



## Full wwPDB EM Validation Report ⓘ

Jun 29, 2025 – 06:39 am BST

PDB ID : 8QO9 / pdb\_00008qo9  
EMDB ID : EMD-18529  
Title : Cryo-EM structure of a human spliceosomal B complex protomer  
Authors : Zhang, Z.; Kumar, V.; Dybkov, O.; Will, C.L.; Urlaub, H.; Stark, H.;  
Luehrmann, R.  
Deposited on : 2023-09-28  
Resolution : 5.29 Å(reported)

This is a Full wwPDB EM Validation 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>.

---

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

EMDB validation analysis : 0.0.1.dev118  
MolProbity : 4-5-2 with Phenix2.0rc1  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.44

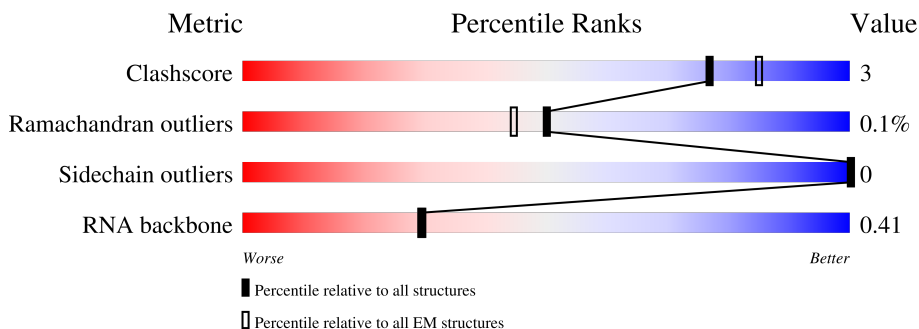
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 5.29 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) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore            | 210492                      | 15764                       |
| Ramachandran outliers | 207382                      | 16835                       |
| Sidechain outliers    | 206894                      | 16415                       |
| RNA backbone          | 6643                        | 2191                        |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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   | B4    | 424    |                  |
| 2   | 8     | 464    |                  |
| 2   | G     | 464    |                  |
| 3   | 9     | 501    |                  |
| 3   | H     | 501    |                  |
| 4   | B2    | 895    |                  |
| 5   | B5    | 86     |                  |

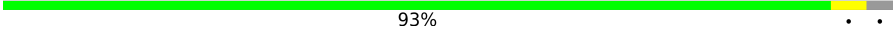
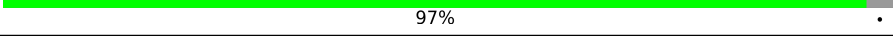
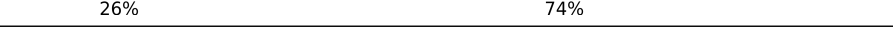
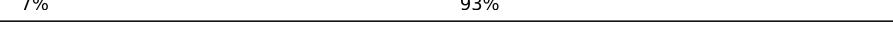
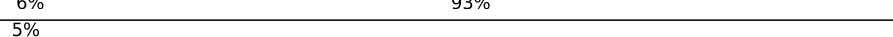
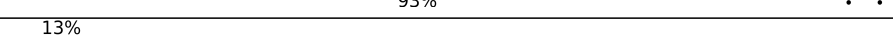
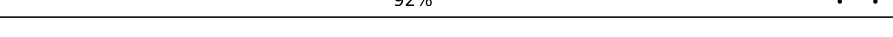
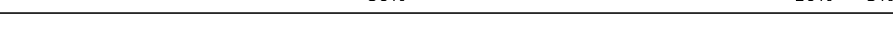
Continued on next page...

Continued from previous page...

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 6   | 2     | 188    |                  |
| 7   | B3    | 1217   |                  |
| 8   | BP    | 110    |                  |
| 9   | B1    | 1304   |                  |
| 10  | B6    | 125    |                  |
| 11  | 62    | 95     |                  |
| 12  | 63    | 102    |                  |
| 13  | 64    | 139    |                  |
| 14  | 65    | 91     |                  |
| 15  | 66    | 80     |                  |
| 16  | 67    | 103    |                  |
| 17  | 68    | 96     |                  |
| 18  | 2b    | 240    |                  |
| 18  | 4b    | 240    |                  |
| 18  | 5b    | 240    |                  |
| 19  | 21    | 119    |                  |
| 19  | 41    | 119    |                  |
| 19  | 51    | 119    |                  |
| 20  | 22    | 118    |                  |
| 20  | 42    | 118    |                  |
| 20  | 52    | 118    |                  |
| 21  | 2f    | 86     |                  |
| 21  | 4f    | 86     |                  |
| 21  | 5f    | 86     |                  |
| 22  | 2e    | 92     |                  |

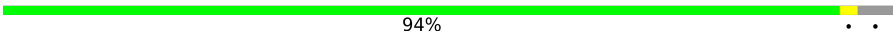
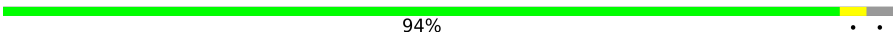
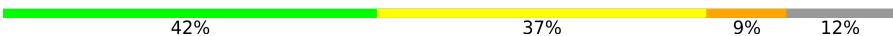
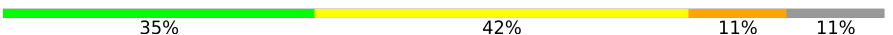
Continued on next page...

Continued from previous page...

| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 22  | 4e    | 92     |    |
| 22  | 5e    | 92     |    |
| 23  | 2g    | 76     |    |
| 23  | 4g    | 76     |    |
| 23  | 5g    | 76     |    |
| 24  | 23    | 126    |    |
| 24  | 43    | 126    |    |
| 24  | 53    | 126    |    |
| 25  | 2B    | 225    |    |
| 26  | 2A    | 255    |    |
| 27  | 7     | 793    |    |
| 28  | E     | 357    |   |
| 29  | B     | 2136   |  |
| 30  | x     | 557    |  |
| 30  | y     | 557    |  |
| 31  | v     | 513    |  |
| 31  | w     | 513    |  |
| 32  | z     | 248    |  |
| 33  | W     | 177    |  |
| 34  | 5     | 117    |  |
| 35  | Q     | 144    |  |
| 36  | D     | 142    |  |
| 37  | X     | 376    |  |
| 38  | K     | 439    |  |
| 39  | Z     | 347    |  |

Continued on next page...

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 40  | L     | 499    |    |
| 41  | F     | 522    |    |
| 42  | N     | 941    |    |
| 43  | A     | 2335   |    |
| 44  | I     | 312    |    |
| 45  | S     | 800    |    |
| 46  | C     | 972    |    |
| 47  | M     | 128    |    |
| 48  | T     | 1098   |    |
| 49  | 4     | 144    |    |
| 50  | 6     | 106    |    |
| 51  | r     | 199    |   |
| 52  | J     | 683    |  |
| 53  | s     | 73     |  |

## 2 Entry composition

There are 53 unique types of molecules in this entry. The entry contains 87322 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Splicing factor 3B subunit 4.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 1   | B4    | 78       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 391   | 235 | 78 | 78 |         |       |

- Molecule 2 is a protein called Splicing factor 3A subunit 2.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 2   | 8     | 100      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 510   | 310 | 100 | 100 |         |       |
| 2   | G     | 44       | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 219   | 131 | 44  | 44  |         |       |

- Molecule 3 is a protein called Splicing factor 3A subunit 3.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 3   | 9     | 313      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1569  | 943 | 313 | 313 |         |       |
| 3   | H     | 70       | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 351   | 211 | 70  | 70  |         |       |

- Molecule 4 is a protein called Splicing factor 3B subunit 2.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 4   | B2    | 208      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1072  | 656 | 208 | 208 |         |       |

- Molecule 5 is a protein called Splicing factor 3B subunit 5.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 5   | B5    | 69       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 347   | 209 | 69 | 69 |         |       |

- Molecule 6 is a RNA chain called U2 snRNA.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 6   | 2     | 98       | Total | C   | N   | O   | P  | 0       | 0     |
|     |       |          | 2071  | 926 | 349 | 698 | 98 |         |       |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference |
|-------|---------|----------|--------|----------|-----------|
| 2     | 97      | A        | G      | conflict | GB 36516  |

- Molecule 7 is a protein called Splicing factor 3B subunit 3.

| Mol | Chain | Residues | Atoms |      |      |      |  | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|--|---------|-------|
| 7   | B3    | 1174     | Total | C    | N    | O    |  | 0       | 0     |
|     |       |          | 5908  | 3560 | 1174 | 1174 |  |         |       |

- Molecule 8 is a protein called PHD finger-like domain-containing protein 5A.

| Mol | Chain | Residues | Atoms |     |     |     |  | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|--|---------|-------|
| 8   | BP    | 100      | Total | C   | N   | O   |  | 0       | 0     |
|     |       |          | 498   | 298 | 100 | 100 |  |         |       |

- Molecule 9 is a protein called Splicing factor 3B subunit 1.

| Mol | Chain | Residues | Atoms |      |     |     |  | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|--|---------|-------|
| 9   | B1    | 870      | Total | C    | N   | O   |  | 0       | 0     |
|     |       |          | 4383  | 2643 | 870 | 870 |  |         |       |

- Molecule 10 is a protein called Splicing factor 3B subunit 6.

| Mol | Chain | Residues | Atoms |     |    |    |  | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|--|---------|-------|
| 10  | B6    | 90       | Total | C   | N  | O  |  | 0       | 0     |
|     |       |          | 455   | 275 | 90 | 90 |  |         |       |

- Molecule 11 is a protein called U6 snRNA-associated Sm-like protein LSm2.

| Mol | Chain | Residues | Atoms |     |    |    |  | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|--|---------|-------|
| 11  | 62    | 90       | Total | C   | N  | O  |  | 0       | 0     |
|     |       |          | 360   | 180 | 90 | 90 |  |         |       |

- Molecule 12 is a protein called U6 snRNA-associated Sm-like protein LSm3.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 12  | 63    | 74       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 296   | 148 | 74 | 74 |         |       |

- Molecule 13 is a protein called U6 snRNA-associated Sm-like protein LSm4.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 13  | 64    | 74       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 296   | 148 | 74 | 74 |         |       |

- Molecule 14 is a protein called U6 snRNA-associated Sm-like protein LSm5.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 14  | 65    | 72       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 288   | 144 | 72 | 72 |         |       |

- Molecule 15 is a protein called U6 snRNA-associated Sm-like protein LSm6.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 15  | 66    | 70       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 280   | 140 | 70 | 70 |         |       |

- Molecule 16 is a protein called U6 snRNA-associated Sm-like protein LSm7.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 16  | 67    | 65       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 260   | 130 | 65 | 65 |         |       |

- Molecule 17 is a protein called U6 snRNA-associated Sm-like protein LSm8.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 17  | 68    | 61       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 244   | 122 | 61 | 61 |         |       |

- Molecule 18 is a protein called Small nuclear ribonucleoprotein-associated proteins B and B'.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 18  | 5b    | 86       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 344   | 172 | 86 | 86 |         |       |
| 18  | 2b    | 82       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 413   | 249 | 82 | 82 |         |       |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 18  | 4b    | 82       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 413   | 249 | 82 | 82 |         |       |

- Molecule 19 is a protein called Small nuclear ribonucleoprotein Sm D1.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 19  | 51    | 82       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 328   | 164 | 82 | 82 |         |       |
| 19  | 21    | 80       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 402   | 242 | 80 | 80 |         |       |
| 19  | 41    | 81       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 407   | 245 | 81 | 81 |         |       |

- Molecule 20 is a protein called Small nuclear ribonucleoprotein Sm D2.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 20  | 52    | 97       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 388   | 194 | 97 | 97 |         |       |
| 20  | 22    | 95       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 482   | 292 | 95 | 95 |         |       |
| 20  | 42    | 92       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 463   | 279 | 92 | 92 |         |       |

- Molecule 21 is a protein called Small nuclear ribonucleoprotein F.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 21  | 5f    | 74       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 296   | 148 | 74 | 74 |         |       |
| 21  | 2f    | 72       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 359   | 215 | 72 | 72 |         |       |
| 21  | 4f    | 72       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 359   | 215 | 72 | 72 |         |       |

- Molecule 22 is a protein called Small nuclear ribonucleoprotein E.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 22  | 5e    | 79       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 316   | 158 | 79 | 79 |         |       |
| 22  | 2e    | 81       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 403   | 241 | 81 | 81 |         |       |
| 22  | 4e    | 76       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 378   | 226 | 76 | 76 |         |       |

- Molecule 23 is a protein called Small nuclear ribonucleoprotein G.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 23  | 5g    | 74       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 296   | 148 | 74 | 74 |         |       |
| 23  | 2g    | 73       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 364   | 218 | 73 | 73 |         |       |
| 23  | 4g    | 74       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 369   | 221 | 74 | 74 |         |       |

- Molecule 24 is a protein called Small nuclear ribonucleoprotein Sm D3.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 24  | 53    | 77       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 308   | 154 | 77 | 77 |         |       |
| 24  | 23    | 83       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 415   | 249 | 83 | 83 |         |       |
| 24  | 43    | 83       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 415   | 249 | 83 | 83 |         |       |

- Molecule 25 is a protein called U2 small nuclear ribonucleoprotein B''.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 25  | 2B    | 92       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 461   | 277 | 92 | 92 |         |       |

- Molecule 26 is a protein called U2 small nuclear ribonucleoprotein A'.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 26  | 2A    | 162      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 816   | 492 | 162 | 162 |         |       |

- Molecule 27 is a protein called Splicing factor 3A subunit 1.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 27  | 7     | 204      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1028  | 620 | 204 | 204 |         |       |

- Molecule 28 is a protein called U5 small nuclear ribonucleoprotein 40 kDa protein.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 28  | E     | 299      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1196  | 598 | 299 | 299 |         |       |

- Molecule 29 is a protein called U5 small nuclear ribonucleoprotein 200 kDa helicase.

| Mol | Chain | Residues | Atoms |      |      |      | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|---------|-------|
| 29  | B     | 1693     | Total | C    | N    | O    | 0       | 0     |
|     |       |          | 8538  | 5154 | 1693 | 1691 |         |       |

- Molecule 30 is a protein called Protein Red.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 30  | x     | 39       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 197   | 119 | 39 | 39 |         |       |
| 30  | y     | 37       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 187   | 113 | 37 | 37 |         |       |

- Molecule 31 is a protein called WD40 repeat-containing protein SMU1.

| Mol | Chain | Residues | Atoms |      |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|-------|
| 31  | v     | 496      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 2478  | 1486 | 496 | 496 |         |       |
| 31  | w     | 495      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 2474  | 1484 | 495 | 495 |         |       |

- Molecule 32 is a protein called Serine/arginine-rich splicing factor 1.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 32  | z     | 74       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 368   | 220 | 74 | 74 |         |       |

- Molecule 33 is a protein called Peptidyl-prolyl cis-trans isomerase H.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 33  | W     | 169      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 844   | 506 | 169 | 169 |         |       |

- Molecule 34 is a RNA chain called U5 snRNA.

| Mol | Chain | Residues | Atoms |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 34  | 5     | 115      | Total | C    | N   | O   | P   | 0       | 0     |
|     |       |          | 2420  | 1084 | 403 | 818 | 115 |         |       |

- Molecule 35 is a protein called Protein BUD31 homolog.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 35  | Q     | 142      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 713   | 429 | 142 | 142 |         |       |

- Molecule 36 is a protein called Thioredoxin-like protein 4A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 36  | D     | 141      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 708   | 426 | 141 | 141 |         |       |

- Molecule 37 is a protein called WW domain-binding protein 4.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 37  | X     | 81       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 408   | 246 | 81 | 81 |         |       |

- Molecule 38 is a protein called Microfibrillar-associated protein 1.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 38  | K     | 212      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1057  | 633 | 212 | 212 |         |       |

- Molecule 39 is a RNA chain called MINX pre-mRNA.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 39  | Z     | 46       | Total | C   | N   | O   | P  | 0       | 0     |
|     |       |          | 977   | 438 | 175 | 319 | 45 |         |       |

- Molecule 40 is a protein called U4/U6 small nuclear ribonucleoprotein Prp31.

| Mol | Chain | Residues | Atoms |      |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|-------|
| 40  | L     | 373      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 1873  | 1127 | 373 | 373 |         |       |

- Molecule 41 is a protein called U4/U6 small nuclear ribonucleoprotein Prp4.

| Mol | Chain | Residues | Atoms |      |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|-------|
| 41  | F     | 431      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 2155  | 1293 | 431 | 431 |         |       |

- Molecule 42 is a protein called Pre-mRNA-processing factor 6.

| Mol | Chain | Residues | Atoms |      |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|-------|
| 42  | N     | 791      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 3990  | 2408 | 791 | 791 |         |       |

- Molecule 43 is a protein called Pre-mRNA-processing-splicing factor 8.

| Mol | Chain | Residues | Atoms |      |      |      | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|---------|-------|
| 43  | A     | 2234     | Total | C    | N    | O    | 0       | 0     |
|     |       |          | 11052 | 6584 | 2234 | 2234 |         |       |

- Molecule 44 is a protein called Pre-mRNA-splicing factor 38A.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 44  | I     | 184      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 925   | 557 | 184 | 184 |         |       |

- Molecule 45 is a protein called U4/U6.U5 tri-snRNP-associated protein 1.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 45  | S     | 171      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 854   | 512 | 171 | 171 |         |       |

- Molecule 46 is a protein called 116 kDa U5 small nuclear ribonucleoprotein component.

| Mol | Chain | Residues | Atoms |      |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|-------|
| 46  | C     | 843      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 4260  | 2574 | 843 | 843 |         |       |

- Molecule 47 is a protein called NHP2-like protein 1, N-terminally processed.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 47  | M     | 124      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 627   | 379 | 124 | 124 |         |       |

- Molecule 48 is a protein called Transcription elongation regulator 1.

| Mol | Chain | Residues | Atoms |      |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|-------|
| 48  | T     | 412      | Total | C    | N   | O   | 0       | 0     |
|     |       |          | 2071  | 1247 | 412 | 412 |         |       |

- Molecule 49 is a RNA chain called U4 snRNA.

| Mol | Chain | Residues | Atoms |      |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|-----|---------|-------|
| 49  | 4     | 127      | Total | C    | N   | O   | P   | 0       | 0     |
|     |       |          | 2692  | 1203 | 467 | 895 | 127 |         |       |

- Molecule 50 is a RNA chain called U6 snRNA.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 50  | 6     | 94       | Total | C   | N   | O   | P  | 0       | 0     |
|     |       |          | 1995  | 891 | 362 | 648 | 94 |         |       |

- Molecule 51 is a protein called Zinc finger matrin-type protein 2.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 51  | r     | 114      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 568   | 340 | 114 | 114 |         |       |

- Molecule 52 is a protein called U4/U6 small nuclear ribonucleoprotein Prp3.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 52  | J     | 260      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 1314  | 794 | 260 | 260 |         |       |

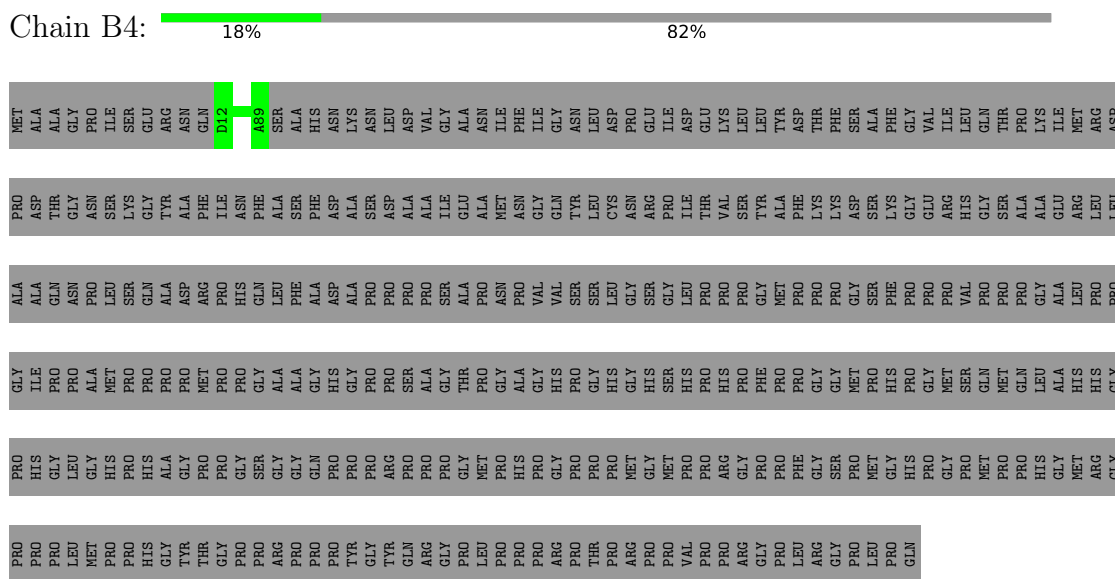
- Molecule 53 is a protein called Ubiquitin-like protein 5.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 53  | s     | 73       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 360   | 214 | 73 | 73 |         |       |

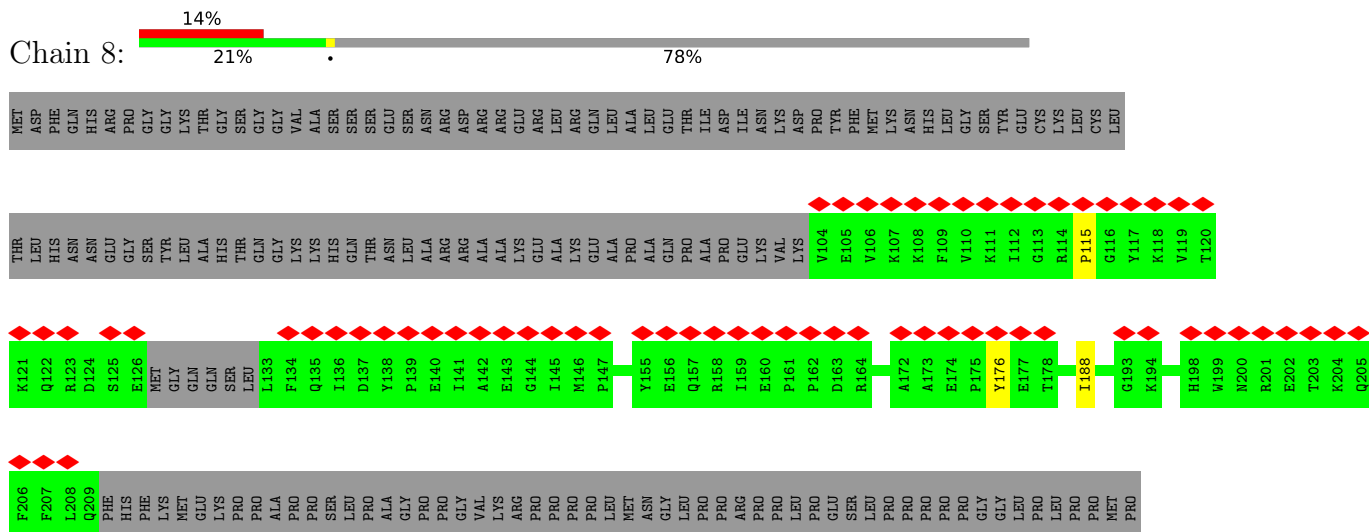
### 3 Residue-property plots

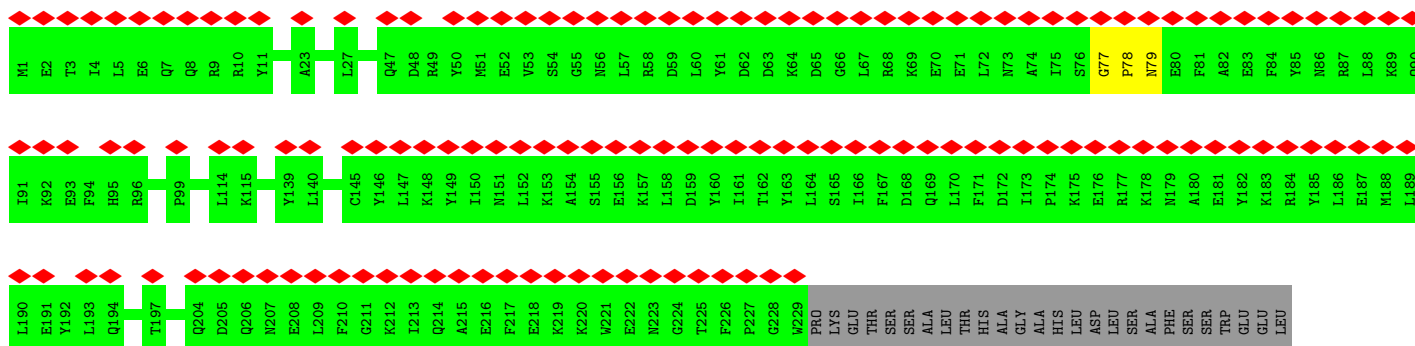
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

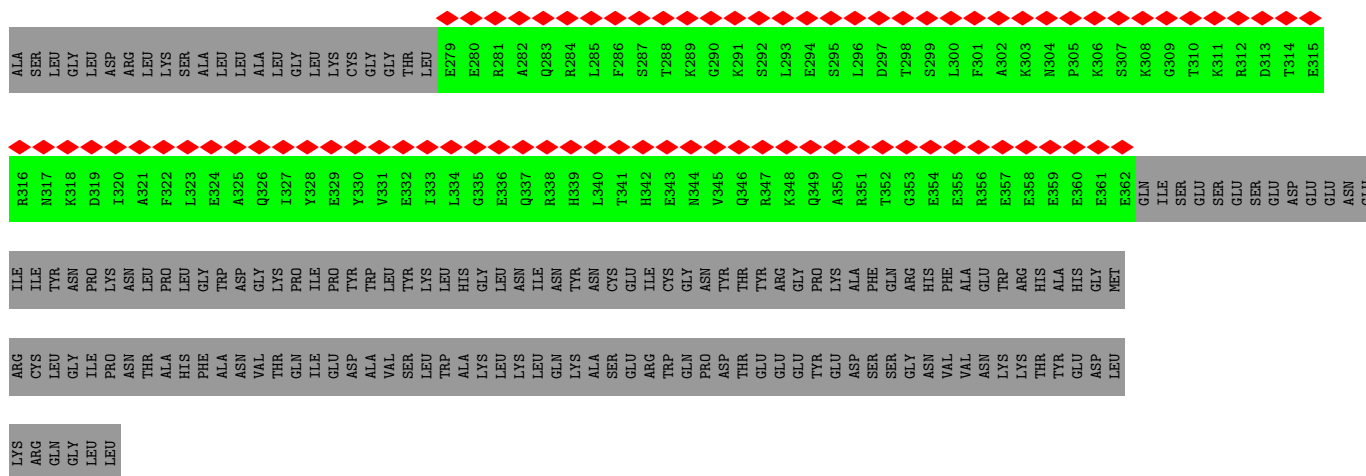
#### • Molecule 1: Splicing factor 3B subunit 4



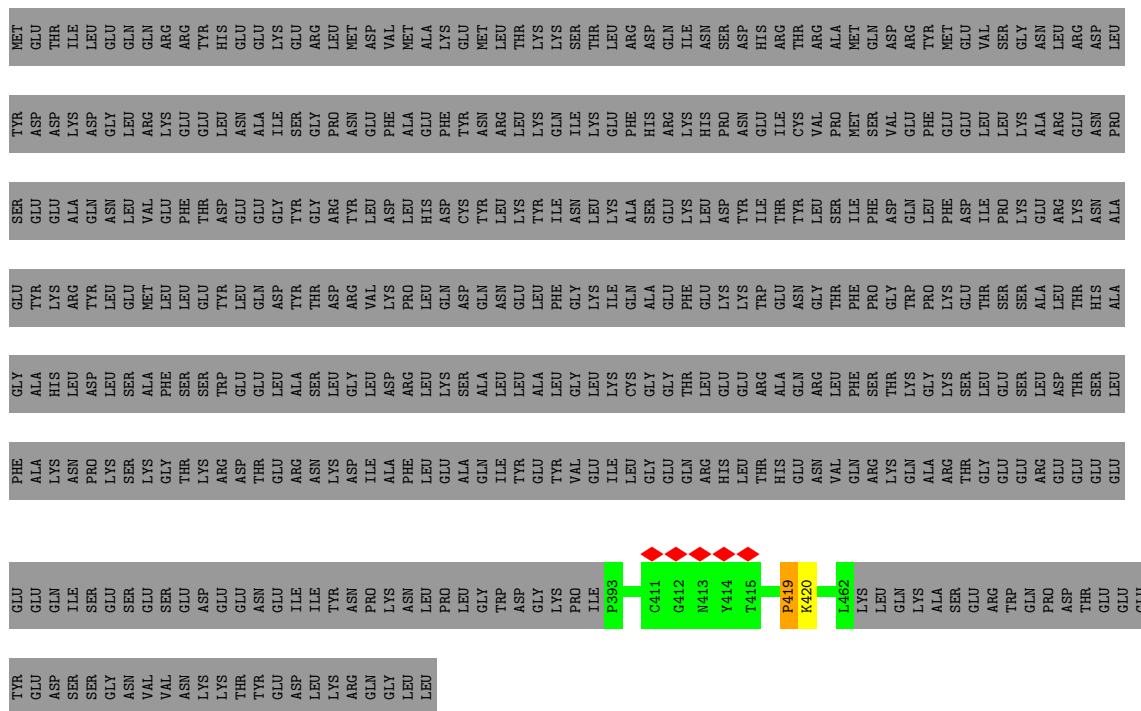
#### • Molecule 2: Splicing factor 3A subunit 2



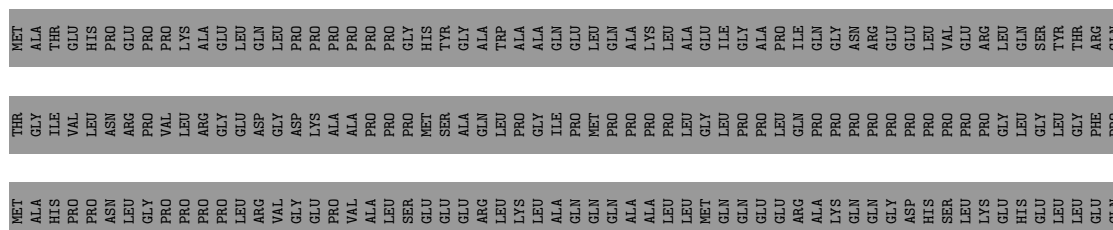




- Molecule 3: Splicing factor 3A subunit 3



- Molecule 4: Splicing factor 3B subunit 2

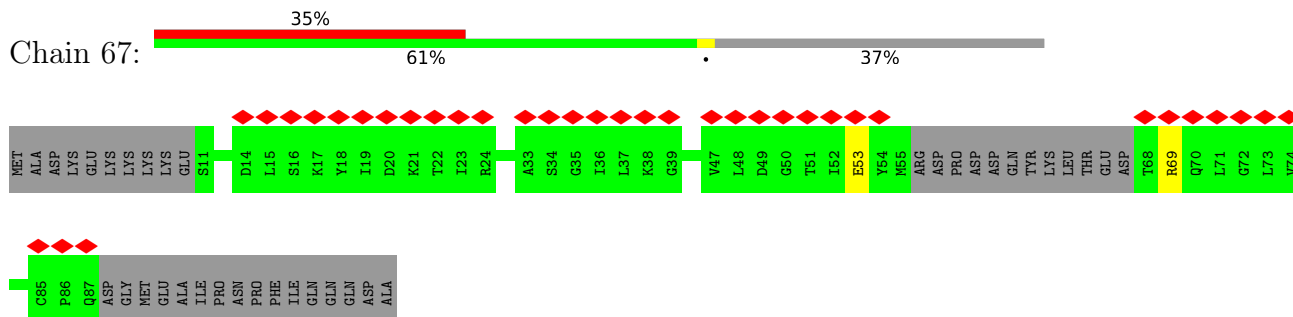




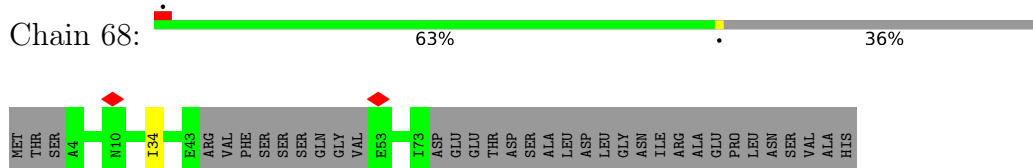




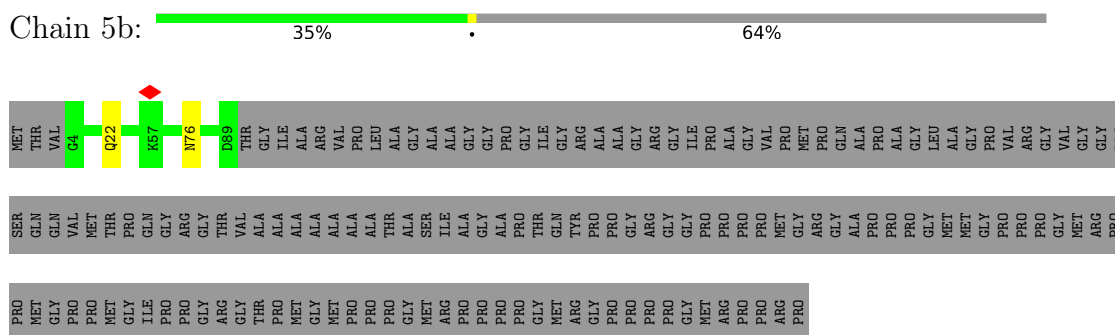
- Chain 67:



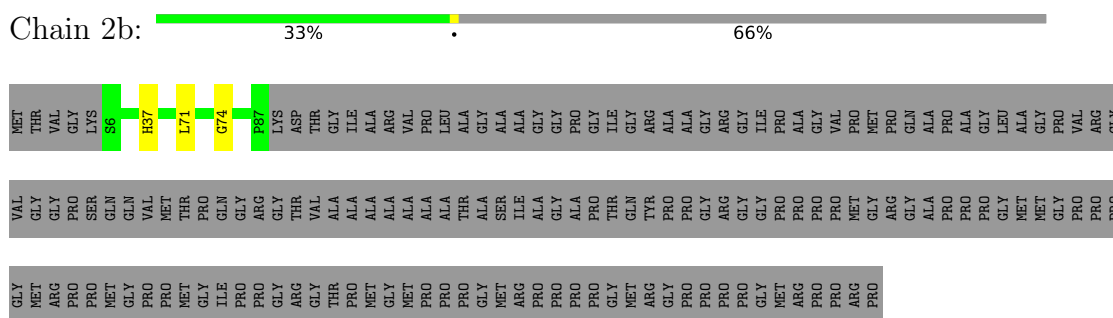
- Chain 68:



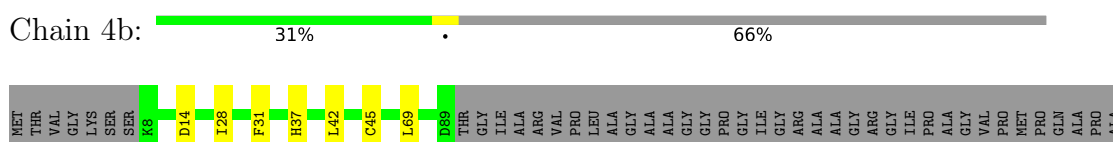
- Chain 5b:



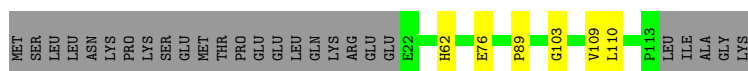
- Chain 2b:



- Chain 4b:

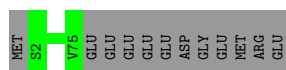






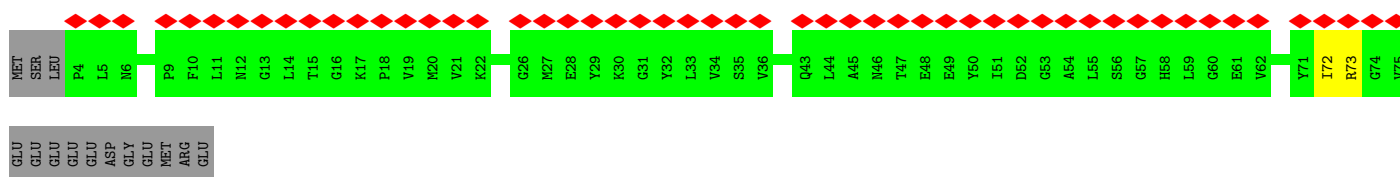
- Molecule 21: Small nuclear ribonucleoprotein F

Chain 5f: 86% 14%



- Molecule 21: Small nuclear ribonucleoprotein F

Chain 2f: 62% 81% 16%



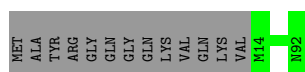
- Molecule 21: Small nuclear ribonucleoprotein F

Chain 4f: 78% 6% 16%



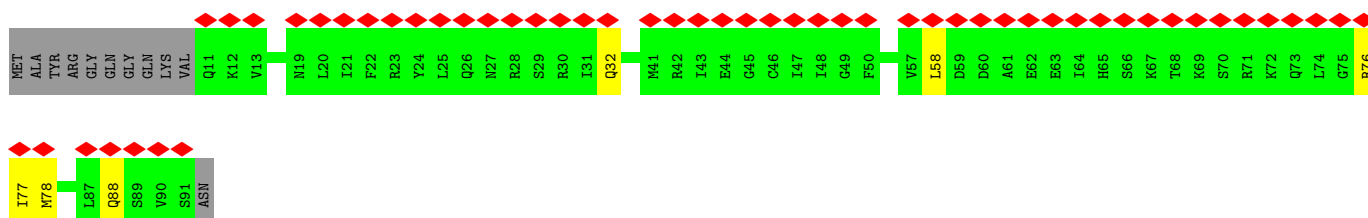
- Molecule 22: Small nuclear ribonucleoprotein E

Chain 5e: 86% 14%



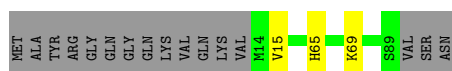
- Molecule 22: Small nuclear ribonucleoprotein E

Chain 2e: 59% 82% 7% 12%



- Molecule 22: Small nuclear ribonucleoprotein E

Chain 4e: 79% 17% 4%



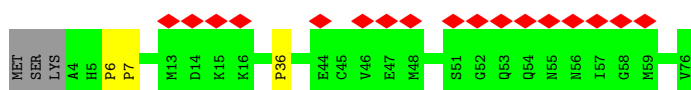
- Molecule 23: Small nuclear ribonucleoprotein G

Chain 5g: 97%



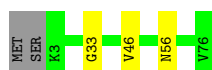
- Molecule 23: Small nuclear ribonucleoprotein G

Chain 2g: 22% 92%



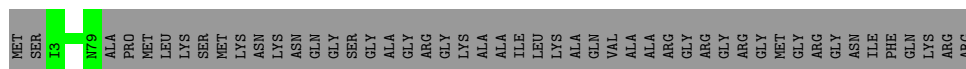
- Molecule 23: Small nuclear ribonucleoprotein G

Chain 4g: 93%



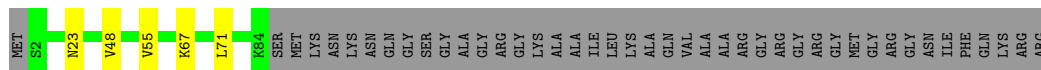
- Molecule 24: Small nuclear ribonucleoprotein Sm D3

Chain 53: 61% 39%



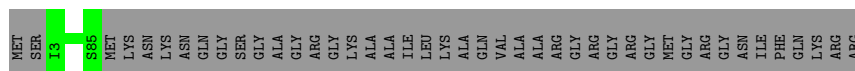
- Molecule 24: Small nuclear ribonucleoprotein Sm D3

Chain 23: 62% 34%



- Molecule 24: Small nuclear ribonucleoprotein Sm D3

Chain 43: 66% 34%

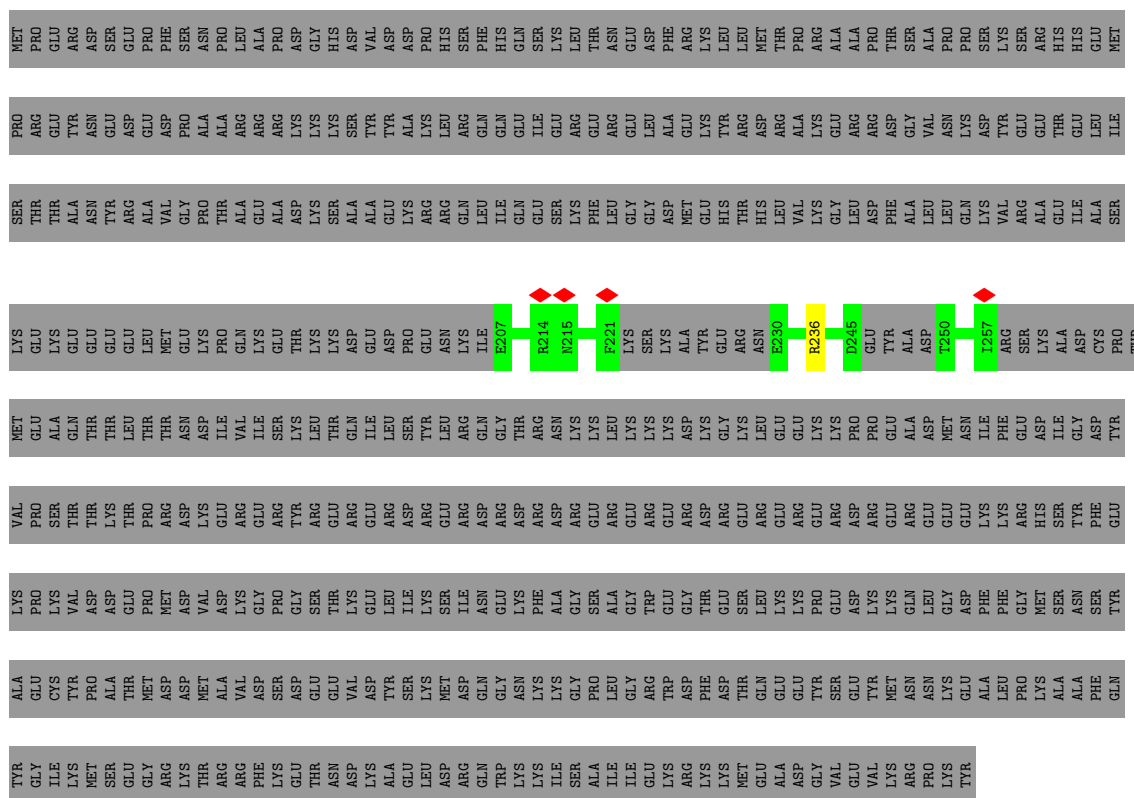


- Molecule 25: U2 small nuclear ribonucleoprotein B''

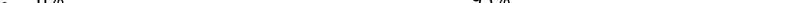
Chain 2B: 11% 40% 59%

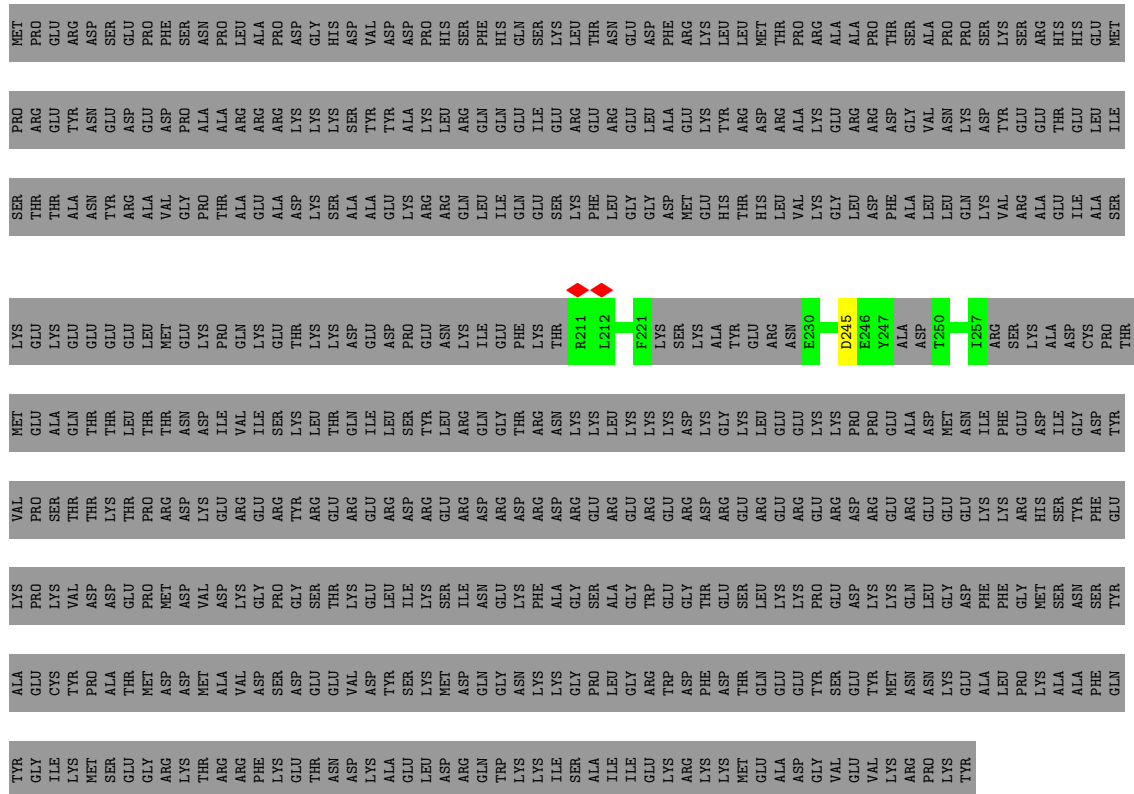


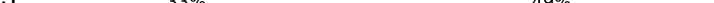




- Molecule 30: Protein Red

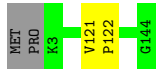
Chain y:  6% 93%



- Chain 5:  33% 49% 16%

- Molecule 35: Protein BUD31 homolog

Chain Q:  97%

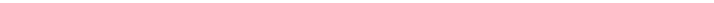


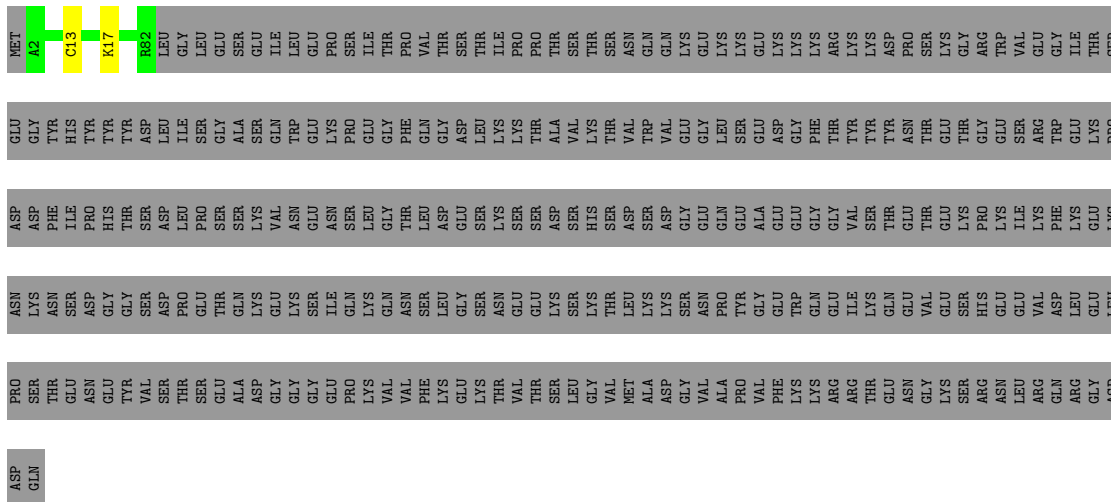
- Molecule 36: Thioredoxin-like protein 4A

Chain D:  96%



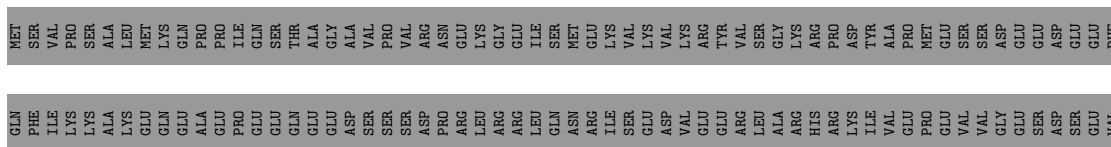
- Molecule 37: WW domain-binding protein 4

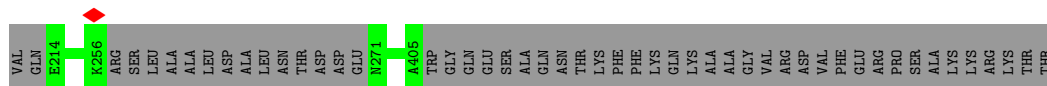
Chain X:  21% . 78%



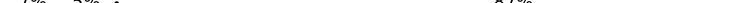
- Molecule 38: Microfibrillar-associated protein 1

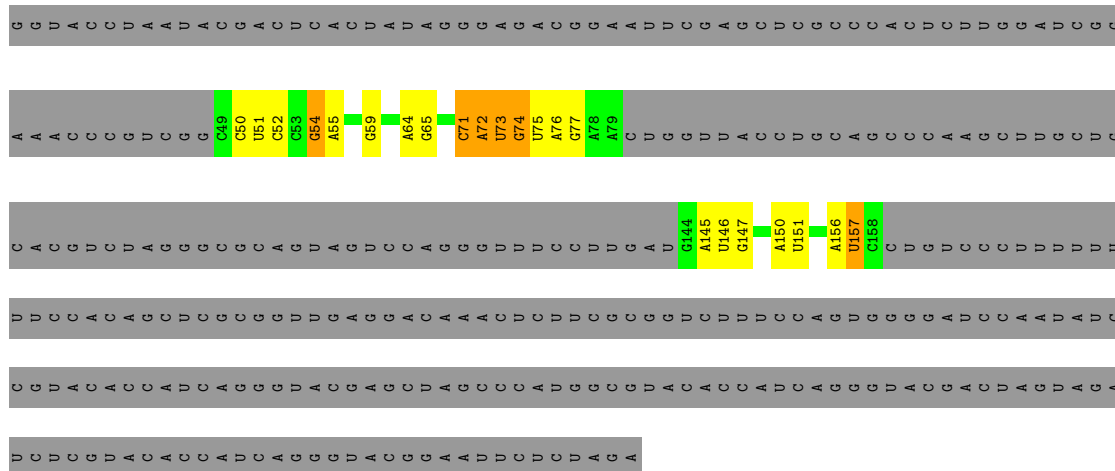
Chain K:  48% 52%





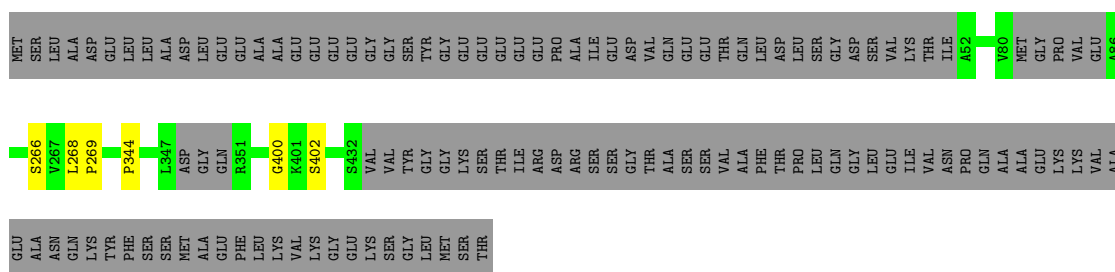
- Molecule 39: MINX pre-mRNA

Chain Z:  7% 5% • 87%

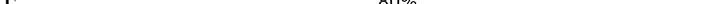


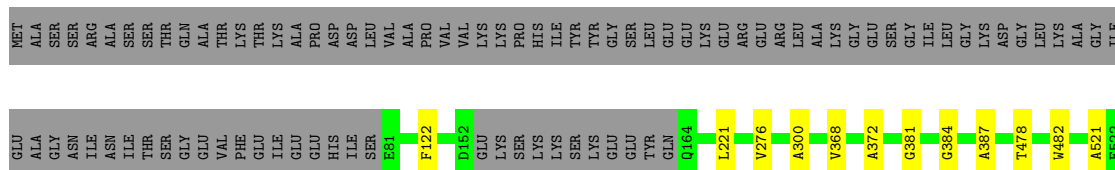
- Molecule 40: U4/U6 small nuclear ribonucleoprotein Prp31

Chain L:  74% . 25%



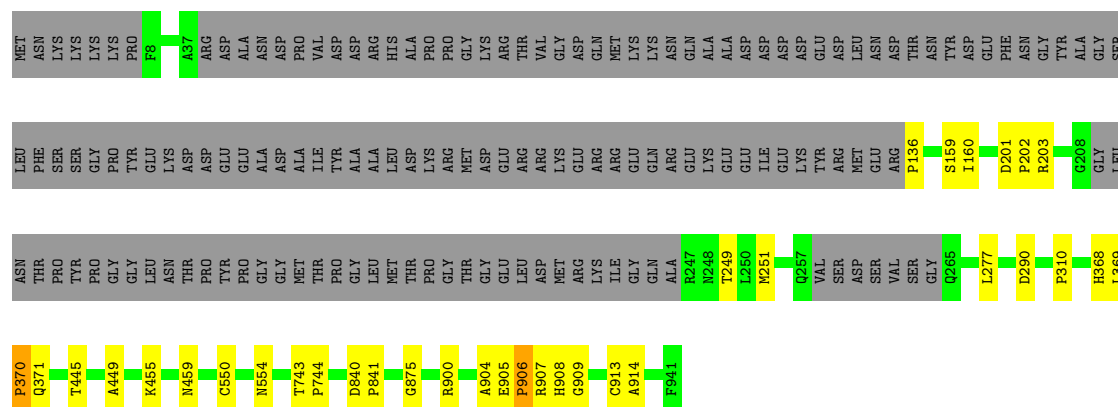
- Molecule 41: U4/U6 small nuclear ribonucleoprotein Prp4

Chain F:  80% • 17%



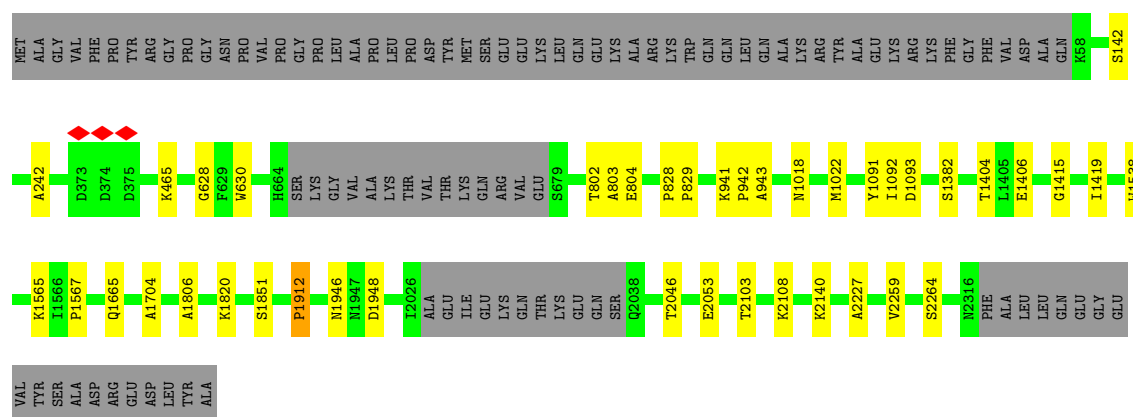
- Molecule 42: Pre-mRNA-processing factor 6

Chain N:  80% . 16%



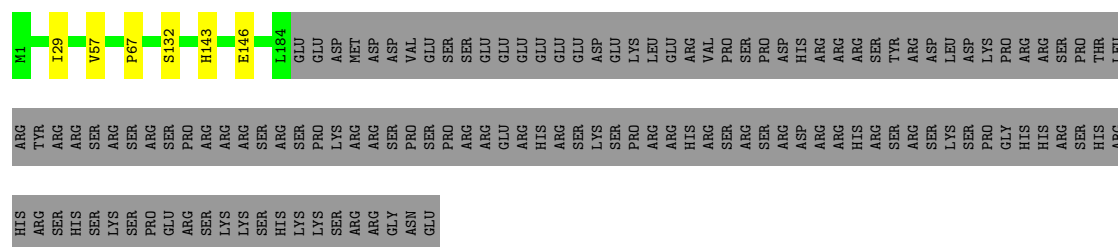
• Molecule 43: Pre-mRNA-processing-splicing factor 8

Chain A: 94%



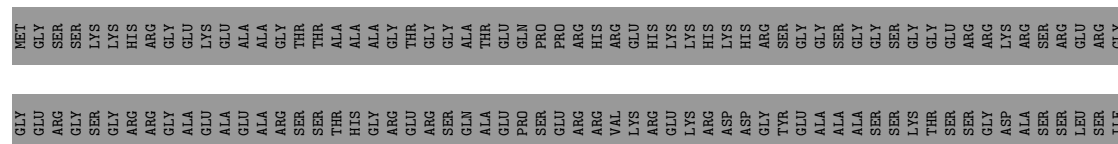
• Molecule 44: Pre-mRNA-splicing factor 38A

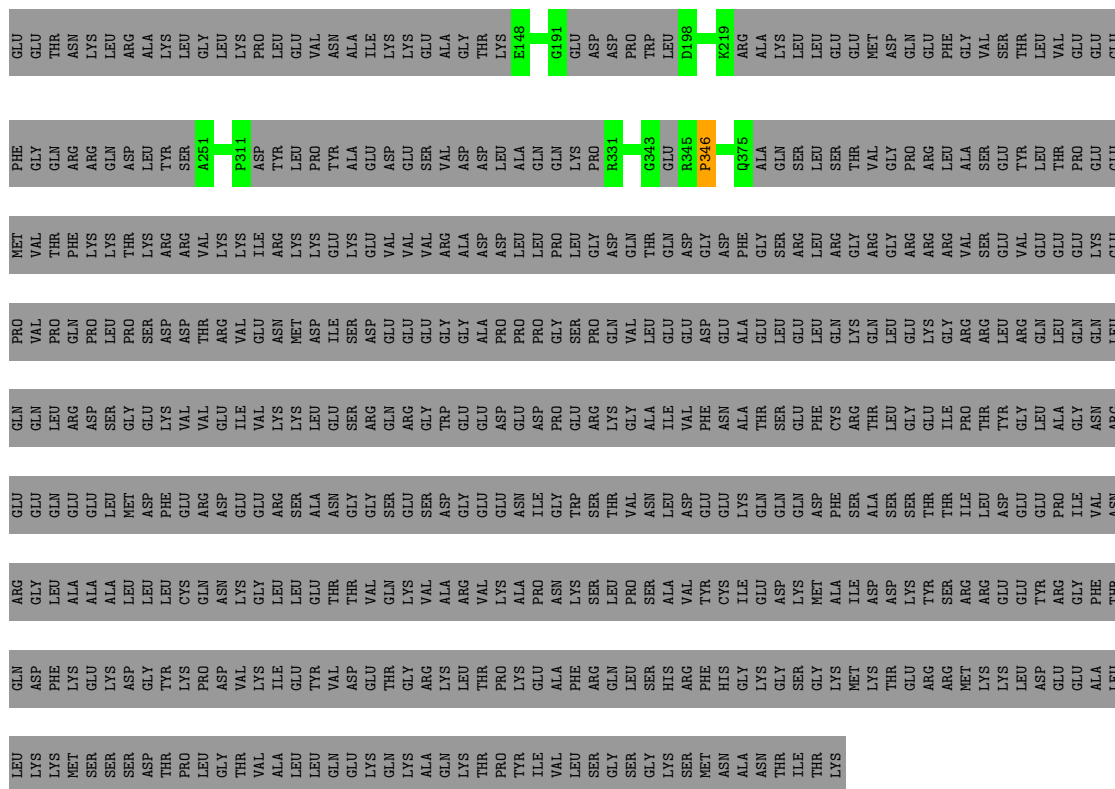
Chain I: 57% 41%



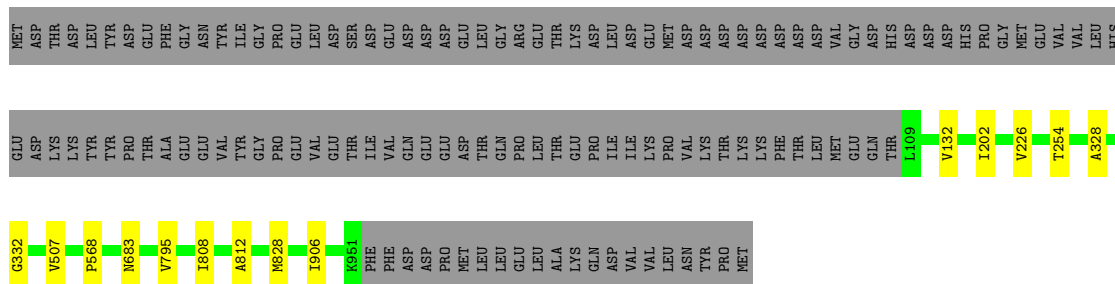
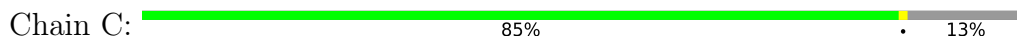
• Molecule 45: U4/U6.U5 tri-snRNP-associated protein 1

Chain S: 21% 79%





- Molecule 46: 116 kDa U5 small nuclear ribonucleoprotein component

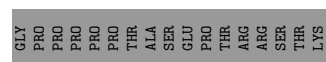


- Molecule 47: NHP2-like protein 1, N-terminally processed

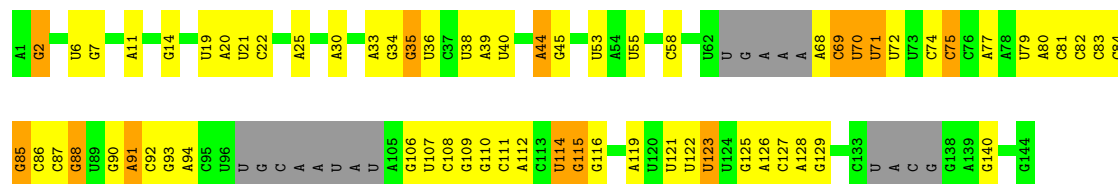


- Molecule 48: Transcription elongation regulator 1

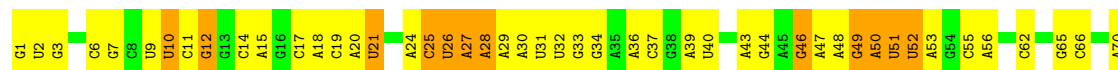




Chain 4:  42% 37% 9% 12%



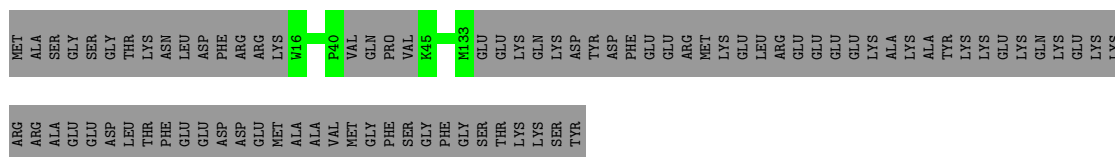
Chain 6:  35% 42% 11% 11%





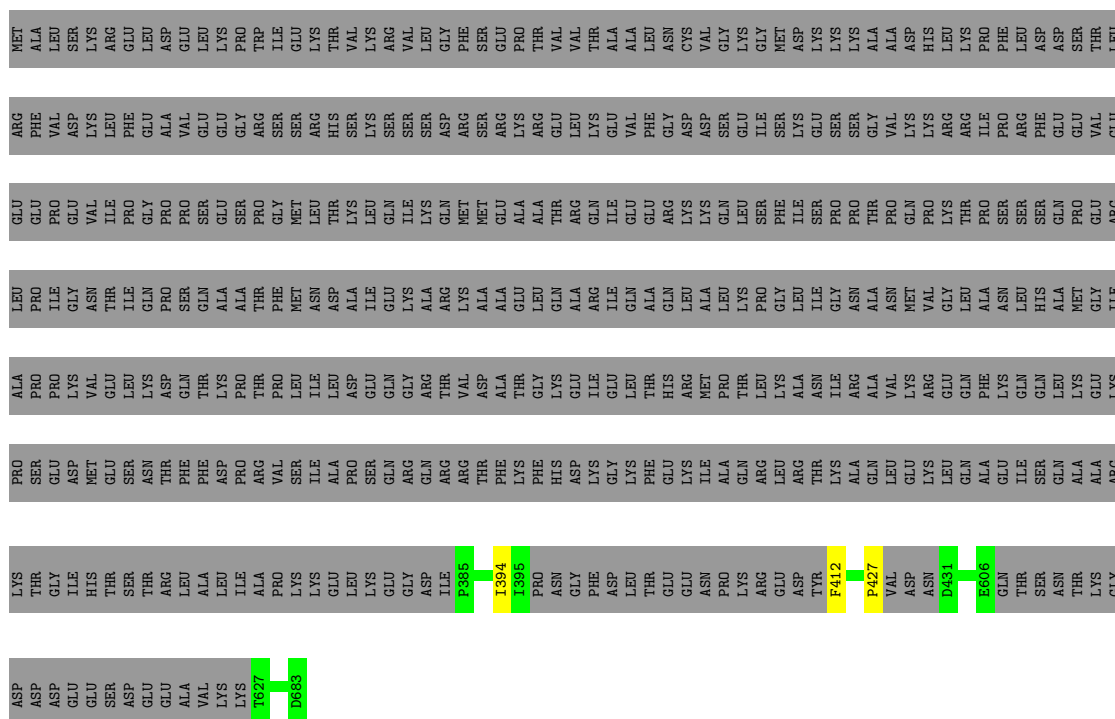
- Molecule 51: Zinc finger matrin-type protein 2

Chain r: 57% 43%



- Molecule 52: U4/U6 small nuclear ribonucleoprotein Prp3

Chain J: 38% 62%



- Molecule 53: Ubiquitin-like protein 5

Chain s: 100%

There are no outlier residues recorded for this chain.

## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 50321                                   | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | FEI TITAN KRIOS                         | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 45                                      | Depositor |
| Minimum defocus (nm)                 | 1500                                    | Depositor |
| Maximum defocus (nm)                 | 5000                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | FEI FALCON III (4k x 4k)                | Depositor |
| Maximum map value                    | 0.141                                   | Depositor |
| Minimum map value                    | -0.034                                  | Depositor |
| Average map value                    | -0.000                                  | Depositor |
| Map value standard deviation         | 0.009                                   | Depositor |
| Recommended contour level            | 0.02                                    | Depositor |
| Map size ( $\text{\AA}$ )            | 603.2, 603.2, 603.2                     | wwPDB     |
| Map dimensions                       | 260, 260, 260                           | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 2.32, 2.32, 2.32                        | Depositor |

## 5 Model quality ⓘ

### 5.1 Standard geometry ⓘ

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   | B4    | 0.13         | 0/394        | 0.34        | 0/549         |
| 2   | 8     | 0.23         | 0/515        | 0.58        | 1/721 (0.1%)  |
| 2   | G     | 0.11         | 0/219        | 0.41        | 0/304         |
| 3   | 9     | 0.14         | 0/1575       | 0.39        | 0/2201        |
| 3   | H     | 0.80         | 1/353 (0.3%) | 1.16        | 3/491 (0.6%)  |
| 4   | B2    | 0.17         | 0/1092       | 0.45        | 0/1536        |
| 5   | B5    | 0.11         | 0/349        | 0.34        | 0/487         |
| 6   | 2     | 0.12         | 0/2307       | 0.31        | 0/3582        |
| 7   | B3    | 0.14         | 0/5961       | 0.39        | 1/8335 (0.0%) |
| 8   | BP    | 0.12         | 0/501        | 0.43        | 0/697         |
| 9   | B1    | 0.16         | 0/4421       | 0.47        | 3/6190 (0.0%) |
| 10  | B6    | 0.13         | 0/459        | 0.30        | 0/642         |
| 11  | 62    | 0.14         | 0/359        | 0.41        | 0/447         |
| 12  | 63    | 0.14         | 0/294        | 0.46        | 0/364         |
| 13  | 64    | 0.12         | 0/294        | 0.42        | 0/364         |
| 14  | 65    | 0.10         | 0/286        | 0.30        | 0/354         |
| 15  | 66    | 0.12         | 0/279        | 0.28        | 0/347         |
| 16  | 67    | 0.14         | 0/258        | 0.37        | 0/319         |
| 17  | 68    | 0.11         | 0/242        | 0.39        | 0/299         |
| 18  | 2b    | 0.13         | 0/416        | 0.41        | 0/581         |
| 18  | 4b    | 0.18         | 0/416        | 0.40        | 0/581         |
| 18  | 5b    | 0.15         | 0/343        | 0.44        | 0/427         |
| 19  | 21    | 0.13         | 0/404        | 0.37        | 0/564         |
| 19  | 41    | 0.15         | 0/409        | 0.36        | 0/571         |
| 19  | 51    | 0.14         | 0/327        | 0.31        | 0/407         |
| 20  | 22    | 0.13         | 0/485        | 0.32        | 0/677         |
| 20  | 42    | 0.15         | 0/466        | 0.39        | 0/651         |
| 20  | 52    | 0.14         | 0/387        | 0.38        | 0/482         |
| 21  | 2f    | 0.13         | 0/362        | 0.32        | 0/502         |
| 21  | 4f    | 0.16         | 0/362        | 0.37        | 0/502         |
| 21  | 5f    | 0.16         | 0/295        | 0.38        | 0/367         |
| 22  | 2e    | 0.13         | 0/403        | 0.36        | 0/561         |
| 22  | 4e    | 0.14         | 0/378        | 0.43        | 0/526         |
| 22  | 5e    | 0.14         | 0/315        | 0.35        | 0/392         |

| Mol | Chain | Bond lengths |                 | Bond angles |                  |
|-----|-------|--------------|-----------------|-------------|------------------|
|     |       | RMSZ         | # Z  >5         | RMSZ        | # Z  >5          |
| 23  | 2g    | 0.12         | 0/366           | 0.35        | 0/509            |
| 23  | 4g    | 0.13         | 0/371           | 0.37        | 0/516            |
| 23  | 5g    | 0.14         | 0/295           | 0.36        | 0/367            |
| 24  | 23    | 0.12         | 0/417           | 0.33        | 0/581            |
| 24  | 43    | 0.17         | 0/417           | 0.44        | 0/581            |
| 24  | 53    | 0.15         | 0/307           | 0.32        | 0/382            |
| 25  | 2B    | 0.11         | 0/463           | 0.28        | 0/646            |
| 26  | 2A    | 0.12         | 0/821           | 0.35        | 0/1149           |
| 27  | 7     | 0.21         | 0/1034          | 0.41        | 0/1446           |
| 28  | E     | 0.15         | 0/1195          | 0.41        | 0/1492           |
| 29  | B     | 0.17         | 0/8614          | 0.38        | 0/12072          |
| 30  | x     | 0.17         | 0/196           | 0.87        | 2/270 (0.7%)     |
| 30  | y     | 0.19         | 0/186           | 0.78        | 2/256 (0.8%)     |
| 31  | v     | 0.13         | 0/2491          | 0.34        | 0/3477           |
| 31  | w     | 0.14         | 0/2486          | 0.41        | 2/3469 (0.1%)    |
| 32  | z     | 0.22         | 0/369           | 0.47        | 0/513            |
| 33  | W     | 0.22         | 0/853           | 0.45        | 0/1188           |
| 34  | 5     | 0.65         | 0/2698          | 0.44        | 0/4195           |
| 35  | Q     | 0.32         | 0/718           | 0.59        | 0/1003           |
| 36  | D     | 0.53         | 0/712           | 0.63        | 0/995            |
| 37  | X     | 0.29         | 0/409           | 0.48        | 0/572            |
| 38  | K     | 0.32         | 0/1056          | 0.53        | 0/1471           |
| 39  | Z     | 0.67         | 0/1089          | 0.57        | 0/1692           |
| 40  | L     | 0.43         | 0/1884          | 0.58        | 0/2632           |
| 41  | F     | 0.20         | 0/2170          | 0.43        | 0/3028           |
| 42  | N     | 0.34         | 4/4021 (0.1%)   | 0.56        | 5/5630 (0.1%)    |
| 43  | A     | 0.53         | 1/11156 (0.0%)  | 0.69        | 4/15500 (0.0%)   |
| 44  | I     | 0.45         | 0/931           | 0.62        | 0/1302           |
| 45  | S     | 0.52         | 3/853 (0.4%)    | 0.73        | 3/1184 (0.3%)    |
| 46  | C     | 0.41         | 0/4308          | 0.57        | 0/6037           |
| 47  | M     | 0.33         | 0/632           | 0.53        | 0/885            |
| 48  | T     | 0.47         | 2/2075 (0.1%)   | 0.96        | 7/2903 (0.2%)    |
| 49  | 4     | 0.57         | 0/3002          | 0.41        | 0/4666           |
| 50  | 6     | 0.57         | 0/2230          | 0.45        | 0/3468           |
| 51  | r     | 0.36         | 0/568           | 0.51        | 0/790            |
| 52  | J     | 0.27         | 0/1323          | 0.42        | 0/1848           |
| 53  | s     | 0.62         | 0/359           | 0.88        | 0/498            |
| All | All   | 0.35         | 11/89001 (0.0%) | 0.51        | 33/125233 (0.0%) |

All (11) bond length outliers are listed below:

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res  | Type | Atoms | Z      | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|--------|-------------|----------|
| 3   | H     | 419  | PRO  | CG-CD | -13.71 | 1.04        | 1.50     |
| 48  | T     | 988  | PRO  | N-CA  | 13.66  | 1.66        | 1.47     |
| 45  | S     | 346  | PRO  | N-CD  | 7.75   | 1.58        | 1.47     |
| 48  | T     | 988  | PRO  | N-CD  | -7.66  | 1.37        | 1.47     |
| 42  | N     | 370  | PRO  | N-CD  | 6.84   | 1.57        | 1.47     |
| 42  | N     | 368  | HIS  | C-N   | -6.82  | 1.23        | 1.33     |
| 42  | N     | 370  | PRO  | CG-CD | -6.76  | 1.27        | 1.50     |
| 45  | S     | 346  | PRO  | CB-CG | 6.60   | 1.82        | 1.49     |
| 45  | S     | 346  | PRO  | CG-CD | -6.56  | 1.28        | 1.50     |
| 42  | N     | 370  | PRO  | CB-CG | 6.27   | 1.81        | 1.49     |
| 43  | A     | 1851 | SER  | C-N   | -6.10  | 1.22        | 1.33     |

All (33) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms    | Z      | Observed(°) | Ideal(°) |
|-----|-------|------|------|----------|--------|-------------|----------|
| 48  | T     | 988  | PRO  | N-CD-CG  | -25.99 | 64.22       | 103.20   |
| 48  | T     | 988  | PRO  | CA-CB-CG | -25.38 | 56.29       | 104.50   |
| 48  | T     | 988  | PRO  | CB-CG-CD | 23.09  | 179.99      | 106.10   |
| 3   | H     | 419  | PRO  | N-CD-CG  | -16.46 | 78.51       | 103.20   |
| 45  | S     | 346  | PRO  | CA-N-CD  | -14.80 | 91.28       | 112.00   |
| 42  | N     | 370  | PRO  | CA-N-CD  | -14.61 | 91.54       | 112.00   |
| 48  | T     | 988  | PRO  | CA-N-CD  | -13.57 | 93.01       | 112.00   |
| 3   | H     | 419  | PRO  | CA-CB-CG | -13.47 | 78.90       | 104.50   |
| 45  | S     | 346  | PRO  | N-CD-CG  | -10.11 | 88.03       | 103.20   |
| 43  | A     | 1912 | PRO  | CA-N-CD  | -9.85  | 98.22       | 112.00   |
| 3   | H     | 419  | PRO  | N-CA-CB  | -9.66  | 93.11       | 103.25   |
| 42  | N     | 370  | PRO  | N-CD-CG  | -9.06  | 89.61       | 103.20   |
| 31  | w     | 176  | GLY  | CA-C-N   | 8.59   | 137.16      | 121.70   |
| 31  | w     | 176  | GLY  | C-N-CA   | 8.59   | 137.16      | 121.70   |
| 48  | T     | 988  | PRO  | N-CA-CB  | -8.12  | 95.72       | 103.51   |
| 30  | y     | 245  | ASP  | CA-C-N   | 7.66   | 135.48      | 121.70   |
| 30  | y     | 245  | ASP  | C-N-CA   | 7.66   | 135.48      | 121.70   |
| 45  | S     | 346  | PRO  | CA-CB-CG | -7.35  | 90.53       | 104.50   |
| 42  | N     | 136  | PRO  | N-CA-CB  | 7.34   | 111.07      | 103.00   |
| 30  | x     | 236  | ARG  | CA-C-N   | 7.25   | 134.76      | 121.70   |
| 30  | x     | 236  | ARG  | C-N-CA   | 7.25   | 134.76      | 121.70   |
| 9   | B1    | 1171 | PRO  | CA-N-CD  | -7.09  | 102.07      | 112.00   |
| 43  | A     | 1912 | PRO  | N-CD-CG  | -6.64  | 93.24       | 103.20   |
| 9   | B1    | 1171 | PRO  | N-CD-CG  | -6.05  | 94.12       | 103.20   |
| 42  | N     | 370  | PRO  | N-CA-CB  | -5.71  | 97.25       | 103.25   |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res  | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|----------|-------|-------------|----------|
| 7   | B3    | 45   | PRO  | CA-N-CD  | -5.56 | 104.21      | 112.00   |
| 48  | T     | 988  | PRO  | N-CA-C   | 5.40  | 120.61      | 113.86   |
| 9   | B1    | 695  | VAL  | N-CA-C   | -5.30 | 108.11      | 113.20   |
| 42  | N     | 370  | PRO  | CA-CB-CG | -5.26 | 94.51       | 104.50   |
| 43  | A     | 1538 | TRP  | CA-C-N   | 5.17  | 126.56      | 120.09   |
| 43  | A     | 1538 | TRP  | C-N-CA   | 5.17  | 126.56      | 120.09   |
| 48  | T     | 987  | ASP  | C-N-CD   | -5.08 | 104.18      | 125.00   |
| 2   | 8     | 188  | ILE  | N-CA-C   | -5.00 | 108.63      | 113.53   |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts [i](#)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | B4    | 391   | 0        | 197      | 0       | 0            |
| 2   | 8     | 510   | 0        | 255      | 1       | 0            |
| 2   | G     | 219   | 0        | 101      | 2       | 0            |
| 3   | 9     | 1569  | 0        | 721      | 2       | 0            |
| 3   | H     | 351   | 0        | 181      | 2       | 0            |
| 4   | B2    | 1072  | 0        | 563      | 1       | 0            |
| 5   | B5    | 347   | 0        | 171      | 1       | 0            |
| 6   | 2     | 2071  | 0        | 1049     | 39      | 0            |
| 7   | B3    | 5908  | 0        | 2954     | 18      | 0            |
| 8   | BP    | 498   | 0        | 241      | 3       | 0            |
| 9   | B1    | 4383  | 0        | 2195     | 5       | 0            |
| 10  | B6    | 455   | 0        | 227      | 1       | 0            |
| 11  | 62    | 360   | 0        | 95       | 0       | 0            |
| 12  | 63    | 296   | 0        | 76       | 0       | 0            |
| 13  | 64    | 296   | 0        | 77       | 0       | 0            |
| 14  | 65    | 288   | 0        | 78       | 0       | 0            |
| 15  | 66    | 280   | 0        | 81       | 0       | 0            |
| 16  | 67    | 260   | 0        | 75       | 1       | 0            |
| 17  | 68    | 244   | 0        | 71       | 0       | 0            |
| 18  | 2b    | 413   | 0        | 194      | 2       | 0            |
| 18  | 4b    | 413   | 0        | 194      | 4       | 0            |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 18  | 5b    | 344   | 0        | 93       | 1       | 0            |
| 19  | 21    | 402   | 0        | 184      | 0       | 0            |
| 19  | 41    | 407   | 0        | 183      | 1       | 0            |
| 19  | 51    | 328   | 0        | 89       | 1       | 0            |
| 20  | 22    | 482   | 0        | 220      | 3       | 0            |
| 20  | 42    | 463   | 0        | 211      | 4       | 0            |
| 20  | 52    | 388   | 0        | 102      | 0       | 0            |
| 21  | 2f    | 359   | 0        | 179      | 2       | 0            |
| 21  | 4f    | 359   | 0        | 179      | 4       | 0            |
| 21  | 5f    | 296   | 0        | 87       | 0       | 0            |
| 22  | 2e    | 403   | 0        | 173      | 4       | 0            |
| 22  | 4e    | 378   | 0        | 163      | 2       | 0            |
| 22  | 5e    | 316   | 0        | 85       | 0       | 0            |
| 23  | 2g    | 364   | 0        | 176      | 2       | 0            |
| 23  | 4g    | 369   | 0        | 178      | 2       | 0            |
| 23  | 5g    | 296   | 0        | 84       | 0       | 0            |
| 24  | 23    | 415   | 0        | 198      | 3       | 0            |
| 24  | 43    | 415   | 0        | 198      | 0       | 0            |
| 24  | 53    | 308   | 0        | 86       | 0       | 0            |
| 25  | 2B    | 461   | 0        | 218      | 2       | 0            |
| 26  | 2A    | 816   | 0        | 386      | 2       | 0            |
| 27  | 7     | 1028  | 0        | 487      | 0       | 0            |
| 28  | E     | 1196  | 0        | 337      | 0       | 0            |
| 29  | B     | 8538  | 0        | 4146     | 22      | 0            |
| 30  | x     | 197   | 0        | 90       | 0       | 0            |
| 30  | y     | 187   | 0        | 86       | 0       | 0            |
| 31  | v     | 2478  | 0        | 1181     | 9       | 0            |
| 31  | w     | 2474  | 0        | 1177     | 12      | 0            |
| 32  | z     | 368   | 0        | 175      | 2       | 0            |
| 33  | W     | 844   | 0        | 426      | 9       | 0            |
| 34  | 5     | 2420  | 0        | 1226     | 46      | 0            |
| 35  | Q     | 713   | 0        | 337      | 1       | 0            |
| 36  | D     | 708   | 0        | 328      | 2       | 0            |
| 37  | X     | 408   | 0        | 205      | 1       | 0            |
| 38  | K     | 1057  | 0        | 480      | 0       | 0            |
| 39  | Z     | 977   | 0        | 498      | 16      | 0            |
| 40  | L     | 1873  | 0        | 926      | 6       | 0            |
| 41  | F     | 2155  | 0        | 1069     | 7       | 0            |
| 42  | N     | 3990  | 0        | 2055     | 20      | 0            |
| 43  | A     | 11052 | 0        | 5148     | 22      | 0            |
| 44  | I     | 925   | 0        | 438      | 3       | 0            |
| 45  | S     | 854   | 0        | 405      | 3       | 0            |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 46  | C     | 4260  | 0        | 2118     | 7       | 0            |
| 47  | M     | 627   | 0        | 315      | 3       | 0            |
| 48  | T     | 2071  | 0        | 935      | 6       | 0            |
| 49  | 4     | 2692  | 0        | 1367     | 34      | 0            |
| 50  | 6     | 1995  | 0        | 1006     | 33      | 0            |
| 51  | r     | 568   | 0        | 245      | 0       | 0            |
| 52  | J     | 1314  | 0        | 651      | 2       | 0            |
| 53  | s     | 360   | 0        | 159      | 0       | 0            |
| All | All   | 87322 | 0        | 41284    | 352     | 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 3.

All (352) 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) |
|------------------|------------------|--------------------------|-------------------|
| 42:N:370:PRO:CG  | 42:N:370:PRO:CB  | 1.81                     | 1.46              |
| 45:S:346:PRO:CG  | 45:S:346:PRO:CB  | 1.82                     | 1.40              |
| 48:T:988:PRO:HD2 | 48:T:989:ARG:H   | 1.20                     | 1.06              |
| 48:T:988:PRO:HD2 | 48:T:989:ARG:N   | 1.84                     | 0.92              |
| 22:2e:58:LEU:O   | 22:2e:76:ARG:HA  | 1.69                     | 0.91              |
| 3:H:419:PRO:HG2  | 3:H:420:LYS:N    | 1.87                     | 0.89              |
| 24:23:48:VAL:O   | 24:23:55:VAL:HA  | 1.73                     | 0.89              |
| 39:Z:71:C:H3'    | 39:Z:72:A:H2'    | 1.53                     | 0.89              |
| 7:B3:886:GLU:HA  | 7:B3:910:ALA:O   | 1.77                     | 0.84              |
| 3:H:419:PRO:HG2  | 3:H:420:LYS:H    | 1.42                     | 0.84              |
| 7:B3:699:VAL:HA  | 7:B3:715:MET:O   | 1.78                     | 0.83              |
| 3:9:77:GLY:O     | 3:9:79:ASN:N     | 2.14                     | 0.77              |
| 42:N:875:GLY:H   | 42:N:914:ALA:HB3 | 1.51                     | 0.76              |
| 6:2:33:G:H1      | 39:Z:157:U:H3    | 1.33                     | 0.74              |
| 49:4:68:A:H4'    | 49:4:69:C:H5     | 1.53                     | 0.74              |
| 45:S:346:PRO:HD2 | 45:S:346:PRO:O   | 1.87                     | 0.73              |
| 7:B3:1101:VAL:HA | 7:B3:1121:THR:HA | 1.68                     | 0.73              |
| 46:C:683:ASN:HA  | 46:C:795:VAL:O   | 1.90                     | 0.71              |
| 32:z:177:ASN:HA  | 32:z:190:ILE:O   | 1.89                     | 0.71              |
| 49:4:109:G:H2'   | 49:4:110:G:H8    | 1.56                     | 0.70              |
| 21:4f:38:GLY:O   | 49:4:119:A:N6    | 2.25                     | 0.70              |
| 29:B:571:GLY:HA3 | 49:4:75:C:H5'    | 1.74                     | 0.69              |
| 42:N:445:THR:O   | 42:N:449:ALA:N   | 2.24                     | 0.69              |
| 7:B3:426:ALA:HB1 | 7:B3:785:PRO:HG2 | 1.73                     | 0.69              |
| 7:B3:486:SER:O   | 7:B3:491:VAL:HA  | 1.93                     | 0.69              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 46:C:507:VAL:HA  | 46:C:568:PRO:HD3  | 1.74                     | 0.69              |
| 31:w:172:GLN:O   | 31:w:176:GLY:N    | 2.22                     | 0.69              |
| 48:T:921:THR:O   | 48:T:925:LEU:N    | 2.24                     | 0.69              |
| 49:4:109:G:H2'   | 49:4:110:G:C8     | 2.27                     | 0.68              |
| 40:L:402:SER:HA  | 42:N:290:ASP:HA   | 1.75                     | 0.68              |
| 34:5:108:G:H3'   | 34:5:109:G:H8     | 1.59                     | 0.68              |
| 29:B:434:SER:HA  | 29:B:446:HIS:O    | 1.94                     | 0.68              |
| 39:Z:71:C:H42    | 50:6:34:G:H1      | 1.39                     | 0.67              |
| 34:5:74:U:H2'    | 34:5:75:G:H8      | 1.60                     | 0.67              |
| 43:A:1382:SER:HA | 43:A:1415:GLY:HA2 | 1.76                     | 0.66              |
| 33:W:96:ALA:HA   | 33:W:118:SER:HA   | 1.77                     | 0.66              |
| 49:4:20:A:H2'    | 49:4:21:U:C6      | 2.31                     | 0.66              |
| 29:B:1295:TYR:C  | 29:B:1297:PRO:HD3 | 2.21                     | 0.65              |
| 46:C:808:ILE:O   | 46:C:812:ALA:N    | 2.29                     | 0.65              |
| 34:5:75:G:H2'    | 34:5:76:A:H8      | 1.61                     | 0.65              |
| 31:v:217:VAL:HA  | 31:v:233:SER:HA   | 1.80                     | 0.64              |
| 43:A:941:LYS:O   | 43:A:943:ALA:N    | 2.31                     | 0.64              |
| 6:2:103:U:H4'    | 6:2:104:U:H5'     | 1.79                     | 0.64              |
| 6:2:43:U:O2      | 39:Z:147:G:N2     | 2.32                     | 0.63              |
| 43:A:942:PRO:HD3 | 43:A:1091:TYR:HA  | 1.80                     | 0.63              |
| 31:w:488:ILE:H   | 31:w:503:SER:HA   | 1.63                     | 0.63              |
| 48:T:988:PRO:CD  | 48:T:989:ARG:H    | 1.98                     | 0.62              |
| 31:w:217:VAL:HA  | 31:w:233:SER:HA   | 1.80                     | 0.62              |
| 34:5:86:C:H1'    | 34:5:87:A:H2      | 1.64                     | 0.62              |
| 50:6:1:G:H2'     | 50:6:2:U:C6       | 2.34                     | 0.62              |
| 6:2:34:U:H2'     | 6:2:35:A:H8       | 1.65                     | 0.62              |
| 50:6:10:U:O2'    | 50:6:12:G:N7      | 2.26                     | 0.62              |
| 6:2:3:C:H2'      | 6:2:4:G:H8        | 1.65                     | 0.61              |
| 49:4:2:G:H1      | 50:6:73:A:H2      | 1.49                     | 0.61              |
| 32:z:177:ASN:CA  | 32:z:190:ILE:O    | 2.49                     | 0.61              |
| 41:F:368:VAL:HA  | 41:F:384:GLY:HA2  | 1.82                     | 0.61              |
| 41:F:478:THR:O   | 41:F:482:TRP:N    | 2.34                     | 0.60              |
| 50:6:17:C:H2'    | 50:6:18:A:C8      | 2.36                     | 0.60              |
| 46:C:226:VAL:HA  | 46:C:254:THR:O    | 2.01                     | 0.60              |
| 6:2:182:U:H2'    | 6:2:183:G:C8      | 2.37                     | 0.59              |
| 34:5:74:U:H2'    | 34:5:75:G:C8      | 2.37                     | 0.59              |
| 34:5:23:C:N4     | 43:A:465:LYS:O    | 2.35                     | 0.59              |
| 40:L:266:SER:O   | 40:L:269:PRO:HD3  | 2.03                     | 0.59              |
| 50:6:44:G:O2'    | 50:6:46:G:OP1     | 2.21                     | 0.59              |
| 31:v:488:ILE:H   | 31:v:503:SER:HA   | 1.67                     | 0.59              |
| 6:2:175:G:H2'    | 6:2:176:G:H8      | 1.67                     | 0.59              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 42:N:455:LYS:O   | 42:N:459:ASN:N   | 2.35                     | 0.59              |
| 42:N:550:CYS:O   | 42:N:554:ASN:N   | 2.36                     | 0.59              |
| 6:2:165:A:N6     | 25:2B:86:THR:O   | 2.36                     | 0.59              |
| 6:2:161:U:O2     | 6:2:163:G:N2     | 2.36                     | 0.59              |
| 41:F:276:VAL:HA  | 41:F:300:ALA:HA  | 1.85                     | 0.58              |
| 6:2:37:U:H2'     | 6:2:38:A:H8      | 1.68                     | 0.58              |
| 33:W:65:PHE:HA   | 33:W:76:GLY:HA3  | 1.85                     | 0.58              |
| 49:4:90:G:H2'    | 49:4:91:A:C8     | 2.39                     | 0.58              |
| 6:2:3:C:H2'      | 6:2:4:G:C8       | 2.38                     | 0.58              |
| 20:42:76:GLU:O   | 20:42:89:PRO:HA  | 2.03                     | 0.58              |
| 48:T:988:PRO:CD  | 48:T:989:ARG:N   | 2.53                     | 0.58              |
| 29:B:1670:ASN:O  | 29:B:1674:HIS:N  | 2.37                     | 0.57              |
| 34:5:113:G:H2'   | 34:5:114:G:C8    | 2.40                     | 0.57              |
| 43:A:2108:LYS:N  | 43:A:2264:SER:O  | 2.37                     | 0.57              |
| 49:4:87:C:H2'    | 49:4:88:G:C8     | 2.40                     | 0.56              |
| 33:W:111:SER:HA  | 33:W:140:VAL:HA  | 1.85                     | 0.56              |
| 6:2:37:U:H2'     | 6:2:38:A:C8      | 2.40                     | 0.56              |
| 20:42:110:LEU:HA | 21:4f:62:VAL:HA  | 1.88                     | 0.56              |
| 7:B3:439:ARG:O   | 7:B3:774:PHE:HA  | 2.06                     | 0.56              |
| 2:G:56:CYS:O     | 2:G:60:LEU:N     | 2.39                     | 0.56              |
| 29:B:912:ASN:HA  | 29:B:978:ASN:HA  | 1.89                     | 0.55              |
| 29:B:559:LEU:O   | 29:B:563:GLY:N   | 2.34                     | 0.55              |
| 42:N:249:THR:HA  | 42:N:310:PRO:HB2 | 1.89                     | 0.55              |
| 50:6:32:U:H3'    | 50:6:33:G:H21    | 1.72                     | 0.55              |
| 39:Z:76:A:H2'    | 39:Z:77:G:C8     | 2.40                     | 0.55              |
| 50:6:1:G:H2'     | 50:6:2:U:H6      | 1.70                     | 0.55              |
| 34:5:20:G:H2'    | 34:5:21:A:C8     | 2.42                     | 0.54              |
| 19:51:63:ASN:N   | 34:5:92:U:O2     | 2.40                     | 0.54              |
| 31:v:362:HIS:O   | 31:v:378:MET:N   | 2.35                     | 0.54              |
| 34:5:75:G:H2'    | 34:5:76:A:C8     | 2.40                     | 0.54              |
| 34:5:111:A:H2'   | 34:5:112:A:C8    | 2.43                     | 0.54              |
| 29:B:826:VAL:O   | 29:B:867:GLY:HA2 | 2.07                     | 0.54              |
| 34:5:71:C:O2'    | 34:5:72:U:O4'    | 2.24                     | 0.54              |
| 42:N:905:GLU:O   | 42:N:907:ARG:N   | 2.41                     | 0.53              |
| 6:2:182:U:H2'    | 6:2:183:G:H8     | 1.71                     | 0.53              |
| 31:w:290:VAL:O   | 31:w:299:LEU:N   | 2.41                     | 0.53              |
| 34:5:110:C:H2'   | 34:5:111:A:C8    | 2.43                     | 0.53              |
| 34:5:115:C:H3'   | 34:5:116:U:H5''  | 1.90                     | 0.53              |
| 39:Z:71:C:H3'    | 39:Z:72:A:C2'    | 2.31                     | 0.53              |
| 43:A:1091:TYR:O  | 43:A:1092:ILE:C  | 2.52                     | 0.53              |
| 39:Z:75:U:H4'    | 39:Z:76:A:N7     | 2.25                     | 0.53              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 34:5:41:U:H2'     | 34:5:42:U:C6      | 2.43                     | 0.52              |
| 34:5:97:G:H2'     | 34:5:98:G:C8      | 2.43                     | 0.52              |
| 7:B3:603:ARG:O    | 7:B3:619:LEU:N    | 2.31                     | 0.52              |
| 50:6:89:U:H2'     | 50:6:90:G:H8      | 1.74                     | 0.52              |
| 6:2:34:U:H2'      | 6:2:35:A:C8       | 2.45                     | 0.52              |
| 37:X:13:CYS:O     | 37:X:17:LYS:N     | 2.43                     | 0.52              |
| 6:2:151:C:H2'     | 6:2:152:G:C8      | 2.45                     | 0.52              |
| 22:4e:65:HIS:O    | 22:4e:69:LYS:N    | 2.43                     | 0.51              |
| 34:5:100:C:H2'    | 34:5:101:U:H6     | 1.74                     | 0.51              |
| 18:5b:22:GLN:N    | 18:5b:76:ASN:O    | 2.41                     | 0.51              |
| 34:5:100:C:H2'    | 34:5:101:U:C6     | 2.45                     | 0.51              |
| 31:w:284:GLN:HA   | 31:w:309:GLY:HA3  | 1.93                     | 0.51              |
| 33:W:160:GLY:N    | 33:W:164:LYS:O    | 2.33                     | 0.51              |
| 39:Z:145:A:H2'    | 39:Z:146:U:C6     | 2.45                     | 0.51              |
| 49:4:93:G:H2'     | 49:4:94:A:H8      | 1.75                     | 0.51              |
| 52:J:394:ILE:O    | 52:J:412:PHE:N    | 2.43                     | 0.51              |
| 7:B3:796:ASN:HA   | 7:B3:871:PRO:HD3  | 1.92                     | 0.51              |
| 46:C:828:MET:HA   | 46:C:906:ILE:HA   | 1.92                     | 0.51              |
| 50:6:70:A:H2'     | 50:6:71:G:O4'     | 2.09                     | 0.51              |
| 6:2:166:G:N2      | 6:2:166:G:OP2     | 2.44                     | 0.51              |
| 34:5:73:C:H2'     | 34:5:74:U:H6      | 1.74                     | 0.51              |
| 21:2f:72:ILE:O    | 22:2e:78:MET:N    | 2.42                     | 0.51              |
| 34:5:42:U:H2'     | 34:5:43:U:O4'     | 2.10                     | 0.51              |
| 43:A:1091:TYR:O   | 43:A:1093:ASP:N   | 2.44                     | 0.51              |
| 6:2:180:G:H2'     | 6:2:181:G:H8      | 1.75                     | 0.51              |
| 31:w:241:TRP:HA   | 31:w:249:ARG:H    | 1.76                     | 0.51              |
| 43:A:142:SER:HA   | 43:A:242:ALA:HB2  | 1.92                     | 0.50              |
| 20:22:23:GLU:O    | 20:22:27:GLY:N    | 2.44                     | 0.50              |
| 42:N:906:PRO:C    | 42:N:908:HIS:H    | 2.20                     | 0.50              |
| 50:6:2:U:H2'      | 50:6:3:G:C8       | 2.47                     | 0.50              |
| 29:B:1964:PRO:HG2 | 29:B:2007:VAL:HA  | 1.94                     | 0.50              |
| 6:2:151:C:H2'     | 6:2:152:G:H8      | 1.76                     | 0.50              |
| 29:B:1522:PRO:HD2 | 29:B:1698:ASP:O   | 2.11                     | 0.50              |
| 43:A:1565:LYS:O   | 43:A:1567:PRO:HD3 | 2.11                     | 0.50              |
| 43:A:1665:GLN:O   | 43:A:1704:ALA:HA  | 2.12                     | 0.50              |
| 50:6:49:G:C2      | 50:6:50:A:H1'     | 2.46                     | 0.50              |
| 40:L:266:SER:C    | 40:L:268:LEU:H    | 2.19                     | 0.50              |
| 34:5:112:A:H2'    | 34:5:113:G:H8     | 1.77                     | 0.49              |
| 39:Z:73:U:H2'     | 39:Z:74:G:H5'     | 1.94                     | 0.49              |
| 49:4:6:U:H2'      | 49:4:7:G:C8       | 2.47                     | 0.49              |
| 50:6:9:U:H2'      | 50:6:10:U:C6      | 2.47                     | 0.49              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 50:6:49:G:N2     | 50:6:51:U:O4'    | 2.45                     | 0.49              |
| 29:B:468:PRO:HD2 | 29:B:471:ALA:HB3 | 1.94                     | 0.49              |
| 42:N:909:GLY:O   | 42:N:913:CYS:N   | 2.44                     | 0.49              |
| 43:A:1404:THR:C  | 43:A:1406:GLU:H  | 2.19                     | 0.49              |
| 6:2:62:U:H2'     | 6:2:63:G:C8      | 2.47                     | 0.49              |
| 7:B3:785:PRO:HA  | 7:B3:801:GLU:HA  | 1.95                     | 0.49              |
| 29:B:573:HIS:O   | 49:4:77:A:N6     | 2.46                     | 0.49              |
| 42:N:840:ASP:N   | 42:N:841:PRO:HD3 | 2.28                     | 0.49              |
| 6:2:32:U:H2'     | 6:2:33:G:H8      | 1.77                     | 0.49              |
| 7:B3:83:ASP:O    | 7:B3:111:GLY:N   | 2.46                     | 0.49              |
| 39:Z:72:A:H4'    | 39:Z:73:U:O5'    | 2.13                     | 0.49              |
| 31:v:241:TRP:HA  | 31:v:249:ARG:H   | 1.76                     | 0.48              |
| 34:5:73:C:H2'    | 34:5:74:U:C6     | 2.48                     | 0.48              |
| 23:4g:46:VAL:HA  | 23:4g:56:ASN:HA  | 1.95                     | 0.48              |
| 34:5:102:U:H2'   | 34:5:103:G:C8    | 2.48                     | 0.48              |
| 20:42:109:VAL:O  | 21:4f:63:LEU:N   | 2.32                     | 0.48              |
| 6:2:62:U:H2'     | 6:2:63:G:H8      | 1.79                     | 0.48              |
| 18:4b:28:ILE:O   | 18:4b:45:CYS:HA  | 2.13                     | 0.48              |
| 50:6:14:C:H2'    | 50:6:15:A:H8     | 1.78                     | 0.48              |
| 33:W:107:PRO:HG3 | 33:W:129:SER:HA  | 1.94                     | 0.48              |
| 41:F:387:ALA:HB3 | 52:J:427:PRO:HD2 | 1.95                     | 0.48              |
| 44:I:57:VAL:O    | 44:I:132:SER:HA  | 2.14                     | 0.48              |
| 6:2:165:A:H2'    | 6:2:166:G:C4     | 2.48                     | 0.48              |
| 49:4:92:C:C2     | 49:4:93:G:C8     | 3.01                     | 0.48              |
| 42:N:743:THR:N   | 42:N:744:PRO:HD3 | 2.28                     | 0.48              |
| 49:4:127:C:H2'   | 49:4:128:A:C8    | 2.49                     | 0.48              |
| 33:W:16:ASP:HA   | 33:W:26:ARG:HA   | 1.96                     | 0.47              |
| 21:4f:30:LYS:O   | 21:4f:47:THR:HA  | 2.14                     | 0.47              |
| 34:5:98:G:H2'    | 34:5:99:C:C6     | 2.49                     | 0.47              |
| 18:4b:37:HIS:HA  | 49:4:123:U:H5    | 1.79                     | 0.47              |
| 45:S:346:PRO:O   | 45:S:346:PRO:CD  | 2.57                     | 0.47              |
| 7:B3:1007:GLU:O  | 7:B3:1031:ARG:N  | 2.48                     | 0.47              |
| 50:6:14:C:H2'    | 50:6:15:A:C8     | 2.48                     | 0.47              |
| 34:5:23:C:O2     | 34:5:23:C:O2'    | 2.31                     | 0.47              |
| 29:B:786:HIS:HA  | 29:B:812:THR:H   | 1.79                     | 0.47              |
| 34:5:74:U:C2     | 34:5:75:G:C8     | 3.03                     | 0.47              |
| 34:5:107:U:H2'   | 34:5:108:G:O4'   | 2.15                     | 0.47              |
| 6:2:46:U:H1'     | 6:2:47:U:OP2     | 2.14                     | 0.47              |
| 33:W:47:CYS:O    | 41:F:122:PHE:HA  | 2.14                     | 0.47              |
| 34:5:112:A:H2'   | 34:5:113:G:C8    | 2.49                     | 0.47              |
| 31:v:290:VAL:O   | 31:v:299:LEU:N   | 2.46                     | 0.47              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 7:B3:17:ALA:HB3  | 7:B3:338:ALA:HB3  | 1.97                     | 0.47              |
| 50:6:26:U:H5'    | 50:6:27:A:C8      | 2.50                     | 0.47              |
| 6:2:46:U:H4'     | 6:2:47:U:O5'      | 2.15                     | 0.46              |
| 33:W:64:THR:HA   | 33:W:170:VAL:HA   | 1.97                     | 0.46              |
| 50:6:26:U:OP1    | 50:6:27:A:H2'     | 2.15                     | 0.46              |
| 50:6:55:C:H2'    | 50:6:56:A:O4'     | 2.15                     | 0.46              |
| 22:2e:32:GLN:N   | 22:2e:88:GLN:O    | 2.41                     | 0.46              |
| 29:B:626:PRO:HG3 | 29:B:893:MET:HA   | 1.97                     | 0.46              |
| 49:4:30:A:N6     | 49:4:44:A:H2'     | 2.30                     | 0.46              |
| 49:4:115:G:H2'   | 49:4:116:G:C8     | 2.51                     | 0.46              |
| 49:4:68:A:H4'    | 49:4:69:C:C5      | 2.41                     | 0.46              |
| 33:W:13:VAL:N    | 33:W:29:ILE:O     | 2.47                     | 0.46              |
| 34:5:61:A:H2'    | 34:5:62:G:H8      | 1.80                     | 0.46              |
| 49:4:111:C:C2    | 49:4:112:A:C8     | 3.04                     | 0.46              |
| 31:v:334:HIS:HA  | 31:v:341:THR:HA   | 1.97                     | 0.46              |
| 49:4:2:G:O6      | 50:6:73:A:N1      | 2.48                     | 0.46              |
| 49:4:33:A:H2'    | 49:4:34:G:O4'     | 2.16                     | 0.46              |
| 24:23:23:ASN:N   | 24:23:67:LYS:O    | 2.49                     | 0.46              |
| 18:4b:14:ASP:N   | 18:4b:31:PHE:O    | 2.44                     | 0.46              |
| 42:N:249:THR:HA  | 42:N:310:PRO:CB   | 2.46                     | 0.46              |
| 47:M:67:LEU:O    | 47:M:70:PRO:HD2   | 2.16                     | 0.46              |
| 36:D:91:MET:O    | 36:D:129:LEU:HA   | 2.16                     | 0.46              |
| 49:4:108:C:H2'   | 49:4:109:G:C8     | 2.50                     | 0.46              |
| 34:5:108:G:H3'   | 34:5:109:G:C8     | 2.46                     | 0.45              |
| 49:4:93:G:H2'    | 49:4:94:A:C8      | 2.51                     | 0.45              |
| 50:6:52:U:O2     | 50:6:52:U:H2'     | 2.17                     | 0.45              |
| 6:2:9:U:H2'      | 6:2:10:C:C6       | 2.52                     | 0.45              |
| 7:B3:428:GLY:HA3 | 7:B3:433:SER:HA   | 1.98                     | 0.45              |
| 31:w:362:HIS:O   | 31:w:378:MET:N    | 2.47                     | 0.45              |
| 43:A:2046:THR:O  | 43:A:2053:GLU:HA  | 2.16                     | 0.45              |
| 42:N:201:ASP:O   | 42:N:203:ARG:N    | 2.41                     | 0.45              |
| 43:A:2227:ALA:O  | 43:A:2259:VAL:N   | 2.48                     | 0.45              |
| 34:5:66:A:H2'    | 34:5:67:A:O4'     | 2.17                     | 0.45              |
| 43:A:802:THR:O   | 43:A:804:GLU:N    | 2.50                     | 0.45              |
| 43:A:1404:THR:O  | 43:A:1406:GLU:N   | 2.49                     | 0.45              |
| 18:2b:37:HIS:O   | 18:2b:74:GLY:HA3  | 2.17                     | 0.45              |
| 29:B:690:VAL:O   | 29:B:870:ILE:HA   | 2.17                     | 0.45              |
| 29:B:1670:ASN:O  | 29:B:1674:HIS:CA  | 2.65                     | 0.45              |
| 9:B1:1010:THR:O  | 9:B1:1012:PRO:HD3 | 2.17                     | 0.45              |
| 19:41:46:THR:HA  | 19:41:52:PRO:HA   | 1.98                     | 0.45              |
| 42:N:251:MET:HA  | 42:N:277:LEU:HA   | 1.99                     | 0.45              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:2:150:U:H2'    | 6:2:151:C:C6      | 2.52                     | 0.45              |
| 42:N:905:GLU:O   | 42:N:908:HIS:N    | 2.50                     | 0.45              |
| 49:4:114:U:H4'   | 49:4:115:G:OP1    | 2.17                     | 0.45              |
| 31:w:216:HIS:O   | 31:w:234:VAL:N    | 2.39                     | 0.44              |
| 34:5:115:C:H3'   | 34:5:116:U:C5'    | 2.47                     | 0.44              |
| 43:A:828:PRO:HA  | 43:A:829:PRO:HD3  | 1.87                     | 0.44              |
| 49:4:109:G:C2    | 49:4:110:G:C5     | 3.05                     | 0.44              |
| 50:6:24:A:H2'    | 50:6:26:U:H1'     | 1.99                     | 0.44              |
| 50:6:75:G:H2'    | 50:6:76:A:C8      | 2.53                     | 0.44              |
| 29:B:1542:MET:C  | 29:B:1545:PRO:HD2 | 2.42                     | 0.44              |
| 39:Z:75:U:H5'    | 50:6:30:A:H61     | 1.82                     | 0.44              |
| 6:2:36:G:H2'     | 6:2:37:U:C6       | 2.52                     | 0.44              |
| 22:4e:15:VAL:O   | 23:4g:33:GLY:HA3  | 2.17                     | 0.44              |
| 50:6:28:A:H2'    | 50:6:29:A:O4'     | 2.18                     | 0.44              |
| 34:5:8:G:N3      | 34:5:72:U:H5      | 2.16                     | 0.44              |
| 43:A:2103:THR:O  | 43:A:2140:LYS:N   | 2.37                     | 0.44              |
| 34:5:13:C:H2'    | 34:5:14:U:H6      | 1.83                     | 0.44              |
| 34:5:61:A:H2'    | 34:5:62:G:C8      | 2.53                     | 0.44              |
| 7:B3:147:ASP:O   | 7:B3:150:ALA:N    | 2.51                     | 0.44              |
| 29:B:1295:TYR:O  | 29:B:1297:PRO:HD3 | 2.16                     | 0.44              |
| 48:T:699:PRO:HB2 | 48:T:700:LYS:H    | 1.61                     | 0.44              |
| 16:67:53:GLU:N   | 16:67:69:ARG:O    | 2.44                     | 0.44              |
| 44:I:29:ILE:HA   | 44:I:67:PRO:HG3   | 1.99                     | 0.44              |
| 46:C:328:ALA:O   | 46:C:332:GLY:N    | 2.43                     | 0.44              |
| 50:6:3:G:N1      | 50:6:18:A:C6      | 2.85                     | 0.44              |
| 18:4b:42:LEU:O   | 18:4b:69:LEU:HA   | 2.18                     | 0.43              |
| 34:5:87:A:C5     | 34:5:94:U:H5      | 2.36                     | 0.43              |
| 39:Z:64:A:H2'    | 39:Z:65:G:O4'     | 2.18                     | 0.43              |
| 46:C:132:VAL:O   | 46:C:202:ILE:HA   | 2.18                     | 0.43              |
| 49:4:127:C:H2'   | 49:4:128:A:H8     | 1.82                     | 0.43              |
| 7:B3:157:PRO:HD2 | 8:BP:16:GLY:HA2   | 2.00                     | 0.43              |
| 20:22:30:SER:O   | 20:22:34:GLN:N    | 2.40                     | 0.43              |
| 25:2B:45:THR:O   | 25:2B:49:ARG:N    | 2.51                     | 0.43              |
| 34:5:58:U:H2'    | 34:5:59:G:C8      | 2.53                     | 0.43              |
| 31:v:172:GLN:O   | 31:v:176:GLY:N    | 2.52                     | 0.43              |
| 31:v:209:ILE:HA  | 31:v:511:TRP:HA   | 2.00                     | 0.43              |
| 41:F:372:ALA:O   | 41:F:381:GLY:N    | 2.35                     | 0.43              |
| 26:2A:64:ARG:HA  | 26:2A:88:PRO:HD2  | 2.01                     | 0.43              |
| 31:w:236:GLY:HA3 | 31:w:256:ALA:HB2  | 2.00                     | 0.43              |
| 34:5:116:U:OP1   | 34:5:116:U:H4'    | 2.18                     | 0.43              |
| 6:2:39:U:O2'     | 2:G:62:LEU:O      | 2.32                     | 0.43              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 6:2:165:A:H2'     | 6:2:166:G:N3     | 2.33                     | 0.43              |
| 43:A:628:GLY:O    | 43:A:630:TRP:N   | 2.52                     | 0.43              |
| 43:A:1806:ALA:HA  | 43:A:1820:LYS:O  | 2.18                     | 0.43              |
| 6:2:156:U:H2'     | 6:2:157:G:C8     | 2.53                     | 0.43              |
| 6:2:168:A:H2'     | 6:2:168:A:N3     | 2.34                     | 0.43              |
| 18:2b:71:LEU:O    | 24:23:71:LEU:N   | 2.50                     | 0.43              |
| 50:6:89:U:H2'     | 50:6:90:G:C8     | 2.54                     | 0.43              |
| 43:A:1946:ASN:C   | 43:A:1948:ASP:H  | 2.26                     | 0.42              |
| 49:4:108:C:H2'    | 49:4:109:G:H8    | 1.84                     | 0.42              |
| 42:N:159:SER:O    | 42:N:160:ILE:C   | 2.61                     | 0.42              |
| 47:M:56:MET:O     | 47:M:82:PHE:HA   | 2.20                     | 0.42              |
| 6:2:173:C:H2'     | 6:2:174:A:C8     | 2.54                     | 0.42              |
| 40:L:266:SER:C    | 40:L:268:LEU:N   | 2.76                     | 0.42              |
| 50:6:43:A:H2'     | 50:6:44:G:O4'    | 2.19                     | 0.42              |
| 29:B:823:ALA:O    | 29:B:857:GLY:N   | 2.40                     | 0.42              |
| 34:5:14:U:H2'     | 34:5:15:C:H6     | 1.84                     | 0.42              |
| 39:Z:150:A:H2'    | 39:Z:151:U:C6    | 2.55                     | 0.42              |
| 42:N:900:ARG:O    | 42:N:904:ALA:HB2 | 2.19                     | 0.42              |
| 23:2g:6:PRO:HA    | 23:2g:36:PRO:HA  | 2.01                     | 0.42              |
| 7:B3:1006:GLN:O   | 7:B3:1032:TRP:N  | 2.45                     | 0.42              |
| 6:2:156:U:OP1     | 26:2A:151:LYS:HA | 2.20                     | 0.42              |
| 31:w:424:ILE:O    | 31:w:432:VAL:N   | 2.52                     | 0.42              |
| 41:F:221:LEU:HA   | 41:F:521:ALA:HA  | 2.02                     | 0.42              |
| 49:4:128:A:H2'    | 49:4:129:G:C8    | 2.55                     | 0.42              |
| 50:6:20:A:C8      | 50:6:21:U:H5     | 2.38                     | 0.42              |
| 43:A:1018:ASN:HA  | 43:A:1022:MET:O  | 2.19                     | 0.42              |
| 8:BP:23:CYS:HA    | 8:BP:65:GLY:HA2  | 2.02                     | 0.41              |
| 9:B1:1130:PRO:O   | 9:B1:1134:ASN:N  | 2.53                     | 0.41              |
| 34:5:26:A:H2'     | 34:5:27:U:O4'    | 2.20                     | 0.41              |
| 47:M:67:LEU:C     | 47:M:70:PRO:HD2  | 2.45                     | 0.41              |
| 5:B5:78:PRO:HA    | 5:B5:79:PRO:HD3  | 1.93                     | 0.41              |
| 6:2:43:U:H2'      | 6:2:44:U:C6      | 2.55                     | 0.41              |
| 29:B:1522:PRO:HB3 | 31:w:307:SER:O   | 2.21                     | 0.41              |
| 34:5:12:U:H2'     | 34:5:13:C:C6     | 2.55                     | 0.41              |
| 44:I:143:HIS:O    | 44:I:146:GLU:N   | 2.52                     | 0.41              |
| 40:L:400:GLY:O    | 40:L:402:SER:N   | 2.54                     | 0.41              |
| 49:4:85:G:H2'     | 49:4:86:C:H6     | 1.85                     | 0.41              |
| 7:B3:117:PRO:HA   | 7:B3:134:ALA:HB2 | 2.01                     | 0.41              |
| 9:B1:509:PRO:HB2  | 9:B1:510:PRO:HD3 | 2.03                     | 0.41              |
| 34:5:9:G:O2'      | 34:5:10:U:O4'    | 2.38                     | 0.41              |
| 34:5:13:C:H2'     | 34:5:14:U:C6     | 2.55                     | 0.41              |

*Continued on next page...*

*Continued from previous page...*

| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:2:9:U:H2'      | 6:2:10:C:H6       | 1.86                     | 0.41              |
| 6:2:36:G:H2'     | 6:2:37:U:H6       | 1.86                     | 0.41              |
| 8:BP:28:GLY:O    | 8:BP:36:TYR:HA    | 2.20                     | 0.41              |
| 31:w:468:CYS:O   | 31:w:477:GLU:N    | 2.53                     | 0.41              |
| 49:4:106:G:H2'   | 49:4:107:U:C6     | 2.56                     | 0.41              |
| 50:6:18:A:H2'    | 50:6:19:C:C6      | 2.55                     | 0.41              |
| 50:6:65:G:H2'    | 50:6:66:C:C6      | 2.55                     | 0.41              |
| 4:B2:628:VAL:N   | 4:B2:629:PRO:HD2  | 2.36                     | 0.41              |
| 6:2:51:A:N6      | 6:2:63:G:O6       | 2.54                     | 0.41              |
| 9:B1:717:THR:HA  | 9:B1:718:PRO:HA   | 1.92                     | 0.41              |
| 40:L:266:SER:O   | 40:L:268:LEU:N    | 2.54                     | 0.41              |
| 29:B:1030:ARG:CB | 49:4:70:U:H3      | 2.34                     | 0.41              |
| 39:Z:71:C:N4     | 50:6:34:G:H1      | 2.12                     | 0.41              |
| 39:Z:150:A:H2'   | 39:Z:151:U:H6     | 1.85                     | 0.41              |
| 6:2:44:U:H2'     | 6:2:45:C:C5       | 2.56                     | 0.41              |
| 29:B:1030:ARG:O  | 29:B:1034:LYS:N   | 2.43                     | 0.41              |
| 34:5:44:A:H2     | 39:Z:54:G:O6      | 2.03                     | 0.41              |
| 36:D:141:ARG:O   | 36:D:142:TYR:C    | 2.64                     | 0.41              |
| 20:22:62:HIS:O   | 20:22:103:GLY:HA3 | 2.21                     | 0.40              |
| 20:42:62:HIS:O   | 20:42:103:GLY:HA3 | 2.21                     | 0.40              |
| 49:4:111:C:H2'   | 49:4:112:A:H8     | 1.86                     | 0.40              |
| 50:6:25:C:H4'    | 50:6:26:U:H4'     | 2.02                     | 0.40              |
| 9:B1:1070:LYS:C  | 9:B1:1072:ALA:H   | 2.28                     | 0.40              |
| 21:2f:73:ARG:HA  | 22:2e:77:ILE:HA   | 2.04                     | 0.40              |
| 2:8:115:PRO:HD2  | 2:8:176:TYR:HA    | 2.03                     | 0.40              |
| 7:B3:214:ASP:O   | 7:B3:218:ASN:N    | 2.55                     | 0.40              |
| 34:5:73:C:C2     | 34:5:74:U:C5      | 3.09                     | 0.40              |
| 35:Q:121:VAL:HA  | 35:Q:122:PRO:HD3  | 1.97                     | 0.40              |
| 49:4:71:U:H2'    | 49:4:72:U:C6      | 2.56                     | 0.40              |
| 3:9:77:GLY:C     | 3:9:79:ASN:N      | 2.80                     | 0.40              |
| 6:2:32:U:H2'     | 6:2:33:G:C8       | 2.56                     | 0.40              |
| 23:2g:6:PRO:HA   | 23:2g:7:PRO:HD3   | 1.99                     | 0.40              |
| 42:N:369:LEU:O   | 42:N:371:GLN:N    | 2.53                     | 0.40              |
| 43:A:1404:THR:C  | 43:A:1406:GLU:N   | 2.80                     | 0.40              |
| 49:4:34:G:H2'    | 49:4:35:G:O4'     | 2.22                     | 0.40              |
| 10:B6:46:ARG:H   | 10:B6:64:TYR:HA   | 1.86                     | 0.40              |
| 29:B:1670:ASN:O  | 29:B:1674:HIS:HA  | 2.21                     | 0.40              |
| 31:v:284:GLN:HA  | 31:v:309:GLY:HA3  | 2.03                     | 0.40              |
| 34:5:8:G:N2      | 34:5:71:C:H2'     | 2.36                     | 0.40              |
| 42:N:201:ASP:HA  | 42:N:202:PRO:HD3  | 1.93                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

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   | B4    | 76/424 (18%)    | 76 (100%)  | 0       | 0        | 100         | 100 |
| 2   | 8     | 96/464 (21%)    | 91 (95%)   | 5 (5%)  | 0        | 100         | 100 |
| 2   | G     | 42/464 (9%)     | 42 (100%)  | 0       | 0        | 100         | 100 |
| 3   | 9     | 309/501 (62%)   | 302 (98%)  | 6 (2%)  | 1 (0%)   | 37          | 72  |
| 3   | H     | 68/501 (14%)    | 67 (98%)   | 1 (2%)  | 0        | 100         | 100 |
| 4   | B2    | 204/895 (23%)   | 194 (95%)  | 10 (5%) | 0        | 100         | 100 |
| 5   | B5    | 67/86 (78%)     | 65 (97%)   | 2 (3%)  | 0        | 100         | 100 |
| 7   | B3    | 1162/1217 (96%) | 1117 (96%) | 45 (4%) | 0        | 100         | 100 |
| 8   | BP    | 98/110 (89%)    | 94 (96%)   | 4 (4%)  | 0        | 100         | 100 |
| 9   | B1    | 866/1304 (66%)  | 834 (96%)  | 32 (4%) | 0        | 100         | 100 |
| 10  | B6    | 88/125 (70%)    | 86 (98%)   | 2 (2%)  | 0        | 100         | 100 |
| 11  | 62    | 88/95 (93%)     | 86 (98%)   | 1 (1%)  | 1 (1%)   | 12          | 46  |
| 12  | 63    | 70/102 (69%)    | 65 (93%)   | 5 (7%)  | 0        | 100         | 100 |
| 13  | 64    | 70/139 (50%)    | 68 (97%)   | 2 (3%)  | 0        | 100         | 100 |
| 14  | 65    | 68/91 (75%)     | 63 (93%)   | 3 (4%)  | 2 (3%)   | 3           | 23  |
| 15  | 66    | 68/80 (85%)     | 64 (94%)   | 2 (3%)  | 2 (3%)   | 3           | 23  |
| 16  | 67    | 61/103 (59%)    | 58 (95%)   | 3 (5%)  | 0        | 100         | 100 |
| 17  | 68    | 57/96 (59%)     | 55 (96%)   | 1 (2%)  | 1 (2%)   | 7           | 33  |
| 18  | 2b    | 80/240 (33%)    | 76 (95%)   | 4 (5%)  | 0        | 100         | 100 |
| 18  | 4b    | 80/240 (33%)    | 77 (96%)   | 3 (4%)  | 0        | 100         | 100 |
| 18  | 5b    | 84/240 (35%)    | 80 (95%)   | 4 (5%)  | 0        | 100         | 100 |
| 19  | 21    | 78/119 (66%)    | 77 (99%)   | 1 (1%)  | 0        | 100         | 100 |
| 19  | 41    | 79/119 (66%)    | 76 (96%)   | 3 (4%)  | 0        | 100         | 100 |
| 19  | 51    | 80/119 (67%)    | 75 (94%)   | 5 (6%)  | 0        | 100         | 100 |
| 20  | 22    | 91/118 (77%)    | 89 (98%)   | 2 (2%)  | 0        | 100         | 100 |

Continued on next page...

*Continued from previous page...*

| Mol | Chain | Analysed        | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 20  | 42    | 90/118 (76%)    | 88 (98%)   | 2 (2%)   | 0        | 100         | 100 |
| 20  | 52    | 95/118 (80%)    | 91 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 21  | 2f    | 70/86 (81%)     | 70 (100%)  | 0        | 0        | 100         | 100 |
| 21  | 4f    | 70/86 (81%)     | 68 (97%)   | 2 (3%)   | 0        | 100         | 100 |
| 21  | 5f    | 72/86 (84%)     | 68 (94%)   | 4 (6%)   | 0        | 100         | 100 |
| 22  | 2e    | 79/92 (86%)     | 78 (99%)   | 1 (1%)   | 0        | 100         | 100 |
| 22  | 4e    | 74/92 (80%)     | 72 (97%)   | 2 (3%)   | 0        | 100         | 100 |
| 22  | 5e    | 77/92 (84%)     | 74 (96%)   | 3 (4%)   | 0        | 100         | 100 |
| 23  | 2g    | 71/76 (93%)     | 70 (99%)   | 1 (1%)   | 0        | 100         | 100 |
| 23  | 4g    | 72/76 (95%)     | 69 (96%)   | 3 (4%)   | 0        | 100         | 100 |
| 23  | 5g    | 72/76 (95%)     | 71 (99%)   | 1 (1%)   | 0        | 100         | 100 |
| 24  | 23    | 81/126 (64%)    | 79 (98%)   | 2 (2%)   | 0        | 100         | 100 |
| 24  | 43    | 81/126 (64%)    | 78 (96%)   | 3 (4%)   | 0        | 100         | 100 |
| 24  | 53    | 75/126 (60%)    | 73 (97%)   | 2 (3%)   | 0        | 100         | 100 |
| 25  | 2B    | 90/225 (40%)    | 89 (99%)   | 1 (1%)   | 0        | 100         | 100 |
| 26  | 2A    | 160/255 (63%)   | 155 (97%)  | 5 (3%)   | 0        | 100         | 100 |
| 27  | 7     | 200/793 (25%)   | 187 (94%)  | 13 (6%)  | 0        | 100         | 100 |
| 28  | E     | 297/357 (83%)   | 280 (94%)  | 16 (5%)  | 1 (0%)   | 37          | 72  |
| 29  | B     | 1691/2136 (79%) | 1622 (96%) | 68 (4%)  | 1 (0%)   | 48          | 83  |
| 30  | x     | 33/557 (6%)     | 27 (82%)   | 6 (18%)  | 0        | 100         | 100 |
| 30  | y     | 31/557 (6%)     | 29 (94%)   | 2 (6%)   | 0        | 100         | 100 |
| 31  | v     | 492/513 (96%)   | 477 (97%)  | 15 (3%)  | 0        | 100         | 100 |
| 31  | w     | 489/513 (95%)   | 475 (97%)  | 14 (3%)  | 0        | 100         | 100 |
| 32  | z     | 72/248 (29%)    | 66 (92%)   | 6 (8%)   | 0        | 100         | 100 |
| 33  | W     | 167/177 (94%)   | 157 (94%)  | 10 (6%)  | 0        | 100         | 100 |
| 35  | Q     | 140/144 (97%)   | 125 (89%)  | 15 (11%) | 0        | 100         | 100 |
| 36  | D     | 139/142 (98%)   | 132 (95%)  | 7 (5%)   | 0        | 100         | 100 |
| 37  | X     | 79/376 (21%)    | 79 (100%)  | 0        | 0        | 100         | 100 |
| 38  | K     | 206/439 (47%)   | 189 (92%)  | 17 (8%)  | 0        | 100         | 100 |
| 40  | L     | 367/499 (74%)   | 342 (93%)  | 24 (6%)  | 1 (0%)   | 37          | 72  |
| 41  | F     | 427/522 (82%)   | 411 (96%)  | 16 (4%)  | 0        | 100         | 100 |

*Continued on next page...*

Continued from previous page...

| Mol | Chain | Analysed          | Favoured    | Allowed   | Outliers | Percentiles |     |
|-----|-------|-------------------|-------------|-----------|----------|-------------|-----|
| 42  | N     | 783/941 (83%)     | 682 (87%)   | 100 (13%) | 1 (0%)   | 48          | 83  |
| 43  | A     | 2228/2335 (95%)   | 2044 (92%)  | 181 (8%)  | 3 (0%)   | 48          | 83  |
| 44  | I     | 182/312 (58%)     | 173 (95%)   | 9 (5%)    | 0        | 100         | 100 |
| 45  | S     | 161/800 (20%)     | 152 (94%)   | 9 (6%)    | 0        | 100         | 100 |
| 46  | C     | 841/972 (86%)     | 794 (94%)   | 47 (6%)   | 0        | 100         | 100 |
| 47  | M     | 122/128 (95%)     | 119 (98%)   | 3 (2%)    | 0        | 100         | 100 |
| 48  | T     | 406/1098 (37%)    | 386 (95%)   | 20 (5%)   | 0        | 100         | 100 |
| 51  | r     | 110/199 (55%)     | 104 (94%)   | 6 (6%)    | 0        | 100         | 100 |
| 52  | J     | 252/683 (37%)     | 236 (94%)   | 16 (6%)   | 0        | 100         | 100 |
| 53  | s     | 71/73 (97%)       | 66 (93%)    | 5 (7%)    | 0        | 100         | 100 |
| All | All   | 15445/25362 (61%) | 14624 (95%) | 807 (5%)  | 14 (0%)  | 50          | 83  |

All (14) Ramachandran outliers are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 3   | 9     | 78   | PRO  |
| 11  | 62    | 55   | LEU  |
| 14  | 65    | 70   | ASP  |
| 15  | 66    | 52   | VAL  |
| 15  | 66    | 55   | GLN  |
| 28  | E     | 193  | THR  |
| 43  | A     | 803  | ALA  |
| 17  | 68    | 34   | ILE  |
| 40  | L     | 344  | PRO  |
| 29  | B     | 1296 | PRO  |
| 43  | A     | 1912 | PRO  |
| 14  | 65    | 47   | VAL  |
| 42  | N     | 906  | PRO  |
| 43  | A     | 1419 | ILE  |

### 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   | B4    | 4/336 (1%)   | 4 (100%)  | 0        | 100         | 100 |
| 2   | 8     | 7/382 (2%)   | 7 (100%)  | 0        | 100         | 100 |
| 2   | G     | 1/382 (0%)   | 1 (100%)  | 0        | 100         | 100 |
| 3   | 9     | 8/446 (2%)   | 8 (100%)  | 0        | 100         | 100 |
| 3   | H     | 3/446 (1%)   | 3 (100%)  | 0        | 100         | 100 |
| 4   | B2    | 22/776 (3%)  | 22 (100%) | 0        | 100         | 100 |
| 5   | B5    | 3/77 (4%)    | 3 (100%)  | 0        | 100         | 100 |
| 7   | B3    | 59/1051 (6%) | 59 (100%) | 0        | 100         | 100 |
| 8   | BP    | 4/95 (4%)    | 4 (100%)  | 0        | 100         | 100 |
| 9   | B1    | 40/1104 (4%) | 40 (100%) | 0        | 100         | 100 |
| 10  | B6    | 5/109 (5%)   | 5 (100%)  | 0        | 100         | 100 |
| 18  | 2b    | 4/177 (2%)   | 4 (100%)  | 0        | 100         | 100 |
| 18  | 4b    | 4/177 (2%)   | 4 (100%)  | 0        | 100         | 100 |
| 19  | 21    | 3/101 (3%)   | 3 (100%)  | 0        | 100         | 100 |
| 19  | 41    | 3/101 (3%)   | 3 (100%)  | 0        | 100         | 100 |
| 20  | 22    | 5/110 (4%)   | 5 (100%)  | 0        | 100         | 100 |
| 20  | 42    | 4/110 (4%)   | 4 (100%)  | 0        | 100         | 100 |
| 21  | 2f    | 4/74 (5%)    | 4 (100%)  | 0        | 100         | 100 |
| 21  | 4f    | 4/74 (5%)    | 4 (100%)  | 0        | 100         | 100 |
| 22  | 2e    | 1/84 (1%)    | 1 (100%)  | 0        | 100         | 100 |
| 22  | 4e    | 1/84 (1%)    | 1 (100%)  | 0        | 100         | 100 |
| 23  | 2g    | 3/66 (4%)    | 3 (100%)  | 0        | 100         | 100 |
| 23  | 4g    | 3/66 (4%)    | 3 (100%)  | 0        | 100         | 100 |
| 24  | 23    | 3/101 (3%)   | 3 (100%)  | 0        | 100         | 100 |
| 24  | 43    | 3/101 (3%)   | 3 (100%)  | 0        | 100         | 100 |
| 25  | 2B    | 3/195 (2%)   | 3 (100%)  | 0        | 100         | 100 |
| 26  | 2A    | 6/218 (3%)   | 6 (100%)  | 0        | 100         | 100 |
| 27  | 7     | 8/709 (1%)   | 8 (100%)  | 0        | 100         | 100 |
| 29  | B     | 77/1908 (4%) | 77 (100%) | 0        | 100         | 100 |
| 30  | x     | 2/498 (0%)   | 2 (100%)  | 0        | 100         | 100 |
| 30  | y     | 2/498 (0%)   | 2 (100%)  | 0        | 100         | 100 |
| 31  | v     | 15/450 (3%)  | 15 (100%) | 0        | 100         | 100 |

Continued on next page...

*Continued from previous page...*

| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 31  | w     | 15/450 (3%)    | 15 (100%)  | 0        | 100         | 100 |
| 32  | z     | 2/203 (1%)     | 2 (100%)   | 0        | 100         | 100 |
| 33  | W     | 10/148 (7%)    | 10 (100%)  | 0        | 100         | 100 |
| 35  | Q     | 6/130 (5%)     | 6 (100%)   | 0        | 100         | 100 |
| 36  | D     | 5/130 (4%)     | 5 (100%)   | 0        | 100         | 100 |
| 37  | X     | 2/333 (1%)     | 2 (100%)   | 0        | 100         | 100 |
| 38  | K     | 2/395 (0%)     | 2 (100%)   | 0        | 100         | 100 |
| 40  | L     | 14/424 (3%)    | 14 (100%)  | 0        | 100         | 100 |
| 41  | F     | 17/442 (4%)    | 17 (100%)  | 0        | 100         | 100 |
| 42  | N     | 35/792 (4%)    | 35 (100%)  | 0        | 100         | 100 |
| 43  | A     | 107/2108 (5%)  | 107 (100%) | 0        | 100         | 100 |
| 44  | I     | 7/293 (2%)     | 7 (100%)   | 0        | 100         | 100 |
| 45  | S     | 4/681 (1%)     | 4 (100%)   | 0        | 100         | 100 |
| 46  | C     | 49/866 (6%)    | 49 (100%)  | 0        | 100         | 100 |
| 47  | M     | 6/111 (5%)     | 6 (100%)   | 0        | 100         | 100 |
| 48  | T     | 7/956 (1%)     | 7 (100%)   | 0        | 100         | 100 |
| 51  | r     | 2/181 (1%)     | 2 (100%)   | 0        | 100         | 100 |
| 52  | J     | 13/599 (2%)    | 13 (100%)  | 0        | 100         | 100 |
| All | All   | 617/20348 (3%) | 617 (100%) | 0        | 100         | 100 |

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 5.3.3 RNA ⓘ

| Mol | Chain | Analysed      | Backbone Outliers | Pucker Outliers |
|-----|-------|---------------|-------------------|-----------------|
| 34  | 5     | 114/117 (97%) | 46 (40%)          | 2 (1%)          |
| 39  | Z     | 44/347 (12%)  | 12 (27%)          | 1 (2%)          |
| 49  | 4     | 123/144 (85%) | 38 (30%)          | 3 (2%)          |
| 50  | 6     | 90/106 (84%)  | 26 (28%)          | 4 (4%)          |
| 6   | 2     | 94/188 (50%)  | 22 (23%)          | 4 (4%)          |
| All | All   | 465/902 (51%) | 144 (30%)         | 14 (3%)         |

All (144) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 6   | 2     | 31  | G    |
| 6   | 2     | 38  | A    |
| 6   | 2     | 40  | C    |
| 6   | 2     | 45  | C    |
| 6   | 2     | 46  | U    |
| 6   | 2     | 47  | U    |
| 6   | 2     | 48  | A    |
| 6   | 2     | 49  | U    |
| 6   | 2     | 63  | G    |
| 6   | 2     | 65  | U    |
| 6   | 2     | 98  | G    |
| 6   | 2     | 100 | U    |
| 6   | 2     | 101 | U    |
| 6   | 2     | 102 | U    |
| 6   | 2     | 103 | U    |
| 6   | 2     | 104 | U    |
| 6   | 2     | 105 | G    |
| 6   | 2     | 106 | G    |
| 6   | 2     | 107 | A    |
| 6   | 2     | 157 | G    |
| 6   | 2     | 171 | U    |
| 6   | 2     | 178 | A    |
| 34  | 5     | 5   | U    |
| 34  | 5     | 8   | G    |
| 34  | 5     | 9   | G    |
| 34  | 5     | 10  | U    |
| 34  | 5     | 18  | C    |
| 34  | 5     | 20  | G    |
| 34  | 5     | 21  | A    |
| 34  | 5     | 22  | U    |
| 34  | 5     | 23  | C    |
| 34  | 5     | 24  | G    |
| 34  | 5     | 25  | C    |
| 34  | 5     | 26  | A    |
| 34  | 5     | 28  | A    |
| 34  | 5     | 35  | U    |
| 34  | 5     | 40  | U    |
| 34  | 5     | 41  | U    |
| 34  | 5     | 42  | U    |
| 34  | 5     | 43  | U    |
| 34  | 5     | 45  | C    |
| 34  | 5     | 53  | U    |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 34  | 5     | 57  | G    |
| 34  | 5     | 68  | C    |
| 34  | 5     | 69  | A    |
| 34  | 5     | 70  | A    |
| 34  | 5     | 71  | C    |
| 34  | 5     | 72  | U    |
| 34  | 5     | 77  | G    |
| 34  | 5     | 78  | U    |
| 34  | 5     | 79  | C    |
| 34  | 5     | 80  | U    |
| 34  | 5     | 83  | A    |
| 34  | 5     | 84  | C    |
| 34  | 5     | 86  | C    |
| 34  | 5     | 87  | A    |
| 34  | 5     | 88  | A    |
| 34  | 5     | 89  | U    |
| 34  | 5     | 91  | U    |
| 34  | 5     | 92  | U    |
| 34  | 5     | 93  | U    |
| 34  | 5     | 94  | U    |
| 34  | 5     | 95  | G    |
| 34  | 5     | 96  | A    |
| 34  | 5     | 98  | G    |
| 34  | 5     | 109 | G    |
| 34  | 5     | 116 | U    |
| 34  | 5     | 117 | A    |
| 39  | Z     | 50  | C    |
| 39  | Z     | 51  | U    |
| 39  | Z     | 52  | C    |
| 39  | Z     | 54  | G    |
| 39  | Z     | 55  | A    |
| 39  | Z     | 59  | G    |
| 39  | Z     | 71  | C    |
| 39  | Z     | 72  | A    |
| 39  | Z     | 73  | U    |
| 39  | Z     | 74  | G    |
| 39  | Z     | 156 | A    |
| 39  | Z     | 157 | U    |
| 49  | 4     | 2   | G    |
| 49  | 4     | 11  | A    |
| 49  | 4     | 14  | G    |
| 49  | 4     | 19  | U    |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 49  | 4     | 22  | C    |
| 49  | 4     | 25  | A    |
| 49  | 4     | 35  | G    |
| 49  | 4     | 36  | U    |
| 49  | 4     | 38  | U    |
| 49  | 4     | 39  | A    |
| 49  | 4     | 40  | U    |
| 49  | 4     | 44  | A    |
| 49  | 4     | 45  | G    |
| 49  | 4     | 53  | U    |
| 49  | 4     | 55  | U    |
| 49  | 4     | 58  | C    |
| 49  | 4     | 69  | C    |
| 49  | 4     | 70  | U    |
| 49  | 4     | 71  | U    |
| 49  | 4     | 74  | C    |
| 49  | 4     | 75  | C    |
| 49  | 4     | 79  | U    |
| 49  | 4     | 80  | A    |
| 49  | 4     | 81  | C    |
| 49  | 4     | 82  | C    |
| 49  | 4     | 83  | C    |
| 49  | 4     | 84  | C    |
| 49  | 4     | 85  | G    |
| 49  | 4     | 88  | G    |
| 49  | 4     | 91  | A    |
| 49  | 4     | 114 | U    |
| 49  | 4     | 115 | G    |
| 49  | 4     | 121 | U    |
| 49  | 4     | 122 | U    |
| 49  | 4     | 123 | U    |
| 49  | 4     | 125 | G    |
| 49  | 4     | 126 | A    |
| 49  | 4     | 140 | G    |
| 50  | 6     | 6   | C    |
| 50  | 6     | 7   | G    |
| 50  | 6     | 10  | U    |
| 50  | 6     | 11  | C    |
| 50  | 6     | 12  | G    |
| 50  | 6     | 21  | U    |
| 50  | 6     | 25  | C    |
| 50  | 6     | 26  | U    |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 50  | 6     | 27  | A    |
| 50  | 6     | 28  | A    |
| 50  | 6     | 31  | U    |
| 50  | 6     | 36  | A    |
| 50  | 6     | 37  | C    |
| 50  | 6     | 40  | U    |
| 50  | 6     | 46  | G    |
| 50  | 6     | 47  | A    |
| 50  | 6     | 48  | A    |
| 50  | 6     | 49  | G    |
| 50  | 6     | 50  | A    |
| 50  | 6     | 51  | U    |
| 50  | 6     | 53  | A    |
| 50  | 6     | 62  | C    |
| 50  | 6     | 77  | C    |
| 50  | 6     | 78  | A    |
| 50  | 6     | 103 | U    |
| 50  | 6     | 104 | U    |

All (14) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 6   | 2     | 37  | U    |
| 6   | 2     | 46  | U    |
| 6   | 2     | 103 | U    |
| 6   | 2     | 106 | G    |
| 34  | 5     | 69  | A    |
| 34  | 5     | 77  | G    |
| 39  | Z     | 72  | A    |
| 49  | 4     | 44  | A    |
| 49  | 4     | 80  | A    |
| 49  | 4     | 114 | U    |
| 50  | 6     | 25  | C    |
| 50  | 6     | 39  | A    |
| 50  | 6     | 52  | U    |
| 50  | 6     | 77  | C    |

## 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 [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 43  | A     | 1                |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | A     | 461:HIS   | C      | 462:ARG   | N      | 1.18         |

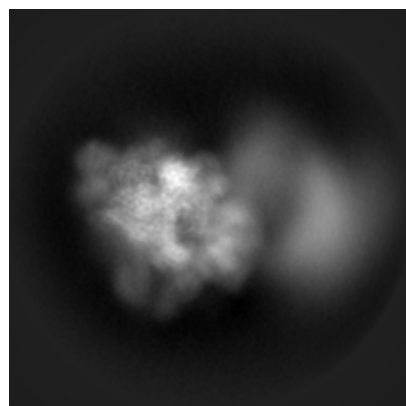
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-18529. These allow visual inspection of the internal detail of the map and identification of artifacts.

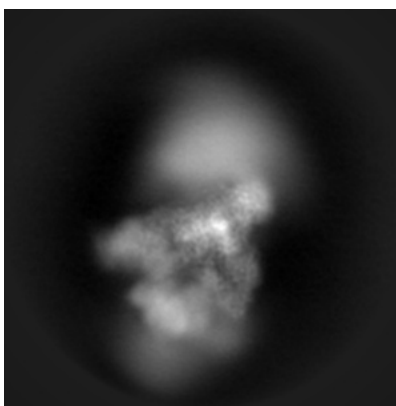
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

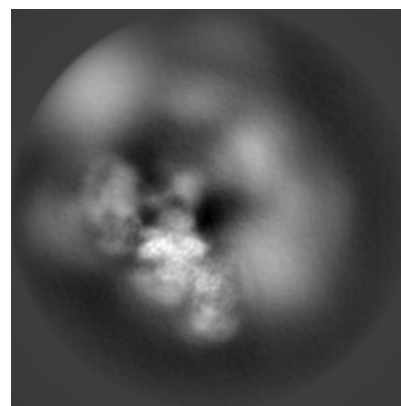
#### 6.1.1 Primary map



X

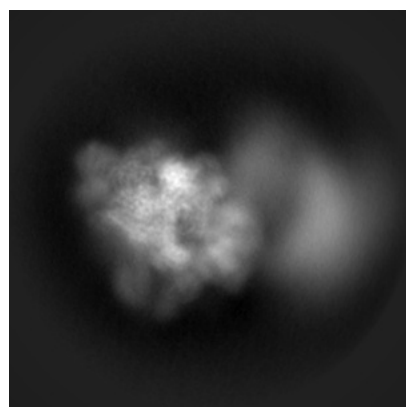


Y

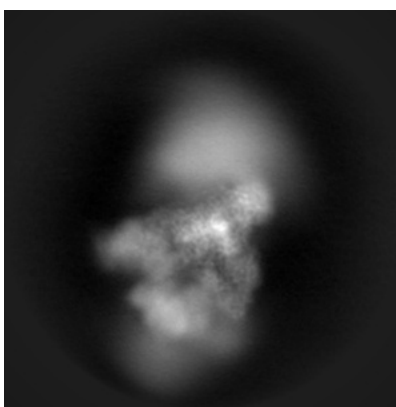


Z

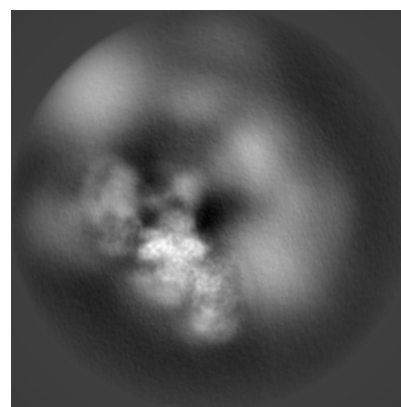
#### 6.1.2 Raw map



X



Y

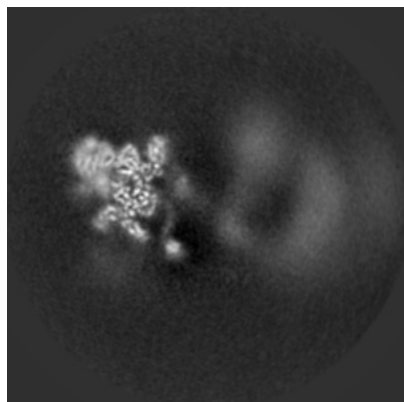


Z

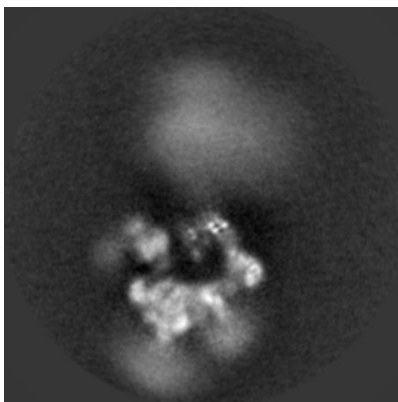
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

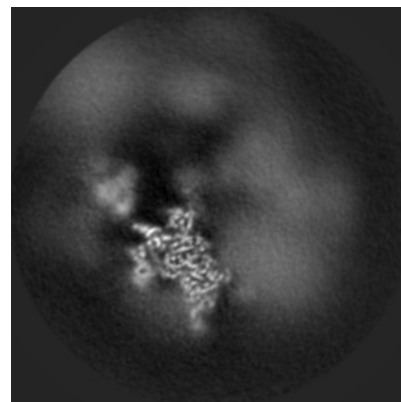
### 6.2.1 Primary map



X Index: 130

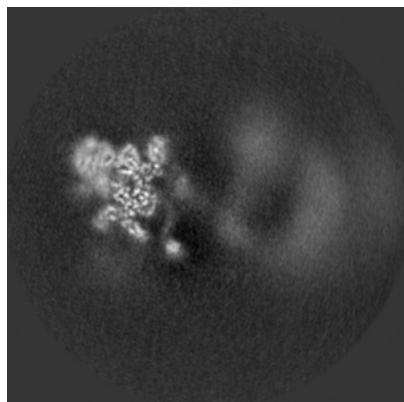


Y Index: 130

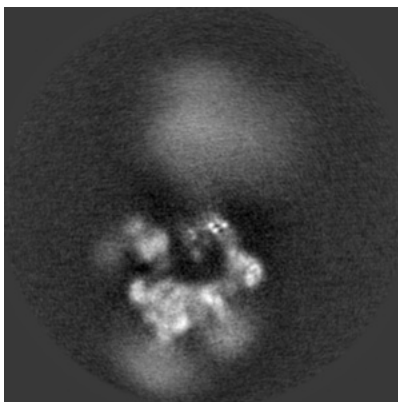


Z Index: 130

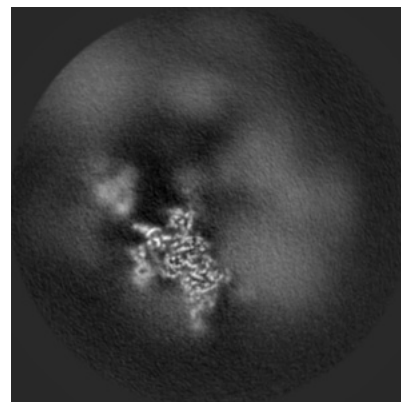
### 6.2.2 Raw map



X Index: 130



Y Index: 130

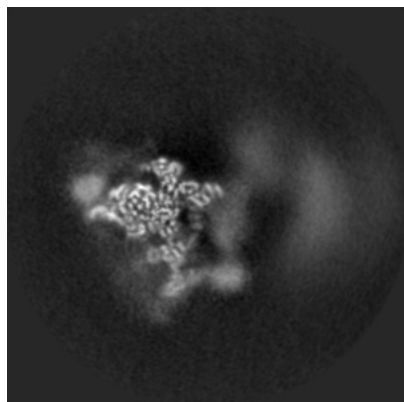


Z Index: 130

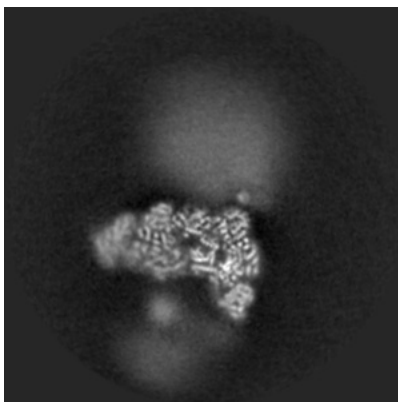
The images above show central slices of the map in three orthogonal directions.

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

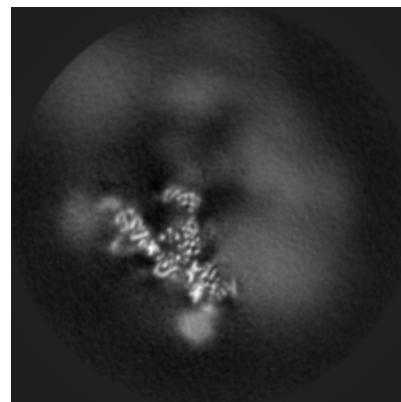
### 6.3.1 Primary map



X Index: 118

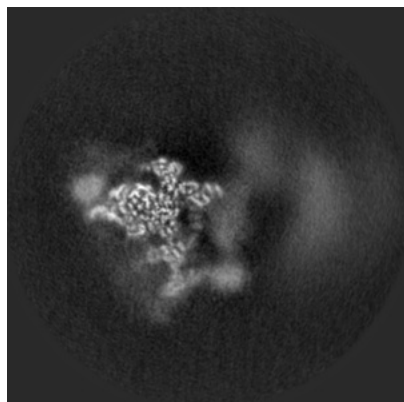


Y Index: 106

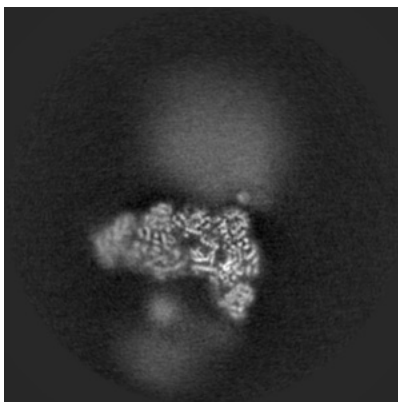


Z Index: 141

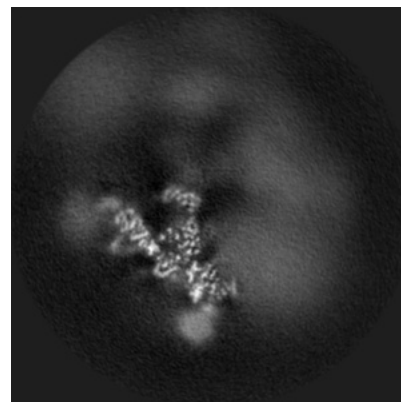
### 6.3.2 Raw map



X Index: 118



Y Index: 106

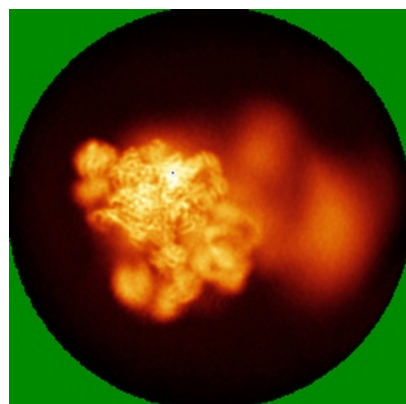


Z Index: 141

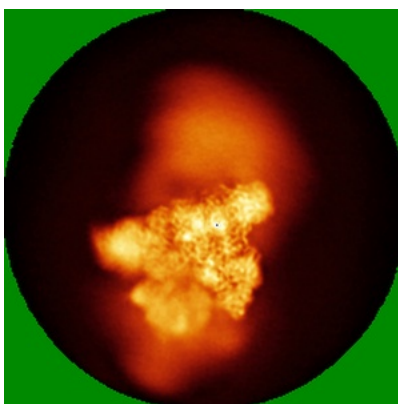
The images above show the largest variance slices of the map in three orthogonal directions.

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

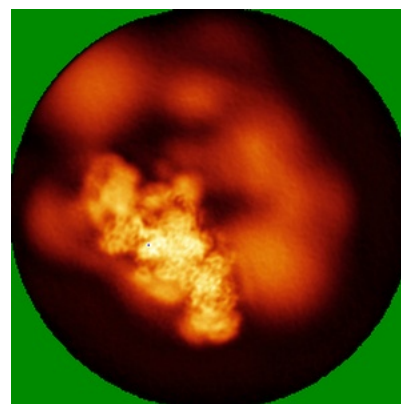
### 6.4.1 Primary map



X

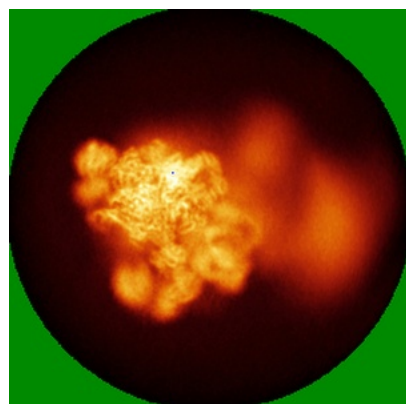


Y

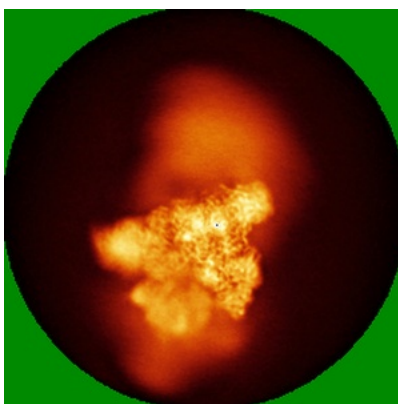


Z

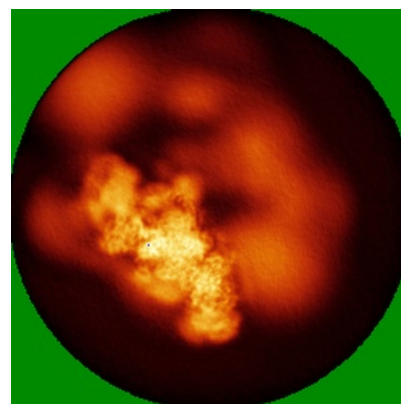
### 6.4.2 Raw map



X



Y

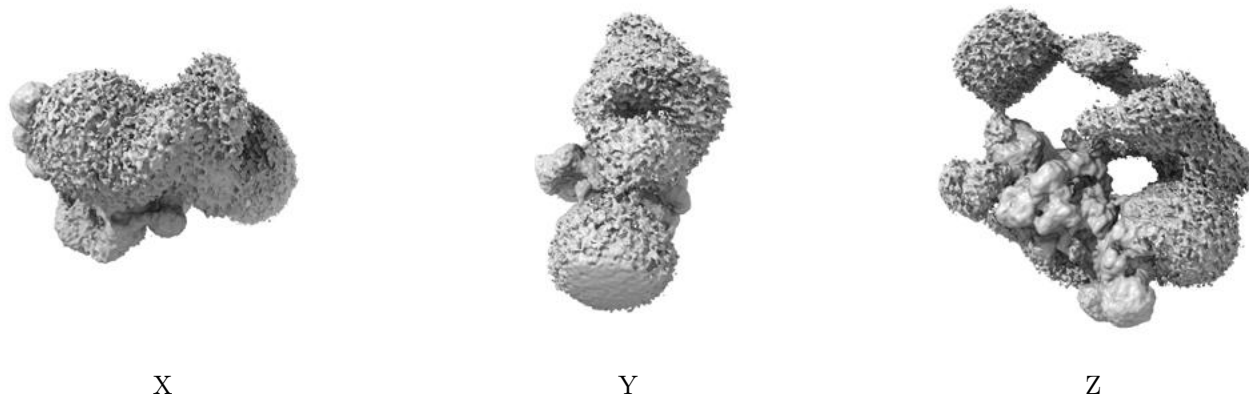


Z

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.

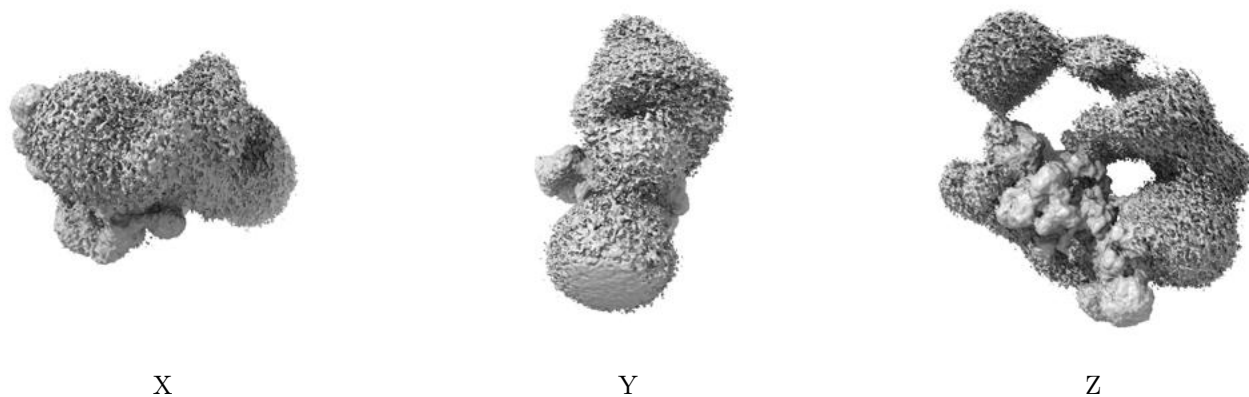
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.02. 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.

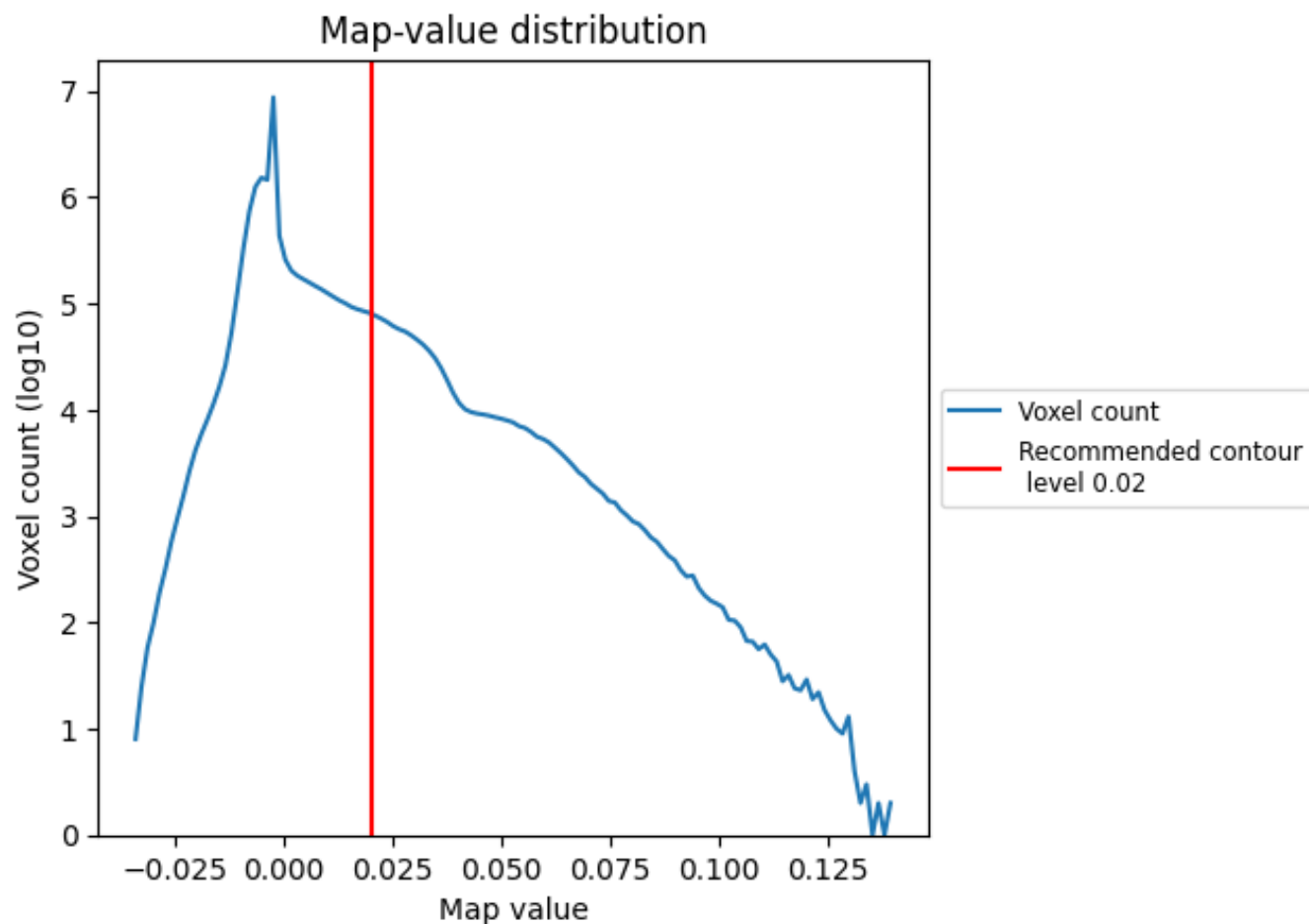
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

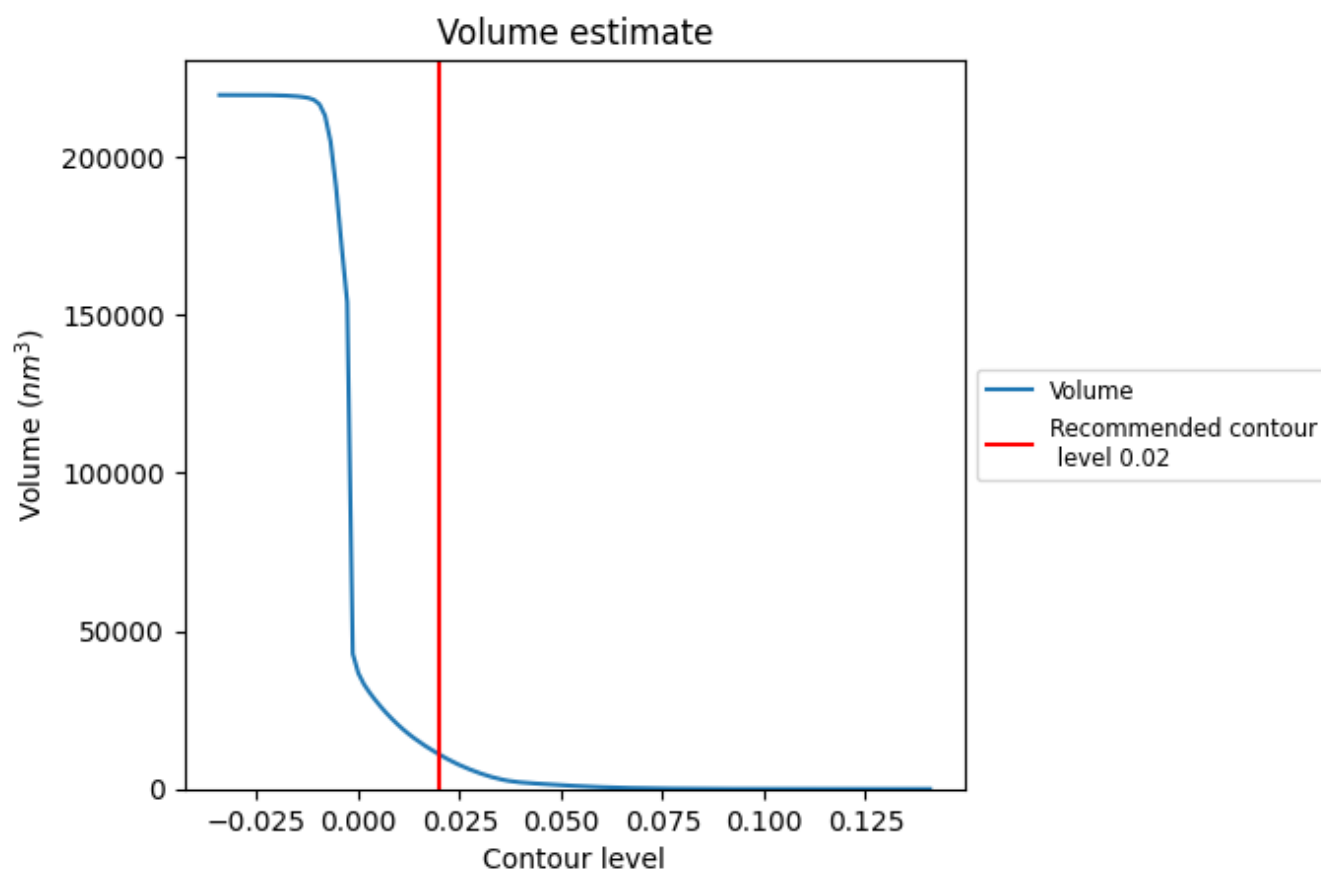
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



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

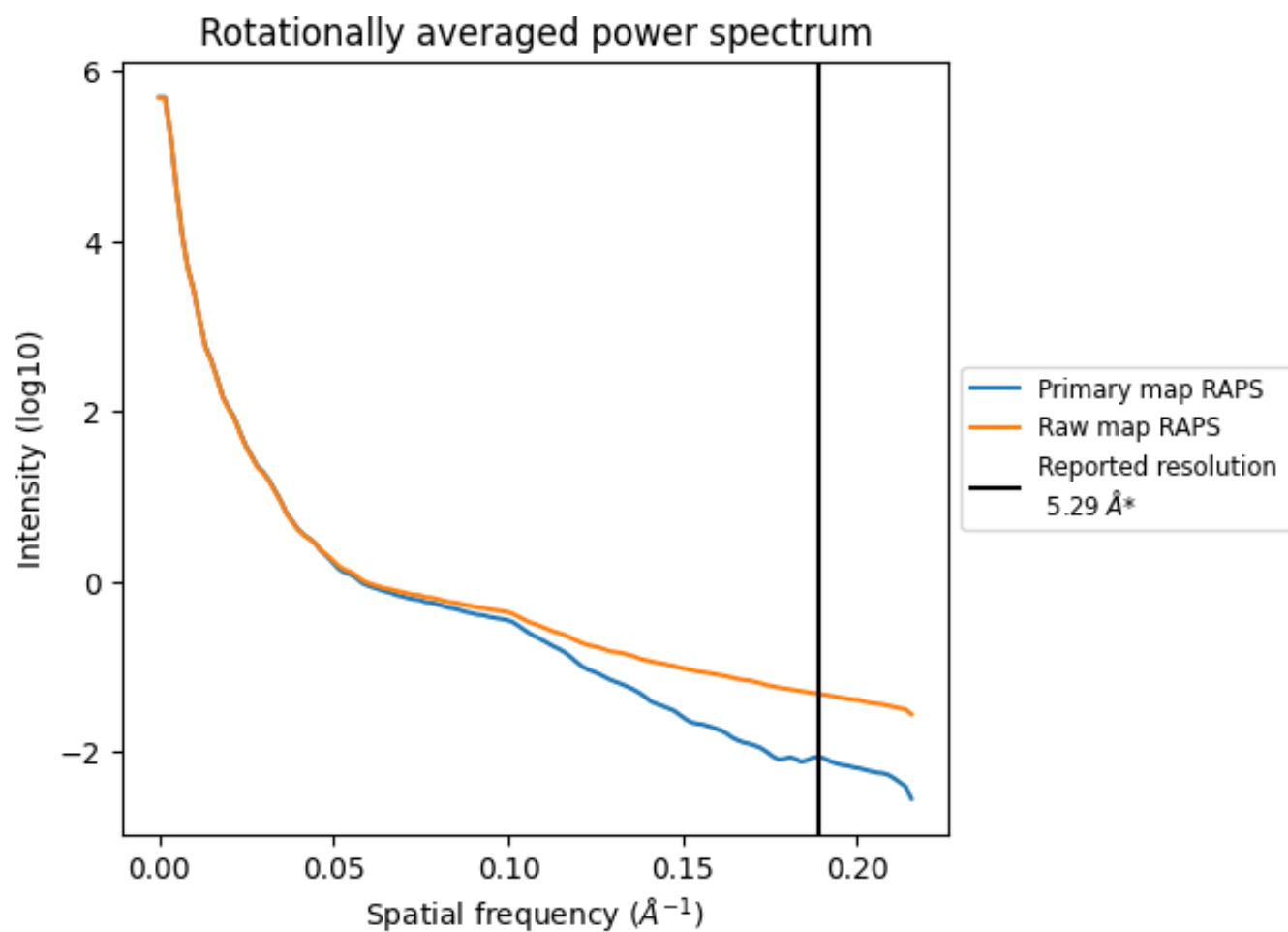
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 10940 nm<sup>3</sup>; this corresponds to an approximate mass of 9883 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 ⓘ

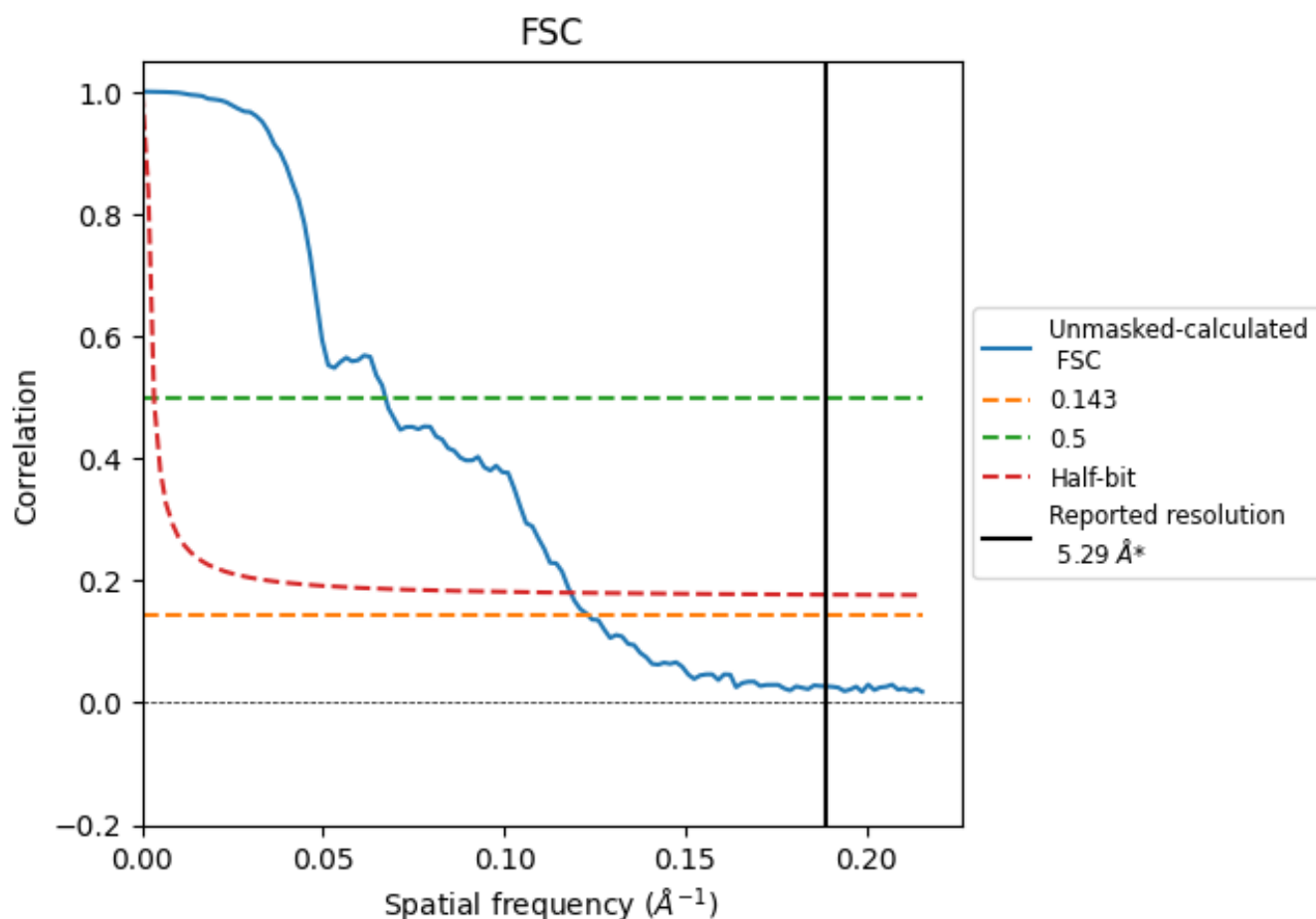


\*Reported resolution corresponds to spatial frequency of 0.189  $\text{\AA}^{-1}$

## 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  $0.189 \text{ \AA}^{-1}$

## 8.2 Resolution estimates [i](#)

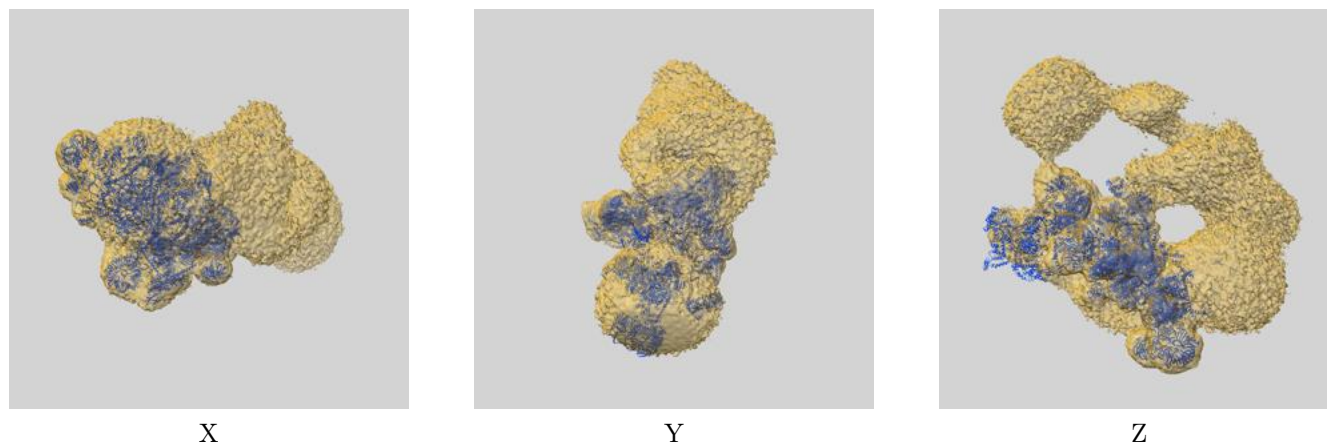
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |       |          |
|---------------------------|------------------------------------|-------|----------|
|                           | 0.143                              | 0.5   | Half-bit |
| Reported by author        | 5.29                               | -     | -        |
| Author-provided FSC curve | -                                  | -     | -        |
| Unmasked-calculated*      | 8.12                               | 14.88 | 8.45     |

\*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 8.12 differs from the reported value 5.29 by more than 10 %

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

This section contains information regarding the fit between EMDB map EMD-18529 and PDB model 8QO9. Per-residue inclusion information can be found in section 3 on page 15.

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



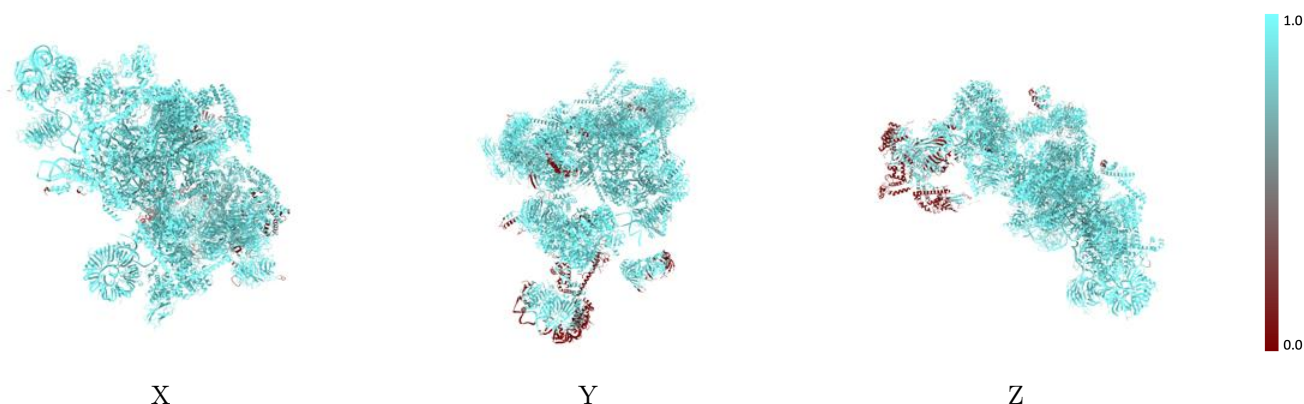
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



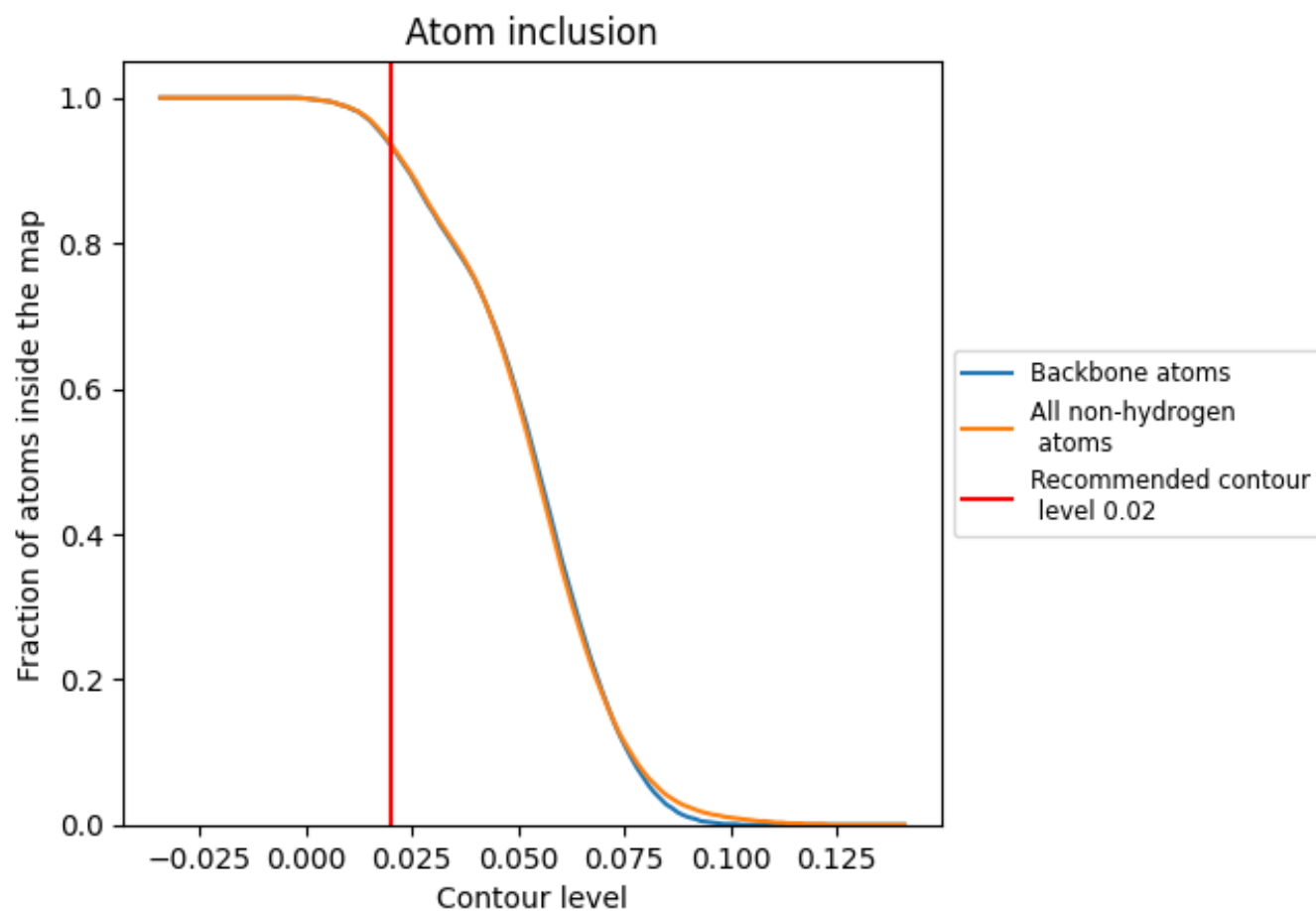
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 94% 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 (0.02) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                     |
|-------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| All   |  0.9370   |  0.1580    |
| 2     |  0.8310   |  0.0270    |
| 21    |  0.9550   |  0.0410    |
| 22    |  0.5140   |  0.0130    |
| 23    |  1.0000   |  0.0220    |
| 2A    |  0.8200   |  0.0220    |
| 2B    |  0.7570   |  0.0160    |
| 2b    |  1.0000   |  0.0020    |
| 2e    |  0.3570   |  0.0210    |
| 2f    |  0.2590   |  0.0420    |
| 2g    |  0.7640   |  0.0410    |
| 4     |  0.9990   |  0.1710    |
| 41    |  1.0000   |  0.0340    |
| 42    |  0.9980   |  0.0600    |
| 43    |  1.0000  |  0.0350   |
| 4b    |  1.0000 |  0.0530  |
| 4e    |  1.0000 |  0.0510  |
| 4f    |  1.0000 |  0.0540  |
| 4g    |  1.0000 |  0.0230  |
| 5     |  1.0000 |  0.1840  |
| 51    |  1.0000 |  0.2060  |
| 52    |  0.9920 |  0.1130  |
| 53    |  1.0000 |  0.2640  |
| 5b    |  0.9860 |  0.1870  |
| 5e    |  1.0000 |  0.1950  |
| 5f    |  1.0000 |  0.1230  |
| 5g    |  1.0000 |  0.2370  |
| 6     |  1.0000 |  0.2000  |
| 62    |  0.9420 |  0.0120  |
| 63    |  0.9190 |  0.0070  |
| 64    |  0.6280 |  -0.0180 |
| 65    |  0.6420 |  0.0370  |
| 66    |  0.8860 |  -0.0100 |
| 67    |  0.4190 |  0.0540  |
| 68    |  0.9470 |  0.0500  |



*Continued on next page...*

Continued from previous page...

| Chain | Atom inclusion                                                                             | Q-score                                                                                     |
|-------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 7     |  0.4450   |  0.0960    |
| 8     |  0.3390   |  0.0500    |
| 9     |  0.2770   |  0.0100    |
| A     |  0.9980   |  0.2880    |
| B     |  1.0000   |  0.1950    |
| B1    |  0.9710   |  0.0360    |
| B2    |  0.8320   |  0.0190    |
| B3    |  0.9230   |  0.0570    |
| B4    |  1.0000   |  0.0240    |
| B5    |  1.0000   |  0.0650    |
| B6    |  1.0000   |  0.0630    |
| BP    |  1.0000   |  0.0440    |
| C     |  1.0000   |  0.2540    |
| D     |  1.0000   |  0.2890    |
| E     |  0.9980   |  0.0590    |
| F     |  1.0000   |  0.2480    |
| G     |  0.8720   |  0.0660    |
| H     |  0.9200  |  0.0570   |
| I     |  1.0000 |  0.2780  |
| J     |  1.0000 |  0.2610  |
| K     |  0.9920 |  0.2360  |
| L     |  1.0000 |  0.2850  |
| M     |  1.0000 |  0.2950  |
| N     |  1.0000 |  0.2430  |
| Q     |  1.0000 |  0.2340  |
| S     |  0.9910 |  0.2670  |
| T     |  0.9340 |  0.1530  |
| W     |  1.0000 |  0.2050  |
| X     |  1.0000 |  0.2490  |
| Z     |  1.0000 |  0.1570  |
| r     |  1.0000 |  0.2650  |
| s     |  1.0000 |  0.2980  |
| v     |  0.9460 |  0.0550  |
| w     |  0.8530 |  0.0470  |
| x     |  0.8830 |  0.0250  |
| y     |  0.9470 |  -0.0010 |
| z     |  1.0000 |  0.0640  |