



# Full wwPDB X-ray Structure Validation Report ⓘ

May 13, 2020 – 03:03 pm BST

PDB ID : 1HY1  
Title : CRYSTAL STRUCTURE OF WILD TYPE DUCK DELTA 2 CRYSTALLIN  
(EYE LENS PROTEIN)  
Authors : Sampaleanu, L.M.; Vallee, F.; Slingsby, C.; Howell, P.L.  
Deposited on : 2001-01-17  
Resolution : 2.30 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  
Xtriage (Phenix) : 1.13  
EDS : 2.11  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.11

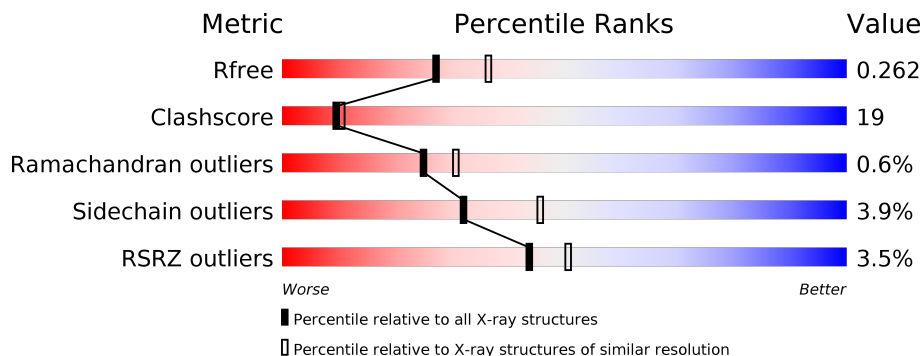
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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)) |
|-----------------------|-----------------------------|---|
| $R_{free}$            | 130704                      | 5042 (2.30-2.30)                                      |
| Clashscore            | 141614                      | 5643 (2.30-2.30)                                      |
| Ramachandran outliers | 138981                      | 5575 (2.30-2.30)                                      |
| Sidechain outliers    | 138945                      | 5575 (2.30-2.30)                                      |
| RSRZ outliers         | 127900                      | 4938 (2.30-2.30)                                      |

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  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 468    | <br>3% 63% 31%   |
| 1   | B     | 468    | <br>4% 56% 38%   |
| 1   | C     | 468    | <br>2% 57% 35%   |
| 1   | D     | 468    | <br>4% 65% 29%   |

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 14603 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 DELTA CRYSTALLIN II.

| Mol | Chain | Residues | Atoms |      |     |     |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S  |         |         |       |
| 1   | A     | 448      | 3484  | 2207 | 589 | 676 | 12 | 0       | 0       | 0     |
| 1   | B     | 448      | 3481  | 2205 | 589 | 675 | 12 | 0       | 0       | 0     |
| 1   | C     | 449      | 3490  | 2210 | 590 | 678 | 12 | 0       | 0       | 0     |
| 1   | D     | 449      | 3493  | 2212 | 591 | 678 | 12 | 0       | 0       | 0     |

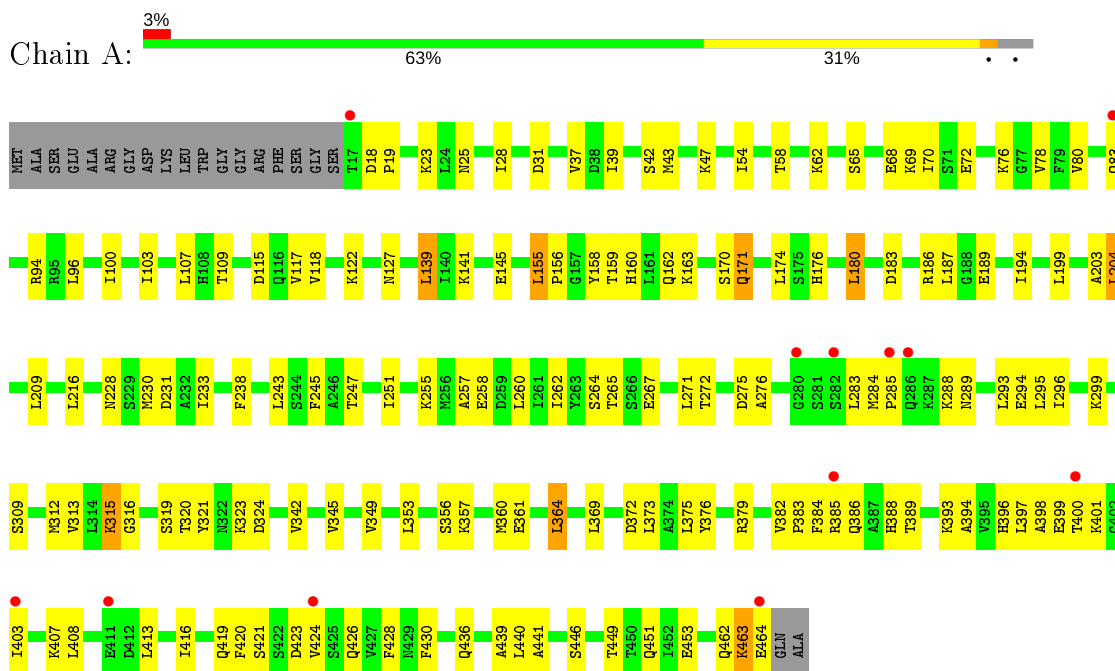
- Molecule 2 is water.

| Mol | Chain | Residues | Atoms        |          | ZeroOcc | AltConf |
|-----|-------|----------|--------------|----------|---------|---------|
| 2   | A     | 196      | Total<br>196 | O<br>196 | 0       | 0       |
| 2   | B     | 135      | Total<br>135 | O<br>135 | 0       | 0       |
| 2   | C     | 184      | Total<br>184 | O<br>184 | 0       | 0       |
| 2   | D     | 140      | Total<br>140 | O<br>140 | 0       | 0       |

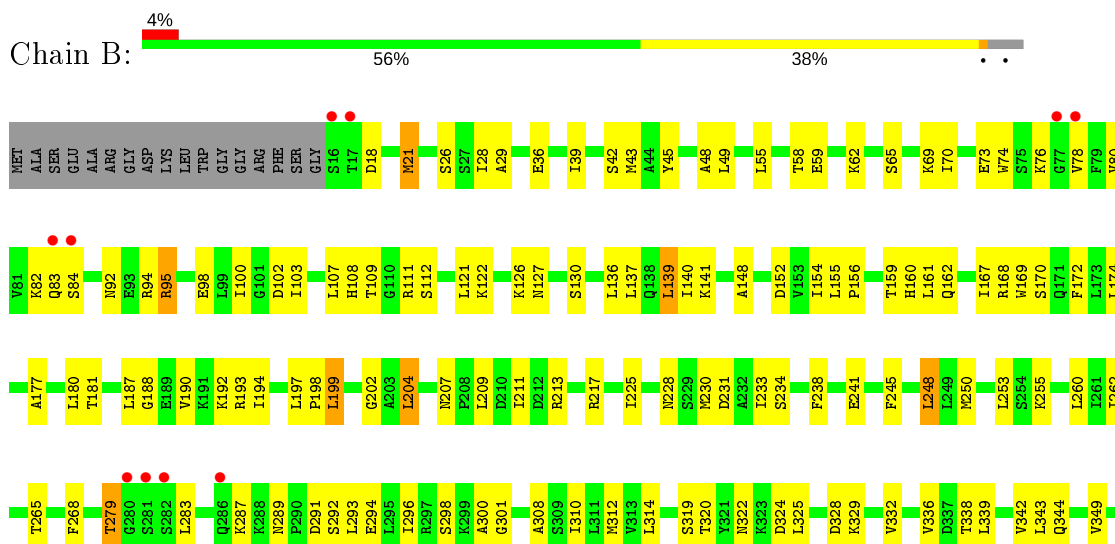
### 3 Residue-property plots

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 and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

#### • Molecule 1: DELTA CRYSTALLIN II

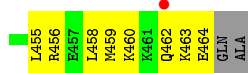
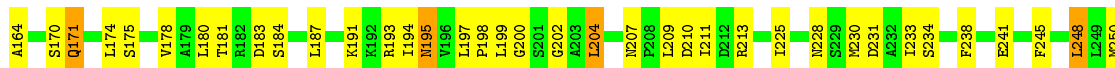


#### • Molecule 1: DELTA CRYSTALLIN II





### ● Molecule 1: DELTA CRYSTALLIN II



### ● Molecule 1: DELTA CRYSTALLIN II





## 4 Data and refinement statistics

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | P 1 21 1  | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 93.48Å 99.05Å 107.18Å<br>90.00° 102.08° 90.00°              | Depositor        |
| Resolution (Å)  | 20.00 – 2.30<br>19.99 – 2.30                                | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 86.6 (20.00-2.30)<br>86.7 (19.99-2.30)                      | Depositor<br>EDS |
| $R_{merge}$   | 0.05  | Depositor        |
| $R_{sym}$   | (Not available)   | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 3.51 (at 2.30Å)   | Xtriage          |
| Refinement program  | CNS 1.0   | Depositor        |
| R, $R_{free}$   | 0.208 , 0.263<br>0.205 , 0.262                              | Depositor<br>DCC |
| $R_{free}$ test set   | 7436 reflections (10.11%)                                   | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 24.2  | Xtriage          |
| Anisotropy  | 0.127   | Xtriage          |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.32 , 53.3   | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$ | Xtriage          |
| Estimated twinning fraction   | No twinning to report.                                      | Xtriage          |
| $F_o, F_c$ correlation  | 0.92  | EDS              |
| Total number of atoms   | 14603   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 33.0  | wwPDB-VP         |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.47% of the height of the origin peak. No significant pseudotranslation is detected.*

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

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

## 5 Model quality [i](#)

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

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     | 0.33         | 0/3529  | 0.56        | 0/4759  |
| 1   | B     | 0.33         | 0/3526  | 0.54        | 0/4755  |
| 1   | C     | 0.34         | 0/3535  | 0.55        | 0/4767  |
| 1   | D     | 0.34         | 0/3538  | 0.56        | 0/4771  |
| All | All   | 0.33         | 0/14128 | 0.55        | 0/19052 |

There are no bond length outliers.

There are no bond angle outliers.

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     | 3484  | 0        | 3605     | 133     | 0            |
| 1   | B     | 3481  | 0        | 3604     | 163     | 0            |
| 1   | C     | 3490  | 0        | 3610     | 172     | 0            |
| 1   | D     | 3493  | 0        | 3613     | 133     | 0            |
| 2   | A     | 196   | 0        | 0        | 11      | 0            |
| 2   | B     | 135   | 0        | 0        | 5       | 0            |
| 2   | C     | 184   | 0        | 0        | 14      | 0            |
| 2   | D     | 140   | 0        | 0        | 11      | 0            |
| All | All   | 14603 | 0        | 14432    | 552     | 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 19.



All (552) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:127:ASN:HB3  | 2:A:495:HOH:O    | 1.61                     | 1.00              |
| 1:A:155:LEU:HB3  | 1:A:360:MET:HG2  | 1.43                     | 0.98              |
| 1:B:379:ARG:HH12 | 1:B:436:GLN:HE21 | 1.10                     | 0.95              |
| 1:A:398:ALA:HB2  | 1:A:408:LEU:HD23 | 1.50                     | 0.94              |
| 1:D:49:LEU:HB3   | 1:D:55:LEU:HD23  | 1.48                     | 0.93              |
| 1:C:171:GLN:HE22 | 1:C:451:GLN:HE22 | 1.12                     | 0.92              |
| 1:D:406:ASN:H    | 1:D:406:ASN:HD22 | 1.17                     | 0.91              |
| 1:B:127:ASN:HB2  | 2:B:518:HOH:O    | 1.72                     | 0.90              |
| 1:C:283:LEU:H    | 1:C:283:LEU:HD22 | 1.36                     | 0.90              |
| 1:D:379:ARG:HH22 | 1:D:436:GLN:HE21 | 0.94                     | 0.88              |
| 1:C:202:GLY:O    | 1:C:233:ILE:HD11 | 1.74                     | 0.87              |
| 1:B:70:ILE:HG12  | 1:B:95:ARG:HG2   | 1.57                     | 0.86              |
| 1:A:383:PRO:HG2  | 1:A:386:GLN:HB3  | 1.57                     | 0.85              |
| 1:C:141:LYS:HG2  | 1:C:459:MET:SD   | 2.15                     | 0.85              |
| 1:C:213:ARG:NE   | 1:C:225:ILE:HD11 | 1.93                     | 0.84              |
| 1:D:171:GLN:HE21 | 1:D:171:GLN:HA   | 1.43                     | 0.83              |
| 1:B:429:ASN:ND2  | 1:B:432:ASN:H    | 1.77                     | 0.83              |
| 1:A:228:ASN:HD22 | 1:A:231:ASP:H    | 1.27                     | 0.81              |
| 1:D:159:THR:HG22 | 1:D:160:HIS:CD2  | 2.14                     | 0.81              |
| 1:A:393:LYS:HD2  | 1:A:416:ILE:HG23 | 1.62                     | 0.81              |
| 1:D:419:GLN:NE2  | 1:D:419:GLN:H    | 1.79                     | 0.81              |
| 1:A:403:ILE:HB   | 1:A:407:LYS:HD3  | 1.63                     | 0.80              |
| 1:D:379:ARG:NH2  | 1:D:436:GLN:HE21 | 1.78                     | 0.79              |
| 1:D:379:ARG:HH22 | 1:D:436:GLN:NE2  | 1.76                     | 0.79              |
| 1:B:154:ILE:HD12 | 1:B:167:ILE:O    | 1.83                     | 0.79              |
| 1:C:456:ARG:O    | 1:C:460:LYS:HD3  | 1.83                     | 0.78              |
| 1:C:371:THR:HB   | 2:C:500:HOH:O    | 1.84                     | 0.78              |
| 1:B:228:ASN:HD22 | 1:B:231:ASP:H    | 1.29                     | 0.77              |
| 1:A:115:ASP:HB3  | 1:A:233:ILE:HD11 | 1.67                     | 0.77              |
| 1:D:113:ARG:HH21 | 1:D:116:GLN:HE22 | 1.32                     | 0.77              |
| 1:B:207:ASN:ND2  | 1:B:209:LEU:H    | 1.83                     | 0.77              |
| 1:D:406:ASN:HD22 | 1:D:406:ASN:N    | 1.80                     | 0.76              |
| 1:C:76:LYS:HE3   | 1:C:78:VAL:HG11  | 1.67                     | 0.76              |
| 1:A:171:GLN:HE21 | 1:A:171:GLN:HA   | 1.51                     | 0.75              |
| 1:D:414:LYS:HE3  | 1:D:420:PHE:O    | 1.86                     | 0.75              |
| 1:B:429:ASN:HD22 | 1:B:432:ASN:H    | 1.36                     | 0.74              |
| 1:B:109:THR:HG22 | 1:B:209:LEU:HD11 | 1.70                     | 0.73              |
| 1:D:228:ASN:HD22 | 1:D:231:ASP:H    | 1.36                     | 0.73              |
| 1:C:250:MET:HE2  | 1:C:253:LEU:HD12 | 1.70                     | 0.73              |
| 1:B:82:LYS:HD3   | 1:B:83:GLN:N     | 2.02                     | 0.73              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:399:GLU:HG3  | 2:C:644:HOH:O    | 1.87                     | 0.73              |
| 1:B:82:LYS:HD3   | 1:B:84:SER:H     | 1.53                     | 0.73              |
| 1:D:419:GLN:H    | 1:D:419:GLN:HE21 | 1.36                     | 0.72              |
| 1:A:283:LEU:HD21 | 1:B:388:HIS:NE2  | 2.04                     | 0.72              |
| 1:D:208:PRO:HG2  | 1:D:209:LEU:HD22 | 1.70                     | 0.72              |
| 1:A:109:THR:HG22 | 1:A:209:LEU:HD11 | 1.71                     | 0.72              |
| 1:C:213:ARG:HE   | 1:C:225:ILE:HD11 | 1.53                     | 0.72              |
| 1:B:375:LEU:O    | 1:B:378:VAL:HG22 | 1.89                     | 0.72              |
| 1:B:296:ILE:HG12 | 1:B:342:VAL:HG23 | 1.71                     | 0.71              |
| 1:C:17:THR:HB    | 1:C:20:ILE:HB    | 1.71                     | 0.71              |
| 1:C:181:THR:HG21 | 1:C:458:LEU:HD13 | 1.71                     | 0.71              |
| 1:B:292:SER:HB3  | 1:C:21:MET:HE2   | 1.72                     | 0.71              |
| 1:B:366:PRO:HA   | 1:B:369:LEU:HD23 | 1.71                     | 0.70              |
| 1:A:376:TYR:CZ   | 1:A:424:VAL:HG22 | 2.26                     | 0.70              |
| 1:D:171:GLN:HE22 | 1:D:451:GLN:HE22 | 1.37                     | 0.70              |
| 1:B:393:LYS:HD2  | 1:B:416:ILE:HG23 | 1.74                     | 0.70              |
| 1:A:464:GLU:HG3  | 2:A:540:HOH:O    | 1.89                     | 0.70              |
| 1:B:293:LEU:HD21 | 1:B:349:VAL:HG11 | 1.72                     | 0.70              |
| 1:A:462:GLN:O    | 1:A:463:LYS:HG3  | 1.92                     | 0.70              |
| 1:B:139:LEU:HD13 | 1:B:180:LEU:HD13 | 1.74                     | 0.70              |
| 1:A:25:ASN:OD1   | 1:A:323:LYS:HE2  | 1.92                     | 0.70              |
| 1:D:70:ILE:HD11  | 1:D:74:TRP:HE1   | 1.57                     | 0.69              |
| 1:D:139:LEU:HD13 | 1:D:180:LEU:HD13 | 1.72                     | 0.69              |
| 1:C:111:ARG:HH21 | 1:C:111:ARG:HG2  | 1.58                     | 0.69              |
| 1:C:228:ASN:HD22 | 1:C:231:ASP:H    | 1.41                     | 0.69              |
| 1:B:376:TYR:CZ   | 1:B:424:VAL:HG22 | 2.27                     | 0.69              |
| 1:C:379:ARG:HH22 | 1:C:436:GLN:HE21 | 1.40                     | 0.69              |
| 1:D:32:GLN:HA    | 1:D:88:ILE:HD13  | 1.75                     | 0.69              |
| 1:B:429:ASN:HD21 | 1:B:431:VAL:HB   | 1.57                     | 0.68              |
| 1:A:18:ASP:OD1   | 1:A:19:PRO:HD2   | 1.93                     | 0.68              |
| 1:C:118:VAL:O    | 1:C:122:LYS:HG3  | 1.93                     | 0.68              |
| 1:D:460:LYS:HE2  | 1:D:464:GLU:OE1  | 1.93                     | 0.68              |
| 1:A:72:GLU:HB3   | 1:A:76:LYS:NZ    | 2.09                     | 0.68              |
| 1:C:18:ASP:N     | 1:C:19:PRO:HD2   | 2.08                     | 0.68              |
| 1:C:283:LEU:HD21 | 1:D:388:HIS:NE2  | 2.07                     | 0.68              |
| 1:C:309:SER:O    | 1:C:313:VAL:HG23 | 1.94                     | 0.68              |
| 1:B:177:ALA:O    | 1:B:181:THR:HG23 | 1.94                     | 0.68              |
| 1:B:279:THR:HB   | 1:B:291:ASP:OD1  | 1.93                     | 0.67              |
| 1:B:140:ILE:HD13 | 1:B:181:THR:HG22 | 1.75                     | 0.67              |
| 1:C:64:LEU:O     | 1:C:68:GLU:HG3   | 1.95                     | 0.67              |
| 1:D:365:THR:HG21 | 2:D:601:HOH:O    | 1.94                     | 0.67              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:171:GLN:HE21 | 1:C:171:GLN:HA   | 1.60                     | 0.67              |
| 1:A:176:HIS:O    | 1:A:180:LEU:HD22 | 1.94                     | 0.67              |
| 1:B:338:THR:O    | 1:B:342:VAL:HG12 | 1.95                     | 0.67              |
| 1:C:109:THR:HG22 | 1:C:209:LEU:HD11 | 1.76                     | 0.66              |
| 1:D:296:ILE:HG12 | 1:D:342:VAL:HG13 | 1.77                     | 0.66              |
| 1:D:20:ILE:HD13  | 2:D:504:HOH:O    | 1.96                     | 0.66              |
| 1:A:408:LEU:O    | 1:A:408:LEU:HD12 | 1.94                     | 0.66              |
| 1:B:369:LEU:HD21 | 1:B:430:PHE:HE2  | 1.61                     | 0.65              |
| 1:B:154:ILE:HD13 | 1:B:434:VAL:HG21 | 1.78                     | 0.65              |
| 1:C:108:HIS:HA   | 1:C:111:ARG:HH22 | 1.62                     | 0.65              |
| 1:C:143:LEU:HD21 | 1:C:350:ILE:HD13 | 1.79                     | 0.65              |
| 1:D:76:LYS:HD3   | 1:D:76:LYS:O     | 1.97                     | 0.65              |
| 1:B:455:LEU:O    | 1:B:459:MET:HG3  | 1.97                     | 0.64              |
| 1:C:418:PRO:HB2  | 2:C:573:HOH:O    | 1.97                     | 0.64              |
| 1:B:18:ASP:HB3   | 1:B:21:MET:HB2   | 1.79                     | 0.64              |
| 1:A:379:ARG:HH22 | 1:A:436:GLN:HE21 | 1.45                     | 0.64              |
| 1:C:59:GLU:O     | 1:C:63:ILE:HG12  | 1.97                     | 0.64              |
| 1:D:207:ASN:ND2  | 1:D:211:ILE:HB   | 2.13                     | 0.64              |
| 1:C:149:ILE:HB   | 2:C:557:HOH:O    | 1.97                     | 0.64              |
| 1:D:204:LEU:HD23 | 1:D:204:LEU:C    | 2.18                     | 0.64              |
| 1:C:293:LEU:HD21 | 1:C:349:VAL:HG11 | 1.79                     | 0.63              |
| 1:B:376:TYR:CE2  | 1:B:424:VAL:HG22 | 2.33                     | 0.63              |
| 1:B:359:ASN:HD22 | 1:B:359:ASN:N    | 1.97                     | 0.62              |
| 1:C:126:LYS:NZ   | 1:C:195:ASN:HD21 | 1.98                     | 0.62              |
| 1:B:225:ILE:CD1  | 1:D:440:LEU:HD13 | 2.30                     | 0.62              |
| 1:C:144:VAL:HG22 | 1:C:455:LEU:HD23 | 1.81                     | 0.62              |
| 1:B:159:THR:CG2  | 1:D:204:LEU:HD12 | 2.29                     | 0.62              |
| 1:D:293:LEU:HD21 | 1:D:349:VAL:HG11 | 1.81                     | 0.62              |
| 1:C:32:GLN:HA    | 1:C:88:ILE:HD13  | 1.82                     | 0.62              |
| 1:B:449:THR:O    | 1:B:453:GLU:HG3  | 2.00                     | 0.61              |
| 1:C:103:ILE:HG13 | 2:C:634:HOH:O    | 2.00                     | 0.61              |
| 1:C:286:GLN:H    | 1:C:286:GLN:CD   | 2.03                     | 0.61              |
| 1:D:208:PRO:HG2  | 1:D:209:LEU:CD2  | 2.29                     | 0.61              |
| 1:C:191:LYS:HE2  | 2:C:539:HOH:O    | 1.98                     | 0.61              |
| 1:C:250:MET:CE   | 1:C:253:LEU:HD12 | 2.31                     | 0.61              |
| 1:A:141:LYS:O    | 1:A:145:GLU:HG3  | 2.01                     | 0.60              |
| 1:C:151:ILE:HD11 | 1:C:448:VAL:HG23 | 1.81                     | 0.60              |
| 1:D:286:GLN:HE21 | 1:D:286:GLN:HA   | 1.67                     | 0.60              |
| 1:C:159:THR:HG23 | 1:C:164:ALA:HB2  | 1.84                     | 0.60              |
| 1:B:395:VAL:HG12 | 1:B:405:ILE:HG21 | 1.84                     | 0.60              |
| 1:D:96:LEU:O     | 1:D:100:ILE:HG22 | 2.01                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:458:LEU:HD12 | 1:D:461:LYS:HE3  | 1.83                     | 0.60              |
| 1:B:228:ASN:HD21 | 1:B:230:MET:HB2  | 1.66                     | 0.60              |
| 1:A:171:GLN:NE2  | 1:A:171:GLN:HA   | 2.17                     | 0.60              |
| 1:C:73:GLU:HA    | 1:C:78:VAL:CG2   | 2.30                     | 0.60              |
| 1:C:143:LEU:CD2  | 1:C:350:ILE:HD13 | 2.32                     | 0.60              |
| 1:D:136:LEU:HD13 | 1:D:184:SER:HB2  | 1.82                     | 0.59              |
| 1:D:393:LYS:HG3  | 2:D:569:HOH:O    | 2.02                     | 0.59              |
| 1:C:95:ARG:O     | 1:C:95:ARG:HD3   | 2.02                     | 0.59              |
| 1:C:171:GLN:HE22 | 1:C:451:GLN:NE2  | 1.93                     | 0.59              |
| 1:C:464:GLU:O    | 1:C:464:GLU:HG2  | 2.02                     | 0.59              |
| 1:B:339:LEU:HA   | 1:B:342:VAL:HG12 | 1.85                     | 0.58              |
| 1:C:97:LYS:HD2   | 1:C:97:LYS:O     | 2.02                     | 0.58              |
| 1:D:406:ASN:H    | 1:D:406:ASN:ND2  | 1.94                     | 0.58              |
| 1:A:383:PRO:HG2  | 1:A:386:GLN:CB   | 2.29                     | 0.58              |
| 1:A:440:LEU:O    | 1:A:441:ALA:HB3  | 2.02                     | 0.58              |
| 1:B:82:LYS:CD    | 1:B:84:SER:H     | 2.16                     | 0.58              |
| 1:C:117:VAL:HG12 | 1:C:118:VAL:N    | 2.19                     | 0.58              |
| 1:D:100:ILE:CG2  | 1:D:104:ALA:HB2  | 2.33                     | 0.58              |
| 1:C:37:VAL:HG22  | 2:C:468:HOH:O    | 2.04                     | 0.58              |
| 1:D:94:ARG:HH21  | 1:D:95:ARG:HD3   | 1.68                     | 0.58              |
| 1:B:188:GLY:O    | 1:B:192:LYS:HG2  | 2.04                     | 0.58              |
| 1:C:283:LEU:H    | 1:C:283:LEU:CD2  | 2.15                     | 0.57              |
| 1:C:283:LEU:N    | 1:C:283:LEU:HD22 | 2.14                     | 0.57              |
| 1:A:39:ILE:HD11  | 1:A:70:ILE:HG22  | 1.85                     | 0.57              |
| 1:C:295:LEU:O    | 1:C:299:LYS:HG2  | 2.03                     | 0.57              |
| 1:D:419:GLN:NE2  | 1:D:419:GLN:N    | 2.51                     | 0.57              |
| 1:C:73:GLU:HA    | 1:C:78:VAL:HG23  | 1.86                     | 0.57              |
| 1:D:323:LYS:HD2  | 1:D:326:GLN:OE1  | 2.03                     | 0.57              |
| 1:B:197:LEU:HD13 | 1:B:217:ARG:HA   | 1.86                     | 0.57              |
| 1:B:74:TRP:HE1   | 1:B:92:ASN:HD21  | 1.51                     | 0.57              |
| 1:A:289:ASN:HD22 | 1:B:162:GLN:HG3  | 1.70                     | 0.57              |
| 2:A:661:HOH:O    | 1:C:159:THR:HG22 | 2.04                     | 0.56              |
| 1:B:225:ILE:HD11 | 1:D:440:LEU:HD13 | 1.87                     | 0.56              |
| 1:B:440:LEU:O    | 1:B:441:ALA:HB3  | 2.05                     | 0.56              |
| 1:B:298:SER:HB3  | 1:C:324:ASP:HA   | 1.87                     | 0.56              |
| 1:D:269:GLY:HA2  | 2:D:516:HOH:O    | 2.05                     | 0.56              |
| 1:A:364:LEU:HB3  | 1:A:430:PHE:CE2  | 2.41                     | 0.56              |
| 1:B:287:LYS:HE2  | 2:B:584:HOH:O    | 2.06                     | 0.56              |
| 1:B:159:THR:HG22 | 1:D:204:LEU:HD12 | 1.87                     | 0.56              |
| 1:A:284:MET:N    | 1:A:285:PRO:HD3  | 2.21                     | 0.56              |
| 1:C:256:MET:SD   | 1:C:350:ILE:HD11 | 2.45                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:260:LEU:HB3  | 1:B:293:LEU:HD13 | 1.88                     | 0.56              |
| 1:A:373:LEU:HD13 | 1:A:373:LEU:O    | 2.06                     | 0.55              |
| 1:A:78:VAL:O     | 1:A:78:VAL:HG22  | 2.05                     | 0.55              |
| 1:B:187:LEU:O    | 1:B:187:LEU:HD23 | 2.06                     | 0.55              |
| 1:A:357:LYS:O    | 1:A:361:GLU:HB2  | 2.06                     | 0.55              |
| 1:B:193:ARG:NH2  | 1:B:241:GLU:OE1  | 2.39                     | 0.55              |
| 1:C:63:ILE:O     | 1:C:67:LEU:HD23  | 2.06                     | 0.55              |
| 1:D:42:SER:HB3   | 1:D:107:LEU:HD21 | 1.89                     | 0.55              |
| 1:B:431:VAL:O    | 1:B:435:GLU:HG2  | 2.06                     | 0.55              |
| 1:C:39:ILE:HG22  | 1:C:43:MET:HE2   | 1.88                     | 0.55              |
| 1:A:384:PHE:HB2  | 1:C:109:THR:OG1  | 2.05                     | 0.55              |
| 1:C:204:LEU:HD23 | 1:C:204:LEU:C    | 2.27                     | 0.55              |
| 1:A:228:ASN:ND2  | 1:A:231:ASP:H    | 2.00                     | 0.55              |
| 1:B:181:THR:HG21 | 1:B:455:LEU:CD1  | 2.36                     | 0.55              |
| 1:B:190:VAL:HG22 | 1:B:241:GLU:HG2  | 1.89                     | 0.55              |
| 1:D:186:ARG:CZ   | 1:D:248:LEU:HD13 | 2.36                     | 0.55              |
| 1:A:296:ILE:HG12 | 1:A:342:VAL:HG13 | 1.87                     | 0.55              |
| 1:A:379:ARG:NH2  | 1:A:436:GLN:HE21 | 2.05                     | 0.55              |
| 1:C:17:THR:HG21  | 1:C:20:ILE:HD12  | 1.89                     | 0.55              |
| 1:C:445:LYS:O    | 1:C:448:VAL:HG22 | 2.06                     | 0.55              |
| 1:C:126:LYS:NZ   | 1:C:195:ASN:ND2  | 2.55                     | 0.54              |
| 1:C:228:ASN:HD21 | 1:C:230:MET:HB2  | 1.72                     | 0.54              |
| 1:A:283:LEU:HD11 | 1:B:388:HIS:CD2  | 2.42                     | 0.54              |
| 1:B:369:LEU:HD21 | 1:B:430:PHE:CE2  | 2.43                     | 0.54              |
| 1:C:282:SER:HB2  | 1:D:388:HIS:HE1  | 1.71                     | 0.54              |
| 1:A:159:THR:CG2  | 1:C:204:LEU:HD12 | 2.37                     | 0.54              |
| 1:B:461:LYS:C    | 1:B:463:LYS:H    | 2.11                     | 0.54              |
| 1:B:82:LYS:HD3   | 1:B:84:SER:N     | 2.19                     | 0.54              |
| 1:D:70:ILE:HD11  | 1:D:74:TRP:NE1   | 2.20                     | 0.54              |
| 1:D:100:ILE:HG12 | 1:D:103:ILE:CG2  | 2.38                     | 0.54              |
| 1:D:181:THR:HG21 | 1:D:458:LEU:HD23 | 1.88                     | 0.54              |
| 1:D:18:ASP:OD1   | 1:D:19:PRO:HD2   | 2.06                     | 0.54              |
| 1:A:39:ILE:O     | 1:A:43:MET:HG3   | 2.08                     | 0.54              |
| 1:B:148:ALA:HB2  | 1:B:452:ILE:HD13 | 1.90                     | 0.54              |
| 1:C:294:GLU:OE2  | 1:D:160:HIS:HA   | 2.08                     | 0.54              |
| 1:C:440:LEU:O    | 1:C:441:ALA:HB3  | 2.06                     | 0.54              |
| 1:B:76:LYS:HB2   | 1:B:78:VAL:HG23  | 1.89                     | 0.54              |
| 1:D:195:ASN:ND2  | 1:D:223:ALA:HB2  | 2.23                     | 0.54              |
| 1:D:154:ILE:HG22 | 1:D:364:LEU:HD11 | 1.90                     | 0.54              |
| 1:D:54:ILE:HD13  | 1:D:109:THR:HG21 | 1.90                     | 0.54              |
| 1:D:286:GLN:NE2  | 1:D:286:GLN:HA   | 2.24                     | 0.53              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:187:LEU:C    | 1:A:187:LEU:HD23 | 2.29                     | 0.53              |
| 1:A:413:LEU:HB3  | 1:A:420:PHE:CD1  | 2.43                     | 0.53              |
| 1:D:295:LEU:O    | 1:D:299:LYS:HG2  | 2.08                     | 0.53              |
| 1:A:423:ASP:O    | 1:A:426:GLN:HG2  | 2.07                     | 0.53              |
| 1:B:94:ARG:O     | 1:B:98:GLU:HG3   | 2.09                     | 0.53              |
| 1:D:127:ASN:HB2  | 2:D:595:HOH:O    | 2.08                     | 0.53              |
| 1:D:171:GLN:NE2  | 1:D:171:GLN:HA   | 2.19                     | 0.53              |
| 1:A:364:LEU:HB3  | 1:A:430:PHE:CZ   | 2.44                     | 0.53              |
| 1:C:272:THR:CG2  | 1:C:288:LYS:HD2  | 2.39                     | 0.53              |
| 1:C:88:ILE:HG23  | 1:C:89:HIS:HD2   | 1.74                     | 0.53              |
| 1:C:63:ILE:HA    | 1:C:100:ILE:CD1  | 2.39                     | 0.53              |
| 1:D:406:ASN:ND2  | 1:D:406:ASN:N    | 2.53                     | 0.53              |
| 1:A:160:HIS:HA   | 1:B:294:GLU:OE1  | 2.09                     | 0.52              |
| 1:A:94:ARG:HH11  | 1:A:94:ARG:HG2   | 1.75                     | 0.52              |
| 1:B:159:THR:O    | 1:B:160:HIS:HB2  | 2.09                     | 0.52              |
| 1:B:65:SER:O     | 1:B:69:LYS:HG3   | 2.09                     | 0.52              |
| 2:C:503:HOH:O    | 1:D:163:LYS:HE2  | 2.09                     | 0.52              |
| 1:B:324:ASP:HA   | 1:C:298:SER:HB3  | 1.91                     | 0.52              |
| 1:B:379:ARG:NH1  | 1:B:436:GLN:HE21 | 1.93                     | 0.52              |
| 1:B:49:LEU:HB2   | 1:B:55:LEU:HD12  | 1.91                     | 0.52              |
| 1:C:31:ASP:O     | 1:C:34:LEU:HB2   | 2.09                     | 0.52              |
| 1:D:67:LEU:O     | 1:D:70:ILE:HG23  | 2.08                     | 0.52              |
| 1:B:429:ASN:HD22 | 1:B:432:ASN:CG   | 2.12                     | 0.52              |
| 1:D:100:ILE:HG21 | 1:D:104:ALA:HB2  | 1.92                     | 0.52              |
| 1:B:207:ASN:HD22 | 1:B:209:LEU:H    | 1.57                     | 0.52              |
| 1:C:108:HIS:HA   | 1:C:111:ARG:NH2  | 2.25                     | 0.52              |
| 1:B:339:LEU:HA   | 1:B:342:VAL:CG1  | 2.40                     | 0.52              |
| 1:B:421:SER:O    | 1:B:424:VAL:HG23 | 2.10                     | 0.52              |
| 1:C:213:ARG:CZ   | 1:C:225:ILE:HD11 | 2.40                     | 0.52              |
| 1:B:429:ASN:HB3  | 1:B:432:ASN:HD22 | 1.75                     | 0.52              |
| 1:B:70:ILE:HG12  | 1:B:95:ARG:CG    | 2.36                     | 0.52              |
| 1:D:115:ASP:HB3  | 1:D:233:ILE:HD11 | 1.90                     | 0.52              |
| 1:D:70:ILE:HG13  | 1:D:71:SER:N     | 2.24                     | 0.52              |
| 1:B:154:ILE:HG13 | 1:B:364:LEU:HD11 | 1.91                     | 0.52              |
| 1:B:440:LEU:HD23 | 2:D:491:HOH:O    | 2.10                     | 0.52              |
| 1:A:155:LEU:HB2  | 1:A:156:PRO:CD   | 2.40                     | 0.51              |
| 1:B:169:TRP:O    | 1:B:172:PHE:HB3  | 2.10                     | 0.51              |
| 1:B:260:LEU:HB3  | 1:B:293:LEU:CD1  | 2.40                     | 0.51              |
| 1:B:376:TYR:HB2  | 1:B:427:VAL:HG21 | 1.91                     | 0.51              |
| 1:D:365:THR:HG22 | 1:D:368:MET:HG3  | 1.92                     | 0.51              |
| 1:A:194:ILE:HG12 | 1:A:238:PHE:HB2  | 1.92                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:197:LEU:HD11 | 1:C:199:LEU:HB3  | 1.92                     | 0.51              |
| 1:D:114:ASN:HB3  | 1:D:233:ILE:HG23 | 1.91                     | 0.51              |
| 1:A:171:GLN:HE21 | 1:A:171:GLN:CA   | 2.19                     | 0.51              |
| 1:C:100:ILE:HG22 | 2:C:610:HOH:O    | 2.09                     | 0.51              |
| 1:A:315:LYS:HD2  | 1:A:316:GLY:N    | 2.25                     | 0.51              |
| 1:A:171:GLN:HE22 | 1:A:451:GLN:HE22 | 1.57                     | 0.51              |
| 1:D:228:ASN:HD21 | 1:D:230:MET:HB2  | 1.76                     | 0.51              |
| 1:A:264:SER:HA   | 1:A:271:LEU:O    | 2.10                     | 0.51              |
| 1:B:359:ASN:ND2  | 1:B:359:ASN:N    | 2.58                     | 0.51              |
| 1:A:283:LEU:HD22 | 1:A:283:LEU:N    | 2.25                     | 0.51              |
| 1:C:151:ILE:HD11 | 1:C:448:VAL:CG2  | 2.41                     | 0.51              |
| 1:D:440:LEU:O    | 1:D:441:ALA:HB3  | 2.11                     | 0.51              |
| 1:B:39:ILE:O     | 1:B:43:MET:HG3   | 2.10                     | 0.51              |
| 1:A:398:ALA:HB1  | 1:A:403:ILE:O    | 2.11                     | 0.50              |
| 1:B:58:THR:O     | 1:B:62:LYS:HG3   | 2.11                     | 0.50              |
| 1:D:129:LEU:CD1  | 1:D:187:LEU:HG   | 2.41                     | 0.50              |
| 1:C:302:ARG:NH2  | 2:C:519:HOH:O    | 2.44                     | 0.50              |
| 1:B:248:LEU:HG   | 1:D:240:VAL:HG11 | 1.94                     | 0.50              |
| 1:D:450:THR:O    | 1:D:454:GLN:HG3  | 2.12                     | 0.50              |
| 1:B:434:VAL:HG13 | 1:B:443:THR:HG23 | 1.93                     | 0.50              |
| 1:B:250:MET:HB3  | 1:B:300:ALA:HA   | 1.94                     | 0.50              |
| 1:B:39:ILE:HD11  | 1:B:70:ILE:HG22  | 1.92                     | 0.50              |
| 1:D:204:LEU:HD23 | 1:D:204:LEU:O    | 2.11                     | 0.50              |
| 1:D:76:LYS:HD2   | 1:D:78:VAL:CG2   | 2.42                     | 0.50              |
| 1:A:96:LEU:O     | 1:A:100:ILE:HG12 | 2.11                     | 0.50              |
| 1:C:65:SER:O     | 1:C:69:LYS:HG3   | 2.12                     | 0.50              |
| 1:D:129:LEU:HD12 | 1:D:187:LEU:HG   | 1.93                     | 0.50              |
| 1:A:238:PHE:HB3  | 2:A:494:HOH:O    | 2.11                     | 0.49              |
| 1:B:369:LEU:N    | 1:B:369:LEU:HD22 | 2.27                     | 0.49              |
| 1:C:213:ARG:HB3  | 1:C:225:ILE:HD12 | 1.94                     | 0.49              |
| 1:C:18:ASP:O     | 1:C:21:MET:HB3   | 2.12                     | 0.49              |
| 1:C:149:ILE:HG23 | 1:C:150:GLU:HG3  | 1.94                     | 0.49              |
| 1:C:85:ASP:OD1   | 1:C:91:ALA:HA    | 2.13                     | 0.49              |
| 1:B:197:LEU:HD23 | 1:B:213:ARG:HH21 | 1.76                     | 0.49              |
| 1:A:294:GLU:OE1  | 1:B:160:HIS:HA   | 2.12                     | 0.49              |
| 1:B:204:LEU:HD21 | 1:D:165:GLN:HG2  | 1.95                     | 0.49              |
| 1:B:181:THR:HG21 | 1:B:455:LEU:HD12 | 1.95                     | 0.49              |
| 1:C:151:ILE:HA   | 1:C:170:SER:OG   | 2.12                     | 0.49              |
| 1:C:18:ASP:N     | 1:C:19:PRO:CD    | 2.74                     | 0.49              |
| 1:D:69:LYS:O     | 1:D:73:GLU:HG3   | 2.13                     | 0.49              |
| 1:B:409:SER:O    | 1:B:413:LEU:HD23 | 2.11                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:168:ARG:HB3  | 2:D:474:HOH:O    | 2.12                     | 0.49              |
| 1:C:122:LYS:HE2  | 1:C:238:PHE:CE2  | 2.48                     | 0.49              |
| 1:D:106:LYS:HG3  | 2:D:598:HOH:O    | 2.12                     | 0.49              |
| 1:D:45:TYR:CE2   | 1:D:111:ARG:HB2  | 2.48                     | 0.49              |
| 1:D:54:ILE:C     | 1:D:55:LEU:HD22  | 2.33                     | 0.49              |
| 1:A:228:ASN:HD21 | 1:A:230:MET:HB2  | 1.78                     | 0.49              |
| 1:C:345:VAL:O    | 1:C:349:VAL:HG23 | 2.13                     | 0.49              |
| 1:A:382:VAL:HG21 | 1:A:419:GLN:HG3  | 1.95                     | 0.49              |
| 1:B:100:ILE:O    | 1:B:103:ILE:HG22 | 2.13                     | 0.48              |
| 1:A:372:ASP:HA   | 1:A:375:LEU:HD12 | 1.94                     | 0.48              |
| 1:D:63:ILE:HA    | 1:D:100:ILE:HD12 | 1.94                     | 0.48              |
| 1:B:353:LEU:HD12 | 1:B:353:LEU:C    | 2.33                     | 0.48              |
| 1:C:126:LYS:HZ2  | 1:C:195:ASN:HD21 | 1.61                     | 0.48              |
| 1:D:139:LEU:HD13 | 1:D:180:LEU:CD1  | 2.40                     | 0.48              |
| 1:A:42:SER:HB3   | 1:A:107:LEU:HD21 | 1.95                     | 0.48              |
| 1:B:364:LEU:HD23 | 1:B:368:MET:HE1  | 1.96                     | 0.48              |
| 1:C:45:TYR:CD1   | 1:C:111:ARG:HD3  | 2.49                     | 0.48              |
| 1:D:329:LYS:HE3  | 2:D:509:HOH:O    | 2.13                     | 0.48              |
| 1:D:51:LYS:HG2   | 2:D:567:HOH:O    | 2.13                     | 0.48              |
| 1:D:171:GLN:HE22 | 1:D:451:GLN:NE2  | 2.08                     | 0.48              |
| 1:A:384:PHE:CE2  | 1:C:108:HIS:HB2  | 2.49                     | 0.48              |
| 1:C:187:LEU:HB2  | 1:C:245:PHE:CE1  | 2.49                     | 0.48              |
| 1:C:250:MET:HB3  | 1:C:300:ALA:HA   | 1.96                     | 0.48              |
| 1:C:180:LEU:O    | 1:C:183:ASP:HB2  | 2.14                     | 0.47              |
| 1:C:273:LEU:CD1  | 1:C:349:VAL:HG13 | 2.44                     | 0.47              |
| 1:A:320:THR:OG1  | 1:A:321:TYR:N    | 2.47                     | 0.47              |
| 1:B:377:LEU:HB3  | 1:B:382:VAL:HB   | 1.96                     | 0.47              |
| 1:D:243:LEU:HD23 | 1:D:307:LEU:HA   | 1.96                     | 0.47              |
| 1:A:262:ILE:O    | 1:A:265:THR:HG23 | 2.14                     | 0.47              |
| 1:A:69:LYS:HE2   | 2:A:550:HOH:O    | 2.14                     | 0.47              |
| 1:C:456:ARG:HA   | 1:C:459:MET:CE   | 2.43                     | 0.47              |
| 1:D:421:SER:O    | 1:D:424:VAL:HG12 | 2.13                     | 0.47              |
| 1:A:72:GLU:HB3   | 1:A:76:LYS:HZ3   | 1.77                     | 0.47              |
| 1:A:80:VAL:HG13  | 2:A:484:HOH:O    | 2.14                     | 0.47              |
| 1:B:202:GLY:O    | 1:B:233:ILE:HD11 | 2.13                     | 0.47              |
| 1:A:267:GLU:HG2  | 1:B:268:PHE:CD1  | 2.49                     | 0.47              |
| 1:B:451:GLN:O    | 1:B:455:LEU:HD23 | 2.13                     | 0.47              |
| 1:A:385:ARG:O    | 1:A:389:THR:HG23 | 2.13                     | 0.47              |
| 1:A:397:LEU:HD23 | 1:A:397:LEU:C    | 2.35                     | 0.47              |
| 1:C:138:GLN:HG3  | 2:C:635:HOH:O    | 2.14                     | 0.47              |
| 1:A:267:GLU:HG2  | 1:B:268:PHE:CG   | 2.49                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:28:ILE:HG23  | 1:B:29:ALA:N     | 2.30                     | 0.47              |
| 1:B:156:PRO:HG2  | 1:B:363:ALA:HB1  | 1.97                     | 0.47              |
| 1:A:43:MET:O     | 1:A:47:LYS:HG3   | 2.15                     | 0.47              |
| 1:A:388:HIS:CE1  | 1:B:283:LEU:HD13 | 2.49                     | 0.47              |
| 1:B:42:SER:HB3   | 1:B:107:LEU:HD21 | 1.96                     | 0.47              |
| 1:C:88:ILE:HG23  | 1:C:89:HIS:CD2   | 2.49                     | 0.47              |
| 1:D:100:ILE:HG12 | 1:D:103:ILE:HG23 | 1.96                     | 0.47              |
| 1:B:26:SER:OG    | 1:B:28:ILE:HG22  | 2.14                     | 0.47              |
| 1:D:247:THR:O    | 1:D:251:ILE:HG12 | 2.15                     | 0.47              |
| 1:B:429:ASN:ND2  | 1:B:432:ASN:ND2  | 2.63                     | 0.47              |
| 1:C:373:LEU:O    | 1:C:376:TYR:HB3  | 2.15                     | 0.47              |
| 1:C:83:GLN:HG2   | 1:C:83:GLN:O     | 2.15                     | 0.47              |
| 1:B:342:VAL:HG13 | 1:B:343:LEU:N    | 2.30                     | 0.47              |
| 1:B:423:ASP:C    | 1:B:425:SER:N    | 2.68                     | 0.47              |
| 1:D:17:THR:O     | 1:D:17:THR:HG23  | 2.15                     | 0.47              |
| 1:D:404:THR:OG1  | 1:D:406:ASN:ND2  | 2.42                     | 0.47              |
| 1:A:324:ASP:HA   | 1:D:298:SER:HB3  | 1.97                     | 0.46              |
| 1:A:396:HIS:O    | 1:A:400:THR:HG23 | 2.14                     | 0.46              |
| 1:C:48:ALA:HB1   | 1:C:211:ILE:HD11 | 1.97                     | 0.46              |
| 1:A:255:LYS:NZ   | 1:C:234:SER:OG   | 2.47                     | 0.46              |
| 1:C:163:LYS:O    | 1:D:287:LYS:HE2  | 2.14                     | 0.46              |
| 1:C:200:GLY:HA3  | 1:C:213:ARG:HD3  | 1.96                     | 0.46              |
| 1:B:372:ASP:HA   | 1:B:375:LEU:HD12 | 1.97                     | 0.46              |
| 1:B:73:GLU:O     | 1:B:78:VAL:N     | 2.47                     | 0.46              |
| 1:B:429:ASN:HD22 | 1:B:432:ASN:ND2  | 2.14                     | 0.46              |
| 1:C:194:ILE:HG12 | 1:C:238:PHE:HB2  | 1.97                     | 0.46              |
| 1:D:54:ILE:HG22  | 1:D:55:LEU:HD22  | 1.96                     | 0.46              |
| 1:A:309:SER:O    | 1:A:313:VAL:HG23 | 2.15                     | 0.46              |
| 1:A:54:ILE:N     | 1:A:54:ILE:HD12  | 2.30                     | 0.46              |
| 1:C:174:LEU:O    | 1:C:178:VAL:HG23 | 2.15                     | 0.46              |
| 1:A:23:LYS:HD2   | 1:A:23:LYS:HA    | 1.72                     | 0.46              |
| 1:B:255:LYS:HG3  | 1:D:317:LEU:O    | 2.16                     | 0.46              |
| 1:D:212:ASP:OD2  | 1:D:215:MET:HB2  | 2.15                     | 0.46              |
| 1:D:367:GLU:H    | 1:D:367:GLU:CD   | 2.19                     | 0.46              |
| 1:D:141:LYS:O    | 1:D:145:GLU:HG2  | 2.15                     | 0.46              |
| 1:D:50:GLU:HG3   | 1:D:60:LEU:HD22  | 1.97                     | 0.46              |
| 1:C:154:ILE:HG22 | 1:C:364:LEU:HD11 | 1.98                     | 0.46              |
| 1:A:295:LEU:O    | 1:A:299:LYS:HG2  | 2.16                     | 0.46              |
| 1:C:403:ILE:HD11 | 1:C:408:LEU:HD23 | 1.97                     | 0.46              |
| 1:D:20:ILE:HD12  | 1:D:20:ILE:N     | 2.30                     | 0.46              |
| 1:D:89:HIS:O     | 1:D:93:GLU:HG3   | 2.15                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:103:ILE:HD13 | 2:A:488:HOH:O    | 2.15                     | 0.46              |
| 1:A:180:LEU:O    | 1:A:183:ASP:HB2  | 2.16                     | 0.46              |
| 1:A:449:THR:O    | 1:A:453:GLU:HG3  | 2.15                     | 0.46              |
| 1:B:126:LYS:HD3  | 2:B:523:HOH:O    | 2.16                     | 0.46              |
| 1:B:83:GLN:HB3   | 2:B:512:HOH:O    | 2.15                     | 0.46              |
| 1:A:275:ASP:OD1  | 1:A:288:LYS:NZ   | 2.49                     | 0.45              |
| 1:A:72:GLU:HA    | 1:A:72:GLU:OE1   | 2.16                     | 0.45              |
| 1:D:229:SER:O    | 1:D:233:ILE:HG12 | 2.15                     | 0.45              |
| 1:B:413:LEU:O    | 1:B:420:PHE:HD2  | 1.99                     | 0.45              |
| 1:B:440:LEU:HD22 | 1:B:440:LEU:H    | 1.80                     | 0.45              |
| 1:C:328:ASP:OD2  | 1:C:329:LYS:N    | 2.48                     | 0.45              |
| 1:A:159:THR:HG23 | 1:C:204:LEU:HD12 | 1.97                     | 0.45              |
| 1:C:111:ARG:HH21 | 1:C:111:ARG:CG   | 2.26                     | 0.45              |
| 1:C:283:LEU:HB3  | 1:D:370:ALA:HB3  | 1.98                     | 0.45              |
| 1:A:18:ASP:CG    | 1:A:19:PRO:HD2   | 2.36                     | 0.45              |
| 1:A:203:ALA:O    | 1:A:204:LEU:HB3  | 2.15                     | 0.45              |
| 1:B:375:LEU:CD1  | 1:B:436:GLN:HE22 | 2.30                     | 0.45              |
| 1:A:312:MET:CE   | 1:B:312:MET:HA   | 2.46                     | 0.45              |
| 1:C:319:SER:HA   | 1:C:320:THR:HA   | 1.79                     | 0.45              |
| 1:C:57:LYS:O     | 1:C:60:LEU:HB3   | 2.16                     | 0.45              |
| 1:A:170:SER:O    | 1:A:174:LEU:HG   | 2.16                     | 0.45              |
| 1:A:446:SER:HB3  | 2:A:587:HOH:O    | 2.15                     | 0.45              |
| 1:B:375:LEU:HA   | 1:B:378:VAL:HG22 | 1.99                     | 0.45              |
| 1:D:353:LEU:HD12 | 1:D:353:LEU:O    | 2.17                     | 0.45              |
| 1:C:62:LYS:HD3   | 2:C:634:HOH:O    | 2.17                     | 0.45              |
| 1:D:228:ASN:ND2  | 1:D:231:ASP:H    | 2.09                     | 0.45              |
| 1:A:58:THR:O     | 1:A:62:LYS:HG2   | 2.16                     | 0.45              |
| 1:B:262:ILE:O    | 1:B:265:THR:HG23 | 2.17                     | 0.45              |
| 1:D:385:ARG:HH11 | 1:D:385:ARG:HG2  | 1.82                     | 0.45              |
| 1:D:78:VAL:O     | 1:D:78:VAL:HG12  | 2.16                     | 0.45              |
| 1:A:379:ARG:HH22 | 1:A:436:GLN:NE2  | 2.11                     | 0.45              |
| 1:A:401:LYS:HB3  | 1:A:401:LYS:NZ   | 2.31                     | 0.45              |
| 1:B:204:LEU:HA   | 1:B:233:ILE:HD12 | 1.99                     | 0.45              |
| 1:B:228:ASN:ND2  | 1:D:175:SER:HB3  | 2.32                     | 0.45              |
| 1:C:102:ASP:HB3  | 2:C:499:HOH:O    | 2.16                     | 0.45              |
| 1:B:301:GLY:HA2  | 1:C:312:MET:HG2  | 1.99                     | 0.45              |
| 1:C:421:SER:HB2  | 1:C:423:ASP:OD2  | 2.17                     | 0.45              |
| 1:D:217:ARG:HH11 | 1:D:217:ARG:HG2  | 1.82                     | 0.45              |
| 1:D:81:VAL:HG23  | 1:D:85:ASP:OD2   | 2.17                     | 0.45              |
| 1:A:228:ASN:HD21 | 1:C:175:SER:HB3  | 1.82                     | 0.44              |
| 1:A:369:LEU:HD13 | 1:A:428:PHE:HA   | 1.98                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:440:LEU:O    | 1:B:441:ALA:CB   | 2.65                     | 0.44              |
| 1:D:190:VAL:HG22 | 1:D:241:GLU:HB3  | 1.98                     | 0.44              |
| 1:D:250:MET:HB3  | 1:D:300:ALA:HA   | 1.99                     | 0.44              |
| 1:C:207:ASN:ND2  | 1:C:211:ILE:HB   | 2.32                     | 0.44              |
| 1:A:356:SER:O    | 1:A:360:MET:HB2  | 2.17                     | 0.44              |
| 1:B:194:ILE:HG12 | 1:B:238:PHE:HB2  | 1.99                     | 0.44              |
| 1:C:184:SER:OG   | 1:C:462:GLN:CG   | 2.66                     | 0.44              |
| 1:D:66:GLY:O     | 1:D:69:LYS:N     | 2.51                     | 0.44              |
| 1:A:394:ALA:HA   | 1:A:416:ILE:CD1  | 2.48                     | 0.44              |
| 1:C:49:LEU:HB3   | 1:C:55:LEU:HG    | 1.98                     | 0.44              |
| 1:D:67:LEU:HD23  | 1:D:96:LEU:HD13  | 1.99                     | 0.44              |
| 1:A:189:GLU:OE2  | 1:C:193:ARG:NH2  | 2.46                     | 0.44              |
| 1:D:421:SER:HB2  | 1:D:423:ASP:OD1  | 2.18                     | 0.44              |
| 1:B:410:LEU:HD11 | 1:B:414:LYS:HE2  | 2.00                     | 0.44              |
| 1:C:260:LEU:HB2  | 1:C:293:LEU:HD13 | 1.99                     | 0.44              |
| 1:C:48:ALA:CB    | 1:C:211:ILE:HD11 | 2.48                     | 0.44              |
| 1:D:193:ARG:NH2  | 1:D:241:GLU:OE2  | 2.48                     | 0.44              |
| 1:D:186:ARG:NE   | 1:D:248:LEU:HD13 | 2.33                     | 0.44              |
| 1:A:187:LEU:O    | 1:A:187:LEU:HD23 | 2.17                     | 0.44              |
| 1:A:255:LYS:HG3  | 1:C:317:LEU:O    | 2.16                     | 0.44              |
| 1:B:308:ALA:HB1  | 1:C:304:PHE:CE2  | 2.53                     | 0.44              |
| 1:C:126:LYS:HZ1  | 1:C:195:ASN:HD21 | 1.66                     | 0.44              |
| 1:B:152:ASP:HA   | 1:B:168:ARG:HH21 | 1.83                     | 0.44              |
| 1:B:228:ASN:ND2  | 1:B:231:ASP:H    | 2.05                     | 0.44              |
| 1:C:126:LYS:HZ2  | 1:C:195:ASN:ND2  | 2.13                     | 0.44              |
| 1:A:247:THR:O    | 1:A:251:ILE:HG12 | 2.17                     | 0.43              |
| 1:A:65:SER:O     | 1:A:69:LYS:HG3   | 2.17                     | 0.43              |
| 1:B:328:ASP:OD1  | 1:B:329:LYS:N    | 2.51                     | 0.43              |
| 1:C:193:ARG:NH1  | 1:C:241:GLU:OE2  | 2.51                     | 0.43              |
| 1:A:396:HIS:O    | 1:A:399:GLU:HB3  | 2.17                     | 0.43              |
| 1:C:213:ARG:CB   | 1:C:225:ILE:HD12 | 2.47                     | 0.43              |
| 1:C:228:ASN:ND2  | 1:C:230:MET:H    | 2.16                     | 0.43              |
| 1:C:353:LEU:HD12 | 1:C:353:LEU:C    | 2.39                     | 0.43              |
| 1:D:62:LYS:HG3   | 1:D:100:ILE:HG13 | 1.99                     | 0.43              |
| 1:A:72:GLU:HB3   | 1:A:76:LYS:HZ2   | 1.81                     | 0.43              |
| 1:A:257:ALA:HA   | 1:A:293:LEU:HD22 | 2.01                     | 0.43              |
| 1:A:283:LEU:HD11 | 1:B:388:HIS:HD2  | 1.81                     | 0.43              |
| 1:A:357:LYS:H    | 1:A:357:LYS:HD2  | 1.84                     | 0.43              |
| 1:C:161:LEU:HD23 | 1:C:161:LEU:HA   | 1.90                     | 0.43              |
| 1:B:301:GLY:CA   | 1:C:312:MET:HG2  | 2.48                     | 0.43              |
| 1:C:323:LYS:HE3  | 1:C:326:GLN:NE2  | 2.33                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:315:LYS:C    | 1:D:315:LYS:HD3  | 2.39                     | 0.43              |
| 1:A:446:SER:O    | 1:A:449:THR:OG1  | 2.32                     | 0.43              |
| 1:B:377:LEU:HB2  | 1:B:387:ALA:HB1  | 2.01                     | 0.43              |
| 1:B:45:TYR:CE2   | 1:B:111:ARG:HB2  | 2.53                     | 0.43              |
| 1:C:447:SER:O    | 1:C:451:GLN:HG3  | 2.19                     | 0.43              |
| 1:B:361:GLU:HG3  | 1:B:364:LEU:HD12 | 2.01                     | 0.43              |
| 1:B:429:ASN:HD22 | 1:B:432:ASN:N    | 2.11                     | 0.43              |
| 1:C:184:SER:OG   | 1:C:462:GLN:HG2  | 2.18                     | 0.43              |
| 1:C:356:SER:OG   | 1:C:359:ASN:ND2  | 2.52                     | 0.43              |
| 1:B:204:LEU:HD21 | 1:D:165:GLN:CG   | 2.49                     | 0.42              |
| 1:C:248:LEU:HA   | 1:C:248:LEU:HD23 | 1.84                     | 0.42              |
| 1:A:155:LEU:CB   | 1:A:360:MET:HG2  | 2.31                     | 0.42              |
| 1:A:408:LEU:HD11 | 1:A:413:LEU:HD21 | 2.02                     | 0.42              |
| 1:A:440:LEU:O    | 1:A:441:ALA:CB   | 2.67                     | 0.42              |
| 1:B:332:VAL:O    | 1:B:336:VAL:HG23 | 2.20                     | 0.42              |
| 1:C:17:THR:CG2   | 1:C:20:ILE:HD12  | 2.48                     | 0.42              |
| 1:C:440:LEU:HD23 | 2:C:507:HOH:O    | 2.19                     | 0.42              |
| 1:C:76:LYS:HE3   | 1:C:78:VAL:CG1   | 2.41                     | 0.42              |
| 1:A:162:GLN:HB3  | 1:B:287:LYS:HD3  | 2.02                     | 0.42              |
| 1:A:276:ALA:HA   | 1:D:17:THR:N     | 2.34                     | 0.42              |
| 1:C:74:TRP:C     | 1:C:76:LYS:H     | 2.22                     | 0.42              |
| 1:A:122:LYS:HE2  | 1:A:238:PHE:CD2  | 2.54                     | 0.42              |
| 1:B:109:THR:HG22 | 1:B:209:LEU:CD1  | 2.46                     | 0.42              |
| 1:B:322:ASN:H    | 1:B:325:LEU:HD23 | 1.85                     | 0.42              |
| 1:C:40:GLN:NE2   | 1:C:43:MET:HE3   | 2.34                     | 0.42              |
| 1:A:28:ILE:HA    | 1:A:31:ASP:OD2   | 2.19                     | 0.42              |
| 1:A:319:SER:HB3  | 1:A:320:THR:HG22 | 2.02                     | 0.42              |
| 1:C:207:ASN:HD21 | 1:C:209:LEU:HB2  | 1.84                     | 0.42              |
| 1:C:369:LEU:HD13 | 1:C:428:PHE:HA   | 2.02                     | 0.42              |
| 1:B:197:LEU:HD23 | 1:B:213:ARG:NH2  | 2.35                     | 0.42              |
| 1:C:108:HIS:CE1  | 1:C:113:ARG:HH22 | 2.38                     | 0.42              |
| 1:A:186:ARG:HH11 | 1:C:241:GLU:CD   | 2.22                     | 0.42              |
| 1:C:319:SER:HB3  | 1:C:320:THR:HG22 | 2.00                     | 0.42              |
| 1:A:83:GLN:HG2   | 1:A:83:GLN:O     | 2.20                     | 0.42              |
| 1:B:122:LYS:HE2  | 2:B:601:HOH:O    | 2.19                     | 0.42              |
| 1:D:21:MET:HA    | 1:D:21:MET:CE    | 2.50                     | 0.42              |
| 1:A:117:VAL:HG13 | 1:A:118:VAL:N    | 2.35                     | 0.42              |
| 1:B:161:LEU:HD12 | 1:B:161:LEU:HA   | 1.82                     | 0.42              |
| 1:B:423:ASP:C    | 1:B:425:SER:H    | 2.23                     | 0.42              |
| 1:B:397:LEU:HG   | 1:B:401:LYS:HE2  | 2.01                     | 0.42              |
| 1:B:48:ALA:CB    | 1:B:211:ILE:HD11 | 2.50                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:163:LYS:HE2  | 2:D:551:HOH:O    | 2.20                     | 0.42              |
| 1:C:282:SER:HB2  | 1:D:388:HIS:CE1  | 2.52                     | 0.42              |
| 1:C:365:THR:HB   | 1:C:367:GLU:OE1  | 2.19                     | 0.42              |
| 1:C:394:ALA:HA   | 1:C:416:ILE:CD1  | 2.50                     | 0.42              |
| 1:C:144:VAL:CG2  | 1:C:455:LEU:HD23 | 2.47                     | 0.42              |
| 1:A:158:TYR:CE2  | 1:A:163:LYS:HG2  | 2.55                     | 0.41              |
| 1:B:121:LEU:HD12 | 1:B:121:LEU:HA   | 1.89                     | 0.41              |
| 1:C:143:LEU:HD21 | 1:C:350:ILE:CD1  | 2.48                     | 0.41              |
| 1:A:43:MET:CE    | 1:A:68:GLU:HG3   | 2.50                     | 0.41              |
| 1:B:310:ILE:O    | 1:B:314:LEU:HG   | 2.21                     | 0.41              |
| 1:C:377:LEU:HD11 | 1:C:420:PHE:CZ   | 2.56                     | 0.41              |
| 1:C:49:LEU:HD12  | 1:C:49:LEU:HA    | 1.84                     | 0.41              |
| 1:D:115:ASP:HA   | 1:D:118:VAL:HG22 | 2.01                     | 0.41              |
| 1:A:361:GLU:HG2  | 2:A:554:HOH:O    | 2.20                     | 0.41              |
| 1:C:391:SER:O    | 1:C:395:VAL:HG23 | 2.21                     | 0.41              |
| 1:D:328:ASP:OD1  | 1:D:329:LYS:N    | 2.53                     | 0.41              |
| 1:D:332:VAL:O    | 1:D:336:VAL:HG23 | 2.20                     | 0.41              |
| 1:A:353:LEU:C    | 1:A:353:LEU:HD12 | 2.40                     | 0.41              |
| 1:B:355:ILE:HB   | 1:B:360:MET:HE3  | 2.02                     | 0.41              |
| 1:B:287:LYS:C    | 1:B:287:LYS:HD2  | 2.41                     | 0.41              |
| 1:B:448:VAL:O    | 1:B:451:GLN:HB2  | 2.21                     | 0.41              |
| 1:C:79:PHE:CD2   | 1:C:80:VAL:N     | 2.88                     | 0.41              |
| 1:D:204:LEU:C    | 1:D:204:LEU:CD2  | 2.87                     | 0.41              |
| 1:A:258:GLU:HG2  | 1:C:316:GLY:O    | 2.20                     | 0.41              |
| 1:C:49:LEU:HG    | 1:C:54:ILE:HB    | 2.03                     | 0.41              |
| 1:C:94:ARG:HG2   | 1:C:94:ARG:HH11  | 1.85                     | 0.41              |
| 1:B:170:SER:O    | 1:B:174:LEU:HG   | 2.21                     | 0.41              |
| 1:B:80:VAL:HG13  | 1:B:80:VAL:O     | 2.21                     | 0.41              |
| 1:C:16:SER:C     | 1:C:17:THR:HG23  | 2.41                     | 0.41              |
| 1:D:248:LEU:O    | 1:D:248:LEU:HD23 | 2.21                     | 0.41              |
| 1:B:279:THR:HG22 | 1:B:289:ASN:HB2  | 2.02                     | 0.41              |
| 1:C:435:GLU:HA   | 1:C:435:GLU:OE2  | 2.20                     | 0.41              |
| 1:B:199:LEU:HD23 | 1:B:199:LEU:HA   | 1.91                     | 0.41              |
| 1:C:31:ASP:OD1   | 1:C:88:ILE:HB    | 2.21                     | 0.41              |
| 1:D:209:LEU:HD22 | 1:D:209:LEU:N    | 2.36                     | 0.41              |
| 1:A:171:GLN:HE22 | 1:A:451:GLN:NE2  | 2.19                     | 0.40              |
| 1:A:345:VAL:O    | 1:A:349:VAL:HG23 | 2.21                     | 0.40              |
| 1:B:141:LYS:HE3  | 1:B:141:LYS:HB2  | 1.85                     | 0.40              |
| 1:B:217:ARG:HG2  | 1:B:217:ARG:HH11 | 1.86                     | 0.40              |
| 1:C:267:GLU:HG2  | 1:D:268:PHE:CG   | 2.56                     | 0.40              |
| 1:C:459:MET:O    | 1:C:463:LYS:HB2  | 2.21                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:D:93:GLU:O     | 1:D:96:LEU:N     | 2.46                     | 0.40              |
| 1:A:315:LYS:HE2  | 1:B:312:MET:O    | 2.21                     | 0.40              |
| 1:B:234:SER:OG   | 1:D:255:LYS:NZ   | 2.54                     | 0.40              |
| 1:A:439:ALA:HB2  | 1:C:210:ASP:HA   | 2.02                     | 0.40              |
| 1:A:139:LEU:HD23 | 1:A:139:LEU:O    | 2.21                     | 0.40              |
| 1:A:272:THR:HA   | 2:A:568:HOH:O    | 2.20                     | 0.40              |
| 1:A:421:SER:O    | 1:A:424:VAL:HG23 | 2.21                     | 0.40              |
| 1:B:429:ASN:ND2  | 1:B:432:ASN:N    | 2.57                     | 0.40              |
| 1:D:113:ARG:HH21 | 1:D:116:GLN:NE2  | 2.10                     | 0.40              |
| 1:B:59:GLU:HG2   | 1:B:103:ILE:HD11 | 2.02                     | 0.40              |
| 1:B:344:GLN:HB3  | 1:C:17:THR:HG21  | 2.03                     | 0.40              |
| 1:C:272:THR:HG23 | 1:C:288:LYS:HD2  | 2.03                     | 0.40              |
| 1:C:323:LYS:HE3  | 1:C:326:GLN:HE22 | 1.86                     | 0.40              |
| 1:A:159:THR:O    | 1:A:160:HIS:HB2  | 2.21                     | 0.40              |
| 1:A:37:VAL:HG13  | 2:A:476:HOH:O    | 2.21                     | 0.40              |
| 1:A:464:GLU:O    | 1:A:464:GLU:HG3  | 2.20                     | 0.40              |
| 1:B:319:SER:HA   | 1:B:320:THR:HA   | 1.92                     | 0.40              |
| 1:B:403:ILE:HD12 | 1:B:407:LYS:HB2  | 2.03                     | 0.40              |
| 1:C:111:ARG:NH2  | 1:C:111:ARG:CG   | 2.83                     | 0.40              |
| 1:C:439:ALA:O    | 1:C:440:LEU:C    | 2.60                     | 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     | 446/468 (95%)   | 416 (93%)  | 28 (6%) | 2 (0%)   | 34 42       |
| 1   | B     | 446/468 (95%)   | 426 (96%)  | 17 (4%) | 3 (1%)   | 22 26       |
| 1   | C     | 447/468 (96%)   | 424 (95%)  | 20 (4%) | 3 (1%)   | 22 26       |
| 1   | D     | 447/468 (96%)   | 426 (95%)  | 19 (4%) | 2 (0%)   | 34 42       |
| All | All   | 1786/1872 (95%) | 1692 (95%) | 84 (5%) | 10 (1%)  | 25 31       |

All (10) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 204 | LEU  |
| 1   | B     | 204 | LEU  |
| 1   | C     | 204 | LEU  |
| 1   | D     | 204 | LEU  |
| 1   | B     | 102 | ASP  |
| 1   | D     | 198 | PRO  |
| 1   | A     | 463 | LYS  |
| 1   | B     | 198 | PRO  |
| 1   | C     | 117 | VAL  |
| 1   | C     | 198 | PRO  |

### 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     | 392/405 (97%)   | 381 (97%)  | 11 (3%)  | 43 60       |
| 1   | B     | 392/405 (97%)   | 377 (96%)  | 15 (4%)  | 33 47       |
| 1   | C     | 393/405 (97%)   | 374 (95%)  | 19 (5%)  | 25 36       |
| 1   | D     | 393/405 (97%)   | 376 (96%)  | 17 (4%)  | 29 40       |
| All | All   | 1570/1620 (97%) | 1508 (96%) | 62 (4%)  | 32 46       |

All (62) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 139 | LEU  |
| 1   | A     | 155 | LEU  |
| 1   | A     | 171 | GLN  |
| 1   | A     | 180 | LEU  |
| 1   | A     | 199 | LEU  |
| 1   | A     | 216 | LEU  |
| 1   | A     | 243 | LEU  |
| 1   | A     | 245 | PHE  |
| 1   | A     | 260 | LEU  |
| 1   | A     | 315 | LYS  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 364        | LEU         |
| 1          | B            | 21         | MET         |
| 1          | B            | 36         | GLU         |
| 1          | B            | 95         | ARG         |
| 1          | B            | 108        | HIS         |
| 1          | B            | 112        | SER         |
| 1          | B            | 130        | SER         |
| 1          | B            | 136        | LEU         |
| 1          | B            | 137        | LEU         |
| 1          | B            | 139        | LEU         |
| 1          | B            | 155        | LEU         |
| 1          | B            | 199        | LEU         |
| 1          | B            | 245        | PHE         |
| 1          | B            | 248        | LEU         |
| 1          | B            | 253        | LEU         |
| 1          | B            | 279        | THR         |
| 1          | C            | 21         | MET         |
| 1          | C            | 34         | LEU         |
| 1          | C            | 95         | ARG         |
| 1          | C            | 102        | ASP         |
| 1          | C            | 121        | LEU         |
| 1          | C            | 138        | GLN         |
| 1          | C            | 139        | LEU         |
| 1          | C            | 161        | LEU         |
| 1          | C            | 171        | GLN         |
| 1          | C            | 195        | ASN         |
| 1          | C            | 248        | LEU         |
| 1          | C            | 283        | LEU         |
| 1          | C            | 286        | GLN         |
| 1          | C            | 291        | ASP         |
| 1          | C            | 311        | LEU         |
| 1          | C            | 323        | LYS         |
| 1          | C            | 324        | ASP         |
| 1          | C            | 339        | LEU         |
| 1          | C            | 386        | GLN         |
| 1          | D            | 70         | ILE         |
| 1          | D            | 113        | ARG         |
| 1          | D            | 117        | VAL         |
| 1          | D            | 136        | LEU         |
| 1          | D            | 139        | LEU         |
| 1          | D            | 171        | GLN         |
| 1          | D            | 199        | LEU         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | D            | 243        | LEU         |
| 1          | D            | 245        | PHE         |
| 1          | D            | 260        | LEU         |
| 1          | D            | 291        | ASP         |
| 1          | D            | 323        | LYS         |
| 1          | D            | 324        | ASP         |
| 1          | D            | 367        | GLU         |
| 1          | D            | 406        | ASN         |
| 1          | D            | 419        | GLN         |
| 1          | D            | 455        | LEU         |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (55) such sidechains are listed below:

| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 32         | GLN         |
| 1          | A            | 114        | ASN         |
| 1          | A            | 135        | HIS         |
| 1          | A            | 162        | GLN         |
| 1          | A            | 171        | GLN         |
| 1          | A            | 228        | ASN         |
| 1          | A            | 289        | ASN         |
| 1          | A            | 326        | GLN         |
| 1          | A            | 344        | GLN         |
| 1          | A            | 419        | GLN         |
| 1          | A            | 436        | GLN         |
| 1          | B            | 92         | ASN         |
| 1          | B            | 108        | HIS         |
| 1          | B            | 114        | ASN         |
| 1          | B            | 116        | GLN         |
| 1          | B            | 162        | GLN         |
| 1          | B            | 165        | GLN         |
| 1          | B            | 207        | ASN         |
| 1          | B            | 228        | ASN         |
| 1          | B            | 326        | GLN         |
| 1          | B            | 354        | GLN         |
| 1          | B            | 359        | ASN         |
| 1          | B            | 429        | ASN         |
| 1          | B            | 432        | ASN         |
| 1          | B            | 436        | GLN         |
| 1          | B            | 454        | GLN         |
| 1          | C            | 25         | ASN         |
| 1          | C            | 40         | GLN         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | C     | 83  | GLN  |
| 1   | C     | 89  | HIS  |
| 1   | C     | 108 | HIS  |
| 1   | C     | 116 | GLN  |
| 1   | C     | 171 | GLN  |
| 1   | C     | 195 | ASN  |
| 1   | C     | 207 | ASN  |
| 1   | C     | 228 | ASN  |
| 1   | C     | 286 | GLN  |
| 1   | C     | 326 | GLN  |
| 1   | C     | 359 | ASN  |
| 1   | C     | 386 | GLN  |
| 1   | C     | 436 | GLN  |
| 1   | D     | 25  | ASN  |
| 1   | D     | 116 | GLN  |
| 1   | D     | 127 | ASN  |
| 1   | D     | 171 | GLN  |
| 1   | D     | 207 | ASN  |
| 1   | D     | 228 | ASN  |
| 1   | D     | 286 | GLN  |
| 1   | D     | 386 | GLN  |
| 1   | D     | 406 | ASN  |
| 1   | D     | 419 | GLN  |
| 1   | D     | 426 | GLN  |
| 1   | D     | 432 | ASN  |
| 1   | D     | 436 | GLN  |
| 1   | D     | 462 | 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

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed        | <RSRZ> | #RSRZ>2       | OWAB(Å <sup>2</sup> ) | Q<0.9 |
|-----|-------|-----------------|--------|---------------|-----------------------|-------|
| 1   | A     | 448/468 (95%)   | -0.09  | 12 (2%) 54 62 | 11, 28, 62, 76        | 0     |
| 1   | B     | 448/468 (95%)   | 0.13   | 21 (4%) 31 38 | 13, 34, 61, 73        | 0     |
| 1   | C     | 449/468 (95%)   | -0.05  | 10 (2%) 62 69 | 10, 27, 65, 85        | 0     |
| 1   | D     | 449/468 (95%)   | 0.01   | 19 (4%) 36 43 | 10, 28, 63, 80        | 0     |
| All | All   | 1794/1872 (95%) | -0.00  | 62 (3%) 44 51 | 10, 29, 63, 85        | 0     |

All (62) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1   | C     | 16  | SER  | 5.6  |
| 1   | D     | 78  | VAL  | 5.6  |
| 1   | B     | 16  | SER  | 5.2  |
| 1   | C     | 67  | LEU  | 3.9  |
| 1   | C     | 83  | GLN  | 3.8  |
| 1   | C     | 462 | GLN  | 3.8  |
| 1   | B     | 280 | GLY  | 3.7  |
| 1   | B     | 281 | SER  | 3.6  |
| 1   | D     | 76  | LYS  | 3.4  |
| 1   | B     | 282 | SER  | 3.2  |
| 1   | B     | 286 | GLN  | 3.2  |
| 1   | B     | 410 | LEU  | 3.1  |
| 1   | B     | 83  | GLN  | 3.1  |
| 1   | D     | 96  | LEU  | 3.1  |
| 1   | D     | 465 | GLN  | 3.1  |
| 1   | D     | 385 | ARG  | 2.9  |
| 1   | C     | 17  | THR  | 2.8  |
| 1   | C     | 281 | SER  | 2.8  |
| 1   | B     | 395 | VAL  | 2.8  |
| 1   | B     | 78  | VAL  | 2.8  |
| 1   | A     | 400 | THR  | 2.8  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 1          | A            | 83         | GLN         | 2.8         |
| 1          | C            | 282        | SER         | 2.8         |
| 1          | D            | 82         | LYS         | 2.7         |
| 1          | D            | 100        | ILE         | 2.7         |
| 1          | A            | 286        | GLN         | 2.6         |
| 1          | D            | 58         | THR         | 2.6         |
| 1          | B            | 385        | ARG         | 2.6         |
| 1          | A            | 464        | GLU         | 2.6         |
| 1          | B            | 388        | HIS         | 2.6         |
| 1          | A            | 385        | ARG         | 2.6         |
| 1          | D            | 60         | LEU         | 2.6         |
| 1          | B            | 422        | SER         | 2.5         |
| 1          | D            | 99         | LEU         | 2.5         |
| 1          | A            | 285        | PRO         | 2.5         |
| 1          | D            | 29         | ALA         | 2.4         |
| 1          | B            | 408        | LEU         | 2.4         |
| 1          | D            | 83         | GLN         | 2.4         |
| 1          | B            | 462        | GLN         | 2.4         |
| 1          | A            | 17         | THR         | 2.4         |
| 1          | A            | 403        | ILE         | 2.4         |
| 1          | D            | 103        | ILE         | 2.3         |
| 1          | A            | 424        | VAL         | 2.2         |
| 1          | A            | 282        | SER         | 2.2         |
| 1          | A            | 411        | GLU         | 2.2         |
| 1          | B            | 84         | SER         | 2.2         |
| 1          | D            | 77         | GLY         | 2.2         |
| 1          | B            | 358        | GLU         | 2.1         |
| 1          | A            | 280        | GLY         | 2.1         |
| 1          | C            | 76         | LYS         | 2.1         |
| 1          | B            | 389        | THR         | 2.1         |
| 1          | D            | 80         | VAL         | 2.1         |
| 1          | C            | 19         | PRO         | 2.1         |
| 1          | D            | 65         | SER         | 2.1         |
| 1          | D            | 86         | GLU         | 2.1         |
| 1          | B            | 17         | THR         | 2.0         |
| 1          | B            | 77         | GLY         | 2.0         |
| 1          | D            | 55         | LEU         | 2.0         |
| 1          | D            | 286        | GLN         | 2.0         |
| 1          | B            | 411        | GLU         | 2.0         |
| 1          | B            | 426        | GLN         | 2.0         |
| 1          | C            | 90         | THR         | 2.0         |

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

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

There are no ligands in this entry.

## 6.5 Other polymers [i](#)

There are no such residues in this entry.