



Full wwPDB EM Map/Model Validation Report ⓘ

May 29, 2020 – 07:34 am BST

PDB ID : 5LMX
EMDB ID : EMD-4088
Title : Monomeric RNA polymerase I at 4.9 Å resolution
Authors : Torreira, E.; Louro, J.A.; Gil-Carton, D.; Gallego, O.; Calvo, O.; Fernandez-Tornero, C.
Deposited on : 2016-08-02
Resolution : 4.90 Å(reported)

This is a Full wwPDB EM Map/Model 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 ⓘ symbol.

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

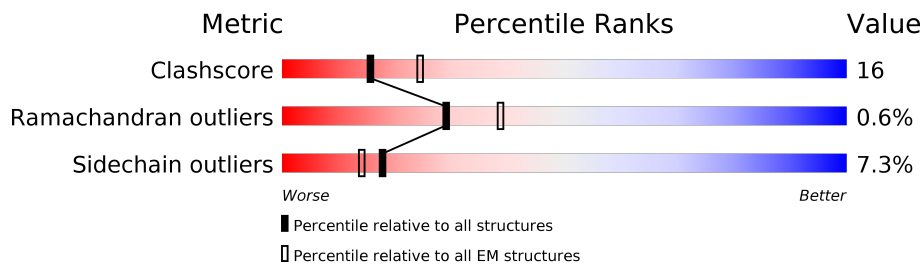
EMDB validation analysis : 0.0.0.dev33
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

1 Overall quality at a glance i

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

The reported resolution of this entry is 4.90 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



| Metric | Whole archive (#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 on 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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all atom inclusion $< 40\%$). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | A | 1664 | |
| 2 | B | 1203 | |
| 3 | C | 380 | |
| 4 | D | 137 | |
| 5 | E | 215 | |
| 6 | F | 155 | |
| 7 | G | 326 | |
| 8 | H | 146 | |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 9 | I | 125 | |
| 10 | J | 70 | |
| 11 | K | 142 | |
| 12 | L | 70 | |
| 13 | M | 415 | |
| 14 | N | 233 | |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 15 | ZN | L | 101 | - | - | X | - |

2 Entry composition

There are 15 unique types of molecules in this entry. The entry contains 31118 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-directed RNA polymerase I subunit RPA190.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 1 | A | 1420 | Total | C | N | O | S | 0 | 0 |
| | | | 11207 | 7087 | 1942 | 2118 | 60 | | |

- Molecule 2 is a protein called DNA-directed RNA polymerase I subunit RPA135.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 2 | B | 1115 | Total | C | N | O | S | 0 | 0 |
| | | | 8868 | 5618 | 1546 | 1656 | 48 | | |

- Molecule 3 is a protein called DNA-directed RNA polymerases I and III subunit RPAC1, DNA-directed RNA polymerases I and III subunit RPAC1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 3 | C | 304 | Total | C | N | O | S | 0 | 0 |
| | | | 2418 | 1536 | 414 | 460 | 8 | | |

- Molecule 4 is a protein called DNA-directed RNA polymerase I subunit RPA14.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| | | | Total | C | N | O | | |
| 4 | D | 18 | Total | C | N | O | 0 | 0 |
| | | | 133 | 84 | 23 | 26 | | |

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 5 | E | 215 | Total | C | N | O | S | 0 | 0 |
| | | | 1759 | 1116 | 310 | 321 | 12 | | |

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 6 | F | 100 | Total | C | N | O | S | 0 | 0 |
| | | | 823 | 522 | 144 | 154 | 3 | | |

- Molecule 7 is a protein called DNA-directed RNA polymerase I subunit RPA43.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 7 | G | 89 | 706 | 465 | 113 | 123 | 5 | 0 | 0 |

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 8 | H | 134 | 1072 | 676 | 181 | 211 | 4 | 0 | 0 |

- Molecule 9 is a protein called DNA-directed RNA polymerase I subunit RPA12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 9 | I | 64 | 472 | 295 | 78 | 95 | 4 | 0 | 0 |

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 10 | J | 69 | 569 | 362 | 101 | 100 | 6 | 0 | 0 |

- Molecule 11 is a protein called DNA-directed RNA polymerases I and III subunit RPAC2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 11 | K | 101 | 792 | 496 | 130 | 161 | 5 | 0 | 0 |

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 12 | L | 45 | 359 | 221 | 71 | 63 | 4 | 0 | 0 |

- Molecule 13 is a protein called DNA-directed RNA polymerase I subunit RPA49.

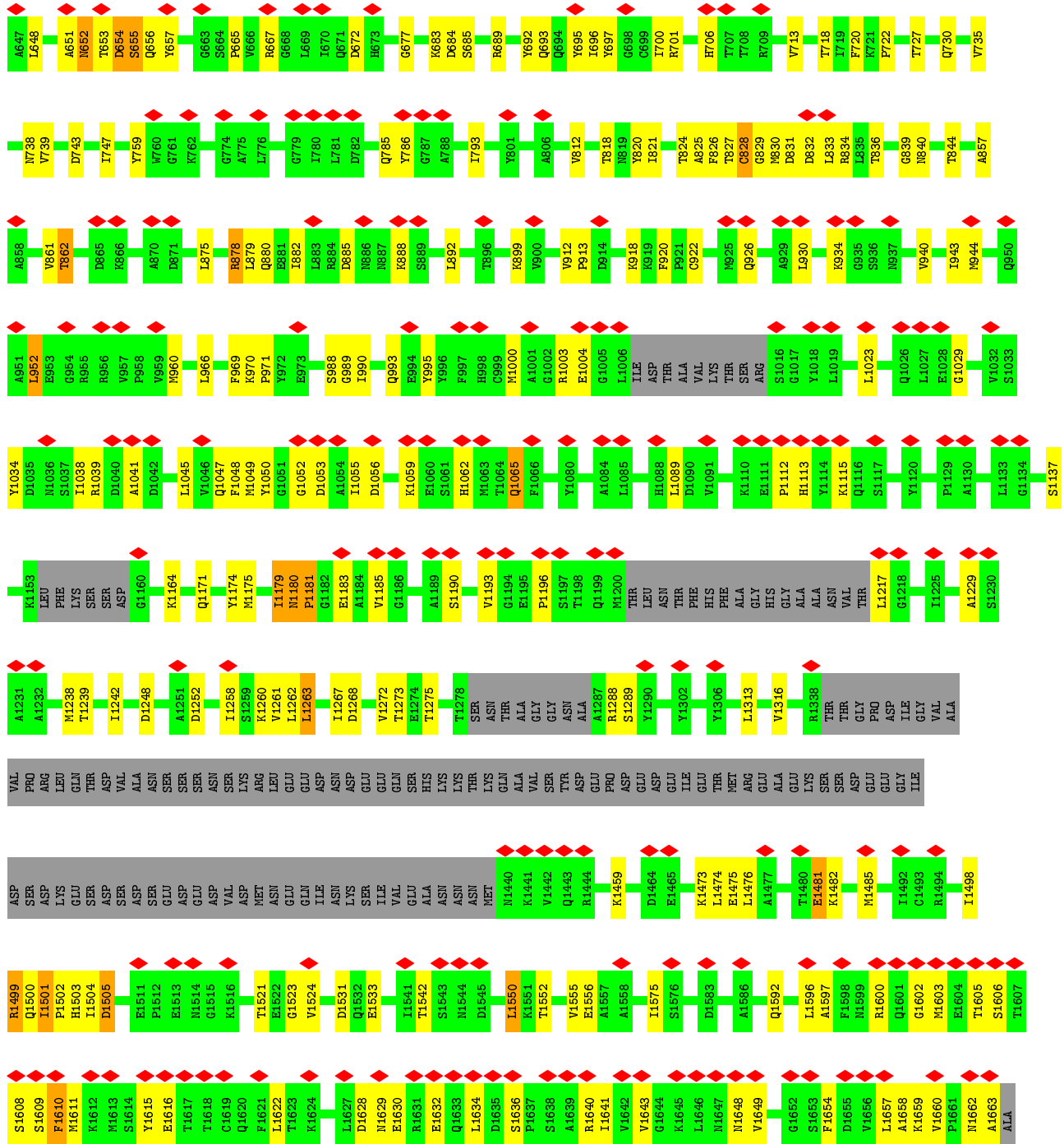
| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| | | | Total | C | N | O | | |
| 13 | M | 105 | 831 | 528 | 137 | 166 | 0 | 0 |

- Molecule 14 is a protein called DNA-directed RNA polymerase I subunit RPA34.

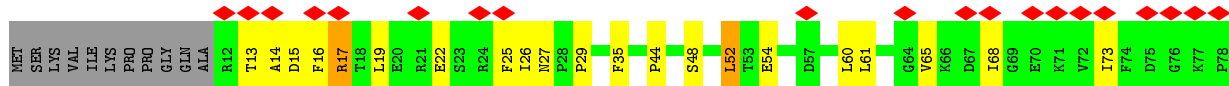
| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 14 | N | 139 | 1103 | 706 | 179 | 214 | 4 | 0 | 0 |

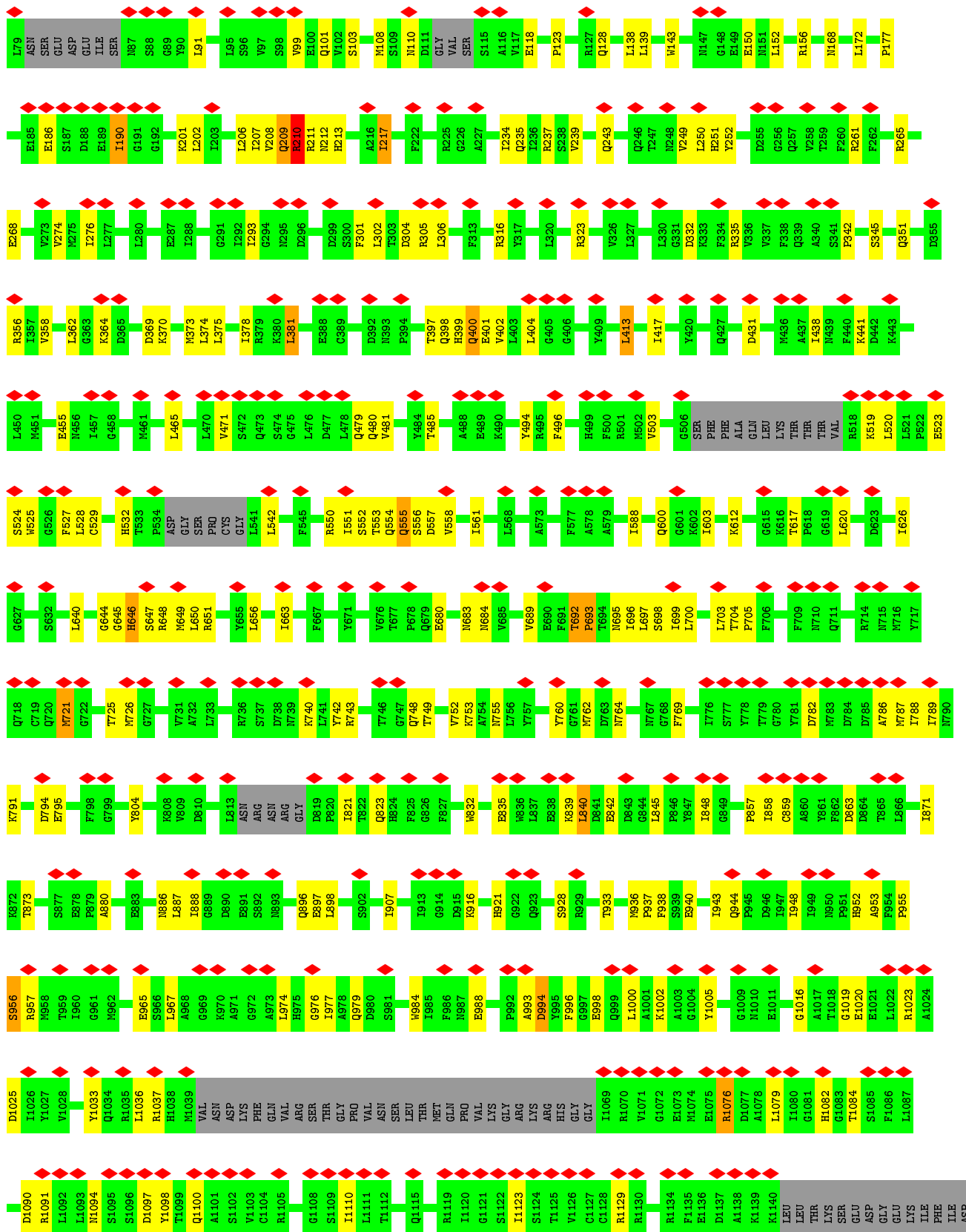
- Molecule 15 is ZINC ION (three-letter code: ZN) (formula: Zn).

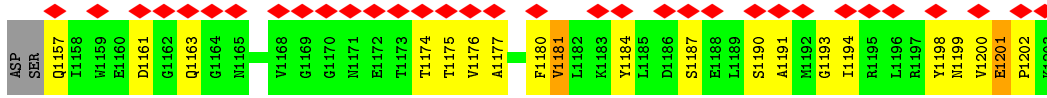
| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|------------|---------|---------|
| 15 | B | 1 | Total 1 | Zn 1 | 0 |
| 15 | A | 2 | Total 2 | Zn 2 | 0 |
| 15 | L | 1 | Total 1 | Zn 1 | 0 |
| 15 | J | 1 | Total 1 | Zn 1 | 0 |
| 15 | I | 1 | Total 1 | Zn 1 | 0 |



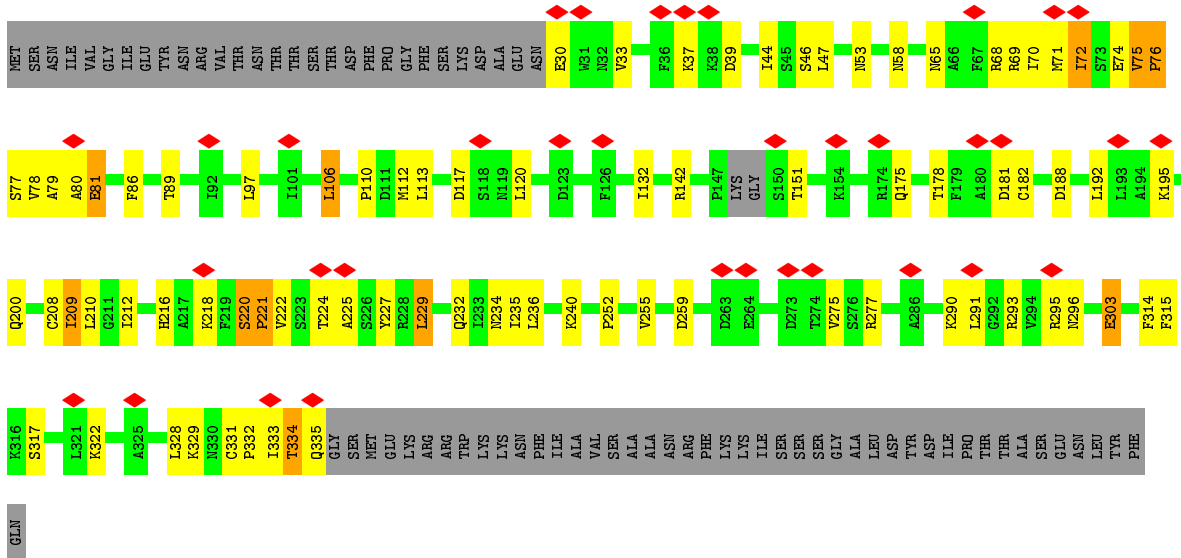
• Molecule 2: DNA-directed RNA polymerase I subunit RPA135



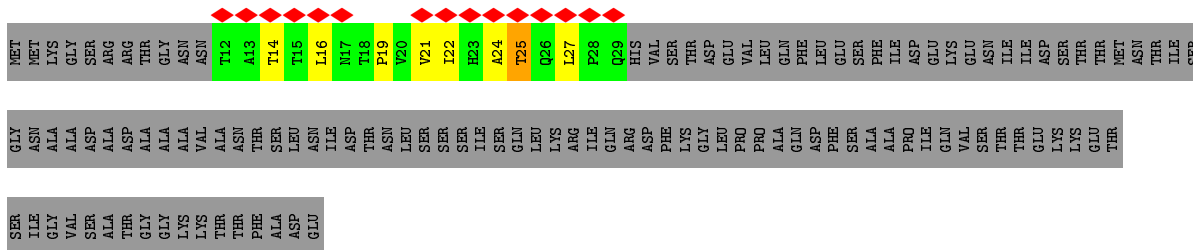




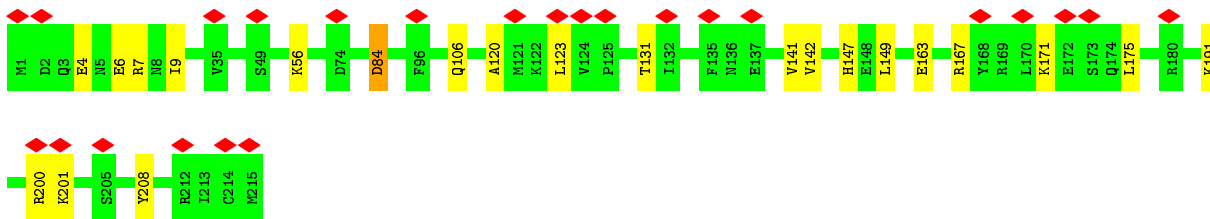
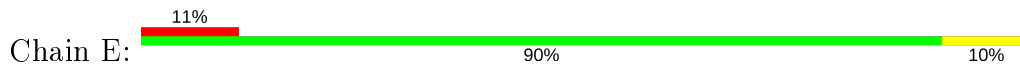
- Molecule 3: DNA-directed RNA polymerases I and III subunit RPAC1, DNA-directed RNA polymerases I and III subunit RPAC1



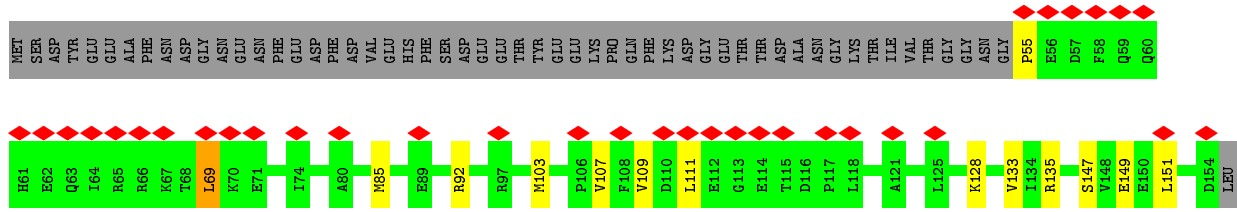
- Molecule 4: DNA-directed RNA polymerase I subunit RPA14



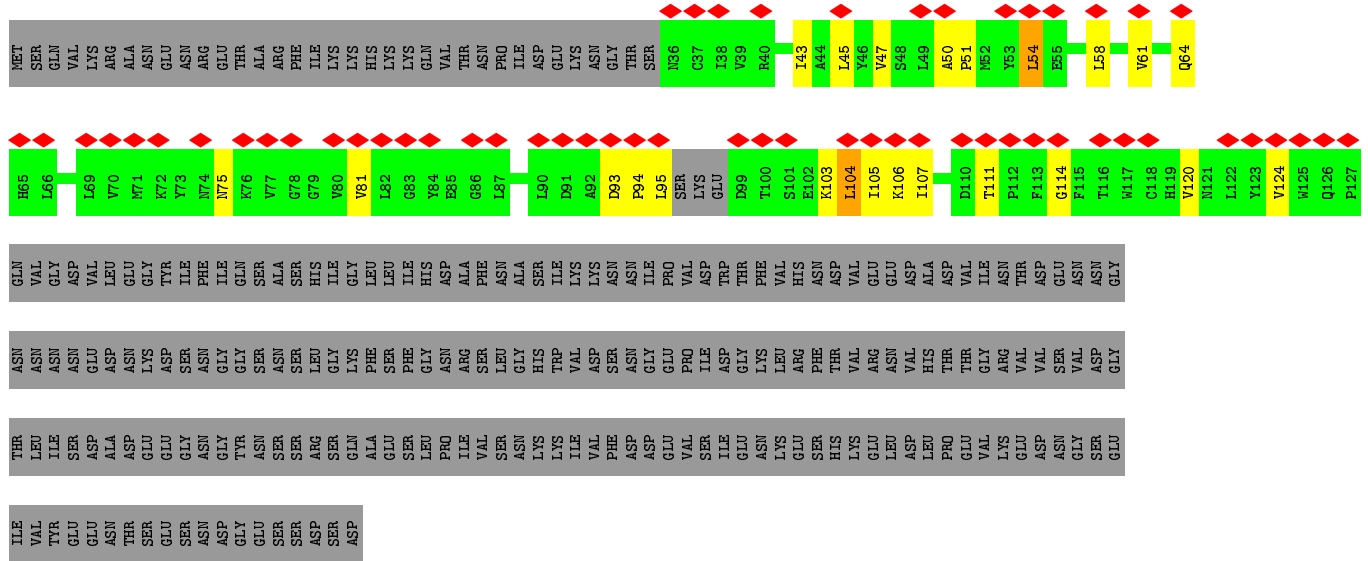
- Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1



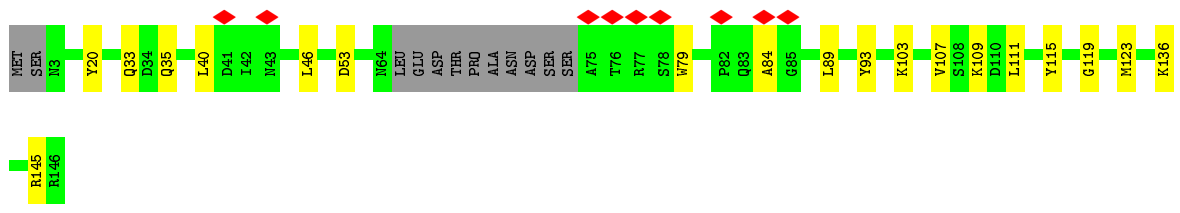
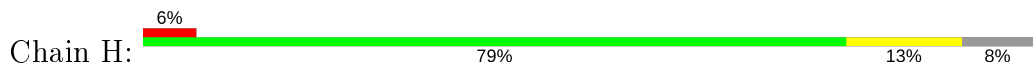
- Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2



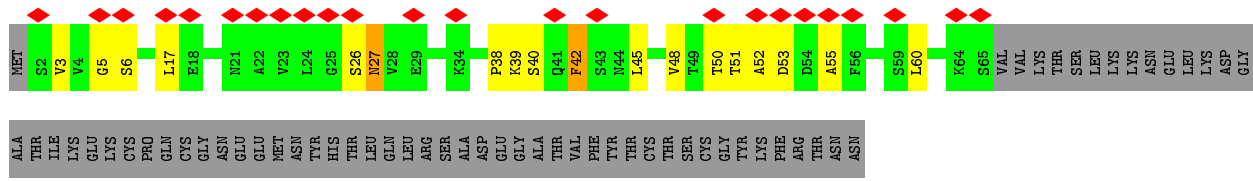
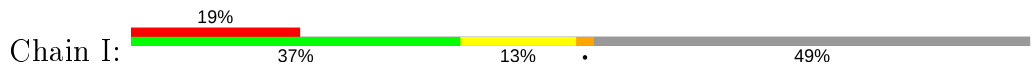
• Molecule 7: DNA-directed RNA polymerase I subunit RPA43



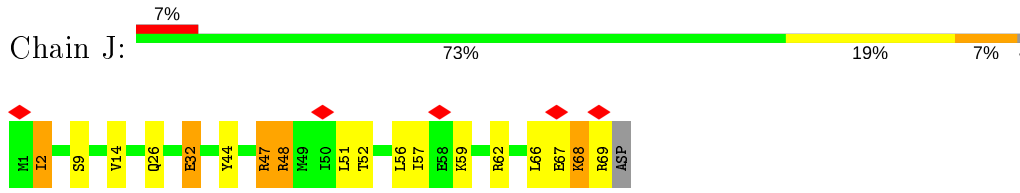
• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3



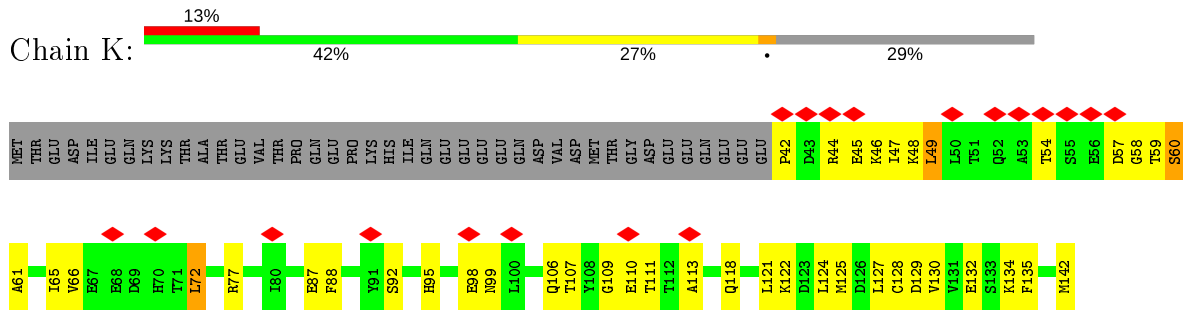
• Molecule 9: DNA-directed RNA polymerase I subunit RPA12



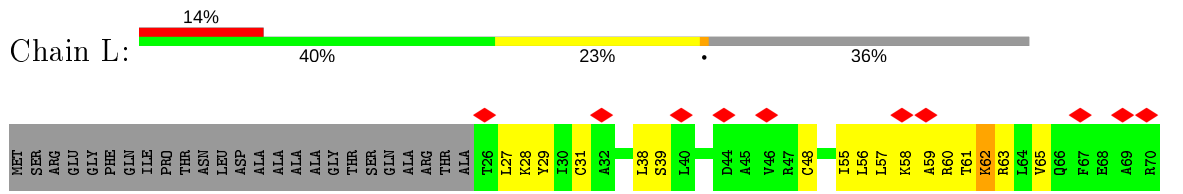
- Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5



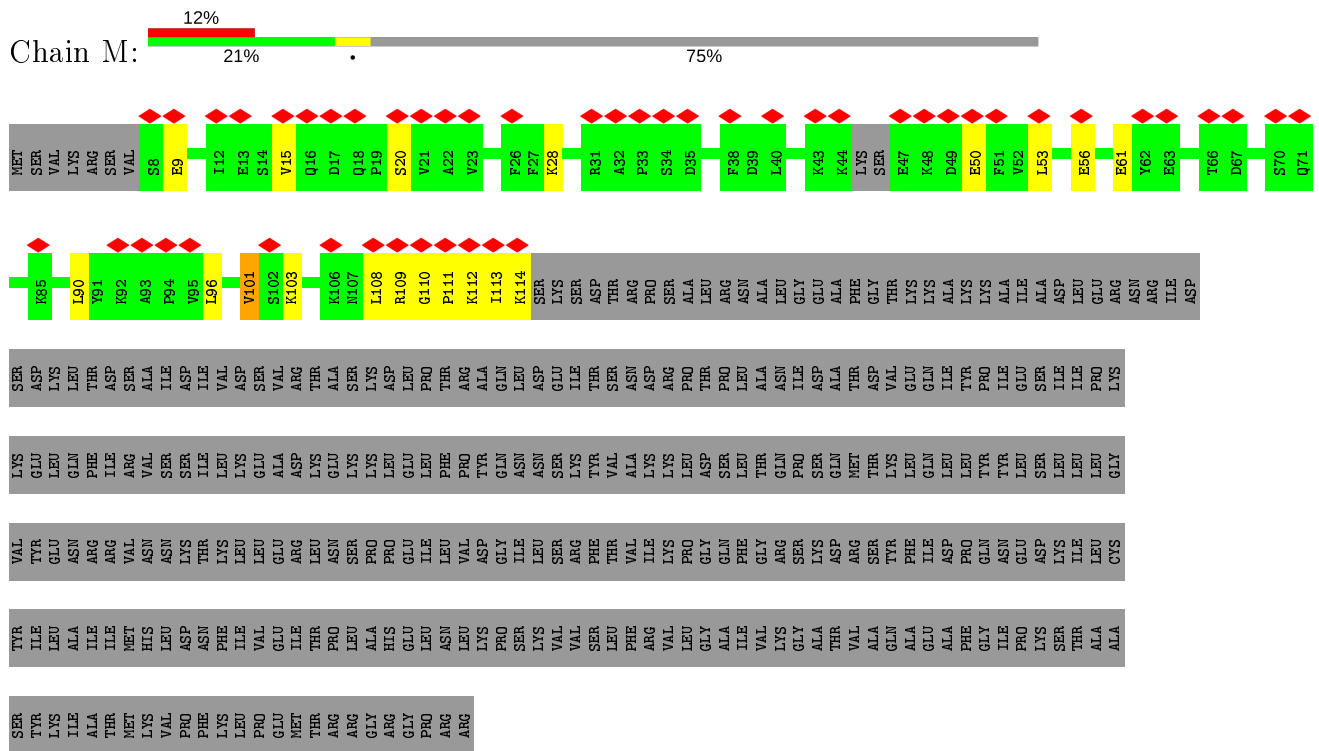
- Molecule 11: DNA-directed RNA polymerases I and III subunit RPAC2



- Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4



- Molecule 13: DNA-directed RNA polymerase I subunit RPA49



- Molecule 14: DNA-directed RNA polymerase I subunit RPA34



| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|-----|-----|
| MET | SER | LYS | LEU | SER | LYS | ASP | TYP | VAL | SER | ASP | SER | ASP | SER | SER | SER | SER | ASN | GLU | F23 | S24 | I25 | F26 | H34 | L35 | K36 | N37 | F38 | F39 | L40 | N41 | G42 | D43 | N44 | LYS | LYS | LYS | ALA | K49 | Q50 | S60 | N61 | V62 | D63 | I64 | S65 | K66 | L67 | K68 | S69 | L70 | F71 | V72 | D73 | F74 | | |
| E75 | S76 | T79 | I82 | D83 | K84 | H85 | I89 | M90 | D91 | D92 | T93 | D94 | I95 | GLU | SER | SER | LEU | THR | GLN | ASP | ASN | LEU | SER | M106 | M107 | T108 | L109 | L110 | V111 | P112 | S113 | E114 | S115 | K116 | E117 | I121 | A122 | S123 | T124 | A125 | LYS | ASP | ASN | ALA | P130 | L131 | Q132 | F133 | D134 | S138 | V139 | S140 | E141 | T142 | | |
| A143 | K144 | I145 | I148 | D149 | Y150 | S151 | K152 | V153 | R157 | K158 | D159 | V160 | P161 | K162 | V163 | E164 | G165 | L166 | K167 | L168 | E169 | H170 | F171 | A172 | T173 | G174 | Y175 | D176 | A177 | E178 | D179 | F180 | HIS | VAL | ALA | GLU | VAL | VAL | LYS | GLU | ASN | LYS | GLU | PRO | LYS | LYS | ARG | SER | HIS | HIS | ASP | ASP | GLU | GLU | SER | |
| SER | GLU | LYS | LYS | LYS | LYS | LYS | GLU | ARG | GLU | LYS | ARG | GLU | LYS | ASP | LYS | LYS | ASP | LYS | LYS | LYS | LYS | HIS | ASP | SER | LYS | LYS | LYS | LYS | LYS | LYS | LYS | ARG | LYS | HIS | VAL | ALA | GLU | VAL | VAL | LYS | GLU | ASN | LYS | GLU | PRO | LYS | LYS | ARG | SER | HIS | HIS | ASP | ASP | GLU | GLU | SER |

4 Experimental information

| Property | Value | Source |
|--------------------------------------|-------------------------|-----------|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | Depositor |
| Number of particles used | 122348 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING ONLY | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/\text{\AA}^2$) | 68.0 | Depositor |
| Minimum defocus (nm) | 1900.0 | Depositor |
| Maximum defocus (nm) | 4200.0 | Depositor |
| Magnification | 79096 | Depositor |
| Image detector | FEI FALCON II (4k x 4k) | Depositor |
| Maximum map value | 0.408 | Depositor |
| Minimum map value | -0.180 | Depositor |
| Average map value | 0.005 | Depositor |
| Map value standard deviation | 0.024 | Depositor |
| Recommended contour level | 0.14 | Depositor |
| Map size (\AA) | 286.74, 286.74, 286.74 | Depositor |
| Map dimensions | 162, 162, 162 | Depositor |
| Map angles ($^\circ$) | 90.0, 90.0, 90.0 | Depositor |
| Pixel spacing (\AA) | 1.77, 1.77, 1.77 | Depositor |

5 Model quality i

5.1 Standard geometry i

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

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

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|----------------|-------------|----------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 1 | A | 0.40 | 1/11408 (0.0%) | 0.57 | 3/15405 (0.0%) |
| 2 | B | 0.39 | 1/9062 (0.0%) | 0.59 | 2/12249 (0.0%) |
| 3 | C | 0.42 | 0/2469 | 0.62 | 2/3347 (0.1%) |
| 4 | D | 0.37 | 0/135 | 0.62 | 0/188 |
| 5 | E | 0.40 | 0/1795 | 0.55 | 0/2416 |
| 6 | F | 0.39 | 0/838 | 0.54 | 0/1129 |
| 7 | G | 0.40 | 0/725 | 0.60 | 0/990 |
| 8 | H | 0.39 | 0/1090 | 0.57 | 0/1476 |
| 9 | I | 0.37 | 0/478 | 0.53 | 0/647 |
| 10 | J | 0.40 | 0/578 | 0.62 | 0/775 |
| 11 | K | 0.38 | 0/803 | 0.57 | 0/1083 |
| 12 | L | 0.35 | 0/361 | 0.56 | 0/478 |
| 13 | M | 0.38 | 0/846 | 0.53 | 0/1136 |
| 14 | N | 0.44 | 0/1124 | 0.56 | 2/1512 (0.1%) |
| All | All | 0.40 | 2/31712 (0.0%) | 0.58 | 9/42831 (0.0%) |

All (2) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|------|-------------|----------|
| 1 | A | 1181 | PRO | N-CD | 5.30 | 1.55 | 1.47 |
| 2 | B | 693 | PRO | N-CD | 5.26 | 1.55 | 1.47 |

All (9) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|--------|------|-------------|----------|
| 3 | C | 220 | SER | C-N-CD | 6.06 | 141.13 | 128.40 |
| 1 | A | 1501 | ILE | C-N-CD | 6.05 | 141.12 | 128.40 |
| 3 | C | 75 | VAL | C-N-CD | 6.04 | 141.09 | 128.40 |
| 14 | N | 160 | VAL | C-N-CD | 6.04 | 141.07 | 128.40 |
| 1 | A | 507 | TYR | C-N-CD | 6.03 | 141.07 | 128.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|--------|------|-------------|----------|
| 2 | B | 704 | THR | C-N-CD | 6.02 | 141.05 | 128.40 |
| 14 | N | 145 | ILE | C-N-CD | 6.02 | 141.04 | 128.40 |
| 1 | A | 1180 | ASN | C-N-CD | 5.60 | 140.16 | 128.40 |
| 2 | B | 692 | THR | C-N-CD | 5.58 | 140.13 | 128.40 |

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 11207 | 0 | 11249 | 527 | 0 |
| 2 | B | 8868 | 0 | 8734 | 466 | 0 |
| 3 | C | 2418 | 0 | 2401 | 145 | 0 |
| 4 | D | 133 | 0 | 138 | 5 | 0 |
| 5 | E | 1759 | 0 | 1788 | 14 | 0 |
| 6 | F | 823 | 0 | 841 | 28 | 0 |
| 7 | G | 706 | 0 | 721 | 59 | 0 |
| 8 | H | 1072 | 0 | 1042 | 15 | 0 |
| 9 | I | 472 | 0 | 473 | 9 | 0 |
| 10 | J | 569 | 0 | 585 | 58 | 0 |
| 11 | K | 792 | 0 | 790 | 93 | 0 |
| 12 | L | 359 | 0 | 384 | 17 | 0 |
| 13 | M | 831 | 0 | 820 | 19 | 0 |
| 14 | N | 1103 | 0 | 1106 | 27 | 0 |
| 15 | A | 2 | 0 | 0 | 0 | 0 |
| 15 | B | 1 | 0 | 0 | 0 | 0 |
| 15 | I | 1 | 0 | 0 | 0 | 0 |
| 15 | J | 1 | 0 | 0 | 0 | 0 |
| 15 | L | 1 | 0 | 0 | 2 | 0 |
| All | All | 31118 | 0 | 31072 | 1011 | 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 16.

All (1011) 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) |
|-------------------|------------------|--------------------------|-------------------|
| 2:B:697:LEU:HD11 | 2:B:984:TRP:CH2 | 1.23 | 1.65 |
| 2:B:697:LEU:HD11 | 2:B:984:TRP:CZ3 | 1.31 | 1.59 |
| 1:A:5:LYS:CB | 2:B:1100:GLN:NE2 | 1.67 | 1.57 |
| 1:A:1660:VAL:CG2 | 7:G:105:ILE:HG23 | 1.10 | 1.56 |
| 3:C:37:LYS:HG3 | 11:K:134:LYS:CE | 1.33 | 1.55 |
| 1:A:824:THR:CG2 | 2:B:1023:ARG:HD3 | 1.30 | 1.55 |
| 1:A:9:SER:HB3 | 2:B:1200:VAL:CG1 | 1.05 | 1.52 |
| 1:A:49:LEU:HD22 | 1:A:390:LEU:CD1 | 1.42 | 1.48 |
| 1:A:1660:VAL:HG21 | 7:G:105:ILE:CG2 | 1.02 | 1.47 |
| 1:A:49:LEU:CD2 | 1:A:390:LEU:HD11 | 1.42 | 1.47 |
| 1:A:35:PRO:CD | 1:A:394:LEU:HD12 | 1.48 | 1.42 |
| 1:A:826:PHE:HA | 2:B:1023:ARG:NH2 | 1.27 | 1.42 |
| 2:B:683:ASN:OD1 | 14:N:150:TYR:CE2 | 1.72 | 1.42 |
| 1:A:35:PRO:CD | 1:A:394:LEU:CD1 | 1.97 | 1.41 |
| 1:A:367:PHE:CE1 | 2:B:1184:TYR:HA | 1.57 | 1.38 |
| 2:B:697:LEU:CD1 | 2:B:984:TRP:CZ3 | 2.03 | 1.38 |
| 1:A:9:SER:CB | 2:B:1200:VAL:CG1 | 2.00 | 1.37 |
| 1:A:11:ILE:HD13 | 2:B:1198:TYR:CD1 | 1.57 | 1.36 |
| 1:A:49:LEU:CD2 | 1:A:390:LEU:CD1 | 2.00 | 1.36 |
| 3:C:37:LYS:CG | 11:K:134:LYS:CE | 2.01 | 1.36 |
| 2:B:342:PRO:O | 13:M:112:LYS:CE | 1.74 | 1.36 |
| 2:B:974:LEU:HD21 | 10:J:44:TYR:CD1 | 1.60 | 1.35 |
| 1:A:1662:ASN:ND2 | 7:G:58:LEU:H | 1.18 | 1.35 |
| 1:A:34:ASN:O | 1:A:390:LEU:CD2 | 1.75 | 1.33 |
| 1:A:9:SER:HA | 2:B:1201:GLU:O | 1.22 | 1.33 |
| 1:A:1:MET:HG2 | 2:B:1098:TYR:CE2 | 1.65 | 1.31 |
| 1:A:5:LYS:HB3 | 2:B:1100:GLN:NE2 | 1.01 | 1.31 |
| 2:B:401:GLU:CD | 2:B:647:SER:OG | 1.67 | 1.31 |
| 2:B:494:TYR:CE1 | 2:B:762:MET:SD | 2.25 | 1.30 |
| 2:B:342:PRO:O | 13:M:112:LYS:HE3 | 1.14 | 1.27 |
| 3:C:142:ARG:HH21 | 10:J:67:GLU:CD | 1.38 | 1.27 |
| 1:A:1003:ARG:NH2 | 2:B:520:LEU:HD22 | 1.50 | 1.27 |
| 1:A:1659:LYS:CE | 6:F:133:VAL:HG21 | 1.64 | 1.26 |
| 1:A:11:ILE:CG1 | 2:B:1198:TYR:HB3 | 1.65 | 1.25 |
| 3:C:37:LYS:CG | 11:K:134:LYS:HE2 | 1.64 | 1.25 |
| 1:A:1662:ASN:HD22 | 7:G:58:LEU:N | 1.35 | 1.24 |
| 1:A:824:THR:HG22 | 2:B:1023:ARG:CD | 1.65 | 1.23 |
| 1:A:826:PHE:CA | 2:B:1023:ARG:NH2 | 2.01 | 1.23 |
| 2:B:697:LEU:CD1 | 2:B:984:TRP:CH2 | 2.19 | 1.23 |
| 2:B:683:ASN:OD1 | 14:N:150:TYR:CZ | 1.91 | 1.23 |
| 1:A:35:PRO:HD3 | 1:A:394:LEU:CD1 | 1.61 | 1.22 |
| 1:A:11:ILE:HA | 2:B:1199:ASN:O | 1.35 | 1.22 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:363:PRO:CG | 2:B:1191:ALA:HB2 | 1.69 | 1.21 |
| 1:A:1660:VAL:HG22 | 7:G:105:ILE:N | 1.57 | 1.19 |
| 1:A:76:GLN:NE2 | 2:B:1190:SER:HB3 | 1.55 | 1.18 |
| 2:B:494:TYR:CZ | 2:B:762:MET:SD | 2.36 | 1.17 |
| 1:A:35:PRO:CG | 1:A:394:LEU:HD12 | 1.73 | 1.16 |
| 1:A:824:THR:CG2 | 2:B:1023:ARG:CD | 2.21 | 1.15 |
| 1:A:363:PRO:HG3 | 2:B:1191:ALA:CB | 1.75 | 1.15 |
| 1:A:49:LEU:HG | 1:A:386:LEU:HB3 | 1.28 | 1.15 |
| 1:A:825:ALA:O | 2:B:1023:ARG:NH2 | 1.79 | 1.15 |
| 1:A:1660:VAL:CG2 | 7:G:105:ILE:CG2 | 1.85 | 1.15 |
| 1:A:368:ARG:HG3 | 1:A:382:GLN:OE1 | 1.48 | 1.13 |
| 1:A:1048:PHE:HB2 | 5:E:208:TYR:OH | 1.47 | 1.13 |
| 2:B:974:LEU:HD23 | 10:J:44:TYR:HB3 | 1.21 | 1.13 |
| 1:A:1003:ARG:HH12 | 2:B:520:LEU:CB | 1.60 | 1.13 |
| 1:A:35:PRO:HD2 | 1:A:394:LEU:CD1 | 1.77 | 1.13 |
| 2:B:974:LEU:CD2 | 10:J:44:TYR:CD1 | 2.32 | 1.12 |
| 1:A:34:ASN:O | 1:A:390:LEU:HD22 | 0.96 | 1.12 |
| 1:A:825:ALA:O | 2:B:1023:ARG:NE | 1.83 | 1.12 |
| 1:A:1260:LYS:HG3 | 1:A:1500:GLN:HB2 | 1.18 | 1.11 |
| 1:A:83:VAL:HG21 | 1:A:427:PHE:CE2 | 1.84 | 1.11 |
| 3:C:53:ASN:ND2 | 14:N:173:THR:HB | 1.63 | 1.11 |
| 1:A:1660:VAL:HG21 | 7:G:105:ILE:HG21 | 1.28 | 1.11 |
| 3:C:37:LYS:HG3 | 11:K:134:LYS:HE3 | 1.15 | 1.11 |
| 1:A:825:ALA:O | 2:B:1023:ARG:CZ | 1.96 | 1.10 |
| 1:A:83:VAL:HG21 | 1:A:427:PHE:CZ | 1.86 | 1.10 |
| 3:C:75:VAL:CG1 | 3:C:221:PRO:HG3 | 1.81 | 1.10 |
| 3:C:33:VAL:HG22 | 11:K:130:VAL:HG21 | 1.30 | 1.10 |
| 2:B:697:LEU:CD1 | 2:B:984:TRP:HZ3 | 1.50 | 1.10 |
| 2:B:397:THR:HB | 2:B:523:GLU:CB | 1.80 | 1.10 |
| 1:A:34:ASN:C | 1:A:390:LEU:HD22 | 1.70 | 1.10 |
| 1:A:368:ARG:CG | 1:A:382:GLN:OE1 | 1.99 | 1.10 |
| 3:C:37:LYS:CG | 11:K:134:LYS:HE3 | 1.72 | 1.10 |
| 2:B:207:ILE:HD13 | 2:B:402:VAL:HG22 | 1.33 | 1.10 |
| 3:C:70:ILE:HG23 | 3:C:74:GLU:HG3 | 1.32 | 1.10 |
| 1:A:826:PHE:CA | 2:B:1023:ARG:HH21 | 1.62 | 1.09 |
| 9:I:6:SER:HA | 9:I:45:LEU:HD13 | 1.18 | 1.09 |
| 2:B:401:GLU:CG | 2:B:647:SER:OG | 2.01 | 1.08 |
| 1:A:1003:ARG:HH12 | 2:B:520:LEU:HB2 | 1.11 | 1.08 |
| 1:A:934:LYS:NZ | 2:B:956:SER:OG | 1.87 | 1.07 |
| 3:C:314:PHE:CE2 | 11:K:135:PHE:CE1 | 2.42 | 1.07 |
| 1:A:35:PRO:CD | 1:A:394:LEU:HD11 | 1.78 | 1.07 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:11:ILE:CD1 | 2:B:1198:TYR:CD1 | 2.38 | 1.06 |
| 3:C:333:ILE:HG23 | 11:K:47:ILE:HG12 | 1.35 | 1.06 |
| 1:A:5:LYS:HB3 | 2:B:1100:GLN:CD | 1.75 | 1.06 |
| 1:A:9:SER:HB3 | 2:B:1200:VAL:HG13 | 1.14 | 1.05 |
| 1:A:1003:ARG:NH2 | 2:B:520:LEU:CD2 | 2.19 | 1.05 |
| 1:A:5:LYS:HB2 | 2:B:1100:GLN:NE2 | 1.68 | 1.05 |
| 1:A:988:SER:C | 2:B:988:GLU:OE1 | 1.83 | 1.05 |
| 1:A:11:ILE:HG12 | 2:B:1198:TYR:CB | 1.87 | 1.04 |
| 1:A:363:PRO:HG3 | 2:B:1191:ALA:HB2 | 1.09 | 1.04 |
| 2:B:26:ILE:HA | 10:J:62:ARG:HD2 | 1.33 | 1.04 |
| 3:C:314:PHE:CD2 | 11:K:135:PHE:CZ | 2.45 | 1.04 |
| 1:A:1659:LYS:HD2 | 6:F:133:VAL:HG23 | 1.40 | 1.03 |
| 1:A:1663:ALA:CA | 7:G:103:LYS:HD2 | 1.88 | 1.03 |
| 1:A:49:LEU:CD2 | 1:A:390:LEU:HD12 | 1.89 | 1.03 |
| 3:C:333:ILE:HA | 11:K:47:ILE:CG2 | 1.89 | 1.03 |
| 1:A:9:SER:HB3 | 2:B:1200:VAL:HG11 | 1.34 | 1.02 |
| 2:B:345:SER:CB | 13:M:111:PRO:O | 2.07 | 1.02 |
| 2:B:697:LEU:HD12 | 2:B:984:TRP:HZ3 | 1.21 | 1.02 |
| 2:B:401:GLU:OE1 | 2:B:647:SER:CB | 2.08 | 1.02 |
| 3:C:322:LYS:HE3 | 11:K:129:ASP:OD1 | 1.57 | 1.02 |
| 2:B:345:SER:HB2 | 13:M:111:PRO:O | 1.57 | 1.02 |
| 1:A:1003:ARG:NH1 | 2:B:520:LEU:CB | 2.23 | 1.01 |
| 3:C:222:VAL:HG23 | 3:C:303:GLU:O | 1.58 | 1.01 |
| 3:C:37:LYS:HG3 | 11:K:134:LYS:HE2 | 1.02 | 1.01 |
| 3:C:328:LEU:CD1 | 11:K:72:LEU:HD11 | 1.91 | 1.01 |
| 1:A:10:GLU:O | 2:B:1200:VAL:HA | 1.59 | 1.01 |
| 1:A:759:TYR:OH | 1:A:930:LEU:HD22 | 1.57 | 1.01 |
| 3:C:75:VAL:HG12 | 3:C:221:PRO:HG3 | 1.38 | 1.01 |
| 3:C:314:PHE:HE2 | 11:K:135:PHE:CE1 | 1.75 | 1.01 |
| 3:C:76:PRO:HB3 | 3:C:212:ILE:HG22 | 1.39 | 1.01 |
| 3:C:328:LEU:CD1 | 11:K:72:LEU:CD1 | 2.38 | 1.00 |
| 1:A:76:GLN:HE22 | 2:B:1190:SER:HB3 | 1.16 | 1.00 |
| 1:A:1659:LYS:HE3 | 6:F:133:VAL:HG21 | 1.41 | 1.00 |
| 1:A:759:TYR:OH | 1:A:930:LEU:CD2 | 2.10 | 1.00 |
| 1:A:934:LYS:NZ | 2:B:956:SER:CB | 2.24 | 1.00 |
| 1:A:7:VAL:CG1 | 2:B:1176:VAL:HA | 1.91 | 1.00 |
| 1:A:1660:VAL:HG23 | 7:G:105:ILE:HG23 | 1.39 | 1.00 |
| 1:A:1:MET:N | 2:B:1098:TYR:CG | 2.30 | 1.00 |
| 1:A:367:PHE:HD1 | 2:B:1184:TYR:HD1 | 1.03 | 0.99 |
| 12:L:48:CYS:SG | 15:L:101:ZN:ZN | 1.51 | 0.99 |
| 2:B:397:THR:HB | 2:B:523:GLU:HB3 | 1.01 | 0.99 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 12:L:28:LYS:HB2 | 12:L:59:ALA:HB3 | 1.42 | 0.99 |
| 3:C:142:ARG:NH2 | 10:J:67:GLU:OE2 | 1.95 | 0.99 |
| 1:A:63:SER:O | 2:B:1163:GLN:OE1 | 1.81 | 0.98 |
| 1:A:7:VAL:HG11 | 2:B:1176:VAL:HA | 1.43 | 0.98 |
| 2:B:397:THR:CB | 2:B:523:GLU:HB3 | 1.92 | 0.98 |
| 1:A:1663:ALA:HA | 7:G:103:LYS:HD2 | 1.00 | 0.98 |
| 1:A:689:ARG:NH2 | 11:K:87:GLU:O | 1.97 | 0.98 |
| 1:A:1501:ILE:HG13 | 1:A:1502:PRO:CD | 1.93 | 0.98 |
| 3:C:70:ILE:HG23 | 3:C:74:GLU:CG | 1.92 | 0.98 |
| 2:B:25:PHE:CE1 | 2:B:764:ASN:OD1 | 2.16 | 0.98 |
| 1:A:1:MET:HA | 2:B:1098:TYR:CD2 | 1.99 | 0.98 |
| 1:A:1663:ALA:HA | 7:G:103:LYS:CD | 1.94 | 0.98 |
| 1:A:1660:VAL:H | 7:G:104:LEU:HA | 1.26 | 0.97 |
| 1:A:11:ILE:CD1 | 2:B:1198:TYR:HB3 | 1.92 | 0.97 |
| 3:C:75:VAL:CG1 | 3:C:221:PRO:CG | 2.42 | 0.97 |
| 1:A:9:SER:HB3 | 2:B:1200:VAL:HG12 | 1.01 | 0.97 |
| 2:B:211:ARG:HH22 | 2:B:243:GLN:NE2 | 1.61 | 0.97 |
| 1:A:1659:LYS:NZ | 6:F:133:VAL:HG21 | 1.78 | 0.97 |
| 2:B:974:LEU:CD2 | 10:J:44:TYR:HB3 | 1.93 | 0.97 |
| 1:A:1657:LEU:CD1 | 6:F:135:ARG:HD2 | 1.94 | 0.97 |
| 1:A:1:MET:HA | 2:B:1098:TYR:CD1 | 2.00 | 0.97 |
| 2:B:25:PHE:CZ | 2:B:764:ASN:OD1 | 2.18 | 0.96 |
| 1:A:11:ILE:HG12 | 2:B:1198:TYR:HB3 | 0.99 | 0.96 |
| 1:A:1660:VAL:CG2 | 7:G:105:ILE:CB | 2.34 | 0.96 |
| 2:B:401:GLU:OE1 | 2:B:647:SER:HB3 | 1.62 | 0.96 |
| 1:A:1654:PHE:HE2 | 6:F:92:ARG:HH11 | 1.09 | 0.96 |
| 1:A:1:MET:CA | 2:B:1098:TYR:CG | 2.49 | 0.96 |
| 1:A:1:MET:HA | 2:B:1098:TYR:CG | 2.00 | 0.96 |
| 1:A:9:SER:CA | 2:B:1201:GLU:O | 2.13 | 0.96 |
| 1:A:367:PHE:CD1 | 2:B:1184:TYR:HD1 | 1.82 | 0.95 |
| 1:A:824:THR:HG23 | 2:B:1023:ARG:HD3 | 1.48 | 0.95 |
| 1:A:200:GLY:O | 5:E:171:LYS:NZ | 2.00 | 0.95 |
| 2:B:401:GLU:OE1 | 2:B:647:SER:OG | 1.84 | 0.95 |
| 1:A:989:GLY:N | 2:B:988:GLU:OE1 | 1.99 | 0.95 |
| 1:A:367:PHE:HE1 | 2:B:1184:TYR:HA | 1.18 | 0.94 |
| 3:C:334:THR:HG21 | 11:K:44:ARG:HB3 | 1.47 | 0.94 |
| 1:A:1660:VAL:HG21 | 7:G:105:ILE:CB | 1.89 | 0.94 |
| 1:A:1660:VAL:HG22 | 7:G:105:ILE:HG23 | 1.49 | 0.94 |
| 1:A:1662:ASN:ND2 | 7:G:58:LEU:N | 2.02 | 0.94 |
| 1:A:8:GLY:O | 2:B:1202:PRO:HD3 | 1.68 | 0.94 |
| 2:B:527:PHE:CE2 | 2:B:651:ARG:HD3 | 2.04 | 0.93 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:C:142:ARG:NH2 | 10:J:67:GLU:OE1 | 2.02 | 0.93 |
| 1:A:1003:ARG:HH22 | 2:B:520:LEU:HD22 | 1.09 | 0.93 |
| 1:A:76:GLN:NE2 | 2:B:1190:SER:CB | 2.31 | 0.93 |
| 3:C:37:LYS:HG2 | 11:K:134:LYS:CE | 1.97 | 0.93 |
| 1:A:1316:VAL:HG21 | 1:A:1498:ILE:HG23 | 1.50 | 0.93 |
| 4:D:24:ALA:O | 6:F:55:PRO:HA | 1.69 | 0.92 |
| 2:B:211:ARG:HD3 | 2:B:239:VAL:HG21 | 1.48 | 0.92 |
| 3:C:53:ASN:ND2 | 14:N:173:THR:CB | 2.31 | 0.92 |
| 1:A:1:MET:CG | 2:B:1098:TYR:CE2 | 2.52 | 0.92 |
| 2:B:494:TYR:OH | 2:B:762:MET:SD | 2.28 | 0.92 |
| 2:B:26:ILE:HA | 10:J:62:ARG:CD | 1.99 | 0.92 |
| 3:C:142:ARG:NH2 | 10:J:67:GLU:CD | 2.22 | 0.92 |
| 1:A:12:THR:HG21 | 2:B:1201:GLU:OE2 | 1.70 | 0.91 |
| 2:B:974:LEU:CD2 | 10:J:44:TYR:HD1 | 1.78 | 0.91 |
| 12:L:48:CYS:HG | 15:L:101:ZN:ZN | 0.65 | 0.91 |
| 1:A:11:ILE:CA | 2:B:1199:ASN:O | 2.16 | 0.91 |
| 1:A:1003:ARG:NH1 | 2:B:520:LEU:HB3 | 1.83 | 0.91 |
| 2:B:209:GLN:HG2 | 2:B:210:ARG:H | 1.35 | 0.91 |
| 1:A:1:MET:HA | 2:B:1098:TYR:CE2 | 2.05 | 0.91 |
| 1:A:1657:LEU:HD13 | 6:F:135:ARG:HD2 | 1.50 | 0.91 |
| 3:C:33:VAL:CG2 | 11:K:130:VAL:HG21 | 2.00 | 0.91 |
| 14:N:149:ASP:O | 14:N:153:VAL:HG12 | 1.69 | 0.91 |
| 1:A:1:MET:CA | 2:B:1098:TYR:CD2 | 2.54 | 0.90 |
| 2:B:529:CYS:SG | 2:B:698:SER:HB2 | 2.10 | 0.90 |
| 1:A:13:SER:O | 2:B:1199:ASN:OD1 | 1.89 | 0.90 |
| 1:A:1659:LYS:HD2 | 6:F:133:VAL:CG2 | 2.01 | 0.90 |
| 1:A:1003:ARG:NH1 | 2:B:520:LEU:HB2 | 1.86 | 0.89 |
| 1:A:363:PRO:CG | 2:B:1191:ALA:CB | 2.42 | 0.89 |
| 1:A:367:PHE:CE1 | 2:B:1184:TYR:CA | 2.53 | 0.89 |
| 1:A:759:TYR:HD1 | 1:A:920:PHE:CD2 | 1.90 | 0.89 |
| 11:K:59:THR:O | 11:K:113:ALA:HB2 | 1.72 | 0.89 |
| 1:A:35:PRO:HD3 | 1:A:394:LEU:HD11 | 1.40 | 0.89 |
| 1:A:34:ASN:O | 1:A:390:LEU:CG | 2.20 | 0.89 |
| 1:A:1659:LYS:CE | 6:F:133:VAL:CG2 | 2.51 | 0.89 |
| 2:B:14:ALA:HB3 | 2:B:755:ASN:HD21 | 1.37 | 0.89 |
| 1:A:824:THR:HG22 | 2:B:1023:ARG:HD3 | 0.89 | 0.88 |
| 1:A:1:MET:HA | 2:B:1098:TYR:CE1 | 2.08 | 0.88 |
| 1:A:1260:LYS:HG3 | 1:A:1500:GLN:CB | 2.04 | 0.88 |
| 1:A:934:LYS:NZ | 2:B:956:SER:HB2 | 1.87 | 0.88 |
| 2:B:211:ARG:NH2 | 2:B:243:GLN:HE22 | 1.72 | 0.88 |
| 1:A:1659:LYS:NZ | 6:F:133:VAL:CG2 | 2.37 | 0.88 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1654:PHE:CE2 | 6:F:92:ARG:NH1 | 2.42 | 0.87 |
| 1:A:1003:ARG:HH22 | 2:B:520:LEU:CD2 | 1.81 | 0.87 |
| 2:B:99:VAL:HG21 | 2:B:417:ILE:HD11 | 1.55 | 0.87 |
| 3:C:314:PHE:HD2 | 11:K:135:PHE:CZ | 1.91 | 0.87 |
| 1:A:11:ILE:HD13 | 2:B:1198:TYR:HD1 | 0.96 | 0.87 |
| 2:B:525:TRP:CZ2 | 2:B:696:ILE:HG21 | 2.10 | 0.87 |
| 3:C:53:ASN:HD21 | 14:N:173:THR:CB | 1.88 | 0.87 |
| 1:A:49:LEU:CG | 1:A:386:LEU:HB3 | 2.04 | 0.87 |
| 1:A:35:PRO:HG2 | 1:A:394:LEU:HD12 | 1.55 | 0.87 |
| 1:A:367:PHE:HD1 | 2:B:1184:TYR:CD1 | 1.93 | 0.87 |
| 3:C:328:LEU:HD12 | 11:K:72:LEU:CD1 | 2.04 | 0.87 |
| 2:B:974:LEU:HD23 | 10:J:44:TYR:CB | 2.04 | 0.87 |
| 1:A:368:ARG:HG2 | 1:A:382:GLN:OE1 | 1.76 | 0.86 |
| 14:N:163:VAL:HG12 | 14:N:164:GLU:H | 1.41 | 0.86 |
| 1:A:35:PRO:HD2 | 1:A:394:LEU:HD11 | 1.47 | 0.86 |
| 2:B:209:GLN:HG2 | 2:B:210:ARG:N | 1.91 | 0.86 |
| 3:C:315:PHE:CE1 | 11:K:135:PHE:HD2 | 1.94 | 0.86 |
| 3:C:37:LYS:O | 11:K:134:LYS:NZ | 2.07 | 0.86 |
| 3:C:333:ILE:HA | 11:K:47:ILE:HG23 | 1.54 | 0.86 |
| 1:A:1:MET:HG2 | 2:B:1098:TYR:HE2 | 1.35 | 0.85 |
| 2:B:398:GLN:HG3 | 2:B:399:HIS:CE1 | 2.11 | 0.85 |
| 2:B:697:LEU:HD11 | 2:B:984:TRP:HH2 | 1.13 | 0.85 |
| 1:A:1659:LYS:HG2 | 7:G:104:LEU:HB3 | 1.58 | 0.85 |
| 1:A:718:THR:HG21 | 8:H:119:GLY:HA3 | 1.56 | 0.85 |
| 1:A:1:MET:HA | 2:B:1098:TYR:CZ | 2.10 | 0.85 |
| 2:B:404:LEU:HD21 | 2:B:551:ILE:HD13 | 1.57 | 0.85 |
| 1:A:1:MET:CB | 2:B:1098:TYR:CD2 | 2.59 | 0.85 |
| 9:I:6:SER:HA | 9:I:45:LEU:CD1 | 2.05 | 0.85 |
| 1:A:8:GLY:O | 2:B:1202:PRO:CD | 2.25 | 0.85 |
| 1:A:76:GLN:HE22 | 2:B:1190:SER:CB | 1.87 | 0.85 |
| 3:C:314:PHE:CE2 | 11:K:135:PHE:CZ | 2.65 | 0.85 |
| 3:C:328:LEU:CD1 | 11:K:72:LEU:HD13 | 2.07 | 0.84 |
| 3:C:335:GLN:HB3 | 11:K:49:LEU:H | 1.40 | 0.84 |
| 2:B:26:ILE:HG23 | 10:J:62:ARG:HH11 | 1.42 | 0.84 |
| 1:A:9:SER:CB | 2:B:1200:VAL:HG12 | 1.83 | 0.84 |
| 2:B:128:GLN:HB3 | 12:L:55:ILE:HD13 | 1.59 | 0.84 |
| 1:A:49:LEU:HG | 1:A:386:LEU:CB | 2.07 | 0.84 |
| 2:B:14:ALA:CB | 2:B:755:ASN:ND2 | 2.41 | 0.84 |
| 9:I:6:SER:CA | 9:I:45:LEU:HD13 | 2.04 | 0.84 |
| 1:A:1:MET:CB | 2:B:1094:ASN:OD1 | 2.26 | 0.84 |
| 2:B:494:TYR:HE1 | 2:B:762:MET:SD | 2.00 | 0.84 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1501:ILE:HG13 | 1:A:1502:PRO:HD2 | 1.58 | 0.83 |
| 3:C:333:ILE:HA | 11:K:47:ILE:HG21 | 1.59 | 0.83 |
| 3:C:333:ILE:HG23 | 11:K:47:ILE:CG1 | 2.07 | 0.83 |
| 3:C:335:GLN:O | 11:K:49:LEU:HB3 | 1.77 | 0.83 |
| 2:B:208:VAL:O | 2:B:401:GLU:N | 2.09 | 0.82 |
| 2:B:211:ARG:HH22 | 2:B:243:GLN:HE22 | 0.87 | 0.82 |
| 1:A:1654:PHE:HE2 | 6:F:92:ARG:NH1 | 1.77 | 0.82 |
| 1:A:654:ASP:O | 1:A:656:GLN:N | 2.12 | 0.82 |
| 1:A:824:THR:HA | 2:B:1023:ARG:HB2 | 1.61 | 0.82 |
| 1:A:825:ALA:C | 2:B:1023:ARG:HH21 | 1.81 | 0.82 |
| 1:A:834:ARG:HH22 | 2:B:994:ASP:CG | 1.83 | 0.82 |
| 1:A:7:VAL:HG21 | 2:B:1177:ALA:N | 1.94 | 0.82 |
| 2:B:527:PHE:CZ | 2:B:651:ARG:HD3 | 2.15 | 0.82 |
| 2:B:401:GLU:CB | 2:B:647:SER:OG | 2.27 | 0.81 |
| 1:A:722:PRO:HG2 | 8:H:46:LEU:HD13 | 1.61 | 0.81 |
| 1:A:722:PRO:CG | 8:H:46:LEU:HD13 | 2.11 | 0.81 |
| 3:C:75:VAL:HG12 | 3:C:221:PRO:CG | 2.10 | 0.81 |
| 14:N:162:LYS:N | 14:N:162:LYS:HD2 | 1.96 | 0.81 |
| 1:A:651:ALA:O | 1:A:652:ASN:O | 1.97 | 0.80 |
| 3:C:37:LYS:CA | 11:K:134:LYS:HE3 | 2.11 | 0.80 |
| 2:B:211:ARG:HD3 | 2:B:239:VAL:CG2 | 2.10 | 0.80 |
| 3:C:33:VAL:HG22 | 11:K:130:VAL:CG2 | 2.12 | 0.80 |
| 2:B:401:GLU:HB2 | 2:B:647:SER:OG | 1.81 | 0.80 |
| 1:A:1:MET:N | 2:B:1098:TYR:CB | 2.45 | 0.80 |
| 1:A:489:ASN:HB3 | 11:K:95:HIS:HD2 | 1.46 | 0.80 |
| 1:A:7:VAL:HG21 | 2:B:1177:ALA:H | 1.46 | 0.80 |
| 2:B:494:TYR:CZ | 2:B:762:MET:CE | 2.65 | 0.80 |
| 2:B:401:GLU:CD | 2:B:647:SER:CB | 2.47 | 0.80 |
| 2:B:26:ILE:CA | 10:J:62:ARG:HD2 | 2.12 | 0.79 |
| 1:A:1660:VAL:HG22 | 7:G:105:ILE:CB | 2.08 | 0.79 |
| 1:A:722:PRO:HD2 | 8:H:46:LEU:HD13 | 1.63 | 0.79 |
| 2:B:398:GLN:HG3 | 2:B:399:HIS:ND1 | 1.98 | 0.78 |
| 2:B:525:TRP:CH2 | 2:B:696:ILE:HG21 | 2.19 | 0.78 |
| 1:A:826:PHE:HA | 2:B:1023:ARG:HH22 | 0.97 | 0.77 |
| 1:A:367:PHE:CD1 | 2:B:1184:TYR:CD1 | 2.70 | 0.77 |
| 1:A:1600:ARG:HD2 | 1:A:1616:GLU:OE2 | 1.84 | 0.77 |
| 1:A:9:SER:CB | 2:B:1200:VAL:HG13 | 1.89 | 0.77 |
| 1:A:489:ASN:CB | 11:K:95:HIS:HD2 | 1.97 | 0.77 |
| 1:A:1659:LYS:CD | 6:F:133:VAL:CG2 | 2.63 | 0.77 |
| 2:B:527:PHE:CE1 | 2:B:651:ARG:HB3 | 2.18 | 0.77 |
| 3:C:222:VAL:CG2 | 3:C:303:GLU:O | 2.30 | 0.77 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:14:ALA:HB1 | 2:B:755:ASN:ND2 | 2.00 | 0.77 |
| 2:B:974:LEU:HD21 | 10:J:44:TYR:HD1 | 1.07 | 0.77 |
| 1:A:1260:LYS:NZ | 1:A:1262:LEU:HD11 | 1.98 | 0.77 |
| 2:B:14:ALA:CB | 2:B:755:ASN:HD21 | 1.99 | 0.76 |
| 1:A:367:PHE:HE1 | 2:B:1184:TYR:CA | 1.96 | 0.76 |
| 3:C:328:LEU:HD12 | 11:K:72:LEU:HD11 | 1.62 | 0.76 |
| 9:I:5:GLY:O | 9:I:45:LEU:HD22 | 1.85 | 0.75 |
| 1:A:1:MET:HE2 | 2:B:1094:ASN:HD21 | 1.51 | 0.75 |
| 1:A:1660:VAL:HG22 | 7:G:105:ILE:CA | 2.16 | 0.75 |
| 1:A:9:SER:CB | 2:B:1200:VAL:HG11 | 2.00 | 0.75 |
| 2:B:494:TYR:OH | 2:B:762:MET:CG | 2.35 | 0.74 |
| 1:A:1260:LYS:CG | 1:A:1500:GLN:HB2 | 2.10 | 0.74 |
| 1:A:1:MET:CA | 2:B:1098:TYR:CD1 | 2.68 | 0.74 |
| 3:C:75:VAL:HG11 | 3:C:221:PRO:CG | 2.15 | 0.74 |
| 1:A:1659:LYS:CD | 6:F:133:VAL:HG21 | 2.17 | 0.74 |
| 1:A:1:MET:HG3 | 2:B:1094:ASN:OD1 | 1.87 | 0.74 |
| 3:C:37:LYS:HA | 11:K:134:LYS:HE3 | 1.69 | 0.74 |
| 1:A:11:ILE:CD1 | 2:B:1198:TYR:CB | 2.66 | 0.74 |
| 1:A:11:ILE:CD1 | 2:B:1198:TYR:CG | 2.71 | 0.74 |
| 1:A:1657:LEU:CG | 7:G:106:LYS:HG3 | 2.17 | 0.74 |
| 14:N:168:LEU:O | 14:N:169:GLU:HG3 | 1.88 | 0.73 |
| 1:A:49:LEU:HD21 | 1:A:390:LEU:CD1 | 2.12 | 0.73 |
| 3:C:328:LEU:HD11 | 11:K:72:LEU:HD13 | 1.71 | 0.73 |
| 1:A:7:VAL:HG13 | 2:B:1175:THR:O | 1.87 | 0.73 |
| 1:A:722:PRO:CD | 8:H:46:LEU:HD13 | 2.18 | 0.73 |
| 1:A:363:PRO:HG2 | 2:B:1191:ALA:HB2 | 1.67 | 0.73 |
| 1:A:824:THR:HG23 | 2:B:1023:ARG:CG | 2.18 | 0.72 |
| 3:C:328:LEU:HD13 | 11:K:72:LEU:HD11 | 1.71 | 0.72 |
| 1:A:832:ASP:C | 1:A:833:LEU:HD12 | 2.09 | 0.72 |
| 2:B:44:PRO:CB | 2:B:551:ILE:HD12 | 2.20 | 0.72 |
| 1:A:1048:PHE:CB | 5:E:208:TYR:OH | 2.32 | 0.72 |
| 3:C:75:VAL:CB | 3:C:221:PRO:HG3 | 2.19 | 0.72 |
| 1:A:1:MET:CE | 2:B:1094:ASN:HD21 | 2.02 | 0.72 |
| 1:A:1:MET:HB3 | 2:B:1094:ASN:CG | 2.10 | 0.72 |
| 2:B:209:GLN:HA | 2:B:400:GLN:HA | 1.71 | 0.72 |
| 1:A:1:MET:H1 | 2:B:1098:TYR:CB | 2.01 | 0.72 |
| 1:A:35:PRO:HD3 | 1:A:394:LEU:CG | 2.18 | 0.72 |
| 2:B:1005:TYR:HH | 10:J:44:TYR:HE1 | 1.37 | 0.72 |
| 1:A:1179:ILE:HG13 | 1:A:1180:ASN:N | 2.04 | 0.72 |
| 1:A:759:TYR:HB3 | 1:A:920:PHE:CE2 | 2.25 | 0.72 |
| 1:A:7:VAL:HG13 | 2:B:1176:VAL:HA | 1.71 | 0.72 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:759:TYR:OH | 1:A:930:LEU:HD21 | 1.90 | 0.72 |
| 3:C:37:LYS:CB | 11:K:134:LYS:HE3 | 2.19 | 0.71 |
| 1:A:759:TYR:HB3 | 1:A:920:PHE:HE2 | 1.55 | 0.71 |
| 2:B:14:ALA:O | 2:B:755:ASN:OD1 | 2.08 | 0.71 |
| 1:A:826:PHE:CB | 2:B:1023:ARG:NH2 | 2.52 | 0.71 |
| 1:A:988:SER:O | 2:B:988:GLU:CA | 2.39 | 0.71 |
| 2:B:342:PRO:O | 13:M:112:LYS:HE2 | 1.83 | 0.71 |
| 1:A:1179:ILE:HG13 | 1:A:1180:ASN:H | 1.55 | 0.71 |
| 3:C:328:LEU:HB3 | 11:K:121:LEU:HD22 | 1.73 | 0.71 |
| 1:A:50:TYR:CE1 | 1:A:383:ASN:OD1 | 2.37 | 0.71 |
| 1:A:759:TYR:CD1 | 1:A:920:PHE:CD2 | 2.76 | 0.71 |
| 1:A:489:ASN:CB | 11:K:95:HIS:CD2 | 2.74 | 0.70 |
| 1:A:759:TYR:CZ | 1:A:930:LEU:HD22 | 2.26 | 0.70 |
| 3:C:71:MET:HG3 | 3:C:317:SER:HB3 | 1.73 | 0.70 |
| 1:A:1660:VAL:N | 7:G:104:LEU:HA | 2.05 | 0.70 |
| 1:A:597:LYS:HB2 | 2:B:1082:HIS:CE1 | 2.27 | 0.70 |
| 1:A:993:GLN:NE2 | 2:B:680:GLU:OE2 | 2.24 | 0.70 |
| 3:C:71:MET:SD | 3:C:314:PHE:HA | 2.31 | 0.70 |
| 3:C:70:ILE:HG23 | 3:C:74:GLU:CB | 2.22 | 0.70 |
| 2:B:345:SER:CA | 13:M:111:PRO:O | 2.39 | 0.70 |
| 1:A:1260:LYS:HZ2 | 1:A:1262:LEU:HD11 | 1.57 | 0.69 |
| 1:A:76:GLN:HE21 | 2:B:1190:SER:HB3 | 1.53 | 0.69 |
| 2:B:209:GLN:C | 2:B:400:GLN:HA | 2.13 | 0.69 |
| 1:A:818:THR:O | 1:A:821:ILE:HG22 | 1.92 | 0.69 |
| 3:C:335:GLN:O | 11:K:49:LEU:CB | 2.40 | 0.69 |
| 1:A:1663:ALA:CB | 7:G:103:LYS:NZ | 2.56 | 0.69 |
| 2:B:401:GLU:HB2 | 2:B:647:SER:O | 1.91 | 0.69 |
| 1:A:826:PHE:N | 2:B:1023:ARG:HH21 | 1.88 | 0.69 |
| 1:A:1606:SER:HB3 | 1:A:1611:MET:HE3 | 1.74 | 0.69 |
| 1:A:19:LEU:HD12 | 2:B:1193:GLY:C | 2.12 | 0.69 |
| 2:B:397:THR:CB | 2:B:523:GLU:CB | 2.60 | 0.69 |
| 1:A:1:MET:CE | 2:B:1094:ASN:ND2 | 2.56 | 0.69 |
| 1:A:1023:LEU:HB3 | 1:A:1190:SER:HB3 | 1.74 | 0.69 |
| 1:A:1:MET:HB2 | 2:B:1094:ASN:HA | 1.75 | 0.69 |
| 1:A:1:MET:N | 2:B:1098:TYR:HB3 | 2.07 | 0.68 |
| 1:A:10:GLU:O | 2:B:1199:ASN:O | 2.11 | 0.68 |
| 1:A:759:TYR:CE1 | 1:A:930:LEU:HD13 | 2.29 | 0.68 |
| 2:B:342:PRO:O | 13:M:112:LYS:CD | 2.42 | 0.68 |
| 2:B:44:PRO:CG | 2:B:551:ILE:HD12 | 2.22 | 0.68 |
| 3:C:44:ILE:HD13 | 11:K:142:MET:SD | 2.34 | 0.68 |
| 3:C:71:MET:HG3 | 3:C:317:SER:CB | 2.24 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1:MET:HE3 | 2:B:1094:ASN:ND2 | 2.09 | 0.68 |
| 2:B:974:LEU:CD2 | 10:J:44:TYR:CG | 2.76 | 0.68 |
| 1:A:1:MET:HB2 | 2:B:1098:TYR:CD2 | 2.29 | 0.68 |
| 2:B:208:VAL:HG23 | 2:B:401:GLU:CG | 2.24 | 0.68 |
| 1:A:11:ILE:HD13 | 2:B:1198:TYR:CG | 2.25 | 0.68 |
| 1:A:49:LEU:HD23 | 1:A:390:LEU:HD12 | 1.75 | 0.67 |
| 1:A:1:MET:CG | 2:B:1094:ASN:OD1 | 2.42 | 0.67 |
| 1:A:367:PHE:CZ | 2:B:1187:SER:HB2 | 2.01 | 0.67 |
| 3:C:229:LEU:HB3 | 3:C:293:ARG:HG2 | 1.76 | 0.67 |
| 1:A:693:GLN:HB3 | 11:K:88:PHE:CE2 | 2.29 | 0.67 |
| 1:A:64:THR:HG23 | 2:B:1129:ARG:NH1 | 2.10 | 0.67 |
| 1:A:824:THR:HG23 | 2:B:1023:ARG:CD | 2.12 | 0.67 |
| 12:L:28:LYS:NZ | 12:L:60:ARG:O | 2.18 | 0.67 |
| 3:C:221:PRO:HD2 | 3:C:222:VAL:H | 1.59 | 0.67 |
| 2:B:697:LEU:CD1 | 2:B:984:TRP:HH2 | 1.84 | 0.67 |
| 2:B:210:ARG:N | 2:B:400:GLN:HA | 2.10 | 0.67 |
| 2:B:404:LEU:HD21 | 2:B:551:ILE:HG21 | 1.76 | 0.67 |
| 1:A:826:PHE:CB | 2:B:1023:ARG:HH21 | 2.07 | 0.67 |
| 14:N:162:LYS:H | 14:N:162:LYS:HD2 | 1.58 | 0.67 |
| 2:B:555:GLN:HB3 | 2:B:644:GLY:O | 1.94 | 0.66 |
| 2:B:1005:TYR:CZ | 10:J:44:TYR:HE1 | 2.13 | 0.66 |
| 3:C:329:LYS:NZ | 11:K:125:MET:CE | 2.54 | 0.66 |
| 11:K:54:THR:HG23 | 11:K:61:ALA:HB2 | 1.75 | 0.66 |
| 1:A:1622:LEU:HD21 | 2:B:1194:ILE:HD13 | 1.78 | 0.66 |
| 1:A:34:ASN:O | 1:A:390:LEU:CD1 | 2.43 | 0.66 |
| 2:B:524:SER:HB3 | 2:B:528:LEU:HB2 | 1.77 | 0.66 |
| 3:C:53:ASN:HD22 | 14:N:173:THR:HB | 1.58 | 0.66 |
| 1:A:1038:ILE:HB | 1:A:1047:GLN:HB2 | 1.78 | 0.66 |
| 1:A:35:PRO:HD2 | 1:A:394:LEU:HD12 | 1.49 | 0.66 |
| 2:B:44:PRO:HB3 | 2:B:551:ILE:HD12 | 1.76 | 0.66 |
| 1:A:1504:ILE:HG22 | 1:A:1505:ASP:N | 2.11 | 0.66 |
| 1:A:83:VAL:HG11 | 1:A:427:PHE:HZ | 1.61 | 0.66 |
| 1:A:34:ASN:O | 1:A:390:LEU:HD13 | 1.96 | 0.66 |
| 1:A:63:SER:O | 2:B:1163:GLN:CD | 2.33 | 0.66 |
| 1:A:1622:LEU:HD21 | 2:B:1194:ILE:CD1 | 2.26 | 0.66 |
| 2:B:25:PHE:CZ | 10:J:59:LYS:HE2 | 2.29 | 0.66 |
| 1:A:988:SER:O | 2:B:988:GLU:CB | 2.44 | 0.66 |
| 2:B:210:ARG:NH2 | 2:B:648:ARG:HA | 2.11 | 0.66 |
| 2:B:345:SER:HA | 13:M:111:PRO:O | 1.96 | 0.65 |
| 2:B:1019:GLY:HA3 | 3:C:65:ASN:ND2 | 2.11 | 0.65 |
| 1:A:824:THR:HG22 | 2:B:1023:ARG:NE | 2.12 | 0.65 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:1657:LEU:CB | 7:G:106:LYS:HG3 | 2.27 | 0.65 |
| 1:A:581:ILE:HD11 | 1:A:605:VAL:HG21 | 1.78 | 0.65 |
| 1:A:1659:LYS:HA | 7:G:104:LEU:CB | 2.27 | 0.64 |
| 1:A:655:SER:O | 1:A:656:GLN:NE2 | 2.30 | 0.64 |
| 2:B:209:GLN:CA | 2:B:400:GLN:HA | 2.28 | 0.64 |
| 2:B:210:ARG:O | 2:B:237:ARG:NH1 | 2.31 | 0.64 |
| 2:B:886:ASN:OD1 | 12:L:57:LEU:HD23 | 1.97 | 0.64 |
| 1:A:1659:LYS:HZ2 | 6:F:133:VAL:CG2 | 2.08 | 0.64 |
| 1:A:10:GLU:H | 2:B:1201:GLU:H | 1.45 | 0.64 |
| 1:A:1260:LYS:HG2 | 1:A:1261:VAL:N | 2.11 | 0.64 |
| 1:A:1663:ALA:HB1 | 7:G:103:LYS:NZ | 2.13 | 0.64 |
| 1:A:1663:ALA:HB1 | 7:G:103:LYS:HZ3 | 1.62 | 0.64 |
| 1:A:697:TYR:CE2 | 11:K:92:SER:HB2 | 2.33 | 0.64 |
| 2:B:25:PHE:HE2 | 10:J:56:LEU:HD23 | 1.63 | 0.64 |
| 1:A:19:LEU:HD12 | 2:B:1193:GLY:O | 1.98 | 0.64 |
| 2:B:399:HIS:O | 2:B:400:GLN:HB3 | 1.96 | 0.64 |
| 2:B:190:ILE:H | 2:B:190:ILE:HD13 | 1.63 | 0.64 |
| 2:B:404:LEU:CD2 | 2:B:551:ILE:HD13 | 2.26 | 0.64 |
| 2:B:699:ILE:HG23 | 2:B:760:TYR:CE2 | 2.32 | 0.64 |
| 1:A:1034:TYR:HA | 1:A:1181:PRO:HG2 | 1.80 | 0.63 |
| 2:B:974:LEU:CD2 | 10:J:44:TYR:CB | 2.69 | 0.63 |
| 2:B:1016:GLY:O | 3:C:69:ARG:NH2 | 2.30 | 0.63 |
| 2:B:974:LEU:CG | 10:J:44:TYR:HB3 | 2.29 | 0.63 |
| 3:C:315:PHE:CE1 | 11:K:135:PHE:CD2 | 2.81 | 0.63 |
| 1:A:368:ARG:HE | 1:A:386:LEU:HD11 | 1.62 | 0.63 |
| 1:A:913:PRO:HB3 | 1:A:926:GLN:HE22 | 1.63 | 0.63 |
| 2:B:208:VAL:HG23 | 2:B:401:GLU:HG3 | 1.81 | 0.63 |
| 2:B:494:TYR:OH | 2:B:762:MET:HG3 | 1.99 | 0.63 |
| 2:B:697:LEU:HD21 | 2:B:984:TRP:HH2 | 1.64 | 0.63 |
| 1:A:367:PHE:CZ | 2:B:1187:SER:CB | 2.55 | 0.63 |
| 2:B:211:ARG:CD | 2:B:239:VAL:HG21 | 2.28 | 0.63 |
| 1:A:1608:SER:HB2 | 1:A:1636:SER:HB3 | 1.80 | 0.63 |
| 1:A:1:MET:N | 2:B:1098:TYR:CD1 | 2.60 | 0.63 |
| 3:C:79:ALA:HA | 3:C:106:LEU:HD11 | 1.79 | 0.63 |
| 2:B:998:GLU:O | 2:B:1002:LYS:HG2 | 1.99 | 0.63 |
| 1:A:1:MET:HB2 | 2:B:1094:ASN:OD1 | 1.99 | 0.62 |
| 3:C:75:VAL:HG11 | 3:C:221:PRO:HG2 | 1.80 | 0.62 |
| 2:B:210:ARG:HH12 | 2:B:648:ARG:HG2 | 1.64 | 0.62 |
| 1:A:713:VAL:H | 1:A:738:ASN:HD21 | 1.47 | 0.62 |
| 2:B:16:PHE:HB3 | 2:B:753:LYS:NZ | 2.14 | 0.62 |
| 11:K:59:THR:HG22 | 11:K:107:THR:OG1 | 2.00 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:37:VAL:HG13 | 1:A:387:SER:OG | 1.99 | 0.62 |
| 14:N:160:VAL:HG12 | 14:N:161:PRO:HD2 | 1.82 | 0.62 |
| 1:A:834:ARG:NH2 | 2:B:994:ASP:OD1 | 2.33 | 0.62 |
| 1:A:824:THR:HG21 | 2:B:1023:ARG:HD3 | 1.64 | 0.62 |
| 4:D:24:ALA:O | 6:F:55:PRO:CA | 2.46 | 0.62 |
| 3:C:142:ARG:CZ | 10:J:67:GLU:OE2 | 2.48 | 0.62 |
| 1:A:1603:MET:HE1 | 1:A:1615:TYR:CG | 2.34 | 0.62 |
| 1:A:833:LEU:N | 1:A:833:LEU:HD12 | 2.15 | 0.62 |
| 2:B:26:ILE:CG2 | 10:J:62:ARG:HH11 | 2.12 | 0.62 |
| 14:N:160:VAL:HG12 | 14:N:161:PRO:CD | 2.30 | 0.62 |
| 1:A:701:ARG:H | 1:A:706:HIS:HD2 | 1.46 | 0.61 |
| 1:A:988:SER:O | 2:B:988:GLU:HA | 1.99 | 0.61 |
| 3:C:335:GLN:HB3 | 11:K:49:LEU:N | 2.14 | 0.61 |
| 1:A:363:PRO:HG3 | 2:B:1191:ALA:CA | 2.30 | 0.61 |
| 2:B:558:VAL:HA | 2:B:561:ILE:HD12 | 1.80 | 0.61 |
| 1:A:1608:SER:CB | 1:A:1636:SER:HB3 | 2.29 | 0.61 |
| 2:B:25:PHE:HE2 | 10:J:56:LEU:CD2 | 2.14 | 0.61 |
| 3:C:79:ALA:HA | 3:C:106:LEU:CD1 | 2.29 | 0.61 |
| 3:C:322:LYS:CE | 11:K:129:ASP:OD1 | 2.43 | 0.61 |
| 1:A:1:MET:HG2 | 2:B:1098:TYR:CD2 | 2.33 | 0.61 |
| 1:A:368:ARG:HE | 1:A:386:LEU:CD1 | 2.13 | 0.61 |
| 2:B:527:PHE:CZ | 2:B:651:ARG:CG | 2.84 | 0.61 |
| 3:C:335:GLN:HB2 | 11:K:48:LYS:HG2 | 1.82 | 0.61 |
| 1:A:1600:ARG:HG3 | 1:A:1615:TYR:HE2 | 1.66 | 0.61 |
| 3:C:329:LYS:HD2 | 11:K:122:LYS:HA | 1.82 | 0.61 |
| 3:C:76:PRO:HB3 | 3:C:212:ILE:CG2 | 2.24 | 0.61 |
| 1:A:1659:LYS:HA | 7:G:104:LEU:HB2 | 1.83 | 0.61 |
| 2:B:494:TYR:HE2 | 2:B:703:LEU:HD13 | 1.64 | 0.61 |
| 1:A:825:ALA:C | 2:B:1023:ARG:NH2 | 2.46 | 0.60 |
| 2:B:211:ARG:HG3 | 2:B:211:ARG:O | 2.00 | 0.60 |
| 1:A:1657:LEU:HD11 | 6:F:135:ARG:HD2 | 1.79 | 0.60 |
| 1:A:1003:ARG:CZ | 2:B:520:LEU:HB3 | 2.31 | 0.60 |
| 2:B:683:ASN:OD1 | 14:N:150:TYR:OH | 2.18 | 0.60 |
| 3:C:44:ILE:CD1 | 11:K:142:MET:SD | 2.88 | 0.60 |
| 2:B:527:PHE:CZ | 2:B:651:ARG:HG2 | 2.37 | 0.60 |
| 14:N:149:ASP:O | 14:N:153:VAL:CG1 | 2.48 | 0.60 |
| 3:C:275:VAL:HG21 | 3:C:293:ARG:HH21 | 1.66 | 0.60 |
| 1:A:1660:VAL:HG22 | 7:G:104:LEU:C | 2.20 | 0.60 |
| 1:A:697:TYR:CD2 | 11:K:92:SER:HB2 | 2.37 | 0.60 |
| 3:C:334:THR:H | 11:K:47:ILE:HG23 | 1.67 | 0.60 |
| 1:A:10:GLU:C | 2:B:1200:VAL:HA | 2.22 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1600:ARG:CD | 1:A:1616:GLU:OE2 | 2.49 | 0.60 |
| 2:B:494:TYR:CE1 | 2:B:762:MET:CE | 2.84 | 0.60 |
| 1:A:1:MET:CB | 2:B:1094:ASN:CG | 2.69 | 0.60 |
| 2:B:128:GLN:CB | 12:L:55:ILE:HD13 | 2.30 | 0.60 |
| 1:A:507:TYR:HE1 | 1:A:639:GLN:HA | 1.68 | 0.59 |
| 3:C:334:THR:CB | 11:K:47:ILE:O | 2.49 | 0.59 |
| 1:A:785:GLN:HB3 | 1:A:793:ILE:HG22 | 1.83 | 0.59 |
| 1:A:1556:GLU:OE2 | 5:E:200:ARG:NH1 | 2.35 | 0.59 |
| 1:A:1603:MET:CE | 1:A:1615:TYR:CD2 | 2.86 | 0.59 |
| 3:C:37:LYS:HG2 | 11:K:134:LYS:NZ | 2.16 | 0.59 |
| 13:M:61:GLU:HB3 | 13:M:101:VAL:HG23 | 1.84 | 0.59 |
| 2:B:52:LEU:HG | 2:B:61:LEU:HD13 | 1.84 | 0.59 |
| 2:B:683:ASN:OD1 | 14:N:150:TYR:HE2 | 1.69 | 0.59 |
| 3:C:70:ILE:HG23 | 3:C:74:GLU:HB2 | 1.82 | 0.59 |
| 10:J:48:ARG:O | 10:J:52:THR:HB | 2.01 | 0.59 |
| 2:B:527:PHE:CZ | 2:B:651:ARG:CD | 2.85 | 0.59 |
| 3:C:332:PRO:O | 11:K:47:ILE:CG2 | 2.50 | 0.59 |
| 3:C:75:VAL:HB | 3:C:221:PRO:HG3 | 1.84 | 0.59 |
| 5:E:147:HIS:HD2 | 5:E:149:LEU:H | 1.50 | 0.59 |
| 12:L:28:LYS:HB2 | 12:L:59:ALA:CB | 2.26 | 0.59 |
| 1:A:83:VAL:CG2 | 1:A:427:PHE:CE2 | 2.75 | 0.59 |
| 1:A:1659:LYS:CG | 7:G:104:LEU:HB3 | 2.32 | 0.59 |
| 3:C:71:MET:O | 3:C:222:VAL:HG11 | 2.03 | 0.58 |
| 1:A:1048:PHE:HB2 | 5:E:208:TYR:HH | 1.67 | 0.58 |
| 1:A:506:THR:HA | 1:A:580:HIS:HA | 1.85 | 0.58 |
| 1:A:35:PRO:O | 1:A:387:SER:HA | 2.02 | 0.58 |
| 1:A:507:TYR:CD2 | 1:A:508:PRO:HD2 | 2.38 | 0.58 |
| 3:C:142:ARG:NE | 10:J:67:GLU:OE2 | 2.37 | 0.58 |
| 1:A:934:LYS:HZ3 | 2:B:956:SER:HB2 | 1.67 | 0.58 |
| 1:A:1003:ARG:CZ | 2:B:520:LEU:CB | 2.80 | 0.58 |
| 1:A:527:PRO:HG2 | 1:A:547:ILE:HA | 1.85 | 0.58 |
| 1:A:727:THR:HG22 | 1:A:730:GLN:HG3 | 1.85 | 0.58 |
| 2:B:839:LYS:HG3 | 2:B:857:PRO:HD2 | 1.86 | 0.58 |
| 2:B:974:LEU:HG | 10:J:44:TYR:CG | 2.39 | 0.58 |
| 1:A:1502:PRO:O | 1:A:1503:HIS:HB2 | 2.03 | 0.58 |
| 1:A:32:ILE:HG22 | 1:A:390:LEU:HD21 | 1.84 | 0.58 |
| 1:A:332:GLN:HE22 | 1:A:350:VAL:H | 1.52 | 0.58 |
| 2:B:400:GLN:O | 2:B:649:MET:CE | 2.51 | 0.58 |
| 3:C:332:PRO:HG2 | 11:K:42:PRO:HB2 | 1.85 | 0.58 |
| 2:B:656:LEU:HD23 | 14:N:148:ILE:HD13 | 1.86 | 0.57 |
| 2:B:210:ARG:NH1 | 2:B:648:ARG:HG2 | 2.18 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:938:PHE:CZ | 3:C:68:ARG:CZ | 2.87 | 0.57 |
| 3:C:328:LEU:HD11 | 11:K:72:LEU:CD1 | 2.29 | 0.57 |
| 1:A:952:LEU:HD21 | 1:A:1000:MET:HB3 | 1.85 | 0.57 |
| 2:B:398:GLN:CG | 2:B:399:HIS:CE1 | 2.86 | 0.57 |
| 2:B:974:LEU:HA | 10:J:44:TYR:HB3 | 1.84 | 0.57 |
| 11:K:88:PHE:HB3 | 11:K:106:GLN:HB2 | 1.86 | 0.57 |
| 1:A:1662:ASN:HD21 | 7:G:58:LEU:HB2 | 1.69 | 0.57 |
| 1:A:34:ASN:C | 1:A:390:LEU:CD2 | 2.49 | 0.57 |
| 1:A:1662:ASN:ND2 | 7:G:58:LEU:CB | 2.67 | 0.57 |
| 1:A:1:MET:H2 | 2:B:1098:TYR:HB3 | 1.69 | 0.57 |
| 2:B:786:ALA:HB1 | 2:B:928:SER:HB2 | 1.86 | 0.57 |
| 1:A:1662:ASN:ND2 | 7:G:58:LEU:HB2 | 2.20 | 0.57 |
| 1:A:1610:PHE:CD2 | 1:A:1632:GLU:HG2 | 2.40 | 0.57 |
| 2:B:335:ARG:NH2 | 13:M:114:LYS:C | 2.58 | 0.57 |
| 2:B:840:LEU:HD21 | 2:B:857:PRO:HB2 | 1.87 | 0.57 |
| 1:A:10:GLU:O | 2:B:1200:VAL:CA | 2.46 | 0.56 |
| 1:A:9:SER:C | 2:B:1200:VAL:HG13 | 2.26 | 0.56 |
| 1:A:579:ARG:NH1 | 1:A:580:HIS:O | 2.38 | 0.56 |
| 3:C:78:VAL:HG22 | 3:C:210:LEU:CD1 | 2.36 | 0.56 |
| 3:C:71:MET:C | 3:C:72:ILE:HG13 | 2.24 | 0.56 |
| 3:C:70:ILE:CG2 | 3:C:74:GLU:HG3 | 2.21 | 0.56 |
| 2:B:26:ILE:O | 10:J:62:ARG:NE | 2.38 | 0.56 |
| 1:A:1501:ILE:HG13 | 1:A:1502:PRO:N | 2.21 | 0.56 |
| 1:A:367:PHE:CZ | 2:B:1187:SER:HB3 | 2.39 | 0.56 |
| 1:A:1605:THR:HG22 | 1:A:1605:THR:O | 2.04 | 0.56 |
| 1:A:1:MET:CG | 2:B:1098:TYR:CD2 | 2.86 | 0.56 |
| 1:A:502:ALA:O | 1:A:580:HIS:HB3 | 2.05 | 0.56 |
| 2:B:1090:ASP:HA | 2:B:1094:ASN:HB2 | 1.86 | 0.56 |
| 1:A:1662:ASN:OD1 | 7:G:58:LEU:HD12 | 2.05 | 0.56 |
| 1:A:507:TYR:CE2 | 1:A:508:PRO:HD2 | 2.40 | 0.56 |
| 3:C:78:VAL:HG22 | 3:C:210:LEU:HD12 | 1.87 | 0.56 |
| 1:A:824:THR:HG23 | 2:B:1023:ARG:HG3 | 1.87 | 0.56 |
| 1:A:826:PHE:HB2 | 2:B:1023:ARG:NH2 | 2.21 | 0.56 |
| 3:C:78:VAL:O | 3:C:79:ALA:HB2 | 2.05 | 0.56 |
| 1:A:502:ALA:HA | 1:A:581:ILE:CG2 | 2.36 | 0.56 |
| 2:B:207:ILE:HG12 | 2:B:503:VAL:HG22 | 1.88 | 0.56 |
| 1:A:363:PRO:HG2 | 2:B:1191:ALA:CB | 2.28 | 0.55 |
| 2:B:400:GLN:O | 2:B:649:MET:HE3 | 2.05 | 0.55 |
| 2:B:791:LYS:O | 2:B:795:GLU:HG2 | 2.06 | 0.55 |
| 1:A:361:VAL:CG2 | 2:B:1190:SER:O | 2.54 | 0.55 |
| 1:A:367:PHE:CZ | 2:B:1184:TYR:HA | 2.32 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1501:ILE:HG23 | 1:A:1504:ILE:HB | 1.88 | 0.55 |
| 1:A:722:PRO:HG3 | 8:H:46:LEU:HB3 | 1.87 | 0.55 |
| 2:B:527:PHE:HE1 | 2:B:650:LEU:C | 2.10 | 0.55 |
| 1:A:1603:MET:HE2 | 1:A:1615:TYR:CD2 | 2.42 | 0.55 |
| 1:A:586:VAL:HG21 | 1:A:648:LEU:HG | 1.87 | 0.55 |
| 2:B:699:ILE:HD13 | 2:B:760:TYR:CZ | 2.41 | 0.55 |
| 3:C:200:GLN:HG3 | 10:J:66:LEU:HD13 | 1.87 | 0.55 |
| 3:C:221:PRO:CD | 3:C:222:VAL:H | 2.19 | 0.55 |
| 2:B:697:LEU:CD2 | 2:B:984:TRP:HH2 | 2.19 | 0.55 |
| 1:A:476:VAL:HG12 | 2:B:1091:ARG:O | 2.06 | 0.55 |
| 1:A:1501:ILE:CG2 | 1:A:1504:ILE:HB | 2.37 | 0.55 |
| 1:A:361:VAL:HG21 | 2:B:1190:SER:O | 2.06 | 0.55 |
| 1:A:1663:ALA:CB | 7:G:103:LYS:HZ2 | 2.20 | 0.55 |
| 11:K:46:LYS:HA | 11:K:66:VAL:HG22 | 1.88 | 0.55 |
| 1:A:586:VAL:CG2 | 1:A:648:LEU:HG | 2.37 | 0.55 |
| 3:C:33:VAL:CG2 | 11:K:130:VAL:CG2 | 2.79 | 0.55 |
| 13:M:9:GLU:HG2 | 14:N:71:PRO:HB3 | 1.89 | 0.55 |
| 2:B:555:GLN:HG2 | 2:B:645:GLY:HA2 | 1.89 | 0.55 |
| 1:A:64:THR:O | 2:B:1161:ASP:HB2 | 2.07 | 0.54 |
| 1:A:934:LYS:HZ2 | 2:B:956:SER:HB2 | 1.69 | 0.54 |
| 3:C:232:GLN:HE21 | 3:C:234:ASN:HD21 | 1.55 | 0.54 |
| 3:C:334:THR:O | 11:K:48:LYS:HA | 2.08 | 0.54 |
| 1:A:1658:ALA:H | 7:G:107:ILE:H | 1.55 | 0.54 |
| 1:A:63:SER:O | 2:B:1163:GLN:HG3 | 2.07 | 0.54 |
| 1:A:695:TYR:HE1 | 1:A:820:TYR:HA | 1.71 | 0.54 |
| 1:A:677:GLY:HA3 | 1:A:786:TYR:OH | 2.07 | 0.54 |
| 2:B:721:MET:HG3 | 2:B:1036:LEU:HD21 | 1.88 | 0.54 |
| 1:A:834:ARG:NH2 | 2:B:994:ASP:OD2 | 2.36 | 0.54 |
| 2:B:525:TRP:CZ2 | 2:B:696:ILE:CG2 | 2.86 | 0.54 |
| 1:A:1503:HIS:C | 1:A:1504:ILE:HG13 | 2.26 | 0.54 |
| 2:B:699:ILE:HG12 | 2:B:760:TYR:OH | 2.08 | 0.54 |
| 2:B:943:ILE:HG23 | 10:J:9:SER:HB3 | 1.90 | 0.54 |
| 10:J:2:ILE:HG23 | 10:J:57:ILE:HG21 | 1.90 | 0.54 |
| 2:B:938:PHE:CE1 | 3:C:68:ARG:NH2 | 2.76 | 0.54 |
| 1:A:701:ARG:H | 1:A:706:HIS:CD2 | 2.24 | 0.53 |
| 2:B:857:PRO:HB3 | 2:B:871:ILE:HD13 | 1.89 | 0.53 |
| 11:K:54:THR:HG23 | 11:K:61:ALA:CB | 2.38 | 0.53 |
| 1:A:49:LEU:HD23 | 1:A:390:LEU:CD1 | 2.22 | 0.53 |
| 1:A:438:ILE:HA | 1:A:456:VAL:HG22 | 1.89 | 0.53 |
| 1:A:1596:LEU:HD22 | 1:A:1602:GLY:HA2 | 1.90 | 0.53 |
| 3:C:333:ILE:CA | 11:K:47:ILE:HG23 | 2.35 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:1062:HIS:HA | 1:A:1065:GLN:HB2 | 1.90 | 0.53 |
| 1:A:366:ARG:NH2 | 2:B:1180:PHE:CE2 | 2.76 | 0.53 |
| 2:B:748:GLN:HB2 | 2:B:769:PHE:HA | 1.89 | 0.53 |
| 13:M:28:LYS:HD2 | 14:N:106:ASN:HB2 | 1.91 | 0.53 |
| 7:G:81:VAL:HA | 7:G:124:VAL:HG12 | 1.90 | 0.53 |
| 2:B:323:ARG:HH22 | 2:B:351:GLN:HE22 | 1.56 | 0.53 |
| 2:B:211:ARG:O | 2:B:212:ASN:HB2 | 2.08 | 0.53 |
| 3:C:335:GLN:OE1 | 11:K:49:LEU:O | 2.27 | 0.53 |
| 1:A:11:ILE:HD11 | 2:B:1198:TYR:CG | 2.43 | 0.53 |
| 3:C:71:MET:CG | 3:C:317:SER:HB3 | 2.39 | 0.53 |
| 3:C:58:ASN:HA | 3:C:296:ASN:HB3 | 1.90 | 0.53 |
| 1:A:1:MET:CA | 2:B:1098:TYR:CE2 | 2.83 | 0.53 |
| 1:A:9:SER:OG | 2:B:1174:THR:HG21 | 2.09 | 0.53 |
| 3:C:328:LEU:HD12 | 11:K:72:LEU:HD13 | 1.81 | 0.52 |
| 1:A:5:LYS:O | 2:B:1100:GLN:NE2 | 2.42 | 0.52 |
| 2:B:555:GLN:O | 2:B:556:SER:HB3 | 2.09 | 0.52 |
| 1:A:1658:ALA:H | 7:G:106:LYS:HA | 1.74 | 0.52 |
| 2:B:1019:GLY:HA3 | 3:C:65:ASN:HD21 | 1.74 | 0.52 |
| 1:A:1056:ASP:HB3 | 1:A:1059:LYS:HD3 | 1.91 | 0.52 |
| 1:A:646:GLU:OE1 | 2:B:1084:THR:OG1 | 2.27 | 0.52 |
| 1:A:8:GLY:O | 2:B:1202:PRO:HD2 | 2.06 | 0.52 |
| 5:E:131:THR:HG21 | 5:E:191:LYS:HE2 | 1.91 | 0.52 |
| 1:A:502:ALA:HA | 1:A:581:ILE:HG22 | 1.90 | 0.52 |
| 1:A:833:LEU:HD23 | 1:A:943:ILE:CG2 | 2.40 | 0.52 |
| 7:G:50:ALA:H | 7:G:64:GLN:HE22 | 1.56 | 0.52 |
| 1:A:697:TYR:CE2 | 11:K:92:SER:CB | 2.93 | 0.52 |
| 2:B:979:GLN:HG2 | 2:B:996:PHE:HE1 | 1.73 | 0.52 |
| 1:A:1606:SER:CB | 1:A:1611:MET:HE3 | 2.40 | 0.52 |
| 2:B:26:ILE:CG2 | 10:J:62:ARG:NH1 | 2.73 | 0.52 |
| 2:B:646:HIS:H | 2:B:646:HIS:CD2 | 2.28 | 0.52 |
| 1:A:1:MET:CB | 2:B:1094:ASN:HA | 2.40 | 0.52 |
| 2:B:208:VAL:HG23 | 2:B:401:GLU:HG2 | 1.92 | 0.52 |
| 3:C:216:HIS:HD2 | 3:C:218:LYS:H | 1.58 | 0.52 |
| 2:B:749:THR:HG22 | 10:J:52:THR:O | 2.10 | 0.52 |
| 2:B:726:MET:HG3 | 2:B:742:TYR:HB3 | 1.93 | 0.51 |
| 1:A:489:ASN:HB2 | 11:K:95:HIS:CD2 | 2.44 | 0.51 |
| 1:A:722:PRO:HD2 | 8:H:46:LEU:CD1 | 2.37 | 0.51 |
| 2:B:91:LEU:CD2 | 2:B:342:PRO:HG2 | 2.40 | 0.51 |
| 6:F:69:LEU:HB3 | 7:G:94:PRO:HG3 | 1.92 | 0.51 |
| 1:A:1504:ILE:HA | 1:A:1523:GLY:HA3 | 1.91 | 0.51 |
| 1:A:934:LYS:HG2 | 2:B:955:PRO:HB2 | 1.92 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:974:LEU:HA | 10:J:44:TYR:CB | 2.40 | 0.51 |
| 1:A:759:TYR:CD1 | 1:A:920:PHE:CE2 | 2.98 | 0.51 |
| 2:B:974:LEU:HG | 10:J:44:TYR:CB | 2.40 | 0.51 |
| 1:A:1229:ALA:CB | 1:A:1597:ALA:HB2 | 2.41 | 0.51 |
| 3:C:329:LYS:NZ | 11:K:125:MET:HE2 | 2.24 | 0.51 |
| 1:A:720:PHE:CE2 | 8:H:79:TRP:CD1 | 2.98 | 0.51 |
| 2:B:25:PHE:CE1 | 10:J:59:LYS:HE2 | 2.45 | 0.51 |
| 1:A:1263:LEU:HD22 | 1:A:1267:ILE:HD11 | 1.92 | 0.51 |
| 1:A:588:LEU:HB2 | 1:A:636:HIS:HB2 | 1.91 | 0.51 |
| 1:A:1003:ARG:NH2 | 2:B:520:LEU:CB | 2.74 | 0.51 |
| 1:A:10:GLU:H | 2:B:1201:GLU:N | 2.07 | 0.51 |
| 1:A:1660:VAL:HG22 | 7:G:105:ILE:H | 1.66 | 0.51 |
| 6:F:69:LEU:HD22 | 7:G:94:PRO:HD3 | 1.92 | 0.51 |
| 3:C:86:PHE:HA | 12:L:63:ARG:O | 2.11 | 0.51 |
| 13:M:53:LEU:HB2 | 13:M:96:LEU:HD22 | 1.93 | 0.51 |
| 1:A:827:THR:OG1 | 1:A:828:CYS:N | 2.42 | 0.51 |
| 2:B:293:ILE:HG12 | 2:B:302:LEU:HD23 | 1.91 | 0.51 |
| 2:B:207:ILE:CD1 | 2:B:402:VAL:HG22 | 2.24 | 0.51 |
| 1:A:507:TYR:O | 1:A:578:TYR:HA | 2.11 | 0.50 |
| 1:A:1049:MET:SD | 1:A:1052:GLY:HA2 | 2.51 | 0.50 |
| 14:N:141:GLU:O | 14:N:142:THR:HG23 | 2.10 | 0.50 |
| 1:A:1606:SER:OG | 1:A:1611:MET:HE1 | 2.11 | 0.50 |
| 2:B:123:PRO:HG2 | 2:B:172:LEU:HD11 | 1.92 | 0.50 |
| 2:B:699:ILE:HD13 | 2:B:760:TYR:CE1 | 2.46 | 0.50 |
| 3:C:78:VAL:HG12 | 3:C:79:ALA:N | 2.27 | 0.50 |
| 3:C:314:PHE:HE2 | 11:K:135:PHE:CD1 | 2.23 | 0.50 |
| 4:D:25:THR:O | 6:F:55:PRO:O | 2.29 | 0.50 |
| 1:A:1039:ARG:HD2 | 1:A:1045:LEU:HA | 1.94 | 0.50 |
| 1:A:1239:THR:HB | 1:A:1542:THR:HB | 1.92 | 0.50 |
| 1:A:1608:SER:CB | 1:A:1636:SER:CB | 2.90 | 0.50 |
| 2:B:25:PHE:HE1 | 2:B:764:ASN:OD1 | 1.85 | 0.50 |
| 12:L:60:ARG:HG2 | 12:L:61:THR:H | 1.77 | 0.50 |
| 1:A:35:PRO:HD3 | 1:A:394:LEU:HG | 1.92 | 0.50 |
| 1:A:11:ILE:HD11 | 2:B:1198:TYR:HB3 | 1.89 | 0.50 |
| 2:B:974:LEU:HD23 | 10:J:44:TYR:CD1 | 2.40 | 0.50 |
| 1:A:34:ASN:O | 1:A:390:LEU:CB | 2.55 | 0.50 |
| 2:B:211:ARG:NH2 | 2:B:243:GLN:NE2 | 2.44 | 0.50 |
| 2:B:44:PRO:HB3 | 2:B:551:ILE:CD1 | 2.41 | 0.50 |
| 1:A:1501:ILE:HG12 | 1:A:1504:ILE:HD12 | 1.94 | 0.50 |
| 1:A:5:LYS:HB3 | 2:B:1100:GLN:OE1 | 2.09 | 0.50 |
| 2:B:700:LEU:HA | 2:B:703:LEU:HD12 | 1.94 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:110:ASN:HB3 | 2:B:118:GLU:HG2 | 1.94 | 0.50 |
| 2:B:209:GLN:O | 2:B:401:GLU:HG2 | 2.12 | 0.50 |
| 1:A:1003:ARG:HH21 | 2:B:520:LEU:HD22 | 1.62 | 0.49 |
| 2:B:26:ILE:HG23 | 10:J:62:ARG:NH1 | 2.20 | 0.49 |
| 1:A:1003:ARG:HH22 | 2:B:520:LEU:CB | 2.25 | 0.49 |
| 7:G:51:PRO:HA | 7:G:54:LEU:HD13 | 1.95 | 0.49 |
| 3:C:334:THR:HB | 11:K:47:ILE:O | 2.11 | 0.49 |
| 2:B:823:GLN:HG2 | 2:B:863:ASP:HB3 | 1.94 | 0.49 |
| 3:C:335:GLN:HB2 | 11:K:48:LYS:CG | 2.42 | 0.49 |
| 1:A:1038:ILE:HD12 | 1:A:1185:VAL:HG21 | 1.94 | 0.49 |
| 1:A:63:SER:O | 2:B:1163:GLN:CG | 2.61 | 0.49 |
| 2:B:974:LEU:CG | 10:J:44:TYR:CB | 2.91 | 0.49 |
| 3:C:334:THR:CG2 | 11:K:44:ARG:HB3 | 2.32 | 0.49 |
| 1:A:1503:HIS:O | 1:A:1504:ILE:HG13 | 2.13 | 0.49 |
| 1:A:496:GLY:HA3 | 1:A:615:ARG:HB2 | 1.94 | 0.49 |
| 1:A:601:MET:HB3 | 1:A:653:THR:HG22 | 1.95 | 0.49 |
| 1:A:1500:GLN:NE2 | 1:A:1501:ILE:O | 2.45 | 0.49 |
| 1:A:32:ILE:CG2 | 1:A:390:LEU:HD21 | 2.42 | 0.49 |
| 1:A:833:LEU:HD23 | 1:A:943:ILE:HG23 | 1.94 | 0.49 |
| 1:A:918:LYS:HE2 | 1:A:922:CYS:HB3 | 1.94 | 0.49 |
| 1:A:1659:LYS:HZ1 | 6:F:133:VAL:HG21 | 1.74 | 0.49 |
| 12:L:60:ARG:NH2 | 12:L:65:VAL:HG21 | 2.28 | 0.49 |
| 1:A:64:THR:CG2 | 2:B:1129:ARG:NH1 | 2.76 | 0.49 |
| 14:N:163:VAL:HG12 | 14:N:164:GLU:N | 2.18 | 0.49 |
| 1:A:1504:ILE:HG22 | 1:A:1505:ASP:H | 1.76 | 0.49 |
| 1:A:19:LEU:HD12 | 2:B:1193:GLY:CA | 2.42 | 0.49 |
| 1:A:861:VAL:HG21 | 1:A:892:LEU:HA | 1.94 | 0.49 |
| 12:L:62:LYS:NZ | 12:L:62:LYS:HB2 | 2.28 | 0.49 |
| 1:A:934:LYS:HZ1 | 2:B:956:SER:CB | 1.94 | 0.49 |
| 2:B:705:PRO:HG2 | 2:B:921:HIS:CE1 | 2.47 | 0.49 |
| 2:B:976:GLY:HA2 | 10:J:51:LEU:CD2 | 2.43 | 0.49 |
| 1:A:1504:ILE:CG2 | 1:A:1505:ASP:N | 2.76 | 0.48 |
| 1:A:1603:MET:HE1 | 1:A:1615:TYR:CD2 | 2.47 | 0.48 |
| 1:A:504:LYS:O | 1:A:506:THR:N | 2.45 | 0.48 |
| 3:C:113:LEU:HD11 | 3:C:132:ILE:HD12 | 1.94 | 0.48 |
| 9:I:42:PHE:N | 9:I:42:PHE:CD1 | 2.81 | 0.48 |
| 2:B:916:LYS:HB3 | 2:B:1036:LEU:HD12 | 1.95 | 0.48 |
| 2:B:252:TYR:HB2 | 2:B:381:LEU:HD21 | 1.93 | 0.48 |
| 3:C:334:THR:OG1 | 11:K:47:ILE:O | 2.30 | 0.48 |
| 1:A:952:LEU:HD23 | 1:A:1004:GLU:HG3 | 1.95 | 0.48 |
| 2:B:740:LYS:HA | 2:B:804:TYR:O | 2.13 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:C:192:LEU:HD21 | 3:C:195:LYS:HE3 | 1.96 | 0.48 |
| 6:F:69:LEU:HB3 | 7:G:94:PRO:CG | 2.43 | 0.48 |
| 1:A:718:THR:CG2 | 8:H:119:GLY:HA3 | 2.36 | 0.48 |
| 1:A:1663:ALA:HB2 | 7:G:103:LYS:HZ2 | 1.79 | 0.48 |
| 2:B:26:ILE:O | 10:J:62:ARG:CZ | 2.61 | 0.48 |
| 1:A:1609:SER:HB2 | 1:A:1630:GLU:OE2 | 2.13 | 0.48 |
| 13:M:109:ARG:HG3 | 13:M:110:GLY:H | 1.77 | 0.48 |
| 2:B:16:PHE:HB3 | 2:B:753:LYS:HZ2 | 1.76 | 0.48 |
| 1:A:1003:ARG:NH2 | 2:B:520:LEU:HD23 | 2.23 | 0.48 |
| 1:A:1196:PRO:HB2 | 1:A:1575:ILE:HG21 | 1.96 | 0.48 |
| 1:A:507:TYR:CE1 | 1:A:639:GLN:HA | 2.47 | 0.48 |
| 1:A:518:GLU:OE2 | 1:A:582:LYS:NZ | 2.43 | 0.48 |
| 1:A:9:SER:O | 2:B:1176:VAL:HG12 | 2.13 | 0.48 |
| 7:G:47:VAL:HG21 | 7:G:61:VAL:HG13 | 1.96 | 0.48 |
| 1:A:836:THR:HG23 | 1:A:839:GLY:H | 1.78 | 0.48 |
| 11:K:95:HIS:HB3 | 11:K:98:GLU:HG2 | 1.96 | 0.48 |
| 1:A:1:MET:H2 | 2:B:1098:TYR:CB | 2.16 | 0.48 |
| 8:H:103:LYS:HB3 | 8:H:115:TYR:HB2 | 1.96 | 0.48 |
| 1:A:5:LYS:HB2 | 2:B:1100:GLN:HE21 | 1.72 | 0.47 |
| 1:A:727:THR:H | 1:A:730:GLN:HE21 | 1.61 | 0.47 |
| 2:B:1005:TYR:OH | 10:J:44:TYR:HE1 | 1.95 | 0.47 |
| 1:A:49:LEU:CD2 | 1:A:386:LEU:HB3 | 2.44 | 0.47 |
| 2:B:103:SER:HB3 | 2:B:138:LEU:HB2 | 1.95 | 0.47 |
| 1:A:934:LYS:HZ3 | 2:B:956:SER:CB | 2.18 | 0.47 |
| 3:C:314:PHE:HD2 | 11:K:135:PHE:CE2 | 2.31 | 0.47 |
| 3:C:333:ILE:CG2 | 11:K:47:ILE:HG12 | 2.25 | 0.47 |
| 1:A:1003:ARG:CZ | 2:B:520:LEU:HB2 | 2.44 | 0.47 |
| 2:B:699:ILE:CD1 | 2:B:760:TYR:OH | 2.62 | 0.47 |
| 6:F:128:LYS:HD2 | 6:F:149:GLU:HA | 1.96 | 0.47 |
| 1:A:862:THR:OG1 | 1:A:878:ARG:HB3 | 2.15 | 0.47 |
| 1:A:879:LEU:HA | 1:A:882:ILE:HD12 | 1.97 | 0.47 |
| 2:B:375:LEU:HA | 2:B:378:ILE:HD12 | 1.96 | 0.47 |
| 2:B:554:GLN:HG3 | 2:B:646:HIS:CE1 | 2.48 | 0.47 |
| 5:E:56:LYS:HE2 | 5:E:84:ASP:H | 1.80 | 0.47 |
| 1:A:1659:LYS:NZ | 6:F:133:VAL:HG22 | 2.25 | 0.47 |
| 8:H:107:VAL:O | 8:H:111:LEU:HB2 | 2.15 | 0.47 |
| 1:A:1634:LEU:HD13 | 1:A:1643:VAL:HG11 | 1.96 | 0.47 |
| 1:A:37:VAL:HG12 | 1:A:49:LEU:HB2 | 1.95 | 0.47 |
| 1:A:538:ASN:HA | 1:A:575:LYS:HG2 | 1.96 | 0.47 |
| 2:B:527:PHE:HZ | 2:B:651:ARG:HG2 | 1.77 | 0.47 |
| 2:B:697:LEU:CG | 2:B:984:TRP:HH2 | 2.27 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:126:GLN:HB3 | 1:A:343:PRO:HD3 | 1.96 | 0.47 |
| 1:A:1640:ARG:HH11 | 1:A:1648:ASN:HB3 | 1.78 | 0.47 |
| 2:B:362:LEU:HD22 | 2:B:369:ASP:HB3 | 1.97 | 0.47 |
| 2:B:494:TYR:CE2 | 2:B:703:LEU:HD13 | 2.47 | 0.47 |
| 1:A:506:THR:HB | 1:A:579:ARG:O | 2.14 | 0.47 |
| 1:A:9:SER:CA | 2:B:1200:VAL:HG13 | 2.44 | 0.47 |
| 14:N:150:TYR:HA | 14:N:153:VAL:HG12 | 1.96 | 0.47 |
| 1:A:652:ASN:HD22 | 1:A:654:ASP:HB2 | 1.80 | 0.47 |
| 3:C:229:LEU:HD23 | 3:C:293:ARG:HB3 | 1.97 | 0.47 |
| 5:E:4:GLU:HG2 | 5:E:7:ARG:HH12 | 1.80 | 0.47 |
| 1:A:1658:ALA:H | 7:G:107:ILE:N | 2.12 | 0.47 |
| 1:A:826:PHE:CA | 2:B:1023:ARG:HH22 | 1.88 | 0.47 |
| 1:A:536:ILE:HD11 | 1:A:575:LYS:HD3 | 1.96 | 0.47 |
| 3:C:70:ILE:CG2 | 3:C:74:GLU:HB2 | 2.44 | 0.47 |
| 2:B:880:ALA:HB2 | 2:B:907:ILE:HG13 | 1.97 | 0.46 |
| 9:I:48:VAL:O | 9:I:48:VAL:HG13 | 2.15 | 0.46 |
| 11:K:59:THR:CG2 | 11:K:107:THR:OG1 | 2.61 | 0.46 |
| 1:A:1660:VAL:H | 7:G:104:LEU:CA | 2.11 | 0.46 |
| 2:B:25:PHE:HZ | 2:B:764:ASN:OD1 | 1.88 | 0.46 |
| 11:K:59:THR:HG22 | 11:K:111:THR:O | 2.16 | 0.46 |
| 3:C:334:THR:HG21 | 11:K:44:ARG:CB | 2.32 | 0.46 |
| 3:C:75:VAL:HB | 3:C:221:PRO:CG | 2.46 | 0.46 |
| 3:C:81:GLU:HG3 | 3:C:209:ILE:HG22 | 1.97 | 0.46 |
| 1:A:32:ILE:HG21 | 1:A:49:LEU:HD13 | 1.96 | 0.46 |
| 14:N:164:GLU:HG2 | 14:N:165:GLY:N | 2.30 | 0.46 |
| 1:A:1641:ILE:HD13 | 2:B:1076:ARG:HH11 | 1.81 | 0.46 |
| 2:B:397:THR:OG1 | 2:B:523:GLU:HB2 | 2.15 | 0.46 |
| 1:A:1662:ASN:HD22 | 7:G:58:LEU:H | 0.54 | 0.46 |
| 1:A:11:ILE:HD11 | 2:B:1198:TYR:CB | 2.46 | 0.46 |
| 1:A:1275:THR:HG23 | 1:A:1289:SER:HB2 | 1.97 | 0.46 |
| 1:A:3:ILE:O | 7:G:111:THR:CG2 | 2.64 | 0.46 |
| 2:B:65:VAL:HA | 2:B:68:ILE:HG12 | 1.97 | 0.46 |
| 1:A:1657:LEU:HA | 7:G:106:LYS:HG3 | 1.97 | 0.46 |
| 1:A:827:THR:HG21 | 2:B:1025:ASP:O | 2.15 | 0.46 |
| 1:A:1112:PRO:HD2 | 1:A:1115:LYS:HB2 | 1.97 | 0.45 |
| 2:B:143:TRP:HB3 | 2:B:152:LEU:HB2 | 1.99 | 0.45 |
| 2:B:721:MET:O | 2:B:725:THR:HG23 | 2.16 | 0.45 |
| 12:L:60:ARG:HG2 | 12:L:61:THR:N | 2.31 | 0.45 |
| 2:B:335:ARG:NH2 | 13:M:113:ILE:O | 2.50 | 0.45 |
| 2:B:1005:TYR:CE2 | 10:J:44:TYR:CE1 | 3.05 | 0.45 |
| 1:A:1:MET:CB | 2:B:1098:TYR:CE2 | 2.91 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1003:ARG:HH22 | 2:B:520:LEU:HB2 | 1.82 | 0.45 |
| 14:N:162:LYS:H | 14:N:162:LYS:CD | 2.29 | 0.45 |
| 1:A:506:THR:CA | 1:A:579:ARG:O | 2.64 | 0.45 |
| 1:A:828:CYS:SG | 1:A:829:GLY:N | 2.89 | 0.45 |
| 1:A:824:THR:CA | 2:B:1023:ARG:HB2 | 2.40 | 0.45 |
| 14:N:160:VAL:CG1 | 14:N:161:PRO:CD | 2.95 | 0.45 |
| 1:A:1498:ILE:O | 1:A:1499:ARG:HB2 | 2.16 | 0.45 |
| 1:A:35:PRO:HB2 | 1:A:391:THR:CG2 | 2.47 | 0.45 |
| 1:A:700:ILE:HD11 | 1:A:735:VAL:HA | 1.97 | 0.45 |
| 2:B:16:PHE:HB3 | 2:B:753:LYS:HZ1 | 1.81 | 0.45 |
| 2:B:553:THR:O | 2:B:554:GLN:HB2 | 2.17 | 0.45 |
| 3:C:110:PRO:C | 3:C:112:MET:H | 2.20 | 0.45 |
| 10:J:44:TYR:HA | 10:J:47:ARG:HB2 | 1.99 | 0.45 |
| 1:A:1657:LEU:HG | 7:G:106:LYS:HG3 | 1.93 | 0.45 |
| 1:A:537:GLN:HB2 | 1:A:578:TYR:HE1 | 1.81 | 0.45 |
| 3:C:236:LEU:HD11 | 3:C:290:LYS:HG3 | 1.98 | 0.45 |
| 9:I:39:LYS:O | 9:I:40:SER:HB2 | 2.15 | 0.45 |
| 1:A:35:PRO:HG2 | 1:A:391:THR:HA | 1.34 | 0.45 |
| 3:C:229:LEU:HD21 | 3:C:295:ARG:HA | 1.99 | 0.45 |
| 1:A:1659:LYS:HZ2 | 6:F:133:VAL:HG22 | 1.80 | 0.45 |
| 12:L:28:LYS:CB | 12:L:59:ALA:HB3 | 2.30 | 0.45 |
| 1:A:1003:ARG:HH22 | 2:B:520:LEU:CG | 2.29 | 0.45 |
| 1:A:1053:ASP:HB3 | 1:A:1137:SER:HB3 | 1.99 | 0.45 |
| 1:A:507:TYR:CG | 1:A:508:PRO:CD | 3.00 | 0.45 |
| 1:A:672:ASP:OD1 | 2:B:952:HIS:CE1 | 2.70 | 0.45 |
| 1:A:833:LEU:N | 1:A:833:LEU:CD1 | 2.79 | 0.45 |
| 2:B:397:THR:CB | 2:B:523:GLU:HB2 | 2.44 | 0.45 |
| 3:C:71:MET:O | 3:C:222:VAL:CG1 | 2.64 | 0.45 |
| 3:C:75:VAL:HG12 | 3:C:221:PRO:CB | 2.46 | 0.45 |
| 1:A:35:PRO:HB2 | 1:A:391:THR:HG23 | 1.98 | 0.44 |
| 2:B:1097:ASP:OD2 | 2:B:1181:VAL:HG22 | 2.17 | 0.44 |
| 2:B:398:GLN:O | 2:B:399:HIS:CG | 2.70 | 0.44 |
| 2:B:556:SER:O | 2:B:558:VAL:N | 2.50 | 0.44 |
| 3:C:33:VAL:HG21 | 11:K:127:LEU:HA | 1.98 | 0.44 |
| 1:A:1055:ILE:HD11 | 1:A:1174:TYR:CE2 | 2.53 | 0.44 |
| 9:I:27:ASN:HA | 9:I:38:PRO:HD3 | 1.99 | 0.44 |
| 2:B:398:GLN:CD | 2:B:399:HIS:CE1 | 2.91 | 0.44 |
| 2:B:693:PRO:O | 2:B:696:ILE:HG12 | 2.18 | 0.44 |
| 1:A:692:TYR:O | 1:A:696:ILE:HG12 | 2.17 | 0.44 |
| 1:A:1288:ARG:HB2 | 1:A:1476:LEU:HB2 | 1.98 | 0.44 |
| 1:A:19:LEU:HD12 | 2:B:1193:GLY:HA2 | 2.00 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1258:ILE:O | 1:A:1258:ILE:HG22 | 2.18 | 0.44 |
| 1:A:988:SER:O | 2:B:988:GLU:HB2 | 2.17 | 0.44 |
| 2:B:210:ARG:NH2 | 2:B:649:MET:H | 2.16 | 0.44 |
| 3:C:200:GLN:CG | 10:J:66:LEU:HD13 | 2.48 | 0.44 |
| 1:A:1029:GLY:HA3 | 1:A:1041:ALA:HB2 | 1.99 | 0.44 |
| 2:B:398:GLN:O | 2:B:399:HIS:CD2 | 2.71 | 0.44 |
| 2:B:401:GLU:HG3 | 2:B:402:VAL:N | 2.32 | 0.44 |
| 1:A:1038:ILE:HD11 | 1:A:1050:TYR:HB2 | 1.99 | 0.44 |
| 2:B:689:VAL:O | 2:B:689:VAL:HG13 | 2.17 | 0.44 |
| 3:C:72:ILE:HG22 | 3:C:72:ILE:O | 2.17 | 0.44 |
| 5:E:120:ALA:HA | 5:E:123:LEU:HD12 | 2.00 | 0.44 |
| 2:B:845:LEU:HB2 | 12:L:58:LYS:HE2 | 2.00 | 0.44 |
| 1:A:1113:HIS:HB3 | 5:E:201:LYS:NZ | 2.33 | 0.44 |
| 1:A:655:SER:O | 1:A:656:GLN:HG2 | 2.18 | 0.44 |
| 1:A:826:PHE:HB2 | 2:B:1023:ARG:HH21 | 1.77 | 0.44 |
| 2:B:556:SER:C | 2:B:558:VAL:H | 2.20 | 0.44 |
| 3:C:72:ILE:HD11 | 3:C:225:ALA:HB3 | 1.98 | 0.44 |
| 1:A:1663:ALA:HB2 | 7:G:103:LYS:NZ | 2.32 | 0.44 |
| 1:A:1:MET:HE2 | 2:B:1094:ASN:ND2 | 2.21 | 0.43 |
| 1:A:476:VAL:CG1 | 2:B:1091:ARG:O | 2.66 | 0.43 |
| 1:A:506:THR:CB | 1:A:579:ARG:O | 2.65 | 0.43 |
| 1:A:940:VAL:HG13 | 1:A:944:MET:HE3 | 2.00 | 0.43 |
| 1:A:385:LEU:HD13 | 1:A:437:PHE:HA | 2.00 | 0.43 |
| 2:B:953:ALA:O | 2:B:957:ARG:HG2 | 2.19 | 0.43 |
| 5:E:141:VAL:HG12 | 5:E:142:VAL:HG23 | 2.00 | 0.43 |
| 8:H:40:LEU:HB2 | 8:H:123:MET:HG3 | 1.99 | 0.43 |
| 1:A:1658:ALA:N | 7:G:107:ILE:H | 2.16 | 0.43 |
| 1:A:233:CYS:HB3 | 1:A:236:CYS:O | 2.18 | 0.43 |
| 1:A:387:SER:HA | 1:A:390:LEU:HD12 | 2.01 | 0.43 |
| 2:B:26:ILE:O | 10:J:62:ARG:CD | 2.66 | 0.43 |
| 13:M:9:GLU:HA | 14:N:71:PRO:HA | 2.00 | 0.43 |
| 1:A:1603:MET:CE | 1:A:1615:TYR:CG | 2.99 | 0.43 |
| 1:A:1659:LYS:HA | 7:G:104:LEU:HB3 | 2.01 | 0.43 |
| 1:A:683:LYS:HD2 | 8:H:20:TYR:OH | 2.17 | 0.43 |
| 1:A:83:VAL:HG11 | 1:A:427:PHE:CZ | 2.49 | 0.43 |
| 1:A:862:THR:HG21 | 1:A:875:LEU:HD12 | 1.99 | 0.43 |
| 2:B:529:CYS:SG | 2:B:698:SER:CB | 2.97 | 0.43 |
| 1:A:10:GLU:N | 2:B:1200:VAL:HG13 | 2.34 | 0.43 |
| 1:A:1113:HIS:CB | 5:E:201:LYS:NZ | 2.82 | 0.43 |
| 1:A:1260:LYS:HZ1 | 1:A:1262:LEU:HD11 | 1.81 | 0.43 |
| 1:A:1481:GLU:HB2 | 1:A:1482:LYS:H | 1.72 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:5:LYS:HD3 | 2:B:1100:GLN:CD | 2.39 | 0.43 |
| 1:A:885:ASP:HB3 | 1:A:888:LYS:HB2 | 2.01 | 0.43 |
| 2:B:207:ILE:HD13 | 2:B:402:VAL:CG2 | 2.23 | 0.43 |
| 2:B:251:HIS:HE1 | 2:B:261:ARG:HD2 | 1.84 | 0.43 |
| 2:B:25:PHE:CE2 | 10:J:56:LEU:HD23 | 2.49 | 0.43 |
| 2:B:26:ILE:CA | 10:J:62:ARG:CD | 2.85 | 0.43 |
| 1:A:396:ILE:HG12 | 1:A:426:ALA:HB1 | 2.01 | 0.43 |
| 1:A:739:VAL:HG11 | 1:A:812:VAL:HG21 | 2.00 | 0.43 |
| 2:B:25:PHE:HD2 | 10:J:59:LYS:HB2 | 1.32 | 0.43 |
| 3:C:333:ILE:CD1 | 11:K:118:GLN:HE21 | 2.31 | 0.43 |
| 3:C:80:ALA:HA | 3:C:208:CYS:HA | 2.00 | 0.43 |
| 3:C:221:PRO:CD | 3:C:222:VAL:N | 2.82 | 0.42 |
| 3:C:44:ILE:HD12 | 11:K:142:MET:SD | 2.59 | 0.42 |
| 1:A:49:LEU:HD22 | 1:A:390:LEU:HD11 | 0.56 | 0.42 |
| 2:B:249:VAL:HB | 2:B:261:ARG:HB3 | 2.00 | 0.42 |
| 6:F:107:VAL:HG12 | 6:F:109:VAL:H | 1.84 | 0.42 |
| 2:B:974:LEU:CG | 10:J:44:TYR:CG | 3.02 | 0.42 |
| 4:D:19:PRO:HG2 | 4:D:22:ILE:HD11 | 2.01 | 0.42 |
| 1:A:657:TYR:O | 1:A:665:PRO:HA | 2.19 | 0.42 |
| 2:B:301:PHE:O | 2:B:305:ARG:HG2 | 2.19 | 0.42 |
| 3:C:71:MET:O | 3:C:72:ILE:HG13 | 2.19 | 0.42 |
| 1:A:1663:ALA:CB | 7:G:103:LYS:HZ3 | 2.24 | 0.42 |
| 11:K:46:LYS:O | 11:K:65:ILE:HA | 2.20 | 0.42 |
| 1:A:591:ARG:HB2 | 1:A:633:MET:HG2 | 2.02 | 0.42 |
| 1:A:966:LEU:HB2 | 1:A:969:PHE:HD2 | 1.84 | 0.42 |
| 10:J:32:GLU:HG2 | 10:J:32:GLU:H | 1.53 | 0.42 |
| 2:B:61:LEU:HD21 | 2:B:413:LEU:HD13 | 2.02 | 0.42 |
| 2:B:561:ILE:HG12 | 2:B:620:LEU:HD12 | 2.01 | 0.42 |
| 1:A:1603:MET:HE2 | 1:A:1615:TYR:CE2 | 2.54 | 0.42 |
| 1:A:399:LEU:HD11 | 1:A:422:ARG:HB3 | 2.02 | 0.42 |
| 2:B:612:LYS:HD3 | 2:B:626:ILE:HD11 | 2.01 | 0.42 |
| 4:D:24:ALA:HA | 7:G:43:ILE:HG22 | 2.02 | 0.42 |
| 8:H:35:GLN:HB3 | 8:H:111:LEU:HD21 | 2.01 | 0.42 |
| 3:C:252:PRO:HD2 | 3:C:255:VAL:HG21 | 2.02 | 0.42 |
| 12:L:29:TYR:HD2 | 12:L:39:SER:HA | 1.85 | 0.42 |
| 1:A:536:ILE:HG23 | 1:A:544:VAL:HB | 2.02 | 0.42 |
| 1:A:970:LYS:HG2 | 1:A:971:PRO:HD2 | 2.02 | 0.42 |
| 2:B:209:GLN:CG | 2:B:210:ARG:N | 2.73 | 0.42 |
| 2:B:217:ILE:HD11 | 2:B:235:GLN:HB2 | 2.02 | 0.42 |
| 2:B:44:PRO:O | 2:B:48:SER:HB2 | 2.20 | 0.42 |
| 2:B:699:ILE:CD1 | 2:B:760:TYR:CZ | 3.01 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:1238:MET:HB2 | 1:A:1521:THR:HB | 2.01 | 0.41 |
| 2:B:201:LYS:HD3 | 2:B:465:LEU:O | 2.20 | 0.41 |
| 2:B:210:ARG:HH22 | 2:B:648:ARG:CA | 2.33 | 0.41 |
| 2:B:26:ILE:HA | 10:J:62:ARG:HD3 | 1.92 | 0.41 |
| 6:F:85:MET:HB2 | 6:F:151:LEU:HB3 | 2.01 | 0.41 |
| 1:A:880:GLN:HB2 | 1:A:880:GLN:HE21 | 1.69 | 0.41 |
| 2:B:212:ASN:O | 2:B:213:HIS:HB2 | 2.20 | 0.41 |
| 9:I:52:ALA:HB3 | 9:I:55:ALA:HB2 | 2.02 | 0.41 |
| 11:K:60:SER:HB3 | 11:K:106:GLN:HG2 | 2.02 | 0.41 |
| 1:A:11:ILE:HG12 | 2:B:1198:TYR:CA | 2.47 | 0.41 |
| 1:A:1459:LYS:HB2 | 1:A:1473:LYS:HB2 | 2.02 | 0.41 |
| 2:B:858:ILE:HD12 | 2:B:858:ILE:HA | 1.97 | 0.41 |
| 2:B:936:MET:HG3 | 2:B:937:PRO:HD2 | 2.01 | 0.41 |
| 2:B:788:ILE:HB | 2:B:948:ILE:HB | 2.02 | 0.41 |
| 2:B:25:PHE:CE2 | 10:J:56:LEU:CD2 | 3.00 | 0.41 |
| 1:A:830:MET:SD | 2:B:993:ALA:CB | 3.09 | 0.41 |
| 5:E:6:GLU:HA | 5:E:9:ILE:HD12 | 2.02 | 0.41 |
| 12:L:31:CYS:HA | 12:L:56:LEU:HD23 | 2.03 | 0.41 |
| 1:A:492:THR:HB | 1:A:667:ARG:HH22 | 1.85 | 0.41 |
| 1:A:1:MET:H1 | 2:B:1094:ASN:HA | 1.86 | 0.41 |
| 1:A:533:ALA:HA | 1:A:579:ARG:HA | 2.03 | 0.41 |
| 8:H:93:TYR:HA | 8:H:145:ARG:HG3 | 2.03 | 0.41 |
| 3:C:335:GLN:CB | 11:K:48:LYS:HG2 | 2.50 | 0.41 |
| 13:M:20:SER:HB3 | 14:N:36:LYS:HB2 | 2.02 | 0.41 |
| 1:A:1550:LEU:HD12 | 1:A:1555:VAL:HA | 2.02 | 0.41 |
| 1:A:363:PRO:CG | 2:B:1191:ALA:HB1 | 2.44 | 0.41 |
| 1:A:507:TYR:N | 1:A:579:ARG:O | 2.54 | 0.41 |
| 1:A:7:VAL:HG11 | 2:B:1176:VAL:CA | 2.31 | 0.41 |
| 2:B:494:TYR:CE1 | 2:B:762:MET:HE1 | 2.56 | 0.41 |
| 3:C:77:SER:OG | 3:C:78:VAL:N | 2.52 | 0.41 |
| 10:J:68:LYS:HD3 | 10:J:69:ARG:HD2 | 2.03 | 0.41 |
| 2:B:17:ARG:H | 2:B:17:ARG:HG2 | 1.64 | 0.41 |
| 2:B:342:PRO:O | 13:M:112:LYS:HD2 | 2.17 | 0.41 |
| 13:M:15:VAL:HG12 | 13:M:90:LEU:HB2 | 2.03 | 0.41 |
| 2:B:1079:LEU:O | 2:B:1084:THR:HG22 | 2.21 | 0.41 |
| 2:B:1084:THR:HG23 | 2:B:1084:THR:O | 2.21 | 0.41 |
| 3:C:175:GLN:HB3 | 3:C:178:THR:HG22 | 2.03 | 0.41 |
| 1:A:3:ILE:O | 7:G:111:THR:HG21 | 2.20 | 0.41 |
| 1:A:124:LEU:HD21 | 1:A:189:VAL:HA | 2.01 | 0.41 |
| 2:B:190:ILE:HD11 | 2:B:496:PHE:HE2 | 1.85 | 0.41 |
| 1:A:1229:ALA:HB2 | 1:A:1597:ALA:HB2 | 2.03 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:A:582:LYS:HB3 | 1:A:583:ASN:H | 1.69 | 0.41 |
| 1:A:912:VAL:HA | 1:A:913:PRO:HA | 1.92 | 0.41 |
| 2:B:1005:TYR:CE2 | 10:J:44:TYR:HE1 | 2.37 | 0.41 |
| 2:B:29:PRO:HB2 | 2:B:177:PRO:HG2 | 2.03 | 0.41 |
| 2:B:600:GLN:HA | 2:B:603:ILE:HD12 | 2.03 | 0.41 |
| 7:G:45:LEU:HD11 | 7:G:120:VAL:HG12 | 2.02 | 0.41 |
| 1:A:693:GLN:CD | 11:K:88:PHE:CD2 | 2.94 | 0.40 |
| 2:B:210:ARG:NH2 | 2:B:648:ARG:CA | 2.82 | 0.40 |
| 1:A:368:ARG:NE | 1:A:386:LEU:HD11 | 2.33 | 0.40 |
| 1:A:507:TYR:CD2 | 1:A:508:PRO:CD | 3.04 | 0.40 |
| 1:A:361:VAL:HG22 | 2:B:1190:SER:O | 2.21 | 0.40 |
| 1:A:990:ILE:HD12 | 1:A:995:TYR:HA | 2.03 | 0.40 |
| 3:C:65:ASN:HA | 3:C:227:TYR:HE2 | 1.86 | 0.40 |
| 3:C:322:LYS:HB2 | 11:K:128:CYS:HB3 | 2.03 | 0.40 |
| 1:A:1272:VAL:HG11 | 1:A:1485:MET:HB3 | 2.03 | 0.40 |
| 1:A:76:GLN:HE21 | 2:B:1190:SER:CB | 2.20 | 0.40 |
| 1:A:857:ALA:HB2 | 1:A:899:LYS:HD2 | 2.03 | 0.40 |
| 1:A:12:THR:N | 2:B:1199:ASN:O | 2.54 | 0.40 |
| 2:B:974:LEU:CG | 10:J:44:TYR:CD1 | 3.03 | 0.40 |
| 1:A:1503:HIS:HB3 | 1:A:1524:VAL:O | 2.21 | 0.40 |
| 1:A:98:LEU:HD13 | 1:A:320:VAL:HG13 | 2.03 | 0.40 |
| 2:B:358:VAL:HG13 | 2:B:370:LYS:HD3 | 2.03 | 0.40 |
| 2:B:650:LEU:HB3 | 2:B:663:ILE:HG23 | 2.04 | 0.40 |
| 2:B:699:ILE:CG2 | 2:B:760:TYR:CE2 | 3.04 | 0.40 |
| 7:G:107:ILE:HA | 7:G:114:GLY:HA2 | 2.03 | 0.40 |
| 11:K:109:GLY:O | 11:K:110:GLU:HG2 | 2.21 | 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 | 1394/1664 (84%) | 1309 (94%) | 76 (6%) | 9 (1%) | 25 | 65 |
| 2 | B | 1099/1203 (91%) | 1020 (93%) | 73 (7%) | 6 (0%) | 29 | 68 |
| 3 | C | 300/380 (79%) | 273 (91%) | 24 (8%) | 3 (1%) | 15 | 54 |
| 4 | D | 16/137 (12%) | 14 (88%) | 2 (12%) | 0 | 100 | 100 |
| 5 | E | 213/215 (99%) | 202 (95%) | 11 (5%) | 0 | 100 | 100 |
| 6 | F | 98/155 (63%) | 96 (98%) | 2 (2%) | 0 | 100 | 100 |
| 7 | G | 85/326 (26%) | 80 (94%) | 5 (6%) | 0 | 100 | 100 |
| 8 | H | 130/146 (89%) | 119 (92%) | 10 (8%) | 1 (1%) | 19 | 60 |
| 9 | I | 62/125 (50%) | 53 (86%) | 8 (13%) | 1 (2%) | 9 | 44 |
| 10 | J | 67/70 (96%) | 62 (92%) | 5 (8%) | 0 | 100 | 100 |
| 11 | K | 99/142 (70%) | 91 (92%) | 6 (6%) | 2 (2%) | 7 | 39 |
| 12 | L | 43/70 (61%) | 38 (88%) | 5 (12%) | 0 | 100 | 100 |
| 13 | M | 101/415 (24%) | 93 (92%) | 8 (8%) | 0 | 100 | 100 |
| 14 | N | 131/233 (56%) | 114 (87%) | 15 (12%) | 2 (2%) | 10 | 46 |
| All | All | 3838/5281 (73%) | 3564 (93%) | 250 (6%) | 24 (1%) | 29 | 65 |

All (24) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 652 | ASN |
| 1 | A | 655 | SER |
| 1 | A | 505 | LEU |
| 1 | A | 654 | ASP |
| 1 | A | 1499 | ARG |
| 2 | B | 210 | ARG |
| 2 | B | 557 | ASP |
| 11 | K | 57 | ASP |
| 14 | N | 165 | GLY |
| 1 | A | 237 | GLY |
| 2 | B | 532 | HIS |
| 3 | C | 72 | ILE |
| 3 | C | 221 | PRO |
| 1 | A | 478 | TYR |
| 2 | B | 209 | GLN |
| 2 | B | 400 | GLN |
| 2 | B | 552 | SER |
| 1 | A | 508 | PRO |
| 1 | A | 580 | HIS |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | C | 76 | PRO |
| 8 | H | 84 | ALA |
| 9 | I | 26 | SER |
| 11 | K | 58 | GLY |
| 14 | N | 163 | VAL |

5.3.2 Protein sidechains [i](#)

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 | 1250/1465 (85%) | 1184 (95%) | 66 (5%) | 22 49 |
| 2 | B | 973/1053 (92%) | 876 (90%) | 97 (10%) | 7 28 |
| 3 | C | 269/334 (80%) | 243 (90%) | 26 (10%) | 8 29 |
| 4 | D | 16/116 (14%) | 11 (69%) | 5 (31%) | 0 2 |
| 5 | E | 197/197 (100%) | 192 (98%) | 5 (2%) | 47 68 |
| 6 | F | 90/137 (66%) | 86 (96%) | 4 (4%) | 28 53 |
| 7 | G | 80/291 (28%) | 75 (94%) | 5 (6%) | 18 44 |
| 8 | H | 116/128 (91%) | 111 (96%) | 5 (4%) | 29 54 |
| 9 | I | 56/110 (51%) | 48 (86%) | 8 (14%) | 3 17 |
| 10 | J | 64/65 (98%) | 57 (89%) | 7 (11%) | 6 25 |
| 11 | K | 91/130 (70%) | 83 (91%) | 8 (9%) | 10 33 |
| 12 | L | 40/57 (70%) | 37 (92%) | 3 (8%) | 13 39 |
| 13 | M | 94/371 (25%) | 89 (95%) | 5 (5%) | 22 49 |
| 14 | N | 128/220 (58%) | 118 (92%) | 10 (8%) | 12 38 |
| All | All | 3464/4674 (74%) | 3210 (93%) | 254 (7%) | 18 40 |

All (254) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 2 | ASP |
| 1 | A | 39 | ASP |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 59 | ARG |
| 1 | A | 113 | VAL |
| 1 | A | 129 | LEU |
| 1 | A | 136 | LEU |
| 1 | A | 177 | LEU |
| 1 | A | 195 | LYS |
| 1 | A | 199 | ASP |
| 1 | A | 211 | THR |
| 1 | A | 270 | ILE |
| 1 | A | 325 | ASP |
| 1 | A | 345 | LEU |
| 1 | A | 361 | VAL |
| 1 | A | 398 | ASP |
| 1 | A | 399 | LEU |
| 1 | A | 403 | LEU |
| 1 | A | 406 | LEU |
| 1 | A | 413 | LEU |
| 1 | A | 518 | GLU |
| 1 | A | 536 | ILE |
| 1 | A | 562 | LEU |
| 1 | A | 572 | THR |
| 1 | A | 587 | VAL |
| 1 | A | 621 | THR |
| 1 | A | 684 | ASP |
| 1 | A | 685 | SER |
| 1 | A | 743 | ASP |
| 1 | A | 747 | ILE |
| 1 | A | 828 | CYS |
| 1 | A | 831 | ASP |
| 1 | A | 840 | ASN |
| 1 | A | 844 | THR |
| 1 | A | 862 | THR |
| 1 | A | 878 | ARG |
| 1 | A | 952 | LEU |
| 1 | A | 960 | MET |
| 1 | A | 1065 | GLN |
| 1 | A | 1089 | LEU |
| 1 | A | 1164 | LYS |
| 1 | A | 1171 | GLN |
| 1 | A | 1175 | MET |
| 1 | A | 1179 | ILE |
| 1 | A | 1183 | GLU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | A | 1193 | VAL |
| 1 | A | 1217 | LEU |
| 1 | A | 1242 | ILE |
| 1 | A | 1248 | ASP |
| 1 | A | 1252 | ASP |
| 1 | A | 1263 | LEU |
| 1 | A | 1268 | ASP |
| 1 | A | 1273 | THR |
| 1 | A | 1313 | LEU |
| 1 | A | 1474 | LEU |
| 1 | A | 1475 | GLU |
| 1 | A | 1481 | GLU |
| 1 | A | 1505 | ASP |
| 1 | A | 1531 | ASP |
| 1 | A | 1533 | GLU |
| 1 | A | 1550 | LEU |
| 1 | A | 1552 | THR |
| 1 | A | 1592 | GLN |
| 1 | A | 1610 | PHE |
| 1 | A | 1628 | ASP |
| 1 | A | 1629 | ASN |
| 1 | A | 1649 | VAL |
| 2 | B | 13 | THR |
| 2 | B | 15 | ASP |
| 2 | B | 17 | ARG |
| 2 | B | 19 | LEU |
| 2 | B | 22 | GLU |
| 2 | B | 27 | ASN |
| 2 | B | 35 | PHE |
| 2 | B | 52 | LEU |
| 2 | B | 54 | GLU |
| 2 | B | 60 | LEU |
| 2 | B | 73 | ILE |
| 2 | B | 101 | GLN |
| 2 | B | 108 | MET |
| 2 | B | 139 | LEU |
| 2 | B | 150 | GLU |
| 2 | B | 156 | ARG |
| 2 | B | 168 | ASN |
| 2 | B | 186 | GLU |
| 2 | B | 190 | ILE |
| 2 | B | 202 | LEU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | B | 206 | LEU |
| 2 | B | 210 | ARG |
| 2 | B | 217 | ILE |
| 2 | B | 234 | ILE |
| 2 | B | 250 | LEU |
| 2 | B | 265 | ARG |
| 2 | B | 268 | GLU |
| 2 | B | 274 | VAL |
| 2 | B | 276 | ILE |
| 2 | B | 304 | ASP |
| 2 | B | 306 | LEU |
| 2 | B | 316 | ARG |
| 2 | B | 332 | ASP |
| 2 | B | 356 | ARG |
| 2 | B | 364 | LYS |
| 2 | B | 373 | MET |
| 2 | B | 374 | LEU |
| 2 | B | 381 | LEU |
| 2 | B | 413 | LEU |
| 2 | B | 431 | ASP |
| 2 | B | 438 | ILE |
| 2 | B | 441 | LYS |
| 2 | B | 455 | GLU |
| 2 | B | 471 | VAL |
| 2 | B | 479 | GLN |
| 2 | B | 480 | GLN |
| 2 | B | 481 | VAL |
| 2 | B | 485 | THR |
| 2 | B | 519 | LYS |
| 2 | B | 542 | LEU |
| 2 | B | 550 | ARG |
| 2 | B | 555 | GLN |
| 2 | B | 588 | ILE |
| 2 | B | 617 | THR |
| 2 | B | 640 | LEU |
| 2 | B | 646 | HIS |
| 2 | B | 684 | ASN |
| 2 | B | 692 | THR |
| 2 | B | 695 | ASN |
| 2 | B | 721 | MET |
| 2 | B | 743 | ARG |
| 2 | B | 752 | VAL |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | B | 782 | ASP |
| 2 | B | 787 | MET |
| 2 | B | 789 | ILE |
| 2 | B | 794 | ASP |
| 2 | B | 821 | ILE |
| 2 | B | 832 | TRP |
| 2 | B | 835 | GLU |
| 2 | B | 840 | LEU |
| 2 | B | 842 | GLU |
| 2 | B | 848 | ILE |
| 2 | B | 859 | CYS |
| 2 | B | 873 | THR |
| 2 | B | 887 | LEU |
| 2 | B | 888 | ILE |
| 2 | B | 896 | GLN |
| 2 | B | 897 | GLU |
| 2 | B | 898 | LEU |
| 2 | B | 933 | THR |
| 2 | B | 940 | GLU |
| 2 | B | 944 | GLN |
| 2 | B | 956 | SER |
| 2 | B | 965 | GLU |
| 2 | B | 967 | LEU |
| 2 | B | 977 | ILE |
| 2 | B | 994 | ASP |
| 2 | B | 1000 | LEU |
| 2 | B | 1020 | GLU |
| 2 | B | 1033 | TYR |
| 2 | B | 1037 | ARG |
| 2 | B | 1076 | ARG |
| 2 | B | 1110 | ILE |
| 2 | B | 1123 | ILE |
| 2 | B | 1157 | GLN |
| 2 | B | 1181 | VAL |
| 2 | B | 1201 | GLU |
| 3 | C | 30 | GLU |
| 3 | C | 39 | ASP |
| 3 | C | 46 | SER |
| 3 | C | 47 | LEU |
| 3 | C | 81 | GLU |
| 3 | C | 89 | THR |
| 3 | C | 97 | LEU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 3 | C | 106 | LEU |
| 3 | C | 117 | ASP |
| 3 | C | 120 | LEU |
| 3 | C | 151 | THR |
| 3 | C | 181 | ASP |
| 3 | C | 182 | CYS |
| 3 | C | 188 | ASP |
| 3 | C | 209 | ILE |
| 3 | C | 220 | SER |
| 3 | C | 224 | THR |
| 3 | C | 229 | LEU |
| 3 | C | 235 | ILE |
| 3 | C | 240 | LYS |
| 3 | C | 259 | ASP |
| 3 | C | 277 | ARG |
| 3 | C | 291 | LEU |
| 3 | C | 303 | GLU |
| 3 | C | 331 | CYS |
| 3 | C | 334 | THR |
| 4 | D | 14 | THR |
| 4 | D | 16 | LEU |
| 4 | D | 21 | VAL |
| 4 | D | 25 | THR |
| 4 | D | 27 | LEU |
| 5 | E | 84 | ASP |
| 5 | E | 106 | GLN |
| 5 | E | 163 | GLU |
| 5 | E | 167 | ARG |
| 5 | E | 175 | LEU |
| 6 | F | 69 | LEU |
| 6 | F | 103 | MET |
| 6 | F | 111 | LEU |
| 6 | F | 147 | SER |
| 7 | G | 54 | LEU |
| 7 | G | 75 | ASN |
| 7 | G | 93 | ASP |
| 7 | G | 95 | LEU |
| 7 | G | 104 | LEU |
| 8 | H | 33 | GLN |
| 8 | H | 53 | ASP |
| 8 | H | 89 | LEU |
| 8 | H | 109 | LYS |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 8 | H | 136 | LYS |
| 9 | I | 3 | VAL |
| 9 | I | 17 | LEU |
| 9 | I | 27 | ASN |
| 9 | I | 42 | PHE |
| 9 | I | 50 | THR |
| 9 | I | 51 | THR |
| 9 | I | 53 | ASP |
| 9 | I | 60 | LEU |
| 10 | J | 2 | ILE |
| 10 | J | 14 | VAL |
| 10 | J | 26 | GLN |
| 10 | J | 32 | GLU |
| 10 | J | 47 | ARG |
| 10 | J | 48 | ARG |
| 10 | J | 68 | LYS |
| 11 | K | 45 | GLU |
| 11 | K | 49 | LEU |
| 11 | K | 60 | SER |
| 11 | K | 72 | LEU |
| 11 | K | 77 | ARG |
| 11 | K | 99 | ASN |
| 11 | K | 124 | LEU |
| 11 | K | 132 | GLU |
| 12 | L | 27 | LEU |
| 12 | L | 38 | LEU |
| 12 | L | 62 | LYS |
| 13 | M | 50 | GLU |
| 13 | M | 56 | GLU |
| 13 | M | 101 | VAL |
| 13 | M | 103 | LYS |
| 13 | M | 108 | LEU |
| 14 | N | 36 | LYS |
| 14 | N | 67 | LEU |
| 14 | N | 74 | PHE |
| 14 | N | 94 | ASP |
| 14 | N | 114 | GLU |
| 14 | N | 117 | GLU |
| 14 | N | 131 | LEU |
| 14 | N | 164 | GLU |
| 14 | N | 168 | LEU |
| 14 | N | 178 | GLU |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (54) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 76 | GLN |
| 1 | A | 260 | GLN |
| 1 | A | 332 | GLN |
| 1 | A | 435 | ASN |
| 1 | A | 592 | GLN |
| 1 | A | 671 | GLN |
| 1 | A | 693 | GLN |
| 1 | A | 706 | HIS |
| 1 | A | 730 | GLN |
| 1 | A | 738 | ASN |
| 1 | A | 798 | HIS |
| 1 | A | 926 | GLN |
| 1 | A | 1026 | GLN |
| 1 | A | 1128 | ASN |
| 1 | A | 1180 | ASN |
| 1 | A | 1592 | GLN |
| 1 | A | 1599 | ASN |
| 1 | A | 1662 | ASN |
| 2 | B | 146 | ASN |
| 2 | B | 151 | ASN |
| 2 | B | 212 | ASN |
| 2 | B | 243 | GLN |
| 2 | B | 251 | HIS |
| 2 | B | 351 | GLN |
| 2 | B | 361 | HIS |
| 2 | B | 399 | HIS |
| 2 | B | 400 | GLN |
| 2 | B | 555 | GLN |
| 2 | B | 646 | HIS |
| 2 | B | 683 | ASN |
| 2 | B | 686 | HIS |
| 2 | B | 695 | ASN |
| 2 | B | 724 | GLN |
| 2 | B | 755 | ASN |
| 2 | B | 896 | GLN |
| 2 | B | 975 | HIS |
| 2 | B | 987 | ASN |
| 2 | B | 999 | GLN |
| 2 | B | 1094 | ASN |
| 3 | C | 99 | HIS |
| 3 | C | 130 | ASN |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | C | 216 | HIS |
| 3 | C | 232 | GLN |
| 5 | E | 147 | HIS |
| 5 | E | 179 | GLN |
| 7 | G | 64 | GLN |
| 7 | G | 65 | HIS |
| 8 | H | 35 | GLN |
| 9 | I | 21 | ASN |
| 11 | K | 95 | HIS |
| 11 | K | 106 | GLN |
| 11 | K | 118 | GLN |
| 13 | M | 16 | GLN |
| 14 | N | 132 | GLN |

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

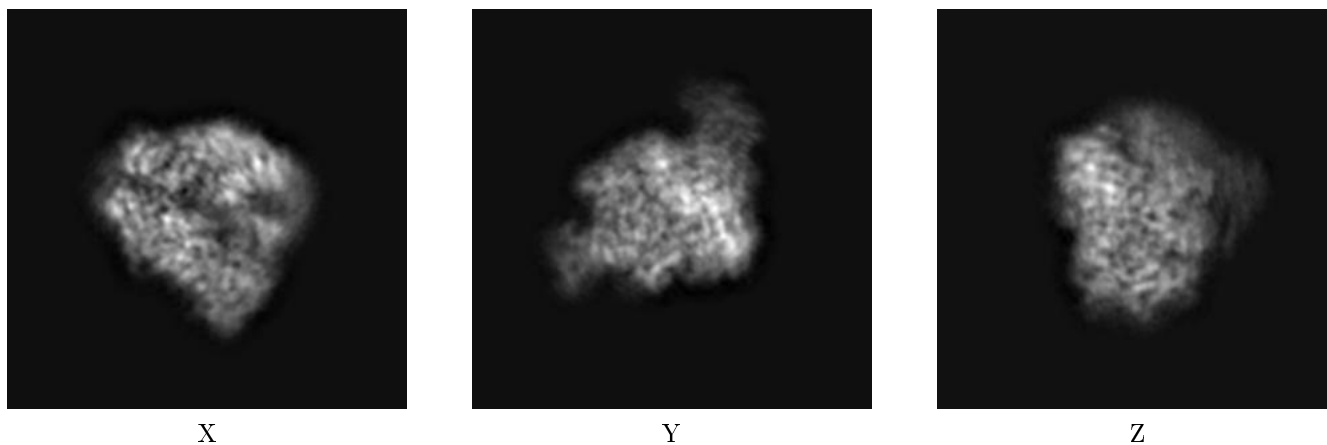
5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Map visualisation [i](#)

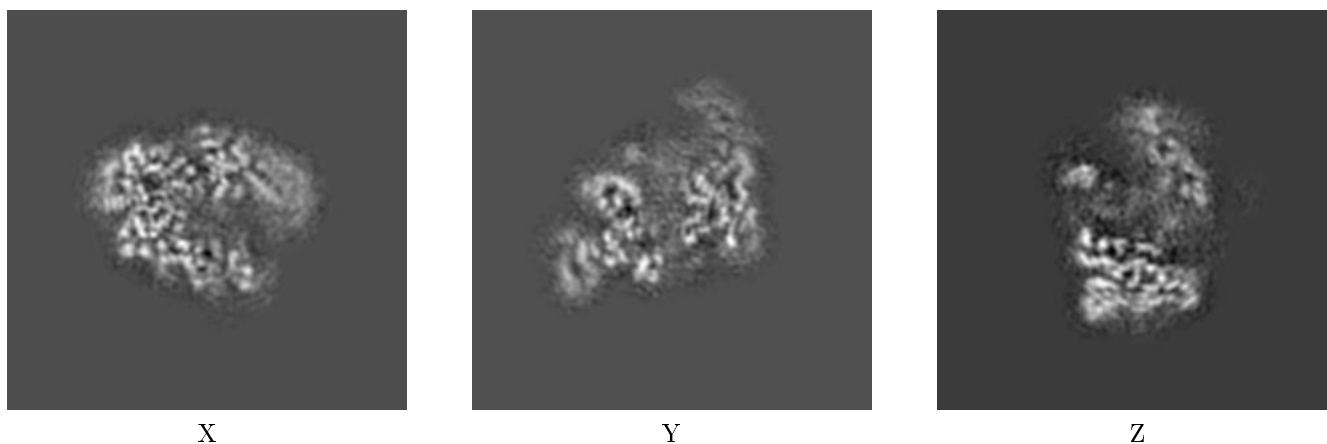
This section contains visualisations of the EMDB entry EMD-4088. These are intended to permit visual inspection of the internal detail of the map and identification of artifacts.

6.1 Orthogonal projections [i](#)



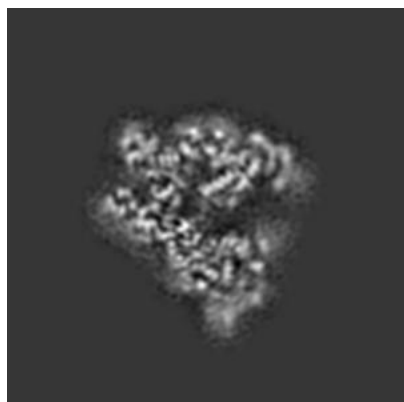
The images above show the map projected in three orthogonal projections, in greyscale.

6.2 Central slices [i](#)

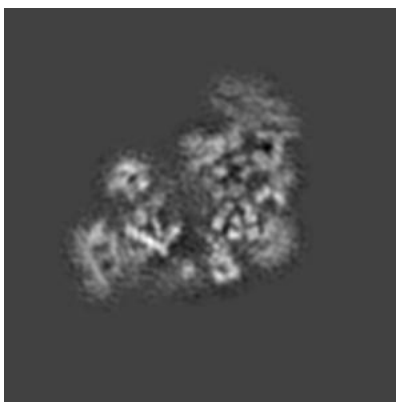


The images above show central slices of the map in three orthogonal directions, in greyscale.

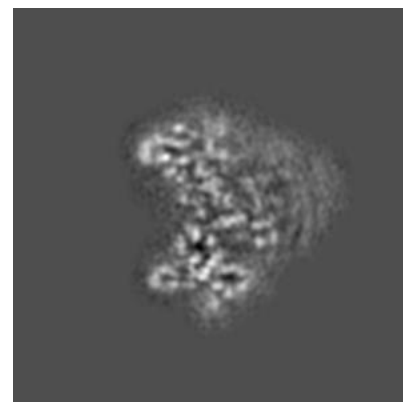
6.3 Largest variance slices [i](#)



X Index: 69



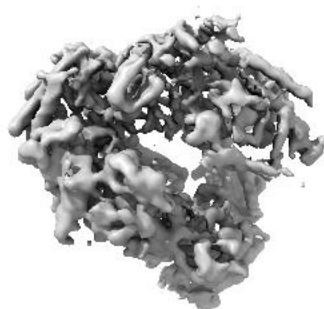
Y Index: 89



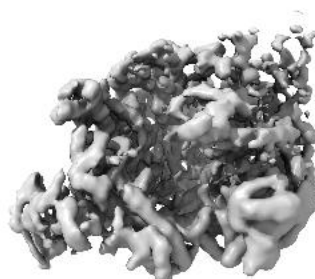
Z Index: 98

The images above show the highest variance slices of the map in three orthogonal directions, in greyscale.

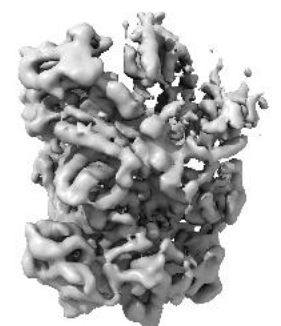
6.4 Orthogonal surface views [i](#)



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.14. This in conjunction with the slice images can indicate whether an appropriate contour level has been selected.

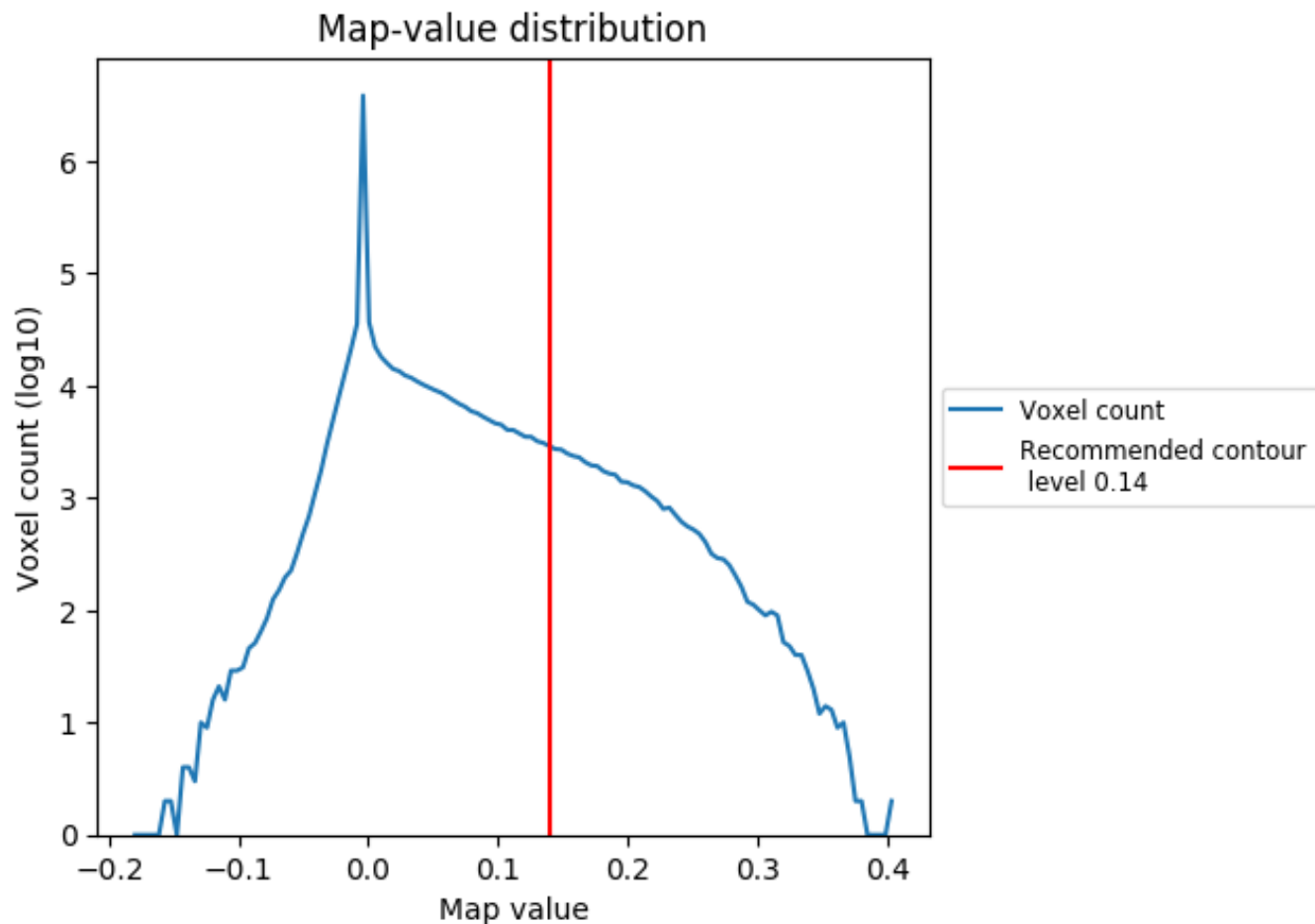
6.5 Mask visualisation [i](#)

This section was not generated. No masks were provided.

7 Map analysis [i](#)

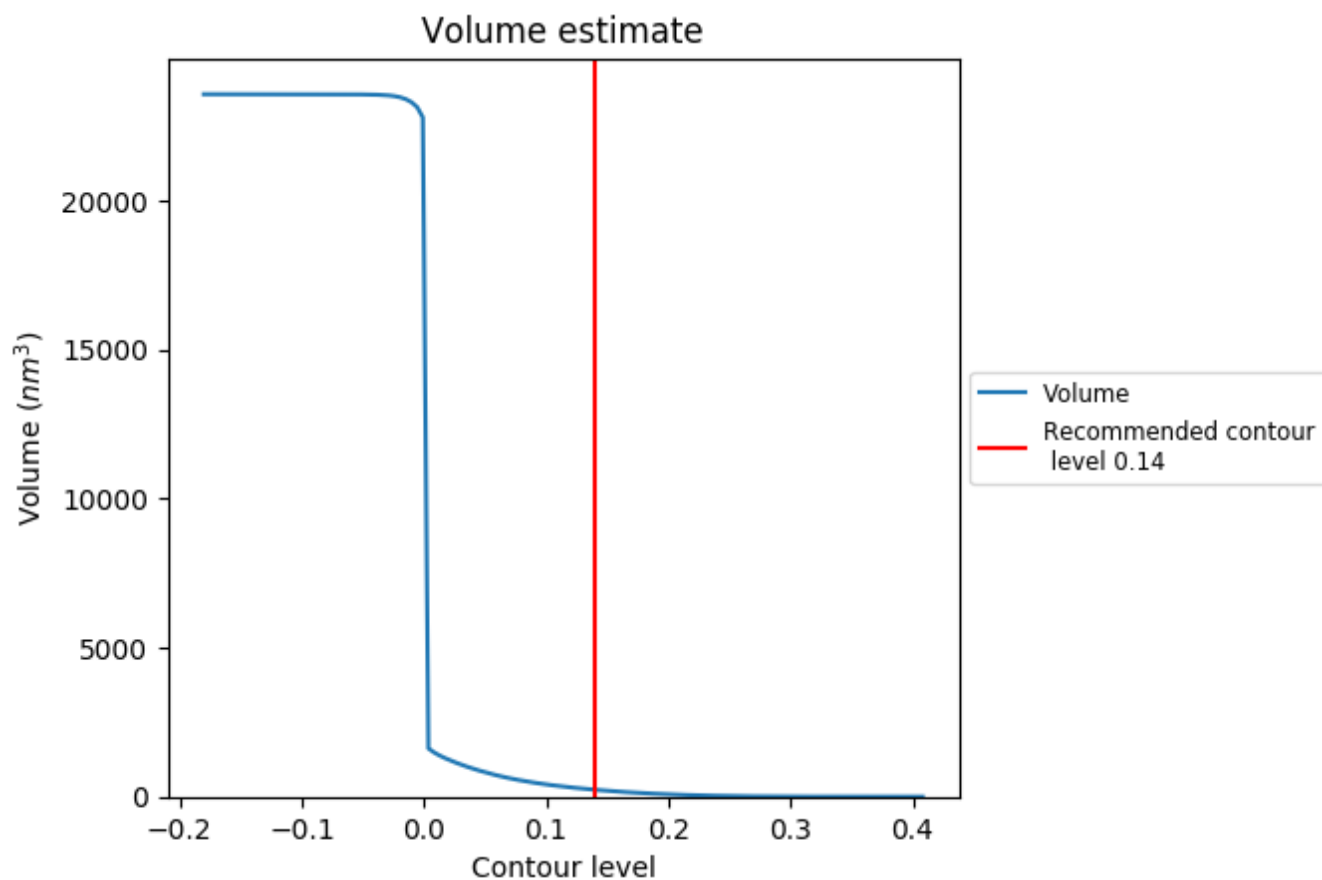
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

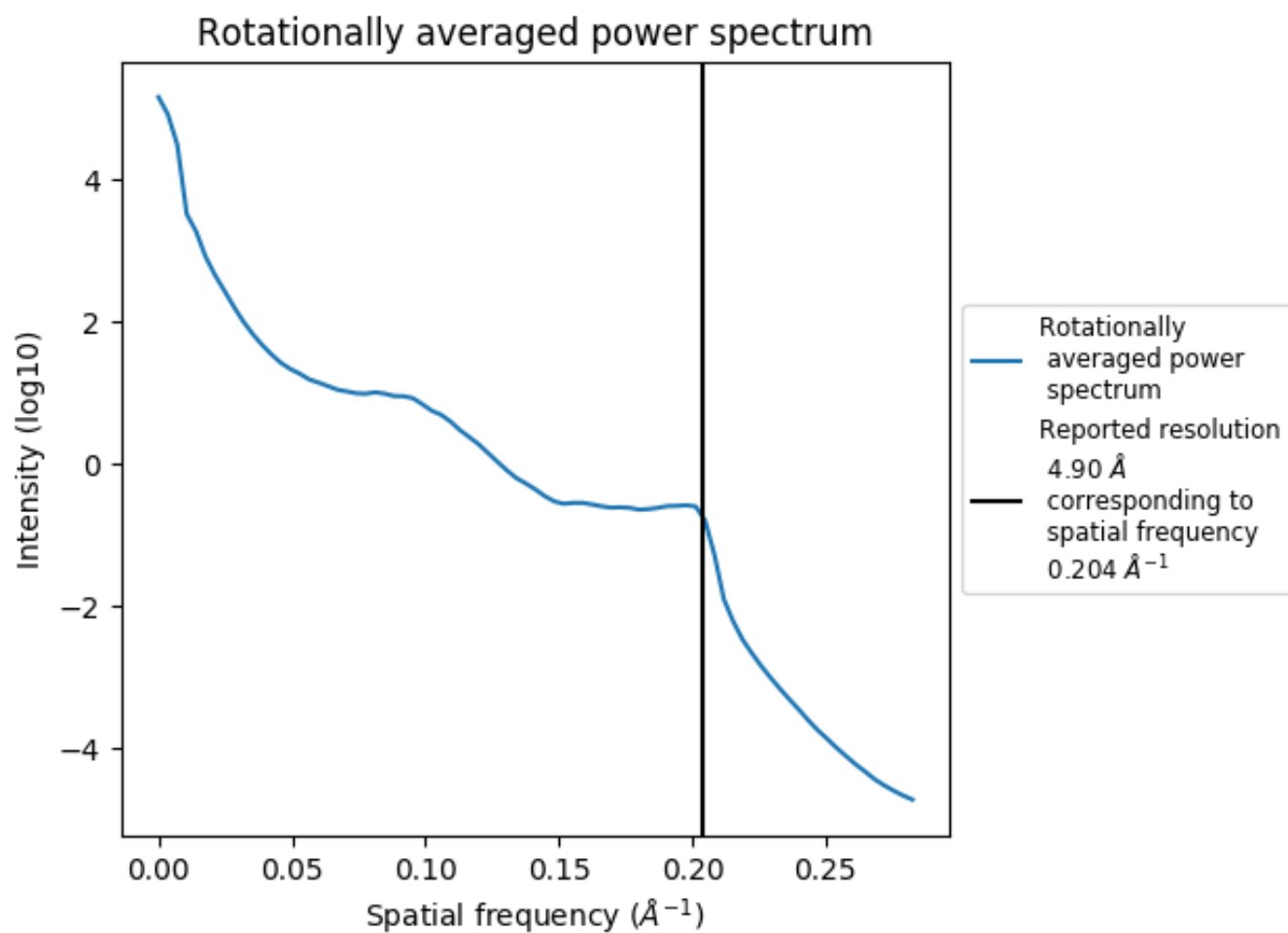
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 233 nm^3 ; this corresponds to an approximate mass of 210 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 [i](#)



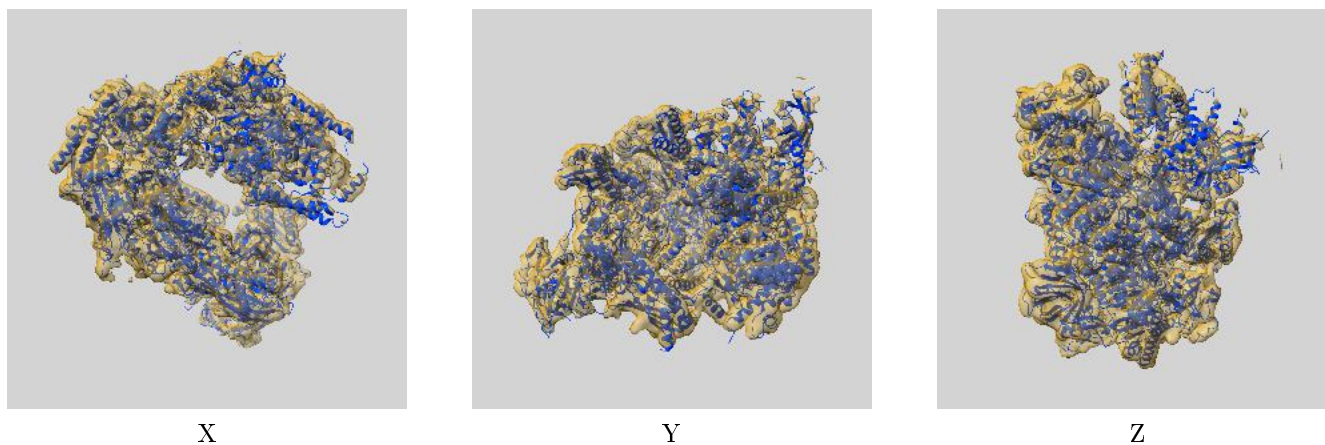
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

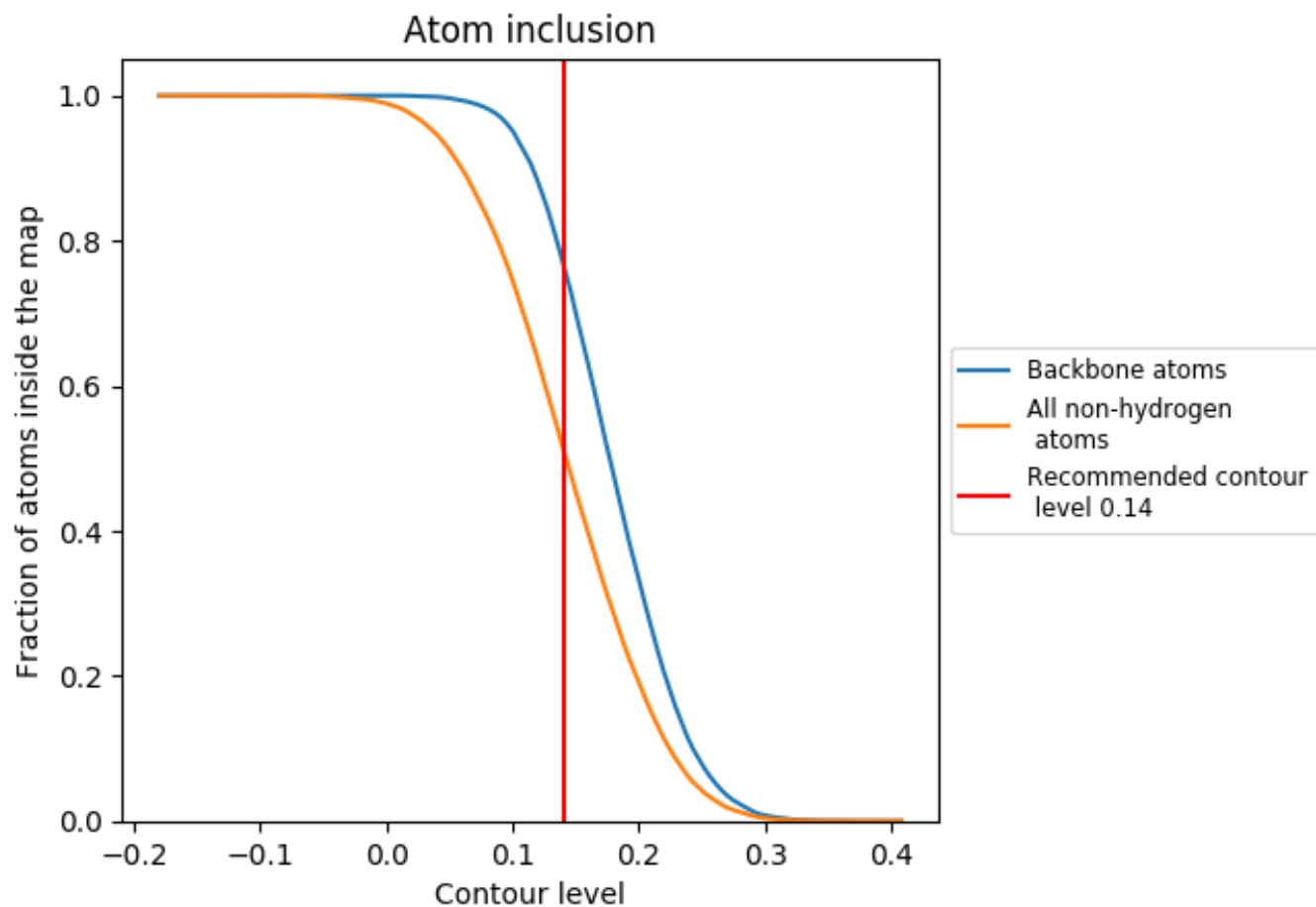
This section contains information regarding the fit between EMDB map EMD-4088 and PDB model 5LMX. Per-residue inclusion information can be found in section [3](#) on page [7](#).

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.14 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 [i](#)



At the recommended contour level, 77% of all backbone atoms, 51% of all non-hydrogen atoms, are inside the map.