# WORLDWIDE
# wwPDB
## PROTEIN DATA BANK

# Full wwPDB EM Validation Report (i)

Aug 2, 2022 – 11:10 am BST

|           |   |                                                                                                          |
|-----------|---|----------------------------------------------------------------------------------------------------------|
| PDB ID    | : | 7PX3                                                                                                      |
| EMDB ID   | : | EMD-13690                                                                                                 |
| Title     | : | Structure of U5 snRNP assembly and recycling factor TSSC4 in complex with BRR2 and Jab1 domain of PRPF8  |
| Authors   | : | Bergfort, A.; Kuropka, B.; Ilik, I.A.; Freund, C.; Aktas, T.; Hilal, T.; Weber, G.; Wahl, M.C.           |
| Deposited on | : | 2021-10-07                                                                                             |
| Resolution | : | 3.05 Å(reported)                                                                                         |

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

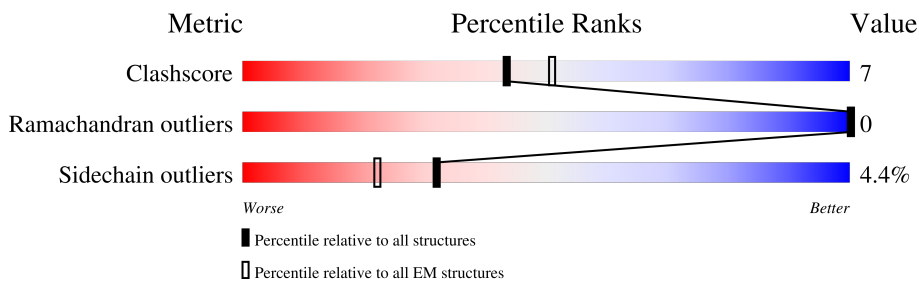|                                 |   |                                                                                       |
|---------------------------------|---|---------------------------------------------------------------------------------------|
| EMDB validation analysis        | : | 0.0.1.dev8                                                                             |
| MolProbity                      | : | 4.02b-467                                                                              |
| Percentile statistics           | : | 20191225.v01 (using entries in the PDB archive December 25th 2019)                     |
| Ideal geometry (proteins)       | : | Engh & Huber (2001)                                                                    |
| Ideal geometry (DNA, RNA)       | : | Parkinson et al. (1996)                                                                |
| Validation Pipeline (wwPDB-VP)  | : | 2.29                                                                                   |

# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.05 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 | | 7 |
| | Ramachandran outliers | | 0 |
| | Sidechain outliers | | 4.4% |

*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 | B | 1747 | 78% · · · · 19% · · |
| 2 | J | 263 | 76% · 18% · 5% |
| 3 | T | 329 | 16% · 80% |

# 2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 16430 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 U5 small nuclear ribonucleoprotein 200 kDa helicase.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 1 | B | 1725 | Total 13870 | C 8865 | N 2373 | O 2560 | S 72 | 0 | 0 |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| B | 390 | GLY | - | expression tag | UNP O75643 |
| B | 391 | ALA | - | expression tag | UNP O75643 |
| B | 392 | GLU | - | expression tag | UNP O75643 |
| B | 393 | PHE | - | expression tag | UNP O75643 |

- Molecule 2 is a protein called Pre-mRNA-processing-splicing factor 8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 2 | J | 250 | Total 2030 | C 1301 | N 350 | O 368 | S 11 | 0 | 0 |

There are 6 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| J | 2058 | GLY | - | expression tag | UNP Q6P2Q9 |
| J | 2059 | PRO | - | expression tag | UNP Q6P2Q9 |
| J | 2060 | LEU | - | expression tag | UNP Q6P2Q9 |
| J | 2061 | GLY | - | expression tag | UNP Q6P2Q9 |
| J | 2062 | SER | - | expression tag | UNP Q6P2Q9 |
| J | 2063 | MET | - | expression tag | UNP Q6P2Q9 |

- Molecule 3 is a protein called Protein TSSC4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|-------|
| 3 | T | 66 | Total 530 | C 332 | N 103 | O 94 | S 1 | 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: U5 small nuclear ribonucleoprotein 200 kDa helicase

R1762 R1763 N1769 L1773 R1779 L1785 V1789 L1796 E1797 Q1798 I1804 M1808 D1809 V1810 M1817 Y1823 L1831 L1836 N1851 Y1855 E1856 I1860 R1861 H1862 D1865 L1879 P1882 H1888 T1891 N1892 L1904 E1907 L1930 E1944

Q1947 T1950 L1963 T1967 H1970 V1979 E1980 S1981 V1982 F1983 D1984 I1985 M1986 E1989 D1990 E1991 E1992 R1993 L1996 L1997 Q1998 L1999 I2004 F2010 R2013 I2017 I2029 V2035 V2036 V2037 L2038 V2039 Q2040 L2041 E2042 R2043 E2044 G2049 P2050 V2051 I2052 R2060 E2061 G2063

W2064 I2068 L2082 T2083 L2084 V2090 K2091 L2106 Y2107 F2108 M2109 S2110 D2111 A2112 D2117 Y2120 K2127 GLU ALA GLU THR ASP SER ASP SER ASP

• Molecule 2: Pre-mRNA-processing-splicing factor 8

Chain J: 76% 18% 5%

GLY PRO LEU GLY SER MET THR GLN THR PHE SER SER LYS T2071 R2074 H2084 L2085 R2086 T2087 N2088 H2089 I2090 S2093 I2097 L2106 P2107 K2108 N2109 V2110 D2119 L2120 L2128 P2133 V2139 I2142 R2143 C2144 I2145 P2149 H2154 P2160 L2163 P2164 K2170

S2189 P2190 Q2191 M2200 N2203 D2207 G2208 E2209 K2210 T2215 C2216 S2217 F2218 T2219 S2222 C2223 T2224 L2225 T2226 Y2235 R2239 L2252 R2258 V2259 Q2260 M2261 S2264 S2278 L2298 H2309 L2320

• Molecule 3: Protein TSSC4

Chain T: 16% 80%

MET ALA GLU ALA GLY THR GLY GLU PRO SER PRO SER SER VAL GLU GLY GLU HIS GLY THR GLU TYR ASP THR LEU PRO SER ASP THR VAL SER LEU SER ASP SER ASP SER GLU LEU SER GLU PRO GLY GLY ALA GLU VAL GLU ALA LEU SER PRO MET GLY LEU GLU PRO GLY GLU GLU ASP SER

GLY PRO ASP GLU PRO PRO SER PRO PRO SER GLY LEU LEU PRO ALA THR VAL GLN PRO PHE HIS LEU ARG GLY MET SER SER THR PHE SER GLN ARG SER ASP SER ASP ILE PHE ASP CYS LEU GLU GLY ALA ALA ARG ALA PRO SER SER VAL ALA HIS THR SER MET SER ASP ASN GLY

GLY PHE LYS ARG PRO LEU ALA PRO SER GLY ARG SER PRO VAL GLU GLY LEU GLY ARG ALA ALA HIS ARG SER PRO ALA SER PRO ARG VAL PRO PRO VAL P153 D154 Y155 V156 W162 T163 K164 L167 E168 ASP VAL THR GLU VAL SER GLU GLN SER ASN ALA THR ALA LEU LEU ALA PHE

LEU GLY SER GLN SER LEU ALA ALA PRO THR ASP CYS V198 Q203 R212 V213 I214 K217 P218 V219 R220 GLY SER VAL GLU ALA ARG HIS GLU ARG LYS ARG VAL LEU GLY LYS VAL GLY GLU PRO GLY ARG GLY LEU GLU GLY ASN PRO ALA THR ASP ARG GLY GLU G253 L260

P263 GLY SER PRO GLU ALA GLU GLU TRP GLY SER HIS HIS GLY GLY LEU GLN GLU VAL GLU ALA LEU SER GLY SER VAL HIS SER GLY SER VAL PRO GLY LEU PRO PRO VAL GLU THR VAL G303 R310 D313 K318 SER SER SER PRO GLU ASP ASP PRO GLY ALA GLU VAL

# 4 Experimental information ⓘ

| Property | Value | Source |
| --- | --- | --- |
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of particles used | 387973 | 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 $(e^-/\text{Å}^2)$ | 40 | Depositor |
| Minimum defocus (nm) | 800 | Depositor |
| Maximum defocus (nm) | 2000 | Depositor |
| Magnification | 120000 | Depositor |
| Image detector | FEI FALCON III (4k x 4k) | Depositor |
| Maximum map value | 2.916 | Depositor |
| Minimum map value | 0.000 | Depositor |
| Average map value | 0.008 | Depositor |
| Map value standard deviation | 0.069 | Depositor |
| Recommended contour level | 0.3 | Depositor |
| Map size (Å) | 283.824, 283.824, 283.824 | wwPDB |
| Map dimensions | 324, 324, 324 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 0.876, 0.876, 0.876 | 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 | B | 0.25 | 0/14164 | 0.46 | 0/19191 |
| 2 | J | 0.26 | 0/2095 | 0.44 | 0/2855 |
| 3 | T | 0.25 | 0/544 | 0.53 | 0/728 |
| All | All | 0.25 | 0/16803 | 0.46 | 0/22774 |

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 | B | 13870 | 0 | 14018 | 202 | 0 |
| 2 | J | 2030 | 0 | 1971 | 27 | 0 |
| 3 | T | 530 | 0 | 506 | 11 | 0 |
| All | All | 16430 | 0 | 16495 | 231 | 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 7.

All (231) 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) |
|--------|--------|--------------------------|-------------------|
| 1:B:1598:ILE:HG13 | 1:B:1599:PRO:HD3 | 1.70 | 0.73 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:827:ILE:HG22 | 1:B:868:ILE:HB | 1.71 | 0.73 |
| 1:B:969:LEU:HD21 | 1:B:998:VAL:HG11 | 1.70 | 0.72 |
| 1:B:1456:VAL:HG22 | 1:B:1491:SER:HB2 | 1.70 | 0.72 |
| 1:B:713:MET:SD | 1:B:753:ARG:NH2 | 2.66 | 0.68 |
| 1:B:1143:ILE:HG12 | 1:B:1165:ILE:HD12 | 1.75 | 0.68 |
| 1:B:971:LYS:HB2 | 1:B:980:GLN:HB2 | 1.75 | 0.68 |
| 1:B:539:ILE:HB | 1:B:612:ILE:HG22 | 1.75 | 0.68 |
| 1:B:436:ARG:NH1 | 1:B:443:GLU:OE2 | 2.26 | 0.67 |
| 3:T:217:LYS:HD2 | 3:T:219:VAL:H | 1.58 | 0.67 |
| 1:B:1515:HIS:ND1 | 1:B:1517:ASN:OD1 | 2.27 | 0.67 |
| 1:B:1538:ARG:NH1 | 1:B:1665:ASP:OD1 | 2.30 | 0.65 |
| 1:B:538:ILE:HB | 1:B:585:ILE:HG13 | 1.78 | 0.65 |
| 1:B:1443:LYS:O | 1:B:1447:ASN:ND2 | 2.30 | 0.65 |
| 1:B:1671:GLY:HA3 | 1:B:1860:ILE:HB | 1.79 | 0.64 |
| 1:B:1052:ILE:HG13 | 1:B:1053:GLU:HG2 | 1.79 | 0.64 |
| 1:B:570:THR:HA | 1:B:592:LYS:HG2 | 1.78 | 0.63 |
| 1:B:1566:ARG:NH1 | 1:B:1907:GLU:OE1 | 2.32 | 0.63 |
| 1:B:815:LEU:HD21 | 1:B:821:LEU:HD11 | 1.79 | 0.63 |
| 1:B:493:LEU:O | 1:B:519:ARG:NH1 | 2.29 | 0.62 |
| 1:B:1093:ARG:NH2 | 1:B:1273:ASP:OD1 | 2.32 | 0.62 |
| 1:B:1035:LEU:HD22 | 1:B:1039:LYS:HE3 | 1.81 | 0.62 |
| 1:B:701:PHE:O | 1:B:705:ASN:ND2 | 2.31 | 0.62 |
| 1:B:692:ILE:HG13 | 1:B:872:SER:HA | 1.81 | 0.62 |
| 1:B:552:VAL:HG21 | 1:B:568:GLU:HB3 | 1.80 | 0.61 |
| 1:B:858:ARG:HD2 | 1:B:861:TYR:HB2 | 1.82 | 0.61 |
| 1:B:1569:THR:HG22 | 1:B:1619:TYR:HB2 | 1.82 | 0.61 |
| 2:J:2086:ARG:NH1 | 2:J:2219:THR:O | 2.34 | 0.61 |
| 1:B:1433:ASP:OD1 | 1:B:1473:ARG:NH2 | 2.34 | 0.61 |
| 1:B:815:LEU:HD11 | 1:B:821:LEU:HD21 | 1.83 | 0.61 |
| 1:B:872:SER:HB3 | 1:B:876:LEU:HD12 | 1.82 | 0.61 |
| 1:B:1360:ALA:HB2 | 1:B:1490:LEU:HD11 | 1.83 | 0.60 |
| 1:B:1351:PRO:HG3 | 1:B:1516:PRO:HA | 1.83 | 0.60 |
| 2:J:2093:SER:OG | 2:J:2258:ARG:NH2 | 2.35 | 0.59 |
| 1:B:713:MET:HA | 1:B:753:ARG:HH22 | 1.68 | 0.59 |
| 1:B:1855:TYR:HB3 | 1:B:1891:THR:HG21 | 1.85 | 0.59 |
| 1:B:816:ALA:O | 1:B:855:ARG:NH1 | 2.36 | 0.58 |
| 2:J:2089:HIS:HB3 | 3:T:164:LYS:HE3 | 1.84 | 0.58 |
| 2:J:2207:ASP:OD2 | 2:J:2210:LYS:NZ | 2.34 | 0.58 |
| 1:B:1856:GLU:OE1 | 1:B:1888:HIS:NE2 | 2.37 | 0.57 |
| 1:B:1950:THR:OG1 | 1:B:2060:ARG:NH1 | 2.37 | 0.57 |
| 1:B:675:TYR:OH | 1:B:885:GLN:NE2 | 2.38 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:1160:GLU:OE1 | 1:B:1160:GLU:N | 2.34 | 0.57 |
| 1:B:543:PRO:HG3 | 1:B:847:LEU:HD11 | 1.86 | 0.57 |
| 1:B:2043:ARG:NH2 | 1:B:2062:GLU:OE2 | 2.37 | 0.57 |
| 2:J:2235:TYR:OH | 2:J:2239:ARG:NH2 | 2.37 | 0.56 |
| 1:B:969:LEU:HD22 | 1:B:985:GLY:HA2 | 1.87 | 0.56 |
| 1:B:1879:LEU:HD13 | 1:B:1882:PRO:HB3 | 1.87 | 0.56 |
| 1:B:617:ILE:HG22 | 1:B:652:SER:HB2 | 1.88 | 0.56 |
| 1:B:1756:THR:O | 1:B:1762:ARG:NH1 | 2.38 | 0.56 |
| 2:J:2119:ASP:OD1 | 2:J:2120:LEU:N | 2.39 | 0.55 |
| 1:B:988:ALA:HB2 | 1:B:998:VAL:HG21 | 1.88 | 0.55 |
| 1:B:741:MET:HA | 1:B:744:GLU:HG3 | 1.89 | 0.55 |
| 2:J:2108:LYS:HD3 | 3:T:167:LEU:HA | 1.88 | 0.55 |
| 2:J:2278:SER:OG | 2:J:2309:HIS:NE2 | 2.38 | 0.55 |
| 1:B:493:LEU:HD23 | 1:B:519:ARG:HB2 | 1.89 | 0.54 |
| 1:B:591:GLU:OE2 | 1:B:624:ARG:NH2 | 2.41 | 0.54 |
| 1:B:933:PRO:HG3 | 1:B:943:LEU:HD22 | 1.90 | 0.54 |
| 1:B:1190:LEU:HD11 | 1:B:1198:LEU:HD13 | 1.90 | 0.53 |
| 1:B:1967:THR:H | 1:B:1970:HIS:HB2 | 1.74 | 0.53 |
| 1:B:2082:LEU:HD22 | 1:B:2090:VAL:HG21 | 1.90 | 0.53 |
| 2:J:2106:LEU:HD12 | 2:J:2107:PRO:HD2 | 1.89 | 0.53 |
| 1:B:1455:GLU:HB3 | 1:B:1458:LEU:HD13 | 1.91 | 0.53 |
| 2:J:2225:LEU:HB3 | 2:J:2261:MET:HE1 | 1.91 | 0.53 |
| 1:B:735:ALA:HB2 | 1:B:810:VAL:HG11 | 1.91 | 0.53 |
| 2:J:2163:LEU:HD13 | 2:J:2164:PRO:HD2 | 1.91 | 0.52 |
| 1:B:622:ASP:OD1 | 1:B:623:ASP:N | 2.34 | 0.52 |
| 1:B:2010:PHE:HA | 1:B:2052:ILE:HD12 | 1.90 | 0.52 |
| 1:B:2013:ARG:NH1 | 1:B:2049:GLY:O | 2.43 | 0.52 |
| 1:B:1262:LEU:HD12 | 1:B:1263:PRO:HD2 | 1.91 | 0.52 |
| 1:B:1394:TYR:O | 1:B:1398:GLN:HB3 | 2.10 | 0.52 |
| 1:B:2051:VAL:HG21 | 1:B:2112:ALA:HB1 | 1.92 | 0.52 |
| 2:J:2200:MET:HE1 | 2:J:2208:GLY:HA2 | 1.91 | 0.52 |
| 1:B:475:PHE:HA | 1:B:558:ARG:HH21 | 1.74 | 0.52 |
| 1:B:846:ALA:HB1 | 1:B:882:LEU:HD11 | 1.91 | 0.52 |
| 1:B:2029:ILE:HD12 | 1:B:2035:VAL:HG22 | 1.91 | 0.52 |
| 1:B:603:ARG:HB2 | 1:B:1540:LEU:HD13 | 1.92 | 0.52 |
| 1:B:774:LEU:HB3 | 1:B:778:LEU:HG | 1.92 | 0.52 |
| 1:B:1131:GLN:OE1 | 1:B:1276:LEU:N | 2.40 | 0.51 |
| 1:B:474:GLY:O | 1:B:558:ARG:NE | 2.35 | 0.51 |
| 1:B:1481:ILE:HG23 | 1:B:1483:ARG:H | 1.76 | 0.51 |
| 1:B:920:LEU:HB3 | 1:B:953:ARG:HD2 | 1.94 | 0.50 |
| 1:B:1148:PHE:HE1 | 1:B:1152:ARG:HD2 | 1.76 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:1636:PHE:HD2 | 1:B:1656:VAL:HG21 | 1.75 | 0.50 |
| 1:B:2038:LEU:HD13 | 1:B:2091:LYS:HB3 | 1.92 | 0.50 |
| 1:B:1494:LEU:O | 1:B:1513:ASN:ND2 | 2.41 | 0.50 |
| 2:J:2149:PRO:O | 2:J:2160:PRO:HD3 | 2.11 | 0.50 |
| 2:J:2189:SER:OG | 2:J:2191:GLN:OE1 | 2.29 | 0.50 |
| 1:B:1804:ILE:HG12 | 1:B:1810:VAL:HG12 | 1.94 | 0.50 |
| 1:B:1265:GLN:HG2 | 2:J:2298:LEU:HD21 | 1.92 | 0.50 |
| 1:B:2017:ILE:HG23 | 1:B:2043:ARG:HB3 | 1.92 | 0.50 |
| 1:B:429:GLN:O | 1:B:886:GLN:NE2 | 2.35 | 0.50 |
| 1:B:723:VAL:HG22 | 1:B:827:ILE:HD11 | 1.93 | 0.49 |
| 1:B:1879:LEU:HD23 | 1:B:1892:ASN:HD22 | 1.76 | 0.49 |
| 1:B:1306:PRO:HA | 1:B:1333:THR:HG21 | 1.95 | 0.49 |
| 1:B:1963:LEU:HD21 | 1:B:1982:VAL:HG13 | 1.95 | 0.49 |
| 1:B:482:ASN:OD1 | 1:B:483:ARG:N | 2.40 | 0.49 |
| 1:B:2117:ASP:N | 1:B:2117:ASP:OD1 | 2.45 | 0.49 |
| 1:B:1180:LEU:O | 1:B:1215:HIS:NE2 | 2.44 | 0.48 |
| 1:B:1600:TYR:HD2 | 1:B:1631:LEU:HD11 | 1.79 | 0.48 |
| 1:B:785:HIS:NE2 | 1:B:794:ARG:HG3 | 2.28 | 0.48 |
| 1:B:1944:GLU:HA | 1:B:1947:GLN:HG2 | 1.96 | 0.48 |
| 1:B:540:TYR:HB3 | 1:B:587:VAL:HG22 | 1.96 | 0.48 |
| 1:B:1836:LEU:HD22 | 1:B:1930:LEU:HD21 | 1.95 | 0.47 |
| 1:B:926:TYR:HA | 1:B:929:MET:HE2 | 1.97 | 0.47 |
| 1:B:1109:ASP:HB2 | 1:B:1269:ARG:HH12 | 1.78 | 0.47 |
| 1:B:1265:GLN:HB3 | 1:B:1285:SER:HA | 1.96 | 0.47 |
| 1:B:1228:VAL:HG21 | 1:B:1264:PRO:HD2 | 1.94 | 0.47 |
| 1:B:722:LEU:HB3 | 1:B:826:VAL:HG12 | 1.97 | 0.47 |
| 1:B:1990:ASP:HA | 1:B:1993:ARG:HD2 | 1.96 | 0.47 |
| 1:B:2064:TRP:CZ3 | 1:B:2110:SER:HB2 | 2.49 | 0.47 |
| 1:B:768:GLN:HG3 | 1:B:779:PRO:HD3 | 1.97 | 0.47 |
| 1:B:927:ILE:HG23 | 1:B:931:ARG:HH21 | 1.79 | 0.47 |
| 1:B:1059:ILE:HG22 | 1:B:1084:VAL:HG11 | 1.97 | 0.47 |
| 1:B:1725:GLU:OE2 | 1:B:1763:ARG:NH2 | 2.42 | 0.47 |
| 1:B:1817:MET:HG2 | 3:T:260:LEU:HB3 | 1.96 | 0.47 |
| 1:B:1981:SER:OG | 1:B:1984:ASP:OD1 | 2.24 | 0.47 |
| 1:B:728:ARG:H | 1:B:728:ARG:HD2 | 1.79 | 0.47 |
| 1:B:568:GLU:OE1 | 1:B:568:GLU:N | 2.45 | 0.47 |
| 1:B:1260:GLU:HB3 | 1:B:1261:PRO:HD3 | 1.97 | 0.47 |
| 1:B:566:VAL:HB | 1:B:585:ILE:HB | 1.97 | 0.46 |
| 1:B:725:VAL:HG12 | 1:B:726:HIS:H | 1.80 | 0.46 |
| 1:B:1007:PRO:HG3 | 1:B:1104:TRP:CE2 | 2.50 | 0.46 |
| 1:B:597:THR:HG22 | 1:B:602:GLU:HG3 | 1.97 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:569:LEU:HD21 | 1:B:576:CYS:SG | 2.55 | 0.46 |
| 1:B:432:ASP:N | 1:B:432:ASP:OD1 | 2.46 | 0.46 |
| 1:B:1069:GLN:HA | 1:B:1121:ARG:HH21 | 1.81 | 0.46 |
| 1:B:1514:PHE:HB3 | 1:B:1518:VAL:HG11 | 1.97 | 0.46 |
| 1:B:1989:GLU:HB2 | 1:B:1992:GLU:HB3 | 1.97 | 0.46 |
| 2:J:2128:LEU:HD22 | 2:J:2142:ILE:HG21 | 1.98 | 0.46 |
| 1:B:1068:SER:HB3 | 1:B:1123:TRP:HE1 | 1.81 | 0.46 |
| 1:B:569:LEU:HD22 | 1:B:580:ILE:HG21 | 1.96 | 0.46 |
| 1:B:690:VAL:HG11 | 1:B:707:ILE:HD13 | 1.98 | 0.46 |
| 1:B:1499:ASP:OD2 | 1:B:1763:ARG:NH1 | 2.41 | 0.46 |
| 1:B:503:ALA:HB3 | 1:B:509:LYS:HE3 | 1.98 | 0.46 |
| 1:B:520:GLU:HA | 1:B:523:LYS:HE2 | 1.97 | 0.45 |
| 2:J:2090:ILE:HD12 | 3:T:167:LEU:HD13 | 1.97 | 0.45 |
| 1:B:1012:ILE:HG12 | 1:B:1047:PRO:HG2 | 1.99 | 0.45 |
| 1:B:1161:ILE:O | 1:B:1165:ILE:HG12 | 2.16 | 0.45 |
| 1:B:1729:ASP:OD1 | 1:B:1729:ASP:N | 2.47 | 0.45 |
| 1:B:750:LEU:HD22 | 1:B:780:TYR:CG | 2.51 | 0.45 |
| 1:B:2004:ILE:HD12 | 1:B:2004:ILE:HA | 1.84 | 0.45 |
| 3:T:153:PRO:HB2 | 3:T:156:VAL:HG12 | 1.99 | 0.45 |
| 1:B:554:SER:O | 1:B:558:ARG:HG2 | 2.17 | 0.45 |
| 1:B:1018:PHE:CE1 | 1:B:1063:LEU:HD22 | 2.52 | 0.45 |
| 2:J:2107:PRO:HG2 | 2:J:2110:VAL:HG22 | 1.99 | 0.45 |
| 3:T:155:TYR:HA | 3:T:162:TRP:CD1 | 2.51 | 0.45 |
| 1:B:1553:HIS:O | 1:B:1701:ARG:NH1 | 2.50 | 0.45 |
| 2:J:2133:PRO:HD2 | 2:J:2139:VAL:O | 2.17 | 0.45 |
| 2:J:2087:THR:HB | 3:T:167:LEU:HD23 | 1.99 | 0.44 |
| 2:J:2219:THR:HG22 | 2:J:2222:SER:O | 2.18 | 0.44 |
| 1:B:619:LEU:HD13 | 1:B:847:LEU:HD13 | 1.99 | 0.44 |
| 1:B:2051:VAL:HG11 | 1:B:2060:ARG:HB2 | 2.00 | 0.44 |
| 1:B:1430:GLU:O | 1:B:1434:ILE:HG23 | 2.17 | 0.44 |
| 1:B:891:SER:HB3 | 1:B:925:LEU:HD23 | 1.99 | 0.44 |
| 1:B:1594:GLU:O | 1:B:1598:ILE:HG12 | 2.17 | 0.44 |
| 2:J:2144:CYS:SG | 2:J:2145:ILE:N | 2.89 | 0.44 |
| 1:B:838:LYS:HG3 | 1:B:842:THR:HG21 | 2.00 | 0.44 |
| 1:B:1879:LEU:HD23 | 1:B:1892:ASN:ND2 | 2.33 | 0.44 |
| 1:B:881:SER:HA | 1:B:886:GLN:HB2 | 1.99 | 0.44 |
| 1:B:1307:LEU:HD23 | 1:B:1333:THR:HB | 1.98 | 0.44 |
| 1:B:1051:SER:HB3 | 1:B:1057:ALA:HB2 | 2.00 | 0.44 |
| 1:B:1979:VAL:HG13 | 1:B:1984:ASP:HB2 | 1.98 | 0.44 |
| 1:B:1331:ILE:HD11 | 1:B:1518:VAL:HG13 | 2.00 | 0.43 |
| 1:B:823:ALA:O | 1:B:857:GLY:N | 2.41 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:1193:ILE:HG13 | 1:B:1255:PHE:HE2 | 1.83 | 0.43 |
| 1:B:1831:LEU:HD21 | 1:B:1851:ASN:HB3 | 1.98 | 0.43 |
| 1:B:1331:ILE:HD12 | 1:B:1354:SER:HB3 | 2.00 | 0.43 |
| 1:B:1748:LYS:HE3 | 1:B:1748:LYS:HB2 | 1.92 | 0.43 |
| 1:B:611:LEU:HD11 | 1:B:649:ILE:HD12 | 1.99 | 0.43 |
| 1:B:994:THR:HG23 | 1:B:997:THR:H | 1.83 | 0.43 |
| 1:B:463:PRO:HD2 | 1:B:466:LYS:HD2 | 2.00 | 0.43 |
| 1:B:620:LEU:HD12 | 1:B:620:LEU:HA | 1.86 | 0.43 |
| 1:B:1099:VAL:HG23 | 1:B:1104:TRP:HE3 | 1.82 | 0.43 |
| 1:B:1384:ALA:HB1 | 1:B:1653:GLY:HA2 | 2.01 | 0.43 |
| 1:B:1434:ILE:HG22 | 1:B:1823:TYR:CD2 | 2.54 | 0.43 |
| 1:B:1581:ALA:HA | 1:B:1586:ARG:HA | 2.01 | 0.43 |
| 1:B:1469:VAL:HG21 | 1:B:1735:HIS:CG | 2.53 | 0.43 |
| 1:B:1722:LEU:HD12 | 1:B:1723:PRO:HD2 | 2.00 | 0.42 |
| 1:B:1753:ASP:OD1 | 3:T:203:GLN:NE2 | 2.52 | 0.42 |
| 2:J:2097:ILE:HG12 | 2:J:2259:VAL:C | 2.40 | 0.42 |
| 1:B:739:ARG:HG2 | 1:B:750:LEU:HD21 | 2.02 | 0.42 |
| 1:B:973:ASP:OD2 | 1:B:976:THR:OG1 | 2.26 | 0.42 |
| 1:B:1456:VAL:HG11 | 1:B:1489:ALA:HB1 | 2.01 | 0.42 |
| 1:B:1749:GLN:HE21 | 3:T:214:ILE:HA | 1.84 | 0.42 |
| 1:B:723:VAL:HB | 1:B:810:VAL:HA | 2.01 | 0.42 |
| 1:B:1169:LYS:H | 1:B:1169:LYS:HD2 | 1.83 | 0.42 |
| 1:B:1378:TYR:OH | 1:B:1454:ASP:OD2 | 2.37 | 0.42 |
| 1:B:542:ALA:HB1 | 1:B:547:LEU:HD23 | 2.02 | 0.42 |
| 1:B:1408:LEU:HD12 | 1:B:1408:LEU:HA | 1.86 | 0.42 |
| 1:B:1678:ASP:OD1 | 1:B:1678:ASP:N | 2.53 | 0.42 |
| 1:B:2017:ILE:HD13 | 1:B:2108:PHE:HE2 | 1.85 | 0.42 |
| 1:B:696:LYS:HB2 | 1:B:699:LYS:HB3 | 2.02 | 0.42 |
| 1:B:830:GLY:O | 1:B:831:THR:OG1 | 2.35 | 0.42 |
| 1:B:924:TYR:CZ | 1:B:928:ARG:HD3 | 2.55 | 0.42 |
| 1:B:946:ASP:OD2 | 1:B:950:ASP:N | 2.53 | 0.42 |
| 1:B:1092:MET:HB3 | 1:B:1115:CYS:SG | 2.60 | 0.42 |
| 1:B:463:PRO:HA | 1:B:480:THR:HA | 2.02 | 0.41 |
| 2:J:2084:HIS:O | 2:J:2087:THR:OG1 | 2.25 | 0.41 |
| 1:B:727:SER:HB2 | 1:B:730:GLU:HB2 | 2.02 | 0.41 |
| 1:B:739:ARG:NH2 | 1:B:776:ASP:OD1 | 2.43 | 0.41 |
| 1:B:1099:VAL:HG23 | 1:B:1104:TRP:CE3 | 2.55 | 0.41 |
| 1:B:1755:LEU:HD23 | 1:B:1755:LEU:HA | 1.94 | 0.41 |
| 1:B:1865:ASP:N | 1:B:1865:ASP:OD1 | 2.54 | 0.41 |
| 1:B:469:LYS:HA | 1:B:472:GLN:HG3 | 2.03 | 0.41 |
| 1:B:1099:VAL:HG21 | 1:B:1107:LEU:HB3 | 2.03 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:1290:ILE:N | 1:B:1769:ASN:OD1 | 2.39 | 0.41 |
| 1:B:2060:ARG:NH2 | 1:B:2111:ASP:OD2 | 2.54 | 0.41 |
| 1:B:705:ASN:HB3 | 1:B:741:MET:HE3 | 2.03 | 0.41 |
| 1:B:746:ASP:HB2 | 1:B:748:LEU:HG | 2.03 | 0.41 |
| 1:B:887:LEU:HD23 | 1:B:888:PRO:HD2 | 2.03 | 0.41 |
| 1:B:1191:GLN:HE21 | 1:B:1199:LYS:HD3 | 1.85 | 0.41 |
| 1:B:656:PRO:HD2 | 1:B:887:LEU:O | 2.21 | 0.41 |
| 1:B:905:ILE:HG22 | 1:B:981:VAL:HG22 | 2.02 | 0.41 |
| 1:B:2037:VAL:HG11 | 1:B:2068:ILE:HD11 | 2.02 | 0.41 |
| 1:B:449:ALA:HB1 | 1:B:684:PRO:HB2 | 2.02 | 0.41 |
| 1:B:1044:VAL:HG23 | 2:J:2074:ARG:HH12 | 1.85 | 0.41 |
| 1:B:1560:ILE:HG13 | 1:B:1658:ALA:HB2 | 2.03 | 0.41 |
| 1:B:1763:ARG:HD2 | 1:B:1763:ARG:HA | 1.84 | 0.41 |
| 1:B:1970:HIS:CE1 | 1:B:1997:LEU:HB2 | 2.55 | 0.41 |
| 1:B:2013:ARG:NH2 | 1:B:2062:GLU:OE2 | 2.53 | 0.41 |
| 1:B:2106:LEU:N | 1:B:2120:TYR:O | 2.52 | 0.41 |
| 1:B:424:ALA:HB3 | 1:B:888:PRO:HG2 | 2.03 | 0.41 |
| 2:J:2107:PRO:HA | 2:J:2264:SER:O | 2.21 | 0.41 |
| 1:B:1749:GLN:O | 1:B:1752:VAL:HG12 | 2.21 | 0.40 |
| 1:B:1986:MET:HB2 | 1:B:1986:MET:HE2 | 1.95 | 0.40 |
| 3:T:217:LYS:HZ1 | 3:T:219:VAL:HG23 | 1.86 | 0.40 |
| 1:B:1907:GLU:H | 1:B:1907:GLU:HG2 | 1.47 | 0.40 |
| 1:B:2017:ILE:H | 1:B:2017:ILE:HG13 | 1.50 | 0.40 |
| 1:B:1785:LEU:O | 1:B:1789:VAL:HG12 | 2.21 | 0.40 |
| 2:J:2217:SER:OG | 2:J:2224:THR:OG1 | 2.39 | 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 | B | 1723/1747 (99%) | 1686 (98%) | 37 (2%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|-------|-----|
| 2 | J | 248/263 (94%) | 242 (98%) | 6 (2%) | 0 | 100 | 100 |
| 3 | T | 58/329 (18%) | 53 (91%) | 5 (9%) | 0 | 100 | 100 |
| All | All | 2029/2339 (87%) | 1981 (98%) | 48 (2%) | 0 | 100 | 100 |

There are no Ramachandran outliers to report.

### 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 | B | 1544/1560 (99%) | 1479 (96%) | 65 (4%) | 30 | 60 |
| 2 | J | 225/236 (95%) | 215 (96%) | 10 (4%) | 28 | 58 |
| 3 | T | 57/264 (22%) | 52 (91%) | 5 (9%) | 10 | 32 |
| All | All | 1826/2060 (89%) | 1746 (96%) | 80 (4%) | 32 | 58 |

All (80) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 447 | VAL |
| 1 | B | 488 | LEU |
| 1 | B | 489 | TYR |
| 1 | B | 501 | LEU |
| 1 | B | 566 | VAL |
| 1 | B | 673 | LEU |
| 1 | B | 680 | PHE |
| 1 | B | 709 | TYR |
| 1 | B | 722 | LEU |
| 1 | B | 772 | LEU |
| 1 | B | 821 | LEU |
| 1 | B | 844 | LEU |
| 1 | B | 847 | LEU |
| 1 | B | 850 | LEU |
| 1 | B | 855 | ARG |
| 1 | B | 882 | LEU |

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| Mol | Chain | Res | Type |
|:---:|:-----:|:----:|:----:|
| 1 | B | 887 | LEU |
| 1 | B | 910 | VAL |
| 1 | B | 931 | ARG |
| 1 | B | 998 | VAL |
| 1 | B | 1016 | ARG |
| 1 | B | 1035 | LEU |
| 1 | B | 1037 | LEU |
| 1 | B | 1044 | VAL |
| 1 | B | 1059 | ILE |
| 1 | B | 1070 | LEU |
| 1 | B | 1225 | VAL |
| 1 | B | 1240 | LEU |
| 1 | B | 1265 | GLN |
| 1 | B | 1380 | THR |
| 1 | B | 1408 | LEU |
| 1 | B | 1435 | LEU |
| 1 | B | 1442 | ARG |
| 1 | B | 1456 | VAL |
| 1 | B | 1474 | MET |
| 1 | B | 1481 | ILE |
| 1 | B | 1586 | ARG |
| 1 | B | 1598 | ILE |
| 1 | B | 1611 | GLU |
| 1 | B | 1739 | GLU |
| 1 | B | 1742 | THR |
| 1 | B | 1752 | VAL |
| 1 | B | 1773 | LEU |
| 1 | B | 1779 | ARG |
| 1 | B | 1796 | LEU |
| 1 | B | 1798 | GLN |
| 1 | B | 1808 | MET |
| 1 | B | 1862 | HIS |
| 1 | B | 1879 | LEU |
| 1 | B | 1904 | LEU |
| 1 | B | 1907 | GLU |
| 1 | B | 1993 | ARG |
| 1 | B | 1996 | LEU |
| 1 | B | 1997 | LEU |
| 1 | B | 1999 | LEU |
| 1 | B | 2004 | ILE |
| 1 | B | 2013 | ARG |
| 1 | B | 2017 | ILE |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | B | 2039 | VAL |
| 1 | B | 2041 | LEU |
| 1 | B | 2044 | GLU |
| 1 | B | 2051 | VAL |
| 1 | B | 2082 | LEU |
| 1 | B | 2084 | LEU |
| 1 | B | 2117 | ASP |
| 2 | J | 2089 | HIS |
| 2 | J | 2143 | ARG |
| 2 | J | 2144 | CYS |
| 2 | J | 2154 | HIS |
| 2 | J | 2170 | LYS |
| 2 | J | 2203 | ASN |
| 2 | J | 2215 | THR |
| 2 | J | 2219 | THR |
| 2 | J | 2226 | THR |
| 2 | J | 2252 | LEU |
| 3 | T | 212 | ARG |
| 3 | T | 217 | LYS |
| 3 | T | 310 | ARG |
| 3 | T | 313 | ASP |
| 3 | T | 318 | LYS |

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

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | B | 526 | ASN |
| 1 | B | 1447 | ASN |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 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 ⓘ

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-13690. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

## 6.1 Orthogonal projections ⓘ

### 6.1.1 Primary map



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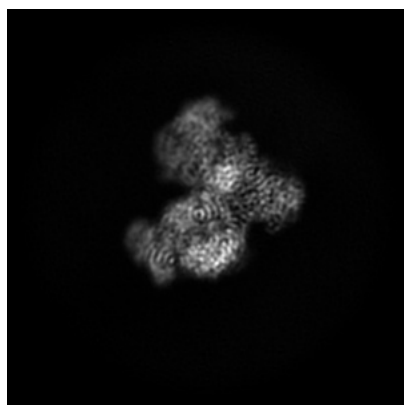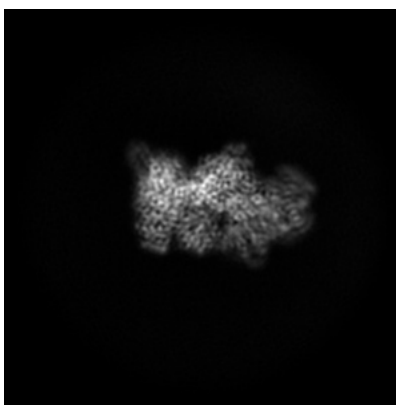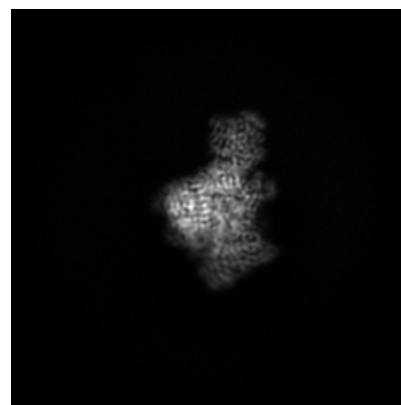
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices ⓘ
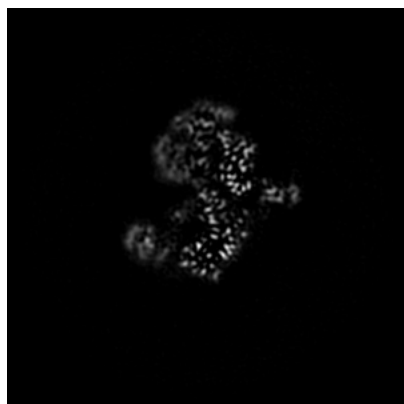
### 6.2.1 Primary map
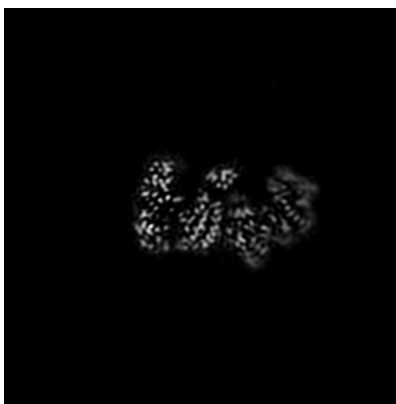


| X Index: 162 | Y Index: 162 | Z Index: 162 |
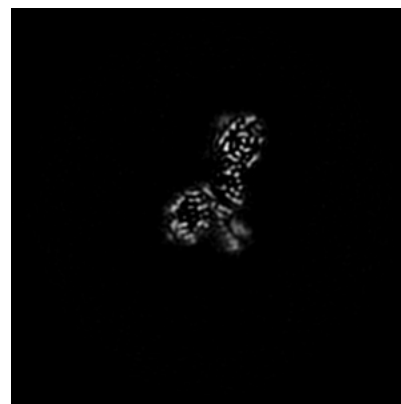
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices ⓘ
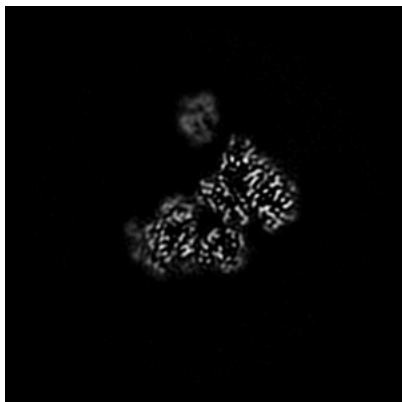
### 6.3.1 Primary map
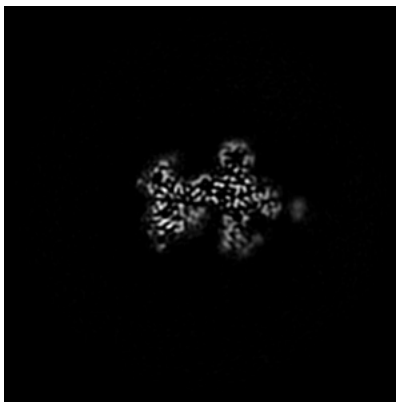


| X Index: 180 | Y Index: 179 | Z Index: 127 |
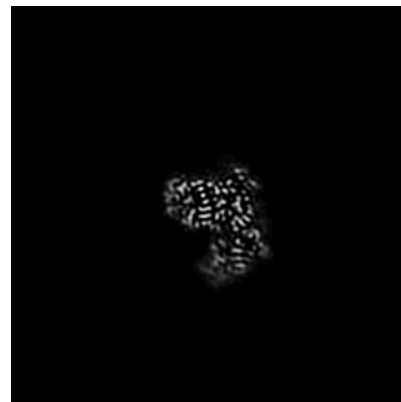
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal surface views ⓘ

### 6.4.1 Primary map



| X | Y | Z |
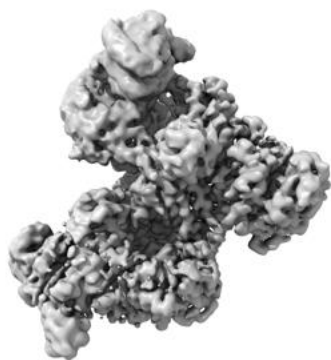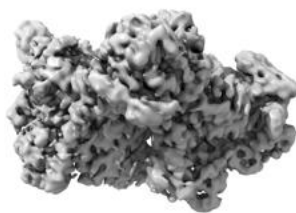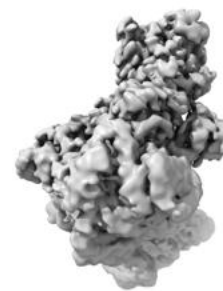
The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

## 6.5 Mask visualisation ⓘ

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

# 7 Map analysis ⓘ

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

## 7.1 Map-value distribution ⓘ
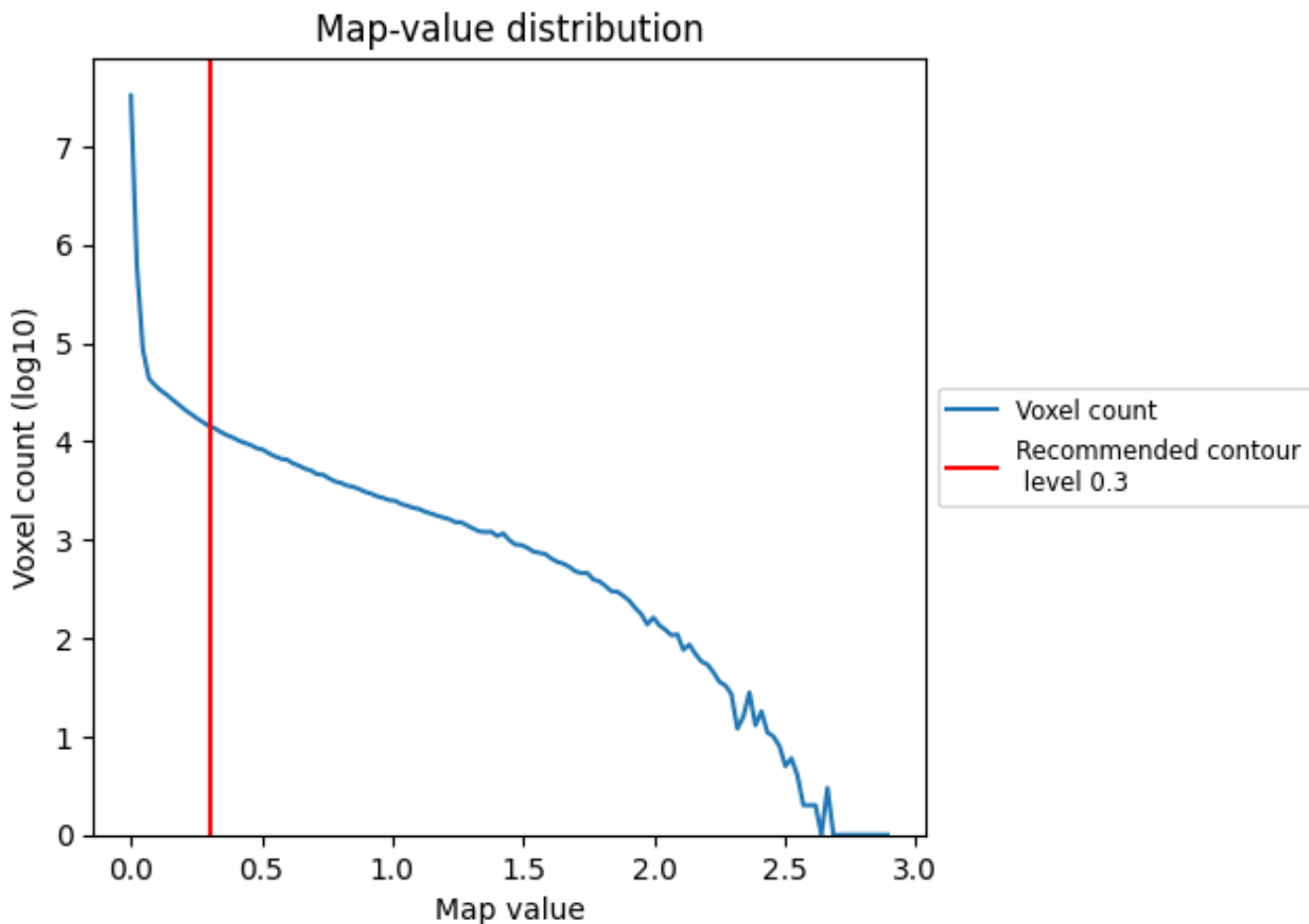


The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

## 7.2　Volume estimate ⓘ
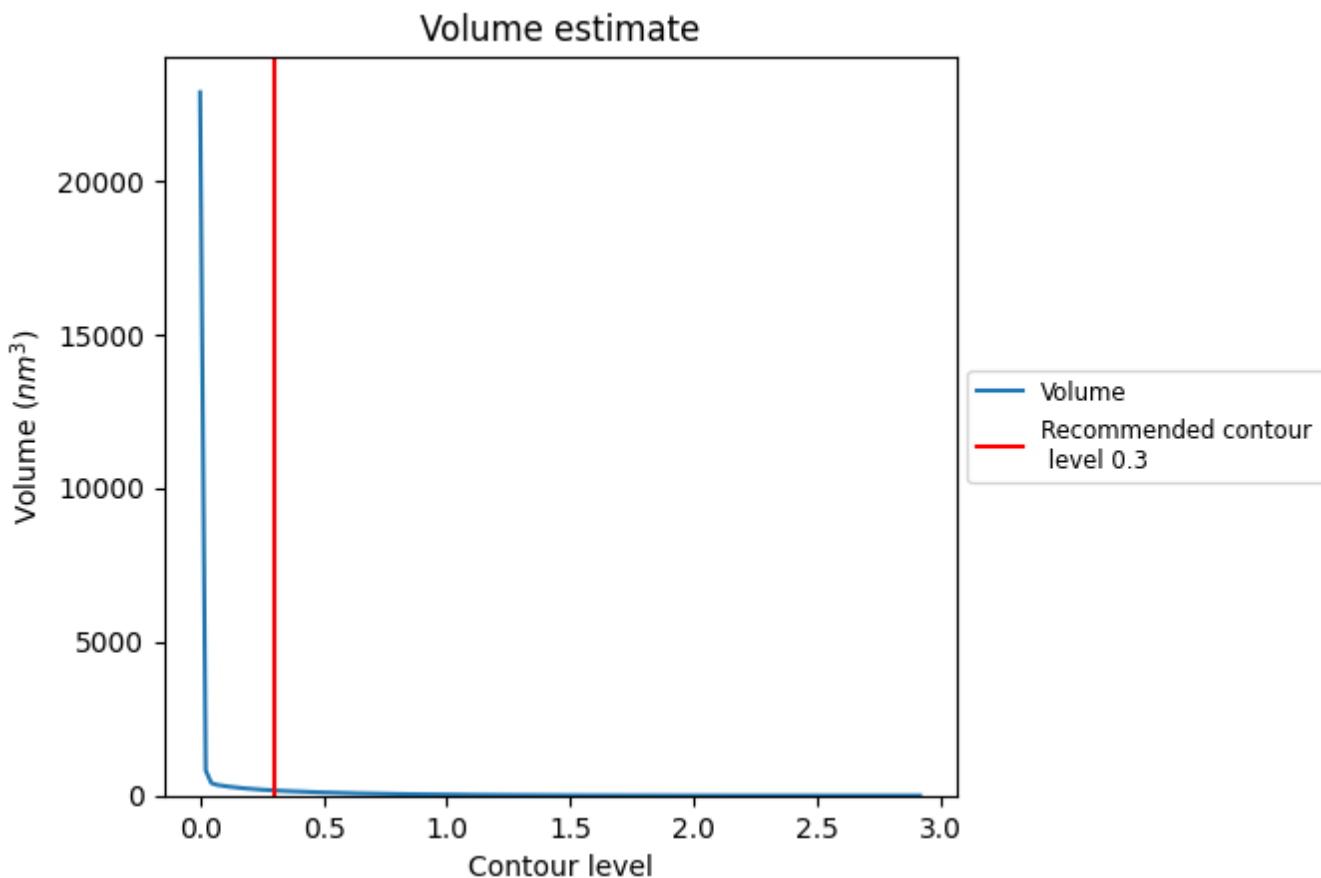


The volume at the recommended contour level is 167 $nm^3$; this corresponds to an approximate mass of 150 kDa.

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 ⓘ
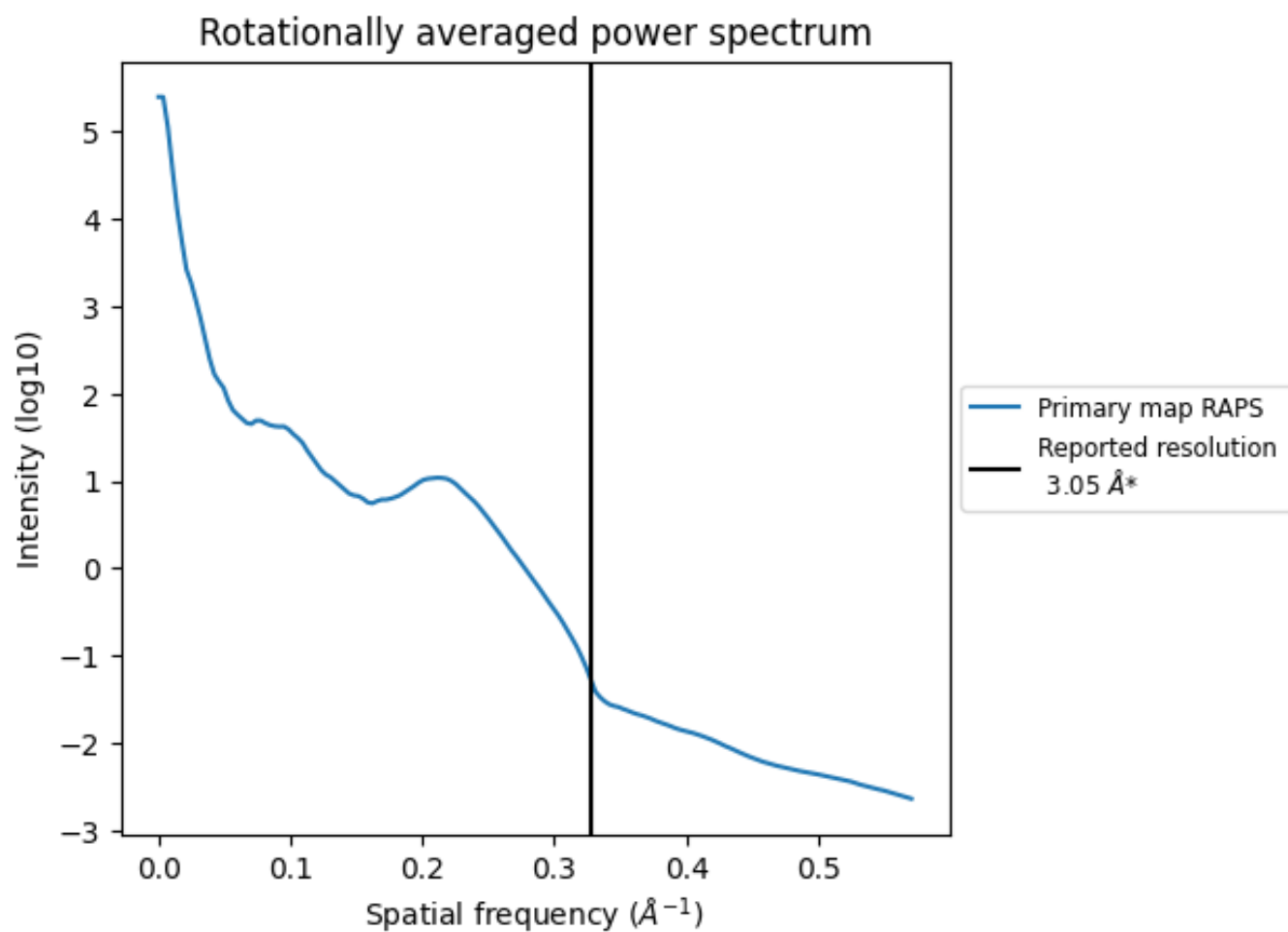


*Reported resolution corresponds to spatial frequency of 0.328 Å$^{-1}$

# 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 ⓘ
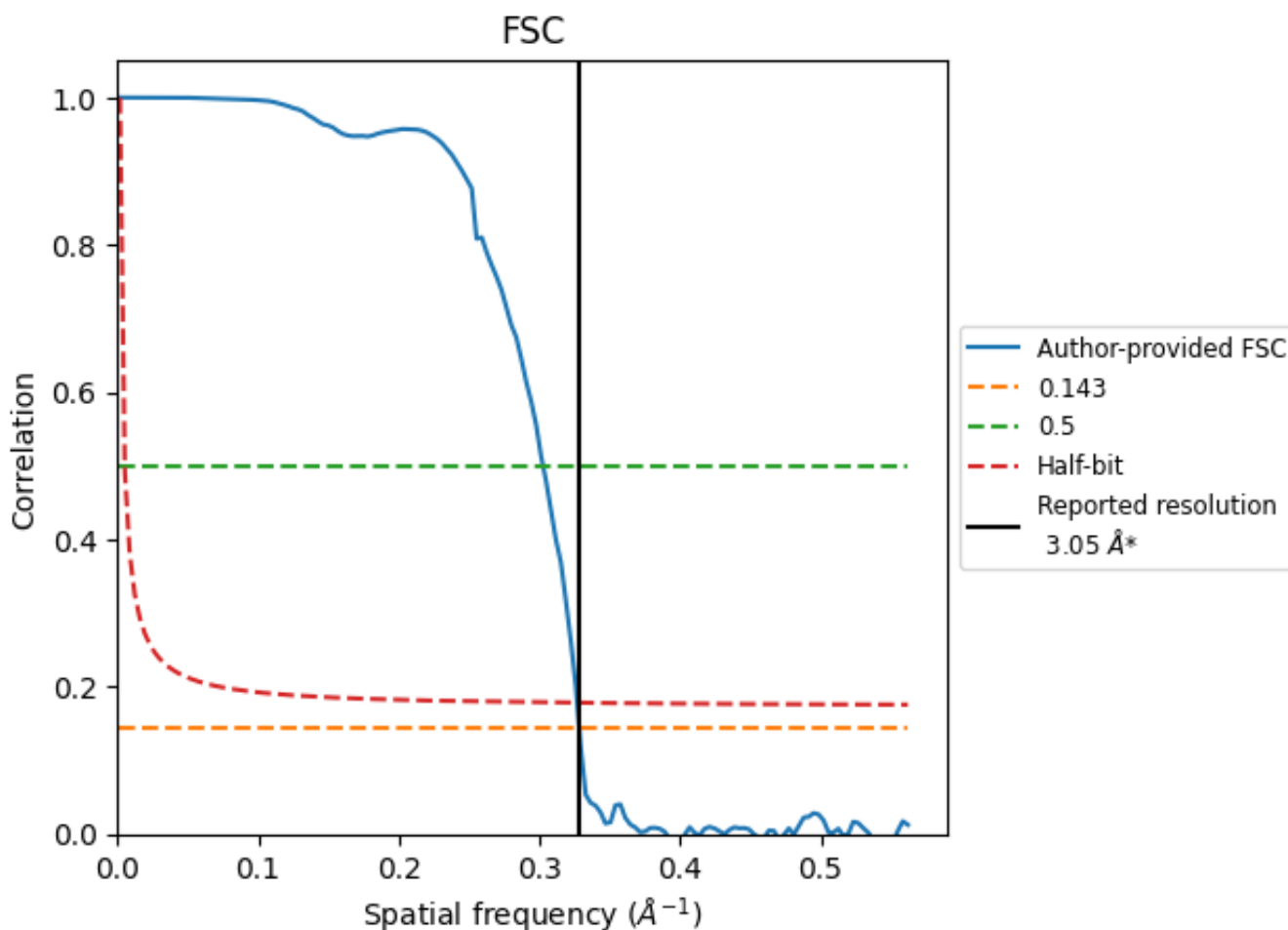


*Reported resolution corresponds to spatial frequency of 0.328 Å$^{-1}$

## 8.2 Resolution estimates ⓘ

| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 3.05 | - | - |
| Author-provided FSC curve | 3.05 | 3.30 | 3.06 |
| Unmasked-calculated* | - | - | - |

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

# 9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-13690 and PDB model 7PX3. Per-residue inclusion information can be found in section 3 on page 4.

## 9.1 Map-model overlay ⓘ



| X | Y | Z |
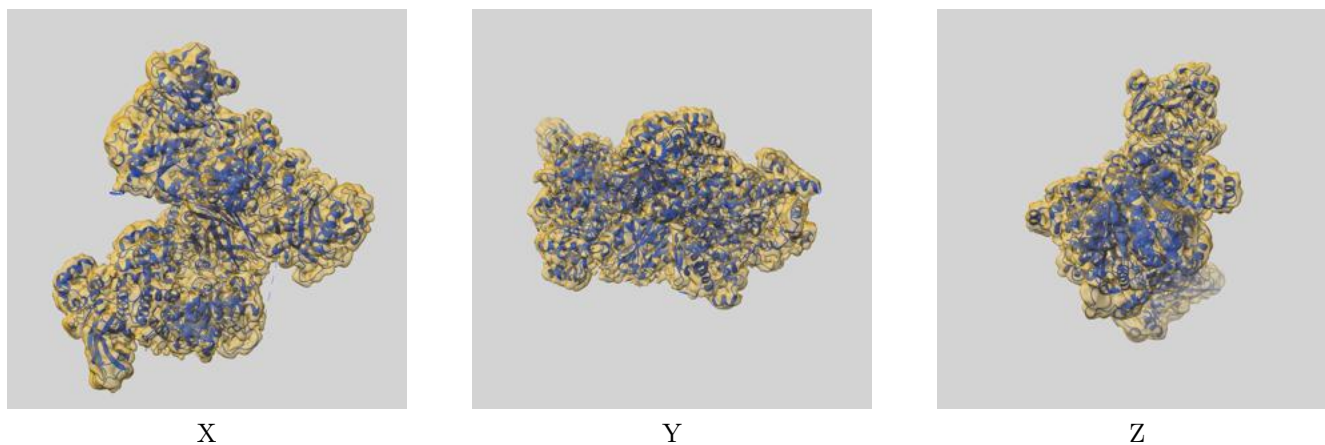
The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2　Atom inclusion　ⓘ
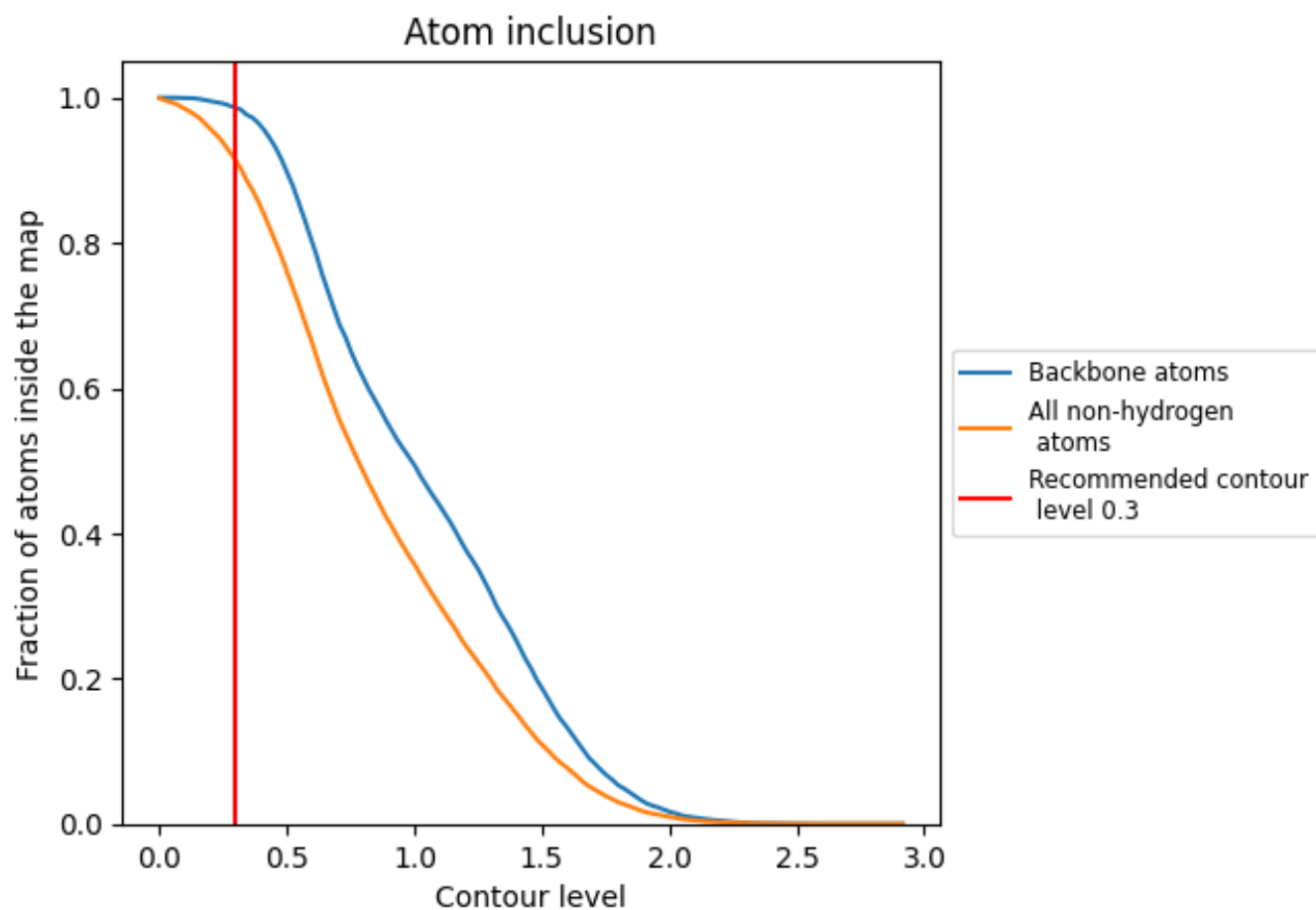


At the recommended contour level, 99% of all backbone atoms, 91% of all non-hydrogen atoms, are inside the map.