



## Full wwPDB EM Validation Report ⓘ

Jun 29, 2025 – 05:31 am BST

PDB ID : 6XTY / pdb\_00006xty  
EMDB ID : EMD-10621  
Title : CryoEM structure of human CMG bound to AND-1 (CMGA)  
Authors : Rzechorzek, N.J.; Pellegrini, L.; Chirgadze, D.Y.; Hardwick, S.W.  
Deposited on : 2020-01-16  
Resolution : 6.77 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.dev118  
MolProbity : 4-5-2 with Phenix2.0rc1  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.44

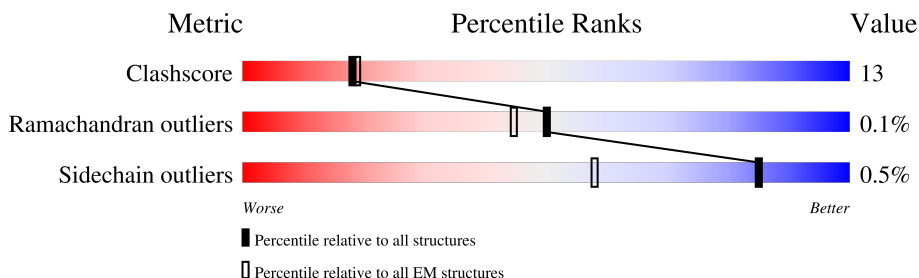
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 6.77 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) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore            | 210492                      | 15764                       |
| Ramachandran outliers | 207382                      | 16835                       |
| Sidechain outliers    | 206894                      | 16415                       |

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   | 2     | 904    |                  |
| 2   | 3     | 853    |                  |
| 3   | 4     | 863    |                  |
| 4   | 5     | 734    |                  |
| 5   | 6     | 821    |                  |
| 6   | 7     | 719    |                  |
| 7   | A     | 196    |                  |
| 8   | B     | 185    |                  |

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| Mol | Chain | Length | Quality of chain                           |
|-----|-------|--------|--------------------------------------------|
| 9   | C     | 216    | <div><div></div><div>66%24%10%</div></div> |
| 10  | D     | 223    | <div><div></div><div>73%18%9%</div></div>  |
| 11  | E     | 566    | <div><div></div><div>71%23%5%</div></div>  |
| 12  | F     | 1171   | <div><div></div><div>6%30%66%</div></div>  |
| 12  | G     | 1171   | <div><div></div><div>10%30%66%</div></div> |
| 12  | H     | 1171   | <div><div></div><div>11%30%66%</div></div> |

## 2 Entry composition

There are 13 unique types of molecules in this entry. The entry contains 48821 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called DNA replication licensing factor MCM2.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | 2     | 611      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4832  | 3040 | 863 | 899 | 30 |         |       |

- Molecule 2 is a protein called DNA replication licensing factor MCM3.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | 3     | 608      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4782  | 2997 | 844 | 916 | 25 |         |       |

- Molecule 3 is a protein called DNA replication licensing factor MCM4.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 3   | 4     | 598      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4784  | 3016 | 850 | 892 | 26 |         |       |

- Molecule 4 is a protein called DNA replication licensing factor MCM5.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | 5     | 577      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4524  | 2841 | 805 | 843 | 35 |         |       |

- Molecule 5 is a protein called DNA replication licensing factor MCM6.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 5   | 6     | 609      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4873  | 3068 | 862 | 917 | 26 |         |       |

- Molecule 6 is a protein called DNA replication licensing factor MCM7.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 6   | 7     | 598      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4727  | 2960 | 837 | 901 | 29 |         |       |

- Molecule 7 is a protein called DNA replication complex GINS protein PSF1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 7   | A     | 196      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1613  | 1016 | 290 | 295 | 12 |         |       |

- Molecule 8 is a protein called DNA replication complex GINS protein PSF2.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 8   | B     | 176      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1431  | 916 | 242 | 264 | 9 |         |       |

- Molecule 9 is a protein called DNA replication complex GINS protein PSF3.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 9   | C     | 194      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1552  | 985 | 268 | 293 | 6 |         |       |

- Molecule 10 is a protein called DNA replication complex GINS protein SLD5.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 10  | D     | 203      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 1679  | 1065 | 290 | 314 | 10 |         |       |

- Molecule 11 is a protein called Cell division control protein 45 homolog.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 11  | E     | 538      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4380  | 2785 | 751 | 813 | 31 |         |       |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference  |
|-------|---------|----------|--------|---------|------------|
| E     | 346     | GLN      | GLU    | variant | UNP O75419 |

- Molecule 12 is a protein called WD repeat and HMG-box DNA-binding protein 1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 12  | F     | 403      | Total | C    | N   | O   | S  | 3       | 0     |
|     |       |          | 3213  | 2038 | 559 | 595 | 21 |         |       |
| 12  | G     | 403      | Total | C    | N   | O   | S  | 3       | 0     |
|     |       |          | 3213  | 2038 | 559 | 595 | 21 |         |       |
| 12  | H     | 403      | Total | C    | N   | O   | S  | 3       | 0     |
|     |       |          | 3213  | 2038 | 559 | 595 | 21 |         |       |

There are 126 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment               | Reference  |
|-------|---------|----------|--------|-----------------------|------------|
| F     | -41     | MET      | -      | initiating methionine | UNP O75717 |
| F     | -40     | SER      | -      | expression tag        | UNP O75717 |
| F     | -39     | ALA      | -      | expression tag        | UNP O75717 |
| F     | -38     | TRP      | -      | expression tag        | UNP O75717 |
| F     | -37     | SER      | -      | expression tag        | UNP O75717 |
| F     | -36     | HIS      | -      | expression tag        | UNP O75717 |
| F     | -35     | PRO      | -      | expression tag        | UNP O75717 |
| F     | -34     | GLN      | -      | expression tag        | UNP O75717 |
| F     | -33     | PHE      | -      | expression tag        | UNP O75717 |
| F     | -32     | GLU      | -      | expression tag        | UNP O75717 |
| F     | -31     | LYS      | -      | expression tag        | UNP O75717 |
| F     | -30     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -29     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -28     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -27     | SER      | -      | expression tag        | UNP O75717 |
| F     | -26     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -25     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -24     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -23     | SER      | -      | expression tag        | UNP O75717 |
| F     | -22     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -21     | GLY      | -      | expression tag        | UNP O75717 |
| F     | -20     | SER      | -      | expression tag        | UNP O75717 |
| F     | -19     | ALA      | -      | expression tag        | UNP O75717 |
| F     | -18     | TRP      | -      | expression tag        | UNP O75717 |
| F     | -17     | SER      | -      | expression tag        | UNP O75717 |
| F     | -16     | HIS      | -      | expression tag        | UNP O75717 |
| F     | -15     | PRO      | -      | expression tag        | UNP O75717 |
| F     | -14     | GLN      | -      | expression tag        | UNP O75717 |
| F     | -13     | PHE      | -      | expression tag        | UNP O75717 |
| F     | -12     | GLU      | -      | expression tag        | UNP O75717 |
| F     | -11     | LYS      | -      | expression tag        | UNP O75717 |
| F     | -10     | GLU      | -      | expression tag        | UNP O75717 |
| F     | -9      | ASN      | -      | expression tag        | UNP O75717 |
| F     | -8      | LEU      | -      | expression tag        | UNP O75717 |
| F     | -7      | TYR      | -      | expression tag        | UNP O75717 |
| F     | -6      | PHE      | -      | expression tag        | UNP O75717 |
| F     | -5      | GLN      | -      | expression tag        | UNP O75717 |
| F     | -4      | GLY      | -      | expression tag        | UNP O75717 |
| F     | -3      | SER      | -      | expression tag        | UNP O75717 |
| F     | -2      | SER      | -      | expression tag        | UNP O75717 |
| F     | -1      | ALA      | -      | expression tag        | UNP O75717 |
| F     | 0       | THR      | -      | expression tag        | UNP O75717 |

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| Chain | Residue | Modelled | Actual | Comment               | Reference  |
|-------|---------|----------|--------|-----------------------|------------|
| G     | -41     | MET      | -      | initiating methionine | UNP O75717 |
| G     | -40     | SER      | -      | expression tag        | UNP O75717 |
| G     | -39     | ALA      | -      | expression tag        | UNP O75717 |
| G     | -38     | TRP      | -      | expression tag        | UNP O75717 |
| G     | -37     | SER      | -      | expression tag        | UNP O75717 |
| G     | -36     | HIS      | -      | expression tag        | UNP O75717 |
| G     | -35     | PRO      | -      | expression tag        | UNP O75717 |
| G     | -34     | GLN      | -      | expression tag        | UNP O75717 |
| G     | -33     | PHE      | -      | expression tag        | UNP O75717 |
| G     | -32     | GLU      | -      | expression tag        | UNP O75717 |
| G     | -31     | LYS      | -      | expression tag        | UNP O75717 |
| G     | -30     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -29     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -28     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -27     | SER      | -      | expression tag        | UNP O75717 |
| G     | -26     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -25     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -24     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -23     | SER      | -      | expression tag        | UNP O75717 |
| G     | -22     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -21     | GLY      | -      | expression tag        | UNP O75717 |
| G     | -20     | SER      | -      | expression tag        | UNP O75717 |
| G     | -19     | ALA      | -      | expression tag        | UNP O75717 |
| G     | -18     | TRP      | -      | expression tag        | UNP O75717 |
| G     | -17     | SER      | -      | expression tag        | UNP O75717 |
| G     | -16     | HIS      | -      | expression tag        | UNP O75717 |
| G     | -15     | PRO      | -      | expression tag        | UNP O75717 |
| G     | -14     | GLN      | -      | expression tag        | UNP O75717 |
| G     | -13     | PHE      | -      | expression tag        | UNP O75717 |
| G     | -12     | GLU      | -      | expression tag        | UNP O75717 |
| G     | -11     | LYS      | -      | expression tag        | UNP O75717 |
| G     | -10     | GLU      | -      | expression tag        | UNP O75717 |
| G     | -9      | ASN      | -      | expression tag        | UNP O75717 |
| G     | -8      | LEU      | -      | expression tag        | UNP O75717 |
| G     | -7      | TYR      | -      | expression tag        | UNP O75717 |
| G     | -6      | PHE      | -      | expression tag        | UNP O75717 |
| G     | -5      | GLN      | -      | expression tag        | UNP O75717 |
| G     | -4      | GLY      | -      | expression tag        | UNP O75717 |
| G     | -3      | SER      | -      | expression tag        | UNP O75717 |
| G     | -2      | SER      | -      | expression tag        | UNP O75717 |
| G     | -1      | ALA      | -      | expression tag        | UNP O75717 |
| G     | 0       | THR      | -      | expression tag        | UNP O75717 |

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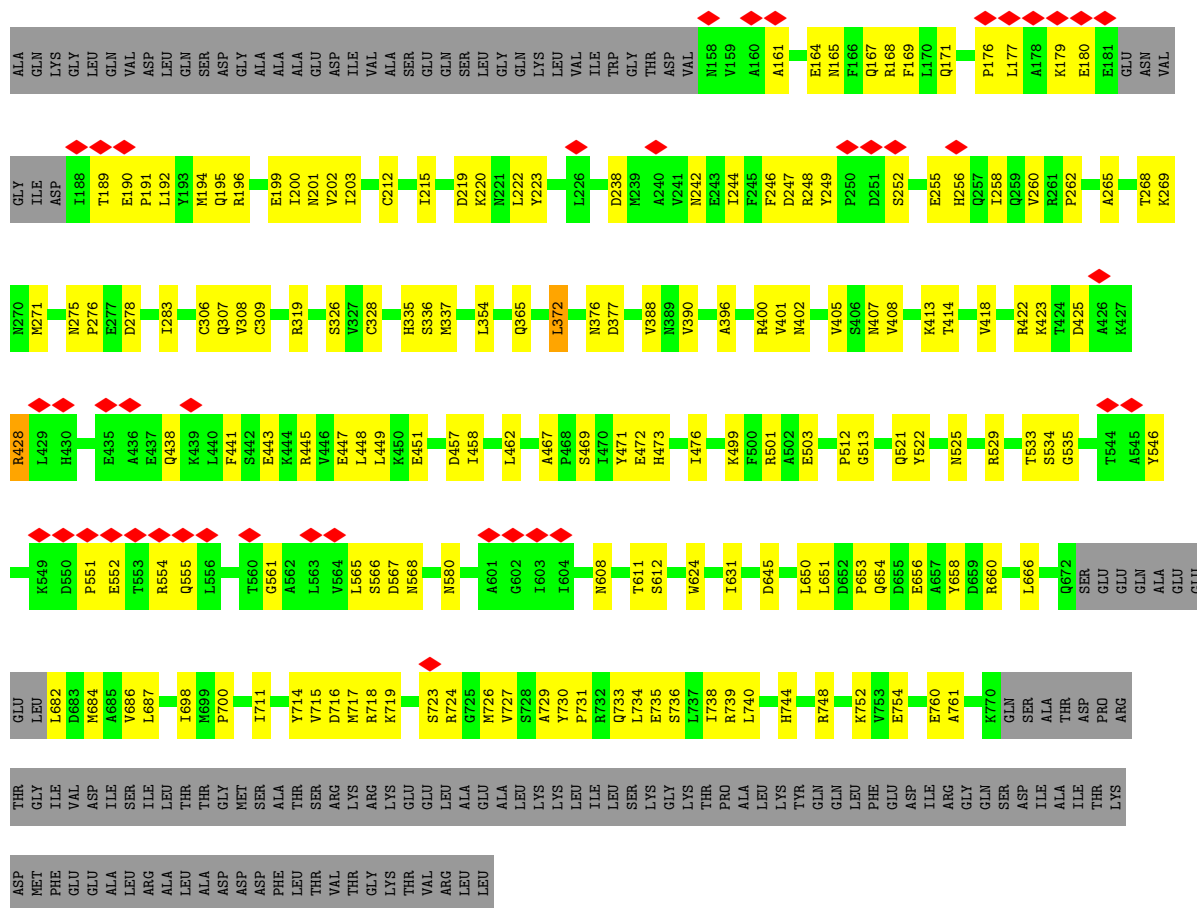
| Chain | Residue | Modelled | Actual | Comment               | Reference  |
|-------|---------|----------|--------|-----------------------|------------|
| H     | -41     | MET      | -      | initiating methionine | UNP O75717 |
| H     | -40     | SER      | -      | expression tag        | UNP O75717 |
| H     | -39     | ALA      | -      | expression tag        | UNP O75717 |
| H     | -38     | TRP      | -      | expression tag        | UNP O75717 |
| H     | -37     | SER      | -      | expression tag        | UNP O75717 |
| H     | -36     | HIS      | -      | expression tag        | UNP O75717 |
| H     | -35     | PRO      | -      | expression tag        | UNP O75717 |
| H     | -34     | GLN      | -      | expression tag        | UNP O75717 |
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| H     | -28     | GLY      | -      | expression tag        | UNP O75717 |
| H     | -27     | SER      | -      | expression tag        | UNP O75717 |
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| H     | -25     | GLY      | -      | expression tag        | UNP O75717 |
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| H     | -23     | SER      | -      | expression tag        | UNP O75717 |
| H     | -22     | GLY      | -      | expression tag        | UNP O75717 |
| H     | -21     | GLY      | -      | expression tag        | UNP O75717 |
| H     | -20     | SER      | -      | expression tag        | UNP O75717 |
| H     | -19     | ALA      | -      | expression tag        | UNP O75717 |
| H     | -18     | TRP      | -      | expression tag        | UNP O75717 |
| H     | -17     | SER      | -      | expression tag        | UNP O75717 |
| H     | -16     | HIS      | -      | expression tag        | UNP O75717 |
| H     | -15     | PRO      | -      | expression tag        | UNP O75717 |
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| H     | -12     | GLU      | -      | expression tag        | UNP O75717 |
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| H     | -10     | GLU      | -      | expression tag        | UNP O75717 |
| H     | -9      | ASN      | -      | expression tag        | UNP O75717 |
| H     | -8      | LEU      | -      | expression tag        | UNP O75717 |
| H     | -7      | TYR      | -      | expression tag        | UNP O75717 |
| H     | -6      | PHE      | -      | expression tag        | UNP O75717 |
| H     | -5      | GLN      | -      | expression tag        | UNP O75717 |
| H     | -4      | GLY      | -      | expression tag        | UNP O75717 |
| H     | -3      | SER      | -      | expression tag        | UNP O75717 |
| H     | -2      | SER      | -      | expression tag        | UNP O75717 |
| H     | -1      | ALA      | -      | expression tag        | UNP O75717 |
| H     | 0       | THR      | -      | expression tag        | UNP O75717 |

- Molecule 13 is ZINC ION (CCD ID: ZN) (formula: Zn).

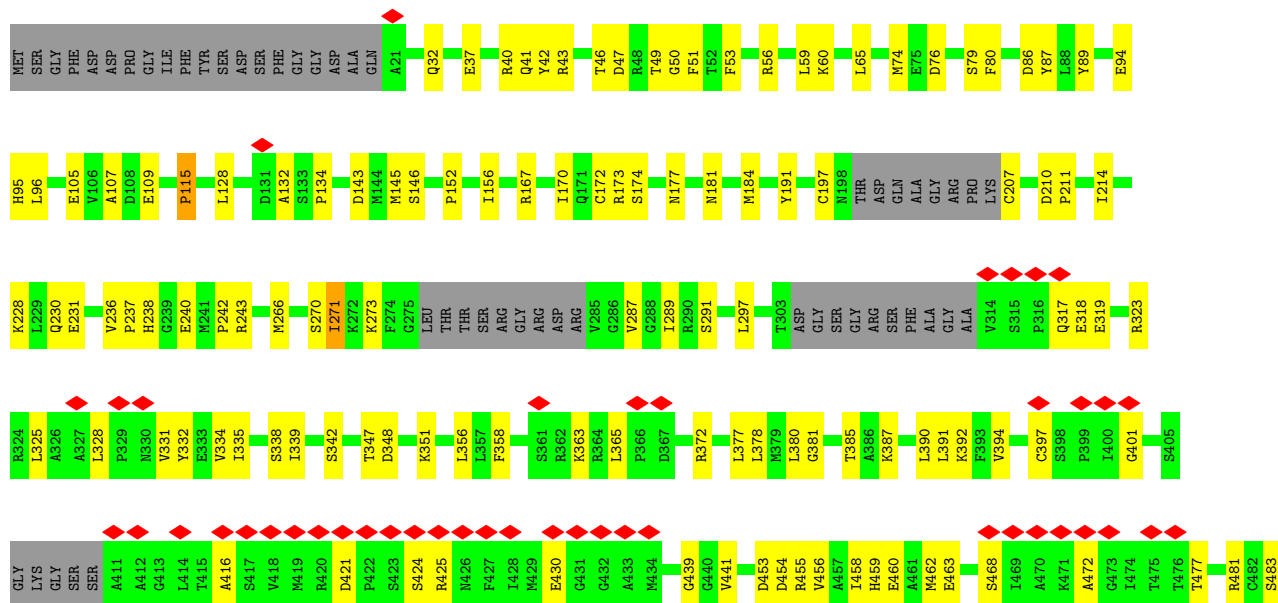
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|-----|-------|----------|------------|---------|---------|
| 13  | 2     | 1        | Total<br>1 | Zn<br>1 | 0       |
| 13  | 4     | 1        | Total<br>1 | Zn<br>1 | 0       |
| 13  | 5     | 1        | Total<br>1 | Zn<br>1 | 0       |
| 13  | 6     | 1        | Total<br>1 | Zn<br>1 | 0       |
| 13  | 7     | 1        | Total<br>1 | Zn<br>1 | 0       |

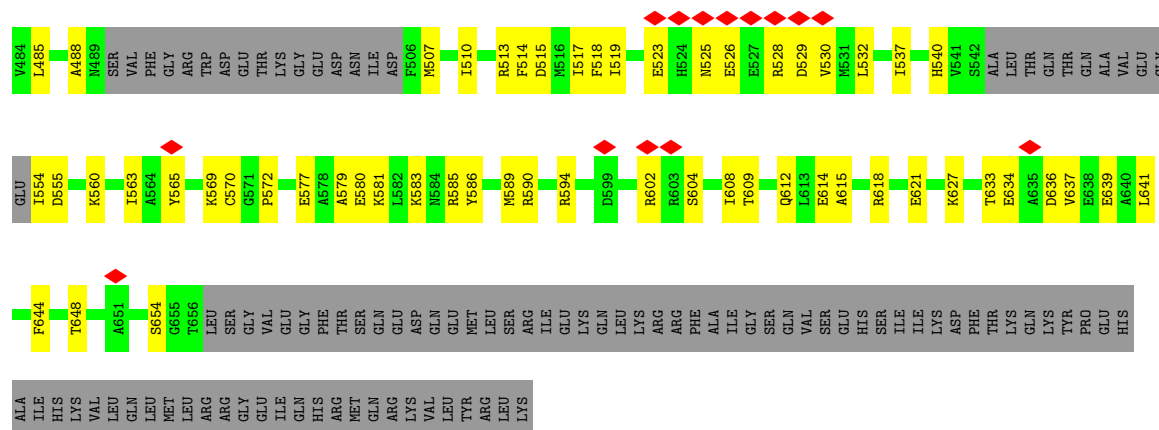




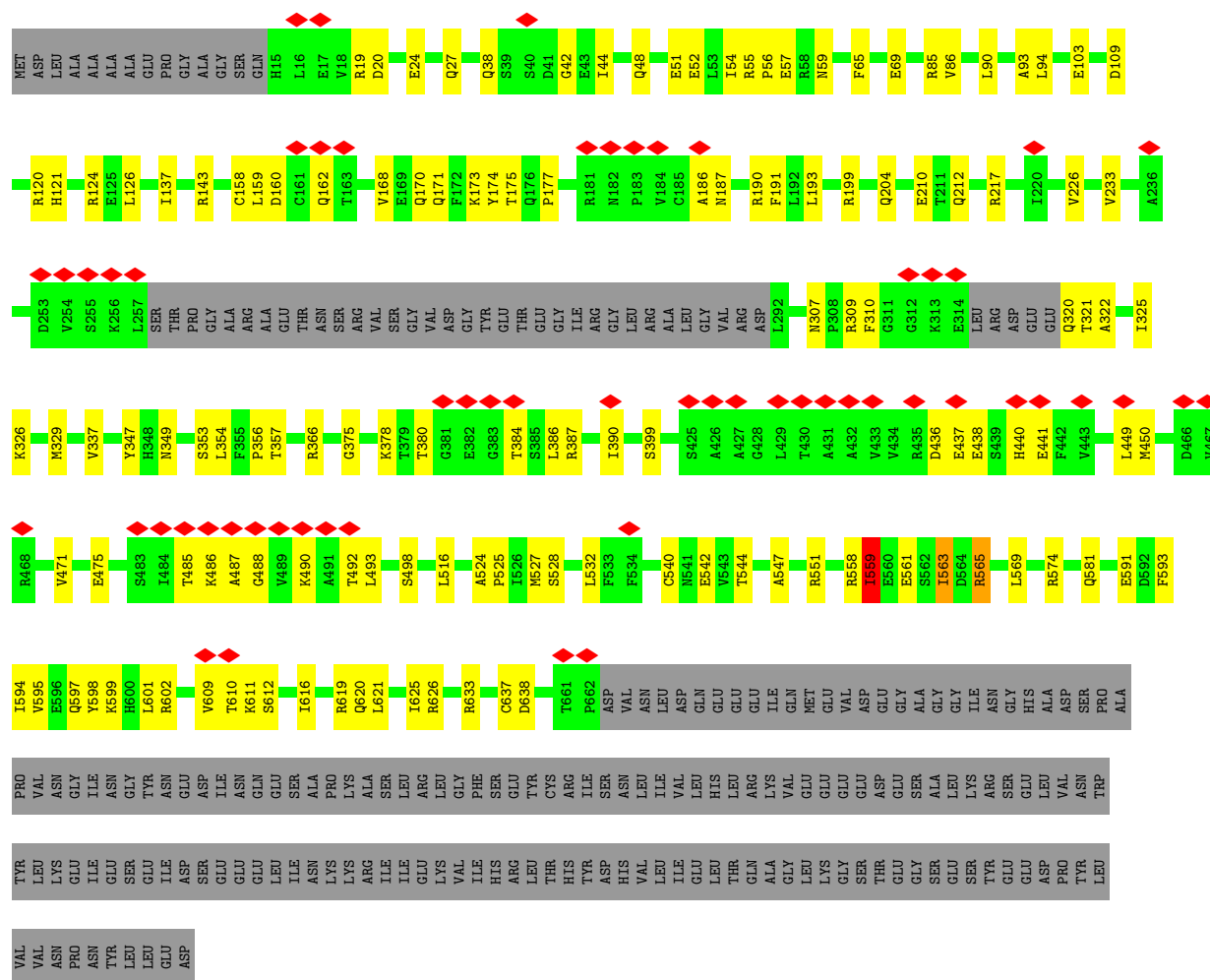


• Molecule 4: DNA replication licensing factor MCM5





• Molecule 5: DNA replication licensing factor MCM6

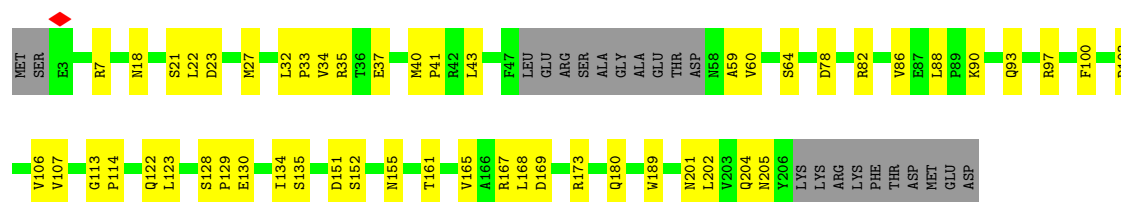


• Molecule 6: DNA replication licensing factor MCM7



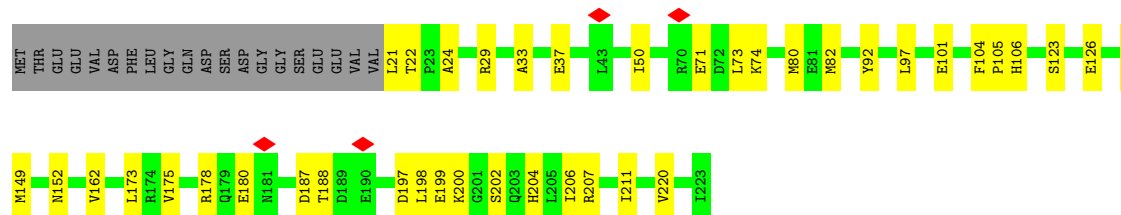


Chain C: 



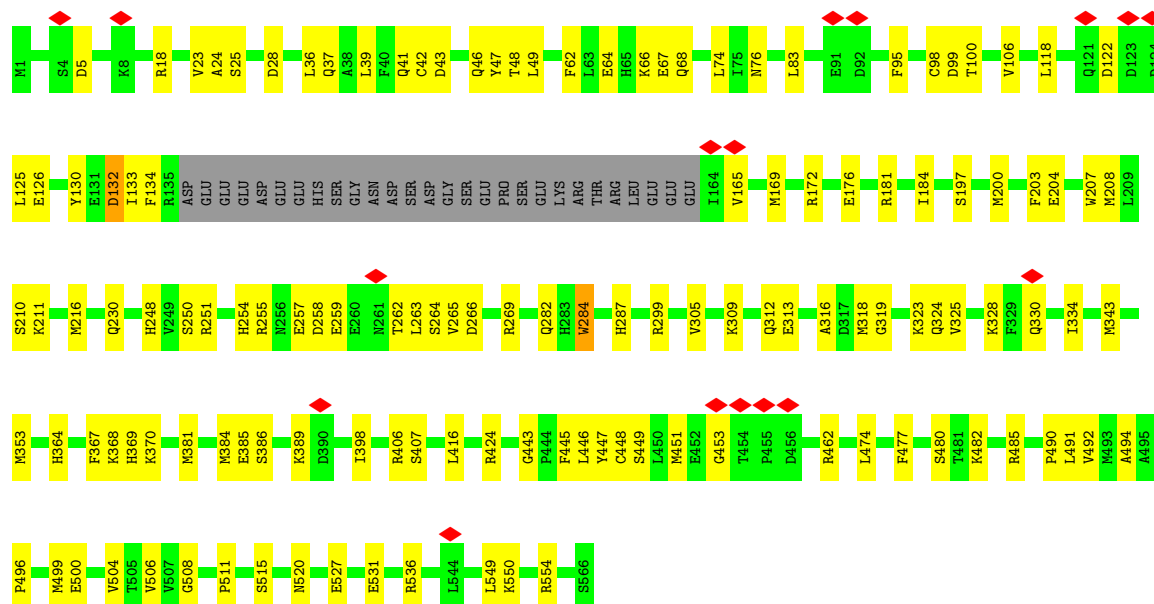
- Molecule 10: DNA replication complex GINS protein SLD5

Chain D: 



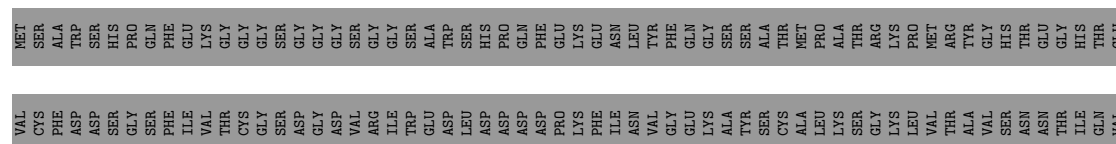
- Molecule 11: Cell division control protein 45 homolog

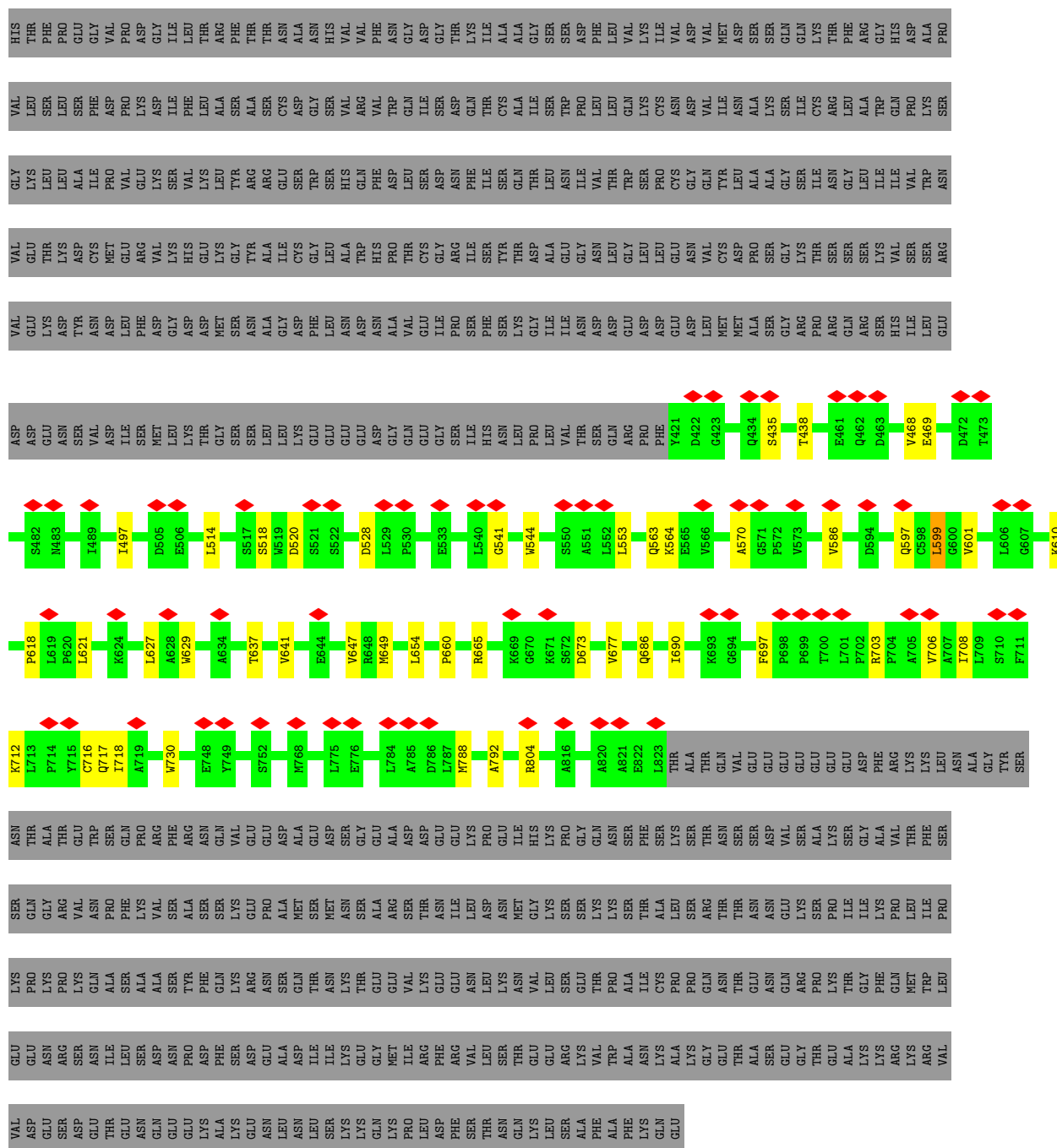
Chain E: 



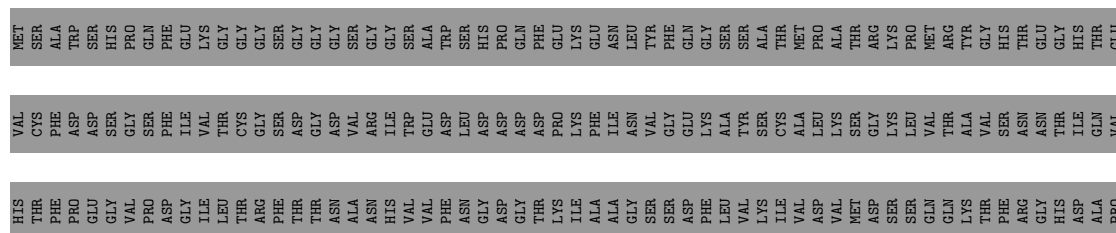
- Molecule 12: WD repeat and HMG-box DNA-binding protein 1

Chain F: 





- Molecule 12: WD repeat and HMG-box DNA-binding protein 1







## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, C1                               | Depositor |
| Number of particles used             | 15393                                   | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | FEI TITAN KRIOS                         | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 54.3                                    | Depositor |
| Minimum defocus (nm)                 | Not provided                            |           |
| Maximum defocus (nm)                 | Not provided                            |           |
| Magnification                        | Not provided                            |           |
| Image detector                       | FEI FALCON III (4k x 4k)                | Depositor |
| Maximum map value                    | 1.639                                   | Depositor |
| Minimum map value                    | -0.543                                  | Depositor |
| Average map value                    | 0.003                                   | Depositor |
| Map value standard deviation         | 0.070                                   | Depositor |
| Recommended contour level            | 0.4                                     | Depositor |
| Map size (Å)                         | 455.8, 455.8, 455.8                     | wwPDB     |
| Map dimensions                       | 430, 430, 430                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 1.06, 1.06, 1.06                        | Depositor |

## 5 Model quality [i](#)

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

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

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

| Mol | Chain | Bond lengths |             | Bond angles |                |
|-----|-------|--------------|-------------|-------------|----------------|
|     |       | RMSZ         | # $ Z  > 5$ | RMSZ        | # $ Z  > 5$    |
| 1   | 2     | 0.34         | 0/4923      | 0.44        | 0/6648         |
| 2   | 3     | 0.39         | 0/4859      | 0.47        | 0/6563         |
| 3   | 4     | 0.45         | 0/4870      | 0.50        | 1/6579 (0.0%)  |
| 4   | 5     | 0.40         | 0/4590      | 0.47        | 0/6171         |
| 5   | 6     | 0.43         | 0/4955      | 0.49        | 0/6685         |
| 6   | 7     | 0.43         | 0/4801      | 0.49        | 0/6482         |
| 7   | A     | 0.37         | 0/1645      | 0.46        | 0/2210         |
| 8   | B     | 0.44         | 0/1462      | 0.45        | 0/1981         |
| 9   | C     | 0.41         | 0/1587      | 0.43        | 0/2143         |
| 10  | D     | 0.41         | 0/1711      | 0.45        | 0/2305         |
| 11  | E     | 0.39         | 0/4472      | 0.42        | 0/6037         |
| 12  | F     | 0.09         | 0/3293      | 0.26        | 0/4462         |
| 12  | G     | 0.09         | 0/3293      | 0.26        | 0/4462         |
| 12  | H     | 0.09         | 0/3293      | 0.26        | 0/4462         |
| All | All   | 0.37         | 0/49754     | 0.43        | 1/67190 (0.0%) |

There are no bond length outliers.

All (1) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 3   | 4     | 458 | ILE  | N-CA-C | -5.10 | 105.89      | 113.39   |

There are no chirality outliers.

There are no planarity outliers.

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

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | 2     | 4832  | 0        | 4839     | 252     | 0            |
| 2   | 3     | 4782  | 0        | 4826     | 155     | 0            |
| 3   | 4     | 4784  | 0        | 4825     | 141     | 0            |
| 4   | 5     | 4524  | 0        | 4608     | 219     | 0            |
| 5   | 6     | 4873  | 0        | 4901     | 156     | 0            |
| 6   | 7     | 4727  | 0        | 4758     | 122     | 0            |
| 7   | A     | 1613  | 0        | 1606     | 84      | 0            |
| 8   | B     | 1431  | 0        | 1456     | 101     | 0            |
| 9   | C     | 1552  | 0        | 1504     | 45      | 0            |
| 10  | D     | 1679  | 0        | 1700     | 33      | 0            |
| 11  | E     | 4380  | 0        | 4331     | 239     | 0            |
| 12  | F     | 3213  | 0        | 3168     | 30      | 0            |
| 12  | G     | 3213  | 0        | 3168     | 94      | 0            |
| 12  | H     | 3213  | 0        | 3168     | 31      | 0            |
| 13  | 2     | 1     | 0        | 0        | 0       | 0            |
| 13  | 4     | 1     | 0        | 0        | 0       | 0            |
| 13  | 5     | 1     | 0        | 0        | 0       | 0            |
| 13  | 6     | 1     | 0        | 0        | 0       | 0            |
| 13  | 7     | 1     | 0        | 0        | 0       | 0            |
| All | All   | 48821 | 0        | 48858    | 1271    | 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 13.

All (1271) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:2:562:ARG:HH21 | 5:6:440:HIS:CD2  | 1.19                     | 1.58              |
| 1:2:377:ARG:CG   | 1:2:565:VAL:HG22 | 1.33                     | 1.57              |
| 8:B:59:ARG:CZ    | 12:G:703:ARG:HD2 | 1.20                     | 1.57              |
| 1:2:377:ARG:CD   | 1:2:565:VAL:HG22 | 1.33                     | 1.56              |
| 2:3:416:ARG:CG   | 4:5:456:VAL:HG11 | 1.31                     | 1.55              |
| 1:2:511:HIS:CE1  | 4:5:342:SER:HB2  | 1.41                     | 1.54              |
| 11:E:210:SER:HB2 | 12:G:473:THR:CG2 | 1.37                     | 1.52              |
| 1:2:377:ARG:HG3  | 1:2:565:VAL:CG2  | 1.31                     | 1.51              |
| 1:2:549:GLN:HG2  | 5:6:471:VAL:CG1  | 1.41                     | 1.49              |
| 1:2:549:GLN:CG   | 5:6:471:VAL:HG11 | 1.43                     | 1.46              |
| 3:4:521:GLN:NE2  | 6:7:464:GLN:HG2  | 1.29                     | 1.45              |
| 11:E:254:HIS:CE1 | 12:G:458:TYR:CZ  | 1.79                     | 1.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:2:549:GLN:CD   | 5:6:471:VAL:CG1   | 1.90                     | 1.44              |
| 1:2:549:GLN:CG   | 5:6:471:VAL:CG1   | 1.93                     | 1.42              |
| 8:B:59:ARG:CZ    | 12:G:703:ARG:CD   | 1.98                     | 1.40              |
| 3:4:568:ASN:ND2  | 5:6:217:ARG:NH2   | 1.69                     | 1.40              |
| 1:2:314:SER:HB3  | 1:2:563:HIS:NE2   | 1.33                     | 1.38              |
| 11:E:254:HIS:HE1 | 12:G:458:TYR:CZ   | 1.03                     | 1.37              |
| 5:6:357:THR:HA   | 5:6:551:ARG:NH1   | 1.05                     | 1.36              |
| 11:E:255:ARG:O   | 12:G:701:LEU:CD1  | 1.72                     | 1.35              |
| 1:2:549:GLN:CD   | 5:6:471:VAL:HG11  | 0.93                     | 1.35              |
| 4:5:86:ASP:OD2   | 11:E:334:ILE:CG2  | 1.76                     | 1.33              |
| 1:2:549:GLN:OE1  | 5:6:471:VAL:CG1   | 1.76                     | 1.32              |
| 11:E:210:SER:CB  | 12:G:473:THR:CG2  | 2.06                     | 1.31              |
| 1:2:580:ASP:HB3  | 4:5:238:HIS:NE2   | 1.43                     | 1.31              |
| 11:E:255:ARG:O   | 12:G:701:LEU:HD11 | 1.16                     | 1.31              |
| 8:B:111:ASP:OD1  | 11:E:265:VAL:N    | 1.61                     | 1.30              |
| 1:2:276:ARG:NH2  | 11:E:318:MET:O    | 1.66                     | 1.29              |
| 1:2:549:GLN:OE1  | 5:6:471:VAL:HG11  | 1.20                     | 1.29              |
| 1:2:562:ARG:NH2  | 5:6:440:HIS:CD2   | 2.00                     | 1.28              |
| 1:2:377:ARG:CG   | 1:2:565:VAL:CG2   | 1.94                     | 1.28              |
| 5:6:357:THR:CA   | 5:6:551:ARG:NH1   | 1.99                     | 1.26              |
| 8:B:59:ARG:NE    | 12:G:703:ARG:HD2  | 1.52                     | 1.24              |
| 5:6:357:THR:CA   | 5:6:551:ARG:HH11  | 1.49                     | 1.24              |
| 11:E:210:SER:CB  | 12:G:473:THR:HG23 | 1.67                     | 1.23              |
| 2:3:416:ARG:HG2  | 4:5:456:VAL:CG1   | 1.68                     | 1.22              |
| 2:3:487:LEU:CD2  | 6:7:241:SER:OG    | 1.88                     | 1.20              |
| 1:2:765:ARG:NH2  | 4:5:385:THR:HG21  | 1.55                     | 1.20              |
| 11:E:257:GLU:OE1 | 12:G:701:LEU:HD12 | 1.33                     | 1.20              |
| 1:2:561:GLN:HE21 | 5:6:488:GLY:CA    | 1.54                     | 1.20              |
| 8:B:59:ARG:NH1   | 12:G:703:ARG:CD   | 2.04                     | 1.19              |
| 8:B:59:ARG:NH2   | 12:G:703:ARG:HB3  | 1.54                     | 1.19              |
| 2:3:444:VAL:HG12 | 6:7:246:VAL:O     | 1.40                     | 1.18              |
| 1:2:511:HIS:CE1  | 4:5:342:SER:CB    | 2.25                     | 1.18              |
| 3:4:568:ASN:ND2  | 5:6:217:ARG:HH21  | 1.28                     | 1.17              |
| 1:2:606:GLN:HE22 | 4:5:392:LYS:CE    | 1.57                     | 1.17              |
| 1:2:561:GLN:CG   | 5:6:487:ALA:O     | 1.92                     | 1.17              |
| 4:5:80:PHE:HD1   | 11:E:367:PHE:CE1  | 1.62                     | 1.17              |
| 4:5:80:PHE:CD1   | 11:E:367:PHE:CE1  | 2.31                     | 1.17              |
| 1:2:526:GLY:HA2  | 5:6:619:ARG:CZ    | 1.74                     | 1.16              |
| 11:E:254:HIS:HE1 | 12:G:458:TYR:CE1  | 1.54                     | 1.16              |
| 3:4:555:GLN:OE1  | 5:6:143:ARG:NH1   | 1.74                     | 1.16              |
| 1:2:314:SER:CB   | 1:2:563:HIS:NE2   | 2.09                     | 1.16              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 3:4:568:ASN:HD22 | 5:6:217:ARG:NH2   | 1.26                     | 1.16              |
| 11:E:251:ARG:HD3 | 12:G:480:HIS:HB2  | 1.28                     | 1.14              |
| 2:3:487:LEU:HD21 | 6:7:241:SER:OG    | 1.41                     | 1.13              |
| 1:2:606:GLN:HE22 | 4:5:392:LYS:HE3   | 1.10                     | 1.11              |
| 1:2:561:GLN:HG3  | 5:6:487:ALA:O     | 1.47                     | 1.11              |
| 4:5:42:TYR:HA    | 11:E:367:PHE:CE2  | 1.84                     | 1.11              |
| 1:2:377:ARG:HD3  | 1:2:565:VAL:HG22  | 1.29                     | 1.11              |
| 1:2:561:GLN:HE21 | 5:6:488:GLY:HA2   | 1.10                     | 1.10              |
| 4:5:86:ASP:OD2   | 11:E:334:ILE:HG22 | 1.36                     | 1.09              |
| 4:5:56:ARG:NH2   | 8:B:119:ASP:OD1   | 1.85                     | 1.09              |
| 8:B:40:LEU:HD21  | 12:G:688:ARG:CD   | 1.83                     | 1.09              |
| 2:3:416:ARG:CB   | 4:5:456:VAL:HG11  | 1.82                     | 1.08              |
| 8:B:59:ARG:NH1   | 12:G:703:ARG:HD3  | 1.61                     | 1.08              |
| 2:3:416:ARG:CG   | 4:5:456:VAL:CG1   | 2.28                     | 1.07              |
| 1:2:562:ARG:NH2  | 5:6:440:HIS:NE2   | 2.02                     | 1.07              |
| 11:E:210:SER:HB2 | 12:G:473:THR:HG21 | 1.10                     | 1.07              |
| 3:4:521:GLN:NE2  | 6:7:464:GLN:CG    | 2.18                     | 1.06              |
| 4:5:43:ARG:HH21  | 11:E:266:ASP:CG   | 1.63                     | 1.06              |
| 4:5:86:ASP:OD2   | 11:E:334:ILE:HG21 | 1.56                     | 1.05              |
| 4:5:86:ASP:CG    | 11:E:334:ILE:HG22 | 1.80                     | 1.05              |
| 8:B:40:LEU:HD11  | 12:G:688:ARG:CZ   | 1.87                     | 1.05              |
| 11:E:259:GLU:OE2 | 12:G:701:LEU:C    | 1.98                     | 1.05              |
| 1:2:377:ARG:HG3  | 1:2:565:VAL:HG21  | 1.06                     | 1.04              |
| 1:2:271:TYR:OH   | 11:E:313:GLU:OE1  | 1.75                     | 1.03              |
| 4:5:86:ASP:CG    | 11:E:334:ILE:CG2  | 2.32                     | 1.03              |
| 1:2:564:PRO:HA   | 5:6:441:GLU:CD    | 1.80                     | 1.02              |
| 1:2:377:ARG:CD   | 1:2:565:VAL:CG2   | 2.27                     | 1.01              |
| 2:3:462:MET:O    | 6:7:407:ARG:NH1   | 1.94                     | 1.00              |
| 1:2:271:TYR:CE1  | 11:E:313:GLU:OE1  | 2.14                     | 1.00              |
| 8:B:111:ASP:OD2  | 11:E:264:SER:OG   | 1.80                     | 0.99              |
| 3:4:521:GLN:HE21 | 6:7:464:GLN:HG2   | 1.23                     | 0.99              |
| 1:2:562:ARG:HH21 | 5:6:440:HIS:HD2   | 1.07                     | 0.99              |
| 1:2:549:GLN:HG2  | 5:6:471:VAL:HG12  | 1.01                     | 0.98              |
| 2:3:439:GLU:OE1  | 4:5:472:ALA:O     | 1.82                     | 0.98              |
| 8:B:59:ARG:NH2   | 12:G:703:ARG:CB   | 2.28                     | 0.97              |
| 2:3:465:THR:CG2  | 6:7:407:ARG:HG2   | 1.94                     | 0.96              |
| 11:E:254:HIS:CE1 | 12:G:458:TYR:CE1  | 2.14                     | 0.96              |
| 1:2:511:HIS:HE1  | 4:5:342:SER:HB2   | 1.29                     | 0.96              |
| 8:B:40:LEU:HD11  | 12:G:688:ARG:NH2  | 1.81                     | 0.95              |
| 4:5:43:ARG:NE    | 11:E:266:ASP:OD1  | 1.98                     | 0.95              |
| 1:2:549:GLN:OE1  | 5:6:471:VAL:CG2   | 2.15                     | 0.94              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 4:5:42:TYR:HE1   | 11:E:367:PHE:HB3  | 1.29                     | 0.94              |
| 1:2:561:GLN:HG2  | 5:6:487:ALA:O     | 1.68                     | 0.94              |
| 11:E:259:GLU:OE2 | 12:G:701:LEU:CB   | 2.17                     | 0.93              |
| 2:3:416:ARG:HG2  | 4:5:456:VAL:HG11  | 0.93                     | 0.93              |
| 8:B:56:GLN:OE1   | 11:E:211:LYS:O    | 1.87                     | 0.93              |
| 11:E:257:GLU:OE1 | 12:G:701:LEU:CD1  | 2.17                     | 0.92              |
| 4:5:46:THR:HG21  | 11:E:406:ARG:O    | 1.69                     | 0.92              |
| 1:2:765:ARG:HH21 | 4:5:385:THR:HG21  | 1.26                     | 0.91              |
| 4:5:40:ARG:NH2   | 8:B:119:ASP:OD2   | 2.03                     | 0.91              |
| 1:2:561:GLN:NE2  | 5:6:488:GLY:HA2   | 1.85                     | 0.91              |
| 1:2:606:GLN:NE2  | 4:5:392:LYS:CE    | 2.34                     | 0.91              |
| 1:2:511:HIS:NE2  | 4:5:342:SER:HB2   | 1.86                     | 0.90              |
| 8:B:111:ASP:OD1  | 11:E:264:SER:HA   | 1.70                     | 0.90              |
| 1:2:561:GLN:NE2  | 5:6:488:GLY:CA    | 2.34                     | 0.90              |
| 1:2:271:TYR:CZ   | 11:E:313:GLU:OE1  | 2.24                     | 0.90              |
| 8:B:59:ARG:HH21  | 12:G:703:ARG:HB3  | 1.31                     | 0.90              |
| 8:B:111:ASP:OD1  | 11:E:264:SER:CA   | 2.19                     | 0.90              |
| 1:2:549:GLN:HB3  | 5:6:475:GLU:OE2   | 1.73                     | 0.89              |
| 3:4:568:ASN:HD22 | 5:6:217:ARG:CZ    | 1.85                     | 0.89              |
| 7:A:166:SER:O    | 11:E:68:GLN:HG2   | 1.72                     | 0.89              |
| 11:E:207:TRP:CZ2 | 12:G:478:ALA:O    | 2.25                     | 0.88              |
| 11:E:259:GLU:OE2 | 12:G:701:LEU:HB3  | 1.72                     | 0.88              |
| 1:2:549:GLN:OE1  | 5:6:471:VAL:HG21  | 1.71                     | 0.88              |
| 8:B:111:ASP:OD1  | 11:E:264:SER:C    | 2.16                     | 0.88              |
| 1:2:606:GLN:NE2  | 4:5:392:LYS:HE3   | 1.88                     | 0.87              |
| 2:3:487:LEU:HD23 | 6:7:241:SER:OG    | 1.72                     | 0.87              |
| 1:2:526:GLY:CA   | 5:6:619:ARG:CZ    | 2.51                     | 0.87              |
| 3:4:555:GLN:HE22 | 5:6:143:ARG:HH22  | 1.23                     | 0.87              |
| 4:5:42:TYR:CE1   | 11:E:367:PHE:CB   | 2.58                     | 0.87              |
| 5:6:356:PRO:O    | 5:6:551:ARG:NH1   | 2.07                     | 0.86              |
| 11:E:255:ARG:O   | 12:G:701:LEU:HD13 | 1.73                     | 0.86              |
| 3:4:521:GLN:HE21 | 6:7:464:GLN:CG    | 1.81                     | 0.85              |
| 2:3:534:MET:HE3  | 4:5:594:ARG:HG2   | 1.58                     | 0.85              |
| 2:3:444:VAL:CG1  | 6:7:246:VAL:O     | 2.24                     | 0.85              |
| 8:B:110:ALA:HB3  | 11:E:264:SER:HB2  | 1.59                     | 0.85              |
| 3:4:568:ASN:ND2  | 5:6:217:ARG:CZ    | 2.40                     | 0.85              |
| 1:2:606:GLN:HE22 | 4:5:392:LYS:NZ    | 1.74                     | 0.85              |
| 4:5:80:PHE:CE1   | 11:E:367:PHE:CE1  | 2.65                     | 0.85              |
| 3:4:521:GLN:HE22 | 6:7:464:GLN:HG2   | 1.32                     | 0.84              |
| 1:2:314:SER:HB3  | 1:2:563:HIS:CD2   | 2.14                     | 0.83              |
| 1:2:606:GLN:NE2  | 4:5:392:LYS:NZ    | 2.26                     | 0.83              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:5:42:TYR:CE1    | 11:E:367:PHE:HB3  | 2.13                     | 0.83              |
| 4:5:42:TYR:CD1    | 11:E:367:PHE:CD2  | 2.65                     | 0.83              |
| 8:B:56:GLN:OE1    | 11:E:211:LYS:C    | 2.21                     | 0.82              |
| 1:2:656:ARG:NH2   | 4:5:385:THR:OG1   | 2.13                     | 0.81              |
| 1:2:765:ARG:HH22  | 4:5:385:THR:HG21  | 1.43                     | 0.81              |
| 3:4:555:GLN:NE2   | 5:6:143:ARG:HH22  | 1.78                     | 0.81              |
| 4:5:42:TYR:HE1    | 11:E:367:PHE:CB   | 1.92                     | 0.81              |
| 1:2:377:ARG:CG    | 1:2:565:VAL:HG21  | 1.88                     | 0.81              |
| 4:5:43:ARG:NH2    | 11:E:266:ASP:CG   | 2.39                     | 0.81              |
| 1:2:564:PRO:HA    | 5:6:441:GLU:OE2   | 1.80                     | 0.80              |
| 8:B:59:ARG:NH1    | 12:G:703:ARG:HD2  | 1.80                     | 0.80              |
| 4:5:42:TYR:HA     | 11:E:367:PHE:HE2  | 1.46                     | 0.80              |
| 3:4:512:PRO:HB2   | 6:7:600:TYR:CE2   | 2.17                     | 0.80              |
| 11:E:207:TRP:HZ2  | 12:G:478:ALA:O    | 1.63                     | 0.79              |
| 2:3:416:ARG:HG3   | 4:5:456:VAL:HG11  | 1.59                     | 0.79              |
| 2:3:416:ARG:CB    | 4:5:456:VAL:CG1   | 2.56                     | 0.79              |
| 5:6:159:LEU:HB3   | 5:6:187:ASN:HD21  | 1.48                     | 0.79              |
| 8:B:129:ARG:NH2   | 9:C:151:ASP:OD2   | 2.16                     | 0.79              |
| 9:C:34:VAL:HG12   | 9:C:86:VAL:HG12   | 1.65                     | 0.79              |
| 5:6:356:PRO:C     | 5:6:551:ARG:HH12  | 1.91                     | 0.79              |
| 8:B:109:LYS:HG3   | 11:E:262:THR:HB   | 1.63                     | 0.78              |
| 7:A:98:LEU:H      | 7:A:103:ARG:HH21  | 1.31                     | 0.78              |
| 1:2:561:GLN:HE21  | 5:6:488:GLY:HA3   | 1.45                     | 0.78              |
| 1:2:765:ARG:HH21  | 4:5:385:THR:CG2   | 1.96                     | 0.78              |
| 8:B:40:LEU:HD21   | 12:G:688:ARG:HD3  | 1.65                     | 0.78              |
| 1:2:271:TYR:HE1   | 11:E:313:GLU:OE1  | 1.63                     | 0.78              |
| 3:4:731:PRO:HD2   | 5:6:399:SER:OG    | 1.84                     | 0.77              |
| 12:F:716:CYS:H    | 12:G:563:GLN:HE22 | 1.31                     | 0.77              |
| 1:2:562:ARG:CZ    | 5:6:440:HIS:NE2   | 2.48                     | 0.77              |
| 11:E:210:SER:HB2  | 12:G:473:THR:HG22 | 1.59                     | 0.77              |
| 1:2:549:GLN:OE1   | 5:6:471:VAL:CB    | 2.31                     | 0.77              |
| 3:4:521:GLN:HE21  | 6:7:464:GLN:CD    | 1.92                     | 0.77              |
| 1:2:224:LYS:O     | 11:E:312:GLN:HB3  | 1.84                     | 0.77              |
| 11:E:389:LYS:HZ1  | 11:E:462:ARG:HD2  | 1.50                     | 0.77              |
| 12:F:563:GLN:HE22 | 12:H:716:CYS:H    | 1.31                     | 0.77              |
| 12:G:716:CYS:H    | 12:H:563:GLN:HE22 | 1.31                     | 0.77              |
| 2:3:4:ARG:NH1     | 9:C:107:VAL:HA    | 2.00                     | 0.77              |
| 11:E:210:SER:OG   | 12:G:473:THR:HG23 | 1.85                     | 0.76              |
| 11:E:257:GLU:HB2  | 12:G:458:TYR:HE1  | 1.49                     | 0.76              |
| 1:2:561:GLN:HE22  | 1:2:564:PRO:HD3   | 1.49                     | 0.76              |
| 3:4:161:ALA:O     | 3:4:165:ASN:ND2   | 2.18                     | 0.76              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:B:59:ARG:NH2   | 12:G:703:ARG:CG   | 2.49                     | 0.76              |
| 8:B:111:ASP:CG   | 11:E:264:SER:HG   | 1.93                     | 0.76              |
| 3:4:469:SER:HB3  | 6:7:369:MET:SD    | 2.25                     | 0.75              |
| 1:2:377:ARG:HD2  | 1:2:565:VAL:HG22  | 1.65                     | 0.75              |
| 3:4:555:GLN:CD   | 5:6:143:ARG:HH12  | 1.94                     | 0.75              |
| 4:5:43:ARG:NH2   | 11:E:266:ASP:OD1  | 2.20                     | 0.75              |
| 4:5:80:PHE:CE1   | 11:E:367:PHE:CZ   | 2.75                     | 0.75              |
| 1:2:377:ARG:CB   | 1:2:565:VAL:CG2   | 2.65                     | 0.74              |
| 2:3:100:ARG:NH2  | 2:3:150:SER:O     | 2.20                     | 0.74              |
| 1:2:667:VAL:HG12 | 5:6:602:ARG:HH21  | 1.51                     | 0.74              |
| 8:B:59:ARG:CZ    | 12:G:703:ARG:CG   | 2.65                     | 0.74              |
| 7:A:170:LYS:NZ   | 11:E:64:GLU:OE2   | 2.16                     | 0.74              |
| 8:B:40:LEU:HD11  | 12:G:688:ARG:NE   | 2.02                     | 0.74              |
| 4:5:80:PHE:HD1   | 11:E:367:PHE:CD1  | 2.05                     | 0.74              |
| 3:4:191:PRO:HB2  | 3:4:194:MET:HB2   | 1.70                     | 0.73              |
| 8:B:7:GLU:OE1    | 9:C:189:TRP:NE1   | 2.21                     | 0.73              |
| 11:E:257:GLU:CD  | 12:G:701:LEU:HD12 | 2.14                     | 0.73              |
| 2:3:658:VAL:HG23 | 2:3:662:THR:HG21  | 1.71                     | 0.73              |
| 2:3:416:ARG:HB3  | 4:5:456:VAL:CG1   | 2.18                     | 0.73              |
| 11:E:99:ASP:OD1  | 11:E:100:THR:N    | 2.22                     | 0.73              |
| 1:2:580:ASP:CB   | 4:5:238:HIS:NE2   | 2.39                     | 0.72              |
| 8:B:109:LYS:CG   | 11:E:262:THR:HB   | 2.18                     | 0.72              |
| 1:2:377:ARG:HG3  | 1:2:565:VAL:CB    | 2.16                     | 0.72              |
| 1:2:561:GLN:NE2  | 5:6:488:GLY:HA3   | 2.02                     | 0.72              |
| 7:A:179:ARG:NH2  | 7:A:183:GLU:OE2   | 2.23                     | 0.72              |
| 5:6:187:ASN:ND2  | 5:6:190:ARG:O     | 2.23                     | 0.72              |
| 8:B:40:LEU:HD21  | 12:G:688:ARG:NE   | 2.04                     | 0.72              |
| 7:A:195:LEU:HD22 | 11:E:41:GLN:HE22  | 1.55                     | 0.72              |
| 1:2:526:GLY:HA2  | 5:6:619:ARG:NH2   | 2.05                     | 0.71              |
| 8:B:59:ARG:NH2   | 12:G:703:ARG:HD2  | 2.01                     | 0.71              |
| 4:5:537:ILE:HA   | 4:5:540:HIS:HB3   | 1.71                     | 0.71              |
| 5:6:27:GLN:HG3   | 5:6:93:ALA:HB2    | 1.73                     | 0.71              |
| 5:6:307:ASN:O    | 5:6:309:ARG:NH1   | 2.23                     | 0.71              |
| 5:6:54:ILE:HD11  | 5:6:103:GLU:HB2   | 1.71                     | 0.71              |
| 2:3:347:SER:HG   | 2:3:608:VAL:N     | 1.88                     | 0.71              |
| 11:E:210:SER:CB  | 12:G:473:THR:HG21 | 1.97                     | 0.71              |
| 11:E:257:GLU:HB2 | 12:G:458:TYR:CE1  | 2.25                     | 0.70              |
| 7:A:176:PHE:CE1  | 11:E:41:GLN:HG2   | 2.25                     | 0.70              |
| 8:B:111:ASP:CG   | 11:E:264:SER:OG   | 2.34                     | 0.70              |
| 4:5:43:ARG:CZ    | 11:E:266:ASP:OD1  | 2.40                     | 0.70              |
| 5:6:310:PHE:CZ   | 5:6:574:ARG:HG2   | 2.27                     | 0.70              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:3:230:GLU:OE1   | 6:7:72:ARG:NH2    | 2.25                     | 0.70              |
| 8:B:136:VAL:HG13  | 8:B:167:MET:HE1   | 1.74                     | 0.70              |
| 4:5:79:SER:OG     | 11:E:368:LYS:HB3  | 1.91                     | 0.69              |
| 11:E:287:HIS:HB2  | 11:E:325:VAL:HG12 | 1.73                     | 0.69              |
| 3:4:568:ASN:HD22  | 5:6:217:ARG:HH21  | 0.75                     | 0.69              |
| 7:A:147:TYR:HE2   | 11:E:46:GLN:HG2   | 1.56                     | 0.69              |
| 1:2:818:PHE:HA    | 1:2:821:TYR:HB3   | 1.75                     | 0.69              |
| 7:A:151:ARG:CZ    | 11:E:398:ILE:HG23 | 2.23                     | 0.69              |
| 11:E:210:SER:HB3  | 12:G:473:THR:HG23 | 1.70                     | 0.69              |
| 1:2:377:ARG:CB    | 1:2:565:VAL:HG22  | 2.19                     | 0.69              |
| 2:3:4:ARG:NH1     | 9:C:106:VAL:O     | 2.26                     | 0.69              |
| 8:B:40:LEU:CD2    | 12:G:688:ARG:HD3  | 2.22                     | 0.69              |
| 1:2:325:VAL:HA    | 1:2:368:THR:HG23  | 1.74                     | 0.68              |
| 1:2:754:SER:HB2   | 1:2:761:PRO:HB3   | 1.75                     | 0.68              |
| 11:E:263:LEU:HD23 | 11:E:269:ARG:HH21 | 1.57                     | 0.68              |
| 1:2:580:ASP:HB3   | 4:5:238:HIS:CD2   | 2.28                     | 0.68              |
| 2:3:534:MET:CE    | 4:5:594:ARG:HG2   | 2.24                     | 0.68              |
| 1:2:224:LYS:HB3   | 11:E:312:GLN:HB2  | 1.75                     | 0.68              |
| 11:E:257:GLU:CB   | 12:G:458:TYR:HE1  | 2.06                     | 0.68              |
| 3:4:219:ASP:OD1   | 3:4:220:LYS:N     | 2.26                     | 0.68              |
| 1:2:593:ASN:ND2   | 1:2:596:ASP:OD2   | 2.27                     | 0.68              |
| 5:6:390:ILE:O     | 5:6:498:SER:OG    | 2.12                     | 0.68              |
| 3:4:335:HIS:O     | 3:4:335:HIS:ND1   | 2.27                     | 0.68              |
| 2:3:416:ARG:HG2   | 4:5:456:VAL:CB    | 2.24                     | 0.68              |
| 3:4:546:TYR:CE2   | 6:7:472:ALA:HB1   | 2.29                     | 0.68              |
| 1:2:526:GLY:HA2   | 5:6:619:ARG:NE    | 2.09                     | 0.67              |
| 4:5:47:ASP:HB2    | 11:E:406:ARG:HH22 | 1.58                     | 0.67              |
| 11:E:251:ARG:HD3  | 12:G:480:HIS:CB   | 2.18                     | 0.67              |
| 7:A:176:PHE:HB2   | 11:E:47:TYR:CE1   | 2.30                     | 0.67              |
| 8:B:40:LEU:CD2    | 12:G:688:ARG:CD   | 2.68                     | 0.67              |
| 2:3:444:VAL:O     | 6:7:246:VAL:HB    | 1.95                     | 0.67              |
| 4:5:42:TYR:OH     | 11:E:368:LYS:NZ   | 2.25                     | 0.67              |
| 1:2:507:PRO:HD3   | 1:2:513:VAL:HG12  | 1.77                     | 0.67              |
| 4:5:80:PHE:CD1    | 11:E:367:PHE:CZ   | 2.83                     | 0.67              |
| 1:2:549:GLN:CG    | 5:6:471:VAL:HG12  | 1.84                     | 0.67              |
| 3:4:388:VAL:HG12  | 3:4:423:LYS:HG2   | 1.76                     | 0.67              |
| 5:6:20:ASP:OD1    | 5:6:85:ARG:NH2    | 2.28                     | 0.67              |
| 2:3:70:ASP:OD2    | 2:3:77:TYR:N      | 2.26                     | 0.67              |
| 4:5:79:SER:CB     | 11:E:368:LYS:HB3  | 2.24                     | 0.67              |
| 1:2:757:THR:HG22  | 1:2:758:GLY:H     | 1.60                     | 0.66              |
| 2:3:645:GLN:OE1   | 2:3:654:ARG:NH2   | 2.29                     | 0.66              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 11:E:447:TYR:OH  | 11:E:554:ARG:NH2  | 2.28                     | 0.66              |
| 7:A:144:LYS:NZ   | 8:B:11:GLU:OE2    | 2.28                     | 0.66              |
| 1:2:204:ARG:O    | 1:2:213:ASN:ND2   | 2.28                     | 0.66              |
| 3:4:726:MET:HG3  | 3:4:727:VAL:H     | 1.59                     | 0.66              |
| 7:A:149:GLU:OE2  | 7:A:174:GLN:NE2   | 2.28                     | 0.66              |
| 8:B:56:GLN:OE1   | 11:E:211:LYS:HB3  | 1.96                     | 0.66              |
| 1:2:328:ASN:HD22 | 1:2:364:ASN:HB2   | 1.60                     | 0.66              |
| 10:D:202:SER:HG  | 10:D:204:HIS:HE2  | 1.43                     | 0.66              |
| 2:3:91:ARG:NH2   | 2:3:268:ASP:OD1   | 2.28                     | 0.66              |
| 1:2:198:ARG:NH2  | 1:2:241:GLU:OE2   | 2.29                     | 0.66              |
| 2:3:465:THR:HG22 | 6:7:407:ARG:HG2   | 1.76                     | 0.66              |
| 1:2:301:HIS:HB3  | 1:2:306:ILE:HD11  | 1.77                     | 0.66              |
| 4:5:132:ALA:HA   | 11:E:328:LYS:HD2  | 1.78                     | 0.66              |
| 8:B:23:LEU:HB3   | 8:B:36:PHE:HD2    | 1.61                     | 0.66              |
| 7:A:74:ARG:NH2   | 9:C:18:ASN:O      | 2.29                     | 0.66              |
| 1:2:365:MET:HB2  | 4:5:273:LYS:HZ1   | 1.59                     | 0.65              |
| 2:3:465:THR:HG21 | 6:7:407:ARG:HG2   | 1.76                     | 0.65              |
| 3:4:400:ARG:HG2  | 3:4:408:VAL:HG12  | 1.76                     | 0.65              |
| 4:5:86:ASP:CG    | 11:E:334:ILE:HG21 | 2.13                     | 0.65              |
| 10:D:71:GLU:OE1  | 10:D:73:LEU:N     | 2.25                     | 0.65              |
| 2:3:151:PHE:H    | 2:3:155:HIS:HE1   | 1.43                     | 0.65              |
| 4:5:441:VAL:HG22 | 4:5:483:SER:HB2   | 1.78                     | 0.65              |
| 10:D:22:THR:HG22 | 10:D:24:ALA:H     | 1.60                     | 0.65              |
| 11:E:257:GLU:CB  | 12:G:458:TYR:CE1  | 2.80                     | 0.65              |
| 3:4:246:PHE:HA   | 3:4:249:TYR:CD2   | 2.32                     | 0.65              |
| 5:6:310:PHE:HZ   | 5:6:574:ARG:HG2   | 1.61                     | 0.65              |
| 1:2:564:PRO:CA   | 5:6:441:GLU:CD    | 2.62                     | 0.65              |
| 11:E:323:LYS:HG3 | 11:E:324:GLN:HE21 | 1.61                     | 0.65              |
| 11:E:448:CYS:SG  | 11:E:449:SER:N    | 2.70                     | 0.65              |
| 1:2:514:ARG:O    | 1:2:772:ARG:NH1   | 2.30                     | 0.65              |
| 1:2:733:PRO:HA   | 1:2:784:ASP:HB3   | 1.79                     | 0.65              |
| 3:4:568:ASN:HD21 | 5:6:217:ARG:NH2   | 1.89                     | 0.65              |
| 5:6:558:ARG:HB3  | 5:6:561:GLU:HB2   | 1.79                     | 0.65              |
| 2:3:544:ASP:OD2  | 2:3:548:ARG:NH2   | 2.31                     | 0.64              |
| 4:5:416:ALA:HA   | 4:5:430:GLU:O     | 1.97                     | 0.64              |
| 2:3:152:GLY:HA3  | 9:C:103:ASP:HB2   | 1.77                     | 0.64              |
| 8:B:51:ASN:ND2   | 10:D:80:MET:SD    | 2.70                     | 0.64              |
| 2:3:381:ARG:NH2  | 2:3:385:ASN:OD1   | 2.28                     | 0.64              |
| 7:A:175:HIS:HA   | 11:E:48:THR:HA    | 1.78                     | 0.64              |
| 4:5:115:PRO:HA   | 8:B:130:VAL:HG22  | 1.79                     | 0.64              |
| 4:5:167:ARG:HH11 | 4:5:181:ASN:HA    | 1.63                     | 0.64              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:6:436:ASP:O     | 5:6:440:HIS:N     | 2.31                     | 0.64              |
| 11:E:28:ASP:OD1   | 11:E:197:SER:OG   | 2.15                     | 0.64              |
| 2:3:61:GLN:HG3    | 2:3:124:ALA:HB2   | 1.79                     | 0.64              |
| 4:5:47:ASP:CB     | 11:E:406:ARG:HH22 | 2.11                     | 0.64              |
| 4:5:42:TYR:OH     | 11:E:368:LYS:HG2  | 1.97                     | 0.64              |
| 4:5:53:PHE:HZ     | 8:B:114:ARG:HG2   | 1.62                     | 0.64              |
| 6:7:416:ALA:HB3   | 6:7:469:ILE:HD11  | 1.80                     | 0.64              |
| 4:5:421:ASP:HB3   | 4:5:424:SER:OG    | 1.98                     | 0.64              |
| 9:C:35:ARG:NH1    | 9:C:37:GLU:OE2    | 2.30                     | 0.64              |
| 3:4:471:TYR:HD2   | 3:4:658:TYR:HE1   | 1.46                     | 0.63              |
| 3:4:555:GLN:OE1   | 5:6:143:ARG:CZ    | 2.44                     | 0.63              |
| 12:G:654:LEU:HD12 | 12:H:610:LYS:HG2  | 1.80                     | 0.63              |
| 5:6:380:THR:HG1   | 5:6:384:THR:HG1   | 1.43                     | 0.63              |
| 7:A:176:PHE:HB3   | 11:E:47:TYR:H     | 1.63                     | 0.63              |
| 1:2:377:ARG:HG3   | 1:2:565:VAL:CG1   | 2.27                     | 0.63              |
| 1:2:485:ILE:HD11  | 1:2:531:GLN:HB2   | 1.80                     | 0.63              |
| 11:E:259:GLU:OE2  | 12:G:701:LEU:O    | 2.16                     | 0.63              |
| 3:4:425:ASP:HB3   | 3:4:428:ARG:HG3   | 1.81                     | 0.63              |
| 7:A:175:HIS:ND1   | 11:E:48:THR:HG23  | 2.14                     | 0.63              |
| 8:B:55:ARG:HH21   | 11:E:43:ASP:HA    | 1.63                     | 0.63              |
| 12:F:654:LEU:HD12 | 12:G:610:LYS:HG2  | 1.80                     | 0.63              |
| 8:B:175:GLN:HB2   | 10:D:188:THR:HG21 | 1.80                     | 0.63              |
| 4:5:80:PHE:HE1    | 11:E:367:PHE:CZ   | 2.16                     | 0.63              |
| 4:5:42:TYR:CE1    | 11:E:367:PHE:HB2  | 2.33                     | 0.62              |
| 5:6:187:ASN:HB2   | 5:6:190:ARG:HB2   | 1.80                     | 0.62              |
| 7:A:111:MET:O     | 7:A:115:ASN:ND2   | 2.29                     | 0.62              |
| 7:A:174:GLN:HG3   | 11:E:49:LEU:HB3   | 1.80                     | 0.62              |
| 10:D:21:LEU:HD21  | 10:D:29:ARG:HH12  | 1.63                     | 0.62              |
| 3:4:365:GLN:NE2   | 6:7:266:GLN:OE1   | 2.33                     | 0.62              |
| 2:3:162:THR:OG1   | 2:3:164:CYS:SG    | 2.54                     | 0.62              |
| 12:F:610:LYS:HG2  | 12:H:654:LEU:HD12 | 1.80                     | 0.62              |
| 1:2:500:PHE:O     | 1:2:728:LYS:NZ    | 2.33                     | 0.62              |
| 2:3:416:ARG:HG2   | 4:5:456:VAL:CG2   | 2.29                     | 0.62              |
| 12:G:518:SER:OG   | 12:G:520:ASP:OD1  | 2.17                     | 0.62              |
| 1:2:567:ARG:HD2   | 5:6:440:HIS:HD2   | 1.64                     | 0.62              |
| 1:2:377:ARG:HD3   | 1:2:565:VAL:CG2   | 2.15                     | 0.62              |
| 5:6:594:ILE:HD13  | 5:6:625:ILE:HG22  | 1.82                     | 0.62              |
| 2:3:416:ARG:HG2   | 4:5:456:VAL:HG21  | 1.81                     | 0.62              |
| 1:2:489:GLU:HA    | 1:2:492:LYS:HD2   | 1.81                     | 0.62              |
| 9:C:7:ARG:NH2     | 9:C:23:ASP:OD2    | 2.33                     | 0.62              |
| 1:2:667:VAL:HG12  | 5:6:602:ARG:NH2   | 2.14                     | 0.62              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:B:40:LEU:HD21  | 12:G:688:ARG:HD2 | 1.75                     | 0.62              |
| 4:5:42:TYR:CD1   | 11:E:367:PHE:CG  | 2.87                     | 0.61              |
| 4:5:65:LEU:HD11  | 9:C:155:ASN:O    | 1.99                     | 0.61              |
| 4:5:347:THR:O    | 4:5:351:LYS:N    | 2.32                     | 0.61              |
| 1:2:314:SER:HB2  | 1:2:565:VAL:CG2  | 2.30                     | 0.61              |
| 2:3:115:PHE:CZ   | 2:3:287:ARG:HD3  | 2.35                     | 0.61              |
| 12:F:518:SER:OG  | 12:F:520:ASP:OD1 | 2.17                     | 0.61              |
| 3:4:402:ASN:HB2  | 3:4:405:VAL:HG22 | 1.83                     | 0.61              |
| 1:2:683:HIS:CE1  | 5:6:386:LEU:HD13 | 2.35                     | 0.61              |
| 1:2:742:LYS:HD2  | 1:2:788:GLU:HG3  | 1.82                     | 0.61              |
| 1:2:314:SER:CB   | 1:2:563:HIS:CD2  | 2.79                     | 0.61              |
| 3:4:719:LYS:HE2  | 5:6:542:GLU:OE2  | 2.01                     | 0.61              |
| 6:7:56:ALA:HB2   | 6:7:63:VAL:HG21  | 1.82                     | 0.61              |
| 6:7:520:LEU:HD23 | 6:7:644:LEU:HD11 | 1.82                     | 0.61              |
| 3:4:469:SER:CB   | 6:7:369:MET:SD   | 2.88                     | 0.60              |
| 6:7:222:LEU:HD12 | 6:7:223:GLN:H    | 1.66                     | 0.60              |
| 12:H:518:SER:OG  | 12:H:520:ASP:OD1 | 2.17                     | 0.60              |
| 7:A:174:GLN:O    | 11:E:49:LEU:N    | 2.32                     | 0.60              |
| 5:6:124:ARG:NH2  | 5:6:210:GLU:OE2  | 2.34                     | 0.60              |
| 6:7:171:SER:OG   | 6:7:172:GLU:N    | 2.35                     | 0.60              |
| 2:3:440:ALA:CB   | 6:7:247:GLY:HA2  | 2.30                     | 0.60              |
| 4:5:43:ARG:HD3   | 8:B:114:ARG:HD3  | 1.84                     | 0.60              |
| 4:5:174:SER:OG   | 4:5:207:CYS:SG   | 2.60                     | 0.60              |
| 4:5:231:GLU:OE2  | 4:5:243:ARG:N    | 2.28                     | 0.60              |
| 5:6:109:ASP:OD1  | 5:6:109:ASP:N    | 2.34                     | 0.60              |
| 6:7:52:LEU:HD12  | 6:7:141:PRO:HD3  | 1.84                     | 0.60              |
| 1:2:355:CYS:SG   | 1:2:357:SER:OG   | 2.59                     | 0.60              |
| 3:4:306:CYS:SG   | 3:4:308:VAL:N    | 2.67                     | 0.60              |
| 5:6:159:LEU:HB3  | 5:6:187:ASN:ND2  | 2.16                     | 0.60              |
| 2:3:465:THR:CB   | 6:7:407:ARG:HG2  | 2.30                     | 0.60              |
| 3:4:718:ARG:NH1  | 3:4:729:ALA:O    | 2.31                     | 0.60              |
| 11:E:210:SER:OG  | 12:G:473:THR:CG2 | 2.45                     | 0.60              |
| 1:2:314:SER:HB2  | 1:2:565:VAL:HG23 | 1.84                     | 0.59              |
| 1:2:329:CYS:HB3  | 1:2:332:CYS:SG   | 2.41                     | 0.59              |
| 1:2:562:ARG:NH2  | 5:6:440:HIS:HD2  | 1.73                     | 0.59              |
| 4:5:80:PHE:CD1   | 11:E:367:PHE:HE1 | 2.16                     | 0.59              |
| 5:6:52:GLU:OE2   | 5:6:55:ARG:NH1   | 2.35                     | 0.59              |
| 1:2:549:GLN:OE1  | 5:6:471:VAL:HG13 | 1.93                     | 0.59              |
| 1:2:563:HIS:HD2  | 1:2:565:VAL:H    | 1.49                     | 0.59              |
| 8:B:56:GLN:OE1   | 11:E:211:LYS:CA  | 2.50                     | 0.59              |
| 2:3:212:ALA:HB2  | 2:3:287:ARG:HH22 | 1.67                     | 0.59              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 4:5:528:ARG:O     | 4:5:532:LEU:HG    | 2.02                     | 0.59              |
| 6:7:374:ASN:HB3   | 6:7:483:SER:HB3   | 1.84                     | 0.59              |
| 11:E:259:GLU:CD   | 12:G:701:LEU:HB3  | 2.26                     | 0.59              |
| 1:2:343:GLN:HA    | 4:5:287:VAL:HG11  | 1.84                     | 0.59              |
| 2:3:6:PRO:HD2     | 2:3:149:GLY:O     | 2.02                     | 0.59              |
| 5:6:611:LYS:NZ    | 5:6:612:SER:O     | 2.35                     | 0.59              |
| 7:A:43:ASN:O      | 7:A:47:VAL:HG23   | 2.02                     | 0.59              |
| 12:G:641:VAL:HG21 | 12:G:677:VAL:HG21 | 1.84                     | 0.59              |
| 2:3:663:LEU:HD23  | 6:7:537:ILE:HD12  | 1.83                     | 0.59              |
| 7:A:135:ASP:OD2   | 7:A:138:GLN:NE2   | 2.32                     | 0.59              |
| 12:H:641:VAL:HG21 | 12:H:677:VAL:HG21 | 1.84                     | 0.59              |
| 2:3:173:GLU:HG3   | 2:3:281:GLN:HG2   | 1.83                     | 0.59              |
| 4:5:42:TYR:HD1    | 11:E:367:PHE:CD2  | 2.20                     | 0.59              |
| 1:2:477:ILE:O     | 1:2:480:SER:OG    | 2.19                     | 0.59              |
| 1:2:514:ARG:NH2   | 1:2:516:ASP:O     | 2.36                     | 0.59              |
| 2:3:173:GLU:N     | 2:3:173:GLU:OE1   | 2.36                     | 0.59              |
| 2:3:447:ASP:HB3   | 6:7:246:VAL:CG1   | 2.33                     | 0.59              |
| 3:4:476:ILE:CD1   | 3:4:650:LEU:HD11  | 2.32                     | 0.59              |
| 2:3:344:LEU:HD11  | 2:3:616:TYR:HE2   | 1.67                     | 0.59              |
| 3:4:247:ASP:HB2   | 3:4:248:ARG:HD2   | 1.85                     | 0.59              |
| 2:3:141:GLU:OE1   | 2:3:237:VAL:HG11  | 2.03                     | 0.59              |
| 4:5:51:PHE:CE1    | 11:E:266:ASP:HB3  | 2.38                     | 0.59              |
| 4:5:507:MET:HB2   | 4:5:510:ILE:HG22  | 1.83                     | 0.59              |
| 6:7:403:TYR:OH    | 6:7:445:ASP:OD2   | 2.19                     | 0.59              |
| 1:2:384:LYS:HG2   | 1:2:385:VAL:HG23  | 1.85                     | 0.58              |
| 4:5:42:TYR:HA     | 11:E:367:PHE:CD2  | 2.37                     | 0.58              |
| 11:E:257:GLU:HG2  | 11:E:258:ASP:N    | 2.18                     | 0.58              |
| 1:2:463:MET:O     | 1:2:467:LEU:HG    | 2.03                     | 0.58              |
| 1:2:762:ILE:HG23  | 1:2:766:HIS:HB2   | 1.85                     | 0.58              |
| 6:7:324:LEU:HA    | 6:7:327:ILE:HG22  | 1.84                     | 0.58              |
| 9:C:106:VAL:O     | 9:C:167:ARG:NH2   | 2.36                     | 0.58              |
| 2:3:447:ASP:CB    | 6:7:246:VAL:HG12  | 2.34                     | 0.58              |
| 5:6:598:TYR:HB2   | 5:6:621:LEU:HD13  | 1.84                     | 0.58              |
| 9:C:204:GLN:N     | 9:C:204:GLN:OE1   | 2.36                     | 0.58              |
| 10:D:175:VAL:HG12 | 10:D:220:VAL:HG12 | 1.83                     | 0.58              |
| 12:F:641:VAL:HG21 | 12:F:677:VAL:HG21 | 1.84                     | 0.58              |
| 1:2:276:ARG:HH21  | 11:E:318:MET:C    | 2.03                     | 0.58              |
| 1:2:377:ARG:HD2   | 1:2:565:VAL:HA    | 1.85                     | 0.58              |
| 6:7:311:ASP:O     | 6:7:313:GLU:HG2   | 2.04                     | 0.58              |
| 1:2:580:ASP:OD2   | 4:5:238:HIS:CD2   | 2.57                     | 0.58              |
| 4:5:47:ASP:HB2    | 11:E:406:ARG:NH2  | 2.18                     | 0.58              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 10:D:29:ARG:HE    | 10:D:50:ILE:HD11 | 1.68                     | 0.58              |
| 1:2:314:SER:CB    | 1:2:565:VAL:HG23 | 2.34                     | 0.58              |
| 2:3:440:ALA:CB    | 6:7:247:GLY:CA   | 2.82                     | 0.58              |
| 3:4:566:SER:OG    | 3:4:567:ASP:N    | 2.35                     | 0.58              |
| 1:2:377:ARG:NH2   | 1:2:393:SER:OG   | 2.37                     | 0.57              |
| 3:4:278:ASP:HB3   | 3:4:283:ILE:HD11 | 1.85                     | 0.57              |
| 11:E:536:ARG:HE   | 11:E:550:LYS:HE2 | 1.69                     | 0.57              |
| 1:2:315:CYS:HB2   | 1:2:374:GLN:HE21 | 1.69                     | 0.57              |
| 1:2:731:VAL:O     | 1:2:732:HIS:ND1  | 2.36                     | 0.57              |
| 3:4:428:ARG:HH11  | 3:4:428:ARG:HB3  | 1.69                     | 0.57              |
| 3:4:546:TYR:CE2   | 6:7:472:ALA:CB   | 2.87                     | 0.57              |
| 6:7:567:ARG:O     | 6:7:618:ARG:NH1  | 2.37                     | 0.57              |
| 8:B:57:LYS:NZ     | 11:E:211:LYS:NZ  | 2.53                     | 0.57              |
| 1:2:763:THR:HG22  | 1:2:764:VAL:H    | 1.69                     | 0.57              |
| 4:5:439:GLY:N     | 4:5:481:ARG:O    | 2.37                     | 0.57              |
| 11:E:385:GLU:OE1  | 11:E:462:ARG:NE  | 2.37                     | 0.57              |
| 4:5:60:LYS:NZ     | 8:B:122:ASP:OD2  | 2.23                     | 0.57              |
| 1:2:517:ILE:O     | 1:2:625:THR:OG1  | 2.21                     | 0.57              |
| 6:7:178:VAL:HG12  | 6:7:179:VAL:HG23 | 1.87                     | 0.57              |
| 10:D:37:GLU:HG3   | 10:D:92:TYR:HE1  | 1.70                     | 0.57              |
| 1:2:224:LYS:HB3   | 11:E:312:GLN:CB  | 2.35                     | 0.57              |
| 2:3:447:ASP:HB3   | 6:7:246:VAL:HG12 | 1.87                     | 0.57              |
| 3:4:555:GLN:HE22  | 5:6:143:ARG:NH2  | 1.98                     | 0.57              |
| 8:B:78:GLU:OE1    | 8:B:85:THR:OG1   | 2.22                     | 0.56              |
| 2:3:527:LEU:HD23  | 2:3:655:THR:HB   | 1.87                     | 0.56              |
| 7:A:168:LEU:CD2   | 11:E:64:GLU:HB3  | 2.35                     | 0.56              |
| 8:B:2:ASP:N       | 8:B:2:ASP:OD1    | 2.35                     | 0.56              |
| 1:2:656:ARG:HH22  | 4:5:385:THR:HG1  | 1.50                     | 0.56              |
| 2:3:385:ASN:HD22  | 2:3:493:VAL:H    | 1.54                     | 0.56              |
| 2:3:509:THR:HG23  | 2:3:511:MET:H    | 1.71                     | 0.56              |
| 2:3:616:TYR:OH    | 2:3:676:ALA:O    | 2.21                     | 0.56              |
| 7:A:194:ILE:HG13  | 7:A:195:LEU:H    | 1.70                     | 0.56              |
| 9:C:168:LEU:O     | 9:C:173:ARG:NH1  | 2.38                     | 0.56              |
| 9:C:169:ASP:OD1   | 9:C:169:ASP:N    | 2.37                     | 0.56              |
| 10:D:123:SER:HB3  | 10:D:126:GLU:HG3 | 1.88                     | 0.56              |
| 12:F:637:THR:HG21 | 12:F:649:MET:HE3 | 1.87                     | 0.56              |
| 4:5:325:LEU:HA    | 4:5:328:LEU:HD23 | 1.86                     | 0.56              |
| 6:7:459:HIS:O     | 6:7:514:ARG:NH1  | 2.32                     | 0.56              |
| 11:E:207:TRP:CE2  | 12:G:478:ALA:O   | 2.58                     | 0.56              |
| 1:2:325:VAL:HG11  | 1:2:347:VAL:HG11 | 1.88                     | 0.56              |
| 1:2:377:ARG:HD2   | 1:2:565:VAL:HG13 | 1.88                     | 0.56              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 1:2:562:ARG:NE    | 5:6:440:HIS:NE2  | 2.53                     | 0.56              |
| 2:3:73:ASP:OD1    | 2:3:74:GLN:N     | 2.37                     | 0.56              |
| 6:7:40:LEU:HD23   | 6:7:45:GLN:HB3   | 1.87                     | 0.56              |
| 4:5:586:TYR:CZ    | 4:5:590:ARG:HD2  | 2.40                     | 0.56              |
| 2:3:393:SER:CB    | 4:5:609:THR:HB   | 2.36                     | 0.56              |
| 2:3:465:THR:HB    | 6:7:407:ARG:HG2  | 1.88                     | 0.56              |
| 3:4:199:GLU:HA    | 3:4:202:VAL:HG12 | 1.88                     | 0.56              |
| 4:5:172:CYS:HB3   | 4:5:177:ASN:H    | 1.70                     | 0.56              |
| 4:5:377:LEU:HB2   | 4:5:485:LEU:HD12 | 1.87                     | 0.56              |
| 5:6:329:MET:HE1   | 5:6:337:VAL:HG21 | 1.88                     | 0.56              |
| 7:A:162:ASP:OD2   | 7:A:181:LYS:NZ   | 2.39                     | 0.56              |
| 8:B:55:ARG:O      | 11:E:42:CYS:SG   | 2.63                     | 0.56              |
| 2:3:409:ARG:NH2   | 2:3:447:ASP:O    | 2.24                     | 0.56              |
| 6:7:169:ARG:HH11  | 6:7:236:LYS:HD3  | 1.71                     | 0.56              |
| 11:E:282:GLN:O    | 11:E:330:GLN:NE2 | 2.39                     | 0.56              |
| 1:2:765:ARG:HG3   | 1:2:765:ARG:O    | 2.06                     | 0.55              |
| 6:7:363:ASP:OD1   | 6:7:363:ASP:N    | 2.37                     | 0.55              |
| 8:B:110:ALA:HB3   | 11:E:264:SER:CB  | 2.34                     | 0.55              |
| 3:4:533:THR:HG22  | 3:4:534:SER:H    | 1.70                     | 0.55              |
| 4:5:170:ILE:HG22  | 4:5:214:ILE:HD13 | 1.87                     | 0.55              |
| 11:E:259:GLU:OE2  | 12:G:701:LEU:CA  | 2.53                     | 0.55              |
| 2:3:662:THR:O     | 2:3:665:THR:HG22 | 2.06                     | 0.55              |
| 3:4:390:VAL:HG23  | 3:4:418:VAL:HG23 | 1.87                     | 0.55              |
| 3:4:654:GLN:HG3   | 6:7:589:ARG:HH21 | 1.70                     | 0.55              |
| 3:4:476:ILE:HD11  | 3:4:650:LEU:HD11 | 1.89                     | 0.55              |
| 5:6:601:LEU:HG    | 5:6:616:ILE:HD13 | 1.88                     | 0.55              |
| 3:4:328:CYS:SG    | 3:4:336:SER:OG   | 2.65                     | 0.55              |
| 3:4:405:VAL:HG23  | 3:4:407:ASN:H    | 1.72                     | 0.55              |
| 4:5:372:ARG:HB2   | 4:5:618:ARG:NH2  | 2.22                     | 0.55              |
| 4:5:633:THR:OG1   | 4:5:634:GLU:N    | 2.38                     | 0.55              |
| 9:C:90:LYS:HA     | 9:C:93:GLN:HB2   | 1.89                     | 0.55              |
| 11:E:230:GLN:NE2  | 11:E:381:MET:SD  | 2.79                     | 0.55              |
| 12:H:637:THR:HG21 | 12:H:649:MET:HE3 | 1.87                     | 0.55              |
| 2:3:460:SER:OG    | 2:3:463:ASP:OD2  | 2.25                     | 0.55              |
| 3:4:189:THR:HB    | 3:4:195:GLN:HE22 | 1.71                     | 0.55              |
| 4:5:565:TYR:CE1   | 4:5:569:LYS:HG3  | 2.41                     | 0.55              |
| 5:6:174:TYR:OH    | 5:6:193:LEU:HD22 | 2.06                     | 0.55              |
| 8:B:59:ARG:CD     | 12:G:703:ARG:HD2 | 2.36                     | 0.55              |
| 12:G:665:ARG:NH1  | 12:G:673:ASP:O   | 2.40                     | 0.55              |
| 7:A:62:ILE:O      | 7:A:66:HIS:N     | 2.34                     | 0.55              |
| 11:E:515:SER:O    | 11:E:515:SER:OG  | 2.25                     | 0.55              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 12:G:637:THR:HG21 | 12:G:649:MET:HE3  | 1.87                     | 0.55              |
| 2:3:267:ASP:OD2   | 2:3:268:ASP:N     | 2.40                     | 0.55              |
| 3:4:200:ILE:HG21  | 3:4:258:ILE:HD11  | 1.87                     | 0.55              |
| 4:5:589:MET:HE1   | 4:5:644:PHE:HE2   | 1.72                     | 0.55              |
| 6:7:269:ASP:OD1   | 6:7:270:HIS:N     | 2.40                     | 0.55              |
| 2:3:244:ILE:HD13  | 2:3:266:LEU:HD11  | 1.89                     | 0.54              |
| 3:4:716:ASP:OD1   | 3:4:717:MET:N     | 2.39                     | 0.54              |
| 11:E:443:GLY:O    | 11:E:485:ARG:NH2  | 2.39                     | 0.54              |
| 1:2:377:ARG:HB2   | 1:2:565:VAL:CG2   | 2.37                     | 0.54              |
| 1:2:580:ASP:OD2   | 4:5:238:HIS:HD2   | 1.88                     | 0.54              |
| 3:4:354:LEU:HD13  | 3:4:372:LEU:HD11  | 1.88                     | 0.54              |
| 5:6:170:GLN:OE1   | 5:6:170:GLN:N     | 2.40                     | 0.54              |
| 1:2:680:VAL:HG11  | 5:6:591:GLU:HG3   | 1.88                     | 0.54              |
| 8:B:24:ASP:OD1    | 8:B:24:ASP:N      | 2.36                     | 0.54              |
| 1:2:402:LEU:O     | 1:2:405:SER:OG    | 2.12                     | 0.54              |
| 1:2:592:MET:HE3   | 1:2:597:ARG:HG2   | 1.89                     | 0.54              |
| 12:H:665:ARG:NH1  | 12:H:673:ASP:O    | 2.40                     | 0.54              |
| 1:2:765:ARG:HH21  | 4:5:385:THR:CB    | 2.20                     | 0.54              |
| 9:C:78:ASP:CG     | 9:C:82:ARG:H      | 2.13                     | 0.54              |
| 10:D:106:HIS:NE2  | 10:D:162:VAL:O    | 2.39                     | 0.54              |
| 12:F:665:ARG:NH1  | 12:F:673:ASP:O    | 2.40                     | 0.54              |
| 4:5:380:LEU:HA    | 4:5:488:ALA:HB3   | 1.88                     | 0.54              |
| 4:5:37:GLU:OE1    | 4:5:41:GLN:NE2    | 2.40                     | 0.54              |
| 6:7:5:ASP:OD1     | 6:7:6:TYR:N       | 2.36                     | 0.54              |
| 6:7:500:SER:O     | 6:7:504:ASN:ND2   | 2.41                     | 0.54              |
| 6:7:135:GLU:HG3   | 6:7:137:TYR:CZ    | 2.43                     | 0.54              |
| 3:4:457:ASP:N     | 3:4:457:ASP:OD1   | 2.38                     | 0.53              |
| 3:4:748:ARG:HH22  | 3:4:754:GLU:HG2   | 1.74                     | 0.53              |
| 4:5:634:GLU:HA    | 4:5:637:VAL:HG12  | 1.91                     | 0.53              |
| 5:6:320:GLN:O     | 5:6:581:GLN:NE2   | 2.41                     | 0.53              |
| 7:A:129:GLY:H     | 7:A:133:GLY:HA2   | 1.73                     | 0.53              |
| 1:2:570:THR:OG1   | 1:2:571:LEU:N     | 2.41                     | 0.53              |
| 5:6:109:ASP:OD2   | 5:6:199:ARG:NH2   | 2.42                     | 0.53              |
| 6:7:445:ASP:OD1   | 6:7:445:ASP:N     | 2.33                     | 0.53              |
| 6:7:521:ILE:HG13  | 6:7:522:GLN:H     | 1.73                     | 0.53              |
| 5:6:171:GLN:H     | 5:6:175:THR:HG21  | 1.74                     | 0.53              |
| 6:7:186:GLN:HE21  | 6:7:215:ARG:HH11  | 1.55                     | 0.53              |
| 12:F:599:LEU:HD22 | 12:F:621:LEU:HD11 | 1.90                     | 0.53              |
| 1:2:765:ARG:NH2   | 4:5:385:THR:CG2   | 2.46                     | 0.53              |
| 2:3:469:GLU:HA    | 2:3:473:GLN:OE1   | 2.08                     | 0.53              |
| 6:7:51:ASP:OD1    | 6:7:52:LEU:N      | 2.41                     | 0.53              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:D:178:ARG:NE   | 10:D:180:GLU:OE2  | 2.39                     | 0.53              |
| 12:H:468:VAL:HG21 | 12:H:497:ILE:HD13 | 1.90                     | 0.53              |
| 1:2:366:GLU:N     | 1:2:366:GLU:OE2   | 2.42                     | 0.53              |
| 2:3:191:HIS:HB3   | 2:3:229:LEU:HD22  | 1.89                     | 0.53              |
| 11:E:496:PRO:HA   | 11:E:504:VAL:HG12 | 1.90                     | 0.53              |
| 4:5:156:ILE:HD12  | 4:5:230:GLN:HB2   | 1.90                     | 0.53              |
| 6:7:528:ASP:N     | 6:7:528:ASP:OD1   | 2.42                     | 0.53              |
| 8:B:57:LYS:HZ3    | 11:E:211:LYS:NZ   | 2.07                     | 0.53              |
| 12:G:599:LEU:HD22 | 12:G:621:LEU:HD11 | 1.90                     | 0.53              |
| 12:H:712:LYS:HE3  | 12:H:718:ILE:HD13 | 1.91                     | 0.53              |
| 3:4:501:ARG:O     | 3:4:739:ARG:NH2   | 2.41                     | 0.53              |
| 12:F:597:GLN:HB3  | 12:F:599:LEU:HD13 | 1.91                     | 0.53              |
| 1:2:792:ASN:O     | 1:2:796:ARG:HB2   | 2.09                     | 0.53              |
| 2:3:390:GLY:O     | 2:3:396:LYS:NZ    | 2.41                     | 0.53              |
| 4:5:380:LEU:HD23  | 4:5:381:GLY:N     | 2.23                     | 0.53              |
| 12:H:597:GLN:HB3  | 12:H:599:LEU:HD13 | 1.91                     | 0.53              |
| 12:H:599:LEU:HD22 | 12:H:621:LEU:HD11 | 1.90                     | 0.53              |
| 1:2:687:HIS:O     | 1:2:689:SER:N     | 2.41                     | 0.53              |
| 3:4:179:LYS:HG3   | 3:4:180:GLU:HG2   | 1.91                     | 0.53              |
| 12:G:468:VAL:HG21 | 12:G:497:ILE:HD13 | 1.90                     | 0.53              |
| 1:2:225:GLU:OE2   | 11:E:312:GLN:NE2  | 2.42                     | 0.53              |
| 11:E:386:SER:O    | 11:E:389:LYS:NZ   | 2.32                     | 0.53              |
| 12:G:597:GLN:HB3  | 12:G:599:LEU:HD13 | 1.91                     | 0.53              |
| 4:5:43:ARG:CD     | 8:B:114:ARG:HD3   | 2.39                     | 0.52              |
| 2:3:437:ARG:HH11  | 6:7:249:ILE:HD12  | 1.72                     | 0.52              |
| 4:5:79:SER:HB2    | 11:E:367:PHE:O    | 2.10                     | 0.52              |
| 4:5:172:CYS:SG    | 4:5:173:ARG:N     | 2.82                     | 0.52              |
| 5:6:559:ILE:H     | 5:6:559:ILE:HD12  | 1.74                     | 0.52              |
| 8:B:144:LYS:HE2   | 10:D:204:HIS:CE1  | 2.44                     | 0.52              |
| 12:G:712:LYS:HE3  | 12:G:718:ILE:HD13 | 1.91                     | 0.52              |
| 1:2:804:ASP:N     | 1:2:804:ASP:OD1   | 2.35                     | 0.52              |
| 4:5:526:GLU:HA    | 4:5:529:ASP:HB2   | 1.91                     | 0.52              |
| 1:2:606:GLN:NE2   | 4:5:392:LYS:HZ1   | 2.06                     | 0.52              |
| 2:3:440:ALA:HB2   | 6:7:247:GLY:HA2   | 1.92                     | 0.52              |
| 6:7:223:GLN:HE21  | 6:7:225:ARG:HB2   | 1.74                     | 0.52              |
| 11:E:25:SER:OG    | 11:E:384:MET:SD   | 2.66                     | 0.52              |
| 2:3:627:LEU:HA    | 2:3:682:VAL:HG22  | 1.91                     | 0.52              |
| 3:4:199:GLU:O     | 3:4:203:ILE:HG12  | 2.10                     | 0.52              |
| 7:A:161:VAL:HG13  | 7:A:181:LYS:HZ2   | 1.74                     | 0.52              |
| 10:D:187:ASP:OD1  | 10:D:188:THR:N    | 2.38                     | 0.52              |
| 12:F:468:VAL:HG21 | 12:F:497:ILE:HD13 | 1.91                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 5:6:525:PRO:O    | 5:6:528:SER:OG    | 2.22                     | 0.52              |
| 7:A:83:ARG:HH21  | 7:A:110:GLU:CD    | 2.18                     | 0.52              |
| 2:3:133:ASP:OD1  | 2:3:136:TYR:N     | 2.34                     | 0.52              |
| 3:4:448:LEU:O    | 3:4:451:GLU:HG3   | 2.09                     | 0.52              |
| 4:5:96:LEU:HD22  | 4:5:297:LEU:HD22  | 1.91                     | 0.52              |
| 8:B:144:LYS:HE2  | 10:D:204:HIS:HE1  | 1.75                     | 0.52              |
| 7:A:161:VAL:HG13 | 7:A:181:LYS:NZ    | 2.25                     | 0.52              |
| 12:F:712:LYS:HE3 | 12:F:718:ILE:HD13 | 1.91                     | 0.52              |
| 2:3:634:TYR:OH   | 2:3:688:GLU:OE1   | 2.14                     | 0.52              |
| 2:3:638:GLU:OE1  | 2:3:641:ARG:NH2   | 2.35                     | 0.52              |
| 4:5:363:LYS:NZ   | 4:5:621:GLU:OE2   | 2.42                     | 0.52              |
| 7:A:149:GLU:CD   | 11:E:47:TYR:OH    | 2.53                     | 0.51              |
| 4:5:332:TYR:HE2  | 4:5:351:LYS:HE2   | 1.75                     | 0.51              |
| 4:5:585:ARG:HG2  | 4:5:641:LEU:HD22  | 1.93                     | 0.51              |
| 8:B:59:ARG:NE    | 12:G:703:ARG:CD   | 2.46                     | 0.51              |
| 1:2:644:SER:OG   | 1:2:651:GLU:OE1   | 2.25                     | 0.51              |
| 3:4:167:GLN:HG2  | 3:4:244:ILE:HD11  | 1.92                     | 0.51              |
| 10:D:199:GLU:HG3 | 10:D:200:LYS:H    | 1.75                     | 0.51              |
| 1:2:777:HIS:HA   | 1:2:780:ILE:HG22  | 1.92                     | 0.51              |
| 4:5:53:PHE:CZ    | 8:B:114:ARG:HG2   | 2.44                     | 0.51              |
| 6:7:257:VAL:HG13 | 6:7:261:ASN:HB2   | 1.93                     | 0.51              |
| 11:E:28:ASP:OD2  | 11:E:76:ASN:ND2   | 2.36                     | 0.51              |
| 11:E:368:LYS:O   | 11:E:369:HIS:ND1  | 2.44                     | 0.51              |
| 1:2:558:ALA:HB3  | 1:2:611:ILE:HD13  | 1.93                     | 0.51              |
| 1:2:592:MET:HE1  | 1:2:600:ILE:HG21  | 1.92                     | 0.51              |
| 2:3:673:HIS:HD2  | 2:3:686:ASP:HA    | 1.74                     | 0.51              |
| 4:5:319:GLU:O    | 4:5:323:ARG:HG2   | 2.10                     | 0.51              |
| 5:6:609:VAL:HG22 | 5:6:610:THR:HG23  | 1.93                     | 0.51              |
| 7:A:39:LEU:HD22  | 7:A:65:ARG:HG2    | 1.93                     | 0.51              |
| 4:5:87:TYR:HB3   | 4:5:95:HIS:CE1    | 2.45                     | 0.51              |
| 5:6:349:ASN:O    | 5:6:353:SER:OG    | 2.23                     | 0.51              |
| 7:A:158:GLU:HG3  | 7:A:166:SER:HB3   | 1.92                     | 0.51              |
| 8:B:100:LEU:O    | 8:B:104:SER:HB2   | 2.10                     | 0.51              |
| 4:5:236:VAL:HG21 | 4:5:242:PRO:HG3   | 1.93                     | 0.51              |
| 6:7:280:ILE:HD12 | 6:7:295:GLU:HG3   | 1.92                     | 0.51              |
| 8:B:103:ALA:O    | 8:B:107:ILE:HG12  | 2.11                     | 0.51              |
| 2:3:88:ASN:HA    | 2:3:136:TYR:OH    | 2.10                     | 0.51              |
| 3:4:171:GLN:HE21 | 3:4:244:ILE:HD12  | 1.76                     | 0.51              |
| 11:E:98:CYS:HB2  | 11:E:118:LEU:HD12 | 1.93                     | 0.51              |
| 5:6:321:THR:OG1  | 5:6:322:ALA:N     | 2.42                     | 0.51              |
| 6:7:642:ASP:C    | 6:7:644:LEU:H     | 2.18                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 11:E:451:MET:HG2 | 11:E:453:GLY:H   | 1.76                     | 0.50              |
| 2:3:623:ILE:HG22 | 2:3:625:PRO:HD3  | 1.92                     | 0.50              |
| 4:5:590:ARG:HG2  | 4:5:608:ILE:HG21 | 1.94                     | 0.50              |
| 8:B:56:GLN:OE1   | 11:E:211:LYS:CB  | 2.59                     | 0.50              |
| 1:2:377:ARG:CB   | 1:2:565:VAL:HG21 | 2.38                     | 0.50              |
| 4:5:590:ARG:HG2  | 4:5:608:ILE:CG2  | 2.42                     | 0.50              |
| 5:6:19:ARG:NH1   | 5:6:24:GLU:OE2   | 2.45                     | 0.50              |
| 7:A:109:GLU:OE2  | 7:A:109:GLU:N    | 2.40                     | 0.50              |
| 9:C:100:PHE:CE1  | 9:C:107:VAL:HG11 | 2.47                     | 0.50              |
| 11:E:527:GLU:O   | 11:E:531:GLU:HG3 | 2.11                     | 0.50              |
| 1:2:276:ARG:HE   | 11:E:319:GLY:HA3 | 1.76                     | 0.50              |
| 2:3:655:THR:OG1  | 2:3:698:TYR:O    | 2.24                     | 0.50              |
| 4:5:387:LYS:O    | 4:5:391:LEU:HG   | 2.12                     | 0.50              |
| 6:7:317:GLY:HA2  | 6:7:561:ARG:HE   | 1.76                     | 0.50              |
| 1:2:315:CYS:SG   | 1:2:408:PRO:HD3  | 2.51                     | 0.50              |
| 2:3:122:GLN:HG2  | 2:3:145:VAL:HG12 | 1.94                     | 0.50              |
| 2:3:151:PHE:H    | 2:3:155:HIS:CE1  | 2.27                     | 0.50              |
| 3:4:568:ASN:HD22 | 5:6:217:ARG:NE   | 2.08                     | 0.50              |
| 4:5:338:SER:O    | 4:5:338:SER:OG   | 2.27                     | 0.50              |
| 5:6:485:THR:HG23 | 5:6:490:LYS:HE2  | 1.94                     | 0.50              |
| 8:B:49:ALA:HB1   | 8:B:60:LEU:HD21  | 1.93                     | 0.50              |
| 11:E:5:ASP:OD1   | 11:E:5:ASP:N     | 2.45                     | 0.50              |
| 4:5:390:LEU:O    | 4:5:394:VAL:HG23 | 2.11                     | 0.50              |
| 6:7:36:GLN:HE22  | 6:7:39:ARG:CZ    | 2.25                     | 0.50              |
| 9:C:128:SER:OG   | 9:C:129:PRO:HD2  | 2.12                     | 0.50              |
| 1:2:462:LYS:HG3  | 1:2:463:MET:SD   | 2.51                     | 0.50              |
| 3:4:656:GLU:O    | 3:4:660:ARG:HG3  | 2.10                     | 0.50              |
| 1:2:548:GLY:N    | 1:2:587:ASP:O    | 2.44                     | 0.49              |
| 1:2:676:ALA:HB3  | 5:6:595:VAL:HG23 | 1.94                     | 0.49              |
| 3:4:698:ILE:HG22 | 3:4:700:PRO:HD3  | 1.92                     | 0.49              |
| 4:5:47:ASP:H     | 11:E:406:ARG:NH2 | 2.10                     | 0.49              |
| 6:7:153:ARG:HH12 | 6:7:251:ARG:NH1  | 2.10                     | 0.49              |
| 1:2:560:VAL:H    | 1:2:613:LYS:HE2  | 1.77                     | 0.49              |
| 1:2:802:PHE:HE2  | 1:2:814:MET:HE1  | 1.78                     | 0.49              |
| 2:3:85:ILE:HD11  | 2:3:129:VAL:HG23 | 1.93                     | 0.49              |
| 4:5:453:ASP:OD2  | 4:5:454:ASP:N    | 2.45                     | 0.49              |
| 7:A:58:LEU:HD23  | 9:C:41:PRO:HG2   | 1.94                     | 0.49              |
| 2:3:81:VAL:HG21  | 2:3:128:PHE:HE2  | 1.77                     | 0.49              |
| 3:4:396:ALA:HB2  | 3:4:414:THR:HG22 | 1.93                     | 0.49              |
| 4:5:380:LEU:HD22 | 4:5:519:ILE:HD12 | 1.94                     | 0.49              |
| 6:7:575:GLU:CD   | 6:7:575:GLU:H    | 2.20                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:3:179:CYS:HB3  | 2:3:242:GLN:NE2  | 2.28                     | 0.49              |
| 2:3:462:MET:HB3  | 6:7:407:ARG:HH11 | 1.78                     | 0.49              |
| 3:4:580:ASN:N    | 3:4:580:ASN:OD1  | 2.45                     | 0.49              |
| 7:A:88:ARG:NH2   | 10:D:101:GLU:OE1 | 2.45                     | 0.49              |
| 7:A:149:GLU:OE2  | 11:E:37:GLN:NE2  | 2.45                     | 0.49              |
| 1:2:642:THR:HG23 | 1:2:645:GLU:HG2  | 1.94                     | 0.49              |
| 3:4:376:ASN:OD1  | 3:4:377:ASP:N    | 2.45                     | 0.49              |
| 3:4:401:VAL:HG12 | 3:4:407:ASN:O    | 2.11                     | 0.49              |
| 3:4:512:PRO:HB2  | 6:7:600:TYR:HE2  | 1.73                     | 0.49              |
| 4:5:42:TYR:HD1   | 11:E:367:PHE:CG  | 2.30                     | 0.49              |
| 4:5:143:ASP:OD1  | 4:5:143:ASP:N    | 2.45                     | 0.49              |
| 6:7:153:ARG:HH12 | 6:7:251:ARG:HH12 | 1.60                     | 0.49              |
| 8:B:26:ILE:HG13  | 8:B:33:LEU:HB2   | 1.93                     | 0.49              |
| 1:2:248:LEU:HD21 | 1:2:285:ILE:HD13 | 1.95                     | 0.49              |
| 1:2:314:SER:OG   | 1:2:563:HIS:CD2  | 2.66                     | 0.49              |
| 1:2:462:LYS:O    | 1:2:465:THR:OG1  | 2.31                     | 0.49              |
| 1:2:526:GLY:N    | 5:6:619:ARG:NH1  | 2.61                     | 0.49              |
| 3:4:319:ARG:HG2  | 6:7:221:TYR:CE2  | 2.48                     | 0.49              |
| 4:5:614:GLU:HG2  | 4:5:618:ARG:NH1  | 2.28                     | 0.49              |
| 5:6:357:THR:HA   | 5:6:551:ARG:HH11 | 0.67                     | 0.49              |
| 7:A:194:ILE:HG13 | 7:A:195:LEU:N    | 2.27                     | 0.49              |
| 8:B:56:GLN:HE22  | 11:E:216:MET:HE1 | 1.77                     | 0.49              |
| 8:B:109:LYS:HG2  | 11:E:262:THR:HB  | 1.94                     | 0.49              |
| 1:2:373:TYR:CE1  | 4:5:289:ILE:HD11 | 2.47                     | 0.49              |
| 3:4:740:LEU:HB3  | 3:4:761:ALA:HB1  | 1.94                     | 0.49              |
| 4:5:134:PRO:HB2  | 4:5:152:PRO:HD3  | 1.93                     | 0.49              |
| 5:6:159:LEU:O    | 5:6:162:GLN:NE2  | 2.45                     | 0.49              |
| 11:E:477:PHE:O   | 11:E:480:SER:N   | 2.43                     | 0.49              |
| 1:2:314:SER:CA   | 1:2:563:HIS:NE2  | 2.75                     | 0.49              |
| 1:2:547:THR:OG1  | 1:2:588:GLU:OE1  | 2.30                     | 0.49              |
| 7:A:10:ILE:HD12  | 9:C:22:LEU:HD22  | 1.95                     | 0.49              |
| 7:A:195:LEU:HD22 | 11:E:41:GLN:NE2  | 2.26                     | 0.49              |
| 1:2:633:ILE:HB   | 1:2:648:ASP:OD2  | 2.12                     | 0.49              |
| 4:5:515:ASP:OD1  | 4:5:515:ASP:N    | 2.42                     | 0.49              |
| 5:6:378:LYS:HB2  | 5:6:386:LEU:HD12 | 1.95                     | 0.49              |
| 6:7:501:LEU:C    | 6:7:503:GLN:H    | 2.21                     | 0.49              |
| 6:7:521:ILE:HG13 | 6:7:522:GLN:N    | 2.27                     | 0.49              |
| 11:E:172:ARG:O   | 11:E:176:GLU:HG3 | 2.13                     | 0.49              |
| 1:2:750:LEU:HD21 | 1:2:762:ILE:HG12 | 1.94                     | 0.49              |
| 2:3:226:ASN:OD1  | 2:3:227:ASN:N    | 2.45                     | 0.49              |
| 2:3:467:ILE:HG22 | 2:3:471:MET:HG3  | 1.94                     | 0.49              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:4:190:GLU:O     | 3:4:192:LEU:N     | 2.45                     | 0.49              |
| 3:4:723:SER:OG    | 3:4:724:ARG:NH1   | 2.46                     | 0.49              |
| 4:5:356:LEU:HD13  | 4:5:377:LEU:HD12  | 1.95                     | 0.49              |
| 8:B:57:LYS:NZ     | 11:E:211:LYS:HZ3  | 2.11                     | 0.49              |
| 1:2:381:SER:HB3   | 1:2:384:LYS:HE2   | 1.94                     | 0.48              |
| 6:7:500:SER:H     | 6:7:503:GLN:NE2   | 2.11                     | 0.48              |
| 11:E:257:GLU:HG2  | 11:E:258:ASP:H    | 1.77                     | 0.48              |
| 1:2:178:LYS:HD3   | 1:2:179:GLY:N     | 2.28                     | 0.48              |
| 2:3:436:ARG:NH1   | 2:3:481:ALA:HB3   | 2.28                     | 0.48              |
| 2:3:646:ASP:N     | 2:3:646:ASP:OD1   | 2.44                     | 0.48              |
| 3:4:242:ASN:O     | 3:4:249:TYR:OH    | 2.16                     | 0.48              |
| 5:6:86:VAL:O      | 5:6:90:LEU:HG     | 2.13                     | 0.48              |
| 1:2:500:PHE:CZ    | 1:2:724:ILE:HG22  | 2.48                     | 0.48              |
| 3:4:682:LEU:HG    | 3:4:686:VAL:HG11  | 1.94                     | 0.48              |
| 4:5:156:ILE:HG22  | 4:5:228:LYS:HB3   | 1.94                     | 0.48              |
| 1:2:207:VAL:O     | 1:2:240:ARG:NH2   | 2.46                     | 0.48              |
| 4:5:51:PHE:CZ     | 11:E:266:ASP:HB3  | 2.47                     | 0.48              |
| 5:6:160:ASP:OD2   | 5:6:186:ALA:N     | 2.29                     | 0.48              |
| 10:D:197:ASP:OD1  | 10:D:197:ASP:N    | 2.46                     | 0.48              |
| 2:3:458:LYS:NZ    | 4:5:459:HIS:HD2   | 2.12                     | 0.48              |
| 4:5:47:ASP:CB     | 11:E:406:ARG:NH2  | 2.76                     | 0.48              |
| 11:E:265:VAL:HG13 | 11:E:266:ASP:OD2  | 2.14                     | 0.48              |
| 11:E:490:PRO:HD3  | 11:E:511:PRO:HG3  | 1.94                     | 0.48              |
| 1:2:377:ARG:CG    | 1:2:565:VAL:CG1   | 2.90                     | 0.48              |
| 1:2:594:ASP:O     | 1:2:598:THR:HG23  | 2.13                     | 0.48              |
| 2:3:462:MET:CB    | 6:7:407:ARG:HH11  | 2.27                     | 0.48              |
| 2:3:501:TYR:OH    | 2:3:508:LYS:NZ    | 2.47                     | 0.48              |
| 5:6:565:ARG:C     | 5:6:565:ARG:HD2   | 2.38                     | 0.48              |
| 7:A:83:ARG:NH2    | 7:A:110:GLU:OE1   | 2.46                     | 0.48              |
| 7:A:124:TYR:O     | 7:A:127:SER:OG    | 2.26                     | 0.48              |
| 11:E:126:GLU:N    | 11:E:126:GLU:OE1  | 2.47                     | 0.48              |
| 4:5:115:PRO:HA    | 8:B:130:VAL:CG2   | 2.44                     | 0.48              |
| 6:7:336:LEU:HD22  | 6:7:559:MET:HE3   | 1.96                     | 0.48              |
| 8:B:66:MET:HE2    | 8:B:96:THR:HG22   | 1.96                     | 0.48              |
| 11:E:257:GLU:HB3  | 12:G:458:TYR:CE1  | 2.49                     | 0.48              |
| 2:3:95:ASN:HA     | 2:3:148:GLU:O     | 2.14                     | 0.48              |
| 12:F:528:ASP:H    | 12:H:717:GLN:HE21 | 1.62                     | 0.48              |
| 1:2:207:VAL:HA    | 1:2:212:HIS:O     | 2.14                     | 0.48              |
| 2:3:10:ARG:NH1    | 9:C:90:LYS:HB2    | 2.29                     | 0.48              |
| 7:A:168:LEU:HD22  | 11:E:64:GLU:HB3   | 1.94                     | 0.48              |
| 12:G:686:GLN:HB2  | 12:G:708:ILE:HG23 | 1.96                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:2:385:VAL:O     | 1:2:387:ALA:N     | 2.46                     | 0.48              |
| 11:E:74:LEU:HD11  | 11:E:95:PHE:HD1   | 1.79                     | 0.48              |
| 1:2:720:LEU:O     | 1:2:724:ILE:HG23  | 2.14                     | 0.47              |
| 2:3:400:LEU:HD12  | 2:3:454:ASP:HB3   | 1.95                     | 0.47              |
| 11:E:389:LYS:NZ   | 11:E:462:ARG:HD2  | 2.23                     | 0.47              |
| 12:F:686:GLN:HB2  | 12:F:708:ILE:HG23 | 1.96                     | 0.47              |
| 3:4:624:TRP:CE2   | 3:4:651:LEU:HD21  | 2.49                     | 0.47              |
| 5:6:44:ILE:H      | 5:6:44:ILE:HD12   | 1.79                     | 0.47              |
| 5:6:637:CYS:SG    | 5:6:638:ASP:N     | 2.86                     | 0.47              |
| 7:A:149:GLU:OE1   | 11:E:41:GLN:NE2   | 2.47                     | 0.47              |
| 11:E:133:ILE:O    | 11:E:181:ARG:HD2  | 2.13                     | 0.47              |
| 10:D:104:PHE:CD2  | 10:D:105:PRO:HD3  | 2.49                     | 0.47              |
| 11:E:343:MET:SD   | 11:E:343:MET:N    | 2.87                     | 0.47              |
| 1:2:549:GLN:CD    | 5:6:471:VAL:CB    | 2.77                     | 0.47              |
| 1:2:586:ILE:HB    | 1:2:628:ALA:HB2   | 1.96                     | 0.47              |
| 2:3:447:ASP:CB    | 6:7:246:VAL:CG1   | 2.93                     | 0.47              |
| 3:4:714:TYR:HB2   | 3:4:734:LEU:HD13  | 1.96                     | 0.47              |
| 4:5:76:ASP:OD1    | 11:E:368:LYS:HD3  | 2.14                     | 0.47              |
| 6:7:420:ARG:HG2   | 6:7:427:LEU:HG    | 1.96                     | 0.47              |
| 10:D:175:VAL:HG11 | 10:D:198:LEU:HD13 | 1.95                     | 0.47              |
| 12:F:717:GLN:HE21 | 12:G:528:ASP:H    | 1.62                     | 0.47              |
| 12:G:788:MET:HB3  | 12:G:792:ALA:HB3  | 1.96                     | 0.47              |
| 1:2:343:GLN:NE2   | 1:2:399:LEU:HD11  | 2.30                     | 0.47              |
| 3:4:521:GLN:O     | 3:4:525:ASN:ND2   | 2.48                     | 0.47              |
| 4:5:80:PHE:CE1    | 11:E:367:PHE:HE1  | 2.30                     | 0.47              |
| 12:G:717:GLN:HE21 | 12:H:528:ASP:H    | 1.62                     | 0.47              |
| 3:4:306:CYS:HB2   | 3:4:337:MET:SD    | 2.55                     | 0.47              |
| 4:5:40:ARG:NH2    | 8:B:75:ARG:NH1    | 2.63                     | 0.47              |
| 4:5:43:ARG:HH22   | 8:B:111:ASP:CG    | 2.23                     | 0.47              |
| 4:5:237:PRO:HG2   | 4:5:240:GLU:OE1   | 2.15                     | 0.47              |
| 5:6:375:GLY:O     | 5:6:633:ARG:NH2   | 2.48                     | 0.47              |
| 7:A:73:ARG:HG3    | 10:D:149:MET:HE1  | 1.97                     | 0.47              |
| 8:B:55:ARG:NE     | 11:E:42:CYS:O     | 2.27                     | 0.47              |
| 8:B:55:ARG:HA     | 11:E:42:CYS:SG    | 2.54                     | 0.47              |
| 12:F:788:MET:HB3  | 12:F:792:ALA:HB3  | 1.96                     | 0.47              |
| 2:3:391:ASP:HB2   | 2:3:532:ASP:HB2   | 1.97                     | 0.47              |
| 4:5:380:LEU:N     | 4:5:518:PHE:O     | 2.48                     | 0.47              |
| 7:A:165:THR:HB    | 11:E:18:ARG:HH22  | 1.79                     | 0.47              |
| 8:B:17:ILE:HG22   | 8:B:60:LEU:HD23   | 1.96                     | 0.47              |
| 11:E:133:ILE:HG13 | 11:E:181:ARG:HG3  | 1.97                     | 0.47              |
| 12:H:788:MET:HB3  | 12:H:792:ALA:HB3  | 1.96                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:3:249:MET:HE2   | 2:3:279:ARG:HH21  | 1.79                     | 0.47              |
| 4:5:577:GLU:HA    | 4:5:580:GLU:OE2   | 2.14                     | 0.47              |
| 5:6:527:MET:HE2   | 5:6:527:MET:HB3   | 1.77                     | 0.47              |
| 1:2:526:GLY:CA    | 5:6:619:ARG:NH1   | 2.77                     | 0.47              |
| 3:4:265:ALA:O     | 3:4:422:ARG:NH1   | 2.48                     | 0.47              |
| 3:4:726:MET:HG3   | 3:4:727:VAL:N     | 2.28                     | 0.47              |
| 4:5:519:ILE:HD12  | 4:5:654:SER:OG    | 2.15                     | 0.47              |
| 5:6:38:GLN:CD     | 5:6:42:GLY:HA2    | 2.40                     | 0.47              |
| 5:6:120:ARG:O     | 5:6:121:HIS:ND1   | 2.48                     | 0.47              |
| 1:2:276:ARG:NE    | 11:E:319:GLY:O    | 2.48                     | 0.47              |
| 2:3:436:ARG:HH12  | 2:3:481:ALA:HB3   | 1.80                     | 0.47              |
| 3:4:513:GLY:HA3   | 6:7:602:SER:HB2   | 1.97                     | 0.47              |
| 6:7:554:LEU:H     | 6:7:554:LEU:HD12  | 1.80                     | 0.47              |
| 11:E:491:LEU:HD23 | 11:E:492:VAL:N    | 2.30                     | 0.47              |
| 1:2:481:ILE:HD11  | 1:2:496:ALA:HB2   | 1.97                     | 0.46              |
| 4:5:49:THR:CG2    | 11:E:407:SER:CB   | 2.92                     | 0.46              |
| 4:5:94:GLU:HG3    | 4:5:95:HIS:HD2    | 1.79                     | 0.46              |
| 11:E:250:SER:O    | 11:E:254:HIS:HB3  | 2.15                     | 0.46              |
| 12:H:686:GLN:HB2  | 12:H:708:ILE:HG23 | 1.96                     | 0.46              |
| 1:2:186:VAL:HG13  | 1:2:195:ILE:HD12  | 1.97                     | 0.46              |
| 2:3:184:PRO:HA    | 2:3:239:LYS:O     | 2.15                     | 0.46              |
| 2:3:326:ILE:HG12  | 2:3:330:LYS:HE3   | 1.98                     | 0.46              |
| 4:5:525:ASN:O     | 4:5:529:ASP:N     | 2.43                     | 0.46              |
| 4:5:608:ILE:HD12  | 4:5:612:GLN:OE1   | 2.15                     | 0.46              |
| 5:6:56:PRO:O      | 5:6:57:GLU:HG2    | 2.16                     | 0.46              |
| 5:6:173:LYS:HG2   | 5:6:174:TYR:H     | 1.80                     | 0.46              |
| 9:C:201:ASN:HA    | 9:C:204:GLN:CD    | 2.40                     | 0.46              |
| 1:2:526:GLY:N     | 5:6:619:ARG:CZ    | 2.78                     | 0.46              |
| 4:5:50:GLY:HA2    | 8:B:101:ASN:HD21  | 1.80                     | 0.46              |
| 7:A:147:TYR:CE2   | 11:E:46:GLN:HG2   | 2.44                     | 0.46              |
| 7:A:94:TYR:CE2    | 9:C:202:LEU:HD11  | 2.50                     | 0.46              |
| 9:C:88:LEU:HD22   | 9:C:123:LEU:HD23  | 1.97                     | 0.46              |
| 1:2:566:SER:OG    | 1:2:568:GLU:HG2   | 2.16                     | 0.46              |
| 11:E:181:ARG:HA   | 11:E:184:ILE:HG22 | 1.97                     | 0.46              |
| 12:H:586:VAL:HG11 | 12:H:627:LEU:HD22 | 1.98                     | 0.46              |
| 1:2:587:ASP:OD1   | 1:2:588:GLU:N     | 2.49                     | 0.46              |
| 1:2:751:ARG:HD3   | 4:5:532:LEU:HD13  | 1.97                     | 0.46              |
| 2:3:151:PHE:N     | 2:3:155:HIS:HE1   | 2.13                     | 0.46              |
| 3:4:730:TYR:HB3   | 5:6:399:SER:CB    | 2.45                     | 0.46              |
| 4:5:115:PRO:CA    | 8:B:130:VAL:HG22  | 2.44                     | 0.46              |
| 8:B:81:GLU:HG3    | 8:B:83:THR:H      | 1.81                     | 0.46              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:D:71:GLU:OE1   | 10:D:74:LYS:N     | 2.44                     | 0.46              |
| 1:2:284:ARG:HD2   | 1:2:442:ASN:O     | 2.15                     | 0.46              |
| 1:2:288:LEU:HD21  | 1:2:305:LEU:HD23  | 1.96                     | 0.46              |
| 2:3:431:GLN:HA    | 4:5:425:ARG:NH2   | 2.31                     | 0.46              |
| 4:5:32:GLN:NE2    | 4:5:105:GLU:OE2   | 2.48                     | 0.46              |
| 4:5:49:THR:OG1    | 4:5:50:GLY:N      | 2.49                     | 0.46              |
| 8:B:111:ASP:CG    | 11:E:264:SER:HA   | 2.39                     | 0.46              |
| 1:2:463:MET:SD    | 1:2:463:MET:N     | 2.88                     | 0.46              |
| 7:A:176:PHE:CB    | 11:E:47:TYR:CE1   | 2.99                     | 0.46              |
| 10:D:104:PHE:CG   | 10:D:105:PRO:HD3  | 2.51                     | 0.46              |
| 2:3:202:ARG:NH2   | 2:3:220:PRO:HG3   | 2.31                     | 0.46              |
| 2:3:324:GLU:HG2   | 2:3:328:LYS:HE3   | 1.98                     | 0.46              |
| 2:3:547:LEU:O     | 2:3:551:ARG:HG3   | 2.15                     | 0.46              |
| 4:5:109:GLU:HB3   | 8:B:79:ARG:CZ     | 2.45                     | 0.46              |
| 4:5:401:GLY:HA2   | 4:5:441:VAL:O     | 2.16                     | 0.46              |
| 4:5:468:SER:HB3   | 4:5:477:THR:HG22  | 1.98                     | 0.46              |
| 4:5:570:CYS:SG    | 4:5:572:PRO:HD3   | 2.56                     | 0.46              |
| 5:6:187:ASN:OD1   | 5:6:187:ASN:N     | 2.49                     | 0.46              |
| 10:D:37:GLU:HG3   | 10:D:92:TYR:CE1   | 2.50                     | 0.46              |
| 12:F:586:VAL:HG11 | 12:F:627:LEU:HD22 | 1.98                     | 0.46              |
| 1:2:750:LEU:HB2   | 1:2:818:PHE:CE2   | 2.51                     | 0.45              |
| 2:3:673:HIS:CD2   | 2:3:686:ASP:HA    | 2.50                     | 0.45              |
| 3:4:164:GLU:O     | 3:4:168:ARG:HG3   | 2.16                     | 0.45              |
| 3:4:258:ILE:HD12  | 3:4:258:ILE:HA    | 1.77                     | 0.45              |
| 3:4:438:GLN:HG2   | 3:4:441:PHE:CE2   | 2.51                     | 0.45              |
| 4:5:378:LEU:HD23  | 4:5:517:ILE:HD12  | 1.98                     | 0.45              |
| 12:G:618:PRO:HB2  | 12:H:570:ALA:HB1  | 1.98                     | 0.45              |
| 2:3:148:GLU:HG2   | 2:3:149:GLY:N     | 2.32                     | 0.45              |
| 2:3:471:MET:HE2   | 2:3:471:MET:HB3   | 1.87                     | 0.45              |
| 3:4:171:GLN:NE2   | 3:4:244:ILE:HD12  | 2.32                     | 0.45              |
| 7:A:175:HIS:ND1   | 11:E:48:THR:CG2   | 2.77                     | 0.45              |
| 8:B:96:THR:HG21   | 8:B:117:VAL:HG21  | 1.97                     | 0.45              |
| 1:2:726:TYR:CE2   | 1:2:730:ARG:HD2   | 2.50                     | 0.45              |
| 2:3:206:ASP:HB2   | 6:7:292:LEU:HD12  | 1.99                     | 0.45              |
| 2:3:535:ASP:HB3   | 2:3:538:GLN:HE22  | 1.82                     | 0.45              |
| 4:5:210:ASP:OD1   | 4:5:210:ASP:N     | 2.43                     | 0.45              |
| 4:5:615:ALA:HA    | 4:5:618:ARG:HG2   | 1.98                     | 0.45              |
| 8:B:27:TYR:HA     | 8:B:32:ASP:OD1    | 2.16                     | 0.45              |
| 1:2:223:CYS:O     | 11:E:316:ALA:HB2  | 2.17                     | 0.45              |
| 1:2:585:LEU:HD23  | 1:2:627:ILE:HB    | 1.98                     | 0.45              |
| 3:4:191:PRO:O     | 3:4:195:GLN:N     | 2.44                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:5:145:MET:O    | 4:5:146:SER:OG   | 2.24                     | 0.45              |
| 6:7:223:GLN:HG2  | 6:7:225:ARG:H    | 1.81                     | 0.45              |
| 7:A:9:LEU:HB3    | 7:A:79:TYR:CD2   | 2.51                     | 0.45              |
| 11:E:208:MET:O   | 12:G:477:HIS:HB3 | 2.16                     | 0.45              |
| 12:F:570:ALA:HB1 | 12:H:618:PRO:HB2 | 1.98                     | 0.45              |
| 1:2:377:ARG:HD2  | 1:2:565:VAL:CB   | 2.46                     | 0.45              |
| 2:3:152:GLY:HA3  | 9:C:103:ASP:CB   | 2.45                     | 0.45              |
| 3:4:222:LEU:HD12 | 3:4:223:TYR:N    | 2.32                     | 0.45              |
| 4:5:335:ILE:O    | 4:5:339:ILE:HG23 | 2.16                     | 0.45              |
| 4:5:463:GLU:HG3  | 4:5:513:ARG:CZ   | 2.46                     | 0.45              |
| 6:7:534:ALA:O    | 6:7:538:THR:HG23 | 2.16                     | 0.45              |
| 11:E:451:MET:HE2 | 11:E:453:GLY:HA3 | 1.99                     | 0.45              |
| 1:2:276:ARG:CZ   | 11:E:318:MET:O   | 2.53                     | 0.45              |
| 6:7:148:VAL:HG12 | 6:7:149:ILE:H    | 1.81                     | 0.45              |
| 6:7:539:TYR:CG   | 6:7:547:PRO:HG3  | 2.51                     | 0.45              |
| 11:E:39:LEU:HD23 | 11:E:39:LEU:HA   | 1.80                     | 0.45              |
| 1:2:203:LEU:HD23 | 1:2:215:PHE:CD2  | 2.52                     | 0.45              |
| 3:4:201:ASN:OD1  | 3:4:252:SER:OG   | 2.18                     | 0.45              |
| 7:A:20:GLN:NE2   | 9:C:205:ASN:OD1  | 2.49                     | 0.45              |
| 8:B:59:ARG:HH11  | 12:G:703:ARG:HD3 | 1.68                     | 0.45              |
| 11:E:130:TYR:HE1 | 11:E:134:PHE:HD2 | 1.64                     | 0.45              |
| 12:F:618:PRO:HB2 | 12:G:570:ALA:HB1 | 1.98                     | 0.45              |
| 1:2:319:LEU:HD13 | 4:5:289:ILE:HG21 | 1.99                     | 0.45              |
| 3:4:533:THR:HG22 | 3:4:534:SER:N    | 2.31                     | 0.45              |
| 3:4:555:GLN:NE2  | 5:6:438:GLU:OE2  | 2.50                     | 0.45              |
| 3:4:730:TYR:H    | 3:4:733:GLN:NE2  | 2.15                     | 0.45              |
| 4:5:358:PHE:CE1  | 4:5:563:ILE:HG12 | 2.52                     | 0.45              |
| 4:5:526:GLU:O    | 4:5:530:VAL:HG23 | 2.17                     | 0.45              |
| 6:7:395:ASP:OD1  | 6:7:401:SER:OG   | 2.24                     | 0.45              |
| 7:A:46:ASP:HA    | 7:A:49:GLU:HB3   | 1.98                     | 0.45              |
| 10:D:29:ARG:NE   | 10:D:50:ILE:HD11 | 2.31                     | 0.45              |
| 1:2:377:ARG:CD   | 1:2:565:VAL:CB   | 2.93                     | 0.45              |
| 1:2:562:ARG:NH1  | 1:2:567:ARG:O    | 2.50                     | 0.45              |
| 1:2:651:GLU:HB3  | 1:2:652:PRO:HD3  | 1.99                     | 0.45              |
| 4:5:581:LYS:HG3  | 4:5:634:GLU:HG2  | 1.99                     | 0.45              |
| 6:7:236:LYS:HE3  | 6:7:236:LYS:HB3  | 1.80                     | 0.45              |
| 1:2:276:ARG:HE   | 11:E:319:GLY:C   | 2.25                     | 0.45              |
| 1:2:530:SER:O    | 1:2:534:LYS:HG2  | 2.17                     | 0.45              |
| 2:3:91:ARG:HB3   | 2:3:144:TYR:HB2  | 1.99                     | 0.45              |
| 4:5:65:LEU:CD2   | 9:C:152:SER:HA   | 2.46                     | 0.45              |
| 6:7:182:TYR:HE2  | 6:7:193:GLN:HG2  | 1.82                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 11:E:203:PHE:HE2  | 11:E:248:HIS:CD2  | 2.35                     | 0.45              |
| 4:5:266:MET:HE2   | 4:5:266:MET:HB3   | 1.78                     | 0.44              |
| 5:6:569:LEU:HD23  | 5:6:569:LEU:HA    | 1.78                     | 0.44              |
| 6:7:48:LEU:HD23   | 6:7:136:LEU:HD12  | 2.00                     | 0.44              |
| 8:B:55:ARG:CA     | 11:E:42:CYS:SG    | 3.05                     | 0.44              |
| 2:3:126:LYS:HA    | 2:3:129:VAL:HG12  | 1.98                     | 0.44              |
| 2:3:158:PRO:HD3   | 2:3:172:VAL:HG13  | 2.00                     | 0.44              |
| 10:D:82:MET:HE2   | 10:D:82:MET:HB3   | 1.75                     | 0.44              |
| 11:E:474:LEU:HD12 | 11:E:474:LEU:HA   | 1.81                     | 0.44              |
| 12:G:690:ILE:HD13 | 12:G:706:VAL:HA   | 1.99                     | 0.44              |
| 1:2:365:MET:SD    | 4:5:270:SER:HB2   | 2.58                     | 0.44              |
| 1:2:493:ARG:O     | 1:2:497:LEU:HG    | 2.16                     | 0.44              |
| 1:2:532:PHE:O     | 1:2:536:ILE:HG12  | 2.17                     | 0.44              |
| 1:2:795:ILE:O     | 1:2:798:MET:HG3   | 2.17                     | 0.44              |
| 3:4:306:CYS:SG    | 3:4:307:GLN:N     | 2.89                     | 0.44              |
| 4:5:40:ARG:NH2    | 8:B:75:ARG:HH12   | 2.15                     | 0.44              |
| 4:5:636:ASP:O     | 4:5:639:GLU:HG3   | 2.17                     | 0.44              |
| 5:6:616:ILE:HG23  | 5:6:620:GLN:HG3   | 1.98                     | 0.44              |
| 6:7:153:ARG:HB2   | 6:7:155:ASP:OD2   | 2.17                     | 0.44              |
| 7:A:174:GLN:NE2   | 11:E:37:GLN:HE22  | 2.16                     | 0.44              |
| 12:G:586:VAL:HG11 | 12:G:627:LEU:HD22 | 1.98                     | 0.44              |
| 12:H:438:THR:HG22 | 12:H:697:PHE:HB2  | 2.00                     | 0.44              |
| 3:4:238:ASP:OD2   | 3:4:260:VAL:HG12  | 2.17                     | 0.44              |
| 3:4:271:MET:HE1   | 3:4:354:LEU:HB3   | 1.99                     | 0.44              |
| 8:B:66:MET:HG2    | 8:B:113:ILE:HD13  | 1.99                     | 0.44              |
| 12:G:438:THR:HG22 | 12:G:697:PHE:HB2  | 1.99                     | 0.44              |
| 2:3:627:LEU:HD23  | 2:3:682:VAL:HG21  | 2.00                     | 0.44              |
| 4:5:86:ASP:CB     | 11:E:334:ILE:HG21 | 2.48                     | 0.44              |
| 4:5:579:ALA:O     | 4:5:583:LYS:HG3   | 2.17                     | 0.44              |
| 7:A:98:LEU:N      | 7:A:103:ARG:HH21  | 2.08                     | 0.44              |
| 8:B:67:ASP:OD1    | 8:B:68:VAL:N      | 2.51                     | 0.44              |
| 11:E:62:PHE:O     | 11:E:66:LYS:HB3   | 2.17                     | 0.44              |
| 2:3:59:GLU:OE1    | 2:3:62:ARG:NH2    | 2.51                     | 0.44              |
| 2:3:378:SER:OG    | 6:7:343:GLU:OE2   | 2.30                     | 0.44              |
| 3:4:220:LYS:HE2   | 3:4:220:LYS:HB3   | 1.81                     | 0.44              |
| 5:6:347:TYR:OH    | 5:6:366:ARG:HB3   | 2.18                     | 0.44              |
| 6:7:43:ARG:HH22   | 6:7:133:ARG:HH11  | 1.66                     | 0.44              |
| 6:7:566:CYS:SG    | 6:7:619:LEU:HA    | 2.57                     | 0.44              |
| 6:7:582:THR:O     | 6:7:586:VAL:HG23  | 2.17                     | 0.44              |
| 9:C:40:MET:HB3    | 9:C:60:VAL:HB     | 1.99                     | 0.44              |
| 10:D:173:LEU:HD13 | 10:D:211:ILE:HD12 | 1.99                     | 0.44              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 11:E:299:ARG:HG2  | 11:E:353:MET:HG2 | 1.99                     | 0.44              |
| 4:5:197:CYS:HB2   | 4:5:211:PRO:HG3  | 2.00                     | 0.44              |
| 12:H:690:ILE:HD13 | 12:H:706:VAL:HA  | 1.99                     | 0.44              |
| 1:2:720:LEU:HA    | 1:2:723:TYR:HB3  | 1.99                     | 0.44              |
| 5:6:126:LEU:HD21  | 5:6:137:ILE:HD11 | 2.00                     | 0.44              |
| 10:D:152:ASN:N    | 10:D:152:ASN:OD1 | 2.49                     | 0.44              |
| 12:F:438:THR:HG22 | 12:F:697:PHE:HB2 | 2.00                     | 0.44              |
| 1:2:306:ILE:HD12  | 1:2:418:TYR:HB2  | 2.00                     | 0.44              |
| 1:2:377:ARG:HD2   | 1:2:565:VAL:CA   | 2.48                     | 0.44              |
| 2:3:166:LEU:HD11  | 2:3:288:CYS:HB3  | 2.00                     | 0.44              |
| 3:4:476:ILE:HD11  | 3:4:650:LEU:CD1  | 2.48                     | 0.44              |
| 4:5:317:GLN:NE2   | 4:5:318:GLU:HG2  | 2.33                     | 0.44              |
| 4:5:614:GLU:HG2   | 4:5:618:ARG:HH12 | 1.83                     | 0.44              |
| 5:6:354:LEU:HD12  | 5:6:354:LEU:HA   | 1.81                     | 0.44              |
| 12:F:690:ILE:HD13 | 12:F:706:VAL:HA  | 1.99                     | 0.44              |
| 1:2:500:PHE:HE1   | 1:2:727:ALA:HB3  | 1.83                     | 0.43              |
| 3:4:413:LYS:HB3   | 3:4:413:LYS:HE2  | 1.76                     | 0.43              |
| 4:5:43:ARG:NH2    | 8:B:111:ASP:OD2  | 2.51                     | 0.43              |
| 6:7:233:GLN:HG2   | 6:7:262:THR:HG22 | 2.00                     | 0.43              |
| 6:7:248:ASN:OD1   | 6:7:249:ILE:N    | 2.49                     | 0.43              |
| 7:A:176:PHE:HB2   | 11:E:47:TYR:CD1  | 2.53                     | 0.43              |
| 1:2:567:ARG:HD2   | 5:6:440:HIS:CD2  | 2.49                     | 0.43              |
| 2:3:118:LEU:HA    | 2:3:118:LEU:HD23 | 1.69                     | 0.43              |
| 2:3:207:LEU:HD23  | 2:3:207:LEU:HA   | 1.82                     | 0.43              |
| 3:4:268:THR:HG22  | 3:4:269:LYS:HG3  | 2.00                     | 0.43              |
| 3:4:534:SER:OG    | 3:4:535:GLY:N    | 2.52                     | 0.43              |
| 4:5:331:VAL:HG11  | 4:5:627:LYS:HG2  | 1.99                     | 0.43              |
| 5:6:357:THR:C     | 5:6:551:ARG:HH11 | 2.18                     | 0.43              |
| 6:7:148:VAL:HG12  | 6:7:149:ILE:N    | 2.33                     | 0.43              |
| 7:A:30:ARG:HH21   | 7:A:31:GLN:HG3   | 1.83                     | 0.43              |
| 7:A:144:LYS:HD2   | 7:A:144:LYS:HA   | 1.75                     | 0.43              |
| 1:2:332:CYS:HB3   | 1:2:355:CYS:SG   | 2.58                     | 0.43              |
| 1:2:399:LEU:HA    | 1:2:399:LEU:HD23 | 1.69                     | 0.43              |
| 1:2:536:ILE:HA    | 1:2:539:VAL:HG12 | 1.99                     | 0.43              |
| 2:3:487:LEU:HD21  | 6:7:241:SER:HG   | 1.69                     | 0.43              |
| 2:3:525:ASP:OD2   | 2:3:665:THR:OG1  | 2.36                     | 0.43              |
| 3:4:255:GLU:HG2   | 3:4:256:HIS:N    | 2.32                     | 0.43              |
| 3:4:711:ILE:O     | 3:4:715:VAL:HG23 | 2.19                     | 0.43              |
| 5:6:168:VAL:HB    | 5:6:177:PRO:HG3  | 1.99                     | 0.43              |
| 7:A:28:GLY:O      | 7:A:32:VAL:HG13  | 2.18                     | 0.43              |
| 7:A:102:LEU:C     | 7:A:104:PHE:H    | 2.26                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 12:G:541:GLY:HA3  | 12:G:544:TRP:CE2  | 2.53                     | 0.43              |
| 1:2:271:TYR:HH    | 11:E:313:GLU:CD   | 2.17                     | 0.43              |
| 1:2:382:PRO:HB3   | 5:6:492:THR:O     | 2.19                     | 0.43              |
| 1:2:384:LYS:HE2   | 1:2:384:LYS:HB3   | 1.80                     | 0.43              |
| 2:3:447:ASP:HB3   | 6:7:246:VAL:HG11  | 2.01                     | 0.43              |
| 3:4:551:PRO:HG2   | 3:4:552:GLU:CD    | 2.42                     | 0.43              |
| 4:5:507:MET:HE2   | 4:5:510:ILE:HG21  | 2.00                     | 0.43              |
| 5:6:387:ARG:O     | 5:6:626:ARG:NH1   | 2.50                     | 0.43              |
| 11:E:210:SER:CB   | 12:G:473:THR:HG22 | 2.28                     | 0.43              |
| 3:4:169:PHE:CZ    | 3:4:215:ILE:HG22  | 2.54                     | 0.43              |
| 9:C:35:ARG:HA     | 9:C:64:SER:O      | 2.18                     | 0.43              |
| 9:C:93:GLN:O      | 9:C:97:ARG:NH1    | 2.51                     | 0.43              |
| 9:C:161:THR:HG21  | 9:C:180:GLN:NE2   | 2.34                     | 0.43              |
| 11:E:445:PHE:HD1  | 11:E:446:LEU:O    | 2.01                     | 0.43              |
| 12:G:641:VAL:HG22 | 12:G:647:VAL:HG22 | 2.01                     | 0.43              |
| 1:2:248:LEU:HB3   | 1:2:249:PRO:HD3   | 2.00                     | 0.43              |
| 3:4:611:THR:OG1   | 3:4:612:SER:N     | 2.52                     | 0.43              |
| 5:6:390:ILE:HG22  | 5:6:626:ARG:HD2   | 2.00                     | 0.43              |
| 6:7:24:ASP:C      | 6:7:26:LEU:H      | 2.25                     | 0.43              |
| 6:7:155:ASP:OD2   | 6:7:155:ASP:N     | 2.44                     | 0.43              |
| 6:7:182:TYR:OH    | 6:7:193:GLN:NE2   | 2.51                     | 0.43              |
| 7:A:188:GLN:O     | 9:C:202:LEU:HG    | 2.19                     | 0.43              |
| 9:C:32:LEU:HA     | 9:C:33:PRO:HD3    | 1.90                     | 0.43              |
| 9:C:78:ASP:OD1    | 9:C:82:ARG:N      | 2.38                     | 0.43              |
| 11:E:106:VAL:HG11 | 11:E:133:ILE:HG21 | 2.00                     | 0.43              |
| 11:E:125:LEU:HD23 | 11:E:125:LEU:HA   | 1.86                     | 0.43              |
| 12:H:641:VAL:HG22 | 12:H:647:VAL:HG22 | 2.01                     | 0.43              |
| 1:2:749:ASP:O     | 1:2:753:GLU:HG2   | 2.19                     | 0.43              |
| 3:4:238:ASP:O     | 3:4:242:ASN:ND2   | 2.52                     | 0.43              |
| 3:4:551:PRO:HG2   | 3:4:552:GLU:OE1   | 2.19                     | 0.43              |
| 4:5:74:MET:HE2    | 4:5:89:TYR:CE1    | 2.54                     | 0.43              |
| 6:7:185:ASP:OD1   | 6:7:185:ASP:N     | 2.49                     | 0.43              |
| 7:A:176:PHE:CB    | 11:E:47:TYR:CD1   | 3.02                     | 0.43              |
| 9:C:167:ARG:C     | 9:C:168:LEU:HD12  | 2.43                     | 0.43              |
| 1:2:757:THR:HG22  | 1:2:758:GLY:N     | 2.30                     | 0.43              |
| 2:3:486:ARG:O     | 6:7:242:ASP:OD1   | 2.36                     | 0.43              |
| 3:4:276:PRO:HB3   | 6:7:175:PRO:HB3   | 2.00                     | 0.43              |
| 3:4:566:SER:C     | 3:4:568:ASN:H     | 2.26                     | 0.43              |
| 4:5:51:PHE:CD2    | 8:B:114:ARG:NH2   | 2.86                     | 0.43              |
| 10:D:33:ALA:O     | 10:D:37:GLU:HG2   | 2.18                     | 0.43              |
| 11:E:305:VAL:HG12 | 11:E:309:LYS:NZ   | 2.33                     | 0.43              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:3:521:LEU:HD12  | 2:3:521:LEU:HA   | 1.77                     | 0.43              |
| 11:E:305:VAL:HG12 | 11:E:309:LYS:HZ2 | 1.83                     | 0.43              |
| 2:3:437:ARG:NH1   | 6:7:249:ILE:HD12 | 2.22                     | 0.43              |
| 3:4:561:GLY:O     | 3:4:565:LEU:HG   | 2.19                     | 0.43              |
| 4:5:50:GLY:HA2    | 8:B:101:ASN:ND2  | 2.34                     | 0.43              |
| 4:5:462:MET:HE1   | 4:5:514:PHE:CE2  | 2.53                     | 0.43              |
| 5:6:532:LEU:HD12  | 5:6:532:LEU:HA   | 1.91                     | 0.43              |
| 6:7:559:MET:HB3   | 6:7:559:MET:HE2  | 1.67                     | 0.43              |
| 7:A:41:GLU:HG3    | 7:A:42:GLN:N     | 2.34                     | 0.43              |
| 8:B:40:LEU:CD2    | 12:G:688:ARG:NE  | 2.79                     | 0.43              |
| 10:D:187:ASP:CG   | 10:D:188:THR:H   | 2.27                     | 0.43              |
| 11:E:259:GLU:OE2  | 12:G:701:LEU:HB2 | 2.12                     | 0.43              |
| 1:2:723:TYR:OH    | 1:2:780:ILE:O    | 2.37                     | 0.42              |
| 3:4:326:SER:O     | 3:4:326:SER:OG   | 2.36                     | 0.42              |
| 4:5:523:GLU:HB2   | 4:5:528:ARG:HD2  | 2.01                     | 0.42              |
| 8:B:148:LEU:HD23  | 8:B:148:LEU:HA   | 1.79                     | 0.42              |
| 11:E:36:LEU:HD12  | 11:E:36:LEU:HA   | 1.63                     | 0.42              |
| 11:E:499:MET:SD   | 11:E:500:GLU:N   | 2.92                     | 0.42              |
| 11:E:508:GLY:O    | 11:E:520:ASN:ND2 | 2.45                     | 0.42              |
| 12:F:541:GLY:HA3  | 12:F:544:TRP:CE2 | 2.53                     | 0.42              |
| 1:2:746:MET:HE2   | 1:2:795:ILE:HG23 | 2.02                     | 0.42              |
| 4:5:238:HIS:O     | 4:5:238:HIS:CG   | 2.72                     | 0.42              |
| 4:5:348:ASP:HA    | 4:5:351:LYS:HB2  | 2.00                     | 0.42              |
| 7:A:33:LEU:HD13   | 10:D:148:HIS:HB2 | 2.01                     | 0.42              |
| 9:C:27:MET:HE1    | 9:C:122:GLN:HG3  | 2.01                     | 0.42              |
| 11:E:200:MET:O    | 11:E:204:GLU:HG2 | 2.19                     | 0.42              |
| 2:3:671:THR:HG22  | 2:3:682:VAL:HG11 | 1.99                     | 0.42              |
| 3:4:212:CYS:HB3   | 3:4:262:PRO:HB3  | 2.01                     | 0.42              |
| 5:6:326:LYS:HA    | 5:6:329:MET:HG3  | 2.00                     | 0.42              |
| 5:6:544:THR:O     | 5:6:547:ALA:N    | 2.52                     | 0.42              |
| 11:E:132:ASP:OD2  | 11:E:132:ASP:N   | 2.50                     | 0.42              |
| 1:2:315:CYS:H     | 1:2:563:HIS:CE1  | 2.38                     | 0.42              |
| 1:2:526:GLY:CA    | 5:6:619:ARG:NH2  | 2.77                     | 0.42              |
| 2:3:74:GLN:HG3    | 2:3:76:ILE:HG12  | 2.02                     | 0.42              |
| 2:3:356:ASP:OD1   | 2:3:357:TYR:N    | 2.53                     | 0.42              |
| 2:3:383:ASP:HB3   | 2:3:492:SER:HB3  | 2.02                     | 0.42              |
| 3:4:568:ASN:CG    | 5:6:217:ARG:HH21 | 2.13                     | 0.42              |
| 4:5:644:PHE:O     | 4:5:648:THR:HG22 | 2.19                     | 0.42              |
| 7:A:31:GLN:O      | 7:A:35:GLU:HG2   | 2.19                     | 0.42              |
| 8:B:19:PRO:HD2    | 8:B:40:LEU:O     | 2.19                     | 0.42              |
| 1:2:534:LYS:O     | 1:2:537:GLU:HB3  | 2.19                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:3:394:VAL:HG12  | 2:3:394:VAL:O     | 2.19                     | 0.42              |
| 2:3:415:GLY:HA3   | 2:3:455:GLU:O     | 2.19                     | 0.42              |
| 3:4:255:GLU:OE1   | 3:4:255:GLU:N     | 2.50                     | 0.42              |
| 3:4:443:GLU:O     | 3:4:447:GLU:HG3   | 2.19                     | 0.42              |
| 3:4:529:ARG:HA    | 3:4:529:ARG:HD2   | 1.83                     | 0.42              |
| 7:A:190:VAL:HG12  | 7:A:191:LEU:HD12  | 2.01                     | 0.42              |
| 12:H:541:GLY:HA3  | 12:H:544:TRP:CE2  | 2.53                     | 0.42              |
| 2:3:465:THR:HG22  | 6:7:407:ARG:CG    | 2.47                     | 0.42              |
| 3:4:654:GLN:N     | 3:4:654:GLN:OE1   | 2.53                     | 0.42              |
| 4:5:46:THR:HG21   | 11:E:406:ARG:HB3  | 2.02                     | 0.42              |
| 7:A:3:CYS:SG      | 7:A:72:ASN:ND2    | 2.92                     | 0.42              |
| 12:F:641:VAL:HG22 | 12:F:647:VAL:HG22 | 2.01                     | 0.42              |
| 1:2:315:CYS:HB2   | 1:2:374:GLN:NE2   | 2.35                     | 0.42              |
| 1:2:561:GLN:HB3   | 1:2:572:GLU:HG2   | 2.01                     | 0.42              |
| 3:4:196:ARG:O     | 3:4:200:ILE:HG12  | 2.20                     | 0.42              |
| 3:4:306:CYS:HB3   | 3:4:309:CYS:SG    | 2.59                     | 0.42              |
| 3:4:684:MET:O     | 3:4:687:LEU:N     | 2.53                     | 0.42              |
| 5:6:449:LEU:HD23  | 5:6:449:LEU:HA    | 1.74                     | 0.42              |
| 7:A:151:ARG:NH2   | 11:E:398:ILE:HG23 | 2.35                     | 0.42              |
| 9:C:40:MET:HE2    | 9:C:43:LEU:HD12   | 2.02                     | 0.42              |
| 11:E:122:ASP:OD1  | 11:E:122:ASP:N    | 2.53                     | 0.42              |
| 11:E:207:TRP:NE1  | 12:G:478:ALA:O    | 2.52                     | 0.42              |
| 1:2:668:ASP:HA    | 1:2:669:PRO:HD3   | 1.95                     | 0.42              |
| 1:2:723:TYR:CE1   | 1:2:727:ALA:HB2   | 2.55                     | 0.42              |
| 2:3:353:HIS:HB3   | 2:3:542:ILE:HG12  | 2.02                     | 0.42              |
| 2:3:399:LEU:O     | 2:3:403:VAL:HG23  | 2.20                     | 0.42              |
| 3:4:467:ALA:HB2   | 3:4:522:TYR:CD2   | 2.55                     | 0.42              |
| 3:4:735:GLU:O     | 3:4:738:ILE:HB    | 2.19                     | 0.42              |
| 4:5:348:ASP:OD1   | 4:5:351:LYS:HD2   | 2.19                     | 0.42              |
| 7:A:151:ARG:CZ    | 11:E:398:ILE:CG2  | 2.97                     | 0.42              |
| 8:B:81:GLU:HG2    | 8:B:85:THR:HG22   | 2.01                     | 0.42              |
| 9:C:113:GLY:HA3   | 9:C:114:PRO:HA    | 1.81                     | 0.42              |
| 11:E:494:ALA:HB2  | 11:E:506:VAL:HG22 | 2.02                     | 0.42              |
| 11:E:536:ARG:HH21 | 11:E:550:LYS:HE2  | 1.84                     | 0.42              |
| 12:G:660:PRO:HG2  | 12:H:553:LEU:HD21 | 2.02                     | 0.42              |
| 1:2:197:HIS:CE1   | 1:2:201:ASN:HD21  | 2.37                     | 0.42              |
| 1:2:685:ARG:HG3   | 1:2:686:HIS:CE1   | 2.55                     | 0.42              |
| 1:2:762:ILE:HA    | 1:2:766:HIS:ND1   | 2.34                     | 0.42              |
| 2:3:81:VAL:HG21   | 2:3:128:PHE:CE2   | 2.53                     | 0.42              |
| 2:3:462:MET:HB3   | 6:7:407:ARG:NH1   | 2.35                     | 0.42              |
| 5:6:48:GLN:HA     | 5:6:51:GLU:HG2    | 2.01                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:6:94:LEU:HD12   | 5:6:94:LEU:HA     | 1.84                     | 0.42              |
| 5:6:593:PHE:O     | 5:6:597:GLN:HG2   | 2.20                     | 0.42              |
| 7:A:174:GLN:CG    | 11:E:49:LEU:HB3   | 2.50                     | 0.42              |
| 12:F:660:PRO:HG2  | 12:G:553:LEU:HD21 | 2.02                     | 0.42              |
| 12:H:469:GLU:OE2  | 12:H:703:ARG:NH2  | 2.53                     | 0.42              |
| 1:2:314:SER:HB2   | 1:2:565:VAL:HG21  | 2.00                     | 0.42              |
| 1:2:331:LYS:HD2   | 1:2:357:SER:HB3   | 2.01                     | 0.42              |
| 4:5:397:CYS:C     | 4:5:560:LYS:HE3   | 2.45                     | 0.42              |
| 6:7:269:ASP:OD2   | 6:7:305:LYS:HE3   | 2.19                     | 0.42              |
| 9:C:130:GLU:OE1   | 9:C:130:GLU:N     | 2.33                     | 0.42              |
| 11:E:482:LYS:HD3  | 11:E:482:LYS:HA   | 1.88                     | 0.42              |
| 1:2:524:ASP:HA    | 1:2:632:PRO:HG3   | 2.01                     | 0.41              |
| 3:4:608:ASN:ND2   | 5:6:212:GLN:NE2   | 2.68                     | 0.41              |
| 4:5:184:MET:HE1   | 4:5:191:TYR:CG    | 2.54                     | 0.41              |
| 6:7:77:PHE:O      | 6:7:81:VAL:HG23   | 2.20                     | 0.41              |
| 10:D:206:ILE:HG22 | 10:D:207:ARG:N    | 2.34                     | 0.41              |
| 12:F:730:TRP:HZ2  | 12:G:564:LYS:HD2  | 1.85                     | 0.41              |
| 1:2:673:GLU:OE2   | 5:6:599:LYS:NZ    | 2.33                     | 0.41              |
| 2:3:206:ASP:CG    | 2:3:207:LEU:H     | 2.28                     | 0.41              |
| 4:5:455:ARG:O     | 4:5:458:ILE:HG22  | 2.20                     | 0.41              |
| 12:F:469:GLU:OE2  | 12:F:703:ARG:NH2  | 2.52                     | 0.41              |
| 12:F:553:LEU:HD21 | 12:H:660:PRO:HG2  | 2.02                     | 0.41              |
| 2:3:416:ARG:HB3   | 4:5:456:VAL:HG11  | 1.74                     | 0.41              |
| 2:3:509:THR:OG1   | 2:3:510:PRO:HD2   | 2.20                     | 0.41              |
| 3:4:445:ARG:O     | 3:4:449:LEU:HG    | 2.20                     | 0.41              |
| 4:5:59:LEU:HD22   | 4:5:107:ALA:HB2   | 2.02                     | 0.41              |
| 5:6:120:ARG:HG2   | 5:6:121:HIS:H     | 1.86                     | 0.41              |
| 11:E:83:LEU:HA    | 11:E:83:LEU:HD12  | 1.86                     | 0.41              |
| 12:G:469:GLU:OE2  | 12:G:703:ARG:NH2  | 2.53                     | 0.41              |
| 1:2:588:GLU:HB3   | 1:2:591:LYS:HD2   | 2.02                     | 0.41              |
| 2:3:511:MET:HE3   | 2:3:511:MET:HB2   | 1.91                     | 0.41              |
| 3:4:551:PRO:O     | 3:4:554:ARG:HD3   | 2.21                     | 0.41              |
| 5:6:486:LYS:HD3   | 5:6:486:LYS:HA    | 1.74                     | 0.41              |
| 7:A:21:LEU:HD12   | 7:A:22:PRO:HD2    | 2.01                     | 0.41              |
| 7:A:98:LEU:HB3    | 7:A:102:LEU:HD12  | 2.02                     | 0.41              |
| 7:A:151:ARG:NH1   | 11:E:398:ILE:HG23 | 2.35                     | 0.41              |
| 1:2:203:LEU:HD23  | 1:2:203:LEU:HA    | 1.90                     | 0.41              |
| 1:2:342:SER:OG    | 1:2:344:ASN:OD1   | 2.29                     | 0.41              |
| 1:2:464:ILE:HD13  | 1:2:467:LEU:HD12  | 2.01                     | 0.41              |
| 2:3:281:GLN:HG3   | 2:3:313:MET:HG3   | 2.02                     | 0.41              |
| 3:4:275:ASN:OD1   | 6:7:263:ARG:NH2   | 2.41                     | 0.41              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 3:4:503:GLU:HB3   | 3:4:612:SER:HB3  | 2.02                     | 0.41              |
| 3:4:744:HIS:CE1   | 3:4:760:GLU:HG2  | 2.55                     | 0.41              |
| 4:5:334:VAL:HG22  | 4:5:554:ILE:HG13 | 2.02                     | 0.41              |
| 6:7:533:LEU:O     | 6:7:537:ILE:HG13 | 2.20                     | 0.41              |
| 6:7:645:LEU:HD23  | 6:7:645:LEU:HA   | 1.91                     | 0.41              |
| 7:A:195:LEU:CD2   | 11:E:41:GLN:OE1  | 2.69                     | 0.41              |
| 9:C:88:LEU:HD13   | 9:C:134:ILE:HD11 | 2.02                     | 0.41              |
| 11:E:67:GLU:OE2   | 11:E:67:GLU:N    | 2.53                     | 0.41              |
| 12:H:435:SER:HB3  | 12:H:629:TRP:CD1 | 2.56                     | 0.41              |
| 5:6:65:PHE:O      | 5:6:69:GLU:HG3   | 2.19                     | 0.41              |
| 5:6:322:ALA:O     | 5:6:326:LYS:HB2  | 2.21                     | 0.41              |
| 5:6:450:MET:HE3   | 5:6:450:MET:HB2  | 1.87                     | 0.41              |
| 6:7:166:ILE:HA    | 6:7:269:ASP:O    | 2.20                     | 0.41              |
| 7:A:24:PHE:CG     | 7:A:107:ALA:HB2  | 2.55                     | 0.41              |
| 9:C:165:VAL:HA    | 9:C:168:LEU:HD13 | 2.02                     | 0.41              |
| 11:E:254:HIS:O    | 11:E:254:HIS:ND1 | 2.54                     | 0.41              |
| 11:E:416:LEU:HD23 | 11:E:416:LEU:HA  | 1.88                     | 0.41              |
| 12:F:435:SER:HB3  | 12:F:629:TRP:CD1 | 2.56                     | 0.41              |
| 12:G:730:TRP:HZ2  | 12:H:564:LYS:HD2 | 1.85                     | 0.41              |
| 4:5:167:ARG:NH1   | 4:5:181:ASN:HD22 | 2.18                     | 0.41              |
| 4:5:555:ASP:OD1   | 4:5:555:ASP:N    | 2.52                     | 0.41              |
| 5:6:450:MET:HE1   | 5:6:493:LEU:HD13 | 2.03                     | 0.41              |
| 6:7:182:TYR:HB2   | 6:7:191:THR:HG23 | 2.03                     | 0.41              |
| 7:A:151:ARG:NH2   | 11:E:398:ILE:CG2 | 2.84                     | 0.41              |
| 7:A:165:THR:HB    | 11:E:18:ARG:NH2  | 2.35                     | 0.41              |
| 1:2:377:ARG:NH1   | 1:2:377:ARG:HB3  | 2.36                     | 0.41              |
| 1:2:606:GLN:NE2   | 4:5:392:LYS:HZ2  | 2.15                     | 0.41              |
| 1:2:718:GLU:HG3   | 1:2:722:LYS:NZ   | 2.36                     | 0.41              |
| 2:3:468:HIS:O     | 2:3:523:ARG:NH2  | 2.50                     | 0.41              |
| 3:4:176:PRO:O     | 3:4:177:LEU:HD23 | 2.21                     | 0.41              |
| 5:6:158:CYS:HA    | 5:6:191:PHE:HD1  | 1.86                     | 0.41              |
| 5:6:357:THR:CA    | 5:6:551:ARG:HH12 | 2.00                     | 0.41              |
| 6:7:135:GLU:HG3   | 6:7:137:TYR:OH   | 2.21                     | 0.41              |
| 7:A:7:MET:HE3     | 7:A:7:MET:HB3    | 1.89                     | 0.41              |
| 7:A:116:ASN:OD1   | 7:A:119:ARG:NH2  | 2.53                     | 0.41              |
| 7:A:194:ILE:O     | 7:A:196:SER:N    | 2.53                     | 0.41              |
| 1:2:311:VAL:HG22  | 1:2:411:GLU:HG3  | 2.03                     | 0.41              |
| 1:2:616:ILE:HD12  | 1:2:616:ILE:HA   | 1.77                     | 0.41              |
| 1:2:765:ARG:HD3   | 1:2:768:GLU:OE1  | 2.20                     | 0.41              |
| 2:3:156:VAL:HG21  | 2:3:161:LEU:HD13 | 2.03                     | 0.41              |
| 3:4:472:GLU:HG3   | 3:4:473:HIS:H    | 1.86                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:5:46:THR:CG2   | 11:E:406:ARG:O   | 2.56                     | 0.41              |
| 4:5:529:ASP:HA   | 4:5:532:LEU:HD12 | 2.03                     | 0.41              |
| 4:5:602:ARG:C    | 4:5:604:SER:H    | 2.27                     | 0.41              |
| 5:6:325:ILE:O    | 5:6:329:MET:HG2  | 2.20                     | 0.41              |
| 5:6:437:GLU:C    | 5:6:440:HIS:H    | 2.29                     | 0.41              |
| 6:7:348:GLU:OE2  | 6:7:348:GLU:N    | 2.36                     | 0.41              |
| 7:A:152:CYS:SG   | 7:A:169:LEU:HG   | 2.61                     | 0.41              |
| 7:A:176:PHE:CG   | 11:E:47:TYR:CE1  | 3.09                     | 0.41              |
| 8:B:84:PHE:O     | 8:B:147:ASN:ND2  | 2.48                     | 0.41              |
| 8:B:173:ASN:OD1  | 9:C:135:SER:OG   | 2.28                     | 0.41              |
| 11:E:364:HIS:CD2 | 11:E:370:LYS:HD2 | 2.56                     | 0.41              |
| 1:2:233:ASN:HB3  | 1:2:236:ASP:OD1  | 2.21                     | 0.41              |
| 1:2:715:LEU:HA   | 1:2:716:PRO:HD3  | 1.91                     | 0.41              |
| 1:2:726:TYR:CZ   | 1:2:730:ARG:HD2  | 2.56                     | 0.41              |
| 1:2:793:MET:HB3  | 1:2:793:MET:HE3  | 1.80                     | 0.41              |
| 2:3:414:THR:OG1  | 4:5:460:GLU:OE2  | 2.38                     | 0.41              |
| 2:3:480:LYS:HD3  | 2:3:480:LYS:HA   | 1.80                     | 0.41              |
| 3:4:631:ILE:HG13 | 3:4:631:ILE:O    | 2.20                     | 0.41              |
| 5:6:59:ASN:OD1   | 5:6:59:ASN:N     | 2.53                     | 0.41              |
| 5:6:187:ASN:HD22 | 5:6:190:ARG:HB2  | 1.86                     | 0.41              |
| 5:6:516:LEU:HD12 | 5:6:516:LEU:HA   | 1.90                     | 0.41              |
| 8:B:40:LEU:CD1   | 12:G:688:ARG:NE  | 2.77                     | 0.41              |
| 11:E:23:VAL:HG12 | 11:E:24:ALA:O    | 2.21                     | 0.41              |
| 12:G:435:SER:HB3 | 12:G:629:TRP:CD1 | 2.56                     | 0.41              |
| 1:2:328:ASN:HA   | 1:2:335:VAL:HA   | 2.03                     | 0.40              |
| 2:3:526:LEU:HD23 | 2:3:526:LEU:HA   | 1.85                     | 0.40              |
| 3:4:499:LYS:HB3  | 3:4:499:LYS:HE3  | 1.83                     | 0.40              |
| 4:5:507:MET:SD   | 4:5:507:MET:N    | 2.94                     | 0.40              |
| 6:7:427:LEU:HD12 | 6:7:427:LEU:H    | 1.85                     | 0.40              |
| 7:A:43:ASN:HB2   | 7:A:65:ARG:HD3   | 2.02                     | 0.40              |
| 8:B:57:LYS:NZ    | 11:E:211:LYS:HZ1 | 2.18                     | 0.40              |
| 11:E:284:TRP:HE1 | 11:E:424:ARG:NH2 | 2.20                     | 0.40              |
| 2:3:114:ALA:HB2  | 2:3:169:VAL:HG23 | 2.03                     | 0.40              |
| 2:3:509:THR:HG23 | 2:3:511:MET:N    | 2.35                     | 0.40              |
| 3:4:462:LEU:HD23 | 3:4:462:LEU:HA   | 1.90                     | 0.40              |
| 4:5:42:TYR:CD1   | 11:E:367:PHE:CB  | 3.04                     | 0.40              |
| 4:5:128:LEU:O    | 4:5:128:LEU:HD12 | 2.21                     | 0.40              |
| 4:5:271:ILE:HG12 | 4:5:291:SER:O    | 2.21                     | 0.40              |
| 5:6:204:GLN:HB2  | 5:6:233:VAL:HG22 | 2.04                     | 0.40              |
| 8:B:60:LEU:HD23  | 8:B:60:LEU:HA    | 1.93                     | 0.40              |
| 9:C:40:MET:O     | 9:C:59:ALA:HA    | 2.21                     | 0.40              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:3:414:THR:HA    | 2:3:454:ASP:OD1  | 2.22                     | 0.40              |
| 2:3:549:MET:HE2   | 4:5:365:LEU:HD13 | 2.03                     | 0.40              |
| 2:3:659:THR:O     | 2:3:662:THR:HG22 | 2.22                     | 0.40              |
| 3:4:471:TYR:HD2   | 3:4:658:TYR:CE1  | 2.32                     | 0.40              |
| 5:6:524:ALA:HB3   | 5:6:525:PRO:HD3  | 2.02                     | 0.40              |
| 6:7:400:ARG:O     | 6:7:440:GLY:HA3  | 2.21                     | 0.40              |
| 7:A:166:SER:C     | 11:E:68:GLN:HG2  | 2.40                     | 0.40              |
| 9:C:21:SER:O      | 9:C:21:SER:OG    | 2.39                     | 0.40              |
| 12:H:554:LEU:HD22 | 12:H:567:PHE:CE1 | 2.57                     | 0.40              |
| 1:2:271:TYR:OH    | 11:E:313:GLU:CD  | 2.59                     | 0.40              |
| 1:2:814:MET:HE2   | 1:2:814:MET:HB3  | 1.88                     | 0.40              |
| 2:3:65:LEU:HD12   | 2:3:65:LEU:HA    | 1.94                     | 0.40              |
| 2:3:180:SER:OG    | 2:3:181:LEU:N    | 2.54                     | 0.40              |
| 2:3:242:GLN:HG2   | 2:3:243:THR:H    | 1.86                     | 0.40              |
| 3:4:752:LYS:HE2   | 3:4:752:LYS:HB3  | 1.86                     | 0.40              |
| 4:5:49:THR:CG2    | 11:E:407:SER:HB2 | 2.51                     | 0.40              |
| 7:A:124:TYR:CE2   | 10:D:97:LEU:HD11 | 2.56                     | 0.40              |
| 12:F:497:ILE:HB   | 12:F:514:LEU:HB2 | 2.03                     | 0.40              |
| 1:2:236:ASP:OD2   | 1:2:237:LEU:N    | 2.54                     | 0.40              |
| 1:2:461:VAL:O     | 1:2:464:ILE:N    | 2.54                     | 0.40              |
| 3:4:645:ASP:HB2   | 3:4:736:SER:OG   | 2.22                     | 0.40              |
| 3:4:666:LEU:HD23  | 3:4:666:LEU:HA   | 1.93                     | 0.40              |
| 6:7:51:ASP:OD1    | 6:7:53:ASP:N     | 2.45                     | 0.40              |
| 6:7:339:SER:HB3   | 6:7:553:PRO:HA   | 2.03                     | 0.40              |
| 7:A:94:TYR:HE2    | 9:C:202:LEU:HD11 | 1.87                     | 0.40              |
| 11:E:165:VAL:HG22 | 11:E:169:MET:HG3 | 2.03                     | 0.40              |
| 11:E:549:LEU:HD12 | 11:E:549:LEU:HA  | 1.88                     | 0.40              |
| 12:F:564:LYS:HD2  | 12:H:730:TRP:HZ2 | 1.85                     | 0.40              |
| 12:H:497:ILE:HB   | 12:H:514:LEU:HB2 | 2.03                     | 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   | 2     | 603/904 (67%)   | 523 (87%)  | 80 (13%) | 0        | 100         | 100 |
| 2   | 3     | 602/853 (71%)   | 532 (88%)  | 70 (12%) | 0        | 100         | 100 |
| 3   | 4     | 592/863 (69%)   | 507 (86%)  | 84 (14%) | 1 (0%)   | 44          | 78  |
| 4   | 5     | 563/734 (77%)   | 503 (89%)  | 59 (10%) | 1 (0%)   | 44          | 78  |
| 5   | 6     | 603/821 (73%)   | 538 (89%)  | 62 (10%) | 3 (0%)   | 25          | 64  |
| 6   | 7     | 592/719 (82%)   | 528 (89%)  | 63 (11%) | 1 (0%)   | 44          | 78  |
| 7   | A     | 194/196 (99%)   | 170 (88%)  | 24 (12%) | 0        | 100         | 100 |
| 8   | B     | 174/185 (94%)   | 161 (92%)  | 13 (8%)  | 0        | 100         | 100 |
| 9   | C     | 190/216 (88%)   | 173 (91%)  | 17 (9%)  | 0        | 100         | 100 |
| 10  | D     | 201/223 (90%)   | 186 (92%)  | 15 (8%)  | 0        | 100         | 100 |
| 11  | E     | 534/566 (94%)   | 480 (90%)  | 54 (10%) | 0        | 100         | 100 |
| 12  | F     | 404/1171 (34%)  | 396 (98%)  | 8 (2%)   | 0        | 100         | 100 |
| 12  | G     | 404/1171 (34%)  | 396 (98%)  | 8 (2%)   | 0        | 100         | 100 |
| 12  | H     | 404/1171 (34%)  | 396 (98%)  | 8 (2%)   | 0        | 100         | 100 |
| All | All   | 6060/9793 (62%) | 5489 (91%) | 565 (9%) | 6 (0%)   | 50          | 83  |

All (6) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5   | 6     | 540 | CYS  |
| 3   | 4     | 653 | PRO  |
| 4   | 5     | 115 | PRO  |
| 5   | 6     | 559 | ILE  |
| 5   | 6     | 563 | ILE  |
| 6   | 7     | 490 | PRO  |

### 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   | 2     | 535/781 (68%) | 535 (100%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Rotameric   | Outliers | Percentiles |     |
|-----|-------|-----------------|-------------|----------|-------------|-----|
| 2   | 3     | 527/742 (71%)   | 527 (100%)  | 0        | 100         | 100 |
| 3   | 4     | 530/753 (70%)   | 528 (100%)  | 2 (0%)   | 89          | 91  |
| 4   | 5     | 494/625 (79%)   | 493 (100%)  | 1 (0%)   | 92          | 94  |
| 5   | 6     | 545/724 (75%)   | 541 (99%)   | 4 (1%)   | 81          | 87  |
| 6   | 7     | 514/619 (83%)   | 507 (99%)   | 7 (1%)   | 62          | 75  |
| 7   | A     | 174/174 (100%)  | 173 (99%)   | 1 (1%)   | 84          | 88  |
| 8   | B     | 160/169 (95%)   | 160 (100%)  | 0        | 100         | 100 |
| 9   | C     | 167/186 (90%)   | 167 (100%)  | 0        | 100         | 100 |
| 10  | D     | 188/205 (92%)   | 188 (100%)  | 0        | 100         | 100 |
| 11  | E     | 491/517 (95%)   | 489 (100%)  | 2 (0%)   | 89          | 91  |
| 12  | F     | 350/1017 (34%)  | 347 (99%)   | 3 (1%)   | 75          | 83  |
| 12  | G     | 350/1017 (34%)  | 347 (99%)   | 3 (1%)   | 75          | 83  |
| 12  | H     | 350/1017 (34%)  | 347 (99%)   | 3 (1%)   | 75          | 83  |
| All | All   | 5375/8546 (63%) | 5349 (100%) | 26 (0%)  | 85          | 89  |

All (26) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | 4     | 372 | LEU  |
| 3   | 4     | 428 | ARG  |
| 4   | 5     | 271 | ILE  |
| 5   | 6     | 226 | VAL  |
| 5   | 6     | 559 | ILE  |
| 5   | 6     | 563 | ILE  |
| 5   | 6     | 565 | ARG  |
| 6   | 7     | 311 | ASP  |
| 6   | 7     | 312 | ASP  |
| 6   | 7     | 319 | LEU  |
| 6   | 7     | 320 | THR  |
| 6   | 7     | 527 | ARG  |
| 6   | 7     | 528 | ASP  |
| 6   | 7     | 529 | ASN  |
| 7   | A     | 80  | LEU  |
| 11  | E     | 132 | ASP  |
| 11  | E     | 284 | TRP  |
| 12  | F     | 599 | LEU  |
| 12  | F     | 601 | VAL  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 12  | F     | 804 | ARG  |
| 12  | G     | 599 | LEU  |
| 12  | G     | 601 | VAL  |
| 12  | G     | 804 | ARG  |
| 12  | H     | 599 | LEU  |
| 12  | H     | 601 | VAL  |
| 12  | H     | 804 | ARG  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (98) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 2     | 180 | HIS  |
| 1   | 2     | 196 | HIS  |
| 1   | 2     | 197 | HIS  |
| 1   | 2     | 201 | ASN  |
| 1   | 2     | 206 | HIS  |
| 1   | 2     | 282 | HIS  |
| 1   | 2     | 328 | ASN  |
| 1   | 2     | 419 | HIS  |
| 1   | 2     | 443 | HIS  |
| 1   | 2     | 488 | HIS  |
| 1   | 2     | 511 | HIS  |
| 1   | 2     | 561 | GLN  |
| 1   | 2     | 601 | HIS  |
| 1   | 2     | 606 | GLN  |
| 1   | 2     | 607 | GLN  |
| 1   | 2     | 683 | HIS  |
| 2   | 3     | 97  | ASN  |
| 2   | 3     | 112 | ASN  |
| 2   | 3     | 155 | HIS  |
| 2   | 3     | 241 | HIS  |
| 2   | 3     | 488 | ASN  |
| 2   | 3     | 513 | ASN  |
| 2   | 3     | 545 | HIS  |
| 3   | 4     | 165 | ASN  |
| 3   | 4     | 171 | GLN  |
| 3   | 4     | 195 | GLN  |
| 3   | 4     | 214 | HIS  |
| 3   | 4     | 256 | HIS  |
| 3   | 4     | 368 | HIS  |
| 3   | 4     | 415 | HIS  |
| 3   | 4     | 473 | HIS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | 4     | 521 | GLN  |
| 3   | 4     | 525 | ASN  |
| 3   | 4     | 568 | ASN  |
| 3   | 4     | 588 | HIS  |
| 3   | 4     | 633 | ASN  |
| 3   | 4     | 695 | HIS  |
| 3   | 4     | 733 | GLN  |
| 3   | 4     | 744 | HIS  |
| 4   | 5     | 95  | HIS  |
| 4   | 5     | 181 | ASN  |
| 4   | 5     | 244 | HIS  |
| 4   | 5     | 376 | ASN  |
| 4   | 5     | 426 | ASN  |
| 4   | 5     | 459 | HIS  |
| 5   | 6     | 27  | GLN  |
| 5   | 6     | 70  | GLN  |
| 5   | 6     | 212 | GLN  |
| 5   | 6     | 342 | GLN  |
| 5   | 6     | 349 | ASN  |
| 6   | 7     | 36  | GLN  |
| 6   | 7     | 186 | GLN  |
| 6   | 7     | 223 | GLN  |
| 6   | 7     | 243 | GLN  |
| 6   | 7     | 503 | GLN  |
| 6   | 7     | 543 | HIS  |
| 7   | A     | 20  | GLN  |
| 7   | A     | 72  | ASN  |
| 7   | A     | 174 | GLN  |
| 7   | A     | 188 | GLN  |
| 8   | B     | 51  | ASN  |
| 8   | B     | 101 | ASN  |
| 8   | B     | 102 | HIS  |
| 8   | B     | 166 | HIS  |
| 9   | C     | 136 | GLN  |
| 9   | C     | 155 | ASN  |
| 9   | C     | 177 | GLN  |
| 9   | C     | 180 | GLN  |
| 10  | D     | 60  | HIS  |
| 10  | D     | 78  | HIS  |
| 11  | E     | 15  | GLN  |
| 11  | E     | 37  | GLN  |
| 11  | E     | 248 | HIS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 11  | E     | 253 | ASN  |
| 11  | E     | 324 | GLN  |
| 11  | E     | 339 | ASN  |
| 11  | E     | 364 | HIS  |
| 11  | E     | 414 | HIS  |
| 12  | F     | 563 | GLN  |
| 12  | F     | 602 | GLN  |
| 12  | F     | 615 | HIS  |
| 12  | F     | 663 | ASN  |
| 12  | F     | 667 | HIS  |
| 12  | F     | 717 | GLN  |
| 12  | G     | 459 | ASN  |
| 12  | G     | 563 | GLN  |
| 12  | G     | 602 | GLN  |
| 12  | G     | 615 | HIS  |
| 12  | G     | 663 | ASN  |
| 12  | G     | 667 | HIS  |
| 12  | G     | 717 | GLN  |
| 12  | H     | 563 | GLN  |
| 12  | H     | 602 | GLN  |
| 12  | H     | 615 | HIS  |
| 12  | H     | 663 | ASN  |
| 12  | H     | 667 | HIS  |
| 12  | H     | 717 | GLN  |
| 12  | H     | 738 | HIS  |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

### 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

### 5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry

Of 5 ligands modelled in this entry, 5 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

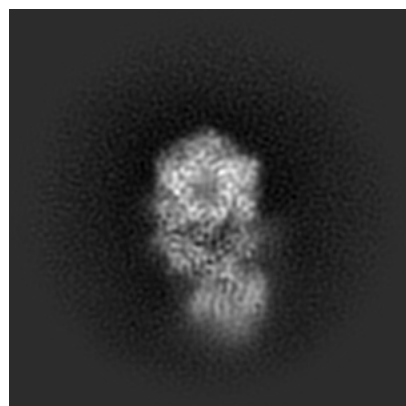
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10621. These allow visual inspection of the internal detail of the map and identification of artifacts.

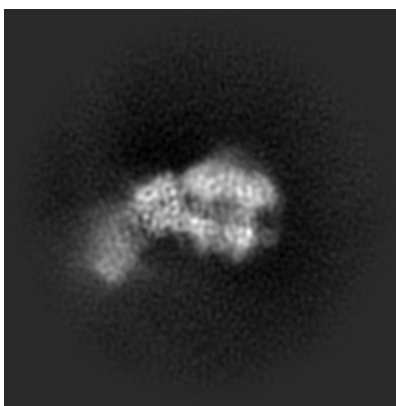
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

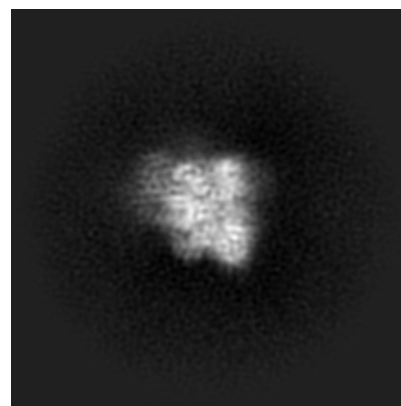
#### 6.1.1 Primary map



X

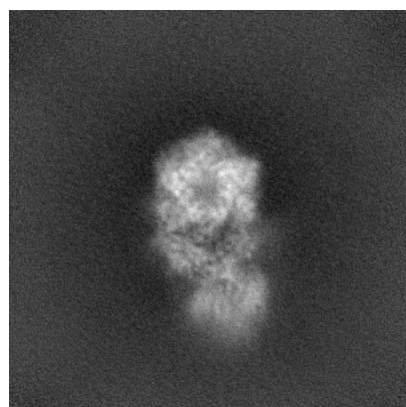


Y

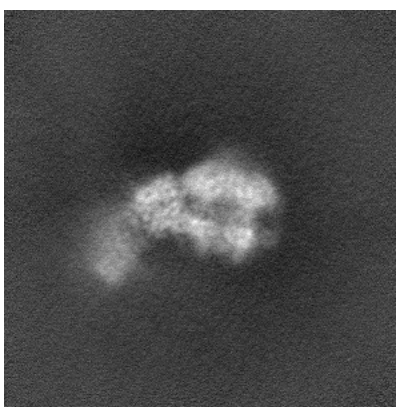


Z

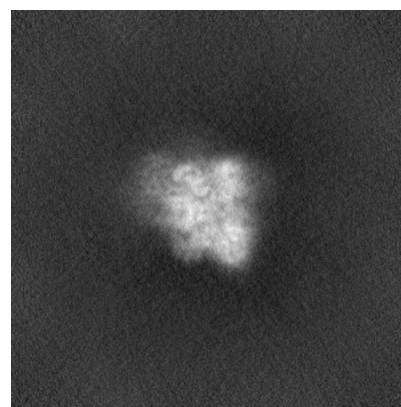
#### 6.1.2 Raw map



X



Y

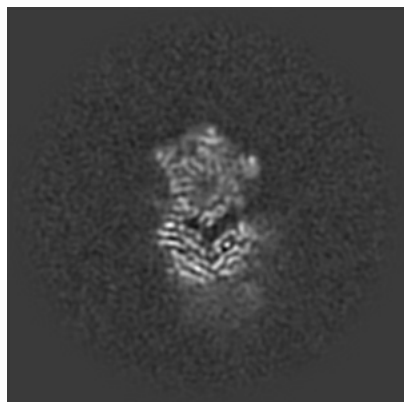


Z

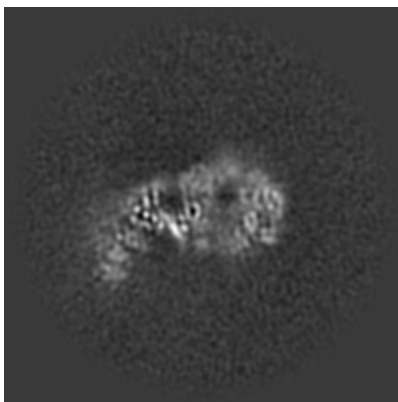
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

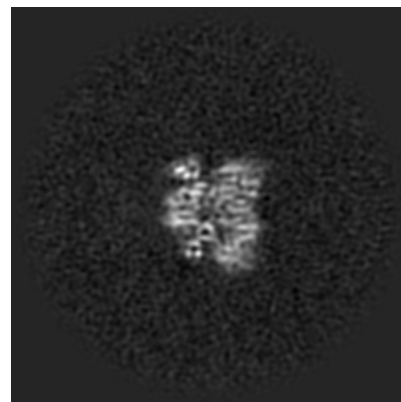
### 6.2.1 Primary map



X Index: 215

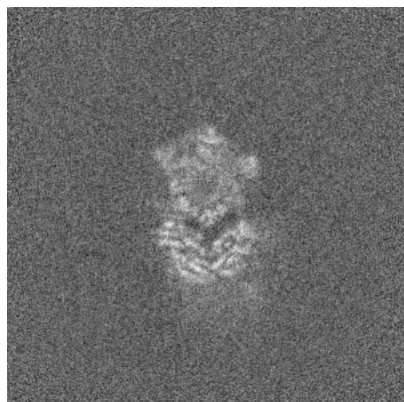


Y Index: 215

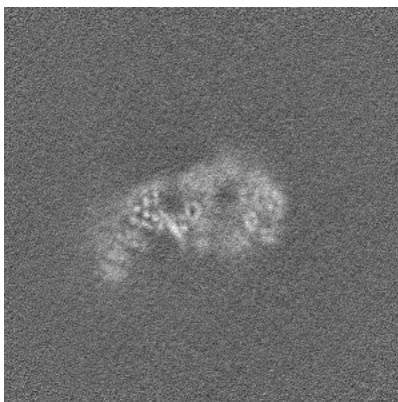


Z Index: 215

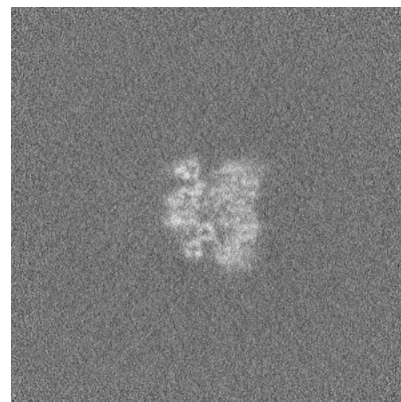
### 6.2.2 Raw map



X Index: 215



Y Index: 215

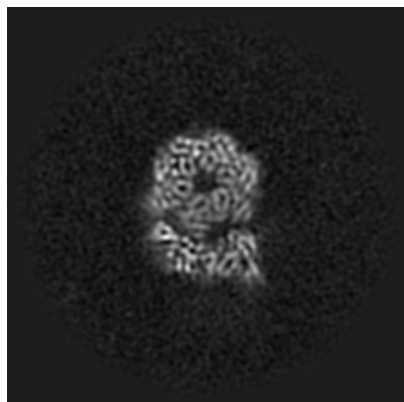


Z Index: 215

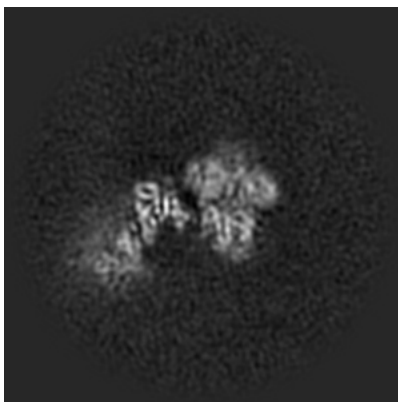
The images above show central slices of the map in three orthogonal directions.

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

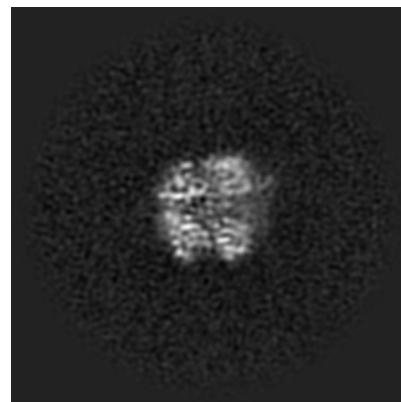
### 6.3.1 Primary map



X Index: 233

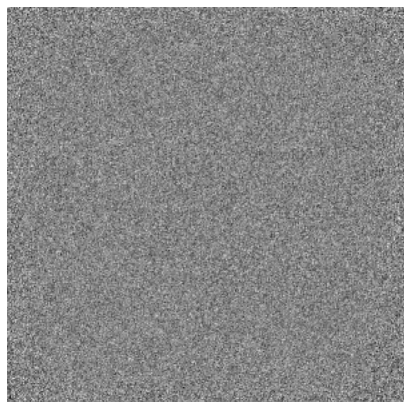


Y Index: 236

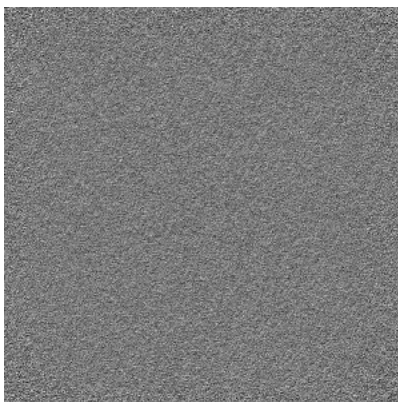


Z Index: 254

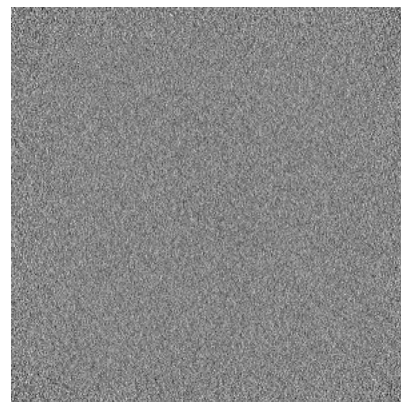
### 6.3.2 Raw map



X Index: 0



Y Index: 0

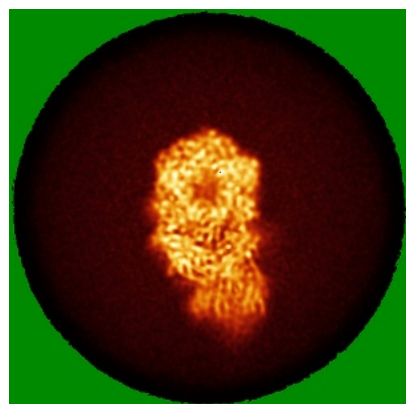


Z Index: 0

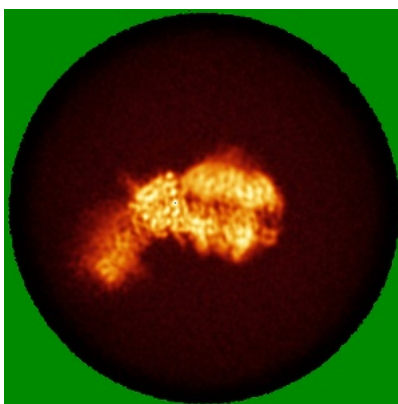
The images above show the largest variance slices of the map in three orthogonal directions.

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

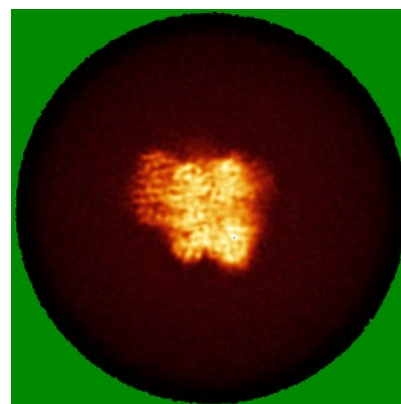
### 6.4.1 Primary map



X

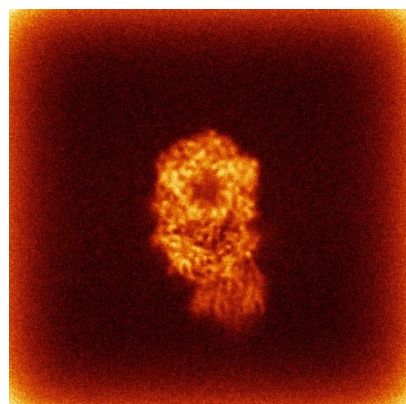


Y

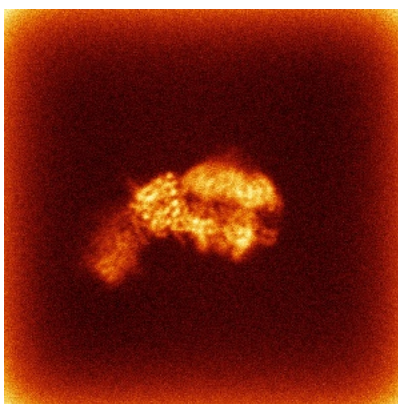


Z

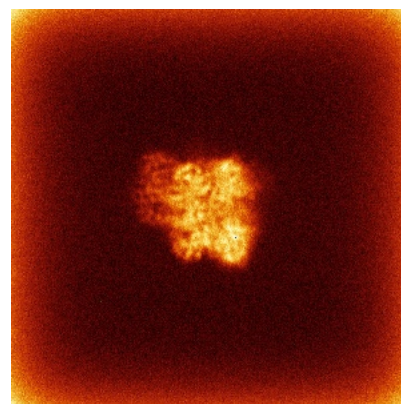
### 6.4.2 Raw map



X



Y

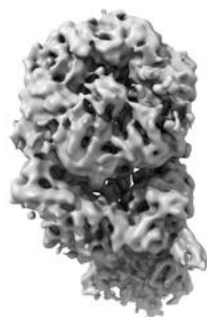


Z

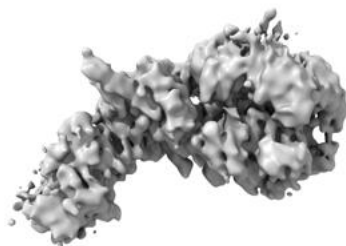
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

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

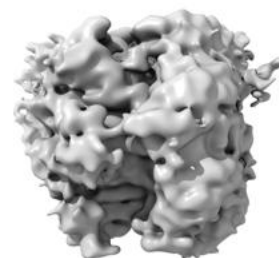
### 6.5.1 Primary map



X



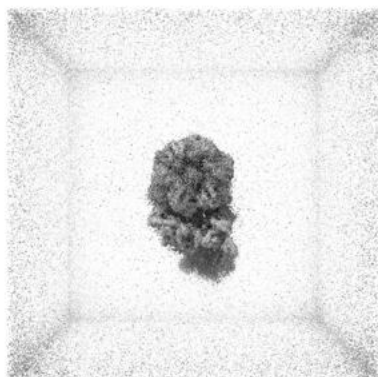
Y



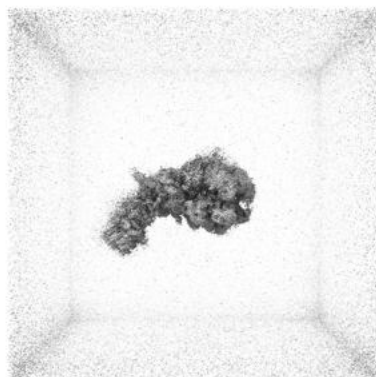
Z

The images above show the 3D surface view of the map at the recommended contour level 0.4. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

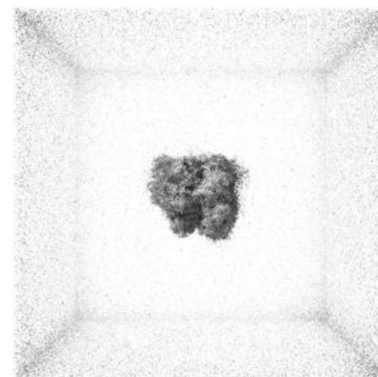
### 6.5.2 Raw map



X



Y



Z

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.

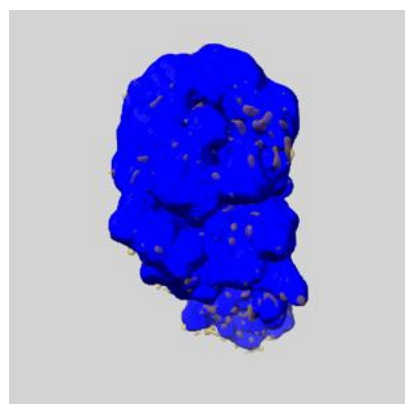
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

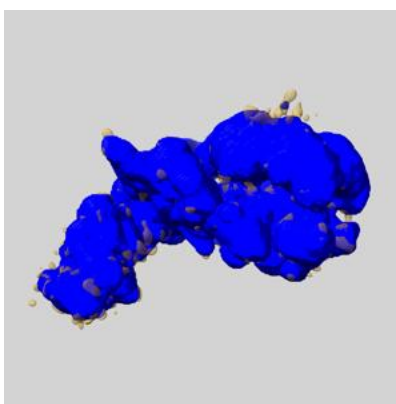
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

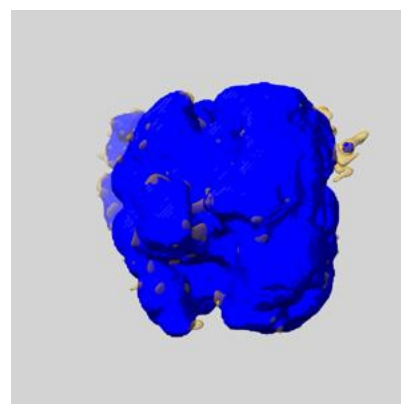
### 6.6.1 emd\_10621\_msk\_1.map [i](#)



X



Y

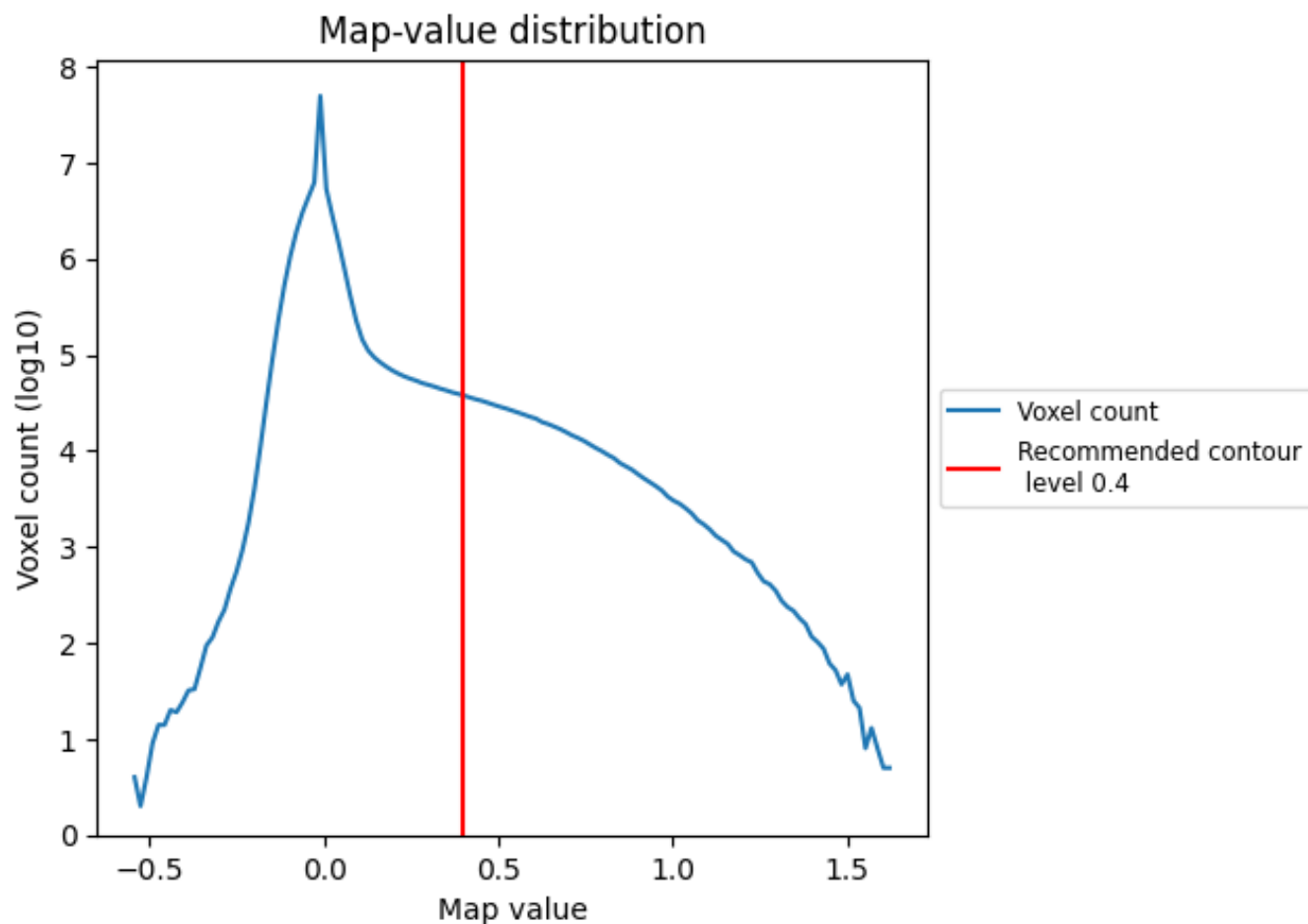


Z

## 7 Map analysis [i](#)

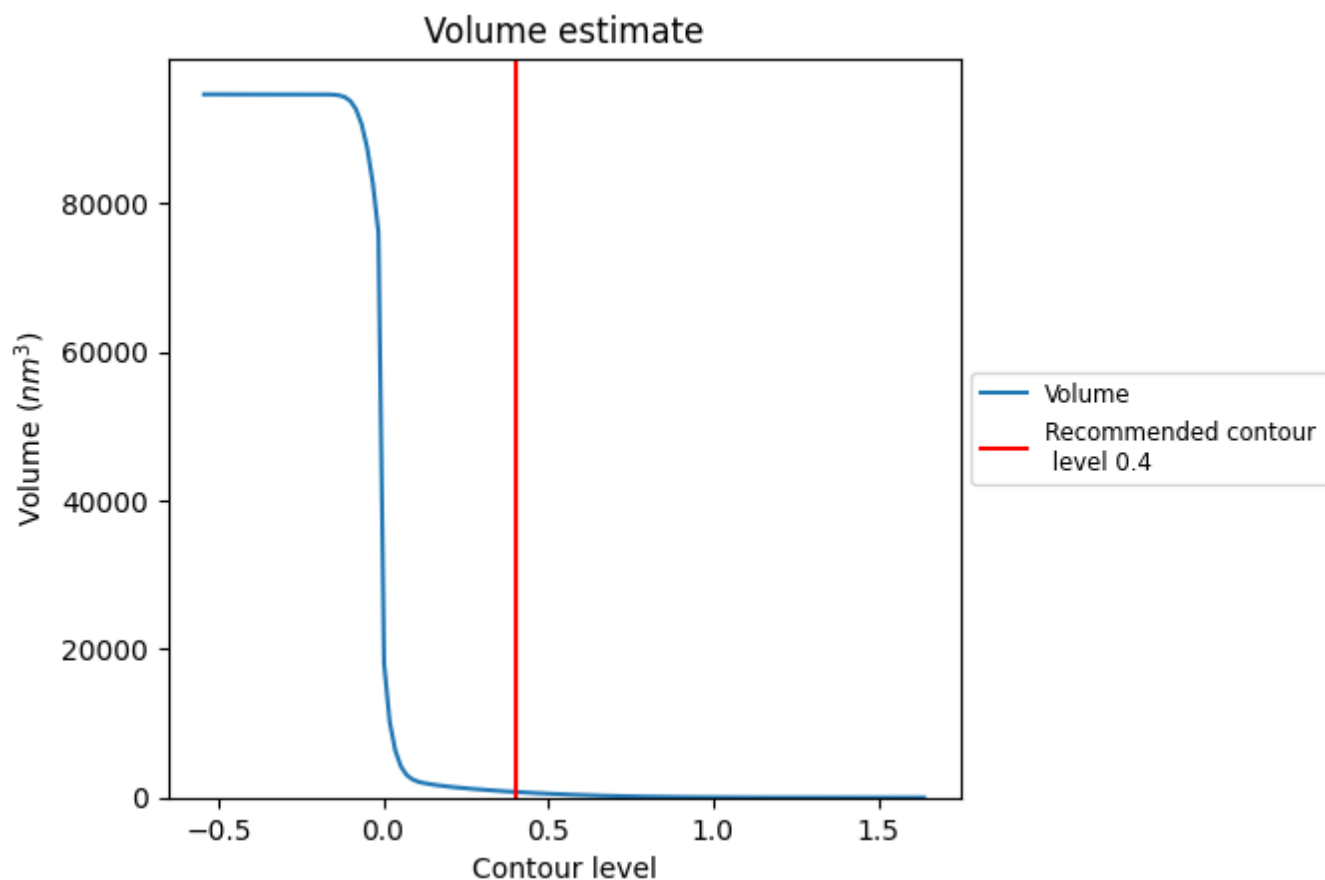
This section contains the results of statistical analysis of the map.

### 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.

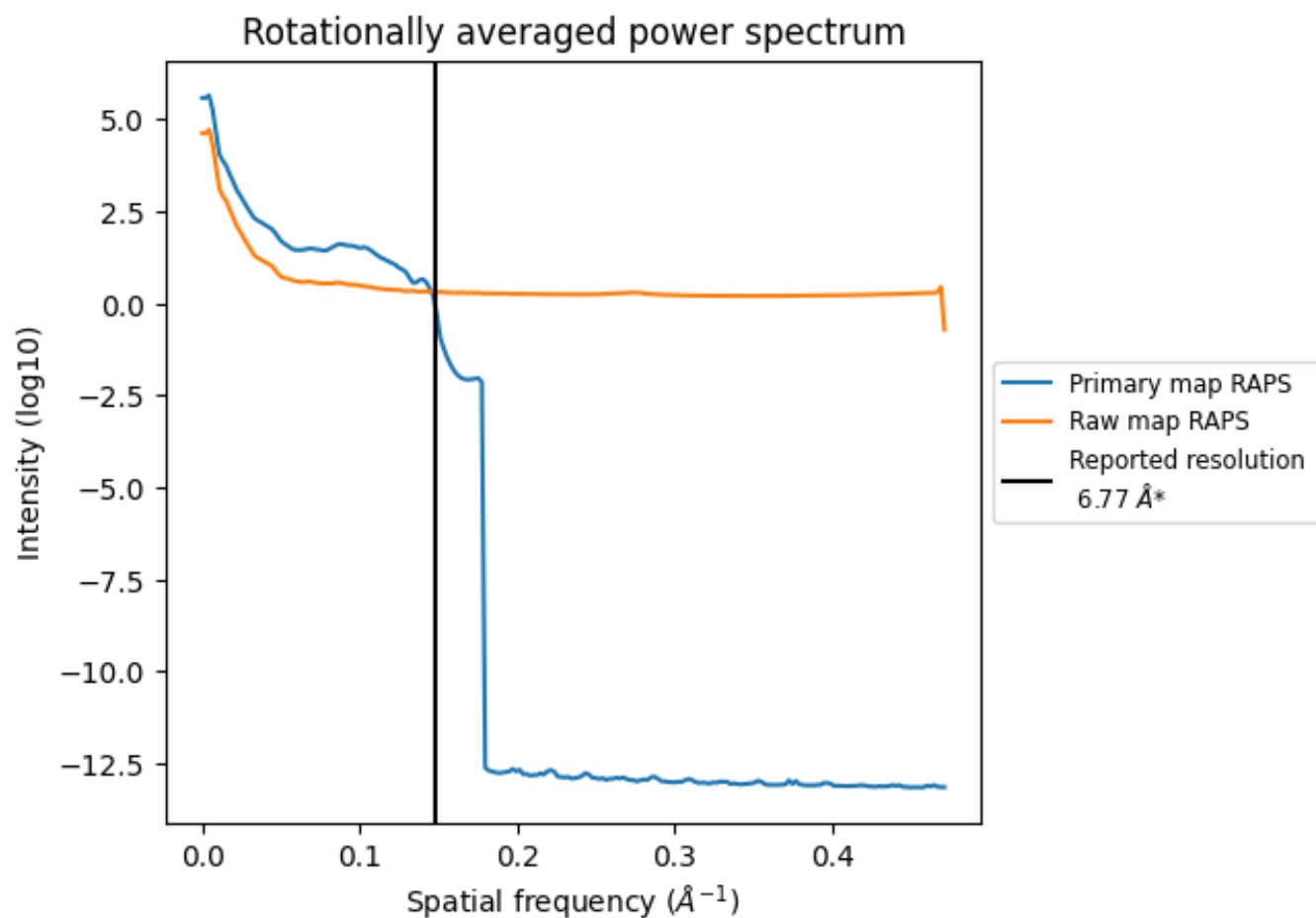
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 757 nm<sup>3</sup>; this corresponds to an approximate mass of 683 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 ⓘ

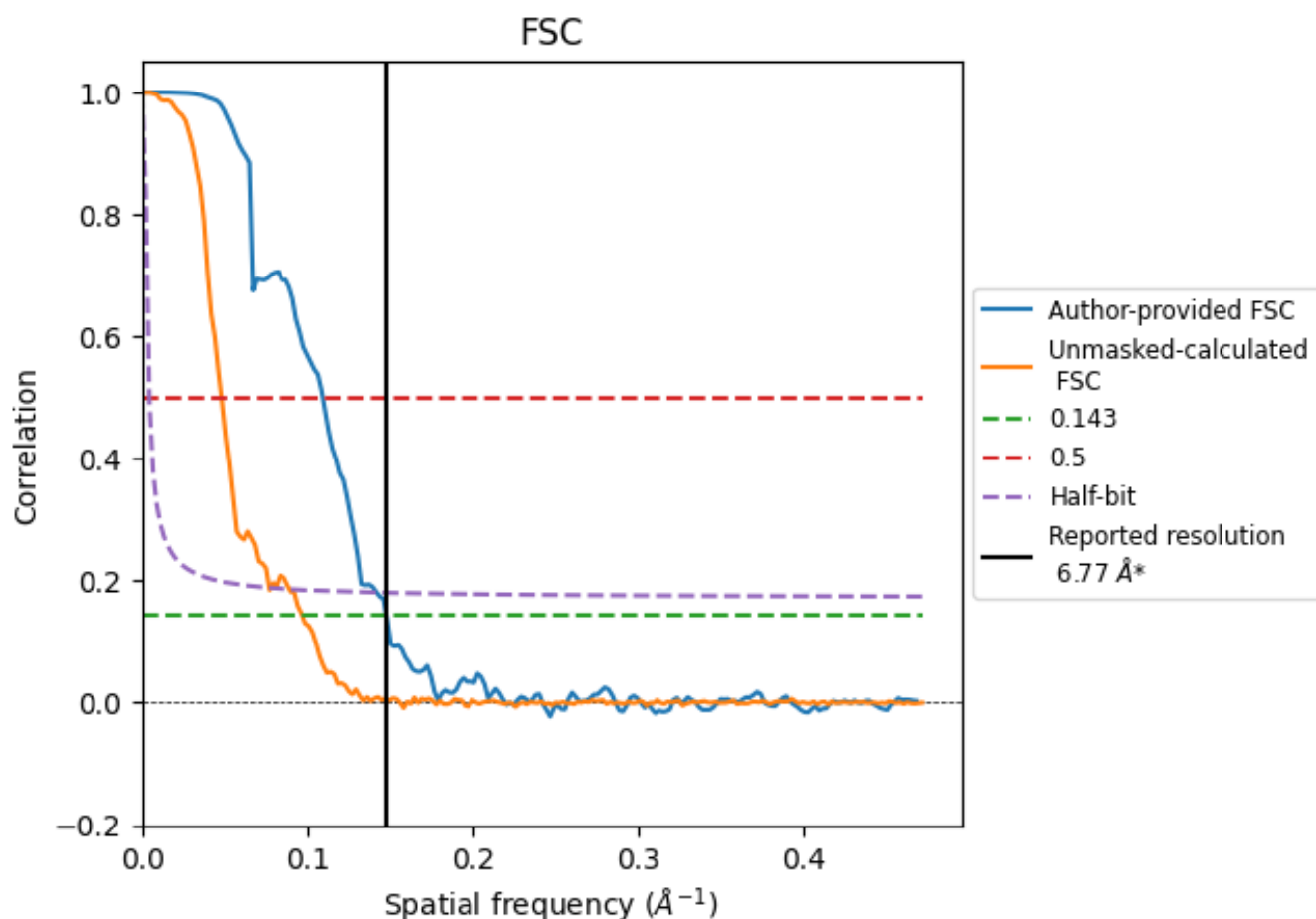


\*Reported resolution corresponds to spatial frequency of 0.148 Å<sup>-1</sup>

## 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 0.148 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

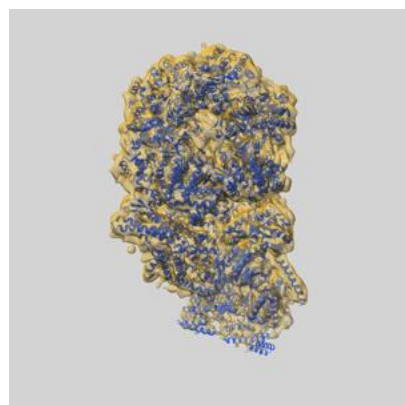
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |       |          |
|---------------------------|------------------------------------|-------|----------|
|                           | 0.143                              | 0.5   | Half-bit |
| Reported by author        | 6.77                               | -     | -        |
| Author-provided FSC curve | 6.78                               | 9.14  | 7.05     |
| Unmasked-calculated*      | 10.31                              | 20.88 | 13.05    |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 10.31 differs from the reported value 6.77 by more than 10 %

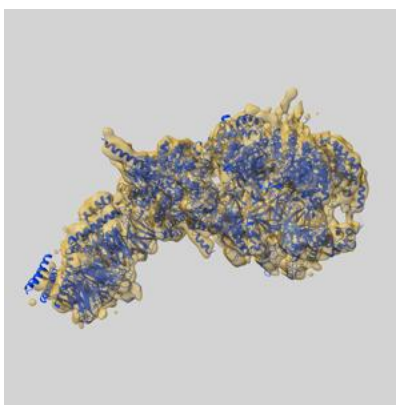
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-10621 and PDB model 6XTY. Per-residue inclusion information can be found in section [3](#) on page [10](#).

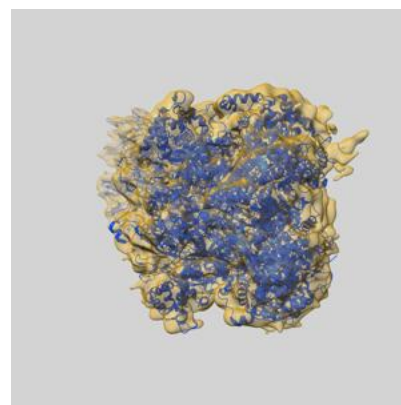
### 9.1 Map-model overlay [i](#)



X



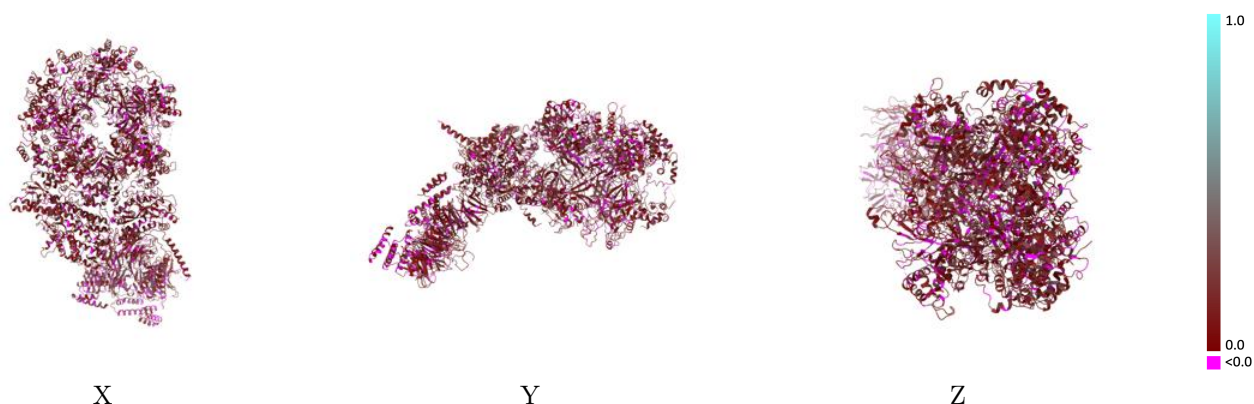
Y



Z

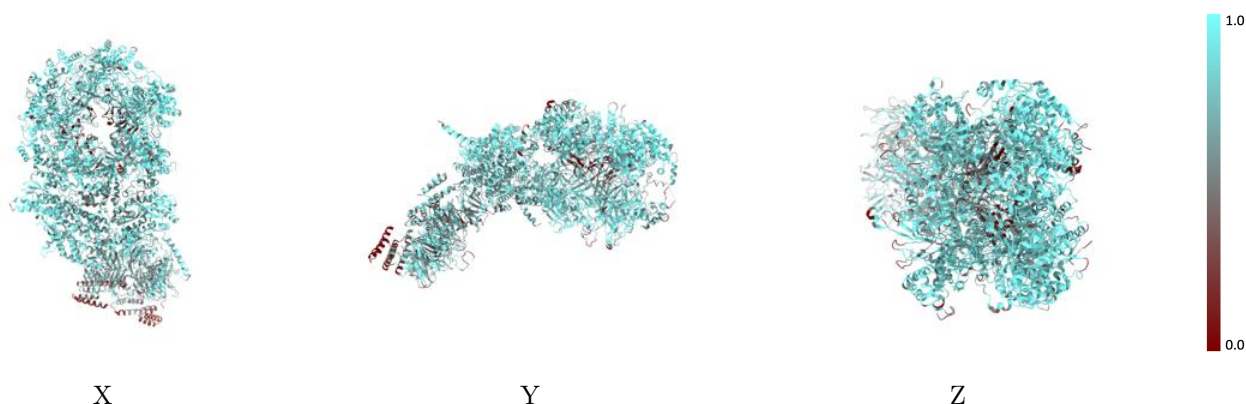
The images above show the 3D surface view of the map at the recommended contour level 0.4 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



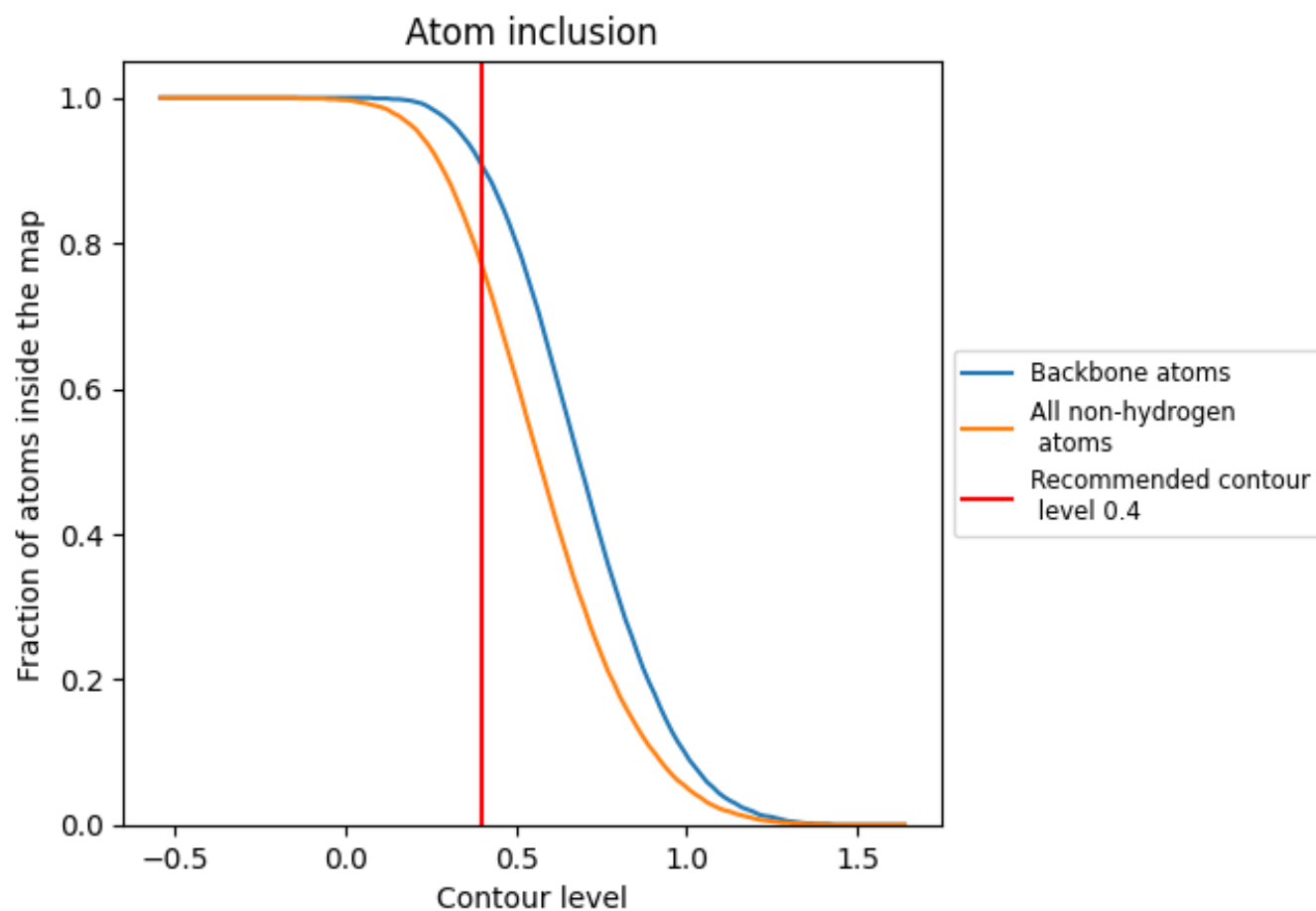
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.4).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 91% of all backbone atoms, 77% 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 (0.4) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion     | Q-score            |
|-------|--------------------|--------------------|
| All   | <div></div> 0.7680 | <div></div> 0.1270 |
| 2     | <div></div> 0.8100 | <div></div> 0.1330 |
| 3     | <div></div> 0.8100 | <div></div> 0.1200 |
| 4     | <div></div> 0.8170 | <div></div> 0.1280 |
| 5     | <div></div> 0.7610 | <div></div> 0.1260 |
| 6     | <div></div> 0.8180 | <div></div> 0.1210 |
| 7     | <div></div> 0.8260 | <div></div> 0.1250 |
| A     | <div></div> 0.8330 | <div></div> 0.1430 |
| B     | <div></div> 0.8010 | <div></div> 0.1520 |
| C     | <div></div> 0.8150 | <div></div> 0.1420 |
| D     | <div></div> 0.8350 | <div></div> 0.1380 |
| E     | <div></div> 0.7980 | <div></div> 0.1410 |
| F     | <div></div> 0.6680 | <div></div> 0.1200 |
| G     | <div></div> 0.5650 | <div></div> 0.1270 |
| H     | <div></div> 0.5750 | <div></div> 0.0990 |

1.0

0.0

<0.0