# Full wwPDB EM Validation Report ⓘ

Mar 20, 2024 – 09:53 AM JST

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|---|---|---|
| PDB ID | : | 6LQP |
| EMDB ID | : | EMD-0949 |
| Title | : | Cryo-EM structure of 90S small subunit preribosomes in transition states (State A) |
| Authors | : | Du, Y.; Ye, K. |
| Deposited on | : | 2020-01-14 |
| Resolution | : | 3.20 Å(reported) |
| Based on initial model | : | 6KE6 |

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

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

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

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The following versions of software and data (see references ①) were used in the production of this report:

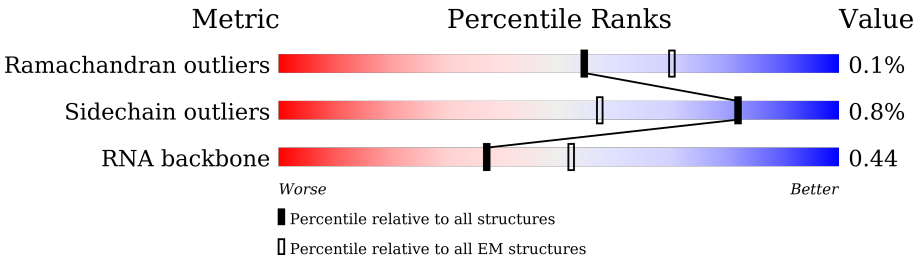
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev70 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| MolProbity | : | 4.02b-467 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.36 |

# 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 3.20 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 | 154571 | 4023 |
| Sidechain outliers | 154315 | 3826 |
| RNA backbone | 4643 | 859 |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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 | 3A | 333 | 38% 13% 47% |
| 2 | 5A | 700 | 50% 23% 25% |
| 3 | SA | 1808 | 15% 43% 27% 27% |
| 4 | SC | 255 | 87% 10% |
| 5 | SF | 261 | 12% 84% 12% |
| 6 | SG | 225 | 95% 5% |
| 7 | SH | 236 | 28% 70% 29% |
| 8 | SI | 190 | 15% 84% 13% |

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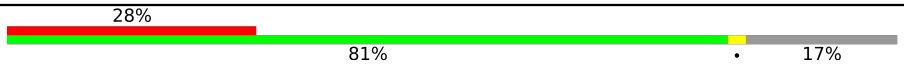
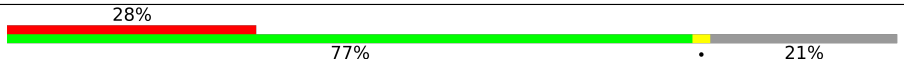
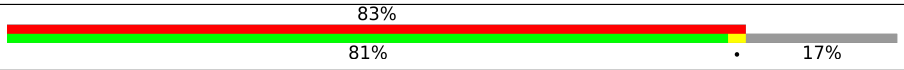
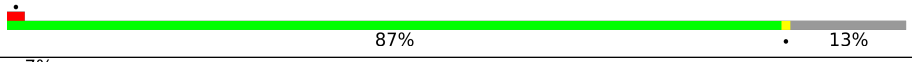
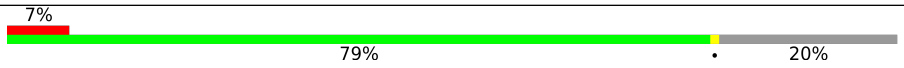
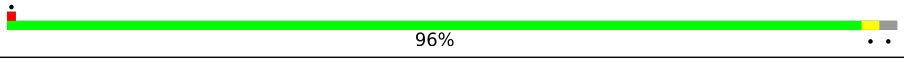
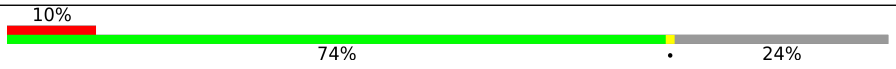
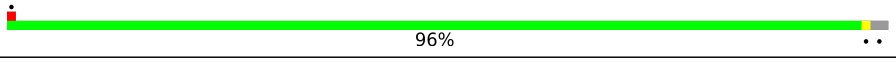
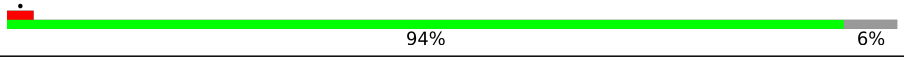
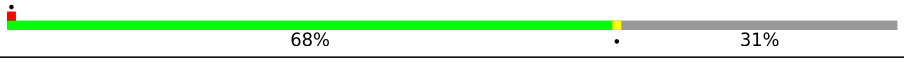
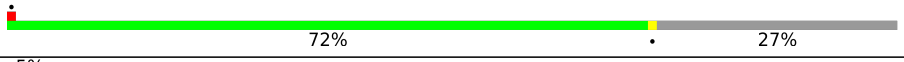
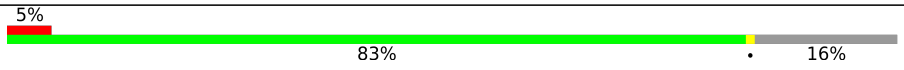
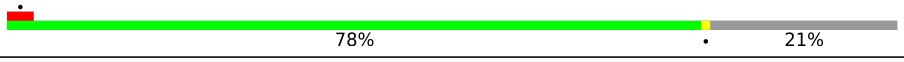
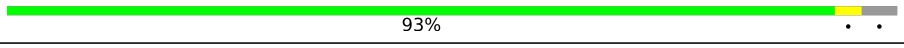
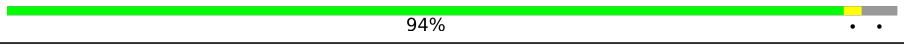
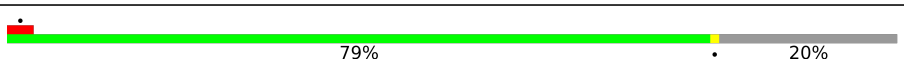
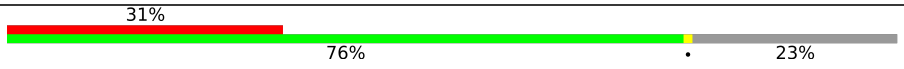
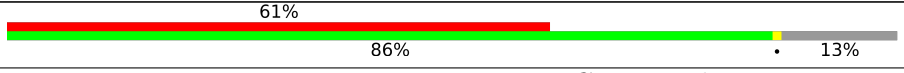
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 9 | SJ | 200 |   |
| 10 | SK | 197 |   |
| 11 | SM | 156 |   |
| 12 | SN | 143 |   |
| 13 | SO | 151 |   |
| 14 | SP | 137 |   |
| 15 | SR | 143 |   |
| 16 | ST | 146 |   |
| 17 | SX | 130 |   |
| 18 | SY | 145 |   |
| 19 | SZ | 135 |   |
| 20 | Sc | 82 |   |
| 21 | Sd | 67 |   |
| 22 | 3B | 327 |   |
| 22 | 3C | 327 |   |
| 23 | 3D | 504 |   |
| 24 | 3E | 511 |   |
| 25 | 3F | 573 |   |
| 26 | 3G | 126 |   |
| 26 | 3H | 126 |   |
| 27 | A4 | 776 |   |
| 28 | A5 | 643 |   |
| 29 | A8 | 713 |   |
| 30 | A9 | 575 |   |
| 31 | AE | 1769 |   |

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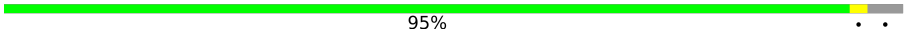
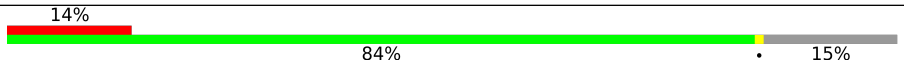
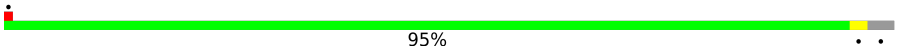
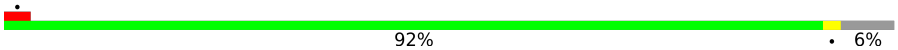
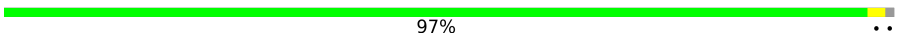
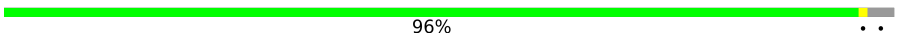
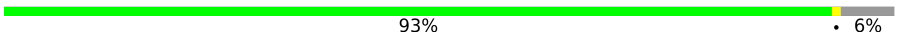
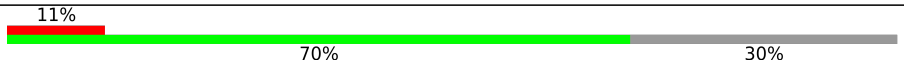
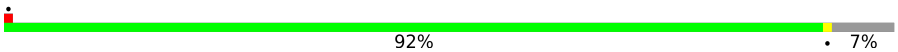
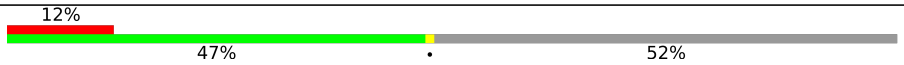
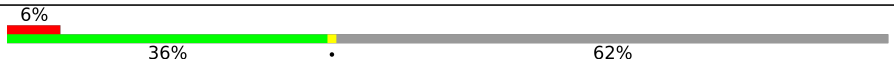
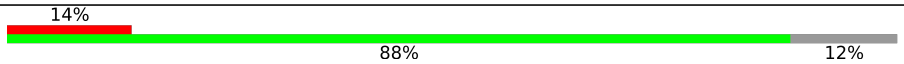
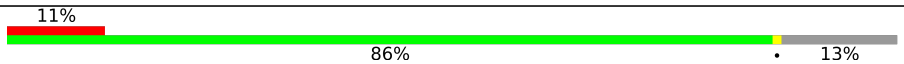
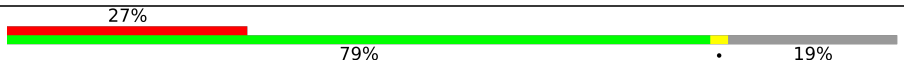
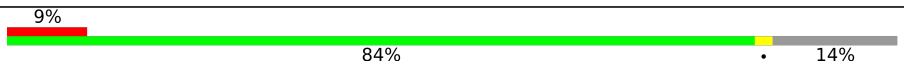
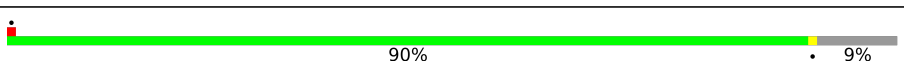
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 32 | AF | 513 |   |
| 33 | AG | 896 |   |
| 34 | B1 | 923 |   |
| 35 | B2 | 943 |   |
| 36 | B3 | 817 |   |
| 37 | B8 | 594 |   |
| 38 | BE | 939 |   |
| 39 | B6 | 440 |   |
| 40 | 5B | 214 |   |
| 41 | 5C | 554 |   |
| 42 | 5D | 250 |   |
| 43 | 5E | 593 |   |
| 44 | 5F | 183 |   |
| 45 | 5G | 290 |   |
| 46 | 5H | 610 |   |
| 47 | 5I | 489 |   |
| 48 | 5J | 217 |   |
| 49 | 5K | 189 |   |
| 50 | RA | 707 |   |
| 51 | RB | 357 |   |
| 52 | RC | 316 |   |
| 53 | RE | 1237 |   |
| 54 | RF | 297 |   |
| 55 | RG | 252 |   |
| 55 | RH | 252 |   |

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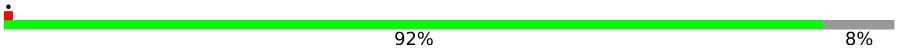
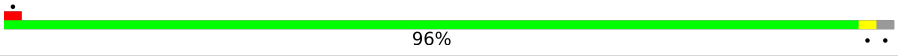
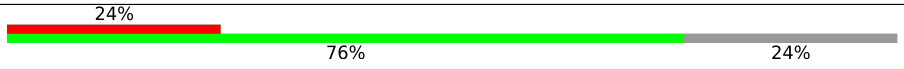
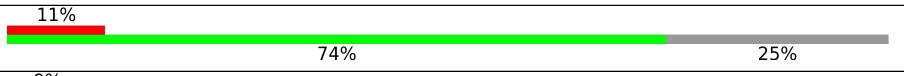
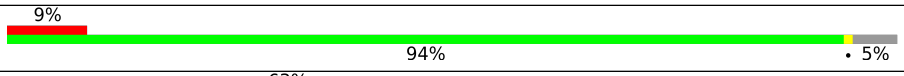
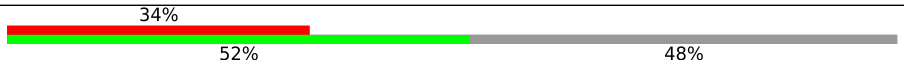
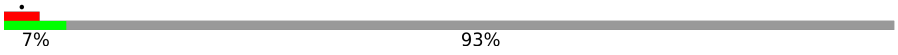
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 56 | RI | 274 |   |
| 57 | RJ | 1183 |   |
| 58 | RK | 367 |   |
| 59 | RL | 1056 |   |
| 59 | RM | 1056 |   |
| 60 | RN | 810 |   |
| 61 | RO | 552 |   |
| 62 | RP | 2493 |   |
| 63 | RQ | 899 |   |
| 64 | RS | 483 |   |
| 65 | RT | 326 |   |
| 66 | RV | 346 |   |
| 67 | RW | 206 |   |
| 68 | RY | 534 |   |
| 69 | X1 | 347 |   |

# 2 Entry composition

There are 72 unique types of molecules in this entry. The entry contains 232186 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 U3 snoRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 1 | 3A | 175 | 3711 | 1661 | 648 | 1227 | 175 | 0 | 0 |

- Molecule 2 is a RNA chain called 5' ETS.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 2 | 5A | 523 | 11163 | 4988 | 1984 | 3668 | 523 | 0 | 0 |

- Molecule 3 is a RNA chain called 18S pre-rRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 3 | SA | 1325 | 28258 | 12629 | 5035 | 9269 | 1325 | 0 | 0 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 4 | SC | 230 | 1830 | 1156 | 335 | 335 | 4 | 0 | 0 |

- Molecule 5 is a protein called 40S ribosomal protein S4-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 5 | SF | 229 | 1815 | 1161 | 331 | 320 | 3 | 0 | 0 |

- Molecule 6 is a protein called 40S ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 6 | SG | 213 | 1669 | 1045 | 307 | 314 | 3 | 0 | 0 |

- Molecule 7 is a protein called 40S ribosomal protein S6-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | SH | 167 | Total | C | N | O | S | 0 | 0 |
| | | | 1327 | 834 | 256 | 235 | 2 | | |

- Molecule 8 is a protein called 40S ribosomal protein S7-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 8 | SI | 165 | Total | C | N | O | 0 | 0 |
| | | | 1321 | 853 | 226 | 242 | | |

- Molecule 9 is a protein called 40S ribosomal protein S8-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | SJ | 166 | Total | C | N | O | S | 0 | 0 |
| | | | 1324 | 824 | 262 | 236 | 2 | | |

- Molecule 10 is a protein called 40S ribosomal protein S9-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | SK | 171 | Total | C | N | O | S | 0 | 0 |
| | | | 1388 | 879 | 268 | 240 | 1 | | |

- Molecule 11 is a protein called 40S ribosomal protein S11-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | SM | 123 | Total | C | N | O | S | 0 | 0 |
| | | | 997 | 641 | 189 | 164 | 3 | | |

- Molecule 12 is a protein called 40S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | SN | 119 | Total | C | N | O | S | 0 | 0 |
| | | | 865 | 545 | 151 | 167 | 2 | | |

- Molecule 13 is a protein called 40S ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | SO | 134 | Total | C | N | O | S | 0 | 0 |
| | | | 1087 | 698 | 202 | 186 | 1 | | |

- Molecule 14 is a protein called 40S ribosomal protein S14-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | SP | 118 | Total | C | N | O | S | 0 | 0 |
| | | | 868 | 536 | 164 | 165 | 3 | | |

- Molecule 15 is a protein called 40S ribosomal protein S16-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 15 | SR | 125 | Total | C | N | O | 0 | 0 |
| | | | 973 | 625 | 174 | 174 | | |

- Molecule 16 is a protein called 40S ribosomal protein S18-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | ST | 117 | Total | C | N | O | S | 0 | 0 |
| | | | 964 | 610 | 184 | 168 | 2 | | |

- Molecule 17 is a protein called 40S ribosomal protein S22-B.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | SX | 127 | Total | C | N | O | S | 0 | 0 |
| | | | 1003 | 640 | 183 | 177 | 3 | | |

- Molecule 18 is a protein called 40S ribosomal protein S23-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | SY | 103 | Total | C | N | O | S | 0 | 0 |
| | | | 786 | 503 | 144 | 137 | 2 | | |

- Molecule 19 is a protein called 40S ribosomal protein S24-A.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 19 | SZ | 102 | Total | C | N | O | 0 | 0 |
| | | | 809 | 517 | 148 | 144 | | |

- Molecule 20 is a protein called 40S ribosomal protein S27-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 20 | Sc | 80 | Total | C | N | O | S | 0 | 0 |
| | | | 603 | 377 | 109 | 112 | 5 | | |

- Molecule 21 is a protein called 40S ribosomal protein S28-A.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | Sd | 63 | Total | C | N | O | S | 0 | 0 |
| | | | 497 | 306 | 99 | 91 | 1 | | |

- Molecule 22 is a protein called rRNA 2'-O-methyltransferase fibrillarin.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 22 | 3B | 240 | Total | C | N | O | S | 0 | 0 |
| | | | 1865 | 1184 | 333 | 338 | 10 | | |
| 22 | 3C | 225 | Total | C | N | O | S | 0 | 0 |
| | | | 1763 | 1120 | 316 | 317 | 10 | | |

- Molecule 23 is a protein called Nucleolar protein 56.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 23 | 3D | 369 | Total | C | N | O | S | 0 | 0 |
| | | | 2848 | 1811 | 489 | 540 | 8 | | |

- Molecule 24 is a protein called Nucleolar protein 58.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | 3E | 431 | Total | C | N | O | S | 0 | 0 |
| | | | 3028 | 1888 | 543 | 588 | 9 | | |

- Molecule 25 is a protein called Ribosomal RNA-processing protein 9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | 3F | 454 | Total | C | N | O | S | 0 | 0 |
| | | | 3643 | 2315 | 638 | 680 | 10 | | |

- Molecule 26 is a protein called 13 kDa ribonucleoprotein-associated protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | 3G | 121 | Total | C | N | O | S | 0 | 0 |
| | | | 916 | 583 | 158 | 171 | 4 | | |
| 26 | 3H | 121 | Total | C | N | O | S | 0 | 0 |
| | | | 916 | 583 | 158 | 171 | 4 | | |

- Molecule 27 is a protein called U3 small nucleolar RNA-associated protein 4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 27 | A4 | 662 | Total | C | N | O | S | 0 | 0 |
| | | | 5226 | 3309 | 910 | 986 | 21 | | |

- Molecule 28 is a protein called U3 small nucleolar RNA-associated protein 5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 28 | A5 | 514 | Total | C | N | O | S | 0 | 0 |
| | | | 3976 | 2520 | 688 | 755 | 13 | | |

- Molecule 29 is a protein called U3 small nucleolar RNA-associated protein 8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 29 | A8 | 548 | Total | C | N | O | S | 0 | 0 |
| | | | 3307 | 2054 | 608 | 642 | 3 | | |

- Molecule 30 is a protein called U3 small nucleolar RNA-associated protein 9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 30 | A9 | 128 | Total | C | N | O | S | 0 | 0 |
| | | | 939 | 594 | 173 | 170 | 2 | | |

- Molecule 31 is a protein called U3 small nucleolar RNA-associated protein 10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 31 | AE | 1534 | Total | C | N | O | S | 0 | 0 |
| | | | 9955 | 6242 | 1771 | 1923 | 19 | | |

- Molecule 32 is a protein called U3 small nucleolar RNA-associated protein 15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 32 | AF | 493 | Total | C | N | O | S | 0 | 0 |
| | | | 3911 | 2462 | 702 | 735 | 12 | | |

- Molecule 33 is a protein called NET1-associated nuclear protein 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 33 | AG | 826 | Total | C | N | O | S | 0 | 0 |
| | | | 6570 | 4181 | 1111 | 1259 | 19 | | |

- Molecule 34 is a protein called Periodic tryptophan protein 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 34 | B1 | 834 | Total | C | N | O | S | 0 | 0 |
| | | | 6635 | 4223 | 1140 | 1253 | 19 | | |

- Molecule 35 is a protein called U3 small nucleolar RNA-associated protein 12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 35 | B2 | 851 | Total | C | N | O | S | 0 | 0 |
| | | | 6723 | 4294 | 1133 | 1269 | 27 | | |

- Molecule 36 is a protein called U3 small nucleolar RNA-associated protein 13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 36 | B3 | 757 | Total | C | N | O | S | 0 | 0 |
| | | | 5919 | 3769 | 993 | 1130 | 27 | | |

- Molecule 37 is a protein called U3 small nucleolar RNA-associated protein 18.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 37 | B8 | 477 | Total | C | N | O | S | 0 | 0 |
| | | | 3764 | 2387 | 662 | 705 | 10 | | |

- Molecule 38 is a protein called U3 small nucleolar RNA-associated protein 21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 38 | BE | 865 | Total | C | N | O | S | 0 | 0 |
| | | | 6810 | 4322 | 1175 | 1292 | 21 | | |

- Molecule 39 is a protein called U3 small nucleolar RNA-associated protein 6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 39 | B6 | 374 | Total | C | N | O | S | 0 | 0 |
| | | | 2800 | 1782 | 501 | 505 | 12 | | |

- Molecule 40 is a protein called Bud site selection protein 21.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 40 | 5B | 60 | Total | C | N | O | 0 | 0 |
| | | | 495 | 310 | 101 | 84 | | |

- Molecule 41 is a protein called U3 small nucleolar RNA-associated protein 7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 41 | 5C | 535 | Total | C | N | O | S | 0 | 0 |
| | | | 4237 | 2656 | 762 | 807 | 12 | | |

- Molecule 42 is a protein called U3 small nucleolar RNA-associated protein 11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 42 | 5D | 235 | Total | C | N | O | S | 0 | 0 |
| | | | 1972 | 1226 | 380 | 359 | 7 | | |

- Molecule 43 is a protein called U3 small nucleolar RNA-associated protein MPP10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 43 | 5E | 204 | Total | C | N | O | S | 0 | 0 |
| | | | 1647 | 1021 | 294 | 328 | 4 | | |

- Molecule 44 is a protein called U3 small nucleolar ribonucleoprotein protein IMP3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 44 | 5F | 182 | Total | C | N | O | S | 0 | 0 |
| | | | 1530 | 967 | 287 | 269 | 7 | | |

- Molecule 45 is a protein called U3 small nucleolar ribonucleoprotein protein IMP4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 45 | 5G | 282 | Total | C | N | O | S | 0 | 0 |
| | | | 2296 | 1441 | 430 | 418 | 7 | | |

- Molecule 46 is a protein called Something about silencing protein 10.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 46 | 5H | 136 | Total | C | N | O | 0 | 0 |
| | | | 1065 | 658 | 211 | 196 | | |

- Molecule 47 is a protein called Protein SOF1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 47 | 5I | 461 | Total | C | N | O | S | 0 | 0 |
| | | | 3765 | 2354 | 686 | 709 | 16 | | |

- Molecule 48 is a protein called rRNA-processing protein FCF2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 48 | 5J | 151 | Total | C | N | O | S | 0 | 0 |
| | | | 1280 | 807 | 240 | 228 | 5 | | |

- Molecule 49 is a protein called rRNA-processing protein FCF1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 49 | 5K | 175 | Total | C | N | O | S | 0 | 0 |
| | | | 1403 | 896 | 256 | 241 | 10 | | |

- Molecule 50 is a protein called Ribosome biogenesis protein ENP2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 50 | RA | 338 | Total | C | N | O | S | 0 | 0 |
| | | | 2709 | 1713 | 463 | 524 | 9 | | |

- Molecule 51 is a protein called U3 small nucleolar ribonucleoprotein protein LCP5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 51 | RB | 134 | Total | C | N | O | S | 0 | 0 |
| | | | 1108 | 664 | 227 | 214 | 3 | | |

- Molecule 52 is a protein called KRR1 small subunit processome component.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 52 | RC | 278 | Total | C | N | O | S | 0 | 0 |
| | | | 2207 | 1408 | 391 | 395 | 13 | | |

- Molecule 53 is a protein called U3 small nucleolar RNA-associated protein 22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 53 | RE | 1079 | Total | C | N | O | S | 0 | 0 |
| | | | 8716 | 5666 | 1437 | 1589 | 24 | | |

- Molecule 54 is a protein called Ribosomal RNA-processing protein 7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 54 | RF | 241 | Total | C | N | O | S | 0 | 0 |
| | | | 1963 | 1253 | 335 | 367 | 8 | | |

- Molecule 55 is a protein called Ribosomal RNA small subunit methyltransferase NEP1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 55 | RG | 216 | Total | C | N | O | S | 0 | 0 |
| | | | 1701 | 1079 | 296 | 315 | 11 | | |
| 55 | RH | 230 | Total | C | N | O | S | 0 | 0 |
| | | | 1799 | 1142 | 313 | 333 | 11 | | |

- Molecule 56 is a protein called Ribosome biogenesis protein UTP30.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 56 | RI | 252 | Total | C | N | O | S | 0 | 0 |
| | | | 2045 | 1309 | 362 | 366 | 8 | | |

- Molecule 57 is a protein called Ribosome biogenesis protein BMS1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 57 | RJ | 796 | Total | C | N | O | S | 0 | 0 |
| | | | 6379 | 4086 | 1136 | 1128 | 29 | | |

- Molecule 58 is a protein called RNA 3'-terminal phosphate cyclase-like protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 58 | RK | 360 | Total | C | N | O | S | 0 | 0 |
| | | | 2781 | 1781 | 473 | 516 | 11 | | |

- Molecule 59 is a protein called RNA cytidine acetyltransferase.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 59 | RL | 805 | Total | C | N | O | S | 0 | 0 |
| | | | 4539 | 2760 | 885 | 887 | 7 | | |
| 59 | RM | 766 | Total | C | N | O | | 0 | 0 |
| | | | 3779 | 2247 | 766 | 766 | | | |

- Molecule 60 is a protein called Nucleolar complex protein 14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 60 | RN | 607 | Total | C | N | O | S | 0 | 0 |
| | | | 4529 | 2861 | 820 | 837 | 11 | | |

- Molecule 61 is a protein called Nucleolar complex protein 4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 61 | RO | 525 | Total | C | N | O | S | 0 | 0 |
| | | | 3766 | 2412 | 646 | 696 | 12 | | |

- Molecule 62 is a protein called U3 small nucleolar RNA-associated protein 20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 62 | RP | 2109 | Total | C | N | O | S | 0 | 0 |
| | | | 12176 | 7486 | 2292 | 2382 | 16 | | |

- Molecule 63 is a protein called U3 small nucleolar RNA-associated protein 14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 63 | RQ | 226 | Total | C | N | O | S | 0 | 0 |
| | | | 1651 | 1023 | 313 | 313 | 2 | | |

- Molecule 64 is a protein called Essential nuclear protein 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 64 | RS | 251 | Total | C | N | O | S | 0 | 0 |
| | | | 2051 | 1340 | 349 | 359 | 3 | | |

- Molecule 65 is a protein called Pno1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 65 | RT | 171 | Total | C | N | O | S | 0 | 0 |
| | | | 1357 | 864 | 249 | 240 | 4 | | |

- Molecule 66 is a protein called Protein FAF1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 66 | RV | 190 | Total | C | N | O | S | 0 | 0 |
| | | | 1448 | 891 | 290 | 264 | 3 | | |

- Molecule 67 is a protein called Regulator of rDNA transcription protein 14.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 67 | RW | 63 | Total | C | N | O | 0 | 0 |
| | | | 381 | 234 | 69 | 78 | | |

- Molecule 68 is a protein called Protein BFR2.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 68 | RY | 37 | Total | C | N | O | 0 | 0 |
| | | | 299 | 191 | 48 | 60 | | |

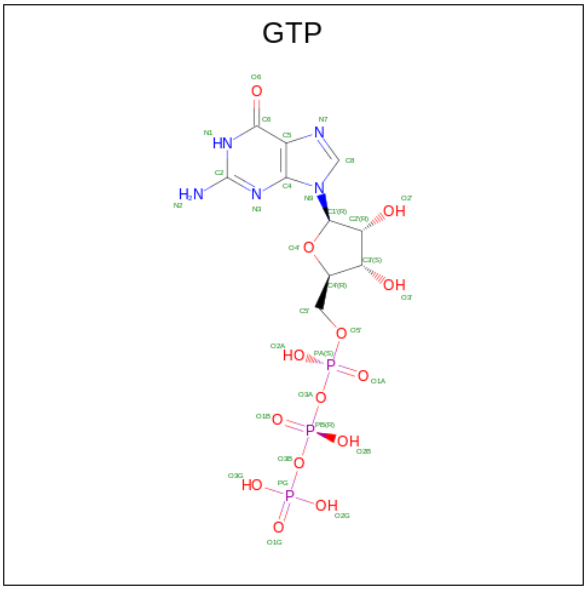
- Molecule 69 is a protein called Unassigned helices.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 69 | X1 | 61 | Total | C | N | O | 0 | 0 |
| | | | 305 | 183 | 61 | 61 | | |

- Molecule 70 is ZINC ION (three-letter code: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 70 | Sc | 1 | Total Zn<br>1 1 | 0 |
| 70 | 5K | 1 | Total Zn<br>1 1 | 0 |

- Molecule 71 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).




| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 71 | RJ | 1 | Total C N O P<br>32 10 5 14 3 | 0 |

- Molecule 72 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

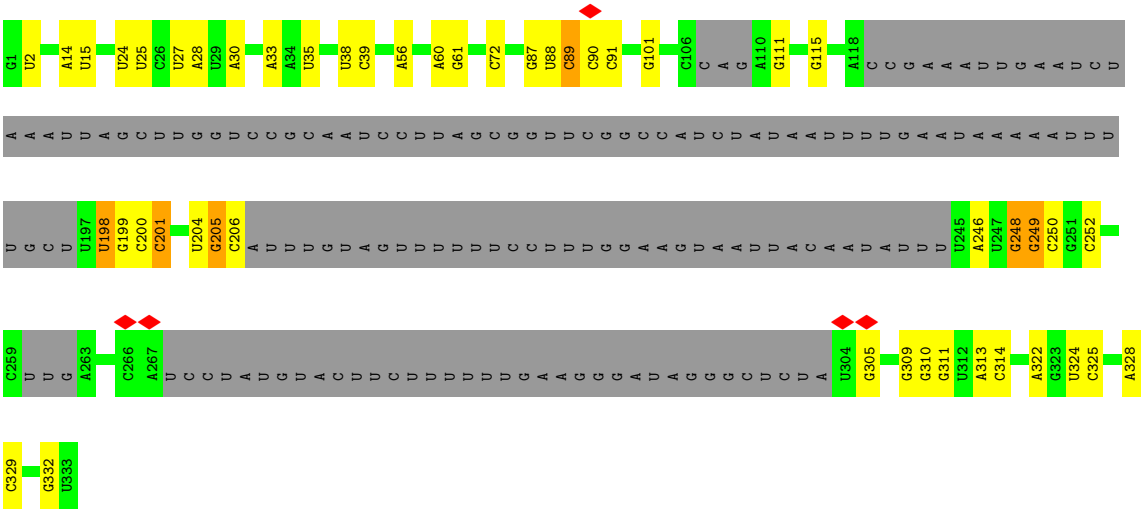
| Mol | Chain | Residues | Atoms | AltConf |
|---|---|---|---|---|
| 72 | RJ | 1 | Total Mg<br>1 1 | 0 |

# 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.

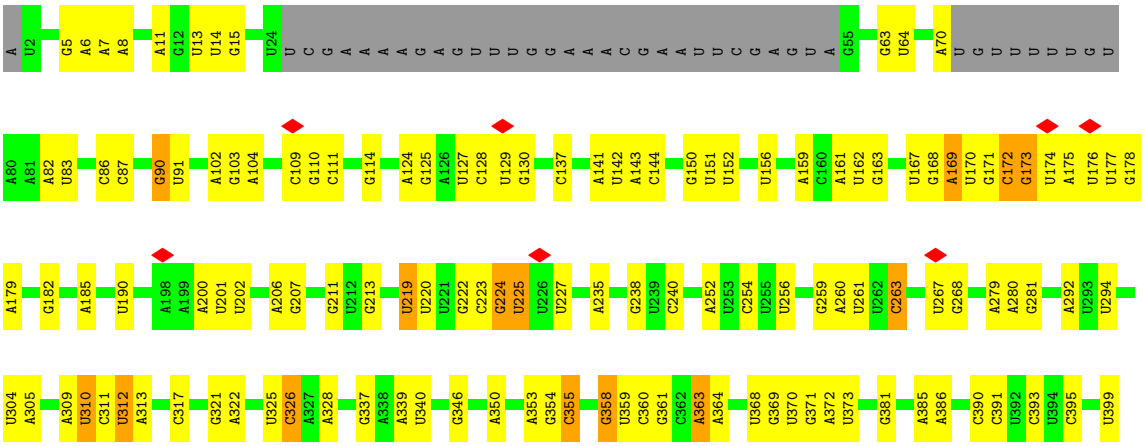
• Molecule 1: U3 snoRNA

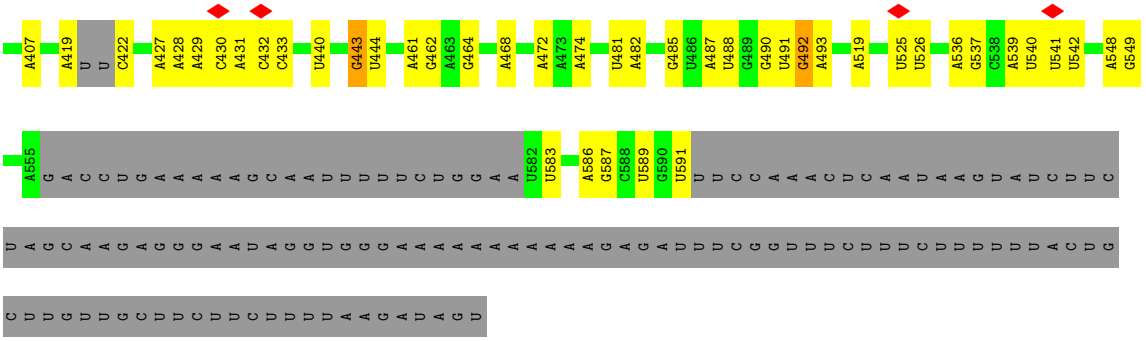
Chain 3A:

• Molecule 2: 5' ETS

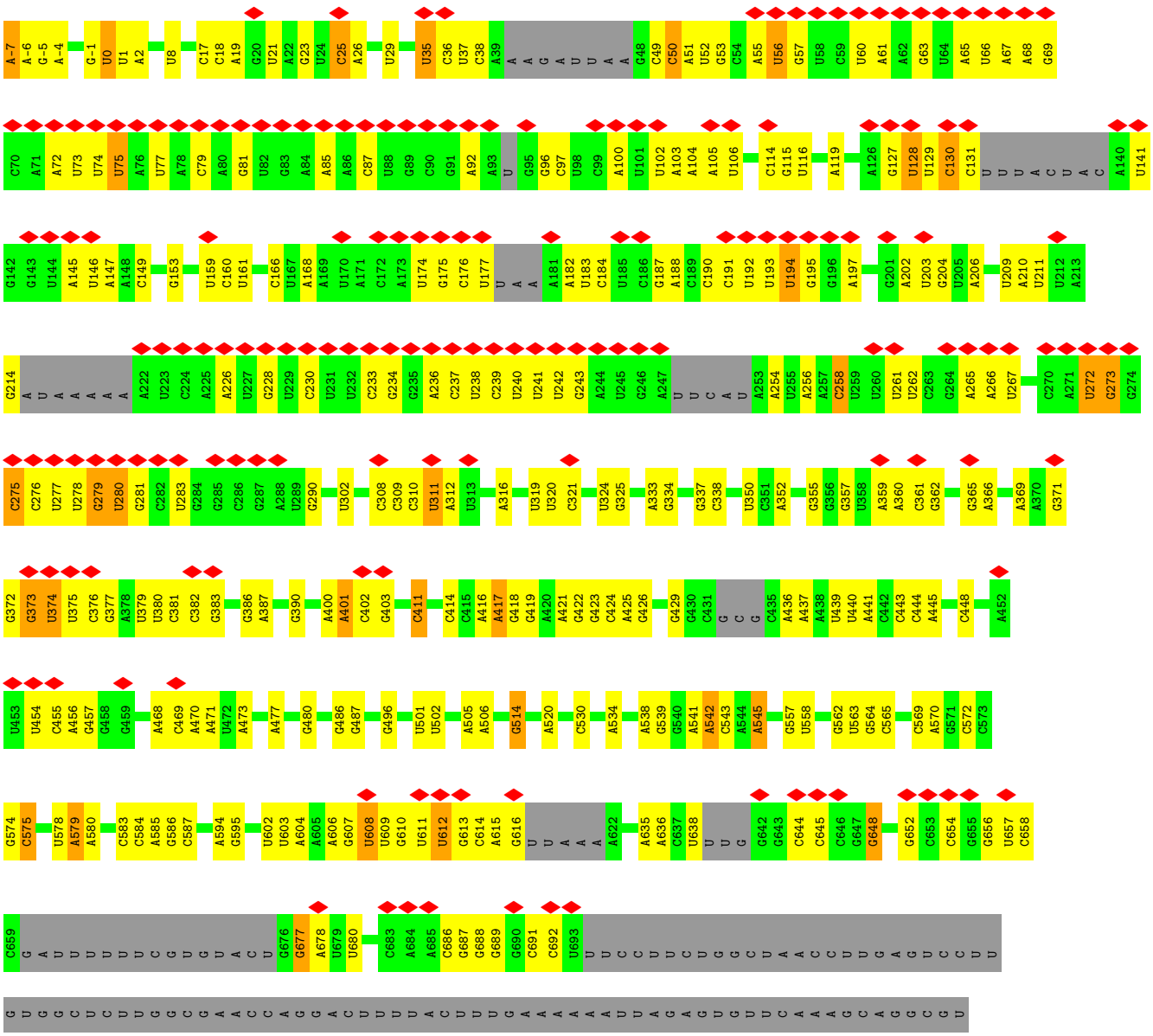
Chain 5A:

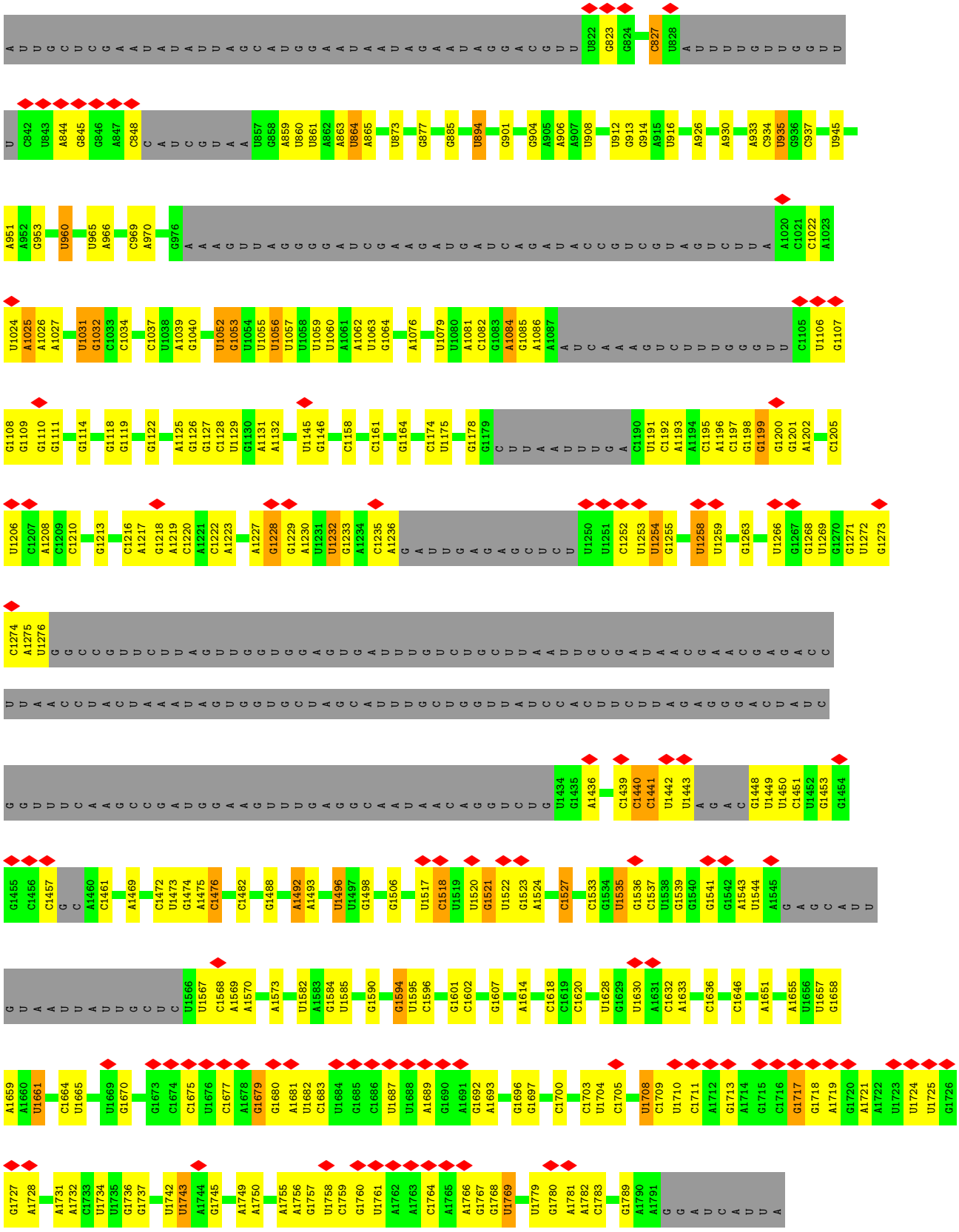





• Molecule 3: 18S pre-rRNA

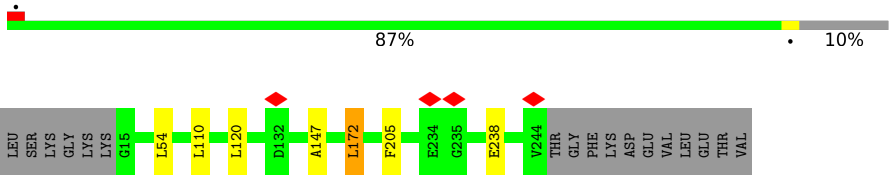
Chain SA:



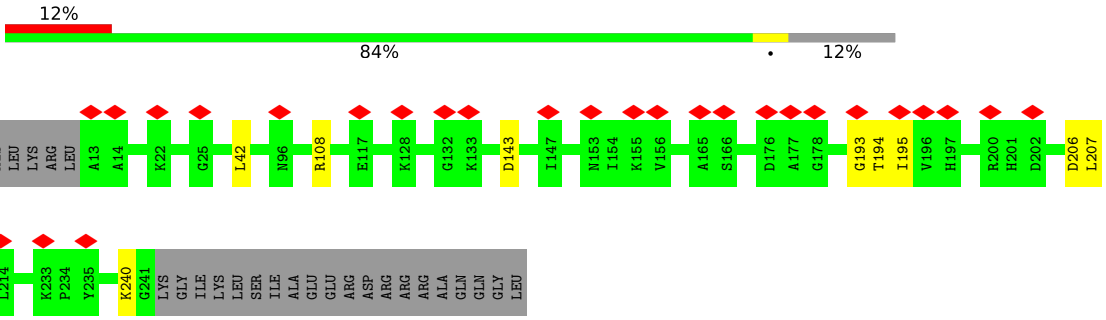
• Molecule 4: 40S ribosomal protein S1-A

Chain SC:



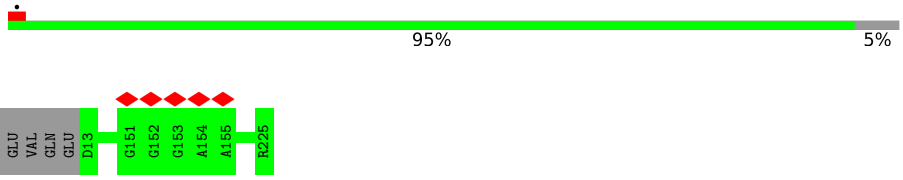

• Molecule 5: 40S ribosomal protein S4-A

Chain SF:



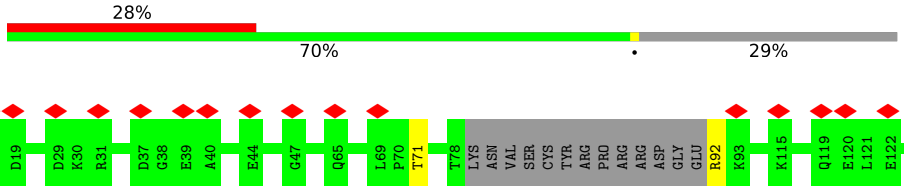

• Molecule 6: 40S ribosomal protein S5

Chain SG:



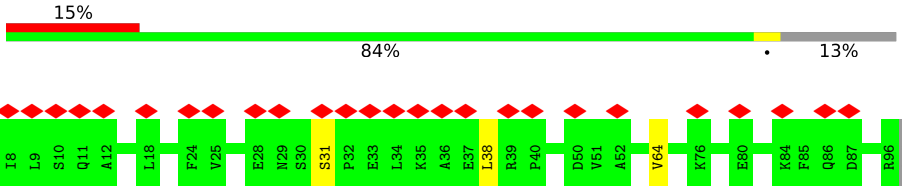

• Molecule 7: 40S ribosomal protein S6-A

Chain SH:



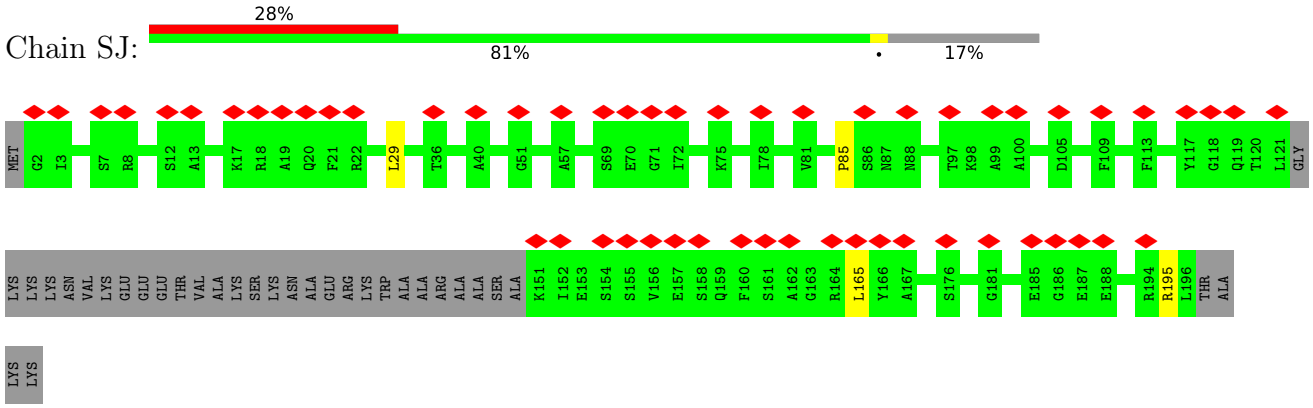

• Molecule 8: 40S ribosomal protein S7-A

Chain SI:



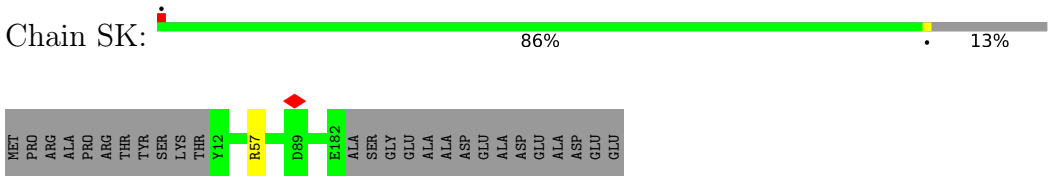
• Molecule 9: 40S ribosomal protein S8-A

Chain SJ:



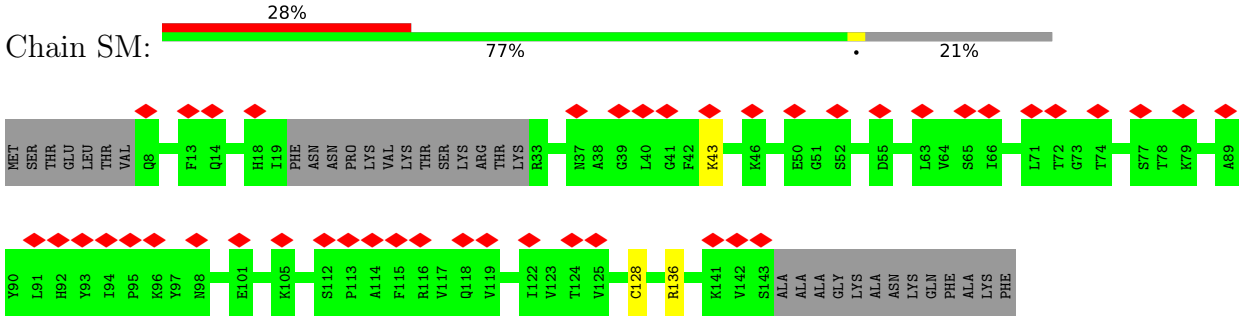

• Molecule 10: 40S ribosomal protein S9-A

Chain SK:



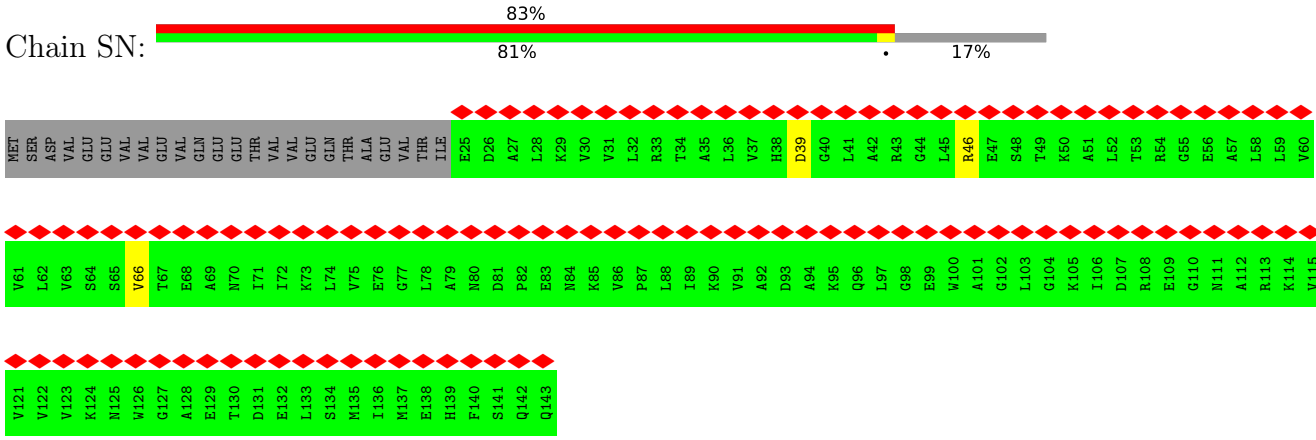

• Molecule 11: 40S ribosomal protein S11-A

Chain SM:



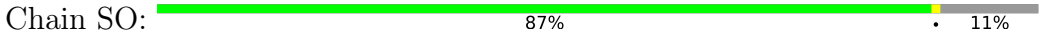

• Molecule 12: 40S ribosomal protein S12

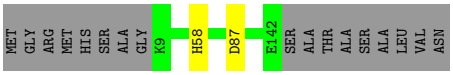
Chain SN:



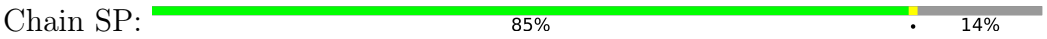

• Molecule 13: 40S ribosomal protein S13

Chain SO:



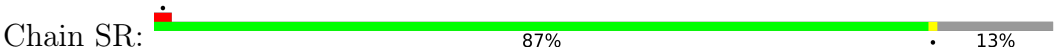


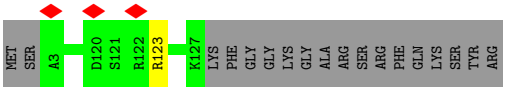

• Molecule 14: 40S ribosomal protein S14-A



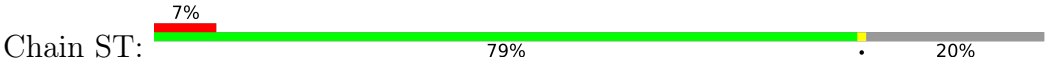


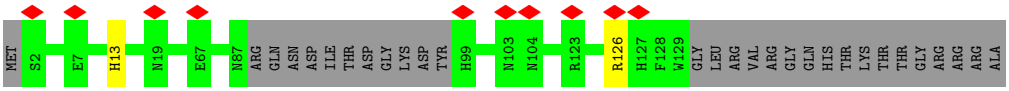
• Molecule 15: 40S ribosomal protein S16-A




• Molecule 16: 40S ribosomal protein S18-A

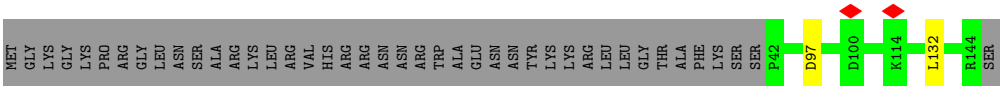


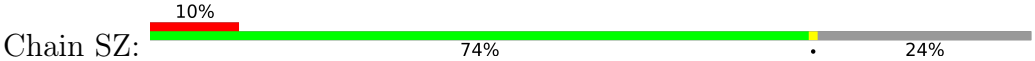

• Molecule 17: 40S ribosomal protein S22-B

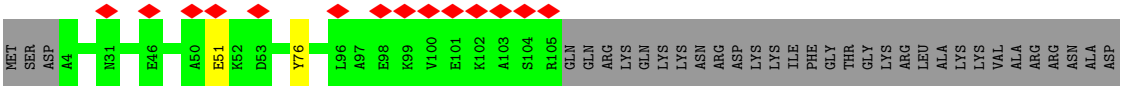


• Molecule 18: 40S ribosomal protein S23-A

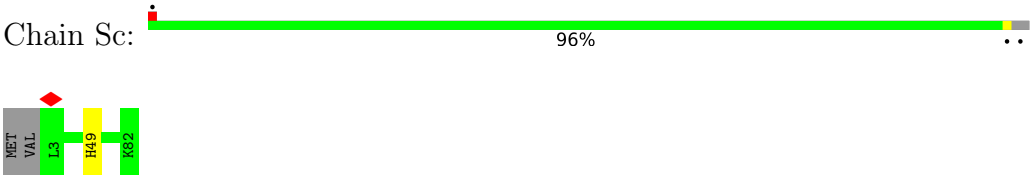

• Molecule 19: 40S ribosomal protein S24-A



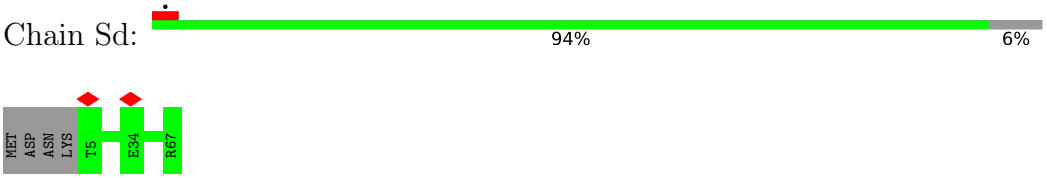

• Molecule 20: 40S ribosomal protein S27-A

Chain Sc:



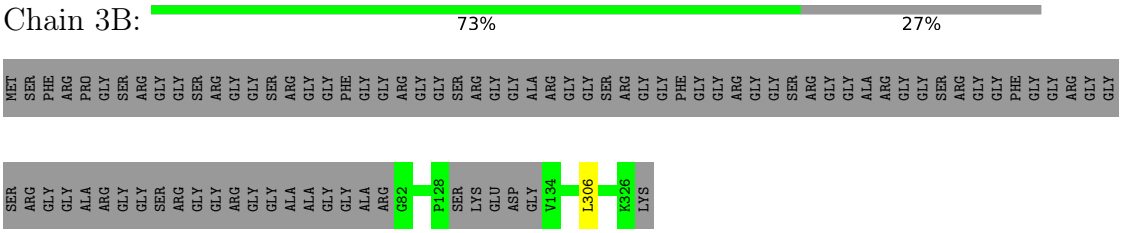

• Molecule 21: 40S ribosomal protein S28-A

Chain Sd:



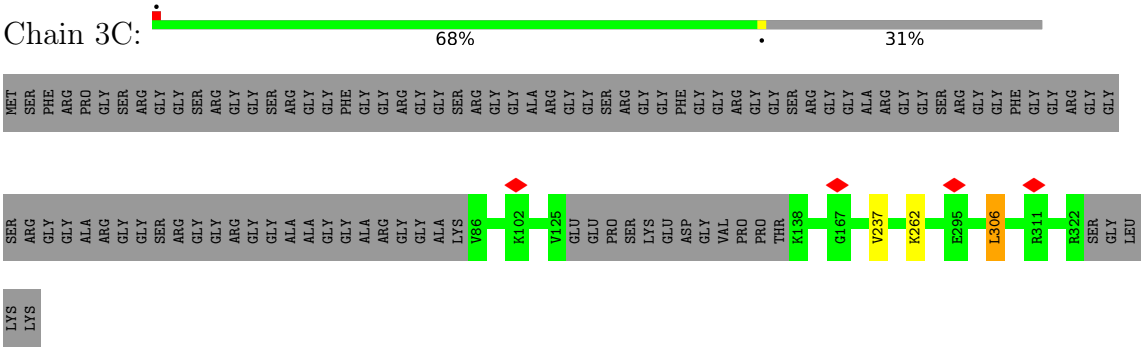

• Molecule 22: rRNA 2'-O-methyltransferase fibrillarin

Chain 3B:



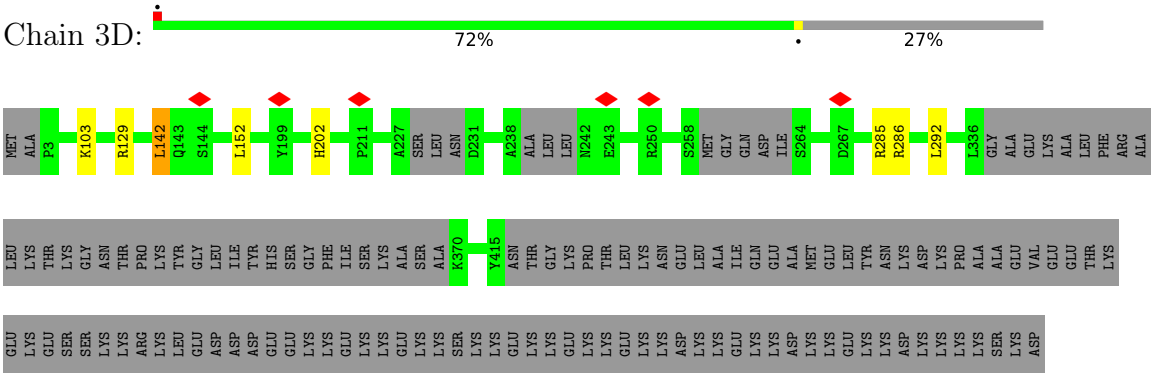

• Molecule 22: rRNA 2'-O-methyltransferase fibrillarin

Chain 3C:



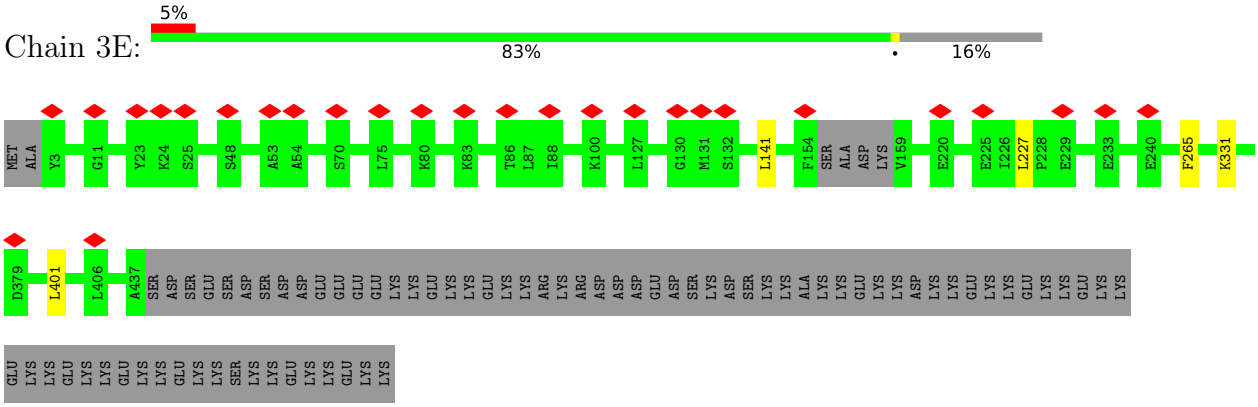

• Molecule 23: Nucleolar protein 56

Chain 3D:



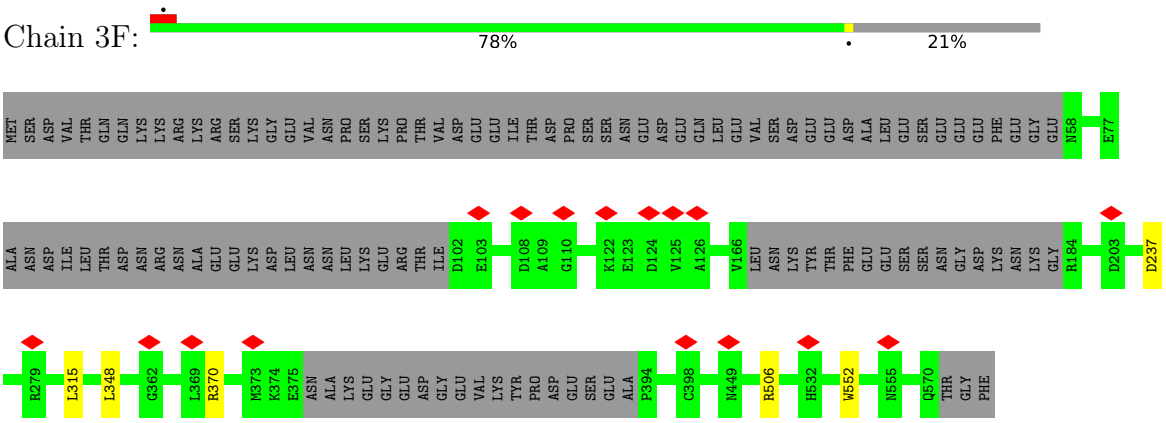

• Molecule 24: Nucleolar protein 58

Chain 3E:

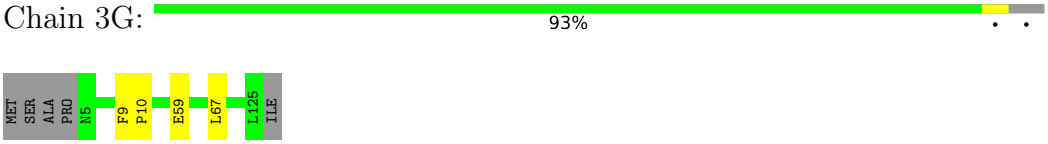



• Molecule 25: Ribosomal RNA-processing protein 9

Chain 3F:

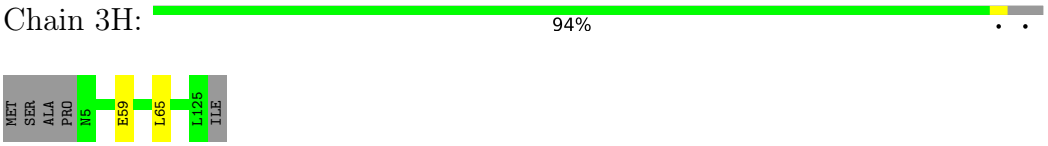



Chain 3G:



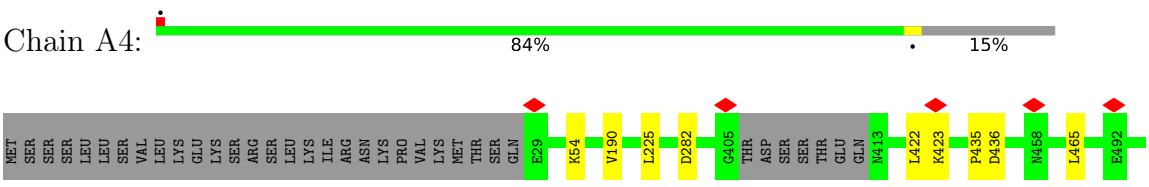

• Molecule 26: 13 kDa ribonucleoprotein-associated protein

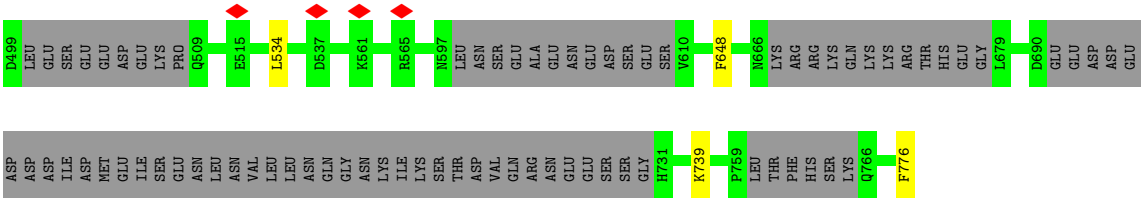
Chain 3H:




• Molecule 27: U3 small nucleolar RNA-associated protein 4

Chain A4:

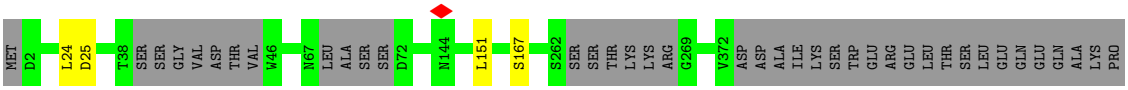


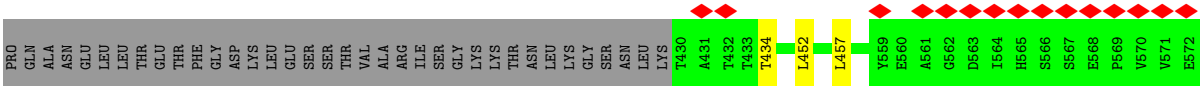


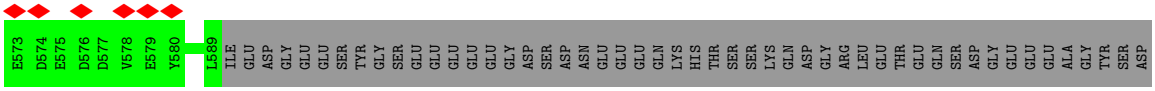


• Molecule 28: U3 small nucleolar RNA-associated protein 5

Chain A5:

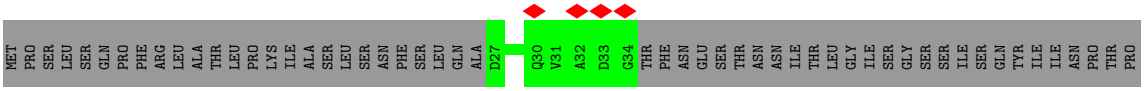



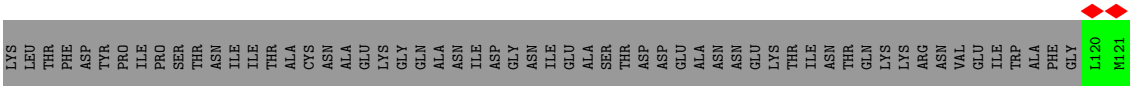


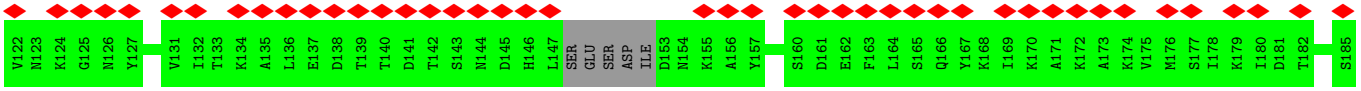


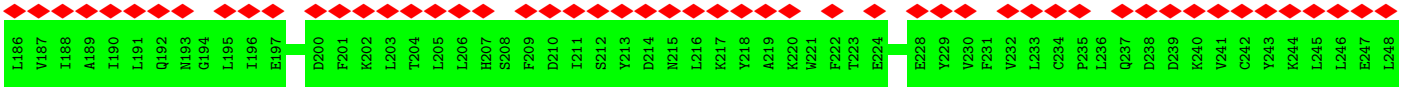
• Molecule 29: U3 small nucleolar RNA-associated protein 8

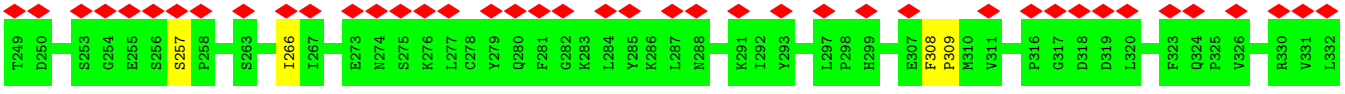
Chain A8:

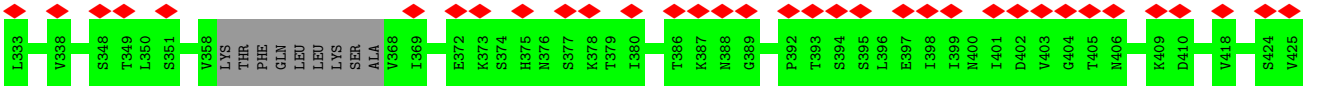



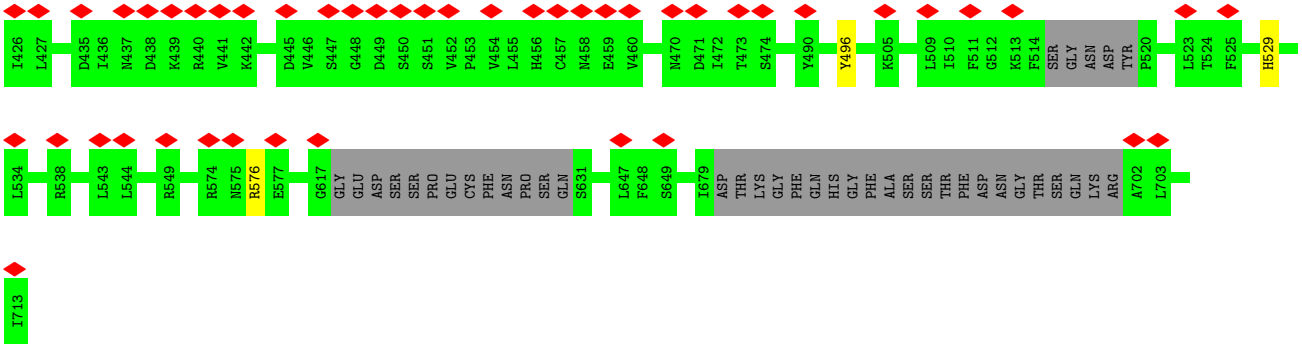






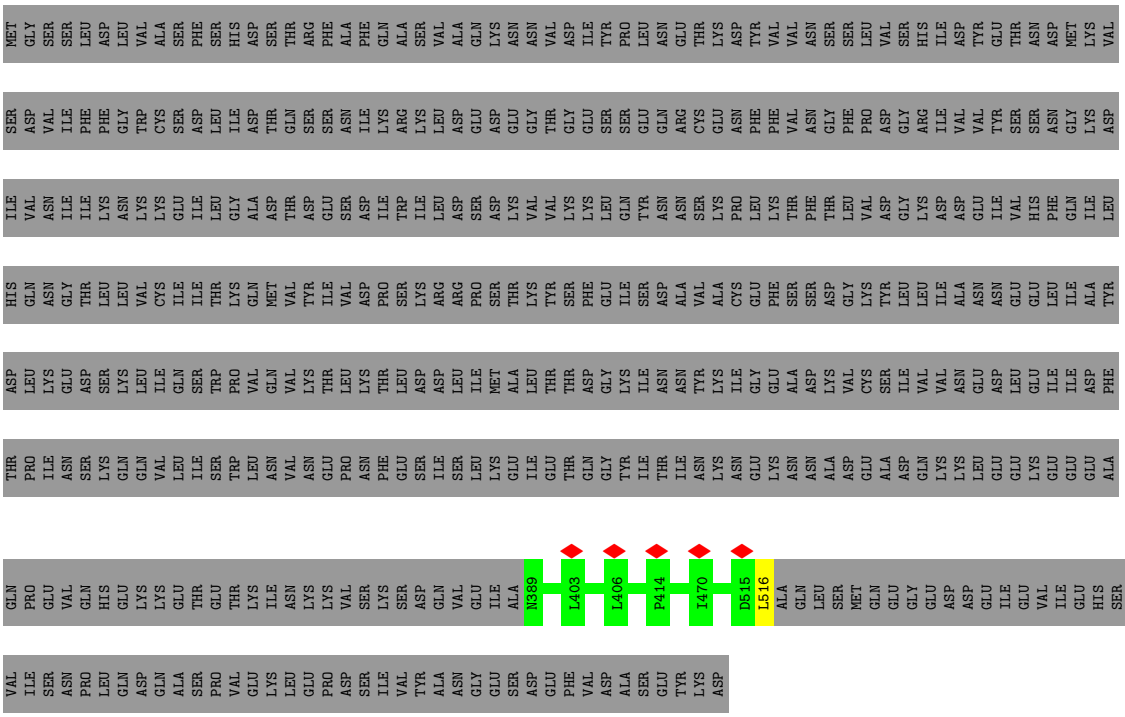






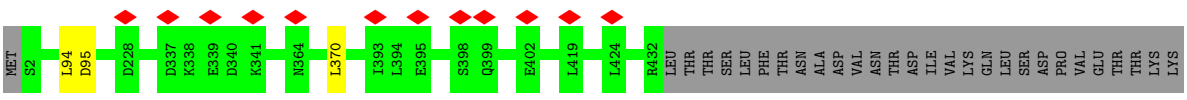

• Molecule 30: U3 small nucleolar RNA-associated protein 9

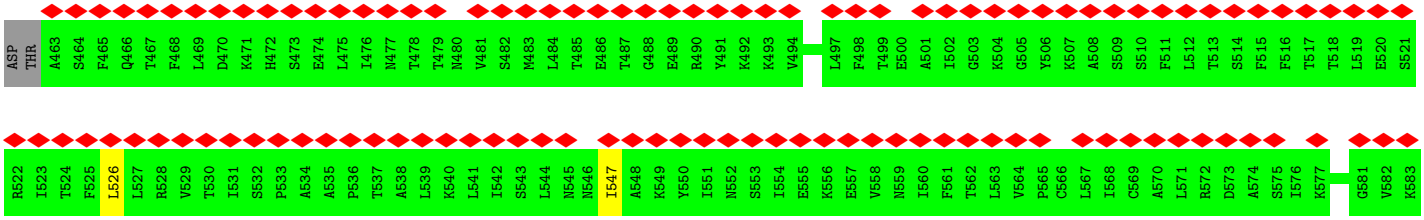
Chain A9:

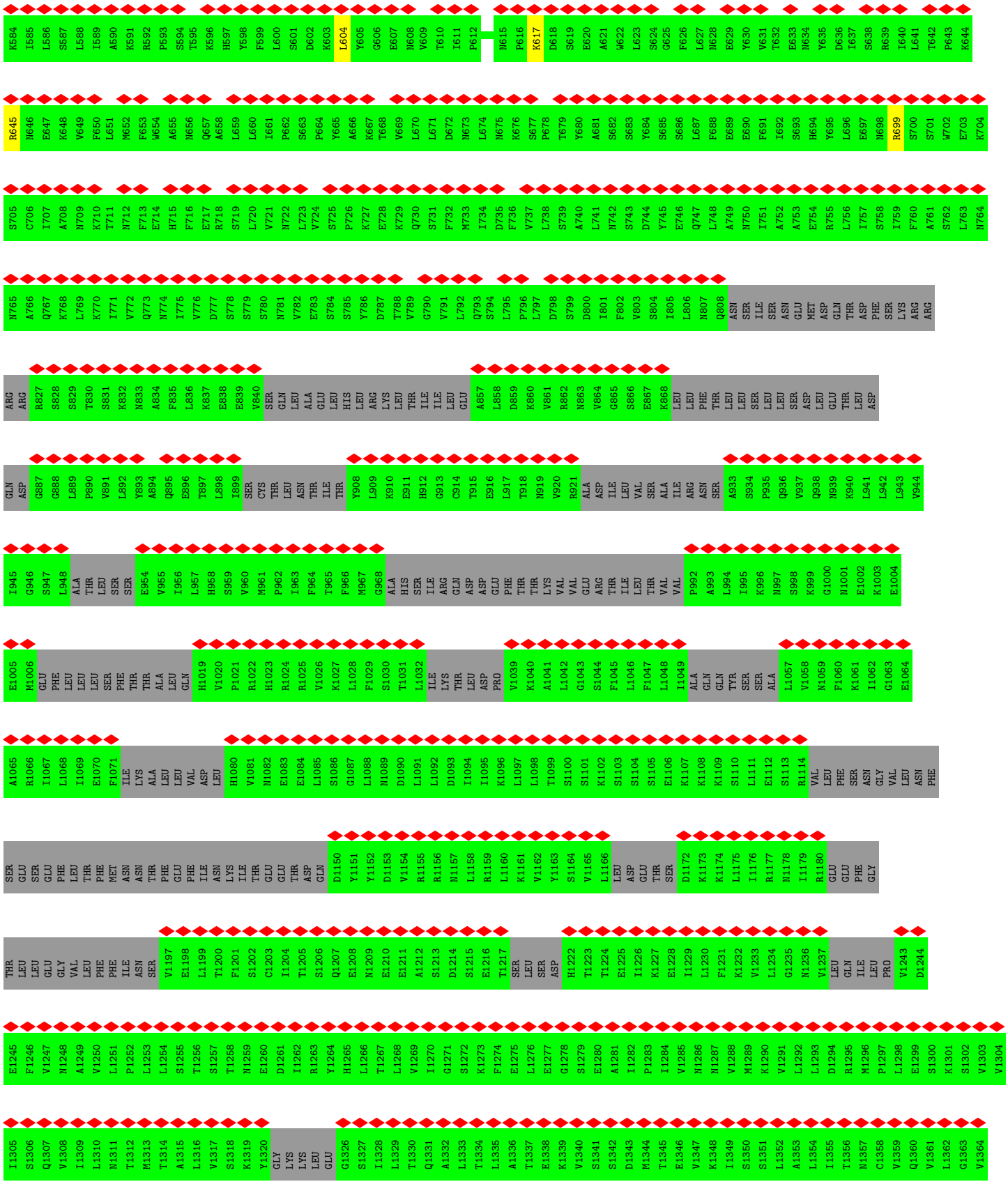



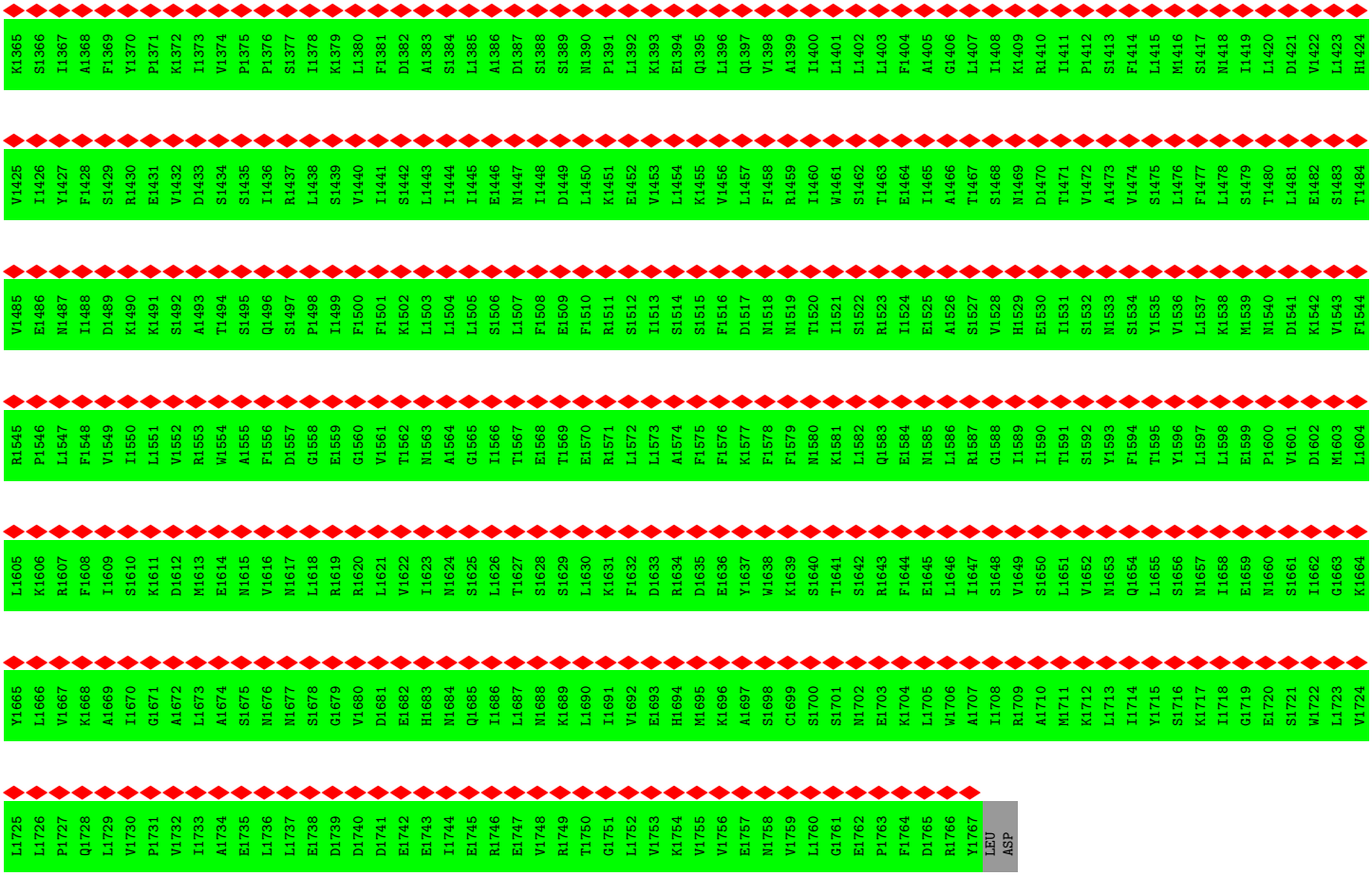

• Molecule 31: U3 small nucleolar RNA-associated protein 10

Chain AE:

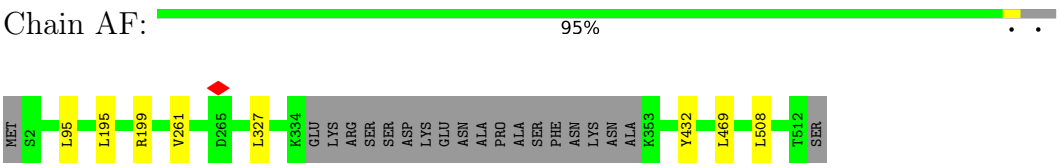



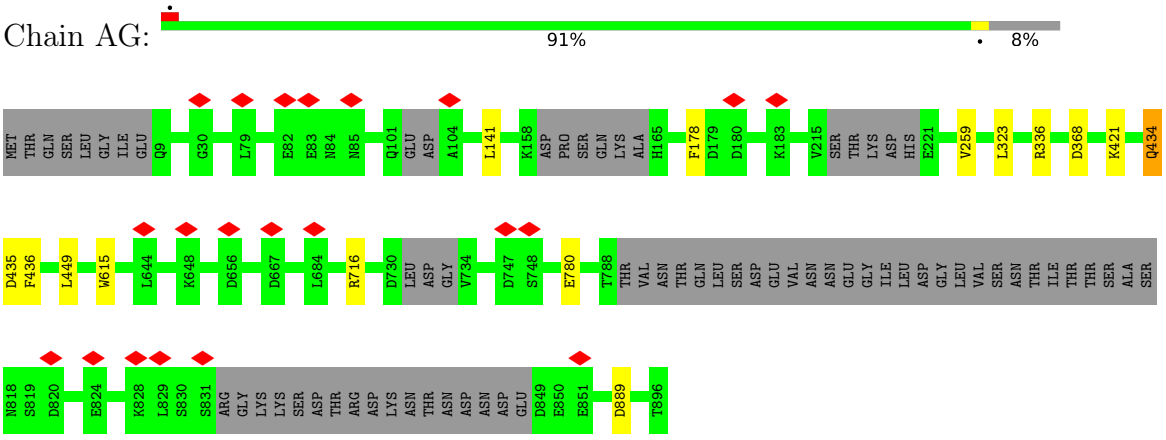

K584 I585 L586 S587 L588 I589 A590 K591 R592 P593 S594 T595 K596 H597 Y598 F599 L600 S601 D602 K603 L604 Y605 G606 E607 N608 V609 T610 I611 P612 N615 P616 K617 D618 S619 E620 A621 W622 L623 S624 G625 F626 L627 N628 E629 Y630 V631 T632 E633 N634 Y635 D636 I637 S638 R639 I640 L641 T642 P643 K644
R645 N646 E647 K648 V649 F650 L651 M652 F653 W654 A655 N656 Q657 A658 L659 L660 I661 P662 S663 P664 Y665 A666 K667 T668 V669 L670 L671 D672 N673 L674 N675 K676 S677 P678 T679 Y680 A681 S682 S683 Y684 S685 S686 L687 F688 E689 E690 F691 I692 S693 H694 Y695 L696 E697 N698 R699 S700 S701 W702 E703 K704
S705 C706 I707 A708 N709 K710 T711 N712 F713 E714 H715 F716 E717 R718 S719 L720 V721 N722 L723 V724 S725 P726 K727 E728 K729 Q730 S731 F732 M733 I734 D735 F736 V737 L738 S739 A740 L741 N742 S743 D744 Y745 E746 Q747 L748 A749 N750 I751 A752 A753 E754 R755 L756 I757 S758 I759 F760 A761 S762 L763 N764
N765 A766 Q767 K768 L769 K770 I771 V772 Q773 N774 I775 V776 D777 S778 S779 S780 N781 V782 L783 S784 S785 Y786 D787 T788 V789 G790 V791 L792 Q793 S794 L795 P796 L797 D798 S799 D800 I801 F802 V803 S804 I805 L806 N807 Q808 ASN SER ILE SER ASN GLU MET ASP GLN THR ASP PHE SER LYS ARG ARG
ARG ARG R827 S828 S829 T830 S831 K832 N833 A834 F835 L836 K837 E838 E839 V840 SER GLN LEU ALA GLU LEU HIS LEU ARG LYS LEU THR ILE ILE LEU GLU A857 L858 D859 K860 V861 R862 N863 V864 G865 S866 E867 K868 LEU LEU PHE THR LEU LEU SER LEU LEU SER ASP LEU GLU THR LEU ASP
GLN ASP G887 G888 L889 P890 V891 L892 Y893 A894 Q895 E896 T897 L898 I899 SER CYS THR LEU ASN THR ILE THR Y908 L909 K910 E911 H912 G913 C914 T915 E916 L917 T918 N919 V920 R921 ALA ASP ILE LEU VAL SER ALA ILE ARG ASN SER A933 S934 P935 Q936 V937 Q938 N939 K940 L941 L942 L943 V944
I945 G946 S947 L948 ALA THR LEU SER SER E954 V955 I956 L957 H958 S959 V960 M961 P962 I963 F964 T965 F966 M967 G968 ALA HIS SER ILE ARG GLN ASP ASP GLU PHE THR THR LYS VAL VAL GLU ARG THR ILE LEU LEU THR VAL VAL P992 A993 L994 I995 K996 N997 S998 K999 G1000 N1001 E1002 K1003 E1004
E1005 M1006 GLU PHE LEU LEU LEU SER PHE THR THR ALA LEU GLN H1019 V1020 P1021 R1022 H1023 R1024 R1025 V1026 K1027 L1028 F1029 S1030 T1031 L1032 ILE LYS THR LEU ASP PRO V1039 K1040 A1041 L1042 G1043 S1044 F1045 L1046 F1047 L1048 I1049 ALA GLN GLN TYR SER SER ALA L1057 V1058 N1059 F1060 K1061 I1062 G1063 E1064
A1065 R1066 I1067 L1068 I1069 E1070 F1071 ILE LYS ALA LEU LEU VAL ASP LEU H1080 V1081 N1082 E1083 E1084 L1085 S1086 G1087 L1088 N1089 D1090 L1091 L1092 D1093 I1094 I1095 K1096 L1097 L1098 T1099 S1100 S1101 K1102 S1103 S1104 S1105 E1106 K1107 K1108 K1109 S1110 L1111 E1112 S1113 R1114 VAL LEU PHE SER ASN GLY VAL LEU ASN PHE
SER GLU SER GLU PHE LEU THR PHE MET ASN ASN THR PHE GLU PHE ILE ASN LYS ILE THR GLU GLU THR ASP GLN D1150 Y1151 Y1152 D1153 V1154 R1155 R1156 N1157 L1158 R1159 L1160 K1161 V1162 Y1163 S1164 V1165 L1166 LEU ASP GLU THR SER D1172 K1173 K1174 L1175 I1176 R1177 N1178 I1179 R1180 GLU GLU PHE GLY
THR LEU LEU GLU GLY VAL PHE PHE ILE ASN SER V1197 E1198 L1199 T1200 F1201 S1202 C1203 I1204 T1205 S1206 Q1207 E1208 N1209 E1210 E1211 A1212 S1213 D1214 S1215 E1216 T1217 SER LEU SER ASP H1222 T1223 T1224 E1225 I1226 K1227 E1228 I1229 L1230 F1231 K1232 V1233 L1234 G1235 N1236 V1237 LEU GLN ILE LEU PRO V1243 D1244
E1245 F1246 V1247 N1248 A1249 V1250 L1251 P1252 L1253 L1254 L1255 T1256 S1257 T1258 N1259 E1260 D1261 I1262 R1263 Y1264 H1265 L1266 T1267 L1268 V1269 I1270 G1271 S1272 K1273 F1274 E1275 L1276 E1277 G1278 S1279 E1280 A1281 I1282 P1283 I1284 V1285 N1286 N1287 V1288 M1289 K1290 V1291 L1292 L1293 D1294 R1295 M1296 P1297 L1298 E1299 S1300 K1301 S1302 V1303 V1304
I1305 S1306 Q1307 V1308 I1309 L1310 N1311 T1312 M1313 T1314 A1315 L1316 V1317 S1318 K1319 Y1320 GLY LYS LYS LEU GLU G1326 S1327 I1328 L1329 T1330 Q1331 A1332 L1333 T1334 L1335 A1336 T1337 E1338 K1339 V1340 S1341 S1342 D1343 M1344 T1345 E1346 V1347 K1348 I1349 S1350 S1351 L1352 A1353 L1354 I1355 T1356 N1357 C1358 V1359 Q1360 V1361 L1362 G1363 V1364




• Molecule 32: U3 small nucleolar RNA-associated protein 15

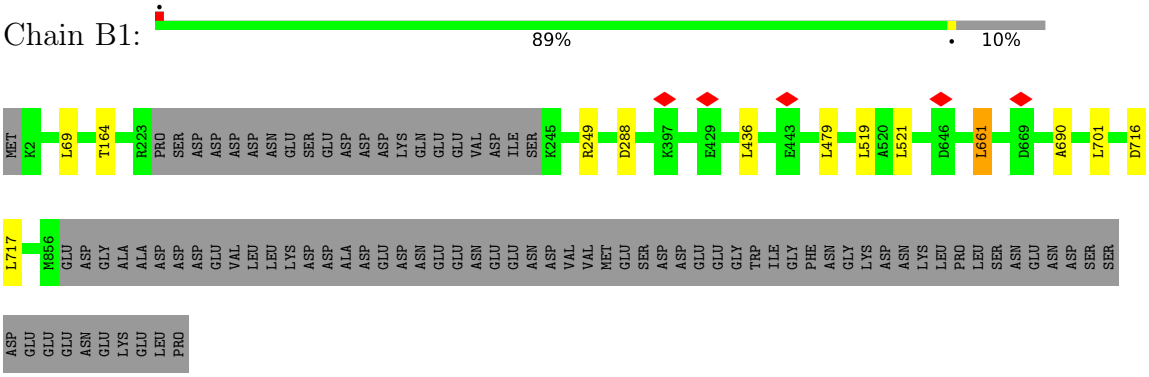



• Molecule 33: NET1-associated nuclear protein 1



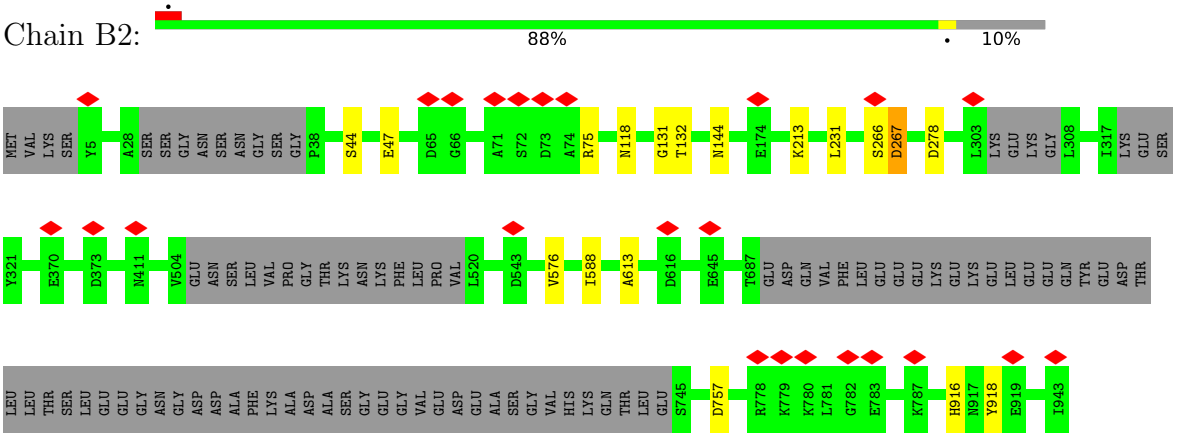

• Molecule 34: Periodic tryptophan protein 2

Chain B1:



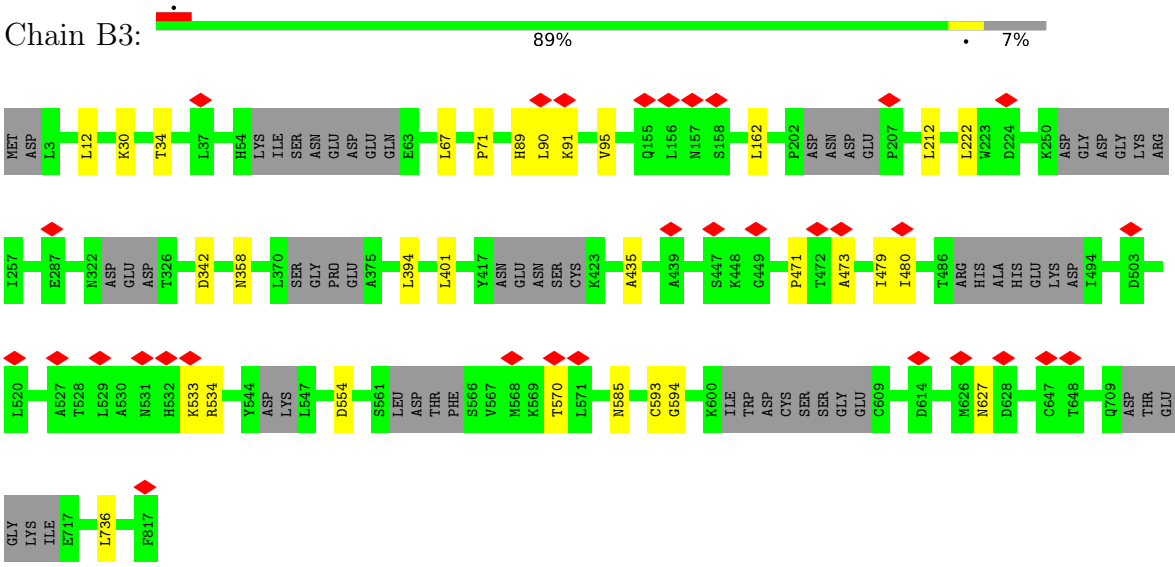

• Molecule 35: U3 small nucleolar RNA-associated protein 12

Chain B2:



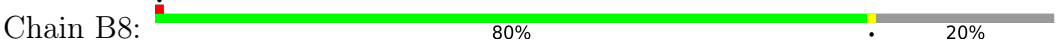

• Molecule 36: U3 small nucleolar RNA-associated protein 13

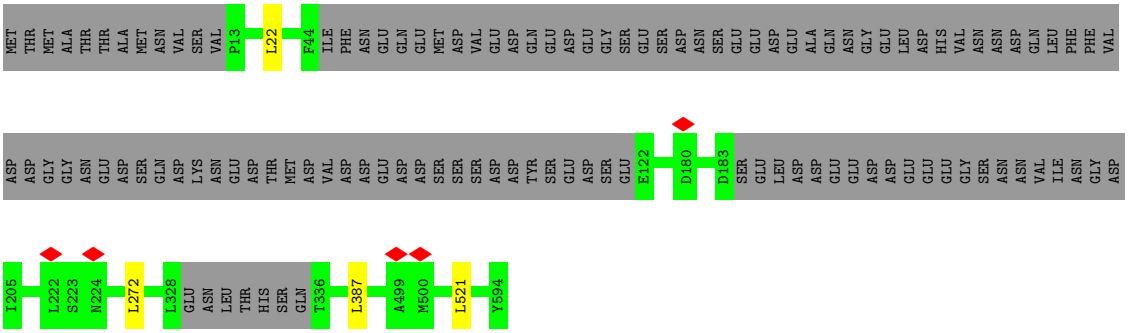
Chain B3:




• Molecule 37: U3 small nucleolar RNA-associated protein 18

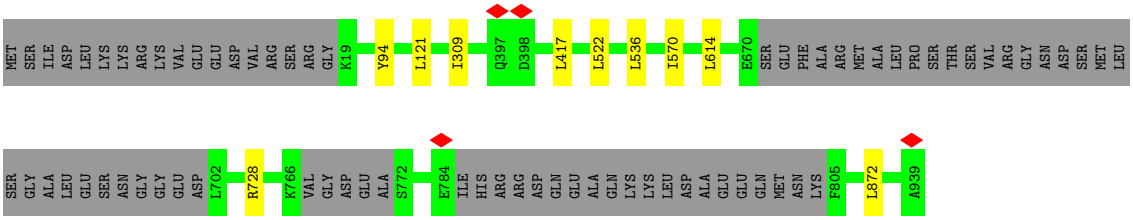
Chain B8:





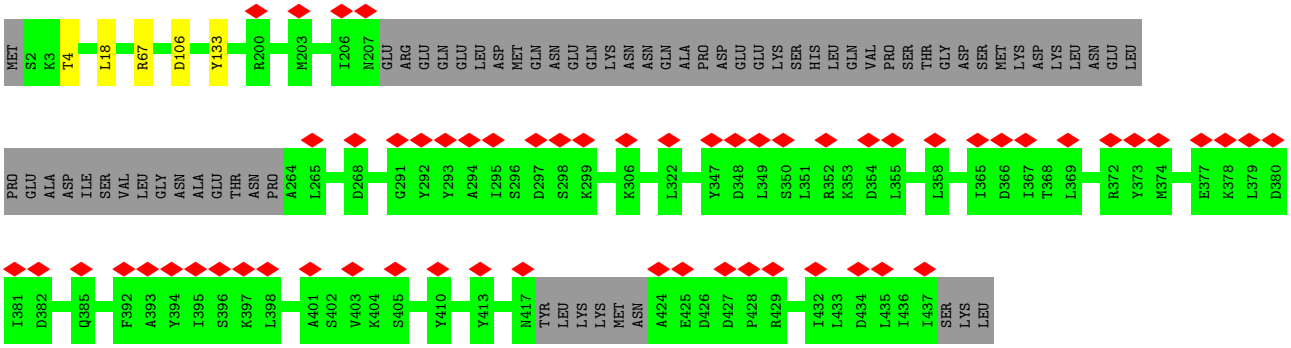
• Molecule 38: U3 small nucleolar RNA-associated protein 21

Chain BE:

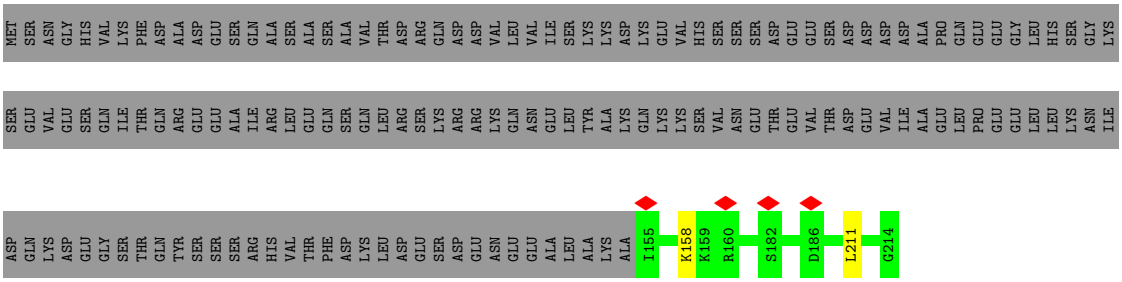
• Molecule 39: U3 small nucleolar RNA-associated protein 6

Chain B6:

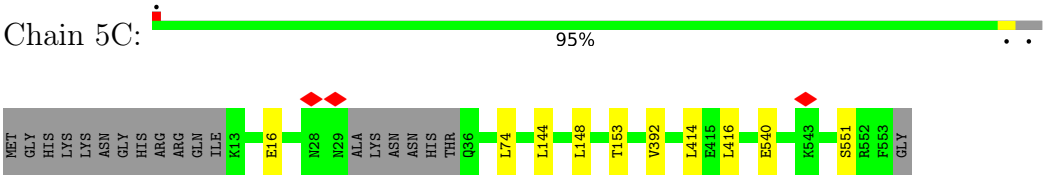
• Molecule 40: Bud site selection protein 21

Chain 5B:

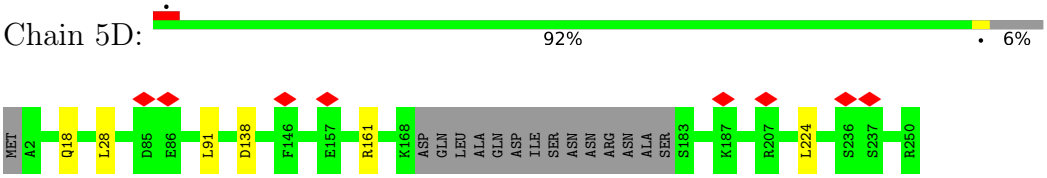
• Molecule 41: U3 small nucleolar RNA-associated protein 7

Chain 5C:



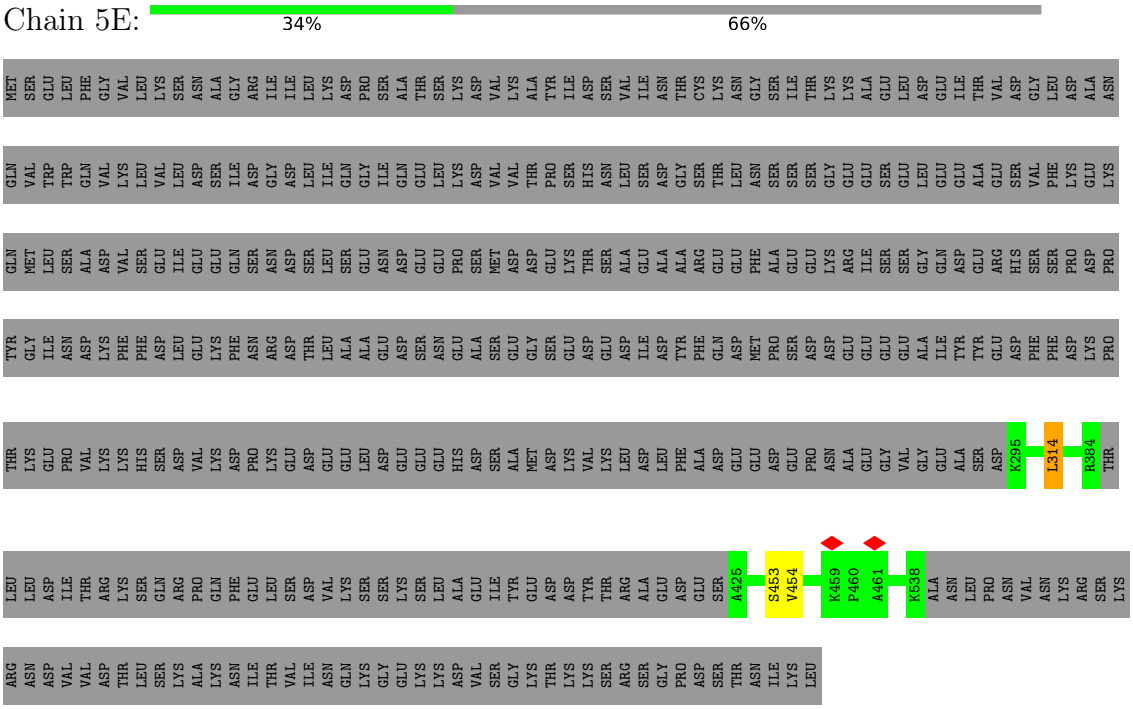

• Molecule 42: U3 small nucleolar RNA-associated protein 11

Chain 5D:



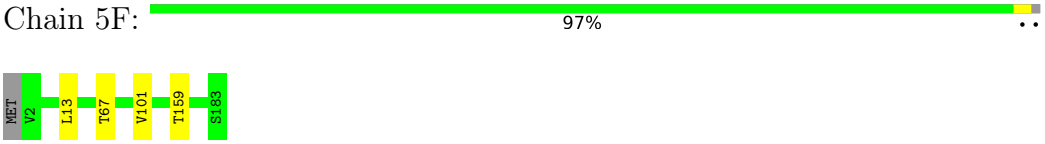

• Molecule 43: U3 small nucleolar RNA-associated protein MPP10

Chain 5E:



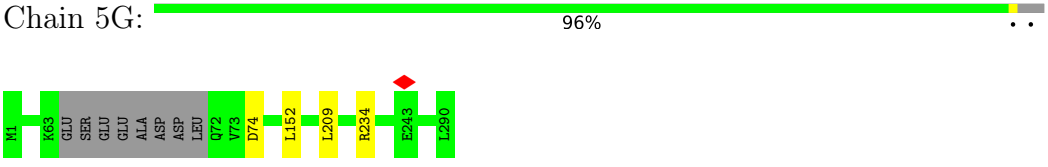

• Molecule 44: U3 small nucleolar ribonucleoprotein protein IMP3

Chain 5F:



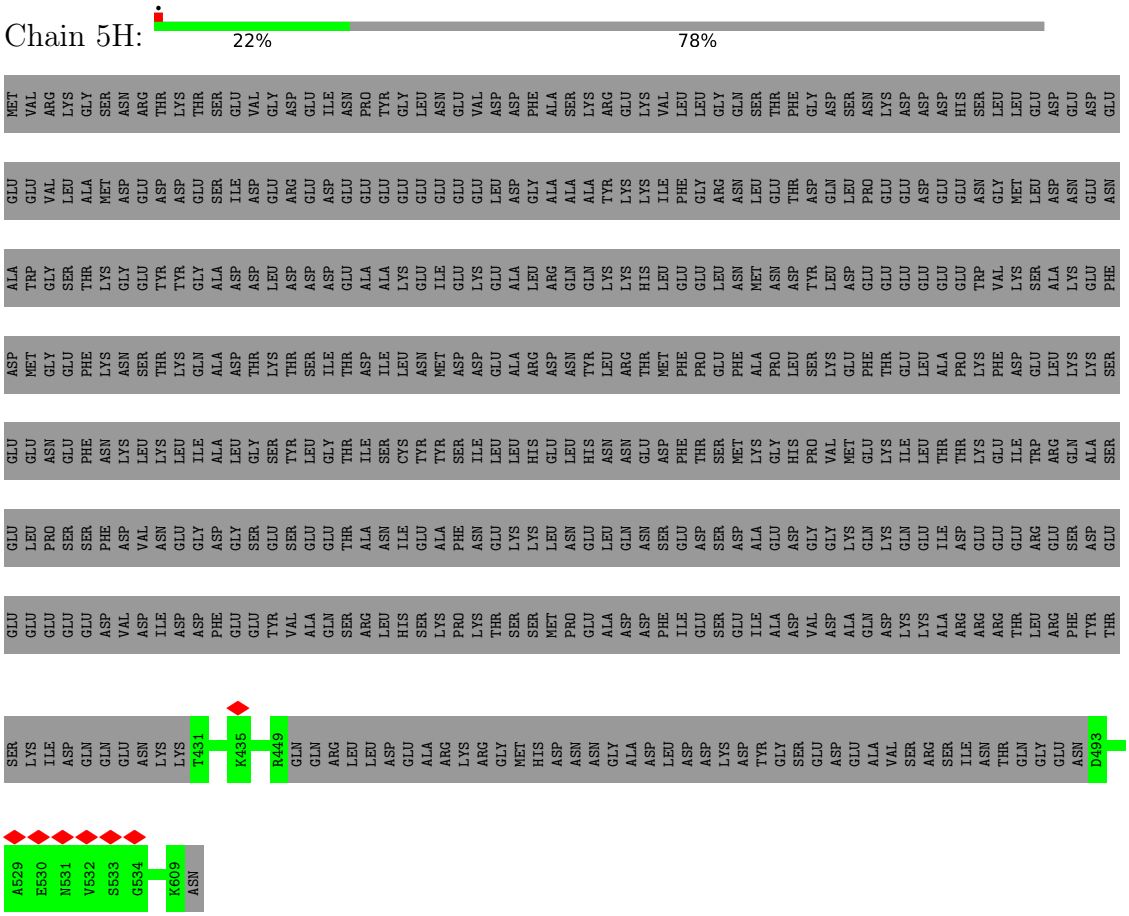

• Molecule 45: U3 small nucleolar ribonucleoprotein protein IMP4

Chain 5G:



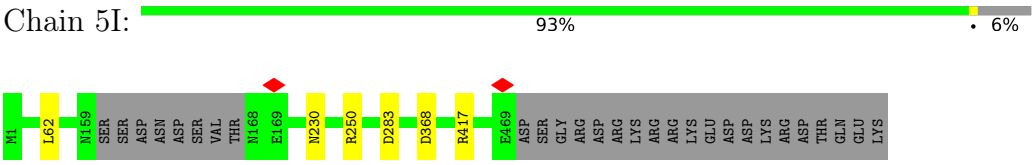
• Molecule 46: Something about silencing protein 10

Chain 5H:



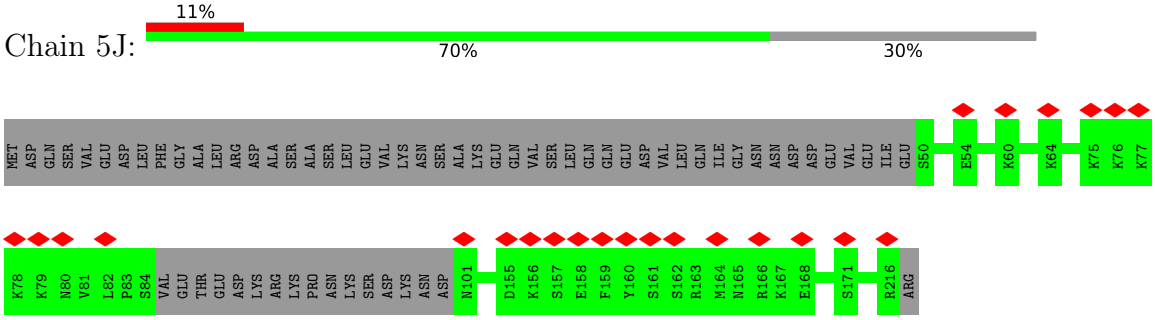

• Molecule 47: Protein SOF1

Chain 5I:



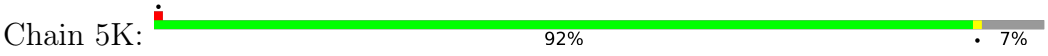

• Molecule 48: rRNA-processing protein FCF2

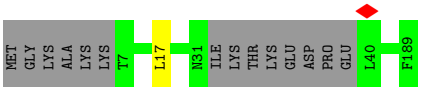
Chain 5J:




• Molecule 49: rRNA-processing protein FCF1

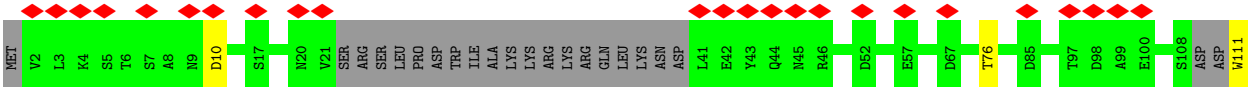
Chain 5K:

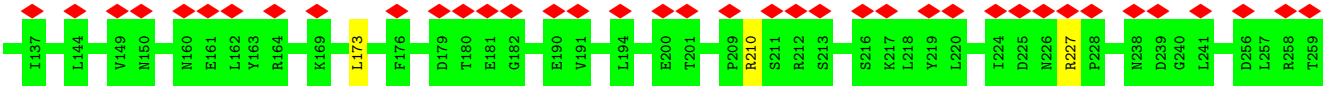


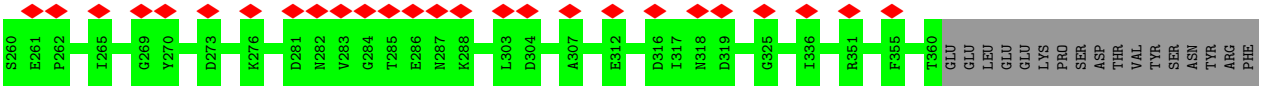



• Molecule 50: Ribosome biogenesis protein ENP2

Chain RA:





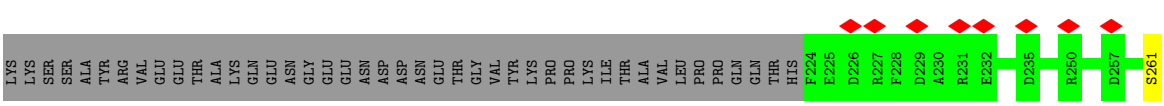


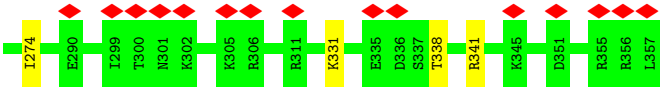

• Molecule 51: U3 small nucleolar ribonucleoprotein protein LCP5

Chain RB:



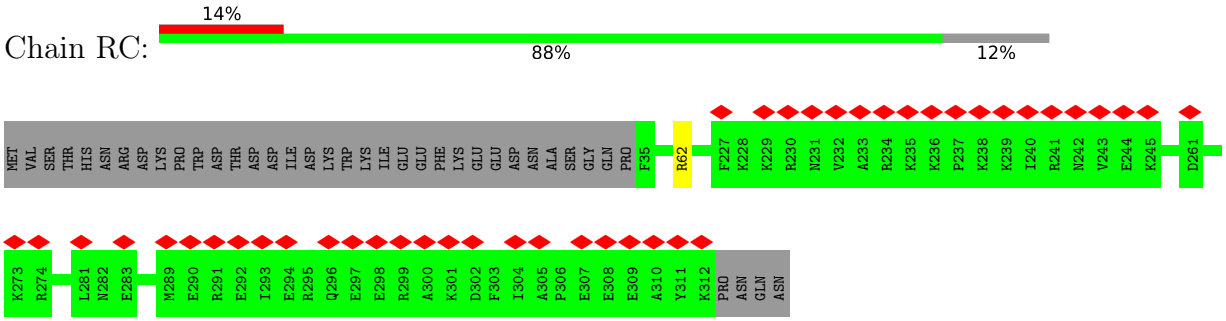






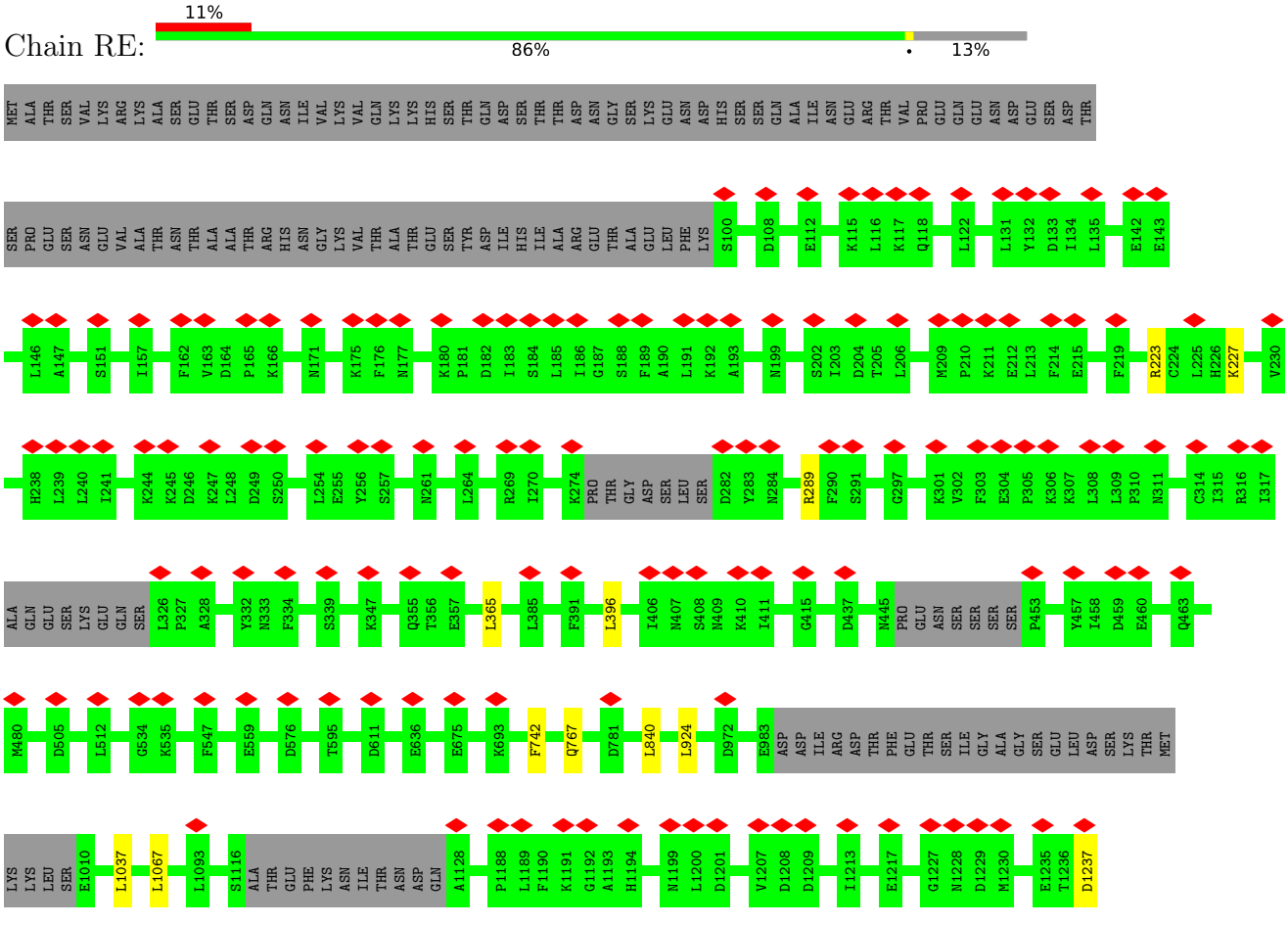

• Molecule 52: KRR1 small subunit processome component

Chain RC:



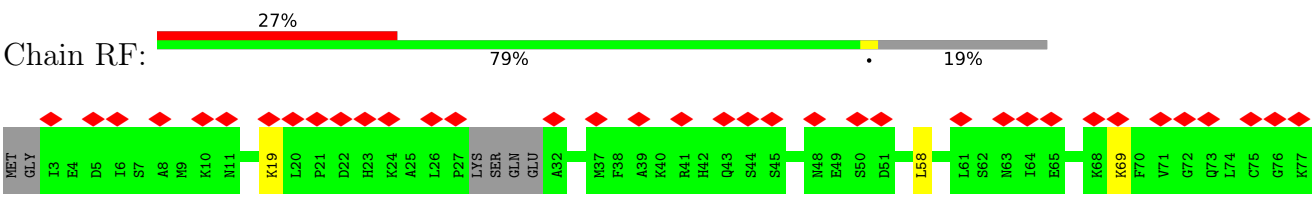

• Molecule 53: U3 small nucleolar RNA-associated protein 22

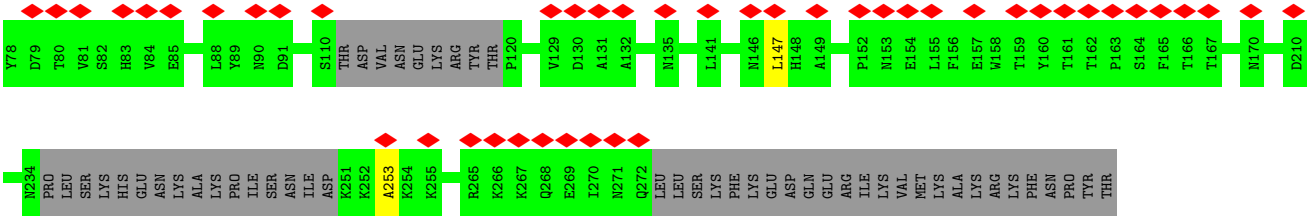
Chain RE:



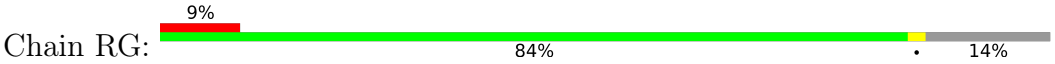

• Molecule 54: Ribosomal RNA-processing protein 7

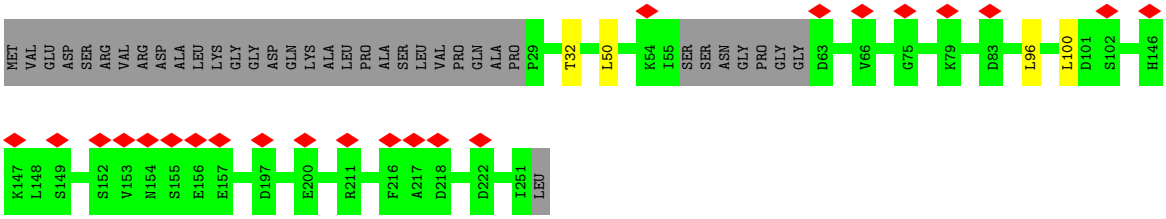
Chain RF:



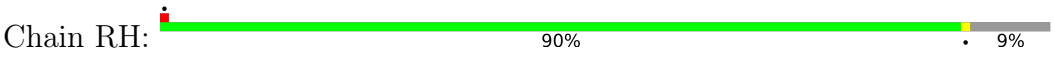


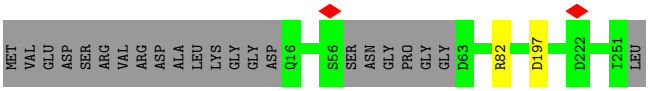

• Molecule 55: Ribosomal RNA small subunit methyltransferase NEP1



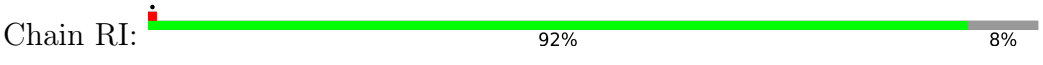



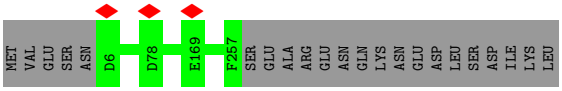

• Molecule 55: Ribosomal RNA small subunit methyltransferase NEP1



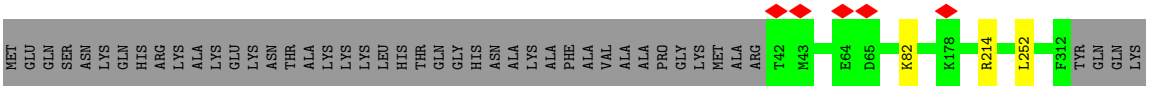



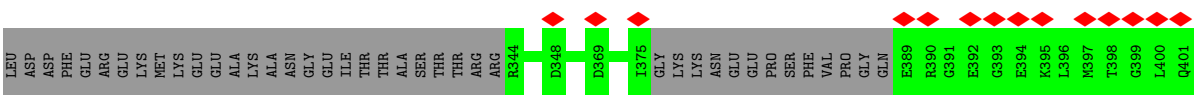

• Molecule 56: Ribosome biogenesis protein UTP30

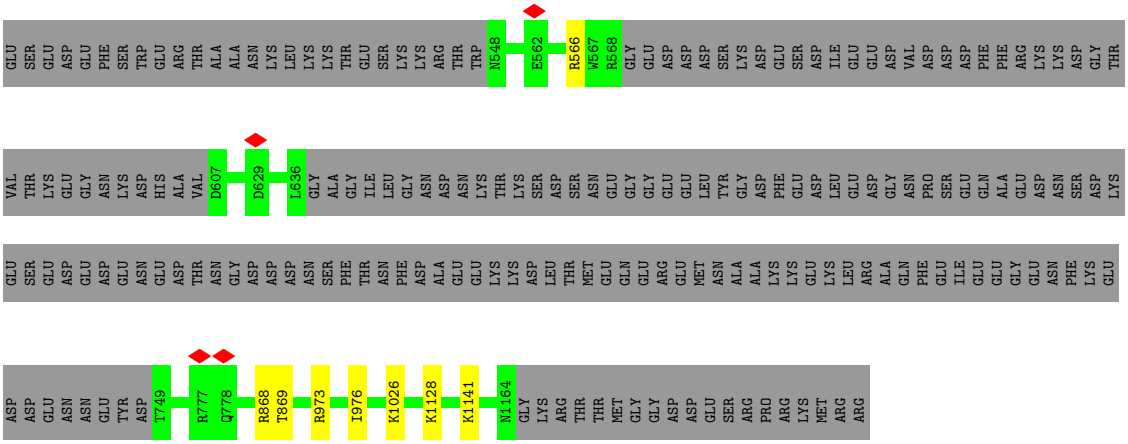



• Molecule 57: Ribosome biogenesis protein BMS1

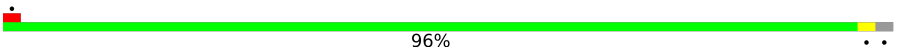



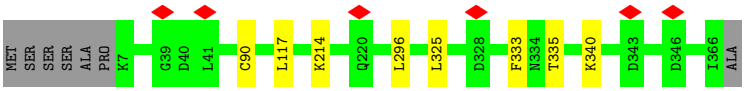



• Molecule 58: RNA 3'-terminal phosphate cyclase-like protein

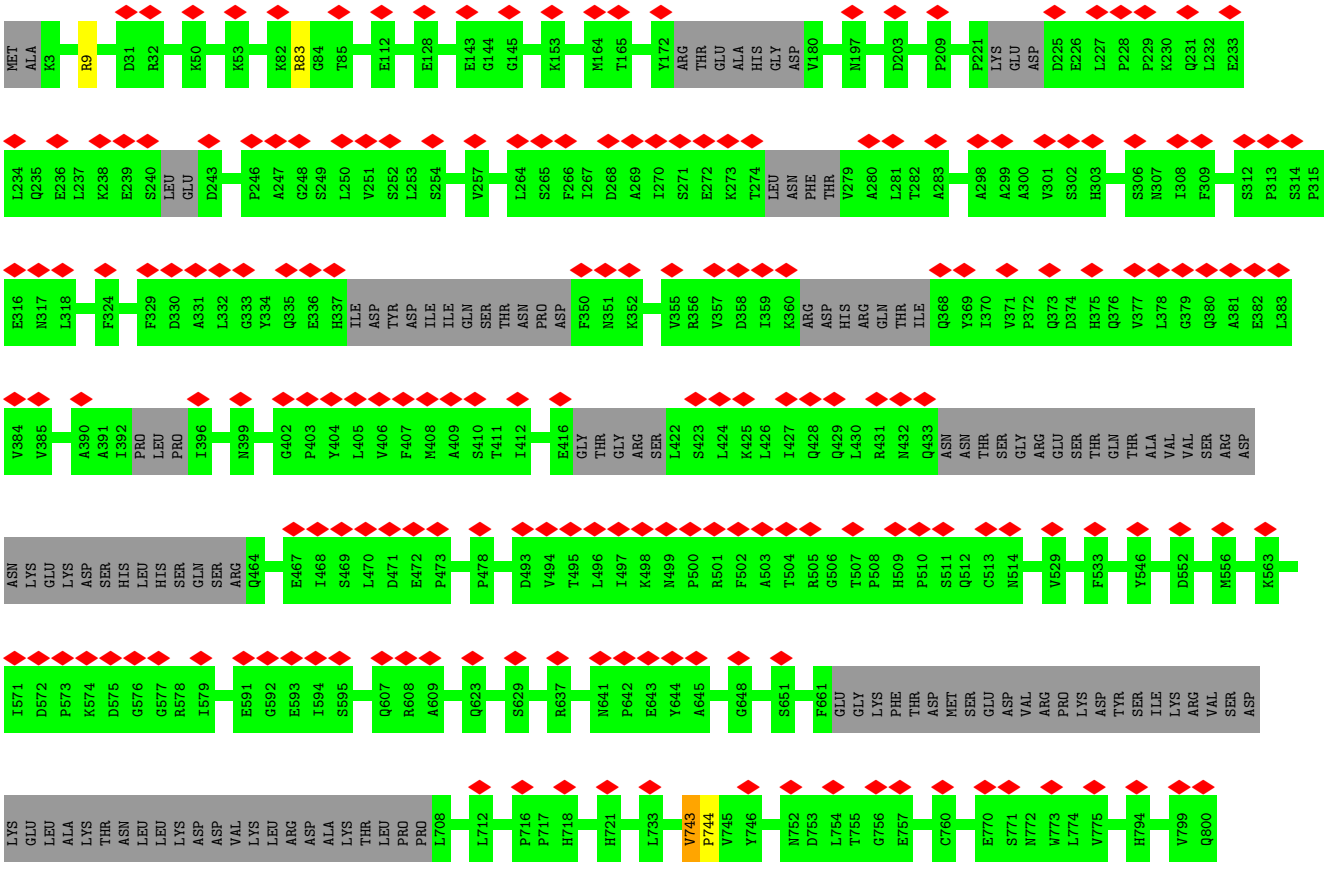
Chain RK:

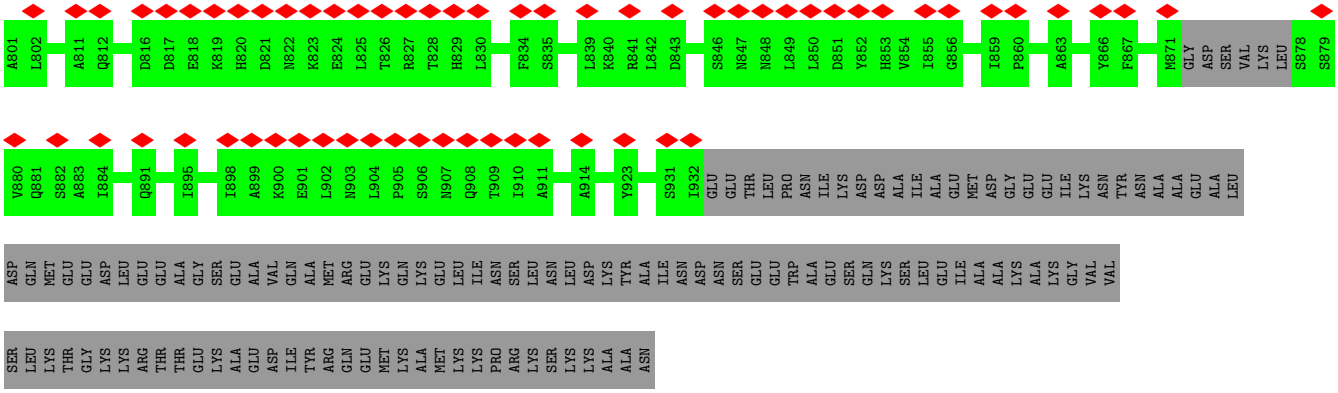


• Molecule 59: RNA cytidine acetyltransferase

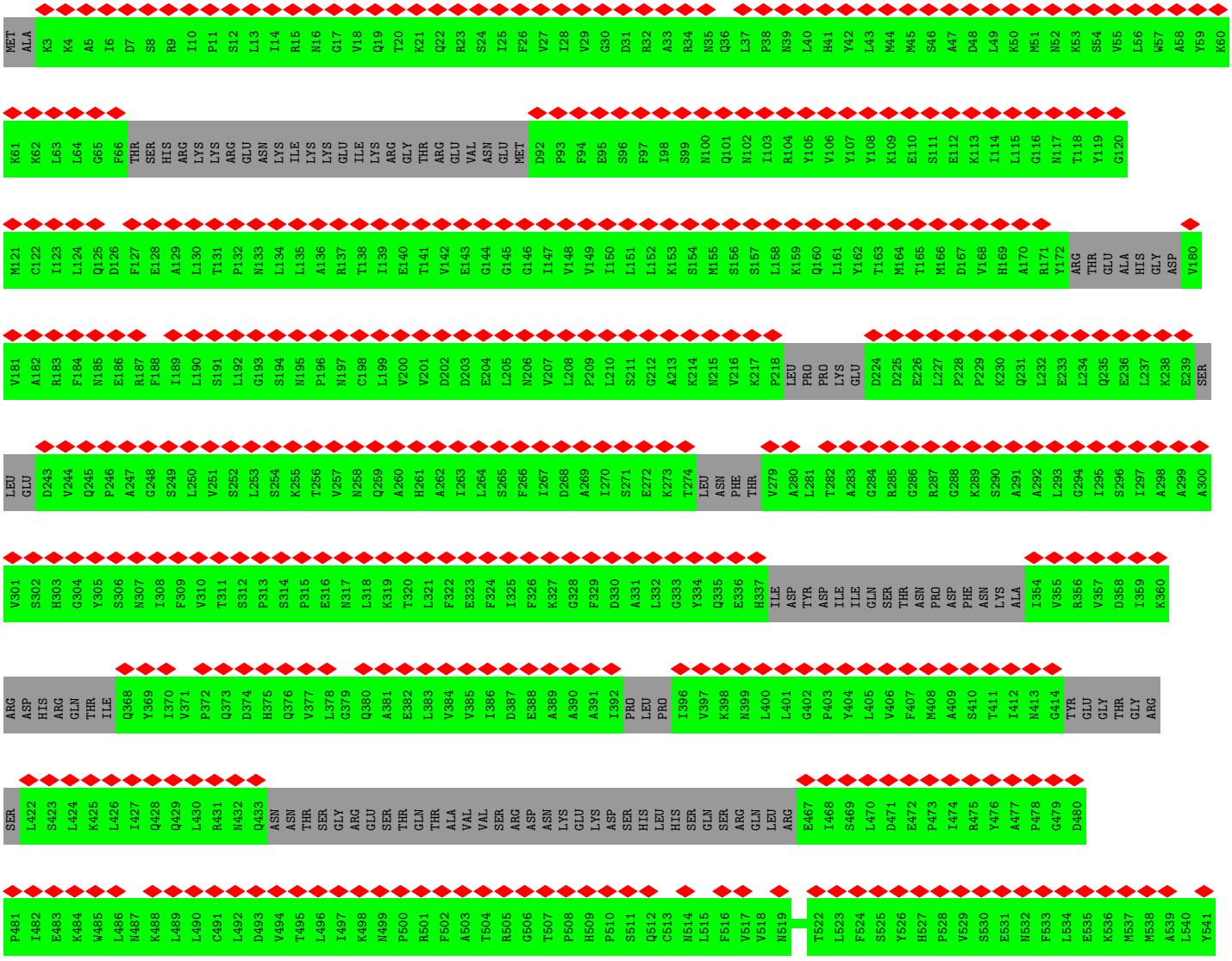
Chain RL:

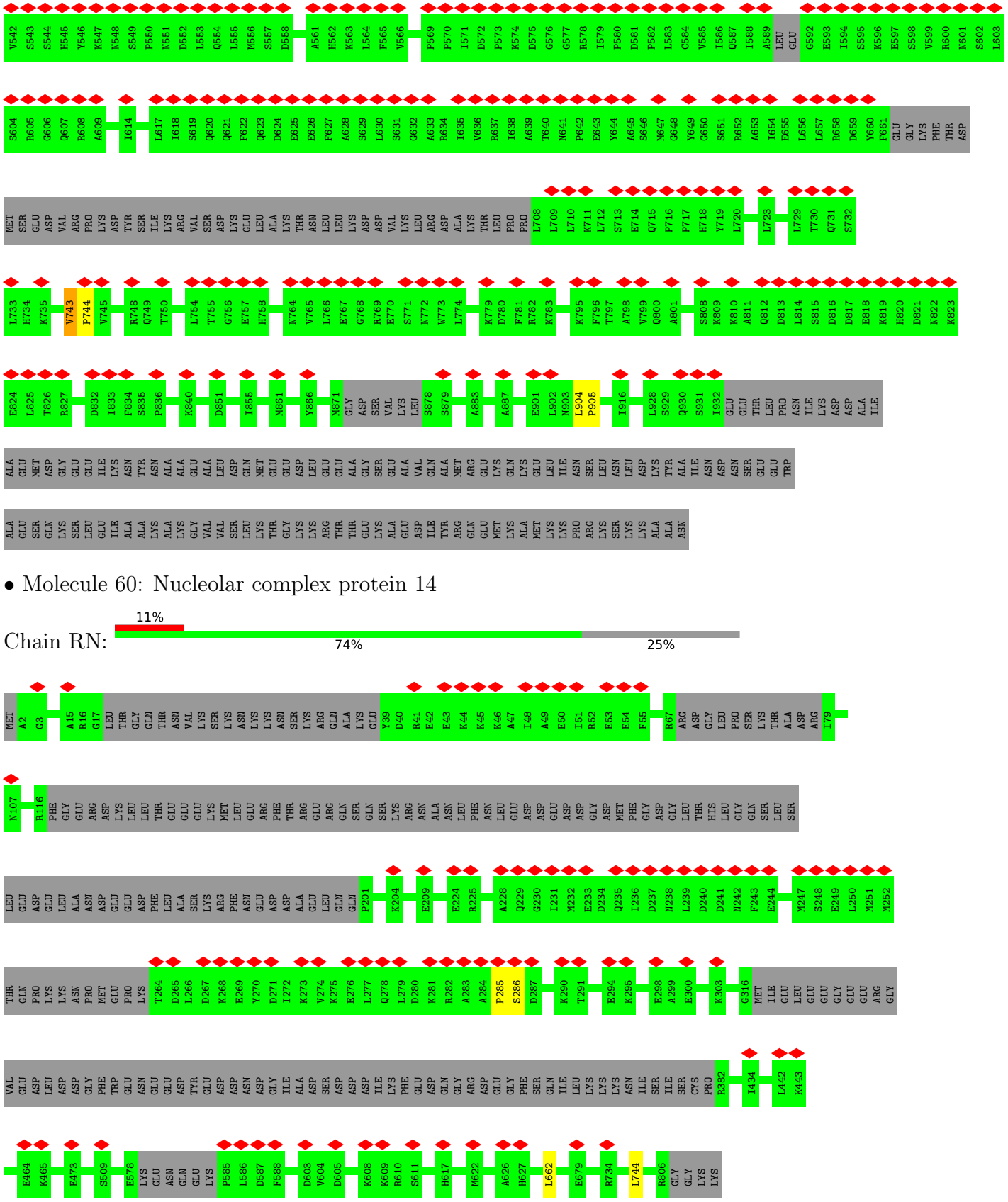






• Molecule 59: RNA cytidine acetyltransferase

Chain RM:



• Molecule 60: Nucleolar complex protein 14

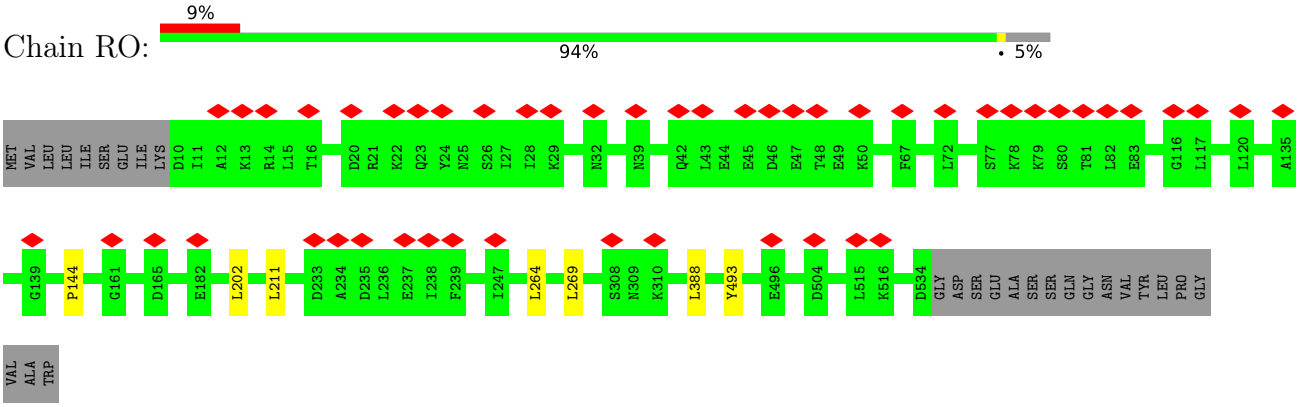
Chain RN:





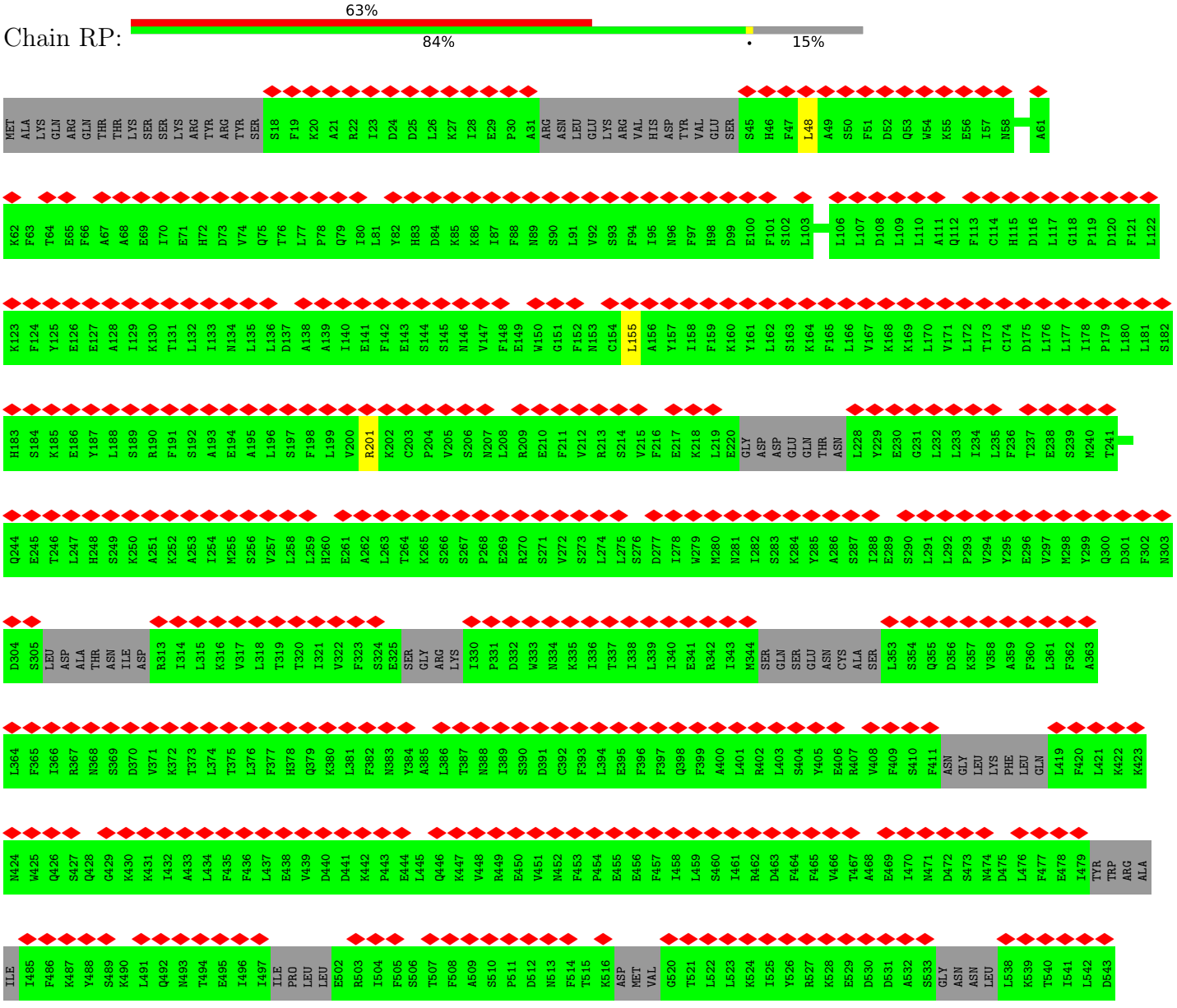

• Molecule 61: Nucleolar complex protein 4

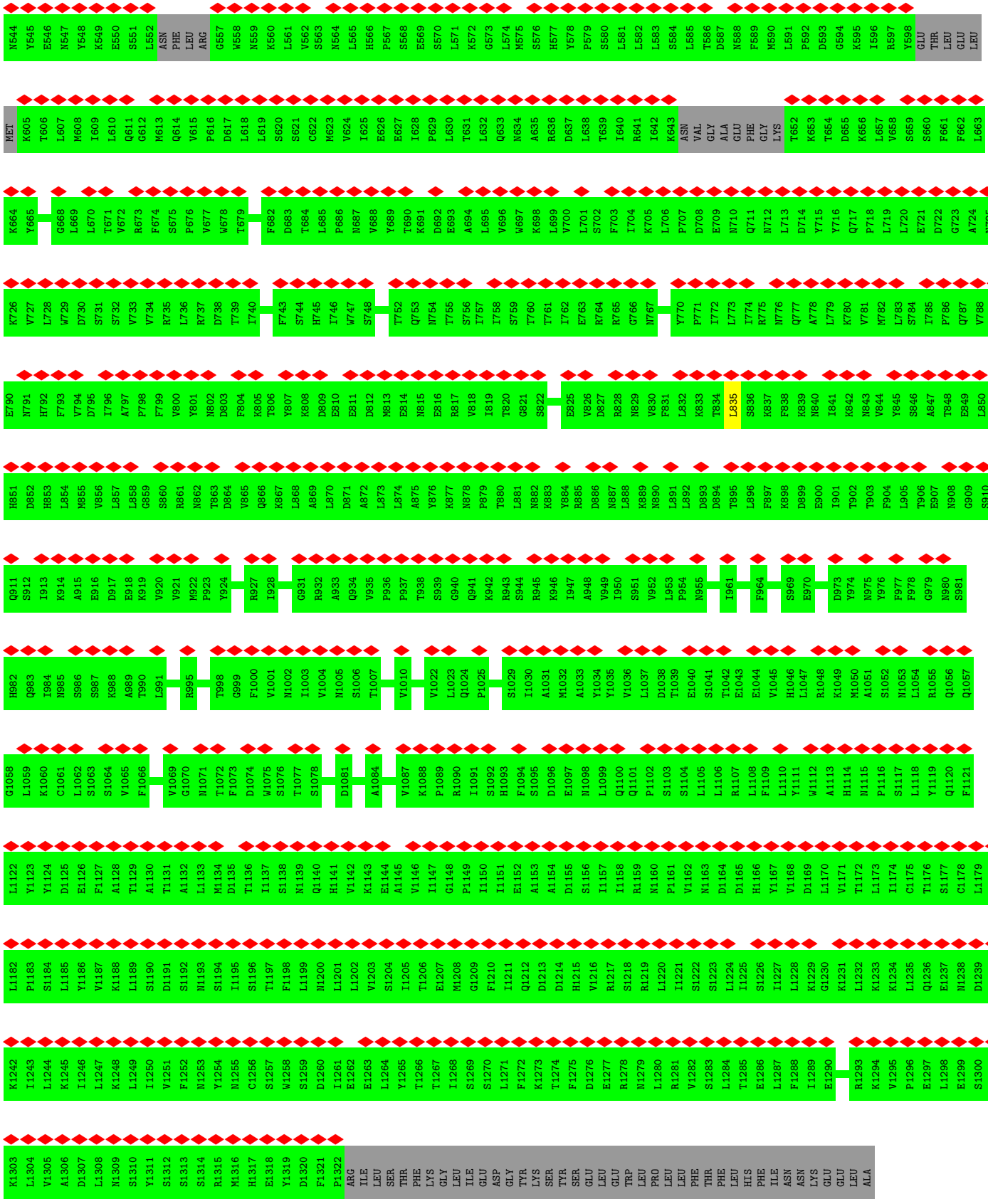
Chain RO:




• Molecule 62: U3 small nucleolar RNA-associated protein 20

Chain RP:

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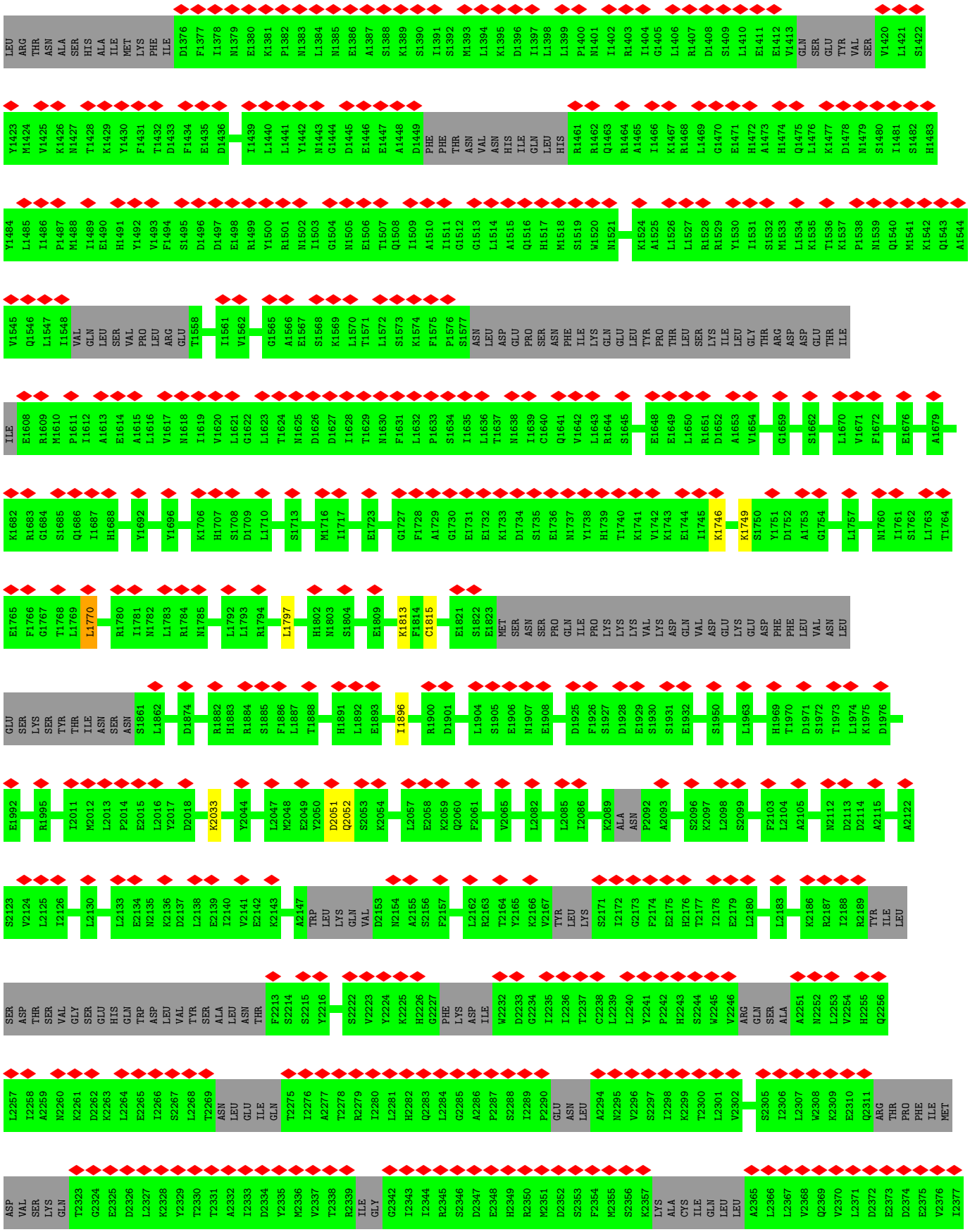
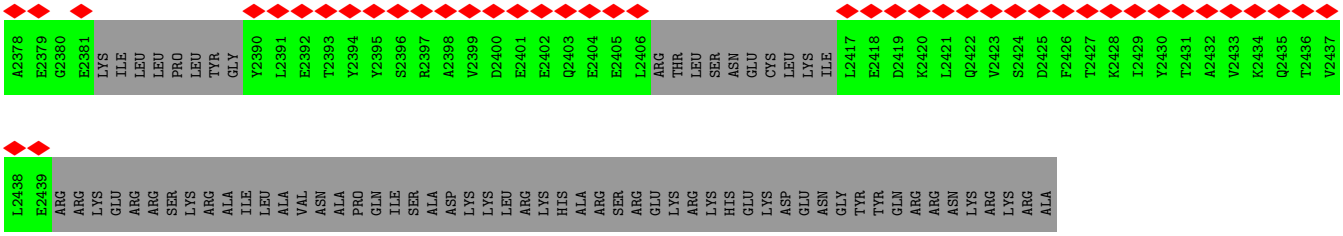
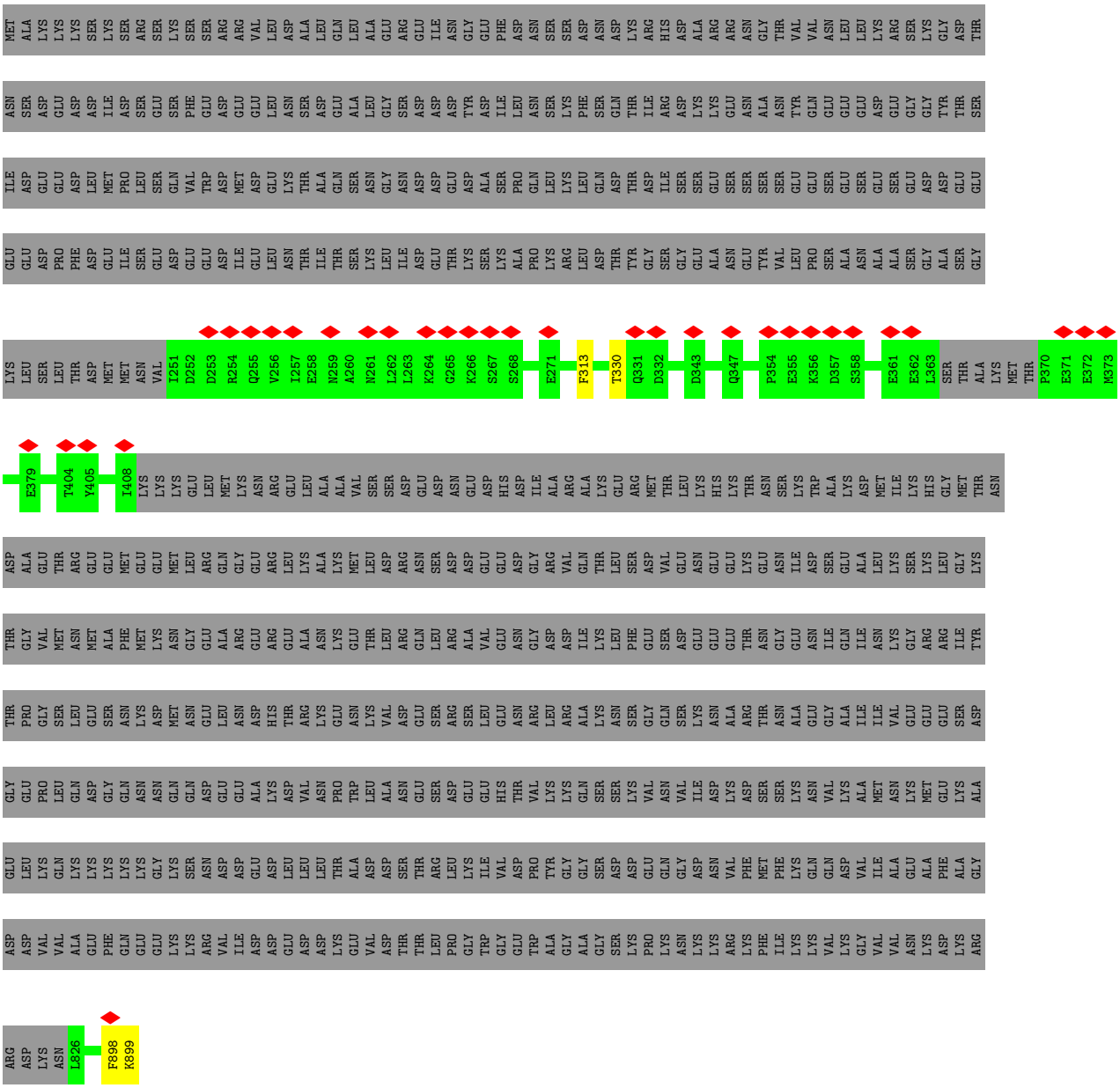
MET K605 T606 L607 M608 I609 L610 Q611 G612 M613 Q614 V615 P616 D617 L618 L619 S620 S621 C622 M623 V624 I625 E626 E627 I628 P629 L630 T631 L632 Q633 N634 A635 R636 D637 L638 T639 I640 R641 I642 K643 ASN VAL GLY ALA GLU PHE GLY LYS T652 K653 T654 D655 K656 L657 V658 S659 S660 F661 F662 L663
K664 Y665 G668 L669 L670 T671 V672 R673 F674 S675 P676 V677 W678 T679 F682 D683 T684 L685 P686 N687 V688 Y689 T690 K691 D692 E693 A694 L695 V696 W697 K698 L699 V700 L701 S702 F703 I704 K705 L706 P707 D708 E709 N710 Q711 N712 L713 D714 Y715 Y716 Q717 P718 L719 L720 E721 D722 G723 A724 N725
K726 V727 L728 W729 D730 S731 S732 V733 V734 R735 L736 R737 D738 T739 I740 F743 S744 H745 I746 W747 S748 T752 Q753 N754 T755 S756 I757 I758 S759 T760 T761 I762 E763 R764 R765 G766 N767 Y770 P771 I772 L773 I774 R775 N776 Q777 A778 L779 K780 V781 M782 L783 S784 I785 P786 Q787 V788 A789
E790 N791 H792 F793 V794 D795 I796 A797 P798 F799 V800 Y801 N802 D803 F804 K805 T806 Y807 K808 D809 E810 E811 D812 M813 E814 N815 E816 R817 V818 I819 T820 G821 S822 E825 V826 D827 R828 N829 V830 F831 L832 K833 T834 L835 S836 K837 F838 K839 N840 I841 K842 N843 V844 Y845 S846 A847 T848 E849 L850
H851 D852 H853 L854 M855 V856 L857 L858 G859 S860 R861 N862 T863 D864 V865 Q866 K867 L868 A869 L870 D871 A872 L873 L874 A875 Y876 K877 N878 P879 T880 L881 N882 K883 Y884 R885 D886 N887 L888 K889 N890 L891 L892 D893 D894 T895 L896 F897 K898 D899 E900 I901 T902 T903 F904 L905 T906 E907 N908 G909 S910
Q911 S912 I913 K914 A915 E916 D917 E918 K919 V920 Y921 M922 P923 Y924 R927 I928 G931 R932 A933 Q934 V935 P936 P937 T938 S939 G940 Q941 K942 R943 S944 R945 K946 I947 A948 Y949 I950 S951 Y952 L953 P954 N955 I961 F964 S969 E970 D973 Y974 N975 Y976 F977 F978 G979 N980 S981
H982 Q983 I984 N985 S986 S987 K988 A989 T990 L991 R995 T998 G999 F1000 V1001 N1002 I1003 V1004 N1005 S1006 T1007 V1010 V1022 L1023 Q1024 P1025 S1029 I1030 A1031 M1032 A1033 Y1034 Y1035 V1036 L1037 D1038 T1039 E1040 S1041 T1042 E1043 E1044 V1045 H1046 L1047 R1048 K1049 M1050 A1051 S1052 N1053 L1054 R1055 Q1056 Q1057
G1058 L1059 K1060 C1061 L1062 S1063 S1064 V1065 F1066 V1069 G1070 N1071 T1072 F1073 D1074 W1075 S1076 T1077 S1078 D1081 A1084 V1087 K1088 P1089 R1090 I1091 S1092 H1093 F1094 S1095 D1096 E1097 N1098 L1099 Q1100 Q1101 P1102 S1103 S1104 L1105 L1106 R1107 L1108 F1109 L1110 Y1111 W1112 A1113 H1114 N1115 P1116 S1117 L1118 Y1119 Q1120 F1121
L1122 Y1123 Y1124 D1125 E1126 F1127 A1128 T1129 A1130 T1131 A1132 L1133 M1134 D1135 T1136 I1137 S1138 N1139 Q1140 H1141 V1142 K1143 E1144 A1145 V1146 I1147 G1148 P1149 I1150 I1151 E1152 A1153 A1154 D1155 S1156 I1157 I1158 R1159 N1160 P1161 V1162 N1163 D1164 D1165 H1166 Y1167 V1168 D1169 L1170 V1171 T1172 L1173 I1174 C1175 T1176 S1177 C1178 L1179 K1180 I1181
L1182 P1183 S1184 L1185 Y1186 V1187 K1188 L1189 S1190 D1191 S1192 N1193 S1194 I1195 S1196 T1197 F1198 L1199 N1200 L1201 L1202 V1203 S1204 I1205 T1206 E1207 M1208 G1209 F1210 I1211 Q1212 D1213 D1214 H1215 V1216 R1217 S1218 R1219 L1220 I1221 S1222 S1223 L1224 I1225 S1226 H1227 L1228 K1229 G1230 K1231 L1232 K1233 K1234 L1235 Q1236 E1237 N1238 D1239 T1240 Q1241
K1242 I1243 L1244 K1245 I1246 L1247 K1248 L1249 I1250 V1251 F1252 N1253 Y1254 N1255 C1256 S1257 W1258 S1259 D1260 I1261 E1262 E1263 L1264 Y1265 T1266 T1267 I1268 S1269 S1270 L1271 F1272 K1273 T1274 F1275 D1276 E1277 R1278 N1279 L1280 R1281 V1282 S1283 L1284 T1285 E1286 L1287 F1288 I1289 E1290 R1293 K1294 V1295 P1296 E1297 L1298 E1299 S1300 I1301 S1302
K1303 L1304 V1305 A1306 D1307 L1308 N1309 S1310 Y1311 S1312 S1313 S1314 R1315 M1316 H1317 E1318 Y1319 D1320 F1321 P1322 ARG ILE LEU SER THR PHE LYS GLY LEU ILE GLU ASP GLY TYR LYS SER TYR SER GLU LEU GLU TRP LEU PRO LEU LEU PHE THR PHE LEU HIS PHE ILE ASN ASN LYS GLU GLU LEU ALA


LEU ARG THR ASN ALA SER HIS ALA ILE MET LYS PHE ILE D1376 F1377 I1378 N1379 E1380 K1381 P1382 N1383 L1384 N1385 E1386 A1387 S1388 K1389 S1390 I1391 S1392 M1393 L1394 K1395 D1396 I1397 L1398 L1399 P1400 N1401 I1402 R1403 I1404 G1405 L1406 R1407 D1408 S1409 L1410 E1411 E1412 V1413 GLN SER GLU TYR VAL SER V1420 L1421 S1422
Y1423 M1424 V1425 K1426 N1427 T1428 K1429 Y1430 F1431 T1432 D1433 F1434 E1435 D1436 I1439 L1440 L1441 Y1442 N1443 G1444 D1445 E1446 E1447 A1448 D1449 PHE PHE THR ASN VAL ASN HIS ILE GLN LEU HIS R1461 R1462 Q1463 R1464 A1465 I1466 K1467 R1468 L1469 G1470 E1471 H1472 A1473 H1474 Q1475 L1476 K1477 D1478 N1479 S1480 I1481 S1482 H1483
Y1484 L1485 I1486 P1487 M1488 I1489 E1490 H1491 Y1492 V1493 F1494 S1495 D1496 D1497 E1498 R1499 Y1500 R1501 N1502 I1503 G1504 N1505 E1506 T1507 Q1508 I1509 A1510 I1511 G1512 G1513 L1514 A1515 Q1516 H1517 M1518 S1519 W1520 N1521 K1524 A1525 L1526 L1527 R1528 R1529 Y1530 I1531 S1532 M1533 L1534 K1535 T1536 K1537 P1538 N1539 Q1540 M1541 K1542 Q1543 A1544
V1545 Q1546 L1547 I1548 VAL GLN LEU SER VAL PRO LEU ARG GLU T1558 I1561 V1562 G1565 A1566 E1567 S1568 K1569 L1570 T1571 L1572 S1573 K1574 F1575 P1576 S1577 ASN LEU ASP GLU PRO SER ASN PHE ILE LYS GLN GLU LEU TYR PRO THR LEU SER LYS ILE LEU GLY THR ARG ASP ASP GLU THR ILE
ILE E1608 R1609 M1610 P1611 I1612 A1613 E1614 A1615 L1616 V1617 N1618 I1619 V1620 L1621 G1622 L1623 T1624 N1625 D1626 D1627 I1628 T1629 N1630 F1631 L1632 P1633 S1634 I1635 L1636 T1637 N1638 I1639 C1640 Q1641 V1642 L1643 R1644 S1645 E1648 E1649 L1650 R1651 D1652 A1653 V1654 G1659 S1662 L1670 V1671 F1672 E1676 A1679
K1682 R1683 G1684 S1685 Q1686 I1687 H1688 Y1692 Y1696 K1706 H1707 S1708 D1709 L1710 S1713 M1716 I1717 E1723 G1727 F1728 A1729 G1730 E1731 E1732 K1733 D1734 S1735 E1736 N1737 Y1738 H1739 T1740 K1741 V1742 K1743 E1744 I1745 K1746 K1749 S1750 Y1751 D1752 A1753 G1754 L1757 N1760 I1761 S1762 L1763 T1764
E1765 F1766 G1767 T1768 L1769 L1770 R1780 I1781 N1782 L1783 R1784 N1785 L1792 L1793 R1794 L1797 H1802 N1803 S1804 E1809 K1813 F1814 C1815 E1821 S1822 E1823 MET SER ASN SER PRO GLN ILE PRO LYS LYS LYS VAL LYS ASP GLN VAL ASP GLU LYS GLU ASP PHE PHE LEU VAL ASN LEU
GLU SER LYS SER THR TYR THR ILE ASN SER ASN S1861 L1862 D1874 R1882 H1883 R1884 S1885 F1886 L1887 T1888 H1891 L1892 E1893 I1896 R1900 D1901 L1904 S1905 E1906 N1907 E1908 D1925 F1926 S1927 D1928 E1929 S1930 S1931 E1932 S1950 L1963 H1969 T1970 D1971 S1972 T1973 L1974 K1975 D1976
E1992 R1995 I2011 M2012 L2013 P2014 E2015 L2016 Y2017 D2018 K2033 Y2044 L2047 M2048 E2049 Y2050 D2051 Q2052 S2053 K2054 L2057 E2058 K2059 Q2060 F2061 V2065 L2082 L2085 I2086 K2089 ALA ASN P2092 A2093 S2096 K2097 L2098 S2099 F2103 L2104 A2105 N2112 D2113 D2114 A2115 A2122
S2123 V2124 L2125 I2126 L2130 L2133 E2134 N2135 K2136 D2137 L2138 E2139 I2140 V2141 E2142 K2143 A2147 TRP LEU LYS GLN VAL D2153 N2154 A2155 S2156 F2157 L2162 R2163 T2164 Y2165 K2166 V2167 TYR LEU LYS S2171 I2172 G2173 F2174 E2175 H2176 T2177 I2178 E2179 L2180 L2183 K2186 R2187 I2188 R2189 TYR ILE LEU
SER ASP THR SER VAL GLY SER GLU HIS GLN TRP ASP LEU VAL TYR SER ALA LEU ASN THR F2213 S2214 S2215 Y2216 S2222 V2223 Y2224 K2225 H2226 G2227 PHE LYS ASP ILE W2232 D2233 G2234 I2235 I2236 T2237 C2238 L2239 L2240 Y2241 P2242 H2243 S2244 W2245 V2246 ARG GLN SER ALA A2251 N2252 L2253 V2254 H2255 Q2256
L2257 I2258 A2259 N2260 K2261 D2262 K2263 L2264 E2265 I2266 S2267 L2268 T2269 ASN LEU GLU ILE GLN T2275 I2276 A2277 T2278 R2279 I2280 L2281 H2282 Q2283 L2284 G2285 A2286 P2287 S2288 I2289 P2290 GLU ASN LEU A2294 N2295 V2296 S2297 I2298 K2299 T2300 L2301 V2302 S2305 I2306 L2307 W2308 K2309 E2310 Q2311 ARG THR PRO PHE ILE MET
ASP VAL SER LYS GLN T2323 G2324 E2325 D2326 L2327 K2328 Y2329 T2330 T2331 A2332 I2333 D2334 Y2335 M2336 V2337 T2338 R2339 ILE GLY G2342 I2343 I2344 R2345 S2346 D2347 E2348 H2349 R2350 M2351 D2352 S2353 F2354 M2355 S2356 K2357 LYS ALA CYS ILE GLN LEU LEU A2365 L2366 L2367 V2368 Q2369 V2370 L2371 D2372 E2373 D2374 E2375 V2376 I2377



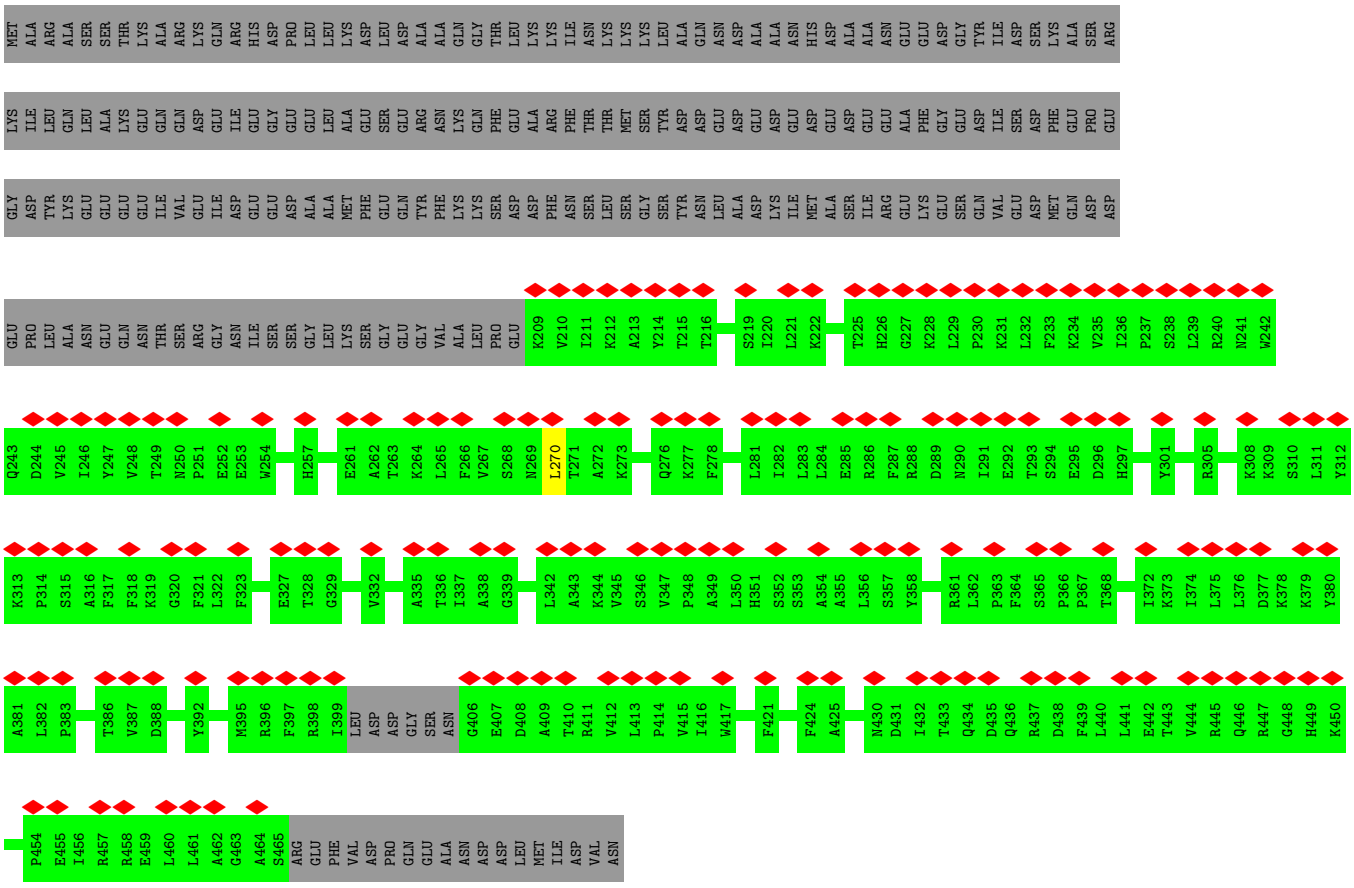

• Molecule 63: U3 small nucleolar RNA-associated protein 14

Chain RQ:

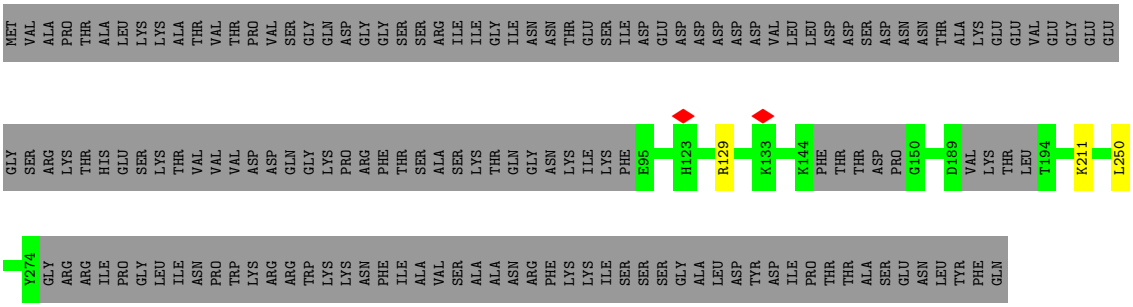

• Molecule 64: Essential nuclear protein 1

Chain RS:



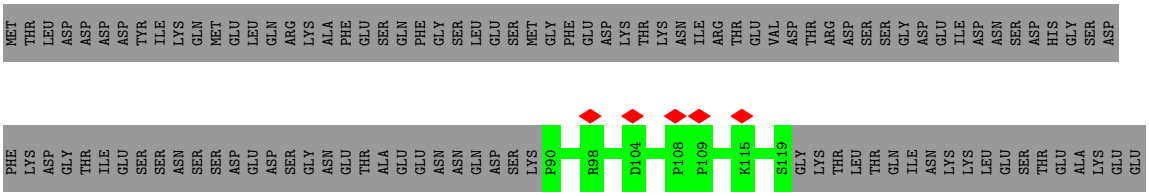
• Molecule 65: Pno1

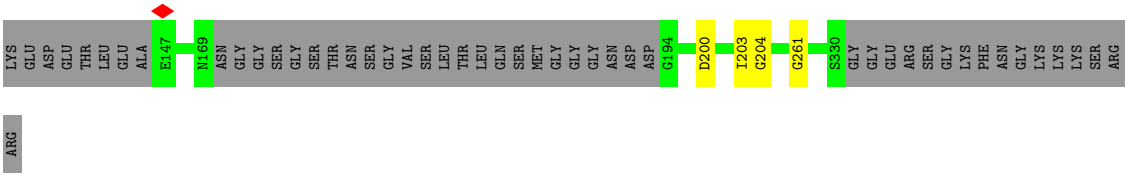
Chain RT:

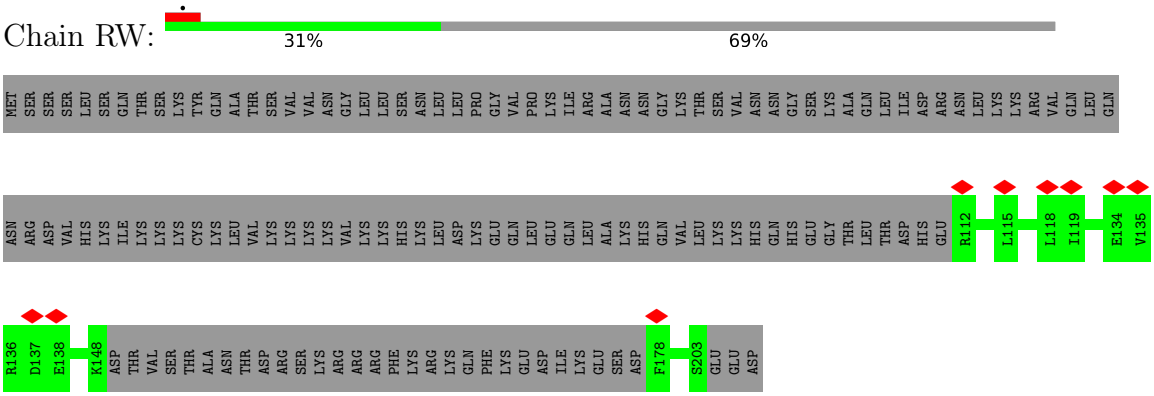
• Molecule 66: Protein FAF1

Chain RV:

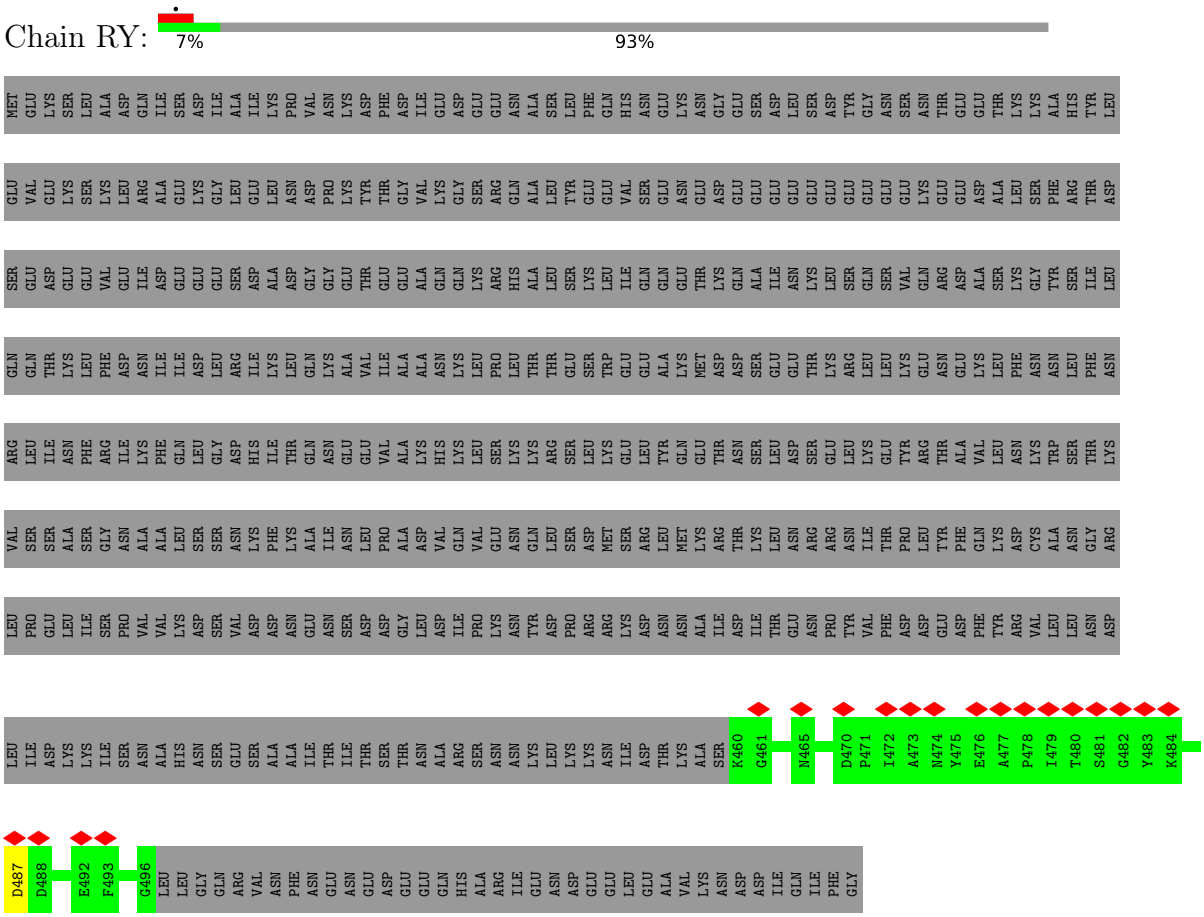






• Molecule 67: Regulator of rDNA transcription protein 14

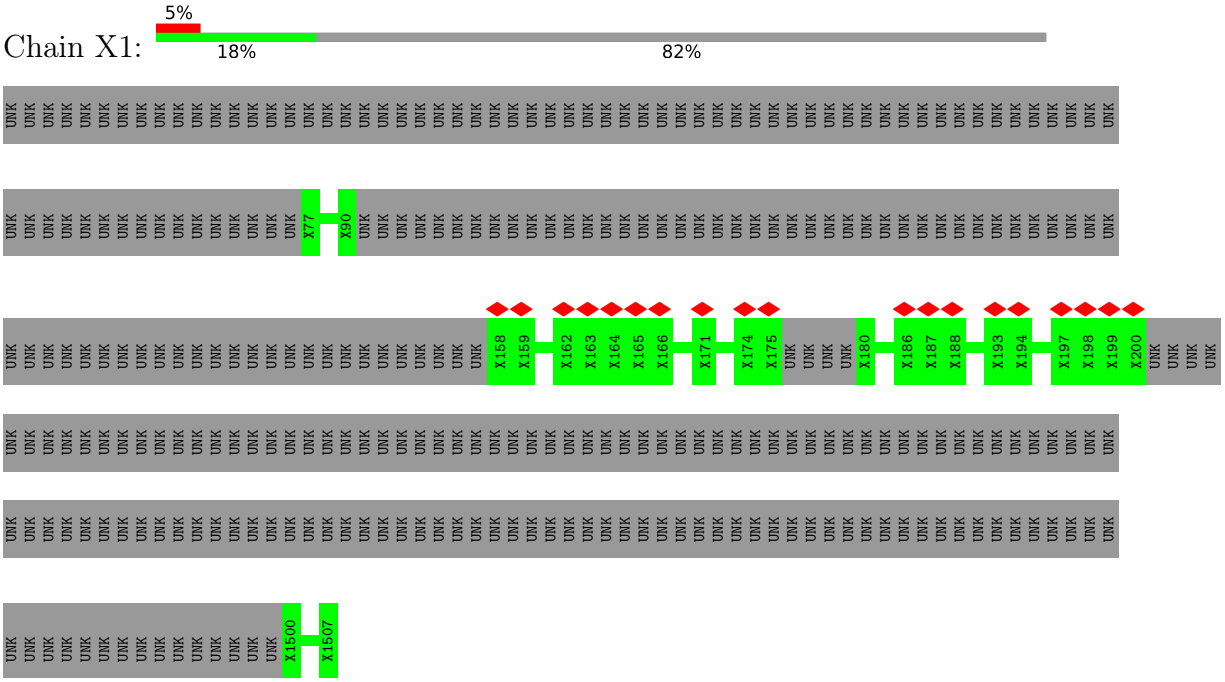



• Molecule 68: Protein BFR2




• Molecule 69: Unassigned helices

Chain X1:


5%
18%
82%
UNK
X77
X90
X158
X159
X162
X163
X164
X165
X166
X171
X174
X175
X180
X186
X187
X188
X193
X194
X197
X198
X199
X200
X1500
X1507

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 71230 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 50 | Depositor |
| Minimum defocus (nm) | 1500 | Depositor |
| Maximum defocus (nm) | 2500 | Depositor |
| Magnification | Not provided | |
| Image detector | GATAN K2 SUMMIT (4k x 4k) | Depositor |
| Maximum map value | 0.246 | Depositor |
| Minimum map value | -0.115 | Depositor |
| Average map value | 0.001 | Depositor |
| Map value standard deviation | 0.006 | Depositor |
| Recommended contour level | 0.03 | Depositor |
| Map size (Å) | 597.632, 597.632, 597.632 | wwPDB |
| Map dimensions | 448, 448, 448 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.334, 1.334, 1.334 | Depositor |

# 5 Model quality (i)

## 5.1 Standard geometry (i)

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

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 | 3A | 0.92 | 0/4141 | 1.17 | 24/6433 (0.4%) |
| 2 | 5A | 0.84 | 0/12485 | 1.11 | 48/19449 (0.2%) |
| 3 | SA | 0.71 | 0/31590 | 1.16 | 247/49182 (0.5%) |
| 4 | SC | 0.47 | 0/1856 | 0.73 | 5/2490 (0.2%) |
| 5 | SF | 0.35 | 0/1854 | 0.66 | 1/2504 (0.0%) |
| 6 | SG | 0.53 | 0/1690 | 0.64 | 0/2285 |
| 7 | SH | 0.31 | 0/1341 | 0.60 | 0/1789 |
| 8 | SI | 0.38 | 0/1341 | 0.67 | 1/1806 (0.1%) |
| 9 | SJ | 0.31 | 0/1347 | 0.59 | 1/1801 (0.1%) |
| 10 | SK | 0.47 | 0/1410 | 0.60 | 0/1888 |
| 11 | SM | 0.31 | 0/1020 | 0.58 | 0/1374 |
| 12 | SN | 0.32 | 0/873 | 0.73 | 1/1185 (0.1%) |
| 13 | SO | 0.45 | 0/1109 | 0.62 | 0/1495 |
| 14 | SP | 0.49 | 0/879 | 0.68 | 0/1186 |
| 15 | SR | 0.58 | 0/990 | 0.73 | 1/1335 (0.1%) |
| 16 | ST | 0.38 | 0/980 | 0.63 | 0/1319 |
| 17 | SX | 0.51 | 0/1020 | 0.66 | 1/1371 (0.1%) |
| 18 | SY | 0.54 | 0/798 | 0.67 | 1/1065 (0.1%) |
| 19 | SZ | 0.43 | 0/822 | 0.64 | 0/1103 |
| 20 | Sc | 0.44 | 0/613 | 0.65 | 0/828 |
| 21 | Sd | 0.54 | 0/499 | 0.66 | 0/670 |
| 22 | 3B | 0.59 | 0/1901 | 0.66 | 1/2567 (0.0%) |
| 22 | 3C | 0.44 | 0/1796 | 0.62 | 1/2424 (0.0%) |
| 23 | 3D | 0.44 | 0/2891 | 0.63 | 3/3895 (0.1%) |
| 24 | 3E | 0.41 | 0/3059 | 0.62 | 3/4153 (0.1%) |
| 25 | 3F | 0.42 | 0/3715 | 0.64 | 2/5001 (0.0%) |
| 26 | 3G | 0.52 | 0/928 | 0.76 | 1/1262 (0.1%) |
| 26 | 3H | 0.47 | 0/928 | 0.69 | 2/1262 (0.2%) |
| 27 | A4 | 0.47 | 0/5321 | 0.66 | 5/7207 (0.1%) |
| 28 | A5 | 0.48 | 0/4044 | 0.68 | 5/5493 (0.1%) |
| 29 | A8 | 0.30 | 0/3328 | 0.61 | 0/4565 |
| 30 | A9 | 0.31 | 0/951 | 0.58 | 1/1287 (0.1%) |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 31 | AE | 0.37 | 0/10049 | 0.56 | 6/13737 (0.0%) |
| 32 | AF | 0.53 | 0/3993 | 0.67 | 4/5413 (0.1%) |
| 33 | AG | 0.47 | 0/6699 | 0.65 | 3/9077 (0.0%) |
| 34 | B1 | 0.64 | 0/6780 | 0.68 | 7/9175 (0.1%) |
| 35 | B2 | 0.43 | 0/6853 | 0.67 | 3/9256 (0.0%) |
| 36 | B3 | 0.39 | 0/6014 | 0.69 | 7/8137 (0.1%) |
| 37 | B8 | 0.58 | 0/3848 | 0.66 | 4/5218 (0.1%) |
| 38 | BE | 0.57 | 0/6948 | 0.66 | 7/9391 (0.1%) |
| 39 | B6 | 0.45 | 0/2849 | 0.58 | 1/3853 (0.0%) |
| 40 | 5B | 0.34 | 0/499 | 0.62 | 0/659 |
| 41 | 5C | 0.58 | 0/4321 | 0.68 | 5/5832 (0.1%) |
| 42 | 5D | 0.50 | 0/1998 | 0.66 | 3/2644 (0.1%) |
| 43 | 5E | 0.47 | 0/1665 | 0.64 | 1/2233 (0.0%) |
| 44 | 5F | 0.66 | 0/1559 | 0.73 | 2/2097 (0.1%) |
| 45 | 5G | 0.56 | 0/2337 | 0.66 | 1/3148 (0.0%) |
| 46 | 5H | 0.45 | 0/1074 | 0.56 | 0/1422 |
| 47 | 5I | 0.61 | 0/3844 | 0.66 | 2/5174 (0.0%) |
| 48 | 5J | 0.42 | 0/1302 | 0.54 | 0/1728 |
| 49 | 5K | 0.56 | 0/1426 | 0.66 | 1/1917 (0.1%) |
| 50 | RA | 0.34 | 0/2769 | 0.67 | 1/3753 (0.0%) |
| 51 | RB | 0.38 | 0/1121 | 0.62 | 0/1487 |
| 52 | RC | 0.46 | 0/2245 | 0.60 | 0/3021 |
| 53 | RE | 0.38 | 0/8924 | 0.62 | 6/12070 (0.0%) |
| 54 | RF | 0.34 | 0/2004 | 0.63 | 2/2697 (0.1%) |
| 55 | RG | 0.39 | 0/1727 | 0.68 | 2/2329 (0.1%) |
| 55 | RH | 0.42 | 0/1828 | 0.61 | 0/2470 |
| 56 | RI | 0.46 | 0/2080 | 0.65 | 0/2797 |
| 57 | RJ | 0.50 | 0/6514 | 0.60 | 1/8768 (0.0%) |
| 58 | RK | 0.44 | 0/2832 | 0.65 | 3/3825 (0.1%) |
| 59 | RL | 0.29 | 0/4549 | 0.50 | 0/6241 |
| 59 | RM | 0.25 | 0/3765 | 0.47 | 0/5218 |
| 60 | RN | 0.36 | 0/4591 | 0.58 | 2/6187 (0.0%) |
| 61 | RO | 0.38 | 0/3849 | 0.62 | 5/5261 (0.1%) |
| 62 | RP | 0.28 | 0/12230 | 0.51 | 5/16819 (0.0%) |
| 63 | RQ | 0.46 | 0/1678 | 0.58 | 0/2282 |
| 64 | RS | 0.33 | 0/2104 | 0.67 | 1/2854 (0.0%) |
| 65 | RT | 0.42 | 0/1379 | 0.63 | 1/1853 (0.1%) |
| 66 | RV | 0.47 | 0/1456 | 0.63 | 2/1937 (0.1%) |
| 67 | RW | 0.34 | 0/385 | 0.50 | 0/529 |
| 68 | RY | 0.29 | 0/307 | 0.51 | 0/415 |
| All | All | 0.53 | 0/239915 | 0.77 | 443/334598 (0.1%) |

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 |
|---|---|---|---|
| 4 | SC | 0 | 1 |
| 5 | SF | 0 | 2 |
| 8 | SI | 0 | 3 |
| 9 | SJ | 0 | 1 |
| 11 | SM | 0 | 1 |
| 13 | SO | 0 | 1 |
| 14 | SP | 0 | 1 |
| 16 | ST | 0 | 1 |
| 19 | SZ | 0 | 1 |
| 20 | Sc | 0 | 1 |
| 23 | 3D | 0 | 3 |
| 24 | 3E | 0 | 1 |
| 25 | 3F | 0 | 1 |
| 26 | 3G | 0 | 2 |
| 26 | 3H | 0 | 1 |
| 27 | A4 | 0 | 1 |
| 28 | A5 | 0 | 1 |
| 29 | A8 | 0 | 4 |
| 33 | AG | 0 | 2 |
| 34 | B1 | 0 | 3 |
| 35 | B2 | 0 | 9 |
| 36 | B3 | 0 | 11 |
| 38 | BE | 0 | 1 |
| 41 | 5C | 0 | 2 |
| 42 | 5D | 0 | 1 |
| 43 | 5E | 0 | 1 |
| 44 | 5F | 0 | 1 |
| 45 | 5G | 0 | 1 |
| 47 | 5I | 0 | 2 |
| 50 | RA | 0 | 2 |
| 51 | RB | 0 | 1 |
| 53 | RE | 0 | 1 |
| 54 | RF | 0 | 1 |
| 57 | RJ | 0 | 2 |
| 58 | RK | 0 | 1 |
| 59 | RL | 0 | 1 |
| 59 | RM | 0 | 1 |
| 60 | RN | 0 | 1 |
| 61 | RO | 0 | 1 |
| 62 | RP | 0 | 3 |

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 63 | RQ | 0 | 1 |
| 66 | RV | 0 | 2 |
| All | All | 0 | 79 |

There are no bond length outliers.

All (443) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 861 | U | C2-N1-C1' | 10.60 | 130.42 | 117.70 |
| 3 | SA | 376 | C | N1-C2-O2 | 10.43 | 125.16 | 118.90 |
| 3 | SA | 1174 | C | N1-C2-O2 | 10.35 | 125.11 | 118.90 |
| 44 | 5F | 13 | LEU | CA-CB-CG | 10.29 | 138.96 | 115.30 |
| 3 | SA | 1034 | C | C5-C6-N1 | 10.00 | 126.00 | 121.00 |
| 28 | A5 | 25 | ASP | CB-CG-OD1 | 9.52 | 126.87 | 118.30 |
| 26 | 3G | 67 | LEU | CA-CB-CG | 9.36 | 136.82 | 115.30 |
| 3 | SA | 1274 | C | C6-N1-C2 | -9.01 | 116.70 | 120.30 |
| 2 | 5A | 312 | U | P-O3'-C3' | 8.94 | 130.43 | 119.70 |
| 4 | SC | 54 | LEU | CA-CB-CG | 8.93 | 135.85 | 115.30 |
| 3 | SA | 1743 | U | N1-C2-O2 | 8.93 | 129.05 | 122.80 |
| 3 | SA | 1451 | C | N3-C2-O2 | -8.87 | 115.69 | 121.90 |
| 53 | RE | 924 | LEU | CA-CB-CG | 8.78 | 135.50 | 115.30 |
| 3 | SA | 1274 | C | C2-N1-C1' | 8.73 | 128.40 | 118.80 |
| 3 | SA | 1174 | C | N3-C2-O2 | -8.70 | 115.81 | 121.90 |
| 2 | 5A | 310 | U | N3-C2-O2 | -8.64 | 116.15 | 122.20 |
| 1 | 3A | 200 | C | C2-N1-C1' | 8.62 | 128.29 | 118.80 |
| 3 | SA | 1254 | U | N1-C2-O2 | 8.57 | 128.80 | 122.80 |
| 31 | AE | 95 | ASP | CB-CG-OD1 | 8.49 | 125.94 | 118.30 |
| 3 | SA | 376 | C | C2-N1-C1' | 8.42 | 128.06 | 118.80 |
| 1 | 3A | 89 | C | C2-N1-C1' | 8.41 | 128.05 | 118.80 |
| 3 | SA | 258 | C | N1-C2-O2 | 8.38 | 123.93 | 118.90 |
| 3 | SA | 1451 | C | C6-N1-C2 | -8.29 | 116.98 | 120.30 |
| 3 | SA | 1174 | C | C2-N1-C1' | 8.29 | 127.92 | 118.80 |
| 3 | SA | 1743 | U | C2-N1-C1' | 8.23 | 127.58 | 117.70 |
| 3 | SA | 1274 | C | C5-C6-N1 | 8.22 | 125.11 | 121.00 |
| 2 | 5A | 355 | C | C2-N1-C1' | 8.18 | 127.80 | 118.80 |
| 3 | SA | 607 | G | N3-C4-C5 | -8.17 | 124.52 | 128.60 |
| 1 | 3A | 200 | C | N1-C2-O2 | 8.15 | 123.79 | 118.90 |
| 3 | SA | 275 | C | N1-C2-O2 | 8.10 | 123.76 | 118.90 |
| 3 | SA | 607 | G | C2-N3-C4 | 8.05 | 115.93 | 111.90 |
| 22 | 3B | 306 | LEU | CA-CB-CG | 8.05 | 133.82 | 115.30 |
| 3 | SA | 166 | C | N1-C2-O2 | 7.97 | 123.68 | 118.90 |
| 3 | SA | 1254 | U | N3-C2-O2 | -7.94 | 116.64 | 122.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 1053 | G | O5'-P-OP1 | -7.94 | 98.55 | 105.70 |
| 37 | B8 | 521 | LEU | CA-CB-CG | 7.91 | 133.49 | 115.30 |
| 1 | 3A | 89 | C | C6-N1-C2 | -7.88 | 117.15 | 120.30 |
| 3 | SA | 1274 | C | N1-C2-O2 | 7.84 | 123.61 | 118.90 |
| 3 | SA | 374 | U | C2-N1-C1' | 7.83 | 127.10 | 117.70 |
| 2 | 5A | 399 | U | C5-C6-N1 | 7.83 | 126.61 | 122.70 |
| 3 | SA | 258 | C | C2-N1-C1' | 7.80 | 127.38 | 118.80 |
| 2 | 5A | 340 | U | C5-C6-N1 | 7.79 | 126.59 | 122.70 |
| 3 | SA | 607 | G | C4-N9-C1' | 7.78 | 136.62 | 126.50 |
| 50 | RA | 10 | ASP | CB-CG-OD1 | 7.73 | 125.26 | 118.30 |
| 3 | SA | 376 | C | N3-C2-O2 | -7.72 | 116.50 | 121.90 |
| 1 | 3A | 201 | C | N1-C2-O2 | 7.70 | 123.52 | 118.90 |
| 3 | SA | 1703 | C | N3-C2-O2 | -7.68 | 116.53 | 121.90 |
| 3 | SA | 374 | U | N1-C2-O2 | 7.67 | 128.17 | 122.80 |
| 1 | 3A | 89 | C | N1-C2-O2 | 7.66 | 123.50 | 118.90 |
| 66 | RV | 200 | ASP | CB-CG-OD1 | 7.66 | 125.19 | 118.30 |
| 1 | 3A | 89 | C | C5-C6-N1 | 7.59 | 124.79 | 121.00 |
| 3 | SA | 861 | U | C6-N1-C1' | -7.57 | 110.60 | 121.20 |
| 3 | SA | 1254 | U | C2-N1-C1' | 7.55 | 126.76 | 117.70 |
| 2 | 5A | 91 | U | C5-C6-N1 | 7.45 | 126.42 | 122.70 |
| 27 | A4 | 225 | LEU | CA-CB-CG | 7.45 | 132.43 | 115.30 |
| 3 | SA | 1518 | C | N1-C2-O2 | 7.44 | 123.36 | 118.90 |
| 64 | RS | 270 | LEU | CA-CB-CG | 7.36 | 132.24 | 115.30 |
| 38 | BE | 536 | LEU | CA-CB-CG | 7.35 | 132.21 | 115.30 |
| 3 | SA | 1258 | U | C2-N1-C1' | 7.28 | 126.44 | 117.70 |
| 2 | 5A | 310 | U | N1-C2-O2 | 7.28 | 127.89 | 122.80 |
| 2 | 5A | 90 | G | O4'-C1'-N9 | 7.25 | 114.00 | 108.20 |
| 3 | SA | 275 | C | C2-N1-C1' | 7.25 | 126.77 | 118.80 |
| 3 | SA | 1760 | G | C4-N9-C1' | 7.24 | 135.91 | 126.50 |
| 65 | RT | 250 | LEU | CA-CB-CG | 7.24 | 131.94 | 115.30 |
| 3 | SA | 1228 | G | N3-C4-C5 | -7.23 | 124.99 | 128.60 |
| 3 | SA | 579 | A | P-O3'-C3' | 7.14 | 128.27 | 119.70 |
| 32 | AF | 469 | LEU | CA-CB-CG | 7.14 | 131.73 | 115.30 |
| 60 | RN | 662 | LEU | CA-CB-CG | 7.13 | 131.69 | 115.30 |
| 28 | A5 | 24 | LEU | CA-CB-CG | 7.09 | 131.62 | 115.30 |
| 2 | 5A | 312 | U | C5-C6-N1 | -7.09 | 119.16 | 122.70 |
| 3 | SA | 311 | U | N1-C2-O2 | 7.09 | 127.76 | 122.80 |
| 2 | 5A | 173 | G | P-O3'-C3' | 7.07 | 128.18 | 119.70 |
| 3 | SA | 272 | U | P-O3'-C3' | 7.05 | 128.16 | 119.70 |
| 3 | SA | 1451 | C | N1-C2-O2 | 7.04 | 123.13 | 118.90 |
| 41 | 5C | 144 | LEU | CA-CB-CG | 7.04 | 131.49 | 115.30 |
| 23 | 3D | 292 | LEU | CA-CB-CG | 7.00 | 131.39 | 115.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 1056 | U | N1-C2-O2 | 6.97 | 127.68 | 122.80 |
| 3 | SA | 1518 | C | C2-N1-C1' | 6.97 | 126.46 | 118.80 |
| 26 | 3H | 65 | LEU | CB-CG-CD1 | -6.96 | 99.17 | 111.00 |
| 3 | SA | 1258 | U | N1-C2-O2 | 6.96 | 127.67 | 122.80 |
| 1 | 3A | 248 | G | O4'-C1'-N9 | 6.93 | 113.75 | 108.20 |
| 3 | SA | 374 | U | N3-C2-O2 | -6.92 | 117.35 | 122.20 |
| 3 | SA | 280 | U | N3-C2-O2 | -6.92 | 117.36 | 122.20 |
| 3 | SA | 1760 | G | N3-C4-N9 | 6.86 | 130.12 | 126.00 |
| 3 | SA | 1743 | U | C6-N1-C1' | -6.85 | 111.61 | 121.20 |
| 3 | SA | 1760 | G | N3-C4-C5 | -6.84 | 125.18 | 128.60 |
| 3 | SA | 381 | C | N3-C2-O2 | -6.83 | 117.12 | 121.90 |
| 3 | SA | 1034 | C | C6-N1-C2 | -6.83 | 117.57 | 120.30 |
| 3 | SA | 1704 | U | N1-C2-O2 | 6.82 | 127.57 | 122.80 |
| 3 | SA | 209 | U | N3-C2-O2 | -6.81 | 117.44 | 122.20 |
| 2 | 5A | 312 | U | OP1-P-O3' | 6.80 | 120.17 | 105.20 |
| 1 | 3A | 72 | C | C6-N1-C2 | -6.79 | 117.58 | 120.30 |
| 3 | SA | 258 | C | N3-C2-O2 | -6.79 | 117.15 | 121.90 |
| 43 | 5E | 314 | LEU | CA-CB-CG | 6.79 | 130.92 | 115.30 |
| 18 | SY | 132 | LEU | CA-CB-CG | 6.75 | 130.83 | 115.30 |
| 3 | SA | 311 | U | C2-N1-C1' | 6.73 | 125.77 | 117.70 |
| 3 | SA | 1174 | C | C6-N1-C2 | -6.71 | 117.62 | 120.30 |
| 3 | SA | 56 | U | P-O3'-C3' | 6.70 | 127.74 | 119.70 |
| 35 | B2 | 757 | ASP | CB-CG-OD1 | 6.69 | 124.32 | 118.30 |
| 2 | 5A | 399 | U | C2-N1-C1' | 6.69 | 125.72 | 117.70 |
| 2 | 5A | 219 | U | C2-N1-C1' | 6.68 | 125.71 | 117.70 |
| 2 | 5A | 219 | U | C5-C6-N1 | 6.67 | 126.04 | 122.70 |
| 3 | SA | 607 | G | N3-C4-N9 | 6.67 | 130.00 | 126.00 |
| 3 | SA | 545 | A | O4'-C1'-N9 | 6.67 | 113.54 | 108.20 |
| 3 | SA | 1527 | C | N1-C2-O2 | 6.66 | 122.90 | 118.90 |
| 2 | 5A | 358 | G | P-O3'-C3' | 6.66 | 127.69 | 119.70 |
| 3 | SA | 1258 | U | N3-C2-O2 | -6.65 | 117.55 | 122.20 |
| 3 | SA | 1661 | U | C5-C6-N1 | 6.65 | 126.03 | 122.70 |
| 2 | 5A | 355 | C | N1-C2-O2 | 6.64 | 122.89 | 118.90 |
| 3 | SA | 1496 | U | N3-C2-O2 | -6.63 | 117.56 | 122.20 |
| 3 | SA | 648 | G | N3-C4-N9 | 6.63 | 129.98 | 126.00 |
| 3 | SA | 1052 | U | O4'-C1'-N1 | 6.62 | 113.50 | 108.20 |
| 3 | SA | 608 | U | C2-N1-C1' | 6.60 | 125.62 | 117.70 |
| 3 | SA | 1518 | C | N3-C2-O2 | -6.60 | 117.28 | 121.90 |
| 23 | 3D | 142 | LEU | CA-CB-CG | 6.60 | 130.47 | 115.30 |
| 39 | B6 | 18 | LEU | CA-CB-CG | 6.59 | 130.46 | 115.30 |
| 3 | SA | 1476 | C | C2-N1-C1' | 6.55 | 126.00 | 118.80 |
| 3 | SA | 864 | U | C2-N1-C1' | 6.53 | 125.54 | 117.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 26 | 3H | 65 | LEU | CA-CB-CG | 6.52 | 130.30 | 115.30 |
| 3 | SA | 280 | U | N1-C2-O2 | 6.51 | 127.36 | 122.80 |
| 3 | SA | 1175 | U | N3-C2-O2 | -6.50 | 117.65 | 122.20 |
| 3 | SA | 1274 | C | N3-C2-O2 | -6.49 | 117.35 | 121.90 |
| 32 | AF | 327 | LEU | CA-CB-CG | 6.49 | 130.24 | 115.30 |
| 57 | RJ | 252 | LEU | CA-CB-CG | 6.49 | 130.24 | 115.30 |
| 3 | SA | 280 | U | C2-N1-C1' | 6.49 | 125.48 | 117.70 |
| 3 | SA | 401 | A | P-O3'-C3' | 6.49 | 127.48 | 119.70 |
| 34 | B1 | 717 | LEU | CA-CB-CG | 6.46 | 130.16 | 115.30 |
| 3 | SA | 302 | U | N3-C2-O2 | -6.45 | 117.68 | 122.20 |
| 3 | SA | 1535 | U | N3-C2-O2 | -6.45 | 117.68 | 122.20 |
| 47 | 5I | 368 | ASP | CB-CG-OD1 | 6.45 | 124.10 | 118.30 |
| 28 | A5 | 452 | LEU | CA-CB-CG | 6.44 | 130.11 | 115.30 |
| 3 | SA | 166 | C | N3-C2-O2 | -6.43 | 117.40 | 121.90 |
| 4 | SC | 120 | LEU | CA-CB-CG | 6.43 | 130.08 | 115.30 |
| 3 | SA | 1031 | U | P-O3'-C3' | 6.41 | 127.39 | 119.70 |
| 1 | 3A | 250 | C | N1-C2-O2 | 6.40 | 122.74 | 118.90 |
| 3 | SA | 1232 | U | N1-C2-O2 | 6.40 | 127.28 | 122.80 |
| 3 | SA | 275 | C | N3-C2-O2 | -6.39 | 117.43 | 121.90 |
| 3 | SA | 1228 | G | C2-N3-C4 | 6.39 | 115.09 | 111.90 |
| 3 | SA | 864 | U | N3-C2-O2 | -6.38 | 117.73 | 122.20 |
| 3 | SA | 965 | U | C2-N1-C1' | 6.38 | 125.35 | 117.70 |
| 3 | SA | 1175 | U | N1-C2-O2 | 6.38 | 127.26 | 122.80 |
| 1 | 3A | 200 | C | C6-N1-C1' | -6.36 | 113.16 | 120.80 |
| 3 | SA | 1440 | C | C6-N1-C2 | -6.36 | 117.75 | 120.30 |
| 3 | SA | 648 | G | C4-N9-C1' | 6.35 | 134.75 | 126.50 |
| 3 | SA | 1496 | U | N1-C2-O2 | 6.34 | 127.24 | 122.80 |
| 2 | 5A | 443 | G | O4'-C1'-N9 | 6.31 | 113.25 | 108.20 |
| 3 | SA | 1594 | G | P-O3'-C3' | 6.29 | 127.25 | 119.70 |
| 32 | AF | 95 | LEU | CA-CB-CG | 6.29 | 129.75 | 115.30 |
| 3 | SA | 38 | C | N1-C2-O2 | 6.28 | 122.67 | 118.90 |
| 62 | RP | 48 | LEU | CA-CB-CG | 6.28 | 129.74 | 115.30 |
| 3 | SA | 1704 | U | N3-C2-O2 | -6.27 | 117.81 | 122.20 |
| 3 | SA | 1703 | C | N1-C2-O2 | 6.26 | 122.66 | 118.90 |
| 3 | SA | 827 | C | C2-N1-C1' | 6.25 | 125.68 | 118.80 |
| 3 | SA | 1056 | U | N3-C2-O2 | -6.25 | 117.83 | 122.20 |
| 45 | 5G | 152 | LEU | CA-CB-CG | 6.24 | 129.66 | 115.30 |
| 28 | A5 | 457 | LEU | CA-CB-CG | 6.23 | 129.63 | 115.30 |
| 3 | SA | 1527 | C | C2-N1-C1' | 6.19 | 125.61 | 118.80 |
| 3 | SA | 861 | U | N1-C2-O2 | 6.18 | 127.13 | 122.80 |
| 2 | 5A | 219 | U | N1-C2-O2 | 6.18 | 127.13 | 122.80 |
| 2 | 5A | 312 | U | C2-N1-C1' | -6.17 | 110.30 | 117.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 1769 | U | N1-C2-O2 | 6.17 | 127.12 | 122.80 |
| 3 | SA | 1228 | G | C4-N9-C1' | 6.16 | 134.51 | 126.50 |
| 3 | SA | 935 | U | N1-C2-O2 | 6.15 | 127.11 | 122.80 |
| 3 | SA | 1440 | C | C5-C6-N1 | 6.15 | 124.07 | 121.00 |
| 1 | 3A | 198 | U | P-O3'-C3' | 6.14 | 127.07 | 119.70 |
| 3 | SA | 1441 | C | N3-C2-O2 | -6.14 | 117.60 | 121.90 |
| 3 | SA | 864 | U | N1-C2-O2 | 6.13 | 127.09 | 122.80 |
| 1 | 3A | 200 | C | C5-C6-N1 | 6.10 | 124.05 | 121.00 |
| 3 | SA | 827 | C | N1-C2-O2 | 6.10 | 122.56 | 118.90 |
| 3 | SA | 607 | G | C8-N9-C1' | -6.10 | 119.07 | 127.00 |
| 3 | SA | 648 | G | C8-N9-C1' | -6.10 | 119.08 | 127.00 |
| 3 | SA | 209 | U | N1-C2-O2 | 6.09 | 127.07 | 122.80 |
| 3 | SA | 273 | G | C4-N9-C1' | 6.09 | 134.42 | 126.50 |
| 3 | SA | 376 | C | C6-N1-C2 | -6.09 | 117.86 | 120.30 |
| 2 | 5A | 173 | G | OP1-P-O3' | 6.08 | 118.59 | 105.20 |
| 3 | SA | 1760 | G | C8-N9-C1' | -6.08 | 119.09 | 127.00 |
| 61 | RO | 269 | LEU | CA-CB-CG | 6.08 | 129.28 | 115.30 |
| 3 | SA | 514 | G | N7-C8-N9 | 6.07 | 116.14 | 113.10 |
| 2 | 5A | 225 | U | N3-C2-O2 | -6.06 | 117.95 | 122.20 |
| 3 | SA | 1259 | U | C5-C6-N1 | 6.05 | 125.72 | 122.70 |
| 3 | SA | 1476 | C | C5-C6-N1 | 6.04 | 124.02 | 121.00 |
| 58 | RK | 117 | LEU | CA-CB-CG | 6.04 | 129.19 | 115.30 |
| 3 | SA | 1055 | U | N3-C2-O2 | -6.04 | 117.97 | 122.20 |
| 3 | SA | 1032 | G | N3-C4-N9 | 6.03 | 129.62 | 126.00 |
| 3 | SA | 311 | U | N3-C2-O2 | -6.01 | 117.99 | 122.20 |
| 3 | SA | 1439 | C | N3-C2-O2 | -6.00 | 117.70 | 121.90 |
| 2 | 5A | 492 | G | P-O3'-C3' | 6.00 | 126.90 | 119.70 |
| 3 | SA | 1620 | C | N1-C2-O2 | 6.00 | 122.50 | 118.90 |
| 34 | B1 | 521 | LEU | CA-CB-CG | 6.00 | 129.10 | 115.30 |
| 3 | SA | 575 | C | N1-C2-O2 | 5.99 | 122.50 | 118.90 |
| 3 | SA | -7 | A | P-O3'-C3' | 5.99 | 126.89 | 119.70 |
| 2 | 5A | 202 | U | C2-N1-C1' | 5.99 | 124.88 | 117.70 |
| 3 | SA | 1476 | C | C6-N1-C2 | -5.98 | 117.91 | 120.30 |
| 1 | 3A | 72 | C | C5-C6-N1 | 5.96 | 123.98 | 121.00 |
| 9 | SJ | 29 | LEU | CA-CB-CG | 5.95 | 128.99 | 115.30 |
| 2 | 5A | 172 | C | P-O3'-C3' | 5.94 | 126.83 | 119.70 |
| 2 | 5A | 225 | U | C2-N1-C1' | 5.93 | 124.82 | 117.70 |
| 2 | 5A | 422 | C | C6-N1-C2 | -5.92 | 117.93 | 120.30 |
| 3 | SA | 1228 | G | N3-C4-N9 | 5.92 | 129.55 | 126.00 |
| 3 | SA | 645 | C | N1-C2-O2 | 5.92 | 122.45 | 118.90 |
| 3 | SA | 608 | U | N1-C2-O2 | 5.91 | 126.94 | 122.80 |
| 3 | SA | 275 | C | C6-N1-C2 | -5.91 | 117.94 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 1232 | U | C2-N1-C1' | 5.91 | 124.79 | 117.70 |
| 3 | SA | 1232 | U | N3-C2-O2 | -5.91 | 118.06 | 122.20 |
| 3 | SA | 1084 | A | OP1-P-O3' | 5.91 | 118.19 | 105.20 |
| 62 | RP | 1797 | LEU | CA-CB-CG | 5.90 | 128.88 | 115.30 |
| 34 | B1 | 479 | LEU | CA-CB-CG | 5.90 | 128.87 | 115.30 |
| 3 | SA | 1216 | C | N3-C2-O2 | -5.89 | 117.77 | 121.90 |
| 3 | SA | 1769 | U | N3-C2-O2 | -5.89 | 118.07 | 122.20 |
| 3 | SA | 1084 | A | P-O3'-C3' | 5.89 | 126.77 | 119.70 |
| 3 | SA | 381 | C | N1-C2-O2 | 5.89 | 122.43 | 118.90 |
| 42 | 5D | 28 | LEU | CA-CB-CG | 5.88 | 128.82 | 115.30 |
| 3 | SA | 1034 | C | C2-N1-C1' | 5.88 | 125.26 | 118.80 |
| 3 | SA | 1679 | G | O4'-C1'-N9 | 5.88 | 112.90 | 108.20 |
| 3 | SA | 0 | U | P-O3'-C3' | 5.87 | 126.74 | 119.70 |
| 3 | SA | 1254 | U | C5-C6-N1 | 5.86 | 125.63 | 122.70 |
| 55 | RG | 96 | LEU | CA-CB-CG | 5.85 | 128.76 | 115.30 |
| 3 | SA | 562 | G | O4'-C1'-N9 | 5.84 | 112.87 | 108.20 |
| 36 | B3 | 401 | LEU | CA-CB-CG | 5.83 | 128.71 | 115.30 |
| 3 | SA | 1055 | U | N1-C2-O2 | 5.83 | 126.88 | 122.80 |
| 3 | SA | 542 | A | P-O3'-C3' | 5.83 | 126.69 | 119.70 |
| 34 | B1 | 69 | LEU | CA-CB-CG | 5.83 | 128.70 | 115.30 |
| 2 | 5A | 355 | C | C6-N1-C2 | -5.81 | 117.98 | 120.30 |
| 3 | SA | 411 | C | N1-C2-O2 | 5.79 | 122.37 | 118.90 |
| 3 | SA | 1734 | U | N3-C2-O2 | -5.79 | 118.15 | 122.20 |
| 3 | SA | 417 | A | P-O3'-C3' | 5.78 | 126.64 | 119.70 |
| 38 | BE | 522 | LEU | CA-CB-CG | 5.78 | 128.60 | 115.30 |
| 41 | 5C | 74 | LEU | CA-CB-CG | 5.76 | 128.56 | 115.30 |
| 2 | 5A | 263 | C | C6-N1-C2 | -5.76 | 118.00 | 120.30 |
| 38 | BE | 872 | LEU | CA-CB-CG | 5.75 | 128.52 | 115.30 |
| 3 | SA | 194 | U | C2-N1-C1' | 5.75 | 124.59 | 117.70 |
| 3 | SA | 376 | C | C5-C6-N1 | 5.74 | 123.87 | 121.00 |
| 3 | SA | 612 | U | C2-N1-C1' | 5.74 | 124.59 | 117.70 |
| 3 | SA | 885 | G | C8-N9-C4 | -5.73 | 104.11 | 106.40 |
| 3 | SA | 894 | U | N1-C2-O2 | 5.73 | 126.81 | 122.80 |
| 32 | AF | 195 | LEU | CA-CB-CG | 5.73 | 128.47 | 115.30 |
| 38 | BE | 121 | LEU | CA-CB-CG | 5.73 | 128.47 | 115.30 |
| 3 | SA | 87 | C | C6-N1-C2 | -5.72 | 118.01 | 120.30 |
| 3 | SA | 1448 | G | C5-C6-O6 | 5.71 | 132.03 | 128.60 |
| 36 | B3 | 342 | ASP | CB-CG-OD1 | 5.70 | 123.43 | 118.30 |
| 8 | SI | 38 | LEU | CA-CB-CG | 5.70 | 128.41 | 115.30 |
| 3 | SA | 373 | G | N3-C4-C5 | -5.70 | 125.75 | 128.60 |
| 3 | SA | 310 | C | C6-N1-C2 | -5.70 | 118.02 | 120.30 |
| 3 | SA | 1199 | G | N3-C4-N9 | 5.69 | 129.42 | 126.00 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 1521 | G | P-O3'-C3' | 5.69 | 126.53 | 119.70 |
| 1 | 3A | 201 | C | N3-C2-O2 | -5.68 | 117.92 | 121.90 |
| 31 | AE | 604 | LEU | CA-CB-CG | 5.68 | 128.36 | 115.30 |
| 3 | SA | 376 | C | C6-N1-C1' | -5.67 | 114.00 | 120.80 |
| 3 | SA | 1034 | C | N1-C2-O2 | 5.67 | 122.30 | 118.90 |
| 3 | SA | 1518 | C | C6-N1-C2 | -5.67 | 118.03 | 120.30 |
| 37 | B8 | 387 | LEU | CA-CB-CG | 5.67 | 128.33 | 115.30 |
| 47 | 5I | 62 | LEU | CA-CB-CG | 5.66 | 128.32 | 115.30 |
| 3 | SA | 569 | C | C6-N1-C2 | -5.66 | 118.04 | 120.30 |
| 27 | A4 | 422 | LEU | CA-CB-CG | 5.65 | 128.30 | 115.30 |
| 3 | SA | 1174 | C | C5-C6-N1 | 5.63 | 123.81 | 121.00 |
| 34 | B1 | 716 | ASP | CB-CG-OD1 | 5.63 | 123.37 | 118.30 |
| 3 | SA | 1743 | U | N3-C2-O2 | -5.63 | 118.26 | 122.20 |
| 33 | AG | 449 | LEU | CA-CB-CG | 5.62 | 128.23 | 115.30 |
| 2 | 5A | 225 | U | N1-C2-O2 | 5.60 | 126.72 | 122.80 |
| 42 | 5D | 224 | LEU | CB-CG-CD2 | -5.58 | 101.51 | 111.00 |
| 3 | SA | 273 | G | N3-C4-N9 | 5.58 | 129.35 | 126.00 |
| 3 | SA | 1056 | U | C2-N1-C1' | 5.58 | 124.40 | 117.70 |
| 3 | SA | 894 | U | N3-C2-O2 | -5.58 | 118.30 | 122.20 |
| 27 | A4 | 534 | LEU | CA-CB-CG | 5.58 | 128.12 | 115.30 |
| 3 | SA | 411 | C | N3-C2-O2 | -5.57 | 118.00 | 121.90 |
| 3 | SA | 1705 | C | C6-N1-C2 | -5.57 | 118.07 | 120.30 |
| 3 | SA | 1441 | C | N1-C2-O2 | 5.56 | 122.24 | 118.90 |
| 12 | SN | 39 | ASP | CB-CG-OD1 | 5.55 | 123.30 | 118.30 |
| 30 | A9 | 516 | LEU | CA-CB-CG | 5.55 | 128.07 | 115.30 |
| 2 | 5A | 169 | A | P-O3'-C3' | 5.55 | 126.36 | 119.70 |
| 3 | SA | 273 | G | N3-C4-C5 | -5.55 | 125.83 | 128.60 |
| 38 | BE | 417 | LEU | CA-CB-CG | 5.54 | 128.04 | 115.30 |
| 2 | 5A | 326 | C | N1-C2-O2 | 5.54 | 122.22 | 118.90 |
| 3 | SA | 38 | C | C6-N1-C2 | -5.54 | 118.09 | 120.30 |
| 41 | 5C | 414 | LEU | CA-CB-CG | 5.53 | 128.02 | 115.30 |
| 2 | 5A | 355 | C | C6-N1-C1' | -5.52 | 114.18 | 120.80 |
| 55 | RG | 50 | LEU | CA-CB-CG | 5.51 | 127.98 | 115.30 |
| 2 | 5A | 90 | G | C8-N9-C1' | 5.51 | 134.16 | 127.00 |
| 37 | B8 | 272 | LEU | CA-CB-CG | 5.51 | 127.96 | 115.30 |
| 3 | SA | 87 | C | C5-C6-N1 | 5.50 | 123.75 | 121.00 |
| 5 | SF | 42 | LEU | CA-CB-CG | 5.50 | 127.96 | 115.30 |
| 3 | SA | 1585 | U | N1-C2-O2 | 5.50 | 126.65 | 122.80 |
| 2 | 5A | 360 | C | C2-N1-C1' | 5.49 | 124.84 | 118.80 |
| 31 | AE | 526 | LEU | CA-CB-CG | 5.49 | 127.93 | 115.30 |
| 3 | SA | 1161 | C | C5-C6-N1 | 5.48 | 123.74 | 121.00 |
| 49 | 5K | 17 | LEU | CA-CB-CG | 5.48 | 127.91 | 115.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 31 | AE | 370 | LEU | CA-CB-CG | 5.48 | 127.89 | 115.30 |
| 3 | SA | 965 | U | N1-C2-O2 | 5.47 | 126.63 | 122.80 |
| 3 | SA | 1734 | U | N1-C2-O2 | 5.46 | 126.62 | 122.80 |
| 22 | 3C | 306 | LEU | CA-CB-CG | 5.45 | 127.84 | 115.30 |
| 38 | BE | 614 | LEU | CA-CB-CG | 5.45 | 127.84 | 115.30 |
| 2 | 5A | 252 | A | C4-N9-C1' | 5.45 | 136.11 | 126.30 |
| 3 | SA | 1783 | C | C6-N1-C2 | -5.45 | 118.12 | 120.30 |
| 3 | SA | 38 | C | C2-N1-C1' | 5.45 | 124.79 | 118.80 |
| 41 | 5C | 416 | LEU | CA-CB-CG | 5.45 | 127.83 | 115.30 |
| 36 | B3 | 471 | PRO | C-N-CA | 5.45 | 135.31 | 121.70 |
| 3 | SA | 50 | C | C2-N1-C1' | 5.44 | 124.79 | 118.80 |
| 1 | 3A | 89 | C | N3-C2-O2 | -5.44 | 118.09 | 121.90 |
| 3 | SA | 894 | U | C2-N1-C1' | 5.44 | 124.22 | 117.70 |
| 3 | SA | 373 | G | C4-N9-C1' | 5.43 | 133.56 | 126.50 |
| 3 | SA | 1585 | U | N3-C2-O2 | -5.43 | 118.40 | 122.20 |
| 58 | RK | 296 | LEU | CA-CB-CG | 5.43 | 127.78 | 115.30 |
| 3 | SA | 608 | U | N3-C2-O2 | -5.42 | 118.40 | 122.20 |
| 4 | SC | 172 | LEU | CA-CB-CG | 5.42 | 127.77 | 115.30 |
| 3 | SA | 275 | C | C5-C6-N1 | 5.42 | 123.71 | 121.00 |
| 3 | SA | 935 | U | N3-C2-O2 | -5.42 | 118.41 | 122.20 |
| 3 | SA | 258 | C | C6-N1-C1' | -5.41 | 114.30 | 120.80 |
| 33 | AG | 323 | LEU | CA-CB-CG | 5.41 | 127.75 | 115.30 |
| 3 | SA | 1496 | U | C2-N1-C1' | 5.41 | 124.19 | 117.70 |
| 3 | SA | 258 | C | C6-N1-C2 | -5.40 | 118.14 | 120.30 |
| 1 | 3A | 248 | G | P-O3'-C3' | 5.40 | 126.18 | 119.70 |
| 3 | SA | 916 | U | N3-C2-O2 | -5.40 | 118.42 | 122.20 |
| 3 | SA | 514 | G | C8-N9-C4 | -5.40 | 104.24 | 106.40 |
| 36 | B3 | 736 | LEU | CA-CB-CG | 5.39 | 127.71 | 115.30 |
| 3 | SA | 128 | U | C2-N1-C1' | 5.38 | 124.16 | 117.70 |
| 31 | AE | 547 | ILE | CG1-CB-CG2 | -5.38 | 99.55 | 111.40 |
| 3 | SA | 1448 | G | N1-C6-O6 | -5.38 | 116.67 | 119.90 |
| 3 | SA | 908 | U | N3-C2-O2 | -5.38 | 118.43 | 122.20 |
| 3 | SA | 1717 | G | C4-N9-C1' | 5.38 | 133.49 | 126.50 |
| 3 | SA | 648 | G | C6-C5-N7 | -5.38 | 127.17 | 130.40 |
| 23 | 3D | 152 | LEU | CA-CB-CG | 5.37 | 127.65 | 115.30 |
| 66 | RV | 204 | GLY | N-CA-C | 5.37 | 126.52 | 113.10 |
| 3 | SA | 1174 | C | C6-N1-C1' | -5.37 | 114.36 | 120.80 |
| 33 | AG | 889 | ASP | CB-CG-OD1 | 5.37 | 123.13 | 118.30 |
| 3 | SA | 311 | U | C5-C6-N1 | 5.36 | 125.38 | 122.70 |
| 25 | 3F | 315 | LEU | CA-CB-CG | 5.36 | 127.63 | 115.30 |
| 3 | SA | 607 | G | C8-N9-C4 | -5.36 | 104.26 | 106.40 |
| 2 | 5A | 312 | U | O4'-C1'-N1 | 5.36 | 112.49 | 108.20 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 79 | C | N1-C2-O2 | 5.35 | 122.11 | 118.90 |
| 3 | SA | 908 | U | N1-C2-O2 | 5.35 | 126.54 | 122.80 |
| 3 | SA | 530 | C | N1-C2-O2 | 5.34 | 122.11 | 118.90 |
| 24 | 3E | 401 | LEU | CA-CB-CG | 5.34 | 127.58 | 115.30 |
| 3 | SA | 75 | U | C2-N1-C1' | 5.34 | 124.10 | 117.70 |
| 53 | RE | 1037 | LEU | CA-CB-CG | -5.34 | 103.02 | 115.30 |
| 36 | B3 | 162 | LEU | CB-CG-CD2 | -5.33 | 101.93 | 111.00 |
| 3 | SA | 1439 | C | N1-C2-O2 | 5.33 | 122.10 | 118.90 |
| 62 | RP | 155 | LEU | CA-CB-CG | 5.33 | 127.56 | 115.30 |
| 3 | SA | 937 | C | C6-N1-C2 | -5.32 | 118.17 | 120.30 |
| 3 | SA | 38 | C | N3-C2-O2 | -5.32 | 118.18 | 121.90 |
| 2 | 5A | 90 | G | C4-N9-C1' | -5.32 | 119.59 | 126.50 |
| 53 | RE | 365 | LEU | CA-CB-CG | 5.32 | 127.53 | 115.30 |
| 3 | SA | 680 | U | C5-C6-N1 | 5.31 | 125.35 | 122.70 |
| 53 | RE | 840 | LEU | CA-CB-CG | 5.31 | 127.50 | 115.30 |
| 3 | SA | 1760 | G | C2-N3-C4 | 5.30 | 114.55 | 111.90 |
| 2 | 5A | 111 | C | C6-N1-C2 | -5.30 | 118.18 | 120.30 |
| 3 | SA | 1064 | G | C4-N9-C1' | 5.30 | 133.39 | 126.50 |
| 3 | SA | 1646 | C | N1-C2-O2 | 5.29 | 122.08 | 118.90 |
| 3 | SA | 25 | C | C2-N1-C1' | 5.29 | 124.61 | 118.80 |
| 3 | SA | 680 | U | N1-C2-O2 | 5.28 | 126.50 | 122.80 |
| 3 | SA | 960 | U | N3-C2-O2 | -5.27 | 118.51 | 122.20 |
| 41 | 5C | 148 | LEU | CA-CB-CG | 5.27 | 127.43 | 115.30 |
| 3 | SA | 380 | U | N1-C2-O2 | 5.27 | 126.49 | 122.80 |
| 3 | SA | 916 | U | N1-C2-O2 | 5.26 | 126.48 | 122.80 |
| 3 | SA | 1708 | U | C2-N1-C1' | 5.26 | 124.02 | 117.70 |
| 3 | SA | 49 | C | C5-C6-N1 | 5.26 | 123.63 | 121.00 |
| 3 | SA | 50 | C | C6-N1-C2 | -5.26 | 118.19 | 120.30 |
| 3 | SA | 443 | C | C5-C6-N1 | 5.26 | 123.63 | 121.00 |
| 38 | BE | 536 | LEU | CB-CG-CD2 | -5.26 | 102.06 | 111.00 |
| 3 | SA | 1269 | U | N3-C2-O2 | -5.26 | 118.52 | 122.20 |
| 3 | SA | 1664 | C | N3-C2-O2 | -5.26 | 118.22 | 121.90 |
| 2 | 5A | 111 | C | C2-N1-C1' | 5.25 | 124.58 | 118.80 |
| 61 | RO | 388 | LEU | CA-CB-CG | 5.25 | 127.36 | 115.30 |
| 3 | SA | 8 | U | N3-C2-O2 | -5.24 | 118.53 | 122.20 |
| 24 | 3E | 227 | LEU | CA-CB-CG | 5.24 | 127.35 | 115.30 |
| 3 | SA | 935 | U | C5-C6-N1 | 5.24 | 125.32 | 122.70 |
| 3 | SA | -7 | A | OP1-P-O3' | 5.23 | 116.72 | 105.20 |
| 25 | 3F | 348 | LEU | CA-CB-CG | 5.23 | 127.33 | 115.30 |
| 17 | SX | 93 | LEU | CA-CB-CG | 5.23 | 127.33 | 115.30 |
| 54 | RF | 147 | LEU | CA-CB-CG | 5.23 | 127.32 | 115.30 |
| 36 | B3 | 12 | LEU | CA-CB-CG | 5.22 | 127.31 | 115.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 2 | 5A | 252 | A | C2-N3-C4 | 5.22 | 113.21 | 110.60 |
| 3 | SA | 279 | G | N3-C4-N9 | -5.22 | 122.87 | 126.00 |
| 31 | AE | 94 | LEU | CA-CB-CG | 5.22 | 127.30 | 115.30 |
| 28 | A5 | 151 | LEU | CA-CB-CG | 5.21 | 127.29 | 115.30 |
| 62 | RP | 1770 | LEU | CA-CB-CG | 5.21 | 127.28 | 115.30 |
| 44 | 5F | 67 | THR | C-N-CA | -5.21 | 108.69 | 121.70 |
| 3 | SA | 373 | G | N3-C4-N9 | 5.20 | 129.12 | 126.00 |
| 3 | SA | 1269 | U | N1-C2-O2 | 5.19 | 126.44 | 122.80 |
| 24 | 3E | 141 | LEU | CA-CB-CG | 5.19 | 127.24 | 115.30 |
| 3 | SA | 677 | G | N3-C4-N9 | -5.19 | 122.89 | 126.00 |
| 36 | B3 | 394 | LEU | CA-CB-CG | 5.18 | 127.23 | 115.30 |
| 1 | 3A | 39 | C | C2-N1-C1' | 5.18 | 124.50 | 118.80 |
| 3 | SA | 612 | U | N1-C2-O2 | 5.18 | 126.43 | 122.80 |
| 35 | B2 | 267 | ASP | C-N-CA | 5.18 | 134.65 | 121.70 |
| 3 | SA | 380 | U | N3-C2-O2 | -5.18 | 118.58 | 122.20 |
| 37 | B8 | 521 | LEU | CB-CG-CD1 | -5.18 | 102.20 | 111.00 |
| 1 | 3A | 39 | C | C6-N1-C2 | -5.17 | 118.23 | 120.30 |
| 1 | 3A | 205 | G | P-O3'-C3' | 5.16 | 125.89 | 119.70 |
| 4 | SC | 110 | LEU | CA-CB-CG | 5.15 | 127.14 | 115.30 |
| 3 | SA | 1704 | U | C2-N1-C1' | 5.15 | 123.88 | 117.70 |
| 3 | SA | 443 | C | C6-N1-C2 | -5.14 | 118.24 | 120.30 |
| 3 | SA | 861 | U | N3-C2-O2 | -5.14 | 118.60 | 122.20 |
| 61 | RO | 211 | LEU | CA-CB-CG | 5.14 | 127.13 | 115.30 |
| 2 | 5A | 310 | U | C6-N1-C2 | -5.14 | 117.92 | 121.00 |
| 3 | SA | 273 | G | C8-N9-C1' | -5.14 | 120.32 | 127.00 |
| 3 | SA | 411 | C | C6-N1-C2 | -5.14 | 118.25 | 120.30 |
| 3 | SA | 1783 | C | C5-C6-N1 | 5.14 | 123.57 | 121.00 |
| 2 | 5A | 390 | C | C5-C6-N1 | 5.13 | 123.57 | 121.00 |
| 2 | 5A | 137 | C | N1-C2-O2 | 5.13 | 121.98 | 118.90 |
| 58 | RK | 325 | LEU | CA-CB-CG | 5.13 | 127.09 | 115.30 |
| 2 | 5A | 355 | C | C5-C6-N1 | 5.12 | 123.56 | 121.00 |
| 2 | 5A | 224 | G | P-O3'-C3' | 5.11 | 125.83 | 119.70 |
| 3 | SA | 885 | G | N1-C6-O6 | -5.11 | 116.83 | 119.90 |
| 2 | 5A | 317 | C | C6-N1-C2 | -5.09 | 118.26 | 120.30 |
| 27 | A4 | 465 | LEU | CA-CB-CG | 5.09 | 127.02 | 115.30 |
| 1 | 3A | 249 | G | O5'-P-OP1 | -5.09 | 101.12 | 105.70 |
| 3 | SA | 1492 | A | C4-N9-C1' | 5.09 | 135.46 | 126.30 |
| 3 | SA | 1535 | U | C6-N1-C2 | -5.09 | 117.95 | 121.00 |
| 3 | SA | 35 | U | C5-C6-N1 | 5.09 | 125.24 | 122.70 |
| 1 | 3A | 89 | C | C6-N1-C1' | -5.08 | 114.70 | 120.80 |
| 2 | 5A | 238 | G | C8-N9-C4 | -5.08 | 104.37 | 106.40 |
| 3 | SA | 130 | C | C2-N1-C1' | 5.07 | 124.38 | 118.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | SA | 1053 | G | C8-N9-C4 | -5.07 | 104.37 | 106.40 |
| 15 | SR | 123 | ARG | C-N-CD | -5.07 | 109.46 | 120.60 |
| 1 | 3A | 200 | C | C6-N1-C2 | -5.06 | 118.27 | 120.30 |
| 1 | 3A | 198 | U | OP1-P-O3' | 5.06 | 116.34 | 105.20 |
| 3 | SA | 75 | U | N3-C2-O2 | -5.06 | 118.66 | 122.20 |
| 54 | RF | 58 | LEU | CA-CB-CG | 5.06 | 126.93 | 115.30 |
| 3 | SA | 1664 | C | N1-C2-O2 | 5.05 | 121.93 | 118.90 |
| 3 | SA | 861 | U | C5-C6-N1 | 5.05 | 125.22 | 122.70 |
| 2 | 5A | 363 | A | P-O3'-C3' | 5.05 | 125.76 | 119.70 |
| 42 | 5D | 91 | LEU | CA-CB-CG | 5.05 | 126.91 | 115.30 |
| 61 | RO | 264 | LEU | CA-CB-CG | 5.05 | 126.91 | 115.30 |
| 4 | SC | 147 | ALA | C-N-CA | 5.04 | 134.31 | 121.70 |
| 27 | A4 | 435 | PRO | C-N-CA | 5.04 | 134.31 | 121.70 |
| 34 | B1 | 701 | LEU | CA-CB-CG | 5.04 | 126.90 | 115.30 |
| 3 | SA | 1664 | C | C2-N1-C1' | 5.04 | 124.34 | 118.80 |
| 35 | B2 | 231 | LEU | CA-CB-CG | 5.04 | 126.90 | 115.30 |
| 3 | SA | 414 | C | C5-C6-N1 | 5.03 | 123.52 | 121.00 |
| 3 | SA | 1222 | C | C5-C6-N1 | 5.03 | 123.52 | 121.00 |
| 3 | SA | 35 | U | N1-C2-O2 | 5.03 | 126.32 | 122.80 |
| 53 | RE | 396 | LEU | CA-CB-CG | 5.03 | 126.86 | 115.30 |
| 3 | SA | 885 | G | N9-C4-C5 | 5.03 | 107.41 | 105.40 |
| 53 | RE | 1237 | ASP | CB-CG-OD1 | 5.02 | 122.82 | 118.30 |
| 34 | B1 | 436 | LEU | CA-CB-CG | 5.02 | 126.84 | 115.30 |
| 3 | SA | 1025 | A | O4'-C1'-N9 | 5.01 | 112.21 | 108.20 |
| 3 | SA | 960 | U | N1-C2-O2 | 5.01 | 126.31 | 122.80 |
| 3 | SA | 1717 | G | N3-C4-N9 | 5.01 | 129.00 | 126.00 |
| 61 | RO | 202 | LEU | CA-CB-CG | 5.01 | 126.81 | 115.30 |
| 62 | RP | 2033 | LYS | C-N-CA | 5.01 | 134.22 | 121.70 |
| 3 | SA | 1636 | C | C5-C6-N1 | 5.00 | 123.50 | 121.00 |
| 3 | SA | 1664 | C | C6-N1-C2 | -5.00 | 118.30 | 120.30 |
| 60 | RN | 744 | LEU | CA-CB-CG | 5.00 | 126.80 | 115.30 |

There are no chirality outliers.

All (79) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 23 | 3D | 142 | LEU | Peptide |
| 23 | 3D | 202 | HIS | Peptide |
| 23 | 3D | 286 | ARG | Peptide |
| 24 | 3E | 331 | LYS | Peptide |
| 25 | 3F | 237 | ASP | Peptide |
| 26 | 3G | 59 | GLU | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 26 | 3G | 9 | PHE | Peptide |
| 26 | 3H | 59 | GLU | Peptide |
| 41 | 5C | 540 | GLU | Peptide |
| 41 | 5C | 551 | SER | Peptide |
| 42 | 5D | 138 | ASP | Peptide |
| 43 | 5E | 453 | SER | Peptide |
| 44 | 5F | 101 | VAL | Peptide |
| 45 | 5G | 74 | ASP | Peptide |
| 47 | 5I | 230 | ASN | Peptide |
| 47 | 5I | 283 | ASP | Peptide |
| 27 | A4 | 54 | LYS | Peptide |
| 28 | A5 | 167 | SER | Peptide |
| 29 | A8 | 257 | SER | Peptide |
| 29 | A8 | 266 | ILE | Peptide |
| 29 | A8 | 496 | TYR | Peptide |
| 29 | A8 | 529 | HIS | Peptide |
| 33 | AG | 178 | PHE | Peptide |
| 33 | AG | 780 | GLU | Peptide |
| 34 | B1 | 288 | ASP | Peptide |
| 34 | B1 | 661 | LEU | Peptide |
| 34 | B1 | 690 | ALA | Peptide |
| 35 | B2 | 131 | GLY | Peptide |
| 35 | B2 | 213 | LYS | Peptide |
| 35 | B2 | 266 | SER | Peptide |
| 35 | B2 | 267 | ASP | Peptide |
| 35 | B2 | 278 | ASP | Peptide |
| 35 | B2 | 44 | SER | Peptide |
| 35 | B2 | 613 | ALA | Peptide |
| 35 | B2 | 916 | HIS | Peptide |
| 35 | B2 | 918 | TYR | Peptide |
| 36 | B3 | 34 | THR | Peptide |
| 36 | B3 | 435 | ALA | Peptide |
| 36 | B3 | 473 | ALA | Peptide |
| 36 | B3 | 479 | ILE | Peptide |
| 36 | B3 | 480 | ILE | Peptide |
| 36 | B3 | 585 | ASN | Peptide |
| 36 | B3 | 593 | CYS | Peptide |
| 36 | B3 | 594 | GLY | Peptide |
| 36 | B3 | 627 | ASN | Peptide |
| 36 | B3 | 89 | HIS | Peptide |
| 36 | B3 | 90 | LEU | Peptide |
| 38 | BE | 94 | TYR | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 50 | RA | 111 | TRP | Peptide |
| 50 | RA | 173 | LEU | Peptide |
| 51 | RB | 261 | SER | Peptide |
| 53 | RE | 767 | GLN | Peptide |
| 54 | RF | 253 | ALA | Peptide |
| 57 | RJ | 1026 | LYS | Peptide |
| 57 | RJ | 868 | ARG | Peptide |
| 58 | RK | 333 | PHE | Peptide |
| 59 | RL | 743 | VAL | Peptide |
| 59 | RM | 743 | VAL | Peptide |
| 60 | RN | 286 | SER | Peptide |
| 61 | RO | 144 | PRO | Peptide |
| 62 | RP | 1746 | LYS | Peptide |
| 62 | RP | 2051 | ASP | Peptide |
| 62 | RP | 835 | LEU | Peptide |
| 63 | RQ | 313 | PHE | Peptide |
| 66 | RV | 203 | ILE | Peptide |
| 66 | RV | 261 | GLY | Peptide |
| 4 | SC | 238 | GLU | Peptide |
| 5 | SF | 193 | GLY | Peptide |
| 5 | SF | 195 | ILE | Peptide |
| 8 | SI | 133 | THR | Peptide |
| 8 | SI | 31 | SER | Peptide |
| 8 | SI | 64 | VAL | Peptide |
| 9 | SJ | 85 | PRO | Peptide |
| 11 | SM | 128 | CYS | Peptide |
| 13 | SO | 58 | HIS | Peptide |
| 14 | SP | 90 | ARG | Peptide |
| 16 | ST | 13 | HIS | Peptide |
| 19 | SZ | 76 | TYR | Peptide |
| 20 | Sc | 49 | HIS | 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 | SC | 228/255 (89%) | 196 (86%) | 32 (14%) | 0 | 100 | 100 |
| 5 | SF | 227/261 (87%) | 197 (87%) | 29 (13%) | 1 (0%) | 34 | 69 |
| 6 | SG | 211/225 (94%) | 195 (92%) | 16 (8%) | 0 | 100 | 100 |
| 7 | SH | 161/236 (68%) | 143 (89%) | 18 (11%) | 0 | 100 | 100 |
| 8 | SI | 161/190 (85%) | 143 (89%) | 18 (11%) | 0 | 100 | 100 |
| 9 | SJ | 162/200 (81%) | 140 (86%) | 22 (14%) | 0 | 100 | 100 |
| 10 | SK | 169/197 (86%) | 163 (96%) | 6 (4%) | 0 | 100 | 100 |
| 11 | SM | 119/156 (76%) | 103 (87%) | 16 (13%) | 0 | 100 | 100 |
| 12 | SN | 117/143 (82%) | 89 (76%) | 28 (24%) | 0 | 100 | 100 |
| 13 | SO | 132/151 (87%) | 123 (93%) | 9 (7%) | 0 | 100 | 100 |
| 14 | SP | 116/137 (85%) | 99 (85%) | 16 (14%) | 1 (1%) | 17 | 56 |
| 15 | SR | 123/143 (86%) | 112 (91%) | 11 (9%) | 0 | 100 | 100 |
| 16 | ST | 113/146 (77%) | 103 (91%) | 10 (9%) | 0 | 100 | 100 |
| 17 | SX | 125/130 (96%) | 119 (95%) | 6 (5%) | 0 | 100 | 100 |
| 18 | SY | 101/145 (70%) | 90 (89%) | 11 (11%) | 0 | 100 | 100 |
| 19 | SZ | 100/135 (74%) | 87 (87%) | 12 (12%) | 1 (1%) | 15 | 54 |
| 20 | Sc | 78/82 (95%) | 69 (88%) | 9 (12%) | 0 | 100 | 100 |
| 21 | Sd | 61/67 (91%) | 57 (93%) | 4 (7%) | 0 | 100 | 100 |
| 22 | 3B | 236/327 (72%) | 222 (94%) | 14 (6%) | 0 | 100 | 100 |
| 22 | 3C | 221/327 (68%) | 207 (94%) | 14 (6%) | 0 | 100 | 100 |
| 23 | 3D | 359/504 (71%) | 346 (96%) | 13 (4%) | 0 | 100 | 100 |
| 24 | 3E | 427/511 (84%) | 387 (91%) | 40 (9%) | 0 | 100 | 100 |
| 25 | 3F | 446/573 (78%) | 403 (90%) | 42 (9%) | 1 (0%) | 47 | 79 |
| 26 | 3G | 119/126 (94%) | 107 (90%) | 11 (9%) | 1 (1%) | 19 | 58 |
| 26 | 3H | 119/126 (94%) | 111 (93%) | 8 (7%) | 0 | 100 | 100 |
| 27 | A4 | 648/776 (84%) | 590 (91%) | 58 (9%) | 0 | 100 | 100 |
| 28 | A5 | 504/643 (78%) | 465 (92%) | 39 (8%) | 0 | 100 | 100 |
| 29 | A8 | 534/713 (75%) | 398 (74%) | 134 (25%) | 2 (0%) | 34 | 69 |
| 30 | A9 | 126/575 (22%) | 115 (91%) | 11 (9%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 31 | AE | 1496/1769 (85%) | 1367 (91%) | 129 (9%) | 0 | 100 | 100 |
| 32 | AF | 489/513 (95%) | 442 (90%) | 47 (10%) | 0 | 100 | 100 |
| 33 | AG | 812/896 (91%) | 731 (90%) | 80 (10%) | 1 (0%) | 51 | 83 |
| 34 | B1 | 830/923 (90%) | 767 (92%) | 63 (8%) | 0 | 100 | 100 |
| 35 | B2 | 839/943 (89%) | 749 (89%) | 88 (10%) | 2 (0%) | 47 | 79 |
| 36 | B3 | 733/817 (90%) | 606 (83%) | 125 (17%) | 2 (0%) | 41 | 74 |
| 37 | B8 | 469/594 (79%) | 439 (94%) | 30 (6%) | 0 | 100 | 100 |
| 38 | BE | 857/939 (91%) | 803 (94%) | 54 (6%) | 0 | 100 | 100 |
| 39 | B6 | 368/440 (84%) | 341 (93%) | 27 (7%) | 0 | 100 | 100 |
| 40 | 5B | 58/214 (27%) | 55 (95%) | 3 (5%) | 0 | 100 | 100 |
| 41 | 5C | 531/554 (96%) | 487 (92%) | 43 (8%) | 1 (0%) | 47 | 79 |
| 42 | 5D | 231/250 (92%) | 204 (88%) | 27 (12%) | 0 | 100 | 100 |
| 43 | 5E | 200/593 (34%) | 183 (92%) | 16 (8%) | 1 (0%) | 29 | 67 |
| 44 | 5F | 180/183 (98%) | 172 (96%) | 8 (4%) | 0 | 100 | 100 |
| 45 | 5G | 278/290 (96%) | 256 (92%) | 22 (8%) | 0 | 100 | 100 |
| 46 | 5H | 132/610 (22%) | 123 (93%) | 9 (7%) | 0 | 100 | 100 |
| 47 | 5I | 457/489 (94%) | 421 (92%) | 36 (8%) | 0 | 100 | 100 |
| 48 | 5J | 147/217 (68%) | 136 (92%) | 11 (8%) | 0 | 100 | 100 |
| 49 | 5K | 171/189 (90%) | 166 (97%) | 5 (3%) | 0 | 100 | 100 |
| 50 | RA | 332/707 (47%) | 276 (83%) | 56 (17%) | 0 | 100 | 100 |
| 51 | RB | 132/357 (37%) | 117 (89%) | 14 (11%) | 1 (1%) | 19 | 58 |
| 52 | RC | 276/316 (87%) | 259 (94%) | 17 (6%) | 0 | 100 | 100 |
| 53 | RE | 1067/1237 (86%) | 999 (94%) | 68 (6%) | 0 | 100 | 100 |
| 54 | RF | 233/297 (78%) | 203 (87%) | 30 (13%) | 0 | 100 | 100 |
| 55 | RG | 212/252 (84%) | 182 (86%) | 30 (14%) | 0 | 100 | 100 |
| 55 | RH | 226/252 (90%) | 219 (97%) | 7 (3%) | 0 | 100 | 100 |
| 56 | RI | 250/274 (91%) | 233 (93%) | 17 (7%) | 0 | 100 | 100 |
| 57 | RJ | 784/1183 (66%) | 721 (92%) | 62 (8%) | 1 (0%) | 51 | 83 |
| 58 | RK | 358/367 (98%) | 341 (95%) | 17 (5%) | 0 | 100 | 100 |
| 59 | RL | 781/1056 (74%) | 664 (85%) | 115 (15%) | 2 (0%) | 41 | 74 |
| 59 | RM | 738/1056 (70%) | 625 (85%) | 109 (15%) | 4 (0%) | 29 | 67 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 60 | RN | 593/810 (73%) | 545 (92%) | 47 (8%) | 1 (0%) | 47 79 |
| 61 | RO | 523/552 (95%) | 455 (87%) | 68 (13%) | 0 | 100 100 |
| 62 | RP | 2043/2493 (82%) | 1815 (89%) | 227 (11%) | 1 (0%) | 100 100 |
| 63 | RQ | 220/899 (24%) | 199 (90%) | 21 (10%) | 0 | 100 100 |
| 64 | RS | 247/483 (51%) | 225 (91%) | 22 (9%) | 0 | 100 100 |
| 65 | RT | 165/326 (51%) | 150 (91%) | 15 (9%) | 0 | 100 100 |
| 66 | RV | 184/346 (53%) | 165 (90%) | 19 (10%) | 0 | 100 100 |
| 67 | RW | 59/206 (29%) | 54 (92%) | 5 (8%) | 0 | 100 100 |
| 68 | RY | 35/534 (7%) | 29 (83%) | 6 (17%) | 0 | 100 100 |
| All | All | 24979/33626 (74%) | 22503 (90%) | 2452 (10%) | 24 (0%) | 54 83 |

All (24) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 43 | 5E | 454 | VAL |
| 59 | RL | 744 | PRO |
| 59 | RM | 744 | PRO |
| 59 | RM | 905 | PRO |
| 19 | SZ | 51 | GLU |
| 57 | RJ | 82 | LYS |
| 29 | A8 | 309 | PRO |
| 33 | AG | 434 | GLN |
| 35 | B2 | 132 | THR |
| 36 | B3 | 91 | LYS |
| 59 | RM | 904 | LEU |
| 60 | RN | 285 | PRO |
| 25 | 3F | 552 | TRP |
| 5 | SF | 194 | THR |
| 29 | A8 | 308 | PHE |
| 35 | B2 | 118 | ASN |
| 51 | RB | 274 | ILE |
| 59 | RL | 743 | VAL |
| 59 | RM | 743 | VAL |
| 14 | SP | 123 | SER |
| 36 | B3 | 71 | PRO |
| 41 | 5C | 16 | GLU |
| 62 | RP | 2052 | GLN |
| 26 | 3G | 10 | 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 | SC | 203/224 (91%) | 201 (99%) | 2 (1%) | 76 90 |
| 5 | SF | 196/222 (88%) | 190 (97%) | 6 (3%) | 40 72 |
| 6 | SG | 180/191 (94%) | 180 (100%) | 0 | 100 100 |
| 7 | SH | 139/201 (69%) | 137 (99%) | 2 (1%) | 67 86 |
| 8 | SI | 146/170 (86%) | 145 (99%) | 1 (1%) | 84 94 |
| 9 | SJ | 136/161 (84%) | 134 (98%) | 2 (2%) | 65 85 |
| 10 | SK | 147/166 (89%) | 146 (99%) | 1 (1%) | 84 94 |
| 11 | SM | 110/137 (80%) | 108 (98%) | 2 (2%) | 59 82 |
| 12 | SN | 88/119 (74%) | 86 (98%) | 2 (2%) | 50 78 |
| 13 | SO | 117/128 (91%) | 116 (99%) | 1 (1%) | 78 91 |
| 14 | SP | 90/105 (86%) | 90 (100%) | 0 | 100 100 |
| 15 | SR | 105/119 (88%) | 105 (100%) | 0 | 100 100 |
| 16 | ST | 105/129 (81%) | 104 (99%) | 1 (1%) | 76 90 |
| 17 | SX | 108/111 (97%) | 107 (99%) | 1 (1%) | 78 91 |
| 18 | SY | 85/120 (71%) | 84 (99%) | 1 (1%) | 71 88 |
| 19 | SZ | 85/113 (75%) | 85 (100%) | 0 | 100 100 |
| 20 | Sc | 69/71 (97%) | 69 (100%) | 0 | 100 100 |
| 21 | Sd | 56/60 (93%) | 56 (100%) | 0 | 100 100 |
| 22 | 3B | 201/240 (84%) | 201 (100%) | 0 | 100 100 |
| 22 | 3C | 190/240 (79%) | 187 (98%) | 3 (2%) | 62 84 |
| 23 | 3D | 296/435 (68%) | 293 (99%) | 3 (1%) | 76 90 |
| 24 | 3E | 262/433 (60%) | 261 (100%) | 1 (0%) | 91 95 |
| 25 | 3F | 396/503 (79%) | 394 (100%) | 2 (0%) | 88 95 |
| 26 | 3G | 100/104 (96%) | 100 (100%) | 0 | 100 100 |
| 26 | 3H | 100/104 (96%) | 100 (100%) | 0 | 100 100 |
| 27 | A4 | 591/713 (83%) | 584 (99%) | 7 (1%) | 71 88 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 28 | A5 | 433/574 (75%) | 432 (100%) | 1 (0%) | 93 98 |
| 29 | A8 | 174/657 (26%) | 173 (99%) | 1 (1%) | 86 94 |
| 30 | A9 | 89/533 (17%) | 89 (100%) | 0 | 100 100 |
| 31 | AE | 708/1633 (43%) | 705 (100%) | 3 (0%) | 91 95 |
| 32 | AF | 437/454 (96%) | 433 (99%) | 4 (1%) | 78 91 |
| 33 | AG | 750/826 (91%) | 740 (99%) | 10 (1%) | 69 87 |
| 34 | B1 | 730/812 (90%) | 726 (100%) | 4 (0%) | 88 95 |
| 35 | B2 | 736/832 (88%) | 731 (99%) | 5 (1%) | 84 94 |
| 36 | B3 | 665/719 (92%) | 655 (98%) | 10 (2%) | 65 85 |
| 37 | B8 | 421/529 (80%) | 420 (100%) | 1 (0%) | 93 98 |
| 38 | BE | 757/819 (92%) | 754 (100%) | 3 (0%) | 91 95 |
| 39 | B6 | 251/414 (61%) | 247 (98%) | 4 (2%) | 62 84 |
| 40 | 5B | 57/196 (29%) | 55 (96%) | 2 (4%) | 36 69 |
| 41 | 5C | 465/480 (97%) | 463 (100%) | 2 (0%) | 91 95 |
| 42 | 5D | 221/234 (94%) | 219 (99%) | 2 (1%) | 78 91 |
| 43 | 5E | 185/535 (35%) | 184 (100%) | 1 (0%) | 88 95 |
| 44 | 5F | 171/172 (99%) | 170 (99%) | 1 (1%) | 86 94 |
| 45 | 5G | 251/258 (97%) | 249 (99%) | 2 (1%) | 81 93 |
| 46 | 5H | 107/538 (20%) | 107 (100%) | 0 | 100 100 |
| 47 | 5I | 416/443 (94%) | 414 (100%) | 2 (0%) | 88 95 |
| 48 | 5J | 140/200 (70%) | 140 (100%) | 0 | 100 100 |
| 49 | 5K | 157/169 (93%) | 157 (100%) | 0 | 100 100 |
| 50 | RA | 303/636 (48%) | 300 (99%) | 3 (1%) | 76 90 |
| 51 | RB | 117/315 (37%) | 114 (97%) | 3 (3%) | 46 76 |
| 52 | RC | 231/289 (80%) | 230 (100%) | 1 (0%) | 91 95 |
| 53 | RE | 984/1125 (88%) | 979 (100%) | 5 (0%) | 88 95 |
| 54 | RF | 221/274 (81%) | 219 (99%) | 2 (1%) | 78 91 |
| 55 | RG | 195/222 (88%) | 193 (99%) | 2 (1%) | 76 90 |
| 55 | RH | 206/222 (93%) | 204 (99%) | 2 (1%) | 76 90 |
| 56 | RI | 235/256 (92%) | 235 (100%) | 0 | 100 100 |
| 57 | RJ | 683/1039 (66%) | 676 (99%) | 7 (1%) | 76 90 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 58 | RK | 307/312 (98%) | 303 (99%) | 4 (1%) | 69 87 |
| 59 | RL | 164/934 (18%) | 162 (99%) | 2 (1%) | 71 88 |
| 60 | RN | 422/732 (58%) | 422 (100%) | 0 | 100 100 |
| 61 | RO | 329/506 (65%) | 328 (100%) | 1 (0%) | 92 96 |
| 62 | RP | 499/2307 (22%) | 493 (99%) | 6 (1%) | 71 88 |
| 63 | RQ | 148/808 (18%) | 145 (98%) | 3 (2%) | 55 80 |
| 64 | RS | 225/424 (53%) | 225 (100%) | 0 | 100 100 |
| 65 | RT | 148/282 (52%) | 146 (99%) | 2 (1%) | 67 86 |
| 66 | RV | 141/304 (46%) | 141 (100%) | 0 | 100 100 |
| 67 | RW | 22/192 (12%) | 22 (100%) | 0 | 100 100 |
| 68 | RY | 31/482 (6%) | 30 (97%) | 1 (3%) | 39 71 |
| All | All | 18233/29007 (63%) | 18093 (99%) | 140 (1%) | 82 93 |

All (140) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | SC | 172 | LEU |
| 4 | SC | 205 | PHE |
| 5 | SF | 108 | ARG |
| 5 | SF | 143 | ASP |
| 5 | SF | 206 | ASP |
| 5 | SF | 207 | LEU |
| 5 | SF | 211 | LYS |
| 5 | SF | 240 | LYS |
| 7 | SH | 71 | THR |
| 7 | SH | 92 | ARG |
| 8 | SI | 189 | THR |
| 9 | SJ | 165 | LEU |
| 9 | SJ | 195 | ARG |
| 10 | SK | 57 | ARG |
| 11 | SM | 43 | LYS |
| 11 | SM | 136 | ARG |
| 12 | SN | 46 | ARG |
| 12 | SN | 66 | VAL |
| 13 | SO | 87 | ASP |
| 16 | ST | 126 | ARG |
| 17 | SX | 70 | ASN |
| 18 | SY | 97 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 22 | 3C | 237 | VAL |
| 22 | 3C | 262 | LYS |
| 22 | 3C | 306 | LEU |
| 23 | 3D | 103 | LYS |
| 23 | 3D | 129 | ARG |
| 23 | 3D | 285 | ARG |
| 24 | 3E | 265 | PHE |
| 25 | 3F | 370 | ARG |
| 25 | 3F | 506 | ARG |
| 27 | A4 | 190 | VAL |
| 27 | A4 | 282 | ASP |
| 27 | A4 | 423 | LYS |
| 27 | A4 | 436 | ASP |
| 27 | A4 | 648 | PHE |
| 27 | A4 | 739 | LYS |
| 27 | A4 | 776 | PHE |
| 28 | A5 | 434 | THR |
| 29 | A8 | 576 | ARG |
| 31 | AE | 617 | LYS |
| 31 | AE | 645 | ARG |
| 31 | AE | 699 | ARG |
| 32 | AF | 199 | ARG |
| 32 | AF | 261 | VAL |
| 32 | AF | 432 | TYR |
| 32 | AF | 508 | LEU |
| 33 | AG | 141 | LEU |
| 33 | AG | 259 | VAL |
| 33 | AG | 336 | ARG |
| 33 | AG | 368 | ASP |
| 33 | AG | 421 | LYS |
| 33 | AG | 434 | GLN |
| 33 | AG | 435 | ASP |
| 33 | AG | 436 | PHE |
| 33 | AG | 615 | TRP |
| 33 | AG | 716 | ARG |
| 34 | B1 | 164 | THR |
| 34 | B1 | 249 | ARG |
| 34 | B1 | 519 | LEU |
| 34 | B1 | 661 | LEU |
| 35 | B2 | 47 | GLU |
| 35 | B2 | 75 | ARG |
| 35 | B2 | 144 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 35 | B2 | 576 | VAL |
| 35 | B2 | 588 | ILE |
| 36 | B3 | 30 | LYS |
| 36 | B3 | 67 | LEU |
| 36 | B3 | 95 | VAL |
| 36 | B3 | 212 | LEU |
| 36 | B3 | 222 | LEU |
| 36 | B3 | 358 | ASN |
| 36 | B3 | 533 | LYS |
| 36 | B3 | 534 | ARG |
| 36 | B3 | 554 | ASP |
| 36 | B3 | 570 | THR |
| 37 | B8 | 22 | LEU |
| 38 | BE | 309 | ILE |
| 38 | BE | 570 | ILE |
| 38 | BE | 728 | ARG |
| 39 | B6 | 4 | THR |
| 39 | B6 | 67 | ARG |
| 39 | B6 | 106 | ASP |
| 39 | B6 | 133 | TYR |
| 40 | 5B | 158 | LYS |
| 40 | 5B | 211 | LEU |
| 41 | 5C | 153 | THR |
| 41 | 5C | 392 | VAL |
| 42 | 5D | 18 | GLN |
| 42 | 5D | 161 | ARG |
| 43 | 5E | 314 | LEU |
| 44 | 5F | 159 | THR |
| 45 | 5G | 209 | LEU |
| 45 | 5G | 234 | ARG |
| 47 | 5I | 250 | ARG |
| 47 | 5I | 417 | ARG |
| 50 | RA | 76 | THR |
| 50 | RA | 210 | ARG |
| 50 | RA | 227 | ARG |
| 51 | RB | 331 | LYS |
| 51 | RB | 338 | THR |
| 51 | RB | 341 | ARG |
| 52 | RC | 62 | ARG |
| 53 | RE | 223 | ARG |
| 53 | RE | 227 | LYS |
| 53 | RE | 289 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 53 | RE | 742 | PHE |
| 53 | RE | 1067 | LEU |
| 54 | RF | 19 | LYS |
| 54 | RF | 69 | LYS |
| 55 | RG | 32 | THR |
| 55 | RG | 100 | LEU |
| 55 | RH | 82 | ARG |
| 55 | RH | 197 | ASP |
| 57 | RJ | 214 | ARG |
| 57 | RJ | 566 | ARG |
| 57 | RJ | 869 | THR |
| 57 | RJ | 973 | ARG |
| 57 | RJ | 976 | ILE |
| 57 | RJ | 1128 | LYS |
| 57 | RJ | 1141 | LYS |
| 58 | RK | 90 | CYS |
| 58 | RK | 214 | LYS |
| 58 | RK | 335 | THR |
| 58 | RK | 340 | LYS |
| 59 | RL | 9 | ARG |
| 59 | RL | 83 | ARG |
| 61 | RO | 493 | TYR |
| 62 | RP | 201 | ARG |
| 62 | RP | 1749 | LYS |
| 62 | RP | 1770 | LEU |
| 62 | RP | 1813 | LYS |
| 62 | RP | 1815 | CYS |
| 62 | RP | 1896 | ILE |
| 63 | RQ | 330 | THR |
| 63 | RQ | 898 | PHE |
| 63 | RQ | 899 | LYS |
| 65 | RT | 129 | ARG |
| 65 | RT | 211 | LYS |
| 68 | RY | 487 | ASP |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (304) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | SC | 74 | GLN |
| 4 | SC | 92 | GLN |
| 4 | SC | 101 | HIS |
| 4 | SC | 194 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | SG | 63 | GLN |
| 6 | SG | 169 | ASN |
| 6 | SG | 186 | ASN |
| 7 | SH | 140 | ASN |
| 7 | SH | 201 | GLN |
| 8 | SI | 29 | ASN |
| 8 | SI | 42 | GLN |
| 8 | SI | 170 | GLN |
| 9 | SJ | 32 | GLN |
| 9 | SJ | 84 | HIS |
| 9 | SJ | 103 | GLN |
| 9 | SJ | 159 | GLN |
| 11 | SM | 81 | HIS |
| 14 | SP | 12 | GLN |
| 15 | SR | 32 | ASN |
| 15 | SR | 74 | HIS |
| 16 | ST | 103 | ASN |
| 16 | ST | 104 | ASN |
| 17 | SX | 12 | ASN |
| 17 | SX | 16 | ASN |
| 20 | Sc | 42 | ASN |
| 22 | 3B | 91 | HIS |
| 22 | 3B | 183 | HIS |
| 22 | 3B | 258 | HIS |
| 23 | 3D | 39 | ASN |
| 23 | 3D | 85 | ASN |
| 23 | 3D | 168 | GLN |
| 23 | 3D | 213 | ASN |
| 24 | 3E | 191 | HIS |
| 24 | 3E | 256 | ASN |
| 24 | 3E | 286 | ASN |
| 24 | 3E | 289 | GLN |
| 24 | 3E | 400 | GLN |
| 25 | 3F | 155 | ASN |
| 25 | 3F | 235 | HIS |
| 25 | 3F | 525 | GLN |
| 25 | 3F | 561 | ASN |
| 26 | 3G | 19 | GLN |
| 26 | 3G | 29 | ASN |
| 26 | 3G | 38 | ASN |
| 26 | 3H | 5 | ASN |
| 26 | 3H | 18 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 26 | 3H | 45 | ASN |
| 27 | A4 | 53 | HIS |
| 27 | A4 | 179 | HIS |
| 27 | A4 | 279 | HIS |
| 27 | A4 | 292 | ASN |
| 27 | A4 | 317 | ASN |
| 27 | A4 | 426 | GLN |
| 27 | A4 | 438 | GLN |
| 27 | A4 | 452 | HIS |
| 27 | A4 | 529 | ASN |
| 27 | A4 | 589 | ASN |
| 28 | A5 | 32 | GLN |
| 28 | A5 | 67 | ASN |
| 28 | A5 | 115 | ASN |
| 28 | A5 | 293 | ASN |
| 28 | A5 | 302 | ASN |
| 28 | A5 | 316 | ASN |
| 28 | A5 | 324 | ASN |
| 28 | A5 | 333 | ASN |
| 28 | A5 | 443 | GLN |
| 29 | A8 | 553 | GLN |
| 29 | A8 | 609 | ASN |
| 29 | A8 | 636 | GLN |
| 30 | A9 | 478 | ASN |
| 30 | A9 | 509 | GLN |
| 31 | AE | 14 | ASN |
| 31 | AE | 141 | ASN |
| 31 | AE | 166 | ASN |
| 31 | AE | 219 | ASN |
| 31 | AE | 224 | ASN |
| 31 | AE | 258 | HIS |
| 31 | AE | 477 | ASN |
| 31 | AE | 480 | ASN |
| 31 | AE | 545 | ASN |
| 31 | AE | 673 | ASN |
| 31 | AE | 730 | GLN |
| 32 | AF | 48 | ASN |
| 32 | AF | 64 | GLN |
| 32 | AF | 125 | HIS |
| 32 | AF | 133 | HIS |
| 32 | AF | 156 | ASN |
| 32 | AF | 289 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 32 | AF | 481 | GLN |
| 33 | AG | 50 | ASN |
| 33 | AG | 105 | HIS |
| 33 | AG | 190 | GLN |
| 33 | AG | 266 | ASN |
| 33 | AG | 269 | GLN |
| 33 | AG | 325 | GLN |
| 33 | AG | 332 | GLN |
| 33 | AG | 370 | GLN |
| 33 | AG | 375 | ASN |
| 33 | AG | 393 | ASN |
| 33 | AG | 407 | ASN |
| 33 | AG | 410 | ASN |
| 33 | AG | 453 | HIS |
| 33 | AG | 467 | GLN |
| 33 | AG | 489 | ASN |
| 33 | AG | 568 | ASN |
| 33 | AG | 579 | ASN |
| 33 | AG | 669 | ASN |
| 33 | AG | 706 | HIS |
| 33 | AG | 881 | ASN |
| 34 | B1 | 92 | HIS |
| 34 | B1 | 142 | HIS |
| 34 | B1 | 190 | HIS |
| 34 | B1 | 201 | HIS |
| 34 | B1 | 297 | GLN |
| 34 | B1 | 303 | ASN |
| 34 | B1 | 349 | ASN |
| 34 | B1 | 386 | HIS |
| 34 | B1 | 432 | GLN |
| 34 | B1 | 452 | ASN |
| 34 | B1 | 456 | HIS |
| 34 | B1 | 483 | GLN |
| 34 | B1 | 549 | GLN |
| 34 | B1 | 552 | ASN |
| 34 | B1 | 650 | ASN |
| 34 | B1 | 795 | ASN |
| 34 | B1 | 813 | HIS |
| 34 | B1 | 837 | ASN |
| 34 | B1 | 842 | ASN |
| 35 | B2 | 172 | GLN |
| 35 | B2 | 390 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 35 | B2 | 455 | GLN |
| 35 | B2 | 524 | HIS |
| 35 | B2 | 596 | ASN |
| 35 | B2 | 628 | HIS |
| 35 | B2 | 629 | ASN |
| 35 | B2 | 657 | GLN |
| 35 | B2 | 770 | ASN |
| 35 | B2 | 791 | ASN |
| 35 | B2 | 856 | ASN |
| 35 | B2 | 879 | GLN |
| 36 | B3 | 241 | GLN |
| 36 | B3 | 337 | HIS |
| 36 | B3 | 387 | HIS |
| 36 | B3 | 519 | ASN |
| 36 | B3 | 667 | GLN |
| 36 | B3 | 753 | HIS |
| 36 | B3 | 767 | HIS |
| 36 | B3 | 792 | HIS |
| 37 | B8 | 162 | ASN |
| 37 | B8 | 167 | GLN |
| 37 | B8 | 224 | ASN |
| 37 | B8 | 282 | ASN |
| 37 | B8 | 311 | ASN |
| 37 | B8 | 352 | GLN |
| 37 | B8 | 472 | GLN |
| 37 | B8 | 492 | ASN |
| 37 | B8 | 528 | GLN |
| 37 | B8 | 592 | ASN |
| 38 | BE | 163 | GLN |
| 38 | BE | 289 | ASN |
| 38 | BE | 481 | ASN |
| 38 | BE | 501 | HIS |
| 38 | BE | 514 | ASN |
| 38 | BE | 627 | ASN |
| 38 | BE | 708 | ASN |
| 38 | BE | 877 | ASN |
| 38 | BE | 911 | ASN |
| 38 | BE | 916 | HIS |
| 39 | B6 | 90 | GLN |
| 39 | B6 | 115 | ASN |
| 39 | B6 | 166 | ASN |
| 39 | B6 | 287 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 40 | 5B | 207 | ASN |
| 41 | 5C | 101 | ASN |
| 41 | 5C | 124 | HIS |
| 41 | 5C | 133 | HIS |
| 41 | 5C | 151 | ASN |
| 41 | 5C | 164 | GLN |
| 41 | 5C | 170 | GLN |
| 41 | 5C | 371 | HIS |
| 41 | 5C | 394 | HIS |
| 41 | 5C | 525 | ASN |
| 42 | 5D | 42 | HIS |
| 42 | 5D | 144 | ASN |
| 42 | 5D | 153 | ASN |
| 43 | 5E | 303 | GLN |
| 43 | 5E | 316 | ASN |
| 44 | 5F | 125 | GLN |
| 44 | 5F | 135 | HIS |
| 44 | 5F | 144 | ASN |
| 45 | 5G | 143 | HIS |
| 45 | 5G | 156 | HIS |
| 45 | 5G | 159 | HIS |
| 45 | 5G | 193 | ASN |
| 46 | 5H | 499 | GLN |
| 46 | 5H | 513 | HIS |
| 46 | 5H | 515 | ASN |
| 46 | 5H | 560 | ASN |
| 47 | 5I | 20 | GLN |
| 47 | 5I | 46 | ASN |
| 47 | 5I | 109 | HIS |
| 47 | 5I | 242 | ASN |
| 47 | 5I | 260 | GLN |
| 47 | 5I | 336 | HIS |
| 47 | 5I | 371 | ASN |
| 47 | 5I | 406 | HIS |
| 47 | 5I | 460 | GLN |
| 48 | 5J | 135 | HIS |
| 48 | 5J | 184 | ASN |
| 48 | 5J | 195 | GLN |
| 49 | 5K | 29 | GLN |
| 49 | 5K | 43 | ASN |
| 50 | RA | 82 | HIS |
| 50 | RA | 96 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 50 | RA | 119 | ASN |
| 50 | RA | 147 | ASN |
| 50 | RA | 230 | GLN |
| 50 | RA | 268 | GLN |
| 50 | RA | 282 | ASN |
| 50 | RA | 339 | HIS |
| 51 | RB | 314 | ASN |
| 51 | RB | 318 | ASN |
| 52 | RC | 149 | ASN |
| 52 | RC | 151 | ASN |
| 52 | RC | 255 | GLN |
| 53 | RE | 170 | GLN |
| 53 | RE | 293 | ASN |
| 53 | RE | 402 | ASN |
| 53 | RE | 409 | ASN |
| 53 | RE | 506 | GLN |
| 53 | RE | 520 | ASN |
| 53 | RE | 537 | ASN |
| 53 | RE | 568 | ASN |
| 53 | RE | 602 | ASN |
| 53 | RE | 834 | ASN |
| 53 | RE | 841 | ASN |
| 53 | RE | 969 | ASN |
| 53 | RE | 1029 | ASN |
| 53 | RE | 1033 | ASN |
| 53 | RE | 1215 | ASN |
| 53 | RE | 1228 | ASN |
| 54 | RF | 23 | HIS |
| 54 | RF | 73 | GLN |
| 54 | RF | 90 | ASN |
| 54 | RF | 135 | ASN |
| 54 | RF | 136 | ASN |
| 54 | RF | 187 | HIS |
| 54 | RF | 197 | GLN |
| 55 | RG | 105 | ASN |
| 55 | RG | 125 | ASN |
| 55 | RH | 69 | ASN |
| 55 | RH | 125 | ASN |
| 55 | RH | 250 | ASN |
| 56 | RI | 52 | ASN |
| 56 | RI | 186 | ASN |
| 56 | RI | 215 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 56 | RI | 221 | ASN |
| 57 | RJ | 126 | ASN |
| 57 | RJ | 157 | ASN |
| 57 | RJ | 276 | HIS |
| 57 | RJ | 289 | HIS |
| 57 | RJ | 778 | GLN |
| 57 | RJ | 909 | ASN |
| 58 | RK | 16 | ASN |
| 58 | RK | 334 | ASN |
| 59 | RL | 16 | ASN |
| 59 | RL | 75 | ASN |
| 59 | RL | 133 | ASN |
| 60 | RN | 8 | ASN |
| 60 | RN | 56 | ASN |
| 60 | RN | 482 | GLN |
| 60 | RN | 703 | GLN |
| 60 | RN | 771 | ASN |
| 60 | RN | 797 | ASN |
| 61 | RO | 192 | GLN |
| 61 | RO | 266 | ASN |
| 61 | RO | 268 | GLN |
| 61 | RO | 273 | GLN |
| 61 | RO | 290 | HIS |
| 61 | RO | 304 | ASN |
| 61 | RO | 306 | GLN |
| 61 | RO | 343 | GLN |
| 61 | RO | 434 | ASN |
| 61 | RO | 472 | HIS |
| 61 | RO | 474 | HIS |
| 62 | RP | 58 | ASN |
| 62 | RP | 1686 | GLN |
| 62 | RP | 1702 | HIS |
| 62 | RP | 1707 | HIS |
| 62 | RP | 1785 | ASN |
| 62 | RP | 1787 | ASN |
| 62 | RP | 1802 | HIS |
| 62 | RP | 1816 | HIS |
| 63 | RQ | 303 | GLN |
| 63 | RQ | 310 | HIS |
| 63 | RQ | 344 | GLN |
| 63 | RQ | 839 | ASN |
| 63 | RQ | 867 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 63 | RQ | 876 | GLN |
| 65 | RT | 127 | GLN |
| 65 | RT | 218 | ASN |
| 65 | RT | 232 | HIS |
| 66 | RV | 222 | ASN |
| 66 | RV | 224 | HIS |

### 5.3.3 RNA

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 1 | 3A | 169/333 (50%) | 44 (26%) | 2 (1%) |
| 2 | 5A | 518/700 (74%) | 161 (31%) | 11 (2%) |
| 3 | SA | 1304/1808 (72%) | 498 (38%) | 19 (1%) |
| All | All | 1991/2841 (70%) | 703 (35%) | 32 (1%) |

All (703) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 3A | 2 | U |
| 1 | 3A | 14 | A |
| 1 | 3A | 15 | U |
| 1 | 3A | 24 | U |
| 1 | 3A | 25 | U |
| 1 | 3A | 27 | U |
| 1 | 3A | 28 | A |
| 1 | 3A | 30 | A |
| 1 | 3A | 33 | A |
| 1 | 3A | 35 | U |
| 1 | 3A | 38 | U |
| 1 | 3A | 56 | A |
| 1 | 3A | 60 | A |
| 1 | 3A | 61 | G |
| 1 | 3A | 87 | G |
| 1 | 3A | 88 | U |
| 1 | 3A | 89 | C |
| 1 | 3A | 90 | C |
| 1 | 3A | 91 | C |
| 1 | 3A | 101 | G |
| 1 | 3A | 111 | G |
| 1 | 3A | 115 | G |
| 1 | 3A | 198 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 3A | 199 | G |
| 1 | 3A | 201 | C |
| 1 | 3A | 204 | U |
| 1 | 3A | 205 | G |
| 1 | 3A | 206 | C |
| 1 | 3A | 246 | A |
| 1 | 3A | 248 | G |
| 1 | 3A | 249 | G |
| 1 | 3A | 252 | C |
| 1 | 3A | 305 | G |
| 1 | 3A | 309 | G |
| 1 | 3A | 310 | G |
| 1 | 3A | 311 | G |
| 1 | 3A | 313 | A |
| 1 | 3A | 314 | C |
| 1 | 3A | 322 | A |
| 1 | 3A | 324 | U |
| 1 | 3A | 325 | C |
| 1 | 3A | 328 | A |
| 1 | 3A | 329 | C |
| 1 | 3A | 332 | G |
| 2 | 5A | 5 | G |
| 2 | 5A | 6 | A |
| 2 | 5A | 7 | A |
| 2 | 5A | 8 | A |
| 2 | 5A | 11 | A |
| 2 | 5A | 13 | U |
| 2 | 5A | 14 | U |
| 2 | 5A | 15 | G |
| 2 | 5A | 63 | G |
| 2 | 5A | 64 | U |
| 2 | 5A | 70 | A |
| 2 | 5A | 82 | A |
| 2 | 5A | 83 | U |
| 2 | 5A | 86 | C |
| 2 | 5A | 87 | C |
| 2 | 5A | 90 | G |
| 2 | 5A | 102 | A |
| 2 | 5A | 103 | G |
| 2 | 5A | 104 | A |
| 2 | 5A | 109 | C |
| 2 | 5A | 110 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | 5A | 114 | G |
| 2 | 5A | 124 | A |
| 2 | 5A | 125 | G |
| 2 | 5A | 127 | U |
| 2 | 5A | 128 | C |
| 2 | 5A | 129 | U |
| 2 | 5A | 130 | G |
| 2 | 5A | 141 | A |
| 2 | 5A | 142 | U |
| 2 | 5A | 143 | A |
| 2 | 5A | 144 | C |
| 2 | 5A | 150 | G |
| 2 | 5A | 151 | U |
| 2 | 5A | 152 | U |
| 2 | 5A | 156 | U |
| 2 | 5A | 159 | A |
| 2 | 5A | 161 | A |
| 2 | 5A | 162 | U |
| 2 | 5A | 163 | G |
| 2 | 5A | 167 | U |
| 2 | 5A | 168 | G |
| 2 | 5A | 169 | A |
| 2 | 5A | 170 | U |
| 2 | 5A | 171 | G |
| 2 | 5A | 172 | C |
| 2 | 5A | 173 | G |
| 2 | 5A | 174 | U |
| 2 | 5A | 175 | A |
| 2 | 5A | 176 | U |
| 2 | 5A | 177 | U |
| 2 | 5A | 178 | G |
| 2 | 5A | 179 | A |
| 2 | 5A | 182 | G |
| 2 | 5A | 185 | A |
| 2 | 5A | 190 | U |
| 2 | 5A | 200 | A |
| 2 | 5A | 201 | U |
| 2 | 5A | 206 | A |
| 2 | 5A | 207 | G |
| 2 | 5A | 211 | G |
| 2 | 5A | 213 | G |
| 2 | 5A | 219 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | 5A | 220 | U |
| 2 | 5A | 222 | G |
| 2 | 5A | 223 | C |
| 2 | 5A | 224 | G |
| 2 | 5A | 225 | U |
| 2 | 5A | 227 | U |
| 2 | 5A | 235 | A |
| 2 | 5A | 240 | C |
| 2 | 5A | 254 | C |
| 2 | 5A | 256 | U |
| 2 | 5A | 259 | G |
| 2 | 5A | 260 | A |
| 2 | 5A | 261 | U |
| 2 | 5A | 263 | C |
| 2 | 5A | 267 | U |
| 2 | 5A | 268 | G |
| 2 | 5A | 279 | A |
| 2 | 5A | 280 | A |
| 2 | 5A | 281 | G |
| 2 | 5A | 292 | A |
| 2 | 5A | 294 | U |
| 2 | 5A | 304 | U |
| 2 | 5A | 305 | A |
| 2 | 5A | 309 | A |
| 2 | 5A | 310 | U |
| 2 | 5A | 311 | C |
| 2 | 5A | 312 | U |
| 2 | 5A | 313 | A |
| 2 | 5A | 321 | G |
| 2 | 5A | 322 | A |
| 2 | 5A | 325 | U |
| 2 | 5A | 326 | C |
| 2 | 5A | 328 | A |
| 2 | 5A | 337 | G |
| 2 | 5A | 339 | A |
| 2 | 5A | 346 | G |
| 2 | 5A | 350 | A |
| 2 | 5A | 353 | A |
| 2 | 5A | 354 | G |
| 2 | 5A | 355 | C |
| 2 | 5A | 359 | U |
| 2 | 5A | 361 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | 5A | 363 | A |
| 2 | 5A | 364 | A |
| 2 | 5A | 368 | U |
| 2 | 5A | 369 | G |
| 2 | 5A | 370 | U |
| 2 | 5A | 371 | G |
| 2 | 5A | 372 | A |
| 2 | 5A | 373 | U |
| 2 | 5A | 381 | G |
| 2 | 5A | 385 | A |
| 2 | 5A | 386 | A |
| 2 | 5A | 391 | C |
| 2 | 5A | 393 | C |
| 2 | 5A | 395 | C |
| 2 | 5A | 407 | A |
| 2 | 5A | 419 | A |
| 2 | 5A | 427 | A |
| 2 | 5A | 428 | A |
| 2 | 5A | 429 | A |
| 2 | 5A | 430 | C |
| 2 | 5A | 431 | A |
| 2 | 5A | 432 | C |
| 2 | 5A | 433 | C |
| 2 | 5A | 440 | U |
| 2 | 5A | 443 | G |
| 2 | 5A | 444 | U |
| 2 | 5A | 461 | A |
| 2 | 5A | 462 | G |
| 2 | 5A | 464 | G |
| 2 | 5A | 468 | A |
| 2 | 5A | 472 | A |
| 2 | 5A | 474 | A |
| 2 | 5A | 481 | U |
| 2 | 5A | 482 | A |
| 2 | 5A | 485 | G |
| 2 | 5A | 487 | A |
| 2 | 5A | 488 | U |
| 2 | 5A | 490 | G |
| 2 | 5A | 491 | U |
| 2 | 5A | 493 | A |
| 2 | 5A | 519 | A |
| 2 | 5A | 525 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 2 | 5A | 526 | U |
| 2 | 5A | 536 | A |
| 2 | 5A | 537 | G |
| 2 | 5A | 539 | A |
| 2 | 5A | 540 | U |
| 2 | 5A | 541 | U |
| 2 | 5A | 542 | U |
| 2 | 5A | 548 | A |
| 2 | 5A | 549 | G |
| 2 | 5A | 583 | U |
| 2 | 5A | 586 | A |
| 2 | 5A | 587 | G |
| 2 | 5A | 589 | U |
| 2 | 5A | 591 | U |
| 3 | SA | -6 | A |
| 3 | SA | -5 | G |
| 3 | SA | -4 | A |
| 3 | SA | -1 | G |
| 3 | SA | 0 | U |
| 3 | SA | 1 | U |
| 3 | SA | 2 | A |
| 3 | SA | 17 | C |
| 3 | SA | 18 | C |
| 3 | SA | 19 | A |
| 3 | SA | 21 | U |
| 3 | SA | 23 | G |
| 3 | SA | 25 | C |
| 3 | SA | 26 | A |
| 3 | SA | 29 | U |
| 3 | SA | 35 | U |
| 3 | SA | 36 | C |
| 3 | SA | 37 | U |
| 3 | SA | 50 | C |
| 3 | SA | 51 | A |
| 3 | SA | 52 | U |
| 3 | SA | 53 | G |
| 3 | SA | 55 | A |
| 3 | SA | 56 | U |
| 3 | SA | 57 | G |
| 3 | SA | 60 | U |
| 3 | SA | 61 | A |
| 3 | SA | 63 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 65 | A |
| 3 | SA | 66 | U |
| 3 | SA | 67 | A |
| 3 | SA | 68 | A |
| 3 | SA | 69 | G |
| 3 | SA | 72 | A |
| 3 | SA | 73 | U |
| 3 | SA | 74 | U |
| 3 | SA | 75 | U |
| 3 | SA | 77 | U |
| 3 | SA | 81 | G |
| 3 | SA | 85 | A |
| 3 | SA | 92 | A |
| 3 | SA | 96 | G |
| 3 | SA | 97 | C |
| 3 | SA | 100 | A |
| 3 | SA | 102 | U |
| 3 | SA | 103 | A |
| 3 | SA | 104 | A |
| 3 | SA | 105 | A |
| 3 | SA | 106 | U |
| 3 | SA | 114 | C |
| 3 | SA | 115 | G |
| 3 | SA | 116 | U |
| 3 | SA | 119 | A |
| 3 | SA | 127 | G |
| 3 | SA | 128 | U |
| 3 | SA | 129 | U |
| 3 | SA | 130 | C |
| 3 | SA | 131 | C |
| 3 | SA | 141 | U |
| 3 | SA | 145 | A |
| 3 | SA | 146 | U |
| 3 | SA | 147 | A |
| 3 | SA | 149 | C |
| 3 | SA | 153 | G |
| 3 | SA | 159 | U |
| 3 | SA | 160 | C |
| 3 | SA | 161 | U |
| 3 | SA | 168 | A |
| 3 | SA | 174 | U |
| 3 | SA | 175 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 176 | C |
| 3 | SA | 177 | U |
| 3 | SA | 182 | A |
| 3 | SA | 183 | U |
| 3 | SA | 184 | C |
| 3 | SA | 187 | G |
| 3 | SA | 188 | A |
| 3 | SA | 190 | C |
| 3 | SA | 191 | C |
| 3 | SA | 192 | U |
| 3 | SA | 193 | U |
| 3 | SA | 194 | U |
| 3 | SA | 195 | G |
| 3 | SA | 197 | A |
| 3 | SA | 202 | A |
| 3 | SA | 203 | U |
| 3 | SA | 204 | G |
| 3 | SA | 206 | A |
| 3 | SA | 210 | A |
| 3 | SA | 211 | U |
| 3 | SA | 214 | G |
| 3 | SA | 226 | A |
| 3 | SA | 228 | G |
| 3 | SA | 230 | C |
| 3 | SA | 233 | C |
| 3 | SA | 234 | G |
| 3 | SA | 236 | A |
| 3 | SA | 237 | C |
| 3 | SA | 238 | U |
| 3 | SA | 239 | C |
| 3 | SA | 240 | U |
| 3 | SA | 241 | U |
| 3 | SA | 242 | U |
| 3 | SA | 243 | G |
| 3 | SA | 254 | A |
| 3 | SA | 256 | A |
| 3 | SA | 258 | C |
| 3 | SA | 261 | U |
| 3 | SA | 262 | U |
| 3 | SA | 265 | A |
| 3 | SA | 266 | A |
| 3 | SA | 267 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 272 | U |
| 3 | SA | 273 | G |
| 3 | SA | 275 | C |
| 3 | SA | 276 | C |
| 3 | SA | 277 | U |
| 3 | SA | 278 | U |
| 3 | SA | 279 | G |
| 3 | SA | 280 | U |
| 3 | SA | 281 | G |
| 3 | SA | 283 | U |
| 3 | SA | 290 | G |
| 3 | SA | 308 | C |
| 3 | SA | 309 | C |
| 3 | SA | 311 | U |
| 3 | SA | 312 | A |
| 3 | SA | 316 | A |
| 3 | SA | 319 | U |
| 3 | SA | 320 | U |
| 3 | SA | 321 | C |
| 3 | SA | 324 | U |
| 3 | SA | 325 | G |
| 3 | SA | 333 | A |
| 3 | SA | 334 | G |
| 3 | SA | 337 | G |
| 3 | SA | 338 | C |
| 3 | SA | 350 | U |
| 3 | SA | 352 | A |
| 3 | SA | 355 | G |
| 3 | SA | 357 | G |
| 3 | SA | 359 | A |
| 3 | SA | 360 | A |
| 3 | SA | 361 | C |
| 3 | SA | 362 | G |
| 3 | SA | 365 | G |
| 3 | SA | 366 | A |
| 3 | SA | 369 | A |
| 3 | SA | 371 | G |
| 3 | SA | 373 | G |
| 3 | SA | 374 | U |
| 3 | SA | 375 | U |
| 3 | SA | 377 | G |
| 3 | SA | 379 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 382 | C |
| 3 | SA | 383 | G |
| 3 | SA | 386 | G |
| 3 | SA | 387 | A |
| 3 | SA | 390 | G |
| 3 | SA | 400 | A |
| 3 | SA | 401 | A |
| 3 | SA | 402 | C |
| 3 | SA | 403 | G |
| 3 | SA | 411 | C |
| 3 | SA | 416 | A |
| 3 | SA | 417 | A |
| 3 | SA | 418 | G |
| 3 | SA | 419 | G |
| 3 | SA | 421 | A |
| 3 | SA | 422 | G |
| 3 | SA | 423 | G |
| 3 | SA | 424 | C |
| 3 | SA | 425 | A |
| 3 | SA | 426 | G |
| 3 | SA | 429 | G |
| 3 | SA | 436 | A |
| 3 | SA | 437 | A |
| 3 | SA | 439 | U |
| 3 | SA | 440 | U |
| 3 | SA | 441 | A |
| 3 | SA | 444 | C |
| 3 | SA | 445 | A |
| 3 | SA | 448 | C |
| 3 | SA | 454 | U |
| 3 | SA | 455 | C |
| 3 | SA | 456 | A |
| 3 | SA | 457 | G |
| 3 | SA | 468 | A |
| 3 | SA | 469 | C |
| 3 | SA | 470 | A |
| 3 | SA | 471 | A |
| 3 | SA | 473 | A |
| 3 | SA | 477 | A |
| 3 | SA | 480 | G |
| 3 | SA | 486 | G |
| 3 | SA | 487 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 496 | G |
| 3 | SA | 501 | U |
| 3 | SA | 502 | U |
| 3 | SA | 505 | A |
| 3 | SA | 506 | A |
| 3 | SA | 514 | G |
| 3 | SA | 520 | A |
| 3 | SA | 534 | A |
| 3 | SA | 538 | A |
| 3 | SA | 539 | G |
| 3 | SA | 541 | A |
| 3 | SA | 542 | A |
| 3 | SA | 543 | C |
| 3 | SA | 545 | A |
| 3 | SA | 557 | G |
| 3 | SA | 558 | U |
| 3 | SA | 563 | U |
| 3 | SA | 564 | G |
| 3 | SA | 565 | C |
| 3 | SA | 570 | A |
| 3 | SA | 572 | C |
| 3 | SA | 574 | G |
| 3 | SA | 575 | C |
| 3 | SA | 578 | U |
| 3 | SA | 579 | A |
| 3 | SA | 580 | A |
| 3 | SA | 583 | C |
| 3 | SA | 584 | C |
| 3 | SA | 585 | A |
| 3 | SA | 586 | G |
| 3 | SA | 587 | C |
| 3 | SA | 594 | A |
| 3 | SA | 595 | G |
| 3 | SA | 602 | U |
| 3 | SA | 603 | U |
| 3 | SA | 604 | A |
| 3 | SA | 606 | A |
| 3 | SA | 608 | U |
| 3 | SA | 609 | U |
| 3 | SA | 610 | G |
| 3 | SA | 611 | U |
| 3 | SA | 612 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 613 | G |
| 3 | SA | 614 | C |
| 3 | SA | 615 | A |
| 3 | SA | 616 | G |
| 3 | SA | 635 | A |
| 3 | SA | 636 | A |
| 3 | SA | 638 | U |
| 3 | SA | 644 | C |
| 3 | SA | 648 | G |
| 3 | SA | 652 | G |
| 3 | SA | 654 | C |
| 3 | SA | 656 | G |
| 3 | SA | 657 | U |
| 3 | SA | 658 | C |
| 3 | SA | 677 | G |
| 3 | SA | 678 | A |
| 3 | SA | 686 | C |
| 3 | SA | 687 | G |
| 3 | SA | 688 | G |
| 3 | SA | 689 | G |
| 3 | SA | 691 | C |
| 3 | SA | 692 | C |
| 3 | SA | 823 | G |
| 3 | SA | 827 | C |
| 3 | SA | 844 | A |
| 3 | SA | 845 | G |
| 3 | SA | 848 | C |
| 3 | SA | 859 | A |
| 3 | SA | 860 | U |
| 3 | SA | 863 | A |
| 3 | SA | 864 | U |
| 3 | SA | 865 | A |
| 3 | SA | 873 | U |
| 3 | SA | 877 | G |
| 3 | SA | 894 | U |
| 3 | SA | 901 | G |
| 3 | SA | 904 | G |
| 3 | SA | 906 | A |
| 3 | SA | 912 | U |
| 3 | SA | 913 | G |
| 3 | SA | 914 | G |
| 3 | SA | 926 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 930 | A |
| 3 | SA | 933 | A |
| 3 | SA | 934 | C |
| 3 | SA | 935 | U |
| 3 | SA | 945 | U |
| 3 | SA | 951 | A |
| 3 | SA | 953 | G |
| 3 | SA | 960 | U |
| 3 | SA | 966 | A |
| 3 | SA | 969 | C |
| 3 | SA | 970 | A |
| 3 | SA | 1022 | C |
| 3 | SA | 1024 | U |
| 3 | SA | 1025 | A |
| 3 | SA | 1026 | A |
| 3 | SA | 1027 | A |
| 3 | SA | 1031 | U |
| 3 | SA | 1032 | G |
| 3 | SA | 1037 | C |
| 3 | SA | 1039 | A |
| 3 | SA | 1040 | G |
| 3 | SA | 1052 | U |
| 3 | SA | 1053 | G |
| 3 | SA | 1056 | U |
| 3 | SA | 1057 | U |
| 3 | SA | 1059 | U |
| 3 | SA | 1060 | U |
| 3 | SA | 1062 | A |
| 3 | SA | 1063 | U |
| 3 | SA | 1076 | A |
| 3 | SA | 1079 | U |
| 3 | SA | 1081 | A |
| 3 | SA | 1082 | C |
| 3 | SA | 1084 | A |
| 3 | SA | 1085 | G |
| 3 | SA | 1086 | A |
| 3 | SA | 1106 | U |
| 3 | SA | 1107 | G |
| 3 | SA | 1108 | G |
| 3 | SA | 1109 | G |
| 3 | SA | 1110 | G |
| 3 | SA | 1111 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 1114 | G |
| 3 | SA | 1118 | G |
| 3 | SA | 1119 | G |
| 3 | SA | 1122 | G |
| 3 | SA | 1125 | A |
| 3 | SA | 1126 | G |
| 3 | SA | 1127 | G |
| 3 | SA | 1128 | C |
| 3 | SA | 1129 | U |
| 3 | SA | 1131 | A |
| 3 | SA | 1132 | A |
| 3 | SA | 1145 | U |
| 3 | SA | 1146 | G |
| 3 | SA | 1158 | C |
| 3 | SA | 1164 | G |
| 3 | SA | 1178 | G |
| 3 | SA | 1191 | U |
| 3 | SA | 1192 | C |
| 3 | SA | 1193 | A |
| 3 | SA | 1195 | C |
| 3 | SA | 1196 | A |
| 3 | SA | 1197 | C |
| 3 | SA | 1198 | G |
| 3 | SA | 1199 | G |
| 3 | SA | 1200 | G |
| 3 | SA | 1201 | G |
| 3 | SA | 1202 | A |
| 3 | SA | 1205 | C |
| 3 | SA | 1206 | U |
| 3 | SA | 1208 | A |
| 3 | SA | 1210 | C |
| 3 | SA | 1213 | G |
| 3 | SA | 1217 | A |
| 3 | SA | 1218 | G |
| 3 | SA | 1219 | A |
| 3 | SA | 1220 | C |
| 3 | SA | 1223 | A |
| 3 | SA | 1227 | A |
| 3 | SA | 1228 | G |
| 3 | SA | 1229 | G |
| 3 | SA | 1230 | A |
| 3 | SA | 1232 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 1233 | G |
| 3 | SA | 1235 | C |
| 3 | SA | 1236 | A |
| 3 | SA | 1252 | C |
| 3 | SA | 1253 | U |
| 3 | SA | 1254 | U |
| 3 | SA | 1255 | G |
| 3 | SA | 1258 | U |
| 3 | SA | 1263 | G |
| 3 | SA | 1266 | U |
| 3 | SA | 1268 | G |
| 3 | SA | 1271 | G |
| 3 | SA | 1272 | U |
| 3 | SA | 1273 | G |
| 3 | SA | 1275 | A |
| 3 | SA | 1276 | U |
| 3 | SA | 1436 | A |
| 3 | SA | 1440 | C |
| 3 | SA | 1441 | C |
| 3 | SA | 1442 | U |
| 3 | SA | 1443 | U |
| 3 | SA | 1449 | U |
| 3 | SA | 1450 | U |
| 3 | SA | 1453 | G |
| 3 | SA | 1457 | C |
| 3 | SA | 1461 | C |
| 3 | SA | 1469 | A |
| 3 | SA | 1472 | C |
| 3 | SA | 1473 | U |
| 3 | SA | 1474 | G |
| 3 | SA | 1475 | A |
| 3 | SA | 1476 | C |
| 3 | SA | 1482 | C |
| 3 | SA | 1488 | G |
| 3 | SA | 1492 | A |
| 3 | SA | 1493 | A |
| 3 | SA | 1496 | U |
| 3 | SA | 1498 | G |
| 3 | SA | 1506 | G |
| 3 | SA | 1517 | U |
| 3 | SA | 1518 | C |
| 3 | SA | 1520 | U |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 1521 | G |
| 3 | SA | 1522 | U |
| 3 | SA | 1523 | G |
| 3 | SA | 1524 | A |
| 3 | SA | 1527 | C |
| 3 | SA | 1533 | C |
| 3 | SA | 1535 | U |
| 3 | SA | 1536 | G |
| 3 | SA | 1537 | C |
| 3 | SA | 1539 | G |
| 3 | SA | 1541 | G |
| 3 | SA | 1543 | A |
| 3 | SA | 1544 | U |
| 3 | SA | 1567 | U |
| 3 | SA | 1568 | C |
| 3 | SA | 1569 | A |
| 3 | SA | 1570 | A |
| 3 | SA | 1573 | A |
| 3 | SA | 1582 | U |
| 3 | SA | 1584 | G |
| 3 | SA | 1590 | G |
| 3 | SA | 1594 | G |
| 3 | SA | 1595 | U |
| 3 | SA | 1596 | C |
| 3 | SA | 1601 | G |
| 3 | SA | 1602 | C |
| 3 | SA | 1607 | G |
| 3 | SA | 1614 | A |
| 3 | SA | 1618 | C |
| 3 | SA | 1628 | U |
| 3 | SA | 1630 | U |
| 3 | SA | 1633 | A |
| 3 | SA | 1651 | A |
| 3 | SA | 1655 | A |
| 3 | SA | 1657 | U |
| 3 | SA | 1658 | G |
| 3 | SA | 1659 | A |
| 3 | SA | 1661 | U |
| 3 | SA | 1665 | U |
| 3 | SA | 1670 | G |
| 3 | SA | 1675 | C |
| 3 | SA | 1677 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 1679 | G |
| 3 | SA | 1680 | G |
| 3 | SA | 1681 | A |
| 3 | SA | 1682 | U |
| 3 | SA | 1683 | C |
| 3 | SA | 1687 | U |
| 3 | SA | 1689 | A |
| 3 | SA | 1692 | G |
| 3 | SA | 1693 | A |
| 3 | SA | 1696 | G |
| 3 | SA | 1697 | G |
| 3 | SA | 1700 | C |
| 3 | SA | 1708 | U |
| 3 | SA | 1709 | C |
| 3 | SA | 1710 | U |
| 3 | SA | 1711 | C |
| 3 | SA | 1713 | G |
| 3 | SA | 1717 | G |
| 3 | SA | 1718 | G |
| 3 | SA | 1719 | A |
| 3 | SA | 1721 | A |
| 3 | SA | 1724 | U |
| 3 | SA | 1725 | U |
| 3 | SA | 1727 | G |
| 3 | SA | 1728 | A |
| 3 | SA | 1731 | A |
| 3 | SA | 1732 | A |
| 3 | SA | 1736 | G |
| 3 | SA | 1737 | G |
| 3 | SA | 1742 | U |
| 3 | SA | 1743 | U |
| 3 | SA | 1745 | G |
| 3 | SA | 1749 | A |
| 3 | SA | 1750 | A |
| 3 | SA | 1755 | A |
| 3 | SA | 1756 | A |
| 3 | SA | 1757 | G |
| 3 | SA | 1758 | U |
| 3 | SA | 1759 | C |
| 3 | SA | 1761 | U |
| 3 | SA | 1764 | C |
| 3 | SA | 1766 | A |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 1767 | G |
| 3 | SA | 1768 | G |
| 3 | SA | 1769 | U |
| 3 | SA | 1779 | U |
| 3 | SA | 1780 | G |
| 3 | SA | 1781 | A |
| 3 | SA | 1782 | A |
| 3 | SA | 1789 | G |

All (32) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | 3A | 198 | U |
| 1 | 3A | 248 | G |
| 2 | 5A | 169 | A |
| 2 | 5A | 172 | C |
| 2 | 5A | 173 | G |
| 2 | 5A | 224 | G |
| 2 | 5A | 312 | U |
| 2 | 5A | 358 | G |
| 2 | 5A | 363 | A |
| 2 | 5A | 368 | U |
| 2 | 5A | 487 | A |
| 2 | 5A | 492 | G |
| 2 | 5A | 536 | A |
| 3 | SA | -7 | A |
| 3 | SA | 0 | U |
| 3 | SA | 56 | U |
| 3 | SA | 68 | A |
| 3 | SA | 272 | U |
| 3 | SA | 372 | G |
| 3 | SA | 401 | A |
| 3 | SA | 417 | A |
| 3 | SA | 538 | A |
| 3 | SA | 542 | A |
| 3 | SA | 579 | A |
| 3 | SA | 602 | U |
| 3 | SA | 1031 | U |
| 3 | SA | 1052 | U |
| 3 | SA | 1084 | A |
| 3 | SA | 1197 | C |
| 3 | SA | 1521 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 3 | SA | 1594 | G |
| 3 | SA | 1632 | C |

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

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

## 5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry (i)

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

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 71 | GTP | RJ | 1201 | 72 | 26,34,34 | 0.94 | 2 (7%) | 32,54,54 | 0.92 | 0 |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 71 | GTP | RJ | 1201 | 72 | - | 3/18/38/38 | 0/3/3/3 |

All (2) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 71 | RJ | 1201 | GTP | C5-C6 | -2.47 | 1.42 | 1.47 |
| 71 | RJ | 1201 | GTP | C8-N7 | -2.05 | 1.31 | 1.35 |

There are no bond angle outliers.

There are no chirality outliers.

All (3) torsion outliers are listed below:

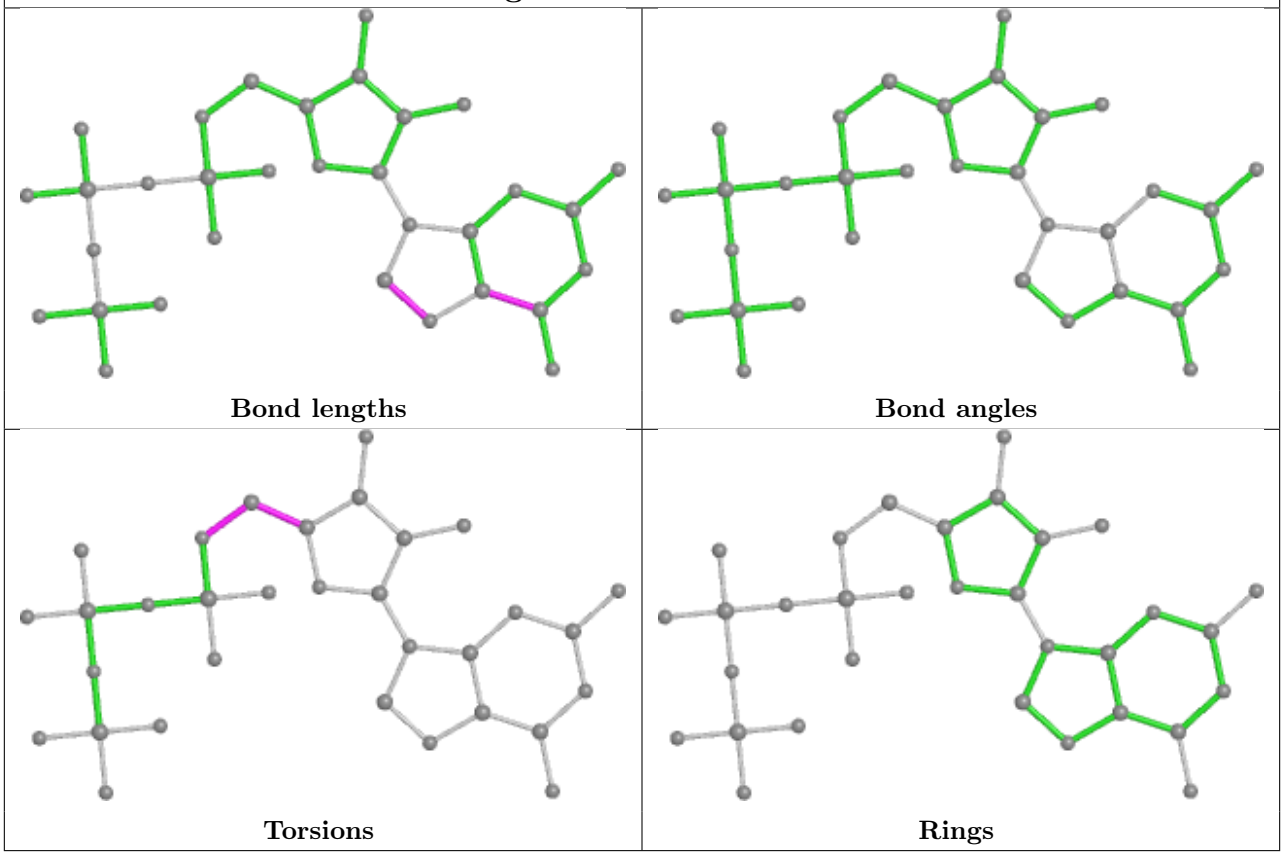
| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 71 | RJ | 1201 | GTP | O4'-C4'-C5'-O5' |
| 71 | RJ | 1201 | GTP | C3'-C4'-C5'-O5' |
| 71 | RJ | 1201 | GTP | C4'-C5'-O5'-PA |

There are no ring outliers.

No monomer is involved in short contacts.

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

**Ligand GTP RJ 1201**




## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

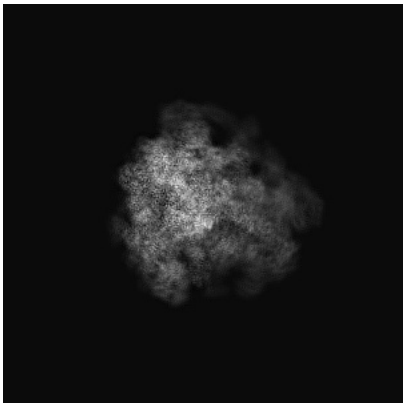
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-0949. These allow visual inspection of the internal detail of the map and identification of artifacts.

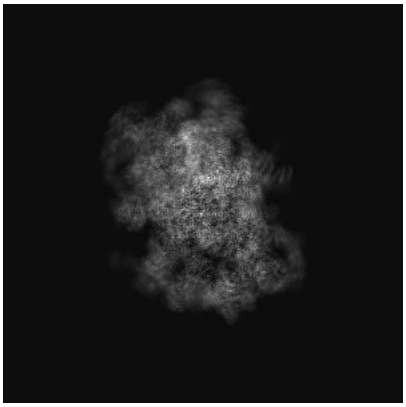
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

## 6.1 Orthogonal projections

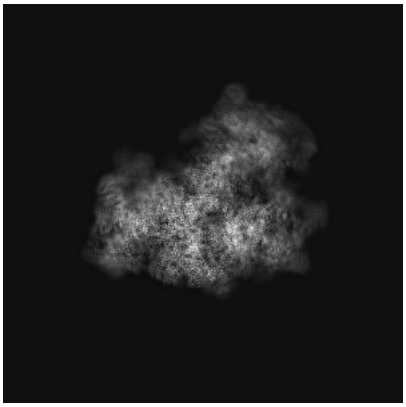
### 6.1.1 Primary map



X



Y

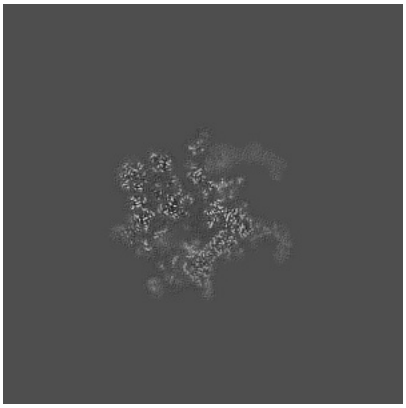


Z

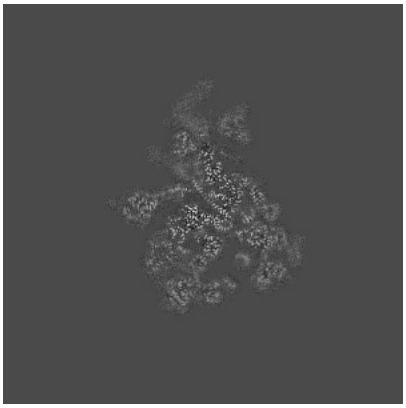
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices

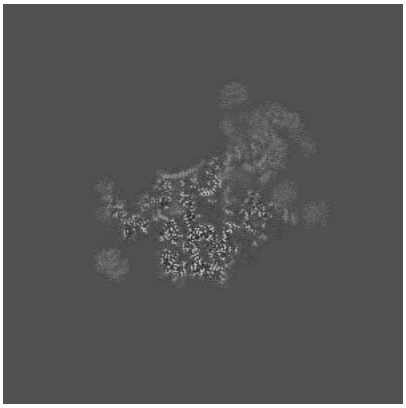
### 6.2.1 Primary map



X Index: 224



Y Index: 224

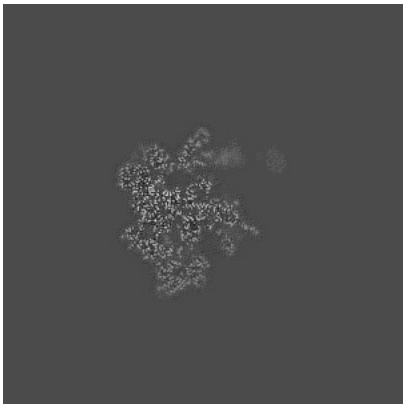


Z Index: 224

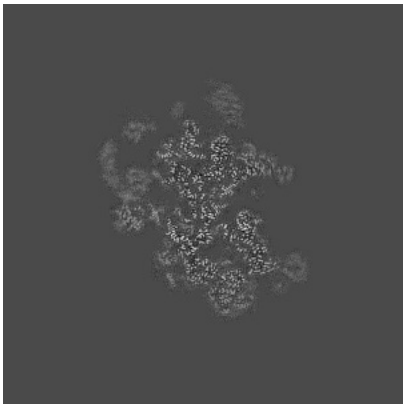
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

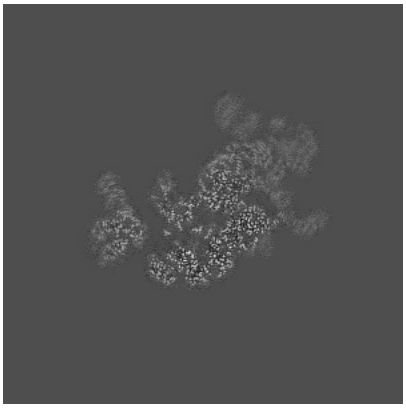
### 6.3.1 Primary map



X Index: 212



Y Index: 196

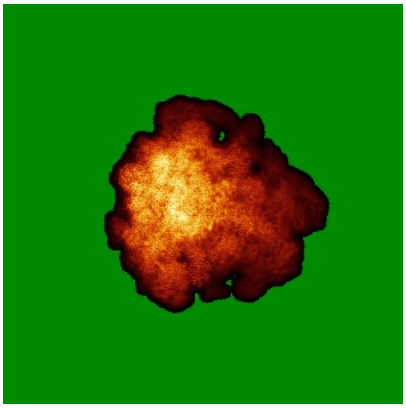


Z Index: 242

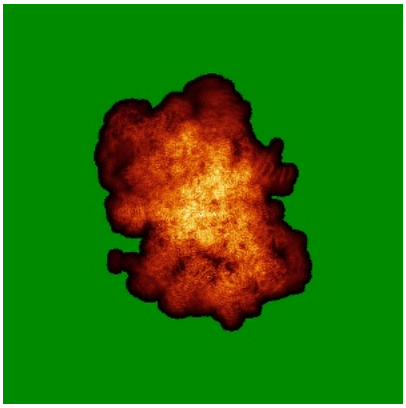
The images above show the largest variance slices of the map in three orthogonal directions.

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

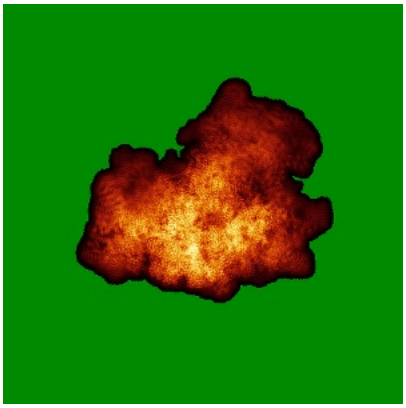
### 6.4.1 Primary map



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 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

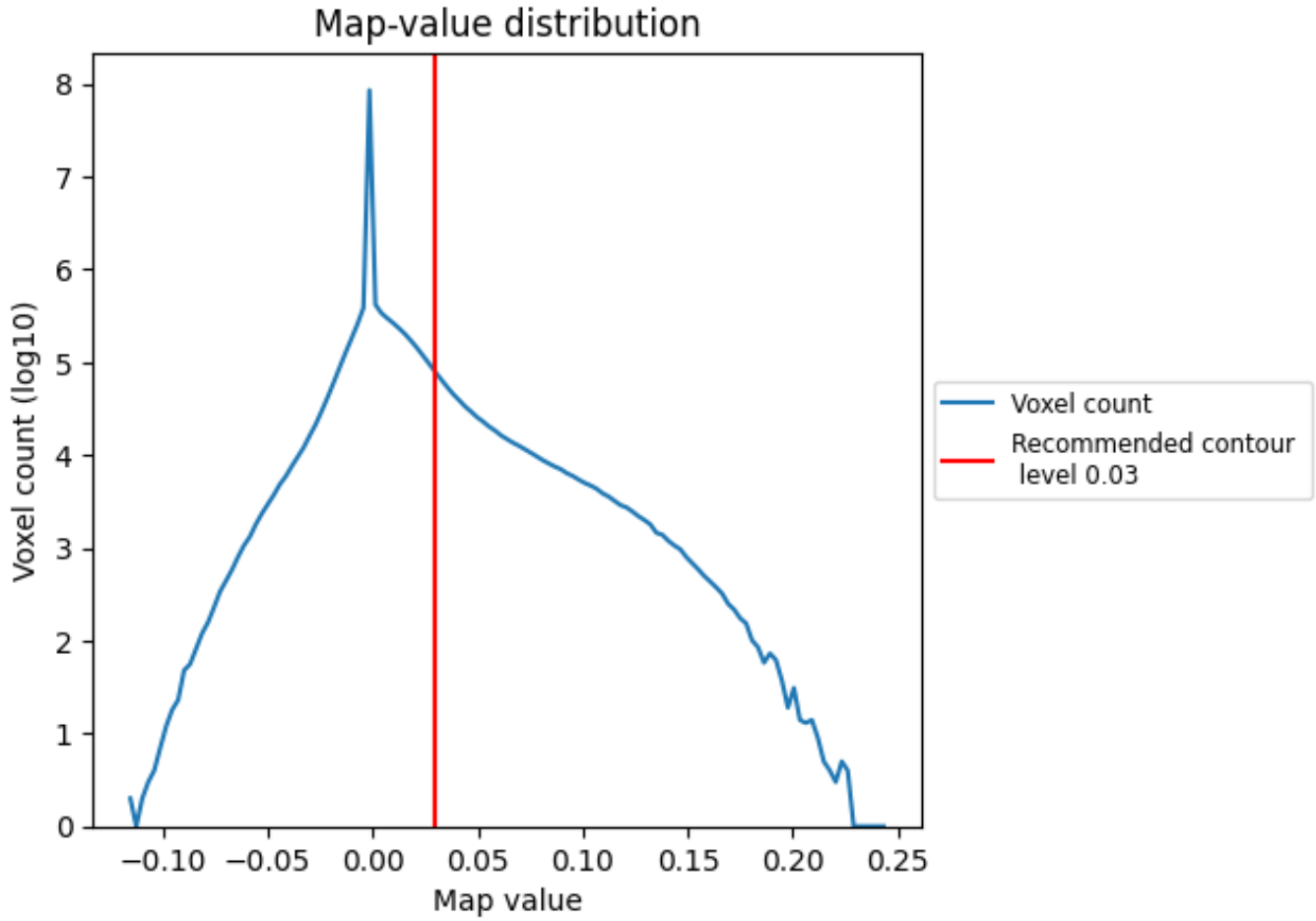
## 6.6 Mask visualisation (i)

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

# 7 Map analysis

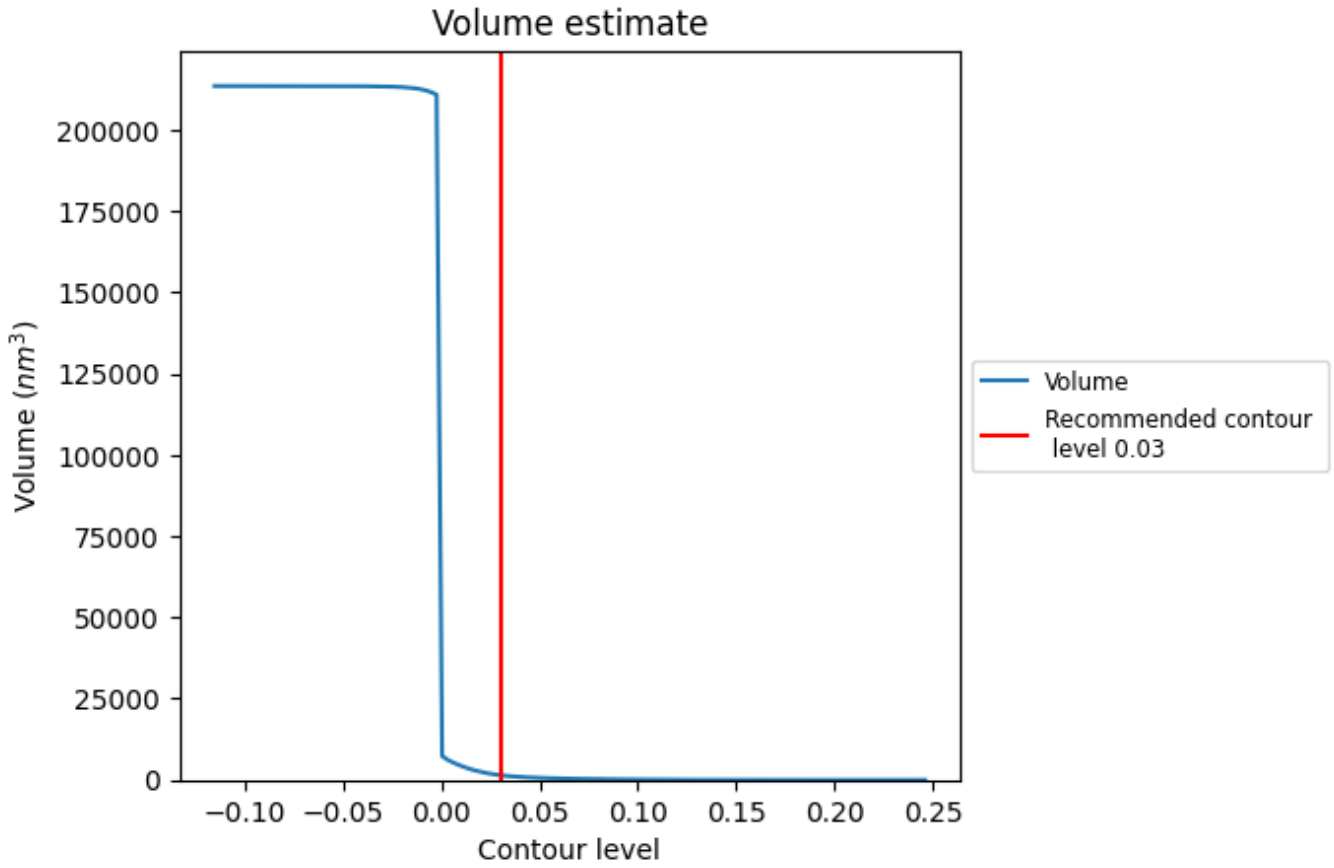
This section contains the results of statistical analysis of the map.

## 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.

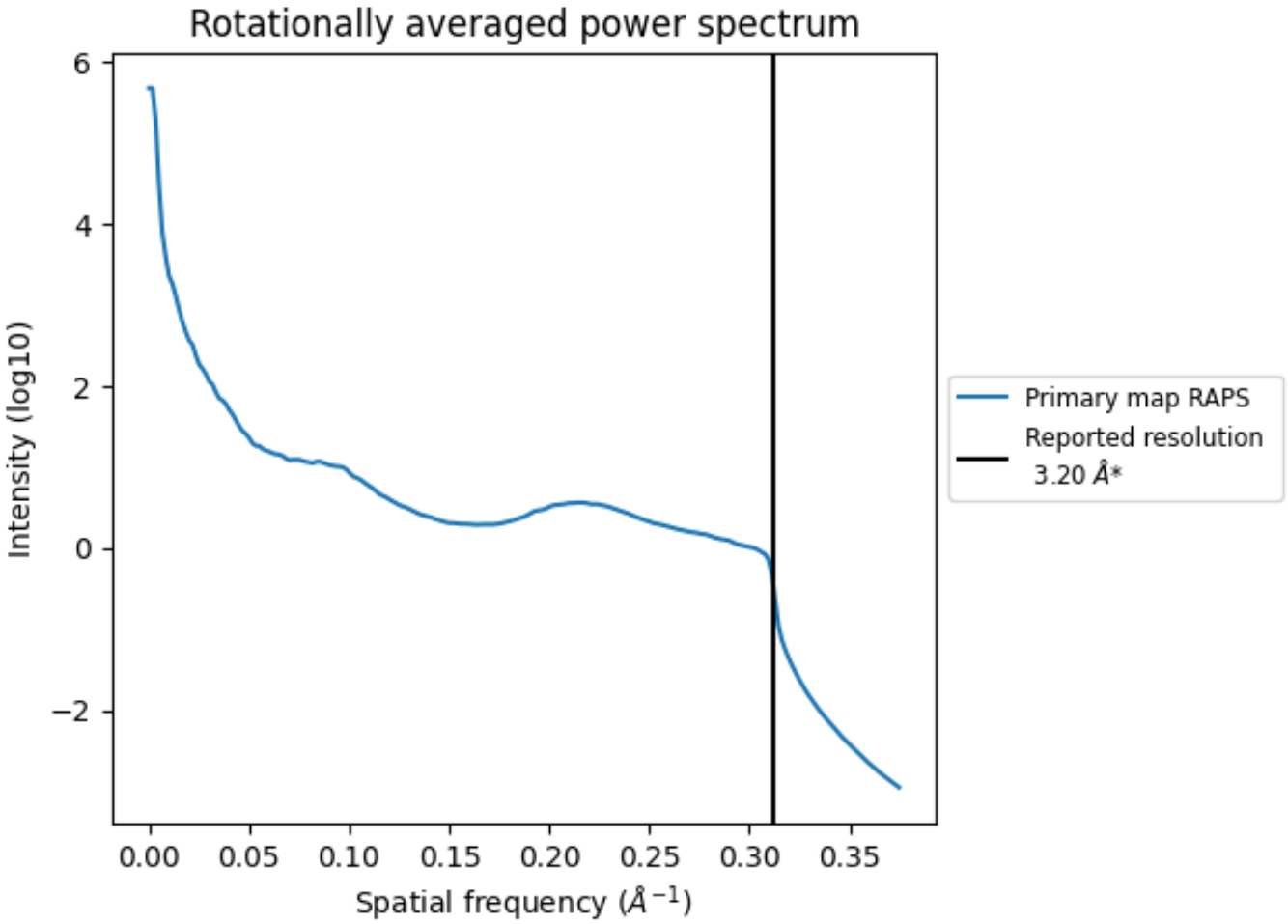
## 7.2 Volume estimate




The volume at the recommended contour level is 1466 $nm^3$; this corresponds to an approximate mass of 1324 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)

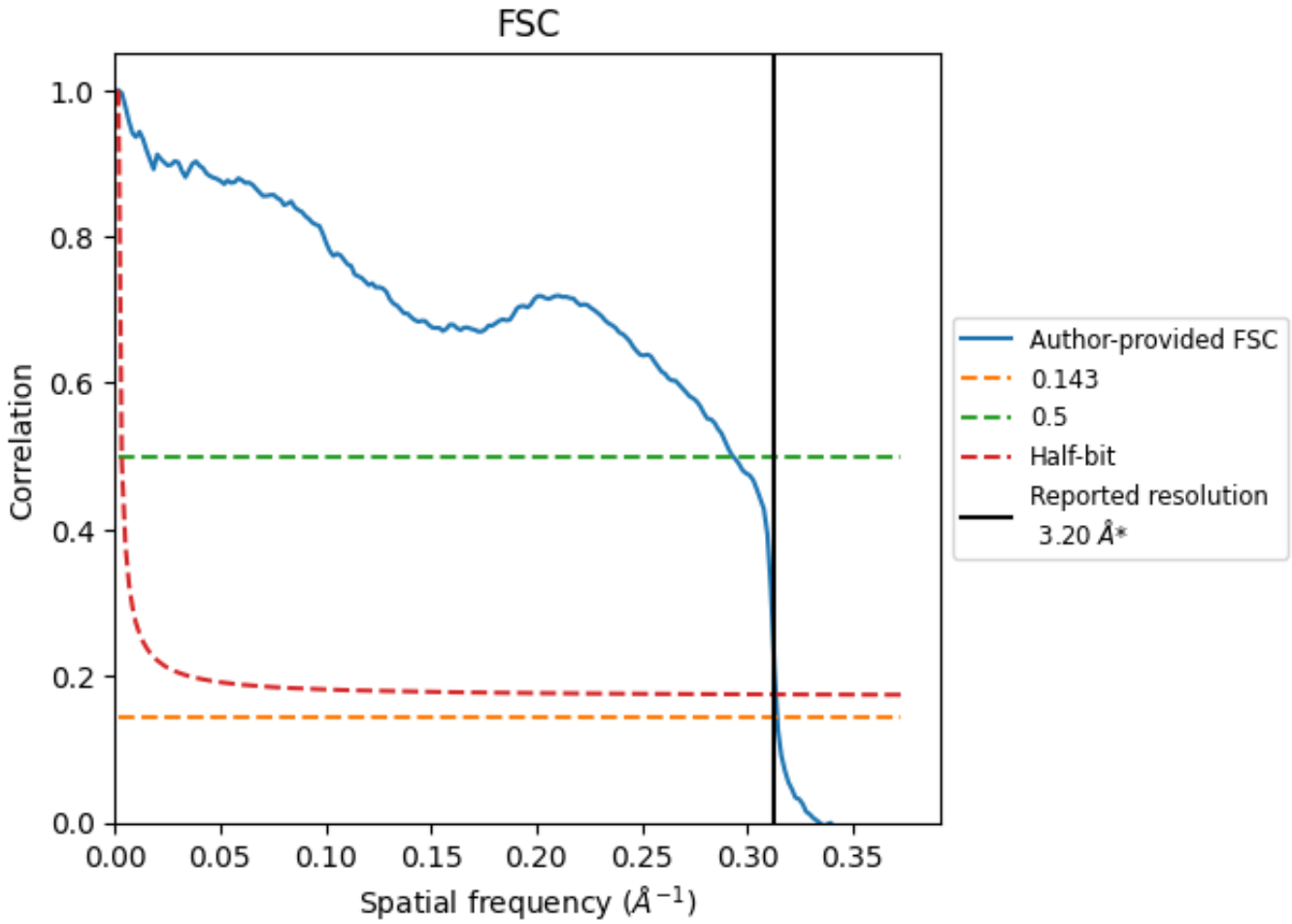



*Reported resolution corresponds to spatial frequency of 0.312 Å$^{-1}$

# 8 Fourier-Shell correlation

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

## 8.1 FSC




*Reported resolution corresponds to spatial frequency of 0.312 Å$^{-1}$

## 8.2 Resolution estimates (i)

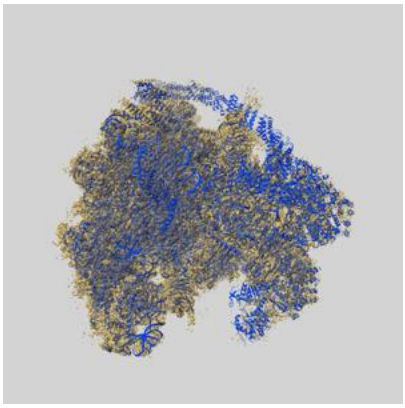
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 3.20 | - | - |
| Author-provided FSC curve | 3.18 | 3.41 | 3.19 |
| Unmasked-calculated* | - | - | - |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

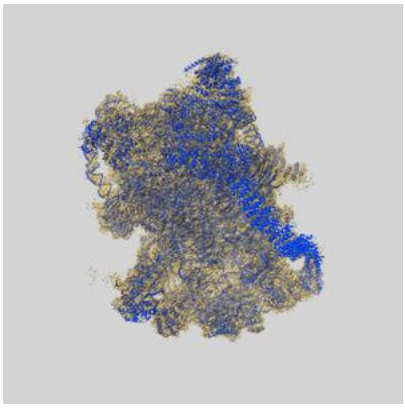
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-0949 and PDB model 6LQP. Per-residue inclusion information can be found in section 3 on page 17.

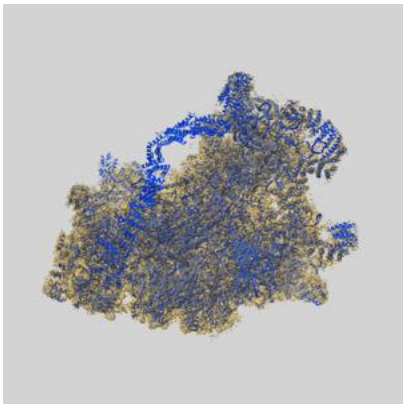
## 9.1 Map-model overlay



X



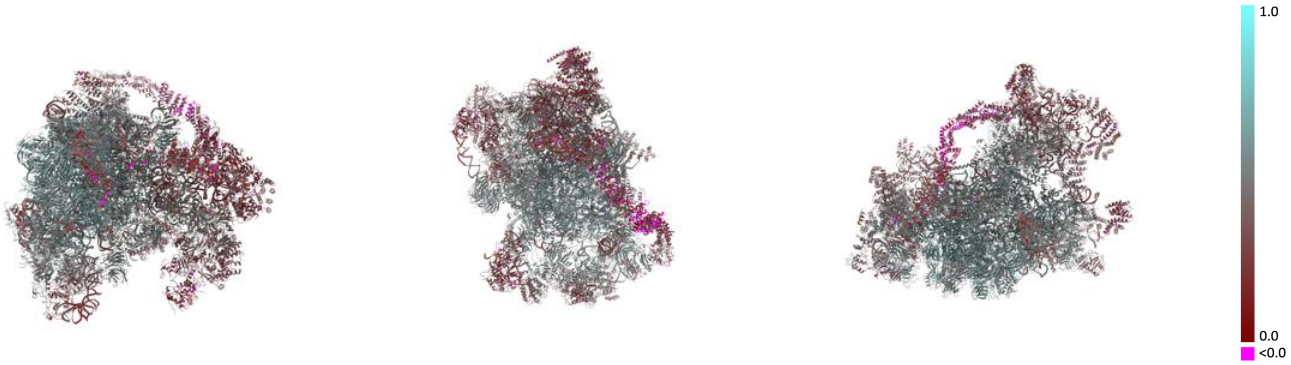
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 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.

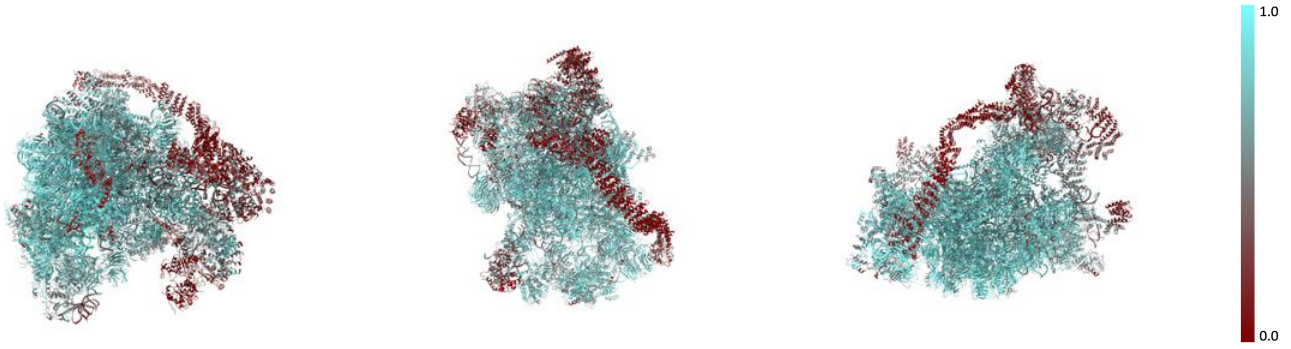
## 9.2 Q-score mapped to coordinate model




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.

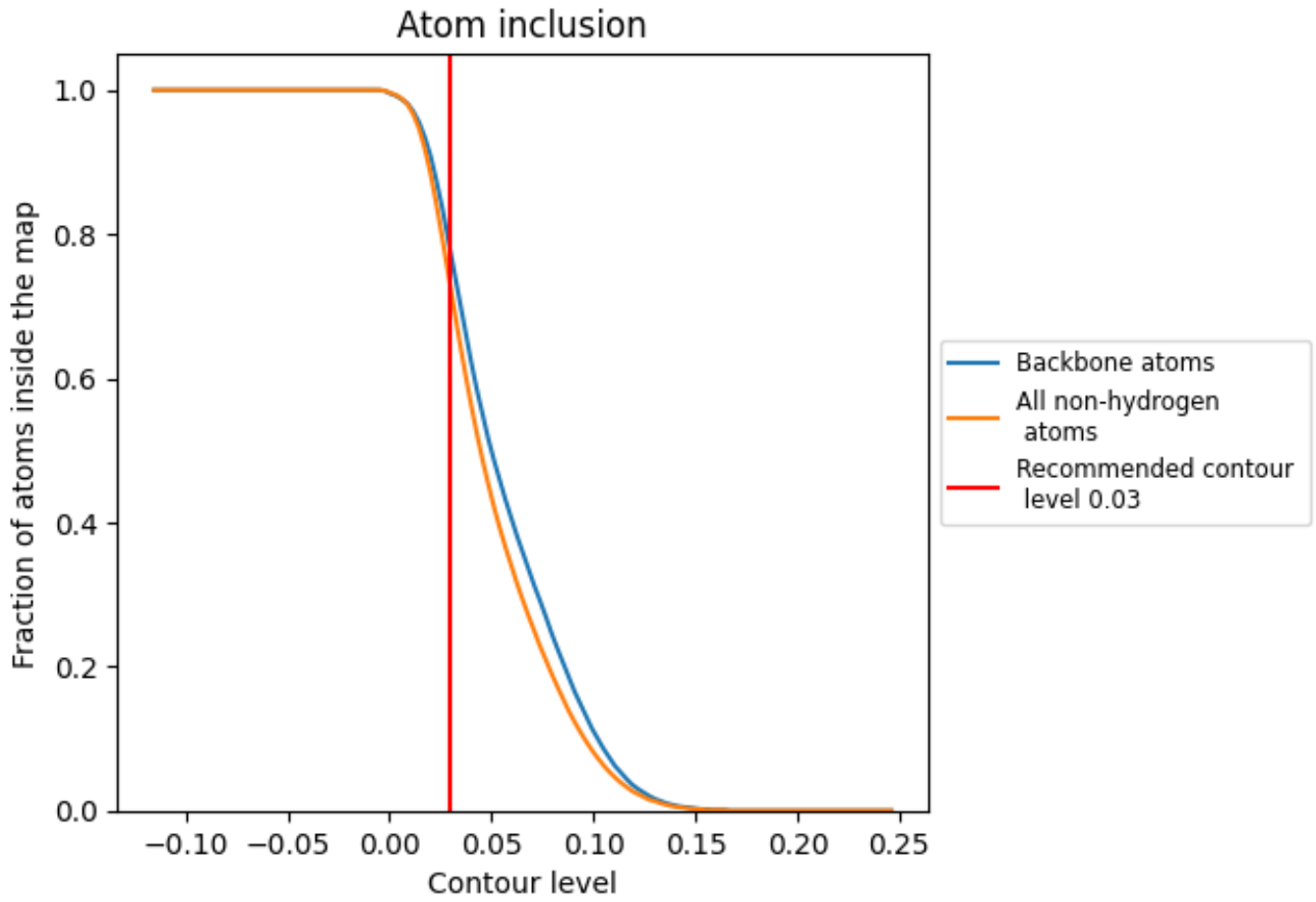
## 9.3 Atom inclusion mapped to coordinate model




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 (0.03).

## 9.4 Atom inclusion (i)




At the recommended contour level, 77% of all backbone atoms, 72% 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 (0.03) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.7240 | 0.4710 |
| 3A | 0.9050 | 0.5090 |
| 3B | 0.8850 | 0.5680 |
| 3C | 0.7980 | 0.5000 |
| 3D | 0.8130 | 0.5140 |
| 3E | 0.7920 | 0.4870 |
| 3F | 0.7810 | 0.4970 |
| 3G | 0.8710 | 0.5540 |
| 3H | 0.8270 | 0.5340 |
| 5A | 0.8940 | 0.4880 |
| 5B | 0.7230 | 0.4830 |
| 5C | 0.8960 | 0.5750 |
| 5D | 0.8260 | 0.5310 |
| 5E | 0.8190 | 0.5440 |
| 5F | 0.9230 | 0.5830 |
| 5G | 0.8720 | 0.5680 |
| 5H | 0.8170 | 0.5270 |
| 5I | 0.8990 | 0.5770 |
| 5J | 0.7060 | 0.5110 |
| 5K | 0.8810 | 0.5670 |
| A4 | 0.8400 | 0.5160 |
| A5 | 0.8530 | 0.5350 |
| A8 | 0.5490 | 0.3710 |
| A9 | 0.7580 | 0.4200 |
| AE | 0.3280 | 0.3250 |
| AF | 0.8920 | 0.5540 |
| AG | 0.8330 | 0.5210 |
| B1 | 0.9100 | 0.5770 |
| B2 | 0.8170 | 0.5040 |
| B3 | 0.7660 | 0.4720 |
| B6 | 0.7450 | 0.4690 |
| B8 | 0.8980 | 0.5670 |
| BE | 0.9110 | 0.5760 |
| RA | 0.5410 | 0.4120 |
| RB | 0.6400 | 0.4590 |


*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion | Q-score |
|---|---|---|
| RC | 0.7470 | 0.5120 |
| RE | 0.6650 | 0.4410 |
| RF | 0.5400 | 0.4040 |
| RG | 0.6890 | 0.4530 |
| RH | 0.8230 | 0.5330 |
| RI | 0.8460 | 0.5290 |
| RJ | 0.8370 | 0.5370 |
| RK | 0.8320 | 0.5310 |
| RL | 0.5790 | 0.4100 |
| RM | 0.2390 | 0.3000 |
| RN | 0.6800 | 0.4410 |
| RO | 0.7590 | 0.4580 |
| RP | 0.3010 | 0.3170 |
| RQ | 0.7450 | 0.5040 |
| RS | 0.3360 | 0.2730 |
| RT | 0.8270 | 0.5200 |
| RV | 0.8290 | 0.5350 |
| RW | 0.7040 | 0.4960 |
| RY | 0.4400 | 0.3860 |
| SA | 0.7270 | 0.4210 |
| SC | 0.8170 | 0.5370 |
| SF | 0.6230 | 0.4190 |
| SG | 0.8590 | 0.5590 |
| SH | 0.4570 | 0.4220 |
| SI | 0.6410 | 0.4510 |
| SJ | 0.5160 | 0.3740 |
| SK | 0.8580 | 0.5550 |
| SM | 0.4930 | 0.3660 |
| SN | 0.0400 | 0.2760 |
| SO | 0.8530 | 0.5380 |
| SP | 0.8680 | 0.5470 |
| SR | 0.8980 | 0.5690 |
| ST | 0.6950 | 0.4700 |
| SX | 0.8400 | 0.5470 |
| SY | 0.8750 | 0.5630 |
| SZ | 0.6750 | 0.4650 |
| Sc | 0.8620 | 0.5520 |
| Sd | 0.8600 | 0.5610 |
| X1 | 0.6560 | 0.4480 |