



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 20, 2025 – 01:03 PM EDT

PDB ID : 1GPB  
Title : GLYCOGEN PHOSPHORYLASE B: DESCRIPTION OF THE PROTEIN STRUCTURE  
Authors : Johnson, L.N.; Acharya, K.R.; Stuart, D.I.  
Deposited on : 1990-06-04  
Resolution : 1.90 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                          | : | 2022.3.0, CSD as543be (2022)                                       |
| Xtriage (Phenix)               | : | NOT EXECUTED   |
| EDS                            | : | NOT EXECUTED   |
| Percentile statistics          | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| Ideal geometry (proteins)      | : | Engh & Huber (2001)  |
| Ideal geometry (DNA, RNA)      | : | Parkinson et al. (1996)  |
| Validation Pipeline (wwPDB-VP) | : | 2.41.4   |

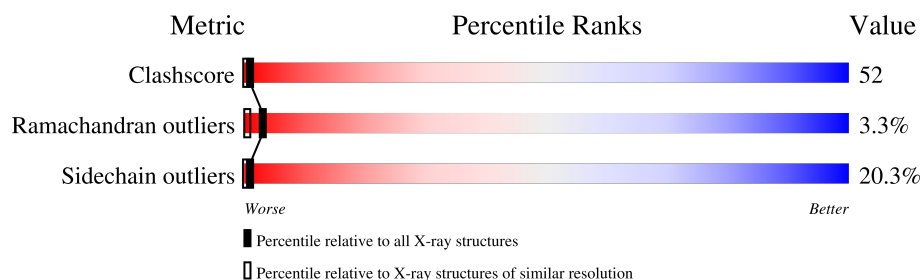
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.90 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            | 180529                      | 8090 (1.90-1.90)                                      |
| Ramachandran outliers | 177936                      | 8022 (1.90-1.90)                                      |
| Sidechain outliers    | 177891                      | 8022 (1.90-1.90)                                      |

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  $\leq 5\%$

Note EDS was not executed.

| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 1   | A     | 842    |  |

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 7397 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 GLYCOGEN PHOSPHORYLASE B.

| Mol | Chain | Residues | Atoms |      |      |      |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|---------|-------|
|     |       |          | Total | C    | N    | O    | S  |         |         |       |
| 1   | A     | 823      | 6691  | 4264 | 1178 | 1219 | 30 | 0       | 0       | 0     |

There is a discrepancy between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| A     | 380     | ILE      | LEU    | conflict | UNP P00489 |

- Molecule 2 is PYRIDOXAL-5'-PHOSPHATE (three-letter code: PLP) (formula: C<sub>8</sub>H<sub>10</sub>NO<sub>6</sub>P).



| Mol | Chain | Residues | Atoms |   |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---|---------|---------|
|     |       |          | Total | C | N | O | P |         |         |
| 2   | A     | 1        | 15    | 8 | 1 | 5 | 1 | 0       | 0       |

- Molecule 3 is water.

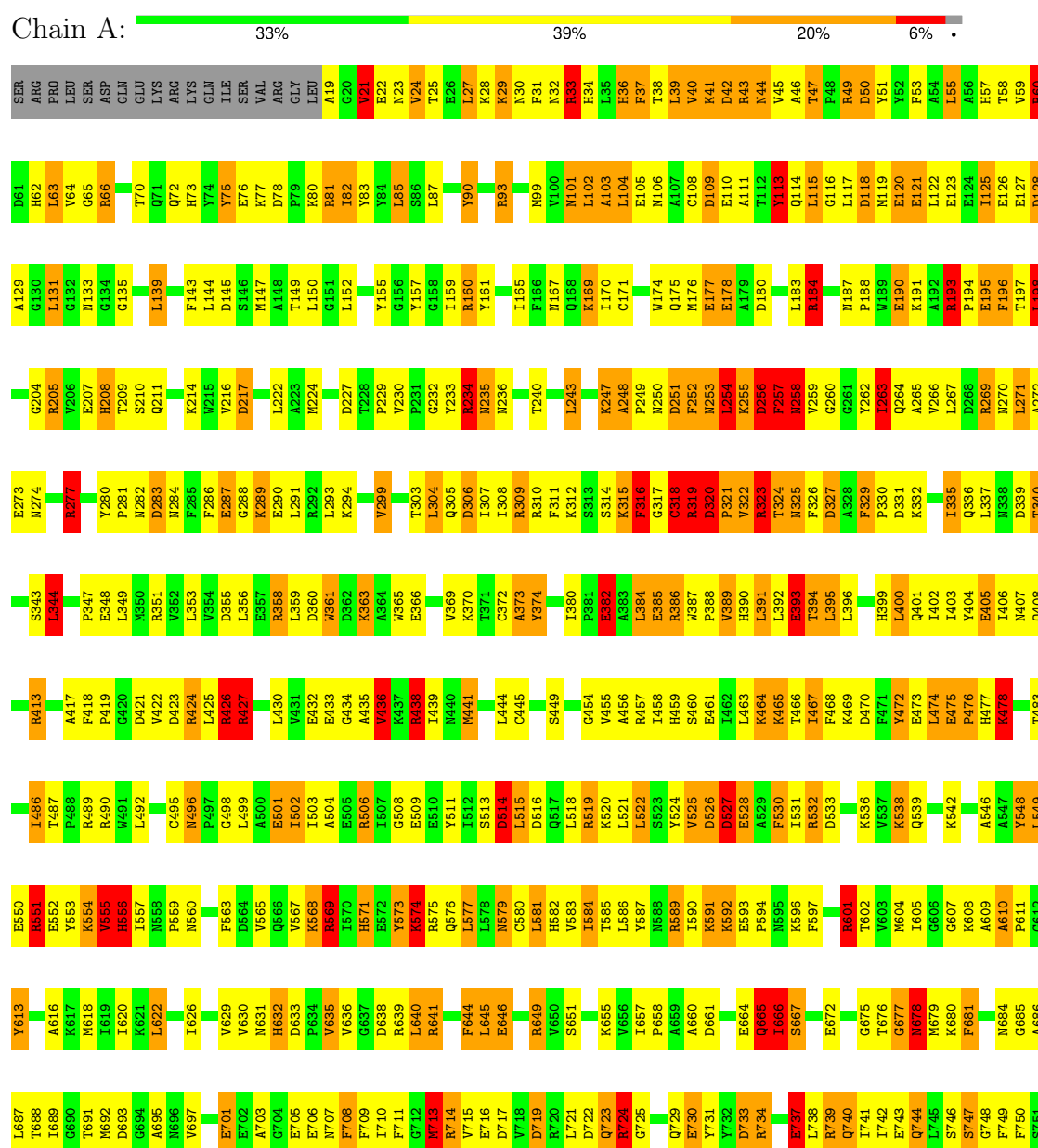
| Mol | Chain | Residues | Atoms        |          | ZeroOcc | AltConf |
|-----|-------|----------|--------------|----------|---------|---------|
| 3   | A     | 691      | Total<br>691 | O<br>691 | 0       | 0       |

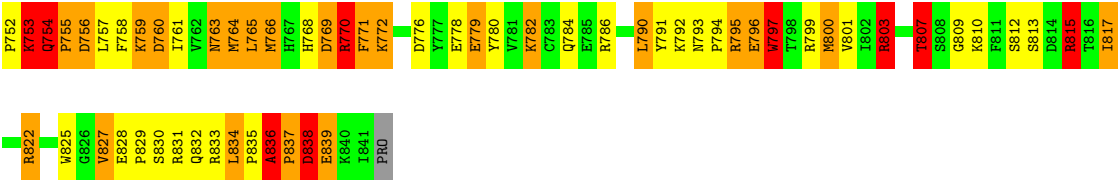
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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.

Note EDS was not executed.

#### • Molecule 1: GLYCOGEN PHOSPHORYLASE B





## 4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

| Property   | Value   | Source    |
|--|---|-----------|
| Space group  | P 43 21 2                                       | Depositor |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$ | 128.50Å 128.50Å 116.30Å<br>90.00° 90.00° 90.00° | Depositor |
| Resolution (Å)   | (Not available) – 1.90                          | Depositor |
| % Data completeness<br>(in resolution range)             | (Not available) ((Not available)-1.90)          | Depositor |
| $R_{merge}$  | (Not available)                                 | Depositor |
| $R_{sym}$  | (Not available)                                 | Depositor |
| Refinement program                                       | PROLSQ  | Depositor |
| R, $R_{free}$  | 0.190 , (Not available)                         | Depositor |
| Estimated twinning fraction                              | No twinning to report.                          | Xtriage   |
| Total number of atoms                                    | 7397  | wwPDB-VP  |
| Average B, all atoms (Å <sup>2</sup> )                   | 38.0  | wwPDB-VP  |

## 5 Model quality

### 5.1 Standard geometry

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

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

| Mol | Chain | Bond lengths |               | Bond angles |                 |
|-----|-------|--------------|---------------|-------------|-----------------|
|     |       | RMSZ         | $\# Z  > 5$   | RMSZ        | $\# Z  > 5$     |
| 1   | A     | 1.17         | 9/6844 (0.1%) | 2.25        | 299/9265 (3.2%) |

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 |
|-----|-------|---------------------|---------------------|
| 1   | A     | 0                   | 17                  |

All (9) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 1   | A     | 372 | CYS  | CB-SG  | 7.59  | 1.95        | 1.82     |
| 1   | A     | 490 | ARG  | NE-CZ  | 6.67  | 1.41        | 1.33     |
| 1   | A     | 678 | ASN  | CA-CB  | 6.49  | 1.70        | 1.53     |
| 1   | A     | 675 | GLY  | N-CA   | 5.75  | 1.54        | 1.46     |
| 1   | A     | 195 | GLU  | CG-CD  | -5.71 | 1.43        | 1.51     |
| 1   | A     | 230 | VAL  | N-CA   | 5.51  | 1.57        | 1.46     |
| 1   | A     | 496 | ASN  | N-CA   | 5.26  | 1.56        | 1.46     |
| 1   | A     | 836 | ALA  | N-CA   | -5.24 | 1.35        | 1.46     |
| 1   | A     | 178 | GLU  | CD-OE2 | -5.02 | 1.20        | 1.25     |

All (299) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms     | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|--------|-------------|----------|
| 1   | A     | 66  | ARG  | CD-NE-CZ  | 34.03  | 171.24      | 123.60   |
| 1   | A     | 277 | ARG  | CD-NE-CZ  | 21.36  | 153.51      | 123.60   |
| 1   | A     | 490 | ARG  | NE-CZ-NH2 | -19.50 | 110.55      | 120.30   |
| 1   | A     | 193 | ARG  | CD-NE-CZ  | 17.29  | 147.81      | 123.60   |

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| Mol | Chain | Res | Type | Atoms      | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|--------|-------------|----------|
| 1   | A     | 277 | ARG  | NE-CZ-NH1  | 16.17  | 128.39      | 120.30   |
| 1   | A     | 207 | GLU  | CA-CB-CG   | 16.16  | 148.96      | 113.40   |
| 1   | A     | 193 | ARG  | NE-CZ-NH1  | 15.86  | 128.23      | 120.30   |
| 1   | A     | 269 | ARG  | NE-CZ-NH1  | 14.99  | 127.80      | 120.30   |
| 1   | A     | 81  | ARG  | NE-CZ-NH1  | 13.99  | 127.30      | 120.30   |
| 1   | A     | 384 | LEU  | CB-CA-C    | 13.96  | 136.72      | 110.20   |
| 1   | A     | 506 | ARG  | NE-CZ-NH1  | 13.73  | 127.16      | 120.30   |
| 1   | A     | 50  | ASP  | CB-CG-OD2  | 13.67  | 130.60      | 118.30   |
| 1   | A     | 532 | ARG  | NE-CZ-NH1  | 13.46  | 127.03      | 120.30   |
| 1   | A     | 386 | ARG  | NE-CZ-NH1  | 12.72  | 126.66      | 120.30   |
| 1   | A     | 269 | ARG  | NE-CZ-NH2  | -12.48 | 114.06      | 120.30   |
| 1   | A     | 123 | GLU  | OE1-CD-OE2 | -12.35 | 108.48      | 123.30   |
| 1   | A     | 309 | ARG  | CA-CB-CG   | 12.17  | 140.17      | 113.40   |
| 1   | A     | 93  | ARG  | NE-CZ-NH1  | 12.10  | 126.35      | 120.30   |
| 1   | A     | 478 | LYS  | CA-CB-CG   | 11.73  | 139.22      | 113.40   |
| 1   | A     | 519 | ARG  | NE-CZ-NH2  | 11.73  | 126.16      | 120.30   |
| 1   | A     | 198 | LEU  | CA-CB-CG   | 11.40  | 141.52      | 115.30   |
| 1   | A     | 50  | ASP  | CB-CG-OD1  | -11.40 | 108.04      | 118.30   |
| 1   | A     | 665 | GLN  | CB-CA-C    | 11.28  | 132.96      | 110.40   |
| 1   | A     | 309 | ARG  | CD-NE-CZ   | 11.06  | 139.08      | 123.60   |
| 1   | A     | 575 | ARG  | NE-CZ-NH1  | 11.05  | 125.83      | 120.30   |
| 1   | A     | 438 | ARG  | CD-NE-CZ   | 10.98  | 138.97      | 123.60   |
| 1   | A     | 321 | PRO  | N-CA-C     | 10.87  | 140.35      | 112.10   |
| 1   | A     | 822 | ARG  | NE-CZ-NH1  | -10.61 | 114.99      | 120.30   |
| 1   | A     | 834 | LEU  | CB-CA-C    | 10.57  | 130.29      | 110.20   |
| 1   | A     | 839 | GLU  | CB-CG-CD   | 10.44  | 142.38      | 114.20   |
| 1   | A     | 490 | ARG  | NH1-CZ-NH2 | 10.24  | 130.67      | 119.40   |
| 1   | A     | 556 | HIS  | N-CA-CB    | 10.19  | 128.93      | 110.60   |
| 1   | A     | 475 | GLU  | OE1-CD-OE2 | -10.07 | 111.21      | 123.30   |
| 1   | A     | 33  | ARG  | NE-CZ-NH1  | -10.03 | 115.29      | 120.30   |
| 1   | A     | 586 | LEU  | CA-CB-CG   | 9.87   | 138.00      | 115.30   |
| 1   | A     | 835 | PRO  | C-N-CA     | 9.81   | 146.22      | 121.70   |
| 1   | A     | 532 | ARG  | CD-NE-CZ   | 9.78   | 137.29      | 123.60   |
| 1   | A     | 33  | ARG  | CD-NE-CZ   | -9.62  | 110.14      | 123.60   |
| 1   | A     | 310 | ARG  | NE-CZ-NH1  | -9.56  | 115.52      | 120.30   |
| 1   | A     | 413 | ARG  | NE-CZ-NH2  | -9.53  | 115.54      | 120.30   |
| 1   | A     | 678 | ASN  | N-CA-CB    | -9.48  | 93.53       | 110.60   |
| 1   | A     | 569 | ARG  | NE-CZ-NH2  | -9.41  | 115.59      | 120.30   |
| 1   | A     | 731 | TYR  | CB-CG-CD1  | -9.40  | 115.36      | 121.00   |
| 1   | A     | 815 | ARG  | NE-CZ-NH2  | -9.20  | 115.70      | 120.30   |
| 1   | A     | 836 | ALA  | N-CA-C     | 9.19   | 135.81      | 111.00   |
| 1   | A     | 632 | HIS  | CA-CB-CG   | -9.18  | 97.99       | 113.60   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | A     | 145 | ASP  | CB-CG-OD2  | -9.05 | 110.15      | 118.30   |
| 1   | A     | 178 | GLU  | CA-CB-CG   | 8.79  | 132.75      | 113.40   |
| 1   | A     | 770 | ARG  | NE-CZ-NH1  | 8.79  | 124.69      | 120.30   |
| 1   | A     | 117 | LEU  | N-CA-C     | 8.79  | 134.73      | 111.00   |
| 1   | A     | 519 | ARG  | CA-CB-CG   | 8.78  | 132.71      | 113.40   |
| 1   | A     | 822 | ARG  | CD-NE-CZ   | -8.74 | 111.37      | 123.60   |
| 1   | A     | 340 | THR  | OG1-CB-CG2 | 8.74  | 130.09      | 110.00   |
| 1   | A     | 506 | ARG  | NE-CZ-NH2  | -8.71 | 115.94      | 120.30   |
| 1   | A     | 66  | ARG  | NE-CZ-NH2  | 8.71  | 124.65      | 120.30   |
| 1   | A     | 118 | ASP  | CB-CG-OD2  | 8.69  | 126.12      | 118.30   |
| 1   | A     | 475 | GLU  | CG-CD-OE1  | 8.62  | 135.53      | 118.30   |
| 1   | A     | 554 | LYS  | N-CA-CB    | 8.56  | 126.01      | 110.60   |
| 1   | A     | 115 | LEU  | CA-CB-CG   | 8.44  | 134.70      | 115.30   |
| 1   | A     | 807 | THR  | N-CA-CB    | -8.43 | 94.28       | 110.30   |
| 1   | A     | 526 | ASP  | N-CA-C     | -8.32 | 88.52       | 111.00   |
| 1   | A     | 791 | TYR  | CB-CG-CD1  | 8.30  | 125.98      | 121.00   |
| 1   | A     | 81  | ARG  | NE-CZ-NH2  | -8.27 | 116.16      | 120.30   |
| 1   | A     | 340 | THR  | N-CA-CB    | -8.24 | 94.64       | 110.30   |
| 1   | A     | 113 | TYR  | CB-CG-CD1  | -8.24 | 116.06      | 121.00   |
| 1   | A     | 90  | TYR  | CB-CG-CD2  | -8.23 | 116.06      | 121.00   |
| 1   | A     | 160 | ARG  | NE-CZ-NH2  | 8.22  | 124.41      | 120.30   |
| 1   | A     | 78  | ASP  | CB-CG-OD1  | 8.20  | 125.68      | 118.30   |
| 1   | A     | 586 | LEU  | CB-CA-C    | 8.18  | 125.75      | 110.20   |
| 1   | A     | 472 | TYR  | CB-CG-CD2  | -8.07 | 116.16      | 121.00   |
| 1   | A     | 24  | VAL  | CA-CB-CG2  | 8.03  | 122.95      | 110.90   |
| 1   | A     | 646 | GLU  | CA-CB-CG   | 8.01  | 131.02      | 113.40   |
| 1   | A     | 269 | ARG  | CD-NE-CZ   | 8.00  | 134.80      | 123.60   |
| 1   | A     | 478 | LYS  | CG-CD-CE   | 7.98  | 135.84      | 111.90   |
| 1   | A     | 90  | TYR  | CB-CG-CD1  | 7.96  | 125.77      | 121.00   |
| 1   | A     | 803 | ARG  | CD-NE-CZ   | -7.91 | 112.53      | 123.60   |
| 1   | A     | 208 | HIS  | CA-CB-CG   | -7.85 | 100.25      | 113.60   |
| 1   | A     | 686 | ALA  | CB-CA-C    | 7.84  | 121.87      | 110.10   |
| 1   | A     | 83  | TYR  | CB-CG-CD1  | -7.76 | 116.34      | 121.00   |
| 1   | A     | 43  | ARG  | NE-CZ-NH1  | 7.66  | 124.13      | 120.30   |
| 1   | A     | 737 | GLU  | CA-CB-CG   | 7.62  | 130.16      | 113.40   |
| 1   | A     | 287 | GLU  | CA-CB-CG   | 7.60  | 130.12      | 113.40   |
| 1   | A     | 610 | ALA  | CB-CA-C    | 7.60  | 121.49      | 110.10   |
| 1   | A     | 800 | MET  | CG-SD-CE   | 7.58  | 112.33      | 100.20   |
| 1   | A     | 589 | ARG  | NE-CZ-NH1  | 7.57  | 124.08      | 120.30   |
| 1   | A     | 254 | LEU  | CA-CB-CG   | 7.53  | 132.62      | 115.30   |
| 1   | A     | 93  | ARG  | NH1-CZ-NH2 | -7.46 | 111.20      | 119.40   |
| 1   | A     | 42  | ASP  | CB-CG-OD1  | 7.43  | 124.98      | 118.30   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | A     | 310 | ARG  | CD-NE-CZ   | -7.35 | 113.31      | 123.60   |
| 1   | A     | 386 | ARG  | CD-NE-CZ   | 7.33  | 133.87      | 123.60   |
| 1   | A     | 145 | ASP  | CB-CG-OD1  | 7.32  | 124.89      | 118.30   |
| 1   | A     | 740 | GLN  | CB-CG-CD   | 7.30  | 130.57      | 111.60   |
| 1   | A     | 360 | ASP  | N-CA-CB    | -7.29 | 97.48       | 110.60   |
| 1   | A     | 128 | ASP  | CB-CG-OD1  | -7.28 | 111.75      | 118.30   |
| 1   | A     | 253 | ASN  | N-CA-CB    | -7.27 | 97.51       | 110.60   |
| 1   | A     | 113 | TYR  | CB-CG-CD2  | 7.26  | 125.36      | 121.00   |
| 1   | A     | 649 | ARG  | NE-CZ-NH1  | 7.23  | 123.92      | 120.30   |
| 1   | A     | 490 | ARG  | CD-NE-CZ   | -7.19 | 113.53      | 123.60   |
| 1   | A     | 511 | TYR  | CB-CG-CD1  | 7.15  | 125.29      | 121.00   |
| 1   | A     | 807 | THR  | OG1-CB-CG2 | 7.12  | 126.37      | 110.00   |
| 1   | A     | 323 | ARG  | C-N-CA     | 7.11  | 139.49      | 121.70   |
| 1   | A     | 62  | HIS  | CA-CB-CG   | -7.08 | 101.56      | 113.60   |
| 1   | A     | 800 | MET  | CA-CB-CG   | -7.08 | 101.26      | 113.30   |
| 1   | A     | 438 | ARG  | NE-CZ-NH1  | 7.05  | 123.83      | 120.30   |
| 1   | A     | 37  | PHE  | CB-CG-CD1  | -7.04 | 115.88      | 120.80   |
| 1   | A     | 234 | ARG  | NE-CZ-NH2  | -7.03 | 116.78      | 120.30   |
| 1   | A     | 731 | TYR  | CB-CG-CD2  | 7.03  | 125.22      | 121.00   |
| 1   | A     | 118 | ASP  | N-CA-CB    | 7.00  | 123.20      | 110.60   |
| 1   | A     | 230 | VAL  | CA-CB-CG2  | 6.97  | 121.35      | 110.90   |
| 1   | A     | 838 | ASP  | N-CA-C     | 6.96  | 129.80      | 111.00   |
| 1   | A     | 321 | PRO  | CA-C-N     | 6.94  | 132.47      | 117.20   |
| 1   | A     | 589 | ARG  | CD-NE-CZ   | 6.93  | 133.30      | 123.60   |
| 1   | A     | 310 | ARG  | NE-CZ-NH2  | 6.92  | 123.76      | 120.30   |
| 1   | A     | 324 | THR  | N-CA-CB    | 6.92  | 123.44      | 110.30   |
| 1   | A     | 121 | GLU  | CA-CB-CG   | 6.91  | 128.60      | 113.40   |
| 1   | A     | 160 | ARG  | CD-NE-CZ   | -6.90 | 113.94      | 123.60   |
| 1   | A     | 678 | ASN  | CA-CB-CG   | -6.86 | 98.31       | 113.40   |
| 1   | A     | 527 | ASP  | N-CA-CB    | 6.84  | 122.91      | 110.60   |
| 1   | A     | 509 | GLU  | N-CA-C     | 6.80  | 129.37      | 111.00   |
| 1   | A     | 601 | ARG  | CA-CB-CG   | 6.80  | 128.35      | 113.40   |
| 1   | A     | 613 | TYR  | N-CA-C     | -6.79 | 92.68       | 111.00   |
| 1   | A     | 316 | PHE  | N-CA-CB    | 6.78  | 122.80      | 110.60   |
| 1   | A     | 772 | LYS  | N-CA-CB    | -6.76 | 98.44       | 110.60   |
| 1   | A     | 344 | LEU  | CA-CB-CG   | 6.75  | 130.83      | 115.30   |
| 1   | A     | 719 | ASP  | CB-CG-OD2  | -6.68 | 112.29      | 118.30   |
| 1   | A     | 769 | ASP  | CB-CG-OD1  | -6.67 | 112.30      | 118.30   |
| 1   | A     | 551 | ARG  | NE-CZ-NH1  | 6.65  | 123.62      | 120.30   |
| 1   | A     | 714 | ARG  | NE-CZ-NH1  | 6.60  | 123.60      | 120.30   |
| 1   | A     | 457 | ARG  | NE-CZ-NH2  | -6.57 | 117.02      | 120.30   |
| 1   | A     | 803 | ARG  | NE-CZ-NH1  | 6.52  | 123.56      | 120.30   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | A     | 501 | GLU  | O-C-N      | 6.52  | 133.13      | 122.70   |
| 1   | A     | 639 | ARG  | CB-CA-C    | 6.51  | 123.42      | 110.40   |
| 1   | A     | 424 | ARG  | CD-NE-CZ   | -6.51 | 114.49      | 123.60   |
| 1   | A     | 190 | GLU  | OE1-CD-OE2 | -6.50 | 115.50      | 123.30   |
| 1   | A     | 190 | GLU  | CG-CD-OE2  | 6.50  | 131.30      | 118.30   |
| 1   | A     | 609 | ALA  | CB-CA-C    | -6.48 | 100.38      | 110.10   |
| 1   | A     | 248 | ALA  | N-CA-CB    | -6.43 | 101.10      | 110.10   |
| 1   | A     | 178 | GLU  | CB-CA-C    | 6.40  | 123.21      | 110.40   |
| 1   | A     | 526 | ASP  | CB-CA-C    | 6.40  | 123.20      | 110.40   |
| 1   | A     | 532 | ARG  | NE-CZ-NH2  | -6.40 | 117.10      | 120.30   |
| 1   | A     | 234 | ARG  | NE-CZ-NH1  | 6.39  | 123.50      | 120.30   |
| 1   | A     | 666 | ILE  | N-CA-C     | 6.38  | 128.24      | 111.00   |
| 1   | A     | 753 | LYS  | N-CA-CB    | -6.38 | 99.11       | 110.60   |
| 1   | A     | 571 | HIS  | CA-CB-CG   | 6.38  | 124.45      | 113.60   |
| 1   | A     | 613 | TYR  | CB-CG-CD2  | -6.38 | 117.17      | 121.00   |
| 1   | A     | 217 | ASP  | CB-CA-C    | 6.37  | 123.14      | 110.40   |
| 1   | A     | 834 | LEU  | CA-CB-CG   | 6.35  | 129.91      | 115.30   |
| 1   | A     | 331 | ASP  | CB-CA-C    | 6.34  | 123.07      | 110.40   |
| 1   | A     | 646 | GLU  | CB-CA-C    | -6.33 | 97.73       | 110.40   |
| 1   | A     | 555 | VAL  | CA-CB-CG1  | 6.31  | 120.36      | 110.90   |
| 1   | A     | 613 | TYR  | CB-CG-CD1  | 6.28  | 124.77      | 121.00   |
| 1   | A     | 348 | GLU  | CA-CB-CG   | 6.27  | 127.20      | 113.40   |
| 1   | A     | 678 | ASN  | CA-C-O     | 6.26  | 133.26      | 120.10   |
| 1   | A     | 316 | PHE  | N-CA-C     | -6.25 | 94.13       | 111.00   |
| 1   | A     | 433 | GLU  | CA-CB-CG   | 6.23  | 127.11      | 113.40   |
| 1   | A     | 427 | ARG  | NE-CZ-NH1  | 6.20  | 123.40      | 120.30   |
| 1   | A     | 178 | GLU  | CG-CD-OE1  | -6.18 | 105.94      | 118.30   |
| 1   | A     | 472 | TYR  | CA-CB-CG   | -6.17 | 101.67      | 113.40   |
| 1   | A     | 224 | MET  | N-CA-CB    | -6.17 | 99.50       | 110.60   |
| 1   | A     | 299 | VAL  | CG1-CB-CG2 | -6.14 | 101.08      | 110.90   |
| 1   | A     | 373 | ALA  | N-CA-CB    | 6.13  | 118.69      | 110.10   |
| 1   | A     | 574 | LYS  | CB-CG-CD   | -6.13 | 95.66       | 111.60   |
| 1   | A     | 739 | ARG  | NE-CZ-NH1  | 6.13  | 123.36      | 120.30   |
| 1   | A     | 374 | TYR  | CB-CG-CD2  | 6.12  | 124.67      | 121.00   |
| 1   | A     | 257 | PHE  | CA-C-O     | 6.11  | 132.94      | 120.10   |
| 1   | A     | 360 | ASP  | CB-CG-OD2  | -6.11 | 112.81      | 118.30   |
| 1   | A     | 63  | LEU  | N-CA-CB    | -6.09 | 98.23       | 110.40   |
| 1   | A     | 456 | ALA  | N-CA-CB    | 6.09  | 118.62      | 110.10   |
| 1   | A     | 677 | GLY  | C-N-CA     | 6.05  | 136.83      | 121.70   |
| 1   | A     | 514 | ASP  | CB-CA-C    | 6.03  | 122.46      | 110.40   |
| 1   | A     | 436 | VAL  | N-CA-CB    | 6.02  | 124.75      | 111.50   |
| 1   | A     | 713 | MET  | CG-SD-CE   | -5.99 | 90.62       | 100.20   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | A     | 701 | GLU  | CB-CA-C    | 5.98  | 122.35      | 110.40   |
| 1   | A     | 797 | TRP  | CA-CB-CG   | 5.95  | 125.00      | 113.70   |
| 1   | A     | 160 | ARG  | NE-CZ-NH1  | -5.93 | 117.33      | 120.30   |
| 1   | A     | 666 | ILE  | CB-CG1-CD1 | 5.93  | 130.51      | 113.90   |
| 1   | A     | 109 | ASP  | CB-CG-OD2  | 5.92  | 123.63      | 118.30   |
| 1   | A     | 331 | ASP  | CB-CG-OD1  | 5.92  | 123.63      | 118.30   |
| 1   | A     | 272 | ALA  | CB-CA-C    | 5.91  | 118.97      | 110.10   |
| 1   | A     | 782 | LYS  | CB-CA-C    | 5.90  | 122.20      | 110.40   |
| 1   | A     | 532 | ARG  | O-C-N      | 5.89  | 132.12      | 122.70   |
| 1   | A     | 257 | PHE  | C-N-CA     | 5.88  | 136.40      | 121.70   |
| 1   | A     | 265 | ALA  | CB-CA-C    | -5.88 | 101.28      | 110.10   |
| 1   | A     | 516 | ASP  | CB-CG-OD1  | 5.87  | 123.58      | 118.30   |
| 1   | A     | 601 | ARG  | NE-CZ-NH1  | 5.87  | 123.23      | 120.30   |
| 1   | A     | 836 | ALA  | CB-CA-C    | -5.86 | 101.31      | 110.10   |
| 1   | A     | 75  | TYR  | CB-CG-CD1  | -5.86 | 117.49      | 121.00   |
| 1   | A     | 506 | ARG  | CD-NE-CZ   | 5.86  | 131.80      | 123.60   |
| 1   | A     | 247 | LYS  | CB-CA-C    | 5.84  | 122.07      | 110.40   |
| 1   | A     | 779 | GLU  | CA-CB-CG   | 5.83  | 126.23      | 113.40   |
| 1   | A     | 120 | GLU  | CG-CD-OE2  | 5.83  | 129.96      | 118.30   |
| 1   | A     | 325 | ASN  | CA-CB-CG   | -5.81 | 100.61      | 113.40   |
| 1   | A     | 754 | GLN  | CB-CA-C    | -5.80 | 98.79       | 110.40   |
| 1   | A     | 589 | ARG  | NE-CZ-NH2  | -5.74 | 117.43      | 120.30   |
| 1   | A     | 573 | TYR  | CG-CD1-CE1 | 5.73  | 125.89      | 121.30   |
| 1   | A     | 252 | PHE  | CA-C-O     | 5.73  | 132.13      | 120.10   |
| 1   | A     | 725 | GLY  | N-CA-C     | -5.72 | 98.81       | 113.10   |
| 1   | A     | 495 | CYS  | O-C-N      | 5.71  | 131.84      | 122.70   |
| 1   | A     | 438 | ARG  | NE-CZ-NH2  | -5.70 | 117.45      | 120.30   |
| 1   | A     | 184 | ARG  | CD-NE-CZ   | 5.70  | 131.57      | 123.60   |
| 1   | A     | 519 | ARG  | NE-CZ-NH1  | -5.70 | 117.45      | 120.30   |
| 1   | A     | 538 | LYS  | CG-CD-CE   | 5.70  | 128.98      | 111.90   |
| 1   | A     | 321 | PRO  | CA-C-O     | -5.69 | 106.54      | 120.20   |
| 1   | A     | 722 | ASP  | O-C-N      | 5.69  | 131.81      | 122.70   |
| 1   | A     | 433 | GLU  | N-CA-CB    | 5.69  | 120.84      | 110.60   |
| 1   | A     | 129 | ALA  | N-CA-C     | -5.68 | 95.66       | 111.00   |
| 1   | A     | 198 | LEU  | N-CA-CB    | -5.68 | 99.03       | 110.40   |
| 1   | A     | 318 | CYS  | CB-CA-C    | 5.68  | 121.76      | 110.40   |
| 1   | A     | 511 | TYR  | CB-CG-CD2  | -5.68 | 117.59      | 121.00   |
| 1   | A     | 454 | GLY  | N-CA-C     | -5.67 | 98.92       | 113.10   |
| 1   | A     | 257 | PHE  | N-CA-C     | -5.66 | 95.71       | 111.00   |
| 1   | A     | 83  | TYR  | CB-CG-CD2  | 5.66  | 124.39      | 121.00   |
| 1   | A     | 277 | ARG  | NE-CZ-NH2  | -5.66 | 117.47      | 120.30   |
| 1   | A     | 791 | TYR  | CB-CG-CD2  | -5.66 | 117.61      | 121.00   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | A     | 681 | PHE  | CB-CG-CD1  | -5.65 | 116.85      | 120.80   |
| 1   | A     | 66  | ARG  | NH1-CZ-NH2 | -5.64 | 113.19      | 119.40   |
| 1   | A     | 234 | ARG  | N-CA-CB    | -5.63 | 100.47      | 110.60   |
| 1   | A     | 325 | ASN  | CB-CA-C    | 5.62  | 121.64      | 110.40   |
| 1   | A     | 457 | ARG  | CB-CA-C    | 5.62  | 121.64      | 110.40   |
| 1   | A     | 771 | PHE  | CB-CA-C    | 5.62  | 121.63      | 110.40   |
| 1   | A     | 526 | ASP  | N-CA-CB    | 5.59  | 120.67      | 110.60   |
| 1   | A     | 489 | ARG  | CD-NE-CZ   | 5.58  | 131.41      | 123.60   |
| 1   | A     | 577 | LEU  | O-C-N      | 5.57  | 131.62      | 122.70   |
| 1   | A     | 27  | LEU  | CA-CB-CG   | 5.56  | 128.09      | 115.30   |
| 1   | A     | 519 | ARG  | N-CA-CB    | 5.54  | 120.58      | 110.60   |
| 1   | A     | 723 | GLN  | CB-CA-C    | 5.54  | 121.48      | 110.40   |
| 1   | A     | 573 | TYR  | CB-CG-CD2  | 5.53  | 124.32      | 121.00   |
| 1   | A     | 121 | GLU  | N-CA-CB    | 5.52  | 120.54      | 110.60   |
| 1   | A     | 739 | ARG  | CD-NE-CZ   | 5.49  | 131.28      | 123.60   |
| 1   | A     | 81  | ARG  | O-C-N      | 5.48  | 131.46      | 122.70   |
| 1   | A     | 731 | TYR  | CA-CB-CG   | -5.47 | 103.01      | 113.40   |
| 1   | A     | 551 | ARG  | NE-CZ-NH2  | -5.46 | 117.57      | 120.30   |
| 1   | A     | 252 | PHE  | CA-C-N     | -5.46 | 105.19      | 117.20   |
| 1   | A     | 822 | ARG  | O-C-N      | 5.45  | 131.42      | 122.70   |
| 1   | A     | 639 | ARG  | CG-CD-NE   | 5.45  | 123.24      | 111.80   |
| 1   | A     | 256 | ASP  | CB-CG-OD1  | -5.43 | 113.41      | 118.30   |
| 1   | A     | 135 | GLY  | N-CA-C     | 5.41  | 126.63      | 113.10   |
| 1   | A     | 382 | GLU  | CG-CD-OE2  | -5.39 | 107.52      | 118.30   |
| 1   | A     | 553 | TYR  | C-N-CA     | 5.38  | 135.15      | 121.70   |
| 1   | A     | 324 | THR  | N-CA-C     | -5.37 | 96.50       | 111.00   |
| 1   | A     | 358 | ARG  | NE-CZ-NH1  | 5.37  | 122.98      | 120.30   |
| 1   | A     | 807 | THR  | CA-CB-CG2  | 5.36  | 119.91      | 112.40   |
| 1   | A     | 114 | GLN  | CB-CG-CD   | 5.35  | 125.52      | 111.60   |
| 1   | A     | 724 | ARG  | CA-CB-CG   | 5.35  | 125.17      | 113.40   |
| 1   | A     | 316 | PHE  | CB-CA-C    | -5.35 | 99.70       | 110.40   |
| 1   | A     | 744 | GLN  | CA-CB-CG   | 5.34  | 125.14      | 113.40   |
| 1   | A     | 39  | LEU  | O-C-N      | 5.32  | 131.21      | 122.70   |
| 1   | A     | 701 | GLU  | CA-CB-CG   | 5.32  | 125.10      | 113.40   |
| 1   | A     | 193 | ARG  | NH1-CZ-NH2 | -5.32 | 113.55      | 119.40   |
| 1   | A     | 40  | VAL  | N-CA-CB    | -5.31 | 99.82       | 111.50   |
| 1   | A     | 322 | VAL  | N-CA-CB    | 5.30  | 123.17      | 111.50   |
| 1   | A     | 113 | TYR  | N-CA-CB    | 5.29  | 120.12      | 110.60   |
| 1   | A     | 587 | TYR  | CB-CG-CD1  | -5.29 | 117.83      | 121.00   |
| 1   | A     | 766 | MET  | CB-CA-C    | -5.28 | 99.84       | 110.40   |
| 1   | A     | 263 | ILE  | O-C-N      | 5.28  | 131.15      | 122.70   |
| 1   | A     | 430 | LEU  | CB-CA-C    | -5.28 | 100.17      | 110.20   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | A     | 831 | ARG  | CD-NE-CZ   | 5.26  | 130.97      | 123.60   |
| 1   | A     | 251 | ASP  | N-CA-C     | 5.25  | 125.16      | 111.00   |
| 1   | A     | 393 | GLU  | CA-CB-CG   | 5.24  | 124.93      | 113.40   |
| 1   | A     | 796 | GLU  | CB-CA-C    | 5.24  | 120.87      | 110.40   |
| 1   | A     | 139 | LEU  | CA-CB-CG   | -5.23 | 103.27      | 115.30   |
| 1   | A     | 230 | VAL  | CG1-CB-CG2 | -5.22 | 102.55      | 110.90   |
| 1   | A     | 339 | ASP  | CB-CG-OD2  | 5.21  | 122.99      | 118.30   |
| 1   | A     | 257 | PHE  | CA-C-N     | -5.21 | 105.73      | 117.20   |
| 1   | A     | 489 | ARG  | CB-CA-C    | 5.21  | 120.81      | 110.40   |
| 1   | A     | 133 | ASN  | O-C-N      | 5.21  | 132.05      | 123.20   |
| 1   | A     | 608 | LYS  | O-C-N      | 5.20  | 131.02      | 122.70   |
| 1   | A     | 509 | GLU  | CB-CA-C    | -5.20 | 100.00      | 110.40   |
| 1   | A     | 436 | VAL  | CA-C-N     | -5.19 | 105.78      | 117.20   |
| 1   | A     | 312 | LYS  | CB-CA-C    | -5.18 | 100.04      | 110.40   |
| 1   | A     | 386 | ARG  | NH1-CZ-NH2 | -5.17 | 113.71      | 119.40   |
| 1   | A     | 103 | ALA  | N-CA-CB    | -5.17 | 102.87      | 110.10   |
| 1   | A     | 556 | HIS  | CA-C-N     | -5.16 | 105.84      | 117.20   |
| 1   | A     | 385 | GLU  | CG-CD-OE2  | -5.16 | 107.97      | 118.30   |
| 1   | A     | 649 | ARG  | N-CA-CB    | -5.16 | 101.31      | 110.60   |
| 1   | A     | 87  | LEU  | CB-CA-C    | 5.16  | 120.00      | 110.20   |
| 1   | A     | 646 | GLU  | OE1-CD-OE2 | -5.15 | 117.12      | 123.30   |
| 1   | A     | 734 | ARG  | NE-CZ-NH1  | 5.15  | 122.87      | 120.30   |
| 1   | A     | 737 | GLU  | N-CA-CB    | 5.14  | 119.85      | 110.60   |
| 1   | A     | 120 | GLU  | OE1-CD-OE2 | -5.14 | 117.13      | 123.30   |
| 1   | A     | 101 | ASN  | CB-CA-C    | 5.12  | 120.65      | 110.40   |
| 1   | A     | 254 | LEU  | CB-CA-C    | 5.12  | 119.94      | 110.20   |
| 1   | A     | 329 | PHE  | CB-CA-C    | 5.12  | 120.64      | 110.40   |
| 1   | A     | 502 | ILE  | CA-CB-CG1  | 5.10  | 120.69      | 111.00   |
| 1   | A     | 207 | GLU  | N-CA-CB    | 5.10  | 119.77      | 110.60   |
| 1   | A     | 348 | GLU  | OE1-CD-OE2 | -5.09 | 117.19      | 123.30   |
| 1   | A     | 283 | ASP  | N-CA-CB    | -5.09 | 101.44      | 110.60   |
| 1   | A     | 644 | PHE  | CB-CG-CD2  | -5.08 | 117.25      | 120.80   |
| 1   | A     | 472 | TYR  | CB-CG-CD1  | 5.07  | 124.04      | 121.00   |
| 1   | A     | 51  | TYR  | CB-CA-C    | 5.06  | 120.52      | 110.40   |
| 1   | A     | 149 | THR  | CA-CB-CG2  | 5.06  | 119.49      | 112.40   |
| 1   | A     | 602 | THR  | N-CA-C     | -5.06 | 97.34       | 111.00   |
| 1   | A     | 675 | GLY  | N-CA-C     | -5.06 | 100.45      | 113.10   |
| 1   | A     | 317 | GLY  | CA-C-N     | -5.05 | 106.09      | 117.20   |
| 1   | A     | 21  | VAL  | N-CA-C     | 5.04  | 124.61      | 111.00   |
| 1   | A     | 82  | ILE  | O-C-N      | 5.04  | 130.76      | 122.70   |
| 1   | A     | 677 | GLY  | N-CA-C     | -5.04 | 100.50      | 113.10   |
| 1   | A     | 176 | MET  | O-C-N      | 5.04  | 130.76      | 122.70   |

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| Mol | Chain | Res | Type | Atoms  | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|------|-------------|----------|
| 1   | A     | 835 | PRO  | CA-C-O | 5.00 | 132.21      | 120.20   |

There are no chirality outliers.

All (17) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 1   | A     | 205 | ARG  | Sidechain |
| 1   | A     | 234 | ARG  | Sidechain |
| 1   | A     | 323 | ARG  | Sidechain |
| 1   | A     | 33  | ARG  | Sidechain |
| 1   | A     | 358 | ARG  | Sidechain |
| 1   | A     | 413 | ARG  | Sidechain |
| 1   | A     | 426 | ARG  | Sidechain |
| 1   | A     | 427 | ARG  | Sidechain |
| 1   | A     | 49  | ARG  | Sidechain |
| 1   | A     | 569 | ARG  | Sidechain |
| 1   | A     | 60  | ARG  | Sidechain |
| 1   | A     | 601 | ARG  | Sidechain |
| 1   | A     | 649 | ARG  | Sidechain |
| 1   | A     | 770 | ARG  | Sidechain |
| 1   | A     | 803 | ARG  | Sidechain |
| 1   | A     | 822 | ARG  | Sidechain |
| 1   | A     | 833 | ARG  | Sidechain |

## 5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 6691  | 0        | 6614     | 696     | 1            |
| 2   | A     | 15    | 0        | 7        | 1       | 0            |
| 3   | A     | 691   | 0        | 0        | 56      | 0            |
| All | All   | 7397  | 0        | 6621     | 696     | 1            |

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 52.

All (696) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.



| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:99:MET:CE    | 1:A:119:MET:HE1  | 1.37                     | 1.51              |
| 1:A:99:MET:HE1   | 1:A:119:MET:CE   | 1.41                     | 1.46              |
| 1:A:666:ILE:HG21 | 1:A:711:PHE:CZ   | 1.53                     | 1.44              |
| 1:A:320:ASP:HB3  | 1:A:321:PRO:CD   | 1.48                     | 1.36              |
| 1:A:320:ASP:CB   | 1:A:321:PRO:HD3  | 1.55                     | 1.36              |
| 1:A:584:ILE:HD11 | 1:A:741:ILE:CD1  | 1.61                     | 1.31              |
| 1:A:322:VAL:HG11 | 1:A:325:ASN:CB   | 1.63                     | 1.29              |
| 1:A:322:VAL:CG1  | 1:A:325:ASN:HB2  | 1.65                     | 1.26              |
| 1:A:160:ARG:NH1  | 1:A:190:GLU:OE1  | 1.70                     | 1.24              |
| 1:A:251:ASP:O    | 1:A:255:LYS:N    | 1.71                     | 1.20              |
| 1:A:756:ASP:HB2  | 1:A:759:LYS:CE   | 1.71                     | 1.20              |
| 1:A:666:ILE:CG2  | 1:A:711:PHE:HZ   | 1.56                     | 1.19              |
| 1:A:549:LEU:C    | 1:A:555:VAL:HG21 | 1.64                     | 1.16              |
| 1:A:666:ILE:CG2  | 1:A:711:PHE:CZ   | 2.29                     | 1.16              |
| 1:A:474:LEU:HD13 | 1:A:474:LEU:O    | 1.48                     | 1.14              |
| 1:A:256:ASP:HB2  | 1:A:258:ASN:HB2  | 1.30                     | 1.13              |
| 1:A:474:LEU:HD12 | 1:A:475:GLU:HG3  | 1.24                     | 1.13              |
| 1:A:687:LEU:HD21 | 1:A:801:VAL:HG23 | 1.31                     | 1.11              |
| 1:A:832:GLN:HG3  | 3:A:1038:HOH:O   | 1.49                     | 1.10              |
| 1:A:404:TYR:HB3  | 3:A:1267:HOH:O   | 1.50                     | 1.10              |
| 1:A:160:ARG:HH12 | 1:A:190:GLU:CD   | 1.55                     | 1.09              |
| 1:A:555:VAL:HG13 | 1:A:557:ILE:HG23 | 1.21                     | 1.08              |
| 1:A:474:LEU:O    | 1:A:474:LEU:CD1  | 2.01                     | 1.07              |
| 1:A:85:LEU:HG    | 1:A:335:ILE:HD13 | 1.38                     | 1.06              |
| 1:A:687:LEU:HD21 | 1:A:801:VAL:CG2  | 1.85                     | 1.06              |
| 1:A:723:GLN:HA   | 3:A:1375:HOH:O   | 1.54                     | 1.05              |
| 1:A:536:LYS:HD2  | 1:A:539:GLN:HE21 | 1.18                     | 1.04              |
| 1:A:584:ILE:CD1  | 1:A:741:ILE:HD13 | 1.88                     | 1.04              |
| 1:A:198:LEU:HD21 | 1:A:305:GLN:CB   | 1.87                     | 1.03              |
| 1:A:527:ASP:O    | 1:A:531:ILE:HD13 | 1.60                     | 1.02              |
| 1:A:311:PHE:CE1  | 1:A:316:PHE:HE2  | 1.76                     | 1.02              |
| 1:A:316:PHE:HD1  | 1:A:319:ARG:CB   | 1.72                     | 1.02              |
| 1:A:316:PHE:CD1  | 1:A:319:ARG:HG3  | 1.94                     | 1.02              |
| 1:A:518:LEU:O    | 1:A:521:LEU:HB2  | 1.60                     | 1.02              |
| 1:A:555:VAL:CG1  | 1:A:557:ILE:HG23 | 1.91                     | 1.01              |
| 1:A:198:LEU:HD21 | 1:A:305:GLN:HB2  | 1.44                     | 1.00              |
| 1:A:778:GLU:HB3  | 3:A:1540:HOH:O   | 1.60                     | 1.00              |
| 1:A:256:ASP:CB   | 1:A:258:ASN:HB2  | 1.92                     | 0.99              |
| 1:A:99:MET:CE    | 1:A:119:MET:CE   | 2.14                     | 0.98              |
| 1:A:325:ASN:HD22 | 1:A:326:PHE:H    | 1.12                     | 0.98              |
| 1:A:106:ASN:OD1  | 3:A:1406:HOH:O   | 1.81                     | 0.97              |
| 1:A:316:PHE:HD1  | 1:A:319:ARG:CG   | 1.76                     | 0.97              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:99:MET:CE    | 1:A:108:CYS:CB   | 2.43                     | 0.96              |
| 1:A:43:ARG:NH1   | 3:A:1002:HOH:O   | 1.94                     | 0.96              |
| 1:A:316:PHE:HE1  | 1:A:319:ARG:NE   | 1.63                     | 0.96              |
| 1:A:756:ASP:HB2  | 1:A:759:LYS:HE3  | 1.45                     | 0.96              |
| 1:A:426:ARG:NH1  | 1:A:427:ARG:HG3  | 1.81                     | 0.95              |
| 1:A:314:SER:HB3  | 3:A:1581:HOH:O   | 1.65                     | 0.95              |
| 1:A:82:ILE:HD11  | 1:A:827:VAL:HG21 | 1.49                     | 0.95              |
| 1:A:427:ARG:NH1  | 1:A:470:ASP:OD1  | 1.99                     | 0.95              |
| 1:A:719:ASP:O    | 1:A:723:GLN:HG3  | 1.67                     | 0.95              |
| 1:A:549:LEU:HB3  | 1:A:555:VAL:HG21 | 1.47                     | 0.95              |
| 1:A:24:VAL:HG12  | 1:A:28:LYS:HE2   | 1.49                     | 0.94              |
| 1:A:251:ASP:O    | 1:A:254:LEU:C    | 2.05                     | 0.94              |
| 1:A:316:PHE:CE1  | 1:A:319:ARG:NE   | 2.36                     | 0.94              |
| 1:A:426:ARG:HH12 | 1:A:427:ARG:CG   | 1.81                     | 0.94              |
| 1:A:742:ILE:HG21 | 1:A:766:MET:HE3  | 1.48                     | 0.94              |
| 1:A:834:LEU:HD23 | 1:A:836:ALA:HB2  | 1.48                     | 0.93              |
| 1:A:108:CYS:HB3  | 1:A:119:MET:CE   | 1.98                     | 0.93              |
| 1:A:252:PHE:C    | 1:A:254:LEU:H    | 1.66                     | 0.92              |
| 1:A:150:LEU:HD12 | 1:A:817:ILE:HG22 | 1.52                     | 0.92              |
| 1:A:536:LYS:HD2  | 1:A:539:GLN:NE2  | 1.83                     | 0.92              |
| 1:A:593:GLU:OE2  | 1:A:596:LYS:HD2  | 1.69                     | 0.92              |
| 1:A:678:ASN:HB3  | 1:A:679:MET:HG3  | 1.52                     | 0.92              |
| 1:A:646:GLU:HG3  | 3:A:1127:HOH:O   | 1.68                     | 0.92              |
| 1:A:666:ILE:HG23 | 1:A:691:THR:HG23 | 1.51                     | 0.91              |
| 1:A:108:CYS:HB3  | 1:A:119:MET:HE3  | 1.52                     | 0.91              |
| 1:A:549:LEU:C    | 1:A:555:VAL:CG2  | 2.39                     | 0.91              |
| 1:A:584:ILE:HD11 | 1:A:741:ILE:HD13 | 0.93                     | 0.90              |
| 1:A:421:ASP:O    | 1:A:425:LEU:HD13 | 1.70                     | 0.90              |
| 1:A:361:TRP:CH2  | 1:A:406:ILE:HD13 | 2.05                     | 0.90              |
| 1:A:316:PHE:CD1  | 1:A:319:ARG:CG   | 2.53                     | 0.90              |
| 1:A:550:GLU:N    | 1:A:555:VAL:HG21 | 1.87                     | 0.90              |
| 1:A:256:ASP:HB2  | 1:A:258:ASN:CB   | 2.01                     | 0.90              |
| 1:A:779:GLU:HG2  | 3:A:1684:HOH:O   | 1.72                     | 0.89              |
| 1:A:335:ILE:HD11 | 1:A:337:LEU:HD13 | 1.55                     | 0.89              |
| 1:A:463:LEU:CD2  | 1:A:467:ILE:HD11 | 2.02                     | 0.88              |
| 1:A:252:PHE:HA   | 1:A:255:LYS:HB2  | 1.54                     | 0.87              |
| 1:A:271:LEU:O    | 1:A:274:ASN:HB2  | 1.74                     | 0.87              |
| 1:A:435:ALA:O    | 1:A:436:VAL:HG23 | 1.75                     | 0.87              |
| 1:A:304:LEU:O    | 1:A:308:ILE:HG12 | 1.73                     | 0.86              |
| 1:A:311:PHE:CE1  | 1:A:316:PHE:CE2  | 2.63                     | 0.86              |
| 1:A:211:GLN:O    | 3:A:1068:HOH:O   | 1.94                     | 0.86              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:548:TYR:CD2  | 1:A:655:LYS:HE2  | 2.09                     | 0.86              |
| 1:A:474:LEU:HD12 | 1:A:475:GLU:CG   | 2.05                     | 0.86              |
| 1:A:551:ARG:HG3  | 1:A:552:GLU:H    | 1.41                     | 0.85              |
| 1:A:790:LEU:O    | 1:A:790:LEU:CD1  | 2.24                     | 0.85              |
| 1:A:316:PHE:HA   | 1:A:319:ARG:HB2  | 1.58                     | 0.85              |
| 1:A:198:LEU:HD23 | 1:A:305:GLN:CD   | 1.96                     | 0.85              |
| 1:A:252:PHE:HA   | 1:A:255:LYS:CB   | 2.07                     | 0.85              |
| 1:A:666:ILE:CG2  | 1:A:691:THR:HG23 | 2.05                     | 0.85              |
| 1:A:790:LEU:O    | 1:A:790:LEU:HD13 | 1.75                     | 0.85              |
| 1:A:455:VAL:H    | 1:A:459:HIS:HD2  | 1.24                     | 0.85              |
| 1:A:546:ALA:HB2  | 1:A:557:ILE:HD11 | 1.58                     | 0.85              |
| 1:A:752:PRO:HB2  | 1:A:753:LYS:HZ3  | 1.42                     | 0.85              |
| 1:A:474:LEU:CD1  | 1:A:474:LEU:C    | 2.41                     | 0.84              |
| 1:A:252:PHE:CA   | 1:A:255:LYS:HB2  | 2.08                     | 0.84              |
| 1:A:80:LYS:HE2   | 1:A:825:TRP:O    | 1.78                     | 0.84              |
| 1:A:752:PRO:HB2  | 1:A:753:LYS:NZ   | 1.92                     | 0.84              |
| 1:A:759:LYS:O    | 1:A:763:ASN:ND2  | 2.10                     | 0.83              |
| 1:A:549:LEU:HB3  | 1:A:555:VAL:CG2  | 2.06                     | 0.83              |
| 1:A:515:LEU:HB3  | 1:A:809:GLY:HA2  | 1.61                     | 0.82              |
| 1:A:584:ILE:HD13 | 1:A:585:THR:N    | 1.94                     | 0.82              |
| 1:A:549:LEU:CB   | 1:A:555:VAL:HG21 | 2.09                     | 0.82              |
| 1:A:311:PHE:CZ   | 1:A:316:PHE:CE2  | 2.68                     | 0.82              |
| 1:A:102:LEU:HB3  | 1:A:104:LEU:HD22 | 1.62                     | 0.82              |
| 1:A:426:ARG:HH12 | 1:A:427:ARG:HG3  | 1.38                     | 0.81              |
| 1:A:756:ASP:HB2  | 1:A:759:LYS:CD   | 2.11                     | 0.81              |
| 1:A:63:LEU:HD21  | 1:A:229:PRO:HG3  | 1.62                     | 0.81              |
| 1:A:85:LEU:HG    | 1:A:335:ILE:CD1  | 2.10                     | 0.81              |
| 1:A:555:VAL:HG12 | 1:A:556:HIS:H    | 1.45                     | 0.81              |
| 1:A:322:VAL:O    | 1:A:323:ARG:HG2  | 1.81                     | 0.81              |
| 1:A:316:PHE:CD1  | 1:A:319:ARG:CB   | 2.64                     | 0.80              |
| 1:A:423:ASP:HB3  | 3:A:1289:HOH:O   | 1.81                     | 0.80              |
| 1:A:266:VAL:O    | 1:A:269:ARG:HG3  | 1.82                     | 0.80              |
| 1:A:311:PHE:CZ   | 1:A:316:PHE:HE2  | 1.98                     | 0.80              |
| 1:A:549:LEU:CA   | 1:A:555:VAL:HG21 | 2.11                     | 0.80              |
| 1:A:743:GLU:O    | 1:A:747:SER:OG   | 1.99                     | 0.80              |
| 1:A:584:ILE:CD1  | 1:A:741:ILE:CD1  | 2.55                     | 0.80              |
| 1:A:111:ALA:O    | 1:A:115:LEU:HD13 | 1.82                     | 0.80              |
| 1:A:361:TRP:CZ2  | 1:A:406:ILE:HD13 | 2.16                     | 0.80              |
| 1:A:463:LEU:HD22 | 1:A:467:ILE:HD11 | 1.63                     | 0.79              |
| 1:A:579:ASN:O    | 1:A:583:VAL:HG23 | 1.83                     | 0.79              |
| 1:A:322:VAL:CG2  | 1:A:325:ASN:OD1  | 2.30                     | 0.79              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:159:ILE:CG1  | 1:A:299:VAL:HG23 | 2.13                     | 0.79              |
| 1:A:99:MET:CE    | 1:A:108:CYS:HB2  | 2.11                     | 0.78              |
| 1:A:474:LEU:O    | 1:A:474:LEU:HD12 | 1.83                     | 0.78              |
| 1:A:474:LEU:HD12 | 1:A:474:LEU:C    | 2.04                     | 0.78              |
| 1:A:19:ALA:N     | 1:A:106:ASN:HB3  | 1.98                     | 0.78              |
| 1:A:159:ILE:HG13 | 1:A:299:VAL:CG2  | 2.14                     | 0.77              |
| 1:A:536:LYS:HE3  | 3:A:1321:HOH:O   | 1.82                     | 0.77              |
| 1:A:661:ASP:O    | 1:A:797:TRP:HH2  | 1.66                     | 0.77              |
| 1:A:316:PHE:CA   | 1:A:319:ARG:HB2  | 2.15                     | 0.77              |
| 1:A:160:ARG:NH1  | 1:A:190:GLU:CD   | 2.28                     | 0.77              |
| 1:A:236:ASN:ND2  | 1:A:834:LEU:O    | 2.12                     | 0.77              |
| 1:A:99:MET:HE2   | 1:A:108:CYS:CB   | 2.15                     | 0.77              |
| 1:A:322:VAL:HG21 | 1:A:325:ASN:OD1  | 1.84                     | 0.77              |
| 1:A:402:ILE:O    | 1:A:406:ILE:HG12 | 1.85                     | 0.77              |
| 1:A:75:TYR:HE1   | 3:A:1557:HOH:O   | 1.67                     | 0.76              |
| 1:A:716:GLU:HA   | 3:A:1527:HOH:O   | 1.85                     | 0.76              |
| 1:A:177:GLU:OE1  | 1:A:611:PRO:HG3  | 1.85                     | 0.76              |
| 1:A:248:ALA:HB1  | 1:A:253:ASN:OD1  | 1.86                     | 0.76              |
| 1:A:630:VAL:HG11 | 1:A:640:LEU:HD13 | 1.68                     | 0.75              |
| 1:A:251:ASP:HB2  | 1:A:255:LYS:HG3  | 1.68                     | 0.75              |
| 1:A:555:VAL:HG13 | 1:A:557:ILE:CG2  | 2.12                     | 0.75              |
| 1:A:666:ILE:HG21 | 1:A:711:PHE:HZ   | 0.66                     | 0.75              |
| 1:A:208:HIS:O    | 1:A:209:THR:OG1  | 2.05                     | 0.74              |
| 1:A:340:THR:HG23 | 1:A:374:TYR:HE1  | 1.50                     | 0.74              |
| 1:A:528:GLU:O    | 1:A:532:ARG:HG3  | 1.87                     | 0.74              |
| 1:A:304:LEU:HD12 | 1:A:307:ILE:HD12 | 1.69                     | 0.74              |
| 1:A:426:ARG:NH1  | 1:A:427:ARG:CG   | 2.46                     | 0.74              |
| 1:A:327:ASP:HA   | 1:A:363:LYS:HZ1  | 1.53                     | 0.74              |
| 1:A:380:ILE:O    | 1:A:384:LEU:HD12 | 1.87                     | 0.74              |
| 1:A:756:ASP:HB2  | 1:A:759:LYS:HE2  | 1.67                     | 0.74              |
| 1:A:314:SER:C    | 1:A:316:PHE:H    | 1.89                     | 0.74              |
| 1:A:322:VAL:O    | 1:A:323:ARG:CG   | 2.35                     | 0.73              |
| 1:A:549:LEU:HD23 | 1:A:557:ILE:HG21 | 1.70                     | 0.73              |
| 1:A:322:VAL:HG11 | 1:A:325:ASN:HB2  | 0.78                     | 0.73              |
| 1:A:43:ARG:HD3   | 3:A:1412:HOH:O   | 1.89                     | 0.73              |
| 1:A:340:THR:HG23 | 1:A:374:TYR:CE1  | 2.23                     | 0.73              |
| 1:A:729:GLN:O    | 1:A:733:ASP:HB2  | 1.88                     | 0.73              |
| 1:A:756:ASP:HA   | 1:A:759:LYS:HG3  | 1.70                     | 0.73              |
| 1:A:160:ARG:NH1  | 1:A:190:GLU:OE2  | 2.16                     | 0.73              |
| 1:A:522:LEU:O    | 1:A:525:VAL:HG22 | 1.87                     | 0.73              |
| 1:A:737:GLU:O    | 1:A:740:GLN:HG2  | 1.89                     | 0.73              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:486:ILE:HD11 | 1:A:680:LYS:HE3  | 1.71                     | 0.72              |
| 1:A:546:ALA:CB   | 1:A:557:ILE:HD11 | 2.18                     | 0.72              |
| 1:A:589:ARG:NH2  | 1:A:737:GLU:OE1  | 2.22                     | 0.72              |
| 1:A:834:LEU:HD23 | 1:A:836:ALA:CB   | 2.18                     | 0.72              |
| 1:A:486:ILE:CD1  | 1:A:676:THR:HB   | 2.18                     | 0.72              |
| 1:A:763:ASN:N    | 1:A:763:ASN:HD22 | 1.87                     | 0.72              |
| 1:A:499:LEU:HD12 | 1:A:502:ILE:HD11 | 1.71                     | 0.72              |
| 1:A:633:ASP:OD1  | 1:A:635:VAL:HG23 | 1.89                     | 0.72              |
| 1:A:198:LEU:HD21 | 1:A:305:GLN:HB3  | 1.70                     | 0.71              |
| 1:A:498:GLY:O    | 1:A:501:GLU:HB3  | 1.90                     | 0.71              |
| 1:A:19:ALA:HB1   | 3:A:1206:HOH:O   | 1.89                     | 0.71              |
| 1:A:76:GLU:HA    | 1:A:315:LYS:NZ   | 2.05                     | 0.71              |
| 1:A:21:VAL:HG23  | 3:A:1592:HOH:O   | 1.91                     | 0.71              |
| 1:A:108:CYS:CB   | 1:A:119:MET:HE1  | 2.19                     | 0.71              |
| 1:A:665:GLN:NE2  | 3:A:1400:HOH:O   | 2.22                     | 0.71              |
| 1:A:31:PHE:CD2   | 1:A:115:LEU:HD21 | 2.26                     | 0.71              |
| 1:A:30:ASN:HB3   | 1:A:58:THR:HG23  | 1.73                     | 0.70              |
| 1:A:82:ILE:HD13  | 1:A:825:TRP:CE3  | 2.25                     | 0.70              |
| 1:A:325:ASN:HD22 | 1:A:326:PHE:N    | 1.86                     | 0.70              |
| 1:A:630:VAL:HG11 | 1:A:640:LEU:CD1  | 2.22                     | 0.70              |
| 1:A:549:LEU:HB3  | 1:A:555:VAL:CG1  | 2.22                     | 0.70              |
| 1:A:742:ILE:CG2  | 1:A:766:MET:HE3  | 2.22                     | 0.70              |
| 1:A:198:LEU:HD23 | 1:A:305:GLN:NE2  | 2.06                     | 0.70              |
| 1:A:335:ILE:HD11 | 1:A:337:LEU:CD1  | 2.22                     | 0.70              |
| 1:A:687:LEU:CD2  | 1:A:801:VAL:CG2  | 2.69                     | 0.70              |
| 1:A:75:TYR:O     | 1:A:315:LYS:HE3  | 1.92                     | 0.69              |
| 1:A:193:ARG:HD3  | 1:A:196:PHE:HE2  | 1.57                     | 0.69              |
| 1:A:604:MET:HB3  | 1:A:645:LEU:HD22 | 1.73                     | 0.69              |
| 1:A:288:GLY:C    | 1:A:289:LYS:HD2  | 2.13                     | 0.69              |
| 1:A:661:ASP:O    | 1:A:797:TRP:CH2  | 2.45                     | 0.69              |
| 1:A:752:PRO:CB   | 1:A:753:LYS:HZ3  | 2.04                     | 0.69              |
| 1:A:460:SER:O    | 1:A:464:LYS:HG3  | 1.91                     | 0.69              |
| 1:A:252:PHE:C    | 1:A:254:LEU:N    | 2.45                     | 0.69              |
| 1:A:551:ARG:CG   | 1:A:552:GLU:H    | 2.05                     | 0.69              |
| 1:A:99:MET:HE2   | 1:A:108:CYS:HB2  | 1.73                     | 0.69              |
| 1:A:250:ASN:HA   | 1:A:269:ARG:NH2  | 2.08                     | 0.69              |
| 1:A:198:LEU:CD2  | 1:A:305:GLN:HB2  | 2.19                     | 0.69              |
| 1:A:43:ARG:HB2   | 3:A:1412:HOH:O   | 1.91                     | 0.69              |
| 1:A:198:LEU:CD2  | 1:A:305:GLN:CD   | 2.61                     | 0.69              |
| 1:A:380:ILE:CG2  | 1:A:382:GLU:CD   | 2.61                     | 0.69              |
| 1:A:63:LEU:HD21  | 1:A:229:PRO:CG   | 2.23                     | 0.68              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:99:MET:HE2   | 1:A:108:CYS:SG   | 2.34                     | 0.68              |
| 1:A:108:CYS:HB3  | 1:A:119:MET:HE1  | 1.73                     | 0.68              |
| 1:A:426:ARG:HH12 | 1:A:427:ARG:HG2  | 1.57                     | 0.68              |
| 1:A:730:GLU:O    | 1:A:734:ARG:HG3  | 1.92                     | 0.68              |
| 1:A:687:LEU:HD21 | 1:A:801:VAL:HG22 | 1.73                     | 0.68              |
| 1:A:744:GLN:HB3  | 1:A:749:PHE:HB3  | 1.73                     | 0.68              |
| 1:A:252:PHE:N    | 1:A:255:LYS:HB2  | 2.09                     | 0.68              |
| 1:A:466:THR:HA   | 1:A:469:LYS:HD3  | 1.75                     | 0.68              |
| 1:A:118:ASP:HB3  | 1:A:121:GLU:HG3  | 1.75                     | 0.67              |
| 1:A:584:ILE:HD13 | 1:A:585:THR:H    | 1.56                     | 0.67              |
| 1:A:251:ASP:O    | 1:A:255:LYS:CA   | 2.42                     | 0.67              |
| 1:A:538:LYS:NZ   | 1:A:684:ASN:O    | 2.28                     | 0.67              |
| 1:A:289:LYS:HD2  | 1:A:289:LYS:N    | 2.08                     | 0.67              |
| 1:A:85:LEU:CG    | 1:A:335:ILE:HD13 | 2.22                     | 0.67              |
| 1:A:208:HIS:C    | 1:A:209:THR:OG1  | 2.34                     | 0.67              |
| 1:A:380:ILE:HG23 | 1:A:382:GLU:CD   | 2.16                     | 0.67              |
| 1:A:513:SER:O    | 1:A:514:ASP:HB2  | 1.94                     | 0.67              |
| 1:A:790:LEU:HD12 | 1:A:797:TRP:CD1  | 2.30                     | 0.67              |
| 1:A:665:GLN:NE2  | 1:A:678:ASN:HA   | 2.09                     | 0.66              |
| 1:A:763:ASN:HB3  | 3:A:1083:HOH:O   | 1.95                     | 0.66              |
| 1:A:633:ASP:HB3  | 1:A:636:VAL:HG23 | 1.77                     | 0.66              |
| 1:A:152:LEU:HD11 | 1:A:829:PRO:HA   | 1.77                     | 0.66              |
| 1:A:270:ASN:O    | 1:A:271:LEU:C    | 2.33                     | 0.66              |
| 1:A:504:ALA:O    | 1:A:508:GLY:N    | 2.27                     | 0.66              |
| 1:A:99:MET:HE3   | 1:A:119:MET:CE   | 2.18                     | 0.65              |
| 1:A:426:ARG:HG3  | 1:A:427:ARG:N    | 2.11                     | 0.65              |
| 1:A:31:PHE:CD2   | 1:A:115:LEU:CD2  | 2.79                     | 0.65              |
| 1:A:475:GLU:HB3  | 1:A:477:HIS:CE1  | 2.31                     | 0.65              |
| 1:A:828:GLU:CD   | 3:A:1405:HOH:O   | 2.35                     | 0.65              |
| 1:A:250:ASN:HA   | 1:A:269:ARG:HH22 | 1.60                     | 0.65              |
| 1:A:361:TRP:HH2  | 1:A:406:ILE:HD13 | 1.59                     | 0.65              |
| 1:A:466:THR:O    | 1:A:469:LYS:HD3  | 1.96                     | 0.65              |
| 1:A:591:LYS:NZ   | 3:A:1100:HOH:O   | 2.29                     | 0.65              |
| 1:A:581:LEU:O    | 1:A:584:ILE:CD1  | 2.43                     | 0.65              |
| 1:A:404:TYR:CB   | 3:A:1267:HOH:O   | 2.23                     | 0.65              |
| 1:A:761:ILE:HG22 | 1:A:765:LEU:CD2  | 2.26                     | 0.65              |
| 1:A:351:ARG:O    | 1:A:355:ASP:HB2  | 1.97                     | 0.65              |
| 1:A:549:LEU:HB3  | 1:A:555:VAL:HG11 | 1.77                     | 0.65              |
| 1:A:790:LEU:HD11 | 1:A:797:TRP:N    | 2.12                     | 0.65              |
| 1:A:834:LEU:CD2  | 1:A:836:ALA:HB2  | 2.26                     | 0.65              |
| 1:A:438:ARG:HG2  | 1:A:438:ARG:HH11 | 1.62                     | 0.64              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:43:ARG:O     | 1:A:43:ARG:HG3   | 1.94                     | 0.64              |
| 1:A:55:LEU:HD11  | 1:A:119:MET:CE   | 2.27                     | 0.64              |
| 1:A:113:TYR:O    | 1:A:116:GLY:HA2  | 1.96                     | 0.64              |
| 1:A:753:LYS:HB2  | 1:A:754:GLN:HE21 | 1.63                     | 0.64              |
| 1:A:538:LYS:O    | 1:A:538:LYS:HG3  | 1.98                     | 0.64              |
| 1:A:582:HIS:HB2  | 1:A:780:TYR:HE2  | 1.61                     | 0.64              |
| 1:A:167:ASN:ND2  | 1:A:180:ASP:HA   | 2.12                     | 0.64              |
| 1:A:316:PHE:HD1  | 1:A:319:ARG:HB2  | 1.62                     | 0.64              |
| 1:A:657:ILE:HG23 | 1:A:681:PHE:CD1  | 2.32                     | 0.64              |
| 1:A:569:ARG:O    | 1:A:574:LYS:HE2  | 1.98                     | 0.64              |
| 1:A:525:VAL:O    | 1:A:531:ILE:HD11 | 1.97                     | 0.64              |
| 1:A:552:GLU:O    | 3:A:1326:HOH:O   | 2.15                     | 0.64              |
| 1:A:687:LEU:HD23 | 1:A:797:TRP:CZ3  | 2.33                     | 0.63              |
| 1:A:159:ILE:HG13 | 1:A:299:VAL:HG23 | 1.75                     | 0.63              |
| 1:A:519:ARG:C    | 1:A:521:LEU:H    | 2.01                     | 0.63              |
| 1:A:102:LEU:HB3  | 1:A:104:LEU:CD2  | 2.27                     | 0.63              |
| 1:A:101:ASN:ND2  | 1:A:233:TYR:HA   | 2.14                     | 0.63              |
| 1:A:810:LYS:O    | 1:A:810:LYS:HG3  | 1.97                     | 0.63              |
| 1:A:99:MET:CE    | 1:A:108:CYS:HB3  | 2.27                     | 0.62              |
| 1:A:113:TYR:O    | 1:A:116:GLY:N    | 2.30                     | 0.62              |
| 1:A:335:ILE:HD12 | 1:A:336:GLN:N    | 2.14                     | 0.62              |
| 1:A:551:ARG:HG3  | 1:A:552:GLU:N    | 2.15                     | 0.62              |
| 1:A:709:PHE:CZ   | 1:A:800:MET:HE1  | 2.34                     | 0.62              |
| 1:A:327:ASP:CA   | 1:A:363:LYS:HZ1  | 2.11                     | 0.62              |
| 1:A:253:ASN:O    | 1:A:254:LEU:HB3  | 1.98                     | 0.62              |
| 1:A:631:ASN:O    | 1:A:632:HIS:CD2  | 2.52                     | 0.62              |
| 1:A:527:ASP:O    | 1:A:531:ILE:CD1  | 2.44                     | 0.61              |
| 1:A:582:HIS:HB2  | 1:A:780:TYR:CE2  | 2.34                     | 0.61              |
| 1:A:803:ARG:O    | 1:A:807:THR:HB   | 2.00                     | 0.61              |
| 1:A:436:VAL:O    | 1:A:438:ARG:HD2  | 1.99                     | 0.61              |
| 1:A:170:ILE:HD11 | 1:A:644:PHE:CE1  | 2.35                     | 0.61              |
| 1:A:790:LEU:O    | 1:A:790:LEU:HD12 | 2.00                     | 0.61              |
| 1:A:455:VAL:H    | 1:A:459:HIS:CD2  | 2.12                     | 0.61              |
| 1:A:756:ASP:CB   | 1:A:759:LYS:CE   | 2.64                     | 0.61              |
| 1:A:753:LYS:CG   | 1:A:754:GLN:H    | 2.14                     | 0.61              |
| 1:A:256:ASP:HB2  | 1:A:258:ASN:CG   | 2.20                     | 0.61              |
| 1:A:423:ASP:O    | 1:A:426:ARG:HG2  | 2.00                     | 0.61              |
| 1:A:555:VAL:HG12 | 1:A:556:HIS:N    | 2.14                     | 0.61              |
| 1:A:550:GLU:N    | 1:A:555:VAL:CG2  | 2.61                     | 0.61              |
| 1:A:519:ARG:C    | 1:A:521:LEU:N    | 2.53                     | 0.61              |
| 1:A:756:ASP:CB   | 1:A:759:LYS:HE3  | 2.26                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:99:MET:CE    | 1:A:108:CYS:SG   | 2.89                     | 0.60              |
| 1:A:687:LEU:CD2  | 1:A:801:VAL:HG22 | 2.30                     | 0.60              |
| 1:A:746:SER:HB3  | 3:A:1534:HOH:O   | 2.01                     | 0.60              |
| 1:A:24:VAL:O     | 1:A:28:LYS:HG3   | 2.01                     | 0.60              |
| 1:A:108:CYS:CB   | 1:A:119:MET:CE   | 2.72                     | 0.60              |
| 1:A:81:ARG:NH2   | 3:A:1581:HOH:O   | 2.34                     | 0.60              |
| 1:A:110:GLU:O    | 1:A:113:TYR:N    | 2.35                     | 0.60              |
| 1:A:325:ASN:ND2  | 1:A:326:PHE:H    | 1.92                     | 0.60              |
| 1:A:542:LYS:HE3  | 1:A:661:ASP:OD2  | 2.01                     | 0.60              |
| 1:A:703:ALA:CB   | 1:A:807:THR:HG21 | 2.32                     | 0.60              |
| 1:A:426:ARG:NH1  | 3:A:1289:HOH:O   | 2.34                     | 0.60              |
| 1:A:797:TRP:HZ3  | 3:A:1662:HOH:O   | 1.83                     | 0.60              |
| 1:A:72:GLN:NE2   | 1:A:76:GLU:OE1   | 2.35                     | 0.60              |
| 1:A:322:VAL:CG1  | 1:A:325:ASN:CB   | 2.47                     | 0.60              |
| 1:A:790:LEU:HD12 | 1:A:797:TRP:HD1  | 1.67                     | 0.59              |
| 1:A:99:MET:CE    | 1:A:119:MET:HE2  | 2.26                     | 0.59              |
| 1:A:356:LEU:N    | 1:A:356:LEU:HD12 | 2.17                     | 0.59              |
| 1:A:102:LEU:O    | 1:A:103:ALA:HB3  | 2.03                     | 0.59              |
| 1:A:803:ARG:NH1  | 1:A:803:ARG:HG3  | 2.15                     | 0.59              |
| 1:A:99:MET:HE1   | 1:A:108:CYS:HB2  | 1.84                     | 0.59              |
| 1:A:667:SER:HB3  | 1:A:693:ASP:OD2  | 2.02                     | 0.59              |
| 1:A:251:ASP:C    | 1:A:255:LYS:HB2  | 2.22                     | 0.59              |
| 1:A:548:TYR:CD1  | 1:A:548:TYR:C    | 2.75                     | 0.59              |
| 1:A:55:LEU:HD11  | 1:A:119:MET:HE2  | 1.84                     | 0.59              |
| 1:A:463:LEU:HD22 | 1:A:467:ILE:CD1  | 2.31                     | 0.59              |
| 1:A:705:GLU:HG2  | 1:A:710:ILE:HD12 | 1.84                     | 0.59              |
| 1:A:169:LYS:HG3  | 1:A:170:ILE:N    | 2.17                     | 0.59              |
| 1:A:75:TYR:CE1   | 3:A:1557:HOH:O   | 2.48                     | 0.58              |
| 1:A:327:ASP:HA   | 1:A:363:LYS:NZ   | 2.18                     | 0.58              |
| 1:A:716:GLU:HB2  | 3:A:1114:HOH:O   | 2.03                     | 0.58              |
| 1:A:72:GLN:O     | 1:A:75:TYR:HB3   | 2.03                     | 0.58              |
| 1:A:629:VAL:HG23 | 3:A:1536:HOH:O   | 2.03                     | 0.58              |
| 1:A:758:PHE:C    | 1:A:760:ASP:H    | 2.06                     | 0.58              |
| 1:A:709:PHE:HZ   | 1:A:800:MET:HE1  | 1.67                     | 0.58              |
| 1:A:34:HIS:HD2   | 1:A:38:THR:OG1   | 1.85                     | 0.58              |
| 1:A:105:GLU:HB3  | 3:A:1428:HOH:O   | 2.04                     | 0.58              |
| 1:A:536:LYS:HE2  | 3:A:1320:HOH:O   | 2.02                     | 0.58              |
| 1:A:548:TYR:CE2  | 1:A:655:LYS:HE2  | 2.39                     | 0.58              |
| 1:A:47:THR:N     | 1:A:50:ASP:OD2   | 2.29                     | 0.58              |
| 1:A:60:ARG:O     | 1:A:63:LEU:HB3   | 2.04                     | 0.58              |
| 1:A:235:ASN:HD22 | 1:A:235:ASN:H    | 1.52                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:753:LYS:HG2  | 1:A:754:GLN:H    | 1.68                     | 0.57              |
| 1:A:175:GLN:HG2  | 1:A:177:GLU:OE2  | 2.04                     | 0.57              |
| 1:A:198:LEU:CD2  | 1:A:305:GLN:CB   | 2.74                     | 0.57              |
| 1:A:555:VAL:CG1  | 1:A:556:HIS:H    | 2.06                     | 0.57              |
| 1:A:664:GLU:OE1  | 1:A:666:ILE:CD1  | 2.51                     | 0.57              |
| 1:A:752:PRO:CG   | 1:A:753:LYS:HZ3  | 2.17                     | 0.57              |
| 1:A:322:VAL:HG22 | 1:A:323:ARG:HG3  | 1.86                     | 0.57              |
| 1:A:41:LYS:HE3   | 3:A:1576:HOH:O   | 2.04                     | 0.57              |
| 1:A:709:PHE:CE2  | 1:A:800:MET:HE3  | 2.39                     | 0.57              |
| 1:A:316:PHE:C    | 1:A:318:CYS:N    | 2.57                     | 0.57              |
| 1:A:466:THR:O    | 1:A:469:LYS:CD   | 2.52                     | 0.57              |
| 1:A:752:PRO:O    | 1:A:755:PRO:HD3  | 2.04                     | 0.57              |
| 1:A:536:LYS:CE   | 3:A:1321:HOH:O   | 2.46                     | 0.57              |
| 1:A:42:ASP:H     | 1:A:45:VAL:HG13  | 1.70                     | 0.57              |
| 1:A:80:LYS:CE    | 1:A:825:TRP:O    | 2.49                     | 0.57              |
| 1:A:205:ARG:HH21 | 1:A:216:VAL:HG21 | 1.69                     | 0.57              |
| 1:A:251:ASP:OD2  | 1:A:255:LYS:NZ   | 2.36                     | 0.57              |
| 1:A:763:ASN:CB   | 3:A:1083:HOH:O   | 2.52                     | 0.57              |
| 1:A:150:LEU:CD1  | 1:A:817:ILE:HG22 | 2.32                     | 0.57              |
| 1:A:380:ILE:HG23 | 1:A:382:GLU:OE2  | 2.05                     | 0.57              |
| 1:A:476:PRO:HB3  | 3:A:1203:HOH:O   | 2.04                     | 0.57              |
| 1:A:474:LEU:CD1  | 1:A:475:GLU:HG3  | 2.16                     | 0.56              |
| 1:A:274:ASN:HA   | 1:A:277:ARG:HH11 | 1.70                     | 0.56              |
| 1:A:761:ILE:HG22 | 1:A:765:LEU:HD22 | 1.85                     | 0.56              |
| 1:A:101:ASN:HD22 | 1:A:232:GLY:C    | 2.09                     | 0.56              |
| 1:A:280:TYR:OH   | 1:A:291:LEU:HB3  | 2.06                     | 0.56              |
| 1:A:171:CYS:N    | 1:A:174:TRP:O    | 2.33                     | 0.56              |
| 1:A:764:MET:HE1  | 3:A:1654:HOH:O   | 2.04                     | 0.56              |
| 1:A:111:ALA:O    | 1:A:115:LEU:CD1  | 2.52                     | 0.56              |
| 1:A:337:LEU:HD22 | 1:A:373:ALA:O    | 2.05                     | 0.56              |
| 1:A:581:LEU:O    | 1:A:584:ILE:HD13 | 2.05                     | 0.56              |
| 1:A:590:ILE:HD13 | 1:A:636:VAL:HG13 | 1.87                     | 0.56              |
| 1:A:678:ASN:OD1  | 1:A:695:ALA:HB3  | 2.05                     | 0.56              |
| 1:A:159:ILE:HG12 | 1:A:299:VAL:HG23 | 1.87                     | 0.56              |
| 1:A:687:LEU:N    | 1:A:687:LEU:HD22 | 2.20                     | 0.56              |
| 1:A:538:LYS:HE2  | 1:A:660:ALA:O    | 2.06                     | 0.56              |
| 1:A:703:ALA:HB2  | 1:A:807:THR:HG21 | 1.88                     | 0.56              |
| 1:A:705:GLU:HG2  | 1:A:710:ILE:CD1  | 2.36                     | 0.56              |
| 1:A:108:CYS:HB2  | 1:A:119:MET:HE1  | 1.87                     | 0.56              |
| 1:A:113:TYR:O    | 1:A:116:GLY:CA   | 2.53                     | 0.56              |
| 1:A:538:LYS:CE   | 1:A:660:ALA:O    | 2.54                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:666:ILE:HG22 | 1:A:691:THR:HG23 | 1.88                     | 0.56              |
| 1:A:837:PRO:HG2  | 1:A:838:ASP:H    | 1.70                     | 0.56              |
| 1:A:666:ILE:CG2  | 1:A:711:PHE:CE1  | 2.87                     | 0.55              |
| 1:A:756:ASP:CA   | 1:A:759:LYS:HG3  | 2.36                     | 0.55              |
| 1:A:208:HIS:C    | 1:A:209:THR:HG1  | 2.04                     | 0.55              |
| 1:A:252:PHE:C    | 1:A:255:LYS:H    | 2.09                     | 0.55              |
| 1:A:349:LEU:HD12 | 1:A:353:LEU:HG   | 1.86                     | 0.55              |
| 1:A:256:ASP:CA   | 1:A:258:ASN:HB2  | 2.37                     | 0.55              |
| 1:A:251:ASP:OD1  | 1:A:252:PHE:N    | 2.40                     | 0.55              |
| 1:A:65:GLY:HA3   | 1:A:838:ASP:OD1  | 2.05                     | 0.55              |
| 1:A:343:SER:OG   | 1:A:441:MET:HG3  | 2.07                     | 0.55              |
| 1:A:713:MET:HB2  | 1:A:717:ASP:HB2  | 1.88                     | 0.55              |
| 1:A:252:PHE:CE2  | 1:A:255:LYS:HE2  | 2.41                     | 0.55              |
| 1:A:340:THR:CG2  | 1:A:374:TYR:CE1  | 2.89                     | 0.55              |
| 1:A:343:SER:HB3  | 1:A:445:CYS:SG   | 2.47                     | 0.55              |
| 1:A:395:LEU:C    | 1:A:396:LEU:HG   | 2.26                     | 0.55              |
| 1:A:532:ARG:O    | 1:A:536:LYS:HB2  | 2.08                     | 0.54              |
| 1:A:183:LEU:HD23 | 1:A:187:ASN:HB2  | 1.89                     | 0.54              |
| 1:A:252:PHE:CA   | 1:A:255:LYS:H    | 2.20                     | 0.54              |
| 1:A:754:GLN:HB3  | 1:A:757:LEU:HB2  | 1.90                     | 0.54              |
| 1:A:150:LEU:O    | 1:A:152:LEU:CD1  | 2.55                     | 0.54              |
| 1:A:571:HIS:HB2  | 1:A:574:LYS:HD2  | 1.89                     | 0.54              |
| 1:A:41:LYS:CE    | 3:A:1576:HOH:O   | 2.55                     | 0.54              |
| 1:A:557:ILE:HG13 | 1:A:557:ILE:O    | 2.07                     | 0.54              |
| 1:A:147:MET:HE2  | 1:A:825:TRP:CH2  | 2.43                     | 0.54              |
| 1:A:22:GLU:O     | 1:A:25:THR:N     | 2.41                     | 0.54              |
| 1:A:565:VAL:HG21 | 1:A:660:ALA:HB2  | 1.90                     | 0.54              |
| 1:A:571:HIS:HB2  | 1:A:574:LYS:CD   | 2.37                     | 0.54              |
| 1:A:36:HIS:HB2   | 3:A:1000:HOH:O   | 2.08                     | 0.53              |
| 1:A:42:ASP:H     | 1:A:45:VAL:CG1   | 2.21                     | 0.53              |
| 1:A:487:THR:HG23 | 1:A:487:THR:O    | 2.08                     | 0.53              |
| 1:A:758:PHE:C    | 1:A:760:ASP:N    | 2.61                     | 0.53              |
| 1:A:703:ALA:HA   | 1:A:807:THR:HG21 | 1.91                     | 0.53              |
| 1:A:205:ARG:HE   | 1:A:216:VAL:HG23 | 1.72                     | 0.53              |
| 1:A:314:SER:O    | 1:A:316:PHE:N    | 2.41                     | 0.53              |
| 1:A:519:ARG:O    | 1:A:521:LEU:N    | 2.41                     | 0.53              |
| 1:A:76:GLU:HA    | 1:A:315:LYS:CE   | 2.37                     | 0.53              |
| 1:A:147:MET:CE   | 1:A:825:TRP:HH2  | 2.21                     | 0.53              |
| 1:A:666:ILE:HG23 | 1:A:711:PHE:CZ   | 2.37                     | 0.53              |
| 1:A:676:THR:CA   | 1:A:678:ASN:HB2  | 2.39                     | 0.53              |
| 1:A:314:SER:C    | 1:A:316:PHE:N    | 2.61                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:528:GLU:OE1  | 1:A:532:ARG:NH2  | 2.37                     | 0.53              |
| 1:A:584:ILE:HG13 | 1:A:741:ILE:HG23 | 1.90                     | 0.53              |
| 1:A:703:ALA:CA   | 1:A:807:THR:HG21 | 2.39                     | 0.53              |
| 1:A:55:LEU:CD2   | 1:A:59:VAL:HG23  | 2.39                     | 0.53              |
| 1:A:322:VAL:HG22 | 1:A:325:ASN:OD1  | 2.07                     | 0.53              |
| 1:A:235:ASN:H    | 1:A:235:ASN:ND2  | 2.07                     | 0.53              |
| 1:A:400:LEU:HD13 | 1:A:404:TYR:CE2  | 2.44                     | 0.53              |
| 1:A:810:LYS:O    | 1:A:810:LYS:CG   | 2.56                     | 0.53              |
| 1:A:263:ILE:O    | 1:A:267:LEU:HG   | 2.09                     | 0.52              |
| 1:A:753:LYS:HG3  | 1:A:754:GLN:NE2  | 2.24                     | 0.52              |
| 1:A:197:THR:CG2  | 1:A:222:LEU:HB3  | 2.40                     | 0.52              |
| 1:A:763:ASN:HD22 | 1:A:763:ASN:H    | 1.58                     | 0.52              |
| 1:A:347:PRO:HB3  | 1:A:402:ILE:HG22 | 1.91                     | 0.52              |
| 1:A:486:ILE:HD12 | 1:A:676:THR:HB   | 1.90                     | 0.52              |
| 1:A:147:MET:CE   | 1:A:825:TRP:CH2  | 2.93                     | 0.52              |
| 1:A:306:ASP:HA   | 1:A:309:ARG:HD3  | 1.90                     | 0.52              |
| 1:A:685:GLY:HA2  | 3:A:1667:HOH:O   | 2.09                     | 0.52              |
| 1:A:387:TRP:HD1  | 1:A:441:MET:SD   | 2.33                     | 0.52              |
| 1:A:549:LEU:HD23 | 1:A:557:ILE:HD13 | 1.92                     | 0.52              |
| 1:A:689:ILE:CD1  | 1:A:784:GLN:HG2  | 2.40                     | 0.52              |
| 1:A:259:VAL:HG22 | 1:A:260:GLY:H    | 1.75                     | 0.52              |
| 1:A:316:PHE:CE1  | 1:A:319:ARG:CD   | 2.93                     | 0.51              |
| 1:A:380:ILE:CG2  | 1:A:382:GLU:OE1  | 2.59                     | 0.51              |
| 1:A:252:PHE:HA   | 1:A:255:LYS:H    | 1.75                     | 0.51              |
| 1:A:577:LEU:O    | 1:A:580:CYS:HB2  | 2.09                     | 0.51              |
| 1:A:692:MET:CE   | 1:A:710:ILE:HD13 | 2.41                     | 0.51              |
| 1:A:483:THR:O    | 1:A:815:ARG:NH2  | 2.43                     | 0.51              |
| 1:A:658:PRO:HA   | 1:A:684:ASN:HB3  | 1.91                     | 0.51              |
| 1:A:664:GLU:HB3  | 1:A:666:ILE:HD12 | 1.92                     | 0.51              |
| 1:A:455:VAL:N    | 1:A:459:HIS:HD2  | 2.02                     | 0.51              |
| 1:A:551:ARG:CG   | 1:A:552:GLU:N    | 2.73                     | 0.51              |
| 1:A:76:GLU:HA    | 1:A:315:LYS:HE3  | 1.93                     | 0.51              |
| 1:A:198:LEU:CD2  | 1:A:305:GLN:NE2  | 2.72                     | 0.51              |
| 1:A:311:PHE:CZ   | 1:A:325:ASN:O    | 2.63                     | 0.51              |
| 1:A:31:PHE:CE2   | 1:A:115:LEU:HD23 | 2.45                     | 0.50              |
| 1:A:472:TYR:O    | 1:A:476:PRO:HG3  | 2.11                     | 0.50              |
| 1:A:590:ILE:HG22 | 1:A:591:LYS:N    | 2.25                     | 0.50              |
| 1:A:557:ILE:HD12 | 1:A:563:PHE:CZ   | 2.45                     | 0.50              |
| 1:A:753:LYS:HB2  | 1:A:754:GLN:NE2  | 2.27                     | 0.50              |
| 1:A:55:LEU:HD11  | 1:A:119:MET:HE3  | 1.93                     | 0.50              |
| 1:A:721:LEU:HA   | 1:A:724:ARG:HG3  | 1.92                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:738:LEU:O    | 1:A:742:ILE:HG12 | 2.12                     | 0.50              |
| 1:A:147:MET:HE2  | 1:A:825:TRP:HH2  | 1.77                     | 0.50              |
| 1:A:616:ALA:O    | 1:A:620:ILE:HG12 | 2.11                     | 0.50              |
| 1:A:73:HIS:O     | 1:A:77:LYS:HB2   | 2.11                     | 0.50              |
| 1:A:382:GLU:OE2  | 1:A:770:ARG:NH1  | 2.39                     | 0.50              |
| 1:A:764:MET:HE1  | 1:A:769:ASP:HA   | 1.94                     | 0.50              |
| 1:A:790:LEU:HD11 | 1:A:796:GLU:C    | 2.32                     | 0.50              |
| 1:A:386:ARG:HA   | 1:A:439:ILE:O    | 2.12                     | 0.50              |
| 1:A:810:LYS:O    | 1:A:815:ARG:HD2  | 2.12                     | 0.50              |
| 1:A:384:LEU:HD23 | 3:A:1260:HOH:O   | 2.11                     | 0.49              |
| 1:A:503:ILE:HG12 | 1:A:521:LEU:HD21 | 1.94                     | 0.49              |
| 1:A:584:ILE:HG12 | 1:A:741:ILE:HG12 | 1.94                     | 0.49              |
| 1:A:709:PHE:HE2  | 1:A:800:MET:HE3  | 1.77                     | 0.49              |
| 1:A:191:LYS:HE3  | 1:A:193:ARG:NH2  | 2.28                     | 0.49              |
| 1:A:402:ILE:O    | 1:A:405:GLU:HB2  | 2.13                     | 0.49              |
| 1:A:70:THR:O     | 1:A:73:HIS:HB3   | 2.13                     | 0.49              |
| 1:A:76:GLU:HA    | 1:A:315:LYS:HZ2  | 1.78                     | 0.49              |
| 1:A:227:ASP:HB3  | 1:A:240:THR:HG23 | 1.94                     | 0.49              |
| 1:A:666:ILE:HD13 | 1:A:780:TYR:CE1  | 2.47                     | 0.49              |
| 1:A:198:LEU:HD23 | 1:A:305:GLN:OE1  | 2.13                     | 0.49              |
| 1:A:322:VAL:C    | 1:A:323:ARG:CG   | 2.80                     | 0.49              |
| 1:A:790:LEU:CD1  | 1:A:790:LEU:C    | 2.80                     | 0.49              |
| 1:A:337:LEU:CD2  | 1:A:373:ALA:O    | 2.61                     | 0.49              |
| 1:A:304:LEU:CD1  | 1:A:307:ILE:HD12 | 2.39                     | 0.48              |
| 1:A:667:SER:OG   | 1:A:672:GLU:HB2  | 2.13                     | 0.48              |
| 1:A:744:GLN:NE2  | 1:A:750:PHE:CZ   | 2.81                     | 0.48              |
| 1:A:492:LEU:O    | 1:A:496:ASN:N    | 2.40                     | 0.48              |
| 1:A:316:PHE:CD1  | 1:A:319:ARG:HB3  | 2.47                     | 0.48              |
| 1:A:287:GLU:OE1  | 1:A:289:LYS:HG2  | 2.13                     | 0.48              |
| 1:A:322:VAL:O    | 1:A:323:ARG:HG3  | 2.13                     | 0.48              |
| 1:A:93:ARG:NE    | 1:A:126:GLU:O    | 2.46                     | 0.48              |
| 1:A:99:MET:HE1   | 1:A:108:CYS:CB   | 2.28                     | 0.48              |
| 1:A:408:GLN:OE1  | 3:A:1191:HOH:O   | 2.20                     | 0.48              |
| 1:A:703:ALA:HB2  | 1:A:807:THR:CG2  | 2.43                     | 0.48              |
| 1:A:793:ASN:HD21 | 1:A:796:GLU:HG3  | 1.78                     | 0.48              |
| 1:A:320:ASP:CB   | 1:A:321:PRO:CD   | 2.37                     | 0.48              |
| 1:A:790:LEU:HD12 | 1:A:797:TRP:CB   | 2.44                     | 0.48              |
| 1:A:311:PHE:HZ   | 1:A:325:ASN:O    | 1.96                     | 0.48              |
| 1:A:709:PHE:CE2  | 1:A:800:MET:CE   | 2.97                     | 0.47              |
| 1:A:770:ARG:HD3  | 3:A:1469:HOH:O   | 2.13                     | 0.47              |
| 1:A:131:LEU:HG   | 1:A:161:TYR:HD2  | 1.79                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:311:PHE:CE1  | 1:A:332:LYS:HD2  | 2.49                     | 0.47              |
| 1:A:463:LEU:HD23 | 1:A:467:ILE:HD11 | 1.92                     | 0.47              |
| 1:A:466:THR:O    | 1:A:469:LYS:CG   | 2.62                     | 0.47              |
| 1:A:568:LYS:O    | 1:A:607:GLY:HA3  | 2.14                     | 0.47              |
| 1:A:441:MET:HG2  | 3:A:1471:HOH:O   | 2.13                     | 0.47              |
| 1:A:715:VAL:HG23 | 1:A:716:GLU:N    | 2.30                     | 0.47              |
| 1:A:315:LYS:N    | 1:A:315:LYS:CD   | 2.76                     | 0.47              |
| 1:A:387:TRP:HA   | 1:A:388:PRO:HD3  | 1.85                     | 0.47              |
| 1:A:795:ARG:HE   | 1:A:795:ARG:HB3  | 1.21                     | 0.47              |
| 1:A:46:ALA:HA    | 1:A:50:ASP:OD2   | 2.14                     | 0.47              |
| 1:A:75:TYR:CE2   | 1:A:315:LYS:HE2  | 2.50                     | 0.47              |
| 1:A:422:VAL:HG13 | 3:A:1643:HOH:O   | 2.13                     | 0.47              |
| 1:A:678:ASN:HB3  | 1:A:679:MET:H    | 1.26                     | 0.47              |
| 1:A:316:PHE:HA   | 1:A:319:ARG:CB   | 2.39                     | 0.47              |
| 1:A:347:PRO:HB3  | 1:A:402:ILE:CG2  | 2.45                     | 0.47              |
| 1:A:688:THR:HB   | 1:A:708:PHE:CE2  | 2.50                     | 0.47              |
| 1:A:44:ASN:ND2   | 3:A:1001:HOH:O   | 2.47                     | 0.47              |
| 1:A:315:LYS:H    | 1:A:315:LYS:HD3  | 1.79                     | 0.47              |
| 1:A:427:ARG:NH1  | 1:A:470:ASP:CG   | 2.67                     | 0.47              |
| 1:A:557:ILE:O    | 1:A:559:PRO:HD3  | 2.15                     | 0.47              |
| 1:A:177:GLU:OE1  | 1:A:611:PRO:CG   | 2.60                     | 0.47              |
| 1:A:113:TYR:O    | 1:A:113:TYR:HD1  | 1.98                     | 0.46              |
| 1:A:113:TYR:C    | 1:A:113:TYR:CD1  | 2.86                     | 0.46              |
| 1:A:193:ARG:HD3  | 1:A:196:PHE:CE2  | 2.43                     | 0.46              |
| 1:A:424:ARG:NH2  | 1:A:473:GLU:OE1  | 2.48                     | 0.46              |
| 1:A:315:LYS:N    | 1:A:315:LYS:HD3  | 2.31                     | 0.46              |
| 1:A:390:HIS:O    | 1:A:394:THR:OG1  | 2.32                     | 0.46              |
| 1:A:399:HIS:O    | 1:A:403:ILE:HG13 | 2.16                     | 0.46              |
| 1:A:555:VAL:CG1  | 1:A:556:HIS:N    | 2.75                     | 0.46              |
| 1:A:803:ARG:NH1  | 1:A:803:ARG:CG   | 2.74                     | 0.46              |
| 1:A:101:ASN:ND2  | 1:A:233:TYR:CA   | 2.79                     | 0.46              |
| 1:A:177:GLU:H    | 1:A:177:GLU:HG2  | 1.52                     | 0.46              |
| 1:A:356:LEU:N    | 1:A:356:LEU:CD1  | 2.78                     | 0.46              |
| 1:A:640:LEU:O    | 1:A:641:ARG:HD2  | 2.16                     | 0.46              |
| 1:A:697:VAL:O    | 1:A:701:GLU:HB2  | 2.14                     | 0.46              |
| 1:A:729:GLN:O    | 1:A:729:GLN:HG3  | 2.15                     | 0.46              |
| 1:A:160:ARG:HH11 | 1:A:160:ARG:HD2  | 1.42                     | 0.46              |
| 1:A:709:PHE:CZ   | 1:A:800:MET:CE   | 2.99                     | 0.46              |
| 1:A:93:ARG:NH1   | 3:A:1014:HOH:O   | 2.41                     | 0.46              |
| 1:A:159:ILE:HG13 | 1:A:299:VAL:HG21 | 1.96                     | 0.46              |
| 1:A:257:PHE:HD1  | 1:A:257:PHE:HA   | 1.65                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:290:GLU:O    | 1:A:294:LYS:HG3  | 2.16                     | 0.46              |
| 1:A:584:ILE:CG1  | 1:A:741:ILE:HG12 | 2.46                     | 0.46              |
| 1:A:771:PHE:O    | 1:A:772:LYS:HB2  | 2.15                     | 0.46              |
| 1:A:167:ASN:HD22 | 1:A:180:ASP:HA   | 1.79                     | 0.46              |
| 1:A:252:PHE:CE2  | 1:A:255:LYS:CE   | 2.98                     | 0.46              |
| 1:A:316:PHE:CD1  | 1:A:319:ARG:HB2  | 2.44                     | 0.46              |
| 1:A:455:VAL:O    | 1:A:483:THR:HA   | 2.16                     | 0.46              |
| 1:A:483:THR:HB   | 1:A:815:ARG:NH2  | 2.31                     | 0.45              |
| 1:A:502:ILE:HG21 | 1:A:533:ASP:HB3  | 1.98                     | 0.45              |
| 1:A:756:ASP:CB   | 1:A:759:LYS:HE2  | 2.41                     | 0.45              |
| 1:A:28:LYS:O     | 1:A:32:ASN:ND2   | 2.49                     | 0.45              |
| 1:A:309:ARG:HG2  | 3:A:1253:HOH:O   | 2.15                     | 0.45              |
| 1:A:118:ASP:CB   | 1:A:121:GLU:HG3  | 2.43                     | 0.45              |
| 1:A:103:ALA:HB2  | 1:A:234:ARG:NE   | 2.32                     | 0.45              |
| 1:A:157:TYR:CG   | 1:A:303:THR:HG23 | 2.52                     | 0.45              |
| 1:A:321:PRO:O    | 1:A:322:VAL:C    | 2.54                     | 0.45              |
| 1:A:593:GLU:N    | 1:A:594:PRO:HD3  | 2.32                     | 0.45              |
| 1:A:39:LEU:N     | 1:A:39:LEU:HD12  | 2.31                     | 0.45              |
| 1:A:109:ASP:OD2  | 3:A:1205:HOH:O   | 2.21                     | 0.45              |
| 1:A:467:ILE:HD12 | 1:A:468:PHE:CE2  | 2.52                     | 0.45              |
| 1:A:753:LYS:O    | 1:A:755:PRO:HD2  | 2.17                     | 0.45              |
| 1:A:150:LEU:HD12 | 1:A:817:ILE:CG2  | 2.35                     | 0.45              |
| 1:A:461:GLU:HA   | 1:A:464:LYS:HD2  | 1.99                     | 0.45              |
| 1:A:597:PHE:HD1  | 3:A:1327:HOH:O   | 1.98                     | 0.45              |
| 1:A:666:ILE:HD13 | 1:A:780:TYR:HE1  | 1.82                     | 0.45              |
| 1:A:837:PRO:CG   | 1:A:838:ASP:H    | 2.29                     | 0.45              |
| 1:A:322:VAL:HG11 | 1:A:325:ASN:CG   | 2.32                     | 0.45              |
| 1:A:322:VAL:C    | 1:A:323:ARG:HG3  | 2.37                     | 0.45              |
| 1:A:487:THR:O    | 1:A:487:THR:CG2  | 2.65                     | 0.45              |
| 1:A:57:HIS:HE1   | 3:A:1007:HOH:O   | 2.00                     | 0.45              |
| 1:A:187:ASN:HA   | 1:A:188:PRO:HD2  | 1.85                     | 0.45              |
| 1:A:252:PHE:CE1  | 1:A:255:LYS:HD2  | 2.52                     | 0.45              |
| 1:A:204:GLY:HA2  | 1:A:217:ASP:O    | 2.16                     | 0.45              |
| 1:A:363:LYS:HD2  | 1:A:363:LYS:C    | 2.37                     | 0.45              |
| 1:A:382:GLU:OE2  | 1:A:770:ARG:NH2  | 2.47                     | 0.45              |
| 1:A:382:GLU:H    | 1:A:382:GLU:HG3  | 1.23                     | 0.45              |
| 1:A:417:ALA:HB3  | 1:A:418:PHE:CD1  | 2.51                     | 0.45              |
| 1:A:39:LEU:HD21  | 1:A:53:PHE:HB3   | 1.99                     | 0.44              |
| 1:A:249:PRO:O    | 1:A:269:ARG:NH2  | 2.50                     | 0.44              |
| 1:A:466:THR:O    | 1:A:469:LYS:HG2  | 2.17                     | 0.44              |
| 1:A:515:LEU:HD22 | 1:A:518:LEU:HD22 | 1.99                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:796:GLU:OE1  | 1:A:799:ARG:HD3  | 2.16                     | 0.44              |
| 1:A:43:ARG:O     | 1:A:43:ARG:CG    | 2.62                     | 0.44              |
| 1:A:262:TYR:O    | 1:A:266:VAL:HG23 | 2.17                     | 0.44              |
| 1:A:335:ILE:CD1  | 1:A:337:LEU:HD13 | 2.35                     | 0.44              |
| 1:A:390:HIS:CE1  | 1:A:391:LEU:HD12 | 2.53                     | 0.44              |
| 1:A:752:PRO:HB2  | 1:A:753:LYS:HZ2  | 1.76                     | 0.44              |
| 1:A:365:TRP:O    | 1:A:369:VAL:HG23 | 2.17                     | 0.44              |
| 1:A:748:GLY:O    | 1:A:749:PHE:C    | 2.56                     | 0.44              |
| 1:A:208:HIS:HB2  | 3:A:1268:HOH:O   | 2.18                     | 0.44              |
| 1:A:549:LEU:CB   | 1:A:555:VAL:CG2  | 2.81                     | 0.44              |
| 1:A:567:VAL:O    | 1:A:568:LYS:HB3  | 2.18                     | 0.44              |
| 1:A:417:ALA:C    | 1:A:419:PRO:HD3  | 2.38                     | 0.43              |
| 1:A:834:LEU:CD2  | 1:A:836:ALA:CB   | 2.91                     | 0.43              |
| 1:A:306:ASP:OD1  | 1:A:309:ARG:HD3  | 2.18                     | 0.43              |
| 1:A:713:MET:HG2  | 1:A:776:ASP:OD1  | 2.18                     | 0.43              |
| 1:A:24:VAL:HG12  | 1:A:24:VAL:O     | 2.17                     | 0.43              |
| 1:A:29:LYS:HB3   | 1:A:29:LYS:HE2   | 1.78                     | 0.43              |
| 1:A:31:PHE:CE2   | 1:A:115:LEU:CD2  | 3.02                     | 0.43              |
| 1:A:184:ARG:HE   | 1:A:184:ARG:HB2  | 1.25                     | 0.43              |
| 1:A:550:GLU:O    | 1:A:551:ARG:C    | 2.54                     | 0.43              |
| 1:A:36:HIS:O     | 1:A:40:VAL:N     | 2.52                     | 0.43              |
| 1:A:744:GLN:HB3  | 1:A:749:PHE:CB   | 2.44                     | 0.43              |
| 1:A:344:LEU:O    | 1:A:347:PRO:HD2  | 2.17                     | 0.43              |
| 1:A:764:MET:C    | 1:A:764:MET:SD   | 2.97                     | 0.43              |
| 1:A:36:HIS:CB    | 3:A:1000:HOH:O   | 2.65                     | 0.43              |
| 1:A:170:ILE:HA   | 1:A:174:TRP:O    | 2.19                     | 0.43              |
| 1:A:329:PHE:N    | 1:A:330:PRO:HD2  | 2.34                     | 0.43              |
| 1:A:366:GLU:O    | 1:A:370:LYS:HG3  | 2.19                     | 0.43              |
| 1:A:661:ASP:C    | 1:A:797:TRP:HH2  | 2.20                     | 0.43              |
| 1:A:252:PHE:CZ   | 1:A:255:LYS:HD2  | 2.53                     | 0.43              |
| 1:A:256:ASP:C    | 1:A:258:ASN:N    | 2.63                     | 0.43              |
| 1:A:361:TRP:CZ2  | 1:A:406:ILE:CD1  | 2.94                     | 0.43              |
| 1:A:389:VAL:O    | 1:A:393:GLU:HB2  | 2.19                     | 0.43              |
| 1:A:678:ASN:HA   | 1:A:678:ASN:HD22 | 0.99                     | 0.43              |
| 1:A:680:LYS:NZ   | 2:A:999:PLP:O3   | 2.52                     | 0.43              |
| 1:A:515:LEU:HD22 | 1:A:518:LEU:CD2  | 2.49                     | 0.43              |
| 1:A:193:ARG:N    | 1:A:194:PRO:CD   | 2.82                     | 0.42              |
| 1:A:758:PHE:O    | 1:A:760:ASP:N    | 2.52                     | 0.42              |
| 1:A:159:ILE:CG1  | 1:A:299:VAL:CG2  | 2.80                     | 0.42              |
| 1:A:753:LYS:CG   | 1:A:754:GLN:N    | 2.80                     | 0.42              |
| 1:A:75:TYR:CZ    | 1:A:315:LYS:HE2  | 2.55                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:465:LYS:HD2  | 1:A:465:LYS:HA   | 1.67                     | 0.42              |
| 1:A:530:PHE:HD1  | 1:A:530:PHE:HA   | 1.47                     | 0.42              |
| 1:A:665:GLN:HE21 | 1:A:678:ASN:HA   | 1.83                     | 0.42              |
| 1:A:752:PRO:HG2  | 1:A:753:LYS:HZ3  | 1.82                     | 0.42              |
| 1:A:763:ASN:ND2  | 1:A:763:ASN:N    | 2.59                     | 0.42              |
| 1:A:49:ARG:HH11  | 1:A:49:ARG:HD2   | 1.67                     | 0.42              |
| 1:A:283:ASP:O    | 1:A:284:ASN:HB2  | 2.19                     | 0.42              |
| 1:A:688:THR:HG21 | 1:A:708:PHE:CE2  | 2.55                     | 0.42              |
| 1:A:316:PHE:HE1  | 1:A:319:ARG:CD   | 2.27                     | 0.42              |
| 1:A:103:ALA:HB2  | 1:A:234:ARG:HE   | 1.84                     | 0.42              |
| 1:A:548:TYR:HA   | 1:A:551:ARG:HG2  | 2.02                     | 0.42              |
| 1:A:584:ILE:HD11 | 1:A:741:ILE:CG1  | 2.40                     | 0.42              |
| 1:A:139:LEU:HD21 | 1:A:143:PHE:CZ   | 2.53                     | 0.42              |
| 1:A:160:ARG:HB2  | 1:A:243:LEU:HB3  | 2.02                     | 0.42              |
| 1:A:688:THR:HG21 | 1:A:708:PHE:HE2  | 1.84                     | 0.42              |
| 1:A:152:LEU:CD1  | 1:A:829:PRO:HA   | 2.46                     | 0.42              |
| 1:A:605:ILE:O    | 1:A:644:PHE:HA   | 2.20                     | 0.42              |
| 1:A:449:SER:O    | 1:A:478:LYS:HD3  | 2.20                     | 0.42              |
| 1:A:778:GLU:HG2  | 1:A:782:LYS:HE3  | 2.02                     | 0.42              |
| 1:A:36:HIS:HD2   | 1:A:37:PHE:CE2   | 2.38                     | 0.42              |
| 1:A:113:TYR:C    | 1:A:113:TYR:HD1  | 2.23                     | 0.42              |
| 1:A:33:ARG:HG2   | 1:A:37:PHE:HD2   | 1.85                     | 0.41              |
| 1:A:119:MET:O    | 1:A:120:GLU:C    | 2.59                     | 0.41              |
| 1:A:286:PHE:CD1  | 1:A:385:GLU:HG2  | 2.55                     | 0.41              |
| 1:A:293:LEU:HD12 | 1:A:293:LEU:HA   | 1.73                     | 0.41              |
| 1:A:464:LYS:HG3  | 1:A:464:LYS:H    | 1.65                     | 0.41              |
| 1:A:322:VAL:CG1  | 1:A:325:ASN:OD1  | 2.68                     | 0.41              |
| 1:A:592:LYS:C    | 1:A:594:PRO:HD3  | 2.40                     | 0.41              |
| 1:A:631:ASN:C    | 1:A:632:HIS:CD2  | 2.93                     | 0.41              |
| 1:A:786:ARG:HH11 | 1:A:786:ARG:HD3  | 1.75                     | 0.41              |
| 1:A:355:ASP:C    | 1:A:356:LEU:HD12 | 2.39                     | 0.41              |
| 1:A:363:LYS:HD2  | 1:A:363:LYS:O    | 2.19                     | 0.41              |
| 1:A:365:TRP:CE3  | 1:A:365:TRP:HA   | 2.54                     | 0.41              |
| 1:A:251:ASP:CG   | 1:A:255:LYS:NZ   | 2.73                     | 0.41              |
| 1:A:252:PHE:HA   | 1:A:255:LYS:N    | 2.35                     | 0.41              |
| 1:A:618:MET:HB3  | 1:A:761:ILE:HD11 | 2.03                     | 0.41              |
| 1:A:304:LEU:HD12 | 1:A:304:LEU:HA   | 1.68                     | 0.41              |
| 1:A:677:GLY:O    | 1:A:681:PHE:HD2  | 2.04                     | 0.41              |
| 1:A:39:LEU:O     | 1:A:40:VAL:HB    | 2.20                     | 0.41              |
| 1:A:316:PHE:CE1  | 1:A:319:ARG:HG3  | 2.50                     | 0.41              |
| 1:A:524:TYR:CD1  | 1:A:524:TYR:N    | 2.89                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:549:LEU:HD12 | 1:A:549:LEU:HA   | 1.82                     | 0.41              |
| 1:A:666:ILE:HG23 | 1:A:711:PHE:CE1  | 2.55                     | 0.41              |
| 1:A:282:ASN:ND2  | 1:A:610:ALA:HB1  | 2.35                     | 0.41              |
| 1:A:349:LEU:O    | 1:A:353:LEU:HG   | 2.20                     | 0.41              |
| 1:A:522:LEU:HG   | 3:A:1312:HOH:O   | 2.20                     | 0.41              |
| 1:A:676:THR:N    | 1:A:678:ASN:HB2  | 2.36                     | 0.41              |
| 1:A:707:ASN:ND2  | 1:A:803:ARG:HD2  | 2.36                     | 0.41              |
| 1:A:316:PHE:CD1  | 1:A:319:ARG:NE   | 2.87                     | 0.41              |
| 1:A:325:ASN:HD22 | 1:A:325:ASN:HA   | 1.44                     | 0.41              |
| 1:A:335:ILE:HD12 | 1:A:335:ILE:C    | 2.41                     | 0.41              |
| 1:A:128:ASP:OD1  | 1:A:651:SER:OG   | 2.36                     | 0.41              |
| 1:A:622:LEU:HD22 | 1:A:626:ILE:HD12 | 2.03                     | 0.41              |
| 1:A:793:ASN:ND2  | 1:A:796:GLU:HB2  | 2.35                     | 0.41              |
| 1:A:76:GLU:H     | 1:A:76:GLU:HG2   | 1.62                     | 0.41              |
| 1:A:85:LEU:N     | 1:A:85:LEU:HD23  | 2.36                     | 0.41              |
| 1:A:99:MET:O     | 1:A:103:ALA:N    | 2.54                     | 0.41              |
| 1:A:254:LEU:O    | 1:A:254:LEU:HD13 | 2.21                     | 0.41              |
| 1:A:273:GLU:C    | 1:A:277:ARG:NH1  | 2.74                     | 0.41              |
| 1:A:407:ASN:O    | 1:A:408:GLN:C    | 2.60                     | 0.41              |
| 1:A:458:ILE:CG2  | 1:A:459:HIS:N    | 2.84                     | 0.41              |
| 1:A:593:GLU:OE2  | 1:A:596:LYS:CD   | 2.54                     | 0.41              |
| 1:A:676:THR:C    | 1:A:678:ASN:N    | 2.72                     | 0.41              |
| 1:A:125:ILE:O    | 1:A:125:ILE:HG22 | 2.21                     | 0.40              |
| 1:A:676:THR:C    | 1:A:678:ASN:HB2  | 2.42                     | 0.40              |
| 1:A:758:PHE:HD2  | 1:A:761:ILE:HD12 | 1.87                     | 0.40              |
| 1:A:293:LEU:HB2  | 1:A:387:TRP:CH2  | 2.57                     | 0.40              |
| 1:A:380:ILE:HG21 | 1:A:382:GLU:OE1  | 2.22                     | 0.40              |
| 1:A:41:LYS:NZ    | 3:A:1576:HOH:O   | 2.54                     | 0.40              |
| 1:A:170:ILE:HD11 | 1:A:644:PHE:HE1  | 1.84                     | 0.40              |
| 1:A:254:LEU:O    | 1:A:254:LEU:CD1  | 2.69                     | 0.40              |
| 1:A:269:ARG:O    | 1:A:273:GLU:HG3  | 2.22                     | 0.40              |
| 1:A:322:VAL:CG1  | 1:A:325:ASN:CG   | 2.89                     | 0.40              |
| 1:A:790:LEU:HD11 | 1:A:797:TRP:CA   | 2.51                     | 0.40              |
| 1:A:81:ARG:HB3   | 1:A:155:TYR:HE1  | 1.87                     | 0.40              |
| 1:A:400:LEU:CD2  | 1:A:439:ILE:HD11 | 2.50                     | 0.40              |
| 1:A:175:GLN:HE21 | 1:A:177:GLU:CD   | 2.24                     | 0.40              |
| 1:A:610:ALA:HA   | 1:A:611:PRO:HD3  | 1.80                     | 0.40              |
| 1:A:715:VAL:HG23 | 1:A:716:GLU:H    | 1.86                     | 0.40              |
| 1:A:790:LEU:CD1  | 1:A:797:TRP:N    | 2.83                     | 0.40              |

All (1) 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) |
|---------------|------------------------|--------------------------|-------------------|
| 1:A:177:GLU:O | 1:A:254:LEU:CD1[7_556] | 1.88                     | 0.32              |

## 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   | A     | 821/842 (98%) | 735 (90%) | 59 (7%) | 27 (3%)  | <b>3</b> <b>0</b> |

All (27) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 254 | LEU  |
| 1   | A     | 256 | ASP  |
| 1   | A     | 258 | ASN  |
| 1   | A     | 315 | LYS  |
| 1   | A     | 319 | ARG  |
| 1   | A     | 320 | ASP  |
| 1   | A     | 436 | VAL  |
| 1   | A     | 837 | PRO  |
| 1   | A     | 838 | ASP  |
| 1   | A     | 21  | VAL  |
| 1   | A     | 323 | ARG  |
| 1   | A     | 527 | ASP  |
| 1   | A     | 551 | ARG  |
| 1   | A     | 271 | LEU  |
| 1   | A     | 324 | THR  |
| 1   | A     | 434 | GLY  |
| 1   | A     | 514 | ASP  |
| 1   | A     | 556 | HIS  |
| 1   | A     | 836 | ALA  |
| 1   | A     | 210 | SER  |
| 1   | A     | 555 | VAL  |
| 1   | A     | 36  | HIS  |
| 1   | A     | 131 | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 520 | LYS  |
| 1   | A     | 678 | ASN  |
| 1   | A     | 759 | LYS  |
| 1   | A     | 755 | PRO  |

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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   | A     | 711/731 (97%) | 567 (80%) | 144 (20%) | <b>1</b> <b>0</b> |

All (144) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 21  | VAL  |
| 1   | A     | 23  | ASN  |
| 1   | A     | 27  | LEU  |
| 1   | A     | 29  | LYS  |
| 1   | A     | 41  | LYS  |
| 1   | A     | 44  | ASN  |
| 1   | A     | 47  | THR  |
| 1   | A     | 55  | LEU  |
| 1   | A     | 60  | ARG  |
| 1   | A     | 64  | VAL  |
| 1   | A     | 66  | ARG  |
| 1   | A     | 85  | LEU  |
| 1   | A     | 90  | TYR  |
| 1   | A     | 102 | LEU  |
| 1   | A     | 104 | LEU  |
| 1   | A     | 113 | TYR  |
| 1   | A     | 122 | LEU  |
| 1   | A     | 125 | ILE  |
| 1   | A     | 127 | GLU  |
| 1   | A     | 144 | LEU  |
| 1   | A     | 165 | ILE  |
| 1   | A     | 169 | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 177 | GLU  |
| 1   | A     | 178 | GLU  |
| 1   | A     | 184 | ARG  |
| 1   | A     | 193 | ARG  |
| 1   | A     | 195 | GLU  |
| 1   | A     | 196 | PHE  |
| 1   | A     | 198 | LEU  |
| 1   | A     | 214 | LYS  |
| 1   | A     | 234 | ARG  |
| 1   | A     | 235 | ASN  |
| 1   | A     | 243 | LEU  |
| 1   | A     | 247 | LYS  |
| 1   | A     | 254 | LEU  |
| 1   | A     | 255 | LYS  |
| 1   | A     | 257 | PHE  |
| 1   | A     | 258 | ASN  |
| 1   | A     | 263 | ILE  |
| 1   | A     | 264 | GLN  |
| 1   | A     | 277 | ARG  |
| 1   | A     | 281 | PRO  |
| 1   | A     | 289 | LYS  |
| 1   | A     | 304 | LEU  |
| 1   | A     | 306 | ASP  |
| 1   | A     | 316 | PHE  |
| 1   | A     | 318 | CYS  |
| 1   | A     | 319 | ARG  |
| 1   | A     | 320 | ASP  |
| 1   | A     | 323 | ARG  |
| 1   | A     | 327 | ASP  |
| 1   | A     | 335 | ILE  |
| 1   | A     | 344 | LEU  |
| 1   | A     | 359 | LEU  |
| 1   | A     | 361 | TRP  |
| 1   | A     | 363 | LYS  |
| 1   | A     | 382 | GLU  |
| 1   | A     | 389 | VAL  |
| 1   | A     | 391 | LEU  |
| 1   | A     | 392 | LEU  |
| 1   | A     | 393 | GLU  |
| 1   | A     | 394 | THR  |
| 1   | A     | 395 | LEU  |
| 1   | A     | 400 | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 401 | GLN  |
| 1   | A     | 405 | GLU  |
| 1   | A     | 426 | ARG  |
| 1   | A     | 432 | GLU  |
| 1   | A     | 438 | ARG  |
| 1   | A     | 441 | MET  |
| 1   | A     | 444 | LEU  |
| 1   | A     | 464 | LYS  |
| 1   | A     | 465 | LYS  |
| 1   | A     | 467 | ILE  |
| 1   | A     | 474 | LEU  |
| 1   | A     | 476 | PRO  |
| 1   | A     | 478 | LYS  |
| 1   | A     | 486 | ILE  |
| 1   | A     | 506 | ARG  |
| 1   | A     | 515 | LEU  |
| 1   | A     | 522 | LEU  |
| 1   | A     | 525 | VAL  |
| 1   | A     | 526 | ASP  |
| 1   | A     | 528 | GLU  |
| 1   | A     | 530 | PHE  |
| 1   | A     | 548 | TYR  |
| 1   | A     | 549 | LEU  |
| 1   | A     | 551 | ARG  |
| 1   | A     | 554 | LYS  |
| 1   | A     | 560 | ASN  |
| 1   | A     | 568 | LYS  |
| 1   | A     | 573 | TYR  |
| 1   | A     | 574 | LYS  |
| 1   | A     | 576 | GLN  |
| 1   | A     | 579 | ASN  |
| 1   | A     | 581 | LEU  |
| 1   | A     | 584 | ILE  |
| 1   | A     | 591 | LYS  |
| 1   | A     | 592 | LYS  |
| 1   | A     | 601 | ARG  |
| 1   | A     | 613 | TYR  |
| 1   | A     | 622 | LEU  |
| 1   | A     | 635 | VAL  |
| 1   | A     | 638 | ASP  |
| 1   | A     | 640 | LEU  |
| 1   | A     | 641 | ARG  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 645 | LEU  |
| 1   | A     | 665 | GLN  |
| 1   | A     | 666 | ILE  |
| 1   | A     | 667 | SER  |
| 1   | A     | 678 | ASN  |
| 1   | A     | 706 | GLU  |
| 1   | A     | 708 | PHE  |
| 1   | A     | 713 | MET  |
| 1   | A     | 714 | ARG  |
| 1   | A     | 724 | ARG  |
| 1   | A     | 730 | GLU  |
| 1   | A     | 733 | ASP  |
| 1   | A     | 737 | GLU  |
| 1   | A     | 739 | ARG  |
| 1   | A     | 747 | SER  |
| 1   | A     | 753 | LYS  |
| 1   | A     | 754 | GLN  |
| 1   | A     | 756 | ASP  |
| 1   | A     | 760 | ASP  |
| 1   | A     | 763 | ASN  |
| 1   | A     | 764 | MET  |
| 1   | A     | 765 | LEU  |
| 1   | A     | 768 | HIS  |
| 1   | A     | 790 | LEU  |
| 1   | A     | 792 | LYS  |
| 1   | A     | 794 | PRO  |
| 1   | A     | 795 | ARG  |
| 1   | A     | 797 | TRP  |
| 1   | A     | 803 | ARG  |
| 1   | A     | 807 | THR  |
| 1   | A     | 812 | SER  |
| 1   | A     | 813 | SER  |
| 1   | A     | 815 | ARG  |
| 1   | A     | 817 | ILE  |
| 1   | A     | 827 | VAL  |
| 1   | A     | 830 | SER  |
| 1   | A     | 838 | ASP  |
| 1   | A     | 839 | GLU  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 34  | HIS  |
| 1   | A     | 36  | HIS  |
| 1   | A     | 72  | GLN  |
| 1   | A     | 101 | ASN  |
| 1   | A     | 106 | ASN  |
| 1   | A     | 187 | ASN  |
| 1   | A     | 235 | ASN  |
| 1   | A     | 282 | ASN  |
| 1   | A     | 412 | ASN  |
| 1   | A     | 459 | HIS  |
| 1   | A     | 477 | HIS  |
| 1   | A     | 481 | ASN  |
| 1   | A     | 484 | ASN  |
| 1   | A     | 539 | GLN  |
| 1   | A     | 560 | ASN  |
| 1   | A     | 566 | GLN  |
| 1   | A     | 576 | GLN  |
| 1   | A     | 579 | ASN  |
| 1   | A     | 632 | HIS  |
| 1   | A     | 678 | ASN  |
| 1   | A     | 754 | GLN  |
| 1   | A     | 763 | ASN  |
| 1   | A     | 768 | HIS  |
| 1   | A     | 793 | ASN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

1 ligand is 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 | $\# Z  > 2$ |
| 2   | PLP  | A     | 999 | 1    | 15,15,16     | 2.05 | 6 (40%)     | 21,22,23    | 2.91 | 8 (38%)     |

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   |
|-----|------|-------|-----|------|---------|----------|---------|
| 2   | PLP  | A     | 999 | 1    | -       | 2/6/6/8  | 0/1/1/1 |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 2   | A     | 999 | PLP  | C4A-C4 | -4.05 | 1.43        | 1.51     |
| 2   | A     | 999 | PLP  | C5A-C5 | 3.42  | 1.59        | 1.50     |
| 2   | A     | 999 | PLP  | P-O4P  | 3.31  | 1.70        | 1.60     |
| 2   | A     | 999 | PLP  | P-O2P  | -2.35 | 1.46        | 1.54     |
| 2   | A     | 999 | PLP  | C2A-C2 | 2.03  | 1.53        | 1.50     |
| 2   | A     | 999 | PLP  | P-O3P  | -2.00 | 1.47        | 1.54     |

All (8) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 2   | A     | 999 | PLP  | C6-N1-C2   | 5.64  | 129.42      | 119.20   |
| 2   | A     | 999 | PLP  | O4P-C5A-C5 | -5.49 | 99.06       | 109.36   |
| 2   | A     | 999 | PLP  | C5-C6-N1   | -5.28 | 115.23      | 123.83   |
| 2   | A     | 999 | PLP  | C3-C2-N1   | -4.60 | 115.16      | 120.96   |
| 2   | A     | 999 | PLP  | C2A-C2-N1  | 4.35  | 125.83      | 117.64   |
| 2   | A     | 999 | PLP  | C6-C5-C4   | 4.00  | 121.37      | 118.10   |
| 2   | A     | 999 | PLP  | O2P-P-O4P  | -3.71 | 97.00       | 106.67   |
| 2   | A     | 999 | PLP  | O2P-P-O1P  | 2.83  | 121.87      | 110.83   |

There are no chirality outliers.



All (2) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms         |
|-----|-------|-----|------|---------------|
| 2   | A     | 999 | PLP  | C4-C5-C5A-O4P |
| 2   | A     | 999 | PLP  | C6-C5-C5A-O4P |

There are no ring outliers.

1 monomer is involved in 1 short contact:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 2   | A     | 999 | PLP  | 1       | 0            |

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates ⓘ

EDS was not executed - this section is therefore empty.

### 6.4 Ligands ⓘ

EDS was not executed - this section is therefore empty.

### 6.5 Other polymers ⓘ

EDS was not executed - this section is therefore empty.