



# Full wwPDB X-ray Structure Validation Report ⓘ

May 26, 2020 – 12:30 pm BST

PDB ID : 1CQZ  
Title : CRYSTAL STRUCTURE OF MURINE SOLUBLE EPOXIDE HYDROLASE.  
Authors : Argiriadi, M.A.; Morisseau, C.; Hammock, B.D.; Christianson, D.W.  
Deposited on : 1999-08-12  
Resolution : 2.80 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.

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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  
Xtrriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.11

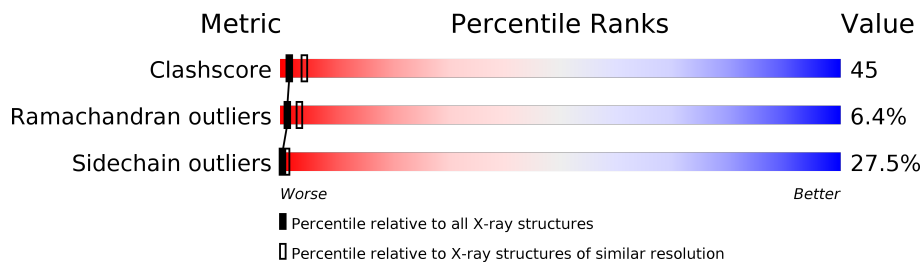
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 Å.

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



| Metric                | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| Clashscore            | 141614                      | 3569 (2.80-2.80)                                      |
| Ramachandran outliers | 138981                      | 3498 (2.80-2.80)                                      |
| Sidechain outliers    | 138945                      | 3500 (2.80-2.80)                                      |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on 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     | 554    |                  |
| 1   | B     | 554    |                  |

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 8218 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 EPOXIDE HYDROLASE.

| Mol | Chain | Residues | Atoms |      |     |     |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S  |         |         |       |
| 1   | A     | 487      | 3879  | 2501 | 648 | 701 | 29 | 61      | 0       | 0     |
| 1   | B     | 541      | 4299  | 2766 | 719 | 783 | 31 | 71      | 0       | 0     |

- Molecule 2 is water.

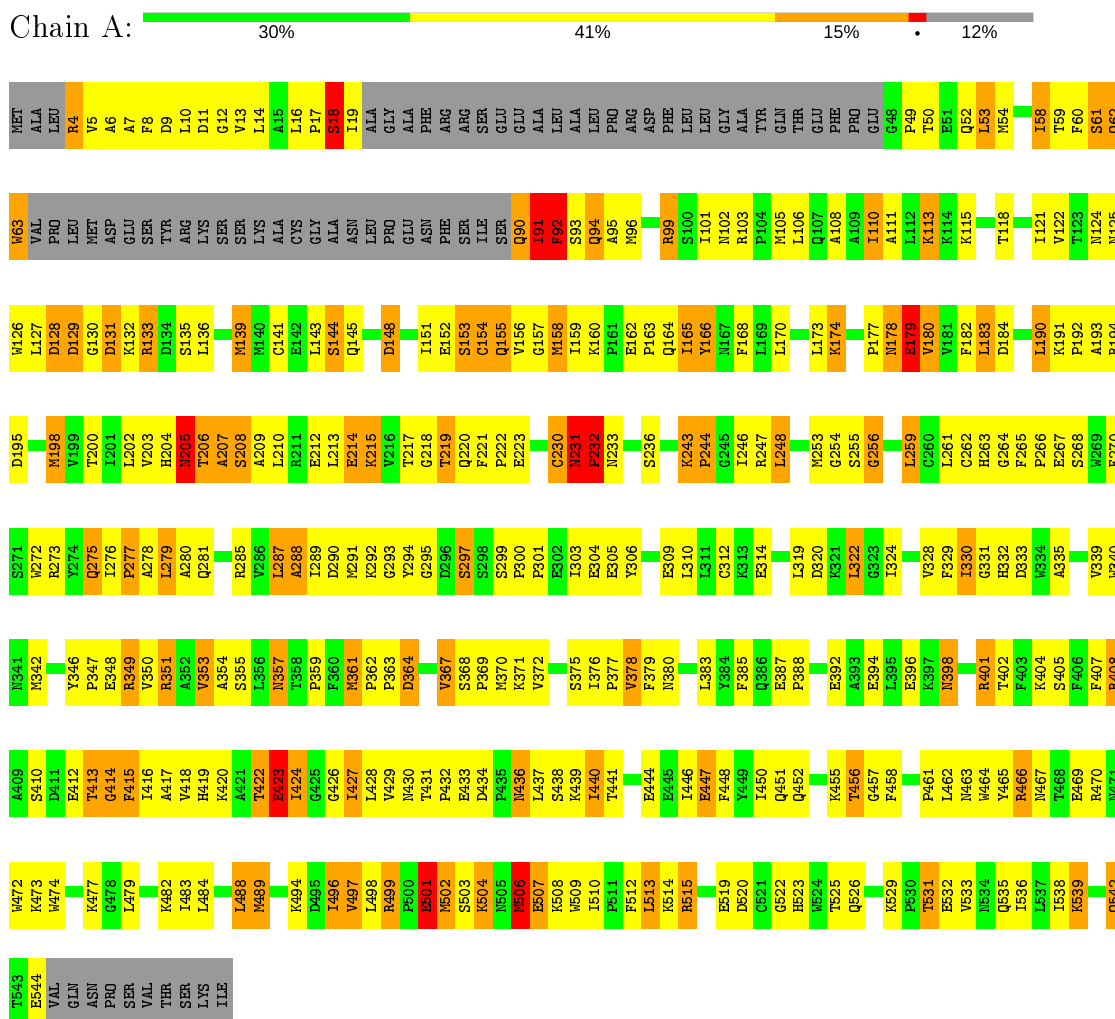
| Mol | Chain | Residues | Atoms       |         | ZeroOcc | AltConf |
|-----|-------|----------|-------------|---------|---------|---------|
| 2   | A     | 18       | Total<br>18 | O<br>18 | 0       | 0       |
| 2   | B     | 22       | Total<br>22 | O<br>22 | 0       | 0       |

### 3 Residue-property plots

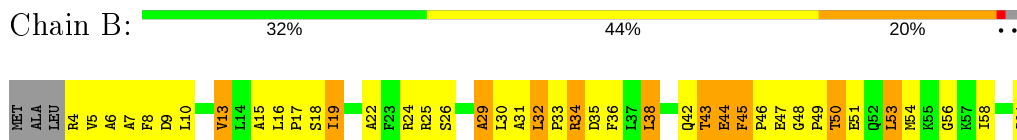
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according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



- Molecule 1: EPOXIDE HYDROLASE



|     |      |      |      |      |      |      |
|-----|------|------|------|------|------|------|
| SER | G480 | F415 | R349 | A278 | T266 | M139 |
| VAL | R481 | I416 | V350 | L279 | A207 | D68  |
| THR | K482 | A417 | R351 | A280 | S208 | E69  |
| SER | I483 | V418 | A352 | Q281 | G    | S70  |
| LYS | L484 | H419 | V353 | R255 | R211 | Y71  |
| ILE | L488 | K420 | A354 | R265 | L212 | R72  |
|     | M489 | A421 | S355 | V286 | L145 | K73  |
|     |      | T422 | L356 | L287 | F147 | S74  |
|     |      | E423 | N357 | K215 | S75  | S76  |
|     |      | I424 | T358 | V216 | K76  | K77  |
|     |      | G425 | P359 | T217 | A77  | A78  |
|     |      | G426 | F360 | G218 | C78  | C79  |
|     |      | I427 | M361 | T219 | I151 | G79  |
|     |      | L428 | P362 | Q220 | A80  | A81  |
|     |      | V429 | P363 | F221 | N81  | N82  |
|     |      | M430 | D364 | P222 | L82  | L83  |
|     |      | T431 | G    | E223 | P83  | P84  |
|     |      | P432 | V367 | A224 | E84  | E85  |
|     |      | E433 | S368 | P225 | N85  | N86  |
|     |      | D434 | P369 | G    | M158 | M159 |
|     |      | P435 | M370 | V228 | I159 | I160 |
|     |      | N436 | K371 | P229 | K160 | K161 |
|     |      | L437 | V372 | C230 | P161 | P162 |
|     |      | S438 | G    | N231 | E163 | E164 |
|     |      | K439 | S375 | P232 | P163 | P164 |
|     |      | L440 | I376 | M233 | L165 | L166 |
|     |      | T441 | P377 | D234 | Y166 | Y167 |
|     |      | G    | V378 | V235 | S100 | S101 |
|     |      | E444 | F379 | S236 | I101 | I102 |
|     |      | E445 | N380 | K243 | N102 | N103 |
|     |      | I446 | I381 | P244 | R103 | R104 |
|     |      | E447 | C312 | R247 | M105 | M106 |
|     |      | F448 | R313 | L248 | L106 | L107 |
|     |      | Y449 | E314 | M178 | Q107 | Q108 |
|     |      | Q451 | F318 | L249 | G    | G    |
|     |      | K455 | L319 | M253 | I110 | I111 |
|     |      | T456 | D320 | G254 | A111 | A112 |
|     |      | G457 | K321 | S255 | L112 | L113 |
|     |      | F458 | L322 | G256 | K113 | K114 |
|     |      | G    | I324 | G    | G    | G    |
|     |      | P461 | V328 | L259 | G116 | G117 |
|     |      | N463 | F329 | L261 | F117 | F118 |
|     |      | W464 | I330 | C262 | T118 | T119 |
|     |      | Y465 | G331 | H263 | C120 | C121 |
|     |      | R466 | H332 | F264 | I121 | I122 |
|     |      | N467 | D333 | P265 | K191 | K192 |
|     |      | T468 | K334 | P266 | P192 | P193 |
|     |      | E469 | A335 | E267 | A193 | A194 |
|     |      | R470 | S405 | S268 | R194 | R195 |
|     |      | W471 | P406 | W269 | G197 | G198 |
|     |      | K472 | F407 | F270 | M198 | M199 |
|     |      | K473 | R408 | S271 | L127 | L128 |
|     |      | W474 | A409 | W272 | V199 | V200 |
|     |      | G    | S410 | R273 | T200 | T201 |
|     |      | K477 | D411 | Y274 | D129 | D130 |
|     |      | G478 | E412 | Q275 | L201 | L202 |
|     |      | L479 | T413 | I276 | L203 | L204 |
|     |      | G    | P414 | G    | V203 | V204 |
|     |      | G    | G414 | G    | H204 | H205 |
|     |      | G    | G    | G    | N205 | N206 |

## 4 Data and refinement statistics

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

| Property   | Value  | Source    |
|--|--|-----------|
| Space group  | P 21 21 2                                      | Depositor |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$ | 151.90Å 143.00Å 60.00Å<br>90.00° 90.00° 90.00° | Depositor |
| Resolution (Å)   | 20.00 – 2.80                                   | Depositor |
| % Data completeness<br>(in resolution range)             | 94.6 (20.00-2.80)                              | Depositor |
| $R_{merge}$  | 0.07   | Depositor |
| $R_{sym}$  | (Not available)                                | Depositor |
| Refinement program                                       | X-PLOR 3.851                                   | Depositor |
| R, $R_{free}$  | 0.214 , 0.309                                  | Depositor |
| Estimated twinning fraction                              | No twinning to report.                         | Xtrriage  |
| Total number of atoms                                    | 8218   | wwPDB-VP  |
| Average B, all atoms (Å <sup>2</sup> )                   | 37.0   | wwPDB-VP  |

## 5 Model quality [i](#)

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

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

| Mol | Chain | Bond lengths |         | Bond angles |                 |
|-----|-------|--------------|---------|-------------|-----------------|
|     |       | RMSZ         | # Z  >5 | RMSZ        | # Z  >5         |
| 1   | A     | 0.66         | 0/3981  | 0.87        | 6/5397 (0.1%)   |
| 1   | B     | 0.68         | 0/4413  | 0.86        | 8/5984 (0.1%)   |
| All | All   | 0.67         | 0/8394  | 0.87        | 14/11381 (0.1%) |

There are no bond length outliers.

All (14) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|--------|-------------|----------|
| 1   | A     | 231 | ASN  | C-N-CD   | -15.19 | 87.18       | 120.60   |
| 1   | A     | 231 | ASN  | C-N-CA   | 8.88   | 159.29      | 122.00   |
| 1   | B     | 231 | ASN  | C-N-CD   | -8.27  | 102.40      | 120.60   |
| 1   | B     | 231 | ASN  | N-CA-C   | 5.43   | 125.67      | 111.00   |
| 1   | B     | 231 | ASN  | C-N-CA   | 5.36   | 144.53      | 122.00   |
| 1   | A     | 436 | ASN  | N-CA-C   | -5.32  | 96.65       | 111.00   |
| 1   | B     | 436 | ASN  | N-CA-C   | -5.26  | 96.79       | 111.00   |
| 1   | B     | 457 | GLY  | N-CA-C   | -5.24  | 99.99       | 113.10   |
| 1   | B     | 66  | LEU  | CA-CB-CG | 5.22   | 127.30      | 115.30   |
| 1   | A     | 232 | PRO  | CA-N-CD  | -5.20  | 104.22      | 111.50   |
| 1   | A     | 488 | LEU  | CA-CB-CG | 5.13   | 127.09      | 115.30   |
| 1   | A     | 457 | GLY  | N-CA-C   | -5.09  | 100.37      | 113.10   |
| 1   | B     | 488 | LEU  | CA-CB-CG | 5.05   | 126.92      | 115.30   |
| 1   | B     | 183 | LEU  | CA-CB-CG | 5.01   | 126.82      | 115.30   |

There are no chirality outliers.

There are no planarity outliers.

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

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 3879  | 0        | 3863     | 335     | 0            |
| 1   | B     | 4299  | 0        | 4270     | 398     | 0            |
| 2   | A     | 18    | 0        | 0        | 4       | 0            |
| 2   | B     | 22    | 0        | 0        | 1       | 0            |
| All | All   | 8218  | 0        | 8133     | 715     | 0            |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 45.

All (715) 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:B:122:VAL:HG12 | 1:B:151:ILE:HG13 | 1.26                     | 1.17              |
| 1:A:348:GLU:HA   | 1:B:133:ARG:HG3  | 1.33                     | 1.11              |
| 1:A:5:VAL:HG22   | 1:A:118:THR:HB   | 1.33                     | 1.08              |
| 1:B:232:PRO:HD2  | 1:B:233:ASN:H    | 1.16                     | 1.03              |
| 1:A:58:ILE:HG22  | 1:A:62:GLN:HG3   | 1.44                     | 1.00              |
| 1:B:204:HIS:O    | 1:B:205:ASN:HB2  | 1.58                     | 0.99              |
| 1:B:19:ILE:HD11  | 1:B:96:MET:HA    | 1.41                     | 0.99              |
| 1:B:127:LEU:HD12 | 1:B:127:LEU:H    | 1.29                     | 0.98              |
| 1:B:122:VAL:CG1  | 1:B:151:ILE:HG13 | 1.93                     | 0.97              |
| 1:B:125:ASN:HD22 | 1:B:152:GLU:HB3  | 1.28                     | 0.97              |
| 1:B:5:VAL:HG21   | 1:B:173:LEU:HD21 | 1.45                     | 0.97              |
| 1:A:205:ASN:ND2  | 1:A:207:ALA:H    | 1.63                     | 0.96              |
| 1:A:193:ALA:O    | 1:A:198:MET:HG3  | 1.65                     | 0.96              |
| 1:A:484:LEU:HD13 | 1:B:61:SER:HB2   | 1.44                     | 0.94              |
| 1:B:322:LEU:HB3  | 1:B:324:ILE:HD12 | 1.50                     | 0.93              |
| 1:A:205:ASN:HD22 | 1:A:207:ALA:H    | 0.97                     | 0.92              |
| 1:A:422:THR:O    | 1:A:423:GLU:HB2  | 1.66                     | 0.92              |
| 1:B:5:VAL:HG21   | 1:B:173:LEU:CD2  | 1.99                     | 0.91              |
| 1:B:44:GLU:O     | 1:B:46:PRO:HD3   | 1.69                     | 0.91              |
| 1:B:259:LEU:HD21 | 1:B:279:LEU:HD13 | 1.52                     | 0.91              |
| 1:A:158:MET:HG2  | 1:A:164:GLN:HG3  | 1.51                     | 0.91              |
| 1:B:64:VAL:HB    | 1:B:65:PRO:HD3   | 1.52                     | 0.91              |
| 1:B:190:LEU:HD22 | 1:B:200:THR:HB   | 1.51                     | 0.90              |
| 1:A:259:LEU:HD21 | 1:A:279:LEU:HD13 | 1.54                     | 0.90              |
| 1:B:127:LEU:HD12 | 1:B:127:LEU:N    | 1.88                     | 0.89              |
| 1:B:26:SER:HA    | 1:B:29:ALA:HB3   | 1.54                     | 0.89              |
| 1:A:320:ASP:OD1  | 1:A:349:ARG:NH2  | 2.06                     | 0.89              |
| 1:B:230:CYS:HB3  | 1:B:277:PRO:HD3  | 1.55                     | 0.89              |
| 1:A:133:ARG:HG3  | 1:B:348:GLU:HA   | 1.55                     | 0.88              |
| 1:B:320:ASP:OD1  | 1:B:349:ARG:NH2  | 2.07                     | 0.88              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:322:LEU:HB3  | 1:A:324:ILE:HD12 | 1.55                     | 0.88              |
| 1:A:339:VAL:HG13 | 1:A:353:VAL:HG12 | 1.55                     | 0.87              |
| 1:B:339:VAL:HG13 | 1:B:353:VAL:HG12 | 1.57                     | 0.87              |
| 1:A:342:MET:HE2  | 1:A:346:TYR:HD2  | 1.38                     | 0.87              |
| 1:A:369:PRO:O    | 1:A:372:VAL:HG22 | 1.74                     | 0.87              |
| 1:B:369:PRO:O    | 1:B:372:VAL:HG22 | 1.75                     | 0.86              |
| 1:B:19:ILE:HD11  | 1:B:96:MET:CA    | 2.04                     | 0.86              |
| 1:B:342:MET:HE2  | 1:B:346:TYR:HD2  | 1.38                     | 0.86              |
| 1:A:158:MET:HB3  | 1:A:165:ILE:HG12 | 1.58                     | 0.85              |
| 1:B:231:ASN:HD22 | 1:B:231:ASN:N    | 1.73                     | 0.84              |
| 1:A:263:HIS:CD2  | 1:A:291:MET:HG2  | 2.12                     | 0.84              |
| 1:B:180:VAL:HG11 | 1:B:198:MET:HE3  | 1.57                     | 0.84              |
| 1:B:155:GLN:HA   | 1:B:155:GLN:OE1  | 1.78                     | 0.84              |
| 1:A:155:GLN:OE1  | 1:A:155:GLN:HA   | 1.75                     | 0.83              |
| 1:B:263:HIS:CD2  | 1:B:291:MET:HG2  | 2.13                     | 0.83              |
| 1:A:106:LEU:O    | 1:A:106:LEU:HD23 | 1.79                     | 0.83              |
| 1:A:378:VAL:HG11 | 2:A:1015:HOH:O   | 1.78                     | 0.82              |
| 1:B:531:THR:HG23 | 1:B:532:GLU:OE2  | 1.79                     | 0.82              |
| 1:A:52:GLN:CG    | 1:A:58:ILE:HD11  | 2.09                     | 0.82              |
| 1:B:232:PRO:CD   | 1:B:233:ASN:H    | 1.91                     | 0.82              |
| 1:A:193:ALA:HB1  | 1:A:198:MET:SD   | 2.20                     | 0.82              |
| 1:B:5:VAL:HG23   | 1:B:118:THR:O    | 1.80                     | 0.82              |
| 1:B:529:LYS:HB3  | 1:B:532:GLU:CG   | 2.09                     | 0.81              |
| 1:A:531:THR:HG23 | 1:A:532:GLU:OE2  | 1.79                     | 0.81              |
| 1:B:62:GLN:O     | 1:B:65:PRO:HD2   | 1.79                     | 0.81              |
| 1:B:446:ILE:O    | 1:B:450:ILE:HD12 | 1.80                     | 0.81              |
| 1:A:484:LEU:HD13 | 1:B:61:SER:CB    | 2.11                     | 0.81              |
| 1:A:243:LYS:HG2  | 1:A:244:PRO:HD2  | 1.62                     | 0.81              |
| 1:A:446:ILE:O    | 1:A:450:ILE:HD12 | 1.79                     | 0.81              |
| 1:B:515:ARG:HH11 | 1:B:515:ARG:HG2  | 1.45                     | 0.81              |
| 1:A:166:TYR:O    | 1:A:170:LEU:HD12 | 1.80                     | 0.80              |
| 1:A:529:LYS:HB3  | 1:A:532:GLU:HG3  | 1.62                     | 0.80              |
| 1:B:194:ARG:HB2  | 1:B:200:THR:HG21 | 1.63                     | 0.80              |
| 1:A:535:GLN:O    | 1:A:539:LYS:HD3  | 1.82                     | 0.80              |
| 1:B:529:LYS:HB3  | 1:B:532:GLU:HG3  | 1.61                     | 0.80              |
| 1:A:13:VAL:HG22  | 1:A:203:VAL:HG21 | 1.64                     | 0.79              |
| 1:A:52:GLN:HG2   | 1:A:58:ILE:HD11  | 1.65                     | 0.79              |
| 1:A:484:LEU:CD1  | 1:B:61:SER:HB2   | 2.12                     | 0.79              |
| 1:B:535:GLN:O    | 1:B:539:LYS:HD3  | 1.83                     | 0.79              |
| 1:B:232:PRO:HD2  | 1:B:233:ASN:N    | 1.97                     | 0.78              |
| 1:A:515:ARG:HH11 | 1:A:515:ARG:HG2  | 1.47                     | 0.78              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:106:LEU:HD21 | 1:A:110:ILE:HD11 | 1.63                     | 0.78              |
| 1:A:529:LYS:HB3  | 1:A:532:GLU:CG   | 2.12                     | 0.78              |
| 1:B:259:LEU:HB2  | 1:B:328:VAL:HG22 | 1.66                     | 0.77              |
| 1:B:243:LYS:HG2  | 1:B:244:PRO:HD2  | 1.64                     | 0.77              |
| 1:B:215:LYS:HA   | 1:B:219:THR:O    | 1.84                     | 0.77              |
| 1:B:183:LEU:HD13 | 1:B:201:ILE:HB   | 1.68                     | 0.76              |
| 1:A:177:PRO:O    | 1:A:198:MET:HA   | 1.86                     | 0.76              |
| 1:A:190:LEU:HD22 | 1:A:200:THR:HB   | 1.66                     | 0.76              |
| 1:B:50:THR:HG23  | 1:B:63:TRP:HE1   | 1.50                     | 0.76              |
| 1:B:230:CYS:HB3  | 1:B:277:PRO:CD   | 2.15                     | 0.75              |
| 1:B:231:ASN:ND2  | 1:B:231:ASN:N    | 2.34                     | 0.75              |
| 1:A:108:ALA:O    | 1:A:111:ALA:HB3  | 1.87                     | 0.74              |
| 1:A:166:TYR:HD1  | 1:A:166:TYR:H    | 1.35                     | 0.74              |
| 1:B:71:TYR:O     | 1:B:75:SER:HB3   | 1.87                     | 0.74              |
| 1:A:483:ILE:HB   | 1:A:510:ILE:HG12 | 1.70                     | 0.74              |
| 1:A:259:LEU:HB2  | 1:A:328:VAL:HG22 | 1.70                     | 0.73              |
| 1:B:300:PRO:HG2  | 1:B:305:GLU:HG2  | 1.71                     | 0.73              |
| 1:B:127:LEU:H    | 1:B:127:LEU:CD1  | 2.02                     | 0.73              |
| 1:B:141:CYS:O    | 1:B:144:SER:HB3  | 1.89                     | 0.73              |
| 1:B:158:MET:CE   | 1:B:164:GLN:HB2  | 2.19                     | 0.73              |
| 1:B:230:CYS:SG   | 1:B:230:CYS:O    | 2.47                     | 0.73              |
| 1:B:330:ILE:HB   | 1:B:354:ALA:HB3  | 1.70                     | 0.73              |
| 1:B:19:ILE:CD1   | 1:B:96:MET:HA    | 2.17                     | 0.73              |
| 1:B:106:LEU:HD21 | 1:B:146:HIS:HD2  | 1.53                     | 0.72              |
| 1:A:300:PRO:HG2  | 1:A:305:GLU:HG2  | 1.70                     | 0.72              |
| 1:B:259:LEU:O    | 1:B:259:LEU:HD12 | 1.90                     | 0.72              |
| 1:A:60:PHE:O     | 1:A:63:TRP:HB2   | 1.90                     | 0.72              |
| 1:A:124:ASN:HA   | 1:A:153:SER:HB3  | 1.72                     | 0.72              |
| 1:B:483:ILE:HB   | 1:B:510:ILE:HG12 | 1.70                     | 0.72              |
| 1:A:299:SER:CB   | 1:A:456:THR:HG22 | 2.19                     | 0.71              |
| 1:A:330:ILE:HB   | 1:A:354:ALA:HB3  | 1.72                     | 0.71              |
| 1:B:230:CYS:HB3  | 1:B:277:PRO:CG   | 2.20                     | 0.71              |
| 1:A:13:VAL:CG2   | 1:A:203:VAL:HG21 | 2.20                     | 0.71              |
| 1:A:513:LEU:HD22 | 1:A:514:LYS:O    | 1.90                     | 0.71              |
| 1:B:158:MET:HG2  | 1:B:164:GLN:HG3  | 1.72                     | 0.70              |
| 1:A:58:ILE:HG22  | 1:A:62:GLN:CG    | 2.19                     | 0.70              |
| 1:B:215:LYS:HZ3  | 1:B:221:PHE:H    | 1.39                     | 0.70              |
| 1:A:342:MET:HE2  | 1:A:346:TYR:CD2  | 2.24                     | 0.70              |
| 1:B:291:MET:HA   | 1:B:291:MET:HE3  | 1.72                     | 0.70              |
| 1:B:158:MET:HE2  | 1:B:164:GLN:HB2  | 1.74                     | 0.70              |
| 1:B:190:LEU:HD13 | 1:B:202:LEU:HD12 | 1.72                     | 0.70              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:61:SER:HB3   | 1:B:484:LEU:HD13 | 1.71                     | 0.70              |
| 1:A:259:LEU:O    | 1:A:259:LEU:HD12 | 1.92                     | 0.70              |
| 1:B:75:SER:O     | 1:B:77:ALA:N     | 2.25                     | 0.70              |
| 1:A:496:ILE:HD12 | 1:A:496:ILE:H    | 1.56                     | 0.69              |
| 1:B:180:VAL:HG13 | 1:B:198:MET:HG2  | 1.73                     | 0.69              |
| 1:A:434:ASP:O    | 1:A:434:ASP:CG   | 2.29                     | 0.69              |
| 1:A:446:ILE:HG22 | 1:A:450:ILE:HD11 | 1.75                     | 0.69              |
| 1:B:513:LEU:HD22 | 1:B:514:LYS:O    | 1.93                     | 0.69              |
| 1:A:328:VAL:HG12 | 1:A:351:ARG:HB3  | 1.74                     | 0.69              |
| 1:A:53:LEU:HA    | 1:A:58:ILE:HD12  | 1.74                     | 0.69              |
| 1:A:426:GLY:O    | 1:A:429:VAL:HG23 | 1.92                     | 0.68              |
| 1:B:299:SER:CB   | 1:B:456:THR:HG22 | 2.22                     | 0.68              |
| 1:B:75:SER:OG    | 1:B:76:LYS:N     | 2.23                     | 0.68              |
| 1:A:173:LEU:O    | 1:A:174:LYS:HB2  | 1.91                     | 0.68              |
| 1:B:342:MET:HE2  | 1:B:346:TYR:CD2  | 2.26                     | 0.68              |
| 1:B:211:ARG:O    | 1:B:215:LYS:HG2  | 1.93                     | 0.68              |
| 1:B:376:ILE:HD12 | 1:B:379:PHE:CE2  | 2.28                     | 0.68              |
| 1:B:230:CYS:HB3  | 1:B:277:PRO:HG3  | 1.74                     | 0.68              |
| 1:A:148:ASP:N    | 1:A:148:ASP:OD1  | 2.26                     | 0.68              |
| 1:B:328:VAL:HG12 | 1:B:351:ARG:HB3  | 1.75                     | 0.68              |
| 1:A:348:GLU:HA   | 1:B:133:ARG:CG   | 2.19                     | 0.67              |
| 1:A:106:LEU:CD2  | 1:A:110:ILE:HD11 | 2.23                     | 0.67              |
| 1:A:210:LEU:O    | 1:A:214:GLU:HB2  | 1.94                     | 0.67              |
| 1:B:223:GLU:H    | 1:B:223:GLU:CD   | 1.97                     | 0.67              |
| 1:B:215:LYS:C    | 1:B:217:THR:H    | 1.96                     | 0.67              |
| 1:A:52:GLN:HG3   | 1:A:58:ILE:HD11  | 1.76                     | 0.67              |
| 1:B:158:MET:HG2  | 1:B:164:GLN:CG   | 2.25                     | 0.67              |
| 1:B:194:ARG:HB2  | 1:B:200:THR:CG2  | 2.24                     | 0.67              |
| 1:A:207:ALA:O    | 1:A:210:LEU:HB3  | 1.95                     | 0.66              |
| 1:A:291:MET:HA   | 1:A:291:MET:HE3  | 1.76                     | 0.66              |
| 1:B:112:LEU:O    | 1:B:117:PHE:HB2  | 1.94                     | 0.66              |
| 1:B:270:PHE:CE1  | 1:B:273:ARG:HD3  | 2.30                     | 0.66              |
| 1:B:529:LYS:O    | 1:B:533:VAL:HG23 | 1.95                     | 0.66              |
| 1:A:205:ASN:ND2  | 1:A:207:ALA:N    | 2.39                     | 0.66              |
| 1:A:248:LEU:HA   | 1:A:297:SER:HB3  | 1.77                     | 0.66              |
| 1:B:496:ILE:H    | 1:B:496:ILE:HD12 | 1.58                     | 0.66              |
| 1:B:467:ASN:OD1  | 1:B:470:ARG:HD2  | 1.96                     | 0.66              |
| 1:B:204:HIS:O    | 1:B:205:ASN:CB   | 2.39                     | 0.66              |
| 1:B:46:PRO:HG2   | 1:B:159:ILE:CD1  | 2.26                     | 0.66              |
| 1:B:248:LEU:HA   | 1:B:297:SER:HB3  | 1.78                     | 0.65              |
| 1:B:446:ILE:HG22 | 1:B:450:ILE:HD11 | 1.77                     | 0.65              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:58:ILE:HA    | 1:A:62:GLN:OE1   | 1.97                     | 0.65              |
| 1:A:50:THR:HA    | 1:A:63:TRP:HZ2   | 1.61                     | 0.65              |
| 1:A:309:GLU:HB2  | 1:A:474:TRP:CD2  | 2.32                     | 0.65              |
| 1:B:124:ASN:HA   | 1:B:153:SER:HB3  | 1.77                     | 0.65              |
| 1:A:166:TYR:HD1  | 1:A:166:TYR:N    | 1.94                     | 0.65              |
| 1:B:106:LEU:HD21 | 1:B:146:HIS:CD2  | 2.31                     | 0.65              |
| 1:B:309:GLU:HB2  | 1:B:474:TRP:CD2  | 2.31                     | 0.65              |
| 1:A:166:TYR:CD1  | 1:A:166:TYR:N    | 2.62                     | 0.64              |
| 1:B:276:ILE:HD11 | 1:B:288:ALA:CB   | 2.27                     | 0.64              |
| 1:A:376:ILE:HD12 | 1:A:379:PHE:CE2  | 2.33                     | 0.64              |
| 1:B:293:GLY:HA2  | 1:B:299:SER:HA   | 1.78                     | 0.64              |
| 1:A:529:LYS:O    | 1:A:533:VAL:HG23 | 1.97                     | 0.64              |
| 1:B:232:PRO:HD2  | 1:B:233:ASN:HD22 | 1.62                     | 0.64              |
| 1:A:145:GLN:HA   | 1:A:145:GLN:NE2  | 2.13                     | 0.64              |
| 1:B:535:GLN:HG2  | 1:B:539:LYS:NZ   | 2.13                     | 0.64              |
| 1:A:293:GLY:HA2  | 1:A:299:SER:HA   | 1.79                     | 0.64              |
| 1:B:159:ILE:O    | 1:B:162:GLU:HB2  | 1.97                     | 0.63              |
| 1:B:510:ILE:HG22 | 1:B:513:LEU:HB2  | 1.80                     | 0.63              |
| 1:B:13:VAL:HB    | 1:B:203:VAL:HG11 | 1.80                     | 0.63              |
| 1:A:177:PRO:O    | 1:A:198:MET:HB3  | 1.97                     | 0.63              |
| 1:B:75:SER:HB2   | 1:B:82:LEU:CB    | 2.29                     | 0.63              |
| 1:A:427:ILE:HG12 | 1:A:427:ILE:O    | 1.98                     | 0.63              |
| 1:A:122:VAL:HG12 | 1:A:151:ILE:HB   | 1.79                     | 0.63              |
| 1:A:446:ILE:HG22 | 1:A:450:ILE:CD1  | 2.28                     | 0.63              |
| 1:A:467:ASN:OD1  | 1:A:470:ARG:HD2  | 1.98                     | 0.63              |
| 1:A:158:MET:CG   | 1:A:164:GLN:HG3  | 2.26                     | 0.63              |
| 1:B:124:ASN:HA   | 1:B:153:SER:CB   | 2.29                     | 0.62              |
| 1:A:106:LEU:C    | 1:A:106:LEU:HD23 | 2.19                     | 0.62              |
| 1:B:38:LEU:HD13  | 1:B:42:GLN:HB3   | 1.81                     | 0.62              |
| 1:B:25:ARG:HH11  | 1:B:25:ARG:HG2   | 1.65                     | 0.62              |
| 1:A:276:ILE:HD11 | 1:A:288:ALA:CB   | 2.30                     | 0.62              |
| 1:B:139:MET:O    | 1:B:143:LEU:HD12 | 1.99                     | 0.61              |
| 1:B:426:GLY:HA3  | 1:B:429:VAL:CG2  | 2.29                     | 0.61              |
| 1:B:8:PHE:O      | 1:B:121:ILE:HG23 | 2.00                     | 0.61              |
| 1:A:394:GLU:OE2  | 1:A:428:LEU:HB2  | 2.00                     | 0.61              |
| 1:B:9:ASP:O      | 1:B:13:VAL:HG22  | 2.01                     | 0.61              |
| 1:A:270:PHE:CE1  | 1:A:273:ARG:HD3  | 2.35                     | 0.61              |
| 1:B:264:GLY:HA3  | 1:B:333:ASP:HB3  | 1.83                     | 0.61              |
| 1:B:259:LEU:HD21 | 1:B:279:LEU:CD1  | 2.29                     | 0.61              |
| 1:B:394:GLU:OE2  | 1:B:428:LEU:HB2  | 2.01                     | 0.61              |
| 1:A:535:GLN:HG2  | 1:A:539:LYS:NZ   | 2.15                     | 0.61              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:359:PRO:HA   | 1:A:489:MET:CE   | 2.30                     | 0.60              |
| 1:A:416:ILE:CG2  | 1:A:427:ILE:HD11 | 2.30                     | 0.60              |
| 1:A:497:VAL:HA   | 2:A:1015:HOH:O   | 2.00                     | 0.60              |
| 1:B:232:PRO:HD2  | 1:B:233:ASN:ND2  | 2.16                     | 0.60              |
| 1:A:378:VAL:HG21 | 2:A:1015:HOH:O   | 2.00                     | 0.60              |
| 1:A:264:GLY:HA3  | 1:A:333:ASP:HB3  | 1.83                     | 0.60              |
| 1:B:146:HIS:N    | 1:B:146:HIS:ND1  | 2.50                     | 0.60              |
| 1:B:16:LEU:HD13  | 1:B:206:THR:HG22 | 1.83                     | 0.60              |
| 1:A:329:PHE:HB3  | 1:A:339:VAL:HG22 | 1.84                     | 0.60              |
| 1:A:159:ILE:O    | 1:A:165:ILE:HD11 | 2.02                     | 0.60              |
| 1:A:180:VAL:HG13 | 1:A:198:MET:HB3  | 1.83                     | 0.60              |
| 1:A:398:ASN:OD1  | 1:A:398:ASN:C    | 2.39                     | 0.59              |
| 1:B:259:LEU:C    | 1:B:259:LEU:HD12 | 2.23                     | 0.59              |
| 1:B:268:SER:HB2  | 2:B:1004:HOH:O   | 2.02                     | 0.59              |
| 1:A:322:LEU:HD22 | 1:A:324:ILE:HD11 | 1.84                     | 0.59              |
| 1:B:187:GLY:HA2  | 1:B:202:LEU:HD11 | 1.83                     | 0.59              |
| 1:B:215:LYS:NZ   | 1:B:221:PHE:H    | 1.99                     | 0.59              |
| 1:B:446:ILE:HG22 | 1:B:450:ILE:CD1  | 2.31                     | 0.59              |
| 1:B:529:LYS:HB3  | 1:B:532:GLU:HG2  | 1.83                     | 0.59              |
| 1:B:322:LEU:HD22 | 1:B:324:ILE:HD11 | 1.83                     | 0.59              |
| 1:B:424:ILE:HD13 | 1:B:424:ILE:N    | 2.17                     | 0.59              |
| 1:A:94:GLN:CD    | 1:A:94:GLN:H     | 2.04                     | 0.59              |
| 1:B:230:CYS:CB   | 1:B:277:PRO:HG3  | 2.33                     | 0.59              |
| 1:B:447:GLU:HA   | 1:B:450:ILE:HD13 | 1.84                     | 0.59              |
| 1:B:359:PRO:HA   | 1:B:489:MET:CE   | 2.33                     | 0.59              |
| 1:B:74:SER:O     | 1:B:75:SER:O     | 2.21                     | 0.59              |
| 1:B:270:PHE:HB2  | 1:B:448:PHE:CE2  | 2.38                     | 0.58              |
| 1:B:398:ASN:C    | 1:B:398:ASN:OD1  | 2.39                     | 0.58              |
| 1:B:329:PHE:HB3  | 1:B:339:VAL:HG22 | 1.85                     | 0.58              |
| 1:A:510:ILE:HG22 | 1:A:513:LEU:HB2  | 1.84                     | 0.58              |
| 1:A:5:VAL:CG1    | 1:A:6:ALA:N      | 2.67                     | 0.58              |
| 1:A:474:TRP:O    | 1:A:477:LYS:HG3  | 2.04                     | 0.58              |
| 1:B:538:ILE:O    | 1:B:542:GLN:HG2  | 2.04                     | 0.58              |
| 1:B:125:ASN:ND2  | 1:B:152:GLU:HB3  | 2.10                     | 0.58              |
| 1:A:270:PHE:HB2  | 1:A:448:PHE:CE2  | 2.39                     | 0.58              |
| 1:A:310:LEU:O    | 1:A:314:GLU:HG3  | 2.03                     | 0.58              |
| 1:A:7:ALA:O      | 1:A:183:LEU:HD23 | 2.04                     | 0.58              |
| 1:A:496:ILE:N    | 1:A:496:ILE:HD12 | 2.18                     | 0.58              |
| 1:A:159:ILE:O    | 1:A:159:ILE:HD12 | 2.04                     | 0.58              |
| 1:A:404:LYS:O    | 1:A:408:ARG:HD2  | 2.04                     | 0.58              |
| 1:B:424:ILE:H    | 1:B:424:ILE:CD1  | 2.17                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:496:ILE:CD1  | 1:A:496:ILE:H    | 2.17                     | 0.57              |
| 1:A:177:PRO:O    | 1:A:198:MET:CA   | 2.52                     | 0.57              |
| 1:B:160:LYS:HA   | 1:B:165:ILE:HD11 | 1.86                     | 0.57              |
| 1:A:431:THR:HG23 | 1:A:432:PRO:HD2  | 1.86                     | 0.57              |
| 1:A:538:ILE:O    | 1:A:542:GLN:HG2  | 2.03                     | 0.57              |
| 1:B:203:VAL:O    | 1:B:203:VAL:HG12 | 2.04                     | 0.57              |
| 1:B:187:GLY:HA2  | 1:B:190:LEU:HB2  | 1.86                     | 0.57              |
| 1:B:404:LYS:O    | 1:B:408:ARG:HD2  | 2.05                     | 0.57              |
| 1:B:75:SER:C     | 1:B:77:ALA:N     | 2.56                     | 0.57              |
| 1:A:447:GLU:HA   | 1:A:450:ILE:HD13 | 1.86                     | 0.57              |
| 1:B:122:VAL:HG21 | 1:B:182:PHE:CE2  | 2.40                     | 0.57              |
| 1:B:75:SER:HB2   | 1:B:82:LEU:HB2   | 1.86                     | 0.57              |
| 1:B:232:PRO:O    | 1:B:235:VAL:HG22 | 2.04                     | 0.57              |
| 1:B:291:MET:CE   | 1:B:291:MET:HA   | 2.35                     | 0.57              |
| 1:B:36:PHE:HZ    | 1:B:75:SER:HA    | 1.69                     | 0.57              |
| 1:B:26:SER:HA    | 1:B:29:ALA:CB    | 2.29                     | 0.56              |
| 1:A:159:ILE:C    | 1:A:165:ILE:HD11 | 2.25                     | 0.56              |
| 1:B:22:ALA:HA    | 1:B:25:ARG:HD3   | 1.86                     | 0.56              |
| 1:A:61:SER:HB2   | 1:A:129:ASP:OD1  | 2.06                     | 0.56              |
| 1:B:427:ILE:HG13 | 1:B:428:LEU:HD13 | 1.87                     | 0.56              |
| 1:B:36:PHE:HE2   | 1:B:82:LEU:HD13  | 1.71                     | 0.56              |
| 1:A:291:MET:CE   | 1:A:291:MET:HA   | 2.36                     | 0.56              |
| 1:A:294:TYR:CZ   | 1:A:461:PRO:HB3  | 2.41                     | 0.56              |
| 1:B:193:ALA:O    | 1:B:198:MET:HB2  | 2.06                     | 0.56              |
| 1:B:346:TYR:O    | 1:B:350:VAL:HG23 | 2.06                     | 0.56              |
| 1:A:206:THR:O    | 1:A:207:ALA:CB   | 2.54                     | 0.56              |
| 1:A:4:ARG:HG3    | 1:A:179:GLU:HB3  | 1.88                     | 0.56              |
| 1:A:17:PRO:O     | 1:A:18:SER:O     | 2.24                     | 0.56              |
| 1:B:178:ASN:N    | 1:B:178:ASN:ND2  | 2.53                     | 0.56              |
| 1:B:474:TRP:O    | 1:B:477:LYS:HG3  | 2.05                     | 0.56              |
| 1:A:529:LYS:HB3  | 1:A:532:GLU:HG2  | 1.87                     | 0.55              |
| 1:B:180:VAL:O    | 1:B:199:VAL:HG23 | 2.06                     | 0.55              |
| 1:A:8:PHE:O      | 1:A:121:ILE:HA   | 2.06                     | 0.55              |
| 1:B:532:GLU:O    | 1:B:536:ILE:HG13 | 2.07                     | 0.55              |
| 1:B:73:LYS:O     | 1:B:77:ALA:HB3   | 2.05                     | 0.55              |
| 1:A:532:GLU:O    | 1:A:536:ILE:HG13 | 2.06                     | 0.55              |
| 1:B:440:ILE:HG22 | 1:B:441:THR:HG23 | 1.88                     | 0.55              |
| 1:A:231:ASN:N    | 1:A:231:ASN:HD22 | 2.04                     | 0.55              |
| 1:A:259:LEU:HD12 | 1:A:259:LEU:C    | 2.26                     | 0.55              |
| 1:A:52:GLN:HE21  | 1:A:58:ILE:HG12  | 1.71                     | 0.55              |
| 1:B:434:ASP:H    | 1:B:435:PRO:HD3  | 1.71                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:262:CYS:HB2  | 1:A:335:ALA:HB1  | 1.89                     | 0.55              |
| 1:B:128:ASP:O    | 1:B:133:ARG:HD3  | 2.07                     | 0.55              |
| 1:B:496:ILE:H    | 1:B:496:ILE:CD1  | 2.19                     | 0.55              |
| 1:B:496:ILE:N    | 1:B:496:ILE:HD12 | 2.21                     | 0.55              |
| 1:A:231:ASN:N    | 1:A:231:ASN:ND2  | 2.53                     | 0.55              |
| 1:A:346:TYR:O    | 1:A:350:VAL:HG23 | 2.07                     | 0.55              |
| 1:B:215:LYS:C    | 1:B:217:THR:N    | 2.59                     | 0.55              |
| 1:B:49:PRO:HD2   | 1:B:67:MET:HE2   | 1.88                     | 0.55              |
| 1:A:156:VAL:HG11 | 1:A:168:PHE:HE2  | 1.72                     | 0.55              |
| 1:A:463:ASN:HA   | 1:A:466:ARG:HG3  | 1.88                     | 0.54              |
| 1:A:215:LYS:HB2  | 1:A:219:THR:O    | 2.06                     | 0.54              |
| 1:A:304:GLU:H    | 1:A:304:GLU:CD   | 2.10                     | 0.54              |
| 1:A:497:VAL:O    | 1:A:498:LEU:HB2  | 2.07                     | 0.54              |
| 1:B:159:ILE:O    | 1:B:165:ILE:HD11 | 2.07                     | 0.54              |
| 1:B:497:VAL:O    | 1:B:498:LEU:HB2  | 2.08                     | 0.54              |
| 1:A:299:SER:HB2  | 1:A:456:THR:HG22 | 1.89                     | 0.54              |
| 1:B:310:LEU:O    | 1:B:314:GLU:HG3  | 2.07                     | 0.54              |
| 1:B:5:VAL:HG21   | 1:B:173:LEU:HD23 | 1.86                     | 0.54              |
| 1:A:264:GLY:O    | 1:A:267:GLU:HG3  | 2.06                     | 0.54              |
| 1:B:202:LEU:HD23 | 1:B:204:HIS:CD2  | 2.42                     | 0.54              |
| 1:A:428:LEU:O    | 1:A:431:THR:HB   | 2.07                     | 0.54              |
| 1:A:256:GLY:N    | 1:A:285:ARG:HB2  | 2.23                     | 0.54              |
| 1:B:292:LYS:NZ   | 1:B:305:GLU:HG3  | 2.23                     | 0.54              |
| 1:A:159:ILE:O    | 1:A:162:GLU:HB2  | 2.07                     | 0.54              |
| 1:B:100:SER:HA   | 1:B:139:MET:HE1  | 1.89                     | 0.54              |
| 1:B:434:ASP:N    | 1:B:435:PRO:HD3  | 2.22                     | 0.54              |
| 1:A:416:ILE:HG21 | 1:A:427:ILE:HD11 | 1.89                     | 0.54              |
| 1:A:92:PHE:C     | 1:A:92:PHE:CD1   | 2.80                     | 0.54              |
| 1:B:53:LEU:HD22  | 1:B:126:TRP:HB2  | 1.90                     | 0.54              |
| 1:B:205:ASN:HB3  | 1:B:207:ALA:H    | 1.73                     | 0.54              |
| 1:B:256:GLY:N    | 1:B:285:ARG:HB2  | 2.23                     | 0.54              |
| 1:B:421:ALA:HA   | 1:B:424:ILE:HD11 | 1.90                     | 0.54              |
| 1:A:166:TYR:O    | 1:A:170:LEU:CD1  | 2.54                     | 0.54              |
| 1:A:182:PHE:HD1  | 1:A:183:LEU:H    | 1.56                     | 0.54              |
| 1:B:309:GLU:HB2  | 1:B:474:TRP:CE2  | 2.43                     | 0.54              |
| 1:A:131:ASP:N    | 1:A:131:ASP:OD1  | 2.42                     | 0.53              |
| 1:A:205:ASN:OD1  | 1:A:209:ALA:N    | 2.40                     | 0.53              |
| 1:A:287:LEU:O    | 1:A:289:ILE:HG13 | 2.08                     | 0.53              |
| 1:B:380:ASN:HB3  | 1:B:418:VAL:O    | 2.09                     | 0.53              |
| 1:B:498:LEU:HD12 | 1:B:523:HIS:CE1  | 2.43                     | 0.53              |
| 1:A:194:ARG:HB2  | 1:A:200:THR:HG21 | 1.90                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:62:GLN:OE1   | 1:B:481:ARG:HA   | 2.08                     | 0.53              |
| 1:B:304:GLU:H    | 1:B:304:GLU:CD   | 2.12                     | 0.53              |
| 1:B:426:GLY:C    | 1:B:429:VAL:HG23 | 2.28                     | 0.53              |
| 1:B:463:ASN:HA   | 1:B:466:ARG:HG3  | 1.91                     | 0.53              |
| 1:B:47:GLU:HG2   | 1:B:48:GLY:H     | 1.71                     | 0.53              |
| 1:A:230:CYS:HB3  | 1:A:277:PRO:HG3  | 1.89                     | 0.53              |
| 1:B:395:LEU:HD21 | 1:B:427:ILE:HD11 | 1.90                     | 0.53              |
| 1:B:342:MET:CE   | 1:B:346:TYR:HD2  | 2.15                     | 0.53              |
| 1:A:303:ILE:HD13 | 1:A:463:ASN:CG   | 2.29                     | 0.53              |
| 1:B:107:GLN:HG3  | 1:B:225:PRO:HG2  | 1.91                     | 0.53              |
| 1:B:424:ILE:CD1  | 1:B:424:ILE:N    | 2.70                     | 0.53              |
| 1:A:125:ASN:HD22 | 1:A:152:GLU:HB2  | 1.73                     | 0.53              |
| 1:B:299:SER:HB2  | 1:B:456:THR:HG22 | 1.90                     | 0.53              |
| 1:A:292:LYS:NZ   | 1:A:305:GLU:HG3  | 2.24                     | 0.53              |
| 1:A:416:ILE:HG23 | 1:A:427:ILE:HG12 | 1.91                     | 0.53              |
| 1:A:503:SER:O    | 1:A:506:MET:HB2  | 2.09                     | 0.53              |
| 1:B:206:THR:O    | 1:B:207:ALA:HB2  | 2.09                     | 0.53              |
| 1:A:255:SER:O    | 1:A:256:GLY:O    | 2.28                     | 0.53              |
| 1:A:501:GLU:O    | 1:A:504:LYS:HG2  | 2.09                     | 0.53              |
| 1:A:9:ASP:OD1    | 1:A:160:LYS:NZ   | 2.37                     | 0.52              |
| 1:B:255:SER:O    | 1:B:256:GLY:O    | 2.27                     | 0.52              |
| 1:A:5:VAL:CG2    | 1:A:118:THR:HB   | 2.24                     | 0.52              |
| 1:A:182:PHE:CD1  | 1:A:183:LEU:N    | 2.76                     | 0.52              |
| 1:A:192:PRO:O    | 1:A:195:ASP:HB2  | 2.10                     | 0.52              |
| 1:A:259:LEU:HD21 | 1:A:279:LEU:CD1  | 2.32                     | 0.52              |
| 1:A:5:VAL:HG12   | 1:A:6:ALA:N      | 2.24                     | 0.52              |
| 1:B:515:ARG:NH1  | 1:B:515:ARG:HG2  | 2.21                     | 0.52              |
| 1:A:275:GLN:O    | 1:A:279:LEU:HB2  | 2.10                     | 0.52              |
| 1:A:440:ILE:HG22 | 1:A:441:THR:HG23 | 1.91                     | 0.52              |
| 1:B:141:CYS:O    | 1:B:144:SER:CB   | 2.58                     | 0.52              |
| 1:B:183:LEU:CD1  | 1:B:201:ILE:HB   | 2.37                     | 0.52              |
| 1:A:380:ASN:HB3  | 1:A:418:VAL:O    | 2.09                     | 0.52              |
| 1:B:49:PRO:HG2   | 1:B:67:MET:HG2   | 1.91                     | 0.52              |
| 1:A:422:THR:O    | 1:A:423:GLU:CB   | 2.47                     | 0.52              |
| 1:A:498:LEU:HD12 | 1:A:523:HIS:CE1  | 2.44                     | 0.52              |
| 1:A:141:CYS:O    | 1:A:144:SER:HB3  | 2.09                     | 0.52              |
| 1:B:6:ALA:O      | 1:B:119:THR:HA   | 2.10                     | 0.52              |
| 1:A:16:LEU:HA    | 1:A:17:PRO:C     | 2.31                     | 0.52              |
| 1:B:222:PRO:HG2  | 1:B:225:PRO:HG3  | 1.90                     | 0.52              |
| 1:B:187:GLY:CA   | 1:B:202:LEU:HD11 | 2.40                     | 0.52              |
| 1:B:16:LEU:HB3   | 1:B:17:PRO:HA    | 1.91                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:434:ASP:N    | 1:B:435:PRO:CD   | 2.72                     | 0.52              |
| 1:A:293:GLY:O    | 1:A:456:THR:HG21 | 2.10                     | 0.51              |
| 1:B:501:GLU:O    | 1:B:504:LYS:HG2  | 2.10                     | 0.51              |
| 1:B:158:MET:HE2  | 1:B:164:GLN:C    | 2.30                     | 0.51              |
| 1:A:212:GLU:HA   | 1:A:215:LYS:HD2  | 1.92                     | 0.51              |
| 1:B:294:TYR:CZ   | 1:B:461:PRO:HB3  | 2.45                     | 0.51              |
| 1:A:469:GLU:HA   | 1:A:469:GLU:OE1  | 2.10                     | 0.51              |
| 1:A:91:ILE:H     | 1:A:91:ILE:HD13  | 1.75                     | 0.51              |
| 1:B:216:VAL:HG13 | 1:B:216:VAL:O    | 2.11                     | 0.51              |
| 1:B:498:LEU:HD12 | 1:B:523:HIS:HE1  | 1.76                     | 0.51              |
| 1:A:190:LEU:CD2  | 1:A:200:THR:HB   | 2.39                     | 0.51              |
| 1:A:380:ASN:ND2  | 1:A:422:THR:OG1  | 2.43                     | 0.51              |
| 1:B:49:PRO:HD2   | 1:B:67:MET:CE    | 2.41                     | 0.51              |
| 1:A:173:LEU:O    | 1:A:174:LYS:CB   | 2.59                     | 0.51              |
| 1:A:309:GLU:HB2  | 1:A:474:TRP:CE2  | 2.46                     | 0.51              |
| 1:A:49:PRO:O     | 1:A:52:GLN:HG2   | 2.11                     | 0.51              |
| 1:B:102:ASN:ND2  | 1:B:105:MET:HG3  | 2.26                     | 0.51              |
| 1:A:515:ARG:HH11 | 1:A:515:ARG:CG   | 2.23                     | 0.51              |
| 1:B:161:PRO:O    | 1:B:162:GLU:C    | 2.49                     | 0.51              |
| 1:B:162:GLU:O    | 1:B:165:ILE:CD1  | 2.59                     | 0.51              |
| 1:B:45:PHE:O     | 1:B:45:PHE:CG    | 2.63                     | 0.51              |
| 1:A:101:ILE:HG22 | 1:A:102:ASN:N    | 2.25                     | 0.51              |
| 1:A:497:VAL:HG22 | 1:A:498:LEU:HG   | 1.93                     | 0.51              |
| 1:B:56:GLY:HA2   | 1:B:127:LEU:HD11 | 1.92                     | 0.51              |
| 1:B:262:CYS:HB2  | 1:B:335:ALA:HB1  | 1.93                     | 0.51              |
| 1:A:10:LEU:HD12  | 1:A:14:LEU:HB2   | 1.92                     | 0.50              |
| 1:A:156:VAL:HG11 | 1:A:168:PHE:CE2  | 2.47                     | 0.50              |
| 1:B:229:PRO:O    | 1:B:231:ASN:ND2  | 2.44                     | 0.50              |
| 1:A:178:ASN:O    | 1:A:180:VAL:N    | 2.42                     | 0.50              |
| 1:A:499:ARG:O    | 1:A:502:MET:HG3  | 2.12                     | 0.50              |
| 1:B:149:PHE:CD2  | 1:B:173:LEU:HD12 | 2.46                     | 0.50              |
| 1:B:276:ILE:HD11 | 1:B:288:ALA:HB2  | 1.93                     | 0.50              |
| 1:A:498:LEU:HD12 | 1:A:523:HIS:HE1  | 1.76                     | 0.50              |
| 1:B:232:PRO:CD   | 1:B:233:ASN:N    | 2.59                     | 0.50              |
| 1:B:499:ARG:O    | 1:B:502:MET:HG3  | 2.11                     | 0.50              |
| 1:A:16:LEU:HD23  | 1:A:18:SER:N     | 2.27                     | 0.50              |
| 1:B:180:VAL:HG11 | 1:B:198:MET:CE   | 2.36                     | 0.50              |
| 1:A:392:GLU:HG3  | 1:A:462:LEU:HD12 | 1.93                     | 0.50              |
| 1:A:515:ARG:NH1  | 1:A:515:ARG:HG2  | 2.23                     | 0.50              |
| 1:A:52:GLN:HE21  | 1:A:58:ILE:CG1   | 2.24                     | 0.50              |
| 1:B:121:ILE:O    | 1:B:151:ILE:HG12 | 2.12                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:158:MET:HB2  | 1:B:165:ILE:HG23 | 1.94                     | 0.50              |
| 1:B:264:GLY:O    | 1:B:267:GLU:HG3  | 2.11                     | 0.50              |
| 1:B:303:ILE:HD13 | 1:B:463:ASN:CG   | 2.31                     | 0.50              |
| 1:B:101:ILE:HG22 | 1:B:102:ASN:N    | 2.26                     | 0.50              |
| 1:B:275:GLN:O    | 1:B:279:LEU:HB2  | 2.10                     | 0.50              |
| 1:A:289:ILE:HG22 | 1:A:290:ASP:N    | 2.27                     | 0.50              |
| 1:B:289:ILE:HG22 | 1:B:290:ASP:N    | 2.27                     | 0.50              |
| 1:B:428:LEU:HA   | 1:B:431:THR:OG1  | 2.12                     | 0.50              |
| 1:B:426:GLY:CA   | 1:B:429:VAL:CG2  | 2.89                     | 0.49              |
| 1:B:469:GLU:OE1  | 1:B:469:GLU:HA   | 2.11                     | 0.49              |
| 1:B:54:MET:HA    | 1:B:125:ASN:O    | 2.12                     | 0.49              |
| 1:A:10:LEU:C     | 1:A:12:GLY:N     | 2.65                     | 0.49              |
| 1:A:125:ASN:HD22 | 1:A:152:GLU:CB   | 2.25                     | 0.49              |
| 1:B:158:MET:HE3  | 1:B:164:GLN:HB2  | 1.91                     | 0.49              |
| 1:B:330:ILE:HG13 | 1:B:330:ILE:O    | 2.12                     | 0.49              |
| 1:B:434:ASP:O    | 1:B:435:PRO:C    | 2.51                     | 0.49              |
| 1:A:128:ASP:O    | 1:A:133:ARG:HD3  | 2.11                     | 0.49              |
| 1:A:193:ALA:CB   | 1:A:198:MET:SD   | 2.96                     | 0.49              |
| 1:A:153:SER:HB2  | 1:A:158:MET:O    | 2.12                     | 0.49              |
| 1:B:216:VAL:CG1  | 1:B:216:VAL:O    | 2.60                     | 0.49              |
| 1:A:165:ILE:O    | 1:A:168:PHE:HB3  | 2.12                     | 0.49              |
| 1:B:177:PRO:O    | 1:B:198:MET:HA   | 2.11                     | 0.49              |
| 1:B:535:GLN:HG2  | 1:B:539:LYS:HZ1  | 1.76                     | 0.49              |
| 1:B:367:VAL:O    | 1:B:368:SER:C    | 2.51                     | 0.49              |
| 1:A:93:SER:O     | 1:A:96:MET:HB3   | 2.13                     | 0.49              |
| 1:B:144:SER:OG   | 1:B:145:GLN:N    | 2.44                     | 0.49              |
| 1:B:287:LEU:O    | 1:B:289:ILE:HG13 | 2.13                     | 0.49              |
| 1:B:30:LEU:O     | 1:B:31:ALA:HB3   | 2.13                     | 0.49              |
| 1:A:439:LYS:HG2  | 1:A:440:ILE:HD13 | 1.94                     | 0.49              |
| 1:A:424:ILE:O    | 1:A:424:ILE:HG13 | 2.13                     | 0.49              |
| 1:A:263:HIS:NE2  | 1:A:291:MET:HG2  | 2.28                     | 0.48              |
| 1:B:270:PHE:CZ   | 1:B:273:ARG:HD3  | 2.47                     | 0.48              |
| 1:A:342:MET:CE   | 1:A:346:TYR:HD2  | 2.17                     | 0.48              |
| 1:B:4:ARG:HE     | 1:B:179:GLU:HA   | 1.78                     | 0.48              |
| 1:B:340:TRP:CZ2  | 1:B:355:SER:HB2  | 2.49                     | 0.48              |
| 1:B:309:GLU:HB2  | 1:B:474:TRP:CG   | 2.48                     | 0.48              |
| 1:B:82:LEU:O     | 1:B:83:PRO:C     | 2.52                     | 0.48              |
| 1:A:319:LEU:HB3  | 1:A:324:ILE:O    | 2.14                     | 0.48              |
| 1:A:162:GLU:O    | 1:A:165:ILE:HD12 | 2.14                     | 0.48              |
| 1:B:4:ARG:HB3    | 1:B:4:ARG:CZ     | 2.42                     | 0.48              |
| 1:B:118:THR:HA   | 1:B:148:ASP:OD2  | 2.13                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:150:LEU:HG   | 1:B:152:GLU:HG2  | 1.96                     | 0.48              |
| 1:B:497:VAL:HG22 | 1:B:498:LEU:HG   | 1.96                     | 0.48              |
| 1:A:276:ILE:HD11 | 1:A:288:ALA:HB2  | 1.96                     | 0.48              |
| 1:A:90:GLN:O     | 1:A:92:PHE:N     | 2.45                     | 0.48              |
| 1:B:64:VAL:CB    | 1:B:65:PRO:HD3   | 2.32                     | 0.48              |
| 1:A:330:ILE:O    | 1:A:330:ILE:HG13 | 2.11                     | 0.48              |
| 1:A:375:SER:OG   | 1:A:376:ILE:N    | 2.47                     | 0.48              |
| 1:A:407:PHE:C    | 1:A:408:ARG:HG2  | 2.34                     | 0.48              |
| 1:B:103:ARG:O    | 1:B:107:GLN:HB2  | 2.14                     | 0.48              |
| 1:B:151:ILE:H    | 1:B:151:ILE:HG12 | 1.34                     | 0.48              |
| 1:A:270:PHE:CZ   | 1:A:273:ARG:HD3  | 2.49                     | 0.48              |
| 1:A:54:MET:SD    | 1:A:124:ASN:HB3  | 2.55                     | 0.47              |
| 1:B:93:SER:OG    | 1:B:132:LYS:NZ   | 2.47                     | 0.47              |
| 1:B:223:GLU:N    | 1:B:223:GLU:CD   | 2.66                     | 0.47              |
| 1:B:503:SER:O    | 1:B:506:MET:HB2  | 2.13                     | 0.47              |
| 1:A:265:PHE:C    | 1:A:265:PHE:CD1  | 2.87                     | 0.47              |
| 1:A:92:PHE:N     | 1:A:94:GLN:OE1   | 2.47                     | 0.47              |
| 1:B:7:ALA:HB2    | 1:B:120:CYS:SG   | 2.54                     | 0.47              |
| 1:B:300:PRO:CG   | 1:B:305:GLU:HG2  | 2.42                     | 0.47              |
| 1:A:122:VAL:O    | 1:A:122:VAL:HG23 | 2.14                     | 0.47              |
| 1:A:179:GLU:HG3  | 1:A:179:GLU:H    | 1.39                     | 0.47              |
| 1:B:182:PHE:HE1  | 1:B:184:ASP:HB2  | 1.78                     | 0.47              |
| 1:B:439:LYS:HG2  | 1:B:440:ILE:HD13 | 1.95                     | 0.47              |
| 1:A:124:ASN:HA   | 1:A:153:SER:CB   | 2.43                     | 0.47              |
| 1:A:53:LEU:HD23  | 1:A:58:ILE:O     | 2.13                     | 0.47              |
| 1:A:92:PHE:O     | 1:A:95:ALA:HB3   | 2.14                     | 0.47              |
| 1:B:160:LYS:HG2  | 1:B:165:ILE:HD13 | 1.95                     | 0.47              |
| 1:B:222:PRO:HG2  | 1:B:225:PRO:HB3  | 1.97                     | 0.47              |
| 1:A:254:GLY:H    | 1:B:323:GLY:HA3  | 1.79                     | 0.47              |
| 1:B:319:LEU:HB3  | 1:B:324:ILE:O    | 2.14                     | 0.47              |
| 1:A:380:ASN:OD1  | 1:A:422:THR:N    | 2.45                     | 0.47              |
| 1:B:364:ASP:N    | 1:B:364:ASP:OD1  | 2.48                     | 0.47              |
| 1:B:36:PHE:CE2   | 1:B:82:LEU:HD13  | 2.50                     | 0.47              |
| 1:A:101:ILE:CG2  | 1:A:102:ASN:N    | 2.78                     | 0.47              |
| 1:A:177:PRO:O    | 1:A:198:MET:CB   | 2.62                     | 0.47              |
| 1:B:58:ILE:HD12  | 1:B:63:TRP:HB2   | 1.96                     | 0.47              |
| 1:A:10:LEU:O     | 1:A:12:GLY:N     | 2.47                     | 0.47              |
| 1:A:309:GLU:HB2  | 1:A:474:TRP:CG   | 2.50                     | 0.47              |
| 1:B:64:VAL:HB    | 1:B:65:PRO:CD    | 2.36                     | 0.47              |
| 1:A:212:GLU:C    | 1:A:214:GLU:N    | 2.67                     | 0.47              |
| 1:A:340:TRP:CZ2  | 1:A:355:SER:HB2  | 2.50                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:413:THR:HB   | 1:B:414:GLY:H    | 1.51                     | 0.47              |
| 1:B:270:PHE:CD2  | 1:B:448:PHE:CD2  | 3.03                     | 0.47              |
| 1:B:92:PHE:CD1   | 1:B:92:PHE:C     | 2.87                     | 0.47              |
| 1:B:10:LEU:HD11  | 1:B:15:ALA:HB2   | 1.97                     | 0.47              |
| 1:A:165:ILE:H    | 1:A:165:ILE:HG13 | 1.49                     | 0.46              |
| 1:A:62:GLN:HE22  | 1:B:482:LYS:N    | 2.13                     | 0.46              |
| 1:A:9:ASP:CG     | 1:A:10:LEU:H     | 2.18                     | 0.46              |
| 1:A:328:VAL:O    | 1:A:328:VAL:CG2  | 2.63                     | 0.46              |
| 1:A:364:ASP:OD1  | 1:A:364:ASP:N    | 2.47                     | 0.46              |
| 1:B:107:GLN:HA   | 1:B:107:GLN:NE2  | 2.29                     | 0.46              |
| 1:B:124:ASN:HA   | 1:B:153:SER:OG   | 2.14                     | 0.46              |
| 1:B:407:PHE:C    | 1:B:408:ARG:HG2  | 2.35                     | 0.46              |
| 1:A:367:VAL:O    | 1:A:368:SER:C    | 2.54                     | 0.46              |
| 1:A:507:GLU:HG2  | 1:A:507:GLU:H    | 1.36                     | 0.46              |
| 1:B:106:LEU:HD23 | 1:B:106:LEU:O    | 2.16                     | 0.46              |
| 1:B:145:GLN:HB2  | 1:B:146:HIS:CE1  | 2.51                     | 0.46              |
| 1:A:106:LEU:O    | 1:A:110:ILE:HG13 | 2.15                     | 0.46              |
| 1:A:165:ILE:HD12 | 1:A:166:TYR:HE1  | 1.80                     | 0.46              |
| 1:A:413:THR:HB   | 1:A:414:GLY:H    | 1.48                     | 0.46              |
| 1:A:50:THR:HG1   | 1:A:63:TRP:HZ2   | 1.50                     | 0.46              |
| 1:B:13:VAL:CB    | 1:B:203:VAL:HG11 | 2.44                     | 0.46              |
| 1:A:469:GLU:O    | 1:A:472:TRP:HB3  | 2.15                     | 0.46              |
| 1:A:416:ILE:HG23 | 1:A:427:ILE:HD11 | 1.97                     | 0.46              |
| 1:B:206:THR:O    | 1:B:207:ALA:CB   | 2.64                     | 0.46              |
| 1:A:54:MET:O     | 1:A:154:CYS:HA   | 2.16                     | 0.46              |
| 1:B:178:ASN:H    | 1:B:178:ASN:ND2  | 2.12                     | 0.46              |
| 1:B:359:PRO:HG2  | 1:B:361:MET:HG2  | 1.98                     | 0.46              |
| 1:B:149:PHE:HD2  | 1:B:173:LEU:CD1  | 2.29                     | 0.46              |
| 1:B:293:GLY:O    | 1:B:456:THR:HG21 | 2.16                     | 0.46              |
| 1:B:434:ASP:H    | 1:B:435:PRO:CD   | 2.29                     | 0.46              |
| 1:A:347:PRO:O    | 1:B:133:ARG:HD2  | 2.15                     | 0.46              |
| 1:B:36:PHE:CZ    | 1:B:75:SER:HA    | 2.51                     | 0.46              |
| 1:B:160:LYS:HA   | 1:B:165:ILE:CD1  | 2.46                     | 0.46              |
| 1:A:126:TRP:NE1  | 1:A:128:ASP:OD1  | 2.32                     | 0.45              |
| 1:A:159:ILE:C    | 1:A:165:ILE:CD1  | 2.85                     | 0.45              |
| 1:A:359:PRO:HA   | 1:A:489:MET:HE2  | 1.97                     | 0.45              |
| 1:B:75:SER:C     | 1:B:77:ALA:H     | 2.18                     | 0.45              |
| 1:A:535:GLN:HG2  | 1:A:539:LYS:HZ1  | 1.80                     | 0.45              |
| 1:B:170:LEU:HD11 | 1:B:198:MET:HE3  | 1.98                     | 0.45              |
| 1:B:46:PRO:O     | 1:B:51:GLU:OE1   | 2.33                     | 0.45              |
| 2:A:1028:HOH:O   | 1:B:285:ARG:HD2  | 2.17                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:127:LEU:N    | 1:A:127:LEU:HD12 | 2.31                     | 0.45              |
| 1:B:121:ILE:HB   | 1:B:150:LEU:HD12 | 1.98                     | 0.45              |
| 1:B:265:PHE:C    | 1:B:265:PHE:CD1  | 2.90                     | 0.45              |
| 1:B:535:GLN:CB   | 1:B:539:LYS:HZ2  | 2.29                     | 0.45              |
| 1:B:75:SER:HB2   | 1:B:82:LEU:HB3   | 1.98                     | 0.45              |
| 1:A:416:ILE:HG23 | 1:A:427:ILE:CD1  | 2.47                     | 0.45              |
| 1:B:158:MET:HE2  | 1:B:164:GLN:CB   | 2.45                     | 0.45              |
| 1:B:149:PHE:HD2  | 1:B:173:LEU:HD12 | 1.82                     | 0.45              |
| 1:B:392:GLU:HG3  | 1:B:462:LEU:HD12 | 1.96                     | 0.45              |
| 1:B:76:LYS:HB2   | 1:B:81:ASN:HD22  | 1.81                     | 0.45              |
| 1:A:145:GLN:NE2  | 1:A:145:GLN:CA   | 2.80                     | 0.45              |
| 1:A:362:PRO:HG3  | 1:A:509:TRP:CE2  | 2.52                     | 0.45              |
| 1:B:113:LYS:O    | 1:B:116:GLY:N    | 2.49                     | 0.45              |
| 1:B:178:ASN:C    | 1:B:180:VAL:H    | 2.19                     | 0.45              |
| 1:A:396:GLU:OE2  | 1:A:458:PHE:N    | 2.47                     | 0.45              |
| 1:B:342:MET:CE   | 1:B:346:TYR:CD2  | 2.95                     | 0.45              |
| 1:B:362:PRO:HG3  | 1:B:509:TRP:CE2  | 2.52                     | 0.45              |
| 1:A:153:SER:OG   | 1:A:154:CYS:N    | 2.49                     | 0.45              |
| 1:B:180:VAL:CG1  | 1:B:198:MET:HG2  | 2.45                     | 0.45              |
| 1:B:77:ALA:O     | 1:B:78:CYS:CB    | 2.65                     | 0.45              |
| 1:B:306:TYR:N    | 1:B:306:TYR:CD1  | 2.84                     | 0.45              |
| 1:A:312:CYS:O    | 1:A:342:MET:HE1  | 2.17                     | 0.44              |
| 1:A:434:ASP:OD1  | 1:A:434:ASP:O    | 2.35                     | 0.44              |
| 1:B:153:SER:OG   | 1:B:154:CYS:N    | 2.50                     | 0.44              |
| 1:B:261:LEU:HB3  | 1:B:272:TRP:CE2  | 2.53                     | 0.44              |
| 1:B:263:HIS:NE2  | 1:B:291:MET:HG2  | 2.31                     | 0.44              |
| 1:B:333:ASP:OD2  | 1:B:523:HIS:NE2  | 2.41                     | 0.44              |
| 1:B:33:PRO:O     | 1:B:34:ARG:C     | 2.55                     | 0.44              |
| 1:B:26:SER:CA    | 1:B:29:ALA:HB3   | 2.38                     | 0.44              |
| 1:A:243:LYS:O    | 1:A:244:PRO:C    | 2.55                     | 0.44              |
| 1:A:270:PHE:CD2  | 1:A:448:PHE:CD2  | 3.04                     | 0.44              |
| 1:A:416:ILE:HG23 | 1:A:427:ILE:CG1  | 2.46                     | 0.44              |
| 1:A:405:SER:OG   | 1:A:431:THR:HG21 | 2.17                     | 0.44              |
| 1:B:19:ILE:HD11  | 1:B:96:MET:CB    | 2.47                     | 0.44              |
| 1:B:312:CYS:O    | 1:B:342:MET:HE1  | 2.17                     | 0.44              |
| 1:B:158:MET:CG   | 1:B:164:GLN:HG3  | 2.45                     | 0.44              |
| 1:B:243:LYS:O    | 1:B:244:PRO:C    | 2.55                     | 0.44              |
| 1:B:32:LEU:HA    | 1:B:33:PRO:HD3   | 1.79                     | 0.44              |
| 1:A:261:LEU:HB3  | 1:A:272:TRP:CE2  | 2.53                     | 0.44              |
| 1:A:306:TYR:N    | 1:A:306:TYR:CD1  | 2.85                     | 0.44              |
| 1:A:535:GLN:CB   | 1:A:539:LYS:HZ2  | 2.30                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:329:PHE:O    | 1:B:353:VAL:HA   | 2.18                     | 0.44              |
| 1:B:469:GLU:O    | 1:B:472:TRP:HB3  | 2.17                     | 0.44              |
| 1:A:482:LYS:HG3  | 1:B:62:GLN:HE21  | 1.82                     | 0.44              |
| 1:A:162:GLU:O    | 1:A:165:ILE:CD1  | 2.65                     | 0.44              |
| 1:A:359:PRO:HG2  | 1:A:361:MET:HG2  | 1.99                     | 0.44              |
| 1:A:53:LEU:HA    | 1:A:58:ILE:CD1   | 2.43                     | 0.44              |
| 1:B:230:CYS:O    | 1:B:231:ASN:CB   | 2.63                     | 0.44              |
| 1:B:375:SER:OG   | 1:B:376:ILE:N    | 2.50                     | 0.44              |
| 1:B:8:PHE:N      | 1:B:8:PHE:CD1    | 2.85                     | 0.44              |
| 1:A:54:MET:O     | 1:A:154:CYS:CA   | 2.66                     | 0.44              |
| 1:A:8:PHE:CD2    | 1:A:105:MET:HE1  | 2.53                     | 0.44              |
| 1:B:158:MET:HG2  | 1:B:164:GLN:HG2  | 2.00                     | 0.44              |
| 1:B:180:VAL:CG1  | 1:B:198:MET:HE3  | 2.38                     | 0.44              |
| 1:A:101:ILE:HG21 | 1:A:106:LEU:HD12 | 2.00                     | 0.44              |
| 1:B:170:LEU:HD11 | 1:B:198:MET:CE   | 2.48                     | 0.44              |
| 1:B:331:GLY:N    | 1:B:339:VAL:HG21 | 2.33                     | 0.44              |
| 1:B:363:PRO:HD2  | 1:B:479:LEU:HD21 | 1.99                     | 0.44              |
| 1:A:136:LEU:HD23 | 1:B:348:GLU:HG2  | 2.00                     | 0.44              |
| 1:B:119:THR:O    | 1:B:120:CYS:HB3  | 2.17                     | 0.44              |
| 1:B:122:VAL:HG12 | 1:B:151:ILE:CG1  | 2.19                     | 0.44              |
| 1:B:278:ALA:HA   | 1:B:281:GLN:HE21 | 1.83                     | 0.44              |
| 1:B:410:SER:HB3  | 1:B:522:GLY:N    | 2.33                     | 0.44              |
| 1:B:75:SER:O     | 1:B:76:LYS:C     | 2.55                     | 0.44              |
| 1:A:5:VAL:HG11   | 1:A:173:LEU:HD21 | 1.99                     | 0.43              |
| 1:B:5:VAL:HG11   | 1:B:173:LEU:HD23 | 1.99                     | 0.43              |
| 1:B:268:SER:OG   | 1:B:269:TRP:N    | 2.51                     | 0.43              |
| 1:B:73:LYS:O     | 1:B:74:SER:C     | 2.56                     | 0.43              |
| 1:B:458:PHE:C    | 1:B:461:PRO:HD2  | 2.38                     | 0.43              |
| 1:A:106:LEU:C    | 1:A:106:LEU:CD2  | 2.86                     | 0.43              |
| 1:A:385:PHE:HD2  | 1:A:465:TYR:CD2  | 2.36                     | 0.43              |
| 1:A:52:GLN:HG3   | 1:A:58:ILE:CD1   | 2.47                     | 0.43              |
| 1:B:253:MET:HG2  | 1:B:280:ALA:CB   | 2.47                     | 0.43              |
| 1:B:43:THR:HB    | 1:B:44:GLU:H     | 1.50                     | 0.43              |
| 1:B:74:SER:O     | 1:B:78:CYS:HB2   | 2.17                     | 0.43              |
| 1:A:8:PHE:CE2    | 1:A:105:MET:HE1  | 2.54                     | 0.43              |
| 1:B:396:GLU:OE2  | 1:B:458:PHE:N    | 2.49                     | 0.43              |
| 1:B:402:THR:O    | 1:B:406:PHE:HD1  | 2.02                     | 0.43              |
| 1:A:194:ARG:HB2  | 1:A:200:THR:CG2  | 2.48                     | 0.43              |
| 1:A:205:ASN:HD22 | 1:A:207:ALA:N    | 1.82                     | 0.43              |
| 1:B:17:PRO:O     | 1:B:18:SER:C     | 2.55                     | 0.43              |
| 1:B:291:MET:CE   | 1:B:291:MET:CA   | 2.95                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:359:PRO:HA   | 1:B:489:MET:HE3  | 2.00                     | 0.43              |
| 1:B:507:GLU:H    | 1:B:507:GLU:HG2  | 1.36                     | 0.43              |
| 1:A:413:THR:O    | 1:A:415:PHE:N    | 2.51                     | 0.43              |
| 1:B:33:PRO:HD3   | 1:B:80:ALA:CB    | 2.48                     | 0.43              |
| 1:B:357:ASN:N    | 1:B:357:ASN:OD1  | 2.51                     | 0.43              |
| 1:A:184:ASP:HB3  | 1:A:190:LEU:CD1  | 2.48                     | 0.43              |
| 1:B:125:ASN:N    | 1:B:153:SER:OG   | 2.51                     | 0.43              |
| 1:B:91:ILE:HG12  | 1:B:92:PHE:N     | 2.34                     | 0.43              |
| 1:A:281:GLN:HE21 | 1:A:281:GLN:HB2  | 1.59                     | 0.43              |
| 1:A:380:ASN:CB   | 1:A:419:HIS:O    | 2.66                     | 0.43              |
| 1:B:125:ASN:HD22 | 1:B:152:GLU:CB   | 2.13                     | 0.43              |
| 1:A:482:LYS:HG3  | 1:B:62:GLN:NE2   | 2.34                     | 0.43              |
| 1:A:53:LEU:HD22  | 1:A:126:TRP:HB2  | 2.01                     | 0.43              |
| 1:A:331:GLY:N    | 1:A:339:VAL:HG21 | 2.33                     | 0.43              |
| 1:A:410:SER:HB3  | 1:A:522:GLY:N    | 2.34                     | 0.43              |
| 1:B:158:MET:CB   | 1:B:165:ILE:HG23 | 2.49                     | 0.43              |
| 1:B:253:MET:HG2  | 1:B:280:ALA:HB2  | 2.01                     | 0.43              |
| 1:B:328:VAL:CG2  | 1:B:328:VAL:O    | 2.65                     | 0.43              |
| 1:A:133:ARG:NH1  | 1:B:350:VAL:O    | 2.52                     | 0.43              |
| 1:A:182:PHE:C    | 1:A:183:LEU:HD22 | 2.39                     | 0.42              |
| 1:A:300:PRO:CG   | 1:A:305:GLU:HG2  | 2.41                     | 0.42              |
| 1:B:162:GLU:O    | 1:B:165:ILE:HD11 | 2.18                     | 0.42              |
| 1:B:228:VAL:O    | 1:B:277:PRO:HG2  | 2.19                     | 0.42              |
| 1:A:342:MET:CE   | 1:A:346:TYR:CD2  | 2.98                     | 0.42              |
| 1:A:357:ASN:N    | 1:A:357:ASN:OD1  | 2.52                     | 0.42              |
| 1:B:103:ARG:HB2  | 1:B:104:PRO:CD   | 2.49                     | 0.42              |
| 1:B:230:CYS:C    | 1:B:231:ASN:ND2  | 2.72                     | 0.42              |
| 1:B:432:PRO:HB2  | 1:B:434:ASP:OD1  | 2.20                     | 0.42              |
| 1:B:462:LEU:C    | 1:B:464:TRP:H    | 2.22                     | 0.42              |
| 1:B:537:LEU:HA   | 1:B:537:LEU:HD23 | 1.85                     | 0.42              |
| 1:A:378:VAL:HG13 | 1:A:378:VAL:O    | 2.17                     | 0.42              |
| 1:A:387:GLU:HA   | 1:A:388:PRO:HD3  | 1.75                     | 0.42              |
| 1:B:414:GLY:O    | 1:B:415:PHE:O    | 2.37                     | 0.42              |
| 1:B:413:THR:O    | 1:B:415:PHE:N    | 2.52                     | 0.42              |
| 1:A:13:VAL:HG21  | 1:A:203:VAL:HG21 | 2.01                     | 0.42              |
| 1:A:359:PRO:HA   | 1:A:489:MET:HE3  | 1.98                     | 0.42              |
| 1:A:212:GLU:O    | 1:A:215:LYS:N    | 2.50                     | 0.42              |
| 1:A:162:GLU:HB3  | 1:A:164:GLN:HE21 | 1.84                     | 0.42              |
| 1:A:262:CYS:O    | 1:A:272:TRP:HZ2  | 2.03                     | 0.42              |
| 1:A:417:ALA:HB2  | 1:A:430:ASN:OD1  | 2.20                     | 0.42              |
| 1:A:144:SER:OG   | 1:A:145:GLN:N    | 2.53                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:332:HIS:ND1  | 1:A:333:ASP:HB2  | 2.35                     | 0.42              |
| 1:B:291:MET:HB3  | 1:B:291:MET:HE2  | 1.73                     | 0.42              |
| 1:A:278:ALA:HA   | 1:A:281:GLN:HE21 | 1.85                     | 0.42              |
| 1:B:401:ARG:O    | 1:B:402:THR:C    | 2.58                     | 0.42              |
| 1:B:462:LEU:C    | 1:B:464:TRP:N    | 2.73                     | 0.42              |
| 1:A:113:LYS:HE2  | 1:A:113:LYS:HB3  | 1.69                     | 0.42              |
| 1:A:232:PRO:HD2  | 1:A:233:ASN:N    | 2.34                     | 0.42              |
| 1:A:243:LYS:NZ   | 1:A:246:ILE:HD13 | 2.35                     | 0.42              |
| 1:A:401:ARG:O    | 1:A:402:THR:C    | 2.57                     | 0.42              |
| 1:B:385:PHE:HD2  | 1:B:465:TYR:CD2  | 2.38                     | 0.42              |
| 1:A:363:PRO:HD2  | 1:A:479:LEU:HD21 | 2.01                     | 0.42              |
| 1:A:497:VAL:CG2  | 1:A:498:LEU:N    | 2.83                     | 0.42              |
| 1:A:529:LYS:O    | 1:A:532:GLU:HG2  | 2.20                     | 0.42              |
| 1:B:178:ASN:O    | 1:B:180:VAL:N    | 2.53                     | 0.42              |
| 1:B:359:PRO:HA   | 1:B:489:MET:HE2  | 2.01                     | 0.42              |
| 1:B:387:GLU:HA   | 1:B:388:PRO:HD3  | 1.75                     | 0.41              |
| 1:A:253:MET:HG2  | 1:A:280:ALA:CB   | 2.51                     | 0.41              |
| 1:A:458:PHE:C    | 1:A:461:PRO:HD2  | 2.40                     | 0.41              |
| 1:B:165:ILE:HG13 | 1:B:165:ILE:H    | 1.34                     | 0.41              |
| 1:B:276:ILE:HG22 | 1:B:277:PRO:N    | 2.35                     | 0.41              |
| 1:B:440:ILE:HD12 | 1:B:440:ILE:HA   | 1.79                     | 0.41              |
| 1:B:131:ASP:N    | 1:B:131:ASP:OD1  | 2.52                     | 0.41              |
| 1:A:350:VAL:O    | 1:B:133:ARG:NH1  | 2.53                     | 0.41              |
| 1:B:318:PHE:O    | 1:B:322:LEU:HB2  | 2.19                     | 0.41              |
| 1:A:376:ILE:HG22 | 1:A:378:VAL:HG12 | 2.03                     | 0.41              |
| 1:A:433:GLU:HA   | 1:A:433:GLU:OE1  | 2.20                     | 0.41              |
| 1:A:484:LEU:HD12 | 1:B:129:ASP:OD2  | 2.19                     | 0.41              |
| 1:B:34:ARG:O     | 1:B:35:ASP:HB2   | 2.19                     | 0.41              |
| 1:A:91:ILE:CD1   | 1:A:91:ILE:H     | 2.33                     | 0.41              |
| 1:B:33:PRO:HD3   | 1:B:80:ALA:HB3   | 2.02                     | 0.41              |
| 1:A:162:GLU:HA   | 1:A:163:PRO:HD2  | 1.69                     | 0.41              |
| 1:A:339:VAL:HG13 | 1:A:353:VAL:CG1  | 2.39                     | 0.41              |
| 1:A:364:ASP:HB2  | 1:A:367:VAL:HG23 | 2.02                     | 0.41              |
| 1:A:54:MET:HB2   | 1:A:159:ILE:HG21 | 2.01                     | 0.41              |
| 1:A:291:MET:HB3  | 1:A:291:MET:HE2  | 1.79                     | 0.41              |
| 1:B:515:ARG:CG   | 1:B:515:ARG:NH1  | 2.83                     | 0.41              |
| 1:B:61:SER:OG    | 1:B:129:ASP:OD1  | 2.35                     | 0.41              |
| 1:B:22:ALA:CB    | 1:B:95:ALA:HB2   | 2.51                     | 0.41              |
| 1:A:133:ARG:CG   | 1:B:348:GLU:HA   | 2.38                     | 0.41              |
| 1:B:61:SER:O     | 1:B:65:PRO:HD3   | 2.20                     | 0.41              |
| 1:A:139:MET:O    | 1:A:143:LEU:HD12 | 2.21                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:5:VAL:HB     | 1:B:118:THR:HB   | 2.01                     | 0.41              |
| 1:B:125:ASN:HB3  | 1:B:154:CYS:SG   | 2.61                     | 0.41              |
| 1:B:417:ALA:HB3  | 1:B:427:ILE:HA   | 2.02                     | 0.41              |
| 1:A:205:ASN:ND2  | 1:A:207:ALA:CA   | 2.84                     | 0.41              |
| 1:A:230:CYS:O    | 1:A:231:ASN:HB3  | 2.20                     | 0.41              |
| 1:A:448:PHE:O    | 1:A:452:GLN:HG2  | 2.21                     | 0.41              |
| 1:B:177:PRO:O    | 1:B:197:GLY:O    | 2.39                     | 0.41              |
| 1:B:184:ASP:OD1  | 1:B:185:ASP:N    | 2.53                     | 0.41              |
| 1:B:398:ASN:O    | 1:B:398:ASN:OD1  | 2.39                     | 0.41              |
| 1:B:526:GLN:HG3  | 1:B:526:GLN:H    | 1.62                     | 0.41              |
| 1:B:529:LYS:O    | 1:B:532:GLU:HG2  | 2.21                     | 0.41              |
| 1:A:376:ILE:HA   | 1:A:377:PRO:HD2  | 1.96                     | 0.40              |
| 1:B:61:SER:H     | 1:B:61:SER:HG    | 1.48                     | 0.40              |
| 1:B:82:LEU:O     | 1:B:83:PRO:O     | 2.38                     | 0.40              |
| 1:A:4:ARG:HH11   | 1:A:4:ARG:CG     | 2.34                     | 0.40              |
| 1:A:53:LEU:HD21  | 1:A:59:THR:O     | 2.21                     | 0.40              |
| 1:A:17:PRO:HD2   | 1:A:99:ARG:HA    | 2.03                     | 0.40              |
| 1:B:166:TYR:O    | 1:B:169:LEU:HB3  | 2.21                     | 0.40              |
| 1:B:376:ILE:HG22 | 1:B:378:VAL:HG12 | 2.02                     | 0.40              |
| 1:B:420:LYS:O    | 1:B:422:THR:N    | 2.55                     | 0.40              |
| 1:A:205:ASN:ND2  | 1:A:207:ALA:C    | 2.75                     | 0.40              |
| 1:A:414:GLY:O    | 1:A:415:PHE:O    | 2.39                     | 0.40              |
| 1:A:462:LEU:C    | 1:A:464:TRP:H    | 2.25                     | 0.40              |
| 1:A:59:THR:H     | 1:A:62:GLN:HG2   | 1.86                     | 0.40              |
| 1:A:8:PHE:HB2    | 1:A:14:LEU:HD11  | 2.04                     | 0.40              |
| 1:A:332:HIS:CE1  | 1:A:333:ASP:HB2  | 2.56                     | 0.40              |
| 1:A:398:ASN:OD1  | 1:A:398:ASN:O    | 2.39                     | 0.40              |
| 1:B:158:MET:HE2  | 1:B:164:GLN:O    | 2.21                     | 0.40              |
| 1:B:462:LEU:O    | 1:B:464:TRP:N    | 2.54                     | 0.40              |

There are no symmetry-related clashes.

## 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     | 481/554 (87%)   | 390 (81%) | 59 (12%)  | 32 (7%)  | 1           | 3 |
| 1   | B     | 539/554 (97%)   | 438 (81%) | 68 (13%)  | 33 (6%)  | 1           | 4 |
| All | All   | 1020/1108 (92%) | 828 (81%) | 127 (12%) | 65 (6%)  | 1           | 3 |

All (65) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 18  | SER  |
| 1   | A     | 208 | SER  |
| 1   | A     | 232 | PRO  |
| 1   | A     | 256 | GLY  |
| 1   | A     | 415 | PHE  |
| 1   | A     | 423 | GLU  |
| 1   | B     | 44  | GLU  |
| 1   | B     | 75  | SER  |
| 1   | B     | 76  | LYS  |
| 1   | B     | 78  | CYS  |
| 1   | B     | 205 | ASN  |
| 1   | B     | 207 | ALA  |
| 1   | B     | 208 | SER  |
| 1   | B     | 232 | PRO  |
| 1   | B     | 256 | GLY  |
| 1   | B     | 415 | PHE  |
| 1   | B     | 421 | ALA  |
| 1   | A     | 174 | LYS  |
| 1   | A     | 205 | ASN  |
| 1   | A     | 207 | ALA  |
| 1   | A     | 414 | GLY  |
| 1   | A     | 501 | GLU  |
| 1   | A     | 520 | ASP  |
| 1   | B     | 73  | LYS  |
| 1   | B     | 179 | GLU  |
| 1   | B     | 414 | GLY  |
| 1   | B     | 501 | GLU  |
| 1   | B     | 520 | ASP  |
| 1   | A     | 130 | GLY  |
| 1   | A     | 244 | PRO  |
| 1   | A     | 295 | GLY  |
| 1   | B     | 29  | ALA  |
| 1   | B     | 83  | PRO  |
| 1   | B     | 206 | THR  |
| 1   | B     | 244 | PRO  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 92  | PHE  |
| 1   | A     | 179 | GLU  |
| 1   | A     | 367 | VAL  |
| 1   | A     | 438 | SER  |
| 1   | A     | 506 | MET  |
| 1   | B     | 74  | SER  |
| 1   | B     | 214 | GLU  |
| 1   | B     | 295 | GLY  |
| 1   | B     | 434 | ASP  |
| 1   | B     | 438 | SER  |
| 1   | B     | 506 | MET  |
| 1   | A     | 11  | ASP  |
| 1   | A     | 91  | ILE  |
| 1   | B     | 111 | ALA  |
| 1   | B     | 203 | VAL  |
| 1   | B     | 367 | VAL  |
| 1   | A     | 222 | PRO  |
| 1   | A     | 266 | PRO  |
| 1   | A     | 277 | PRO  |
| 1   | A     | 288 | ALA  |
| 1   | A     | 496 | ILE  |
| 1   | B     | 266 | PRO  |
| 1   | B     | 277 | PRO  |
| 1   | A     | 218 | GLY  |
| 1   | A     | 301 | PRO  |
| 1   | B     | 496 | ILE  |
| 1   | B     | 301 | PRO  |
| 1   | A     | 231 | ASN  |
| 1   | A     | 157 | GLY  |
| 1   | A     | 180 | VAL  |

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

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

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

| Mol | Chain | Analysed      | Rotameric | Outliers  | Percentiles       |
|-----|-------|---------------|-----------|-----------|-------------------|
| 1   | A     | 424/480 (88%) | 308 (73%) | 116 (27%) | <b>0</b> <b>1</b> |

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| Mol | Chain | Analysed      | Rotameric | Outliers  | Percentiles |   |
|-----|-------|---------------|-----------|-----------|-------------|---|
| 1   | B     | 468/480 (98%) | 339 (72%) | 129 (28%) | 0           | 1 |
| All | All   | 892/960 (93%) | 647 (72%) | 245 (28%) | 0           | 1 |

All (245) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 4   | ARG  |
| 1   | A     | 18  | SER  |
| 1   | A     | 19  | ILE  |
| 1   | A     | 53  | LEU  |
| 1   | A     | 58  | ILE  |
| 1   | A     | 61  | SER  |
| 1   | A     | 62  | GLN  |
| 1   | A     | 63  | TRP  |
| 1   | A     | 90  | GLN  |
| 1   | A     | 91  | ILE  |
| 1   | A     | 92  | PHE  |
| 1   | A     | 94  | GLN  |
| 1   | A     | 99  | ARG  |
| 1   | A     | 103 | ARG  |
| 1   | A     | 110 | ILE  |
| 1   | A     | 113 | LYS  |
| 1   | A     | 115 | LYS  |
| 1   | A     | 128 | ASP  |
| 1   | A     | 129 | ASP  |
| 1   | A     | 131 | ASP  |
| 1   | A     | 132 | LYS  |
| 1   | A     | 133 | ARG  |
| 1   | A     | 135 | SER  |
| 1   | A     | 139 | MET  |
| 1   | A     | 144 | SER  |
| 1   | A     | 148 | ASP  |
| 1   | A     | 153 | SER  |
| 1   | A     | 154 | CYS  |
| 1   | A     | 155 | GLN  |
| 1   | A     | 158 | MET  |
| 1   | A     | 165 | ILE  |
| 1   | A     | 166 | TYR  |
| 1   | A     | 178 | ASN  |
| 1   | A     | 179 | GLU  |
| 1   | A     | 183 | LEU  |
| 1   | A     | 190 | LEU  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 191        | LYS         |
| 1          | A            | 198        | MET         |
| 1          | A            | 202        | LEU         |
| 1          | A            | 204        | HIS         |
| 1          | A            | 205        | ASN         |
| 1          | A            | 206        | THR         |
| 1          | A            | 208        | SER         |
| 1          | A            | 213        | LEU         |
| 1          | A            | 214        | GLU         |
| 1          | A            | 215        | LYS         |
| 1          | A            | 217        | THR         |
| 1          | A            | 219        | THR         |
| 1          | A            | 220        | GLN         |
| 1          | A            | 221        | PHE         |
| 1          | A            | 223        | GLU         |
| 1          | A            | 230        | CYS         |
| 1          | A            | 231        | ASN         |
| 1          | A            | 236        | SER         |
| 1          | A            | 243        | LYS         |
| 1          | A            | 247        | ARG         |
| 1          | A            | 248        | LEU         |
| 1          | A            | 259        | LEU         |
| 1          | A            | 268        | SER         |
| 1          | A            | 275        | GLN         |
| 1          | A            | 279        | LEU         |
| 1          | A            | 287        | LEU         |
| 1          | A            | 297        | SER         |
| 1          | A            | 322        | LEU         |
| 1          | A            | 330        | ILE         |
| 1          | A            | 349        | ARG         |
| 1          | A            | 351        | ARG         |
| 1          | A            | 353        | VAL         |
| 1          | A            | 357        | ASN         |
| 1          | A            | 361        | MET         |
| 1          | A            | 364        | ASP         |
| 1          | A            | 370        | MET         |
| 1          | A            | 371        | LYS         |
| 1          | A            | 378        | VAL         |
| 1          | A            | 383        | LEU         |
| 1          | A            | 398        | ASN         |
| 1          | A            | 401        | ARG         |
| 1          | A            | 408        | ARG         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 412        | GLU         |
| 1          | A            | 413        | THR         |
| 1          | A            | 420        | LYS         |
| 1          | A            | 422        | THR         |
| 1          | A            | 423        | GLU         |
| 1          | A            | 424        | ILE         |
| 1          | A            | 427        | ILE         |
| 1          | A            | 436        | ASN         |
| 1          | A            | 437        | LEU         |
| 1          | A            | 440        | ILE         |
| 1          | A            | 444        | GLU         |
| 1          | A            | 447        | GLU         |
| 1          | A            | 451        | GLN         |
| 1          | A            | 455        | LYS         |
| 1          | A            | 456        | THR         |
| 1          | A            | 466        | ARG         |
| 1          | A            | 473        | LYS         |
| 1          | A            | 488        | LEU         |
| 1          | A            | 489        | MET         |
| 1          | A            | 494        | LYS         |
| 1          | A            | 497        | VAL         |
| 1          | A            | 499        | ARG         |
| 1          | A            | 501        | GLU         |
| 1          | A            | 502        | MET         |
| 1          | A            | 504        | LYS         |
| 1          | A            | 506        | MET         |
| 1          | A            | 507        | GLU         |
| 1          | A            | 508        | LYS         |
| 1          | A            | 512        | PHE         |
| 1          | A            | 513        | LEU         |
| 1          | A            | 515        | ARG         |
| 1          | A            | 519        | GLU         |
| 1          | A            | 525        | THR         |
| 1          | A            | 526        | GLN         |
| 1          | A            | 531        | THR         |
| 1          | A            | 539        | LYS         |
| 1          | A            | 542        | GLN         |
| 1          | A            | 544        | GLU         |
| 1          | B            | 13         | VAL         |
| 1          | B            | 19         | ILE         |
| 1          | B            | 24         | ARG         |
| 1          | B            | 32         | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | B            | 34         | ARG         |
| 1          | B            | 38         | LEU         |
| 1          | B            | 43         | THR         |
| 1          | B            | 45         | PHE         |
| 1          | B            | 50         | THR         |
| 1          | B            | 53         | LEU         |
| 1          | B            | 66         | LEU         |
| 1          | B            | 67         | MET         |
| 1          | B            | 69         | GLU         |
| 1          | B            | 72         | ARG         |
| 1          | B            | 73         | LYS         |
| 1          | B            | 74         | SER         |
| 1          | B            | 75         | SER         |
| 1          | B            | 81         | ASN         |
| 1          | B            | 84         | GLU         |
| 1          | B            | 85         | ASN         |
| 1          | B            | 91         | ILE         |
| 1          | B            | 101        | ILE         |
| 1          | B            | 103        | ARG         |
| 1          | B            | 106        | LEU         |
| 1          | B            | 107        | GLN         |
| 1          | B            | 110        | ILE         |
| 1          | B            | 122        | VAL         |
| 1          | B            | 127        | LEU         |
| 1          | B            | 128        | ASP         |
| 1          | B            | 131        | ASP         |
| 1          | B            | 132        | LYS         |
| 1          | B            | 133        | ARG         |
| 1          | B            | 140        | MET         |
| 1          | B            | 146        | HIS         |
| 1          | B            | 148        | ASP         |
| 1          | B            | 151        | ILE         |
| 1          | B            | 152        | GLU         |
| 1          | B            | 154        | CYS         |
| 1          | B            | 155        | GLN         |
| 1          | B            | 158        | MET         |
| 1          | B            | 164        | GLN         |
| 1          | B            | 165        | ILE         |
| 1          | B            | 173        | LEU         |
| 1          | B            | 178        | ASN         |
| 1          | B            | 179        | GLU         |
| 1          | B            | 181        | VAL         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | B            | 190        | LEU         |
| 1          | B            | 191        | LYS         |
| 1          | B            | 199        | VAL         |
| 1          | B            | 200        | THR         |
| 1          | B            | 202        | LEU         |
| 1          | B            | 204        | HIS         |
| 1          | B            | 206        | THR         |
| 1          | B            | 208        | SER         |
| 1          | B            | 212        | GLU         |
| 1          | B            | 213        | LEU         |
| 1          | B            | 214        | GLU         |
| 1          | B            | 215        | LYS         |
| 1          | B            | 216        | VAL         |
| 1          | B            | 217        | THR         |
| 1          | B            | 219        | THR         |
| 1          | B            | 228        | VAL         |
| 1          | B            | 230        | CYS         |
| 1          | B            | 231        | ASN         |
| 1          | B            | 236        | SER         |
| 1          | B            | 243        | LYS         |
| 1          | B            | 247        | ARG         |
| 1          | B            | 248        | LEU         |
| 1          | B            | 259        | LEU         |
| 1          | B            | 268        | SER         |
| 1          | B            | 275        | GLN         |
| 1          | B            | 279        | LEU         |
| 1          | B            | 287        | LEU         |
| 1          | B            | 297        | SER         |
| 1          | B            | 322        | LEU         |
| 1          | B            | 330        | ILE         |
| 1          | B            | 349        | ARG         |
| 1          | B            | 351        | ARG         |
| 1          | B            | 353        | VAL         |
| 1          | B            | 357        | ASN         |
| 1          | B            | 361        | MET         |
| 1          | B            | 364        | ASP         |
| 1          | B            | 370        | MET         |
| 1          | B            | 371        | LYS         |
| 1          | B            | 378        | VAL         |
| 1          | B            | 383        | LEU         |
| 1          | B            | 398        | ASN         |
| 1          | B            | 401        | ARG         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | B            | 408        | ARG         |
| 1          | B            | 412        | GLU         |
| 1          | B            | 413        | THR         |
| 1          | B            | 420        | LYS         |
| 1          | B            | 422        | THR         |
| 1          | B            | 423        | GLU         |
| 1          | B            | 424        | ILE         |
| 1          | B            | 427        | ILE         |
| 1          | B            | 428        | LEU         |
| 1          | B            | 431        | THR         |
| 1          | B            | 436        | ASN         |
| 1          | B            | 437        | LEU         |
| 1          | B            | 440        | ILE         |
| 1          | B            | 444        | GLU         |
| 1          | B            | 447        | GLU         |
| 1          | B            | 451        | GLN         |
| 1          | B            | 455        | LYS         |
| 1          | B            | 456        | THR         |
| 1          | B            | 466        | ARG         |
| 1          | B            | 473        | LYS         |
| 1          | B            | 488        | LEU         |
| 1          | B            | 489        | MET         |
| 1          | B            | 494        | LYS         |
| 1          | B            | 497        | VAL         |
| 1          | B            | 499        | ARG         |
| 1          | B            | 501        | GLU         |
| 1          | B            | 502        | MET         |
| 1          | B            | 504        | LYS         |
| 1          | B            | 506        | MET         |
| 1          | B            | 507        | GLU         |
| 1          | B            | 508        | LYS         |
| 1          | B            | 512        | PHE         |
| 1          | B            | 513        | LEU         |
| 1          | B            | 515        | ARG         |
| 1          | B            | 519        | GLU         |
| 1          | B            | 525        | THR         |
| 1          | B            | 526        | GLN         |
| 1          | B            | 531        | THR         |
| 1          | B            | 539        | LYS         |
| 1          | B            | 542        | GLN         |
| 1          | B            | 544        | GLU         |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such

sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 52  | GLN  |
| 1   | A     | 125 | ASN  |
| 1   | A     | 145 | GLN  |
| 1   | A     | 164 | GLN  |
| 1   | A     | 205 | ASN  |
| 1   | A     | 220 | GLN  |
| 1   | A     | 231 | ASN  |
| 1   | A     | 281 | GLN  |
| 1   | A     | 451 | GLN  |
| 1   | B     | 81  | ASN  |
| 1   | B     | 85  | ASN  |
| 1   | B     | 107 | GLN  |
| 1   | B     | 125 | ASN  |
| 1   | B     | 145 | GLN  |
| 1   | B     | 146 | HIS  |
| 1   | B     | 178 | ASN  |
| 1   | B     | 204 | HIS  |
| 1   | B     | 231 | ASN  |
| 1   | B     | 233 | ASN  |
| 1   | B     | 281 | GLN  |
| 1   | B     | 451 | GLN  |
| 1   | B     | 526 | GLN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

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

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 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.