



wwPDB EM Validation Summary Report ⓘ

Apr 2, 2025 – 01:54 am BST

PDB ID : 6GWT / pdb_00006gwt
EMDB ID : EMD-0076
Title : Cryo-EM structure of an E. coli 70S ribosome in complex with RF3-GDPCP, RF1(GAQ) and Pint-tRNA (State I)
Authors : Graf, M.; Huter, P.; Maracci, C.; Peterek, M.; Rodnina, M.V.; Wilson, D.N.
Deposited on : 2018-06-25
Resolution : 3.80 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev117
Mogul : 1.8.4, CSD as541be (2020)
MolProbity : 4.02b-467
buster-report : 1.1.7 (2018)
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.42

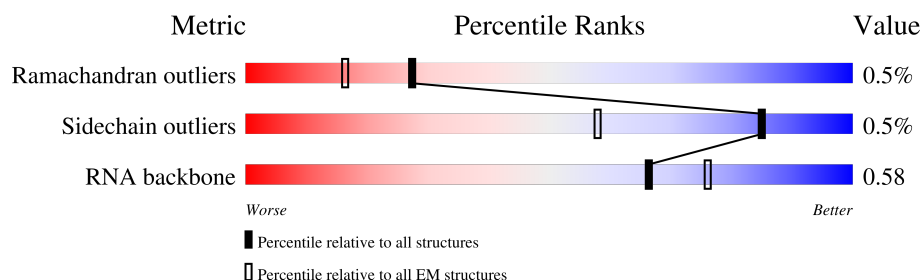
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|-----------------------|-----------------------------|-----------------------------|
| Ramachandran outliers | 207382 | 16835 |
| Sidechain outliers | 206894 | 16415 |
| RNA backbone | 6643 | 2191 |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|---|
| 1 | A | 2903 | <div> <div>7%</div> <div>79%</div> <div>20%</div> <div>.</div> </div> |
| 2 | B | 120 | <div> <div>.</div> <div>78%</div> <div>22%</div> <div>.</div> </div> |
| 3 | C | 271 | <div> <div>20%</div> <div>99%</div> <div>.</div> </div> |
| 4 | D | 209 | <div> <div>15%</div> <div>100%</div> </div> |
| 5 | E | 201 | <div> <div>27%</div> <div>100%</div> </div> |
| 6 | F | 177 | <div> <div>47%</div> <div>98%</div> <div>.</div> </div> |
| 7 | G | 176 | <div> <div>31%</div> <div>98%</div> <div>..</div> </div> |
| 8 | H | 149 | <div> <div>79%</div> <div>100%</div> </div> |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|----------------------|
| 9 | I | 141 | 100% |
| 10 | J | 142 | 23% 100% |
| 11 | K | 122 | 33% 100% |
| 12 | L | 143 | 29% 99% |
| 13 | M | 136 | 30% 96% |
| 14 | N | 120 | 18% 99% |
| 15 | O | 116 | 17% 100% |
| 16 | P | 114 | 25% 99% |
| 17 | Q | 117 | 21% 100% |
| 18 | R | 103 | 26% 98% |
| 19 | S | 110 | 30% 98% |
| 20 | T | 93 | 29% 100% |
| 21 | U | 102 | 26% 98% |
| 22 | V | 94 | 24% 100% |
| 23 | W | 75 | 20% 99% |
| 24 | X | 77 | 25% 99% |
| 25 | Y | 63 | 19% 100% |
| 26 | Z | 58 | 24% 100% |
| 27 | 0 | 56 | 21% 100% |
| 28 | 1 | 50 | 34% 100% |
| 29 | 2 | 46 | 28% 100% |
| 30 | 3 | 64 | 34% 94% 5% |
| 31 | 4 | 38 | 16% 100% |
| 32 | 5 | 131 | 98% 98% |
| 33 | 7 | 7 | 57% 43% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 34 | a | 1539 | |
| 35 | b | 218 | |
| 36 | c | 206 | |
| 37 | d | 205 | |
| 38 | e | 157 | |
| 39 | f | 100 | |
| 40 | g | 151 | |
| 41 | h | 129 | |
| 42 | i | 127 | |
| 43 | j | 98 | |
| 44 | k | 116 | |
| 45 | l | 123 | |
| 46 | m | 114 | |
| 47 | n | 101 | |
| 48 | o | 88 | |
| 49 | p | 82 | |
| 50 | q | 80 | |
| 51 | r | 65 | |
| 52 | s | 79 | |
| 53 | t | 85 | |
| 54 | u | 65 | |
| 55 | v | 248 | |
| 56 | w | 525 | |
| 57 | x | 77 | |
| 58 | z | 14 | |

2 Entry composition

There are 59 unique types of molecules in this entry. The entry contains 151484 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a RNA chain called 23S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|-------|-------|------|---------|-------|
| 1 | A | 2896 | Total | C | N | O | P | 0 | 0 |
| | | | 62177 | 27736 | 11444 | 20101 | 2896 | | |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|---------------|
| A | 747 | C | U | conflict | GB 1036415628 |
| A | 1847 | G | A | conflict | GB 1036415628 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 2 | B | 120 | Total | C | N | O | P | 0 | 0 |
| | | | 2572 | 1145 | 471 | 836 | 120 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|---------------|
| B | 120 | A | U | conflict | GB 1373146531 |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 3 | C | 271 | Total | C | N | O | S | 0 | 0 |
| | | | 2082 | 1288 | 423 | 364 | 7 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 4 | D | 209 | Total | C | N | O | S | 0 | 0 |
| | | | 1565 | 979 | 288 | 294 | 4 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 5 | E | 201 | Total | C | N | O | S | 0 | 0 |
| | | | 1552 | 974 | 283 | 290 | 5 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 6 | F | 177 | Total | C | N | O | S | 0 | 0 |
| | | | 1410 | 899 | 249 | 256 | 6 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 7 | G | 176 | Total | C | N | O | S | 0 | 0 |
| | | | 1323 | 832 | 243 | 246 | 2 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 8 | H | 149 | Total | C | N | O | S | 0 | 0 |
| | | | 1111 | 699 | 197 | 214 | 1 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 9 | I | 141 | Total | C | N | O | S | 0 | 0 |
| | | | 1032 | 651 | 179 | 196 | 6 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 10 | J | 142 | Total | C | N | O | S | 0 | 0 |
| | | | 1129 | 714 | 212 | 199 | 4 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 11 | K | 122 | Total | C | N | O | S | 0 | 0 |
| | | | 938 | 587 | 180 | 165 | 6 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 12 | L | 143 | Total | C | N | O | S | 0 | 0 |
| | | | 1045 | 649 | 206 | 189 | 1 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 13 | M | 136 | Total | C | N | O | S | 0 | 0 |
| | | | 1074 | 686 | 205 | 177 | 6 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 14 | N | 120 | Total | C | N | O | S | 0 | 0 |
| | | | 960 | 593 | 196 | 166 | 5 | | |

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

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 15 | O | 116 | Total | C | N | O | 0 | 0 |
| | | | 892 | 552 | 178 | 162 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 16 | P | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 917 | 574 | 179 | 163 | 1 | | |

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

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 17 | Q | 117 | Total | C | N | O | 0 | 0 |
| | | | 947 | 604 | 192 | 151 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 18 | R | 103 | Total | C | N | O | S | 0 | 0 |
| | | | 816 | 516 | 153 | 145 | 2 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 19 | S | 110 | Total | C | N | O | S | 0 | 0 |
| | | | 857 | 532 | 166 | 156 | 3 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 20 | T | 93 | Total | C | N | O | S | 0 | 0 |
| | | | 738 | 466 | 139 | 131 | 2 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 21 | U | 102 | Total | C | N | O | S | 0 | 0 |
| | | | 779 | 492 | 146 | 141 | | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 22 | V | 94 | Total | C | N | O | S | 0 | 0 |
| | | | 753 | 479 | 137 | 134 | 3 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 23 | W | 75 | Total | C | N | O | S | 0 | 0 |
| | | | 575 | 356 | 116 | 102 | 1 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 24 | X | 77 | Total | C | N | O | S | 0 | 0 |
| | | | 625 | 388 | 129 | 106 | 2 | | |

- Molecule 25 is a protein called 50S ribosomal protein L29.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 25 | Y | 63 | Total | C | N | O | S | 0 | 0 |
| | | | 509 | 313 | 99 | 95 | 2 | | |

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

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 26 | Z | 58 | Total | C | N | O | S | 0 | 0 |
| | | | 449 | 281 | 87 | 79 | 2 | | |

- Molecule 27 is a protein called 50S ribosomal protein L32.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 27 | 0 | 56 | Total | C | N | O | S | 0 | 0 |
| | | | 444 | 269 | 94 | 80 | 1 | | |

- Molecule 28 is a protein called 50S ribosomal protein L33.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 28 | 1 | 50 | Total | C | N | O | S | 0 | 0 |
| | | | 409 | 263 | 75 | 71 | | | |

- Molecule 29 is a protein called 50S ribosomal protein L34.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 29 | 2 | 46 | Total | C | N | O | S | 0 | 0 |
| | | | 377 | 228 | 90 | 57 | 2 | | |

- Molecule 30 is a protein called 50S ribosomal protein L35.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 30 | 3 | 64 | Total | C | N | O | S | 0 | 0 |
| | | | 504 | 323 | 105 | 74 | 2 | | |

- Molecule 31 is a protein called 50S ribosomal protein L36.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| 31 | 4 | 38 | Total | C | N | O | S | 0 | 0 |
| | | | 302 | 185 | 65 | 48 | 4 | | |

- Molecule 32 is a protein called 50S ribosomal protein L10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 32 | 5 | 131 | Total | C | N | O | S | 0 | 0 |
| | | | 988 | 625 | 175 | 183 | 5 | | |

- Molecule 33 is a RNA chain called mRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---|---------|-------|
| 33 | 7 | 7 | Total | C | N | O | P | 0 | 0 |
| | | | 151 | 68 | 29 | 47 | 7 | | |

- Molecule 34 is a RNA chain called 16S ribosomal RNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-------|------|-------|------|---------|-------|
| 34 | a | 1539 | Total | C | N | O | P | 0 | 0 |
| | | | 33016 | 14725 | 6052 | 10700 | 1539 | | |

- Molecule 35 is a protein called 30S ribosomal protein S2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 35 | b | 218 | Total | C | N | O | S | 0 | 0 |
| | | | 1704 | 1081 | 305 | 311 | 7 | | |

- Molecule 36 is a protein called 30S ribosomal protein S3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 36 | c | 206 | Total | C | N | O | S | 0 | 0 |
| | | | 1624 | 1028 | 305 | 288 | 3 | | |

- Molecule 37 is a protein called 30S ribosomal protein S4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 37 | d | 205 | Total | C | N | O | S | 0 | 0 |
| | | | 1643 | 1026 | 315 | 298 | 4 | | |

- Molecule 38 is a protein called 30S ribosomal protein S5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 38 | e | 157 | Total | C | N | O | S | 0 | 0 |
| | | | 1141 | 709 | 218 | 208 | 6 | | |

- Molecule 39 is a protein called 30S ribosomal protein S6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 39 | f | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 817 | 515 | 148 | 148 | 6 | | |

- Molecule 40 is a protein called 30S ribosomal protein S7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 40 | g | 151 | Total | C | N | O | S | 0 | 0 |
| | | | 1181 | 735 | 227 | 215 | 4 | | |

- Molecule 41 is a protein called 30S ribosomal protein S8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 41 | h | 129 | Total | C | N | O | S | 0 | 0 |
| | | | 979 | 616 | 173 | 184 | 6 | | |

- Molecule 42 is a protein called 30S ribosomal protein S9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 42 | i | 127 | Total | C | N | O | S | 0 | 0 |
| | | | 1022 | 634 | 206 | 179 | 3 | | |

- Molecule 43 is a protein called 30S ribosomal protein S10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 43 | j | 98 | Total | C | N | O | S | 0 | 0 |
| | | | 786 | 493 | 150 | 142 | 1 | | |

- Molecule 44 is a protein called 30S ribosomal protein S11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 44 | k | 116 | Total | C | N | O | S | 0 | 0 |
| | | | 869 | 535 | 173 | 158 | 3 | | |

- Molecule 45 is a protein called 30S ribosomal protein S12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 45 | l | 123 | Total | C | N | O | S | 0 | 0 |
| | | | 955 | 590 | 196 | 165 | 4 | | |

- Molecule 46 is a protein called 30S ribosomal protein S13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 46 | m | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 883 | 546 | 178 | 156 | 3 | | |

- Molecule 47 is a protein called 30S ribosomal protein S14.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 47 | n | 101 | Total | C | N | O | S | 0 | 0 |
| | | | 799 | 498 | 165 | 133 | 3 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|-----------|------------|
| n | 35 | ALA | - | insertion | UNP P0AG59 |

- Molecule 48 is a protein called 30S ribosomal protein S15.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 48 | o | 88 | Total | C | N | O | S | 0 | 0 |
| | | | 714 | 439 | 144 | 130 | 1 | | |

- Molecule 49 is a protein called 30S ribosomal protein S16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 49 | p | 82 | Total | C | N | O | S | 0 | 0 |
| | | | 649 | 406 | 128 | 114 | 1 | | |

- Molecule 50 is a protein called 30S ribosomal protein S17.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 50 | q | 80 | Total | C | N | O | S | 0 | 0 |
| | | | 648 | 411 | 121 | 113 | 3 | | |

- Molecule 51 is a protein called 30S ribosomal protein S18.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 51 | r | 65 | Total | C | N | O | 0 | 0 |
| | | | 504 | 317 | 96 | 91 | | |

- Molecule 52 is a protein called 30S ribosomal protein S19.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 52 | s | 79 | Total | C | N | O | S | 0 | 0 |
| | | | 637 | 408 | 120 | 107 | 2 | | |

- Molecule 53 is a protein called 30S ribosomal protein S20.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 53 | t | 85 | Total | C | N | O | S | 0 | 0 |
| | | | 665 | 411 | 137 | 114 | 3 | | |

- Molecule 54 is a protein called 30S ribosomal protein S21.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|---|---------|-------|
| 54 | u | 65 | Total | C | N | O | S | 0 | 0 |
| | | | 495 | 307 | 100 | 87 | 1 | | |

- Molecule 55 is a protein called Peptide chain release factor RF1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| 55 | v | 248 | Total | C | N | O | S | 0 | 0 |
| | | | 1932 | 1180 | 368 | 375 | 9 | | |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|------------|
| v | 167 | CYS | SER | conflict | UNP P0A7I0 |
| v | 234 | ALA | GLY | conflict | UNP P0A7I0 |

- Molecule 56 is a protein called Peptide chain release factor 3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 56 | w | 525 | Total | C | N | O | S | 0 | 0 |
| | | | 4027 | 2534 | 705 | 768 | 20 | | |

- Molecule 57 is a RNA chain called fMet-tRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 57 | x | 77 | Total | C | N | O | P | 0 | 0 |
| | | | 1640 | 732 | 297 | 535 | 76 | | |

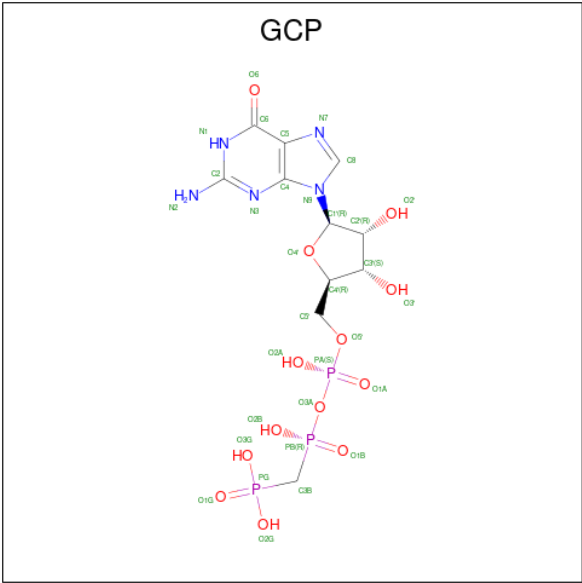
- Molecule 58 is a protein called Apidaecin.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 58 | z | 14 | Total | C | N | O | 0 | 0 |
| | | | 120 | 80 | 25 | 15 | | |

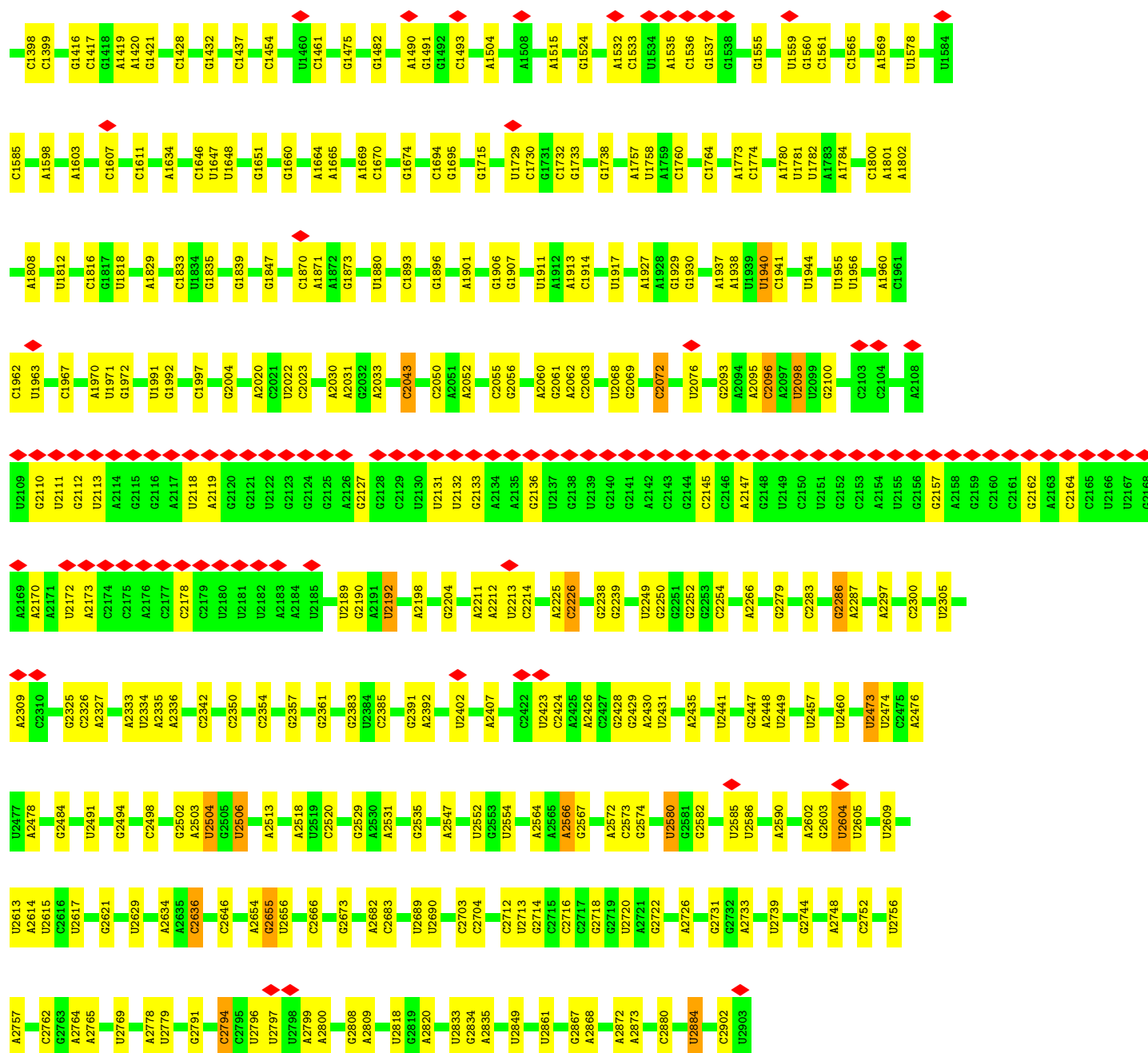
There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|------------|
| z | 10 | ARG | GLN | conflict | UNP Q8WSY8 |

- Molecule 59 is PHOSPHOMETHYLPHOSPHONIC ACID GUANYLATE ESTER (CCD ID: GCP) (formula: C₁₁H₁₈N₅O₁₃P₃).

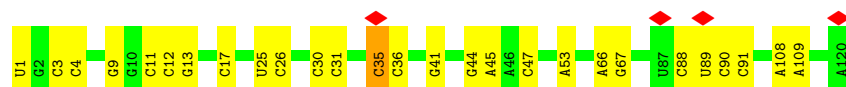


| Mol | Chain | Residues | Atoms | | | | | AltConf |
|-----|-------|----------|-------|----|---|----|---|---------|
| | | | Total | C | N | O | P | |
| 59 | w | 1 | 32 | 11 | 5 | 13 | 3 | 0 |



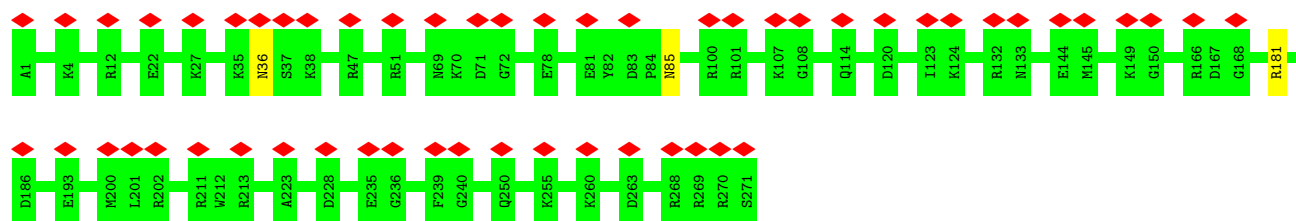
• Molecule 2: 5S ribosomal RNA

Chain B: 78% 22%

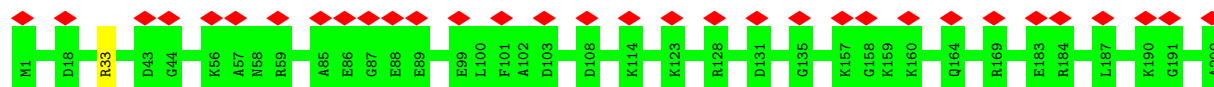


• Molecule 3: 50S ribosomal protein L2

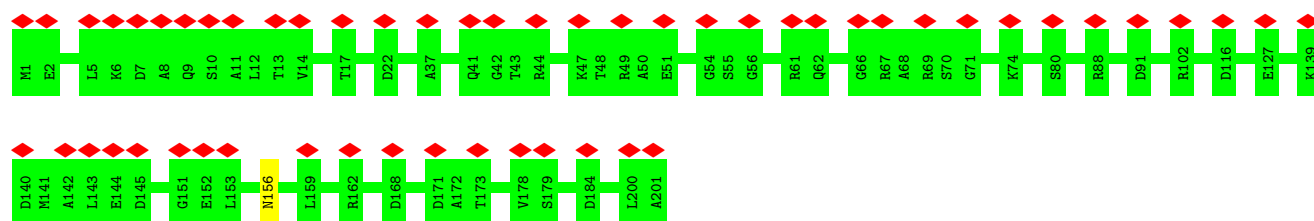
Chain C: 20% 99%



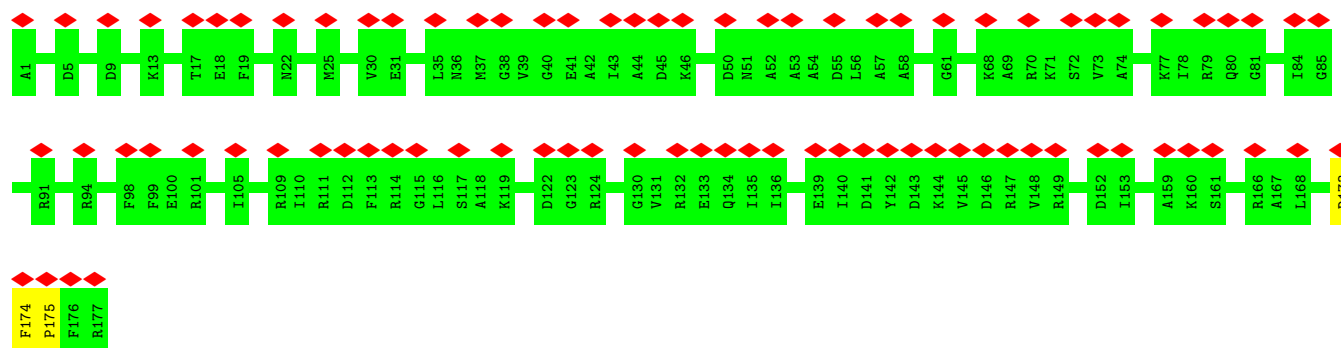
• Molecule 4: 50S ribosomal protein L3



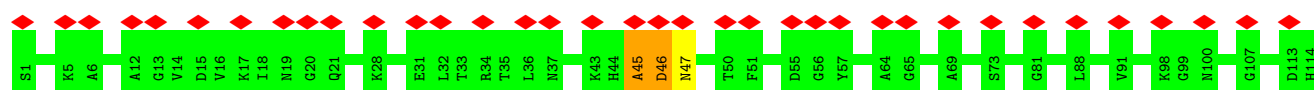
• Molecule 5: 50S ribosomal protein L4

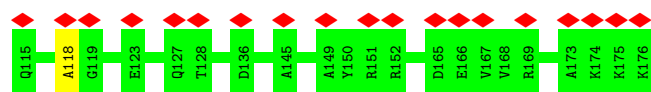


• Molecule 6: 50S ribosomal protein L5

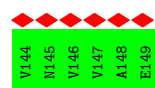
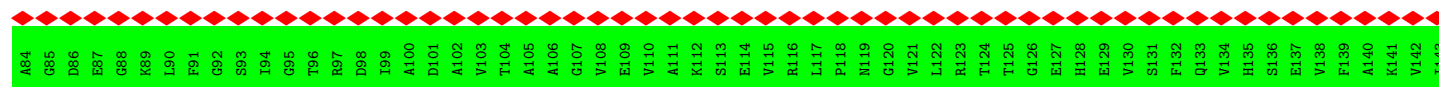
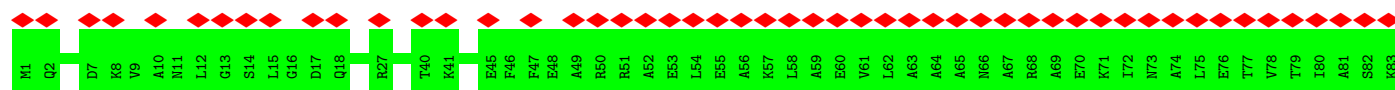
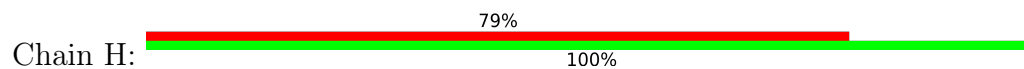


• Molecule 7: 50S ribosomal protein L6

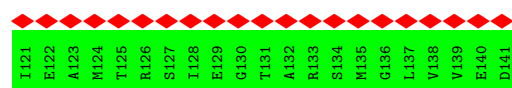
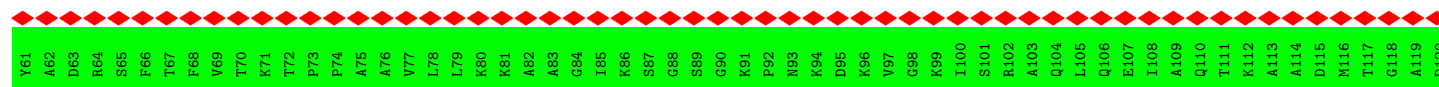




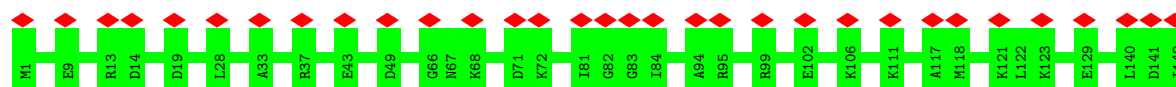
• Molecule 8: 50S ribosomal protein L9



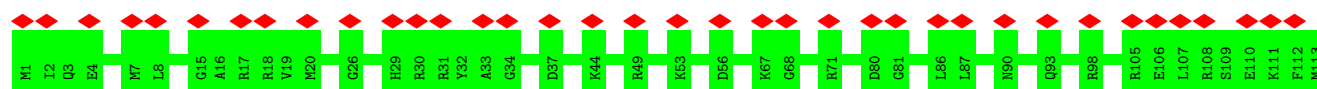
• Molecule 9: 50S ribosomal protein L11

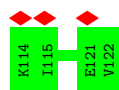


• Molecule 10: 50S ribosomal protein L13



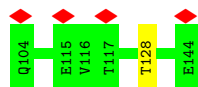
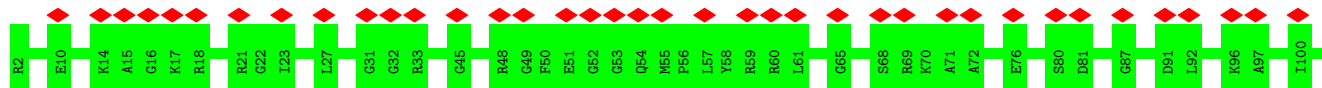
• Molecule 11: 50S ribosomal protein L14





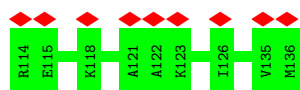
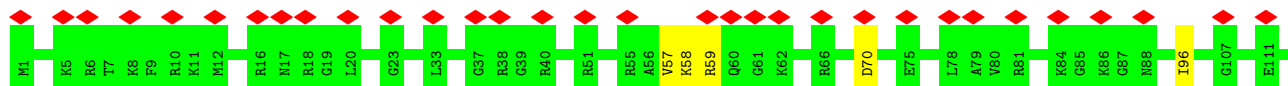
- Molecule 12: 50S ribosomal protein L15

Chain L: 29% 99%



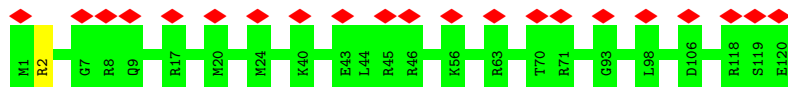
- Molecule 13: 50S ribosomal protein L16

Chain M: 30% 96%



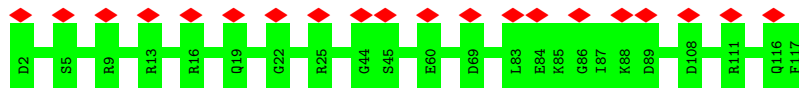
- Molecule 14: 50S ribosomal protein L17

Chain N: 18% 99%



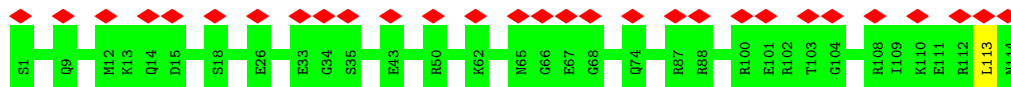
- Molecule 15: 50S ribosomal protein L18

Chain O: 17% 100%

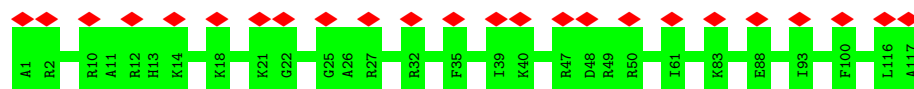


- Molecule 16: 50S ribosomal protein L19

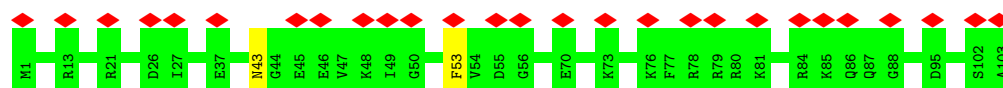
Chain P: 25% 99%



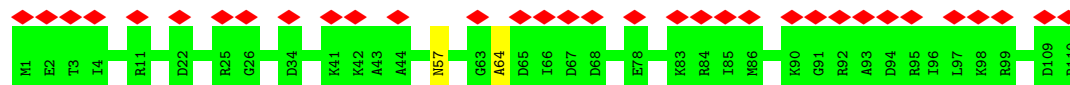
- Molecule 17: 50S ribosomal protein L20



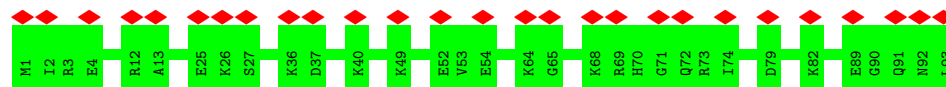
- Molecule 18: 50S ribosomal protein L21



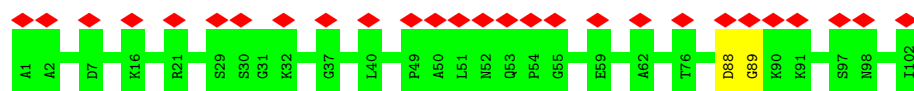
- Molecule 19: 50S ribosomal protein L22



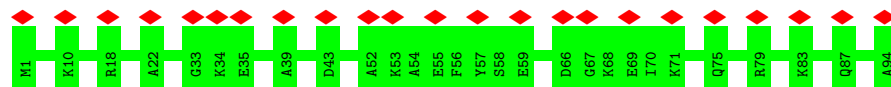
- Molecule 20: 50S ribosomal protein L23



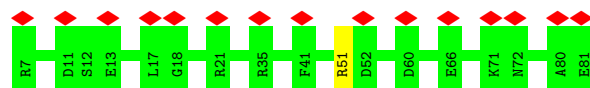
- Molecule 21: 50S ribosomal protein L24



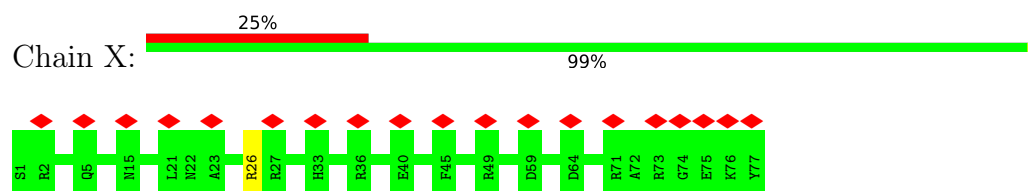
- Molecule 22: 50S ribosomal protein L25



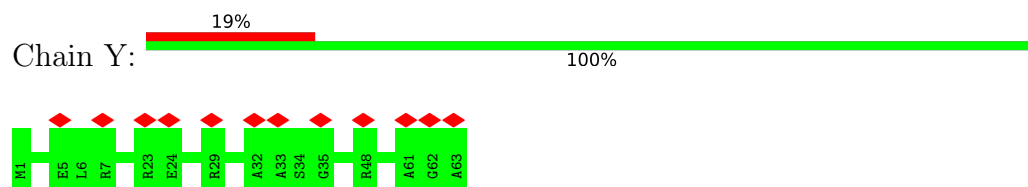
- Molecule 23: 50S ribosomal protein L27



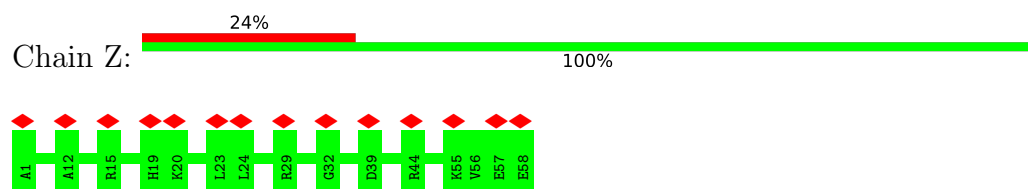
• Molecule 24: 50S ribosomal protein L28



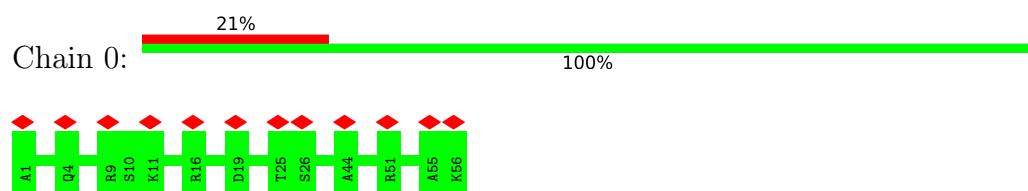
• Molecule 25: 50S ribosomal protein L29



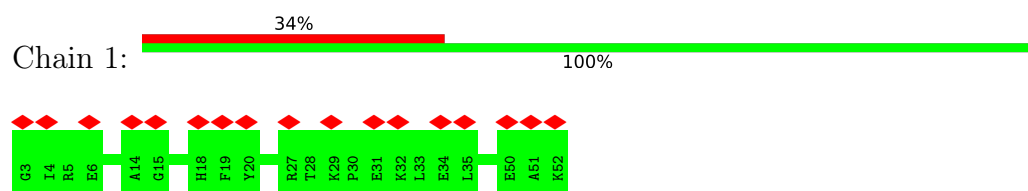
• Molecule 26: 50S ribosomal protein L30



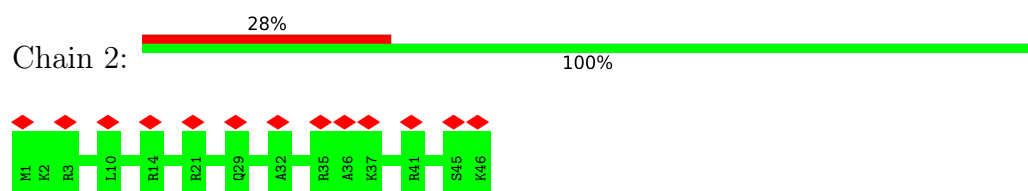
• Molecule 27: 50S ribosomal protein L32



• Molecule 28: 50S ribosomal protein L33

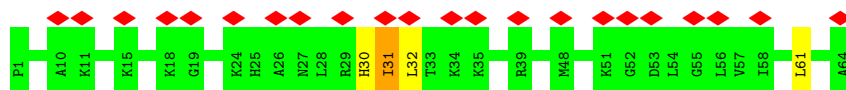


• Molecule 29: 50S ribosomal protein L34

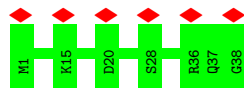


• Molecule 30: 50S ribosomal protein L35

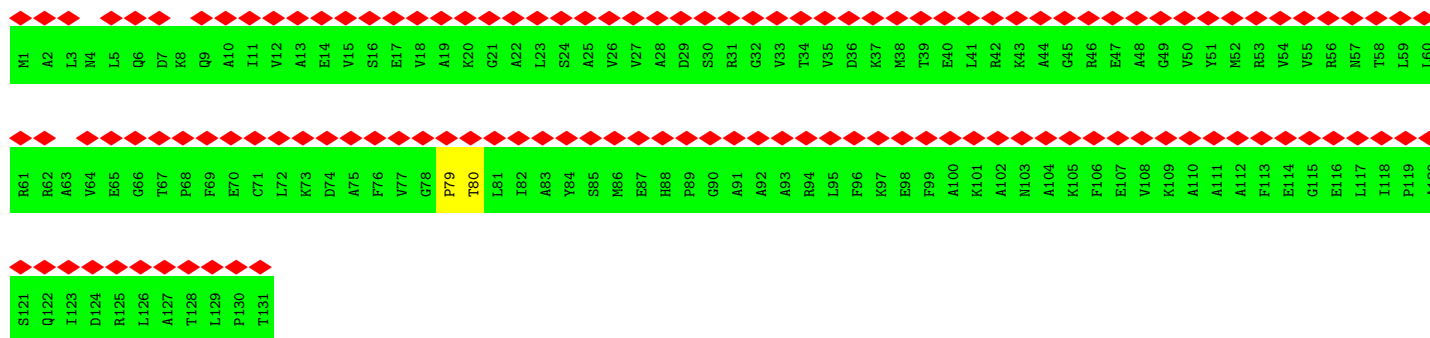




- Molecule 31: 50S ribosomal protein L36



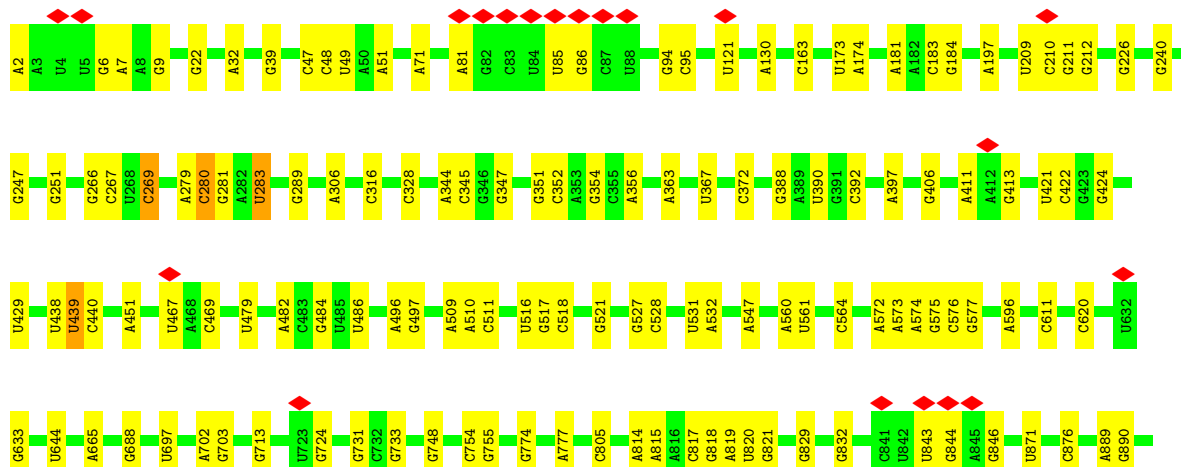
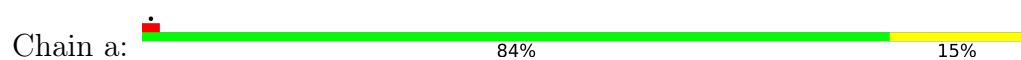
- Molecule 32: 50S ribosomal protein L10

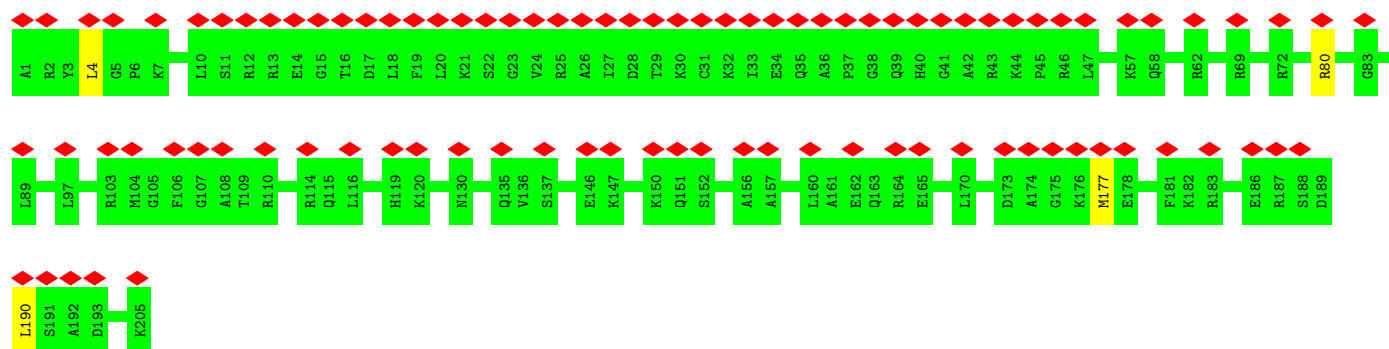


- Molecule 33: mRNA

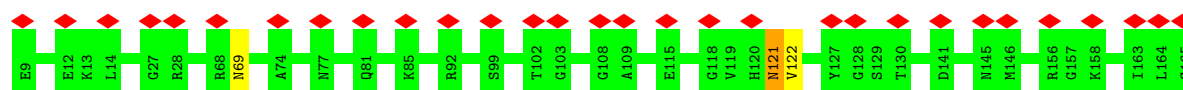


- Molecule 34: 16S ribosomal RNA

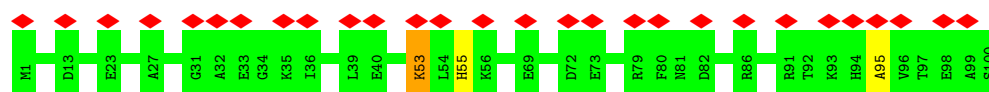




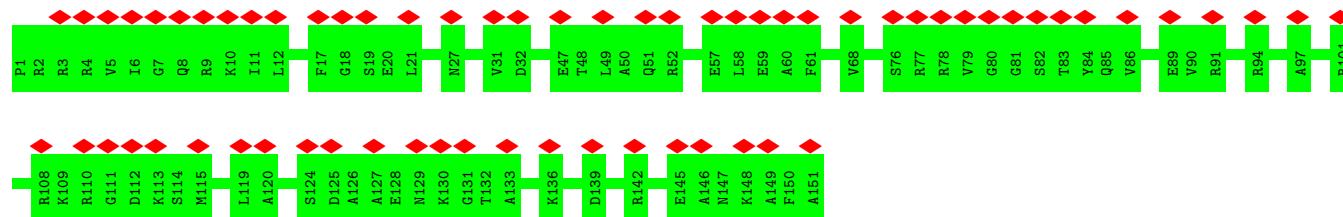
- Molecule 38: 30S ribosomal protein S5



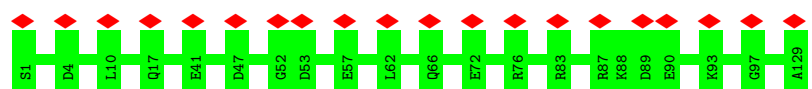
- Molecule 39: 30S ribosomal protein S6



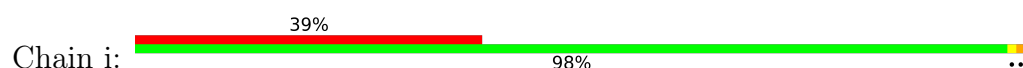
- Molecule 40: 30S ribosomal protein S7

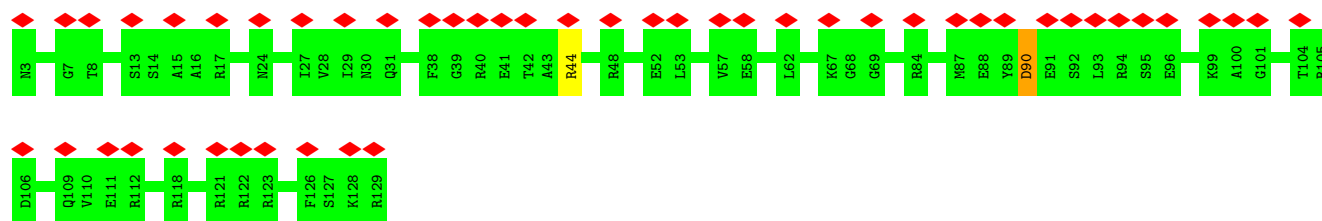


- Molecule 41: 30S ribosomal protein S8

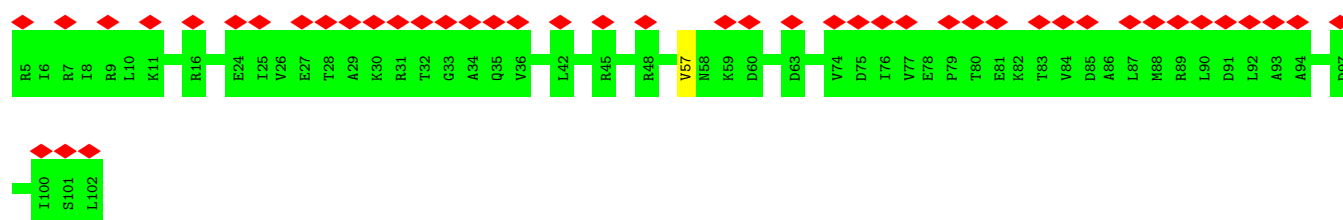


- Molecule 42: 30S ribosomal protein S9

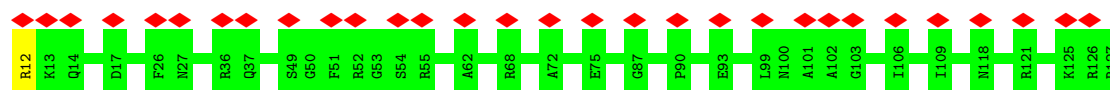




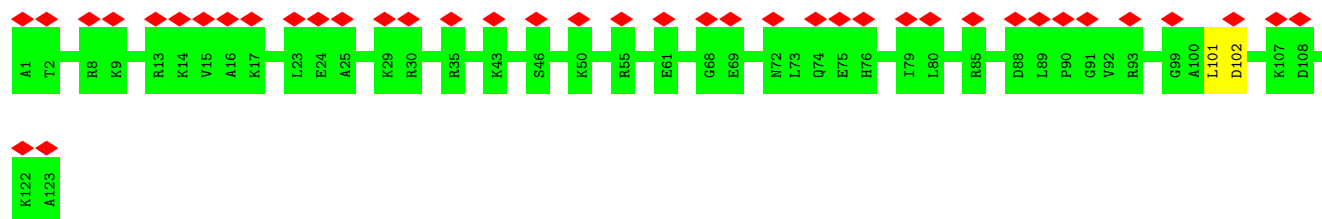
- Molecule 43: 30S ribosomal protein S10



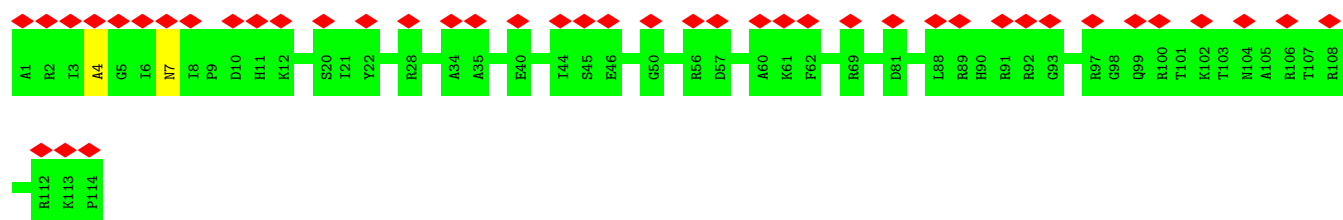
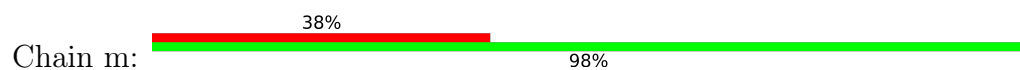
- Molecule 44: 30S ribosomal protein S11



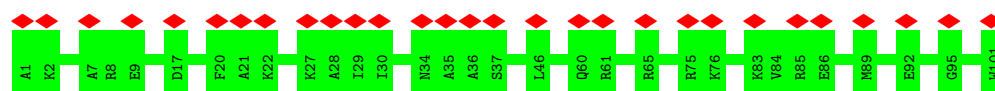
- Molecule 45: 30S ribosomal protein S12



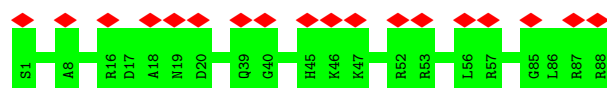
- Molecule 46: 30S ribosomal protein S13



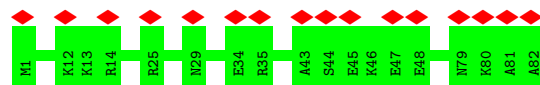
- Molecule 47: 30S ribosomal protein S14



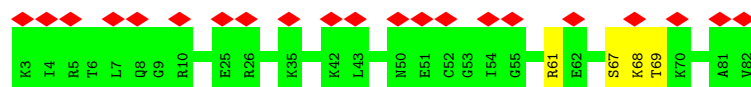
- Molecule 48: 30S ribosomal protein S15



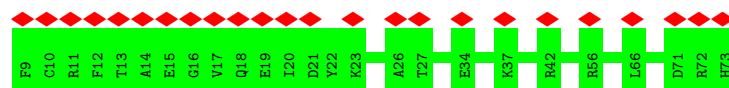
- Molecule 49: 30S ribosomal protein S16



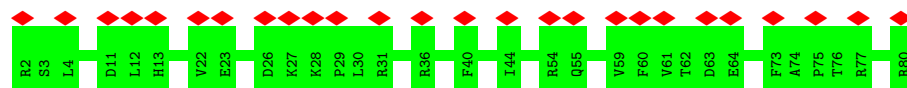
- Molecule 50: 30S ribosomal protein S17



- Molecule 51: 30S ribosomal protein S18

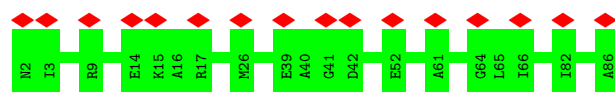


- Molecule 52: 30S ribosomal protein S19

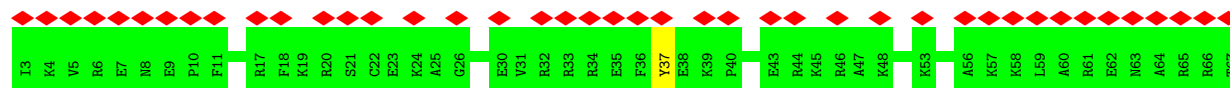


- Molecule 53: 30S ribosomal protein S20

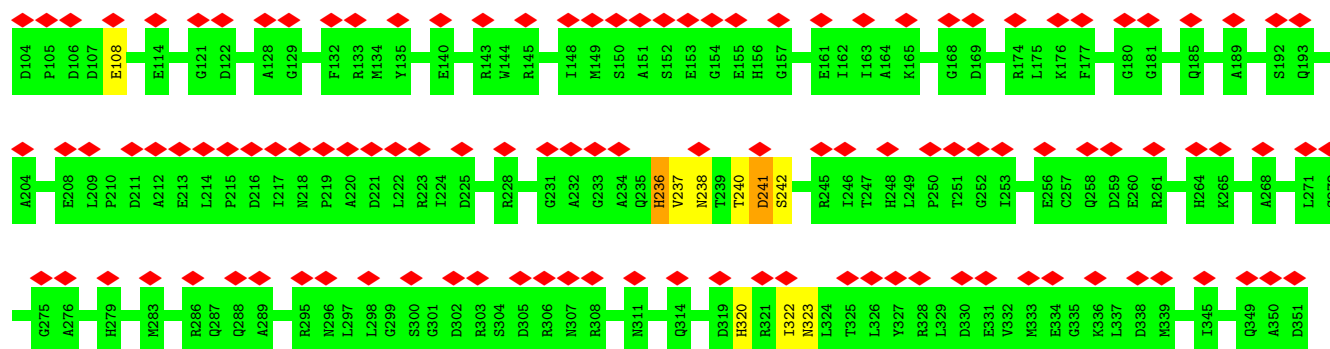




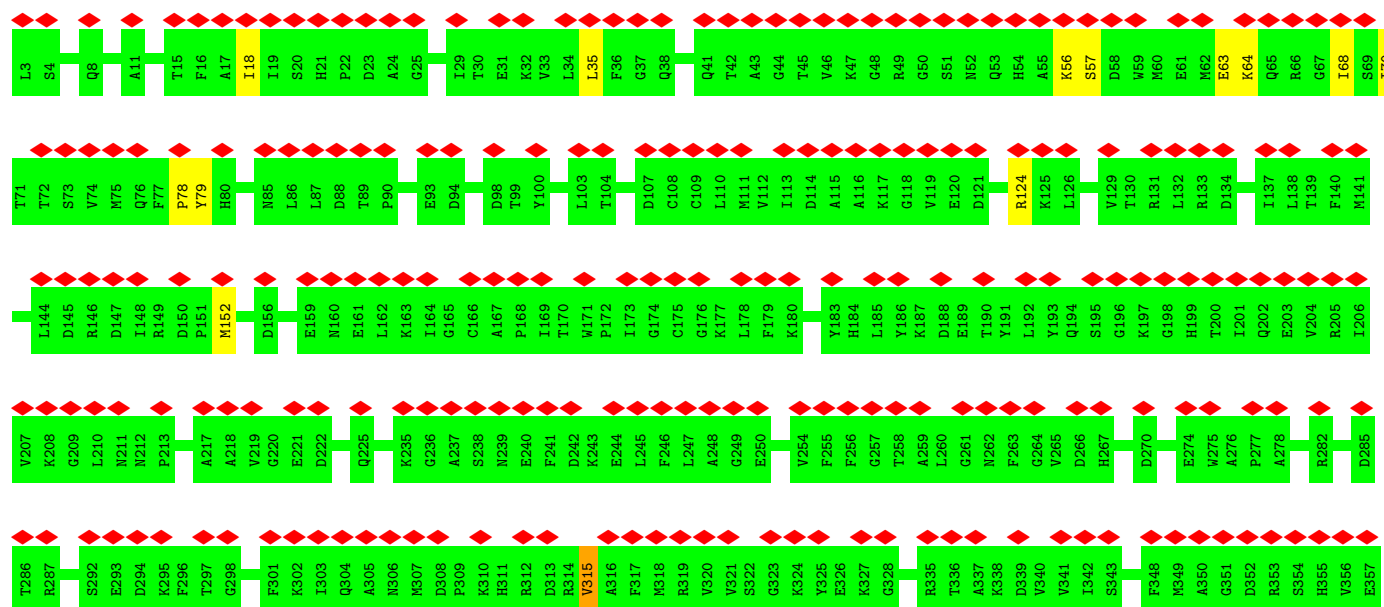
- Molecule 54: 30S ribosomal protein S21



- Molecule 55: Peptide chain release factor RF1

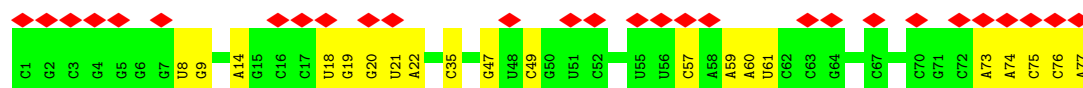
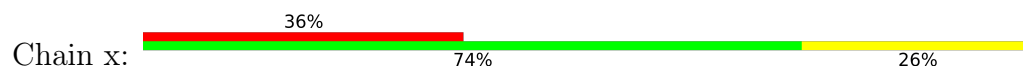


- Molecule 56: Peptide chain release factor 3

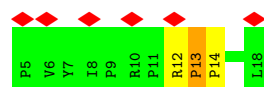
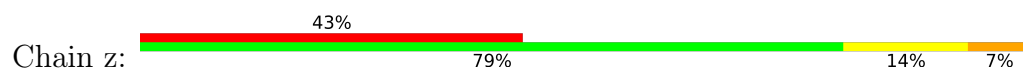




• Molecule 57: fMet-tRNA



• Molecule 58: Apidaecin



4 Experimental information

| Property | Value | Source |
|--------------------------------------|---|-----------|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 47512 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/\text{\AA}^2$) | 45.9 | Depositor |
| Minimum defocus (nm) | Not provided | |
| Maximum defocus (nm) | Not provided | |
| Magnification | Not provided | |
| Image detector | FEI FALCON II (4k x 4k) | Depositor |
| Maximum map value | 0.130 | Depositor |
| Minimum map value | -0.054 | Depositor |
| Average map value | 0.000 | Depositor |
| Map value standard deviation | 0.009 | Depositor |
| Recommended contour level | 0.035 | Depositor |
| Map size (Å) | 381.96, 381.96, 381.96 | wwPDB |
| Map dimensions | 360, 360, 360 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.061, 1.061, 1.061 | Depositor |

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|----------------|-------------|-------------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 1 | A | 0.29 | 1/69638 (0.0%) | 1.00 | 223/108636 (0.2%) |
| 2 | B | 0.38 | 1/2876 (0.0%) | 1.16 | 31/4483 (0.7%) |
| 3 | C | 0.25 | 0/2121 | 0.51 | 0/2852 |
| 4 | D | 0.26 | 0/1586 | 0.51 | 0/2134 |
| 5 | E | 0.26 | 0/1571 | 0.47 | 0/2113 |
| 6 | F | 0.30 | 0/1434 | 0.54 | 0/1926 |
| 7 | G | 0.25 | 0/1343 | 0.52 | 1/1816 (0.1%) |
| 8 | H | 0.26 | 0/1122 | 0.47 | 0/1515 |
| 9 | I | 0.29 | 0/1046 | 0.55 | 0/1410 |
| 10 | J | 0.25 | 0/1152 | 0.46 | 0/1551 |
| 11 | K | 0.27 | 0/947 | 0.53 | 0/1268 |
| 12 | L | 0.27 | 0/1054 | 0.53 | 0/1403 |
| 13 | M | 0.27 | 0/1093 | 0.58 | 2/1460 (0.1%) |
| 14 | N | 0.26 | 0/973 | 0.52 | 0/1301 |
| 15 | O | 0.25 | 0/902 | 0.46 | 0/1209 |
| 16 | P | 0.26 | 0/929 | 0.52 | 1/1242 (0.1%) |
| 17 | Q | 0.26 | 0/960 | 0.44 | 0/1278 |
| 18 | R | 0.26 | 0/829 | 0.50 | 0/1107 |
| 19 | S | 0.24 | 0/864 | 0.50 | 0/1156 |
| 20 | T | 0.26 | 0/744 | 0.50 | 0/994 |
| 21 | U | 0.29 | 0/787 | 0.55 | 0/1051 |
| 22 | V | 0.25 | 0/766 | 0.48 | 0/1025 |
| 23 | W | 0.26 | 0/582 | 0.41 | 0/769 |
| 24 | X | 0.24 | 0/635 | 0.46 | 0/848 |
| 25 | Y | 0.23 | 0/510 | 0.47 | 0/677 |
| 26 | Z | 0.24 | 0/453 | 0.46 | 0/605 |
| 27 | 0 | 0.24 | 0/450 | 0.46 | 0/599 |
| 28 | 1 | 0.26 | 0/416 | 0.50 | 0/554 |
| 29 | 2 | 0.24 | 0/380 | 0.44 | 0/498 |
| 30 | 3 | 0.25 | 0/513 | 0.64 | 2/676 (0.3%) |
| 31 | 4 | 0.27 | 0/303 | 0.52 | 0/397 |
| 32 | 5 | 0.30 | 0/1001 | 0.64 | 0/1350 |

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|------------------|-------------|-------------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 33 | 7 | 1.63 | 2/169 (1.2%) | 1.84 | 7/261 (2.7%) |
| 34 | a | 0.29 | 1/36967 (0.0%) | 0.98 | 71/57666 (0.1%) |
| 35 | b | 0.28 | 0/1735 | 0.55 | 0/2338 |
| 36 | c | 0.25 | 0/1651 | 0.47 | 0/2225 |
| 37 | d | 0.27 | 0/1665 | 0.55 | 2/2227 (0.1%) |
| 38 | e | 0.28 | 0/1154 | 0.59 | 0/1554 |
| 39 | f | 0.31 | 0/835 | 0.62 | 0/1128 |
| 40 | g | 0.28 | 0/1195 | 0.52 | 0/1602 |
| 41 | h | 0.26 | 0/989 | 0.55 | 0/1326 |
| 42 | i | 0.27 | 0/1034 | 0.56 | 0/1375 |
| 43 | j | 0.27 | 0/796 | 0.60 | 0/1077 |
| 44 | k | 0.27 | 0/885 | 0.51 | 0/1195 |
| 45 | l | 0.28 | 0/969 | 0.58 | 0/1300 |
| 46 | m | 0.26 | 0/892 | 0.55 | 0/1193 |
| 47 | n | 0.24 | 0/811 | 0.50 | 0/1081 |
| 48 | o | 0.24 | 0/722 | 0.52 | 0/964 |
| 49 | p | 0.26 | 0/659 | 0.50 | 0/884 |
| 50 | q | 0.27 | 0/657 | 0.59 | 0/881 |
| 51 | r | 0.24 | 0/511 | 0.47 | 0/689 |
| 52 | s | 0.26 | 0/652 | 0.49 | 0/877 |
| 53 | t | 0.29 | 0/671 | 0.48 | 0/888 |
| 54 | u | 0.33 | 0/500 | 0.65 | 0/668 |
| 55 | v | 0.49 | 3/1963 (0.2%) | 0.76 | 7/2646 (0.3%) |
| 56 | w | 0.48 | 1/4101 (0.0%) | 0.91 | 6/5530 (0.1%) |
| 57 | x | 0.31 | 0/1832 | 1.05 | 6/2855 (0.2%) |
| 58 | z | 1.58 | 1/127 (0.8%) | 1.40 | 5/175 (2.9%) |
| All | All | 0.30 | 10/164122 (0.0%) | 0.90 | 364/244508 (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 |
|-----|-------|---------------------|---------------------|
| 6 | F | 0 | 2 |
| 7 | G | 0 | 3 |
| 13 | M | 0 | 1 |
| 18 | R | 0 | 1 |
| 21 | U | 0 | 1 |
| 30 | 3 | 0 | 1 |
| 32 | 5 | 0 | 1 |
| 35 | b | 0 | 3 |

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 38 | e | 0 | 1 |
| 39 | f | 0 | 2 |
| 42 | i | 0 | 1 |
| 43 | j | 0 | 1 |
| 45 | l | 0 | 1 |
| 46 | m | 0 | 1 |
| 50 | q | 0 | 2 |
| 55 | v | 0 | 2 |
| 56 | w | 0 | 5 |
| 58 | z | 0 | 1 |
| All | All | 0 | 30 |

The worst 5 of 10 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|--------|-------------|----------|
| 56 | w | 35 | LEU | C-N | 24.95 | 1.91 | 1.34 |
| 33 | 7 | 20 | U | O3'-P | -19.47 | 1.37 | 1.61 |
| 58 | z | 14 | PRO | C-N | 17.36 | 1.74 | 1.34 |
| 1 | A | 1 | G | OP3-P | -10.62 | 1.48 | 1.61 |
| 34 | a | 2 | A | OP3-P | -10.56 | 1.48 | 1.61 |

The worst 5 of 364 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|--------|-------------|----------|
| 56 | w | 35 | LEU | O-C-N | 33.03 | 175.55 | 122.70 |
| 56 | w | 35 | LEU | CA-C-N | -27.67 | 56.33 | 117.20 |
| 56 | w | 35 | LEU | C-N-CA | -25.91 | 56.91 | 121.70 |
| 55 | v | 240 | THR | N-CA-C | 16.69 | 156.06 | 111.00 |
| 33 | 7 | 21 | A | P-O3'-C3' | -14.15 | 102.72 | 119.70 |

There are no chirality outliers.

5 of 30 planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 6 | F | 173 | ASP | Peptide |
| 6 | F | 174 | PHE | Peptide |
| 7 | G | 118 | ALA | Peptide |
| 7 | G | 45 | ALA | Peptide |
| 7 | G | 46 | ASP | Peptide |

5.2 Too-close contacts [i](#)

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

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|---------------|-----------|----------|----------|-------------|-----|
| 3 | C | 269/271 (99%) | 261 (97%) | 8 (3%) | 0 | 100 | 100 |
| 4 | D | 207/209 (99%) | 193 (93%) | 14 (7%) | 0 | 100 | 100 |
| 5 | E | 199/201 (99%) | 187 (94%) | 12 (6%) | 0 | 100 | 100 |
| 6 | F | 175/177 (99%) | 163 (93%) | 11 (6%) | 1 (1%) | 22 | 55 |
| 7 | G | 174/176 (99%) | 162 (93%) | 10 (6%) | 2 (1%) | 12 | 42 |
| 8 | H | 147/149 (99%) | 140 (95%) | 7 (5%) | 0 | 100 | 100 |
| 9 | I | 139/141 (99%) | 121 (87%) | 18 (13%) | 0 | 100 | 100 |
| 10 | J | 140/142 (99%) | 137 (98%) | 3 (2%) | 0 | 100 | 100 |
| 11 | K | 120/122 (98%) | 106 (88%) | 14 (12%) | 0 | 100 | 100 |
| 12 | L | 141/143 (99%) | 125 (89%) | 15 (11%) | 1 (1%) | 19 | 52 |
| 13 | M | 134/136 (98%) | 124 (92%) | 8 (6%) | 2 (2%) | 8 | 37 |
| 14 | N | 118/120 (98%) | 109 (92%) | 9 (8%) | 0 | 100 | 100 |
| 15 | O | 114/116 (98%) | 109 (96%) | 5 (4%) | 0 | 100 | 100 |
| 16 | P | 112/114 (98%) | 107 (96%) | 5 (4%) | 0 | 100 | 100 |
| 17 | Q | 115/117 (98%) | 113 (98%) | 2 (2%) | 0 | 100 | 100 |
| 18 | R | 101/103 (98%) | 93 (92%) | 8 (8%) | 0 | 100 | 100 |
| 19 | S | 108/110 (98%) | 101 (94%) | 6 (6%) | 1 (1%) | 14 | 45 |
| 20 | T | 91/93 (98%) | 82 (90%) | 9 (10%) | 0 | 100 | 100 |
| 21 | U | 100/102 (98%) | 88 (88%) | 11 (11%) | 1 (1%) | 13 | 44 |
| 22 | V | 92/94 (98%) | 90 (98%) | 2 (2%) | 0 | 100 | 100 |
| 23 | W | 73/75 (97%) | 70 (96%) | 3 (4%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------------|-----------|----------|----------|-------------|-----|
| 24 | X | 75/77 (97%) | 73 (97%) | 2 (3%) | 0 | 100 | 100 |
| 25 | Y | 61/63 (97%) | 58 (95%) | 3 (5%) | 0 | 100 | 100 |
| 26 | Z | 56/58 (97%) | 55 (98%) | 1 (2%) | 0 | 100 | 100 |
| 27 | 0 | 54/56 (96%) | 53 (98%) | 1 (2%) | 0 | 100 | 100 |
| 28 | 1 | 48/50 (96%) | 46 (96%) | 2 (4%) | 0 | 100 | 100 |
| 29 | 2 | 44/46 (96%) | 43 (98%) | 1 (2%) | 0 | 100 | 100 |
| 30 | 3 | 62/64 (97%) | 55 (89%) | 5 (8%) | 2 (3%) | 3 | 25 |
| 31 | 4 | 36/38 (95%) | 31 (86%) | 5 (14%) | 0 | 100 | 100 |
| 32 | 5 | 129/131 (98%) | 103 (80%) | 25 (19%) | 1 (1%) | 16 | 49 |
| 35 | b | 216/218 (99%) | 196 (91%) | 20 (9%) | 0 | 100 | 100 |
| 36 | c | 204/206 (99%) | 196 (96%) | 6 (3%) | 2 (1%) | 13 | 44 |
| 37 | d | 203/205 (99%) | 182 (90%) | 21 (10%) | 0 | 100 | 100 |
| 38 | e | 155/157 (99%) | 137 (88%) | 16 (10%) | 2 (1%) | 10 | 39 |
| 39 | f | 98/100 (98%) | 80 (82%) | 16 (16%) | 2 (2%) | 6 | 32 |
| 40 | g | 149/151 (99%) | 136 (91%) | 13 (9%) | 0 | 100 | 100 |
| 41 | h | 127/129 (98%) | 122 (96%) | 5 (4%) | 0 | 100 | 100 |
| 42 | i | 125/127 (98%) | 110 (88%) | 14 (11%) | 1 (1%) | 16 | 49 |
| 43 | j | 96/98 (98%) | 83 (86%) | 13 (14%) | 0 | 100 | 100 |
| 44 | k | 114/116 (98%) | 101 (89%) | 13 (11%) | 0 | 100 | 100 |
| 45 | l | 121/123 (98%) | 99 (82%) | 21 (17%) | 1 (1%) | 16 | 49 |
| 46 | m | 112/114 (98%) | 100 (89%) | 12 (11%) | 0 | 100 | 100 |
| 47 | n | 99/101 (98%) | 90 (91%) | 9 (9%) | 0 | 100 | 100 |
| 48 | o | 86/88 (98%) | 76 (88%) | 10 (12%) | 0 | 100 | 100 |
| 49 | p | 80/82 (98%) | 73 (91%) | 7 (9%) | 0 | 100 | 100 |
| 50 | q | 78/80 (98%) | 66 (85%) | 11 (14%) | 1 (1%) | 10 | 39 |
| 51 | r | 63/65 (97%) | 60 (95%) | 3 (5%) | 0 | 100 | 100 |
| 52 | s | 77/79 (98%) | 74 (96%) | 3 (4%) | 0 | 100 | 100 |
| 53 | t | 83/85 (98%) | 79 (95%) | 4 (5%) | 0 | 100 | 100 |
| 54 | u | 63/65 (97%) | 50 (79%) | 12 (19%) | 1 (2%) | 8 | 36 |
| 55 | v | 246/248 (99%) | 224 (91%) | 19 (8%) | 3 (1%) | 11 | 40 |
| 56 | w | 523/525 (100%) | 453 (87%) | 63 (12%) | 7 (1%) | 10 | 39 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 58 | z | 12/14 (86%) | 10 (83%) | 2 (17%) | 0 | 100 | 100 |
| All | All | 6564/6670 (98%) | 5995 (91%) | 538 (8%) | 31 (0%) | 27 | 58 |

5 of 31 Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7 | G | 46 | ASP |
| 13 | M | 58 | LYS |
| 30 | 3 | 31 | ILE |
| 36 | c | 96 | VAL |
| 50 | q | 69 | THR |

5.3.2 Protein sidechains ⓘ

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------------|------------|----------|-------------|-----|
| 3 | C | 216/216 (100%) | 213 (99%) | 3 (1%) | 62 | 75 |
| 4 | D | 164/164 (100%) | 163 (99%) | 1 (1%) | 84 | 88 |
| 5 | E | 165/165 (100%) | 164 (99%) | 1 (1%) | 84 | 88 |
| 6 | F | 148/148 (100%) | 148 (100%) | 0 | 100 | 100 |
| 7 | G | 137/137 (100%) | 137 (100%) | 0 | 100 | 100 |
| 8 | H | 114/114 (100%) | 114 (100%) | 0 | 100 | 100 |
| 9 | I | 109/109 (100%) | 109 (100%) | 0 | 100 | 100 |
| 10 | J | 116/116 (100%) | 116 (100%) | 0 | 100 | 100 |
| 11 | K | 103/103 (100%) | 103 (100%) | 0 | 100 | 100 |
| 12 | L | 102/102 (100%) | 102 (100%) | 0 | 100 | 100 |
| 13 | M | 109/109 (100%) | 109 (100%) | 0 | 100 | 100 |
| 14 | N | 100/100 (100%) | 99 (99%) | 1 (1%) | 73 | 80 |
| 15 | O | 86/86 (100%) | 86 (100%) | 0 | 100 | 100 |
| 16 | P | 99/99 (100%) | 99 (100%) | 0 | 100 | 100 |
| 17 | Q | 89/89 (100%) | 89 (100%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------------|------------|----------|-------------|-----|
| 18 | R | 84/84 (100%) | 83 (99%) | 1 (1%) | 67 | 77 |
| 19 | S | 93/93 (100%) | 92 (99%) | 1 (1%) | 70 | 79 |
| 20 | T | 80/80 (100%) | 80 (100%) | 0 | 100 | 100 |
| 21 | U | 83/83 (100%) | 83 (100%) | 0 | 100 | 100 |
| 22 | V | 78/78 (100%) | 78 (100%) | 0 | 100 | 100 |
| 23 | W | 57/57 (100%) | 56 (98%) | 1 (2%) | 54 | 71 |
| 24 | X | 67/67 (100%) | 66 (98%) | 1 (2%) | 60 | 74 |
| 25 | Y | 55/55 (100%) | 55 (100%) | 0 | 100 | 100 |
| 26 | Z | 48/48 (100%) | 48 (100%) | 0 | 100 | 100 |
| 27 | 0 | 47/47 (100%) | 47 (100%) | 0 | 100 | 100 |
| 28 | 1 | 45/45 (100%) | 45 (100%) | 0 | 100 | 100 |
| 29 | 2 | 38/38 (100%) | 38 (100%) | 0 | 100 | 100 |
| 30 | 3 | 51/51 (100%) | 51 (100%) | 0 | 100 | 100 |
| 31 | 4 | 34/34 (100%) | 34 (100%) | 0 | 100 | 100 |
| 32 | 5 | 100/100 (100%) | 100 (100%) | 0 | 100 | 100 |
| 35 | b | 180/180 (100%) | 177 (98%) | 3 (2%) | 56 | 72 |
| 36 | c | 170/170 (100%) | 170 (100%) | 0 | 100 | 100 |
| 37 | d | 172/172 (100%) | 170 (99%) | 2 (1%) | 67 | 77 |
| 38 | e | 114/119 (96%) | 113 (99%) | 1 (1%) | 75 | 82 |
| 39 | f | 87/87 (100%) | 87 (100%) | 0 | 100 | 100 |
| 40 | g | 124/124 (100%) | 124 (100%) | 0 | 100 | 100 |
| 41 | h | 104/104 (100%) | 104 (100%) | 0 | 100 | 100 |
| 42 | i | 105/105 (100%) | 104 (99%) | 1 (1%) | 73 | 80 |
| 43 | j | 86/86 (100%) | 86 (100%) | 0 | 100 | 100 |
| 44 | k | 89/89 (100%) | 88 (99%) | 1 (1%) | 70 | 79 |
| 45 | l | 103/103 (100%) | 103 (100%) | 0 | 100 | 100 |
| 46 | m | 92/92 (100%) | 91 (99%) | 1 (1%) | 70 | 79 |
| 47 | n | 79/83 (95%) | 79 (100%) | 0 | 100 | 100 |
| 48 | o | 76/76 (100%) | 76 (100%) | 0 | 100 | 100 |
| 49 | p | 65/65 (100%) | 65 (100%) | 0 | 100 | 100 |
| 50 | q | 74/74 (100%) | 73 (99%) | 1 (1%) | 62 | 75 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|-----------------|-------------|----------|-------------|-----|
| 51 | r | 48/56 (86%) | 48 (100%) | 0 | 100 | 100 |
| 52 | s | 70/70 (100%) | 70 (100%) | 0 | 100 | 100 |
| 53 | t | 65/65 (100%) | 65 (100%) | 0 | 100 | 100 |
| 54 | u | 44/55 (80%) | 44 (100%) | 0 | 100 | 100 |
| 55 | v | 201/201 (100%) | 199 (99%) | 2 (1%) | 73 | 80 |
| 56 | w | 422/449 (94%) | 419 (99%) | 3 (1%) | 81 | 86 |
| 58 | z | 14/14 (100%) | 13 (93%) | 1 (7%) | 12 | 36 |
| All | All | 5401/5456 (99%) | 5375 (100%) | 26 (0%) | 85 | 90 |

5 of 26 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 37 | d | 177 | MET |
| 44 | k | 12 | ARG |
| 56 | w | 315 | VAL |
| 42 | i | 44 | ARG |
| 46 | m | 7 | ASN |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 50 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 39 | f | 58 | HIS |
| 44 | k | 100 | ASN |
| 56 | w | 445 | GLN |
| 41 | h | 3 | GLN |
| 42 | i | 36 | GLN |

5.3.3 RNA ⓘ

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 1 | A | 2893/2903 (99%) | 534 (18%) | 30 (1%) |
| 2 | B | 119/120 (99%) | 14 (11%) | 2 (1%) |
| 33 | 7 | 6/7 (85%) | 1 (16%) | 0 |
| 34 | a | 1538/1539 (99%) | 219 (14%) | 0 |
| 57 | x | 76/77 (98%) | 18 (23%) | 0 |
| All | All | 4632/4646 (99%) | 786 (16%) | 32 (0%) |

5 of 786 RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 10 | A |
| 1 | A | 12 | U |
| 1 | A | 27 | G |
| 1 | A | 34 | U |
| 1 | A | 35 | G |

5 of 32 RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 2756 | U |
| 1 | A | 2808 | G |
| 1 | A | 1070 | A |
| 1 | A | 1022 | G |
| 2 | B | 66 | A |

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

1 ligand is modelled in this entry.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
| | | | | | Counts | RMSZ | # Z > 2 | Counts | RMSZ | # Z > 2 |
| 59 | GCP | w | 601 | 56 | 27,34,34 | 1.62 | 5 (18%) | 34,54,54 | 2.04 | 6 (17%) |

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 |
|-----|------|-------|-----|------|---------|------------|---------|
| 59 | GCP | w | 601 | 56 | - | 5/15/38/38 | 0/3/3/3 |

All (5) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 59 | w | 601 | GCP | PB-O3A | 5.66 | 1.64 | 1.58 |
| 59 | w | 601 | GCP | C6-N1 | 3.12 | 1.38 | 1.33 |
| 59 | w | 601 | GCP | PG-O1G | 2.55 | 1.55 | 1.50 |
| 59 | w | 601 | GCP | PB-O2B | -2.24 | 1.51 | 1.56 |
| 59 | w | 601 | GCP | C5-C6 | 2.08 | 1.44 | 1.41 |

The worst 5 of 6 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 59 | w | 601 | GCP | C5-C6-N1 | -8.44 | 111.88 | 123.43 |
| 59 | w | 601 | GCP | C2-N1-C6 | 5.86 | 125.24 | 115.93 |
| 59 | w | 601 | GCP | N3-C2-N1 | -2.77 | 123.53 | 127.22 |
| 59 | w | 601 | GCP | C4-C5-C6 | -2.55 | 118.37 | 120.80 |
| 59 | w | 601 | GCP | PB-O3A-PA | -2.43 | 124.86 | 132.56 |

There are no chirality outliers.

All (5) torsion outliers are listed below:

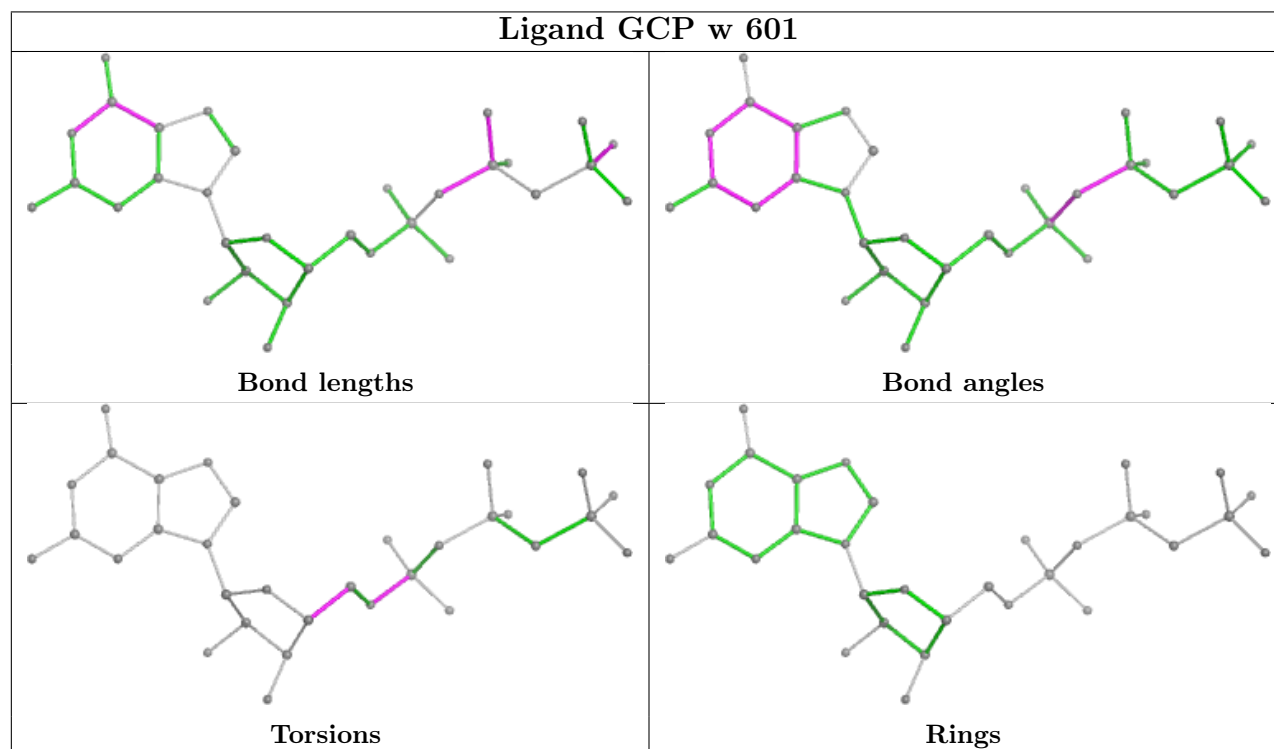
| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-----------------|
| 59 | w | 601 | GCP | C5'-O5'-PA-O3A |
| 59 | w | 601 | GCP | O4'-C4'-C5'-O5' |
| 59 | w | 601 | GCP | C3'-C4'-C5'-O5' |
| 59 | w | 601 | GCP | C5'-O5'-PA-O1A |
| 59 | w | 601 | GCP | C5'-O5'-PA-O2A |

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the

average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 1 | A | 1 |
| 56 | w | 1 |
| 58 | z | 1 |
| 33 | 7 | 1 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1 | A | 2179:C | O3' | 2180:U | P | 3.64 |
| 1 | w | 35:LEU | C | 36:PHE | N | 1.91 |

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| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1 | z | 14:PRO | C | 15:HIS | N | 1.74 |
| 1 | 7 | 20:U | O3' | 21:A | P | 1.37 |

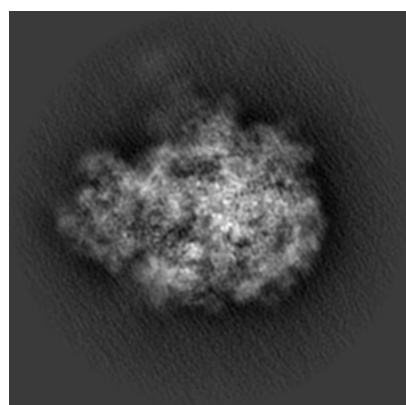
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-0076. These allow visual inspection of the internal detail of the map and identification of artifacts.

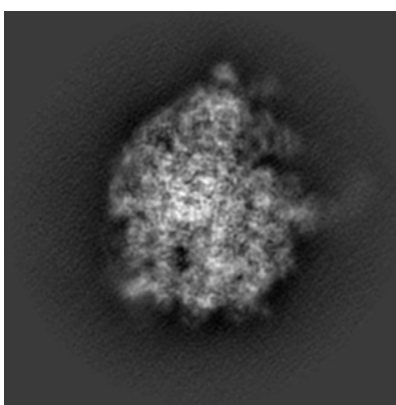
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections [i](#)

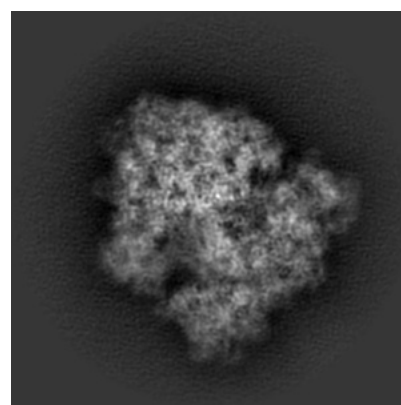
6.1.1 Primary map



X



Y

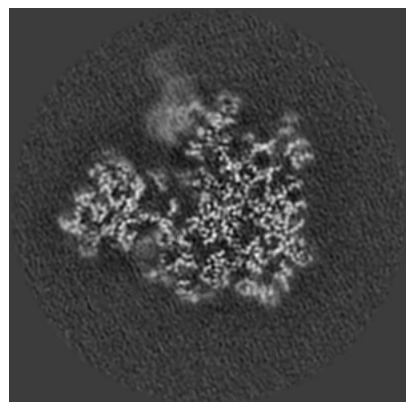


Z

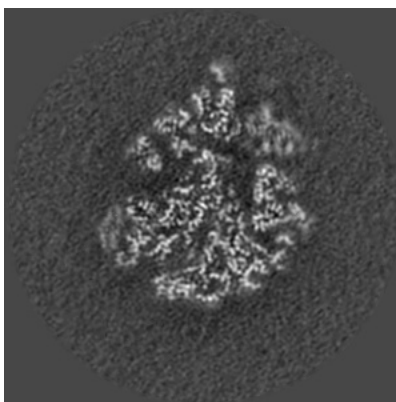
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

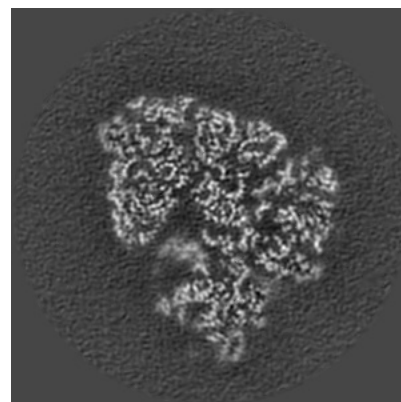
6.2.1 Primary map



X Index: 180



Y Index: 180

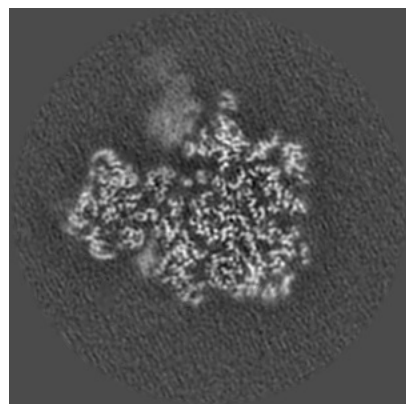


Z Index: 180

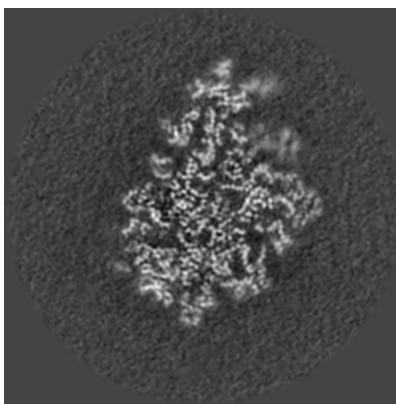
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

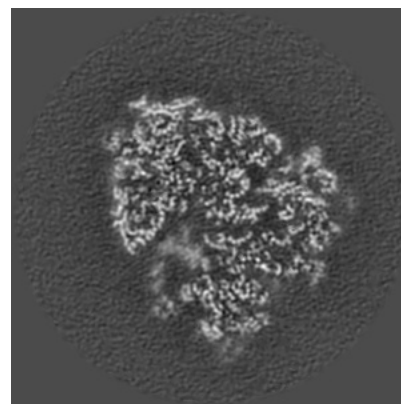
6.3.1 Primary map



X Index: 186



Y Index: 195

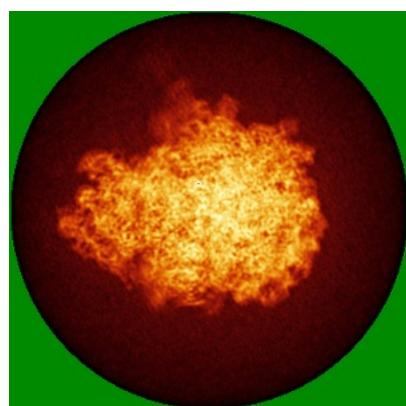


Z Index: 185

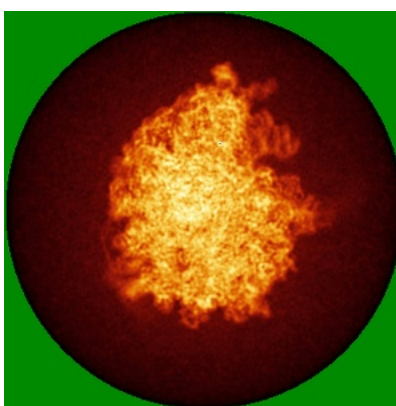
The images above show the largest variance slices of the map in three orthogonal directions.

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

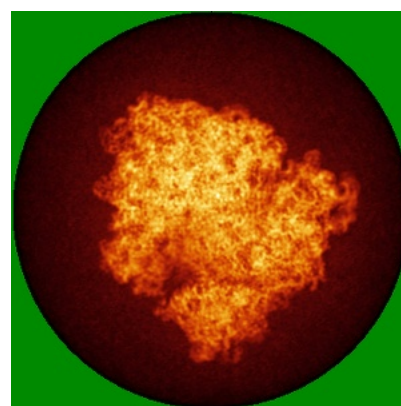
6.4.1 Primary map



X



Y

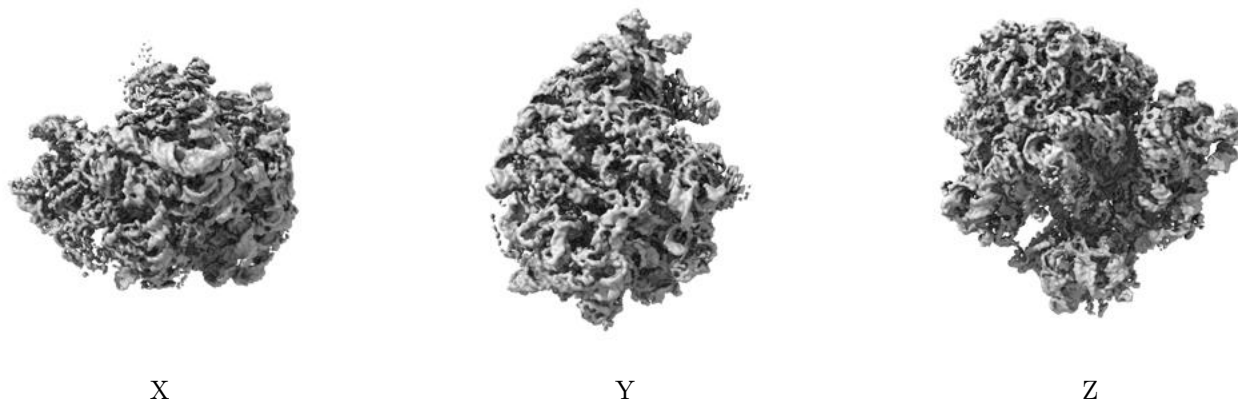


Z

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



The images above show the 3D surface view of the map at the recommended contour level 0.035. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

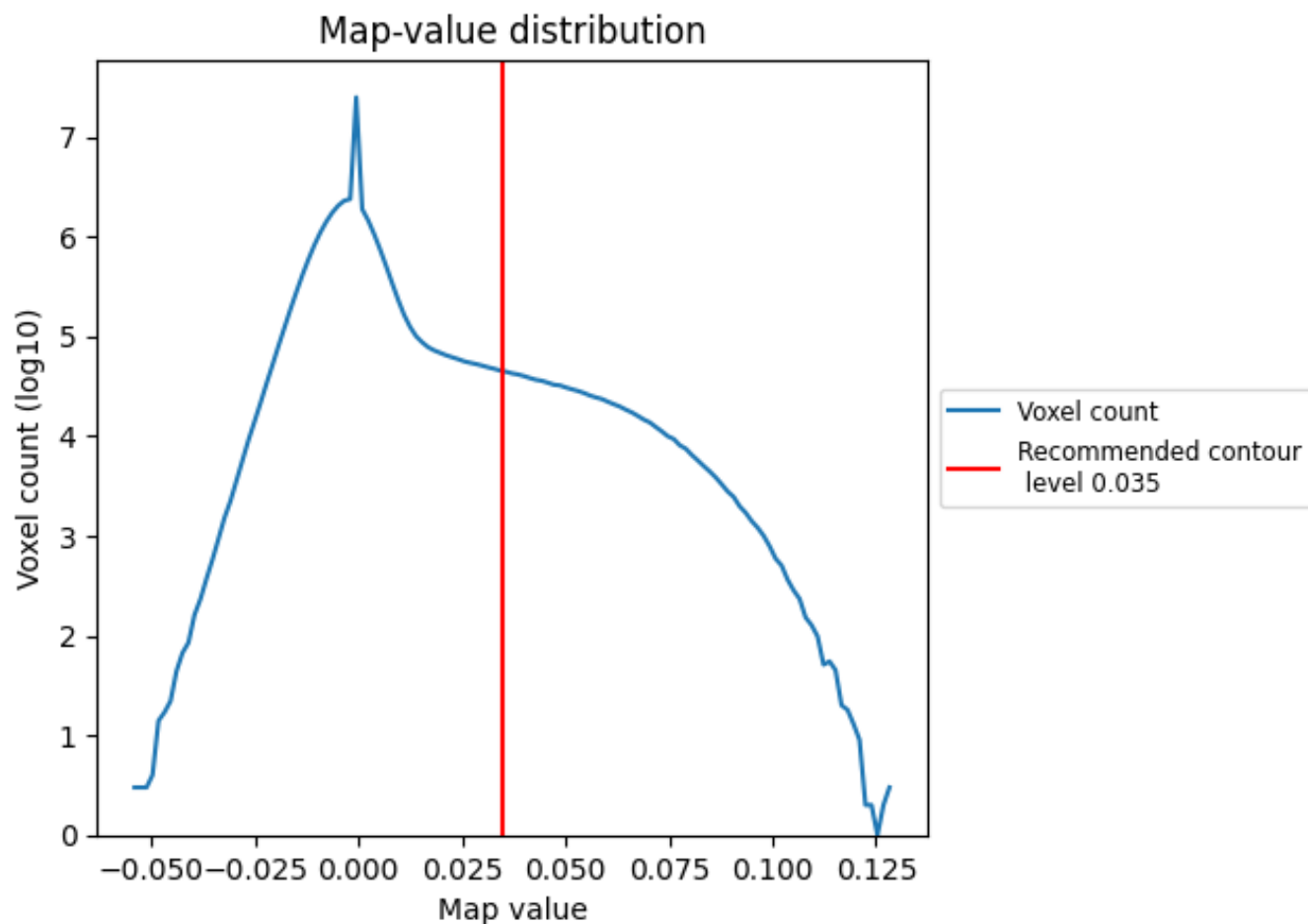
6.6 Mask visualisation [i](#)

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

7 Map analysis [i](#)

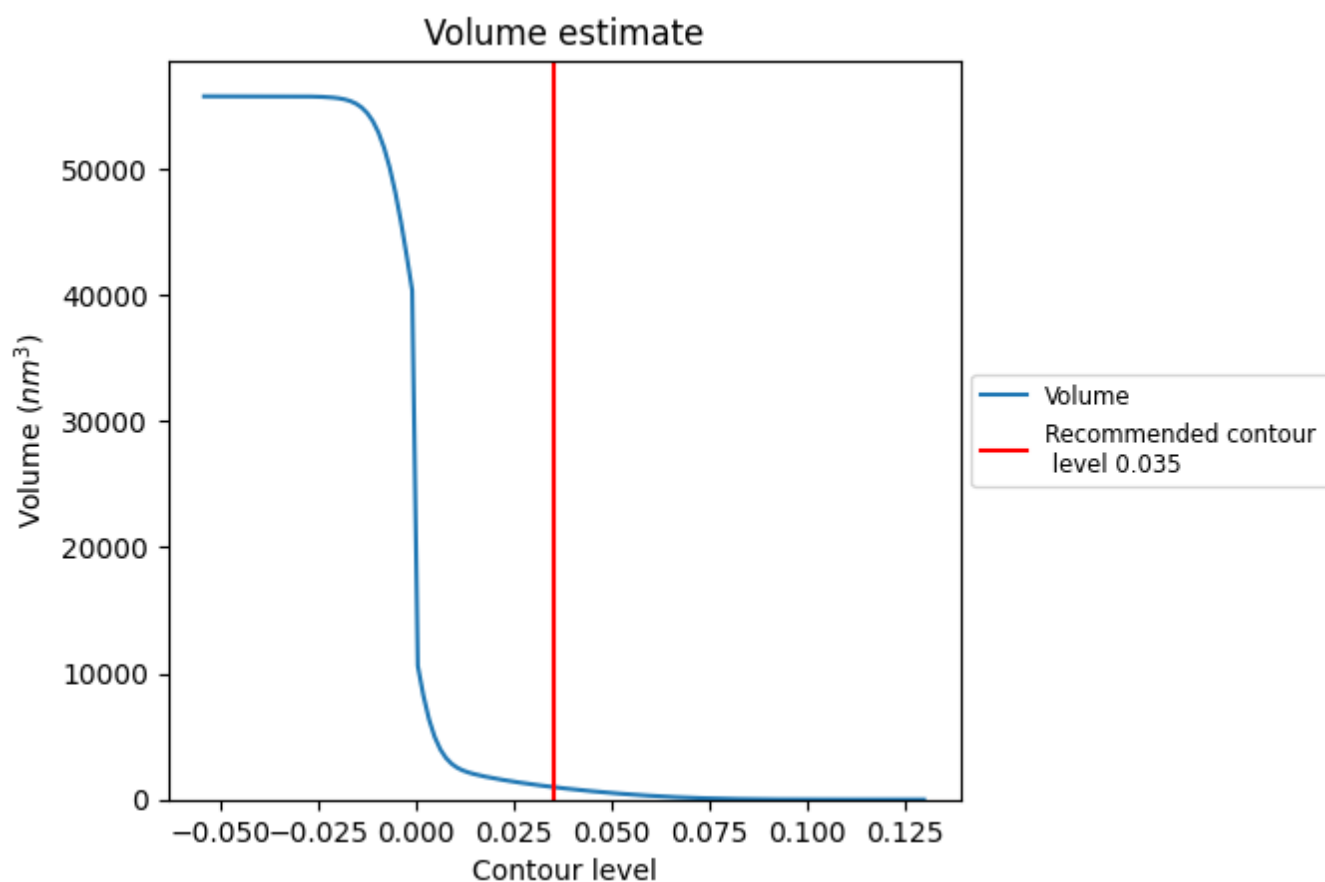
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

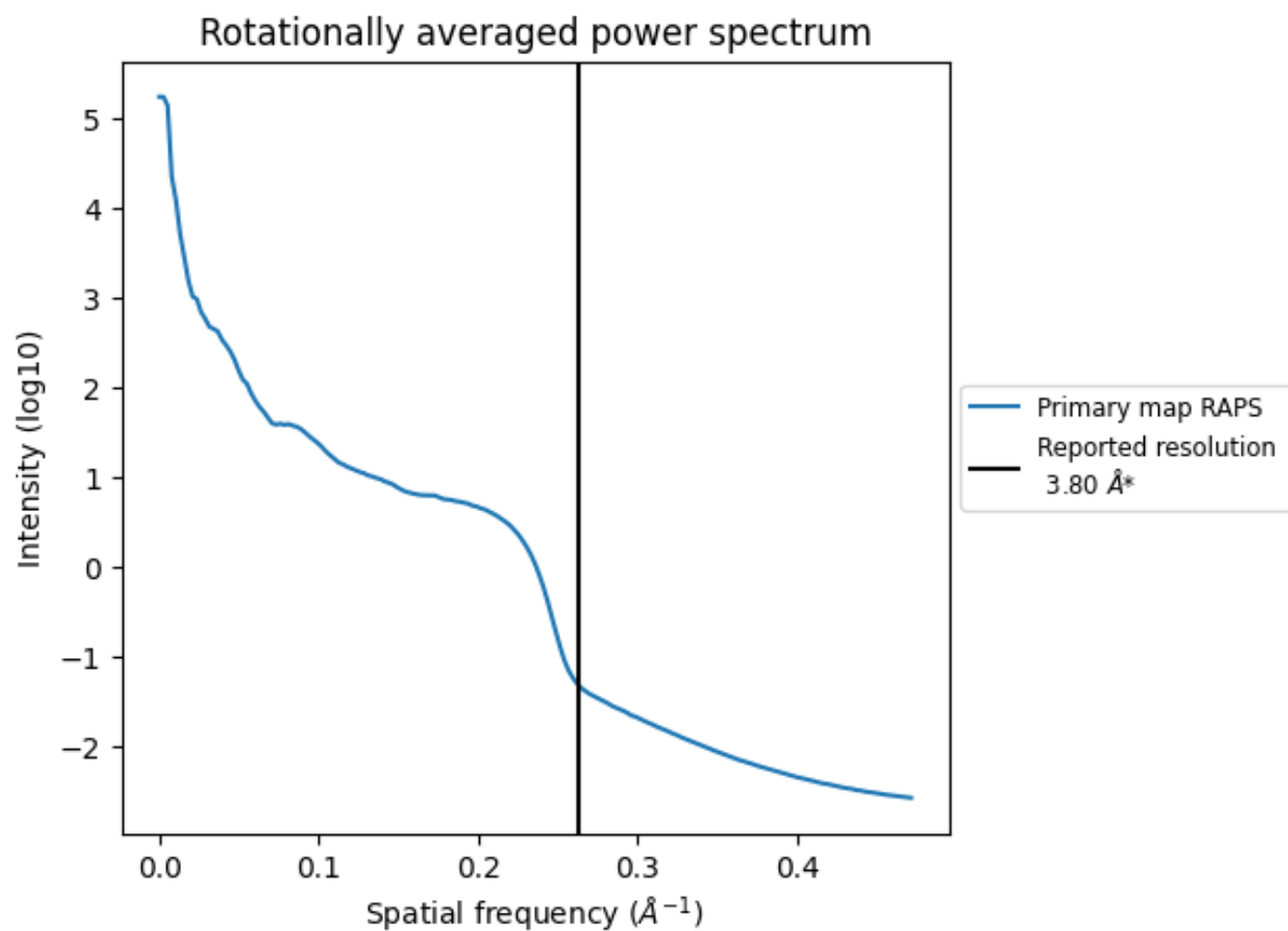
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 993 nm³; this corresponds to an approximate mass of 897 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 ⓘ



*Reported resolution corresponds to spatial frequency of 0.263 Å⁻¹

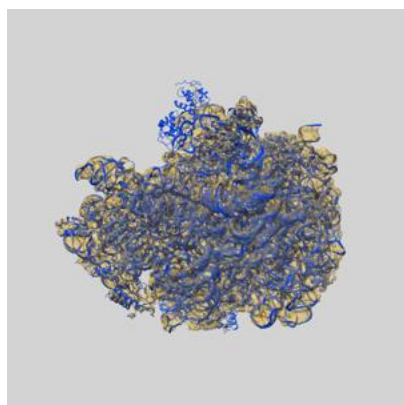
8 Fourier-Shell correlation

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

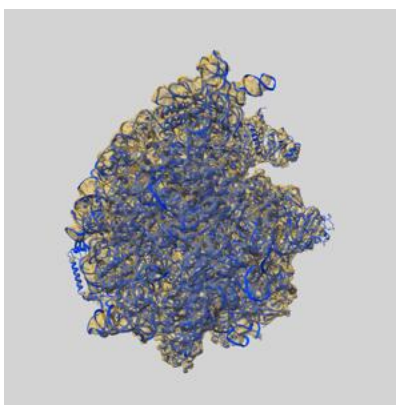
9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-0076 and PDB model 6GWT. Per-residue inclusion information can be found in [section 3](#) on [page 15](#).

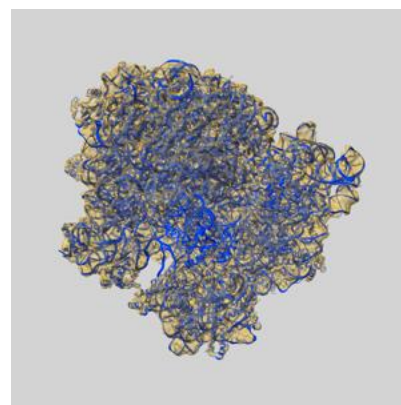
9.1 Map-model overlay [i](#)



X



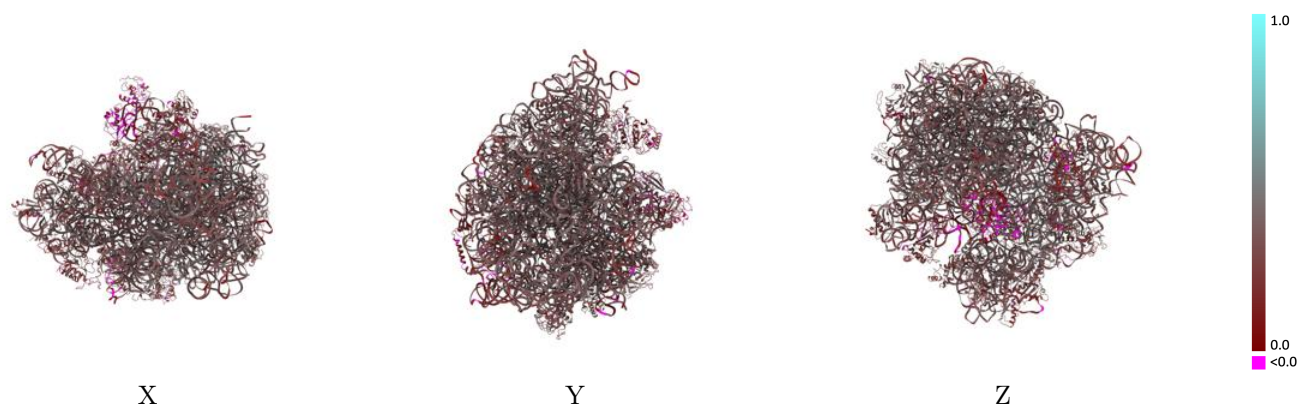
Y



Z

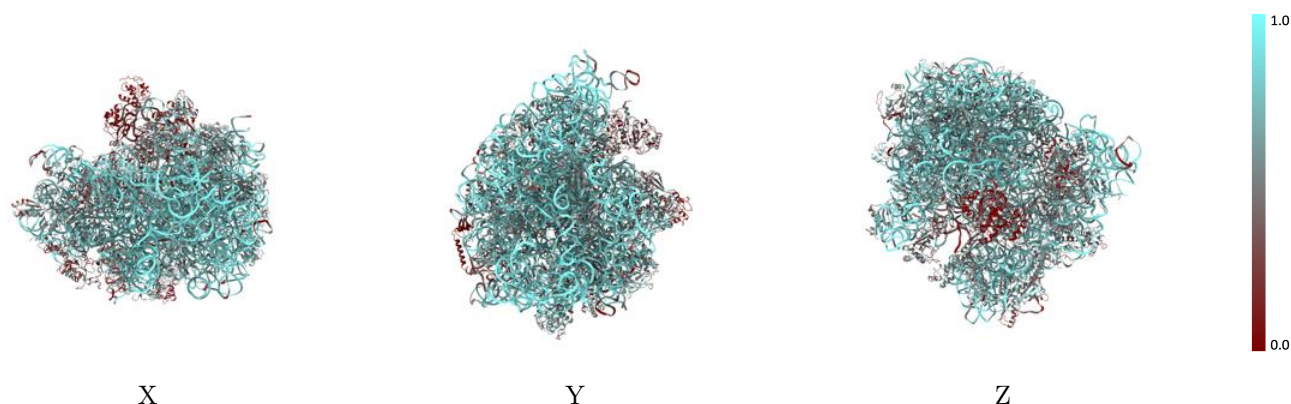
The images above show the 3D surface view of the map at the recommended contour level 0.035 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



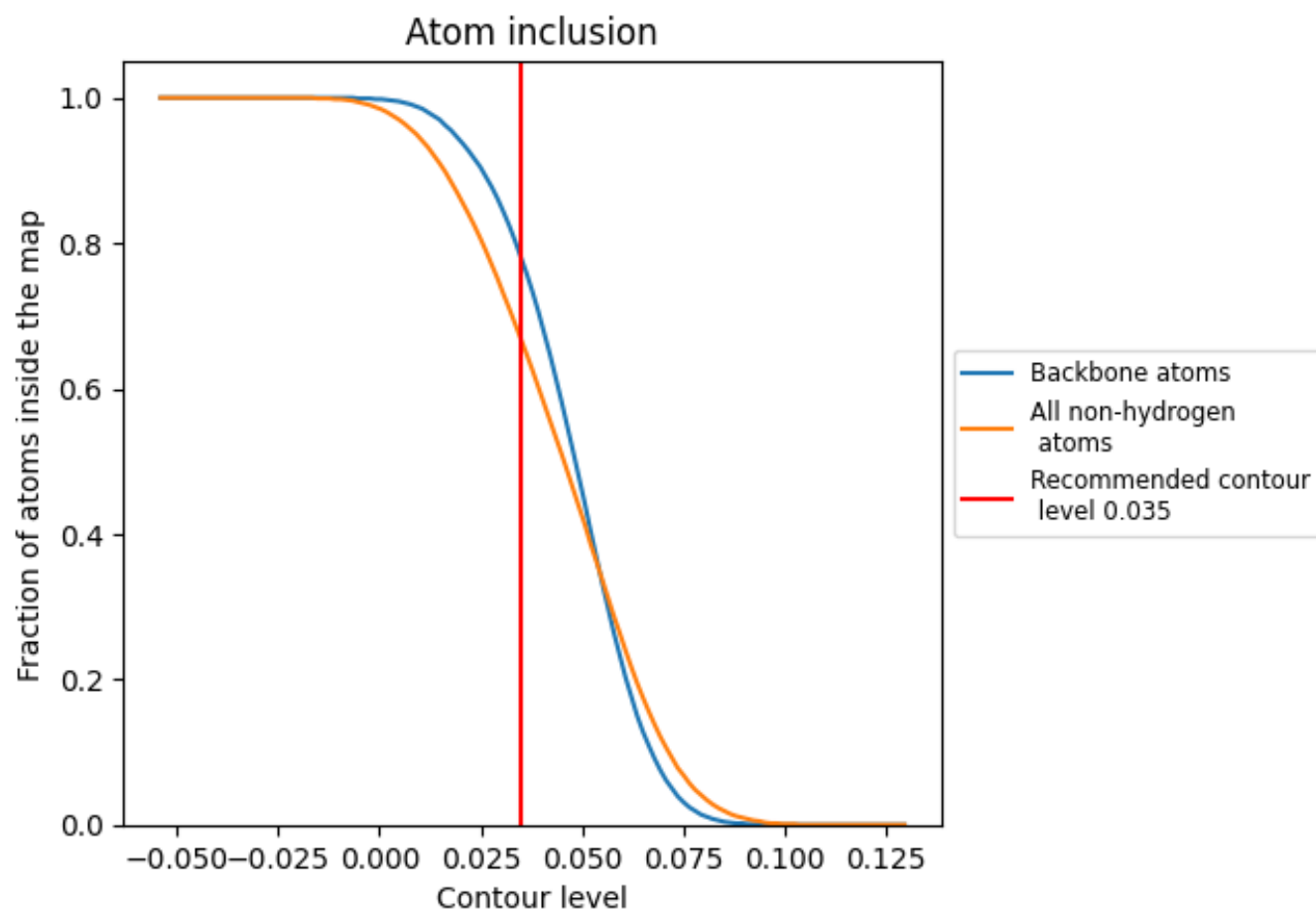
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.035).







































































9.4 Atom inclusion ⓘ



At the recommended contour level, 78% of all backbone atoms, 67% 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 (0.035) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|--|--|
| All |  0.6670 |  0.3300 |
| 0 |  0.5090 |  0.3440 |
| 1 |  0.4790 |  0.3440 |
| 2 |  0.5040 |  0.3250 |
| 3 |  0.4640 |  0.3660 |
| 4 |  0.5480 |  0.3510 |
| 5 |  0.0260 |  0.0730 |
| 7 |  0.7550 |  0.3370 |
| A |  0.7670 |  0.3440 |
| B |  0.8210 |  0.3360 |
| C |  0.5470 |  0.3780 |
| D |  0.5390 |  0.3790 |
| E |  0.5100 |  0.3310 |
| F |  0.4300 |  0.2480 |
| G |  0.4860 |  0.3190 |
| H |  0.1760 |  0.2090 |
| I |  0.0030 |  0.0560 |
| J |  0.5340 |  0.3440 |
| K |  0.4840 |  0.3670 |
| L |  0.4940 |  0.3330 |
| M |  0.4850 |  0.3650 |
| N |  0.5550 |  0.3400 |
| O |  0.5640 |  0.3020 |
| P |  0.5130 |  0.3610 |
| Q |  0.5520 |  0.3250 |
| R |  0.5140 |  0.3450 |
| S |  0.5010 |  0.3540 |
| T |  0.4990 |  0.3390 |
| U |  0.5190 |  0.3300 |
| V |  0.5370 |  0.3380 |
| W |  0.5380 |  0.3660 |
| X |  0.5270 |  0.3450 |
| Y |  0.5270 |  0.2730 |
| Z |  0.5080 |  0.3630 |
| a |  0.8030 |  0.3520 |



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| Chain | Atom inclusion | Q-score |
|-------|--|--|
| b |  0.3000 |  0.2470 |
| c |  0.5370 |  0.3330 |
| d |  0.3990 |  0.2690 |
| e |  0.5450 |  0.3350 |
| f |  0.5230 |  0.2880 |
| g |  0.4410 |  0.2700 |
| h |  0.5750 |  0.3500 |
| i |  0.4520 |  0.2720 |
| j |  0.4010 |  0.2910 |
| k |  0.5340 |  0.3220 |
| l |  0.4850 |  0.3560 |
| m |  0.4630 |  0.2810 |
| n |  0.5250 |  0.3140 |
| o |  0.5640 |  0.3160 |
| p |  0.5730 |  0.3400 |
| q |  0.5240 |  0.3340 |
| r |  0.4680 |  0.2980 |
| s |  0.4610 |  0.3000 |
| t |  0.5510 |  0.3090 |
| u |  0.3360 |  0.2000 |
| v |  0.4290 |  0.3160 |
| w |  0.3070 |  0.2100 |
| x |  0.5090 |  0.2790 |
| z |  0.4070 |  0.3680 |