



## Full wwPDB EM Validation Report ⓘ

May 25, 2025 – 10:00 PM EDT

PDB ID : 8SFE / pdb\_00008sfe  
EMDB ID : EMD-40439  
Title : Open state CCT-G beta 5 complex  
Authors : Wang, S.; Sass, M.; Willardson, B.M.; Shen, P.S.  
Deposited on : 2023-04-10  
Resolution : 3.36 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  
Mogul : 2022.3.0, CSD as543be (2022)  
MolProbity : 4-5-2 with Phenix2.0rc1  
buster-report : 1.1.7 (2018)  
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) : 2.43.1

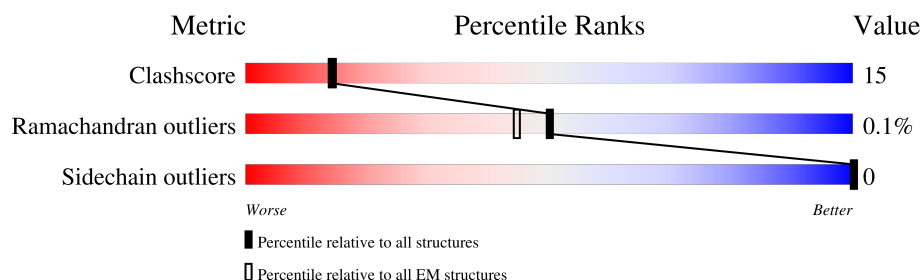
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.36 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   | Z     | 508    |                  |
| 1   | z     | 508    |                  |
| 2   | A     | 536    |                  |
| 2   | a     | 536    |                  |
| 3   | B     | 526    |                  |
| 3   | b     | 526    |                  |
| 4   | D     | 521    |                  |
| 4   | d     | 521    |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 5   | E     | 540    |                  |
| 5   | e     | 540    |                  |
| 6   | G     | 528    |                  |
| 6   | g     | 528    |                  |
| 7   | H     | 528    |                  |
| 7   | h     | 528    |                  |
| 8   | Q     | 538    |                  |
| 8   | q     | 538    |                  |

## 2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 60512 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 T-complex protein 1 subunit zeta.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | z     | 508      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3903  | 2454 | 681 | 748 | 20 |         |       |
| 1   | Z     | 508      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3903  | 2454 | 681 | 748 | 20 |         |       |

- Molecule 2 is a protein called T-complex protein 1 subunit alpha.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | a     | 490      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3709  | 2323 | 651 | 713 | 22 |         |       |
| 2   | A     | 494      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3742  | 2345 | 656 | 719 | 22 |         |       |

- Molecule 3 is a protein called T-complex protein 1 subunit beta.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 3   | b     | 478      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3590  | 2248 | 630 | 694 | 18 |         |       |
| 3   | B     | 492      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3698  | 2311 | 648 | 720 | 19 |         |       |

- Molecule 4 is a protein called T-complex protein 1 subunit delta.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | d     | 489      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3673  | 2302 | 636 | 714 | 21 |         |       |
| 4   | D     | 487      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3655  | 2292 | 634 | 708 | 21 |         |       |

- Molecule 5 is a protein called T-complex protein 1 subunit epsilon.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 5   | e     | 505      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3882  | 2422 | 678 | 752 | 30 |         |       |
| 5   | E     | 503      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3863  | 2412 | 672 | 749 | 30 |         |       |

- Molecule 6 is a protein called T-complex protein 1 subunit gamma.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 6   | g     | 477      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3678  | 2295 | 654 | 700 | 29 |         |       |
| 6   | G     | 485      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3741  | 2335 | 664 | 713 | 29 |         |       |

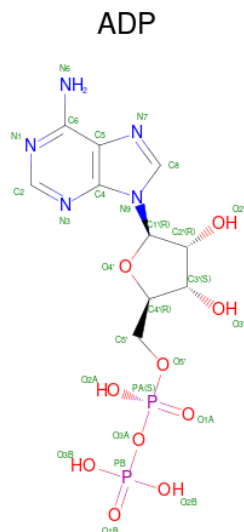
- Molecule 7 is a protein called T-complex protein 1 subunit eta.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 7   | h     | 500      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3834  | 2422 | 662 | 727 | 23 |         |       |
| 7   | H     | 499      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3825  | 2417 | 661 | 724 | 23 |         |       |

- Molecule 8 is a protein called T-complex protein 1 subunit theta.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 8   | q     | 483      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3692  | 2327 | 628 | 712 | 25 |         |       |
| 8   | Q     | 483      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3692  | 2327 | 628 | 712 | 25 |         |       |

- Molecule 9 is ADENOSINE-5'-DIPHOSPHATE (CCD ID: ADP) (formula: C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>10</sub>P<sub>2</sub>).



| Mol | Chain | Residues | Atoms       |         |        |         |        | AltConf |
|-----|-------|----------|-------------|---------|--------|---------|--------|---------|
| 9   | z     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | Z     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | a     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | b     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | d     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | e     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | g     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | h     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | q     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | A     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | B     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | D     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | E     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |
| 9   | G     | 1        | Total<br>27 | C<br>10 | N<br>5 | O<br>10 | P<br>2 | 0       |

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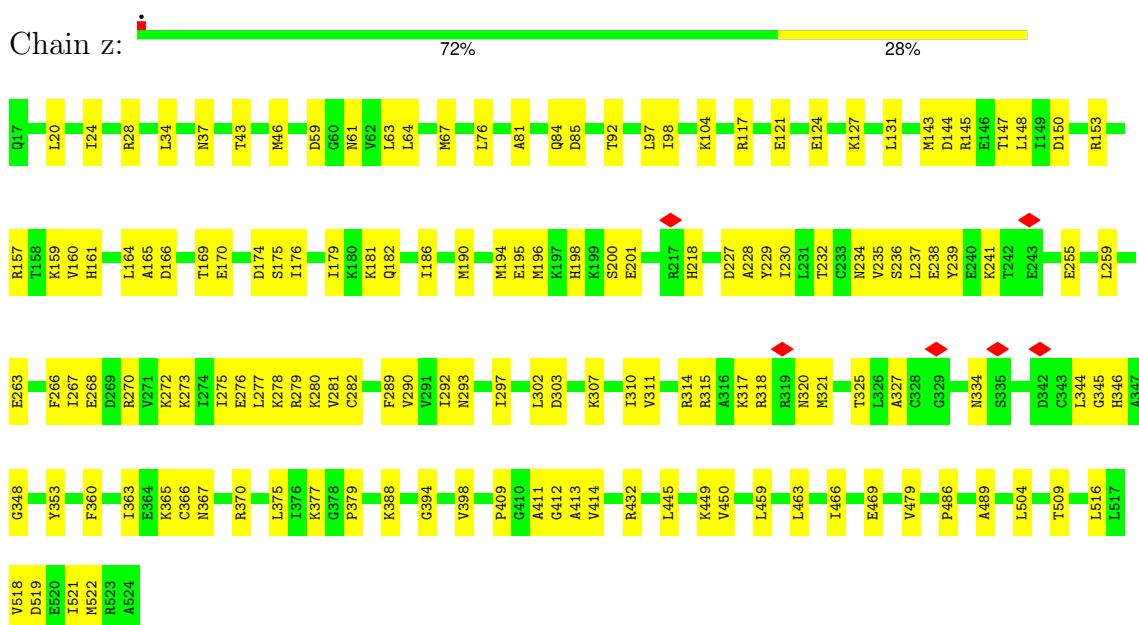
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| Mol | Chain | Residues | Atoms |    |   |    |   | AltConf |
|-----|-------|----------|-------|----|---|----|---|---------|
| 9   | H     | 1        | Total | C  | N | O  | P | 0       |
|     |       |          | 27    | 10 | 5 | 10 | 2 |         |
| 9   | Q     | 1        | Total | C  | N | O  | P | 0       |
|     |       |          | 27    | 10 | 5 | 10 | 2 |         |

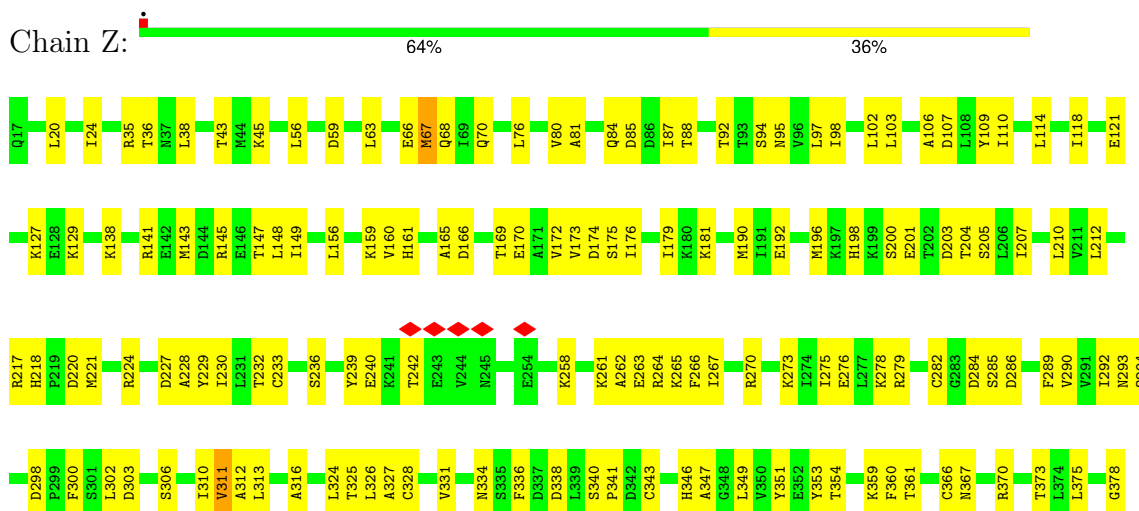
### 3 Residue-property plots

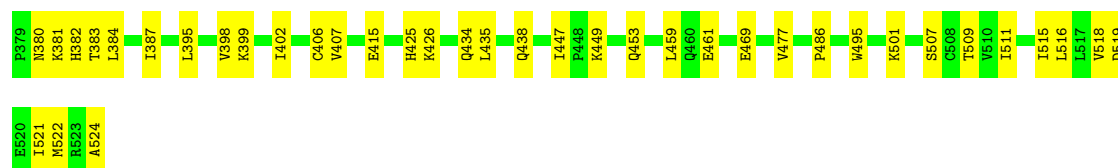
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: T-complex protein 1 subunit zeta

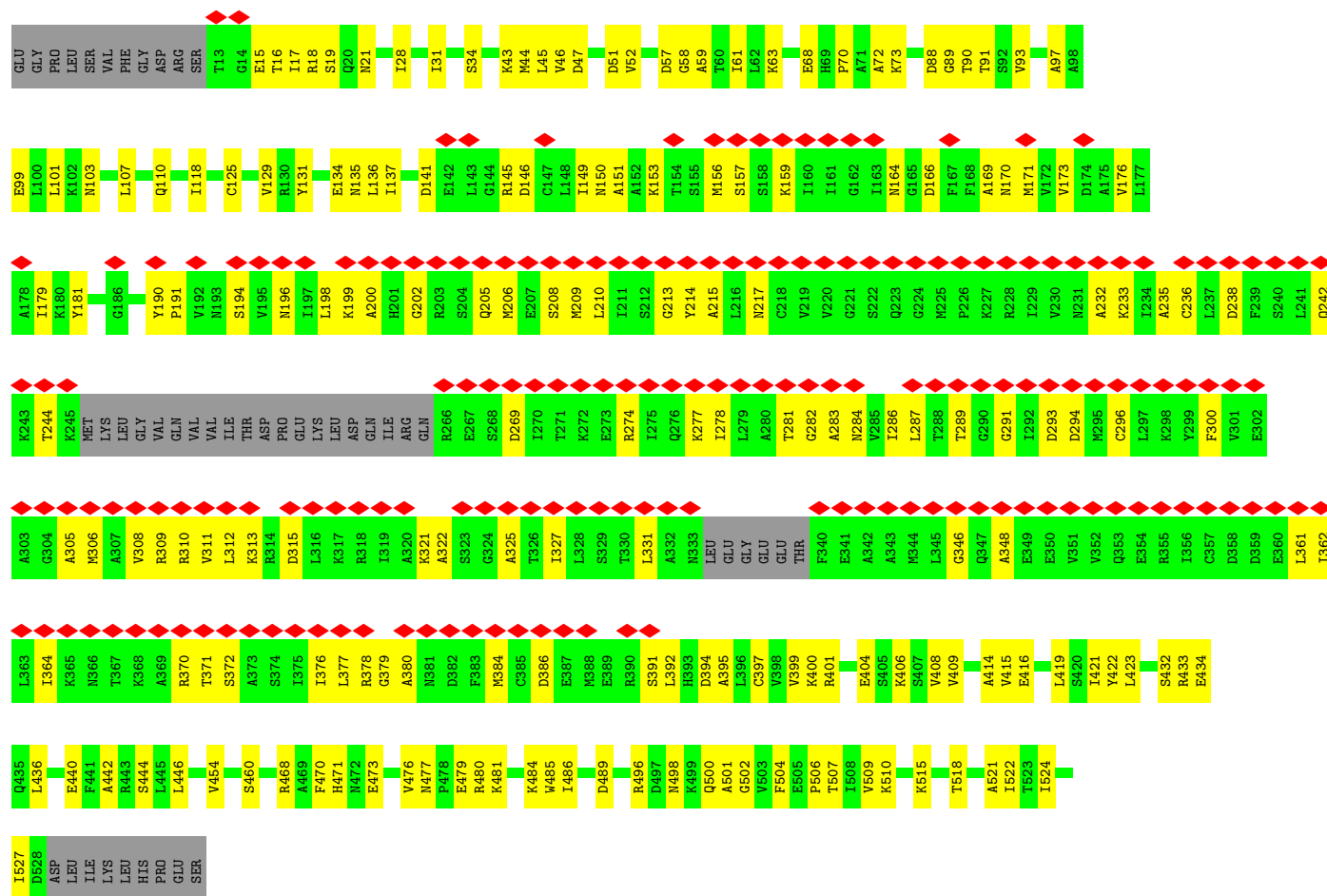


- Molecule 1: T-complex protein 1 subunit zeta

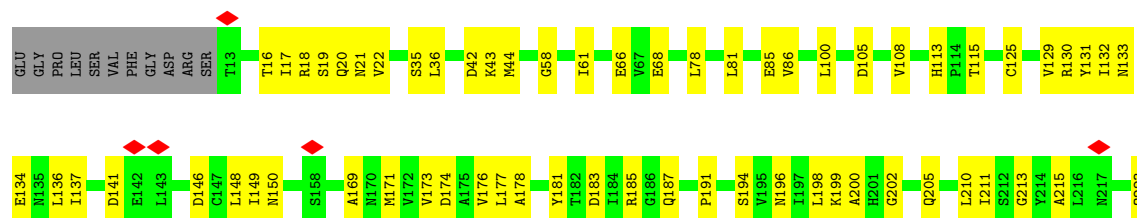


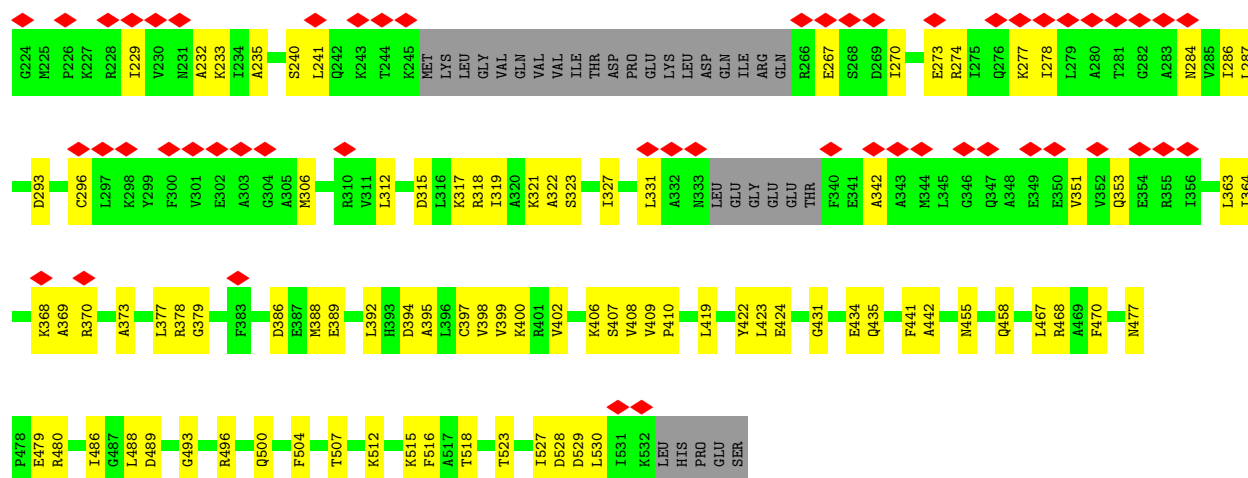


• Molecule 2: T-complex protein 1 subunit alpha

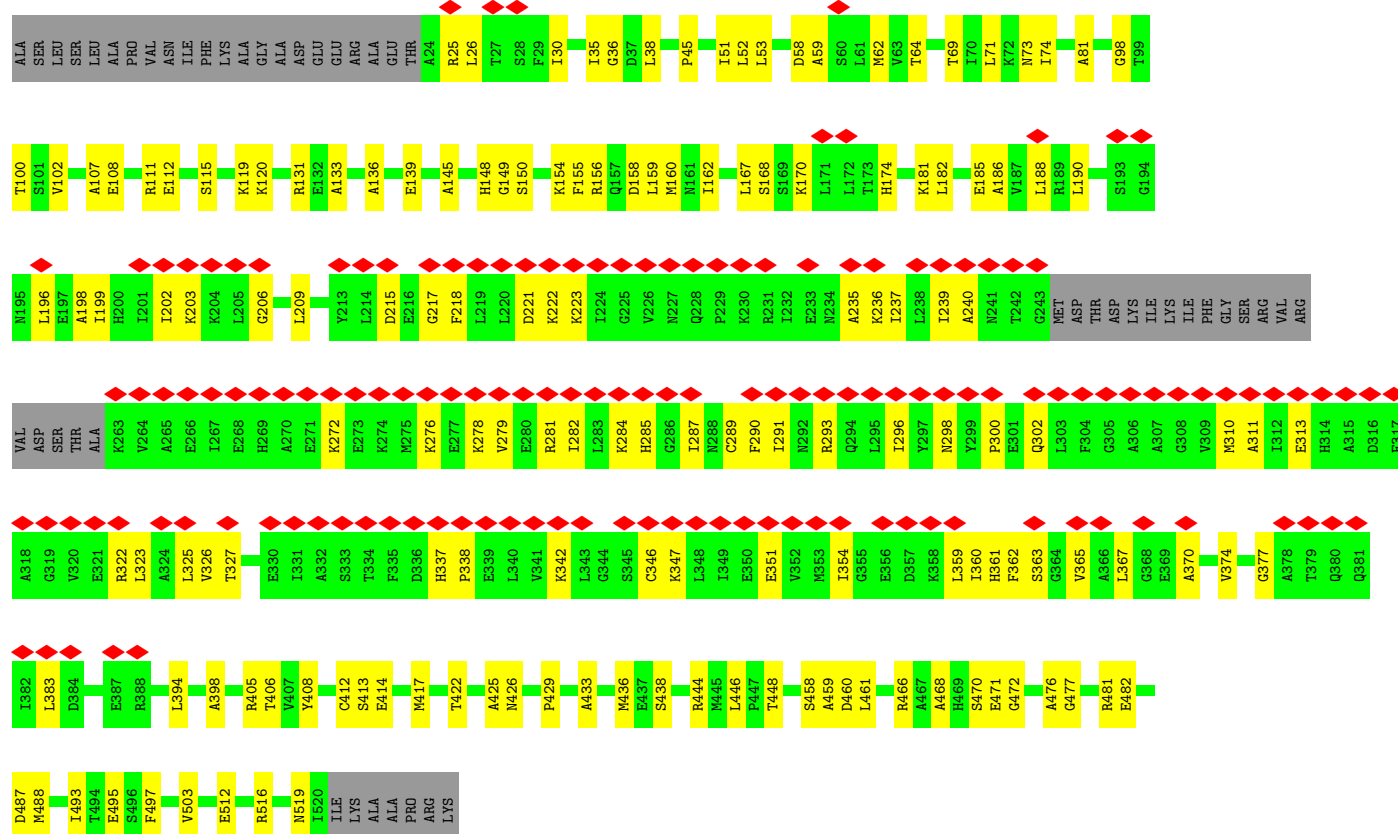


• Molecule 2: T-complex protein 1 subunit alpha

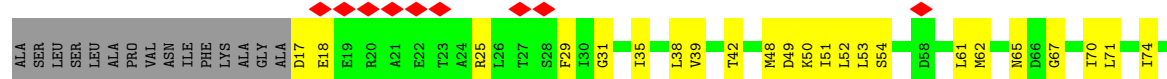


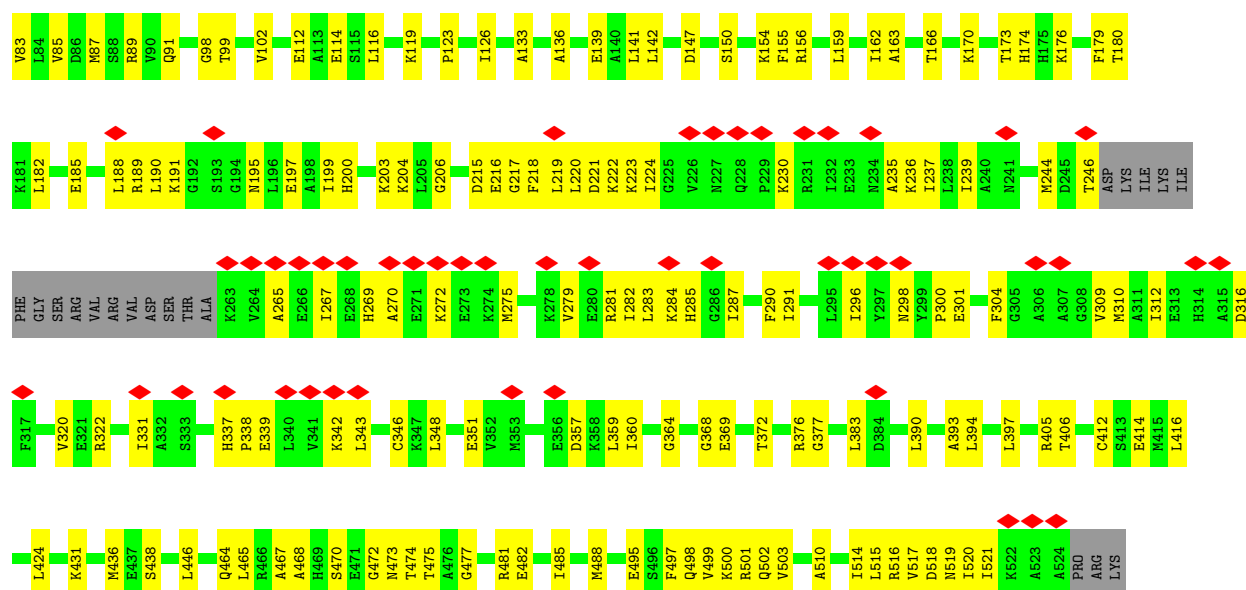


• Molecule 3: T-complex protein 1 subunit beta

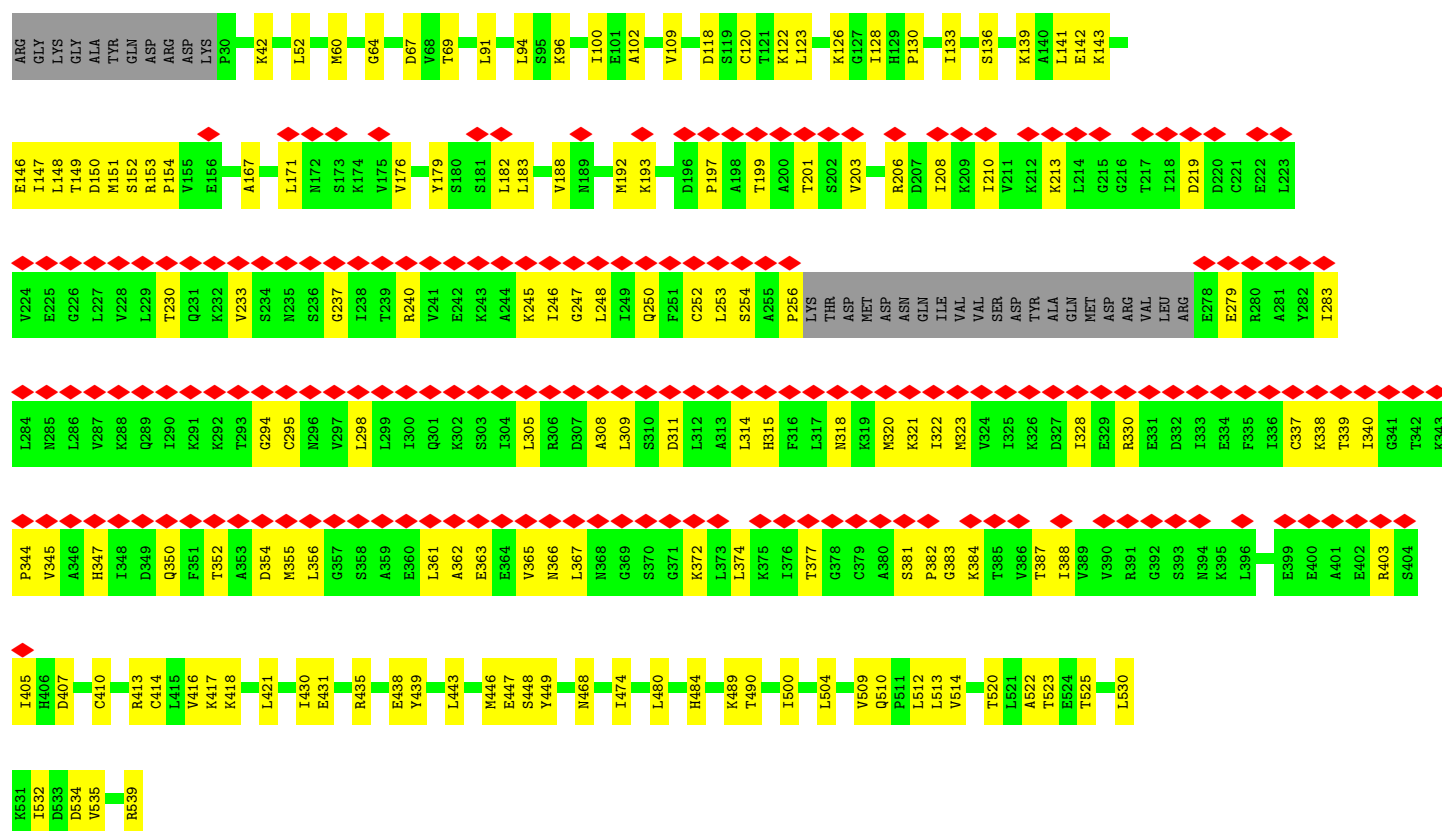


• Molecule 3: T-complex protein 1 subunit beta



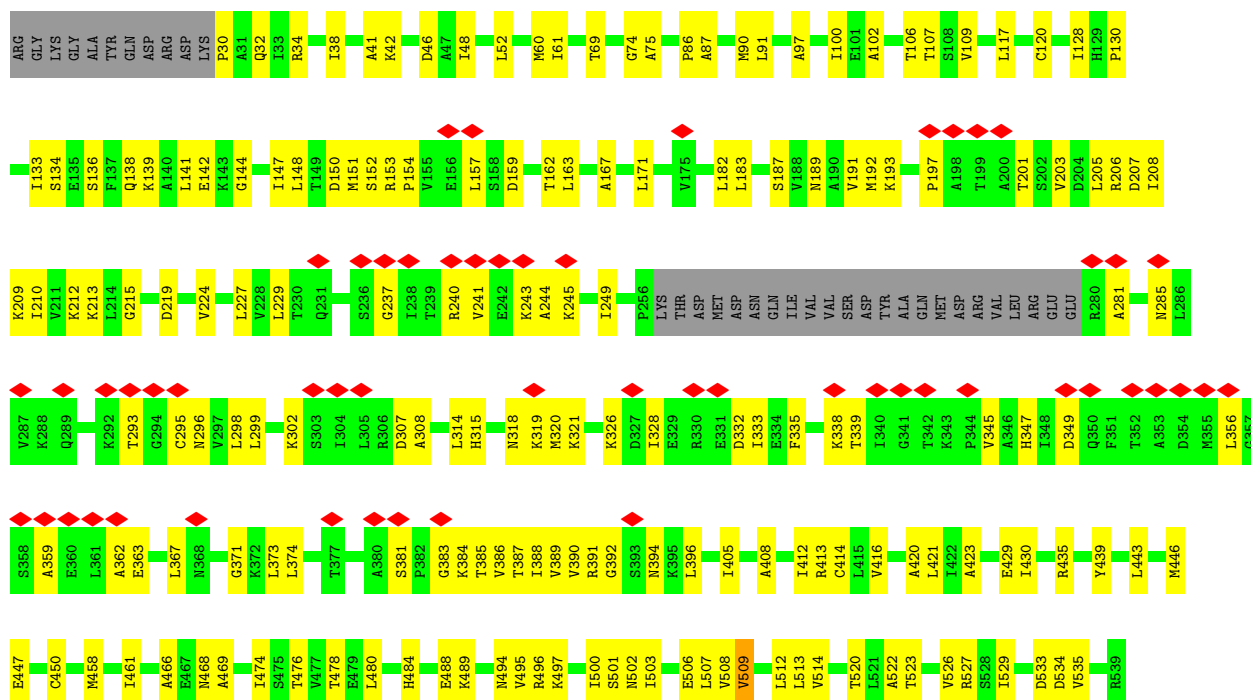


• Molecule 4: T-complex protein 1 subunit delta

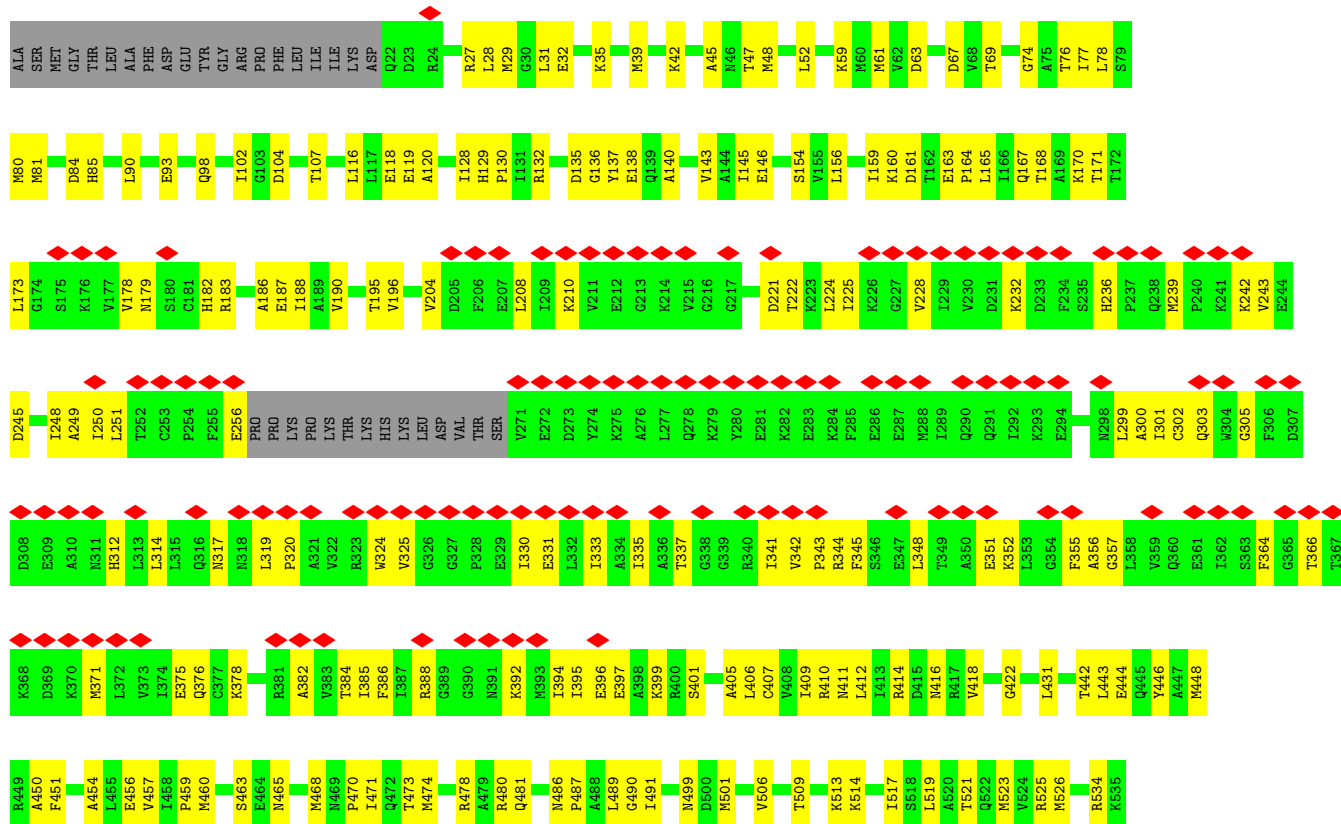


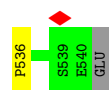
• Molecule 4: T-complex protein 1 subunit delta





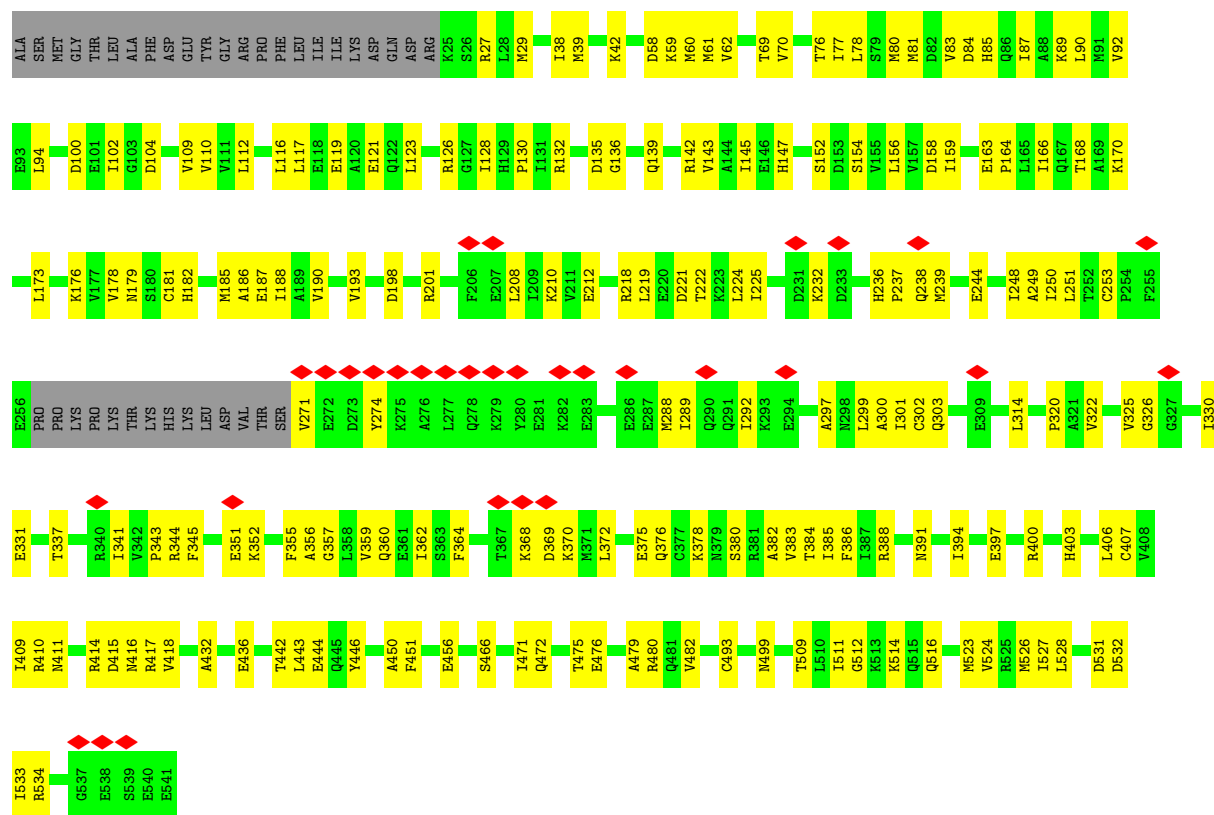
• Molecule 5: T-complex protein 1 subunit epsilon





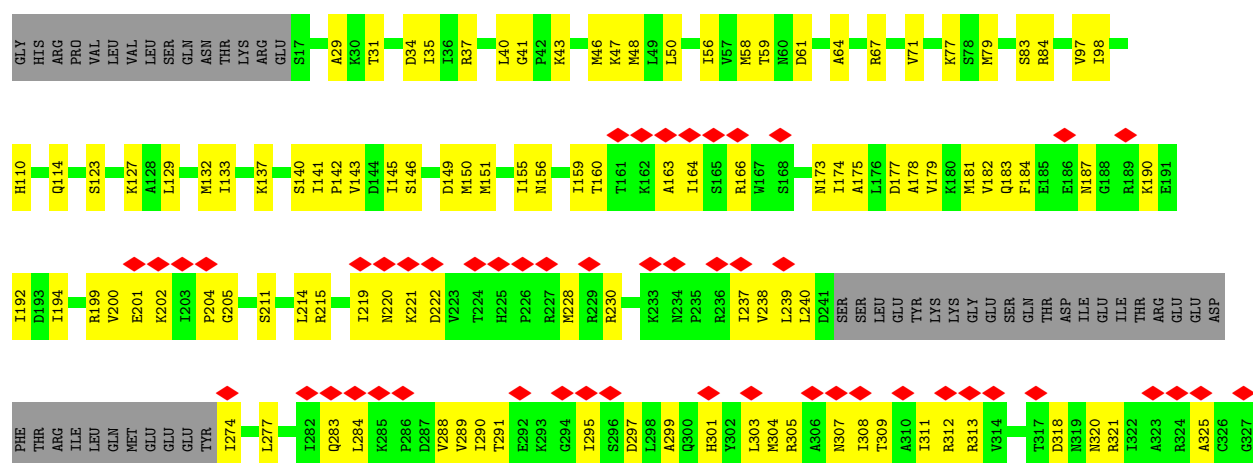
• Molecule 5: T-complex protein 1 subunit epsilon

Chain E: 6% 59% 34% 7%

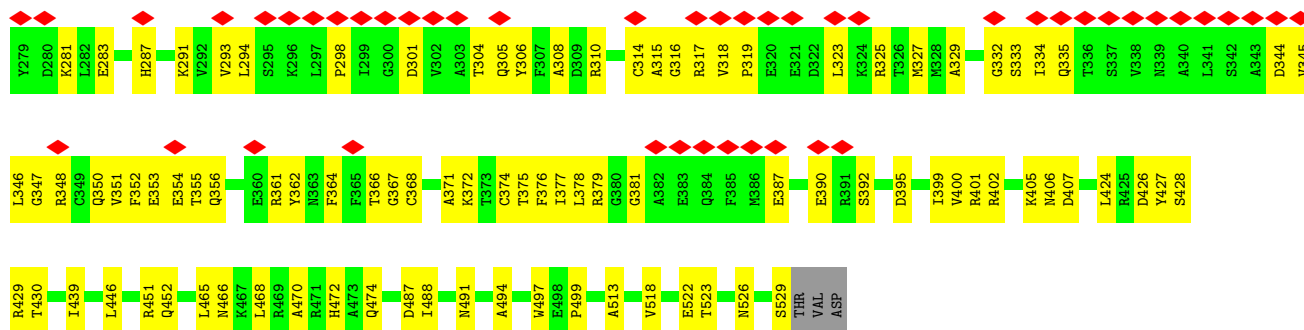


• Molecule 6: T-complex protein 1 subunit gamma

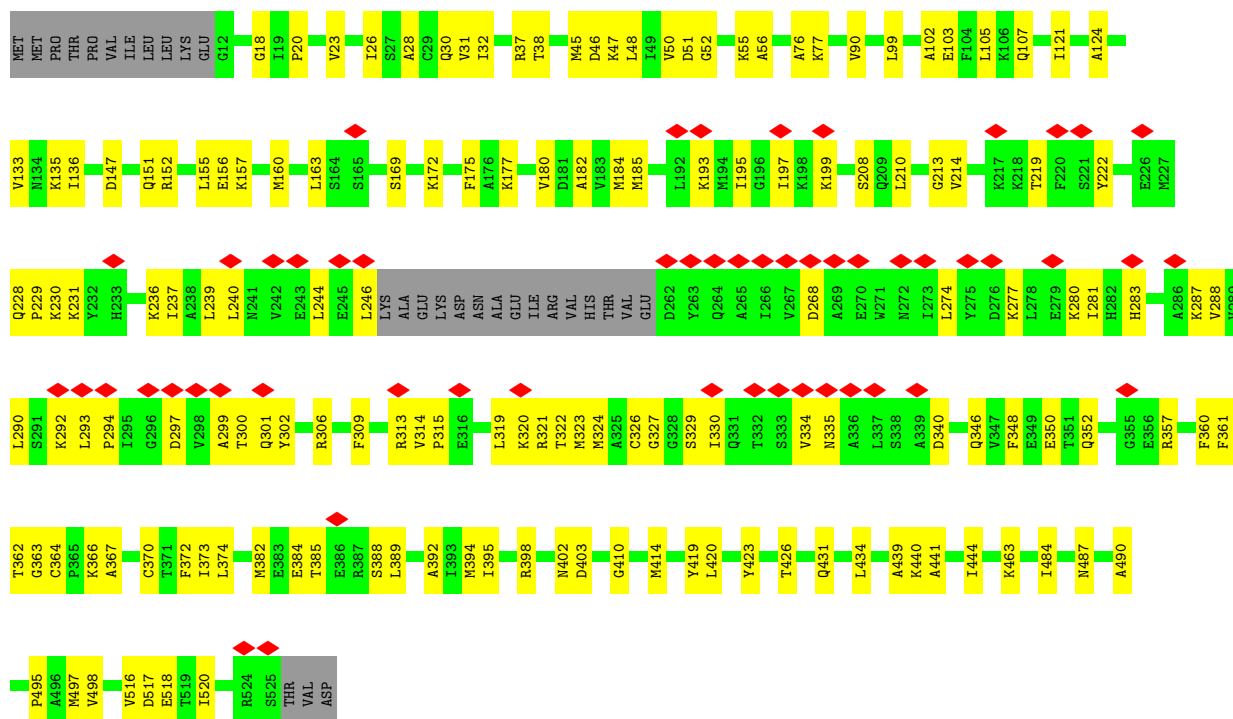
Chain g: 16% 57% 34% 10%



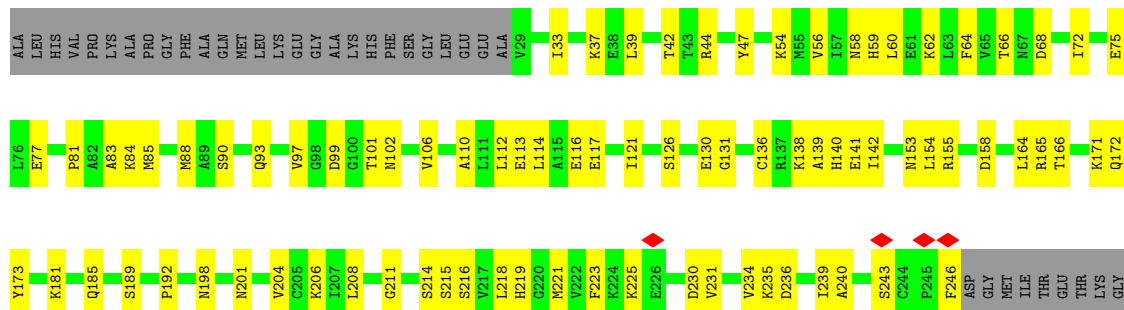


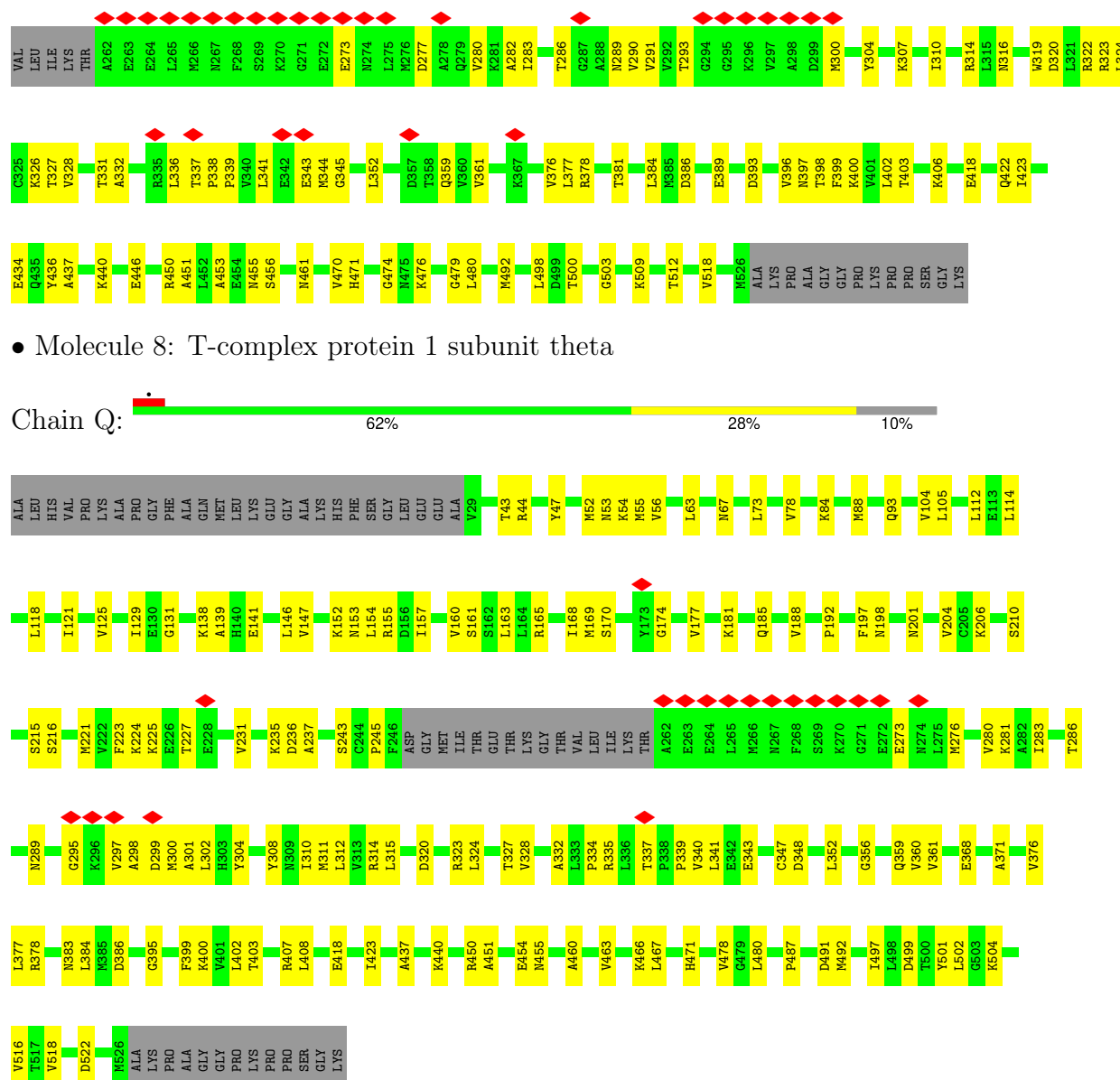


• Molecule 7: T-complex protein 1 subunit eta



• Molecule 8: T-complex protein 1 subunit theta





## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 104907                                  | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | TFS KRIOS                               | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 40.42                                   | Depositor |
| Minimum defocus (nm)                 | 800                                     | Depositor |
| Maximum defocus (nm)                 | 1200                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | GATAN K3 (6k x 4k)                      | Depositor |
| Maximum map value                    | 0.796                                   | Depositor |
| Minimum map value                    | -0.326                                  | Depositor |
| Average map value                    | 0.004                                   | Depositor |
| Map value standard deviation         | 0.031                                   | Depositor |
| Recommended contour level            | 0.0743                                  | Depositor |
| Map size (Å)                         | 317.4, 317.4, 317.4                     | wwPDB     |
| Map dimensions                       | 300, 300, 300                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 1.058, 1.058, 1.058                     | 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: ADP

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   | Z     | 0.16         | 0/3949      | 0.36        | 0/5324         |
| 1   | z     | 0.15         | 0/3949      | 0.32        | 0/5324         |
| 2   | A     | 0.15         | 0/3775      | 0.31        | 0/5093         |
| 2   | a     | 0.13         | 0/3742      | 0.31        | 0/5049         |
| 3   | B     | 0.14         | 0/3736      | 0.33        | 0/5036         |
| 3   | b     | 0.12         | 0/3628      | 0.32        | 0/4891         |
| 4   | D     | 0.14         | 0/3684      | 0.31        | 0/4972         |
| 4   | d     | 0.13         | 0/3702      | 0.31        | 0/4996         |
| 5   | E     | 0.13         | 0/3904      | 0.34        | 1/5256 (0.0%)  |
| 5   | e     | 0.13         | 0/3923      | 0.34        | 0/5281         |
| 6   | G     | 0.16         | 0/3783      | 0.35        | 0/5104         |
| 6   | g     | 0.15         | 0/3719      | 0.36        | 0/5020         |
| 7   | H     | 0.15         | 0/3878      | 0.34        | 0/5232         |
| 7   | h     | 0.15         | 0/3887      | 0.33        | 0/5244         |
| 8   | Q     | 0.17         | 0/3742      | 0.34        | 0/5059         |
| 8   | q     | 0.16         | 0/3742      | 0.34        | 0/5059         |
| All | All   | 0.15         | 0/60743     | 0.33        | 1/81940 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 3   | B     | 0                   | 1                   |

There are no bond length outliers.

All (1) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 5   | E     | 159 | ILE  | N-CA-C | -5.08 | 107.61      | 111.62   |

There are no chirality outliers.

All (1) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 3   | B     | 54  | SER  | Peptide |

## 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   | Z     | 3903  | 0        | 4030     | 131     | 0            |
| 1   | z     | 3903  | 0        | 4030     | 107     | 0            |
| 2   | A     | 3742  | 0        | 3898     | 104     | 0            |
| 2   | a     | 3709  | 0        | 3859     | 133     | 0            |
| 3   | B     | 3698  | 0        | 3792     | 130     | 0            |
| 3   | b     | 3590  | 0        | 3691     | 103     | 0            |
| 4   | D     | 3655  | 0        | 3873     | 135     | 0            |
| 4   | d     | 3673  | 0        | 3886     | 107     | 0            |
| 5   | E     | 3863  | 0        | 3959     | 145     | 0            |
| 5   | e     | 3882  | 0        | 3979     | 138     | 0            |
| 6   | G     | 3741  | 0        | 3880     | 138     | 0            |
| 6   | g     | 3678  | 0        | 3815     | 135     | 0            |
| 7   | H     | 3825  | 0        | 3914     | 105     | 0            |
| 7   | h     | 3834  | 0        | 3920     | 134     | 0            |
| 8   | Q     | 3692  | 0        | 3746     | 98      | 0            |
| 8   | q     | 3692  | 0        | 3744     | 113     | 0            |
| 9   | A     | 27    | 0        | 12       | 0       | 0            |
| 9   | B     | 27    | 0        | 12       | 0       | 0            |
| 9   | D     | 27    | 0        | 10       | 0       | 0            |
| 9   | E     | 27    | 0        | 10       | 0       | 0            |
| 9   | G     | 27    | 0        | 12       | 1       | 0            |
| 9   | H     | 27    | 0        | 12       | 0       | 0            |
| 9   | Q     | 27    | 0        | 12       | 4       | 0            |
| 9   | Z     | 27    | 0        | 12       | 0       | 0            |
| 9   | a     | 27    | 0        | 12       | 2       | 0            |
| 9   | b     | 27    | 0        | 12       | 1       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 9   | d     | 27    | 0        | 12       | 0       | 0            |
| 9   | e     | 27    | 0        | 12       | 0       | 0            |
| 9   | g     | 27    | 0        | 12       | 2       | 0            |
| 9   | h     | 27    | 0        | 12       | 0       | 0            |
| 9   | q     | 27    | 0        | 12       | 4       | 0            |
| 9   | z     | 27    | 0        | 12       | 2       | 0            |
| All | All   | 60512 | 0        | 62204    | 1872    | 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 15.

All (1872) 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) |
|------------------|------------------|--------------------------|-------------------|
| 6:G:195:LYS:HZ1  | 6:G:391:GLN:HB3  | 1.25                     | 0.98              |
| 3:B:102:VAL:HG22 | 3:B:503:VAL:HG13 | 1.46                     | 0.95              |
| 1:z:148:LEU:HD12 | 1:z:398:VAL:HG23 | 1.56                     | 0.88              |
| 7:H:518:GLU:HB2  | 8:Q:54:LYS:HD2   | 1.57                     | 0.86              |
| 3:B:296:ILE:HG23 | 3:B:300:PRO:HB2  | 1.56                     | 0.86              |
| 7:h:167:LEU:HD21 | 7:h:392:SER:HB2  | 1.59                     | 0.84              |
| 7:h:451:ARG:HB2  | 7:h:465:LEU:HD11 | 1.60                     | 0.83              |
| 4:d:210:ILE:HG13 | 4:d:388:ILE:H    | 1.44                     | 0.82              |
| 1:Z:143:MET:HE1  | 1:Z:402:ILE:HA   | 1.62                     | 0.82              |
| 1:Z:218:HIS:HB3  | 1:Z:221:MET:HE3  | 1.62                     | 0.81              |
| 4:d:128:ILE:HG23 | 4:d:446:MET:HE1  | 1.63                     | 0.80              |
| 2:a:306:MET:HE1  | 2:a:362:ILE:HG13 | 1.65                     | 0.78              |
| 5:E:182:HIS:HA   | 5:E:185:MET:HG2  | 1.66                     | 0.78              |
| 5:e:140:ALA:HB2  | 5:e:448:MET:HG2  | 1.64                     | 0.78              |
| 3:B:91:GLN:HE22  | 3:B:502:GLN:HE22 | 1.30                     | 0.78              |
| 1:Z:212:LEU:HB3  | 1:Z:361:THR:HB   | 1.66                     | 0.78              |
| 5:E:343:PRO:HD2  | 7:H:301:GLN:HE21 | 1.50                     | 0.77              |
| 2:a:153:LYS:HE3  | 2:a:169:ALA:HB2  | 1.66                     | 0.77              |
| 1:Z:196:MET:HE1  | 1:Z:198:HIS:HB2  | 1.68                     | 0.76              |
| 2:a:409:VAL:HG13 | 2:a:507:THR:HG22 | 1.66                     | 0.76              |
| 4:D:136:SER:HG   | 4:D:450:CYS:HG   | 1.29                     | 0.75              |
| 5:E:322:VAL:HG21 | 5:E:372:LEU:HD11 | 1.69                     | 0.75              |
| 2:A:223:GLN:HA   | 2:A:353:GLN:HE22 | 1.51                     | 0.75              |
| 8:q:39:LEU:HD13  | 8:q:83:ALA:HB1   | 1.69                     | 0.75              |
| 2:A:409:VAL:HG13 | 2:A:507:THR:HG22 | 1.68                     | 0.75              |
| 4:D:338:LYS:HG3  | 4:D:384:LYS:HZ2  | 1.51                     | 0.75              |
| 7:H:236:LYS:NZ   | 7:H:326:CYS:O    | 2.20                     | 0.74              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:H:364:CYS:HB2  | 7:H:367:ALA:HB2  | 1.69                     | 0.74              |
| 5:e:90:LEU:HD21  | 5:e:526:MET:HE3  | 1.69                     | 0.74              |
| 7:h:401:ARG:HG2  | 7:h:405:LYS:HE3  | 1.70                     | 0.74              |
| 3:B:468:ALA:O    | 3:B:472:GLY:N    | 2.19                     | 0.74              |
| 3:B:190:LEU:HD22 | 3:B:369:GLU:HA   | 1.69                     | 0.74              |
| 2:a:15:GLU:HG2   | 2:a:16:THR:HG22  | 1.70                     | 0.74              |
| 2:a:141:ASP:OD1  | 2:a:406:LYS:NZ   | 2.21                     | 0.73              |
| 4:d:188:VAL:HG12 | 4:d:192:MET:HE2  | 1.68                     | 0.73              |
| 8:q:327:THR:HG23 | 8:q:328:VAL:HG13 | 1.70                     | 0.73              |
| 6:G:122:ILE:HG12 | 6:G:513:VAL:HG23 | 1.70                     | 0.73              |
| 3:B:244:MET:HA   | 3:B:275:MET:HE1  | 1.70                     | 0.73              |
| 3:B:348:LEU:HB3  | 3:B:364:GLY:HA3  | 1.71                     | 0.73              |
| 4:d:60:MET:HE1   | 4:d:69:THR:H     | 1.52                     | 0.73              |
| 3:B:465:LEU:HD13 | 3:B:485:ILE:HD11 | 1.69                     | 0.73              |
| 5:E:181:CYS:HB3  | 5:E:219:LEU:HD12 | 1.71                     | 0.73              |
| 7:H:107:GLN:OE1  | 7:H:440:LYS:NZ   | 2.19                     | 0.73              |
| 7:H:169:SER:HA   | 7:H:172:LYS:HG2  | 1.70                     | 0.73              |
| 2:a:181:TYR:HH   | 2:a:371:THR:HG1  | 1.36                     | 0.72              |
| 4:D:503:ILE:HD11 | 4:D:508:VAL:HG12 | 1.71                     | 0.72              |
| 6:g:204:PRO:HG3  | 6:g:380:LYS:HE3  | 1.71                     | 0.72              |
| 2:a:156:MET:HG3  | 2:a:391:SER:HB2  | 1.72                     | 0.72              |
| 5:e:128:ILE:HD11 | 4:D:474:ILE:HG21 | 1.72                     | 0.72              |
| 2:A:125:CYS:HB2  | 2:A:518:THR:HG21 | 1.70                     | 0.72              |
| 8:q:235:LYS:HG3  | 8:q:236:ASP:H    | 1.54                     | 0.71              |
| 6:G:171:ALA:HB1  | 6:G:390:LEU:HD21 | 1.72                     | 0.71              |
| 1:Z:426:LYS:HE2  | 1:Z:438:GLN:HB2  | 1.71                     | 0.71              |
| 3:B:166:THR:O    | 3:B:170:LYS:NZ   | 2.23                     | 0.71              |
| 6:g:59:THR:HG22  | 6:g:61:ASP:H     | 1.53                     | 0.71              |
| 5:E:187:GLU:HA   | 5:E:190:VAL:HG12 | 1.70                     | 0.71              |
| 6:G:164:ILE:HG12 | 6:G:386:VAL:HG22 | 1.73                     | 0.71              |
| 8:Q:225:LYS:HE3  | 8:Q:352:LEU:HD12 | 1.72                     | 0.71              |
| 4:d:253:LEU:HD22 | 4:d:283:ILE:HG12 | 1.73                     | 0.71              |
| 4:D:210:ILE:HG13 | 4:D:388:ILE:H    | 1.54                     | 0.71              |
| 5:E:60:MET:HA    | 5:E:70:VAL:HA    | 1.73                     | 0.71              |
| 4:d:136:SER:HB3  | 4:d:447:GLU:HB2  | 1.72                     | 0.70              |
| 3:B:18:GLU:HA    | 3:B:521:ILE:HG22 | 1.71                     | 0.70              |
| 4:D:128:ILE:HG23 | 4:D:446:MET:HE1  | 1.72                     | 0.70              |
| 7:h:522:GLU:HB2  | 8:q:54:LYS:HD2   | 1.72                     | 0.70              |
| 8:Q:347:CYS:SG   | 8:Q:348:ASP:N    | 2.63                     | 0.70              |
| 2:a:322:ALA:HB2  | 2:a:371:THR:HB   | 1.73                     | 0.70              |
| 7:H:229:PRO:HG2  | 7:H:287:LYS:HE2  | 1.73                     | 0.70              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:E:357:GLY:H    | 5:E:375:GLU:HA   | 1.56                     | 0.70              |
| 6:g:396:VAL:HG22 | 6:g:497:PRO:HG3  | 1.72                     | 0.70              |
| 6:G:214:LEU:HB3  | 6:G:372:THR:HB   | 1.74                     | 0.70              |
| 3:B:239:ILE:HG13 | 3:B:331:ILE:HD12 | 1.74                     | 0.69              |
| 4:d:449:TYR:OH   | 5:E:456:GLU:OE1  | 2.07                     | 0.69              |
| 1:z:196:MET:HE1  | 1:z:198:HIS:HB2  | 1.73                     | 0.69              |
| 3:b:199:ILE:HD13 | 3:b:394:LEU:HD21 | 1.74                     | 0.69              |
| 7:h:159:LEU:HD21 | 7:h:400:VAL:HG13 | 1.74                     | 0.69              |
| 3:b:468:ALA:O    | 3:b:472:GLY:N    | 2.26                     | 0.69              |
| 3:b:167:LEU:HD23 | 3:b:170:LYS:HZ2  | 1.58                     | 0.69              |
| 5:E:407:CYS:SG   | 5:E:410:ARG:NH2  | 2.65                     | 0.69              |
| 7:H:50:VAL:HG12  | 7:H:52:GLY:H     | 1.57                     | 0.69              |
| 2:a:43:LYS:HG3   | 6:g:520:ASP:HB2  | 1.73                     | 0.69              |
| 3:b:217:GLY:HA3  | 3:b:362:PHE:HB2  | 1.74                     | 0.69              |
| 4:d:323:MET:HE2  | 4:d:374:LEU:HD22 | 1.75                     | 0.69              |
| 8:q:101:THR:N    | 9:q:5000:ADP:O3B | 2.25                     | 0.69              |
| 2:A:205:GLN:HG2  | 2:A:388:MET:HE3  | 1.74                     | 0.69              |
| 5:E:221:ASP:HB3  | 5:E:388:ARG:HB3  | 1.75                     | 0.69              |
| 5:E:236:HIS:HB3  | 5:E:239:MET:HB3  | 1.72                     | 0.69              |
| 8:Q:273:GLU:OE2  | 8:Q:304:TYR:OH   | 2.10                     | 0.69              |
| 5:e:490:GLY:HA3  | 5:e:501:MET:HE1  | 1.75                     | 0.69              |
| 5:E:253:CYS:HB2  | 5:E:345:PHE:HZ   | 1.57                     | 0.69              |
| 5:e:357:GLY:H    | 5:e:375:GLU:HA   | 1.58                     | 0.68              |
| 3:B:265:ALA:O    | 3:B:269:HIS:ND1  | 2.26                     | 0.68              |
| 7:h:164:MET:HB2  | 7:h:176:LYS:HD2  | 1.76                     | 0.68              |
| 2:A:141:ASP:OD1  | 2:A:406:LYS:NZ   | 2.27                     | 0.68              |
| 6:g:179:VAL:HG12 | 6:g:394:MET:HA   | 1.76                     | 0.68              |
| 7:h:406:ASN:HD22 | 7:h:499:PRO:HB3  | 1.58                     | 0.68              |
| 3:b:433:ALA:HA   | 3:b:436:MET:HE3  | 1.75                     | 0.68              |
| 5:E:360:GLN:NE2  | 5:E:375:GLU:OE2  | 2.26                     | 0.68              |
| 4:d:167:ALA:O    | 4:d:171:LEU:N    | 2.25                     | 0.68              |
| 8:Q:243:SER:HB3  | 8:Q:332:ALA:HB1  | 1.75                     | 0.68              |
| 3:b:422:THR:O    | 3:b:426:ASN:ND2  | 2.27                     | 0.68              |
| 6:G:34:ASP:HA    | 6:G:37:ARG:HB2   | 1.74                     | 0.68              |
| 7:h:203:LYS:HA   | 7:h:378:LEU:HB2  | 1.77                     | 0.68              |
| 2:a:233:LYS:H    | 2:a:284:ASN:HB3  | 1.59                     | 0.67              |
| 3:b:133:ALA:HB2  | 3:b:436:MET:HG2  | 1.74                     | 0.67              |
| 5:E:145:ILE:HG23 | 5:E:514:LYS:HD2  | 1.76                     | 0.67              |
| 2:A:467:LEU:HD11 | 2:A:488:LEU:HG   | 1.75                     | 0.67              |
| 6:G:22:GLN:NE2   | 6:G:518:ILE:O    | 2.27                     | 0.67              |
| 3:b:206:GLY:N    | 3:b:377:GLY:O    | 2.27                     | 0.67              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:h:399:ILE:HD13 | 7:h:402:ARG:HH12 | 1.59                     | 0.67              |
| 4:D:167:ALA:O    | 4:D:171:LEU:N    | 2.27                     | 0.67              |
| 7:H:37:ARG:HH12  | 7:H:444:ILE:HD11 | 1.59                     | 0.67              |
| 7:H:324:MET:O    | 7:H:366:LYS:NZ   | 2.25                     | 0.67              |
| 3:b:477:GLY:HA3  | 3:b:488:MET:HB2  | 1.75                     | 0.67              |
| 5:E:130:PRO:HG2  | 7:H:45:MET:HE1   | 1.77                     | 0.67              |
| 3:B:141:LEU:HB3  | 3:B:497:PHE:HE1  | 1.59                     | 0.67              |
| 4:D:208:ILE:HA   | 4:D:383:GLY:HA2  | 1.77                     | 0.67              |
| 3:B:279:VAL:HA   | 3:B:282:ILE:HG12 | 1.76                     | 0.67              |
| 7:H:30:GLN:NE2   | 7:H:102:ALA:O    | 2.25                     | 0.67              |
| 4:D:421:LEU:HD21 | 4:D:509:VAL:HB   | 1.77                     | 0.67              |
| 8:Q:155:ARG:NH2  | 8:Q:192:PRO:O    | 2.26                     | 0.67              |
| 2:a:310:ARG:HH22 | 2:a:313:LYS:HE2  | 1.59                     | 0.66              |
| 5:e:337:THR:HG23 | 5:e:355:PHE:HB3  | 1.75                     | 0.66              |
| 8:q:215:SER:OG   | 8:q:376:VAL:O    | 2.11                     | 0.66              |
| 5:e:210:LYS:HD3  | 5:e:384:THR:HA   | 1.77                     | 0.66              |
| 3:B:154:LYS:HB3  | 3:B:156:ARG:HH12 | 1.60                     | 0.66              |
| 3:B:189:ARG:NH1  | 3:B:368:GLY:O    | 2.27                     | 0.66              |
| 2:A:530:LEU:HD21 | 4:D:60:MET:H     | 1.60                     | 0.66              |
| 5:E:158:ASP:HB2  | 5:E:416:ASN:HD21 | 1.60                     | 0.66              |
| 5:E:331:GLU:HG3  | 5:E:341:ILE:HB   | 1.77                     | 0.66              |
| 8:Q:129:ILE:HD12 | 8:Q:516:VAL:HG13 | 1.77                     | 0.66              |
| 7:H:281:ILE:HG13 | 7:H:306:ARG:HB3  | 1.78                     | 0.66              |
| 2:a:325:ALA:HB2  | 2:a:346:GLY:H    | 1.61                     | 0.66              |
| 4:d:245:LYS:HE2  | 4:d:356:LEU:HA   | 1.76                     | 0.66              |
| 5:E:154:SER:HB2  | 5:E:418:VAL:H    | 1.61                     | 0.66              |
| 7:H:246:LEU:HA   | 7:H:274:LEU:HD21 | 1.78                     | 0.66              |
| 5:e:52:LEU:O     | 5:e:465:ASN:ND2  | 2.28                     | 0.66              |
| 6:G:399:ASN:O    | 6:G:403:ASP:N    | 2.28                     | 0.66              |
| 1:z:518:VAL:HG11 | 6:g:48:MET:HE3   | 1.78                     | 0.66              |
| 3:b:102:VAL:HG22 | 3:b:503:VAL:HG13 | 1.77                     | 0.66              |
| 4:d:237:GLY:HA3  | 4:d:321:LYS:HG2  | 1.78                     | 0.66              |
| 2:A:200:ALA:HB3  | 2:A:378:ARG:HA   | 1.77                     | 0.66              |
| 5:E:179:ASN:O    | 5:E:182:HIS:ND1  | 2.25                     | 0.66              |
| 5:E:249:ALA:HB3  | 5:E:300:ALA:HA   | 1.78                     | 0.66              |
| 2:a:287:LEU:HD13 | 2:a:306:MET:HG2  | 1.77                     | 0.65              |
| 3:B:91:GLN:NE2   | 3:B:502:GLN:HE22 | 1.93                     | 0.65              |
| 1:Z:381:LYS:HA   | 1:Z:384:LEU:HG   | 1.78                     | 0.65              |
| 8:q:273:GLU:HA   | 8:q:300:MET:HE1  | 1.77                     | 0.65              |
| 2:A:470:PHE:HD2  | 2:A:486:ILE:HG21 | 1.59                     | 0.65              |
| 2:a:31:ILE:HD12  | 6:g:522:VAL:HG21 | 1.78                     | 0.65              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:430:ILE:HD13 | 4:D:480:LEU:HG   | 1.79                     | 0.65              |
| 2:a:181:TYR:OH   | 2:a:371:THR:OG1  | 2.09                     | 0.65              |
| 7:H:385:THR:HG23 | 7:H:389:LEU:HD12 | 1.79                     | 0.65              |
| 8:Q:139:ALA:HB2  | 8:Q:423:ILE:HD11 | 1.78                     | 0.65              |
| 1:Z:220:ASP:HB3  | 1:Z:306:SER:HB2  | 1.78                     | 0.65              |
| 5:e:74:GLY:HA3   | 5:e:107:THR:HG22 | 1.79                     | 0.65              |
| 5:e:138:GLU:HB2  | 5:e:525:ARG:HD2  | 1.77                     | 0.65              |
| 6:g:214:LEU:HB3  | 6:g:372:THR:HB   | 1.77                     | 0.65              |
| 2:A:58:GLY:HA2   | 2:A:61:ILE:HD12  | 1.78                     | 0.65              |
| 1:Z:236:SER:HB2  | 1:Z:267:ILE:HD13 | 1.79                     | 0.65              |
| 6:g:283:GLN:HE22 | 6:g:337:LEU:HD22 | 1.61                     | 0.65              |
| 6:g:520:ASP:HB3  | 6:g:522:VAL:HG22 | 1.77                     | 0.65              |
| 2:a:481:LYS:O    | 2:a:484:LYS:NZ   | 2.30                     | 0.65              |
| 2:A:17:ILE:O     | 2:A:21:ASN:ND2   | 2.30                     | 0.65              |
| 7:H:103:GLU:HG2  | 7:H:444:ILE:HG21 | 1.79                     | 0.65              |
| 5:E:224:LEU:HA   | 5:E:385:ILE:HD11 | 1.79                     | 0.65              |
| 2:a:129:VAL:HG11 | 2:a:515:LYS:HE3  | 1.79                     | 0.64              |
| 8:q:166:THR:HG21 | 8:q:498:LEU:H    | 1.61                     | 0.64              |
| 1:Z:84:GLN:NE2   | 1:Z:507:SER:OG   | 2.29                     | 0.64              |
| 4:d:197:PRO:HA   | 4:d:201:THR:HA   | 1.78                     | 0.64              |
| 6:G:155:ILE:HA   | 6:G:159:ILE:HD13 | 1.79                     | 0.64              |
| 1:Z:354:THR:HA   | 1:Z:359:LYS:HA   | 1.78                     | 0.64              |
| 2:a:89:GLY:N     | 9:a:601:ADP:O2B  | 2.31                     | 0.64              |
| 2:a:176:VAL:HG11 | 2:a:399:VAL:HG11 | 1.78                     | 0.64              |
| 4:d:534:ASP:OD1  | 4:d:535:VAL:N    | 2.30                     | 0.64              |
| 5:e:396:GLU:HA   | 5:e:399:LYS:HE3  | 1.78                     | 0.64              |
| 3:B:414:GLU:OE2  | 3:B:500:LYS:NZ   | 2.26                     | 0.64              |
| 4:D:197:PRO:HA   | 4:D:201:THR:HA   | 1.79                     | 0.64              |
| 3:b:25:ARG:HG3   | 3:b:26:LEU:HD12  | 1.79                     | 0.64              |
| 6:g:399:ASN:O    | 6:g:403:ASP:N    | 2.27                     | 0.64              |
| 1:Z:521:ILE:HA   | 6:G:48:MET:HB3   | 1.79                     | 0.64              |
| 3:b:186:ALA:HA   | 3:b:190:LEU:HB2  | 1.79                     | 0.64              |
| 4:D:136:SER:HB3  | 4:D:447:GLU:HB2  | 1.80                     | 0.64              |
| 4:d:252:CYS:HB2  | 4:d:308:ALA:HA   | 1.79                     | 0.64              |
| 1:z:278:LYS:HG2  | 1:z:279:ARG:HH11 | 1.62                     | 0.64              |
| 5:e:249:ALA:HB1  | 5:e:348:LEU:HD11 | 1.80                     | 0.64              |
| 5:e:145:ILE:HD12 | 5:e:514:LYS:HG3  | 1.80                     | 0.64              |
| 1:Z:66:GLU:O     | 1:Z:68:GLN:N     | 2.31                     | 0.63              |
| 4:d:183:LEU:HB3  | 4:d:405:ILE:HD11 | 1.80                     | 0.63              |
| 6:g:238:VAL:HB   | 6:g:289:VAL:HG22 | 1.79                     | 0.63              |
| 8:q:47:TYR:O     | 8:q:455:ASN:ND2  | 2.30                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:207:ASP:HB2  | 4:D:386:VAL:HG22 | 1.79                     | 0.63              |
| 5:E:364:PHE:HB2  | 5:E:370:LYS:HG3  | 1.80                     | 0.63              |
| 1:z:201:GLU:HB3  | 1:z:379:PRO:HD3  | 1.81                     | 0.63              |
| 2:a:208:SER:HA   | 2:a:378:ARG:HH11 | 1.64                     | 0.63              |
| 5:E:126:ARG:NH2  | 5:E:446:TYR:OH   | 2.31                     | 0.63              |
| 2:a:191:PRO:HG2  | 2:a:194:SER:HB3  | 1.80                     | 0.63              |
| 5:e:250:ILE:HG12 | 5:e:330:ILE:HG23 | 1.79                     | 0.63              |
| 8:q:90:SER:HB2   | 8:q:101:THR:HG23 | 1.78                     | 0.63              |
| 5:E:249:ALA:HB2  | 5:E:297:ALA:HB1  | 1.79                     | 0.63              |
| 1:Z:145:ARG:HH22 | 1:Z:174:ASP:HB3  | 1.64                     | 0.63              |
| 2:a:125:CYS:HB2  | 2:a:518:THR:HG21 | 1.80                     | 0.63              |
| 8:q:171:LYS:NZ   | 9:q:5000:ADP:O2B | 2.31                     | 0.63              |
| 3:B:91:GLN:HE22  | 3:B:502:GLN:NE2  | 1.96                     | 0.63              |
| 1:Z:121:GLU:OE2  | 6:G:43:LYS:NZ    | 2.32                     | 0.63              |
| 1:Z:205:SER:HB2  | 1:Z:375:LEU:HD12 | 1.81                     | 0.63              |
| 6:G:163:ALA:O    | 6:G:166:ARG:NH2  | 2.30                     | 0.63              |
| 6:g:202:LYS:HG2  | 6:g:375:LEU:HD22 | 1.81                     | 0.63              |
| 7:h:37:ARG:O     | 7:h:452:GLN:NE2  | 2.32                     | 0.63              |
| 5:E:38:ILE:HG21  | 5:E:121:GLU:HB2  | 1.81                     | 0.63              |
| 5:E:119:GLU:HB3  | 5:E:450:ALA:HB1  | 1.81                     | 0.63              |
| 5:E:156:LEU:HD13 | 5:E:416:ASN:HB3  | 1.80                     | 0.63              |
| 1:Z:426:LYS:HG2  | 1:Z:434:GLN:HG3  | 1.80                     | 0.62              |
| 6:g:301:HIS:HA   | 6:g:304:MET:HE3  | 1.79                     | 0.62              |
| 8:q:66:THR:HG22  | 8:q:68:ASP:H     | 1.63                     | 0.62              |
| 5:E:61:MET:N     | 5:E:69:THR:O     | 2.31                     | 0.62              |
| 6:G:140:SER:HB2  | 6:G:405:GLN:HB3  | 1.80                     | 0.62              |
| 5:E:78:LEU:HD11  | 5:E:110:VAL:HG21 | 1.80                     | 0.62              |
| 2:a:99:GLU:HB3   | 2:a:444:SER:HB2  | 1.80                     | 0.62              |
| 8:q:243:SER:HB3  | 8:q:332:ALA:HB1  | 1.80                     | 0.62              |
| 5:E:87:ILE:HG23  | 5:E:527:ILE:HD11 | 1.82                     | 0.62              |
| 5:E:90:LEU:HD21  | 5:E:526:MET:HE1  | 1.81                     | 0.62              |
| 5:E:344:ARG:HB2  | 7:H:301:GLN:HE22 | 1.64                     | 0.62              |
| 2:a:236:CYS:HA   | 2:a:287:LEU:HB2  | 1.82                     | 0.62              |
| 7:h:325:ARG:NH1  | 7:h:375:THR:OG1  | 2.33                     | 0.62              |
| 4:D:503:ILE:O    | 4:D:507:LEU:N    | 2.31                     | 0.62              |
| 3:b:351:GLU:HA   | 3:b:360:ILE:HG23 | 1.81                     | 0.62              |
| 4:d:147:ILE:HD12 | 4:d:435:ARG:HB2  | 1.81                     | 0.62              |
| 7:h:406:ASN:OD1  | 7:h:407:ASP:N    | 2.32                     | 0.62              |
| 8:Q:170:SER:OG   | 9:Q:5000:ADP:O5' | 2.16                     | 0.62              |
| 5:E:109:VAL:HG22 | 5:E:516:GLN:HG3  | 1.82                     | 0.62              |
| 6:g:297:ASP:O    | 6:g:301:HIS:ND1  | 2.30                     | 0.62              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:E:301:ILE:HB   | 5:E:325:VAL:HG11 | 1.81                     | 0.62              |
| 8:Q:352:LEU:HD11 | 8:Q:359:GLN:HB2  | 1.81                     | 0.62              |
| 5:e:341:ILE:HG23 | 7:h:305:GLN:HE22 | 1.63                     | 0.61              |
| 5:E:84:ASP:OD1   | 5:E:85:HIS:N     | 2.33                     | 0.61              |
| 6:G:100:LEU:O    | 6:G:104:MET:HG3  | 2.00                     | 0.61              |
| 1:z:234:ASN:HA   | 1:z:293:ASN:HA   | 1.81                     | 0.61              |
| 3:B:112:GLU:HB3  | 3:B:438:SER:HB2  | 1.81                     | 0.61              |
| 7:H:180:VAL:HG12 | 7:H:184:MET:HE2  | 1.82                     | 0.61              |
| 7:h:353:GLU:HB3  | 7:h:364:PHE:HB2  | 1.82                     | 0.61              |
| 2:A:18:ARG:NH2   | 2:A:528:ASP:OD2  | 2.32                     | 0.61              |
| 2:A:489:ASP:OD1  | 2:A:496:ARG:NH1  | 2.33                     | 0.61              |
| 4:D:302:LYS:HG2  | 4:D:308:ALA:HB2  | 1.83                     | 0.61              |
| 1:z:449:LYS:HB3  | 1:z:459:LEU:HD12 | 1.81                     | 0.61              |
| 2:a:101:LEU:HD21 | 2:a:521:ALA:HA   | 1.82                     | 0.61              |
| 4:d:352:THR:HG22 | 4:d:355:MET:HE2  | 1.82                     | 0.61              |
| 5:e:457:VAL:HA   | 5:e:460:MET:HE3  | 1.81                     | 0.61              |
| 6:g:390:LEU:HD12 | 6:g:394:MET:HE2  | 1.82                     | 0.61              |
| 8:q:400:LYS:O    | 8:q:403:THR:OG1  | 2.13                     | 0.61              |
| 4:D:74:GLY:HA3   | 4:D:107:THR:HG22 | 1.82                     | 0.61              |
| 6:G:178:ALA:HA   | 6:G:181:MET:SD   | 2.40                     | 0.61              |
| 1:Z:218:HIS:NE2  | 1:Z:303:ASP:OD1  | 2.33                     | 0.61              |
| 2:a:200:ALA:HB3  | 2:a:378:ARG:HA   | 1.81                     | 0.61              |
| 5:E:472:GLN:NE2  | 5:E:476:GLU:OE2  | 2.33                     | 0.61              |
| 8:Q:227:THR:HG21 | 8:Q:312:LEU:HB3  | 1.82                     | 0.61              |
| 5:e:480:ARG:NH1  | 5:e:499:ASN:OD1  | 2.34                     | 0.61              |
| 7:h:346:LEU:O    | 7:h:348:ARG:NH2  | 2.34                     | 0.61              |
| 2:A:150:ASN:ND2  | 2:A:500:GLN:O    | 2.34                     | 0.61              |
| 3:B:199:ILE:O    | 3:B:322:ARG:NH2  | 2.34                     | 0.61              |
| 4:D:138:GLN:OE1  | 4:D:527:ARG:NH1  | 2.33                     | 0.61              |
| 5:E:480:ARG:NH1  | 5:E:499:ASN:OD1  | 2.33                     | 0.61              |
| 6:G:395:GLN:HA   | 6:G:398:ARG:HG2  | 1.83                     | 0.61              |
| 1:Z:45:LYS:HG3   | 1:Z:63:LEU:HD21  | 1.82                     | 0.61              |
| 6:g:83:SER:HB3   | 6:g:98:ILE:HD11  | 1.83                     | 0.61              |
| 6:g:395:GLN:HA   | 6:g:398:ARG:HG2  | 1.81                     | 0.60              |
| 5:E:299:LEU:HD13 | 5:E:320:PRO:HG2  | 1.82                     | 0.60              |
| 2:a:34:SER:OG    | 2:a:43:LYS:NZ    | 2.34                     | 0.60              |
| 6:g:445:VAL:HG12 | 6:g:448:ARG:HH21 | 1.66                     | 0.60              |
| 7:h:21:GLN:NE2   | 7:h:523:THR:HG23 | 2.16                     | 0.60              |
| 4:D:209:LYS:O    | 4:D:387:THR:OG1  | 2.20                     | 0.60              |
| 1:Z:282:CYS:HB2  | 1:Z:286:ASP:HB3  | 1.83                     | 0.60              |
| 5:E:173:LEU:HD22 | 5:E:178:VAL:HG11 | 1.83                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:g:140:SER:HB2  | 6:g:405:GLN:HB3  | 1.84                     | 0.60              |
| 2:A:17:ILE:HA    | 2:A:20:GLN:HG3   | 1.83                     | 0.60              |
| 4:d:446:MET:HA   | 5:E:475:THR:HG21 | 1.84                     | 0.60              |
| 5:e:418:VAL:HA   | 5:e:509:THR:HA   | 1.82                     | 0.60              |
| 7:h:192:ASP:HB2  | 7:h:372:LYS:HE3  | 1.84                     | 0.60              |
| 1:z:198:HIS:HB3  | 1:z:377:LYS:HB3  | 1.83                     | 0.60              |
| 1:Z:325:THR:HG23 | 1:Z:331:VAL:HA   | 1.84                     | 0.60              |
| 4:d:435:ARG:NH1  | 4:d:438:GLU:OE2  | 2.34                     | 0.60              |
| 8:q:172:GLN:NE2  | 8:q:173:TYR:O    | 2.34                     | 0.60              |
| 5:E:532:ASP:OD2  | 5:E:534:ARG:NH1  | 2.34                     | 0.60              |
| 6:G:212:CYS:H    | 6:G:374:LEU:HB3  | 1.66                     | 0.60              |
| 7:H:214:VAL:HG22 | 7:H:361:PHE:H    | 1.66                     | 0.60              |
| 2:a:293:ASP:HB3  | 2:a:296:CYS:HB3  | 1.84                     | 0.60              |
| 4:d:311:ASP:O    | 4:d:315:HIS:ND1  | 2.35                     | 0.60              |
| 8:q:337:THR:C    | 8:q:339:PRO:HD3  | 2.27                     | 0.60              |
| 1:Z:261:LYS:HB3  | 1:Z:265:LYS:HE3  | 1.84                     | 0.60              |
| 3:B:61:LEU:HD11  | 4:D:86:PRO:HB3   | 1.84                     | 0.60              |
| 1:z:145:ARG:NH2  | 1:z:170:GLU:OE1  | 2.34                     | 0.60              |
| 2:a:205:GLN:NE2  | 2:a:378:ARG:O    | 2.35                     | 0.60              |
| 6:g:151:MET:O    | 6:g:155:ILE:HG12 | 2.02                     | 0.60              |
| 8:q:453:ALA:HB2  | 8:q:480:LEU:HD11 | 1.82                     | 0.60              |
| 1:Z:109:TYR:HB3  | 1:Z:114:LEU:HD23 | 1.81                     | 0.59              |
| 5:e:116:LEU:HD22 | 5:e:454:ALA:HB1  | 1.84                     | 0.59              |
| 5:e:251:LEU:HD22 | 5:e:345:PHE:HD1  | 1.67                     | 0.59              |
| 7:h:243:LEU:HB2  | 7:h:334:ILE:HA   | 1.84                     | 0.59              |
| 7:H:384:GLU:O    | 7:H:388:SER:HB3  | 2.02                     | 0.59              |
| 1:z:255:GLU:HA   | 1:z:259:LEU:HD13 | 1.84                     | 0.59              |
| 1:Z:263:GLU:HG3  | 1:Z:264:ARG:HH21 | 1.67                     | 0.59              |
| 2:A:42:ASP:OD1   | 6:G:517:ARG:NE   | 2.34                     | 0.59              |
| 4:D:134:SER:HB2  | 4:D:527:ARG:HD2  | 1.83                     | 0.59              |
| 1:z:409:PRO:HB3  | 1:z:489:ALA:HB3  | 1.83                     | 0.59              |
| 1:Z:201:GLU:HA   | 1:Z:378:GLY:HA2  | 1.83                     | 0.59              |
| 7:h:46:ASP:OD2   | 7:h:47:LYS:N     | 2.35                     | 0.59              |
| 5:e:341:ILE:O    | 7:h:305:GLN:NE2  | 2.36                     | 0.59              |
| 8:q:153:ASN:OD1  | 8:q:155:ARG:NH1  | 2.35                     | 0.59              |
| 3:B:518:ASP:OD1  | 3:B:519:ASN:N    | 2.33                     | 0.59              |
| 6:g:41:GLY:N     | 9:g:601:ADP:O1A  | 2.33                     | 0.59              |
| 7:h:22:LEU:HD11  | 7:h:518:VAL:HA   | 1.85                     | 0.59              |
| 8:q:56:VAL:HB    | 8:q:64:PHE:HB2   | 1.83                     | 0.59              |
| 4:D:148:LEU:HG   | 4:D:512:LEU:HD11 | 1.85                     | 0.59              |
| 1:Z:160:VAL:HG22 | 1:Z:161:HIS:H    | 1.68                     | 0.59              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:a:415:VAL:O    | 2:a:419:LEU:HG   | 2.02                     | 0.59              |
| 3:B:133:ALA:HB2  | 3:B:436:MET:HG2  | 1.85                     | 0.59              |
| 4:d:102:ALA:HB1  | 4:d:514:VAL:HG22 | 1.83                     | 0.59              |
| 4:d:254:SER:HA   | 4:d:305:LEU:HD12 | 1.85                     | 0.59              |
| 5:e:356:ALA:HB1  | 5:e:376:GLN:H    | 1.67                     | 0.59              |
| 4:D:152:SER:HA   | 4:D:489:LYS:HE3  | 1.85                     | 0.59              |
| 3:B:215:ASP:O    | 3:B:372:THR:N    | 2.36                     | 0.59              |
| 7:H:182:ALA:HA   | 7:H:185:MET:HE2  | 1.84                     | 0.59              |
| 1:z:236:SER:OG   | 1:z:334:ASN:O    | 2.20                     | 0.59              |
| 1:Z:20:LEU:HD11  | 1:Z:516:LEU:HD23 | 1.85                     | 0.59              |
| 3:B:414:GLU:HG2  | 3:B:446:LEU:HD23 | 1.85                     | 0.59              |
| 2:a:489:ASP:HB2  | 2:a:496:ARG:HE   | 1.67                     | 0.59              |
| 7:h:162:CYS:HG   | 7:h:497:TRP:CD1  | 2.20                     | 0.59              |
| 7:h:243:LEU:HG   | 7:h:294:LEU:HD22 | 1.85                     | 0.59              |
| 2:A:233:LYS:NZ   | 2:A:342:ALA:O    | 2.36                     | 0.59              |
| 4:d:141:LEU:HB2  | 4:d:523:THR:HG21 | 1.85                     | 0.58              |
| 4:D:414:CYS:SG   | 4:D:513:LEU:HB3  | 2.43                     | 0.58              |
| 5:e:243:VAL:O    | 5:e:376:GLN:NE2  | 2.33                     | 0.58              |
| 5:E:29:MET:HE1   | 5:E:534:ARG:HH12 | 1.68                     | 0.58              |
| 5:E:442:THR:HG23 | 5:E:444:GLU:H    | 1.69                     | 0.58              |
| 6:G:155:ILE:HD13 | 6:G:172:CYS:HB2  | 1.85                     | 0.58              |
| 6:G:228:MET:HE1  | 6:G:309:THR:HG22 | 1.84                     | 0.58              |
| 2:a:200:ALA:HB2  | 2:a:376:ILE:HD11 | 1.85                     | 0.58              |
| 5:E:341:ILE:HG12 | 5:E:343:PRO:HD3  | 1.85                     | 0.58              |
| 7:H:156:GLU:HG2  | 7:H:177:LYS:HD2  | 1.85                     | 0.58              |
| 8:Q:478:VAL:HA   | 8:Q:491:ASP:HA   | 1.84                     | 0.58              |
| 2:a:238:ASP:HB3  | 2:a:327:ILE:HD11 | 1.84                     | 0.58              |
| 6:G:151:MET:HG2  | 6:G:176:LEU:HD13 | 1.85                     | 0.58              |
| 1:Z:109:TYR:CG   | 1:Z:435:LEU:HD21 | 2.38                     | 0.58              |
| 3:B:498:GLN:OE1  | 3:B:501:ARG:NH2  | 2.36                     | 0.58              |
| 5:E:418:VAL:HG12 | 5:E:509:THR:HA   | 1.86                     | 0.58              |
| 1:z:85:ASP:OD2   | 1:z:92:THR:OG1   | 2.22                     | 0.58              |
| 1:z:232:THR:HA   | 1:z:292:ILE:H    | 1.68                     | 0.58              |
| 1:Z:294:GLN:HA   | 1:Z:316:ALA:HB3  | 1.84                     | 0.58              |
| 4:d:130:PRO:HA   | 4:d:133:ILE:HD12 | 1.86                     | 0.58              |
| 7:h:234:LYS:HA   | 7:h:352:PHE:HD2  | 1.67                     | 0.58              |
| 1:Z:85:ASP:OD2   | 1:Z:92:THR:OG1   | 2.14                     | 0.58              |
| 1:Z:224:ARG:HH22 | 1:Z:349:LEU:HD21 | 1.67                     | 0.58              |
| 4:d:148:LEU:HG   | 4:d:512:LEU:HD11 | 1.84                     | 0.58              |
| 3:B:424:LEU:HG   | 3:B:436:MET:HE1  | 1.86                     | 0.58              |
| 4:D:469:ALA:HB2  | 4:D:495:VAL:HG23 | 1.85                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:Z:103:LEU:HD21 | 1:Z:515:ILE:HG21 | 1.85                     | 0.58              |
| 1:Z:328:CYS:HA   | 1:Z:366:CYS:HB2  | 1.86                     | 0.58              |
| 3:b:100:THR:OG1  | 9:b:601:ADP:O1A  | 2.21                     | 0.58              |
| 5:e:442:THR:OG1  | 5:e:443:LEU:N    | 2.37                     | 0.58              |
| 2:A:323:SER:HA   | 2:A:368:LYS:HB3  | 1.86                     | 0.58              |
| 8:Q:297:VAL:HG12 | 8:Q:314:ARG:HG3  | 1.85                     | 0.58              |
| 1:z:97:LEU:HD13  | 1:z:450:VAL:HG21 | 1.85                     | 0.58              |
| 1:Z:143:MET:HE3  | 1:Z:402:ILE:HD12 | 1.86                     | 0.58              |
| 3:b:181:LYS:HD3  | 3:b:182:LEU:HD12 | 1.85                     | 0.58              |
| 8:q:471:HIS:CE1  | 8:q:476:LYS:HA   | 2.38                     | 0.58              |
| 7:H:26:ILE:HG22  | 7:H:105:LEU:HD13 | 1.85                     | 0.58              |
| 1:z:412:GLY:O    | 1:z:414:VAL:N    | 2.37                     | 0.58              |
| 4:d:509:VAL:O    | 4:d:510:GLN:NE2  | 2.37                     | 0.57              |
| 6:g:31:THR:O     | 6:g:35:ILE:HG12  | 2.03                     | 0.57              |
| 6:g:295:ILE:HB   | 6:g:312:ARG:HH21 | 1.70                     | 0.57              |
| 2:A:191:PRO:HG2  | 2:A:194:SER:HB3  | 1.85                     | 0.57              |
| 1:Z:127:LYS:HB2  | 1:Z:509:THR:HG21 | 1.85                     | 0.57              |
| 5:e:48:MET:HE1   | 5:e:107:THR:HA   | 1.86                     | 0.57              |
| 5:e:156:LEU:HD13 | 5:e:416:ASN:HB3  | 1.85                     | 0.57              |
| 8:q:97:VAL:HG11  | 8:q:503:GLY:HA2  | 1.85                     | 0.57              |
| 3:B:298:ASN:HB2  | 4:D:349:ASP:HB2  | 1.86                     | 0.57              |
| 5:E:208:LEU:HG   | 5:E:382:ALA:HA   | 1.86                     | 0.57              |
| 7:H:329:SER:HB3  | 7:H:340:ASP:HB2  | 1.86                     | 0.57              |
| 1:z:469:GLU:HG3  | 1:z:486:PRO:HG2  | 1.85                     | 0.57              |
| 1:Z:84:GLN:HE22  | 1:Z:511:ILE:HD11 | 1.69                     | 0.57              |
| 2:a:17:ILE:O     | 2:a:21:ASN:ND2   | 2.37                     | 0.57              |
| 2:a:477:ASN:ND2  | 2:a:479:GLU:OE2  | 2.36                     | 0.57              |
| 5:e:188:ILE:HG12 | 5:e:224:LEU:HB2  | 1.85                     | 0.57              |
| 6:g:34:ASP:HA    | 6:g:37:ARG:HB3   | 1.87                     | 0.57              |
| 3:B:179:PHE:CD1  | 3:B:390:LEU:HD11 | 2.38                     | 0.57              |
| 3:B:337:HIS:CG   | 3:B:338:PRO:HD3  | 2.38                     | 0.57              |
| 5:E:357:GLY:N    | 5:E:375:GLU:HA   | 2.19                     | 0.57              |
| 3:b:296:ILE:HG23 | 3:b:300:PRO:HG2  | 1.87                     | 0.57              |
| 4:D:439:TYR:O    | 4:D:443:LEU:N    | 2.33                     | 0.57              |
| 5:E:509:THR:HG23 | 5:E:512:GLY:H    | 1.68                     | 0.57              |
| 6:G:191:GLU:HB2  | 6:G:402:LEU:HD21 | 1.86                     | 0.57              |
| 6:G:301:HIS:HA   | 6:G:304:MET:HG2  | 1.87                     | 0.57              |
| 6:G:477:TRP:CE2  | 6:G:488:ASP:HB2  | 2.40                     | 0.57              |
| 2:a:244:THR:OG1  | 2:a:269:ASP:OD1  | 2.23                     | 0.57              |
| 5:e:463:SER:HB3  | 5:e:491:ILE:HD13 | 1.85                     | 0.57              |
| 5:E:38:ILE:HG12  | 5:E:117:LEU:HD12 | 1.86                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:h:294:LEU:HD11 | 7:h:318:VAL:HG21 | 1.85                     | 0.57              |
| 3:b:215:ASP:OD1  | 3:b:361:HIS:ND1  | 2.35                     | 0.57              |
| 5:e:130:PRO:HG2  | 7:h:45:MET:HE1   | 1.87                     | 0.57              |
| 6:g:205:GLY:N    | 6:g:377:GLY:O    | 2.35                     | 0.57              |
| 8:q:102:ASN:ND2  | 9:q:5000:ADP:O2A | 2.38                     | 0.57              |
| 1:Z:266:PHE:O    | 1:Z:270:ARG:NH2  | 2.38                     | 0.56              |
| 7:h:184:VAL:HG12 | 7:h:400:VAL:HG11 | 1.87                     | 0.56              |
| 2:a:137:ILE:HD11 | 2:a:485:TRP:CD1  | 2.39                     | 0.56              |
| 7:h:139:LYS:HE3  | 7:h:143:ILE:HD11 | 1.86                     | 0.56              |
| 6:G:21:VAL:HG11  | 6:G:519:ASP:O    | 2.05                     | 0.56              |
| 7:H:163:LEU:HD12 | 7:H:172:LYS:HZ2  | 1.69                     | 0.56              |
| 7:H:239:LEU:HD22 | 7:H:330:ILE:HG23 | 1.87                     | 0.56              |
| 1:z:229:TYR:HB3  | 1:z:344:LEU:HD21 | 1.87                     | 0.56              |
| 1:Z:227:ASP:OD1  | 1:Z:346:HIS:NE2  | 2.31                     | 0.56              |
| 7:h:30:GLN:NE2   | 7:h:106:ALA:O    | 2.38                     | 0.56              |
| 7:h:195:GLN:HB2  | 7:h:198:MET:HG3  | 1.86                     | 0.56              |
| 3:B:237:ILE:HG13 | 3:B:290:PHE:HA   | 1.87                     | 0.56              |
| 4:D:154:PRO:HA   | 4:D:420:ALA:HA   | 1.86                     | 0.56              |
| 4:D:224:VAL:HG22 | 4:D:387:THR:HG21 | 1.87                     | 0.56              |
| 6:G:219:ILE:HG12 | 6:G:322:ILE:HD11 | 1.86                     | 0.56              |
| 5:E:210:LYS:HE3  | 5:E:385:ILE:HB   | 1.86                     | 0.56              |
| 6:G:191:GLU:O    | 6:G:398:ARG:NH2  | 2.35                     | 0.56              |
| 7:H:197:ILE:HG22 | 7:H:372:PHE:HB3  | 1.86                     | 0.56              |
| 7:H:236:LYS:HG2  | 7:H:237:ILE:H    | 1.70                     | 0.56              |
| 8:Q:466:LYS:NZ   | 8:Q:487:PRO:O    | 2.30                     | 0.56              |
| 6:g:396:VAL:HA   | 6:g:399:ASN:HD21 | 1.70                     | 0.56              |
| 7:h:182:MET:HE1  | 7:h:213:GLN:HA   | 1.88                     | 0.56              |
| 8:q:131:GLY:HA3  | 8:q:437:ALA:HB3  | 1.87                     | 0.56              |
| 3:B:236:LYS:HB2  | 3:B:287:ILE:HG22 | 1.88                     | 0.56              |
| 4:D:319:LYS:HG2  | 4:D:320:MET:HE3  | 1.87                     | 0.56              |
| 6:g:230:ARG:HB3  | 6:g:351:ILE:HD11 | 1.88                     | 0.56              |
| 4:D:182:LEU:HD11 | 4:D:219:ASP:HA   | 1.88                     | 0.56              |
| 7:H:495:PRO:HG2  | 7:H:498:VAL:HB   | 1.86                     | 0.56              |
| 3:b:223:LYS:HZ3  | 3:b:313:GLU:H    | 1.54                     | 0.56              |
| 6:G:353:LYS:HE3  | 6:G:358:TYR:HA   | 1.88                     | 0.56              |
| 6:G:199:ARG:HB3  | 6:G:372:THR:HA   | 1.88                     | 0.56              |
| 6:g:50:LEU:HB3   | 6:g:56:ILE:HD13  | 1.88                     | 0.56              |
| 7:h:223:THR:H    | 7:h:226:TYR:HB3  | 1.71                     | 0.56              |
| 8:Q:84:LYS:O     | 8:Q:88:MET:HG3   | 2.06                     | 0.56              |
| 1:z:153:ARG:HD2  | 1:z:157:ARG:HE   | 1.71                     | 0.56              |
| 2:a:202:GLY:N    | 2:a:379:GLY:O    | 2.39                     | 0.56              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:q:436:TYR:OH   | 6:G:466:ARG:NH2   | 2.39                     | 0.56              |
| 7:H:237:ILE:HG23 | 7:H:290:LEU:HD23  | 1.88                     | 0.56              |
| 8:Q:221:MET:HE2  | 8:Q:324:LEU:HD21  | 1.87                     | 0.56              |
| 8:Q:399:PHE:O    | 8:Q:403:THR:HG23  | 2.06                     | 0.56              |
| 3:b:237:ILE:HD11 | 3:b:291:ILE:HG12  | 1.87                     | 0.55              |
| 5:e:236:HIS:HB3  | 5:e:239:MET:HB2   | 1.88                     | 0.55              |
| 4:D:90:MET:HG3   | 4:D:529:ILE:HD11  | 1.87                     | 0.55              |
| 5:E:351:GLU:HG3  | 5:E:352:LYS:HG3   | 1.88                     | 0.55              |
| 6:G:329:ARG:NH1  | 6:G:330:ILE:O     | 2.39                     | 0.55              |
| 7:H:222:TYR:HE1  | 7:H:315:PRO:HD3   | 1.69                     | 0.55              |
| 1:z:117:ARG:HH21 | 6:g:43:LYS:HE2    | 1.72                     | 0.55              |
| 5:e:167:GLN:HA   | 5:e:170:LYS:HG2   | 1.88                     | 0.55              |
| 6:g:156:ASN:O    | 6:g:160:THR:OG1   | 2.20                     | 0.55              |
| 6:g:211:SER:OG   | 6:g:376:ARG:N     | 2.34                     | 0.55              |
| 2:A:229:ILE:HG21 | 2:A:232:ALA:HB2   | 1.88                     | 0.55              |
| 3:B:244:MET:HE1  | 3:B:279:VAL:HG21  | 1.88                     | 0.55              |
| 1:Z:149:ILE:HA   | 1:Z:173:VAL:HG11  | 1.89                     | 0.55              |
| 4:d:182:LEU:HD11 | 4:d:219:ASP:HA    | 1.88                     | 0.55              |
| 5:e:248:ILE:HA   | 5:e:299:LEU:HB3   | 1.88                     | 0.55              |
| 2:A:394:ASP:OD1  | 2:A:395:ALA:N     | 2.39                     | 0.55              |
| 4:D:229:LEU:HB2  | 4:D:374:LEU:HB3   | 1.87                     | 0.55              |
| 6:G:202:LYS:HA   | 6:G:375:LEU:HB2   | 1.88                     | 0.55              |
| 8:Q:169:MET:HE3  | 9:Q:5000:ADP:HN61 | 1.70                     | 0.55              |
| 1:Z:87:ILE:HG13  | 1:Z:88:THR:HG23   | 1.88                     | 0.55              |
| 5:e:301:ILE:HD12 | 5:e:325:VAL:HG11  | 1.88                     | 0.55              |
| 6:g:201:GLU:OE2  | 6:g:220:ASN:ND2   | 2.34                     | 0.55              |
| 6:G:199:ARG:HG2  | 6:G:218:MET:H     | 1.70                     | 0.55              |
| 6:G:475:GLU:HB3  | 6:G:477:TRP:CD1   | 2.41                     | 0.55              |
| 3:b:240:ALA:HB2  | 3:b:290:PHE:HZ    | 1.71                     | 0.55              |
| 5:e:302:CYS:SG   | 5:e:303:GLN:N     | 2.80                     | 0.55              |
| 2:A:397:CYS:O    | 2:A:400:LYS:HG3   | 2.07                     | 0.55              |
| 7:H:290:LEU:HD12 | 7:H:314:VAL:HB    | 1.87                     | 0.55              |
| 5:e:248:ILE:HG12 | 5:e:299:LEU:HD23  | 1.89                     | 0.55              |
| 3:B:235:ALA:HB3  | 3:B:346:CYS:HB3   | 1.89                     | 0.55              |
| 2:a:209:MET:HE3  | 2:a:210:LEU:H     | 1.71                     | 0.55              |
| 4:d:421:LEU:HD21 | 4:d:509:VAL:HB    | 1.89                     | 0.55              |
| 5:e:314:LEU:HD22 | 5:e:319:LEU:HB2   | 1.88                     | 0.55              |
| 2:A:85:GLU:HG3   | 2:A:86:VAL:HG13   | 1.89                     | 0.55              |
| 3:B:51:ILE:HB    | 4:D:535:VAL:HG22  | 1.89                     | 0.55              |
| 6:G:136:LEU:HD11 | 6:G:505:TYR:CD2   | 2.41                     | 0.55              |
| 8:Q:153:ASN:OD1  | 8:Q:154:LEU:N     | 2.38                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:z:237:LEU:HB2  | 1:z:297:ILE:HB   | 1.88                     | 0.55              |
| 2:a:470:PHE:HD2  | 2:a:486:ILE:HG21 | 1.71                     | 0.55              |
| 5:e:411:ASN:HA   | 5:e:414:ARG:HG2  | 1.88                     | 0.55              |
| 8:q:273:GLU:OE2  | 8:q:304:TYR:OH   | 2.24                     | 0.55              |
| 4:D:150:ASP:OD1  | 4:D:151:MET:N    | 2.39                     | 0.55              |
| 4:D:151:MET:HE1  | 4:D:489:LYS:HB2  | 1.89                     | 0.55              |
| 8:Q:286:THR:HB   | 8:Q:341:LEU:HD13 | 1.89                     | 0.55              |
| 2:a:170:ASN:HA   | 2:a:173:VAL:HG22 | 1.89                     | 0.55              |
| 7:h:213:GLN:NE2  | 7:h:214:LEU:O    | 2.40                     | 0.55              |
| 2:A:322:ALA:O    | 2:A:369:ALA:N    | 2.35                     | 0.55              |
| 5:E:170:LYS:HD2  | 5:E:182:HIS:NE2  | 2.22                     | 0.55              |
| 1:z:34:LEU:HD11  | 1:z:64:LEU:HD21  | 1.87                     | 0.54              |
| 2:a:235:ALA:HB3  | 2:a:286:ILE:HG13 | 1.88                     | 0.54              |
| 2:a:278:ILE:HB   | 2:a:331:LEU:HD21 | 1.88                     | 0.54              |
| 6:g:408:PRO:HB2  | 6:g:412:ALA:HB3  | 1.89                     | 0.54              |
| 8:q:240:ALA:HB3  | 8:q:291:VAL:HG12 | 1.88                     | 0.54              |
| 1:Z:43:THR:HG21  | 8:Q:522:ASP:HB3  | 1.89                     | 0.54              |
| 5:e:210:LYS:HD2  | 5:e:385:ILE:HG12 | 1.89                     | 0.54              |
| 8:Q:450:ARG:HG3  | 8:Q:460:ALA:HB1  | 1.89                     | 0.54              |
| 2:a:91:THR:OG1   | 9:a:601:ADP:O3B  | 2.20                     | 0.54              |
| 3:b:112:GLU:HB3  | 3:b:438:SER:HB3  | 1.88                     | 0.54              |
| 6:g:228:MET:HE2  | 6:g:309:THR:HG22 | 1.88                     | 0.54              |
| 7:h:487:ASP:OD1  | 7:h:488:ILE:N    | 2.39                     | 0.54              |
| 5:E:193:VAL:HG11 | 5:E:409:ILE:HD11 | 1.88                     | 0.54              |
| 7:H:208:SER:OG   | 7:H:373:ILE:O    | 2.18                     | 0.54              |
| 2:a:416:GLU:OE2  | 2:a:510:LYS:NZ   | 2.33                     | 0.54              |
| 5:e:128:ILE:HG23 | 5:e:443:LEU:HD13 | 1.89                     | 0.54              |
| 2:A:178:ALA:O    | 2:A:370:ARG:NH2  | 2.40                     | 0.54              |
| 5:E:128:ILE:HD12 | 5:E:443:LEU:HD13 | 1.89                     | 0.54              |
| 2:A:181:TYR:HB3  | 2:A:191:PRO:HD3  | 1.89                     | 0.54              |
| 3:B:188:LEU:O    | 3:B:191:LYS:NZ   | 2.39                     | 0.54              |
| 4:D:157:LEU:HD23 | 4:D:159:ASP:H    | 1.72                     | 0.54              |
| 4:D:413:ARG:HA   | 4:D:416:VAL:HG12 | 1.90                     | 0.54              |
| 4:D:534:ASP:OD1  | 4:D:535:VAL:N    | 2.41                     | 0.54              |
| 5:E:248:ILE:HA   | 5:E:299:LEU:HB3  | 1.89                     | 0.54              |
| 1:z:268:GLU:HB3  | 1:z:272:LYS:NZ   | 2.22                     | 0.54              |
| 1:Z:264:ARG:HH22 | 1:Z:298:ASP:HB3  | 1.72                     | 0.54              |
| 4:d:52:LEU:O     | 4:d:468:ASN:ND2  | 2.40                     | 0.54              |
| 7:h:234:LYS:HD2  | 7:h:354:GLU:HB3  | 1.89                     | 0.54              |
| 4:D:41:ALA:HB2   | 4:D:87:ALA:HB1   | 1.90                     | 0.54              |
| 1:Z:469:GLU:HB3  | 1:Z:477:VAL:HG11 | 1.90                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:a:118:ILE:HG23 | 2:a:522:ILE:HG12 | 1.90                     | 0.54              |
| 2:a:198:LEU:O    | 2:a:377:LEU:N    | 2.36                     | 0.54              |
| 6:g:182:VAL:O    | 6:g:182:VAL:HG12 | 2.07                     | 0.54              |
| 1:Z:156:LEU:HB3  | 1:Z:165:ALA:HB1  | 1.89                     | 0.54              |
| 7:h:214:LEU:HD11 | 7:h:374:CYS:HB3  | 1.89                     | 0.54              |
| 2:A:477:ASN:ND2  | 2:A:479:GLU:OE2  | 2.41                     | 0.54              |
| 1:Z:232:THR:HA   | 1:Z:292:ILE:HG23 | 1.90                     | 0.54              |
| 1:Z:415:GLU:OE2  | 1:Z:447:ILE:HB   | 2.08                     | 0.54              |
| 7:h:122:PRO:O    | 7:h:126:ILE:HG12 | 2.08                     | 0.54              |
| 3:B:142:LEU:HD22 | 3:B:497:PHE:HZ   | 1.73                     | 0.54              |
| 4:D:227:LEU:HB2  | 4:D:339:THR:HG21 | 1.90                     | 0.54              |
| 5:E:143:VAL:HG11 | 5:E:436:GLU:HG3  | 1.89                     | 0.54              |
| 8:Q:185:GLN:HA   | 8:Q:188:VAL:HG12 | 1.89                     | 0.54              |
| 2:a:489:ASP:OD1  | 2:a:496:ARG:NH2  | 2.41                     | 0.54              |
| 4:d:480:LEU:HD13 | 4:d:500:ILE:HD11 | 1.90                     | 0.54              |
| 2:A:132:ILE:HD11 | 2:A:419:LEU:HD11 | 1.90                     | 0.54              |
| 6:G:183:GLN:HB2  | 6:G:190:LYS:HG3  | 1.89                     | 0.54              |
| 7:H:213:GLY:HA3  | 7:H:362:THR:HG22 | 1.90                     | 0.54              |
| 4:d:213:LYS:NZ   | 4:d:230:THR:O    | 2.41                     | 0.53              |
| 8:q:225:LYS:O    | 8:q:359:GLN:NE2  | 2.37                     | 0.53              |
| 5:E:289:ILE:HD13 | 5:E:292:ILE:HD12 | 1.89                     | 0.53              |
| 6:G:152:LEU:HA   | 6:G:155:ILE:HD12 | 1.90                     | 0.53              |
| 4:d:60:MET:HA    | 4:d:60:MET:HE3   | 1.91                     | 0.53              |
| 5:e:446:TYR:HE2  | 4:D:474:ILE:HG23 | 1.73                     | 0.53              |
| 6:g:155:ILE:HG23 | 6:g:159:ILE:HD13 | 1.91                     | 0.53              |
| 4:D:210:ILE:HA   | 4:D:387:THR:HA   | 1.89                     | 0.53              |
| 4:D:281:ALA:O    | 4:D:285:ASN:ND2  | 2.41                     | 0.53              |
| 4:D:423:ALA:HB1  | 4:D:503:ILE:HG12 | 1.89                     | 0.53              |
| 5:E:301:ILE:HG22 | 5:E:322:VAL:HB   | 1.89                     | 0.53              |
| 5:E:411:ASN:HB3  | 5:E:511:ILE:HD11 | 1.91                     | 0.53              |
| 7:H:199:LYS:HD2  | 7:H:374:LEU:HD22 | 1.89                     | 0.53              |
| 1:Z:174:ASP:OD1  | 1:Z:175:SER:N    | 2.41                     | 0.53              |
| 1:Z:264:ARG:NH1  | 1:Z:300:PHE:HB2  | 2.23                     | 0.53              |
| 4:d:91:LEU:HD23  | 4:d:94:LEU:HD12  | 1.91                     | 0.53              |
| 8:q:185:GLN:HE22 | 8:q:189:SER:HB3  | 1.72                     | 0.53              |
| 5:E:362:ILE:O    | 5:E:370:LYS:NZ   | 2.41                     | 0.53              |
| 6:G:215:ARG:HA   | 6:G:371:CYS:HB3  | 1.91                     | 0.53              |
| 8:Q:463:VAL:HG21 | 8:Q:480:LEU:HD13 | 1.90                     | 0.53              |
| 5:e:208:LEU:HG   | 5:e:382:ALA:HA   | 1.89                     | 0.53              |
| 7:h:333:SER:HB3  | 7:h:344:ASP:HB3  | 1.90                     | 0.53              |
| 3:b:108:GLU:OE2  | 3:b:111:ARG:NH1  | 2.42                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:e:42:LYS:HG2   | 5:e:118:GLU:HB3  | 1.91                     | 0.53              |
| 6:g:283:GLN:NE2  | 6:g:341:ASP:OD2  | 2.41                     | 0.53              |
| 7:h:85:ASP:OD1   | 7:h:86:ILE:N     | 2.41                     | 0.53              |
| 2:A:319:ILE:HG12 | 2:A:364:ILE:HD12 | 1.90                     | 0.53              |
| 3:B:199:ILE:HG12 | 3:B:394:LEU:HG   | 1.91                     | 0.53              |
| 8:Q:280:VAL:HA   | 8:Q:283:ILE:HG22 | 1.90                     | 0.53              |
| 2:a:28:ILE:HG13  | 2:a:72:ALA:HB1   | 1.89                     | 0.53              |
| 2:a:232:ALA:HB3  | 2:a:348:ALA:HB3  | 1.89                     | 0.53              |
| 5:e:396:GLU:HG3  | 5:e:399:LYS:HE3  | 1.90                     | 0.53              |
| 7:H:497:MET:HA   | 7:H:497:MET:HE3  | 1.90                     | 0.53              |
| 7:h:356:GLN:HA   | 7:h:361:ARG:HA   | 1.90                     | 0.53              |
| 8:q:331:THR:HG21 | 8:q:343:GLU:HB3  | 1.91                     | 0.53              |
| 8:q:386:ASP:HA   | 8:q:389:GLU:HG2  | 1.90                     | 0.53              |
| 2:a:289:THR:HG23 | 2:a:311:VAL:HB   | 1.91                     | 0.53              |
| 6:g:46:MET:HE2   | 6:g:58:MET:HB3   | 1.91                     | 0.53              |
| 6:G:184:PHE:HB2  | 6:G:192:ILE:HB   | 1.90                     | 0.53              |
| 7:H:38:THR:OG1   | 7:H:47:LYS:NZ    | 2.42                     | 0.53              |
| 8:Q:215:SER:OG   | 8:Q:376:VAL:O    | 2.23                     | 0.53              |
| 2:a:47:ASP:OD1   | 2:a:51:ASP:N     | 2.42                     | 0.53              |
| 2:a:291:GLY:HA2  | 2:a:309:ARG:HD2  | 1.91                     | 0.53              |
| 4:d:210:ILE:HG13 | 4:d:388:ILE:N    | 2.20                     | 0.53              |
| 4:d:247:GLY:N    | 4:d:295:CYS:SG   | 2.81                     | 0.53              |
| 8:q:218:LEU:HD23 | 8:q:219:HIS:N    | 2.24                     | 0.53              |
| 3:B:147:ASP:HA   | 3:B:405:ARG:HA   | 1.91                     | 0.53              |
| 1:Z:59:ASP:HB3   | 1:Z:159:LYS:HD2  | 1.90                     | 0.53              |
| 6:g:274:ILE:HG22 | 6:g:277:LEU:H    | 1.74                     | 0.53              |
| 8:q:37:LYS:HD2   | 8:q:113:GLU:HG2  | 1.90                     | 0.53              |
| 3:B:42:THR:OG1   | 3:B:65:ASN:O     | 2.27                     | 0.53              |
| 3:B:83:VAL:HB    | 3:B:514:ILE:HD11 | 1.91                     | 0.53              |
| 4:d:338:LYS:O    | 4:d:381:SER:OG   | 2.27                     | 0.52              |
| 5:e:45:ALA:C     | 5:e:47:THR:H     | 2.17                     | 0.52              |
| 3:B:517:VAL:HG13 | 3:B:520:ILE:HD13 | 1.92                     | 0.52              |
| 5:E:116:LEU:HD11 | 5:E:451:PHE:CD1  | 2.44                     | 0.52              |
| 1:z:268:GLU:HB3  | 1:z:272:LYS:HZ3  | 1.74                     | 0.52              |
| 5:e:351:GLU:HG3  | 5:e:352:LYS:HG3  | 1.92                     | 0.52              |
| 4:D:86:PRO:O     | 4:D:90:MET:HG2   | 2.08                     | 0.52              |
| 4:D:345:VAL:HG12 | 4:D:347:HIS:H    | 1.75                     | 0.52              |
| 2:a:214:TYR:HD2  | 2:a:364:ILE:HD11 | 1.74                     | 0.52              |
| 5:e:392:LYS:O    | 5:e:395:ILE:N    | 2.41                     | 0.52              |
| 7:h:351:VAL:HG12 | 7:h:367:GLY:HA3  | 1.90                     | 0.52              |
| 7:h:526:ASN:HD22 | 8:q:77:GLU:HG3   | 1.74                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:191:VAL:HG13 | 4:D:203:VAL:HG21 | 1.91                     | 0.52              |
| 4:D:388:ILE:HG21 | 4:D:405:ILE:HG13 | 1.91                     | 0.52              |
| 6:G:278:CYS:O    | 6:G:282:ILE:HG13 | 2.09                     | 0.52              |
| 3:b:414:GLU:HA   | 3:b:417:MET:HE3  | 1.91                     | 0.52              |
| 5:e:29:MET:HE1   | 5:e:31:LEU:HB2   | 1.92                     | 0.52              |
| 6:g:163:ALA:O    | 6:g:166:ARG:NH1  | 2.42                     | 0.52              |
| 8:q:208:LEU:O    | 8:q:378:ARG:NH2  | 2.36                     | 0.52              |
| 8:q:289:ASN:HA   | 8:q:310:ILE:HD12 | 1.91                     | 0.52              |
| 3:B:29:PHE:HD2   | 3:B:114:GLU:HG2  | 1.75                     | 0.52              |
| 4:D:152:SER:OG   | 4:D:153:ARG:N    | 2.43                     | 0.52              |
| 6:G:398:ARG:HH22 | 6:G:402:LEU:HD11 | 1.74                     | 0.52              |
| 8:Q:337:THR:C    | 8:Q:339:PRO:HD2  | 2.34                     | 0.52              |
| 1:z:176:ILE:HG13 | 1:z:398:VAL:HG11 | 1.92                     | 0.52              |
| 1:z:466:ILE:HD11 | 1:z:479:VAL:HB   | 1.91                     | 0.52              |
| 2:a:432:SER:OG   | 2:a:433:ARG:N    | 2.43                     | 0.52              |
| 3:b:71:LEU:HD23  | 3:b:74:ILE:HD12  | 1.92                     | 0.52              |
| 4:d:431:GLU:OE1  | 4:d:435:ARG:NE   | 2.42                     | 0.52              |
| 4:d:474:ILE:HG21 | 5:E:128:ILE:HD11 | 1.92                     | 0.52              |
| 5:e:228:VAL:HG11 | 5:e:333:ILE:HA   | 1.90                     | 0.52              |
| 5:e:330:ILE:HG21 | 5:e:343:PRO:HB3  | 1.91                     | 0.52              |
| 2:A:267:GLU:HB3  | 2:A:273:GLU:HB2  | 1.91                     | 0.52              |
| 3:B:98:GLY:O     | 3:B:102:VAL:HG23 | 2.09                     | 0.52              |
| 8:Q:44:ARG:HH11  | 8:Q:451:ALA:HB2  | 1.73                     | 0.52              |
| 8:Q:237:ALA:HB1  | 8:Q:289:ASN:HD21 | 1.74                     | 0.52              |
| 1:z:363:ILE:HG22 | 1:z:366:CYS:SG   | 2.49                     | 0.52              |
| 4:d:490:THR:HG21 | 4:d:504:LEU:HD23 | 1.92                     | 0.52              |
| 6:g:181:MET:HE2  | 6:g:371:CYS:HB2  | 1.91                     | 0.52              |
| 8:q:280:VAL:HA   | 8:q:283:ILE:HG22 | 1.92                     | 0.52              |
| 4:D:367:LEU:N    | 4:D:371:GLY:O    | 2.43                     | 0.52              |
| 5:E:218:ARG:H    | 5:E:221:ASP:HB2  | 1.75                     | 0.52              |
| 6:G:49:LEU:HB2   | 6:G:57:VAL:HB    | 1.92                     | 0.52              |
| 7:H:319:LEU:HB3  | 7:H:323:MET:HE1  | 1.92                     | 0.52              |
| 1:z:353:TYR:N    | 1:z:360:PHE:O    | 2.40                     | 0.52              |
| 3:b:413:SER:O    | 3:b:417:MET:HG3  | 2.09                     | 0.52              |
| 3:B:244:MET:HB2  | 3:B:300:PRO:HB3  | 1.92                     | 0.52              |
| 6:G:448:ARG:HB2  | 6:G:462:LEU:HD11 | 1.92                     | 0.52              |
| 7:H:193:LYS:O    | 7:H:321:ARG:NH2  | 2.40                     | 0.52              |
| 3:B:520:ILE:HD11 | 5:E:59:LYS:HA    | 1.90                     | 0.52              |
| 4:D:163:LEU:HD23 | 4:D:412:ILE:HD12 | 1.92                     | 0.52              |
| 7:H:99:LEU:HD21  | 7:H:444:ILE:HG12 | 1.92                     | 0.52              |
| 1:z:263:GLU:HA   | 1:z:266:PHE:HD2  | 1.75                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:b:36:GLY:HA3   | 3:b:107:ALA:HB2  | 1.91                     | 0.52              |
| 6:g:303:LEU:O    | 6:g:307:ASN:N    | 2.43                     | 0.52              |
| 2:A:66:GLU:OE1   | 6:G:523:SER:OG   | 2.28                     | 0.52              |
| 5:E:271:VAL:HB   | 5:E:274:TYR:HB3  | 1.91                     | 0.52              |
| 1:z:59:ASP:O     | 1:z:63:LEU:HD23  | 2.09                     | 0.52              |
| 1:Z:449:LYS:HD2  | 1:Z:459:LEU:HD21 | 1.92                     | 0.52              |
| 2:a:196:ASN:ND2  | 2:a:315:ASP:OD1  | 2.43                     | 0.52              |
| 5:e:221:ASP:HB3  | 5:e:388:ARG:HB3  | 1.92                     | 0.52              |
| 6:g:59:THR:HG21  | 6:g:64:ALA:HB3   | 1.92                     | 0.52              |
| 2:A:198:LEU:H    | 2:A:377:LEU:HD13 | 1.75                     | 0.52              |
| 3:B:237:ILE:HD11 | 3:B:291:ILE:HG12 | 1.92                     | 0.52              |
| 7:H:423:TYR:O    | 7:H:426:THR:OG1  | 2.28                     | 0.52              |
| 1:z:121:GLU:O    | 1:z:124:GLU:HG3  | 2.10                     | 0.51              |
| 1:Z:399:LYS:O    | 1:Z:402:ILE:HG22 | 2.10                     | 0.51              |
| 5:e:90:LEU:O     | 5:e:93:GLU:HG3   | 2.10                     | 0.51              |
| 7:h:148:LYS:HB2  | 7:h:407:ASP:HA   | 1.92                     | 0.51              |
| 6:G:211:SER:OG   | 6:G:376:ARG:N    | 2.43                     | 0.51              |
| 3:B:218:PHE:CE2  | 3:B:220:LEU:HD13 | 2.45                     | 0.51              |
| 4:D:484:HIS:CE1  | 4:D:489:LYS:HA   | 2.45                     | 0.51              |
| 5:E:531:ASP:OD1  | 5:E:532:ASP:N    | 2.44                     | 0.51              |
| 7:H:172:LYS:HA   | 7:H:175:PHE:HB2  | 1.92                     | 0.51              |
| 2:a:46:VAL:H     | 6:g:523:SER:HB3  | 1.75                     | 0.51              |
| 8:q:142:ILE:HD13 | 8:q:422:GLN:HB3  | 1.92                     | 0.51              |
| 3:B:123:PRO:HA   | 3:B:126:ILE:HD12 | 1.92                     | 0.51              |
| 4:D:373:LEU:HD13 | 4:D:391:ARG:HH22 | 1.75                     | 0.51              |
| 7:H:50:VAL:HA    | 7:H:56:ALA:HA    | 1.92                     | 0.51              |
| 1:Z:129:LYS:HZ2  | 1:Z:425:HIS:HB2  | 1.75                     | 0.51              |
| 1:Z:453:GLN:HB2  | 1:Z:459:LEU:HD12 | 1.91                     | 0.51              |
| 1:Z:519:ASP:OD1  | 1:Z:519:ASP:N    | 2.43                     | 0.51              |
| 5:e:116:LEU:HD11 | 5:e:451:PHE:CD1  | 2.45                     | 0.51              |
| 8:q:112:LEU:HD11 | 8:q:518:VAL:HG11 | 1.93                     | 0.51              |
| 2:A:512:LYS:HE3  | 2:A:516:PHE:CE2  | 2.44                     | 0.51              |
| 8:Q:53:ASN:HB3   | 8:Q:67:ASN:HB3   | 1.93                     | 0.51              |
| 1:Z:179:ILE:HD12 | 1:Z:190:MET:HG2  | 1.93                     | 0.51              |
| 6:g:221:LYS:O    | 6:g:360:THR:OG1  | 2.17                     | 0.51              |
| 7:h:207:GLY:O    | 7:h:381:GLY:N    | 2.44                     | 0.51              |
| 8:q:450:ARG:NH1  | 8:q:461:ASN:OD1  | 2.43                     | 0.51              |
| 6:G:410:GLY:HA3  | 6:G:489:MET:HE2  | 1.92                     | 0.51              |
| 7:H:283:HIS:ND1  | 7:H:335:ASN:OD1  | 2.44                     | 0.51              |
| 4:d:94:LEU:HD21  | 4:d:525:THR:OG1  | 2.10                     | 0.51              |
| 7:h:243:LEU:HD11 | 7:h:327:MET:HE1  | 1.91                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:A:528:ASP:OD1  | 2:A:529:ASP:N    | 2.43                     | 0.51              |
| 5:E:210:LYS:HD2  | 5:E:384:THR:HA   | 1.93                     | 0.51              |
| 1:Z:179:ILE:HG23 | 1:Z:190:MET:HE2  | 1.91                     | 0.51              |
| 1:Z:522:MET:HE1  | 6:G:65:ILE:HG23  | 1.92                     | 0.51              |
| 7:h:21:GLN:HE22  | 7:h:523:THR:HG23 | 1.76                     | 0.51              |
| 2:A:78:LEU:HD13  | 2:A:81:LEU:HD21  | 1.92                     | 0.51              |
| 2:A:171:MET:HG3  | 2:A:210:LEU:HB2  | 1.91                     | 0.51              |
| 8:Q:93:GLN:HG3   | 8:Q:104:VAL:HG21 | 1.92                     | 0.51              |
| 1:Z:279:ARG:HG3  | 1:Z:284:ASP:H    | 1.76                     | 0.51              |
| 4:d:246:ILE:HG21 | 4:d:340:ILE:HD13 | 1.93                     | 0.51              |
| 1:z:127:LYS:HB2  | 1:z:509:THR:HG21 | 1.92                     | 0.51              |
| 2:a:103:ASN:OD1  | 2:a:444:SER:HB3  | 2.11                     | 0.51              |
| 3:b:298:ASN:HB3  | 3:b:302:GLN:HE22 | 1.76                     | 0.51              |
| 4:d:199:THR:OG1  | 4:d:417:LYS:NZ   | 2.32                     | 0.51              |
| 6:g:222:ASP:OD1  | 6:g:230:ARG:NH2  | 2.44                     | 0.51              |
| 2:A:512:LYS:HE3  | 2:A:516:PHE:CZ   | 2.46                     | 0.51              |
| 4:D:394:ASN:HB3  | 4:D:396:LEU:HD23 | 1.92                     | 0.51              |
| 1:Z:38:LEU:HD11  | 1:Z:97:LEU:HD11  | 1.93                     | 0.51              |
| 1:Z:67:MET:HG3   | 1:Z:68:GLN:H     | 1.76                     | 0.51              |
| 7:h:426:ASP:OD1  | 7:h:429:ARG:NH2  | 2.44                     | 0.51              |
| 3:B:224:ILE:HD13 | 3:B:301:GLU:HG2  | 1.92                     | 0.51              |
| 4:d:96:LYS:O     | 4:d:100:ILE:HG12 | 2.10                     | 0.50              |
| 2:A:183:ASP:OD1  | 2:A:187:GLN:N    | 2.27                     | 0.50              |
| 3:B:499:VAL:O    | 3:B:503:VAL:HG23 | 2.11                     | 0.50              |
| 1:z:144:ASP:OD1  | 1:z:147:THR:OG1  | 2.20                     | 0.50              |
| 3:b:64:THR:HG21  | 3:b:69:THR:HG21  | 1.93                     | 0.50              |
| 3:b:310:MET:HE3  | 3:b:311:ALA:H    | 1.75                     | 0.50              |
| 3:B:150:SER:HA   | 3:B:155:PHE:H    | 1.77                     | 0.50              |
| 4:D:237:GLY:HA3  | 4:D:321:LYS:HG3  | 1.92                     | 0.50              |
| 6:G:296:SER:O    | 6:G:300:GLN:N    | 2.42                     | 0.50              |
| 7:H:160:MET:HA   | 7:H:172:LYS:HE2  | 1.93                     | 0.50              |
| 1:z:20:LEU:O     | 1:z:24:ILE:HG12  | 2.11                     | 0.50              |
| 2:a:18:ARG:HA    | 2:a:21:ASN:HD22  | 1.75                     | 0.50              |
| 3:b:136:ALA:O    | 3:b:139:GLU:HG3  | 2.10                     | 0.50              |
| 3:B:91:GLN:HG3   | 3:B:99:THR:HG22  | 1.93                     | 0.50              |
| 6:G:295:ILE:O    | 6:G:312:ARG:NH1  | 2.44                     | 0.50              |
| 1:Z:383:THR:O    | 1:Z:387:ILE:HG12 | 2.09                     | 0.50              |
| 3:b:278:LYS:O    | 3:b:282:ILE:HG23 | 2.11                     | 0.50              |
| 8:q:204:VAL:HG13 | 8:q:377:LEU:HD13 | 1.93                     | 0.50              |
| 8:q:235:LYS:HG3  | 8:q:236:ASP:N    | 2.23                     | 0.50              |
| 5:e:171:THR:HG21 | 5:e:506:VAL:HA   | 1.94                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:e:442:THR:HB   | 4:D:478:THR:HG21 | 1.92                     | 0.50              |
| 6:g:40:LEU:HB2   | 9:g:601:ADP:O2A  | 2.11                     | 0.50              |
| 6:g:159:ILE:HA   | 6:g:389:ASN:HD22 | 1.76                     | 0.50              |
| 7:h:228:GLY:H    | 7:h:314:CYS:HG   | 1.59                     | 0.50              |
| 7:H:219:THR:H    | 7:H:222:TYR:HB3  | 1.75                     | 0.50              |
| 8:Q:340:VAL:HG23 | 8:Q:343:GLU:H    | 1.75                     | 0.50              |
| 1:z:160:VAL:HG21 | 1:z:164:LEU:HD22 | 1.93                     | 0.50              |
| 1:z:290:VAL:HA   | 1:z:311:VAL:HB   | 1.92                     | 0.50              |
| 8:q:418:GLU:OE1  | 8:q:471:HIS:NE2  | 2.44                     | 0.50              |
| 6:G:184:PHE:HE2  | 6:G:369:LYS:HB3  | 1.75                     | 0.50              |
| 8:Q:308:TYR:HD2  | 8:Q:310:ILE:HD11 | 1.77                     | 0.50              |
| 1:Z:172:VAL:HG13 | 1:Z:395:LEU:HD23 | 1.94                     | 0.50              |
| 3:b:167:LEU:HA   | 3:b:170:LYS:HZ2  | 1.77                     | 0.50              |
| 3:b:282:ILE:HA   | 3:b:285:HIS:CD2  | 2.47                     | 0.50              |
| 8:q:500:THR:HG23 | 8:q:503:GLY:H    | 1.77                     | 0.50              |
| 3:b:71:LEU:HA    | 3:b:74:ILE:HD12  | 1.93                     | 0.50              |
| 3:b:182:LEU:HA   | 3:b:185:GLU:HG2  | 1.94                     | 0.50              |
| 4:d:130:PRO:HB3  | 4:d:530:LEU:HG   | 1.94                     | 0.50              |
| 4:D:293:THR:HB   | 4:D:356:LEU:HD11 | 1.94                     | 0.50              |
| 4:D:302:LYS:HE3  | 4:D:326:LYS:HG2  | 1.93                     | 0.50              |
| 4:D:381:SER:O    | 4:D:381:SER:OG   | 2.30                     | 0.50              |
| 4:D:389:VAL:HG12 | 4:D:391:ARG:HG3  | 1.93                     | 0.50              |
| 5:E:244:GLU:HA   | 5:E:376:GLN:HG2  | 1.93                     | 0.50              |
| 1:Z:294:GLN:NE2  | 1:Z:334:ASN:OD1  | 2.41                     | 0.50              |
| 1:Z:353:TYR:O    | 1:Z:360:PHE:N    | 2.34                     | 0.50              |
| 3:b:52:LEU:HB3   | 4:d:539:ARG:HD2  | 1.94                     | 0.50              |
| 3:b:236:LYS:HB2  | 3:b:287:ILE:HG22 | 1.93                     | 0.50              |
| 3:b:282:ILE:HA   | 3:b:285:HIS:HD2  | 1.75                     | 0.50              |
| 7:h:217:GLY:HA3  | 7:h:366:THR:HG22 | 1.94                     | 0.50              |
| 7:h:248:LEU:HD12 | 7:h:310:ARG:HH12 | 1.77                     | 0.50              |
| 4:D:212:LYS:HE2  | 4:D:390:VAL:HB   | 1.94                     | 0.50              |
| 8:Q:118:LEU:HD23 | 8:Q:121:ILE:HD12 | 1.93                     | 0.50              |
| 8:Q:400:LYS:O    | 8:Q:403:THR:OG1  | 2.17                     | 0.50              |
| 2:a:446:LEU:HD11 | 2:a:468:ARG:HD3  | 1.93                     | 0.49              |
| 5:e:463:SER:OG   | 5:e:470:PRO:HA   | 2.12                     | 0.49              |
| 2:A:232:ALA:HA   | 2:A:284:ASN:HB3  | 1.93                     | 0.49              |
| 3:B:39:VAL:HG21  | 3:B:71:LEU:HD21  | 1.93                     | 0.49              |
| 3:B:218:PHE:HE2  | 3:B:220:LEU:HD13 | 1.77                     | 0.49              |
| 4:D:241:VAL:HB   | 4:D:296:ASN:HD22 | 1.77                     | 0.49              |
| 5:E:163:GLU:HB2  | 5:E:164:PRO:HD3  | 1.94                     | 0.49              |
| 5:E:479:ALA:HA   | 5:E:482:VAL:HG12 | 1.93                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:Z:145:ARG:NH2  | 1:Z:170:GLU:OE2  | 2.39                     | 0.49              |
| 1:Z:217:ARG:HE   | 1:Z:359:LYS:HG2  | 1.76                     | 0.49              |
| 3:b:221:ASP:OD1  | 3:b:222:LYS:N    | 2.43                     | 0.49              |
| 3:b:481:ARG:NH1  | 3:b:482:GLU:OE2  | 2.44                     | 0.49              |
| 4:d:141:LEU:HD22 | 4:d:523:THR:HB   | 1.93                     | 0.49              |
| 6:g:155:ILE:HA   | 6:g:159:ILE:HD13 | 1.93                     | 0.49              |
| 6:g:199:ARG:NH1  | 6:g:318:ASP:OD1  | 2.46                     | 0.49              |
| 2:A:176:VAL:HG21 | 2:A:399:VAL:HG11 | 1.93                     | 0.49              |
| 3:B:67:GLY:HA2   | 3:B:70:ILE:HD12  | 1.94                     | 0.49              |
| 3:B:267:ILE:HG13 | 5:E:271:VAL:HG12 | 1.94                     | 0.49              |
| 4:D:189:ASN:HA   | 4:D:192:MET:HG2  | 1.94                     | 0.49              |
| 7:H:322:THR:HG21 | 7:H:361:PHE:HD2  | 1.77                     | 0.49              |
| 1:Z:228:ALA:N    | 1:Z:347:ALA:O    | 2.45                     | 0.49              |
| 4:d:153:ARG:HH21 | 4:d:154:PRO:HD2  | 1.77                     | 0.49              |
| 4:d:294:GLY:HA2  | 4:d:320:MET:HE1  | 1.94                     | 0.49              |
| 5:E:337:THR:HG23 | 5:E:355:PHE:HB3  | 1.94                     | 0.49              |
| 6:G:26:ILE:HD12  | 6:G:109:GLU:HG2  | 1.93                     | 0.49              |
| 6:G:489:MET:HE3  | 6:G:494:ILE:HB   | 1.93                     | 0.49              |
| 1:Z:230:ILE:HD11 | 1:Z:292:ILE:HB   | 1.93                     | 0.49              |
| 5:e:501:MET:HB3  | 5:e:506:VAL:HB   | 1.94                     | 0.49              |
| 4:D:34:ARG:O     | 4:D:38:ILE:HG12  | 2.12                     | 0.49              |
| 5:e:245:ASP:N    | 5:e:245:ASP:OD1  | 2.44                     | 0.49              |
| 7:h:193:LEU:O    | 7:h:195:GLN:NE2  | 2.46                     | 0.49              |
| 2:A:17:ILE:HD13  | 2:A:530:LEU:C    | 2.37                     | 0.49              |
| 3:B:206:GLY:N    | 3:B:377:GLY:O    | 2.45                     | 0.49              |
| 4:D:480:LEU:HD13 | 4:D:500:ILE:HD11 | 1.95                     | 0.49              |
| 6:G:172:CYS:SG   | 6:G:173:ASN:N    | 2.85                     | 0.49              |
| 6:G:510:GLU:HA   | 6:G:513:VAL:HG12 | 1.94                     | 0.49              |
| 1:z:239:TYR:O    | 1:z:241:LYS:NZ   | 2.45                     | 0.49              |
| 3:b:223:LYS:NZ   | 3:b:313:GLU:H    | 2.09                     | 0.49              |
| 4:d:345:VAL:HG12 | 4:d:347:HIS:H    | 1.78                     | 0.49              |
| 5:e:63:ASP:HB3   | 5:e:67:ASP:H     | 1.77                     | 0.49              |
| 4:D:213:LYS:NZ   | 4:D:371:GLY:HA2  | 2.28                     | 0.49              |
| 4:D:307:ASP:OD1  | 4:D:307:ASP:N    | 2.45                     | 0.49              |
| 6:G:36:ILE:HD13  | 6:G:66:LEU:HD11  | 1.94                     | 0.49              |
| 1:z:182:GLN:HE21 | 1:z:370:ARG:NH2  | 2.11                     | 0.49              |
| 1:z:327:ALA:O    | 1:z:367:ASN:ND2  | 2.46                     | 0.49              |
| 4:d:314:LEU:O    | 4:d:318:ASN:ND2  | 2.46                     | 0.49              |
| 5:e:173:LEU:HD21 | 5:e:401:SER:HB2  | 1.94                     | 0.49              |
| 7:h:402:ARG:HG2  | 7:h:499:PRO:HG2  | 1.95                     | 0.49              |
| 2:A:318:ARG:HA   | 2:A:321:LYS:HG2  | 1.95                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:A:470:PHE:CD2  | 2:A:486:ILE:HG21 | 2.45                     | 0.49              |
| 5:E:100:ASP:N    | 5:E:100:ASP:OD1  | 2.45                     | 0.49              |
| 6:G:238:VAL:HB   | 6:G:289:VAL:HG22 | 1.95                     | 0.49              |
| 6:G:469:HIS:NE2  | 6:G:476:THR:HA   | 2.27                     | 0.49              |
| 7:H:210:LEU:HD11 | 7:H:370:CYS:HB3  | 1.95                     | 0.49              |
| 7:H:384:GLU:O    | 7:H:388:SER:CB   | 2.59                     | 0.49              |
| 4:d:328:ILE:O    | 4:d:330:ARG:NH1  | 2.44                     | 0.49              |
| 6:g:187:ASN:H    | 6:g:192:ILE:HD13 | 1.78                     | 0.49              |
| 3:B:197:GLU:O    | 3:B:322:ARG:NE   | 2.31                     | 0.49              |
| 3:B:520:ILE:HG21 | 5:E:60:MET:O     | 2.13                     | 0.49              |
| 4:D:193:LYS:HE3  | 4:D:208:ILE:HG13 | 1.94                     | 0.49              |
| 5:E:94:LEU:HD11  | 5:E:523:MET:HG3  | 1.95                     | 0.49              |
| 6:G:179:VAL:HG23 | 6:G:180:LYS:HG2  | 1.95                     | 0.49              |
| 5:e:344:ARG:NH2  | 7:h:306:TYR:HB2  | 2.28                     | 0.49              |
| 8:q:84:LYS:O     | 8:q:88:MET:HG3   | 2.13                     | 0.49              |
| 2:A:44:MET:HB3   | 6:G:521:ILE:HA   | 1.95                     | 0.49              |
| 3:B:285:HIS:NE2  | 3:B:339:GLU:O    | 2.46                     | 0.49              |
| 7:H:463:LYS:HB3  | 7:H:484:ILE:HD11 | 1.95                     | 0.49              |
| 8:Q:204:VAL:HG13 | 8:Q:377:LEU:HD23 | 1.94                     | 0.49              |
| 1:Z:210:LEU:HD13 | 1:Z:324:LEU:HB3  | 1.94                     | 0.49              |
| 5:e:76:THR:O     | 5:e:80:MET:HG2   | 2.13                     | 0.49              |
| 5:e:405:ALA:O    | 5:e:409:ILE:HG12 | 2.12                     | 0.49              |
| 7:h:157:LYS:HG3  | 7:h:158:LEU:HD12 | 1.95                     | 0.49              |
| 7:h:293:VAL:O    | 7:h:315:ALA:N    | 2.44                     | 0.49              |
| 8:q:165:ARG:HE   | 8:q:181:LYS:HE3  | 1.77                     | 0.49              |
| 8:q:206:LYS:HZ1  | 8:q:389:GLU:CD   | 2.20                     | 0.49              |
| 8:q:399:PHE:O    | 8:q:403:THR:HG23 | 2.13                     | 0.49              |
| 2:A:133:ASN:HA   | 2:A:136:LEU:HD23 | 1.93                     | 0.49              |
| 3:B:53:LEU:HD21  | 3:B:61:LEU:HD12  | 1.95                     | 0.49              |
| 4:D:102:ALA:HB1  | 4:D:514:VAL:HG12 | 1.94                     | 0.49              |
| 8:Q:402:LEU:HD11 | 8:Q:408:LEU:HD21 | 1.94                     | 0.49              |
| 5:e:29:MET:HG3   | 5:e:32:GLU:HG2   | 1.94                     | 0.48              |
| 8:q:33:ILE:HG21  | 8:q:116:GLU:HB2  | 1.94                     | 0.48              |
| 8:q:381:THR:H    | 8:q:384:LEU:HD21 | 1.79                     | 0.48              |
| 2:A:293:ASP:HB3  | 2:A:296:CYS:HB3  | 1.94                     | 0.48              |
| 2:A:317:LYS:HG2  | 2:A:327:ILE:HD11 | 1.95                     | 0.48              |
| 3:B:182:LEU:O    | 3:B:185:GLU:HG2  | 2.13                     | 0.48              |
| 4:D:335:PHE:HB3  | 4:D:384:LYS:HG3  | 1.95                     | 0.48              |
| 4:D:367:LEU:HD12 | 4:D:373:LEU:HB2  | 1.94                     | 0.48              |
| 6:G:400:VAL:HA   | 6:G:404:PRO:HA   | 1.94                     | 0.48              |
| 1:z:76:LEU:HD21  | 6:g:58:MET:HE2   | 1.95                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:z:270:ARG:HA   | 1:z:273:LYS:HE2  | 1.96                     | 0.48              |
| 1:Z:181:LYS:HE2  | 1:Z:370:ARG:HD3  | 1.95                     | 0.48              |
| 1:Z:273:LYS:O    | 1:Z:276:GLU:HG3  | 2.13                     | 0.48              |
| 2:a:434:GLU:OE1  | 2:a:434:GLU:N    | 2.45                     | 0.48              |
| 7:h:122:PRO:HA   | 7:h:125:ILE:HD13 | 1.95                     | 0.48              |
| 2:A:434:GLU:OE1  | 2:A:434:GLU:N    | 2.45                     | 0.48              |
| 3:B:71:LEU:HD12  | 3:B:85:VAL:HG22  | 1.96                     | 0.48              |
| 4:D:429:GLU:HG2  | 4:D:461:ILE:HB   | 1.94                     | 0.48              |
| 6:g:123:SER:HB2  | 6:g:127:LYS:NZ   | 2.27                     | 0.48              |
| 7:h:198:MET:SD   | 7:h:199:ILE:HG12 | 2.53                     | 0.48              |
| 7:h:304:THR:O    | 7:h:308:ALA:N    | 2.47                     | 0.48              |
| 6:G:132:MET:HA   | 6:G:135:THR:HG22 | 1.95                     | 0.48              |
| 6:G:237:ILE:HA   | 6:G:288:VAL:HG23 | 1.95                     | 0.48              |
| 6:G:325:ALA:HB2  | 6:G:370:ALA:HB3  | 1.95                     | 0.48              |
| 6:G:501:LYS:HD2  | 6:G:505:TYR:CZ   | 2.48                     | 0.48              |
| 1:z:275:ILE:HG12 | 1:z:279:ARG:HH22 | 1.78                     | 0.48              |
| 2:a:300:PHE:CE1  | 2:a:305:ALA:HB3  | 2.49                     | 0.48              |
| 3:b:159:LEU:HA   | 3:b:162:ILE:HG22 | 1.96                     | 0.48              |
| 3:b:429:PRO:HB3  | 3:B:464:GLN:HA   | 1.95                     | 0.48              |
| 5:e:63:ASP:N     | 5:e:67:ASP:O     | 2.41                     | 0.48              |
| 5:e:179:ASN:O    | 5:e:182:HIS:ND1  | 2.45                     | 0.48              |
| 6:g:71:VAL:O     | 6:g:77:LYS:NZ    | 2.37                     | 0.48              |
| 7:h:291:LYS:H    | 7:h:346:LEU:HD21 | 1.78                     | 0.48              |
| 7:h:395:ASP:O    | 7:h:399:ILE:HG12 | 2.13                     | 0.48              |
| 2:A:215:ALA:HB2  | 2:A:363:LEU:HD13 | 1.96                     | 0.48              |
| 5:E:60:MET:HE1   | 5:E:62:VAL:HB    | 1.94                     | 0.48              |
| 5:E:375:GLU:O    | 5:E:375:GLU:HG2  | 2.13                     | 0.48              |
| 5:E:397:GLU:HA   | 5:E:400:ARG:HG2  | 1.95                     | 0.48              |
| 6:G:320:ASN:OD1  | 6:G:321:ARG:N    | 2.47                     | 0.48              |
| 7:H:487:ASN:HA   | 7:H:490:ALA:HB3  | 1.95                     | 0.48              |
| 8:Q:368:GLU:HB3  | 8:Q:371:ALA:HB2  | 1.95                     | 0.48              |
| 1:Z:165:ALA:O    | 1:Z:169:THR:HG23 | 2.13                     | 0.48              |
| 3:B:179:PHE:HD1  | 3:B:390:LEU:HD11 | 1.79                     | 0.48              |
| 3:B:200:HIS:HB3  | 3:B:372:THR:HA   | 1.96                     | 0.48              |
| 5:E:94:LEU:HD12  | 5:E:523:MET:HE2  | 1.96                     | 0.48              |
| 6:G:175:ALA:HB2  | 6:G:390:LEU:HD22 | 1.94                     | 0.48              |
| 2:a:101:LEU:HD13 | 2:a:524:ILE:HG21 | 1.96                     | 0.48              |
| 5:e:356:ALA:HB1  | 5:e:376:GLN:N    | 2.29                     | 0.48              |
| 7:h:32:ILE:HD12  | 7:h:80:ALA:HB1   | 1.95                     | 0.48              |
| 7:h:218:VAL:HG12 | 7:h:325:ARG:HD3  | 1.96                     | 0.48              |
| 2:A:407:SER:HG   | 2:A:507:THR:HG1  | 1.62                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:Q:467:LEU:O    | 8:Q:471:HIS:HB2  | 2.12                     | 0.48              |
| 1:z:314:ARG:HD2  | 1:z:315:ARG:HD2  | 1.95                     | 0.48              |
| 3:b:327:THR:HG22 | 3:b:365:VAL:HB   | 1.95                     | 0.48              |
| 3:b:414:GLU:HG2  | 3:b:446:LEU:HD23 | 1.96                     | 0.48              |
| 6:g:444:GLU:CD   | 6:g:466:ARG:HH21 | 2.22                     | 0.48              |
| 7:h:470:ALA:O    | 7:h:474:GLN:HG2  | 2.14                     | 0.48              |
| 8:q:117:GLU:O    | 8:q:121:ILE:HG12 | 2.13                     | 0.48              |
| 8:q:139:ALA:HB2  | 8:q:423:ILE:HD11 | 1.96                     | 0.48              |
| 8:q:286:THR:HB   | 8:q:341:LEU:HD13 | 1.95                     | 0.48              |
| 3:B:17:ASP:N     | 3:B:17:ASP:OD1   | 2.46                     | 0.48              |
| 3:B:204:LYS:HE3  | 3:B:357:ASP:HB3  | 1.95                     | 0.48              |
| 5:E:391:ASN:O    | 5:E:394:ILE:HG22 | 2.14                     | 0.48              |
| 6:G:175:ALA:O    | 6:G:179:VAL:HG13 | 2.14                     | 0.48              |
| 3:b:150:SER:OG   | 3:b:155:PHE:O    | 2.21                     | 0.48              |
| 4:d:446:MET:HB2  | 5:E:472:GLN:HG2  | 1.96                     | 0.48              |
| 5:e:78:LEU:HA    | 5:e:81:MET:SD    | 2.53                     | 0.48              |
| 6:g:392:ASP:O    | 6:g:396:VAL:HG23 | 2.14                     | 0.48              |
| 2:A:17:ILE:HG22  | 2:A:21:ASN:HD21  | 1.79                     | 0.48              |
| 6:G:230:ARG:HD2  | 6:G:309:THR:HB   | 1.95                     | 0.48              |
| 1:z:235:VAL:O    | 1:z:293:ASN:ND2  | 2.47                     | 0.48              |
| 1:Z:240:GLU:HB2  | 1:Z:262:ALA:HB2  | 1.95                     | 0.48              |
| 2:a:136:LEU:HD22 | 2:a:507:THR:HG21 | 1.96                     | 0.48              |
| 2:a:215:ALA:HB1  | 2:a:361:LEU:HB3  | 1.95                     | 0.48              |
| 4:d:120:CYS:HA   | 4:d:123:LEU:HD12 | 1.96                     | 0.48              |
| 4:d:403:ARG:NH2  | 4:d:407:ASP:OD1  | 2.33                     | 0.48              |
| 4:D:48:ILE:HD11  | 4:D:74:GLY:HA2   | 1.96                     | 0.48              |
| 4:D:139:LYS:O    | 4:D:142:GLU:HG3  | 2.14                     | 0.48              |
| 4:D:503:ILE:HD12 | 4:D:506:GLU:HB2  | 1.96                     | 0.48              |
| 5:E:198:ASP:OD1  | 5:E:198:ASP:N    | 2.47                     | 0.48              |
| 5:E:466:SER:HG   | 5:E:493:CYS:HG   | 1.54                     | 0.48              |
| 6:G:156:ASN:O    | 6:G:160:THR:OG1  | 2.24                     | 0.48              |
| 7:H:292:LYS:HG3  | 7:H:293:LEU:HD12 | 1.95                     | 0.48              |
| 1:z:59:ASP:HA    | 1:z:159:LYS:HE3  | 1.95                     | 0.48              |
| 1:z:278:LYS:O    | 1:z:282:CYS:HB2  | 2.14                     | 0.48              |
| 1:Z:324:LEU:HA   | 1:Z:327:ALA:HB3  | 1.95                     | 0.48              |
| 4:d:309:LEU:HG   | 4:d:314:LEU:HB2  | 1.96                     | 0.48              |
| 6:g:313:ARG:NH2  | 6:g:358:TYR:OH   | 2.46                     | 0.48              |
| 8:q:44:ARG:NH1   | 8:q:451:ALA:HB2  | 2.29                     | 0.48              |
| 5:E:411:ASN:O    | 5:E:415:ASP:N    | 2.31                     | 0.48              |
| 6:G:465:LEU:O    | 6:G:469:HIS:HB2  | 2.13                     | 0.48              |
| 7:H:46:ASP:OD2   | 7:H:47:LYS:N     | 2.46                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:H:352:GLN:HA   | 7:H:357:ARG:HA   | 1.96                     | 0.48              |
| 8:Q:169:MET:HB2  | 8:Q:177:VAL:HG21 | 1.94                     | 0.48              |
| 1:Z:289:PHE:O    | 1:Z:310:ILE:HA   | 2.14                     | 0.47              |
| 5:e:342:VAL:HG21 | 5:e:352:LYS:HB3  | 1.96                     | 0.47              |
| 6:g:179:VAL:HG11 | 6:g:397:CYS:SG   | 2.54                     | 0.47              |
| 7:h:350:GLN:N    | 7:h:367:GLY:O    | 2.45                     | 0.47              |
| 2:A:386:ASP:O    | 2:A:389:GLU:HG3  | 2.14                     | 0.47              |
| 5:E:466:SER:OG   | 5:E:493:CYS:SG   | 2.66                     | 0.47              |
| 6:G:219:ILE:HG22 | 6:G:221:LYS:H    | 1.79                     | 0.47              |
| 1:z:145:ARG:NH1  | 1:z:174:ASP:OD1  | 2.47                     | 0.47              |
| 1:z:278:LYS:HD3  | 1:z:289:PHE:HB2  | 1.96                     | 0.47              |
| 2:a:498:ASN:HA   | 2:a:501:ALA:HB3  | 1.96                     | 0.47              |
| 4:d:410:CYS:HA   | 4:d:413:ARG:HG2  | 1.96                     | 0.47              |
| 5:e:159:ILE:HG23 | 5:e:160:LYS:H    | 1.79                     | 0.47              |
| 5:e:173:LEU:HD12 | 5:e:178:VAL:HG11 | 1.96                     | 0.47              |
| 8:q:434:GLU:OE1  | 8:q:434:GLU:N    | 2.39                     | 0.47              |
| 3:B:173:THR:HG23 | 3:B:174:HIS:CD2  | 2.50                     | 0.47              |
| 7:H:121:ILE:HA   | 7:H:434:LEU:HD23 | 1.96                     | 0.47              |
| 7:H:392:ALA:HA   | 7:H:395:ILE:HG22 | 1.96                     | 0.47              |
| 1:z:63:LEU:O     | 1:z:67:MET:HB2   | 2.14                     | 0.47              |
| 4:d:413:ARG:O    | 4:d:417:LYS:HG2  | 2.15                     | 0.47              |
| 5:e:164:PRO:O    | 5:e:168:THR:HG23 | 2.14                     | 0.47              |
| 5:e:366:THR:H    | 5:e:388:ARG:HH22 | 1.61                     | 0.47              |
| 8:q:102:ASN:ND2  | 9:q:5000:ADP:O2B | 2.47                     | 0.47              |
| 7:H:240:LEU:HD13 | 7:H:280:LYS:NZ   | 2.29                     | 0.47              |
| 7:H:244:LEU:HD12 | 7:H:277:LYS:HB3  | 1.96                     | 0.47              |
| 8:Q:216:SER:H    | 8:Q:376:VAL:HG13 | 1.80                     | 0.47              |
| 1:z:218:HIS:HB3  | 1:z:302:LEU:HD21 | 1.95                     | 0.47              |
| 3:b:115:SER:O    | 3:b:119:LYS:NZ   | 2.47                     | 0.47              |
| 4:d:150:ASP:OD1  | 4:d:151:MET:N    | 2.48                     | 0.47              |
| 4:d:210:ILE:HA   | 4:d:387:THR:HA   | 1.96                     | 0.47              |
| 4:d:347:HIS:HB2  | 4:d:350:GLN:HB2  | 1.95                     | 0.47              |
| 5:e:331:GLU:HB2  | 5:e:341:ILE:HD12 | 1.95                     | 0.47              |
| 6:g:164:ILE:HG22 | 6:g:164:ILE:O    | 2.14                     | 0.47              |
| 3:B:215:ASP:OD1  | 3:B:217:GLY:N    | 2.44                     | 0.47              |
| 3:B:338:PRO:HA   | 3:B:342:LYS:HB2  | 1.97                     | 0.47              |
| 5:E:251:LEU:HD12 | 5:E:302:CYS:HB2  | 1.96                     | 0.47              |
| 8:Q:112:LEU:HD11 | 8:Q:518:VAL:HG11 | 1.96                     | 0.47              |
| 1:z:165:ALA:O    | 1:z:169:THR:HG23 | 2.13                     | 0.47              |
| 2:a:397:CYS:O    | 2:a:401:ARG:HG2  | 2.15                     | 0.47              |
| 5:e:431:LEU:HD21 | 5:e:478:ARG:HG3  | 1.97                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:e:534:ARG:HD3  | 5:e:534:ARG:HA   | 1.73                     | 0.47              |
| 6:g:175:ALA:O    | 6:g:179:VAL:HG13 | 2.14                     | 0.47              |
| 6:g:215:ARG:HE   | 6:g:368:PRO:HB3  | 1.79                     | 0.47              |
| 6:g:284:LEU:HD13 | 6:g:342:VAL:HB   | 1.96                     | 0.47              |
| 6:g:407:VAL:HG21 | 6:g:501:LYS:HG3  | 1.97                     | 0.47              |
| 2:A:458:GLN:CD   | 2:A:493:GLY:HA3  | 2.40                     | 0.47              |
| 6:G:180:LYS:HD2  | 6:G:190:LYS:HE3  | 1.96                     | 0.47              |
| 6:G:333:ARG:NH2  | 6:G:336:GLU:OE1  | 2.47                     | 0.47              |
| 7:H:346:GLN:N    | 7:H:363:GLY:O    | 2.45                     | 0.47              |
| 1:z:182:GLN:HE21 | 1:z:370:ARG:HH21 | 1.63                     | 0.47              |
| 2:a:16:THR:HG23  | 2:a:19:SER:OG    | 2.15                     | 0.47              |
| 5:e:31:LEU:O     | 5:e:35:LYS:HG2   | 2.15                     | 0.47              |
| 4:D:42:LYS:NZ    | 4:D:46:ASP:HB2   | 2.29                     | 0.47              |
| 5:E:154:SER:CB   | 5:E:418:VAL:H    | 2.27                     | 0.47              |
| 8:Q:43:THR:HG21  | 8:Q:105:LEU:HD22 | 1.96                     | 0.47              |
| 1:Z:240:GLU:HB3  | 1:Z:258:LYS:HG2  | 1.96                     | 0.47              |
| 2:a:199:LYS:HA   | 2:a:377:LEU:HB2  | 1.96                     | 0.47              |
| 6:g:29:ALA:HB1   | 6:g:79:MET:HE1   | 1.97                     | 0.47              |
| 2:A:113:HIS:ND1  | 2:A:115:THR:HG22 | 2.30                     | 0.47              |
| 2:A:131:TYR:CE2  | 2:A:422:TYR:HB3  | 2.50                     | 0.47              |
| 2:A:287:LEU:HD13 | 2:A:306:MET:SD   | 2.55                     | 0.47              |
| 3:B:473:ASN:O    | 3:B:475:THR:N    | 2.48                     | 0.47              |
| 4:D:488:GLU:OE1  | 4:D:488:GLU:N    | 2.46                     | 0.47              |
| 8:Q:206:LYS:HZ1  | 8:Q:386:ASP:HA   | 1.80                     | 0.47              |
| 3:b:58:ASP:OD1   | 3:b:58:ASP:N     | 2.47                     | 0.47              |
| 6:g:182:VAL:HG11 | 6:g:194:ILE:O    | 2.15                     | 0.47              |
| 7:h:190:LEU:HB3  | 7:h:194:LEU:HD21 | 1.96                     | 0.47              |
| 2:A:185:ARG:HG2  | 2:A:187:GLN:OE1  | 2.15                     | 0.47              |
| 3:B:25:ARG:NH2   | 3:B:114:GLU:OE2  | 2.47                     | 0.47              |
| 3:B:173:THR:O    | 3:B:176:LYS:NZ   | 2.35                     | 0.47              |
| 3:B:477:GLY:HA3  | 3:B:488:MET:HB2  | 1.97                     | 0.47              |
| 4:D:328:ILE:HD12 | 4:D:333:ILE:HG12 | 1.96                     | 0.47              |
| 5:E:152:SER:HB3  | 5:E:417:ARG:HH21 | 1.80                     | 0.47              |
| 6:G:475:GLU:HB3  | 6:G:477:TRP:HD1  | 1.78                     | 0.47              |
| 8:Q:235:LYS:HG3  | 8:Q:236:ASP:H    | 1.79                     | 0.47              |
| 1:Z:148:LEU:HD21 | 1:Z:402:ILE:HD13 | 1.95                     | 0.47              |
| 1:Z:218:HIS:HB2  | 1:Z:302:LEU:HD21 | 1.96                     | 0.47              |
| 2:a:157:SER:O    | 2:a:159:LYS:NZ   | 2.46                     | 0.47              |
| 4:d:122:LYS:HE3  | 4:d:126:LYS:HD2  | 1.97                     | 0.47              |
| 7:h:226:TYR:HA   | 7:h:316:GLY:O    | 2.15                     | 0.47              |
| 7:h:491:ASN:HA   | 7:h:494:ALA:HB3  | 1.97                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:Q:324:LEU:O    | 8:Q:328:VAL:HG22 | 2.14                     | 0.47              |
| 1:z:519:ASP:OD2  | 6:g:47:LYS:NZ    | 2.48                     | 0.47              |
| 1:Z:236:SER:HB3  | 1:Z:336:PHE:CZ   | 2.50                     | 0.47              |
| 2:a:164:ASN:HD22 | 2:a:206:MET:HG3  | 1.80                     | 0.47              |
| 3:B:520:ILE:HG22 | 3:B:521:ILE:N    | 2.29                     | 0.47              |
| 4:D:494:ASN:ND2  | 4:D:497:LYS:HB2  | 2.30                     | 0.47              |
| 5:E:368:LYS:NZ   | 5:E:369:ASP:O    | 2.48                     | 0.47              |
| 4:d:365:VAL:HG13 | 4:d:367:LEU:HG   | 1.98                     | 0.46              |
| 7:h:526:ASN:ND2  | 8:q:75:GLU:O     | 2.34                     | 0.46              |
| 3:B:87:MET:HG3   | 3:B:510:ALA:HB2  | 1.97                     | 0.46              |
| 6:G:129:LEU:O    | 6:G:133:ILE:HG12 | 2.15                     | 0.46              |
| 1:Z:94:SER:O     | 1:Z:98:ILE:HG13  | 2.16                     | 0.46              |
| 1:Z:524:ALA:HB2  | 6:G:49:LEU:HD12  | 1.96                     | 0.46              |
| 2:a:370:ARG:HD2  | 2:a:370:ARG:HA   | 1.77                     | 0.46              |
| 2:a:454:VAL:HG23 | 2:a:460:SER:HB3  | 1.97                     | 0.46              |
| 3:b:459:ALA:HB3  | 3:B:431:LYS:HE3  | 1.97                     | 0.46              |
| 4:d:418:LYS:HG3  | 4:d:513:LEU:HD12 | 1.97                     | 0.46              |
| 5:e:167:GLN:HA   | 5:e:170:LYS:HE2  | 1.98                     | 0.46              |
| 5:e:186:ALA:O    | 5:e:190:VAL:HG13 | 2.16                     | 0.46              |
| 7:h:26:ILE:HD13  | 7:h:113:LYS:HB2  | 1.97                     | 0.46              |
| 7:h:277:ILE:O    | 7:h:281:LYS:HG2  | 2.16                     | 0.46              |
| 7:h:323:LEU:O    | 7:h:327:MET:HG2  | 2.15                     | 0.46              |
| 2:A:198:LEU:O    | 2:A:377:LEU:N    | 2.48                     | 0.46              |
| 2:A:278:ILE:HB   | 2:A:331:LEU:HD21 | 1.98                     | 0.46              |
| 5:E:236:HIS:HD1  | 5:E:238:GLN:H    | 1.63                     | 0.46              |
| 7:H:402:ASN:HD21 | 7:H:497:MET:HG2  | 1.80                     | 0.46              |
| 7:H:516:VAL:HG11 | 8:Q:55:MET:HG3   | 1.97                     | 0.46              |
| 1:z:144:ASP:OD1  | 1:z:144:ASP:N    | 2.49                     | 0.46              |
| 1:Z:24:ILE:HD13  | 1:Z:107:ASP:HB2  | 1.97                     | 0.46              |
| 1:Z:76:LEU:O     | 1:Z:80:VAL:HG12  | 2.15                     | 0.46              |
| 1:Z:192:GLU:HB3  | 1:Z:373:THR:HG22 | 1.98                     | 0.46              |
| 5:e:394:ILE:O    | 5:e:397:GLU:HG3  | 2.15                     | 0.46              |
| 6:g:200:VAL:HA   | 6:g:373:ILE:HG23 | 1.96                     | 0.46              |
| 6:g:506:LYS:O    | 6:g:510:GLU:HG2  | 2.15                     | 0.46              |
| 7:h:172:ILE:O    | 7:h:172:ILE:HG22 | 2.14                     | 0.46              |
| 7:h:240:LYS:HD2  | 7:h:347:GLY:H    | 1.79                     | 0.46              |
| 8:q:93:GLN:NE2   | 8:q:99:ASP:O     | 2.40                     | 0.46              |
| 8:q:393:ASP:HA   | 8:q:396:VAL:HG12 | 1.97                     | 0.46              |
| 3:B:467:ALA:O    | 3:B:470:SER:OG   | 2.32                     | 0.46              |
| 5:E:83:VAL:O     | 5:E:89:LYS:NZ    | 2.39                     | 0.46              |
| 1:z:521:ILE:HD13 | 6:g:48:MET:HB2   | 1.97                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:Z:229:TYR:HB2  | 1:Z:289:PHE:CD1  | 2.49                     | 0.46              |
| 2:a:242:GLN:HB2  | 6:g:338:ARG:HB3  | 1.96                     | 0.46              |
| 3:b:188:LEU:HD23 | 3:b:188:LEU:H    | 1.81                     | 0.46              |
| 4:d:443:LEU:HD23 | 4:d:448:SER:HA   | 1.98                     | 0.46              |
| 6:g:156:ASN:HA   | 6:g:160:THR:HG23 | 1.97                     | 0.46              |
| 8:q:58:ASN:HD21  | 8:q:62:LYS:HE2   | 1.80                     | 0.46              |
| 7:H:294:PRO:HG3  | 7:H:313:ARG:HE   | 1.80                     | 0.46              |
| 1:z:186:ILE:HB   | 1:z:190:MET:HE3  | 1.97                     | 0.46              |
| 4:d:338:LYS:HE2  | 4:d:384:LYS:HD2  | 1.97                     | 0.46              |
| 6:g:145:ILE:HD11 | 6:g:397:CYS:SG   | 2.55                     | 0.46              |
| 7:h:222:LYS:HE2  | 7:h:227:ALA:HB3  | 1.96                     | 0.46              |
| 8:q:126:SER:O    | 8:q:130:GLU:HG2  | 2.16                     | 0.46              |
| 4:D:61:ILE:N     | 4:D:69:THR:OG1   | 2.48                     | 0.46              |
| 4:D:213:LYS:HZ1  | 4:D:371:GLY:HA2  | 1.81                     | 0.46              |
| 5:E:357:GLY:O    | 5:E:378:LYS:N    | 2.48                     | 0.46              |
| 1:z:432:ARG:HD2  | 1:Z:461:GLU:HG3  | 1.97                     | 0.46              |
| 3:b:53:LEU:HD12  | 3:b:59:ALA:HB1   | 1.97                     | 0.46              |
| 5:e:225:ILE:HD13 | 5:e:386:PHE:HB3  | 1.98                     | 0.46              |
| 5:e:344:ARG:HH22 | 7:h:305:GLN:HG2  | 1.80                     | 0.46              |
| 5:e:536:PRO:HD2  | 7:h:50:VAL:O     | 2.15                     | 0.46              |
| 6:g:420:ALA:O    | 6:g:423:GLU:HG3  | 2.15                     | 0.46              |
| 6:g:472:GLU:OE1  | 6:g:475:GLU:HG2  | 2.15                     | 0.46              |
| 7:h:49:ILE:O     | 7:h:57:THR:N     | 2.29                     | 0.46              |
| 7:h:86:ILE:HG21  | 7:h:513:ALA:HB2  | 1.98                     | 0.46              |
| 7:h:466:ASN:O    | 2:A:435:GLN:NE2  | 2.48                     | 0.46              |
| 3:B:406:THR:OG1  | 3:B:495:GLU:O    | 2.31                     | 0.46              |
| 4:D:205:LEU:O    | 4:D:385:THR:HA   | 2.15                     | 0.46              |
| 5:E:403:HIS:O    | 5:E:406:LEU:HG   | 2.16                     | 0.46              |
| 6:G:131:ASP:OD2  | 6:G:436:TYR:OH   | 2.29                     | 0.46              |
| 7:H:520:ILE:HD11 | 8:Q:56:VAL:HG13  | 1.97                     | 0.46              |
| 8:Q:454:GLU:HG3  | 8:Q:460:ALA:HB2  | 1.97                     | 0.46              |
| 4:d:133:ILE:HB   | 4:d:530:LEU:HD21 | 1.97                     | 0.46              |
| 5:e:364:PHE:HB2  | 5:e:371:MET:H    | 1.80                     | 0.46              |
| 6:g:141:ILE:HD12 | 6:g:142:PRO:HD2  | 1.98                     | 0.46              |
| 6:g:434:TRP:HB2  | 6:g:435:PRO:HD3  | 1.97                     | 0.46              |
| 4:D:245:LYS:HB2  | 4:D:295:CYS:HA   | 1.98                     | 0.46              |
| 6:G:58:MET:HE2   | 6:G:58:MET:HA    | 1.98                     | 0.46              |
| 8:Q:280:VAL:HG21 | 8:Q:304:TYR:CD1  | 2.50                     | 0.46              |
| 1:z:276:GLU:O    | 1:z:280:LYS:HB3  | 2.15                     | 0.46              |
| 2:a:179:ILE:HA   | 2:a:370:ARG:HB3  | 1.97                     | 0.46              |
| 4:d:240:ARG:HG3  | 4:d:363:GLU:HG3  | 1.96                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:g:219:ILE:HD13 | 6:g:362:ILE:HG13 | 1.98                     | 0.46              |
| 6:g:385:GLU:HA   | 6:g:388:ARG:HG2  | 1.97                     | 0.46              |
| 7:h:19:ILE:HG23  | 7:h:116:VAL:HG12 | 1.97                     | 0.46              |
| 3:B:52:LEU:HD12  | 3:B:62:MET:SD    | 2.56                     | 0.46              |
| 3:B:221:ASP:OD1  | 3:B:351:GLU:HB3  | 2.15                     | 0.46              |
| 6:G:471:GLN:NE2  | 6:G:472:GLU:HG3  | 2.31                     | 0.46              |
| 8:Q:146:LEU:HD21 | 8:Q:418:GLU:HG2  | 1.96                     | 0.46              |
| 1:Z:233:CYS:HB2  | 1:Z:293:ASN:HA   | 1.98                     | 0.46              |
| 2:a:68:GLU:O     | 2:a:73:LYS:NZ    | 2.46                     | 0.46              |
| 3:b:276:LYS:HA   | 3:b:279:VAL:HG22 | 1.97                     | 0.46              |
| 4:d:152:SER:OG   | 4:d:153:ARG:N    | 2.49                     | 0.46              |
| 5:e:74:GLY:HA2   | 5:e:77:ILE:HG12  | 1.97                     | 0.46              |
| 5:e:357:GLY:N    | 5:e:375:GLU:HA   | 2.28                     | 0.46              |
| 5:e:468:MET:SD   | 5:e:473:THR:HG21 | 2.56                     | 0.46              |
| 6:g:399:ASN:HD21 | 6:g:497:PRO:HB3  | 1.80                     | 0.46              |
| 7:h:368:CYS:HB2  | 7:h:371:ALA:HB2  | 1.97                     | 0.46              |
| 4:D:244:ALA:HA   | 4:D:296:ASN:HD21 | 1.80                     | 0.46              |
| 6:G:437:ARG:O    | 6:G:441:GLN:HG2  | 2.16                     | 0.46              |
| 1:z:98:ILE:HD12  | 1:z:504:LEU:HD21 | 1.97                     | 0.46              |
| 1:Z:207:ILE:HG12 | 1:Z:375:LEU:HD11 | 1.98                     | 0.46              |
| 5:e:242:LYS:HA   | 5:e:242:LYS:HD2  | 1.82                     | 0.46              |
| 6:g:395:GLN:O    | 6:g:399:ASN:ND2  | 2.48                     | 0.46              |
| 3:B:246:THR:C    | 3:B:272:LYS:HB3  | 2.40                     | 0.46              |
| 4:D:42:LYS:HZ2   | 4:D:46:ASP:HB2   | 1.81                     | 0.46              |
| 2:a:70:PRO:HA    | 2:a:73:LYS:HD2   | 1.98                     | 0.45              |
| 2:a:244:THR:HG22 | 6:g:338:ARG:HA   | 1.98                     | 0.45              |
| 3:b:354:ILE:HB   | 3:b:359:LEU:HB3  | 1.98                     | 0.45              |
| 3:b:406:THR:OG1  | 3:b:495:GLU:O    | 2.34                     | 0.45              |
| 4:d:256:PRO:HB3  | 4:d:279:GLU:H    | 1.81                     | 0.45              |
| 4:d:352:THR:HG23 | 4:d:354:ASP:H    | 1.81                     | 0.45              |
| 5:e:409:ILE:HD13 | 5:e:412:LEU:HD12 | 1.97                     | 0.45              |
| 7:h:161:LYS:HA   | 7:h:164:MET:HE1  | 1.98                     | 0.45              |
| 7:h:244:LEU:N    | 7:h:294:LEU:O    | 2.41                     | 0.45              |
| 3:B:236:LYS:HB3  | 3:B:343:LEU:HD23 | 1.97                     | 0.45              |
| 6:G:523:SER:OG   | 6:G:523:SER:O    | 2.33                     | 0.45              |
| 7:H:28:ALA:O     | 7:H:31:VAL:HG12  | 2.16                     | 0.45              |
| 2:a:88:ASP:OD1   | 2:a:89:GLY:N     | 2.50                     | 0.45              |
| 2:a:414:ALA:O    | 2:a:471:HIS:HE1  | 1.99                     | 0.45              |
| 3:b:412:CYS:HB3  | 3:b:477:GLY:HA2  | 1.98                     | 0.45              |
| 4:d:176:VAL:HG12 | 4:d:179:TYR:HD2  | 1.80                     | 0.45              |
| 6:g:320:ASN:OD1  | 6:g:321:ARG:N    | 2.48                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:q:322:ARG:C    | 8:q:326:LYS:HZ2  | 2.24                     | 0.45              |
| 4:D:144:GLY:HA2  | 4:D:147:ILE:HG12 | 1.97                     | 0.45              |
| 1:Z:106:ALA:O    | 1:Z:110:ILE:HG12 | 2.17                     | 0.45              |
| 1:Z:166:ASP:O    | 1:Z:169:THR:OG1  | 2.34                     | 0.45              |
| 1:Z:292:ILE:HD12 | 1:Z:313:LEU:HB2  | 1.97                     | 0.45              |
| 2:a:58:GLY:HA2   | 2:a:61:ILE:HD12  | 1.98                     | 0.45              |
| 3:b:361:HIS:CD2  | 3:b:363:SER:HB3  | 2.51                     | 0.45              |
| 4:d:439:TYR:O    | 4:d:443:LEU:N    | 2.49                     | 0.45              |
| 5:e:135:ASP:OD1  | 5:e:136:GLY:N    | 2.48                     | 0.45              |
| 8:q:136:CYS:HB2  | 8:q:512:THR:HG21 | 1.99                     | 0.45              |
| 8:q:324:LEU:O    | 8:q:328:VAL:HG22 | 2.15                     | 0.45              |
| 8:q:402:LEU:O    | 8:q:406:LYS:NZ   | 2.33                     | 0.45              |
| 8:Q:327:THR:HG23 | 8:Q:328:VAL:HG13 | 1.98                     | 0.45              |
| 1:z:37:ASN:ND2   | 1:z:43:THR:O     | 2.49                     | 0.45              |
| 1:z:255:GLU:O    | 1:z:259:LEU:HB2  | 2.16                     | 0.45              |
| 1:z:293:ASN:O    | 1:z:315:ARG:N    | 2.49                     | 0.45              |
| 1:z:303:ASP:OD1  | 1:z:307:LYS:NZ   | 2.49                     | 0.45              |
| 1:Z:264:ARG:HH12 | 1:Z:300:PHE:HB2  | 1.80                     | 0.45              |
| 3:b:51:ILE:HG13  | 4:d:532:ILE:HD12 | 1.97                     | 0.45              |
| 3:b:279:VAL:HA   | 3:b:282:ILE:HG12 | 1.98                     | 0.45              |
| 6:g:40:LEU:HD23  | 6:g:40:LEU:H     | 1.81                     | 0.45              |
| 7:H:124:ALA:HB2  | 7:H:431:GLN:HG2  | 1.99                     | 0.45              |
| 7:H:152:ARG:O    | 7:H:155:LEU:N    | 2.49                     | 0.45              |
| 7:H:163:LEU:HB2  | 7:H:172:LYS:HZ2  | 1.82                     | 0.45              |
| 1:z:157:ARG:NH2  | 1:z:166:ASP:OD1  | 2.50                     | 0.45              |
| 2:a:59:ALA:O     | 2:a:63:LYS:HG3   | 2.16                     | 0.45              |
| 3:b:346:CYS:SG   | 3:b:347:LYS:N    | 2.89                     | 0.45              |
| 5:e:165:LEU:O    | 5:e:168:THR:OG1  | 2.34                     | 0.45              |
| 3:B:215:ASP:OD1  | 3:B:216:GLU:N    | 2.50                     | 0.45              |
| 5:E:117:LEU:HD22 | 5:E:524:VAL:HG23 | 1.97                     | 0.45              |
| 5:E:248:ILE:HG12 | 5:E:299:LEU:HD23 | 1.98                     | 0.45              |
| 6:G:178:ALA:HB3  | 6:G:394:MET:HE1  | 1.99                     | 0.45              |
| 1:z:28:ARG:HD3   | 1:z:104:LYS:HB2  | 1.99                     | 0.45              |
| 1:z:160:VAL:HG22 | 1:z:161:HIS:H    | 1.82                     | 0.45              |
| 1:z:175:SER:O    | 1:z:179:ILE:HG12 | 2.17                     | 0.45              |
| 1:z:236:SER:HB3  | 1:z:239:TYR:HB2  | 1.98                     | 0.45              |
| 2:a:46:VAL:HG12  | 2:a:52:VAL:HG12  | 1.98                     | 0.45              |
| 3:b:448:THR:HG23 | 3:b:458:SER:HB3  | 1.99                     | 0.45              |
| 4:d:141:LEU:HD21 | 4:d:520:THR:HG23 | 1.98                     | 0.45              |
| 5:e:164:PRO:HA   | 5:e:167:GLN:CD   | 2.41                     | 0.45              |
| 5:e:299:LEU:HD13 | 5:e:320:PRO:HG2  | 1.98                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:e:442:THR:HB   | 4:D:478:THR:CG2  | 2.46                     | 0.45              |
| 7:h:222:LYS:HB2  | 7:h:227:ALA:HB3  | 1.99                     | 0.45              |
| 2:A:480:ARG:HD2  | 2:A:480:ARG:HA   | 1.70                     | 0.45              |
| 2:A:523:THR:O    | 2:A:527:ILE:HG13 | 2.17                     | 0.45              |
| 3:B:48:MET:HB3   | 4:D:533:ASP:HB2  | 1.97                     | 0.45              |
| 3:B:159:LEU:HA   | 3:B:162:ILE:HG22 | 1.98                     | 0.45              |
| 6:G:79:MET:O     | 6:G:82:ILE:HG22  | 2.15                     | 0.45              |
| 5:e:471:ILE:HG12 | 4:D:446:MET:HG2  | 1.97                     | 0.45              |
| 3:B:203:LYS:HG2  | 3:B:383:LEU:HD13 | 1.97                     | 0.45              |
| 5:E:250:ILE:HG12 | 5:E:330:ILE:HG12 | 1.99                     | 0.45              |
| 1:Z:81:ALA:HA    | 1:Z:84:GLN:NE2   | 2.31                     | 0.45              |
| 2:a:150:ASN:ND2  | 2:a:500:GLN:O    | 2.50                     | 0.45              |
| 2:a:436:LEU:HD23 | 2:a:436:LEU:HA   | 1.84                     | 0.45              |
| 3:b:35:ILE:HG13  | 3:b:81:ALA:HB1   | 1.99                     | 0.45              |
| 3:b:408:TYR:HB2  | 3:b:412:CYS:SG   | 2.57                     | 0.45              |
| 8:q:153:ASN:OD1  | 8:q:154:LEU:N    | 2.50                     | 0.45              |
| 8:q:293:THR:HB   | 8:q:314:ARG:HD3  | 1.98                     | 0.45              |
| 8:q:324:LEU:HA   | 8:q:327:THR:HG22 | 1.99                     | 0.45              |
| 8:q:479:GLY:HA3  | 8:q:492:MET:HE2  | 1.97                     | 0.45              |
| 2:A:211:ILE:HG22 | 2:A:213:GLY:H    | 1.82                     | 0.45              |
| 3:B:70:ILE:O     | 3:B:74:ILE:HG13  | 2.16                     | 0.45              |
| 3:B:163:ALA:HB3  | 3:B:180:THR:HG22 | 1.99                     | 0.45              |
| 3:B:281:ARG:O    | 3:B:284:LYS:NZ   | 2.40                     | 0.45              |
| 3:B:298:ASN:HB3  | 4:D:347:HIS:HB3  | 1.99                     | 0.45              |
| 4:D:109:VAL:HG23 | 4:D:522:ALA:HB2  | 1.98                     | 0.45              |
| 4:D:501:SER:OG   | 4:D:502:ASN:N    | 2.50                     | 0.45              |
| 5:E:132:ARG:HA   | 5:E:135:ASP:OD2  | 2.16                     | 0.45              |
| 5:E:173:LEU:HD13 | 5:E:185:MET:SD   | 2.57                     | 0.45              |
| 6:G:83:SER:HB3   | 6:G:98:ILE:HD11  | 1.98                     | 0.45              |
| 8:Q:131:GLY:HA3  | 8:Q:437:ALA:HB3  | 1.98                     | 0.45              |
| 1:z:61:ASN:ND2   | 1:z:85:ASP:OD2   | 2.49                     | 0.45              |
| 1:z:159:LYS:NZ   | 9:z:601:ADP:O1B  | 2.32                     | 0.45              |
| 5:e:481:GLN:HE21 | 5:e:487:PRO:HA   | 1.81                     | 0.45              |
| 7:h:220:PHE:CE2  | 7:h:319:PRO:HG2  | 2.51                     | 0.45              |
| 8:q:231:VAL:HG13 | 8:q:234:VAL:HG22 | 1.98                     | 0.45              |
| 2:A:529:ASP:N    | 2:A:529:ASP:OD1  | 2.49                     | 0.45              |
| 3:B:29:PHE:HZ    | 3:B:515:LEU:HA   | 1.81                     | 0.45              |
| 3:B:351:GLU:HA   | 3:B:360:ILE:HG23 | 1.99                     | 0.45              |
| 4:D:208:ILE:HG22 | 4:D:387:THR:OG1  | 2.17                     | 0.45              |
| 7:H:228:GLN:HG2  | 7:H:309:PHE:CG   | 2.52                     | 0.45              |
| 8:Q:492:MET:SD   | 8:Q:497:ILE:HD11 | 2.56                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:a:306:MET:HE3  | 2:a:308:VAL:HB   | 1.99                     | 0.45              |
| 5:e:204:VAL:HG11 | 5:e:406:LEU:HD21 | 1.99                     | 0.45              |
| 7:h:118:GLU:OE1  | 7:h:118:GLU:N    | 2.50                     | 0.45              |
| 7:h:201:ILE:HD12 | 7:h:378:LEU:HD11 | 1.99                     | 0.45              |
| 7:h:529:SER:O    | 8:q:59:HIS:NE2   | 2.50                     | 0.45              |
| 3:B:310:MET:SD   | 3:B:312:ILE:HG13 | 2.57                     | 0.45              |
| 3:B:416:LEU:HD22 | 3:B:474:THR:HB   | 1.97                     | 0.45              |
| 5:E:61:MET:HE2   | 5:E:80:MET:HE1   | 1.98                     | 0.45              |
| 5:E:533:ILE:HA   | 7:H:48:LEU:O     | 2.17                     | 0.45              |
| 6:G:241:ASP:O    | 6:G:293:LYS:NZ   | 2.37                     | 0.45              |
| 8:Q:52:MET:HE3   | 8:Q:52:MET:HB3   | 1.78                     | 0.45              |
| 8:Q:160:VAL:HA   | 8:Q:163:LEU:HB2  | 1.98                     | 0.45              |
| 6:g:178:ALA:HA   | 6:g:181:MET:HG3  | 1.99                     | 0.44              |
| 7:h:167:LEU:HD21 | 7:h:392:SER:CB   | 2.40                     | 0.44              |
| 8:q:277:ASP:HA   | 8:q:280:VAL:HG22 | 1.99                     | 0.44              |
| 3:B:31:GLY:O     | 3:B:35:ILE:HG12  | 2.17                     | 0.44              |
| 4:D:243:LYS:HD3  | 4:D:243:LYS:HA   | 1.74                     | 0.44              |
| 4:D:362:ALA:HB1  | 4:D:374:LEU:HD11 | 2.00                     | 0.44              |
| 5:E:185:MET:HA   | 5:E:188:ILE:HB   | 1.99                     | 0.44              |
| 6:G:333:ARG:O    | 6:G:337:LEU:HG   | 2.17                     | 0.44              |
| 6:G:488:ASP:OD2  | 6:G:490:LYS:HB2  | 2.17                     | 0.44              |
| 1:z:375:LEU:HD21 | 1:z:377:LYS:HE3  | 2.00                     | 0.44              |
| 1:Z:98:ILE:HG22  | 1:Z:102:LEU:HD13 | 1.98                     | 0.44              |
| 2:a:278:ILE:HG12 | 2:a:283:ALA:HB2  | 2.00                     | 0.44              |
| 3:b:218:PHE:HE2  | 3:b:323:LEU:HD11 | 1.81                     | 0.44              |
| 3:b:326:VAL:HG13 | 3:b:367:LEU:HB2  | 1.99                     | 0.44              |
| 5:e:129:HIS:HB3  | 5:e:132:ARG:HG2  | 1.99                     | 0.44              |
| 8:q:60:LEU:HD12  | 8:q:62:LYS:HG3   | 2.00                     | 0.44              |
| 8:q:246:PHE:HE1  | 8:q:336:LEU:HD11 | 1.82                     | 0.44              |
| 8:q:456:SER:O    | 8:q:456:SER:OG   | 2.30                     | 0.44              |
| 3:B:481:ARG:HG3  | 3:B:482:GLU:HG2  | 1.99                     | 0.44              |
| 5:E:102:ILE:HG22 | 5:E:104:ASP:H    | 1.82                     | 0.44              |
| 6:G:32:ILE:HD12  | 6:G:76:ALA:HB1   | 2.00                     | 0.44              |
| 7:H:32:ILE:HD12  | 7:H:76:ALA:HB1   | 1.98                     | 0.44              |
| 7:H:382:MET:HE3  | 7:H:382:MET:HB3  | 1.90                     | 0.44              |
| 8:Q:170:SER:HB2  | 9:Q:5000:ADP:H8  | 1.82                     | 0.44              |
| 8:Q:501:TYR:CD2  | 8:Q:502:LEU:HD12 | 2.51                     | 0.44              |
| 1:Z:380:ASN:HB3  | 1:Z:382:HIS:CD2  | 2.52                     | 0.44              |
| 2:a:151:ALA:HB2  | 2:a:502:GLY:HA3  | 2.00                     | 0.44              |
| 4:d:474:ILE:H    | 4:d:474:ILE:HD12 | 1.81                     | 0.44              |
| 5:e:119:GLU:OE1  | 5:e:450:ALA:HB1  | 2.17                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:g:129:LEU:O    | 6:g:133:ILE:HG12 | 2.17                     | 0.44              |
| 6:g:181:MET:SD   | 6:g:182:VAL:HG23 | 2.58                     | 0.44              |
| 7:h:266:ASP:HB2  | 7:h:269:ALA:HB3  | 1.99                     | 0.44              |
| 8:q:198:ASN:HB2  | 8:q:201:ASN:OD1  | 2.17                     | 0.44              |
| 8:q:211:GLY:O    | 8:q:214:SER:OG   | 2.33                     | 0.44              |
| 4:D:209:LYS:HA   | 4:D:385:THR:H    | 1.83                     | 0.44              |
| 6:G:21:VAL:HG13  | 6:G:22:GLN:HE21  | 1.82                     | 0.44              |
| 1:Z:515:ILE:O    | 1:Z:518:VAL:HG22 | 2.17                     | 0.44              |
| 2:a:145:ARG:HH22 | 2:a:170:ASN:HB2  | 1.81                     | 0.44              |
| 3:b:73:ASN:HB3   | 4:d:539:ARG:HG3  | 1.99                     | 0.44              |
| 4:d:208:ILE:HA   | 4:d:383:GLY:HA3  | 1.99                     | 0.44              |
| 4:d:366:ASN:OD1  | 4:d:372:LYS:HB3  | 2.17                     | 0.44              |
| 5:e:143:VAL:O    | 5:e:146:GLU:HG3  | 2.17                     | 0.44              |
| 5:e:187:GLU:HA   | 5:e:190:VAL:HG22 | 1.99                     | 0.44              |
| 3:B:91:GLN:HG2   | 3:B:99:THR:HA    | 1.99                     | 0.44              |
| 4:D:117:LEU:HA   | 4:D:120:CYS:SG   | 2.58                     | 0.44              |
| 6:G:429:THR:OG1  | 6:G:430:GLY:N    | 2.50                     | 0.44              |
| 6:G:473:ASN:N    | 6:G:473:ASN:OD1  | 2.51                     | 0.44              |
| 1:z:143:MET:HA   | 1:z:143:MET:HE2  | 1.99                     | 0.44              |
| 1:z:194:MET:HE1  | 1:z:196:MET:HG2  | 1.99                     | 0.44              |
| 3:b:45:PRO:HB3   | 3:b:168:SER:HB2  | 1.98                     | 0.44              |
| 3:b:240:ALA:HB2  | 3:b:290:PHE:CZ   | 2.52                     | 0.44              |
| 7:h:32:ILE:HD11  | 7:h:84:VAL:HG23  | 2.00                     | 0.44              |
| 2:A:274:ARG:HD3  | 2:A:331:LEU:HB3  | 2.00                     | 0.44              |
| 3:B:49:ASP:HB3   | 3:B:65:ASN:OD1   | 2.17                     | 0.44              |
| 4:D:299:LEU:HD12 | 4:D:328:ILE:HG21 | 1.99                     | 0.44              |
| 7:H:107:GLN:HG3  | 7:H:441:ALA:HB2  | 1.98                     | 0.44              |
| 1:Z:20:LEU:HD23  | 1:Z:110:ILE:HG21 | 1.98                     | 0.44              |
| 1:Z:230:ILE:HA   | 1:Z:290:VAL:O    | 2.16                     | 0.44              |
| 6:g:183:GLN:HB2  | 6:g:190:LYS:HG3  | 2.00                     | 0.44              |
| 8:q:99:ASP:N     | 8:q:99:ASP:OD1   | 2.51                     | 0.44              |
| 8:Q:299:ASP:OD1  | 8:Q:300:MET:N    | 2.46                     | 0.44              |
| 2:a:90:THR:HA    | 2:a:93:VAL:HG12  | 1.99                     | 0.44              |
| 2:a:170:ASN:OD1  | 2:a:171:MET:N    | 2.50                     | 0.44              |
| 2:a:173:VAL:HA   | 2:a:176:VAL:HG12 | 2.00                     | 0.44              |
| 3:b:405:ARG:HH21 | 3:b:497:PHE:HE2  | 1.65                     | 0.44              |
| 3:b:488:MET:HE3  | 3:b:493:ILE:O    | 2.17                     | 0.44              |
| 5:e:161:ASP:C    | 5:e:164:PRO:HD2  | 2.43                     | 0.44              |
| 6:g:173:ASN:OD1  | 6:g:174:ILE:N    | 2.50                     | 0.44              |
| 6:g:240:LEU:HB2  | 6:g:291:THR:HG22 | 1.98                     | 0.44              |
| 6:g:487:VAL:HG11 | 6:g:492:LEU:HD22 | 2.00                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:q:158:ASP:OD1  | 8:q:158:ASP:N    | 2.49                     | 0.44              |
| 5:E:27:ARG:HD2   | 5:E:27:ARG:HA    | 1.74                     | 0.44              |
| 5:E:166:ILE:HA   | 5:E:186:ALA:HB1  | 1.99                     | 0.44              |
| 6:G:394:MET:HE2  | 6:G:394:MET:HB2  | 1.73                     | 0.44              |
| 8:Q:114:LEU:HB3  | 8:Q:440:LYS:HD2  | 2.00                     | 0.44              |
| 3:b:512:GLU:OE2  | 3:b:516:ARG:NH2  | 2.50                     | 0.44              |
| 4:d:139:LYS:O    | 4:d:142:GLU:HG3  | 2.17                     | 0.44              |
| 4:d:305:LEU:HD23 | 4:d:305:LEU:HA   | 1.85                     | 0.44              |
| 4:d:362:ALA:HB1  | 4:d:374:LEU:HD11 | 1.99                     | 0.44              |
| 7:h:156:ARG:HH11 | 7:h:184:VAL:HG23 | 1.81                     | 0.44              |
| 7:h:301:ASP:O    | 7:h:304:THR:OG1  | 2.25                     | 0.44              |
| 2:A:277:LYS:HZ1  | 2:A:331:LEU:HG   | 1.83                     | 0.44              |
| 4:D:249:ILE:HG12 | 4:D:298:LEU:HD11 | 1.99                     | 0.44              |
| 4:D:495:VAL:HG13 | 4:D:496:ARG:HG2  | 2.00                     | 0.44              |
| 1:z:150:ASP:OD1  | 1:z:153:ARG:NH2  | 2.51                     | 0.44              |
| 1:z:318:ARG:O    | 1:z:321:MET:N    | 2.50                     | 0.44              |
| 1:z:321:MET:O    | 1:z:325:THR:HG23 | 2.18                     | 0.44              |
| 1:Z:326:LEU:HD23 | 1:Z:326:LEU:H    | 1.83                     | 0.44              |
| 5:e:35:LYS:O     | 5:e:39:MET:HG2   | 2.18                     | 0.44              |
| 5:e:407:CYS:HA   | 5:e:410:ARG:NE   | 2.33                     | 0.44              |
| 7:h:221:LYS:HB2  | 7:h:362:TYR:CZ   | 2.52                     | 0.44              |
| 8:q:39:LEU:O     | 8:q:42:THR:HG22  | 2.18                     | 0.44              |
| 8:q:140:HIS:NE2  | 8:q:509:LYS:HB2  | 2.32                     | 0.44              |
| 8:q:304:TYR:O    | 8:q:307:LYS:HG2  | 2.18                     | 0.44              |
| 5:E:225:ILE:HD13 | 5:E:386:PHE:HB3  | 2.00                     | 0.44              |
| 6:G:144:ASP:H    | 6:G:150:MET:HE3  | 1.82                     | 0.44              |
| 2:a:131:TYR:HD2  | 2:a:422:TYR:CD2  | 2.35                     | 0.43              |
| 2:a:176:VAL:HG23 | 2:a:190:TYR:CZ   | 2.53                     | 0.43              |
| 3:b:460:ASP:HB3  | 3:B:431:LYS:HG3  | 2.00                     | 0.43              |
| 3:b:470:SER:OG   | 3:b:471:GLU:OE1  | 2.35                     | 0.43              |
| 5:e:222:THR:HG22 | 5:e:388:ARG:H    | 1.83                     | 0.43              |
| 5:e:519:LEU:O    | 5:e:523:MET:HG2  | 2.17                     | 0.43              |
| 8:q:221:MET:HE1  | 8:q:223:PHE:CE1  | 2.53                     | 0.43              |
| 2:A:35:SER:N     | 2:A:43:LYS:HZ1   | 2.15                     | 0.43              |
| 3:B:223:LYS:NZ   | 3:B:296:ILE:HB   | 2.33                     | 0.43              |
| 4:D:30:PRO:HD2   | 4:D:32:GLN:HE22  | 1.82                     | 0.43              |
| 5:E:232:LYS:HE3  | 5:E:326:GLY:N    | 2.33                     | 0.43              |
| 5:E:292:ILE:HG12 | 5:E:297:ALA:O    | 2.18                     | 0.43              |
| 6:G:205:GLY:N    | 6:G:377:GLY:O    | 2.41                     | 0.43              |
| 7:H:133:VAL:O    | 7:H:136:ILE:HG22 | 2.17                     | 0.43              |
| 7:H:147:ASP:HB3  | 7:H:151:GLN:O    | 2.17                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:Z:261:LYS:HE3  | 1:Z:265:LYS:HD3  | 2.00                     | 0.43              |
| 1:Z:278:LYS:NZ   | 1:Z:285:SER:HB3  | 2.33                     | 0.43              |
| 4:d:203:VAL:H    | 4:d:416:VAL:HG11 | 1.81                     | 0.43              |
| 7:h:14:ASP:HB3   | 7:h:20:PRO:HB3   | 1.98                     | 0.43              |
| 2:A:36:LEU:O     | 2:A:455:ASN:ND2  | 2.40                     | 0.43              |
| 4:D:371:GLY:HA3  | 4:D:391:ARG:HH12 | 1.83                     | 0.43              |
| 5:E:29:MET:HE1   | 5:E:534:ARG:HH22 | 1.83                     | 0.43              |
| 6:G:223:VAL:HG12 | 6:G:312:ARG:HH21 | 1.83                     | 0.43              |
| 6:G:392:ASP:O    | 6:G:396:VAL:HG23 | 2.18                     | 0.43              |
| 8:Q:47:TYR:O     | 8:Q:455:ASN:ND2  | 2.41                     | 0.43              |
| 8:Q:198:ASN:HB2  | 8:Q:201:ASN:OD1  | 2.18                     | 0.43              |
| 1:Z:275:ILE:O    | 1:Z:278:LYS:HG2  | 2.18                     | 0.43              |
| 2:a:408:VAL:HG21 | 2:a:504:PHE:HB3  | 2.00                     | 0.43              |
| 3:b:272:LYS:O    | 3:b:276:LYS:HG2  | 2.19                     | 0.43              |
| 4:d:183:LEU:HD13 | 4:d:405:ILE:HD11 | 2.00                     | 0.43              |
| 4:d:337:CYS:SG   | 4:d:344:PRO:HB3  | 2.58                     | 0.43              |
| 4:D:187:SER:O    | 4:D:191:VAL:HG23 | 2.19                     | 0.43              |
| 5:E:39:MET:O     | 5:E:42:LYS:HG2   | 2.18                     | 0.43              |
| 6:G:32:ILE:HD11  | 6:G:80:ILE:HD11  | 2.00                     | 0.43              |
| 1:z:121:GLU:OE2  | 6:g:43:LYS:NZ    | 2.51                     | 0.43              |
| 1:Z:338:ASP:OD1  | 1:Z:338:ASP:N    | 2.49                     | 0.43              |
| 2:a:473:GLU:HA   | 2:a:476:VAL:HG22 | 2.00                     | 0.43              |
| 3:b:148:HIS:CE1  | 3:b:150:SER:HB2  | 2.53                     | 0.43              |
| 5:e:407:CYS:O    | 5:e:410:ARG:HG2  | 2.17                     | 0.43              |
| 5:e:486:ASN:HB3  | 5:e:489:LEU:HD13 | 1.99                     | 0.43              |
| 7:h:446:LEU:HD23 | 7:h:446:LEU:HA   | 1.87                     | 0.43              |
| 2:A:130:ARG:O    | 2:A:134:GLU:HG2  | 2.19                     | 0.43              |
| 3:B:279:VAL:O    | 3:B:283:LEU:N    | 2.51                     | 0.43              |
| 4:D:458:MET:HE2  | 4:D:458:MET:HB2  | 1.86                     | 0.43              |
| 5:E:112:LEU:O    | 5:E:116:LEU:HD23 | 2.19                     | 0.43              |
| 6:G:311:ILE:HD12 | 6:G:311:ILE:HA   | 1.91                     | 0.43              |
| 7:H:277:LYS:HA   | 7:H:277:LYS:HD3  | 1.65                     | 0.43              |
| 8:Q:320:ASP:HA   | 8:Q:323:ARG:HG2  | 1.99                     | 0.43              |
| 1:z:218:HIS:ND1  | 1:z:218:HIS:O    | 2.52                     | 0.43              |
| 2:a:146:ASP:OD1  | 2:a:146:ASP:N    | 2.50                     | 0.43              |
| 2:a:294:ASP:OD1  | 2:a:294:ASP:N    | 2.52                     | 0.43              |
| 3:b:38:LEU:HD22  | 3:b:74:ILE:HD11  | 2.00                     | 0.43              |
| 3:b:235:ALA:HB1  | 3:b:289:CYS:HB2  | 2.00                     | 0.43              |
| 3:b:338:PRO:HB3  | 3:b:342:LYS:HB2  | 2.01                     | 0.43              |
| 5:e:120:ALA:HB2  | 5:e:137:TYR:OH   | 2.19                     | 0.43              |
| 6:g:110:HIS:O    | 6:g:114:GLN:HG3  | 2.19                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:q:344:MET:HE3  | 8:q:344:MET:HB3  | 1.78                     | 0.43              |
| 4:D:141:LEU:HD13 | 4:D:523:THR:HG21 | 2.01                     | 0.43              |
| 5:E:76:THR:O     | 5:E:80:MET:HG3   | 2.18                     | 0.43              |
| 1:z:275:ILE:HG23 | 1:z:279:ARG:NH2  | 2.32                     | 0.43              |
| 1:Z:302:LEU:HD12 | 1:Z:312:ALA:HB3  | 2.00                     | 0.43              |
| 2:a:103:ASN:HB3  | 2:a:440:GLU:HB3  | 1.99                     | 0.43              |
| 2:a:277:LYS:O    | 2:a:281:THR:HG23 | 2.19                     | 0.43              |
| 3:b:174:HIS:HB3  | 3:b:209:LEU:HB3  | 1.99                     | 0.43              |
| 3:b:239:ILE:HG21 | 3:b:293:ARG:HE   | 1.83                     | 0.43              |
| 6:g:202:LYS:HE2  | 6:g:380:LYS:HD3  | 2.00                     | 0.43              |
| 8:q:68:ASP:O     | 8:q:72:ILE:HG12  | 2.19                     | 0.43              |
| 8:q:234:VAL:HG12 | 8:q:235:LYS:O    | 2.18                     | 0.43              |
| 4:D:130:PRO:HA   | 4:D:133:ILE:HD13 | 1.99                     | 0.43              |
| 4:D:474:ILE:HD12 | 4:D:474:ILE:H    | 1.84                     | 0.43              |
| 5:E:89:LYS:O     | 5:E:90:LEU:C     | 2.62                     | 0.43              |
| 5:E:524:VAL:O    | 5:E:528:LEU:HB2  | 2.19                     | 0.43              |
| 7:H:268:ASP:OD1  | 7:H:268:ASP:N    | 2.48                     | 0.43              |
| 1:Z:290:VAL:HG13 | 1:Z:311:VAL:HB   | 2.00                     | 0.43              |
| 2:a:44:MET:HE2   | 6:g:521:ILE:HG12 | 2.00                     | 0.43              |
| 2:a:386:ASP:N    | 2:a:386:ASP:OD1  | 2.52                     | 0.43              |
| 4:d:153:ARG:NH2  | 4:d:154:PRO:HD2  | 2.33                     | 0.43              |
| 4:d:361:LEU:HG   | 4:d:377:THR:HG22 | 1.99                     | 0.43              |
| 5:e:407:CYS:HA   | 5:e:410:ARG:HE   | 1.83                     | 0.43              |
| 7:h:424:LEU:HD23 | 7:h:424:LEU:HA   | 1.87                     | 0.43              |
| 8:q:223:PHE:O    | 8:q:361:VAL:HG12 | 2.19                     | 0.43              |
| 3:B:136:ALA:O    | 3:B:139:GLU:HG3  | 2.18                     | 0.43              |
| 3:B:223:LYS:HZ3  | 3:B:296:ILE:HB   | 1.82                     | 0.43              |
| 5:E:158:ASP:H    | 5:E:416:ASN:HD21 | 1.67                     | 0.43              |
| 5:E:303:GLN:HA   | 5:E:325:VAL:H    | 1.84                     | 0.43              |
| 6:G:434:TRP:HB2  | 6:G:435:PRO:HD3  | 2.01                     | 0.43              |
| 7:H:195:ILE:HD12 | 7:H:370:CYS:HB2  | 2.00                     | 0.43              |
| 8:Q:192:PRO:HA   | 8:Q:197:PHE:CZ   | 2.54                     | 0.43              |
| 1:Z:114:LEU:HD12 | 1:Z:118:ILE:HD11 | 2.01                     | 0.43              |
| 1:Z:198:HIS:CE1  | 1:Z:200:SER:H    | 2.36                     | 0.43              |
| 1:Z:282:CYS:SG   | 1:Z:286:ASP:N    | 2.92                     | 0.43              |
| 2:a:198:LEU:HD11 | 2:a:217:ASN:HB2  | 1.99                     | 0.43              |
| 3:b:98:GLY:O     | 3:b:102:VAL:HG23 | 2.19                     | 0.43              |
| 5:e:98:GLN:HG3   | 5:e:519:LEU:HD13 | 2.01                     | 0.43              |
| 6:g:129:LEU:HB2  | 6:g:509:VAL:HG11 | 2.00                     | 0.43              |
| 6:g:398:ARG:HG3  | 6:g:399:ASN:N    | 2.33                     | 0.43              |
| 6:g:472:GLU:HB3  | 6:g:475:GLU:CD   | 2.44                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:h:214:LEU:HD12 | 7:h:375:THR:C    | 2.43                     | 0.43              |
| 7:h:244:LEU:HD23 | 7:h:248:LEU:HD21 | 2.00                     | 0.43              |
| 2:A:424:GLU:OE2  | 2:A:468:ARG:NH2  | 2.49                     | 0.43              |
| 5:E:77:ILE:O     | 5:E:81:MET:HB2   | 2.19                     | 0.43              |
| 5:E:90:LEU:O     | 5:E:94:LEU:HG    | 2.19                     | 0.43              |
| 6:G:230:ARG:NH2  | 6:G:311:ILE:HD13 | 2.34                     | 0.43              |
| 1:Z:261:LYS:HD2  | 1:Z:261:LYS:HA   | 1.69                     | 0.43              |
| 5:e:84:ASP:OD1   | 5:e:85:HIS:N     | 2.52                     | 0.43              |
| 6:g:381:GLU:HG2  | 6:g:382:ILE:HG13 | 2.01                     | 0.43              |
| 8:q:470:VAL:O    | 8:q:474:GLY:N    | 2.51                     | 0.43              |
| 5:E:222:THR:HG22 | 5:E:388:ARG:H    | 1.84                     | 0.43              |
| 7:H:516:VAL:HA   | 8:Q:53:ASN:O     | 2.18                     | 0.43              |
| 8:Q:299:ASP:O    | 8:Q:302:LEU:HG   | 2.19                     | 0.43              |
| 8:Q:418:GLU:HB2  | 8:Q:471:HIS:NE2  | 2.33                     | 0.43              |
| 1:z:198:HIS:NE2  | 1:z:200:SER:HB3  | 2.33                     | 0.43              |
| 1:z:522:MET:HE1  | 6:g:35:ILE:HG23  | 2.00                     | 0.43              |
| 2:a:57:ASP:N     | 2:a:57:ASP:OD1   | 2.52                     | 0.43              |
| 2:a:274:ARG:HB3  | 2:a:331:LEU:HD23 | 2.01                     | 0.43              |
| 3:b:202:ILE:O    | 3:b:374:VAL:HA   | 2.19                     | 0.43              |
| 4:d:233:VAL:HG21 | 4:d:323:MET:SD   | 2.59                     | 0.43              |
| 7:h:230:GLU:HG2  | 7:h:361:ARG:HH11 | 1.84                     | 0.43              |
| 7:h:355:THR:H    | 7:h:364:PHE:HE2  | 1.65                     | 0.43              |
| 7:h:427:TYR:O    | 7:h:430:THR:OG1  | 2.28                     | 0.43              |
| 8:q:60:LEU:HD11  | 8:q:62:LYS:HE2   | 2.00                     | 0.43              |
| 8:q:155:ARG:NH2  | 8:q:192:PRO:O    | 2.52                     | 0.43              |
| 8:q:239:ILE:HD12 | 8:q:290:VAL:HG23 | 2.01                     | 0.43              |
| 2:A:148:LEU:HD11 | 2:A:399:VAL:HG13 | 1.99                     | 0.43              |
| 8:Q:499:ASP:OD2  | 8:Q:504:LYS:HE2  | 2.18                     | 0.43              |
| 1:z:289:PHE:HB3  | 1:z:310:ILE:HG23 | 2.00                     | 0.42              |
| 1:z:317:LYS:N    | 1:z:320:ASN:HD21 | 2.16                     | 0.42              |
| 6:g:137:LYS:HE3  | 6:g:502:LEU:HD11 | 2.01                     | 0.42              |
| 8:q:316:ASN:OD1  | 8:q:320:ASP:HB3  | 2.19                     | 0.42              |
| 2:A:100:LEU:HD21 | 2:A:441:PHE:CE1  | 2.54                     | 0.42              |
| 2:A:312:LEU:HB3  | 2:A:315:ASP:HB2  | 2.01                     | 0.42              |
| 2:A:424:GLU:CD   | 2:A:468:ARG:HH22 | 2.27                     | 0.42              |
| 2:A:431:GLY:HA2  | 2:A:435:GLN:HE21 | 1.82                     | 0.42              |
| 4:D:159:ASP:O    | 4:D:162:THR:HG22 | 2.19                     | 0.42              |
| 4:D:215:GLY:O    | 4:D:392:GLY:N    | 2.52                     | 0.42              |
| 5:E:356:ALA:HB1  | 5:E:376:GLN:H    | 1.84                     | 0.42              |
| 6:G:19:ARG:HA    | 6:G:19:ARG:HD3   | 1.78                     | 0.42              |
| 6:G:84:ARG:O     | 6:G:87:ASP:N     | 2.51                     | 0.42              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:G:190:LYS:HD3  | 6:G:401:LEU:HD21  | 2.01                     | 0.42              |
| 6:G:207:ILE:HD12 | 6:G:207:ILE:HA    | 1.93                     | 0.42              |
| 7:H:18:GLY:HA2   | 7:H:517:ASP:O     | 2.19                     | 0.42              |
| 8:Q:223:PHE:O    | 8:Q:361:VAL:N     | 2.48                     | 0.42              |
| 1:z:195:GLU:OE1  | 1:z:388:LYS:NZ    | 2.46                     | 0.42              |
| 3:b:425:ALA:HB2  | 3:b:436:MET:HB2   | 2.01                     | 0.42              |
| 5:e:256:GLU:HA   | 7:h:267:TYR:CE2   | 2.54                     | 0.42              |
| 7:h:79:ALA:HA    | 7:h:82:THR:HG22   | 2.01                     | 0.42              |
| 7:h:215:VAL:HG13 | 7:h:377:ILE:HD11  | 2.01                     | 0.42              |
| 4:D:97:ALA:HA    | 4:D:100:ILE:HG12  | 2.00                     | 0.42              |
| 4:D:152:SER:OG   | 4:D:421:LEU:O     | 2.37                     | 0.42              |
| 4:D:183:LEU:HB3  | 4:D:405:ILE:HD11  | 2.00                     | 0.42              |
| 6:G:240:LEU:HD23 | 6:G:240:LEU:HA    | 1.93                     | 0.42              |
| 1:z:518:VAL:HA   | 6:g:46:MET:O      | 2.18                     | 0.42              |
| 1:Z:56:LEU:HD23  | 1:Z:56:LEU:HA     | 1.87                     | 0.42              |
| 3:b:131:ARG:NH2  | 3:b:512:GLU:OE2   | 2.46                     | 0.42              |
| 3:b:203:LYS:HG2  | 3:b:383:LEU:HD23  | 2.01                     | 0.42              |
| 7:h:22:LEU:HD23  | 7:h:116:VAL:HG11  | 2.01                     | 0.42              |
| 7:h:468:LEU:O    | 7:h:472:HIS:CB    | 2.67                     | 0.42              |
| 8:q:282:ALA:O    | 8:q:339:PRO:HG2   | 2.19                     | 0.42              |
| 8:q:446:GLU:OE2  | 8:q:450:ARG:NH2   | 2.40                     | 0.42              |
| 3:B:393:ALA:O    | 3:B:397:LEU:HD23  | 2.19                     | 0.42              |
| 6:G:171:ALA:HA   | 6:G:390:LEU:HD11  | 2.01                     | 0.42              |
| 7:H:135:LYS:HD3  | 7:H:419:TYR:CD2   | 2.54                     | 0.42              |
| 8:Q:161:SER:HA   | 8:Q:181:LYS:HD3   | 2.01                     | 0.42              |
| 8:Q:169:MET:CE   | 9:Q:5000:ADP:HN61 | 2.31                     | 0.42              |
| 1:Z:224:ARG:HH21 | 1:Z:351:TYR:HB2   | 1.84                     | 0.42              |
| 4:d:193:LYS:NZ   | 4:d:208:ILE:HG13  | 2.34                     | 0.42              |
| 4:d:248:LEU:HD21 | 4:d:250:GLN:HE21  | 1.83                     | 0.42              |
| 5:e:232:LYS:HA   | 5:e:232:LYS:HD3   | 1.81                     | 0.42              |
| 6:g:424:LYS:HB2  | 6:g:424:LYS:HE3   | 1.80                     | 0.42              |
| 3:B:176:LYS:O    | 3:B:180:THR:HG23  | 2.19                     | 0.42              |
| 3:B:195:ASN:ND2  | 3:B:369:GLU:OE1   | 2.52                     | 0.42              |
| 4:D:314:LEU:O    | 4:D:318:ASN:N     | 2.53                     | 0.42              |
| 5:E:139:GLN:HA   | 5:E:142:ARG:HG2   | 2.01                     | 0.42              |
| 6:G:61:ASP:O     | 6:G:65:ILE:HG12   | 2.19                     | 0.42              |
| 7:H:230:LYS:HG2  | 7:H:350:GLU:HB3   | 2.01                     | 0.42              |
| 8:Q:298:ALA:HB3  | 8:Q:301:ALA:HB3   | 2.01                     | 0.42              |
| 1:z:445:LEU:HD12 | 1:z:463:LEU:HD21  | 2.02                     | 0.42              |
| 2:a:134:GLU:O    | 2:a:135:ASN:ND2   | 2.52                     | 0.42              |
| 3:b:337:HIS:CE1  | 5:e:312:HIS:HB2   | 2.54                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:e:61:MET:N     | 5:e:69:THR:O     | 2.52                     | 0.42              |
| 5:e:102:ILE:HG22 | 5:e:104:ASP:H    | 1.84                     | 0.42              |
| 6:g:379:SER:OG   | 6:g:380:LYS:N    | 2.52                     | 0.42              |
| 2:A:196:ASN:ND2  | 2:A:373:ALA:O    | 2.33                     | 0.42              |
| 4:D:405:ILE:HD13 | 4:D:405:ILE:HA   | 1.93                     | 0.42              |
| 5:E:380:SER:HB2  | 5:E:383:VAL:HA   | 2.02                     | 0.42              |
| 5:E:524:VAL:HA   | 5:E:527:ILE:HG22 | 2.01                     | 0.42              |
| 6:G:234:ASN:OD1  | 6:G:236:ARG:NH2  | 2.52                     | 0.42              |
| 6:G:235:PRO:HD2  | 6:G:346:ALA:C    | 2.45                     | 0.42              |
| 6:G:346:ALA:HA   | 6:G:365:CYS:HA   | 2.00                     | 0.42              |
| 7:H:236:LYS:HD3  | 7:H:327:GLY:O    | 2.19                     | 0.42              |
| 8:Q:73:LEU:HD11  | 8:Q:105:LEU:HD21 | 2.02                     | 0.42              |
| 8:Q:235:LYS:HA   | 8:Q:235:LYS:HD2  | 1.79                     | 0.42              |
| 1:Z:203:ASP:OD1  | 1:Z:204:THR:N    | 2.53                     | 0.42              |
| 2:a:97:ALA:O     | 2:a:101:LEU:HG   | 2.19                     | 0.42              |
| 2:a:421:ILE:HD11 | 2:a:468:ARG:HE   | 1.84                     | 0.42              |
| 4:d:206:ARG:HA   | 4:d:384:LYS:O    | 2.20                     | 0.42              |
| 4:d:383:GLY:O    | 4:d:384:LYS:HE2  | 2.19                     | 0.42              |
| 4:d:430:ILE:HD13 | 4:d:480:LEU:HG   | 2.01                     | 0.42              |
| 6:g:387:GLU:O    | 6:g:390:LEU:HG   | 2.18                     | 0.42              |
| 6:g:477:TRP:CE2  | 6:g:488:ASP:HB2  | 2.55                     | 0.42              |
| 6:G:284:LEU:HD22 | 6:G:341:ASP:HB2  | 2.02                     | 0.42              |
| 1:Z:239:TYR:HB3  | 1:Z:242:THR:HB   | 2.01                     | 0.42              |
| 3:b:145:ALA:HB1  | 3:b:405:ARG:HB2  | 2.01                     | 0.42              |
| 3:b:237:ILE:HG13 | 3:b:290:PHE:HA   | 2.02                     | 0.42              |
| 3:b:359:LEU:HD11 | 3:b:374:VAL:HG11 | 2.02                     | 0.42              |
| 5:e:154:SER:OG   | 5:e:418:VAL:O    | 2.38                     | 0.42              |
| 5:e:195:THR:HG23 | 5:e:196:VAL:HG13 | 2.00                     | 0.42              |
| 8:q:225:LYS:HE3  | 8:q:352:LEU:HD12 | 2.01                     | 0.42              |
| 4:D:41:ALA:HB1   | 4:D:91:LEU:HD11  | 2.02                     | 0.42              |
| 5:E:116:LEU:HD11 | 5:E:451:PHE:HD1  | 1.84                     | 0.42              |
| 5:E:201:ARG:O    | 5:E:414:ARG:NH1  | 2.52                     | 0.42              |
| 6:G:22:GLN:O     | 6:G:26:ILE:HG12  | 2.19                     | 0.42              |
| 7:H:410:GLY:O    | 7:H:414:MET:HG2  | 2.20                     | 0.42              |
| 8:Q:147:VAL:HG11 | 8:Q:407:ARG:HG2  | 2.01                     | 0.42              |
| 8:Q:152:LYS:NZ   | 8:Q:155:ARG:HB2  | 2.35                     | 0.42              |
| 1:z:117:ARG:HE   | 6:g:43:LYS:HD3   | 1.84                     | 0.42              |
| 2:a:45:LEU:CD1   | 6:g:523:SER:HB2  | 2.50                     | 0.42              |
| 2:a:45:LEU:HD12  | 6:g:523:SER:HB2  | 2.01                     | 0.42              |
| 2:a:380:ALA:HB3  | 2:a:384:MET:SD   | 2.60                     | 0.42              |
| 2:a:408:VAL:CG2  | 2:a:504:PHE:HB3  | 2.49                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:g:184:PHE:HB2  | 6:g:192:ILE:O    | 2.20                     | 0.42              |
| 7:h:181:LYS:HB2  | 7:h:181:LYS:HE3  | 1.80                     | 0.42              |
| 2:A:105:ASP:HA   | 2:A:108:VAL:HG12 | 2.01                     | 0.42              |
| 2:A:395:ALA:HA   | 2:A:398:VAL:HG22 | 2.01                     | 0.42              |
| 3:B:85:VAL:O     | 3:B:89:ARG:HG2   | 2.20                     | 0.42              |
| 3:B:304:PHE:HB3  | 3:B:309:VAL:O    | 2.19                     | 0.42              |
| 3:B:337:HIS:CD2  | 3:B:337:HIS:H    | 2.38                     | 0.42              |
| 3:B:516:ARG:HG2  | 5:E:58:ASP:H     | 1.85                     | 0.42              |
| 4:D:52:LEU:O     | 4:D:468:ASN:ND2  | 2.53                     | 0.42              |
| 5:E:253:CYS:HB2  | 5:E:345:PHE:CZ   | 2.45                     | 0.42              |
| 6:G:164:ILE:HD11 | 6:G:389:ASN:HD22 | 1.84                     | 0.42              |
| 6:G:398:ARG:HH12 | 6:G:402:LEU:HD12 | 1.85                     | 0.42              |
| 7:H:51:ASP:OD2   | 7:H:55:LYS:HB2   | 2.19                     | 0.42              |
| 8:Q:138:LYS:O    | 8:Q:141:GLU:HG3  | 2.19                     | 0.42              |
| 1:z:317:LYS:H    | 1:z:320:ASN:HD21 | 1.68                     | 0.42              |
| 1:Z:84:GLN:HE22  | 1:Z:511:ILE:CD1  | 2.32                     | 0.42              |
| 1:Z:407:VAL:HG22 | 1:Z:495:TRP:HB3  | 2.02                     | 0.42              |
| 2:a:232:ALA:O    | 2:a:348:ALA:N    | 2.50                     | 0.42              |
| 2:a:481:LYS:HE2  | 2:a:481:LYS:HB2  | 1.77                     | 0.42              |
| 4:d:42:LYS:HA    | 4:d:42:LYS:HD2   | 1.80                     | 0.42              |
| 4:d:146:GLU:HA   | 4:d:149:THR:HG22 | 2.01                     | 0.42              |
| 5:e:160:LYS:HD3  | 5:e:160:LYS:HA   | 1.85                     | 0.42              |
| 6:g:149:ASP:OD1  | 6:g:150:MET:N    | 2.51                     | 0.42              |
| 6:g:414:GLU:OE1  | 6:g:414:GLU:N    | 2.50                     | 0.42              |
| 8:q:164:LEU:HD21 | 8:q:399:PHE:HD1  | 1.85                     | 0.42              |
| 8:q:230:ASP:OD1  | 8:q:231:VAL:N    | 2.53                     | 0.42              |
| 2:A:185:ARG:H    | 2:A:185:ARG:HD3  | 1.84                     | 0.42              |
| 5:E:135:ASP:OD1  | 5:E:136:GLY:N    | 2.53                     | 0.42              |
| 5:E:212:GLU:HB2  | 5:E:385:ILE:O    | 2.20                     | 0.42              |
| 6:G:105:LEU:HD21 | 6:G:512:ALA:HA   | 2.02                     | 0.42              |
| 6:G:408:PRO:HB2  | 6:G:412:ALA:HB3  | 2.01                     | 0.42              |
| 8:Q:125:VAL:O    | 8:Q:129:ILE:HG12 | 2.19                     | 0.42              |
| 8:Q:334:PRO:HB2  | 8:Q:335:ARG:HD3  | 2.02                     | 0.42              |
| 1:z:144:ASP:O    | 1:z:148:LEU:HD23 | 2.19                     | 0.42              |
| 1:z:411:ALA:N    | 9:z:601:ADP:O2'  | 2.48                     | 0.42              |
| 3:b:196:LEU:HD21 | 3:b:398:ALA:HB2  | 2.01                     | 0.42              |
| 4:d:42:LYS:HD3   | 4:d:118:ASP:HB3  | 2.02                     | 0.42              |
| 5:e:422:GLY:HA3  | 5:e:501:MET:HE3  | 2.01                     | 0.42              |
| 7:h:250:LEU:HD13 | 7:h:278:LEU:HD22 | 2.01                     | 0.42              |
| 2:A:351:VAL:HA   | 2:A:363:LEU:O    | 2.19                     | 0.42              |
| 4:D:435:ARG:HA   | 4:D:435:ARG:HD3  | 1.89                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:G:196:LYS:HA   | 6:G:196:LYS:HD2  | 1.85                     | 0.42              |
| 7:H:20:PRO:HA    | 7:H:23:VAL:HG22  | 2.02                     | 0.42              |
| 7:H:156:GLU:O    | 7:H:160:MET:HG2  | 2.20                     | 0.42              |
| 7:H:398:ARG:HH11 | 7:H:495:PRO:HD3  | 1.85                     | 0.42              |
| 8:Q:501:TYR:HD2  | 8:Q:502:LEU:HD12 | 1.84                     | 0.42              |
| 1:z:46:MET:HE2   | 8:q:81:PRO:HB2   | 2.01                     | 0.41              |
| 1:Z:95:ASN:ND2   | 1:Z:507:SER:OG   | 2.49                     | 0.41              |
| 1:Z:346:HIS:HB3  | 1:Z:367:ASN:OD1  | 2.20                     | 0.41              |
| 3:b:198:ALA:O    | 3:b:370:ALA:HA   | 2.20                     | 0.41              |
| 3:b:519:ASN:HB3  | 5:e:59:LYS:HD2   | 2.00                     | 0.41              |
| 4:d:315:HIS:HA   | 4:d:318:ASN:HD21 | 1.84                     | 0.41              |
| 5:e:132:ARG:HA   | 5:e:135:ASP:OD2  | 2.20                     | 0.41              |
| 6:g:166:ARG:H    | 6:g:166:ARG:HD3  | 1.85                     | 0.41              |
| 7:h:180:ALA:O    | 7:h:184:VAL:HG13 | 2.20                     | 0.41              |
| 7:h:468:LEU:O    | 7:h:472:HIS:HB2  | 2.20                     | 0.41              |
| 7:h:526:ASN:HA   | 8:q:77:GLU:CD    | 2.45                     | 0.41              |
| 2:A:240:SER:HB2  | 6:G:338:ARG:NE   | 2.34                     | 0.41              |
| 5:E:417:ARG:HA   | 5:E:417:ARG:HD2  | 1.77                     | 0.41              |
| 6:G:195:LYS:HD3  | 6:G:395:GLN:HE21 | 1.86                     | 0.41              |
| 7:H:320:LYS:HA   | 7:H:320:LYS:HD3  | 1.85                     | 0.41              |
| 1:z:227:ASP:HB3  | 1:z:346:HIS:HE1  | 1.85                     | 0.41              |
| 1:z:318:ARG:HA   | 1:z:321:MET:HE3  | 2.02                     | 0.41              |
| 2:a:432:SER:OG   | 2:a:434:GLU:OE1  | 2.23                     | 0.41              |
| 4:d:449:TYR:HD2  | 5:E:471:ILE:HD11 | 1.85                     | 0.41              |
| 5:e:314:LEU:HA   | 5:e:317:ASN:HB2  | 2.01                     | 0.41              |
| 5:e:357:GLY:HA2  | 5:e:378:LYS:O    | 2.21                     | 0.41              |
| 6:g:184:PHE:CD1  | 6:g:369:LYS:HD3  | 2.54                     | 0.41              |
| 6:g:230:ARG:HA   | 6:g:309:THR:HG21 | 2.02                     | 0.41              |
| 7:h:277:ILE:HD13 | 7:h:277:ILE:HA   | 1.95                     | 0.41              |
| 8:q:319:TRP:HB3  | 8:q:323:ARG:HH12 | 1.85                     | 0.41              |
| 2:A:16:THR:HG22  | 2:A:18:ARG:H     | 1.84                     | 0.41              |
| 2:A:146:ASP:OD1  | 2:A:146:ASP:N    | 2.51                     | 0.41              |
| 2:A:146:ASP:HA   | 2:A:149:ILE:HG22 | 2.01                     | 0.41              |
| 2:A:287:LEU:HA   | 2:A:306:MET:SD   | 2.60                     | 0.41              |
| 2:A:388:MET:O    | 2:A:392:LEU:HG   | 2.20                     | 0.41              |
| 3:B:219:LEU:HD23 | 3:B:219:LEU:H    | 1.85                     | 0.41              |
| 3:B:222:LYS:HZ1  | 3:B:230:LYS:HD3  | 1.85                     | 0.41              |
| 4:D:523:THR:HA   | 4:D:526:VAL:HG12 | 2.01                     | 0.41              |
| 5:E:359:VAL:HG12 | 5:E:376:GLN:HG3  | 2.02                     | 0.41              |
| 6:G:296:SER:H    | 6:G:299:ALA:HB3  | 1.85                     | 0.41              |
| 7:H:135:LYS:NZ   | 7:H:419:TYR:HB3  | 2.35                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:H:230:LYS:O    | 7:H:348:PHE:HB3  | 2.20                     | 0.41              |
| 7:H:352:GLN:HB3  | 7:H:357:ARG:HG3  | 2.02                     | 0.41              |
| 8:Q:78:VAL:HG23  | 8:Q:84:LYS:HG2   | 2.02                     | 0.41              |
| 8:Q:165:ARG:HB2  | 8:Q:181:LYS:HE2  | 2.02                     | 0.41              |
| 2:a:107:LEU:HA   | 2:a:110:GLN:OE1  | 2.20                     | 0.41              |
| 2:a:506:PRO:HB2  | 2:a:509:VAL:HG23 | 2.02                     | 0.41              |
| 5:e:163:GLU:HB3  | 5:e:164:PRO:HD3  | 2.01                     | 0.41              |
| 5:e:456:GLU:HB3  | 5:e:474:MET:HE2  | 2.01                     | 0.41              |
| 5:e:456:GLU:O    | 5:e:459:PRO:HD2  | 2.20                     | 0.41              |
| 6:g:396:VAL:HA   | 6:g:399:ASN:ND2  | 2.35                     | 0.41              |
| 8:q:88:MET:HE2   | 8:q:88:MET:HB3   | 1.87                     | 0.41              |
| 3:B:244:MET:HE1  | 3:B:279:VAL:CG2  | 2.51                     | 0.41              |
| 4:D:141:LEU:HD21 | 4:D:520:THR:HG23 | 2.02                     | 0.41              |
| 4:D:240:ARG:HG3  | 4:D:363:GLU:HA   | 2.02                     | 0.41              |
| 5:E:58:ASP:OD1   | 5:E:59:LYS:N     | 2.53                     | 0.41              |
| 6:G:93:GLY:N     | 9:G:601:ADP:O1B  | 2.52                     | 0.41              |
| 6:G:129:LEU:HA   | 6:G:132:MET:HE3  | 2.01                     | 0.41              |
| 6:G:184:PHE:CD2  | 6:G:369:LYS:HD3  | 2.56                     | 0.41              |
| 6:G:217:VAL:HG21 | 6:G:322:ILE:HG13 | 2.02                     | 0.41              |
| 6:G:490:LYS:HA   | 6:G:495:TRP:CZ2  | 2.55                     | 0.41              |
| 7:H:360:PHE:HB3  | 7:H:362:THR:HG23 | 2.01                     | 0.41              |
| 8:Q:210:SER:O    | 8:Q:378:ARG:HG3  | 2.20                     | 0.41              |
| 8:Q:308:TYR:CD2  | 8:Q:310:ILE:HD11 | 2.54                     | 0.41              |
| 8:Q:315:LEU:HD12 | 8:Q:315:LEU:HA   | 1.94                     | 0.41              |
| 8:Q:356:GLY:HA3  | 8:Q:378:ARG:HH22 | 1.85                     | 0.41              |
| 1:Z:35:ARG:HG2   | 1:Z:36:THR:H     | 1.85                     | 0.41              |
| 1:Z:138:LYS:HD2  | 1:Z:406:CYS:SG   | 2.61                     | 0.41              |
| 1:Z:176:ILE:HG13 | 1:Z:398:VAL:HG11 | 2.03                     | 0.41              |
| 2:a:145:ARG:O    | 2:a:149:ILE:HG12 | 2.21                     | 0.41              |
| 2:a:233:LYS:HD2  | 2:a:282:GLY:O    | 2.20                     | 0.41              |
| 3:b:149:GLY:O    | 3:b:154:LYS:N    | 2.53                     | 0.41              |
| 4:d:484:HIS:NE2  | 4:d:489:LYS:O    | 2.53                     | 0.41              |
| 6:g:67:ARG:HG2   | 6:g:84:ARG:HH12  | 1.84                     | 0.41              |
| 7:h:226:TYR:HE1  | 7:h:318:VAL:HA   | 1.86                     | 0.41              |
| 8:q:397:ASN:OD1  | 8:q:398:THR:N    | 2.53                     | 0.41              |
| 3:B:176:LYS:HA   | 3:B:179:PHE:HD2  | 1.85                     | 0.41              |
| 3:B:316:ASP:O    | 3:B:320:VAL:HG23 | 2.21                     | 0.41              |
| 4:D:75:ALA:HB2   | 4:D:106:THR:HG21 | 2.03                     | 0.41              |
| 4:D:408:ALA:O    | 4:D:412:ILE:HG12 | 2.21                     | 0.41              |
| 5:E:89:LYS:O     | 5:E:92:VAL:HG22  | 2.20                     | 0.41              |
| 6:G:462:LEU:HD23 | 6:G:462:LEU:HA   | 1.83                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:G:490:LYS:HA   | 6:G:495:TRP:CH2  | 2.56                     | 0.41              |
| 7:H:135:LYS:HD3  | 7:H:419:TYR:HB3  | 2.02                     | 0.41              |
| 7:H:231:LYS:HD2  | 7:H:231:LYS:HA   | 1.75                     | 0.41              |
| 8:Q:169:MET:HG3  | 8:Q:174:GLY:HA2  | 2.02                     | 0.41              |
| 2:a:321:LYS:HE3  | 2:a:321:LYS:HB2  | 1.85                     | 0.41              |
| 2:a:394:ASP:OD1  | 2:a:395:ALA:N    | 2.53                     | 0.41              |
| 2:a:423:LEU:HB2  | 2:a:442:ALA:HB2  | 2.01                     | 0.41              |
| 3:b:158:ASP:OD1  | 3:b:159:LEU:N    | 2.52                     | 0.41              |
| 4:d:64:GLY:HA3   | 4:d:67:ASP:OD2   | 2.20                     | 0.41              |
| 4:d:152:SER:OG   | 4:d:421:LEU:O    | 2.38                     | 0.41              |
| 4:d:298:LEU:HD11 | 4:d:322:ILE:HD12 | 2.02                     | 0.41              |
| 5:e:182:HIS:CE1  | 5:e:183:ARG:HG3  | 2.56                     | 0.41              |
| 5:e:521:THR:O    | 5:e:525:ARG:HG3  | 2.19                     | 0.41              |
| 6:g:143:VAL:HG23 | 6:g:150:MET:SD   | 2.61                     | 0.41              |
| 6:g:303:LEU:HB3  | 6:g:308:ILE:O    | 2.21                     | 0.41              |
| 7:h:84:VAL:HG12  | 7:h:88:LYS:HD2   | 2.02                     | 0.41              |
| 7:h:120:LEU:HB3  | 7:h:125:ILE:HD11 | 2.02                     | 0.41              |
| 7:h:223:THR:H    | 7:h:226:TYR:CB   | 2.34                     | 0.41              |
| 2:A:174:ASP:HA   | 2:A:177:LEU:HG   | 2.03                     | 0.41              |
| 4:D:244:ALA:HB3  | 4:D:359:ALA:HB3  | 2.03                     | 0.41              |
| 4:D:326:LYS:HE2  | 4:D:326:LYS:HB2  | 1.96                     | 0.41              |
| 4:D:494:ASN:CG   | 4:D:497:LYS:HB2  | 2.46                     | 0.41              |
| 5:E:289:ILE:HD11 | 5:E:314:LEU:HD21 | 2.01                     | 0.41              |
| 6:G:155:ILE:HA   | 6:G:159:ILE:HB   | 2.02                     | 0.41              |
| 1:Z:407:VAL:CG2  | 1:Z:495:TRP:HB3  | 2.50                     | 0.41              |
| 2:a:196:ASN:OD1  | 2:a:196:ASN:N    | 2.54                     | 0.41              |
| 2:a:296:CYS:HB2  | 2:a:300:PHE:CZ   | 2.56                     | 0.41              |
| 2:a:479:GLU:OE2  | 2:a:480:ARG:HG2  | 2.20                     | 0.41              |
| 3:b:26:LEU:O     | 3:b:30:ILE:HG12  | 2.20                     | 0.41              |
| 4:d:339:THR:HG23 | 4:d:382:PRO:HA   | 2.02                     | 0.41              |
| 5:e:446:TYR:CZ   | 4:D:478:THR:HB   | 2.55                     | 0.41              |
| 6:g:129:LEU:HA   | 6:g:132:MET:HE3  | 2.02                     | 0.41              |
| 7:h:29:CYS:HA    | 7:h:32:ILE:HG22  | 2.02                     | 0.41              |
| 7:h:200:GLY:O    | 7:h:375:THR:HA   | 2.20                     | 0.41              |
| 7:h:387:GLU:HA   | 7:h:390:GLU:HG2  | 2.02                     | 0.41              |
| 7:h:470:ALA:HB2  | 2:A:435:GLN:NE2  | 2.35                     | 0.41              |
| 8:q:471:HIS:HE1  | 8:q:476:LYS:HA   | 1.81                     | 0.41              |
| 2:A:199:LYS:HA   | 2:A:377:LEU:HB2  | 2.03                     | 0.41              |
| 3:B:38:LEU:O     | 3:B:50:LYS:HE3   | 2.20                     | 0.41              |
| 6:G:155:ILE:O    | 6:G:160:THR:HG23 | 2.20                     | 0.41              |
| 6:G:216:GLY:O    | 6:G:372:THR:N    | 2.54                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:H:280:LYS:HD2  | 7:H:334:VAL:O    | 2.21                     | 0.41              |
| 8:Q:231:VAL:HG12 | 8:Q:311:MET:HE1  | 2.02                     | 0.41              |
| 1:z:277:LEU:O    | 1:z:281:VAL:HG22 | 2.19                     | 0.41              |
| 1:Z:141:ARG:HH12 | 1:Z:147:THR:HG21 | 1.86                     | 0.41              |
| 1:Z:275:ILE:HB   | 1:Z:279:ARG:HH11 | 1.86                     | 0.41              |
| 2:a:527:ILE:HG23 | 4:d:60:MET:HG2   | 2.01                     | 0.41              |
| 3:b:444:ARG:NH2  | 3:b:466:ARG:HE   | 2.18                     | 0.41              |
| 4:d:143:LYS:O    | 4:d:146:GLU:HG3  | 2.20                     | 0.41              |
| 5:e:412:LEU:HD23 | 5:e:412:LEU:HA   | 1.92                     | 0.41              |
| 6:g:37:ARG:NH1   | 6:g:452:GLN:OE1  | 2.54                     | 0.41              |
| 6:g:239:LEU:HB2  | 6:g:330:ILE:HB   | 2.02                     | 0.41              |
| 6:g:299:ALA:O    | 6:g:303:LEU:HG   | 2.21                     | 0.41              |
| 7:h:298:PRO:HG3  | 7:h:317:ARG:HH21 | 1.85                     | 0.41              |
| 7:h:329:ALA:O    | 7:h:368:CYS:HB3  | 2.21                     | 0.41              |
| 8:q:216:SER:H    | 8:q:376:VAL:HG23 | 1.86                     | 0.41              |
| 8:q:384:LEU:HD23 | 8:q:384:LEU:H    | 1.85                     | 0.41              |
| 2:A:19:SER:HA    | 2:A:22:VAL:HG22  | 2.02                     | 0.41              |
| 3:B:359:LEU:HD11 | 3:B:376:ARG:HH22 | 1.85                     | 0.41              |
| 4:D:133:ILE:HG23 | 4:D:450:CYS:SG   | 2.61                     | 0.41              |
| 4:D:474:ILE:O    | 4:D:478:THR:HG22 | 2.20                     | 0.41              |
| 5:E:147:HIS:CE1  | 5:E:432:ALA:HB2  | 2.55                     | 0.41              |
| 7:H:90:VAL:HG23  | 7:H:90:VAL:O     | 2.20                     | 0.41              |
| 7:H:287:LYS:HD3  | 7:H:288:VAL:HG23 | 2.03                     | 0.41              |
| 8:Q:276:MET:O    | 8:Q:280:VAL:HG13 | 2.20                     | 0.41              |
| 1:Z:228:ALA:HB1  | 1:Z:290:VAL:HG23 | 2.03                     | 0.41              |
| 2:a:400:LYS:O    | 2:a:404:GLU:HG2  | 2.20                     | 0.41              |
| 3:b:119:LYS:C    | 3:b:120:LYS:HG2  | 2.46                     | 0.41              |
| 3:b:199:ILE:O    | 3:b:322:ARG:NH2  | 2.53                     | 0.41              |
| 3:b:281:ARG:O    | 3:b:284:LYS:HG3  | 2.21                     | 0.41              |
| 6:g:311:ILE:HD12 | 6:g:311:ILE:HA   | 1.97                     | 0.41              |
| 7:h:241:ILE:HB   | 7:h:332:GLY:HA3  | 2.03                     | 0.41              |
| 2:A:137:ILE:HD12 | 2:A:410:PRO:HD3  | 2.02                     | 0.41              |
| 4:D:136:SER:HG   | 4:D:450:CYS:CB   | 2.33                     | 0.41              |
| 5:E:164:PRO:O    | 5:E:168:THR:HG23 | 2.20                     | 0.41              |
| 6:G:244:LEU:HD23 | 6:G:299:ALA:HB1  | 2.03                     | 0.41              |
| 6:G:451:ILE:HG12 | 6:G:479:VAL:HG21 | 2.03                     | 0.41              |
| 7:H:77:LYS:HB3   | 8:Q:63:LEU:HD22  | 2.02                     | 0.41              |
| 8:Q:245:PRO:HB3  | 8:Q:295:GLY:N    | 2.36                     | 0.41              |
| 1:z:277:LEU:HA   | 1:z:280:LYS:HE2  | 2.01                     | 0.41              |
| 1:Z:114:LEU:HD21 | 1:Z:435:LEU:HD22 | 2.02                     | 0.41              |
| 1:Z:477:VAL:HG21 | 1:Z:486:PRO:HB2  | 2.03                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:a:153:LYS:HE2  | 2:a:153:LYS:HA   | 2.03                     | 0.41              |
| 3:b:52:LEU:HB2   | 3:b:62:MET:HB2   | 2.03                     | 0.41              |
| 3:b:156:ARG:O    | 3:b:160:MET:HG2  | 2.20                     | 0.41              |
| 3:b:322:ARG:HA   | 3:b:325:LEU:HD23 | 2.03                     | 0.41              |
| 4:d:414:CYS:SG   | 4:d:513:LEU:HB3  | 2.60                     | 0.41              |
| 5:e:335:ILE:HD12 | 5:e:335:ILE:HA   | 1.89                     | 0.41              |
| 5:e:525:ARG:HB3  | 5:e:525:ARG:CZ   | 2.50                     | 0.41              |
| 6:g:133:ILE:HD12 | 6:g:502:LEU:HD22 | 2.02                     | 0.41              |
| 6:g:177:ASP:O    | 6:g:181:MET:HG3  | 2.21                     | 0.41              |
| 6:g:290:ILE:HD13 | 6:g:290:ILE:HA   | 1.96                     | 0.41              |
| 6:g:305:ARG:HE   | 6:g:305:ARG:HB2  | 1.67                     | 0.41              |
| 6:g:325:ALA:HB2  | 6:g:370:ALA:HB3  | 2.03                     | 0.41              |
| 6:g:473:ASN:OD1  | 6:g:474:CYS:N    | 2.53                     | 0.41              |
| 7:h:50:VAL:HA    | 7:h:56:ALA:HA    | 2.03                     | 0.41              |
| 7:h:243:LEU:N    | 7:h:335:GLN:OE1  | 2.54                     | 0.41              |
| 7:h:248:LEU:HD12 | 7:h:310:ARG:NH1  | 2.35                     | 0.41              |
| 7:h:283:GLU:O    | 7:h:287:HIS:HB3  | 2.21                     | 0.41              |
| 7:h:350:GLN:NE2  | 7:h:368:CYS:O    | 2.54                     | 0.41              |
| 7:h:428:SER:HB3  | 7:h:439:ILE:HG22 | 2.03                     | 0.41              |
| 8:q:138:LYS:O    | 8:q:141:GLU:HG3  | 2.21                     | 0.41              |
| 8:q:171:LYS:HE2  | 8:q:171:LYS:HA   | 2.03                     | 0.41              |
| 8:q:440:LYS:HA   | 8:q:440:LYS:HD3  | 1.88                     | 0.41              |
| 2:A:423:LEU:HB2  | 2:A:442:ALA:HB2  | 2.03                     | 0.41              |
| 3:B:141:LEU:HB3  | 3:B:497:PHE:CE1  | 2.49                     | 0.41              |
| 3:B:270:ALA:HB3  | 5:E:271:VAL:HG13 | 2.03                     | 0.41              |
| 4:D:466:ALA:HB1  | 4:D:476:THR:HG21 | 2.02                     | 0.41              |
| 5:E:176:LYS:C    | 5:E:178:VAL:H    | 2.28                     | 0.41              |
| 5:E:288:MET:O    | 5:E:288:MET:HE3  | 2.21                     | 0.41              |
| 6:G:40:LEU:HD23  | 6:G:40:LEU:H     | 1.85                     | 0.41              |
| 6:G:129:LEU:HB2  | 6:G:509:VAL:HG11 | 2.03                     | 0.41              |
| 6:G:195:LYS:NZ   | 6:G:391:GLN:HB3  | 2.13                     | 0.41              |
| 7:H:157:LYS:HA   | 7:H:160:MET:HE2  | 2.03                     | 0.41              |
| 7:H:420:LEU:HB3  | 7:H:439:ALA:HB2  | 2.02                     | 0.41              |
| 8:Q:281:LYS:HA   | 8:Q:281:LYS:HD3  | 1.78                     | 0.41              |
| 8:Q:383:ASN:OD1  | 8:Q:384:LEU:N    | 2.54                     | 0.41              |
| 1:z:348:GLY:HA3  | 1:z:365:LYS:HB3  | 2.03                     | 0.41              |
| 1:Z:240:GLU:CD   | 1:Z:265:LYS:HZ2  | 2.29                     | 0.41              |
| 1:Z:331:VAL:O    | 1:Z:343:CYS:HB2  | 2.21                     | 0.41              |
| 1:Z:340:SER:HA   | 1:Z:341:PRO:HD3  | 1.90                     | 0.41              |
| 2:a:391:SER:HA   | 2:a:394:ASP:OD2  | 2.21                     | 0.41              |
| 5:e:513:LYS:O    | 5:e:517:ILE:HG22 | 2.21                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:h:175:GLN:HG2  | 7:h:210:GLU:HG3  | 2.03                     | 0.41              |
| 8:q:114:LEU:HA   | 8:q:117:GLU:HG2  | 2.02                     | 0.41              |
| 8:q:239:ILE:HG22 | 8:q:345:GLY:O    | 2.21                     | 0.41              |
| 2:A:267:GLU:CD   | 2:A:270:ILE:HA   | 2.46                     | 0.41              |
| 2:A:398:VAL:O    | 2:A:402:VAL:HG23 | 2.21                     | 0.41              |
| 2:A:408:VAL:HG21 | 2:A:504:PHE:HB3  | 2.03                     | 0.41              |
| 3:B:38:LEU:HD22  | 3:B:74:ILE:HD11  | 2.02                     | 0.41              |
| 4:D:206:ARG:HG3  | 4:D:384:LYS:O    | 2.21                     | 0.41              |
| 4:D:315:HIS:HA   | 4:D:318:ASN:HB2  | 2.02                     | 0.41              |
| 5:E:123:LEU:HD22 | 5:E:446:TYR:HD2  | 1.86                     | 0.41              |
| 7:H:299:ALA:HB1  | 7:H:302:TYR:HB3  | 2.03                     | 0.41              |
| 7:H:385:THR:HA   | 7:H:388:SER:HG   | 1.86                     | 0.41              |
| 8:Q:152:LYS:HD2  | 8:Q:153:ASN:HB3  | 2.03                     | 0.41              |
| 8:Q:157:ILE:HG13 | 8:Q:185:GLN:OE1  | 2.21                     | 0.41              |
| 8:Q:224:LYS:HG2  | 8:Q:360:VAL:HG12 | 2.03                     | 0.41              |
| 1:z:394:GLY:O    | 1:z:398:VAL:HG12 | 2.21                     | 0.40              |
| 1:Z:501:LYS:HE2  | 1:Z:501:LYS:HB2  | 1.76                     | 0.40              |
| 2:a:213:GLY:HA2  | 2:a:372:SER:O    | 2.22                     | 0.40              |
| 6:g:187:ASN:H    | 6:g:192:ILE:CD1  | 2.34                     | 0.40              |
| 8:q:85:MET:HE3   | 8:q:85:MET:HA    | 2.03                     | 0.40              |
| 2:A:169:ALA:O    | 2:A:173:VAL:HG22 | 2.21                     | 0.40              |
| 3:B:219:LEU:O    | 3:B:220:LEU:HD12 | 2.20                     | 0.40              |
| 3:B:412:CYS:SG   | 3:B:474:THR:OG1  | 2.68                     | 0.40              |
| 4:D:241:VAL:HB   | 4:D:296:ASN:ND2  | 2.36                     | 0.40              |
| 8:Q:78:VAL:O     | 8:Q:84:LYS:NZ    | 2.41                     | 0.40              |
| 1:z:230:ILE:N    | 1:z:345:GLY:O    | 2.35                     | 0.40              |
| 1:z:238:GLU:HB2  | 1:z:297:ILE:HA   | 2.02                     | 0.40              |
| 3:b:476:ALA:HA   | 3:b:487:ASP:HA   | 2.02                     | 0.40              |
| 5:e:27:ARG:HH11  | 5:e:28:LEU:H     | 1.69                     | 0.40              |
| 5:e:136:GLY:HA2  | 5:e:444:GLU:HG2  | 2.04                     | 0.40              |
| 6:g:145:ILE:HG13 | 6:g:146:SER:N    | 2.36                     | 0.40              |
| 8:q:102:ASN:O    | 8:q:106:VAL:HG12 | 2.21                     | 0.40              |
| 8:q:110:ALA:O    | 8:q:114:LEU:HG   | 2.21                     | 0.40              |
| 8:q:386:ASP:O    | 8:q:389:GLU:HG2  | 2.21                     | 0.40              |
| 2:A:68:GLU:OE1   | 2:A:68:GLU:N     | 2.54                     | 0.40              |
| 2:A:200:ALA:N    | 2:A:377:LEU:O    | 2.54                     | 0.40              |
| 5:E:236:HIS:CD2  | 5:E:237:PRO:HD2  | 2.56                     | 0.40              |
| 5:E:249:ALA:O    | 5:E:301:ILE:HG12 | 2.20                     | 0.40              |
| 1:z:127:LYS:O    | 1:z:131:LEU:HD23 | 2.21                     | 0.40              |
| 1:z:181:LYS:HE2  | 1:z:182:GLN:NE2  | 2.36                     | 0.40              |
| 1:z:237:LEU:HA   | 1:z:267:ILE:HG23 | 2.02                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:e:249:ALA:HB3  | 5:e:300:ALA:HB2  | 2.02                     | 0.40              |
| 5:e:305:GLY:HA2  | 5:e:324:TRP:HE1  | 1.86                     | 0.40              |
| 6:g:237:ILE:HA   | 6:g:288:VAL:HG23 | 2.02                     | 0.40              |
| 7:h:335:GLN:HE21 | 7:h:345:VAL:HG12 | 1.85                     | 0.40              |
| 2:A:235:ALA:HB3  | 2:A:286:ILE:HG13 | 2.03                     | 0.40              |
| 7:H:297:ASP:O    | 7:H:300:THR:OG1  | 2.27                     | 0.40              |
| 7:H:394:MET:HE3  | 7:H:398:ARG:HE   | 1.86                     | 0.40              |
| 1:z:81:ALA:O     | 1:z:84:GLN:HG3   | 2.22                     | 0.40              |
| 1:z:275:ILE:HG12 | 1:z:279:ARG:NH2  | 2.37                     | 0.40              |
| 1:Z:263:GLU:HG3  | 1:Z:264:ARG:NH2  | 2.35                     | 0.40              |
| 2:a:310:ARG:HH21 | 2:a:312:LEU:HA   | 1.85                     | 0.40              |
| 7:h:207:GLY:HA3  | 7:h:379:ARG:HG2  | 2.03                     | 0.40              |
| 7:h:376:PHE:HD2  | 7:h:378:LEU:HD12 | 1.85                     | 0.40              |
| 2:A:129:VAL:HG11 | 2:A:515:LYS:HE3  | 2.02                     | 0.40              |
| 2:A:235:ALA:HB3  | 2:A:286:ILE:HA   | 2.03                     | 0.40              |
| 2:A:267:GLU:OE1  | 2:A:273:GLU:N    | 2.49                     | 0.40              |
| 3:B:156:ARG:HE   | 3:B:159:LEU:HD12 | 1.86                     | 0.40              |
| 4:D:209:LYS:NZ   | 4:D:332:ASP:OD1  | 2.54                     | 0.40              |
| 6:G:28:ALA:HA    | 6:G:31:THR:HG22  | 2.03                     | 0.40              |
| 1:z:20:LEU:HD11  | 1:z:516:LEU:HD23 | 2.04                     | 0.40              |
| 1:z:228:ALA:O    | 1:z:346:HIS:ND1  | 2.55                     | 0.40              |
| 1:z:230:ILE:HG13 | 1:z:290:VAL:HB   | 2.04                     | 0.40              |
| 1:Z:262:ALA:O    | 1:Z:266:PHE:HB3  | 2.22                     | 0.40              |
| 2:a:166:ASP:N    | 2:a:166:ASP:OD1  | 2.54                     | 0.40              |
| 2:a:392:LEU:HD23 | 2:a:392:LEU:HA   | 1.93                     | 0.40              |
| 3:b:460:ASP:OD1  | 3:b:461:LEU:N    | 2.54                     | 0.40              |
| 4:d:109:VAL:HG23 | 4:d:522:ALA:HB2  | 2.02                     | 0.40              |
| 4:d:123:LEU:HA   | 4:d:126:LYS:HB2  | 2.03                     | 0.40              |
| 6:g:97:VAL:HG13  | 6:g:504:THR:HG22 | 2.03                     | 0.40              |
| 6:g:471:GLN:NE2  | 6:g:472:GLU:OE2  | 2.48                     | 0.40              |
| 2:A:202:GLY:N    | 2:A:379:GLY:O    | 2.54                     | 0.40              |
| 2:A:241:LEU:HB2  | 2:A:293:ASP:HB2  | 2.03                     | 0.40              |
| 3:B:116:LEU:HA   | 3:B:119:LYS:HD2  | 2.04                     | 0.40              |
| 3:B:239:ILE:HA   | 3:B:291:ILE:O    | 2.21                     | 0.40              |
| 3:B:521:ILE:HD11 | 5:E:61:MET:HE1   | 2.03                     | 0.40              |
| 5:E:90:LEU:HD11  | 5:E:526:MET:HE1  | 2.04                     | 0.40              |
| 5:E:181:CYS:SG   | 5:E:219:LEU:HB2  | 2.62                     | 0.40              |
| 6:G:352:LYS:O    | 6:G:359:PHE:HB2  | 2.21                     | 0.40              |
| 6:G:424:LYS:HE3  | 6:G:424:LYS:HB2  | 1.86                     | 0.40              |
| 7:H:402:ASN:OD1  | 7:H:403:ASP:N    | 2.54                     | 0.40              |
| 8:Q:168:ILE:HD11 | 8:Q:395:GLY:HA3  | 2.04                     | 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   | Z     | 506/508 (100%)  | 459 (91%)  | 44 (9%)  | 3 (1%)   | 22          | 50  |
| 1   | z     | 506/508 (100%)  | 455 (90%)  | 50 (10%) | 1 (0%)   | 44          | 71  |
| 2   | A     | 488/536 (91%)   | 460 (94%)  | 28 (6%)  | 0        | 100         | 100 |
| 2   | a     | 484/536 (90%)   | 455 (94%)  | 29 (6%)  | 0        | 100         | 100 |
| 3   | B     | 488/526 (93%)   | 457 (94%)  | 31 (6%)  | 0        | 100         | 100 |
| 3   | b     | 474/526 (90%)   | 454 (96%)  | 20 (4%)  | 0        | 100         | 100 |
| 4   | D     | 483/521 (93%)   | 450 (93%)  | 32 (7%)  | 1 (0%)   | 44          | 71  |
| 4   | d     | 485/521 (93%)   | 456 (94%)  | 29 (6%)  | 0        | 100         | 100 |
| 5   | E     | 499/540 (92%)   | 466 (93%)  | 33 (7%)  | 0        | 100         | 100 |
| 5   | e     | 501/540 (93%)   | 465 (93%)  | 36 (7%)  | 0        | 100         | 100 |
| 6   | G     | 481/528 (91%)   | 453 (94%)  | 28 (6%)  | 0        | 100         | 100 |
| 6   | g     | 473/528 (90%)   | 443 (94%)  | 30 (6%)  | 0        | 100         | 100 |
| 7   | H     | 495/528 (94%)   | 473 (96%)  | 22 (4%)  | 0        | 100         | 100 |
| 7   | h     | 496/528 (94%)   | 456 (92%)  | 40 (8%)  | 0        | 100         | 100 |
| 8   | Q     | 479/538 (89%)   | 449 (94%)  | 30 (6%)  | 0        | 100         | 100 |
| 8   | q     | 479/538 (89%)   | 447 (93%)  | 31 (6%)  | 1 (0%)   | 44          | 71  |
| All | All   | 7817/8450 (92%) | 7298 (93%) | 513 (7%) | 6 (0%)   | 50          | 77  |

All (6) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | Z     | 67  | MET  |
| 4   | D     | 509 | VAL  |
| 1   | z     | 413 | ALA  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | Z     | 70  | GLN  |
| 8   | q     | 338 | PRO  |
| 1   | Z     | 311 | VAL  |

### 5.3.2 Protein sidechains ⓘ

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

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

| Mol | Chain | Analysed        | Rotameric   | Outliers | Percentiles |     |
|-----|-------|-----------------|-------------|----------|-------------|-----|
| 1   | Z     | 426/426 (100%)  | 426 (100%)  | 0        | 100         | 100 |
| 1   | z     | 426/426 (100%)  | 426 (100%)  | 0        | 100         | 100 |
| 2   | A     | 409/447 (92%)   | 409 (100%)  | 0        | 100         | 100 |
| 2   | a     | 405/447 (91%)   | 405 (100%)  | 0        | 100         | 100 |
| 3   | B     | 391/418 (94%)   | 391 (100%)  | 0        | 100         | 100 |
| 3   | b     | 380/418 (91%)   | 380 (100%)  | 0        | 100         | 100 |
| 4   | D     | 413/443 (93%)   | 413 (100%)  | 0        | 100         | 100 |
| 4   | d     | 415/443 (94%)   | 415 (100%)  | 0        | 100         | 100 |
| 5   | E     | 422/455 (93%)   | 422 (100%)  | 0        | 100         | 100 |
| 5   | e     | 424/455 (93%)   | 424 (100%)  | 0        | 100         | 100 |
| 6   | G     | 416/457 (91%)   | 416 (100%)  | 0        | 100         | 100 |
| 6   | g     | 409/457 (90%)   | 409 (100%)  | 0        | 100         | 100 |
| 7   | H     | 408/435 (94%)   | 408 (100%)  | 0        | 100         | 100 |
| 7   | h     | 409/435 (94%)   | 409 (100%)  | 0        | 100         | 100 |
| 8   | Q     | 402/442 (91%)   | 402 (100%)  | 0        | 100         | 100 |
| 8   | q     | 402/442 (91%)   | 402 (100%)  | 0        | 100         | 100 |
| All | All   | 6557/7046 (93%) | 6557 (100%) | 0        | 100         | 100 |

There are no protein residues with a non-rotameric sidechain to report.

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

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | z     | 61  | ASN  |
| 1   | z     | 95  | ASN  |
| 1   | z     | 400 | ASN  |
| 1   | z     | 497 | ASN  |
| 1   | Z     | 84  | GLN  |
| 1   | Z     | 95  | ASN  |
| 1   | Z     | 182 | GLN  |
| 1   | Z     | 425 | HIS  |
| 1   | Z     | 497 | ASN  |
| 2   | a     | 82  | GLN  |
| 2   | a     | 103 | ASN  |
| 2   | a     | 135 | ASN  |
| 2   | a     | 471 | HIS  |
| 2   | a     | 472 | ASN  |
| 3   | b     | 178 | HIS  |
| 3   | b     | 292 | ASN  |
| 3   | b     | 473 | ASN  |
| 4   | d     | 165 | ASN  |
| 4   | d     | 231 | GLN  |
| 4   | d     | 289 | GLN  |
| 4   | d     | 347 | HIS  |
| 4   | d     | 368 | ASN  |
| 5   | e     | 86  | GLN  |
| 5   | e     | 290 | GLN  |
| 5   | e     | 416 | ASN  |
| 5   | e     | 445 | GLN  |
| 5   | e     | 481 | GLN  |
| 6   | g     | 389 | ASN  |
| 6   | g     | 399 | ASN  |
| 7   | h     | 134 | GLN  |
| 7   | h     | 155 | GLN  |
| 7   | h     | 286 | HIS  |
| 7   | h     | 435 | GLN  |
| 7   | h     | 485 | ASN  |
| 8   | q     | 53  | ASN  |
| 8   | q     | 274 | ASN  |
| 8   | q     | 306 | ASN  |
| 2   | A     | 353 | GLN  |
| 2   | A     | 472 | ASN  |
| 3   | B     | 337 | HIS  |
| 3   | B     | 502 | GLN  |
| 4   | D     | 165 | ASN  |
| 4   | D     | 189 | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5   | E     | 311 | ASN  |
| 5   | E     | 416 | ASN  |
| 6   | G     | 22  | GLN  |
| 6   | G     | 156 | ASN  |
| 6   | G     | 301 | HIS  |
| 6   | G     | 503 | GLN  |
| 7   | H     | 21  | GLN  |
| 7   | H     | 151 | GLN  |
| 7   | H     | 301 | GLN  |
| 7   | H     | 481 | ASN  |
| 8   | Q     | 32  | ASN  |
| 8   | Q     | 274 | ASN  |
| 8   | Q     | 397 | ASN  |
| 8   | Q     | 475 | ASN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

16 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res  | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|------|------|--------------|------|----------|-------------|------|----------|
|     |      |       |      |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 9   | ADP  | Z     | 601  | -    | 24,29,29     | 0.88 | 0        | 29,45,45    | 1.23 | 2 (6%)   |
| 9   | ADP  | E     | 601  | -    | 24,29,29     | 0.84 | 0        | 29,45,45    | 1.31 | 3 (10%)  |
| 9   | ADP  | q     | 5000 | -    | 24,29,29     | 0.87 | 0        | 29,45,45    | 1.23 | 2 (6%)   |
| 9   | ADP  | e     | 601  | -    | 24,29,29     | 0.87 | 0        | 29,45,45    | 1.20 | 2 (6%)   |
| 9   | ADP  | h     | 601  | -    | 24,29,29     | 0.85 | 0        | 29,45,45    | 1.17 | 2 (6%)   |
| 9   | ADP  | A     | 601  | -    | 24,29,29     | 0.85 | 0        | 29,45,45    | 1.37 | 4 (13%)  |
| 9   | ADP  | B     | 601  | -    | 24,29,29     | 0.87 | 0        | 29,45,45    | 1.19 | 2 (6%)   |
| 9   | ADP  | Q     | 5000 | -    | 24,29,29     | 0.86 | 0        | 29,45,45    | 1.44 | 4 (13%)  |
| 9   | ADP  | D     | 601  | -    | 24,29,29     | 0.83 | 0        | 29,45,45    | 1.26 | 2 (6%)   |
| 9   | ADP  | b     | 601  | -    | 24,29,29     | 0.86 | 0        | 29,45,45    | 1.17 | 2 (6%)   |
| 9   | ADP  | H     | 601  | -    | 24,29,29     | 0.82 | 0        | 29,45,45    | 1.31 | 4 (13%)  |
| 9   | ADP  | g     | 601  | -    | 24,29,29     | 0.85 | 0        | 29,45,45    | 1.23 | 2 (6%)   |
| 9   | ADP  | d     | 601  | -    | 24,29,29     | 0.89 | 0        | 29,45,45    | 1.27 | 3 (10%)  |
| 9   | ADP  | G     | 601  | -    | 24,29,29     | 0.82 | 0        | 29,45,45    | 1.28 | 2 (6%)   |
| 9   | ADP  | z     | 601  | -    | 24,29,29     | 0.88 | 0        | 29,45,45    | 1.20 | 2 (6%)   |
| 9   | ADP  | a     | 601  | -    | 24,29,29     | 0.89 | 0        | 29,45,45    | 1.28 | 3 (10%)  |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '–' means no outliers of that kind were identified.

| Mol | Type | Chain | Res  | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|------|------|---------|------------|---------|
| 9   | ADP  | Z     | 601  | -    | -       | 4/12/32/32 | 0/3/3/3 |
| 9   | ADP  | E     | 601  | -    | -       | 3/12/32/32 | 0/3/3/3 |
| 9   | ADP  | q     | 5000 | -    | -       | 1/12/32/32 | 0/3/3/3 |
| 9   | ADP  | e     | 601  | -    | -       | 2/12/32/32 | 0/3/3/3 |
| 9   | ADP  | h     | 601  | -    | -       | 2/12/32/32 | 0/3/3/3 |
| 9   | ADP  | A     | 601  | -    | -       | 4/12/32/32 | 0/3/3/3 |
| 9   | ADP  | B     | 601  | -    | -       | 3/12/32/32 | 0/3/3/3 |
| 9   | ADP  | Q     | 5000 | -    | -       | 3/12/32/32 | 0/3/3/3 |
| 9   | ADP  | D     | 601  | -    | -       | 3/12/32/32 | 0/3/3/3 |
| 9   | ADP  | b     | 601  | -    | -       | 4/12/32/32 | 0/3/3/3 |
| 9   | ADP  | H     | 601  | -    | -       | 1/12/32/32 | 0/3/3/3 |
| 9   | ADP  | g     | 601  | -    | -       | 4/12/32/32 | 0/3/3/3 |
| 9   | ADP  | d     | 601  | -    | -       | 1/12/32/32 | 0/3/3/3 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|-----|------|---------|------------|---------|
| 9   | ADP  | G     | 601 | -    | -       | 5/12/32/32 | 0/3/3/3 |
| 9   | ADP  | z     | 601 | -    | -       | 3/12/32/32 | 0/3/3/3 |
| 9   | ADP  | a     | 601 | -    | -       | 3/12/32/32 | 0/3/3/3 |

There are no bond length outliers.

All (41) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 9   | A     | 601  | ADP  | N3-C2-N1    | -3.78 | 123.54      | 128.67   |
| 9   | a     | 601  | ADP  | N3-C2-N1    | -3.75 | 123.59      | 128.67   |
| 9   | H     | 601  | ADP  | N3-C2-N1    | -3.71 | 123.63      | 128.67   |
| 9   | G     | 601  | ADP  | N3-C2-N1    | -3.70 | 123.64      | 128.67   |
| 9   | d     | 601  | ADP  | N3-C2-N1    | -3.70 | 123.65      | 128.67   |
| 9   | b     | 601  | ADP  | N3-C2-N1    | -3.68 | 123.68      | 128.67   |
| 9   | e     | 601  | ADP  | N3-C2-N1    | -3.67 | 123.69      | 128.67   |
| 9   | q     | 5000 | ADP  | N3-C2-N1    | -3.65 | 123.72      | 128.67   |
| 9   | E     | 601  | ADP  | N3-C2-N1    | -3.64 | 123.73      | 128.67   |
| 9   | B     | 601  | ADP  | N3-C2-N1    | -3.62 | 123.76      | 128.67   |
| 9   | h     | 601  | ADP  | N3-C2-N1    | -3.61 | 123.77      | 128.67   |
| 9   | g     | 601  | ADP  | N3-C2-N1    | -3.58 | 123.81      | 128.67   |
| 9   | Q     | 5000 | ADP  | N3-C2-N1    | -3.57 | 123.83      | 128.67   |
| 9   | z     | 601  | ADP  | N3-C2-N1    | -3.56 | 123.84      | 128.67   |
| 9   | D     | 601  | ADP  | N3-C2-N1    | -3.53 | 123.88      | 128.67   |
| 9   | Z     | 601  | ADP  | N3-C2-N1    | -3.40 | 124.05      | 128.67   |
| 9   | Q     | 5000 | ADP  | C4'-O4'-C1' | -3.17 | 107.02      | 109.92   |
| 9   | Q     | 5000 | ADP  | O4'-C1'-N9  | 3.17  | 112.95      | 108.75   |
| 9   | Q     | 5000 | ADP  | C4-C5-N7    | -2.78 | 106.39      | 109.34   |
| 9   | A     | 601  | ADP  | O4'-C1'-N9  | 2.77  | 112.42      | 108.75   |
| 9   | E     | 601  | ADP  | O4'-C1'-N9  | 2.67  | 112.28      | 108.75   |
| 9   | a     | 601  | ADP  | O4'-C1'-N9  | 2.63  | 112.23      | 108.75   |
| 9   | d     | 601  | ADP  | C4-C5-N7    | -2.63 | 106.56      | 109.34   |
| 9   | a     | 601  | ADP  | C4-C5-N7    | -2.62 | 106.57      | 109.34   |
| 9   | q     | 5000 | ADP  | C4-C5-N7    | -2.61 | 106.58      | 109.34   |
| 9   | A     | 601  | ADP  | C4-C5-N7    | -2.61 | 106.58      | 109.34   |
| 9   | D     | 601  | ADP  | C4-C5-N7    | -2.61 | 106.58      | 109.34   |
| 9   | g     | 601  | ADP  | C4-C5-N7    | -2.60 | 106.59      | 109.34   |
| 9   | H     | 601  | ADP  | C4-C5-N7    | -2.59 | 106.60      | 109.34   |
| 9   | G     | 601  | ADP  | C4-C5-N7    | -2.58 | 106.61      | 109.34   |
| 9   | Z     | 601  | ADP  | C4-C5-N7    | -2.56 | 106.63      | 109.34   |
| 9   | E     | 601  | ADP  | C4-C5-N7    | -2.56 | 106.64      | 109.34   |
| 9   | B     | 601  | ADP  | C4-C5-N7    | -2.56 | 106.64      | 109.34   |

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| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 9   | e     | 601 | ADP  | C4-C5-N7    | -2.53 | 106.66      | 109.34   |
| 9   | h     | 601 | ADP  | C4-C5-N7    | -2.52 | 106.68      | 109.34   |
| 9   | z     | 601 | ADP  | C4-C5-N7    | -2.51 | 106.69      | 109.34   |
| 9   | b     | 601 | ADP  | C4-C5-N7    | -2.51 | 106.69      | 109.34   |
| 9   | d     | 601 | ADP  | O4'-C1'-N9  | 2.29  | 111.78      | 108.75   |
| 9   | A     | 601 | ADP  | C4'-O4'-C1' | -2.24 | 107.87      | 109.92   |
| 9   | H     | 601 | ADP  | O4'-C1'-N9  | 2.12  | 111.55      | 108.75   |
| 9   | H     | 601 | ADP  | C4'-O4'-C1' | -2.00 | 108.09      | 109.92   |

There are no chirality outliers.

All (46) torsion outliers are listed below:

| Mol | Chain | Res  | Type | Atoms           |
|-----|-------|------|------|-----------------|
| 9   | z     | 601  | ADP  | PA-O3A-PB-O3B   |
| 9   | Z     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | Z     | 601  | ADP  | C5'-O5'-PA-O3A  |
| 9   | g     | 601  | ADP  | O4'-C4'-C5'-O5' |
| 9   | A     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | A     | 601  | ADP  | C5'-O5'-PA-O2A  |
| 9   | A     | 601  | ADP  | C5'-O5'-PA-O3A  |
| 9   | B     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | B     | 601  | ADP  | C5'-O5'-PA-O2A  |
| 9   | B     | 601  | ADP  | C5'-O5'-PA-O3A  |
| 9   | D     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | D     | 601  | ADP  | C5'-O5'-PA-O2A  |
| 9   | D     | 601  | ADP  | C5'-O5'-PA-O3A  |
| 9   | E     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | E     | 601  | ADP  | C5'-O5'-PA-O2A  |
| 9   | E     | 601  | ADP  | C5'-O5'-PA-O3A  |
| 9   | G     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | G     | 601  | ADP  | C5'-O5'-PA-O3A  |
| 9   | a     | 601  | ADP  | O4'-C4'-C5'-O5' |
| 9   | g     | 601  | ADP  | C3'-C4'-C5'-O5' |
| 9   | Q     | 5000 | ADP  | C3'-C4'-C5'-O5' |
| 9   | a     | 601  | ADP  | C3'-C4'-C5'-O5' |
| 9   | Q     | 5000 | ADP  | O4'-C4'-C5'-O5' |
| 9   | d     | 601  | ADP  | PB-O3A-PA-O5'   |
| 9   | G     | 601  | ADP  | C3'-C4'-C5'-O5' |
| 9   | z     | 601  | ADP  | PA-O3A-PB-O2B   |
| 9   | b     | 601  | ADP  | PB-O3A-PA-O1A   |
| 9   | G     | 601  | ADP  | O4'-C4'-C5'-O5' |
| 9   | Z     | 601  | ADP  | C5'-O5'-PA-O2A  |

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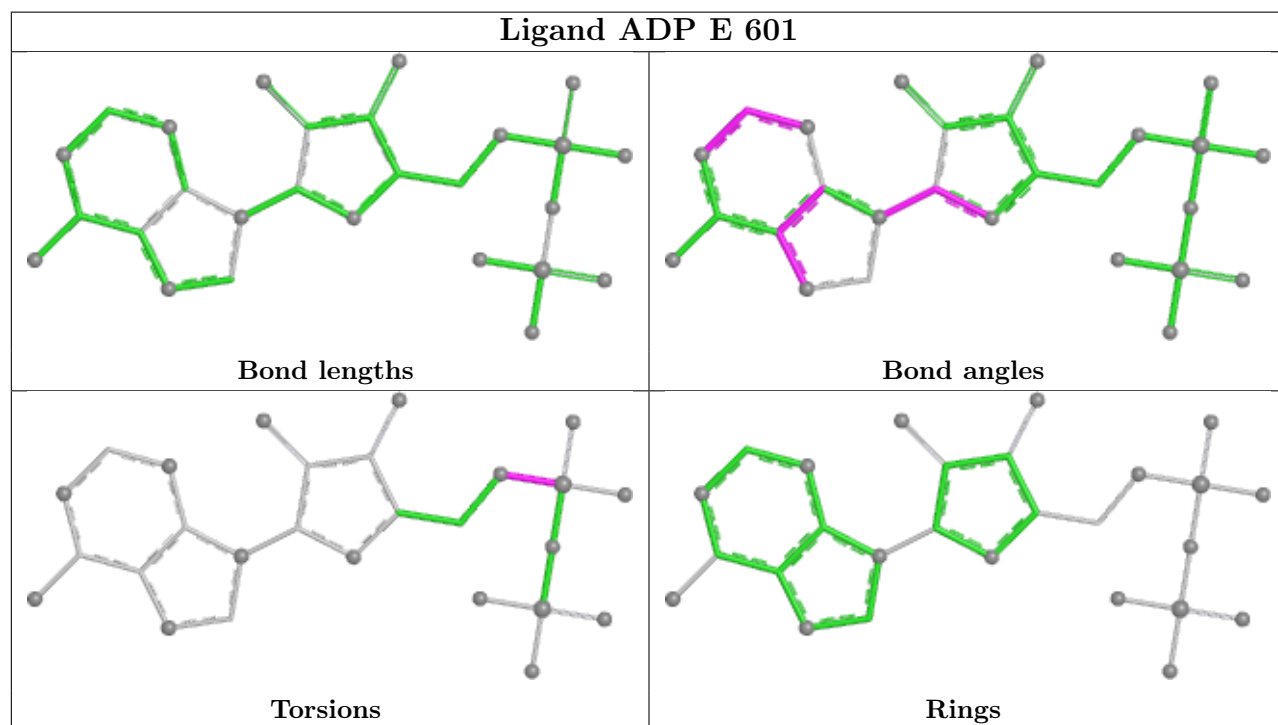
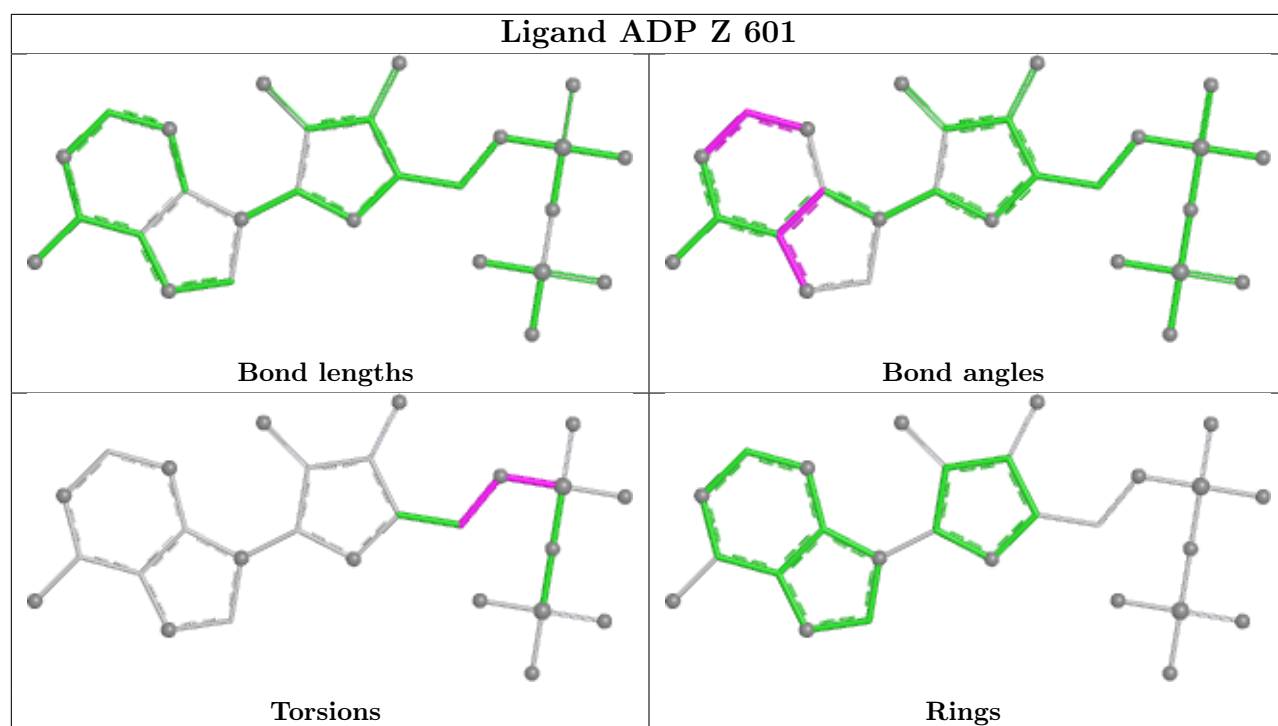
| Mol | Chain | Res  | Type | Atoms           |
|-----|-------|------|------|-----------------|
| 9   | b     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | q     | 5000 | ADP  | C5'-O5'-PA-O1A  |
| 9   | G     | 601  | ADP  | C5'-O5'-PA-O2A  |
| 9   | H     | 601  | ADP  | C5'-O5'-PA-O1A  |
| 9   | g     | 601  | ADP  | C4'-C5'-O5'-PA  |
| 9   | e     | 601  | ADP  | PB-O3A-PA-O2A   |
| 9   | b     | 601  | ADP  | C3'-C4'-C5'-O5' |
| 9   | Q     | 5000 | ADP  | C4'-C5'-O5'-PA  |
| 9   | e     | 601  | ADP  | PB-O3A-PA-O1A   |
| 9   | h     | 601  | ADP  | PB-O3A-PA-O1A   |
| 9   | g     | 601  | ADP  | PB-O3A-PA-O5'   |
| 9   | b     | 601  | ADP  | O4'-C4'-C5'-O5' |
| 9   | z     | 601  | ADP  | PA-O3A-PB-O1B   |
| 9   | Z     | 601  | ADP  | C4'-C5'-O5'-PA  |
| 9   | A     | 601  | ADP  | C4'-C5'-O5'-PA  |
| 9   | h     | 601  | ADP  | PB-O3A-PA-O2A   |
| 9   | a     | 601  | ADP  | PB-O3A-PA-O2A   |

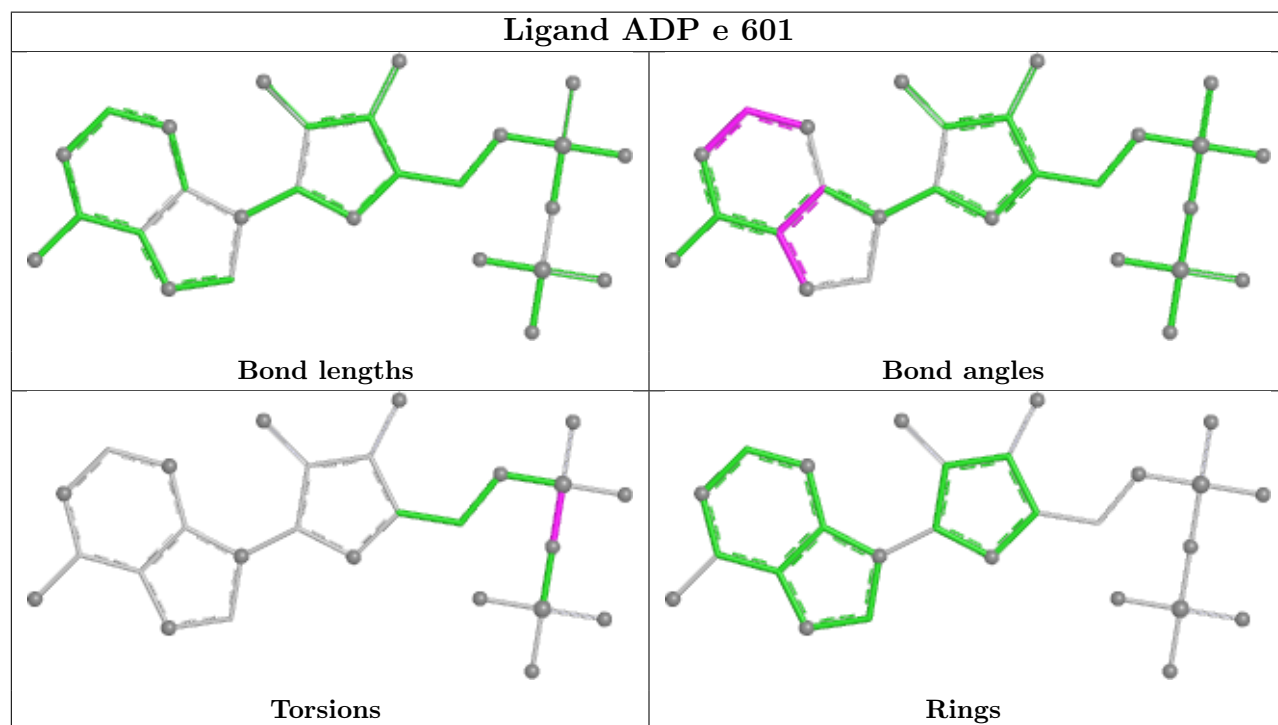
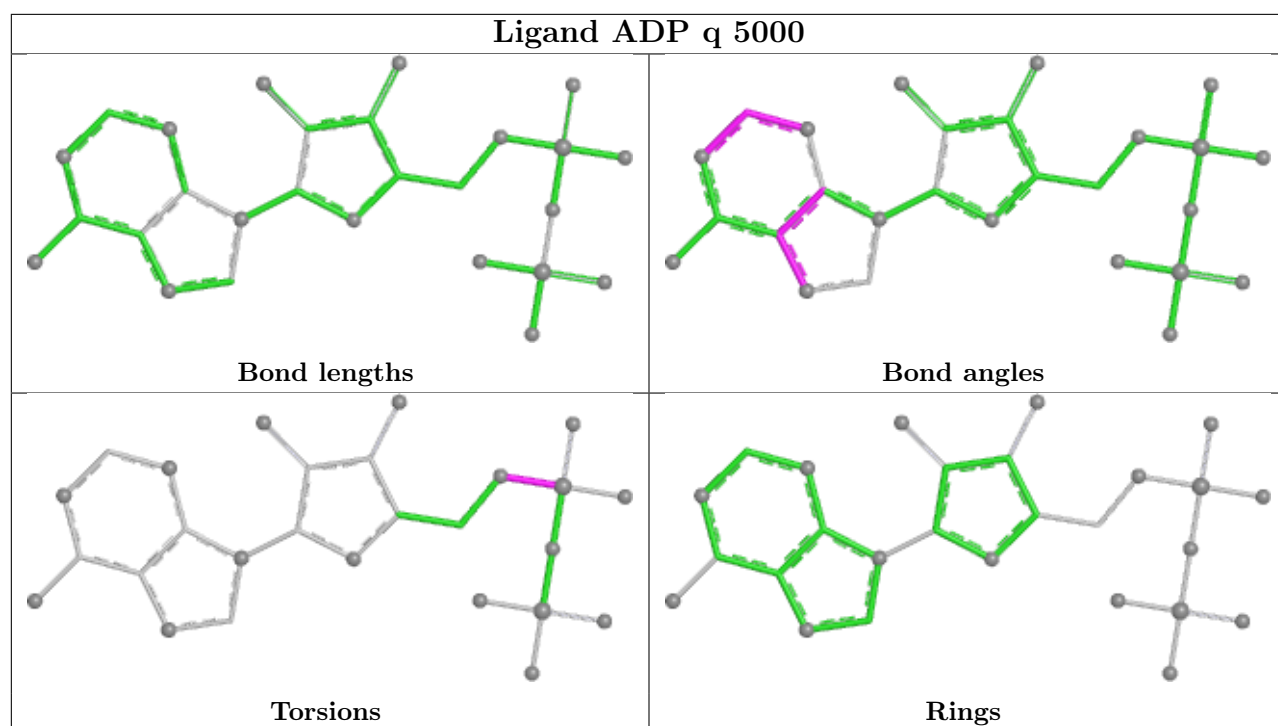
There are no ring outliers.

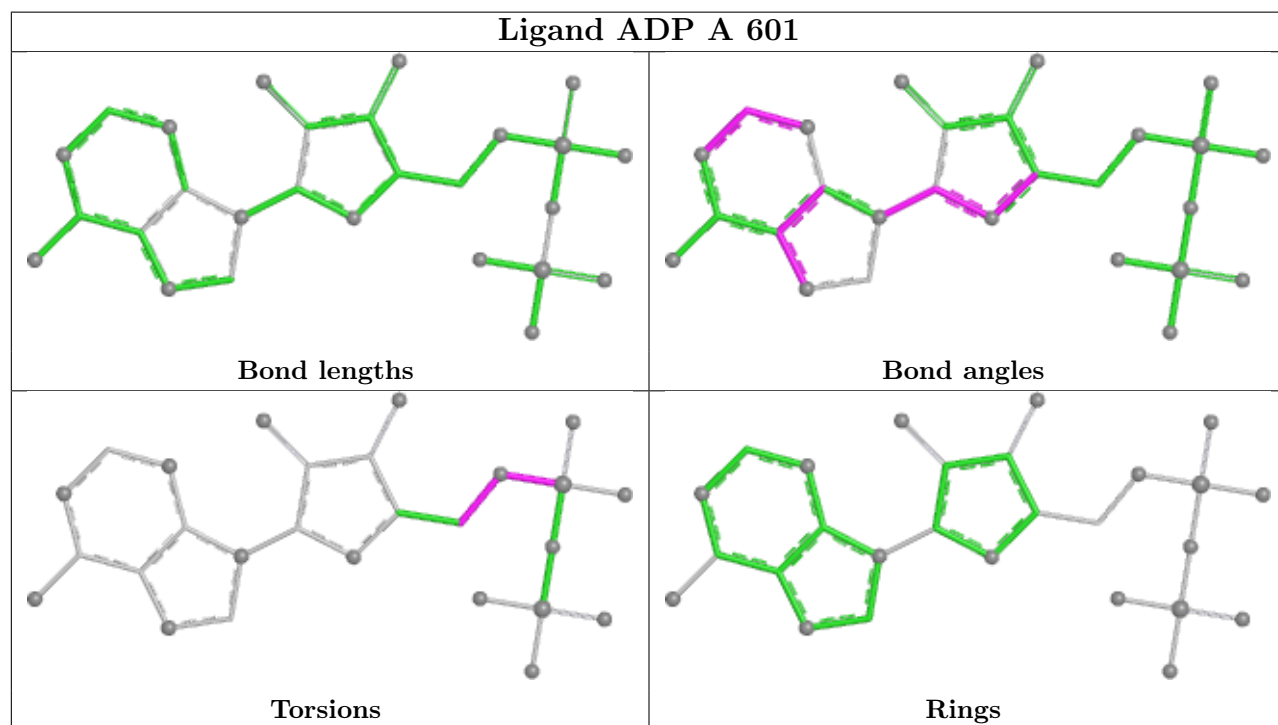
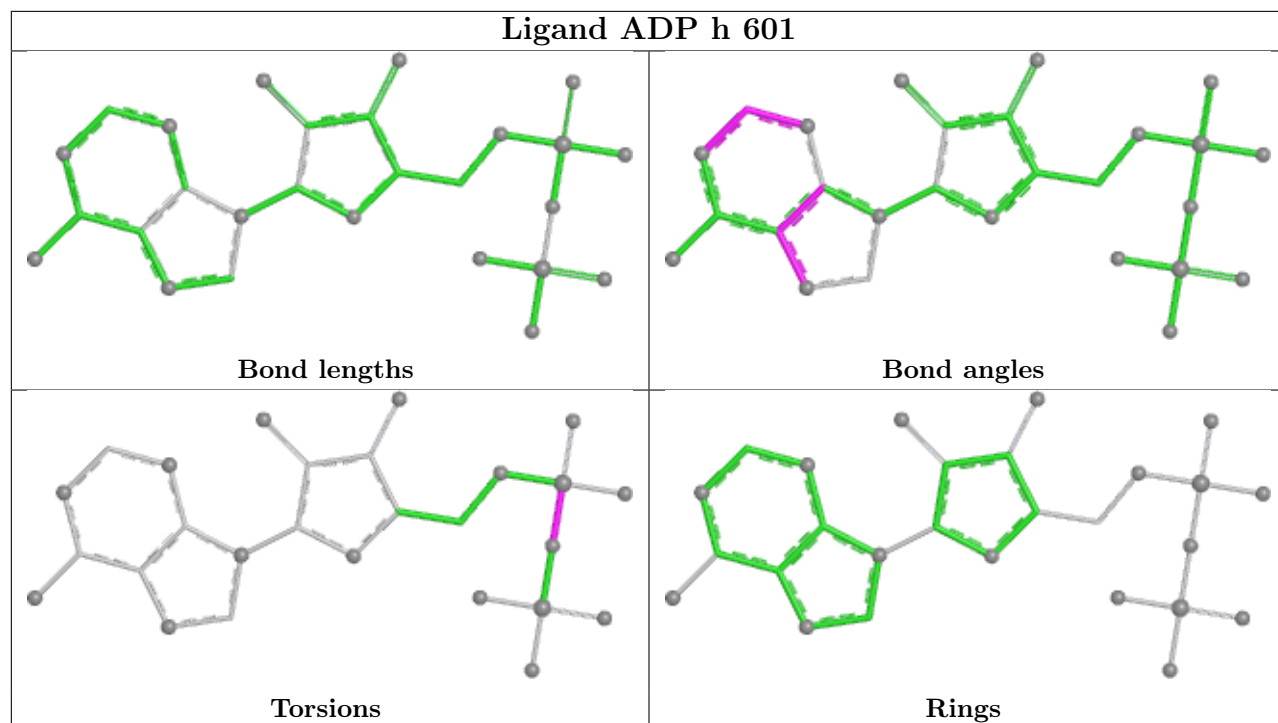
7 monomers are involved in 16 short contacts:

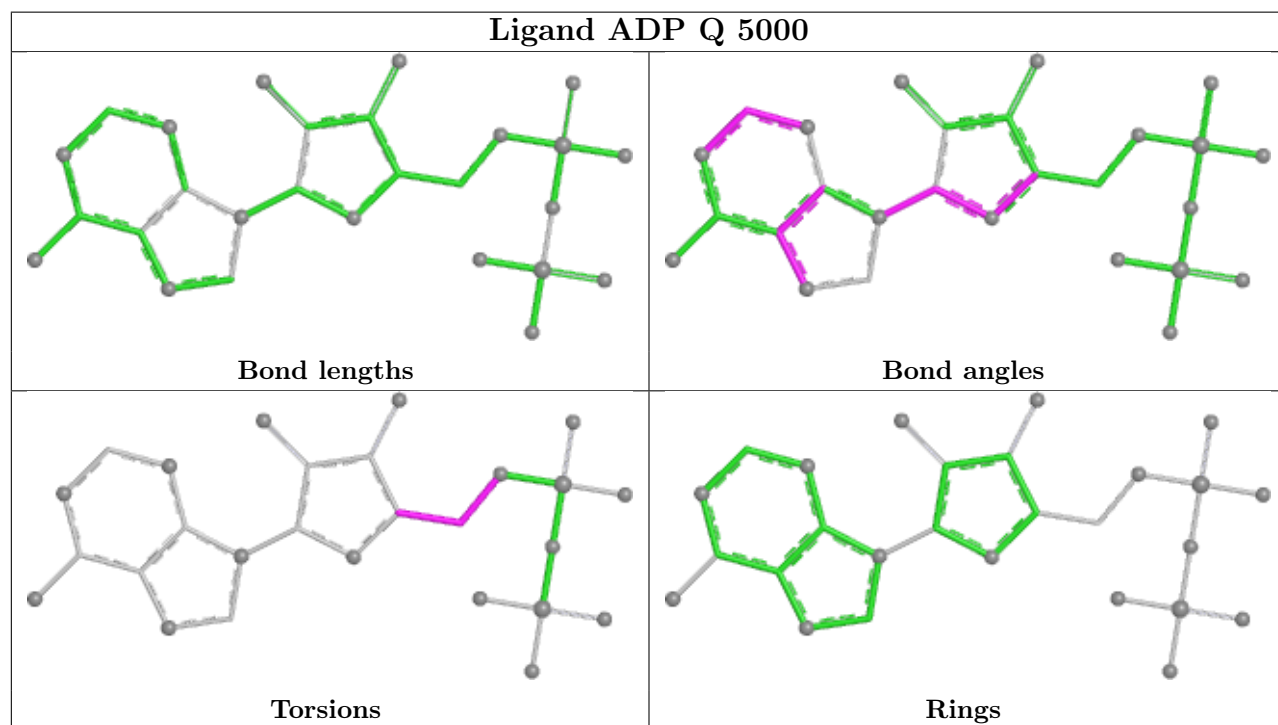
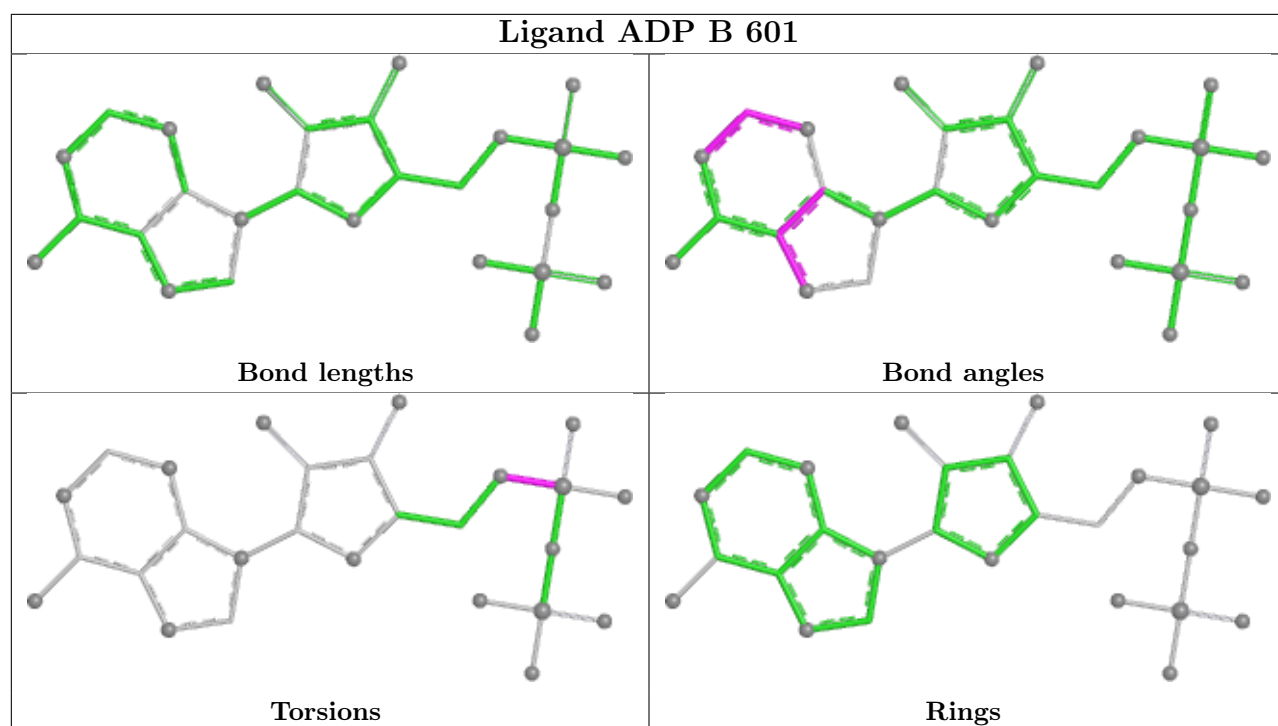
| Mol | Chain | Res  | Type | Clashes | Symm-Clashes |
|-----|-------|------|------|---------|--------------|
| 9   | q     | 5000 | ADP  | 4       | 0            |
| 9   | Q     | 5000 | ADP  | 4       | 0            |
| 9   | b     | 601  | ADP  | 1       | 0            |
| 9   | g     | 601  | ADP  | 2       | 0            |
| 9   | G     | 601  | ADP  | 1       | 0            |
| 9   | z     | 601  | ADP  | 2       | 0            |
| 9   | a     | 601  | ADP  | 2       | 0            |

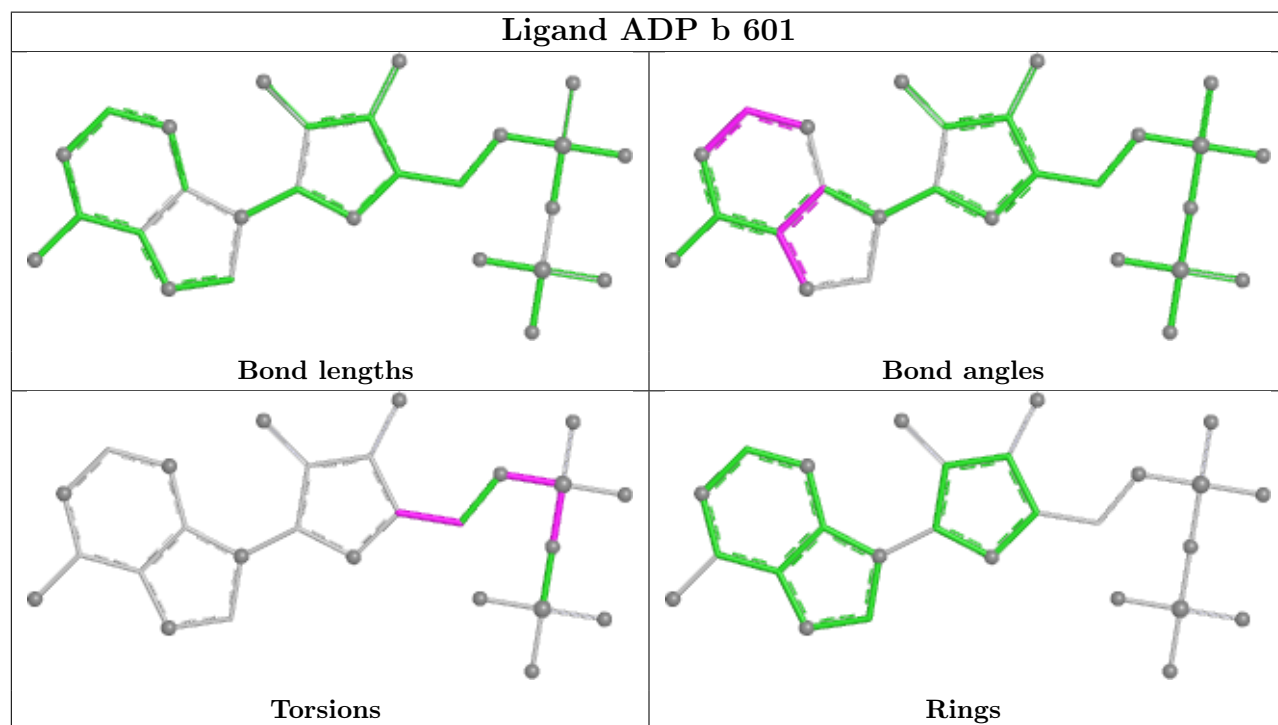
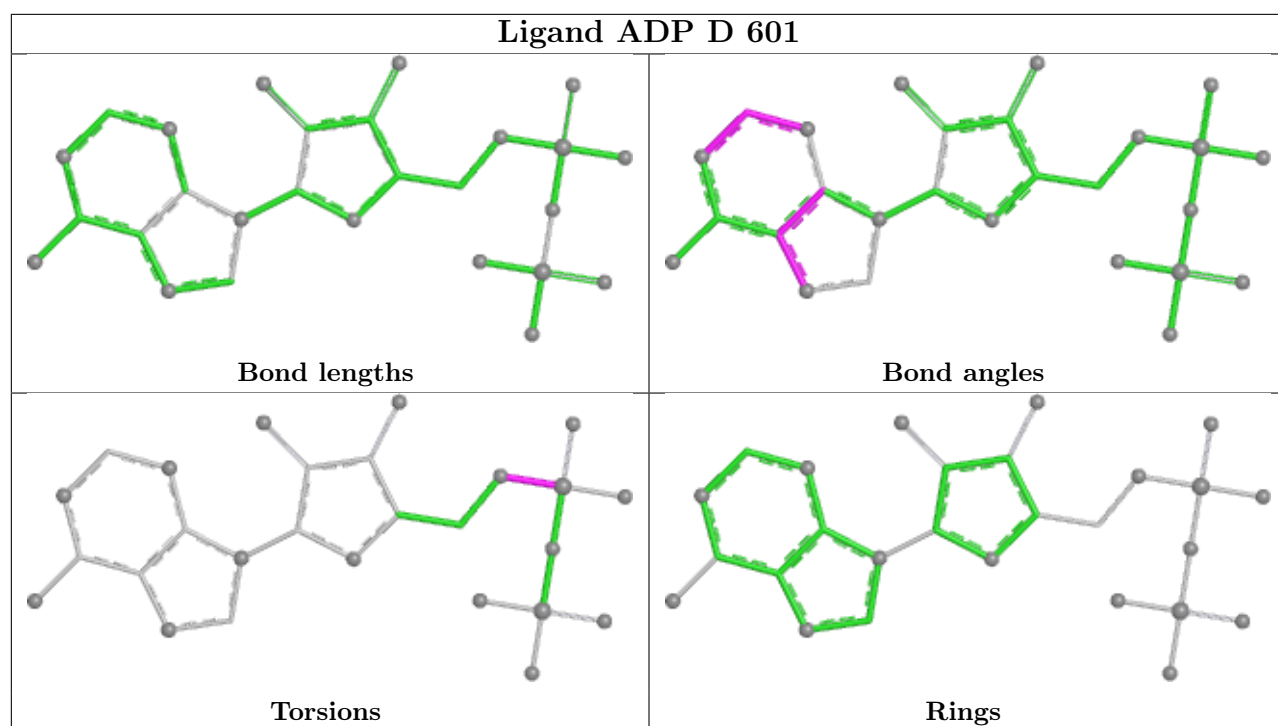
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

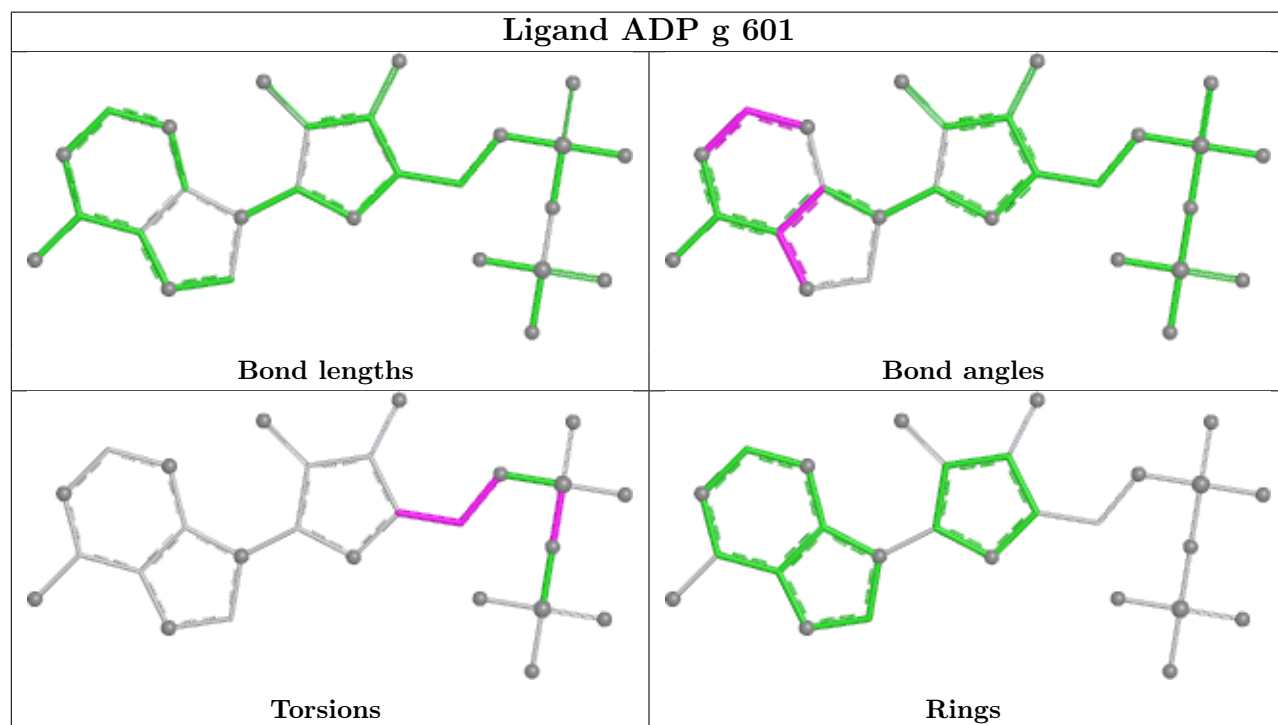
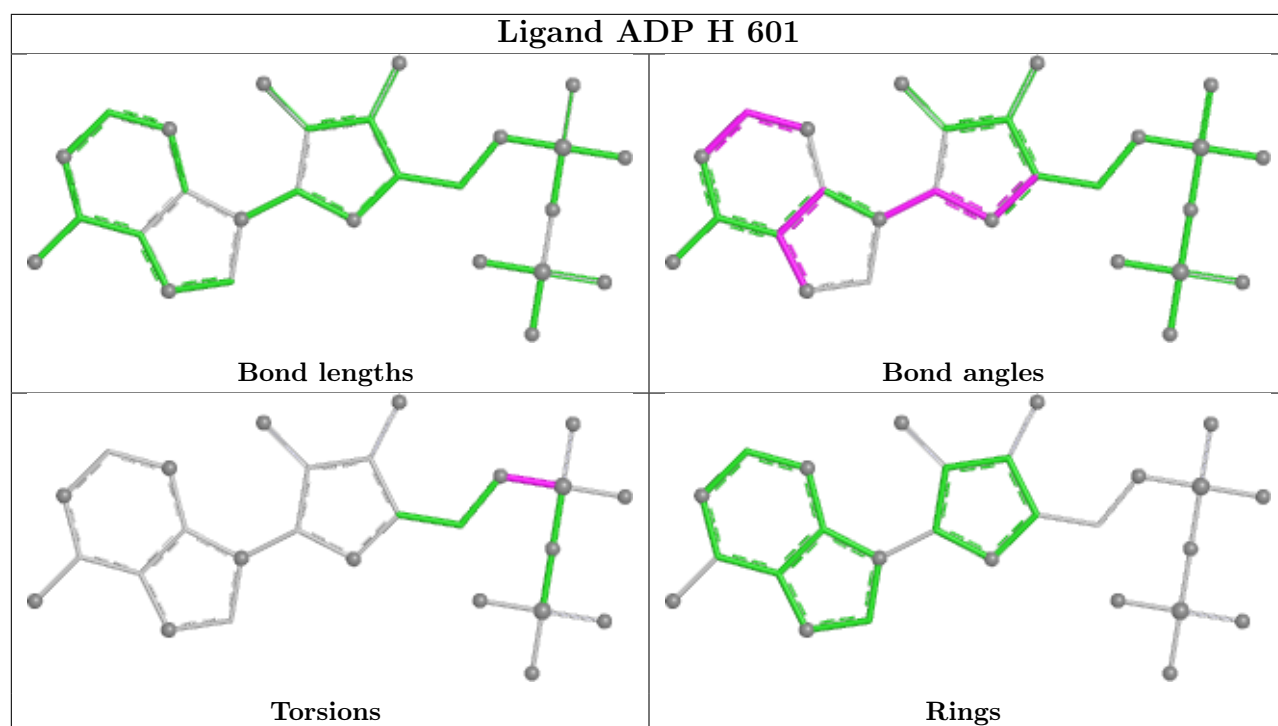


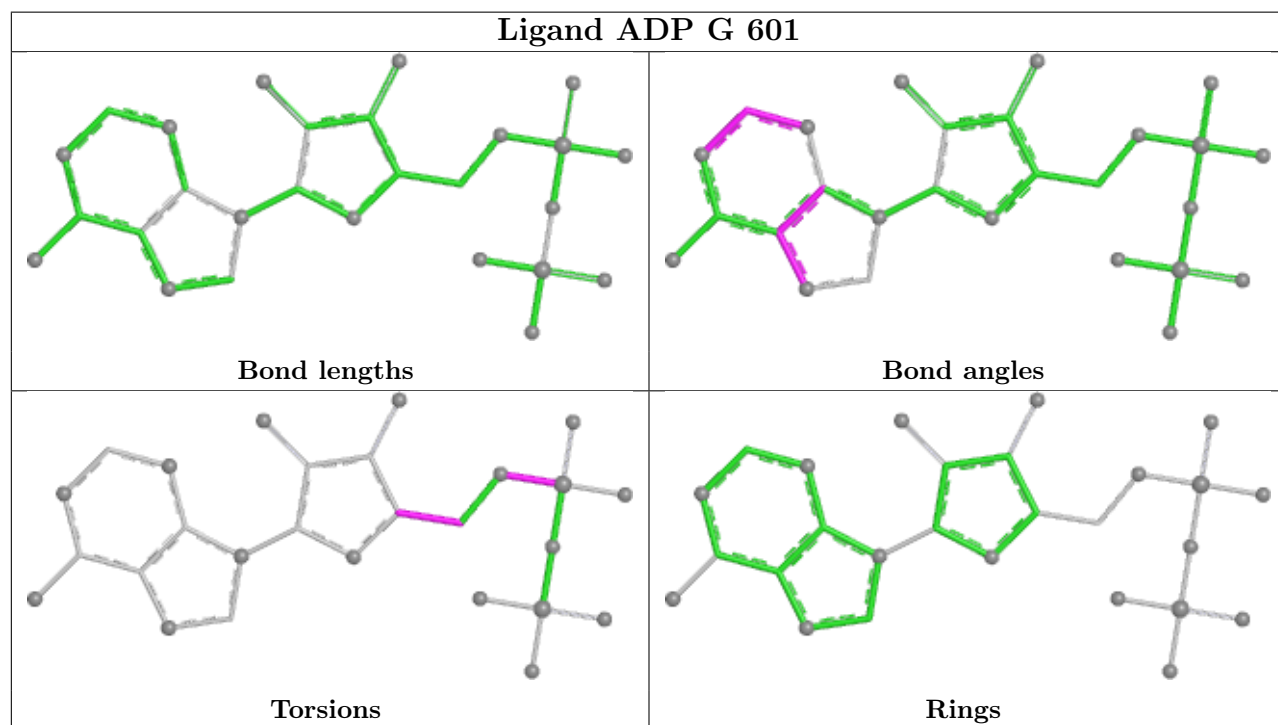
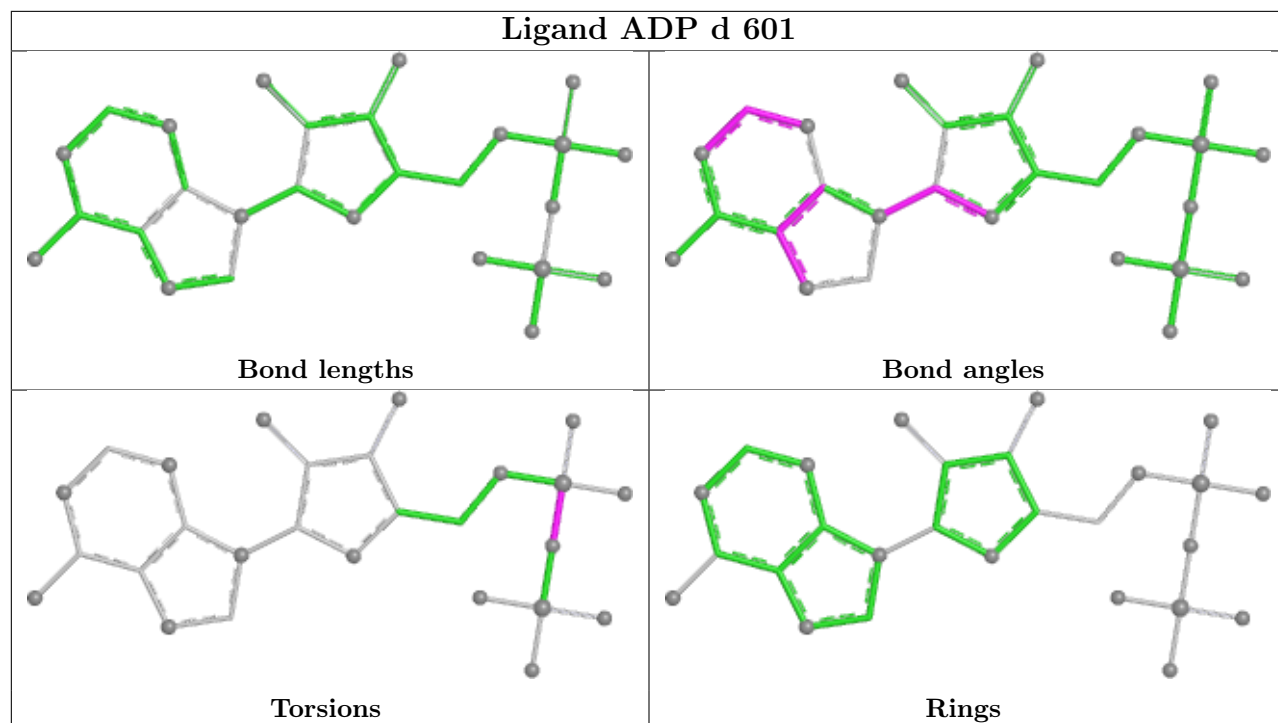


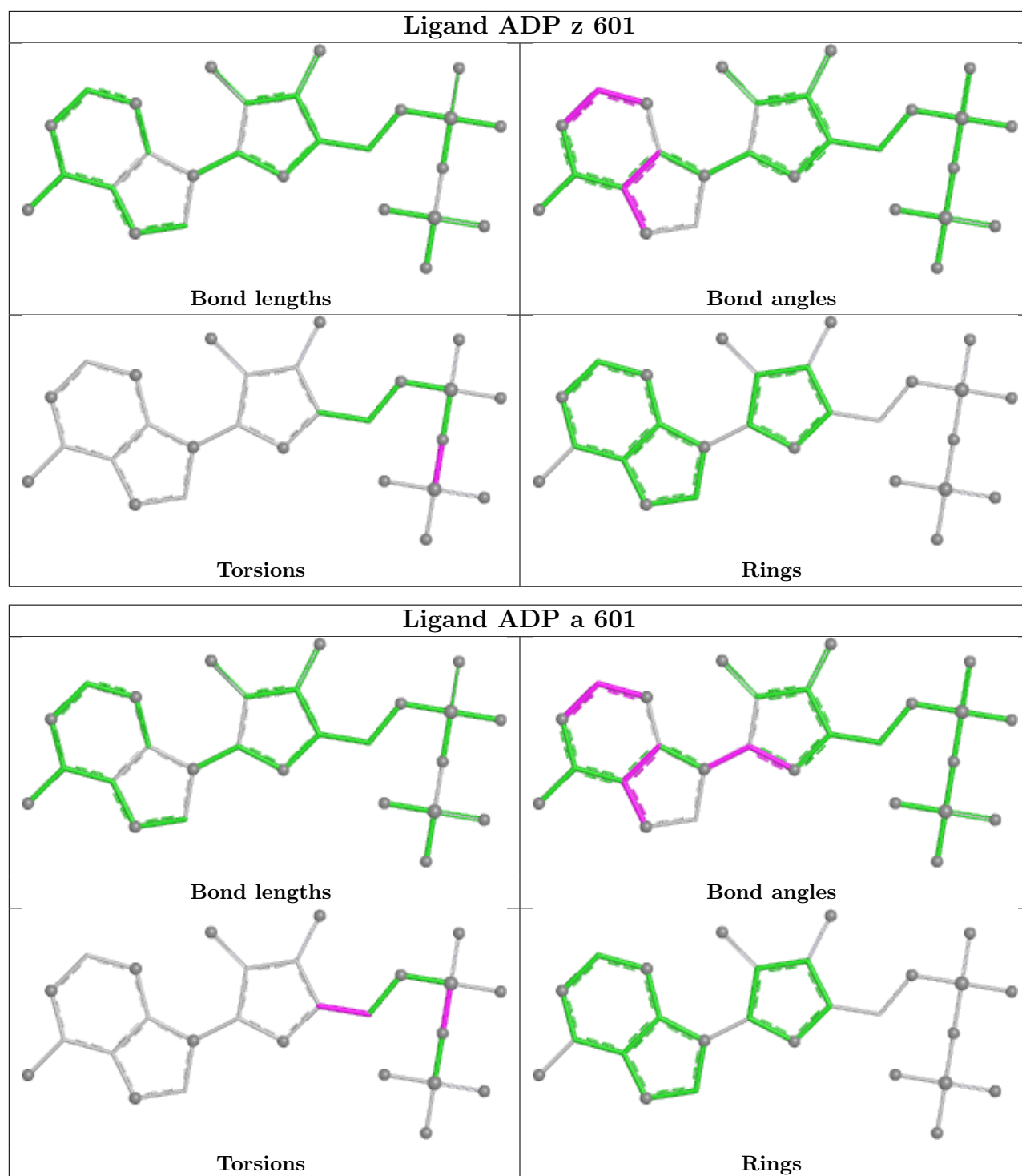












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

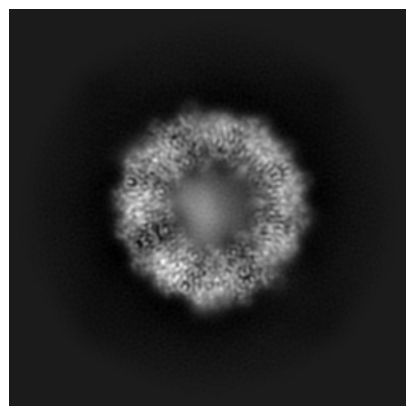
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-40439. These allow visual inspection of the internal detail of the map and identification of artifacts.

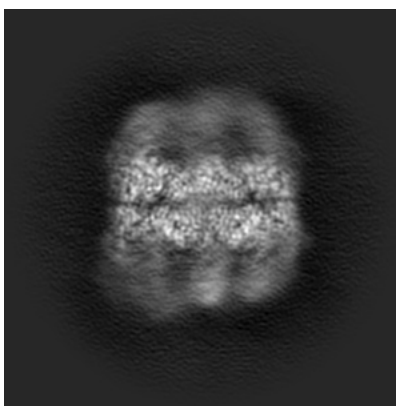
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

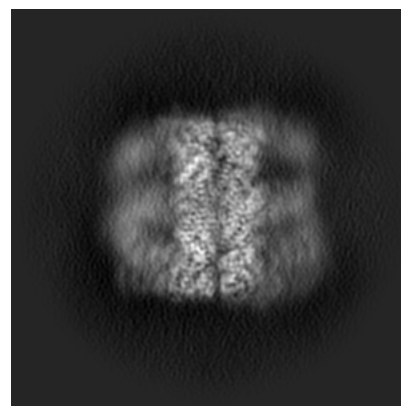
#### 6.1.1 Primary map



X

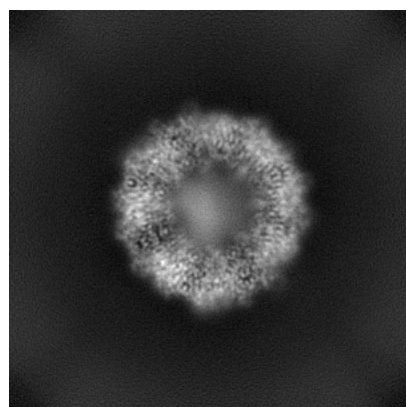


Y

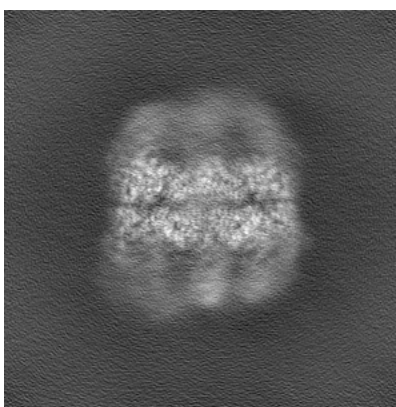


Z

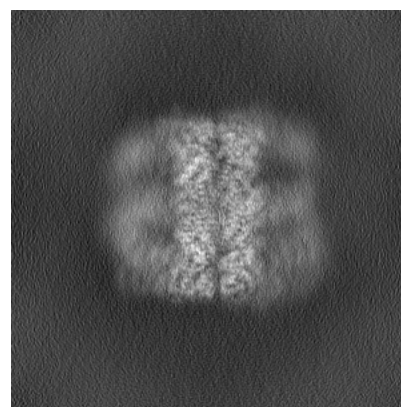
#### 6.1.2 Raw map



X



Y

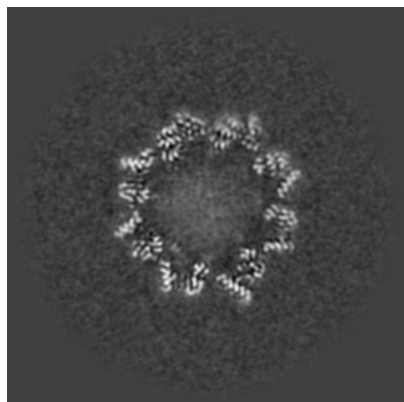


Z

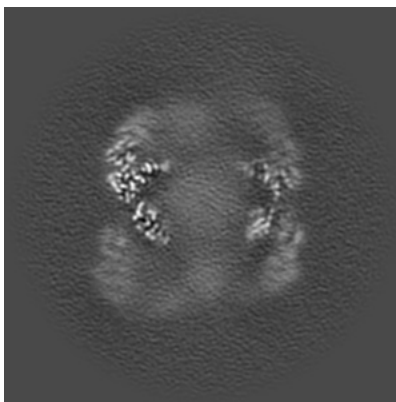
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

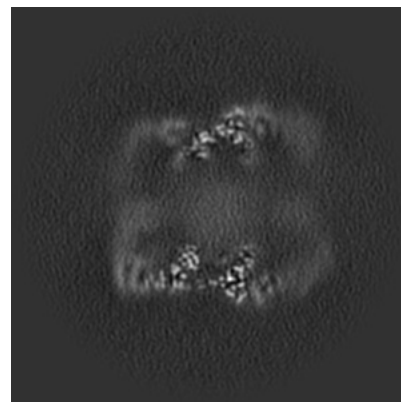
### 6.2.1 Primary map



X Index: 150

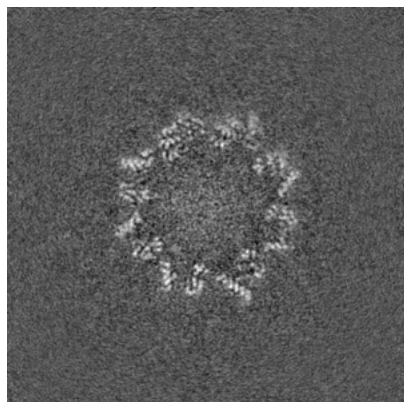


Y Index: 150

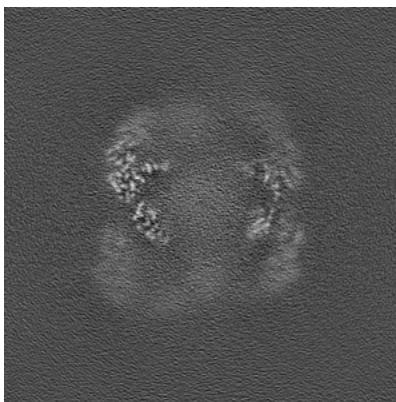


Z Index: 150

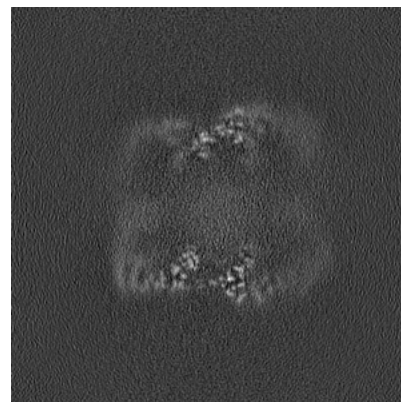
### 6.2.2 Raw map



X Index: 150



Y Index: 150

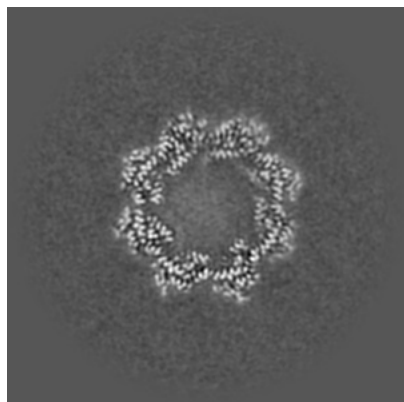


Z Index: 150

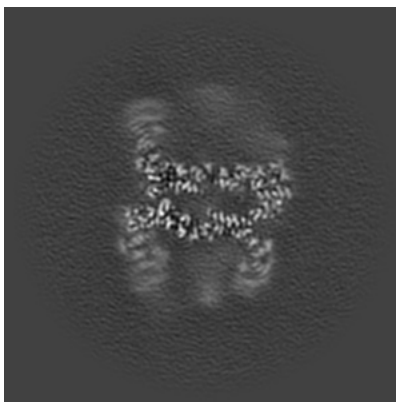
The images above show central slices of the map in three orthogonal directions.

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

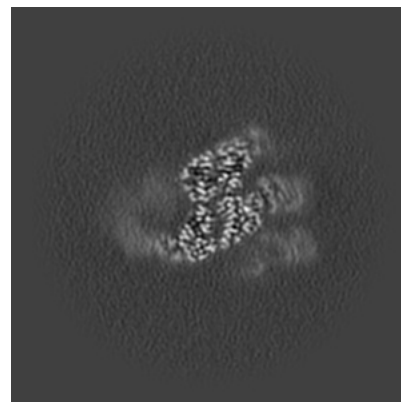
### 6.3.1 Primary map



X Index: 143

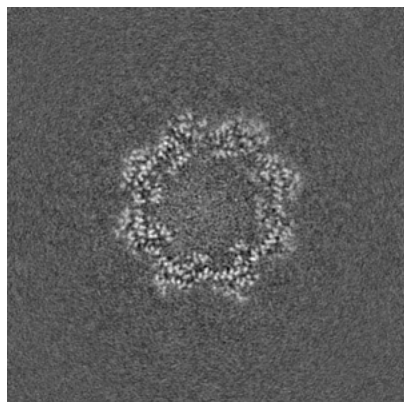


Y Index: 114

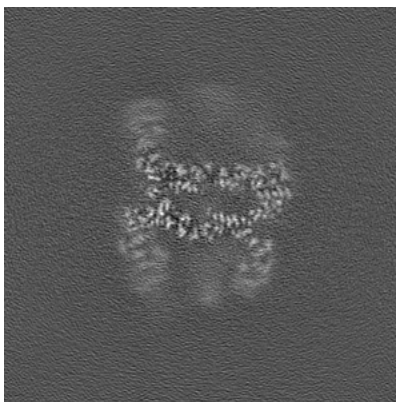


Z Index: 97

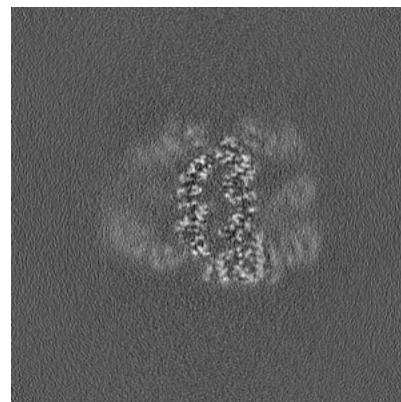
### 6.3.2 Raw map



X Index: 143



Y Index: 114

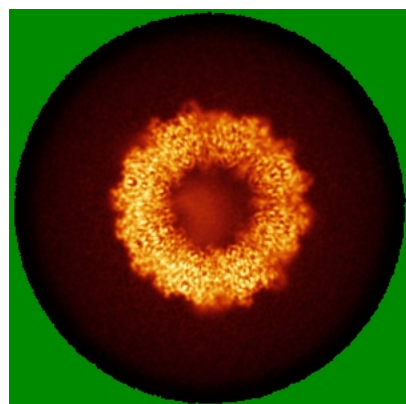


Z Index: 111

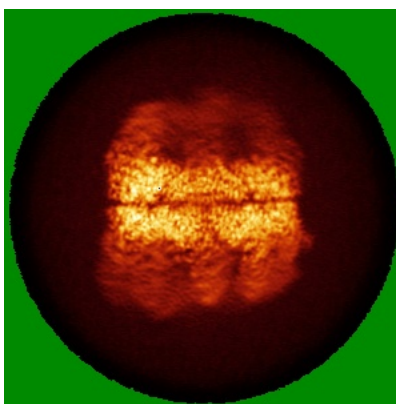
The images above show the largest variance slices of the map in three orthogonal directions.

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

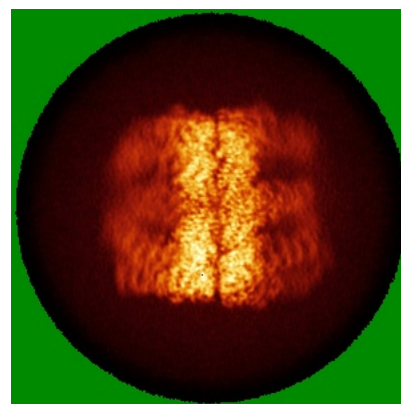
### 6.4.1 Primary map



X

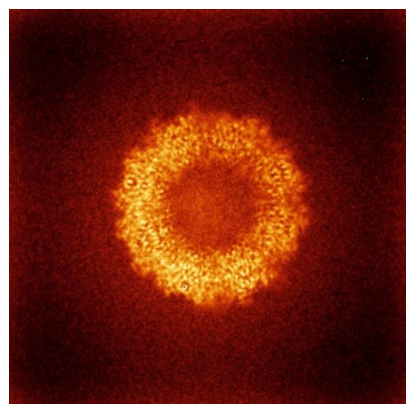


Y

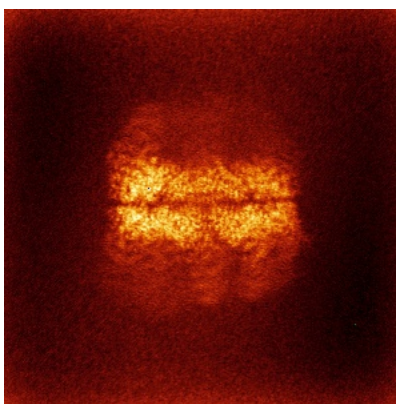


Z

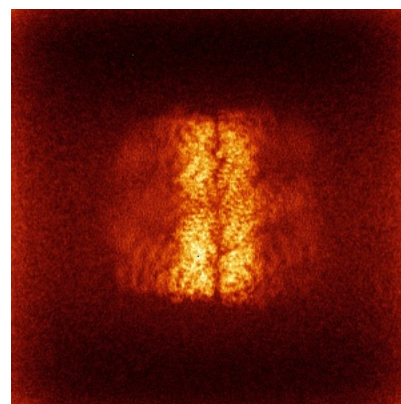
### 6.4.2 Raw map



X



Y

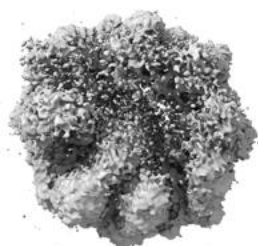


Z

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](#)

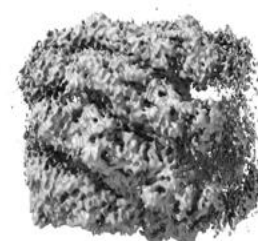
### 6.5.1 Primary map



X



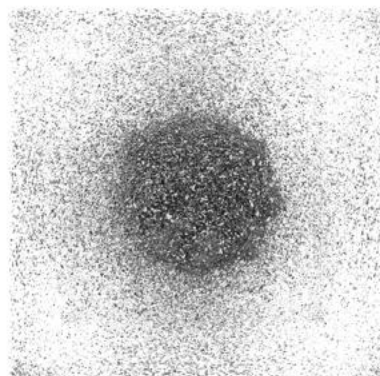
Y



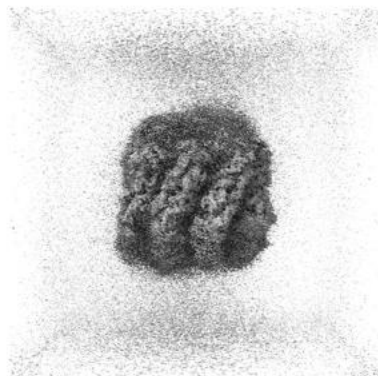
Z

The images above show the 3D surface view of the map at the recommended contour level 0.0743. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

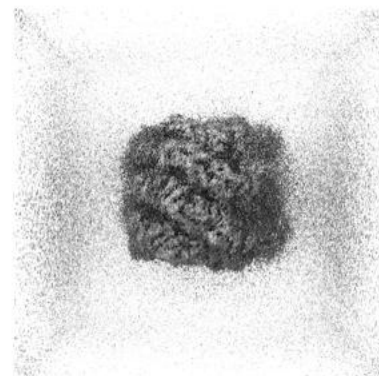
### 6.5.2 Raw map



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.

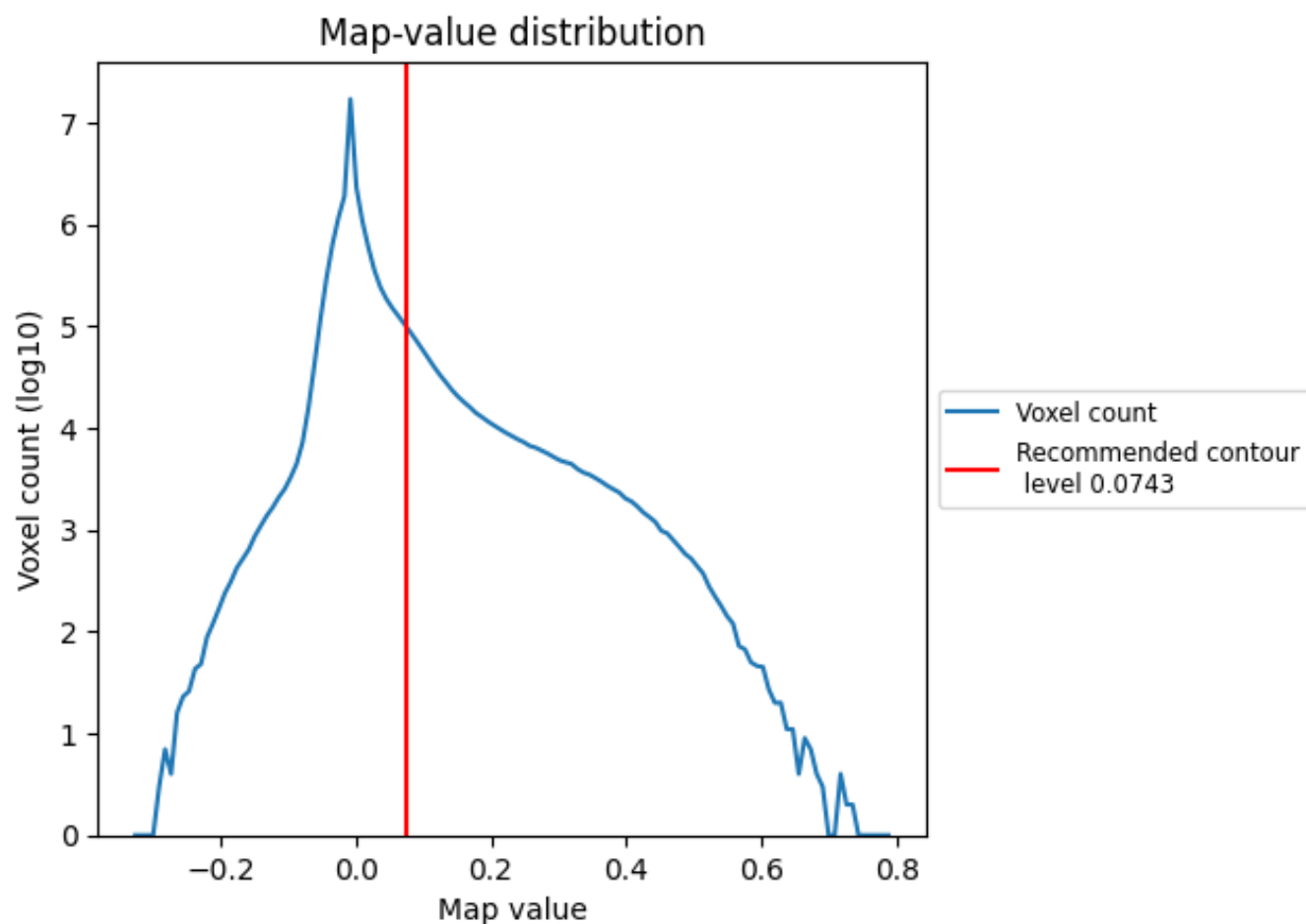
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

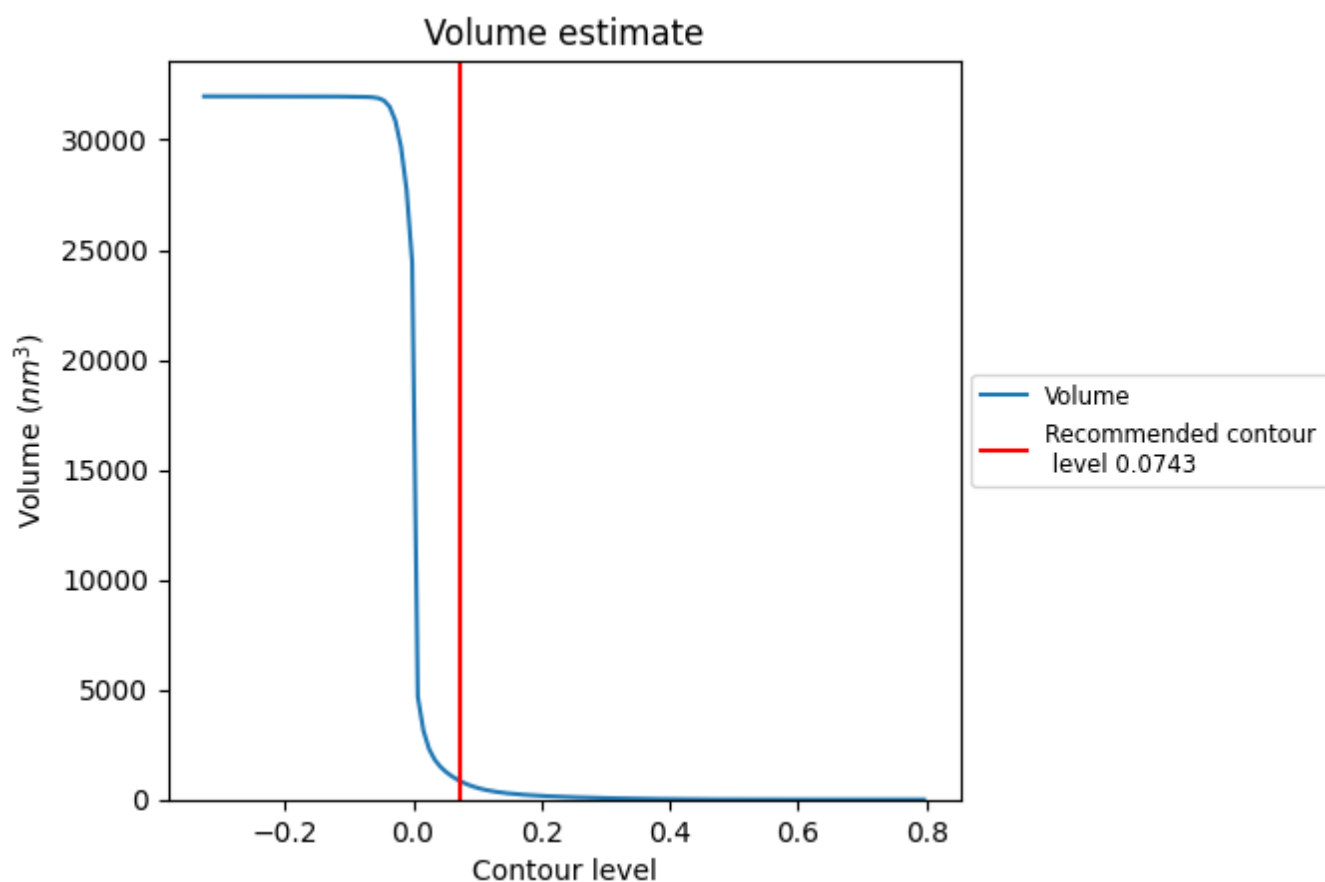
This section contains the results of statistical analysis of the map.

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



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

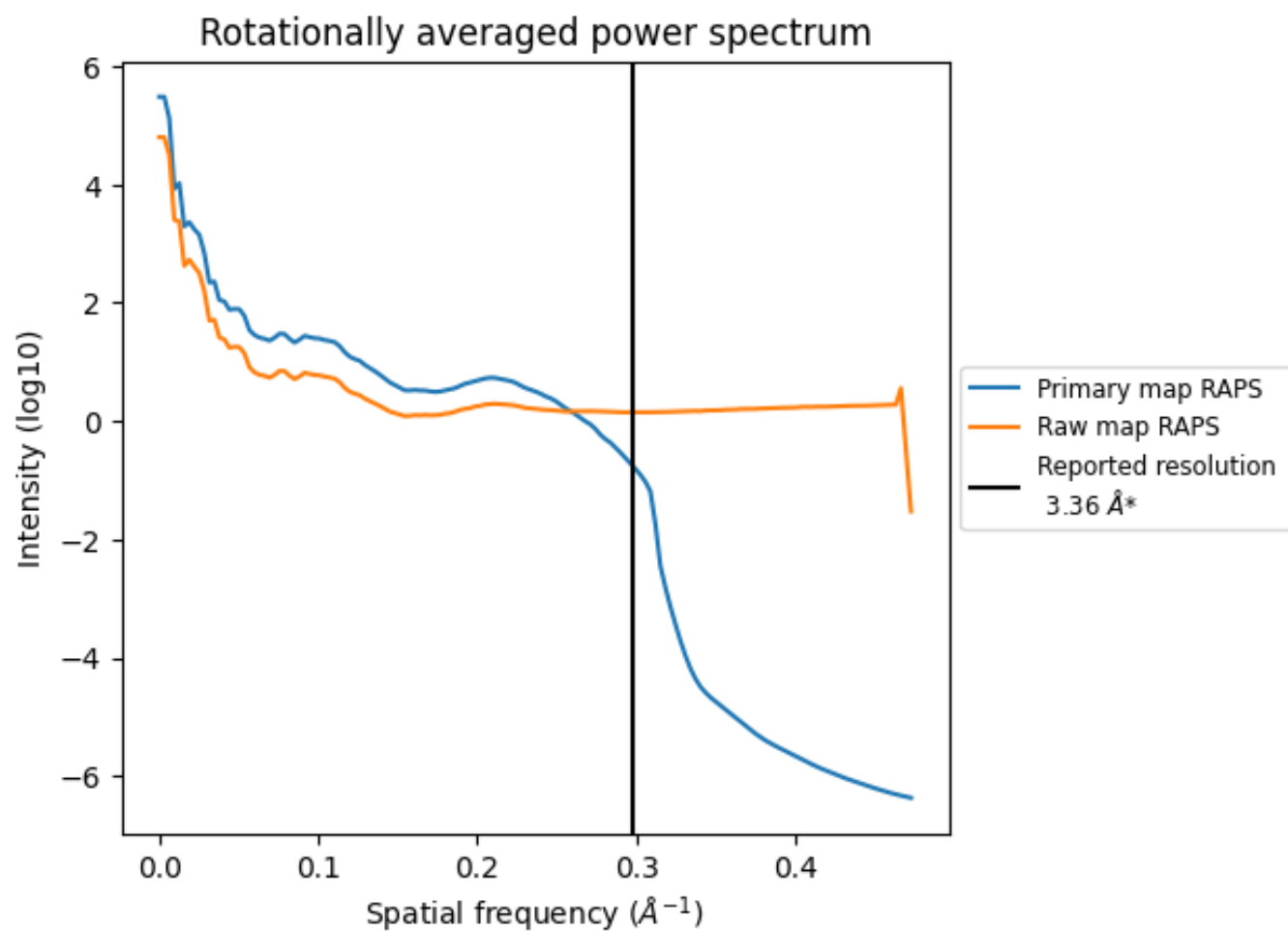
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 829 nm<sup>3</sup>; this corresponds to an approximate mass of 749 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 ⓘ

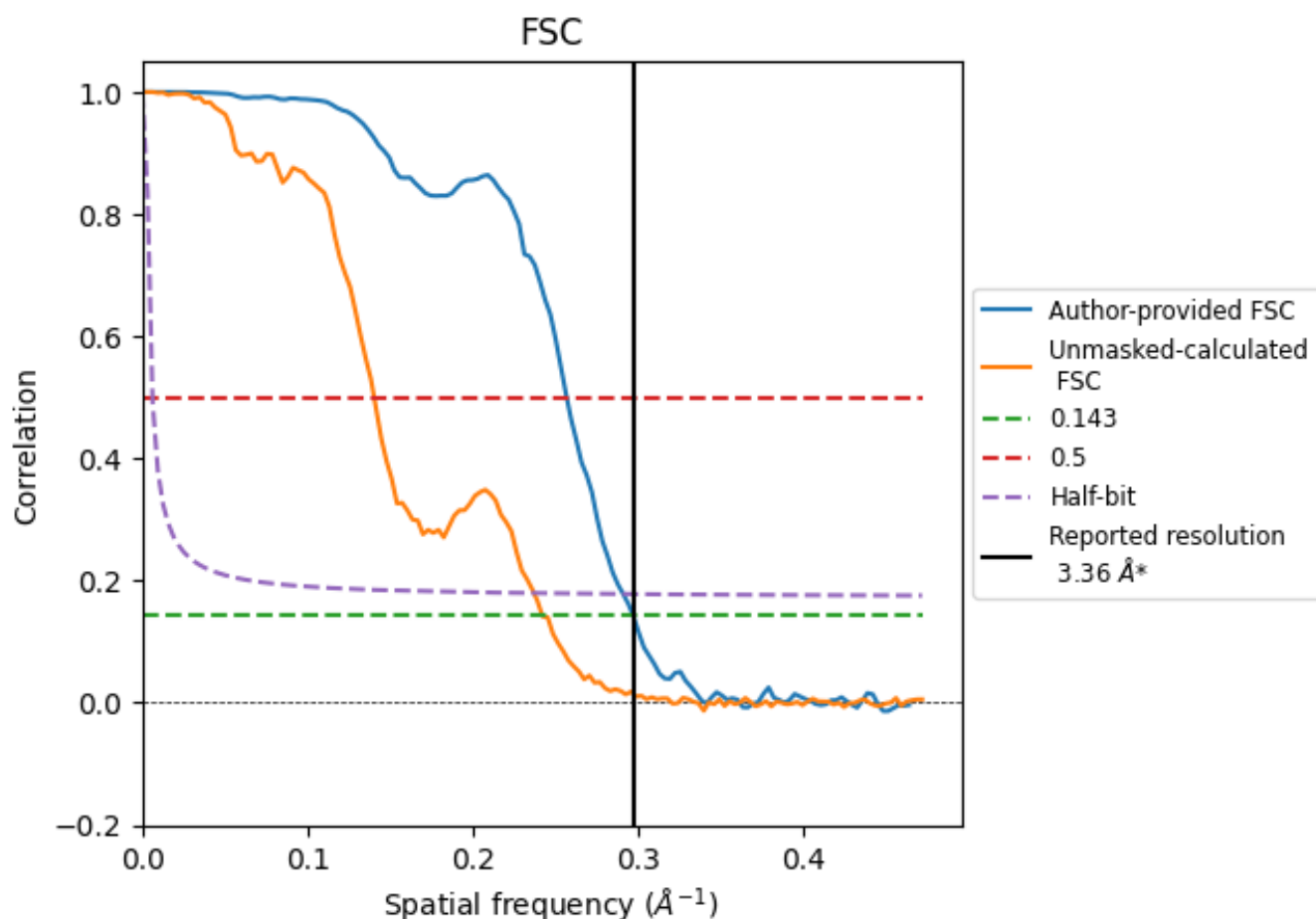


\*Reported resolution corresponds to spatial frequency of  $0.298 \text{ \AA}^{-1}$

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

## 8.2 Resolution estimates [i](#)

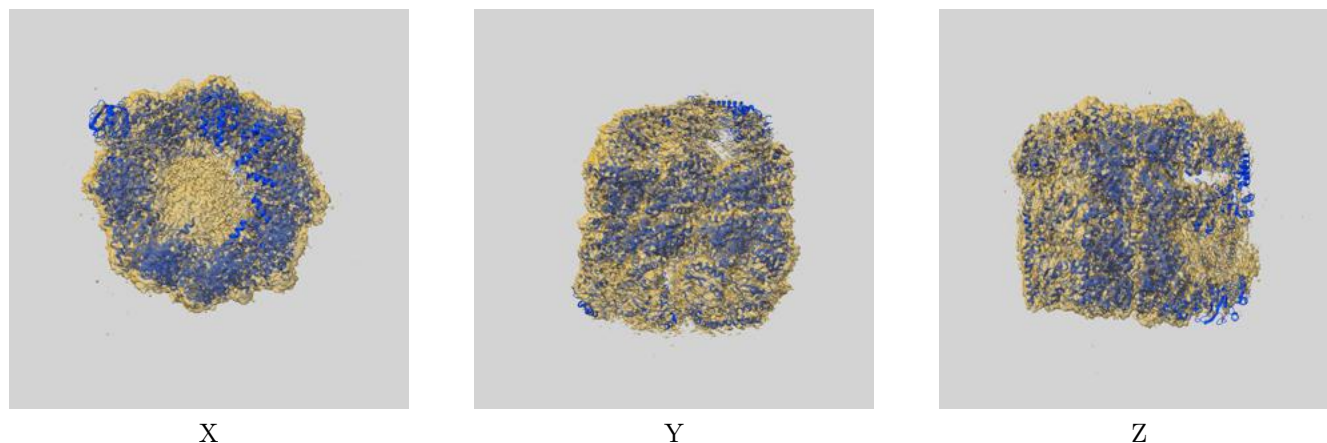
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.36                               | -    | -        |
| Author-provided FSC curve | 3.36                               | 3.89 | 3.43     |
| Unmasked-calculated*      | 4.13                               | 7.11 | 4.21     |

\*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 4.13 differs from the reported value 3.36 by more than 10 %

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

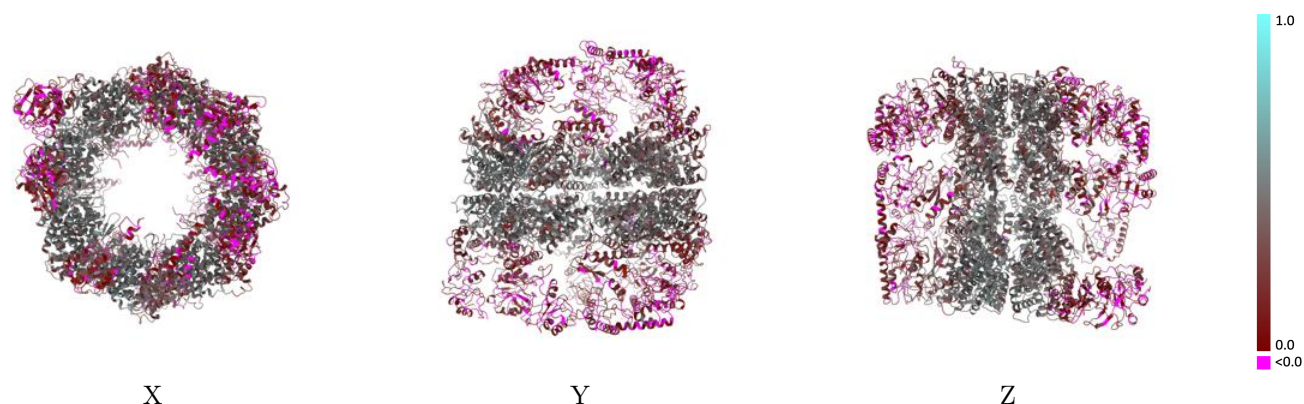
This section contains information regarding the fit between EMDB map EMD-40439 and PDB model 8SFE. Per-residue inclusion information can be found in section [3](#) on page [8](#).

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



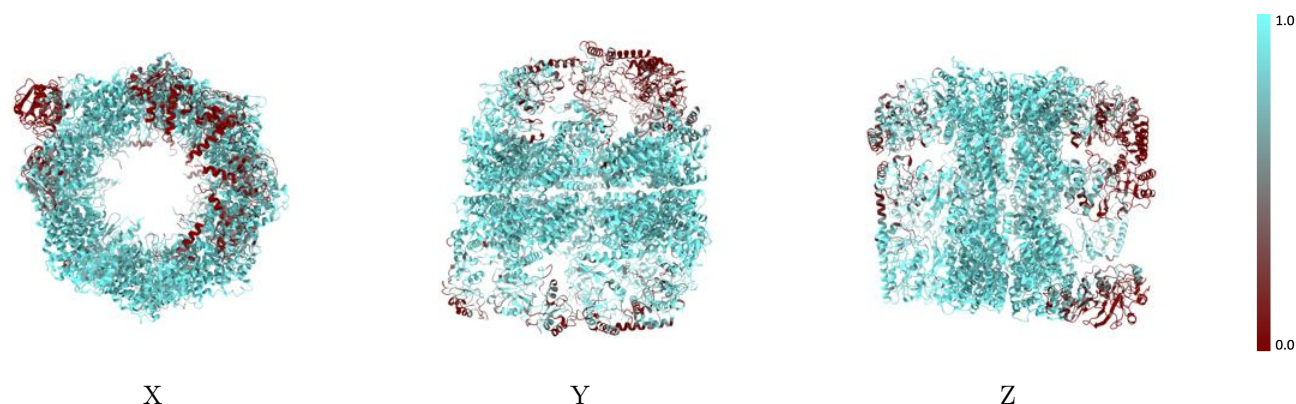
The images above show the 3D surface view of the map at the recommended contour level 0.0743 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



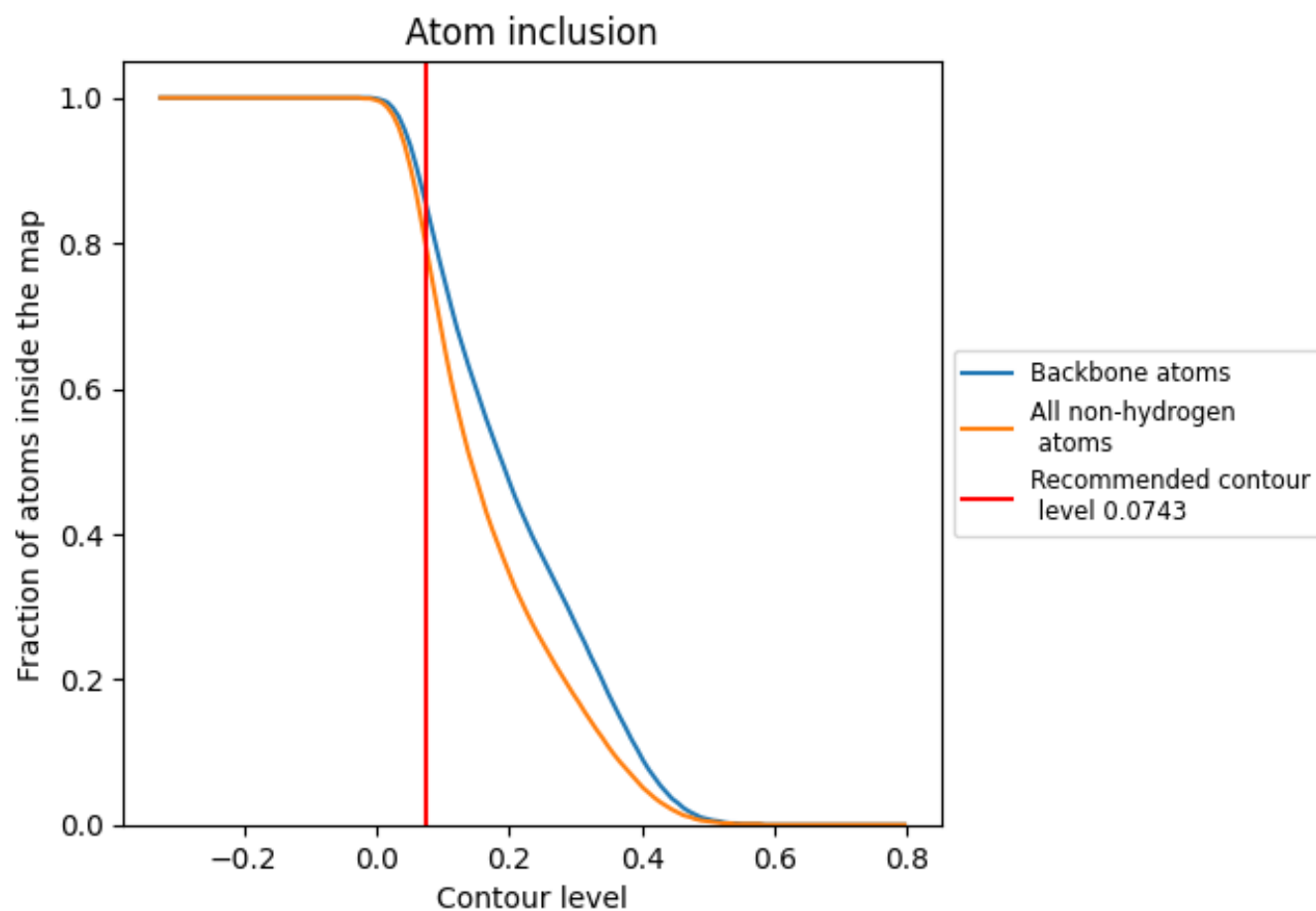
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.0743).

## 9.4 Atom inclusion ⓘ



At the recommended contour level, 85% of all backbone atoms, 80% 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 (0.0743) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.7970   |  0.3000   |
| A     |  0.8230   |  0.3060   |
| B     |  0.8200   |  0.2850   |
| D     |  0.8100   |  0.2600   |
| E     |  0.8580   |  0.2560   |
| G     |  0.9050   |  0.3050   |
| H     |  0.8270   |  0.2950   |
| Q     |  0.9200   |  0.3690   |
| Z     |  0.9520   |  0.3670   |
| a     |  0.6050   |  0.2780   |
| b     |  0.6400   |  0.2680   |
| d     |  0.5830   |  0.2520   |
| e     |  0.6810   |  0.2380   |
| g     |  0.7500   |  0.3060   |
| h     |  0.7580  |  0.3000  |
| q     |  0.8810 |  0.3590 |
| z     |  0.9210 |  0.3520 |

