



## wwPDB EM Validation Summary Report ⓘ

Nov 13, 2025 – 03:15 PM EST

PDB ID : 9N9J / pdb\_00009n9j  
EMDB ID : EMD-49171  
Title : Structure of a GRP94 folding intermediate engaged with a CCDC134- and FKBP11-bound secretory translocon  
Authors : Yamsek, M.; Jha, R.; Keenan, R.J.  
Deposited on : 2025-02-10  
Resolution : 3.20 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

The types of validation reports are described at

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

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

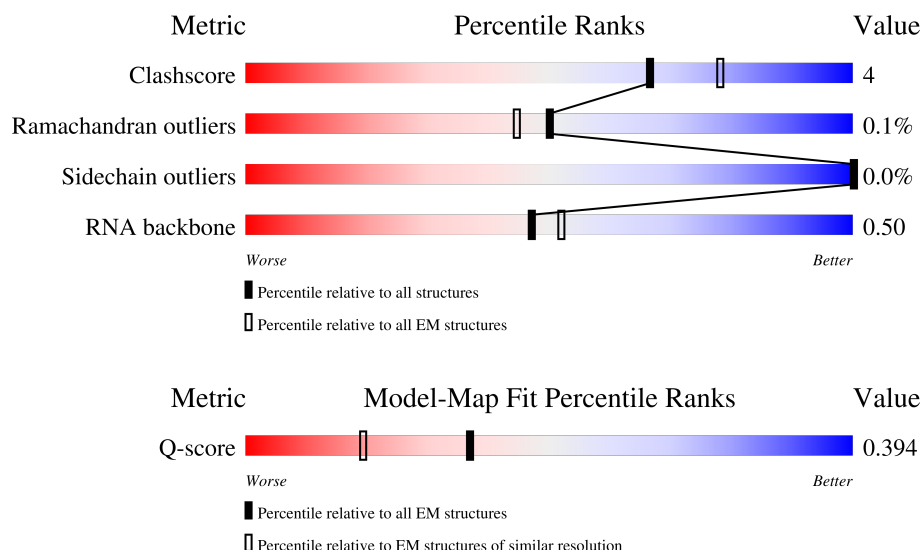
EMDB validation analysis : 0.0.1.dev129  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.46

# 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 3.20 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<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|--|
| Clashscore            | 210492                      | 15764                       | -  |
| Ramachandran outliers | 207382                      | 16835                       | -  |
| Sidechain outliers    | 206894                      | 16415                       | -  |
| RNA backbone          | 6643                        | 2191                        | -  |
| Q-score               | -                           | 25397                       | 15020 ( 2.70 - 3.70 )                                    |

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  $\geq 3$ , 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   | 5     | 286    |                  |
| 2   | 6     | 183    |                  |
| 3   | 7     | 185    |                  |






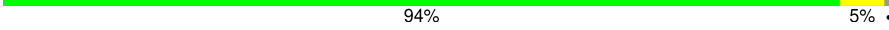





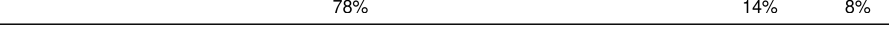

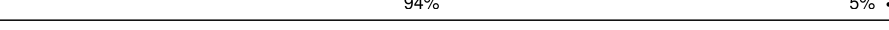





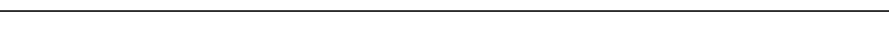

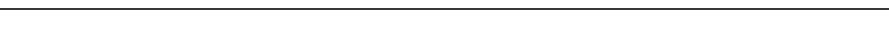
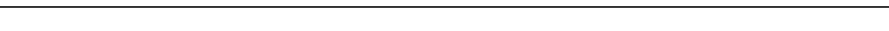


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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 4   | 8     | 173    |                  |
| 5   | A     | 201    |                  |
| 6   | B     | 229    |                  |
| 7   | D     | 476    |                  |
| 8   | E     | 96     |                  |
| 9   | F     | 68     |                  |
| 10  | G     | 66     |                  |
| 11  | I     | 705    |                  |
| 12  | J     | 149    |                  |
| 13  | K2    | 37     |                  |
| 14  | L2    | 79     |                  |
| 15  | L5    | 5066   |                  |
| 16  | L7    | 121    |                  |
| 17  | L8    | 157    |                  |
| 18  | LA    | 257    |                  |
| 19  | LB    | 403    |                  |
| 20  | LC    | 427    |                  |
| 21  | LD    | 297    |                  |
| 22  | LE    | 288    |                  |
| 23  | LF    | 248    |                  |
| 24  | LG    | 266    |                  |
| 25  | LH    | 192    |                  |
| 26  | LI    | 214    |                  |
| 27  | LL    | 211    |                  |
| 28  | LM    | 215    |                  |


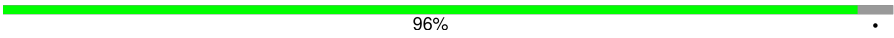






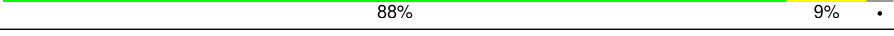
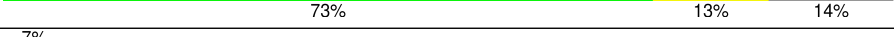
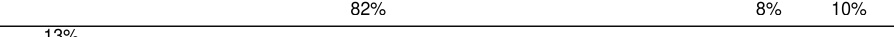

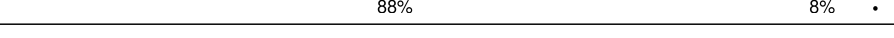
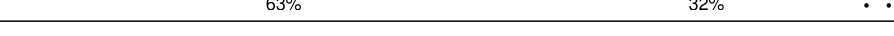
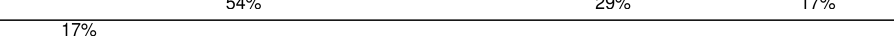






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| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 29  | LN    | 204    |  90% 8%        |
| 30  | LO    | 203    |  86% 13%       |
| 31  | LP    | 184    |  89% 10%       |
| 32  | LQ    | 188    |  91% 9%        |
| 33  | LR    | 196    |  85% 5% 10%    |
| 34  | LS    | 176    |  94% 5%        |
| 35  | LT    | 160    |  89% 11%       |
| 36  | LU    | 128    |  66% 12% 21%   |
| 37  | LV    | 140    |  81% 12% 6%    |
| 38  | LW    | 157    |  34% 6% 60%    |
| 39  | LX    | 156    |  68% 8% 24%    |
| 40  | LY    | 145    |  78% 14% 8%   |
| 41  | LZ    | 136    |  88% 11%     |
| 42  | La    | 148    |  94% 5%      |
| 43  | Lb    | 159    |  62% 6% 31%  |
| 44  | Lc    | 115    |  75% 10% 15% |
| 45  | Ld    | 125    |  71% 14% 14% |
| 46  | Le    | 135    |  87% 8%      |
| 47  | Lf    | 110    |  80% 18% ..  |
| 48  | Lg    | 117    |  89% 9%      |
| 49  | Lh    | 123    |  88% 11%     |
| 50  | Li    | 105    |  89% 9%      |
| 51  | Lj    | 97     |  79% 8% 11%  |
| 52  | Lk    | 70     |  86% 13%     |
| 53  | Ll    | 51     |  78% 20%     |

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| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 54  | Lm    | 128    |    |
| 55  | Ln    | 25     |    |
| 56  | Lo    | 106    |    |
| 57  | Lp    | 92     |    |
| 58  | Lr    | 137    |    |
| 59  | Ls    | 317    |    |
| 60  | Lt    | 165    |    |
| 61  | Lz    | 217    |    |
| 62  | M2    | 113    |    |
| 63  | N     | 136    |    |
| 64  | N2    | 456    |    |
| 65  | O2    | 607    |   |
| 66  | P2    | 631    |  |
| 67  | u3    | 76     |  |
| 68  | v3    | 76     |  |
| 69  | y3    | 846    |  |
| 70  | LJ    | 178    |  |
| 71  | K     | 8      |  |
| 72  | C     | 2      |  |
| 73  | H     | 8      |  |
| 74  | L     | 2      |  |

## 2 Entry composition

There are 78 unique types of molecules in this entry. The entry contains 326107 atoms, of which 142818 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 protein called Translocon-associated protein subunit alpha.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 1   | 5     | 140      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2192  | 723 | 1071 | 179 | 217 | 2 |         |       |

- Molecule 2 is a protein called Translocon-associated protein subunit beta.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 2   | 6     | 162      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2500  | 808 | 1241 | 212 | 237 | 2 |         |       |

- Molecule 3 is a protein called Translocon-associated protein subunit gamma.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 3   | 7     | 179      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2938  | 946 | 1487 | 239 | 263 | 3 |         |       |

- Molecule 4 is a protein called Translocon-associated protein subunit delta.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 4   | 8     | 150      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2333  | 755 | 1148 | 199 | 228 | 3 |         |       |

- Molecule 5 is a protein called Peptidyl-prolyl cis-trans isomerase FKBP11.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 5   | A     | 167      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2695  | 842 | 1390 | 230 | 228 | 5 |         |       |

- Molecule 6 is a protein called Coiled-coil domain-containing protein 134.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 6   | B     | 197      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3279  | 1046 | 1646 | 289 | 294 | 4 |         |       |

- Molecule 7 is a protein called Protein transport protein Sec61 subunit alpha isoform 1.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 7   | D     | 454      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 7189  | 2324 | 3661 | 564 | 616 | 24 |         |       |

- Molecule 8 is a protein called Protein transport protein Sec61 subunit beta.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 8   | E     | 32       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 523   | 171 | 273 | 40 | 37 | 2 |         |       |

- Molecule 9 is a protein called Protein transport protein Sec61 subunit gamma.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 9   | F     | 67       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 1112  | 353 | 574 | 93 | 87 | 5 |         |       |

- Molecule 10 is a protein called Stress-associated endoplasmic reticulum protein 1.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 10  | G     | 56       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 904   | 280 | 467 | 82 | 71 | 4 |         |       |

- Molecule 11 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit STT3A.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 11  | I     | 701      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 11261 | 3701 | 5612 | 913 | 998 | 37 |         |       |

- Molecule 12 is a protein called Oligosaccharyltransferase complex subunit OSTC.

| Mol | Chain | Residues | Atoms |     |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|----|---------|-------|
| 12  | J     | 149      | Total | C   | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 2409  | 789 | 1227 | 189 | 192 | 12 |         |       |

- Molecule 13 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 4.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 13  | K2    | 37       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 607   | 196 | 312 | 46 | 51 | 2 |         |       |

- Molecule 14 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit TMEM258.

| Mol | Chain | Residues | Atoms |     |     |    |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|-----|---|---------|-------|
| 14  | L2    | 79       | Total | C   | H   | N  | O   | S | 0       | 0     |
|     |       |          | 1302  | 440 | 659 | 92 | 107 | 4 |         |       |

- Molecule 15 is a RNA chain called 28S ribosomal RNA.

| Mol | Chain | Residues | Atoms  |       |       |       |       |      | AltConf | Trace |
|-----|-------|----------|--------|-------|-------|-------|-------|------|---------|-------|
| 15  | L5    | 3718     | Total  | C     | H     | N     | O     | P    | 0       | 0     |
|     |       |          | 119751 | 35431 | 40176 | 14552 | 25875 | 3717 |         |       |

- Molecule 16 is a RNA chain called 5S ribosomal RNA.

| Mol | Chain | Residues | Atoms |      |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|-----|---------|-------|
| 16  | L7    | 120      | Total | C    | H    | N   | O   | P   | 0       | 0     |
|     |       |          | 3855  | 1141 | 1294 | 456 | 844 | 120 |         |       |

- Molecule 17 is a RNA chain called 5.8S ribosomal RNA.

| Mol | Chain | Residues | Atoms |      |      |     |      |     | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|------|-----|---------|-------|
| 17  | L8    | 156      | Total | C    | H    | N   | O    | P   | 0       | 0     |
|     |       |          | 4996  | 1480 | 1682 | 585 | 1094 | 155 |         |       |

- Molecule 18 is a protein called 60S ribosomal protein L8.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 18  | LA    | 248      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3891  | 1189 | 1993 | 389 | 314 | 6 |         |       |

- Molecule 19 is a protein called 60S ribosomal protein L3.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 19  | LB    | 400      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 6598  | 2055 | 3369 | 606 | 554 | 14 |         |       |

- Molecule 20 is a protein called Large ribosomal subunit protein uL4.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 20  | LC    | 368      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 6031  | 1840 | 3104 | 583 | 489 | 15 |         |       |

- Molecule 21 is a protein called Large ribosomal subunit protein uL18.



| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 21  | LD    | 293      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 4792  | 1507 | 2410 | 434 | 427 | 14 |         |       |

- Molecule 22 is a protein called Large ribosomal subunit protein eL6.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 22  | LE    | 236      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3959  | 1222 | 2055 | 361 | 317 | 4 |         |       |

- Molecule 23 is a protein called 60S ribosomal protein L7.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 23  | LF    | 225      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3866  | 1202 | 1996 | 358 | 301 | 9 |         |       |

- Molecule 24 is a protein called Large ribosomal subunit protein eL8.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 24  | LG    | 241      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 4001  | 1228 | 2074 | 371 | 324 | 4 |         |       |

- Molecule 25 is a protein called Large ribosomal subunit protein uL6.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 25  | LH    | 190      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3119  | 956 | 1601 | 284 | 272 | 6 |         |       |

- Molecule 26 is a protein called Ribosomal protein uL16-like.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 26  | LI    | 202      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 3305  | 1037 | 1671 | 314 | 269 | 14 |         |       |

- Molecule 27 is a protein called Large ribosomal subunit protein eL13.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 27  | LL    | 210      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3519  | 1064 | 1818 | 352 | 281 | 4 |         |       |

- Molecule 28 is a protein called Large ribosomal subunit protein eL14.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 28  | LM    | 136      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2307  | 719 | 1187 | 215 | 179 | 7 |         |       |

- Molecule 29 is a protein called Large ribosomal subunit protein eL15.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 29  | LN    | 203      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3450  | 1072 | 1749 | 359 | 266 | 4 |         |       |

- Molecule 30 is a protein called Large ribosomal subunit protein uL13.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 30  | LO    | 201      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3444  | 1063 | 1794 | 321 | 261 | 5 |         |       |

- Molecule 31 is a protein called Large ribosomal subunit protein uL22.

| Mol | Chain | Residues | Atoms |     |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|----|---------|-------|
| 31  | LP    | 181      | Total | C   | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 3006  | 923 | 1536 | 282 | 255 | 10 |         |       |

- Molecule 32 is a protein called Large ribosomal subunit protein eL18.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 32  | LQ    | 187      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3141  | 944 | 1628 | 314 | 250 | 5 |         |       |

- Molecule 33 is a protein called Large ribosomal subunit protein eL19.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 33  | LR    | 177      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3118  | 918 | 1633 | 323 | 235 | 9 |         |       |

- Molecule 34 is a protein called Large ribosomal subunit protein eL20.

| Mol | Chain | Residues | Atoms |     |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|----|---------|-------|
| 34  | LS    | 175      | Total | C   | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 2943  | 925 | 1490 | 283 | 235 | 10 |         |       |

- Molecule 35 is a protein called Large ribosomal subunit protein eL21.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 35  | LT    | 159      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2664  | 823 | 1366 | 252 | 217 | 6 |         |       |

- Molecule 36 is a protein called Large ribosomal subunit protein eL22.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 36  | LU    | 101      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1675  | 529 | 850 | 144 | 150 | 2 |         |       |

- Molecule 37 is a protein called Large ribosomal subunit protein uL14.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 37  | LV    | 131      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2018  | 618 | 1039 | 184 | 172 | 5 |         |       |

- Molecule 38 is a protein called Large ribosomal subunit protein eL24.

| Mol | Chain | Residues | Atoms |     |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---|---------|-------|
| 38  | LW    | 63       | Total | C   | H   | N   | O  | S | 0       | 0     |
|     |       |          | 1069  | 337 | 541 | 103 | 85 | 3 |         |       |

- Molecule 39 is a protein called Large ribosomal subunit protein uL23.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 39  | LX    | 119      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2029  | 624 | 1053 | 183 | 168 | 1 |         |       |

- Molecule 40 is a protein called Large ribosomal subunit protein uL24.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 40  | LY    | 134      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2320  | 700 | 1205 | 226 | 186 | 3 |         |       |

- Molecule 41 is a protein called Large ribosomal subunit protein eL27.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 41  | LZ    | 135      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2289  | 714 | 1182 | 208 | 182 | 3 |         |       |

- Molecule 42 is a protein called 60S ribosomal protein L27a.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 42  | La    | 147      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2376  | 736 | 1214 | 237 | 186 | 3 |         |       |

- Molecule 43 is a protein called 60S ribosomal protein L29.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 43  | Lb    | 109      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1824  | 546 | 948 | 189 | 137 | 4 |         |       |

- Molecule 44 is a protein called Large ribosomal subunit protein eL30.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 44  | Lc    | 98       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1568  | 485 | 804 | 135 | 138 | 6 |         |       |

- Molecule 45 is a protein called Large ribosomal subunit protein eL31.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 45  | Ld    | 107      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1818  | 560 | 930 | 171 | 155 | 2 |         |       |

- Molecule 46 is a protein called Large ribosomal subunit protein eL32.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 46  | Le    | 129      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2224  | 673 | 1160 | 220 | 166 | 5 |         |       |

- Molecule 47 is a protein called Large ribosomal subunit protein eL33.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 47  | Lf    | 109      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1788  | 555 | 912 | 174 | 144 | 3 |         |       |

- Molecule 48 is a protein called Large ribosomal subunit protein eL34.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 48  | Lg    | 114      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1904  | 566 | 998 | 187 | 147 | 6 |         |       |

- Molecule 49 is a protein called Large ribosomal subunit protein uL29.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 49  | Lh    | 122      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2163  | 641 | 1148 | 205 | 168 | 1 |         |       |

- Molecule 50 is a protein called Large ribosomal subunit protein eL36.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 50  | Li    | 102      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1749  | 521 | 917 | 177 | 129 | 5 |         |       |

- Molecule 51 is a protein called Large ribosomal subunit protein eL37.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 51  | Lj    | 86       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1441  | 434 | 736 | 155 | 111 | 5 |         |       |

- Molecule 52 is a protein called Large ribosomal subunit protein eL38.

| Mol | Chain | Residues | Atoms |     |     |     |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---|---------|-------|
| 52  | Lk    | 69       | Total | C   | H   | N   | O  | S | 0       | 0     |
|     |       |          | 1206  | 366 | 637 | 103 | 99 | 1 |         |       |

- Molecule 53 is a protein called Large ribosomal subunit protein eL39.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 53  | Ll    | 50       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 927   | 281 | 483 | 98 | 64 | 1 |         |       |

- Molecule 54 is a protein called Ubiquitin-60S ribosomal protein L40.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 54  | Lm    | 52       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 894   | 266 | 465 | 90 | 67 | 6 |         |       |

- Molecule 55 is a protein called Small ribosomal subunit protein eS32.

| Mol | Chain | Residues | Atoms |     |     |    |    |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|----|----|---|---------|-------|
| 55  | Ln    | 24       | Total | C   | H   | N  | O  | S | 0       | 0     |
|     |       |          | 506   | 139 | 276 | 62 | 26 | 3 |         |       |

- Molecule 56 is a protein called Large ribosomal subunit protein eL42.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 56  | Lo    | 105      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1791  | 542 | 929 | 175 | 139 | 6 |         |       |

- Molecule 57 is a protein called Large ribosomal subunit protein eL43.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 57  | Lp    | 91       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1464  | 445 | 756 | 136 | 120 | 7 |         |       |

- Molecule 58 is a protein called 60S ribosomal protein L28.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 58  | Lr    | 125      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2070  | 622 | 1068 | 207 | 168 | 5 |         |       |

- Molecule 59 is a protein called 60S acidic ribosomal protein P0.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 59  | Ls    | 196      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3036  | 952 | 1540 | 259 | 276 | 9 |         |       |

- Molecule 60 is a protein called 60S ribosomal protein L12.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 60  | Lt    | 141      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2122  | 652 | 1076 | 191 | 199 | 4 |         |       |

- Molecule 61 is a protein called 60S ribosomal protein L10a.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 61  | Lz    | 217      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3595  | 1113 | 1854 | 312 | 307 | 9 |         |       |

- Molecule 62 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit DAD1.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 62  | M2    | 110      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1743  | 573 | 880 | 135 | 151 | 4 |         |       |

- Molecule 63 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit KCP2.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 63  | N     | 117      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1816  | 591 | 925 | 138 | 156 | 6 |         |       |

- Molecule 64 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase 48 kDa subunit.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 64  | N2    | 410      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 6385  | 2079 | 3161 | 531 | 608 | 6 |         |       |

- Molecule 65 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 65  | O2    | 580      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 9342  | 2978 | 4687 | 785 | 883 | 9 |         |       |

- Molecule 66 is a protein called Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 2.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 66  | P2    | 607      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 9445  | 3020 | 4724 | 783 | 909 | 9 |         |       |

- Molecule 67 is a RNA chain called tRNA.

| Mol | Chain | Residues | Atoms |     |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|----|---------|-------|
| 67  | u3    | 75       | Total | C   | H   | N   | O   | P  | 0       | 0     |
|     |       |          | 2402  | 710 | 809 | 278 | 530 | 75 |         |       |

- Molecule 68 is a RNA chain called tRNA.

| Mol | Chain | Residues | Atoms |     |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|----|---------|-------|
| 68  | v3    | 76       | Total | C   | H   | N   | O   | P  | 0       | 0     |
|     |       |          | 2440  | 721 | 822 | 287 | 534 | 76 |         |       |

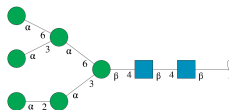
- Molecule 69 is a protein called Endoplasmin.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 69  | y3    | 275      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 4069  | 1284 | 2011 | 355 | 415 | 4 |         |       |

- Molecule 70 is a protein called Large ribosomal subunit protein uL5.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 70  | LJ    | 176      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2851  | 888 | 1441 | 263 | 253 | 6 |         |       |

- Molecule 71 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



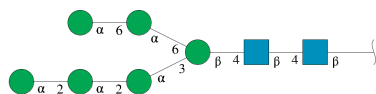
| Mol | Chain | Residues | Atoms |    |    |   |    |  | AltConf | Trace |
|-----|-------|----------|-------|----|----|---|----|--|---------|-------|
| 71  | K     | 8        | Total | C  | H  | N | O  |  | 0       | 0     |
|     |       |          | 173   | 52 | 79 | 2 | 40 |  |         |       |

- Molecule 72 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |    |   |    |  | AltConf | Trace |
|-----|-------|----------|-------|----|----|---|----|--|---------|-------|
| 72  | C     | 2        | Total | C  | H  | N | O  |  | 0       | 0     |
|     |       |          | 53    | 16 | 25 | 2 | 10 |  |         |       |

- Molecule 73 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |    |   |    |  | AltConf | Trace |
|-----|-------|----------|-------|----|----|---|----|--|---------|-------|
| 73  | H     | 8        | Total | C  | H  | N | O  |  | 0       | 0     |
|     |       |          | 173   | 52 | 79 | 2 | 40 |  |         |       |

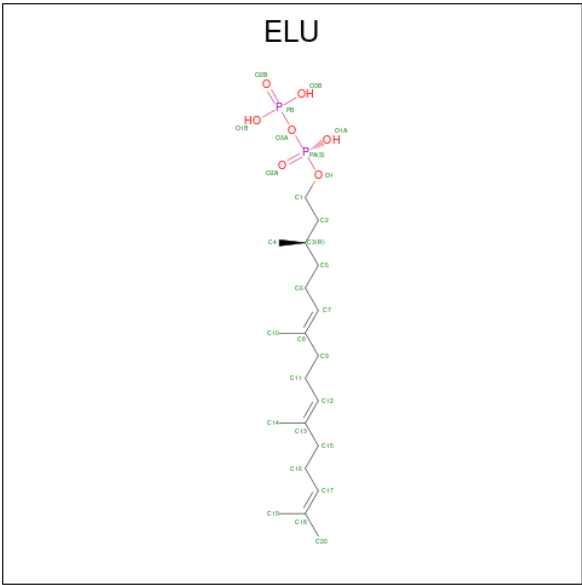
- Molecule 74 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-alpha-D-glucopyranose.





| Mol | Chain | Residues | Atoms |    |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|---|----|---------|-------|
| 74  | L     | 2        | Total | C  | H  | N | O  | 0       | 0     |
|     |       |          | 53    | 16 | 25 | 2 | 10 |         |       |

- Molecule 75 is phosphono [(3 {R},6 {E},10 {E})-3,7,11,15-tetramethylhexadeca-6,10,14-trienyl] hydrogen phosphate (CCD ID: ELU) (formula: C<sub>20</sub>H<sub>38</sub>O<sub>7</sub>P<sub>2</sub>) (labeled as "Ligand of Interest" by depositor).



| Mol | Chain | Residues | Atoms |    |    |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---------|
| 75  | I     | 1        | Total | C  | H  | O | P | 0       |
|     |       |          | 64    | 20 | 35 | 7 | 2 |         |

- Molecule 76 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms |     | AltConf |
|-----|-------|----------|-------|-----|---------|
| 76  | L5    | 213      | Total | Mg  | 0       |
|     |       |          | 213   | 213 |         |
| 76  | L7    | 3        | Total | Mg  | 0       |
|     |       |          | 3     | 3   |         |
| 76  | L8    | 3        | Total | Mg  | 0       |
|     |       |          | 3     | 3   |         |
| 76  | LA    | 1        | Total | Mg  | 0       |
|     |       |          | 1     | 1   |         |

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| Mol | Chain | Residues | Atoms      |         | AltConf |
|-----|-------|----------|------------|---------|---------|
| 76  | LI    | 1        | Total<br>1 | Mg<br>1 | 0       |
| 76  | LP    | 1        | Total<br>1 | Mg<br>1 | 0       |
| 76  | LV    | 1        | Total<br>1 | Mg<br>1 | 0       |
| 76  | Le    | 1        | Total<br>1 | Mg<br>1 | 0       |
| 76  | Lg    | 1        | Total<br>1 | Mg<br>1 | 0       |
| 76  | Lj    | 1        | Total<br>1 | Mg<br>1 | 0       |

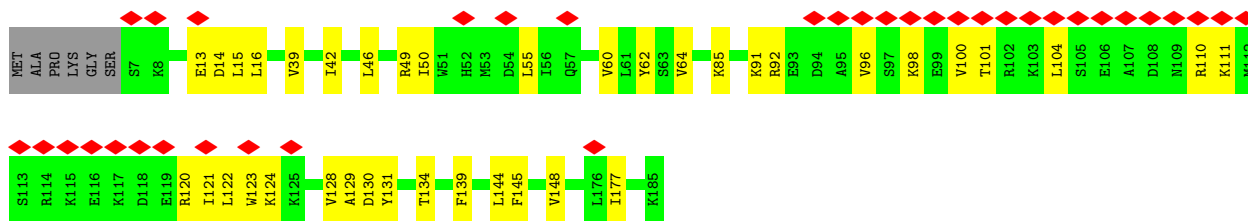
- Molecule 77 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms      |         | AltConf |
|-----|-------|----------|------------|---------|---------|
| 77  | Lg    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 77  | Lj    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 77  | Lm    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 77  | Lo    | 1        | Total<br>1 | Zn<br>1 | 0       |
| 77  | Lp    | 1        | Total<br>1 | Zn<br>1 | 0       |

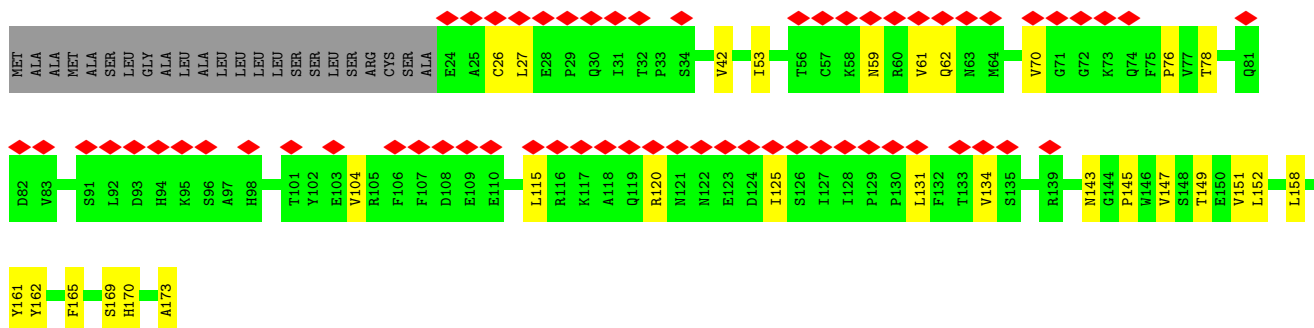
- Molecule 78 is water.

| Mol | Chain | Residues | Atoms      |        | AltConf |
|-----|-------|----------|------------|--------|---------|
| 78  | u3    | 1        | Total<br>1 | O<br>1 | 0       |

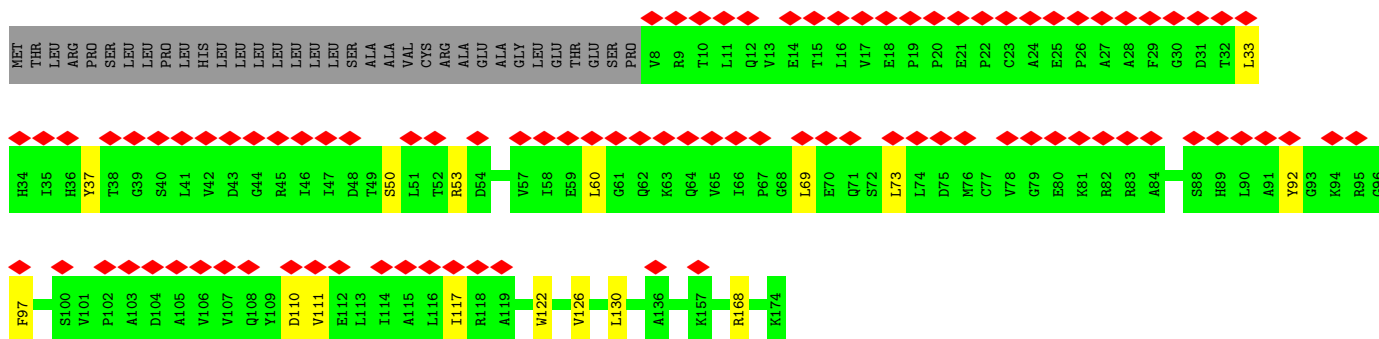




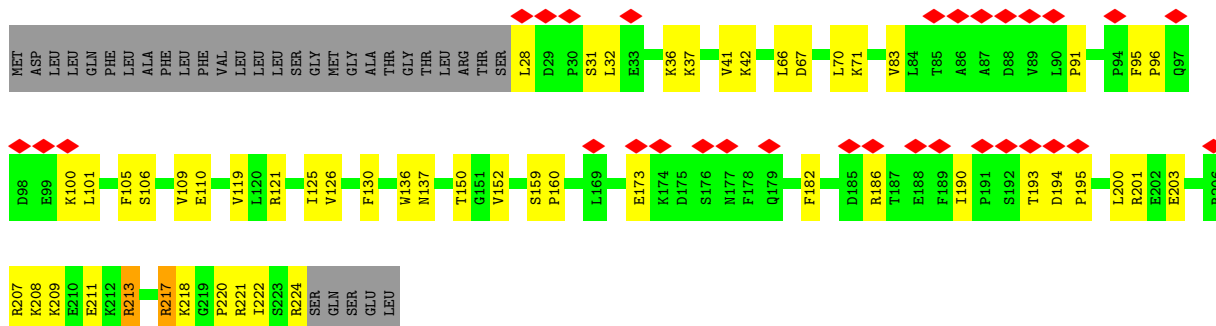
• Molecule 4: Translocon-associated protein subunit delta



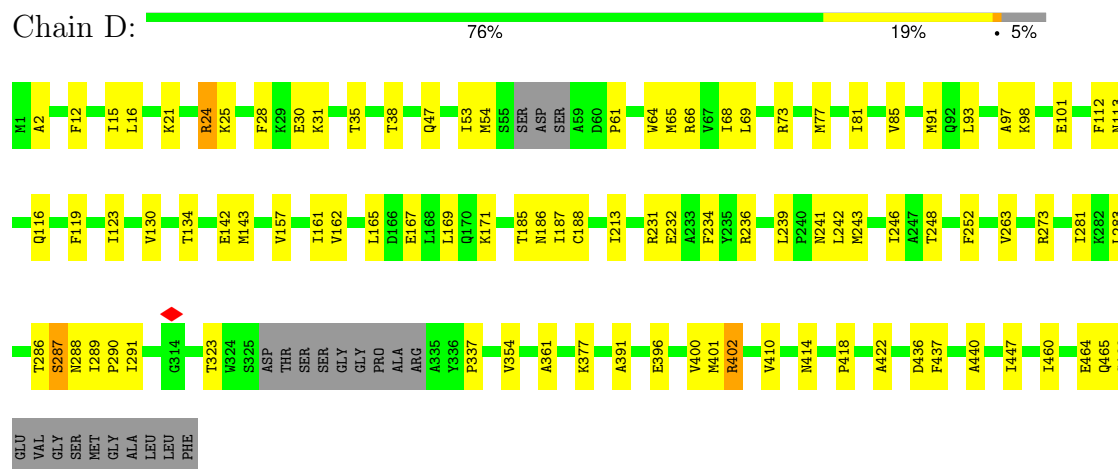
• Molecule 5: Peptidyl-prolyl cis-trans isomerase FKBP11



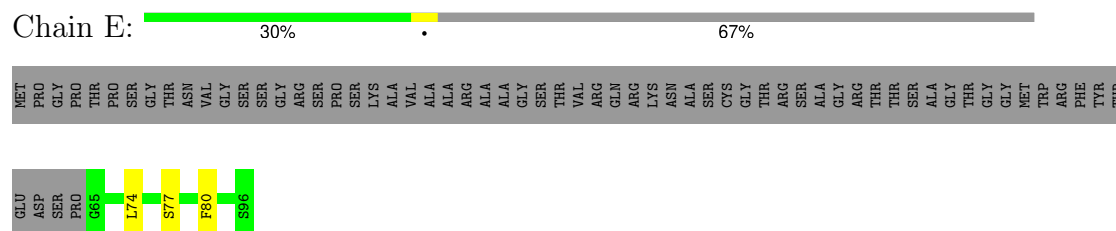
• Molecule 6: Coiled-coil domain-containing protein 134



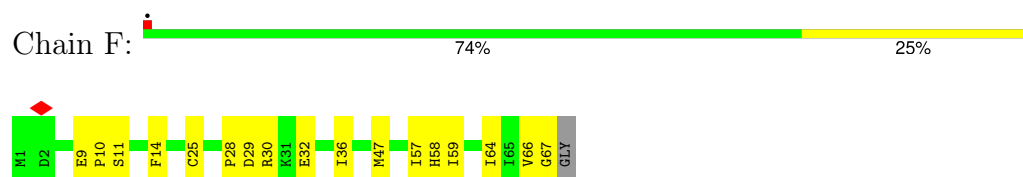
- Molecule 7: Protein transport protein Sec61 subunit alpha isoform 1



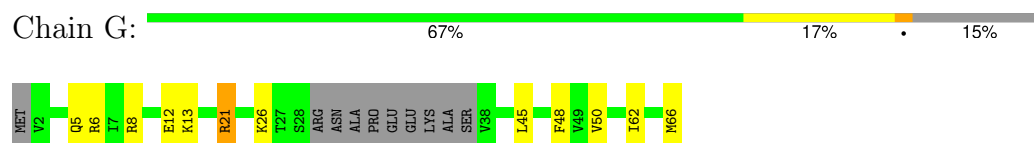
- Molecule 8: Protein transport protein Sec61 subunit beta



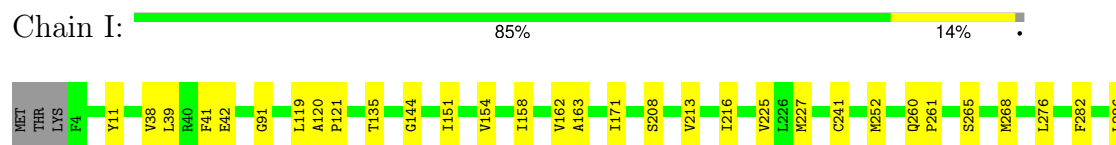
- Molecule 9: Protein transport protein Sec61 subunit gamma

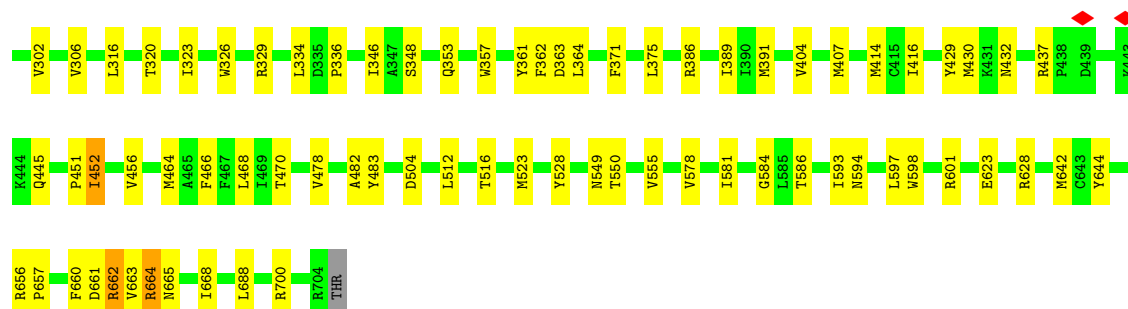


- Molecule 10: Stress-associated endoplasmic reticulum protein 1

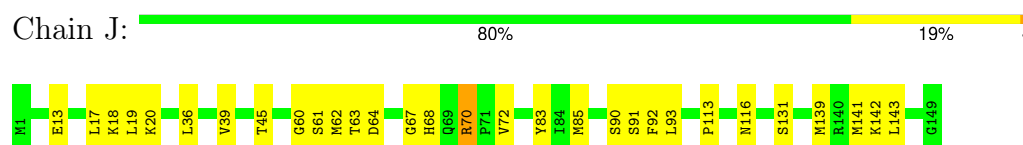


- Molecule 11: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit STT3A

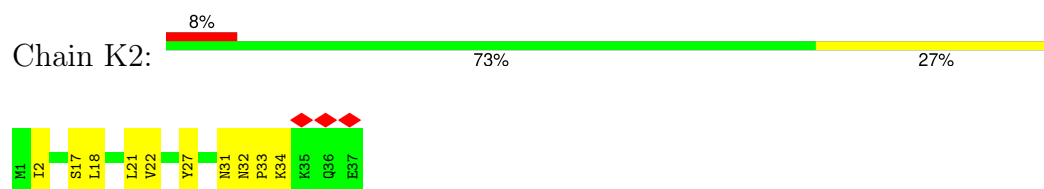




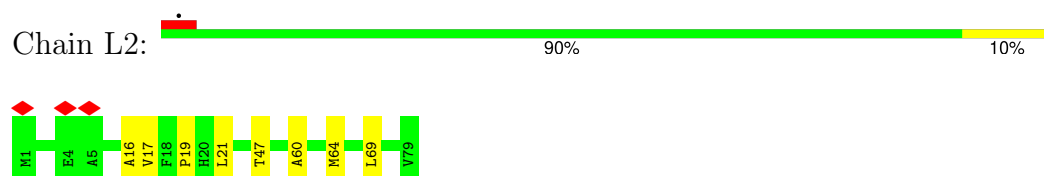
- Molecule 12: Oligosaccharyltransferase complex subunit OSTC



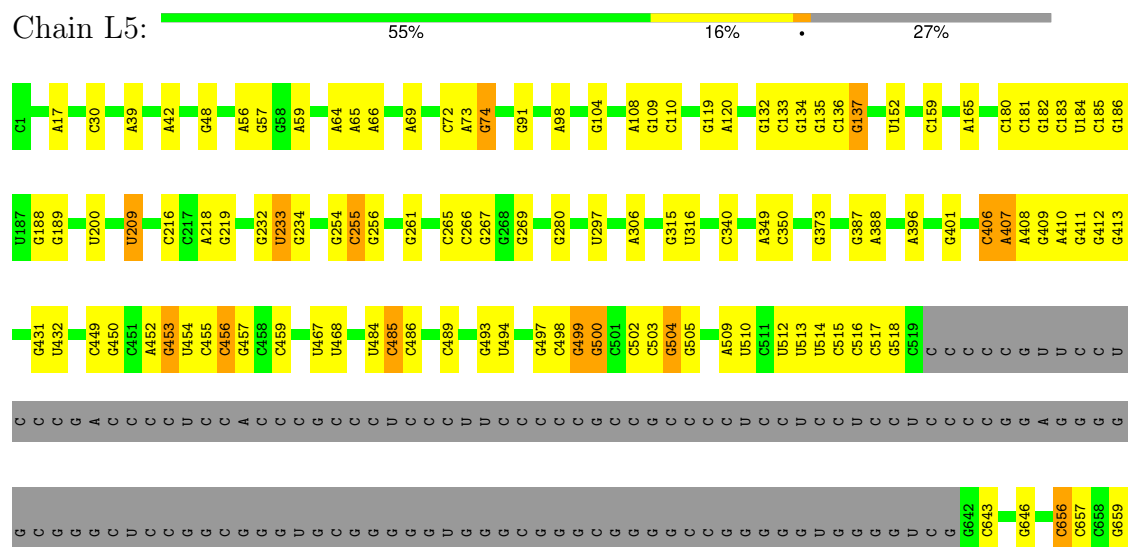
- Molecule 13: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 4



- Molecule 14: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit TMEM258



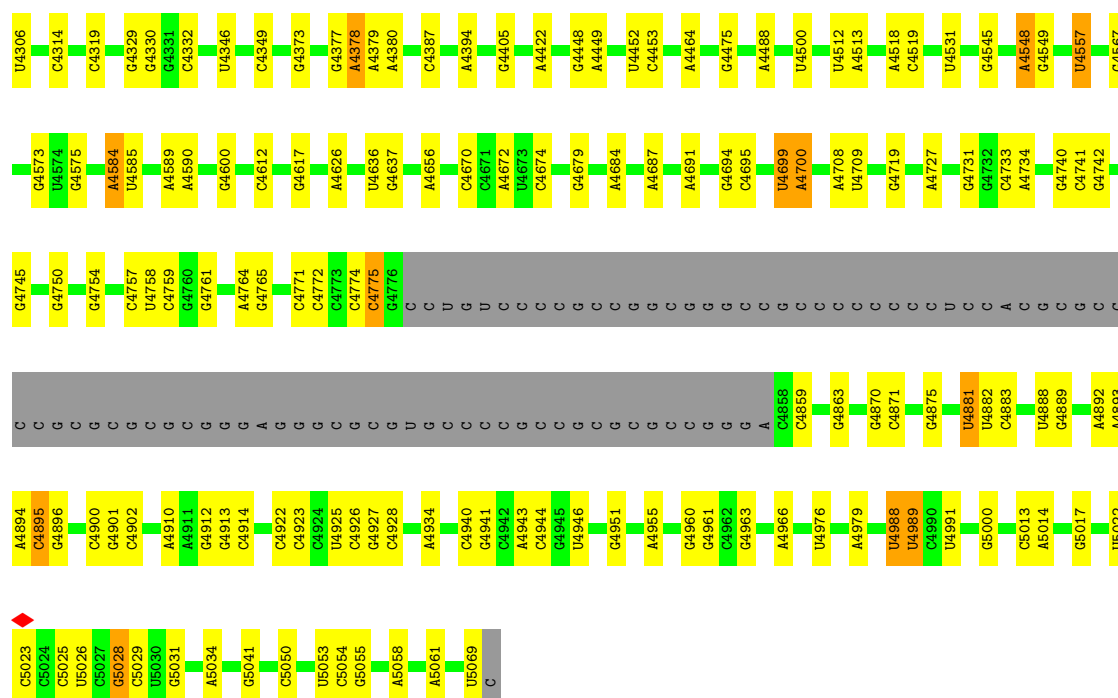
- Molecule 15: 28S ribosomal RNA





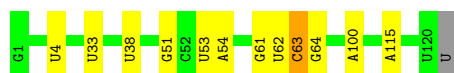






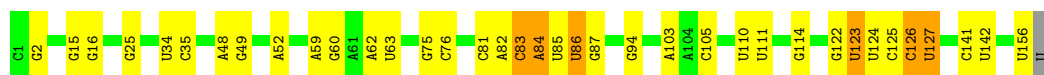
• Molecule 16: 5S ribosomal RNA

Chain L7: 89% 9% ..



• Molecule 17: 5.8S ribosomal RNA

Chain L8: 76% 20% . .



• Molecule 18: 60S ribosomal protein L8

Chain LA: 86% 11% .



• Molecule 19: 60S ribosomal protein L3

Chain LB: 90% 10% .

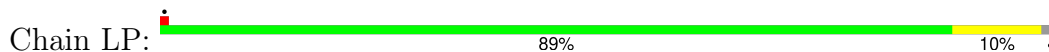








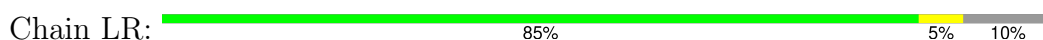
- Molecule 31: Large ribosomal subunit protein uL22



- Molecule 32: Large ribosomal subunit protein eL18



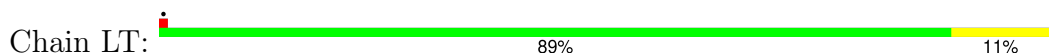
- Molecule 33: Large ribosomal subunit protein eL19



- Molecule 34: Large ribosomal subunit protein eL20



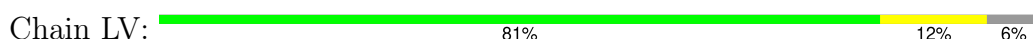
- Molecule 35: Large ribosomal subunit protein eL21



- Molecule 36: Large ribosomal subunit protein eL22

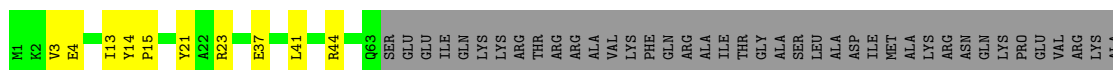
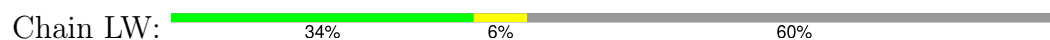


- Molecule 37: Large ribosomal subunit protein uL14

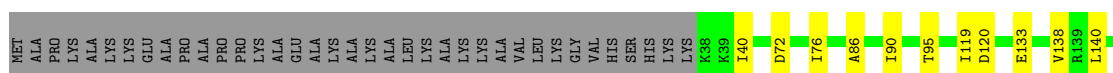




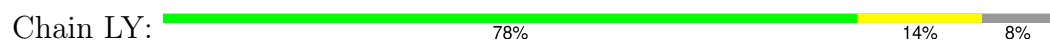
- Molecule 38: Large ribosomal subunit protein eL24



- Molecule 39: Large ribosomal subunit protein uL23



- Molecule 40: Large ribosomal subunit protein uL24



- Molecule 41: Large ribosomal subunit protein eL27

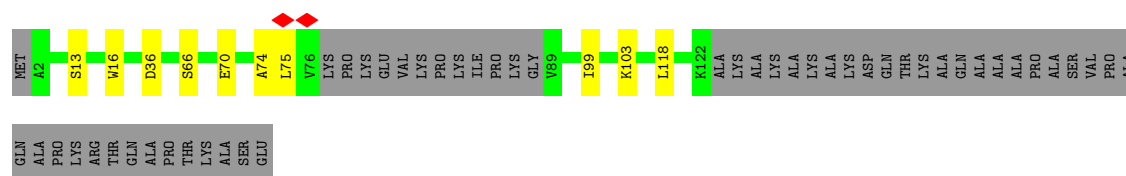


- Molecule 42: 60S ribosomal protein L27a




- Molecule 43: 60S ribosomal protein L29





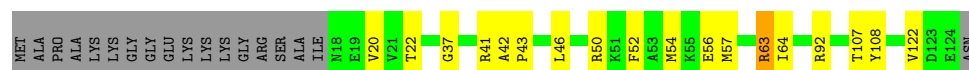
- Molecule 44: Large ribosomal subunit protein eL30

Chain Lc: 




- Molecule 45: Large ribosomal subunit protein eL31

Chain Ld: 




- Molecule 46: Large ribosomal subunit protein eL32

Chain Le: 



- Molecule 47: Large ribosomal subunit protein eL33

Chain Lf: 



- Molecule 48: Large ribosomal subunit protein eL34

Chain Lg: 



- Molecule 49: Large ribosomal subunit protein uL29

Chain Lh: 




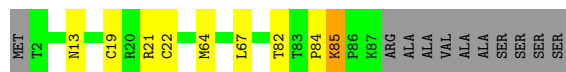
- Molecule 50: Large ribosomal subunit protein eL36

Chain Li:  89% 9%




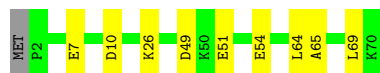
- Molecule 51: Large ribosomal subunit protein eL37

Chain Lj:  79% 8% 11%




- Molecule 52: Large ribosomal subunit protein eL38

Chain Lk:  86% 13%



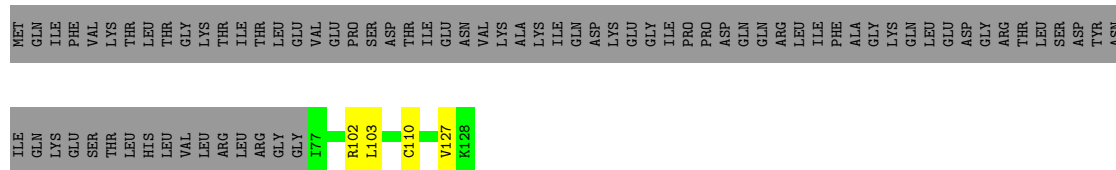
- Molecule 53: Large ribosomal subunit protein eL39

Chain Ll:  78% 20%



- Molecule 54: Ubiquitin-60S ribosomal protein L40

Chain Lm:  38% 59%



- Molecule 55: Small ribosomal subunit protein eS32

Chain Ln:  96%



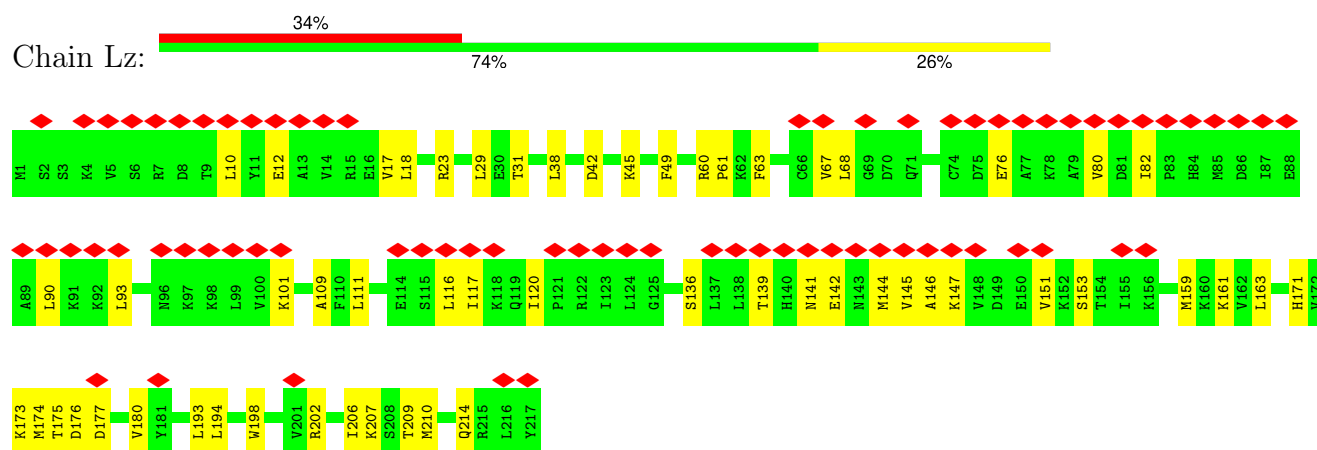
- Molecule 56: Large ribosomal subunit protein eL42

Chain Lo:  93% 6%

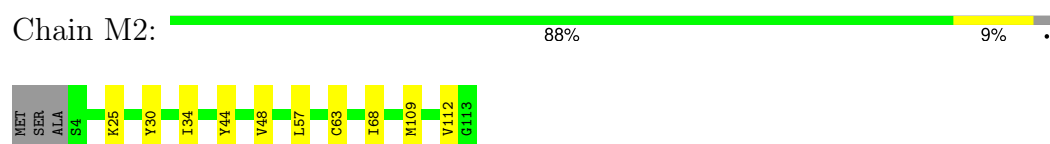




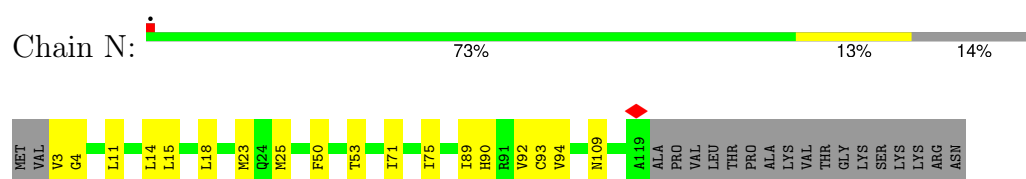




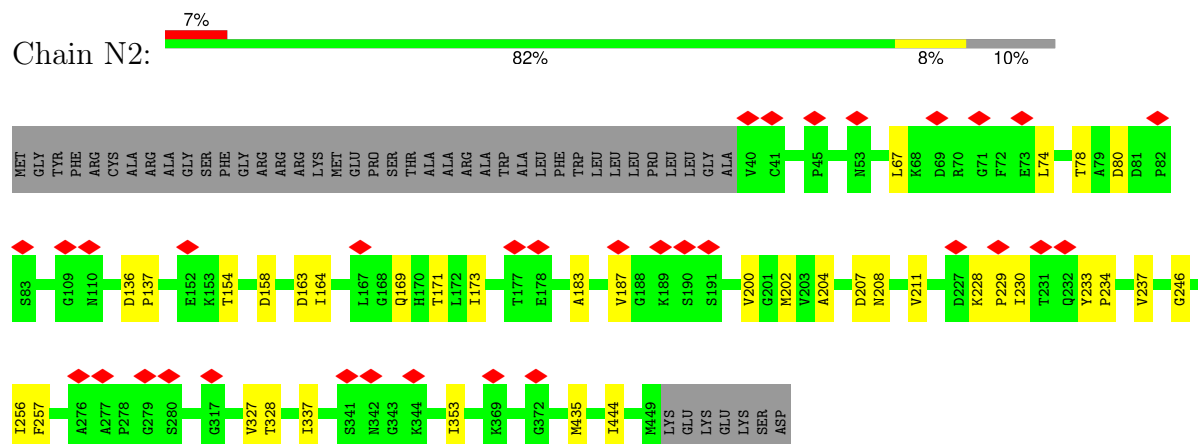
- Molecule 62: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit DAD1



- Molecule 63: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit KCP2

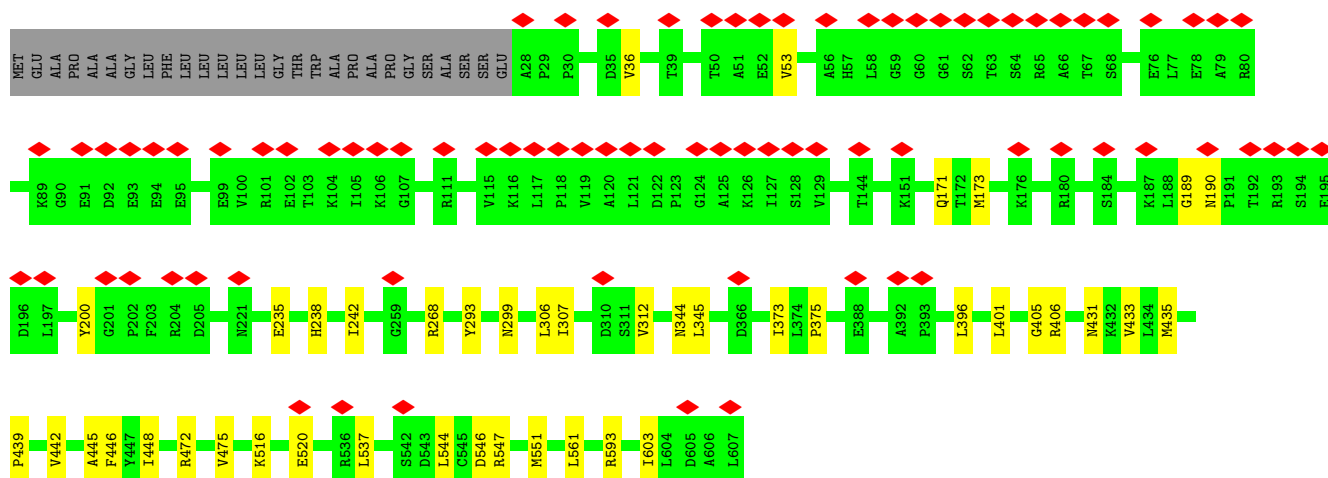


- Molecule 64: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase 48 kDa subunit

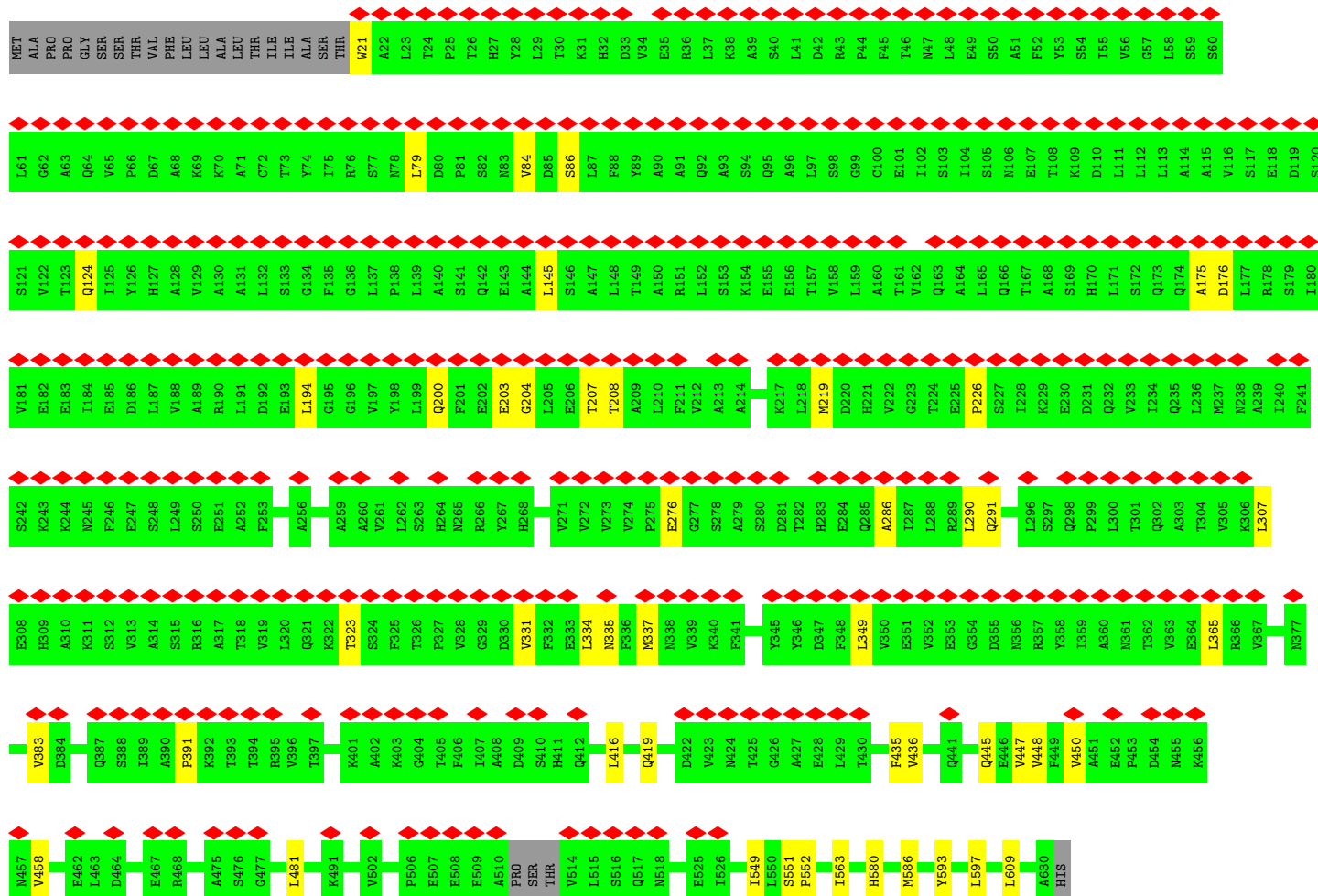
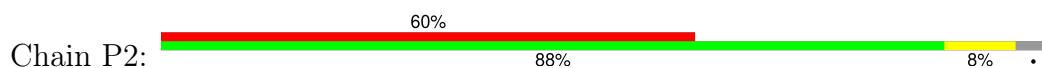


- Molecule 65: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 1





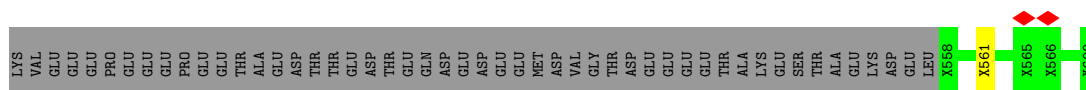
• Molecule 66: Dolichyl-diphosphooligosaccharide--protein glycosyltransferase subunit 2



• Molecule 67: tRNA







- Molecule 70: Large ribosomal subunit protein uL5

Chain LJ: 80% 17%



- Molecule 71: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K: 12% 25% 62% 12%



- Molecule 72: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain C: 50% 50% 50%



- Molecule 73: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain H: 25% 50% 75%



- Molecule 74: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-alpha-D-glucopyranose

Chain L: 100%



## 4 Experimental information

| Property                             | Value                           | Source    |
|--------------------------------------|---------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                 | Depositor |
| Imposed symmetry                     | POINT, Not provided             |           |
| Number of particles used             | 55750                           | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF               | Depositor |
| CTF correction method                | NONE                            | Depositor |
| Microscope                           | TFS KRIOS                       | Depositor |
| Voltage (kV)                         | 300                             | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 60                              | Depositor |
| Minimum defocus (nm)                 | 900                             | Depositor |
| Maximum defocus (nm)                 | 1900                            | Depositor |
| Magnification                        | 53000                           | Depositor |
| Image detector                       | GATAN K3 BIOQUANTUM (6k x 4k)   | Depositor |
| Maximum map value                    | 0.114                           | Depositor |
| Minimum map value                    | -0.017                          | Depositor |
| Average map value                    | 0.001                           | Depositor |
| Map value standard deviation         | 0.005                           | Depositor |
| Recommended contour level            | 0.019                           | Depositor |
| Map size ( $\text{\AA}$ )            | 673.1687, 673.1687, 673.1687    | wwPDB     |
| Map dimensions                       | 480, 480, 480                   | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0                | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.4024348, 1.4024348, 1.4024348 | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, NDG, MAN, BMA, ELU, MG, 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   | 5     | 0.13         | 0/1150      | 0.36        | 0/1569        |
| 2   | 6     | 0.15         | 0/1291      | 0.51        | 1/1757 (0.1%) |
| 3   | 7     | 0.14         | 0/1481      | 0.37        | 0/2000        |
| 4   | 8     | 0.13         | 0/1214      | 0.39        | 0/1654        |
| 5   | A     | 0.13         | 0/1331      | 0.41        | 0/1801        |
| 6   | B     | 0.16         | 0/1670      | 0.42        | 0/2248        |
| 7   | D     | 0.14         | 0/3604      | 0.37        | 0/4884        |
| 8   | E     | 0.11         | 0/257       | 0.31        | 0/348         |
| 9   | F     | 0.13         | 0/548       | 0.34        | 0/733         |
| 10  | G     | 0.16         | 0/442       | 0.42        | 0/590         |
| 11  | I     | 0.12         | 0/5806      | 0.34        | 1/7884 (0.0%) |
| 12  | J     | 0.13         | 0/1216      | 0.41        | 0/1649        |
| 13  | K2    | 0.12         | 0/300       | 0.35        | 0/406         |
| 14  | L2    | 0.10         | 0/663       | 0.28        | 0/903         |
| 15  | L5    | 0.15         | 0/89009     | 0.29        | 0/138839      |
| 16  | L7    | 0.15         | 0/2861      | 0.28        | 0/4459        |
| 17  | L8    | 0.15         | 0/3701      | 0.27        | 0/5766        |
| 18  | LA    | 0.14         | 0/1936      | 0.40        | 0/2596        |
| 19  | LB    | 0.14         | 0/3297      | 0.41        | 0/4412        |
| 20  | LC    | 0.15         | 0/2981      | 0.40        | 0/4002        |
| 21  | LD    | 0.13         | 0/2428      | 0.37        | 0/3252        |
| 22  | LE    | 0.14         | 0/1942      | 0.39        | 0/2606        |
| 23  | LF    | 0.15         | 0/1905      | 0.36        | 0/2539        |
| 24  | LG    | 0.14         | 0/1960      | 0.39        | 0/2637        |
| 25  | LH    | 0.13         | 0/1537      | 0.36        | 0/2066        |
| 26  | LI    | 0.16         | 0/1673      | 0.42        | 0/2233        |
| 27  | LL    | 0.14         | 0/1732      | 0.37        | 0/2315        |
| 28  | LM    | 0.15         | 0/1142      | 0.37        | 0/1527        |
| 29  | LN    | 0.15         | 0/1746      | 0.39        | 0/2338        |
| 30  | LO    | 0.14         | 0/1682      | 0.36        | 0/2250        |
| 31  | LP    | 0.13         | 0/1498      | 0.42        | 0/2004        |
| 32  | LQ    | 0.14         | 0/1537      | 0.34        | 0/2052        |

| Mol | Chain | Bond lengths |          | Bond angles |                 |
|-----|-------|--------------|----------|-------------|-----------------|
|     |       | RMSZ         | # Z  >5  | RMSZ        | # Z  >5         |
| 33  | LR    | 0.13         | 0/1501   | 0.32        | 0/1984          |
| 34  | LS    | 0.14         | 0/1493   | 0.35        | 0/2003          |
| 35  | LT    | 0.14         | 0/1326   | 0.33        | 0/1770          |
| 36  | LU    | 0.13         | 0/839    | 0.41        | 0/1126          |
| 37  | LV    | 0.14         | 0/993    | 0.36        | 0/1332          |
| 38  | LW    | 0.13         | 0/541    | 0.35        | 0/720           |
| 39  | LX    | 0.14         | 0/993    | 0.36        | 0/1334          |
| 40  | LY    | 0.16         | 0/1132   | 0.35        | 0/1504          |
| 41  | LZ    | 0.12         | 0/1130   | 0.33        | 0/1507          |
| 42  | La    | 0.13         | 0/1191   | 0.34        | 0/1591          |
| 43  | Lb    | 0.13         | 0/889    | 0.39        | 0/1175          |
| 44  | Lc    | 0.13         | 0/774    | 0.32        | 0/1038          |
| 45  | Ld    | 0.15         | 0/903    | 0.38        | 0/1216          |
| 46  | Le    | 0.13         | 0/1082   | 0.37        | 0/1443          |
| 47  | Lf    | 0.22         | 0/895    | 0.50        | 1/1198 (0.1%)   |
| 48  | Lg    | 0.12         | 0/916    | 0.34        | 0/1220          |
| 49  | Lh    | 0.13         | 0/1023   | 0.35        | 0/1351          |
| 50  | Li    | 0.13         | 0/843    | 0.36        | 0/1115          |
| 51  | Lj    | 0.15         | 0/720    | 0.43        | 0/952           |
| 52  | Lk    | 0.14         | 0/575    | 0.36        | 0/761           |
| 53  | Ll    | 0.17         | 0/454    | 0.40        | 0/599           |
| 54  | Lm    | 0.13         | 0/435    | 0.36        | 0/575           |
| 55  | Ln    | 0.10         | 0/231    | 0.27        | 0/294           |
| 56  | Lo    | 0.14         | 0/876    | 0.36        | 0/1156          |
| 57  | Lp    | 0.14         | 0/718    | 0.37        | 0/953           |
| 58  | Lr    | 0.17         | 0/1017   | 0.38        | 0/1364          |
| 59  | Ls    | 0.12         | 0/1519   | 0.34        | 0/2052          |
| 60  | Lt    | 0.15         | 0/1058   | 0.51        | 0/1430          |
| 61  | Lz    | 0.16         | 0/1769   | 0.49        | 0/2371          |
| 62  | M2    | 0.10         | 0/883    | 0.27        | 0/1197          |
| 63  | N     | 0.12         | 0/908    | 0.31        | 0/1229          |
| 64  | N2    | 0.09         | 0/3306   | 0.29        | 0/4493          |
| 65  | O2    | 0.11         | 0/4752   | 0.31        | 0/6444          |
| 66  | P2    | 0.09         | 0/4814   | 0.29        | 0/6553          |
| 67  | u3    | 0.10         | 0/1777   | 0.28        | 0/2767          |
| 68  | v3    | 0.12         | 0/1806   | 0.32        | 0/2813          |
| 69  | y3    | 0.15         | 0/1864   | 0.45        | 0/2511          |
| 70  | LJ    | 0.83         | 0/1433   | 0.86        | 0/1915          |
| All | All   | 0.16         | 0/194919 | 0.34        | 3/283375 (0.0%) |

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

sidechain that are expected to be planar.

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 2   | 6     | 0                   | 2                   |
| 3   | 7     | 0                   | 2                   |
| 4   | 8     | 0                   | 1                   |
| 5   | A     | 0                   | 2                   |
| 6   | B     | 0                   | 6                   |
| 7   | D     | 0                   | 5                   |
| 10  | G     | 0                   | 3                   |
| 11  | I     | 0                   | 4                   |
| 12  | J     | 0                   | 1                   |
| 29  | LN    | 0                   | 1                   |
| 30  | LO    | 0                   | 1                   |
| 31  | LP    | 0                   | 1                   |
| 33  | LR    | 0                   | 1                   |
| 40  | LY    | 0                   | 1                   |
| 45  | Ld    | 0                   | 3                   |
| 69  | y3    | 0                   | 6                   |
| 70  | LJ    | 0                   | 3                   |
| All | All   | 0                   | 43                  |

There are no bond length outliers.

All (3) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed( $^{\circ}$ ) | Ideal( $^{\circ}$ ) |
|-----|-------|-----|------|---------|-------|------------------------|---------------------|
| 47  | Lf    | 107 | PRO  | CA-N-CD | -5.62 | 104.12                 | 112.00              |
| 2   | 6     | 32  | ARG  | CB-CA-C | -5.49 | 101.51                 | 110.85              |
| 11  | I     | 452 | ILE  | N-CA-C  | 5.02  | 119.78                 | 109.34              |

There are no chirality outliers.

5 of 43 planarity outliers are listed below:

| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 2   | 6     | 137 | ARG  | Sidechain |
| 2   | 6     | 142 | ARG  | Sidechain |
| 3   | 7     | 110 | ARG  | Sidechain |
| 3   | 7     | 92  | ARG  | Sidechain |
| 4   | 8     | 120 | ARG  | Sidechain |



## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | 5     | 1121  | 1071     | 1071     | 9       | 0            |
| 2   | 6     | 1259  | 1241     | 1241     | 32      | 0            |
| 3   | 7     | 1451  | 1487     | 1487     | 29      | 0            |
| 4   | 8     | 1185  | 1148     | 1148     | 29      | 0            |
| 5   | A     | 1305  | 1390     | 1390     | 9       | 0            |
| 6   | B     | 1633  | 1646     | 1646     | 38      | 0            |
| 7   | D     | 3528  | 3661     | 3661     | 71      | 0            |
| 8   | E     | 250   | 273      | 272      | 3       | 0            |
| 9   | F     | 538   | 574      | 574      | 15      | 0            |
| 10  | G     | 437   | 467      | 467      | 8       | 0            |
| 11  | I     | 5649  | 5612     | 5612     | 77      | 0            |
| 12  | J     | 1182  | 1227     | 1227     | 29      | 0            |
| 13  | K2    | 295   | 312      | 312      | 7       | 0            |
| 14  | L2    | 643   | 659      | 659      | 6       | 0            |
| 15  | L5    | 79575 | 40176    | 40187    | 196     | 0            |
| 16  | L7    | 2561  | 1294     | 1295     | 7       | 0            |
| 17  | L8    | 3314  | 1682     | 1683     | 13      | 0            |
| 18  | LA    | 1898  | 1993     | 1993     | 20      | 0            |
| 19  | LB    | 3229  | 3369     | 3368     | 23      | 0            |
| 20  | LC    | 2927  | 3104     | 3104     | 25      | 0            |
| 21  | LD    | 2382  | 2410     | 2410     | 21      | 0            |
| 22  | LE    | 1904  | 2055     | 2055     | 22      | 0            |
| 23  | LF    | 1870  | 1996     | 1996     | 22      | 0            |
| 24  | LG    | 1927  | 2074     | 2074     | 28      | 0            |
| 25  | LH    | 1518  | 1601     | 1601     | 17      | 0            |
| 26  | LI    | 1634  | 1671     | 1671     | 22      | 0            |
| 27  | LL    | 1701  | 1818     | 1818     | 18      | 0            |
| 28  | LM    | 1120  | 1187     | 1187     | 15      | 0            |
| 29  | LN    | 1701  | 1749     | 1749     | 16      | 0            |
| 30  | LO    | 1650  | 1794     | 1794     | 20      | 0            |
| 31  | LP    | 1470  | 1536     | 1536     | 10      | 0            |
| 32  | LQ    | 1513  | 1628     | 1628     | 19      | 0            |
| 33  | LR    | 1485  | 1633     | 1633     | 10      | 0            |
| 34  | LS    | 1453  | 1490     | 1490     | 7       | 0            |
| 35  | LT    | 1298  | 1366     | 1366     | 12      | 0            |
| 36  | LU    | 825   | 850      | 850      | 10      | 0            |
| 37  | LV    | 979   | 1039     | 1039     | 13      | 0            |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 38  | LW    | 528   | 541      | 541      | 8       | 0            |
| 39  | LX    | 976   | 1053     | 1053     | 11      | 0            |
| 40  | LY    | 1115  | 1205     | 1205     | 16      | 0            |
| 41  | LZ    | 1107  | 1182     | 1182     | 9       | 0            |
| 42  | La    | 1162  | 1214     | 1213     | 7       | 0            |
| 43  | Lb    | 876   | 948      | 948      | 7       | 0            |
| 44  | Lc    | 764   | 804      | 804      | 6       | 0            |
| 45  | Ld    | 888   | 930      | 930      | 15      | 0            |
| 46  | Le    | 1064  | 1160     | 1160     | 6       | 0            |
| 47  | Lf    | 876   | 912      | 912      | 15      | 0            |
| 48  | Lg    | 906   | 998      | 998      | 7       | 0            |
| 49  | Lh    | 1015  | 1148     | 1148     | 10      | 0            |
| 50  | Li    | 832   | 917      | 917      | 9       | 0            |
| 51  | Lj    | 705   | 736      | 736      | 6       | 0            |
| 52  | Lk    | 569   | 637      | 637      | 6       | 0            |
| 53  | Ll    | 444   | 483      | 483      | 9       | 0            |
| 54  | Lm    | 429   | 465      | 465      | 3       | 0            |
| 55  | Ln    | 230   | 276      | 276      | 0       | 0            |
| 56  | Lo    | 862   | 929      | 929      | 5       | 0            |
| 57  | Lp    | 708   | 756      | 756      | 10      | 0            |
| 58  | Lr    | 1002  | 1068     | 1068     | 7       | 0            |
| 59  | Ls    | 1496  | 1540     | 1540     | 33      | 0            |
| 60  | Lt    | 1046  | 1076     | 1076     | 36      | 0            |
| 61  | Lz    | 1741  | 1854     | 1854     | 43      | 0            |
| 62  | M2    | 863   | 880      | 880      | 9       | 0            |
| 63  | N     | 891   | 925      | 925      | 20      | 0            |
| 64  | N2    | 3224  | 3161     | 3161     | 25      | 0            |
| 65  | O2    | 4655  | 4687     | 4687     | 31      | 0            |
| 66  | P2    | 4721  | 4724     | 4724     | 34      | 0            |
| 67  | u3    | 1593  | 809      | 809      | 4       | 0            |
| 68  | v3    | 1618  | 822      | 822      | 12      | 0            |
| 69  | y3    | 2058  | 2011     | 1897     | 42      | 0            |
| 70  | LJ    | 1410  | 1441     | 1441     | 26      | 0            |
| 71  | K     | 94    | 79       | 79       | 1       | 0            |
| 72  | C     | 28    | 25       | 25       | 0       | 0            |
| 73  | H     | 94    | 79       | 79       | 0       | 0            |
| 74  | L     | 28    | 25       | 24       | 0       | 0            |
| 75  | I     | 29    | 35       | 0        | 0       | 0            |
| 76  | L5    | 213   | 0        | 0        | 0       | 0            |
| 76  | L7    | 3     | 0        | 0        | 0       | 0            |
| 76  | L8    | 3     | 0        | 0        | 0       | 0            |
| 76  | LA    | 1     | 0        | 0        | 0       | 0            |

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| Mol | Chain | Non-H  | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|--------|----------|----------|---------|--------------|
| 76  | LI    | 1      | 0        | 0        | 0       | 0            |
| 76  | LP    | 1      | 0        | 0        | 0       | 0            |
| 76  | LV    | 1      | 0        | 0        | 0       | 0            |
| 76  | Le    | 1      | 0        | 0        | 0       | 0            |
| 76  | Lg    | 1      | 0        | 0        | 0       | 0            |
| 76  | Lj    | 1      | 0        | 0        | 0       | 0            |
| 77  | Lg    | 1      | 0        | 0        | 0       | 0            |
| 77  | Lj    | 1      | 0        | 0        | 0       | 0            |
| 77  | Lm    | 1      | 0        | 0        | 0       | 0            |
| 77  | Lo    | 1      | 0        | 0        | 0       | 0            |
| 77  | Lp    | 1      | 0        | 0        | 0       | 0            |
| 78  | u3    | 1      | 0        | 0        | 0       | 0            |
| All | All   | 183289 | 142818   | 142678   | 1200    | 0            |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 4.

The worst 5 of 1200 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1             | Atom-2             | Interatomic distance (Å) | Clash overlap (Å) |
|--------------------|--------------------|--------------------------|-------------------|
| 15:L5:2373:C:H5'   | 45:Ld:46:LEU:HD21  | 1.59                     | 0.85              |
| 66:P2:416:LEU:HD11 | 66:P2:481:LEU:HD21 | 1.59                     | 0.82              |
| 11:I:241:CYS:HB3   | 62:M2:68:ILE:HD11  | 1.60                     | 0.81              |
| 7:D:85:VAL:HG11    | 69:y3:561:UNK:CB   | 2.11                     | 0.80              |
| 37:LV:112:MET:HE1  | 37:LV:117:ILE:HD11 | 1.64                     | 0.78              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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

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

| Mol | Chain | Analysed      | Favoured  | Allowed | Outliers | Percentiles |     |
|-----|-------|---------------|-----------|---------|----------|-------------|-----|
| 1   | 5     | 136/286 (48%) | 133 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 2   | 6     | 160/183 (87%) | 153 (96%) | 7 (4%)  | 0        | 100         | 100 |
| 3   | 7     | 177/185 (96%) | 173 (98%) | 4 (2%)  | 0        | 100         | 100 |
| 4   | 8     | 148/173 (86%) | 145 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 5   | A     | 165/201 (82%) | 161 (98%) | 4 (2%)  | 0        | 100         | 100 |
| 6   | B     | 195/229 (85%) | 190 (97%) | 4 (2%)  | 1 (0%)   | 25          | 60  |
| 7   | D     | 448/476 (94%) | 441 (98%) | 6 (1%)  | 1 (0%)   | 44          | 75  |
| 8   | E     | 30/96 (31%)   | 30 (100%) | 0       | 0        | 100         | 100 |
| 9   | F     | 65/68 (96%)   | 65 (100%) | 0       | 0        | 100         | 100 |
| 10  | G     | 52/66 (79%)   | 51 (98%)  | 1 (2%)  | 0        | 100         | 100 |
| 11  | I     | 699/705 (99%) | 689 (99%) | 9 (1%)  | 1 (0%)   | 48          | 80  |
| 12  | J     | 147/149 (99%) | 146 (99%) | 1 (1%)  | 0        | 100         | 100 |
| 13  | K2    | 35/37 (95%)   | 35 (100%) | 0       | 0        | 100         | 100 |
| 14  | L2    | 77/79 (98%)   | 76 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 18  | LA    | 246/257 (96%) | 239 (97%) | 7 (3%)  | 0        | 100         | 100 |
| 19  | LB    | 398/403 (99%) | 390 (98%) | 7 (2%)  | 1 (0%)   | 37          | 69  |
| 20  | LC    | 366/427 (86%) | 350 (96%) | 16 (4%) | 0        | 100         | 100 |
| 21  | LD    | 291/297 (98%) | 283 (97%) | 8 (3%)  | 0        | 100         | 100 |
| 22  | LE    | 232/288 (81%) | 230 (99%) | 2 (1%)  | 0        | 100         | 100 |
| 23  | LF    | 223/248 (90%) | 221 (99%) | 2 (1%)  | 0        | 100         | 100 |
| 24  | LG    | 239/266 (90%) | 231 (97%) | 8 (3%)  | 0        | 100         | 100 |
| 25  | LH    | 188/192 (98%) | 181 (96%) | 7 (4%)  | 0        | 100         | 100 |
| 26  | LI    | 198/214 (92%) | 192 (97%) | 6 (3%)  | 0        | 100         | 100 |
| 27  | LL    | 208/211 (99%) | 200 (96%) | 8 (4%)  | 0        | 100         | 100 |
| 28  | LM    | 134/215 (62%) | 131 (98%) | 2 (2%)  | 1 (1%)   | 19          | 54  |
| 29  | LN    | 201/204 (98%) | 195 (97%) | 4 (2%)  | 2 (1%)   | 13          | 47  |
| 30  | LO    | 199/203 (98%) | 197 (99%) | 2 (1%)  | 0        | 100         | 100 |
| 31  | LP    | 179/184 (97%) | 174 (97%) | 5 (3%)  | 0        | 100         | 100 |
| 32  | LQ    | 185/188 (98%) | 183 (99%) | 2 (1%)  | 0        | 100         | 100 |
| 33  | LR    | 175/196 (89%) | 172 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 34  | LS    | 173/176 (98%) | 167 (96%) | 6 (4%)  | 0        | 100         | 100 |
| 35  | LT    | 157/160 (98%) | 153 (98%) | 4 (2%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed      | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|---------------|------------|----------|----------|-------------|-----|
| 36  | LU    | 99/128 (77%)  | 94 (95%)   | 5 (5%)   | 0        | 100         | 100 |
| 37  | LV    | 129/140 (92%) | 128 (99%)  | 1 (1%)   | 0        | 100         | 100 |
| 38  | LW    | 61/157 (39%)  | 61 (100%)  | 0        | 0        | 100         | 100 |
| 39  | LX    | 117/156 (75%) | 116 (99%)  | 1 (1%)   | 0        | 100         | 100 |
| 40  | LY    | 132/145 (91%) | 131 (99%)  | 1 (1%)   | 0        | 100         | 100 |
| 41  | LZ    | 133/136 (98%) | 128 (96%)  | 5 (4%)   | 0        | 100         | 100 |
| 42  | La    | 145/148 (98%) | 143 (99%)  | 2 (1%)   | 0        | 100         | 100 |
| 43  | Lb    | 105/159 (66%) | 101 (96%)  | 4 (4%)   | 0        | 100         | 100 |
| 44  | Lc    | 96/115 (84%)  | 94 (98%)   | 2 (2%)   | 0        | 100         | 100 |
| 45  | Ld    | 105/125 (84%) | 103 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 46  | Le    | 127/135 (94%) | 125 (98%)  | 1 (1%)   | 1 (1%)   | 16          | 51  |
| 47  | Lf    | 107/110 (97%) | 102 (95%)  | 4 (4%)   | 1 (1%)   | 14          | 49  |
| 48  | Lg    | 112/117 (96%) | 112 (100%) | 0        | 0        | 100         | 100 |
| 49  | Lh    | 120/123 (98%) | 119 (99%)  | 1 (1%)   | 0        | 100         | 100 |
| 50  | Li    | 100/105 (95%) | 100 (100%) | 0        | 0        | 100         | 100 |
| 51  | Lj    | 84/97 (87%)   | 81 (96%)   | 2 (2%)   | 1 (1%)   | 11          | 43  |
| 52  | Lk    | 67/70 (96%)   | 66 (98%)   | 1 (2%)   | 0        | 100         | 100 |
| 53  | Ll    | 48/51 (94%)   | 48 (100%)  | 0        | 0        | 100         | 100 |
| 54  | Lm    | 50/128 (39%)  | 50 (100%)  | 0        | 0        | 100         | 100 |
| 55  | Ln    | 22/25 (88%)   | 22 (100%)  | 0        | 0        | 100         | 100 |
| 56  | Lo    | 103/106 (97%) | 102 (99%)  | 1 (1%)   | 0        | 100         | 100 |
| 57  | Lp    | 89/92 (97%)   | 86 (97%)   | 3 (3%)   | 0        | 100         | 100 |
| 58  | Lr    | 123/137 (90%) | 121 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 59  | Ls    | 194/317 (61%) | 187 (96%)  | 7 (4%)   | 0        | 100         | 100 |
| 60  | Lt    | 137/165 (83%) | 122 (89%)  | 14 (10%) | 1 (1%)   | 19          | 54  |
| 61  | Lz    | 215/217 (99%) | 198 (92%)  | 17 (8%)  | 0        | 100         | 100 |
| 62  | M2    | 108/113 (96%) | 108 (100%) | 0        | 0        | 100         | 100 |
| 63  | N     | 115/136 (85%) | 115 (100%) | 0        | 0        | 100         | 100 |
| 64  | N2    | 408/456 (90%) | 401 (98%)  | 7 (2%)   | 0        | 100         | 100 |
| 65  | O2    | 578/607 (95%) | 572 (99%)  | 6 (1%)   | 0        | 100         | 100 |
| 66  | P2    | 603/631 (96%) | 594 (98%)  | 9 (2%)   | 0        | 100         | 100 |

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| Mol | Chain | Analysed          | Favoured    | Allowed  | Outliers | Percentiles |    |
|-----|-------|-------------------|-------------|----------|----------|-------------|----|
| 69  | y3    | 228/846 (27%)     | 222 (97%)   | 5 (2%)   | 1 (0%)   | 30          | 64 |
| 70  | LJ    | 174/178 (98%)     | 167 (96%)   | 6 (3%)   | 1 (1%)   | 22          | 57 |
| All | All   | 11560/13633 (85%) | 11296 (98%) | 251 (2%) | 13 (0%)  | 50          | 80 |

5 of 13 Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 28  | LM    | 88  | ALA  |
| 29  | LN    | 124 | ASP  |
| 47  | Lf    | 107 | PRO  |
| 51  | Lj    | 85  | LYS  |
| 69  | y3    | 93  | LEU  |

### 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 |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 1   | 5     | 125/253 (49%)  | 125 (100%) | 0        | 100         | 100 |
| 2   | 6     | 135/153 (88%)  | 134 (99%)  | 1 (1%)   | 81          | 92  |
| 3   | 7     | 161/165 (98%)  | 161 (100%) | 0        | 100         | 100 |
| 4   | 8     | 129/145 (89%)  | 129 (100%) | 0        | 100         | 100 |
| 5   | A     | 143/172 (83%)  | 143 (100%) | 0        | 100         | 100 |
| 6   | B     | 181/208 (87%)  | 181 (100%) | 0        | 100         | 100 |
| 7   | D     | 382/398 (96%)  | 382 (100%) | 0        | 100         | 100 |
| 8   | E     | 28/74 (38%)    | 28 (100%)  | 0        | 100         | 100 |
| 9   | F     | 59/59 (100%)   | 59 (100%)  | 0        | 100         | 100 |
| 10  | G     | 47/55 (86%)    | 47 (100%)  | 0        | 100         | 100 |
| 11  | I     | 611/615 (99%)  | 611 (100%) | 0        | 100         | 100 |
| 12  | J     | 130/130 (100%) | 130 (100%) | 0        | 100         | 100 |
| 13  | K2    | 33/33 (100%)   | 33 (100%)  | 0        | 100         | 100 |
| 14  | L2    | 70/70 (100%)   | 70 (100%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 18  | LA    | 190/199 (96%)  | 190 (100%) | 0        | 100         | 100 |
| 19  | LB    | 348/349 (100%) | 348 (100%) | 0        | 100         | 100 |
| 20  | LC    | 306/348 (88%)  | 306 (100%) | 0        | 100         | 100 |
| 21  | LD    | 246/250 (98%)  | 246 (100%) | 0        | 100         | 100 |
| 22  | LE    | 209/252 (83%)  | 209 (100%) | 0        | 100         | 100 |
| 23  | LF    | 194/215 (90%)  | 194 (100%) | 0        | 100         | 100 |
| 24  | LG    | 203/223 (91%)  | 203 (100%) | 0        | 100         | 100 |
| 25  | LH    | 169/171 (99%)  | 169 (100%) | 0        | 100         | 100 |
| 26  | LI    | 172/181 (95%)  | 172 (100%) | 0        | 100         | 100 |
| 27  | LL    | 176/177 (99%)  | 176 (100%) | 0        | 100         | 100 |
| 28  | LM    | 116/161 (72%)  | 116 (100%) | 0        | 100         | 100 |
| 29  | LN    | 171/172 (99%)  | 171 (100%) | 0        | 100         | 100 |
| 30  | LO    | 173/174 (99%)  | 173 (100%) | 0        | 100         | 100 |
| 31  | LP    | 160/163 (98%)  | 160 (100%) | 0        | 100         | 100 |
| 32  | LQ    | 164/165 (99%)  | 164 (100%) | 0        | 100         | 100 |
| 33  | LR    | 157/175 (90%)  | 157 (100%) | 0        | 100         | 100 |
| 34  | LS    | 156/157 (99%)  | 156 (100%) | 0        | 100         | 100 |
| 35  | LT    | 139/140 (99%)  | 139 (100%) | 0        | 100         | 100 |
| 36  | LU    | 91/115 (79%)   | 91 (100%)  | 0        | 100         | 100 |
| 37  | LV    | 101/107 (94%)  | 101 (100%) | 0        | 100         | 100 |
| 38  | LW    | 55/126 (44%)   | 55 (100%)  | 0        | 100         | 100 |
| 39  | LX    | 107/133 (80%)  | 107 (100%) | 0        | 100         | 100 |
| 40  | LY    | 124/135 (92%)  | 124 (100%) | 0        | 100         | 100 |
| 41  | LZ    | 117/118 (99%)  | 117 (100%) | 0        | 100         | 100 |
| 42  | La    | 120/121 (99%)  | 120 (100%) | 0        | 100         | 100 |
| 43  | Lb    | 88/126 (70%)   | 88 (100%)  | 0        | 100         | 100 |
| 44  | Lc    | 83/97 (86%)    | 83 (100%)  | 0        | 100         | 100 |
| 45  | Ld    | 98/110 (89%)   | 98 (100%)  | 0        | 100         | 100 |
| 46  | Le    | 115/121 (95%)  | 115 (100%) | 0        | 100         | 100 |
| 47  | Lf    | 88/89 (99%)    | 87 (99%)   | 1 (1%)   | 70          | 86  |
| 48  | Lg    | 98/100 (98%)   | 98 (100%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed          | Rotameric    | Outliers | Percentiles |     |
|-----|-------|-------------------|--------------|----------|-------------|-----|
| 49  | Lh    | 109/110 (99%)     | 109 (100%)   | 0        | 100         | 100 |
| 50  | Li    | 86/89 (97%)       | 86 (100%)    | 0        | 100         | 100 |
| 51  | Lj    | 73/80 (91%)       | 73 (100%)    | 0        | 100         | 100 |
| 52  | Lk    | 64/65 (98%)       | 64 (100%)    | 0        | 100         | 100 |
| 53  | Ll    | 47/48 (98%)       | 47 (100%)    | 0        | 100         | 100 |
| 54  | Lm    | 48/116 (41%)      | 48 (100%)    | 0        | 100         | 100 |
| 55  | Ln    | 23/24 (96%)       | 23 (100%)    | 0        | 100         | 100 |
| 56  | Lo    | 93/94 (99%)       | 93 (100%)    | 0        | 100         | 100 |
| 57  | Lp    | 74/75 (99%)       | 74 (100%)    | 0        | 100         | 100 |
| 58  | Lr    | 109/121 (90%)     | 109 (100%)   | 0        | 100         | 100 |
| 59  | Ls    | 162/258 (63%)     | 162 (100%)   | 0        | 100         | 100 |
| 60  | Lt    | 112/137 (82%)     | 112 (100%)   | 0        | 100         | 100 |
| 61  | Lz    | 195/196 (100%)    | 195 (100%)   | 0        | 100         | 100 |
| 62  | M2    | 96/98 (98%)       | 96 (100%)    | 0        | 100         | 100 |
| 63  | N     | 97/113 (86%)      | 97 (100%)    | 0        | 100         | 100 |
| 64  | N2    | 356/391 (91%)     | 356 (100%)   | 0        | 100         | 100 |
| 65  | O2    | 519/537 (97%)     | 519 (100%)   | 0        | 100         | 100 |
| 66  | P2    | 521/541 (96%)     | 521 (100%)   | 0        | 100         | 100 |
| 69  | y3    | 207/725 (29%)     | 207 (100%)   | 0        | 100         | 100 |
| 70  | LJ    | 148/149 (99%)     | 147 (99%)    | 1 (1%)   | 81          | 92  |
| All | All   | 10107/11667 (87%) | 10104 (100%) | 3 (0%)   | 100         | 100 |

All (3) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | 6     | 134 | LEU  |
| 47  | Lf    | 107 | PRO  |
| 70  | LJ    | 8   | LYS  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 86 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 39  | LX    | 107 | HIS  |
| 52  | Lk    | 31  | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 42  | La    | 34  | ASN  |
| 45  | Ld    | 121 | ASN  |
| 61  | Lz    | 19  | HIS  |

### 5.3.3 RNA ⓘ

| Mol | Chain | Analysed        | Backbone Outliers | Pucker Outliers |
|-----|-------|-----------------|-------------------|-----------------|
| 15  | L5    | 3697/5066 (72%) | 795 (21%)         | 17 (0%)         |
| 16  | L7    | 119/121 (98%)   | 9 (7%)            | 0               |
| 17  | L8    | 155/157 (98%)   | 26 (16%)          | 0               |
| 67  | u3    | 74/76 (97%)     | 26 (35%)          | 0               |
| 68  | v3    | 75/76 (98%)     | 31 (41%)          | 0               |
| All | All   | 4120/5496 (74%) | 887 (21%)         | 17 (0%)         |

5 of 887 RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 15  | L5    | 17  | A    |
| 15  | L5    | 30  | C    |
| 15  | L5    | 39  | A    |
| 15  | L5    | 42  | A    |
| 15  | L5    | 48  | G    |

5 of 17 RNA pucker outliers are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 15  | L5    | 4106 | G    |
| 15  | L5    | 4913 | G    |
| 15  | L5    | 2416 | G    |
| 15  | L5    | 2675 | G    |
| 15  | L5    | 2760 | G    |

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

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

## 5.5 Carbohydrates ⓘ

20 monosaccharides are 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 | $\# Z  > 2$ |
| 72  | NAG  | C     | 1   | 72    | 14,14,15     | 0.72 | 0           | 17,19,21    | 1.07 | 1 (5%)      |
| 72  | NAG  | C     | 2   | 72    | 14,14,15     | 0.72 | 0           | 17,19,21    | 0.85 | 0           |
| 73  | NAG  | H     | 1   | 11,73 | 14,14,15     | 0.70 | 0           | 17,19,21    | 0.74 | 0           |
| 73  | NAG  | H     | 2   | 73    | 14,14,15     | 0.73 | 0           | 17,19,21    | 0.79 | 0           |
| 73  | BMA  | H     | 3   | 73    | 11,11,12     | 0.83 | 0           | 15,15,17    | 0.97 | 1 (6%)      |
| 73  | MAN  | H     | 4   | 73    | 11,11,12     | 0.76 | 0           | 15,15,17    | 1.14 | 1 (6%)      |
| 73  | MAN  | H     | 5   | 73    | 11,11,12     | 0.76 | 0           | 15,15,17    | 1.03 | 1 (6%)      |
| 73  | MAN  | H     | 6   | 73    | 11,11,12     | 0.77 | 0           | 15,15,17    | 1.01 | 1 (6%)      |
| 73  | MAN  | H     | 7   | 73    | 11,11,12     | 0.69 | 0           | 15,15,17    | 1.21 | 1 (6%)      |
| 73  | MAN  | H     | 8   | 73    | 11,11,12     | 0.72 | 0           | 15,15,17    | 1.00 | 1 (6%)      |
| 71  | NAG  | K     | 1   | 71    | 14,14,15     | 0.66 | 0           | 17,19,21    | 1.30 | 3 (17%)     |
| 71  | NAG  | K     | 2   | 71    | 14,14,15     | 0.75 | 0           | 17,19,21    | 0.76 | 0           |
| 71  | BMA  | K     | 3   | 71    | 11,11,12     | 0.84 | 0           | 15,15,17    | 1.39 | 1 (6%)      |
| 71  | MAN  | K     | 4   | 71    | 11,11,12     | 0.80 | 1 (9%)      | 15,15,17    | 0.88 | 0           |
| 71  | MAN  | K     | 5   | 71    | 11,11,12     | 0.85 | 1 (9%)      | 15,15,17    | 0.94 | 0           |
| 71  | MAN  | K     | 6   | 71    | 11,11,12     | 0.82 | 1 (9%)      | 15,15,17    | 0.93 | 0           |
| 71  | MAN  | K     | 7   | 71    | 11,11,12     | 0.76 | 0           | 15,15,17    | 0.97 | 1 (6%)      |
| 71  | MAN  | K     | 8   | 71    | 11,11,12     | 0.76 | 0           | 15,15,17    | 0.90 | 0           |
| 74  | NDG  | L     | 1   | 74,75 | 14,14,15     | 0.83 | 0           | 17,19,21    | 1.70 | 3 (17%)     |
| 74  | NAG  | L     | 2   | 74    | 14,14,15     | 0.75 | 0           | 17,19,21    | 0.92 | 1 (5%)      |

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   |
|-----|------|-------|-----|-------|---------|-----------|---------|
| 72  | NAG  | C     | 1   | 72    | -       | 4/6/23/26 | 0/1/1/1 |
| 72  | NAG  | C     | 2   | 72    | -       | 0/6/23/26 | 0/1/1/1 |
| 73  | NAG  | H     | 1   | 11,73 | -       | 2/6/23/26 | 0/1/1/1 |
| 73  | NAG  | H     | 2   | 73    | -       | 0/6/23/26 | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link  | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|-------|---------|-----------|---------|
| 73  | BMA  | H     | 3   | 73    | -       | 0/2/19/22 | 0/1/1/1 |
| 73  | MAN  | H     | 4   | 73    | -       | 0/2/19/22 | 0/1/1/1 |
| 73  | MAN  | H     | 5   | 73    | -       | 2/2/19/22 | 0/1/1/1 |
| 73  | MAN  | H     | 6   | 73    | -       | 1/2/19/22 | 0/1/1/1 |
| 73  | MAN  | H     | 7   | 73    | -       | 2/2/19/22 | 1/1/1/1 |
| 73  | MAN  | H     | 8   | 73    | -       | 1/2/19/22 | 1/1/1/1 |
| 71  | NAG  | K     | 1   | 71    | -       | 2/6/23/26 | 0/1/1/1 |
| 71  | NAG  | K     | 2   | 71    | -       | 1/6/23/26 | 0/1/1/1 |
| 71  | BMA  | K     | 3   | 71    | -       | 0/2/19/22 | 0/1/1/1 |
| 71  | MAN  | K     | 4   | 71    | -       | 0/2/19/22 | 0/1/1/1 |
| 71  | MAN  | K     | 5   | 71    | -       | 0/2/19/22 | 0/1/1/1 |
| 71  | MAN  | K     | 6   | 71    | -       | 2/2/19/22 | 0/1/1/1 |
| 71  | MAN  | K     | 7   | 71    | -       | 0/2/19/22 | 0/1/1/1 |
| 71  | MAN  | K     | 8   | 71    | -       | 0/2/19/22 | 0/1/1/1 |
| 74  | NDG  | L     | 1   | 74,75 | -       | 2/6/23/26 | 0/1/1/1 |
| 74  | NAG  | L     | 2   | 74    | -       | 2/6/23/26 | 0/1/1/1 |

All (3) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 71  | K     | 5   | MAN  | O5-C1 | -2.27 | 1.39        | 1.43     |
| 71  | K     | 4   | MAN  | O5-C1 | -2.09 | 1.40        | 1.43     |
| 71  | K     | 6   | MAN  | O5-C1 | -2.09 | 1.40        | 1.43     |

The worst 5 of 16 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|------|-------------|----------|
| 74  | L     | 1   | NDG  | C1-O5-C5 | 4.73 | 118.52      | 112.19   |
| 71  | K     | 3   | BMA  | C1-O5-C5 | 4.62 | 118.38      | 112.19   |
| 73  | H     | 7   | MAN  | C1-O5-C5 | 3.67 | 117.10      | 112.19   |
| 72  | C     | 1   | NAG  | C2-N2-C7 | 3.36 | 127.41      | 122.90   |
| 71  | K     | 1   | NAG  | C2-N2-C7 | 3.21 | 127.20      | 122.90   |

There are no chirality outliers.

5 of 21 torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 71  | K     | 6   | MAN  | C4-C5-C6-O6 |
| 72  | C     | 1   | NAG  | C4-C5-C6-O6 |
| 71  | K     | 6   | MAN  | O5-C5-C6-O6 |

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| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 74  | L     | 2   | NAG  | O5-C5-C6-O6 |
| 73  | H     | 7   | MAN  | O5-C5-C6-O6 |

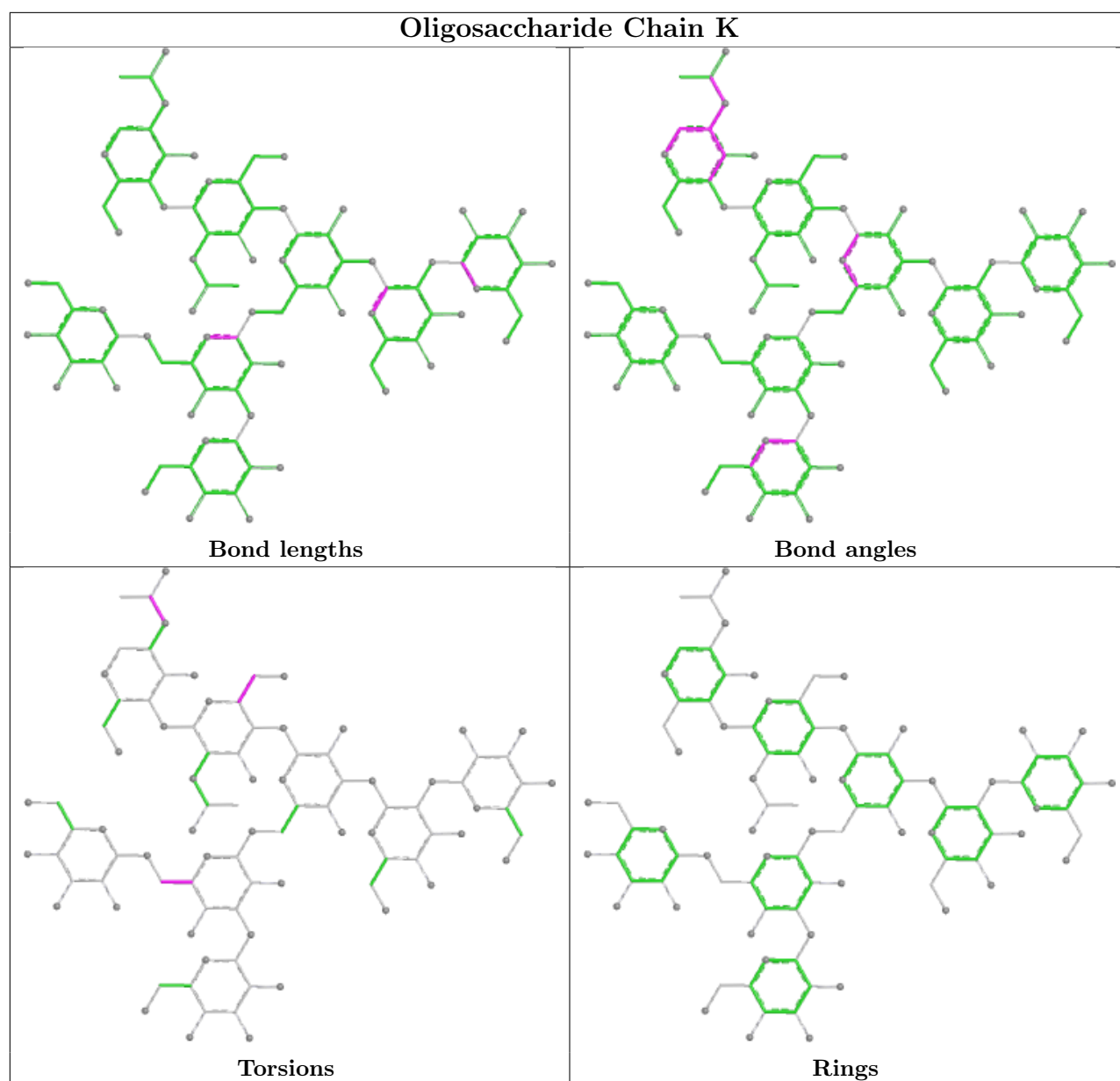
All (2) ring outliers are listed below:

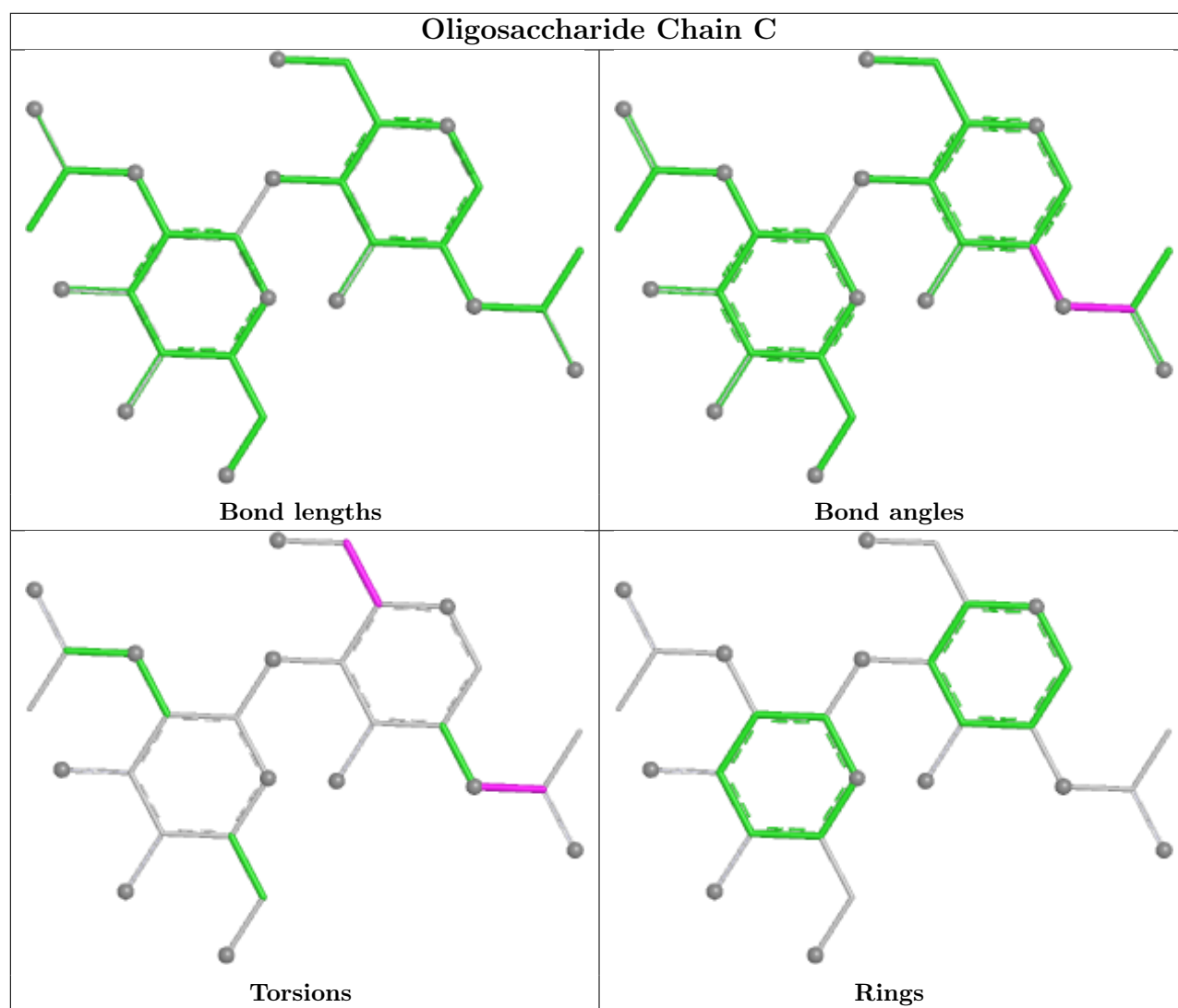
| Mol | Chain | Res | Type | Atoms             |
|-----|-------|-----|------|-------------------|
| 73  | H     | 7   | MAN  | C1-C2-C3-C4-C5-O5 |
| 73  | H     | 8   | MAN  | C1-C2-C3-C4-C5-O5 |

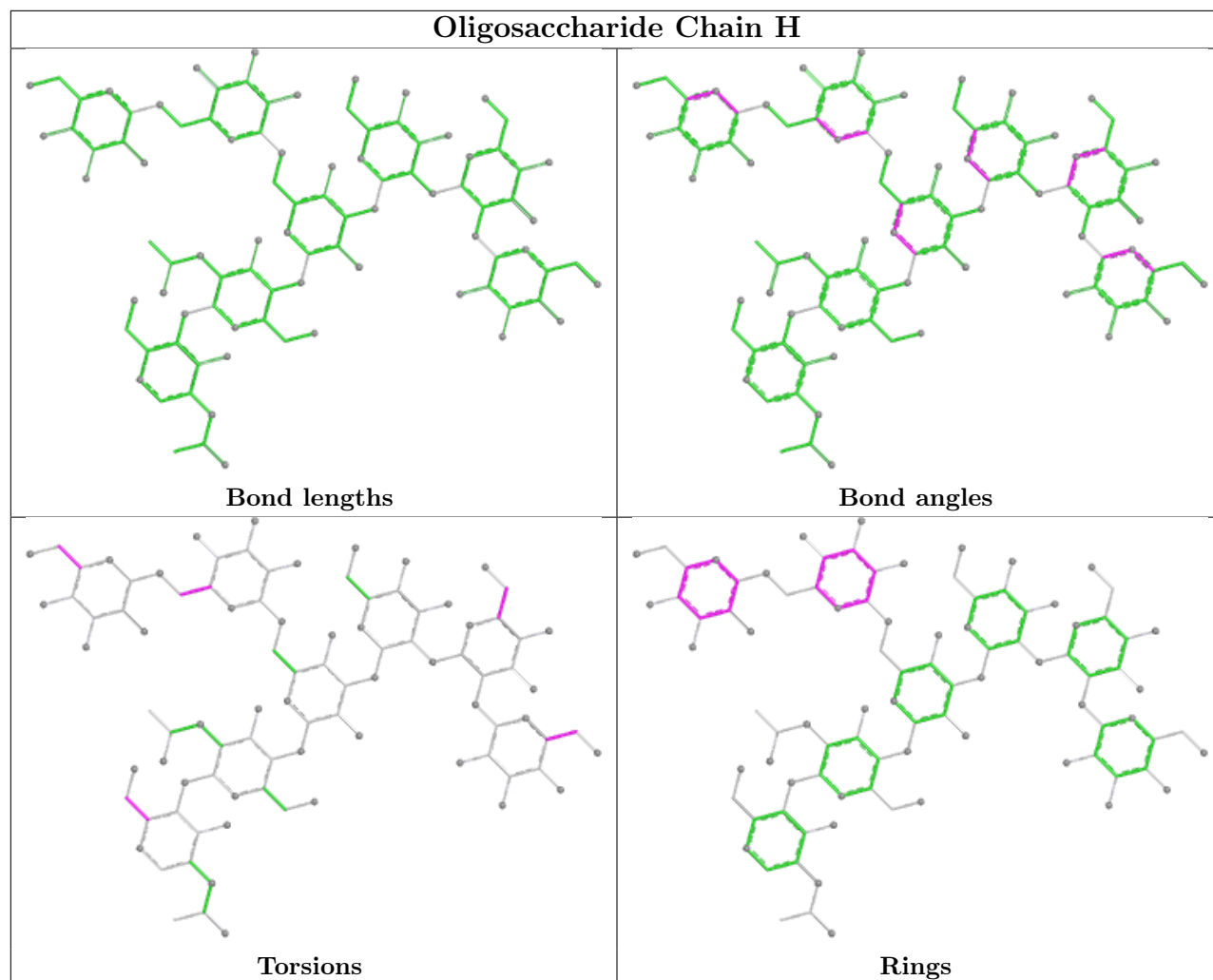
1 monomer is involved in 1 short contact:

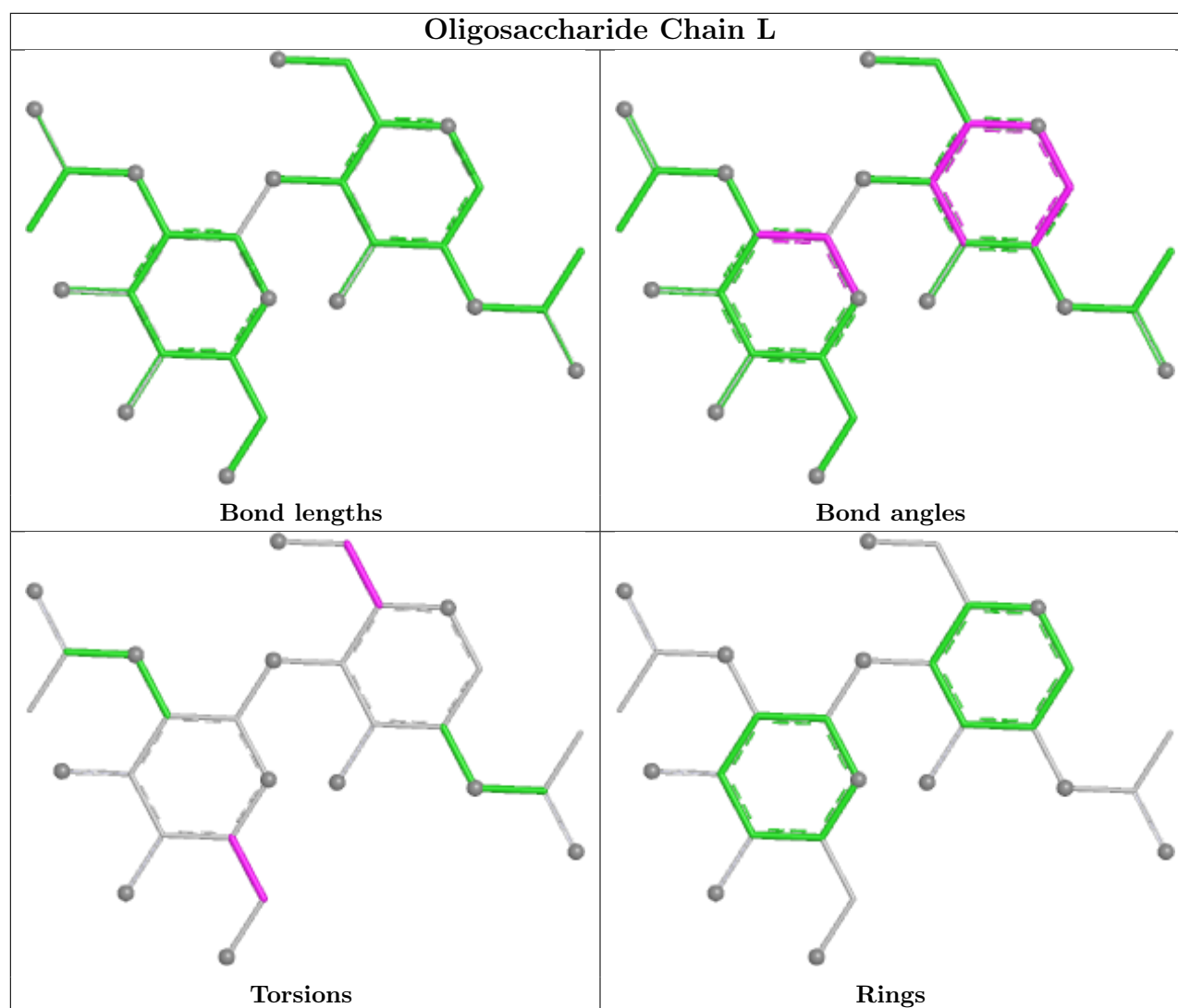
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 71  | K     | 6   | MAN  | 1       | 0            |

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.









## 5.6 Ligand geometry [i](#)

Of 232 ligands modelled in this entry, 231 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 | $\# Z  > 2$ |
| 75  | ELU  | I     | 801 | 74   | 27,28,28     | 0.92 | 2 (7%)      | 33,37,37    | 1.21 | 5 (15%)     |

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 |
|-----|------|-------|-----|------|---------|-------------|-------|
| 75  | ELU  | I     | 801 | 74   | -       | 12/31/31/31 | -     |

All (2) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|------|-------------|----------|
| 75  | I     | 801 | ELU  | PA-O3A | 2.79 | 1.62        | 1.59     |
| 75  | I     | 801 | ELU  | PB-O2B | 2.65 | 1.58        | 1.50     |

All (5) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 75  | I     | 801 | ELU  | O1B-PB-O3A | 3.12  | 115.08      | 104.64   |
| 75  | I     | 801 | ELU  | O3B-PB-O1B | 2.49  | 117.14      | 107.80   |
| 75  | I     | 801 | ELU  | O1-PA-O2A  | 2.36  | 118.27      | 108.94   |
| 75  | I     | 801 | ELU  | O3A-PB-O2B | -2.31 | 98.90       | 111.04   |
| 75  | I     | 801 | ELU  | O1B-PB-O2B | 2.06  | 118.88      | 110.83   |

There are no chirality outliers.

5 of 12 torsion outliers are listed below:

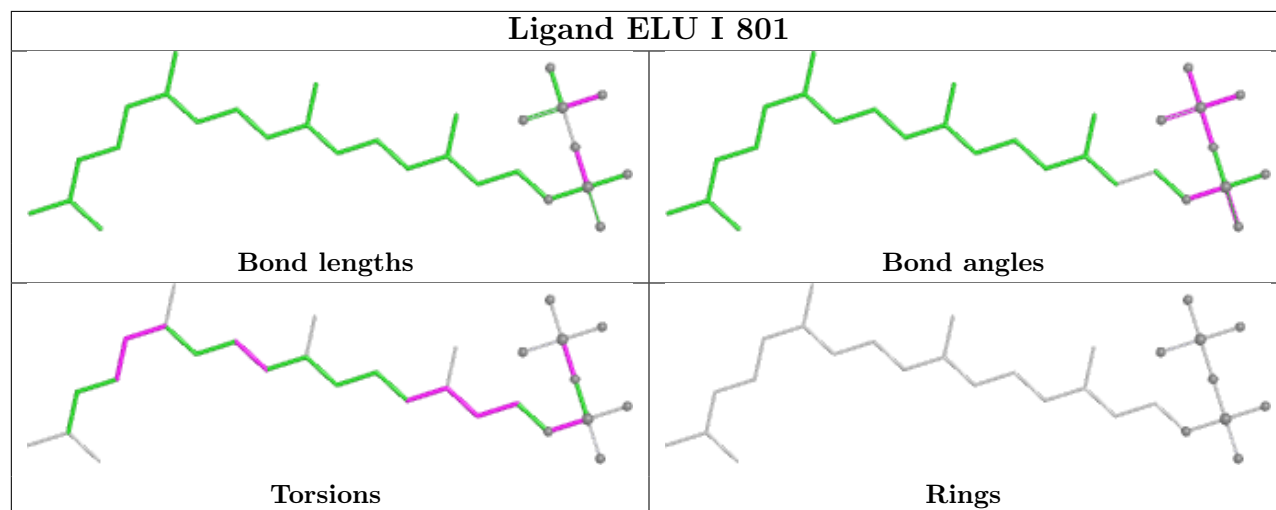
| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 75  | I     | 801 | ELU  | C1-O1-PA-O2A    |
| 75  | I     | 801 | ELU  | C1-O1-PA-O3A    |
| 75  | I     | 801 | ELU  | PA-O3A-PB-O1B   |
| 75  | I     | 801 | ELU  | C1-C2-C3-C4     |
| 75  | I     | 801 | ELU  | C14-C13-C15-C16 |

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](#)

There are no chain breaks in this entry.

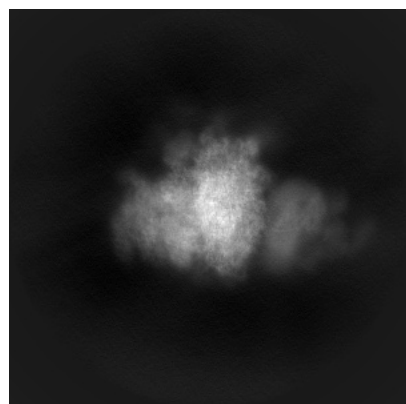
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-49171. These allow visual inspection of the internal detail of the map and identification of artifacts.

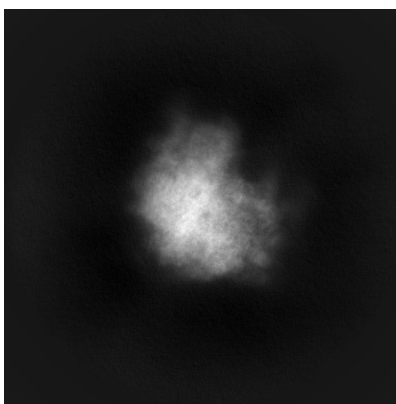
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

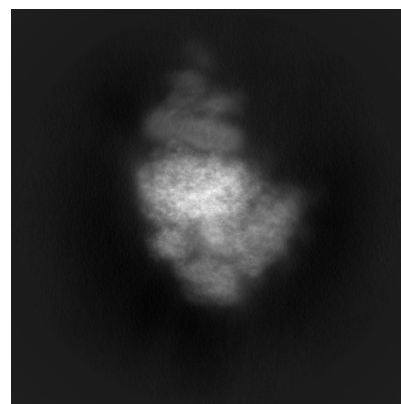
#### 6.1.1 Primary map



X

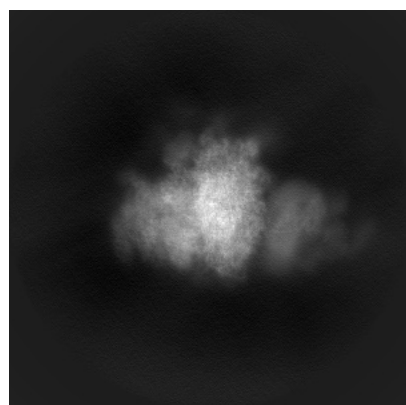


Y

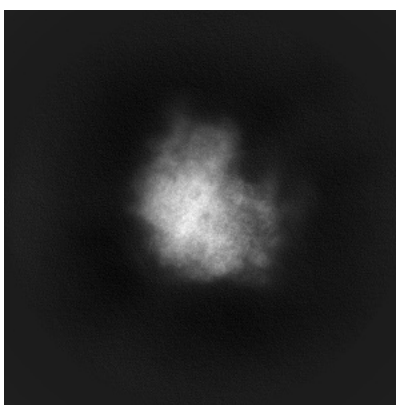


Z

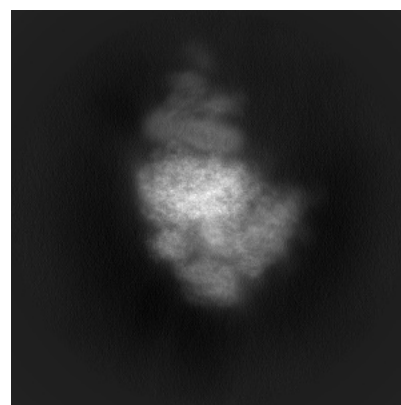
#### 6.1.2 Raw map



X



Y

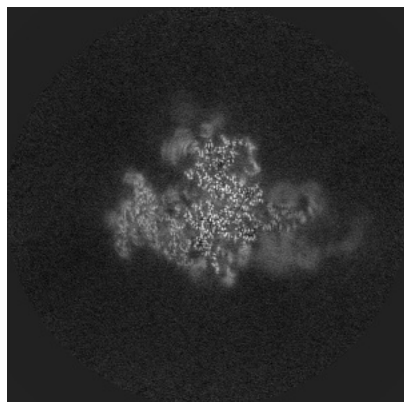


Z

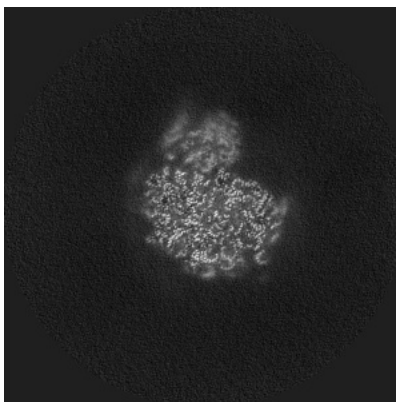
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

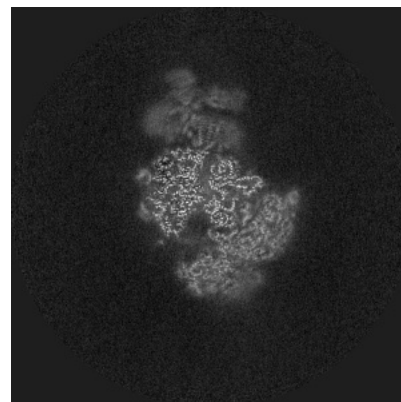
### 6.2.1 Primary map



X Index: 240

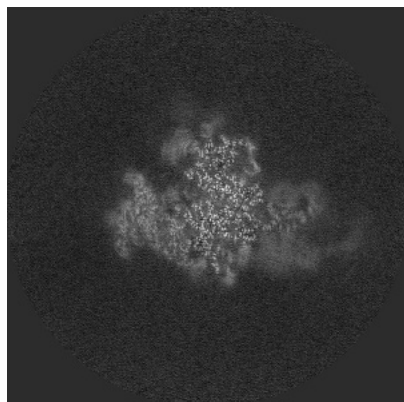


Y Index: 240

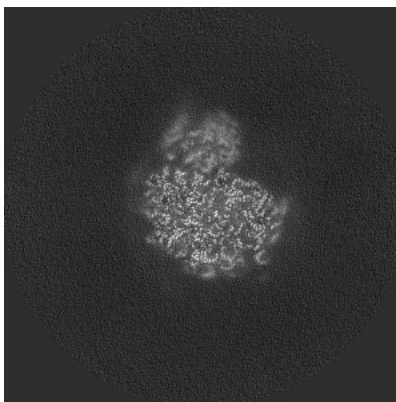


Z Index: 240

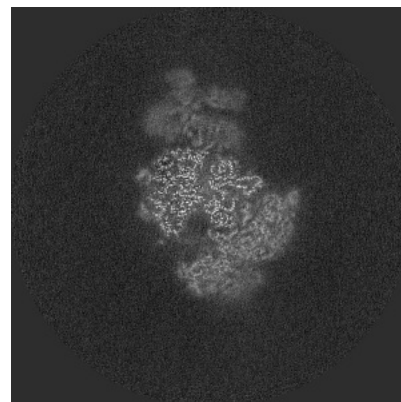
### 6.2.2 Raw map



X Index: 240



Y Index: 240

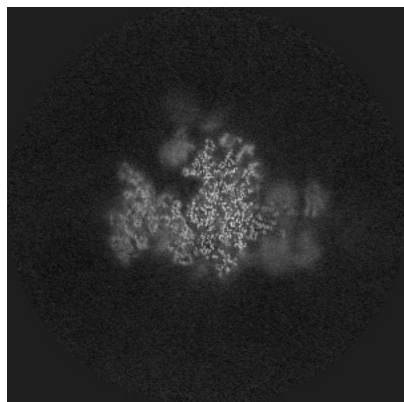


Z Index: 240

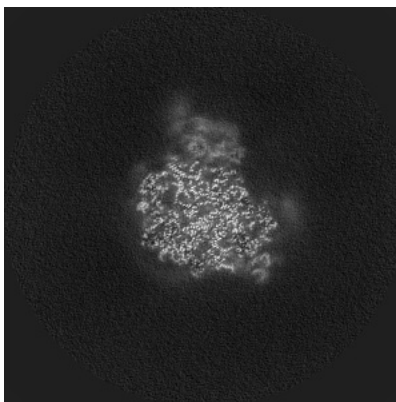
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

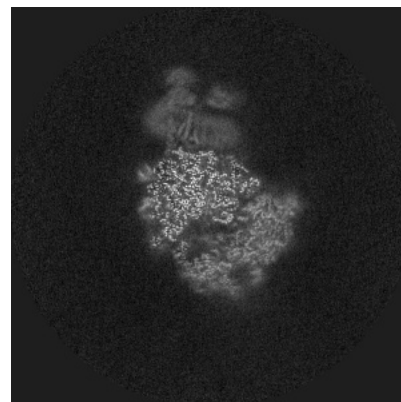
### 6.3.1 Primary map



X Index: 249

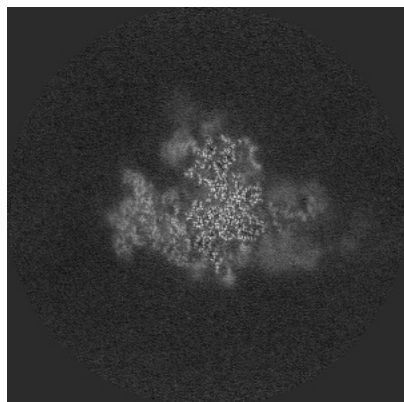


Y Index: 252

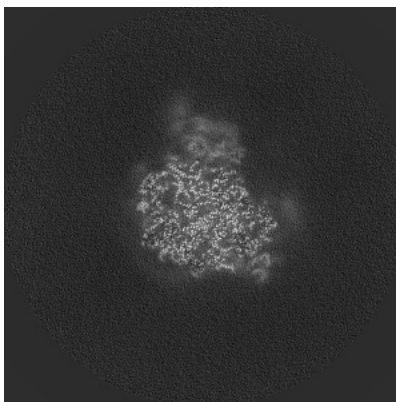


Z Index: 247

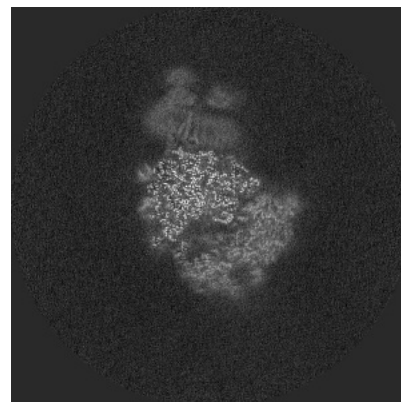
### 6.3.2 Raw map



X Index: 242



Y Index: 252



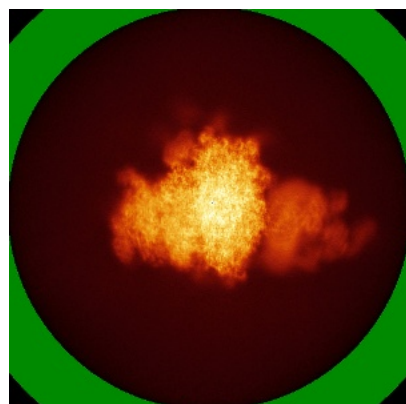
Z Index: 247

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

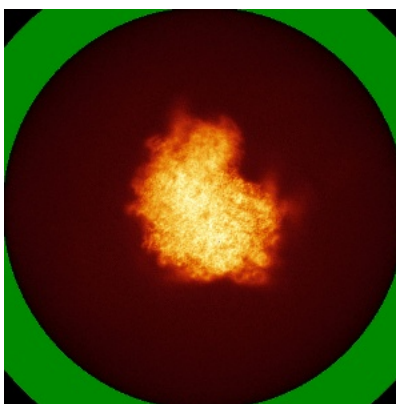


## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

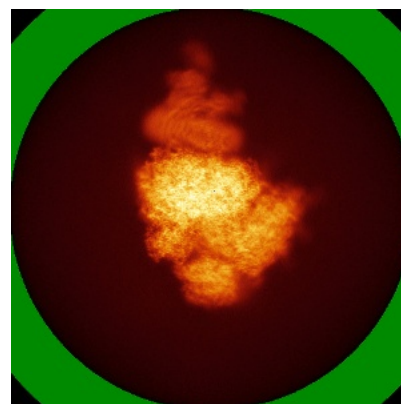
### 6.4.1 Primary map



X

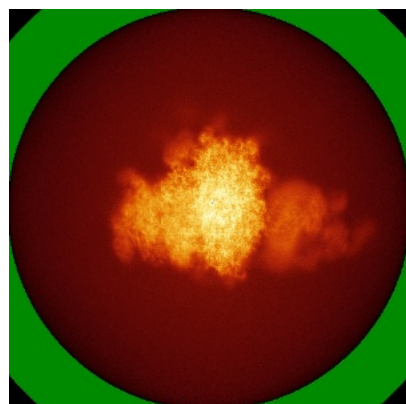


Y

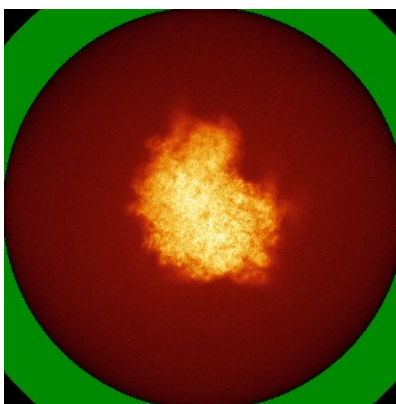


Z

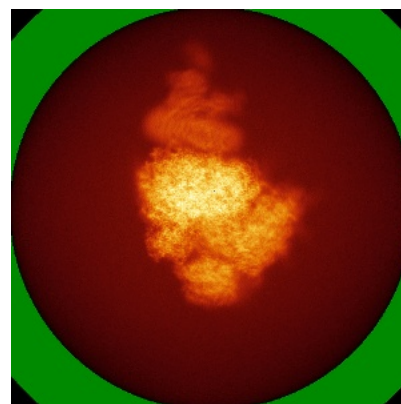
### 6.4.2 Raw map



X



Y

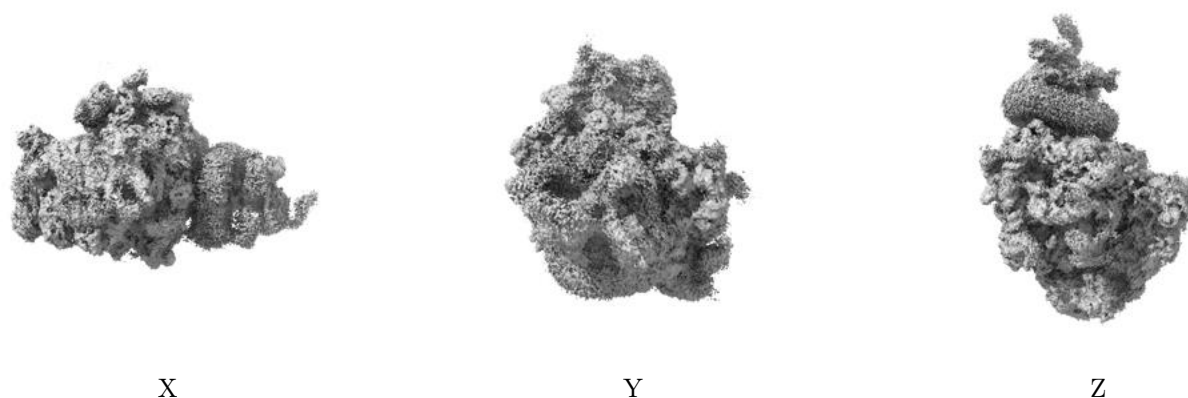


Z

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

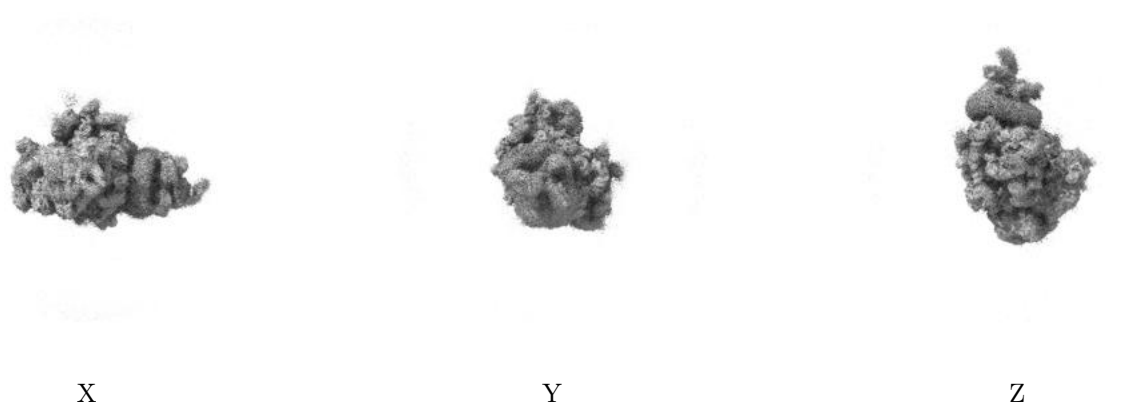
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.019. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

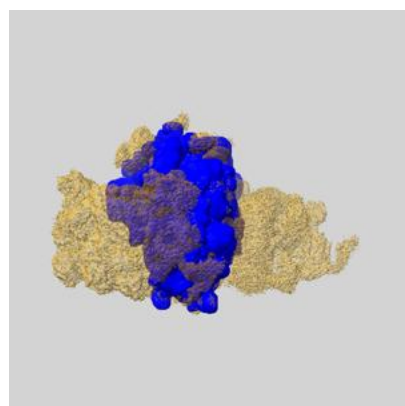
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

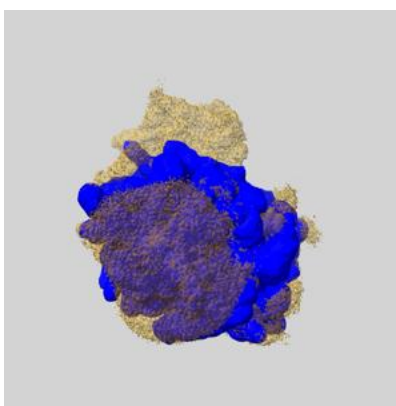
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

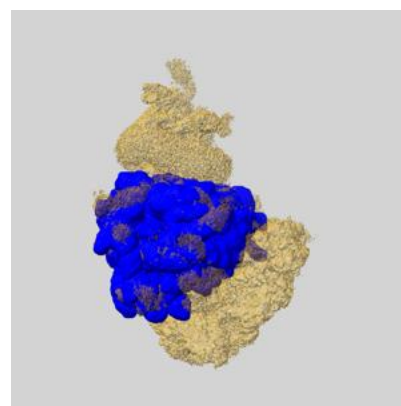
### 6.6.1 emd\_49171\_msk\_1.map [i](#)



X



Y



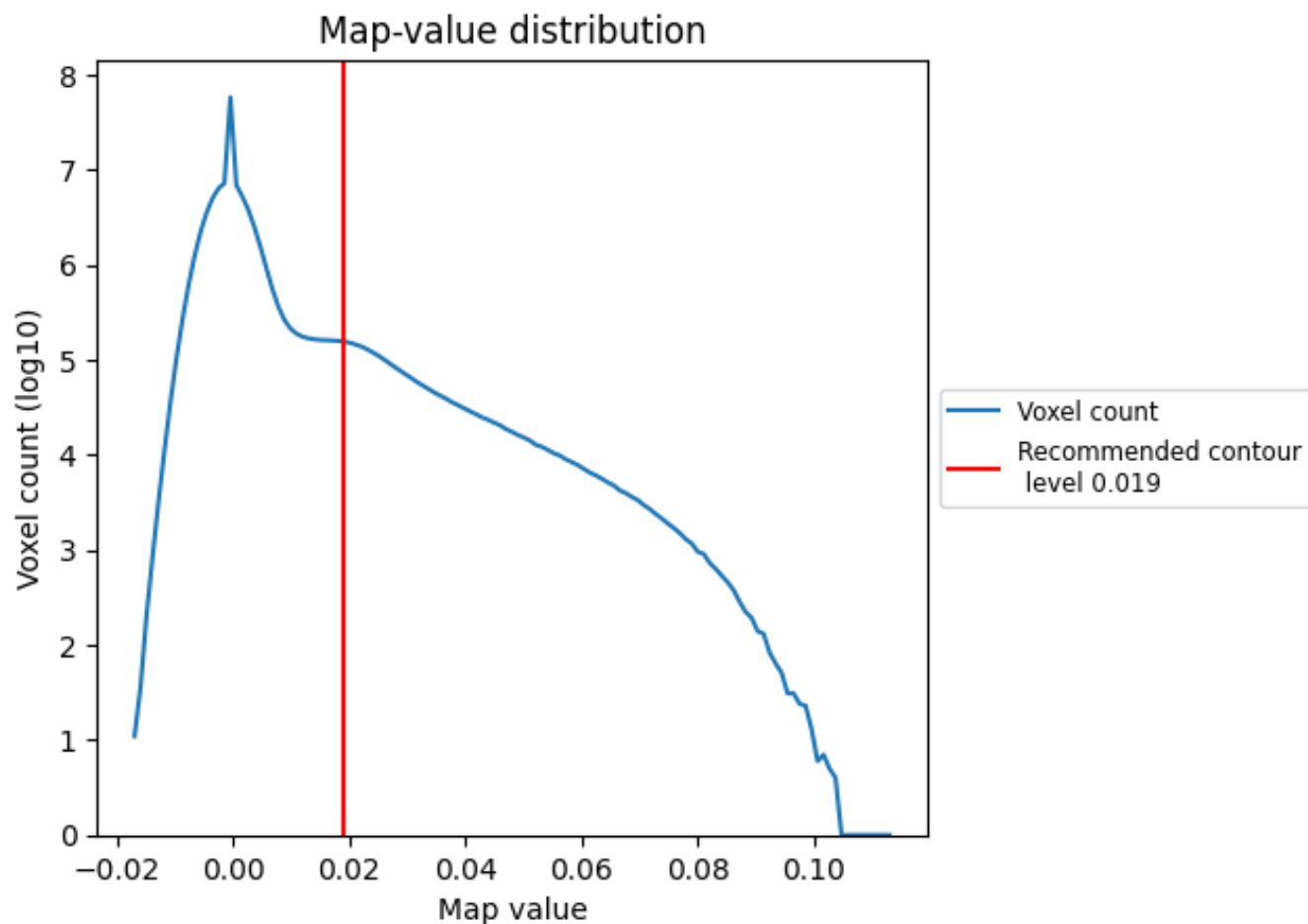
Z



## 7 Map analysis [i](#)

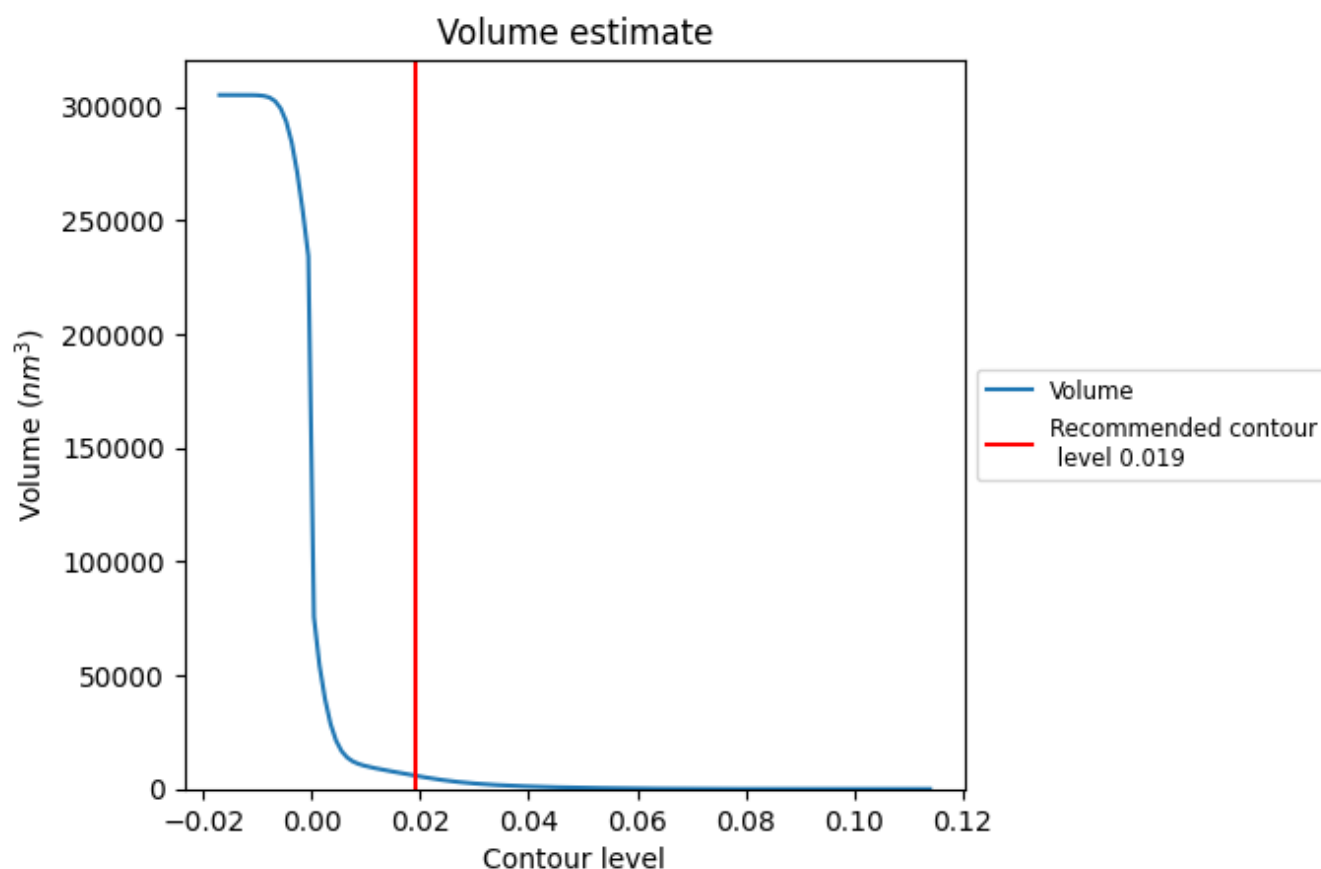
This section contains the results of statistical analysis of the map.

### 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.

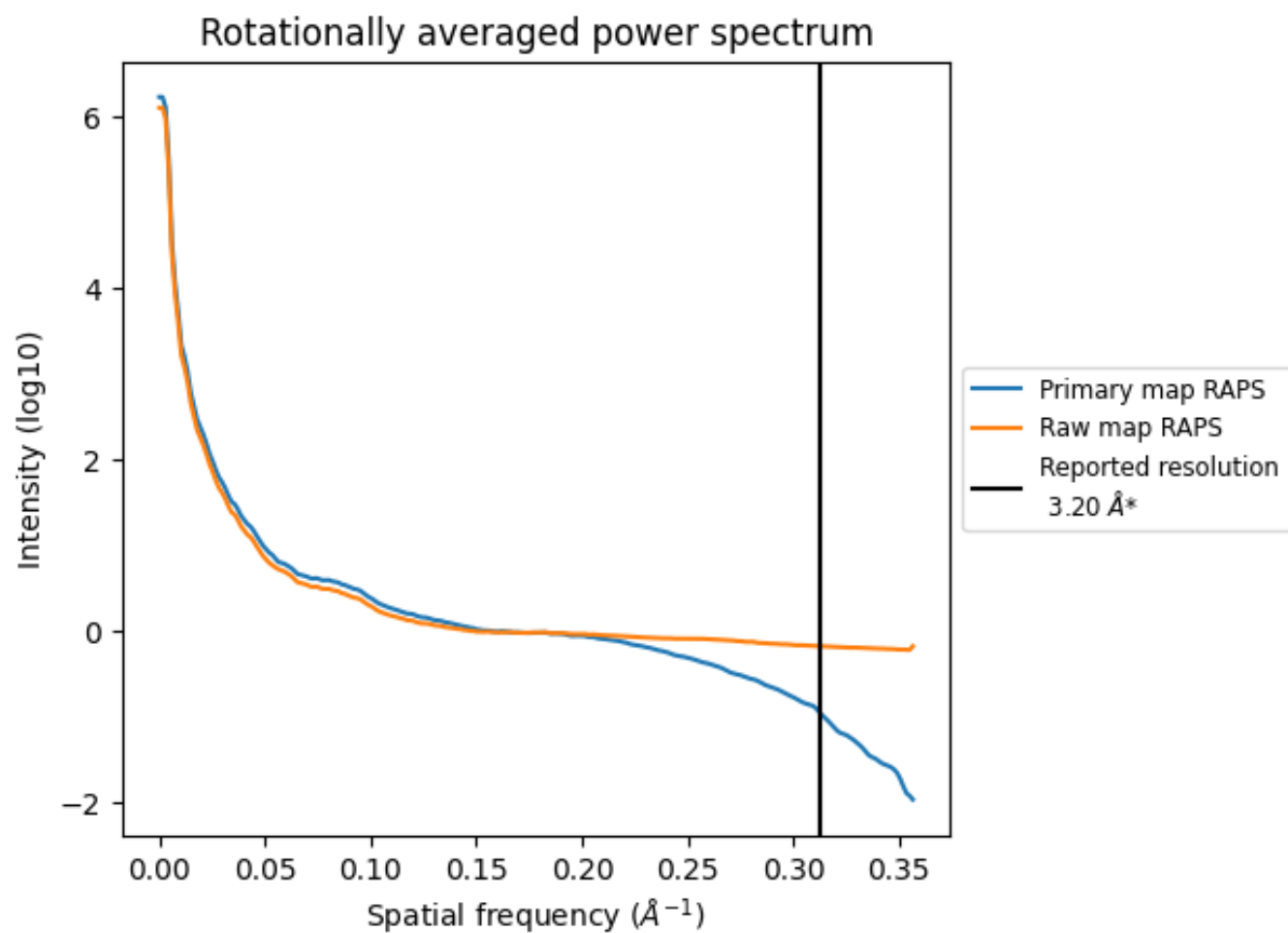
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 5887  $\text{nm}^3$ ; this corresponds to an approximate mass of 5318 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 ⓘ

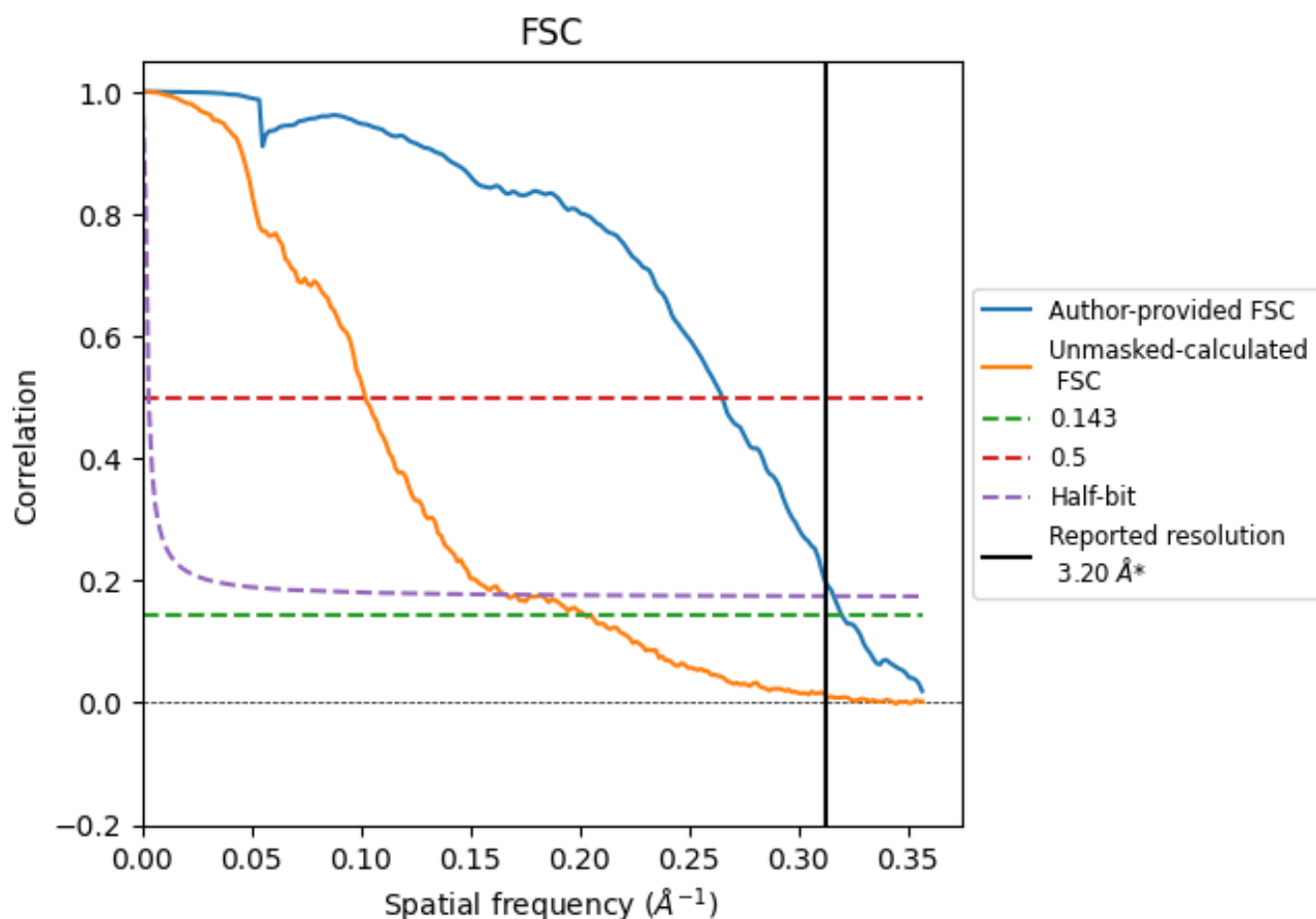


\*Reported resolution corresponds to spatial frequency of 0.312 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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 [i](#)



\*Reported resolution corresponds to spatial frequency of  $0.312 \text{ \AA}^{-1}$

## 8.2 Resolution estimates [i](#)

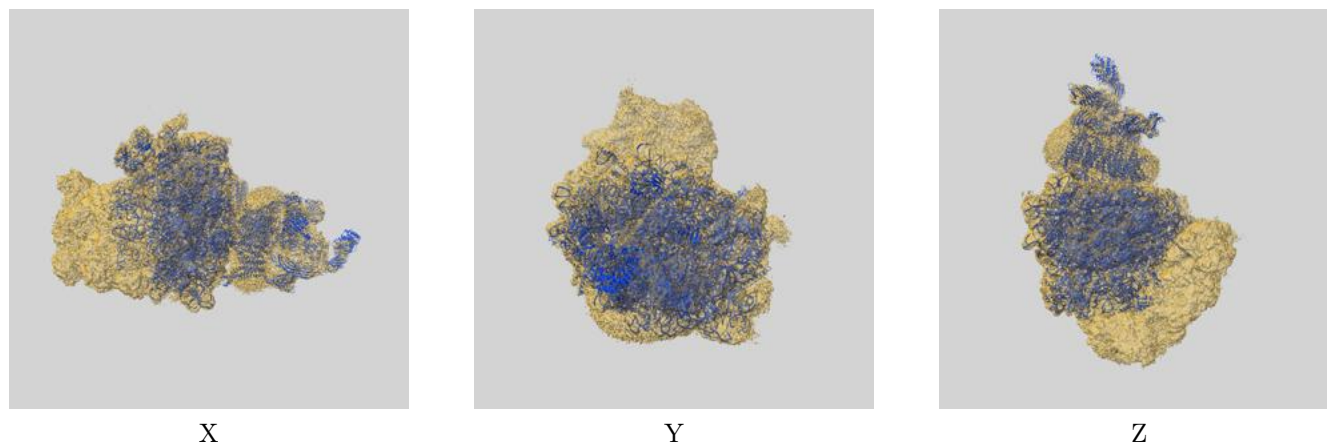
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.20                               | -    | -        |
| Author-provided FSC curve | 3.13                               | 3.77 | 3.16     |
| Unmasked-calculated*      | 4.94                               | 9.80 | 6.02     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.94 differs from the reported value 3.2 by more than 10 %

## 9 Map-model fit [i](#)

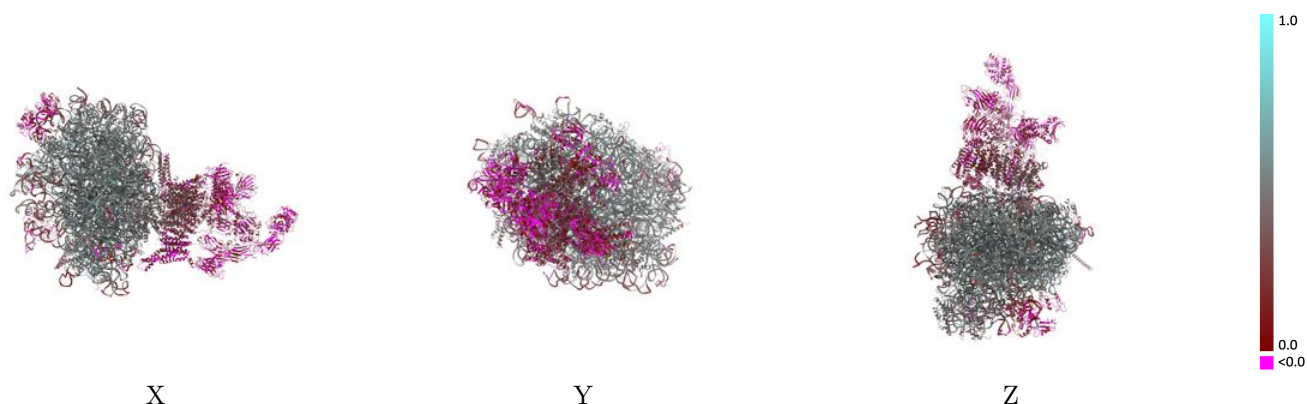
This section contains information regarding the fit between EMDB map EMD-49171 and PDB model 9N9J. Per-residue inclusion information can be found in [section 3](#) on [page 19](#).

### 9.1 Map-model overlay [i](#)



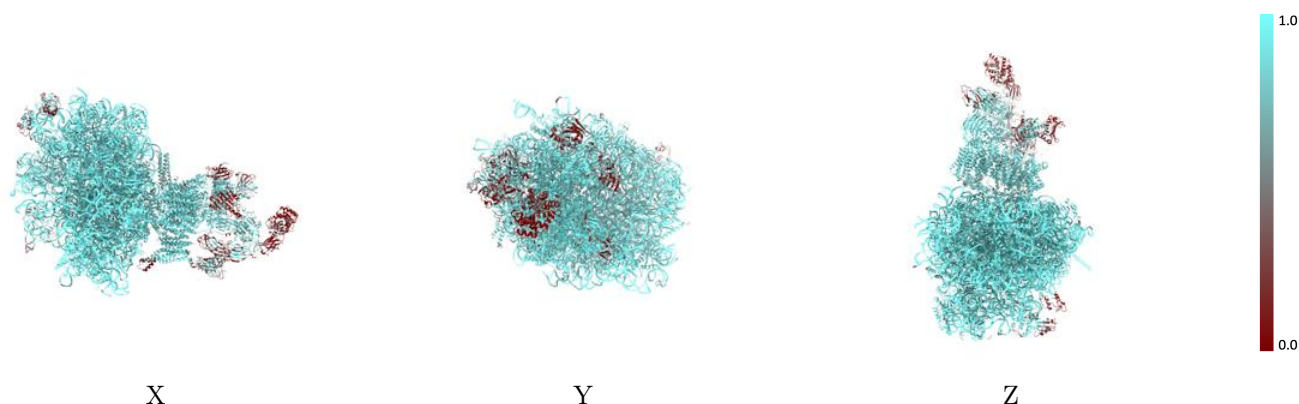
The images above show the 3D surface view of the map at the recommended contour level 0.019 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



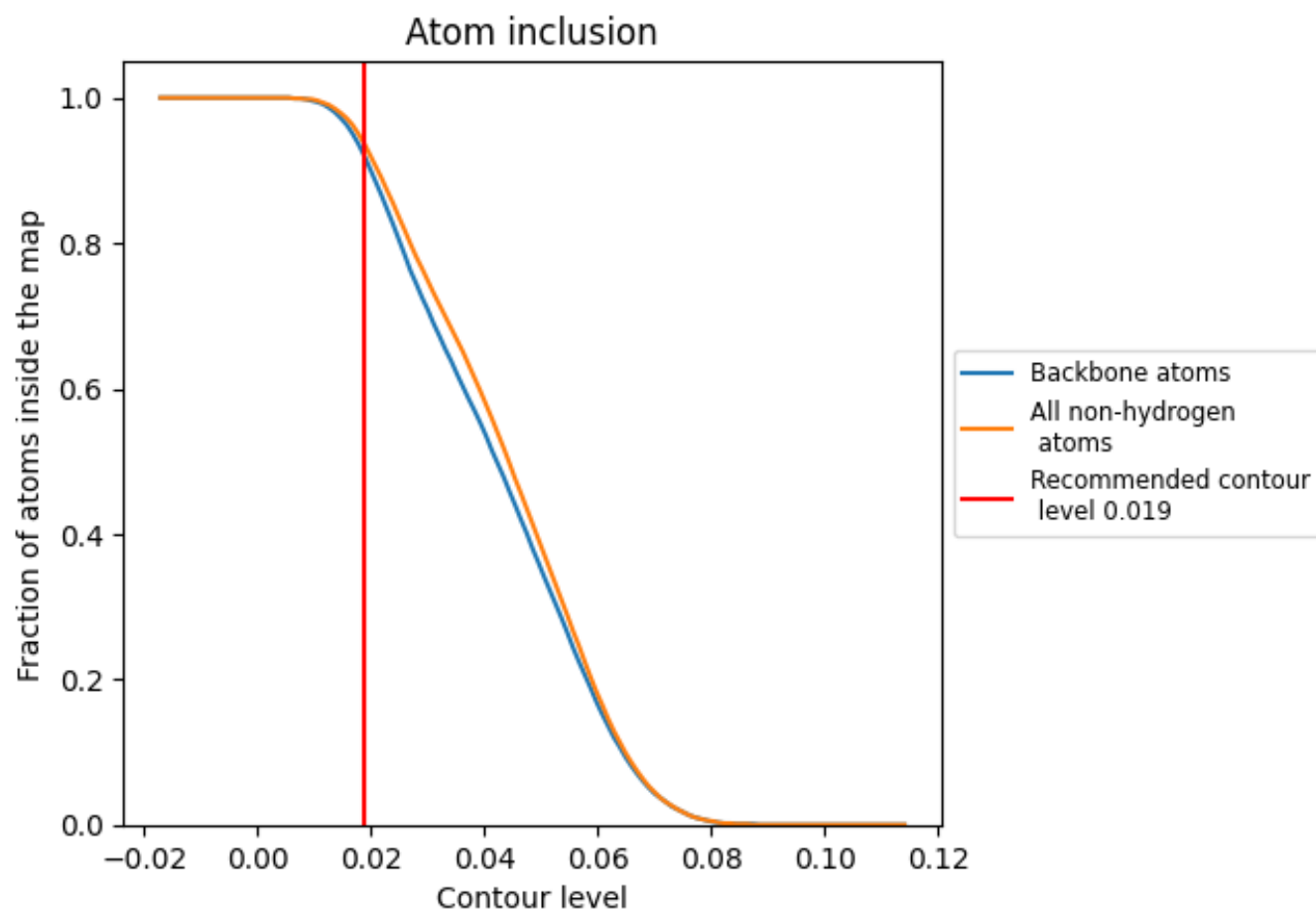
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.019).

## 9.4 Atom inclusion [i](#)









































































At the recommended contour level, 92% of all backbone atoms, 94% 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 (0.019) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| All   |  0.9350   |  0.3940   |
| 5     |  0.3950   |  0.0740   |
| 6     |  0.5040   |  0.0300   |
| 7     |  0.7320   |  0.0430   |
| 8     |  0.4880   |  0.0410   |
| A     |  0.4230   |  0.0690   |
| B     |  0.7570   |  0.1050   |
| C     |  0.6430   |  0.0610   |
| D     |  0.9400   |  0.3100   |
| E     |  0.9190   |  0.2680   |
| F     |  0.9280   |  0.2870   |
| G     |  0.9440   |  0.3280   |
| H     |  0.5750   |  0.0950   |
| I     |  0.9370   |  0.1550   |
| J     |  0.9200  |  0.2310  |
| K     |  0.7870 |  0.1830 |
| K2    |  0.8050 |  0.1640 |
| L     |  1.0000 |  0.1520 |
| L2    |  0.9080 |  0.0780 |
| L5    |  0.9930 |  0.4690 |
| L7    |  0.9980 |  0.5280 |
| L8    |  0.9980 |  0.4850 |
| LA    |  0.9970 |  0.5290 |
| LB    |  0.9810 |  0.5030 |
| LC    |  0.9890 |  0.5070 |
| LD    |  0.9840 |  0.4770 |
| LE    |  0.9850 |  0.4510 |
| LF    |  0.9960 |  0.5020 |
| LG    |  0.9460 |  0.4420 |
| LH    |  0.9900 |  0.4880 |
| LI    |  0.9860 |  0.4920 |
| LJ    |  0.9450 |  0.4150 |
| LL    |  0.9620 |  0.4840 |
| LM    |  0.9950 |  0.4900 |
| LN    |  0.9990 |  0.5220 |



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| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| LO    |  0.9910   |  0.4990   |
| LP    |  0.9630   |  0.4710   |
| LQ    |  1.0000   |  0.5260   |
| LR    |  0.9960   |  0.4670   |
| LS    |  0.9980   |  0.5140   |
| LT    |  0.9900   |  0.4940   |
| LU    |  0.9730   |  0.4010   |
| LV    |  0.9940   |  0.5150   |
| LW    |  0.9980   |  0.4900   |
| LX    |  0.9870   |  0.4860   |
| LY    |  0.9810   |  0.4890   |
| LZ    |  0.9880   |  0.4930   |
| La    |  0.9960   |  0.5320   |
| Lb    |  0.9620   |  0.4280   |
| Lc    |  0.9840   |  0.4650   |
| Ld    |  0.9880   |  0.4810   |
| Le    |  0.9960   |  0.5170   |
| Lf    |  1.0000  |  0.5330  |
| Lg    |  0.9920 |  0.4830 |
| Lh    |  0.9860 |  0.4680 |
| Li    |  0.9850 |  0.4710 |
| Lj    |  0.9990 |  0.5240 |
| Lk    |  0.9460 |  0.4540 |
| Ll    |  0.9980 |  0.5010 |
| Lm    |  0.9710 |  0.4880 |
| Ln    |  1.0000 |  0.4640 |
| Lo    |  0.9930 |  0.4940 |
| Lp    |  0.9960 |  0.4980 |
| Lr    |  0.9900 |  0.5080 |
| Ls    |  0.5770 |  0.0880 |
| Lt    |  0.5610 |  0.0900 |
| Lz    |  0.5990 |  0.0760 |
| M2    |  0.9450 |  0.1010 |
| N     |  0.9620 |  0.0870 |
| N2    |  0.8440 |  0.0910 |
| O2    |  0.7740 |  0.0990 |
| P2    |  0.3680 |  0.0500 |
| u3    |  0.9810 |  0.2950 |
| v3    |  0.9980 |  0.3160 |
| y3    |  0.4390 |  0.1250 |