268 | A |
| 1 | 5 | 4271 | A |
| 1 | 5 | 4274 | A |
| 1 | 5 | 4276 | G |
| 1 | 5 | 4279 | A |
| 1 | 5 | 4280 | A |
| 1 | 5 | 4281 | A |
| 1 | 5 | 4282 | A |
| 1 | 5 | 4283 | G |
| 1 | 5 | 4286 | C |
| 1 | 5 | 4287 | G |
| 1 | 5 | 4288 | C |
| 1 | 5 | 4290 | U |
| 1 | 5 | 4291 | G |
| 1 | 5 | 4296 | U |
| 1 | 5 | 4297 | G |
| 1 | 5 | 4305 | G |
| 1 | 5 | 4306 | U |
| 1 | 5 | 4311 | A |
| 1 | 5 | 4314 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4316 | G |
| 1 | 5 | 4318 | C |
| 1 | 5 | 4323 | A |
| 1 | 5 | 4329 | G |
| 1 | 5 | 4330 | G |
| 1 | 5 | 4332 | C |
| 1 | 5 | 4335 | C |
| 1 | 5 | 4336 | A |
| 1 | 5 | 4337 | C |
| 1 | 5 | 4339 | A |
| 1 | 5 | 4344 | U |
| 1 | 5 | 4348 | A |
| 1 | 5 | 4349 | C |
| 1 | 5 | 4350 | C |
| 1 | 5 | 4352 | U |
| 1 | 5 | 4353 | U |
| 1 | 5 | 4354 | U |
| 1 | 5 | 4356 | G |
| 1 | 5 | 4364 | G |
| 1 | 5 | 4368 | G |
| 1 | 5 | 4369 | A |
| 1 | 5 | 4373 | G |
| 1 | 5 | 4374 | U |
| 1 | 5 | 4375 | C |
| 1 | 5 | 4376 | A |
| 1 | 5 | 4377 | G |
| 1 | 5 | 4378 | A |
| 1 | 5 | 4379 | A |
| 1 | 5 | 4385 | A |
| 1 | 5 | 4386 | C |
| 1 | 5 | 4387 | C |
| 1 | 5 | 4388 | A |
| 1 | 5 | 4391 | G |
| 1 | 5 | 4393 | G |
| 1 | 5 | 4394 | A |
| 1 | 5 | 4395 | U |
| 1 | 5 | 4396 | A |
| 1 | 5 | 4401 | G |
| 1 | 5 | 4419 | U |
| 1 | 5 | 4422 | A |
| 1 | 5 | 4425 | G |
| 1 | 5 | 4426 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4434 | C |
| 1 | 5 | 4436 | U |
| 1 | 5 | 4437 | U |
| 1 | 5 | 4438 | U |
| 1 | 5 | 4439 | U |
| 1 | 5 | 4440 | G |
| 1 | 5 | 4441 | A |
| 1 | 5 | 4443 | C |
| 1 | 5 | 4444 | C |
| 1 | 5 | 4448 | G |
| 1 | 5 | 4449 | A |
| 1 | 5 | 4450 | U |
| 1 | 5 | 4451 | G |
| 1 | 5 | 4452 | U |
| 1 | 5 | 4454 | G |
| 1 | 5 | 4459 | U |
| 1 | 5 | 4463 | U |
| 1 | 5 | 4464 | A |
| 1 | 5 | 4465 | U |
| 1 | 5 | 4466 | C |
| 1 | 5 | 4467 | A |
| 1 | 5 | 4469 | U |
| 1 | 5 | 4471 | U |
| 1 | 5 | 4472 | G |
| 1 | 5 | 4473 | A |
| 1 | 5 | 4475 | G |
| 1 | 5 | 4476 | C |
| 1 | 5 | 4484 | A |
| 1 | 5 | 4488 | A |
| 1 | 5 | 4489 | G |
| 1 | 5 | 4491 | G |
| 1 | 5 | 4498 | U |
| 1 | 5 | 4500 | U |
| 1 | 5 | 4503 | A |
| 1 | 5 | 4510 | A |
| 1 | 5 | 4511 | A |
| 1 | 5 | 4512 | U |
| 1 | 5 | 4513 | A |
| 1 | 5 | 4518 | A |
| 1 | 5 | 4519 | C |
| 1 | 5 | 4520 | G |
| 1 | 5 | 4522 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4523 | A |
| 1 | 5 | 4524 | G |
| 1 | 5 | 4528 | G |
| 1 | 5 | 4529 | G |
| 1 | 5 | 4530 | U |
| 1 | 5 | 4531 | U |
| 1 | 5 | 4532 | U |
| 1 | 5 | 4534 | G |
| 1 | 5 | 4536 | C |
| 1 | 5 | 4537 | C |
| 1 | 5 | 4543 | G |
| 1 | 5 | 4544 | A |
| 1 | 5 | 4546 | A |
| 1 | 5 | 4548 | A |
| 1 | 5 | 4549 | G |
| 1 | 5 | 4550 | G |
| 1 | 5 | 4552 | U |
| 1 | 5 | 4557 | U |
| 1 | 5 | 4560 | C |
| 1 | 5 | 4569 | U |
| 1 | 5 | 4570 | G |
| 1 | 5 | 4572 | U |
| 1 | 5 | 4574 | U |
| 1 | 5 | 4575 | G |
| 1 | 5 | 4581 | G |
| 1 | 5 | 4583 | C |
| 1 | 5 | 4584 | A |
| 1 | 5 | 4585 | U |
| 1 | 5 | 4586 | G |
| 1 | 5 | 4589 | A |
| 1 | 5 | 4590 | A |
| 1 | 5 | 4592 | C |
| 1 | 5 | 4599 | A |
| 1 | 5 | 4600 | G |
| 1 | 5 | 4601 | U |
| 1 | 5 | 4603 | C |
| 1 | 5 | 4605 | A |
| 1 | 5 | 4606 | G |
| 1 | 5 | 4608 | G |
| 1 | 5 | 4617 | G |
| 1 | 5 | 4623 | G |
| 1 | 5 | 4624 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4636 | U |
| 1 | 5 | 4637 | G |
| 1 | 5 | 4641 | U |
| 1 | 5 | 4646 | U |
| 1 | 5 | 4647 | G |
| 1 | 5 | 4648 | A |
| 1 | 5 | 4652 | G |
| 1 | 5 | 4656 | A |
| 1 | 5 | 4657 | U |
| 1 | 5 | 4661 | G |
| 1 | 5 | 4664 | A |
| 1 | 5 | 4669 | A |
| 1 | 5 | 4670 | C |
| 1 | 5 | 4671 | C |
| 1 | 5 | 4672 | A |
| 1 | 5 | 4676 | G |
| 1 | 5 | 4677 | U |
| 1 | 5 | 4678 | G |
| 1 | 5 | 4679 | G |
| 1 | 5 | 4687 | A |
| 1 | 5 | 4693 | C |
| 1 | 5 | 4694 | G |
| 1 | 5 | 4695 | C |
| 1 | 5 | 4700 | A |
| 1 | 5 | 4701 | A |
| 1 | 5 | 4709 | U |
| 1 | 5 | 4714 | C |
| 1 | 5 | 4715 | C |
| 1 | 5 | 4717 | A |
| 1 | 5 | 4718 | G |
| 1 | 5 | 4719 | G |
| 1 | 5 | 4720 | C |
| 1 | 5 | 4721 | G |
| 1 | 5 | 4722 | G |
| 1 | 5 | 4729 | A |
| 1 | 5 | 4730 | C |
| 1 | 5 | 4731 | G |
| 1 | 5 | 4732 | G |
| 1 | 5 | 4733 | C |
| 1 | 5 | 4734 | A |
| 1 | 5 | 4735 | G |
| 1 | 5 | 4737 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4738 | C |
| 1 | 5 | 4741 | C |
| 1 | 5 | 4743 | G |
| 1 | 5 | 4745 | G |
| 1 | 5 | 4746 | C |
| 1 | 5 | 4748 | U |
| 1 | 5 | 4749 | C |
| 1 | 5 | 4750 | G |
| 1 | 5 | 4751 | G |
| 1 | 5 | 4753 | U |
| 1 | 5 | 4756 | C |
| 1 | 5 | 4757 | C |
| 1 | 5 | 4758 | U |
| 1 | 5 | 4760 | G |
| 1 | 5 | 4763 | U |
| 1 | 5 | 4764 | A |
| 1 | 5 | 4770 | U |
| 1 | 5 | 4771 | C |
| 1 | 5 | 4774 | C |
| 1 | 5 | 4860 | G |
| 1 | 5 | 4865 | C |
| 1 | 5 | 4869 | U |
| 1 | 5 | 4871 | C |
| 1 | 5 | 4872 | G |
| 1 | 5 | 4873 | G |
| 1 | 5 | 4874 | A |
| 1 | 5 | 4875 | G |
| 1 | 5 | 4876 | U |
| 1 | 5 | 4877 | G |
| 1 | 5 | 4878 | C |
| 1 | 5 | 4881 | U |
| 1 | 5 | 4882 | U |
| 1 | 5 | 4883 | C |
| 1 | 5 | 4884 | G |
| 1 | 5 | 4885 | U |
| 1 | 5 | 4886 | C |
| 1 | 5 | 4888 | U |
| 1 | 5 | 4889 | G |
| 1 | 5 | 4890 | G |
| 1 | 5 | 4891 | G |
| 1 | 5 | 4893 | A |
| 1 | 5 | 4895 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4896 | G |
| 1 | 5 | 4900 | C |
| 1 | 5 | 4901 | G |
| 1 | 5 | 4903 | G |
| 1 | 5 | 4906 | C |
| 1 | 5 | 4910 | G |
| 1 | 5 | 4911 | A |
| 1 | 5 | 4912 | G |
| 1 | 5 | 4913 | G |
| 1 | 5 | 4915 | G |
| 1 | 5 | 4919 | G |
| 1 | 5 | 4926 | C |
| 1 | 5 | 4927 | G |
| 1 | 5 | 4928 | C |
| 1 | 5 | 4929 | C |
| 1 | 5 | 4930 | C |
| 1 | 5 | 4932 | U |
| 1 | 5 | 4933 | C |
| 1 | 5 | 4934 | A |
| 1 | 5 | 4936 | G |
| 1 | 5 | 4937 | C |
| 1 | 5 | 4938 | A |
| 1 | 5 | 4939 | C |
| 1 | 5 | 4942 | C |
| 1 | 5 | 4945 | G |
| 1 | 5 | 4946 | U |
| 1 | 5 | 4947 | U |
| 1 | 5 | 4948 | C |
| 1 | 5 | 4949 | G |
| 1 | 5 | 4950 | U |
| 1 | 5 | 4951 | G |
| 1 | 5 | 4952 | G |
| 1 | 5 | 4953 | G |
| 1 | 5 | 4957 | C |
| 1 | 5 | 4959 | U |
| 1 | 5 | 4961 | G |
| 1 | 5 | 4962 | C |
| 1 | 5 | 4964 | C |
| 1 | 5 | 4965 | U |
| 1 | 5 | 4966 | A |
| 1 | 5 | 4967 | A |
| 1 | 5 | 4977 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4979 | A |
| 1 | 5 | 4980 | C |
| 1 | 5 | 4981 | G |
| 1 | 5 | 4982 | A |
| 1 | 5 | 4985 | U |
| 1 | 5 | 4988 | U |
| 1 | 5 | 4989 | U |
| 1 | 5 | 4990 | C |
| 1 | 5 | 4991 | U |
| 1 | 5 | 4992 | G |
| 1 | 5 | 4993 | G |
| 1 | 5 | 4999 | G |
| 1 | 5 | 5002 | U |
| 1 | 5 | 5006 | U |
| 1 | 5 | 5013 | C |
| 1 | 5 | 5014 | A |
| 1 | 5 | 5016 | A |
| 1 | 5 | 5017 | G |
| 1 | 5 | 5018 | C |
| 1 | 5 | 5019 | A |
| 1 | 5 | 5021 | C |
| 1 | 5 | 5023 | C |
| 1 | 5 | 5026 | U |
| 1 | 5 | 5027 | C |
| 1 | 5 | 5028 | G |
| 1 | 5 | 5034 | A |
| 1 | 5 | 5035 | U |
| 1 | 5 | 5040 | U |
| 1 | 5 | 5041 | G |
| 1 | 5 | 5042 | A |
| 1 | 5 | 5045 | G |
| 1 | 5 | 5047 | C |
| 1 | 5 | 5048 | A |
| 1 | 5 | 5049 | G |
| 1 | 5 | 5050 | C |
| 1 | 5 | 5052 | C |
| 1 | 5 | 5053 | U |
| 1 | 5 | 5054 | C |
| 1 | 5 | 5056 | A |
| 1 | 5 | 5057 | C |
| 1 | 5 | 5058 | A |
| 1 | 5 | 5060 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 5061 | A |
| 1 | 5 | 5062 | G |
| 1 | 5 | 5063 | G |
| 1 | 5 | 5069 | U |
| 2 | 7 | 7 | G |
| 2 | 7 | 11 | A |
| 2 | 7 | 17 | C |
| 2 | 7 | 21 | G |
| 2 | 7 | 22 | A |
| 2 | 7 | 23 | A |
| 2 | 7 | 24 | C |
| 2 | 7 | 27 | G |
| 2 | 7 | 30 | C |
| 2 | 7 | 31 | G |
| 2 | 7 | 42 | A |
| 2 | 7 | 53 | U |
| 2 | 7 | 54 | A |
| 2 | 7 | 57 | C |
| 2 | 7 | 60 | G |
| 2 | 7 | 63 | C |
| 2 | 7 | 64 | G |
| 2 | 7 | 65 | G |
| 2 | 7 | 70 | G |
| 2 | 7 | 73 | U |
| 2 | 7 | 74 | A |
| 2 | 7 | 79 | U |
| 2 | 7 | 80 | U |
| 2 | 7 | 90 | A |
| 2 | 7 | 100 | A |
| 2 | 7 | 105 | C |
| 2 | 7 | 106 | G |
| 2 | 7 | 110 | G |
| 2 | 7 | 112 | U |
| 2 | 7 | 115 | A |
| 2 | 7 | 120 | U |
| 3 | 8 | 2 | G |
| 3 | 8 | 3 | A |
| 3 | 8 | 9 | A |
| 3 | 8 | 11 | C |
| 3 | 8 | 13 | G |
| 3 | 8 | 16 | G |
| 3 | 8 | 23 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | 8 | 32 | C |
| 3 | 8 | 33 | G |
| 3 | 8 | 34 | U |
| 3 | 8 | 35 | C |
| 3 | 8 | 37 | A |
| 3 | 8 | 38 | U |
| 3 | 8 | 39 | G |
| 3 | 8 | 40 | A |
| 3 | 8 | 46 | G |
| 3 | 8 | 48 | A |
| 3 | 8 | 50 | C |
| 3 | 8 | 51 | U |
| 3 | 8 | 59 | A |
| 3 | 8 | 61 | A |
| 3 | 8 | 62 | A |
| 3 | 8 | 63 | U |
| 3 | 8 | 64 | U |
| 3 | 8 | 65 | A |
| 3 | 8 | 70 | G |
| 3 | 8 | 71 | A |
| 3 | 8 | 74 | U |
| 3 | 8 | 75 | G |
| 3 | 8 | 80 | A |
| 3 | 8 | 81 | C |
| 3 | 8 | 82 | A |
| 3 | 8 | 83 | C |
| 3 | 8 | 84 | A |
| 3 | 8 | 85 | U |
| 3 | 8 | 86 | U |
| 3 | 8 | 87 | G |
| 3 | 8 | 90 | C |
| 3 | 8 | 94 | G |
| 3 | 8 | 95 | A |
| 3 | 8 | 97 | A |
| 3 | 8 | 98 | C |
| 3 | 8 | 99 | U |
| 3 | 8 | 103 | A |
| 3 | 8 | 104 | A |
| 3 | 8 | 105 | C |
| 3 | 8 | 109 | C |
| 3 | 8 | 110 | U |
| 3 | 8 | 111 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | 8 | 112 | G |
| 3 | 8 | 114 | G |
| 3 | 8 | 118 | C |
| 3 | 8 | 121 | G |
| 3 | 8 | 122 | G |
| 3 | 8 | 125 | C |
| 3 | 8 | 126 | C |
| 3 | 8 | 127 | U |
| 3 | 8 | 137 | A |
| 3 | 8 | 147 | G |
| 3 | 8 | 151 | G |
| 3 | 8 | 153 | C |
| 49 | S2 | 3 | C |
| 49 | S2 | 4 | C |
| 49 | S2 | 9 | U |
| 49 | S2 | 10 | G |
| 49 | S2 | 17 | C |
| 49 | S2 | 18 | C |
| 49 | S2 | 20 | G |
| 49 | S2 | 23 | G |
| 49 | S2 | 24 | C |
| 49 | S2 | 25 | A |
| 49 | S2 | 27 | A |
| 49 | S2 | 33 | G |
| 49 | S2 | 39 | A |
| 49 | S2 | 44 | U |
| 49 | S2 | 45 | A |
| 49 | S2 | 46 | A |
| 49 | S2 | 49 | C |
| 49 | S2 | 51 | U |
| 49 | S2 | 53 | C |
| 49 | S2 | 56 | G |
| 49 | S2 | 57 | U |
| 49 | S2 | 58 | C |
| 49 | S2 | 59 | U |
| 49 | S2 | 60 | A |
| 49 | S2 | 61 | A |
| 49 | S2 | 62 | G |
| 49 | S2 | 63 | U |
| 49 | S2 | 64 | A |
| 49 | S2 | 65 | C |
| 49 | S2 | 66 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 67 | C |
| 49 | S2 | 68 | A |
| 49 | S2 | 71 | G |
| 49 | S2 | 72 | C |
| 49 | S2 | 73 | C |
| 49 | S2 | 74 | G |
| 49 | S2 | 75 | G |
| 49 | S2 | 76 | U |
| 49 | S2 | 77 | A |
| 49 | S2 | 78 | C |
| 49 | S2 | 79 | A |
| 49 | S2 | 80 | G |
| 49 | S2 | 84 | A |
| 49 | S2 | 88 | G |
| 49 | S2 | 89 | C |
| 49 | S2 | 92 | A |
| 49 | S2 | 98 | C |
| 49 | S2 | 99 | A |
| 49 | S2 | 101 | U |
| 49 | S2 | 103 | A |
| 49 | S2 | 105 | U |
| 49 | S2 | 111 | A |
| 49 | S2 | 113 | G |
| 49 | S2 | 114 | G |
| 49 | S2 | 115 | U |
| 49 | S2 | 116 | U |
| 49 | S2 | 117 | C |
| 49 | S2 | 123 | G |
| 49 | S2 | 125 | C |
| 49 | S2 | 127 | C |
| 49 | S2 | 139 | C |
| 49 | S2 | 140 | C |
| 49 | S2 | 141 | A |
| 49 | S2 | 142 | C |
| 49 | S2 | 143 | U |
| 49 | S2 | 144 | U |
| 49 | S2 | 146 | G |
| 49 | S2 | 147 | A |
| 49 | S2 | 148 | U |
| 49 | S2 | 150 | A |
| 49 | S2 | 153 | G |
| 49 | S2 | 154 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 155 | G |
| 49 | S2 | 156 | G |
| 49 | S2 | 159 | A |
| 49 | S2 | 160 | U |
| 49 | S2 | 161 | U |
| 49 | S2 | 162 | C |
| 49 | S2 | 163 | U |
| 49 | S2 | 164 | A |
| 49 | S2 | 165 | G |
| 49 | S2 | 167 | G |
| 49 | S2 | 169 | U |
| 49 | S2 | 170 | A |
| 49 | S2 | 173 | A |
| 49 | S2 | 176 | U |
| 49 | S2 | 180 | G |
| 49 | S2 | 181 | A |
| 49 | S2 | 182 | C |
| 49 | S2 | 183 | G |
| 49 | S2 | 184 | G |
| 49 | S2 | 188 | C |
| 49 | S2 | 189 | U |
| 49 | S2 | 191 | A |
| 49 | S2 | 192 | C |
| 49 | S2 | 200 | G |
| 49 | S2 | 202 | G |
| 49 | S2 | 206 | G |
| 49 | S2 | 209 | A |
| 49 | S2 | 210 | U |
| 49 | S2 | 211 | G |
| 49 | S2 | 213 | G |
| 49 | S2 | 215 | G |
| 49 | S2 | 216 | C |
| 49 | S2 | 217 | A |
| 49 | S2 | 290 | U |
| 49 | S2 | 291 | G |
| 49 | S2 | 292 | A |
| 49 | S2 | 293 | C |
| 49 | S2 | 295 | C |
| 49 | S2 | 302 | A |
| 49 | S2 | 305 | U |
| 49 | S2 | 306 | C |
| 49 | S2 | 307 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 308 | G |
| 49 | S2 | 309 | G |
| 49 | S2 | 310 | C |
| 49 | S2 | 311 | C |
| 49 | S2 | 312 | G |
| 49 | S2 | 313 | A |
| 49 | S2 | 314 | U |
| 49 | S2 | 316 | G |
| 49 | S2 | 317 | C |
| 49 | S2 | 318 | A |
| 49 | S2 | 319 | C |
| 49 | S2 | 321 | C |
| 49 | S2 | 324 | C |
| 49 | S2 | 325 | C |
| 49 | S2 | 326 | C |
| 49 | S2 | 328 | U |
| 49 | S2 | 338 | G |
| 49 | S2 | 340 | C |
| 49 | S2 | 341 | C |
| 49 | S2 | 342 | C |
| 49 | S2 | 343 | A |
| 49 | S2 | 346 | C |
| 49 | S2 | 347 | G |
| 49 | S2 | 350 | C |
| 49 | S2 | 355 | G |
| 49 | S2 | 356 | C |
| 49 | S2 | 357 | C |
| 49 | S2 | 360 | A |
| 49 | S2 | 362 | C |
| 49 | S2 | 364 | A |
| 49 | S2 | 365 | C |
| 49 | S2 | 367 | U |
| 49 | S2 | 368 | U |
| 49 | S2 | 369 | C |
| 49 | S2 | 370 | G |
| 49 | S2 | 373 | G |
| 49 | S2 | 377 | G |
| 49 | S2 | 380 | G |
| 49 | S2 | 381 | C |
| 49 | S2 | 382 | C |
| 49 | S2 | 384 | U |
| 49 | S2 | 385 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 386 | C |
| 49 | S2 | 394 | G |
| 49 | S2 | 398 | A |
| 49 | S2 | 400 | C |
| 49 | S2 | 407 | G |
| 49 | S2 | 408 | A |
| 49 | S2 | 409 | C |
| 49 | S2 | 411 | G |
| 49 | S2 | 414 | A |
| 49 | S2 | 416 | U |
| 49 | S2 | 417 | C |
| 49 | S2 | 418 | A |
| 49 | S2 | 419 | G |
| 49 | S2 | 425 | G |
| 49 | S2 | 426 | A |
| 49 | S2 | 427 | U |
| 49 | S2 | 428 | U |
| 49 | S2 | 429 | C |
| 49 | S2 | 435 | A |
| 49 | S2 | 436 | G |
| 49 | S2 | 438 | G |
| 49 | S2 | 441 | C |
| 49 | S2 | 444 | G |
| 49 | S2 | 445 | A |
| 49 | S2 | 447 | A |
| 49 | S2 | 448 | A |
| 49 | S2 | 449 | A |
| 49 | S2 | 450 | C |
| 49 | S2 | 453 | C |
| 49 | S2 | 454 | U |
| 49 | S2 | 455 | A |
| 49 | S2 | 459 | C |
| 49 | S2 | 460 | A |
| 49 | S2 | 464 | A |
| 49 | S2 | 465 | A |
| 49 | S2 | 466 | G |
| 49 | S2 | 467 | G |
| 49 | S2 | 468 | A |
| 49 | S2 | 469 | A |
| 49 | S2 | 471 | G |
| 49 | S2 | 472 | C |
| 49 | S2 | 473 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 474 | G |
| 49 | S2 | 476 | A |
| 49 | S2 | 482 | G |
| 49 | S2 | 487 | U |
| 49 | S2 | 488 | U |
| 49 | S2 | 489 | A |
| 49 | S2 | 492 | C |
| 49 | S2 | 493 | A |
| 49 | S2 | 496 | C |
| 49 | S2 | 500 | A |
| 49 | S2 | 501 | C |
| 49 | S2 | 507 | G |
| 49 | S2 | 508 | A |
| 49 | S2 | 516 | A |
| 49 | S2 | 518 | G |
| 49 | S2 | 523 | A |
| 49 | S2 | 525 | A |
| 49 | S2 | 528 | A |
| 49 | S2 | 530 | U |
| 49 | S2 | 532 | C |
| 49 | S2 | 533 | A |
| 49 | S2 | 534 | G |
| 49 | S2 | 542 | U |
| 49 | S2 | 544 | G |
| 49 | S2 | 548 | C |
| 49 | S2 | 549 | C |
| 49 | S2 | 550 | C |
| 49 | S2 | 551 | U |
| 49 | S2 | 552 | G |
| 49 | S2 | 554 | A |
| 49 | S2 | 555 | A |
| 49 | S2 | 556 | U |
| 49 | S2 | 557 | U |
| 49 | S2 | 559 | G |
| 49 | S2 | 560 | A |
| 49 | S2 | 562 | U |
| 49 | S2 | 563 | G |
| 49 | S2 | 564 | A |
| 49 | S2 | 568 | C |
| 49 | S2 | 575 | A |
| 49 | S2 | 576 | A |
| 49 | S2 | 579 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 580 | U |
| 49 | S2 | 583 | C |
| 49 | S2 | 588 | G |
| 49 | S2 | 589 | G |
| 49 | S2 | 590 | A |
| 49 | S2 | 591 | U |
| 49 | S2 | 592 | C |
| 49 | S2 | 593 | C |
| 49 | S2 | 595 | U |
| 49 | S2 | 596 | U |
| 49 | S2 | 598 | G |
| 49 | S2 | 600 | G |
| 49 | S2 | 601 | G |
| 49 | S2 | 602 | G |
| 49 | S2 | 604 | A |
| 49 | S2 | 605 | A |
| 49 | S2 | 607 | U |
| 49 | S2 | 608 | C |
| 49 | S2 | 612 | U |
| 49 | S2 | 614 | C |
| 49 | S2 | 616 | A |
| 49 | S2 | 617 | G |
| 49 | S2 | 621 | C |
| 49 | S2 | 623 | G |
| 49 | S2 | 626 | G |
| 49 | S2 | 627 | U |
| 49 | S2 | 628 | A |
| 49 | S2 | 629 | A |
| 49 | S2 | 630 | U |
| 49 | S2 | 631 | U |
| 49 | S2 | 632 | C |
| 49 | S2 | 643 | A |
| 49 | S2 | 644 | G |
| 49 | S2 | 646 | G |
| 49 | S2 | 649 | U |
| 49 | S2 | 655 | A |
| 49 | S2 | 657 | U |
| 49 | S2 | 660 | C |
| 49 | S2 | 662 | G |
| 49 | S2 | 666 | U |
| 49 | S2 | 667 | U |
| 49 | S2 | 668 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 669 | A |
| 49 | S2 | 671 | A |
| 49 | S2 | 672 | A |
| 49 | S2 | 673 | G |
| 49 | S2 | 679 | A |
| 49 | S2 | 683 | G |
| 49 | S2 | 684 | G |
| 49 | S2 | 687 | C |
| 49 | S2 | 688 | U |
| 49 | S2 | 689 | U |
| 49 | S2 | 690 | G |
| 49 | S2 | 693 | A |
| 49 | S2 | 694 | G |
| 49 | S2 | 695 | C |
| 49 | S2 | 698 | G |
| 49 | S2 | 731 | G |
| 49 | S2 | 733 | C |
| 49 | S2 | 734 | C |
| 49 | S2 | 735 | C |
| 49 | S2 | 736 | C |
| 49 | S2 | 738 | C |
| 49 | S2 | 739 | C |
| 49 | S2 | 745 | C |
| 49 | S2 | 747 | U |
| 49 | S2 | 748 | C |
| 49 | S2 | 749 | U |
| 49 | S2 | 751 | G |
| 49 | S2 | 752 | G |
| 49 | S2 | 753 | C |
| 49 | S2 | 788 | G |
| 49 | S2 | 791 | C |
| 49 | S2 | 797 | C |
| 49 | S2 | 798 | A |
| 49 | S2 | 799 | U |
| 49 | S2 | 800 | U |
| 49 | S2 | 809 | A |
| 49 | S2 | 810 | A |
| 49 | S2 | 811 | A |
| 49 | S2 | 812 | A |
| 49 | S2 | 820 | U |
| 49 | S2 | 821 | G |
| 49 | S2 | 822 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 827 | A |
| 49 | S2 | 830 | A |
| 49 | S2 | 833 | C |
| 49 | S2 | 834 | C |
| 49 | S2 | 835 | C |
| 49 | S2 | 836 | G |
| 49 | S2 | 837 | A |
| 49 | S2 | 838 | G |
| 49 | S2 | 840 | C |
| 49 | S2 | 841 | G |
| 49 | S2 | 842 | C |
| 49 | S2 | 843 | C |
| 49 | S2 | 845 | G |
| 49 | S2 | 847 | A |
| 49 | S2 | 848 | U |
| 49 | S2 | 856 | C |
| 49 | S2 | 861 | A |
| 49 | S2 | 867 | G |
| 49 | S2 | 868 | G |
| 49 | S2 | 869 | A |
| 49 | S2 | 870 | A |
| 49 | S2 | 871 | U |
| 49 | S2 | 872 | A |
| 49 | S2 | 873 | G |
| 49 | S2 | 875 | A |
| 49 | S2 | 877 | C |
| 49 | S2 | 878 | G |
| 49 | S2 | 879 | C |
| 49 | S2 | 880 | G |
| 49 | S2 | 881 | G |
| 49 | S2 | 887 | U |
| 49 | S2 | 888 | U |
| 49 | S2 | 890 | U |
| 49 | S2 | 891 | G |
| 49 | S2 | 892 | U |
| 49 | S2 | 897 | U |
| 49 | S2 | 898 | U |
| 49 | S2 | 903 | A |
| 49 | S2 | 910 | G |
| 49 | S2 | 913 | A |
| 49 | S2 | 914 | U |
| 49 | S2 | 915 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 917 | U |
| 49 | S2 | 918 | U |
| 49 | S2 | 919 | A |
| 49 | S2 | 920 | A |
| 49 | S2 | 921 | G |
| 49 | S2 | 930 | C |
| 49 | S2 | 933 | G |
| 49 | S2 | 934 | G |
| 49 | S2 | 938 | A |
| 49 | S2 | 943 | U |
| 49 | S2 | 954 | U |
| 49 | S2 | 955 | A |
| 49 | S2 | 956 | G |
| 49 | S2 | 957 | A |
| 49 | S2 | 958 | G |
| 49 | S2 | 959 | G |
| 49 | S2 | 960 | U |
| 49 | S2 | 961 | G |
| 49 | S2 | 962 | A |
| 49 | S2 | 964 | A |
| 49 | S2 | 965 | U |
| 49 | S2 | 966 | U |
| 49 | S2 | 968 | U |
| 49 | S2 | 969 | U |
| 49 | S2 | 970 | G |
| 49 | S2 | 971 | G |
| 49 | S2 | 979 | C |
| 49 | S2 | 980 | A |
| 49 | S2 | 981 | A |
| 49 | S2 | 990 | A |
| 49 | S2 | 991 | G |
| 49 | S2 | 992 | A |
| 49 | S2 | 996 | A |
| 49 | S2 | 997 | A |
| 49 | S2 | 999 | G |
| 49 | S2 | 1001 | A |
| 49 | S2 | 1002 | U |
| 49 | S2 | 1008 | A |
| 49 | S2 | 1017 | U |
| 49 | S2 | 1023 | A |
| 49 | S2 | 1033 | G |
| 49 | S2 | 1034 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1035 | A |
| 49 | S2 | 1040 | G |
| 49 | S2 | 1041 | G |
| 49 | S2 | 1044 | G |
| 49 | S2 | 1045 | U |
| 49 | S2 | 1049 | A |
| 49 | S2 | 1050 | A |
| 49 | S2 | 1060 | A |
| 49 | S2 | 1062 | A |
| 49 | S2 | 1067 | C |
| 49 | S2 | 1070 | A |
| 49 | S2 | 1072 | U |
| 49 | S2 | 1073 | U |
| 49 | S2 | 1077 | A |
| 49 | S2 | 1078 | C |
| 49 | S2 | 1083 | A |
| 49 | S2 | 1084 | A |
| 49 | S2 | 1085 | C |
| 49 | S2 | 1087 | A |
| 49 | S2 | 1088 | U |
| 49 | S2 | 1089 | G |
| 49 | S2 | 1091 | C |
| 49 | S2 | 1096 | G |
| 49 | S2 | 1099 | G |
| 49 | S2 | 1100 | A |
| 49 | S2 | 1102 | G |
| 49 | S2 | 1109 | C |
| 49 | S2 | 1110 | G |
| 49 | S2 | 1111 | U |
| 49 | S2 | 1114 | U |
| 49 | S2 | 1115 | U |
| 49 | S2 | 1116 | C |
| 49 | S2 | 1117 | C |
| 49 | S2 | 1118 | C |
| 49 | S2 | 1120 | U |
| 49 | S2 | 1123 | C |
| 49 | S2 | 1126 | G |
| 49 | S2 | 1130 | G |
| 49 | S2 | 1131 | G |
| 49 | S2 | 1133 | A |
| 49 | S2 | 1138 | C |
| 49 | S2 | 1139 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1143 | A |
| 49 | S2 | 1144 | A |
| 49 | S2 | 1146 | C |
| 49 | S2 | 1148 | A |
| 49 | S2 | 1149 | A |
| 49 | S2 | 1150 | A |
| 49 | S2 | 1151 | G |
| 49 | S2 | 1153 | C |
| 49 | S2 | 1154 | U |
| 49 | S2 | 1157 | G |
| 49 | S2 | 1165 | G |
| 49 | S2 | 1166 | G |
| 49 | S2 | 1171 | G |
| 49 | S2 | 1172 | U |
| 49 | S2 | 1181 | A |
| 49 | S2 | 1182 | A |
| 49 | S2 | 1186 | U |
| 49 | S2 | 1187 | G |
| 49 | S2 | 1192 | U |
| 49 | S2 | 1194 | A |
| 49 | S2 | 1195 | A |
| 49 | S2 | 1199 | A |
| 49 | S2 | 1200 | A |
| 49 | S2 | 1207 | G |
| 49 | S2 | 1208 | A |
| 49 | S2 | 1211 | G |
| 49 | S2 | 1212 | G |
| 49 | S2 | 1214 | A |
| 49 | S2 | 1215 | C |
| 49 | S2 | 1216 | C |
| 49 | S2 | 1217 | A |
| 49 | S2 | 1221 | G |
| 49 | S2 | 1224 | G |
| 49 | S2 | 1234 | C |
| 49 | S2 | 1242 | U |
| 49 | S2 | 1243 | U |
| 49 | S2 | 1244 | U |
| 49 | S2 | 1247 | C |
| 49 | S2 | 1248 | U |
| 49 | S2 | 1250 | A |
| 49 | S2 | 1251 | A |
| 49 | S2 | 1253 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1254 | C |
| 49 | S2 | 1256 | G |
| 49 | S2 | 1257 | G |
| 49 | S2 | 1258 | A |
| 49 | S2 | 1259 | A |
| 49 | S2 | 1264 | C |
| 49 | S2 | 1265 | A |
| 49 | S2 | 1266 | C |
| 49 | S2 | 1267 | C |
| 49 | S2 | 1268 | C |
| 49 | S2 | 1269 | G |
| 49 | S2 | 1271 | C |
| 49 | S2 | 1273 | C |
| 49 | S2 | 1274 | G |
| 49 | S2 | 1275 | G |
| 49 | S2 | 1276 | A |
| 49 | S2 | 1280 | G |
| 49 | S2 | 1282 | A |
| 49 | S2 | 1283 | C |
| 49 | S2 | 1284 | A |
| 49 | S2 | 1285 | G |
| 49 | S2 | 1286 | G |
| 49 | S2 | 1288 | U |
| 49 | S2 | 1289 | U |
| 49 | S2 | 1292 | C |
| 49 | S2 | 1293 | A |
| 49 | S2 | 1296 | U |
| 49 | S2 | 1298 | G |
| 49 | S2 | 1299 | A |
| 49 | S2 | 1301 | A |
| 49 | S2 | 1302 | G |
| 49 | S2 | 1303 | C |
| 49 | S2 | 1304 | U |
| 49 | S2 | 1305 | C |
| 49 | S2 | 1306 | U |
| 49 | S2 | 1308 | U |
| 49 | S2 | 1309 | C |
| 49 | S2 | 1312 | G |
| 49 | S2 | 1313 | A |
| 49 | S2 | 1314 | U |
| 49 | S2 | 1315 | U |
| 49 | S2 | 1316 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1322 | G |
| 49 | S2 | 1324 | G |
| 49 | S2 | 1326 | U |
| 49 | S2 | 1330 | G |
| 49 | S2 | 1332 | A |
| 49 | S2 | 1333 | U |
| 49 | S2 | 1337 | C |
| 49 | S2 | 1342 | U |
| 49 | S2 | 1343 | U |
| 49 | S2 | 1345 | G |
| 49 | S2 | 1348 | G |
| 49 | S2 | 1352 | G |
| 49 | S2 | 1367 | U |
| 49 | S2 | 1370 | A |
| 49 | S2 | 1371 | U |
| 49 | S2 | 1372 | U |
| 49 | S2 | 1373 | C |
| 49 | S2 | 1378 | A |
| 49 | S2 | 1379 | A |
| 49 | S2 | 1380 | C |
| 49 | S2 | 1385 | G |
| 49 | S2 | 1394 | G |
| 49 | S2 | 1395 | C |
| 49 | S2 | 1396 | A |
| 49 | S2 | 1397 | U |
| 49 | S2 | 1401 | A |
| 49 | S2 | 1402 | A |
| 49 | S2 | 1403 | C |
| 49 | S2 | 1404 | U |
| 49 | S2 | 1405 | A |
| 49 | S2 | 1407 | U |
| 49 | S2 | 1410 | C |
| 49 | S2 | 1411 | G |
| 49 | S2 | 1412 | C |
| 49 | S2 | 1414 | A |
| 49 | S2 | 1417 | C |
| 49 | S2 | 1418 | C |
| 49 | S2 | 1419 | C |
| 49 | S2 | 1420 | G |
| 49 | S2 | 1424 | G |
| 49 | S2 | 1426 | U |
| 49 | S2 | 1430 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1431 | G |
| 49 | S2 | 1432 | U |
| 49 | S2 | 1433 | C |
| 49 | S2 | 1434 | C |
| 49 | S2 | 1435 | C |
| 49 | S2 | 1437 | C |
| 49 | S2 | 1438 | A |
| 49 | S2 | 1441 | U |
| 49 | S2 | 1442 | U |
| 49 | S2 | 1449 | G |
| 49 | S2 | 1450 | G |
| 49 | S2 | 1452 | A |
| 49 | S2 | 1454 | A |
| 49 | S2 | 1455 | A |
| 49 | S2 | 1456 | G |
| 49 | S2 | 1462 | U |
| 49 | S2 | 1463 | U |
| 49 | S2 | 1464 | C |
| 49 | S2 | 1466 | G |
| 49 | S2 | 1467 | C |
| 49 | S2 | 1474 | A |
| 49 | S2 | 1475 | G |
| 49 | S2 | 1476 | A |
| 49 | S2 | 1477 | U |
| 49 | S2 | 1478 | U |
| 49 | S2 | 1489 | A |
| 49 | S2 | 1490 | G |
| 49 | S2 | 1493 | C |
| 49 | S2 | 1494 | U |
| 49 | S2 | 1495 | G |
| 49 | S2 | 1496 | U |
| 49 | S2 | 1506 | A |
| 49 | S2 | 1507 | G |
| 49 | S2 | 1508 | A |
| 49 | S2 | 1509 | U |
| 49 | S2 | 1510 | G |
| 49 | S2 | 1512 | C |
| 49 | S2 | 1513 | C |
| 49 | S2 | 1514 | G |
| 49 | S2 | 1515 | G |
| 49 | S2 | 1520 | G |
| 49 | S2 | 1521 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1522 | A |
| 49 | S2 | 1525 | C |
| 49 | S2 | 1527 | C |
| 49 | S2 | 1531 | A |
| 49 | S2 | 1534 | C |
| 49 | S2 | 1535 | U |
| 49 | S2 | 1536 | G |
| 49 | S2 | 1537 | A |
| 49 | S2 | 1541 | G |
| 49 | S2 | 1542 | C |
| 49 | S2 | 1543 | U |
| 49 | S2 | 1544 | C |
| 49 | S2 | 1545 | A |
| 49 | S2 | 1546 | G |
| 49 | S2 | 1548 | G |
| 49 | S2 | 1550 | G |
| 49 | S2 | 1551 | U |
| 49 | S2 | 1552 | G |
| 49 | S2 | 1553 | C |
| 49 | S2 | 1554 | C |
| 49 | S2 | 1555 | U |
| 49 | S2 | 1556 | A |
| 49 | S2 | 1557 | C |
| 49 | S2 | 1558 | C |
| 49 | S2 | 1560 | U |
| 49 | S2 | 1567 | G |
| 49 | S2 | 1568 | C |
| 49 | S2 | 1570 | G |
| 49 | S2 | 1574 | C |
| 49 | S2 | 1578 | U |
| 49 | S2 | 1579 | A |
| 49 | S2 | 1580 | A |
| 49 | S2 | 1581 | C |
| 49 | S2 | 1585 | U |
| 49 | S2 | 1586 | U |
| 49 | S2 | 1587 | G |
| 49 | S2 | 1588 | A |
| 49 | S2 | 1589 | A |
| 49 | S2 | 1590 | C |
| 49 | S2 | 1593 | C |
| 49 | S2 | 1595 | U |
| 49 | S2 | 1596 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1598 | G |
| 49 | S2 | 1599 | U |
| 49 | S2 | 1600 | G |
| 49 | S2 | 1601 | A |
| 49 | S2 | 1602 | U |
| 49 | S2 | 1604 | G |
| 49 | S2 | 1606 | G |
| 49 | S2 | 1609 | C |
| 49 | S2 | 1610 | G |
| 49 | S2 | 1621 | U |
| 49 | S2 | 1622 | U |
| 49 | S2 | 1623 | A |
| 49 | S2 | 1625 | U |
| 49 | S2 | 1633 | A |
| 49 | S2 | 1637 | A |
| 49 | S2 | 1638 | G |
| 49 | S2 | 1644 | C |
| 49 | S2 | 1648 | G |
| 49 | S2 | 1649 | U |
| 49 | S2 | 1656 | G |
| 49 | S2 | 1660 | C |
| 49 | S2 | 1663 | A |
| 49 | S2 | 1664 | A |
| 49 | S2 | 1665 | G |
| 49 | S2 | 1666 | C |
| 49 | S2 | 1674 | G |
| 49 | S2 | 1679 | A |
| 49 | S2 | 1680 | G |
| 49 | S2 | 1682 | C |
| 49 | S2 | 1683 | C |
| 49 | S2 | 1684 | C |
| 49 | S2 | 1689 | C |
| 49 | S2 | 1695 | A |
| 49 | S2 | 1696 | C |
| 49 | S2 | 1699 | A |
| 49 | S2 | 1700 | C |
| 49 | S2 | 1701 | C |
| 49 | S2 | 1702 | G |
| 49 | S2 | 1707 | U |
| 49 | S2 | 1720 | U |
| 49 | S2 | 1721 | U |
| 49 | S2 | 1722 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1729 | U |
| 49 | S2 | 1730 | U |
| 49 | S2 | 1734 | G |
| 49 | S2 | 1742 | C |
| 49 | S2 | 1745 | A |
| 49 | S2 | 1746 | U |
| 49 | S2 | 1751 | C |
| 49 | S2 | 1753 | C |
| 49 | S2 | 1783 | C |
| 49 | S2 | 1785 | C |
| 49 | S2 | 1786 | U |
| 49 | S2 | 1792 | G |
| 49 | S2 | 1793 | A |
| 49 | S2 | 1795 | G |
| 49 | S2 | 1797 | U |
| 49 | S2 | 1798 | C |
| 49 | S2 | 1804 | U |
| 49 | S2 | 1805 | G |
| 49 | S2 | 1816 | G |
| 49 | S2 | 1823 | A |
| 49 | S2 | 1824 | A |
| 49 | S2 | 1825 | A |
| 49 | S2 | 1826 | G |
| 49 | S2 | 1827 | U |
| 49 | S2 | 1831 | A |
| 49 | S2 | 1835 | A |
| 49 | S2 | 1836 | G |
| 49 | S2 | 1837 | G |
| 49 | S2 | 1838 | U |
| 49 | S2 | 1839 | U |
| 49 | S2 | 1841 | C |
| 49 | S2 | 1849 | G |
| 49 | S2 | 1850 | A |
| 49 | S2 | 1851 | A |
| 49 | S2 | 1852 | C |
| 49 | S2 | 1860 | A |
| 49 | S2 | 1861 | G |
| 49 | S2 | 1862 | G |
| 49 | S2 | 1863 | A |
| 49 | S2 | 1864 | U |
| 49 | S2 | 1865 | C |
| 49 | S2 | 1868 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1869 | A |

All (921) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1 | C |
| 1 | 5 | 20 | U |
| 1 | 5 | 33 | A |
| 1 | 5 | 39 | A |
| 1 | 5 | 42 | A |
| 1 | 5 | 47 | A |
| 1 | 5 | 48 | G |
| 1 | 5 | 51 | A |
| 1 | 5 | 53 | C |
| 1 | 5 | 54 | G |
| 1 | 5 | 55 | G |
| 1 | 5 | 62 | A |
| 1 | 5 | 64 | A |
| 1 | 5 | 65 | A |
| 1 | 5 | 66 | A |
| 1 | 5 | 84 | A |
| 1 | 5 | 85 | G |
| 1 | 5 | 88 | A |
| 1 | 5 | 94 | A |
| 1 | 5 | 97 | G |
| 1 | 5 | 98 | A |
| 1 | 5 | 99 | A |
| 1 | 5 | 100 | C |
| 1 | 5 | 107 | G |
| 1 | 5 | 111 | C |
| 1 | 5 | 112 | C |
| 1 | 5 | 119 | G |
| 1 | 5 | 120 | A |
| 1 | 5 | 125 | C |
| 1 | 5 | 134 | G |
| 1 | 5 | 136 | C |
| 1 | 5 | 143 | C |
| 1 | 5 | 149 | A |
| 1 | 5 | 151 | G |
| 1 | 5 | 158 | A |
| 1 | 5 | 159 | C |
| 1 | 5 | 163 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 170 | C |
| 1 | 5 | 172 | C |
| 1 | 5 | 183 | C |
| 1 | 5 | 186 | G |
| 1 | 5 | 187 | U |
| 1 | 5 | 197 | A |
| 1 | 5 | 207 | G |
| 1 | 5 | 209 | U |
| 1 | 5 | 216 | C |
| 1 | 5 | 218 | A |
| 1 | 5 | 219 | G |
| 1 | 5 | 226 | G |
| 1 | 5 | 235 | A |
| 1 | 5 | 237 | G |
| 1 | 5 | 245 | C |
| 1 | 5 | 253 | G |
| 1 | 5 | 265 | C |
| 1 | 5 | 266 | C |
| 1 | 5 | 268 | G |
| 1 | 5 | 275 | C |
| 1 | 5 | 276 | C |
| 1 | 5 | 280 | G |
| 1 | 5 | 292 | G |
| 1 | 5 | 293 | G |
| 1 | 5 | 296 | A |
| 1 | 5 | 298 | G |
| 1 | 5 | 315 | G |
| 1 | 5 | 333 | U |
| 1 | 5 | 337 | U |
| 1 | 5 | 340 | C |
| 1 | 5 | 349 | A |
| 1 | 5 | 353 | A |
| 1 | 5 | 354 | U |
| 1 | 5 | 360 | A |
| 1 | 5 | 361 | C |
| 1 | 5 | 362 | A |
| 1 | 5 | 371 | A |
| 1 | 5 | 385 | A |
| 1 | 5 | 387 | G |
| 1 | 5 | 388 | A |
| 1 | 5 | 393 | U |
| 1 | 5 | 394 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 405 | U |
| 1 | 5 | 406 | C |
| 1 | 5 | 407 | A |
| 1 | 5 | 410 | A |
| 1 | 5 | 414 | C |
| 1 | 5 | 417 | G |
| 1 | 5 | 421 | C |
| 1 | 5 | 432 | U |
| 1 | 5 | 435 | A |
| 1 | 5 | 451 | C |
| 1 | 5 | 454 | U |
| 1 | 5 | 485 | C |
| 1 | 5 | 486 | C |
| 1 | 5 | 493 | G |
| 1 | 5 | 495 | C |
| 1 | 5 | 496 | G |
| 1 | 5 | 497 | G |
| 1 | 5 | 502 | C |
| 1 | 5 | 505 | G |
| 1 | 5 | 514 | U |
| 1 | 5 | 647 | G |
| 1 | 5 | 648 | G |
| 1 | 5 | 655 | C |
| 1 | 5 | 658 | C |
| 1 | 5 | 659 | G |
| 1 | 5 | 664 | G |
| 1 | 5 | 666 | G |
| 1 | 5 | 668 | C |
| 1 | 5 | 684 | G |
| 1 | 5 | 686 | A |
| 1 | 5 | 693 | C |
| 1 | 5 | 704 | C |
| 1 | 5 | 727 | C |
| 1 | 5 | 728 | U |
| 1 | 5 | 732 | A |
| 1 | 5 | 733 | A |
| 1 | 5 | 738 | C |
| 1 | 5 | 746 | A |
| 1 | 5 | 747 | A |
| 1 | 5 | 909 | A |
| 1 | 5 | 911 | U |
| 1 | 5 | 917 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 920 | C |
| 1 | 5 | 927 | G |
| 1 | 5 | 930 | G |
| 1 | 5 | 931 | C |
| 1 | 5 | 932 | A |
| 1 | 5 | 936 | C |
| 1 | 5 | 943 | A |
| 1 | 5 | 946 | C |
| 1 | 5 | 956 | A |
| 1 | 5 | 957 | G |
| 1 | 5 | 958 | G |
| 1 | 5 | 961 | G |
| 1 | 5 | 962 | C |
| 1 | 5 | 965 | G |
| 1 | 5 | 968 | C |
| 1 | 5 | 974 | C |
| 1 | 5 | 977 | C |
| 1 | 5 | 978 | G |
| 1 | 5 | 979 | C |
| 1 | 5 | 986 | C |
| 1 | 5 | 987 | C |
| 1 | 5 | 989 | U |
| 1 | 5 | 1067 | G |
| 1 | 5 | 1068 | G |
| 1 | 5 | 1074 | G |
| 1 | 5 | 1076 | C |
| 1 | 5 | 1186 | U |
| 1 | 5 | 1210 | C |
| 1 | 5 | 1211 | G |
| 1 | 5 | 1214 | C |
| 1 | 5 | 1217 | G |
| 1 | 5 | 1221 | G |
| 1 | 5 | 1232 | G |
| 1 | 5 | 1235 | G |
| 1 | 5 | 1236 | C |
| 1 | 5 | 1237 | C |
| 1 | 5 | 1238 | A |
| 1 | 5 | 1239 | C |
| 1 | 5 | 1241 | C |
| 1 | 5 | 1243 | C |
| 1 | 5 | 1244 | G |
| 1 | 5 | 1254 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1264 | C |
| 1 | 5 | 1266 | G |
| 1 | 5 | 1268 | G |
| 1 | 5 | 1272 | C |
| 1 | 5 | 1274 | A |
| 1 | 5 | 1279 | A |
| 1 | 5 | 1280 | C |
| 1 | 5 | 1281 | G |
| 1 | 5 | 1293 | G |
| 1 | 5 | 1296 | G |
| 1 | 5 | 1319 | U |
| 1 | 5 | 1324 | A |
| 1 | 5 | 1325 | C |
| 1 | 5 | 1329 | G |
| 1 | 5 | 1334 | A |
| 1 | 5 | 1356 | U |
| 1 | 5 | 1357 | C |
| 1 | 5 | 1359 | G |
| 1 | 5 | 1364 | U |
| 1 | 5 | 1365 | C |
| 1 | 5 | 1368 | A |
| 1 | 5 | 1370 | G |
| 1 | 5 | 1371 | A |
| 1 | 5 | 1377 | G |
| 1 | 5 | 1378 | C |
| 1 | 5 | 1379 | C |
| 1 | 5 | 1380 | G |
| 1 | 5 | 1386 | C |
| 1 | 5 | 1398 | A |
| 1 | 5 | 1405 | C |
| 1 | 5 | 1406 | G |
| 1 | 5 | 1407 | C |
| 1 | 5 | 1410 | U |
| 1 | 5 | 1419 | G |
| 1 | 5 | 1420 | A |
| 1 | 5 | 1426 | G |
| 1 | 5 | 1428 | U |
| 1 | 5 | 1438 | U |
| 1 | 5 | 1439 | C |
| 1 | 5 | 1440 | U |
| 1 | 5 | 1445 | U |
| 1 | 5 | 1464 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1474 | C |
| 1 | 5 | 1479 | G |
| 1 | 5 | 1480 | C |
| 1 | 5 | 1481 | C |
| 1 | 5 | 1484 | G |
| 1 | 5 | 1488 | G |
| 1 | 5 | 1489 | G |
| 1 | 5 | 1500 | A |
| 1 | 5 | 1509 | C |
| 1 | 5 | 1521 | C |
| 1 | 5 | 1522 | G |
| 1 | 5 | 1539 | G |
| 1 | 5 | 1554 | A |
| 1 | 5 | 1596 | U |
| 1 | 5 | 1613 | A |
| 1 | 5 | 1614 | C |
| 1 | 5 | 1615 | C |
| 1 | 5 | 1617 | G |
| 1 | 5 | 1627 | G |
| 1 | 5 | 1633 | G |
| 1 | 5 | 1636 | U |
| 1 | 5 | 1640 | C |
| 1 | 5 | 1650 | A |
| 1 | 5 | 1654 | G |
| 1 | 5 | 1671 | U |
| 1 | 5 | 1676 | C |
| 1 | 5 | 1681 | G |
| 1 | 5 | 1682 | A |
| 1 | 5 | 1696 | C |
| 1 | 5 | 1697 | G |
| 1 | 5 | 1698 | C |
| 1 | 5 | 1724 | G |
| 1 | 5 | 1725 | U |
| 1 | 5 | 1742 | A |
| 1 | 5 | 1763 | C |
| 1 | 5 | 1764 | G |
| 1 | 5 | 1804 | A |
| 1 | 5 | 1808 | C |
| 1 | 5 | 1819 | G |
| 1 | 5 | 1835 | G |
| 1 | 5 | 1864 | G |
| 1 | 5 | 1865 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 1869 | G |
| 1 | 5 | 1876 | U |
| 1 | 5 | 1881 | C |
| 1 | 5 | 1884 | C |
| 1 | 5 | 1887 | G |
| 1 | 5 | 1890 | G |
| 1 | 5 | 1891 | A |
| 1 | 5 | 1912 | G |
| 1 | 5 | 1919 | G |
| 1 | 5 | 1920 | C |
| 1 | 5 | 1921 | C |
| 1 | 5 | 1925 | G |
| 1 | 5 | 1928 | C |
| 1 | 5 | 1930 | U |
| 1 | 5 | 1935 | C |
| 1 | 5 | 1938 | C |
| 1 | 5 | 1959 | U |
| 1 | 5 | 1960 | A |
| 1 | 5 | 1974 | U |
| 1 | 5 | 1975 | G |
| 1 | 5 | 1980 | U |
| 1 | 5 | 1983 | A |
| 1 | 5 | 1998 | A |
| 1 | 5 | 2007 | G |
| 1 | 5 | 2008 | U |
| 1 | 5 | 2009 | A |
| 1 | 5 | 2014 | C |
| 1 | 5 | 2044 | U |
| 1 | 5 | 2046 | G |
| 1 | 5 | 2057 | A |
| 1 | 5 | 2068 | C |
| 1 | 5 | 2075 | G |
| 1 | 5 | 2077 | C |
| 1 | 5 | 2083 | C |
| 1 | 5 | 2088 | A |
| 1 | 5 | 2089 | G |
| 1 | 5 | 2090 | U |
| 1 | 5 | 2093 | A |
| 1 | 5 | 2094 | G |
| 1 | 5 | 2096 | G |
| 1 | 5 | 2107 | C |
| 1 | 5 | 2111 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2114 | G |
| 1 | 5 | 2116 | C |
| 1 | 5 | 2118 | G |
| 1 | 5 | 2119 | C |
| 1 | 5 | 2122 | G |
| 1 | 5 | 2123 | C |
| 1 | 5 | 2124 | G |
| 1 | 5 | 2126 | G |
| 1 | 5 | 2246 | C |
| 1 | 5 | 2248 | C |
| 1 | 5 | 2250 | C |
| 1 | 5 | 2251 | G |
| 1 | 5 | 2256 | C |
| 1 | 5 | 2257 | C |
| 1 | 5 | 2258 | C |
| 1 | 5 | 2260 | C |
| 1 | 5 | 2261 | G |
| 1 | 5 | 2262 | G |
| 1 | 5 | 2264 | C |
| 1 | 5 | 2265 | G |
| 1 | 5 | 2266 | C |
| 1 | 5 | 2267 | U |
| 1 | 5 | 2268 | A |
| 1 | 5 | 2269 | C |
| 1 | 5 | 2272 | C |
| 1 | 5 | 2276 | A |
| 1 | 5 | 2278 | G |
| 1 | 5 | 2289 | C |
| 1 | 5 | 2313 | A |
| 1 | 5 | 2321 | G |
| 1 | 5 | 2323 | C |
| 1 | 5 | 2324 | C |
| 1 | 5 | 2325 | C |
| 1 | 5 | 2328 | G |
| 1 | 5 | 2329 | U |
| 1 | 5 | 2331 | G |
| 1 | 5 | 2332 | A |
| 1 | 5 | 2347 | A |
| 1 | 5 | 2361 | G |
| 1 | 5 | 2362 | U |
| 1 | 5 | 2370 | A |
| 1 | 5 | 2389 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2394 | G |
| 1 | 5 | 2396 | A |
| 1 | 5 | 2398 | U |
| 1 | 5 | 2417 | A |
| 1 | 5 | 2436 | U |
| 1 | 5 | 2438 | A |
| 1 | 5 | 2447 | U |
| 1 | 5 | 2448 | G |
| 1 | 5 | 2459 | G |
| 1 | 5 | 2464 | C |
| 1 | 5 | 2468 | U |
| 1 | 5 | 2470 | C |
| 1 | 5 | 2474 | G |
| 1 | 5 | 2479 | G |
| 1 | 5 | 2487 | G |
| 1 | 5 | 2490 | U |
| 1 | 5 | 2502 | G |
| 1 | 5 | 2507 | A |
| 1 | 5 | 2509 | C |
| 1 | 5 | 2512 | A |
| 1 | 5 | 2513 | A |
| 1 | 5 | 2514 | G |
| 1 | 5 | 2515 | G |
| 1 | 5 | 2529 | A |
| 1 | 5 | 2533 | C |
| 1 | 5 | 2544 | G |
| 1 | 5 | 2545 | U |
| 1 | 5 | 2546 | G |
| 1 | 5 | 2553 | A |
| 1 | 5 | 2554 | U |
| 1 | 5 | 2576 | G |
| 1 | 5 | 2581 | A |
| 1 | 5 | 2583 | C |
| 1 | 5 | 2587 | A |
| 1 | 5 | 2588 | C |
| 1 | 5 | 2589 | C |
| 1 | 5 | 2591 | A |
| 1 | 5 | 2600 | A |
| 1 | 5 | 2614 | C |
| 1 | 5 | 2618 | G |
| 1 | 5 | 2622 | G |
| 1 | 5 | 2631 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 2652 | G |
| 1 | 5 | 2658 | G |
| 1 | 5 | 2661 | U |
| 1 | 5 | 2665 | U |
| 1 | 5 | 2666 | U |
| 1 | 5 | 2673 | G |
| 1 | 5 | 2674 | A |
| 1 | 5 | 2677 | G |
| 1 | 5 | 2683 | C |
| 1 | 5 | 2686 | G |
| 1 | 5 | 2688 | G |
| 1 | 5 | 2695 | A |
| 1 | 5 | 2703 | G |
| 1 | 5 | 2711 | G |
| 1 | 5 | 2732 | G |
| 1 | 5 | 2744 | A |
| 1 | 5 | 2761 | U |
| 1 | 5 | 2768 | C |
| 1 | 5 | 2769 | U |
| 1 | 5 | 2782 | U |
| 1 | 5 | 2786 | C |
| 1 | 5 | 2787 | A |
| 1 | 5 | 2796 | G |
| 1 | 5 | 2803 | U |
| 1 | 5 | 2806 | A |
| 1 | 5 | 2811 | G |
| 1 | 5 | 2812 | A |
| 1 | 5 | 2817 | C |
| 1 | 5 | 2825 | A |
| 1 | 5 | 2827 | G |
| 1 | 5 | 2828 | U |
| 1 | 5 | 2833 | A |
| 1 | 5 | 2834 | C |
| 1 | 5 | 2837 | U |
| 1 | 5 | 2843 | U |
| 1 | 5 | 2848 | G |
| 1 | 5 | 2851 | G |
| 1 | 5 | 2858 | A |
| 1 | 5 | 2859 | G |
| 1 | 5 | 2879 | A |
| 1 | 5 | 2895 | A |
| 1 | 5 | 2896 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 3590 | G |
| 1 | 5 | 3593 | C |
| 1 | 5 | 3615 | G |
| 1 | 5 | 3620 | G |
| 1 | 5 | 3622 | C |
| 1 | 5 | 3625 | G |
| 1 | 5 | 3626 | G |
| 1 | 5 | 3636 | C |
| 1 | 5 | 3648 | A |
| 1 | 5 | 3653 | A |
| 1 | 5 | 3654 | G |
| 1 | 5 | 3663 | A |
| 1 | 5 | 3666 | C |
| 1 | 5 | 3667 | C |
| 1 | 5 | 3671 | G |
| 1 | 5 | 3676 | G |
| 1 | 5 | 3679 | U |
| 1 | 5 | 3681 | G |
| 1 | 5 | 3683 | C |
| 1 | 5 | 3692 | A |
| 1 | 5 | 3697 | U |
| 1 | 5 | 3712 | A |
| 1 | 5 | 3717 | A |
| 1 | 5 | 3727 | A |
| 1 | 5 | 3730 | U |
| 1 | 5 | 3735 | G |
| 1 | 5 | 3736 | A |
| 1 | 5 | 3773 | U |
| 1 | 5 | 3774 | A |
| 1 | 5 | 3776 | G |
| 1 | 5 | 3784 | A |
| 1 | 5 | 3799 | A |
| 1 | 5 | 3802 | U |
| 1 | 5 | 3803 | A |
| 1 | 5 | 3809 | G |
| 1 | 5 | 3813 | A |
| 1 | 5 | 3817 | A |
| 1 | 5 | 3839 | G |
| 1 | 5 | 3845 | A |
| 1 | 5 | 3856 | A |
| 1 | 5 | 3860 | A |
| 1 | 5 | 3862 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 3875 | G |
| 1 | 5 | 3876 | A |
| 1 | 5 | 3877 | A |
| 1 | 5 | 3879 | G |
| 1 | 5 | 3888 | G |
| 1 | 5 | 3905 | A |
| 1 | 5 | 3922 | G |
| 1 | 5 | 3938 | G |
| 1 | 5 | 3944 | G |
| 1 | 5 | 4069 | U |
| 1 | 5 | 4075 | U |
| 1 | 5 | 4084 | G |
| 1 | 5 | 4085 | A |
| 1 | 5 | 4086 | G |
| 1 | 5 | 4095 | G |
| 1 | 5 | 4096 | C |
| 1 | 5 | 4097 | G |
| 1 | 5 | 4102 | C |
| 1 | 5 | 4103 | C |
| 1 | 5 | 4115 | G |
| 1 | 5 | 4118 | U |
| 1 | 5 | 4119 | C |
| 1 | 5 | 4120 | U |
| 1 | 5 | 4121 | G |
| 1 | 5 | 4123 | C |
| 1 | 5 | 4124 | G |
| 1 | 5 | 4127 | A |
| 1 | 5 | 4144 | C |
| 1 | 5 | 4163 | U |
| 1 | 5 | 4165 | C |
| 1 | 5 | 4170 | A |
| 1 | 5 | 4173 | G |
| 1 | 5 | 4183 | G |
| 1 | 5 | 4195 | G |
| 1 | 5 | 4197 | G |
| 1 | 5 | 4219 | A |
| 1 | 5 | 4221 | C |
| 1 | 5 | 4227 | U |
| 1 | 5 | 4228 | G |
| 1 | 5 | 4229 | U |
| 1 | 5 | 4232 | U |
| 1 | 5 | 4233 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4239 | A |
| 1 | 5 | 4240 | G |
| 1 | 5 | 4250 | G |
| 1 | 5 | 4251 | A |
| 1 | 5 | 4254 | G |
| 1 | 5 | 4257 | A |
| 1 | 5 | 4269 | G |
| 1 | 5 | 4270 | C |
| 1 | 5 | 4275 | G |
| 1 | 5 | 4276 | G |
| 1 | 5 | 4280 | A |
| 1 | 5 | 4282 | A |
| 1 | 5 | 4283 | G |
| 1 | 5 | 4287 | G |
| 1 | 5 | 4291 | G |
| 1 | 5 | 4295 | U |
| 1 | 5 | 4297 | G |
| 1 | 5 | 4322 | G |
| 1 | 5 | 4330 | G |
| 1 | 5 | 4334 | U |
| 1 | 5 | 4338 | G |
| 1 | 5 | 4348 | A |
| 1 | 5 | 4349 | C |
| 1 | 5 | 4368 | G |
| 1 | 5 | 4374 | U |
| 1 | 5 | 4375 | C |
| 1 | 5 | 4378 | A |
| 1 | 5 | 4385 | A |
| 1 | 5 | 4395 | U |
| 1 | 5 | 4419 | U |
| 1 | 5 | 4425 | G |
| 1 | 5 | 4436 | U |
| 1 | 5 | 4440 | G |
| 1 | 5 | 4448 | G |
| 1 | 5 | 4449 | A |
| 1 | 5 | 4451 | G |
| 1 | 5 | 4454 | G |
| 1 | 5 | 4463 | U |
| 1 | 5 | 4464 | A |
| 1 | 5 | 4472 | G |
| 1 | 5 | 4474 | A |
| 1 | 5 | 4475 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4481 | U |
| 1 | 5 | 4488 | A |
| 1 | 5 | 4489 | G |
| 1 | 5 | 4497 | U |
| 1 | 5 | 4498 | U |
| 1 | 5 | 4507 | A |
| 1 | 5 | 4518 | A |
| 1 | 5 | 4519 | C |
| 1 | 5 | 4522 | G |
| 1 | 5 | 4527 | G |
| 1 | 5 | 4528 | G |
| 1 | 5 | 4531 | U |
| 1 | 5 | 4533 | A |
| 1 | 5 | 4535 | A |
| 1 | 5 | 4536 | C |
| 1 | 5 | 4543 | G |
| 1 | 5 | 4547 | C |
| 1 | 5 | 4548 | A |
| 1 | 5 | 4560 | C |
| 1 | 5 | 4574 | U |
| 1 | 5 | 4583 | C |
| 1 | 5 | 4600 | G |
| 1 | 5 | 4605 | A |
| 1 | 5 | 4610 | A |
| 1 | 5 | 4645 | C |
| 1 | 5 | 4647 | G |
| 1 | 5 | 4656 | A |
| 1 | 5 | 4670 | C |
| 1 | 5 | 4677 | U |
| 1 | 5 | 4678 | G |
| 1 | 5 | 4691 | A |
| 1 | 5 | 4693 | C |
| 1 | 5 | 4700 | A |
| 1 | 5 | 4718 | G |
| 1 | 5 | 4719 | G |
| 1 | 5 | 4720 | C |
| 1 | 5 | 4730 | C |
| 1 | 5 | 4731 | G |
| 1 | 5 | 4737 | G |
| 1 | 5 | 4739 | C |
| 1 | 5 | 4740 | G |
| 1 | 5 | 4745 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 5 | 4756 | C |
| 1 | 5 | 4762 | A |
| 1 | 5 | 4763 | U |
| 1 | 5 | 4871 | C |
| 1 | 5 | 4872 | G |
| 1 | 5 | 4873 | G |
| 1 | 5 | 4874 | A |
| 1 | 5 | 4884 | G |
| 1 | 5 | 4885 | U |
| 1 | 5 | 4887 | C |
| 1 | 5 | 4888 | U |
| 1 | 5 | 4889 | G |
| 1 | 5 | 4900 | C |
| 1 | 5 | 4911 | A |
| 1 | 5 | 4926 | C |
| 1 | 5 | 4929 | C |
| 1 | 5 | 4935 | C |
| 1 | 5 | 4936 | G |
| 1 | 5 | 4938 | A |
| 1 | 5 | 4948 | C |
| 1 | 5 | 4949 | G |
| 1 | 5 | 4950 | U |
| 1 | 5 | 4951 | G |
| 1 | 5 | 4981 | G |
| 1 | 5 | 4990 | C |
| 1 | 5 | 4991 | U |
| 1 | 5 | 5022 | U |
| 1 | 5 | 5026 | U |
| 1 | 5 | 5027 | C |
| 1 | 5 | 5041 | G |
| 1 | 5 | 5046 | U |
| 1 | 5 | 5049 | G |
| 1 | 5 | 5056 | A |
| 1 | 5 | 5059 | C |
| 1 | 5 | 5060 | A |
| 1 | 5 | 5061 | A |
| 1 | 5 | 5062 | G |
| 1 | 5 | 5068 | G |
| 2 | 7 | 7 | G |
| 2 | 7 | 21 | G |
| 2 | 7 | 42 | A |
| 2 | 7 | 56 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | 7 | 58 | A |
| 2 | 7 | 60 | G |
| 2 | 7 | 63 | C |
| 2 | 7 | 72 | U |
| 2 | 7 | 75 | G |
| 3 | 8 | 2 | G |
| 3 | 8 | 9 | A |
| 3 | 8 | 10 | G |
| 3 | 8 | 14 | U |
| 3 | 8 | 33 | G |
| 3 | 8 | 34 | U |
| 3 | 8 | 37 | A |
| 3 | 8 | 64 | U |
| 3 | 8 | 70 | G |
| 3 | 8 | 73 | U |
| 3 | 8 | 81 | C |
| 3 | 8 | 83 | C |
| 3 | 8 | 85 | U |
| 3 | 8 | 94 | G |
| 3 | 8 | 95 | A |
| 3 | 8 | 98 | C |
| 3 | 8 | 110 | U |
| 3 | 8 | 111 | U |
| 3 | 8 | 124 | U |
| 3 | 8 | 125 | C |
| 3 | 8 | 126 | C |
| 3 | 8 | 131 | G |
| 49 | S2 | 1 | U |
| 49 | S2 | 2 | A |
| 49 | S2 | 9 | U |
| 49 | S2 | 19 | A |
| 49 | S2 | 24 | C |
| 49 | S2 | 50 | A |
| 49 | S2 | 55 | U |
| 49 | S2 | 60 | A |
| 49 | S2 | 61 | A |
| 49 | S2 | 65 | C |
| 49 | S2 | 66 | G |
| 49 | S2 | 67 | C |
| 49 | S2 | 72 | C |
| 49 | S2 | 73 | C |
| 49 | S2 | 74 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 90 | G |
| 49 | S2 | 91 | A |
| 49 | S2 | 98 | C |
| 49 | S2 | 102 | A |
| 49 | S2 | 104 | A |
| 49 | S2 | 110 | U |
| 49 | S2 | 113 | G |
| 49 | S2 | 126 | G |
| 49 | S2 | 127 | C |
| 49 | S2 | 139 | C |
| 49 | S2 | 140 | C |
| 49 | S2 | 141 | A |
| 49 | S2 | 142 | C |
| 49 | S2 | 158 | A |
| 49 | S2 | 160 | U |
| 49 | S2 | 163 | U |
| 49 | S2 | 164 | A |
| 49 | S2 | 180 | G |
| 49 | S2 | 181 | A |
| 49 | S2 | 182 | C |
| 49 | S2 | 183 | G |
| 49 | S2 | 190 | G |
| 49 | S2 | 215 | G |
| 49 | S2 | 291 | G |
| 49 | S2 | 294 | U |
| 49 | S2 | 304 | C |
| 49 | S2 | 305 | U |
| 49 | S2 | 312 | G |
| 49 | S2 | 313 | A |
| 49 | S2 | 327 | G |
| 49 | S2 | 333 | G |
| 49 | S2 | 340 | C |
| 49 | S2 | 349 | A |
| 49 | S2 | 355 | G |
| 49 | S2 | 357 | C |
| 49 | S2 | 360 | A |
| 49 | S2 | 368 | U |
| 49 | S2 | 369 | C |
| 49 | S2 | 377 | G |
| 49 | S2 | 381 | C |
| 49 | S2 | 384 | U |
| 49 | S2 | 385 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 409 | C |
| 49 | S2 | 421 | G |
| 49 | S2 | 427 | U |
| 49 | S2 | 435 | A |
| 49 | S2 | 443 | U |
| 49 | S2 | 444 | G |
| 49 | S2 | 446 | G |
| 49 | S2 | 448 | A |
| 49 | S2 | 452 | G |
| 49 | S2 | 453 | C |
| 49 | S2 | 458 | A |
| 49 | S2 | 465 | A |
| 49 | S2 | 468 | A |
| 49 | S2 | 471 | G |
| 49 | S2 | 473 | A |
| 49 | S2 | 482 | G |
| 49 | S2 | 492 | C |
| 49 | S2 | 499 | G |
| 49 | S2 | 515 | G |
| 49 | S2 | 532 | C |
| 49 | S2 | 539 | C |
| 49 | S2 | 548 | C |
| 49 | S2 | 550 | C |
| 49 | S2 | 577 | U |
| 49 | S2 | 578 | C |
| 49 | S2 | 579 | C |
| 49 | S2 | 601 | G |
| 49 | S2 | 604 | A |
| 49 | S2 | 606 | G |
| 49 | S2 | 607 | U |
| 49 | S2 | 613 | G |
| 49 | S2 | 615 | C |
| 49 | S2 | 618 | C |
| 49 | S2 | 642 | U |
| 49 | S2 | 646 | G |
| 49 | S2 | 649 | U |
| 49 | S2 | 656 | G |
| 49 | S2 | 671 | A |
| 49 | S2 | 687 | C |
| 49 | S2 | 688 | U |
| 49 | S2 | 732 | U |
| 49 | S2 | 733 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 746 | C |
| 49 | S2 | 747 | U |
| 49 | S2 | 751 | G |
| 49 | S2 | 752 | G |
| 49 | S2 | 797 | C |
| 49 | S2 | 798 | A |
| 49 | S2 | 799 | U |
| 49 | S2 | 800 | U |
| 49 | S2 | 810 | A |
| 49 | S2 | 815 | U |
| 49 | S2 | 821 | G |
| 49 | S2 | 827 | A |
| 49 | S2 | 833 | C |
| 49 | S2 | 841 | G |
| 49 | S2 | 855 | G |
| 49 | S2 | 867 | G |
| 49 | S2 | 868 | G |
| 49 | S2 | 869 | A |
| 49 | S2 | 870 | A |
| 49 | S2 | 871 | U |
| 49 | S2 | 872 | A |
| 49 | S2 | 918 | U |
| 49 | S2 | 919 | A |
| 49 | S2 | 924 | G |
| 49 | S2 | 950 | C |
| 49 | S2 | 956 | G |
| 49 | S2 | 957 | A |
| 49 | S2 | 958 | G |
| 49 | S2 | 959 | G |
| 49 | S2 | 960 | U |
| 49 | S2 | 964 | A |
| 49 | S2 | 967 | C |
| 49 | S2 | 970 | G |
| 49 | S2 | 980 | A |
| 49 | S2 | 991 | G |
| 49 | S2 | 992 | A |
| 49 | S2 | 993 | G |
| 49 | S2 | 999 | G |
| 49 | S2 | 1001 | A |
| 49 | S2 | 1016 | U |
| 49 | S2 | 1039 | C |
| 49 | S2 | 1050 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1051 | G |
| 49 | S2 | 1083 | A |
| 49 | S2 | 1085 | C |
| 49 | S2 | 1087 | A |
| 49 | S2 | 1088 | U |
| 49 | S2 | 1093 | A |
| 49 | S2 | 1097 | G |
| 49 | S2 | 1098 | C |
| 49 | S2 | 1109 | C |
| 49 | S2 | 1110 | G |
| 49 | S2 | 1114 | U |
| 49 | S2 | 1115 | U |
| 49 | S2 | 1121 | G |
| 49 | S2 | 1132 | C |
| 49 | S2 | 1133 | A |
| 49 | S2 | 1137 | U |
| 49 | S2 | 1138 | C |
| 49 | S2 | 1141 | G |
| 49 | S2 | 1142 | G |
| 49 | S2 | 1150 | A |
| 49 | S2 | 1153 | C |
| 49 | S2 | 1165 | G |
| 49 | S2 | 1171 | G |
| 49 | S2 | 1181 | A |
| 49 | S2 | 1194 | A |
| 49 | S2 | 1199 | A |
| 49 | S2 | 1206 | G |
| 49 | S2 | 1207 | G |
| 49 | S2 | 1223 | A |
| 49 | S2 | 1244 | U |
| 49 | S2 | 1247 | C |
| 49 | S2 | 1249 | C |
| 49 | S2 | 1250 | A |
| 49 | S2 | 1253 | A |
| 49 | S2 | 1265 | A |
| 49 | S2 | 1273 | C |
| 49 | S2 | 1275 | G |
| 49 | S2 | 1283 | C |
| 49 | S2 | 1292 | C |
| 49 | S2 | 1298 | G |
| 49 | S2 | 1302 | G |
| 49 | S2 | 1312 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1313 | A |
| 49 | S2 | 1315 | U |
| 49 | S2 | 1341 | C |
| 49 | S2 | 1367 | U |
| 49 | S2 | 1368 | U |
| 49 | S2 | 1372 | U |
| 49 | S2 | 1393 | G |
| 49 | S2 | 1395 | C |
| 49 | S2 | 1396 | A |
| 49 | S2 | 1401 | A |
| 49 | S2 | 1404 | U |
| 49 | S2 | 1416 | C |
| 49 | S2 | 1417 | C |
| 49 | S2 | 1418 | C |
| 49 | S2 | 1419 | C |
| 49 | S2 | 1421 | A |
| 49 | S2 | 1429 | G |
| 49 | S2 | 1433 | C |
| 49 | S2 | 1434 | C |
| 49 | S2 | 1440 | C |
| 49 | S2 | 1441 | U |
| 49 | S2 | 1442 | U |
| 49 | S2 | 1446 | A |
| 49 | S2 | 1454 | A |
| 49 | S2 | 1462 | U |
| 49 | S2 | 1463 | U |
| 49 | S2 | 1474 | A |
| 49 | S2 | 1475 | G |
| 49 | S2 | 1477 | U |
| 49 | S2 | 1489 | A |
| 49 | S2 | 1493 | C |
| 49 | S2 | 1494 | U |
| 49 | S2 | 1506 | A |
| 49 | S2 | 1512 | C |
| 49 | S2 | 1521 | C |
| 49 | S2 | 1522 | A |
| 49 | S2 | 1534 | C |
| 49 | S2 | 1537 | A |
| 49 | S2 | 1540 | G |
| 49 | S2 | 1542 | C |
| 49 | S2 | 1543 | U |
| 49 | S2 | 1552 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1555 | U |
| 49 | S2 | 1556 | A |
| 49 | S2 | 1557 | C |
| 49 | S2 | 1561 | A |
| 49 | S2 | 1568 | C |
| 49 | S2 | 1579 | A |
| 49 | S2 | 1585 | U |
| 49 | S2 | 1588 | A |
| 49 | S2 | 1593 | C |
| 49 | S2 | 1597 | C |
| 49 | S2 | 1598 | G |
| 49 | S2 | 1599 | U |
| 49 | S2 | 1603 | G |
| 49 | S2 | 1605 | G |
| 49 | S2 | 1623 | A |
| 49 | S2 | 1629 | C |
| 49 | S2 | 1637 | A |
| 49 | S2 | 1643 | U |
| 49 | S2 | 1648 | G |
| 49 | S2 | 1659 | U |
| 49 | S2 | 1664 | A |
| 49 | S2 | 1678 | A |
| 49 | S2 | 1679 | A |
| 49 | S2 | 1682 | C |
| 49 | S2 | 1694 | U |
| 49 | S2 | 1695 | A |
| 49 | S2 | 1700 | C |
| 49 | S2 | 1703 | C |
| 49 | S2 | 1720 | U |
| 49 | S2 | 1744 | G |
| 49 | S2 | 1756 | C |
| 49 | S2 | 1823 | A |
| 49 | S2 | 1825 | A |
| 49 | S2 | 1826 | G |
| 49 | S2 | 1830 | U |
| 49 | S2 | 1835 | A |
| 49 | S2 | 1836 | G |
| 49 | S2 | 1838 | U |
| 49 | S2 | 1849 | G |
| 49 | S2 | 1857 | G |
| 49 | S2 | 1858 | G |
| 49 | S2 | 1860 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 49 | S2 | 1863 | A |
| 49 | S2 | 1868 | U |

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

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

## 5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 170 ligands modelled in this entry, 170 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers (i)

There are no such residues in this entry.

## 5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|---|---|---|
| 1 | 5 | 13 |
| 49 | S2 | 4 |
| 8 | E | 1 |
| 14 | K | 1 |
| 48 | 4 | 1 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | E | 72:ALA | C | 84:VAL | N | 23.51 |
| 1 | S2 | 753:C | O3' | 785:C | P | 22.68 |
| 1 | S2 | 698:G | O3' | 730:C | P | 19.95 |
| 1 | 5 | 4776:G | O3' | 4859:C | P | 17.87 |
| 1 | 5 | 757:G | O3' | 906:C | P | 16.89 |
| 1 | 5 | 519:C | O3' | 642:G | P | 16.61 |
| 1 | 5 | 2910:G | O3' | 3583:U | P | 16.04 |
| 1 | 5 | 2131:C | O3' | 2243:C | P | 14.89 |
| 1 | 5 | 997:C | O3' | 1047:C | P | 13.99 |
| 1 | 5 | 3950:U | O3' | 4065:G | P | 13.97 |
| 1 | 5 | 1051:G | O3' | 1064:G | P | 9.59 |
| 1 | S2 | 739:C | O3' | 744:G | P | 7.74 |
| 1 | S2 | 225:G | O3' | 287:U | P | 6.54 |
| 1 | 5 | 1222:A | O3' | 1232:G | P | 3.97 |
| 1 | 5 | 1699:A | O3' | 1718:C | P | 3.33 |
| 1 | 5 | 1100:U | O3' | 1167:C | P | 3.02 |
| 1 | 5 | 4939:C | O3' | 4941:G | P | 2.74 |
| 1 | 5 | 4942:C | O3' | 4944:C | P | 2.72 |
| 1 | K | 154:ASP | C | 155:ILE | N | 2.32 |
| 1 | 4 | 269:ALA | C | 270:ASN | N | 1.60 |

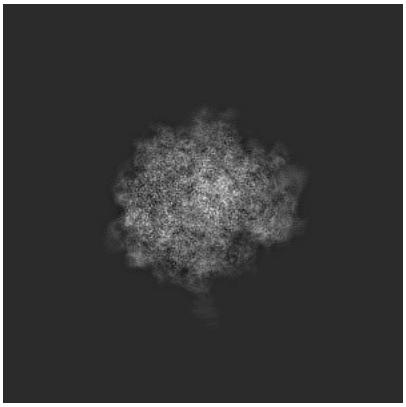
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-2646. These allow visual inspection of the internal detail of the map and identification of artifacts.

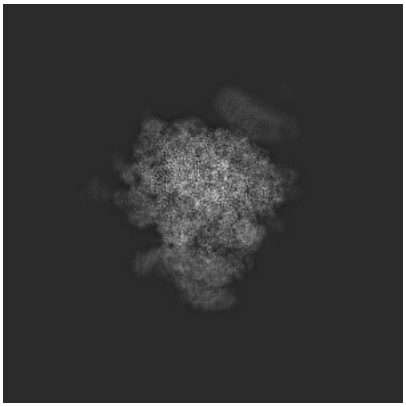
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

## 6.1 Orthogonal projections

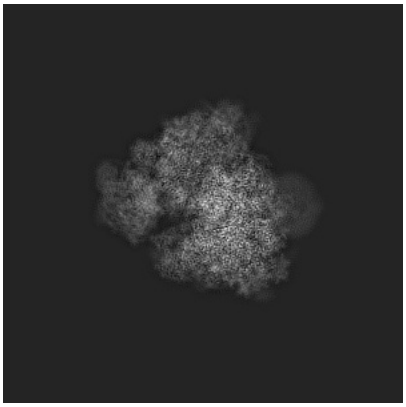
### 6.1.1 Primary map



X



Y

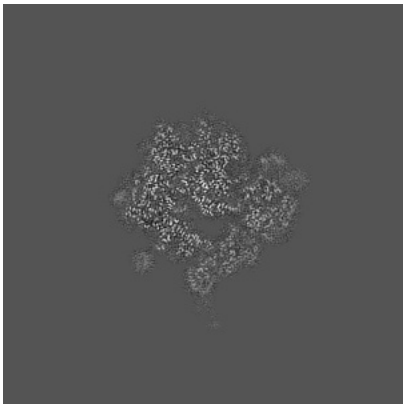


Z

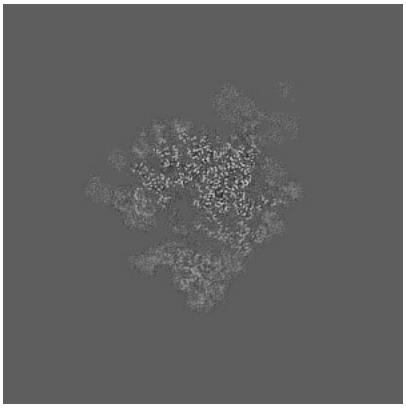
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices

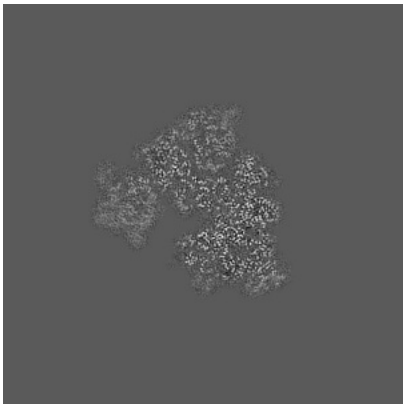
### 6.2.1 Primary map



X Index: 210



Y Index: 210

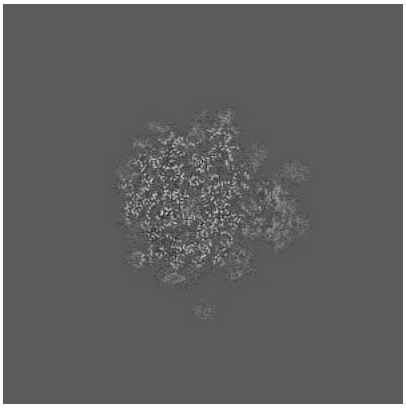


Z Index: 210

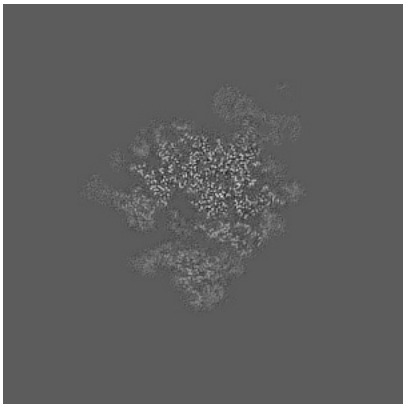
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

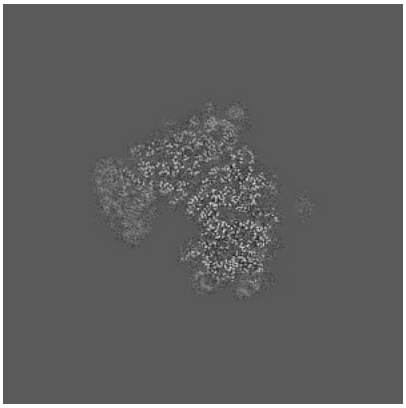
### 6.3.1 Primary map



X Index: 232



Y Index: 212

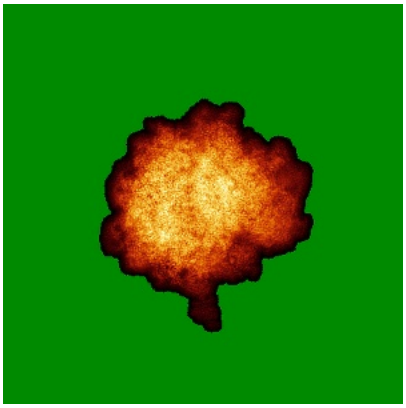


Z Index: 221

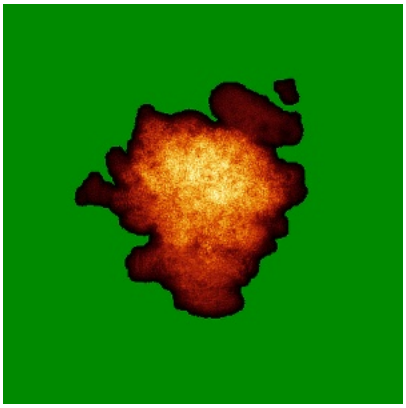
The images above show the largest variance slices of the map in three orthogonal directions.

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

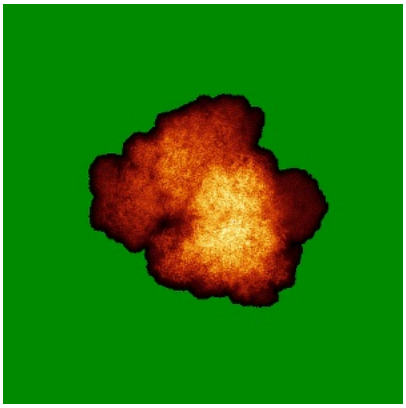
### 6.4.1 Primary map



X



Y

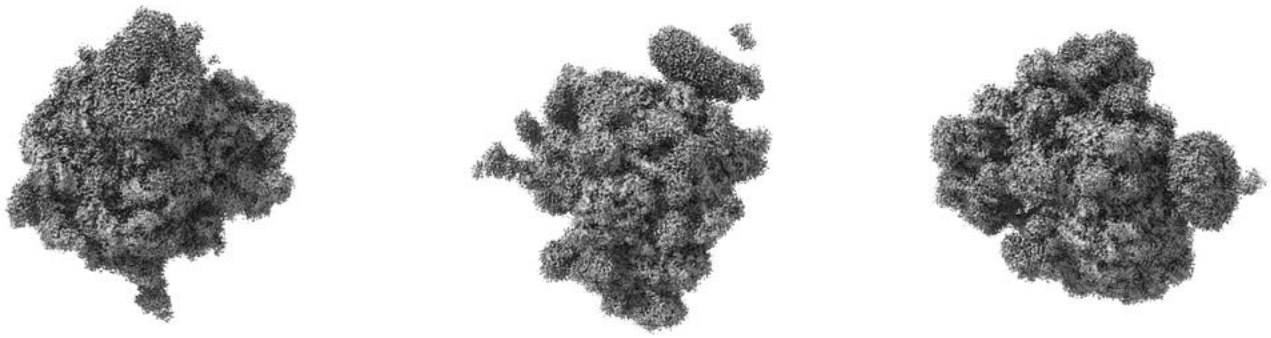


Z

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

## 6.5 Orthogonal surface views (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 0.065. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

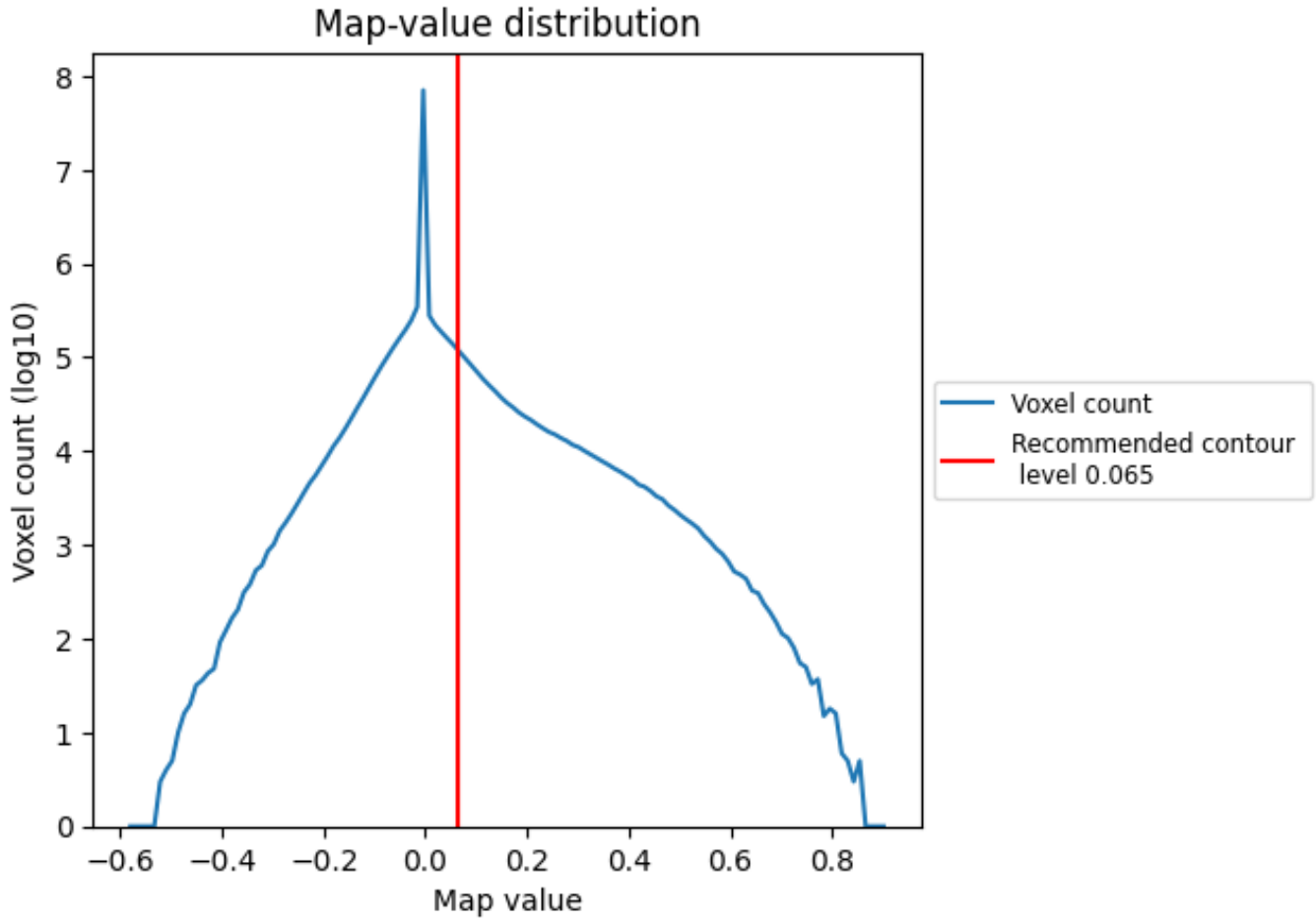
## 6.6 Mask visualisation (i)

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

# 7 Map analysis

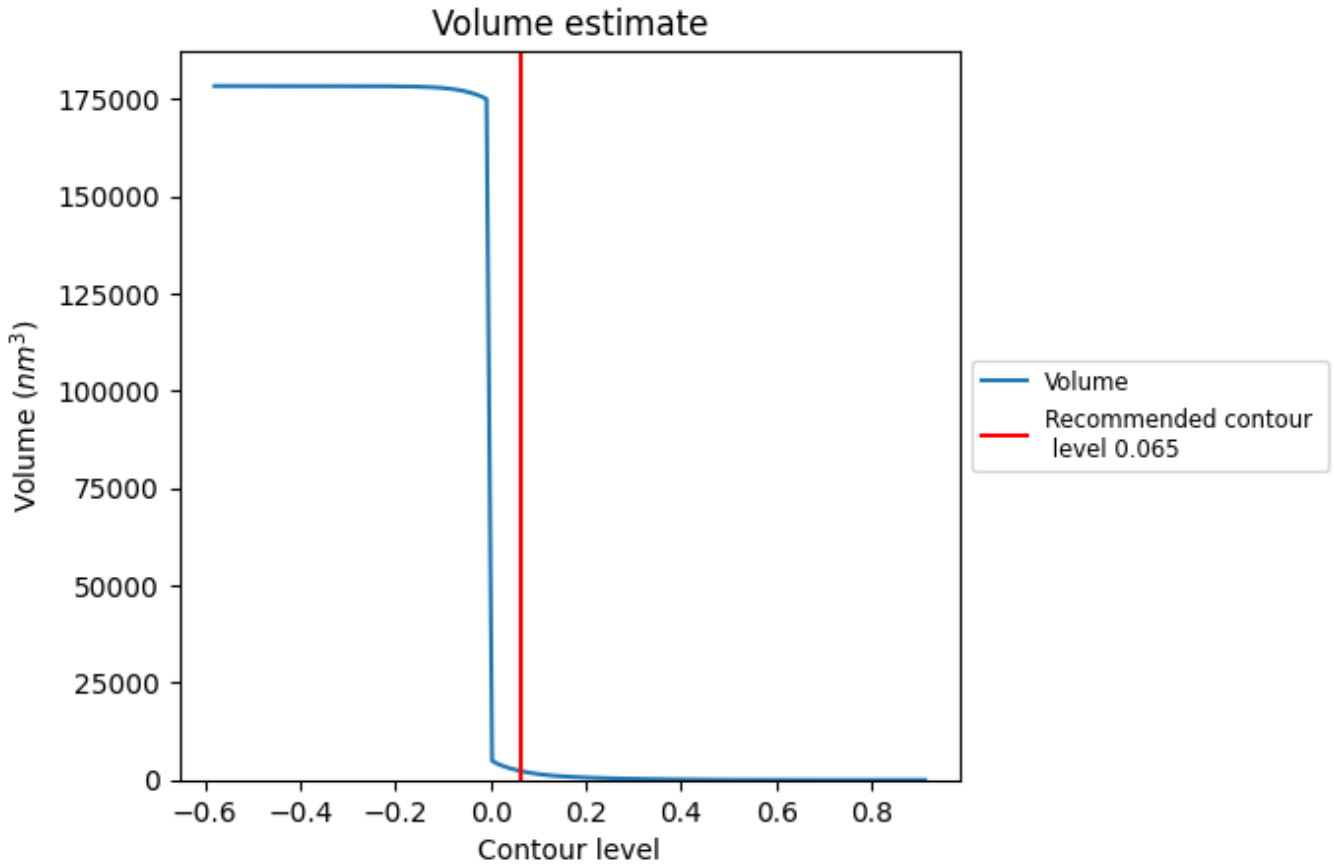
This section contains the results of statistical analysis of the map.

## 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.

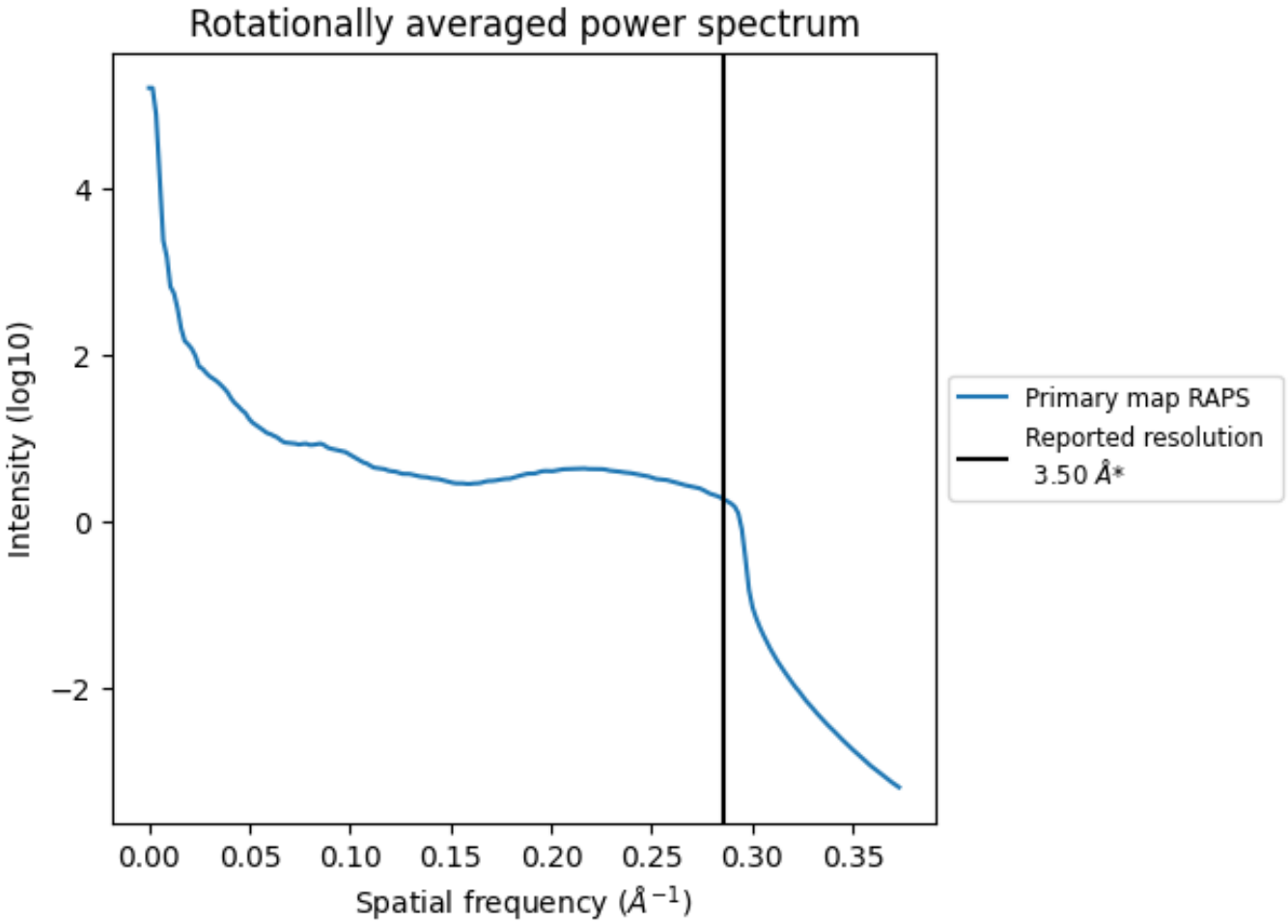
## 7.2 Volume estimate




The volume at the recommended contour level is 2236 $nm^3$; this corresponds to an approximate mass of 2020 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 0.286 Å$^{-1}$

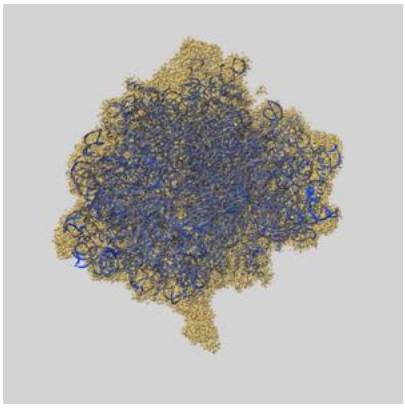
# 8 Fourier-Shell correlation

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

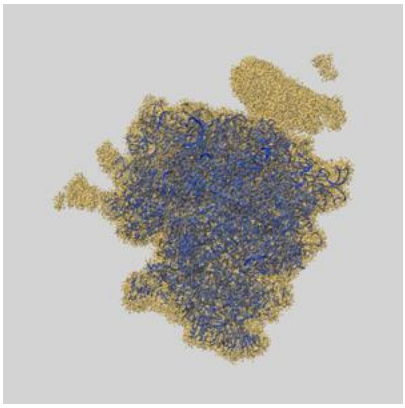
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-2646 and PDB model 3J7P. Per-residue inclusion information can be found in section 3 on page 19.

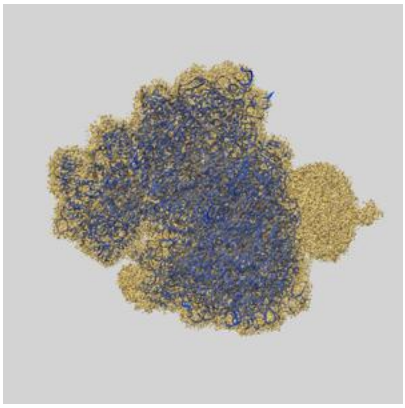
## 9.1 Map-model overlay



X



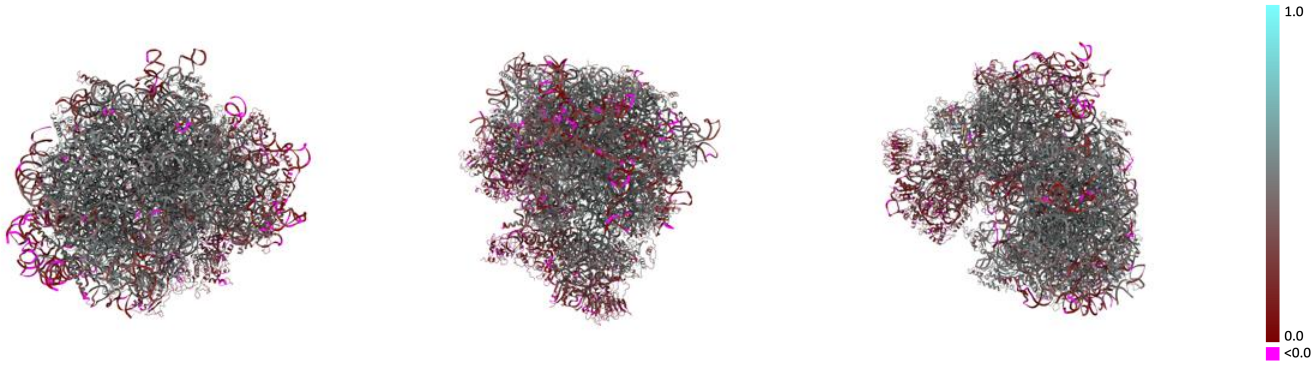
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.065 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.

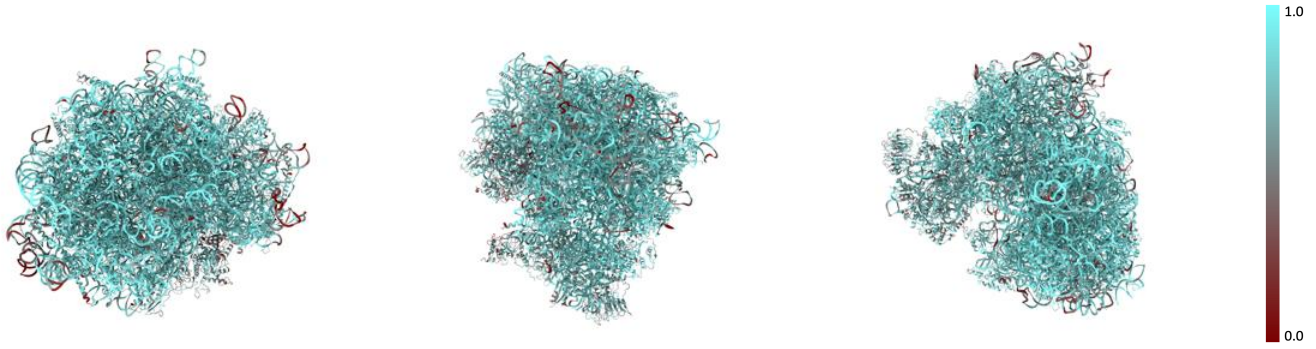
## 9.2 Q-score mapped to coordinate model (i)




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.

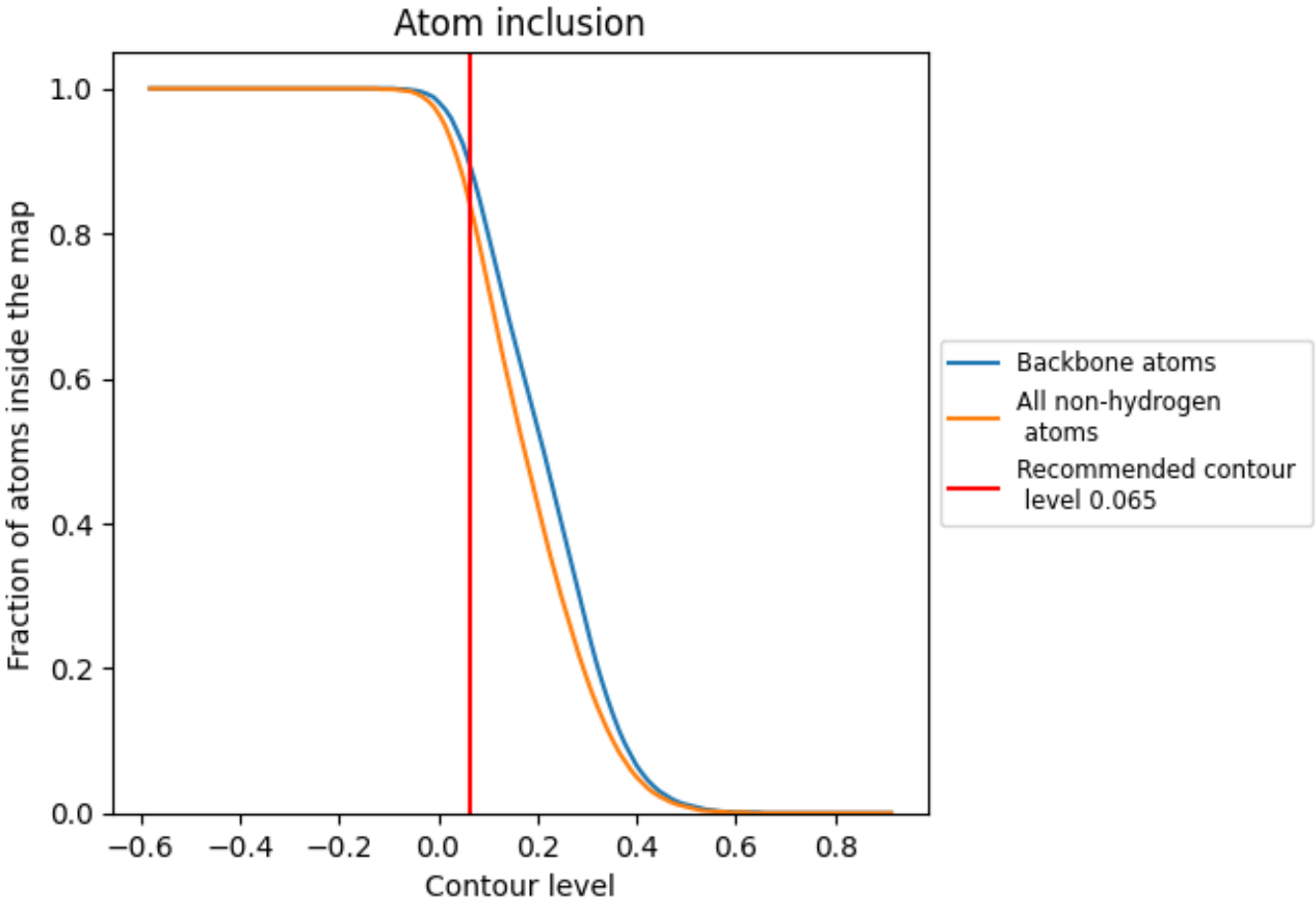
## 9.3 Atom inclusion mapped to coordinate model (i)




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 (0.065).

## 9.4 Atom inclusion (i)




At the recommended contour level, 89% of all backbone atoms, 84% 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 (0.065) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.8380 | 0.3940 |
| 4 | 0.5770 | 0.2090 |
| 5 | 0.8680 | 0.4020 |
| 7 | 0.9510 | 0.4630 |
| 8 | 0.8960 | 0.4310 |
| A | 0.8930 | 0.5000 |
| B | 0.8910 | 0.4950 |
| C | 0.8700 | 0.4840 |
| D | 0.8730 | 0.4340 |
| E | 0.8350 | 0.4260 |
| F | 0.8780 | 0.4820 |
| G | 0.8430 | 0.4340 |
| H | 0.8800 | 0.4840 |
| I | 0.8490 | 0.4640 |
| J | 0.8300 | 0.4140 |
| K | 0.5230 | 0.1450 |
| L | 0.8440 | 0.4520 |
| M | 0.8800 | 0.4790 |
| N | 0.9040 | 0.5080 |
| O | 0.8970 | 0.5060 |
| P | 0.8870 | 0.5030 |
| Q | 0.8970 | 0.5060 |
| R | 0.8480 | 0.4450 |
| S | 0.9100 | 0.4990 |
| S2 | 0.8580 | 0.3540 |
| SA | 0.8830 | 0.4570 |
| SB | 0.8420 | 0.4280 |
| SC | 0.8890 | 0.4900 |
| SD | 0.7090 | 0.2870 |
| SE | 0.8440 | 0.4430 |
| SF | 0.6230 | 0.2060 |
| SG | 0.7240 | 0.2970 |
| SH | 0.7840 | 0.3730 |
| SI | 0.7810 | 0.3810 |
| SJ | 0.8510 | 0.4450 |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| Chain | Atom inclusion | Q-score |
|---|---|---|
| SK | 0.6700 | 0.2230 |
| SL | 0.8190 | 0.4330 |
| SM | 0.4670 | 0.0930 |
| SN | 0.8720 | 0.4550 |
| SO | 0.8510 | 0.4440 |
| SP | 0.6490 | 0.2520 |
| SQ | 0.6910 | 0.2540 |
| SR | 0.7290 | 0.3230 |
| SS | 0.6950 | 0.2300 |
| ST | 0.7390 | 0.2670 |
| SU | 0.6980 | 0.2790 |
| SV | 0.8640 | 0.4650 |
| SW | 0.9160 | 0.5060 |
| SX | 0.8760 | 0.5020 |
| SY | 0.8080 | 0.3850 |
| SZ | 0.6110 | 0.1690 |
| Sa | 0.8700 | 0.4610 |
| Sb | 0.8780 | 0.4540 |
| Sc | 0.5410 | 0.2010 |
| Sd | 0.8320 | 0.3900 |
| Se | 0.7940 | 0.4090 |
| Sf | 0.4120 | 0.0550 |
| Sg | 0.6390 | 0.2040 |
| T | 0.8790 | 0.4820 |
| U | 0.7960 | 0.3830 |
| V | 0.8630 | 0.4880 |
| W | 0.8550 | 0.4750 |
| X | 0.8370 | 0.4700 |
| Y | 0.8600 | 0.4710 |
| Z | 0.8800 | 0.4690 |
| a | 0.8990 | 0.5040 |
| b | 0.7610 | 0.3830 |
| c | 0.8600 | 0.4600 |
| d | 0.8530 | 0.4540 |
| e | 0.8920 | 0.5010 |
| f | 0.9220 | 0.5060 |
| g | 0.8560 | 0.4830 |
| h | 0.8500 | 0.4650 |
| i | 0.8530 | 0.4570 |
| j | 0.9050 | 0.4880 |
| k | 0.8100 | 0.4220 |
| l | 0.8820 | 0.5080 |

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| Chain | Atom inclusion | Q-score |
|---|---|---|
| m | 0.8580 | 0.4980 |
| n | 0.8860 | 0.4620 |
| o | 0.8490 | 0.4690 |
| p | 0.8650 | 0.4870 |
| q | 0.6420 | 0.2130 |
| r | 0.8830 | 0.4930 |