# Full wwPDB EM Validation Report (i)

Feb 24, 2024 – 01:38 PM EST

|  |  |  |
|---|---|---|
| PDB ID | : | 7K1K |
| EMDB ID | : | EMD-22625 |
| Title | : | CryoEM structure of inactivated-form DNA-PK (Complex IV) |
| Authors | : | Chen, X.; Gellert, M.; Yang, W. |
| Deposited on | : | 2020-09-07 |
| Resolution | : | 4.10 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*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
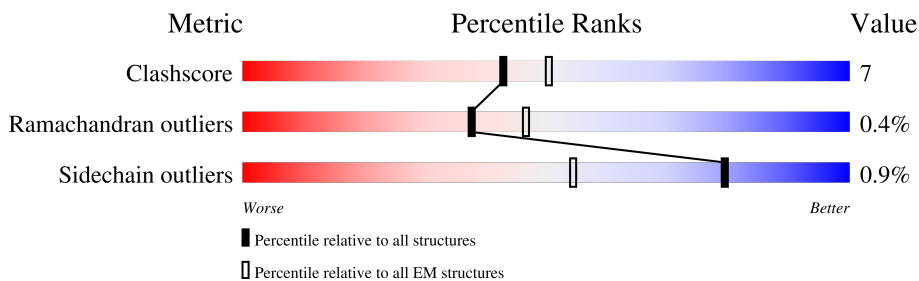http://www.wwpdb.org/validation/2017/FAQs#types.

# 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 4.10 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 | | 0.4% |
| Sidechain outliers | | 0.9% |

*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 | 4128 | •   72%   15%   13% |
| 2 | B | 609 | 5%   63%   16%   20% |
| 3 | C | 732 | 6%   54%   17%   28% |
| 4 | D | 24 | 8%   75%   25% |
| 4 | F | 24 | 83%   •   12% |
| 5 | E | 16 | 19%   81%   19% |
| 5 | G | 16 | 94%   6% |

# 2   Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 38243 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 DNA-dependent protein kinase catalytic subunit.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 3604 | Total 28577 | C 18342 | N 4862 | O 5189 | S 184 | 0 | 0 |

- Molecule 2 is a protein called X-ray repair cross-complementing protein 6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 2 | B | 490 | Total 3954 | C 2533 | N 671 | O 733 | S 17 | 0 | 0 |

- Molecule 3 is a protein called X-ray repair cross-complementing protein 5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 3 | C | 526 | Total 4204 | C 2693 | N 704 | O 784 | S 23 | 0 | 0 |

- Molecule 4 is a DNA chain called DNA (5'-D(*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP* CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3').

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 4 | D | 24 | Total 484 | C 233 | N 82 | O 146 | P 23 | 0 | 0 |
| 4 | F | 21 | Total 425 | C 204 | N 69 | O 131 | P 21 | 0 | 0 |

- Molecule 5 is a DNA chain called DNA (5'-D(*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP* GP*CP*A)-3').

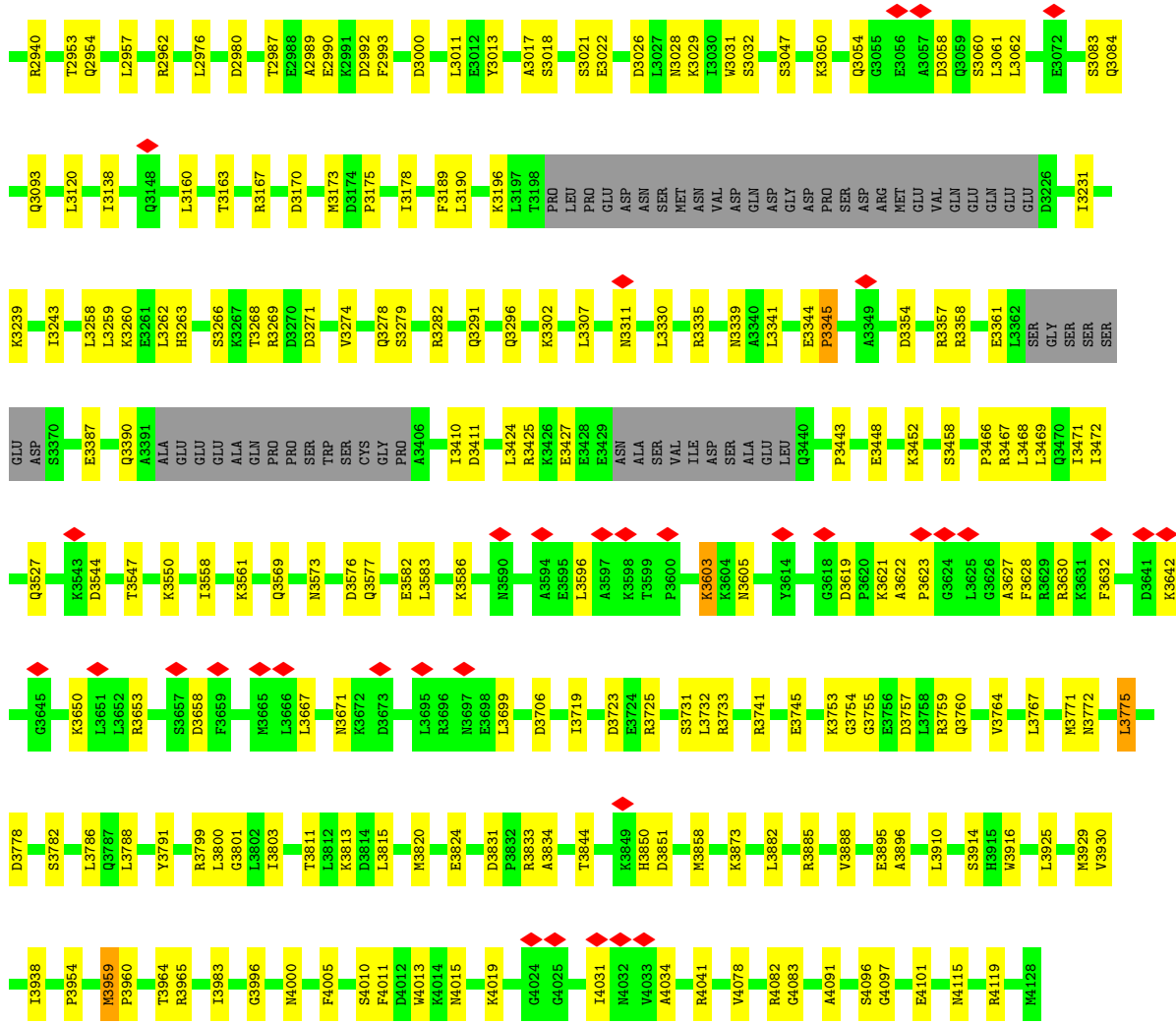| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 5 | E | 13 | Total 269 | C 128 | N 58 | O 71 | P 12 | 0 | 0 |
| 5 | G | 16 | Total 330 | C 157 | N 68 | O 90 | P 15 | 0 | 0 |

# 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.
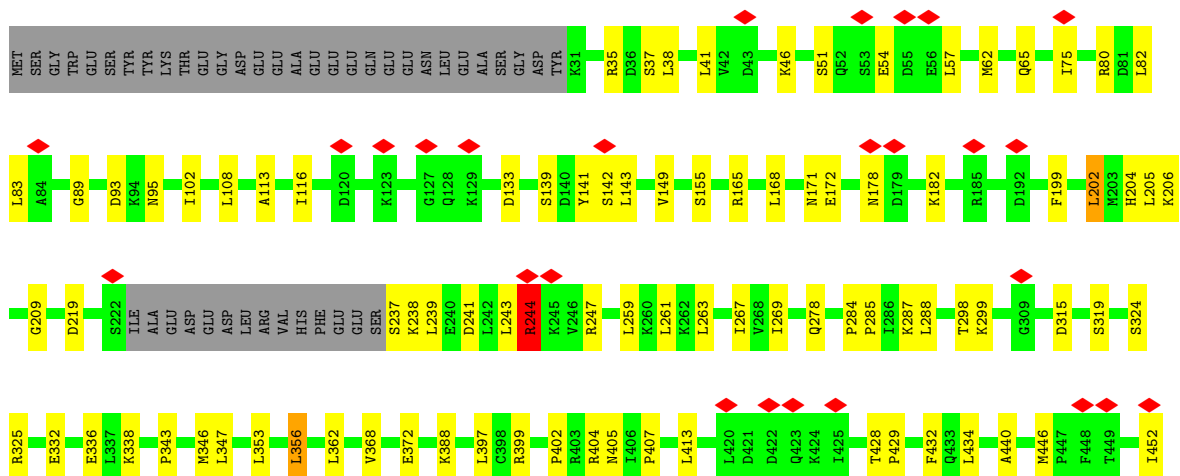
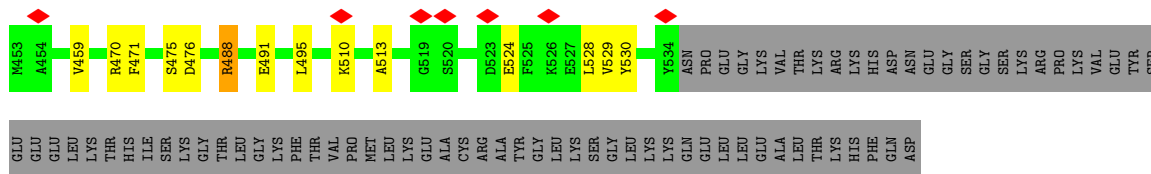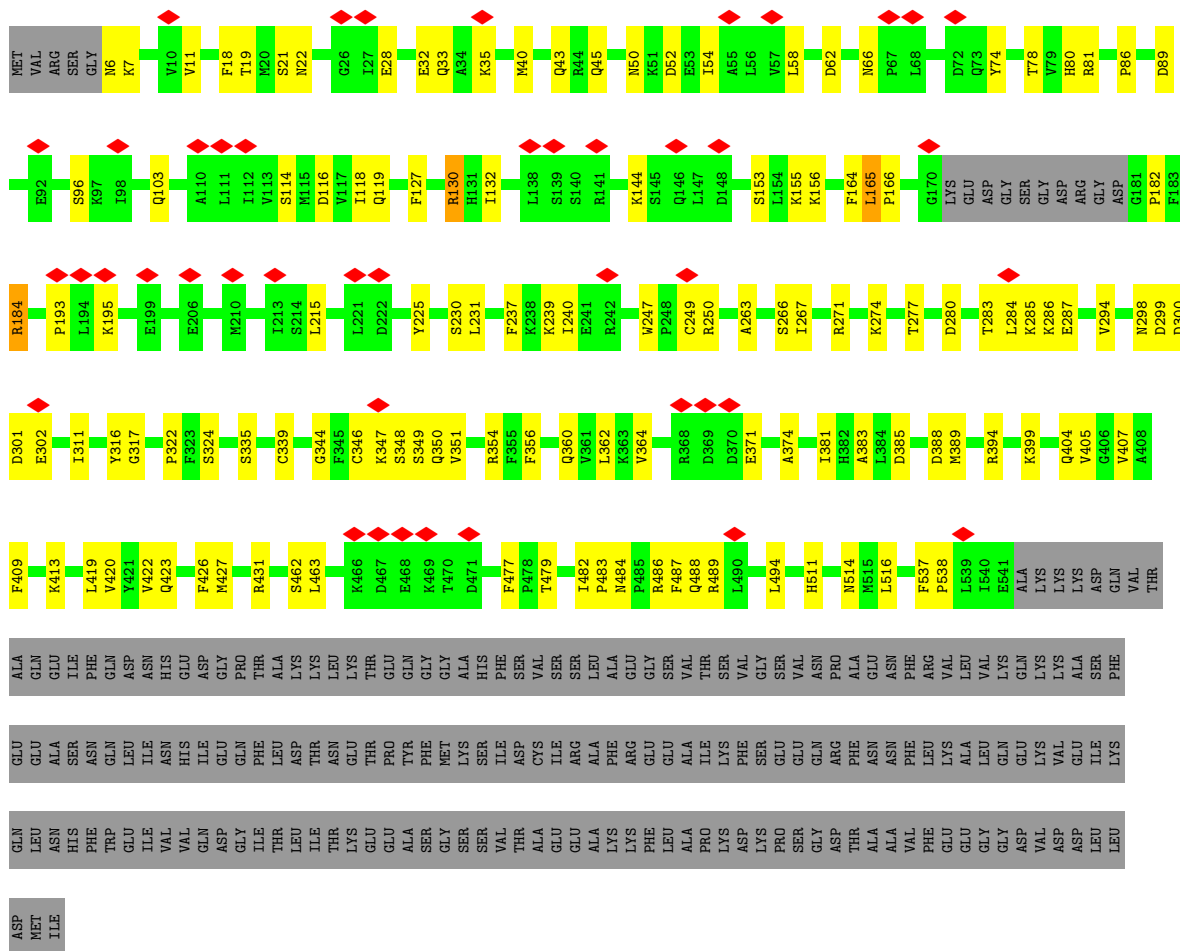• Molecule 1: DNA-dependent protein kinase catalytic subunit



Chain A:

• Molecule 2: X-ray repair cross-complementing protein 6

Chain B:

M453 A454 V459 R470 F471 S475 D476 R488 E491 L495 K510 A513 G519 S520 D523 E524 F525 K526 E527 L528 V529 Y530 Y534 ASN PRO GLU GLY LYS VAL THR LYS ARG HIS ASP GLU GLY SER GLY LYS ARG PRO LYS VAL GLU TYR SER

GLU GLU GLU LEU LYS THR HIS ILE SER GLY LYS GLY THR LEU GLY LYS PHE THR VAL PRO MET LEU LYS GLU ALA CYS ARG ALA TYR GLY LEU LYS SER GLY LEU LYS LYS GLN GLU LEU LEU GLU ALA LEU THR LYS HIS PHE GLN ASP
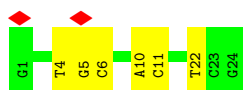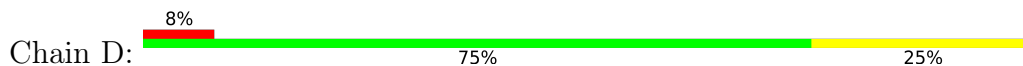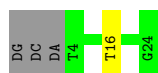
• Molecule 3: X-ray repair cross-complementing protein 5

Chain C:

6%
54%    17%    28%

MET VAL ARG SER GLY N6 K7 V10 V11 F18 T19 M20 S21 N22 G26 I27 E28 E32 Q33 A34 K35 M40 Q43 R44 Q45 N50 K51 D52 E53 I54 A55 L56 V57 L58 D62 N66 P67 L68 D72 Q73 Y74 T78 V79 H80 R81 P86 D89

E92 S96 K97 I98 Q103 A110 L111 I112 V113 S114 M115 D116 V117 I118 Q119 F127 R130 H131 I132 L138 S139 S140 R141 K144 S145 Q146 L147 D148 S153 L154 K155 K156 F164 L165 P166 G170 LYS GLU ASP GLY SER GLY ASP ARG GLY ASP G181 P182 F183

R184 P193 L194 K195 E199 E206 M210 I213 S214 L215 L221 D222 Y225 S230 L231 F237 K238 K239 I240 E241 R242 W247 P248 C249 R250 A263 S266 I267 R271 K274 T277 D280 T283 L284 K285 K286 E287 V294 N298 D299 D300

D301 E302 I311 Y316 G317 P322 F323 S324 S335 C339 G344 F345 C346 K347 S348 S349 Q350 V351 R354 F355 F356 G360 V361 L362 K363 V364 R368 D369 D370 E371 A374 I381 H382 A383 L384 D385 D388 M389 R394 K399 Q404 V405 G406 V407 A408

F409 K413 L419 V420 Y421 V422 Q423 F426 M427 R431 S462 L463 K466 D467 E468 K469 T470 D471 F477 P478 T479 I482 P483 N484 P485 R486 F487 Q488 R489 L490 L494 H511 N514 M515 L516 F537 P538 L539 I540 E541 ALA LYS LYS LYS ASP GLN VAL THR

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

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

GLN LEU ASN HIS PHE TRP GLU ILE VAL VAL GLN ASP GLY ILE THR LEU ILE THR LYS GLU GLU ALA SER GLY SER SER VAL THR ALA GLU GLU ALA LYS LYS PHE LEU ALA PRO LYS ASP LYS PRO SER GLY ASP THR ALA ALA VAL PHE GLU GLU GLY GLY ASP VAL ASP LEU LEU

ASP MET ILE

• Molecule 4: DNA (5'-D(*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP*CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3')
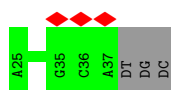
Chain D:

8%
75%    25%

G1 T4 G5 C6 A10 C11 T22 C23 G24

• Molecule 4: DNA (5'-D(*GP*CP*AP*TP*GP*CP*TP*CP*TP*AP*CP*TP*GP*CP*TP*TP*CP*GP*AP*TP*AP*TP*CP*G)-3')

Chain F:



• Molecule 5: DNA (5'-D(*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3')

Chain E:



• Molecule 5: DNA (5'-D(*AP*AP*GP*CP*AP*GP*TP*AP*GP*AP*GP*CP*A)-3')

Chain G:

# 4 Experimental information ⓘ

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 96299 | 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 $(e^-/\text{Å}^2)$ | 45 | Depositor |
| Minimum defocus (nm) | Not provided | |
| Maximum defocus (nm) | Not provided | |
| Magnification | Not provided | |
| Image detector | GATAN K2 SUMMIT (4k x 4k) | Depositor |
| Maximum map value | 0.101 | Depositor |
| Minimum map value | -0.052 | Depositor |
| Average map value | 0.000 | Depositor |
| Map value standard deviation | 0.003 | Depositor |
| Recommended contour level | 0.013 | Depositor |
| Map size (Å) | 408.31998, 408.31998, 408.31998 | wwPDB |
| Map dimensions | 352, 352, 352 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.16, 1.16, 1.16 | 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 | A | 0.40 | 0/29150 | 0.63 | 8/39416 (0.0%) |
| 2 | B | 0.38 | 0/4031 | 0.65 | 5/5429 (0.1%) |
| 3 | C | 0.35 | 0/4291 | 0.61 | 2/5791 (0.0%) |
| 4 | D | 0.87 | 0/540 | 1.02 | 0/831 |
| 4 | F | 0.82 | 0/473 | 1.06 | 1/727 (0.1%) |
| 5 | E | 0.67 | 0/304 | 0.97 | 0/468 |
| 5 | G | 0.89 | 0/372 | 1.00 | 0/573 |
| All | All | 0.42 | 0/39161 | 0.65 | 16/53235 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1 | A | 0 | 1 |
| 2 | B | 0 | 1 |
| All | All | 0 | 2 |

There are no bond length outliers.

All (16) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|----------------|-------------|
| 1 | A | 2337 | LEU | CA-CB-CG | 7.62 | 132.83 | 115.30 |
| 3 | C | 284 | LEU | CA-CB-CG | 7.34 | 132.18 | 115.30 |
| 3 | C | 165 | LEU | CA-CB-CG | 6.58 | 130.43 | 115.30 |
| 1 | A | 1984 | LEU | CA-CB-CG | 6.56 | 130.39 | 115.30 |
| 2 | B | 356 | LEU | CA-CB-CG | 6.50 | 130.24 | 115.30 |
| 1 | A | 1981 | LEU | CA-CB-CG | 5.95 | 128.98 | 115.30 |
| 1 | A | 2545 | LEU | CA-CB-CG | 5.81 | 128.65 | 115.30 |
| 2 | B | 202 | LEU | CA-CB-CG | 5.58 | 128.13 | 115.30 |
| 2 | B | 133 | ASP | CB-CG-OD2 | 5.42 | 123.17 | 118.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|---------------|-------------|
| 1 | A | 8 | VAL | C-N-CA | 5.36 | 135.10 | 121.70 |
| 2 | B | 202 | LEU | CB-CG-CD2 | -5.36 | 101.90 | 111.00 |
| 2 | B | 315 | ASP | CB-CG-OD1 | 5.35 | 123.11 | 118.30 |
| 1 | A | 1475 | LEU | CA-CB-CG | 5.33 | 127.56 | 115.30 |
| 1 | A | 3596 | LEU | CA-CB-CG | 5.12 | 127.08 | 115.30 |
| 4 | F | 16 | DT | N3-C4-O4 | 5.01 | 122.91 | 119.90 |
| 1 | A | 3341 | LEU | CA-CB-CG | 5.00 | 126.81 | 115.30 |

There are no chirality outliers.

All (2) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|-------|
| 1 | A | 213 | ARG | Sidechain |
| 2 | B | 244 | ARG | Sidechain |

## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 28577 | 0 | 28854 | 391 | 0 |
| 2 | B | 3954 | 0 | 4042 | 79 | 0 |
| 3 | C | 4204 | 0 | 4239 | 90 | 0 |
| 4 | D | 484 | 0 | 274 | 4 | 0 |
| 4 | F | 425 | 0 | 240 | 0 | 0 |
| 5 | E | 269 | 0 | 146 | 0 | 0 |
| 5 | G | 330 | 0 | 180 | 1 | 0 |
| All | All | 38243 | 0 | 37975 | 540 | 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 (540) 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:A:1171:TRP:O | 1:A:1175:HIS:HB2 | 1.71 | 0.91 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:4078:VAL:O | 1:A:4082:ARG:HB2 | 1.74 | 0.88 |
| 3:C:19:THR:O | 3:C:22:ASN:HB2 | 1.81 | 0.80 |
| 1:A:2538:ARG:O | 1:A:2542:LEU:HB2 | 1.83 | 0.77 |
| 1:A:213:ARG:HG2 | 2:B:404:ARG:HH12 | 1.51 | 0.75 |
| 1:A:3357:ARG:O | 1:A:3361:GLU:HB2 | 1.90 | 0.70 |
| 3:C:277:THR:HB | 3:C:286:LYS:HD3 | 1.77 | 0.66 |
| 1:A:1018:VAL:HG11 | 1:A:1074:LYS:HD3 | 1.78 | 0.66 |
| 1:A:977:ASP:HB3 | 1:A:980:THR:HG22 | 1.78 | 0.65 |
| 1:A:1727:ARG:NH1 | 1:A:1771:GLN:O | 2.30 | 0.64 |
| 1:A:3586:LYS:HG2 | 1:A:3667:LEU:HD21 | 1.79 | 0.64 |
| 2:B:37:SER:HA | 2:B:82:LEU:O | 1.98 | 0.63 |
| 3:C:339:CYS:SG | 3:C:394:ARG:NH1 | 2.71 | 0.63 |
| 2:B:165:ARG:HA | 2:B:199:PHE:O | 1.99 | 0.63 |
| 1:A:1829:TRP:O | 1:A:1883:ARG:NH2 | 2.32 | 0.63 |
| 1:A:495:VAL:HG21 | 1:A:625:ASN:HB2 | 1.81 | 0.62 |
| 1:A:1151:ARG:HB2 | 1:A:1163:LEU:HD12 | 1.80 | 0.62 |
| 1:A:2085:MET:HA | 1:A:2089:ASN:HB2 | 1.81 | 0.62 |
| 1:A:3239:LYS:HB3 | 1:A:3262:LEU:HD11 | 1.80 | 0.62 |
| 2:B:143:LEU:HD11 | 2:B:182:LYS:HB3 | 1.81 | 0.61 |
| 1:A:2426:HIS:O | 1:A:2432:GLN:NE2 | 2.34 | 0.61 |
| 2:B:524:GLU:O | 2:B:528:LEU:HB3 | 2.01 | 0.61 |
| 2:B:288:LEU:HB2 | 3:C:311:ILE:O | 2.00 | 0.61 |
| 3:C:364:VAL:HG23 | 3:C:419:LEU:HB3 | 1.82 | 0.61 |
| 1:A:3815:LEU:HD22 | 1:A:3930:VAL:HG11 | 1.83 | 0.61 |
| 1:A:2482:ASP:HA | 1:A:2485:ARG:HH21 | 1.66 | 0.60 |
| 1:A:3772:ASN:HA | 1:A:3775:LEU:HB2 | 1.83 | 0.60 |
| 2:B:35:ARG:NH2 | 2:B:80:ARG:O | 2.34 | 0.60 |
| 1:A:1664:SER:HA | 1:A:1668:PHE:HB3 | 1.84 | 0.60 |
| 1:A:3011:LEU:HD23 | 1:A:3047:SER:HB3 | 1.83 | 0.60 |
| 1:A:3028:ASN:HA | 1:A:3031:TRP:HD1 | 1.66 | 0.60 |
| 1:A:2230:VAL:O | 1:A:2234:ASN:ND2 | 2.35 | 0.60 |
| 1:A:2259:LYS:O | 1:A:2270:ASN:ND2 | 2.34 | 0.60 |
| 1:A:1725:GLN:NE2 | 1:A:1768:ARG:O | 2.35 | 0.59 |
| 1:A:1735:ARG:O | 1:A:1739:TYR:HB2 | 2.01 | 0.59 |
| 1:A:3278:GLN:OE1 | 1:A:3282:ARG:NH1 | 2.35 | 0.59 |
| 3:C:335:SER:OG | 3:C:394:ARG:NH2 | 2.36 | 0.59 |
| 1:A:1668:PHE:HA | 1:A:1671:VAL:HG12 | 1.84 | 0.59 |
| 1:A:4010:SER:O | 1:A:4015:ASN:ND2 | 2.36 | 0.59 |
| 2:B:346:MET:SD | 2:B:399:ARG:NH2 | 2.76 | 0.59 |
| 1:A:561:ASN:N | 1:A:561:ASN:OD1 | 2.35 | 0.59 |
| 1:A:1089:PHE:HB2 | 1:A:1095:LEU:HD11 | 1.84 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:278:HIS:HB3 | 1:A:281:GLN:HE22 | 1.69 | 0.58 |
| 1:A:1079:SER:O | 1:A:1083:ASN:ND2 | 2.37 | 0.58 |
| 1:A:2467:THR:O | 1:A:2471:GLU:HB2 | 2.03 | 0.58 |
| 1:A:1782:PHE:HA | 1:A:1785:ILE:HG22 | 1.84 | 0.58 |
| 1:A:3733:ARG:NH2 | 1:A:3754:GLY:O | 2.37 | 0.58 |
| 2:B:399:ARG:NH1 | 3:C:516:LEU:O | 2.37 | 0.58 |
| 3:C:271:ARG:NH1 | 4:D:22:DT:OP2 | 2.37 | 0.58 |
| 1:A:3772:ASN:HD22 | 1:A:3788:LEU:HB2 | 1.69 | 0.58 |
| 1:A:3831:ASP:HB3 | 1:A:3834:ALA:HB2 | 1.86 | 0.58 |
| 2:B:368:VAL:HG13 | 2:B:434:LEU:HD11 | 1.85 | 0.57 |
| 1:A:3813:LYS:HB2 | 1:A:3925:LEU:HB3 | 1.86 | 0.57 |
| 1:A:1894:SER:HA | 1:A:1897:ASN:HB3 | 1.87 | 0.57 |
| 1:A:608:PRO:HB3 | 1:A:662:LEU:HD13 | 1.87 | 0.57 |
| 1:A:1568:ASN:HA | 1:A:1571:LEU:HB2 | 1.86 | 0.57 |
| 1:A:213:ARG:HG2 | 2:B:404:ARG:NH1 | 2.19 | 0.57 |
| 1:A:765:LEU:HA | 1:A:768:VAL:HG12 | 1.86 | 0.57 |
| 1:A:3757:ASP:OD2 | 1:A:3759:ARG:NH2 | 2.36 | 0.57 |
| 1:A:3569:GLN:O | 1:A:3573:ASN:ND2 | 2.38 | 0.57 |
| 2:B:446:MET:SD | 2:B:446:MET:N | 2.77 | 0.57 |
| 2:B:428:THR:HG22 | 3:C:354:ARG:HH22 | 1.70 | 0.56 |
| 1:A:652:GLU:OE1 | 1:A:656:GLN:NE2 | 2.37 | 0.56 |
| 1:A:889:GLU:OE1 | 1:A:891:ARG:NH1 | 2.36 | 0.56 |
| 1:A:2231:PHE:HA | 1:A:2234:ASN:HD22 | 1.70 | 0.56 |
| 1:A:3243:ILE:HD13 | 1:A:3259:LEU:HD22 | 1.87 | 0.56 |
| 1:A:3411:ASP:N | 1:A:3411:ASP:OD1 | 2.38 | 0.56 |
| 3:C:80:HIS:HD2 | 3:C:81:ARG:HG2 | 1.69 | 0.56 |
| 1:A:3084:GLN:HE21 | 1:A:3138:ILE:HD11 | 1.70 | 0.56 |
| 2:B:338:LYS:O | 2:B:405:ASN:ND2 | 2.38 | 0.56 |
| 3:C:348:SER:HB2 | 3:C:350:GLN:HG2 | 1.88 | 0.56 |
| 1:A:212:VAL:HG12 | 2:B:332:GLU:OE2 | 2.06 | 0.56 |
| 1:A:880:MET:HA | 1:A:883:TYR:HB2 | 1.86 | 0.56 |
| 1:A:2084:GLU:O | 1:A:2089:ASN:ND2 | 2.38 | 0.56 |
| 1:A:117:LYS:NZ | 3:C:300:ASP:OD1 | 2.33 | 0.56 |
| 1:A:4115:ASN:OD1 | 1:A:4119:ARG:NH2 | 2.38 | 0.56 |
| 2:B:285:PRO:O | 2:B:287:LYS:NZ | 2.39 | 0.56 |
| 1:A:3760:GLN:HE21 | 1:A:4005:PHE:HZ | 1.53 | 0.56 |
| 1:A:1068:LEU:HD11 | 1:A:1106:ILE:HD11 | 1.89 | 0.55 |
| 1:A:1988:TYR:HE2 | 1:A:2088:LEU:HD13 | 1.70 | 0.55 |
| 1:A:1440:ASP:OD1 | 1:A:1440:ASP:N | 2.39 | 0.55 |
| 1:A:1938:ARG:NH1 | 1:A:2092:GLU:OE2 | 2.39 | 0.55 |
| 2:B:440:ALA:HB2 | 3:C:483:PRO:HA | 1.88 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:2962:ARG:NH2 | 1:A:4101:GLU:OE2 | 2.39 | 0.55 |
| 1:A:3448:GLU:HG2 | 1:A:3452:LYS:HD2 | 1.89 | 0.55 |
| 3:C:28:GLU:OE2 | 3:C:33:GLN:NE2 | 2.38 | 0.55 |
| 3:C:266:SER:OG | 3:C:267:ILE:N | 2.38 | 0.55 |
| 1:A:820:ARG:NH2 | 4:D:6:DC:OP2 | 2.34 | 0.55 |
| 1:A:1094:SER:O | 1:A:1098:GLN:NE2 | 2.37 | 0.55 |
| 1:A:4083:GLY:HA3 | 1:A:4091:ALA:HB2 | 1.88 | 0.55 |
| 1:A:1467:ILE:HG22 | 1:A:1468:LEU:HG | 1.89 | 0.55 |
| 1:A:3603:LYS:O | 1:A:3605:ASN:ND2 | 2.39 | 0.55 |
| 1:A:3771:MET:SD | 1:A:3914:SER:OG | 2.64 | 0.55 |
| 1:A:1896:ILE:HA | 1:A:1899:VAL:HG12 | 1.87 | 0.55 |
| 1:A:2270:ASN:OD1 | 1:A:2306:ASN:ND2 | 2.40 | 0.54 |
| 1:A:2455:LEU:HD11 | 1:A:2480:ILE:HD13 | 1.89 | 0.54 |
| 3:C:155:LYS:HD3 | 3:C:215:LEU:HA | 1.89 | 0.54 |
| 1:A:409:GLN:O | 1:A:412:SER:OG | 2.25 | 0.54 |
| 1:A:2837:LEU:O | 1:A:2841:ASN:ND2 | 2.32 | 0.54 |
| 1:A:1538:LEU:O | 1:A:1552:HIS:N | 2.41 | 0.54 |
| 1:A:3630:ARG:HG2 | 1:A:3632:PHE:H | 1.71 | 0.54 |
| 1:A:3760:GLN:OE1 | 1:A:4019:LYS:NZ | 2.40 | 0.54 |
| 1:A:4011:PHE:HA | 1:A:4015:ASN:HD22 | 1.71 | 0.54 |
| 2:B:241:ASP:OD2 | 2:B:241:ASP:N | 2.40 | 0.54 |
| 1:A:75:SER:OG | 1:A:77:GLU:OE1 | 2.25 | 0.54 |
| 1:A:993:HIS:NE2 | 1:A:1035:GLU:OE2 | 2.31 | 0.54 |
| 1:A:1420:ARG:NH1 | 1:A:1466:ASN:O | 2.40 | 0.54 |
| 3:C:346:CYS:SG | 3:C:348:SER:OG | 2.63 | 0.54 |
| 1:A:1735:ARG:O | 1:A:1739:TYR:CB | 2.55 | 0.54 |
| 1:A:1864:ASP:HA | 1:A:1867:ILE:HD12 | 1.90 | 0.54 |
| 1:A:2121:ASP:OD2 | 1:A:2130:HIS:ND1 | 2.41 | 0.54 |
| 1:A:385:TYR:H | 1:A:388:LEU:HD23 | 1.71 | 0.54 |
| 1:A:2931:ARG:NH2 | 1:A:3000:ASP:OD2 | 2.41 | 0.54 |
| 2:B:407:PRO:HG2 | 3:C:486:ARG:HD2 | 1.89 | 0.54 |
| 2:B:470:ARG:HE | 3:C:347:LYS:HE3 | 1.72 | 0.54 |
| 1:A:3120:LEU:HD11 | 1:A:3896:ALA:HA | 1.90 | 0.53 |
| 1:A:1180:GLN:O | 1:A:1184:ARG:NH2 | 2.41 | 0.53 |
| 3:C:247:TRP:HD1 | 3:C:263:ALA:HB3 | 1.74 | 0.53 |
| 1:A:3278:GLN:NE2 | 1:A:3279:SER:OG | 2.41 | 0.53 |
| 1:A:2177:ASN:HB3 | 1:A:2182:ILE:HG12 | 1.90 | 0.53 |
| 1:A:2987:THR:HG23 | 1:A:2989:ALA:H | 1.72 | 0.53 |
| 1:A:3387:GLU:HA | 1:A:3390:GLN:HE21 | 1.73 | 0.53 |
| 1:A:723:ASP:OD1 | 1:A:723:ASP:N | 2.39 | 0.53 |
| 1:A:2375:ALA:HB3 | 1:A:2404:ARG:HG3 | 1.91 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:865:GLN:HG3 | 1:A:3170:ASP:HB3 | 1.90 | 0.53 |
| 1:A:3569:GLN:OE1 | 1:A:3573:ASN:ND2 | 2.42 | 0.53 |
| 1:A:3820:MET:HG2 | 1:A:3882:LEU:HD11 | 1.89 | 0.53 |
| 2:B:324:SER:OG | 2:B:325:ARG:NH1 | 2.42 | 0.53 |
| 3:C:351:VAL:HG21 | 3:C:407:VAL:HG21 | 1.90 | 0.53 |
| 1:A:738:HIS:HA | 1:A:741:ILE:HB | 1.90 | 0.53 |
| 3:C:280:ASP:N | 3:C:280:ASP:OD1 | 2.42 | 0.53 |
| 1:A:3527:GLN:NE2 | 1:A:3699:LEU:O | 2.41 | 0.53 |
| 1:A:400:THR:OG1 | 1:A:404:ASP:OD2 | 2.27 | 0.52 |
| 1:A:3354:ASP:OD1 | 1:A:3354:ASP:N | 2.40 | 0.52 |
| 2:B:206:LYS:HB3 | 2:B:209:GLY:HA2 | 1.90 | 0.52 |
| 2:B:413:LEU:HD23 | 2:B:432:PHE:HD2 | 1.75 | 0.52 |
| 1:A:3786:LEU:HB3 | 1:A:3910:LEU:HD22 | 1.91 | 0.52 |
| 2:B:142:SER:OG | 2:B:143:LEU:N | 2.43 | 0.52 |
| 1:A:131:LEU:HD22 | 1:A:177:LEU:HD21 | 1.92 | 0.52 |
| 1:A:1445:ARG:HD3 | 1:A:1448:LEU:HD21 | 1.90 | 0.52 |
| 1:A:861:SER:O | 1:A:3167:ARG:NH1 | 2.43 | 0.52 |
| 1:A:3425:ARG:HH21 | 1:A:3467:ARG:HH21 | 1.57 | 0.52 |
| 3:C:409:PHE:HB2 | 3:C:420:VAL:HG23 | 1.92 | 0.52 |
| 1:A:1153:LEU:HD12 | 1:A:1154:PRO:HD2 | 1.92 | 0.52 |
| 1:A:3271:ASP:HA | 1:A:3274:VAL:HG22 | 1.92 | 0.52 |
| 2:B:204:HIS:O | 2:B:237:SER:N | 2.42 | 0.52 |
| 3:C:52:ASP:N | 3:C:52:ASP:OD1 | 2.43 | 0.52 |
| 1:A:288:ASP:OD1 | 1:A:288:ASP:N | 2.43 | 0.52 |
| 1:A:2148:LYS:O | 1:A:2152:ASN:ND2 | 2.40 | 0.52 |
| 1:A:3050:LYS:O | 1:A:3054:GLN:NE2 | 2.42 | 0.52 |
| 1:A:264:ARG:HA | 5:G:33:DG:H5' | 1.92 | 0.51 |
| 1:A:1066:LEU:HD23 | 1:A:1074:LYS:HG3 | 1.93 | 0.51 |
| 2:B:93:ASP:N | 2:B:93:ASP:OD1 | 2.42 | 0.51 |
| 1:A:1334:LYS:NZ | 1:A:1382:ILE:O | 2.43 | 0.51 |
| 1:A:1423:ILE:HB | 1:A:1458:LEU:HD11 | 1.92 | 0.51 |
| 1:A:2452:ARG:HH21 | 1:A:2497:GLU:HG2 | 1.75 | 0.51 |
| 1:A:2859:GLN:NE2 | 1:A:2880:CYS:SG | 2.83 | 0.51 |
| 1:A:3576:ASP:OD2 | 1:A:3577:GLN:NE2 | 2.43 | 0.51 |
| 1:A:3731:SER:OG | 1:A:3732:LEU:N | 2.43 | 0.51 |
| 2:B:491:GLU:OE1 | 3:C:316:TYR:OH | 2.26 | 0.51 |
| 1:A:998:ASN:HA | 1:A:1001:PHE:HB2 | 1.93 | 0.51 |
| 1:A:1035:GLU:OE2 | 1:A:1039:TRP:NE1 | 2.43 | 0.51 |
| 1:A:2452:ARG:HD2 | 1:A:2497:GLU:HG2 | 1.91 | 0.51 |
| 1:A:1914:THR:HA | 1:A:1917:LYS:HG2 | 1.93 | 0.51 |
| 2:B:83:LEU:O | 2:B:108:LEU:HA | 2.11 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:1582:LEU:HD21 | 1:A:1596:VAL:HG13 | 1.93 | 0.50 |
| 1:A:1690:GLY:HA2 | 1:A:1693:VAL:HG12 | 1.93 | 0.50 |
| 1:A:3466:PRO:HA | 1:A:3469:LEU:HB2 | 1.92 | 0.50 |
| 1:A:76:ILE:O | 1:A:79:ARG:NH1 | 2.44 | 0.50 |
| 1:A:3021:SER:OG | 1:A:3022:GLU:N | 2.44 | 0.50 |
| 2:B:319:SER:HG | 3:C:277:THR:HG1 | 1.60 | 0.50 |
| 1:A:1071:ASN:HB3 | 1:A:1074:LYS:HB2 | 1.92 | 0.50 |
| 1:A:2992:ASP:OD1 | 1:A:2992:ASP:N | 2.40 | 0.50 |
| 2:B:263:LEU:HB2 | 2:B:267:ILE:HB | 1.93 | 0.50 |
| 1:A:374:LYS:HB2 | 1:A:381:VAL:HG21 | 1.94 | 0.50 |
| 1:A:1407:LYS:HD3 | 1:A:1463:LEU:HB2 | 1.92 | 0.50 |
| 1:A:984:TYR:HA | 1:A:987:LEU:HB3 | 1.94 | 0.50 |
| 1:A:1568:ASN:OD1 | 1:A:1568:ASN:N | 2.41 | 0.50 |
| 1:A:3424:LEU:HD21 | 1:A:3443:PRO:HG3 | 1.93 | 0.50 |
| 1:A:2122:LEU:O | 1:A:2127:LYS:N | 2.36 | 0.50 |
| 1:A:2538:ARG:HG2 | 1:A:2542:LEU:HD12 | 1.93 | 0.50 |
| 2:B:41:LEU:HD23 | 2:B:168:LEU:HD13 | 1.93 | 0.50 |
| 1:A:538:ASP:HA | 1:A:541:MET:HB2 | 1.94 | 0.50 |
| 2:B:298:THR:OG1 | 3:C:294:VAL:O | 2.25 | 0.50 |
| 1:A:863:GLY:O | 1:A:867:ASN:ND2 | 2.38 | 0.49 |
| 1:A:1668:PHE:O | 1:A:1672:PHE:HB2 | 2.12 | 0.49 |
| 1:A:3916:TRP:CD1 | 1:A:3960:PRO:HB3 | 2.47 | 0.49 |
| 3:C:511:HIS:HA | 3:C:514:ASN:HB2 | 1.93 | 0.49 |
| 1:A:1250:LEU:O | 1:A:1253:THR:OG1 | 2.29 | 0.49 |
| 2:B:278:GLN:HE22 | 3:C:431:ARG:HB3 | 1.77 | 0.49 |
| 1:A:1794:GLN:NE2 | 1:A:1832:SER:O | 2.42 | 0.49 |
| 1:A:121:ALA:HA | 1:A:124:LYS:HB2 | 1.93 | 0.49 |
| 1:A:257:ARG:HD3 | 1:A:258:PRO:HD2 | 1.95 | 0.49 |
| 1:A:988:VAL:HG11 | 1:A:1028:PHE:HZ | 1.78 | 0.49 |
| 1:A:3619:ASP:OD1 | 1:A:3622:ALA:N | 2.45 | 0.49 |
| 2:B:244:ARG:O | 2:B:244:ARG:HG3 | 2.12 | 0.49 |
| 3:C:404:GLN:HB2 | 3:C:423:GLN:HE21 | 1.77 | 0.49 |
| 3:C:462:SER:OG | 3:C:463:LEU:N | 2.44 | 0.49 |
| 1:A:289:ASN:O | 1:A:292:SER:OG | 2.28 | 0.49 |
| 1:A:3996:GLY:O | 1:A:4000:ASN:ND2 | 2.45 | 0.49 |
| 1:A:1117:ASP:OD1 | 1:A:1117:ASP:N | 2.37 | 0.49 |
| 1:A:2182:ILE:O | 1:A:2186:VAL:N | 2.43 | 0.49 |
| 3:C:45:GLN:OE1 | 3:C:50:ASN:ND2 | 2.40 | 0.49 |
| 1:A:1726:SER:OG | 1:A:1727:ARG:N | 2.44 | 0.49 |
| 3:C:280:ASP:OD1 | 3:C:283:THR:OG1 | 2.31 | 0.49 |
| 3:C:285:LYS:NZ | 3:C:287:GLU:OE1 | 2.36 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:1579:VAL:HG23 | 1:A:1580:LEU:HD12 | 1.94 | 0.49 |
| 2:B:259:LEU:HD21 | 2:B:402:PRO:HA | 1.95 | 0.49 |
| 2:B:459:VAL:HG12 | 3:C:383:ALA:HA | 1.94 | 0.49 |
| 1:A:1369:MET:HA | 1:A:1372:LEU:HD12 | 1.95 | 0.49 |
| 1:A:3175:PRO:HD2 | 1:A:3178:ILE:HD12 | 1.95 | 0.49 |
| 1:A:3706:ASP:OD1 | 1:A:3706:ASP:N | 2.41 | 0.49 |
| 2:B:51:SER:OG | 2:B:51:SER:O | 2.30 | 0.49 |
| 2:B:319:SER:OG | 3:C:277:THR:OG1 | 2.31 | 0.49 |
| 1:A:125:ILE:HG12 | 1:A:170:VAL:HG22 | 1.95 | 0.48 |
| 1:A:1151:ARG:HD2 | 1:A:1163:LEU:HB2 | 1.95 | 0.48 |
| 1:A:1356:TRP:HZ2 | 1:A:1409:SER:HB2 | 1.77 | 0.48 |
| 1:A:3410:ILE:HD11 | 1:A:3458:SER:HB2 | 1.94 | 0.48 |
| 1:A:3959:MET:SD | 1:A:3959:MET:N | 2.70 | 0.48 |
| 3:C:182:PRO:O | 3:C:184:ARG:NH1 | 2.46 | 0.48 |
| 1:A:2439:ILE:HA | 1:A:2442:MET:HG2 | 1.94 | 0.48 |
| 1:A:1218:SER:HA | 1:A:1221:ILE:HG22 | 1.94 | 0.48 |
| 1:A:2380:ASN:OD1 | 1:A:2380:ASN:N | 2.44 | 0.48 |
| 1:A:3358:ARG:NH1 | 1:A:3361:GLU:OE1 | 2.45 | 0.48 |
| 3:C:231:LEU:HD21 | 3:C:511:HIS:HB2 | 1.95 | 0.48 |
| 1:A:2235:LEU:HA | 1:A:2238:ILE:HD12 | 1.94 | 0.48 |
| 1:A:3307:LEU:HD22 | 1:A:3330:LEU:HD21 | 1.96 | 0.48 |
| 3:C:32:GLU:HA | 3:C:35:LYS:HG2 | 1.95 | 0.48 |
| 3:C:66:ASN:HD22 | 3:C:74:TYR:HB3 | 1.77 | 0.48 |
| 1:A:3764:VAL:HA | 1:A:3767:LEU:HB2 | 1.94 | 0.48 |
| 3:C:249:CYS:SG | 3:C:250:ARG:N | 2.87 | 0.48 |
| 1:A:2841:ASN:O | 1:A:2845:ASN:ND2 | 2.35 | 0.48 |
| 1:A:3623:PRO:O | 1:A:3627:ALA:C | 2.52 | 0.48 |
| 1:A:2827:SER:O | 1:A:2831:ASN:ND2 | 2.46 | 0.48 |
| 1:A:3733:ARG:HH22 | 1:A:3755:GLY:HA3 | 1.79 | 0.48 |
| 1:A:3778:ASP:OD1 | 1:A:3778:ASP:N | 2.41 | 0.48 |
| 1:A:4096:SER:OG | 1:A:4097:GLY:N | 2.47 | 0.48 |
| 1:A:3885:ARG:HA | 1:A:3888:VAL:HG12 | 1.96 | 0.48 |
| 2:B:116:ILE:HG13 | 2:B:495:LEU:HD21 | 1.94 | 0.48 |
| 1:A:3723:ASP:OD2 | 1:A:3741:ARG:NH2 | 2.43 | 0.48 |
| 2:B:35:ARG:HH22 | 2:B:80:ARG:HB2 | 1.79 | 0.48 |
| 2:B:476:ASP:HB3 | 3:C:427:MET:HG2 | 1.96 | 0.48 |
| 1:A:3582:GLU:OE2 | 1:A:3671:ASN:ND2 | 2.47 | 0.47 |
| 2:B:62:MET:SD | 2:B:206:LYS:NZ | 2.87 | 0.47 |
| 2:B:343:PRO:HG3 | 2:B:404:ARG:HG3 | 1.96 | 0.47 |
| 1:A:3786:LEU:HD21 | 1:A:3983:ILE:HD12 | 1.96 | 0.47 |
| 1:A:2123:PRO:O | 1:A:2128:PHE:N | 2.47 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:2148:LYS:HD3 | 1:A:2151:ILE:HD11 | 1.96 | 0.47 |
| 1:A:3811:THR:HG22 | 1:A:3929:MET:HG2 | 1.95 | 0.47 |
| 2:B:89:GLY:O | 2:B:139:SER:OG | 2.33 | 0.47 |
| 1:A:1256:TRP:HA | 1:A:1259:LEU:HD12 | 1.95 | 0.47 |
| 1:A:1448:LEU:HD22 | 1:A:1510:LEU:HD13 | 1.96 | 0.47 |
| 1:A:2189:ILE:HA | 1:A:2192:THR:HG22 | 1.96 | 0.47 |
| 3:C:11:VAL:O | 3:C:132:ILE:HA | 2.14 | 0.47 |
| 1:A:3558:ILE:HA | 1:A:3561:LYS:HG2 | 1.96 | 0.47 |
| 1:A:3658:ASP:OD1 | 1:A:3658:ASP:N | 2.46 | 0.47 |
| 1:A:2162:LYS:HG3 | 1:A:2200:ALA:HB2 | 1.96 | 0.47 |
| 1:A:1678:LEU:O | 1:A:1683:LYS:NZ | 2.48 | 0.47 |
| 1:A:1379:PRO:HB2 | 1:A:1384:PHE:HB2 | 1.96 | 0.47 |
| 1:A:1585:SER:OG | 1:A:1589:ASN:OD1 | 2.27 | 0.47 |
| 1:A:401:ASP:OD1 | 1:A:401:ASP:N | 2.48 | 0.46 |
| 1:A:450:SER:O | 1:A:454:GLN:N | 2.44 | 0.46 |
| 1:A:3260:LYS:HA | 1:A:3260:LYS:HD3 | 1.69 | 0.46 |
| 3:C:96:SER:O | 3:C:96:SER:OG | 2.31 | 0.46 |
| 1:A:3583:LEU:HD13 | 1:A:3586:LYS:HD2 | 1.98 | 0.46 |
| 2:B:263:LEU:HG | 2:B:347:LEU:HD22 | 1.97 | 0.46 |
| 3:C:237:PHE:HA | 3:C:240:ILE:HD12 | 1.97 | 0.46 |
| 1:A:456:VAL:HG12 | 1:A:459:ARG:HD2 | 1.96 | 0.46 |
| 3:C:298:ASN:HA | 3:C:302:GLU:HG3 | 1.96 | 0.46 |
| 1:A:3858:MET:HE1 | 1:A:4119:ARG:HB3 | 1.98 | 0.46 |
| 2:B:168:LEU:HB3 | 2:B:202:LEU:HB3 | 1.98 | 0.46 |
| 3:C:347:LYS:HG3 | 3:C:389:MET:HG2 | 1.96 | 0.46 |
| 1:A:36:ARG:NH2 | 1:A:823:GLN:O | 2.40 | 0.46 |
| 1:A:2492:ASP:HB3 | 1:A:2495:SER:H | 1.81 | 0.46 |
| 3:C:58:LEU:O | 3:C:78:THR:OG1 | 2.31 | 0.46 |
| 1:A:1003:SER:O | 1:A:1006:THR:OG1 | 2.33 | 0.46 |
| 1:A:1688:LEU:HA | 1:A:1691:GLN:HE22 | 1.80 | 0.46 |
| 1:A:2236:GLU:HA | 1:A:2239:LYS:HG2 | 1.98 | 0.46 |
| 1:A:3335:ARG:O | 1:A:3339:ASN:HB2 | 2.15 | 0.46 |
| 1:A:3725:ARG:HD2 | 1:A:3725:ARG:HA | 1.72 | 0.46 |
| 2:B:475:SER:O | 2:B:476:ASP:CG | 2.54 | 0.46 |
| 1:A:1911:LEU:HA | 1:A:1914:THR:HG22 | 1.97 | 0.46 |
| 3:C:6:ASN:HB3 | 3:C:7:LYS:H | 1.58 | 0.46 |
| 3:C:371:GLU:HB3 | 3:C:374:ALA:HB3 | 1.97 | 0.46 |
| 1:A:2990:GLU:HA | 1:A:2993:PHE:HB3 | 1.98 | 0.46 |
| 1:A:3357:ARG:O | 1:A:3361:GLU:CB | 2.61 | 0.46 |
| 1:A:2333:ARG:HD2 | 1:A:2333:ARG:HA | 1.74 | 0.46 |
| 3:C:40:MET:HA | 3:C:43:GLN:HE21 | 1.80 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:1813:SER:OG | 1:A:1864:ASP:OD2 | 2.33 | 0.46 |
| 1:A:2251:ILE:HD12 | 1:A:2252:PRO:HD2 | 1.97 | 0.46 |
| 1:A:3468:LEU:HA | 1:A:3471:ILE:HG22 | 1.98 | 0.46 |
| 1:A:3820:MET:HB3 | 1:A:3824:GLU:HG3 | 1.98 | 0.46 |
| 3:C:116:ASP:OD1 | 3:C:119:GLN:NE2 | 2.48 | 0.46 |
| 3:C:349:SER:O | 3:C:349:SER:OG | 2.34 | 0.46 |
| 1:A:2885:GLN:NE2 | 1:A:3895:GLU:OE2 | 2.47 | 0.45 |
| 3:C:165:LEU:HD12 | 3:C:166:PRO:HD2 | 1.98 | 0.45 |
| 1:A:1538:LEU:HD12 | 1:A:1555:HIS:HA | 1.98 | 0.45 |
| 1:A:1949:ILE:HG23 | 1:A:2100:LEU:HD22 | 1.98 | 0.45 |
| 2:B:471:PHE:HE1 | 3:C:344:GLY:HA3 | 1.80 | 0.45 |
| 1:A:2348:GLN:O | 1:A:2352:HIS:HB2 | 2.16 | 0.45 |
| 1:A:3026:ASP:N | 1:A:3026:ASP:OD1 | 2.47 | 0.45 |
| 1:A:3964:THR:OG1 | 1:A:3965:ARG:N | 2.47 | 0.45 |
| 1:A:385:TYR:HA | 1:A:388:LEU:HB2 | 1.97 | 0.45 |
| 1:A:1400:VAL:HG21 | 1:A:1460:ARG:HH11 | 1.81 | 0.45 |
| 1:A:1656:ASP:OD1 | 1:A:1656:ASP:N | 2.49 | 0.45 |
| 1:A:1135:CYS:HA | 1:A:1138:ILE:HG22 | 1.99 | 0.45 |
| 1:A:1774:MET:HB3 | 1:A:1777:LEU:HB2 | 1.99 | 0.45 |
| 1:A:2512:ASP:OD1 | 1:A:2512:ASP:N | 2.49 | 0.45 |
| 3:C:413:LYS:HD2 | 3:C:413:LYS:HA | 1.79 | 0.45 |
| 1:A:2277:LEU:HA | 1:A:2280:VAL:HG22 | 1.98 | 0.45 |
| 2:B:238:LYS:HD3 | 2:B:238:LYS:HA | 1.77 | 0.45 |
| 2:B:388:LYS:HD2 | 2:B:388:LYS:HA | 1.72 | 0.45 |
| 1:A:569:VAL:HA | 1:A:572:VAL:HG12 | 1.99 | 0.45 |
| 1:A:1597:LEU:HA | 1:A:1597:LEU:HD23 | 1.84 | 0.45 |
| 1:A:1833:LEU:HB3 | 1:A:1836:LEU:HB2 | 1.99 | 0.45 |
| 1:A:3623:PRO:HA | 1:A:3627:ALA:HB3 | 1.98 | 0.45 |
| 2:B:51:SER:OG | 2:B:54:GLU:O | 2.33 | 0.45 |
| 3:C:164:PHE:HA | 3:C:225:TYR:O | 2.16 | 0.45 |
| 1:A:10:CYS:SG | 1:A:11:SER:N | 2.90 | 0.45 |
| 2:B:95:ASN:OD1 | 2:B:95:ASN:N | 2.49 | 0.45 |
| 3:C:127:PHE:O | 3:C:130:ARG:NH1 | 2.50 | 0.45 |
| 1:A:576:VAL:HA | 1:A:579:LEU:HD12 | 1.99 | 0.45 |
| 1:A:3173:MET:SD | 1:A:3782:SER:OG | 2.75 | 0.45 |
| 3:C:385:ASP:N | 3:C:385:ASP:OD1 | 2.49 | 0.45 |
| 1:A:1588:ASP:OD1 | 1:A:1588:ASP:N | 2.42 | 0.44 |
| 1:A:3058:ASP:O | 1:A:3060:SER:OG | 2.34 | 0.44 |
| 1:A:3873:LYS:HA | 1:A:3873:LYS:HD2 | 1.77 | 0.44 |
| 1:A:977:ASP:OD1 | 1:A:978:GLN:N | 2.50 | 0.44 |
| 1:A:3753:LYS:N | 1:A:3801:GLY:O | 2.50 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:4011:PHE:O | 1:A:4013:TRP:N | 2.47 | 0.44 |
| 1:A:187:SER:O | 1:A:187:SER:OG | 2.34 | 0.44 |
| 1:A:408:TYR:N | 1:A:409:GLN:OE1 | 2.50 | 0.44 |
| 1:A:2980:ASP:OD1 | 1:A:2980:ASP:N | 2.46 | 0.44 |
| 1:A:1715:GLU:HA | 1:A:1718:ILE:HB | 2.00 | 0.44 |
| 1:A:1963:GLN:O | 1:A:1968:SER:OG | 2.24 | 0.44 |
| 1:A:2856:SER:O | 1:A:2860:ASP:HB2 | 2.17 | 0.44 |
| 1:A:3262:LEU:HD23 | 1:A:3262:LEU:HA | 1.85 | 0.44 |
| 3:C:247:TRP:CD1 | 3:C:263:ALA:HB3 | 2.50 | 0.44 |
| 1:A:61:ARG:HD2 | 1:A:61:ARG:HA | 1.75 | 0.44 |
| 1:A:2334:LYS:HD2 | 1:A:2334:LYS:HA | 1.65 | 0.44 |
| 3:C:144:LYS:HB3 | 3:C:144:LYS:HE3 | 1.83 | 0.44 |
| 3:C:301:ASP:N | 3:C:301:ASP:OD1 | 2.50 | 0.44 |
| 1:A:863:GLY:HA2 | 1:A:3167:ARG:HD2 | 2.00 | 0.44 |
| 1:A:2147:ALA:HA | 1:A:2150:VAL:HG22 | 1.99 | 0.44 |
| 2:B:155:SER:O | 2:B:155:SER:OG | 2.26 | 0.44 |
| 4:D:10:DA:H1' | 4:D:11:DC:H5' | 2.00 | 0.44 |
| 1:A:1106:ILE:HD12 | 1:A:1106:ILE:HA | 1.87 | 0.44 |
| 1:A:3263:HIS:O | 1:A:3266:SER:OG | 2.34 | 0.44 |
| 1:A:739:ASN:OD1 | 1:A:739:ASN:N | 2.47 | 0.44 |
| 2:B:102:ILE:HG21 | 2:B:149:VAL:HG11 | 1.99 | 0.44 |
| 3:C:54:ILE:HD12 | 3:C:86:PRO:HG3 | 2.00 | 0.43 |
| 1:A:564:LEU:HD23 | 1:A:564:LEU:HA | 1.85 | 0.43 |
| 1:A:726:LEU:HD23 | 1:A:726:LEU:HA | 1.85 | 0.43 |
| 1:A:1508:LYS:HD3 | 1:A:1508:LYS:HA | 1.79 | 0.43 |
| 2:B:362:LEU:HA | 2:B:362:LEU:HD23 | 1.81 | 0.43 |
| 1:A:1190:LEU:HD23 | 1:A:1190:LEU:HA | 1.82 | 0.43 |
| 1:A:2428:ASP:OD1 | 1:A:2429:ASP:N | 2.51 | 0.43 |
| 2:B:284:PRO:HA | 2:B:285:PRO:HD3 | 1.81 | 0.43 |
| 3:C:43:GLN:HE22 | 3:C:488:GLN:HE22 | 1.66 | 0.43 |
| 3:C:114:SER:O | 3:C:118:ILE:HG12 | 2.18 | 0.43 |
| 1:A:1071:ASN:HA | 1:A:3745:GLU:HG2 | 1.99 | 0.43 |
| 1:A:759:GLY:HA3 | 1:A:766:ALA:HB2 | 2.00 | 0.43 |
| 1:A:1477:HIS:CD2 | 1:A:1479:VAL:HG12 | 2.53 | 0.43 |
| 1:A:2556:SER:O | 1:A:2560:ASN:HB2 | 2.18 | 0.43 |
| 1:A:3767:LEU:HD23 | 1:A:3767:LEU:HA | 1.88 | 0.43 |
| 2:B:529:VAL:HG23 | 2:B:530:TYR:HD1 | 1.82 | 0.43 |
| 3:C:18:PHE:O | 3:C:21:SER:OG | 2.26 | 0.43 |
| 3:C:463:LEU:HD21 | 3:C:477:PHE:HB3 | 2.00 | 0.43 |
| 1:A:913:ARG:HD2 | 1:A:913:ARG:HA | 1.80 | 0.43 |
| 1:A:1949:ILE:HD13 | 1:A:2096:PRO:HB2 | 2.00 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:2953:THR:OG1 | 1:A:2954:GLN:OE1 | 2.37 | 0.43 |
| 2:B:397:LEU:HD21 | 3:C:479:THR:HG21 | 2.01 | 0.43 |
| 3:C:239:LYS:HD3 | 3:C:239:LYS:HA | 1.77 | 0.43 |
| 3:C:356:PHE:HD2 | 3:C:422:VAL:HG21 | 1.84 | 0.43 |
| 1:A:253:LEU:HA | 1:A:256:ILE:HG12 | 2.01 | 0.43 |
| 1:A:653:LEU:O | 1:A:657:SER:OG | 2.29 | 0.43 |
| 1:A:1776:GLU:HA | 1:A:1779:GLN:HG2 | 2.00 | 0.43 |
| 1:A:1820:VAL:HA | 1:A:1824:LEU:HD11 | 2.01 | 0.43 |
| 1:A:1930:GLU:OE1 | 1:A:1932:GLN:N | 2.49 | 0.43 |
| 1:A:1934:LEU:HA | 1:A:1937:ARG:HB2 | 1.99 | 0.43 |
| 1:A:3018:SER:O | 1:A:3018:SER:OG | 2.30 | 0.43 |
| 1:A:3138:ILE:HG12 | 1:A:3189:PHE:HZ | 1.84 | 0.43 |
| 1:A:3291:GLN:HB2 | 1:A:3296:GLN:HG3 | 2.01 | 0.43 |
| 2:B:353:LEU:HD23 | 2:B:356:LEU:HD21 | 2.00 | 0.43 |
| 2:B:495:LEU:HD23 | 2:B:495:LEU:HA | 1.84 | 0.43 |
| 1:A:72:SER:O | 1:A:72:SER:OG | 2.34 | 0.43 |
| 1:A:171:LEU:HD12 | 1:A:171:LEU:HA | 1.82 | 0.43 |
| 1:A:975:ASP:OD2 | 1:A:975:ASP:N | 2.47 | 0.43 |
| 1:A:1507:CYS:HA | 1:A:1510:LEU:HB3 | 2.00 | 0.43 |
| 1:A:2130:HIS:HE1 | 1:A:2163:HIS:HB3 | 1.84 | 0.43 |
| 1:A:2190:VAL:HA | 1:A:2193:ILE:HG22 | 2.01 | 0.43 |
| 1:A:2518:GLN:OE1 | 1:A:2522:ARG:NH2 | 2.40 | 0.43 |
| 1:A:3547:THR:HA | 1:A:3550:LYS:HZ3 | 1.83 | 0.43 |
| 1:A:3844:THR:HG22 | 1:A:3850:HIS:HA | 2.01 | 0.43 |
| 2:B:261:LEU:HB3 | 2:B:269:ILE:HG23 | 2.01 | 0.43 |
| 3:C:50:ASN:OD1 | 3:C:50:ASN:N | 2.52 | 0.43 |
| 1:A:3472:ILE:HD13 | 1:A:3472:ILE:HA | 1.88 | 0.43 |
| 3:C:89:ASP:OD1 | 3:C:89:ASP:N | 2.52 | 0.43 |
| 4:D:4:DT:H2" | 4:D:5:DG:C8 | 2.54 | 0.43 |
| 1:A:2489:SER:OG | 1:A:2490:GLU:N | 2.51 | 0.42 |
| 1:A:2857:CYS:O | 1:A:2861:ILE:HG12 | 2.19 | 0.42 |
| 1:A:3013:TYR:O | 1:A:3017:ALA:CB | 2.67 | 0.42 |
| 1:A:3929:MET:HB2 | 1:A:3938:ILE:HD11 | 2.00 | 0.42 |
| 2:B:143:LEU:HD12 | 2:B:143:LEU:HA | 1.84 | 0.42 |
| 2:B:247:ARG:HH21 | 2:B:488:ARG:HE | 1.67 | 0.42 |
| 1:A:1089:PHE:HE2 | 1:A:1100:VAL:HG21 | 1.83 | 0.42 |
| 1:A:1464:LEU:HD12 | 1:A:1464:LEU:HA | 1.89 | 0.42 |
| 1:A:2428:ASP:HB3 | 1:A:2431:ARG:HD3 | 2.01 | 0.42 |
| 1:A:4031:ILE:HD12 | 1:A:4034:ALA:HB3 | 2.00 | 0.42 |
| 1:A:1221:ILE:HD12 | 1:A:1224:PHE:HB2 | 2.00 | 0.42 |
| 1:A:1445:ARG:HH12 | 1:A:1506:SER:HB2 | 1.83 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:1987:ARG:HE | 1:A:1988:TYR:H | 1.67 | 0.42 |
| 1:A:2466:SER:HG | 1:A:2469:CYS:HG | 1.67 | 0.42 |
| 1:A:2926:LEU:HD12 | 1:A:2926:LEU:HA | 1.83 | 0.42 |
| 1:A:3983:ILE:HD13 | 1:A:3983:ILE:HA | 1.85 | 0.42 |
| 2:B:332:GLU:O | 2:B:336:GLU:HB2 | 2.18 | 0.42 |
| 2:B:372:GLU:N | 2:B:372:GLU:OE1 | 2.52 | 0.42 |
| 1:A:1607:GLU:O | 1:A:1614:GLN:NE2 | 2.53 | 0.42 |
| 1:A:2100:LEU:HD12 | 1:A:2100:LEU:HA | 1.92 | 0.42 |
| 1:A:3344:GLU:HA | 1:A:3345:PRO:HD2 | 1.57 | 0.42 |
| 2:B:298:THR:OG1 | 2:B:299:LYS:N | 2.52 | 0.42 |
| 1:A:1142:HIS:CD2 | 1:A:1165:LEU:HB2 | 2.54 | 0.42 |
| 1:A:1407:LYS:HG2 | 1:A:1408:MET:HE2 | 2.00 | 0.42 |
| 1:A:1963:GLN:NE2 | 1:A:2124:SER:OG | 2.52 | 0.42 |
| 1:A:2103:HIS:O | 1:A:2107:SER:HB3 | 2.19 | 0.42 |
| 1:A:3029:LYS:O | 1:A:3032:SER:OG | 2.29 | 0.42 |
| 1:A:3544:ASP:OD1 | 1:A:3544:ASP:N | 2.51 | 0.42 |
| 1:A:2398:LEU:HA | 1:A:2401:VAL:HG12 | 2.02 | 0.42 |
| 1:A:1906:THR:OG1 | 1:A:1910:GLU:OE1 | 2.36 | 0.42 |
| 1:A:3754:GLY:HA2 | 1:A:3800:LEU:HD23 | 2.01 | 0.42 |
| 1:A:171:LEU:HA | 1:A:174:VAL:HG12 | 2.01 | 0.42 |
| 1:A:1682:THR:HA | 1:A:1689:LYS:HE3 | 2.02 | 0.42 |
| 1:A:3788:LEU:HD13 | 1:A:3788:LEU:HA | 1.91 | 0.42 |
| 2:B:57:LEU:HD21 | 2:B:65:GLN:HE22 | 1.85 | 0.42 |
| 2:B:113:ALA:HA | 2:B:116:ILE:HG12 | 2.01 | 0.42 |
| 2:B:178:ASN:OD1 | 2:B:178:ASN:N | 2.53 | 0.42 |
| 1:A:967:PRO:O | 1:A:971:ARG:NH2 | 2.53 | 0.42 |
| 1:A:1069:HIS:HA | 1:A:1070:PRO:HD3 | 1.93 | 0.42 |
| 1:A:1818:SER:HA | 1:A:1821:ASP:HB2 | 2.01 | 0.42 |
| 1:A:1851:LEU:HD23 | 1:A:1851:LEU:HA | 1.83 | 0.42 |
| 1:A:2940:ARG:HD3 | 1:A:2957:LEU:HD22 | 2.02 | 0.42 |
| 1:A:2976:LEU:HD12 | 1:A:2976:LEU:HA | 1.92 | 0.42 |
| 1:A:3013:TYR:O | 1:A:3017:ALA:HB3 | 2.19 | 0.42 |
| 1:A:3268:THR:OG1 | 1:A:3269:ARG:N | 2.53 | 0.42 |
| 1:A:488:ILE:O | 1:A:492:SER:OG | 2.32 | 0.41 |
| 2:B:75:ILE:HD11 | 3:C:317:GLY:HA3 | 2.02 | 0.41 |
| 1:A:680:ILE:HD12 | 1:A:680:ILE:HA | 1.93 | 0.41 |
| 1:A:1068:LEU:HD23 | 1:A:1068:LEU:HA | 1.91 | 0.41 |
| 3:C:225:TYR:HB3 | 3:C:230:SER:HB2 | 2.03 | 0.41 |
| 3:C:484:ASN:HB3 | 3:C:487:PHE:CZ | 2.55 | 0.41 |
| 1:A:1540:THR:HG1 | 1:A:1552:HIS:N | 2.17 | 0.41 |
| 1:A:2385:LEU:HD12 | 1:A:2385:LEU:HA | 1.93 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:2526:SER:O | 1:A:2526:SER:OG | 2.31 | 0.41 |
| 1:A:3628:PHE:HD1 | 1:A:3628:PHE:HA | 1.78 | 0.41 |
| 2:B:141:TYR:OH | 2:B:172:GLU:OE2 | 2.22 | 0.41 |
| 2:B:399:ARG:HH11 | 3:C:516:LEU:HB3 | 1.86 | 0.41 |
| 3:C:62:ASP:HA | 3:C:103:GLN:HG2 | 2.02 | 0.41 |
| 1:A:362:ALA:O | 1:A:366:TYR:HB2 | 2.20 | 0.41 |
| 2:B:46:LYS:HA | 2:B:46:LYS:HD3 | 1.86 | 0.41 |
| 2:B:510:LYS:HB3 | 2:B:513:ALA:HB3 | 2.01 | 0.41 |
| 3:C:381:ILE:HD12 | 3:C:381:ILE:HA | 1.85 | 0.41 |
| 3:C:388:ASP:N | 3:C:388:ASP:OD1 | 2.47 | 0.41 |
| 1:A:1718:ILE:HD13 | 1:A:1718:ILE:HA | 1.96 | 0.41 |
| 1:A:2555:LEU:HD21 | 1:A:2854:PHE:HD1 | 1.85 | 0.41 |
| 1:A:3302:LYS:HB3 | 1:A:3302:LYS:HE2 | 1.88 | 0.41 |
| 1:A:3330:LEU:HD23 | 1:A:3330:LEU:HA | 1.86 | 0.41 |
| 3:C:127:PHE:HB3 | 3:C:130:ARG:HD2 | 2.02 | 0.41 |
| 1:A:732:PHE:O | 1:A:735:SER:OG | 2.38 | 0.41 |
| 1:A:2510:LEU:O | 1:A:2518:GLN:NE2 | 2.54 | 0.41 |
| 1:A:2876:VAL:HG11 | 1:A:2892:LEU:HD23 | 2.01 | 0.41 |
| 1:A:2897:LEU:HA | 1:A:2897:LEU:HD23 | 1.88 | 0.41 |
| 3:C:271:ARG:HD3 | 3:C:271:ARG:HA | 1.90 | 0.41 |
| 3:C:274:LYS:HA | 3:C:274:LYS:HD3 | 1.89 | 0.41 |
| 1:A:390:GLN:O | 1:A:394:GLN:NE2 | 2.43 | 0.41 |
| 1:A:1452:VAL:HG12 | 1:A:1517:LEU:HD12 | 2.02 | 0.41 |
| 1:A:1848:ILE:HD12 | 1:A:1848:ILE:HA | 1.91 | 0.41 |
| 1:A:2234:ASN:HA | 1:A:2237:ILE:HD12 | 2.01 | 0.41 |
| 1:A:2281:MET:HG2 | 1:A:2326:ILE:HG22 | 2.03 | 0.41 |
| 3:C:482:ILE:HD13 | 3:C:482:ILE:HA | 1.93 | 0.41 |
| 1:A:670:LEU:HD23 | 1:A:670:LEU:HA | 1.89 | 0.41 |
| 1:A:1256:TRP:HZ2 | 1:A:1293:ALA:HB1 | 1.85 | 0.41 |
| 1:A:1725:GLN:O | 1:A:1768:ARG:NE | 2.49 | 0.41 |
| 1:A:1824:LEU:H | 1:A:1824:LEU:HG | 1.75 | 0.41 |
| 1:A:2002:LYS:HA | 1:A:2005:ILE:HG22 | 2.02 | 0.41 |
| 1:A:2122:LEU:HB2 | 1:A:2126:MET:HE3 | 2.02 | 0.41 |
| 1:A:3800:LEU:HD23 | 1:A:3800:LEU:HA | 1.88 | 0.41 |
| 3:C:405:VAL:HG22 | 3:C:426:PHE:HE1 | 1.86 | 0.41 |
| 3:C:537:PHE:HD1 | 3:C:538:PRO:HD2 | 1.85 | 0.41 |
| 1:A:456:VAL:HA | 1:A:459:ARG:HB2 | 2.03 | 0.41 |
| 1:A:1049:GLN:HG2 | 1:A:1055:ASN:HD21 | 1.86 | 0.41 |
| 1:A:1341:ILE:HD12 | 1:A:1344:PHE:HB3 | 2.02 | 0.41 |
| 1:A:1373:VAL:HA | 1:A:1376:LEU:HG | 2.02 | 0.41 |
| 1:A:1866:GLN:HA | 1:A:1869:LYS:HE3 | 2.01 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:2898:LEU:HD23 | 1:A:2898:LEU:HA | 1.76 | 0.41 |
| 1:A:3062:LEU:HD21 | 1:A:3093:GLN:HG3 | 2.03 | 0.41 |
| 1:A:3424:LEU:HA | 1:A:3427:GLU:HB2 | 2.02 | 0.41 |
| 3:C:362:LEU:O | 3:C:420:VAL:HA | 2.20 | 0.41 |
| 1:A:915:THR:HG23 | 1:A:968:VAL:HG11 | 2.02 | 0.41 |
| 1:A:1167:ASP:N | 1:A:1167:ASP:OD1 | 2.53 | 0.41 |
| 1:A:1331:ASN:HA | 1:A:1334:LYS:HE3 | 2.03 | 0.41 |
| 1:A:1605:PHE:HD1 | 1:A:1655:ILE:HG13 | 1.86 | 0.41 |
| 1:A:3621:LYS:HD3 | 1:A:3621:LYS:HA | 1.92 | 0.41 |
| 2:B:239:LEU:HD23 | 2:B:243:LEU:HG | 2.03 | 0.41 |
| 1:A:921:ALA:HB1 | 1:A:923:ASP:HB3 | 2.04 | 0.40 |
| 1:A:1385:ASN:OD1 | 1:A:1386:ILE:N | 2.54 | 0.40 |
| 1:A:1593:VAL:HA | 1:A:1596:VAL:HG12 | 2.03 | 0.40 |
| 1:A:1904:CYS:HB3 | 1:A:1906:THR:HG22 | 2.02 | 0.40 |
| 1:A:671:SER:HA | 1:A:674:VAL:HG12 | 2.03 | 0.40 |
| 1:A:1372:LEU:HD21 | 1:A:1402:LEU:HD23 | 2.03 | 0.40 |
| 1:A:1633:TRP:HZ3 | 1:A:1645:VAL:HG11 | 1.87 | 0.40 |
| 1:A:1707:LEU:HD23 | 1:A:1707:LEU:HA | 1.89 | 0.40 |
| 1:A:2365:ASN:HD22 | 1:A:2396:LEU:HD22 | 1.85 | 0.40 |
| 1:A:3061:LEU:HD23 | 1:A:3061:LEU:HA | 1.96 | 0.40 |
| 1:A:3196:LYS:HA | 1:A:3196:LYS:HD2 | 1.78 | 0.40 |
| 2:B:171:ASN:HB3 | 2:B:205:LEU:HD12 | 2.02 | 0.40 |
| 2:B:219:ASP:OD1 | 2:B:219:ASP:N | 2.46 | 0.40 |
| 3:C:43:GLN:NE2 | 3:C:488:GLN:OE1 | 2.54 | 0.40 |
| 1:A:385:TYR:HE2 | 1:A:428:PRO:HG2 | 1.87 | 0.40 |
| 1:A:618:LYS:HA | 1:A:618:LYS:HD3 | 1.83 | 0.40 |
| 1:A:892:LEU:HD23 | 1:A:892:LEU:HA | 1.93 | 0.40 |
| 1:A:1483:LEU:HD23 | 1:A:1483:LEU:HA | 1.93 | 0.40 |
| 1:A:3358:ARG:HD2 | 1:A:3358:ARG:HA | 1.84 | 0.40 |
| 1:A:3851:ASP:OD1 | 1:A:3851:ASP:N | 2.53 | 0.40 |
| 2:B:38:LEU:HA | 2:B:38:LEU:HD12 | 1.84 | 0.40 |
| 3:C:153:SER:HA | 3:C:156:LYS:HG2 | 2.02 | 0.40 |
| 1:A:1362:ASP:OD1 | 1:A:1362:ASP:N | 2.54 | 0.40 |
| 1:A:1785:ILE:HG23 | 1:A:1827:LEU:HD11 | 2.03 | 0.40 |
| 1:A:1911:LEU:O | 1:A:1915:LEU:HG | 2.22 | 0.40 |
| 1:A:3190:LEU:HD21 | 1:A:3231:ILE:HG23 | 2.03 | 0.40 |
| 1:A:3243:ILE:HD11 | 1:A:3258:LEU:HB3 | 2.03 | 0.40 |
| 1:A:177:LEU:HD12 | 1:A:177:LEU:HA | 1.80 | 0.40 |
| 1:A:392:CYS:SG | 1:A:393:LYS:N | 2.94 | 0.40 |
| 1:A:1807:LYS:HE2 | 1:A:1809:ASP:HB2 | 2.03 | 0.40 |
| 1:A:2102:LYS:O | 1:A:2106:ARG:HG2 | 2.22 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:2176:ASN:OD1 | 1:A:2176:ASN:N | 2.51 | 0.40 |
| 1:A:3160:LEU:HA | 1:A:3163:THR:HG22 | 2.03 | 0.40 |
| 1:A:3719:ILE:H | 1:A:3719:ILE:HG22 | 1.66 | 0.40 |
| 1:A:3791:TYR:HE2 | 1:A:3803:ILE:HD11 | 1.86 | 0.40 |
| 2:B:429:PRO:HD2 | 3:C:354:ARG:HH12 | 1.86 | 0.40 |
| 3:C:195:LYS:HD3 | 3:C:195:LYS:HA | 1.84 | 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 | 3562/4128 (86%) | 3060 (86%) | 487 (14%) | 15 (0%) | 34 | 71 |
| 2 | B | 486/609 (80%) | 401 (82%) | 85 (18%) | 0 | 100 | 100 |
| 3 | C | 522/732 (71%) | 448 (86%) | 70 (13%) | 4 (1%) | 19 | 58 |
| All | All | 4570/5469 (84%) | 3909 (86%) | 642 (14%) | 19 (0%) | 38 | 71 |

All (19) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 1021 | VAL |
| 1 | A | 3345 | PRO |
| 1 | A | 2246 | LYS |
| 1 | A | 2467 | THR |
| 1 | A | 3083 | SER |
| 3 | C | 299 | ASP |
| 3 | C | 322 | PRO |
| 1 | A | 259 | GLN |
| 1 | A | 1164 | CYS |
| 1 | A | 1723 | PRO |
| 1 | A | 2202 | PRO |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 3775 | LEU |
| 1 | A | 3954 | PRO |
| 3 | C | 324 | SER |
| 1 | A | 258 | PRO |
| 3 | C | 193 | PRO |
| 1 | A | 661 | PRO |
| 1 | A | 2548 | PRO |
| 1 | A | 976 | VAL |

### 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 | 3142/3671 (86%) | 3114 (99%) | 28 (1%) | 78 | 87 |
| 2 | B | 444/548 (81%) | 441 (99%) | 3 (1%) | 84 | 90 |
| 3 | C | 473/649 (73%) | 467 (99%) | 6 (1%) | 69 | 81 |
| All | All | 4059/4868 (83%) | 4022 (99%) | 37 (1%) | 79 | 87 |

All (37) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 214 | GLU |
| 1 | A | 561 | ASN |
| 1 | A | 612 | LEU |
| 1 | A | 910 | PHE |
| 1 | A | 1021 | VAL |
| 1 | A | 1089 | PHE |
| 1 | A | 1213 | LYS |
| 1 | A | 1527 | ARG |
| 1 | A | 1568 | ASN |
| 1 | A | 1773 | VAL |
| 1 | A | 1783 | ARG |
| 1 | A | 1837 | ARG |
| 1 | A | 1845 | VAL |
| 1 | A | 1856 | THR |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 1886 | LYS |
| 1 | A | 2341 | LEU |
| 1 | A | 2389 | PHE |
| 1 | A | 2542 | LEU |
| 1 | A | 2919 | ASP |
| 1 | A | 3311 | ASN |
| 1 | A | 3603 | LYS |
| 1 | A | 3642 | LYS |
| 1 | A | 3650 | LYS |
| 1 | A | 3653 | ARG |
| 1 | A | 3799 | ARG |
| 1 | A | 3833 | ARG |
| 1 | A | 3959 | MET |
| 1 | A | 4041 | ARG |
| 2 | B | 244 | ARG |
| 2 | B | 452 | ILE |
| 2 | B | 488 | ARG |
| 3 | C | 130 | ARG |
| 3 | C | 184 | ARG |
| 3 | C | 360 | GLN |
| 3 | C | 399 | LYS |
| 3 | C | 489 | ARG |
| 3 | C | 494 | LEU |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (57) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 16 | GLN |
| 1 | A | 322 | GLN |
| 1 | A | 484 | HIS |
| 1 | A | 625 | ASN |
| 1 | A | 982 | GLN |
| 1 | A | 1083 | ASN |
| 1 | A | 1126 | GLN |
| 1 | A | 1205 | ASN |
| 1 | A | 1654 | GLN |
| 1 | A | 1691 | GLN |
| 1 | A | 1957 | ASN |
| 1 | A | 1963 | GLN |
| 1 | A | 2103 | HIS |
| 1 | A | 2222 | HIS |
| 1 | A | 2234 | ASN |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 2266 | ASN |
| 1 | A | 2301 | GLN |
| 1 | A | 2305 | ASN |
| 1 | A | 2348 | GLN |
| 1 | A | 2414 | GLN |
| 1 | A | 2464 | HIS |
| 1 | A | 2831 | ASN |
| 1 | A | 3084 | GLN |
| 1 | A | 3139 | GLN |
| 1 | A | 3278 | GLN |
| 1 | A | 3311 | ASN |
| 1 | A | 3327 | ASN |
| 1 | A | 3390 | GLN |
| 1 | A | 3470 | GLN |
| 1 | A | 3516 | HIS |
| 1 | A | 3569 | GLN |
| 1 | A | 3573 | ASN |
| 1 | A | 3577 | GLN |
| 1 | A | 3605 | ASN |
| 1 | A | 3772 | ASN |
| 1 | A | 4000 | ASN |
| 1 | A | 4015 | ASN |
| 1 | A | 4032 | ASN |
| 1 | A | 4055 | ASN |
| 2 | B | 65 | GLN |
| 2 | B | 98 | ASN |
| 2 | B | 101 | ASN |
| 2 | B | 152 | ASN |
| 2 | B | 426 | GLN |
| 2 | B | 433 | GLN |
| 2 | B | 489 | ASN |
| 3 | C | 43 | GLN |
| 3 | C | 75 | GLN |
| 3 | C | 76 | ASN |
| 3 | C | 80 | HIS |
| 3 | C | 119 | GLN |
| 3 | C | 330 | GLN |
| 3 | C | 360 | GLN |
| 3 | C | 423 | GLN |
| 3 | C | 450 | GLN |
| 3 | C | 488 | GLN |
| 3 | C | 517 | 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-22625. 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 |
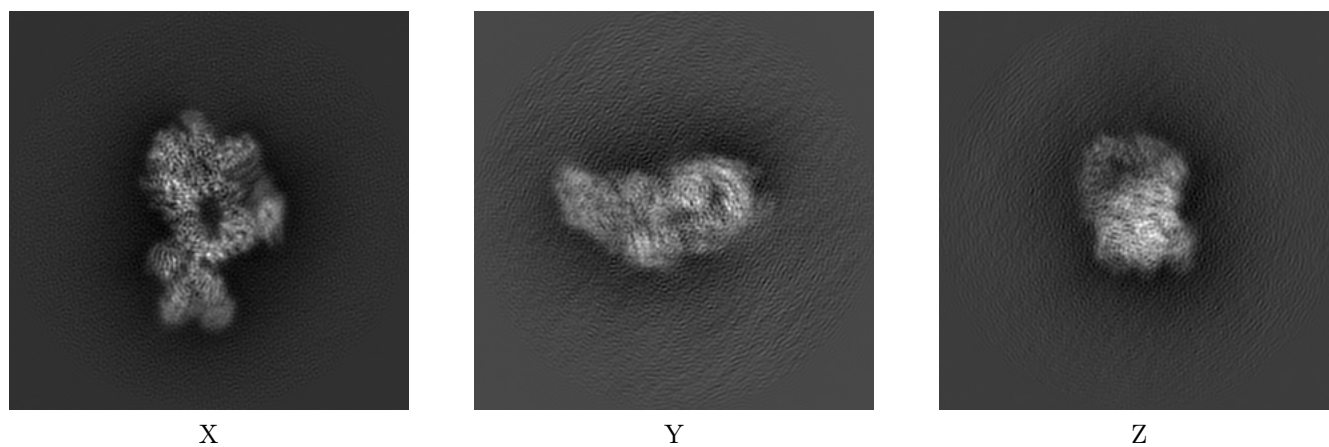
The images above show the map projected in three orthogonal directions.

## 6.2　Central slices ⓘ

### 6.2.1　Primary map



| X Index: 176 | Y Index: 176 | Z Index: 176 |
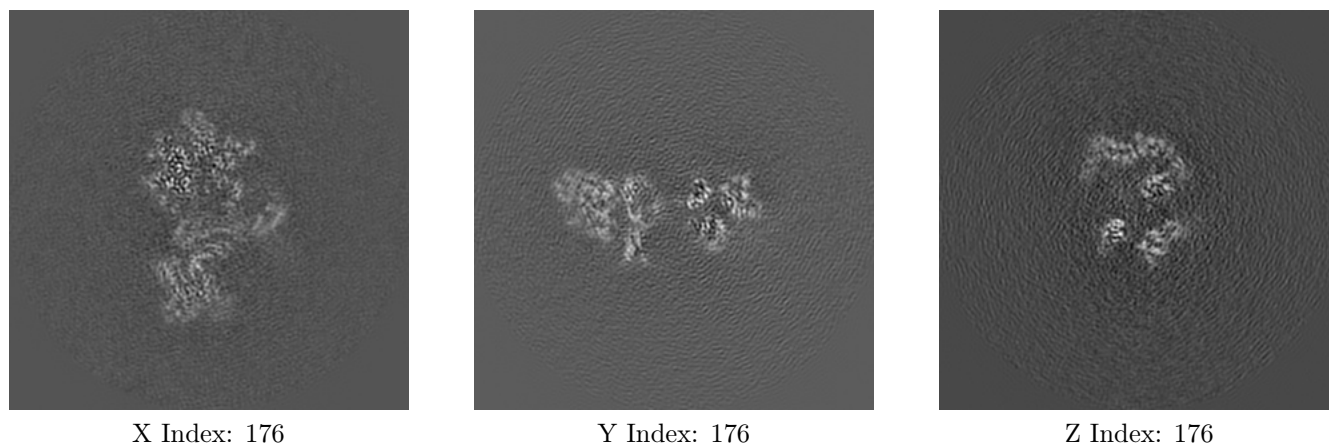
The images above show central slices of the map in three orthogonal directions.

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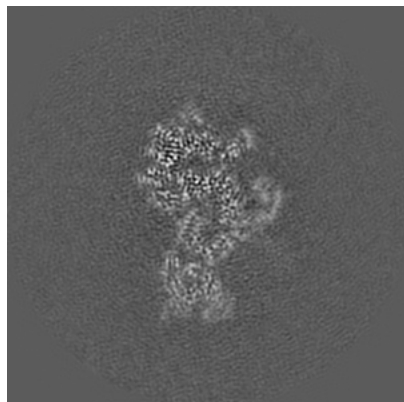
### 6.3.1 Primary map
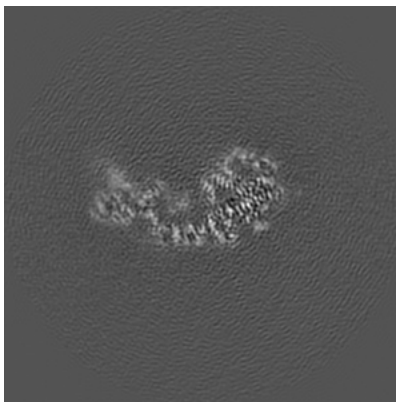


| X Index: 184 | Y Index: 149 | Z Index: 199 |
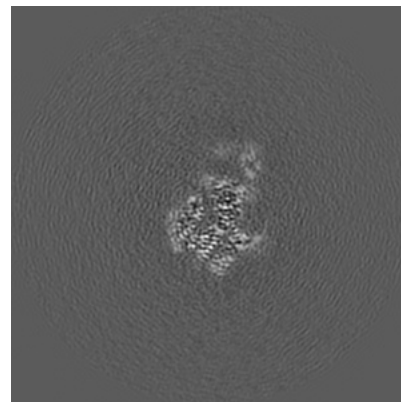
The images above show the largest variance slices of the map in three orthogonal directions.

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

### 6.4.1 Primary map



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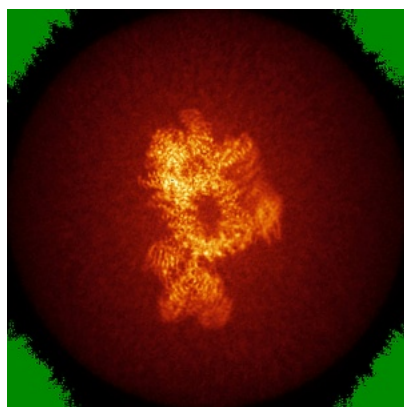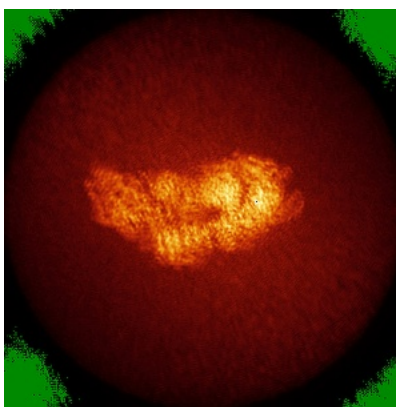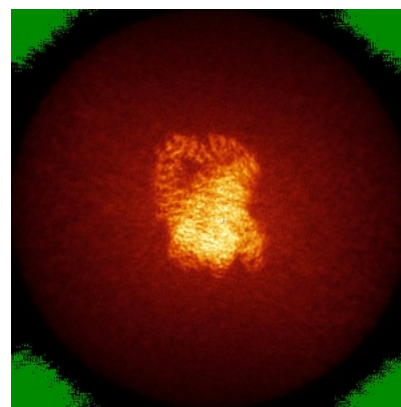
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views (i)

### 6.5.1 Primary map



X                                          Y                                          Z

The images above show the 3D surface view of the map at the recommended contour level 0.013. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

## 6.6 Mask visualisation (i)

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

# 7 Map analysis ⓘ

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

## 7.1 Map-value distribution ⓘ
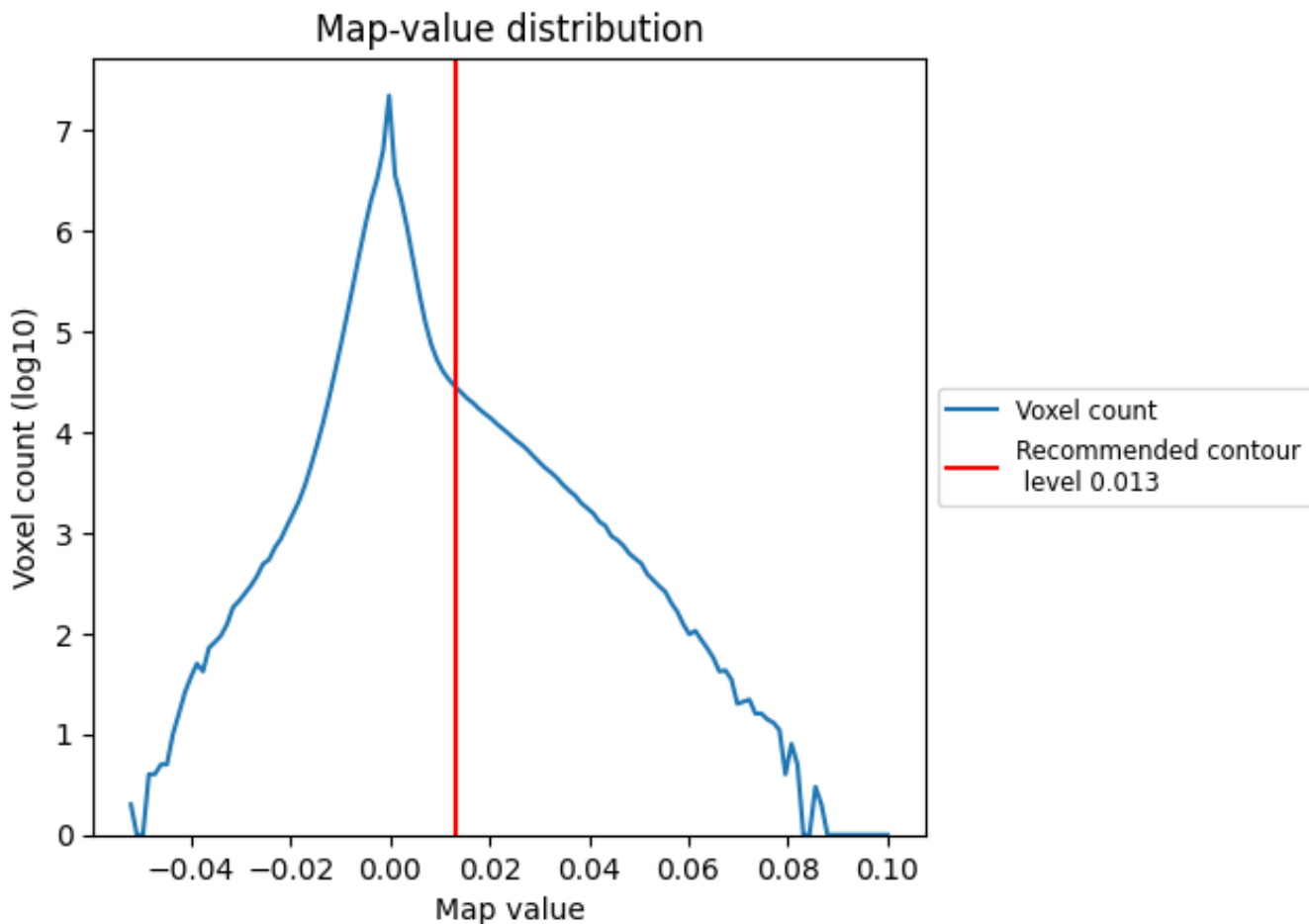


The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

## 7.2 Volume estimate ⓘ
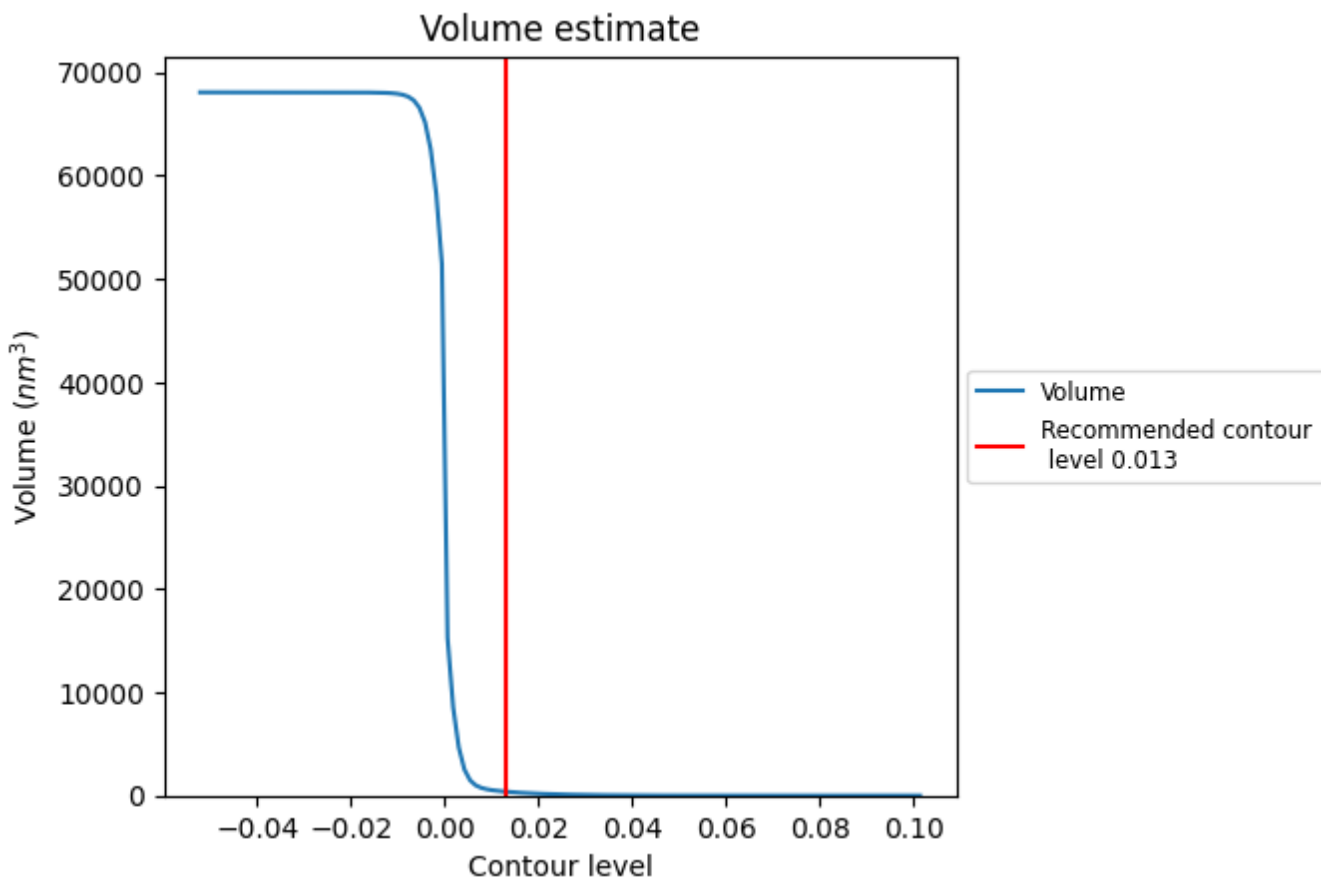


The volume at the recommended contour level is 377 nm$^3$; this corresponds to an approximate mass of 340 kDa.

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 ⓘ
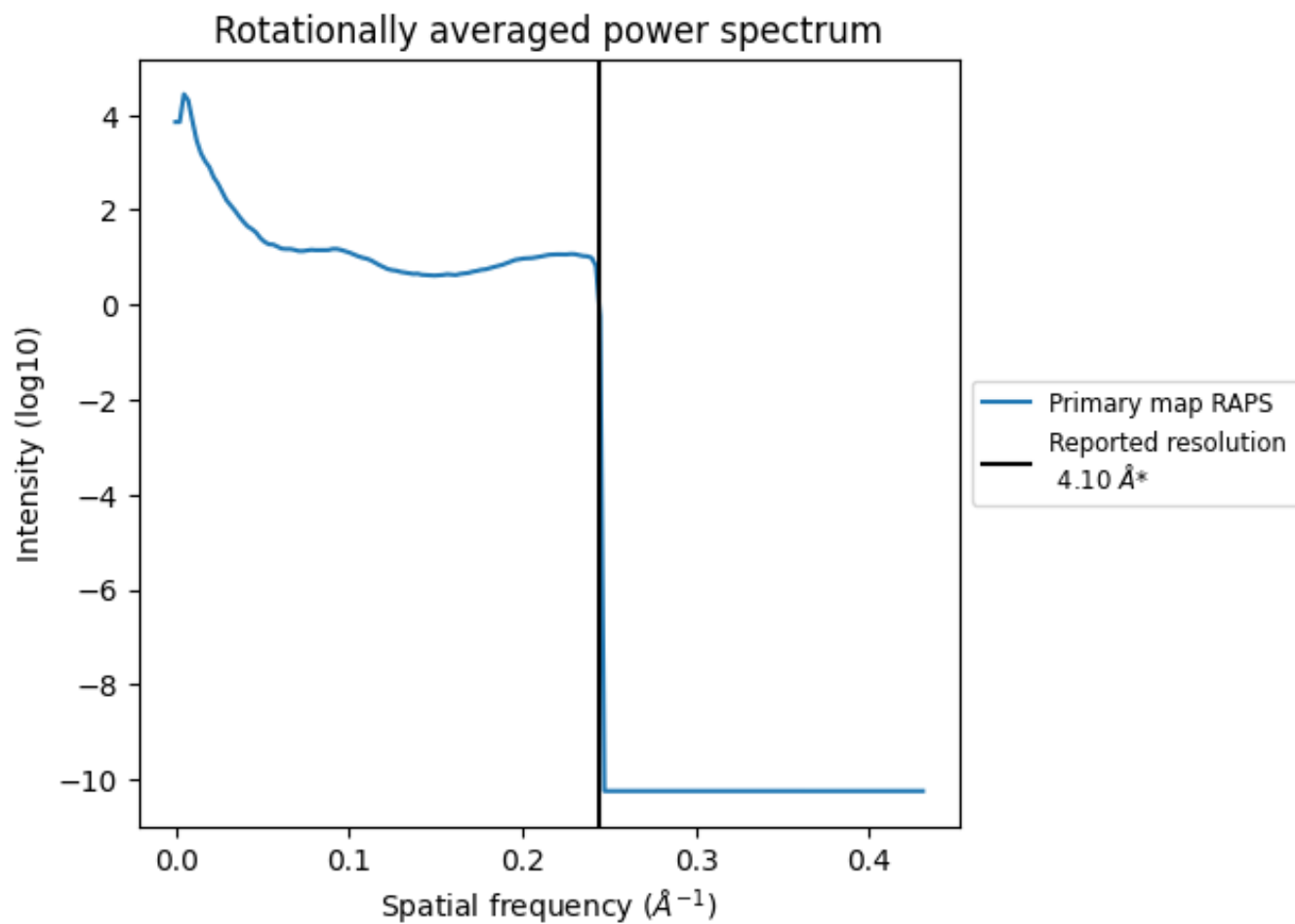


*Reported resolution corresponds to spatial frequency of 0.244 Å$^{-1}$

# 8 Fourier-Shell correlation ⓘ

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

# 9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-22625 and PDB model 7K1K. Per-residue inclusion information can be found in section 3 on page 4.

## 9.1 Map-model overlay ⓘ



|  X  |  Y  |  Z  |
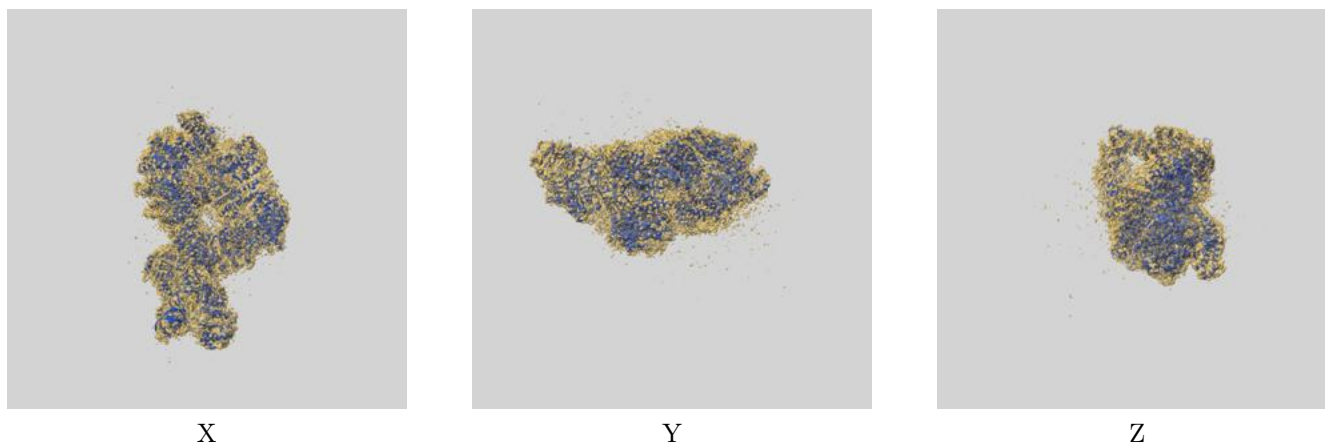
The images above show the 3D surface view of the map at the recommended contour level 0.013 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2　Q-score mapped to coordinate model　ⓘ



X　　　　　　　　　　　Y　　　　　　　　　　　Z
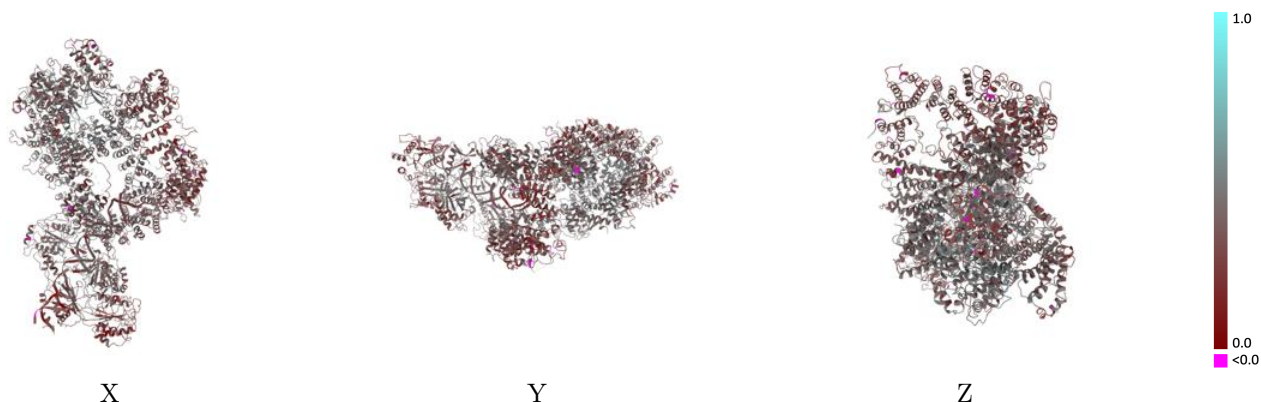
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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
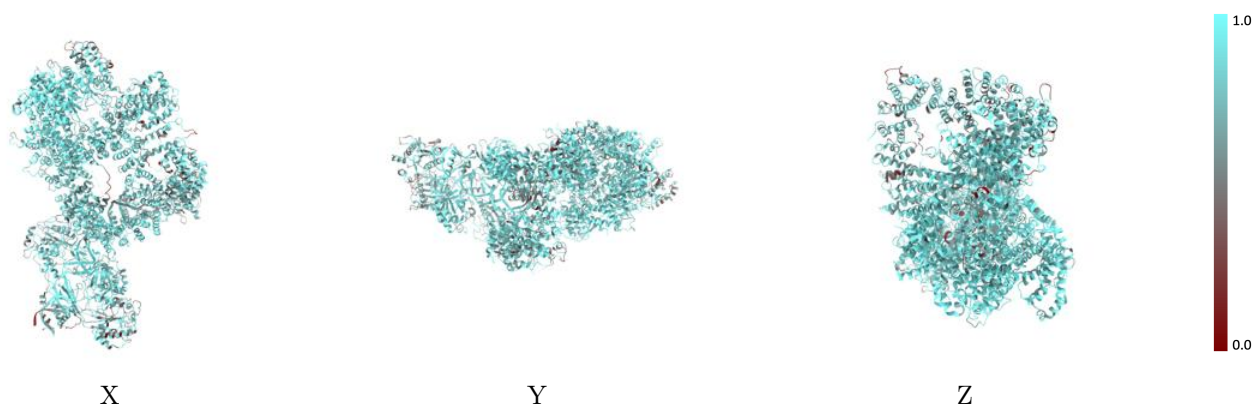
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.013).

## 9.4 Atom inclusion ⓘ
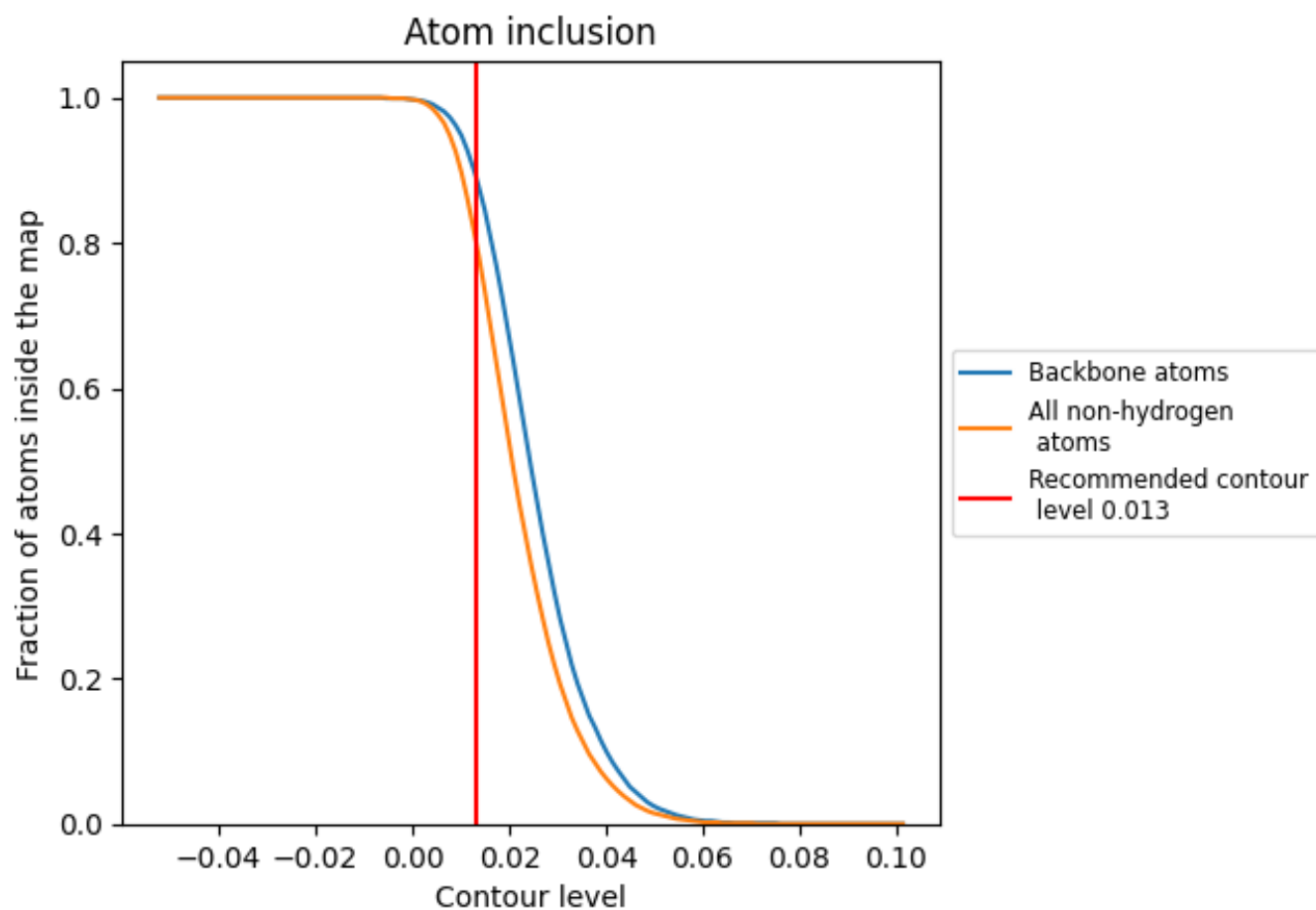


At the recommended contour level, 90% of all backbone atoms, 81% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.013) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|----------------|---------|
| All | 0.8080 | 0.3780 |
| A | 0.8210 | 0.3870 |
| B | 0.7840 | 0.3840 |
| C | 0.7370 | 0.3470 |
| D | 0.8240 | 0.3190 |
| E | 0.6650 | 0.1990 |
| F | 0.8780 | 0.3080 |
| G | 0.8790 | 0.3040 |

1.0

0.0
<0.0