



# Full wwPDB X-ray Structure Validation Report ⓘ

May 14, 2020 – 12:33 pm BST

PDB ID : 6FNP  
Title : Crystal structure of ECF-CbrT, a cobalamin transporter  
Authors : Santos, J.A.; Rempel, S.; Guskov, A.; Slotboom, D.J.  
Deposited on : 2018-02-05  
Resolution : 3.40 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

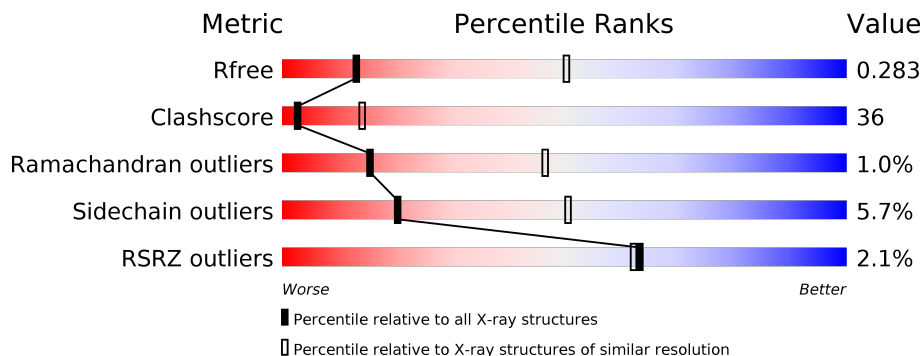
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 3.40 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.



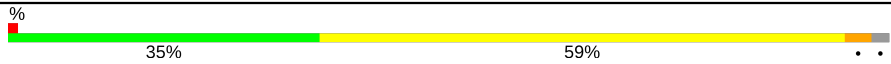
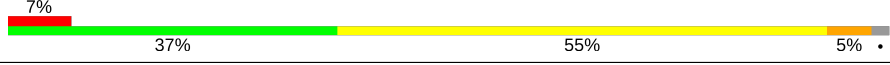
| Metric                | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| $R_{free}$            | 130704                      | 1026 (3.48-3.32)                                      |
| Clashscore            | 141614                      | 1055 (3.48-3.32)                                      |
| Ramachandran outliers | 138981                      | 1038 (3.48-3.32)                                      |
| Sidechain outliers    | 138945                      | 1038 (3.48-3.32)                                      |
| RSRZ outliers         | 127900                      | 2173 (3.50-3.30)                                      |

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     | 182    |                  |
| 1   | E     | 182    |                  |
| 2   | B     | 300    |                  |
| 2   | F     | 300    |                  |
| 3   | C     | 287    |                  |
| 3   | G     | 287    |                  |

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| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 4   | D     | 265    |  <p>%</p> <p>35% 59%</p>     |
| 4   | H     | 265    |  <p>7%</p> <p>37% 55% 5%</p> |

## 2 Entry composition i

There are 4 unique types of molecules in this entry. The entry contains 15083 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 Membrane protein.

| Mol | Chain | Residues | Atoms |     |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C   | N   | O   | S |         |         |       |
| 1   | A     | 159      | 1242  | 847 | 190 | 199 | 6 | 0       | 0       | 0     |
| 1   | E     | 132      | 999   | 676 | 152 | 166 | 5 | 0       | 0       | 0     |

- Molecule 2 is a protein called Energy-coupling factor transporter ATP-binding protein EcfA1.

| Mol | Chain | Residues | Atoms |      |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |         |       |
| 2   | B     | 280      | 2147  | 1354 | 359 | 430 | 4 | 0       | 0       | 0     |
| 2   | F     | 280      | 2147  | 1354 | 359 | 430 | 4 | 0       | 0       | 0     |

There are 38 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment               | Reference  |
|-------|---------|----------|--------|-----------------------|------------|
| B     | -17     | MET      | -      | initiating methionine | UNP Q1GBJ0 |
| B     | -16     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -15     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -14     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -13     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -12     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -11     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -10     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -9      | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -8      | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -7      | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -6      | GLY      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -5      | GLU      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -4      | ASN      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -3      | LEU      | -      | expression tag        | UNP Q1GBJ0 |
| B     | -2      | TYR      | -      | expression tag        | UNP Q1GBJ0 |

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| Chain | Residue | Modelled | Actual | Comment               | Reference  |
|-------|---------|----------|--------|-----------------------|------------|
| B     | -1      | PHE      | -      | expression tag        | UNP Q1GBJ0 |
| B     | 0       | GLN      | -      | expression tag        | UNP Q1GBJ0 |
| B     | 1       | GLY      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -17     | MET      | -      | initiating methionine | UNP Q1GBJ0 |
| F     | -16     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -15     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -14     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -13     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -12     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -11     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -10     | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -9      | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -8      | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -7      | HIS      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -6      | GLY      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -5      | GLU      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -4      | ASN      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -3      | LEU      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -2      | TYR      | -      | expression tag        | UNP Q1GBJ0 |
| F     | -1      | PHE      | -      | expression tag        | UNP Q1GBJ0 |
| F     | 0       | GLN      | -      | expression tag        | UNP Q1GBJ0 |
| F     | 1       | GLY      | -      | expression tag        | UNP Q1GBJ0 |

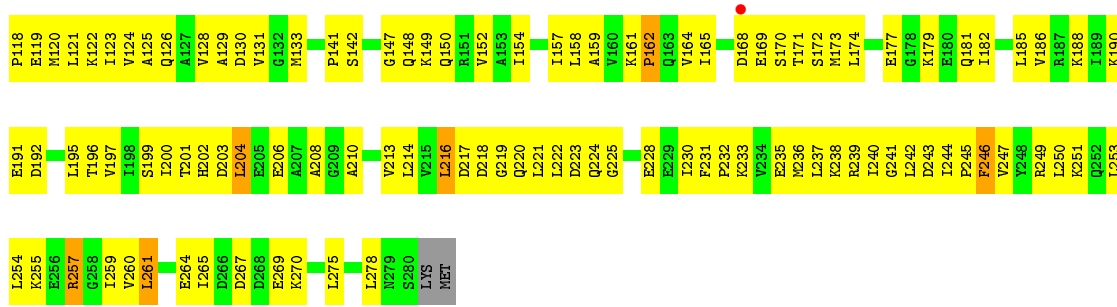
- Molecule 3 is a protein called Energy-coupling factor transporter ATP-binding protein EcfA2.

| Mol | Chain | Residues | Atoms |      |     |     |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
| 3   | C     | 282      | Total | C    | N   | O   | S | 0       | 0       | 0     |
|     |       |          | 2191  | 1399 | 371 | 412 | 9 |         |         |       |
| 3   | G     | 282      | Total | C    | N   | O   | S | 0       | 0       | 0     |
|     |       |          | 2191  | 1399 | 371 | 412 | 9 |         |         |       |

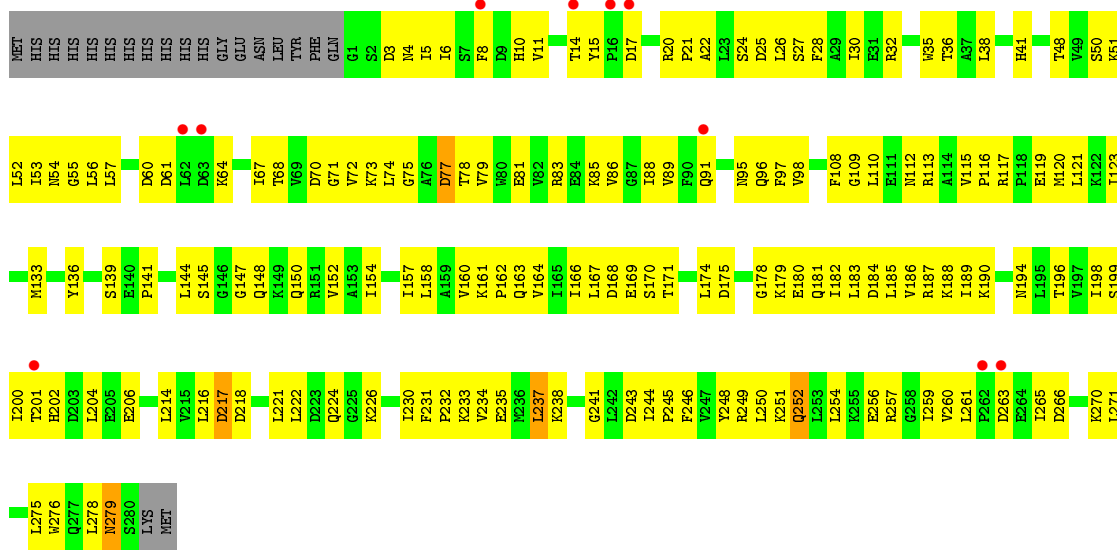
- Molecule 4 is a protein called Energy-coupling factor transporter transmembrane protein EcfT.

| Mol | Chain | Residues | Atoms |      |     |     |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
| 4   | D     | 259      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2083  | 1391 | 333 | 345 | 14 |         |         |       |
| 4   | H     | 259      | Total | C    | N   | O   | S  | 0       | 0       | 0     |
|     |       |          | 2083  | 1391 | 333 | 345 | 14 |         |         |       |

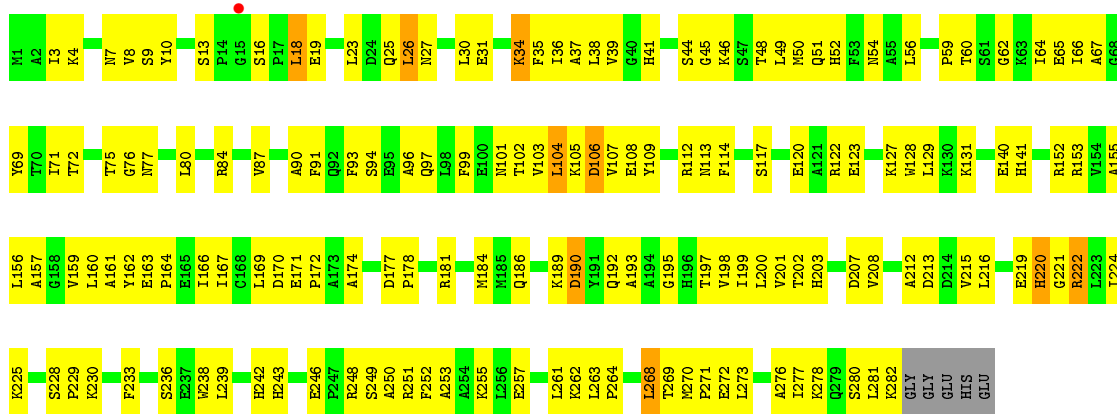




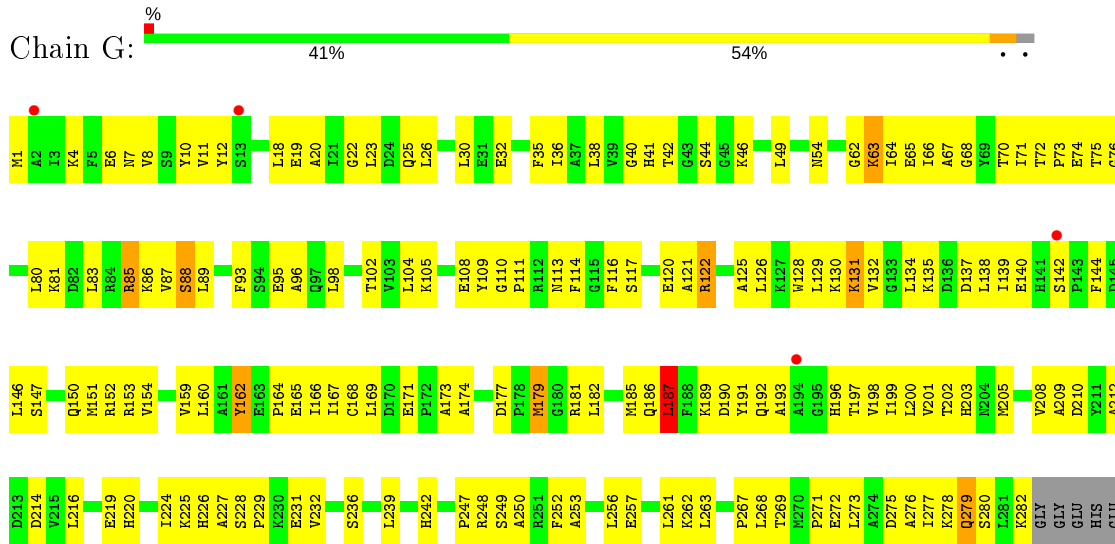
• Molecule 2: Energy-coupling factor transporter ATP-binding protein EcfA1



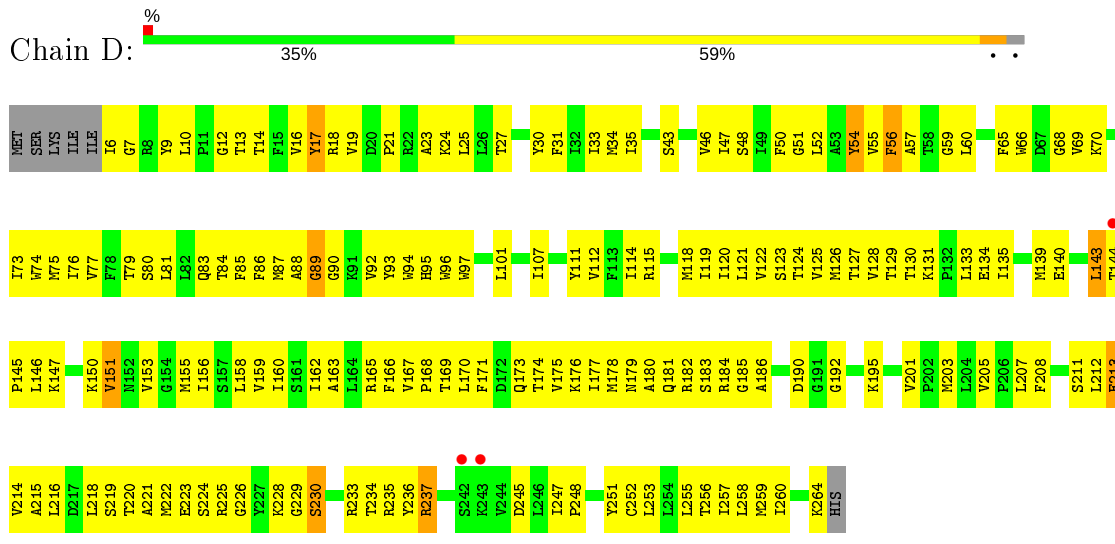
• Molecule 3: Energy-coupling factor transporter ATP-binding protein EcfA2



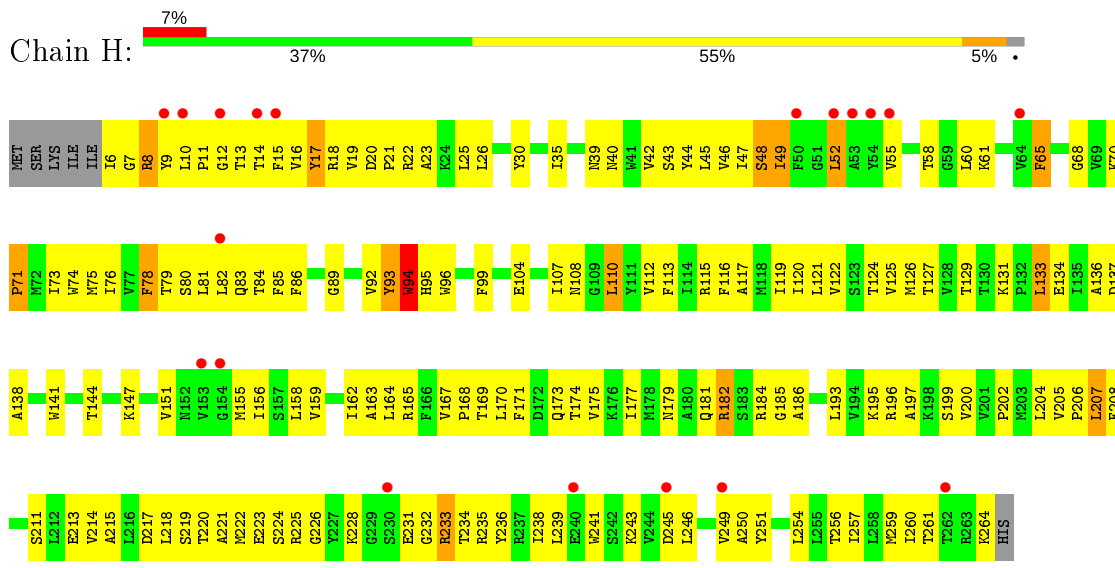
• Molecule 3: Energy-coupling factor transporter ATP-binding protein EcfA2



• Molecule 4: Energy-coupling factor transporter transmembrane protein EcFt



• Molecule 4: Energy-coupling factor transporter transmembrane protein EcFt





## 4 Data and refinement statistics

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | P 1   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 85.47Å 92.86Å 105.51Å<br>72.57° 66.27° 62.89°               | Depositor        |
| Resolution (Å)  | 47.80 – 3.40<br>47.80 – 3.40                                | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 88.3 (47.80-3.40)<br>86.8 (47.80-3.40)                      | Depositor<br>EDS |
| $R_{merge}$   | (Not available)   | Depositor        |
| $R_{sym}$   | (Not available)   | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 0.98 (at 3.40Å)   | Xtrriage         |
| Refinement program  | PHENIX (1.12_2829: ???)                                     | Depositor        |
| R, $R_{free}$   | 0.238 , 0.293<br>0.241 , 0.283                              | Depositor<br>DCC |
| $R_{free}$ test set   | 1587 reflections (5.00%)                                    | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 34.0  | Xtrriage         |
| Anisotropy  | 0.000   | Xtrriage         |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.19 , -11.7  | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.41$ , $\langle L^2 \rangle = 0.23$ | Xtrriage         |
| Estimated twinning fraction   | 0.256 for h,h-k,h-l   | Xtrriage         |
| $F_o, F_c$ correlation  | 0.79  | EDS              |
| Total number of atoms   | 15083   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 22.0  | wwPDB-VP         |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.64% 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

### 5.1 Standard geometry

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     | 0.54         | 0/1276  | 1.07        | 5/1738 (0.3%)   |
| 1   | E     | 0.40         | 0/1021  | 0.72        | 0/1391          |
| 2   | B     | 0.55         | 0/2180  | 0.82        | 2/2959 (0.1%)   |
| 2   | F     | 0.45         | 0/2180  | 0.68        | 1/2959 (0.0%)   |
| 3   | C     | 0.54         | 0/2237  | 0.83        | 1/3019 (0.0%)   |
| 3   | G     | 0.43         | 0/2237  | 0.71        | 1/3019 (0.0%)   |
| 4   | D     | 0.50         | 0/2136  | 0.77        | 1/2901 (0.0%)   |
| 4   | H     | 0.41         | 0/2136  | 0.66        | 1/2901 (0.0%)   |
| All | All   | 0.48         | 0/15403 | 0.78        | 12/20887 (0.1%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A     | 0                   | 6                   |
| 2   | B     | 0                   | 1                   |
| 3   | C     | 0                   | 1                   |
| 3   | G     | 0                   | 1                   |
| 4   | D     | 0                   | 1                   |
| 4   | H     | 0                   | 2                   |
| All | All   | 0                   | 12                  |

There are no bond length outliers.

All (12) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms      | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|--------|-------------|----------|
| 1   | A     | 35  | ASN  | CB-CG-OD1  | 18.98  | 159.55      | 121.60   |
| 1   | A     | 35  | ASN  | CB-CG-ND2  | -17.75 | 74.09       | 116.70   |
| 3   | G     | 187 | LEU  | CA-CB-CG   | 7.96   | 133.61      | 115.30   |
| 1   | A     | 35  | ASN  | OD1-CG-ND2 | -7.88  | 103.77      | 121.90   |

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| Mol | Chain | Res | Type | Atoms    | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|------|-------------|----------|
| 3   | C     | 268 | LEU  | CA-CB-CG | 6.69 | 130.68      | 115.30   |
| 2   | B     | 204 | LEU  | CA-CB-CG | 5.73 | 128.49      | 115.30   |
| 2   | F     | 237 | LEU  | CA-CB-CG | 5.72 | 128.46      | 115.30   |
| 1   | A     | 22  | CYS  | CA-CB-SG | 5.53 | 123.95      | 114.00   |
| 4   | D     | 143 | LEU  | CA-CB-CG | 5.36 | 127.64      | 115.30   |
| 2   | B     | 216 | LEU  | CA-CB-CG | 5.31 | 127.51      | 115.30   |
| 4   | H     | 207 | LEU  | CA-CB-CG | 5.15 | 127.15      | 115.30   |
| 1   | A     | 58  | LEU  | CA-CB-CG | 5.08 | 126.99      | 115.30   |

There are no chirality outliers.

All (12) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 1   | A     | 140 | TRP  | Peptide   |
| 1   | A     | 35  | ASN  | Sidechain |
| 1   | A     | 37  | GLN  | Peptide   |
| 1   | A     | 38  | PRO  | Peptide   |
| 1   | A     | 79  | GLN  | Peptide   |
| 1   | A     | 84  | ALA  | Peptide   |
| 2   | B     | 26  | LEU  | Peptide   |
| 3   | C     | 13  | SER  | Peptide   |
| 4   | D     | 230 | SER  | Peptide   |
| 3   | G     | 187 | LEU  | Peptide   |
| 4   | H     | 48  | SER  | Peptide   |
| 4   | H     | 94  | TRP  | Peptide   |

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

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 1242  | 0        | 1289     | 116     | 1            |
| 1   | E     | 999   | 0        | 1028     | 83      | 0            |
| 2   | B     | 2147  | 0        | 2159     | 172     | 1            |
| 2   | F     | 2147  | 0        | 2159     | 167     | 2            |
| 3   | C     | 2191  | 0        | 2199     | 157     | 0            |
| 3   | G     | 2191  | 0        | 2199     | 152     | 0            |
| 4   | D     | 2083  | 0        | 2185     | 183     | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 4   | H     | 2083  | 0        | 2185     | 168     | 0            |
| All | All   | 15083 | 0        | 15403    | 1091    | 2            |

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 36.

All (1091) 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) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:107:ILE:HB   | 4:D:111:TYR:CE2  | 1.37                     | 1.56              |
| 2:B:83:ARG:NH2   | 4:D:223:GLU:OE2  | 1.67                     | 1.27              |
| 4:D:107:ILE:CB   | 4:D:111:TYR:CE2  | 2.24                     | 1.21              |
| 4:D:107:ILE:HB   | 4:D:111:TYR:CD2  | 1.92                     | 1.03              |
| 2:B:105:ASP:O    | 4:D:225:ARG:NH2  | 1.94                     | 0.99              |
| 2:F:108:PHE:O    | 2:F:112:ASN:ND2  | 1.96                     | 0.98              |
| 1:A:137:ILE:HD12 | 4:D:79:THR:HG22  | 1.44                     | 0.98              |
| 2:B:94:ASP:OD1   | 4:D:165:ARG:NH1  | 1.97                     | 0.97              |
| 4:H:45:LEU:HA    | 4:H:48:SER:HB3   | 1.43                     | 0.97              |
| 2:B:107:ALA:HB2  | 2:B:124:VAL:HG21 | 1.47                     | 0.95              |
| 2:B:265:ILE:HA   | 2:B:270:LYS:HD2  | 1.48                     | 0.95              |
| 3:C:4:LYS:HE2    | 3:C:65:GLU:HG3   | 1.51                     | 0.93              |
| 2:B:108:PHE:O    | 2:B:112:ASN:ND2  | 2.02                     | 0.93              |
| 3:C:97:GLN:O     | 4:D:181:GLN:NE2  | 2.03                     | 0.91              |
| 1:E:63:MET:O     | 1:E:67:ASN:ND2   | 2.03                     | 0.90              |
| 2:F:168:ASP:HA   | 2:F:200:ILE:HG13 | 1.52                     | 0.90              |
| 3:C:25:GLN:O     | 3:C:27:ASN:ND2   | 2.05                     | 0.90              |
| 3:C:152:ARG:NH2  | 3:C:174:ALA:O    | 2.05                     | 0.89              |
| 2:F:204:LEU:HD21 | 2:F:246:PHE:H    | 1.33                     | 0.89              |
| 2:B:7:SER:O      | 2:B:27:SER:N     | 2.06                     | 0.89              |
| 2:B:47:SER:O     | 2:B:51:LYS:NZ    | 2.05                     | 0.88              |
| 1:A:74:ILE:H     | 1:A:74:ILE:HD12  | 1.39                     | 0.88              |
| 3:C:251:ARG:O    | 3:C:255:LYS:NZ   | 2.06                     | 0.88              |
| 3:G:187:LEU:HD13 | 3:G:190:ASP:HB2  | 1.55                     | 0.87              |
| 4:D:107:ILE:HB   | 4:D:111:TYR:HE2  | 1.09                     | 0.86              |
| 3:G:189:LYS:O    | 3:G:193:ALA:N    | 2.09                     | 0.86              |
| 3:G:36:ILE:HD13  | 3:G:199:ILE:HG12 | 1.58                     | 0.86              |
| 1:A:146:PHE:O    | 1:A:150:HIS:NE2  | 2.08                     | 0.86              |
| 2:B:94:ASP:O     | 4:D:165:ARG:NH1  | 2.09                     | 0.85              |
| 1:A:21:MET:HA    | 1:A:24:VAL:HG12  | 1.55                     | 0.85              |
| 2:B:223:ASP:HB3  | 2:B:230:ILE:HD12 | 1.58                     | 0.85              |
| 4:H:214:VAL:O    | 4:H:218:LEU:N    | 2.10                     | 0.85              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:144:LEU:O    | 1:E:148:LEU:N    | 2.10                     | 0.84              |
| 3:G:205:MET:HG2  | 3:G:208:VAL:HG11 | 1.60                     | 0.83              |
| 3:G:102:THR:HB   | 3:G:140:GLU:HB2  | 1.60                     | 0.83              |
| 2:F:79:VAL:O     | 2:F:83:ARG:NH1   | 2.11                     | 0.83              |
| 1:E:117:LEU:HD21 | 1:E:143:GLY:HA2  | 1.61                     | 0.82              |
| 2:F:98:VAL:HG13  | 4:H:218:LEU:HD11 | 1.62                     | 0.82              |
| 3:C:97:GLN:OE1   | 4:D:184:ARG:NH1  | 2.11                     | 0.81              |
| 1:A:137:ILE:HD12 | 4:D:79:THR:CG2   | 2.10                     | 0.81              |
| 2:B:222:LEU:HD21 | 2:B:236:MET:SD   | 2.21                     | 0.81              |
| 3:G:81:LYS:HE2   | 3:G:113:ASN:HD22 | 1.46                     | 0.81              |
| 3:G:219:GLU:HG2  | 3:G:224:ILE:HD13 | 1.62                     | 0.81              |
| 2:B:158:LEU:O    | 2:B:161:LYS:NZ   | 2.12                     | 0.81              |
| 3:C:7:ASN:HB2    | 3:C:27:ASN:HD21  | 1.45                     | 0.81              |
| 1:A:14:LEU:O     | 1:A:18:LEU:N     | 2.13                     | 0.81              |
| 4:D:76:ILE:HD12  | 4:D:77:VAL:H     | 1.47                     | 0.80              |
| 4:D:66:TRP:HA    | 4:D:69:VAL:HG22  | 1.63                     | 0.80              |
| 2:F:68:THR:HB    | 2:F:73:LYS:HA    | 1.64                     | 0.80              |
| 4:D:30:TYR:O     | 4:D:34:MET:N     | 2.13                     | 0.80              |
| 4:D:73:ILE:HG12  | 4:H:193:LEU:HD23 | 1.62                     | 0.80              |
| 3:G:164:PRO:O    | 3:G:191:TYR:OH   | 1.99                     | 0.79              |
| 4:D:229:GLY:HA2  | 4:D:233:ARG:HD2  | 1.63                     | 0.79              |
| 2:B:95:ASN:O     | 4:D:218:LEU:HD13 | 1.81                     | 0.79              |
| 3:C:64:ILE:HB    | 3:C:71:ILE:HB    | 1.65                     | 0.79              |
| 4:D:85:PHE:HB2   | 4:D:89:GLY:HA2   | 1.63                     | 0.79              |
| 1:A:43:ILE:HA    | 1:A:161:PHE:CZ   | 2.18                     | 0.79              |
| 4:H:12:GLY:HA3   | 4:H:15:PHE:HB2   | 1.63                     | 0.79              |
| 1:A:37:GLN:HB3   | 1:A:38:PRO:HD3   | 1.64                     | 0.79              |
| 4:H:80:SER:HB2   | 4:H:83:GLN:HE21  | 1.48                     | 0.79              |
| 1:E:26:ARG:HG2   | 1:E:68:ILE:HD11  | 1.63                     | 0.78              |
| 1:E:90:VAL:HA    | 1:E:93:PHE:CD2   | 2.19                     | 0.78              |
| 2:B:261:LEU:HD13 | 2:B:265:ILE:HD12 | 1.65                     | 0.78              |
| 4:H:60:LEU:HB2   | 4:H:65:PHE:HB2   | 1.65                     | 0.78              |
| 1:A:23:VAL:HG23  | 1:A:64:VAL:HG22  | 1.65                     | 0.78              |
| 3:G:162:TYR:HE2  | 3:G:164:PRO:HG3  | 1.47                     | 0.78              |
| 3:G:173:ALA:O    | 3:G:181:ARG:NH1  | 2.16                     | 0.78              |
| 3:G:205:MET:HE3  | 3:G:208:VAL:HG21 | 1.64                     | 0.78              |
| 2:B:267:ASP:HB3  | 2:B:269:GLU:HG3  | 1.66                     | 0.78              |
| 2:B:92:ASN:O     | 2:B:96:GLN:NE2   | 2.17                     | 0.78              |
| 3:G:162:TYR:CE2  | 3:G:164:PRO:HG3  | 2.19                     | 0.78              |
| 1:E:83:TYR:OH    | 4:H:120:ILE:HG12 | 1.83                     | 0.78              |
| 2:B:72:VAL:HG12  | 2:B:73:LYS:H     | 1.48                     | 0.77              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:21:MET:SD    | 4:D:211:SER:OG   | 2.42                     | 0.77              |
| 3:G:38:LEU:HB3   | 3:G:201:VAL:HA   | 1.66                     | 0.77              |
| 3:G:46:LYS:HD3   | 3:G:203:HIS:HE1  | 1.46                     | 0.77              |
| 1:E:57:LEU:HD12  | 1:E:58:LEU:H     | 1.47                     | 0.77              |
| 3:G:128:TRP:HA   | 3:G:131:LYS:HG2  | 1.66                     | 0.77              |
| 3:G:126:LEU:HA   | 3:G:129:LEU:HB2  | 1.66                     | 0.77              |
| 3:C:249:SER:OG   | 3:C:268:LEU:O    | 2.01                     | 0.76              |
| 2:B:237:LEU:HG   | 2:B:242:LEU:HB2  | 1.67                     | 0.76              |
| 1:E:122:PHE:HA   | 1:E:125:LEU:HB2  | 1.68                     | 0.76              |
| 2:B:244:ILE:HG13 | 2:B:249:ARG:HG2  | 1.67                     | 0.76              |
| 4:D:18:ARG:HD2   | 4:D:129:THR:HB   | 1.66                     | 0.76              |
| 2:B:117:ARG:NH2  | 4:D:236:TYR:O    | 2.16                     | 0.76              |
| 1:A:169:ASP:HA   | 4:D:212:LEU:HD21 | 1.67                     | 0.76              |
| 4:H:70:LYS:HA    | 4:H:73:ILE:HG12  | 1.68                     | 0.76              |
| 2:B:235:GLU:C    | 2:B:237:LEU:H    | 1.89                     | 0.76              |
| 4:D:107:ILE:CG2  | 4:D:111:TYR:CE2  | 2.68                     | 0.76              |
| 1:E:84:ALA:HA    | 1:E:86:CYS:H     | 1.50                     | 0.76              |
| 3:C:169:LEU:HB3  | 3:C:172:PRO:HG3  | 1.68                     | 0.76              |
| 4:H:169:THR:O    | 4:H:173:GLN:NE2  | 2.19                     | 0.75              |
| 4:D:73:ILE:HD13  | 4:H:193:LEU:HB3  | 1.67                     | 0.75              |
| 2:B:41:HIS:ND1   | 2:B:217:ASP:OD1  | 2.19                     | 0.75              |
| 4:H:260:ILE:O    | 4:H:264:LYS:N    | 2.16                     | 0.75              |
| 1:E:62:VAL:O     | 1:E:66:SER:OG    | 2.03                     | 0.75              |
| 4:D:230:SER:H    | 4:D:233:ARG:HG3  | 1.50                     | 0.75              |
| 2:B:50:SER:OG    | 2:B:168:ASP:OD2  | 2.04                     | 0.75              |
| 2:B:243:ASP:OD1  | 2:B:244:ILE:N    | 2.15                     | 0.75              |
| 1:A:24:VAL:HG11  | 4:D:170:LEU:HB3  | 1.69                     | 0.75              |
| 2:F:183:LEU:HD11 | 2:F:202:HIS:HD2  | 1.52                     | 0.75              |
| 3:G:191:TYR:O    | 3:G:196:HIS:ND1  | 2.20                     | 0.75              |
| 2:B:142:SER:HB2  | 4:D:168:PRO:HB2  | 1.68                     | 0.75              |
| 2:B:11:VAL:HG23  | 2:B:23:LEU:HD12  | 1.68                     | 0.75              |
| 3:G:189:LYS:HA   | 3:G:192:GLN:HB3  | 1.68                     | 0.75              |
| 1:A:83:TYR:HD1   | 1:A:84:ALA:H     | 1.32                     | 0.75              |
| 2:B:254:LEU:O    | 2:B:259:ILE:N    | 2.19                     | 0.75              |
| 2:B:170:SER:O    | 2:B:171:THR:OG1  | 2.05                     | 0.74              |
| 3:G:110:GLY:HA3  | 4:H:184:ARG:HG2  | 1.69                     | 0.74              |
| 4:H:165:ARG:NH2  | 4:H:169:THR:OG1  | 2.20                     | 0.74              |
| 4:D:92:VAL:HA    | 4:D:93:TYR:HB3   | 1.69                     | 0.74              |
| 4:D:131:LYS:O    | 4:D:134:GLU:N    | 2.17                     | 0.74              |
| 2:B:154:ILE:HD12 | 2:B:185:LEU:HD23 | 1.70                     | 0.74              |
| 4:D:215:ALA:O    | 4:D:219:SER:OG   | 2.06                     | 0.74              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:25:ASP:OD1   | 2:B:26:LEU:N     | 2.20                     | 0.74              |
| 2:F:74:LEU:HD23  | 2:F:75:GLY:HA3   | 1.70                     | 0.74              |
| 3:C:50:MET:SD    | 3:C:170:ASP:HB2  | 2.28                     | 0.73              |
| 2:B:110:LEU:HD21 | 2:B:123:ILE:HG21 | 1.71                     | 0.73              |
| 4:H:85:PHE:HB3   | 4:H:99:PHE:HB2   | 1.70                     | 0.73              |
| 3:C:220:HIS:HB2  | 3:C:222:ARG:HH21 | 1.51                     | 0.73              |
| 3:G:202:THR:O    | 3:G:203:HIS:ND1  | 2.22                     | 0.73              |
| 2:B:78:THR:O     | 2:B:81:GLU:N     | 2.20                     | 0.72              |
| 3:C:170:ASP:HA   | 3:C:201:VAL:HB   | 1.71                     | 0.72              |
| 1:A:114:PHE:HA   | 1:A:118:GLU:HB3  | 1.71                     | 0.72              |
| 3:C:45:GLY:O     | 3:C:49:LEU:HB3   | 1.89                     | 0.72              |
| 1:E:40:THR:HG22  | 1:E:43:ILE:HD11  | 1.70                     | 0.72              |
| 3:C:186:GLN:NE2  | 3:C:190:ASP:OD1  | 2.22                     | 0.72              |
| 3:G:41:HIS:CD2   | 3:G:242:HIS:CD2  | 2.78                     | 0.72              |
| 2:F:112:ASN:HA   | 4:H:233:ARG:HG2  | 1.70                     | 0.72              |
| 4:D:23:ALA:O     | 4:D:27:THR:OG1   | 2.05                     | 0.72              |
| 1:A:48:LEU:HD11  | 1:A:60:ILE:HD13  | 1.72                     | 0.72              |
| 3:C:122:ARG:NH1  | 3:C:123:GLU:OE2  | 2.23                     | 0.72              |
| 4:D:56:PHE:O     | 4:D:59:GLY:N     | 2.21                     | 0.72              |
| 1:E:84:ALA:HA    | 1:E:86:CYS:N     | 2.05                     | 0.72              |
| 3:G:278:LYS:O    | 3:G:280:SER:N    | 2.22                     | 0.72              |
| 3:G:96:ALA:HB1   | 4:H:206:PRO:HB3  | 1.69                     | 0.72              |
| 1:E:19:THR:HA    | 1:E:64:VAL:HG22  | 1.71                     | 0.72              |
| 2:F:171:THR:OG1  | 2:F:179:LYS:NZ   | 2.21                     | 0.72              |
| 3:G:134:LEU:HD22 | 3:G:138:LEU:HB3  | 1.72                     | 0.71              |
| 3:C:246:GLU:HB2  | 3:C:251:ARG:HG2  | 1.71                     | 0.71              |
| 1:A:19:THR:HG21  | 1:A:63:MET:HB2   | 1.72                     | 0.71              |
| 4:H:171:PHE:O    | 4:H:175:VAL:HG23 | 1.90                     | 0.71              |
| 3:G:214:ASP:OD1  | 3:G:226:HIS:NE2  | 2.20                     | 0.71              |
| 1:E:85:ALA:HB1   | 1:E:123:VAL:HA   | 1.72                     | 0.71              |
| 1:E:14:LEU:HD12  | 1:E:15:LEU:HD22  | 1.72                     | 0.71              |
| 4:H:147:LYS:HB3  | 4:H:151:VAL:HG22 | 1.73                     | 0.70              |
| 2:B:98:VAL:HG21  | 4:D:222:MET:HG2  | 1.73                     | 0.70              |
| 1:E:70:LEU:N     | 1:E:71:GLY:HA3   | 2.07                     | 0.70              |
| 2:F:36:THR:HG23  | 2:F:214:LEU:HD13 | 1.74                     | 0.69              |
| 4:H:119:ILE:HG13 | 4:H:120:ILE:HG13 | 1.72                     | 0.69              |
| 4:H:55:VAL:HG11  | 4:H:121:LEU:HD13 | 1.73                     | 0.69              |
| 2:F:202:HIS:HB2  | 2:F:206:GLU:HG3  | 1.74                     | 0.69              |
| 3:G:108:GLU:HG3  | 3:G:111:PRO:HG2  | 1.74                     | 0.69              |
| 1:A:61:LEU:HD22  | 1:A:90:VAL:HG21  | 1.74                     | 0.69              |
| 3:C:128:TRP:CD1  | 3:C:161:ALA:HA   | 2.28                     | 0.69              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:161:PHE:HA   | 1:A:165:LEU:HB2  | 1.73                     | 0.69              |
| 2:F:237:LEU:O    | 2:F:238:LYS:HD2  | 1.93                     | 0.69              |
| 3:G:41:HIS:CD2   | 3:G:242:HIS:NE2  | 2.61                     | 0.69              |
| 1:A:144:LEU:HD12 | 1:E:142:SER:HA   | 1.73                     | 0.69              |
| 2:B:84:GLU:HG2   | 2:B:113:ARG:HH21 | 1.57                     | 0.68              |
| 4:H:155:MET:HG2  | 4:H:156:ILE:HD13 | 1.75                     | 0.68              |
| 2:F:171:THR:HG21 | 2:F:182:ILE:HG21 | 1.75                     | 0.68              |
| 3:G:81:LYS:HE2   | 3:G:113:ASN:ND2  | 2.09                     | 0.68              |
| 3:G:95:GLU:OE2   | 3:G:152:ARG:NE   | 2.16                     | 0.68              |
| 1:E:70:LEU:O     | 4:H:8:ARG:N      | 2.27                     | 0.68              |
| 3:C:233:PHE:HD1  | 3:C:239:LEU:HD11 | 1.57                     | 0.68              |
| 2:B:221:LEU:HD21 | 2:B:224:GLN:HG2  | 1.76                     | 0.68              |
| 1:A:77:LEU:HB3   | 1:A:78:PRO:HD2   | 1.73                     | 0.68              |
| 2:B:222:LEU:CD2  | 2:B:236:MET:SD   | 2.81                     | 0.68              |
| 3:C:46:LYS:HE2   | 3:C:203:HIS:NE2  | 2.09                     | 0.68              |
| 3:C:152:ARG:HG3  | 3:C:156:LEU:HD23 | 1.76                     | 0.68              |
| 1:A:13:THR:OG1   | 4:D:219:SER:OG   | 2.10                     | 0.68              |
| 2:B:125:ALA:O    | 2:B:129:ALA:N    | 2.27                     | 0.67              |
| 2:F:166:ILE:HG12 | 2:F:198:ILE:HB   | 1.75                     | 0.67              |
| 2:F:4:ASN:HD22   | 2:F:6:ILE:HD13   | 1.58                     | 0.67              |
| 2:B:97:PHE:HB3   | 4:D:165:ARG:HE   | 1.60                     | 0.67              |
| 2:B:106:VAL:HG21 | 2:B:128:VAL:HG12 | 1.75                     | 0.67              |
| 4:D:21:PRO:HG3   | 4:D:134:GLU:HB3  | 1.76                     | 0.67              |
| 4:H:78:PHE:HB2   | 4:H:81:LEU:HD23  | 1.77                     | 0.67              |
| 1:A:172:LYS:HE2  | 4:D:213:GLU:HB2  | 1.77                     | 0.67              |
| 4:D:112:VAL:HA   | 4:D:115:ARG:HG2  | 1.76                     | 0.67              |
| 2:F:241:GLY:O    | 3:G:179:MET:HG3  | 1.95                     | 0.67              |
| 2:F:157:ILE:O    | 2:F:162:PRO:HD3  | 1.95                     | 0.67              |
| 2:B:204:LEU:HD21 | 2:B:246:PHE:HB3  | 1.77                     | 0.66              |
| 4:H:95:HIS:O     | 4:H:96:TRP:HD1   | 1.77                     | 0.66              |
| 4:H:71:PRO:HD2   | 4:H:73:ILE:HG23  | 1.76                     | 0.66              |
| 4:H:95:HIS:ND1   | 4:H:95:HIS:O     | 2.27                     | 0.66              |
| 2:F:52:LEU:HD23  | 2:F:57:LEU:HB3   | 1.77                     | 0.66              |
| 2:F:234:VAL:HA   | 2:F:237:LEU:HD12 | 1.78                     | 0.66              |
| 3:C:4:LYS:HG2    | 3:C:65:GLU:HB2   | 1.77                     | 0.66              |
| 4:D:54:TYR:O     | 4:D:57:ALA:N     | 2.29                     | 0.65              |
| 2:B:93:PRO:HG3   | 2:B:150:GLN:HG2  | 1.79                     | 0.65              |
| 1:E:17:LEU:O     | 1:E:21:MET:N     | 2.22                     | 0.65              |
| 2:F:181:GLN:O    | 2:F:185:LEU:N    | 2.27                     | 0.65              |
| 2:F:68:THR:OG1   | 2:F:70:ASP:OD1   | 2.14                     | 0.65              |
| 2:B:102:VAL:HG13 | 2:B:152:VAL:HG13 | 1.79                     | 0.65              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:253:ALA:O    | 3:C:257:GLU:N    | 2.20                     | 0.65              |
| 2:F:20:ARG:NH2   | 2:F:218:ASP:OD2  | 2.29                     | 0.65              |
| 3:G:214:ASP:CG   | 3:G:226:HIS:HE2  | 1.99                     | 0.65              |
| 2:B:208:ALA:HB2  | 2:B:245:PRO:HG2  | 1.79                     | 0.65              |
| 4:D:12:GLY:O     | 4:D:18:ARG:NH2   | 2.29                     | 0.65              |
| 2:F:245:PRO:HD2  | 2:F:248:TYR:HB2  | 1.79                     | 0.65              |
| 1:A:48:LEU:HB2   | 1:A:57:LEU:HD13  | 1.79                     | 0.65              |
| 2:B:69:VAL:HG12  | 2:B:70:ASP:H     | 1.61                     | 0.65              |
| 1:E:15:LEU:HD12  | 1:E:60:ILE:HB    | 1.79                     | 0.65              |
| 2:B:88:ILE:HG22  | 2:B:89:VAL:O     | 1.97                     | 0.64              |
| 3:C:90:ALA:O     | 3:C:170:ASP:N    | 2.21                     | 0.64              |
| 2:B:54:ASN:ND2   | 4:D:224:SER:OG   | 2.30                     | 0.64              |
| 2:B:7:SER:C      | 2:B:27:SER:H     | 1.99                     | 0.64              |
| 3:G:108:GLU:HG2  | 3:G:121:ALA:HB1  | 1.79                     | 0.64              |
| 4:H:35:ILE:HG23  | 4:H:47:ILE:HD12  | 1.79                     | 0.64              |
| 2:B:237:LEU:HA   | 2:B:240:ILE:HB   | 1.79                     | 0.64              |
| 3:C:276:ALA:O    | 3:C:280:SER:OG   | 2.14                     | 0.64              |
| 4:D:165:ARG:NH2  | 4:D:165:ARG:O    | 2.26                     | 0.64              |
| 4:D:46:VAL:O     | 4:D:50:PHE:N     | 2.17                     | 0.64              |
| 3:C:193:ALA:C    | 3:C:195:GLY:H    | 2.00                     | 0.64              |
| 1:E:28:PHE:HD2   | 1:E:29:LYS:HD2   | 1.62                     | 0.64              |
| 4:H:122:VAL:HA   | 4:H:125:VAL:HG22 | 1.79                     | 0.64              |
| 1:A:141:VAL:O    | 1:E:144:LEU:HD13 | 1.98                     | 0.64              |
| 2:F:265:ILE:HG12 | 2:F:270:LYS:HD2  | 1.80                     | 0.64              |
| 3:C:177:ASP:HB2  | 3:C:178:PRO:HD2  | 1.78                     | 0.63              |
| 4:D:131:LYS:HB3  | 4:D:134:GLU:HG3  | 1.80                     | 0.63              |
| 2:B:100:ALA:HB3  | 4:D:133:LEU:HD11 | 1.79                     | 0.63              |
| 4:D:12:GLY:N     | 4:D:18:ARG:HH22  | 1.95                     | 0.63              |
| 4:D:260:ILE:O    | 4:D:264:LYS:N    | 2.22                     | 0.63              |
| 4:D:151:VAL:HG12 | 4:D:153:VAL:HG22 | 1.80                     | 0.63              |
| 3:G:166:ILE:HG23 | 3:G:197:THR:HB   | 1.81                     | 0.63              |
| 4:D:76:ILE:CD1   | 4:D:77:VAL:H     | 2.12                     | 0.63              |
| 4:H:170:LEU:HD12 | 4:H:173:GLN:HE22 | 1.64                     | 0.62              |
| 2:F:257:ARG:NH1  | 3:G:282:LYS:HE2  | 2.14                     | 0.62              |
| 4:H:86:PHE:CD1   | 4:H:96:TRP:HE3   | 2.17                     | 0.62              |
| 3:C:219:GLU:O    | 3:C:221:GLY:N    | 2.32                     | 0.62              |
| 2:F:190:LYS:O    | 2:F:194:ASN:N    | 2.26                     | 0.62              |
| 3:G:38:LEU:HD23  | 3:G:201:VAL:HG22 | 1.80                     | 0.62              |
| 2:B:17:ASP:OD1   | 2:B:17:ASP:N     | 2.31                     | 0.62              |
| 2:F:226:LYS:O    | 2:F:230:ILE:HG22 | 1.99                     | 0.62              |
| 4:H:110:LEU:HG   | 4:H:113:PHE:HB3  | 1.82                     | 0.62              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:91:PHE:HA    | 3:C:170:ASP:HB3  | 1.81                     | 0.62              |
| 1:A:29:LYS:NZ    | 1:A:34:PRO:HG3   | 2.15                     | 0.62              |
| 1:A:39:VAL:HG22  | 1:A:75:TRP:CZ3   | 2.35                     | 0.62              |
| 3:C:233:PHE:CD1  | 3:C:239:LEU:HD11 | 2.35                     | 0.62              |
| 2:B:107:ALA:HB1  | 2:B:120:MET:HE3  | 1.82                     | 0.62              |
| 3:G:125:ALA:O    | 3:G:129:LEU:N    | 2.32                     | 0.62              |
| 4:D:126:MET:O    | 4:D:130:THR:OG1  | 2.17                     | 0.61              |
| 2:B:68:THR:HG22  | 2:B:73:LYS:HG3   | 1.81                     | 0.61              |
| 2:B:126:GLN:NE2  | 2:B:130:ASP:OD1  | 2.32                     | 0.61              |
| 2:B:10:HIS:HA    | 2:B:23:LEU:HB2   | 1.83                     | 0.61              |
| 4:D:159:VAL:O    | 4:D:163:ALA:N    | 2.19                     | 0.61              |
| 4:D:162:ILE:HA   | 4:D:165:ARG:HB3  | 1.82                     | 0.61              |
| 1:A:76:THR:OG1   | 1:A:77:LEU:N     | 2.34                     | 0.61              |
| 3:C:202:THR:OG1  | 3:C:203:HIS:N    | 2.34                     | 0.61              |
| 1:E:107:LEU:HD23 | 1:E:108:GLN:H    | 1.65                     | 0.61              |
| 4:D:212:LEU:O    | 4:D:216:LEU:HD13 | 2.01                     | 0.61              |
| 1:E:48:LEU:HD12  | 1:E:56:ILE:HB    | 1.82                     | 0.61              |
| 3:G:117:SER:HB3  | 3:G:120:GLU:H    | 1.65                     | 0.61              |
| 4:H:250:ALA:O    | 4:H:254:LEU:N    | 2.34                     | 0.61              |
| 2:B:200:ILE:HG22 | 2:B:201:THR:H    | 1.65                     | 0.61              |
| 3:G:279:GLN:HA   | 3:G:282:LYS:HG2  | 1.81                     | 0.61              |
| 4:H:234:THR:HG22 | 4:H:235:ARG:H    | 1.66                     | 0.61              |
| 2:F:109:GLY:H    | 4:H:225:ARG:NH2  | 1.98                     | 0.60              |
| 2:F:276:TRP:O    | 2:F:279:ASN:ND2  | 2.34                     | 0.60              |
| 3:G:267:PRO:HG3  | 3:G:276:ALA:HB2  | 1.83                     | 0.60              |
| 1:A:43:ILE:HG22  | 1:A:44:MET:N     | 2.17                     | 0.60              |
| 4:D:55:VAL:HG13  | 4:D:125:VAL:HG11 | 1.82                     | 0.60              |
| 2:F:72:VAL:HG12  | 2:F:73:LYS:H     | 1.65                     | 0.60              |
| 2:B:119:GLU:HA   | 2:B:122:LYS:HE2  | 1.84                     | 0.60              |
| 2:F:184:ASP:O    | 2:F:188:LYS:N    | 2.34                     | 0.60              |
| 3:G:160:LEU:HD21 | 3:G:167:ILE:HD12 | 1.83                     | 0.60              |
| 4:D:107:ILE:CB   | 4:D:111:TYR:HE2  | 1.84                     | 0.60              |
| 4:D:31:PHE:CZ    | 4:D:51:GLY:HA3   | 2.37                     | 0.60              |
| 2:F:10:HIS:CG    | 2:F:60:ASP:HB2   | 2.37                     | 0.60              |
| 2:B:237:LEU:O    | 2:B:242:LEU:N    | 2.30                     | 0.60              |
| 3:C:250:ALA:HB2  | 3:C:268:LEU:HA   | 1.82                     | 0.60              |
| 4:D:52:LEU:HD12  | 4:D:55:VAL:HB    | 1.84                     | 0.60              |
| 3:C:99:PHE:HD2   | 4:D:201:VAL:HG12 | 1.67                     | 0.60              |
| 3:G:42:THR:HA    | 3:G:203:HIS:NE2  | 2.17                     | 0.60              |
| 3:G:232:VAL:HG22 | 3:G:239:LEU:HD21 | 1.83                     | 0.60              |
| 1:A:117:LEU:O    | 1:A:121:PHE:HB2  | 2.02                     | 0.60              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:127:LYS:NZ   | 3:C:163:GLU:OE2  | 2.34                     | 0.60              |
| 4:D:17:TYR:O     | 4:D:19:VAL:HG13  | 2.00                     | 0.60              |
| 4:H:25:LEU:HG    | 4:H:126:MET:HG2  | 1.83                     | 0.60              |
| 4:H:182:ARG:HD2  | 4:H:186:ALA:HB3  | 1.83                     | 0.60              |
| 4:D:75:MET:O     | 4:D:79:THR:OG1   | 2.12                     | 0.60              |
| 2:F:113:ARG:HH21 | 2:F:160:VAL:HG11 | 1.67                     | 0.60              |
| 2:F:86:VAL:HB    | 2:F:164:VAL:HB   | 1.83                     | 0.60              |
| 3:G:269:THR:OG1  | 3:G:271:PRO:HD2  | 2.01                     | 0.60              |
| 4:D:166:PHE:HB3  | 4:D:170:LEU:HD23 | 1.84                     | 0.59              |
| 2:F:252:GLN:O    | 2:F:256:GLU:N    | 2.34                     | 0.59              |
| 3:G:187:LEU:HA   | 3:G:189:LYS:HB2  | 1.84                     | 0.59              |
| 4:H:8:ARG:CZ     | 4:H:8:ARG:HB2    | 2.30                     | 0.59              |
| 4:D:31:PHE:CE1   | 4:D:51:GLY:HA3   | 2.37                     | 0.59              |
| 4:H:251:TYR:CD1  | 4:H:254:LEU:HD22 | 2.37                     | 0.59              |
| 1:A:59:ALA:HA    | 1:A:62:VAL:HG22  | 1.83                     | 0.59              |
| 2:F:230:ILE:HG13 | 2:F:233:LYS:HE3  | 1.83                     | 0.59              |
| 2:B:154:ILE:O    | 2:B:158:LEU:HD13 | 2.03                     | 0.59              |
| 2:B:202:HIS:HB2  | 2:B:206:GLU:HG2  | 1.83                     | 0.59              |
| 2:B:3:ASP:HB2    | 2:B:32:ARG:HA    | 1.85                     | 0.59              |
| 4:H:133:LEU:HD23 | 4:H:133:LEU:H    | 1.67                     | 0.59              |
| 1:A:28:PHE:O     | 1:A:34:PRO:HD2   | 2.03                     | 0.59              |
| 4:D:147:LYS:HA   | 4:D:151:VAL:HG13 | 1.84                     | 0.59              |
| 3:G:187:LEU:HB2  | 3:G:190:ASP:H    | 1.67                     | 0.59              |
| 1:A:31:ILE:HG13  | 1:A:32:ASP:H     | 1.67                     | 0.59              |
| 3:C:261:LEU:HD22 | 3:C:263:LEU:HD12 | 1.84                     | 0.59              |
| 4:D:107:ILE:CG2  | 4:D:111:TYR:CZ   | 2.85                     | 0.59              |
| 2:F:3:ASP:O      | 2:F:70:ASP:N     | 2.36                     | 0.59              |
| 2:B:46:LYS:H     | 2:B:46:LYS:HD3   | 1.68                     | 0.58              |
| 3:C:238:TRP:O    | 3:C:242:HIS:HB2  | 2.03                     | 0.58              |
| 3:C:162:TYR:OH   | 4:D:183:SER:O    | 2.07                     | 0.58              |
| 1:E:89:THR:HG21  | 1:E:119:TYR:HA   | 1.84                     | 0.58              |
| 2:F:96:GLN:HA    | 4:H:218:LEU:HD12 | 1.85                     | 0.58              |
| 4:D:125:VAL:HA   | 4:D:128:VAL:HB   | 1.85                     | 0.58              |
| 4:D:54:TYR:HB3   | 4:D:251:TYR:OH   | 2.03                     | 0.58              |
| 4:D:88:ALA:O     | 4:D:90:GLY:N     | 2.36                     | 0.58              |
| 2:F:185:LEU:O    | 2:F:189:ILE:N    | 2.35                     | 0.58              |
| 4:H:94:TRP:HB2   | 4:H:95:HIS:HA    | 1.84                     | 0.58              |
| 1:A:21:MET:HB2   | 4:D:207:LEU:HD11 | 1.86                     | 0.58              |
| 1:A:45:LEU:O     | 1:A:57:LEU:HD11  | 2.03                     | 0.58              |
| 2:F:113:ARG:HH11 | 4:H:228:LYS:HE3  | 1.68                     | 0.58              |
| 2:F:75:GLY:HA2   | 2:F:78:THR:HG23  | 1.85                     | 0.58              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:3:ILE:HG23   | 3:C:66:ILE:HG13  | 1.84                     | 0.58              |
| 1:A:75:TRP:CE3   | 1:A:76:THR:HG22  | 2.39                     | 0.58              |
| 3:C:90:ALA:HB3   | 3:C:169:LEU:HD23 | 1.84                     | 0.58              |
| 1:A:63:MET:SD    | 4:D:159:VAL:HG11 | 2.43                     | 0.58              |
| 3:G:167:ILE:HG23 | 3:G:169:LEU:HD11 | 1.84                     | 0.58              |
| 2:B:216:LEU:HA   | 2:B:220:GLN:O    | 2.03                     | 0.58              |
| 2:B:255:LYS:HG2  | 2:B:260:VAL:HA   | 1.85                     | 0.58              |
| 2:B:8:PHE:CE1    | 2:B:65:SER:HB3   | 2.39                     | 0.58              |
| 2:F:201:THR:O    | 2:F:202:HIS:ND1  | 2.37                     | 0.58              |
| 2:F:83:ARG:NH2   | 4:H:223:GLU:OE2  | 2.36                     | 0.58              |
| 1:E:133:TRP:HE1  | 4:H:82:LEU:HD23  | 1.69                     | 0.58              |
| 1:E:64:VAL:O     | 1:E:68:ILE:HB    | 2.03                     | 0.58              |
| 3:C:270:MET:HB2  | 3:C:271:PRO:HD3  | 1.84                     | 0.57              |
| 2:F:115:VAL:O    | 4:H:234:THR:OG1  | 2.15                     | 0.57              |
| 2:F:88:ILE:HD12  | 2:F:166:ILE:HB   | 1.86                     | 0.57              |
| 3:G:256:LEU:HD13 | 3:G:263:LEU:HD12 | 1.86                     | 0.57              |
| 2:B:171:THR:HG22 | 2:B:174:LEU:HD23 | 1.85                     | 0.57              |
| 4:D:75:MET:SD    | 4:D:79:THR:OG1   | 2.62                     | 0.57              |
| 3:G:11:VAL:HG13  | 3:G:22:GLY:HA3   | 1.85                     | 0.57              |
| 3:G:182:LEU:HD23 | 3:G:185:MET:HB2  | 1.86                     | 0.57              |
| 4:H:225:ARG:O    | 4:H:225:ARG:NH1  | 2.38                     | 0.57              |
| 1:A:163:LEU:O    | 1:A:167:LEU:HB2  | 2.05                     | 0.57              |
| 2:B:72:VAL:HG23  | 2:B:85:LYS:HE3   | 1.87                     | 0.57              |
| 4:D:66:TRP:HH2   | 4:H:195:LYS:HB2  | 1.68                     | 0.57              |
| 2:F:179:LYS:HZ1  | 2:F:202:HIS:CD2  | 2.23                     | 0.57              |
| 2:F:26:LEU:HB3   | 2:F:28:PHE:HD2   | 1.67                     | 0.57              |
| 3:G:105:LYS:HA   | 3:G:122:ARG:HE   | 1.69                     | 0.57              |
| 3:G:63:LYS:HD2   | 3:G:63:LYS:H     | 1.70                     | 0.57              |
| 3:G:247:PRO:HG2  | 3:G:250:ALA:HB3  | 1.87                     | 0.57              |
| 2:B:202:HIS:HB2  | 2:B:206:GLU:HB3  | 1.87                     | 0.57              |
| 2:B:17:ASP:N     | 2:B:19:PRO:HD2   | 2.19                     | 0.57              |
| 3:G:41:HIS:O     | 3:G:44:SER:OG    | 2.17                     | 0.57              |
| 4:H:251:TYR:HA   | 4:H:254:LEU:HB3  | 1.86                     | 0.57              |
| 3:C:186:GLN:HA   | 3:C:189:LYS:HG3  | 1.87                     | 0.57              |
| 3:G:182:LEU:O    | 3:G:186:GLN:HB2  | 2.05                     | 0.57              |
| 4:D:158:LEU:O    | 4:D:162:ILE:HG12 | 2.04                     | 0.57              |
| 3:G:81:LYS:HG3   | 3:G:114:PHE:HD1  | 1.70                     | 0.57              |
| 4:H:10:LEU:HD22  | 4:H:131:LYS:HB3  | 1.87                     | 0.57              |
| 2:B:69:VAL:HG12  | 2:B:70:ASP:N     | 2.20                     | 0.57              |
| 4:D:253:LEU:O    | 4:D:256:THR:OG1  | 2.17                     | 0.57              |
| 1:E:108:GLN:HG2  | 1:E:154:ASN:HA   | 1.87                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:G:248:ARG:O    | 3:G:252:PHE:N    | 2.35                     | 0.57              |
| 1:A:16:ALA:HA    | 4:D:159:VAL:HG13 | 1.86                     | 0.56              |
| 1:E:85:ALA:H     | 1:E:88:LEU:HD22  | 1.70                     | 0.56              |
| 3:G:261:LEU:HD22 | 3:G:263:LEU:HG   | 1.86                     | 0.56              |
| 1:E:61:LEU:HD23  | 1:E:87:ALA:HA    | 1.87                     | 0.56              |
| 2:F:109:GLY:O    | 2:F:113:ARG:HG3  | 2.04                     | 0.56              |
| 1:E:57:LEU:HD12  | 1:E:58:LEU:N     | 2.19                     | 0.56              |
| 2:F:6:ILE:HG13   | 2:F:67:ILE:HG12  | 1.86                     | 0.56              |
| 1:A:142:SER:OG   | 1:A:142:SER:O    | 2.19                     | 0.56              |
| 4:D:16:VAL:O     | 4:D:18:ARG:HG2   | 2.05                     | 0.56              |
| 2:F:117:ARG:HE   | 4:H:236:TYR:HA   | 1.69                     | 0.56              |
| 4:H:231:GLU:HG2  | 4:H:232:GLY:H    | 1.70                     | 0.56              |
| 3:C:31:GLU:HB3   | 3:C:34:LYS:HD3   | 1.88                     | 0.56              |
| 1:E:137:ILE:O    | 1:E:141:VAL:N    | 2.26                     | 0.56              |
| 3:C:46:LYS:HB3   | 3:C:201:VAL:HG13 | 1.88                     | 0.56              |
| 2:B:254:LEU:HB3  | 2:B:259:ILE:HB   | 1.88                     | 0.56              |
| 3:C:10:TYR:HB2   | 3:C:52:HIS:CE1   | 2.40                     | 0.56              |
| 3:C:140:GLU:O    | 3:C:141:HIS:ND1  | 2.38                     | 0.56              |
| 1:E:108:GLN:OE1  | 1:E:111:LEU:HB2  | 2.06                     | 0.56              |
| 4:H:257:ILE:O    | 4:H:261:THR:OG1  | 2.24                     | 0.56              |
| 4:H:78:PHE:O     | 4:H:81:LEU:HD23  | 2.06                     | 0.56              |
| 1:A:106:TRP:O    | 1:A:110:LEU:HG   | 2.06                     | 0.56              |
| 3:C:103:VAL:O    | 3:C:106:ASP:N    | 2.32                     | 0.55              |
| 1:A:137:ILE:HG13 | 1:A:138:ALA:H    | 1.71                     | 0.55              |
| 2:B:235:GLU:O    | 2:B:237:LEU:N    | 2.37                     | 0.55              |
| 2:F:108:PHE:HD2  | 4:H:225:ARG:HG3  | 1.71                     | 0.55              |
| 1:A:23:VAL:HG13  | 1:A:68:ILE:HB    | 1.88                     | 0.55              |
| 2:B:275:LEU:HD23 | 2:B:278:LEU:HD12 | 1.88                     | 0.55              |
| 3:C:97:GLN:HG2   | 4:D:180:ALA:HB1  | 1.87                     | 0.55              |
| 3:G:267:PRO:HA   | 3:G:272:GLU:HB3  | 1.89                     | 0.55              |
| 4:H:23:ALA:HB2   | 4:H:241:TRP:CZ3  | 2.41                     | 0.55              |
| 3:C:249:SER:HA   | 3:C:273:LEU:HD22 | 1.88                     | 0.55              |
| 3:G:72:THR:HG22  | 3:G:73:PRO:HD2   | 1.88                     | 0.55              |
| 1:A:173:LYS:HD2  | 4:D:216:LEU:HD11 | 1.87                     | 0.55              |
| 4:D:80:SER:HA    | 4:D:83:GLN:HG2   | 1.88                     | 0.55              |
| 1:E:144:LEU:HA   | 1:E:147:ASP:HB2  | 1.88                     | 0.55              |
| 2:F:243:ASP:OD1  | 2:F:244:ILE:N    | 2.39                     | 0.55              |
| 3:G:88:SER:OG    | 3:G:159:VAL:HG13 | 2.06                     | 0.55              |
| 1:A:170:ARG:HG3  | 1:A:174:LYS:HZ2  | 1.71                     | 0.55              |
| 1:E:106:TRP:N    | 1:E:109:GLU:OE2  | 2.40                     | 0.55              |
| 3:G:279:GLN:HA   | 3:G:282:LYS:CG   | 2.37                     | 0.55              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:101:ASN:N    | 3:C:101:ASN:OD1  | 2.39                     | 0.55              |
| 4:D:88:ALA:HB2   | 4:D:94:TRP:CE2   | 2.42                     | 0.55              |
| 1:E:133:TRP:CZ3  | 1:E:135:ALA:HA   | 2.42                     | 0.55              |
| 2:B:214:LEU:HB3  | 2:B:221:LEU:HD11 | 1.89                     | 0.55              |
| 2:B:237:LEU:O    | 2:B:241:GLY:N    | 2.37                     | 0.55              |
| 4:H:167:VAL:HB   | 4:H:168:PRO:HD3  | 1.88                     | 0.55              |
| 4:H:215:ALA:HA   | 4:H:218:LEU:HB3  | 1.87                     | 0.55              |
| 3:C:72:THR:O     | 3:C:75:THR:OG1   | 2.22                     | 0.55              |
| 1:E:32:ASP:OD1   | 1:E:33:ILE:N     | 2.40                     | 0.55              |
| 2:B:231:PHE:HB3  | 2:B:244:ILE:HG22 | 1.88                     | 0.54              |
| 1:A:70:LEU:HD13  | 4:D:135:ILE:HB   | 1.90                     | 0.54              |
| 2:B:107:ALA:HA   | 2:B:110:LEU:HD12 | 1.90                     | 0.54              |
| 2:B:142:SER:CB   | 4:D:168:PRO:HB2  | 2.36                     | 0.54              |
| 3:G:114:PHE:HE2  | 3:G:162:TYR:CE1  | 2.25                     | 0.54              |
| 3:G:4:LYS:O      | 3:G:64:ILE:HG23  | 2.07                     | 0.54              |
| 3:G:66:ILE:HG12  | 3:G:67:ALA:H     | 1.71                     | 0.54              |
| 4:H:124:THR:HA   | 4:H:127:THR:OG1  | 2.07                     | 0.54              |
| 1:A:48:LEU:O     | 1:A:52:ALA:HB3   | 2.07                     | 0.54              |
| 2:B:50:SER:O     | 2:B:53:ILE:HG22  | 2.08                     | 0.54              |
| 2:B:93:PRO:HG2   | 2:B:149:LYS:HB2  | 1.90                     | 0.54              |
| 2:B:111:GLU:HA   | 4:D:234:THR:HB   | 1.89                     | 0.54              |
| 2:B:148:GLN:O    | 2:B:152:VAL:HG23 | 2.06                     | 0.54              |
| 3:C:66:ILE:HG12  | 3:C:67:ALA:H     | 1.72                     | 0.54              |
| 4:H:158:LEU:O    | 4:H:162:ILE:HG12 | 2.08                     | 0.54              |
| 1:A:61:LEU:O     | 1:A:65:ILE:HG12  | 2.07                     | 0.54              |
| 4:D:24:LYS:HD2   | 4:D:130:THR:HG23 | 1.90                     | 0.54              |
| 2:F:175:ASP:HB3  | 3:G:203:HIS:HB2  | 1.89                     | 0.54              |
| 2:F:4:ASN:HA     | 2:F:70:ASP:H     | 1.73                     | 0.54              |
| 1:E:13:THR:HG23  | 4:H:215:ALA:HB1  | 1.90                     | 0.54              |
| 1:A:28:PHE:O     | 1:A:29:LYS:HG2   | 2.08                     | 0.54              |
| 1:A:66:SER:OG    | 4:D:139:MET:SD   | 2.66                     | 0.54              |
| 4:D:81:LEU:HA    | 4:D:84:THR:OG1   | 2.07                     | 0.54              |
| 2:F:89:VAL:HG21  | 2:F:154:ILE:HD13 | 1.90                     | 0.54              |
| 4:H:40:ASN:HB3   | 4:H:42:VAL:HG22  | 1.90                     | 0.54              |
| 2:B:235:GLU:C    | 2:B:237:LEU:N    | 2.60                     | 0.54              |
| 3:C:66:ILE:HG22  | 3:C:69:TYR:O     | 2.07                     | 0.54              |
| 2:F:183:LEU:HD11 | 2:F:202:HIS:CD2  | 2.39                     | 0.54              |
| 3:C:220:HIS:HB2  | 3:C:222:ARG:NH2  | 2.21                     | 0.54              |
| 3:C:41:HIS:CG    | 3:C:243:HIS:HB2  | 2.43                     | 0.54              |
| 1:E:107:LEU:HA   | 1:E:157:PHE:CZ   | 2.42                     | 0.54              |
| 4:H:94:TRP:CB    | 4:H:95:HIS:HA    | 2.38                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:173:GLN:HA   | 4:D:176:LYS:HG2  | 1.90                     | 0.53              |
| 2:F:232:PRO:O    | 2:F:234:VAL:HG13 | 2.08                     | 0.53              |
| 4:H:131:LYS:HG3  | 4:H:134:GLU:HB2  | 1.90                     | 0.53              |
| 1:A:138:ALA:HB2  | 4:D:79:THR:HG21  | 1.89                     | 0.53              |
| 3:C:23:LEU:HD11  | 3:C:48:THR:O     | 2.07                     | 0.53              |
| 2:B:10:HIS:CD2   | 2:B:24:SER:H     | 2.26                     | 0.53              |
| 3:C:104:LEU:O    | 3:C:108:GLU:N    | 2.38                     | 0.53              |
| 4:H:8:ARG:HB2    | 4:H:8:ARG:NH1    | 2.23                     | 0.53              |
| 3:G:236:SER:HA   | 3:G:239:LEU:HD12 | 1.91                     | 0.53              |
| 3:G:30:LEU:HD11  | 3:G:36:ILE:HD11  | 1.90                     | 0.53              |
| 2:F:179:LYS:HZ2  | 2:F:183:LEU:HD13 | 1.74                     | 0.53              |
| 3:G:6:GLU:OE1    | 3:G:7:ASN:ND2    | 2.23                     | 0.53              |
| 2:F:202:HIS:HB2  | 2:F:206:GLU:CG   | 2.37                     | 0.53              |
| 2:F:230:ILE:O    | 2:F:233:LYS:N    | 2.38                     | 0.53              |
| 2:F:257:ARG:HH12 | 3:G:282:LYS:HE2  | 1.74                     | 0.53              |
| 2:B:107:ALA:O    | 2:B:111:GLU:HG3  | 2.09                     | 0.53              |
| 2:B:278:LEU:HB2  | 3:C:281:LEU:HD13 | 1.90                     | 0.53              |
| 3:C:127:LYS:HE3  | 3:C:131:LYS:HE2  | 1.91                     | 0.53              |
| 2:B:107:ALA:HB2  | 2:B:124:VAL:CG2  | 2.32                     | 0.53              |
| 3:C:169:LEU:HD22 | 3:C:172:PRO:HG3  | 1.91                     | 0.53              |
| 2:F:158:LEU:O    | 2:F:161:LYS:N    | 2.42                     | 0.53              |
| 2:B:86:VAL:HA    | 2:B:164:VAL:HB   | 1.91                     | 0.53              |
| 2:B:39:ILE:O     | 2:B:216:LEU:HD12 | 2.08                     | 0.53              |
| 3:C:102:THR:HG22 | 3:C:104:LEU:H    | 1.73                     | 0.53              |
| 2:F:17:ASP:N     | 2:F:17:ASP:OD1   | 2.43                     | 0.53              |
| 1:A:30:ILE:HG22  | 4:D:171:PHE:HZ   | 1.73                     | 0.52              |
| 2:B:177:GLU:O    | 2:B:181:GLN:NE2  | 2.42                     | 0.52              |
| 2:B:91:GLN:OE1   | 2:B:172:SER:OG   | 2.26                     | 0.52              |
| 4:D:107:ILE:C    | 4:D:111:TYR:CD2  | 2.82                     | 0.52              |
| 4:D:88:ALA:O     | 4:D:92:VAL:HB    | 2.09                     | 0.52              |
| 2:F:14:THR:OG1   | 2:F:15:TYR:N     | 2.42                     | 0.52              |
| 2:B:110:LEU:HD11 | 2:B:159:ALA:HB1  | 1.91                     | 0.52              |
| 2:B:33:GLY:O     | 2:B:190:LYS:NZ   | 2.29                     | 0.52              |
| 3:G:26:LEU:HG    | 3:G:49:LEU:HD11  | 1.91                     | 0.52              |
| 3:G:275:ASP:HA   | 3:G:278:LYS:HB2  | 1.91                     | 0.52              |
| 1:A:64:VAL:O     | 1:A:68:ILE:HG22  | 2.10                     | 0.52              |
| 3:C:44:SER:OG    | 3:C:46:LYS:NZ    | 2.42                     | 0.52              |
| 3:C:252:PHE:HA   | 3:C:255:LYS:HG2  | 1.91                     | 0.52              |
| 4:D:213:GLU:O    | 4:D:216:LEU:HB2  | 2.09                     | 0.52              |
| 2:F:55:GLY:O     | 2:F:83:ARG:NH2   | 2.42                     | 0.52              |
| 1:E:20:ALA:HB2   | 4:H:163:ALA:HA   | 1.91                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:H:256:THR:HA   | 4:H:259:MET:HG3  | 1.91                     | 0.52              |
| 2:B:223:ASP:CB   | 2:B:230:ILE:HD12 | 2.35                     | 0.52              |
| 2:B:78:THR:O     | 2:B:80:TRP:N     | 2.42                     | 0.52              |
| 1:A:49:GLU:O     | 1:A:51:GLY:N     | 2.41                     | 0.52              |
| 2:B:250:LEU:O    | 2:B:254:LEU:N    | 2.42                     | 0.52              |
| 1:E:111:LEU:HD12 | 1:E:114:PHE:CD1  | 2.45                     | 0.52              |
| 1:A:19:THR:HG21  | 1:A:63:MET:CB    | 2.40                     | 0.52              |
| 3:C:35:PHE:HB3   | 3:C:212:ALA:HA   | 1.91                     | 0.52              |
| 2:F:167:LEU:HD11 | 2:F:186:VAL:HG11 | 1.92                     | 0.52              |
| 2:B:54:ASN:OD1   | 2:B:56:LEU:HG    | 2.09                     | 0.52              |
| 4:D:230:SER:N    | 4:D:233:ARG:HG3  | 2.21                     | 0.52              |
| 2:B:53:ILE:HD12  | 2:B:67:ILE:HG21  | 1.91                     | 0.52              |
| 3:C:41:HIS:CD2   | 3:C:243:HIS:HB2  | 2.45                     | 0.52              |
| 3:G:132:VAL:HG21 | 3:G:153:ARG:HD3  | 1.91                     | 0.52              |
| 3:G:249:SER:O    | 3:G:253:ALA:N    | 2.42                     | 0.52              |
| 3:C:39:VAL:C     | 3:C:46:LYS:HE3   | 2.31                     | 0.51              |
| 2:F:48:THR:HA    | 2:F:51:LYS:NZ    | 2.25                     | 0.51              |
| 4:H:55:VAL:HG21  | 4:H:121:LEU:HD13 | 1.91                     | 0.51              |
| 4:D:235:ARG:HG2  | 4:D:236:TYR:H    | 1.75                     | 0.51              |
| 2:B:247:VAL:O    | 2:B:251:LYS:HG3  | 2.10                     | 0.51              |
| 2:F:141:PRO:HA   | 2:F:144:LEU:HG   | 1.91                     | 0.51              |
| 2:F:271:LEU:HD23 | 3:G:252:PHE:HZ   | 1.75                     | 0.51              |
| 3:G:23:LEU:HB3   | 3:G:26:LEU:HD21  | 1.93                     | 0.51              |
| 4:H:80:SER:HB2   | 4:H:83:GLN:HG3   | 1.92                     | 0.51              |
| 2:B:116:PRO:HG2  | 2:B:119:GLU:HB3  | 1.93                     | 0.51              |
| 3:C:269:THR:HB   | 3:C:272:GLU:HG2  | 1.91                     | 0.51              |
| 4:D:107:ILE:HG22 | 4:D:111:TYR:CZ   | 2.46                     | 0.51              |
| 4:D:248:PRO:HA   | 4:D:251:TYR:HB2  | 1.92                     | 0.51              |
| 4:D:255:LEU:O    | 4:D:259:MET:HB2  | 2.10                     | 0.51              |
| 2:B:91:GLN:HE22  | 2:B:169:GLU:HG2  | 1.75                     | 0.51              |
| 2:B:225:GLY:N    | 2:B:230:ILE:HD11 | 2.24                     | 0.51              |
| 2:F:78:THR:O     | 2:F:78:THR:OG1   | 2.28                     | 0.51              |
| 3:G:192:GLN:HA   | 3:G:196:HIS:HB2  | 1.92                     | 0.51              |
| 4:H:11:PRO:O     | 4:H:13:THR:HG23  | 2.11                     | 0.51              |
| 4:H:65:PHE:HE1   | 4:H:68:GLY:HA3   | 1.76                     | 0.51              |
| 1:A:78:PRO:HB2   | 1:A:79:GLN:CD    | 2.31                     | 0.51              |
| 2:B:204:LEU:HG   | 2:B:245:PRO:HA   | 1.91                     | 0.51              |
| 2:B:233:LYS:HE2  | 2:B:236:MET:SD   | 2.51                     | 0.51              |
| 3:C:213:ASP:O    | 3:C:228:SER:OG   | 2.28                     | 0.51              |
| 4:H:199:SER:O    | 4:H:202:PRO:HD2  | 2.10                     | 0.51              |
| 3:C:37:ALA:HB3   | 3:C:215:VAL:HA   | 1.92                     | 0.51              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:F:265:ILE:HG23 | 2:F:270:LYS:HB3  | 1.93                     | 0.51              |
| 2:F:145:SER:O    | 2:F:148:GLN:N    | 2.35                     | 0.51              |
| 2:F:201:THR:O    | 2:F:202:HIS:CG   | 2.64                     | 0.51              |
| 3:G:173:ALA:HB1  | 3:G:181:ARG:HD2  | 1.93                     | 0.51              |
| 3:G:80:LEU:HD12  | 3:G:80:LEU:H     | 1.76                     | 0.51              |
| 4:H:243:LYS:O    | 4:H:246:LEU:HG   | 2.11                     | 0.51              |
| 1:A:63:MET:O     | 1:A:67:ASN:ND2   | 2.44                     | 0.50              |
| 2:B:11:VAL:HB    | 2:B:22:ALA:HB3   | 1.93                     | 0.50              |
| 2:B:188:LYS:O    | 2:B:192:ASP:N    | 2.27                     | 0.50              |
| 3:C:75:THR:HA    | 3:G:75:THR:HA    | 1.93                     | 0.50              |
| 4:D:25:LEU:HD13  | 4:D:126:MET:CE   | 2.41                     | 0.50              |
| 1:E:150:HIS:O    | 1:E:153:GLY:N    | 2.44                     | 0.50              |
| 2:B:117:ARG:NH1  | 2:B:121:LEU:HD21 | 2.27                     | 0.50              |
| 3:C:140:GLU:O    | 3:C:141:HIS:CG   | 2.63                     | 0.50              |
| 2:F:117:ARG:HH11 | 2:F:121:LEU:HD11 | 1.77                     | 0.50              |
| 2:B:124:VAL:O    | 2:B:128:VAL:HG13 | 2.11                     | 0.50              |
| 3:G:110:GLY:HA2  | 4:H:184:ARG:O    | 2.12                     | 0.50              |
| 4:H:78:PHE:HB2   | 4:H:81:LEU:CD2   | 2.40                     | 0.50              |
| 2:F:10:HIS:NE2   | 2:F:60:ASP:OD2   | 2.44                     | 0.50              |
| 3:G:108:GLU:N    | 3:G:108:GLU:OE2  | 2.44                     | 0.50              |
| 3:G:109:TYR:HE2  | 4:H:181:GLN:HG2  | 1.76                     | 0.50              |
| 3:C:97:GLN:HB2   | 4:D:184:ARG:NH1  | 2.27                     | 0.50              |
| 4:D:24:LYS:HD2   | 4:D:130:THR:CG2  | 2.42                     | 0.50              |
| 4:D:97:TRP:CE3   | 4:D:97:TRP:HA    | 2.46                     | 0.50              |
| 1:E:84:ALA:N     | 1:E:85:ALA:HB3   | 2.26                     | 0.50              |
| 2:F:254:LEU:O    | 2:F:259:ILE:HG13 | 2.11                     | 0.50              |
| 3:G:38:LEU:C     | 3:G:46:LYS:HZ1   | 2.15                     | 0.50              |
| 3:C:152:ARG:HA   | 3:C:155:ALA:HB3  | 1.92                     | 0.50              |
| 3:C:264:PRO:HD3  | 3:C:280:SER:HB3  | 1.93                     | 0.50              |
| 2:F:110:LEU:HB3  | 2:F:120:MET:HG2  | 1.93                     | 0.50              |
| 3:G:104:LEU:HD12 | 3:G:125:ALA:HB3  | 1.92                     | 0.50              |
| 4:H:78:PHE:CE1   | 4:H:113:PHE:HB2  | 2.47                     | 0.50              |
| 1:A:172:LYS:HG3  | 4:D:212:LEU:HB3  | 1.93                     | 0.50              |
| 2:B:202:HIS:HB2  | 2:B:206:GLU:CB   | 2.42                     | 0.50              |
| 2:B:44:SER:O     | 2:B:219:GLY:HA2  | 2.11                     | 0.50              |
| 3:C:18:LEU:HB2   | 3:C:19:GLU:HG2   | 1.92                     | 0.50              |
| 4:D:30:TYR:CD2   | 4:D:34:MET:HB2   | 2.47                     | 0.50              |
| 2:F:52:LEU:HB2   | 2:F:53:ILE:HD12  | 1.94                     | 0.50              |
| 1:A:121:PHE:HA   | 1:A:125:LEU:HG   | 1.94                     | 0.50              |
| 2:B:204:LEU:O    | 2:B:208:ALA:N    | 2.40                     | 0.50              |
| 4:D:9:TYR:N      | 4:D:127:THR:O    | 2.44                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:190:ASP:OD1  | 4:D:190:ASP:N    | 2.43                     | 0.50              |
| 2:F:30:ILE:HD12  | 2:F:36:THR:HG21  | 1.93                     | 0.50              |
| 4:H:14:THR:OG1   | 4:H:15:PHE:N     | 2.45                     | 0.50              |
| 3:C:26:LEU:C     | 3:C:27:ASN:HD22  | 2.15                     | 0.50              |
| 4:D:156:ILE:O    | 4:D:160:ILE:HG23 | 2.12                     | 0.50              |
| 1:E:144:LEU:HD11 | 1:E:148:LEU:HG   | 1.93                     | 0.50              |
| 2:B:186:VAL:HG11 | 2:B:197:VAL:HG11 | 1.94                     | 0.49              |
| 2:B:48:THR:HA    | 2:B:51:LYS:HD2   | 1.94                     | 0.49              |
| 4:D:25:LEU:HD13  | 4:D:126:MET:HE1  | 1.94                     | 0.49              |
| 2:F:133:MET:SD   | 2:F:133:MET:N    | 2.85                     | 0.49              |
| 2:B:118:PRO:O    | 2:B:122:LYS:HG3  | 2.11                     | 0.49              |
| 2:B:246:PHE:HA   | 2:B:249:ARG:HB2  | 1.94                     | 0.49              |
| 3:C:103:VAL:N    | 3:C:141:HIS:O    | 2.34                     | 0.49              |
| 1:E:117:LEU:O    | 1:E:121:PHE:N    | 2.35                     | 0.49              |
| 3:G:44:SER:HB2   | 3:G:220:HIS:H    | 1.77                     | 0.49              |
| 2:F:97:PHE:HB3   | 4:H:165:ARG:HH11 | 1.77                     | 0.49              |
| 1:A:75:TRP:HE3   | 1:A:76:THR:HG22  | 1.76                     | 0.49              |
| 2:B:182:ILE:O    | 2:B:186:VAL:HG23 | 2.12                     | 0.49              |
| 3:C:94:SER:C     | 3:C:96:ALA:H     | 2.13                     | 0.49              |
| 4:D:147:LYS:NZ   | 4:D:147:LYS:HB2  | 2.28                     | 0.49              |
| 1:E:59:ALA:O     | 1:E:63:MET:HG2   | 2.11                     | 0.49              |
| 3:G:1:MET:O      | 3:G:32:GLU:HB2   | 2.12                     | 0.49              |
| 4:D:31:PHE:HD2   | 4:D:122:VAL:HG11 | 1.76                     | 0.49              |
| 3:G:65:GLU:HG3   | 3:G:70:THR:OG1   | 2.13                     | 0.49              |
| 4:D:160:ILE:HD12 | 4:D:237:ARG:HH22 | 1.77                     | 0.49              |
| 3:G:169:LEU:HD13 | 3:G:198:VAL:HG13 | 1.94                     | 0.49              |
| 4:H:112:VAL:HA   | 4:H:115:ARG:HB3  | 1.93                     | 0.49              |
| 4:H:144:THR:O    | 4:H:147:LYS:HG3  | 2.12                     | 0.49              |
| 3:C:69:TYR:HB3   | 3:G:74:GLU:OE2   | 2.13                     | 0.49              |
| 3:G:36:ILE:O     | 3:G:200:LEU:N    | 2.42                     | 0.49              |
| 1:A:88:LEU:O     | 1:A:92:LEU:HD12  | 2.12                     | 0.49              |
| 2:B:150:GLN:O    | 2:B:154:ILE:HG13 | 2.13                     | 0.49              |
| 3:C:54:ASN:HD21  | 3:C:56:LEU:HD13  | 1.77                     | 0.49              |
| 2:F:26:LEU:HB3   | 2:F:28:PHE:CD2   | 2.46                     | 0.49              |
| 1:A:163:LEU:HB2  | 1:A:164:PRO:HD3  | 1.94                     | 0.49              |
| 1:A:39:VAL:HG22  | 1:A:75:TRP:HZ3   | 1.78                     | 0.49              |
| 2:B:41:HIS:CE1   | 2:B:217:ASP:OD1  | 2.66                     | 0.49              |
| 4:D:84:THR:O     | 4:D:85:PHE:HD1   | 1.95                     | 0.49              |
| 1:A:152:ALA:HA   | 1:A:155:LEU:HB3  | 1.93                     | 0.49              |
| 2:B:7:SER:O      | 2:B:9:ASP:N      | 2.44                     | 0.49              |
| 2:F:136:TYR:HB3  | 2:F:139:SER:OG   | 2.12                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:F:54:ASN:HB2   | 2:F:86:VAL:HG13  | 1.94                     | 0.49              |
| 4:H:104:GLU:HA   | 4:H:107:ILE:HD11 | 1.94                     | 0.49              |
| 4:H:86:PHE:HA    | 4:H:108:ASN:HB2  | 1.94                     | 0.49              |
| 4:H:217:ASP:HA   | 4:H:220:THR:HB   | 1.94                     | 0.49              |
| 3:C:56:LEU:HD23  | 4:D:179:ASN:HB3  | 1.95                     | 0.48              |
| 4:D:88:ALA:HB2   | 4:D:94:TRP:NE1   | 2.28                     | 0.48              |
| 1:E:121:PHE:O    | 1:E:125:LEU:HD22 | 2.13                     | 0.48              |
| 1:E:69:PHE:C     | 1:E:71:GLY:HA3   | 2.33                     | 0.48              |
| 2:F:199:SER:HB3  | 2:F:206:GLU:OE1  | 2.13                     | 0.48              |
| 2:F:71:GLY:HA3   | 2:F:85:LYS:NZ    | 2.28                     | 0.48              |
| 2:F:75:GLY:HA2   | 2:F:78:THR:CG2   | 2.43                     | 0.48              |
| 4:H:15:PHE:CE2   | 4:H:16:VAL:HG22  | 2.48                     | 0.48              |
| 1:A:140:TRP:HE1  | 1:A:146:PHE:HD2  | 1.61                     | 0.48              |
| 3:C:264:PRO:HD2  | 3:C:276:ALA:O    | 2.14                     | 0.48              |
| 3:C:38:LEU:HD23  | 3:C:201:VAL:HG22 | 1.94                     | 0.48              |
| 3:G:8:VAL:O      | 3:G:25:GLN:HA    | 2.12                     | 0.48              |
| 3:C:171:GLU:HG2  | 3:C:202:THR:HA   | 1.94                     | 0.48              |
| 3:C:219:GLU:OE2  | 3:C:242:HIS:HA   | 2.13                     | 0.48              |
| 3:C:249:SER:HG   | 3:C:268:LEU:C    | 2.10                     | 0.48              |
| 4:D:112:VAL:HG23 | 4:D:115:ARG:HE   | 1.78                     | 0.48              |
| 1:E:60:ILE:O     | 1:E:63:MET:N     | 2.43                     | 0.48              |
| 4:D:226:GLY:O    | 4:D:228:LYS:N    | 2.44                     | 0.48              |
| 2:F:250:LEU:HG   | 2:F:254:LEU:HG   | 1.95                     | 0.48              |
| 2:F:4:ASN:OD1    | 2:F:30:ILE:N     | 2.35                     | 0.48              |
| 3:G:66:ILE:HG12  | 3:G:67:ALA:N     | 2.29                     | 0.48              |
| 3:G:6:GLU:OE2    | 3:G:6:GLU:HA     | 2.11                     | 0.48              |
| 2:B:13:PHE:CE2   | 2:B:22:ALA:HB2   | 2.49                     | 0.48              |
| 2:B:39:ILE:HD12  | 2:B:213:VAL:HG13 | 1.95                     | 0.48              |
| 4:H:23:ALA:HB3   | 4:H:245:ASP:HB3  | 1.96                     | 0.48              |
| 1:A:15:LEU:HD11  | 1:A:56:ILE:HG23  | 1.96                     | 0.48              |
| 3:C:105:LYS:HA   | 3:C:108:GLU:HB2  | 1.96                     | 0.48              |
| 3:C:36:ILE:HB    | 3:C:199:ILE:HA   | 1.95                     | 0.48              |
| 4:D:224:SER:OG   | 4:D:224:SER:O    | 2.26                     | 0.48              |
| 1:E:117:LEU:HD22 | 1:E:139:TYR:HA   | 1.95                     | 0.48              |
| 1:E:63:MET:HE1   | 4:H:159:VAL:HG13 | 1.95                     | 0.48              |
| 3:G:88:SER:O     | 3:G:167:ILE:HG13 | 2.13                     | 0.48              |
| 3:G:4:LYS:HG2    | 3:G:65:GLU:H     | 1.79                     | 0.48              |
| 4:H:205:VAL:HB   | 4:H:206:PRO:HD3  | 1.95                     | 0.48              |
| 2:B:35:TRP:HD1   | 2:B:210:ALA:CB   | 2.27                     | 0.48              |
| 3:C:103:VAL:O    | 3:C:105:LYS:N    | 2.47                     | 0.48              |
| 4:D:35:ILE:HG22  | 4:D:47:ILE:HG12  | 1.96                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:H:218:LEU:O    | 4:H:222:MET:N    | 2.47                     | 0.48              |
| 3:C:181:ARG:NH2  | 3:C:207:ASP:OD1  | 2.47                     | 0.48              |
| 4:D:92:VAL:CA    | 4:D:93:TYR:HB3   | 2.41                     | 0.48              |
| 3:G:146:LEU:HD13 | 3:G:150:GLN:HG2  | 1.96                     | 0.48              |
| 3:G:209:ALA:HB1  | 3:G:229:PRO:HB3  | 1.95                     | 0.48              |
| 3:G:66:ILE:O     | 3:G:68:GLY:N     | 2.46                     | 0.48              |
| 1:E:17:LEU:HD11  | 4:H:214:VAL:HG11 | 1.95                     | 0.48              |
| 1:A:43:ILE:HA    | 1:A:161:PHE:HZ   | 1.77                     | 0.48              |
| 4:D:257:ILE:HG13 | 4:D:258:LEU:N    | 2.28                     | 0.48              |
| 1:E:111:LEU:HD23 | 1:E:154:ASN:OD1  | 2.14                     | 0.48              |
| 4:H:121:LEU:HD12 | 4:H:122:VAL:N    | 2.29                     | 0.48              |
| 4:H:12:GLY:HA3   | 4:H:15:PHE:CB    | 2.41                     | 0.48              |
| 4:H:197:ALA:O    | 4:H:200:VAL:HG22 | 2.14                     | 0.48              |
| 2:B:26:LEU:HD12  | 2:B:221:LEU:HD22 | 1.95                     | 0.48              |
| 3:C:228:SER:O    | 3:C:230:LYS:N    | 2.47                     | 0.48              |
| 4:D:151:VAL:CG1  | 4:D:153:VAL:HG22 | 2.43                     | 0.48              |
| 1:A:31:ILE:HG12  | 4:D:175:VAL:HG22 | 1.95                     | 0.48              |
| 4:D:66:TRP:CH2   | 4:H:195:LYS:HB2  | 2.47                     | 0.48              |
| 3:C:269:THR:HG22 | 3:C:270:MET:H    | 1.79                     | 0.47              |
| 3:C:80:LEU:O     | 3:C:84:ARG:HB2   | 2.14                     | 0.47              |
| 2:F:231:PHE:CD1  | 2:F:245:PRO:HD3  | 2.49                     | 0.47              |
| 4:H:76:ILE:HG13  | 4:H:113:PHE:CE1  | 2.49                     | 0.47              |
| 4:H:138:ALA:HA   | 4:H:141:TRP:CE2  | 2.48                     | 0.47              |
| 4:H:8:ARG:HB3    | 4:H:9:TYR:HB2    | 1.96                     | 0.47              |
| 1:A:114:PHE:CE1  | 1:A:150:HIS:HE1  | 2.32                     | 0.47              |
| 2:B:147:GLY:HA2  | 2:B:174:LEU:HD11 | 1.96                     | 0.47              |
| 2:F:119:GLU:HG3  | 2:F:123:ILE:HG13 | 1.95                     | 0.47              |
| 3:G:132:VAL:HG21 | 3:G:153:ARG:CG   | 2.44                     | 0.47              |
| 3:G:36:ILE:HB    | 3:G:199:ILE:HA   | 1.94                     | 0.47              |
| 4:H:175:VAL:O    | 4:H:179:ASN:ND2  | 2.47                     | 0.47              |
| 2:B:28:PHE:HD1   | 2:B:29:ALA:N     | 2.11                     | 0.47              |
| 3:C:192:GLN:HB2  | 3:C:198:VAL:HG21 | 1.96                     | 0.47              |
| 1:E:26:ARG:HG2   | 1:E:68:ILE:CD1   | 2.40                     | 0.47              |
| 2:B:165:ILE:HD11 | 2:B:195:LEU:HD12 | 1.95                     | 0.47              |
| 2:B:26:LEU:HD13  | 2:B:216:LEU:CD2  | 2.45                     | 0.47              |
| 2:B:26:LEU:HD11  | 2:B:28:PHE:HD2   | 1.79                     | 0.47              |
| 3:C:208:VAL:HG13 | 3:C:229:PRO:HG3  | 1.97                     | 0.47              |
| 4:D:124:THR:O    | 4:D:128:VAL:HG23 | 2.14                     | 0.47              |
| 4:D:48:SER:OG    | 4:D:114:ILE:HB   | 2.15                     | 0.47              |
| 4:D:107:ILE:O    | 4:D:111:TYR:N    | 2.38                     | 0.47              |
| 2:F:221:LEU:HD12 | 2:F:222:LEU:H    | 1.78                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:H:156:ILE:O    | 4:H:159:VAL:HG12 | 2.14                     | 0.47              |
| 2:B:131:VAL:HG23 | 2:B:133:MET:HG2  | 1.96                     | 0.47              |
| 2:B:202:HIS:HB2  | 2:B:206:GLU:CG   | 2.45                     | 0.47              |
| 2:B:214:LEU:HB3  | 2:B:221:LEU:CD1  | 2.45                     | 0.47              |
| 4:D:214:VAL:O    | 4:D:218:LEU:N    | 2.44                     | 0.47              |
| 1:E:89:THR:OG1   | 1:E:90:VAL:N     | 2.47                     | 0.47              |
| 2:B:54:ASN:HB2   | 2:B:83:ARG:HG3   | 1.96                     | 0.47              |
| 3:C:97:GLN:HE21  | 4:D:180:ALA:HB1  | 1.80                     | 0.47              |
| 3:G:81:LYS:HG3   | 3:G:114:PHE:CD1  | 2.50                     | 0.47              |
| 2:B:23:LEU:HD22  | 2:B:26:LEU:HD22  | 1.97                     | 0.47              |
| 3:C:117:SER:HB3  | 3:C:120:GLU:OE2  | 2.15                     | 0.47              |
| 3:C:8:VAL:HG13   | 3:C:59:PRO:HB3   | 1.96                     | 0.47              |
| 1:E:21:MET:O     | 1:E:24:VAL:HG12  | 2.13                     | 0.47              |
| 1:E:30:ILE:HG21  | 1:E:40:THR:HG21  | 1.97                     | 0.47              |
| 2:F:68:THR:CB    | 2:F:73:LYS:HA    | 2.38                     | 0.47              |
| 3:G:41:HIS:NE2   | 3:G:242:HIS:CD2  | 2.82                     | 0.47              |
| 3:C:38:LEU:N     | 3:C:200:LEU:O    | 2.46                     | 0.47              |
| 4:D:140:GLU:HA   | 4:D:143:LEU:HB3  | 1.97                     | 0.47              |
| 4:D:144:THR:O    | 4:D:147:LYS:HG3  | 2.15                     | 0.47              |
| 1:E:57:LEU:HD22  | 1:E:90:VAL:O     | 2.14                     | 0.47              |
| 1:A:81:PHE:HB2   | 1:A:127:MET:CE   | 2.45                     | 0.47              |
| 1:A:43:ILE:HG13  | 1:A:161:PHE:CE1  | 2.50                     | 0.47              |
| 3:C:215:VAL:HG12 | 3:C:216:LEU:N    | 2.30                     | 0.47              |
| 4:D:173:GLN:O    | 4:D:177:ILE:HG13 | 2.15                     | 0.47              |
| 2:F:266:ASP:OD1  | 2:F:266:ASP:N    | 2.45                     | 0.47              |
| 3:G:160:LEU:HD22 | 3:G:164:PRO:HD2  | 1.97                     | 0.47              |
| 1:A:28:PHE:HD2   | 1:A:30:ILE:HG13  | 1.80                     | 0.46              |
| 2:B:173:MET:HB3  | 3:C:93:PHE:CZ    | 2.51                     | 0.46              |
| 2:B:74:LEU:HD12  | 2:B:79:VAL:HG23  | 1.97                     | 0.46              |
| 3:C:18:LEU:HA    | 3:C:19:GLU:HA    | 1.27                     | 0.46              |
| 3:C:99:PHE:CD2   | 4:D:201:VAL:HG12 | 2.50                     | 0.46              |
| 3:G:38:LEU:HD12  | 3:G:216:LEU:HB2  | 1.97                     | 0.46              |
| 4:H:55:VAL:HG23  | 4:H:125:VAL:HG11 | 1.96                     | 0.46              |
| 1:A:9:LEU:HD23   | 1:A:9:LEU:HA     | 1.67                     | 0.46              |
| 3:C:38:LEU:HB3   | 3:C:201:VAL:HA   | 1.98                     | 0.46              |
| 2:F:50:SER:OG    | 2:F:168:ASP:OD2  | 2.16                     | 0.46              |
| 3:G:19:GLU:OE1   | 3:G:20:ALA:N     | 2.40                     | 0.46              |
| 4:H:6:ILE:HA     | 4:H:7:GLY:HA3    | 1.70                     | 0.46              |
| 3:C:77:ASN:HA    | 3:C:80:LEU:HD11  | 1.97                     | 0.46              |
| 3:G:95:GLU:HG2   | 3:G:152:ARG:HH21 | 1.80                     | 0.46              |
| 4:H:185:GLY:HA3  | 4:H:186:ALA:HB2  | 1.98                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:18:LEU:O     | 1:A:21:MET:HG2   | 2.16                     | 0.46              |
| 3:C:160:LEU:HD13 | 3:C:167:ILE:HD12 | 1.96                     | 0.46              |
| 3:C:269:THR:O    | 3:C:273:LEU:N    | 2.48                     | 0.46              |
| 1:A:79:GLN:NE2   | 4:D:68:GLY:O     | 2.30                     | 0.46              |
| 4:D:97:TRP:HE3   | 4:D:97:TRP:HA    | 1.80                     | 0.46              |
| 3:G:109:TYR:CE2  | 4:H:181:GLN:HG2  | 2.51                     | 0.46              |
| 1:A:74:ILE:HD11  | 1:A:80:ILE:HG22  | 1.97                     | 0.46              |
| 3:G:135:LYS:O    | 3:G:138:LEU:N    | 2.38                     | 0.46              |
| 3:G:85:ARG:HE    | 3:G:86:LYS:HG3   | 1.80                     | 0.46              |
| 4:H:133:LEU:HB3  | 4:H:164:LEU:HD21 | 1.97                     | 0.46              |
| 4:H:73:ILE:O     | 4:H:76:ILE:HG22  | 2.14                     | 0.46              |
| 2:B:171:THR:O    | 2:B:179:LYS:HD3  | 2.16                     | 0.46              |
| 3:C:192:GLN:HG3  | 3:C:198:VAL:HB   | 1.98                     | 0.46              |
| 4:D:6:ILE:O      | 4:D:6:ILE:HG13   | 2.14                     | 0.46              |
| 1:E:14:LEU:O     | 1:E:18:LEU:HD13  | 2.16                     | 0.46              |
| 2:F:25:ASP:O     | 2:F:26:LEU:HB2   | 2.16                     | 0.46              |
| 3:G:210:ASP:OD1  | 3:G:210:ASP:N    | 2.48                     | 0.46              |
| 4:H:170:LEU:O    | 4:H:174:THR:OG1  | 2.34                     | 0.46              |
| 2:B:196:THR:O    | 2:B:196:THR:OG1  | 2.28                     | 0.46              |
| 2:B:26:LEU:HD13  | 2:B:216:LEU:HD21 | 1.96                     | 0.46              |
| 4:D:163:ALA:O    | 4:D:167:VAL:HG23 | 2.16                     | 0.46              |
| 1:A:29:LYS:HD3   | 4:D:174:THR:HG22 | 1.97                     | 0.46              |
| 2:F:95:ASN:OD1   | 4:H:214:VAL:HA   | 2.16                     | 0.46              |
| 1:A:111:LEU:HD23 | 1:A:150:HIS:ND1  | 2.31                     | 0.46              |
| 1:A:161:PHE:HA   | 1:A:165:LEU:HD22 | 1.98                     | 0.46              |
| 1:A:44:MET:HG2   | 1:A:45:LEU:HD23  | 1.98                     | 0.46              |
| 2:B:200:ILE:HG22 | 2:B:201:THR:N    | 2.30                     | 0.46              |
| 4:D:155:MET:O    | 4:D:159:VAL:HG23 | 2.15                     | 0.46              |
| 3:G:227:ALA:CB   | 3:G:232:VAL:HB   | 2.46                     | 0.46              |
| 4:H:137:ASP:HB3  | 4:H:141:TRP:CZ3  | 2.51                     | 0.46              |
| 1:E:120:GLY:HA2  | 1:E:123:VAL:HG13 | 1.98                     | 0.46              |
| 1:E:27:ILE:HG13  | 1:E:28:PHE:N     | 2.31                     | 0.46              |
| 2:F:148:GLN:O    | 2:F:152:VAL:HG23 | 2.16                     | 0.46              |
| 2:F:3:ASP:C      | 2:F:70:ASP:HB2   | 2.36                     | 0.46              |
| 3:G:160:LEU:HD21 | 3:G:167:ILE:HB   | 1.97                     | 0.46              |
| 1:E:17:LEU:HG    | 4:H:211:SER:O    | 2.16                     | 0.46              |
| 2:B:3:ASP:OD2    | 2:B:32:ARG:HG3   | 2.16                     | 0.46              |
| 4:D:192:GLY:HA3  | 4:D:195:LYS:HB2  | 1.98                     | 0.46              |
| 2:F:11:VAL:O     | 2:F:22:ALA:HB3   | 2.16                     | 0.46              |
| 2:F:32:ARG:HA    | 2:F:196:THR:HB   | 1.98                     | 0.46              |
| 4:H:221:ALA:HA   | 4:H:224:SER:HB3  | 1.98                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:H:74:TRP:CG    | 4:H:75:MET:N     | 2.83                     | 0.46              |
| 2:B:95:ASN:O     | 4:D:218:LEU:CD1  | 2.59                     | 0.45              |
| 4:D:43:SER:O     | 4:D:47:ILE:HB    | 2.16                     | 0.45              |
| 1:E:22:CYS:HA    | 1:E:25:LEU:HB3   | 1.96                     | 0.45              |
| 4:D:119:ILE:HA   | 4:D:122:VAL:HG12 | 1.98                     | 0.45              |
| 4:D:139:MET:HE3  | 4:D:140:GLU:OE2  | 2.15                     | 0.45              |
| 4:D:19:VAL:HG23  | 4:D:245:ASP:OD1  | 2.15                     | 0.45              |
| 2:F:11:VAL:HG21  | 2:F:52:LEU:HD11  | 1.98                     | 0.45              |
| 2:F:72:VAL:HG23  | 2:F:85:LYS:HD2   | 1.98                     | 0.45              |
| 3:G:225:LYS:HD3  | 3:G:225:LYS:HA   | 1.63                     | 0.45              |
| 2:F:95:ASN:O     | 4:H:218:LEU:HD13 | 2.16                     | 0.45              |
| 4:H:52:LEU:HD12  | 4:H:55:VAL:HG13  | 1.98                     | 0.45              |
| 4:H:94:TRP:HB2   | 4:H:95:HIS:CA    | 2.46                     | 0.45              |
| 1:E:26:ARG:NH1   | 1:E:41:ASP:OD1   | 2.50                     | 0.45              |
| 2:F:35:TRP:HB2   | 2:F:190:LYS:HZ2  | 1.81                     | 0.45              |
| 2:F:164:VAL:HA   | 2:F:196:THR:HG23 | 1.97                     | 0.45              |
| 2:F:48:THR:HA    | 2:F:51:LYS:HZ1   | 1.81                     | 0.45              |
| 2:F:5:ILE:HG22   | 2:F:70:ASP:OD1   | 2.16                     | 0.45              |
| 3:G:108:GLU:HA   | 3:G:111:PRO:HD2  | 1.97                     | 0.45              |
| 4:D:158:LEU:HD11 | 4:D:233:ARG:HH12 | 1.82                     | 0.45              |
| 1:E:61:LEU:O     | 1:E:65:ILE:HG13  | 2.16                     | 0.45              |
| 2:F:117:ARG:O    | 2:F:121:LEU:N    | 2.29                     | 0.45              |
| 2:F:251:LYS:O    | 2:F:254:LEU:N    | 2.49                     | 0.45              |
| 4:H:133:LEU:HA   | 4:H:136:ALA:HB3  | 1.98                     | 0.45              |
| 4:H:86:PHE:CE1   | 4:H:96:TRP:HB3   | 2.52                     | 0.45              |
| 3:C:278:LYS:HB3  | 3:C:278:LYS:HE2  | 1.81                     | 0.45              |
| 1:E:118:GLU:HA   | 1:E:121:PHE:CD1  | 2.52                     | 0.45              |
| 2:F:117:ARG:CZ   | 4:H:238:ILE:HG12 | 2.47                     | 0.45              |
| 2:F:6:ILE:HB     | 2:F:28:PHE:O     | 2.16                     | 0.45              |
| 3:G:40:GLY:HA2   | 3:G:242:HIS:HE1  | 1.81                     | 0.45              |
| 2:F:117:ARG:HG3  | 4:H:236:TYR:HA   | 1.98                     | 0.45              |
| 4:H:249:VAL:HG13 | 4:H:250:ALA:N    | 2.32                     | 0.45              |
| 4:H:47:ILE:O     | 4:H:47:ILE:HG12  | 2.17                     | 0.45              |
| 2:B:165:ILE:HB   | 2:B:197:VAL:HG13 | 1.99                     | 0.45              |
| 1:E:117:LEU:HB3  | 1:E:121:PHE:HB3  | 1.99                     | 0.45              |
| 2:F:157:ILE:HG22 | 2:F:162:PRO:HG3  | 1.98                     | 0.45              |
| 2:F:249:ARG:HA   | 2:F:249:ARG:HD2  | 1.68                     | 0.45              |
| 3:G:117:SER:HB3  | 3:G:120:GLU:HB3  | 1.98                     | 0.45              |
| 4:H:76:ILE:HD11  | 4:H:117:ALA:HB2  | 1.98                     | 0.45              |
| 4:H:85:PHE:CB    | 4:H:99:PHE:HB2   | 2.45                     | 0.45              |
| 1:A:39:VAL:HG23  | 1:A:149:TYR:CE2  | 2.52                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:G:257:GLU:HG2  | 3:G:263:LEU:O    | 2.17                     | 0.45              |
| 3:G:35:PHE:HB3   | 3:G:212:ALA:HA   | 1.96                     | 0.45              |
| 2:B:253:LEU:O    | 2:B:257:ARG:HB2  | 2.17                     | 0.45              |
| 3:C:90:ALA:CB    | 3:C:169:LEU:HD23 | 2.47                     | 0.45              |
| 2:F:257:ARG:HD2  | 3:G:278:LYS:HG3  | 1.99                     | 0.45              |
| 4:H:205:VAL:HA   | 4:H:208:PHE:HB3  | 1.98                     | 0.45              |
| 4:H:20:ASP:OD1   | 4:H:22:ARG:HB2   | 2.16                     | 0.45              |
| 1:A:43:ILE:HG23  | 1:A:165:LEU:HD11 | 1.98                     | 0.45              |
| 3:G:110:GLY:CA   | 4:H:184:ARG:HG2  | 2.42                     | 0.45              |
| 2:B:39:ILE:HG23  | 2:B:201:THR:HG23 | 1.99                     | 0.44              |
| 3:C:54:ASN:ND2   | 3:C:56:LEU:HD13  | 2.33                     | 0.44              |
| 2:F:147:GLY:N    | 2:F:174:LEU:HD13 | 2.32                     | 0.44              |
| 2:F:51:LYS:HB2   | 2:F:51:LYS:HE2   | 1.81                     | 0.44              |
| 3:G:187:LEU:HB2  | 3:G:190:ASP:N    | 2.32                     | 0.44              |
| 4:H:113:PHE:O    | 4:H:117:ALA:HB3  | 2.17                     | 0.44              |
| 1:A:29:LYS:CD    | 4:D:174:THR:HG22 | 2.48                     | 0.44              |
| 2:B:120:MET:O    | 2:B:124:VAL:HB   | 2.18                     | 0.44              |
| 3:C:108:GLU:O    | 3:C:112:ARG:HG3  | 2.17                     | 0.44              |
| 3:C:162:TYR:CE1  | 3:C:164:PRO:HG3  | 2.52                     | 0.44              |
| 3:C:219:GLU:HB2  | 3:C:224:ILE:HG21 | 1.98                     | 0.44              |
| 2:F:158:LEU:O    | 2:F:161:LYS:HG2  | 2.17                     | 0.44              |
| 4:H:81:LEU:HD22  | 4:H:84:THR:HG21  | 1.98                     | 0.44              |
| 1:A:83:TYR:HD1   | 1:A:84:ALA:N     | 2.08                     | 0.44              |
| 3:C:30:LEU:HD13  | 3:C:36:ILE:HD13  | 1.99                     | 0.44              |
| 4:D:13:THR:HA    | 4:D:14:THR:HA    | 1.47                     | 0.44              |
| 2:F:230:ILE:HG23 | 2:F:231:PHE:H    | 1.82                     | 0.44              |
| 2:F:251:LYS:NZ   | 2:F:252:GLN:HE22 | 2.14                     | 0.44              |
| 1:A:156:ALA:O    | 1:A:161:PHE:CD1  | 2.70                     | 0.44              |
| 4:D:165:ARG:NH2  | 4:D:169:THR:HG1  | 2.16                     | 0.44              |
| 4:D:234:THR:HG22 | 4:D:235:ARG:H    | 1.82                     | 0.44              |
| 2:F:96:GLN:HA    | 4:H:218:LEU:CD1  | 2.47                     | 0.44              |
| 3:G:87:VAL:HG12  | 3:G:89:LEU:HD11  | 1.99                     | 0.44              |
| 4:H:219:SER:HA   | 4:H:222:MET:HB2  | 1.99                     | 0.44              |
| 2:F:116:PRO:HA   | 4:H:234:THR:HG21 | 1.97                     | 0.44              |
| 2:B:96:GLN:HB3   | 4:D:221:ALA:HB3  | 1.99                     | 0.44              |
| 4:D:6:ILE:HA     | 4:D:7:GLY:HA3    | 1.61                     | 0.44              |
| 1:E:108:GLN:CD   | 1:E:111:LEU:HB2  | 2.38                     | 0.44              |
| 1:E:54:THR:HB    | 1:E:95:ARG:HB2   | 1.99                     | 0.44              |
| 4:H:21:PRO:HG2   | 4:H:134:GLU:HB3  | 1.99                     | 0.44              |
| 2:B:228:GLU:HB3  | 2:B:264:GLU:OE1  | 2.17                     | 0.44              |
| 3:C:257:GLU:HG2  | 3:C:263:LEU:H    | 1.83                     | 0.44              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:F:91:GLN:HB2   | 2:F:169:GLU:HB2  | 2.00                     | 0.44              |
| 3:G:219:GLU:HG2  | 3:G:224:ILE:HG21 | 2.00                     | 0.44              |
| 3:G:75:THR:HG22  | 3:G:76:GLY:H     | 1.83                     | 0.44              |
| 1:A:74:ILE:HD11  | 1:A:80:ILE:HA    | 2.00                     | 0.44              |
| 2:B:36:THR:O     | 2:B:199:SER:N    | 2.41                     | 0.44              |
| 3:C:102:THR:HG22 | 3:C:104:LEU:N    | 2.32                     | 0.44              |
| 3:C:236:SER:HA   | 3:C:239:LEU:HD23 | 2.00                     | 0.44              |
| 3:C:7:ASN:O      | 3:C:62:GLY:HA3   | 2.17                     | 0.44              |
| 3:C:97:GLN:HB2   | 4:D:184:ARG:HH11 | 1.81                     | 0.44              |
| 2:F:8:PHE:N      | 2:F:27:SER:H     | 2.15                     | 0.44              |
| 3:G:68:GLY:HA3   | 3:G:83:LEU:HD13  | 1.99                     | 0.44              |
| 3:C:156:LEU:HA   | 3:C:159:VAL:HG22 | 2.00                     | 0.44              |
| 2:F:275:LEU:O    | 2:F:279:ASN:HB3  | 2.17                     | 0.44              |
| 4:H:48:SER:OG    | 4:H:49:ILE:N     | 2.51                     | 0.44              |
| 3:C:153:ARG:HG2  | 3:C:184:MET:HE3  | 2.00                     | 0.44              |
| 4:D:94:TRP:HA    | 4:D:95:HIS:HA    | 1.44                     | 0.44              |
| 2:F:178:GLY:O    | 2:F:182:ILE:HG22 | 2.18                     | 0.44              |
| 3:G:114:PHE:HE2  | 3:G:162:TYR:HE1  | 1.66                     | 0.44              |
| 2:B:106:VAL:HG21 | 2:B:128:VAL:CG1  | 2.44                     | 0.43              |
| 2:B:231:PHE:CD1  | 2:B:244:ILE:HG22 | 2.53                     | 0.43              |
| 2:F:35:TRP:HE3   | 2:F:190:LYS:HD2  | 1.82                     | 0.43              |
| 3:C:253:ALA:HA   | 3:C:263:LEU:HD22 | 1.99                     | 0.43              |
| 4:D:65:PHE:O     | 4:D:69:VAL:HG13  | 2.18                     | 0.43              |
| 1:E:72:PHE:CG    | 1:E:72:PHE:O     | 2.71                     | 0.43              |
| 1:A:74:ILE:H     | 1:A:74:ILE:CD1   | 2.09                     | 0.43              |
| 2:B:147:GLY:O    | 2:B:182:ILE:HD11 | 2.18                     | 0.43              |
| 3:C:3:ILE:HB     | 3:C:30:LEU:HD12  | 2.00                     | 0.43              |
| 3:C:41:HIS:O     | 3:C:46:LYS:NZ    | 2.37                     | 0.43              |
| 4:D:66:TRP:CD1   | 4:D:70:LYS:HB2   | 2.53                     | 0.43              |
| 3:G:62:GLY:O     | 3:G:73:PRO:HD3   | 2.19                     | 0.43              |
| 3:C:75:THR:HG22  | 3:C:76:GLY:H     | 1.83                     | 0.43              |
| 2:F:10:HIS:O     | 2:F:60:ASP:N     | 2.50                     | 0.43              |
| 2:F:26:LEU:HD11  | 2:F:216:LEU:HD13 | 1.99                     | 0.43              |
| 3:G:250:ALA:HB2  | 3:G:268:LEU:HA   | 2.00                     | 0.43              |
| 4:H:207:LEU:HD13 | 4:H:207:LEU:O    | 2.18                     | 0.43              |
| 4:H:22:ARG:NH1   | 4:H:241:TRP:CD1  | 2.86                     | 0.43              |
| 4:D:55:VAL:HG11  | 4:D:121:LEU:HB3  | 1.99                     | 0.43              |
| 2:F:51:LYS:O     | 2:F:56:LEU:N     | 2.52                     | 0.43              |
| 2:F:117:ARG:H    | 4:H:234:THR:HG21 | 1.83                     | 0.43              |
| 4:H:22:ARG:HG3   | 4:H:239:LEU:HD11 | 1.99                     | 0.43              |
| 2:B:213:VAL:HG12 | 2:B:230:ILE:HG21 | 2.01                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:49:GLU:O     | 1:E:50:LEU:HG    | 2.17                     | 0.43              |
| 2:F:260:VAL:O    | 2:F:261:LEU:HD12 | 2.19                     | 0.43              |
| 2:F:4:ASN:N      | 2:F:4:ASN:OD1    | 2.51                     | 0.43              |
| 2:B:100:ALA:HA   | 2:B:141:PRO:HD3  | 2.00                     | 0.43              |
| 2:B:3:ASP:CG     | 2:B:32:ARG:HG3   | 2.38                     | 0.43              |
| 4:D:216:LEU:O    | 4:D:220:THR:HG23 | 2.18                     | 0.43              |
| 2:F:217:ASP:HA   | 2:F:218:ASP:HA   | 1.70                     | 0.43              |
| 4:H:147:LYS:HB3  | 4:H:151:VAL:HG13 | 2.00                     | 0.43              |
| 2:B:97:PHE:CZ    | 2:B:141:PRO:HB3  | 2.54                     | 0.43              |
| 3:C:38:LEU:HD12  | 3:C:38:LEU:HA    | 1.68                     | 0.43              |
| 4:D:123:SER:O    | 4:D:126:MET:HB3  | 2.18                     | 0.43              |
| 2:F:110:LEU:CB   | 2:F:120:MET:HG2  | 2.49                     | 0.43              |
| 3:G:116:PHE:HB3  | 3:G:121:ALA:HB2  | 2.01                     | 0.43              |
| 3:G:8:VAL:HG23   | 3:G:26:LEU:HB2   | 2.01                     | 0.43              |
| 4:H:181:GLN:OE1  | 4:H:202:PRO:HB2  | 2.19                     | 0.43              |
| 4:H:68:GLY:O     | 4:H:71:PRO:HD3   | 2.18                     | 0.43              |
| 2:B:275:LEU:HD22 | 3:C:277:ILE:HG21 | 2.01                     | 0.43              |
| 3:C:224:ILE:HG13 | 3:C:225:LYS:N    | 2.34                     | 0.43              |
| 2:F:230:ILE:HG23 | 2:F:231:PHE:N    | 2.34                     | 0.43              |
| 2:F:38:LEU:HD23  | 2:F:216:LEU:HD11 | 2.01                     | 0.43              |
| 4:H:107:ILE:O    | 4:H:110:LEU:HB3  | 2.19                     | 0.43              |
| 4:H:78:PHE:HE1   | 4:H:113:PHE:HB2  | 1.84                     | 0.43              |
| 2:F:154:ILE:O    | 2:F:158:LEU:HD13 | 2.19                     | 0.43              |
| 2:F:52:LEU:HA    | 2:F:57:LEU:O     | 2.19                     | 0.43              |
| 4:H:93:TYR:HE1   | 4:H:94:TRP:CE2   | 2.36                     | 0.43              |
| 1:A:81:PHE:HB2   | 1:A:127:MET:HE3  | 2.01                     | 0.42              |
| 1:A:145:THR:O    | 1:A:149:TYR:HD1  | 2.01                     | 0.42              |
| 3:C:155:ALA:O    | 3:C:159:VAL:HG13 | 2.18                     | 0.42              |
| 3:C:248:ARG:HA   | 3:C:251:ARG:HB2  | 2.01                     | 0.42              |
| 4:D:220:THR:O    | 4:D:224:SER:HB3  | 2.19                     | 0.42              |
| 2:F:56:LEU:CD1   | 4:H:223:GLU:HB3  | 2.49                     | 0.42              |
| 4:H:264:LYS:HB2  | 4:H:264:LYS:HE3  | 1.55                     | 0.42              |
| 4:H:52:LEU:HD12  | 4:H:55:VAL:CG1   | 2.48                     | 0.42              |
| 1:A:43:ILE:C     | 1:A:45:LEU:H     | 2.23                     | 0.42              |
| 2:B:131:VAL:HG23 | 2:B:133:MET:CG   | 2.49                     | 0.42              |
| 4:D:10:LEU:HG    | 4:D:12:GLY:N     | 2.34                     | 0.42              |
| 1:A:45:LEU:HA    | 1:A:48:LEU:HG    | 2.00                     | 0.42              |
| 3:C:220:HIS:CB   | 3:C:222:ARG:HH21 | 2.26                     | 0.42              |
| 3:C:257:GLU:HG2  | 3:C:262:LYS:HA   | 2.00                     | 0.42              |
| 2:F:48:THR:O     | 2:F:48:THR:OG1   | 2.30                     | 0.42              |
| 3:G:171:GLU:O    | 3:G:174:ALA:HB2  | 2.19                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:H:226:GLY:O    | 4:H:228:LYS:HG3  | 2.19                     | 0.42              |
| 1:E:23:VAL:O     | 1:E:27:ILE:HG12  | 2.19                     | 0.42              |
| 3:C:112:ARG:O    | 3:C:113:ASN:HB2  | 2.18                     | 0.42              |
| 3:C:278:LYS:O    | 3:C:282:LYS:HG3  | 2.19                     | 0.42              |
| 4:D:248:PRO:HA   | 4:D:251:TYR:CB   | 2.49                     | 0.42              |
| 1:E:127:MET:O    | 1:E:130:TRP:NE1  | 2.53                     | 0.42              |
| 3:G:11:VAL:HG12  | 3:G:12:TYR:H     | 1.84                     | 0.42              |
| 3:G:38:LEU:CD1   | 3:G:216:LEU:HB2  | 2.49                     | 0.42              |
| 1:A:48:LEU:HD12  | 1:A:57:LEU:HD12  | 2.00                     | 0.42              |
| 2:B:16:PRO:HA    | 2:B:19:PRO:CG    | 2.49                     | 0.42              |
| 3:C:248:ARG:HB2  | 3:C:248:ARG:HE   | 1.49                     | 0.42              |
| 2:F:180:GLU:O    | 2:F:184:ASP:HB2  | 2.19                     | 0.42              |
| 2:F:279:ASN:HD22 | 2:F:279:ASN:H    | 1.66                     | 0.42              |
| 2:F:10:HIS:ND1   | 2:F:60:ASP:HB2   | 2.35                     | 0.42              |
| 2:F:89:VAL:O     | 2:F:168:ASP:N    | 2.51                     | 0.42              |
| 4:H:233:ARG:HB2  | 4:H:233:ARG:NH1  | 2.35                     | 0.42              |
| 1:A:144:LEU:HD13 | 1:E:145:THR:HG23 | 2.02                     | 0.42              |
| 3:C:90:ALA:HB3   | 3:C:169:LEU:HA   | 2.01                     | 0.42              |
| 4:D:175:VAL:O    | 4:D:178:MET:N    | 2.43                     | 0.42              |
| 4:D:201:VAL:O    | 4:D:205:VAL:HG23 | 2.19                     | 0.42              |
| 3:G:130:LYS:HE2  | 3:G:135:LYS:NZ   | 2.34                     | 0.42              |
| 3:G:130:LYS:HE2  | 3:G:135:LYS:HE3  | 2.01                     | 0.42              |
| 2:F:41:HIS:CE1   | 3:G:179:MET:HE2  | 2.54                     | 0.42              |
| 3:G:98:LEU:HD21  | 3:G:154:VAL:CG1  | 2.49                     | 0.42              |
| 4:H:42:VAL:HG23  | 4:H:43:SER:H     | 1.84                     | 0.42              |
| 4:D:165:ARG:NH2  | 4:D:169:THR:OG1  | 2.48                     | 0.42              |
| 4:D:247:ILE:O    | 4:D:251:TYR:HB2  | 2.19                     | 0.42              |
| 4:D:85:PHE:C     | 4:D:87:MET:H     | 2.23                     | 0.42              |
| 2:F:21:PRO:HB2   | 2:F:24:SER:OG    | 2.20                     | 0.42              |
| 2:F:265:ILE:CG1  | 2:F:270:LYS:HD2  | 2.47                     | 0.42              |
| 1:E:127:MET:HB3  | 4:H:116:PHE:CE2  | 2.54                     | 0.42              |
| 1:A:160:ILE:O    | 1:A:165:LEU:HB2  | 2.19                     | 0.42              |
| 4:D:235:ARG:HG2  | 4:D:236:TYR:N    | 2.34                     | 0.42              |
| 2:F:179:LYS:NZ   | 2:F:183:LEU:HD13 | 2.35                     | 0.42              |
| 2:F:61:ASP:OD2   | 2:F:64:LYS:HB3   | 2.19                     | 0.42              |
| 4:H:254:LEU:O    | 4:H:257:ILE:HG22 | 2.20                     | 0.42              |
| 1:A:112:ALA:HA   | 1:A:115:LEU:HB3  | 2.01                     | 0.42              |
| 1:A:32:ASP:OD2   | 4:D:182:ARG:NH2  | 2.45                     | 0.42              |
| 1:A:50:LEU:CD1   | 1:A:166:VAL:HG21 | 2.50                     | 0.42              |
| 3:C:157:ALA:O    | 3:C:161:ALA:N    | 2.53                     | 0.42              |
| 3:C:251:ARG:O    | 3:C:255:LYS:HG2  | 2.20                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:26:ARG:CG    | 1:E:68:ILE:HD11  | 2.41                     | 0.42              |
| 3:G:263:LEU:HA   | 3:G:263:LEU:HD23 | 1.79                     | 0.42              |
| 3:G:64:ILE:HB    | 3:G:71:ILE:CG1   | 2.50                     | 0.42              |
| 4:H:76:ILE:HA    | 4:H:76:ILE:HD12  | 1.86                     | 0.42              |
| 1:A:19:THR:HA    | 1:A:22:CYS:SG    | 2.60                     | 0.41              |
| 1:A:24:VAL:O     | 1:A:24:VAL:HG13  | 2.20                     | 0.41              |
| 1:A:7:TYR:HD2    | 1:A:8:GLN:HG3    | 1.85                     | 0.41              |
| 2:B:74:LEU:HA    | 2:B:75:GLY:HA2   | 1.72                     | 0.41              |
| 3:C:107:VAL:HG21 | 3:C:129:LEU:HD21 | 2.01                     | 0.41              |
| 3:C:27:ASN:HD22  | 3:C:27:ASN:N     | 2.18                     | 0.41              |
| 4:D:52:LEU:HB2   | 4:D:118:MET:HE1  | 2.02                     | 0.41              |
| 1:E:70:LEU:N     | 1:E:71:GLY:CA    | 2.81                     | 0.41              |
| 2:F:30:ILE:HG23  | 2:F:36:THR:OG1   | 2.20                     | 0.41              |
| 3:G:159:VAL:O    | 3:G:160:LEU:HD23 | 2.19                     | 0.41              |
| 4:H:89:GLY:HA2   | 4:H:92:VAL:HB    | 2.02                     | 0.41              |
| 2:B:235:GLU:O    | 2:B:238:LYS:N    | 2.52                     | 0.41              |
| 3:C:16:SER:HA    | 3:C:18:LEU:H     | 1.85                     | 0.41              |
| 4:D:143:LEU:HD22 | 4:D:146:LEU:HD22 | 2.02                     | 0.41              |
| 2:F:221:LEU:HD21 | 2:F:224:GLN:HB2  | 2.01                     | 0.41              |
| 3:G:108:GLU:OE1  | 3:G:125:ALA:HB2  | 2.20                     | 0.41              |
| 4:H:15:PHE:CD2   | 4:H:16:VAL:HG22  | 2.55                     | 0.41              |
| 2:B:106:VAL:HG12 | 2:B:159:ALA:HB2  | 2.02                     | 0.41              |
| 2:B:177:GLU:HG2  | 2:B:177:GLU:O    | 2.20                     | 0.41              |
| 2:B:222:LEU:HD22 | 2:B:233:LYS:HE2  | 2.01                     | 0.41              |
| 3:C:152:ARG:O    | 3:C:156:LEU:HB2  | 2.20                     | 0.41              |
| 3:C:46:LYS:HE2   | 3:C:203:HIS:CE1  | 2.55                     | 0.41              |
| 4:D:120:ILE:O    | 4:D:124:THR:OG1  | 2.32                     | 0.41              |
| 4:D:252:CYS:O    | 4:D:256:THR:HG23 | 2.19                     | 0.41              |
| 2:F:4:ASN:HD21   | 2:F:30:ILE:HG12  | 1.85                     | 0.41              |
| 3:G:54:ASN:OD1   | 3:G:54:ASN:N     | 2.52                     | 0.41              |
| 2:F:109:GLY:HA3  | 4:H:225:ARG:HH12 | 1.84                     | 0.41              |
| 2:B:255:LYS:HG2  | 2:B:260:VAL:HG13 | 2.02                     | 0.41              |
| 3:C:109:TYR:CD2  | 4:D:184:ARG:HB3  | 2.55                     | 0.41              |
| 4:D:185:GLY:HA3  | 4:D:186:ALA:HA   | 1.85                     | 0.41              |
| 2:F:252:GLN:O    | 2:F:256:GLU:HB2  | 2.19                     | 0.41              |
| 2:F:275:LEU:HD23 | 2:F:278:LEU:HB2  | 2.01                     | 0.41              |
| 2:F:5:ILE:HG22   | 2:F:68:THR:OG1   | 2.20                     | 0.41              |
| 4:H:125:VAL:O    | 4:H:129:THR:OG1  | 2.28                     | 0.41              |
| 4:H:43:SER:O     | 4:H:46:VAL:HB    | 2.20                     | 0.41              |
| 1:A:161:PHE:O    | 1:A:166:VAL:HG23 | 2.21                     | 0.41              |
| 2:B:81:GLU:HA    | 2:B:84:GLU:HG3   | 2.01                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 4:D:9:TYR:CE2    | 4:D:60:LEU:HD13  | 2.56                     | 0.41              |
| 1:E:144:LEU:O    | 1:E:144:LEU:HD12 | 2.21                     | 0.41              |
| 2:F:83:ARG:HG3   | 2:F:83:ARG:HH11  | 1.85                     | 0.41              |
| 4:H:173:GLN:O    | 4:H:177:ILE:HG13 | 2.20                     | 0.41              |
| 4:H:17:TYR:O     | 4:H:19:VAL:HB    | 2.21                     | 0.41              |
| 1:A:115:LEU:HD12 | 1:A:150:HIS:CD2  | 2.55                     | 0.41              |
| 1:A:43:ILE:O     | 1:A:45:LEU:N     | 2.53                     | 0.41              |
| 1:A:65:ILE:HG21  | 1:A:83:TYR:HA    | 2.02                     | 0.41              |
| 3:C:67:ALA:CB    | 3:C:166:ILE:HD11 | 2.51                     | 0.41              |
| 1:A:29:LYS:HE3   | 4:D:203:MET:HG2  | 2.02                     | 0.41              |
| 4:D:76:ILE:HD12  | 4:D:77:VAL:N     | 2.25                     | 0.41              |
| 3:G:147:SER:O    | 3:G:151:MET:HG2  | 2.20                     | 0.41              |
| 3:G:224:ILE:O    | 3:G:225:LYS:NZ   | 2.26                     | 0.41              |
| 4:H:65:PHE:CE1   | 4:H:68:GLY:HA3   | 2.54                     | 0.41              |
| 1:A:111:LEU:HA   | 1:A:114:PHE:HB3  | 2.02                     | 0.41              |
| 1:A:167:LEU:HD23 | 1:A:167:LEU:HA   | 1.80                     | 0.41              |
| 2:B:8:PHE:CD1    | 2:B:65:SER:HB3   | 2.55                     | 0.41              |
| 3:C:9:SER:O      | 3:C:60:THR:OG1   | 2.33                     | 0.41              |
| 4:D:86:PHE:O     | 4:D:87:MET:HG3   | 2.21                     | 0.41              |
| 1:E:41:ASP:C     | 1:E:43:ILE:H     | 2.24                     | 0.41              |
| 3:C:69:TYR:HD2   | 3:G:74:GLU:OE2   | 2.02                     | 0.41              |
| 4:H:39:ASN:CG    | 4:H:40:ASN:H     | 2.24                     | 0.41              |
| 2:B:157:ILE:CG2  | 2:B:162:PRO:HG3  | 2.50                     | 0.41              |
| 2:B:228:GLU:O    | 2:B:232:PRO:HG2  | 2.20                     | 0.41              |
| 3:C:54:ASN:CB    | 3:C:87:VAL:HB    | 2.50                     | 0.41              |
| 4:D:170:LEU:HA   | 4:D:170:LEU:HD13 | 1.88                     | 0.41              |
| 3:G:227:ALA:HB1  | 3:G:231:GLU:HB3  | 2.03                     | 0.41              |
| 3:G:227:ALA:HB3  | 3:G:232:VAL:HB   | 2.02                     | 0.41              |
| 2:F:56:LEU:HD13  | 4:H:223:GLU:HB3  | 2.03                     | 0.41              |
| 1:A:13:THR:H     | 1:A:13:THR:HG23  | 1.51                     | 0.41              |
| 1:A:29:LYS:CE    | 4:D:203:MET:HE3  | 2.51                     | 0.41              |
| 3:C:112:ARG:C    | 3:C:114:PHE:H    | 2.23                     | 0.41              |
| 3:C:257:GLU:HA   | 3:C:262:LYS:H    | 1.84                     | 0.41              |
| 1:A:139:TYR:O    | 1:A:140:TRP:HD1  | 2.04                     | 0.41              |
| 2:B:69:VAL:CG1   | 2:B:85:LYS:HZ2   | 2.34                     | 0.41              |
| 3:C:190:ASP:OD1  | 3:C:190:ASP:N    | 2.53                     | 0.41              |
| 4:D:33:ILE:HG22  | 4:D:33:ILE:O     | 2.21                     | 0.41              |
| 1:E:21:MET:HB2   | 4:H:170:LEU:HD23 | 2.03                     | 0.41              |
| 2:F:35:TRP:CZ3   | 2:F:187:ARG:HG3  | 2.56                     | 0.41              |
| 2:F:38:LEU:HA    | 2:F:214:LEU:O    | 2.20                     | 0.41              |
| 1:A:69:PHE:CE1   | 1:A:74:ILE:HG13  | 2.56                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:269:THR:HG22 | 3:C:271:PRO:HD2  | 2.03                     | 0.41              |
| 3:C:54:ASN:HB3   | 3:C:87:VAL:HB    | 2.03                     | 0.41              |
| 1:E:128:ALA:N    | 4:H:116:PHE:HZ   | 2.19                     | 0.41              |
| 1:E:49:GLU:HG2   | 1:E:49:GLU:O     | 2.20                     | 0.41              |
| 4:H:78:PHE:CE1   | 4:H:113:PHE:CD1  | 3.08                     | 0.41              |
| 1:A:77:LEU:HB3   | 1:A:78:PRO:CD    | 2.48                     | 0.40              |
| 2:B:239:ARG:HB3  | 2:B:239:ARG:HE   | 1.62                     | 0.40              |
| 3:C:166:ILE:HG23 | 3:C:197:THR:HB   | 2.02                     | 0.40              |
| 3:C:249:SER:O    | 3:C:273:LEU:HD22 | 2.21                     | 0.40              |
| 4:D:203:MET:HE2  | 4:D:203:MET:HB2  | 1.94                     | 0.40              |
| 4:H:26:LEU:HA    | 4:H:26:LEU:HD12  | 1.88                     | 0.40              |
| 1:A:117:LEU:HA   | 1:A:121:PHE:CD1  | 2.56                     | 0.40              |
| 3:C:35:PHE:CE2   | 3:C:198:VAL:HG11 | 2.56                     | 0.40              |
| 3:G:273:LEU:O    | 3:G:277:ILE:HG13 | 2.20                     | 0.40              |
| 3:G:64:ILE:HB    | 3:G:71:ILE:HG12  | 2.03                     | 0.40              |
| 4:H:55:VAL:HG22  | 4:H:58:THR:OG1   | 2.21                     | 0.40              |
| 1:A:160:ILE:HG23 | 1:A:165:LEU:HD13 | 2.03                     | 0.40              |
| 1:E:114:PHE:CD2  | 1:E:119:TYR:HB2  | 2.56                     | 0.40              |
| 2:F:237:LEU:C    | 2:F:238:LYS:HD2  | 2.41                     | 0.40              |
| 2:F:77:ASP:OD1   | 2:F:77:ASP:N     | 2.53                     | 0.40              |
| 2:F:81:GLU:HG2   | 2:F:81:GLU:H     | 1.70                     | 0.40              |
| 3:G:135:LYS:O    | 3:G:137:ASP:N    | 2.54                     | 0.40              |
| 1:A:169:ASP:HA   | 4:D:212:LEU:CD2  | 2.45                     | 0.40              |
| 2:B:34:SER:OG    | 2:B:35:TRP:N     | 2.54                     | 0.40              |
| 3:C:93:PHE:HA    | 3:C:152:ARG:NH1  | 2.37                     | 0.40              |
| 4:H:235:ARG:HG2  | 4:H:238:ILE:HG22 | 2.04                     | 0.40              |
| 1:A:11:ARG:HH12  | 1:A:174:LYS:H    | 1.69                     | 0.40              |
| 1:A:80:ILE:O     | 1:A:81:PHE:CG    | 2.75                     | 0.40              |
| 2:B:217:ASP:HA   | 2:B:218:ASP:HA   | 1.95                     | 0.40              |
| 2:B:54:ASN:HB3   | 2:B:86:VAL:HG11  | 2.03                     | 0.40              |
| 2:F:36:THR:O     | 2:F:199:SER:HB2  | 2.21                     | 0.40              |
| 3:G:63:LYS:O     | 3:G:64:ILE:HG13  | 2.21                     | 0.40              |
| 3:G:86:LYS:HB3   | 3:G:165:GLU:HG3  | 2.04                     | 0.40              |
| 4:H:11:PRO:HD3   | 4:H:131:LYS:N    | 2.36                     | 0.40              |

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

| Atom-1          | Atom-2                 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------------|--------------------------|-------------------|
| 1:A:170:ARG:NH2 | 2:F:235:GLU:OE2[1_654] | 2.12                     | 0.08              |
| 2:B:122:LYS:NZ  | 2:F:160:VAL:O[1_564]   | 2.15                     | 0.05              |

## 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     | 155/182 (85%)   | 107 (69%)  | 46 (30%)  | 2 (1%)   | 12          | 39 |
| 1   | E     | 126/182 (69%)   | 96 (76%)   | 28 (22%)  | 2 (2%)   | 9           | 34 |
| 2   | B     | 278/300 (93%)   | 215 (77%)  | 60 (22%)  | 3 (1%)   | 14          | 44 |
| 2   | F     | 278/300 (93%)   | 206 (74%)  | 71 (26%)  | 1 (0%)   | 34          | 67 |
| 3   | C     | 280/287 (98%)   | 212 (76%)  | 65 (23%)  | 3 (1%)   | 14          | 44 |
| 3   | G     | 280/287 (98%)   | 203 (72%)  | 75 (27%)  | 2 (1%)   | 22          | 55 |
| 4   | D     | 257/265 (97%)   | 179 (70%)  | 75 (29%)  | 3 (1%)   | 13          | 41 |
| 4   | H     | 257/265 (97%)   | 164 (64%)  | 89 (35%)  | 4 (2%)   | 9           | 34 |
| All | All   | 1911/2068 (92%) | 1382 (72%) | 509 (27%) | 20 (1%)  | 15          | 46 |

All (20) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | H     | 94  | TRP  |
| 1   | E     | 38  | PRO  |
| 1   | E     | 39  | VAL  |
| 3   | G     | 279 | GLN  |
| 3   | C     | 26  | LEU  |
| 2   | B     | 8   | PHE  |
| 3   | C     | 220 | HIS  |
| 4   | D     | 89  | GLY  |
| 2   | F     | 252 | GLN  |
| 4   | H     | 71  | PRO  |
| 2   | B     | 7   | SER  |
| 3   | C     | 104 | LEU  |
| 4   | H     | 79  | THR  |
| 1   | A     | 137 | ILE  |
| 3   | G     | 139 | ILE  |
| 4   | H     | 49  | ILE  |
| 1   | A     | 43  | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | B     | 162 | PRO  |
| 4   | D     | 145 | PRO  |
| 4   | D     | 151 | 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     | 125/146 (86%)   | 118 (94%)  | 7 (6%)   | 21          | 51 |
| 1   | E     | 98/146 (67%)    | 85 (87%)   | 13 (13%) | 4           | 15 |
| 2   | B     | 240/259 (93%)   | 223 (93%)  | 17 (7%)  | 14          | 44 |
| 2   | F     | 240/259 (93%)   | 233 (97%)  | 7 (3%)   | 42          | 69 |
| 3   | C     | 231/234 (99%)   | 225 (97%)  | 6 (3%)   | 46          | 72 |
| 3   | G     | 231/234 (99%)   | 215 (93%)  | 16 (7%)  | 15          | 45 |
| 4   | D     | 227/233 (97%)   | 217 (96%)  | 10 (4%)  | 28          | 58 |
| 4   | H     | 227/233 (97%)   | 210 (92%)  | 17 (8%)  | 13          | 41 |
| All | All   | 1619/1744 (93%) | 1526 (94%) | 93 (6%)  | 20          | 50 |

All (93) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 22  | CYS  |
| 1   | A     | 44  | MET  |
| 1   | A     | 69  | PHE  |
| 1   | A     | 70  | LEU  |
| 1   | A     | 83  | TYR  |
| 1   | A     | 107 | LEU  |
| 1   | A     | 170 | ARG  |
| 2   | B     | 2   | SER  |
| 2   | B     | 8   | PHE  |
| 2   | B     | 9   | ASP  |
| 2   | B     | 26  | LEU  |
| 2   | B     | 28  | PHE  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 2          | B            | 32         | ARG         |
| 2          | B            | 41         | HIS         |
| 2          | B            | 46         | LYS         |
| 2          | B            | 60         | ASP         |
| 2          | B            | 97         | PHE         |
| 2          | B            | 108        | PHE         |
| 2          | B            | 112        | ASN         |
| 2          | B            | 191        | GLU         |
| 2          | B            | 203        | ASP         |
| 2          | B            | 246        | PHE         |
| 2          | B            | 257        | ARG         |
| 2          | B            | 261        | LEU         |
| 3          | C            | 18         | LEU         |
| 3          | C            | 34         | LYS         |
| 3          | C            | 51         | GLN         |
| 3          | C            | 106        | ASP         |
| 3          | C            | 190        | ASP         |
| 3          | C            | 222        | ARG         |
| 4          | D            | 17         | TYR         |
| 4          | D            | 54         | TYR         |
| 4          | D            | 56         | PHE         |
| 4          | D            | 74         | TRP         |
| 4          | D            | 96         | TRP         |
| 4          | D            | 101        | LEU         |
| 4          | D            | 150        | LYS         |
| 4          | D            | 208        | PHE         |
| 4          | D            | 213        | GLU         |
| 4          | D            | 237        | ARG         |
| 1          | E            | 11         | ARG         |
| 1          | E            | 26         | ARG         |
| 1          | E            | 35         | ASN         |
| 1          | E            | 37         | GLN         |
| 1          | E            | 48         | LEU         |
| 1          | E            | 49         | GLU         |
| 1          | E            | 107        | LEU         |
| 1          | E            | 110        | LEU         |
| 1          | E            | 122        | PHE         |
| 1          | E            | 136        | PHE         |
| 1          | E            | 148        | LEU         |
| 1          | E            | 149        | TYR         |
| 1          | E            | 157        | PHE         |
| 2          | F            | 77         | ASP         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 2          | F            | 150        | GLN         |
| 2          | F            | 163        | GLN         |
| 2          | F            | 170        | SER         |
| 2          | F            | 217        | ASP         |
| 2          | F            | 263        | ASP         |
| 2          | F            | 279        | ASN         |
| 3          | G            | 10         | TYR         |
| 3          | G            | 18         | LEU         |
| 3          | G            | 63         | LYS         |
| 3          | G            | 85         | ARG         |
| 3          | G            | 88         | SER         |
| 3          | G            | 93         | PHE         |
| 3          | G            | 122        | ARG         |
| 3          | G            | 131        | LYS         |
| 3          | G            | 142        | SER         |
| 3          | G            | 144        | PHE         |
| 3          | G            | 162        | TYR         |
| 3          | G            | 168        | CYS         |
| 3          | G            | 177        | ASP         |
| 3          | G            | 179        | MET         |
| 3          | G            | 228        | SER         |
| 3          | G            | 262        | LYS         |
| 4          | H            | 8          | ARG         |
| 4          | H            | 17         | TYR         |
| 4          | H            | 18         | ARG         |
| 4          | H            | 30         | TYR         |
| 4          | H            | 44         | TYR         |
| 4          | H            | 52         | LEU         |
| 4          | H            | 61         | LYS         |
| 4          | H            | 65         | PHE         |
| 4          | H            | 78         | PHE         |
| 4          | H            | 93         | TYR         |
| 4          | H            | 110        | LEU         |
| 4          | H            | 133        | LEU         |
| 4          | H            | 182        | ARG         |
| 4          | H            | 196        | ARG         |
| 4          | H            | 204        | LEU         |
| 4          | H            | 213        | GLU         |
| 4          | H            | 233        | ARG         |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | C     | 27  | ASN  |
| 3   | C     | 186 | GLN  |
| 2   | F     | 252 | GLN  |
| 2   | F     | 279 | ASN  |
| 3   | G     | 41  | HIS  |
| 3   | G     | 113 | ASN  |
| 3   | G     | 242 | HIS  |
| 4   | H     | 83  | GLN  |
| 4   | H     | 173 | GLN  |
| 4   | H     | 179 | ASN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no 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     | 159/182 (87%)   | -0.57  | 1 (0%) 89 89  | 2, 14, 41, 57         | 0     |
| 1   | E     | 132/182 (72%)   | -0.47  | 1 (0%) 86 85  | 3, 28, 58, 67         | 0     |
| 2   | B     | 280/300 (93%)   | -0.62  | 1 (0%) 92 92  | 2, 11, 32, 44         | 0     |
| 2   | F     | 280/300 (93%)   | -0.34  | 10 (3%) 42 42 | 3, 23, 52, 76         | 0     |
| 3   | C     | 282/287 (98%)   | -0.63  | 1 (0%) 92 92  | 2, 10, 27, 55         | 0     |
| 3   | G     | 282/287 (98%)   | -0.38  | 4 (1%) 75 74  | 6, 31, 56, 80         | 0     |
| 4   | D     | 259/265 (97%)   | -0.59  | 3 (1%) 79 77  | 2, 13, 39, 66         | 0     |
| 4   | H     | 259/265 (97%)   | -0.16  | 19 (7%) 15 17 | 3, 31, 59, 69         | 0     |
| All | All   | 1933/2068 (93%) | -0.46  | 40 (2%) 63 62 | 2, 19, 50, 80         | 0     |

All (40) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 3   | G     | 2   | ALA  | 5.1  |
| 4   | H     | 52  | LEU  | 5.0  |
| 3   | G     | 13  | SER  | 4.8  |
| 1   | E     | 131 | GLY  | 4.7  |
| 3   | G     | 142 | SER  | 4.1  |
| 4   | H     | 64  | VAL  | 4.0  |
| 2   | B     | 168 | ASP  | 3.7  |
| 4   | H     | 53  | ALA  | 3.7  |
| 4   | H     | 9   | TYR  | 3.6  |
| 2   | F     | 201 | THR  | 3.6  |
| 1   | A     | 160 | ILE  | 3.6  |
| 3   | C     | 15  | GLY  | 3.5  |
| 4   | H     | 54  | TYR  | 3.5  |
| 3   | G     | 194 | ALA  | 3.2  |
| 2   | F     | 8   | PHE  | 3.2  |
| 2   | F     | 62  | LEU  | 3.1  |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 4   | H     | 55  | VAL  | 3.1  |
| 4   | D     | 144 | THR  | 2.9  |
| 4   | H     | 230 | SER  | 2.8  |
| 4   | H     | 10  | LEU  | 2.8  |
| 4   | H     | 15  | PHE  | 2.8  |
| 2   | F     | 262 | PRO  | 2.8  |
| 4   | H     | 14  | THR  | 2.8  |
| 4   | H     | 12  | GLY  | 2.7  |
| 4   | H     | 240 | GLU  | 2.7  |
| 4   | H     | 154 | GLY  | 2.6  |
| 4   | H     | 82  | LEU  | 2.4  |
| 4   | H     | 50  | PHE  | 2.3  |
| 2   | F     | 14  | THR  | 2.3  |
| 4   | D     | 243 | LYS  | 2.3  |
| 4   | H     | 249 | VAL  | 2.3  |
| 2   | F     | 63  | ASP  | 2.3  |
| 4   | D     | 242 | SER  | 2.2  |
| 2   | F     | 16  | PRO  | 2.1  |
| 2   | F     | 263 | ASP  | 2.1  |
| 4   | H     | 245 | ASP  | 2.1  |
| 2   | F     | 91  | GLN  | 2.0  |
| 4   | H     | 153 | VAL  | 2.0  |
| 2   | F     | 17  | ASP  | 2.0  |
| 4   | H     | 262 | 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.