



## Full wwPDB EM Validation Report ⓘ

Jan 18, 2026 – 04:51 PM JST

PDB ID : 9VYG / pdb\_00009vyg  
EMDB ID : EMD-65452  
Title : Cyanopodophage Pan3 tail complex  
Authors : Hou, P.; Zhou, C.Z.; Jiang, Y.L.  
Deposited on : 2025-07-21  
Resolution : 3.50 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.dev129  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.47

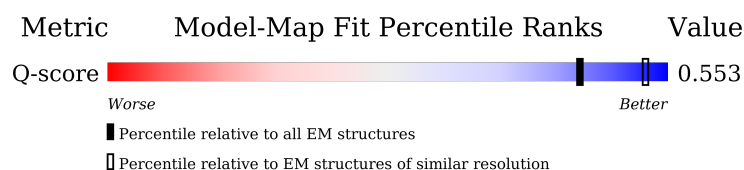
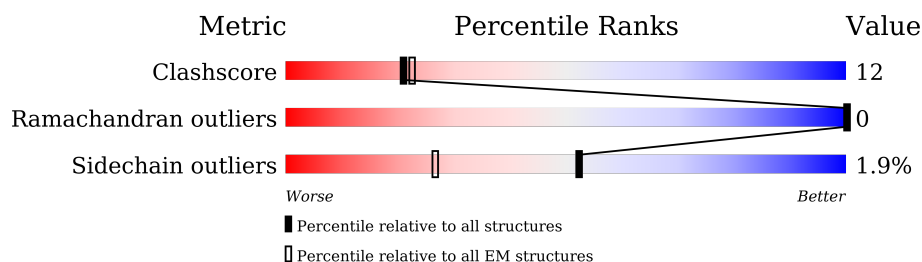
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.50 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.



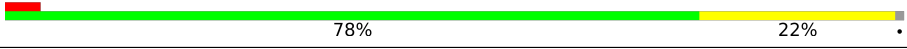
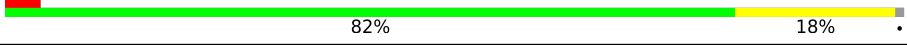
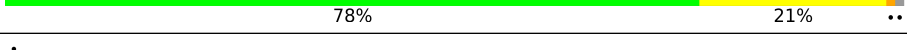
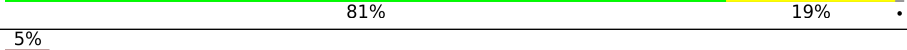
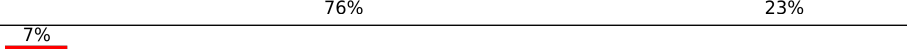
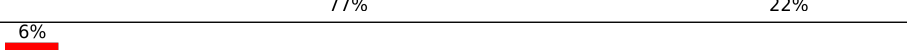
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 210492                      | 15764                       | -                                                        |
| Ramachandran outliers | 207382                      | 16835                       | -                                                        |
| Sidechain outliers    | 206894                      | 16415                       | -                                                        |
| Q-score               | -                           | 25397                       | 13950 ( 3.00 - 4.00 )                                    |

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     | 186    |                  |
| 1   | B     | 186    |                  |
| 1   | C     | 186    |                  |
| 1   | D     | 186    |                  |

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| Mol | Chain | Length | Quality of chain                                                                                 |
|-----|-------|--------|--------------------------------------------------------------------------------------------------|
| 1   | E     | 186    |  81% 19%       |
| 1   | F     | 186    |  76% 24%       |
| 1   | G     | 186    |  78% 22%       |
| 1   | H     | 186    |  82% 18%       |
| 1   | I     | 186    |  81% 18%       |
| 1   | J     | 186    |  83% 16%       |
| 1   | K     | 186    |  78% 21%       |
| 1   | L     | 186    |  81% 19%       |
| 2   | M     | 446    |  76% 23%       |
| 2   | N     | 446    |  77% 22%       |
| 2   | O     | 446    |  74% 24%       |
| 2   | P     | 446    |  74% 25%     |
| 2   | Q     | 446    |  76% 24%     |
| 2   | R     | 446    |  79% 20%     |
| 3   | S     | 69     |  57% 23% 19% |
| 3   | T     | 69     |  52% 29% 19% |
| 3   | U     | 69     |  58% 23% 19% |
| 4   | m     | 128    |  62% 37%     |
| 5   | n     | 129    |  76% 23%     |
| 6   | o     | 126    |  78% 21%     |

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 41366 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 Adaptor protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 1   | A     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | B     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | C     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | D     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | E     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | F     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | G     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | H     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | I     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | J     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | K     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |
| 1   | L     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1386  | 866 | 238 | 273 | 9 |         |       |

- Molecule 2 is a protein called Stabilization protein.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | M     | 445      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3431  | 2165 | 581 | 674 | 11 |         |       |
| 2   | N     | 445      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3431  | 2165 | 581 | 674 | 11 |         |       |
| 2   | O     | 445      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3431  | 2165 | 581 | 674 | 11 |         |       |

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| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | P     | 445      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3431  | 2165 | 581 | 674 | 11 |         |       |
| 2   | Q     | 445      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3431  | 2165 | 581 | 674 | 11 |         |       |
| 2   | R     | 445      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3431  | 2165 | 581 | 674 | 11 |         |       |

- Molecule 3 is a protein called Needle protein.

| Mol | Chain | Residues | Atoms |     |    |    | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---------|-------|
| 3   | S     | 56       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 439   | 273 | 82 | 84 |         |       |
| 3   | T     | 56       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 439   | 273 | 82 | 84 |         |       |
| 3   | U     | 56       | Total | C   | N  | O  | 0       | 0     |
|     |       |          | 439   | 273 | 82 | 84 |         |       |

There are 3 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| S     | 1       | VAL      | MET    | conflict | UNP A0AA49CMD6 |
| T     | 1       | VAL      | MET    | conflict | UNP A0AA49CMD6 |
| U     | 1       | VAL      | MET    | conflict | UNP A0AA49CMD6 |

- Molecule 4 is a protein called Tail spike protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 4   | m     | 127      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 940   | 595 | 149 | 194 | 2 |         |       |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| m     | 129     | ALA      | THR    | conflict | UNP A0AA49HGR3 |

- Molecule 5 is a protein called Tail spike protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 5   | n     | 129      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 956   | 604 | 152 | 198 | 2 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| n     | ?       | -        | ALA    | deletion | UNP A0AA49HGR3 |
| n     | ?       | -        | THR    | deletion | UNP A0AA49HGR3 |

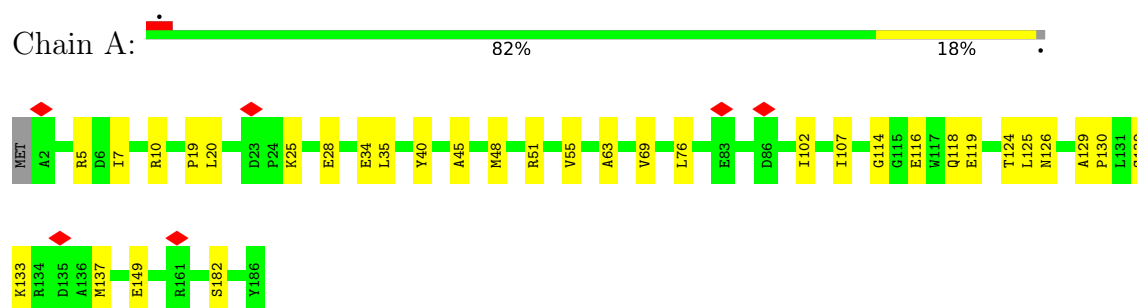
- Molecule 6 is a protein called Tail spike protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 6   | o     | 126      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 935   | 592 | 148 | 193 | 2 |         |       |

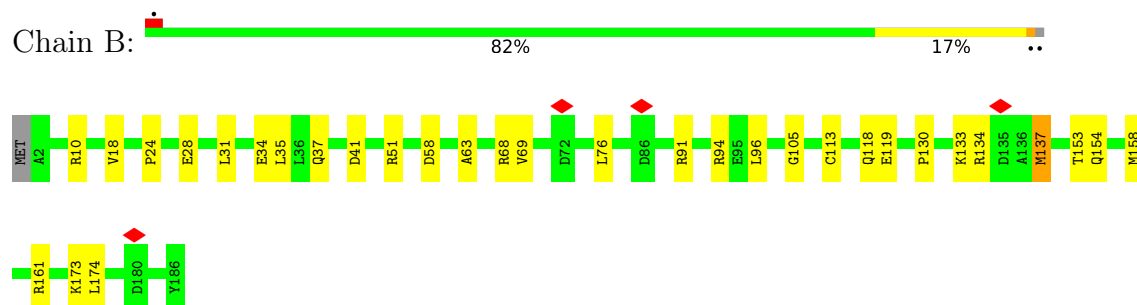
### 3 Residue-property plots [i](#)

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.

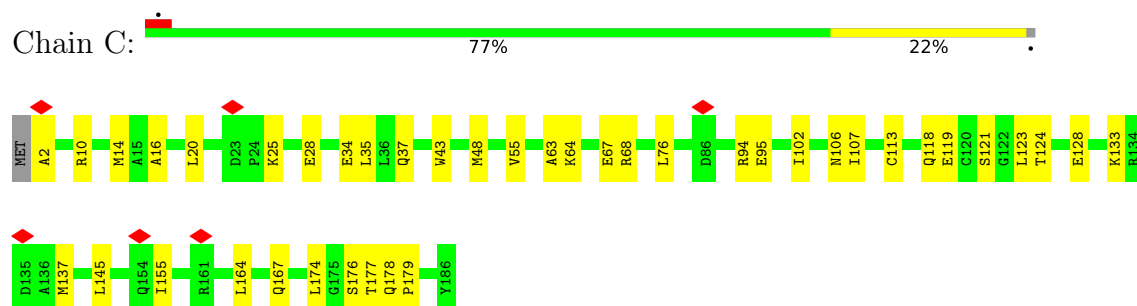
- Molecule 1: Adaptor protein



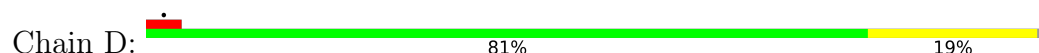
- Molecule 1: Adaptor protein

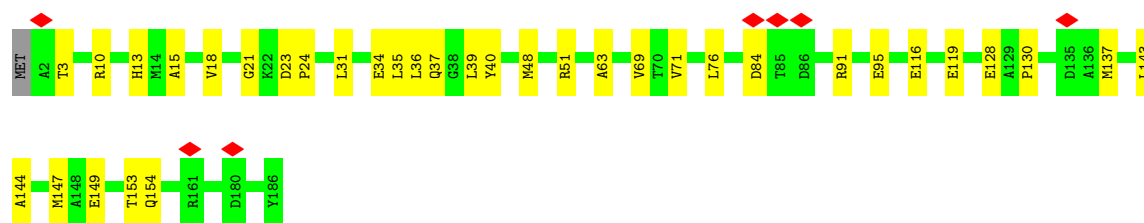


- Molecule 1: Adaptor protein

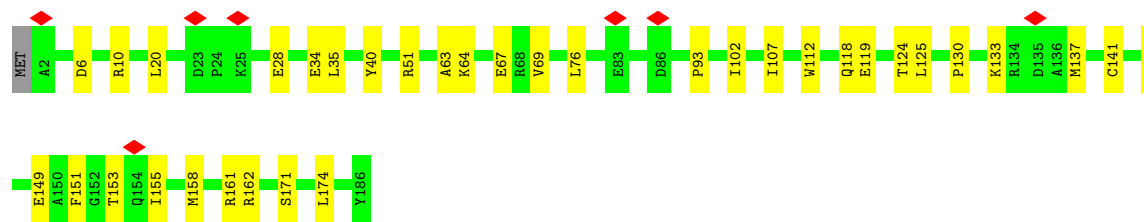
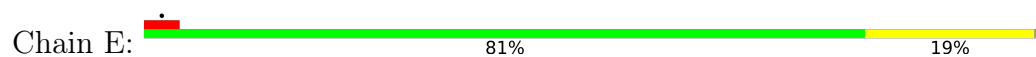


- Molecule 1: Adaptor protein

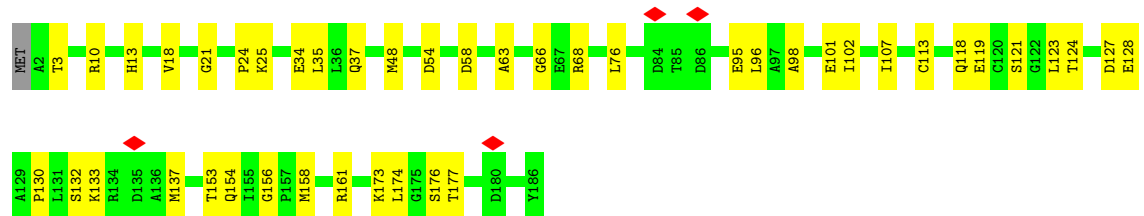
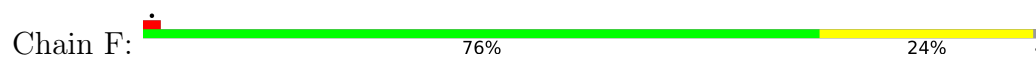




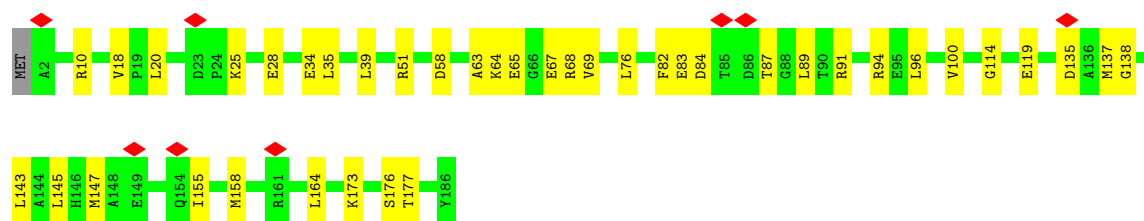
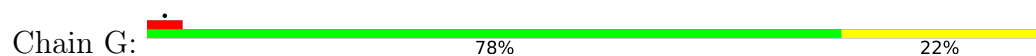
- Molecule 1: Adaptor protein



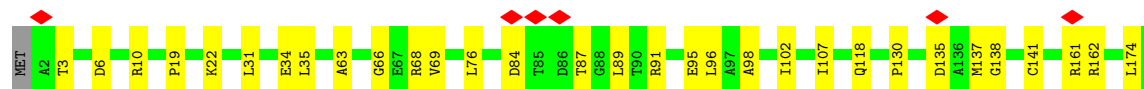
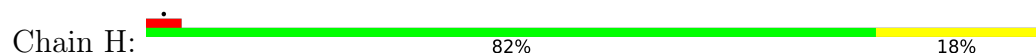
- Molecule 1: Adaptor protein



- Molecule 1: Adaptor protein



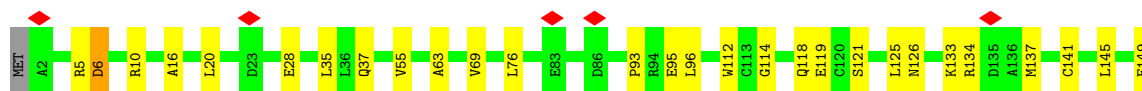
- Molecule 1: Adaptor protein





- Molecule 1: Adaptor protein

Chain I: 81% 18% ..



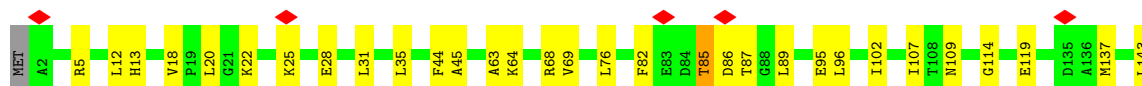
- Molecule 1: Adaptor protein

Chain J: 83% 16% ..



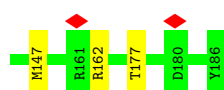
- Molecule 1: Adaptor protein

Chain K: 78% 21% ..

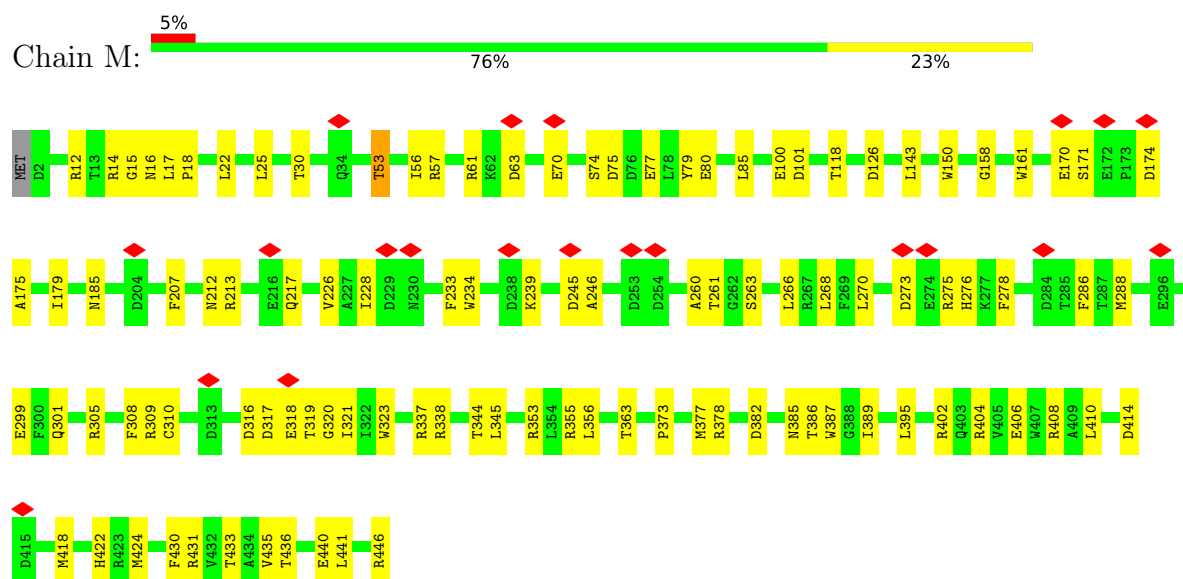


- Molecule 1: Adaptor protein

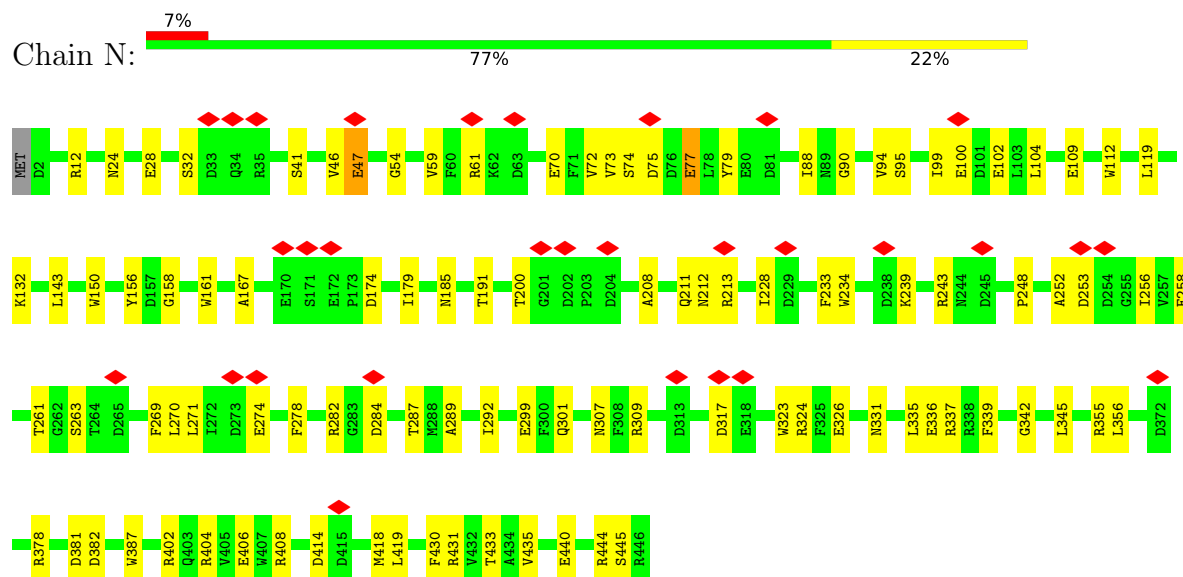
Chain L: 81% 19% .



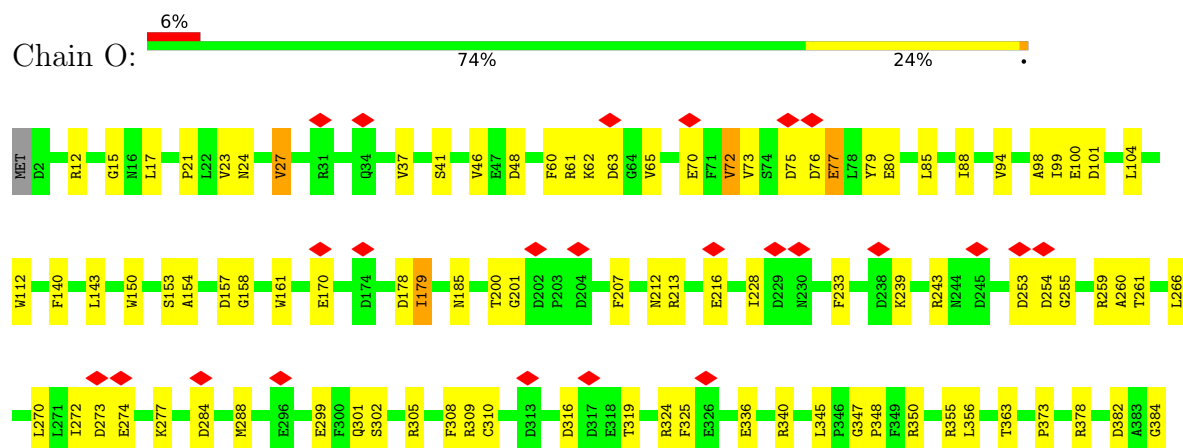
- Molecule 2: Stabilization protein



• Molecule 2: Stabilization protein

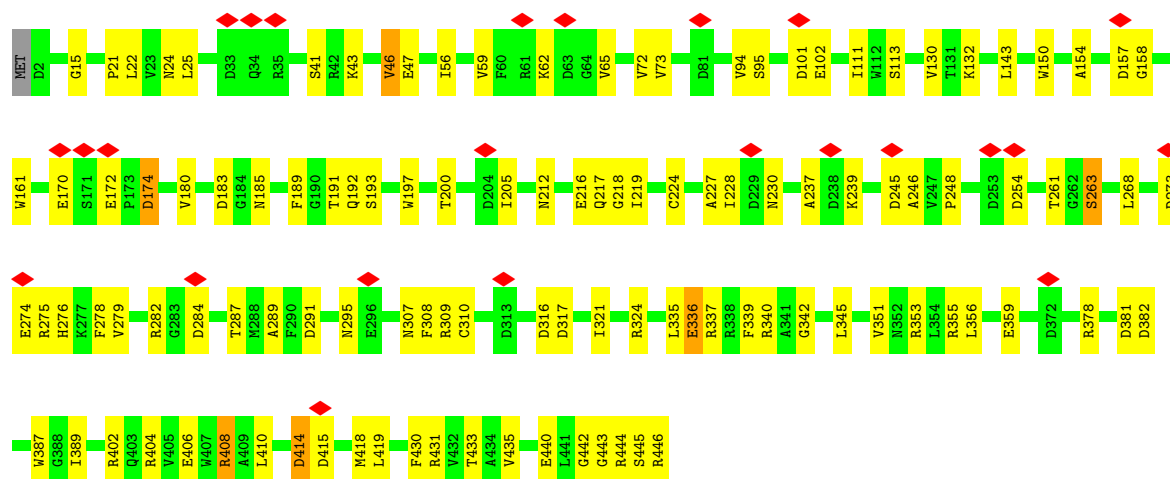
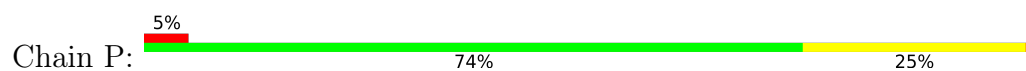


• Molecule 2: Stabilization protein

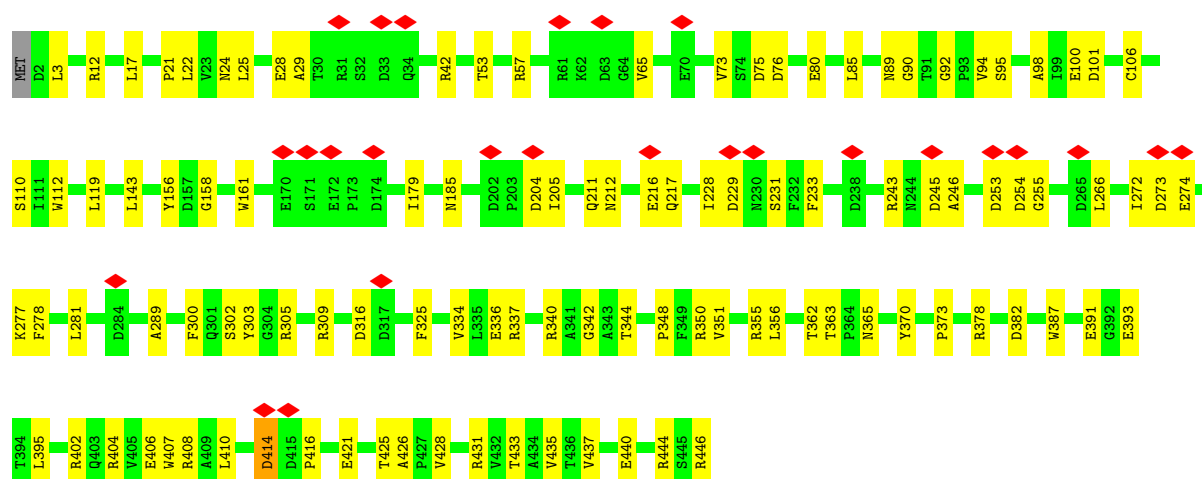
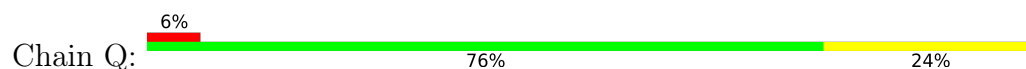




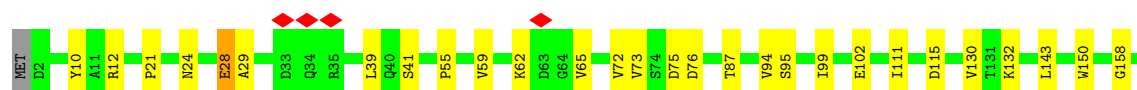
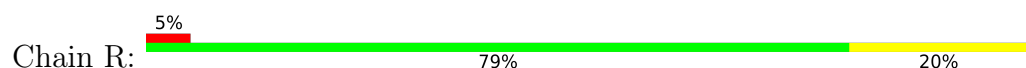
• Molecule 2: Stabilization protein

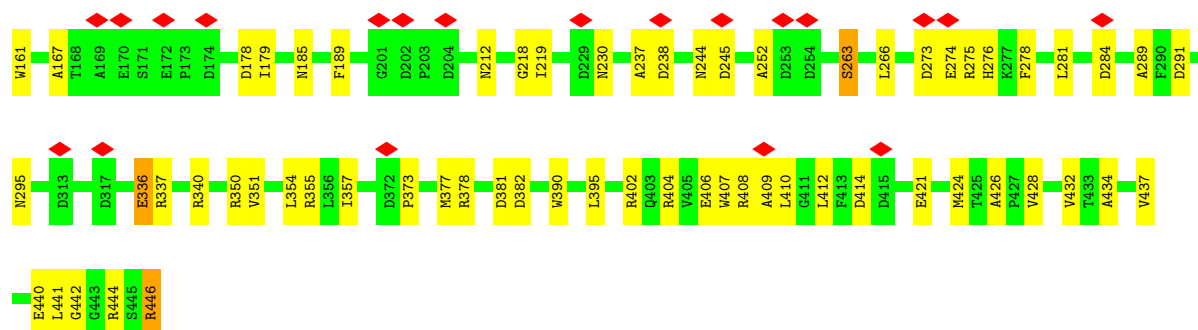


• Molecule 2: Stabilization protein

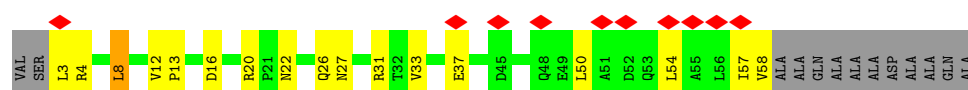


• Molecule 2: Stabilization protein

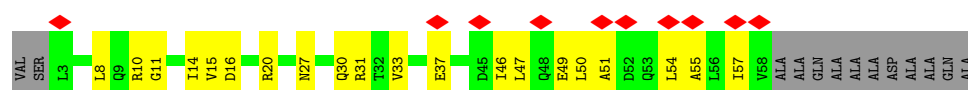




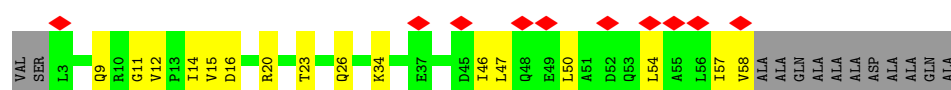
• Molecule 3: Needle protein



• Molecule 3: Needle protein



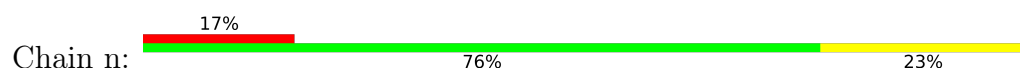
• Molecule 3: Needle protein

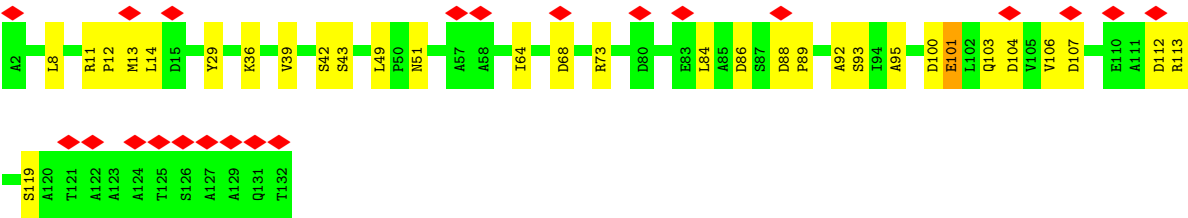


• Molecule 4: Tail spike protein

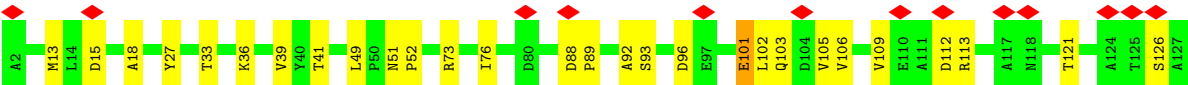
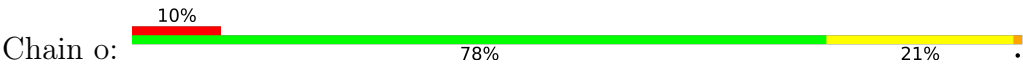


• Molecule 5: Tail spike protein





• Molecule 6: Tail spike protein



## 4 Experimental information

| Property                             | Value                      | Source    |
|--------------------------------------|----------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE            | Depositor |
| Imposed symmetry                     | POINT, Not provided        |           |
| Number of particles used             | 119673                     | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF          | Depositor |
| CTF correction method                | PHASE FLIPPING ONLY        | Depositor |
| Microscope                           | TFS KRIOS                  | Depositor |
| Voltage (kV)                         | 300                        | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 55                         | Depositor |
| Minimum defocus (nm)                 | 1500                       | Depositor |
| Maximum defocus (nm)                 | 2500                       | Depositor |
| Magnification                        | Not provided               |           |
| Image detector                       | GATAN K2 QUANTUM (4k x 4k) | Depositor |
| Maximum map value                    | 0.058                      | Depositor |
| Minimum map value                    | -0.029                     | Depositor |
| Average map value                    | 0.000                      | Depositor |
| Map value standard deviation         | 0.002                      | Depositor |
| Recommended contour level            | 0.012                      | Depositor |
| Map size ( $\text{\AA}$ )            | 547.84, 547.84, 547.84     | wwPDB     |
| Map dimensions                       | 512, 512, 512              | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0           | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.07, 1.07, 1.07           | Depositor |

## 5 Model quality

### 5.1 Standard geometry

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

| Mol | Chain | Bond lengths |             | Bond angles |             |
|-----|-------|--------------|-------------|-------------|-------------|
|     |       | RMSZ         | $\# Z  > 5$ | RMSZ        | $\# Z  > 5$ |
| 1   | A     | 0.10         | 0/1411      | 0.27        | 0/1915      |
| 1   | B     | 0.11         | 0/1411      | 0.28        | 0/1915      |
| 1   | C     | 0.12         | 0/1411      | 0.30        | 0/1915      |
| 1   | D     | 0.10         | 0/1411      | 0.25        | 0/1915      |
| 1   | E     | 0.10         | 0/1411      | 0.26        | 0/1915      |
| 1   | F     | 0.11         | 0/1411      | 0.26        | 0/1915      |
| 1   | G     | 0.11         | 0/1411      | 0.27        | 0/1915      |
| 1   | H     | 0.11         | 0/1411      | 0.28        | 0/1915      |
| 1   | I     | 0.11         | 0/1411      | 0.28        | 0/1915      |
| 1   | J     | 0.14         | 0/1411      | 0.29        | 0/1915      |
| 1   | K     | 0.12         | 0/1411      | 0.30        | 0/1915      |
| 1   | L     | 0.13         | 0/1411      | 0.27        | 0/1915      |
| 2   | M     | 0.24         | 0/3511      | 0.45        | 0/4776      |
| 2   | N     | 0.23         | 0/3511      | 0.40        | 0/4776      |
| 2   | O     | 0.22         | 0/3511      | 0.40        | 0/4776      |
| 2   | P     | 0.19         | 0/3511      | 0.38        | 0/4776      |
| 2   | Q     | 0.23         | 0/3511      | 0.45        | 0/4776      |
| 2   | R     | 0.14         | 0/3511      | 0.36        | 0/4776      |
| 3   | S     | 0.23         | 0/443       | 0.47        | 0/602       |
| 3   | T     | 0.33         | 0/443       | 0.52        | 0/602       |
| 3   | U     | 0.14         | 0/443       | 0.38        | 0/602       |
| 4   | m     | 0.15         | 0/959       | 0.39        | 0/1319      |
| 5   | n     | 0.23         | 0/975       | 0.46        | 0/1341      |
| 6   | o     | 0.13         | 0/954       | 0.37        | 0/1312      |
| All | All   | 0.18         | 0/42215     | 0.36        | 0/57414     |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 1386  | 0        | 1353     | 32      | 0            |
| 1   | B     | 1386  | 0        | 1353     | 33      | 0            |
| 1   | C     | 1386  | 0        | 1353     | 32      | 0            |
| 1   | D     | 1386  | 0        | 1353     | 29      | 0            |
| 1   | E     | 1386  | 0        | 1353     | 41      | 0            |
| 1   | F     | 1386  | 0        | 1353     | 45      | 0            |
| 1   | G     | 1386  | 0        | 1353     | 37      | 0            |
| 1   | H     | 1386  | 0        | 1353     | 26      | 0            |
| 1   | I     | 1386  | 0        | 1353     | 26      | 0            |
| 1   | J     | 1386  | 0        | 1353     | 22      | 0            |
| 1   | K     | 1386  | 0        | 1353     | 38      | 0            |
| 1   | L     | 1386  | 0        | 1353     | 32      | 0            |
| 2   | M     | 3431  | 0        | 3246     | 77      | 0            |
| 2   | N     | 3431  | 0        | 3246     | 96      | 0            |
| 2   | O     | 3431  | 0        | 3246     | 93      | 0            |
| 2   | P     | 3431  | 0        | 3246     | 99      | 0            |
| 2   | Q     | 3431  | 0        | 3246     | 108     | 0            |
| 2   | R     | 3431  | 0        | 3246     | 77      | 0            |
| 3   | S     | 439   | 0        | 448      | 31      | 0            |
| 3   | T     | 439   | 0        | 448      | 30      | 0            |
| 3   | U     | 439   | 0        | 448      | 22      | 0            |
| 4   | m     | 940   | 0        | 904      | 41      | 0            |
| 5   | n     | 956   | 0        | 919      | 39      | 0            |
| 6   | o     | 935   | 0        | 899      | 22      | 0            |
| All | All   | 41366 | 0        | 39778    | 945     | 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 12.

All (945) 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) |
|----------------|-----------------|--------------------------|-------------------|
| 5:n:11:ARG:NH1 | 5:n:95:ALA:HB2  | 1.46                     | 1.30              |
| 2:Q:12:ARG:NH1 | 2:Q:254:ASP:HB2 | 1.46                     | 1.27              |
| 2:Q:305:ARG:CD | 2:Q:309:ARG:HD3 | 1.70                     | 1.20              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:158:MET:HE1  | 1:F:161:ARG:HD2  | 1.25                     | 1.13              |
| 3:T:57:ILE:HG21  | 3:U:57:ILE:HG22  | 1.28                     | 1.12              |
| 2:Q:404:ARG:HG3  | 2:Q:446:ARG:NH1  | 1.65                     | 1.12              |
| 3:S:57:ILE:HG12  | 3:U:57:ILE:CD1   | 1.80                     | 1.10              |
| 3:T:57:ILE:HG21  | 3:U:57:ILE:CG2   | 1.81                     | 1.10              |
| 2:O:201:GLY:HA3  | 3:S:3:LEU:CD1    | 1.82                     | 1.10              |
| 5:n:11:ARG:HH12  | 5:n:95:ALA:HB2   | 0.93                     | 1.09              |
| 2:Q:305:ARG:HD2  | 2:Q:309:ARG:HD3  | 1.08                     | 1.06              |
| 3:S:57:ILE:HG12  | 3:U:57:ILE:HD12  | 1.09                     | 1.04              |
| 5:n:11:ARG:HG3   | 5:n:11:ARG:HH11  | 1.13                     | 1.03              |
| 2:N:309:ARG:HH12 | 2:N:331:ASN:ND2  | 1.56                     | 1.03              |
| 2:O:254:ASP:OD1  | 2:P:275:ARG:HD3  | 1.59                     | 1.02              |
| 2:N:41:SER:HB2   | 2:N:337:ARG:HE   | 1.20                     | 1.01              |
| 3:T:57:ILE:HD13  | 3:U:57:ILE:HG21  | 1.41                     | 1.01              |
| 2:P:41:SER:HB2   | 2:P:337:ARG:HE   | 1.24                     | 1.00              |
| 2:N:41:SER:CB    | 2:N:337:ARG:HE   | 1.73                     | 1.00              |
| 1:K:13:HIS:HD2   | 1:K:18:VAL:HG13  | 1.27                     | 0.99              |
| 3:T:51:ALA:HA    | 3:T:54:LEU:CD2   | 1.92                     | 0.98              |
| 2:P:408:ARG:HG2  | 2:P:408:ARG:HH11 | 1.28                     | 0.96              |
| 2:M:404:ARG:HB2  | 2:M:446:ARG:HH11 | 1.30                     | 0.96              |
| 5:n:11:ARG:HH12  | 5:n:95:ALA:CB    | 1.77                     | 0.96              |
| 3:T:51:ALA:HA    | 3:T:54:LEU:HD23  | 1.45                     | 0.95              |
| 1:K:13:HIS:HD2   | 1:K:18:VAL:CG1   | 1.79                     | 0.95              |
| 2:O:201:GLY:CA   | 3:S:3:LEU:CD1    | 2.44                     | 0.95              |
| 1:F:158:MET:CE   | 1:F:161:ARG:HD2  | 1.96                     | 0.95              |
| 2:Q:12:ARG:NH1   | 2:Q:254:ASP:CB   | 2.31                     | 0.93              |
| 2:O:201:GLY:HA3  | 3:S:3:LEU:HD12   | 1.46                     | 0.93              |
| 3:T:57:ILE:CG2   | 3:U:57:ILE:HG22  | 1.97                     | 0.93              |
| 2:Q:404:ARG:HG3  | 2:Q:446:ARG:HH11 | 1.31                     | 0.92              |
| 2:N:208:ALA:HB3  | 3:S:4:ARG:HH21   | 1.32                     | 0.92              |
| 3:S:57:ILE:CG1   | 3:U:57:ILE:HD12  | 1.98                     | 0.92              |
| 2:Q:12:ARG:HH12  | 2:Q:254:ASP:HB2  | 1.28                     | 0.91              |
| 2:N:54:GLY:HA3   | 2:N:75:ASP:HB3   | 1.50                     | 0.90              |
| 1:K:13:HIS:CD2   | 1:K:18:VAL:HG13  | 2.08                     | 0.89              |
| 2:P:41:SER:CB    | 2:P:337:ARG:HE   | 1.85                     | 0.88              |
| 1:F:158:MET:HE1  | 1:F:161:ARG:CD   | 2.05                     | 0.87              |
| 5:n:11:ARG:HH11  | 5:n:11:ARG:CG    | 1.88                     | 0.87              |
| 2:Q:305:ARG:CZ   | 2:Q:309:ARG:HH11 | 1.88                     | 0.86              |
| 5:n:11:ARG:CD    | 5:n:93:SER:HA    | 2.06                     | 0.86              |
| 2:Q:305:ARG:CD   | 2:Q:309:ARG:CD   | 2.54                     | 0.86              |
| 1:A:124:THR:HG22 | 1:A:125:LEU:H    | 1.40                     | 0.86              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:R:244:ASN:O    | 2:R:245:ASP:OD1  | 1.94                     | 0.85              |
| 2:P:408:ARG:HH11 | 2:P:408:ARG:CG   | 1.90                     | 0.85              |
| 2:P:408:ARG:HG2  | 2:P:408:ARG:NH1  | 1.84                     | 0.84              |
| 1:E:124:THR:HG22 | 1:E:125:LEU:H    | 1.39                     | 0.84              |
| 1:B:51:ARG:NH2   | 1:C:174:LEU:HD12 | 1.93                     | 0.84              |
| 1:L:18:VAL:HG22  | 2:Q:444:ARG:HH21 | 1.43                     | 0.83              |
| 1:E:51:ARG:NH2   | 1:F:174:LEU:HD12 | 1.93                     | 0.83              |
| 2:P:359:GLU:OE2  | 2:P:430:PHE:C    | 2.22                     | 0.82              |
| 2:Q:12:ARG:HD2   | 2:Q:254:ASP:OD2  | 1.79                     | 0.81              |
| 2:R:377:MET:HE2  | 2:R:407:TRP:CG   | 2.16                     | 0.81              |
| 1:E:124:THR:HG22 | 1:E:125:LEU:N    | 1.96                     | 0.81              |
| 2:R:354:LEU:HD22 | 2:R:377:MET:SD   | 2.21                     | 0.81              |
| 1:L:68:ARG:CZ    | 1:L:102:ILE:HD11 | 2.11                     | 0.81              |
| 3:T:57:ILE:CD1   | 3:U:57:ILE:HG21  | 2.10                     | 0.81              |
| 5:n:11:ARG:HD2   | 5:n:93:SER:C     | 2.06                     | 0.81              |
| 2:O:201:GLY:N    | 3:S:3:LEU:CD1    | 2.44                     | 0.80              |
| 1:G:143:LEU:HG   | 1:G:147:MET:SD   | 2.21                     | 0.80              |
| 2:N:74:SER:HG    | 2:N:79:TYR:HE1   | 1.29                     | 0.80              |
| 2:Q:362:THR:O    | 2:Q:362:THR:HG22 | 1.82                     | 0.80              |
| 2:O:201:GLY:CA   | 3:S:3:LEU:HD11   | 2.13                     | 0.79              |
| 2:Q:305:ARG:CZ   | 2:Q:309:ARG:NH1  | 2.45                     | 0.78              |
| 2:M:404:ARG:HB2  | 2:M:446:ARG:NH1  | 1.99                     | 0.77              |
| 2:M:404:ARG:HD3  | 2:M:406:GLU:OE1  | 1.84                     | 0.77              |
| 4:m:78:ASP:OD1   | 4:m:79:ALA:N     | 2.18                     | 0.77              |
| 1:A:124:THR:HG22 | 1:A:125:LEU:N    | 1.95                     | 0.77              |
| 1:J:51:ARG:NH2   | 1:K:174:LEU:HD12 | 1.99                     | 0.77              |
| 1:E:137:MET:HB2  | 1:E:162:ARG:HH21 | 1.50                     | 0.77              |
| 1:G:10:ARG:HG2   | 1:G:137:MET:HE1  | 1.64                     | 0.77              |
| 2:N:41:SER:HB2   | 2:N:337:ARG:NE   | 1.99                     | 0.76              |
| 4:m:73:ARG:HG3   | 4:m:88:ASP:HA    | 1.68                     | 0.76              |
| 4:m:74:CYS:SG    | 4:m:87:SER:OG    | 2.45                     | 0.75              |
| 2:Q:305:ARG:HD3  | 2:Q:309:ARG:HD3  | 1.67                     | 0.75              |
| 5:n:11:ARG:NH1   | 5:n:95:ALA:CB    | 2.40                     | 0.74              |
| 1:K:87:THR:HG21  | 1:K:89:LEU:HD12  | 1.68                     | 0.74              |
| 2:N:41:SER:CB    | 2:N:337:ARG:NE   | 2.49                     | 0.74              |
| 3:T:51:ALA:O     | 3:T:54:LEU:HG    | 1.87                     | 0.74              |
| 1:F:18:VAL:HG22  | 2:N:444:ARG:HH21 | 1.53                     | 0.73              |
| 5:n:11:ARG:NH1   | 5:n:11:ARG:HG3   | 1.96                     | 0.73              |
| 2:O:299:GLU:CD   | 2:O:301:GLN:HE21 | 1.97                     | 0.72              |
| 2:O:201:GLY:N    | 3:S:3:LEU:HD11   | 2.05                     | 0.72              |
| 1:L:118:GLN:NE2  | 1:L:130:PRO:O    | 2.22                     | 0.72              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:119:GLU:OE2  | 1:C:119:GLU:N    | 2.24                     | 0.71              |
| 2:O:200:THR:C    | 3:S:3:LEU:HD13   | 2.15                     | 0.71              |
| 6:o:13:MET:HE3   | 6:o:76:ILE:HG21  | 1.73                     | 0.71              |
| 1:K:143:LEU:HG   | 1:K:147:MET:SD   | 2.31                     | 0.70              |
| 1:E:124:THR:CG2  | 1:E:125:LEU:H    | 2.05                     | 0.70              |
| 1:F:34:GLU:HB3   | 1:G:137:MET:HE3  | 1.72                     | 0.70              |
| 1:A:124:THR:CG2  | 1:A:125:LEU:H    | 2.05                     | 0.70              |
| 1:G:119:GLU:OE2  | 1:G:119:GLU:N    | 2.25                     | 0.70              |
| 1:K:119:GLU:N    | 1:K:119:GLU:OE2  | 2.24                     | 0.70              |
| 2:N:213:ARG:CZ   | 3:S:12:VAL:HG22  | 2.22                     | 0.70              |
| 2:Q:305:ARG:HD2  | 2:Q:309:ARG:CD   | 2.04                     | 0.70              |
| 1:F:63:ALA:HB2   | 1:F:76:LEU:HD11  | 1.72                     | 0.70              |
| 2:O:416:PRO:HD3  | 2:P:446:ARG:HH22 | 1.55                     | 0.70              |
| 2:O:355:ARG:NH2  | 2:O:440:GLU:O    | 2.24                     | 0.69              |
| 2:Q:211:GLN:HG3  | 3:T:30:GLN:HE21  | 1.57                     | 0.69              |
| 1:K:87:THR:CG2   | 1:K:89:LEU:HD12  | 2.22                     | 0.69              |
| 2:N:355:ARG:NH1  | 2:N:406:GLU:OE2  | 2.24                     | 0.69              |
| 3:T:54:LEU:HD12  | 3:T:55:ALA:N     | 2.06                     | 0.69              |
| 1:B:119:GLU:OE2  | 1:B:119:GLU:N    | 2.25                     | 0.69              |
| 1:J:161:ARG:O    | 1:J:165:GLN:HG3  | 1.92                     | 0.69              |
| 1:D:31:LEU:HD22  | 1:E:20:LEU:HD21  | 1.74                     | 0.69              |
| 2:Q:57:ARG:NH2   | 2:Q:90:GLY:O     | 2.26                     | 0.69              |
| 2:P:359:GLU:OE2  | 2:P:430:PHE:CA   | 2.40                     | 0.69              |
| 2:Q:355:ARG:HD3  | 2:Q:404:ARG:HD3  | 1.73                     | 0.69              |
| 2:R:377:MET:HE2  | 2:R:407:TRP:CD2  | 2.27                     | 0.69              |
| 1:A:119:GLU:N    | 1:A:119:GLU:OE2  | 2.25                     | 0.69              |
| 2:Q:245:ASP:OD1  | 2:Q:246:ALA:N    | 2.25                     | 0.69              |
| 2:O:424:MET:HE2  | 2:O:426:ALA:HB3  | 1.75                     | 0.69              |
| 1:E:119:GLU:OE2  | 1:E:119:GLU:N    | 2.26                     | 0.68              |
| 1:L:2:ALA:N      | 1:L:132:SER:HG   | 1.91                     | 0.68              |
| 2:N:77:GLU:HB3   | 2:N:79:TYR:CE1   | 2.28                     | 0.68              |
| 2:O:382:ASP:HB3  | 2:P:402:ARG:HG3  | 1.75                     | 0.68              |
| 1:L:143:LEU:HG   | 1:L:147:MET:SD   | 2.34                     | 0.68              |
| 1:F:68:ARG:CZ    | 1:F:102:ILE:HD11 | 2.23                     | 0.68              |
| 2:N:74:SER:OG    | 2:N:79:TYR:HE1   | 1.75                     | 0.68              |
| 1:J:119:GLU:OE2  | 1:J:119:GLU:N    | 2.26                     | 0.68              |
| 2:M:424:MET:SD   | 2:M:430:PHE:CD1  | 2.87                     | 0.68              |
| 2:O:228:ILE:HD11 | 2:O:270:LEU:HD11 | 1.76                     | 0.68              |
| 2:P:41:SER:CB    | 2:P:337:ARG:NE   | 2.56                     | 0.67              |
| 1:F:119:GLU:N    | 1:F:119:GLU:OE2  | 2.26                     | 0.67              |
| 1:C:145:LEU:HD13 | 1:C:155:ILE:HD11 | 1.75                     | 0.67              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:K:13:HIS:CD2   | 1:K:18:VAL:CG1   | 2.70                     | 0.67              |
| 1:I:119:GLU:N    | 1:I:119:GLU:OE1  | 2.26                     | 0.67              |
| 2:N:132:LYS:HD3  | 2:N:179:ILE:HG22 | 1.76                     | 0.67              |
| 2:P:154:ALA:HB3  | 2:P:157:ASP:HB3  | 1.77                     | 0.67              |
| 1:E:28:GLU:HG2   | 1:E:151:PHE:HZ   | 1.60                     | 0.67              |
| 1:L:18:VAL:HG22  | 2:Q:444:ARG:NH2  | 2.10                     | 0.67              |
| 1:E:137:MET:CB   | 1:E:162:ARG:HH21 | 2.07                     | 0.67              |
| 2:N:100:GLU:OE2  | 2:N:100:GLU:N    | 2.28                     | 0.66              |
| 2:Q:305:ARG:HD3  | 2:Q:309:ARG:CD   | 2.23                     | 0.66              |
| 2:R:28:GLU:OE2   | 2:R:28:GLU:HA    | 1.94                     | 0.66              |
| 4:m:101:GLU:OE2  | 4:m:101:GLU:N    | 2.24                     | 0.66              |
| 2:N:309:ARG:HH12 | 2:N:331:ASN:HD22 | 1.44                     | 0.66              |
| 2:Q:305:ARG:NE   | 2:Q:309:ARG:HH11 | 1.94                     | 0.66              |
| 2:O:355:ARG:NH1  | 2:O:406:GLU:OE2  | 2.29                     | 0.66              |
| 1:F:133:LYS:HZ3  | 1:F:133:LYS:HB2  | 1.61                     | 0.66              |
| 1:F:118:GLN:NE2  | 1:F:130:PRO:O    | 2.29                     | 0.65              |
| 2:O:201:GLY:N    | 3:S:3:LEU:HD13   | 2.10                     | 0.65              |
| 5:n:11:ARG:HD3   | 5:n:93:SER:HA    | 1.78                     | 0.65              |
| 2:R:28:GLU:OE1   | 2:R:276:HIS:CE1  | 2.50                     | 0.65              |
| 2:P:402:ARG:NH2  | 2:P:444:ARG:O    | 2.29                     | 0.65              |
| 2:Q:42:ARG:HD3   | 2:Q:300:PHE:CE1  | 2.32                     | 0.65              |
| 2:M:275:ARG:NH1  | 2:R:252:ALA:O    | 2.29                     | 0.65              |
| 2:R:355:ARG:NH2  | 2:R:440:GLU:O    | 2.30                     | 0.65              |
| 1:H:19:PRO:HB2   | 1:H:22:LYS:HG3   | 1.77                     | 0.65              |
| 2:N:228:ILE:HG21 | 2:N:292:ILE:HG13 | 1.78                     | 0.64              |
| 1:B:158:MET:HA   | 1:B:158:MET:HE3  | 1.79                     | 0.64              |
| 2:P:216:GLU:OE2  | 2:P:216:GLU:N    | 2.26                     | 0.64              |
| 2:N:431:ARG:NH1  | 2:N:433:THR:OG1  | 2.30                     | 0.64              |
| 2:P:212:ASN:OD1  | 2:Q:185:ASN:ND2  | 2.31                     | 0.64              |
| 4:m:110:GLU:CD   | 4:m:113:ARG:HH21 | 2.06                     | 0.64              |
| 2:M:245:ASP:OD1  | 2:M:246:ALA:N    | 2.31                     | 0.64              |
| 2:P:59:VAL:HG22  | 2:P:72:VAL:HG22  | 1.79                     | 0.64              |
| 2:Q:355:ARG:NH2  | 2:Q:440:GLU:O    | 2.30                     | 0.64              |
| 1:K:35:LEU:HD12  | 1:K:147:MET:HG2  | 1.79                     | 0.63              |
| 1:L:35:LEU:CD1   | 1:L:147:MET:HG2  | 2.28                     | 0.63              |
| 1:G:96:LEU:HD12  | 1:G:173:LYS:HG2  | 1.80                     | 0.63              |
| 2:O:299:GLU:OE2  | 2:O:301:GLN:NE2  | 2.32                     | 0.63              |
| 2:Q:73:VAL:HG21  | 2:Q:94:VAL:HG11  | 1.80                     | 0.63              |
| 2:N:278:PHE:HB3  | 2:N:289:ALA:HB1  | 1.81                     | 0.63              |
| 2:N:158:GLY:O    | 2:N:161:TRP:NE1  | 2.32                     | 0.63              |
| 2:N:228:ILE:HD11 | 2:N:270:LEU:HD11 | 1.79                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:O:100:GLU:OE2  | 2:O:100:GLU:N    | 2.25                     | 0.63              |
| 2:N:299:GLU:OE2  | 2:N:301:GLN:NE2  | 2.22                     | 0.62              |
| 1:A:124:THR:CG2  | 1:A:125:LEU:N    | 2.62                     | 0.62              |
| 1:F:158:MET:HE1  | 1:F:161:ARG:HH11 | 1.63                     | 0.62              |
| 2:M:239:LYS:HD3  | 2:M:261:THR:HA   | 1.81                     | 0.62              |
| 1:H:68:ARG:NH2   | 1:I:95:GLU:OE1   | 2.33                     | 0.62              |
| 2:N:299:GLU:CD   | 2:N:301:GLN:HE21 | 2.05                     | 0.62              |
| 2:R:28:GLU:OE2   | 2:R:29:ALA:N     | 2.31                     | 0.62              |
| 2:M:431:ARG:NH1  | 2:M:433:THR:OG1  | 2.31                     | 0.62              |
| 1:H:137:MET:HB3  | 1:H:162:ARG:HH21 | 1.65                     | 0.62              |
| 1:J:96:LEU:HD12  | 1:J:173:LYS:HG2  | 1.80                     | 0.62              |
| 2:R:377:MET:CE   | 2:R:407:TRP:CG   | 2.83                     | 0.62              |
| 4:m:37:GLN:O     | 4:m:51:ASN:ND2   | 2.33                     | 0.62              |
| 2:N:355:ARG:HD3  | 2:N:404:ARG:HD2  | 1.81                     | 0.62              |
| 1:E:118:GLN:NE2  | 1:E:130:PRO:O    | 2.31                     | 0.62              |
| 2:N:355:ARG:HG2  | 2:N:406:GLU:HG3  | 1.81                     | 0.62              |
| 2:Q:334:VAL:HG11 | 4:m:33:THR:HG21  | 1.81                     | 0.62              |
| 2:P:359:GLU:OE2  | 2:P:431:ARG:N    | 2.33                     | 0.61              |
| 2:Q:158:GLY:O    | 2:Q:161:TRP:NE1  | 2.34                     | 0.61              |
| 5:n:88:ASP:HB2   | 5:n:89:PRO:HD3   | 1.82                     | 0.61              |
| 1:A:118:GLN:NE2  | 1:A:130:PRO:O    | 2.33                     | 0.61              |
| 2:M:12:ARG:NE    | 2:N:28:GLU:OE2   | 2.34                     | 0.61              |
| 1:E:28:GLU:HG2   | 1:E:151:PHE:CZ   | 2.36                     | 0.61              |
| 1:H:118:GLN:OE1  | 1:H:130:PRO:HA   | 2.00                     | 0.61              |
| 2:P:183:ASP:OD2  | 3:T:10:ARG:NH2   | 2.33                     | 0.61              |
| 2:M:309:ARG:HD3  | 2:M:323:TRP:CZ2  | 2.36                     | 0.61              |
| 2:O:212:ASN:OD1  | 2:P:185:ASN:ND2  | 2.32                     | 0.61              |
| 2:R:337:ARG:NH1  | 2:R:428:VAL:O    | 2.33                     | 0.61              |
| 5:n:11:ARG:HD2   | 5:n:93:SER:HA    | 1.81                     | 0.61              |
| 1:A:25:LYS:N     | 1:A:28:GLU:OE2   | 2.33                     | 0.61              |
| 1:J:68:ARG:CZ    | 1:J:102:ILE:HD11 | 2.31                     | 0.61              |
| 2:M:404:ARG:NH2  | 2:M:446:ARG:NH2  | 2.48                     | 0.61              |
| 5:n:36:LYS:HG2   | 5:n:51:ASN:HD22  | 1.66                     | 0.61              |
| 2:N:200:THR:HG22 | 3:S:4:ARG:CZ     | 2.31                     | 0.61              |
| 2:M:273:ASP:OD2  | 2:M:278:PHE:HE2  | 1.83                     | 0.61              |
| 3:S:57:ILE:HG21  | 3:T:57:ILE:HD13  | 1.82                     | 0.61              |
| 6:o:73:ARG:HD2   | 6:o:88:ASP:HA    | 1.82                     | 0.61              |
| 1:L:63:ALA:HB2   | 1:L:76:LEU:HD11  | 1.83                     | 0.60              |
| 2:Q:404:ARG:CZ   | 2:Q:446:ARG:CZ   | 2.79                     | 0.60              |
| 2:R:357:ILE:HD12 | 2:R:434:ALA:HB3  | 1.83                     | 0.60              |
| 1:G:68:ARG:HG3   | 1:G:100:VAL:HB   | 1.81                     | 0.60              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 2:Q:101:ASP:N   | 2:Q:101:ASP:OD1  | 2.35                     | 0.60              |
| 2:Q:305:ARG:NE  | 2:Q:309:ARG:NH1  | 2.48                     | 0.60              |
| 1:G:51:ARG:NH2  | 1:H:174:LEU:HD12 | 2.15                     | 0.60              |
| 5:n:11:ARG:HD2  | 5:n:93:SER:CA    | 2.31                     | 0.60              |
| 1:G:84:ASP:HB3  | 1:G:91:ARG:HE    | 1.67                     | 0.60              |
| 2:Q:28:GLU:CD   | 2:Q:29:ALA:O     | 2.44                     | 0.60              |
| 4:m:110:GLU:O   | 4:m:114:VAL:HG23 | 2.01                     | 0.60              |
| 1:A:63:ALA:HB2  | 1:A:76:LEU:HD11  | 1.84                     | 0.60              |
| 1:H:141:CYS:SG  | 1:H:162:ARG:HD3  | 2.42                     | 0.60              |
| 2:M:213:ARG:CZ  | 3:U:23:THR:OG1   | 2.49                     | 0.60              |
| 2:O:153:SER:OG  | 2:O:157:ASP:O    | 2.20                     | 0.60              |
| 2:Q:57:ARG:NH2  | 2:Q:92:GLY:O     | 2.34                     | 0.60              |
| 4:m:78:ASP:HB3  | 4:m:82:ASN:HB2   | 1.84                     | 0.60              |
| 1:G:20:LEU:HB3  | 2:N:445:SER:HA   | 1.84                     | 0.60              |
| 2:N:73:VAL:HG13 | 2:N:88:ILE:HD11  | 1.84                     | 0.59              |
| 2:P:278:PHE:HB3 | 2:P:289:ALA:HB1  | 1.84                     | 0.59              |
| 2:M:355:ARG:NH2 | 2:M:440:GLU:O    | 2.35                     | 0.59              |
| 1:G:69:VAL:HG11 | 1:G:76:LEU:HD13  | 1.83                     | 0.59              |
| 2:O:348:PRO:HG3 | 2:P:442:GLY:HA3  | 1.85                     | 0.59              |
| 1:H:34:GLU:OE1  | 1:I:10:ARG:NE    | 2.35                     | 0.59              |
| 2:P:275:ARG:O   | 2:P:275:ARG:HG2  | 2.01                     | 0.59              |
| 1:B:113:CYS:HB3 | 1:B:118:GLN:HE21 | 1.67                     | 0.59              |
| 2:M:395:LEU:CD1 | 2:M:424:MET:CE   | 2.81                     | 0.59              |
| 2:M:414:ASP:OD1 | 2:M:414:ASP:N    | 2.33                     | 0.59              |
| 1:F:96:LEU:HD12 | 1:F:173:LYS:HG2  | 1.85                     | 0.59              |
| 1:A:114:GLY:HA2 | 1:L:107:ILE:HD11 | 1.83                     | 0.59              |
| 1:E:124:THR:CG2 | 1:E:125:LEU:N    | 2.63                     | 0.59              |
| 2:R:278:PHE:HB3 | 2:R:289:ALA:HB1  | 1.82                     | 0.59              |
| 1:K:20:LEU:HB3  | 2:P:445:SER:HA   | 1.85                     | 0.59              |
| 2:Q:12:ARG:HH11 | 2:Q:254:ASP:HB2  | 1.55                     | 0.58              |
| 1:B:51:ARG:NH2  | 1:C:174:LEU:CD1  | 2.66                     | 0.58              |
| 1:B:133:LYS:HZ3 | 1:B:133:LYS:HB2  | 1.68                     | 0.58              |
| 2:O:12:ARG:NH1  | 2:P:274:GLU:OE2  | 2.33                     | 0.58              |
| 2:Q:80:GLU:HB2  | 2:Q:85:LEU:HD11  | 1.85                     | 0.58              |
| 2:Q:204:ASP:OD1 | 2:Q:205:ILE:N    | 2.34                     | 0.58              |
| 5:n:36:LYS:HG2  | 5:n:51:ASN:ND2   | 2.18                     | 0.58              |
| 2:P:414:ASP:N   | 2:P:414:ASP:OD1  | 2.35                     | 0.58              |
| 2:P:431:ARG:NH1 | 2:P:433:THR:OG1  | 2.35                     | 0.58              |
| 2:Q:337:ARG:NH2 | 2:Q:426:ALA:O    | 2.37                     | 0.58              |
| 2:Q:431:ARG:NH1 | 2:Q:433:THR:OG1  | 2.36                     | 0.58              |
| 1:D:84:ASP:HB3  | 1:D:91:ARG:HE    | 1.68                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:145:LEU:HD13 | 1:G:155:ILE:HD11 | 1.85                     | 0.58              |
| 3:U:54:LEU:O     | 3:U:58:VAL:HG23  | 2.04                     | 0.58              |
| 2:N:47:GLU:O     | 2:N:324:ARG:NH1  | 2.37                     | 0.58              |
| 4:m:76:ILE:HG23  | 4:m:84:LEU:HB2   | 1.84                     | 0.58              |
| 1:G:58:ASP:N     | 1:G:58:ASP:OD1   | 2.36                     | 0.58              |
| 2:P:287:THR:OG1  | 2:P:307:ASN:OD1  | 2.21                     | 0.58              |
| 2:R:377:MET:HE1  | 2:R:407:TRP:HB2  | 1.85                     | 0.58              |
| 2:R:189:PHE:HB3  | 2:R:219:ILE:HB   | 1.86                     | 0.58              |
| 1:L:141:CYS:SG   | 1:L:162:ARG:HD3  | 2.44                     | 0.58              |
| 2:O:80:GLU:HB2   | 2:O:85:LEU:HD11  | 1.86                     | 0.58              |
| 2:O:340:ARG:NE   | 2:O:421:GLU:OE1  | 2.35                     | 0.58              |
| 3:S:26:GLN:NE2   | 3:T:8:LEU:O      | 2.36                     | 0.58              |
| 5:n:113:ARG:HD3  | 6:o:105:VAL:HG23 | 1.86                     | 0.58              |
| 2:M:101:ASP:OD1  | 2:M:101:ASP:N    | 2.35                     | 0.57              |
| 2:M:431:ARG:HH11 | 2:M:433:THR:HG1  | 1.50                     | 0.57              |
| 2:N:382:ASP:HB3  | 2:O:402:ARG:HG3  | 1.86                     | 0.57              |
| 4:m:30:ALA:HB3   | 4:m:33:THR:OG1   | 2.04                     | 0.57              |
| 2:P:172:GLU:OE2  | 2:P:193:SER:N    | 2.34                     | 0.57              |
| 3:S:57:ILE:HG21  | 3:T:57:ILE:CD1   | 2.35                     | 0.57              |
| 1:F:25:LYS:HE3   | 2:N:444:ARG:NH1  | 2.18                     | 0.57              |
| 2:M:212:ASN:OD1  | 2:N:185:ASN:ND2  | 2.37                     | 0.57              |
| 2:Q:100:GLU:OE2  | 2:Q:100:GLU:N    | 2.24                     | 0.57              |
| 4:m:41:THR:HG22  | 4:m:49:LEU:HG    | 1.85                     | 0.57              |
| 1:L:68:ARG:NH2   | 1:L:102:ILE:HD11 | 2.19                     | 0.57              |
| 5:n:36:LYS:HZ2   | 5:n:51:ASN:HB3   | 1.70                     | 0.57              |
| 2:M:345:LEU:HD21 | 2:M:418:MET:HE2  | 1.85                     | 0.57              |
| 2:P:21:PRO:HD2   | 2:P:340:ARG:HG3  | 1.87                     | 0.57              |
| 2:R:28:GLU:OE2   | 2:R:28:GLU:CA    | 2.53                     | 0.57              |
| 1:I:16:ALA:HB3   | 2:O:441:LEU:HD13 | 1.87                     | 0.57              |
| 1:C:68:ARG:HH12  | 1:D:95:GLU:CD    | 2.12                     | 0.56              |
| 1:D:63:ALA:HB2   | 1:D:76:LEU:HD11  | 1.87                     | 0.56              |
| 1:I:63:ALA:HB2   | 1:I:76:LEU:HD11  | 1.86                     | 0.56              |
| 2:M:22:LEU:HD22  | 2:M:25:LEU:HB2   | 1.87                     | 0.56              |
| 2:P:415:ASP:OD2  | 2:Q:404:ARG:NH1  | 2.38                     | 0.56              |
| 1:H:3:THR:OG1    | 1:H:6:ASP:OD2    | 2.21                     | 0.56              |
| 2:R:402:ARG:NH2  | 2:R:444:ARG:O    | 2.38                     | 0.56              |
| 2:P:174:ASP:OD1  | 2:P:174:ASP:N    | 2.36                     | 0.56              |
| 3:T:33:VAL:O     | 3:T:37:GLU:HG2   | 2.06                     | 0.56              |
| 6:o:41:THR:HG22  | 6:o:49:LEU:HG    | 1.87                     | 0.56              |
| 2:N:253:ASP:OD1  | 2:N:253:ASP:N    | 2.38                     | 0.56              |
| 1:B:96:LEU:HD12  | 1:B:173:LYS:HG2  | 1.88                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:N:212:ASN:OD1  | 2:O:185:ASN:ND2  | 2.38                     | 0.56              |
| 2:P:158:GLY:O    | 2:P:161:TRP:NE1  | 2.37                     | 0.56              |
| 1:G:35:LEU:HD13  | 1:G:147:MET:HG2  | 1.86                     | 0.56              |
| 1:I:145:LEU:HD13 | 1:I:155:ILE:HD11 | 1.87                     | 0.56              |
| 1:F:158:MET:HE1  | 1:F:161:ARG:NH1  | 2.20                     | 0.56              |
| 2:N:24:ASN:ND2   | 2:N:336:GLU:O    | 2.37                     | 0.56              |
| 1:G:18:VAL:HG22  | 2:N:408:ARG:NH2  | 2.20                     | 0.56              |
| 2:R:158:GLY:O    | 2:R:161:TRP:NE1  | 2.30                     | 0.56              |
| 2:Q:24:ASN:ND2   | 2:Q:336:GLU:O    | 2.33                     | 0.56              |
| 3:U:16:ASP:OD1   | 3:U:20:ARG:N     | 2.39                     | 0.56              |
| 1:K:95:GLU:HG3   | 1:K:96:LEU:HD13  | 1.88                     | 0.55              |
| 2:N:309:ARG:HH12 | 2:N:331:ASN:CG   | 2.11                     | 0.55              |
| 4:m:95:ALA:HB3   | 6:o:93:SER:HB3   | 1.88                     | 0.55              |
| 5:n:68:ASP:OD1   | 5:n:68:ASP:N     | 2.34                     | 0.55              |
| 1:H:63:ALA:HB2   | 1:H:76:LEU:HD11  | 1.88                     | 0.55              |
| 2:Q:89:ASN:OD1   | 2:Q:110:SER:OG   | 2.23                     | 0.55              |
| 2:Q:212:ASN:OD1  | 2:R:185:ASN:ND2  | 2.38                     | 0.55              |
| 2:P:219:ILE:HD11 | 2:P:224:CYS:HB2  | 1.87                     | 0.55              |
| 2:Q:28:GLU:OE1   | 2:Q:28:GLU:C     | 2.49                     | 0.55              |
| 1:L:94:ARG:NH1   | 1:L:177:THR:HB   | 2.21                     | 0.55              |
| 2:O:48:ASP:HB2   | 2:O:324:ARG:HG2  | 1.89                     | 0.55              |
| 2:P:174:ASP:OD2  | 2:P:191:THR:OG1  | 2.24                     | 0.55              |
| 1:E:51:ARG:NH2   | 1:F:174:LEU:CD1  | 2.67                     | 0.55              |
| 1:C:2:ALA:N      | 1:C:128:GLU:OE2  | 2.40                     | 0.55              |
| 2:P:356:LEU:HD12 | 2:P:435:VAL:HG22 | 1.87                     | 0.55              |
| 2:Q:254:ASP:OD1  | 2:Q:255:GLY:N    | 2.40                     | 0.55              |
| 3:T:16:ASP:OD1   | 3:T:20:ARG:N     | 2.40                     | 0.55              |
| 1:D:36:LEU:HD13  | 1:D:143:LEU:HD22 | 1.89                     | 0.55              |
| 1:H:69:VAL:HG11  | 1:H:76:LEU:HD13  | 1.88                     | 0.55              |
| 2:N:211:GLN:HB2  | 3:S:31:ARG:HH22  | 1.71                     | 0.55              |
| 2:P:73:VAL:HG21  | 2:P:94:VAL:HG11  | 1.87                     | 0.55              |
| 2:P:102:GLU:OE2  | 2:P:113:SER:OG   | 2.21                     | 0.55              |
| 1:E:69:VAL:HG11  | 1:E:76:LEU:HD13  | 1.89                     | 0.55              |
| 1:K:31:LEU:HD22  | 1:L:20:LEU:HD11  | 1.89                     | 0.55              |
| 2:Q:12:ARG:HH11  | 2:Q:254:ASP:CB   | 2.14                     | 0.55              |
| 2:R:275:ARG:O    | 2:R:275:ARG:HG2  | 2.07                     | 0.55              |
| 1:J:63:ALA:HB2   | 1:J:76:LEU:HD11  | 1.89                     | 0.55              |
| 1:C:102:ILE:HG13 | 1:C:107:ILE:HG12 | 1.88                     | 0.54              |
| 1:F:113:CYS:HB3  | 1:F:118:GLN:NE2  | 2.22                     | 0.54              |
| 1:I:158:MET:HE3  | 1:I:158:MET:HA   | 1.89                     | 0.54              |
| 2:O:15:GLY:HA2   | 2:P:359:GLU:OE1  | 2.07                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:K:158:MET:HE1  | 1:K:161:ARG:HD2  | 1.87                     | 0.54              |
| 4:m:88:ASP:HB3   | 4:m:89:PRO:HD3   | 1.89                     | 0.54              |
| 2:O:216:GLU:HG2  | 2:P:230:ASN:H    | 1.73                     | 0.54              |
| 2:Q:12:ARG:HD2   | 2:Q:254:ASP:CG   | 2.31                     | 0.54              |
| 2:P:381:ASP:OD1  | 2:P:381:ASP:N    | 2.35                     | 0.54              |
| 2:Q:228:ILE:HD12 | 2:Q:229:ASP:H    | 1.72                     | 0.54              |
| 3:U:9:GLN:HB2    | 3:U:12:VAL:HB    | 1.88                     | 0.54              |
| 5:n:39:VAL:HG12  | 5:n:49:LEU:HB2   | 1.88                     | 0.54              |
| 1:C:68:ARG:NH2   | 1:D:95:GLU:OE1   | 2.40                     | 0.54              |
| 1:H:95:GLU:HB3   | 1:H:96:LEU:HD22  | 1.89                     | 0.54              |
| 1:C:178:GLN:HG3  | 1:C:179:PRO:HD2  | 1.90                     | 0.54              |
| 1:I:35:LEU:HD23  | 1:J:137:MET:HG3  | 1.89                     | 0.54              |
| 1:J:134:ARG:NH2  | 1:J:169:SER:OG   | 2.41                     | 0.54              |
| 2:N:309:ARG:NH1  | 2:N:331:ASN:ND2  | 2.41                     | 0.54              |
| 2:P:282:ARG:NH2  | 2:P:317:ASP:OD2  | 2.41                     | 0.54              |
| 2:P:353:ARG:HA   | 2:P:408:ARG:HA   | 1.90                     | 0.54              |
| 3:T:57:ILE:HG21  | 3:U:57:ILE:CB    | 2.36                     | 0.54              |
| 1:B:58:ASP:OD1   | 1:B:58:ASP:N     | 2.41                     | 0.54              |
| 2:P:24:ASN:ND2   | 2:P:336:GLU:O    | 2.39                     | 0.54              |
| 1:F:58:ASP:OD1   | 1:F:58:ASP:N     | 2.40                     | 0.53              |
| 2:N:41:SER:HB3   | 2:N:337:ARG:HD3  | 1.89                     | 0.53              |
| 2:N:402:ARG:NH2  | 2:N:444:ARG:O    | 2.41                     | 0.53              |
| 2:P:404:ARG:HB2  | 2:P:446:ARG:HD3  | 1.89                     | 0.53              |
| 2:R:75:ASP:O     | 2:R:76:ASP:OD1   | 2.25                     | 0.53              |
| 3:T:51:ALA:HA    | 3:T:54:LEU:HD21  | 1.84                     | 0.53              |
| 2:P:378:ARG:HD2  | 2:P:387:TRP:HB3  | 1.89                     | 0.53              |
| 3:T:57:ILE:HD13  | 3:U:57:ILE:CG2   | 2.28                     | 0.53              |
| 1:B:31:LEU:HD22  | 1:C:20:LEU:HD11  | 1.91                     | 0.53              |
| 1:G:34:GLU:OE1   | 1:H:10:ARG:NE    | 2.29                     | 0.53              |
| 2:N:59:VAL:HG22  | 2:N:72:VAL:HG22  | 1.89                     | 0.53              |
| 2:N:61:ARG:HD3   | 2:N:70:GLU:HB3   | 1.90                     | 0.53              |
| 2:O:382:ASP:OD1  | 2:O:382:ASP:N    | 2.36                     | 0.53              |
| 2:P:353:ARG:HD2  | 2:P:355:ARG:HH21 | 1.73                     | 0.53              |
| 1:D:37:GLN:HE21  | 1:D:37:GLN:HA    | 1.74                     | 0.53              |
| 1:L:69:VAL:HG11  | 1:L:76:LEU:HD13  | 1.89                     | 0.53              |
| 2:M:353:ARG:HD3  | 2:M:406:GLU:OE2  | 2.09                     | 0.53              |
| 2:N:213:ARG:NH1  | 3:S:12:VAL:HG22  | 2.24                     | 0.53              |
| 2:N:414:ASP:OD1  | 2:N:414:ASP:N    | 2.34                     | 0.53              |
| 2:O:150:TRP:HH2  | 2:O:207:PHE:HB2  | 1.73                     | 0.53              |
| 1:F:35:LEU:HD23  | 1:G:137:MET:HG3  | 1.90                     | 0.53              |
| 2:P:22:LEU:HD22  | 2:P:25:LEU:HB2   | 1.91                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:n:11:ARG:NH1   | 5:n:11:ARG:CG    | 2.57                     | 0.53              |
| 3:T:54:LEU:HD12  | 3:T:54:LEU:C     | 2.33                     | 0.53              |
| 2:N:54:GLY:HA3   | 2:N:75:ASP:CB    | 2.31                     | 0.53              |
| 2:Q:28:GLU:OE1   | 2:Q:29:ALA:O     | 2.27                     | 0.53              |
| 3:S:16:ASP:OD1   | 3:S:20:ARG:N     | 2.42                     | 0.53              |
| 1:G:35:LEU:CD1   | 1:G:147:MET:HG2  | 2.38                     | 0.53              |
| 6:o:102:LEU:O    | 6:o:106:VAL:HG12 | 2.08                     | 0.53              |
| 1:B:68:ARG:NH2   | 1:C:95:GLU:OE1   | 2.42                     | 0.52              |
| 2:M:185:ASN:ND2  | 2:R:212:ASN:OD1  | 2.42                     | 0.52              |
| 2:M:363:THR:HG21 | 2:M:373:PRO:HD3  | 1.91                     | 0.52              |
| 2:M:378:ARG:HD2  | 2:M:387:TRP:HB3  | 1.91                     | 0.52              |
| 3:U:14:ILE:HG13  | 3:U:15:VAL:HG23  | 1.90                     | 0.52              |
| 2:N:356:LEU:HD12 | 2:N:435:VAL:HG22 | 1.90                     | 0.52              |
| 2:R:337:ARG:NH2  | 2:R:426:ALA:O    | 2.41                     | 0.52              |
| 1:I:37:GLN:HE22  | 1:I:121:SER:HA   | 1.74                     | 0.52              |
| 2:N:342:GLY:HA3  | 2:N:419:LEU:HD12 | 1.92                     | 0.52              |
| 2:O:61:ARG:NH2   | 2:O:63:ASP:OD1   | 2.38                     | 0.52              |
| 2:O:228:ILE:HD13 | 2:O:277:LYS:HB3  | 1.92                     | 0.52              |
| 2:P:189:PHE:HB3  | 2:P:219:ILE:HB   | 1.92                     | 0.52              |
| 2:Q:391:GLU:HB2  | 2:Q:407:TRP:HE1  | 1.75                     | 0.52              |
| 5:n:42:SER:OG    | 5:n:43:SER:N     | 2.41                     | 0.52              |
| 2:M:395:LEU:CD1  | 2:M:424:MET:HE3  | 2.39                     | 0.52              |
| 2:O:158:GLY:O    | 2:O:161:TRP:NE1  | 2.40                     | 0.52              |
| 6:o:93:SER:OG    | 6:o:96:ASP:OD1   | 2.21                     | 0.52              |
| 1:E:141:CYS:SG   | 1:E:162:ARG:HD3  | 2.50                     | 0.52              |
| 1:L:113:CYS:HB3  | 1:L:118:GLN:NE2  | 2.23                     | 0.52              |
| 2:N:414:ASP:OD2  | 2:O:446:ARG:NH2  | 2.42                     | 0.52              |
| 3:S:33:VAL:O     | 3:S:37:GLU:HG2   | 2.10                     | 0.52              |
| 1:D:34:GLU:OE1   | 1:E:10:ARG:NE    | 2.39                     | 0.52              |
| 2:M:305:ARG:HH12 | 2:M:318:GLU:HG2  | 1.75                     | 0.52              |
| 2:R:76:ASP:O     | 2:R:87:THR:HG23  | 2.10                     | 0.52              |
| 1:F:133:LYS:HB2  | 1:F:133:LYS:NZ   | 2.25                     | 0.52              |
| 2:N:213:ARG:CZ   | 3:S:12:VAL:CG2   | 2.86                     | 0.52              |
| 2:Q:362:THR:O    | 2:Q:362:THR:CG2  | 2.55                     | 0.52              |
| 2:R:24:ASN:ND2   | 2:R:336:GLU:O    | 2.38                     | 0.52              |
| 3:S:20:ARG:HD3   | 3:T:11:GLY:HA2   | 1.91                     | 0.52              |
| 2:Q:217:GLN:NE2  | 2:R:230:ASN:OD1  | 2.43                     | 0.52              |
| 1:E:34:GLU:OE1   | 1:F:10:ARG:NE    | 2.43                     | 0.51              |
| 2:M:61:ARG:NH2   | 2:M:63:ASP:OD1   | 2.42                     | 0.51              |
| 2:R:55:PRO:HD2   | 2:R:75:ASP:HB3   | 1.91                     | 0.51              |
| 1:A:102:ILE:HG13 | 1:A:107:ILE:HG12 | 1.92                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:N:73:VAL:CG1   | 2:N:88:ILE:HD11  | 2.41                     | 0.51              |
| 2:O:414:ASP:OD2  | 2:P:402:ARG:NH2  | 2.35                     | 0.51              |
| 1:B:133:LYS:HB2  | 1:B:133:LYS:NZ   | 2.25                     | 0.51              |
| 1:D:69:VAL:HG11  | 1:D:76:LEU:HD13  | 1.92                     | 0.51              |
| 1:E:137:MET:HB3  | 1:E:162:ARG:HE   | 1.74                     | 0.51              |
| 2:N:355:ARG:NH2  | 2:N:440:GLU:O    | 2.40                     | 0.51              |
| 2:P:254:ASP:OD2  | 2:Q:28:GLU:OE2   | 2.29                     | 0.51              |
| 2:Q:334:VAL:HG11 | 4:m:33:THR:CG2   | 2.41                     | 0.51              |
| 1:F:68:ARG:NH2   | 1:F:102:ILE:HD11 | 2.25                     | 0.51              |
| 1:G:51:ARG:NH2   | 1:H:174:LEU:CD1  | 2.74                     | 0.51              |
| 2:M:402:ARG:HG3  | 2:R:382:ASP:HB3  | 1.92                     | 0.51              |
| 2:O:72:VAL:HG22  | 2:O:79:TYR:HB2   | 1.93                     | 0.51              |
| 2:P:41:SER:HB2   | 2:P:337:ARG:NE   | 2.06                     | 0.51              |
| 2:P:56:ILE:HG23  | 2:P:72:VAL:HG13  | 1.91                     | 0.51              |
| 2:P:111:ILE:HD11 | 2:P:130:VAL:HG21 | 1.92                     | 0.51              |
| 4:m:104:ASP:OD1  | 4:m:105:VAL:N    | 2.43                     | 0.51              |
| 1:K:35:LEU:CD1   | 1:K:147:MET:HG2  | 2.39                     | 0.51              |
| 4:m:110:GLU:OE1  | 4:m:113:ARG:NH2  | 2.37                     | 0.51              |
| 2:N:345:LEU:HD21 | 2:N:418:MET:HE2  | 1.93                     | 0.51              |
| 1:A:137:MET:HG3  | 1:L:35:LEU:HD23  | 1.92                     | 0.51              |
| 2:M:174:ASP:OD1  | 2:M:175:ALA:N    | 2.39                     | 0.51              |
| 5:n:104:ASP:HA   | 5:n:107:ASP:OD1  | 2.10                     | 0.51              |
| 1:E:64:LYS:N     | 1:E:67:GLU:OE2   | 2.37                     | 0.51              |
| 1:F:37:GLN:HE21  | 1:F:123:LEU:H    | 1.59                     | 0.50              |
| 2:N:233:PHE:CZ   | 2:N:243:ARG:HD3  | 2.46                     | 0.50              |
| 2:Q:416:PRO:HD3  | 2:R:446:ARG:HH22 | 1.76                     | 0.50              |
| 2:R:99:ILE:HD11  | 2:R:102:GLU:HB3  | 1.93                     | 0.50              |
| 3:S:8:LEU:O      | 3:U:26:GLN:NE2   | 2.43                     | 0.50              |
| 1:L:129:ALA:HB3  | 1:L:132:SER:HB3  | 1.92                     | 0.50              |
| 2:N:309:ARG:NH2  | 2:N:323:TRP:HZ2  | 2.09                     | 0.50              |
| 3:T:14:ILE:HG13  | 3:T:15:VAL:HG23  | 1.94                     | 0.50              |
| 2:Q:302:SER:CB   | 2:Q:309:ARG:HG2  | 2.41                     | 0.50              |
| 2:R:351:VAL:HG13 | 2:R:437:VAL:HG23 | 1.93                     | 0.50              |
| 2:M:170:GLU:OE1  | 2:N:156:TYR:OH   | 2.30                     | 0.50              |
| 2:O:309:ARG:NH2  | 2:O:316:ASP:OD2  | 2.44                     | 0.50              |
| 2:O:378:ARG:HD2  | 2:O:387:TRP:HB3  | 1.92                     | 0.50              |
| 2:M:440:GLU:HA   | 2:M:440:GLU:OE1  | 2.11                     | 0.50              |
| 2:Q:12:ARG:NH1   | 2:Q:254:ASP:CG   | 2.70                     | 0.50              |
| 3:S:50:LEU:HD11  | 3:T:49:GLU:OE2   | 2.11                     | 0.50              |
| 1:F:3:THR:HA     | 1:F:128:GLU:HA   | 1.94                     | 0.50              |
| 1:K:63:ALA:HB2   | 1:K:76:LEU:HD11  | 1.93                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:N:252:ALA:HB1  | 2:N:256:ILE:HB   | 1.92                     | 0.50              |
| 2:P:47:GLU:HG3   | 2:P:321:ILE:HG23 | 1.92                     | 0.50              |
| 2:Q:382:ASP:HB3  | 2:R:402:ARG:HG3  | 1.94                     | 0.50              |
| 1:B:158:MET:HE1  | 1:B:161:ARG:HD2  | 1.93                     | 0.50              |
| 1:I:158:MET:HE1  | 1:I:161:ARG:HD2  | 1.93                     | 0.50              |
| 2:M:15:GLY:O     | 2:N:431:ARG:NE   | 2.45                     | 0.50              |
| 2:M:30:THR:OG1   | 2:R:10:TYR:OH    | 2.28                     | 0.50              |
| 2:M:273:ASP:HB2  | 2:M:276:HIS:HB2  | 1.94                     | 0.50              |
| 2:O:302:SER:OG   | 2:O:305:ARG:HB2  | 2.11                     | 0.50              |
| 2:Q:12:ARG:HH11  | 2:Q:254:ASP:CG   | 2.20                     | 0.50              |
| 2:Q:351:VAL:HG13 | 2:Q:437:VAL:HG23 | 1.94                     | 0.50              |
| 2:R:355:ARG:NH1  | 2:R:406:GLU:OE1  | 2.45                     | 0.50              |
| 2:R:273:ASP:OD1  | 2:R:274:GLU:N    | 2.40                     | 0.50              |
| 1:F:34:GLU:OE1   | 1:G:10:ARG:NE    | 2.43                     | 0.49              |
| 2:M:226:VAL:HG13 | 2:M:268:LEU:HD23 | 1.93                     | 0.49              |
| 2:M:382:ASP:OD2  | 2:M:386:THR:OG1  | 2.26                     | 0.49              |
| 2:O:143:LEU:HD23 | 2:O:150:TRP:HB3  | 1.94                     | 0.49              |
| 2:P:414:ASP:OD2  | 2:Q:402:ARG:NH2  | 2.38                     | 0.49              |
| 2:R:354:LEU:CD2  | 2:R:377:MET:SD   | 2.97                     | 0.49              |
| 1:B:153:THR:OG1  | 2:Q:350:ARG:NH2  | 2.45                     | 0.49              |
| 1:I:134:ARG:NH2  | 1:I:169:SER:OG   | 2.45                     | 0.49              |
| 2:O:440:GLU:HA   | 2:O:440:GLU:OE1  | 2.12                     | 0.49              |
| 2:Q:348:PRO:HG3  | 2:R:442:GLY:HA3  | 1.94                     | 0.49              |
| 1:H:84:ASP:HB3   | 1:H:91:ARG:HE    | 1.77                     | 0.49              |
| 2:R:377:MET:HE1  | 2:R:407:TRP:CB   | 2.41                     | 0.49              |
| 4:m:118:ASN:OD1  | 4:m:119:SER:N    | 2.45                     | 0.49              |
| 6:o:88:ASP:HB3   | 6:o:89:PRO:HD3   | 1.93                     | 0.49              |
| 1:K:12:LEU:HB3   | 1:K:18:VAL:HG12  | 1.95                     | 0.49              |
| 2:M:395:LEU:HD12 | 2:M:424:MET:HE3  | 1.94                     | 0.49              |
| 2:Q:22:LEU:HD22  | 2:Q:25:LEU:HB2   | 1.93                     | 0.49              |
| 1:E:40:TYR:HE2   | 1:E:130:PRO:HD2  | 1.77                     | 0.49              |
| 2:O:363:THR:HG21 | 2:O:373:PRO:HD3  | 1.95                     | 0.49              |
| 1:F:37:GLN:HE22  | 1:F:121:SER:HA   | 1.77                     | 0.49              |
| 3:T:20:ARG:HD3   | 3:U:11:GLY:HA2   | 1.94                     | 0.49              |
| 1:A:5:ARG:NH2    | 1:A:126:ASN:OD1  | 2.45                     | 0.49              |
| 2:M:424:MET:SD   | 2:M:430:PHE:CG   | 3.06                     | 0.49              |
| 2:R:28:GLU:CD    | 2:R:276:HIS:HE1  | 2.21                     | 0.49              |
| 4:m:13:MET:HE2   | 4:m:76:ILE:HG21  | 1.94                     | 0.49              |
| 1:F:54:ASP:OD2   | 1:G:176:SER:OG   | 2.25                     | 0.49              |
| 1:G:65:GLU:OE1   | 1:G:94:ARG:N     | 2.44                     | 0.49              |
| 1:L:35:LEU:HD12  | 1:L:147:MET:HG2  | 1.93                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:63:ALA:HB2   | 1:C:76:LEU:HD11  | 1.93                     | 0.49              |
| 2:P:239:LYS:CD   | 2:P:261:THR:HA   | 2.43                     | 0.49              |
| 2:P:273:ASP:HB3  | 2:P:276:HIS:HB2  | 1.95                     | 0.49              |
| 2:R:377:MET:CE   | 2:R:407:TRP:CD2  | 2.95                     | 0.49              |
| 1:C:35:LEU:HD23  | 1:D:137:MET:HG3  | 1.95                     | 0.48              |
| 1:K:35:LEU:HD23  | 1:L:137:MET:HG3  | 1.95                     | 0.48              |
| 2:P:239:LYS:HD3  | 2:P:261:THR:HA   | 1.95                     | 0.48              |
| 2:Q:21:PRO:HD2   | 2:Q:340:ARG:HG3  | 1.95                     | 0.48              |
| 2:Q:266:LEU:HD13 | 2:Q:281:LEU:HD11 | 1.94                     | 0.48              |
| 2:N:378:ARG:HD2  | 2:N:387:TRP:HB3  | 1.93                     | 0.48              |
| 2:O:24:ASN:ND2   | 2:O:336:GLU:O    | 2.42                     | 0.48              |
| 2:O:153:SER:OG   | 2:O:154:ALA:N    | 2.43                     | 0.48              |
| 2:R:150:TRP:CE2  | 2:R:167:ALA:HB3  | 2.48                     | 0.48              |
| 2:R:414:ASP:OD1  | 2:R:414:ASP:N    | 2.37                     | 0.48              |
| 1:I:28:GLU:OE2   | 2:O:408:ARG:NH1  | 2.43                     | 0.48              |
| 2:N:99:ILE:HD11  | 2:N:102:GLU:HB3  | 1.95                     | 0.48              |
| 2:N:150:TRP:CE2  | 2:N:167:ALA:HB3  | 2.49                     | 0.48              |
| 2:Q:94:VAL:HA    | 2:Q:106:CYS:O    | 2.13                     | 0.48              |
| 2:Q:404:ARG:CG   | 2:Q:446:ARG:HH11 | 2.16                     | 0.48              |
| 2:R:59:VAL:HG22  | 2:R:72:VAL:HG22  | 1.94                     | 0.48              |
| 4:m:58:ALA:HB2   | 5:n:84:LEU:HD13  | 1.96                     | 0.48              |
| 2:M:100:GLU:H    | 2:M:100:GLU:CD   | 2.18                     | 0.48              |
| 2:Q:12:ARG:CD    | 2:Q:254:ASP:OD2  | 2.55                     | 0.48              |
| 2:Q:440:GLU:OE1  | 2:Q:440:GLU:HA   | 2.12                     | 0.48              |
| 1:B:113:CYS:HB3  | 1:B:118:GLN:NE2  | 2.28                     | 0.48              |
| 4:m:14:LEU:HB3   | 4:m:18:ALA:HA    | 1.96                     | 0.48              |
| 1:C:94:ARG:NH1   | 1:C:177:THR:HB   | 2.28                     | 0.48              |
| 1:F:18:VAL:HG21  | 1:F:24:PRO:HB3   | 1.96                     | 0.48              |
| 1:J:35:LEU:HA    | 1:K:137:MET:HG3  | 1.96                     | 0.48              |
| 2:P:41:SER:HB3   | 2:P:337:ARG:HD3  | 1.96                     | 0.48              |
| 2:Q:373:PRO:HG2  | 2:Q:395:LEU:HB2  | 1.94                     | 0.48              |
| 2:R:21:PRO:HD2   | 2:R:340:ARG:HD2  | 1.95                     | 0.48              |
| 3:S:57:ILE:HG22  | 3:S:58:VAL:N     | 2.28                     | 0.48              |
| 2:M:70:GLU:OE2   | 2:M:70:GLU:HA    | 2.13                     | 0.48              |
| 2:M:316:ASP:OD1  | 2:M:317:ASP:N    | 2.46                     | 0.48              |
| 2:O:373:PRO:HG2  | 2:O:395:LEU:HB2  | 1.96                     | 0.48              |
| 2:R:178:ASP:OD1  | 2:R:179:ILE:N    | 2.46                     | 0.48              |
| 1:A:10:ARG:HG3   | 1:A:137:MET:HE1  | 1.96                     | 0.48              |
| 1:A:35:LEU:HD23  | 1:B:137:MET:HG3  | 1.95                     | 0.48              |
| 1:G:63:ALA:HB2   | 1:G:76:LEU:HD11  | 1.95                     | 0.48              |
| 1:G:176:SER:OG   | 1:G:177:THR:N    | 2.47                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:R:28:GLU:OE1   | 2:R:276:HIS:HE1  | 1.97                     | 0.48              |
| 1:D:35:LEU:HA    | 1:E:137:MET:HG3  | 1.96                     | 0.48              |
| 1:A:51:ARG:NH2   | 1:B:174:LEU:HD12 | 2.28                     | 0.48              |
| 1:C:37:GLN:HE22  | 1:C:121:SER:HA   | 1.79                     | 0.48              |
| 1:J:17:ILE:HG22  | 2:P:444:ARG:HD2  | 1.96                     | 0.48              |
| 1:J:58:ASP:OD1   | 1:J:58:ASP:N     | 2.45                     | 0.48              |
| 1:J:133:LYS:HB2  | 1:J:133:LYS:NZ   | 2.28                     | 0.48              |
| 2:O:404:ARG:HH22 | 2:O:442:GLY:HA2  | 1.77                     | 0.48              |
| 1:A:34:GLU:OE1   | 1:B:10:ARG:NE    | 2.35                     | 0.47              |
| 1:F:66:GLY:HA2   | 1:F:98:ALA:O     | 2.14                     | 0.47              |
| 2:N:337:ARG:CD   | 2:N:430:PHE:HB3  | 2.44                     | 0.47              |
| 2:P:218:GLY:O    | 2:P:237:ALA:N    | 2.47                     | 0.47              |
| 2:P:309:ARG:NH2  | 2:P:316:ASP:OD2  | 2.46                     | 0.47              |
| 2:R:340:ARG:NE   | 2:R:421:GLU:OE1  | 2.45                     | 0.47              |
| 1:H:35:LEU:HD23  | 1:I:137:MET:HG3  | 1.97                     | 0.47              |
| 2:N:239:LYS:HD3  | 2:N:261:THR:HA   | 1.96                     | 0.47              |
| 2:R:39:LEU:HB2   | 2:R:432:VAL:HB   | 1.94                     | 0.47              |
| 1:C:28:GLU:OE2   | 2:R:408:ARG:HD2  | 2.14                     | 0.47              |
| 1:L:35:LEU:HD13  | 1:L:147:MET:HG2  | 1.93                     | 0.47              |
| 2:N:77:GLU:HB3   | 2:N:79:TYR:HE1   | 1.76                     | 0.47              |
| 2:Q:340:ARG:NE   | 2:Q:421:GLU:OE1  | 2.37                     | 0.47              |
| 1:E:10:ARG:HG3   | 1:E:137:MET:HE1  | 1.95                     | 0.47              |
| 1:D:37:GLN:HA    | 1:D:37:GLN:NE2   | 2.29                     | 0.47              |
| 1:D:51:ARG:NH2   | 1:E:174:LEU:CD2  | 2.77                     | 0.47              |
| 1:E:118:GLN:HE21 | 1:E:130:PRO:C    | 2.21                     | 0.47              |
| 1:L:133:LYS:HB2  | 1:L:133:LYS:NZ   | 2.30                     | 0.47              |
| 2:M:239:LYS:CD   | 2:M:261:THR:HA   | 2.44                     | 0.47              |
| 2:M:373:PRO:HG2  | 2:M:395:LEU:HB2  | 1.96                     | 0.47              |
| 2:N:174:ASP:OD2  | 2:N:191:THR:HB   | 2.15                     | 0.47              |
| 2:N:200:THR:HG22 | 3:S:4:ARG:NH2    | 2.30                     | 0.47              |
| 2:P:355:ARG:NE   | 2:P:406:GLU:OE2  | 2.47                     | 0.47              |
| 1:E:158:MET:HE1  | 1:E:161:ARG:HD2  | 1.97                     | 0.47              |
| 2:M:74:SER:O     | 2:M:75:ASP:C     | 2.57                     | 0.47              |
| 1:H:31:LEU:HD22  | 1:I:20:LEU:HD11  | 1.96                     | 0.47              |
| 2:N:132:LYS:HG2  | 2:N:143:LEU:HD12 | 1.97                     | 0.47              |
| 2:Q:416:PRO:CD   | 2:R:446:ARG:HH22 | 2.27                     | 0.47              |
| 5:n:73:ARG:NH2   | 5:n:86:ASP:OD2   | 2.48                     | 0.47              |
| 2:N:74:SER:OG    | 2:N:79:TYR:CE1   | 2.51                     | 0.47              |
| 2:O:21:PRO:HD2   | 2:O:340:ARG:HG3  | 1.95                     | 0.47              |
| 2:P:41:SER:HB3   | 2:P:337:ARG:NE   | 2.29                     | 0.47              |
| 2:P:132:LYS:HG2  | 2:P:143:LEU:HD12 | 1.95                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:28:GLU:OE2   | 1:E:151:PHE:CE1  | 2.68                     | 0.47              |
| 1:F:76:LEU:HD23  | 1:F:101:GLU:OE1  | 2.15                     | 0.47              |
| 1:F:153:THR:OG1  | 1:F:154:GLN:N    | 2.47                     | 0.47              |
| 1:L:13:HIS:CE1   | 1:L:21:GLY:H     | 2.33                     | 0.47              |
| 2:N:12:ARG:NH1   | 2:N:258:GLU:OE1  | 2.48                     | 0.47              |
| 2:R:99:ILE:HG13  | 2:R:102:GLU:H    | 1.80                     | 0.47              |
| 1:D:15:ALA:HB2   | 1:D:144:ALA:HB1  | 1.96                     | 0.47              |
| 1:D:153:THR:OG1  | 2:R:350:ARG:NH2  | 2.46                     | 0.47              |
| 1:K:176:SER:OG   | 1:K:177:THR:N    | 2.48                     | 0.47              |
| 1:L:48:MET:HE2   | 1:L:48:MET:HB2   | 1.86                     | 0.47              |
| 2:R:424:MET:HE2  | 2:R:426:ALA:H    | 1.79                     | 0.47              |
| 1:F:124:THR:OG1  | 1:F:127:ASP:OD1  | 2.32                     | 0.46              |
| 2:Q:363:THR:HG21 | 2:Q:373:PRO:HD3  | 1.96                     | 0.46              |
| 2:O:356:LEU:HD12 | 2:O:435:VAL:HG22 | 1.96                     | 0.46              |
| 4:m:110:GLU:OE2  | 4:m:113:ARG:NE   | 2.48                     | 0.46              |
| 5:n:100:ASP:OD1  | 5:n:101:GLU:N    | 2.48                     | 0.46              |
| 1:B:34:GLU:OE1   | 1:C:10:ARG:NE    | 2.48                     | 0.46              |
| 1:D:35:LEU:HD13  | 1:D:147:MET:HG2  | 1.98                     | 0.46              |
| 1:I:96:LEU:HD21  | 1:I:134:ARG:NH1  | 2.31                     | 0.46              |
| 2:O:65:VAL:HG11  | 2:O:98:ALA:HB1   | 1.98                     | 0.46              |
| 2:Q:233:PHE:CZ   | 2:Q:243:ARG:HD3  | 2.51                     | 0.46              |
| 4:m:25:LYS:HG2   | 4:m:54:VAL:HG22  | 1.96                     | 0.46              |
| 4:m:32:GLY:N     | 4:m:88:ASP:OD1   | 2.43                     | 0.46              |
| 1:H:161:ARG:HG2  | 1:H:161:ARG:HH11 | 1.80                     | 0.46              |
| 2:P:170:GLU:OE1  | 2:Q:156:TYR:OH   | 2.33                     | 0.46              |
| 4:m:112:ASP:OD2  | 6:o:109:VAL:HG12 | 2.16                     | 0.46              |
| 5:n:107:ASP:OD1  | 5:n:107:ASP:N    | 2.44                     | 0.46              |
| 1:C:64:LYS:N     | 1:C:67:GLU:OE2   | 2.38                     | 0.46              |
| 2:M:319:THR:OG1  | 2:M:321:ILE:HG13 | 2.15                     | 0.46              |
| 2:O:46:VAL:O     | 2:O:324:ARG:HG3  | 2.16                     | 0.46              |
| 2:P:200:THR:OG1  | 2:P:205:ILE:O    | 2.32                     | 0.46              |
| 1:B:28:GLU:OE1   | 1:B:28:GLU:N     | 2.49                     | 0.46              |
| 1:H:102:ILE:HG13 | 1:H:107:ILE:HD12 | 1.97                     | 0.46              |
| 1:I:69:VAL:HG11  | 1:I:76:LEU:HD13  | 1.98                     | 0.46              |
| 2:O:239:LYS:HD3  | 2:O:261:THR:HA   | 1.96                     | 0.46              |
| 2:P:101:ASP:OD1  | 2:P:101:ASP:N    | 2.45                     | 0.46              |
| 1:C:113:CYS:HB3  | 1:C:118:GLN:NE2  | 2.31                     | 0.46              |
| 1:I:96:LEU:HB2   | 1:I:173:LYS:HD3  | 1.97                     | 0.46              |
| 2:M:217:GLN:HB2  | 2:M:234:TRP:HH2  | 1.79                     | 0.46              |
| 2:O:140:PHE:HB2  | 2:O:153:SER:HB3  | 1.97                     | 0.46              |
| 2:Q:216:GLU:HG2  | 2:R:230:ASN:H    | 1.81                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:M:80:GLU:HB2   | 2:M:85:LEU:HD11  | 1.97                     | 0.46              |
| 2:P:230:ASN:HB3  | 3:T:10:ARG:HH22  | 1.80                     | 0.46              |
| 2:R:132:LYS:HG2  | 2:R:143:LEU:HD12 | 1.98                     | 0.46              |
| 1:A:28:GLU:OE1   | 2:Q:408:ARG:HD2  | 2.16                     | 0.46              |
| 1:I:35:LEU:HA    | 1:J:137:MET:HG3  | 1.97                     | 0.46              |
| 2:O:253:ASP:OD1  | 2:O:255:GLY:N    | 2.49                     | 0.46              |
| 2:P:345:LEU:HD21 | 2:P:418:MET:HE2  | 1.96                     | 0.46              |
| 2:Q:3:LEU:HD13   | 2:Q:342:GLY:HA2  | 1.98                     | 0.46              |
| 6:o:39:VAL:HG23  | 6:o:49:LEU:HB2   | 1.98                     | 0.46              |
| 1:B:69:VAL:HG11  | 1:B:76:LEU:HD13  | 1.98                     | 0.45              |
| 1:J:15:ALA:HB2   | 1:J:144:ALA:HB1  | 1.97                     | 0.45              |
| 1:K:64:LYS:HE3   | 1:K:64:LYS:HB3   | 1.82                     | 0.45              |
| 2:M:16:ASN:HD21  | 2:M:385:ASN:HD21 | 1.62                     | 0.45              |
| 4:m:98:LEU:HD23  | 4:m:102:LEU:HD23 | 1.98                     | 0.45              |
| 1:F:35:LEU:HA    | 1:G:137:MET:HG3  | 1.98                     | 0.45              |
| 1:G:64:LYS:N     | 1:G:67:GLU:OE1   | 2.48                     | 0.45              |
| 1:K:13:HIS:HD2   | 1:K:18:VAL:HG11  | 1.74                     | 0.45              |
| 2:O:23:VAL:HG13  | 2:O:301:GLN:HG3  | 1.97                     | 0.45              |
| 2:Q:42:ARG:HD3   | 2:Q:300:PHE:CZ   | 2.51                     | 0.45              |
| 1:C:25:LYS:N     | 1:C:28:GLU:OE1   | 2.40                     | 0.45              |
| 1:J:18:VAL:HG21  | 1:J:24:PRO:HB3   | 1.97                     | 0.45              |
| 2:R:41:SER:HB2   | 2:R:337:ARG:HD3  | 1.98                     | 0.45              |
| 2:R:291:ASP:O    | 2:R:295:ASN:N    | 2.49                     | 0.45              |
| 2:R:373:PRO:HG2  | 2:R:395:LEU:HB2  | 1.98                     | 0.45              |
| 3:S:27:ASN:OD1   | 3:S:31:ARG:NH2   | 2.49                     | 0.45              |
| 2:N:132:LYS:HB2  | 2:N:132:LYS:HE3  | 1.72                     | 0.45              |
| 2:N:317:ASP:OD1  | 2:N:317:ASP:O    | 2.33                     | 0.45              |
| 2:P:62:LYS:HB2   | 2:P:62:LYS:HE2   | 1.72                     | 0.45              |
| 2:P:245:ASP:OD1  | 2:P:246:ALA:N    | 2.44                     | 0.45              |
| 2:Q:355:ARG:HG2  | 2:Q:406:GLU:HB2  | 1.97                     | 0.45              |
| 6:o:36:LYS:HD2   | 6:o:51:ASN:HD22  | 1.82                     | 0.45              |
| 1:I:118:GLN:HE22 | 1:I:133:LYS:NZ   | 2.15                     | 0.45              |
| 2:N:233:PHE:CE2  | 2:N:243:ARG:HD3  | 2.51                     | 0.45              |
| 1:C:68:ARG:NH1   | 1:D:95:GLU:OE1   | 2.50                     | 0.45              |
| 1:E:51:ARG:CZ    | 1:F:174:LEU:HD12 | 2.46                     | 0.45              |
| 1:E:145:LEU:HG   | 1:E:155:ILE:HD11 | 1.99                     | 0.45              |
| 1:F:48:MET:HE2   | 1:F:48:MET:HB2   | 1.86                     | 0.45              |
| 2:M:53:THR:O     | 2:M:53:THR:OG1   | 2.30                     | 0.45              |
| 2:R:73:VAL:HG21  | 2:R:94:VAL:HG11  | 1.98                     | 0.45              |
| 5:n:103:GLN:OE1  | 5:n:103:GLN:HA   | 2.15                     | 0.45              |
| 1:G:35:LEU:HD13  | 1:G:147:MET:CG   | 2.47                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:K:69:VAL:HG11  | 1:K:76:LEU:HD13  | 1.97                     | 0.45              |
| 1:K:137:MET:HE3  | 1:K:137:MET:HA   | 1.98                     | 0.45              |
| 3:S:13:PRO:O     | 3:S:22:ASN:ND2   | 2.50                     | 0.45              |
| 1:A:118:GLN:HE21 | 1:A:130:PRO:C    | 2.24                     | 0.45              |
| 2:Q:337:ARG:NH1  | 2:Q:428:VAL:O    | 2.48                     | 0.45              |
| 5:n:103:GLN:O    | 5:n:106:VAL:HG12 | 2.17                     | 0.45              |
| 1:C:37:GLN:HE21  | 1:C:123:LEU:H    | 1.65                     | 0.45              |
| 1:E:63:ALA:HB2   | 1:E:76:LEU:HD11  | 1.98                     | 0.45              |
| 1:I:141:CYS:SG   | 1:I:159:THR:HG23 | 2.57                     | 0.45              |
| 1:J:21:GLY:C     | 1:J:22:LYS:HD2   | 2.42                     | 0.45              |
| 1:B:118:GLN:NE2  | 1:B:130:PRO:O    | 2.50                     | 0.45              |
| 1:K:85:THR:OG1   | 1:K:86:ASP:N     | 2.49                     | 0.45              |
| 1:A:45:ALA:HB1   | 1:B:134:ARG:HE   | 1.82                     | 0.44              |
| 1:A:149:GLU:HG3  | 1:B:158:MET:HB2  | 1.99                     | 0.44              |
| 2:N:239:LYS:CD   | 2:N:261:THR:HA   | 2.48                     | 0.44              |
| 2:Q:243:ARG:NH1  | 2:Q:243:ARG:HG2  | 2.32                     | 0.44              |
| 2:R:218:GLY:O    | 2:R:237:ALA:N    | 2.50                     | 0.44              |
| 3:U:34:LYS:HZ3   | 3:U:34:LYS:HB2   | 1.82                     | 0.44              |
| 4:m:110:GLU:OE2  | 4:m:113:ARG:NH2  | 2.50                     | 0.44              |
| 1:L:37:GLN:HE22  | 1:L:122:GLY:H    | 1.65                     | 0.44              |
| 2:O:170:GLU:HA   | 2:O:170:GLU:OE1  | 2.18                     | 0.44              |
| 2:Q:42:ARG:HH11  | 2:Q:325:PHE:HE1  | 1.65                     | 0.44              |
| 2:R:266:LEU:HB3  | 2:R:281:LEU:HD11 | 1.98                     | 0.44              |
| 6:o:103:GLN:HA   | 6:o:103:GLN:OE1  | 2.17                     | 0.44              |
| 1:A:7:ILE:HD13   | 1:A:7:ILE:HA     | 1.89                     | 0.44              |
| 1:J:107:ILE:HD11 | 1:K:114:GLY:HA2  | 1.99                     | 0.44              |
| 2:M:158:GLY:O    | 2:M:161:TRP:NE1  | 2.48                     | 0.44              |
| 2:M:404:ARG:HH21 | 2:M:446:ARG:NH2  | 2.14                     | 0.44              |
| 2:P:335:LEU:HD23 | 2:P:337:ARG:NH2  | 2.32                     | 0.44              |
| 2:P:339:PHE:HZ   | 2:P:356:LEU:HD11 | 1.82                     | 0.44              |
| 2:R:10:TYR:CZ    | 2:R:12:ARG:HG3   | 2.53                     | 0.44              |
| 1:B:35:LEU:HD23  | 1:C:137:MET:HG3  | 2.00                     | 0.44              |
| 1:H:107:ILE:HD11 | 1:I:114:GLY:HA2  | 1.99                     | 0.44              |
| 1:K:45:ALA:HB1   | 1:L:134:ARG:HE   | 1.82                     | 0.44              |
| 2:M:228:ILE:HD11 | 2:M:233:PHE:HE2  | 1.81                     | 0.44              |
| 2:M:239:LYS:HD2  | 2:M:261:THR:HG22 | 2.00                     | 0.44              |
| 2:M:356:LEU:HD12 | 2:M:435:VAL:HG22 | 1.99                     | 0.44              |
| 2:P:217:GLN:NE2  | 2:P:248:PRO:HG2  | 2.33                     | 0.44              |
| 4:m:113:ARG:NE   | 5:n:112:ASP:OD1  | 2.50                     | 0.44              |
| 1:J:10:ARG:HD3   | 1:J:137:MET:HE1  | 1.98                     | 0.44              |
| 1:K:25:LYS:N     | 1:K:28:GLU:OE1   | 2.50                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:M:288:MET:HE3  | 2:M:288:MET:HB3  | 1.85                     | 0.44              |
| 2:M:414:ASP:OD2  | 2:N:402:ARG:NH2  | 2.51                     | 0.44              |
| 2:N:112:TRP:HB3  | 2:N:119:LEU:HD11 | 1.99                     | 0.44              |
| 2:O:441:LEU:HD23 | 2:O:441:LEU:HA   | 1.86                     | 0.44              |
| 2:P:268:LEU:HD11 | 2:P:279:VAL:HG12 | 2.00                     | 0.44              |
| 2:M:441:LEU:HD23 | 2:M:441:LEU:HA   | 1.82                     | 0.44              |
| 2:O:104:LEU:HD11 | 2:O:158:GLY:HA3  | 2.00                     | 0.44              |
| 2:O:284:ASP:OD1  | 2:O:284:ASP:N    | 2.50                     | 0.44              |
| 2:Q:305:ARG:HD3  | 2:Q:309:ARG:HD2  | 1.99                     | 0.44              |
| 2:Q:425:THR:HB   | 4:m:33:THR:HG22  | 1.99                     | 0.44              |
| 4:m:6:PHE:HB3    | 5:n:64:ILE:HB    | 1.99                     | 0.44              |
| 1:C:34:GLU:OE1   | 1:D:10:ARG:NE    | 2.50                     | 0.44              |
| 1:D:149:GLU:HG3  | 1:E:158:MET:HB2  | 2.00                     | 0.44              |
| 1:G:18:VAL:HG22  | 2:N:408:ARG:CZ   | 2.48                     | 0.44              |
| 1:J:153:THR:OG1  | 2:O:350:ARG:NH2  | 2.45                     | 0.44              |
| 1:K:86:ASP:OD1   | 1:K:87:THR:N     | 2.51                     | 0.44              |
| 2:N:287:THR:OG1  | 2:N:307:ASN:OD1  | 2.26                     | 0.44              |
| 1:L:37:GLN:HE22  | 1:L:122:GLY:N    | 2.15                     | 0.44              |
| 2:N:73:VAL:HG21  | 2:N:94:VAL:HG11  | 1.99                     | 0.44              |
| 2:N:335:LEU:HD23 | 2:N:337:ARG:NH2  | 2.32                     | 0.44              |
| 2:O:178:ASP:OD1  | 2:O:179:ILE:N    | 2.49                     | 0.44              |
| 2:Q:75:ASP:HB3   | 2:Q:76:ASP:H     | 1.67                     | 0.44              |
| 2:Q:243:ARG:HG2  | 2:Q:243:ARG:HH11 | 1.82                     | 0.44              |
| 2:R:404:ARG:HB2  | 2:R:446:ARG:HD3  | 2.00                     | 0.44              |
| 3:T:50:LEU:HD23  | 3:T:50:LEU:HA    | 1.80                     | 0.44              |
| 1:I:6:ASP:OD1    | 1:I:6:ASP:N      | 2.50                     | 0.44              |
| 1:L:35:LEU:HD13  | 1:L:147:MET:CG   | 2.48                     | 0.44              |
| 2:M:56:ILE:HG12  | 2:M:320:GLY:HA2  | 2.00                     | 0.44              |
| 2:P:291:ASP:O    | 2:P:295:ASN:N    | 2.51                     | 0.44              |
| 2:Q:112:TRP:HB3  | 2:Q:119:LEU:HD11 | 2.00                     | 0.44              |
| 2:R:28:GLU:CD    | 2:R:276:HIS:CE1  | 2.96                     | 0.44              |
| 1:B:105:GLY:O    | 1:C:133:LYS:NZ   | 2.50                     | 0.43              |
| 1:C:48:MET:HE2   | 1:C:48:MET:HB2   | 1.83                     | 0.43              |
| 1:G:51:ARG:CZ    | 1:H:174:LEU:HD12 | 2.47                     | 0.43              |
| 2:N:104:LEU:HD11 | 2:N:158:GLY:HA3  | 2.00                     | 0.43              |
| 2:O:308:PHE:CE2  | 2:O:310:CYS:HB3  | 2.53                     | 0.43              |
| 2:O:378:ARG:NH2  | 2:O:421:GLU:OE2  | 2.46                     | 0.43              |
| 2:R:238:ASP:OD1  | 2:R:238:ASP:N    | 2.38                     | 0.43              |
| 3:T:47:LEU:HD23  | 3:U:46:ILE:HD11  | 1.99                     | 0.43              |
| 5:n:29:TYR:HB2   | 5:n:73:ARG:HD3   | 2.00                     | 0.43              |
| 1:A:137:MET:HG3  | 1:L:35:LEU:HA    | 2.00                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:O:260:ALA:HB1  | 2:O:266:LEU:HD21 | 2.00                     | 0.43              |
| 2:Q:356:LEU:HD12 | 2:Q:435:VAL:HG22 | 2.01                     | 0.43              |
| 2:R:381:ASP:OD1  | 2:R:381:ASP:N    | 2.41                     | 0.43              |
| 2:R:409:ALA:C    | 2:R:410:LEU:HD23 | 2.43                     | 0.43              |
| 1:B:91:ARG:HD2   | 1:B:94:ARG:NH1   | 2.33                     | 0.43              |
| 1:C:14:MET:HE3   | 1:C:14:MET:HA    | 1.99                     | 0.43              |
| 1:I:5:ARG:HG3    | 1:I:125:LEU:HD12 | 1.98                     | 0.43              |
| 2:O:77:GLU:HB3   | 2:O:79:TYR:CE1   | 2.53                     | 0.43              |
| 2:O:305:ARG:HD2  | 2:O:309:ARG:HG2  | 1.99                     | 0.43              |
| 2:O:316:ASP:HB3  | 2:O:319:THR:O    | 2.18                     | 0.43              |
| 2:P:263:SER:OG   | 2:P:284:ASP:OD1  | 2.29                     | 0.43              |
| 5:n:12:PRO:HB2   | 5:n:14:LEU:HG    | 1.98                     | 0.43              |
| 1:C:35:LEU:HA    | 1:D:137:MET:HG3  | 2.00                     | 0.43              |
| 1:F:18:VAL:HG22  | 2:N:444:ARG:NH2  | 2.27                     | 0.43              |
| 1:K:12:LEU:C     | 1:K:18:VAL:HG12  | 2.43                     | 0.43              |
| 1:E:137:MET:HB2  | 1:E:162:ARG:NH2  | 2.27                     | 0.43              |
| 1:G:135:ASP:CG   | 1:G:138:GLY:H    | 2.27                     | 0.43              |
| 1:H:176:SER:OG   | 1:H:177:THR:N    | 2.52                     | 0.43              |
| 2:O:60:PHE:CZ    | 2:O:62:LYS:HE2   | 2.54                     | 0.43              |
| 2:Q:253:ASP:OD1  | 2:Q:255:GLY:N    | 2.52                     | 0.43              |
| 5:n:93:SER:OG    | 6:o:101:GLU:OE1  | 2.30                     | 0.43              |
| 1:A:20:LEU:HD21  | 1:L:31:LEU:HD22  | 1.99                     | 0.43              |
| 1:A:102:ILE:HD12 | 1:A:102:ILE:N    | 2.33                     | 0.43              |
| 1:B:18:VAL:HG21  | 1:B:24:PRO:HB3   | 2.01                     | 0.43              |
| 2:N:381:ASP:OD2  | 2:O:402:ARG:NH1  | 2.51                     | 0.43              |
| 2:P:15:GLY:O     | 2:Q:431:ARG:NE   | 2.52                     | 0.43              |
| 6:o:27:TYR:CE1   | 6:o:52:PRO:HB3   | 2.53                     | 0.43              |
| 1:F:176:SER:OG   | 1:F:177:THR:N    | 2.51                     | 0.43              |
| 2:M:260:ALA:HB1  | 2:M:266:LEU:HD21 | 2.01                     | 0.43              |
| 2:M:424:MET:SD   | 2:M:430:PHE:CE1  | 3.12                     | 0.43              |
| 2:N:309:ARG:NH1  | 2:N:331:ASN:CG   | 2.76                     | 0.43              |
| 1:D:48:MET:HE2   | 1:D:48:MET:HB2   | 1.88                     | 0.43              |
| 1:E:137:MET:HB3  | 1:E:162:ARG:NE   | 2.34                     | 0.43              |
| 2:N:263:SER:OG   | 2:N:284:ASP:OD1  | 2.36                     | 0.43              |
| 2:O:73:VAL:HG11  | 2:O:94:VAL:HG21  | 2.01                     | 0.43              |
| 3:U:57:ILE:HG13  | 3:U:58:VAL:N     | 2.33                     | 0.43              |
| 5:n:13:MET:O     | 6:o:18:ALA:HB2   | 2.19                     | 0.43              |
| 1:A:129:ALA:HB3  | 1:A:132:SER:HB3  | 2.01                     | 0.43              |
| 1:D:13:HIS:CE1   | 1:D:21:GLY:H     | 2.37                     | 0.43              |
| 4:m:75:TYR:CD1   | 4:m:86:ASP:HB2   | 2.53                     | 0.43              |
| 1:C:16:ALA:O     | 2:R:441:LEU:HD12 | 2.19                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:133:LYS:HB3  | 1:E:133:LYS:HE3  | 1.75                     | 0.43              |
| 1:K:64:LYS:HA    | 1:K:82:PHE:HE1   | 1.84                     | 0.43              |
| 2:N:382:ASP:OD1  | 2:N:382:ASP:N    | 2.39                     | 0.43              |
| 2:P:46:VAL:HG22  | 2:P:324:ARG:HG2  | 2.01                     | 0.43              |
| 2:P:62:LYS:HB3   | 2:P:65:VAL:HB    | 2.00                     | 0.43              |
| 2:Q:65:VAL:HG11  | 2:Q:98:ALA:HB1   | 2.01                     | 0.43              |
| 1:G:83:GLU:N     | 1:G:83:GLU:OE1   | 2.51                     | 0.42              |
| 2:M:57:ARG:NH2   | 2:M:75:ASP:OD1   | 2.52                     | 0.42              |
| 2:O:414:ASP:HB3  | 2:P:443:GLY:HA2  | 2.00                     | 0.42              |
| 2:Q:309:ARG:NH2  | 2:Q:316:ASP:OD2  | 2.52                     | 0.42              |
| 1:B:63:ALA:HB2   | 1:B:76:LEU:HD11  | 2.01                     | 0.42              |
| 1:D:3:THR:HA     | 1:D:128:GLU:HA   | 2.00                     | 0.42              |
| 1:L:66:GLY:HA2   | 1:L:98:ALA:O     | 2.18                     | 0.42              |
| 2:M:143:LEU:HD11 | 2:M:179:ILE:HD11 | 2.01                     | 0.42              |
| 2:N:269:PHE:HE1  | 2:N:282:ARG:HB2  | 1.85                     | 0.42              |
| 2:O:431:ARG:NH1  | 2:O:433:THR:OG1  | 2.43                     | 0.42              |
| 4:m:56:ASN:HD21  | 4:m:60:LYS:HB3   | 1.84                     | 0.42              |
| 6:o:15:ASP:OD1   | 6:o:15:ASP:N     | 2.37                     | 0.42              |
| 6:o:33:THR:O     | 6:o:73:ARG:NH1   | 2.52                     | 0.42              |
| 2:M:377:MET:HE3  | 2:M:377:MET:HB3  | 1.86                     | 0.42              |
| 2:O:70:GLU:OE2   | 2:O:70:GLU:HA    | 2.19                     | 0.42              |
| 2:O:233:PHE:CE2  | 2:O:243:ARG:HD3  | 2.54                     | 0.42              |
| 2:Q:414:ASP:OD2  | 2:R:402:ARG:NH2  | 2.43                     | 0.42              |
| 2:R:62:LYS:HB3   | 2:R:65:VAL:HB    | 2.00                     | 0.42              |
| 1:C:43:TRP:HE1   | 1:C:167:GLN:HE21 | 1.67                     | 0.42              |
| 1:D:23:ASP:OD1   | 1:D:23:ASP:N     | 2.52                     | 0.42              |
| 1:E:35:LEU:HA    | 1:F:137:MET:HG3  | 2.01                     | 0.42              |
| 2:O:243:ARG:HG2  | 2:O:243:ARG:HH11 | 1.85                     | 0.42              |
| 2:P:43:LYS:H     | 2:P:43:LYS:HG2   | 1.67                     | 0.42              |
| 2:P:275:ARG:O    | 2:P:275:ARG:CG   | 2.67                     | 0.42              |
| 1:B:96:LEU:HD11  | 1:B:134:ARG:HH11 | 1.85                     | 0.42              |
| 1:B:153:THR:OG1  | 1:B:154:GLN:N    | 2.52                     | 0.42              |
| 1:F:113:CYS:HB3  | 1:F:118:GLN:HE21 | 1.84                     | 0.42              |
| 1:G:68:ARG:NH2   | 1:H:95:GLU:OE1   | 2.51                     | 0.42              |
| 2:M:12:ARG:HH11  | 2:M:14:ARG:HB3   | 1.84                     | 0.42              |
| 2:O:213:ARG:HG3  | 3:T:10:ARG:HG3   | 2.00                     | 0.42              |
| 2:R:111:ILE:HD11 | 2:R:130:VAL:HG21 | 2.01                     | 0.42              |
| 4:m:117:ALA:O    | 4:m:121:THR:HG23 | 2.18                     | 0.42              |
| 2:N:46:VAL:HG21  | 2:N:326:GLU:HG2  | 2.02                     | 0.42              |
| 2:N:99:ILE:HB    | 2:N:100:GLU:OE2  | 2.20                     | 0.42              |
| 2:N:234:TRP:HH2  | 2:N:248:PRO:HB3  | 1.84                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:N:337:ARG:HD2  | 2:N:430:PHE:HB3  | 2.00                     | 0.42              |
| 2:P:359:GLU:HG2  | 2:P:431:ARG:H    | 1.85                     | 0.42              |
| 2:Q:272:ILE:HD12 | 2:Q:277:LYS:HD2  | 2.01                     | 0.42              |
| 5:n:8:LEU:HD21   | 6:o:13:MET:HB2   | 2.01                     | 0.42              |
| 1:D:51:ARG:NH2   | 1:E:174:LEU:HD22 | 2.34                     | 0.42              |
| 1:K:68:ARG:NH2   | 1:L:95:GLU:OE1   | 2.53                     | 0.42              |
| 2:M:126:ASP:OD1  | 2:M:126:ASP:O    | 2.37                     | 0.42              |
| 2:N:339:PHE:HZ   | 2:N:356:LEU:HD11 | 1.85                     | 0.42              |
| 2:O:99:ILE:HD12  | 2:O:101:ASP:H    | 1.84                     | 0.42              |
| 2:O:347:GLY:HA3  | 2:P:440:GLU:HB2  | 2.00                     | 0.42              |
| 3:T:46:ILE:HD13  | 3:T:46:ILE:HA    | 1.83                     | 0.42              |
| 1:E:137:MET:CB   | 1:E:162:ARG:NH2  | 2.80                     | 0.42              |
| 2:O:27:VAL:HG13  | 2:O:37:VAL:HG13  | 2.00                     | 0.42              |
| 1:I:5:ARG:NH2    | 1:I:126:ASN:OD1  | 2.53                     | 0.42              |
| 2:O:12:ARG:HG2   | 2:O:17:LEU:HD12  | 2.00                     | 0.42              |
| 2:P:41:SER:HB3   | 2:P:337:ARG:CD   | 2.50                     | 0.42              |
| 1:D:153:THR:OG1  | 1:D:154:GLN:N    | 2.53                     | 0.41              |
| 1:G:64:LYS:HA    | 1:G:82:PHE:CE1   | 2.55                     | 0.41              |
| 1:G:158:MET:HE3  | 1:G:158:MET:O    | 2.20                     | 0.41              |
| 1:H:89:LEU:HD12  | 1:H:89:LEU:H     | 1.85                     | 0.41              |
| 1:H:135:ASP:OD1  | 1:H:138:GLY:N    | 2.30                     | 0.41              |
| 1:K:45:ALA:O     | 1:L:134:ARG:NH2  | 2.53                     | 0.41              |
| 2:M:18:PRO:HG2   | 2:N:32:SER:HB2   | 2.02                     | 0.41              |
| 2:N:270:LEU:O    | 2:N:271:LEU:HD23 | 2.20                     | 0.41              |
| 2:Q:278:PHE:HB3  | 2:Q:289:ALA:HB1  | 2.01                     | 0.41              |
| 2:Q:378:ARG:HG2  | 2:Q:387:TRP:CE3  | 2.55                     | 0.41              |
| 2:O:345:LEU:HD21 | 2:O:418:MET:HE2  | 2.02                     | 0.41              |
| 2:P:180:VAL:HG13 | 2:P:227:ALA:HB2  | 2.03                     | 0.41              |
| 2:P:185:ASN:HB3  | 2:P:197:TRP:O    | 2.20                     | 0.41              |
| 5:n:104:ASP:OD1  | 5:n:104:ASP:N    | 2.51                     | 0.41              |
| 1:G:35:LEU:HD23  | 1:H:137:MET:HG2  | 2.02                     | 0.41              |
| 2:M:299:GLU:CD   | 2:M:301:GLN:HE21 | 2.27                     | 0.41              |
| 2:M:395:LEU:HD11 | 2:M:424:MET:CE   | 2.50                     | 0.41              |
| 2:N:208:ALA:HB3  | 3:S:4:ARG:NH2    | 2.15                     | 0.41              |
| 2:O:378:ARG:HG2  | 2:O:387:TRP:HE3  | 1.85                     | 0.41              |
| 1:A:35:LEU:HA    | 1:B:137:MET:HG3  | 2.03                     | 0.41              |
| 1:B:37:GLN:NE2   | 1:B:41:ASP:OD1   | 2.50                     | 0.41              |
| 1:B:51:ARG:CZ    | 1:C:174:LEU:HD12 | 2.48                     | 0.41              |
| 1:D:147:MET:HE2  | 1:D:147:MET:HB3  | 1.95                     | 0.41              |
| 1:H:66:GLY:HA2   | 1:H:98:ALA:O     | 2.20                     | 0.41              |
| 3:T:27:ASN:HD21  | 3:T:31:ARG:CZ    | 2.33                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:m:112:ASP:OD1  | 6:o:113:ARG:HB2  | 2.20                     | 0.41              |
| 1:A:25:LYS:HE2   | 2:Q:393:GLU:OE2  | 2.21                     | 0.41              |
| 1:D:40:TYR:OH    | 1:D:130:PRO:O    | 2.29                     | 0.41              |
| 2:M:12:ARG:NH1   | 2:M:14:ARG:HB3   | 2.35                     | 0.41              |
| 2:P:284:ASP:OD1  | 2:P:284:ASP:N    | 2.54                     | 0.41              |
| 2:Q:406:GLU:OE1  | 2:Q:408:ARG:NE   | 2.53                     | 0.41              |
| 3:U:46:ILE:HD13  | 3:U:46:ILE:HA    | 1.86                     | 0.41              |
| 1:A:48:MET:HE2   | 1:A:48:MET:HB2   | 1.89                     | 0.41              |
| 1:C:176:SER:OG   | 1:C:177:THR:N    | 2.52                     | 0.41              |
| 1:K:102:ILE:HG12 | 1:K:107:ILE:HG12 | 2.02                     | 0.41              |
| 2:M:100:GLU:OE2  | 2:M:100:GLU:N    | 2.32                     | 0.41              |
| 2:O:243:ARG:HG2  | 2:O:243:ARG:NH1  | 2.35                     | 0.41              |
| 2:O:259:ARG:HD3  | 2:O:288:MET:HE3  | 2.03                     | 0.41              |
| 2:O:272:ILE:HD13 | 2:O:277:LYS:HD2  | 2.01                     | 0.41              |
| 2:P:342:GLY:HA3  | 2:P:419:LEU:HD12 | 2.02                     | 0.41              |
| 2:R:115:ASP:OD1  | 2:R:115:ASP:N    | 2.54                     | 0.41              |
| 3:U:47:LEU:HD23  | 3:U:47:LEU:HA    | 1.85                     | 0.41              |
| 1:A:69:VAL:HG11  | 1:A:76:LEU:HD13  | 2.02                     | 0.41              |
| 1:E:35:LEU:HG    | 1:F:137:MET:HE2  | 2.03                     | 0.41              |
| 1:G:25:LYS:N     | 1:G:28:GLU:OE2   | 2.41                     | 0.41              |
| 1:I:149:GLU:HG3  | 1:J:158:MET:HB2  | 2.02                     | 0.41              |
| 1:K:22:LYS:HD2   | 1:K:22:LYS:N     | 2.35                     | 0.41              |
| 2:R:378:ARG:HD2  | 2:R:390:TRP:CE2  | 2.56                     | 0.41              |
| 1:A:19:PRO:HG3   | 2:Q:404:ARG:HE   | 1.86                     | 0.41              |
| 1:A:116:GLU:OE2  | 1:A:133:LYS:NZ   | 2.46                     | 0.41              |
| 1:G:87:THR:HG23  | 1:G:89:LEU:HG    | 2.01                     | 0.41              |
| 2:M:150:TRP:HH2  | 2:M:207:PHE:HB2  | 1.84                     | 0.41              |
| 4:m:113:ARG:HD3  | 5:n:112:ASP:HA   | 2.03                     | 0.41              |
| 5:n:113:ARG:HH11 | 5:n:113:ARG:HG2  | 1.86                     | 0.41              |
| 1:A:40:TYR:HE2   | 1:A:130:PRO:HD2  | 1.86                     | 0.41              |
| 1:D:18:VAL:HG21  | 1:D:24:PRO:HB3   | 2.02                     | 0.41              |
| 1:E:93:PRO:HG2   | 1:E:112:TRP:CD2  | 2.55                     | 0.41              |
| 1:E:102:ILE:HG13 | 1:E:107:ILE:HG12 | 2.02                     | 0.41              |
| 1:J:28:GLU:OE2   | 2:P:444:ARG:NH1  | 2.54                     | 0.41              |
| 2:O:75:ASP:O     | 2:O:76:ASP:C     | 2.64                     | 0.41              |
| 2:O:253:ASP:OD1  | 2:O:253:ASP:C    | 2.63                     | 0.41              |
| 2:O:273:ASP:O    | 2:O:274:GLU:C    | 2.64                     | 0.41              |
| 2:P:143:LEU:HD23 | 2:P:150:TRP:HB3  | 2.03                     | 0.41              |
| 2:P:351:VAL:HG11 | 2:P:410:LEU:HD12 | 2.03                     | 0.41              |
| 2:P:359:GLU:OE2  | 2:P:430:PHE:HA   | 2.21                     | 0.41              |
| 2:R:377:MET:CE   | 2:R:407:TRP:CB   | 2.99                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:m:4:GLN:NE2    | 5:n:92:ALA:HB1   | 2.36                     | 0.41              |
| 6:o:96:ASP:OD1   | 6:o:96:ASP:N     | 2.54                     | 0.41              |
| 1:J:7:ILE:HD13   | 1:J:7:ILE:HA     | 1.87                     | 0.41              |
| 1:K:44:PHE:CE1   | 1:K:109:ASN:HB3  | 2.56                     | 0.41              |
| 2:M:77:GLU:HB3   | 2:M:79:TYR:CE1   | 2.56                     | 0.41              |
| 2:M:308:PHE:CE2  | 2:M:310:CYS:HB3  | 2.56                     | 0.41              |
| 2:P:415:ASP:OD2  | 2:Q:355:ARG:NE   | 2.53                     | 0.41              |
| 2:Q:12:ARG:HD3   | 2:Q:17:LEU:CD1   | 2.51                     | 0.41              |
| 2:Q:303:TYR:OH   | 4:m:30:ALA:HB1   | 2.21                     | 0.41              |
| 4:m:94:ILE:HA    | 6:o:92:ALA:O     | 2.21                     | 0.41              |
| 4:m:104:ASP:OD1  | 4:m:104:ASP:C    | 2.64                     | 0.41              |
| 1:F:13:HIS:CE1   | 1:F:21:GLY:H     | 2.39                     | 0.40              |
| 1:I:93:PRO:HG2   | 1:I:112:TRP:CE3  | 2.56                     | 0.40              |
| 2:M:263:SER:HB2  | 2:M:286:PHE:HE1  | 1.86                     | 0.40              |
| 2:M:319:THR:OG1  | 2:M:320:GLY:N    | 2.55                     | 0.40              |
| 2:M:338:ARG:HG3  | 2:M:422:HIS:O    | 2.21                     | 0.40              |
| 2:O:415:ASP:OD2  | 2:P:355:ARG:NH1  | 2.49                     | 0.40              |
| 2:Q:143:LEU:HG   | 2:Q:179:ILE:HD11 | 2.03                     | 0.40              |
| 4:m:8:LEU:HD23   | 4:m:8:LEU:HA     | 1.87                     | 0.40              |
| 4:m:40:TYR:CD2   | 4:m:45:LEU:HD22  | 2.56                     | 0.40              |
| 1:K:5:ARG:NH1    | 1:K:5:ARG:HG3    | 2.37                     | 0.40              |
| 2:N:90:GLY:HA2   | 2:N:109:GLU:CG   | 2.51                     | 0.40              |
| 2:O:88:ILE:HD12  | 2:O:112:TRP:CG   | 2.57                     | 0.40              |
| 2:P:382:ASP:OD1  | 2:P:382:ASP:N    | 2.38                     | 0.40              |
| 2:Q:365:ASN:HD22 | 2:Q:370:TYR:HB2  | 1.86                     | 0.40              |
| 3:S:54:LEU:HD23  | 3:S:54:LEU:HA    | 1.75                     | 0.40              |
| 1:F:107:ILE:HD11 | 1:G:114:GLY:HA2  | 2.03                     | 0.40              |
| 1:F:158:MET:CE   | 1:F:161:ARG:NH1  | 2.84                     | 0.40              |
| 2:Q:378:ARG:HG2  | 2:Q:387:TRP:HE3  | 1.86                     | 0.40              |
| 6:o:112:ASP:OD1  | 6:o:112:ASP:C    | 2.64                     | 0.40              |
| 1:E:6:ASP:OD1    | 1:E:6:ASP:N      | 2.55                     | 0.40              |
| 1:E:149:GLU:OE1  | 1:F:156:GLY:HA3  | 2.21                     | 0.40              |
| 1:F:95:GLU:HG3   | 1:F:96:LEU:HG    | 2.03                     | 0.40              |
| 1:K:87:THR:CG2   | 1:K:89:LEU:CD1   | 2.98                     | 0.40              |
| 2:O:384:GLY:O    | 2:O:387:TRP:NE1  | 2.55                     | 0.40              |
| 2:P:308:PHE:CE2  | 2:P:310:CYS:HB3  | 2.57                     | 0.40              |
| 2:Q:273:ASP:O    | 2:Q:274:GLU:C    | 2.64                     | 0.40              |
| 2:R:73:VAL:HG11  | 2:R:94:VAL:HG21  | 2.03                     | 0.40              |
| 2:R:263:SER:HG   | 2:R:284:ASP:H    | 1.64                     | 0.40              |
| 2:R:378:ARG:HD2  | 2:R:390:TRP:CZ2  | 2.56                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

| Mol | Chain | Analysed        | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|----------|-------------|-----|
| 1   | A     | 183/186 (98%)   | 182 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 1   | B     | 183/186 (98%)   | 183 (100%) | 0        | 0        | 100         | 100 |
| 1   | C     | 183/186 (98%)   | 182 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 1   | D     | 183/186 (98%)   | 181 (99%)  | 2 (1%)   | 0        | 100         | 100 |
| 1   | E     | 183/186 (98%)   | 182 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 1   | F     | 183/186 (98%)   | 181 (99%)  | 2 (1%)   | 0        | 100         | 100 |
| 1   | G     | 183/186 (98%)   | 181 (99%)  | 2 (1%)   | 0        | 100         | 100 |
| 1   | H     | 183/186 (98%)   | 182 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 1   | I     | 183/186 (98%)   | 182 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 1   | J     | 183/186 (98%)   | 180 (98%)  | 3 (2%)   | 0        | 100         | 100 |
| 1   | K     | 183/186 (98%)   | 179 (98%)  | 4 (2%)   | 0        | 100         | 100 |
| 1   | L     | 183/186 (98%)   | 182 (100%) | 1 (0%)   | 0        | 100         | 100 |
| 2   | M     | 443/446 (99%)   | 430 (97%)  | 13 (3%)  | 0        | 100         | 100 |
| 2   | N     | 443/446 (99%)   | 432 (98%)  | 11 (2%)  | 0        | 100         | 100 |
| 2   | O     | 443/446 (99%)   | 427 (96%)  | 16 (4%)  | 0        | 100         | 100 |
| 2   | P     | 443/446 (99%)   | 430 (97%)  | 13 (3%)  | 0        | 100         | 100 |
| 2   | Q     | 443/446 (99%)   | 432 (98%)  | 11 (2%)  | 0        | 100         | 100 |
| 2   | R     | 443/446 (99%)   | 432 (98%)  | 11 (2%)  | 0        | 100         | 100 |
| 3   | S     | 54/69 (78%)     | 53 (98%)   | 1 (2%)   | 0        | 100         | 100 |
| 3   | T     | 54/69 (78%)     | 54 (100%)  | 0        | 0        | 100         | 100 |
| 3   | U     | 54/69 (78%)     | 54 (100%)  | 0        | 0        | 100         | 100 |
| 4   | m     | 125/128 (98%)   | 118 (94%)  | 7 (6%)   | 0        | 100         | 100 |
| 5   | n     | 127/129 (98%)   | 121 (95%)  | 6 (5%)   | 0        | 100         | 100 |
| 6   | o     | 124/126 (98%)   | 119 (96%)  | 5 (4%)   | 0        | 100         | 100 |
| All | All   | 5392/5498 (98%) | 5279 (98%) | 113 (2%) | 0        | 100         | 100 |

There are no Ramachandran outliers to report.

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

| Mol | Chain | Analysed       | Rotameric | Outliers | Percentiles |     |
|-----|-------|----------------|-----------|----------|-------------|-----|
| 1   | A     | 142/143 (99%)  | 140 (99%) | 2 (1%)   | 62          | 79  |
| 1   | B     | 142/143 (99%)  | 141 (99%) | 1 (1%)   | 81          | 89  |
| 1   | C     | 142/143 (99%)  | 138 (97%) | 4 (3%)   | 38          | 65  |
| 1   | D     | 142/143 (99%)  | 138 (97%) | 4 (3%)   | 38          | 65  |
| 1   | E     | 142/143 (99%)  | 140 (99%) | 2 (1%)   | 62          | 79  |
| 1   | F     | 142/143 (99%)  | 141 (99%) | 1 (1%)   | 81          | 89  |
| 1   | G     | 142/143 (99%)  | 140 (99%) | 2 (1%)   | 62          | 79  |
| 1   | H     | 142/143 (99%)  | 141 (99%) | 1 (1%)   | 81          | 89  |
| 1   | I     | 142/143 (99%)  | 139 (98%) | 3 (2%)   | 48          | 71  |
| 1   | J     | 142/143 (99%)  | 139 (98%) | 3 (2%)   | 48          | 71  |
| 1   | K     | 142/143 (99%)  | 138 (97%) | 4 (3%)   | 38          | 65  |
| 1   | L     | 142/143 (99%)  | 140 (99%) | 2 (1%)   | 62          | 79  |
| 2   | M     | 355/356 (100%) | 344 (97%) | 11 (3%)  | 35          | 63  |
| 2   | N     | 355/356 (100%) | 351 (99%) | 4 (1%)   | 70          | 83  |
| 2   | O     | 355/356 (100%) | 349 (98%) | 6 (2%)   | 56          | 75  |
| 2   | P     | 355/356 (100%) | 345 (97%) | 10 (3%)  | 38          | 65  |
| 2   | Q     | 355/356 (100%) | 349 (98%) | 6 (2%)   | 56          | 75  |
| 2   | R     | 355/356 (100%) | 349 (98%) | 6 (2%)   | 56          | 75  |
| 3   | S     | 46/51 (90%)    | 45 (98%)  | 1 (2%)   | 47          | 70  |
| 3   | T     | 46/51 (90%)    | 46 (100%) | 0        | 100         | 100 |
| 3   | U     | 46/51 (90%)    | 45 (98%)  | 1 (2%)   | 47          | 70  |
| 4   | m     | 95/96 (99%)    | 93 (98%)  | 2 (2%)   | 48          | 71  |
| 5   | n     | 97/97 (100%)   | 95 (98%)  | 2 (2%)   | 48          | 71  |
| 6   | o     | 95/95 (100%)   | 92 (97%)  | 3 (3%)   | 34          | 62  |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |
|-----|-------|-----------------|------------|----------|-------------|
| All | All   | 4259/4293 (99%) | 4178 (98%) | 81 (2%)  | 52 73       |

All (81) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 55  | VAL  |
| 1   | A     | 182 | SER  |
| 1   | B     | 137 | MET  |
| 1   | C     | 55  | VAL  |
| 1   | C     | 106 | ASN  |
| 1   | C     | 124 | THR  |
| 1   | C     | 164 | LEU  |
| 1   | D     | 39  | LEU  |
| 1   | D     | 71  | VAL  |
| 1   | D     | 116 | GLU  |
| 1   | D     | 119 | GLU  |
| 1   | E     | 153 | THR  |
| 1   | E     | 171 | SER  |
| 1   | F     | 132 | SER  |
| 1   | G     | 39  | LEU  |
| 1   | G     | 164 | LEU  |
| 1   | H     | 87  | THR  |
| 1   | I     | 6   | ASP  |
| 1   | I     | 55  | VAL  |
| 1   | I     | 171 | SER  |
| 1   | J     | 53  | THR  |
| 1   | J     | 153 | THR  |
| 1   | J     | 164 | LEU  |
| 1   | K     | 85  | THR  |
| 1   | K     | 164 | LEU  |
| 1   | K     | 171 | SER  |
| 1   | K     | 182 | SER  |
| 1   | L     | 55  | VAL  |
| 1   | L     | 77  | THR  |
| 2   | M     | 17  | LEU  |
| 2   | M     | 53  | THR  |
| 2   | M     | 118 | THR  |
| 2   | M     | 171 | SER  |
| 2   | M     | 270 | LEU  |
| 2   | M     | 337 | ARG  |
| 2   | M     | 344 | THR  |
| 2   | M     | 389 | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | M     | 408 | ARG  |
| 2   | M     | 410 | LEU  |
| 2   | M     | 436 | THR  |
| 2   | N     | 47  | GLU  |
| 2   | N     | 77  | GLU  |
| 2   | N     | 95  | SER  |
| 2   | N     | 274 | GLU  |
| 2   | O     | 27  | VAL  |
| 2   | O     | 41  | SER  |
| 2   | O     | 72  | VAL  |
| 2   | O     | 77  | GLU  |
| 2   | O     | 179 | ILE  |
| 2   | O     | 325 | PHE  |
| 2   | P     | 46  | VAL  |
| 2   | P     | 95  | SER  |
| 2   | P     | 174 | ASP  |
| 2   | P     | 192 | GLN  |
| 2   | P     | 228 | ILE  |
| 2   | P     | 263 | SER  |
| 2   | P     | 336 | GLU  |
| 2   | P     | 389 | ILE  |
| 2   | P     | 408 | ARG  |
| 2   | P     | 414 | ASP  |
| 2   | Q     | 53  | THR  |
| 2   | Q     | 95  | SER  |
| 2   | Q     | 231 | SER  |
| 2   | Q     | 344 | THR  |
| 2   | Q     | 410 | LEU  |
| 2   | Q     | 414 | ASP  |
| 2   | R     | 28  | GLU  |
| 2   | R     | 95  | SER  |
| 2   | R     | 263 | SER  |
| 2   | R     | 336 | GLU  |
| 2   | R     | 412 | LEU  |
| 2   | R     | 446 | ARG  |
| 3   | S     | 8   | LEU  |
| 3   | U     | 50  | LEU  |
| 4   | m     | 74  | CYS  |
| 4   | m     | 93  | SER  |
| 5   | n     | 101 | GLU  |
| 5   | n     | 119 | SER  |
| 6   | o     | 101 | GLU  |

*Continued on next page...*

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 6   | o     | 121 | THR  |
| 6   | o     | 126 | SER  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 106 | ASN  |
| 1   | B     | 118 | GLN  |
| 1   | C     | 37  | GLN  |
| 1   | D     | 37  | GLN  |
| 1   | F     | 37  | GLN  |
| 1   | F     | 118 | GLN  |
| 1   | I     | 37  | GLN  |
| 1   | I     | 118 | GLN  |
| 1   | K     | 126 | ASN  |
| 1   | L     | 37  | GLN  |
| 1   | L     | 118 | GLN  |
| 1   | L     | 146 | HIS  |
| 2   | M     | 295 | ASN  |
| 2   | M     | 385 | ASN  |
| 2   | N     | 230 | ASN  |
| 2   | N     | 331 | ASN  |
| 2   | N     | 365 | ASN  |
| 2   | N     | 422 | HIS  |
| 2   | O     | 301 | GLN  |
| 2   | P     | 40  | GLN  |
| 2   | P     | 192 | GLN  |
| 2   | P     | 352 | ASN  |
| 2   | P     | 365 | ASN  |
| 2   | P     | 422 | HIS  |
| 2   | Q     | 185 | ASN  |
| 2   | Q     | 192 | GLN  |
| 2   | Q     | 217 | GLN  |
| 2   | Q     | 276 | HIS  |
| 2   | Q     | 365 | ASN  |
| 2   | R     | 149 | GLN  |
| 2   | R     | 230 | ASN  |
| 2   | R     | 276 | HIS  |
| 2   | R     | 398 | GLN  |
| 3   | T     | 27  | ASN  |
| 3   | T     | 30  | GLN  |
| 3   | T     | 53  | GLN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | U     | 48  | GLN  |
| 4   | m     | 48  | GLN  |
| 5   | n     | 48  | 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 oligosaccharides 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.

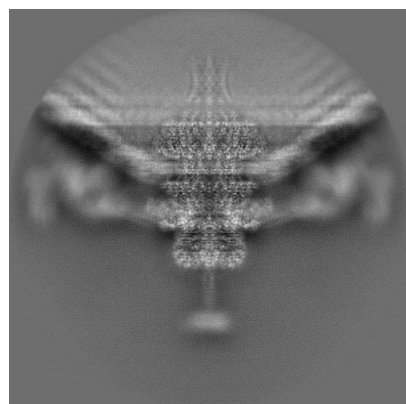
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-65452. These allow visual inspection of the internal detail of the map and identification of artifacts.

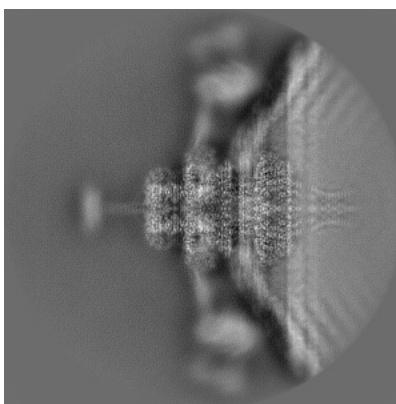
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

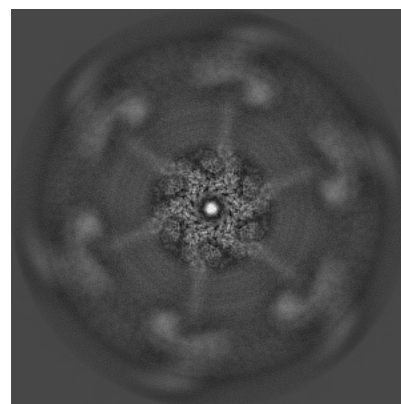
#### 6.1.1 Primary map



X

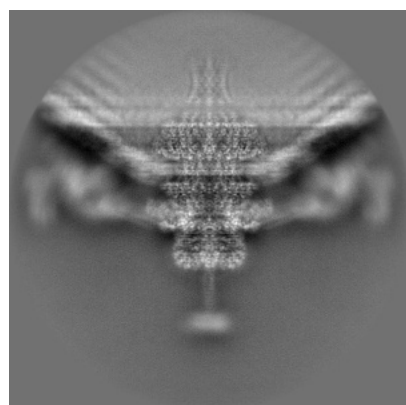


Y

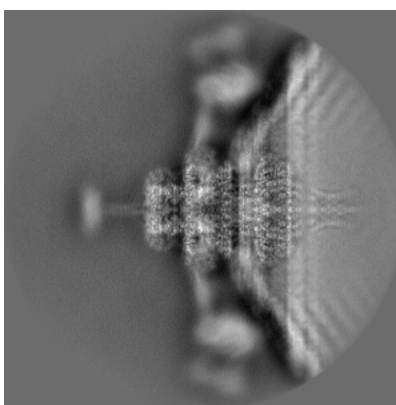


Z

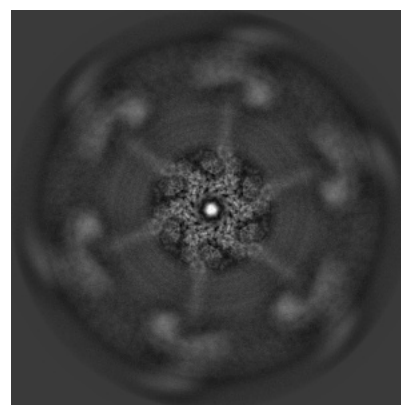
#### 6.1.2 Raw map



X



Y

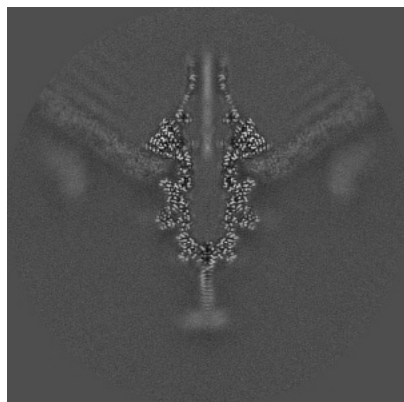


Z

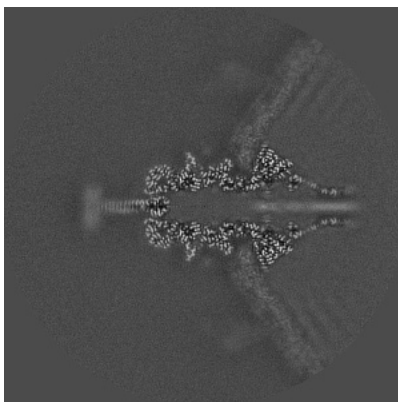
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

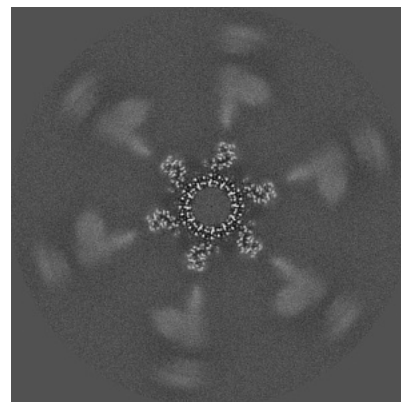
### 6.2.1 Primary map



X Index: 256

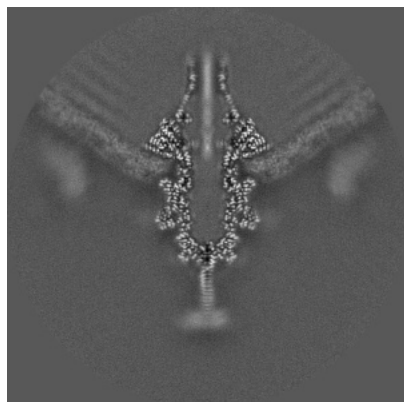


Y Index: 256

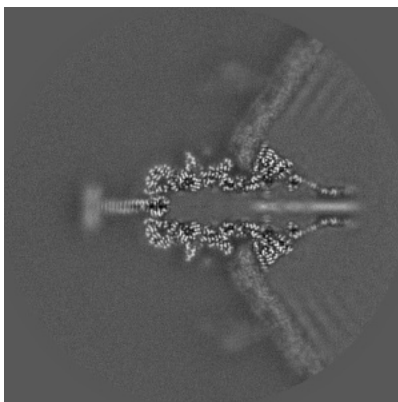


Z Index: 256

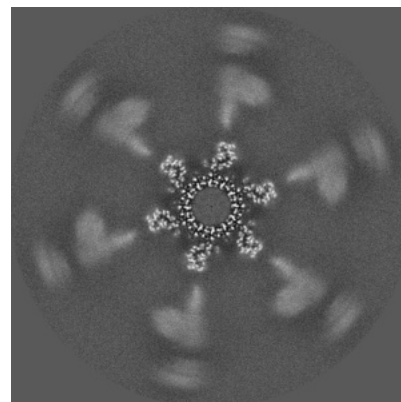
### 6.2.2 Raw map



X Index: 256



Y Index: 256

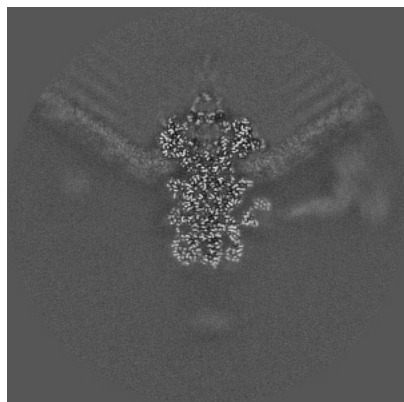


Z Index: 256

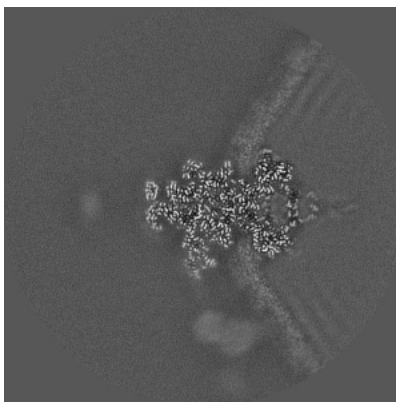
The images above show central slices of the map in three orthogonal directions.

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

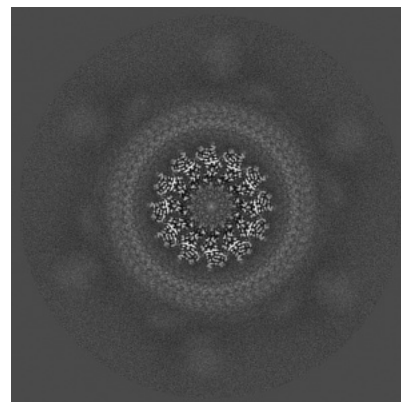
### 6.3.1 Primary map



X Index: 283

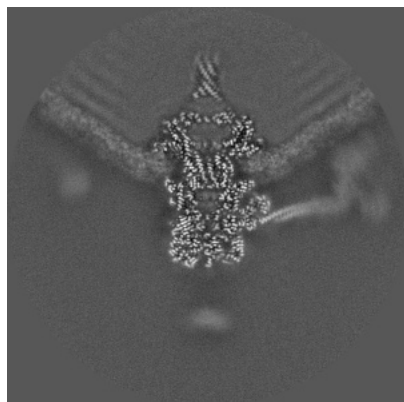


Y Index: 230

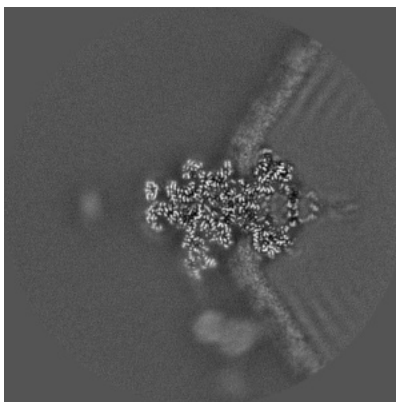


Z Index: 332

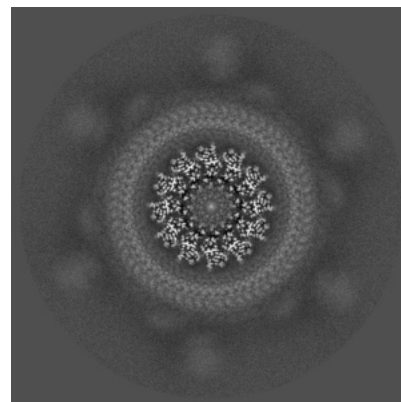
### 6.3.2 Raw map



X Index: 277



Y Index: 230



Z Index: 332

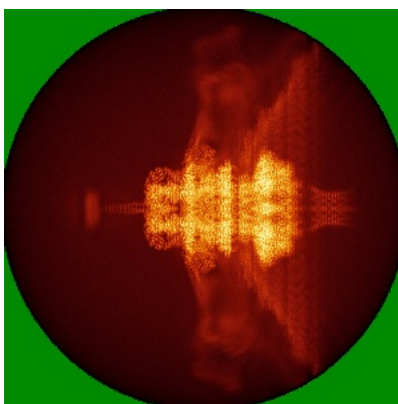
The images above show the largest variance slices of the map in three orthogonal directions.

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

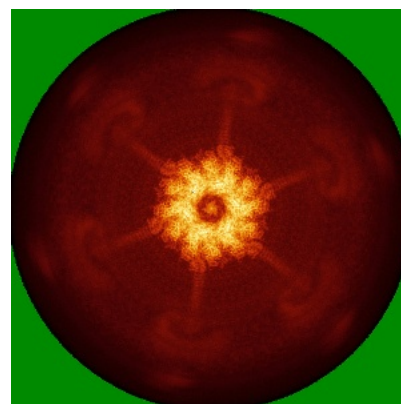
### 6.4.1 Primary map



X

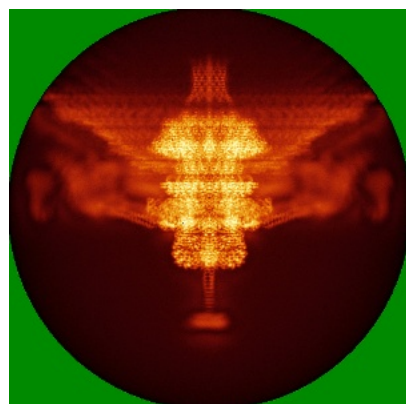


Y

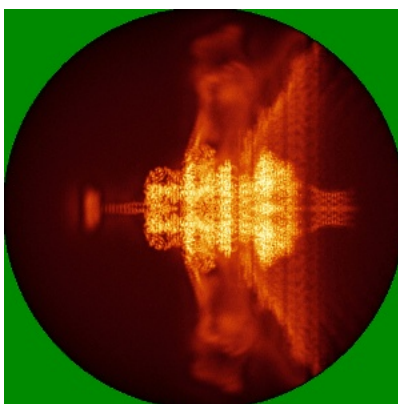


Z

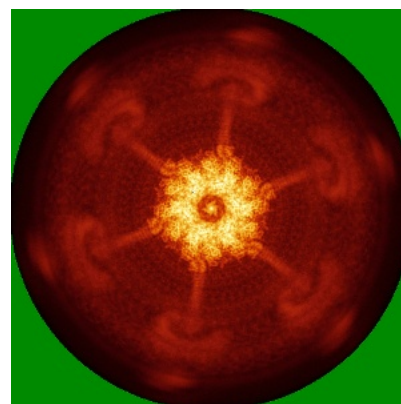
### 6.4.2 Raw map



X



Y

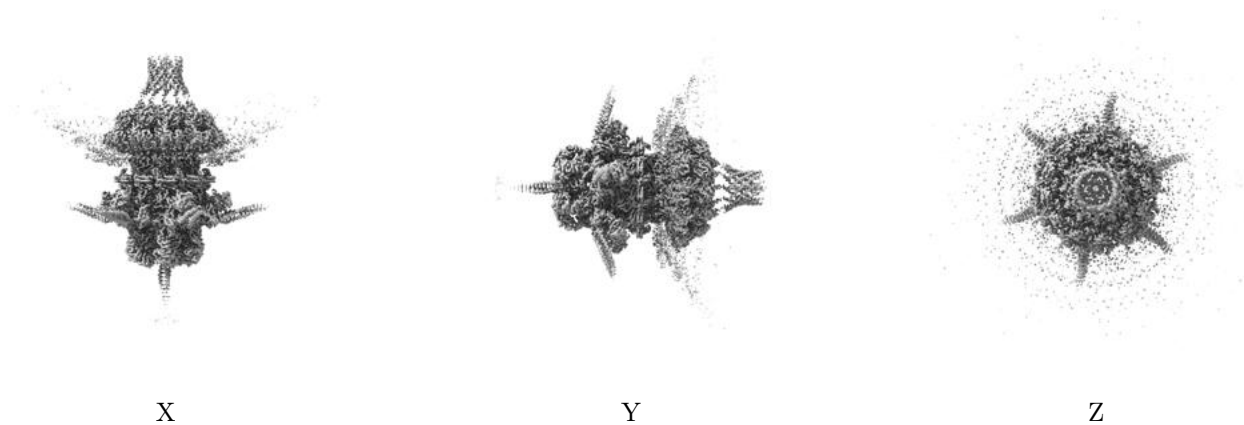


Z

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.

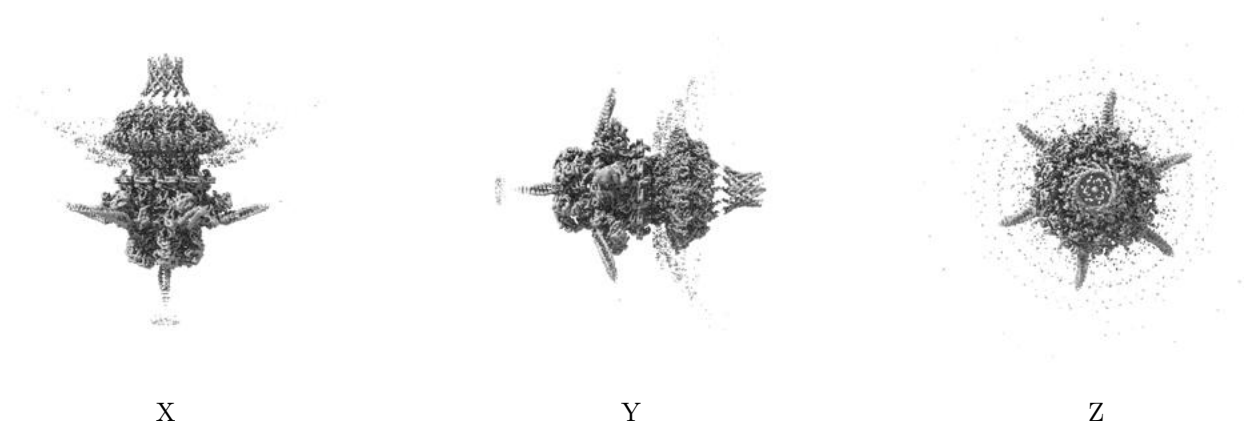
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.012. 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.

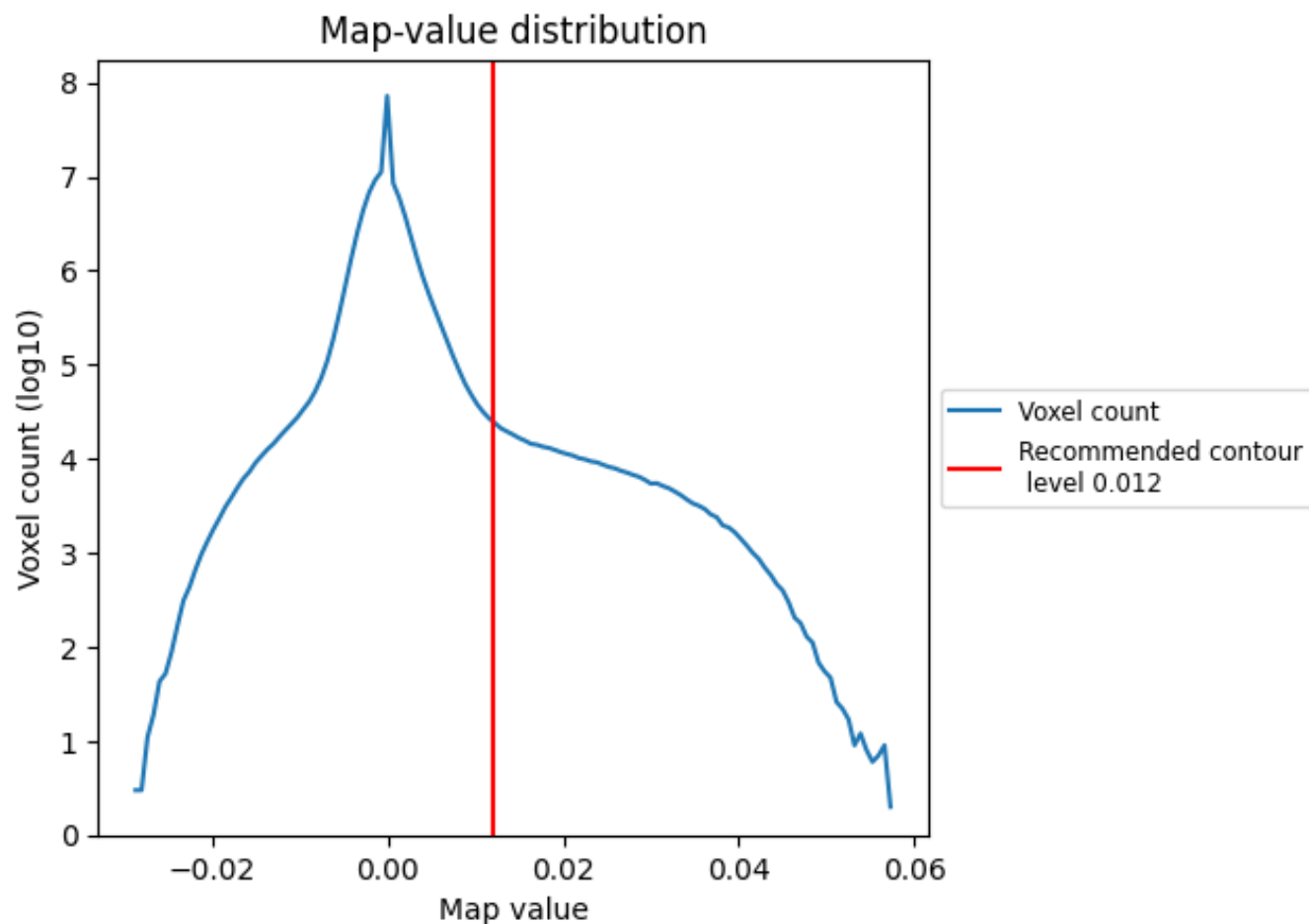
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

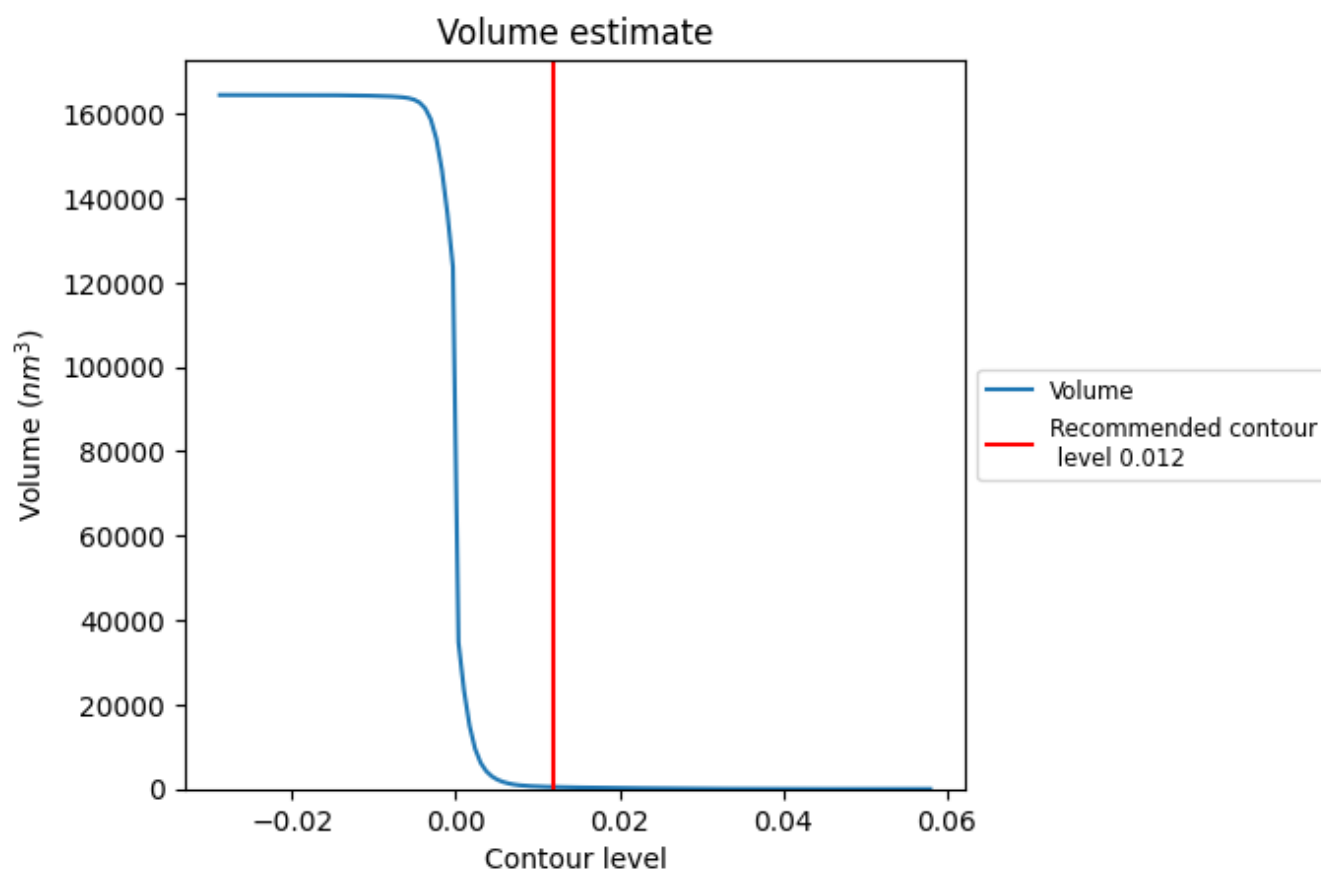
This section contains the results of statistical analysis of the map.

### 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.

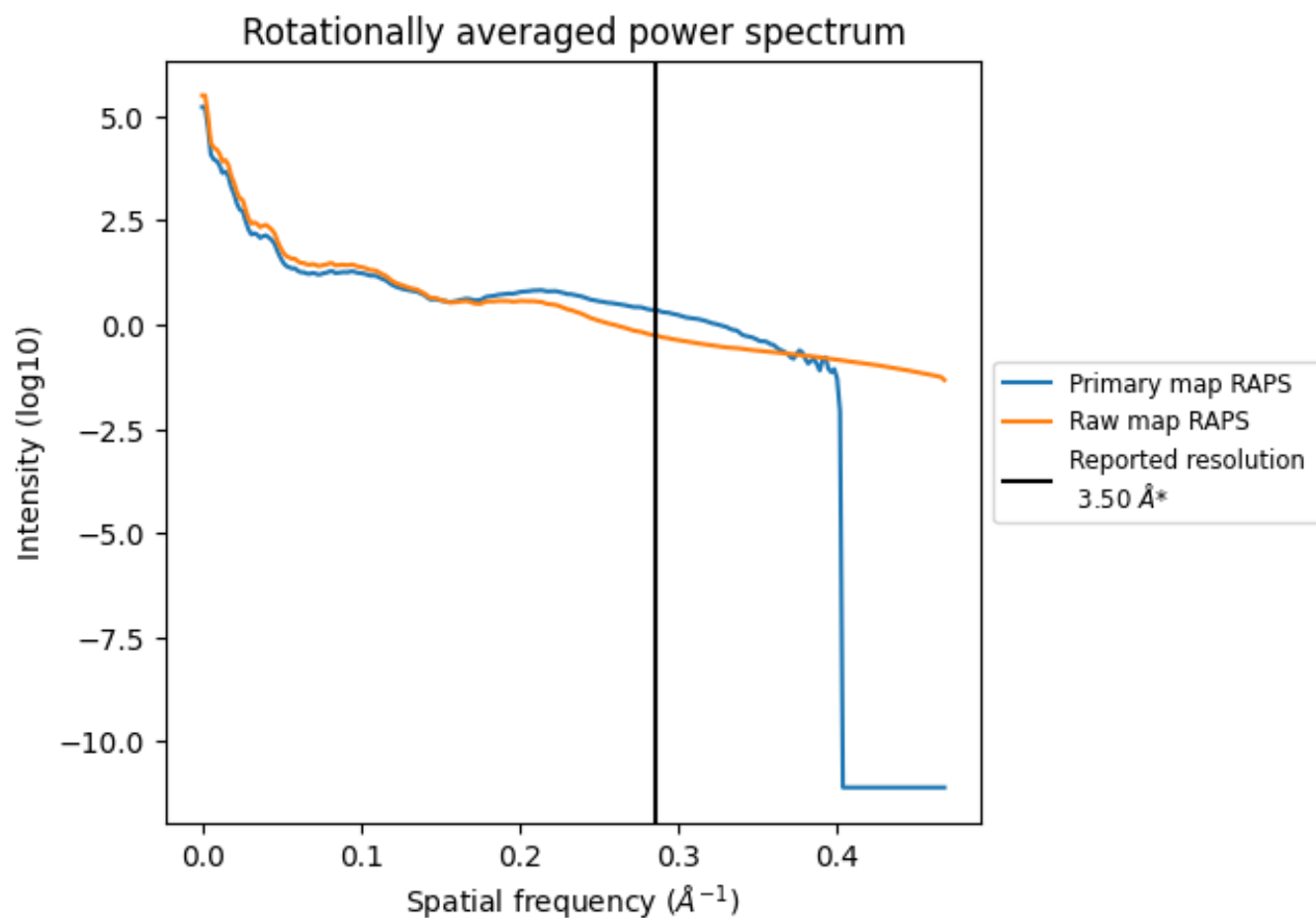
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 467 nm<sup>3</sup>; this corresponds to an approximate mass of 422 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum ⓘ

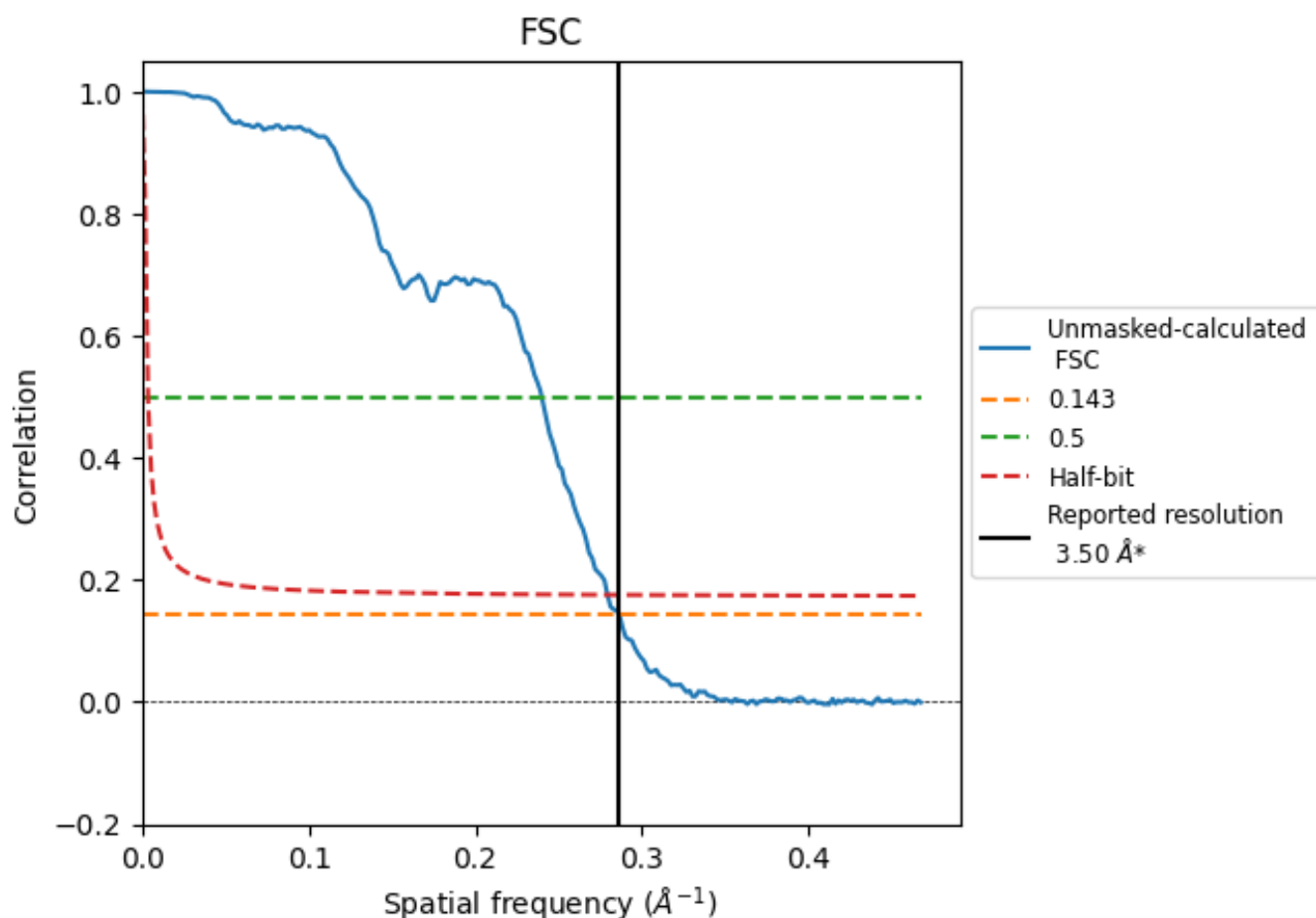


\*Reported resolution corresponds to spatial frequency of 0.286 Å<sup>-1</sup>

## 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 0.286  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

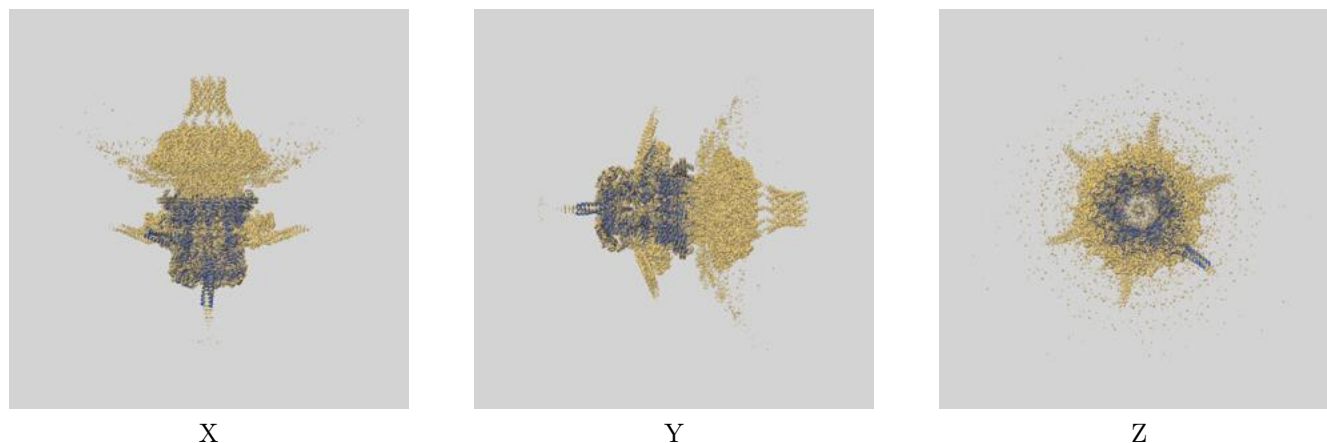
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.50                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 3.49                               | 4.17 | 3.58     |

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

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

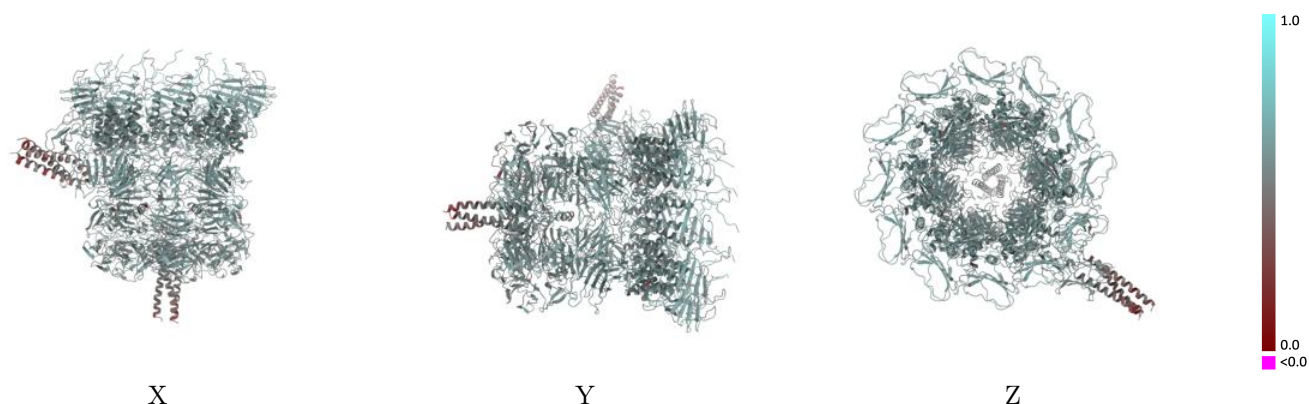
This section contains information regarding the fit between EMDB map EMD-65452 and PDB model 9VYG. Per-residue inclusion information can be found in [section 3](#) on [page 7](#).

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



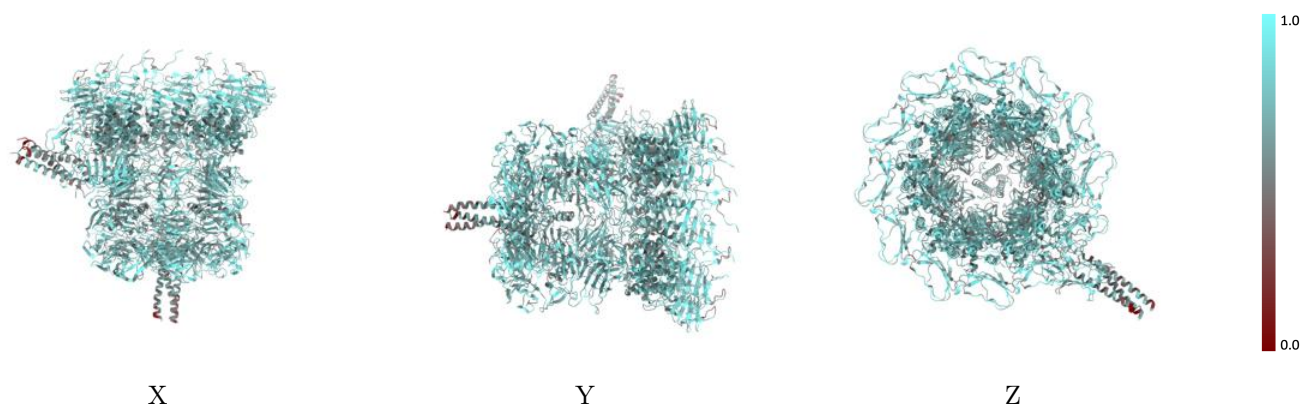
The images above show the 3D surface view of the map at the recommended contour level 0.012 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



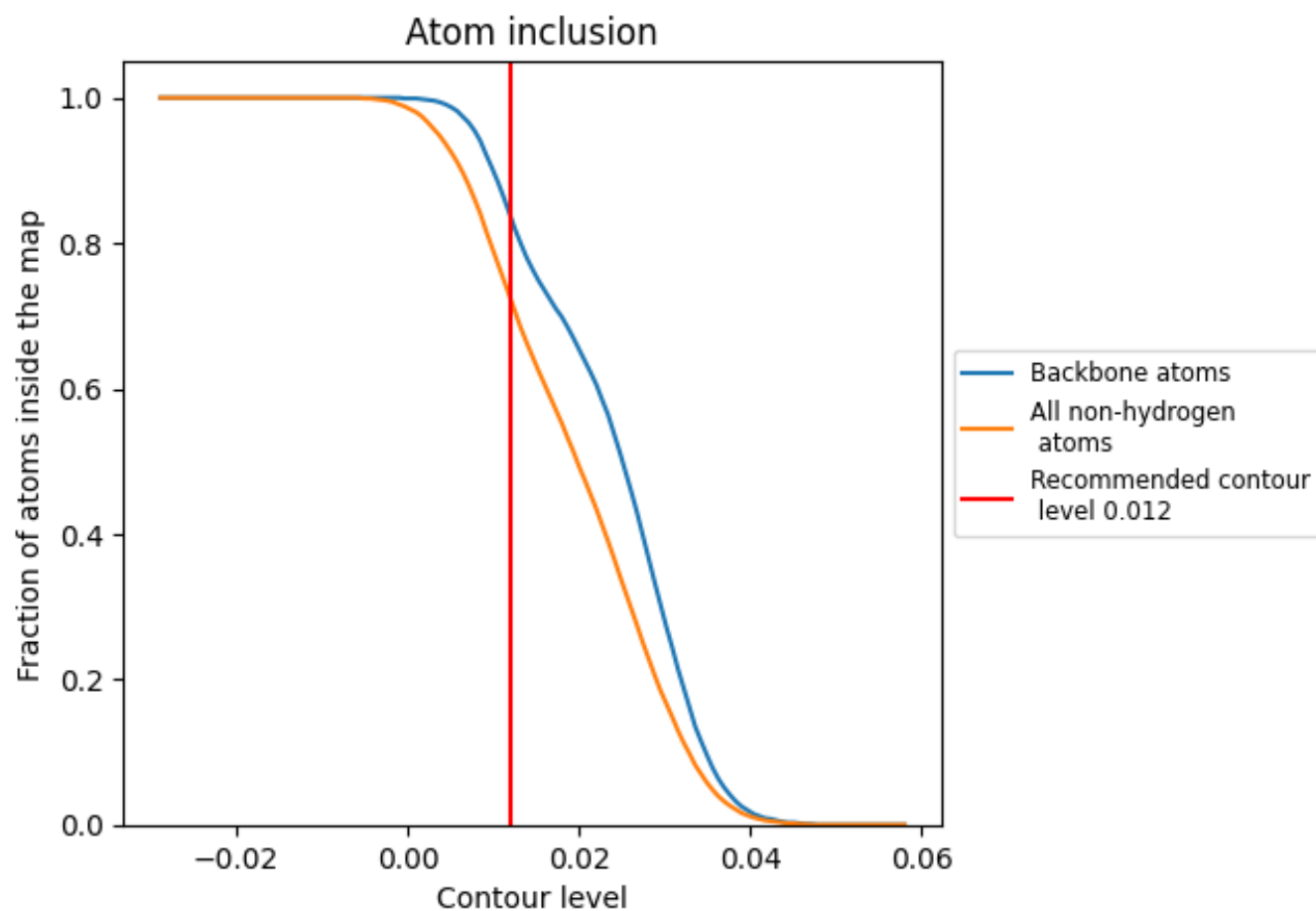
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.012).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 84% of all backbone atoms, 72% 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 (0.012) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.7240   |  0.5530   |
| A     |  0.7330   |  0.5710   |
| B     |  0.7290   |  0.5690   |
| C     |  0.7250   |  0.5660   |
| D     |  0.7370   |  0.5730   |
| E     |  0.7230   |  0.5670   |
| F     |  0.7330   |  0.5660   |
| G     |  0.7280   |  0.5670   |
| H     |  0.7380   |  0.5700   |
| I     |  0.7240   |  0.5690   |
| J     |  0.7330   |  0.5690   |
| K     |  0.7280   |  0.5660   |
| L     |  0.7300   |  0.5690   |
| M     |  0.7370   |  0.5500   |
| N     |  0.7320  |  0.5480  |
| O     |  0.7270 |  0.5510 |
| P     |  0.7360 |  0.5520 |
| Q     |  0.7290 |  0.5480 |
| R     |  0.7350 |  0.5530 |
| S     |  0.6180 |  0.4830 |
| T     |  0.6300 |  0.4730 |
| U     |  0.6280 |  0.4870 |
| m     |  0.6940 |  0.5200 |
| n     |  0.6460 |  0.4880 |
| o     |  0.6910 |  0.5200 |

