



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 03:51 AM EDT

PDB ID : 1G4A
Title : CRYSTAL STRUCTURES OF THE HSLVU PEPTIDASE-ATPASE COMPLEX REVEAL AN ATP-DEPENDENT PROTEOLYSIS MECHANISM
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Deposited on : 2000-10-26
Resolution : 3.00 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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.20.1
EDS : 2.36.2
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36.2

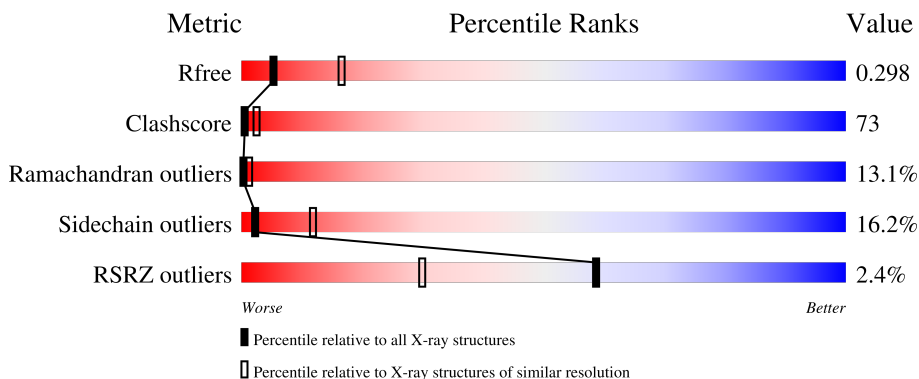
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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.



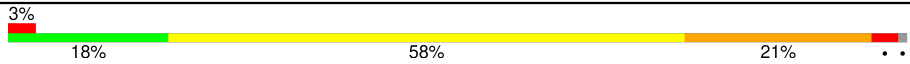
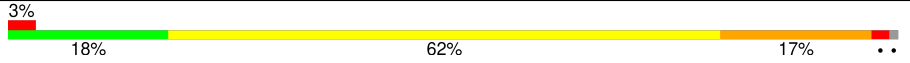
| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| R_{free} | 130704 | 2092 (3.00-3.00) |
| Clashscore | 141614 | 2416 (3.00-3.00) |
| Ramachandran outliers | 138981 | 2333 (3.00-3.00) |
| Sidechain outliers | 138945 | 2336 (3.00-3.00) |
| RSRZ outliers | 127900 | 1990 (3.00-3.00) |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 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 | E | 443 | |
| 1 | F | 443 | |
| 2 | A | 175 | |
| 2 | B | 175 | |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|--|
| 2 | C | 175 |  |
| 2 | D | 175 |  |

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 10920 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.

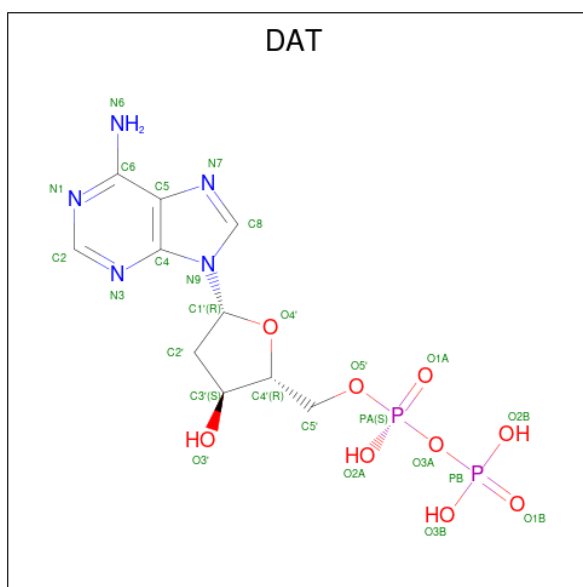
- Molecule 1 is a protein called ATP-DEPENDENT HSL PROTEASE ATP-BINDING SUB-UNIT HSLU.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 1 | E | 356 | 2796 | 1747 | 492 | 546 | 11 | 0 | 0 | 0 |
| 1 | F | 356 | 2796 | 1747 | 492 | 546 | 11 | 0 | 0 | 0 |

- Molecule 2 is a protein called ATP-DEPENDENT PROTEASE HSLV.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 2 | B | 173 | 1319 | 828 | 235 | 252 | 4 | 0 | 0 | 0 |
| 2 | A | 173 | 1319 | 828 | 235 | 252 | 4 | 0 | 0 | 0 |
| 2 | D | 173 | 1319 | 828 | 235 | 252 | 4 | 0 | 0 | 0 |
| 2 | C | 173 | 1319 | 828 | 235 | 252 | 4 | 0 | 0 | 0 |

- Molecule 3 is 2'-DEOXYADENOSINE-5'-DIPHOSPHATE (three-letter code: DAT) (formula: C₁₀H₁₅N₅O₉P₂).

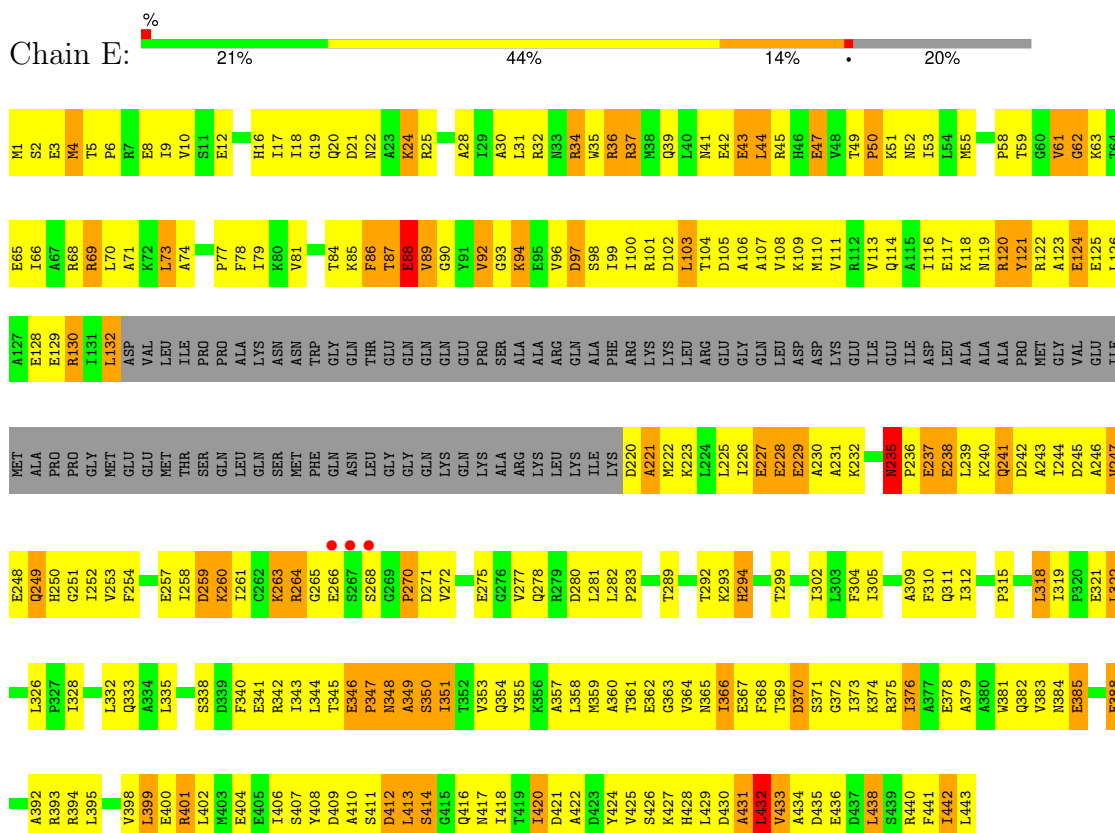


| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---|---|---------|---------|
| | | | Total | C | N | O | P | | |
| 3 | E | 1 | 26 | 10 | 5 | 9 | 2 | 0 | 0 |
| 3 | F | 1 | 26 | 10 | 5 | 9 | 2 | 0 | 0 |

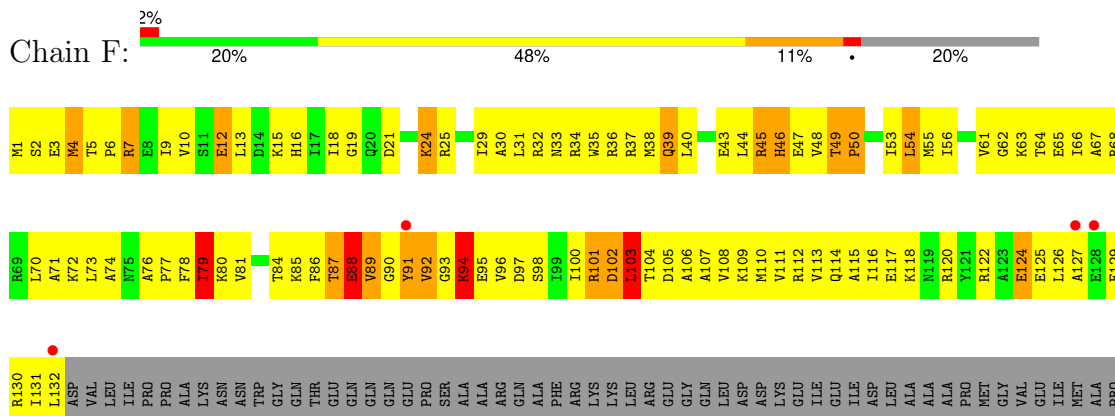
3 Residue-property plots i

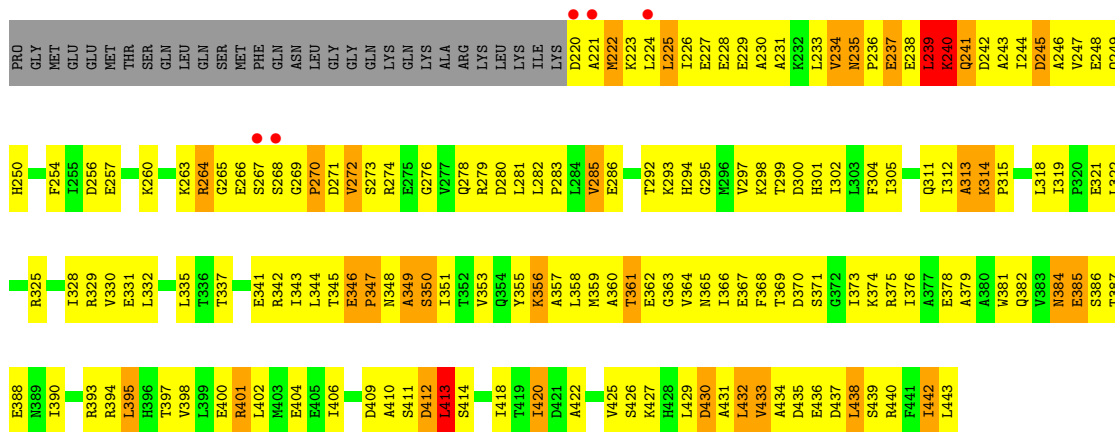
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: ATP-DEPENDENT HSL PROTEASE ATP-BINDING SUBUNIT HSLU

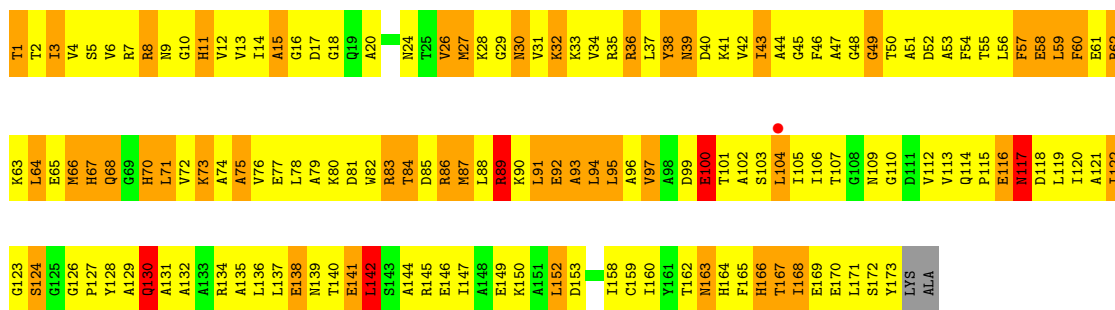
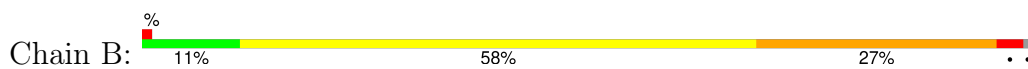


• Molecule 1: ATP-DEPENDENT HSL PROTEASE ATP-BINDING SUBUNIT HSLU

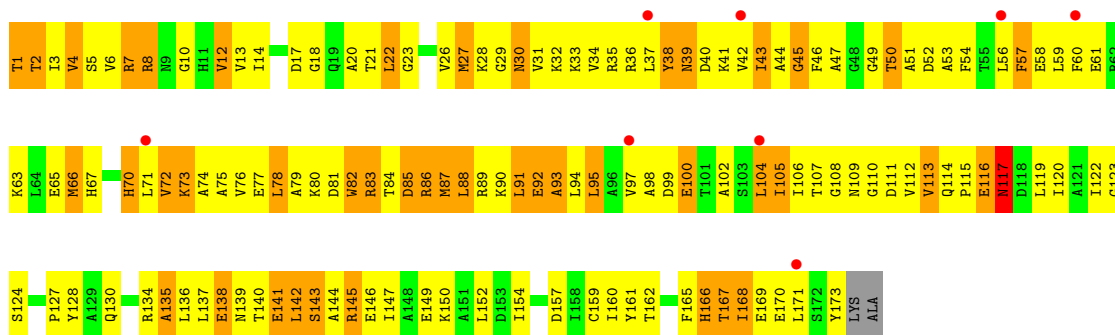
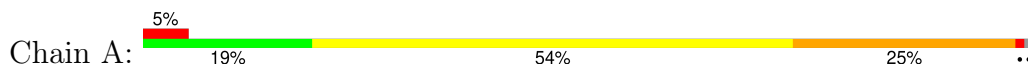




• Molecule 2: ATP-DEPENDENT PROTEASE HSLV

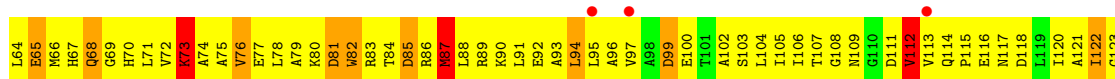


• Molecule 2: ATP-DEPENDENT PROTEASE HSLV

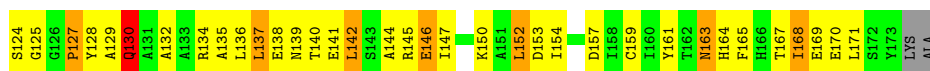
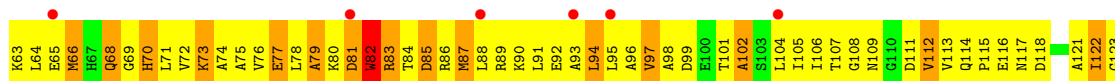
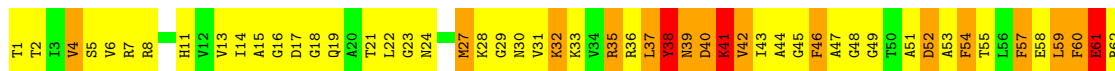
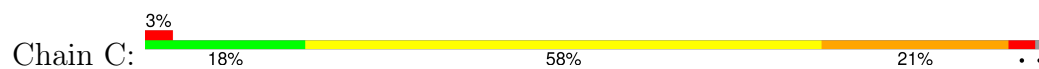


• Molecule 2: ATP-DEPENDENT PROTEASE HSLV





• Molecule 2: ATP-DEPENDENT PROTEASE HSLV



4 Data and refinement statistics

| Property | Value | Source |
|---|---|------------------|
| Space group | P 3 2 1 | Depositor |
| Cell constants a, b, c, α , β , γ | 170.00Å 170.00Å 161.32Å 90.00° 90.00° 120.00° | Depositor |
| Resolution (Å) | 85.00 – 3.00 85.00 – 3.00 | Depositor EDS |
| % Data completeness (in resolution range) | 85.7 (85.00-3.00) 85.7 (85.00-3.00) | Depositor EDS |
| R_{merge} | (Not available) | Depositor |
| R_{sym} | (Not available) | Depositor |
| $\langle I/\sigma(I) \rangle$ ¹ | 1.83 (at 3.01Å) | Xtrriage |
| Refinement program | CNS 1.0 | Depositor |
| R, R_{free} | 0.257 , 0.294 0.262 , 0.298 | Depositor DCC |
| R_{free} test set | 4647 reflections (9.98%) | wwPDB-VP |
| Wilson B-factor (Å ²) | 63.0 | Xtrriage |
| Anisotropy | 0.042 | Xtrriage |
| Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²) | 0.31 , 14.9 | EDS |
| L-test for twinning ² | $\langle L \rangle = 0.42$, $\langle L^2 \rangle = 0.25$ | Xtrriage |
| Estimated twinning fraction | 0.426 for -h,-k,l | Xtrriage |
| F_o, F_c correlation | 0.86 | EDS |
| Total number of atoms | 10920 | wwPDB-VP |
| Average B, all atoms (Å ²) | 52.0 | wwPDB-VP |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 12.30% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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 | E | 0.47 | 0/2829 | 0.76 | 0/3816 |
| 1 | F | 0.47 | 0/2829 | 0.75 | 0/3816 |
| 2 | A | 0.43 | 0/1336 | 0.76 | 0/1806 |
| 2 | B | 0.45 | 0/1336 | 0.77 | 1/1806 (0.1%) |
| 2 | C | 0.44 | 0/1336 | 0.78 | 1/1806 (0.1%) |
| 2 | D | 0.43 | 0/1336 | 0.74 | 0/1806 |
| All | All | 0.46 | 0/11002 | 0.76 | 2/14856 (0.0%) |

There are no bond length outliers.

All (2) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 2 | C | 22 | LEU | CA-CB-CG | 6.38 | 129.96 | 115.30 |
| 2 | B | 117 | ASN | N-CA-C | -5.55 | 96.01 | 111.00 |

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | E | 2796 | 0 | 2848 | 348 | 0 |
| 1 | F | 2796 | 0 | 2848 | 387 | 0 |
| 2 | A | 1319 | 0 | 1335 | 223 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 2 | B | 1319 | 0 | 1335 | 270 | 0 |
| 2 | C | 1319 | 0 | 1335 | 216 | 0 |
| 2 | D | 1319 | 0 | 1335 | 231 | 0 |
| 3 | E | 26 | 0 | 12 | 3 | 0 |
| 3 | F | 26 | 0 | 12 | 1 | 0 |
| All | All | 10920 | 0 | 11060 | 1594 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 73.

All (1594) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:387:THR:HG22 | 1:F:388:GLU:H | 1.12 | 1.12 |
| 1:E:130:ARG:HH11 | 1:E:130:ARG:HB2 | 1.09 | 1.11 |
| 2:C:41:LYS:H | 2:C:41:LYS:NZ | 1.49 | 1.09 |
| 2:B:115:PRO:HD2 | 2:B:120:ILE:HD11 | 1.31 | 1.07 |
| 2:C:82:TRP:HE1 | 2:C:108:GLY:HA2 | 1.20 | 1.07 |
| 2:B:44:ALA:HB2 | 2:B:97:VAL:HA | 1.32 | 1.06 |
| 2:D:8:ARG:HB3 | 2:D:144:ALA:HB2 | 1.37 | 1.05 |
| 1:E:104:THR:HA | 1:E:247:VAL:HG21 | 1.33 | 1.04 |
| 2:C:81:ASP:HB3 | 2:C:87:MET:SD | 1.98 | 1.04 |
| 2:A:91:LEU:HD22 | 2:A:91:LEU:H | 1.21 | 1.04 |
| 1:E:103:LEU:HG | 1:E:247:VAL:HG13 | 1.40 | 1.03 |
| 2:C:63:LYS:HD2 | 2:C:78:LEU:HG | 1.42 | 1.01 |
| 1:E:128:GLU:HG2 | 1:E:132:LEU:HD11 | 1.39 | 0.99 |
| 1:F:374:LYS:HE2 | 1:F:378:GLU:OE2 | 1.60 | 0.99 |
| 2:D:63:LYS:HG3 | 2:D:78:LEU:HG | 1.44 | 0.99 |
| 1:E:223:LYS:HD2 | 1:E:226:ILE:HG13 | 1.45 | 0.97 |
| 1:E:383:VAL:HB | 1:E:394:ARG:HD3 | 1.47 | 0.97 |
| 2:B:96:ALA:O | 2:B:97:VAL:HG23 | 1.64 | 0.96 |
| 2:D:70:HIS:HB3 | 2:D:73:LYS:HD2 | 1.45 | 0.96 |
| 2:A:115:PRO:HD2 | 2:A:120:ILE:HD11 | 1.46 | 0.96 |
| 2:A:36:ARG:HA | 2:A:44:ALA:H | 1.30 | 0.96 |
| 2:D:28:LYS:HD2 | 2:D:31:VAL:HG22 | 1.46 | 0.95 |
| 1:F:351:ILE:HD12 | 1:F:351:ILE:H | 1.30 | 0.95 |
| 2:C:41:LYS:HZ3 | 2:C:41:LYS:N | 1.63 | 0.95 |
| 2:B:140:THR:HB | 2:B:142:LEU:HD11 | 1.47 | 0.95 |
| 2:C:71:LEU:HB2 | 2:C:99:ASP:OD1 | 1.66 | 0.95 |
| 2:A:116:GLU:O | 2:A:117:ASN:HB2 | 1.65 | 0.95 |
| 2:B:163:ASN:ND2 | 2:B:165:PHE:H | 1.66 | 0.94 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:32:LYS:HZ3 | 2:B:32:LYS:HB2 | 1.30 | 0.93 |
| 1:F:115:ALA:HA | 1:F:118:LYS:HB2 | 1.51 | 0.92 |
| 1:F:79:ILE:HG21 | 1:F:103:LEU:HB2 | 1.51 | 0.92 |
| 2:D:47:ALA:HB3 | 2:D:94:LEU:HD13 | 1.51 | 0.92 |
| 1:E:130:ARG:HB2 | 1:E:130:ARG:NH1 | 1.84 | 0.92 |
| 1:E:432:LEU:HD11 | 1:E:442:ILE:HD11 | 1.51 | 0.92 |
| 2:C:44:ALA:HB2 | 2:C:97:VAL:HG13 | 1.49 | 0.91 |
| 2:B:7:ARG:HH12 | 2:B:102:ALA:N | 1.69 | 0.91 |
| 2:A:22:LEU:HD23 | 2:A:23:GLY:H | 1.35 | 0.90 |
| 2:D:32:LYS:HD2 | 2:D:167:THR:HG21 | 1.54 | 0.89 |
| 1:F:375:ARG:HG2 | 1:F:375:ARG:HH11 | 1.35 | 0.88 |
| 1:F:438:LEU:HD22 | 1:F:442:ILE:HD12 | 1.54 | 0.88 |
| 2:B:28:LYS:HG2 | 2:B:30:ASN:H | 1.38 | 0.88 |
| 2:A:2:THR:OG1 | 2:A:162:THR:HG21 | 1.73 | 0.88 |
| 2:C:86:ARG:HA | 2:C:89:ARG:HD2 | 1.55 | 0.88 |
| 2:C:36:ARG:HG2 | 2:C:38:TYR:H | 1.38 | 0.88 |
| 2:B:13:VAL:HB | 2:B:170:GLU:HG3 | 1.53 | 0.87 |
| 2:D:37:LEU:HD22 | 2:D:61:GLU:HB2 | 1.54 | 0.87 |
| 2:B:75:ALA:HB1 | 2:B:112:VAL:HG21 | 1.58 | 0.86 |
| 1:F:240:LYS:HG3 | 1:F:241:GLN:H | 1.38 | 0.85 |
| 2:B:2:THR:OG1 | 2:B:162:THR:HG21 | 1.75 | 0.85 |
| 2:A:75:ALA:HB1 | 2:A:112:VAL:HG21 | 1.56 | 0.85 |
| 1:F:387:THR:HG22 | 1:F:388:GLU:N | 1.90 | 0.85 |
| 1:E:249:GLN:HG2 | 1:E:250:HIS:N | 1.92 | 0.85 |
| 1:F:220:ASP:N | 1:F:224:LEU:H | 1.74 | 0.84 |
| 1:E:220:ASP:OD1 | 1:E:222:MET:HG3 | 1.77 | 0.84 |
| 1:F:34:ARG:HG3 | 1:F:35:TRP:H | 1.43 | 0.83 |
| 1:F:382:GLN:HG2 | 1:F:433:VAL:CG2 | 2.08 | 0.83 |
| 2:A:79:ALA:HB2 | 2:A:112:VAL:HG23 | 1.60 | 0.83 |
| 2:C:122:ILE:HD13 | 2:C:122:ILE:H | 1.42 | 0.83 |
| 2:D:83:ARG:HD2 | 2:D:89:ARG:HD2 | 1.61 | 0.83 |
| 2:C:83:ARG:HH11 | 2:C:83:ARG:HA | 1.43 | 0.83 |
| 2:D:60:PHE:HA | 2:D:78:LEU:HD11 | 1.61 | 0.82 |
| 2:B:116:GLU:O | 2:B:117:ASN:HB2 | 1.76 | 0.82 |
| 2:C:63:LYS:HA | 2:C:66:MET:SD | 2.19 | 0.82 |
| 1:F:102:ASP:C | 1:F:104:THR:H | 1.79 | 0.82 |
| 2:D:73:LYS:HE2 | 2:D:73:LYS:H | 1.44 | 0.82 |
| 2:D:103:SER:HB3 | 2:D:120:ILE:HD11 | 1.61 | 0.82 |
| 2:D:106:ILE:HG22 | 2:D:108:GLY:H | 1.45 | 0.82 |
| 1:F:55:MET:HE1 | 1:F:66:ILE:HD12 | 1.62 | 0.82 |
| 2:B:50:THR:H | 2:A:111:ASP:HB3 | 1.42 | 0.81 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:5:SER:HB2 | 2:C:14:ILE:HG12 | 1.60 | 0.81 |
| 2:C:163:ASN:C | 2:C:163:ASN:HD22 | 1.82 | 0.81 |
| 2:C:82:TRP:HE1 | 2:C:108:GLY:CA | 1.93 | 0.81 |
| 1:F:21:ASP:O | 1:F:25:ARG:HG3 | 1.80 | 0.81 |
| 2:B:32:LYS:HB2 | 2:B:32:LYS:NZ | 1.94 | 0.81 |
| 2:B:89:ARG:HH11 | 2:B:89:ARG:HB3 | 1.45 | 0.81 |
| 2:A:149:GLU:OE2 | 2:A:168:ILE:HD13 | 1.81 | 0.81 |
| 2:D:83:ARG:HA | 2:D:89:ARG:HD2 | 1.63 | 0.81 |
| 1:E:20:GLN:HE22 | 1:E:333:GLN:H | 1.25 | 0.81 |
| 2:C:70:HIS:CG | 2:C:73:LYS:HB2 | 2.16 | 0.81 |
| 1:E:69:ARG:HG3 | 1:E:69:ARG:HH11 | 1.46 | 0.80 |
| 1:E:106:ALA:O | 1:E:110:MET:HB2 | 1.80 | 0.80 |
| 1:F:413:LEU:HD13 | 1:F:418:ILE:HD11 | 1.62 | 0.80 |
| 1:F:31:LEU:HD22 | 1:F:70:LEU:HD11 | 1.62 | 0.80 |
| 2:B:13:VAL:HG21 | 2:B:168:ILE:HG22 | 1.63 | 0.80 |
| 1:F:103:LEU:HD13 | 1:F:103:LEU:O | 1.81 | 0.80 |
| 2:C:39:ASN:N | 2:C:39:ASN:HD22 | 1.80 | 0.80 |
| 2:C:74:ALA:O | 2:C:78:LEU:HB2 | 1.82 | 0.80 |
| 2:B:60:PHE:CZ | 2:B:64:LEU:HA | 2.17 | 0.80 |
| 1:F:34:ARG:HG3 | 1:F:35:TRP:N | 1.97 | 0.80 |
| 1:F:34:ARG:NH1 | 1:F:250:HIS:HB3 | 1.95 | 0.79 |
| 2:D:71:LEU:HD12 | 2:D:99:ASP:HB2 | 1.63 | 0.79 |
| 2:B:89:ARG:HB3 | 2:B:89:ARG:NH1 | 1.97 | 0.79 |
| 2:D:37:LEU:O | 2:D:39:ASN:N | 2.14 | 0.79 |
| 2:A:145:ARG:O | 2:A:149:GLU:HG3 | 1.82 | 0.79 |
| 2:B:159:CYS:SG | 2:B:162:THR:HG23 | 2.22 | 0.79 |
| 1:F:45:ARG:HE | 1:F:46:HIS:HD2 | 1.31 | 0.79 |
| 1:E:96:VAL:HG21 | 1:E:280:ASP:O | 1.83 | 0.78 |
| 1:F:3:GLU:O | 1:F:4:MET:HG2 | 1.83 | 0.78 |
| 2:D:37:LEU:HD21 | 2:D:57:PHE:O | 1.83 | 0.78 |
| 1:F:382:GLN:HG2 | 1:F:433:VAL:HG23 | 1.65 | 0.78 |
| 2:A:43:ILE:HG13 | 2:A:171:LEU:HB2 | 1.65 | 0.78 |
| 2:A:82:TRP:HZ3 | 2:A:89:ARG:HA | 1.48 | 0.78 |
| 2:B:4:VAL:HG22 | 2:B:121:ALA:HB1 | 1.65 | 0.78 |
| 2:A:34:VAL:HA | 2:A:45:GLY:HA2 | 1.64 | 0.78 |
| 2:D:152:LEU:HD13 | 2:D:166:HIS:HD2 | 1.49 | 0.78 |
| 1:F:220:ASP:N | 1:F:223:LYS:HB3 | 1.99 | 0.78 |
| 1:F:358:LEU:O | 1:F:361:THR:HG22 | 1.83 | 0.77 |
| 1:F:32:ARG:HG3 | 1:F:36:ARG:HD3 | 1.65 | 0.77 |
| 1:F:34:ARG:HH22 | 1:F:74:ALA:HB1 | 1.48 | 0.77 |
| 2:A:91:LEU:H | 2:A:91:LEU:CD2 | 1.96 | 0.77 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:235:ASN:H | 1:E:236:PRO:HD3 | 1.47 | 0.77 |
| 2:D:4:VAL:HG23 | 2:D:15:ALA:HB3 | 1.65 | 0.77 |
| 2:B:90:LYS:HB3 | 2:A:83:ARG:HH21 | 1.49 | 0.77 |
| 2:B:88:LEU:HD23 | 2:B:88:LEU:H | 1.49 | 0.77 |
| 2:D:88:LEU:HD22 | 2:C:84:THR:HB | 1.65 | 0.77 |
| 2:C:36:ARG:HG2 | 2:C:37:LEU:H | 1.50 | 0.77 |
| 1:E:20:GLN:HE21 | 1:E:20:GLN:HA | 1.49 | 0.77 |
| 1:F:45:ARG:HG3 | 1:F:45:ARG:HH11 | 1.49 | 0.77 |
| 2:A:136:LEU:HD13 | 2:D:135:ALA:HB1 | 1.66 | 0.77 |
| 2:C:90:LYS:O | 2:C:91:LEU:HD13 | 1.83 | 0.77 |
| 1:F:34:ARG:NH2 | 1:F:74:ALA:HB1 | 2.00 | 0.76 |
| 2:A:91:LEU:HD22 | 2:A:91:LEU:N | 1.98 | 0.76 |
| 2:D:44:ALA:HB2 | 2:D:97:VAL:HG12 | 1.66 | 0.76 |
| 1:E:258:ILE:O | 1:E:261:ILE:HB | 1.84 | 0.76 |
| 1:F:9:ILE:HD13 | 1:F:31:LEU:HD23 | 1.67 | 0.76 |
| 1:F:55:MET:CE | 1:F:63:LYS:HA | 2.15 | 0.76 |
| 2:A:75:ALA:HB1 | 2:A:112:VAL:CG2 | 2.16 | 0.76 |
| 1:E:362:GLU:OE1 | 1:F:36:ARG:HD2 | 1.84 | 0.76 |
| 2:D:13:VAL:HG21 | 2:D:145:ARG:HA | 1.68 | 0.76 |
| 2:C:71:LEU:O | 2:C:74:ALA:HB3 | 1.86 | 0.76 |
| 1:F:108:VAL:HA | 1:F:111:VAL:HG23 | 1.68 | 0.76 |
| 2:A:38:TYR:C | 2:A:40:ASP:H | 1.88 | 0.75 |
| 2:C:53:ALA:O | 2:C:55:THR:N | 2.19 | 0.75 |
| 1:F:351:ILE:HD12 | 1:F:351:ILE:N | 2.02 | 0.75 |
| 2:C:41:LYS:NZ | 2:C:41:LYS:N | 2.29 | 0.75 |
| 2:B:163:ASN:C | 2:B:163:ASN:HD22 | 1.90 | 0.75 |
| 2:C:17:ASP:O | 2:C:33:LYS:HG3 | 1.87 | 0.75 |
| 2:A:28:LYS:HG2 | 2:A:29:GLY:N | 2.01 | 0.75 |
| 1:E:77:PRO:HB3 | 1:E:107:ALA:HB2 | 1.69 | 0.75 |
| 1:E:442:ILE:HA | 1:F:329:ARG:HG3 | 1.68 | 0.75 |
| 1:F:96:VAL:HG21 | 1:F:280:ASP:O | 1.87 | 0.74 |
| 1:F:222:MET:HA | 1:F:226:ILE:HG23 | 1.69 | 0.74 |
| 2:B:90:LYS:HE3 | 2:A:83:ARG:HH21 | 1.49 | 0.74 |
| 2:A:105:ILE:HG23 | 2:A:113:VAL:HG13 | 1.69 | 0.74 |
| 2:C:39:ASN:HD22 | 2:C:39:ASN:H | 1.33 | 0.74 |
| 1:E:263:LYS:C | 1:E:263:LYS:HD3 | 2.07 | 0.74 |
| 2:D:86:ARG:HA | 2:D:86:ARG:HE | 1.52 | 0.74 |
| 1:F:235:ASN:O | 1:F:239:LEU:HG | 1.87 | 0.74 |
| 2:A:58:GLU:O | 2:A:61:GLU:HB3 | 1.87 | 0.74 |
| 2:D:14:ILE:HD12 | 2:D:43:ILE:HG22 | 1.69 | 0.74 |
| 1:F:387:THR:HG23 | 1:F:440:ARG:CZ | 2.17 | 0.74 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:1:MET:C | 1:E:3:GLU:H | 1.91 | 0.74 |
| 2:A:20:ALA:HB2 | 2:A:31:VAL:HG21 | 1.68 | 0.74 |
| 2:D:5:SER:HA | 2:D:13:VAL:O | 1.87 | 0.74 |
| 2:B:76:VAL:O | 2:B:80:LYS:HG2 | 1.88 | 0.74 |
| 1:E:21:ASP:O | 1:E:25:ARG:HG3 | 1.88 | 0.74 |
| 2:B:80:LYS:C | 2:B:82:TRP:H | 1.90 | 0.74 |
| 2:C:134:ARG:O | 2:C:138:GLU:HG2 | 1.87 | 0.74 |
| 1:E:109:LYS:HD3 | 1:E:109:LYS:O | 1.88 | 0.73 |
| 1:F:19:GLY:O | 1:F:24:LYS:NZ | 2.22 | 0.73 |
| 1:F:240:LYS:CG | 1:F:241:GLN:H | 2.00 | 0.73 |
| 2:A:12:VAL:HG13 | 2:A:171:LEU:HB3 | 1.70 | 0.73 |
| 2:D:7:ARG:HG3 | 2:D:12:VAL:HG22 | 1.70 | 0.73 |
| 2:C:57:PHE:O | 2:C:60:PHE:HB2 | 1.89 | 0.73 |
| 1:E:9:ILE:HD13 | 1:E:31:LEU:HD23 | 1.70 | 0.73 |
| 2:B:70:HIS:O | 2:B:74:ALA:HB3 | 1.89 | 0.73 |
| 2:C:1:THR:HA | 2:C:17:ASP:OD1 | 1.89 | 0.72 |
| 1:E:123:ALA:HB1 | 1:E:229:GLU:HG3 | 1.71 | 0.72 |
| 2:A:1:THR:HB | 2:A:162:THR:HG22 | 1.70 | 0.72 |
| 2:B:7:ARG:HG3 | 2:B:12:VAL:HG22 | 1.71 | 0.72 |
| 2:A:100:GLU:CD | 2:A:100:GLU:H | 1.92 | 0.72 |
| 1:F:21:ASP:OD1 | 1:F:25:ARG:HD2 | 1.89 | 0.72 |
| 2:B:64:LEU:HD12 | 2:B:64:LEU:H | 1.52 | 0.72 |
| 2:A:82:TRP:CE2 | 2:A:108:GLY:HA3 | 2.25 | 0.72 |
| 2:C:21:THR:HG21 | 2:C:161:TYR:HD2 | 1.54 | 0.72 |
| 2:D:63:LYS:HA | 2:D:66:MET:SD | 2.29 | 0.72 |
| 1:F:413:LEU:HD23 | 1:F:413:LEU:H | 1.53 | 0.72 |
| 2:D:136:LEU:C | 2:D:138:GLU:H | 1.93 | 0.72 |
| 2:C:63:LYS:CD | 2:C:78:LEU:HG | 2.19 | 0.72 |
| 1:E:235:ASN:H | 1:E:236:PRO:CD | 2.03 | 0.71 |
| 1:F:53:ILE:N | 1:F:53:ILE:HD12 | 2.05 | 0.71 |
| 2:B:34:VAL:HA | 2:B:45:GLY:HA2 | 1.71 | 0.71 |
| 2:C:86:ARG:O | 2:C:87:MET:HG2 | 1.90 | 0.71 |
| 2:C:123:GLY:C | 2:C:125:GLY:H | 1.94 | 0.71 |
| 1:F:5:THR:HG22 | 1:F:32:ARG:NH2 | 2.05 | 0.71 |
| 2:A:18:GLY:O | 2:A:31:VAL:HG23 | 1.90 | 0.71 |
| 2:D:52:ASP:O | 2:D:54:PHE:N | 2.23 | 0.71 |
| 1:E:61:VAL:HG23 | 1:E:62:GLY:H | 1.53 | 0.71 |
| 2:A:28:LYS:HD3 | 2:A:30:ASN:OD1 | 1.91 | 0.71 |
| 1:E:244:ILE:HD12 | 1:E:248:GLU:OE2 | 1.91 | 0.71 |
| 1:E:372:GLY:O | 1:E:376:ILE:HG12 | 1.89 | 0.71 |
| 2:B:13:VAL:HG11 | 2:B:145:ARG:HA | 1.72 | 0.71 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:158:ILE:HD11 | 2:C:127:PRO:HB3 | 1.73 | 0.71 |
| 2:A:28:LYS:HG2 | 2:A:29:GLY:H | 1.56 | 0.71 |
| 2:C:42:VAL:HA | 2:C:98:ALA:O | 1.90 | 0.71 |
| 1:F:61:VAL:HG12 | 1:F:335:LEU:HD13 | 1.73 | 0.71 |
| 2:C:41:LYS:H | 2:C:41:LYS:HZ3 | 0.77 | 0.71 |
| 1:E:102:ASP:C | 1:E:104:THR:H | 1.95 | 0.70 |
| 1:E:432:LEU:HB3 | 1:E:443:LEU:HD11 | 1.72 | 0.70 |
| 2:B:90:LYS:HE3 | 2:A:83:ARG:NH2 | 2.04 | 0.70 |
| 1:E:104:THR:O | 1:E:108:VAL:HG23 | 1.90 | 0.70 |
| 1:E:260:LYS:HE2 | 1:E:260:LYS:HA | 1.74 | 0.70 |
| 1:E:375:ARG:HA | 1:E:378:GLU:OE1 | 1.91 | 0.70 |
| 2:B:1:THR:HB | 2:B:33:LYS:HE3 | 1.72 | 0.70 |
| 2:B:140:THR:CB | 2:B:142:LEU:HD11 | 2.22 | 0.70 |
| 2:B:88:LEU:HG | 2:B:89:ARG:HG2 | 1.73 | 0.70 |
| 2:D:28:LYS:CD | 2:D:31:VAL:HG22 | 2.19 | 0.70 |
| 2:C:35:ARG:NH1 | 2:C:37:LEU:HA | 2.07 | 0.70 |
| 2:B:36:ARG:NH1 | 2:B:40:ASP:OD2 | 2.25 | 0.70 |
| 2:A:38:TYR:HB3 | 2:A:42:VAL:HG21 | 1.73 | 0.70 |
| 2:A:80:LYS:C | 2:A:82:TRP:H | 1.95 | 0.70 |
| 2:A:119:LEU:C | 2:A:120:ILE:HD12 | 2.12 | 0.70 |
| 2:B:13:VAL:CG2 | 2:B:168:ILE:HG22 | 2.22 | 0.70 |
| 1:E:412:ASP:O | 1:E:414:SER:N | 2.24 | 0.70 |
| 2:B:160:ILE:HD11 | 2:D:19:GLN:NE2 | 2.07 | 0.70 |
| 1:F:45:ARG:HE | 1:F:46:HIS:CD2 | 2.10 | 0.69 |
| 2:D:8:ARG:HB3 | 2:D:144:ALA:CB | 2.19 | 0.69 |
| 1:E:315:PRO:HA | 1:E:318:LEU:HD12 | 1.75 | 0.69 |
| 2:C:15:ALA:HA | 2:C:168:ILE:HG23 | 1.74 | 0.69 |
| 2:C:62:ARG:O | 2:C:65:GLU:HB2 | 1.92 | 0.69 |
| 1:E:401:ARG:O | 1:E:401:ARG:HD3 | 1.92 | 0.69 |
| 2:A:67:HIS:HB3 | 2:A:70:HIS:HB2 | 1.75 | 0.69 |
| 2:C:77:GLU:CD | 2:C:77:GLU:H | 1.96 | 0.69 |
| 1:E:335:LEU:HD12 | 1:E:392:ALA:HB2 | 1.73 | 0.69 |
| 1:F:89:VAL:HG21 | 1:F:274:ARG:NH2 | 2.07 | 0.69 |
| 1:F:412:ASP:O | 1:F:414:SER:N | 2.24 | 0.69 |
| 2:B:88:LEU:HD12 | 2:B:89:ARG:HE | 1.58 | 0.69 |
| 1:E:239:LEU:O | 1:E:240:LYS:HD3 | 1.92 | 0.69 |
| 1:E:259:ASP:C | 1:E:261:ILE:H | 1.97 | 0.69 |
| 1:F:6:PRO:O | 1:F:10:VAL:HG23 | 1.93 | 0.69 |
| 1:F:21:ASP:HA | 1:F:24:LYS:HG3 | 1.73 | 0.69 |
| 1:F:34:ARG:HD3 | 1:F:250:HIS:CD2 | 2.27 | 0.69 |
| 2:D:15:ALA:HB1 | 2:D:152:LEU:HD12 | 1.73 | 0.69 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:441:PHE:HD1 | 1:F:56:ILE:HD13 | 1.57 | 0.68 |
| 1:E:442:ILE:HD13 | 1:E:442:ILE:H | 1.57 | 0.68 |
| 1:F:266:GLU:HG3 | 1:F:267:SER:H | 1.56 | 0.68 |
| 1:E:302:ILE:HB | 1:E:304:PHE:CE1 | 2.28 | 0.68 |
| 1:E:277:VAL:O | 1:E:281:LEU:HG | 1.93 | 0.68 |
| 1:E:84:THR:O | 1:E:87:THR:HG22 | 1.94 | 0.68 |
| 1:F:68:ARG:HG3 | 1:F:78:PHE:CE2 | 2.29 | 0.68 |
| 2:B:84:THR:O | 2:B:84:THR:HG22 | 1.92 | 0.68 |
| 2:C:39:ASN:ND2 | 2:C:40:ASP:H | 1.90 | 0.68 |
| 2:C:13:VAL:HG11 | 2:C:145:ARG:HA | 1.75 | 0.68 |
| 1:E:20:GLN:O | 1:E:24:LYS:HG2 | 1.94 | 0.68 |
| 1:E:402:LEU:HD11 | 1:E:425:VAL:HA | 1.76 | 0.68 |
| 2:B:13:VAL:HB | 2:B:170:GLU:CG | 2.22 | 0.68 |
| 2:C:36:ARG:HD2 | 2:C:38:TYR:CG | 2.28 | 0.68 |
| 1:F:103:LEU:HD13 | 1:F:247:VAL:HG22 | 1.76 | 0.68 |
| 2:D:84:THR:HG22 | 2:D:85:ASP:H | 1.57 | 0.68 |
| 1:E:79:ILE:HG21 | 1:E:103:LEU:HB2 | 1.74 | 0.68 |
| 2:B:38:TYR:C | 2:B:40:ASP:H | 1.97 | 0.68 |
| 2:B:58:GLU:O | 2:B:60:PHE:N | 2.27 | 0.68 |
| 2:B:73:LYS:HA | 2:B:77:GLU:CD | 2.14 | 0.68 |
| 1:F:108:VAL:HG22 | 1:F:243:ALA:HB1 | 1.76 | 0.67 |
| 1:E:69:ARG:HH11 | 1:E:69:ARG:CG | 2.05 | 0.67 |
| 2:D:7:ARG:NH1 | 2:D:12:VAL:HG21 | 2.08 | 0.67 |
| 2:C:6:VAL:O | 2:C:144:ALA:HB1 | 1.94 | 0.67 |
| 2:B:150:LYS:HD3 | 2:C:139:ASN:HD21 | 1.59 | 0.67 |
| 2:A:38:TYR:C | 2:A:40:ASP:N | 2.46 | 0.67 |
| 2:D:58:GLU:O | 2:D:61:GLU:HB3 | 1.92 | 0.67 |
| 1:E:18:ILE:HD13 | 1:E:342:ARG:HB2 | 1.77 | 0.67 |
| 2:B:137:LEU:HD13 | 2:B:147:ILE:HG13 | 1.76 | 0.67 |
| 2:C:87:MET:CG | 2:C:88:LEU:H | 2.07 | 0.67 |
| 2:D:88:LEU:HD23 | 2:D:91:LEU:HD21 | 1.74 | 0.67 |
| 1:E:438:LEU:HD22 | 1:E:442:ILE:HD12 | 1.76 | 0.67 |
| 2:A:61:GLU:O | 2:A:65:GLU:HG3 | 1.94 | 0.67 |
| 1:F:264:ARG:HD2 | 1:F:312:ILE:CG1 | 2.25 | 0.67 |
| 1:F:390:ILE:HD11 | 1:F:394:ARG:HA | 1.75 | 0.67 |
| 1:E:278:GLN:HE22 | 1:E:318:LEU:CA | 2.08 | 0.67 |
| 2:B:50:THR:N | 2:A:111:ASP:HB3 | 2.10 | 0.67 |
| 2:A:75:ALA:O | 2:A:79:ALA:N | 2.21 | 0.67 |
| 2:B:8:ARG:HG3 | 2:B:9:ASN:N | 2.10 | 0.66 |
| 1:F:375:ARG:HG2 | 1:F:375:ARG:NH1 | 2.09 | 0.66 |
| 1:E:244:ILE:HG13 | 1:E:245:ASP:N | 2.10 | 0.66 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:94:LEU:HD12 | 2:B:94:LEU:H | 1.60 | 0.66 |
| 2:D:44:ALA:HB2 | 2:D:97:VAL:CG1 | 2.26 | 0.66 |
| 1:F:319:ILE:HG13 | 1:F:319:ILE:O | 1.95 | 0.66 |
| 2:B:15:ALA:HB2 | 2:B:168:ILE:HG23 | 1.76 | 0.66 |
| 2:C:37:LEU:HD13 | 2:C:61:GLU:HG2 | 1.76 | 0.66 |
| 1:F:7:ARG:HG2 | 1:F:7:ARG:HH11 | 1.61 | 0.66 |
| 2:B:51:ALA:C | 2:B:54:PHE:H | 1.98 | 0.66 |
| 2:D:14:ILE:O | 2:D:168:ILE:HG13 | 1.95 | 0.66 |
| 1:E:438:LEU:HD13 | 1:E:442:ILE:HD11 | 1.78 | 0.66 |
| 2:C:93:ALA:C | 2:C:94:LEU:HD23 | 2.16 | 0.66 |
| 1:E:108:VAL:O | 1:E:111:VAL:HG22 | 1.96 | 0.66 |
| 2:D:121:ALA:CB | 2:D:130:GLN:HB2 | 2.26 | 0.66 |
| 2:D:85:ASP:O | 2:D:86:ARG:HB2 | 1.95 | 0.66 |
| 2:C:122:ILE:HD13 | 2:C:122:ILE:N | 2.10 | 0.65 |
| 1:F:68:ARG:HG3 | 1:F:78:PHE:HE2 | 1.62 | 0.65 |
| 2:D:72:VAL:C | 2:D:74:ALA:H | 2.00 | 0.65 |
| 2:C:86:ARG:H | 2:C:87:MET:HE3 | 1.61 | 0.65 |
| 2:C:163:ASN:C | 2:C:163:ASN:ND2 | 2.50 | 0.65 |
| 1:F:34:ARG:HH11 | 1:F:250:HIS:HB3 | 1.60 | 0.65 |
| 1:F:94:LYS:HE2 | 1:F:94:LYS:HA | 1.79 | 0.65 |
| 2:C:106:ILE:C | 2:C:108:GLY:H | 1.99 | 0.65 |
| 2:A:88:LEU:HD22 | 2:A:91:LEU:HB2 | 1.77 | 0.65 |
| 1:E:6:PRO:O | 1:E:10:VAL:HG23 | 1.95 | 0.65 |
| 1:F:267:SER:HA | 2:D:87:MET:HG3 | 1.79 | 0.65 |
| 2:A:42:VAL:HG12 | 2:A:42:VAL:O | 1.97 | 0.65 |
| 2:D:99:ASP:CG | 2:D:100:GLU:H | 1.99 | 0.65 |
| 1:E:122:ARG:O | 1:E:125:GLU:HG2 | 1.97 | 0.65 |
| 2:B:32:LYS:NZ | 2:B:32:LYS:CB | 2.59 | 0.65 |
| 2:C:2:THR:HG21 | 2:C:129:ALA:HB2 | 1.78 | 0.65 |
| 2:C:70:HIS:CE1 | 2:C:72:VAL:HB | 2.30 | 0.65 |
| 1:E:432:LEU:CD1 | 1:E:442:ILE:HD11 | 2.25 | 0.64 |
| 1:E:350:SER:O | 1:E:354:GLN:HG3 | 1.97 | 0.64 |
| 2:B:70:HIS:O | 2:B:74:ALA:O | 2.14 | 0.64 |
| 2:C:37:LEU:HB3 | 2:C:61:GLU:HG2 | 1.79 | 0.64 |
| 1:E:246:ALA:C | 1:E:248:GLU:H | 2.00 | 0.64 |
| 2:C:132:ALA:HB1 | 2:C:154:ILE:HD12 | 1.78 | 0.64 |
| 1:E:123:ALA:HA | 1:E:126:LEU:HD12 | 1.80 | 0.64 |
| 2:B:60:PHE:CE2 | 2:B:64:LEU:HA | 2.32 | 0.64 |
| 2:D:38:TYR:O | 2:D:40:ASP:N | 2.30 | 0.64 |
| 2:D:85:ASP:HB3 | 2:D:87:MET:SD | 2.38 | 0.64 |
| 2:A:95:LEU:HD23 | 2:A:95:LEU:H | 1.61 | 0.64 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:D:1:THR:HA | 2:D:17:ASP:OD1 | 1.98 | 0.64 |
| 2:C:106:ILE:O | 2:C:108:GLY:N | 2.31 | 0.64 |
| 2:C:140:THR:HG21 | 2:C:142:LEU:HD12 | 1.80 | 0.64 |
| 1:E:278:GLN:NE2 | 1:E:319:ILE:H | 1.95 | 0.64 |
| 1:F:384:ASN:ND2 | 1:F:390:ILE:H | 1.95 | 0.64 |
| 2:B:4:VAL:HG22 | 2:B:121:ALA:CB | 2.27 | 0.64 |
| 2:B:5:SER:HB2 | 2:B:14:ILE:HA | 1.79 | 0.64 |
| 2:C:37:LEU:O | 2:C:39:ASN:N | 2.31 | 0.64 |
| 1:F:240:LYS:HG3 | 1:F:241:GLN:N | 2.12 | 0.64 |
| 1:F:278:GLN:NE2 | 1:F:319:ILE:H | 1.95 | 0.64 |
| 2:A:142:LEU:O | 2:A:143:SER:HB3 | 1.98 | 0.64 |
| 2:D:15:ALA:HB2 | 2:D:168:ILE:HD12 | 1.79 | 0.64 |
| 2:B:37:LEU:HG | 2:B:61:GLU:OE1 | 1.98 | 0.64 |
| 2:B:90:LYS:HB3 | 2:A:83:ARG:NH2 | 2.12 | 0.64 |
| 1:E:20:GLN:HA | 1:E:20:GLN:NE2 | 2.12 | 0.64 |
| 1:E:61:VAL:O | 3:E:905:DAT:N7 | 2.31 | 0.64 |
| 2:B:86:ARG:HH11 | 2:B:86:ARG:HB2 | 1.61 | 0.64 |
| 2:C:5:SER:HA | 2:C:13:VAL:O | 1.98 | 0.64 |
| 2:C:81:ASP:HA | 2:C:85:ASP:CG | 2.18 | 0.64 |
| 2:B:8:ARG:HB3 | 2:B:144:ALA:HB2 | 1.80 | 0.63 |
| 2:B:119:LEU:C | 2:B:120:ILE:HD12 | 2.18 | 0.63 |
| 2:A:38:TYR:HB3 | 2:A:42:VAL:CG2 | 2.28 | 0.63 |
| 1:F:387:THR:CG2 | 1:F:388:GLU:H | 1.96 | 0.63 |
| 2:D:143:SER:HB3 | 2:D:146:GLU:HG2 | 1.80 | 0.63 |
| 2:A:3:ILE:CG1 | 2:A:47:ALA:HB2 | 2.29 | 0.63 |
| 2:A:138:GLU:C | 2:A:139:ASN:HD22 | 2.02 | 0.63 |
| 1:E:241:GLN:O | 1:E:245:ASP:OD1 | 2.17 | 0.63 |
| 1:F:240:LYS:O | 1:F:241:GLN:C | 2.35 | 0.63 |
| 1:F:409:ASP:O | 1:F:411:SER:N | 2.32 | 0.63 |
| 2:A:135:ALA:O | 2:D:136:LEU:HD21 | 1.98 | 0.63 |
| 1:E:17:ILE:HB | 1:E:24:LYS:HE3 | 1.81 | 0.63 |
| 1:F:124:GLU:C | 1:F:126:LEU:H | 2.02 | 0.63 |
| 2:A:28:LYS:HD3 | 2:A:30:ASN:CG | 2.19 | 0.63 |
| 2:D:82:TRP:CD2 | 2:D:108:GLY:O | 2.51 | 0.63 |
| 1:E:108:VAL:C | 1:E:110:MET:N | 2.52 | 0.63 |
| 1:F:351:ILE:H | 1:F:351:ILE:CD1 | 2.09 | 0.63 |
| 2:B:44:ALA:CB | 2:B:97:VAL:HA | 2.20 | 0.63 |
| 2:B:80:LYS:C | 2:B:82:TRP:N | 2.51 | 0.63 |
| 2:A:28:LYS:HG2 | 2:A:30:ASN:H | 1.64 | 0.63 |
| 2:A:71:LEU:HD11 | 2:A:97:VAL:HG23 | 1.80 | 0.63 |
| 2:D:44:ALA:HA | 2:D:96:ALA:O | 1.98 | 0.63 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:D:105:ILE:HB | 2:D:113:VAL:HG22 | 1.81 | 0.63 |
| 1:E:432:LEU:HB3 | 1:E:443:LEU:CD1 | 2.29 | 0.62 |
| 2:D:105:ILE:O | 2:D:112:VAL:HA | 1.99 | 0.62 |
| 2:C:15:ALA:HB1 | 2:C:152:LEU:HD12 | 1.81 | 0.62 |
| 2:C:82:TRP:NE1 | 2:C:108:GLY:HA2 | 2.03 | 0.62 |
| 2:B:6:VAL:O | 2:B:144:ALA:HB1 | 1.99 | 0.62 |
| 2:D:136:LEU:O | 2:D:138:GLU:N | 2.32 | 0.62 |
| 2:C:44:ALA:HB2 | 2:C:97:VAL:CG1 | 2.27 | 0.62 |
| 2:A:80:LYS:C | 2:A:82:TRP:N | 2.53 | 0.62 |
| 2:A:1:THR:N | 2:A:33:LYS:HE2 | 2.14 | 0.62 |
| 2:A:71:LEU:HG | 2:A:104:LEU:HD21 | 1.81 | 0.62 |
| 1:E:43:GLU:HG3 | 1:E:44:LEU:N | 2.14 | 0.62 |
| 1:E:259:ASP:O | 1:E:261:ILE:N | 2.33 | 0.62 |
| 1:F:228:GLU:O | 1:F:231:ALA:HB3 | 1.99 | 0.62 |
| 2:B:74:ALA:O | 2:B:75:ALA:HB2 | 1.99 | 0.62 |
| 2:B:78:LEU:HD23 | 2:B:106:ILE:HD13 | 1.80 | 0.62 |
| 2:D:85:ASP:O | 2:D:87:MET:HE1 | 2.00 | 0.62 |
| 1:F:376:ILE:O | 1:F:379:ALA:HB3 | 1.99 | 0.62 |
| 2:B:149:GLU:CD | 2:B:168:ILE:HD13 | 2.19 | 0.62 |
| 2:A:74:ALA:O | 2:A:78:LEU:HB2 | 2.00 | 0.62 |
| 1:F:97:ASP:OD2 | 1:F:98:SER:N | 2.32 | 0.62 |
| 2:B:38:TYR:O | 2:B:40:ASP:N | 2.32 | 0.62 |
| 2:D:6:VAL:O | 2:D:144:ALA:HB1 | 1.98 | 0.62 |
| 2:D:102:ALA:HB1 | 2:D:114:GLN:OE1 | 2.00 | 0.62 |
| 2:C:54:PHE:O | 2:C:57:PHE:HB3 | 2.00 | 0.62 |
| 1:E:96:VAL:HG11 | 1:E:280:ASP:HB3 | 1.82 | 0.62 |
| 1:F:88:GLU:C | 1:F:90:GLY:H | 2.02 | 0.62 |
| 1:F:312:ILE:O | 1:F:313:ALA:HB2 | 2.00 | 0.62 |
| 2:A:22:LEU:CD2 | 2:A:23:GLY:H | 2.09 | 0.62 |
| 2:D:63:LYS:O | 2:D:66:MET:HG2 | 2.00 | 0.62 |
| 2:C:105:ILE:HG22 | 2:C:106:ILE:N | 2.15 | 0.62 |
| 2:B:95:LEU:H | 2:B:95:LEU:HD23 | 1.64 | 0.62 |
| 2:D:54:PHE:O | 2:D:57:PHE:HB3 | 1.99 | 0.62 |
| 2:C:39:ASN:N | 2:C:39:ASN:ND2 | 2.48 | 0.62 |
| 1:E:311:GLN:HG3 | 1:E:312:ILE:H | 1.65 | 0.61 |
| 1:F:102:ASP:C | 1:F:104:THR:N | 2.51 | 0.61 |
| 2:B:7:ARG:HG3 | 2:B:12:VAL:CG2 | 2.29 | 0.61 |
| 2:B:141:GLU:O | 2:B:142:LEU:O | 2.18 | 0.61 |
| 2:A:35:ARG:H | 2:A:45:GLY:HA2 | 1.64 | 0.61 |
| 2:D:32:LYS:HD2 | 2:D:167:THR:CG2 | 2.28 | 0.61 |
| 2:D:64:LEU:O | 2:D:68:GLN:N | 2.33 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:70:HIS:ND1 | 2:C:72:VAL:HB | 2.15 | 0.61 |
| 2:B:72:VAL:C | 2:B:74:ALA:H | 2.03 | 0.61 |
| 2:D:74:ALA:HB1 | 2:D:78:LEU:HD12 | 1.81 | 0.61 |
| 2:D:82:TRP:NE1 | 2:D:109:ASN:HA | 2.14 | 0.61 |
| 2:B:39:ASN:HA | 2:B:62:ARG:NH2 | 2.14 | 0.61 |
| 2:D:100:GLU:HB2 | 2:D:173:TYR:HD1 | 1.65 | 0.61 |
| 2:C:136:LEU:C | 2:C:138:GLU:H | 2.03 | 0.61 |
| 1:E:55:MET:HE2 | 1:E:332:LEU:HD21 | 1.82 | 0.61 |
| 1:F:34:ARG:HH11 | 1:F:250:HIS:CB | 2.13 | 0.61 |
| 1:F:89:VAL:HG21 | 1:F:274:ARG:CZ | 2.30 | 0.61 |
| 2:B:3:ILE:O | 2:B:121:ALA:HA | 2.01 | 0.61 |
| 2:B:39:ASN:H | 2:B:62:ARG:NH2 | 1.98 | 0.61 |
| 2:B:114:GLN:HG2 | 2:B:116:GLU:OE1 | 2.00 | 0.61 |
| 2:A:140:THR:HG22 | 2:A:141:GLU:N | 2.16 | 0.61 |
| 2:C:45:GLY:O | 2:C:95:LEU:HD12 | 2.00 | 0.61 |
| 1:F:390:ILE:HD11 | 1:F:394:ARG:CA | 2.31 | 0.61 |
| 2:B:60:PHE:CE1 | 2:B:64:LEU:HG | 2.34 | 0.61 |
| 1:E:242:ASP:HA | 1:E:245:ASP:OD1 | 2.01 | 0.61 |
| 2:C:63:LYS:C | 2:C:65:GLU:H | 2.02 | 0.61 |
| 1:E:229:GLU:HB2 | 1:E:232:LYS:HZ3 | 1.65 | 0.61 |
| 1:F:130:ARG:O | 1:F:131:ILE:HD13 | 2.01 | 0.61 |
| 2:B:86:ARG:HE | 2:A:84:THR:HG21 | 1.65 | 0.61 |
| 2:A:36:ARG:NE | 2:A:40:ASP:OD2 | 2.32 | 0.61 |
| 1:F:438:LEU:HD22 | 1:F:442:ILE:CD1 | 2.30 | 0.61 |
| 2:B:17:ASP:HA | 2:B:165:PHE:O | 2.00 | 0.61 |
| 2:A:71:LEU:O | 2:A:74:ALA:HB3 | 2.01 | 0.61 |
| 1:E:349:ALA:O | 1:E:350:SER:O | 2.19 | 0.60 |
| 2:D:71:LEU:CD1 | 2:D:99:ASP:HB2 | 2.30 | 0.60 |
| 2:D:86:ARG:HA | 2:D:86:ARG:NE | 2.15 | 0.60 |
| 1:E:108:VAL:C | 1:E:110:MET:H | 2.02 | 0.60 |
| 2:C:82:TRP:NE1 | 2:C:108:GLY:C | 2.54 | 0.60 |
| 1:E:88:GLU:OE2 | 1:E:92:VAL:N | 2.27 | 0.60 |
| 2:B:65:GLU:HB2 | 2:B:66:MET:SD | 2.41 | 0.60 |
| 1:E:245:ASP:HA | 1:E:248:GLU:HB3 | 1.83 | 0.60 |
| 1:E:278:GLN:HE22 | 1:E:318:LEU:HA | 1.66 | 0.60 |
| 1:E:432:LEU:HD11 | 1:E:442:ILE:CD1 | 2.28 | 0.60 |
| 1:F:235:ASN:H | 1:F:236:PRO:HD3 | 1.65 | 0.60 |
| 2:D:35:ARG:HB3 | 2:D:57:PHE:HE1 | 1.65 | 0.60 |
| 1:F:122:ARG:HH21 | 1:F:125:GLU:HG3 | 1.66 | 0.60 |
| 2:D:35:ARG:HB3 | 2:D:57:PHE:CE1 | 2.37 | 0.60 |
| 1:E:19:GLY:O | 1:E:24:LYS:NZ | 2.34 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:271:ASP:O | 1:F:274:ARG:HG2 | 2.02 | 0.60 |
| 2:A:3:ILE:HD12 | 2:A:34:VAL:HG12 | 1.81 | 0.60 |
| 2:D:46:PHE:HE1 | 2:D:48:GLY:O | 1.84 | 0.60 |
| 1:E:49:THR:O | 1:E:50:PRO:O | 2.20 | 0.60 |
| 1:E:299:THR:HA | 1:E:302:ILE:HG12 | 1.84 | 0.60 |
| 2:A:75:ALA:CB | 2:A:112:VAL:HG21 | 2.28 | 0.60 |
| 2:C:37:LEU:HB3 | 2:C:61:GLU:CG | 2.31 | 0.60 |
| 1:F:39:GLN:C | 1:F:39:GLN:CD | 2.61 | 0.60 |
| 1:F:432:LEU:HD11 | 1:F:442:ILE:HD11 | 1.84 | 0.60 |
| 2:A:140:THR:HB | 2:A:142:LEU:CD1 | 2.32 | 0.60 |
| 2:C:75:ALA:O | 2:C:79:ALA:HB3 | 2.02 | 0.60 |
| 1:F:73:LEU:C | 1:F:73:LEU:HD23 | 2.22 | 0.60 |
| 2:A:84:THR:C | 2:A:86:ARG:H | 2.05 | 0.60 |
| 1:F:226:ILE:HG13 | 1:F:227:GLU:N | 2.17 | 0.59 |
| 2:D:52:ASP:O | 2:D:55:THR:N | 2.33 | 0.59 |
| 2:D:52:ASP:OD2 | 2:D:53:ALA:N | 2.35 | 0.59 |
| 2:D:82:TRP:CD1 | 2:D:83:ARG:N | 2.70 | 0.59 |
| 1:E:125:GLU:O | 1:E:129:GLU:HG2 | 2.01 | 0.59 |
| 1:E:229:GLU:HB2 | 1:E:232:LYS:NZ | 2.17 | 0.59 |
| 2:B:115:PRO:O | 2:B:116:GLU:C | 2.40 | 0.59 |
| 2:D:82:TRP:HD1 | 2:D:83:ARG:N | 2.01 | 0.59 |
| 2:B:42:VAL:O | 2:B:43:ILE:HG23 | 2.02 | 0.59 |
| 2:D:71:LEU:O | 2:D:74:ALA:HB3 | 2.02 | 0.59 |
| 2:B:160:ILE:HD12 | 2:D:160:ILE:O | 2.03 | 0.59 |
| 2:D:60:PHE:O | 2:D:62:ARG:N | 2.34 | 0.59 |
| 2:D:84:THR:O | 2:D:85:ASP:HB2 | 2.02 | 0.59 |
| 2:C:5:SER:CB | 2:C:14:ILE:HG12 | 2.29 | 0.59 |
| 1:E:103:LEU:HG | 1:E:247:VAL:CG1 | 2.23 | 0.59 |
| 1:E:226:ILE:O | 1:E:229:GLU:HB3 | 2.02 | 0.59 |
| 1:F:55:MET:HE1 | 1:F:63:LYS:HA | 1.82 | 0.59 |
| 1:F:432:LEU:HG | 1:F:443:LEU:HD22 | 1.84 | 0.59 |
| 2:C:136:LEU:O | 2:C:138:GLU:N | 2.36 | 0.59 |
| 1:E:249:GLN:NE2 | 1:E:250:HIS:ND1 | 2.51 | 0.59 |
| 2:A:38:TYR:O | 2:A:40:ASP:N | 2.35 | 0.59 |
| 2:D:88:LEU:HD22 | 2:C:84:THR:CB | 2.31 | 0.59 |
| 2:C:60:PHE:O | 2:C:64:LEU:HD13 | 2.01 | 0.59 |
| 1:E:61:VAL:HG23 | 1:E:62:GLY:N | 2.16 | 0.59 |
| 1:F:374:LYS:O | 1:F:378:GLU:HG3 | 2.03 | 0.59 |
| 1:F:375:ARG:HD3 | 1:F:426:SER:OG | 2.03 | 0.59 |
| 2:D:70:HIS:HB3 | 2:D:73:LYS:CD | 2.28 | 0.59 |
| 2:B:28:LYS:HE3 | 2:A:113:VAL:HG23 | 1.84 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:51:ALA:HA | 2:B:54:PHE:CB | 2.33 | 0.59 |
| 2:A:35:ARG:O | 2:A:44:ALA:O | 2.20 | 0.59 |
| 2:C:37:LEU:HD22 | 2:C:61:GLU:HB2 | 1.85 | 0.59 |
| 1:E:96:VAL:HG23 | 1:E:97:ASP:N | 2.18 | 0.59 |
| 2:A:14:ILE:HD12 | 2:A:14:ILE:N | 2.17 | 0.59 |
| 2:A:142:LEU:O | 2:A:143:SER:CB | 2.51 | 0.59 |
| 1:F:5:THR:OG1 | 1:F:7:ARG:HG3 | 2.02 | 0.59 |
| 2:B:18:GLY:O | 2:B:31:VAL:HG23 | 2.02 | 0.59 |
| 1:E:254:PHE:HA | 1:E:305:ILE:O | 2.03 | 0.58 |
| 1:F:67:ALA:HA | 1:F:70:LEU:HB3 | 1.85 | 0.58 |
| 2:D:82:TRP:CD1 | 2:D:109:ASN:HA | 2.38 | 0.58 |
| 2:C:105:ILE:C | 2:C:106:ILE:HD12 | 2.22 | 0.58 |
| 1:E:237:GLU:O | 1:E:240:LYS:HB2 | 2.02 | 0.58 |
| 1:F:366:ILE:HD13 | 1:F:418:ILE:HB | 1.85 | 0.58 |
| 2:C:71:LEU:HG | 2:C:99:ASP:HB2 | 1.85 | 0.58 |
| 1:F:112:ARG:O | 1:F:116:ILE:HG23 | 2.03 | 0.58 |
| 2:A:7:ARG:O | 2:A:144:ALA:HB2 | 2.03 | 0.58 |
| 1:E:5:THR:HG22 | 1:E:32:ARG:NH2 | 2.18 | 0.58 |
| 2:B:28:LYS:HG2 | 2:B:29:GLY:N | 2.17 | 0.58 |
| 2:A:63:LYS:HE3 | 2:A:77:GLU:HB3 | 1.86 | 0.58 |
| 2:C:27:MET:O | 2:C:29:GLY:N | 2.37 | 0.58 |
| 1:F:282:LEU:HD21 | 1:F:321:GLU:HB2 | 1.85 | 0.58 |
| 2:B:52:ASP:HB2 | 2:A:110:GLY:HA3 | 1.85 | 0.58 |
| 1:E:90:GLY:O | 1:F:91:TYR:HA | 2.03 | 0.58 |
| 1:E:110:MET:HA | 1:E:113:VAL:HG12 | 1.83 | 0.58 |
| 1:F:102:ASP:O | 1:F:104:THR:N | 2.36 | 0.58 |
| 1:E:73:LEU:C | 1:E:73:LEU:HD12 | 2.24 | 0.58 |
| 1:F:375:ARG:HA | 1:F:378:GLU:OE1 | 2.04 | 0.58 |
| 2:B:35:ARG:N | 2:B:44:ALA:O | 2.31 | 0.58 |
| 2:A:32:LYS:HG2 | 2:A:167:THR:HG21 | 1.86 | 0.58 |
| 2:C:13:VAL:HG23 | 2:C:169:GLU:O | 2.04 | 0.58 |
| 1:F:103:LEU:O | 1:F:247:VAL:HG22 | 2.03 | 0.58 |
| 2:B:51:ALA:HA | 2:B:54:PHE:HB3 | 1.84 | 0.58 |
| 2:A:8:ARG:NH1 | 2:A:141:GLU:O | 2.36 | 0.58 |
| 2:C:13:VAL:HG22 | 2:C:14:ILE:N | 2.19 | 0.58 |
| 2:C:82:TRP:NE1 | 2:C:108:GLY:CA | 2.64 | 0.58 |
| 1:F:122:ARG:NH2 | 1:F:125:GLU:HG3 | 2.19 | 0.58 |
| 1:F:240:LYS:O | 1:F:243:ALA:N | 2.36 | 0.58 |
| 1:F:278:GLN:HE22 | 1:F:318:LEU:CA | 2.17 | 0.58 |
| 2:B:34:VAL:HG22 | 2:B:45:GLY:HA3 | 1.85 | 0.58 |
| 2:B:72:VAL:O | 2:B:74:ALA:N | 2.37 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:A:78:LEU:O | 2:A:82:TRP:HB2 | 2.04 | 0.58 |
| 2:D:2:THR:HG21 | 2:D:129:ALA:HB2 | 1.86 | 0.58 |
| 2:D:62:ARG:HA | 2:D:65:GLU:OE2 | 2.04 | 0.58 |
| 2:D:84:THR:HG22 | 2:D:85:ASP:N | 2.19 | 0.58 |
| 1:E:229:GLU:C | 1:E:229:GLU:CD | 2.63 | 0.57 |
| 1:F:344:LEU:O | 1:F:350:SER:OG | 2.22 | 0.57 |
| 2:C:36:ARG:HG2 | 2:C:37:LEU:N | 2.19 | 0.57 |
| 1:E:355:TYR:OH | 1:E:400:GLU:HB2 | 2.04 | 0.57 |
| 1:F:108:VAL:C | 1:F:110:MET:N | 2.58 | 0.57 |
| 1:F:264:ARG:HD2 | 1:F:312:ILE:HG12 | 1.86 | 0.57 |
| 1:F:381:TRP:CH2 | 1:F:385:GLU:HG3 | 2.39 | 0.57 |
| 2:B:7:ARG:NH1 | 2:B:102:ALA:N | 2.48 | 0.57 |
| 2:C:23:GLY:C | 2:C:24:ASN:HD22 | 2.06 | 0.57 |
| 1:F:226:ILE:HG13 | 1:F:227:GLU:H | 1.69 | 0.57 |
| 1:F:341:GLU:OE1 | 1:F:374:LYS:HG3 | 2.03 | 0.57 |
| 2:B:75:ALA:HB1 | 2:B:112:VAL:CG2 | 2.33 | 0.57 |
| 2:D:37:LEU:HD11 | 2:D:60:PHE:CB | 2.34 | 0.57 |
| 2:C:39:ASN:HB3 | 2:C:61:GLU:OE1 | 2.04 | 0.57 |
| 2:D:80:LYS:O | 2:D:82:TRP:N | 2.37 | 0.57 |
| 2:C:52:ASP:OD2 | 2:C:91:LEU:HD12 | 2.03 | 0.57 |
| 2:C:127:PRO:O | 2:C:130:GLN:HB3 | 2.04 | 0.57 |
| 1:F:9:ILE:CD1 | 1:F:31:LEU:HD23 | 2.33 | 0.57 |
| 1:F:236:PRO:O | 1:F:238:GLU:N | 2.36 | 0.57 |
| 2:A:82:TRP:O | 2:A:84:THR:N | 2.37 | 0.57 |
| 1:E:275:GLU:O | 1:E:278:GLN:HB2 | 2.05 | 0.57 |
| 2:B:20:ALA:HB2 | 2:B:31:VAL:HG21 | 1.85 | 0.57 |
| 2:B:51:ALA:CA | 2:B:54:PHE:HB3 | 2.34 | 0.57 |
| 2:A:71:LEU:HD22 | 2:A:99:ASP:OD2 | 2.04 | 0.57 |
| 2:A:140:THR:HG22 | 2:A:141:GLU:H | 1.70 | 0.57 |
| 2:C:101:THR:O | 2:C:102:ALA:HB2 | 2.05 | 0.57 |
| 1:E:376:ILE:O | 1:E:379:ALA:HB3 | 2.05 | 0.57 |
| 1:F:115:ALA:HA | 1:F:118:LYS:CB | 2.28 | 0.57 |
| 2:A:160:ILE:HG13 | 2:A:161:TYR:CD2 | 2.40 | 0.57 |
| 2:D:37:LEU:CD2 | 2:D:61:GLU:HB2 | 2.29 | 0.57 |
| 1:E:223:LYS:NZ | 1:E:226:ILE:HG21 | 2.20 | 0.57 |
| 1:F:227:GLU:HA | 1:F:230:ALA:HB3 | 1.86 | 0.57 |
| 2:B:149:GLU:OE2 | 2:B:168:ILE:HD13 | 2.05 | 0.57 |
| 1:F:90:GLY:O | 1:F:91:TYR:CG | 2.57 | 0.57 |
| 2:B:82:TRP:O | 2:B:83:ARG:HG2 | 2.03 | 0.57 |
| 2:B:150:LYS:HD3 | 2:C:139:ASN:ND2 | 2.19 | 0.57 |
| 1:F:240:LYS:HA | 1:F:294:HIS:CD2 | 2.38 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:278:GLN:HE22 | 1:F:319:ILE:H | 1.50 | 0.57 |
| 2:B:32:LYS:HG3 | 2:B:167:THR:HG21 | 1.87 | 0.57 |
| 2:A:3:ILE:HG13 | 2:A:47:ALA:HB2 | 1.87 | 0.57 |
| 2:A:6:VAL:HG11 | 2:A:147:ILE:HB | 1.87 | 0.57 |
| 2:A:44:ALA:HB1 | 2:A:57:PHE:CZ | 2.40 | 0.57 |
| 2:C:35:ARG:HD2 | 2:C:57:PHE:HZ | 1.68 | 0.57 |
| 1:F:33:ASN:HA | 1:F:36:ARG:HB2 | 1.87 | 0.56 |
| 2:B:38:TYR:C | 2:B:40:ASP:N | 2.58 | 0.56 |
| 2:D:28:LYS:O | 2:D:31:VAL:HG23 | 2.05 | 0.56 |
| 1:F:45:ARG:HH11 | 1:F:45:ARG:CG | 2.19 | 0.56 |
| 1:F:387:THR:HG23 | 1:F:440:ARG:NH1 | 2.19 | 0.56 |
| 2:A:79:ALA:HB2 | 2:A:112:VAL:CG2 | 2.31 | 0.56 |
| 1:E:3:GLU:O | 1:E:4:MET:HB2 | 2.05 | 0.56 |
| 1:E:265:GLY:HA2 | 1:E:312:ILE:HG22 | 1.88 | 0.56 |
| 1:E:335:LEU:CD1 | 1:E:392:ALA:HB2 | 2.35 | 0.56 |
| 1:F:106:ALA:O | 1:F:110:MET:HB2 | 2.05 | 0.56 |
| 1:F:244:ILE:O | 1:F:247:VAL:N | 2.38 | 0.56 |
| 1:F:268:SER:C | 1:F:270:PRO:HD3 | 2.25 | 0.56 |
| 2:A:140:THR:HB | 2:A:142:LEU:HD12 | 1.86 | 0.56 |
| 2:D:37:LEU:C | 2:D:39:ASN:H | 2.08 | 0.56 |
| 1:E:102:ASP:C | 1:E:104:THR:N | 2.58 | 0.56 |
| 1:F:425:VAL:O | 1:F:429:LEU:HB2 | 2.06 | 0.56 |
| 2:B:11:HIS:ND1 | 2:B:11:HIS:N | 2.54 | 0.56 |
| 2:B:54:PHE:HE2 | 2:A:80:LYS:NZ | 2.04 | 0.56 |
| 2:D:93:ALA:C | 2:D:94:LEU:HD12 | 2.26 | 0.56 |
| 2:D:94:LEU:HD12 | 2:D:94:LEU:N | 2.20 | 0.56 |
| 1:E:1:MET:O | 1:E:3:GLU:N | 2.38 | 0.56 |
| 2:B:163:ASN:HD22 | 2:B:165:PHE:H | 1.53 | 0.56 |
| 1:F:104:THR:O | 1:F:108:VAL:HG23 | 2.06 | 0.56 |
| 1:F:442:ILE:HD13 | 1:F:442:ILE:H | 1.70 | 0.56 |
| 2:B:85:ASP:O | 2:B:87:MET:HG2 | 2.06 | 0.56 |
| 2:C:4:VAL:O | 2:C:14:ILE:HA | 2.06 | 0.56 |
| 2:C:43:ILE:HD13 | 2:C:169:GLU:O | 2.04 | 0.56 |
| 1:E:88:GLU:C | 1:E:90:GLY:H | 2.08 | 0.56 |
| 1:E:442:ILE:HA | 1:F:329:ARG:CG | 2.35 | 0.56 |
| 1:F:413:LEU:HD23 | 1:F:413:LEU:N | 2.18 | 0.56 |
| 2:B:4:VAL:HG13 | 2:B:121:ALA:HB2 | 1.87 | 0.56 |
| 2:B:54:PHE:CE2 | 2:A:80:LYS:NZ | 2.74 | 0.56 |
| 2:A:115:PRO:O | 2:A:116:GLU:C | 2.44 | 0.56 |
| 2:D:45:GLY:O | 2:D:95:LEU:HD13 | 2.05 | 0.56 |
| 2:D:66:MET:C | 2:D:68:GLN:H | 2.08 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:150:LYS:O | 2:C:154:ILE:HG13 | 2.06 | 0.56 |
| 1:E:102:ASP:O | 1:E:104:THR:N | 2.38 | 0.56 |
| 1:F:100:ILE:HG12 | 1:F:299:THR:CG2 | 2.36 | 0.56 |
| 1:F:103:LEU:HD11 | 1:F:247:VAL:HG13 | 1.88 | 0.56 |
| 1:F:240:LYS:CG | 1:F:241:GLN:N | 2.68 | 0.56 |
| 2:B:41:LYS:HB2 | 2:B:41:LYS:NZ | 2.21 | 0.56 |
| 2:C:44:ALA:HA | 2:C:96:ALA:O | 2.06 | 0.56 |
| 2:C:72:VAL:C | 2:C:74:ALA:H | 2.08 | 0.56 |
| 2:C:70:HIS:CD2 | 2:C:73:LYS:HB2 | 2.39 | 0.56 |
| 2:C:86:ARG:HG3 | 2:C:87:MET:HE2 | 1.87 | 0.56 |
| 1:E:264:ARG:HA | 1:E:264:ARG:NE | 2.20 | 0.56 |
| 1:E:338:SER:O | 1:E:342:ARG:HG3 | 2.06 | 0.56 |
| 1:F:382:GLN:CG | 1:F:433:VAL:HG23 | 2.35 | 0.56 |
| 2:B:7:ARG:HA | 2:B:12:VAL:HG22 | 1.87 | 0.56 |
| 2:B:88:LEU:O | 2:B:91:LEU:N | 2.29 | 0.56 |
| 1:F:243:ALA:O | 1:F:246:ALA:HB3 | 2.06 | 0.55 |
| 2:B:60:PHE:O | 2:B:61:GLU:OE2 | 2.23 | 0.55 |
| 2:C:142:LEU:HD22 | 2:C:146:GLU:HG2 | 1.87 | 0.55 |
| 1:E:100:ILE:C | 1:E:102:ASP:H | 2.09 | 0.55 |
| 1:E:121:TYR:HD1 | 1:E:122:ARG:H | 1.55 | 0.55 |
| 1:F:268:SER:O | 1:F:270:PRO:HD3 | 2.05 | 0.55 |
| 1:E:35:TRP:O | 1:E:39:GLN:HG3 | 2.06 | 0.55 |
| 1:F:312:ILE:O | 1:F:312:ILE:HG23 | 2.06 | 0.55 |
| 1:F:312:ILE:HB | 2:D:62:ARG:HD2 | 1.87 | 0.55 |
| 1:F:375:ARG:HH11 | 1:F:375:ARG:CG | 2.13 | 0.55 |
| 2:D:106:ILE:C | 2:D:108:GLY:H | 2.08 | 0.55 |
| 2:C:18:GLY:HA3 | 2:C:165:PHE:HD2 | 1.71 | 0.55 |
| 1:E:42:GLU:O | 1:E:45:ARG:HB3 | 2.06 | 0.55 |
| 1:E:235:ASN:N | 1:E:236:PRO:CD | 2.69 | 0.55 |
| 1:F:312:ILE:O | 1:F:312:ILE:HG12 | 2.06 | 0.55 |
| 2:B:52:ASP:N | 2:A:110:GLY:O | 2.39 | 0.55 |
| 2:B:52:ASP:OD2 | 2:B:91:LEU:HD22 | 2.06 | 0.55 |
| 2:A:135:ALA:HB2 | 2:D:154:ILE:HD12 | 1.86 | 0.55 |
| 1:E:282:LEU:HD21 | 1:E:321:GLU:HB2 | 1.89 | 0.55 |
| 1:F:117:GLU:HA | 1:F:120:ARG:HB2 | 1.89 | 0.55 |
| 1:F:402:LEU:HD13 | 1:F:429:LEU:HD13 | 1.89 | 0.55 |
| 2:C:47:ALA:HB3 | 2:C:94:LEU:HG | 1.89 | 0.55 |
| 1:F:104:THR:O | 1:F:108:VAL:N | 2.40 | 0.55 |
| 2:B:64:LEU:HD12 | 2:B:64:LEU:N | 2.20 | 0.55 |
| 2:C:63:LYS:HD2 | 2:C:78:LEU:CG | 2.28 | 0.55 |
| 1:F:90:GLY:O | 1:F:91:TYR:CB | 2.54 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:237:GLU:O | 1:F:240:LYS:HG2 | 2.06 | 0.55 |
| 2:B:49:GLY:HA3 | 2:B:52:ASP:HB2 | 1.89 | 0.55 |
| 2:A:76:VAL:O | 2:A:80:LYS:HG2 | 2.06 | 0.55 |
| 2:C:82:TRP:O | 2:C:82:TRP:CE3 | 2.60 | 0.55 |
| 1:E:25:ARG:O | 1:E:28:ALA:HB3 | 2.06 | 0.55 |
| 1:E:282:LEU:HD21 | 1:E:321:GLU:CB | 2.37 | 0.55 |
| 1:F:436:GLU:O | 1:F:440:ARG:HG3 | 2.07 | 0.55 |
| 2:B:70:HIS:N | 2:B:70:HIS:CD2 | 2.75 | 0.55 |
| 2:A:6:VAL:HG21 | 2:A:137:LEU:HD21 | 1.87 | 0.55 |
| 2:A:67:HIS:CE1 | 2:A:73:LYS:HE2 | 2.42 | 0.55 |
| 2:C:86:ARG:CA | 2:C:89:ARG:HD2 | 2.33 | 0.55 |
| 2:C:111:ASP:O | 2:C:112:VAL:HG13 | 2.07 | 0.55 |
| 2:B:80:LYS:O | 2:B:82:TRP:N | 2.39 | 0.55 |
| 2:B:95:LEU:H | 2:B:95:LEU:CD2 | 2.19 | 0.55 |
| 2:D:52:ASP:O | 2:D:53:ALA:C | 2.45 | 0.55 |
| 1:E:258:ILE:O | 1:E:259:ASP:O | 2.24 | 0.55 |
| 1:E:278:GLN:HE22 | 1:E:319:ILE:H | 1.54 | 0.55 |
| 1:F:126:LEU:HA | 1:F:129:GLU:HB2 | 1.89 | 0.55 |
| 1:F:278:GLN:HE22 | 1:F:319:ILE:N | 2.05 | 0.55 |
| 2:A:63:LYS:HD2 | 2:A:77:GLU:OE1 | 2.07 | 0.55 |
| 2:C:123:GLY:C | 2:C:125:GLY:N | 2.57 | 0.55 |
| 1:E:65:GLU:HG2 | 3:E:905:DAT:H2'2 | 1.89 | 0.54 |
| 1:F:100:ILE:HG12 | 1:F:299:THR:HG22 | 1.89 | 0.54 |
| 1:F:436:GLU:O | 1:F:439:SER:HB3 | 2.07 | 0.54 |
| 2:B:28:LYS:HG2 | 2:B:30:ASN:N | 2.17 | 0.54 |
| 2:A:1:THR:O | 2:A:2:THR:OG1 | 2.20 | 0.54 |
| 2:D:13:VAL:HG12 | 2:D:170:GLU:HB3 | 1.88 | 0.54 |
| 1:F:87:THR:HG23 | 1:F:89:VAL:HG23 | 1.89 | 0.54 |
| 1:F:264:ARG:HD2 | 1:F:312:ILE:HG13 | 1.88 | 0.54 |
| 2:D:4:VAL:O | 2:D:14:ILE:HA | 2.06 | 0.54 |
| 1:E:104:THR:HA | 1:E:247:VAL:CG2 | 2.24 | 0.54 |
| 1:E:340:PHE:HB3 | 1:E:395:LEU:HD21 | 1.87 | 0.54 |
| 1:E:342:ARG:HB3 | 1:E:346:GLU:HG3 | 1.90 | 0.54 |
| 2:D:73:LYS:HE2 | 2:D:73:LYS:N | 2.19 | 0.54 |
| 2:C:105:ILE:HG22 | 2:C:106:ILE:H | 1.73 | 0.54 |
| 1:E:34:ARG:HA | 1:E:34:ARG:NE | 2.21 | 0.54 |
| 1:E:97:ASP:OD2 | 1:E:97:ASP:C | 2.45 | 0.54 |
| 1:E:240:LYS:HA | 1:E:294:HIS:NE2 | 2.22 | 0.54 |
| 1:F:130:ARG:NH2 | 1:F:225:LEU:HD11 | 2.23 | 0.54 |
| 2:B:51:ALA:N | 2:A:110:GLY:O | 2.33 | 0.54 |
| 2:D:83:ARG:NH1 | 2:D:89:ARG:NE | 2.55 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:69:ARG:CG | 1:E:69:ARG:NH1 | 2.65 | 0.54 |
| 1:E:278:GLN:CD | 1:E:319:ILE:HG23 | 2.28 | 0.54 |
| 1:F:43:GLU:HG3 | 1:F:44:LEU:N | 2.22 | 0.54 |
| 2:B:42:VAL:HG12 | 2:B:43:ILE:N | 2.23 | 0.54 |
| 2:D:51:ALA:N | 2:C:111:ASP:OD1 | 2.40 | 0.54 |
| 1:F:87:THR:O | 1:F:88:GLU:C | 2.46 | 0.54 |
| 1:F:266:GLU:HG3 | 1:F:267:SER:N | 2.23 | 0.54 |
| 2:C:80:LYS:HG2 | 2:C:85:ASP:OD2 | 2.07 | 0.54 |
| 1:F:328:ILE:O | 1:F:329:ARG:HD3 | 2.07 | 0.54 |
| 2:A:81:ASP:O | 2:A:85:ASP:HB2 | 2.08 | 0.54 |
| 2:A:85:ASP:O | 2:A:86:ARG:HB3 | 2.08 | 0.54 |
| 2:C:66:MET:O | 2:C:68:GLN:HG2 | 2.08 | 0.54 |
| 1:F:5:THR:HB | 1:F:6:PRO:HD2 | 1.90 | 0.54 |
| 1:F:7:ARG:HG2 | 1:F:7:ARG:NH1 | 2.21 | 0.54 |
| 2:B:158:ILE:HG13 | 2:D:25:THR:HB | 1.90 | 0.54 |
| 2:A:59:LEU:HD22 | 2:A:87:MET:SD | 2.47 | 0.54 |
| 1:E:93:GLY:O | 1:E:94:LYS:HB2 | 2.07 | 0.53 |
| 1:F:245:ASP:O | 1:F:249:GLN:HB2 | 2.08 | 0.53 |
| 2:B:86:ARG:HB2 | 2:B:86:ARG:NH1 | 2.22 | 0.53 |
| 2:D:17:ASP:O | 2:D:33:LYS:HD2 | 2.09 | 0.53 |
| 2:D:105:ILE:HD11 | 2:D:120:ILE:HG23 | 1.90 | 0.53 |
| 2:A:13:VAL:HG21 | 2:A:168:ILE:HG22 | 1.89 | 0.53 |
| 2:C:24:ASN:HD22 | 2:C:24:ASN:N | 2.05 | 0.53 |
| 2:C:82:TRP:CZ3 | 2:C:89:ARG:HA | 2.44 | 0.53 |
| 1:E:238:GLU:O | 1:E:242:ASP:HB3 | 2.07 | 0.53 |
| 1:E:319:ILE:HG12 | 1:E:322:LEU:HD22 | 1.90 | 0.53 |
| 1:E:346:GLU:HB2 | 1:E:347:PRO:CD | 2.37 | 0.53 |
| 1:E:408:TYR:CE2 | 1:F:25:ARG:NH2 | 2.74 | 0.53 |
| 2:B:7:ARG:NH2 | 2:B:99:ASP:O | 2.41 | 0.53 |
| 2:A:136:LEU:CD1 | 2:D:135:ALA:HB1 | 2.36 | 0.53 |
| 1:F:62:GLY:O | 1:F:63:LYS:C | 2.44 | 0.53 |
| 1:F:108:VAL:C | 1:F:110:MET:H | 2.10 | 0.53 |
| 2:A:34:VAL:CA | 2:A:45:GLY:HA2 | 2.34 | 0.53 |
| 1:F:34:ARG:CG | 1:F:35:TRP:H | 2.20 | 0.53 |
| 2:B:55:THR:OG1 | 2:A:80:LYS:HB2 | 2.09 | 0.53 |
| 2:D:3:ILE:HB | 2:D:122:ILE:HG13 | 1.90 | 0.53 |
| 1:E:1:MET:C | 1:E:3:GLU:N | 2.62 | 0.53 |
| 1:E:311:GLN:HG3 | 1:E:312:ILE:HG12 | 1.91 | 0.53 |
| 1:E:421:ASP:OD2 | 1:E:421:ASP:N | 2.41 | 0.53 |
| 2:B:68:GLN:HB3 | 2:B:70:HIS:NE2 | 2.24 | 0.53 |
| 2:B:152:LEU:HD13 | 2:B:166:HIS:CE1 | 2.44 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:A:79:ALA:CB | 2:A:112:VAL:HG23 | 2.35 | 0.53 |
| 2:D:38:TYR:O | 2:D:38:TYR:CD2 | 2.62 | 0.53 |
| 2:C:87:MET:HG3 | 2:C:88:LEU:H | 1.73 | 0.53 |
| 1:E:107:ALA:HB3 | 1:E:247:VAL:HG22 | 1.90 | 0.53 |
| 1:F:49:THR:O | 1:F:50:PRO:O | 2.27 | 0.53 |
| 1:F:223:LYS:HG2 | 1:F:224:LEU:HD23 | 1.90 | 0.53 |
| 2:B:12:VAL:O | 2:B:171:LEU:N | 2.42 | 0.53 |
| 2:C:55:THR:OG1 | 2:C:88:LEU:HD12 | 2.09 | 0.53 |
| 1:E:21:ASP:OD1 | 1:E:25:ARG:HD2 | 2.09 | 0.53 |
| 1:E:400:GLU:O | 1:E:404:GLU:HG2 | 2.09 | 0.53 |
| 1:F:394:ARG:O | 1:F:398:VAL:HG12 | 2.10 | 0.53 |
| 2:B:52:ASP:OD1 | 2:A:83:ARG:NH1 | 2.42 | 0.53 |
| 2:B:67:HIS:O | 2:B:68:GLN:O | 2.28 | 0.53 |
| 2:D:37:LEU:HD11 | 2:D:60:PHE:HB2 | 1.91 | 0.53 |
| 1:F:401:ARG:NH2 | 1:F:442:ILE:HG13 | 2.23 | 0.52 |
| 2:A:1:THR:H3 | 2:A:33:LYS:HE2 | 1.73 | 0.52 |
| 2:D:63:LYS:CG | 2:D:78:LEU:HG | 2.30 | 0.52 |
| 2:D:171:LEU:HD23 | 2:D:171:LEU:N | 2.24 | 0.52 |
| 2:C:82:TRP:HZ3 | 2:C:89:ARG:HA | 1.75 | 0.52 |
| 2:C:141:GLU:O | 2:C:142:LEU:HB2 | 2.08 | 0.52 |
| 1:E:229:GLU:HA | 1:E:232:LYS:NZ | 2.24 | 0.52 |
| 1:F:382:GLN:HG2 | 1:F:433:VAL:HG21 | 1.88 | 0.52 |
| 2:A:150:LYS:O | 2:A:154:ILE:HD13 | 2.09 | 0.52 |
| 1:F:30:ALA:CB | 1:F:53:ILE:HD11 | 2.40 | 0.52 |
| 1:F:122:ARG:NH2 | 1:F:125:GLU:CD | 2.63 | 0.52 |
| 1:F:221:ALA:O | 1:F:222:MET:HB2 | 2.08 | 0.52 |
| 1:F:226:ILE:O | 1:F:230:ALA:N | 2.42 | 0.52 |
| 1:F:229:GLU:C | 1:F:231:ALA:H | 2.13 | 0.52 |
| 1:F:281:LEU:O | 1:F:282:LEU:C | 2.48 | 0.52 |
| 2:B:115:PRO:HD2 | 2:B:120:ILE:CD1 | 2.22 | 0.52 |
| 2:A:17:ASP:HA | 2:A:165:PHE:O | 2.09 | 0.52 |
| 2:A:33:LYS:O | 2:A:46:PHE:O | 2.27 | 0.52 |
| 2:D:16:GLY:CA | 2:D:152:LEU:HD11 | 2.39 | 0.52 |
| 2:C:32:LYS:HG3 | 2:C:167:THR:HG21 | 1.91 | 0.52 |
| 1:E:102:ASP:O | 1:E:105:ASP:N | 2.42 | 0.52 |
| 1:E:227:GLU:C | 1:E:229:GLU:H | 2.12 | 0.52 |
| 1:E:240:LYS:HD2 | 1:E:294:HIS:CE1 | 2.44 | 0.52 |
| 1:F:88:GLU:OE2 | 1:F:92:VAL:N | 2.41 | 0.52 |
| 1:F:244:ILE:C | 1:F:246:ALA:H | 2.13 | 0.52 |
| 2:B:76:VAL:HG12 | 2:B:80:LYS:HE2 | 1.91 | 0.52 |
| 2:D:106:ILE:HD12 | 2:D:106:ILE:N | 2.25 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:94:LEU:HD23 | 2:C:94:LEU:N | 2.25 | 0.52 |
| 1:E:108:VAL:O | 1:E:110:MET:N | 2.42 | 0.52 |
| 1:E:128:GLU:HG3 | 1:E:132:LEU:HD21 | 1.91 | 0.52 |
| 1:E:229:GLU:OE2 | 1:E:230:ALA:N | 2.43 | 0.52 |
| 1:E:311:GLN:HG3 | 1:E:312:ILE:N | 2.24 | 0.52 |
| 1:F:103:LEU:CD1 | 1:F:247:VAL:HG13 | 2.39 | 0.52 |
| 1:F:355:TYR:OH | 1:F:400:GLU:HB2 | 2.09 | 0.52 |
| 2:B:27:MET:CG | 2:B:28:LYS:H | 2.22 | 0.52 |
| 2:B:57:PHE:O | 2:B:61:GLU:CG | 2.57 | 0.52 |
| 2:C:136:LEU:O | 2:C:140:THR:HG22 | 2.10 | 0.52 |
| 1:E:366:ILE:HD11 | 1:E:406:ILE:HD13 | 1.90 | 0.52 |
| 1:F:86:PHE:CE2 | 1:F:96:VAL:HA | 2.45 | 0.52 |
| 2:B:15:ALA:HA | 2:B:167:THR:O | 2.09 | 0.52 |
| 2:B:49:GLY:HA3 | 2:B:52:ASP:CB | 2.40 | 0.52 |
| 2:B:86:ARG:HE | 2:A:84:THR:CG2 | 2.21 | 0.52 |
| 2:D:81:ASP:O | 2:D:87:MET:HB2 | 2.10 | 0.52 |
| 2:C:146:GLU:OE1 | 2:C:150:LYS:HE2 | 2.09 | 0.52 |
| 1:E:130:ARG:NH1 | 1:E:130:ARG:CB | 2.68 | 0.52 |
| 1:F:332:LEU:HD12 | 1:F:332:LEU:N | 2.23 | 0.52 |
| 1:F:438:LEU:O | 1:F:442:ILE:HD13 | 2.10 | 0.52 |
| 2:B:127:PRO:HB2 | 2:C:128:TYR:HE1 | 1.75 | 0.52 |
| 2:A:152:LEU:HD23 | 2:A:166:HIS:CD2 | 2.45 | 0.52 |
| 2:D:43:ILE:O | 2:D:97:VAL:HA | 2.10 | 0.52 |
| 2:D:105:ILE:HB | 2:D:113:VAL:CG2 | 2.39 | 0.52 |
| 1:E:413:LEU:CD1 | 1:E:418:ILE:HD11 | 2.40 | 0.52 |
| 1:F:97:ASP:OD2 | 1:F:97:ASP:C | 2.47 | 0.52 |
| 1:F:263:LYS:HE2 | 1:F:269:GLY:CA | 2.39 | 0.52 |
| 1:F:273:SER:OG | 1:F:274:ARG:HD3 | 2.08 | 0.52 |
| 2:B:3:ILE:HD11 | 2:B:33:LYS:HB3 | 1.91 | 0.52 |
| 2:B:51:ALA:O | 2:B:55:THR:N | 2.40 | 0.52 |
| 2:A:51:ALA:O | 2:A:54:PHE:HB3 | 2.10 | 0.52 |
| 2:D:70:HIS:CB | 2:D:73:LYS:HD2 | 2.31 | 0.52 |
| 1:F:360:ALA:O | 1:F:363:GLY:N | 2.43 | 0.52 |
| 2:B:39:ASN:HA | 2:B:62:ARG:HH22 | 1.73 | 0.52 |
| 2:B:136:LEU:HD21 | 2:C:135:ALA:O | 2.10 | 0.52 |
| 2:C:106:ILE:HG22 | 2:C:108:GLY:H | 1.75 | 0.52 |
| 1:E:315:PRO:HA | 1:E:318:LEU:CD1 | 2.40 | 0.52 |
| 1:E:360:ALA:O | 1:E:363:GLY:N | 2.43 | 0.52 |
| 1:E:375:ARG:HE | 1:E:422:ALA:HB1 | 1.75 | 0.52 |
| 1:F:55:MET:HE2 | 1:F:63:LYS:HA | 1.91 | 0.52 |
| 2:B:36:ARG:HG2 | 2:B:43:ILE:HG22 | 1.91 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:30:ASN:O | 2:C:30:ASN:OD1 | 2.28 | 0.52 |
| 1:E:52:ASN:HB2 | 1:E:326:LEU:HD23 | 1.92 | 0.51 |
| 2:A:1:THR:O | 2:A:162:THR:HG21 | 2.10 | 0.51 |
| 1:E:50:PRO:O | 1:E:51:LYS:HD3 | 2.10 | 0.51 |
| 1:E:238:GLU:C | 1:E:240:LYS:H | 2.13 | 0.51 |
| 1:F:56:ILE:CD1 | 1:F:315:PRO:HG2 | 2.41 | 0.51 |
| 2:B:82:TRP:HZ3 | 2:B:106:ILE:HG22 | 1.73 | 0.51 |
| 2:A:1:THR:O | 2:A:162:THR:CG2 | 2.59 | 0.51 |
| 2:A:140:THR:CG2 | 2:A:142:LEU:HG | 2.40 | 0.51 |
| 2:D:80:LYS:C | 2:D:82:TRP:H | 2.13 | 0.51 |
| 2:C:136:LEU:C | 2:C:138:GLU:N | 2.63 | 0.51 |
| 1:E:103:LEU:HD22 | 1:E:253:VAL:CG2 | 2.41 | 0.51 |
| 1:E:426:SER:HB3 | 1:E:430:ASP:OD1 | 2.11 | 0.51 |
| 1:F:237:GLU:C | 1:F:239:LEU:HD12 | 2.29 | 0.51 |
| 2:B:95:LEU:HD23 | 2:B:95:LEU:N | 2.25 | 0.51 |
| 2:D:36:ARG:O | 2:D:36:ARG:HG2 | 2.06 | 0.51 |
| 2:D:82:TRP:CD1 | 2:D:82:TRP:C | 2.84 | 0.51 |
| 1:F:94:LYS:HA | 1:F:94:LYS:CE | 2.41 | 0.51 |
| 1:F:357:ALA:O | 1:F:360:ALA:HB3 | 2.11 | 0.51 |
| 2:A:34:VAL:HA | 2:A:45:GLY:CA | 2.38 | 0.51 |
| 1:E:97:ASP:OD2 | 1:E:98:SER:N | 2.44 | 0.51 |
| 1:E:107:ALA:HB3 | 1:E:247:VAL:CG2 | 2.40 | 0.51 |
| 1:E:259:ASP:C | 1:E:261:ILE:N | 2.64 | 0.51 |
| 2:C:87:MET:CG | 2:C:88:LEU:N | 2.73 | 0.51 |
| 1:E:226:ILE:O | 1:E:229:GLU:OE2 | 2.28 | 0.51 |
| 1:F:102:ASP:O | 1:F:105:ASP:N | 2.44 | 0.51 |
| 2:B:160:ILE:CG2 | 2:D:160:ILE:HD12 | 2.41 | 0.51 |
| 1:E:263:LYS:HG2 | 1:E:271:ASP:O | 2.10 | 0.51 |
| 1:E:381:TRP:CH2 | 1:E:385:GLU:HG3 | 2.46 | 0.51 |
| 1:F:292:THR:OG1 | 1:F:293:LYS:N | 2.43 | 0.51 |
| 2:D:27:MET:O | 2:D:29:GLY:N | 2.44 | 0.51 |
| 1:E:103:LEU:HD22 | 1:E:253:VAL:HG22 | 1.93 | 0.51 |
| 2:B:24:ASN:ND2 | 2:D:161:TYR:HE1 | 2.09 | 0.51 |
| 2:B:129:ALA:O | 2:B:131:ALA:N | 2.44 | 0.51 |
| 2:A:38:TYR:CE1 | 2:A:65:GLU:HA | 2.46 | 0.51 |
| 2:A:127:PRO:HB2 | 2:D:128:TYR:HE1 | 1.76 | 0.51 |
| 1:E:383:VAL:CB | 1:E:394:ARG:HD3 | 2.32 | 0.51 |
| 1:F:68:ARG:HA | 1:F:78:PHE:CE2 | 2.46 | 0.51 |
| 2:B:10:GLY:O | 2:B:173:TYR:CD1 | 2.65 | 0.51 |
| 2:B:104:LEU:HD23 | 2:B:104:LEU:N | 2.26 | 0.51 |
| 2:A:37:LEU:O | 2:A:42:VAL:HB | 2.11 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:A:67:HIS:CB | 2:A:70:HIS:HB2 | 2.40 | 0.50 |
| 1:E:68:ARG:HG3 | 1:E:78:PHE:CE2 | 2.46 | 0.50 |
| 2:B:57:PHE:O | 2:B:61:GLU:OE2 | 2.29 | 0.50 |
| 2:D:30:ASN:OD1 | 2:D:30:ASN:O | 2.29 | 0.50 |
| 1:E:417:ASN:OD1 | 1:E:417:ASN:O | 2.29 | 0.50 |
| 2:B:27:MET:HG3 | 2:B:28:LYS:H | 1.76 | 0.50 |
| 2:B:60:PHE:CZ | 2:B:64:LEU:HG | 2.46 | 0.50 |
| 1:F:31:LEU:O | 1:F:34:ARG:HG2 | 2.11 | 0.50 |
| 2:B:7:ARG:NE | 2:B:12:VAL:HG21 | 2.27 | 0.50 |
| 2:B:42:VAL:HG12 | 2:B:43:ILE:H | 1.76 | 0.50 |
| 2:B:103:SER:HB2 | 2:B:118:ASP:HB3 | 1.93 | 0.50 |
| 2:A:38:TYR:CZ | 2:A:65:GLU:HA | 2.45 | 0.50 |
| 2:D:103:SER:HB3 | 2:D:120:ILE:CD1 | 2.39 | 0.50 |
| 2:D:106:ILE:HG22 | 2:D:108:GLY:N | 2.21 | 0.50 |
| 2:C:13:VAL:HG22 | 2:C:168:ILE:HG22 | 1.93 | 0.50 |
| 1:F:21:ASP:HA | 1:F:24:LYS:CG | 2.41 | 0.50 |
| 1:F:311:GLN:HG3 | 1:F:312:ILE:H | 1.77 | 0.50 |
| 2:B:96:ALA:O | 2:B:97:VAL:CG2 | 2.49 | 0.50 |
| 2:D:36:ARG:O | 2:D:38:TYR:N | 2.44 | 0.50 |
| 2:C:127:PRO:O | 2:C:128:TYR:C | 2.49 | 0.50 |
| 1:E:438:LEU:O | 1:E:442:ILE:HD13 | 2.12 | 0.50 |
| 1:F:53:ILE:HG13 | 1:F:328:ILE:HB | 1.93 | 0.50 |
| 1:F:131:ILE:HG13 | 1:F:221:ALA:HA | 1.93 | 0.50 |
| 2:B:1:THR:HG21 | 2:B:47:ALA:HA | 1.93 | 0.50 |
| 2:D:1:THR:HA | 2:D:17:ASP:CG | 2.32 | 0.50 |
| 2:C:83:ARG:HH11 | 2:C:83:ARG:CA | 2.19 | 0.50 |
| 2:B:57:PHE:O | 2:B:58:GLU:C | 2.50 | 0.50 |
| 2:B:88:LEU:O | 2:B:89:ARG:C | 2.49 | 0.50 |
| 2:A:119:LEU:O | 2:A:120:ILE:HD12 | 2.11 | 0.50 |
| 1:E:62:GLY:O | 1:E:66:ILE:HG13 | 2.11 | 0.50 |
| 1:F:35:TRP:N | 1:F:38:MET:HE1 | 2.26 | 0.50 |
| 1:E:252:ILE:N | 1:E:252:ILE:HD12 | 2.27 | 0.50 |
| 1:E:344:LEU:O | 1:E:350:SER:OG | 2.30 | 0.50 |
| 1:E:351:ILE:HD13 | 1:E:351:ILE:N | 2.27 | 0.50 |
| 1:E:357:ALA:O | 1:E:360:ALA:HB3 | 2.12 | 0.50 |
| 1:E:368:PHE:CD1 | 1:E:368:PHE:N | 2.80 | 0.50 |
| 1:F:244:ILE:HG12 | 1:F:297:VAL:HG22 | 1.94 | 0.50 |
| 1:F:299:THR:HA | 1:F:302:ILE:HG13 | 1.94 | 0.50 |
| 1:F:369:THR:HG22 | 1:F:370:ASP:N | 2.25 | 0.50 |
| 2:C:41:LYS:N | 2:C:41:LYS:HD2 | 2.26 | 0.50 |
| 1:E:55:MET:CE | 1:E:63:LYS:HA | 2.41 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:61:VAL:HG22 | 1:E:63:LYS:HZ2 | 1.77 | 0.49 |
| 1:F:263:LYS:HD3 | 1:F:264:ARG:N | 2.26 | 0.49 |
| 1:F:312:ILE:HG13 | 2:D:62:ARG:HD3 | 1.94 | 0.49 |
| 2:A:42:VAL:O | 2:A:43:ILE:C | 2.49 | 0.49 |
| 1:E:223:LYS:O | 1:E:223:LYS:HG3 | 2.11 | 0.49 |
| 1:E:346:GLU:O | 1:E:347:PRO:C | 2.50 | 0.49 |
| 1:F:105:ASP:O | 1:F:109:LYS:N | 2.43 | 0.49 |
| 2:B:107:THR:HG22 | 2:B:109:ASN:H | 1.76 | 0.49 |
| 2:C:70:HIS:ND1 | 2:C:73:LYS:HB2 | 2.26 | 0.49 |
| 1:E:30:ALA:CB | 1:E:53:ILE:HD11 | 2.42 | 0.49 |
| 1:E:429:LEU:O | 1:E:433:VAL:HG22 | 2.12 | 0.49 |
| 1:F:312:ILE:O | 1:F:313:ALA:CB | 2.60 | 0.49 |
| 2:A:26:VAL:O | 2:A:27:MET:O | 2.30 | 0.49 |
| 2:A:54:PHE:C | 2:A:56:LEU:H | 2.14 | 0.49 |
| 2:C:111:ASP:OD2 | 2:C:112:VAL:N | 2.44 | 0.49 |
| 1:E:278:GLN:HE22 | 1:E:319:ILE:N | 2.10 | 0.49 |
| 1:E:441:PHE:CD1 | 1:F:56:ILE:HD13 | 2.43 | 0.49 |
| 1:F:10:VAL:HG13 | 1:F:24:LYS:HB2 | 1.93 | 0.49 |
| 1:F:220:ASP:N | 1:F:224:LEU:N | 2.53 | 0.49 |
| 1:F:285:VAL:O | 1:F:285:VAL:HG13 | 2.11 | 0.49 |
| 2:B:160:ILE:HD11 | 2:D:19:GLN:HE22 | 1.74 | 0.49 |
| 2:A:28:LYS:HG2 | 2:A:30:ASN:ND2 | 2.27 | 0.49 |
| 2:A:97:VAL:O | 2:A:98:ALA:HB2 | 2.13 | 0.49 |
| 2:A:135:ALA:HB2 | 2:D:154:ILE:CD1 | 2.43 | 0.49 |
| 2:C:106:ILE:C | 2:C:108:GLY:N | 2.65 | 0.49 |
| 1:E:223:LYS:O | 1:E:223:LYS:CG | 2.60 | 0.49 |
| 1:E:240:LYS:O | 1:E:243:ALA:HB3 | 2.11 | 0.49 |
| 1:E:438:LEU:HD22 | 1:E:442:ILE:CD1 | 2.43 | 0.49 |
| 2:A:112:VAL:C | 2:A:113:VAL:HG12 | 2.32 | 0.49 |
| 2:A:112:VAL:HG12 | 2:A:113:VAL:N | 2.27 | 0.49 |
| 2:D:74:ALA:O | 2:D:78:LEU:N | 2.45 | 0.49 |
| 1:F:108:VAL:HA | 1:F:111:VAL:CG2 | 2.42 | 0.49 |
| 2:B:123:GLY:O | 2:B:124:SER:C | 2.49 | 0.49 |
| 2:C:36:ARG:NH1 | 2:C:38:TYR:CZ | 2.81 | 0.49 |
| 1:E:368:PHE:CD2 | 1:E:420:ILE:HD13 | 2.48 | 0.49 |
| 1:F:240:LYS:NZ | 1:F:294:HIS:O | 2.46 | 0.49 |
| 2:B:160:ILE:CD1 | 2:D:19:GLN:HE22 | 2.26 | 0.49 |
| 2:A:71:LEU:HD23 | 2:A:102:ALA:HB3 | 1.95 | 0.49 |
| 2:C:39:ASN:ND2 | 2:C:40:ASP:N | 2.60 | 0.49 |
| 1:E:43:GLU:HG3 | 1:E:44:LEU:HG | 1.94 | 0.49 |
| 1:E:47:GLU:HA | 1:E:47:GLU:OE1 | 2.13 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:268:SER:C | 1:E:270:PRO:HD3 | 2.33 | 0.49 |
| 1:F:77:PRO:HB2 | 1:F:103:LEU:HD21 | 1.95 | 0.49 |
| 1:F:223:LYS:NZ | 1:F:223:LYS:HB2 | 2.27 | 0.49 |
| 1:F:302:ILE:HB | 1:F:304:PHE:CE1 | 2.48 | 0.49 |
| 1:F:360:ALA:O | 1:F:362:GLU:N | 2.46 | 0.49 |
| 1:F:429:LEU:O | 1:F:433:VAL:HG12 | 2.12 | 0.49 |
| 2:C:37:LEU:HD22 | 2:C:61:GLU:CG | 2.42 | 0.49 |
| 1:E:43:GLU:O | 1:E:45:ARG:N | 2.46 | 0.49 |
| 1:E:359:MET:SD | 1:F:36:ARG:NH2 | 2.86 | 0.49 |
| 1:F:89:VAL:HG12 | 1:F:89:VAL:O | 2.13 | 0.49 |
| 1:F:384:ASN:HD21 | 1:F:390:ILE:HG12 | 1.77 | 0.49 |
| 1:F:432:LEU:C | 1:F:434:ALA:H | 2.16 | 0.49 |
| 2:B:1:THR:OG1 | 2:B:2:THR:N | 2.46 | 0.49 |
| 2:B:99:ASP:O | 2:B:101:THR:N | 2.46 | 0.49 |
| 2:D:72:VAL:O | 2:D:74:ALA:N | 2.45 | 0.49 |
| 2:C:41:LYS:O | 2:C:42:VAL:HB | 2.13 | 0.49 |
| 1:E:10:VAL:HG13 | 1:E:24:LYS:HB2 | 1.94 | 0.49 |
| 2:D:13:VAL:HB | 2:D:168:ILE:HD11 | 1.95 | 0.49 |
| 1:E:345:THR:HG23 | 1:E:373:ILE:CD1 | 2.42 | 0.48 |
| 1:F:221:ALA:O | 1:F:222:MET:CB | 2.61 | 0.48 |
| 2:A:20:ALA:HB2 | 2:A:31:VAL:CG2 | 2.42 | 0.48 |
| 2:A:49:GLY:O | 2:A:50:THR:C | 2.52 | 0.48 |
| 2:A:107:THR:C | 2:A:109:ASN:H | 2.16 | 0.48 |
| 2:C:105:ILE:O | 2:C:112:VAL:HA | 2.13 | 0.48 |
| 1:E:79:ILE:CG2 | 1:E:103:LEU:HB2 | 2.42 | 0.48 |
| 1:E:96:VAL:CG2 | 1:E:97:ASP:N | 2.75 | 0.48 |
| 1:F:18:ILE:HD11 | 1:F:347:PRO:HD3 | 1.95 | 0.48 |
| 2:A:67:HIS:O | 2:A:70:HIS:HD2 | 1.96 | 0.48 |
| 2:D:72:VAL:C | 2:D:74:ALA:N | 2.66 | 0.48 |
| 2:D:104:LEU:C | 2:D:105:ILE:HG13 | 2.32 | 0.48 |
| 1:E:4:MET:HG2 | 1:E:8:GLU:CB | 2.42 | 0.48 |
| 1:E:84:THR:HA | 1:E:261:ILE:HD11 | 1.95 | 0.48 |
| 1:E:369:THR:O | 1:E:372:GLY:N | 2.46 | 0.48 |
| 1:F:62:GLY:O | 1:F:66:ILE:HG13 | 2.14 | 0.48 |
| 1:F:384:ASN:HD21 | 1:F:390:ILE:H | 1.59 | 0.48 |
| 1:F:387:THR:CG2 | 1:F:388:GLU:N | 2.63 | 0.48 |
| 2:B:37:LEU:HB3 | 2:B:61:GLU:HB3 | 1.95 | 0.48 |
| 2:D:136:LEU:C | 2:D:138:GLU:N | 2.60 | 0.48 |
| 1:E:34:ARG:NH1 | 1:E:37:ARG:HE | 2.12 | 0.48 |
| 1:F:88:GLU:OE1 | 1:F:93:GLY:N | 2.46 | 0.48 |
| 1:F:96:VAL:HG23 | 1:F:97:ASP:N | 2.27 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:127:ALA:CB | 1:F:226:ILE:HG22 | 2.44 | 0.48 |
| 1:F:364:VAL:HG22 | 1:F:413:LEU:HB2 | 1.95 | 0.48 |
| 1:F:427:LYS:HG2 | 1:F:427:LYS:O | 2.13 | 0.48 |
| 2:C:18:GLY:HA2 | 2:C:31:VAL:O | 2.14 | 0.48 |
| 2:C:41:LYS:N | 2:C:41:LYS:CD | 2.76 | 0.48 |
| 1:E:117:GLU:O | 1:E:119:ASN:N | 2.46 | 0.48 |
| 1:E:341:GLU:OE1 | 1:E:374:LYS:HE2 | 2.13 | 0.48 |
| 2:B:62:ARG:HE | 2:B:62:ARG:HA | 1.77 | 0.48 |
| 2:A:123:GLY:O | 2:A:124:SER:C | 2.51 | 0.48 |
| 2:A:138:GLU:C | 2:A:139:ASN:ND2 | 2.65 | 0.48 |
| 2:D:60:PHE:C | 2:D:64:LEU:HD23 | 2.33 | 0.48 |
| 2:C:38:TYR:O | 2:C:39:ASN:C | 2.51 | 0.48 |
| 2:C:66:MET:C | 2:C:68:GLN:H | 2.16 | 0.48 |
| 1:E:117:GLU:HA | 1:E:120:ARG:HB2 | 1.96 | 0.48 |
| 1:E:258:ILE:C | 1:E:259:ASP:O | 2.51 | 0.48 |
| 1:F:315:PRO:O | 1:F:318:LEU:HD12 | 2.13 | 0.48 |
| 2:A:4:VAL:HG13 | 2:A:4:VAL:O | 2.13 | 0.48 |
| 2:A:43:ILE:HG12 | 2:A:171:LEU:HD22 | 1.95 | 0.48 |
| 2:A:67:HIS:ND1 | 2:A:73:LYS:HE2 | 2.29 | 0.48 |
| 2:C:48:GLY:O | 2:C:49:GLY:C | 2.51 | 0.48 |
| 1:E:77:PRO:CB | 1:E:107:ALA:HB2 | 2.39 | 0.48 |
| 1:E:394:ARG:O | 1:E:398:VAL:HG23 | 2.14 | 0.48 |
| 1:E:432:LEU:O | 1:E:434:ALA:N | 2.46 | 0.48 |
| 1:F:49:THR:HG21 | 1:F:325:ARG:HH12 | 1.77 | 0.48 |
| 1:F:272:VAL:O | 1:F:273:SER:C | 2.52 | 0.48 |
| 1:F:406:ILE:CD1 | 1:F:418:ILE:HG21 | 2.43 | 0.48 |
| 1:F:435:ASP:O | 1:F:437:ASP:N | 2.39 | 0.48 |
| 2:B:53:ALA:O | 2:B:57:PHE:HB2 | 2.14 | 0.48 |
| 2:A:3:ILE:HD12 | 2:A:34:VAL:CG1 | 2.44 | 0.48 |
| 2:A:6:VAL:CG2 | 2:A:137:LEU:HD21 | 2.44 | 0.48 |
| 2:D:85:ASP:O | 2:D:86:ARG:CB | 2.62 | 0.48 |
| 2:C:58:GLU:OE1 | 2:C:62:ARG:NH2 | 2.47 | 0.48 |
| 2:C:94:LEU:HD12 | 2:C:122:ILE:HB | 1.96 | 0.48 |
| 2:B:44:ALA:HB2 | 2:B:97:VAL:CA | 2.23 | 0.48 |
| 2:A:38:TYR:HB2 | 2:A:61:GLU:OE2 | 2.14 | 0.48 |
| 2:D:58:GLU:HA | 2:D:61:GLU:HB3 | 1.96 | 0.48 |
| 2:D:76:VAL:O | 2:D:80:LYS:HB2 | 2.14 | 0.48 |
| 1:F:53:ILE:HG23 | 1:F:328:ILE:HG22 | 1.95 | 0.48 |
| 1:F:278:GLN:HE22 | 1:F:318:LEU:HA | 1.78 | 0.48 |
| 2:B:123:GLY:O | 2:B:126:GLY:N | 2.45 | 0.48 |
| 2:B:163:ASN:ND2 | 2:B:163:ASN:C | 2.63 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:D:37:LEU:HD22 | 2:D:61:GLU:CB | 2.36 | 0.48 |
| 2:C:59:LEU:CD2 | 2:C:78:LEU:HD22 | 2.44 | 0.48 |
| 1:E:384:ASN:OD1 | 1:E:394:ARG:HD2 | 2.14 | 0.48 |
| 1:E:401:ARG:NH2 | 1:E:442:ILE:HB | 2.29 | 0.48 |
| 1:F:19:GLY:O | 1:F:24:LYS:CE | 2.62 | 0.48 |
| 2:B:1:THR:HB | 2:B:33:LYS:CE | 2.43 | 0.48 |
| 2:B:36:ARG:HH11 | 2:B:36:ARG:HB3 | 1.78 | 0.48 |
| 2:B:79:ALA:O | 2:B:110:GLY:HA2 | 2.14 | 0.48 |
| 2:B:140:THR:CG2 | 2:B:142:LEU:HD11 | 2.43 | 0.48 |
| 2:A:28:LYS:CG | 2:A:30:ASN:ND2 | 2.77 | 0.48 |
| 2:A:30:ASN:HA | 2:A:165:PHE:CE2 | 2.49 | 0.48 |
| 2:A:56:LEU:HD11 | 2:A:88:LEU:CD1 | 2.44 | 0.48 |
| 2:D:16:GLY:C | 2:D:152:LEU:HD11 | 2.34 | 0.48 |
| 1:E:319:ILE:HG13 | 1:E:319:ILE:O | 2.14 | 0.47 |
| 1:F:71:ALA:O | 1:F:72:LYS:C | 2.53 | 0.47 |
| 1:F:103:LEU:O | 1:F:247:VAL:CG2 | 2.61 | 0.47 |
| 2:B:57:PHE:O | 2:B:61:GLU:CD | 2.53 | 0.47 |
| 2:B:119:LEU:HD23 | 2:B:130:GLN:OE1 | 2.14 | 0.47 |
| 2:D:41:LYS:HD2 | 2:D:171:LEU:CD1 | 2.44 | 0.47 |
| 2:D:51:ALA:HB1 | 2:C:109:ASN:O | 2.14 | 0.47 |
| 1:E:123:ALA:HB1 | 1:E:229:GLU:CG | 2.42 | 0.47 |
| 1:F:77:PRO:HB2 | 1:F:103:LEU:CD2 | 2.44 | 0.47 |
| 2:A:53:ALA:O | 2:A:57:PHE:HB2 | 2.14 | 0.47 |
| 2:A:104:LEU:HA | 2:A:113:VAL:O | 2.13 | 0.47 |
| 2:A:112:VAL:CG1 | 2:A:113:VAL:N | 2.77 | 0.47 |
| 2:A:149:GLU:CD | 2:A:168:ILE:HD13 | 2.33 | 0.47 |
| 2:D:30:ASN:HA | 2:D:165:PHE:CD2 | 2.49 | 0.47 |
| 2:D:115:PRO:HB2 | 2:D:118:ASP:CA | 2.44 | 0.47 |
| 1:E:16:HIS:CG | 1:E:69:ARG:HD2 | 2.49 | 0.47 |
| 1:E:17:ILE:HB | 1:E:24:LYS:CE | 2.44 | 0.47 |
| 1:E:105:ASP:HA | 1:E:108:VAL:HB | 1.96 | 0.47 |
| 1:E:245:ASP:O | 1:E:249:GLN:HB3 | 2.15 | 0.47 |
| 1:F:113:VAL:O | 1:F:113:VAL:HG12 | 2.13 | 0.47 |
| 2:A:1:THR:HB | 2:A:162:THR:CG2 | 2.42 | 0.47 |
| 2:A:81:ASP:HA | 2:A:85:ASP:OD2 | 2.13 | 0.47 |
| 2:D:15:ALA:CB | 2:D:152:LEU:HD12 | 2.43 | 0.47 |
| 2:D:37:LEU:HD11 | 2:D:60:PHE:HB3 | 1.97 | 0.47 |
| 2:D:60:PHE:CE2 | 2:D:97:VAL:HG21 | 2.50 | 0.47 |
| 2:D:82:TRP:CD1 | 2:D:89:ARG:HG3 | 2.49 | 0.47 |
| 1:F:5:THR:HB | 1:F:6:PRO:CD | 2.45 | 0.47 |
| 1:F:90:GLY:O | 1:F:91:TYR:HB2 | 2.14 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:109:LYS:O | 1:F:113:VAL:HG23 | 2.14 | 0.47 |
| 2:B:61:GLU:O | 2:B:64:LEU:HD13 | 2.14 | 0.47 |
| 2:B:74:ALA:O | 2:B:75:ALA:CB | 2.63 | 0.47 |
| 2:B:88:LEU:HD12 | 2:B:89:ARG:NE | 2.26 | 0.47 |
| 2:A:72:VAL:O | 2:A:75:ALA:N | 2.28 | 0.47 |
| 2:A:116:GLU:O | 2:A:117:ASN:CB | 2.49 | 0.47 |
| 2:D:1:THR:O | 2:D:123:GLY:HA3 | 2.14 | 0.47 |
| 2:D:62:ARG:O | 2:D:65:GLU:OE2 | 2.33 | 0.47 |
| 1:E:43:GLU:C | 1:E:45:ARG:H | 2.16 | 0.47 |
| 1:F:44:LEU:HA | 1:F:47:GLU:HB2 | 1.96 | 0.47 |
| 1:F:96:VAL:CG2 | 1:F:97:ASP:N | 2.78 | 0.47 |
| 1:F:124:GLU:C | 1:F:126:LEU:N | 2.67 | 0.47 |
| 2:C:60:PHE:O | 2:C:62:ARG:N | 2.48 | 0.47 |
| 1:E:227:GLU:C | 1:E:229:GLU:N | 2.68 | 0.47 |
| 1:E:393:ARG:HG3 | 3:E:905:DAT:H5'1 | 1.96 | 0.47 |
| 1:F:108:VAL:CA | 1:F:111:VAL:HG23 | 2.41 | 0.47 |
| 1:F:274:ARG:C | 1:F:276:GLY:H | 2.18 | 0.47 |
| 2:A:13:VAL:C | 2:A:14:ILE:HD12 | 2.34 | 0.47 |
| 2:A:154:ILE:O | 2:A:157:ASP:HB2 | 2.14 | 0.47 |
| 2:D:99:ASP:CG | 2:D:100:GLU:N | 2.67 | 0.47 |
| 2:C:58:GLU:O | 2:C:62:ARG:HG2 | 2.14 | 0.47 |
| 2:C:141:GLU:O | 2:C:147:ILE:HD11 | 2.14 | 0.47 |
| 1:E:96:VAL:O | 1:E:98:SER:N | 2.48 | 0.47 |
| 1:E:239:LEU:O | 1:E:240:LYS:CD | 2.62 | 0.47 |
| 1:E:257:GLU:O | 1:E:259:ASP:O | 2.33 | 0.47 |
| 1:E:427:LYS:O | 1:E:427:LYS:HG2 | 2.14 | 0.47 |
| 1:F:235:ASN:N | 1:F:236:PRO:HD3 | 2.30 | 0.47 |
| 1:F:360:ALA:C | 1:F:362:GLU:H | 2.17 | 0.47 |
| 2:A:7:ARG:NH2 | 2:A:102:ALA:O | 2.47 | 0.47 |
| 2:A:82:TRP:CZ3 | 2:A:89:ARG:HA | 2.39 | 0.47 |
| 2:D:71:LEU:O | 2:D:74:ALA:CB | 2.63 | 0.47 |
| 2:D:124:SER:C | 2:D:126:GLY:H | 2.18 | 0.47 |
| 1:E:335:LEU:HD13 | 1:E:343:ILE:CD1 | 2.45 | 0.47 |
| 1:F:244:ILE:CG2 | 1:F:248:GLU:HG3 | 2.44 | 0.47 |
| 1:F:274:ARG:C | 1:F:276:GLY:N | 2.68 | 0.47 |
| 1:F:343:ILE:O | 1:F:351:ILE:CD1 | 2.63 | 0.47 |
| 1:F:353:VAL:HA | 1:F:356:LYS:HD3 | 1.97 | 0.47 |
| 2:B:7:ARG:HH12 | 2:B:102:ALA:H | 1.58 | 0.47 |
| 2:B:86:ARG:HD3 | 2:A:84:THR:O | 2.15 | 0.47 |
| 2:B:153:ASP:OD2 | 2:B:166:HIS:CE1 | 2.68 | 0.47 |
| 2:A:139:ASN:ND2 | 2:A:139:ASN:N | 2.60 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:D:94:LEU:HD22 | 2:D:122:ILE:HG21 | 1.96 | 0.47 |
| 2:C:7:ARG:NH1 | 2:C:118:ASP:OD1 | 2.47 | 0.47 |
| 1:E:263:LYS:HD3 | 1:E:263:LYS:O | 2.13 | 0.47 |
| 1:F:227:GLU:O | 1:F:230:ALA:HB3 | 2.14 | 0.47 |
| 1:F:376:ILE:O | 1:F:379:ALA:N | 2.48 | 0.47 |
| 2:B:94:LEU:HD12 | 2:B:94:LEU:N | 2.28 | 0.47 |
| 2:B:117:ASN:HD22 | 2:B:117:ASN:HA | 1.51 | 0.47 |
| 2:D:19:GLN:HG3 | 2:D:26:VAL:HG21 | 1.96 | 0.47 |
| 1:E:260:LYS:HE2 | 1:E:260:LYS:CA | 2.43 | 0.47 |
| 1:E:442:ILE:HA | 1:F:329:ARG:CB | 2.44 | 0.47 |
| 1:F:85:LYS:HE2 | 1:F:86:PHE:CE1 | 2.50 | 0.47 |
| 1:F:126:LEU:HA | 1:F:129:GLU:CB | 2.45 | 0.47 |
| 2:C:35:ARG:HD2 | 2:C:36:ARG:O | 2.15 | 0.47 |
| 2:C:63:LYS:C | 2:C:65:GLU:N | 2.68 | 0.47 |
| 1:E:4:MET:HG2 | 1:E:8:GLU:HB3 | 1.96 | 0.46 |
| 1:E:220:ASP:O | 1:E:221:ALA:HB2 | 2.16 | 0.46 |
| 1:F:9:ILE:O | 1:F:13:LEU:HG | 2.14 | 0.46 |
| 1:F:45:ARG:O | 1:F:45:ARG:HG2 | 2.15 | 0.46 |
| 1:F:88:GLU:C | 1:F:90:GLY:N | 2.69 | 0.46 |
| 2:D:30:ASN:O | 2:D:165:PHE:CE2 | 2.69 | 0.46 |
| 2:D:37:LEU:HD13 | 2:D:61:GLU:N | 2.31 | 0.46 |
| 2:C:44:ALA:HB2 | 2:C:97:VAL:HA | 1.97 | 0.46 |
| 2:C:55:THR:O | 2:C:57:PHE:N | 2.48 | 0.46 |
| 2:B:57:PHE:HD2 | 2:B:57:PHE:HA | 1.67 | 0.46 |
| 2:B:140:THR:HB | 2:B:142:LEU:CD1 | 2.33 | 0.46 |
| 2:A:39:ASN:C | 2:A:41:LYS:H | 2.18 | 0.46 |
| 2:C:35:ARG:HH11 | 2:C:37:LEU:HA | 1.77 | 0.46 |
| 1:E:332:LEU:N | 1:E:332:LEU:HD12 | 2.30 | 0.46 |
| 1:E:402:LEU:HD12 | 1:E:429:LEU:HG | 1.97 | 0.46 |
| 1:F:45:ARG:CG | 1:F:45:ARG:NH1 | 2.77 | 0.46 |
| 1:F:100:ILE:C | 1:F:102:ASP:H | 2.19 | 0.46 |
| 1:F:267:SER:HA | 2:D:87:MET:CE | 2.45 | 0.46 |
| 1:F:318:LEU:O | 1:F:319:ILE:C | 2.54 | 0.46 |
| 2:B:73:LYS:HA | 2:B:77:GLU:OE2 | 2.16 | 0.46 |
| 2:D:37:LEU:HB3 | 2:D:39:ASN:ND2 | 2.30 | 0.46 |
| 2:D:82:TRP:NE1 | 2:D:89:ARG:HG2 | 2.31 | 0.46 |
| 2:C:44:ALA:CB | 2:C:97:VAL:HA | 2.45 | 0.46 |
| 2:C:88:LEU:HD23 | 2:C:88:LEU:HA | 1.85 | 0.46 |
| 1:E:110:MET:O | 1:E:113:VAL:HG12 | 2.16 | 0.46 |
| 1:E:309:ALA:O | 1:E:310:PHE:HB2 | 2.15 | 0.46 |
| 1:E:335:LEU:HD13 | 1:E:343:ILE:HD11 | 1.97 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:355:TYR:CE1 | 1:E:399:LEU:HD13 | 2.50 | 0.46 |
| 1:F:257:GLU:HG2 | 1:F:260:LYS:HB2 | 1.97 | 0.46 |
| 1:F:278:GLN:HE21 | 1:F:322:LEU:HD12 | 1.80 | 0.46 |
| 1:F:345:THR:CG2 | 1:F:373:ILE:HD12 | 2.45 | 0.46 |
| 2:B:28:LYS:HD3 | 2:B:30:ASN:C | 2.36 | 0.46 |
| 2:B:44:ALA:HB1 | 2:B:96:ALA:O | 2.16 | 0.46 |
| 2:D:83:ARG:HD2 | 2:D:83:ARG:HA | 1.78 | 0.46 |
| 2:C:36:ARG:O | 2:C:37:LEU:HG | 2.14 | 0.46 |
| 1:F:122:ARG:O | 1:F:125:GLU:HG2 | 2.16 | 0.46 |
| 2:B:122:ILE:HD13 | 2:B:122:ILE:H | 1.80 | 0.46 |
| 2:D:106:ILE:C | 2:D:108:GLY:N | 2.69 | 0.46 |
| 2:C:40:ASP:O | 2:C:41:LYS:O | 2.32 | 0.46 |
| 2:C:69:GLY:O | 2:C:71:LEU:N | 2.48 | 0.46 |
| 1:E:348:ASN:C | 1:E:348:ASN:ND2 | 2.69 | 0.46 |
| 1:F:349:ALA:O | 1:F:350:SER:O | 2.34 | 0.46 |
| 1:F:406:ILE:HD12 | 1:F:418:ILE:HG21 | 1.96 | 0.46 |
| 2:D:37:LEU:C | 2:D:39:ASN:N | 2.68 | 0.46 |
| 2:D:152:LEU:HD13 | 2:D:166:HIS:CD2 | 2.39 | 0.46 |
| 1:E:43:GLU:OE2 | 1:E:43:GLU:HA | 2.15 | 0.46 |
| 1:E:77:PRO:HB2 | 1:E:103:LEU:HD11 | 1.97 | 0.46 |
| 1:E:364:VAL:CG2 | 1:E:413:LEU:HB2 | 2.45 | 0.46 |
| 1:E:409:ASP:O | 1:E:411:SER:N | 2.49 | 0.46 |
| 1:F:84:THR:O | 1:F:87:THR:HG22 | 2.16 | 0.46 |
| 2:B:51:ALA:O | 2:B:54:PHE:HB3 | 2.15 | 0.46 |
| 2:A:34:VAL:HG22 | 2:A:167:THR:HB | 1.97 | 0.46 |
| 2:D:46:PHE:CD1 | 2:D:46:PHE:C | 2.88 | 0.46 |
| 2:D:89:ARG:C | 2:D:90:LYS:HG3 | 2.36 | 0.46 |
| 1:E:63:LYS:HG2 | 1:E:332:LEU:HD22 | 1.98 | 0.46 |
| 2:B:13:VAL:HA | 2:B:169:GLU:O | 2.16 | 0.46 |
| 2:A:60:PHE:CE2 | 2:A:97:VAL:HG21 | 2.51 | 0.46 |
| 2:A:82:TRP:CG | 2:A:108:GLY:HA2 | 2.51 | 0.46 |
| 2:D:31:VAL:O | 2:D:33:LYS:N | 2.49 | 0.46 |
| 2:D:106:ILE:HG13 | 2:D:111:ASP:O | 2.16 | 0.46 |
| 1:E:369:THR:O | 1:E:370:ASP:C | 2.52 | 0.46 |
| 1:F:85:LYS:C | 1:F:87:THR:H | 2.19 | 0.46 |
| 1:F:432:LEU:C | 1:F:434:ALA:N | 2.68 | 0.46 |
| 2:D:20:ALA:HB3 | 2:D:27:MET:HG3 | 1.98 | 0.46 |
| 2:D:51:ALA:HB2 | 2:C:111:ASP:HB2 | 1.98 | 0.46 |
| 2:D:62:ARG:HG3 | 2:D:63:LYS:N | 2.30 | 0.46 |
| 2:D:64:LEU:N | 2:D:64:LEU:HD22 | 2.31 | 0.46 |
| 2:C:2:THR:CG2 | 2:C:129:ALA:HB2 | 2.46 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:15:ALA:CA | 2:C:168:ILE:HG23 | 2.42 | 0.46 |
| 1:E:87:THR:O | 1:E:88:GLU:C | 2.53 | 0.46 |
| 1:E:365:ASN:O | 1:E:417:ASN:HA | 2.16 | 0.46 |
| 1:E:422:ALA:C | 1:E:424:TYR:H | 2.19 | 0.46 |
| 1:F:54:LEU:HD11 | 1:F:315:PRO:HB3 | 1.98 | 0.46 |
| 1:F:360:ALA:C | 1:F:362:GLU:N | 2.69 | 0.46 |
| 1:F:409:ASP:O | 1:F:412:ASP:N | 2.41 | 0.46 |
| 2:B:101:THR:O | 2:B:101:THR:CG2 | 2.63 | 0.46 |
| 2:B:173:TYR:HD1 | 2:B:173:TYR:O | 1.98 | 0.46 |
| 2:D:83:ARG:NH1 | 2:D:89:ARG:HE | 2.14 | 0.46 |
| 2:D:130:GLN:HA | 2:D:133:ALA:HB3 | 1.98 | 0.46 |
| 2:C:66:MET:C | 2:C:68:GLN:N | 2.69 | 0.46 |
| 2:C:163:ASN:ND2 | 2:C:164:HIS:N | 2.64 | 0.46 |
| 1:E:261:ILE:HG22 | 1:E:261:ILE:O | 2.15 | 0.45 |
| 1:E:374:LYS:O | 1:E:378:GLU:HG3 | 2.16 | 0.45 |
| 1:F:70:LEU:HG | 1:F:70:LEU:O | 2.16 | 0.45 |
| 1:F:388:GLU:OE1 | 1:F:440:ARG:NH2 | 2.49 | 0.45 |
| 2:C:37:LEU:C | 2:C:39:ASN:H | 2.20 | 0.45 |
| 2:C:41:LYS:O | 2:C:42:VAL:CB | 2.63 | 0.45 |
| 2:C:44:ALA:CB | 2:C:97:VAL:HG13 | 2.33 | 0.45 |
| 1:E:24:LYS:O | 1:E:28:ALA:HB2 | 2.16 | 0.45 |
| 1:E:257:GLU:CD | 1:F:279:ARG:HH21 | 2.20 | 0.45 |
| 1:F:1:MET:HG2 | 1:F:3:GLU:HG3 | 1.98 | 0.45 |
| 1:F:282:LEU:O | 1:F:283:PRO:C | 2.55 | 0.45 |
| 2:B:55:THR:OG1 | 2:A:80:LYS:CB | 2.64 | 0.45 |
| 2:B:128:TYR:HD2 | 2:B:158:ILE:HG23 | 1.80 | 0.45 |
| 2:B:135:ALA:O | 2:B:139:ASN:ND2 | 2.43 | 0.45 |
| 2:A:8:ARG:NH2 | 2:A:137:LEU:O | 2.50 | 0.45 |
| 2:A:56:LEU:HD11 | 2:A:88:LEU:HD12 | 1.97 | 0.45 |
| 2:A:66:MET:SD | 2:A:67:HIS:N | 2.90 | 0.45 |
| 2:D:37:LEU:CD1 | 2:D:60:PHE:HB3 | 2.45 | 0.45 |
| 1:E:442:ILE:CB | 1:F:329:ARG:HB2 | 2.46 | 0.45 |
| 1:F:122:ARG:CZ | 1:F:125:GLU:CD | 2.85 | 0.45 |
| 1:F:429:LEU:O | 1:F:430:ASP:C | 2.52 | 0.45 |
| 2:B:58:GLU:O | 2:B:61:GLU:HG2 | 2.17 | 0.45 |
| 1:E:103:LEU:HG | 1:E:103:LEU:O | 2.15 | 0.45 |
| 1:F:65:GLU:OE2 | 1:F:65:GLU:HA | 2.15 | 0.45 |
| 1:F:103:LEU:HD13 | 1:F:247:VAL:CG2 | 2.46 | 0.45 |
| 2:B:122:ILE:H | 2:B:122:ILE:CD1 | 2.29 | 0.45 |
| 2:B:171:LEU:HD12 | 2:B:172:SER:H | 1.81 | 0.45 |
| 2:A:145:ARG:NH1 | 2:A:170:GLU:OE1 | 2.49 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:12:GLU:HA | 1:F:15:LYS:HD3 | 1.98 | 0.45 |
| 1:F:64:THR:HG21 | 1:F:80:LYS:NZ | 2.31 | 0.45 |
| 1:F:264:ARG:NH2 | 1:F:314:LYS:HE2 | 2.32 | 0.45 |
| 1:F:298:LYS:HE2 | 1:F:300:ASP:OD1 | 2.17 | 0.45 |
| 2:C:47:ALA:HB3 | 2:C:94:LEU:CD1 | 2.46 | 0.45 |
| 2:A:100:GLU:CD | 2:A:100:GLU:N | 2.64 | 0.45 |
| 2:C:24:ASN:N | 2:C:24:ASN:ND2 | 2.65 | 0.45 |
| 2:C:36:ARG:CG | 2:C:37:LEU:H | 2.15 | 0.45 |
| 2:C:86:ARG:HG3 | 2:C:86:ARG:HH11 | 1.82 | 0.45 |
| 1:E:108:VAL:HA | 1:E:111:VAL:HG22 | 1.98 | 0.45 |
| 1:E:413:LEU:HD23 | 1:E:413:LEU:H | 1.82 | 0.45 |
| 2:B:5:SER:CB | 2:B:14:ILE:HA | 2.45 | 0.45 |
| 2:D:94:LEU:CD2 | 2:D:122:ILE:HG21 | 2.47 | 0.45 |
| 2:C:104:LEU:N | 2:C:104:LEU:HD12 | 2.32 | 0.45 |
| 1:E:107:ALA:CB | 1:E:247:VAL:HG22 | 2.47 | 0.45 |
| 1:F:426:SER:HB3 | 1:F:430:ASP:OD1 | 2.16 | 0.45 |
| 2:B:54:PHE:C | 2:B:56:LEU:H | 2.20 | 0.45 |
| 2:B:91:LEU:O | 2:B:92:GLU:O | 2.35 | 0.45 |
| 2:A:35:ARG:N | 2:A:45:GLY:HA2 | 2.30 | 0.45 |
| 2:D:62:ARG:HG3 | 2:D:63:LYS:H | 1.82 | 0.45 |
| 2:C:16:GLY:C | 2:C:152:LEU:HD11 | 2.38 | 0.45 |
| 2:C:80:LYS:O | 2:C:82:TRP:N | 2.50 | 0.45 |
| 1:E:360:ALA:O | 1:E:362:GLU:N | 2.49 | 0.45 |
| 1:E:402:LEU:HD13 | 1:E:429:LEU:HD11 | 1.98 | 0.45 |
| 1:F:88:GLU:O | 1:F:90:GLY:N | 2.50 | 0.45 |
| 1:F:242:ASP:O | 1:F:246:ALA:N | 2.49 | 0.45 |
| 1:F:244:ILE:C | 1:F:246:ALA:N | 2.71 | 0.45 |
| 1:E:5:THR:HB | 1:E:6:PRO:HD2 | 1.98 | 0.45 |
| 1:E:41:ASN:C | 1:E:43:GLU:N | 2.70 | 0.45 |
| 1:E:43:GLU:OE2 | 1:E:43:GLU:CA | 2.65 | 0.45 |
| 1:F:55:MET:CE | 1:F:66:ILE:HD12 | 2.42 | 0.45 |
| 2:B:104:LEU:HA | 2:B:113:VAL:O | 2.17 | 0.45 |
| 2:A:5:SER:HA | 2:A:13:VAL:O | 2.17 | 0.45 |
| 1:E:413:LEU:HD23 | 1:E:413:LEU:N | 2.33 | 0.44 |
| 1:E:413:LEU:O | 1:E:416:GLN:HB3 | 2.17 | 0.44 |
| 1:F:101:ARG:C | 1:F:102:ASP:OD1 | 2.55 | 0.44 |
| 2:C:46:PHE:HE1 | 2:C:48:GLY:O | 2.00 | 0.44 |
| 2:C:121:ALA:CB | 2:C:130:GLN:HE21 | 2.30 | 0.44 |
| 1:E:81:VAL:HG21 | 1:E:99:ILE:HG12 | 2.00 | 0.44 |
| 1:E:244:ILE:C | 1:E:246:ALA:N | 2.69 | 0.44 |
| 1:E:20:GLN:NE2 | 1:E:333:GLN:H | 2.05 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:96:VAL:CG1 | 1:E:280:ASP:HB3 | 2.47 | 0.44 |
| 1:F:122:ARG:NH2 | 1:F:125:GLU:CG | 2.80 | 0.44 |
| 1:F:244:ILE:O | 1:F:246:ALA:N | 2.51 | 0.44 |
| 2:B:7:ARG:CG | 2:B:12:VAL:HG22 | 2.46 | 0.44 |
| 2:B:13:VAL:HA | 2:B:170:GLU:HA | 1.99 | 0.44 |
| 2:D:45:GLY:O | 2:D:95:LEU:HA | 2.17 | 0.44 |
| 2:C:63:LYS:CG | 2:C:78:LEU:HG | 2.47 | 0.44 |
| 1:E:258:ILE:CG2 | 1:E:259:ASP:N | 2.80 | 0.44 |
| 1:F:366:ILE:HG22 | 1:F:367:GLU:N | 2.32 | 0.44 |
| 2:B:39:ASN:N | 2:B:62:ARG:NH2 | 2.64 | 0.44 |
| 2:B:82:TRP:C | 2:B:83:ARG:HG2 | 2.38 | 0.44 |
| 2:B:163:ASN:HD21 | 2:B:165:PHE:HB3 | 1.83 | 0.44 |
| 2:A:13:VAL:HG23 | 2:A:169:GLU:O | 2.17 | 0.44 |
| 2:A:84:THR:O | 2:A:84:THR:HG22 | 2.17 | 0.44 |
| 2:D:35:ARG:HG3 | 2:D:36:ARG:N | 2.33 | 0.44 |
| 2:C:115:PRO:O | 2:C:117:ASN:N | 2.51 | 0.44 |
| 1:E:92:VAL:HG13 | 1:F:92:VAL:O | 2.18 | 0.44 |
| 1:E:258:ILE:HG12 | 1:E:318:LEU:HD21 | 2.00 | 0.44 |
| 2:D:8:ARG:CB | 2:D:144:ALA:HB2 | 2.27 | 0.44 |
| 2:D:143:SER:OG | 2:D:144:ALA:N | 2.50 | 0.44 |
| 1:E:81:VAL:CG1 | 1:E:86:PHE:HE2 | 2.31 | 0.44 |
| 1:F:29:ILE:O | 1:F:30:ALA:C | 2.56 | 0.44 |
| 1:F:34:ARG:HG3 | 1:F:38:MET:HE1 | 2.00 | 0.44 |
| 2:B:88:LEU:H | 2:B:88:LEU:CD2 | 2.26 | 0.44 |
| 2:B:150:LYS:CD | 2:C:139:ASN:HD21 | 2.26 | 0.44 |
| 2:A:89:ARG:H | 2:A:91:LEU:CD2 | 2.31 | 0.44 |
| 2:A:160:ILE:HG13 | 2:A:161:TYR:CE2 | 2.52 | 0.44 |
| 1:E:53:ILE:HG13 | 1:E:328:ILE:HB | 2.00 | 0.44 |
| 1:E:87:THR:HA | 1:E:277:VAL:HG21 | 2.00 | 0.44 |
| 1:E:239:LEU:O | 1:E:239:LEU:HD23 | 2.17 | 0.44 |
| 1:E:374:LYS:HB2 | 1:E:374:LYS:HE3 | 1.77 | 0.44 |
| 1:E:375:ARG:HG3 | 1:E:422:ALA:HB1 | 1.99 | 0.44 |
| 1:F:65:GLU:HG2 | 3:F:906:DAT:H2'2 | 1.98 | 0.44 |
| 1:F:233:LEU:O | 1:F:234:VAL:C | 2.56 | 0.44 |
| 2:B:9:ASN:HD22 | 2:B:9:ASN:HA | 1.67 | 0.44 |
| 2:A:2:THR:HA | 2:A:122:ILE:O | 2.17 | 0.44 |
| 2:A:71:LEU:CD2 | 2:A:102:ALA:HB3 | 2.48 | 0.44 |
| 2:A:104:LEU:HD12 | 2:A:104:LEU:H | 1.83 | 0.44 |
| 1:E:88:GLU:O | 1:E:90:GLY:N | 2.51 | 0.44 |
| 1:E:100:ILE:HG13 | 1:E:299:THR:CG2 | 2.48 | 0.44 |
| 1:E:128:GLU:CG | 1:E:132:LEU:HD21 | 2.47 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:244:ILE:O | 1:E:248:GLU:N | 2.51 | 0.44 |
| 1:E:342:ARG:C | 1:E:344:LEU:N | 2.72 | 0.44 |
| 1:F:282:LEU:HB2 | 1:F:283:PRO:HD3 | 1.98 | 0.44 |
| 2:B:32:LYS:HE3 | 2:B:167:THR:CG2 | 2.48 | 0.44 |
| 2:D:145:ARG:HH11 | 2:D:145:ARG:HG2 | 1.83 | 0.44 |
| 1:E:85:LYS:HG3 | 1:F:280:ASP:OD1 | 2.18 | 0.44 |
| 2:A:30:ASN:ND2 | 2:A:30:ASN:N | 2.65 | 0.44 |
| 2:A:85:ASP:O | 2:A:86:ARG:CB | 2.66 | 0.44 |
| 2:A:139:ASN:HD22 | 2:A:139:ASN:N | 2.16 | 0.44 |
| 2:D:127:PRO:O | 2:D:128:TYR:C | 2.56 | 0.44 |
| 2:C:145:ARG:NE | 2:C:170:GLU:OE1 | 2.51 | 0.44 |
| 1:E:100:ILE:O | 1:E:104:THR:HG23 | 2.18 | 0.43 |
| 1:E:265:GLY:HA2 | 1:E:312:ILE:CG2 | 2.47 | 0.43 |
| 1:F:220:ASP:C | 1:F:222:MET:H | 2.21 | 0.43 |
| 2:B:26:VAL:O | 2:B:26:VAL:HG22 | 2.18 | 0.43 |
| 2:A:72:VAL:O | 2:A:74:ALA:N | 2.51 | 0.43 |
| 2:A:144:ALA:C | 2:A:146:GLU:H | 2.21 | 0.43 |
| 2:C:141:GLU:O | 2:C:142:LEU:O | 2.36 | 0.43 |
| 2:B:39:ASN:CA | 2:B:62:ARG:NH2 | 2.79 | 0.43 |
| 2:B:79:ALA:HB2 | 2:B:112:VAL:HG23 | 2.00 | 0.43 |
| 2:C:38:TYR:C | 2:C:40:ASP:N | 2.60 | 0.43 |
| 1:E:85:LYS:C | 1:E:87:THR:H | 2.21 | 0.43 |
| 1:E:225:LEU:HA | 1:E:228:GLU:HB3 | 2.01 | 0.43 |
| 1:E:409:ASP:O | 1:E:412:ASP:N | 2.44 | 0.43 |
| 1:F:56:ILE:HD11 | 1:F:315:PRO:HG2 | 1.99 | 0.43 |
| 1:F:267:SER:CA | 2:D:87:MET:HG3 | 2.48 | 0.43 |
| 1:F:431:ALA:O | 1:F:432:LEU:HB2 | 2.18 | 0.43 |
| 2:B:50:THR:HB | 2:A:111:ASP:CB | 2.48 | 0.43 |
| 2:D:72:VAL:HB | 2:D:73:LYS:NZ | 2.33 | 0.43 |
| 2:C:47:ALA:HB3 | 2:C:94:LEU:CG | 2.48 | 0.43 |
| 2:C:86:ARG:H | 2:C:87:MET:CE | 2.30 | 0.43 |
| 2:C:117:ASN:O | 2:C:118:ASP:HB2 | 2.18 | 0.43 |
| 1:E:104:THR:HG22 | 1:E:247:VAL:HG11 | 2.01 | 0.43 |
| 1:E:122:ARG:O | 1:E:126:LEU:HG | 2.19 | 0.43 |
| 1:E:223:LYS:CD | 1:E:226:ILE:HG13 | 2.32 | 0.43 |
| 1:E:432:LEU:CB | 1:E:443:LEU:HD11 | 2.43 | 0.43 |
| 1:F:49:THR:HG21 | 1:F:325:ARG:NH1 | 2.33 | 0.43 |
| 1:F:292:THR:HG22 | 1:F:295:GLY:O | 2.18 | 0.43 |
| 1:F:312:ILE:HB | 2:D:62:ARG:CD | 2.49 | 0.43 |
| 2:B:134:ARG:HH11 | 2:B:134:ARG:HG2 | 1.83 | 0.43 |
| 2:A:59:LEU:CD2 | 2:A:87:MET:SD | 3.07 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:227:GLU:O | 1:E:230:ALA:N | 2.39 | 0.43 |
| 1:E:281:LEU:O | 1:E:282:LEU:C | 2.55 | 0.43 |
| 1:E:358:LEU:HD11 | 1:F:48:VAL:HG11 | 2.01 | 0.43 |
| 1:F:21:ASP:HA | 1:F:24:LYS:HE2 | 1.99 | 0.43 |
| 1:F:432:LEU:CD1 | 1:F:442:ILE:HD11 | 2.49 | 0.43 |
| 2:B:27:MET:HE3 | 2:A:105:ILE:HD13 | 2.00 | 0.43 |
| 2:A:4:VAL:HA | 2:A:120:ILE:O | 2.18 | 0.43 |
| 2:A:81:ASP:HA | 2:A:85:ASP:CG | 2.37 | 0.43 |
| 1:E:278:GLN:OE1 | 1:E:319:ILE:HG23 | 2.19 | 0.43 |
| 1:E:408:TYR:HE2 | 1:F:25:ARG:HH21 | 1.61 | 0.43 |
| 1:E:413:LEU:O | 1:E:414:SER:C | 2.57 | 0.43 |
| 1:E:431:ALA:O | 1:E:434:ALA:HB3 | 2.17 | 0.43 |
| 1:F:382:GLN:HE21 | 1:F:386:SER:HB3 | 1.84 | 0.43 |
| 2:B:30:ASN:HA | 2:B:165:PHE:CD2 | 2.54 | 0.43 |
| 2:B:144:ALA:C | 2:B:146:GLU:N | 2.71 | 0.43 |
| 2:D:16:GLY:N | 2:D:152:LEU:HD11 | 2.34 | 0.43 |
| 2:D:89:ARG:O | 2:D:91:LEU:HD13 | 2.18 | 0.43 |
| 2:D:117:ASN:O | 2:D:118:ASP:HB2 | 2.18 | 0.43 |
| 2:C:51:ALA:O | 2:C:53:ALA:N | 2.43 | 0.43 |
| 2:B:1:THR:O | 2:B:2:THR:OG1 | 2.35 | 0.43 |
| 2:C:7:ARG:NH1 | 2:C:118:ASP:HB3 | 2.33 | 0.43 |
| 1:F:74:ALA:C | 1:F:76:ALA:H | 2.22 | 0.43 |
| 1:F:346:GLU:O | 1:F:347:PRO:C | 2.56 | 0.43 |
| 2:D:106:ILE:O | 2:D:108:GLY:N | 2.51 | 0.43 |
| 2:C:21:THR:HG21 | 2:C:161:TYR:CD2 | 2.44 | 0.43 |
| 1:E:231:ALA:O | 1:E:232:LYS:C | 2.56 | 0.43 |
| 1:E:241:GLN:HG3 | 1:E:242:ASP:N | 2.34 | 0.43 |
| 1:E:420:ILE:HG12 | 1:E:420:ILE:O | 2.18 | 0.43 |
| 1:F:47:GLU:OE2 | 1:F:47:GLU:HA | 2.19 | 0.43 |
| 1:F:223:LYS:HG2 | 1:F:224:LEU:CD2 | 2.48 | 0.43 |
| 1:F:397:THR:OG1 | 1:F:398:VAL:N | 2.51 | 0.43 |
| 2:B:44:ALA:HB1 | 2:B:96:ALA:C | 2.39 | 0.43 |
| 2:B:150:LYS:CE | 2:C:139:ASN:HD21 | 2.31 | 0.43 |
| 2:A:10:GLY:O | 2:A:173:TYR:CE1 | 2.72 | 0.43 |
| 2:A:150:LYS:HE3 | 2:D:139:ASN:HD21 | 1.84 | 0.43 |
| 1:F:436:GLU:HA | 1:F:439:SER:CB | 2.49 | 0.43 |
| 2:B:160:ILE:HG22 | 2:D:160:ILE:HD12 | 2.00 | 0.43 |
| 1:E:58:PRO:HG2 | 1:E:61:VAL:CG1 | 2.49 | 0.42 |
| 1:E:249:GLN:CG | 1:E:250:HIS:N | 2.69 | 0.42 |
| 1:F:32:ARG:CZ | 1:F:35:TRP:CZ3 | 3.01 | 0.42 |
| 1:F:35:TRP:CZ3 | 1:F:36:ARG:HG3 | 2.54 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:49:GLY:C | 2:B:51:ALA:N | 2.71 | 0.42 |
| 2:B:134:ARG:O | 2:B:138:GLU:HB2 | 2.18 | 0.42 |
| 2:A:63:LYS:HG2 | 2:A:74:ALA:HA | 2.01 | 0.42 |
| 2:A:72:VAL:C | 2:A:74:ALA:N | 2.73 | 0.42 |
| 2:D:1:THR:O | 2:D:124:SER:N | 2.52 | 0.42 |
| 2:C:90:LYS:NZ | 2:C:90:LYS:HB3 | 2.34 | 0.42 |
| 1:E:88:GLU:C | 1:E:90:GLY:N | 2.72 | 0.42 |
| 1:E:436:GLU:O | 1:E:440:ARG:HG3 | 2.19 | 0.42 |
| 1:F:353:VAL:O | 1:F:353:VAL:HG12 | 2.19 | 0.42 |
| 1:F:369:THR:CG2 | 1:F:370:ASP:N | 2.82 | 0.42 |
| 2:B:158:ILE:O | 2:D:25:THR:HA | 2.18 | 0.42 |
| 2:A:52:ASP:OD2 | 2:A:88:LEU:HD21 | 2.19 | 0.42 |
| 2:D:37:LEU:CD1 | 2:D:61:GLU:H | 2.32 | 0.42 |
| 2:D:60:PHE:O | 2:D:61:GLU:C | 2.58 | 0.42 |
| 1:E:315:PRO:O | 1:E:318:LEU:HD12 | 2.20 | 0.42 |
| 1:F:30:ALA:HB2 | 1:F:53:ILE:HD11 | 2.02 | 0.42 |
| 1:F:235:ASN:N | 1:F:236:PRO:CD | 2.82 | 0.42 |
| 1:F:237:GLU:O | 1:F:239:LEU:HD12 | 2.19 | 0.42 |
| 1:F:240:LYS:O | 1:F:242:ASP:N | 2.52 | 0.42 |
| 2:B:15:ALA:HB2 | 2:B:168:ILE:CG2 | 2.48 | 0.42 |
| 2:B:33:LYS:O | 2:B:45:GLY:CA | 2.67 | 0.42 |
| 2:B:38:TYR:CE1 | 2:B:64:LEU:HB2 | 2.55 | 0.42 |
| 2:A:54:PHE:HA | 2:A:57:PHE:HB2 | 2.01 | 0.42 |
| 1:E:366:ILE:HD12 | 1:E:418:ILE:HB | 2.01 | 0.42 |
| 1:E:432:LEU:O | 1:E:435:ASP:N | 2.51 | 0.42 |
| 1:F:39:GLN:C | 1:F:39:GLN:OE1 | 2.58 | 0.42 |
| 1:F:39:GLN:CD | 1:F:39:GLN:O | 2.58 | 0.42 |
| 1:F:368:PHE:CD2 | 1:F:420:ILE:HD13 | 2.54 | 0.42 |
| 2:D:60:PHE:O | 2:D:64:LEU:HD23 | 2.19 | 0.42 |
| 2:C:42:VAL:HG11 | 2:C:64:LEU:CD2 | 2.49 | 0.42 |
| 2:C:85:ASP:HB2 | 2:C:87:MET:HE3 | 2.02 | 0.42 |
| 1:F:39:GLN:O | 1:F:40:LEU:HG | 2.19 | 0.42 |
| 1:F:233:LEU:O | 1:F:235:ASN:ND2 | 2.52 | 0.42 |
| 2:B:41:LYS:HG2 | 2:B:100:GLU:HG3 | 2.01 | 0.42 |
| 2:B:48:GLY:O | 2:B:49:GLY:C | 2.58 | 0.42 |
| 2:A:37:LEU:O | 2:A:38:TYR:O | 2.37 | 0.42 |
| 2:D:52:ASP:C | 2:D:54:PHE:N | 2.71 | 0.42 |
| 2:D:75:ALA:O | 2:D:79:ALA:HB3 | 2.19 | 0.42 |
| 2:D:145:ARG:HG2 | 2:D:145:ARG:NH1 | 2.34 | 0.42 |
| 2:C:121:ALA:HB3 | 2:C:130:GLN:NE2 | 2.35 | 0.42 |
| 1:E:61:VAL:CG2 | 1:E:63:LYS:HZ2 | 2.32 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:21:ASP:CA | 1:F:24:LYS:HG3 | 2.47 | 0.42 |
| 2:B:16:GLY:C | 2:B:152:LEU:HD11 | 2.39 | 0.42 |
| 2:B:27:MET:HE1 | 2:A:105:ILE:HD11 | 2.01 | 0.42 |
| 2:B:90:LYS:CE | 2:A:83:ARG:NH2 | 2.79 | 0.42 |
| 2:B:94:LEU:H | 2:B:94:LEU:CD1 | 2.31 | 0.42 |
| 2:D:5:SER:HB2 | 2:D:14:ILE:HG12 | 2.01 | 0.42 |
| 2:D:41:LYS:O | 2:D:42:VAL:CB | 2.68 | 0.42 |
| 1:E:238:GLU:C | 1:E:240:LYS:N | 2.73 | 0.42 |
| 1:E:244:ILE:C | 1:E:246:ALA:H | 2.23 | 0.42 |
| 1:E:260:LYS:NZ | 1:E:312:ILE:HG13 | 2.34 | 0.42 |
| 1:E:302:ILE:HB | 1:E:304:PHE:CZ | 2.55 | 0.42 |
| 1:E:407:SER:OG | 1:F:36:ARG:NH2 | 2.53 | 0.42 |
| 1:F:16:HIS:O | 1:F:347:PRO:HB3 | 2.19 | 0.42 |
| 1:F:34:ARG:NH1 | 1:F:250:HIS:CB | 2.70 | 0.42 |
| 1:F:34:ARG:O | 1:F:38:MET:SD | 2.78 | 0.42 |
| 1:F:346:GLU:HB2 | 1:F:347:PRO:CD | 2.49 | 0.42 |
| 2:B:57:PHE:O | 2:B:61:GLU:HG2 | 2.20 | 0.42 |
| 2:A:106:ILE:HD12 | 2:A:106:ILE:N | 2.34 | 0.42 |
| 2:A:113:VAL:O | 2:A:115:PRO:HD3 | 2.20 | 0.42 |
| 2:D:111:ASP:C | 2:D:112:VAL:HG12 | 2.39 | 0.42 |
| 1:E:31:LEU:HD22 | 1:E:70:LEU:HD11 | 2.02 | 0.42 |
| 1:E:41:ASN:HB2 | 1:E:43:GLU:HB3 | 2.01 | 0.42 |
| 1:E:364:VAL:HG21 | 1:E:413:LEU:HB2 | 2.02 | 0.42 |
| 1:F:81:VAL:O | 1:F:256:ASP:N | 2.52 | 0.42 |
| 1:F:100:ILE:O | 1:F:102:ASP:N | 2.46 | 0.42 |
| 1:F:101:ARG:O | 1:F:102:ASP:OD1 | 2.37 | 0.42 |
| 1:F:369:THR:HG22 | 1:F:371:SER:H | 1.85 | 0.42 |
| 2:B:37:LEU:O | 2:B:40:ASP:N | 2.50 | 0.42 |
| 2:A:40:ASP:O | 2:A:43:ILE:HD13 | 2.20 | 0.42 |
| 2:A:114:GLN:NE2 | 2:A:116:GLU:OE2 | 2.49 | 0.42 |
| 2:D:37:LEU:CD1 | 2:D:61:GLU:N | 2.83 | 0.42 |
| 1:E:36:ARG:O | 1:E:39:GLN:HG3 | 2.20 | 0.42 |
| 2:B:37:LEU:O | 2:B:40:ASP:HA | 2.19 | 0.42 |
| 2:B:135:ALA:HB2 | 2:C:132:ALA:HB1 | 2.02 | 0.42 |
| 2:B:173:TYR:CD1 | 2:B:173:TYR:O | 2.73 | 0.42 |
| 2:A:40:ASP:OD2 | 2:A:40:ASP:O | 2.36 | 0.42 |
| 2:A:63:LYS:CE | 2:A:77:GLU:HB3 | 2.49 | 0.42 |
| 2:A:136:LEU:HD11 | 2:D:135:ALA:O | 2.19 | 0.42 |
| 2:C:109:ASN:C | 2:C:111:ASP:N | 2.70 | 0.42 |
| 1:E:43:GLU:C | 1:E:45:ARG:N | 2.73 | 0.42 |
| 1:E:351:ILE:O | 1:E:354:GLN:HB2 | 2.20 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:442:ILE:HB | 1:F:329:ARG:HB2 | 2.00 | 0.42 |
| 1:F:344:LEU:HD21 | 1:F:395:LEU:HG | 2.02 | 0.42 |
| 1:F:402:LEU:HD13 | 1:F:429:LEU:CD1 | 2.49 | 0.42 |
| 2:A:159:CYS:HB3 | 2:A:162:THR:HG1 | 1.85 | 0.42 |
| 2:D:66:MET:CG | 2:D:67:HIS:N | 2.83 | 0.42 |
| 1:E:70:LEU:O | 1:E:73:LEU:HG | 2.20 | 0.41 |
| 1:E:227:GLU:O | 1:E:229:GLU:N | 2.52 | 0.41 |
| 2:A:1:THR:H1 | 2:A:33:LYS:HE2 | 1.85 | 0.41 |
| 2:A:41:LYS:C | 2:A:43:ILE:H | 2.23 | 0.41 |
| 2:A:92:GLU:O | 2:A:93:ALA:HB2 | 2.20 | 0.41 |
| 2:D:143:SER:HB3 | 2:D:146:GLU:CG | 2.48 | 0.41 |
| 1:F:34:ARG:HD3 | 1:F:250:HIS:CG | 2.55 | 0.41 |
| 1:F:37:ARG:C | 1:F:39:GLN:N | 2.73 | 0.41 |
| 2:A:13:VAL:HG11 | 2:A:145:ARG:HA | 2.02 | 0.41 |
| 2:A:134:ARG:O | 2:A:136:LEU:N | 2.53 | 0.41 |
| 2:D:44:ALA:HA | 2:D:97:VAL:HA | 2.02 | 0.41 |
| 1:F:244:ILE:HG22 | 1:F:248:GLU:HG3 | 2.02 | 0.41 |
| 2:B:92:GLU:O | 2:B:93:ALA:HB2 | 2.20 | 0.41 |
| 2:A:10:GLY:O | 2:A:173:TYR:CD1 | 2.73 | 0.41 |
| 2:D:82:TRP:CE2 | 2:D:108:GLY:O | 2.73 | 0.41 |
| 2:C:19:GLN:HB2 | 2:C:163:ASN:CG | 2.41 | 0.41 |
| 2:C:46:PHE:CD1 | 2:C:46:PHE:C | 2.93 | 0.41 |
| 1:E:71:ALA:O | 1:E:74:ALA:N | 2.52 | 0.41 |
| 1:F:71:ALA:HB1 | 1:F:78:PHE:HB2 | 2.01 | 0.41 |
| 2:B:140:THR:HG22 | 2:B:142:LEU:HG | 2.01 | 0.41 |
| 1:E:43:GLU:CG | 1:E:44:LEU:N | 2.73 | 0.41 |
| 1:E:77:PRO:HB2 | 1:E:103:LEU:CD1 | 2.50 | 0.41 |
| 1:E:282:LEU:HD21 | 1:E:321:GLU:HB3 | 2.02 | 0.41 |
| 1:F:77:PRO:HB3 | 1:F:107:ALA:HB2 | 2.02 | 0.41 |
| 1:F:131:ILE:O | 1:F:132:LEU:HB3 | 2.20 | 0.41 |
| 1:F:353:VAL:O | 1:F:353:VAL:CG1 | 2.67 | 0.41 |
| 2:B:28:LYS:HD3 | 2:B:30:ASN:OD1 | 2.19 | 0.41 |
| 2:B:59:LEU:O | 2:B:60:PHE:CB | 2.68 | 0.41 |
| 2:B:163:ASN:HD22 | 2:B:164:HIS:N | 2.16 | 0.41 |
| 2:D:1:THR:N | 2:D:161:TYR:O | 2.48 | 0.41 |
| 2:D:28:LYS:HB2 | 2:C:113:VAL:HG13 | 2.01 | 0.41 |
| 2:D:64:LEU:N | 2:D:64:LEU:CD2 | 2.84 | 0.41 |
| 2:C:123:GLY:O | 2:C:125:GLY:N | 2.53 | 0.41 |
| 1:E:282:LEU:O | 1:E:283:PRO:C | 2.59 | 0.41 |
| 1:E:292:THR:OG1 | 1:E:293:LYS:N | 2.53 | 0.41 |
| 1:F:37:ARG:O | 1:F:39:GLN:N | 2.54 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:F:385:GLU:OE2 | 2:D:70:HIS:CE1 | 2.74 | 0.41 |
| 2:B:3:ILE:HG12 | 2:B:46:PHE:H | 1.85 | 0.41 |
| 2:A:14:ILE:N | 2:A:14:ILE:CD1 | 2.83 | 0.41 |
| 2:C:19:GLN:HA | 2:C:29:GLY:HA2 | 2.03 | 0.41 |
| 2:C:86:ARG:C | 2:C:87:MET:HG2 | 2.40 | 0.41 |
| 1:E:96:VAL:C | 1:E:98:SER:N | 2.74 | 0.41 |
| 1:E:388:GLU:CD | 1:E:440:ARG:NH2 | 2.74 | 0.41 |
| 1:F:278:GLN:OE1 | 1:F:319:ILE:HG23 | 2.20 | 0.41 |
| 1:F:365:ASN:ND2 | 1:F:367:GLU:OE2 | 2.49 | 0.41 |
| 2:B:34:VAL:HG12 | 2:B:169:GLU:HG3 | 2.02 | 0.41 |
| 2:B:72:VAL:C | 2:B:74:ALA:N | 2.71 | 0.41 |
| 2:B:129:ALA:O | 2:B:132:ALA:N | 2.54 | 0.41 |
| 2:C:70:HIS:CE1 | 2:C:73:LYS:HB2 | 2.55 | 0.41 |
| 2:C:85:ASP:OD1 | 2:C:85:ASP:N | 2.53 | 0.41 |
| 2:C:105:ILE:CG2 | 2:C:106:ILE:N | 2.83 | 0.41 |
| 2:C:124:SER:O | 2:C:159:CYS:SG | 2.67 | 0.41 |
| 1:E:428:HIS:O | 1:E:429:LEU:HD23 | 2.20 | 0.41 |
| 1:F:254:PHE:HA | 1:F:305:ILE:O | 2.20 | 0.41 |
| 1:E:92:VAL:HG12 | 1:E:93:GLY:N | 2.34 | 0.41 |
| 1:E:250:HIS:CG | 1:E:250:HIS:O | 2.74 | 0.41 |
| 1:E:258:ILE:HG23 | 1:E:259:ASP:N | 2.36 | 0.41 |
| 1:F:108:VAL:O | 1:F:111:VAL:N | 2.53 | 0.41 |
| 1:F:227:GLU:O | 1:F:230:ALA:N | 2.53 | 0.41 |
| 1:F:342:ARG:HD2 | 1:F:346:GLU:CD | 2.41 | 0.41 |
| 1:F:371:SER:HB3 | 1:F:422:ALA:HB2 | 2.03 | 0.41 |
| 2:B:3:ILE:HB | 2:B:122:ILE:CD1 | 2.50 | 0.41 |
| 2:B:44:ALA:HB3 | 2:B:57:PHE:CZ | 2.55 | 0.41 |
| 2:B:90:LYS:O | 2:A:83:ARG:NH2 | 2.50 | 0.41 |
| 2:B:100:GLU:HG3 | 2:B:100:GLU:H | 1.61 | 0.41 |
| 2:B:158:ILE:CG1 | 2:D:25:THR:HB | 2.51 | 0.41 |
| 2:D:105:ILE:CD1 | 2:D:120:ILE:HG23 | 2.50 | 0.41 |
| 2:C:88:LEU:C | 2:C:89:ARG:HG3 | 2.41 | 0.41 |
| 2:C:138:GLU:O | 2:C:139:ASN:OD1 | 2.39 | 0.41 |
| 1:E:271:ASP:HB3 | 1:E:272:VAL:H | 1.41 | 0.41 |
| 1:E:350:SER:HB3 | 1:E:353:VAL:CG2 | 2.51 | 0.41 |
| 1:F:220:ASP:HB2 | 1:F:223:LYS:HB3 | 2.03 | 0.41 |
| 1:F:286:GLU:HG3 | 1:F:325:ARG:NH2 | 2.36 | 0.41 |
| 2:B:119:LEU:O | 2:B:120:ILE:HD12 | 2.21 | 0.41 |
| 2:D:171:LEU:HG | 2:D:172:SER:N | 2.36 | 0.41 |
| 2:C:13:VAL:CG2 | 2:C:14:ILE:N | 2.84 | 0.41 |
| 1:E:43:GLU:HG3 | 1:E:44:LEU:H | 1.84 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:77:PRO:HD2 | 1:E:251:GLY:HA2 | 2.02 | 0.40 |
| 1:F:45:ARG:HG3 | 1:F:45:ARG:NH1 | 2.24 | 0.40 |
| 1:F:124:GLU:HA | 1:F:127:ALA:HB3 | 2.03 | 0.40 |
| 1:F:384:ASN:HD22 | 1:F:384:ASN:HA | 1.66 | 0.40 |
| 1:F:390:ILE:HD12 | 1:F:393:ARG:HB3 | 2.03 | 0.40 |
| 2:B:3:ILE:N | 2:B:3:ILE:CD1 | 2.83 | 0.40 |
| 2:B:66:MET:HB2 | 2:B:73:LYS:HZ3 | 1.86 | 0.40 |
| 2:B:136:LEU:C | 2:B:138:GLU:N | 2.72 | 0.40 |
| 2:D:158:ILE:O | 2:D:158:ILE:HG12 | 2.20 | 0.40 |
| 1:E:114:GLN:O | 1:E:114:GLN:HG2 | 2.21 | 0.40 |
| 2:B:59:LEU:O | 2:B:60:PHE:HB3 | 2.20 | 0.40 |
| 2:B:160:ILE:HD13 | 2:B:160:ILE:HA | 1.96 | 0.40 |
| 2:A:3:ILE:HG12 | 2:A:47:ALA:HB2 | 2.03 | 0.40 |
| 2:A:116:GLU:OE2 | 2:A:116:GLU:HA | 2.20 | 0.40 |
| 2:D:37:LEU:HD11 | 2:D:61:GLU:H | 1.86 | 0.40 |
| 2:D:55:THR:C | 2:D:57:PHE:H | 2.24 | 0.40 |
| 2:D:75:ALA:HA | 2:D:79:ALA:H | 1.86 | 0.40 |
| 2:C:78:LEU:O | 2:C:80:LYS:N | 2.55 | 0.40 |
| 1:E:32:ARG:HG3 | 1:E:36:ARG:HE | 1.86 | 0.40 |
| 1:E:55:MET:HE1 | 1:E:66:ILE:HD12 | 2.03 | 0.40 |
| 1:E:103:LEU:O | 1:E:103:LEU:CG | 2.69 | 0.40 |
| 1:E:124:GLU:C | 1:E:126:LEU:H | 2.24 | 0.40 |
| 1:E:247:VAL:O | 1:E:247:VAL:HG12 | 2.21 | 0.40 |
| 1:F:25:ARG:O | 1:F:29:ILE:HG13 | 2.22 | 0.40 |
| 2:A:49:GLY:O | 2:A:52:ASP:N | 2.55 | 0.40 |
| 2:A:128:TYR:CE1 | 2:D:128:TYR:CE1 | 3.09 | 0.40 |
| 2:D:18:GLY:O | 2:D:29:GLY:C | 2.59 | 0.40 |
| 1:F:32:ARG:HG3 | 1:F:36:ARG:CD | 2.43 | 0.40 |
| 1:F:76:ALA:HB1 | 1:F:77:PRO:CD | 2.50 | 0.40 |
| 1:F:292:THR:CG2 | 1:F:295:GLY:O | 2.69 | 0.40 |
| 2:B:140:THR:HG22 | 2:B:141:GLU:N | 2.36 | 0.40 |
| 2:A:94:LEU:N | 2:A:94:LEU:HD22 | 2.36 | 0.40 |
| 2:D:70:HIS:HB3 | 2:D:73:LYS:HB2 | 2.03 | 0.40 |
| 2:D:71:LEU:C | 2:D:71:LEU:HD23 | 2.41 | 0.40 |
| 2:D:153:ASP:OD1 | 2:D:164:HIS:HD2 | 2.05 | 0.40 |
| 2:C:43:ILE:HD13 | 2:C:169:GLU:C | 2.41 | 0.40 |
| 2:C:113:VAL:O | 2:C:115:PRO:HD3 | 2.21 | 0.40 |
| 1:E:116:ILE:O | 1:E:120:ARG:HB2 | 2.22 | 0.40 |
| 1:E:229:GLU:HA | 1:E:232:LYS:HZ3 | 1.85 | 0.40 |
| 1:F:56:ILE:O | 1:F:331:GLU:HA | 2.21 | 0.40 |
| 1:F:88:GLU:CD | 1:F:92:VAL:H | 2.25 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|----------------|--------------------------|-------------------|
| 1:F:347:PRO:O | 1:F:350:SER:N | 2.54 | 0.40 |
| 2:B:2:THR:HG23 | 2:B:126:GLY:N | 2.36 | 0.40 |
| 2:B:50:THR:HB | 2:A:111:ASP:HA | 2.04 | 0.40 |
| 2:B:78:LEU:O | 2:B:82:TRP:HB3 | 2.22 | 0.40 |
| 2:B:144:ALA:C | 2:B:146:GLU:H | 2.23 | 0.40 |
| 2:A:140:THR:HG22 | 2:A:142:LEU:HG | 2.03 | 0.40 |
| 2:D:78:LEU:HB3 | 2:D:79:ALA:H | 1.70 | 0.40 |
| 2:C:37:LEU:HD22 | 2:C:61:GLU:CB | 2.49 | 0.40 |

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-----------------|-----------|-----------|-----------|-------------|---|
| 1 | E | 352/443 (80%) | 248 (70%) | 61 (17%) | 43 (12%) | 0 | 1 |
| 1 | F | 352/443 (80%) | 245 (70%) | 69 (20%) | 38 (11%) | 0 | 2 |
| 2 | A | 171/175 (98%) | 101 (59%) | 46 (27%) | 24 (14%) | 0 | 1 |
| 2 | B | 171/175 (98%) | 94 (55%) | 48 (28%) | 29 (17%) | 0 | 0 |
| 2 | C | 171/175 (98%) | 103 (60%) | 42 (25%) | 26 (15%) | 0 | 1 |
| 2 | D | 171/175 (98%) | 108 (63%) | 41 (24%) | 22 (13%) | 0 | 1 |
| All | All | 1388/1586 (88%) | 899 (65%) | 307 (22%) | 182 (13%) | 0 | 1 |

All (182) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | E | 50 | PRO |
| 1 | E | 94 | LYS |
| 1 | E | 221 | ALA |
| 1 | E | 259 | ASP |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | E | 350 | SER |
| 1 | E | 410 | ALA |
| 1 | E | 413 | LEU |
| 1 | F | 2 | SER |
| 1 | F | 50 | PRO |
| 1 | F | 91 | TYR |
| 1 | F | 222 | MET |
| 1 | F | 234 | VAL |
| 1 | F | 237 | GLU |
| 1 | F | 239 | LEU |
| 1 | F | 240 | LYS |
| 1 | F | 313 | ALA |
| 1 | F | 348 | ASN |
| 1 | F | 349 | ALA |
| 1 | F | 350 | SER |
| 1 | F | 410 | ALA |
| 1 | F | 412 | ASP |
| 1 | F | 413 | LEU |
| 1 | F | 432 | LEU |
| 2 | B | 15 | ALA |
| 2 | B | 38 | TYR |
| 2 | B | 39 | ASN |
| 2 | B | 59 | LEU |
| 2 | B | 64 | LEU |
| 2 | B | 68 | GLN |
| 2 | B | 75 | ALA |
| 2 | B | 92 | GLU |
| 2 | B | 100 | GLU |
| 2 | B | 142 | LEU |
| 2 | A | 27 | MET |
| 2 | A | 38 | TYR |
| 2 | A | 43 | ILE |
| 2 | A | 83 | ARG |
| 2 | A | 90 | LYS |
| 2 | A | 93 | ALA |
| 2 | A | 143 | SER |
| 2 | D | 28 | LYS |
| 2 | D | 38 | TYR |
| 2 | D | 42 | VAL |
| 2 | D | 51 | ALA |
| 2 | D | 53 | ALA |
| 2 | D | 61 | GLU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | D | 81 | ASP |
| 2 | D | 112 | VAL |
| 2 | C | 28 | LYS |
| 2 | C | 38 | TYR |
| 2 | C | 41 | LYS |
| 2 | C | 42 | VAL |
| 2 | C | 61 | GLU |
| 2 | C | 68 | GLN |
| 2 | C | 82 | TRP |
| 2 | C | 107 | THR |
| 1 | E | 36 | ARG |
| 1 | E | 43 | GLU |
| 1 | E | 44 | LEU |
| 1 | E | 88 | GLU |
| 1 | E | 89 | VAL |
| 1 | E | 103 | LEU |
| 1 | E | 118 | LYS |
| 1 | E | 120 | ARG |
| 1 | E | 247 | VAL |
| 1 | E | 349 | ALA |
| 1 | E | 412 | ASP |
| 1 | E | 414 | SER |
| 1 | E | 432 | LEU |
| 1 | E | 433 | VAL |
| 1 | F | 4 | MET |
| 1 | F | 88 | GLU |
| 1 | F | 89 | VAL |
| 1 | F | 103 | LEU |
| 1 | F | 225 | LEU |
| 1 | F | 241 | GLN |
| 1 | F | 270 | PRO |
| 1 | F | 272 | VAL |
| 2 | B | 49 | GLY |
| 2 | B | 71 | LEU |
| 2 | B | 89 | ARG |
| 2 | B | 93 | ALA |
| 2 | B | 94 | LEU |
| 2 | B | 97 | VAL |
| 2 | B | 117 | ASN |
| 2 | B | 130 | GLN |
| 2 | A | 2 | THR |
| 2 | A | 7 | ARG |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | A | 8 | ARG |
| 2 | A | 70 | HIS |
| 2 | A | 72 | VAL |
| 2 | A | 117 | ASN |
| 2 | D | 39 | ASN |
| 2 | D | 68 | GLN |
| 2 | D | 73 | LYS |
| 2 | D | 137 | LEU |
| 2 | D | 171 | LEU |
| 2 | C | 27 | MET |
| 2 | C | 37 | LEU |
| 2 | C | 40 | ASP |
| 2 | C | 57 | PHE |
| 2 | C | 70 | HIS |
| 2 | C | 76 | VAL |
| 2 | C | 81 | ASP |
| 2 | C | 116 | GLU |
| 2 | C | 130 | GLN |
| 2 | C | 137 | LEU |
| 1 | E | 61 | VAL |
| 1 | E | 97 | ASP |
| 1 | E | 101 | ARG |
| 1 | E | 237 | GLU |
| 1 | E | 270 | PRO |
| 1 | E | 346 | GLU |
| 1 | E | 361 | THR |
| 1 | E | 431 | ALA |
| 1 | F | 94 | LYS |
| 1 | F | 101 | ARG |
| 1 | F | 245 | ASP |
| 1 | F | 361 | THR |
| 2 | B | 27 | MET |
| 2 | B | 60 | PHE |
| 2 | B | 73 | LYS |
| 2 | B | 81 | ASP |
| 2 | B | 84 | THR |
| 2 | B | 116 | GLU |
| 2 | B | 141 | GLU |
| 2 | A | 39 | ASN |
| 2 | A | 50 | THR |
| 2 | A | 135 | ALA |
| 2 | A | 142 | LEU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | D | 40 | ASP |
| 2 | D | 99 | ASP |
| 2 | C | 54 | PHE |
| 2 | C | 79 | ALA |
| 2 | C | 92 | GLU |
| 2 | C | 142 | LEU |
| 1 | E | 2 | SER |
| 1 | E | 4 | MET |
| 1 | E | 62 | GLY |
| 1 | E | 86 | PHE |
| 1 | E | 228 | GLU |
| 1 | E | 235 | ASN |
| 1 | E | 260 | LYS |
| 1 | E | 264 | ARG |
| 1 | E | 266 | GLU |
| 1 | F | 347 | PRO |
| 2 | B | 63 | LYS |
| 2 | B | 66 | MET |
| 2 | A | 86 | ARG |
| 2 | A | 88 | LEU |
| 2 | A | 145 | ARG |
| 2 | D | 60 | PHE |
| 2 | D | 85 | ASP |
| 2 | D | 107 | THR |
| 2 | D | 116 | GLU |
| 2 | C | 52 | ASP |
| 2 | C | 146 | GLU |
| 1 | E | 37 | ARG |
| 1 | E | 249 | GLN |
| 1 | E | 347 | PRO |
| 1 | F | 265 | GLY |
| 1 | F | 285 | VAL |
| 1 | F | 356 | LYS |
| 2 | B | 124 | SER |
| 2 | A | 130 | GLN |
| 2 | D | 87 | MET |
| 2 | C | 102 | ALA |
| 2 | C | 127 | PRO |
| 1 | F | 95 | GLU |
| 1 | F | 430 | ASP |
| 2 | B | 70 | HIS |
| 2 | A | 73 | LYS |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | A | 4 | VAL |
| 1 | F | 79 | ILE |
| 1 | F | 235 | ASN |
| 1 | F | 346 | GLU |
| 2 | D | 76 | VAL |
| 1 | E | 376 | ILE |
| 1 | F | 92 | VAL |
| 2 | A | 45 | GLY |
| 2 | D | 69 | GLY |
| 1 | E | 92 | 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 | E | 305/377 (81%) | 265 (87%) | 40 (13%) | 4 18 |
| 1 | F | 305/377 (81%) | 271 (89%) | 34 (11%) | 6 25 |
| 2 | A | 135/136 (99%) | 110 (82%) | 25 (18%) | 1 8 |
| 2 | B | 135/136 (99%) | 102 (76%) | 33 (24%) | 0 3 |
| 2 | C | 135/136 (99%) | 103 (76%) | 32 (24%) | 1 3 |
| 2 | D | 135/136 (99%) | 113 (84%) | 22 (16%) | 2 11 |
| All | All | 1150/1298 (89%) | 964 (84%) | 186 (16%) | 2 12 |

All (186) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | E | 12 | GLU |
| 1 | E | 22 | ASN |
| 1 | E | 24 | LYS |
| 1 | E | 34 | ARG |
| 1 | E | 47 | GLU |
| 1 | E | 59 | THR |
| 1 | E | 69 | ARG |
| 1 | E | 73 | LEU |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | E | 87 | THR |
| 1 | E | 88 | GLU |
| 1 | E | 89 | VAL |
| 1 | E | 121 | TYR |
| 1 | E | 124 | GLU |
| 1 | E | 130 | ARG |
| 1 | E | 132 | LEU |
| 1 | E | 227 | GLU |
| 1 | E | 229 | GLU |
| 1 | E | 235 | ASN |
| 1 | E | 238 | GLU |
| 1 | E | 241 | GLN |
| 1 | E | 263 | LYS |
| 1 | E | 289 | THR |
| 1 | E | 294 | HIS |
| 1 | E | 318 | LEU |
| 1 | E | 322 | LEU |
| 1 | E | 348 | ASN |
| 1 | E | 351 | ILE |
| 1 | E | 366 | ILE |
| 1 | E | 367 | GLU |
| 1 | E | 370 | ASP |
| 1 | E | 371 | SER |
| 1 | E | 382 | GLN |
| 1 | E | 385 | GLU |
| 1 | E | 388 | GLU |
| 1 | E | 399 | LEU |
| 1 | E | 401 | ARG |
| 1 | E | 420 | ILE |
| 1 | E | 432 | LEU |
| 1 | E | 438 | LEU |
| 1 | E | 442 | ILE |
| 1 | F | 7 | ARG |
| 1 | F | 12 | GLU |
| 1 | F | 24 | LYS |
| 1 | F | 39 | GLN |
| 1 | F | 45 | ARG |
| 1 | F | 46 | HIS |
| 1 | F | 49 | THR |
| 1 | F | 54 | LEU |
| 1 | F | 79 | ILE |
| 1 | F | 87 | THR |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 1 | F | 88 | GLU |
| 1 | F | 94 | LYS |
| 1 | F | 102 | ASP |
| 1 | F | 103 | LEU |
| 1 | F | 114 | GLN |
| 1 | F | 124 | GLU |
| 1 | F | 239 | LEU |
| 1 | F | 240 | LYS |
| 1 | F | 264 | ARG |
| 1 | F | 301 | HIS |
| 1 | F | 314 | LYS |
| 1 | F | 330 | VAL |
| 1 | F | 337 | THR |
| 1 | F | 359 | MET |
| 1 | F | 384 | ASN |
| 1 | F | 385 | GLU |
| 1 | F | 395 | LEU |
| 1 | F | 401 | ARG |
| 1 | F | 404 | GLU |
| 1 | F | 413 | LEU |
| 1 | F | 420 | ILE |
| 1 | F | 433 | VAL |
| 1 | F | 438 | LEU |
| 1 | F | 442 | ILE |
| 2 | B | 1 | THR |
| 2 | B | 3 | ILE |
| 2 | B | 8 | ARG |
| 2 | B | 11 | HIS |
| 2 | B | 26 | VAL |
| 2 | B | 30 | ASN |
| 2 | B | 32 | LYS |
| 2 | B | 36 | ARG |
| 2 | B | 43 | ILE |
| 2 | B | 57 | PHE |
| 2 | B | 58 | GLU |
| 2 | B | 62 | ARG |
| 2 | B | 67 | HIS |
| 2 | B | 71 | LEU |
| 2 | B | 83 | ARG |
| 2 | B | 86 | ARG |
| 2 | B | 87 | MET |
| 2 | B | 89 | ARG |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | B | 91 | LEU |
| 2 | B | 95 | LEU |
| 2 | B | 100 | GLU |
| 2 | B | 104 | LEU |
| 2 | B | 105 | ILE |
| 2 | B | 117 | ASN |
| 2 | B | 122 | ILE |
| 2 | B | 130 | GLN |
| 2 | B | 138 | GLU |
| 2 | B | 142 | LEU |
| 2 | B | 152 | LEU |
| 2 | B | 163 | ASN |
| 2 | B | 166 | HIS |
| 2 | B | 167 | THR |
| 2 | B | 168 | ILE |
| 2 | A | 1 | THR |
| 2 | A | 12 | VAL |
| 2 | A | 21 | THR |
| 2 | A | 22 | LEU |
| 2 | A | 30 | ASN |
| 2 | A | 57 | PHE |
| 2 | A | 66 | MET |
| 2 | A | 78 | LEU |
| 2 | A | 82 | TRP |
| 2 | A | 85 | ASP |
| 2 | A | 87 | MET |
| 2 | A | 91 | LEU |
| 2 | A | 92 | GLU |
| 2 | A | 95 | LEU |
| 2 | A | 100 | GLU |
| 2 | A | 104 | LEU |
| 2 | A | 105 | ILE |
| 2 | A | 113 | VAL |
| 2 | A | 116 | GLU |
| 2 | A | 117 | ASN |
| 2 | A | 138 | GLU |
| 2 | A | 141 | GLU |
| 2 | A | 166 | HIS |
| 2 | A | 167 | THR |
| 2 | A | 168 | ILE |
| 2 | D | 4 | VAL |
| 2 | D | 8 | ARG |

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| Mol | Chain | Res | Type |
|------------|--------------|------------|-------------|
| 2 | D | 11 | HIS |
| 2 | D | 22 | LEU |
| 2 | D | 36 | ARG |
| 2 | D | 46 | PHE |
| 2 | D | 58 | GLU |
| 2 | D | 65 | GLU |
| 2 | D | 73 | LYS |
| 2 | D | 77 | GLU |
| 2 | D | 82 | TRP |
| 2 | D | 87 | MET |
| 2 | D | 92 | GLU |
| 2 | D | 94 | LEU |
| 2 | D | 112 | VAL |
| 2 | D | 122 | ILE |
| 2 | D | 152 | LEU |
| 2 | D | 153 | ASP |
| 2 | D | 157 | ASP |
| 2 | D | 167 | THR |
| 2 | D | 170 | GLU |
| 2 | D | 173 | TYR |
| 2 | C | 4 | VAL |
| 2 | C | 8 | ARG |
| 2 | C | 11 | HIS |
| 2 | C | 32 | LYS |
| 2 | C | 35 | ARG |
| 2 | C | 38 | TYR |
| 2 | C | 39 | ASN |
| 2 | C | 41 | LYS |
| 2 | C | 46 | PHE |
| 2 | C | 59 | LEU |
| 2 | C | 60 | PHE |
| 2 | C | 61 | GLU |
| 2 | C | 66 | MET |
| 2 | C | 73 | LYS |
| 2 | C | 77 | GLU |
| 2 | C | 82 | TRP |
| 2 | C | 83 | ARG |
| 2 | C | 85 | ASP |
| 2 | C | 87 | MET |
| 2 | C | 94 | LEU |
| 2 | C | 97 | VAL |
| 2 | C | 112 | VAL |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | C | 114 | GLN |
| 2 | C | 122 | ILE |
| 2 | C | 130 | GLN |
| 2 | C | 137 | LEU |
| 2 | C | 152 | LEU |
| 2 | C | 153 | ASP |
| 2 | C | 157 | ASP |
| 2 | C | 163 | ASN |
| 2 | C | 168 | ILE |
| 2 | C | 171 | LEU |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | E | 20 | GLN |
| 1 | E | 22 | ASN |
| 1 | E | 241 | GLN |
| 1 | E | 249 | GLN |
| 1 | E | 278 | GLN |
| 1 | E | 323 | GLN |
| 1 | E | 333 | GLN |
| 1 | E | 348 | ASN |
| 1 | E | 354 | GLN |
| 1 | E | 417 | ASN |
| 1 | F | 33 | ASN |
| 1 | F | 41 | ASN |
| 1 | F | 46 | HIS |
| 1 | F | 235 | ASN |
| 1 | F | 278 | GLN |
| 1 | F | 311 | GLN |
| 1 | F | 333 | GLN |
| 1 | F | 382 | GLN |
| 1 | F | 384 | ASN |
| 1 | F | 416 | GLN |
| 1 | F | 417 | ASN |
| 2 | B | 9 | ASN |
| 2 | B | 24 | ASN |
| 2 | B | 163 | ASN |
| 2 | A | 30 | ASN |
| 2 | A | 39 | ASN |
| 2 | A | 70 | HIS |
| 2 | A | 117 | ASN |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | D | 11 | HIS |
| 2 | D | 39 | ASN |
| 2 | D | 109 | ASN |
| 2 | D | 164 | HIS |
| 2 | D | 166 | HIS |
| 2 | C | 24 | ASN |
| 2 | C | 39 | ASN |
| 2 | C | 109 | ASN |
| 2 | C | 130 | GLN |
| 2 | C | 139 | ASN |
| 2 | C | 163 | 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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
| | | | | | Counts | RMSZ | # Z > 2 | Counts | RMSZ | # Z > 2 |
| 3 | DAT | F | 906 | - | 24,28,28 | 0.94 | 0 | 30,43,43 | 1.02 | 3 (10%) |
| 3 | DAT | E | 905 | - | 24,28,28 | 1.09 | 3 (12%) | 30,43,43 | 1.02 | 3 (10%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|------------|---------|
| 3 | DAT | F | 906 | - | - | 4/12/28/28 | 0/3/3/3 |
| 3 | DAT | E | 905 | - | - | 3/12/28/28 | 0/3/3/3 |

All (3) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 3 | E | 905 | DAT | C2-N1 | 2.56 | 1.38 | 1.33 |
| 3 | E | 905 | DAT | C2-N3 | 2.49 | 1.36 | 1.32 |
| 3 | E | 905 | DAT | C4-N3 | 2.01 | 1.38 | 1.35 |

All (6) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|------|-------------|----------|
| 3 | E | 905 | DAT | C2'-C3'-C4' | 2.25 | 107.36 | 102.80 |
| 3 | F | 906 | DAT | C5-C6-N6 | 2.13 | 123.55 | 120.31 |
| 3 | E | 905 | DAT | O2B-PB-O1B | 2.12 | 119.08 | 110.83 |
| 3 | F | 906 | DAT | C2'-C3'-C4' | 2.05 | 106.96 | 102.80 |
| 3 | E | 905 | DAT | C5-C6-N6 | 2.02 | 123.39 | 120.31 |
| 3 | F | 906 | DAT | O2B-PB-O1B | 2.01 | 118.68 | 110.83 |

There are no chirality outliers.

All (7) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|----------------|
| 3 | E | 905 | DAT | C5'-O5'-PA-O2A |
| 3 | E | 905 | DAT | PA-O3A-PB-O1B |
| 3 | F | 906 | DAT | PA-O3A-PB-O1B |
| 3 | E | 905 | DAT | PA-O3A-PB-O2B |
| 3 | F | 906 | DAT | PA-O3A-PB-O2B |
| 3 | F | 906 | DAT | PA-O3A-PB-O3B |
| 3 | F | 906 | DAT | PB-O3A-PA-O2A |

There are no ring outliers.

2 monomers are involved in 4 short contacts:

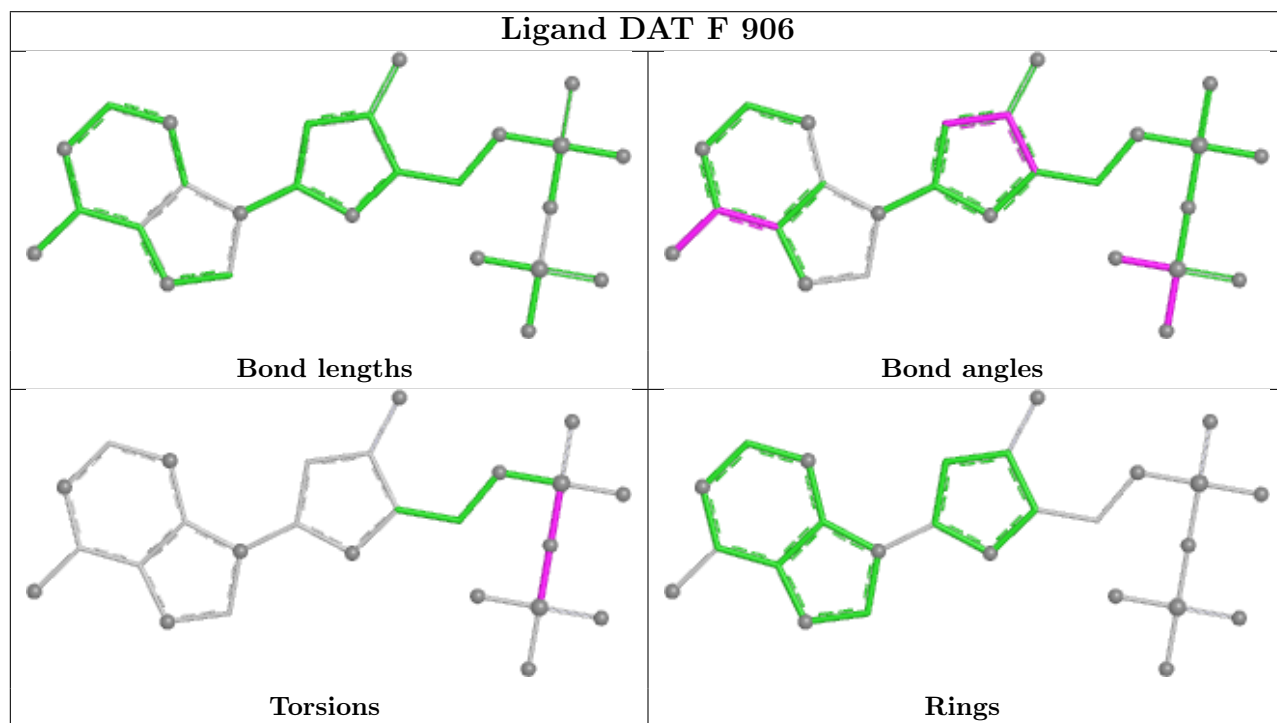
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 3 | F | 906 | DAT | 1 | 0 |

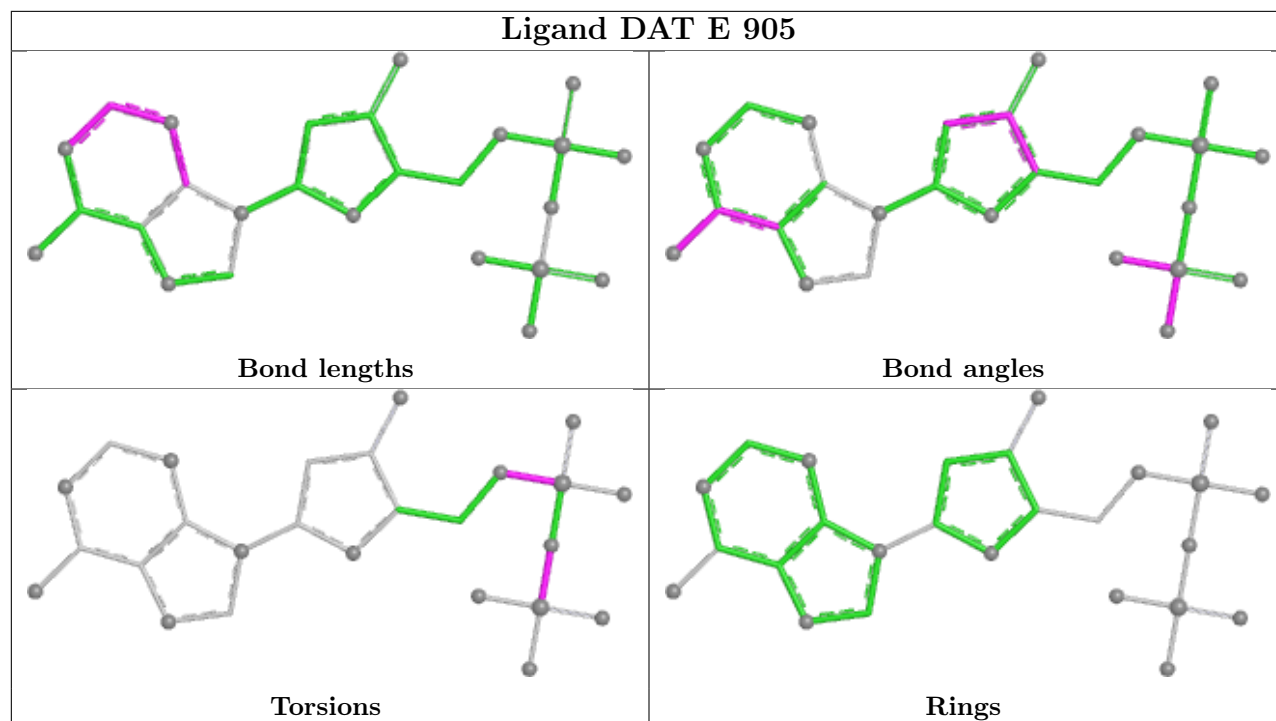
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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 3 | E | 905 | DAT | 3 | 0 |

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

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, 95th 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 ²) | Q<0.9 |
|-----|-------|-----------------|--------|---------------|-----------------------|-------|
| 1 | E | 356/443 (80%) | -0.10 | 3 (0%) 86 65 | 17, 42, 78, 90 | 0 |
| 1 | F | 356/443 (80%) | 0.00 | 9 (2%) 57 29 | 23, 43, 75, 84 | 0 |
| 2 | A | 173/175 (98%) | 0.28 | 8 (4%) 32 12 | 25, 56, 77, 86 | 0 |
| 2 | B | 173/175 (98%) | 0.07 | 1 (0%) 89 72 | 28, 54, 80, 90 | 0 |
| 2 | C | 173/175 (98%) | 0.20 | 6 (3%) 44 18 | 26, 61, 82, 95 | 0 |
| 2 | D | 173/175 (98%) | 0.13 | 6 (3%) 44 18 | 21, 62, 84, 100 | 0 |
| All | All | 1404/1586 (88%) | 0.06 | 33 (2%) 59 30 | 17, 48, 79, 100 | 0 |

All (33) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | F | 267 | SER | 5.3 |
| 1 | F | 220 | ASP | 4.5 |
| 2 | A | 42 | VAL | 4.4 |
| 2 | D | 95 | LEU | 4.2 |
| 2 | D | 42 | VAL | 4.0 |
| 1 | F | 221 | ALA | 3.9 |
| 1 | F | 268 | SER | 3.7 |
| 1 | E | 268 | SER | 3.7 |
| 2 | A | 37 | LEU | 3.5 |
| 2 | A | 97 | VAL | 3.4 |
| 1 | E | 267 | SER | 3.3 |
| 1 | F | 128 | GLU | 3.2 |
| 1 | E | 266 | GLU | 2.9 |
| 2 | C | 88 | LEU | 2.9 |
| 2 | D | 56 | LEU | 2.8 |
| 2 | A | 56 | LEU | 2.8 |
| 1 | F | 91 | TYR | 2.7 |
| 2 | B | 104 | LEU | 2.7 |
| 2 | C | 104 | LEU | 2.6 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 2 | D | 97 | VAL | 2.6 |
| 2 | C | 95 | LEU | 2.6 |
| 2 | D | 44 | ALA | 2.5 |
| 2 | A | 104 | LEU | 2.5 |
| 1 | F | 224 | LEU | 2.4 |
| 2 | C | 93 | ALA | 2.3 |
| 2 | C | 81 | ASP | 2.3 |
| 2 | A | 60 | PHE | 2.2 |
| 2 | A | 71 | LEU | 2.2 |
| 2 | D | 113 | VAL | 2.1 |
| 2 | C | 65 | GLU | 2.1 |
| 2 | A | 171 | LEU | 2.1 |
| 1 | F | 127 | ALA | 2.1 |
| 1 | F | 132 | LEU | 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 monosaccharides in this entry.

6.4 Ligands [i](#)

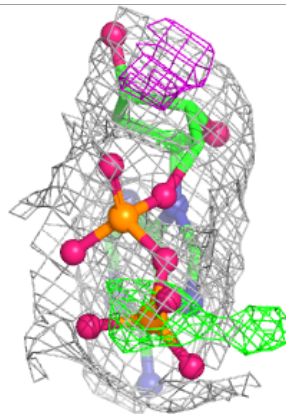
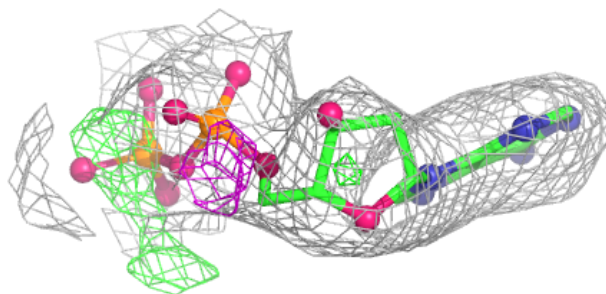
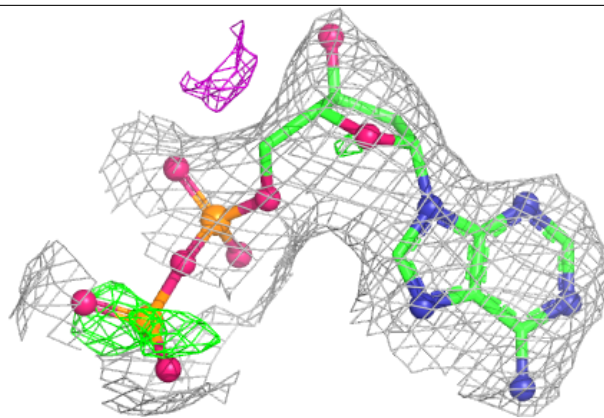
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

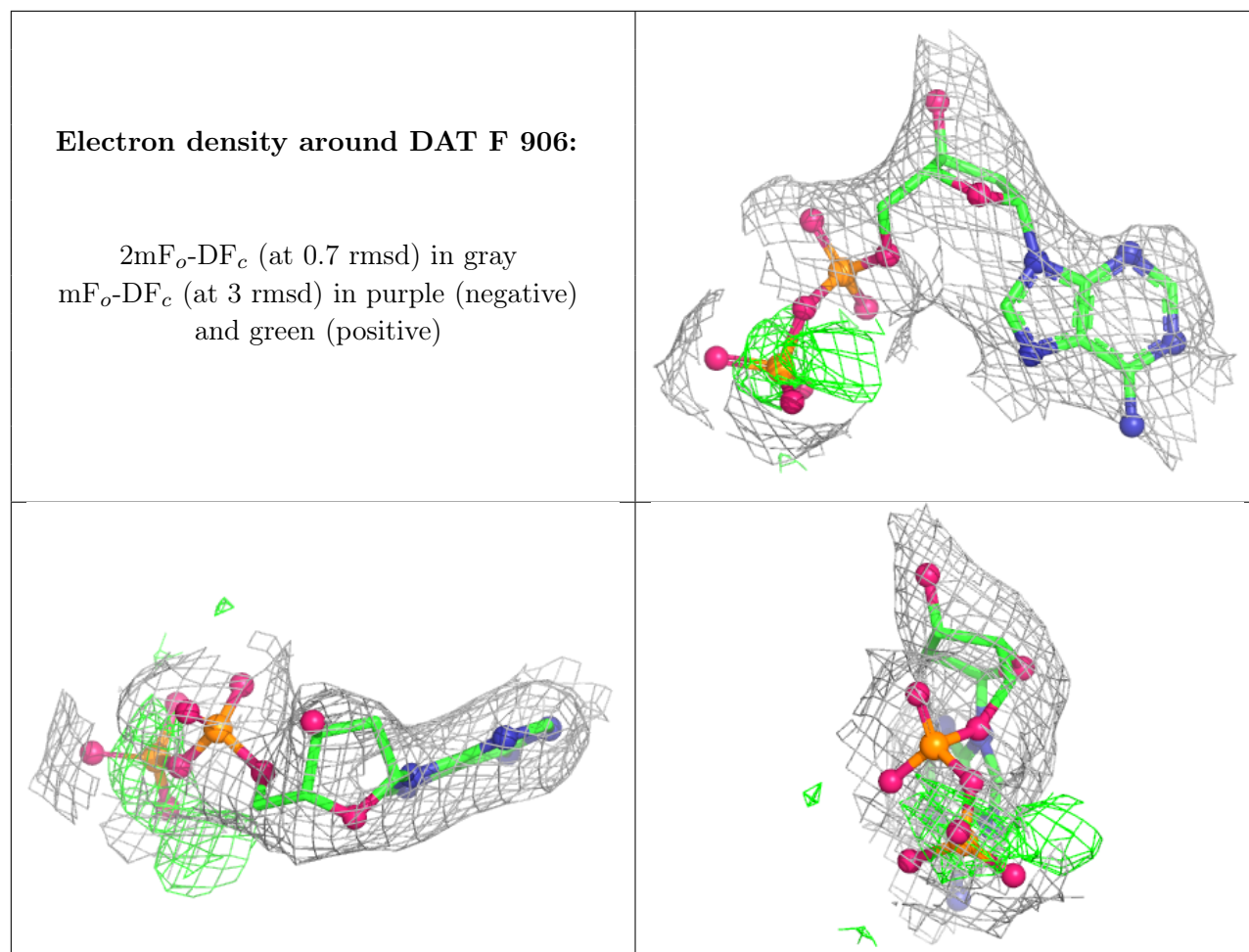
| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(Å ²) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 3 | DAT | E | 905 | 26/26 | 0.94 | 0.28 | 68,73,76,77 | 0 |
| 3 | DAT | F | 906 | 26/26 | 0.94 | 0.26 | 62,69,70,72 | 0 |

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

Electron density around DAT E 905:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)





6.5 Other polymers [i](#)

There are no such residues in this entry.