# WORLDWIDE PDB
## PROTEIN DATA BANK

# Full wwPDB EM Validation Report ⓘ

Apr 11, 2024 – 04:26 pm BST

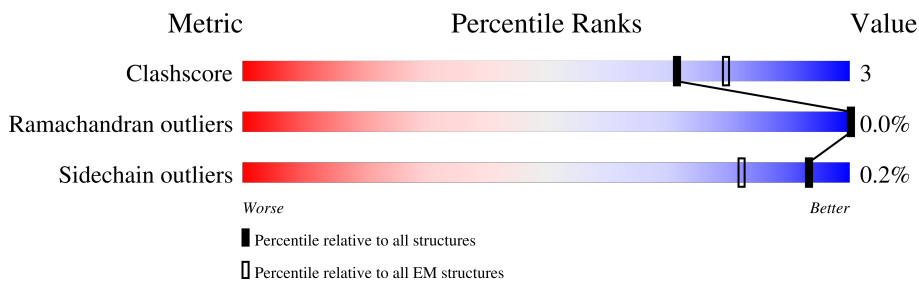| | | |
|---|---|---|
| PDB ID | : | 8QZ9 |
| EMDB ID | : | EMD-18773 |
| Title | : | Human 20S proteasome assembly intermediate structure 4 |
| Authors | : | Schulman, B.A.; Hanna, J.W.; Harper, J.W.; Adolf, F.; Du, J.; Rawson, S.D.; Walsh Jr, R.M.; Goodall, E.A. |
| Deposited on | : | 2023-10-26 |
| Resolution | : | 2.95 Å(reported) |

# 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 2.95 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 | Percentile Ranks | Value |
|--------|------------------|-------|
| Clashscore | | 3 |
| Ramachandran outliers | | 0.0% |
| Sidechain outliers | | 0.2% |

*Worse* ... *Better*

▮ Percentile relative to all structures

▯ Percentile relative to all EM structures
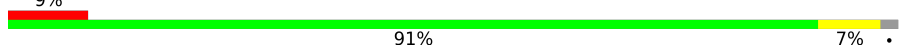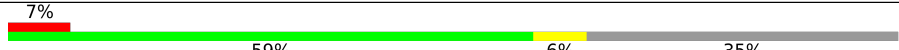
| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|--------|--------------------------|--------------------------|
| Clashscore | 158937 | 4297 |
| Ramachandran outliers | 154571 | 4023 |
| Sidechain outliers | 154315 | 3826 |

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | A | 234 | 92% ... 6% · |
| 2 | B | 261 | 88% ... 5%  7% |
| 3 | C | 248 | 86% ... 8%  5% |
| 4 | D | 242 | 86% ... 11%  · |
| 5 | E | 264 | 84% ... 6%  9% |
| 6 | F | 255 | 83% ... 11%  6% |
| 7 | G | 247 | 85% ... 12%  · |
| 8 | H | 141 | 72% ... 8% ·  20% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 9 | I | 288 | 88% 6% 7% |
| 10 | J | 265 | 88% 6% 6% |
| 11 | K | 332 | 64% 5% 30% |
| 12 | L | 205 | 80% 7% 13% |
| 13 | M | 202 | 9% 91% 7% |
| 14 | N | 263 | 7% 59% 6% 35% |
| 15 | O | 241 | 31% 56% 10% 34% |

## 2 Entry composition ⓘ

There are 15 unique types of molecules in this entry. The entry contains 24217 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 Proteasome subunit alpha type-2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 229 | Total 1731 | C 1114 | N 295 | O 316 | S 6 | 0 | 0 |

- Molecule 2 is a protein called Proteasome subunit alpha type-4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 2 | B | 242 | Total 1786 | C 1132 | N 312 | O 332 | S 10 | 0 | 0 |

- Molecule 3 is a protein called Proteasome subunit alpha type-7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 3 | C | 235 | Total 1780 | C 1121 | N 318 | O 336 | S 5 | 0 | 0 |

- Molecule 4 is a protein called Proteasome subunit alpha type-5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 4 | D | 236 | Total 1758 | C 1109 | N 293 | O 344 | S 12 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| D | 0 | ACE | - | acetylation | UNP P28066 |

- Molecule 5 is a protein called Proteasome subunit alpha type-1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 5 | E | 240 | Total 1852 | C 1162 | N 336 | O 343 | S 11 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| E | 0 | ACE | - | acetylation | UNP P25786 |

- Molecule 6 is a protein called Proteasome subunit alpha type-3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 6 | F | 240 | Total | C | N | O | S | 0 | 0 |
| | | | 1834 | 1163 | 312 | 348 | 11 | | |

- Molecule 7 is a protein called Proteasome subunit alpha type-6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 7 | G | 242 | Total | C | N | O | S | 0 | 0 |
| | | | 1819 | 1157 | 310 | 340 | 12 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| G | 0 | ACE | - | acetylation | UNP P60900 |

- Molecule 8 is a protein called Proteasome maturation protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 8 | H | 113 | Total | C | N | O | S | 0 | 0 |
| | | | 901 | 573 | 152 | 171 | 5 | | |

- Molecule 9 is a protein called Proteasome assembly chaperone 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 9 | I | 269 | Total | C | N | O | S | 0 | 0 |
| | | | 2056 | 1320 | 337 | 384 | 15 | | |

- Molecule 10 is a protein called Proteasome assembly chaperone 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 10 | J | 249 | Total | C | N | O | S | 0 | 0 |
| | | | 1888 | 1218 | 307 | 349 | 14 | | |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| J | 0 | ACE | - | acetylation | UNP Q969U7 |

- Molecule 11 is a protein called Proteasome subunit beta type-7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | K | 231 | Total 1646 | C 1047 | N 281 | O 308 | S 10 | 0 | 0 |

There are 55 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| K | 237P | GLU | - | expression tag | UNP Q99436 |
| K | 237Q | ASP | - | expression tag | UNP Q99436 |
| K | 237R | LEU | - | expression tag | UNP Q99436 |
| K | 237S | TYR | - | expression tag | UNP Q99436 |
| K | 237T | PHE | - | expression tag | UNP Q99436 |
| K | 237U | GLN | - | expression tag | UNP Q99436 |
| K | 237V | SER | - | expression tag | UNP Q99436 |
| K | 237W | VAL | - | expression tag | UNP Q99436 |
| K | 237X | ASP | - | expression tag | UNP Q99436 |
| K | 237Y | SER | - | expression tag | UNP Q99436 |
| K | 237Z | ALA | - | expression tag | UNP Q99436 |
| K | 238A | TRP | - | expression tag | UNP Q99436 |
| K | 238B | SER | - | expression tag | UNP Q99436 |
| K | 238C | HIS | - | expression tag | UNP Q99436 |
| K | 238D | PRO | - | expression tag | UNP Q99436 |
| K | 238E | GLN | - | expression tag | UNP Q99436 |
| K | 238F | PHE | - | expression tag | UNP Q99436 |
| K | 238G | GLU | - | expression tag | UNP Q99436 |
| K | 238H | LYS | - | expression tag | UNP Q99436 |
| K | 238I | GLY | - | expression tag | UNP Q99436 |
| K | 238J | GLY | - | expression tag | UNP Q99436 |
| K | 238K | GLY | - | expression tag | UNP Q99436 |
| K | 238L | SER | - | expression tag | UNP Q99436 |
| K | 238M | GLY | - | expression tag | UNP Q99436 |
| K | 238N | GLY | - | expression tag | UNP Q99436 |
| K | 238O | GLY | - | expression tag | UNP Q99436 |
| K | 238P | SER | - | expression tag | UNP Q99436 |
| K | 238Q | GLY | - | expression tag | UNP Q99436 |
| K | 238R | GLY | - | expression tag | UNP Q99436 |
| K | 238S | SER | - | expression tag | UNP Q99436 |
| K | 238T | ALA | - | expression tag | UNP Q99436 |
| K | 238U | TRP | - | expression tag | UNP Q99436 |
| K | 238V | SER | - | expression tag | UNP Q99436 |
| K | 238W | HIS | - | expression tag | UNP Q99436 |
| K | 238X | PRO | - | expression tag | UNP Q99436 |
| K | 238Y | GLN | - | expression tag | UNP Q99436 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| K | 238Z | PHE | - | expression tag | UNP Q99436 |
| K | 239A | GLU | - | expression tag | UNP Q99436 |
| K | 239B | LYS | - | expression tag | UNP Q99436 |
| K | 247 | UNK | - | expression tag | UNP Q99436 |
| K | 248 | UNK | - | expression tag | UNP Q99436 |
| K | 249 | UNK | - | expression tag | UNP Q99436 |
| K | 250 | UNK | - | expression tag | UNP Q99436 |
| K | 251 | UNK | - | expression tag | UNP Q99436 |
| K | 252 | UNK | - | expression tag | UNP Q99436 |
| K | 253 | UNK | - | expression tag | UNP Q99436 |
| K | 254 | UNK | - | expression tag | UNP Q99436 |
| K | 255 | UNK | - | expression tag | UNP Q99436 |
| K | 256 | UNK | - | expression tag | UNP Q99436 |
| K | 257 | UNK | - | expression tag | UNP Q99436 |
| K | 258 | UNK | - | expression tag | UNP Q99436 |
| K | 259 | UNK | - | expression tag | UNP Q99436 |
| K | 260 | UNK | - | expression tag | UNP Q99436 |
| K | 261 | UNK | - | expression tag | UNP Q99436 |
| K | 262 | UNK | - | expression tag | UNP Q99436 |

- Molecule 12 is a protein called Proteasome subunit beta type-3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|-----|---------|-------|
| | | | Total | C | N | O | S | | |
| 12 | L | 179 | 1343 | 865 | 224 | 238 | 16 | 0 | 0 |

- Molecule 13 is a protein called Proteasome subunit beta type-2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|-----|---------|-------|
| | | | Total | C | N | O | S | | |
| 13 | M | 197 | 1462 | 940 | 249 | 265 | 8 | 0 | 0 |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| M | 0 | ACE | - | acetylation | UNP P49721 |

- Molecule 14 is a protein called Proteasome subunit beta type-5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|-----|---------|-------|
| | | | Total | C | N | O | S | | |
| 14 | N | 172 | 1250 | 800 | 215 | 228 | 7 | 0 | 0 |

- Molecule 15 is a protein called Proteasome subunit beta type-1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 15 | O | 160 | Total 1111 | C 704 | N 188 | O 211 | S 8 | 0 | 0 |

# 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: Proteasome subunit alpha type-2

Chain A:

- Molecule 2: Proteasome subunit alpha type-4

Chain B:

- Molecule 3: Proteasome subunit alpha type-7

Chain C:

- Molecule 4: Proteasome subunit alpha type-5

Chain D:

- Molecule 5: Proteasome subunit alpha type-1

Chain E:

ACE0 V47 R51 K62 T78 L84 M88 V98 F99 D100 R101 R102 I112 T120 Y128 D138 P149 L195 D218 D227 R239 PRO GLN ARG LYS ALA GLN PRO ALA GLN PRO ALA ASP GLU PRO ALA GLU LYS ALA ASP GLU PRO MET GLU

HIS

• Molecule 6: Proteasome subunit alpha type-3

Chain F: 83% 11% 6%

MET SER SER ILE G5 S13 D18 V24 M28 V31 A37 I38 V47 V50 D84 L88 N98 R130 P131 F132 D153 P154 Q181 M185 V194 Y199 K206 D207 K208 L212 W216 L220 T221 V228 P229 K230 D231 I232

L244 LYS GLU GLU ASP GLU SER ASP ASP ASN MET
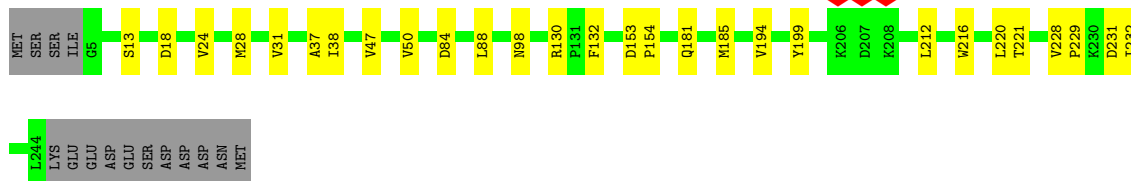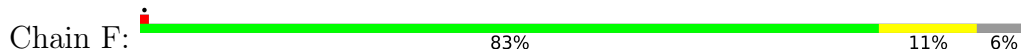
• Molecule 7: Proteasome subunit alpha type-6

Chain G: 85% 12%

ACE0 M1 S2 R3 D10 I13 T14 S17 G20 R21 L22 Y23 R43 G44 K45 V49 T73 E74 D112 M113 D120 R132 D144 E145 P149 G158 V170 K171 T176 E180 K185 LYS PHE ASP W189 L206 S207 I208 V219 E244

ARG ASP
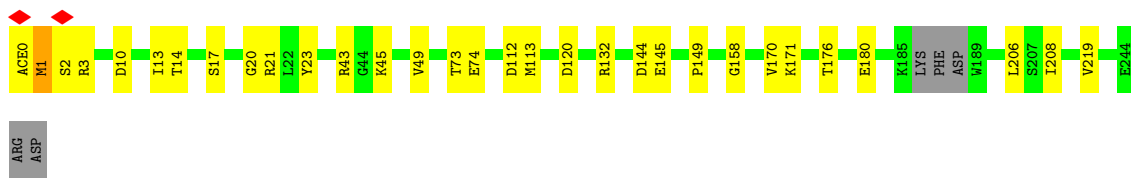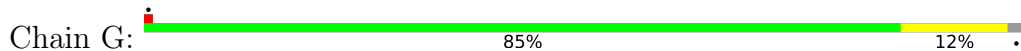
• Molecule 8: Proteasome maturation protein

Chain H: 72% 8% 20%

MET ASN ALA ARG GLY LEU GLY SER GLU GLU LEU LYS ASP SER SER ILE PRO VAL THR GLU LEU SER ALA SER GLY PRO PHE GLU LEU SER HIS D29 R32 K33 G34 F35 S36 C37 V38 K39 N40 E41 L42 L43 N54 N58 R68 V89 Q90 E115 L132 L141

• Molecule 9: Proteasome assembly chaperone 1

Chain I: 88% 6% 7%

MET A2 E22 E23 GLU GLU GLY ARG ARG GLU T31 P32 E33 D34 T54 K55 E59 A74 L83 V92 R107 THR THR ASP THR THR HIS LEU SER SER THR GLU A119 K127 P187 T237 L244 T245 T246 L254 K260 V263 K264 N265

K275 L276 M277 T278 T279 N280 E281 I282 N285 T288

• Molecule 10: Proteasome assembly chaperone 2

Chain J: 88% 6% 6%
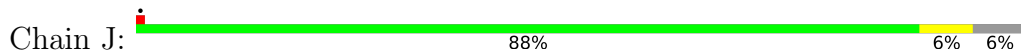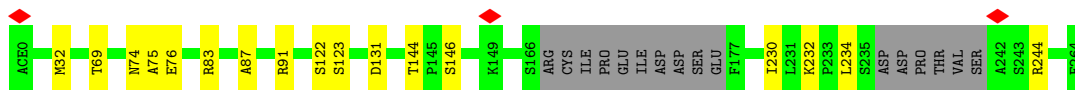
• Molecule 11: Proteasome subunit beta type-7

Chain K:
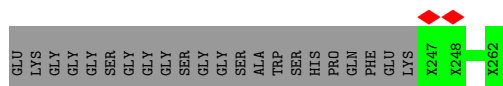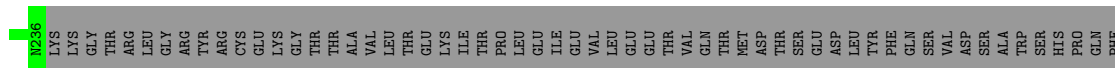


• Molecule 12: Proteasome subunit beta type-3

Chain L:
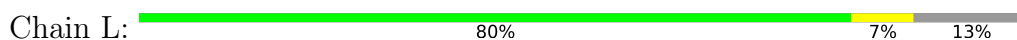


• Molecule 13: Proteasome subunit beta type-2

Chain M:
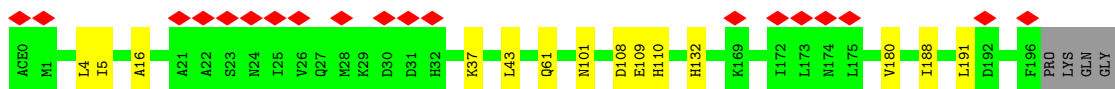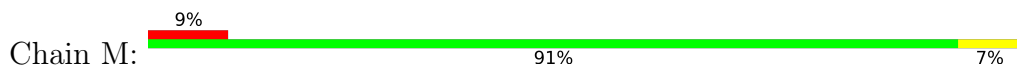


• Molecule 14: Proteasome subunit beta type-5

Chain N:
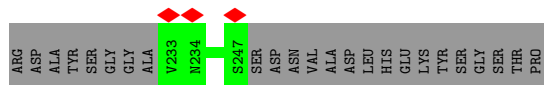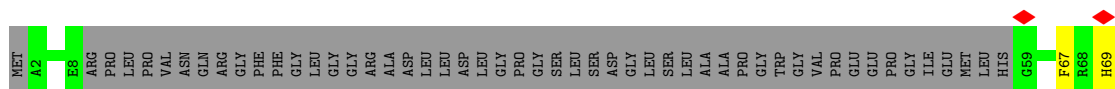


• Molecule 15: Proteasome subunit beta type-1

Chain O:
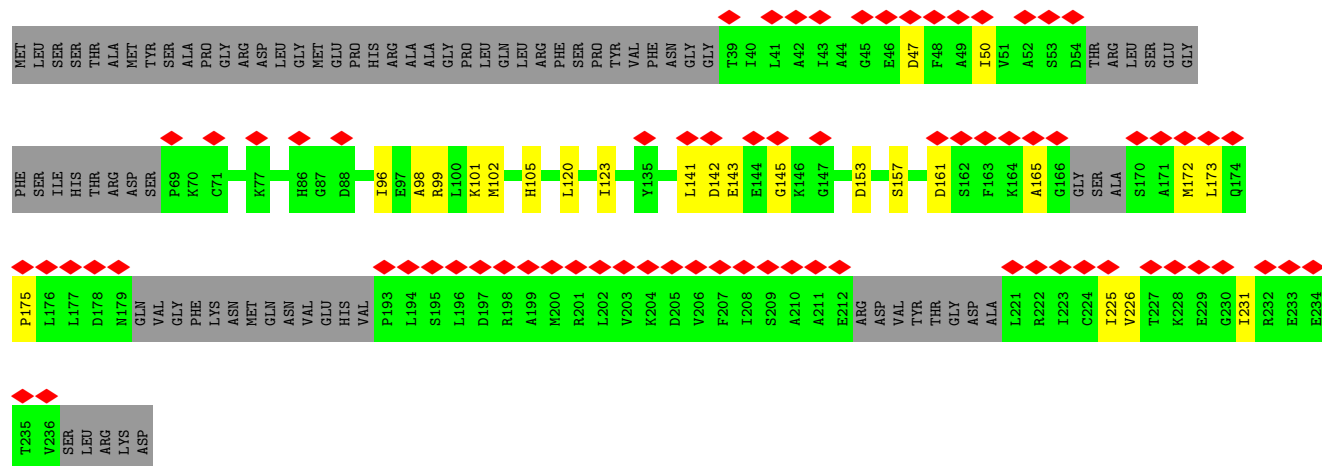
# 4　Experimental information　ⓘ

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 41421 | 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 $(e^-/\text{Å}^2)$ | 66.9 | Depositor |
| Minimum defocus (nm) | 1000 | Depositor |
| Maximum defocus (nm) | 2600 | Depositor |
| Magnification | Not provided | |
| Image detector | GATAN K3 BIOQUANTUM (6k x 4k) | Depositor |
| Maximum map value | 2.624 | Depositor |
| Minimum map value | -1.099 | Depositor |
| Average map value | 0.014 | Depositor |
| Map value standard deviation | 0.117 | Depositor |
| Recommended contour level | 0.5 | Depositor |
| Map size (Å) | 255.36, 255.36, 255.36 | wwPDB |
| Map dimensions | 300, 300, 300 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 0.8512, 0.8512, 0.8512 | Depositor |

# 5   Model quality ⓘ

## 5.1   Standard geometry ⓘ

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

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

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|------|--------|------|--------|
| | | RMSZ | #$|Z|$ >5 | RMSZ | #$|Z|$ >5 |
| 1 | A | 0.26 | 0/1770 | 0.46 | 0/2407 |
| 2 | B | 0.26 | 0/1813 | 0.48 | 0/2461 |
| 3 | C | 0.25 | 0/1806 | 0.50 | 0/2451 |
| 4 | D | 0.25 | 0/1784 | 0.47 | 0/2417 |
| 5 | E | 0.25 | 0/1885 | 0.51 | 0/2553 |
| 6 | F | 0.26 | 0/1869 | 0.48 | 0/2527 |
| 7 | G | 0.26 | 0/1849 | 0.48 | 0/2507 |
| 8 | H | 0.25 | 0/916 | 0.46 | 0/1232 |
| 9 | I | 0.25 | 0/2100 | 0.45 | 0/2863 |
| 10 | J | 0.25 | 0/1926 | 0.48 | 0/2617 |
| 11 | K | 0.26 | 0/1596 | 0.47 | 0/2171 |
| 12 | L | 0.26 | 0/1367 | 0.48 | 0/1850 |
| 13 | M | 0.26 | 0/1490 | 0.48 | 0/2029 |
| 14 | N | 0.24 | 0/1271 | 0.47 | 0/1723 |
| 15 | O | 0.23 | 0/1123 | 0.48 | 0/1522 |
| All | All | 0.25 | 0/24565 | 0.48 | 0/33330 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 5.2   Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 1731 | 0 | 1702 | 11 | 0 |
| 2 | B | 1786 | 0 | 1729 | 8 | 0 |
| 3 | C | 1780 | 0 | 1747 | 14 | 0 |
| 4 | D | 1758 | 0 | 1713 | 18 | 0 |
| 5 | E | 1852 | 0 | 1816 | 13 | 0 |
| 6 | F | 1834 | 0 | 1776 | 19 | 0 |
| 7 | G | 1819 | 0 | 1798 | 20 | 0 |
| 8 | H | 901 | 0 | 909 | 10 | 0 |
| 9 | I | 2056 | 0 | 1982 | 11 | 0 |
| 10 | J | 1888 | 0 | 1884 | 11 | 0 |
| 11 | K | 1646 | 0 | 1548 | 11 | 0 |
| 12 | L | 1343 | 0 | 1321 | 8 | 0 |
| 13 | M | 1462 | 0 | 1389 | 8 | 0 |
| 14 | N | 1250 | 0 | 1188 | 10 | 0 |
| 15 | O | 1111 | 0 | 1047 | 13 | 0 |
| All | All | 24217 | 0 | 23549 | 166 | 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 (166) 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) |
|--------|--------|--------------------------|-------------------|
| 4:D:85:ALA:HB2 | 4:D:139:VAL:HG21 | 1.76 | 0.67 |
| 1:A:69:THR:HG22 | 1:A:70:LYS:H | 1.59 | 0.67 |
| 1:A:74:LEU:HD21 | 1:A:134:LEU:HD22 | 1.77 | 0.67 |
| 3:C:89:VAL:HG11 | 8:H:32:ARG:HE | 1.61 | 0.66 |
| 5:E:120:THR:O | 6:F:130:ARG:NH2 | 2.28 | 0.64 |
| 1:A:28:ALA:HB2 | 7:G:20:GLY:HA3 | 1.78 | 0.64 |
| 8:H:37:CYS:HB3 | 8:H:40:ASN:HB2 | 1.81 | 0.63 |
| 1:A:84:ARG:NH1 | 7:G:120:ASP:OD1 | 2.32 | 0.62 |
| 1:A:119:GLN:HG3 | 2:B:81:SER:HB2 | 1.81 | 0.62 |
| 4:D:44:GLU:HG3 | 4:D:191:LEU:HD23 | 1.81 | 0.62 |
| 14:N:123:ARG:NH1 | 14:N:126:GLU:OE1 | 2.31 | 0.61 |
| 15:O:172:MET:HG2 | 15:O:175:PRO:HD3 | 1.83 | 0.61 |
| 3:C:208:LEU:HD22 | 3:C:220:LEU:HD22 | 1.82 | 0.61 |
| 8:H:54:ASN:O | 8:H:58:ASN:ND2 | 2.34 | 0.60 |
| 4:D:168:ARG:HH12 | 9:I:282:ILE:HG12 | 1.67 | 0.60 |
| 12:L:49:LEU:HD12 | 12:L:111:GLY:HA3 | 1.84 | 0.60 |
| 13:M:180:VAL:HG23 | 13:M:191:LEU:HB3 | 1.83 | 0.59 |
| 3:C:115:LYS:NZ | 3:C:147:THR:OG1 | 2.36 | 0.59 |
| 6:F:199:TYR:HE1 | 6:F:212:LEU:HD11 | 1.68 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 10:J:122:SER:OG | 10:J:123:SER:N | 2.36 | 0.58 |
| 11:K:78:HIS:HB3 | 11:K:99:THR:HG21 | 1.86 | 0.57 |
| 12:L:135:ASP:OD1 | 12:L:136:PHE:N | 2.38 | 0.56 |
| 4:D:202:LEU:O | 4:D:206:MET:HG3 | 2.05 | 0.56 |
| 4:D:165:CYS:SG | 4:D:166:ASP:N | 2.79 | 0.56 |
| 7:G:49:VAL:HG22 | 7:G:219:VAL:HG12 | 1.87 | 0.55 |
| 7:G:0:ACE:O | 7:G:2:SER:N | 2.32 | 0.55 |
| 13:M:37:LYS:O | 13:M:61:GLN:NE2 | 2.40 | 0.55 |
| 4:D:211:ASN:ND2 | 4:D:213:THR:OG1 | 2.37 | 0.55 |
| 13:M:4:LEU:O | 13:M:5:ILE:HD13 | 2.07 | 0.55 |
| 9:I:74:ALA:HB2 | 9:I:83:LEU:HD12 | 1.89 | 0.54 |
| 9:I:275:LYS:O | 9:I:278:THR:OG1 | 2.21 | 0.54 |
| 15:O:153:ASP:OD1 | 15:O:157:SER:N | 2.38 | 0.54 |
| 7:G:112:ASP:OD1 | 7:G:113:MET:N | 2.41 | 0.54 |
| 1:A:35:SER:OG | 1:A:77:SER:OG | 2.25 | 0.53 |
| 10:J:232:LYS:O | 10:J:244:ARG:NH2 | 2.41 | 0.53 |
| 2:B:208:ALA:HB1 | 2:B:233:VAL:HG23 | 1.91 | 0.53 |
| 7:G:13:ILE:HG23 | 7:G:14:THR:HG23 | 1.90 | 0.53 |
| 10:J:83:ARG:HH22 | 10:J:230:ILE:HA | 1.72 | 0.53 |
| 7:G:17:SER:OG | 10:J:131:ASP:OD2 | 2.23 | 0.53 |
| 7:G:176:THR:O | 7:G:180:GLU:HG3 | 2.09 | 0.53 |
| 11:K:25:LEU:HD21 | 12:L:56:LEU:HD11 | 1.91 | 0.53 |
| 13:M:108:ASP:OD1 | 13:M:110:HIS:N | 2.41 | 0.53 |
| 9:I:92:VAL:HG23 | 9:I:127:LYS:HB3 | 1.90 | 0.52 |
| 11:K:189:MET:HE3 | 11:K:193:GLU:HG3 | 1.90 | 0.52 |
| 2:B:35:LEU:HD11 | 2:B:175:LEU:HD11 | 1.90 | 0.52 |
| 4:D:84:ASP:HB3 | 4:D:137:PHE:HD2 | 1.75 | 0.52 |
| 7:G:23:TYR:OH | 10:J:131:ASP:OD1 | 2.20 | 0.52 |
| 15:O:226:VAL:HG22 | 15:O:231:ILE:HG12 | 1.91 | 0.52 |
| 3:C:146:GLN:OE1 | 3:C:159:ASN:ND2 | 2.43 | 0.51 |
| 1:A:84:ARG:NH2 | 7:G:158:GLY:O | 2.44 | 0.51 |
| 3:C:37:GLY:HA2 | 3:C:181:ILE:HD11 | 1.92 | 0.51 |
| 1:A:111:VAL:HG22 | 1:A:136:ILE:HD12 | 1.93 | 0.51 |
| 7:G:144:ASP:OD1 | 7:G:145:GLU:N | 2.44 | 0.50 |
| 3:C:4:ASP:O | 3:C:18:GLN:NE2 | 2.44 | 0.50 |
| 6:F:98:ASN:HD22 | 8:H:68:ARG:CZ | 2.24 | 0.50 |
| 8:H:32:ARG:HH12 | 8:H:132:LEU:HD13 | 1.77 | 0.50 |
| 3:C:183:THR:HB | 3:C:186:LEU:HD23 | 1.94 | 0.49 |
| 14:N:203:SER:OG | 14:N:204:TYR:N | 2.46 | 0.49 |
| 15:O:98:ALA:O | 15:O:102:MET:HG3 | 2.12 | 0.49 |
| 1:A:69:THR:HG22 | 1:A:70:LYS:N | 2.28 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:F:13:SER:HB2 | 7:G:132:ARG:HB3 | 1.95 | 0.49 |
| 6:F:153:ASP:OD1 | 6:F:154:PRO:HD2 | 2.12 | 0.49 |
| 10:J:76:GLU:OE1 | 10:J:91:ARG:NH1 | 2.42 | 0.49 |
| 4:D:68:VAL:HG22 | 4:D:76:CYS:HB3 | 1.95 | 0.48 |
| 13:M:101:ASN:HB3 | 13:M:132:HIS:CE1 | 2.48 | 0.48 |
| 2:B:90:LEU:HG | 2:B:114:LEU:HD13 | 1.95 | 0.48 |
| 11:K:196:ASN:O | 11:K:200:GLU:HG3 | 2.13 | 0.48 |
| 15:O:165:ALA:HB1 | 15:O:173:LEU:HD22 | 1.96 | 0.47 |
| 12:L:113:ASP:OD2 | 12:L:116:THR:N | 2.37 | 0.47 |
| 4:D:167:ALA:HB1 | 4:D:181:LEU:HD13 | 1.97 | 0.47 |
| 6:F:47:VAL:HG22 | 6:F:216:TRP:HB3 | 1.97 | 0.47 |
| 6:F:216:TRP:CZ3 | 6:F:228:VAL:HG22 | 2.50 | 0.47 |
| 7:G:170:VAL:HG13 | 7:G:171:LYS:HG2 | 1.96 | 0.47 |
| 6:F:231:ASP:OD1 | 6:F:231:ASP:N | 2.44 | 0.47 |
| 6:F:37:ALA:HB2 | 6:F:50:VAL:HG23 | 1.97 | 0.46 |
| 15:O:99:ARG:HD3 | 15:O:123:ILE:HD11 | 1.95 | 0.46 |
| 9:I:187:PRO:HB3 | 9:I:237:THR:HG22 | 1.97 | 0.46 |
| 14:N:117:LEU:HD12 | 14:N:120:ARG:HD3 | 1.97 | 0.46 |
| 5:E:47:VAL:HG12 | 5:E:195:LEU:HD22 | 1.97 | 0.46 |
| 12:L:15:LYS:HE3 | 12:L:119:PRO:HB2 | 1.96 | 0.46 |
| 14:N:195:TYR:HA | 14:N:198:MET:HG2 | 1.97 | 0.46 |
| 15:O:47:ASP:N | 15:O:47:ASP:OD1 | 2.49 | 0.46 |
| 15:O:101:LYS:HE3 | 15:O:105:HIS:CE1 | 2.50 | 0.46 |
| 5:E:227:ASP:N | 5:E:227:ASP:OD1 | 2.49 | 0.46 |
| 7:G:17:SER:HB3 | 7:G:21:ARG:H | 1.80 | 0.46 |
| 4:D:157:ASP:OD2 | 9:I:285:ASN:HB2 | 2.15 | 0.46 |
| 10:J:74:ASN:OD1 | 10:J:75:ALA:N | 2.49 | 0.46 |
| 5:E:98:VAL:HG12 | 5:E:99:PHE:HD1 | 1.81 | 0.46 |
| 9:I:244:LEU:HD13 | 9:I:277:MET:HG3 | 1.99 | 0.45 |
| 11:K:113:THR:HG22 | 11:K:115:ARG:HE | 1.81 | 0.45 |
| 13:M:43:LEU:HD13 | 13:M:188:ILE:HD13 | 1.97 | 0.45 |
| 2:B:127:LYS:NZ | 8:H:90:GLN:O | 2.47 | 0.45 |
| 4:D:40:ILE:HD11 | 4:D:194:ALA:HB1 | 1.99 | 0.45 |
| 7:G:206:LEU:HB3 | 7:G:208:ILE:HG12 | 1.97 | 0.45 |
| 14:N:67:PHE:HE2 | 14:N:69:HIS:HB2 | 1.80 | 0.45 |
| 14:N:67:PHE:CE2 | 14:N:69:HIS:HB2 | 2.51 | 0.45 |
| 3:C:196:LEU:HA | 3:C:199:VAL:HG12 | 1.98 | 0.45 |
| 5:E:218:ASP:OD1 | 5:E:218:ASP:N | 2.43 | 0.45 |
| 15:O:96:ILE:HD11 | 15:O:120:LEU:HD13 | 1.99 | 0.45 |
| 3:C:195:LEU:HD23 | 3:C:195:LEU:HA | 1.89 | 0.44 |
| 6:F:18:ASP:OD1 | 6:F:18:ASP:N | 2.44 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 11:K:45:THR:HA | 11:K:171:GLY:HA3 | 1.98 | 0.44 |
| 15:O:161:ASP:N | 15:O:161:ASP:OD1 | 2.50 | 0.44 |
| 8:H:115:GLU:OE2 | 11:K:132:ARG:NH2 | 2.50 | 0.44 |
| 13:M:5:ILE:HB | 13:M:16:ALA:HB3 | 1.99 | 0.44 |
| 1:A:193:LEU:O | 1:A:197:GLU:HG2 | 2.18 | 0.44 |
| 7:G:73:THR:HG22 | 7:G:74:GLU:H | 1.82 | 0.44 |
| 15:O:142:ASP:OD1 | 15:O:143:GLU:N | 2.46 | 0.44 |
| 6:F:181:GLN:O | 6:F:185:MET:HG3 | 2.18 | 0.43 |
| 8:H:89:VAL:O | 8:H:89:VAL:HG23 | 2.17 | 0.43 |
| 11:K:215:ASN:OD1 | 11:K:216:ILE:N | 2.50 | 0.43 |
| 5:E:101:ARG:HD2 | 5:E:102:PRO:O | 2.18 | 0.43 |
| 10:J:144:THR:HG22 | 10:J:146:SER:H | 1.83 | 0.43 |
| 7:G:10:ASP:OD1 | 7:G:10:ASP:N | 2.46 | 0.43 |
| 8:H:39:LYS:HD3 | 8:H:39:LYS:HA | 1.76 | 0.43 |
| 4:D:18:GLU:HG3 | 4:D:20:ARG:HG3 | 2.01 | 0.43 |
| 4:D:161:THR:HG21 | 5:E:78:THR:HB | 2.00 | 0.43 |
| 6:F:220:LEU:HD12 | 6:F:221:THR:HG23 | 2.00 | 0.43 |
| 9:I:260:LYS:HD3 | 9:I:260:LYS:HA | 1.82 | 0.43 |
| 12:L:161:ASP:OD1 | 12:L:162:HIS:N | 2.52 | 0.42 |
| 5:E:128:TYR:O | 5:E:149:PRO:HB3 | 2.19 | 0.42 |
| 15:O:141:LEU:HD11 | 15:O:145:GLY:HA2 | 2.01 | 0.42 |
| 5:E:138:ASP:N | 5:E:138:ASP:OD1 | 2.52 | 0.42 |
| 10:J:69:THR:HG22 | 10:J:69:THR:O | 2.20 | 0.42 |
| 11:K:217:ASP:OD1 | 11:K:218:LEU:N | 2.52 | 0.42 |
| 5:E:88:MET:SD | 5:E:112:ILE:HD11 | 2.60 | 0.42 |
| 6:F:38:ILE:HD11 | 6:F:194:VAL:HG13 | 2.01 | 0.42 |
| 2:B:186:LEU:HD12 | 2:B:186:LEU:HA | 1.87 | 0.42 |
| 6:F:216:TRP:HE1 | 6:F:220:LEU:HD11 | 1.84 | 0.42 |
| 7:G:43:ARG:HG3 | 7:G:149:PRO:HB2 | 2.02 | 0.42 |
| 9:I:254:LEU:HD22 | 9:I:263:VAL:HG21 | 2.01 | 0.42 |
| 1:A:182:LEU:HD12 | 1:A:182:LEU:HA | 1.91 | 0.41 |
| 6:F:28:MET:O | 6:F:31:VAL:HG12 | 2.19 | 0.41 |
| 7:G:1:MET:O | 7:G:3:ARG:HG2 | 2.19 | 0.41 |
| 10:J:32:MET:HE1 | 10:J:87:ALA:HB1 | 2.01 | 0.41 |
| 11:K:51:TYR:HA | 11:K:189:MET:HB2 | 2.01 | 0.41 |
| 4:D:233:GLU:O | 4:D:236:GLU:HG3 | 2.20 | 0.41 |
| 5:E:62:LYS:NZ | 9:I:288:THR:O | 2.48 | 0.41 |
| 13:M:108:ASP:OD1 | 13:M:109:GLU:N | 2.53 | 0.41 |
| 10:J:234:LEU:HD12 | 10:J:234:LEU:HA | 1.83 | 0.41 |
| 2:B:178:ASP:OD2 | 2:B:195:LYS:NZ | 2.48 | 0.41 |
| 4:D:9:ASP:OD1 | 4:D:9:ASP:N | 2.53 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 5:E:98:VAL:HG12 | 5:E:99:PHE:CD1 | 2.56 | 0.41 |
| 9:I:237:THR:HG21 | 9:I:246:THR:HG23 | 2.02 | 0.41 |
| 3:C:89:VAL:HG11 | 8:H:32:ARG:HH21 | 1.86 | 0.41 |
| 4:D:168:ARG:HD2 | 4:D:168:ARG:HA | 1.88 | 0.41 |
| 6:F:229:PRO:HD2 | 6:F:232:ILE:HD12 | 2.03 | 0.41 |
| 6:F:84:ASP:HB3 | 6:F:132:PHE:HD1 | 1.86 | 0.41 |
| 12:L:123:SER:HB3 | 12:L:137:VAL:CG1 | 2.51 | 0.41 |
| 14:N:92:LYS:HB3 | 14:N:92:LYS:HE2 | 1.89 | 0.41 |
| 14:N:111:CYS:O | 14:N:115:GLU:HG2 | 2.21 | 0.41 |
| 3:C:196:LEU:HD21 | 3:C:202:GLY:HA3 | 2.02 | 0.41 |
| 14:N:97:ASN:OD1 | 14:N:98:PRO:HD2 | 2.21 | 0.41 |
| 15:O:50:ILE:HG13 | 15:O:225:ILE:HD13 | 2.03 | 0.41 |
| 12:L:45:MET:O | 12:L:49:LEU:HB3 | 2.21 | 0.40 |
| 3:C:189:LYS:HE3 | 3:C:228:TYR:HD1 | 1.85 | 0.40 |
| 4:D:202:LEU:HD23 | 4:D:202:LEU:HA | 1.95 | 0.40 |
| 6:F:88:LEU:HD23 | 6:F:88:LEU:HA | 1.94 | 0.40 |
| 3:C:173:GLU:OE2 | 4:D:56:SER:OG | 2.37 | 0.40 |
| 6:F:24:VAL:O | 6:F:28:MET:HG3 | 2.21 | 0.40 |
| 5:E:84:LEU:O | 5:E:88:MET:HG3 | 2.21 | 0.40 |
| 11:K:172:SER:OG | 11:K:173:GLY:N | 2.55 | 0.40 |
| 2:B:35:LEU:HB3 | 2:B:46:ALA:HB3 | 2.02 | 0.40 |
| 3:C:107:ILE:HD12 | 3:C:107:ILE:HA | 1.93 | 0.40 |
| 7:G:45:LYS:HE2 | 7:G:45:LYS:HB3 | 1.85 | 0.40 |
| 14:N:164:ASP:OD1 | 14:N:164:ASP:N | 2.49 | 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 | A | 227/234 (97%) | 220 (97%) | 7 (3%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|------|------|
| 2 | B | 238/261 (91%) | 233 (98%) | 5 (2%) | 0 | 100 | 100 |
| 3 | C | 233/248 (94%) | 223 (96%) | 10 (4%) | 0 | 100 | 100 |
| 4 | D | 232/242 (96%) | 219 (94%) | 13 (6%) | 0 | 100 | 100 |
| 5 | E | 238/264 (90%) | 226 (95%) | 12 (5%) | 0 | 100 | 100 |
| 6 | F | 238/255 (93%) | 234 (98%) | 4 (2%) | 0 | 100 | 100 |
| 7 | G | 238/247 (96%) | 232 (98%) | 5 (2%) | 1 (0%) | 34 | 69 |
| 8 | H | 111/141 (79%) | 106 (96%) | 5 (4%) | 0 | 100 | 100 |
| 9 | I | 263/288 (91%) | 247 (94%) | 16 (6%) | 0 | 100 | 100 |
| 10 | J | 243/265 (92%) | 231 (95%) | 12 (5%) | 0 | 100 | 100 |
| 11 | K | 209/332 (63%) | 202 (97%) | 7 (3%) | 0 | 100 | 100 |
| 12 | L | 173/205 (84%) | 167 (96%) | 6 (4%) | 0 | 100 | 100 |
| 13 | M | 195/202 (96%) | 185 (95%) | 10 (5%) | 0 | 100 | 100 |
| 14 | N | 164/263 (62%) | 157 (96%) | 7 (4%) | 0 | 100 | 100 |
| 15 | O | 150/241 (62%) | 139 (93%) | 11 (7%) | 0 | 100 | 100 |
| All | All | 3152/3688 (86%) | 3021 (96%) | 130 (4%) | 1 (0%) | 100 | 100 |

All (1) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7 | G | 1 | MET |

### 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 | A | 174/191 (91%) | 174 (100%) | 0 | 100 | 100 |
| 2 | B | 173/221 (78%) | 173 (100%) | 0 | 100 | 100 |
| 3 | C | 180/211 (85%) | 180 (100%) | 0 | 100 | 100 |
| 4 | D | 186/203 (92%) | 186 (100%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------|-----------|----------|-----|-----|
| 5 | E | 195/224 (87%) | 195 (100%) | 0 | 100 | 100 |
| 6 | F | 187/212 (88%) | 187 (100%) | 0 | 100 | 100 |
| 7 | G | 189/210 (90%) | 189 (100%) | 0 | 100 | 100 |
| 8 | H | 104/128 (81%) | 102 (98%) | 2 (2%) | 57 | 81 |
| 9 | I | 220/262 (84%) | 220 (100%) | 0 | 100 | 100 |
| 10 | J | 208/237 (88%) | 208 (100%) | 0 | 100 | 100 |
| 11 | K | 160/257 (62%) | 159 (99%) | 1 (1%) | 86 | 94 |
| 12 | L | 135/174 (78%) | 134 (99%) | 1 (1%) | 84 | 93 |
| 13 | M | 139/171 (81%) | 139 (100%) | 0 | 100 | 100 |
| 14 | N | 115/202 (57%) | 115 (100%) | 0 | 100 | 100 |
| 15 | O | 104/199 (52%) | 104 (100%) | 0 | 100 | 100 |
| All | All | 2469/3102 (80%) | 2465 (100%) | 4 (0%) | 93 | 98 |

All (4) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 8 | H | 33 | LYS |
| 8 | H | 68 | ARG |
| 11 | K | 115 | ARG |
| 12 | L | 99 | ARG |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 8 | H | 58 | ASN |
| 13 | M | 101 | ASN |

#### 5.3.3   RNA (i)

There are no RNA molecules in this entry.

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

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

## 5.5  Carbohydrates Ⓘ

There are no monosaccharides in this entry.

## 5.6  Ligand geometry Ⓘ

There are no ligands in this entry.

## 5.7  Other polymers Ⓘ

There are no such residues in this entry.

## 5.8  Polymer linkage issues Ⓘ

There are no chain breaks in this entry.

# 6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-18773. 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 ⓘ
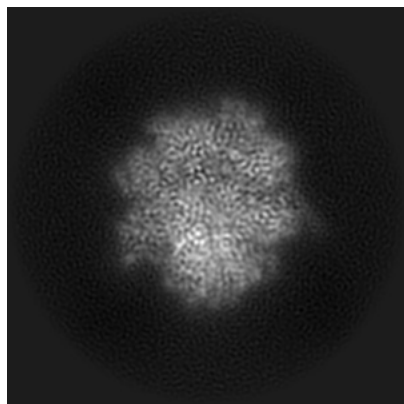
### 6.1.1 Primary map



X
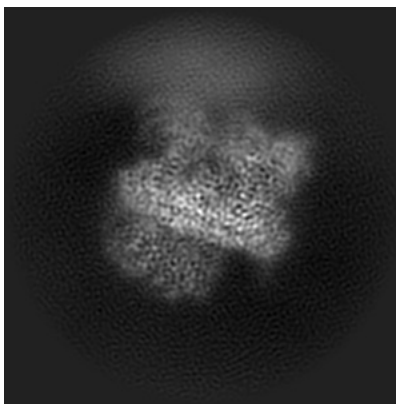


Y
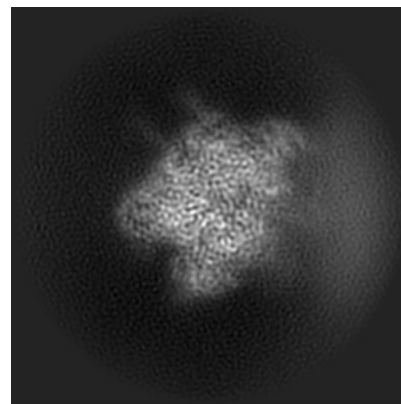


Z

### 6.1.2 Raw map



X



Y



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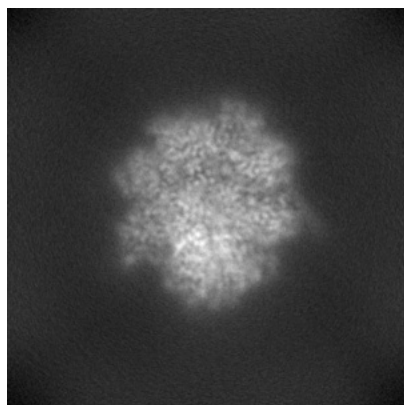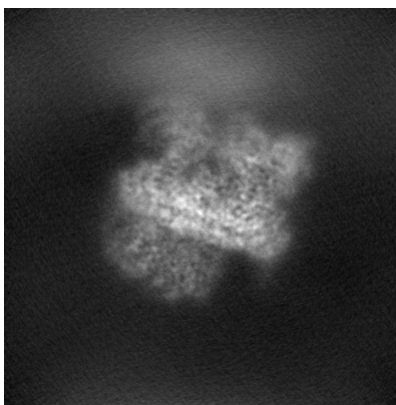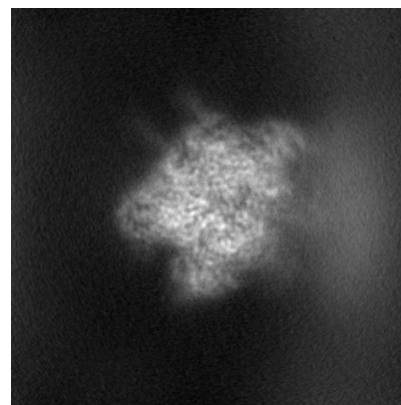
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices (i)

### 6.2.1 Primary map
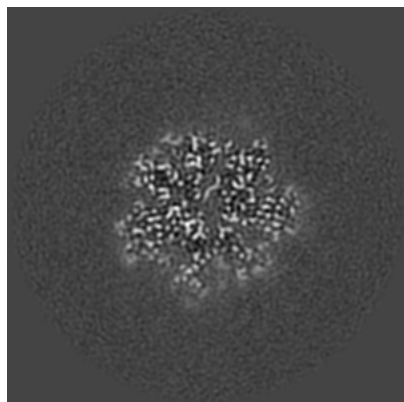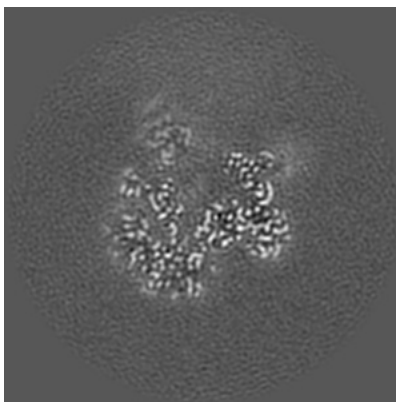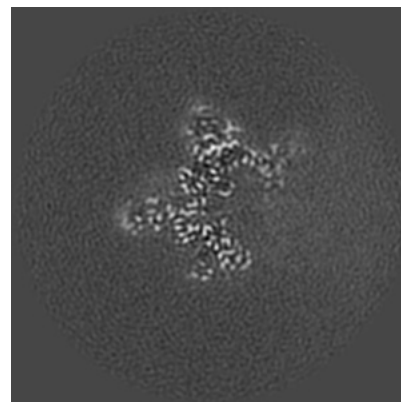


X Index: 150                Y Index: 150                Z Index: 150

### 6.2.2 Raw map
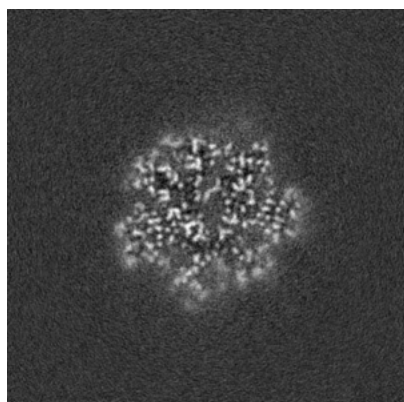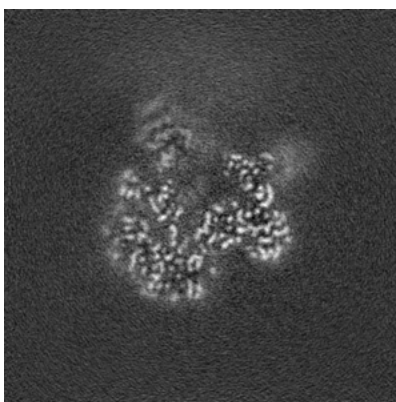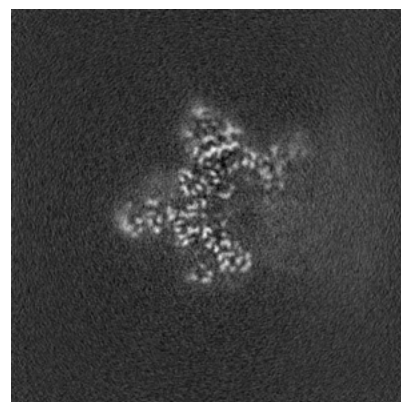


X Index: 150                Y Index: 150                Z Index: 150

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

## 6.3　Largest variance slices (i)

### 6.3.1　Primary map
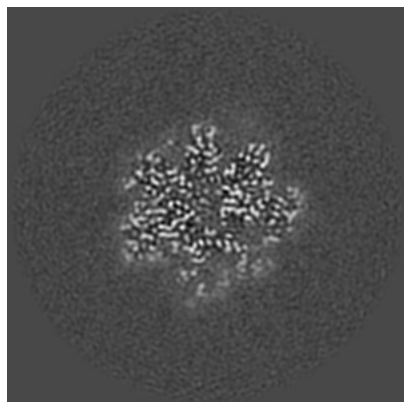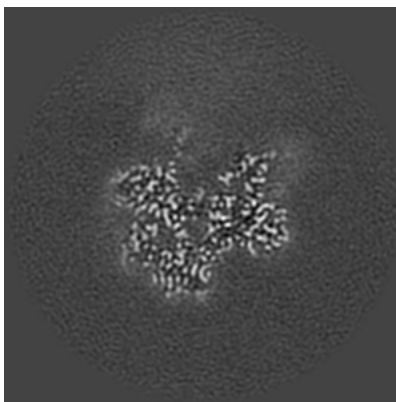


| X Index: 147 | Y Index: 141 | Z Index: 179 |
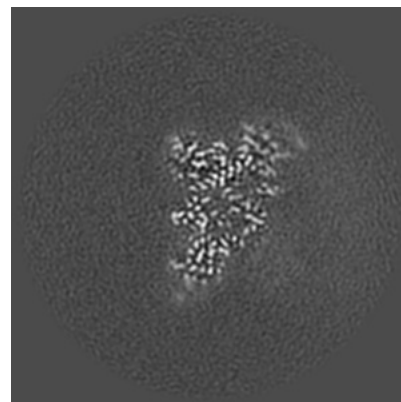
### 6.3.2　Raw map
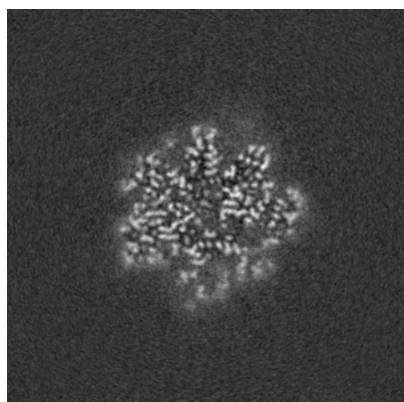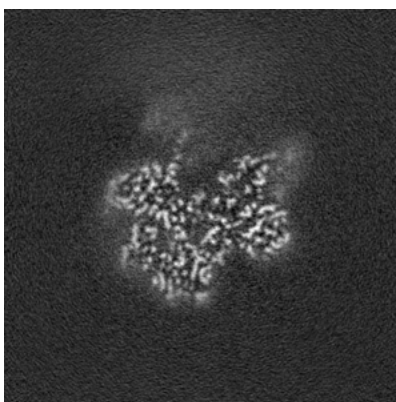


| X Index: 147 | Y Index: 140 | Z Index: 129 |
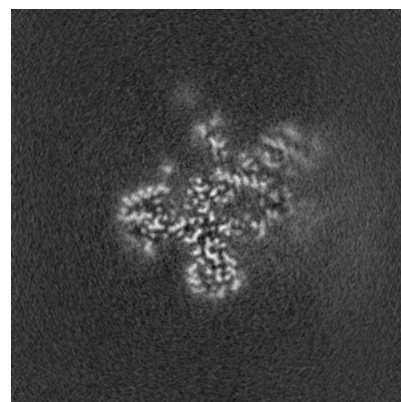
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map
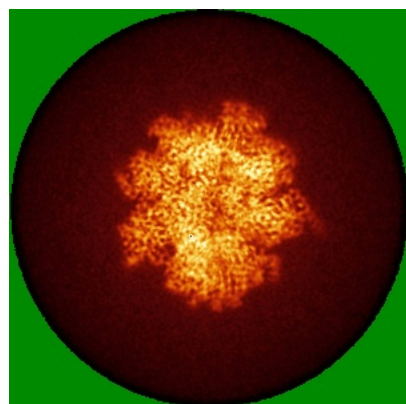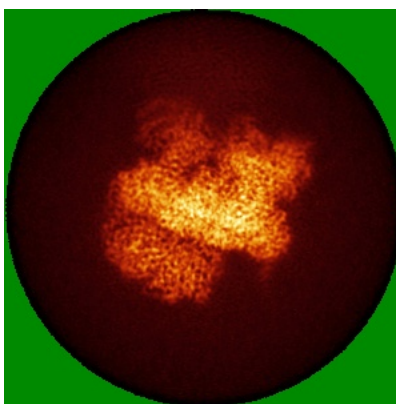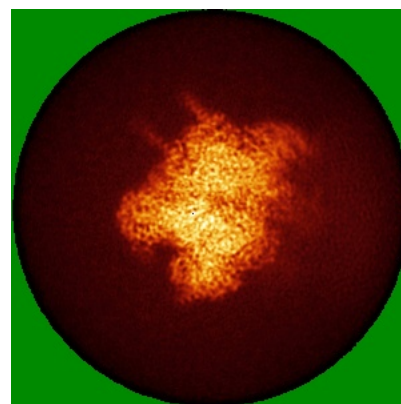


| | | |
|:-:|:-:|:-:|
| X | Y | Z |

### 6.4.2 Raw map



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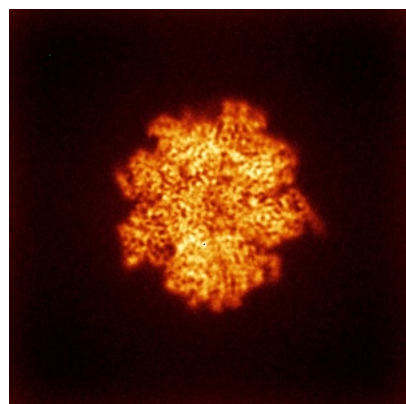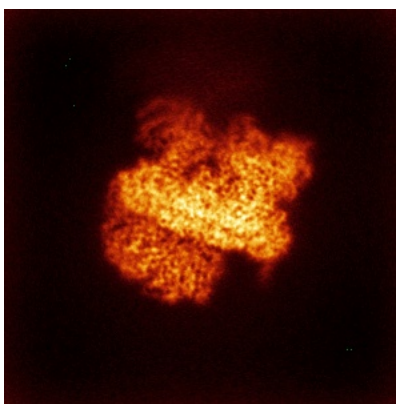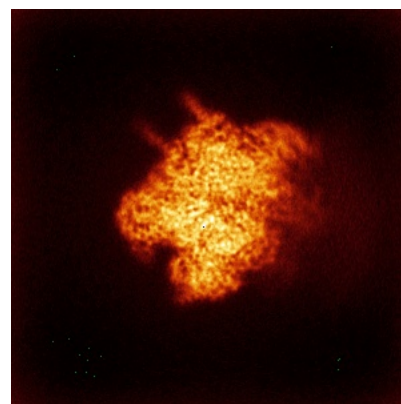
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views ⓘ

### 6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.5. 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



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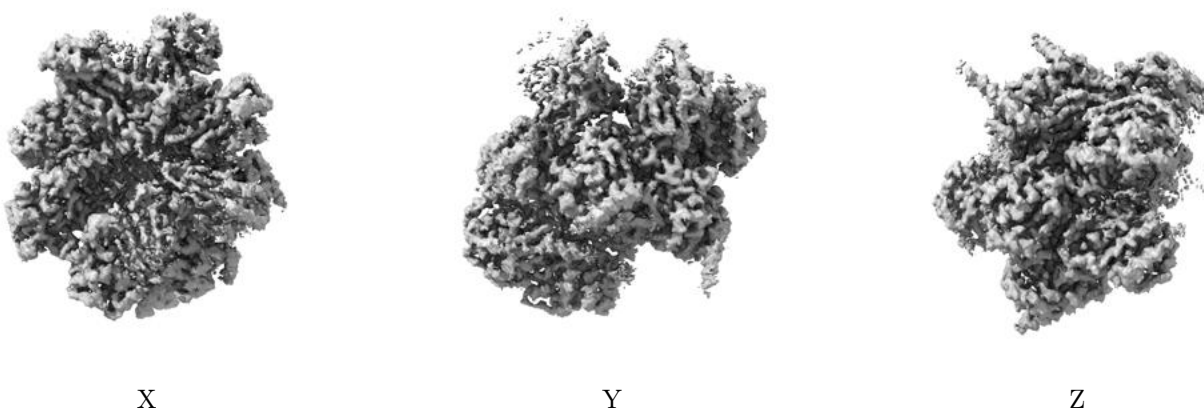
These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

## 6.6 Mask visualisation ⓘ

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

A mask typically either:

- Encompasses the whole structure

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

### 6.6.1 emd_18773_msk_1.map ⓘ
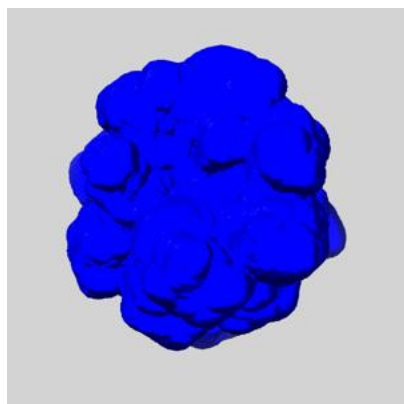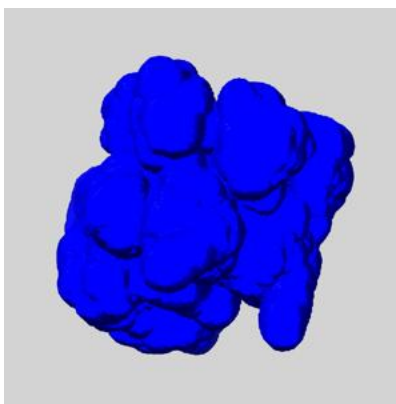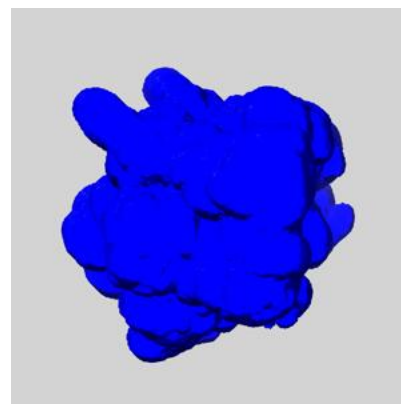


X                                    Y                                    Z

# 7 Map analysis (i)

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

## 7.1 Map-value distribution (i)
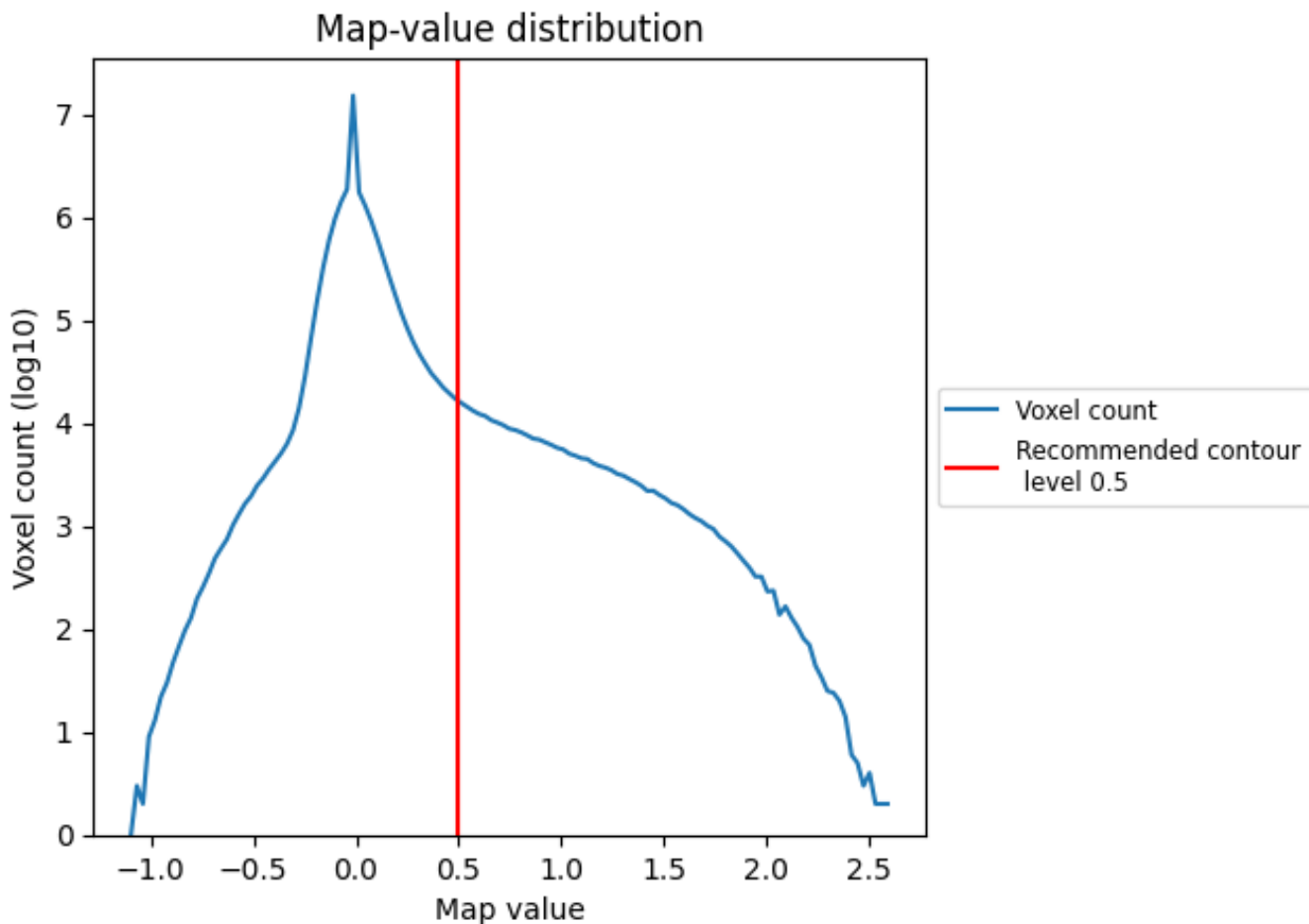


The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

## 7.2 Volume estimate ⓘ
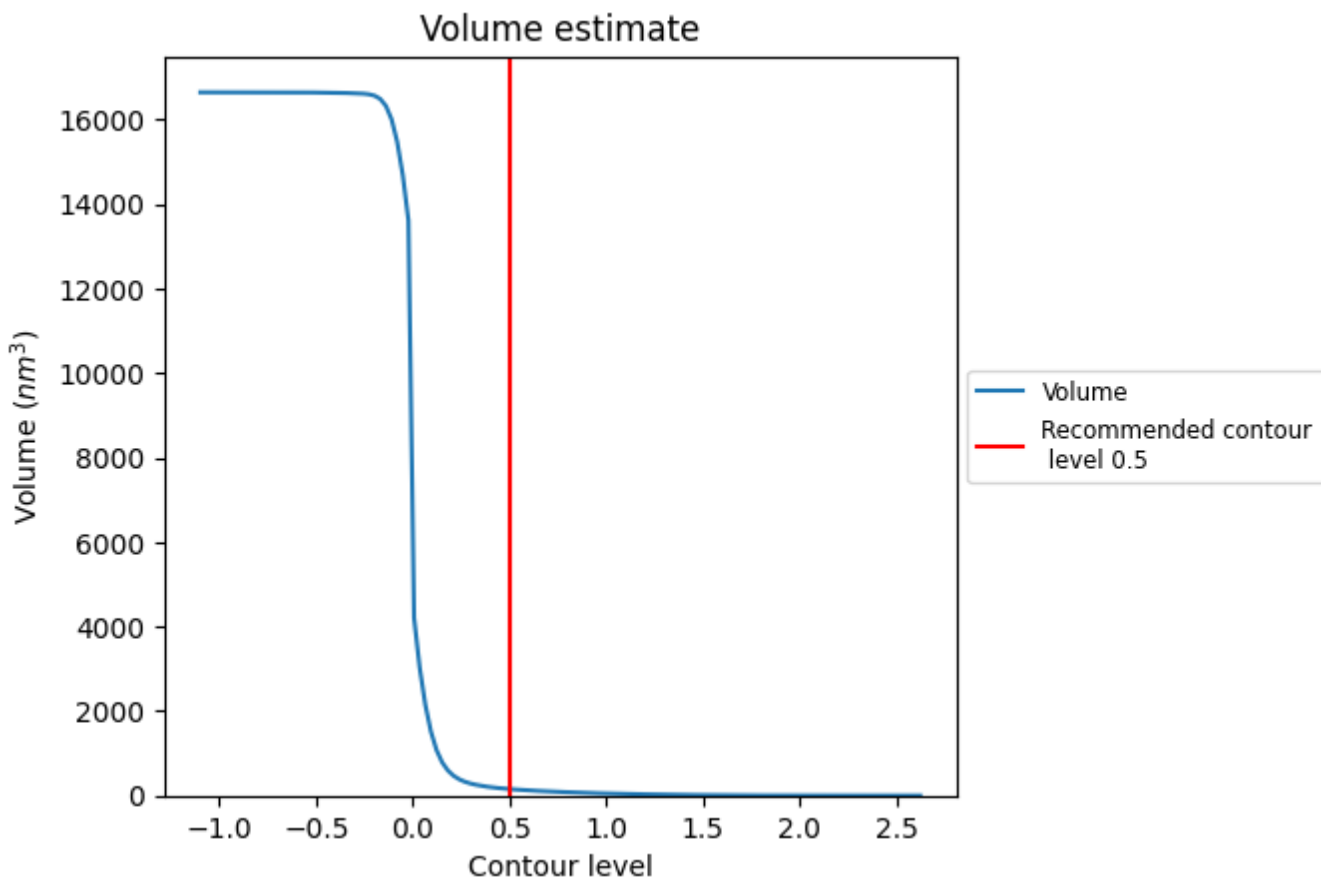


The volume at the recommended contour level is 154 nm$^3$; this corresponds to an approximate mass of 139 kDa.

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 ⓘ
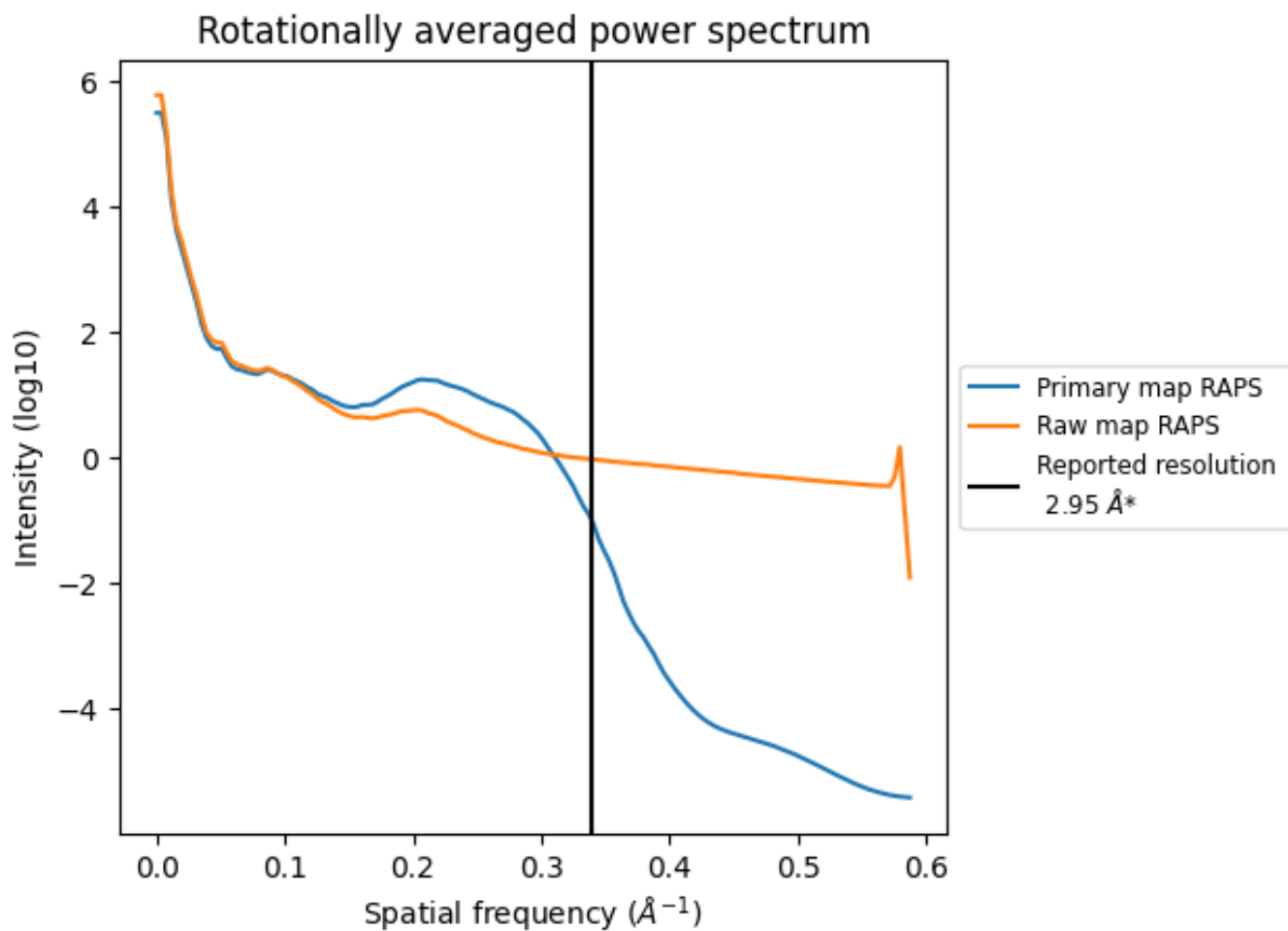


*Reported resolution corresponds to spatial frequency of 0.339 Å$^{-1}$

# 8 Fourier-Shell correlation ⓘ

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

## 8.1 FSC ⓘ
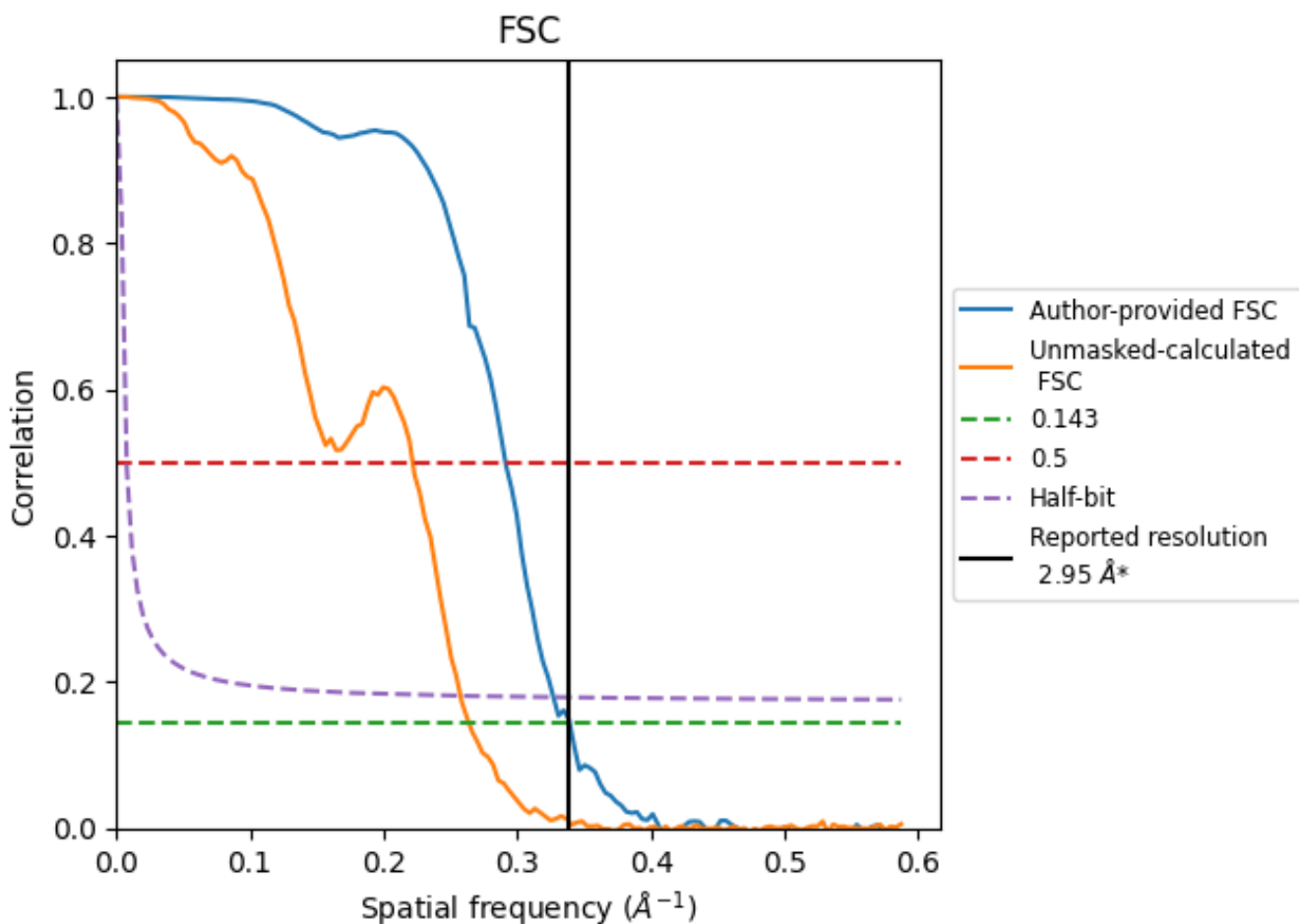


*Reported resolution corresponds to spatial frequency of 0.339 $\text{Å}^{-1}$

## 8.2 Resolution estimates (i)

| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 2.95 | - | - |
| Author-provided FSC curve | 2.95 | 3.43 | 3.06 |
| Unmasked-calculated* | 3.79 | 4.51 | 3.88 |

*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 3.79 differs from the reported value 2.95 by more than 10 %

# 9   Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-18773 and PDB model 8QZ9. Per-residue inclusion information can be found in section 3 on page 9.

## 9.1   Map-model overlay ⓘ



| X | Y | Z |
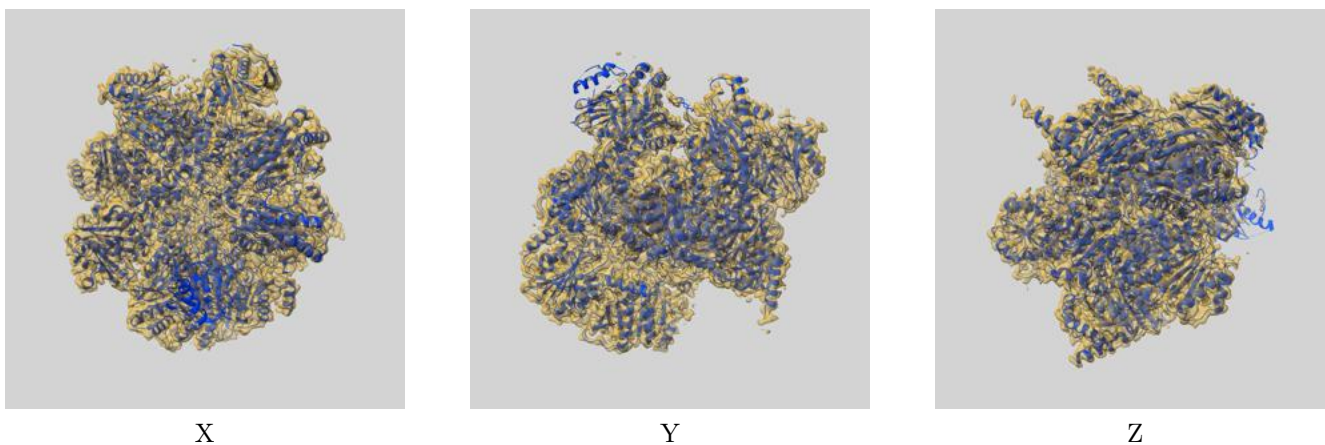
The images above show the 3D surface view of the map at the recommended contour level 0.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2    Q-score mapped to coordinate model  ⓘ



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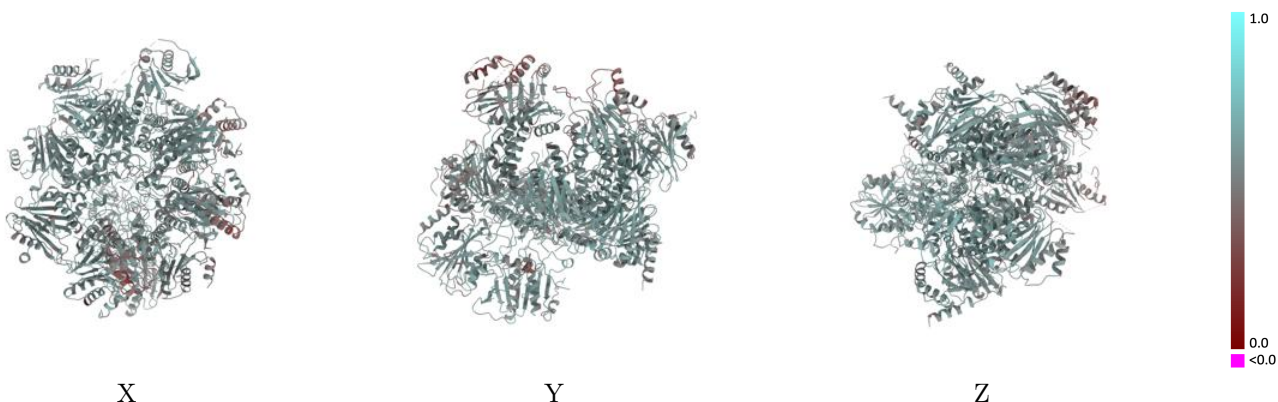
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3    Atom inclusion mapped to coordinate model  ⓘ



X                              Y                              Z
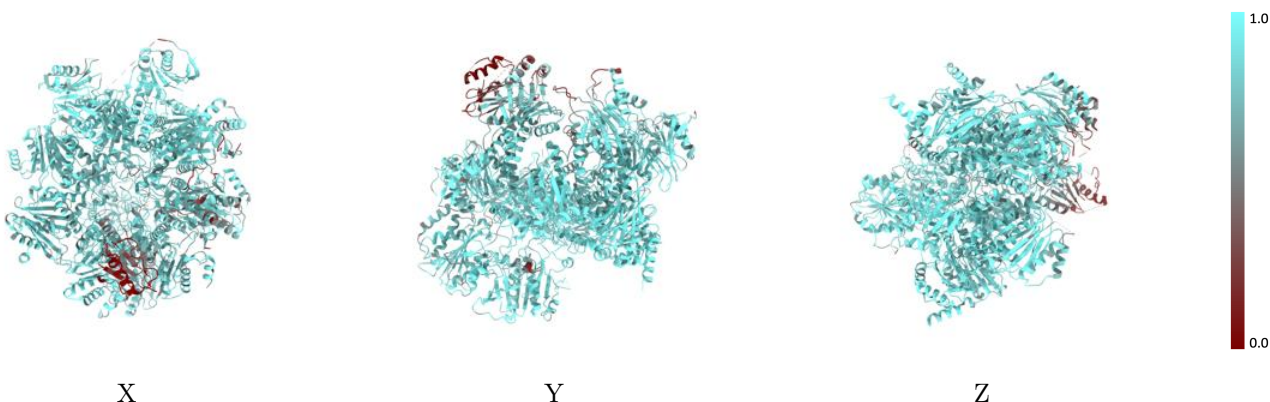
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.5).

## 9.4 Atom inclusion ⓘ
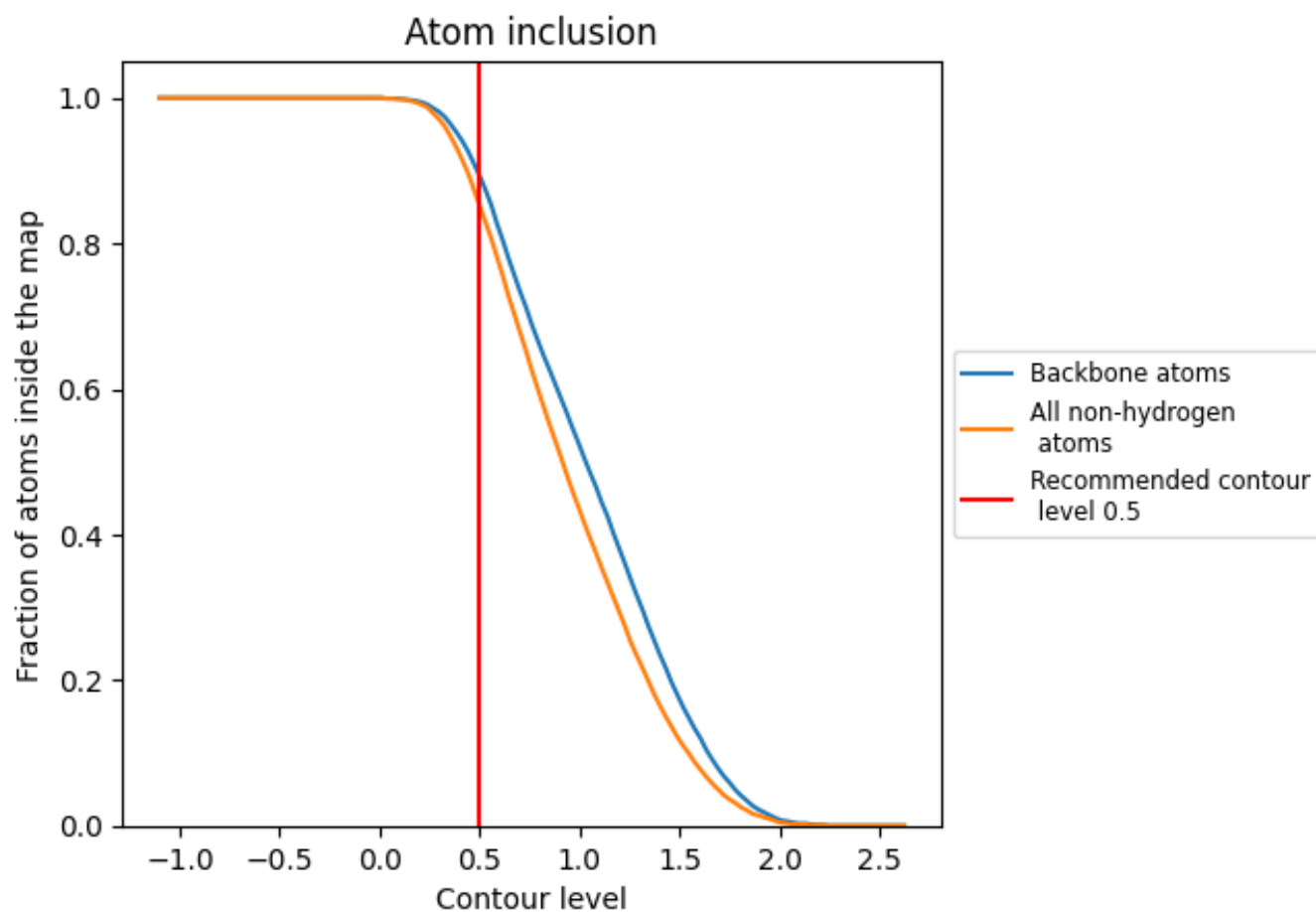


At the recommended contour level, 89% of all backbone atoms, 85% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.5) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|:-----:|:--------------:|:-------:|
| All | 0.8530 | 0.5550 |
| A | 0.9410 | 0.5860 |
| B | 0.9300 | 0.5810 |
| C | 0.9190 | 0.5720 |
| D | 0.8640 | 0.5400 |
| E | 0.9060 | 0.5670 |
| F | 0.8870 | 0.5610 |
| G | 0.9230 | 0.5770 |
| H | 0.8250 | 0.5630 |
| I | 0.8170 | 0.5450 |
| J | 0.8940 | 0.5680 |
| K | 0.8740 | 0.5650 |
| L | 0.8800 | 0.5550 |
| M | 0.7700 | 0.5150 |
| N | 0.7070 | 0.5150 |
| O | 0.4460 | 0.4720 |

1.0

0.0
<0.0