



## Full wwPDB EM Validation Report ⓘ

Apr 15, 2024 – 04:47 PM EDT

PDB ID : 8W19  
EMDB ID : EMD-43716  
Title : Cryo-EM structure of BTV star-subcore  
Authors : Xia, X.; Sung, P.Y.; Martynowycz, M.W.; Gonen, T.; Roy, P.; Zhou, Z.H.  
Deposited on : 2024-02-15  
Resolution : 4.40 Å (reported)

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

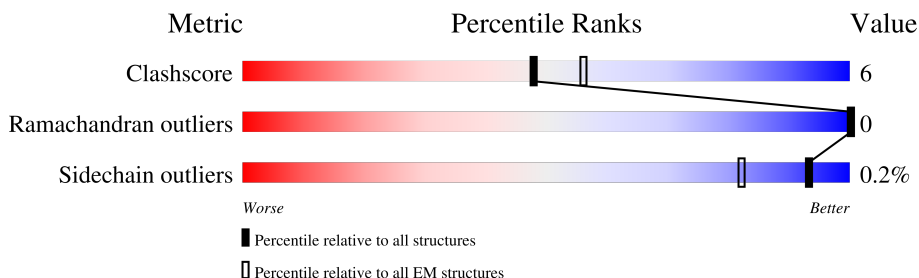
EMDB validation analysis : 0.0.1.dev92  
MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.1

# 1 Overall quality at a glance

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

The reported resolution of this entry is 4.40 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.



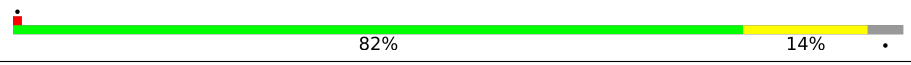

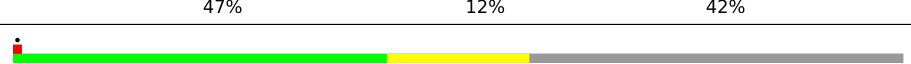
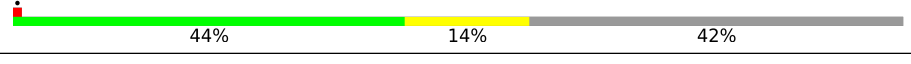
| Metric                | Whole archive (#Entries) | EM structures (#Entries) |
|-----------------------|--------------------------|--------------------------|
| Clashscore            | 158937                   | 4297                     |
| Ramachandran outliers | 154571                   | 4023                     |
| 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 of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 901    |                  |
| 1   | B     | 901    |                  |
| 1   | D     | 901    |                  |
| 1   | E     | 901    |                  |
| 1   | F     | 901    |                  |
| 1   | G     | 901    |                  |
| 1   | H     | 901    |                  |
| 1   | I     | 901    |                  |

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| Mol | Chain | Length | Quality of chain  |
|-----|-------|--------|---|
| 1   | J     | 901    |  <p>82% 14%</p>     |
| 1   | K     | 901    |  <p>81% 15%</p>     |
| 2   | C     | 329    |  <p>47% 12% 42%</p> |
| 2   | L     | 329    |  <p>42% 16% 42%</p> |
| 2   | M     | 329    |  <p>45% 13% 42%</p> |
| 2   | N     | 329    |  <p>44% 14% 42%</p> |
| 2   | O     | 329    |  <p>48% 9% 42%</p>  |

## 2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 76760 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 Core protein VP3.

| Mol | Chain | Residues | Atoms         |           |           |           |         | AltConf | Trace |
|-----|-------|----------|---------------|-----------|-----------|-----------|---------|---------|-------|
|     |       |          | Total         | C         | N         | O         | S       |         |       |
| 1   | A     | 852      | Total<br>6889 | C<br>4397 | N<br>1190 | O<br>1261 | S<br>41 | 0       | 0     |
| 1   | B     | 862      | Total<br>6956 | C<br>4435 | N<br>1208 | O<br>1273 | S<br>40 | 0       | 0     |
| 1   | D     | 852      | Total<br>6889 | C<br>4397 | N<br>1190 | O<br>1261 | S<br>41 | 0       | 0     |
| 1   | E     | 852      | Total<br>6889 | C<br>4397 | N<br>1190 | O<br>1261 | S<br>41 | 0       | 0     |
| 1   | F     | 852      | Total<br>6889 | C<br>4397 | N<br>1190 | O<br>1261 | S<br>41 | 0       | 0     |
| 1   | G     | 852      | Total<br>6889 | C<br>4397 | N<br>1190 | O<br>1261 | S<br>41 | 0       | 0     |
| 1   | H     | 862      | Total<br>6956 | C<br>4435 | N<br>1208 | O<br>1273 | S<br>40 | 0       | 0     |
| 1   | I     | 862      | Total<br>6956 | C<br>4435 | N<br>1208 | O<br>1273 | S<br>40 | 0       | 0     |
| 1   | J     | 862      | Total<br>6956 | C<br>4435 | N<br>1208 | O<br>1273 | S<br>40 | 0       | 0     |
| 1   | K     | 862      | Total<br>6956 | C<br>4435 | N<br>1208 | O<br>1273 | S<br>40 | 0       | 0     |

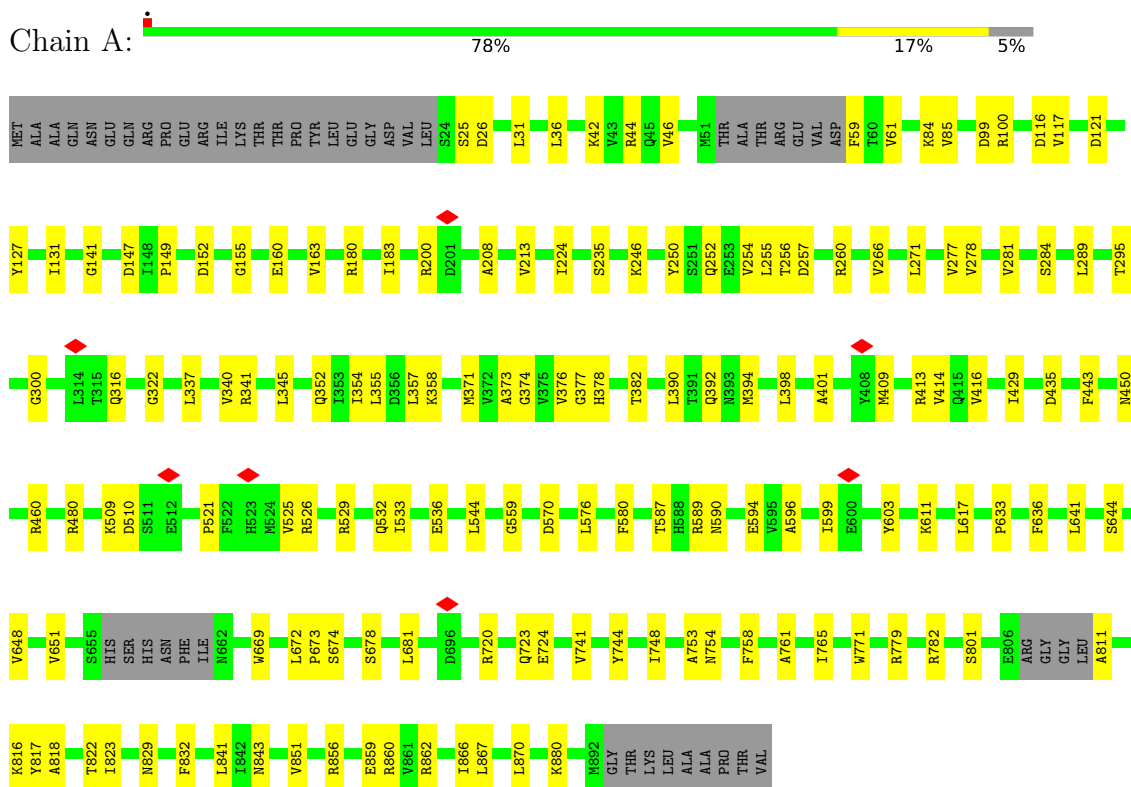
- Molecule 2 is a protein called VP6.

| Mol | Chain | Residues | Atoms         |          |          |          |        | AltConf | Trace |
|-----|-------|----------|---------------|----------|----------|----------|--------|---------|-------|
|     |       |          | Total         | C        | N        | O        | S      |         |       |
| 2   | C     | 191      | Total<br>1507 | C<br>946 | N<br>271 | O<br>285 | S<br>5 | 0       | 0     |
| 2   | L     | 191      | Total<br>1507 | C<br>946 | N<br>271 | O<br>285 | S<br>5 | 0       | 0     |
| 2   | M     | 191      | Total<br>1507 | C<br>946 | N<br>271 | O<br>285 | S<br>5 | 0       | 0     |
| 2   | N     | 191      | Total<br>1507 | C<br>946 | N<br>271 | O<br>285 | S<br>5 | 0       | 0     |
| 2   | O     | 191      | Total<br>1507 | C<br>946 | N<br>271 | O<br>285 | S<br>5 | 0       | 0     |

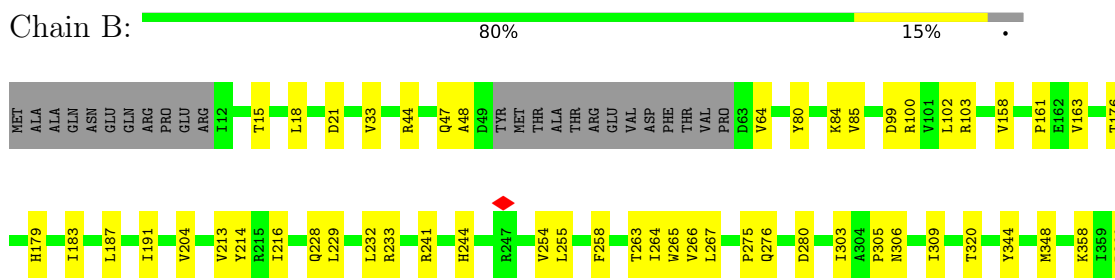
### 3 Residue-property plots [i](#)

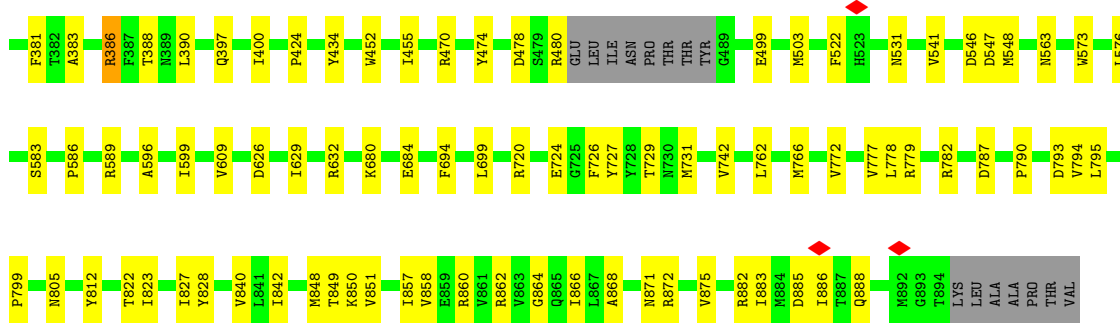
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: Core protein VP3

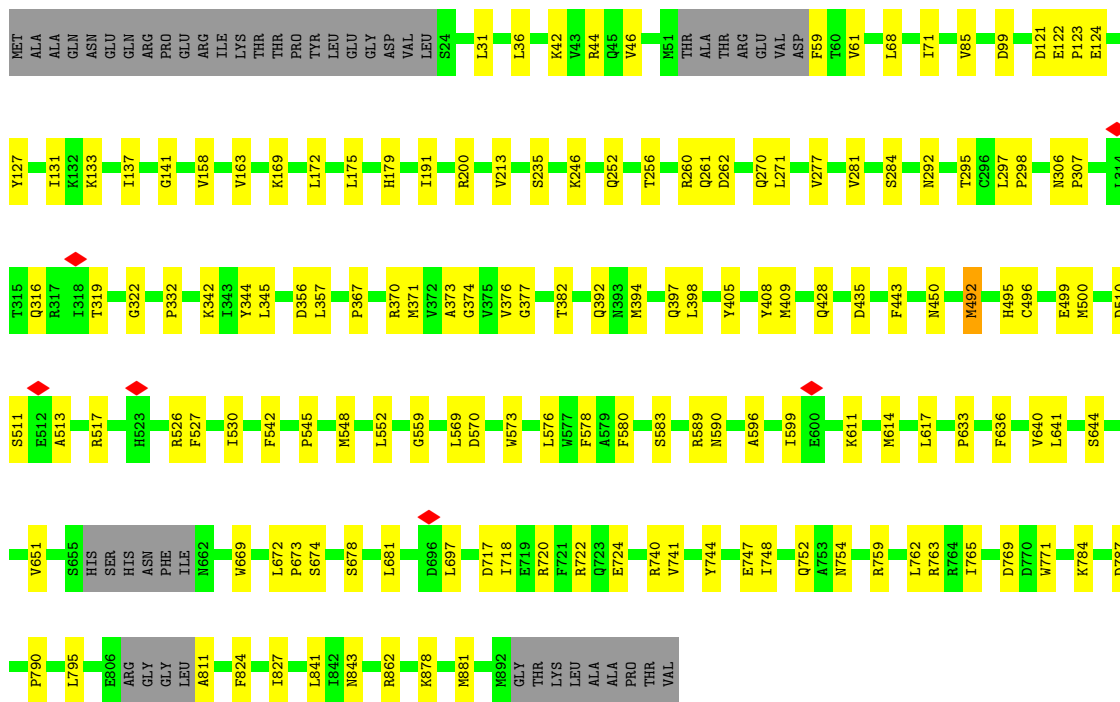
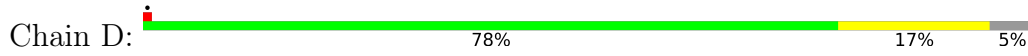


- Molecule 1: Core protein VP3

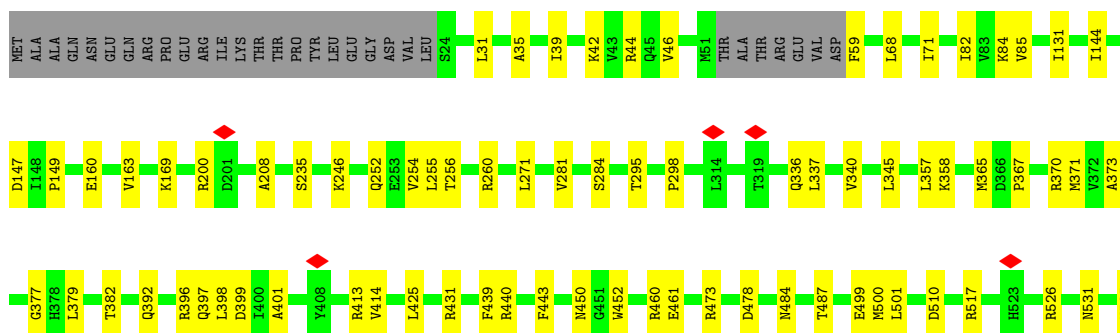
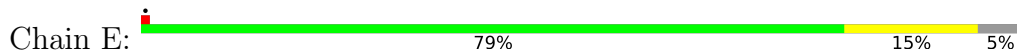




• Molecule 1: Core protein VP3



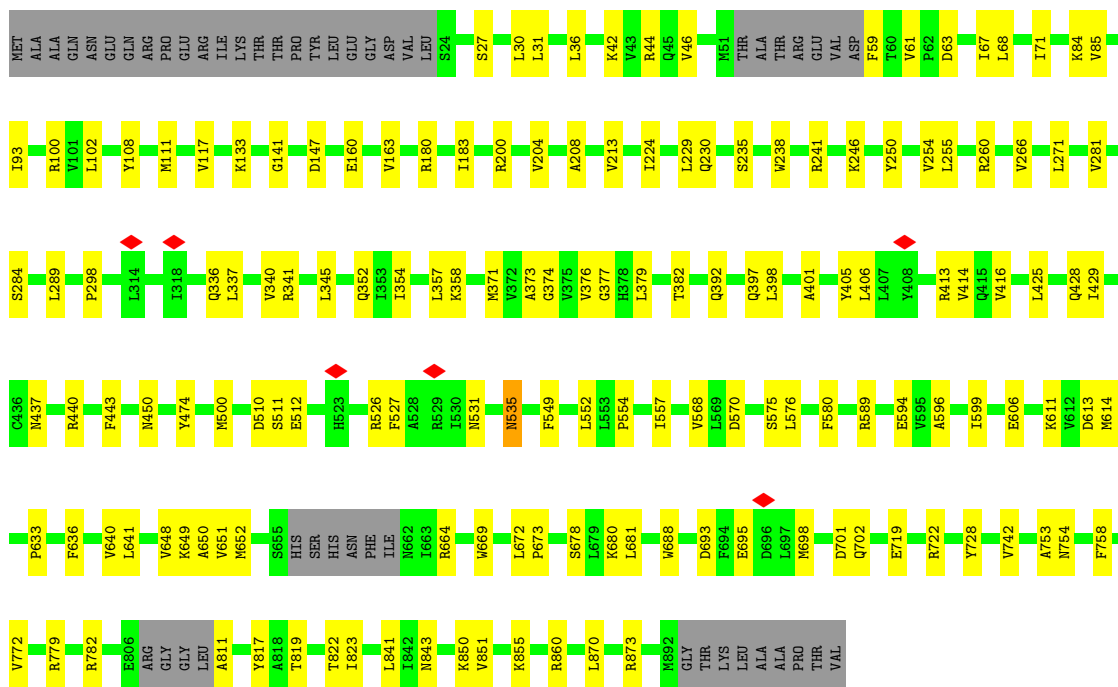
• Molecule 1: Core protein VP3





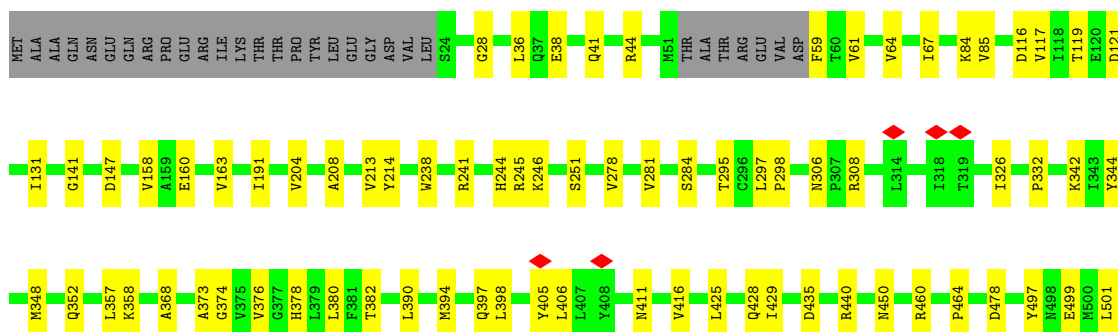
• Molecule 1: Core protein VP3

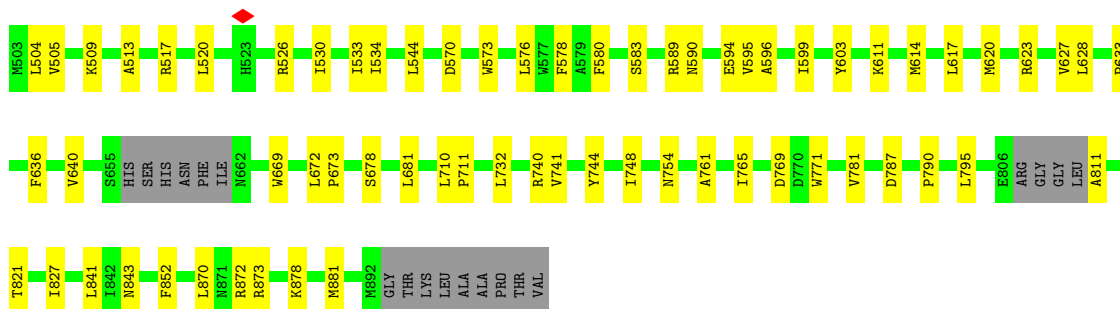
Chain F: 77% 17% 5%



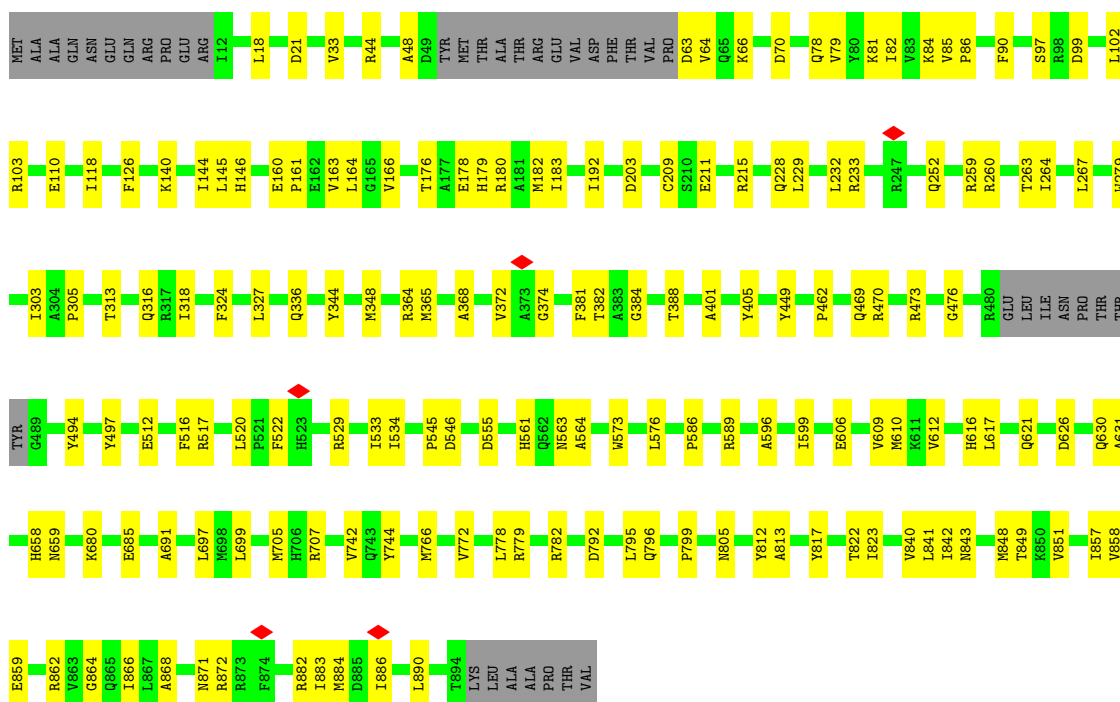
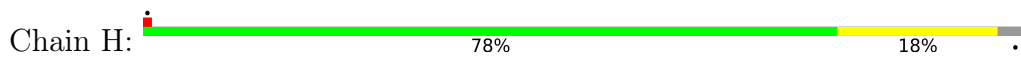
• Molecule 1: Core protein VP3

Chain G: 79% 16% 5%

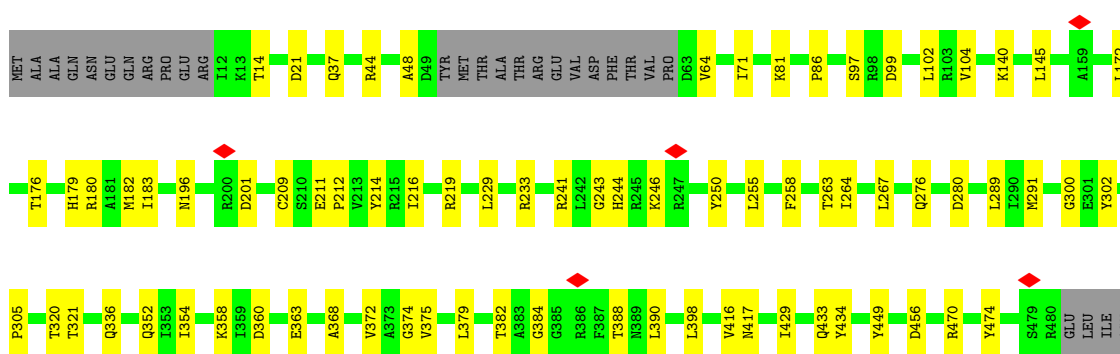
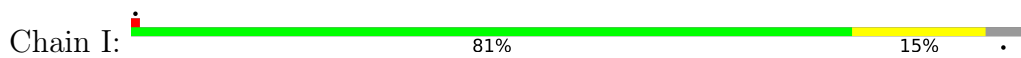




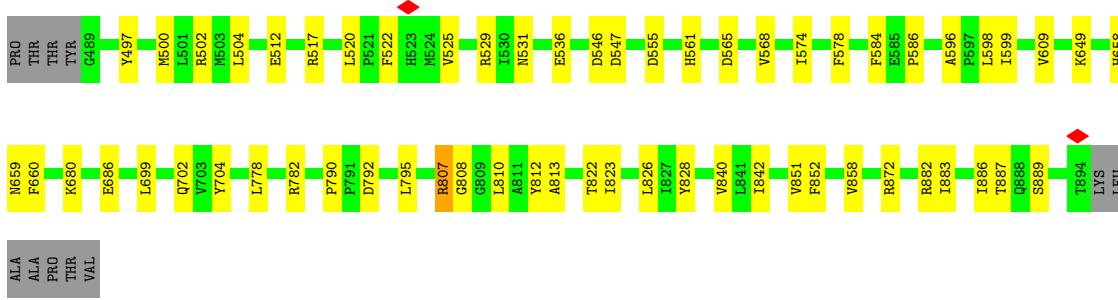
• Molecule 1: Core protein VP3



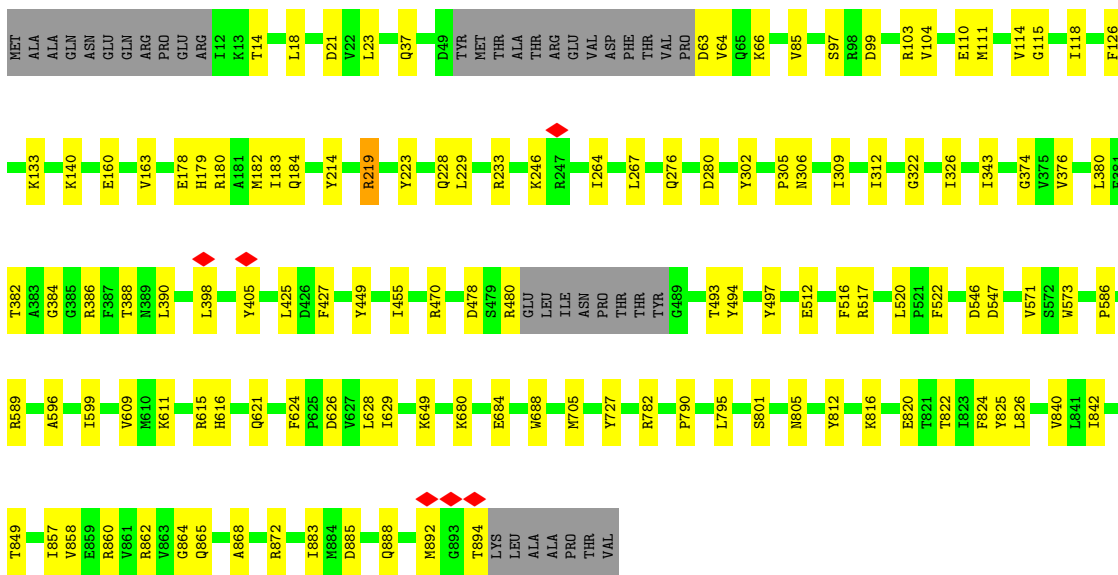
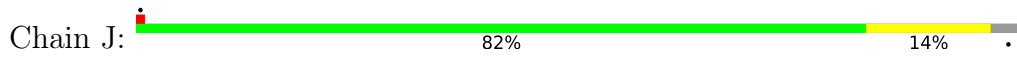
• Molecule 1: Core protein VP3



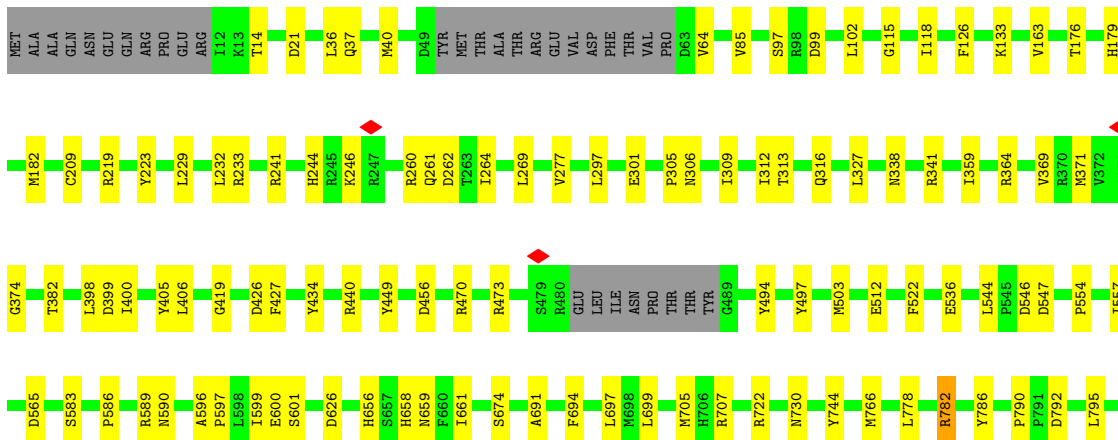
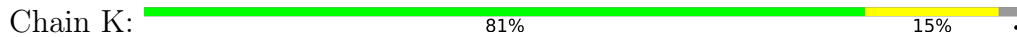


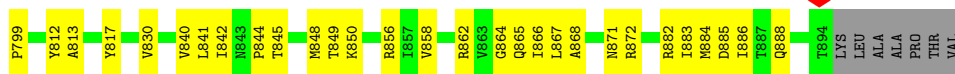


• Molecule 1: Core protein VP3

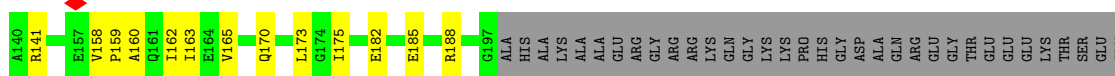
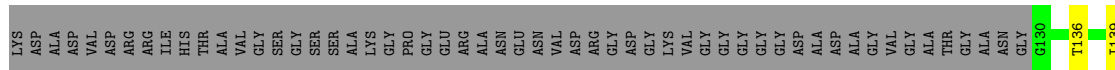
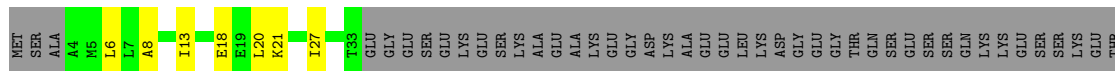


• Molecule 1: Core protein VP3

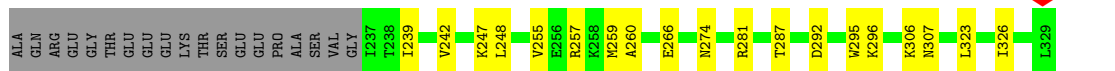
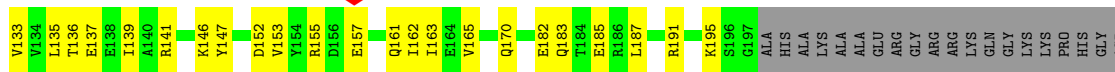
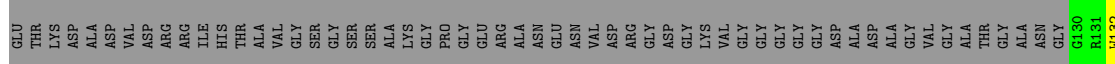
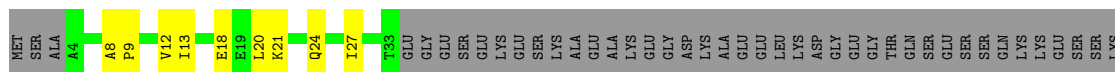




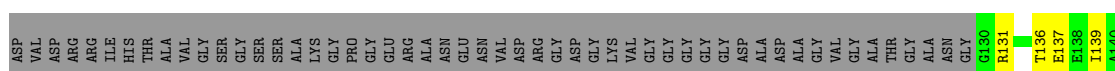
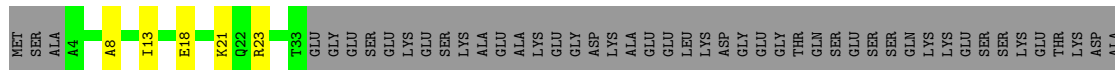
• Molecule 2: VP6

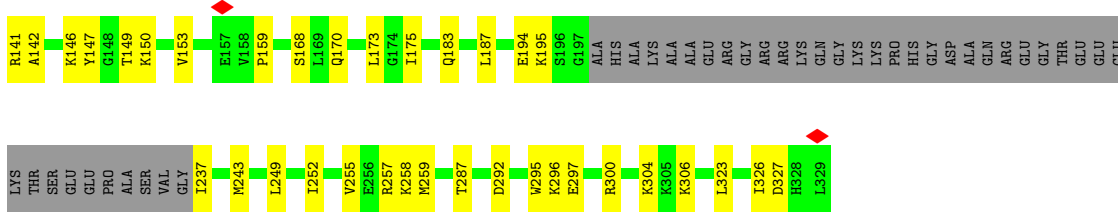


• Molecule 2: VP6

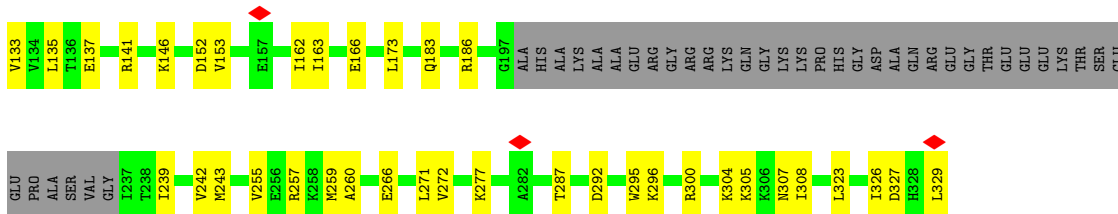
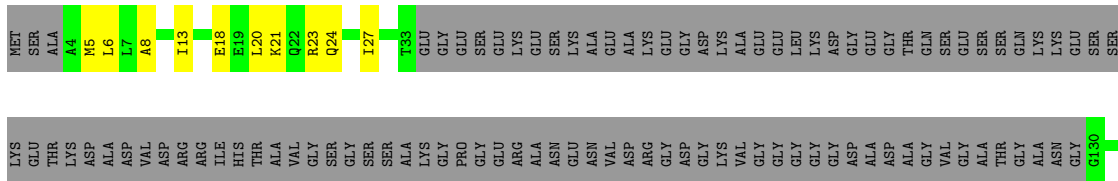


• Molecule 2: VP6

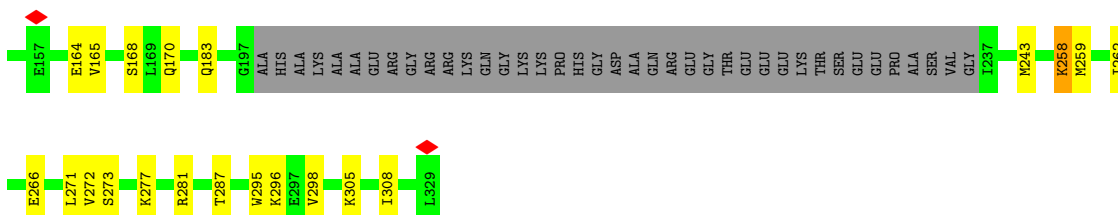
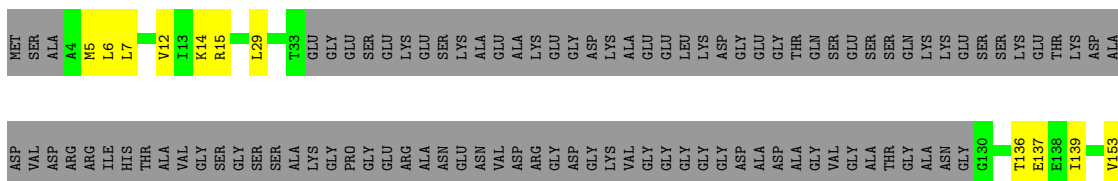




• Molecule 2: VP6



• Molecule 2: VP6



## 4 Experimental information

| Property                             | Value                         | Source    |
|--------------------------------------|-------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE               | Depositor |
| Imposed symmetry                     | POINT, C5                     | Depositor |
| Number of particles used             | 7837                          | 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 ( $e^-/\text{\AA}^2$ ) | 50                            | Depositor |
| Minimum defocus (nm)                 | 1800                          | Depositor |
| Maximum defocus (nm)                 | 2600                          | Depositor |
| Magnification                        | 81000                         | Depositor |
| Image detector                       | GATAN K3 BIOQUANTUM (6k x 4k) | Depositor |
| Maximum map value                    | 2.019                         | Depositor |
| Minimum map value                    | -0.001                        | Depositor |
| Average map value                    | 0.032                         | Depositor |
| Map value standard deviation         | 0.138                         | Depositor |
| Recommended contour level            | 0.25                          | Depositor |
| Map size ( $\text{\AA}$ )            | 352.0, 352.0, 352.0           | wwPDB     |
| Map dimensions                       | 320, 320, 320                 | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0              | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.1, 1.1, 1.1                 | Depositor |

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

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     | 0.28         | 0/7040  | 0.57        | 0/9557   |
| 1   | B     | 0.27         | 0/7108  | 0.56        | 0/9647   |
| 1   | D     | 0.27         | 0/7040  | 0.58        | 0/9557   |
| 1   | E     | 0.27         | 0/7040  | 0.57        | 0/9557   |
| 1   | F     | 0.27         | 0/7040  | 0.57        | 0/9557   |
| 1   | G     | 0.27         | 0/7040  | 0.57        | 0/9557   |
| 1   | H     | 0.28         | 0/7108  | 0.56        | 0/9647   |
| 1   | I     | 0.27         | 0/7108  | 0.56        | 0/9647   |
| 1   | J     | 0.27         | 0/7108  | 0.57        | 0/9647   |
| 1   | K     | 0.27         | 0/7108  | 0.57        | 0/9647   |
| 2   | C     | 0.25         | 0/1524  | 0.56        | 0/2046   |
| 2   | L     | 0.25         | 0/1524  | 0.59        | 0/2046   |
| 2   | M     | 0.26         | 0/1524  | 0.57        | 0/2046   |
| 2   | N     | 0.28         | 0/1524  | 0.58        | 0/2046   |
| 2   | O     | 0.27         | 0/1524  | 0.56        | 0/2046   |
| All | All   | 0.27         | 0/78360 | 0.57        | 0/106250 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 6889  | 0        | 6865     | 87      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | B     | 6956  | 0        | 6935     | 85      | 0            |
| 1   | D     | 6889  | 0        | 6865     | 91      | 0            |
| 1   | E     | 6889  | 0        | 6865     | 81      | 0            |
| 1   | F     | 6889  | 0        | 6865     | 92      | 0            |
| 1   | G     | 6889  | 0        | 6865     | 84      | 0            |
| 1   | H     | 6956  | 0        | 6935     | 104     | 0            |
| 1   | I     | 6956  | 0        | 6935     | 83      | 0            |
| 1   | J     | 6956  | 0        | 6935     | 74      | 0            |
| 1   | K     | 6956  | 0        | 6935     | 89      | 0            |
| 2   | C     | 1507  | 0        | 1563     | 28      | 0            |
| 2   | L     | 1507  | 0        | 1563     | 38      | 0            |
| 2   | M     | 1507  | 0        | 1563     | 27      | 0            |
| 2   | N     | 1507  | 0        | 1563     | 31      | 0            |
| 2   | O     | 1507  | 0        | 1563     | 21      | 0            |
| All | All   | 76760 | 0        | 76815    | 972     | 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 6.

All (972) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:741:VAL:HG12 | 1:G:771:TRP:HB2  | 1.65                     | 0.78              |
| 1:E:741:VAL:HG12 | 1:E:771:TRP:HB2  | 1.66                     | 0.77              |
| 1:G:141:GLY:HA2  | 1:G:213:VAL:HG23 | 1.66                     | 0.77              |
| 1:A:141:GLY:HA2  | 1:A:213:VAL:HG23 | 1.68                     | 0.76              |
| 2:N:6:LEU:HB3    | 2:N:272:VAL:HG12 | 1.68                     | 0.75              |
| 1:A:779:ARG:HH12 | 1:A:817:TYR:HB3  | 1.51                     | 0.74              |
| 1:G:244:HIS:CE1  | 1:K:400:ILE:HD11 | 2.23                     | 0.74              |
| 1:H:462:PRO:HA   | 1:H:469:GLN:HE22 | 1.53                     | 0.74              |
| 1:G:116:ASP:OD1  | 1:G:117:VAL:N    | 2.21                     | 0.73              |
| 1:B:254:VAL:HG12 | 1:B:254:VAL:O    | 1.89                     | 0.73              |
| 1:F:141:GLY:HA2  | 1:F:213:VAL:HG23 | 1.70                     | 0.72              |
| 1:A:741:VAL:HG12 | 1:A:771:TRP:HB2  | 1.72                     | 0.71              |
| 1:D:141:GLY:HA2  | 1:D:213:VAL:HG23 | 1.73                     | 0.71              |
| 1:A:374:GLY:HA2  | 1:A:398:LEU:HD12 | 1.70                     | 0.70              |
| 1:K:840:VAL:HG12 | 1:K:842:ILE:H    | 1.55                     | 0.70              |
| 1:B:264:ILE:HB   | 1:B:883:ILE:HG22 | 1.73                     | 0.70              |
| 1:B:548:MET:HG2  | 1:B:563:ASN:HD21 | 1.57                     | 0.70              |
| 1:A:152:ASP:OD2  | 1:B:632:ARG:NH2  | 2.25                     | 0.69              |
| 1:D:513:ALA:HB1  | 1:D:517:ARG:HH21 | 1.58                     | 0.69              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:611:LYS:NZ   | 1:F:669:TRP:O    | 2.25                     | 0.68              |
| 1:E:526:ARG:NH2  | 1:E:580:PHE:O    | 2.27                     | 0.68              |
| 2:L:182:GLU:O    | 2:L:185:GLU:HG2  | 1.93                     | 0.68              |
| 2:M:258:LYS:HG3  | 2:M:259:MET:H    | 1.58                     | 0.68              |
| 1:D:611:LYS:NZ   | 1:D:669:TRP:O    | 2.26                     | 0.68              |
| 1:G:131:ILE:HD11 | 1:G:617:LEU:HD21 | 1.74                     | 0.68              |
| 1:A:358:LYS:HB2  | 1:A:570:ASP:HB3  | 1.75                     | 0.67              |
| 1:B:573:TRP:HB2  | 2:C:307:ASN:ND2  | 2.09                     | 0.67              |
| 1:F:413:ARG:HE   | 1:F:414:VAL:H    | 1.42                     | 0.67              |
| 1:D:741:VAL:HG12 | 1:D:771:TRP:HB2  | 1.77                     | 0.67              |
| 1:H:573:TRP:HB2  | 2:L:307:ASN:ND2  | 2.09                     | 0.67              |
| 1:J:782:ARG:HB2  | 1:J:822:THR:HG22 | 1.75                     | 0.67              |
| 1:D:235:SER:HB3  | 1:D:271:LEU:HD23 | 1.76                     | 0.67              |
| 1:E:611:LYS:NZ   | 1:E:669:TRP:O    | 2.27                     | 0.67              |
| 1:H:82:ILE:HD11  | 1:H:146:HIS:HB2  | 1.76                     | 0.67              |
| 1:G:611:LYS:NZ   | 1:G:669:TRP:O    | 2.28                     | 0.67              |
| 1:J:264:ILE:HB   | 1:J:883:ILE:HG22 | 1.76                     | 0.66              |
| 1:D:678:SER:HB3  | 1:D:681:LEU:HD23 | 1.77                     | 0.66              |
| 1:I:196:ASN:HA   | 1:I:201:ASP:HA   | 1.78                     | 0.66              |
| 1:I:609:VAL:HG21 | 1:I:680:LYS:HG2  | 1.78                     | 0.66              |
| 1:I:241:ARG:HA   | 1:I:244:HIS:CE1  | 2.31                     | 0.66              |
| 1:A:413:ARG:HE   | 1:A:414:VAL:H    | 1.44                     | 0.66              |
| 1:E:371:MET:HA   | 1:E:401:ALA:HB1  | 1.78                     | 0.65              |
| 1:I:840:VAL:HG12 | 1:I:842:ILE:H    | 1.61                     | 0.65              |
| 1:K:264:ILE:HB   | 1:K:883:ILE:HG22 | 1.79                     | 0.65              |
| 2:O:6:LEU:HB3    | 2:O:272:VAL:HG22 | 1.77                     | 0.65              |
| 2:N:146:LYS:HE3  | 2:N:173:LEU:HG   | 1.79                     | 0.65              |
| 1:E:730:ASN:HB2  | 1:E:823:ILE:HG23 | 1.77                     | 0.65              |
| 1:A:611:LYS:NZ   | 1:A:669:TRP:O    | 2.28                     | 0.65              |
| 1:J:609:VAL:HG21 | 1:J:680:LYS:HG2  | 1.79                     | 0.65              |
| 1:K:374:GLY:HA2  | 1:K:398:LEU:HD13 | 1.79                     | 0.64              |
| 1:K:841:LEU:HD21 | 1:K:845:THR:HG22 | 1.79                     | 0.64              |
| 1:I:782:ARG:HB2  | 1:I:822:THR:HG22 | 1.79                     | 0.64              |
| 1:K:327:LEU:HD21 | 1:K:369:VAL:HG12 | 1.78                     | 0.64              |
| 1:K:232:LEU:HD11 | 1:K:886:ILE:HD11 | 1.78                     | 0.64              |
| 1:A:678:SER:HB3  | 1:A:681:LEU:HD23 | 1.80                     | 0.64              |
| 1:G:295:THR:O    | 1:G:590:ASN:ND2  | 2.30                     | 0.64              |
| 1:H:232:LEU:HD11 | 1:H:886:ILE:HD11 | 1.80                     | 0.64              |
| 1:B:857:ILE:HG22 | 1:B:858:VAL:HG23 | 1.77                     | 0.64              |
| 1:A:373:ALA:HB1  | 1:A:576:LEU:HD12 | 1.79                     | 0.63              |
| 1:E:31:LEU:HD11  | 1:E:345:LEU:HD21 | 1.80                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:526:ARG:NH2  | 1:A:580:PHE:O    | 2.31                     | 0.63              |
| 1:H:868:ALA:O    | 1:H:871:ASN:ND2  | 2.30                     | 0.63              |
| 1:E:200:ARG:NH2  | 1:E:260:ARG:O    | 2.31                     | 0.63              |
| 1:H:609:VAL:HG21 | 1:H:680:LYS:HG2  | 1.79                     | 0.63              |
| 1:H:782:ARG:HB2  | 1:H:822:THR:HG22 | 1.81                     | 0.63              |
| 1:E:373:ALA:HB1  | 1:E:576:LEU:HD12 | 1.81                     | 0.63              |
| 1:B:21:ASP:OD1   | 2:C:296:LYS:NZ   | 2.31                     | 0.63              |
| 1:E:169:LYS:HE3  | 1:I:810:LEU:HD12 | 1.80                     | 0.63              |
| 1:E:717:ASP:OD2  | 1:E:720:ARG:NH1  | 2.30                     | 0.63              |
| 1:E:460:ARG:NH2  | 1:E:478:ASP:OD1  | 2.30                     | 0.62              |
| 1:A:99:ASP:OD2   | 1:A:862:ARG:NH1  | 2.32                     | 0.62              |
| 1:D:31:LEU:HD11  | 1:D:345:LEU:HD21 | 1.80                     | 0.62              |
| 1:E:841:LEU:HG   | 1:E:843:ASN:H    | 1.64                     | 0.62              |
| 1:F:526:ARG:NH2  | 1:F:580:PHE:O    | 2.33                     | 0.62              |
| 1:B:276:GLN:NE2  | 1:B:280:ASP:OD2  | 2.33                     | 0.62              |
| 2:C:6:LEU:HB3    | 2:C:272:VAL:HG22 | 1.80                     | 0.62              |
| 1:H:621:GLN:HE22 | 1:H:630:GLN:HA   | 1.65                     | 0.62              |
| 1:I:354:ILE:HB   | 1:I:568:VAL:HG22 | 1.81                     | 0.62              |
| 2:L:259:MET:SD   | 2:L:260:ALA:N    | 2.70                     | 0.62              |
| 1:G:781:VAL:HA   | 1:G:821:THR:O    | 2.00                     | 0.62              |
| 1:K:868:ALA:O    | 1:K:871:ASN:ND2  | 2.32                     | 0.62              |
| 1:D:342:LYS:NZ   | 1:D:570:ASP:O    | 2.33                     | 0.61              |
| 1:I:276:GLN:NE2  | 1:I:280:ASP:OD2  | 2.33                     | 0.61              |
| 2:N:23:ARG:HE    | 2:N:266:GLU:HB3  | 1.64                     | 0.61              |
| 1:D:246:LYS:O    | 1:D:589:ARG:NH2  | 2.33                     | 0.61              |
| 2:N:305:LYS:HG3  | 2:N:308:ILE:HD13 | 1.80                     | 0.61              |
| 1:I:336:GLN:NE2  | 2:M:306:LYS:O    | 2.34                     | 0.61              |
| 1:E:44:ARG:NH2   | 1:E:59:PHE:O     | 2.33                     | 0.61              |
| 1:H:621:GLN:NE2  | 1:H:630:GLN:HA   | 2.14                     | 0.61              |
| 1:B:868:ALA:O    | 1:B:871:ASN:ND2  | 2.34                     | 0.61              |
| 2:O:136:THR:HG23 | 2:O:139:ILE:H    | 1.65                     | 0.61              |
| 1:D:382:THR:HB   | 1:D:450:ASN:HB2  | 1.83                     | 0.61              |
| 1:E:246:LYS:O    | 1:E:589:ARG:NH2  | 2.34                     | 0.61              |
| 1:J:115:GLY:HA2  | 1:J:133:LYS:NZ   | 2.15                     | 0.61              |
| 1:F:67:ILE:HD12  | 1:F:650:ALA:HB1  | 1.82                     | 0.61              |
| 1:H:862:ARG:HH21 | 1:H:864:GLY:HA3  | 1.65                     | 0.61              |
| 1:A:31:LEU:HD11  | 1:A:345:LEU:HD21 | 1.83                     | 0.60              |
| 1:B:161:PRO:HG3  | 1:B:187:LEU:HD21 | 1.82                     | 0.60              |
| 1:B:573:TRP:HB2  | 2:C:307:ASN:HD22 | 1.65                     | 0.60              |
| 1:F:371:MET:HB2  | 1:F:405:TYR:HB2  | 1.82                     | 0.60              |
| 1:D:526:ARG:NH2  | 1:D:580:PHE:O    | 2.34                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:85:VAL:HG13  | 1:E:163:VAL:HA   | 1.83                     | 0.60              |
| 1:F:357:LEU:HD22 | 1:F:397:GLN:HG3  | 1.84                     | 0.60              |
| 1:D:99:ASP:OD2   | 1:D:862:ARG:NH1  | 2.33                     | 0.60              |
| 1:H:63:ASP:HA    | 1:H:66:LYS:HE2   | 1.84                     | 0.60              |
| 1:A:127:TYR:HD2  | 1:A:636:PHE:HB3  | 1.66                     | 0.60              |
| 1:A:295:THR:O    | 1:A:590:ASN:ND2  | 2.32                     | 0.60              |
| 1:B:344:TYR:O    | 1:B:348:MET:HG3  | 2.01                     | 0.60              |
| 2:C:173:LEU:HD22 | 2:C:175:ILE:HG13 | 1.82                     | 0.60              |
| 1:D:717:ASP:OD2  | 1:D:720:ARG:NH2  | 2.35                     | 0.60              |
| 1:B:840:VAL:HG12 | 1:B:842:ILE:H    | 1.67                     | 0.60              |
| 1:G:499:GLU:HG3  | 1:G:502:ARG:HH21 | 1.66                     | 0.60              |
| 1:G:244:HIS:ND1  | 1:K:400:ILE:HD11 | 2.16                     | 0.60              |
| 1:G:497:TYR:CZ   | 1:G:520:LEU:HD21 | 2.37                     | 0.60              |
| 2:L:133:VAL:HG12 | 2:L:152:ASP:HB2  | 1.84                     | 0.60              |
| 1:A:779:ARG:NH1  | 1:A:818:ALA:O    | 2.35                     | 0.59              |
| 1:H:563:ASN:OD1  | 1:H:564:ALA:N    | 2.35                     | 0.59              |
| 1:G:744:TYR:HA   | 1:G:748:ILE:HD11 | 1.83                     | 0.59              |
| 1:I:209:CYS:O    | 1:I:872:ARG:NH1  | 2.33                     | 0.59              |
| 1:J:104:VAL:HG12 | 1:J:858:VAL:HG22 | 1.84                     | 0.59              |
| 1:J:276:GLN:NE2  | 1:J:280:ASP:OD2  | 2.34                     | 0.59              |
| 1:J:892:MET:SD   | 1:J:894:THR:OG1  | 2.55                     | 0.59              |
| 1:A:155:GLY:O    | 1:B:632:ARG:NH1  | 2.35                     | 0.59              |
| 1:G:405:TYR:HD2  | 1:G:406:LEU:HD22 | 1.67                     | 0.59              |
| 1:G:710:LEU:HD12 | 1:G:711:PRO:HD2  | 1.83                     | 0.59              |
| 1:E:614:MET:HE3  | 1:E:640:VAL:HG21 | 1.83                     | 0.59              |
| 2:C:136:THR:HG23 | 2:C:139:ILE:H    | 1.66                     | 0.59              |
| 1:J:840:VAL:HG12 | 1:J:842:ILE:H    | 1.67                     | 0.59              |
| 2:O:258:LYS:HG2  | 2:O:259:MET:H    | 1.67                     | 0.59              |
| 1:D:559:GLY:O    | 1:I:517:ARG:NH2  | 2.36                     | 0.59              |
| 2:N:137:GLU:HG3  | 2:N:153:VAL:HG21 | 1.83                     | 0.59              |
| 1:A:390:LEU:HB2  | 1:A:394:MET:HE2  | 1.84                     | 0.59              |
| 1:D:133:LYS:HE3  | 1:D:697:LEU:HD12 | 1.84                     | 0.59              |
| 1:E:131:ILE:HD11 | 1:E:617:LEU:HD21 | 1.84                     | 0.59              |
| 1:I:264:ILE:HB   | 1:I:883:ILE:HG22 | 1.83                     | 0.59              |
| 1:F:36:LEU:HD23  | 1:F:61:VAL:HG13  | 1.84                     | 0.59              |
| 1:F:382:THR:HB   | 1:F:450:ASN:HB2  | 1.85                     | 0.59              |
| 1:H:882:ARG:NE   | 1:H:884:MET:SD   | 2.76                     | 0.59              |
| 1:E:295:THR:O    | 1:E:590:ASN:ND2  | 2.34                     | 0.59              |
| 1:K:586:PRO:HB2  | 1:K:589:ARG:HH21 | 1.66                     | 0.59              |
| 2:N:163:ILE:HD11 | 2:N:242:VAL:HB   | 1.85                     | 0.58              |
| 1:D:373:ALA:HB1  | 1:D:576:LEU:HD12 | 1.83                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:373:ALA:HB1  | 1:F:576:LEU:HD12 | 1.85                     | 0.58              |
| 2:N:8:ALA:HB3    | 2:N:13:ILE:HD11  | 1.85                     | 0.58              |
| 1:F:85:VAL:HG13  | 1:F:163:VAL:HA   | 1.85                     | 0.58              |
| 1:K:219:ARG:HH12 | 1:K:223:TYR:HB2  | 1.67                     | 0.58              |
| 1:H:176:THR:HA   | 1:H:180:ARG:HD3  | 1.85                     | 0.58              |
| 1:E:779:ARG:NH2  | 1:E:818:ALA:O    | 2.35                     | 0.58              |
| 1:J:18:LEU:HA    | 1:J:23:LEU:HA    | 1.85                     | 0.58              |
| 1:J:862:ARG:HH21 | 1:J:864:GLY:HA3  | 1.68                     | 0.58              |
| 1:F:377:GLY:HA3  | 1:F:398:LEU:HD11 | 1.85                     | 0.58              |
| 1:F:527:PHE:O    | 1:F:531:ASN:ND2  | 2.36                     | 0.58              |
| 1:G:244:HIS:CE1  | 1:K:400:ILE:CD1  | 2.86                     | 0.58              |
| 2:N:135:LEU:HD22 | 2:N:183:GLN:HG2  | 1.85                     | 0.58              |
| 1:D:260:ARG:NE   | 1:D:262:ASP:OD1  | 2.36                     | 0.57              |
| 1:F:289:LEU:HD21 | 1:F:352:GLN:HG2  | 1.85                     | 0.57              |
| 1:D:545:PRO:HG2  | 1:D:548:MET:HG3  | 1.86                     | 0.57              |
| 1:D:878:LYS:H    | 1:D:881:MET:HG3  | 1.69                     | 0.57              |
| 1:F:31:LEU:HD11  | 1:F:345:LEU:HD21 | 1.86                     | 0.57              |
| 1:H:840:VAL:HG12 | 1:H:842:ILE:H    | 1.69                     | 0.57              |
| 1:H:327:LEU:HD22 | 1:H:372:VAL:HG21 | 1.86                     | 0.57              |
| 1:F:841:LEU:HG   | 1:F:843:ASN:H    | 1.68                     | 0.57              |
| 1:E:744:TYR:HA   | 1:E:748:ILE:HD11 | 1.86                     | 0.57              |
| 1:F:336:GLN:HE21 | 1:F:575:SER:HA   | 1.70                     | 0.57              |
| 1:E:358:LYS:HB2  | 1:E:570:ASP:HB3  | 1.85                     | 0.57              |
| 1:I:470:ARG:NH1  | 1:I:546:ASP:OD1  | 2.34                     | 0.57              |
| 2:L:165:VAL:HG12 | 2:L:170:GLN:HG3  | 1.86                     | 0.57              |
| 1:D:371:MET:HB2  | 1:D:405:TYR:HB2  | 1.87                     | 0.57              |
| 1:G:614:MET:HE3  | 1:G:640:VAL:HG21 | 1.85                     | 0.57              |
| 2:C:185:GLU:HA   | 2:C:188:ARG:HG2  | 1.85                     | 0.57              |
| 1:D:131:ILE:HD11 | 1:D:617:LEU:HD21 | 1.85                     | 0.57              |
| 1:D:495:HIS:CE1  | 1:D:499:GLU:OE2  | 2.58                     | 0.57              |
| 1:J:470:ARG:NH1  | 1:J:546:ASP:OD1  | 2.33                     | 0.57              |
| 1:H:252:GLN:HE21 | 1:H:890:LEU:HG   | 1.70                     | 0.57              |
| 1:H:263:THR:HG22 | 1:H:882:ARG:HB3  | 1.86                     | 0.56              |
| 1:K:338:ASN:OD1  | 1:K:341:ARG:NH1  | 2.38                     | 0.56              |
| 1:I:211:GLU:HA   | 1:I:872:ARG:HH22 | 1.71                     | 0.56              |
| 2:M:23:ARG:NH1   | 2:M:327:ASP:OD1  | 2.37                     | 0.56              |
| 2:C:305:LYS:HD3  | 2:C:308:ILE:HD13 | 1.87                     | 0.56              |
| 1:F:84:LYS:HE3   | 1:F:147:ASP:HB3  | 1.87                     | 0.56              |
| 1:H:470:ARG:NH1  | 1:H:546:ASP:OD1  | 2.35                     | 0.56              |
| 1:H:691:ALA:HB1  | 1:H:697:LEU:HD21 | 1.87                     | 0.56              |
| 2:C:165:VAL:O    | 2:C:170:GLN:NE2  | 2.39                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:281:VAL:HG13 | 1:F:284:SER:HB3  | 1.87                     | 0.56              |
| 1:G:754:ASN:HB2  | 1:G:811:ALA:HA   | 1.87                     | 0.56              |
| 1:G:358:LYS:HB2  | 1:G:570:ASP:HB3  | 1.86                     | 0.56              |
| 1:H:573:TRP:HB2  | 2:L:307:ASN:HD22 | 1.70                     | 0.56              |
| 1:E:707:ARG:HB2  | 1:E:766:MET:HB3  | 1.87                     | 0.56              |
| 1:K:97:SER:OG    | 1:K:99:ASP:OD1   | 2.23                     | 0.56              |
| 1:D:316:GLN:NE2  | 1:D:322:GLY:O    | 2.39                     | 0.56              |
| 1:E:823:ILE:HD11 | 1:E:851:VAL:HB   | 1.87                     | 0.56              |
| 1:J:118:ILE:HD12 | 1:J:126:PHE:HA   | 1.86                     | 0.56              |
| 1:K:470:ARG:NH1  | 1:K:546:ASP:OD1  | 2.32                     | 0.56              |
| 1:E:396:ARG:NH1  | 1:E:399:ASP:OD2  | 2.39                     | 0.56              |
| 1:B:823:ILE:HD13 | 1:B:851:VAL:HB   | 1.88                     | 0.56              |
| 1:G:85:VAL:HG13  | 1:G:163:VAL:HA   | 1.88                     | 0.56              |
| 1:K:707:ARG:HG3  | 1:K:766:MET:HE2  | 1.88                     | 0.56              |
| 1:B:805:ASN:ND2  | 1:B:812:TYR:O    | 2.32                     | 0.55              |
| 1:D:367:PRO:HA   | 1:D:370:ARG:HE   | 1.71                     | 0.55              |
| 1:H:324:PHE:HE1  | 1:H:372:VAL:HG22 | 1.71                     | 0.55              |
| 1:K:209:CYS:O    | 1:K:872:ARG:NH1  | 2.39                     | 0.55              |
| 2:L:137:GLU:HG3  | 2:L:153:VAL:HG21 | 1.87                     | 0.55              |
| 1:G:390:LEU:HB2  | 1:G:394:MET:HE2  | 1.87                     | 0.55              |
| 2:L:155:ARG:HB3  | 2:L:157:GLU:OE2  | 2.06                     | 0.55              |
| 2:N:166:GLU:HG3  | 2:N:243:MET:HG2  | 1.89                     | 0.55              |
| 1:F:379:LEU:HD21 | 1:F:500:MET:HG2  | 1.89                     | 0.55              |
| 1:F:678:SER:HB3  | 1:F:681:LEU:HD23 | 1.89                     | 0.55              |
| 1:G:425:LEU:O    | 1:G:440:ARG:NH2  | 2.39                     | 0.55              |
| 1:A:235:SER:HB3  | 1:A:271:LEU:HD23 | 1.87                     | 0.55              |
| 2:C:324:HIS:CE1  | 2:C:328:HIS:CD2  | 2.95                     | 0.55              |
| 1:E:357:LEU:HD22 | 1:E:397:GLN:HG3  | 1.89                     | 0.55              |
| 1:G:526:ARG:NH2  | 1:G:580:PHE:O    | 2.38                     | 0.55              |
| 1:B:790:PRO:HG2  | 1:B:795:LEU:HG   | 1.88                     | 0.55              |
| 1:F:437:ASN:OD1  | 1:F:440:ARG:NH1  | 2.31                     | 0.55              |
| 1:G:594:GLU:HG2  | 1:G:595:VAL:HG13 | 1.88                     | 0.55              |
| 1:G:281:VAL:HG13 | 1:G:284:SER:HB3  | 1.87                     | 0.55              |
| 1:G:374:GLY:HA2  | 1:G:398:LEU:HD12 | 1.89                     | 0.55              |
| 1:I:21:ASP:OD1   | 2:M:296:LYS:NZ   | 2.39                     | 0.55              |
| 1:A:754:ASN:HB2  | 1:A:811:ALA:HA   | 1.87                     | 0.55              |
| 1:B:470:ARG:NH1  | 1:B:546:ASP:OD1  | 2.35                     | 0.55              |
| 1:F:641:LEU:HD12 | 1:F:649:LYS:HE2  | 1.88                     | 0.55              |
| 1:H:118:ILE:HD12 | 1:H:126:PHE:HD1  | 1.71                     | 0.55              |
| 1:I:71:ILE:HD13  | 1:I:291:MET:HG3  | 1.88                     | 0.55              |
| 1:A:416:VAL:HB   | 1:A:429:ILE:HG13 | 1.88                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:64:VAL:HA    | 1:G:67:ILE:HG12  | 1.87                     | 0.55              |
| 2:M:170:GLN:HG3  | 2:M:175:ILE:HD12 | 1.88                     | 0.55              |
| 1:A:252:GLN:O    | 1:A:256:THR:OG1  | 2.25                     | 0.55              |
| 1:B:609:VAL:HG21 | 1:B:680:LYS:HG2  | 1.88                     | 0.55              |
| 1:G:208:ALA:HB2  | 1:G:870:LEU:HA   | 1.89                     | 0.55              |
| 1:A:200:ARG:NH2  | 1:A:260:ARG:O    | 2.41                     | 0.54              |
| 1:B:885:ASP:HB3  | 1:B:888:GLN:HG3  | 1.89                     | 0.54              |
| 1:I:44:ARG:O     | 1:I:48:ALA:HB2   | 2.07                     | 0.54              |
| 1:H:324:PHE:CE1  | 1:H:372:VAL:HG22 | 2.41                     | 0.54              |
| 1:J:21:ASP:OD1   | 2:N:296:LYS:NZ   | 2.41                     | 0.54              |
| 1:J:727:TYR:OH   | 1:J:860:ARG:NH2  | 2.37                     | 0.54              |
| 1:K:313:THR:OG1  | 1:K:316:GLN:OE1  | 2.20                     | 0.54              |
| 1:B:782:ARG:HB2  | 1:B:822:THR:HG22 | 1.88                     | 0.54              |
| 1:E:336:GLN:HE21 | 1:E:575:SER:HA   | 1.72                     | 0.54              |
| 1:E:377:GLY:HA3  | 1:E:398:LEU:HD11 | 1.88                     | 0.54              |
| 1:F:695:GLU:HB2  | 1:F:855:LYS:HZ2  | 1.71                     | 0.54              |
| 1:H:630:GLN:NE2  | 1:H:631:ALA:O    | 2.41                     | 0.54              |
| 1:J:111:MET:O    | 1:J:114:VAL:HG12 | 2.07                     | 0.54              |
| 2:L:8:ALA:HB3    | 2:L:13:ILE:HD11  | 1.89                     | 0.54              |
| 1:A:856:ARG:NE   | 1:A:859:GLU:OE2  | 2.41                     | 0.54              |
| 1:B:320:THR:HA   | 2:C:328:HIS:HE1  | 1.72                     | 0.54              |
| 1:E:84:LYS:HE3   | 1:E:147:ASP:HB3  | 1.88                     | 0.54              |
| 1:G:460:ARG:NH2  | 1:G:478:ASP:OD1  | 2.41                     | 0.54              |
| 1:K:21:ASP:OD1   | 2:O:296:LYS:NZ   | 2.41                     | 0.54              |
| 1:K:241:ARG:O    | 1:K:244:HIS:ND1  | 2.41                     | 0.54              |
| 1:B:263:THR:HG22 | 1:B:882:ARG:HB3  | 1.88                     | 0.54              |
| 1:D:44:ARG:NH2   | 1:D:59:PHE:O     | 2.41                     | 0.54              |
| 1:E:545:PRO:HG2  | 1:E:548:MET:HG3  | 1.88                     | 0.54              |
| 1:G:246:LYS:O    | 1:G:589:ARG:NH2  | 2.41                     | 0.54              |
| 1:K:866:ILE:HG13 | 1:K:867:LEU:HD12 | 1.90                     | 0.54              |
| 1:B:232:LEU:HD11 | 1:B:886:ILE:HD11 | 1.88                     | 0.54              |
| 1:I:374:GLY:HA2  | 1:I:398:LEU:HD13 | 1.88                     | 0.54              |
| 2:M:159:PRO:HA   | 2:M:237:ILE:HD13 | 1.90                     | 0.54              |
| 1:D:748:ILE:O    | 1:D:752:GLN:HG2  | 2.07                     | 0.54              |
| 1:I:263:THR:HG22 | 1:I:882:ARG:HB3  | 1.89                     | 0.53              |
| 1:K:848:MET:HG3  | 1:K:849:THR:HG23 | 1.89                     | 0.53              |
| 1:B:626:ASP:OD1  | 1:B:626:ASP:N    | 2.41                     | 0.53              |
| 1:B:862:ARG:HD2  | 1:B:864:GLY:H    | 1.73                     | 0.53              |
| 1:F:358:LYS:HB2  | 1:F:570:ASP:HB3  | 1.89                     | 0.53              |
| 1:A:281:VAL:HG13 | 1:A:284:SER:HB3  | 1.91                     | 0.53              |
| 1:F:782:ARG:HB2  | 1:F:822:THR:HG22 | 1.90                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:596:ALA:HA   | 1:B:599:ILE:HG12 | 1.89                     | 0.53              |
| 1:B:862:ARG:HH11 | 1:B:864:GLY:HA3  | 1.73                     | 0.53              |
| 1:E:281:VAL:HG13 | 1:E:284:SER:HB3  | 1.89                     | 0.53              |
| 1:E:382:THR:HB   | 1:E:450:ASN:HB2  | 1.90                     | 0.53              |
| 1:H:796:GLN:HA   | 1:H:848:MET:CG   | 2.38                     | 0.53              |
| 1:J:103:ARG:NH2  | 1:J:865:GLN:O    | 2.42                     | 0.53              |
| 1:J:390:LEU:HD12 | 1:J:449:TYR:HE2  | 1.72                     | 0.53              |
| 2:N:23:ARG:NH1   | 2:N:327:ASP:OD1  | 2.42                     | 0.53              |
| 2:N:287:THR:HA   | 2:N:295:TRP:HZ2  | 1.74                     | 0.53              |
| 1:A:36:LEU:HD23  | 1:A:61:VAL:HG13  | 1.90                     | 0.53              |
| 1:I:97:SER:OG    | 1:I:99:ASP:OD1   | 2.22                     | 0.53              |
| 1:I:179:HIS:HA   | 1:I:182:MET:HG2  | 1.90                     | 0.53              |
| 1:K:694:PHE:HA   | 1:K:697:LEU:HD12 | 1.90                     | 0.53              |
| 1:B:609:VAL:HG13 | 1:B:684:GLU:HG3  | 1.90                     | 0.53              |
| 1:D:295:THR:O    | 1:D:590:ASN:ND2  | 2.34                     | 0.53              |
| 1:D:740:ARG:NH2  | 1:D:769:ASP:O    | 2.42                     | 0.53              |
| 1:E:235:SER:HB3  | 1:E:271:LEU:HD23 | 1.89                     | 0.53              |
| 1:G:278:VAL:HG23 | 1:G:603:TYR:HE2  | 1.72                     | 0.53              |
| 1:F:235:SER:HB3  | 1:F:271:LEU:HD23 | 1.90                     | 0.53              |
| 1:K:799:PRO:HD3  | 1:K:849:THR:HG21 | 1.91                     | 0.53              |
| 2:C:292:ASP:HB2  | 2:C:295:TRP:HB2  | 1.90                     | 0.52              |
| 1:A:131:ILE:HD11 | 1:A:617:LEU:HD21 | 1.92                     | 0.52              |
| 2:C:162:ILE:HB   | 2:C:239:ILE:HG13 | 1.89                     | 0.52              |
| 1:F:614:MET:HE3  | 1:F:640:VAL:HG21 | 1.92                     | 0.52              |
| 1:F:664:ARG:HH22 | 1:K:473:ARG:HH22 | 1.57                     | 0.52              |
| 1:K:305:PRO:HB3  | 1:K:522:PHE:CG   | 2.44                     | 0.52              |
| 1:A:316:GLN:NE2  | 1:A:322:GLY:O    | 2.42                     | 0.52              |
| 1:F:511:SER:HB2  | 2:N:141:ARG:HH22 | 1.75                     | 0.52              |
| 1:D:841:LEU:HG   | 1:D:843:ASN:H    | 1.74                     | 0.52              |
| 1:B:305:PRO:HB3  | 1:B:522:PHE:CG   | 2.44                     | 0.52              |
| 1:F:648:VAL:O    | 1:F:652:MET:HG2  | 2.09                     | 0.52              |
| 1:H:405:TYR:OH   | 1:H:512:GLU:OE2  | 2.27                     | 0.52              |
| 1:B:478:ASP:OD2  | 1:B:480:ARG:NH2  | 2.43                     | 0.52              |
| 1:K:790:PRO:HG2  | 1:K:795:LEU:HG   | 1.91                     | 0.52              |
| 1:B:204:VAL:HG22 | 1:B:875:VAL:HG12 | 1.91                     | 0.52              |
| 2:C:242:VAL:HG23 | 2:C:247:LYS:HG3  | 1.91                     | 0.52              |
| 1:J:801:SER:HB3  | 1:J:816:LYS:HB2  | 1.92                     | 0.52              |
| 1:A:880:LYS:NZ   | 1:B:47:GLN:O     | 2.41                     | 0.51              |
| 1:F:512:GLU:OE1  | 1:F:512:GLU:N    | 2.42                     | 0.51              |
| 1:F:719:GLU:HA   | 1:F:722:ARG:HE   | 1.74                     | 0.51              |
| 1:D:357:LEU:HB2  | 1:D:394:MET:HG2  | 1.93                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:793:ASP:OD1  | 1:B:794:VAL:N    | 2.41                     | 0.51              |
| 1:D:641:LEU:O    | 1:D:644:SER:OG   | 2.28                     | 0.51              |
| 1:I:596:ALA:HA   | 1:I:599:ILE:HG12 | 1.93                     | 0.51              |
| 1:K:547:ASP:OD1  | 1:K:547:ASP:N    | 2.40                     | 0.51              |
| 1:B:434:TYR:HE2  | 1:B:503:MET:HG2  | 1.75                     | 0.51              |
| 1:D:744:TYR:HA   | 1:D:748:ILE:HD11 | 1.92                     | 0.51              |
| 1:F:200:ARG:NH2  | 1:F:260:ARG:O    | 2.43                     | 0.51              |
| 1:G:530:ILE:HD13 | 1:G:533:ILE:HD11 | 1.93                     | 0.51              |
| 1:H:313:THR:OG1  | 1:H:316:GLN:OE1  | 2.22                     | 0.51              |
| 1:K:626:ASP:N    | 1:K:626:ASP:OD1  | 2.41                     | 0.51              |
| 2:M:136:THR:HG23 | 2:M:139:ILE:H    | 1.75                     | 0.51              |
| 1:A:357:LEU:HB2  | 1:A:394:MET:HG2  | 1.92                     | 0.51              |
| 1:B:726:PHE:HD2  | 1:B:828:TYR:HE2  | 1.59                     | 0.51              |
| 1:F:42:LYS:NZ    | 1:F:568:VAL:O    | 2.35                     | 0.51              |
| 1:F:728:TYR:OH   | 1:F:850:LYS:NZ   | 2.44                     | 0.51              |
| 1:H:626:ASP:OD1  | 1:H:626:ASP:N    | 2.43                     | 0.51              |
| 1:J:305:PRO:HB3  | 1:J:522:PHE:CG   | 2.45                     | 0.51              |
| 1:A:720:ARG:HH12 | 1:A:724:GLU:HB3  | 1.76                     | 0.51              |
| 1:B:799:PRO:HD3  | 1:B:849:THR:HG21 | 1.92                     | 0.51              |
| 1:H:21:ASP:OD1   | 2:L:296:LYS:NZ   | 2.33                     | 0.51              |
| 1:H:110:GLU:OE1  | 1:H:140:LYS:NZ   | 2.44                     | 0.51              |
| 1:H:857:ILE:HG13 | 1:H:858:VAL:HG23 | 1.91                     | 0.51              |
| 1:I:305:PRO:HB3  | 1:I:522:PHE:CG   | 2.45                     | 0.51              |
| 1:K:699:LEU:HB3  | 1:K:778:LEU:HD12 | 1.93                     | 0.51              |
| 2:M:292:ASP:HB2  | 2:M:295:TRP:HB2  | 1.91                     | 0.51              |
| 2:O:137:GLU:HG3  | 2:O:153:VAL:HG21 | 1.93                     | 0.51              |
| 1:A:377:GLY:HA3  | 1:A:398:LEU:HD11 | 1.92                     | 0.51              |
| 1:B:158:VAL:HG22 | 1:B:191:ILE:HG22 | 1.93                     | 0.51              |
| 1:E:460:ARG:HB3  | 1:E:461:GLU:OE2  | 2.11                     | 0.51              |
| 1:F:754:ASN:HB2  | 1:F:811:ALA:HA   | 1.93                     | 0.51              |
| 1:B:397:GLN:HA   | 1:B:400:ILE:HG12 | 1.92                     | 0.51              |
| 1:G:378:HIS:CE1  | 1:G:398:LEU:HG   | 2.45                     | 0.51              |
| 1:H:596:ALA:HA   | 1:H:599:ILE:HG12 | 1.93                     | 0.51              |
| 1:D:718:ILE:O    | 1:D:722:ARG:HG2  | 2.10                     | 0.51              |
| 1:I:102:LEU:HD12 | 1:I:858:VAL:HG12 | 1.92                     | 0.51              |
| 2:N:133:VAL:HG12 | 2:N:152:ASP:HB2  | 1.93                     | 0.51              |
| 2:L:135:LEU:HD22 | 2:L:183:GLN:HG3  | 1.93                     | 0.50              |
| 1:E:397:GLN:HE21 | 1:E:573:TRP:HH2  | 1.59                     | 0.50              |
| 1:E:632:ARG:NH1  | 1:E:663:ILE:HD12 | 2.26                     | 0.50              |
| 1:J:376:VAL:HG22 | 1:J:380:LEU:HD23 | 1.94                     | 0.50              |
| 1:J:384:GLY:N    | 1:J:388:THR:OG1  | 2.44                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:K:691:ALA:HB1  | 1:K:697:LEU:HD11 | 1.93                     | 0.50              |
| 2:M:255:VAL:O    | 2:M:257:ARG:NH1  | 2.44                     | 0.50              |
| 1:D:36:LEU:HD23  | 1:D:61:VAL:HG13  | 1.92                     | 0.50              |
| 1:D:377:GLY:HA3  | 1:D:398:LEU:HD11 | 1.93                     | 0.50              |
| 1:F:823:ILE:HD11 | 1:F:851:VAL:HB   | 1.93                     | 0.50              |
| 1:H:805:ASN:ND2  | 1:H:812:TYR:O    | 2.36                     | 0.50              |
| 1:I:384:GLY:N    | 1:I:388:THR:OG1  | 2.42                     | 0.50              |
| 2:C:163:ILE:HD11 | 2:C:242:VAL:HB   | 1.93                     | 0.50              |
| 1:K:246:LYS:NZ   | 1:K:536:GLU:O    | 2.41                     | 0.50              |
| 1:A:378:HIS:CE1  | 1:A:398:LEU:HG   | 2.47                     | 0.50              |
| 1:A:744:TYR:HA   | 1:A:748:ILE:HD11 | 1.93                     | 0.50              |
| 1:E:510:ASP:OD2  | 2:M:141:ARG:NE   | 2.43                     | 0.50              |
| 1:E:754:ASN:HB2  | 1:E:811:ALA:HA   | 1.93                     | 0.50              |
| 1:F:693:ASP:OD2  | 1:F:855:LYS:NZ   | 2.43                     | 0.50              |
| 2:M:194:GLU:OE2  | 2:M:195:LYS:NZ   | 2.36                     | 0.50              |
| 1:A:254:VAL:HG23 | 1:A:255:LEU:HD12 | 1.93                     | 0.50              |
| 1:E:42:LYS:O     | 1:E:46:VAL:HG23  | 2.12                     | 0.50              |
| 1:H:84:LYS:HG3   | 1:H:85:VAL:HG23  | 1.94                     | 0.50              |
| 1:H:344:TYR:O    | 1:H:348:MET:HG3  | 2.12                     | 0.50              |
| 1:I:565:ASP:OD2  | 1:I:659:ASN:ND2  | 2.43                     | 0.50              |
| 1:J:862:ARG:NE   | 1:J:865:GLN:OE1  | 2.45                     | 0.50              |
| 1:K:115:GLY:O    | 1:K:782:ARG:NH2  | 2.45                     | 0.50              |
| 2:L:162:ILE:HB   | 2:L:239:ILE:HG13 | 1.93                     | 0.50              |
| 1:G:382:THR:HB   | 1:G:450:ASN:HB2  | 1.93                     | 0.50              |
| 1:H:555:ASP:HB3  | 1:H:561:HIS:CD2  | 2.46                     | 0.50              |
| 2:O:165:VAL:HG13 | 2:O:170:GLN:NE2  | 2.27                     | 0.50              |
| 1:E:367:PRO:HA   | 1:E:370:ARG:HE   | 1.75                     | 0.50              |
| 1:K:179:HIS:HA   | 1:K:182:MET:HG2  | 1.93                     | 0.50              |
| 2:L:165:VAL:O    | 2:L:170:GLN:NE2  | 2.43                     | 0.50              |
| 1:B:388:THR:HG22 | 1:B:390:LEU:H    | 1.76                     | 0.50              |
| 1:E:254:VAL:HG23 | 1:E:255:LEU:HD12 | 1.93                     | 0.50              |
| 1:G:251:SER:HA   | 1:K:359:ILE:HB   | 1.94                     | 0.50              |
| 1:A:257:ASP:HA   | 1:A:260:ARG:HD3  | 1.93                     | 0.49              |
| 1:E:337:LEU:HA   | 1:E:340:VAL:HG12 | 1.94                     | 0.49              |
| 1:J:228:GLN:HB2  | 1:J:267:LEU:HD12 | 1.94                     | 0.49              |
| 1:J:386:ARG:HH12 | 1:J:455:ILE:HA   | 1.77                     | 0.49              |
| 1:J:705:MET:SD   | 1:J:849:THR:N    | 2.78                     | 0.49              |
| 1:K:656:HIS:CE1  | 1:K:661:ILE:HD13 | 2.47                     | 0.49              |
| 1:F:354:ILE:HB   | 1:F:568:VAL:HG12 | 1.94                     | 0.49              |
| 1:G:373:ALA:HB1  | 1:G:576:LEU:HD12 | 1.94                     | 0.49              |
| 1:H:260:ARG:O    | 1:H:263:THR:OG1  | 2.27                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:H:497:TYR:CE2  | 1:H:520:LEU:HD12 | 2.47                     | 0.49              |
| 1:K:229:LEU:O    | 1:K:233:ARG:HG3  | 2.12                     | 0.49              |
| 1:E:425:LEU:O    | 1:E:440:ARG:NH2  | 2.46                     | 0.49              |
| 1:F:44:ARG:NH2   | 1:F:59:PHE:O     | 2.44                     | 0.49              |
| 1:F:474:TYR:N    | 1:F:531:ASN:OD1  | 2.41                     | 0.49              |
| 1:J:782:ARG:NE   | 1:J:820:GLU:OE2  | 2.44                     | 0.49              |
| 1:K:14:THR:HB    | 1:K:301:GLU:OE2  | 2.12                     | 0.49              |
| 1:F:615:ARG:HH22 | 1:F:673:PRO:HA   | 1.76                     | 0.49              |
| 1:H:616:HIS:NE2  | 1:H:685:GLU:OE1  | 2.46                     | 0.49              |
| 1:H:707:ARG:HG3  | 1:H:766:MET:HE1  | 1.94                     | 0.49              |
| 1:I:699:LEU:HB3  | 1:I:778:LEU:HD12 | 1.95                     | 0.49              |
| 2:N:162:ILE:HB   | 2:N:239:ILE:HG13 | 1.93                     | 0.49              |
| 1:A:559:GLY:O    | 1:H:517:ARG:NH2  | 2.45                     | 0.49              |
| 1:B:44:ARG:O     | 1:B:48:ALA:HB2   | 2.12                     | 0.49              |
| 1:B:586:PRO:HB2  | 1:B:589:ARG:NH2  | 2.28                     | 0.49              |
| 1:F:428:GLN:HG3  | 1:F:435:ASP:HA   | 1.93                     | 0.49              |
| 1:F:633:PRO:HA   | 1:F:636:PHE:CE1  | 2.47                     | 0.49              |
| 1:I:598:LEU:HD11 | 1:I:887:THR:HB   | 1.95                     | 0.49              |
| 2:M:8:ALA:HB3    | 2:M:13:ILE:HD11  | 1.94                     | 0.49              |
| 1:E:439:PHE:HZ   | 1:E:499:GLU:HB3  | 1.78                     | 0.49              |
| 1:G:878:LYS:HB2  | 1:G:881:MET:HG3  | 1.95                     | 0.49              |
| 1:A:529:ARG:O    | 1:A:533:ILE:HG12 | 2.12                     | 0.49              |
| 1:D:495:HIS:HE1  | 1:D:499:GLU:OE2  | 1.95                     | 0.49              |
| 1:E:374:GLY:HA2  | 1:E:398:LEU:HD12 | 1.93                     | 0.49              |
| 2:L:18:GLU:HA    | 2:L:21:LYS:HE2   | 1.94                     | 0.49              |
| 1:G:841:LEU:HG   | 1:G:843:ASN:H    | 1.76                     | 0.49              |
| 1:I:702:GLN:OE1  | 1:I:704:TYR:OH   | 2.22                     | 0.49              |
| 2:L:165:VAL:O    | 2:L:183:GLN:NE2  | 2.34                     | 0.49              |
| 1:A:373:ALA:HA   | 1:A:376:VAL:HG12 | 1.95                     | 0.49              |
| 1:B:727:TYR:OH   | 1:B:860:ARG:NH2  | 2.40                     | 0.49              |
| 1:K:744:TYR:O    | 1:K:817:TYR:OH   | 2.29                     | 0.49              |
| 1:B:229:LEU:O    | 1:B:233:ARG:HG3  | 2.12                     | 0.49              |
| 1:E:856:ARG:NE   | 1:E:859:GLU:OE2  | 2.41                     | 0.49              |
| 1:H:18:LEU:HD11  | 2:L:287:THR:HG21 | 1.94                     | 0.49              |
| 1:I:790:PRO:HG2  | 1:I:795:LEU:HG   | 1.95                     | 0.49              |
| 1:F:371:MET:HA   | 1:F:401:ALA:HB1  | 1.95                     | 0.48              |
| 1:I:823:ILE:HD13 | 1:I:851:VAL:HB   | 1.95                     | 0.48              |
| 1:J:214:TYR:CZ   | 1:J:872:ARG:HB3  | 2.48                     | 0.48              |
| 1:A:250:TYR:HE1  | 1:A:594:GLU:HB3  | 1.79                     | 0.48              |
| 1:B:15:THR:HB    | 1:B:303:ILE:HD12 | 1.94                     | 0.48              |
| 1:B:386:ARG:HH22 | 1:B:455:ILE:HG13 | 1.79                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:356:ASP:N    | 1:D:569:LEU:O    | 2.44                     | 0.48              |
| 1:G:238:TRP:HA   | 1:G:241:ARG:HD3  | 1.94                     | 0.48              |
| 1:H:264:ILE:HB   | 1:H:883:ILE:HG22 | 1.95                     | 0.48              |
| 2:L:255:VAL:O    | 2:L:257:ARG:NH1  | 2.46                     | 0.48              |
| 2:N:323:LEU:HA   | 2:N:326:ILE:HG22 | 1.94                     | 0.48              |
| 1:D:614:MET:SD   | 1:D:640:VAL:HG21 | 2.53                     | 0.48              |
| 1:E:379:LEU:HD11 | 1:E:500:MET:HG2  | 1.94                     | 0.48              |
| 1:J:63:ASP:HA    | 1:J:66:LYS:HE2   | 1.96                     | 0.48              |
| 1:A:641:LEU:O    | 1:A:644:SER:OG   | 2.29                     | 0.48              |
| 1:F:180:ARG:HA   | 1:F:183:ILE:HG22 | 1.95                     | 0.48              |
| 1:K:260:ARG:HG3  | 1:K:262:ASP:H    | 1.77                     | 0.48              |
| 1:K:269:LEU:HD21 | 1:K:601:SER:HB3  | 1.96                     | 0.48              |
| 2:M:168:SER:OG   | 2:M:243:MET:O    | 2.30                     | 0.48              |
| 2:N:305:LYS:HB2  | 2:N:308:ILE:HB   | 1.95                     | 0.48              |
| 1:I:456:ASP:OD1  | 1:I:456:ASP:N    | 2.46                     | 0.48              |
| 1:J:857:ILE:HG12 | 1:J:858:VAL:HG23 | 1.95                     | 0.48              |
| 1:J:865:GLN:HB2  | 1:J:868:ALA:HB2  | 1.96                     | 0.48              |
| 1:K:862:ARG:NH1  | 1:K:865:GLN:OE1  | 2.46                     | 0.48              |
| 1:B:694:PHE:HE2  | 1:B:778:LEU:HD11 | 1.79                     | 0.48              |
| 1:G:627:VAL:HG23 | 1:G:628:LEU:HD12 | 1.95                     | 0.48              |
| 1:E:413:ARG:HE   | 1:E:414:VAL:H    | 1.61                     | 0.48              |
| 1:K:297:LEU:O    | 1:K:590:ASN:ND2  | 2.46                     | 0.48              |
| 2:N:24:GLN:NE2   | 2:N:266:GLU:OE2  | 2.46                     | 0.48              |
| 1:A:823:ILE:HD11 | 1:A:851:VAL:HB   | 1.94                     | 0.48              |
| 1:B:358:LYS:NZ   | 1:B:360:ASP:OD2  | 2.39                     | 0.48              |
| 2:C:8:ALA:HB3    | 2:C:13:ILE:HD11  | 1.94                     | 0.48              |
| 1:D:252:GLN:O    | 1:D:256:THR:OG1  | 2.32                     | 0.48              |
| 1:D:392:GLN:HA   | 1:D:443:PHE:HZ   | 1.79                     | 0.48              |
| 1:D:527:PHE:HA   | 1:D:530:ILE:HB   | 1.94                     | 0.48              |
| 1:E:554:PRO:HA   | 1:E:557:ILE:HG22 | 1.94                     | 0.48              |
| 1:G:158:VAL:HG12 | 1:G:191:ILE:HA   | 1.95                     | 0.48              |
| 2:N:259:MET:SD   | 2:N:260:ALA:N    | 2.85                     | 0.48              |
| 1:F:648:VAL:HA   | 1:F:651:VAL:HG12 | 1.94                     | 0.48              |
| 1:A:371:MET:HA   | 1:A:401:ALA:HB1  | 1.96                     | 0.48              |
| 1:F:374:GLY:HA2  | 1:F:398:LEU:HD12 | 1.96                     | 0.48              |
| 1:G:306:ASN:ND2  | 2:O:266:GLU:OE2  | 2.45                     | 0.48              |
| 1:G:428:GLN:HG3  | 1:G:435:ASP:HA   | 1.96                     | 0.48              |
| 1:H:85:VAL:HG13  | 1:H:163:VAL:HA   | 1.94                     | 0.48              |
| 1:K:102:LEU:HD11 | 1:K:858:VAL:HG12 | 1.96                     | 0.48              |
| 1:K:786:TYR:CD2  | 1:K:790:PRO:HB3  | 2.49                     | 0.48              |
| 1:B:306:ASN:HB3  | 1:B:309:ILE:HD13 | 1.96                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:641:LEU:O    | 1:E:644:SER:OG   | 2.32                     | 0.47              |
| 1:H:705:MET:HE1  | 1:H:848:MET:HA   | 1.96                     | 0.47              |
| 2:L:163:ILE:HD11 | 2:L:242:VAL:HB   | 1.96                     | 0.47              |
| 2:O:168:SER:OG   | 2:O:243:MET:O    | 2.29                     | 0.47              |
| 1:A:532:GLN:O    | 1:A:536:GLU:HB3  | 2.14                     | 0.47              |
| 1:B:241:ARG:O    | 1:B:244:HIS:ND1  | 2.47                     | 0.47              |
| 1:I:886:ILE:HA   | 1:I:889:SER:HB2  | 1.95                     | 0.47              |
| 1:J:14:THR:OG1   | 1:J:302:TYR:O    | 2.22                     | 0.47              |
| 1:J:405:TYR:OH   | 1:J:512:GLU:OE2  | 2.32                     | 0.47              |
| 1:B:214:TYR:CE2  | 1:B:872:ARG:HD2  | 2.49                     | 0.47              |
| 1:D:374:GLY:HA2  | 1:D:398:LEU:HD12 | 1.96                     | 0.47              |
| 1:H:792:ASP:HA   | 1:H:795:LEU:HD12 | 1.95                     | 0.47              |
| 1:J:382:THR:HA   | 1:J:449:TYR:HB3  | 1.95                     | 0.47              |
| 1:A:633:PRO:HA   | 1:A:636:PHE:CZ   | 2.49                     | 0.47              |
| 1:B:228:GLN:HB2  | 1:B:267:LEU:HD13 | 1.95                     | 0.47              |
| 1:D:408:TYR:CD2  | 1:D:409:MET:HG2  | 2.49                     | 0.47              |
| 1:E:632:ARG:HH12 | 1:E:663:ILE:HD12 | 1.79                     | 0.47              |
| 1:I:86:PRO:HG3   | 1:I:145:LEU:HD21 | 1.96                     | 0.47              |
| 1:F:63:ASP:O     | 1:F:67:ILE:HG12  | 2.15                     | 0.47              |
| 1:F:93:ILE:HD12  | 1:F:102:LEU:HD11 | 1.95                     | 0.47              |
| 1:H:66:LYS:O     | 1:H:70:ASP:HB2   | 2.14                     | 0.47              |
| 1:I:434:TYR:CE2  | 1:I:502:ARG:HG3  | 2.49                     | 0.47              |
| 1:G:411:ASN:OD1  | 1:G:509:LYS:NZ   | 2.48                     | 0.47              |
| 1:H:348:MET:HA   | 1:H:534:ILE:HD11 | 1.95                     | 0.47              |
| 1:H:497:TYR:OH   | 1:H:516:PHE:O    | 2.32                     | 0.47              |
| 1:K:399:ASP:OD2  | 1:K:440:ARG:HA   | 2.13                     | 0.47              |
| 1:K:565:ASP:OD2  | 1:K:659:ASN:ND2  | 2.47                     | 0.47              |
| 1:A:208:ALA:HB2  | 1:A:870:LEU:HA   | 1.97                     | 0.47              |
| 1:B:85:VAL:HG13  | 1:B:163:VAL:HA   | 1.96                     | 0.47              |
| 1:B:176:THR:OG1  | 1:B:179:HIS:ND1  | 2.48                     | 0.47              |
| 1:D:754:ASN:HB2  | 1:D:811:ALA:HA   | 1.95                     | 0.47              |
| 1:E:473:ARG:HA   | 1:E:531:ASN:HD21 | 1.80                     | 0.47              |
| 1:E:484:ASN:OD1  | 1:E:487:THR:OG1  | 2.32                     | 0.47              |
| 1:G:633:PRO:HA   | 1:G:636:PHE:CZ   | 2.50                     | 0.47              |
| 1:I:372:VAL:HA   | 1:I:375:VAL:HG12 | 1.97                     | 0.47              |
| 2:C:324:HIS:HE1  | 2:C:328:HIS:NE2  | 2.12                     | 0.47              |
| 1:I:172:LEU:O    | 1:I:180:ARG:NE   | 2.38                     | 0.47              |
| 2:O:287:THR:HA   | 2:O:295:TRP:HZ2  | 1.80                     | 0.47              |
| 1:J:246:LYS:HA   | 1:J:246:LYS:HD2  | 1.78                     | 0.47              |
| 1:K:722:ARG:HA   | 1:K:830:VAL:HG11 | 1.96                     | 0.47              |
| 1:A:44:ARG:HH21  | 1:A:59:PHE:HD2   | 1.63                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:435:ASP:OD1  | 1:A:435:ASP:N    | 2.43                     | 0.47              |
| 1:H:796:GLN:HA   | 1:H:848:MET:HG2  | 1.97                     | 0.47              |
| 1:I:14:THR:OG1   | 1:I:302:TYR:O    | 2.25                     | 0.47              |
| 1:J:805:ASN:ND2  | 1:J:812:TYR:O    | 2.38                     | 0.47              |
| 1:K:176:THR:OG1  | 1:K:179:HIS:ND1  | 2.49                     | 0.47              |
| 1:A:85:VAL:HG13  | 1:A:163:VAL:HA   | 1.97                     | 0.46              |
| 1:K:554:PRO:HA   | 1:K:557:ILE:HG22 | 1.97                     | 0.46              |
| 2:L:187:LEU:O    | 2:L:191:ARG:HG2  | 2.15                     | 0.46              |
| 2:N:255:VAL:O    | 2:N:257:ARG:NH1  | 2.48                     | 0.46              |
| 1:E:678:SER:HB3  | 1:E:681:LEU:HD23 | 1.98                     | 0.46              |
| 1:F:392:GLN:HA   | 1:F:443:PHE:HZ   | 1.79                     | 0.46              |
| 1:G:596:ALA:HA   | 1:G:599:ILE:HD13 | 1.97                     | 0.46              |
| 1:J:609:VAL:HG13 | 1:J:684:GLU:HG3  | 1.97                     | 0.46              |
| 2:L:8:ALA:O      | 2:L:274:ASN:ND2  | 2.48                     | 0.46              |
| 2:N:5:MET:SD     | 2:N:271:LEU:HD22 | 2.55                     | 0.46              |
| 2:N:18:GLU:HA    | 2:N:21:LYS:HE2   | 1.97                     | 0.46              |
| 2:N:292:ASP:HB2  | 2:N:295:TRP:HB2  | 1.97                     | 0.46              |
| 1:A:382:THR:HB   | 1:A:450:ASN:HB2  | 1.98                     | 0.46              |
| 1:F:405:TYR:HD2  | 1:F:406:LEU:HD22 | 1.80                     | 0.46              |
| 1:G:517:ARG:HA   | 1:G:520:LEU:HG   | 1.97                     | 0.46              |
| 1:H:336:GLN:NE2  | 2:L:306:LYS:O    | 2.48                     | 0.46              |
| 1:J:229:LEU:O    | 1:J:233:ARG:HG3  | 2.15                     | 0.46              |
| 1:J:573:TRP:HB2  | 2:N:307:ASN:ND2  | 2.31                     | 0.46              |
| 1:K:730:ASN:HB2  | 1:K:850:LYS:HG2  | 1.97                     | 0.46              |
| 1:D:787:ASP:HA   | 1:D:827:ILE:O    | 2.16                     | 0.46              |
| 1:F:208:ALA:HB2  | 1:F:870:LEU:HA   | 1.98                     | 0.46              |
| 1:F:246:LYS:O    | 1:F:589:ARG:NH2  | 2.48                     | 0.46              |
| 1:G:38:GLU:HA    | 1:G:41:GLN:HG3   | 1.97                     | 0.46              |
| 1:D:492:MET:SD   | 1:D:492:MET:N    | 2.88                     | 0.46              |
| 1:I:229:LEU:O    | 1:I:233:ARG:HG3  | 2.16                     | 0.46              |
| 1:I:417:ASN:ND2  | 1:I:433:GLN:OE1  | 2.47                     | 0.46              |
| 2:L:20:LEU:HB3   | 2:L:27:ILE:HD11  | 1.97                     | 0.46              |
| 2:L:242:VAL:HG23 | 2:L:247:LYS:HG3  | 1.98                     | 0.46              |
| 1:B:779:ARG:NH2  | 1:B:799:PRO:O    | 2.43                     | 0.46              |
| 1:D:548:MET:O    | 1:D:552:LEU:HG   | 2.15                     | 0.46              |
| 1:H:228:GLN:HB2  | 1:H:267:LEU:HD12 | 1.98                     | 0.46              |
| 1:K:596:ALA:HA   | 1:K:599:ILE:HG12 | 1.97                     | 0.46              |
| 1:F:606:GLU:OE2  | 1:F:680:LYS:NZ   | 2.43                     | 0.46              |
| 1:K:327:LEU:HD23 | 1:K:327:LEU:HA   | 1.83                     | 0.46              |
| 1:B:18:LEU:HD11  | 2:C:287:THR:HG21 | 1.98                     | 0.46              |
| 1:D:408:TYR:HD2  | 1:D:409:MET:HG2  | 1.80                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:559:GLY:O    | 1:J:517:ARG:NH2  | 2.49                     | 0.46              |
| 1:H:252:GLN:HG2  | 1:H:890:LEU:HD11 | 1.97                     | 0.46              |
| 1:I:289:LEU:HD22 | 1:I:352:GLN:HB3  | 1.98                     | 0.46              |
| 1:K:494:TYR:CZ   | 1:K:497:TYR:HB2  | 2.51                     | 0.46              |
| 2:M:323:LEU:HA   | 2:M:326:ILE:HG22 | 1.97                     | 0.46              |
| 1:H:744:TYR:O    | 1:H:817:TYR:OH   | 2.33                     | 0.46              |
| 1:I:382:THR:HA   | 1:I:449:TYR:HB3  | 1.98                     | 0.46              |
| 1:A:100:ARG:CZ   | 1:A:860:ARG:HE   | 2.29                     | 0.46              |
| 1:F:238:TRP:HA   | 1:F:241:ARG:HD3  | 1.98                     | 0.46              |
| 1:G:121:ASP:OD1  | 1:G:121:ASP:N    | 2.49                     | 0.46              |
| 1:G:678:SER:HB3  | 1:G:681:LEU:HD23 | 1.98                     | 0.46              |
| 1:H:229:LEU:O    | 1:H:233:ARG:HG3  | 2.14                     | 0.46              |
| 1:B:383:ALA:HA   | 1:B:388:THR:HG23 | 1.98                     | 0.45              |
| 2:C:20:LEU:HD13  | 2:C:27:ILE:HG12  | 1.98                     | 0.45              |
| 1:D:297:LEU:HD12 | 1:D:298:PRO:HD2  | 1.98                     | 0.45              |
| 1:E:611:LYS:HB3  | 1:E:615:ARG:NH2  | 2.32                     | 0.45              |
| 1:F:511:SER:HB2  | 2:N:141:ARG:HH12 | 1.81                     | 0.45              |
| 1:A:84:LYS:HE3   | 1:A:147:ASP:HB3  | 1.98                     | 0.45              |
| 1:D:127:TYR:HD2  | 1:D:636:PHE:HB3  | 1.81                     | 0.45              |
| 1:G:501:LEU:HD21 | 1:G:517:ARG:HD2  | 1.98                     | 0.45              |
| 1:H:796:GLN:C    | 1:H:848:MET:HG3  | 2.36                     | 0.45              |
| 1:K:882:ARG:NE   | 1:K:884:MET:SD   | 2.90                     | 0.45              |
| 1:B:99:ASP:OD1   | 1:B:100:ARG:N    | 2.49                     | 0.45              |
| 1:D:281:VAL:HG13 | 1:D:284:SER:HB3  | 1.99                     | 0.45              |
| 1:F:229:LEU:HG   | 1:F:230:GLN:OE1  | 2.16                     | 0.45              |
| 1:H:305:PRO:HB3  | 1:H:522:PHE:CG   | 2.51                     | 0.45              |
| 1:H:799:PRO:HG3  | 1:H:849:THR:HG21 | 1.97                     | 0.45              |
| 1:B:885:ASP:H    | 1:B:888:GLN:HE21 | 1.64                     | 0.45              |
| 1:I:81:LYS:HA    | 1:I:81:LYS:HD3   | 1.69                     | 0.45              |
| 1:J:160:GLU:O    | 1:J:163:VAL:HG12 | 2.16                     | 0.45              |
| 1:J:343:ILE:HG13 | 1:J:571:VAL:HG21 | 1.98                     | 0.45              |
| 2:M:170:GLN:NE2  | 2:M:183:GLN:OE1  | 2.49                     | 0.45              |
| 1:A:753:ALA:HA   | 1:A:758:PHE:HB2  | 1.97                     | 0.45              |
| 1:B:629:ILE:HD11 | 1:B:777:VAL:HG12 | 1.99                     | 0.45              |
| 1:G:357:LEU:HD11 | 1:G:573:TRP:CH2  | 2.51                     | 0.45              |
| 1:H:318:ILE:O    | 1:H:318:ILE:HG13 | 2.16                     | 0.45              |
| 1:I:320:THR:OG1  | 1:I:321:THR:N    | 2.50                     | 0.45              |
| 1:I:504:LEU:HD21 | 1:I:512:GLU:HG2  | 1.97                     | 0.45              |
| 1:J:824:PHE:HE2  | 1:J:826:LEU:HD23 | 1.82                     | 0.45              |
| 2:L:242:VAL:HG11 | 2:L:248:LEU:HD12 | 1.98                     | 0.45              |
| 1:F:510:ASP:N    | 1:F:510:ASP:OD1  | 2.50                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:753:ALA:HA   | 1:F:758:PHE:HB2  | 1.97                     | 0.45              |
| 1:I:302:TYR:HE1  | 1:I:584:PHE:HD1  | 1.64                     | 0.45              |
| 1:I:826:LEU:HD21 | 1:I:828:TYR:CZ   | 2.52                     | 0.45              |
| 1:A:352:GLN:HE22 | 1:A:544:LEU:HB2  | 1.82                     | 0.45              |
| 1:J:497:TYR:OH   | 1:J:516:PHE:O    | 2.34                     | 0.45              |
| 1:K:371:MET:HG3  | 1:K:405:TYR:HB2  | 1.98                     | 0.45              |
| 1:A:42:LYS:O     | 1:A:46:VAL:HG23  | 2.17                     | 0.45              |
| 1:B:699:LEU:HB3  | 1:B:778:LEU:HD12 | 1.98                     | 0.45              |
| 1:D:720:ARG:O    | 1:D:724:GLU:HB3  | 2.17                     | 0.45              |
| 1:A:246:LYS:O    | 1:A:589:ARG:NH2  | 2.50                     | 0.45              |
| 1:A:672:LEU:HA   | 1:A:673:PRO:HD3  | 1.81                     | 0.45              |
| 1:D:357:LEU:HD22 | 1:D:397:GLN:HG3  | 1.99                     | 0.45              |
| 1:E:431:ARG:HA   | 1:E:431:ARG:HD3  | 1.72                     | 0.45              |
| 1:F:664:ARG:HH12 | 1:K:473:ARG:HH12 | 1.65                     | 0.45              |
| 1:G:504:LEU:HD23 | 1:G:513:ALA:HB2  | 1.99                     | 0.45              |
| 1:H:86:PRO:HG3   | 1:H:145:LEU:HD21 | 1.99                     | 0.45              |
| 1:H:90:PHE:HB2   | 1:H:166:VAL:HG22 | 1.98                     | 0.45              |
| 1:H:382:THR:HA   | 1:H:449:TYR:HB3  | 1.98                     | 0.45              |
| 1:H:473:ARG:NH1  | 1:H:476:GLY:O    | 2.50                     | 0.45              |
| 1:G:297:LEU:HD12 | 1:G:298:PRO:HD2  | 1.98                     | 0.45              |
| 1:H:33:VAL:HG13  | 1:H:64:VAL:HG21  | 1.99                     | 0.45              |
| 1:H:179:HIS:HA   | 1:H:182:MET:HG3  | 1.99                     | 0.45              |
| 1:J:85:VAL:HG13  | 1:J:163:VAL:HA   | 1.98                     | 0.45              |
| 1:K:306:ASN:HB3  | 1:K:309:ILE:HD13 | 1.98                     | 0.45              |
| 2:M:137:GLU:HG3  | 2:M:153:VAL:HG21 | 1.98                     | 0.45              |
| 1:A:510:ASP:OD1  | 2:C:141:ARG:NH1  | 2.50                     | 0.44              |
| 1:B:103:ARG:HH21 | 1:B:866:ILE:HA   | 1.81                     | 0.44              |
| 1:B:522:PHE:CE1  | 1:B:583:SER:HB2  | 2.52                     | 0.44              |
| 1:B:729:THR:HG23 | 1:B:731:MET:H    | 1.81                     | 0.44              |
| 1:D:526:ARG:NE   | 1:D:583:SER:OG   | 2.41                     | 0.44              |
| 1:D:790:PRO:HG2  | 1:D:795:LEU:HD22 | 1.99                     | 0.44              |
| 1:F:373:ALA:HA   | 1:F:376:VAL:HG12 | 2.00                     | 0.44              |
| 1:G:84:LYS:HE3   | 1:G:147:ASP:HB3  | 1.99                     | 0.44              |
| 1:E:669:TRP:HA   | 1:E:672:LEU:HD13 | 1.99                     | 0.44              |
| 1:H:384:GLY:H    | 1:H:388:THR:HG22 | 1.82                     | 0.44              |
| 1:J:374:GLY:HA2  | 1:J:398:LEU:HD13 | 1.98                     | 0.44              |
| 1:E:82:ILE:HD13  | 1:E:144:ILE:HB   | 1.99                     | 0.44              |
| 1:G:732:LEU:HB2  | 1:G:852:PHE:HB2  | 1.99                     | 0.44              |
| 1:I:255:LEU:HA   | 1:I:258:PHE:CD2  | 2.53                     | 0.44              |
| 1:I:379:LEU:HD21 | 1:I:500:MET:HG2  | 1.99                     | 0.44              |
| 1:I:702:GLN:HB3  | 1:I:852:PHE:HB3  | 1.99                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:J:178:GLU:O    | 1:J:182:MET:HG3  | 2.18                     | 0.44              |
| 1:A:121:ASP:N    | 1:A:121:ASP:OD1  | 2.49                     | 0.44              |
| 1:A:532:GLN:O    | 1:A:536:GLU:CB   | 2.66                     | 0.44              |
| 1:A:829:ASN:HB3  | 1:A:832:PHE:HB3  | 1.99                     | 0.44              |
| 1:B:33:VAL:HG13  | 1:B:64:VAL:HG21  | 1.99                     | 0.44              |
| 2:C:300:ARG:O    | 2:C:304:LYS:HG3  | 2.17                     | 0.44              |
| 1:F:254:VAL:HG23 | 1:F:255:LEU:HD12 | 2.00                     | 0.44              |
| 1:F:554:PRO:HA   | 1:F:557:ILE:HG22 | 1.98                     | 0.44              |
| 1:K:705:MET:SD   | 1:K:849:THR:N    | 2.81                     | 0.44              |
| 1:D:510:ASP:N    | 1:D:510:ASP:OD1  | 2.50                     | 0.44              |
| 1:G:787:ASP:HA   | 1:G:827:ILE:O    | 2.18                     | 0.44              |
| 1:H:44:ARG:O     | 1:H:48:ALA:HB2   | 2.18                     | 0.44              |
| 1:H:78:GLN:OE1   | 1:H:79:VAL:N     | 2.50                     | 0.44              |
| 1:J:621:GLN:NE2  | 1:J:629:ILE:O    | 2.40                     | 0.44              |
| 2:N:20:LEU:HB3   | 2:N:27:ILE:HD11  | 1.98                     | 0.44              |
| 1:A:277:VAL:HG22 | 1:A:674:SER:HB3  | 2.00                     | 0.44              |
| 1:A:596:ALA:HA   | 1:A:599:ILE:HD13 | 1.99                     | 0.44              |
| 1:D:158:VAL:HG12 | 1:D:191:ILE:HA   | 2.00                     | 0.44              |
| 1:G:28:GLY:HA2   | 1:G:297:LEU:HD23 | 1.99                     | 0.44              |
| 1:I:300:GLY:HA2  | 1:I:586:PRO:HA   | 1.99                     | 0.44              |
| 1:I:525:VAL:O    | 1:I:529:ARG:HG2  | 2.18                     | 0.44              |
| 2:M:149:THR:HG21 | 2:M:252:ILE:HD12 | 1.98                     | 0.44              |
| 1:D:762:LEU:HA   | 1:D:765:ILE:HG22 | 1.99                     | 0.44              |
| 1:E:779:ARG:HH22 | 1:E:817:TYR:HB3  | 1.83                     | 0.44              |
| 1:E:880:LYS:HD3  | 1:I:660:PHE:CE1  | 2.53                     | 0.44              |
| 1:F:108:TYR:HA   | 1:F:111:MET:HB3  | 2.00                     | 0.44              |
| 1:F:111:MET:HE1  | 1:F:133:LYS:HE3  | 2.00                     | 0.44              |
| 1:G:373:ALA:HA   | 1:G:376:VAL:HG12 | 1.98                     | 0.44              |
| 1:H:102:LEU:HA   | 1:H:859:GLU:O    | 2.18                     | 0.44              |
| 1:J:18:LEU:HD11  | 2:N:287:THR:HG21 | 2.00                     | 0.44              |
| 1:A:149:PRO:HB2  | 1:A:160:GLU:HG3  | 1.99                     | 0.44              |
| 1:E:631:ALA:HB1  | 1:E:635:HIS:ND1  | 2.33                     | 0.44              |
| 1:I:504:LEU:HD12 | 1:I:504:LEU:HA   | 1.84                     | 0.44              |
| 1:A:841:LEU:HG   | 1:A:843:ASN:H    | 1.82                     | 0.44              |
| 1:H:192:ILE:HD11 | 1:H:203:ASP:HB3  | 1.99                     | 0.44              |
| 1:A:782:ARG:HB2  | 1:A:822:THR:HG22 | 2.00                     | 0.43              |
| 2:C:158:VAL:HG23 | 2:C:160:ALA:HB2  | 1.99                     | 0.43              |
| 1:D:175:LEU:HD23 | 1:D:179:HIS:HB3  | 2.00                     | 0.43              |
| 1:E:536:GLU:OE2  | 1:E:589:ARG:NH2  | 2.43                     | 0.43              |
| 1:G:44:ARG:HH21  | 1:G:59:PHE:HB2   | 1.82                     | 0.43              |
| 1:I:358:LYS:NZ   | 1:I:360:ASP:OD2  | 2.45                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:J:547:ASP:N    | 1:J:547:ASP:OD1  | 2.51                     | 0.43              |
| 1:K:382:THR:HA   | 1:K:449:TYR:HB3  | 2.00                     | 0.43              |
| 1:A:866:ILE:HG23 | 1:A:867:LEU:HD22 | 2.00                     | 0.43              |
| 2:C:18:GLU:HA    | 2:C:21:LYS:HE2   | 2.00                     | 0.43              |
| 1:D:277:VAL:HG22 | 1:D:674:SER:HB3  | 2.00                     | 0.43              |
| 1:E:252:GLN:O    | 1:E:256:THR:OG1  | 2.36                     | 0.43              |
| 1:F:160:GLU:O    | 1:F:163:VAL:HG12 | 2.18                     | 0.43              |
| 1:H:97:SER:OG    | 1:H:99:ASP:OD1   | 2.28                     | 0.43              |
| 1:J:322:GLY:O    | 1:J:326:ILE:HD12 | 2.17                     | 0.43              |
| 1:K:841:LEU:HD23 | 1:K:844:PRO:HA   | 2.00                     | 0.43              |
| 2:L:287:THR:HA   | 2:L:295:TRP:HZ2  | 1.81                     | 0.43              |
| 1:E:392:GLN:HA   | 1:E:443:PHE:HZ   | 1.82                     | 0.43              |
| 1:E:611:LYS:HB3  | 1:E:615:ARG:HH22 | 1.83                     | 0.43              |
| 1:F:337:LEU:HA   | 1:F:340:VAL:HG12 | 1.99                     | 0.43              |
| 1:G:119:THR:OG1  | 1:G:121:ASP:OD1  | 2.30                     | 0.43              |
| 1:G:160:GLU:O    | 1:G:163:VAL:HG12 | 2.18                     | 0.43              |
| 1:G:740:ARG:NH2  | 1:G:769:ASP:OD1  | 2.52                     | 0.43              |
| 1:J:626:ASP:OD1  | 1:J:626:ASP:N    | 2.41                     | 0.43              |
| 1:A:224:ILE:HG12 | 1:A:266:VAL:HG23 | 2.01                     | 0.43              |
| 1:A:300:GLY:HA2  | 1:A:587:THR:H    | 1.82                     | 0.43              |
| 1:F:613:ASP:OD1  | 1:F:688:TRP:NE1  | 2.42                     | 0.43              |
| 1:G:342:LYS:HA   | 1:G:345:LEU:HD12 | 2.00                     | 0.43              |
| 1:H:144:ILE:HD12 | 1:H:144:ILE:HA   | 1.91                     | 0.43              |
| 1:H:606:GLU:O    | 1:H:610:MET:HG3  | 2.18                     | 0.43              |
| 1:I:388:THR:HG22 | 1:I:390:LEU:H    | 1.83                     | 0.43              |
| 1:J:611:LYS:HZ3  | 1:J:615:ARG:HH22 | 1.65                     | 0.43              |
| 1:K:434:TYR:HE2  | 1:K:503:MET:HG2  | 1.84                     | 0.43              |
| 1:K:586:PRO:HB2  | 1:K:589:ARG:NH2  | 2.34                     | 0.43              |
| 2:M:142:ALA:HB1  | 2:M:173:LEU:HD12 | 2.00                     | 0.43              |
| 2:O:164:GLU:HB2  | 2:O:183:GLN:HE21 | 1.83                     | 0.43              |
| 1:F:669:TRP:HA   | 1:F:672:LEU:HD13 | 1.99                     | 0.43              |
| 1:G:380:LEU:HD13 | 1:G:580:PHE:HD1  | 1.83                     | 0.43              |
| 1:H:103:ARG:HH21 | 1:H:866:ILE:HA   | 1.83                     | 0.43              |
| 1:H:160:GLU:O    | 1:H:163:VAL:HG12 | 2.18                     | 0.43              |
| 1:I:812:TYR:CG   | 1:I:813:ALA:N    | 2.86                     | 0.43              |
| 2:L:182:GLU:HG3  | 2:L:185:GLU:OE2  | 2.18                     | 0.43              |
| 1:E:632:ARG:NH1  | 1:E:634:SER:HB3  | 2.33                     | 0.43              |
| 1:H:368:ALA:O    | 1:H:372:VAL:HG23 | 2.18                     | 0.43              |
| 1:G:245:ARG:HD2  | 1:G:464:PRO:HD2  | 1.99                     | 0.43              |
| 1:G:308:ARG:HB2  | 2:O:262:ILE:HD13 | 2.00                     | 0.43              |
| 1:G:357:LEU:HD13 | 1:G:397:GLN:HG3  | 2.00                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:H:279:TRP:CE2  | 1:H:545:PRO:HD3  | 2.54                     | 0.43              |
| 1:H:779:ARG:NH2  | 1:H:799:PRO:O    | 2.48                     | 0.43              |
| 1:J:219:ARG:NH1  | 1:J:223:TYR:HB2  | 2.34                     | 0.43              |
| 1:B:885:ASP:H    | 1:B:888:GLN:NE2  | 2.16                     | 0.43              |
| 1:E:336:GLN:NE2  | 1:E:575:SER:HA   | 2.33                     | 0.43              |
| 1:H:707:ARG:HG3  | 1:H:766:MET:CE   | 2.49                     | 0.43              |
| 1:I:368:ALA:O    | 1:I:372:VAL:HG23 | 2.18                     | 0.43              |
| 1:J:37:GLN:HB3   | 1:J:64:VAL:HG11  | 1.99                     | 0.43              |
| 1:J:179:HIS:O    | 1:J:183:ILE:HG12 | 2.19                     | 0.43              |
| 1:J:624:PHE:O    | 1:J:628:LEU:HB2  | 2.19                     | 0.43              |
| 1:K:36:LEU:O     | 1:K:40:MET:HG3   | 2.19                     | 0.43              |
| 1:A:26:ASP:OD1   | 1:A:26:ASP:N     | 2.52                     | 0.43              |
| 1:A:354:ILE:HG22 | 1:A:355:LEU:H    | 1.83                     | 0.43              |
| 1:B:102:LEU:HD22 | 1:B:858:VAL:HG12 | 2.00                     | 0.43              |
| 1:B:452:TRP:CZ3  | 1:B:499:GLU:HG3  | 2.54                     | 0.43              |
| 1:D:260:ARG:HD2  | 1:D:261:GLN:N    | 2.34                     | 0.43              |
| 1:E:149:PRO:HB2  | 1:E:160:GLU:HG3  | 2.01                     | 0.43              |
| 1:G:397:GLN:HE21 | 1:G:573:TRP:HH2  | 1.65                     | 0.43              |
| 1:H:612:VAL:HG22 | 1:H:616:HIS:HD2  | 1.83                     | 0.43              |
| 1:D:496:CYS:O    | 1:D:500:MET:HG2  | 2.19                     | 0.43              |
| 1:D:596:ALA:HA   | 1:D:599:ILE:HD13 | 1.99                     | 0.43              |
| 1:I:243:GLY:HA2  | 1:I:250:TYR:HD2  | 1.84                     | 0.43              |
| 1:I:658:HIS:ND1  | 1:I:659:ASN:OD1  | 2.45                     | 0.43              |
| 1:F:108:TYR:O    | 1:F:698:MET:HE1  | 2.19                     | 0.42              |
| 1:H:742:VAL:HG23 | 1:H:772:VAL:HG23 | 2.00                     | 0.42              |
| 1:I:176:THR:O    | 1:I:180:ARG:HG3  | 2.19                     | 0.42              |
| 1:K:456:ASP:OD1  | 1:K:456:ASP:N    | 2.49                     | 0.42              |
| 1:K:862:ARG:HD2  | 1:K:864:GLY:H    | 1.84                     | 0.42              |
| 2:O:12:VAL:HA    | 2:O:15:ARG:HG2   | 2.01                     | 0.42              |
| 1:D:169:LYS:HA   | 1:D:172:LEU:HD23 | 2.00                     | 0.42              |
| 1:F:549:PHE:HA   | 1:F:552:LEU:HD12 | 2.00                     | 0.42              |
| 1:G:620:MET:HA   | 1:G:623:ARG:HG2  | 2.01                     | 0.42              |
| 1:G:672:LEU:HA   | 1:G:673:PRO:HD3  | 1.84                     | 0.42              |
| 2:L:323:LEU:HA   | 2:L:326:ILE:HG22 | 2.02                     | 0.42              |
| 1:B:547:ASP:OD1  | 1:B:547:ASP:N    | 2.52                     | 0.42              |
| 2:C:182:GLU:O    | 2:C:185:GLU:HG2  | 2.19                     | 0.42              |
| 1:D:397:GLN:HE21 | 1:D:573:TRP:HH2  | 1.66                     | 0.42              |
| 1:D:435:ASP:OD1  | 1:D:435:ASP:N    | 2.52                     | 0.42              |
| 1:F:298:PRO:HB3  | 1:F:589:ARG:HA   | 2.02                     | 0.42              |
| 1:H:374:GLY:HA3  | 1:H:401:ALA:HB3  | 2.01                     | 0.42              |
| 1:D:122:GLU:OE2  | 1:D:124:GLU:HB2  | 2.19                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:250:TYR:HE1  | 1:F:594:GLU:HB3  | 1.85                     | 0.42              |
| 1:F:425:LEU:O    | 1:F:440:ARG:NH2  | 2.53                     | 0.42              |
| 1:F:614:MET:CE   | 1:F:640:VAL:HG21 | 2.49                     | 0.42              |
| 1:H:303:ILE:HD11 | 1:H:529:ARG:HH12 | 1.84                     | 0.42              |
| 1:I:176:THR:OG1  | 1:I:179:HIS:ND1  | 2.52                     | 0.42              |
| 1:K:118:ILE:HD12 | 1:K:126:PHE:HD1  | 1.84                     | 0.42              |
| 2:M:18:GLU:HA    | 2:M:21:LYS:HE2   | 2.01                     | 0.42              |
| 1:D:85:VAL:HG13  | 1:D:163:VAL:HA   | 2.00                     | 0.42              |
| 1:D:200:ARG:NE   | 1:D:261:GLN:O    | 2.51                     | 0.42              |
| 1:D:511:SER:HB2  | 2:L:141:ARG:HH22 | 1.84                     | 0.42              |
| 1:D:672:LEU:HA   | 1:D:673:PRO:HD3  | 1.84                     | 0.42              |
| 1:G:36:LEU:HD23  | 1:G:61:VAL:HG13  | 2.01                     | 0.42              |
| 1:H:586:PRO:HB2  | 1:H:589:ARG:NH2  | 2.35                     | 0.42              |
| 1:H:841:LEU:O    | 1:H:843:ASN:N    | 2.52                     | 0.42              |
| 1:I:416:VAL:HG12 | 1:I:429:ILE:HD13 | 2.01                     | 0.42              |
| 1:K:364:ARG:HD2  | 2:O:281:ARG:HA   | 2.02                     | 0.42              |
| 1:K:406:LEU:HD12 | 1:K:406:LEU:HA   | 1.87                     | 0.42              |
| 2:M:297:GLU:O    | 2:M:300:ARG:N    | 2.53                     | 0.42              |
| 1:G:332:PRO:HB3  | 1:G:578:PHE:CE2  | 2.55                     | 0.42              |
| 1:I:104:VAL:HB   | 1:I:858:VAL:HG22 | 2.02                     | 0.42              |
| 1:J:497:TYR:CE2  | 1:J:520:LEU:HD12 | 2.55                     | 0.42              |
| 1:K:37:GLN:HB3   | 1:K:64:VAL:HG11  | 2.00                     | 0.42              |
| 1:K:133:LYS:HA   | 1:K:133:LYS:HD3  | 1.87                     | 0.42              |
| 1:K:522:PHE:CZ   | 1:K:583:SER:HB2  | 2.55                     | 0.42              |
| 1:A:278:VAL:HG13 | 1:A:603:TYR:HE2  | 1.84                     | 0.42              |
| 1:A:341:ARG:O    | 1:A:345:LEU:HG   | 2.20                     | 0.42              |
| 1:D:121:ASP:N    | 1:D:121:ASP:OD1  | 2.51                     | 0.42              |
| 1:D:344:TYR:HE1  | 1:D:530:ILE:HD11 | 1.84                     | 0.42              |
| 1:F:701:ASP:OD1  | 1:F:702:GLN:NE2  | 2.53                     | 0.42              |
| 1:H:81:LYS:HA    | 1:H:81:LYS:HD3   | 1.72                     | 0.42              |
| 2:M:287:THR:HA   | 2:M:295:TRP:HZ2  | 1.84                     | 0.42              |
| 1:E:439:PHE:HE1  | 1:E:452:TRP:HZ3  | 1.68                     | 0.42              |
| 1:F:341:ARG:O    | 1:F:345:LEU:HG   | 2.20                     | 0.42              |
| 1:H:209:CYS:O    | 1:H:872:ARG:NH1  | 2.52                     | 0.42              |
| 1:H:211:GLU:O    | 1:H:215:ARG:HG2  | 2.20                     | 0.42              |
| 1:J:790:PRO:HG2  | 1:J:795:LEU:HG   | 2.02                     | 0.42              |
| 2:N:135:LEU:HD23 | 2:N:186:ARG:HB2  | 2.02                     | 0.42              |
| 2:O:305:LYS:HD2  | 2:O:308:ILE:HD13 | 2.02                     | 0.42              |
| 1:B:400:ILE:HG22 | 1:B:424:PRO:HG3  | 2.02                     | 0.42              |
| 1:D:306:ASN:ND2  | 2:L:266:GLU:OE2  | 2.53                     | 0.42              |
| 1:D:373:ALA:HA   | 1:D:376:VAL:HG12 | 2.02                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:160:GLU:O    | 1:E:163:VAL:HG12 | 2.19                     | 0.42              |
| 1:H:529:ARG:O    | 1:H:533:ILE:HG12 | 2.20                     | 0.42              |
| 1:I:267:LEU:HD23 | 1:I:267:LEU:HA   | 1.91                     | 0.42              |
| 1:K:885:ASP:HB3  | 1:K:888:GLN:HG3  | 2.01                     | 0.42              |
| 2:L:292:ASP:HB2  | 2:L:295:TRP:HB2  | 2.01                     | 0.42              |
| 2:M:300:ARG:O    | 2:M:304:LYS:HG3  | 2.19                     | 0.42              |
| 2:O:5:MET:SD     | 2:O:271:LEU:HB3  | 2.59                     | 0.42              |
| 2:O:277:LYS:HB3  | 2:O:277:LYS:HE3  | 1.80                     | 0.42              |
| 1:B:84:LYS:HG3   | 1:B:85:VAL:HG23  | 2.01                     | 0.42              |
| 1:B:742:VAL:HG23 | 1:B:772:VAL:HG23 | 2.01                     | 0.42              |
| 1:E:298:PRO:HB3  | 1:E:589:ARG:HA   | 2.02                     | 0.42              |
| 1:H:365:MET:SD   | 1:H:365:MET:N    | 2.93                     | 0.42              |
| 1:I:99:ASP:OD1   | 1:I:99:ASP:N     | 2.52                     | 0.42              |
| 1:I:212:PRO:O    | 1:I:216:ILE:HG12 | 2.20                     | 0.42              |
| 1:I:807:ARG:HH11 | 1:I:808:GLY:H    | 1.66                     | 0.42              |
| 1:K:406:LEU:HD23 | 1:K:427:PHE:CZ   | 2.55                     | 0.42              |
| 2:L:191:ARG:O    | 2:L:195:LYS:HG2  | 2.20                     | 0.42              |
| 1:A:337:LEU:HA   | 1:A:340:VAL:HG12 | 2.02                     | 0.41              |
| 1:A:720:ARG:HA   | 1:A:723:GLN:HG2  | 2.02                     | 0.41              |
| 1:B:213:VAL:HA   | 1:B:216:ILE:HG22 | 2.01                     | 0.41              |
| 1:I:37:GLN:HB3   | 1:I:64:VAL:HG11  | 2.01                     | 0.41              |
| 1:I:792:ASP:OD1  | 1:I:792:ASP:N    | 2.52                     | 0.41              |
| 1:J:97:SER:OG    | 1:J:99:ASP:OD1   | 2.25                     | 0.41              |
| 1:J:586:PRO:HB2  | 1:J:589:ARG:NH2  | 2.35                     | 0.41              |
| 1:J:596:ALA:HA   | 1:J:599:ILE:HG12 | 2.02                     | 0.41              |
| 2:O:258:LYS:HE3  | 2:O:258:LYS:HB3  | 1.76                     | 0.41              |
| 1:A:409:MET:O    | 1:A:509:LYS:NZ   | 2.36                     | 0.41              |
| 2:C:159:PRO:HA   | 2:C:237:ILE:HD13 | 2.01                     | 0.41              |
| 1:D:133:LYS:O    | 1:D:137:ILE:HG12 | 2.20                     | 0.41              |
| 1:E:732:LEU:HB2  | 1:E:852:PHE:HB2  | 2.01                     | 0.41              |
| 1:F:596:ALA:HA   | 1:F:599:ILE:HD13 | 2.02                     | 0.41              |
| 1:F:779:ARG:HH12 | 1:F:817:TYR:HB3  | 1.84                     | 0.41              |
| 1:G:204:VAL:HG21 | 1:G:873:ARG:HE   | 1.86                     | 0.41              |
| 1:G:348:MET:HA   | 1:G:534:ILE:HD11 | 2.02                     | 0.41              |
| 1:G:502:ARG:HA   | 1:G:505:VAL:HG12 | 2.02                     | 0.41              |
| 1:H:211:GLU:CD   | 1:H:872:ARG:HH21 | 2.23                     | 0.41              |
| 1:J:326:ILE:HG12 | 2:N:329:LEU:HD13 | 2.02                     | 0.41              |
| 1:K:658:HIS:ND1  | 1:K:659:ASN:OD1  | 2.44                     | 0.41              |
| 2:O:7:LEU:HA     | 2:O:273:SER:O    | 2.20                     | 0.41              |
| 1:A:801:SER:OG   | 1:A:816:LYS:HB2  | 2.20                     | 0.41              |
| 2:C:165:VAL:HG12 | 2:C:170:GLN:HG3  | 2.02                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:669:TRP:HA   | 1:D:672:LEU:HD13 | 2.02                     | 0.41              |
| 1:E:68:LEU:HA    | 1:E:71:ILE:HG22  | 2.02                     | 0.41              |
| 1:G:298:PRO:HB3  | 1:G:589:ARG:HA   | 2.02                     | 0.41              |
| 1:H:161:PRO:HA   | 1:H:164:LEU:HD13 | 2.02                     | 0.41              |
| 1:J:649:LYS:HE2  | 1:J:649:LYS:HB3  | 1.89                     | 0.41              |
| 1:A:25:SER:OG    | 1:A:300:GLY:O    | 2.36                     | 0.41              |
| 1:F:742:VAL:HG13 | 1:F:772:VAL:HG23 | 2.02                     | 0.41              |
| 1:H:658:HIS:ND1  | 1:H:659:ASN:OD1  | 2.39                     | 0.41              |
| 1:I:474:TYR:H    | 1:I:531:ASN:CG   | 2.21                     | 0.41              |
| 1:J:180:ARG:O    | 1:J:184:GLN:HB2  | 2.21                     | 0.41              |
| 1:J:306:ASN:HB3  | 1:J:309:ILE:HD13 | 2.02                     | 0.41              |
| 1:J:425:LEU:HA   | 1:J:427:PHE:CE2  | 2.55                     | 0.41              |
| 1:K:597:PRO:HA   | 1:K:600:GLU:HG2  | 2.02                     | 0.41              |
| 1:A:460:ARG:HH12 | 1:A:480:ARG:HG3  | 1.85                     | 0.41              |
| 1:A:648:VAL:HA   | 1:A:651:VAL:HG12 | 2.02                     | 0.41              |
| 1:B:255:LEU:HA   | 1:B:258:PHE:CD2  | 2.55                     | 0.41              |
| 1:B:381:PHE:CE2  | 1:B:576:LEU:HD11 | 2.56                     | 0.41              |
| 1:B:474:TYR:H    | 1:B:531:ASN:CG   | 2.21                     | 0.41              |
| 1:E:374:GLY:HA3  | 1:E:401:ALA:HB3  | 2.03                     | 0.41              |
| 1:F:416:VAL:HB   | 1:F:429:ILE:HG13 | 2.01                     | 0.41              |
| 1:H:494:TYR:CZ   | 1:H:497:TYR:HB2  | 2.55                     | 0.41              |
| 1:I:649:LYS:HE2  | 1:I:649:LYS:HB3  | 1.90                     | 0.41              |
| 1:K:241:ARG:HA   | 1:K:244:HIS:HD1  | 1.85                     | 0.41              |
| 1:K:812:TYR:CG   | 1:K:813:ALA:N    | 2.87                     | 0.41              |
| 1:B:720:ARG:O    | 1:B:724:GLU:HG2  | 2.19                     | 0.41              |
| 1:D:428:GLN:HG3  | 1:D:435:ASP:HA   | 2.02                     | 0.41              |
| 1:D:648:VAL:HA   | 1:D:651:VAL:HG12 | 2.03                     | 0.41              |
| 1:F:27:SER:H     | 1:F:30:LEU:HD11  | 1.86                     | 0.41              |
| 1:F:100:ARG:HD2  | 1:F:860:ARG:NH1  | 2.35                     | 0.41              |
| 1:G:214:TYR:CD2  | 1:G:872:ARG:HD3  | 2.56                     | 0.41              |
| 1:H:699:LEU:HB3  | 1:H:778:LEU:HD12 | 2.03                     | 0.41              |
| 1:H:823:ILE:HD13 | 1:H:851:VAL:HB   | 2.03                     | 0.41              |
| 1:I:179:HIS:O    | 1:I:183:ILE:HG12 | 2.20                     | 0.41              |
| 1:I:497:TYR:CE1  | 1:I:520:LEU:HD12 | 2.56                     | 0.41              |
| 1:J:616:HIS:CE1  | 1:J:688:TRP:HB3  | 2.55                     | 0.41              |
| 1:K:419:GLY:N    | 1:K:426:ASP:O    | 2.51                     | 0.41              |
| 1:K:792:ASP:HA   | 1:K:795:LEU:HB2  | 2.02                     | 0.41              |
| 2:M:150:LYS:HD2  | 2:M:150:LYS:HA   | 1.88                     | 0.41              |
| 1:A:521:PRO:O    | 1:A:525:VAL:HG12 | 2.21                     | 0.41              |
| 1:A:720:ARG:NH1  | 1:A:724:GLU:HB3  | 2.35                     | 0.41              |
| 1:D:42:LYS:O     | 1:D:46:VAL:HG23  | 2.21                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:307:PRO:HD3  | 2:L:24:GLN:HE22  | 1.85                     | 0.41              |
| 1:E:745:THR:OG1  | 1:E:746:TYR:N    | 2.54                     | 0.41              |
| 1:G:352:GLN:NE2  | 1:G:544:LEU:HB2  | 2.35                     | 0.41              |
| 1:J:478:ASP:OD2  | 1:J:480:ARG:NH2  | 2.54                     | 0.41              |
| 1:J:494:TYR:CZ   | 1:J:497:TYR:HB2  | 2.55                     | 0.41              |
| 1:K:309:ILE:O    | 1:K:312:ILE:HG12 | 2.21                     | 0.41              |
| 1:A:116:ASP:OD1  | 1:A:117:VAL:N    | 2.44                     | 0.41              |
| 1:A:180:ARG:HA   | 1:A:183:ILE:HG22 | 2.03                     | 0.41              |
| 1:A:289:LEU:HD11 | 1:A:352:GLN:HG3  | 2.03                     | 0.41              |
| 1:A:761:ALA:O    | 1:A:765:ILE:HG12 | 2.20                     | 0.41              |
| 1:B:80:TYR:CZ    | 1:B:266:VAL:HG21 | 2.55                     | 0.41              |
| 1:B:474:TYR:N    | 1:B:531:ASN:OD1  | 2.47                     | 0.41              |
| 1:K:277:VAL:HG22 | 1:K:674:SER:HB3  | 2.02                     | 0.41              |
| 1:K:470:ARG:NH2  | 1:K:544:LEU:O    | 2.44                     | 0.41              |
| 2:M:146:LYS:HE3  | 2:M:173:LEU:HD13 | 2.03                     | 0.41              |
| 2:O:14:LYS:HG3   | 2:O:29:LEU:HD11  | 2.02                     | 0.41              |
| 1:B:275:PRO:HB3  | 1:B:541:VAL:HG23 | 2.03                     | 0.41              |
| 1:B:787:ASP:HA   | 1:B:827:ILE:O    | 2.21                     | 0.41              |
| 1:B:848:MET:O    | 1:B:850:LYS:NZ   | 2.53                     | 0.41              |
| 2:C:324:HIS:HE1  | 2:C:328:HIS:CD2  | 2.39                     | 0.41              |
| 1:D:122:GLU:HA   | 1:D:123:PRO:HD3  | 1.90                     | 0.41              |
| 1:E:742:VAL:HG23 | 1:E:772:VAL:HG23 | 2.03                     | 0.41              |
| 1:F:117:VAL:HB   | 1:F:819:THR:HG21 | 2.03                     | 0.41              |
| 1:F:474:TYR:HB2  | 1:F:531:ASN:HD21 | 1.84                     | 0.41              |
| 1:H:364:ARG:HD2  | 2:L:281:ARG:HA   | 2.03                     | 0.41              |
| 1:I:140:LYS:HD3  | 1:I:140:LYS:HA   | 1.77                     | 0.41              |
| 1:I:555:ASP:HB3  | 1:I:561:HIS:CD2  | 2.56                     | 0.41              |
| 1:J:309:ILE:O    | 1:J:312:ILE:HG12 | 2.21                     | 0.41              |
| 1:J:885:ASP:HB3  | 1:J:888:GLN:HG3  | 2.03                     | 0.41              |
| 1:K:261:GLN:H    | 1:K:261:GLN:HG3  | 1.75                     | 0.41              |
| 1:K:406:LEU:HD23 | 1:K:427:PHE:HZ   | 1.85                     | 0.41              |
| 2:O:295:TRP:HA   | 2:O:298:VAL:HG12 | 2.03                     | 0.41              |
| 1:F:68:LEU:HA    | 1:F:71:ILE:HG22  | 2.03                     | 0.41              |
| 1:G:416:VAL:HB   | 1:G:429:ILE:HG13 | 2.02                     | 0.41              |
| 1:H:233:ARG:HH12 | 1:H:259:ARG:HH21 | 1.68                     | 0.41              |
| 1:I:216:ILE:HD13 | 1:I:686:GLU:HG3  | 2.02                     | 0.41              |
| 1:J:493:THR:HG22 | 1:J:520:LEU:HD11 | 2.02                     | 0.41              |
| 1:K:209:CYS:H    | 1:K:872:ARG:HH11 | 1.68                     | 0.41              |
| 1:K:405:TYR:OH   | 1:K:512:GLU:OE2  | 2.39                     | 0.41              |
| 2:M:147:TYR:CZ   | 2:M:249:LEU:HD21 | 2.56                     | 0.41              |
| 2:N:277:LYS:HE3  | 2:N:277:LYS:HB3  | 1.84                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:O:14:LYS:NZ    | 2:O:29:LEU:HD21  | 2.36                     | 0.41              |
| 1:D:68:LEU:HA    | 1:D:71:ILE:HG22  | 2.03                     | 0.40              |
| 1:E:35:ALA:O     | 1:E:39:ILE:HG12  | 2.21                     | 0.40              |
| 1:E:787:ASP:HA   | 1:E:827:ILE:O    | 2.22                     | 0.40              |
| 1:F:42:LYS:O     | 1:F:46:VAL:HG23  | 2.22                     | 0.40              |
| 1:H:179:HIS:O    | 1:H:183:ILE:HG12 | 2.21                     | 0.40              |
| 1:H:812:TYR:CG   | 1:H:813:ALA:N    | 2.87                     | 0.40              |
| 1:I:246:LYS:NZ   | 1:I:536:GLU:O    | 2.44                     | 0.40              |
| 1:K:85:VAL:HG13  | 1:K:163:VAL:HA   | 2.03                     | 0.40              |
| 2:L:9:PRO:HG2    | 2:L:12:VAL:HG12  | 2.03                     | 0.40              |
| 2:N:300:ARG:O    | 2:N:304:LYS:HG3  | 2.22                     | 0.40              |
| 1:B:179:HIS:O    | 1:B:183:ILE:HG12 | 2.21                     | 0.40              |
| 1:D:759:ARG:O    | 1:D:763:ARG:HG2  | 2.21                     | 0.40              |
| 1:D:784:LYS:O    | 1:D:824:PHE:HA   | 2.21                     | 0.40              |
| 1:E:208:ALA:HB2  | 1:E:870:LEU:HA   | 2.03                     | 0.40              |
| 1:F:204:VAL:HG21 | 1:F:873:ARG:HE   | 1.86                     | 0.40              |
| 1:F:535:ASN:O    | 1:F:535:ASN:ND2  | 2.53                     | 0.40              |
| 1:I:214:TYR:CZ   | 1:I:872:ARG:HB3  | 2.55                     | 0.40              |
| 1:I:360:ASP:O    | 1:I:363:GLU:HG3  | 2.21                     | 0.40              |
| 1:I:574:ILE:HD12 | 1:I:578:PHE:HE2  | 1.86                     | 0.40              |
| 2:M:187:LEU:HD23 | 2:M:187:LEU:HA   | 1.90                     | 0.40              |
| 1:D:332:PRO:HB3  | 1:D:578:PHE:CE2  | 2.56                     | 0.40              |
| 1:D:633:PRO:HA   | 1:D:636:PHE:CZ   | 2.56                     | 0.40              |
| 1:D:747:GLU:HG2  | 1:D:748:ILE:N    | 2.36                     | 0.40              |
| 1:E:501:LEU:HD11 | 1:E:517:ARG:HE   | 1.85                     | 0.40              |
| 1:E:577:TRP:O    | 1:E:581:ASN:ND2  | 2.55                     | 0.40              |
| 1:F:224:ILE:HG12 | 1:F:266:VAL:HG23 | 2.02                     | 0.40              |
| 1:I:547:ASP:OD1  | 1:I:547:ASP:N    | 2.52                     | 0.40              |
| 1:B:265:TRP:HE1  | 1:B:886:ILE:HG23 | 1.87                     | 0.40              |
| 1:B:762:LEU:O    | 1:B:766:MET:HG2  | 2.22                     | 0.40              |
| 2:C:20:LEU:HB3   | 2:C:27:ILE:HD11  | 2.04                     | 0.40              |
| 1:D:292:ASN:HD21 | 1:D:542:PHE:C    | 2.25                     | 0.40              |
| 1:D:319:THR:OG1  | 2:L:137:GLU:OE1  | 2.25                     | 0.40              |
| 1:G:344:TYR:OH   | 1:G:583:SER:HA   | 2.21                     | 0.40              |
| 1:G:513:ALA:O    | 1:G:517:ARG:HG3  | 2.21                     | 0.40              |
| 1:G:790:PRO:HG2  | 1:G:795:LEU:HD22 | 2.03                     | 0.40              |
| 1:H:381:PHE:HE2  | 1:H:576:LEU:HD11 | 1.86                     | 0.40              |
| 1:H:617:LEU:HD23 | 1:H:617:LEU:HA   | 1.96                     | 0.40              |
| 1:I:529:ARG:HH21 | 1:I:586:PRO:HD2  | 1.87                     | 0.40              |
| 1:J:825:TYR:CE2  | 1:J:858:VAL:HG21 | 2.56                     | 0.40              |
| 1:K:862:ARG:HH11 | 1:K:864:GLY:HA3  | 1.85                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:392:GLN:HA   | 1:A:443:PHE:HZ   | 1.87                     | 0.40              |
| 1:D:394:MET:O    | 1:D:398:LEU:HB2  | 2.21                     | 0.40              |
| 1:G:326:ILE:HD12 | 1:G:368:ALA:HB3  | 2.03                     | 0.40              |
| 1:G:761:ALA:O    | 1:G:765:ILE:HG12 | 2.21                     | 0.40              |
| 1:H:381:PHE:CE2  | 1:H:576:LEU:HD11 | 2.56                     | 0.40              |
| 1:J:110:GLU:OE1  | 1:J:140:LYS:HE2  | 2.22                     | 0.40              |
| 2:L:132:TRP:CD1  | 2:L:161:GLN:HB3  | 2.57                     | 0.40              |
| 2:L:136:THR:HG23 | 2:L:139:ILE:H    | 1.86                     | 0.40              |
| 2:L:146:LYS:HG2  | 2:L:147:TYR:CE1  | 2.57                     | 0.40              |
| 2:M:131:ARG:HD3  | 2:M:131:ARG:HA   | 1.85                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

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     | 844/901 (94%) | 812 (96%) | 32 (4%) | 0        | 100         | 100 |
| 1   | B     | 856/901 (95%) | 810 (95%) | 46 (5%) | 0        | 100         | 100 |
| 1   | D     | 844/901 (94%) | 805 (95%) | 39 (5%) | 0        | 100         | 100 |
| 1   | E     | 844/901 (94%) | 813 (96%) | 31 (4%) | 0        | 100         | 100 |
| 1   | F     | 844/901 (94%) | 806 (96%) | 38 (4%) | 0        | 100         | 100 |
| 1   | G     | 844/901 (94%) | 805 (95%) | 39 (5%) | 0        | 100         | 100 |
| 1   | H     | 856/901 (95%) | 821 (96%) | 35 (4%) | 0        | 100         | 100 |
| 1   | I     | 856/901 (95%) | 823 (96%) | 33 (4%) | 0        | 100         | 100 |
| 1   | J     | 856/901 (95%) | 823 (96%) | 33 (4%) | 0        | 100         | 100 |
| 1   | K     | 856/901 (95%) | 826 (96%) | 30 (4%) | 0        | 100         | 100 |
| 2   | C     | 185/329 (56%) | 178 (96%) | 7 (4%)  | 0        | 100         | 100 |
| 2   | L     | 185/329 (56%) | 178 (96%) | 7 (4%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed         | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|------------------|------------|----------|----------|-------------|-----|
| 2   | M     | 185/329 (56%)    | 177 (96%)  | 8 (4%)   | 0        | 100         | 100 |
| 2   | N     | 185/329 (56%)    | 178 (96%)  | 7 (4%)   | 0        | 100         | 100 |
| 2   | O     | 185/329 (56%)    | 179 (97%)  | 6 (3%)   | 0        | 100         | 100 |
| All | All   | 9425/10655 (88%) | 9034 (96%) | 391 (4%) | 0        | 100         | 100 |

There are no Ramachandran outliers to report.

### 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     | 752/792 (95%)   | 752 (100%)  | 0        | 100         | 100 |
| 1   | B     | 758/792 (96%)   | 757 (100%)  | 1 (0%)   | 93          | 97  |
| 1   | D     | 752/792 (95%)   | 750 (100%)  | 2 (0%)   | 92          | 95  |
| 1   | E     | 752/792 (95%)   | 749 (100%)  | 3 (0%)   | 91          | 94  |
| 1   | F     | 752/792 (95%)   | 751 (100%)  | 1 (0%)   | 93          | 97  |
| 1   | G     | 752/792 (95%)   | 752 (100%)  | 0        | 100         | 100 |
| 1   | H     | 758/792 (96%)   | 757 (100%)  | 1 (0%)   | 93          | 97  |
| 1   | I     | 758/792 (96%)   | 756 (100%)  | 2 (0%)   | 92          | 95  |
| 1   | J     | 758/792 (96%)   | 757 (100%)  | 1 (0%)   | 93          | 97  |
| 1   | K     | 758/792 (96%)   | 756 (100%)  | 2 (0%)   | 92          | 95  |
| 2   | C     | 163/259 (63%)   | 163 (100%)  | 0        | 100         | 100 |
| 2   | L     | 163/259 (63%)   | 163 (100%)  | 0        | 100         | 100 |
| 2   | M     | 163/259 (63%)   | 163 (100%)  | 0        | 100         | 100 |
| 2   | N     | 163/259 (63%)   | 163 (100%)  | 0        | 100         | 100 |
| 2   | O     | 163/259 (63%)   | 162 (99%)   | 1 (1%)   | 86          | 92  |
| All | All   | 8365/9215 (91%) | 8351 (100%) | 14 (0%)  | 93          | 96  |

All (14) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | B     | 386 | ARG  |
| 1   | D     | 270 | GLN  |
| 1   | D     | 492 | MET  |
| 1   | E     | 365 | MET  |
| 1   | E     | 535 | ASN  |
| 1   | E     | 623 | ARG  |
| 1   | F     | 535 | ASN  |
| 1   | H     | 178 | GLU  |
| 1   | I     | 219 | ARG  |
| 1   | I     | 807 | ARG  |
| 1   | J     | 219 | ARG  |
| 1   | K     | 782 | ARG  |
| 1   | K     | 856 | ARG  |
| 2   | O     | 258 | LYS  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | B     | 563 | ASN  |
| 1   | B     | 888 | GLN  |
| 2   | C     | 324 | HIS  |
| 2   | C     | 328 | HIS  |
| 1   | D     | 244 | HIS  |
| 1   | E     | 336 | GLN  |
| 1   | E     | 535 | ASN  |
| 1   | F     | 336 | GLN  |
| 1   | F     | 535 | ASN  |
| 1   | F     | 730 | ASN  |
| 1   | G     | 378 | HIS  |
| 1   | H     | 252 | GLN  |
| 1   | H     | 469 | 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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

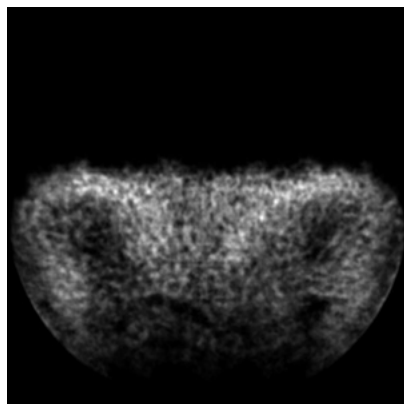
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-43716. These allow visual inspection of the internal detail of the map and identification of artifacts.

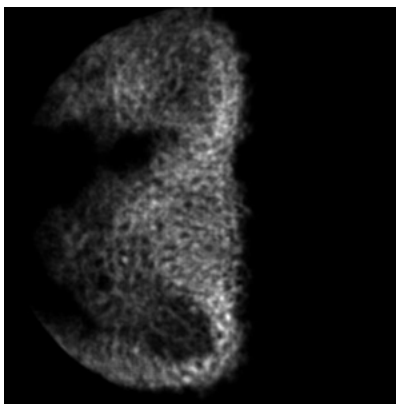
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

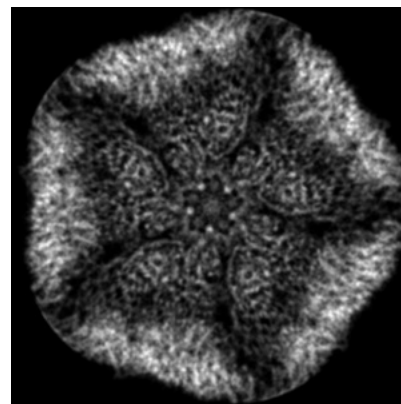
#### 6.1.1 Primary map



X

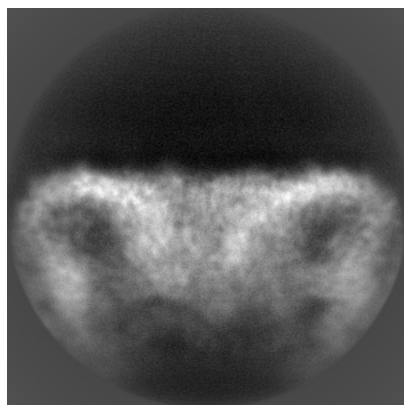


Y

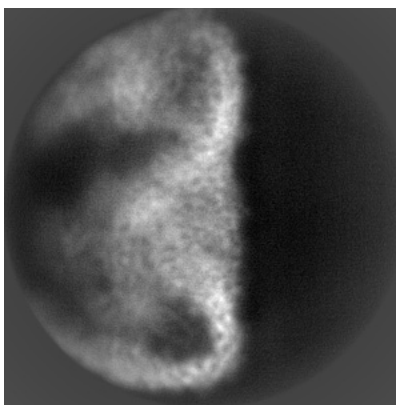


Z

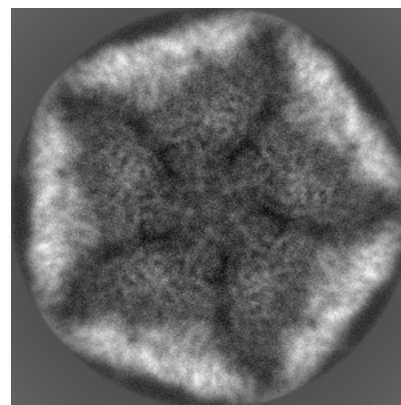
#### 6.1.2 Raw map



X



Y



Z

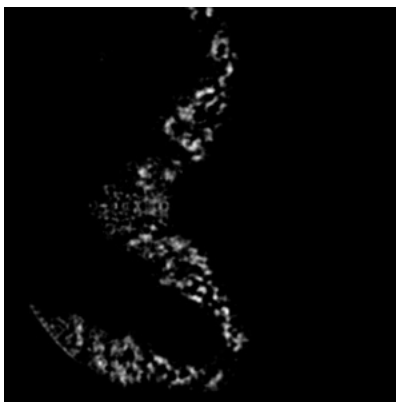
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

### 6.2.1 Primary map



X Index: 160

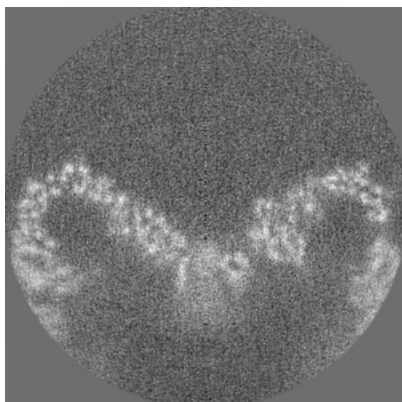


Y Index: 160

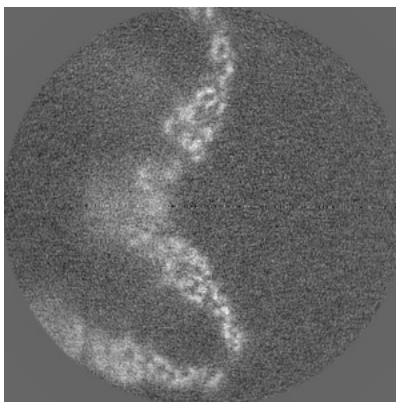


Z Index: 160

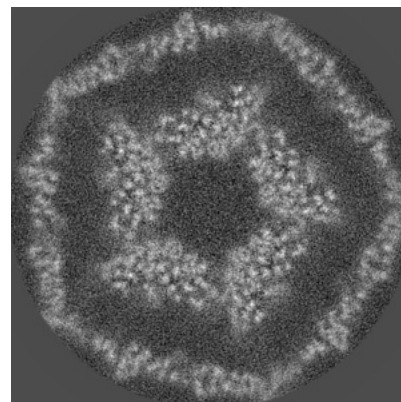
### 6.2.2 Raw map



X Index: 160



Y Index: 160



Z Index: 160

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

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

### 6.3.1 Primary map



X Index: 139

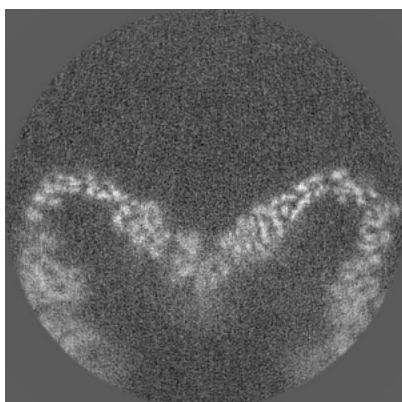


Y Index: 118

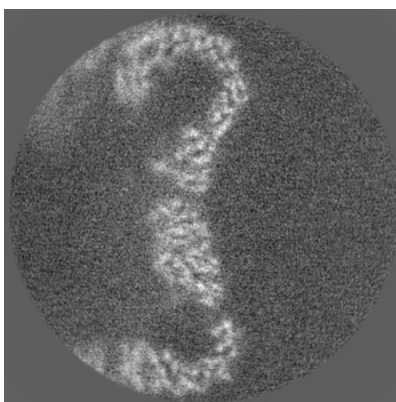


Z Index: 174

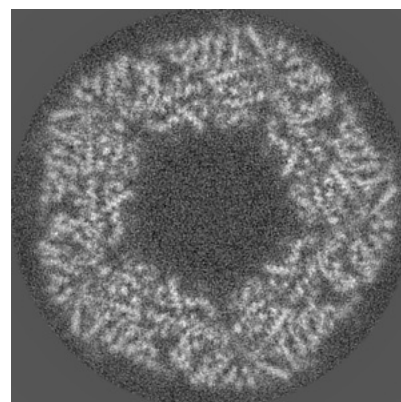
### 6.3.2 Raw map



X Index: 139



Y Index: 119

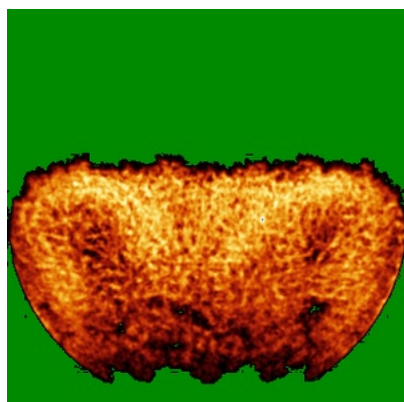


Z Index: 175

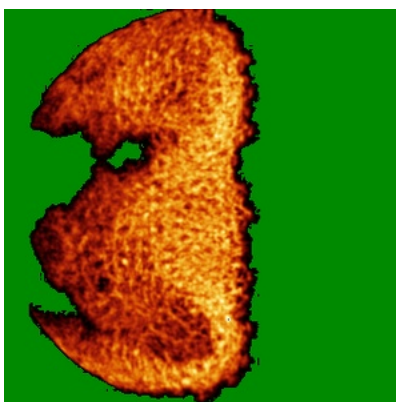
The images above show the largest variance slices of the map in three orthogonal directions.

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

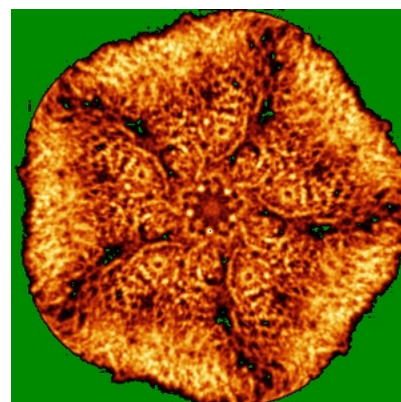
### 6.4.1 Primary map



X

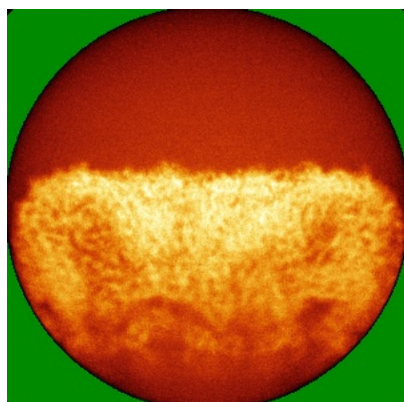


Y

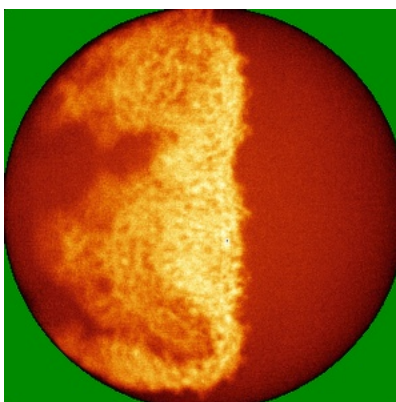


Z

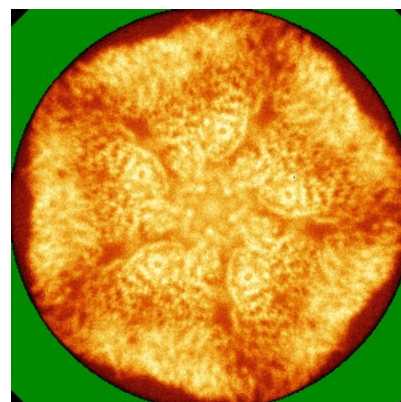
### 6.4.2 Raw map



X



Y



Z

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

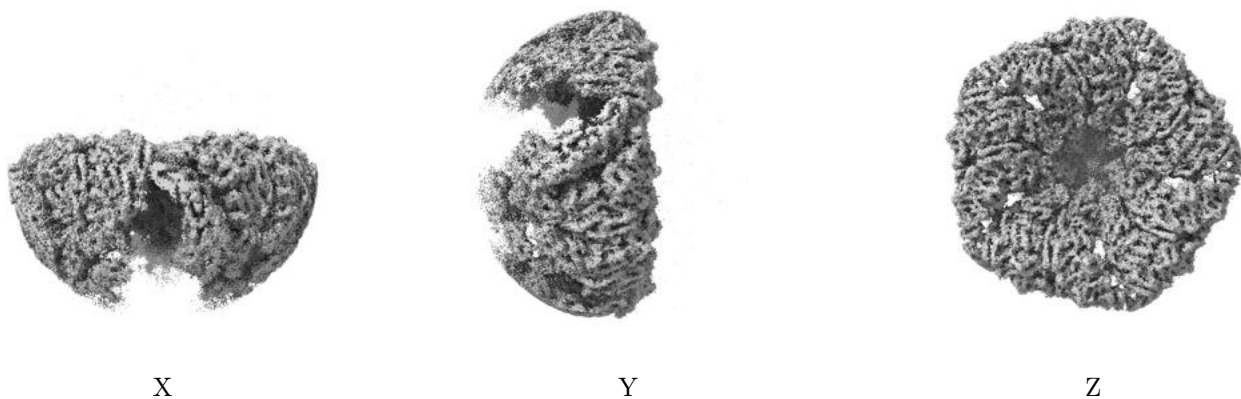
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.25. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

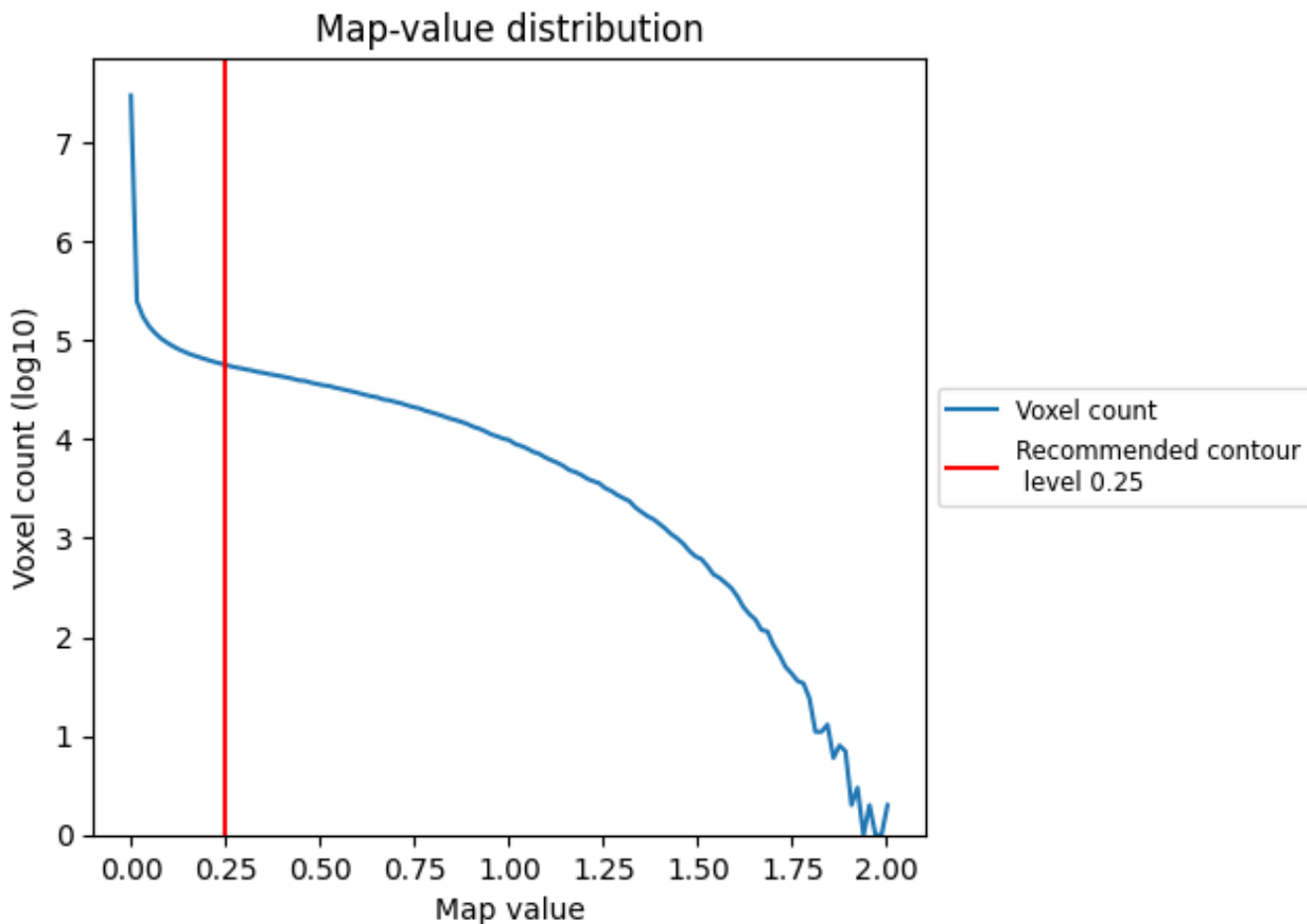
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

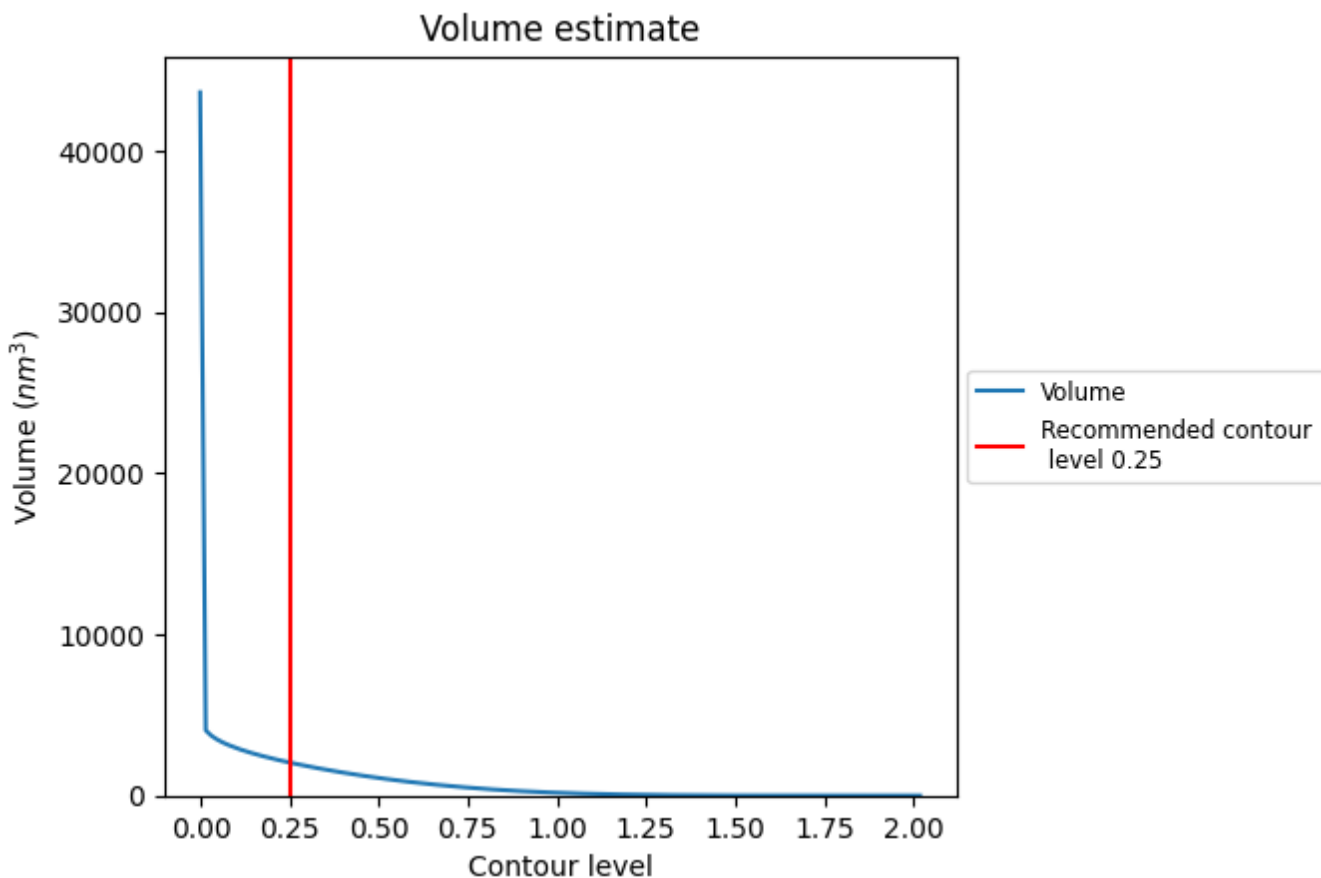
This section contains the results of statistical analysis of the map.

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



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

## 7.2 Volume estimate [i](#)

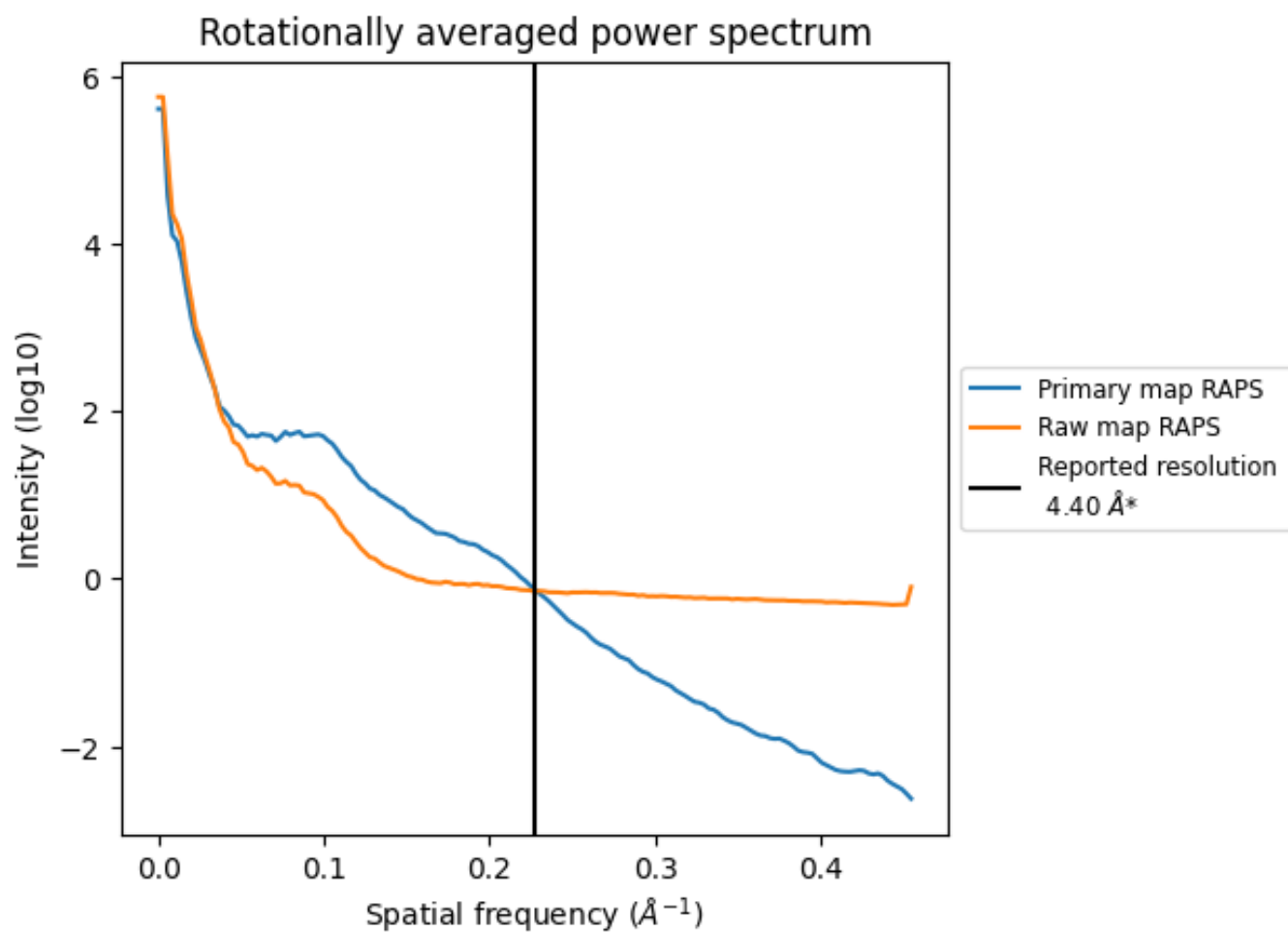


The volume at the recommended contour level is 2050 nm<sup>3</sup>; this corresponds to an approximate mass of 1851 kDa.

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](#)

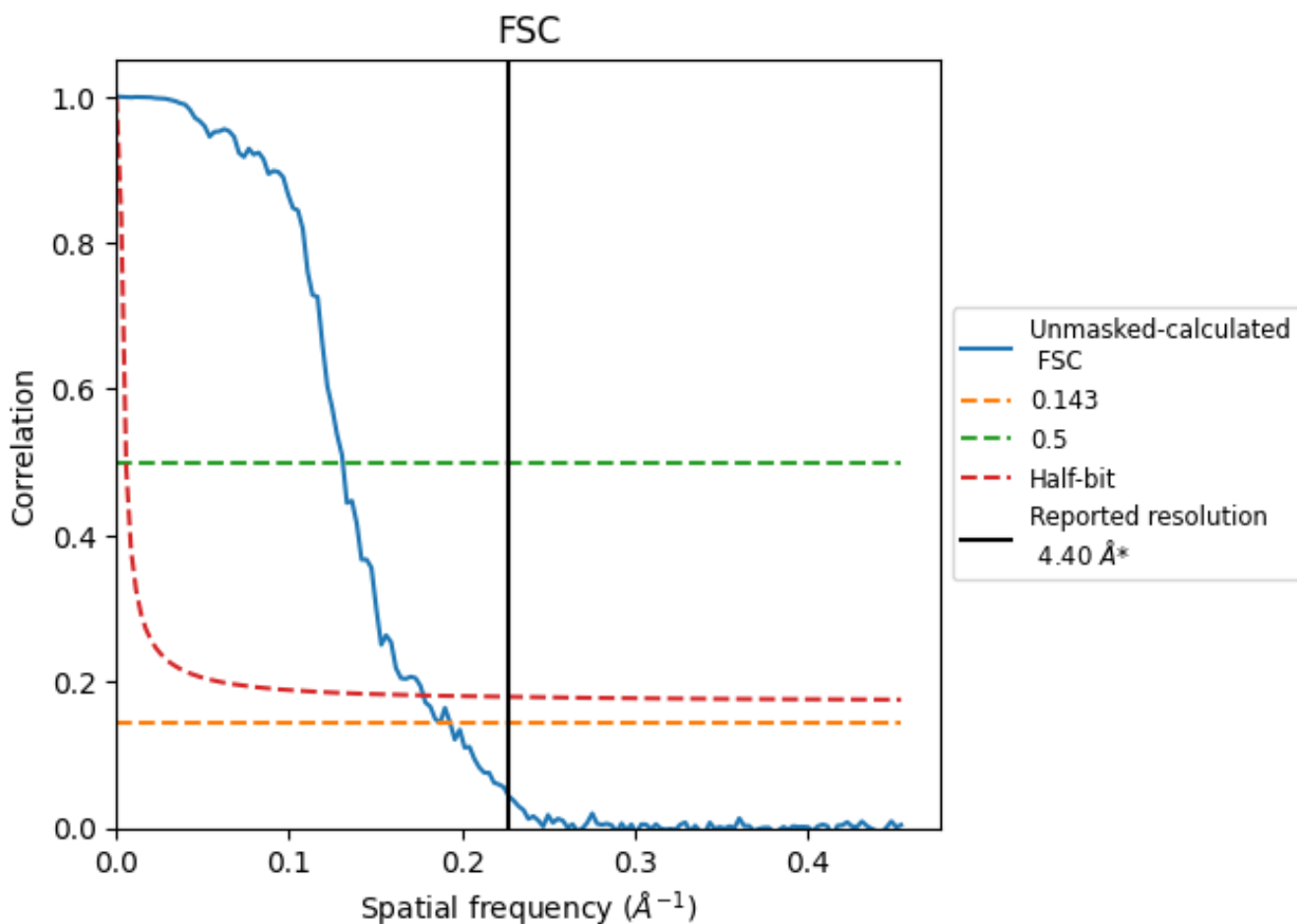


\*Reported resolution corresponds to spatial frequency of 0.227 Å<sup>-1</sup>

## 8 Fourier-Shell correlation [i](#)

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.227 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

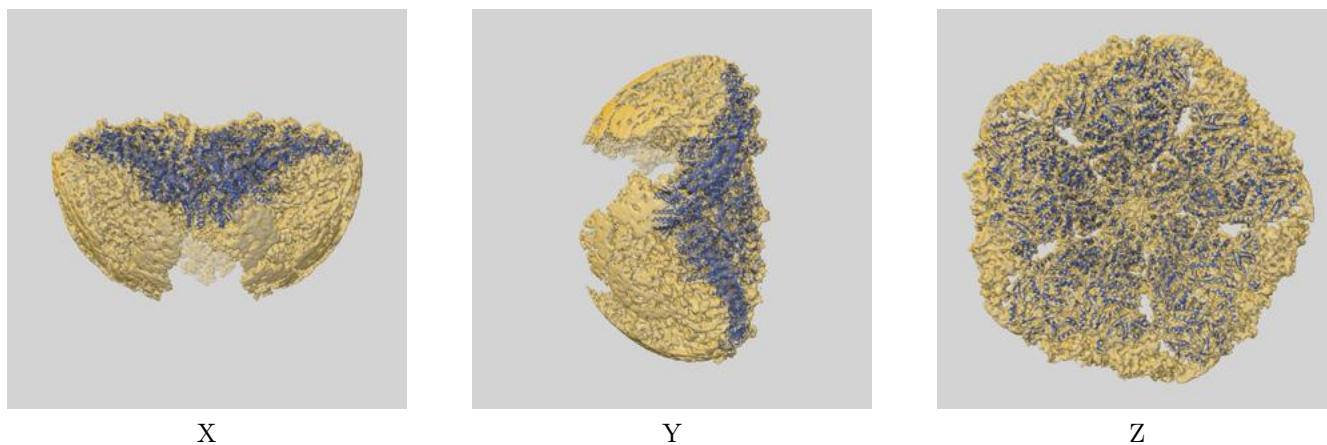
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 4.40                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 5.17                               | 7.63 | 5.62     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 5.17 differs from the reported value 4.4 by more than 10 %

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

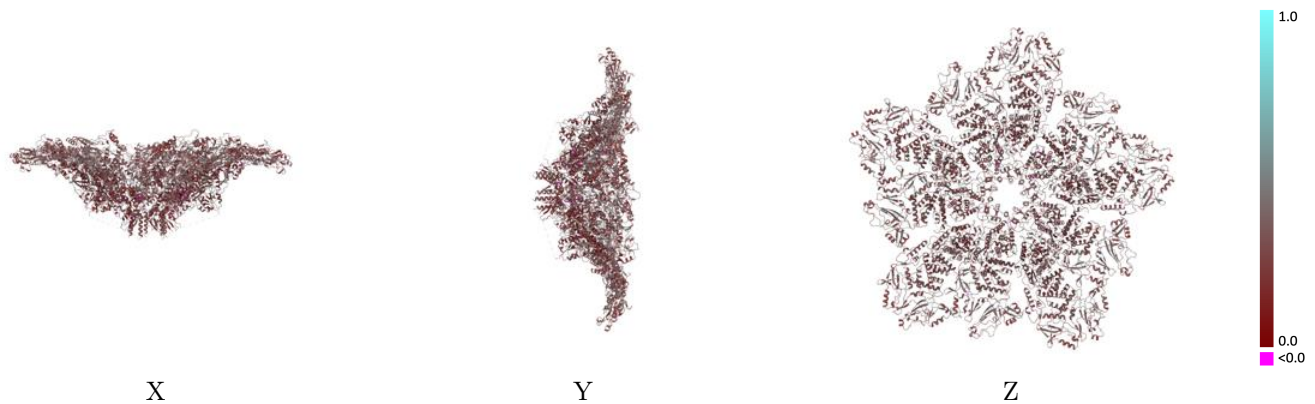
This section contains information regarding the fit between EMDB map EMD-43716 and PDB model 8W19. Per-residue inclusion information can be found in section 3 on page 5.

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



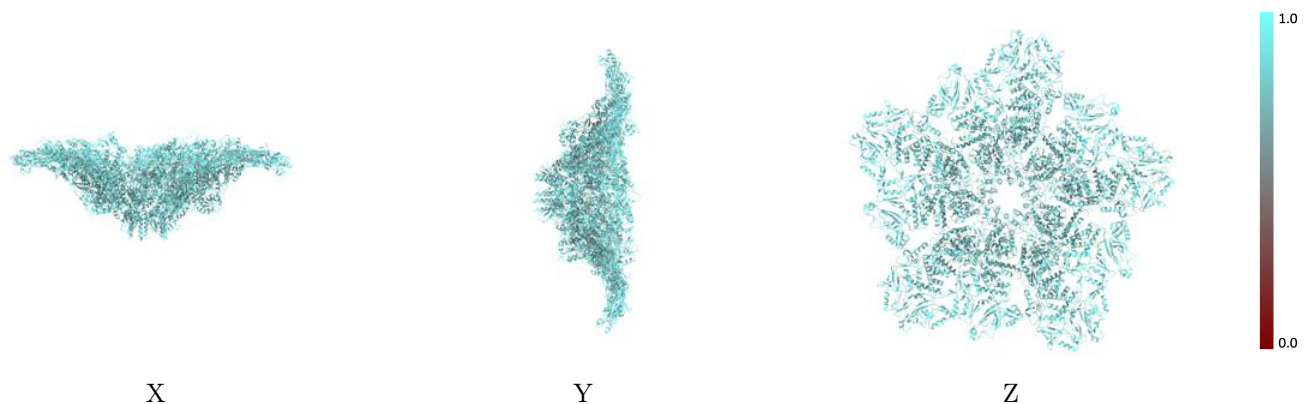
The images above show the 3D surface view of the map at the recommended contour level 0.25 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



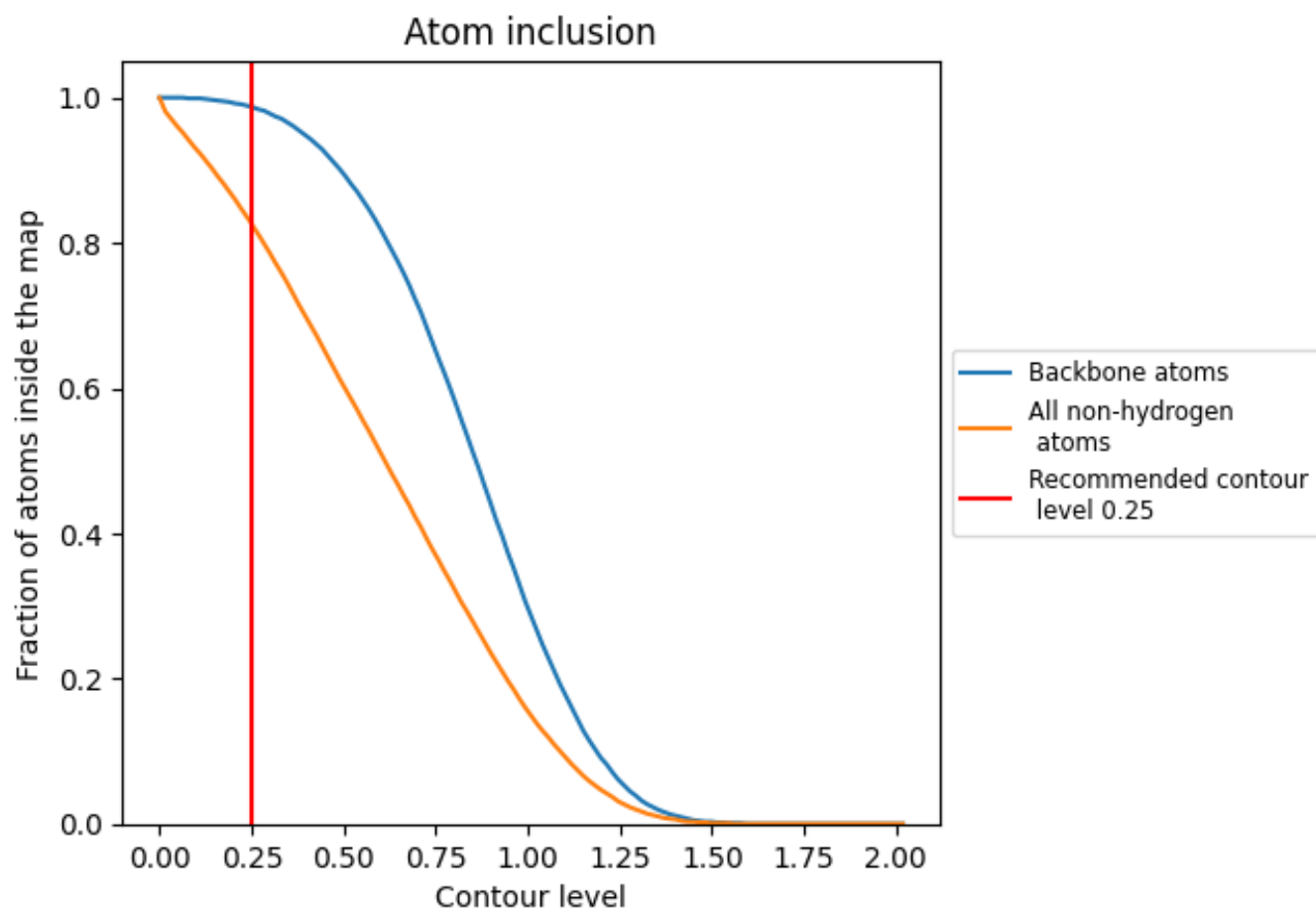
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.25).

































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 83% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.25) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| All   |  0.8260   |  0.3200   |
| A     |  0.8310   |  0.3280   |
| B     |  0.8250   |  0.3290   |
| C     |  0.8240   |  0.2890   |
| D     |  0.8290   |  0.3240   |
| E     |  0.8280   |  0.3210   |
| F     |  0.8280   |  0.3220   |
| G     |  0.8320   |  0.3230   |
| H     |  0.8200   |  0.3260   |
| I     |  0.8210   |  0.3210   |
| J     |  0.8190   |  0.3220   |
| K     |  0.8190   |  0.3250   |
| L     |  0.8220   |  0.2860   |
| M     |  0.8280   |  0.2810   |
| N     |  0.8300  |  0.2900  |
| O     |  0.8390 |  0.2890 |

