



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 30, 2023 – 07:33 AM EDT

PDB ID : 3M9S  
Title : Crystal structure of respiratory complex I from *Thermus thermophilus*  
Authors : Efremov, R.G.; Baradaran, R.; Sazanov, L.A.  
Deposited on : 2010-03-22  
Resolution : 4.50 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp>

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:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.35  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.35

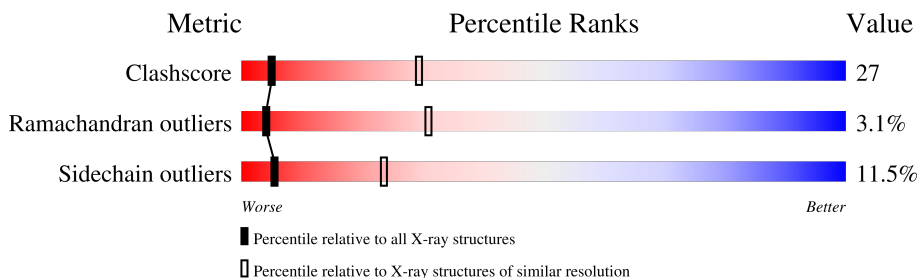
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 4.50 Å.

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



| Metric                | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| Clashscore            | 141614                      | 1123 (5.20-3.80)                                      |
| Ramachandran outliers | 138981                      | 1069 (5.20-3.80)                                      |
| Sidechain outliers    | 138945                      | 1050 (5.20-3.80)                                      |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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  $\leq 5\%$

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | 1     | 438    |                  |
| 1   | A     | 438    |                  |
| 2   | 2     | 181    |                  |
| 2   | B     | 181    |                  |
| 3   | 3     | 783    |                  |
| 3   | C     | 783    |                  |
| 4   | 4     | 409    |                  |
| 4   | D     | 409    |                  |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 5   | 5     | 207    |                  |
| 5   | E     | 207    |                  |
| 6   | 6     | 181    |                  |
| 6   | F     | 181    |                  |
| 7   | 9     | 182    |                  |
| 7   | G     | 182    |                  |
| 8   | 7     | 129    |                  |
| 8   | J     | 129    |                  |
| 9   | L     | 469    |                  |
| 9   | O     | 469    |                  |
| 10  | M     | 392    |                  |
| 10  | P     | 392    |                  |
| 11  | N     | 379    |                  |
| 11  | Q     | 379    |                  |
| 12  | R     | 274    |                  |
| 12  | S     | 274    |                  |
| 13  | H     | 181    |                  |
| 13  | T     | 181    |                  |

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

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 14  | SF4  | 1     | 439 | -         | -        | X       | -                |
| 14  | SF4  | 3     | 784 | -         | -        | X       | -                |
| 14  | SF4  | 3     | 786 | -         | -        | X       | -                |
| 14  | SF4  | 6     | 182 | -         | -        | X       | -                |
| 14  | SF4  | A     | 439 | -         | -        | X       | -                |
| 14  | SF4  | C     | 784 | -         | -        | X       | -                |
| 14  | SF4  | C     | 786 | -         | -        | X       | -                |

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| <b>Mol</b> | <b>Type</b> | <b>Chain</b> | <b>Res</b> | <b>Chirality</b> | <b>Geometry</b> | <b>Clashes</b> | <b>Electron density</b> |
|------------|-------------|--------------|------------|------------------|-----------------|----------------|-------------------------|
| 14         | SF4         | F            | 182        | -                | -               | X              | -                       |

## 2 Entry composition i

There are 16 unique types of molecules in this entry. The entry contains 47664 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 NADH-quinone oxidoreductase subunit 1.

| Mol | Chain | Residues | Atoms         |           |          |          |         | ZeroOcc | AltConf | Trace |
|-----|-------|----------|---------------|-----------|----------|----------|---------|---------|---------|-------|
|     |       |          | Total         | C         | N        | O        | S       |         |         |       |
| 1   | 1     | 437      | Total<br>3417 | C<br>2180 | N<br>595 | O<br>624 | S<br>18 | 0       | 0       | 0     |
| 1   | A     | 437      | Total<br>3417 | C<br>2180 | N<br>595 | O<br>624 | S<br>18 | 0       | 0       | 0     |

- Molecule 2 is a protein called NADH-quinone oxidoreductase subunit 2.

| Mol | Chain | Residues | Atoms         |          |          |          |        | ZeroOcc | AltConf | Trace |
|-----|-------|----------|---------------|----------|----------|----------|--------|---------|---------|-------|
|     |       |          | Total         | C        | N        | O        | S      |         |         |       |
| 2   | 2     | 178      | Total<br>1406 | C<br>895 | N<br>238 | O<br>265 | S<br>8 | 0       | 0       | 0     |
| 2   | B     | 178      | Total<br>1406 | C<br>895 | N<br>238 | O<br>265 | S<br>8 | 0       | 0       | 0     |

- Molecule 3 is a protein called NADH-quinone oxidoreductase subunit 3.

| Mol | Chain | Residues | Atoms         |           |           |           |         | ZeroOcc | AltConf | Trace |
|-----|-------|----------|---------------|-----------|-----------|-----------|---------|---------|---------|-------|
|     |       |          | Total         | C         | N         | O         | S       |         |         |       |
| 3   | 3     | 754      | Total<br>5880 | C<br>3743 | N<br>1055 | O<br>1051 | S<br>31 | 0       | 0       | 0     |
| 3   | C     | 754      | Total<br>5880 | C<br>3743 | N<br>1055 | O<br>1051 | S<br>31 | 0       | 0       | 0     |

- Molecule 4 is a protein called NADH-quinone oxidoreductase subunit 4.

| Mol | Chain | Residues | Atoms         |           |          |          |         | ZeroOcc | AltConf | Trace |
|-----|-------|----------|---------------|-----------|----------|----------|---------|---------|---------|-------|
|     |       |          | Total         | C         | N        | O        | S       |         |         |       |
| 4   | 4     | 377      | Total<br>3011 | C<br>1941 | N<br>510 | O<br>549 | S<br>11 | 0       | 0       | 0     |
| 4   | D     | 377      | Total<br>3011 | C<br>1941 | N<br>510 | O<br>549 | S<br>11 | 0       | 0       | 0     |

- Molecule 5 is a protein called NADH-quinone oxidoreductase subunit C.

| Mol | Chain | Residues | Atoms |      |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |         |       |
| 5   | 5     | 196      | 1607  | 1043 | 273 | 288 | 3 | 0       | 0       | 0     |
| 5   | E     | 196      | 1607  | 1043 | 273 | 288 | 3 | 0       | 0       | 0     |

- Molecule 6 is a protein called NADH-quinone oxidoreductase subunit B.

| Mol | Chain | Residues | Atoms |     |     |     |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S  |         |         |       |
| 6   | 6     | 145      | 1113  | 706 | 196 | 198 | 13 | 0       | 0       | 0     |
| 6   | F     | 145      | 1113  | 706 | 196 | 198 | 13 | 0       | 0       | 0     |

- Molecule 7 is a protein called NADH-quinone oxidoreductase subunit I.

| Mol | Chain | Residues | Atoms |     |     |     |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S  |         |         |       |
| 7   | 9     | 154      | 1193  | 759 | 201 | 222 | 11 | 0       | 0       | 0     |
| 7   | G     | 154      | 1193  | 759 | 201 | 222 | 11 | 0       | 0       | 0     |

- Molecule 8 is a protein called NADH-quinone oxidoreductase subunit 15.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 8   | 7     | 127      | 1031  | 664 | 183 | 181 | 3 | 0       | 0       | 0     |
| 8   | J     | 127      | 1031  | 664 | 183 | 181 | 3 | 0       | 0       | 0     |

- Molecule 9 is a protein called NADH-quinone oxidoreductase subunit 12.

| Mol | Chain | Residues | Atoms |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|---------|---------|-------|
|     |       |          | Total | C   | N   |         |         |       |
| 9   | L     | 469      | 1407  | 938 | 469 | 0       | 0       | 0     |
| 9   | O     | 469      | 1407  | 938 | 469 | 0       | 0       | 0     |

- Molecule 10 is a protein called NADH-quinone oxidoreductase subunit 13.

| Mol | Chain | Residues | Atoms |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|---------|---------|-------|
|     |       |          | Total | C   | N   |         |         |       |
| 10  | M     | 391      | 1173  | 782 | 391 | 0       | 0       | 0     |

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| Mol | Chain | Residues | Atoms |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|---------|---------|-------|
| 10  | P     | 391      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 1173  | 782 | 391 |         |         |       |

- Molecule 11 is a protein called NADH-quinone oxidoreductase subunit 14.

| Mol | Chain | Residues | Atoms |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|---------|---------|-------|
| 11  | N     | 378      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 1134  | 756 | 378 |         |         |       |
| 11  | Q     | 378      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 1134  | 756 | 378 |         |         |       |

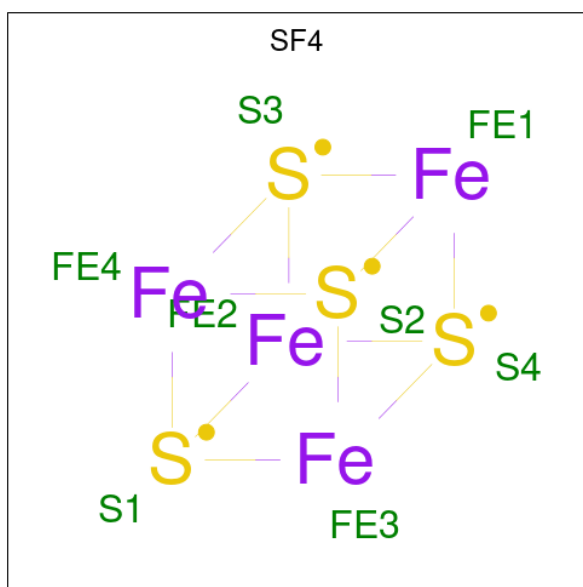
- Molecule 12 is a protein called NADH-quinone oxidoreductase subunits 7, 10 and 11.

| Mol | Chain | Residues | Atoms |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|---------|---------|-------|
| 12  | R     | 274      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 822   | 548 | 274 |         |         |       |
| 12  | S     | 274      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 822   | 548 | 274 |         |         |       |

- Molecule 13 is a protein called NADH-quinone oxidoreductase subunit 8.

| Mol | Chain | Residues | Atoms |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|---------|---------|-------|
| 13  | H     | 181      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 543   | 362 | 181 |         |         |       |
| 13  | T     | 181      | Total | C   | N   | 0       | 0       | 0     |
|     |       |          | 543   | 362 | 181 |         |         |       |

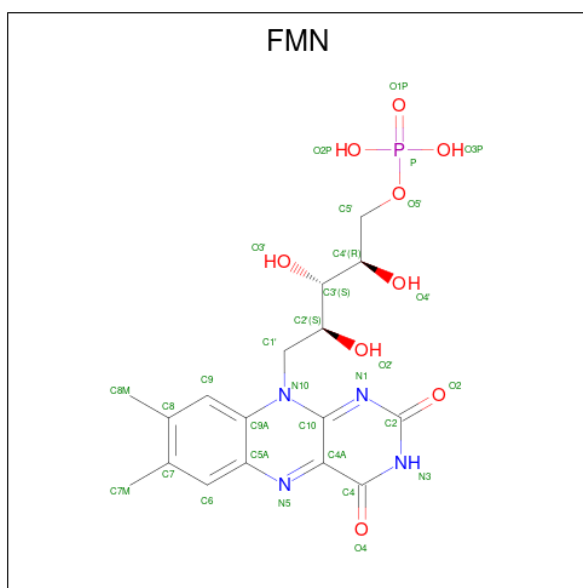
- Molecule 14 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe<sub>4</sub>S<sub>4</sub>).



| Mol | Chain | Residues | Atoms               | ZeroOcc | AltConf |
|-----|-------|----------|---------------------|---------|---------|
| 14  | 1     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | 3     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | 3     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | 3     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | 6     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | 9     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | 9     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | A     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | C     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | C     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | C     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | F     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | G     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |
| 14  | G     | 1        | Total Fe S<br>8 4 4 | 0       | 0       |

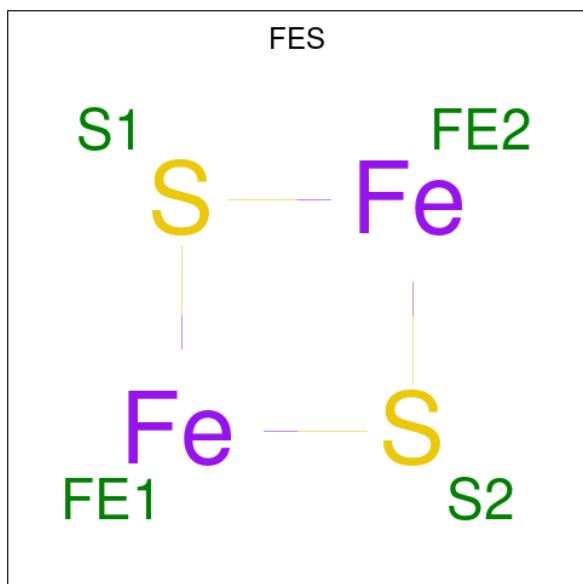


- Molecule 15 is FLAVIN MONONUCLEOTIDE (three-letter code: FMN) (formula: C<sub>17</sub>H<sub>21</sub>N<sub>4</sub>O<sub>9</sub>P).



| Mol | Chain | Residues | Atoms |    |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---|---|---------|---------|
| 15  | 1     | 1        | Total | C  | N | O | P | 0       | 0       |
|     |       |          | 31    | 17 | 4 | 9 | 1 |         |         |
| 15  | A     | 1        | Total | C  | N | O | P | 0       | 0       |
|     |       |          | 31    | 17 | 4 | 9 | 1 |         |         |

- Molecule 16 is FE2/S2 (INORGANIC) CLUSTER (three-letter code: FES) (formula: Fe<sub>2</sub>S<sub>2</sub>).



| Mol | Chain | Residues | Atoms |    |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---------|---------|
| 16  | 2     | 1        | Total | Fe | S | 0       | 0       |
|     |       |          | 4     | 2  | 2 |         |         |

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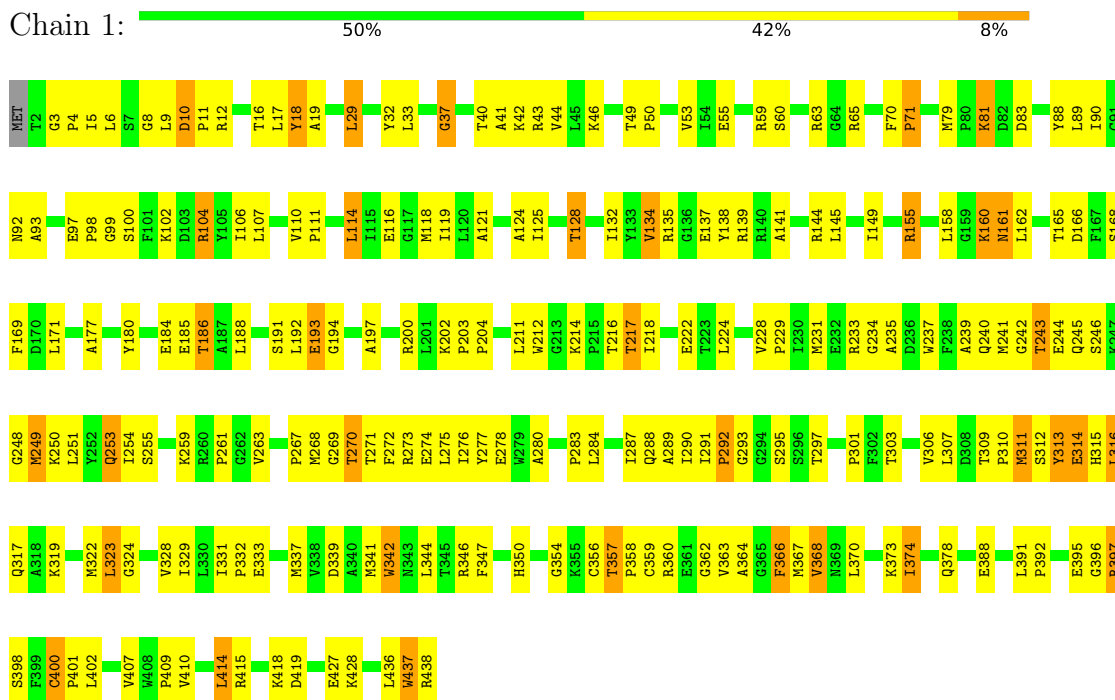
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| <b>Mol</b> | <b>Chain</b> | <b>Residues</b> | <b>Atoms</b> |         |        | <b>ZeroOcc</b> | <b>AltConf</b> |
|------------|--------------|-----------------|--------------|---------|--------|----------------|----------------|
| 16         | 3            | 1               | Total<br>4   | Fe<br>2 | S<br>2 | 0              | 0              |
| 16         | B            | 1               | Total<br>4   | Fe<br>2 | S<br>2 | 0              | 0              |
| 16         | C            | 1               | Total<br>4   | Fe<br>2 | S<br>2 | 0              | 0              |

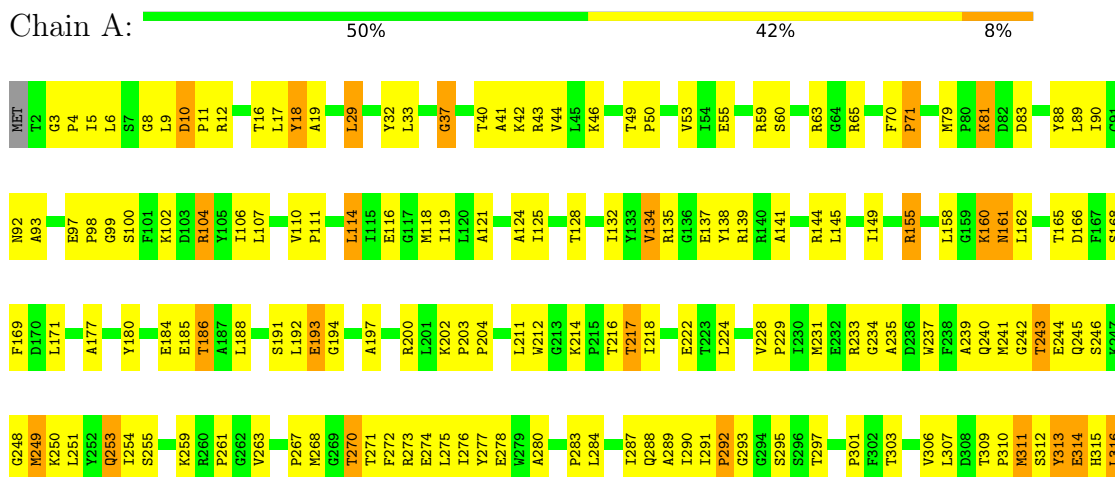
### 3 Residue-property plots [i](#)

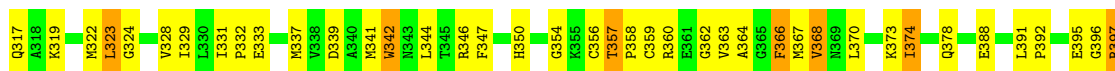
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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: NADH-quinone oxidoreductase subunit 1

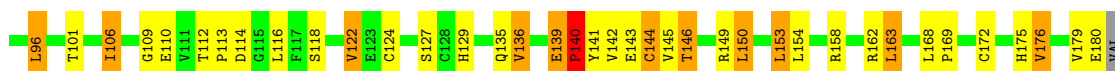


- Molecule 1: NADH-quinone oxidoreductase subunit 1

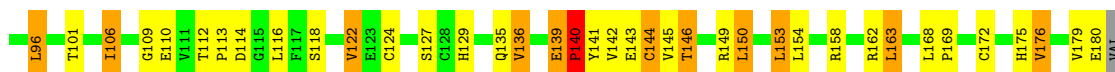




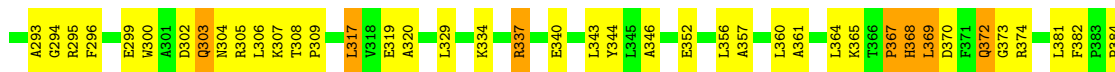
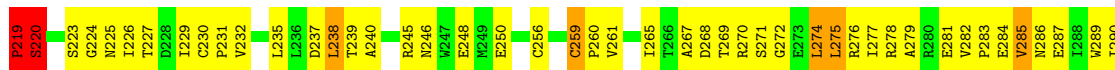
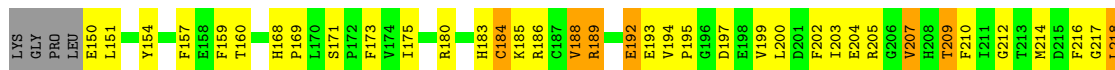
● Molecule 2: NADH-quinone oxidoreductase subunit 2

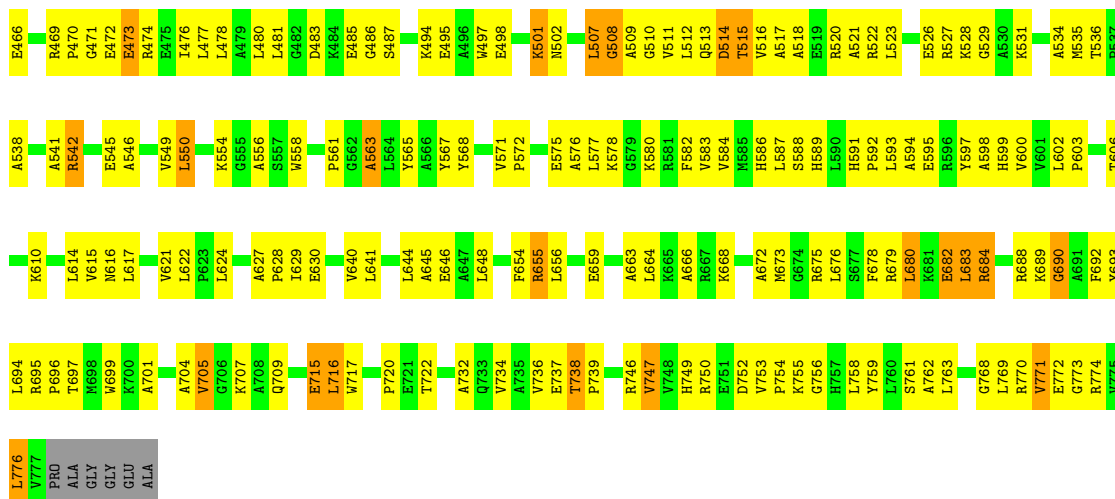


● Molecule 2: NADH-quinone oxidoreductase subunit 2

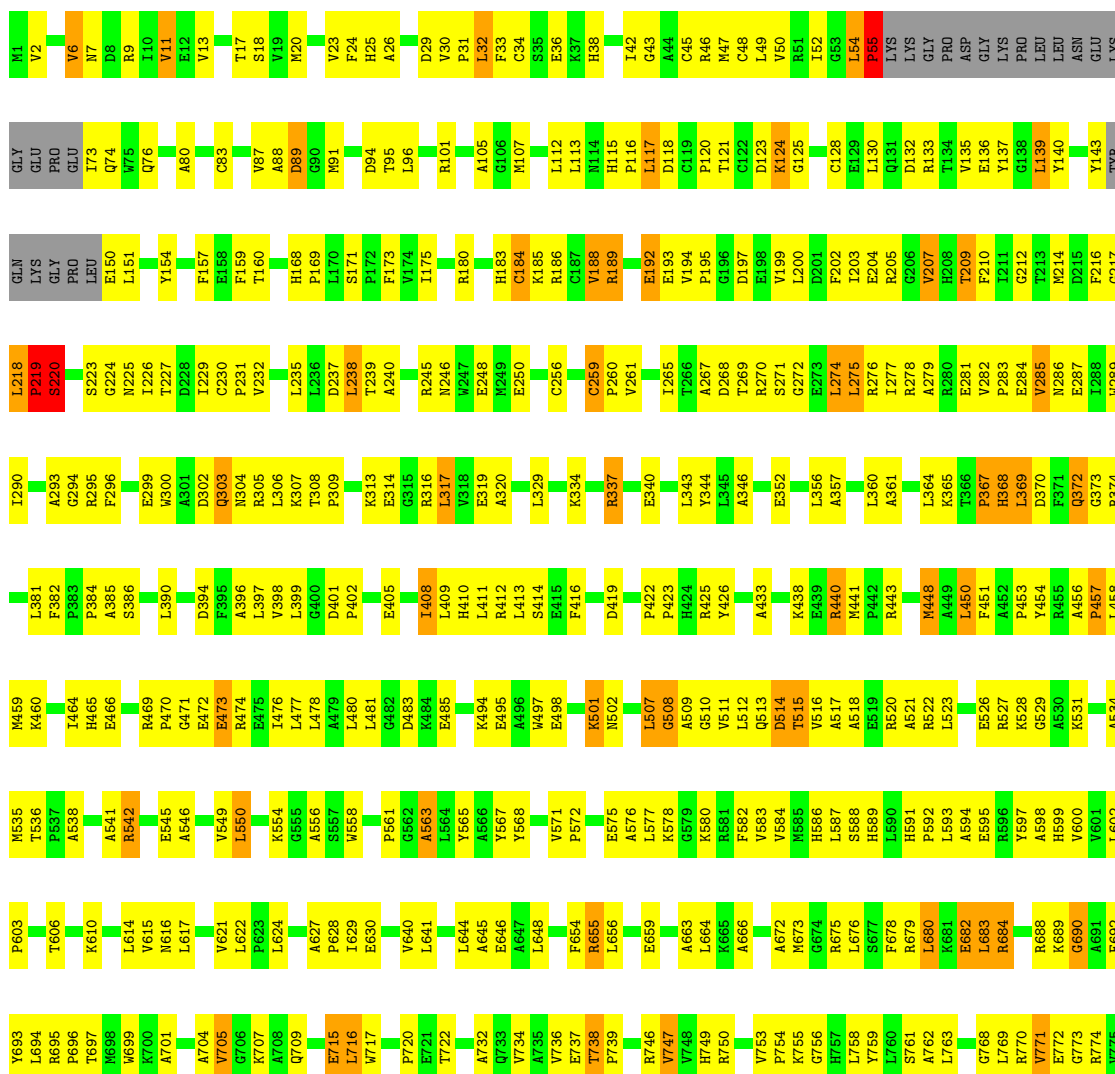


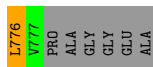
● Molecule 3: NADH-quinone oxidoreductase subunit 3





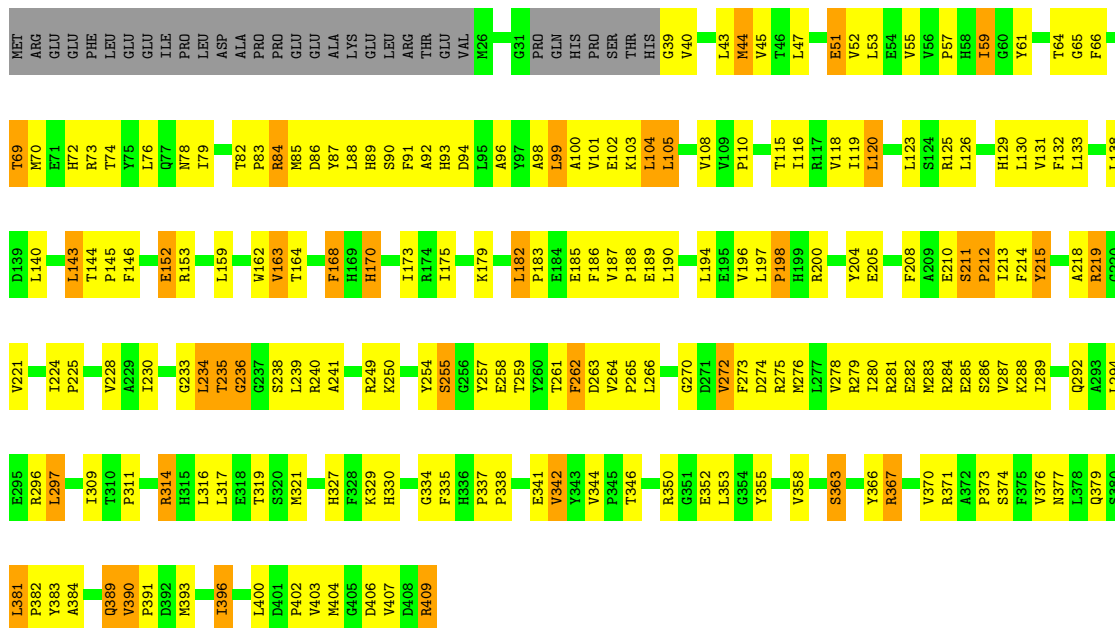
• Molecule 3: NADH-quinone oxidoreductase subunit 3





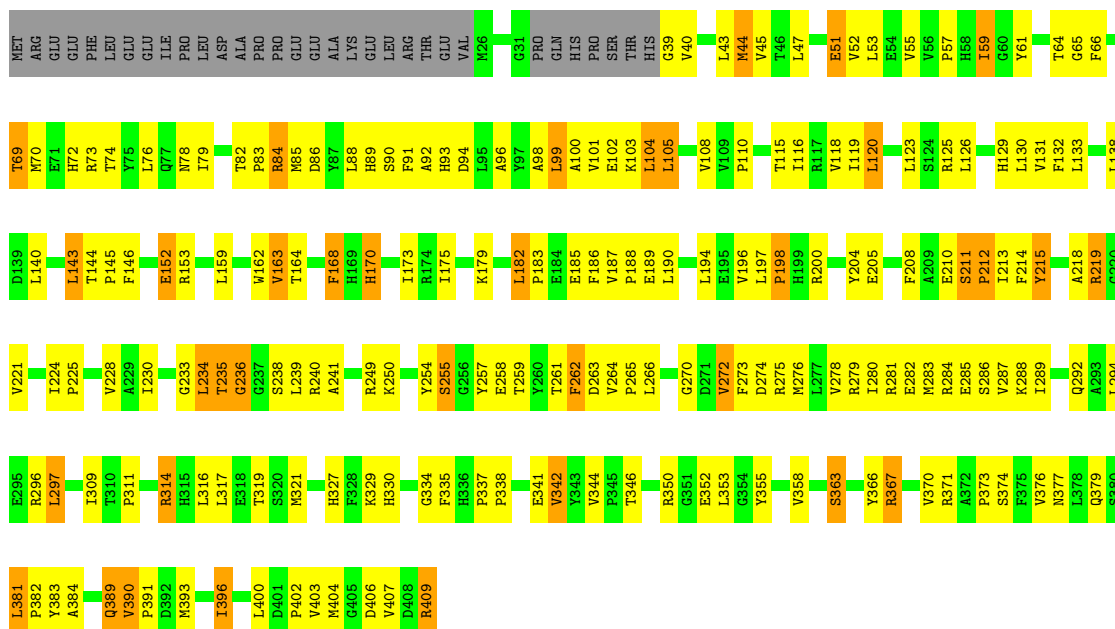
- Molecule 4: NADH-quinone oxidoreductase subunit 4

Chain 4: 44% 40% 9% 8%



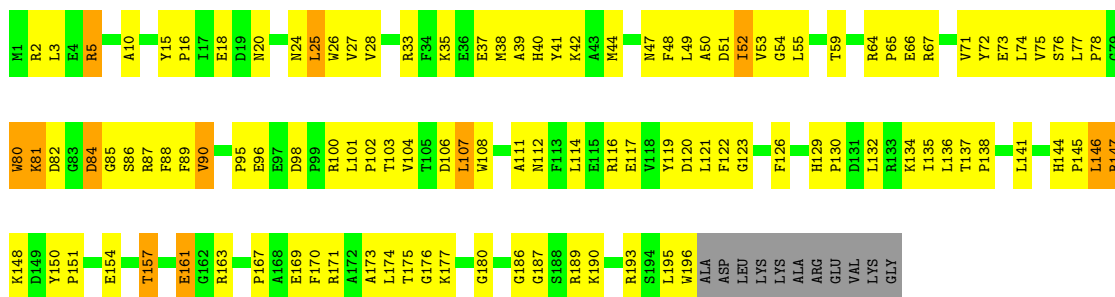
- Molecule 4: NADH-quinone oxidoreductase subunit 4

Chain D: 44% 40% 9% 8%



- Molecule 5: NADH-quinone oxidoreductase subunit C

Chain 5: 

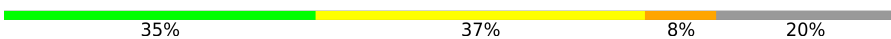


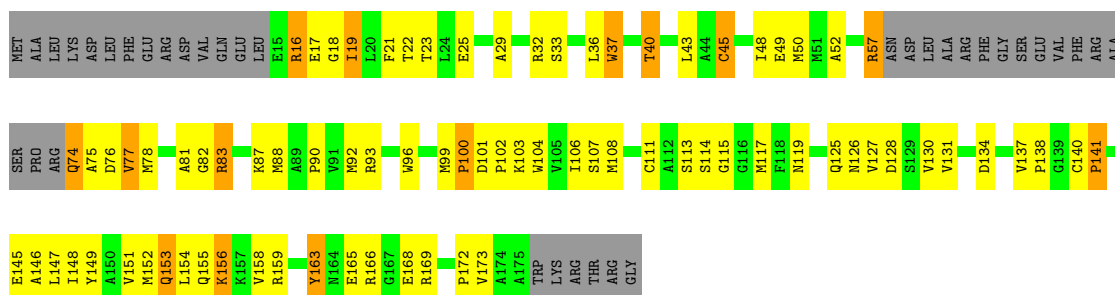
• Molecule 5: NADH-quinone oxidoreductase subunit C

Chain E: 



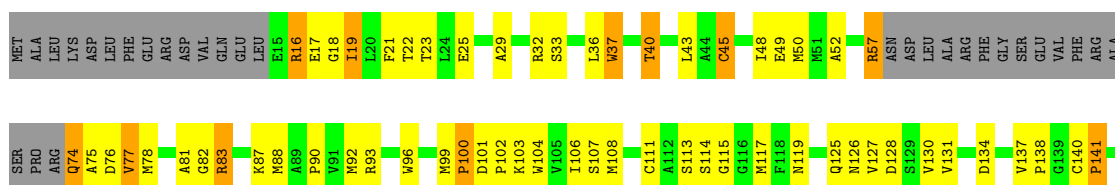
• Molecule 6: NADH-quinone oxidoreductase subunit B

Chain 6: 



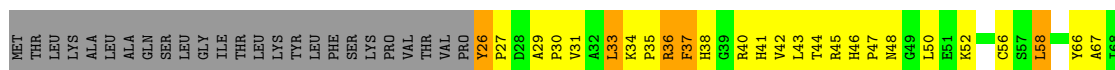
• Molecule 6: NADH-quinone oxidoreductase subunit B

Chain F: 

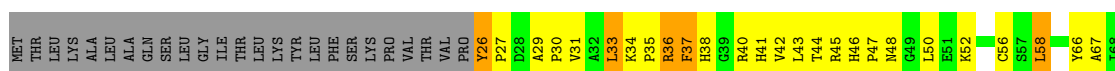




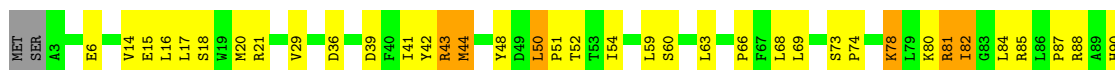
- Molecule 7: NADH-quinone oxidoreductase subunit I



- Molecule 7: NADH-quinone oxidoreductase subunit I



- Molecule 8: NADH-quinone oxidoreductase subunit 15



- Molecule 8: NADH-quinone oxidoreductase subunit 15



- Molecule 9: NADH-quinone oxidoreductase subunit 12



Chain L:  94% 6%



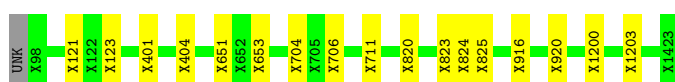
- Molecule 9: NADH-quinone oxidoreductase subunit 12

Chain O:  94% 6%



- Molecule 10: NADH-quinone oxidoreductase subunit 13

Chain M:  95% .



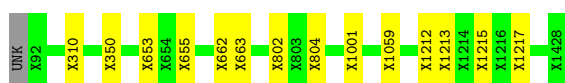
- Molecule 10: NADH-quinone oxidoreductase subunit 13

Chain P:  95% .



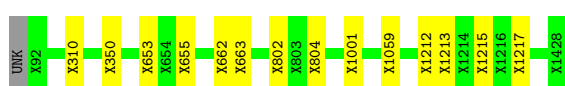
- Molecule 11: NADH-quinone oxidoreductase subunit 14

Chain N:  96% .



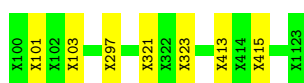
- Molecule 11: NADH-quinone oxidoreductase subunit 14

Chain Q:  96% .



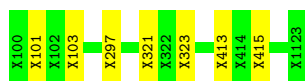
- Molecule 12: NADH-quinone oxidoreductase subunits 7, 10 and 11

Chain R:  97% .



- Molecule 12: NADH-quinone oxidoreductase subunits 7, 10 and 11

Chain S:  97%



- Molecule 13: NADH-quinone oxidoreductase subunit 8

Chain H:  97%



- Molecule 13: NADH-quinone oxidoreductase subunit 8

Chain T:  97%



## 4 Data and refinement statistics

| Property  | Value  | Source           |
|---|--|------------------|
| Space group   | P 1 21 1   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 96.39Å 336.09Å 262.24Å<br>90.00° 100.59° 90.00°              | Depositor        |
| Resolution (Å)  | 30.00 – 4.50<br>29.96 – 4.50                                 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | (Not available) (30.00-4.50)<br>75.0 (29.96-4.50)            | Depositor<br>EDS |
| $R_{merge}$   | 0.25   | Depositor        |
| $R_{sym}$   | (Not available)  | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 1.29 (at 4.42Å)  | Xtrriage         |
| Refinement program  |  | Depositor        |
| R, $R_{free}$   | (Not available) , (Not available)<br>0.394 , (Not available) | Depositor<br>DCC |
| $R_{free}$ test set   | No test flags present.                                       | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 168.8  | Xtrriage         |
| Anisotropy  | 0.325  | Xtrriage         |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.17 , 34.0  | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.30$ , $\langle L^2 \rangle = 0.14$  | Xtrriage         |
| Estimated twinning fraction   | 0.309 for h,-k,-h-l  | Xtrriage         |
| $F_o, F_c$ correlation  | 0.75   | EDS              |
| Total number of atoms   | 47664  | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 80.0   | wwPDB-VP         |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.38% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 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: FMN, SF4, FES

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   | 1     | 0.48         | 1/3506 (0.0%)  | 0.68        | 1/4745 (0.0%)   |
| 1   | A     | 0.48         | 1/3506 (0.0%)  | 0.68        | 1/4745 (0.0%)   |
| 2   | 2     | 0.49         | 0/1439         | 0.66        | 0/1953          |
| 2   | B     | 0.49         | 0/1439         | 0.66        | 0/1953          |
| 3   | 3     | 0.46         | 0/6019         | 0.70        | 3/8163 (0.0%)   |
| 3   | C     | 0.46         | 0/6019         | 0.70        | 3/8163 (0.0%)   |
| 4   | 4     | 0.43         | 0/3089         | 0.64        | 1/4197 (0.0%)   |
| 4   | D     | 0.43         | 0/3089         | 0.64        | 1/4197 (0.0%)   |
| 5   | 5     | 0.42         | 0/1656         | 0.64        | 0/2246          |
| 5   | E     | 0.42         | 0/1656         | 0.64        | 0/2246          |
| 6   | 6     | 0.47         | 0/1137         | 0.68        | 0/1542          |
| 6   | F     | 0.47         | 0/1137         | 0.68        | 0/1542          |
| 7   | 9     | 0.52         | 1/1224 (0.1%)  | 0.65        | 0/1663          |
| 7   | G     | 0.52         | 1/1224 (0.1%)  | 0.65        | 0/1663          |
| 8   | 7     | 0.45         | 0/1059         | 0.61        | 0/1429          |
| 8   | J     | 0.45         | 0/1059         | 0.61        | 0/1429          |
| All | All   | 0.46         | 4/38258 (0.0%) | 0.67        | 10/51876 (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 |
|-----|-------|---------------------|---------------------|
| 9   | L     | 0                   | 2                   |
| 9   | O     | 0                   | 2                   |
| All | All   | 0                   | 4                   |

All (4) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 1   | 1     | 356 | CYS  | CB-SG | -6.06 | 1.72        | 1.82     |
| 1   | A     | 356 | CYS  | CB-SG | -6.05 | 1.72        | 1.82     |
| 7   | 9     | 101 | CYS  | CB-SG | -5.44 | 1.73        | 1.81     |
| 7   | G     | 101 | CYS  | CB-SG | -5.43 | 1.73        | 1.81     |

All (10) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|--------|-------------|----------|
| 3   | 3     | 143 | TYR  | CA-C-O   | -14.73 | 89.16       | 120.10   |
| 3   | C     | 143 | TYR  | CA-C-O   | -14.72 | 89.18       | 120.10   |
| 3   | C     | 55  | PRO  | CB-CA-C  | -5.80  | 97.49       | 112.00   |
| 3   | 3     | 55  | PRO  | CB-CA-C  | -5.79  | 97.53       | 112.00   |
| 4   | 4     | 39  | GLY  | N-CA-C   | -5.39  | 99.61       | 113.10   |
| 3   | C     | 680 | LEU  | CA-CB-CG | 5.39   | 127.70      | 115.30   |
| 3   | 3     | 680 | LEU  | CA-CB-CG | 5.38   | 127.69      | 115.30   |
| 4   | D     | 39  | GLY  | N-CA-C   | -5.38  | 99.65       | 113.10   |
| 1   | 1     | 356 | CYS  | CB-CA-C  | -5.28  | 99.84       | 110.40   |
| 1   | A     | 356 | CYS  | CB-CA-C  | -5.28  | 99.83       | 110.40   |

There are no chirality outliers.

All (4) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group   |
|-----|-------|------|------|---------|
| 9   | L     | 1212 | UNK  | Peptide |
| 9   | L     | 1569 | UNK  | Peptide |
| 9   | O     | 1212 | UNK  | Peptide |
| 9   | O     | 1569 | UNK  | 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   | 1     | 3417  | 0        | 3388     | 207     | 0            |
| 1   | A     | 3417  | 0        | 3388     | 206     | 0            |
| 2   | 2     | 1406  | 0        | 1373     | 72      | 0            |
| 2   | B     | 1406  | 0        | 1373     | 73      | 0            |
| 3   | 3     | 5880  | 0        | 5911     | 427     | 7            |
| 3   | C     | 5880  | 0        | 5911     | 406     | 9            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 4   | 4     | 3011  | 0        | 3000     | 211     | 0            |
| 4   | D     | 3011  | 0        | 3000     | 209     | 0            |
| 5   | 5     | 1607  | 0        | 1574     | 106     | 0            |
| 5   | E     | 1607  | 0        | 1574     | 106     | 0            |
| 6   | 6     | 1113  | 0        | 1121     | 92      | 2            |
| 6   | F     | 1113  | 0        | 1121     | 113     | 0            |
| 7   | 9     | 1193  | 0        | 1160     | 69      | 0            |
| 7   | G     | 1193  | 0        | 1160     | 68      | 0            |
| 8   | 7     | 1031  | 0        | 1029     | 41      | 0            |
| 8   | J     | 1031  | 0        | 1029     | 41      | 0            |
| 9   | L     | 1407  | 0        | 50       | 15      | 0            |
| 9   | O     | 1407  | 0        | 50       | 15      | 0            |
| 10  | M     | 1173  | 0        | 37       | 15      | 0            |
| 10  | P     | 1173  | 0        | 37       | 15      | 0            |
| 11  | N     | 1134  | 0        | 36       | 12      | 0            |
| 11  | Q     | 1134  | 0        | 36       | 12      | 0            |
| 12  | R     | 822   | 0        | 24       | 4       | 0            |
| 12  | S     | 822   | 0        | 24       | 4       | 0            |
| 13  | H     | 543   | 0        | 20       | 6       | 0            |
| 13  | T     | 543   | 0        | 20       | 6       | 0            |
| 14  | 1     | 8     | 0        | 0        | 2       | 0            |
| 14  | 3     | 24    | 0        | 0        | 8       | 0            |
| 14  | 6     | 8     | 0        | 0        | 4       | 0            |
| 14  | 9     | 16    | 0        | 0        | 0       | 0            |
| 14  | A     | 8     | 0        | 0        | 2       | 0            |
| 14  | C     | 24    | 0        | 0        | 7       | 0            |
| 14  | F     | 8     | 0        | 0        | 4       | 0            |
| 14  | G     | 16    | 0        | 0        | 0       | 0            |
| 15  | 1     | 31    | 0        | 19       | 8       | 0            |
| 15  | A     | 31    | 0        | 19       | 8       | 0            |
| 16  | 2     | 4     | 0        | 0        | 0       | 0            |
| 16  | 3     | 4     | 0        | 0        | 1       | 0            |
| 16  | B     | 4     | 0        | 0        | 0       | 0            |
| 16  | C     | 4     | 0        | 0        | 1       | 0            |
| All | All   | 47664 | 0        | 37484    | 2325    | 9            |

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 27.

All (2325) 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) |
|------------------|------------------|--------------------------|-------------------|
| 11:N:1001:UNK:CA | 11:N:1059:UNK:C  | 1.85                     | 1.51              |
| 11:Q:1001:UNK:CA | 11:Q:1059:UNK:C  | 1.85                     | 1.51              |
| 3:3:485:GLU:CD   | 6:F:16:ARG:HG3   | 1.39                     | 1.43              |
| 9:L:1527:UNK:C   | 9:L:1530:UNK:N   | 1.88                     | 1.37              |
| 9:O:1527:UNK:C   | 9:O:1530:UNK:N   | 1.88                     | 1.37              |
| 3:3:485:GLU:O    | 6:F:16:ARG:CD    | 1.84                     | 1.25              |
| 3:3:679:ARG:CZ   | 3:C:319:GLU:OE2  | 1.84                     | 1.23              |
| 3:3:485:GLU:OE1  | 6:F:16:ARG:CG    | 1.87                     | 1.23              |
| 3:3:485:GLU:O    | 6:F:16:ARG:HD2   | 1.05                     | 1.21              |
| 10:P:920:UNK:CA  | 10:P:1200:UNK:N  | 2.03                     | 1.21              |
| 10:M:920:UNK:CA  | 10:M:1200:UNK:N  | 2.03                     | 1.20              |
| 3:3:485:GLU:CG   | 6:F:16:ARG:HG3   | 1.73                     | 1.18              |
| 3:3:474:ARG:NH2  | 3:3:516:VAL:HG21 | 1.60                     | 1.17              |
| 3:C:474:ARG:NH2  | 3:C:516:VAL:HG21 | 1.60                     | 1.17              |
| 11:N:310:UNK:CA  | 11:N:350:UNK:CA  | 2.31                     | 1.08              |
| 11:Q:310:UNK:CA  | 11:Q:350:UNK:CA  | 2.32                     | 1.08              |
| 5:E:66:GLU:HG2   | 5:E:95:PRO:HA    | 1.16                     | 1.06              |
| 5:5:66:GLU:HG2   | 5:5:95:PRO:HA    | 1.16                     | 1.06              |
| 3:C:561:PRO:HB3  | 3:C:576:ALA:HA   | 1.30                     | 1.06              |
| 3:3:440:ARG:HG2  | 3:3:440:ARG:HH11 | 1.20                     | 1.05              |
| 3:3:561:PRO:HB3  | 3:3:576:ALA:HA   | 1.30                     | 1.05              |
| 3:C:440:ARG:HG2  | 3:C:440:ARG:HH11 | 1.20                     | 1.05              |
| 1:1:437:TRP:HB3  | 2:2:92:GLY:HA3   | 1.10                     | 1.05              |
| 1:A:437:TRP:HB3  | 2:B:92:GLY:HA3   | 1.10                     | 1.05              |
| 3:3:115:HIS:CD2  | 3:3:116:PRO:HD2  | 1.91                     | 1.04              |
| 3:C:115:HIS:CD2  | 3:C:116:PRO:HD2  | 1.91                     | 1.04              |
| 3:3:485:GLU:OE1  | 6:F:16:ARG:HG3   | 1.46                     | 1.04              |
| 4:4:143:LEU:CD1  | 13:H:834:UNK:C   | 2.36                     | 1.02              |
| 4:D:143:LEU:CD1  | 13:T:834:UNK:C   | 2.36                     | 1.02              |
| 3:3:738:THR:HG22 | 3:3:739:PRO:HD2  | 1.37                     | 1.02              |
| 3:C:738:THR:HG22 | 3:C:739:PRO:HD2  | 1.37                     | 1.02              |
| 3:3:485:GLU:C    | 6:F:16:ARG:HD2   | 1.79                     | 1.01              |
| 4:4:143:LEU:HD13 | 13:H:834:UNK:C   | 1.90                     | 1.01              |
| 4:D:143:LEU:HD13 | 13:T:834:UNK:C   | 1.90                     | 1.01              |
| 7:9:41:HIS:HB3   | 7:9:113:ILE:HD11 | 1.42                     | 1.01              |
| 7:G:41:HIS:HB3   | 7:G:113:ILE:HD11 | 1.42                     | 1.01              |
| 3:3:679:ARG:CZ   | 3:C:319:GLU:CD   | 2.29                     | 1.00              |
| 3:3:655:ARG:HB2  | 3:3:655:ARG:HH11 | 1.26                     | 1.00              |
| 3:3:679:ARG:NH2  | 3:C:319:GLU:CD   | 2.14                     | 1.00              |
| 4:4:367:ARG:HH11 | 4:4:367:ARG:HG3  | 1.22                     | 1.00              |
| 3:C:655:ARG:HB2  | 3:C:655:ARG:HH11 | 1.26                     | 1.00              |
| 4:D:367:ARG:HH11 | 4:D:367:ARG:HG3  | 1.22                     | 1.00              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:485:GLU:OE1  | 6:F:16:ARG:HG2   | 1.59                     | 1.00              |
| 11:N:1001:UNK:C  | 11:N:1059:UNK:C  | 2.40                     | 0.99              |
| 11:Q:1001:UNK:C  | 11:Q:1059:UNK:C  | 2.40                     | 0.99              |
| 1:1:186:THR:HG23 | 1:1:200:ARG:H    | 1.27                     | 0.99              |
| 1:A:186:THR:HG23 | 1:A:200:ARG:H    | 1.27                     | 0.99              |
| 3:3:501:LYS:H    | 3:3:501:LYS:HD2  | 1.27                     | 0.98              |
| 3:C:501:LYS:H    | 3:C:501:LYS:HD2  | 1.27                     | 0.98              |
| 1:1:16:THR:HG21  | 1:1:229:PRO:HB3  | 1.44                     | 0.98              |
| 1:A:16:THR:HG21  | 1:A:229:PRO:HB3  | 1.44                     | 0.98              |
| 6:F:145:GLU:HG2  | 7:G:31:VAL:HG21  | 1.43                     | 0.97              |
| 6:6:145:GLU:HG2  | 7:9:31:VAL:HG21  | 1.43                     | 0.97              |
| 10:P:920:UNK:C   | 10:P:1200:UNK:H2 | 1.78                     | 0.97              |
| 10:M:920:UNK:C   | 10:M:1200:UNK:H2 | 1.78                     | 0.97              |
| 3:3:485:GLU:CD   | 6:F:16:ARG:CG    | 2.26                     | 0.97              |
| 1:A:90:ILE:HD11  | 1:A:211:LEU:HD22 | 1.48                     | 0.96              |
| 1:1:90:ILE:HD11  | 1:1:211:LEU:HD22 | 1.48                     | 0.95              |
| 3:C:474:ARG:HH21 | 3:C:516:VAL:HG21 | 1.12                     | 0.95              |
| 3:3:474:ARG:HH21 | 3:3:516:VAL:HG21 | 1.12                     | 0.95              |
| 3:3:440:ARG:HH11 | 3:3:440:ARG:CG   | 1.80                     | 0.95              |
| 3:C:440:ARG:HH11 | 3:C:440:ARG:CG   | 1.80                     | 0.95              |
| 1:A:246:SER:HB3  | 1:A:268:MET:HG2  | 1.49                     | 0.94              |
| 1:1:246:SER:HB3  | 1:1:268:MET:HG2  | 1.50                     | 0.94              |
| 1:1:104:ARG:HH21 | 2:2:127:SER:HB3  | 1.31                     | 0.94              |
| 4:4:254:TYR:HD1  | 4:4:255:SER:H    | 1.15                     | 0.94              |
| 4:4:238:SER:HB3  | 4:4:279:ARG:NH2  | 1.83                     | 0.94              |
| 4:D:238:SER:HB3  | 4:D:279:ARG:NH2  | 1.83                     | 0.94              |
| 1:A:104:ARG:HH21 | 2:B:127:SER:HB3  | 1.31                     | 0.94              |
| 4:D:254:TYR:HD1  | 4:D:255:SER:H    | 1.15                     | 0.94              |
| 3:C:509:ALA:HB1  | 3:C:768:GLY:HA3  | 1.50                     | 0.93              |
| 3:3:509:ALA:HB1  | 3:3:768:GLY:HA3  | 1.50                     | 0.93              |
| 1:A:358:PRO:O    | 1:A:362:GLY:HA3  | 1.66                     | 0.93              |
| 1:A:395:GLU:HB2  | 1:A:407:VAL:HG21 | 1.50                     | 0.93              |
| 1:1:395:GLU:HB2  | 1:1:407:VAL:HG21 | 1.50                     | 0.93              |
| 3:3:343:LEU:HD12 | 3:3:361:ALA:HB2  | 1.50                     | 0.93              |
| 3:C:343:LEU:HD12 | 3:C:361:ALA:HB2  | 1.50                     | 0.93              |
| 1:1:358:PRO:O    | 1:1:362:GLY:HA3  | 1.66                     | 0.93              |
| 3:3:486:GLY:HA2  | 6:F:17:GLU:OE1   | 1.68                     | 0.93              |
| 1:1:40:THR:O     | 1:1:44:VAL:HG23  | 1.70                     | 0.92              |
| 1:A:40:THR:O     | 1:A:44:VAL:HG23  | 1.70                     | 0.92              |
| 3:3:722:THR:HG21 | 3:3:756:GLY:H    | 1.34                     | 0.92              |
| 3:C:722:THR:HG21 | 3:C:756:GLY:H    | 1.34                     | 0.92              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 3:3:374:ARG:NH2  | 3:3:684:ARG:HG3   | 1.87                     | 0.89              |
| 3:C:374:ARG:NH2  | 3:C:684:ARG:HG3   | 1.87                     | 0.88              |
| 3:3:689:LYS:HE3  | 3:3:771:VAL:HG13  | 1.55                     | 0.88              |
| 3:C:689:LYS:HE3  | 3:C:771:VAL:HG13  | 1.55                     | 0.88              |
| 3:3:279:ALA:HB2  | 3:3:290:ILE:HG12  | 1.56                     | 0.88              |
| 10:M:920:UNK:CA  | 10:M:1200:UNK:H2  | 1.77                     | 0.88              |
| 3:C:279:ALA:HB2  | 3:C:290:ILE:HG12  | 1.56                     | 0.88              |
| 10:P:920:UNK:CA  | 10:P:1200:UNK:H2  | 1.77                     | 0.88              |
| 3:C:115:HIS:CG   | 3:C:116:PRO:HD2   | 2.09                     | 0.87              |
| 3:3:115:HIS:CG   | 3:3:116:PRO:HD2   | 2.09                     | 0.87              |
| 9:L:119:UNK:C    | 9:L:121:UNK:N     | 2.35                     | 0.87              |
| 9:O:119:UNK:C    | 9:O:121:UNK:N     | 2.35                     | 0.87              |
| 3:3:485:GLU:HG2  | 6:F:16:ARG:HG3    | 1.56                     | 0.87              |
| 5:5:18:GLU:HB2   | 5:5:26:TRP:HB2    | 1.55                     | 0.87              |
| 5:E:18:GLU:HB2   | 5:E:26:TRP:HB2    | 1.55                     | 0.87              |
| 1:A:242:GLY:HA2  | 1:A:268:MET:O     | 1.75                     | 0.86              |
| 1:1:242:GLY:HA2  | 1:1:268:MET:O     | 1.75                     | 0.86              |
| 3:3:136:GLU:HG2  | 5:5:189:ARG:HG2   | 1.55                     | 0.86              |
| 6:6:117:MET:HE2  | 7:9:99:ILE:HG12   | 1.57                     | 0.86              |
| 3:C:136:GLU:HG2  | 5:E:189:ARG:HG2   | 1.55                     | 0.86              |
| 6:F:117:MET:HE2  | 7:G:99:ILE:HG12   | 1.57                     | 0.86              |
| 1:A:162:LEU:O    | 1:A:165:THR:HG22  | 1.76                     | 0.86              |
| 1:1:162:LEU:O    | 1:1:165:THR:HG22  | 1.76                     | 0.86              |
| 1:1:186:THR:CG2  | 1:1:200:ARG:H     | 1.88                     | 0.86              |
| 1:A:186:THR:CG2  | 1:A:200:ARG:H     | 1.88                     | 0.85              |
| 10:P:404:UNK:CA  | 11:Q:662:UNK:CA   | 2.53                     | 0.85              |
| 1:1:297:THR:HG22 | 1:1:322:MET:HG3   | 1.58                     | 0.85              |
| 3:3:396:ALA:HB3  | 3:3:448:MET:HB2   | 1.57                     | 0.85              |
| 10:M:404:UNK:CA  | 11:N:662:UNK:CA   | 2.53                     | 0.85              |
| 1:A:297:THR:HG22 | 1:A:322:MET:HG3   | 1.58                     | 0.85              |
| 3:C:396:ALA:HB3  | 3:C:448:MET:HB2   | 1.57                     | 0.85              |
| 1:1:253:GLN:N    | 1:1:253:GLN:HE21  | 1.75                     | 0.85              |
| 1:A:253:GLN:N    | 1:A:253:GLN:HE21  | 1.75                     | 0.85              |
| 8:7:87:PRO:O     | 8:7:88:ARG:HB2    | 1.74                     | 0.85              |
| 8:J:87:PRO:O     | 8:J:88:ARG:HB2    | 1.74                     | 0.85              |
| 1:A:245:GLN:HB2  | 1:A:314:GLU:OE1   | 1.75                     | 0.84              |
| 1:1:245:GLN:HB2  | 1:1:314:GLU:OE1   | 1.76                     | 0.84              |
| 5:5:52:ILE:CG2   | 5:5:114:LEU:HB3   | 2.07                     | 0.84              |
| 5:E:52:ILE:CG2   | 5:E:114:LEU:HB3   | 2.07                     | 0.84              |
| 1:A:401:PRO:HB2  | 15:A:440:FMN:HM83 | 1.60                     | 0.84              |
| 1:1:401:PRO:HB2  | 15:1:440:FMN:HM83 | 1.60                     | 0.84              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:143:LEU:HD12 | 13:H:834:UNK:C   | 2.06                     | 0.84              |
| 4:D:143:LEU:HD12 | 13:T:834:UNK:C   | 2.06                     | 0.84              |
| 4:D:115:THR:HG21 | 4:D:297:LEU:HD13 | 1.60                     | 0.84              |
| 4:4:115:THR:HG21 | 4:4:297:LEU:HD13 | 1.60                     | 0.83              |
| 3:C:689:LYS:HG3  | 3:C:771:VAL:HA   | 1.59                     | 0.83              |
| 3:3:689:LYS:HG3  | 3:3:771:VAL:HA   | 1.59                     | 0.83              |
| 3:3:226:ILE:HD12 | 3:3:235:LEU:HD13 | 1.58                     | 0.83              |
| 3:C:226:ILE:HD12 | 3:C:235:LEU:HD13 | 1.58                     | 0.83              |
| 5:E:121:LEU:HB3  | 5:E:146:LEU:HB2  | 1.60                     | 0.83              |
| 10:P:704:UNK:C   | 10:P:706:UNK:N   | 2.40                     | 0.83              |
| 10:M:704:UNK:C   | 10:M:706:UNK:N   | 2.40                     | 0.83              |
| 5:5:121:LEU:HB3  | 5:5:146:LEU:HB2  | 1.60                     | 0.83              |
| 3:3:186:ARG:HD2  | 3:3:231:PRO:HD3  | 1.61                     | 0.82              |
| 6:6:96:TRP:HA    | 6:6:99:MET:HE3   | 1.61                     | 0.82              |
| 6:F:96:TRP:HA    | 6:F:99:MET:HE3   | 1.61                     | 0.82              |
| 3:C:186:ARG:HD2  | 3:C:231:PRO:HD3  | 1.61                     | 0.82              |
| 1:1:331:ILE:HD12 | 1:1:337:MET:HE1  | 1.62                     | 0.82              |
| 4:4:238:SER:HB3  | 4:4:279:ARG:HH22 | 1.45                     | 0.82              |
| 4:D:238:SER:HB3  | 4:D:279:ARG:HH22 | 1.45                     | 0.82              |
| 4:4:311:PRO:HD3  | 4:4:330:HIS:CE1  | 2.15                     | 0.82              |
| 1:A:331:ILE:HD12 | 1:A:337:MET:HE1  | 1.62                     | 0.81              |
| 4:D:311:PRO:HD3  | 4:D:330:HIS:CE1  | 2.15                     | 0.81              |
| 4:D:230:ILE:HD13 | 5:E:77:LEU:HD12  | 1.61                     | 0.81              |
| 4:4:230:ILE:HD13 | 5:5:77:LEU:HD12  | 1.61                     | 0.81              |
| 3:3:739:PRO:HG2  | 3:3:771:VAL:CG1  | 2.11                     | 0.81              |
| 3:C:739:PRO:HG2  | 3:C:771:VAL:CG1  | 2.11                     | 0.81              |
| 3:C:2:VAL:HG13   | 3:C:89:ASP:HA    | 1.63                     | 0.81              |
| 3:3:2:VAL:HG13   | 3:3:89:ASP:HA    | 1.63                     | 0.81              |
| 3:3:11:VAL:HG11  | 3:3:25:HIS:CD2   | 2.16                     | 0.81              |
| 3:3:402:PRO:HG3  | 3:3:535:MET:HE1  | 1.61                     | 0.80              |
| 1:A:88:TYR:HB2   | 1:A:216:THR:HG22 | 1.60                     | 0.80              |
| 3:C:11:VAL:HG11  | 3:C:25:HIS:CD2   | 2.16                     | 0.80              |
| 3:C:402:PRO:HG3  | 3:C:535:MET:HE1  | 1.61                     | 0.80              |
| 5:E:161:GLU:HG3  | 5:E:163:ARG:NH2  | 1.96                     | 0.80              |
| 1:1:88:TYR:HB2   | 1:1:216:THR:HG22 | 1.60                     | 0.80              |
| 5:5:161:GLU:HG3  | 5:5:163:ARG:NH2  | 1.96                     | 0.80              |
| 1:1:104:ARG:HH21 | 2:2:127:SER:CB   | 1.94                     | 0.80              |
| 1:A:104:ARG:HH21 | 2:B:127:SER:CB   | 1.94                     | 0.80              |
| 3:3:120:PRO:HG2  | 8:7:42:TYR:OH    | 1.80                     | 0.80              |
| 3:3:584:VAL:HG12 | 3:3:600:VAL:HB   | 1.64                     | 0.80              |
| 3:C:584:VAL:HG12 | 3:C:600:VAL:HB   | 1.64                     | 0.80              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:1:293:GLY:HA3  | 1:1:324:GLY:H    | 1.47                     | 0.80              |
| 3:3:679:ARG:NH1  | 3:C:319:GLU:OE1  | 2.15                     | 0.80              |
| 1:A:293:GLY:HA3  | 1:A:324:GLY:H    | 1.47                     | 0.80              |
| 3:C:120:PRO:HG2  | 8:J:42:TYR:OH    | 1.80                     | 0.80              |
| 3:3:722:THR:HG21 | 3:3:756:GLY:N    | 1.97                     | 0.80              |
| 1:A:104:ARG:NH2  | 2:B:127:SER:HB3  | 1.97                     | 0.80              |
| 3:C:722:THR:HG21 | 3:C:756:GLY:N    | 1.97                     | 0.80              |
| 1:1:104:ARG:NH2  | 2:2:127:SER:HB3  | 1.97                     | 0.80              |
| 15:1:440:FMN:N1  | 15:1:440:FMN:O3' | 2.13                     | 0.79              |
| 15:A:440:FMN:N1  | 15:A:440:FMN:O3' | 2.13                     | 0.79              |
| 1:A:160:LYS:HG3  | 1:A:161:ASN:H    | 1.46                     | 0.79              |
| 3:3:694:LEU:HB3  | 3:3:762:ALA:HB2  | 1.64                     | 0.79              |
| 1:1:160:LYS:HG3  | 1:1:161:ASN:H    | 1.46                     | 0.79              |
| 3:C:694:LEU:HB3  | 3:C:762:ALA:HB2  | 1.64                     | 0.79              |
| 3:3:237:ASP:OD1  | 3:3:239:THR:HG22 | 1.81                     | 0.78              |
| 3:C:237:ASP:OD1  | 3:C:239:THR:HG22 | 1.81                     | 0.78              |
| 4:4:212:PRO:HG2  | 4:4:213:ILE:HD12 | 1.64                     | 0.78              |
| 1:A:415:ARG:O    | 1:A:415:ARG:HG2  | 1.82                     | 0.78              |
| 4:D:212:PRO:HG2  | 4:D:213:ILE:HD12 | 1.64                     | 0.78              |
| 1:1:415:ARG:O    | 1:1:415:ARG:HG2  | 1.83                     | 0.78              |
| 5:E:37:GLU:O     | 5:E:41:TYR:HD1   | 1.67                     | 0.78              |
| 5:5:37:GLU:O     | 5:5:41:TYR:HD1   | 1.67                     | 0.78              |
| 3:3:485:GLU:O    | 6:F:16:ARG:NH1   | 2.16                     | 0.77              |
| 4:D:249:ARG:HB3  | 4:D:257:TYR:HD1  | 1.48                     | 0.77              |
| 3:3:561:PRO:CB   | 3:3:576:ALA:HA   | 2.12                     | 0.77              |
| 4:4:249:ARG:HB3  | 4:4:257:TYR:HD1  | 1.48                     | 0.77              |
| 3:C:561:PRO:CB   | 3:C:576:ALA:HA   | 2.12                     | 0.77              |
| 3:3:337:ARG:H    | 3:3:337:ARG:CD   | 1.98                     | 0.77              |
| 3:C:337:ARG:H    | 3:C:337:ARG:CD   | 1.98                     | 0.77              |
| 9:O:420:UNK:C    | 9:O:422:UNK:N    | 2.44                     | 0.77              |
| 3:3:655:ARG:HB2  | 3:3:655:ARG:NH1  | 1.98                     | 0.77              |
| 9:L:420:UNK:C    | 9:L:422:UNK:N    | 2.44                     | 0.77              |
| 3:C:655:ARG:HB2  | 3:C:655:ARG:NH1  | 1.98                     | 0.77              |
| 1:1:98:PRO:HA    | 2:2:124:CYS:SG   | 2.26                     | 0.77              |
| 7:9:33:LEU:HD11  | 7:9:161:TYR:HB2  | 1.67                     | 0.77              |
| 7:G:33:LEU:HD11  | 7:G:161:TYR:HB2  | 1.68                     | 0.77              |
| 3:3:368:HIS:CB   | 3:3:556:ALA:HB3  | 2.15                     | 0.76              |
| 3:C:368:HIS:CB   | 3:C:556:ALA:HB3  | 2.15                     | 0.76              |
| 1:A:98:PRO:HA    | 2:B:124:CYS:SG   | 2.26                     | 0.76              |
| 5:5:174:LEU:HD21 | 5:5:180:GLY:HA2  | 1.67                     | 0.76              |
| 3:C:368:HIS:HB3  | 3:C:556:ALA:HB3  | 1.67                     | 0.76              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:E:174:LEU:HD21 | 5:E:180:GLY:HA2  | 1.67                     | 0.76              |
| 3:3:368:HIS:HB3  | 3:3:556:ALA:HB3  | 1.67                     | 0.76              |
| 3:3:511:VAL:O    | 3:3:518:ALA:HB2  | 1.86                     | 0.76              |
| 3:C:511:VAL:O    | 3:C:518:ALA:HB2  | 1.86                     | 0.76              |
| 4:4:389:GLN:HG3  | 4:4:390:VAL:H    | 1.51                     | 0.76              |
| 4:D:389:GLN:HG3  | 4:D:390:VAL:H    | 1.51                     | 0.76              |
| 3:C:337:ARG:H    | 3:C:337:ARG:HD2  | 1.51                     | 0.76              |
| 3:3:160:THR:OG1  | 8:7:73:SER:HB3   | 1.86                     | 0.76              |
| 3:C:160:THR:OG1  | 8:J:73:SER:HB3   | 1.86                     | 0.76              |
| 3:3:337:ARG:H    | 3:3:337:ARG:HD2  | 1.51                     | 0.76              |
| 4:D:367:ARG:HH11 | 4:D:367:ARG:CG   | 1.98                     | 0.76              |
| 4:D:390:VAL:HB   | 4:D:391:PRO:HD3  | 1.68                     | 0.76              |
| 4:4:367:ARG:HH11 | 4:4:367:ARG:CG   | 1.99                     | 0.76              |
| 4:4:390:VAL:HB   | 4:4:391:PRO:HD3  | 1.68                     | 0.76              |
| 1:1:243:THR:HG22 | 1:1:244:GLU:H    | 1.51                     | 0.75              |
| 1:1:437:TRP:CB   | 2:2:92:GLY:HA3   | 2.04                     | 0.75              |
| 1:A:243:THR:HG22 | 1:A:244:GLU:H    | 1.51                     | 0.75              |
| 3:3:250:GLU:HG3  | 5:5:169:GLU:CD   | 2.05                     | 0.75              |
| 3:C:250:GLU:HG3  | 5:E:169:GLU:CD   | 2.06                     | 0.75              |
| 1:A:437:TRP:CB   | 2:B:92:GLY:HA3   | 2.04                     | 0.75              |
| 7:9:44:THR:HA    | 7:9:138:VAL:CG1  | 2.16                     | 0.75              |
| 7:G:44:THR:HA    | 7:G:138:VAL:CG1  | 2.16                     | 0.75              |
| 4:4:283:MET:O    | 4:4:287:VAL:HG23 | 1.87                     | 0.75              |
| 4:D:283:MET:O    | 4:D:287:VAL:HG23 | 1.87                     | 0.75              |
| 5:5:5:ARG:HH11   | 5:5:5:ARG:HG3    | 1.51                     | 0.75              |
| 5:E:5:ARG:HH11   | 5:E:5:ARG:HG3    | 1.51                     | 0.75              |
| 6:6:99:MET:HG2   | 6:6:100:PRO:HD2  | 1.69                     | 0.74              |
| 6:6:117:MET:CE   | 7:9:99:ILE:HG12  | 2.17                     | 0.74              |
| 3:C:186:ARG:HD3  | 3:C:229:ILE:HG22 | 1.68                     | 0.74              |
| 6:F:117:MET:CE   | 7:G:99:ILE:HG12  | 2.17                     | 0.74              |
| 3:3:186:ARG:HD3  | 3:3:229:ILE:HG22 | 1.69                     | 0.74              |
| 6:F:99:MET:HG2   | 6:F:100:PRO:HD2  | 1.69                     | 0.74              |
| 3:3:690:GLY:HA3  | 3:3:770:ARG:NH2  | 2.02                     | 0.74              |
| 3:C:690:GLY:HA3  | 3:C:770:ARG:NH2  | 2.02                     | 0.74              |
| 7:9:40:ARG:HB2   | 7:9:121:MET:HE1  | 1.68                     | 0.74              |
| 3:3:440:ARG:CG   | 3:3:440:ARG:NH1  | 2.46                     | 0.74              |
| 3:C:440:ARG:CG   | 3:C:440:ARG:NH1  | 2.46                     | 0.74              |
| 9:L:1527:UNK:C   | 9:L:1529:UNK:N   | 2.42                     | 0.74              |
| 9:O:1527:UNK:C   | 9:O:1529:UNK:N   | 2.42                     | 0.74              |
| 3:3:101:ARG:HB3  | 3:3:101:ARG:NH1  | 2.03                     | 0.73              |
| 10:M:651:UNK:C   | 10:M:653:UNK:N   | 2.50                     | 0.73              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 10:P:651:UNK:C   | 10:P:653:UNK:N   | 2.50                     | 0.73              |
| 3:C:101:ARG:HB3  | 3:C:101:ARG:NH1  | 2.04                     | 0.73              |
| 4:4:371:ARG:NH2  | 4:4:376:VAL:HG21 | 2.02                     | 0.73              |
| 1:A:360:ARG:O    | 1:A:364:ALA:HB3  | 1.88                     | 0.73              |
| 4:D:371:ARG:NH2  | 4:D:376:VAL:HG21 | 2.02                     | 0.73              |
| 1:1:360:ARG:O    | 1:1:364:ALA:HB3  | 1.88                     | 0.73              |
| 1:1:437:TRP:HB3  | 2:2:92:GLY:CA    | 2.05                     | 0.73              |
| 3:3:386:SER:HB2  | 3:3:675:ARG:NH1  | 2.04                     | 0.73              |
| 3:C:386:SER:HB2  | 3:C:675:ARG:NH1  | 2.04                     | 0.73              |
| 4:D:250:LYS:HE2  | 4:D:262:PHE:HB3  | 1.69                     | 0.73              |
| 4:4:250:LYS:HE2  | 4:4:262:PHE:HB3  | 1.70                     | 0.73              |
| 1:A:437:TRP:HB3  | 2:B:92:GLY:CA    | 2.05                     | 0.73              |
| 7:G:40:ARG:HB2   | 7:G:121:MET:CE   | 2.18                     | 0.73              |
| 5:5:103:THR:HG22 | 5:5:126:PHE:HB3  | 1.71                     | 0.73              |
| 11:N:310:UNK:CA  | 11:N:350:UNK:N   | 2.51                     | 0.73              |
| 3:C:205:ARG:HA   | 3:C:209:THR:HG22 | 1.71                     | 0.73              |
| 11:Q:310:UNK:CA  | 11:Q:350:UNK:N   | 2.51                     | 0.73              |
| 2:2:24:ARG:O     | 2:2:27:ILE:HG13  | 1.89                     | 0.73              |
| 2:B:24:ARG:O     | 2:B:27:ILE:HG13  | 1.89                     | 0.73              |
| 5:E:103:THR:HG22 | 5:E:126:PHE:HB3  | 1.71                     | 0.73              |
| 3:3:116:PRO:O    | 3:3:117:LEU:HB2  | 1.88                     | 0.73              |
| 3:3:205:ARG:HA   | 3:3:209:THR:HG22 | 1.71                     | 0.73              |
| 3:3:300:TRP:HB3  | 3:3:705:VAL:HG21 | 1.71                     | 0.73              |
| 3:C:116:PRO:O    | 3:C:117:LEU:HB2  | 1.88                     | 0.73              |
| 3:C:300:TRP:HB3  | 3:C:705:VAL:HG21 | 1.71                     | 0.73              |
| 6:6:165:GLU:HG2  | 7:9:148:ARG:HH11 | 1.54                     | 0.73              |
| 3:C:738:THR:CG2  | 3:C:739:PRO:HD2  | 2.16                     | 0.73              |
| 4:D:168:PHE:HE1  | 6:F:141:PRO:HG3  | 1.54                     | 0.73              |
| 3:3:738:THR:CG2  | 3:3:739:PRO:HD2  | 2.17                     | 0.72              |
| 4:4:168:PHE:HE1  | 6:6:141:PRO:HG3  | 1.54                     | 0.72              |
| 5:5:106:ASP:HB2  | 5:5:107:LEU:HD12 | 1.71                     | 0.72              |
| 1:A:259:LYS:HA   | 1:A:284:LEU:HD21 | 1.72                     | 0.72              |
| 5:E:106:ASP:HB2  | 5:E:107:LEU:HD12 | 1.71                     | 0.72              |
| 1:1:259:LYS:HA   | 1:1:284:LEU:HD21 | 1.72                     | 0.72              |
| 7:9:40:ARG:HB2   | 7:9:121:MET:CE   | 2.18                     | 0.72              |
| 6:F:165:GLU:HG2  | 7:G:148:ARG:HH11 | 1.54                     | 0.72              |
| 1:1:270:THR:O    | 1:1:311:MET:HG3  | 1.88                     | 0.72              |
| 3:3:494:LYS:O    | 3:3:498:GLU:HG2  | 1.88                     | 0.72              |
| 3:C:494:LYS:O    | 3:C:498:GLU:HG2  | 1.88                     | 0.72              |
| 3:C:615:VAL:HG22 | 3:C:621:VAL:HG12 | 1.70                     | 0.72              |
| 1:1:16:THR:HG21  | 1:1:229:PRO:CB   | 2.18                     | 0.72              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:615:VAL:HG22 | 3:3:621:VAL:HG12 | 1.70                     | 0.72              |
| 1:A:16:THR:HG21  | 1:A:229:PRO:CB   | 2.18                     | 0.72              |
| 1:A:270:THR:O    | 1:A:311:MET:HG3  | 1.88                     | 0.72              |
| 3:C:438:LYS:O    | 3:C:441:MET:HG3  | 1.88                     | 0.72              |
| 6:F:81:ALA:HA    | 6:F:108:MET:HB3  | 1.69                     | 0.72              |
| 3:3:438:LYS:O    | 3:3:441:MET:HG3  | 1.88                     | 0.72              |
| 6:6:81:ALA:HA    | 6:6:108:MET:HB3  | 1.69                     | 0.72              |
| 7:9:73:ALA:HB2   | 7:9:89:LYS:HB2   | 1.71                     | 0.72              |
| 3:C:538:ALA:HB3  | 3:C:541:ALA:HB2  | 1.72                     | 0.72              |
| 7:G:73:ALA:HB2   | 7:G:89:LYS:HB2   | 1.71                     | 0.72              |
| 3:3:31:PRO:HG3   | 3:3:137:TYR:CD1  | 2.24                     | 0.72              |
| 3:3:538:ALA:HB3  | 3:3:541:ALA:HB2  | 1.72                     | 0.72              |
| 3:3:679:ARG:NH1  | 3:C:319:GLU:OE2  | 2.21                     | 0.72              |
| 3:3:300:TRP:HB3  | 3:3:705:VAL:CG2  | 2.20                     | 0.72              |
| 11:N:653:UNK:C   | 11:N:655:UNK:N   | 2.51                     | 0.72              |
| 3:C:31:PRO:HG3   | 3:C:137:TYR:CD1  | 2.24                     | 0.72              |
| 4:4:105:LEU:HD13 | 4:4:309:ILE:HD13 | 1.72                     | 0.72              |
| 3:C:300:TRP:HB3  | 3:C:705:VAL:CG2  | 2.20                     | 0.72              |
| 4:D:105:LEU:HD13 | 4:D:309:ILE:HD13 | 1.72                     | 0.72              |
| 5:E:3:LEU:HB2    | 5:E:86:SER:HB2   | 1.70                     | 0.72              |
| 11:Q:653:UNK:C   | 11:Q:655:UNK:N   | 2.51                     | 0.72              |
| 3:3:55:PRO:HD3   | 3:3:74:GLN:H     | 1.53                     | 0.72              |
| 3:3:679:ARG:NH2  | 3:C:319:GLU:OE1  | 2.22                     | 0.72              |
| 5:5:3:LEU:HB2    | 5:5:86:SER:HB2   | 1.71                     | 0.72              |
| 2:2:109:GLY:HA2  | 8:7:91:ILE:HD13  | 1.72                     | 0.71              |
| 4:4:47:LEU:HD13  | 4:4:52:VAL:HA    | 1.72                     | 0.71              |
| 6:6:148:ILE:HG21 | 7:9:27:PRO:HG3   | 1.70                     | 0.71              |
| 9:L:1526:UNK:C   | 9:L:1528:UNK:N   | 2.53                     | 0.71              |
| 2:B:136:VAL:HG21 | 2:B:163:LEU:HD13 | 1.72                     | 0.71              |
| 3:C:55:PRO:HD3   | 3:C:74:GLN:H     | 1.53                     | 0.71              |
| 6:F:148:ILE:HG21 | 7:G:27:PRO:HG3   | 1.70                     | 0.71              |
| 9:O:1526:UNK:C   | 9:O:1528:UNK:N   | 2.53                     | 0.71              |
| 4:D:47:LEU:HD13  | 4:D:52:VAL:HA    | 1.73                     | 0.71              |
| 4:D:314:ARG:HH11 | 4:D:314:ARG:HG2  | 1.53                     | 0.71              |
| 2:2:136:VAL:HG21 | 2:2:163:LEU:HD13 | 1.72                     | 0.71              |
| 3:3:501:LYS:HD2  | 3:3:501:LYS:N    | 2.02                     | 0.71              |
| 4:4:314:ARG:HG2  | 4:4:314:ARG:HH11 | 1.53                     | 0.71              |
| 2:B:109:GLY:HA2  | 8:J:91:ILE:HD13  | 1.72                     | 0.71              |
| 3:C:501:LYS:HD2  | 3:C:501:LYS:N    | 2.02                     | 0.71              |
| 1:1:222:GLU:HG3  | 1:1:251:LEU:HD22 | 1.72                     | 0.71              |
| 3:3:367:PRO:HB2  | 3:3:554:LYS:HB2  | 1.73                     | 0.71              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 12:S:413:UNK:C   | 12:S:415:UNK:N   | 2.54                     | 0.71              |
| 1:A:222:GLU:HG3  | 1:A:251:LEU:HD22 | 1.72                     | 0.71              |
| 3:C:367:PRO:HB2  | 3:C:554:LYS:HB2  | 1.73                     | 0.71              |
| 3:3:217:GLY:O    | 3:3:218:LEU:HB2  | 1.90                     | 0.70              |
| 3:3:398:VAL:HB   | 3:3:450:LEU:HD22 | 1.71                     | 0.70              |
| 12:R:413:UNK:C   | 12:R:415:UNK:N   | 2.54                     | 0.70              |
| 3:C:217:GLY:O    | 3:C:218:LEU:HB2  | 1.90                     | 0.70              |
| 3:C:398:VAL:HB   | 3:C:450:LEU:HD22 | 1.71                     | 0.70              |
| 4:4:371:ARG:HG3  | 5:5:51:ASP:OD1   | 1.91                     | 0.70              |
| 3:C:185:LYS:HG2  | 3:C:188:VAL:HG22 | 1.73                     | 0.70              |
| 4:D:371:ARG:HG3  | 5:E:51:ASP:OD1   | 1.91                     | 0.70              |
| 3:3:185:LYS:HG2  | 3:3:188:VAL:HG22 | 1.73                     | 0.70              |
| 9:O:1527:UNK:C   | 9:O:1530:UNK:CA  | 2.69                     | 0.70              |
| 5:5:80:TRP:HA    | 5:5:80:TRP:CE3   | 2.25                     | 0.70              |
| 7:9:44:THR:HA    | 7:9:138:VAL:HG13 | 1.73                     | 0.70              |
| 9:L:1527:UNK:C   | 9:L:1530:UNK:CA  | 2.69                     | 0.70              |
| 4:D:285:GLU:O    | 4:D:289:ILE:HG12 | 1.91                     | 0.70              |
| 5:E:80:TRP:HA    | 5:E:80:TRP:CE3   | 2.25                     | 0.70              |
| 7:G:44:THR:HA    | 7:G:138:VAL:HG13 | 1.73                     | 0.70              |
| 3:3:591:HIS:ND1  | 3:3:592:PRO:HD2  | 2.07                     | 0.70              |
| 3:C:739:PRO:HG2  | 3:C:771:VAL:HG12 | 1.72                     | 0.70              |
| 3:3:739:PRO:HG2  | 3:3:771:VAL:HG12 | 1.72                     | 0.70              |
| 4:4:285:GLU:O    | 4:4:289:ILE:HG12 | 1.91                     | 0.70              |
| 3:C:101:ARG:NH1  | 3:C:140:TYR:CD1  | 2.59                     | 0.70              |
| 3:C:591:HIS:ND1  | 3:C:592:PRO:HD2  | 2.07                     | 0.70              |
| 4:D:371:ARG:HH22 | 4:D:376:VAL:HG21 | 1.57                     | 0.70              |
| 3:3:101:ARG:NH1  | 3:3:140:TYR:CD1  | 2.59                     | 0.70              |
| 4:4:371:ARG:HH22 | 4:4:376:VAL:HG21 | 1.57                     | 0.70              |
| 1:1:267:PRO:O    | 1:1:270:THR:HG23 | 1.91                     | 0.70              |
| 10:P:820:UNK:C   | 10:P:824:UNK:N   | 2.55                     | 0.70              |
| 10:M:820:UNK:C   | 10:M:824:UNK:N   | 2.55                     | 0.70              |
| 1:A:267:PRO:O    | 1:A:270:THR:HG23 | 1.91                     | 0.70              |
| 3:C:309:PRO:HG2  | 3:C:320:ALA:O    | 1.92                     | 0.70              |
| 3:3:309:PRO:HG2  | 3:3:320:ALA:O    | 1.92                     | 0.69              |
| 3:3:459:MET:HG2  | 3:3:465:HIS:HB2  | 1.75                     | 0.69              |
| 4:D:40:VAL:HG13  | 4:D:404:MET:HG3  | 1.73                     | 0.69              |
| 1:1:402:LEU:HD13 | 14:1:439:SF4:S1  | 2.33                     | 0.69              |
| 4:4:40:VAL:HG13  | 4:4:404:MET:HG3  | 1.73                     | 0.69              |
| 5:5:186:GLY:HA2  | 5:5:190:LYS:HD3  | 1.74                     | 0.69              |
| 1:A:402:LEU:HD13 | 14:A:439:SF4:S1  | 2.33                     | 0.69              |
| 5:E:186:GLY:HA2  | 5:E:190:LYS:HD3  | 1.74                     | 0.69              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:6:151:VAL:O    | 6:6:155:GLN:HB2  | 1.90                     | 0.69              |
| 9:L:1522:UNK:C   | 9:L:1524:UNK:N   | 2.54                     | 0.69              |
| 3:C:459:MET:HG2  | 3:C:465:HIS:HB2  | 1.75                     | 0.69              |
| 9:O:1522:UNK:C   | 9:O:1524:UNK:N   | 2.54                     | 0.69              |
| 1:1:203:PRO:HB2  | 1:1:204:PRO:HD3  | 1.75                     | 0.69              |
| 5:5:33:ARG:O     | 5:5:37:GLU:HB2   | 1.92                     | 0.69              |
| 1:A:303:THR:OG1  | 1:A:306:VAL:HG23 | 1.91                     | 0.69              |
| 5:E:33:ARG:O     | 5:E:37:GLU:HB2   | 1.92                     | 0.69              |
| 6:F:151:VAL:O    | 6:F:155:GLN:HB2  | 1.91                     | 0.69              |
| 1:1:303:THR:OG1  | 1:1:306:VAL:HG23 | 1.91                     | 0.69              |
| 3:3:693:TYR:HB3  | 3:3:759:TYR:HD2  | 1.57                     | 0.69              |
| 4:4:235:THR:HG21 | 4:4:352:GLU:HB2  | 1.73                     | 0.69              |
| 1:A:203:PRO:HB2  | 1:A:204:PRO:HD3  | 1.75                     | 0.69              |
| 1:A:312:SER:N    | 1:A:316:LEU:HD12 | 2.07                     | 0.69              |
| 1:1:312:SER:N    | 1:1:316:LEU:HD12 | 2.07                     | 0.69              |
| 1:1:370:LEU:O    | 1:1:374:ILE:HG22 | 1.92                     | 0.69              |
| 3:C:693:TYR:HB3  | 3:C:759:TYR:HD2  | 1.57                     | 0.69              |
| 4:D:235:THR:HG21 | 4:D:352:GLU:HB2  | 1.73                     | 0.69              |
| 1:A:370:LEU:O    | 1:A:374:ILE:HG22 | 1.92                     | 0.69              |
| 4:4:261:THR:H    | 4:4:292:GLN:HE22 | 1.39                     | 0.69              |
| 1:A:312:SER:H    | 1:A:316:LEU:HD12 | 1.58                     | 0.69              |
| 1:1:312:SER:H    | 1:1:316:LEU:HD12 | 1.59                     | 0.68              |
| 4:D:261:THR:H    | 4:D:292:GLN:HE22 | 1.39                     | 0.68              |
| 6:6:113:SER:HB3  | 7:9:96:LEU:HD13  | 1.75                     | 0.68              |
| 8:7:121:ARG:HH11 | 8:7:121:ARG:HG3  | 1.58                     | 0.68              |
| 6:F:113:SER:HB3  | 7:G:96:LEU:HD13  | 1.75                     | 0.68              |
| 8:J:121:ARG:HH11 | 8:J:121:ARG:HG3  | 1.58                     | 0.68              |
| 1:1:341:MET:CE   | 1:1:409:PRO:HB2  | 2.23                     | 0.68              |
| 4:4:218:ALA:HB1  | 4:4:272:VAL:HG22 | 1.74                     | 0.68              |
| 1:A:149:ILE:HD13 | 1:A:171:LEU:HB3  | 1.74                     | 0.68              |
| 3:C:374:ARG:HH21 | 3:C:684:ARG:HG3  | 1.57                     | 0.68              |
| 3:C:542:ARG:HB2  | 3:C:542:ARG:HH11 | 1.58                     | 0.68              |
| 1:1:149:ILE:HD13 | 1:1:171:LEU:HB3  | 1.74                     | 0.68              |
| 3:3:374:ARG:HH21 | 3:3:684:ARG:HG3  | 1.57                     | 0.68              |
| 4:4:98:ALA:O     | 4:4:102:GLU:HG3  | 1.94                     | 0.68              |
| 1:A:29:LEU:HD22  | 1:A:33:LEU:HG    | 1.74                     | 0.68              |
| 1:A:341:MET:CE   | 1:A:409:PRO:HB2  | 2.23                     | 0.68              |
| 4:D:98:ALA:O     | 4:D:102:GLU:HG3  | 1.94                     | 0.68              |
| 1:1:29:LEU:HD22  | 1:1:33:LEU:HG    | 1.75                     | 0.68              |
| 3:3:175:ILE:HB   | 3:3:238:LEU:HD22 | 1.75                     | 0.68              |
| 3:3:542:ARG:HB2  | 3:3:542:ARG:HH11 | 1.58                     | 0.68              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:96:ALA:HB2   | 4:4:346:THR:HG21 | 1.76                     | 0.68              |
| 4:D:96:ALA:HB2   | 4:D:346:THR:HG21 | 1.76                     | 0.68              |
| 4:D:218:ALA:HB1  | 4:D:272:VAL:HG22 | 1.74                     | 0.68              |
| 3:3:567:TYR:HA   | 3:3:584:VAL:HG23 | 1.75                     | 0.68              |
| 1:A:253:GLN:HE21 | 1:A:253:GLN:H    | 1.42                     | 0.68              |
| 3:C:175:ILE:HB   | 3:C:238:LEU:HD22 | 1.75                     | 0.68              |
| 4:D:40:VAL:O     | 4:D:40:VAL:HG22  | 1.94                     | 0.68              |
| 7:G:40:ARG:HB2   | 7:G:121:MET:HE1  | 1.74                     | 0.68              |
| 1:1:253:GLN:HE21 | 1:1:253:GLN:H    | 1.42                     | 0.68              |
| 4:4:40:VAL:O     | 4:4:40:VAL:HG22  | 1.94                     | 0.68              |
| 3:C:117:LEU:N    | 4:D:321:MET:CE   | 2.57                     | 0.68              |
| 3:C:567:TYR:HA   | 3:C:584:VAL:HG23 | 1.75                     | 0.68              |
| 3:3:117:LEU:N    | 4:4:321:MET:CE   | 2.57                     | 0.68              |
| 5:5:163:ARG:HD2  | 7:9:69:TYR:CD1   | 2.29                     | 0.68              |
| 4:D:367:ARG:HG3  | 4:D:367:ARG:NH1  | 2.03                     | 0.68              |
| 5:E:163:ARG:HD2  | 7:G:69:TYR:CD1   | 2.29                     | 0.68              |
| 5:5:2:ARG:HG3    | 5:5:84:ASP:OD2   | 1.94                     | 0.67              |
| 3:C:117:LEU:N    | 4:D:321:MET:HE1  | 2.08                     | 0.67              |
| 5:E:2:ARG:HG3    | 5:E:84:ASP:OD2   | 1.94                     | 0.67              |
| 3:3:117:LEU:N    | 4:4:321:MET:HE1  | 2.08                     | 0.67              |
| 4:4:367:ARG:HG3  | 4:4:367:ARG:NH1  | 2.03                     | 0.67              |
| 3:C:279:ALA:CB   | 3:C:290:ILE:HG12 | 2.24                     | 0.67              |
| 3:3:279:ALA:CB   | 3:3:290:ILE:HG12 | 2.24                     | 0.67              |
| 6:6:163:TYR:HD1  | 7:9:152:ARG:NH1  | 1.91                     | 0.67              |
| 6:F:163:TYR:HD1  | 7:G:152:ARG:NH1  | 1.91                     | 0.67              |
| 10:P:401:UNK:CA  | 11:Q:663:UNK:CA  | 2.72                     | 0.67              |
| 4:4:224:ILE:HD11 | 4:4:275:ARG:NH1  | 2.09                     | 0.67              |
| 10:M:401:UNK:CA  | 11:N:663:UNK:CA  | 2.72                     | 0.67              |
| 4:D:224:ILE:HD11 | 4:D:275:ARG:NH1  | 2.09                     | 0.67              |
| 3:3:117:LEU:HD23 | 4:4:321:MET:HA   | 1.77                     | 0.67              |
| 4:4:311:PRO:HD3  | 4:4:330:HIS:NE2  | 2.09                     | 0.67              |
| 5:5:50:ALA:HB3   | 5:5:73:GLU:HB3   | 1.78                     | 0.67              |
| 4:D:311:PRO:HD3  | 4:D:330:HIS:NE2  | 2.09                     | 0.67              |
| 1:1:288:GLN:HB3  | 1:1:333:GLU:HG2  | 1.77                     | 0.66              |
| 2:2:77:LYS:H     | 2:2:116:LEU:HA   | 1.58                     | 0.66              |
| 2:B:77:LYS:H     | 2:B:116:LEU:HA   | 1.58                     | 0.66              |
| 5:E:50:ALA:HB3   | 5:E:73:GLU:HB3   | 1.78                     | 0.66              |
| 1:A:93:ALA:HB1   | 1:A:107:LEU:HD11 | 1.75                     | 0.66              |
| 1:A:288:GLN:HB3  | 1:A:333:GLU:HG2  | 1.77                     | 0.66              |
| 3:C:117:LEU:HD23 | 4:D:321:MET:HA   | 1.77                     | 0.66              |
| 5:E:5:ARG:HG3    | 5:E:5:ARG:NH1    | 2.07                     | 0.66              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:1:93:ALA:HB1   | 1:1:107:LEU:HD11 | 1.75                     | 0.66              |
| 3:3:586:HIS:NE2  | 3:3:640:VAL:HG21 | 2.10                     | 0.66              |
| 3:3:679:ARG:CZ   | 3:C:319:GLU:OE1  | 2.42                     | 0.66              |
| 5:5:5:ARG:HG3    | 5:5:5:ARG:NH1    | 2.07                     | 0.66              |
| 3:C:586:HIS:NE2  | 3:C:640:VAL:HG21 | 2.10                     | 0.66              |
| 3:C:132:ASP:O    | 3:C:136:GLU:HG3  | 1.95                     | 0.66              |
| 3:3:132:ASP:O    | 3:3:136:GLU:HG3  | 1.95                     | 0.66              |
| 6:6:119:ASN:HA   | 6:6:125:GLN:HE22 | 1.61                     | 0.66              |
| 6:F:119:ASN:HA   | 6:F:125:GLN:HE22 | 1.61                     | 0.66              |
| 4:4:274:ASP:O    | 4:4:278:VAL:HG23 | 1.96                     | 0.66              |
| 4:D:99:LEU:HB3   | 4:D:344:VAL:HG21 | 1.77                     | 0.66              |
| 3:3:367:PRO:CB   | 3:3:554:LYS:HB2  | 2.26                     | 0.66              |
| 4:4:99:LEU:HB3   | 4:4:344:VAL:HG21 | 1.77                     | 0.66              |
| 4:4:116:ILE:O    | 4:4:120:LEU:HB2  | 1.96                     | 0.66              |
| 3:C:367:PRO:CB   | 3:C:554:LYS:HB2  | 2.26                     | 0.66              |
| 4:D:116:ILE:O    | 4:D:120:LEU:HB2  | 1.96                     | 0.66              |
| 4:D:274:ASP:O    | 4:D:278:VAL:HG23 | 1.96                     | 0.66              |
| 3:3:285:VAL:HG22 | 3:3:286:ASN:H    | 1.61                     | 0.66              |
| 3:3:485:GLU:CG   | 6:F:16:ARG:CG    | 2.65                     | 0.66              |
| 4:4:341:GLU:HG2  | 4:4:358:VAL:HG22 | 1.77                     | 0.66              |
| 3:C:285:VAL:HG22 | 3:C:286:ASN:H    | 1.61                     | 0.66              |
| 4:D:341:GLU:HG2  | 4:D:358:VAL:HG22 | 1.77                     | 0.65              |
| 1:1:437:TRP:CZ3  | 2:2:96:LEU:HB2   | 2.31                     | 0.65              |
| 3:C:20:MET:HE1   | 3:C:83:CYS:HB2   | 1.79                     | 0.65              |
| 6:F:16:ARG:HA    | 6:F:21:PHE:CD2   | 2.32                     | 0.65              |
| 1:1:341:MET:HE1  | 1:1:409:PRO:HB2  | 1.77                     | 0.65              |
| 3:3:715:GLU:HB3  | 3:3:746:ARG:CZ   | 2.26                     | 0.65              |
| 4:4:404:MET:HA   | 4:4:407:VAL:CG1  | 2.27                     | 0.65              |
| 6:6:16:ARG:HA    | 6:6:21:PHE:CD2   | 2.32                     | 0.65              |
| 1:A:437:TRP:CZ3  | 2:B:96:LEU:HB2   | 2.31                     | 0.65              |
| 3:C:715:GLU:HB3  | 3:C:746:ARG:CZ   | 2.25                     | 0.65              |
| 4:D:404:MET:HA   | 4:D:407:VAL:CG1  | 2.27                     | 0.65              |
| 3:3:117:LEU:CD2  | 4:4:321:MET:HA   | 2.26                     | 0.65              |
| 4:4:263:ASP:HB2  | 4:4:285:GLU:CD   | 2.17                     | 0.65              |
| 1:A:341:MET:HE1  | 1:A:409:PRO:HB2  | 1.77                     | 0.65              |
| 3:C:117:LEU:CD2  | 4:D:321:MET:HA   | 2.26                     | 0.65              |
| 1:A:272:PHE:HZ   | 1:A:316:LEU:HD21 | 1.60                     | 0.65              |
| 4:D:263:ASP:HB2  | 4:D:285:GLU:CD   | 2.17                     | 0.65              |
| 2:B:86:LEU:O     | 2:B:90:LEU:HD12  | 1.96                     | 0.65              |
| 2:2:86:LEU:O     | 2:2:90:LEU:HD12  | 1.96                     | 0.65              |
| 1:1:272:PHE:HZ   | 1:1:316:LEU:HD21 | 1.60                     | 0.65              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:254:TYR:CE2  | 4:4:346:THR:HA   | 2.31                     | 0.65              |
| 4:D:254:TYR:CE2  | 4:D:346:THR:HA   | 2.31                     | 0.65              |
| 3:C:216:PHE:CZ   | 8:J:128:PHE:HD2  | 2.15                     | 0.65              |
| 3:3:216:PHE:CZ   | 8:7:128:PHE:HD2  | 2.16                     | 0.64              |
| 1:A:297:THR:HG22 | 1:A:322:MET:CG   | 2.26                     | 0.64              |
| 1:1:297:THR:HG22 | 1:1:322:MET:CG   | 2.26                     | 0.64              |
| 3:3:20:MET:HE1   | 3:3:83:CYS:HB2   | 1.79                     | 0.64              |
| 7:9:46:HIS:HB3   | 7:9:47:PRO:HD2   | 1.79                     | 0.64              |
| 7:G:46:HIS:HB3   | 7:G:47:PRO:HD2   | 1.79                     | 0.64              |
| 3:3:583:VAL:CG2  | 3:3:598:ALA:HA   | 2.27                     | 0.64              |
| 3:C:583:VAL:CG2  | 3:C:598:ALA:HA   | 2.27                     | 0.64              |
| 3:3:679:ARG:NH1  | 3:C:319:GLU:CD   | 2.48                     | 0.64              |
| 1:1:274:GLU:HG3  | 1:1:278:GLU:HG3  | 1.80                     | 0.64              |
| 4:4:65:GLY:O     | 4:4:69:THR:HG22  | 1.98                     | 0.64              |
| 3:3:689:LYS:HE3  | 3:3:771:VAL:CG1  | 2.27                     | 0.64              |
| 3:C:689:LYS:HE3  | 3:C:771:VAL:CG1  | 2.27                     | 0.64              |
| 4:D:65:GLY:O     | 4:D:69:THR:HG22  | 1.98                     | 0.64              |
| 1:1:116:GLU:HA   | 1:1:119:ILE:HD12 | 1.80                     | 0.64              |
| 7:9:101:CYS:HB2  | 7:9:103:LEU:H    | 1.63                     | 0.64              |
| 1:A:116:GLU:HA   | 1:A:119:ILE:HD12 | 1.80                     | 0.64              |
| 1:A:274:GLU:HG3  | 1:A:278:GLU:HG3  | 1.80                     | 0.64              |
| 7:G:101:CYS:HB2  | 7:G:103:LEU:H    | 1.63                     | 0.64              |
| 7:G:56:CYS:SG    | 7:G:58:LEU:HB2   | 2.37                     | 0.64              |
| 1:1:99:GLY:HA3   | 1:1:329:ILE:HD11 | 1.79                     | 0.64              |
| 7:9:56:CYS:SG    | 7:9:58:LEU:HB2   | 2.37                     | 0.64              |
| 1:A:99:GLY:HA3   | 1:A:329:ILE:HD11 | 1.79                     | 0.64              |
| 4:4:314:ARG:HG2  | 4:4:314:ARG:NH1  | 2.13                     | 0.64              |
| 3:3:394:ASP:OD2  | 3:3:501:LYS:HB2  | 1.98                     | 0.63              |
| 3:3:679:ARG:NE   | 3:C:319:GLU:OE2  | 2.31                     | 0.63              |
| 4:4:93:HIS:CE1   | 4:4:353:LEU:HD11 | 2.33                     | 0.63              |
| 3:C:205:ARG:CA   | 3:C:209:THR:HG22 | 2.27                     | 0.63              |
| 3:C:394:ASP:OD2  | 3:C:501:LYS:HB2  | 1.98                     | 0.63              |
| 4:D:93:HIS:CE1   | 4:D:353:LEU:HD11 | 2.33                     | 0.63              |
| 4:D:314:ARG:HG2  | 4:D:314:ARG:NH1  | 2.13                     | 0.63              |
| 3:3:205:ARG:CA   | 3:3:209:THR:HG22 | 2.28                     | 0.63              |
| 3:3:306:LEU:HD11 | 3:3:308:THR:O    | 1.97                     | 0.63              |
| 3:C:306:LEU:HD11 | 3:C:308:THR:O    | 1.98                     | 0.63              |
| 5:E:10:ALA:HB1   | 5:E:15:TYR:HB2   | 1.81                     | 0.63              |
| 3:3:224:GLY:O    | 3:3:227:THR:HB   | 1.99                     | 0.63              |
| 3:3:304:ASN:O    | 3:3:589:HIS:CD2  | 2.52                     | 0.63              |
| 5:5:10:ALA:HB1   | 5:5:15:TYR:HB2   | 1.81                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:5:144:HIS:HB2  | 5:5:147:ARG:HD3  | 1.79                     | 0.63              |
| 3:C:304:ASN:O    | 3:C:589:HIS:CD2  | 2.52                     | 0.63              |
| 5:E:144:HIS:HB2  | 5:E:147:ARG:HD3  | 1.79                     | 0.63              |
| 3:3:485:GLU:HG2  | 6:F:16:ARG:CG    | 2.28                     | 0.63              |
| 3:C:224:GLY:O    | 3:C:227:THR:HB   | 1.99                     | 0.63              |
| 2:2:40:TRP:CH2   | 2:2:42:ARG:HG2   | 2.33                     | 0.63              |
| 3:3:11:VAL:HG11  | 3:3:25:HIS:HD2   | 1.61                     | 0.63              |
| 2:B:40:TRP:CH2   | 2:B:42:ARG:HG2   | 2.33                     | 0.63              |
| 5:5:107:LEU:HD12 | 5:5:107:LEU:N    | 2.14                     | 0.63              |
| 3:C:11:VAL:HG11  | 3:C:25:HIS:HD2   | 1.60                     | 0.63              |
| 4:D:263:ASP:O    | 4:D:265:PRO:HD3  | 1.98                     | 0.63              |
| 5:E:107:LEU:HD12 | 5:E:107:LEU:N    | 2.14                     | 0.63              |
| 4:4:70:MET:HG2   | 4:4:78:ASN:OD1   | 1.99                     | 0.62              |
| 4:4:236:GLY:C    | 4:4:238:SER:H    | 2.00                     | 0.62              |
| 6:6:83:ARG:HH11  | 6:6:83:ARG:HG3   | 1.64                     | 0.62              |
| 4:D:70:MET:HG2   | 4:D:78:ASN:OD1   | 1.99                     | 0.62              |
| 4:4:263:ASP:O    | 4:4:265:PRO:HD3  | 1.99                     | 0.62              |
| 5:5:72:TYR:HB2   | 5:5:90:VAL:HG13  | 1.81                     | 0.62              |
| 1:A:401:PRO:HB2  | 15:A:440:FMN:C8M | 2.29                     | 0.62              |
| 4:D:225:PRO:HG2  | 4:D:228:VAL:HB   | 1.81                     | 0.62              |
| 4:D:236:GLY:C    | 4:D:238:SER:H    | 2.00                     | 0.62              |
| 5:E:72:TYR:HB2   | 5:E:90:VAL:HG13  | 1.81                     | 0.62              |
| 5:E:126:PHE:H    | 5:E:132:LEU:HD11 | 1.65                     | 0.62              |
| 6:F:83:ARG:HH11  | 6:F:83:ARG:HG3   | 1.64                     | 0.62              |
| 1:1:401:PRO:HB2  | 15:1:440:FMN:C8M | 2.30                     | 0.62              |
| 4:4:225:PRO:HG2  | 4:4:228:VAL:HB   | 1.81                     | 0.62              |
| 4:4:215:TYR:CE2  | 4:4:219:ARG:HG3  | 2.34                     | 0.62              |
| 5:5:126:PHE:H    | 5:5:132:LEU:HD11 | 1.65                     | 0.62              |
| 4:D:215:TYR:CE2  | 4:D:219:ARG:HG3  | 2.34                     | 0.62              |
| 5:E:37:GLU:O     | 5:E:41:TYR:CD1   | 2.52                     | 0.62              |
| 6:F:153:GLN:HG3  | 7:G:124:TYR:OH   | 1.99                     | 0.62              |
| 5:5:37:GLU:O     | 5:5:41:TYR:CD1   | 2.52                     | 0.62              |
| 6:6:153:GLN:HG3  | 7:9:124:TYR:OH   | 1.99                     | 0.62              |
| 3:C:716:LEU:HD21 | 3:C:758:LEU:HB3  | 1.81                     | 0.62              |
| 5:E:39:ALA:HA    | 5:E:107:LEU:HD23 | 1.82                     | 0.62              |
| 3:3:716:LEU:HD21 | 3:3:758:LEU:HB3  | 1.81                     | 0.62              |
| 5:5:39:ALA:HA    | 5:5:107:LEU:HD23 | 1.82                     | 0.62              |
| 5:E:174:LEU:CD2  | 5:E:180:GLY:HA2  | 2.30                     | 0.62              |
| 3:3:692:PHE:HE1  | 3:3:773:GLY:O    | 1.82                     | 0.62              |
| 5:5:174:LEU:CD2  | 5:5:180:GLY:HA2  | 2.30                     | 0.62              |
| 3:C:692:PHE:HE1  | 3:C:773:GLY:O    | 1.82                     | 0.62              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:1:50:PRO:O    | 1:1:53:VAL:HG12  | 1.99                     | 0.62              |
| 1:A:50:PRO:O    | 1:A:53:VAL:HG12  | 1.99                     | 0.62              |
| 5:E:80:TRP:HA   | 5:E:80:TRP:HE3   | 1.65                     | 0.62              |
| 3:3:732:ALA:O   | 3:3:747:VAL:HG12 | 2.00                     | 0.61              |
| 5:5:80:TRP:HA   | 5:5:80:TRP:HE3   | 1.65                     | 0.61              |
| 3:C:732:ALA:O   | 3:C:747:VAL:HG12 | 2.01                     | 0.61              |
| 5:5:52:ILE:HG23 | 5:5:114:LEU:HB3  | 1.82                     | 0.61              |
| 3:C:701:ALA:HB2 | 3:C:763:LEU:HB2  | 1.80                     | 0.61              |
| 4:D:88:LEU:HD21 | 6:F:48:ILE:HD13  | 1.82                     | 0.61              |
| 6:F:140:CYS:SG  | 7:G:99:ILE:HG13  | 2.39                     | 0.61              |
| 4:4:72:HIS:O    | 4:4:73:ARG:HD2   | 2.00                     | 0.61              |
| 4:4:88:LEU:HD21 | 6:6:48:ILE:HD13  | 1.82                     | 0.61              |
| 4:D:72:HIS:O    | 4:D:73:ARG:HD2   | 2.00                     | 0.61              |
| 5:E:52:ILE:HG23 | 5:E:114:LEU:HB3  | 1.82                     | 0.61              |
| 3:3:750:ARG:HB2 | 3:3:753:VAL:HG23 | 1.82                     | 0.61              |
| 6:6:140:CYS:SG  | 7:9:99:ILE:HG13  | 2.39                     | 0.61              |
| 3:C:750:ARG:HB2 | 3:C:753:VAL:HG23 | 1.82                     | 0.61              |
| 1:1:92:ASN:ND2  | 15:1:440:FMN:O3' | 2.32                     | 0.61              |
| 2:2:40:TRP:CD1  | 2:2:74:PRO:HA    | 2.36                     | 0.61              |
| 3:3:739:PRO:HG2 | 3:3:771:VAL:HG11 | 1.79                     | 0.61              |
| 1:A:92:ASN:ND2  | 15:A:440:FMN:O3' | 2.32                     | 0.61              |
| 3:3:701:ALA:HB2 | 3:3:763:LEU:HB2  | 1.80                     | 0.61              |
| 5:5:5:ARG:HH11  | 5:5:5:ARG:CG     | 2.12                     | 0.61              |
| 2:B:40:TRP:CD1  | 2:B:74:PRO:HA    | 2.36                     | 0.61              |
| 5:5:20:ASN:HD21 | 5:5:24:ASN:HB2   | 1.65                     | 0.61              |
| 3:C:739:PRO:HG2 | 3:C:771:VAL:HG11 | 1.79                     | 0.61              |
| 5:E:5:ARG:HH11  | 5:E:5:ARG:CG     | 2.12                     | 0.61              |
| 5:E:20:ASN:HD21 | 5:E:24:ASN:HB2   | 1.65                     | 0.61              |
| 6:F:156:LYS:HG2 | 6:F:156:LYS:O    | 2.01                     | 0.61              |
| 1:1:29:LEU:O    | 1:1:33:LEU:HG    | 2.01                     | 0.61              |
| 6:6:156:LYS:HG2 | 6:6:156:LYS:O    | 2.01                     | 0.61              |
| 1:A:29:LEU:O    | 1:A:33:LEU:HG    | 2.01                     | 0.61              |
| 3:3:368:HIS:CE1 | 3:3:563:ALA:HB2  | 2.35                     | 0.60              |
| 6:F:163:TYR:HB3 | 6:F:168:GLU:O    | 2.01                     | 0.60              |
| 6:6:163:TYR:HB3 | 6:6:168:GLU:O    | 2.01                     | 0.60              |
| 3:C:368:HIS:CE1 | 3:C:563:ALA:HB2  | 2.36                     | 0.60              |
| 10:P:920:UNK:CA | 10:P:1200:UNK:H  | 2.10                     | 0.60              |
| 3:3:20:MET:CE   | 3:3:433:ALA:HB2  | 2.30                     | 0.60              |
| 3:3:360:LEU:O   | 3:3:364:LEU:HB3  | 2.00                     | 0.60              |
| 8:7:6:GLU:OE1   | 8:7:80:LYS:HE3   | 2.01                     | 0.60              |
| 3:C:360:LEU:O   | 3:C:364:LEU:HB3  | 2.00                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:J:6:GLU:OE1    | 8:J:80:LYS:HE3   | 2.01                     | 0.60              |
| 3:3:285:VAL:HG22 | 3:3:286:ASN:N    | 2.15                     | 0.60              |
| 10:M:920:UNK:CA  | 10:M:1200:UNK:H  | 2.11                     | 0.60              |
| 12:R:101:UNK:C   | 12:R:103:UNK:N   | 2.59                     | 0.60              |
| 3:C:20:MET:CE    | 3:C:433:ALA:HB2  | 2.30                     | 0.60              |
| 3:C:285:VAL:HG22 | 3:C:286:ASN:N    | 2.15                     | 0.60              |
| 4:D:263:ASP:HB2  | 4:D:285:GLU:OE1  | 2.01                     | 0.60              |
| 7:G:45:ARG:NH2   | 7:G:137:LEU:HD23 | 2.17                     | 0.60              |
| 12:S:101:UNK:C   | 12:S:103:UNK:N   | 2.59                     | 0.60              |
| 4:4:263:ASP:HB2  | 4:4:285:GLU:OE1  | 2.01                     | 0.60              |
| 6:6:165:GLU:HG2  | 7:9:148:ARG:NH1  | 2.15                     | 0.60              |
| 7:9:175:ALA:HB1  | 7:9:176:PRO:HD2  | 1.83                     | 0.60              |
| 6:F:165:GLU:HG2  | 7:G:148:ARG:NH1  | 2.15                     | 0.60              |
| 7:G:175:ALA:HB1  | 7:G:176:PRO:HD2  | 1.83                     | 0.60              |
| 1:1:331:ILE:HG21 | 1:1:337:MET:HE2  | 1.84                     | 0.60              |
| 4:4:393:MET:HA   | 4:4:396:ILE:CG2  | 2.32                     | 0.60              |
| 5:5:39:ALA:HA    | 5:5:107:LEU:CD2  | 2.32                     | 0.60              |
| 7:9:45:ARG:NH2   | 7:9:137:LEU:HD23 | 2.17                     | 0.60              |
| 1:A:331:ILE:HG21 | 1:A:337:MET:HE2  | 1.84                     | 0.60              |
| 4:D:393:MET:HA   | 4:D:396:ILE:CG2  | 2.32                     | 0.60              |
| 1:1:92:ASN:HD21  | 15:1:440:FMN:C2  | 2.14                     | 0.60              |
| 6:6:107:SER:O    | 6:6:137:VAL:HG12 | 2.01                     | 0.60              |
| 1:A:92:ASN:HD21  | 15:A:440:FMN:C2  | 2.14                     | 0.60              |
| 5:E:39:ALA:HA    | 5:E:107:LEU:CD2  | 2.32                     | 0.60              |
| 6:F:107:SER:O    | 6:F:137:VAL:HG12 | 2.01                     | 0.60              |
| 9:O:1324:UNK:C   | 9:O:1326:UNK:N   | 2.63                     | 0.60              |
| 13:T:119:UNK:C   | 13:T:121:UNK:N   | 2.64                     | 0.60              |
| 4:4:130:LEU:HD11 | 4:4:152:GLU:HB3  | 1.83                     | 0.60              |
| 9:L:1324:UNK:C   | 9:L:1326:UNK:N   | 2.63                     | 0.60              |
| 13:H:119:UNK:C   | 13:H:121:UNK:N   | 2.64                     | 0.60              |
| 4:D:130:LEU:HD11 | 4:D:152:GLU:HB3  | 1.83                     | 0.60              |
| 4:4:404:MET:HA   | 4:4:407:VAL:HG12 | 1.84                     | 0.60              |
| 3:C:512:LEU:HD21 | 3:C:534:ALA:HB1  | 1.83                     | 0.60              |
| 4:D:404:MET:HA   | 4:D:407:VAL:HG12 | 1.84                     | 0.60              |
| 3:3:512:LEU:HD21 | 3:3:534:ALA:HB1  | 1.83                     | 0.59              |
| 3:3:583:VAL:HG21 | 3:3:598:ALA:HA   | 1.83                     | 0.59              |
| 3:3:282:VAL:HG22 | 3:3:285:VAL:HG12 | 1.83                     | 0.59              |
| 3:3:693:TYR:HB3  | 3:3:759:TYR:CD2  | 2.37                     | 0.59              |
| 3:C:282:VAL:HG22 | 3:C:285:VAL:HG12 | 1.83                     | 0.59              |
| 3:C:583:VAL:HG21 | 3:C:598:ALA:HA   | 1.83                     | 0.59              |
| 3:3:337:ARG:HD2  | 3:3:337:ARG:N    | 2.16                     | 0.59              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:9:43:LEU:O     | 7:9:138:VAL:HG13 | 2.03                     | 0.59              |
| 10:M:820:UNK:C   | 10:M:824:UNK:CA  | 2.80                     | 0.59              |
| 11:N:802:UNK:C   | 11:N:804:UNK:N   | 2.65                     | 0.59              |
| 7:G:43:LEU:O     | 7:G:138:VAL:HG13 | 2.03                     | 0.59              |
| 10:P:820:UNK:C   | 10:P:824:UNK:CA  | 2.80                     | 0.59              |
| 11:Q:802:UNK:C   | 11:Q:804:UNK:N   | 2.65                     | 0.59              |
| 4:D:76:LEU:HD12  | 4:D:79:ILE:HD12  | 1.84                     | 0.59              |
| 4:4:76:LEU:HD12  | 4:4:79:ILE:HD12  | 1.84                     | 0.59              |
| 1:A:313:TYR:CE1  | 1:A:323:LEU:HD13 | 2.38                     | 0.59              |
| 1:1:214:LYS:O    | 1:1:216:THR:HG23 | 2.03                     | 0.59              |
| 1:1:313:TYR:CE1  | 1:1:323:LEU:HD13 | 2.38                     | 0.59              |
| 3:3:87:VAL:HA    | 3:3:91:MET:HE1   | 1.84                     | 0.59              |
| 3:3:205:ARG:C    | 3:3:209:THR:HG22 | 2.23                     | 0.59              |
| 3:C:205:ARG:C    | 3:C:209:THR:HG22 | 2.23                     | 0.59              |
| 1:1:110:VAL:N    | 1:1:111:PRO:HD3  | 2.17                     | 0.59              |
| 1:A:110:VAL:N    | 1:A:111:PRO:HD3  | 2.17                     | 0.59              |
| 1:A:214:LYS:O    | 1:A:216:THR:HG23 | 2.03                     | 0.59              |
| 3:C:87:VAL:HA    | 3:C:91:MET:HE1   | 1.84                     | 0.59              |
| 5:E:120:ASP:CG   | 5:E:134:LYS:HG3  | 2.22                     | 0.59              |
| 1:A:186:THR:HG23 | 1:A:200:ARG:N    | 2.09                     | 0.59              |
| 1:1:186:THR:HG23 | 1:1:200:ARG:N    | 2.09                     | 0.59              |
| 4:4:85:MET:HE3   | 4:4:409:ARG:HG3  | 1.85                     | 0.59              |
| 3:C:399:LEU:N    | 3:C:399:LEU:HD12 | 2.18                     | 0.59              |
| 3:3:238:LEU:HD12 | 3:3:238:LEU:O    | 2.02                     | 0.59              |
| 3:3:399:LEU:N    | 3:3:399:LEU:HD12 | 2.18                     | 0.59              |
| 5:5:120:ASP:CG   | 5:5:134:LYS:HG3  | 2.22                     | 0.59              |
| 5:5:175:THR:O    | 5:5:177:LYS:N    | 2.36                     | 0.59              |
| 8:7:60:SER:HA    | 8:7:66:PRO:HA    | 1.84                     | 0.59              |
| 1:A:6:LEU:HD21   | 1:A:12:ARG:HG3   | 1.83                     | 0.59              |
| 3:C:337:ARG:HD2  | 3:C:337:ARG:N    | 2.16                     | 0.59              |
| 7:G:67:ALA:HB2   | 7:G:97:ARG:HB3   | 1.85                     | 0.59              |
| 8:J:60:SER:HA    | 8:J:66:PRO:HA    | 1.84                     | 0.59              |
| 1:1:6:LEU:HD21   | 1:1:12:ARG:HG3   | 1.83                     | 0.58              |
| 7:9:67:ALA:HB2   | 7:9:97:ARG:HB3   | 1.85                     | 0.58              |
| 4:D:85:MET:HE3   | 4:D:409:ARG:HG3  | 1.85                     | 0.58              |
| 5:E:175:THR:O    | 5:E:177:LYS:N    | 2.36                     | 0.58              |
| 3:C:238:LEU:HD12 | 3:C:238:LEU:O    | 2.02                     | 0.58              |
| 1:A:344:LEU:O    | 1:A:347:PHE:HB3  | 2.03                     | 0.58              |
| 1:1:344:LEU:O    | 1:1:347:PHE:HB3  | 2.03                     | 0.58              |
| 3:3:546:ALA:HA   | 3:3:678:PHE:CE2  | 2.39                     | 0.58              |
| 4:4:393:MET:O    | 4:4:396:ILE:HG22 | 2.03                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:356:LEU:HD13 | 3:C:654:PHE:HD1  | 1.67                     | 0.58              |
| 3:C:546:ALA:HA   | 3:C:678:PHE:CE2  | 2.39                     | 0.58              |
| 4:D:393:MET:O    | 4:D:396:ILE:HG22 | 2.03                     | 0.58              |
| 2:2:175:HIS:CE1  | 2:2:176:VAL:HG22 | 2.38                     | 0.58              |
| 3:3:356:LEU:HD13 | 3:3:654:PHE:HD1  | 1.67                     | 0.58              |
| 2:B:175:HIS:CE1  | 2:B:176:VAL:HG22 | 2.38                     | 0.58              |
| 3:C:738:THR:HG22 | 3:C:739:PRO:CD   | 2.22                     | 0.58              |
| 1:1:88:TYR:HB2   | 1:1:216:THR:CG2  | 2.32                     | 0.58              |
| 3:3:290:ILE:HG21 | 3:3:295:ARG:HB2  | 1.85                     | 0.58              |
| 3:3:738:THR:HG22 | 3:3:739:PRO:CD   | 2.22                     | 0.58              |
| 10:M:121:UNK:C   | 10:M:123:UNK:N   | 2.66                     | 0.58              |
| 1:A:88:TYR:HB2   | 1:A:216:THR:CG2  | 2.32                     | 0.58              |
| 3:C:290:ILE:HG21 | 3:C:295:ARG:HB2  | 1.85                     | 0.58              |
| 10:P:121:UNK:C   | 10:P:123:UNK:N   | 2.66                     | 0.58              |
| 3:3:300:TRP:CB   | 3:3:705:VAL:HG21 | 2.32                     | 0.58              |
| 4:4:355:TYR:CE2  | 4:4:370:VAL:HG22 | 2.38                     | 0.58              |
| 5:5:134:LYS:HD3  | 5:5:137:THR:OG1  | 2.03                     | 0.58              |
| 3:C:300:TRP:CB   | 3:C:705:VAL:HG21 | 2.32                     | 0.58              |
| 4:D:115:THR:CG2  | 4:D:297:LEU:HD13 | 2.32                     | 0.58              |
| 4:D:355:TYR:CE2  | 4:D:370:VAL:HG22 | 2.38                     | 0.58              |
| 6:F:43:LEU:HB2   | 6:F:82:GLY:HA3   | 1.86                     | 0.58              |
| 4:4:115:THR:CG2  | 4:4:297:LEU:HD13 | 2.32                     | 0.58              |
| 6:6:16:ARG:HD3   | 6:6:17:GLU:OE1   | 2.04                     | 0.58              |
| 6:6:43:LEU:HB2   | 6:6:82:GLY:HA3   | 1.86                     | 0.58              |
| 1:A:17:LEU:HD12  | 1:A:251:LEU:HD11 | 1.86                     | 0.58              |
| 5:E:134:LYS:HD3  | 5:E:137:THR:OG1  | 2.03                     | 0.58              |
| 1:1:17:LEU:HD12  | 1:1:251:LEU:HD11 | 1.86                     | 0.58              |
| 1:1:185:GLU:HB2  | 1:1:218:ILE:HD12 | 1.84                     | 0.58              |
| 1:A:185:GLU:HB2  | 1:A:218:ILE:HD12 | 1.84                     | 0.58              |
| 4:D:241:ALA:CB   | 4:D:278:VAL:HG21 | 2.34                     | 0.58              |
| 1:1:139:ARG:HG2  | 2:2:139:GLU:HA   | 1.85                     | 0.58              |
| 3:3:337:ARG:HG2  | 3:3:340:GLU:HG2  | 1.86                     | 0.58              |
| 4:4:89:HIS:CE1   | 4:4:92:ALA:HB2   | 2.39                     | 0.58              |
| 1:A:53:VAL:HG23  | 1:A:231:MET:CE   | 2.34                     | 0.58              |
| 1:A:139:ARG:HG2  | 2:B:139:GLU:HA   | 1.85                     | 0.58              |
| 3:C:337:ARG:HG2  | 3:C:340:GLU:HG2  | 1.86                     | 0.58              |
| 6:F:16:ARG:HD3   | 6:F:17:GLU:OE1   | 2.04                     | 0.58              |
| 1:1:53:VAL:HG23  | 1:1:231:MET:CE   | 2.34                     | 0.57              |
| 4:4:241:ALA:CB   | 4:4:278:VAL:HG21 | 2.34                     | 0.57              |
| 7:9:33:LEU:H     | 7:9:33:LEU:HD12  | 1.69                     | 0.57              |
| 4:D:89:HIS:CE1   | 4:D:92:ALA:HB2   | 2.39                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:655:ARG:NH1  | 3:3:659:GLU:HG3  | 2.18                     | 0.57              |
| 3:C:655:ARG:NH1  | 3:C:659:GLU:HG3  | 2.18                     | 0.57              |
| 7:G:33:LEU:H     | 7:G:33:LEU:HD12  | 1.69                     | 0.57              |
| 1:1:184:GLU:OE1  | 1:1:186:THR:HG22 | 2.04                     | 0.57              |
| 2:2:58:THR:HG21  | 3:3:200:LEU:N    | 2.19                     | 0.57              |
| 2:2:74:PRO:HB2   | 8:7:121:ARG:HH21 | 1.70                     | 0.57              |
| 1:A:184:GLU:OE1  | 1:A:186:THR:HG22 | 2.03                     | 0.57              |
| 3:C:495:GLU:O    | 3:C:498:GLU:HB2  | 2.04                     | 0.57              |
| 1:1:241:MET:HG2  | 1:1:267:PRO:HB3  | 1.86                     | 0.57              |
| 3:3:20:MET:HE2   | 3:3:433:ALA:HB2  | 1.85                     | 0.57              |
| 3:3:495:GLU:O    | 3:3:498:GLU:HB2  | 2.04                     | 0.57              |
| 4:4:225:PRO:HG3  | 4:4:383:TYR:OH   | 2.04                     | 0.57              |
| 4:4:278:VAL:O    | 4:4:282:GLU:HG3  | 2.04                     | 0.57              |
| 1:A:241:MET:HG2  | 1:A:267:PRO:HB3  | 1.86                     | 0.57              |
| 2:B:74:PRO:HB2   | 8:J:121:ARG:HH21 | 1.70                     | 0.57              |
| 3:C:693:TYR:HB3  | 3:C:759:TYR:CD2  | 2.37                     | 0.57              |
| 4:D:225:PRO:HG3  | 4:D:383:TYR:OH   | 2.04                     | 0.57              |
| 3:3:655:ARG:HH12 | 3:3:659:GLU:HG3  | 1.70                     | 0.57              |
| 9:L:1315:UNK:C   | 9:L:1317:UNK:N   | 2.67                     | 0.57              |
| 2:B:58:THR:HG21  | 3:C:200:LEU:N    | 2.20                     | 0.57              |
| 3:C:655:ARG:HH12 | 3:C:659:GLU:HG3  | 1.70                     | 0.57              |
| 9:O:1315:UNK:C   | 9:O:1317:UNK:N   | 2.67                     | 0.57              |
| 1:1:16:THR:CG2   | 1:1:229:PRO:HB3  | 2.28                     | 0.57              |
| 3:3:136:GLU:CG   | 5:5:189:ARG:HG2  | 2.32                     | 0.57              |
| 3:3:197:ASP:O    | 3:3:199:VAL:HG22 | 2.05                     | 0.57              |
| 1:A:16:THR:CG2   | 1:A:229:PRO:HB3  | 2.28                     | 0.57              |
| 1:A:104:ARG:NH2  | 2:B:127:SER:CB   | 2.64                     | 0.57              |
| 3:C:136:GLU:CG   | 5:E:189:ARG:HG2  | 2.32                     | 0.57              |
| 3:C:197:ASP:O    | 3:C:199:VAL:HG22 | 2.05                     | 0.57              |
| 4:D:278:VAL:O    | 4:D:282:GLU:HG3  | 2.04                     | 0.57              |
| 1:1:104:ARG:NH2  | 2:2:127:SER:CB   | 2.64                     | 0.57              |
| 2:2:146:THR:HG23 | 2:2:149:ARG:HB2  | 1.87                     | 0.57              |
| 3:C:88:ALA:H     | 3:C:91:MET:HE2   | 1.69                     | 0.57              |
| 7:G:46:HIS:HB3   | 7:G:47:PRO:CD    | 2.34                     | 0.57              |
| 4:4:219:ARG:NH1  | 4:4:273:PHE:CD2  | 2.73                     | 0.57              |
| 4:4:352:GLU:HB3  | 4:4:371:ARG:NE   | 2.20                     | 0.57              |
| 7:9:46:HIS:HB3   | 7:9:47:PRO:CD    | 2.34                     | 0.57              |
| 4:D:219:ARG:NH1  | 4:D:273:PHE:CD2  | 2.73                     | 0.57              |
| 4:D:352:GLU:HB3  | 4:D:371:ARG:NE   | 2.20                     | 0.57              |
| 3:3:88:ALA:H     | 3:3:91:MET:HE2   | 1.69                     | 0.57              |
| 2:B:146:THR:HG23 | 2:B:149:ARG:HB2  | 1.87                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:753:VAL:HG13 | 3:3:759:TYR:CE1  | 2.40                     | 0.57              |
| 3:C:753:VAL:HG13 | 3:C:759:TYR:CE1  | 2.40                     | 0.57              |
| 3:3:202:PHE:O    | 3:3:203:ILE:HD13 | 2.04                     | 0.56              |
| 3:C:202:PHE:O    | 3:C:203:ILE:HD13 | 2.04                     | 0.56              |
| 7:G:44:THR:OG1   | 7:G:52:LYS:HD2   | 2.04                     | 0.56              |
| 3:3:309:PRO:HA   | 3:3:603:PRO:HD2  | 1.86                     | 0.56              |
| 6:6:93:ARG:NH1   | 6:6:96:TRP:CE3   | 2.73                     | 0.56              |
| 7:9:44:THR:OG1   | 7:9:52:LYS:HD2   | 2.04                     | 0.56              |
| 11:N:310:UNK:CA  | 11:N:350:UNK:H2  | 2.19                     | 0.56              |
| 1:A:65:ARG:HD2   | 1:A:250:LYS:HD3  | 1.86                     | 0.56              |
| 3:C:309:PRO:HA   | 3:C:603:PRO:HD2  | 1.86                     | 0.56              |
| 1:1:65:ARG:HD2   | 1:1:250:LYS:HD3  | 1.86                     | 0.56              |
| 1:1:315:HIS:O    | 1:1:319:LYS:HB2  | 2.05                     | 0.56              |
| 3:3:385:ALA:HB2  | 3:3:531:LYS:HB2  | 1.87                     | 0.56              |
| 3:3:459:MET:CG   | 3:3:465:HIS:HB2  | 2.35                     | 0.56              |
| 3:3:583:VAL:HG21 | 3:3:597:TYR:O    | 2.04                     | 0.56              |
| 6:6:92:MET:HE1   | 6:6:127:VAL:HG13 | 1.87                     | 0.56              |
| 7:9:26:TYR:N     | 7:9:27:PRO:HD3   | 2.19                     | 0.56              |
| 1:A:315:HIS:O    | 1:A:319:LYS:HB2  | 2.05                     | 0.56              |
| 3:C:385:ALA:HB2  | 3:C:531:LYS:HB2  | 1.87                     | 0.56              |
| 3:C:459:MET:CG   | 3:C:465:HIS:HB2  | 2.35                     | 0.56              |
| 3:C:583:VAL:HG21 | 3:C:597:TYR:O    | 2.04                     | 0.56              |
| 6:F:92:MET:HE1   | 6:F:127:VAL:HG13 | 1.87                     | 0.56              |
| 6:F:93:ARG:NH1   | 6:F:96:TRP:CE3   | 2.73                     | 0.56              |
| 7:G:26:TYR:N     | 7:G:27:PRO:HD3   | 2.19                     | 0.56              |
| 7:G:40:ARG:HB2   | 7:G:121:MET:HE2  | 1.87                     | 0.56              |
| 11:Q:310:UNK:CA  | 11:Q:350:UNK:H2  | 2.19                     | 0.56              |
| 3:3:509:ALA:HB1  | 3:3:768:GLY:CA   | 2.31                     | 0.56              |
| 3:3:715:GLU:H    | 3:3:761:SER:HB2  | 1.71                     | 0.56              |
| 6:6:96:TRP:HA    | 6:6:99:MET:CE    | 2.34                     | 0.56              |
| 3:C:509:ALA:HB1  | 3:C:768:GLY:CA   | 2.31                     | 0.56              |
| 6:F:96:TRP:HA    | 6:F:99:MET:CE    | 2.34                     | 0.56              |
| 3:3:405:GLU:OE1  | 3:3:508:GLY:HA3  | 2.06                     | 0.56              |
| 2:B:135:GLN:HB2  | 2:B:141:TYR:HD1  | 1.70                     | 0.56              |
| 3:C:117:LEU:H    | 4:D:321:MET:HE1  | 1.70                     | 0.56              |
| 3:C:405:GLU:OE1  | 3:C:508:GLY:HA3  | 2.06                     | 0.56              |
| 3:C:715:GLU:H    | 3:C:761:SER:HB2  | 1.71                     | 0.56              |
| 4:D:45:VAL:HG13  | 4:D:55:VAL:HG22  | 1.87                     | 0.56              |
| 1:1:29:LEU:CD1   | 1:1:155:ARG:HG3  | 2.36                     | 0.56              |
| 2:2:135:GLN:HB2  | 2:2:141:TYR:HD1  | 1.70                     | 0.56              |
| 3:3:117:LEU:H    | 4:4:321:MET:HE1  | 1.70                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:45:VAL:HG13  | 4:4:55:VAL:HG22  | 1.87                     | 0.56              |
| 4:4:183:PRO:HD3  | 7:9:36:ARG:NH2   | 2.20                     | 0.56              |
| 4:4:261:THR:N    | 4:4:292:GLN:HE22 | 2.03                     | 0.56              |
| 1:A:29:LEU:CD1   | 1:A:155:ARG:HG3  | 2.36                     | 0.56              |
| 1:A:211:LEU:H    | 1:A:216:THR:HG21 | 1.71                     | 0.56              |
| 4:D:183:PRO:HD3  | 7:G:36:ARG:NH2   | 2.20                     | 0.56              |
| 4:D:261:THR:N    | 4:D:292:GLN:HE22 | 2.03                     | 0.56              |
| 1:1:63:ARG:HD3   | 1:1:313:TYR:HD2  | 1.71                     | 0.56              |
| 1:1:211:LEU:H    | 1:1:216:THR:HG21 | 1.71                     | 0.56              |
| 3:3:295:ARG:HD2  | 3:3:296:PHE:CE2  | 2.41                     | 0.56              |
| 3:3:507:LEU:HD22 | 3:3:511:VAL:HG11 | 1.88                     | 0.56              |
| 3:3:568:TYR:CD1  | 3:3:572:PRO:HG3  | 2.40                     | 0.56              |
| 3:3:675:ARG:NH1  | 3:C:316:ARG:HH22 | 2.03                     | 0.56              |
| 3:3:717:TRP:HB2  | 3:3:759:TYR:HB2  | 1.88                     | 0.56              |
| 6:6:83:ARG:HD3   | 14:6:182:SF4:S4  | 2.44                     | 0.56              |
| 1:A:63:ARG:HD3   | 1:A:313:TYR:HD2  | 1.71                     | 0.56              |
| 3:C:295:ARG:HD2  | 3:C:296:PHE:CE2  | 2.41                     | 0.56              |
| 3:C:507:LEU:HD22 | 3:C:511:VAL:HG11 | 1.88                     | 0.56              |
| 3:C:568:TYR:CD1  | 3:C:572:PRO:HG3  | 2.40                     | 0.56              |
| 3:C:717:TRP:HB2  | 3:C:759:TYR:HB2  | 1.88                     | 0.56              |
| 3:3:101:ARG:HH12 | 3:3:140:TYR:HD1  | 1.47                     | 0.56              |
| 3:3:246:ASN:H    | 3:3:246:ASN:HD22 | 1.52                     | 0.56              |
| 3:3:682:GLU:OE1  | 3:3:684:ARG:NH2  | 2.38                     | 0.56              |
| 6:6:77:VAL:HA    | 6:6:104:TRP:O    | 2.06                     | 0.56              |
| 1:A:314:GLU:HA   | 1:A:317:GLN:HB3  | 1.87                     | 0.56              |
| 3:C:682:GLU:OE1  | 3:C:684:ARG:NH2  | 2.38                     | 0.56              |
| 6:F:77:VAL:HA    | 6:F:104:TRP:O    | 2.06                     | 0.56              |
| 6:F:83:ARG:HD3   | 14:F:182:SF4:S4  | 2.44                     | 0.56              |
| 1:1:314:GLU:HA   | 1:1:317:GLN:HB3  | 1.87                     | 0.56              |
| 3:3:218:LEU:N    | 3:3:219:PRO:CD   | 2.69                     | 0.56              |
| 3:3:469:ARG:HB3  | 3:3:754:PRO:HB3  | 1.86                     | 0.56              |
| 5:5:163:ARG:HD2  | 7:9:69:TYR:CE1   | 2.41                     | 0.56              |
| 3:C:101:ARG:HH12 | 3:C:140:TYR:HD1  | 1.47                     | 0.56              |
| 3:C:218:LEU:N    | 3:C:219:PRO:CD   | 2.69                     | 0.56              |
| 3:C:246:ASN:H    | 3:C:246:ASN:HD22 | 1.52                     | 0.56              |
| 3:C:469:ARG:HB3  | 3:C:754:PRO:HB3  | 1.86                     | 0.56              |
| 5:E:163:ARG:HD2  | 7:G:69:TYR:CE1   | 2.41                     | 0.56              |
| 7:G:175:ALA:O    | 7:G:177:THR:HG23 | 2.06                     | 0.56              |
| 6:6:163:TYR:HD1  | 7:9:152:ARG:HH11 | 1.54                     | 0.56              |
| 7:9:45:ARG:HH21  | 7:9:137:LEU:HD23 | 1.71                     | 0.56              |
| 7:9:175:ALA:O    | 7:9:177:THR:HG23 | 2.06                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:7:6:GLU:CD     | 8:7:80:LYS:HE3   | 2.26                     | 0.56              |
| 7:G:45:ARG:HH21  | 7:G:137:LEU:HD23 | 1.71                     | 0.56              |
| 1:1:310:PRO:HG2  | 1:1:315:HIS:CD2  | 2.41                     | 0.55              |
| 1:1:312:SER:HG   | 1:1:315:HIS:HD1  | 1.53                     | 0.55              |
| 1:A:310:PRO:HG2  | 1:A:315:HIS:CD2  | 2.41                     | 0.55              |
| 1:A:312:SER:O    | 1:A:316:LEU:HB2  | 2.06                     | 0.55              |
| 6:F:163:TYR:HD1  | 7:G:152:ARG:HH11 | 1.54                     | 0.55              |
| 8:J:6:GLU:CD     | 8:J:80:LYS:HE3   | 2.26                     | 0.55              |
| 1:1:312:SER:O    | 1:1:316:LEU:HB2  | 2.06                     | 0.55              |
| 3:3:550:LEU:HD12 | 3:3:550:LEU:N    | 2.22                     | 0.55              |
| 1:A:312:SER:HG   | 1:A:315:HIS:HD1  | 1.53                     | 0.55              |
| 3:C:550:LEU:HD12 | 3:C:550:LEU:N    | 2.22                     | 0.55              |
| 8:J:82:ILE:HG23  | 8:J:95:ALA:HB3   | 1.87                     | 0.55              |
| 8:7:82:ILE:HG23  | 8:7:95:ALA:HB3   | 1.87                     | 0.55              |
| 3:C:20:MET:HE2   | 3:C:433:ALA:HB2  | 1.87                     | 0.55              |
| 1:1:138:TYR:HB3  | 1:1:141:ALA:HB3  | 1.88                     | 0.55              |
| 1:1:177:ALA:HB3  | 2:2:67:TYR:CG    | 2.41                     | 0.55              |
| 1:A:177:ALA:HB3  | 2:B:67:TYR:CG    | 2.41                     | 0.55              |
| 1:A:191:SER:HB2  | 1:A:197:ALA:HB2  | 1.88                     | 0.55              |
| 2:B:10:PHE:CZ    | 2:B:33:ARG:HG3   | 2.42                     | 0.55              |
| 1:1:366:PHE:CD1  | 1:1:370:LEU:HD21 | 2.42                     | 0.55              |
| 2:2:10:PHE:CZ    | 2:2:33:ARG:HG3   | 2.42                     | 0.55              |
| 2:2:86:LEU:O     | 2:2:89:LYS:HB3   | 2.07                     | 0.55              |
| 2:2:86:LEU:CD1   | 2:2:90:LEU:HD11  | 2.35                     | 0.55              |
| 3:3:293:ALA:HA   | 3:3:699:TRP:CZ3  | 2.42                     | 0.55              |
| 3:3:470:PRO:HG3  | 3:3:759:TYR:HE2  | 1.71                     | 0.55              |
| 4:4:212:PRO:HG2  | 4:4:213:ILE:H    | 1.71                     | 0.55              |
| 1:A:366:PHE:CD1  | 1:A:370:LEU:HD21 | 2.42                     | 0.55              |
| 2:B:86:LEU:O     | 2:B:89:LYS:HB3   | 2.07                     | 0.55              |
| 3:C:293:ALA:HA   | 3:C:699:TRP:CZ3  | 2.42                     | 0.55              |
| 3:C:470:PRO:HG3  | 3:C:759:TYR:HE2  | 1.71                     | 0.55              |
| 4:D:212:PRO:HG2  | 4:D:213:ILE:H    | 1.71                     | 0.55              |
| 1:1:191:SER:HB2  | 1:1:197:ALA:HB2  | 1.88                     | 0.55              |
| 4:4:94:ASP:HB3   | 4:4:173:ILE:HG21 | 1.88                     | 0.55              |
| 1:A:138:TYR:HB3  | 1:A:141:ALA:HB3  | 1.89                     | 0.55              |
| 2:B:86:LEU:CD1   | 2:B:90:LEU:HD11  | 2.36                     | 0.55              |
| 7:G:33:LEU:HD22  | 7:G:37:PHE:CD2   | 2.41                     | 0.55              |
| 2:2:101:THR:HG23 | 2:2:106:ILE:O    | 2.07                     | 0.55              |
| 3:3:565:TYR:HD1  | 3:3:582:PHE:CB   | 2.20                     | 0.55              |
| 7:9:33:LEU:HD22  | 7:9:37:PHE:CD2   | 2.41                     | 0.55              |
| 3:C:565:TYR:HD1  | 3:C:582:PHE:CB   | 2.20                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:94:ASP:HB3   | 4:D:173:ILE:HG21 | 1.88                     | 0.55              |
| 6:F:141:PRO:HB3  | 14:F:182:SF4:S1  | 2.46                     | 0.55              |
| 1:1:29:LEU:HD22  | 1:1:29:LEU:O     | 2.07                     | 0.55              |
| 3:3:600:VAL:HG12 | 3:3:602:LEU:HD11 | 1.88                     | 0.55              |
| 6:6:76:ASP:O     | 6:6:77:VAL:HB    | 2.07                     | 0.55              |
| 6:6:141:PRO:HB3  | 14:6:182:SF4:S1  | 2.46                     | 0.55              |
| 1:A:29:LEU:HD22  | 1:A:29:LEU:O     | 2.07                     | 0.55              |
| 2:B:101:THR:HG23 | 2:B:106:ILE:O    | 2.07                     | 0.55              |
| 3:C:600:VAL:HG12 | 3:C:602:LEU:HD11 | 1.88                     | 0.55              |
| 6:F:76:ASP:O     | 6:F:77:VAL:HB    | 2.07                     | 0.55              |
| 2:2:27:ILE:HG22  | 2:2:31:LEU:CD2   | 2.36                     | 0.55              |
| 3:3:474:ARG:NH2  | 3:3:516:VAL:CG2  | 2.53                     | 0.55              |
| 7:9:41:HIS:CD2   | 7:9:115:LEU:CD2  | 2.89                     | 0.55              |
| 4:D:250:LYS:CE   | 4:D:262:PHE:HB3  | 2.36                     | 0.55              |
| 7:G:41:HIS:CD2   | 7:G:115:LEU:CD2  | 2.89                     | 0.55              |
| 4:4:40:VAL:CG1   | 4:4:404:MET:HG3  | 2.36                     | 0.55              |
| 4:4:250:LYS:CE   | 4:4:262:PHE:HB3  | 2.36                     | 0.55              |
| 6:6:40:THR:HB    | 6:6:50:MET:SD    | 2.47                     | 0.55              |
| 2:B:27:ILE:HG22  | 2:B:31:LEU:CD2   | 2.36                     | 0.55              |
| 4:D:40:VAL:CG1   | 4:D:404:MET:HG3  | 2.36                     | 0.55              |
| 6:F:40:THR:HB    | 6:F:50:MET:SD    | 2.47                     | 0.55              |
| 4:4:86:ASP:O     | 4:4:90:SER:HA    | 2.08                     | 0.54              |
| 4:4:133:LEU:HD21 | 4:4:204:TYR:CD2  | 2.42                     | 0.54              |
| 4:4:210:GLU:O    | 4:4:212:PRO:HD3  | 2.08                     | 0.54              |
| 1:A:107:LEU:O    | 1:A:111:PRO:HG3  | 2.06                     | 0.54              |
| 3:C:474:ARG:NH2  | 3:C:516:VAL:CG2  | 2.53                     | 0.54              |
| 3:C:515:THR:HG23 | 3:C:683:LEU:HD12 | 1.90                     | 0.54              |
| 4:D:86:ASP:O     | 4:D:90:SER:HA    | 2.08                     | 0.54              |
| 1:1:107:LEU:O    | 1:1:111:PRO:HG3  | 2.06                     | 0.54              |
| 4:4:197:LEU:HA   | 4:4:200:ARG:HB3  | 1.89                     | 0.54              |
| 4:4:409:ARG:NH2  | 5:5:117:GLU:OE2  | 2.39                     | 0.54              |
| 4:D:133:LEU:HD21 | 4:D:204:TYR:CD2  | 2.42                     | 0.54              |
| 4:D:210:GLU:O    | 4:D:212:PRO:HD3  | 2.08                     | 0.54              |
| 4:D:409:ARG:NH2  | 5:E:117:GLU:OE2  | 2.39                     | 0.54              |
| 5:E:25:LEU:HD23  | 5:E:25:LEU:H     | 1.72                     | 0.54              |
| 3:3:515:THR:HG23 | 3:3:683:LEU:HD12 | 1.90                     | 0.54              |
| 5:5:25:LEU:HD23  | 5:5:25:LEU:H     | 1.72                     | 0.54              |
| 3:C:101:ARG:NH1  | 3:C:140:TYR:HD1  | 2.05                     | 0.54              |
| 3:C:216:PHE:CZ   | 8:J:128:PHE:CD2  | 2.94                     | 0.54              |
| 4:D:197:LEU:HA   | 4:D:200:ARG:HB3  | 1.89                     | 0.54              |
| 6:F:50:MET:HB2   | 6:F:108:MET:HE1  | 1.87                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:101:ARG:NH1  | 3:3:140:TYR:HD1  | 2.05                     | 0.54              |
| 3:3:216:PHE:CZ   | 8:7:128:PHE:CD2  | 2.94                     | 0.54              |
| 6:6:29:ALA:HB1   | 6:6:158:VAL:O    | 2.07                     | 0.54              |
| 6:6:50:MET:HB2   | 6:6:108:MET:HE1  | 1.87                     | 0.54              |
| 4:D:381:LEU:HD13 | 4:D:400:LEU:HD12 | 1.90                     | 0.54              |
| 5:E:25:LEU:HD23  | 5:E:25:LEU:N     | 2.22                     | 0.54              |
| 1:1:332:PRO:HD2  | 2:2:90:LEU:CD2   | 2.38                     | 0.54              |
| 3:3:124:LYS:HE3  | 3:3:128:CYS:HA   | 1.89                     | 0.54              |
| 3:3:469:ARG:HB3  | 3:3:754:PRO:CB   | 2.38                     | 0.54              |
| 4:4:208:PHE:O    | 4:4:211:SER:HB3  | 2.06                     | 0.54              |
| 4:4:374:SER:HB2  | 4:4:406:ASP:HB3  | 1.88                     | 0.54              |
| 5:5:25:LEU:HD23  | 5:5:25:LEU:N     | 2.22                     | 0.54              |
| 8:7:50:LEU:HD12  | 8:7:51:PRO:HD3   | 1.90                     | 0.54              |
| 1:A:332:PRO:HD2  | 2:B:90:LEU:CD2   | 2.38                     | 0.54              |
| 3:C:124:LYS:HE3  | 3:C:128:CYS:HA   | 1.89                     | 0.54              |
| 3:C:469:ARG:HB3  | 3:C:754:PRO:CB   | 2.38                     | 0.54              |
| 4:D:208:PHE:O    | 4:D:211:SER:HB3  | 2.06                     | 0.54              |
| 4:D:374:SER:HB2  | 4:D:406:ASP:HB3  | 1.89                     | 0.54              |
| 6:F:29:ALA:HB1   | 6:F:158:VAL:O    | 2.07                     | 0.54              |
| 8:J:50:LEU:HD12  | 8:J:51:PRO:HD3   | 1.90                     | 0.54              |
| 3:3:294:GLY:HA3  | 14:3:786:SF4:S4  | 2.48                     | 0.54              |
| 4:4:381:LEU:HD13 | 4:4:400:LEU:HD12 | 1.90                     | 0.54              |
| 3:C:294:GLY:HA3  | 14:C:786:SF4:S4  | 2.48                     | 0.54              |
| 1:1:301:PRO:HB2  | 1:1:303:THR:HG23 | 1.89                     | 0.54              |
| 2:2:27:ILE:HG22  | 2:2:31:LEU:HD22  | 1.90                     | 0.54              |
| 3:3:52:ILE:O     | 3:3:76:GLN:HG2   | 2.07                     | 0.54              |
| 3:3:268:ASP:OD2  | 3:3:278:ARG:NH1  | 2.41                     | 0.54              |
| 6:6:138:PRO:CG   | 7:9:121:MET:HG3  | 2.38                     | 0.54              |
| 3:3:55:PRO:HG3   | 3:3:74:GLN:HB2   | 1.90                     | 0.54              |
| 3:3:401:ASP:OD2  | 3:3:457:PRO:HD2  | 2.08                     | 0.54              |
| 6:6:130:VAL:HG23 | 6:6:131:VAL:HG13 | 1.89                     | 0.54              |
| 7:9:133:LYS:O    | 7:9:137:LEU:HD13 | 2.07                     | 0.54              |
| 1:A:301:PRO:HB2  | 1:A:303:THR:HG23 | 1.89                     | 0.54              |
| 1:A:332:PRO:HD2  | 2:B:90:LEU:HD23  | 1.89                     | 0.54              |
| 3:C:52:ILE:O     | 3:C:76:GLN:HG2   | 2.07                     | 0.54              |
| 3:C:268:ASP:OD2  | 3:C:278:ARG:NH1  | 2.41                     | 0.54              |
| 3:C:401:ASP:OD2  | 3:C:457:PRO:HD2  | 2.08                     | 0.54              |
| 6:F:130:VAL:HG23 | 6:F:131:VAL:HG13 | 1.89                     | 0.54              |
| 6:F:138:PRO:CG   | 7:G:121:MET:HG3  | 2.38                     | 0.54              |
| 7:G:133:LYS:O    | 7:G:137:LEU:HD13 | 2.07                     | 0.54              |
| 1:1:332:PRO:HD2  | 2:2:90:LEU:HD23  | 1.89                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:352:GLU:HG3  | 3:3:664:LEU:HD11 | 1.90                     | 0.54              |
| 3:3:473:GLU:O    | 3:3:477:LEU:CD1  | 2.56                     | 0.54              |
| 4:4:179:LYS:HE3  | 7:9:106:GLU:OE1  | 2.07                     | 0.54              |
| 5:5:123:GLY:HA2  | 5:5:144:HIS:CE1  | 2.43                     | 0.54              |
| 6:6:83:ARG:HA    | 6:6:111:CYS:HB3  | 1.89                     | 0.54              |
| 2:B:27:ILE:HG22  | 2:B:31:LEU:HD22  | 1.90                     | 0.54              |
| 3:C:352:GLU:HG3  | 3:C:664:LEU:HD11 | 1.90                     | 0.54              |
| 3:C:473:GLU:O    | 3:C:477:LEU:CD1  | 2.56                     | 0.54              |
| 4:D:179:LYS:HE3  | 7:G:106:GLU:OE1  | 2.07                     | 0.54              |
| 5:E:16:PRO:HB2   | 5:E:28:VAL:HG12  | 1.90                     | 0.54              |
| 5:5:16:PRO:HB2   | 5:5:28:VAL:HG12  | 1.90                     | 0.54              |
| 6:6:104:TRP:NE1  | 6:6:158:VAL:HG12 | 2.23                     | 0.54              |
| 3:C:43:GLY:HA2   | 16:C:787:FES:S1  | 2.48                     | 0.54              |
| 3:C:55:PRO:HG3   | 3:C:74:GLN:HB2   | 1.90                     | 0.54              |
| 3:C:410:HIS:HA   | 3:C:458:LEU:HD21 | 1.89                     | 0.54              |
| 4:D:261:THR:H    | 4:D:292:GLN:NE2  | 2.04                     | 0.54              |
| 5:E:123:GLY:HA2  | 5:E:144:HIS:CE1  | 2.43                     | 0.54              |
| 6:F:83:ARG:HA    | 6:F:111:CYS:HB3  | 1.89                     | 0.54              |
| 1:1:89:LEU:HD12  | 1:1:217:THR:HG22 | 1.90                     | 0.53              |
| 3:3:43:GLY:HA2   | 16:3:787:FES:S1  | 2.48                     | 0.53              |
| 3:3:410:HIS:HA   | 3:3:458:LEU:HD21 | 1.90                     | 0.53              |
| 4:4:261:THR:H    | 4:4:292:GLN:NE2  | 2.04                     | 0.53              |
| 1:A:89:LEU:HD12  | 1:A:217:THR:HG22 | 1.90                     | 0.53              |
| 6:F:104:TRP:NE1  | 6:F:158:VAL:HG12 | 2.23                     | 0.53              |
| 1:A:354:GLY:O    | 1:A:360:ARG:NH1  | 2.38                     | 0.53              |
| 2:2:106:ILE:CG2  | 2:2:110:GLU:HB2  | 2.38                     | 0.53              |
| 3:3:305:ARG:HG2  | 3:3:588:SER:O    | 2.08                     | 0.53              |
| 3:3:356:LEU:HD13 | 3:3:654:PHE:CD1  | 2.43                     | 0.53              |
| 3:3:684:ARG:HG2  | 3:3:684:ARG:HH11 | 1.73                     | 0.53              |
| 4:4:105:LEU:HD13 | 4:4:309:ILE:CD1  | 2.36                     | 0.53              |
| 5:5:167:PRO:C    | 5:5:171:ARG:HH12 | 2.11                     | 0.53              |
| 2:B:106:ILE:CG2  | 2:B:110:GLU:HB2  | 2.38                     | 0.53              |
| 3:C:305:ARG:HG2  | 3:C:588:SER:O    | 2.08                     | 0.53              |
| 3:C:356:LEU:HD13 | 3:C:654:PHE:CD1  | 2.43                     | 0.53              |
| 3:C:684:ARG:HG2  | 3:C:684:ARG:HH11 | 1.73                     | 0.53              |
| 4:D:105:LEU:HD13 | 4:D:309:ILE:CD1  | 2.36                     | 0.53              |
| 5:E:167:PRO:C    | 5:E:171:ARG:HH12 | 2.11                     | 0.53              |
| 1:1:354:GLY:O    | 1:1:360:ARG:NH1  | 2.38                     | 0.53              |
| 3:3:31:PRO:HD3   | 3:3:137:TYR:CE2  | 2.44                     | 0.53              |
| 3:3:218:LEU:N    | 3:3:219:PRO:HD3  | 2.23                     | 0.53              |
| 3:C:31:PRO:HD3   | 3:C:137:TYR:CE2  | 2.44                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:279:ALA:HB2  | 3:C:290:ILE:CG1  | 2.35                     | 0.53              |
| 3:3:279:ALA:HB2  | 3:3:290:ILE:CG1  | 2.35                     | 0.53              |
| 3:3:367:PRO:HB2  | 3:3:554:LYS:CB   | 2.39                     | 0.53              |
| 4:4:262:PHE:CD1  | 4:4:289:ILE:HD11 | 2.43                     | 0.53              |
| 5:5:53:VAL:HG13  | 5:5:71:VAL:HB    | 1.91                     | 0.53              |
| 3:C:218:LEU:N    | 3:C:219:PRO:HD3  | 2.24                     | 0.53              |
| 3:C:367:PRO:HB2  | 3:C:554:LYS:CB   | 2.39                     | 0.53              |
| 4:D:262:PHE:CD1  | 4:D:289:ILE:HD11 | 2.43                     | 0.53              |
| 5:E:53:VAL:HG13  | 5:E:71:VAL:HB    | 1.91                     | 0.53              |
| 1:1:41:ALA:HB2   | 1:1:116:GLU:HG3  | 1.90                     | 0.53              |
| 3:3:225:ASN:HD21 | 3:3:289:TRP:HB3  | 1.74                     | 0.53              |
| 3:3:232:VAL:HB   | 14:3:784:SF4:S2  | 2.49                     | 0.53              |
| 3:3:282:VAL:HG22 | 3:3:282:VAL:O    | 2.08                     | 0.53              |
| 4:4:105:LEU:CD1  | 4:4:309:ILE:HD13 | 2.37                     | 0.53              |
| 6:6:128:ASP:HA   | 6:6:131:VAL:O    | 2.08                     | 0.53              |
| 1:A:9:LEU:O      | 1:A:9:LEU:HG     | 2.08                     | 0.53              |
| 3:C:101:ARG:NH1  | 3:C:140:TYR:CE1  | 2.77                     | 0.53              |
| 3:C:225:ASN:HD21 | 3:C:289:TRP:HB3  | 1.74                     | 0.53              |
| 3:C:232:VAL:HB   | 14:C:784:SF4:S2  | 2.49                     | 0.53              |
| 3:C:261:VAL:CG2  | 14:C:786:SF4:S2  | 2.97                     | 0.53              |
| 3:C:701:ALA:HB2  | 3:C:763:LEU:CB   | 2.39                     | 0.53              |
| 1:1:9:LEU:O      | 1:1:9:LEU:HG     | 2.08                     | 0.53              |
| 3:3:101:ARG:NH1  | 3:3:140:TYR:CE1  | 2.77                     | 0.53              |
| 3:3:261:VAL:CG2  | 14:3:786:SF4:S2  | 2.97                     | 0.53              |
| 3:3:299:GLU:O    | 3:3:303:GLN:HB2  | 2.09                     | 0.53              |
| 3:3:701:ALA:HB2  | 3:3:763:LEU:CB   | 2.39                     | 0.53              |
| 1:A:41:ALA:HB2   | 1:A:116:GLU:HG3  | 1.90                     | 0.53              |
| 1:A:283:PRO:HB3  | 1:A:287:ILE:HD13 | 1.90                     | 0.53              |
| 3:C:282:VAL:HG22 | 3:C:282:VAL:O    | 2.09                     | 0.53              |
| 3:C:299:GLU:O    | 3:C:303:GLN:HB2  | 2.09                     | 0.53              |
| 4:D:105:LEU:CD1  | 4:D:309:ILE:HD13 | 2.37                     | 0.53              |
| 5:E:42:LYS:HB2   | 5:E:108:TRP:CZ2  | 2.43                     | 0.53              |
| 6:F:128:ASP:HA   | 6:F:131:VAL:O    | 2.08                     | 0.53              |
| 1:1:283:PRO:HB3  | 1:1:287:ILE:HD13 | 1.90                     | 0.53              |
| 3:3:451:PHE:HE1  | 3:3:466:GLU:HB3  | 1.74                     | 0.53              |
| 3:3:510:GLY:O    | 3:3:514:ASP:HB3  | 2.08                     | 0.53              |
| 5:5:42:LYS:HB2   | 5:5:108:TRP:CZ2  | 2.44                     | 0.53              |
| 3:C:451:PHE:HE1  | 3:C:466:GLU:HB3  | 1.74                     | 0.53              |
| 3:3:248:GLU:HG2  | 5:5:170:PHE:CE1  | 2.44                     | 0.52              |
| 3:C:248:GLU:HG2  | 5:E:170:PHE:CE1  | 2.44                     | 0.52              |
| 3:C:510:GLY:O    | 3:C:514:ASP:HB3  | 2.08                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:E:66:GLU:CG    | 5:E:95:PRO:HA    | 2.11                     | 0.52              |
| 1:1:60:SER:HA    | 1:1:235:ALA:HB1  | 1.91                     | 0.52              |
| 5:5:66:GLU:CG    | 5:5:95:PRO:HA    | 2.11                     | 0.52              |
| 1:A:60:SER:HA    | 1:A:235:ALA:HB1  | 1.91                     | 0.52              |
| 1:A:313:TYR:HE1  | 1:A:323:LEU:HD13 | 1.74                     | 0.52              |
| 3:C:385:ALA:HB2  | 3:C:531:LYS:CB   | 2.40                     | 0.52              |
| 1:1:42:LYS:HG3   | 1:1:46:LYS:HE3   | 1.91                     | 0.52              |
| 1:1:313:TYR:HE1  | 1:1:323:LEU:HD13 | 1.74                     | 0.52              |
| 3:3:385:ALA:HB2  | 3:3:531:LYS:CB   | 2.40                     | 0.52              |
| 6:6:90:PRO:O     | 6:6:93:ARG:HB3   | 2.09                     | 0.52              |
| 1:A:42:LYS:HG3   | 1:A:46:LYS:HE3   | 1.91                     | 0.52              |
| 4:D:197:LEU:N    | 4:D:198:PRO:HD2  | 2.24                     | 0.52              |
| 6:F:90:PRO:O     | 6:F:93:ARG:HB3   | 2.09                     | 0.52              |
| 3:3:481:LEU:HD22 | 3:3:527:ARG:NH1  | 2.25                     | 0.52              |
| 4:4:197:LEU:N    | 4:4:198:PRO:HD2  | 2.24                     | 0.52              |
| 4:4:381:LEU:H    | 4:4:382:PRO:HD2  | 1.74                     | 0.52              |
| 3:C:481:LEU:HD22 | 3:C:527:ARG:NH1  | 2.25                     | 0.52              |
| 1:1:139:ARG:CG   | 2:2:140:PRO:HD3  | 2.39                     | 0.52              |
| 3:3:720:PRO:HG3  | 3:3:749:HIS:HB3  | 1.91                     | 0.52              |
| 4:4:294:LEU:O    | 4:4:294:LEU:HD23 | 2.09                     | 0.52              |
| 5:5:144:HIS:O    | 5:5:147:ARG:HG2  | 2.10                     | 0.52              |
| 6:6:138:PRO:HG2  | 7:9:121:MET:HG3  | 1.92                     | 0.52              |
| 8:7:117:ALA:O    | 8:7:121:ARG:HG2  | 2.10                     | 0.52              |
| 1:A:139:ARG:CG   | 2:B:140:PRO:HD3  | 2.39                     | 0.52              |
| 1:A:246:SER:HB3  | 1:A:268:MET:CG   | 2.32                     | 0.52              |
| 1:A:289:ALA:HB3  | 1:A:337:MET:CE   | 2.40                     | 0.52              |
| 1:A:289:ALA:HB3  | 1:A:337:MET:HE3  | 1.91                     | 0.52              |
| 4:D:381:LEU:H    | 4:D:382:PRO:HD2  | 1.74                     | 0.52              |
| 5:E:144:HIS:O    | 5:E:147:ARG:HG2  | 2.10                     | 0.52              |
| 6:F:138:PRO:HG2  | 7:G:121:MET:HG3  | 1.92                     | 0.52              |
| 1:1:289:ALA:HB3  | 1:1:337:MET:CE   | 2.40                     | 0.52              |
| 1:1:289:ALA:HB3  | 1:1:337:MET:HE3  | 1.91                     | 0.52              |
| 2:2:139:GLU:CB   | 2:2:140:PRO:HD2  | 2.40                     | 0.52              |
| 3:3:29:ASP:OD2   | 5:5:187:GLY:N    | 2.38                     | 0.52              |
| 2:B:139:GLU:CB   | 2:B:140:PRO:HD2  | 2.40                     | 0.52              |
| 3:C:46:ARG:O     | 3:C:107:MET:HG2  | 2.10                     | 0.52              |
| 3:C:720:PRO:HG3  | 3:C:749:HIS:HB3  | 1.91                     | 0.52              |
| 4:D:153:ARG:HH11 | 4:D:153:ARG:HG3  | 1.75                     | 0.52              |
| 4:D:294:LEU:O    | 4:D:294:LEU:HD23 | 2.10                     | 0.52              |
| 8:J:117:ALA:O    | 8:J:121:ARG:HG2  | 2.10                     | 0.52              |
| 1:1:246:SER:HB3  | 1:1:268:MET:CG   | 2.32                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:2:135:GLN:HB2  | 2:2:141:TYR:CD1  | 2.44                     | 0.52              |
| 3:3:46:ARG:O     | 3:3:107:MET:HG2  | 2.10                     | 0.52              |
| 6:6:78:MET:O     | 6:6:78:MET:HG3   | 2.10                     | 0.52              |
| 11:N:1001:UNK:CA | 11:N:1059:UNK:CA | 2.81                     | 0.52              |
| 2:B:135:GLN:HB2  | 2:B:141:TYR:CD1  | 2.44                     | 0.52              |
| 3:C:29:ASP:OD2   | 5:E:187:GLY:N    | 2.38                     | 0.52              |
| 6:F:78:MET:O     | 6:F:78:MET:HG3   | 2.10                     | 0.52              |
| 11:Q:1001:UNK:CA | 11:Q:1059:UNK:CA | 2.81                     | 0.52              |
| 4:4:44:MET:HA    | 4:4:44:MET:HE3   | 1.92                     | 0.52              |
| 4:4:153:ARG:HH11 | 4:4:153:ARG:HG3  | 1.75                     | 0.52              |
| 6:6:83:ARG:HG3   | 6:6:83:ARG:NH1   | 2.25                     | 0.52              |
| 8:7:15:GLU:O     | 8:7:18:SER:HB3   | 2.09                     | 0.52              |
| 8:7:81:ARG:O     | 8:7:81:ARG:HD3   | 2.10                     | 0.52              |
| 1:A:160:LYS:HG3  | 1:A:161:ASN:N    | 2.21                     | 0.52              |
| 1:A:202:LYS:O    | 1:A:203:PRO:C    | 2.48                     | 0.52              |
| 3:C:157:PHE:CZ   | 3:C:159:PHE:HB2  | 2.44                     | 0.52              |
| 8:J:15:GLU:O     | 8:J:18:SER:HB3   | 2.09                     | 0.52              |
| 8:J:81:ARG:O     | 8:J:81:ARG:HD3   | 2.10                     | 0.52              |
| 1:1:160:LYS:HG3  | 1:1:161:ASN:N    | 2.21                     | 0.52              |
| 1:1:202:LYS:O    | 1:1:203:PRO:C    | 2.48                     | 0.52              |
| 1:1:391:LEU:N    | 1:1:392:PRO:HD2  | 2.25                     | 0.52              |
| 3:3:36:GLU:HG2   | 3:3:229:ILE:HG23 | 1.92                     | 0.52              |
| 3:3:55:PRO:HD3   | 3:3:74:GLN:N     | 2.23                     | 0.52              |
| 3:3:157:PHE:CZ   | 3:3:159:PHE:HB2  | 2.45                     | 0.52              |
| 3:3:200:LEU:HD12 | 3:3:212:GLY:O    | 2.09                     | 0.52              |
| 4:4:393:MET:HA   | 4:4:396:ILE:HG22 | 1.91                     | 0.52              |
| 1:A:391:LEU:N    | 1:A:392:PRO:HD2  | 2.25                     | 0.52              |
| 2:B:116:LEU:HD23 | 2:B:116:LEU:N    | 2.24                     | 0.52              |
| 3:C:36:GLU:HG2   | 3:C:229:ILE:HG23 | 1.92                     | 0.52              |
| 3:C:55:PRO:HD3   | 3:C:74:GLN:N     | 2.23                     | 0.52              |
| 3:C:413:LEU:HD13 | 3:C:448:MET:HE1  | 1.92                     | 0.52              |
| 3:C:575:GLU:OE1  | 3:C:575:GLU:HA   | 2.10                     | 0.52              |
| 4:D:44:MET:HA    | 4:D:44:MET:HE3   | 1.92                     | 0.52              |
| 6:F:83:ARG:HG3   | 6:F:83:ARG:NH1   | 2.25                     | 0.52              |
| 2:2:116:LEU:HD23 | 2:2:116:LEU:N    | 2.24                     | 0.52              |
| 3:3:398:VAL:C    | 3:3:399:LEU:HD12 | 2.30                     | 0.52              |
| 3:3:575:GLU:OE1  | 3:3:575:GLU:HA   | 2.10                     | 0.52              |
| 3:C:200:LEU:HD12 | 3:C:212:GLY:O    | 2.09                     | 0.52              |
| 4:D:84:ARG:HD3   | 6:F:117:MET:HE3  | 1.92                     | 0.52              |
| 4:D:393:MET:HA   | 4:D:396:ILE:HG22 | 1.91                     | 0.52              |
| 1:1:118:MET:HG2  | 1:1:224:LEU:HD13 | 1.92                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:84:ARG:HD3   | 6:6:117:MET:HE3  | 1.92                     | 0.51              |
| 1:A:118:MET:HG2  | 1:A:224:LEU:HD13 | 1.92                     | 0.51              |
| 3:C:398:VAL:C    | 3:C:399:LEU:HD12 | 2.30                     | 0.51              |
| 4:D:140:LEU:HD11 | 4:D:214:PHE:HB2  | 1.90                     | 0.51              |
| 1:1:261:PRO:HB2  | 2:2:129:HIS:HB2  | 1.91                     | 0.51              |
| 3:3:54:LEU:H     | 3:3:55:PRO:HD3   | 1.73                     | 0.51              |
| 6:6:74:GLN:OE1   | 6:6:74:GLN:HA    | 2.10                     | 0.51              |
| 1:A:243:THR:HG21 | 1:A:315:HIS:HE1  | 1.75                     | 0.51              |
| 1:A:261:PRO:HB2  | 2:B:129:HIS:HB2  | 1.91                     | 0.51              |
| 6:F:74:GLN:OE1   | 6:F:74:GLN:HA    | 2.10                     | 0.51              |
| 1:1:243:THR:HG21 | 1:1:315:HIS:HE1  | 1.75                     | 0.51              |
| 4:4:140:LEU:HD11 | 4:4:214:PHE:HB2  | 1.90                     | 0.51              |
| 6:6:22:THR:HA    | 6:6:25:GLU:HG2   | 1.92                     | 0.51              |
| 1:1:436:LEU:HD23 | 2:2:90:LEU:HA    | 1.91                     | 0.51              |
| 3:3:130:LEU:HD23 | 14:3:784:SF4:S4  | 2.50                     | 0.51              |
| 4:4:59:ILE:HD11  | 5:5:135:ILE:HG23 | 1.93                     | 0.51              |
| 4:4:254:TYR:HE2  | 4:4:346:THR:HA   | 1.72                     | 0.51              |
| 1:A:436:LEU:HD23 | 2:B:90:LEU:HA    | 1.91                     | 0.51              |
| 3:C:54:LEU:H     | 3:C:55:PRO:HD3   | 1.73                     | 0.51              |
| 3:C:130:LEU:HD23 | 14:C:784:SF4:S4  | 2.50                     | 0.51              |
| 4:D:254:TYR:HE2  | 4:D:346:THR:HA   | 1.72                     | 0.51              |
| 6:F:22:THR:HA    | 6:F:25:GLU:HG2   | 1.92                     | 0.51              |
| 3:3:361:ALA:HB3  | 3:3:369:LEU:HD13 | 1.92                     | 0.51              |
| 5:5:75:VAL:HG12  | 5:5:76:SER:N     | 2.26                     | 0.51              |
| 3:C:361:ALA:HB3  | 3:C:369:LEU:HD13 | 1.92                     | 0.51              |
| 4:D:59:ILE:HD11  | 5:E:135:ILE:HG23 | 1.93                     | 0.51              |
| 5:E:75:VAL:HG12  | 5:E:76:SER:N     | 2.26                     | 0.51              |
| 3:3:591:HIS:ND1  | 3:3:592:PRO:CD   | 2.72                     | 0.51              |
| 3:C:440:ARG:HG2  | 3:C:440:ARG:NH1  | 2.03                     | 0.51              |
| 3:C:591:HIS:ND1  | 3:C:592:PRO:CD   | 2.72                     | 0.51              |
| 3:3:23:VAL:HG12  | 3:3:24:PHE:N     | 2.26                     | 0.51              |
| 3:3:440:ARG:HG2  | 3:3:440:ARG:NH1  | 2.03                     | 0.51              |
| 3:3:594:ALA:O    | 3:3:598:ALA:HB3  | 2.10                     | 0.51              |
| 4:4:230:ILE:HG22 | 4:4:230:ILE:O    | 2.11                     | 0.51              |
| 4:4:249:ARG:HB2  | 4:4:262:PHE:HE2  | 1.76                     | 0.51              |
| 3:C:2:VAL:CG1    | 3:C:89:ASP:HA    | 2.39                     | 0.51              |
| 3:C:23:VAL:HG12  | 3:C:24:PHE:N     | 2.26                     | 0.51              |
| 3:C:594:ALA:O    | 3:C:598:ALA:HB3  | 2.10                     | 0.51              |
| 4:D:230:ILE:HG22 | 4:D:230:ILE:O    | 2.11                     | 0.51              |
| 4:D:249:ARG:HB2  | 4:D:262:PHE:HE2  | 1.76                     | 0.51              |
| 1:1:291:ILE:O    | 1:1:328:VAL:HA   | 2.11                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:2:VAL:CG1    | 3:3:89:ASP:HA    | 2.39                     | 0.51              |
| 4:4:317:LEU:HD21 | 4:4:327:HIS:CD2  | 2.46                     | 0.51              |
| 3:C:343:LEU:HB2  | 3:C:369:LEU:HB2  | 1.93                     | 0.51              |
| 4:D:317:LEU:HD21 | 4:D:327:HIS:CD2  | 2.46                     | 0.51              |
| 3:3:343:LEU:HB2  | 3:3:369:LEU:HB2  | 1.93                     | 0.51              |
| 6:6:49:GLU:OE1   | 6:6:49:GLU:HA    | 2.11                     | 0.51              |
| 1:A:291:ILE:O    | 1:A:328:VAL:HA   | 2.11                     | 0.51              |
| 4:D:263:ASP:O    | 4:D:285:GLU:HG3  | 2.11                     | 0.51              |
| 6:F:49:GLU:OE1   | 6:F:49:GLU:HA    | 2.11                     | 0.51              |
| 8:J:121:ARG:HG3  | 8:J:121:ARG:NH1  | 2.26                     | 0.51              |
| 3:3:183:HIS:C    | 3:3:184:CYS:O    | 2.48                     | 0.51              |
| 4:4:211:SER:HB2  | 4:4:214:PHE:HB3  | 1.92                     | 0.51              |
| 4:4:263:ASP:O    | 4:4:285:GLU:HG3  | 2.11                     | 0.51              |
| 6:6:77:VAL:O     | 6:6:77:VAL:HG12  | 2.10                     | 0.51              |
| 6:6:104:TRP:CE2  | 6:6:173:VAL:HG22 | 2.46                     | 0.51              |
| 8:7:121:ARG:HG3  | 8:7:121:ARG:NH1  | 2.26                     | 0.51              |
| 9:L:1119:UNK:C   | 9:L:1121:UNK:N   | 2.72                     | 0.51              |
| 3:C:183:HIS:C    | 3:C:184:CYS:O    | 2.48                     | 0.51              |
| 4:D:211:SER:HB2  | 4:D:214:PHE:HB3  | 1.92                     | 0.51              |
| 6:F:104:TRP:CE2  | 6:F:173:VAL:HG22 | 2.46                     | 0.51              |
| 9:O:1119:UNK:C   | 9:O:1121:UNK:N   | 2.72                     | 0.51              |
| 1:1:359:CYS:HB3  | 14:1:439:SF4:S3  | 2.51                     | 0.50              |
| 3:3:456:ALA:O    | 3:3:459:MET:HB2  | 2.11                     | 0.50              |
| 7:9:123:ASP:CG   | 7:9:148:ARG:HH22 | 2.14                     | 0.50              |
| 3:C:216:PHE:HZ   | 8:J:128:PHE:CD2  | 2.28                     | 0.50              |
| 3:C:456:ALA:O    | 3:C:459:MET:HB2  | 2.11                     | 0.50              |
| 6:F:77:VAL:O     | 6:F:77:VAL:HG12  | 2.10                     | 0.50              |
| 3:3:197:ASP:OD2  | 3:3:220:SER:HB2  | 2.12                     | 0.50              |
| 3:3:216:PHE:HZ   | 8:7:128:PHE:CD2  | 2.28                     | 0.50              |
| 3:3:357:ALA:HB2  | 3:3:641:LEU:HD11 | 1.92                     | 0.50              |
| 4:4:44:MET:HA    | 4:4:44:MET:CE    | 2.41                     | 0.50              |
| 6:6:50:MET:HB2   | 6:6:108:MET:CE   | 2.40                     | 0.50              |
| 1:A:359:CYS:HB3  | 14:A:439:SF4:S3  | 2.51                     | 0.50              |
| 3:C:197:ASP:OD2  | 3:C:220:SER:HB2  | 2.12                     | 0.50              |
| 3:C:357:ALA:HB2  | 3:C:641:LEU:HD11 | 1.92                     | 0.50              |
| 4:D:44:MET:HA    | 4:D:44:MET:CE    | 2.41                     | 0.50              |
| 6:F:50:MET:HB2   | 6:F:108:MET:CE   | 2.40                     | 0.50              |
| 6:F:156:LYS:HA   | 6:F:159:ARG:HD2  | 1.92                     | 0.50              |
| 7:G:123:ASP:CG   | 7:G:148:ARG:HH22 | 2.14                     | 0.50              |
| 1:1:185:GLU:HB2  | 1:1:218:ILE:CD1  | 2.41                     | 0.50              |
| 3:3:46:ARG:HG2   | 3:3:46:ARG:HH11  | 1.76                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:368:HIS:CG   | 3:3:556:ALA:HB3  | 2.46                     | 0.50              |
| 3:3:707:LYS:C    | 3:3:709:GLN:H    | 2.14                     | 0.50              |
| 5:5:98:ASP:OD1   | 5:5:100:ARG:HD3  | 2.11                     | 0.50              |
| 6:6:156:LYS:HA   | 6:6:159:ARG:HD2  | 1.92                     | 0.50              |
| 8:7:108:ILE:HD12 | 8:7:108:ILE:N    | 2.25                     | 0.50              |
| 1:A:185:GLU:HB2  | 1:A:218:ILE:CD1  | 2.41                     | 0.50              |
| 3:C:46:ARG:HG2   | 3:C:46:ARG:HH11  | 1.76                     | 0.50              |
| 3:C:185:LYS:HB3  | 3:C:189:ARG:HD3  | 1.93                     | 0.50              |
| 3:C:368:HIS:CG   | 3:C:556:ALA:HB3  | 2.46                     | 0.50              |
| 3:C:707:LYS:C    | 3:C:709:GLN:H    | 2.14                     | 0.50              |
| 1:1:331:ILE:HD12 | 1:1:337:MET:CE   | 2.37                     | 0.50              |
| 3:3:185:LYS:HB3  | 3:3:189:ARG:HD3  | 1.93                     | 0.50              |
| 3:3:317:LEU:HD22 | 3:3:317:LEU:N    | 2.27                     | 0.50              |
| 3:3:352:GLU:HG3  | 3:3:664:LEU:CD1  | 2.41                     | 0.50              |
| 5:5:167:PRO:C    | 5:5:171:ARG:NH1  | 2.65                     | 0.50              |
| 3:C:352:GLU:HG3  | 3:C:664:LEU:CD1  | 2.41                     | 0.50              |
| 5:E:98:ASP:OD1   | 5:E:100:ARG:HD3  | 2.11                     | 0.50              |
| 5:E:167:PRO:C    | 5:E:171:ARG:NH1  | 2.65                     | 0.50              |
| 3:3:473:GLU:O    | 3:3:477:LEU:HD13 | 2.12                     | 0.50              |
| 3:3:572:PRO:HD2  | 3:3:577:LEU:HD21 | 1.92                     | 0.50              |
| 4:4:381:LEU:O    | 4:4:381:LEU:HG   | 2.11                     | 0.50              |
| 1:A:331:ILE:HD12 | 1:A:337:MET:CE   | 2.37                     | 0.50              |
| 3:C:317:LEU:HD22 | 3:C:317:LEU:N    | 2.27                     | 0.50              |
| 3:C:473:GLU:O    | 3:C:477:LEU:HD13 | 2.12                     | 0.50              |
| 5:E:157:THR:HG21 | 7:G:66:TYR:HB2   | 1.92                     | 0.50              |
| 3:3:101:ARG:HB3  | 3:3:101:ARG:CZ   | 2.42                     | 0.50              |
| 3:3:344:TYR:CD1  | 3:3:568:TYR:CE1  | 2.99                     | 0.50              |
| 3:3:614:LEU:HD11 | 3:3:624:LEU:CD1  | 2.42                     | 0.50              |
| 5:5:157:THR:HG21 | 7:9:66:TYR:HB2   | 1.92                     | 0.50              |
| 9:L:1528:UNK:C   | 9:L:1530:UNK:N   | 2.64                     | 0.50              |
| 3:C:101:ARG:HB3  | 3:C:101:ARG:CZ   | 2.42                     | 0.50              |
| 3:C:572:PRO:HD2  | 3:C:577:LEU:HD21 | 1.93                     | 0.50              |
| 3:C:614:LEU:HD11 | 3:C:624:LEU:CD1  | 2.42                     | 0.50              |
| 4:D:381:LEU:O    | 4:D:381:LEU:HG   | 2.12                     | 0.50              |
| 8:J:108:ILE:N    | 8:J:108:ILE:HD12 | 2.25                     | 0.50              |
| 9:O:1528:UNK:C   | 9:O:1530:UNK:N   | 2.64                     | 0.50              |
| 1:1:145:LEU:O    | 1:1:149:ILE:HG13 | 2.12                     | 0.50              |
| 2:2:112:THR:OG1  | 2:2:113:PRO:HD2  | 2.12                     | 0.50              |
| 3:3:169:PRO:HA   | 3:3:175:ILE:HA   | 1.94                     | 0.50              |
| 3:3:192:GLU:HG3  | 3:3:193:GLU:HG3  | 1.93                     | 0.50              |
| 3:3:272:GLY:O    | 3:3:629:ILE:HA   | 2.11                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:7:LYS:O      | 2:B:7:LYS:HG2    | 2.12                     | 0.50              |
| 2:B:112:THR:OG1  | 2:B:113:PRO:HD2  | 2.12                     | 0.50              |
| 3:C:169:PRO:HA   | 3:C:175:ILE:HA   | 1.94                     | 0.50              |
| 3:C:192:GLU:HG3  | 3:C:193:GLU:HG3  | 1.93                     | 0.50              |
| 3:C:272:GLY:O    | 3:C:629:ILE:HA   | 2.11                     | 0.50              |
| 3:C:344:TYR:CD1  | 3:C:568:TYR:CE1  | 2.99                     | 0.50              |
| 3:C:734:VAL:HG12 | 3:C:736:VAL:HG23 | 1.94                     | 0.50              |
| 2:2:7:LYS:O      | 2:2:7:LYS:HG2    | 2.12                     | 0.50              |
| 3:3:472:GLU:O    | 3:3:476:ILE:HD12 | 2.12                     | 0.50              |
| 3:3:734:VAL:HG12 | 3:3:736:VAL:HG23 | 1.94                     | 0.50              |
| 5:5:167:PRO:CB   | 5:5:171:ARG:HH12 | 2.24                     | 0.50              |
| 1:A:145:LEU:O    | 1:A:149:ILE:HG13 | 2.12                     | 0.50              |
| 3:C:472:GLU:O    | 3:C:476:ILE:HD12 | 2.12                     | 0.50              |
| 4:D:241:ALA:HB2  | 4:D:278:VAL:HG21 | 1.92                     | 0.50              |
| 5:E:167:PRO:CB   | 5:E:171:ARG:HH12 | 2.24                     | 0.50              |
| 6:F:153:GLN:HG3  | 7:G:124:TYR:CZ   | 2.46                     | 0.50              |
| 4:4:241:ALA:HB2  | 4:4:278:VAL:HG21 | 1.92                     | 0.50              |
| 6:6:153:GLN:HG3  | 7:9:124:TYR:CZ   | 2.46                     | 0.50              |
| 4:D:64:THR:HB    | 4:D:66:PHE:CE1   | 2.46                     | 0.50              |
| 3:3:459:MET:HG2  | 3:3:465:HIS:CB   | 2.42                     | 0.49              |
| 4:4:43:LEU:HD23  | 4:4:57:PRO:HA    | 1.93                     | 0.49              |
| 4:4:64:THR:HB    | 4:4:66:PHE:CE1   | 2.46                     | 0.49              |
| 8:7:16:LEU:O     | 8:7:20:MET:HG3   | 2.12                     | 0.49              |
| 5:E:119:TYR:O    | 5:E:122:PHE:O    | 2.28                     | 0.49              |
| 8:J:92:HIS:N     | 8:J:92:HIS:CD2   | 2.78                     | 0.49              |
| 11:Q:1212:UNK:N  | 11:Q:1213:UNK:CA | 2.75                     | 0.49              |
| 1:1:272:PHE:CD1  | 1:1:311:MET:HG2  | 2.47                     | 0.49              |
| 5:5:25:LEU:N     | 5:5:25:LEU:CD2   | 2.75                     | 0.49              |
| 8:7:92:HIS:N     | 8:7:92:HIS:CD2   | 2.78                     | 0.49              |
| 11:N:1212:UNK:N  | 11:N:1213:UNK:CA | 2.75                     | 0.49              |
| 3:C:459:MET:HG2  | 3:C:465:HIS:CB   | 2.42                     | 0.49              |
| 3:C:684:ARG:HG2  | 3:C:684:ARG:NH1  | 2.28                     | 0.49              |
| 4:D:85:MET:HE1   | 4:D:370:VAL:HG11 | 1.93                     | 0.49              |
| 5:E:25:LEU:N     | 5:E:25:LEU:CD2   | 2.75                     | 0.49              |
| 8:J:16:LEU:O     | 8:J:20:MET:HG3   | 2.12                     | 0.49              |
| 1:1:350:HIS:O    | 3:3:205:ARG:NH1  | 2.45                     | 0.49              |
| 3:3:684:ARG:HG2  | 3:3:684:ARG:NH1  | 2.28                     | 0.49              |
| 4:4:85:MET:HE1   | 4:4:370:VAL:HG11 | 1.94                     | 0.49              |
| 5:5:119:TYR:O    | 5:5:122:PHE:O    | 2.28                     | 0.49              |
| 7:9:40:ARG:NH1   | 7:9:41:HIS:O     | 2.45                     | 0.49              |
| 1:A:272:PHE:CD1  | 1:A:311:MET:HG2  | 2.47                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:350:HIS:O    | 3:C:205:ARG:NH1  | 2.45                     | 0.49              |
| 4:D:43:LEU:HD23  | 4:D:57:PRO:HA    | 1.94                     | 0.49              |
| 3:3:300:TRP:HB3  | 3:3:705:VAL:HG23 | 1.95                     | 0.49              |
| 3:3:697:THR:HG21 | 3:3:761:SER:OG   | 2.12                     | 0.49              |
| 3:3:722:THR:CG2  | 3:3:755:LYS:HG3  | 2.42                     | 0.49              |
| 4:4:218:ALA:CB   | 4:4:272:VAL:HG22 | 2.42                     | 0.49              |
| 4:4:236:GLY:C    | 4:4:238:SER:N    | 2.65                     | 0.49              |
| 4:4:238:SER:HB2  | 4:4:275:ARG:HG2  | 1.94                     | 0.49              |
| 1:A:339:ASP:OD2  | 2:B:89:LYS:HE2   | 2.12                     | 0.49              |
| 3:C:550:LEU:HD21 | 3:C:680:LEU:HD11 | 1.93                     | 0.49              |
| 4:D:238:SER:HB2  | 4:D:275:ARG:HG2  | 1.94                     | 0.49              |
| 5:E:145:PRO:HA   | 5:E:150:TYR:CD2  | 2.47                     | 0.49              |
| 7:G:40:ARG:NH1   | 7:G:41:HIS:O     | 2.45                     | 0.49              |
| 1:1:97:GLU:O     | 1:1:100:SER:HB3  | 2.12                     | 0.49              |
| 3:3:360:LEU:HD13 | 3:3:645:ALA:HB2  | 1.94                     | 0.49              |
| 3:3:550:LEU:HD21 | 3:3:680:LEU:HD11 | 1.93                     | 0.49              |
| 5:5:145:PRO:HA   | 5:5:150:TYR:CD2  | 2.47                     | 0.49              |
| 3:C:300:TRP:HB3  | 3:C:705:VAL:HG23 | 1.95                     | 0.49              |
| 3:C:697:THR:HG21 | 3:C:761:SER:OG   | 2.12                     | 0.49              |
| 3:C:722:THR:CG2  | 3:C:755:LYS:HG3  | 2.42                     | 0.49              |
| 4:D:218:ALA:CB   | 4:D:272:VAL:HG22 | 2.42                     | 0.49              |
| 4:D:236:GLY:C    | 4:D:238:SER:N    | 2.65                     | 0.49              |
| 1:1:339:ASP:OD2  | 2:2:89:LYS:HE2   | 2.12                     | 0.49              |
| 6:6:57:ARG:C     | 6:6:57:ARG:NE    | 2.66                     | 0.49              |
| 1:A:97:GLU:O     | 1:A:100:SER:HB3  | 2.12                     | 0.49              |
| 3:C:116:PRO:O    | 3:C:117:LEU:CB   | 2.60                     | 0.49              |
| 3:C:360:LEU:HD13 | 3:C:645:ALA:HB2  | 1.95                     | 0.49              |
| 5:E:135:ILE:HG22 | 5:E:136:LEU:HG   | 1.94                     | 0.49              |
| 1:1:114:LEU:O    | 1:1:118:MET:HG3  | 2.13                     | 0.49              |
| 1:1:177:ALA:O    | 2:2:67:TYR:HB3   | 2.13                     | 0.49              |
| 2:2:33:ARG:HH21  | 2:2:37:GLU:CG    | 2.25                     | 0.49              |
| 3:3:116:PRO:O    | 3:3:117:LEU:CB   | 2.60                     | 0.49              |
| 3:3:337:ARG:HD3  | 3:3:340:GLU:HG3  | 1.93                     | 0.49              |
| 3:3:592:PRO:HA   | 3:3:595:GLU:HG2  | 1.93                     | 0.49              |
| 4:4:64:THR:OG1   | 6:6:83:ARG:NH1   | 2.46                     | 0.49              |
| 1:A:342:TRP:O    | 1:A:342:TRP:HE3  | 1.96                     | 0.49              |
| 2:B:33:ARG:HH21  | 2:B:37:GLU:CG    | 2.25                     | 0.49              |
| 4:D:84:ARG:O     | 6:F:83:ARG:NH2   | 2.45                     | 0.49              |
| 6:F:57:ARG:C     | 6:F:57:ARG:NE    | 2.66                     | 0.49              |
| 1:1:342:TRP:O    | 1:1:342:TRP:HE3  | 1.96                     | 0.49              |
| 3:3:202:PHE:HA   | 3:3:210:PHE:O    | 2.13                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:229:ILE:O    | 3:3:230:CYS:C    | 2.51                     | 0.49              |
| 4:4:84:ARG:O     | 6:6:83:ARG:NH2   | 2.45                     | 0.49              |
| 4:4:213:ILE:HD12 | 4:4:213:ILE:H    | 1.78                     | 0.49              |
| 5:5:135:ILE:HG22 | 5:5:136:LEU:HG   | 1.94                     | 0.49              |
| 1:A:114:LEU:O    | 1:A:118:MET:HG3  | 2.13                     | 0.49              |
| 1:A:177:ALA:O    | 2:B:67:TYR:HB3   | 2.13                     | 0.49              |
| 3:C:229:ILE:O    | 3:C:230:CYS:C    | 2.51                     | 0.49              |
| 3:C:592:PRO:HA   | 3:C:595:GLU:HG2  | 1.93                     | 0.49              |
| 4:D:64:THR:OG1   | 6:F:83:ARG:NH1   | 2.46                     | 0.49              |
| 4:4:99:LEU:O     | 4:4:103:LYS:HG2  | 2.13                     | 0.49              |
| 3:C:202:PHE:HA   | 3:C:210:PHE:O    | 2.13                     | 0.49              |
| 3:C:337:ARG:HD3  | 3:C:340:GLU:HG3  | 1.93                     | 0.49              |
| 4:D:213:ILE:HD12 | 4:D:213:ILE:H    | 1.78                     | 0.49              |
| 3:3:186:ARG:CD   | 3:3:231:PRO:HD3  | 2.37                     | 0.49              |
| 3:3:259:CYS:SG   | 3:3:261:VAL:HG22 | 2.53                     | 0.49              |
| 5:5:101:LEU:O    | 5:5:126:PHE:HA   | 2.13                     | 0.49              |
| 6:6:104:TRP:HB3  | 6:6:154:LEU:HD11 | 1.95                     | 0.49              |
| 3:C:186:ARG:CD   | 3:C:231:PRO:HD3  | 2.37                     | 0.49              |
| 3:C:259:CYS:SG   | 3:C:261:VAL:HG22 | 2.53                     | 0.49              |
| 3:C:565:TYR:HD1  | 3:C:582:PHE:HB3  | 1.76                     | 0.49              |
| 5:E:101:LEU:O    | 5:E:126:PHE:HA   | 2.13                     | 0.49              |
| 3:3:565:TYR:HD1  | 3:3:582:PHE:HB3  | 1.76                     | 0.48              |
| 4:4:346:THR:HG22 | 4:4:353:LEU:O    | 2.12                     | 0.48              |
| 6:6:37:TRP:O     | 6:6:75:ALA:HB1   | 2.13                     | 0.48              |
| 1:A:93:ALA:CB    | 1:A:107:LEU:HD11 | 2.43                     | 0.48              |
| 1:A:128:THR:O    | 1:A:169:PHE:HA   | 2.12                     | 0.48              |
| 4:D:99:LEU:O     | 4:D:103:LYS:HG2  | 2.13                     | 0.48              |
| 4:D:346:THR:HG22 | 4:D:353:LEU:O    | 2.12                     | 0.48              |
| 5:E:20:ASN:ND2   | 5:E:26:TRP:HZ3   | 2.10                     | 0.48              |
| 6:F:37:TRP:O     | 6:F:75:ALA:HB1   | 2.13                     | 0.48              |
| 6:F:104:TRP:HB3  | 6:F:154:LEU:HD11 | 1.95                     | 0.48              |
| 1:1:93:ALA:CB    | 1:1:107:LEU:HD11 | 2.43                     | 0.48              |
| 3:3:545:GLU:HA   | 3:3:550:LEU:HD11 | 1.95                     | 0.48              |
| 4:4:59:ILE:H     | 4:4:59:ILE:HD13  | 1.77                     | 0.48              |
| 4:4:381:LEU:H    | 4:4:382:PRO:CD   | 2.26                     | 0.48              |
| 5:5:20:ASN:ND2   | 5:5:26:TRP:HZ3   | 2.10                     | 0.48              |
| 6:6:156:LYS:NZ   | 7:9:149:GLU:OE1  | 2.46                     | 0.48              |
| 3:C:545:GLU:HA   | 3:C:550:LEU:HD11 | 1.95                     | 0.48              |
| 4:D:381:LEU:H    | 4:D:382:PRO:CD   | 2.26                     | 0.48              |
| 6:F:156:LYS:NZ   | 7:G:149:GLU:OE1  | 2.46                     | 0.48              |
| 1:1:128:THR:O    | 1:1:169:PHE:HA   | 2.12                     | 0.48              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 2:2:144:CYS:O    | 2:2:149:ARG:HD3   | 2.13                     | 0.48              |
| 3:3:112:LEU:CD2  | 3:3:130:LEU:HD21  | 2.42                     | 0.48              |
| 3:3:225:ASN:ND2  | 3:3:289:TRP:HB3   | 2.28                     | 0.48              |
| 4:4:185:GLU:O    | 4:4:189:GLU:HG2   | 2.12                     | 0.48              |
| 4:4:233:GLY:HA2  | 5:5:48:PHE:CE1    | 2.49                     | 0.48              |
| 2:B:144:CYS:O    | 2:B:149:ARG:HD3   | 2.13                     | 0.48              |
| 3:C:117:LEU:N    | 4:D:321:MET:HE2   | 2.28                     | 0.48              |
| 3:C:225:ASN:ND2  | 3:C:289:TRP:HB3   | 2.29                     | 0.48              |
| 3:C:515:THR:HG23 | 3:C:683:LEU:CD1   | 2.42                     | 0.48              |
| 4:D:59:ILE:H     | 4:D:59:ILE:HD13   | 1.77                     | 0.48              |
| 4:D:125:ARG:HD2  | 4:D:286:SER:OG    | 2.13                     | 0.48              |
| 4:D:233:GLY:HA2  | 5:E:48:PHE:CE1    | 2.49                     | 0.48              |
| 6:F:37:TRP:CD1   | 6:F:75:ALA:HB2    | 2.48                     | 0.48              |
| 15:1:440:FMN:C2  | 15:1:440:FMN:HO3' | 2.16                     | 0.48              |
| 3:3:11:VAL:CG1   | 3:3:25:HIS:CD2    | 2.92                     | 0.48              |
| 3:3:117:LEU:N    | 4:4:321:MET:HE2   | 2.28                     | 0.48              |
| 3:3:229:ILE:HD11 | 3:3:289:TRP:HZ3   | 1.77                     | 0.48              |
| 4:4:125:ARG:HD2  | 4:4:286:SER:OG    | 2.14                     | 0.48              |
| 4:4:205:GLU:OE2  | 4:4:281:ARG:NE    | 2.27                     | 0.48              |
| 4:4:393:MET:C    | 4:4:396:ILE:HG22  | 2.34                     | 0.48              |
| 5:5:129:HIS:CD2  | 5:5:130:PRO:HD2   | 2.48                     | 0.48              |
| 3:C:11:VAL:CG1   | 3:C:25:HIS:CD2    | 2.92                     | 0.48              |
| 3:C:31:PRO:HG3   | 3:C:137:TYR:CG    | 2.48                     | 0.48              |
| 3:C:112:LEU:CD2  | 3:C:130:LEU:HD21  | 2.42                     | 0.48              |
| 3:C:229:ILE:HD11 | 3:C:289:TRP:HZ3   | 1.77                     | 0.48              |
| 4:D:185:GLU:O    | 4:D:189:GLU:HG2   | 2.12                     | 0.48              |
| 4:D:205:GLU:OE2  | 4:D:281:ARG:NE    | 2.27                     | 0.48              |
| 4:D:393:MET:C    | 4:D:396:ILE:HG22  | 2.34                     | 0.48              |
| 9:O:1523:UNK:C   | 9:O:1525:UNK:N    | 2.72                     | 0.48              |
| 3:3:31:PRO:HG3   | 3:3:137:TYR:CG    | 2.49                     | 0.48              |
| 3:3:515:THR:HG23 | 3:3:683:LEU:CD1   | 2.42                     | 0.48              |
| 4:4:83:PRO:HD3   | 4:4:94:ASP:OD1    | 2.13                     | 0.48              |
| 4:4:379:GLN:OE1  | 5:5:112:ASN:HB3   | 2.12                     | 0.48              |
| 5:5:59:THR:O     | 5:5:59:THR:HG22   | 2.13                     | 0.48              |
| 6:6:37:TRP:CD1   | 6:6:75:ALA:HB2    | 2.49                     | 0.48              |
| 8:7:68:LEU:HD13  | 8:7:69:LEU:N      | 2.29                     | 0.48              |
| 9:L:901:UNK:CA   | 9:L:1199:UNK:CA   | 2.91                     | 0.48              |
| 9:L:1523:UNK:C   | 9:L:1525:UNK:N    | 2.72                     | 0.48              |
| 3:C:205:ARG:HA   | 3:C:209:THR:CG2   | 2.43                     | 0.48              |
| 4:D:83:PRO:HD3   | 4:D:94:ASP:OD1    | 2.13                     | 0.48              |
| 5:E:59:THR:HG22  | 5:E:59:THR:O      | 2.13                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:J:68:LEU:HD13  | 8:J:69:LEU:N     | 2.29                     | 0.48              |
| 9:O:901:UNK:CA   | 9:O:1199:UNK:CA  | 2.91                     | 0.48              |
| 1:1:358:PRO:O    | 1:1:362:GLY:CA   | 2.52                     | 0.48              |
| 7:9:172:GLY:O    | 7:9:174:LYS:N    | 2.47                     | 0.48              |
| 4:D:366:TYR:CZ   | 5:E:148:LYS:HE3  | 2.49                     | 0.48              |
| 4:D:379:GLN:OE1  | 5:E:112:ASN:HB3  | 2.12                     | 0.48              |
| 5:E:129:HIS:CD2  | 5:E:130:PRO:HD2  | 2.48                     | 0.48              |
| 7:G:172:GLY:O    | 7:G:174:LYS:N    | 2.47                     | 0.48              |
| 12:S:321:UNK:C   | 12:S:323:UNK:N   | 2.70                     | 0.48              |
| 1:1:192:LEU:HD22 | 1:1:211:LEU:HD11 | 1.95                     | 0.48              |
| 3:3:205:ARG:HA   | 3:3:209:THR:CG2  | 2.43                     | 0.48              |
| 3:3:413:LEU:HD13 | 3:3:448:MET:CE   | 2.43                     | 0.48              |
| 3:3:478:LEU:HD12 | 3:3:520:ARG:CZ   | 2.44                     | 0.48              |
| 4:4:85:MET:CE    | 4:4:409:ARG:HG3  | 2.43                     | 0.48              |
| 4:4:366:TYR:CZ   | 5:5:148:LYS:HE3  | 2.49                     | 0.48              |
| 6:6:82:GLY:HA2   | 14:6:182:SF4:S4  | 2.53                     | 0.48              |
| 12:R:321:UNK:C   | 12:R:323:UNK:N   | 2.70                     | 0.48              |
| 1:A:358:PRO:O    | 1:A:362:GLY:CA   | 2.52                     | 0.48              |
| 2:B:179:VAL:HG12 | 2:B:180:GLU:N    | 2.29                     | 0.48              |
| 6:F:92:MET:O     | 6:F:92:MET:HG2   | 2.14                     | 0.48              |
| 3:3:113:LEU:HD11 | 3:3:157:PHE:CD1  | 2.49                     | 0.48              |
| 6:6:92:MET:O     | 6:6:92:MET:HG2   | 2.14                     | 0.48              |
| 1:A:192:LEU:HD22 | 1:A:211:LEU:HD11 | 1.95                     | 0.48              |
| 3:C:413:LEU:HD13 | 3:C:448:MET:CE   | 2.43                     | 0.48              |
| 3:C:478:LEU:HD12 | 3:C:520:ARG:CZ   | 2.44                     | 0.48              |
| 4:D:85:MET:CE    | 4:D:409:ARG:HG3  | 2.43                     | 0.48              |
| 6:F:82:GLY:HA2   | 14:F:182:SF4:S4  | 2.53                     | 0.48              |
| 2:2:179:VAL:HG12 | 2:2:180:GLU:N    | 2.29                     | 0.48              |
| 3:3:344:TYR:HD1  | 3:3:568:TYR:CE1  | 2.31                     | 0.48              |
| 7:9:101:CYS:SG   | 7:9:103:LEU:HD12 | 2.53                     | 0.48              |
| 1:A:342:TRP:HZ3  | 1:A:368:VAL:HG23 | 1.78                     | 0.48              |
| 3:C:113:LEU:HD11 | 3:C:157:PHE:CD1  | 2.49                     | 0.48              |
| 3:C:344:TYR:HD1  | 3:C:568:TYR:CE1  | 2.31                     | 0.48              |
| 5:E:20:ASN:HD22  | 5:E:26:TRP:HZ3   | 1.62                     | 0.48              |
| 5:E:123:GLY:H    | 5:E:147:ARG:HH11 | 1.60                     | 0.48              |
| 1:1:283:PRO:HB3  | 1:1:287:ILE:CD1  | 2.43                     | 0.48              |
| 1:1:301:PRO:HB2  | 1:1:303:THR:CG2  | 2.44                     | 0.48              |
| 1:1:342:TRP:HZ3  | 1:1:368:VAL:HG23 | 1.78                     | 0.48              |
| 3:3:160:THR:OG1  | 8:7:73:SER:CB    | 2.60                     | 0.48              |
| 3:3:522:ARG:O    | 3:3:526:GLU:HG3  | 2.14                     | 0.48              |
| 5:5:20:ASN:HD22  | 5:5:26:TRP:HZ3   | 1.62                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:5:123:GLY:H    | 5:5:147:ARG:HH11 | 1.60                     | 0.48              |
| 1:A:283:PRO:HB3  | 1:A:287:ILE:CD1  | 2.43                     | 0.48              |
| 1:A:301:PRO:HB2  | 1:A:303:THR:CG2  | 2.44                     | 0.48              |
| 3:C:160:THR:OG1  | 8:J:73:SER:CB    | 2.60                     | 0.48              |
| 3:C:522:ARG:O    | 3:C:526:GLU:HG3  | 2.14                     | 0.48              |
| 7:G:101:CYS:SG   | 7:G:103:LEU:HD12 | 2.53                     | 0.48              |
| 8:J:20:MET:HE3   | 8:J:59:LEU:HG    | 1.96                     | 0.48              |
| 1:1:6:LEU:HD12   | 1:1:240:GLN:O    | 2.14                     | 0.47              |
| 1:1:81:LYS:HA    | 1:1:81:LYS:HE3   | 1.96                     | 0.47              |
| 3:3:55:PRO:CD    | 3:3:74:GLN:H     | 2.24                     | 0.47              |
| 3:3:105:ALA:CB   | 3:3:140:TYR:HB2  | 2.44                     | 0.47              |
| 3:3:329:LEU:CD1  | 3:3:584:VAL:HG11 | 2.45                     | 0.47              |
| 3:3:478:LEU:HD12 | 3:3:520:ARG:NH2  | 2.29                     | 0.47              |
| 6:6:149:TYR:CE1  | 6:6:153:GLN:NE2  | 2.81                     | 0.47              |
| 8:7:20:MET:HE3   | 8:7:59:LEU:HG    | 1.96                     | 0.47              |
| 1:A:6:LEU:HD12   | 1:A:240:GLN:O    | 2.14                     | 0.47              |
| 3:C:55:PRO:CD    | 3:C:74:GLN:H     | 2.24                     | 0.47              |
| 3:C:105:ALA:CB   | 3:C:140:TYR:HB2  | 2.43                     | 0.47              |
| 4:D:101:VAL:O    | 4:D:104:LEU:N    | 2.47                     | 0.47              |
| 1:1:29:LEU:HD12  | 1:1:155:ARG:HG3  | 1.95                     | 0.47              |
| 2:2:38:GLU:OE2   | 2:2:45:ARG:NH1   | 2.47                     | 0.47              |
| 4:4:101:VAL:O    | 4:4:104:LEU:N    | 2.47                     | 0.47              |
| 4:4:115:THR:O    | 4:4:118:VAL:HG22 | 2.14                     | 0.47              |
| 6:6:36:LEU:HD22  | 6:6:77:VAL:HG21  | 1.97                     | 0.47              |
| 1:A:29:LEU:HD12  | 1:A:155:ARG:HG3  | 1.95                     | 0.47              |
| 1:A:400:CYS:HB2  | 1:A:401:PRO:HD2  | 1.96                     | 0.47              |
| 3:C:329:LEU:CD1  | 3:C:584:VAL:HG11 | 2.45                     | 0.47              |
| 3:C:478:LEU:HD12 | 3:C:520:ARG:NH2  | 2.29                     | 0.47              |
| 3:C:616:ASN:ND2  | 3:C:622:LEU:HD11 | 2.28                     | 0.47              |
| 6:F:36:LEU:HD22  | 6:F:77:VAL:HG21  | 1.97                     | 0.47              |
| 6:F:149:TYR:CE1  | 6:F:153:GLN:NE2  | 2.81                     | 0.47              |
| 1:1:400:CYS:HB2  | 1:1:401:PRO:HD2  | 1.96                     | 0.47              |
| 3:3:616:ASN:ND2  | 3:3:622:LEU:HD11 | 2.28                     | 0.47              |
| 6:6:158:VAL:HA   | 6:6:172:PRO:HB3  | 1.95                     | 0.47              |
| 1:A:81:LYS:HA    | 1:A:81:LYS:HE3   | 1.96                     | 0.47              |
| 2:B:38:GLU:OE2   | 2:B:45:ARG:NH1   | 2.47                     | 0.47              |
| 1:1:92:ASN:ND2   | 15:1:440:FMN:C2  | 2.77                     | 0.47              |
| 2:2:86:LEU:HD11  | 2:2:90:LEU:HD11  | 1.96                     | 0.47              |
| 3:3:229:ILE:HD11 | 3:3:289:TRP:CZ3  | 2.49                     | 0.47              |
| 4:4:212:PRO:CG   | 4:4:213:ILE:HD12 | 2.41                     | 0.47              |
| 5:5:40:HIS:NE2   | 5:5:44:MET:CE    | 2.77                     | 0.47              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:92:ASN:ND2   | 15:A:440:FMN:C2   | 2.77                     | 0.47              |
| 3:C:229:ILE:HD11 | 3:C:289:TRP:CZ3   | 2.49                     | 0.47              |
| 4:D:115:THR:O    | 4:D:118:VAL:HG22  | 2.14                     | 0.47              |
| 4:D:212:PRO:CG   | 4:D:213:ILE:HD12  | 2.41                     | 0.47              |
| 5:E:40:HIS:NE2   | 5:E:44:MET:CE     | 2.77                     | 0.47              |
| 6:F:50:MET:C     | 6:F:52:ALA:H      | 2.16                     | 0.47              |
| 6:F:158:VAL:HA   | 6:F:172:PRO:HB3   | 1.95                     | 0.47              |
| 15:1:440:FMN:H9  | 15:1:440:FMN:H1'1 | 1.64                     | 0.47              |
| 3:3:31:PRO:HD3   | 3:3:137:TYR:CZ    | 2.49                     | 0.47              |
| 6:6:50:MET:C     | 6:6:52:ALA:H      | 2.16                     | 0.47              |
| 7:9:35:PRO:HD3   | 7:9:164:PRO:CG    | 2.45                     | 0.47              |
| 3:C:31:PRO:HD3   | 3:C:137:TYR:CZ    | 2.49                     | 0.47              |
| 4:D:205:GLU:OE1  | 4:D:284:ARG:NH2   | 2.47                     | 0.47              |
| 6:F:23:THR:O     | 6:F:23:THR:HG22   | 2.14                     | 0.47              |
| 3:3:697:THR:OG1  | 3:3:763:LEU:HD23  | 2.15                     | 0.47              |
| 4:4:47:LEU:HD13  | 4:4:52:VAL:CA     | 2.42                     | 0.47              |
| 4:4:205:GLU:OE1  | 4:4:284:ARG:NH2   | 2.47                     | 0.47              |
| 6:6:23:THR:O     | 6:6:23:THR:HG22   | 2.14                     | 0.47              |
| 15:A:440:FMN:H9  | 15:A:440:FMN:H1'1 | 1.64                     | 0.47              |
| 2:B:86:LEU:HD11  | 2:B:90:LEU:HD11   | 1.96                     | 0.47              |
| 3:C:185:LYS:HG3  | 3:C:202:PHE:HE2   | 1.79                     | 0.47              |
| 3:C:697:THR:OG1  | 3:C:763:LEU:HD23  | 2.15                     | 0.47              |
| 7:G:35:PRO:HD3   | 7:G:164:PRO:CG    | 2.45                     | 0.47              |
| 2:2:77:LYS:HE3   | 2:2:78:TYR:CZ     | 2.50                     | 0.47              |
| 2:2:116:LEU:HD23 | 2:2:116:LEU:H     | 1.78                     | 0.47              |
| 3:3:101:ARG:HB3  | 3:3:101:ARG:HH11  | 1.77                     | 0.47              |
| 3:3:185:LYS:HG3  | 3:3:202:PHE:HE2   | 1.80                     | 0.47              |
| 3:3:337:ARG:CD   | 3:3:340:GLU:HG3   | 2.45                     | 0.47              |
| 3:3:360:LEU:HD13 | 3:3:645:ALA:CB    | 2.44                     | 0.47              |
| 3:3:474:ARG:HA   | 3:3:517:ALA:HB2   | 1.97                     | 0.47              |
| 4:4:363:SER:HB3  | 5:5:173:ALA:HB1   | 1.95                     | 0.47              |
| 5:5:49:LEU:HD13  | 5:5:74:LEU:HD23   | 1.97                     | 0.47              |
| 5:5:72:TYR:O     | 5:5:89:PHE:HA     | 2.15                     | 0.47              |
| 7:9:40:ARG:HB2   | 7:9:121:MET:HE2   | 1.94                     | 0.47              |
| 2:B:77:LYS:HE3   | 2:B:78:TYR:CZ     | 2.50                     | 0.47              |
| 2:B:116:LEU:HD23 | 2:B:116:LEU:H     | 1.78                     | 0.47              |
| 3:C:337:ARG:CD   | 3:C:340:GLU:HG3   | 2.45                     | 0.47              |
| 3:C:474:ARG:HA   | 3:C:517:ALA:HB2   | 1.97                     | 0.47              |
| 3:C:586:HIS:CE1  | 3:C:640:VAL:HG21  | 2.50                     | 0.47              |
| 4:D:47:LEU:HD13  | 4:D:52:VAL:CA     | 2.42                     | 0.47              |
| 4:D:363:SER:HB3  | 5:E:173:ALA:HB1   | 1.94                     | 0.47              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 5:E:49:LEU:HD13  | 5:E:74:LEU:HD23   | 1.97                     | 0.47              |
| 5:E:72:TYR:O     | 5:E:89:PHE:HA     | 2.15                     | 0.47              |
| 10:P:653:UNK:CA  | 10:P:711:UNK:CA   | 2.92                     | 0.47              |
| 3:3:227:THR:HG21 | 3:3:237:ASP:HB2   | 1.97                     | 0.47              |
| 3:3:586:HIS:CE1  | 3:3:640:VAL:HG21  | 2.50                     | 0.47              |
| 10:M:653:UNK:CA  | 10:M:711:UNK:CA   | 2.92                     | 0.47              |
| 3:C:360:LEU:HD13 | 3:C:645:ALA:CB    | 2.44                     | 0.47              |
| 4:D:88:LEU:HD12  | 4:D:403:VAL:CG2   | 2.44                     | 0.47              |
| 3:3:214:MET:O    | 3:3:216:PHE:CE1   | 2.67                     | 0.47              |
| 3:3:485:GLU:O    | 6:F:16:ARG:CZ     | 2.63                     | 0.47              |
| 4:4:88:LEU:HD12  | 4:4:403:VAL:CG2   | 2.44                     | 0.47              |
| 15:A:440:FMN:C2  | 15:A:440:FMN:HO3' | 2.16                     | 0.47              |
| 3:C:227:THR:HG21 | 3:C:237:ASP:HB2   | 1.97                     | 0.47              |
| 1:1:132:ILE:HG21 | 1:1:145:LEU:HD11  | 1.96                     | 0.47              |
| 2:2:143:GLU:C    | 2:2:144:CYS:SG    | 2.92                     | 0.47              |
| 3:3:478:LEU:CD2  | 3:3:483:ASP:HB2   | 2.45                     | 0.47              |
| 6:6:115:GLY:HA3  | 6:6:125:GLN:OE1   | 2.15                     | 0.47              |
| 2:B:21:GLU:O     | 2:B:21:GLU:HG2    | 2.14                     | 0.47              |
| 2:B:33:ARG:HH21  | 2:B:37:GLU:HG3    | 1.80                     | 0.47              |
| 2:B:143:GLU:C    | 2:B:144:CYS:SG    | 2.92                     | 0.47              |
| 3:C:214:MET:O    | 3:C:216:PHE:CE1   | 2.67                     | 0.47              |
| 3:C:478:LEU:CD2  | 3:C:483:ASP:HB2   | 2.45                     | 0.47              |
| 3:C:672:ALA:O    | 3:C:673:MET:HB2   | 2.15                     | 0.47              |
| 6:F:115:GLY:HA3  | 6:F:125:GLN:OE1   | 2.15                     | 0.47              |
| 2:2:21:GLU:HG2   | 2:2:21:GLU:O      | 2.14                     | 0.46              |
| 3:3:309:PRO:HA   | 3:3:603:PRO:CD    | 2.45                     | 0.46              |
| 3:3:668:LYS:NZ   | 3:C:592:PRO:HG3   | 2.30                     | 0.46              |
| 2:B:175:HIS:ND1  | 2:B:175:HIS:N     | 2.61                     | 0.46              |
| 3:C:101:ARG:HB3  | 3:C:101:ARG:HH11  | 1.77                     | 0.46              |
| 3:C:309:PRO:HA   | 3:C:603:PRO:CD    | 2.45                     | 0.46              |
| 1:1:259:LYS:HB3  | 1:1:280:ALA:O     | 2.15                     | 0.46              |
| 2:2:33:ARG:HH21  | 2:2:37:GLU:HG3    | 1.80                     | 0.46              |
| 2:2:175:HIS:ND1  | 2:2:175:HIS:N     | 2.61                     | 0.46              |
| 3:3:672:ALA:O    | 3:3:673:MET:HB2   | 2.15                     | 0.46              |
| 4:4:138:LEU:HD11 | 4:4:146:PHE:CD1   | 2.50                     | 0.46              |
| 4:4:317:LEU:HD12 | 4:4:317:LEU:HA    | 1.78                     | 0.46              |
| 1:A:132:ILE:HG21 | 1:A:145:LEU:HD11  | 1.96                     | 0.46              |
| 1:A:259:LYS:HB3  | 1:A:280:ALA:O     | 2.15                     | 0.46              |
| 1:A:273:ARG:HB2  | 1:A:307:LEU:O     | 2.15                     | 0.46              |
| 4:D:317:LEU:HD12 | 4:D:317:LEU:HA    | 1.78                     | 0.46              |
| 4:D:350:ARG:O    | 4:D:373:PRO:HB2   | 2.14                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:1:273:ARG:HB2  | 1:1:307:LEU:O    | 2.15                     | 0.46              |
| 1:1:301:PRO:O    | 1:1:306:VAL:HG21 | 2.15                     | 0.46              |
| 3:3:168:HIS:C    | 3:3:168:HIS:CD2  | 2.89                     | 0.46              |
| 3:3:602:LEU:HD12 | 3:3:602:LEU:N    | 2.31                     | 0.46              |
| 4:4:187:VAL:HB   | 4:4:188:PRO:CD   | 2.45                     | 0.46              |
| 6:6:16:ARG:NH1   | 6:6:17:GLU:OE2   | 2.48                     | 0.46              |
| 1:A:301:PRO:O    | 1:A:306:VAL:HG21 | 2.15                     | 0.46              |
| 3:C:34:CYS:HA    | 3:C:184:CYS:HB2  | 1.96                     | 0.46              |
| 3:C:168:HIS:C    | 3:C:168:HIS:CD2  | 2.89                     | 0.46              |
| 3:C:602:LEU:HD12 | 3:C:602:LEU:N    | 2.31                     | 0.46              |
| 4:D:138:LEU:HD11 | 4:D:146:PHE:CD1  | 2.50                     | 0.46              |
| 6:F:16:ARG:NH1   | 6:F:17:GLU:OE2   | 2.48                     | 0.46              |
| 1:1:8:GLY:C      | 1:1:10:ASP:H     | 2.17                     | 0.46              |
| 1:1:254:ILE:HD12 | 1:1:275:LEU:HD22 | 1.96                     | 0.46              |
| 3:3:34:CYS:HA    | 3:3:184:CYS:HB2  | 1.96                     | 0.46              |
| 4:4:197:LEU:O    | 4:4:198:PRO:C    | 2.54                     | 0.46              |
| 4:4:350:ARG:O    | 4:4:373:PRO:HB2  | 2.14                     | 0.46              |
| 1:A:254:ILE:HD12 | 1:A:275:LEU:HD22 | 1.96                     | 0.46              |
| 4:D:241:ALA:HA   | 4:D:278:VAL:HG21 | 1.98                     | 0.46              |
| 1:1:132:ILE:HG22 | 1:1:134:VAL:HG12 | 1.98                     | 0.46              |
| 1:1:233:ARG:O    | 1:1:237:TRP:HB3  | 2.16                     | 0.46              |
| 3:3:274:LEU:HD12 | 3:3:275:LEU:N    | 2.30                     | 0.46              |
| 5:5:116:ARG:HB3  | 5:5:135:ILE:HG13 | 1.98                     | 0.46              |
| 1:A:132:ILE:HG22 | 1:A:134:VAL:HG12 | 1.98                     | 0.46              |
| 1:A:233:ARG:O    | 1:A:237:TRP:HB3  | 2.16                     | 0.46              |
| 2:B:145:VAL:HG12 | 2:B:150:LEU:HB2  | 1.98                     | 0.46              |
| 3:C:274:LEU:HD12 | 3:C:275:LEU:N    | 2.30                     | 0.46              |
| 4:D:84:ARG:HG2   | 14:F:182:SF4:S2  | 2.56                     | 0.46              |
| 4:D:187:VAL:HB   | 4:D:188:PRO:CD   | 2.45                     | 0.46              |
| 4:D:197:LEU:O    | 4:D:198:PRO:C    | 2.54                     | 0.46              |
| 5:E:116:ARG:HB3  | 5:E:135:ILE:HG13 | 1.98                     | 0.46              |
| 8:J:84:LEU:HB2   | 8:J:93:LEU:HB2   | 1.98                     | 0.46              |
| 2:2:145:VAL:HG12 | 2:2:150:LEU:HB2  | 1.98                     | 0.46              |
| 3:3:13:VAL:HG22  | 3:3:17:THR:OG1   | 2.15                     | 0.46              |
| 3:3:194:VAL:HG12 | 3:3:411:LEU:HD22 | 1.98                     | 0.46              |
| 3:3:272:GLY:HA2  | 3:3:628:PRO:O    | 2.16                     | 0.46              |
| 4:4:84:ARG:HG2   | 14:6:182:SF4:S2  | 2.56                     | 0.46              |
| 4:4:241:ALA:HA   | 4:4:278:VAL:HG21 | 1.98                     | 0.46              |
| 8:7:73:SER:OG    | 8:7:80:LYS:HA    | 2.16                     | 0.46              |
| 8:7:84:LEU:HB2   | 8:7:93:LEU:HB2   | 1.98                     | 0.46              |
| 3:C:13:VAL:HG22  | 3:C:17:THR:OG1   | 2.15                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:194:VAL:HG12 | 3:C:411:LEU:HD22 | 1.98                     | 0.46              |
| 8:J:73:SER:OG    | 8:J:80:LYS:HA    | 2.16                     | 0.46              |
| 1:1:18:TYR:CZ    | 1:1:263:VAL:HG11 | 2.51                     | 0.46              |
| 2:2:79:HIS:ND1   | 2:2:118:SER:HB2  | 2.31                     | 0.46              |
| 1:A:8:GLY:C      | 1:A:10:ASP:H     | 2.17                     | 0.46              |
| 2:B:79:HIS:ND1   | 2:B:118:SER:HB2  | 2.31                     | 0.46              |
| 3:C:33:PHE:HB2   | 3:C:45:CYS:SG    | 2.56                     | 0.46              |
| 3:C:49:LEU:HA    | 3:C:80:ALA:O     | 2.15                     | 0.46              |
| 3:3:33:PHE:HB2   | 3:3:45:CYS:SG    | 2.56                     | 0.46              |
| 3:3:49:LEU:HA    | 3:3:80:ALA:O     | 2.15                     | 0.46              |
| 3:3:184:CYS:SG   | 3:3:186:ARG:HB2  | 2.55                     | 0.46              |
| 3:3:469:ARG:HG2  | 3:3:469:ARG:HH11 | 1.81                     | 0.46              |
| 3:3:690:GLY:HA3  | 3:3:770:ARG:HH21 | 1.79                     | 0.46              |
| 4:4:108:VAL:O    | 4:4:110:PRO:HD3  | 2.16                     | 0.46              |
| 4:4:234:LEU:C    | 4:4:236:GLY:H    | 2.18                     | 0.46              |
| 1:A:18:TYR:CZ    | 1:A:263:VAL:HG11 | 2.51                     | 0.46              |
| 3:C:184:CYS:SG   | 3:C:186:ARG:HB2  | 2.55                     | 0.46              |
| 3:C:272:GLY:HA2  | 3:C:628:PRO:O    | 2.16                     | 0.46              |
| 3:C:690:GLY:HA3  | 3:C:770:ARG:HH21 | 1.79                     | 0.46              |
| 4:D:108:VAL:O    | 4:D:110:PRO:HD3  | 2.16                     | 0.46              |
| 4:4:51:GLU:O     | 4:4:52:VAL:HG23  | 2.16                     | 0.46              |
| 4:4:190:LEU:O    | 4:4:194:LEU:HB2  | 2.16                     | 0.46              |
| 4:4:215:TYR:O    | 4:4:219:ARG:HB2  | 2.15                     | 0.46              |
| 1:A:79:MET:HG3   | 1:A:125:ILE:HB   | 1.98                     | 0.46              |
| 3:C:469:ARG:HG2  | 3:C:469:ARG:HH11 | 1.81                     | 0.46              |
| 4:D:190:LEU:O    | 4:D:194:LEU:HB2  | 2.16                     | 0.46              |
| 4:D:234:LEU:C    | 4:D:236:GLY:H    | 2.18                     | 0.46              |
| 1:1:63:ARG:HD3   | 1:1:313:TYR:CD2  | 2.50                     | 0.46              |
| 1:1:79:MET:HG3   | 1:1:125:ILE:HB   | 1.98                     | 0.46              |
| 1:1:291:ILE:HD11 | 1:1:331:ILE:HD11 | 1.97                     | 0.46              |
| 3:3:270:ARG:HH11 | 3:3:270:ARG:HG3  | 1.81                     | 0.46              |
| 4:4:85:MET:HG2   | 4:4:409:ARG:HB2  | 1.98                     | 0.46              |
| 5:5:52:ILE:HG22  | 5:5:114:LEU:HB3  | 1.91                     | 0.46              |
| 3:C:346:ALA:HA   | 3:C:372:GLN:HB2  | 1.98                     | 0.46              |
| 4:D:51:GLU:O     | 4:D:52:VAL:HG23  | 2.16                     | 0.46              |
| 4:D:85:MET:HG2   | 4:D:409:ARG:HB2  | 1.98                     | 0.46              |
| 4:D:215:TYR:O    | 4:D:219:ARG:HB2  | 2.15                     | 0.46              |
| 1:1:193:GLU:HG3  | 1:1:212:TRP:NE1  | 2.31                     | 0.45              |
| 1:1:398:SER:HA   | 3:3:46:ARG:CD    | 2.47                     | 0.45              |
| 2:2:109:GLY:CA   | 8:7:91:ILE:HD13  | 2.45                     | 0.45              |
| 3:3:426:TYR:N    | 3:3:426:TYR:CD1  | 2.83                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:63:ARG:HD3   | 1:A:313:TYR:CD2  | 2.50                     | 0.45              |
| 1:A:193:GLU:HG3  | 1:A:212:TRP:NE1  | 2.31                     | 0.45              |
| 1:A:291:ILE:HD11 | 1:A:331:ILE:HD11 | 1.97                     | 0.45              |
| 1:A:398:SER:HA   | 3:C:46:ARG:CD    | 2.47                     | 0.45              |
| 3:C:426:TYR:N    | 3:C:426:TYR:CD1  | 2.84                     | 0.45              |
| 5:E:52:ILE:HG22  | 5:E:114:LEU:HB3  | 1.91                     | 0.45              |
| 8:J:29:VAL:HG22  | 8:J:60:SER:O     | 2.16                     | 0.45              |
| 3:3:694:LEU:CB   | 3:3:762:ALA:HB2  | 2.42                     | 0.45              |
| 4:4:187:VAL:N    | 4:4:188:PRO:HD2  | 2.32                     | 0.45              |
| 8:7:29:VAL:HG22  | 8:7:60:SER:O     | 2.16                     | 0.45              |
| 2:B:109:GLY:CA   | 8:J:91:ILE:HD13  | 2.45                     | 0.45              |
| 3:C:270:ARG:HH11 | 3:C:270:ARG:HG3  | 1.81                     | 0.45              |
| 4:D:367:ARG:CG   | 4:D:367:ARG:NH1  | 2.65                     | 0.45              |
| 10:P:823:UNK:C   | 10:P:825:UNK:N   | 2.77                     | 0.45              |
| 3:3:346:ALA:HA   | 3:3:372:GLN:HB2  | 1.98                     | 0.45              |
| 6:6:163:TYR:CE1  | 7:9:152:ARG:HD2  | 2.51                     | 0.45              |
| 7:9:99:ILE:HD12  | 7:9:99:ILE:HA    | 1.85                     | 0.45              |
| 8:7:36:ASP:HB2   | 8:7:41:ILE:HD11  | 1.98                     | 0.45              |
| 10:M:823:UNK:C   | 10:M:825:UNK:N   | 2.77                     | 0.45              |
| 4:D:187:VAL:N    | 4:D:188:PRO:HD2  | 2.32                     | 0.45              |
| 7:G:99:ILE:HA    | 7:G:99:ILE:HD12  | 1.85                     | 0.45              |
| 4:4:126:LEU:O    | 4:4:130:LEU:HB2  | 2.17                     | 0.45              |
| 4:4:221:VAL:HG23 | 4:4:272:VAL:CG1  | 2.46                     | 0.45              |
| 6:6:100:PRO:O    | 6:6:103:LYS:HD3  | 2.16                     | 0.45              |
| 7:9:29:ALA:HA    | 7:9:30:PRO:HD2   | 1.83                     | 0.45              |
| 3:C:270:ARG:O    | 3:C:271:SER:HB2  | 2.17                     | 0.45              |
| 3:C:694:LEU:CB   | 3:C:762:ALA:HB2  | 2.42                     | 0.45              |
| 4:D:221:VAL:HG23 | 4:D:272:VAL:CG1  | 2.46                     | 0.45              |
| 6:F:163:TYR:CE1  | 7:G:152:ARG:HD2  | 2.51                     | 0.45              |
| 8:J:36:ASP:HB2   | 8:J:41:ILE:HD11  | 1.98                     | 0.45              |
| 3:3:270:ARG:O    | 3:3:271:SER:HB2  | 2.17                     | 0.45              |
| 4:4:367:ARG:CG   | 4:4:367:ARG:NH1  | 2.65                     | 0.45              |
| 5:5:67:ARG:HD3   | 5:5:96:GLU:HG3   | 1.99                     | 0.45              |
| 6:6:166:ARG:HD3  | 6:6:168:GLU:OE2  | 2.16                     | 0.45              |
| 4:D:126:LEU:O    | 4:D:130:LEU:HB2  | 2.17                     | 0.45              |
| 5:E:67:ARG:HD3   | 5:E:96:GLU:HG3   | 1.99                     | 0.45              |
| 6:F:100:PRO:O    | 6:F:103:LYS:HD3  | 2.16                     | 0.45              |
| 6:F:166:ARG:HD3  | 6:F:168:GLU:OE2  | 2.17                     | 0.45              |
| 3:3:20:MET:SD    | 3:3:32:LEU:CD2   | 3.05                     | 0.45              |
| 3:3:117:LEU:CG   | 4:4:321:MET:HE2  | 2.47                     | 0.45              |
| 3:3:694:LEU:HB3  | 3:3:762:ALA:CB   | 2.42                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:40:VAL:HG23  | 6:6:88:MET:CE    | 2.46                     | 0.45              |
| 4:4:91:PHE:CE1   | 4:4:120:LEU:HD12 | 2.51                     | 0.45              |
| 5:5:53:VAL:HG22  | 5:5:55:LEU:CD1   | 2.46                     | 0.45              |
| 1:A:357:THR:N    | 1:A:358:PRO:HD2  | 2.32                     | 0.45              |
| 1:A:367:MET:HE1  | 1:A:410:VAL:HG21 | 1.98                     | 0.45              |
| 3:C:20:MET:SD    | 3:C:32:LEU:CD2   | 3.05                     | 0.45              |
| 3:C:117:LEU:CG   | 4:D:321:MET:HE2  | 2.47                     | 0.45              |
| 4:D:40:VAL:HG23  | 6:F:88:MET:CE    | 2.46                     | 0.45              |
| 8:J:108:ILE:HG22 | 8:J:114:ARG:NH1  | 2.32                     | 0.45              |
| 1:1:357:THR:N    | 1:1:358:PRO:HD2  | 2.32                     | 0.45              |
| 1:1:367:MET:HE1  | 1:1:410:VAL:HG21 | 1.99                     | 0.45              |
| 3:3:408:ILE:HD12 | 3:3:408:ILE:HA   | 1.83                     | 0.45              |
| 3:3:583:VAL:HG23 | 3:3:598:ALA:HA   | 1.99                     | 0.45              |
| 6:6:99:MET:CG    | 6:6:100:PRO:HD2  | 2.42                     | 0.45              |
| 6:6:154:LEU:O    | 6:6:158:VAL:HG13 | 2.16                     | 0.45              |
| 8:7:108:ILE:HG22 | 8:7:114:ARG:NH1  | 2.32                     | 0.45              |
| 3:C:583:VAL:HG23 | 3:C:598:ALA:HA   | 1.99                     | 0.45              |
| 3:C:694:LEU:HB3  | 3:C:762:ALA:CB   | 2.42                     | 0.45              |
| 4:D:91:PHE:CE1   | 4:D:120:LEU:HD12 | 2.52                     | 0.45              |
| 5:E:53:VAL:HG22  | 5:E:55:LEU:CD1   | 2.46                     | 0.45              |
| 6:F:154:LEU:O    | 6:F:158:VAL:HG13 | 2.16                     | 0.45              |
| 7:G:29:ALA:HA    | 7:G:30:PRO:HD2   | 1.83                     | 0.45              |
| 3:3:550:LEU:N    | 3:3:550:LEU:CD1  | 2.79                     | 0.45              |
| 3:3:688:ARG:HD3  | 3:3:688:ARG:HA   | 1.71                     | 0.45              |
| 1:A:139:ARG:HG2  | 2:B:140:PRO:HD3  | 1.99                     | 0.45              |
| 1:A:323:LEU:C    | 1:A:323:LEU:CD2  | 2.84                     | 0.45              |
| 3:C:408:ILE:HD12 | 3:C:408:ILE:HA   | 1.83                     | 0.45              |
| 10:P:920:UNK:C   | 10:P:1200:UNK:N  | 2.52                     | 0.45              |
| 1:1:139:ARG:HG2  | 2:2:140:PRO:HD3  | 1.99                     | 0.45              |
| 1:1:323:LEU:C    | 1:1:323:LEU:CD2  | 2.84                     | 0.45              |
| 4:4:162:TRP:CE2  | 7:9:34:LYS:HD2   | 2.52                     | 0.45              |
| 4:4:197:LEU:N    | 4:4:198:PRO:CD   | 2.80                     | 0.45              |
| 3:C:550:LEU:N    | 3:C:550:LEU:CD1  | 2.79                     | 0.45              |
| 3:C:688:ARG:HD3  | 3:C:688:ARG:HA   | 1.71                     | 0.45              |
| 4:D:162:TRP:CE2  | 7:G:34:LYS:HD2   | 2.52                     | 0.45              |
| 4:D:197:LEU:N    | 4:D:198:PRO:CD   | 2.80                     | 0.45              |
| 4:D:236:GLY:HA3  | 4:D:377:ASN:HD21 | 1.82                     | 0.45              |
| 8:J:68:LEU:HD13  | 8:J:68:LEU:C     | 2.37                     | 0.45              |
| 2:2:81:GLN:HB3   | 2:2:122:VAL:HG21 | 1.98                     | 0.44              |
| 3:3:621:VAL:O    | 3:3:621:VAL:HG23 | 2.16                     | 0.44              |
| 3:3:689:LYS:HG3  | 3:3:771:VAL:CA   | 2.38                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:236:GLY:HA3  | 4:4:377:ASN:HD21 | 1.82                     | 0.44              |
| 8:7:68:LEU:HD13  | 8:7:68:LEU:C     | 2.37                     | 0.44              |
| 10:M:920:UNK:C   | 10:M:1200:UNK:N  | 2.52                     | 0.44              |
| 2:B:81:GLN:HB3   | 2:B:122:VAL:HG21 | 1.98                     | 0.44              |
| 6:F:76:ASP:O     | 6:F:77:VAL:CB    | 2.66                     | 0.44              |
| 6:F:99:MET:CG    | 6:F:100:PRO:HD2  | 2.42                     | 0.44              |
| 2:2:106:ILE:HG22 | 2:2:110:GLU:HB2  | 1.98                     | 0.44              |
| 3:3:29:ASP:OD1   | 3:3:29:ASP:N     | 2.50                     | 0.44              |
| 3:3:240:ALA:HB2  | 3:3:276:ARG:HB2  | 1.99                     | 0.44              |
| 4:4:99:LEU:HA    | 4:4:99:LEU:HD13  | 1.55                     | 0.44              |
| 6:6:76:ASP:O     | 6:6:77:VAL:CB    | 2.66                     | 0.44              |
| 3:C:29:ASP:OD1   | 3:C:29:ASP:N     | 2.50                     | 0.44              |
| 3:C:230:CYS:HA   | 14:C:785:SF4:S2  | 2.57                     | 0.44              |
| 3:C:240:ALA:HB2  | 3:C:276:ARG:HB2  | 1.99                     | 0.44              |
| 3:C:621:VAL:O    | 3:C:621:VAL:HG23 | 2.16                     | 0.44              |
| 3:C:689:LYS:HG3  | 3:C:771:VAL:CA   | 2.38                     | 0.44              |
| 4:D:99:LEU:HA    | 4:D:99:LEU:HD13  | 1.55                     | 0.44              |
| 1:1:398:SER:HA   | 3:3:46:ARG:HD3   | 1.98                     | 0.44              |
| 3:3:230:CYS:HA   | 14:3:785:SF4:S2  | 2.58                     | 0.44              |
| 3:3:715:GLU:O    | 3:3:715:GLU:OE2  | 2.36                     | 0.44              |
| 4:4:196:VAL:O    | 4:4:196:VAL:HG22 | 2.17                     | 0.44              |
| 4:4:389:GLN:HG3  | 4:4:390:VAL:N    | 2.26                     | 0.44              |
| 1:A:398:SER:HA   | 3:C:46:ARG:HD3   | 1.98                     | 0.44              |
| 3:C:715:GLU:O    | 3:C:715:GLU:OE2  | 2.36                     | 0.44              |
| 4:D:196:VAL:O    | 4:D:196:VAL:HG22 | 2.17                     | 0.44              |
| 1:1:332:PRO:CD   | 2:2:90:LEU:HD23  | 2.47                     | 0.44              |
| 2:2:154:LEU:O    | 2:2:158:ARG:HB2  | 2.17                     | 0.44              |
| 4:4:262:PHE:HD1  | 4:4:289:ILE:HD11 | 1.81                     | 0.44              |
| 1:A:332:PRO:CD   | 2:B:90:LEU:HD23  | 2.47                     | 0.44              |
| 2:B:106:ILE:HG22 | 2:B:110:GLU:HB2  | 1.99                     | 0.44              |
| 2:B:154:LEU:O    | 2:B:158:ARG:HB2  | 2.17                     | 0.44              |
| 4:D:262:PHE:HD1  | 4:D:289:ILE:HD11 | 1.81                     | 0.44              |
| 5:E:167:PRO:HB2  | 5:E:171:ARG:HH12 | 1.83                     | 0.44              |
| 3:3:117:LEU:CA   | 4:4:321:MET:HE2  | 2.47                     | 0.44              |
| 3:3:394:ASP:OD2  | 3:3:502:ASN:N    | 2.51                     | 0.44              |
| 4:4:61:TYR:CZ    | 6:6:87:LYS:HE2   | 2.53                     | 0.44              |
| 4:4:131:VAL:HG12 | 4:4:132:PHE:N    | 2.33                     | 0.44              |
| 5:5:167:PRO:HB2  | 5:5:171:ARG:HH12 | 1.83                     | 0.44              |
| 3:C:117:LEU:CA   | 4:D:321:MET:HE2  | 2.47                     | 0.44              |
| 3:C:394:ASP:OD2  | 3:C:502:ASN:N    | 2.50                     | 0.44              |
| 4:D:131:VAL:HG12 | 4:D:132:PHE:N    | 2.33                     | 0.44              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 4:D:389:GLN:HG3 | 4:D:390:VAL:N    | 2.26                     | 0.44              |
| 3:3:6:VAL:HG12  | 3:3:7:ASN:N      | 2.32                     | 0.44              |
| 3:3:101:ARG:CZ  | 3:3:101:ARG:CB   | 2.94                     | 0.44              |
| 3:3:256:CYS:HB2 | 3:3:265:ILE:HD13 | 1.98                     | 0.44              |
| 3:3:663:ALA:O   | 3:3:666:ALA:HB3  | 2.18                     | 0.44              |
| 4:4:144:THR:N   | 4:4:145:PRO:CD   | 2.81                     | 0.44              |
| 5:5:101:LEU:HA  | 5:5:102:PRO:HD2  | 1.86                     | 0.44              |
| 1:A:10:ASP:OD1  | 1:A:11:PRO:HD2   | 2.18                     | 0.44              |
| 3:C:6:VAL:HG12  | 3:C:7:ASN:N      | 2.32                     | 0.44              |
| 3:C:101:ARG:CZ  | 3:C:101:ARG:CB   | 2.94                     | 0.44              |
| 3:C:116:PRO:HG3 | 3:C:180:ARG:HG2  | 1.99                     | 0.44              |
| 3:C:256:CYS:HB2 | 3:C:265:ILE:HD13 | 1.99                     | 0.44              |
| 3:C:663:ALA:O   | 3:C:666:ALA:HB3  | 2.18                     | 0.44              |
| 4:D:61:TYR:CZ   | 6:F:87:LYS:HE2   | 2.53                     | 0.44              |
| 4:D:144:THR:N   | 4:D:145:PRO:CD   | 2.81                     | 0.44              |
| 4:D:250:LYS:HE2 | 4:D:262:PHE:CD2  | 2.53                     | 0.44              |
| 1:1:10:ASP:OD1  | 1:1:11:PRO:HD2   | 2.18                     | 0.44              |
| 1:1:93:ALA:O    | 1:1:134:VAL:HA   | 2.17                     | 0.44              |
| 3:3:116:PRO:HG3 | 3:3:180:ARG:HG2  | 1.99                     | 0.44              |
| 3:3:240:ALA:CB  | 3:3:276:ARG:HB2  | 2.47                     | 0.44              |
| 4:4:159:LEU:O   | 4:4:162:TRP:HB2  | 2.18                     | 0.44              |
| 1:A:93:ALA:O    | 1:A:134:VAL:HA   | 2.17                     | 0.44              |
| 3:C:240:ALA:CB  | 3:C:276:ARG:HB2  | 2.48                     | 0.44              |
| 8:J:78:LYS:HD3  | 8:J:78:LYS:HA    | 1.76                     | 0.44              |
| 3:3:38:HIS:CE1  | 3:3:287:GLU:HB3  | 2.52                     | 0.44              |
| 4:4:100:ALA:O   | 4:4:342:VAL:HG11 | 2.17                     | 0.44              |
| 4:4:250:LYS:HE2 | 4:4:262:PHE:CD2  | 2.53                     | 0.44              |
| 5:5:163:ARG:CD  | 7:9:69:TYR:CE1   | 3.00                     | 0.44              |
| 3:C:38:HIS:CE1  | 3:C:287:GLU:HB3  | 2.52                     | 0.44              |
| 4:D:159:LEU:O   | 4:D:162:TRP:HB2  | 2.18                     | 0.44              |
| 5:E:163:ARG:CD  | 7:G:69:TYR:CE1   | 3.00                     | 0.44              |
| 3:3:173:PHE:HB3 | 3:3:296:PHE:CE1  | 2.53                     | 0.44              |
| 3:3:334:LYS:NZ  | 3:3:334:LYS:HB3  | 2.33                     | 0.44              |
| 7:9:41:HIS:CD2  | 7:9:115:LEU:HD21 | 2.53                     | 0.44              |
| 8:7:78:LYS:HD3  | 8:7:78:LYS:HA    | 1.76                     | 0.44              |
| 8:7:90:HIS:O    | 8:7:90:HIS:ND1   | 2.49                     | 0.44              |
| 3:C:173:PHE:HB3 | 3:C:296:PHE:CE1  | 2.53                     | 0.44              |
| 3:C:334:LYS:NZ  | 3:C:334:LYS:HB3  | 2.33                     | 0.44              |
| 3:C:606:THR:O   | 3:C:610:LYS:HG3  | 2.18                     | 0.44              |
| 4:D:100:ALA:O   | 4:D:342:VAL:HG11 | 2.17                     | 0.44              |
| 5:E:101:LEU:HA  | 5:E:102:PRO:HD2  | 1.86                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:J:87:PRO:O     | 8:J:88:ARG:CB    | 2.53                     | 0.44              |
| 8:J:90:HIS:O     | 8:J:90:HIS:ND1   | 2.49                     | 0.44              |
| 1:1:18:TYR:CE2   | 1:1:263:VAL:HG11 | 2.53                     | 0.43              |
| 1:1:110:VAL:O    | 1:1:110:VAL:HG23 | 2.18                     | 0.43              |
| 3:3:151:LEU:HD23 | 3:3:151:LEU:HA   | 1.86                     | 0.43              |
| 3:3:259:CYS:CB   | 3:3:260:PRO:CD   | 2.96                     | 0.43              |
| 3:3:270:ARG:HB3  | 3:3:275:LEU:HD21 | 2.00                     | 0.43              |
| 6:6:37:TRP:CE3   | 6:6:37:TRP:HA    | 2.53                     | 0.43              |
| 8:7:87:PRO:O     | 8:7:88:ARG:CB    | 2.53                     | 0.43              |
| 1:A:110:VAL:O    | 1:A:110:VAL:HG23 | 2.18                     | 0.43              |
| 3:C:270:ARG:HB3  | 3:C:275:LEU:HD21 | 2.00                     | 0.43              |
| 3:C:561:PRO:HG3  | 3:C:575:GLU:O    | 2.18                     | 0.43              |
| 5:E:84:ASP:OD1   | 5:E:84:ASP:N     | 2.51                     | 0.43              |
| 5:E:146:LEU:HD22 | 5:E:146:LEU:HA   | 1.86                     | 0.43              |
| 6:F:37:TRP:CE3   | 6:F:37:TRP:HA    | 2.53                     | 0.43              |
| 7:G:41:HIS:CD2   | 7:G:115:LEU:HD21 | 2.53                     | 0.43              |
| 1:1:134:VAL:HG23 | 1:1:135:ARG:O    | 2.17                     | 0.43              |
| 1:1:211:LEU:HB2  | 1:1:216:THR:HG21 | 2.00                     | 0.43              |
| 3:3:561:PRO:HG3  | 3:3:575:GLU:O    | 2.18                     | 0.43              |
| 3:3:606:THR:O    | 3:3:610:LYS:HG3  | 2.18                     | 0.43              |
| 4:4:329:LYS:HD2  | 4:4:329:LYS:HA   | 1.87                     | 0.43              |
| 5:5:84:ASP:OD1   | 5:5:84:ASP:N     | 2.51                     | 0.43              |
| 1:A:18:TYR:CE2   | 1:A:263:VAL:HG11 | 2.53                     | 0.43              |
| 1:A:134:VAL:HG23 | 1:A:135:ARG:O    | 2.17                     | 0.43              |
| 1:A:211:LEU:HB2  | 1:A:216:THR:HG21 | 1.99                     | 0.43              |
| 3:C:151:LEU:HD23 | 3:C:151:LEU:HA   | 1.86                     | 0.43              |
| 3:C:259:CYS:CB   | 3:C:260:PRO:CD   | 2.96                     | 0.43              |
| 1:1:427:GLU:O    | 1:1:428:LYS:C    | 2.57                     | 0.43              |
| 3:3:55:PRO:CD    | 3:3:74:GLN:N     | 2.80                     | 0.43              |
| 3:3:675:ARG:NH1  | 3:C:316:ARG:NH2  | 2.67                     | 0.43              |
| 3:3:689:LYS:HB2  | 3:3:772:GLU:HG2  | 2.00                     | 0.43              |
| 1:A:427:GLU:O    | 1:A:428:LYS:C    | 2.57                     | 0.43              |
| 3:C:55:PRO:CD    | 3:C:74:GLN:N     | 2.80                     | 0.43              |
| 3:C:451:PHE:CE1  | 3:C:466:GLU:HB3  | 2.53                     | 0.43              |
| 6:F:16:ARG:HG2   | 6:F:21:PHE:HE2   | 1.83                     | 0.43              |
| 3:3:370:ASP:OD2  | 3:3:558:TRP:HD1  | 2.00                     | 0.43              |
| 3:3:451:PHE:CE1  | 3:3:466:GLU:HB3  | 2.53                     | 0.43              |
| 3:3:646:GLU:C    | 3:3:648:LEU:H    | 2.22                     | 0.43              |
| 4:4:233:GLY:CA   | 5:5:48:PHE:HE1   | 2.31                     | 0.43              |
| 5:5:146:LEU:HD22 | 5:5:146:LEU:HA   | 1.86                     | 0.43              |
| 6:6:16:ARG:HG2   | 6:6:21:PHE:HE2   | 1.83                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:9:127:SER:O    | 7:9:130:VAL:HG12 | 2.18                     | 0.43              |
| 3:C:370:ASP:OD2  | 3:C:558:TRP:HD1  | 2.00                     | 0.43              |
| 3:C:689:LYS:HB2  | 3:C:772:GLU:HG2  | 2.00                     | 0.43              |
| 4:D:153:ARG:HG3  | 4:D:153:ARG:NH1  | 2.33                     | 0.43              |
| 4:D:329:LYS:HD2  | 4:D:329:LYS:HA   | 1.87                     | 0.43              |
| 7:G:127:SER:O    | 7:G:130:VAL:HG12 | 2.18                     | 0.43              |
| 1:1:186:THR:CG2  | 1:1:200:ARG:N    | 2.69                     | 0.43              |
| 3:3:627:ALA:HA   | 3:3:628:PRO:HD3  | 1.80                     | 0.43              |
| 4:4:153:ARG:HG3  | 4:4:153:ARG:NH1  | 2.33                     | 0.43              |
| 6:6:104:TRP:NE1  | 6:6:173:VAL:HG22 | 2.33                     | 0.43              |
| 1:A:186:THR:CG2  | 1:A:200:ARG:N    | 2.69                     | 0.43              |
| 3:C:409:LEU:HD23 | 3:C:409:LEU:HA   | 1.72                     | 0.43              |
| 4:D:233:GLY:CA   | 5:E:48:PHE:HE1   | 2.31                     | 0.43              |
| 6:F:104:TRP:NE1  | 6:F:173:VAL:HG22 | 2.33                     | 0.43              |
| 1:1:89:LEU:HD21  | 1:1:121:ALA:HB3  | 1.99                     | 0.43              |
| 1:1:253:GLN:N    | 1:1:253:GLN:NE2  | 2.57                     | 0.43              |
| 3:3:571:VAL:HG11 | 3:3:591:HIS:CD2  | 2.54                     | 0.43              |
| 7:9:41:HIS:CE1   | 7:9:98:CYS:SG    | 3.12                     | 0.43              |
| 8:7:92:HIS:O     | 8:7:93:LEU:HD12  | 2.18                     | 0.43              |
| 12:R:297:UNK:CA  | 13:H:500:UNK:CA  | 2.96                     | 0.43              |
| 3:C:20:MET:HE1   | 3:C:433:ALA:HB2  | 1.98                     | 0.43              |
| 3:C:571:VAL:HG11 | 3:C:591:HIS:CD2  | 2.54                     | 0.43              |
| 3:C:646:GLU:C    | 3:C:648:LEU:H    | 2.22                     | 0.43              |
| 7:G:41:HIS:CE1   | 7:G:98:CYS:SG    | 3.12                     | 0.43              |
| 8:J:92:HIS:O     | 8:J:93:LEU:HD12  | 2.18                     | 0.43              |
| 1:1:291:ILE:HA   | 1:1:292:PRO:HD2  | 1.64                     | 0.43              |
| 3:3:9:ARG:HE     | 3:3:9:ARG:HB2    | 1.65                     | 0.43              |
| 3:3:117:LEU:HG   | 4:4:321:MET:HE2  | 2.01                     | 0.43              |
| 3:3:497:TRP:O    | 3:3:528:LYS:HE3  | 2.18                     | 0.43              |
| 13:H:414:UNK:CA  | 13:H:515:UNK:CA  | 2.97                     | 0.43              |
| 1:A:89:LEU:HD21  | 1:A:121:ALA:HB3  | 1.99                     | 0.43              |
| 1:A:253:GLN:N    | 1:A:253:GLN:NE2  | 2.57                     | 0.43              |
| 3:C:117:LEU:HG   | 4:D:321:MET:HE2  | 2.01                     | 0.43              |
| 3:C:384:PRO:HG3  | 3:C:542:ARG:HE   | 1.83                     | 0.43              |
| 3:C:497:TRP:O    | 3:C:528:LYS:HE3  | 2.18                     | 0.43              |
| 3:C:627:ALA:HA   | 3:C:628:PRO:HD3  | 1.80                     | 0.43              |
| 12:S:297:UNK:CA  | 13:T:500:UNK:CA  | 2.96                     | 0.43              |
| 13:T:414:UNK:CA  | 13:T:515:UNK:CA  | 2.97                     | 0.43              |
| 3:3:384:PRO:HG3  | 3:3:542:ARG:HE   | 1.83                     | 0.43              |
| 3:3:409:LEU:HD23 | 3:3:409:LEU:HA   | 1.72                     | 0.43              |
| 3:3:567:TYR:HE1  | 3:3:586:HIS:HB2  | 1.83                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 5:5:167:PRO:HB3  | 7:9:66:TYR:CE2   | 2.53                     | 0.43              |
| 7:9:99:ILE:HG22  | 7:9:101:CYS:SG   | 2.58                     | 0.43              |
| 1:A:228:VAL:HB   | 1:A:229:PRO:CD   | 2.49                     | 0.43              |
| 3:C:567:TYR:HE1  | 3:C:586:HIS:HB2  | 1.82                     | 0.43              |
| 5:E:167:PRO:HB3  | 7:G:66:TYR:CE2   | 2.53                     | 0.43              |
| 6:F:106:ILE:CD1  | 6:F:151:VAL:HG12 | 2.49                     | 0.43              |
| 8:J:121:ARG:NH1  | 8:J:121:ARG:CG   | 2.81                     | 0.43              |
| 1:1:228:VAL:HB   | 1:1:229:PRO:CD   | 2.49                     | 0.43              |
| 3:3:513:GLN:HG2  | 3:3:769:LEU:HD23 | 2.01                     | 0.43              |
| 3:3:753:VAL:HA   | 3:3:754:PRO:HD2  | 1.83                     | 0.43              |
| 4:4:163:VAL:HG13 | 4:4:164:THR:HG23 | 2.00                     | 0.43              |
| 6:6:106:ILE:CD1  | 6:6:151:VAL:HG12 | 2.49                     | 0.43              |
| 8:7:121:ARG:NH1  | 8:7:121:ARG:CG   | 2.81                     | 0.43              |
| 1:A:291:ILE:HA   | 1:A:292:PRO:HD2  | 1.64                     | 0.43              |
| 3:C:513:GLN:HG2  | 3:C:769:LEU:HD23 | 2.01                     | 0.43              |
| 3:C:753:VAL:HA   | 3:C:754:PRO:HD2  | 1.83                     | 0.43              |
| 4:D:240:ARG:HB2  | 4:D:266:LEU:HD23 | 2.01                     | 0.43              |
| 3:3:120:PRO:HG2  | 8:7:42:TYR:CZ    | 2.53                     | 0.43              |
| 4:4:76:LEU:HD12  | 4:4:76:LEU:O     | 2.19                     | 0.43              |
| 4:4:82:THR:N     | 4:4:83:PRO:HD2   | 2.33                     | 0.43              |
| 4:4:240:ARG:HB2  | 4:4:266:LEU:HD23 | 2.01                     | 0.43              |
| 1:A:414:LEU:O    | 1:A:418:LYS:HB2  | 2.19                     | 0.43              |
| 3:C:120:PRO:HG2  | 8:J:42:TYR:CZ    | 2.53                     | 0.43              |
| 4:D:76:LEU:HD12  | 4:D:76:LEU:O     | 2.19                     | 0.43              |
| 4:D:163:VAL:HG13 | 4:D:164:THR:HG23 | 2.01                     | 0.43              |
| 7:G:99:ILE:HG22  | 7:G:101:CYS:SG   | 2.58                     | 0.43              |
| 1:1:177:ALA:HB3  | 2:2:67:TYR:CD2   | 2.54                     | 0.42              |
| 1:1:414:LEU:O    | 1:1:418:LYS:HB2  | 2.19                     | 0.42              |
| 3:3:45:CYS:SG    | 3:3:47:MET:HB2   | 2.59                     | 0.42              |
| 3:3:471:GLY:HA2  | 3:3:473:GLU:OE2  | 2.19                     | 0.42              |
| 6:6:104:TRP:HA   | 6:6:134:ASP:OD2  | 2.19                     | 0.42              |
| 1:A:177:ALA:HB3  | 2:B:67:TYR:CD2   | 2.54                     | 0.42              |
| 3:C:88:ALA:N     | 3:C:91:MET:HE2   | 2.34                     | 0.42              |
| 3:C:471:GLY:HA2  | 3:C:473:GLU:OE2  | 2.19                     | 0.42              |
| 4:D:82:THR:N     | 4:D:83:PRO:HD2   | 2.33                     | 0.42              |
| 1:1:6:LEU:HB2    | 1:1:241:MET:HA   | 2.00                     | 0.42              |
| 1:1:341:MET:HE1  | 1:1:409:PRO:CB   | 2.47                     | 0.42              |
| 3:3:55:PRO:HG3   | 3:3:74:GLN:CB    | 2.49                     | 0.42              |
| 3:3:88:ALA:N     | 3:3:91:MET:HE2   | 2.34                     | 0.42              |
| 3:3:260:PRO:HG3  | 3:3:536:THR:O    | 2.19                     | 0.42              |
| 3:3:413:LEU:HD13 | 3:3:448:MET:HE1  | 2.01                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:4:119:ILE:O    | 4:4:123:LEU:HB2  | 2.19                     | 0.42              |
| 1:A:6:LEU:HB2    | 1:A:241:MET:HA   | 2.00                     | 0.42              |
| 3:C:9:ARG:HE     | 3:C:9:ARG:HB2    | 1.65                     | 0.42              |
| 3:C:45:CYS:SG    | 3:C:47:MET:HB2   | 2.59                     | 0.42              |
| 3:C:260:PRO:HG3  | 3:C:536:THR:O    | 2.19                     | 0.42              |
| 3:C:776:LEU:N    | 3:C:776:LEU:HD23 | 2.34                     | 0.42              |
| 1:1:188:LEU:HD23 | 1:1:188:LEU:C    | 2.40                     | 0.42              |
| 1:1:211:LEU:HA   | 1:1:211:LEU:HD12 | 1.65                     | 0.42              |
| 2:2:79:HIS:O     | 2:2:136:VAL:O    | 2.38                     | 0.42              |
| 3:3:716:LEU:CD2  | 3:3:758:LEU:HB3  | 2.47                     | 0.42              |
| 3:3:776:LEU:N    | 3:3:776:LEU:HD23 | 2.34                     | 0.42              |
| 4:4:64:THR:N     | 4:4:409:ARG:OXT  | 2.52                     | 0.42              |
| 6:6:32:ARG:NH1   | 6:6:102:PRO:HG2  | 2.34                     | 0.42              |
| 6:6:163:TYR:CD2  | 6:6:169:ARG:HA   | 2.54                     | 0.42              |
| 1:A:188:LEU:HD23 | 1:A:188:LEU:C    | 2.40                     | 0.42              |
| 1:A:211:LEU:HD12 | 1:A:211:LEU:HA   | 1.65                     | 0.42              |
| 2:B:79:HIS:O     | 2:B:136:VAL:O    | 2.38                     | 0.42              |
| 3:C:55:PRO:HG3   | 3:C:74:GLN:CB    | 2.49                     | 0.42              |
| 3:C:716:LEU:CD2  | 3:C:758:LEU:HB3  | 2.47                     | 0.42              |
| 4:D:119:ILE:O    | 4:D:123:LEU:HB2  | 2.19                     | 0.42              |
| 5:E:134:LYS:HB2  | 5:E:134:LYS:HE3  | 1.67                     | 0.42              |
| 6:F:32:ARG:NH1   | 6:F:102:PRO:HG2  | 2.34                     | 0.42              |
| 6:F:104:TRP:HA   | 6:F:134:ASP:OD2  | 2.19                     | 0.42              |
| 6:F:163:TYR:CD2  | 6:F:169:ARG:HA   | 2.54                     | 0.42              |
| 1:1:5:ILE:HG22   | 1:1:6:LEU:N      | 2.34                     | 0.42              |
| 1:1:392:PRO:O    | 1:1:397:ARG:NH1  | 2.52                     | 0.42              |
| 1:1:395:GLU:O    | 1:1:396:GLY:C    | 2.56                     | 0.42              |
| 3:3:695:ARG:HD2  | 3:3:717:TRP:CZ3  | 2.54                     | 0.42              |
| 5:5:134:LYS:HB2  | 5:5:134:LYS:HE3  | 1.67                     | 0.42              |
| 1:A:5:ILE:HG22   | 1:A:6:LEU:N      | 2.34                     | 0.42              |
| 1:A:239:ALA:C    | 1:A:241:MET:H    | 2.23                     | 0.42              |
| 1:A:341:MET:HE1  | 1:A:409:PRO:CB   | 2.47                     | 0.42              |
| 1:A:392:PRO:O    | 1:A:397:ARG:NH1  | 2.52                     | 0.42              |
| 1:A:395:GLU:O    | 1:A:396:GLY:C    | 2.56                     | 0.42              |
| 2:B:168:LEU:HA   | 2:B:169:PRO:HD2  | 1.79                     | 0.42              |
| 3:C:120:PRO:O    | 3:C:245:ARG:NH1  | 2.53                     | 0.42              |
| 3:C:516:VAL:O    | 3:C:520:ARG:HG3  | 2.19                     | 0.42              |
| 4:D:64:THR:N     | 4:D:409:ARG:OXT  | 2.52                     | 0.42              |
| 5:E:54:GLY:C     | 5:E:55:LEU:HD12  | 2.40                     | 0.42              |
| 1:1:248:GLY:O    | 1:1:268:MET:HB2  | 2.19                     | 0.42              |
| 2:2:27:ILE:HD13  | 2:2:60:VAL:HG22  | 2.01                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:2:61:MET:HB2   | 3:3:214:MET:HG3  | 2.01                     | 0.42              |
| 2:2:168:LEU:HA   | 2:2:169:PRO:HD2  | 1.79                     | 0.42              |
| 3:3:120:PRO:O    | 3:3:245:ARG:NH1  | 2.53                     | 0.42              |
| 3:3:516:VAL:O    | 3:3:520:ARG:HG3  | 2.19                     | 0.42              |
| 3:3:753:VAL:HG13 | 3:3:759:TYR:CD1  | 2.55                     | 0.42              |
| 5:5:16:PRO:HD2   | 5:5:28:VAL:HG13  | 2.01                     | 0.42              |
| 5:5:54:GLY:C     | 5:5:55:LEU:HD12  | 2.40                     | 0.42              |
| 1:A:248:GLY:O    | 1:A:268:MET:HB2  | 2.19                     | 0.42              |
| 2:B:27:ILE:HD13  | 2:B:60:VAL:HG22  | 2.01                     | 0.42              |
| 2:B:61:MET:HB2   | 3:C:214:MET:HG3  | 2.01                     | 0.42              |
| 3:C:695:ARG:HD2  | 3:C:717:TRP:CZ3  | 2.54                     | 0.42              |
| 4:D:65:GLY:O     | 4:D:69:THR:CG2   | 2.67                     | 0.42              |
| 5:E:16:PRO:HD2   | 5:E:28:VAL:HG13  | 2.01                     | 0.42              |
| 7:G:41:HIS:HE1   | 7:G:98:CYS:SG    | 2.42                     | 0.42              |
| 1:1:239:ALA:C    | 1:1:241:MET:H    | 2.23                     | 0.42              |
| 1:1:364:ALA:HB3  | 3:3:207:VAL:HG13 | 2.01                     | 0.42              |
| 2:2:43:PRO:O     | 2:2:47:GLU:HG3   | 2.19                     | 0.42              |
| 3:3:11:VAL:HG21  | 3:3:26:ALA:HB2   | 2.00                     | 0.42              |
| 4:4:65:GLY:O     | 4:4:69:THR:CG2   | 2.67                     | 0.42              |
| 4:4:234:LEU:O    | 4:4:236:GLY:N    | 2.53                     | 0.42              |
| 7:9:41:HIS:HE1   | 7:9:98:CYS:SG    | 2.42                     | 0.42              |
| 10:M:916:UNK:C   | 10:M:1203:UNK:CA | 2.97                     | 0.42              |
| 1:A:364:ALA:HB3  | 3:C:207:VAL:HG13 | 2.01                     | 0.42              |
| 2:B:43:PRO:O     | 2:B:47:GLU:HG3   | 2.19                     | 0.42              |
| 3:C:11:VAL:HG21  | 3:C:26:ALA:HB2   | 1.99                     | 0.42              |
| 4:D:234:LEU:O    | 4:D:236:GLY:N    | 2.53                     | 0.42              |
| 1:1:272:PHE:HB3  | 1:1:276:ILE:HD11 | 2.02                     | 0.42              |
| 2:2:3:PHE:HB3    | 2:2:48:GLU:OE1   | 2.20                     | 0.42              |
| 2:2:27:ILE:O     | 2:2:31:LEU:HD22  | 2.20                     | 0.42              |
| 3:3:485:GLU:O    | 6:F:16:ARG:NE    | 2.47                     | 0.42              |
| 4:4:143:LEU:HD23 | 4:4:143:LEU:O    | 2.19                     | 0.42              |
| 4:4:297:LEU:HD12 | 4:4:297:LEU:HA   | 1.85                     | 0.42              |
| 5:5:87:ARG:O     | 5:5:88:PHE:HB3   | 2.19                     | 0.42              |
| 1:A:17:LEU:HD12  | 1:A:251:LEU:CD1  | 2.49                     | 0.42              |
| 1:A:272:PHE:HB3  | 1:A:276:ILE:HD11 | 2.01                     | 0.42              |
| 2:B:27:ILE:O     | 2:B:31:LEU:HD22  | 2.20                     | 0.42              |
| 3:C:139:LEU:HD11 | 3:C:154:TYR:CD1  | 2.54                     | 0.42              |
| 3:C:753:VAL:HG13 | 3:C:759:TYR:CD1  | 2.55                     | 0.42              |
| 4:D:297:LEU:HD12 | 4:D:297:LEU:HA   | 1.85                     | 0.42              |
| 5:E:120:ASP:OD1  | 5:E:134:LYS:HG3  | 2.19                     | 0.42              |
| 10:P:916:UNK:C   | 10:P:1203:UNK:CA | 2.98                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:1:17:LEU:HD12  | 1:1:251:LEU:CD1  | 2.49                     | 0.42              |
| 1:1:249:MET:HA   | 1:1:267:PRO:HA   | 2.02                     | 0.42              |
| 3:3:139:LEU:HD11 | 3:3:154:TYR:CD1  | 2.54                     | 0.42              |
| 4:4:182:LEU:HD22 | 4:4:186:PHE:CD2  | 2.54                     | 0.42              |
| 4:4:196:VAL:O    | 4:4:200:ARG:HB2  | 2.20                     | 0.42              |
| 4:4:197:LEU:O    | 4:4:200:ARG:HB3  | 2.20                     | 0.42              |
| 5:5:53:VAL:HG22  | 5:5:55:LEU:HD12  | 2.02                     | 0.42              |
| 5:5:120:ASP:OD1  | 5:5:134:LYS:HG3  | 2.19                     | 0.42              |
| 8:7:14:VAL:O     | 8:7:17:LEU:HB2   | 2.20                     | 0.42              |
| 1:A:70:PHE:CG    | 1:A:71:PRO:HD2   | 2.54                     | 0.42              |
| 1:A:211:LEU:CB   | 1:A:216:THR:HG21 | 2.50                     | 0.42              |
| 1:A:249:MET:HA   | 1:A:267:PRO:HA   | 2.02                     | 0.42              |
| 2:B:3:PHE:HB3    | 2:B:48:GLU:OE1   | 2.20                     | 0.42              |
| 3:C:414:SER:OG   | 3:C:443:ARG:NH2  | 2.53                     | 0.42              |
| 4:D:143:LEU:HD23 | 4:D:143:LEU:O    | 2.19                     | 0.42              |
| 4:D:182:LEU:HD22 | 4:D:186:PHE:CD2  | 2.54                     | 0.42              |
| 4:D:196:VAL:O    | 4:D:200:ARG:HB2  | 2.20                     | 0.42              |
| 4:D:197:LEU:O    | 4:D:200:ARG:HB3  | 2.20                     | 0.42              |
| 5:E:66:GLU:HG2   | 5:E:95:PRO:CA    | 2.12                     | 0.42              |
| 5:E:87:ARG:O     | 5:E:88:PHE:HB3   | 2.19                     | 0.42              |
| 8:J:14:VAL:O     | 8:J:17:LEU:HB2   | 2.20                     | 0.42              |
| 1:1:211:LEU:CB   | 1:1:216:THR:HG21 | 2.50                     | 0.42              |
| 3:3:261:VAL:HG23 | 14:3:786:SF4:S2  | 2.60                     | 0.42              |
| 3:3:414:SER:OG   | 3:3:443:ARG:NH2  | 2.53                     | 0.42              |
| 3:3:460:LYS:HB2  | 3:3:460:LYS:HE2  | 1.84                     | 0.42              |
| 4:4:250:LYS:HG3  | 4:4:264:VAL:HG21 | 2.01                     | 0.42              |
| 4:4:393:MET:CA   | 4:4:396:ILE:HG22 | 2.49                     | 0.42              |
| 7:9:96:LEU:HD21  | 7:9:129:LEU:HD13 | 2.01                     | 0.42              |
| 8:7:108:ILE:N    | 8:7:108:ILE:CD1  | 2.83                     | 0.42              |
| 3:C:194:VAL:HG12 | 3:C:195:PRO:HD3  | 2.02                     | 0.42              |
| 3:C:261:VAL:HG23 | 14:C:786:SF4:S2  | 2.60                     | 0.42              |
| 3:C:460:LYS:HB2  | 3:C:460:LYS:HE2  | 1.84                     | 0.42              |
| 4:D:88:LEU:HD23  | 4:D:88:LEU:HA    | 1.92                     | 0.42              |
| 4:D:393:MET:CA   | 4:D:396:ILE:HG22 | 2.49                     | 0.42              |
| 5:E:53:VAL:HG22  | 5:E:55:LEU:HD12  | 2.02                     | 0.42              |
| 5:E:64:ARG:HB3   | 5:E:65:PRO:HD2   | 2.02                     | 0.42              |
| 5:E:78:PRO:HG3   | 5:E:85:GLY:CA    | 2.49                     | 0.42              |
| 7:G:96:LEU:HD21  | 7:G:129:LEU:HD13 | 2.01                     | 0.42              |
| 1:1:70:PHE:CG    | 1:1:71:PRO:HD2   | 2.54                     | 0.42              |
| 2:2:142:VAL:HG11 | 2:2:153:LEU:HG   | 2.02                     | 0.42              |
| 3:3:194:VAL:HG12 | 3:3:195:PRO:HD3  | 2.02                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:591:HIS:ND1  | 3:3:592:PRO:N    | 2.68                     | 0.42              |
| 5:5:64:ARG:HB3   | 5:5:65:PRO:HD2   | 2.02                     | 0.42              |
| 5:5:66:GLU:HG2   | 5:5:95:PRO:CA    | 2.12                     | 0.42              |
| 5:5:78:PRO:HG3   | 5:5:85:GLY:CA    | 2.49                     | 0.42              |
| 6:6:96:TRP:O     | 6:6:99:MET:HB2   | 2.20                     | 0.42              |
| 6:6:138:PRO:HG3  | 7:9:121:MET:HG3  | 2.02                     | 0.42              |
| 3:C:591:HIS:ND1  | 3:C:592:PRO:N    | 2.68                     | 0.42              |
| 4:D:250:LYS:HG3  | 4:D:264:VAL:HG21 | 2.01                     | 0.42              |
| 4:D:400:LEU:HD23 | 4:D:400:LEU:HA   | 1.86                     | 0.42              |
| 3:3:501:LYS:N    | 3:3:501:LYS:CD   | 2.73                     | 0.41              |
| 2:B:142:VAL:HG11 | 2:B:153:LEU:HG   | 2.02                     | 0.41              |
| 3:C:267:ALA:HA   | 3:C:277:ILE:HD13 | 2.01                     | 0.41              |
| 3:C:397:LEU:HD21 | 3:C:480:LEU:HD13 | 2.01                     | 0.41              |
| 6:F:96:TRP:O     | 6:F:99:MET:HB2   | 2.20                     | 0.41              |
| 6:F:137:VAL:HG13 | 6:F:137:VAL:O    | 2.19                     | 0.41              |
| 6:F:138:PRO:HG3  | 7:G:121:MET:HG3  | 2.02                     | 0.41              |
| 8:J:108:ILE:N    | 8:J:108:ILE:CD1  | 2.83                     | 0.41              |
| 1:1:97:GLU:HB2   | 1:1:180:TYR:HE1  | 1.85                     | 0.41              |
| 3:3:168:HIS:HA   | 3:3:169:PRO:HD2  | 1.93                     | 0.41              |
| 3:3:397:LEU:HD21 | 3:3:480:LEU:HD13 | 2.01                     | 0.41              |
| 4:4:88:LEU:HD23  | 4:4:88:LEU:HA    | 1.93                     | 0.41              |
| 4:4:400:LEU:HD23 | 4:4:400:LEU:HA   | 1.86                     | 0.41              |
| 6:6:137:VAL:HG13 | 6:6:137:VAL:O    | 2.19                     | 0.41              |
| 9:L:119:UNK:C    | 9:L:122:UNK:N    | 2.83                     | 0.41              |
| 1:A:97:GLU:HB2   | 1:A:180:TYR:HE1  | 1.85                     | 0.41              |
| 3:C:168:HIS:HA   | 3:C:169:PRO:HD2  | 1.93                     | 0.41              |
| 3:C:501:LYS:N    | 3:C:501:LYS:CD   | 2.73                     | 0.41              |
| 9:O:119:UNK:C    | 9:O:122:UNK:N    | 2.83                     | 0.41              |
| 1:1:188:LEU:HD23 | 1:1:188:LEU:O    | 2.20                     | 0.41              |
| 1:1:273:ARG:O    | 1:1:277:TYR:HB2  | 2.21                     | 0.41              |
| 3:3:267:ALA:HA   | 3:3:277:ILE:HD13 | 2.01                     | 0.41              |
| 3:3:390:LEU:O    | 3:3:416:PHE:CD1  | 2.73                     | 0.41              |
| 3:3:694:LEU:HD12 | 3:3:769:LEU:HB2  | 2.01                     | 0.41              |
| 6:6:146:ALA:HB2  | 7:9:119:PHE:HD1  | 1.85                     | 0.41              |
| 1:A:391:LEU:N    | 1:A:392:PRO:CD   | 2.83                     | 0.41              |
| 1:A:438:ARG:HD2  | 1:A:438:ARG:H    | 1.85                     | 0.41              |
| 3:C:337:ARG:HD3  | 3:C:340:GLU:CG   | 2.50                     | 0.41              |
| 3:C:694:LEU:HD12 | 3:C:769:LEU:HB2  | 2.01                     | 0.41              |
| 4:D:70:MET:C     | 4:D:72:HIS:H     | 2.23                     | 0.41              |
| 5:E:2:ARG:HG3    | 5:E:84:ASP:CG    | 2.39                     | 0.41              |
| 6:F:146:ALA:HB2  | 7:G:119:PHE:HD1  | 1.85                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:1:391:LEU:N    | 1:1:392:PRO:CD   | 2.83                     | 0.41              |
| 1:1:438:ARG:H    | 1:1:438:ARG:HD2  | 1.85                     | 0.41              |
| 1:1:438:ARG:HD2  | 1:1:438:ARG:N    | 2.35                     | 0.41              |
| 3:3:30:VAL:HG22  | 3:3:48:CYS:HA    | 2.03                     | 0.41              |
| 3:3:337:ARG:HD3  | 3:3:340:GLU:CG   | 2.50                     | 0.41              |
| 3:3:487:SER:HB3  | 6:F:17:GLU:HB2   | 2.02                     | 0.41              |
| 4:4:70:MET:C     | 4:4:72:HIS:H     | 2.23                     | 0.41              |
| 1:A:246:SER:O    | 1:A:268:MET:HG2  | 2.20                     | 0.41              |
| 1:A:273:ARG:O    | 1:A:277:TYR:HB2  | 2.21                     | 0.41              |
| 1:A:438:ARG:HD2  | 1:A:438:ARG:N    | 2.35                     | 0.41              |
| 3:C:33:PHE:CZ    | 3:C:130:LEU:HD12 | 2.56                     | 0.41              |
| 3:C:390:LEU:O    | 3:C:416:PHE:CD1  | 2.73                     | 0.41              |
| 4:D:40:VAL:O     | 4:D:40:VAL:CG2   | 2.64                     | 0.41              |
| 1:1:246:SER:O    | 1:1:268:MET:HG2  | 2.20                     | 0.41              |
| 3:3:33:PHE:CZ    | 3:3:130:LEU:HD12 | 2.56                     | 0.41              |
| 3:3:473:GLU:O    | 3:3:477:LEU:HD12 | 2.20                     | 0.41              |
| 3:3:486:GLY:CA   | 6:F:17:GLU:OE1   | 2.54                     | 0.41              |
| 3:3:487:SER:HB3  | 6:F:17:GLU:CB    | 2.50                     | 0.41              |
| 3:3:695:ARG:HA   | 3:3:696:PRO:HD2  | 1.91                     | 0.41              |
| 4:4:40:VAL:O     | 4:4:40:VAL:CG2   | 2.64                     | 0.41              |
| 5:5:2:ARG:HG3    | 5:5:84:ASP:CG    | 2.39                     | 0.41              |
| 5:5:144:HIS:HA   | 5:5:145:PRO:HD2  | 1.86                     | 0.41              |
| 7:9:37:PHE:CG    | 7:9:38:HIS:N     | 2.89                     | 0.41              |
| 7:9:121:MET:HG3  | 7:9:121:MET:O    | 2.20                     | 0.41              |
| 1:A:188:LEU:HD23 | 1:A:188:LEU:O    | 2.20                     | 0.41              |
| 3:C:473:GLU:O    | 3:C:477:LEU:HD12 | 2.20                     | 0.41              |
| 7:G:37:PHE:CG    | 7:G:38:HIS:N     | 2.89                     | 0.41              |
| 7:G:121:MET:HG3  | 7:G:121:MET:O    | 2.20                     | 0.41              |
| 3:3:281:GLU:HG3  | 3:3:283:PRO:HD3  | 2.03                     | 0.41              |
| 4:4:337:PRO:HA   | 4:4:338:PRO:HD3  | 1.90                     | 0.41              |
| 3:C:30:VAL:HG22  | 3:C:48:CYS:HA    | 2.03                     | 0.41              |
| 3:C:313:LYS:HB3  | 3:C:314:GLU:H    | 1.74                     | 0.41              |
| 4:D:337:PRO:HA   | 4:D:338:PRO:HD3  | 1.90                     | 0.41              |
| 1:1:83:ASP:OD1   | 1:1:83:ASP:N     | 2.48                     | 0.41              |
| 3:3:33:PHE:HZ    | 3:3:130:LEU:HD12 | 1.86                     | 0.41              |
| 3:3:583:VAL:HG23 | 3:3:599:HIS:H    | 1.84                     | 0.41              |
| 11:N:1215:UNK:C  | 11:N:1217:UNK:N  | 2.83                     | 0.41              |
| 1:A:83:ASP:OD1   | 1:A:83:ASP:N     | 2.48                     | 0.41              |
| 1:A:106:ILE:HG23 | 1:A:110:VAL:HG23 | 2.00                     | 0.41              |
| 3:C:33:PHE:HZ    | 3:C:130:LEU:HD12 | 1.86                     | 0.41              |
| 3:C:695:ARG:HA   | 3:C:696:PRO:HD2  | 1.91                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:381:LEU:HA   | 4:D:384:ALA:HB3  | 2.03                     | 0.41              |
| 5:E:137:THR:HB   | 5:E:141:LEU:HD22 | 2.02                     | 0.41              |
| 7:G:138:VAL:HG23 | 7:G:139:ASP:N    | 2.36                     | 0.41              |
| 11:Q:1215:UNK:C  | 11:Q:1217:UNK:N  | 2.83                     | 0.41              |
| 1:1:158:LEU:HD23 | 1:1:158:LEU:HA   | 1.86                     | 0.41              |
| 3:3:317:LEU:HD22 | 3:3:317:LEU:H    | 1.85                     | 0.41              |
| 4:4:381:LEU:HA   | 4:4:384:ALA:HB3  | 2.03                     | 0.41              |
| 5:5:137:THR:HB   | 5:5:141:LEU:HD22 | 2.02                     | 0.41              |
| 6:6:147:LEU:O    | 6:6:147:LEU:HD13 | 2.20                     | 0.41              |
| 6:6:148:ILE:O    | 6:6:152:MET:HG3  | 2.21                     | 0.41              |
| 7:9:71:GLU:HB2   | 7:9:90:VAL:HB    | 2.02                     | 0.41              |
| 7:9:138:VAL:HG23 | 7:9:139:ASP:N    | 2.36                     | 0.41              |
| 1:A:53:VAL:HG13  | 1:A:124:ALA:HB2  | 2.03                     | 0.41              |
| 3:C:281:GLU:HG3  | 3:C:283:PRO:HD3  | 2.03                     | 0.41              |
| 3:C:592:PRO:HA   | 3:C:595:GLU:OE2  | 2.20                     | 0.41              |
| 5:E:81:LYS:HB2   | 5:E:82:ASP:H     | 1.58                     | 0.41              |
| 5:E:144:HIS:HA   | 5:E:145:PRO:HD2  | 1.86                     | 0.41              |
| 5:E:150:TYR:HA   | 5:E:151:PRO:HD3  | 1.77                     | 0.41              |
| 6:F:148:ILE:O    | 6:F:152:MET:HG3  | 2.21                     | 0.41              |
| 7:G:71:GLU:HB2   | 7:G:90:VAL:HB    | 2.02                     | 0.41              |
| 1:1:32:TYR:O     | 1:1:37:GLY:HA2   | 2.20                     | 0.41              |
| 1:1:53:VAL:HG13  | 1:1:124:ALA:HB2  | 2.03                     | 0.41              |
| 1:1:106:ILE:HG23 | 1:1:110:VAL:HG23 | 2.01                     | 0.41              |
| 1:1:135:ARG:C    | 1:1:137:GLU:H    | 2.24                     | 0.41              |
| 1:1:169:PHE:CE2  | 1:1:171:LEU:CD1  | 3.03                     | 0.41              |
| 1:1:273:ARG:HA   | 1:1:307:LEU:HD22 | 2.03                     | 0.41              |
| 3:3:17:THR:HG22  | 3:3:18:SER:O     | 2.21                     | 0.41              |
| 3:3:20:MET:HE1   | 3:3:433:ALA:HB2  | 2.00                     | 0.41              |
| 3:3:30:VAL:CG2   | 3:3:48:CYS:HA    | 2.50                     | 0.41              |
| 3:3:50:VAL:HG12  | 3:3:95:THR:HG22  | 2.02                     | 0.41              |
| 3:3:118:ASP:HB2  | 14:3:784:SF4:S1  | 2.61                     | 0.41              |
| 3:3:361:ALA:CB   | 3:3:369:LEU:HD13 | 2.50                     | 0.41              |
| 3:3:469:ARG:HB2  | 3:3:470:PRO:HD2  | 2.03                     | 0.41              |
| 3:3:477:LEU:CD2  | 3:3:521:ALA:HB2  | 2.50                     | 0.41              |
| 3:3:592:PRO:HA   | 3:3:595:GLU:OE2  | 2.20                     | 0.41              |
| 3:3:695:ARG:NH1  | 3:3:697:THR:HG22 | 2.36                     | 0.41              |
| 4:4:47:LEU:HA    | 4:4:53:LEU:HD23  | 2.03                     | 0.41              |
| 4:4:224:ILE:HD11 | 4:4:275:ARG:CZ   | 2.50                     | 0.41              |
| 5:5:81:LYS:HB2   | 5:5:82:ASP:H     | 1.58                     | 0.41              |
| 5:5:150:TYR:HA   | 5:5:151:PRO:HD3  | 1.77                     | 0.41              |
| 9:L:1506:UNK:C   | 9:L:1508:UNK:N   | 2.84                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:32:TYR:O     | 1:A:37:GLY:HA2   | 2.20                     | 0.41              |
| 1:A:135:ARG:C    | 1:A:137:GLU:H    | 2.24                     | 0.41              |
| 1:A:158:LEU:HD23 | 1:A:158:LEU:HA   | 1.86                     | 0.41              |
| 1:A:169:PHE:CE2  | 1:A:171:LEU:CD1  | 3.03                     | 0.41              |
| 1:A:272:PHE:HB3  | 1:A:276:ILE:CD1  | 2.51                     | 0.41              |
| 1:A:273:ARG:HA   | 1:A:307:LEU:HD22 | 2.03                     | 0.41              |
| 3:C:30:VAL:CG2   | 3:C:48:CYS:HA    | 2.50                     | 0.41              |
| 3:C:50:VAL:HG12  | 3:C:95:THR:HG22  | 2.02                     | 0.41              |
| 3:C:87:VAL:HG12  | 3:C:91:MET:HE1   | 2.02                     | 0.41              |
| 3:C:118:ASP:HB2  | 14:C:784:SF4:S1  | 2.61                     | 0.41              |
| 3:C:317:LEU:HD22 | 3:C:317:LEU:H    | 1.85                     | 0.41              |
| 3:C:469:ARG:HB2  | 3:C:470:PRO:HD2  | 2.03                     | 0.41              |
| 3:C:477:LEU:CD2  | 3:C:521:ALA:HB2  | 2.50                     | 0.41              |
| 3:C:583:VAL:HG23 | 3:C:599:HIS:H    | 1.85                     | 0.41              |
| 3:C:695:ARG:NH1  | 3:C:697:THR:HG22 | 2.36                     | 0.41              |
| 5:E:16:PRO:HB2   | 5:E:28:VAL:CG1   | 2.51                     | 0.41              |
| 5:E:106:ASP:HB2  | 5:E:107:LEU:CD1  | 2.47                     | 0.41              |
| 5:E:132:LEU:HD23 | 5:E:132:LEU:HA   | 1.58                     | 0.41              |
| 6:F:147:LEU:O    | 6:F:147:LEU:HD13 | 2.20                     | 0.41              |
| 1:1:17:LEU:C     | 1:1:19:ALA:H     | 2.25                     | 0.41              |
| 1:1:55:GLU:O     | 1:1:59:ARG:HG3   | 2.20                     | 0.41              |
| 1:1:63:ARG:NH1   | 1:1:313:TYR:HB3  | 2.36                     | 0.41              |
| 1:1:102:LYS:HG2  | 1:1:253:GLN:OE1  | 2.21                     | 0.41              |
| 1:1:107:LEU:CD2  | 1:1:114:LEU:HD12 | 2.51                     | 0.41              |
| 1:1:272:PHE:HB3  | 1:1:276:ILE:CD1  | 2.51                     | 0.41              |
| 3:3:87:VAL:HG12  | 3:3:91:MET:HE1   | 2.02                     | 0.41              |
| 3:3:487:SER:N    | 6:F:17:GLU:HB2   | 2.35                     | 0.41              |
| 3:3:737:GLU:O    | 3:3:773:GLY:HA3  | 2.20                     | 0.41              |
| 4:4:102:GLU:HG2  | 4:4:175:ILE:O    | 2.21                     | 0.41              |
| 5:5:16:PRO:HB2   | 5:5:28:VAL:CG1   | 2.51                     | 0.41              |
| 5:5:107:LEU:N    | 5:5:107:LEU:CD1  | 2.82                     | 0.41              |
| 1:A:17:LEU:C     | 1:A:19:ALA:H     | 2.25                     | 0.41              |
| 1:A:63:ARG:NH1   | 1:A:313:TYR:HB3  | 2.36                     | 0.41              |
| 1:A:102:LYS:HG2  | 1:A:253:GLN:OE1  | 2.21                     | 0.41              |
| 1:A:107:LEU:CD2  | 1:A:114:LEU:HD12 | 2.51                     | 0.41              |
| 3:C:17:THR:HG22  | 3:C:18:SER:O     | 2.21                     | 0.41              |
| 4:D:47:LEU:HA    | 4:D:53:LEU:HD23  | 2.03                     | 0.41              |
| 4:D:224:ILE:HD11 | 4:D:275:ARG:CZ   | 2.50                     | 0.41              |
| 5:E:107:LEU:N    | 5:E:107:LEU:CD1  | 2.82                     | 0.41              |
| 9:O:1506:UNK:C   | 9:O:1508:UNK:N   | 2.84                     | 0.41              |
| 2:2:79:HIS:ND1   | 2:2:118:SER:CB   | 2.85                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:3:307:LYS:HE2  | 3:3:307:LYS:HB3  | 1.75                     | 0.40              |
| 4:4:314:ARG:HG3  | 8:7:44:MET:HE1   | 2.02                     | 0.40              |
| 5:5:106:ASP:HB2  | 5:5:107:LEU:CD1  | 2.47                     | 0.40              |
| 5:5:132:LEU:HD23 | 5:5:132:LEU:HA   | 1.58                     | 0.40              |
| 6:6:18:GLY:O     | 6:6:19:ILE:C     | 2.60                     | 0.40              |
| 6:6:154:LEU:O    | 6:6:154:LEU:HG   | 2.20                     | 0.40              |
| 1:A:55:GLU:O     | 1:A:59:ARG:HG3   | 2.20                     | 0.40              |
| 2:B:79:HIS:ND1   | 2:B:118:SER:CB   | 2.85                     | 0.40              |
| 2:B:106:ILE:HG23 | 2:B:110:GLU:HB2  | 2.01                     | 0.40              |
| 3:C:361:ALA:CB   | 3:C:369:LEU:HD13 | 2.50                     | 0.40              |
| 3:C:422:PRO:HA   | 3:C:423:PRO:HD2  | 1.91                     | 0.40              |
| 3:C:737:GLU:O    | 3:C:773:GLY:HA3  | 2.20                     | 0.40              |
| 4:D:102:GLU:HG2  | 4:D:175:ILE:O    | 2.21                     | 0.40              |
| 6:F:18:GLY:O     | 6:F:19:ILE:C     | 2.60                     | 0.40              |
| 2:2:106:ILE:HG23 | 2:2:110:GLU:HB2  | 2.02                     | 0.40              |
| 4:4:164:THR:OG1  | 4:4:170:HIS:HB3  | 2.21                     | 0.40              |
| 5:5:2:ARG:HD2    | 5:5:84:ASP:OD1   | 2.21                     | 0.40              |
| 5:5:195:LEU:O    | 5:5:196:TRP:C    | 2.60                     | 0.40              |
| 3:C:307:LYS:HE2  | 3:C:307:LYS:HB3  | 1.75                     | 0.40              |
| 3:C:440:ARG:NH1  | 3:C:440:ARG:HG3  | 2.34                     | 0.40              |
| 3:C:629:ILE:HG22 | 3:C:630:GLU:N    | 2.37                     | 0.40              |
| 4:D:164:THR:OG1  | 4:D:170:HIS:HB3  | 2.21                     | 0.40              |
| 4:D:314:ARG:HG3  | 8:J:44:MET:HE1   | 2.02                     | 0.40              |
| 5:E:195:LEU:O    | 5:E:196:TRP:C    | 2.60                     | 0.40              |
| 6:F:154:LEU:O    | 6:F:154:LEU:HG   | 2.20                     | 0.40              |
| 1:1:373:LYS:HE2  | 1:1:378:GLN:O    | 2.22                     | 0.40              |
| 3:3:382:PHE:CD1  | 3:3:382:PHE:N    | 2.90                     | 0.40              |
| 3:3:422:PRO:HA   | 3:3:423:PRO:HD2  | 1.91                     | 0.40              |
| 3:3:440:ARG:NH1  | 3:3:440:ARG:HG3  | 2.34                     | 0.40              |
| 3:3:571:VAL:HA   | 3:3:572:PRO:HD3  | 1.90                     | 0.40              |
| 3:3:629:ILE:HG22 | 3:3:630:GLU:N    | 2.37                     | 0.40              |
| 1:A:373:LYS:HE2  | 1:A:378:GLN:O    | 2.22                     | 0.40              |
| 3:C:382:PHE:CD1  | 3:C:382:PHE:N    | 2.89                     | 0.40              |
| 1:1:192:LEU:C    | 1:1:194:GLY:H    | 2.25                     | 0.40              |
| 3:3:197:ASP:O    | 3:3:199:VAL:N    | 2.55                     | 0.40              |
| 3:3:223:SER:O    | 3:3:226:ILE:HG12 | 2.21                     | 0.40              |
| 3:3:373:GLY:HA3  | 3:3:538:ALA:HB2  | 2.03                     | 0.40              |
| 3:3:454:TYR:HB2  | 3:3:752:ASP:OD2  | 2.20                     | 0.40              |
| 3:3:701:ALA:N    | 3:3:763:LEU:O    | 2.51                     | 0.40              |
| 4:4:200:ARG:HG3  | 4:4:204:TYR:HE1  | 1.86                     | 0.40              |
| 4:4:234:LEU:O    | 4:4:234:LEU:HD13 | 2.22                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:9:126:TYR:C    | 7:9:126:TYR:CD1  | 2.95                     | 0.40              |
| 8:7:43:ARG:HH11  | 8:7:48:TYR:CB    | 2.33                     | 0.40              |
| 1:A:192:LEU:C    | 1:A:194:GLY:H    | 2.25                     | 0.40              |
| 3:C:197:ASP:O    | 3:C:199:VAL:N    | 2.55                     | 0.40              |
| 3:C:223:SER:O    | 3:C:226:ILE:HG12 | 2.21                     | 0.40              |
| 3:C:571:VAL:HA   | 3:C:572:PRO:HD3  | 1.90                     | 0.40              |
| 3:C:701:ALA:N    | 3:C:763:LEU:O    | 2.51                     | 0.40              |
| 4:D:234:LEU:O    | 4:D:234:LEU:HD13 | 2.22                     | 0.40              |
| 4:D:257:TYR:C    | 4:D:259:THR:H    | 2.25                     | 0.40              |
| 4:D:288:LYS:HD3  | 4:D:288:LYS:HA   | 1.85                     | 0.40              |
| 5:E:2:ARG:HD2    | 5:E:84:ASP:OD1   | 2.21                     | 0.40              |
| 7:G:126:TYR:C    | 7:G:126:TYR:CD1  | 2.95                     | 0.40              |
| 8:J:43:ARG:HH11  | 8:J:48:TYR:CB    | 2.33                     | 0.40              |
| 1:1:269:GLY:O    | 1:1:270:THR:C    | 2.60                     | 0.40              |
| 3:3:54:LEU:N     | 3:3:55:PRO:HD3   | 2.36                     | 0.40              |
| 3:3:261:VAL:HG22 | 14:3:786:SF4:S2  | 2.62                     | 0.40              |
| 4:4:131:VAL:HG23 | 4:4:153:ARG:NH1  | 2.36                     | 0.40              |
| 4:4:200:ARG:HA   | 4:4:200:ARG:HE   | 1.86                     | 0.40              |
| 4:4:257:TYR:C    | 4:4:259:THR:H    | 2.25                     | 0.40              |
| 4:4:276:MET:O    | 4:4:280:ILE:HG13 | 2.21                     | 0.40              |
| 4:4:288:LYS:HD3  | 4:4:288:LYS:HA   | 1.85                     | 0.40              |
| 7:9:126:TYR:C    | 7:9:126:TYR:HD1  | 2.25                     | 0.40              |
| 2:B:136:VAL:HG21 | 2:B:163:LEU:CD1  | 2.47                     | 0.40              |
| 3:C:7:ASN:OD1    | 3:C:96:LEU:HD12  | 2.22                     | 0.40              |
| 3:C:373:GLY:HA3  | 3:C:538:ALA:HB2  | 2.03                     | 0.40              |
| 4:D:200:ARG:HA   | 4:D:200:ARG:HE   | 1.86                     | 0.40              |
| 4:D:276:MET:O    | 4:D:280:ILE:HG13 | 2.21                     | 0.40              |
| 6:F:137:VAL:HA   | 6:F:138:PRO:HD2  | 1.95                     | 0.40              |

All (9) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

| Atom-1          | Atom-2                 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------------|--------------------------|-------------------|
| 3:3:319:GLU:OE2 | 3:C:679:ARG:CZ[1_655]  | 1.75                     | 0.45              |
| 3:3:319:GLU:OE1 | 3:C:679:ARG:NH1[1_655] | 1.84                     | 0.36              |
| 6:6:16:ARG:CG   | 3:C:485:GLU:OE1[1_655] | 1.91                     | 0.29              |
| 6:6:16:ARG:CD   | 3:C:485:GLU:O[1_655]   | 1.99                     | 0.21              |
| 3:3:319:GLU:CD  | 3:C:679:ARG:CZ[1_655]  | 2.07                     | 0.13              |
| 3:3:319:GLU:OE2 | 3:C:679:ARG:NH1[1_655] | 2.07                     | 0.13              |
| 3:3:319:GLU:CD  | 3:C:679:ARG:NH2[1_655] | 2.09                     | 0.11              |

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| Atom-1          | Atom-2                 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------------|--------------------------|-------------------|
| 3:3:319:GLU:OE2 | 3:C:679:ARG:NE[1_655]  | 2.12                     | 0.08              |
| 3:3:319:GLU:OE1 | 3:C:679:ARG:NH2[1_655] | 2.18                     | 0.02              |

## 5.3 Torsion angles [i](#)

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

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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   | 1     | 435/438 (99%)   | 362 (83%)  | 58 (13%)  | 15 (3%)  | 3           | 29 |
| 1   | A     | 435/438 (99%)   | 362 (83%)  | 58 (13%)  | 15 (3%)  | 3           | 29 |
| 2   | 2     | 176/181 (97%)   | 156 (89%)  | 16 (9%)   | 4 (2%)   | 6           | 37 |
| 2   | B     | 176/181 (97%)   | 156 (89%)  | 16 (9%)   | 4 (2%)   | 6           | 37 |
| 3   | 3     | 748/783 (96%)   | 634 (85%)  | 91 (12%)  | 23 (3%)  | 4           | 31 |
| 3   | C     | 748/783 (96%)   | 634 (85%)  | 91 (12%)  | 23 (3%)  | 4           | 31 |
| 4   | 4     | 373/409 (91%)   | 322 (86%)  | 37 (10%)  | 14 (4%)  | 3           | 27 |
| 4   | D     | 373/409 (91%)   | 321 (86%)  | 38 (10%)  | 14 (4%)  | 3           | 27 |
| 5   | 5     | 194/207 (94%)   | 165 (85%)  | 23 (12%)  | 6 (3%)   | 4           | 31 |
| 5   | E     | 194/207 (94%)   | 165 (85%)  | 23 (12%)  | 6 (3%)   | 4           | 31 |
| 6   | 6     | 141/181 (78%)   | 114 (81%)  | 22 (16%)  | 5 (4%)   | 3           | 29 |
| 6   | F     | 141/181 (78%)   | 114 (81%)  | 22 (16%)  | 5 (4%)   | 3           | 29 |
| 7   | 9     | 152/182 (84%)   | 131 (86%)  | 17 (11%)  | 4 (3%)   | 5           | 35 |
| 7   | G     | 152/182 (84%)   | 131 (86%)  | 17 (11%)  | 4 (3%)   | 5           | 35 |
| 8   | 7     | 125/129 (97%)   | 112 (90%)  | 12 (10%)  | 1 (1%)   | 19          | 60 |
| 8   | J     | 125/129 (97%)   | 112 (90%)  | 12 (10%)  | 1 (1%)   | 19          | 60 |
| All | All   | 4688/5020 (93%) | 3991 (85%) | 553 (12%) | 144 (3%) | 4           | 31 |

All (144) Ramachandran outliers are listed below:



| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 4   | PRO  |
| 1   | 1     | 81  | LYS  |
| 2   | 2     | 86  | LEU  |
| 2   | 2     | 136 | VAL  |
| 2   | 2     | 140 | PRO  |
| 3   | 3     | 6   | VAL  |
| 3   | 3     | 117 | LEU  |
| 3   | 3     | 580 | LYS  |
| 7   | 9     | 173 | PHE  |
| 1   | A     | 4   | PRO  |
| 1   | A     | 81  | LYS  |
| 2   | B     | 86  | LEU  |
| 2   | B     | 136 | VAL  |
| 2   | B     | 140 | PRO  |
| 3   | C     | 6   | VAL  |
| 3   | C     | 117 | LEU  |
| 3   | C     | 580 | LYS  |
| 7   | G     | 173 | PHE  |
| 1   | 1     | 37  | GLY  |
| 1   | 1     | 160 | LYS  |
| 3   | 3     | 125 | GLY  |
| 3   | 3     | 184 | CYS  |
| 3   | 3     | 204 | GLU  |
| 3   | 3     | 285 | VAL  |
| 3   | 3     | 563 | ALA  |
| 4   | 4     | 51  | GLU  |
| 4   | 4     | 236 | GLY  |
| 4   | 4     | 258 | GLU  |
| 4   | 4     | 334 | GLY  |
| 5   | 5     | 176 | GLY  |
| 6   | 6     | 45  | CYS  |
| 6   | 6     | 77  | VAL  |
| 6   | 6     | 126 | ASN  |
| 1   | A     | 37  | GLY  |
| 1   | A     | 160 | LYS  |
| 3   | C     | 125 | GLY  |
| 3   | C     | 184 | CYS  |
| 3   | C     | 204 | GLU  |
| 3   | C     | 285 | VAL  |
| 3   | C     | 563 | ALA  |
| 4   | D     | 51  | GLU  |
| 4   | D     | 236 | GLY  |
| 4   | D     | 258 | GLU  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 4          | D            | 334        | GLY         |
| 5          | E            | 176        | GLY         |
| 6          | F            | 45         | CYS         |
| 6          | F            | 77         | VAL         |
| 6          | F            | 126        | ASN         |
| 1          | 1            | 18         | TYR         |
| 1          | 1            | 166        | ASP         |
| 1          | 1            | 311        | MET         |
| 3          | 3            | 220        | SER         |
| 3          | 3            | 365        | LYS         |
| 4          | 4            | 235        | THR         |
| 4          | 4            | 389        | GLN         |
| 5          | 5            | 47         | ASN         |
| 7          | 9            | 37         | PHE         |
| 7          | 9            | 48         | ASN         |
| 1          | A            | 18         | TYR         |
| 1          | A            | 166        | ASP         |
| 1          | A            | 311        | MET         |
| 3          | C            | 220        | SER         |
| 3          | C            | 365        | LYS         |
| 4          | D            | 235        | THR         |
| 4          | D            | 389        | GLN         |
| 5          | E            | 47         | ASN         |
| 7          | G            | 37         | PHE         |
| 7          | G            | 48         | ASN         |
| 1          | 1            | 43         | ARG         |
| 1          | 1            | 314        | GLU         |
| 3          | 3            | 139        | LEU         |
| 3          | 3            | 219        | PRO         |
| 4          | 4            | 255        | SER         |
| 4          | 4            | 390        | VAL         |
| 5          | 5            | 81         | LYS         |
| 5          | 5            | 111        | ALA         |
| 5          | 5            | 138        | PRO         |
| 1          | A            | 43         | ARG         |
| 1          | A            | 314        | GLU         |
| 3          | C            | 139        | LEU         |
| 3          | C            | 219        | PRO         |
| 4          | D            | 255        | SER         |
| 4          | D            | 390        | VAL         |
| 5          | E            | 81         | LYS         |
| 5          | E            | 138        | PRO         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 1            | 292        | PRO         |
| 1          | 1            | 313        | TYR         |
| 2          | 2            | 48         | GLU         |
| 3          | 3            | 54         | LEU         |
| 3          | 3            | 372        | GLN         |
| 3          | 3            | 704        | ALA         |
| 4          | 4            | 211        | SER         |
| 4          | 4            | 381        | LEU         |
| 5          | 5            | 35         | LYS         |
| 7          | 9            | 100        | PHE         |
| 1          | A            | 292        | PRO         |
| 1          | A            | 313        | TYR         |
| 2          | B            | 48         | GLU         |
| 3          | C            | 54         | LEU         |
| 3          | C            | 372        | GLN         |
| 3          | C            | 704        | ALA         |
| 4          | D            | 211        | SER         |
| 4          | D            | 381        | LEU         |
| 5          | E            | 35         | LYS         |
| 5          | E            | 111        | ALA         |
| 7          | G            | 100        | PHE         |
| 1          | 1            | 193        | GLU         |
| 3          | 3            | 682        | GLU         |
| 1          | A            | 193        | GLU         |
| 3          | C            | 682        | GLU         |
| 1          | 1            | 71         | PRO         |
| 3          | 3            | 457        | PRO         |
| 8          | 7            | 74         | PRO         |
| 1          | A            | 71         | PRO         |
| 3          | C            | 457        | PRO         |
| 8          | J            | 74         | PRO         |
| 1          | 1            | 234        | GLY         |
| 3          | 3            | 453        | PRO         |
| 3          | 3            | 529        | GLY         |
| 4          | 4            | 198        | PRO         |
| 4          | 4            | 212        | PRO         |
| 4          | 4            | 270        | GLY         |
| 1          | A            | 234        | GLY         |
| 3          | C            | 453        | PRO         |
| 3          | C            | 529        | GLY         |
| 4          | D            | 198        | PRO         |
| 4          | D            | 270        | GLY         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | 3     | 367 | PRO  |
| 3   | 3     | 690 | GLY  |
| 3   | C     | 367 | PRO  |
| 3   | C     | 690 | GLY  |
| 4   | D     | 212 | PRO  |
| 1   | 1     | 3   | GLY  |
| 3   | 3     | 549 | VAL  |
| 4   | 4     | 402 | PRO  |
| 6   | 6     | 100 | PRO  |
| 6   | 6     | 101 | ASP  |
| 1   | A     | 3   | GLY  |
| 3   | C     | 549 | VAL  |
| 4   | D     | 402 | PRO  |
| 6   | F     | 100 | PRO  |
| 6   | F     | 101 | ASP  |
| 3   | 3     | 508 | GLY  |
| 3   | C     | 508 | GLY  |

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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   | 1     | 355/356 (100%) | 318 (90%) | 37 (10%) | 7 27        |
| 1   | A     | 355/356 (100%) | 319 (90%) | 36 (10%) | 7 27        |
| 2   | 2     | 150/152 (99%)  | 123 (82%) | 27 (18%) | 1 11        |
| 2   | B     | 150/152 (99%)  | 123 (82%) | 27 (18%) | 1 11        |
| 3   | 3     | 607/628 (97%)  | 537 (88%) | 70 (12%) | 5 23        |
| 3   | C     | 607/628 (97%)  | 537 (88%) | 70 (12%) | 5 23        |
| 4   | 4     | 325/355 (92%)  | 291 (90%) | 34 (10%) | 7 26        |
| 4   | D     | 325/355 (92%)  | 292 (90%) | 33 (10%) | 7 27        |
| 5   | 5     | 167/175 (95%)  | 151 (90%) | 16 (10%) | 8 29        |
| 5   | E     | 167/175 (95%)  | 151 (90%) | 16 (10%) | 8 29        |
| 6   | 6     | 118/149 (79%)  | 104 (88%) | 14 (12%) | 5 23        |

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| Mol | Chain | Analysed        | Rotameric  | Outliers  | Percentiles |    |
|-----|-------|-----------------|------------|-----------|-------------|----|
| 6   | F     | 118/149 (79%)   | 104 (88%)  | 14 (12%)  | 5           | 23 |
| 7   | 9     | 126/150 (84%)   | 111 (88%)  | 15 (12%)  | 5           | 23 |
| 7   | G     | 126/150 (84%)   | 111 (88%)  | 15 (12%)  | 5           | 23 |
| 8   | 7     | 104/106 (98%)   | 91 (88%)   | 13 (12%)  | 4           | 21 |
| 8   | J     | 104/106 (98%)   | 91 (88%)   | 13 (12%)  | 4           | 21 |
| All | All   | 3904/4142 (94%) | 3454 (88%) | 450 (12%) | 5           | 23 |

All (450) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 10  | ASP  |
| 1   | 1     | 29  | LEU  |
| 1   | 1     | 49  | THR  |
| 1   | 1     | 104 | ARG  |
| 1   | 1     | 114 | LEU  |
| 1   | 1     | 128 | THR  |
| 1   | 1     | 134 | VAL  |
| 1   | 1     | 144 | ARG  |
| 1   | 1     | 155 | ARG  |
| 1   | 1     | 161 | ASN  |
| 1   | 1     | 168 | SER  |
| 1   | 1     | 186 | THR  |
| 1   | 1     | 217 | THR  |
| 1   | 1     | 243 | THR  |
| 1   | 1     | 249 | MET  |
| 1   | 1     | 253 | GLN  |
| 1   | 1     | 255 | SER  |
| 1   | 1     | 270 | THR  |
| 1   | 1     | 271 | THR  |
| 1   | 1     | 290 | ILE  |
| 1   | 1     | 295 | SER  |
| 1   | 1     | 309 | THR  |
| 1   | 1     | 316 | LEU  |
| 1   | 1     | 323 | LEU  |
| 1   | 1     | 342 | TRP  |
| 1   | 1     | 346 | ARG  |
| 1   | 1     | 357 | THR  |
| 1   | 1     | 363 | VAL  |
| 1   | 1     | 366 | PHE  |
| 1   | 1     | 368 | VAL  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | 1            | 374        | ILE         |
| 1          | 1            | 388        | GLU         |
| 1          | 1            | 397        | ARG         |
| 1          | 1            | 400        | CYS         |
| 1          | 1            | 414        | LEU         |
| 1          | 1            | 419        | ASP         |
| 1          | 1            | 437        | TRP         |
| 2          | 2            | 5          | ASP         |
| 2          | 2            | 7          | LYS         |
| 2          | 2            | 24         | ARG         |
| 2          | 2            | 28         | MET         |
| 2          | 2            | 31         | LEU         |
| 2          | 2            | 32         | ARG         |
| 2          | 2            | 33         | ARG         |
| 2          | 2            | 35         | GLN         |
| 2          | 2            | 45         | ARG         |
| 2          | 2            | 53         | VAL         |
| 2          | 2            | 61         | MET         |
| 2          | 2            | 87         | SER         |
| 2          | 2            | 89         | LYS         |
| 2          | 2            | 96         | LEU         |
| 2          | 2            | 106        | ILE         |
| 2          | 2            | 114        | ASP         |
| 2          | 2            | 122        | VAL         |
| 2          | 2            | 139        | GLU         |
| 2          | 2            | 140        | PRO         |
| 2          | 2            | 144        | CYS         |
| 2          | 2            | 146        | THR         |
| 2          | 2            | 150        | LEU         |
| 2          | 2            | 153        | LEU         |
| 2          | 2            | 162        | ARG         |
| 2          | 2            | 163        | LEU         |
| 2          | 2            | 172        | CYS         |
| 2          | 2            | 176        | VAL         |
| 3          | 3            | 11         | VAL         |
| 3          | 3            | 32         | LEU         |
| 3          | 3            | 42         | ILE         |
| 3          | 3            | 55         | PRO         |
| 3          | 3            | 73         | ILE         |
| 3          | 3            | 89         | ASP         |
| 3          | 3            | 94         | ASP         |
| 3          | 3            | 121        | THR         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 3          | 3            | 123        | ASP         |
| 3          | 3            | 124        | LYS         |
| 3          | 3            | 133        | ARG         |
| 3          | 3            | 135        | VAL         |
| 3          | 3            | 150        | GLU         |
| 3          | 3            | 171        | SER         |
| 3          | 3            | 188        | VAL         |
| 3          | 3            | 189        | ARG         |
| 3          | 3            | 192        | GLU         |
| 3          | 3            | 207        | VAL         |
| 3          | 3            | 209        | THR         |
| 3          | 3            | 218        | LEU         |
| 3          | 3            | 219        | PRO         |
| 3          | 3            | 220        | SER         |
| 3          | 3            | 238        | LEU         |
| 3          | 3            | 259        | CYS         |
| 3          | 3            | 269        | THR         |
| 3          | 3            | 274        | LEU         |
| 3          | 3            | 275        | LEU         |
| 3          | 3            | 284        | GLU         |
| 3          | 3            | 302        | ASP         |
| 3          | 3            | 303        | GLN         |
| 3          | 3            | 317        | LEU         |
| 3          | 3            | 337        | ARG         |
| 3          | 3            | 368        | HIS         |
| 3          | 3            | 369        | LEU         |
| 3          | 3            | 381        | LEU         |
| 3          | 3            | 408        | ILE         |
| 3          | 3            | 412        | ARG         |
| 3          | 3            | 419        | ASP         |
| 3          | 3            | 425        | ARG         |
| 3          | 3            | 440        | ARG         |
| 3          | 3            | 448        | MET         |
| 3          | 3            | 450        | LEU         |
| 3          | 3            | 454        | TYR         |
| 3          | 3            | 464        | ILE         |
| 3          | 3            | 473        | GLU         |
| 3          | 3            | 501        | LYS         |
| 3          | 3            | 507        | LEU         |
| 3          | 3            | 514        | ASP         |
| 3          | 3            | 515        | THR         |
| 3          | 3            | 523        | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 3          | 3            | 542        | ARG         |
| 3          | 3            | 550        | LEU         |
| 3          | 3            | 578        | LYS         |
| 3          | 3            | 587        | LEU         |
| 3          | 3            | 593        | LEU         |
| 3          | 3            | 617        | LEU         |
| 3          | 3            | 644        | LEU         |
| 3          | 3            | 655        | ARG         |
| 3          | 3            | 656        | LEU         |
| 3          | 3            | 676        | LEU         |
| 3          | 3            | 683        | LEU         |
| 3          | 3            | 684        | ARG         |
| 3          | 3            | 705        | VAL         |
| 3          | 3            | 715        | GLU         |
| 3          | 3            | 716        | LEU         |
| 3          | 3            | 738        | THR         |
| 3          | 3            | 747        | VAL         |
| 3          | 3            | 771        | VAL         |
| 3          | 3            | 774        | ARG         |
| 3          | 3            | 776        | LEU         |
| 4          | 4            | 44         | MET         |
| 4          | 4            | 59         | ILE         |
| 4          | 4            | 69         | THR         |
| 4          | 4            | 74         | THR         |
| 4          | 4            | 84         | ARG         |
| 4          | 4            | 87         | TYR         |
| 4          | 4            | 99         | LEU         |
| 4          | 4            | 104        | LEU         |
| 4          | 4            | 105        | LEU         |
| 4          | 4            | 120        | LEU         |
| 4          | 4            | 129        | HIS         |
| 4          | 4            | 143        | LEU         |
| 4          | 4            | 152        | GLU         |
| 4          | 4            | 163        | VAL         |
| 4          | 4            | 168        | PHE         |
| 4          | 4            | 170        | HIS         |
| 4          | 4            | 182        | LEU         |
| 4          | 4            | 215        | TYR         |
| 4          | 4            | 219        | ARG         |
| 4          | 4            | 234        | LEU         |
| 4          | 4            | 239        | LEU         |
| 4          | 4            | 262        | PHE         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 4          | 4            | 272        | VAL         |
| 4          | 4            | 296        | ARG         |
| 4          | 4            | 297        | LEU         |
| 4          | 4            | 314        | ARG         |
| 4          | 4            | 316        | LEU         |
| 4          | 4            | 319        | THR         |
| 4          | 4            | 335        | PHE         |
| 4          | 4            | 342        | VAL         |
| 4          | 4            | 363        | SER         |
| 4          | 4            | 367        | ARG         |
| 4          | 4            | 396        | ILE         |
| 4          | 4            | 409        | ARG         |
| 5          | 5            | 5          | ARG         |
| 5          | 5            | 25         | LEU         |
| 5          | 5            | 27         | VAL         |
| 5          | 5            | 38         | MET         |
| 5          | 5            | 52         | ILE         |
| 5          | 5            | 80         | TRP         |
| 5          | 5            | 84         | ASP         |
| 5          | 5            | 90         | VAL         |
| 5          | 5            | 104        | VAL         |
| 5          | 5            | 107        | LEU         |
| 5          | 5            | 146        | LEU         |
| 5          | 5            | 147        | ARG         |
| 5          | 5            | 154        | GLU         |
| 5          | 5            | 157        | THR         |
| 5          | 5            | 161        | GLU         |
| 5          | 5            | 193        | ARG         |
| 6          | 6            | 16         | ARG         |
| 6          | 6            | 19         | ILE         |
| 6          | 6            | 33         | SER         |
| 6          | 6            | 37         | TRP         |
| 6          | 6            | 40         | THR         |
| 6          | 6            | 45         | CYS         |
| 6          | 6            | 57         | ARG         |
| 6          | 6            | 74         | GLN         |
| 6          | 6            | 83         | ARG         |
| 6          | 6            | 114        | SER         |
| 6          | 6            | 141        | PRO         |
| 6          | 6            | 153        | GLN         |
| 6          | 6            | 156        | LYS         |
| 6          | 6            | 163        | TYR         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 7          | 9            | 26         | TYR         |
| 7          | 9            | 33         | LEU         |
| 7          | 9            | 36         | ARG         |
| 7          | 9            | 42         | VAL         |
| 7          | 9            | 50         | LEU         |
| 7          | 9            | 58         | LEU         |
| 7          | 9            | 85         | GLU         |
| 7          | 9            | 97         | ARG         |
| 7          | 9            | 99         | ILE         |
| 7          | 9            | 101        | CYS         |
| 7          | 9            | 126        | TYR         |
| 7          | 9            | 139        | ASP         |
| 7          | 9            | 140        | VAL         |
| 7          | 9            | 157        | VAL         |
| 7          | 9            | 159        | VAL         |
| 8          | 7            | 21         | ARG         |
| 8          | 7            | 39         | ASP         |
| 8          | 7            | 43         | ARG         |
| 8          | 7            | 44         | MET         |
| 8          | 7            | 50         | LEU         |
| 8          | 7            | 52         | THR         |
| 8          | 7            | 54         | ILE         |
| 8          | 7            | 63         | LEU         |
| 8          | 7            | 78         | LYS         |
| 8          | 7            | 81         | ARG         |
| 8          | 7            | 82         | ILE         |
| 8          | 7            | 85         | ARG         |
| 8          | 7            | 92         | HIS         |
| 1          | A            | 10         | ASP         |
| 1          | A            | 29         | LEU         |
| 1          | A            | 49         | THR         |
| 1          | A            | 104        | ARG         |
| 1          | A            | 114        | LEU         |
| 1          | A            | 134        | VAL         |
| 1          | A            | 144        | ARG         |
| 1          | A            | 155        | ARG         |
| 1          | A            | 161        | ASN         |
| 1          | A            | 168        | SER         |
| 1          | A            | 186        | THR         |
| 1          | A            | 217        | THR         |
| 1          | A            | 243        | THR         |
| 1          | A            | 249        | MET         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 253        | GLN         |
| 1          | A            | 255        | SER         |
| 1          | A            | 270        | THR         |
| 1          | A            | 271        | THR         |
| 1          | A            | 290        | ILE         |
| 1          | A            | 295        | SER         |
| 1          | A            | 309        | THR         |
| 1          | A            | 316        | LEU         |
| 1          | A            | 323        | LEU         |
| 1          | A            | 342        | TRP         |
| 1          | A            | 346        | ARG         |
| 1          | A            | 357        | THR         |
| 1          | A            | 363        | VAL         |
| 1          | A            | 366        | PHE         |
| 1          | A            | 368        | VAL         |
| 1          | A            | 374        | ILE         |
| 1          | A            | 388        | GLU         |
| 1          | A            | 397        | ARG         |
| 1          | A            | 400        | CYS         |
| 1          | A            | 414        | LEU         |
| 1          | A            | 419        | ASP         |
| 1          | A            | 437        | TRP         |
| 2          | B            | 5          | ASP         |
| 2          | B            | 7          | LYS         |
| 2          | B            | 24         | ARG         |
| 2          | B            | 28         | MET         |
| 2          | B            | 31         | LEU         |
| 2          | B            | 32         | ARG         |
| 2          | B            | 33         | ARG         |
| 2          | B            | 35         | GLN         |
| 2          | B            | 45         | ARG         |
| 2          | B            | 53         | VAL         |
| 2          | B            | 61         | MET         |
| 2          | B            | 87         | SER         |
| 2          | B            | 89         | LYS         |
| 2          | B            | 96         | LEU         |
| 2          | B            | 106        | ILE         |
| 2          | B            | 114        | ASP         |
| 2          | B            | 122        | VAL         |
| 2          | B            | 139        | GLU         |
| 2          | B            | 140        | PRO         |
| 2          | B            | 144        | CYS         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 2          | B            | 146        | THR         |
| 2          | B            | 150        | LEU         |
| 2          | B            | 153        | LEU         |
| 2          | B            | 162        | ARG         |
| 2          | B            | 163        | LEU         |
| 2          | B            | 172        | CYS         |
| 2          | B            | 176        | VAL         |
| 3          | C            | 11         | VAL         |
| 3          | C            | 32         | LEU         |
| 3          | C            | 42         | ILE         |
| 3          | C            | 55         | PRO         |
| 3          | C            | 73         | ILE         |
| 3          | C            | 89         | ASP         |
| 3          | C            | 94         | ASP         |
| 3          | C            | 121        | THR         |
| 3          | C            | 123        | ASP         |
| 3          | C            | 124        | LYS         |
| 3          | C            | 133        | ARG         |
| 3          | C            | 135        | VAL         |
| 3          | C            | 150        | GLU         |
| 3          | C            | 171        | SER         |
| 3          | C            | 188        | VAL         |
| 3          | C            | 189        | ARG         |
| 3          | C            | 192        | GLU         |
| 3          | C            | 207        | VAL         |
| 3          | C            | 209        | THR         |
| 3          | C            | 218        | LEU         |
| 3          | C            | 219        | PRO         |
| 3          | C            | 220        | SER         |
| 3          | C            | 238        | LEU         |
| 3          | C            | 259        | CYS         |
| 3          | C            | 269        | THR         |
| 3          | C            | 274        | LEU         |
| 3          | C            | 275        | LEU         |
| 3          | C            | 284        | GLU         |
| 3          | C            | 302        | ASP         |
| 3          | C            | 303        | GLN         |
| 3          | C            | 317        | LEU         |
| 3          | C            | 337        | ARG         |
| 3          | C            | 368        | HIS         |
| 3          | C            | 369        | LEU         |
| 3          | C            | 381        | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 3          | C            | 408        | ILE         |
| 3          | C            | 412        | ARG         |
| 3          | C            | 419        | ASP         |
| 3          | C            | 425        | ARG         |
| 3          | C            | 440        | ARG         |
| 3          | C            | 448        | MET         |
| 3          | C            | 450        | LEU         |
| 3          | C            | 454        | TYR         |
| 3          | C            | 464        | ILE         |
| 3          | C            | 473        | GLU         |
| 3          | C            | 501        | LYS         |
| 3          | C            | 507        | LEU         |
| 3          | C            | 514        | ASP         |
| 3          | C            | 515        | THR         |
| 3          | C            | 523        | LEU         |
| 3          | C            | 542        | ARG         |
| 3          | C            | 550        | LEU         |
| 3          | C            | 578        | LYS         |
| 3          | C            | 587        | LEU         |
| 3          | C            | 593        | LEU         |
| 3          | C            | 617        | LEU         |
| 3          | C            | 644        | LEU         |
| 3          | C            | 655        | ARG         |
| 3          | C            | 656        | LEU         |
| 3          | C            | 676        | LEU         |
| 3          | C            | 683        | LEU         |
| 3          | C            | 684        | ARG         |
| 3          | C            | 705        | VAL         |
| 3          | C            | 715        | GLU         |
| 3          | C            | 716        | LEU         |
| 3          | C            | 738        | THR         |
| 3          | C            | 747        | VAL         |
| 3          | C            | 771        | VAL         |
| 3          | C            | 774        | ARG         |
| 3          | C            | 776        | LEU         |
| 4          | D            | 44         | MET         |
| 4          | D            | 59         | ILE         |
| 4          | D            | 69         | THR         |
| 4          | D            | 74         | THR         |
| 4          | D            | 84         | ARG         |
| 4          | D            | 99         | LEU         |
| 4          | D            | 104        | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 4          | D            | 105        | LEU         |
| 4          | D            | 120        | LEU         |
| 4          | D            | 129        | HIS         |
| 4          | D            | 143        | LEU         |
| 4          | D            | 152        | GLU         |
| 4          | D            | 163        | VAL         |
| 4          | D            | 168        | PHE         |
| 4          | D            | 170        | HIS         |
| 4          | D            | 182        | LEU         |
| 4          | D            | 215        | TYR         |
| 4          | D            | 219        | ARG         |
| 4          | D            | 234        | LEU         |
| 4          | D            | 239        | LEU         |
| 4          | D            | 262        | PHE         |
| 4          | D            | 272        | VAL         |
| 4          | D            | 296        | ARG         |
| 4          | D            | 297        | LEU         |
| 4          | D            | 314        | ARG         |
| 4          | D            | 316        | LEU         |
| 4          | D            | 319        | THR         |
| 4          | D            | 335        | PHE         |
| 4          | D            | 342        | VAL         |
| 4          | D            | 363        | SER         |
| 4          | D            | 367        | ARG         |
| 4          | D            | 396        | ILE         |
| 4          | D            | 409        | ARG         |
| 5          | E            | 5          | ARG         |
| 5          | E            | 25         | LEU         |
| 5          | E            | 27         | VAL         |
| 5          | E            | 38         | MET         |
| 5          | E            | 52         | ILE         |
| 5          | E            | 80         | TRP         |
| 5          | E            | 84         | ASP         |
| 5          | E            | 90         | VAL         |
| 5          | E            | 104        | VAL         |
| 5          | E            | 107        | LEU         |
| 5          | E            | 146        | LEU         |
| 5          | E            | 147        | ARG         |
| 5          | E            | 154        | GLU         |
| 5          | E            | 157        | THR         |
| 5          | E            | 161        | GLU         |
| 5          | E            | 193        | ARG         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 6          | F            | 16         | ARG         |
| 6          | F            | 19         | ILE         |
| 6          | F            | 33         | SER         |
| 6          | F            | 37         | TRP         |
| 6          | F            | 40         | THR         |
| 6          | F            | 45         | CYS         |
| 6          | F            | 57         | ARG         |
| 6          | F            | 74         | GLN         |
| 6          | F            | 83         | ARG         |
| 6          | F            | 114        | SER         |
| 6          | F            | 141        | PRO         |
| 6          | F            | 153        | GLN         |
| 6          | F            | 156        | LYS         |
| 6          | F            | 163        | TYR         |
| 7          | G            | 26         | TYR         |
| 7          | G            | 33         | LEU         |
| 7          | G            | 36         | ARG         |
| 7          | G            | 42         | VAL         |
| 7          | G            | 50         | LEU         |
| 7          | G            | 58         | LEU         |
| 7          | G            | 85         | GLU         |
| 7          | G            | 97         | ARG         |
| 7          | G            | 99         | ILE         |
| 7          | G            | 101        | CYS         |
| 7          | G            | 126        | TYR         |
| 7          | G            | 139        | ASP         |
| 7          | G            | 140        | VAL         |
| 7          | G            | 157        | VAL         |
| 7          | G            | 159        | VAL         |
| 8          | J            | 21         | ARG         |
| 8          | J            | 39         | ASP         |
| 8          | J            | 43         | ARG         |
| 8          | J            | 44         | MET         |
| 8          | J            | 50         | LEU         |
| 8          | J            | 52         | THR         |
| 8          | J            | 54         | ILE         |
| 8          | J            | 63         | LEU         |
| 8          | J            | 78         | LYS         |
| 8          | J            | 81         | ARG         |
| 8          | J            | 82         | ILE         |
| 8          | J            | 85         | ARG         |
| 8          | J            | 92         | HIS         |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | 1     | 92  | ASN  |
| 3   | 3     | 38  | HIS  |
| 3   | 3     | 168 | HIS  |
| 3   | 3     | 246 | ASN  |
| 3   | 3     | 368 | HIS  |
| 3   | 3     | 702 | HIS  |
| 3   | 3     | 709 | GLN  |
| 3   | 3     | 749 | HIS  |
| 4   | 4     | 292 | GLN  |
| 4   | 4     | 336 | HIS  |
| 4   | 4     | 377 | ASN  |
| 5   | 5     | 129 | HIS  |
| 8   | 7     | 92  | HIS  |
| 1   | A     | 92  | ASN  |
| 3   | C     | 38  | HIS  |
| 3   | C     | 168 | HIS  |
| 3   | C     | 246 | ASN  |
| 3   | C     | 368 | HIS  |
| 3   | C     | 702 | HIS  |
| 3   | C     | 749 | HIS  |
| 4   | D     | 292 | GLN  |
| 4   | D     | 336 | HIS  |
| 4   | D     | 377 | ASN  |
| 5   | E     | 129 | HIS  |
| 8   | J     | 92  | HIS  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.



## 5.6 Ligand geometry

20 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 |
| 15  | FMN  | A     | 440 | -    | 33,33,33     | 1.34 | 3 (9%)   | 48,50,50    | 1.63 | 15 (31%) |
| 14  | SF4  | C     | 786 | 3    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | 9     | 184 | 7    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | 1     | 439 | 1    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | 3     | 786 | 3    | 0,12,12      | -    | -        | -           | -    | -        |
| 15  | FMN  | 1     | 440 | -    | 33,33,33     | 1.34 | 3 (9%)   | 48,50,50    | 1.63 | 15 (31%) |
| 14  | SF4  | C     | 785 | 3    | 0,12,12      | -    | -        | -           | -    | -        |
| 16  | FES  | 2     | 182 | 2    | 0,4,4        | -    | -        | -           | -    | -        |
| 14  | SF4  | G     | 183 | 7    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | A     | 439 | 1    | 0,12,12      | -    | -        | -           | -    | -        |
| 16  | FES  | B     | 182 | 2    | 0,4,4        | -    | -        | -           | -    | -        |
| 14  | SF4  | F     | 182 | 6    | 0,12,12      | -    | -        | -           | -    | -        |
| 16  | FES  | 3     | 787 | 3    | 0,4,4        | -    | -        | -           | -    | -        |
| 14  | SF4  | 3     | 784 | 3    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | 6     | 182 | 6    | 0,12,12      | -    | -        | -           | -    | -        |
| 16  | FES  | C     | 787 | 3    | 0,4,4        | -    | -        | -           | -    | -        |
| 14  | SF4  | G     | 184 | 7    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | C     | 784 | 3    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | 9     | 183 | 7    | 0,12,12      | -    | -        | -           | -    | -        |
| 14  | SF4  | 3     | 785 | 3    | 0,12,12      | -    | -        | -           | -    | -        |

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   |
|-----|------|-------|-----|------|---------|------------|---------|
| 15  | FMN  | A     | 440 | -    | -       | 9/18/18/18 | 0/3/3/3 |
| 14  | SF4  | C     | 786 | 3    | -       | -          | 0/6/5/5 |
| 14  | SF4  | 9     | 184 | 7    | -       | -          | 0/6/5/5 |
| 14  | SF4  | 1     | 439 | 1    | -       | -          | 0/6/5/5 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions   | Rings   |
|-----|------|-------|-----|------|---------|------------|---------|
| 14  | SF4  | 3     | 786 | 3    | -       | -          | 0/6/5/5 |
| 15  | FMN  | 1     | 440 | -    | -       | 9/18/18/18 | 0/3/3/3 |
| 14  | SF4  | C     | 785 | 3    | -       | -          | 0/6/5/5 |
| 16  | FES  | 2     | 182 | 2    | -       | -          | 0/1/1/1 |
| 14  | SF4  | G     | 183 | 7    | -       | -          | 0/6/5/5 |
| 14  | SF4  | A     | 439 | 1    | -       | -          | 0/6/5/5 |
| 16  | FES  | B     | 182 | 2    | -       | -          | 0/1/1/1 |
| 14  | SF4  | F     | 182 | 6    | -       | -          | 0/6/5/5 |
| 16  | FES  | 3     | 787 | 3    | -       | -          | 0/1/1/1 |
| 14  | SF4  | 3     | 784 | 3    | -       | -          | 0/6/5/5 |
| 14  | SF4  | 6     | 182 | 6    | -       | -          | 0/6/5/5 |
| 16  | FES  | C     | 787 | 3    | -       | -          | 0/1/1/1 |
| 14  | SF4  | G     | 184 | 7    | -       | -          | 0/6/5/5 |
| 14  | SF4  | C     | 784 | 3    | -       | -          | 0/6/5/5 |
| 14  | SF4  | 9     | 183 | 7    | -       | -          | 0/6/5/5 |
| 14  | SF4  | 3     | 785 | 3    | -       | -          | 0/6/5/5 |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 15  | 1     | 440 | FMN  | C4A-N5  | 3.95  | 1.38        | 1.30     |
| 15  | A     | 440 | FMN  | C4A-N5  | 3.91  | 1.38        | 1.30     |
| 15  | A     | 440 | FMN  | C9A-N10 | -3.15 | 1.35        | 1.41     |
| 15  | 1     | 440 | FMN  | C9A-N10 | -3.11 | 1.35        | 1.41     |
| 15  | 1     | 440 | FMN  | C4A-C10 | -2.13 | 1.37        | 1.44     |
| 15  | A     | 440 | FMN  | C4A-C10 | -2.12 | 1.37        | 1.44     |

All (30) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 15  | 1     | 440 | FMN  | P-O5'-C5'   | 3.15  | 126.97      | 118.30   |
| 15  | A     | 440 | FMN  | P-O5'-C5'   | 3.14  | 126.95      | 118.30   |
| 15  | A     | 440 | FMN  | C4-N3-C2    | -2.88 | 120.32      | 125.64   |
| 15  | 1     | 440 | FMN  | C4-N3-C2    | -2.86 | 120.36      | 125.64   |
| 15  | 1     | 440 | FMN  | O4'-C4'-C3' | -2.82 | 102.23      | 109.10   |
| 15  | A     | 440 | FMN  | O4'-C4'-C3' | -2.82 | 102.25      | 109.10   |
| 15  | A     | 440 | FMN  | O2'-C2'-C3' | 2.66  | 115.57      | 109.10   |
| 15  | 1     | 440 | FMN  | O2'-C2'-C3' | 2.65  | 115.55      | 109.10   |
| 15  | 1     | 440 | FMN  | C9-C9A-N10  | -2.65 | 118.26      | 121.84   |
| 15  | A     | 440 | FMN  | O4'-C4'-C5' | -2.64 | 103.99      | 109.92   |
| 15  | 1     | 440 | FMN  | O4'-C4'-C5' | -2.63 | 104.00      | 109.92   |
| 15  | A     | 440 | FMN  | C9-C9A-N10  | -2.63 | 118.28      | 121.84   |

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| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 15  | A     | 440 | FMN  | C4A-C4-N3   | 2.61  | 119.82      | 113.19   |
| 15  | 1     | 440 | FMN  | C4A-C4-N3   | 2.60  | 119.79      | 113.19   |
| 15  | A     | 440 | FMN  | O4-C4-C4A   | -2.55 | 119.84      | 126.60   |
| 15  | 1     | 440 | FMN  | O4-C4-C4A   | -2.53 | 119.88      | 126.60   |
| 15  | A     | 440 | FMN  | C9A-C5A-N5  | -2.50 | 119.71      | 122.43   |
| 15  | 1     | 440 | FMN  | C9A-C5A-N5  | -2.49 | 119.73      | 122.43   |
| 15  | 1     | 440 | FMN  | C4A-C10-N10 | 2.43  | 120.03      | 116.48   |
| 15  | A     | 440 | FMN  | C4A-C10-N10 | 2.41  | 120.01      | 116.48   |
| 15  | 1     | 440 | FMN  | O2-C2-N1    | -2.36 | 117.92      | 121.83   |
| 15  | 1     | 440 | FMN  | C10-C4A-N5  | -2.35 | 119.88      | 124.86   |
| 15  | A     | 440 | FMN  | C10-C4A-N5  | -2.35 | 119.88      | 124.86   |
| 15  | A     | 440 | FMN  | O2-C2-N1    | -2.34 | 117.94      | 121.83   |
| 15  | A     | 440 | FMN  | C4-C4A-N5   | 2.32  | 121.53      | 118.23   |
| 15  | 1     | 440 | FMN  | C4-C4A-N5   | 2.31  | 121.52      | 118.23   |
| 15  | 1     | 440 | FMN  | C5A-C9A-N10 | 2.13  | 120.15      | 117.95   |
| 15  | A     | 440 | FMN  | C5A-C9A-N10 | 2.13  | 120.15      | 117.95   |
| 15  | 1     | 440 | FMN  | C5'-C4'-C3' | 2.03  | 116.12      | 112.20   |
| 15  | A     | 440 | FMN  | C5'-C4'-C3' | 2.00  | 116.08      | 112.20   |

There are no chirality outliers.

All (18) torsion outliers are listed below:

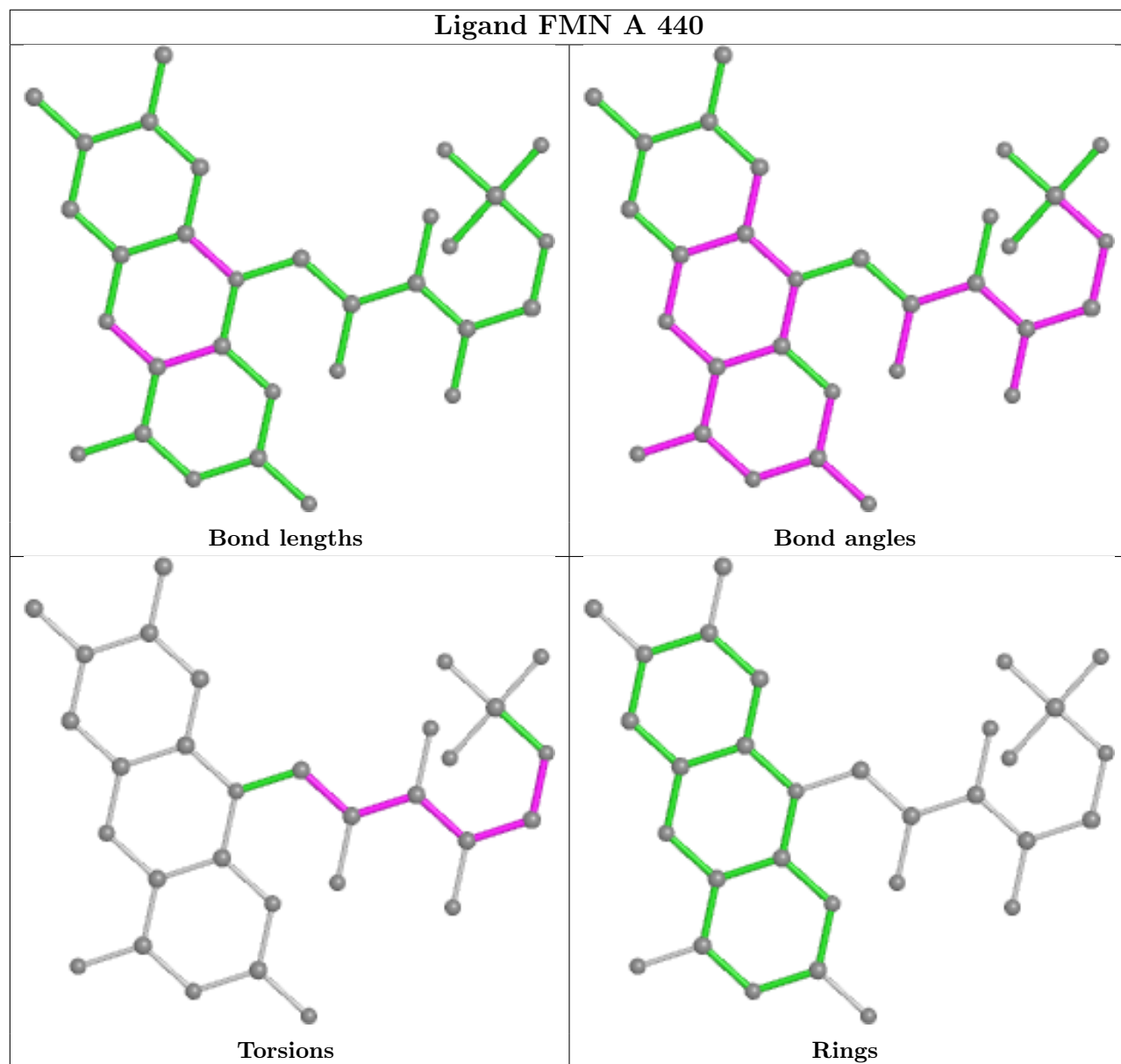
| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 15  | 1     | 440 | FMN  | N10-C1'-C2'-O2' |
| 15  | 1     | 440 | FMN  | N10-C1'-C2'-C3' |
| 15  | 1     | 440 | FMN  | C3'-C4'-C5'-O5' |
| 15  | 1     | 440 | FMN  | O4'-C4'-C5'-O5' |
| 15  | A     | 440 | FMN  | N10-C1'-C2'-O2' |
| 15  | A     | 440 | FMN  | N10-C1'-C2'-C3' |
| 15  | A     | 440 | FMN  | C3'-C4'-C5'-O5' |
| 15  | A     | 440 | FMN  | O4'-C4'-C5'-O5' |
| 15  | 1     | 440 | FMN  | O2'-C2'-C3'-C4' |
| 15  | A     | 440 | FMN  | O2'-C2'-C3'-C4' |
| 15  | 1     | 440 | FMN  | C2'-C3'-C4'-O4' |
| 15  | A     | 440 | FMN  | C2'-C3'-C4'-O4' |
| 15  | 1     | 440 | FMN  | C4'-C5'-O5'-P   |
| 15  | A     | 440 | FMN  | C4'-C5'-O5'-P   |
| 15  | 1     | 440 | FMN  | O2'-C2'-C3'-O3' |
| 15  | A     | 440 | FMN  | O2'-C2'-C3'-O3' |
| 15  | 1     | 440 | FMN  | C1'-C2'-C3'-O3' |
| 15  | A     | 440 | FMN  | C1'-C2'-C3'-O3' |

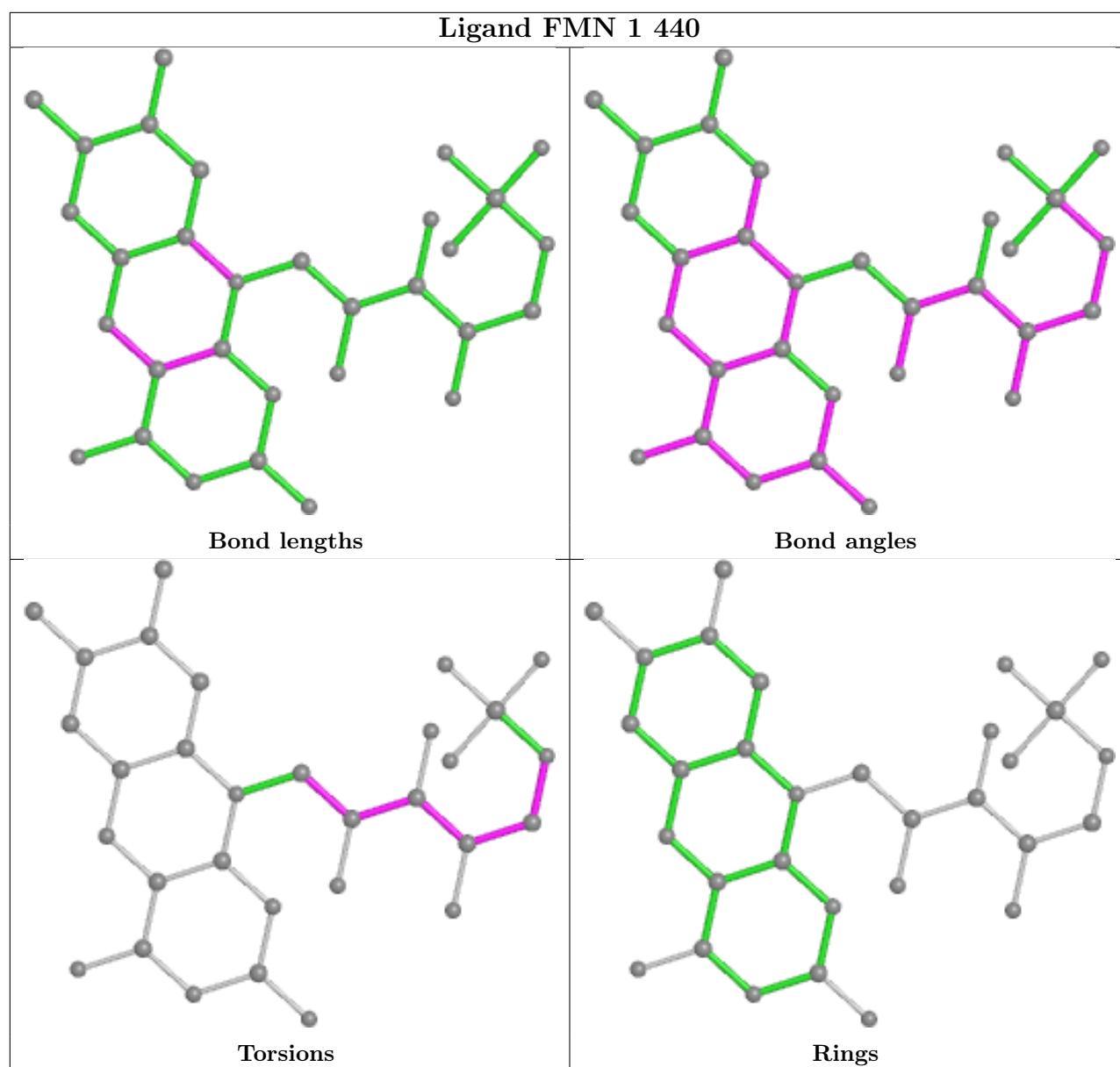
There are no ring outliers.

14 monomers are involved in 45 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 15  | A     | 440 | FMN  | 8       | 0            |
| 14  | C     | 786 | SF4  | 3       | 0            |
| 14  | 1     | 439 | SF4  | 2       | 0            |
| 14  | 3     | 786 | SF4  | 4       | 0            |
| 15  | 1     | 440 | FMN  | 8       | 0            |
| 14  | C     | 785 | SF4  | 1       | 0            |
| 14  | A     | 439 | SF4  | 2       | 0            |
| 14  | F     | 182 | SF4  | 4       | 0            |
| 16  | 3     | 787 | FES  | 1       | 0            |
| 14  | 3     | 784 | SF4  | 3       | 0            |
| 14  | 6     | 182 | SF4  | 4       | 0            |
| 16  | C     | 787 | FES  | 1       | 0            |
| 14  | C     | 784 | SF4  | 3       | 0            |
| 14  | 3     | 785 | SF4  | 1       | 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 [i](#)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 9   | L     | 20               |
| 9   | O     | 20               |
| 10  | M     | 16               |

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| Mol | Chain | Number of breaks |
|-----|-------|------------------|
| 10  | P     | 16               |
| 11  | N     | 16               |
| 11  | Q     | 16               |
| 12  | R     | 10               |
| 12  | S     | 10               |
| 13  | H     | 8                |
| 13  | T     | 8                |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | L     | 428:UNK   | C      | 495:UNK   | N      | 56.90        |
| 1     | O     | 428:UNK   | C      | 495:UNK   | N      | 56.90        |
| 1     | M     | 1024:UNK  | C      | 1050:UNK  | N      | 55.04        |
| 1     | P     | 1024:UNK  | C      | 1050:UNK  | N      | 55.04        |
| 1     | N     | 366:UNK   | C      | 395:UNK   | N      | 50.88        |
| 1     | Q     | 366:UNK   | C      | 395:UNK   | N      | 50.88        |
| 1     | L     | 1417:UNK  | C      | 1501:UNK  | N      | 47.71        |
| 1     | O     | 1417:UNK  | C      | 1501:UNK  | N      | 47.71        |
| 1     | N     | 665:UNK   | C      | 700:UNK   | N      | 47.65        |
| 1     | Q     | 665:UNK   | C      | 700:UNK   | N      | 47.65        |
| 1     | N     | 524:UNK   | C      | 601:UNK   | N      | 47.16        |
| 1     | Q     | 524:UNK   | C      | 601:UNK   | N      | 47.16        |
| 1     | L     | 1326:UNK  | C      | 1401:UNK  | N      | 46.61        |
| 1     | O     | 1326:UNK  | C      | 1401:UNK  | N      | 46.60        |
| 1     | N     | 428:UNK   | C      | 501:UNK   | N      | 46.47        |
| 1     | Q     | 428:UNK   | C      | 501:UNK   | N      | 46.47        |
| 1     | M     | 1328:UNK  | C      | 1399:UNK  | N      | 43.88        |
| 1     | P     | 1328:UNK  | C      | 1399:UNK  | N      | 43.88        |
| 1     | M     | 829:UNK   | C      | 899:UNK   | N      | 43.18        |
| 1     | P     | 829:UNK   | C      | 899:UNK   | N      | 43.18        |
| 1     | N     | 1222:UNK  | C      | 1295:UNK  | N      | 42.97        |
| 1     | Q     | 1222:UNK  | C      | 1295:UNK  | N      | 42.97        |
| 1     | M     | 520:UNK   | C      | 601:UNK   | N      | 42.94        |
| 1     | P     | 520:UNK   | C      | 601:UNK   | N      | 42.94        |
| 1     | H     | 625:UNK   | C      | 700:UNK   | N      | 42.29        |
| 1     | T     | 625:UNK   | C      | 700:UNK   | N      | 42.29        |
| 1     | R     | 725:UNK   | C      | 800:UNK   | N      | 42.19        |
| 1     | S     | 725:UNK   | C      | 800:UNK   | N      | 42.19        |
| 1     | N     | 923:UNK   | C      | 1001:UNK  | N      | 41.07        |
| 1     | Q     | 923:UNK   | C      | 1001:UNK  | N      | 41.07        |
| 1     | R     | 524:UNK   | C      | 603:UNK   | N      | 40.88        |
| 1     | S     | 524:UNK   | C      | 603:UNK   | N      | 40.88        |

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| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | L     | 1022:UNK  | C      | 1050:UNK  | N      | 40.59        |
| 1     | O     | 1022:UNK  | C      | 1050:UNK  | N      | 40.59        |
| 1     | L     | 520:UNK   | C      | 601:UNK   | N      | 40.17        |
| 1     | O     | 520:UNK   | C      | 601:UNK   | N      | 40.17        |
| 1     | M     | 228:UNK   | C      | 301:UNK   | N      | 39.55        |
| 1     | P     | 228:UNK   | C      | 301:UNK   | N      | 39.55        |
| 1     | L     | 922:UNK   | C      | 1003:UNK  | N      | 39.30        |
| 1     | O     | 922:UNK   | C      | 1003:UNK  | N      | 39.30        |
| 1     | N     | 1059:UNK  | C      | 1096:UNK  | N      | 38.87        |
| 1     | Q     | 1059:UNK  | C      | 1096:UNK  | N      | 38.87        |
| 1     | R     | 624:UNK   | C      | 702:UNK   | N      | 37.28        |
| 1     | S     | 624:UNK   | C      | 702:UNK   | N      | 37.28        |
| 1     | N     | 226:UNK   | C      | 301:UNK   | N      | 37.24        |
| 1     | Q     | 226:UNK   | C      | 301:UNK   | N      | 37.24        |
| 1     | L     | 229:UNK   | C      | 301:UNK   | N      | 36.09        |
| 1     | O     | 229:UNK   | C      | 301:UNK   | N      | 36.09        |
| 1     | N     | 1022:UNK  | C      | 1050:UNK  | N      | 35.98        |
| 1     | Q     | 1022:UNK  | C      | 1050:UNK  | N      | 35.98        |
| 1     | R     | 820:UNK   | C      | 900:UNK   | N      | 35.39        |
| 1     | S     | 820:UNK   | C      | 900:UNK   | N      | 35.39        |
| 1     | H     | 322:UNK   | C      | 400:UNK   | N      | 34.95        |
| 1     | T     | 322:UNK   | C      | 400:UNK   | N      | 34.95        |
| 1     | M     | 923:UNK   | C      | 1002:UNK  | N      | 34.04        |
| 1     | P     | 923:UNK   | C      | 1002:UNK  | N      | 34.04        |
| 1     | L     | 360:UNK   | C      | 401:UNK   | N      | 33.91        |
| 1     | O     | 360:UNK   | C      | 401:UNK   | N      | 33.91        |
| 1     | N     | 723:UNK   | C      | 801:UNK   | N      | 33.47        |
| 1     | Q     | 723:UNK   | C      | 801:UNK   | N      | 33.47        |
| 1     | H     | 718:UNK   | C      | 800:UNK   | N      | 31.72        |
| 1     | T     | 718:UNK   | C      | 800:UNK   | N      | 31.72        |
| 1     | M     | 1065:UNK  | C      | 1100:UNK  | N      | 30.93        |
| 1     | P     | 1065:UNK  | C      | 1100:UNK  | N      | 30.93        |
| 1     | H     | 130:UNK   | C      | 201:UNK   | N      | 29.78        |
| 1     | T     | 130:UNK   | C      | 201:UNK   | N      | 29.78        |
| 1     | N     | 121:UNK   | C      | 202:UNK   | N      | 29.63        |
| 1     | Q     | 121:UNK   | C      | 202:UNK   | N      | 29.63        |
| 1     | M     | 123:UNK   | C      | 201:UNK   | N      | 28.64        |
| 1     | P     | 123:UNK   | C      | 201:UNK   | N      | 28.64        |
| 1     | L     | 1061:UNK  | C      | 1101:UNK  | N      | 28.15        |
| 1     | O     | 1061:UNK  | C      | 1101:UNK  | N      | 28.15        |
| 1     | H     | 414:UNK   | C      | 500:UNK   | N      | 25.75        |
| 1     | T     | 414:UNK   | C      | 500:UNK   | N      | 25.75        |

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| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | M     | 424:UNK   | C      | 495:UNK   | N      | 16.18        |
| 1     | P     | 424:UNK   | C      | 495:UNK   | N      | 16.18        |
| 1     | L     | 824:UNK   | C      | 901:UNK   | N      | 15.99        |
| 1     | O     | 824:UNK   | C      | 901:UNK   | N      | 15.99        |
| 1     | M     | 367:UNK   | C      | 398:UNK   | N      | 15.97        |
| 1     | P     | 367:UNK   | C      | 398:UNK   | N      | 15.97        |
| 1     | L     | 666:UNK   | C      | 704:UNK   | N      | 15.22        |
| 1     | O     | 666:UNK   | C      | 704:UNK   | N      | 15.22        |
| 1     | P     | 1121:UNK  | C      | 1200:UNK  | N      | 14.33        |
| 1     | M     | 1121:UNK  | C      | 1200:UNK  | N      | 14.32        |
| 1     | L     | 732:UNK   | C      | 802:UNK   | N      | 14.14        |
| 1     | O     | 732:UNK   | C      | 802:UNK   | N      | 14.14        |
| 1     | H     | 219:UNK   | C      | 300:UNK   | N      | 13.65        |
| 1     | T     | 219:UNK   | C      | 300:UNK   | N      | 13.65        |
| 1     | N     | 823:UNK   | C      | 903:UNK   | N      | 13.62        |
| 1     | Q     | 823:UNK   | C      | 903:UNK   | N      | 13.62        |
| 1     | M     | 734:UNK   | C      | 800:UNK   | N      | 12.90        |
| 1     | P     | 734:UNK   | C      | 800:UNK   | N      | 12.90        |
| 1     | R     | 919:UNK   | C      | 997:UNK   | N      | 12.22        |
| 1     | S     | 919:UNK   | C      | 997:UNK   | N      | 12.22        |
| 1     | R     | 125:UNK   | C      | 202:UNK   | N      | 11.40        |
| 1     | S     | 125:UNK   | C      | 202:UNK   | N      | 11.40        |
| 1     | M     | 1222:UNK  | C      | 1300:UNK  | N      | 11.26        |
| 1     | P     | 1222:UNK  | C      | 1300:UNK  | N      | 11.26        |
| 1     | L     | 613:UNK   | C      | 650:UNK   | N      | 11.20        |
| 1     | O     | 613:UNK   | C      | 650:UNK   | N      | 11.20        |
| 1     | N     | 1122:UNK  | C      | 1200:UNK  | N      | 11.16        |
| 1     | Q     | 1122:UNK  | C      | 1200:UNK  | N      | 11.16        |
| 1     | N     | 1320:UNK  | C      | 1401:UNK  | N      | 11.09        |
| 1     | Q     | 1320:UNK  | C      | 1401:UNK  | N      | 11.09        |
| 1     | R     | 423:UNK   | C      | 494:UNK   | N      | 10.86        |
| 1     | S     | 423:UNK   | C      | 494:UNK   | N      | 10.86        |
| 1     | M     | 663:UNK   | C      | 704:UNK   | N      | 10.34        |
| 1     | P     | 663:UNK   | C      | 704:UNK   | N      | 10.34        |
| 1     | N     | 615:UNK   | C      | 650:UNK   | N      | 10.27        |
| 1     | Q     | 615:UNK   | C      | 650:UNK   | N      | 10.27        |
| 1     | L     | 1123:UNK  | C      | 1195:UNK  | N      | 9.83         |
| 1     | O     | 1123:UNK  | C      | 1195:UNK  | N      | 9.82         |
| 1     | L     | 127:UNK   | C      | 201:UNK   | N      | 9.74         |
| 1     | O     | 127:UNK   | C      | 201:UNK   | N      | 9.74         |
| 1     | R     | 324:UNK   | C      | 397:UNK   | N      | 9.72         |
| 1     | S     | 324:UNK   | C      | 397:UNK   | N      | 9.72         |

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| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|-------|-------|-----------|--------|-----------|--------|--------------|
| 1     | M     | 615:UNK   | C      | 650:UNK   | N      | 9.60         |
| 1     | P     | 615:UNK   | C      | 650:UNK   | N      | 9.60         |
| 1     | H     | 520:UNK   | C      | 600:UNK   | N      | 9.55         |
| 1     | T     | 520:UNK   | C      | 600:UNK   | N      | 9.55         |
| 1     | L     | 1218:UNK  | C      | 1298:UNK  | N      | 9.44         |
| 1     | O     | 1218:UNK  | C      | 1298:UNK  | N      | 9.44         |
| 1     | L     | 1563:UNK  | C      | 1569:UNK  | N      | 9.11         |
| 1     | O     | 1563:UNK  | C      | 1569:UNK  | N      | 9.11         |
| 1     | R     | 223:UNK   | C      | 295:UNK   | N      | 8.96         |
| 1     | S     | 223:UNK   | C      | 295:UNK   | N      | 8.96         |
| 1     | L     | 311:UNK   | C      | 350:UNK   | N      | 6.99         |
| 1     | O     | 311:UNK   | C      | 350:UNK   | N      | 6.99         |
| 1     | N     | 313:UNK   | C      | 350:UNK   | N      | 6.87         |
| 1     | Q     | 313:UNK   | C      | 350:UNK   | N      | 6.87         |
| 1     | R     | 1021:UNK  | C      | 1098:UNK  | N      | 6.64         |
| 1     | S     | 1021:UNK  | C      | 1098:UNK  | N      | 6.64         |
| 1     | L     | 1543:UNK  | C      | 1545:UNK  | N      | 5.82         |
| 1     | O     | 1543:UNK  | C      | 1545:UNK  | N      | 5.82         |
| 1     | M     | 313:UNK   | C      | 350:UNK   | N      | 5.71         |
| 1     | P     | 313:UNK   | C      | 350:UNK   | N      | 5.71         |
| 1     | H     | 812:UNK   | C      | 820:UNK   | N      | 4.89         |
| 1     | T     | 812:UNK   | C      | 820:UNK   | N      | 4.88         |
| 1     | L     | 1595:UNK  | C      | 1601:UNK  | N      | 4.61         |
| 1     | O     | 1595:UNK  | C      | 1601:UNK  | N      | 4.61         |

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

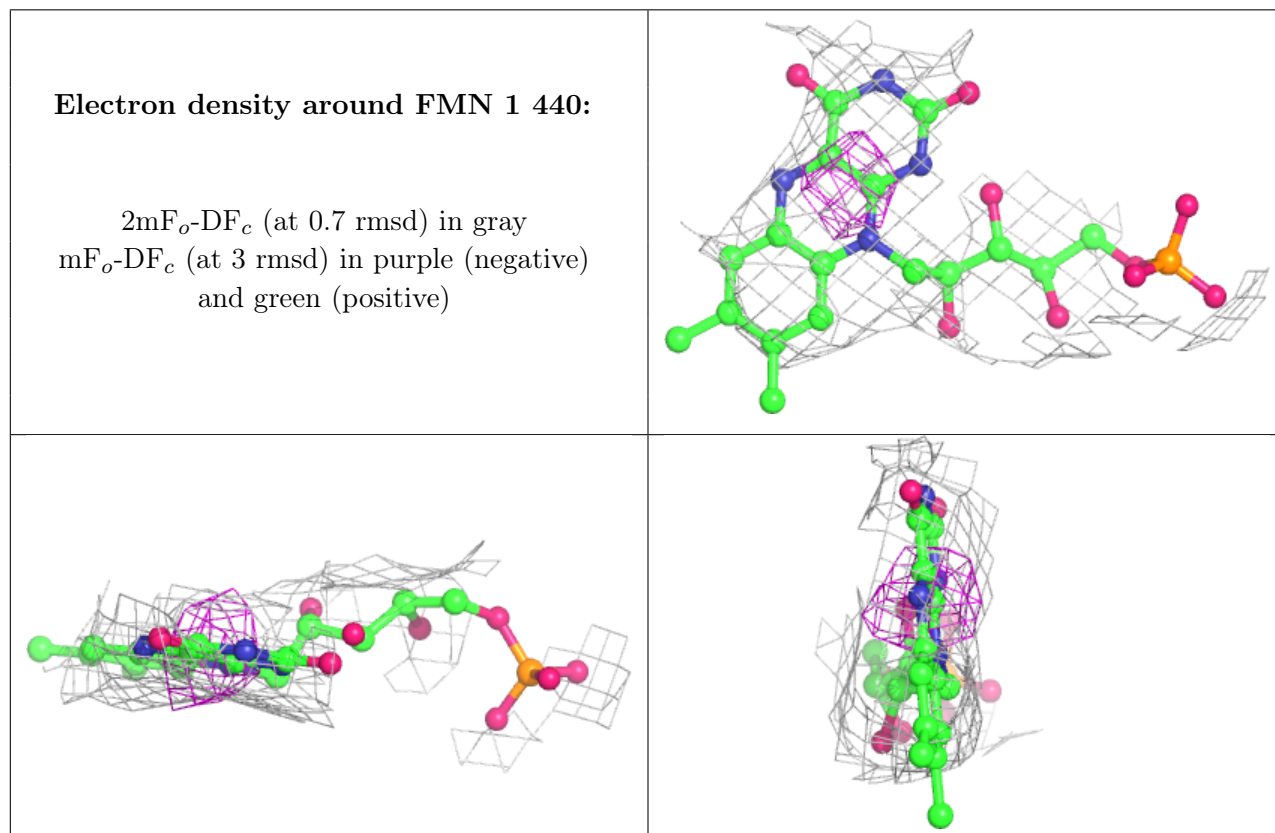
### 6.3 Carbohydrates [i](#)

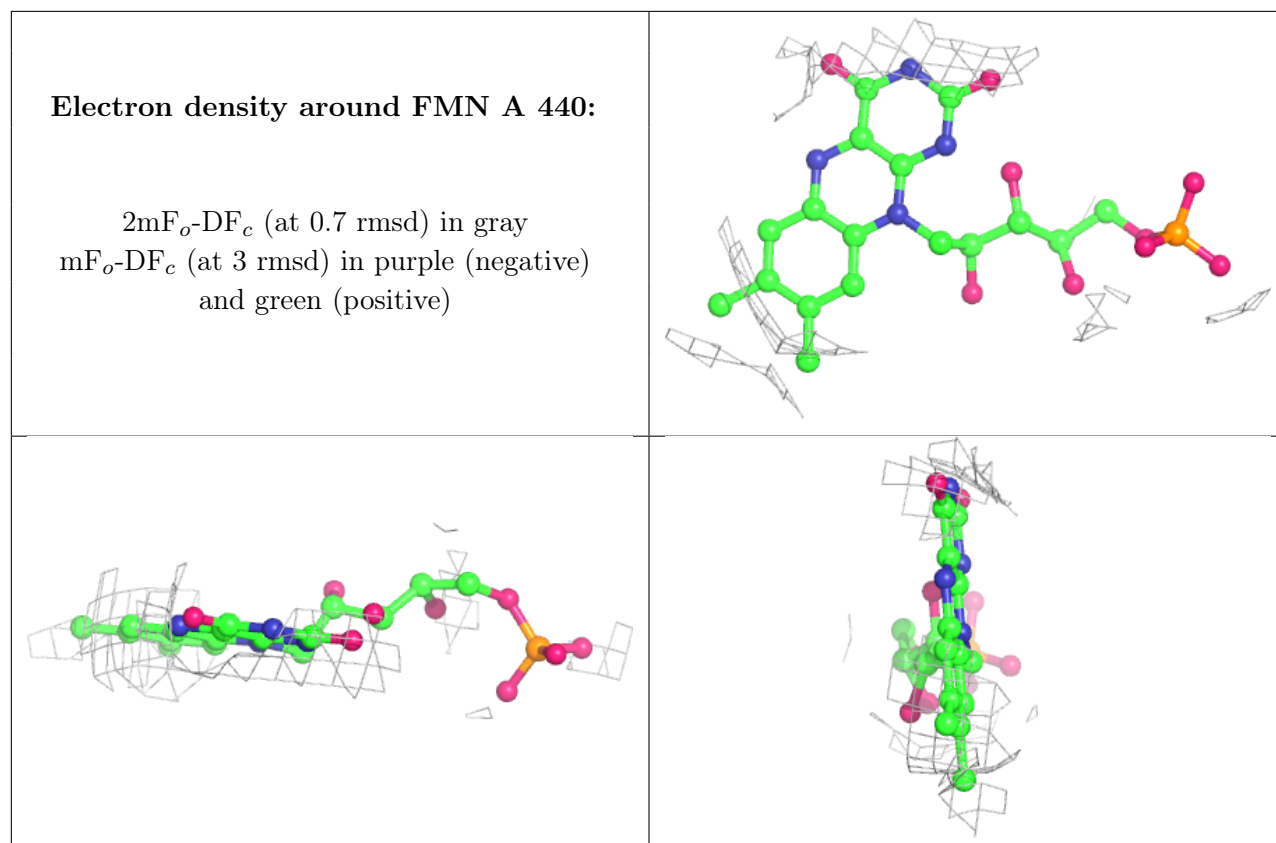
Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.





## 6.5 Other polymers [i](#)

Unable to reproduce the depositors R factor - this section is therefore empty.