# Full wwPDB EM Validation Report ⓘ

Nov 19, 2022 – 09:34 AM EST

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|---|---|---|
| PDB ID | : | 3JCB |
| EMDB ID | : | EMD-6542 |
| Title | : | Structure of Simian Immunodeficiency Virus Envelope Spikes bound with CD4 and Monoclonal Antibody 36D5 |
| Authors | : | Hu, G.; Liu, J.; Roux, K.; Taylor, K.A. |
| Deposited on | : | 2015-11-25 |
| Resolution | : | Not provided |
| Based on initial model | : | 4NCO |

This is a Full wwPDB EM 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/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

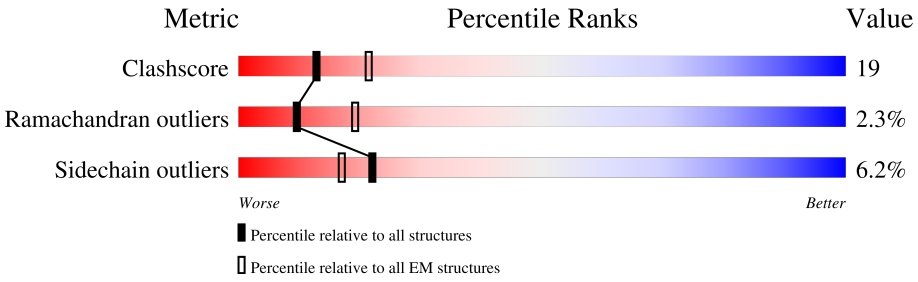
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev43 |
| MolProbity | : | 4.02b-467 |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| MapQ | : | FAILED |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.31.3 |

# 1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
*ELECTRON MICROSCOPY*

The reported resolution of this entry is unknown.

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) | EM structures (#Entries) |
|---|---|---|
| Clashscore | 158937 | 4297 |
| Ramachandran outliers | 154571 | 4023 |
| Sidechain outliers | 154315 | 3826 |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 <=5%

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | A | 448 | 54% 35% 6% 6% |
| 1 | E | 448 | 55% 33% 6% 6% |
| 1 | I | 448 | 55% 33% 5% 6% |
| 2 | B | 207 | 84% 13% • • |
| 3 | C | 232 | 80% 16% • • |
| 4 | D | 175 | 78% 21% • |

# 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 13909 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Envelope glycoprotein gp120.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 420 | Total | C | N | O | S | 0 | 0 |
| | | | 3096 | 1937 | 544 | 590 | 25 | | |
| 1 | E | 420 | Total | C | N | O | S | 0 | 0 |
| | | | 3096 | 1937 | 544 | 590 | 25 | | |
| 1 | I | 420 | Total | C | N | O | S | 0 | 0 |
| | | | 3096 | 1937 | 544 | 590 | 25 | | |

- Molecule 2 is a protein called Antibody 36D5 light chain.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 2 | B | 202 | Total | C | N | O | S | 0 | 0 |
| | | | 1530 | 964 | 255 | 307 | 4 | | |

- Molecule 3 is a protein called Antibody 36D5 heavy chain.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 3 | C | 226 | Total | C | N | O | S | 0 | 0 |
| | | | 1728 | 1100 | 293 | 330 | 5 | | |

- Molecule 4 is a protein called T-cell surface glycoprotein CD4.

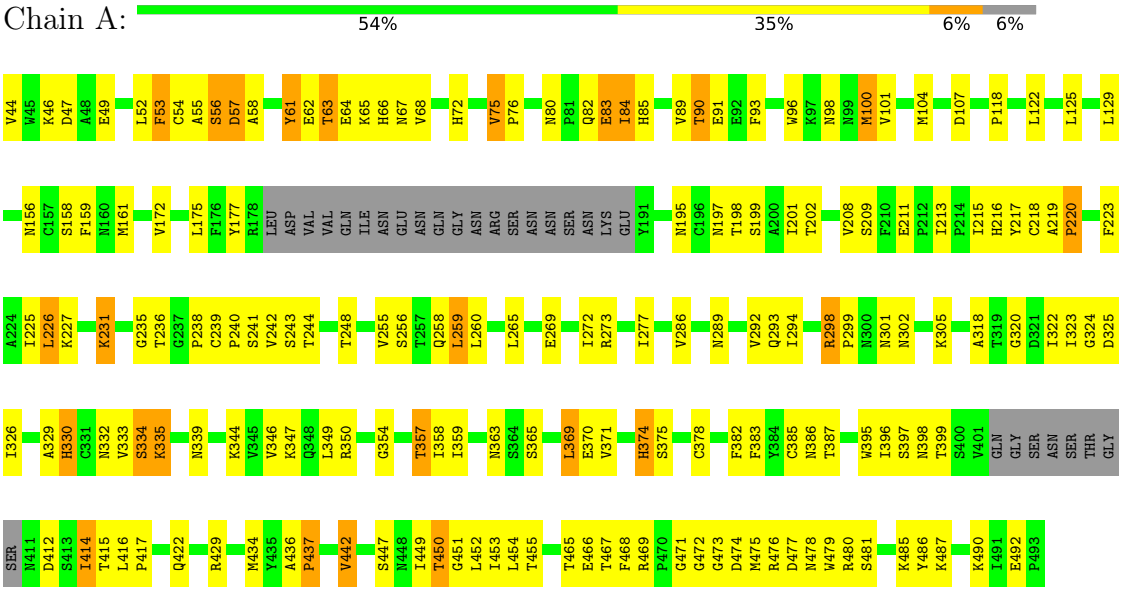
| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 4 | D | 175 | Total | C | N | O | S | 0 | 0 |
| | | | 1363 | 851 | 239 | 269 | 4 | | |

# 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. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

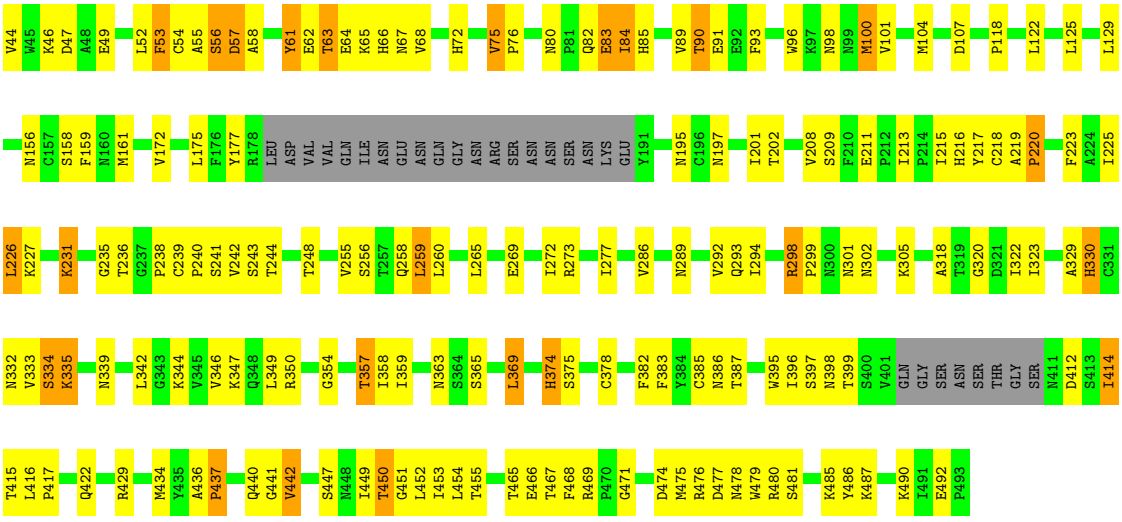
- Molecule 1: Envelope glycoprotein gp120

Chain A:



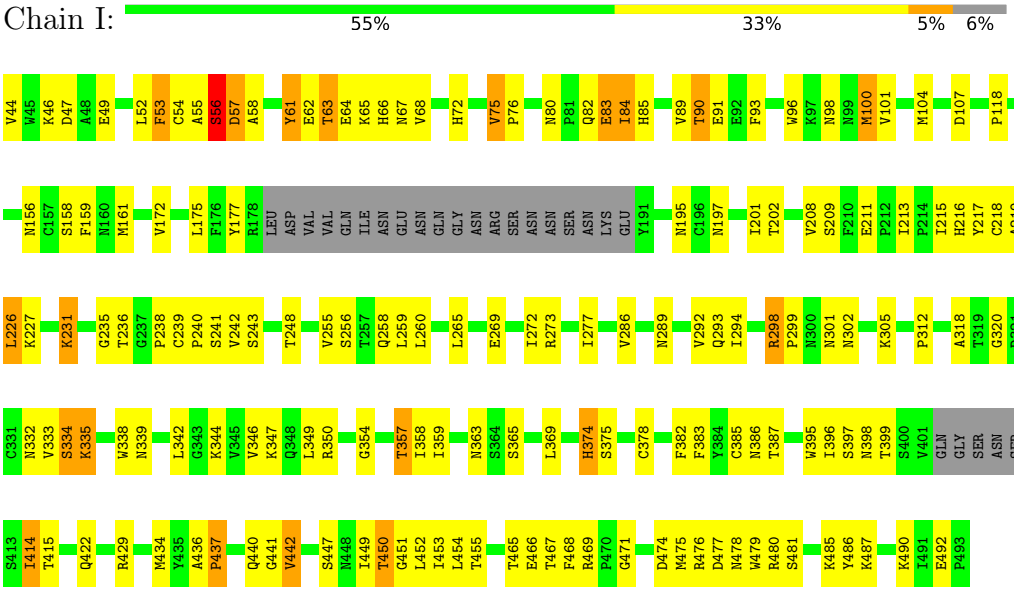

- Molecule 1: Envelope glycoprotein gp120

Chain E:



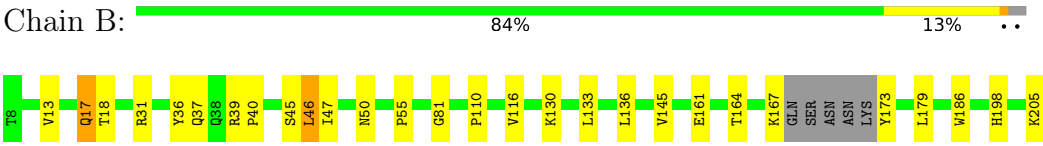
• Molecule 1: Envelope glycoprotein gp120

Chain I:



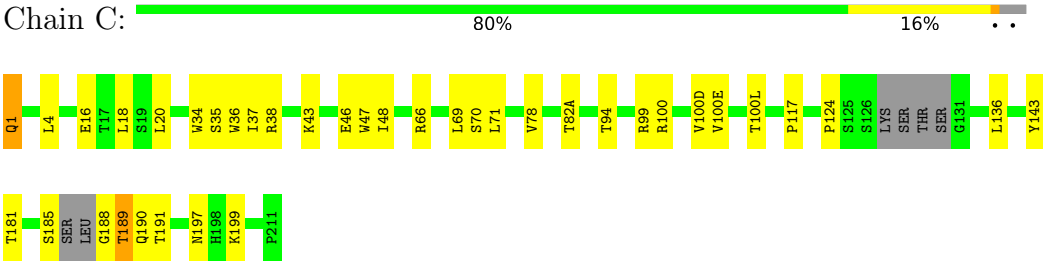

• Molecule 2: Antibody 36D5 light chain

Chain B:



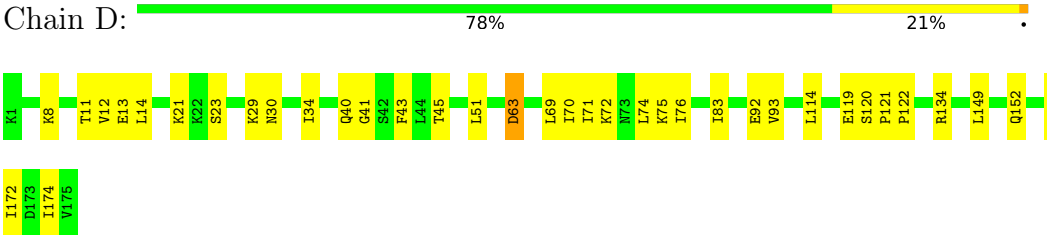

• Molecule 3: Antibody 36D5 heavy chain

Chain C:




• Molecule 4: T-cell surface glycoprotein CD4

Chain D:



# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | TOMOGRAPHY | Depositor |
| Imposed symmetry | POINT, C1 | Depositor |
| Number of tilted images used | 1181 | Depositor |
| Resolution determination method | Not provided | |
| CTF correction method | Not provided | |
| Microscope | FEI POLARA 300 | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 100 | Depositor |
| Minimum defocus (nm) | 4000 | Depositor |
| Maximum defocus (nm) | 5000 | Depositor |
| Magnification | 31000 | Depositor |
| Image detector | TVIPS TEMCAM-F415 (4k x 4k) | Depositor |

# 5 Model quality

## 5.1 Standard geometry

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

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | $\#\|Z\| > 5$ | RMSZ | $\#\|Z\| > 5$ |
| 1 | A | 0.33 | 0/3161 | 0.71 | 4/4306 (0.1%) |
| 1 | E | 0.34 | 0/3161 | 0.71 | 4/4306 (0.1%) |
| 1 | I | 0.34 | 0/3161 | 0.71 | 3/4306 (0.1%) |
| 2 | B | 0.28 | 0/1571 | 0.54 | 1/2151 (0.0%) |
| 3 | C | 0.31 | 0/1774 | 0.57 | 0/2421 |
| 4 | D | 0.26 | 0/1382 | 0.53 | 0/1863 |
| All | All | 0.32 | 0/14210 | 0.66 | 12/19353 (0.1%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 1 | A | 0 | 3 |
| 1 | E | 0 | 3 |
| 1 | I | 0 | 3 |
| 2 | B | 0 | 1 |
| All | All | 0 | 10 |

There are no bond length outliers.

All (12) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | A | 335 | LYS | N-CA-C | 6.19 | 127.72 | 111.00 |
| 1 | I | 335 | LYS | N-CA-C | 6.19 | 127.71 | 111.00 |
| 1 | E | 335 | LYS | N-CA-C | 6.18 | 127.70 | 111.00 |
| 1 | E | 450 | THR | C-N-CA | -5.98 | 109.74 | 122.30 |
| 1 | A | 450 | THR | C-N-CA | -5.97 | 109.76 | 122.30 |
| 1 | I | 450 | THR | C-N-CA | -5.96 | 109.79 | 122.30 |
| 1 | A | 334 | SER | C-N-CA | 5.52 | 135.50 | 121.70 |
| 1 | E | 334 | SER | C-N-CA | 5.52 | 135.50 | 121.70 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | I | 334 | SER | C-N-CA | 5.50 | 135.44 | 121.70 |
| 2 | B | 46 | LEU | CA-CB-CG | 5.31 | 127.52 | 115.30 |
| 1 | E | 259 | LEU | C-N-CA | -5.02 | 109.16 | 121.70 |
| 1 | A | 259 | LEU | C-N-CA | -5.01 | 109.17 | 121.70 |

There are no chirality outliers.

All (10) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | A | 236 | THR | Peptide |
| 1 | A | 56 | SER | Peptide |
| 1 | A | 80 | ASN | Peptide |
| 2 | B | 110 | PRO | Peptide |
| 1 | E | 236 | THR | Peptide |
| 1 | E | 56 | SER | Peptide |
| 1 | E | 80 | ASN | Peptide |
| 1 | I | 236 | THR | Peptide |
| 1 | I | 56 | SER | Peptide |
| 1 | I | 80 | ASN | Peptide |

## 5.2 Too-close contacts (i)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 3096 | 0 | 2836 | 159 | 0 |
| 1 | E | 3096 | 0 | 2836 | 127 | 0 |
| 1 | I | 3096 | 0 | 2835 | 150 | 0 |
| 2 | B | 1530 | 0 | 1472 | 19 | 0 |
| 3 | C | 1728 | 0 | 1699 | 37 | 0 |
| 4 | D | 1363 | 0 | 1386 | 61 | 0 |
| All | All | 13909 | 0 | 13064 | 501 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 19.

All (501) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:D:21:LYS:CE | 1:I:62:GLU:HG3 | 1.41 | 1.49 |
| 1:A:472:GLY:O | 4:D:40:GLN:HG3 | 1.16 | 1.27 |
| 4:D:21:LYS:HE3 | 1:I:62:GLU:CG | 1.63 | 1.26 |
| 1:A:325:ASP:O | 3:C:100(E):VAL:HG23 | 1.15 | 1.25 |
| 1:A:474:ASP:OD1 | 4:D:41:GLY:HA3 | 1.04 | 1.22 |
| 1:A:325:ASP:O | 3:C:100(E):VAL:CG2 | 1.85 | 1.21 |
| 1:A:472:GLY:O | 4:D:40:GLN:CG | 1.91 | 1.18 |
| 1:A:474:ASP:OD1 | 4:D:41:GLY:CA | 1.92 | 1.18 |
| 4:D:21:LYS:CE | 1:I:62:GLU:CG | 2.17 | 1.18 |
| 4:D:21:LYS:HD2 | 1:I:62:GLU:HB2 | 1.17 | 1.12 |
| 4:D:21:LYS:NZ | 1:I:62:GLU:HG3 | 1.63 | 1.11 |
| 1:A:293:GLN:HB2 | 1:A:334:SER:HB3 | 1.33 | 1.10 |
| 1:I:293:GLN:HB2 | 1:I:334:SER:HB3 | 1.33 | 1.05 |
| 1:E:293:GLN:HB2 | 1:E:334:SER:HB3 | 1.33 | 1.04 |
| 4:D:21:LYS:CE | 1:I:61:TYR:HB3 | 1.86 | 1.04 |
| 4:D:21:LYS:NZ | 1:I:62:GLU:CG | 2.18 | 1.01 |
| 4:D:21:LYS:CD | 1:I:62:GLU:HB2 | 1.97 | 0.93 |
| 4:D:21:LYS:HE3 | 1:I:62:GLU:HG3 | 0.93 | 0.92 |
| 4:D:76:ILE:H | 4:D:76:ILE:HD12 | 1.35 | 0.92 |
| 4:D:21:LYS:CD | 1:I:61:TYR:HB3 | 1.99 | 0.92 |
| 4:D:21:LYS:HD3 | 1:I:61:TYR:HB3 | 1.53 | 0.88 |
| 1:I:91:GLU:HA | 1:I:239:CYS:O | 1.74 | 0.87 |
| 1:A:474:ASP:CG | 4:D:41:GLY:HA3 | 1.94 | 0.87 |
| 1:A:91:GLU:HA | 1:A:239:CYS:O | 1.74 | 0.87 |
| 1:A:326:ILE:HA | 3:C:100(E):VAL:HB | 1.56 | 0.87 |
| 1:E:91:GLU:HA | 1:E:239:CYS:O | 1.74 | 0.87 |
| 1:E:358:ILE:HB | 1:E:465:THR:HG22 | 1.57 | 0.86 |
| 4:D:21:LYS:CE | 1:I:62:GLU:CB | 2.53 | 0.85 |
| 4:D:21:LYS:HD2 | 1:I:62:GLU:CB | 2.05 | 0.85 |
| 1:I:358:ILE:HB | 1:I:465:THR:HG22 | 1.58 | 0.84 |
| 1:A:324:GLY:O | 3:C:100(E):VAL:HG21 | 1.76 | 0.84 |
| 1:A:358:ILE:HB | 1:A:465:THR:HG22 | 1.58 | 0.84 |
| 1:A:260:LEU:HB2 | 1:A:450:THR:O | 1.78 | 0.83 |
| 1:I:260:LEU:HB2 | 1:I:450:THR:O | 1.78 | 0.82 |
| 1:E:260:LEU:HB2 | 1:E:450:THR:O | 1.78 | 0.82 |
| 3:C:38:ARG:N | 3:C:46:GLU:O | 2.12 | 0.80 |
| 1:A:269:GLU:HA | 1:A:289:ASN:HD22 | 1.48 | 0.78 |
| 1:I:269:GLU:HA | 1:I:289:ASN:HD22 | 1.48 | 0.78 |
| 3:C:38:ARG:O | 3:C:46:GLU:N | 2.15 | 0.78 |
| 1:E:335:LYS:HD3 | 1:E:414:ILE:HD11 | 1.67 | 0.76 |
| 1:E:269:GLU:HA | 1:E:289:ASN:HD22 | 1.48 | 0.76 |
| 1:I:335:LYS:HD3 | 1:I:414:ILE:HD11 | 1.67 | 0.76 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:55:ALA:HB3 | 1:E:216:HIS:HB2 | 1.68 | 0.76 |
| 1:A:335:LYS:HD3 | 1:A:414:ILE:HD11 | 1.67 | 0.75 |
| 3:C:99:ARG:HG2 | 3:C:100(L):THR:HG22 | 1.68 | 0.75 |
| 1:I:55:ALA:HB3 | 1:I:216:HIS:HB2 | 1.68 | 0.75 |
| 1:A:472:GLY:O | 4:D:40:GLN:CB | 2.34 | 0.75 |
| 1:E:436:ALA:HB3 | 1:E:437:PRO:HD3 | 1.70 | 0.74 |
| 1:I:101:VAL:HG13 | 1:I:479:TRP:HB2 | 1.69 | 0.74 |
| 1:E:101:VAL:HG13 | 1:E:479:TRP:HB2 | 1.69 | 0.74 |
| 1:A:474:ASP:CG | 4:D:41:GLY:CA | 2.52 | 0.74 |
| 1:I:436:ALA:HB3 | 1:I:437:PRO:HD3 | 1.70 | 0.73 |
| 1:A:55:ALA:HB3 | 1:A:216:HIS:HB2 | 1.68 | 0.73 |
| 1:A:101:VAL:HG13 | 1:A:479:TRP:HB2 | 1.69 | 0.73 |
| 1:A:325:ASP:C | 3:C:100(E):VAL:CG2 | 2.57 | 0.73 |
| 1:A:325:ASP:C | 3:C:100(E):VAL:HG23 | 2.06 | 0.73 |
| 1:A:436:ALA:HB3 | 1:A:437:PRO:HD3 | 1.70 | 0.72 |
| 1:A:199:SER:HA | 1:I:312:PRO:HB3 | 1.73 | 0.71 |
| 1:A:325:ASP:O | 3:C:100(E):VAL:CB | 2.40 | 0.69 |
| 1:E:227:LYS:HE3 | 1:E:485:LYS:HD2 | 1.75 | 0.69 |
| 4:D:29:LYS:HB2 | 4:D:83:ILE:HD11 | 1.74 | 0.69 |
| 4:D:21:LYS:CE | 1:I:61:TYR:CB | 2.68 | 0.69 |
| 1:I:227:LYS:HE3 | 1:I:485:LYS:HD2 | 1.75 | 0.69 |
| 4:D:21:LYS:HE3 | 1:I:62:GLU:CD | 2.13 | 0.69 |
| 1:A:227:LYS:HE3 | 1:A:485:LYS:HD2 | 1.75 | 0.68 |
| 3:C:37:ILE:HG23 | 3:C:47:TRP:HA | 1.76 | 0.68 |
| 1:A:330:HIS:CD2 | 3:C:100(D):VAL:CG2 | 2.77 | 0.68 |
| 1:I:294:ILE:HG23 | 1:I:447:SER:HB2 | 1.76 | 0.67 |
| 1:I:477:ASP:OD1 | 1:I:480:ARG:NH1 | 2.27 | 0.67 |
| 1:A:294:ILE:HG23 | 1:A:447:SER:HB2 | 1.76 | 0.67 |
| 1:E:477:ASP:OD1 | 1:E:480:ARG:NH1 | 2.27 | 0.67 |
| 2:B:39:ARG:HG3 | 2:B:40:PRO:HD2 | 1.77 | 0.67 |
| 3:C:38:ARG:O | 3:C:46:GLU:O | 2.12 | 0.67 |
| 4:D:21:LYS:HE2 | 1:I:61:TYR:HB3 | 1.72 | 0.67 |
| 1:A:477:ASP:OD1 | 1:A:480:ARG:NH1 | 2.27 | 0.67 |
| 1:A:472:GLY:C | 4:D:40:GLN:HE21 | 1.98 | 0.66 |
| 4:D:21:LYS:HE2 | 1:I:61:TYR:CG | 2.31 | 0.66 |
| 1:A:350:ARG:NH2 | 1:A:397:SER:O | 2.30 | 0.65 |
| 1:E:294:ILE:HG23 | 1:E:447:SER:HB2 | 1.76 | 0.65 |
| 1:E:350:ARG:NH2 | 1:E:397:SER:O | 2.29 | 0.65 |
| 1:A:101:VAL:HG21 | 1:A:480:ARG:HG2 | 1.79 | 0.64 |
| 3:C:35:SER:HB3 | 3:C:47:TRP:HE1 | 1.62 | 0.64 |
| 4:D:51:LEU:HD23 | 4:D:71:ILE:HD12 | 1.79 | 0.64 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:101:VAL:HG21 | 1:E:480:ARG:HG2 | 1.79 | 0.64 |
| 4:D:21:LYS:CD | 1:I:62:GLU:CB | 2.67 | 0.64 |
| 1:I:68:VAL:O | 1:I:72:HIS:ND1 | 2.31 | 0.64 |
| 1:I:350:ARG:NH2 | 1:I:397:SER:O | 2.30 | 0.64 |
| 1:E:68:VAL:O | 1:E:72:HIS:ND1 | 2.31 | 0.63 |
| 1:A:68:VAL:O | 1:A:72:HIS:ND1 | 2.31 | 0.63 |
| 2:B:37:GLN:N | 2:B:45:SER:O | 2.31 | 0.63 |
| 1:I:101:VAL:HG21 | 1:I:480:ARG:HG2 | 1.79 | 0.63 |
| 1:I:359:ILE:HD12 | 1:I:468:PHE:HE1 | 1.63 | 0.63 |
| 1:E:91:GLU:O | 1:E:238:PRO:HA | 1.99 | 0.63 |
| 1:A:359:ILE:HD12 | 1:A:468:PHE:HE1 | 1.63 | 0.63 |
| 4:D:21:LYS:HE2 | 1:I:61:TYR:CB | 2.27 | 0.62 |
| 1:E:359:ILE:HD12 | 1:E:468:PHE:HE1 | 1.63 | 0.62 |
| 1:E:100:MET:SD | 1:E:100:MET:N | 2.73 | 0.62 |
| 1:A:91:GLU:O | 1:A:238:PRO:HA | 1.99 | 0.62 |
| 1:I:91:GLU:O | 1:I:238:PRO:HA | 1.99 | 0.62 |
| 1:A:363:ASN:O | 1:A:469:ARG:NH1 | 2.33 | 0.62 |
| 1:E:226:LEU:HD11 | 1:E:487:LYS:HD3 | 1.82 | 0.61 |
| 1:I:83:GLU:HG3 | 1:I:84:ILE:H | 1.65 | 0.61 |
| 1:I:100:MET:SD | 1:I:100:MET:N | 2.73 | 0.61 |
| 1:E:363:ASN:O | 1:E:469:ARG:NH1 | 2.33 | 0.61 |
| 1:A:83:GLU:HG3 | 1:A:84:ILE:H | 1.65 | 0.61 |
| 1:I:226:LEU:HD11 | 1:I:487:LYS:HD3 | 1.82 | 0.61 |
| 1:I:363:ASN:O | 1:I:469:ARG:NH1 | 2.33 | 0.61 |
| 4:D:83:ILE:HG22 | 4:D:92:GLU:HG2 | 1.83 | 0.61 |
| 1:E:83:GLU:HG3 | 1:E:84:ILE:H | 1.65 | 0.60 |
| 1:I:358:ILE:HG13 | 1:I:397:SER:H | 1.66 | 0.60 |
| 1:A:100:MET:N | 1:A:100:MET:SD | 2.73 | 0.60 |
| 1:A:226:LEU:HD11 | 1:A:487:LYS:HD3 | 1.82 | 0.60 |
| 1:A:226:LEU:HD11 | 1:A:487:LYS:HB3 | 1.83 | 0.60 |
| 1:I:177:TYR:HE2 | 1:I:422:GLN:HE21 | 1.49 | 0.60 |
| 1:E:358:ILE:HG13 | 1:E:397:SER:H | 1.66 | 0.60 |
| 1:E:226:LEU:HD11 | 1:E:487:LYS:HB3 | 1.84 | 0.60 |
| 1:I:226:LEU:HD11 | 1:I:487:LYS:HB3 | 1.83 | 0.60 |
| 1:A:177:TYR:HE2 | 1:A:422:GLN:HE21 | 1.49 | 0.59 |
| 4:D:76:ILE:HD12 | 4:D:76:ILE:N | 2.12 | 0.59 |
| 1:E:258:GLN:O | 1:E:452:LEU:HA | 2.03 | 0.59 |
| 1:A:258:GLN:O | 1:A:452:LEU:HA | 2.03 | 0.59 |
| 2:B:37:GLN:O | 2:B:45:SER:O | 2.20 | 0.59 |
| 3:C:37:ILE:HG13 | 3:C:47:TRP:HD1 | 1.67 | 0.59 |
| 1:A:358:ILE:HG13 | 1:A:397:SER:H | 1.66 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:476:ARG:HA | 1:A:479:TRP:CD1 | 2.38 | 0.59 |
| 1:I:258:GLN:O | 1:I:452:LEU:HA | 2.03 | 0.59 |
| 1:A:52:LEU:HB3 | 1:A:217:TYR:HD2 | 1.68 | 0.59 |
| 1:I:256:SER:HB2 | 1:I:374:HIS:HE1 | 1.68 | 0.59 |
| 1:A:256:SER:HB2 | 1:A:374:HIS:HE1 | 1.68 | 0.58 |
| 2:B:50:ASN:OD1 | 3:C:100:ARG:NH2 | 2.36 | 0.58 |
| 1:A:226:LEU:CD1 | 1:A:487:LYS:HB3 | 2.33 | 0.58 |
| 1:A:371:VAL:HG11 | 4:D:45:THR:HG22 | 1.85 | 0.58 |
| 1:E:177:TYR:HE2 | 1:E:422:GLN:HE21 | 1.49 | 0.58 |
| 1:I:52:LEU:HB3 | 1:I:217:TYR:HD2 | 1.68 | 0.58 |
| 1:E:52:LEU:HB3 | 1:E:217:TYR:HD2 | 1.68 | 0.58 |
| 1:I:476:ARG:HA | 1:I:479:TRP:CD1 | 2.38 | 0.58 |
| 1:E:256:SER:HB2 | 1:E:374:HIS:HE1 | 1.69 | 0.58 |
| 1:I:226:LEU:CD1 | 1:I:487:LYS:HB3 | 2.33 | 0.58 |
| 1:I:259:LEU:HB3 | 1:I:449:ILE:HG23 | 1.85 | 0.58 |
| 1:A:259:LEU:HB3 | 1:A:449:ILE:HG23 | 1.85 | 0.58 |
| 1:E:476:ARG:HA | 1:E:479:TRP:CD1 | 2.38 | 0.58 |
| 1:A:122:LEU:HA | 1:A:201:ILE:HA | 1.86 | 0.57 |
| 1:I:422:GLN:O | 1:I:434:MET:HA | 2.04 | 0.57 |
| 2:B:145:VAL:HG12 | 2:B:198:HIS:HB2 | 1.86 | 0.57 |
| 3:C:4:LEU:HD11 | 3:C:94:THR:HG23 | 1.85 | 0.57 |
| 1:I:98:ASN:HB3 | 1:I:100:MET:HG2 | 1.87 | 0.57 |
| 1:I:122:LEU:HA | 1:I:201:ILE:HA | 1.85 | 0.57 |
| 1:A:330:HIS:CD2 | 3:C:100(D):VAL:HG21 | 2.39 | 0.57 |
| 1:E:122:LEU:HA | 1:E:201:ILE:HA | 1.85 | 0.57 |
| 1:E:98:ASN:HB3 | 1:E:100:MET:HG2 | 1.87 | 0.57 |
| 1:A:98:ASN:HB3 | 1:A:100:MET:HG2 | 1.87 | 0.57 |
| 2:B:36:TYR:HA | 2:B:46:LEU:HA | 1.85 | 0.57 |
| 1:E:226:LEU:CD1 | 1:E:487:LYS:HB3 | 2.34 | 0.57 |
| 4:D:76:ILE:H | 4:D:76:ILE:CD1 | 2.11 | 0.57 |
| 1:I:53:PHE:HB3 | 1:I:218:CYS:HB2 | 1.87 | 0.57 |
| 1:A:53:PHE:HB3 | 1:A:218:CYS:HB2 | 1.87 | 0.56 |
| 1:E:259:LEU:HB3 | 1:E:449:ILE:HG23 | 1.85 | 0.56 |
| 1:A:422:GLN:O | 1:A:434:MET:HA | 2.05 | 0.56 |
| 1:E:53:PHE:HB3 | 1:E:218:CYS:HB2 | 1.87 | 0.56 |
| 1:E:422:GLN:O | 1:E:434:MET:HA | 2.05 | 0.56 |
| 1:A:474:ASP:OD2 | 4:D:41:GLY:CA | 2.53 | 0.56 |
| 1:E:82:GLN:O | 1:E:84:ILE:HG13 | 2.06 | 0.56 |
| 1:E:347:LYS:O | 1:E:350:ARG:HG2 | 2.06 | 0.56 |
| 1:A:347:LYS:O | 1:A:350:ARG:HG2 | 2.06 | 0.55 |
| 3:C:37:ILE:HG13 | 3:C:47:TRP:CD1 | 2.41 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:C:161:VAL:HG22 | 3:C:180:VAL:HG12 | 1.88 | 0.55 |
| 1:I:82:GLN:O | 1:I:84:ILE:HG13 | 2.06 | 0.55 |
| 1:E:217:TYR:O | 1:E:248:THR:HG23 | 2.07 | 0.55 |
| 1:I:347:LYS:O | 1:I:350:ARG:HG2 | 2.06 | 0.55 |
| 1:A:82:GLN:O | 1:A:84:ILE:HG13 | 2.06 | 0.55 |
| 1:A:217:TYR:O | 1:A:248:THR:HG23 | 2.07 | 0.55 |
| 3:C:37:ILE:HA | 3:C:47:TRP:HA | 1.89 | 0.55 |
| 1:E:93:PHE:CE1 | 1:E:226:LEU:HD13 | 2.42 | 0.55 |
| 1:I:217:TYR:O | 1:I:248:THR:HG23 | 2.07 | 0.55 |
| 2:B:39:ARG:NH1 | 2:B:81:GLY:O | 2.40 | 0.55 |
| 1:A:326:ILE:CA | 3:C:100(E):VAL:HB | 2.35 | 0.54 |
| 1:I:93:PHE:CE1 | 1:I:226:LEU:HD13 | 2.42 | 0.54 |
| 1:I:451:GLY:O | 1:I:452:LEU:HD23 | 2.07 | 0.54 |
| 1:E:451:GLY:O | 1:E:452:LEU:HD23 | 2.07 | 0.54 |
| 1:I:346:VAL:HG21 | 1:I:395:TRP:CD1 | 2.43 | 0.54 |
| 1:A:93:PHE:CE1 | 1:A:226:LEU:HD13 | 2.42 | 0.54 |
| 1:I:396:ILE:HG22 | 1:I:398:ASN:H | 1.73 | 0.54 |
| 4:D:23:SER:HB3 | 4:D:63:ASP:HA | 1.88 | 0.54 |
| 1:I:63:THR:OG1 | 1:I:64:GLU:N | 2.40 | 0.54 |
| 1:E:346:VAL:HG21 | 1:E:395:TRP:CD1 | 2.43 | 0.54 |
| 3:C:34:TRP:CZ3 | 3:C:94:THR:HG22 | 2.43 | 0.54 |
| 1:E:298:ARG:HG2 | 1:E:383:PHE:CZ | 2.43 | 0.54 |
| 1:E:344:LYS:HA | 1:E:347:LYS:HE2 | 1.90 | 0.54 |
| 4:D:14:LEU:HB2 | 4:D:69:LEU:HB3 | 1.90 | 0.54 |
| 1:I:82:GLN:O | 1:I:84:ILE:N | 2.41 | 0.54 |
| 1:I:298:ARG:HG2 | 1:I:383:PHE:CZ | 2.43 | 0.54 |
| 1:A:63:THR:OG1 | 1:A:64:GLU:N | 2.40 | 0.53 |
| 1:A:346:VAL:HG21 | 1:A:395:TRP:CD1 | 2.43 | 0.53 |
| 1:A:451:GLY:O | 1:A:452:LEU:HD23 | 2.07 | 0.53 |
| 4:D:74:LEU:HD13 | 4:D:75:LYS:N | 2.22 | 0.53 |
| 1:A:396:ILE:HG22 | 1:A:398:ASN:H | 1.73 | 0.53 |
| 1:E:66:HIS:HB3 | 1:E:213:ILE:HG12 | 1.90 | 0.53 |
| 1:E:82:GLN:O | 1:E:84:ILE:N | 2.42 | 0.53 |
| 1:A:66:HIS:HB3 | 1:A:213:ILE:HG12 | 1.90 | 0.53 |
| 1:I:66:HIS:HB3 | 1:I:213:ILE:HG12 | 1.90 | 0.53 |
| 1:E:396:ILE:HG22 | 1:E:398:ASN:H | 1.73 | 0.53 |
| 2:B:37:GLN:HB2 | 2:B:47:ILE:HG12 | 1.91 | 0.53 |
| 1:I:344:LYS:HA | 1:I:347:LYS:HE2 | 1.90 | 0.53 |
| 1:I:378:CYS:HB2 | 1:I:383:PHE:CE1 | 2.44 | 0.53 |
| 1:A:55:ALA:O | 1:A:216:HIS:ND1 | 2.42 | 0.53 |
| 1:A:298:ARG:HG2 | 1:A:383:PHE:CZ | 2.43 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:344:LYS:HA | 1:A:347:LYS:HE2 | 1.90 | 0.53 |
| 1:A:82:GLN:O | 1:A:84:ILE:N | 2.41 | 0.53 |
| 1:A:305:LYS:O | 1:A:318:ALA:N | 2.42 | 0.53 |
| 1:E:305:LYS:O | 1:E:318:ALA:N | 2.42 | 0.53 |
| 1:E:378:CYS:HB2 | 1:E:383:PHE:CE1 | 2.44 | 0.53 |
| 1:A:64:GLU:HB2 | 1:A:209:SER:HB3 | 1.90 | 0.52 |
| 1:I:305:LYS:O | 1:I:318:ALA:N | 2.42 | 0.52 |
| 1:A:265:LEU:HD23 | 1:A:450:THR:HG23 | 1.91 | 0.52 |
| 1:I:55:ALA:O | 1:I:216:HIS:ND1 | 2.42 | 0.52 |
| 1:I:265:LEU:HD23 | 1:I:450:THR:HG23 | 1.91 | 0.52 |
| 1:E:299:PRO:HA | 1:E:442:VAL:HA | 1.91 | 0.52 |
| 1:A:378:CYS:HB2 | 1:A:383:PHE:CE1 | 2.44 | 0.52 |
| 4:D:30:ASN:HD21 | 4:D:34:ILE:HB | 1.75 | 0.52 |
| 1:I:299:PRO:HA | 1:I:442:VAL:HA | 1.91 | 0.52 |
| 1:A:159:PHE:HB2 | 1:A:172:VAL:HG23 | 1.92 | 0.52 |
| 1:E:63:THR:OG1 | 1:E:64:GLU:N | 2.40 | 0.52 |
| 1:E:64:GLU:HB2 | 1:E:209:SER:HB3 | 1.90 | 0.52 |
| 1:I:64:GLU:HB2 | 1:I:209:SER:HB3 | 1.90 | 0.52 |
| 2:B:133:LEU:HD12 | 2:B:179:LEU:HD23 | 1.92 | 0.52 |
| 3:C:189:THR:OG1 | 3:C:190:GLN:N | 2.42 | 0.52 |
| 1:E:265:LEU:HD23 | 1:E:450:THR:HG23 | 1.91 | 0.52 |
| 1:E:55:ALA:O | 1:E:216:HIS:ND1 | 2.42 | 0.51 |
| 1:E:346:VAL:HA | 1:E:349:LEU:HD12 | 1.92 | 0.51 |
| 1:A:299:PRO:HA | 1:A:442:VAL:HA | 1.91 | 0.51 |
| 1:I:346:VAL:HA | 1:I:349:LEU:HD12 | 1.92 | 0.51 |
| 1:I:478:ASN:O | 1:I:481:SER:OG | 2.20 | 0.51 |
| 1:A:93:PHE:HE1 | 1:A:226:LEU:HD13 | 1.75 | 0.51 |
| 1:I:159:PHE:HB2 | 1:I:172:VAL:HG23 | 1.92 | 0.51 |
| 4:D:14:LEU:HD12 | 4:D:69:LEU:HD12 | 1.93 | 0.51 |
| 1:E:248:THR:HG22 | 1:E:486:TYR:CE1 | 2.46 | 0.51 |
| 1:A:64:GLU:HA | 1:A:209:SER:N | 2.26 | 0.51 |
| 3:C:185:SER:O | 3:C:188:GLY:N | 2.44 | 0.51 |
| 1:A:248:THR:HG22 | 1:A:486:TYR:CE1 | 2.46 | 0.51 |
| 1:E:64:GLU:HA | 1:E:209:SER:N | 2.26 | 0.51 |
| 1:I:64:GLU:HA | 1:I:209:SER:N | 2.26 | 0.51 |
| 1:I:248:THR:HG22 | 1:I:486:TYR:CE1 | 2.46 | 0.51 |
| 1:A:335:LYS:HG3 | 1:A:339:ASN:OD1 | 2.11 | 0.50 |
| 1:A:346:VAL:HA | 1:A:349:LEU:HD12 | 1.92 | 0.50 |
| 1:I:335:LYS:HG3 | 1:I:339:ASN:OD1 | 2.11 | 0.50 |
| 1:I:158:SER:O | 1:I:159:PHE:HD1 | 1.95 | 0.50 |
| 1:E:159:PHE:HB2 | 1:E:172:VAL:HG23 | 1.92 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:335:LYS:HG3 | 1:E:339:ASN:OD1 | 2.11 | 0.50 |
| 1:I:90:THR:HG22 | 1:I:91:GLU:H | 1.76 | 0.50 |
| 1:A:158:SER:O | 1:A:159:PHE:HD1 | 1.95 | 0.50 |
| 4:D:70:ILE:O | 4:D:71:ILE:HD13 | 2.10 | 0.50 |
| 1:E:93:PHE:HE1 | 1:E:226:LEU:HD13 | 1.75 | 0.50 |
| 1:E:158:SER:O | 1:E:159:PHE:HD1 | 1.95 | 0.50 |
| 1:I:474:ASP:HB3 | 1:I:476:ARG:HG2 | 1.94 | 0.50 |
| 1:A:46:LYS:HB3 | 1:A:490:LYS:HG3 | 1.94 | 0.50 |
| 1:A:478:ASN:O | 1:A:481:SER:OG | 2.20 | 0.50 |
| 4:D:8:LYS:HA | 4:D:74:LEU:HD12 | 1.92 | 0.50 |
| 1:A:474:ASP:HB3 | 1:A:476:ARG:HG2 | 1.94 | 0.50 |
| 4:D:157:TRP:HB2 | 4:D:172:ILE:HG13 | 1.93 | 0.50 |
| 1:I:93:PHE:HE1 | 1:I:226:LEU:HD13 | 1.75 | 0.50 |
| 1:I:96:TRP:HZ2 | 1:I:273:ARG:HB3 | 1.77 | 0.50 |
| 1:A:226:LEU:HA | 1:A:243:SER:O | 2.12 | 0.50 |
| 1:E:474:ASP:HB3 | 1:E:476:ARG:HG2 | 1.94 | 0.50 |
| 1:I:129:LEU:HA | 1:I:159:PHE:CE1 | 2.47 | 0.49 |
| 1:A:90:THR:HG22 | 1:A:91:GLU:H | 1.76 | 0.49 |
| 1:I:46:LYS:HB3 | 1:I:490:LYS:HG3 | 1.94 | 0.49 |
| 1:E:46:LYS:HB3 | 1:E:490:LYS:HG3 | 1.94 | 0.49 |
| 1:I:286:VAL:HB | 1:I:452:LEU:HB2 | 1.94 | 0.49 |
| 1:E:90:THR:HG22 | 1:E:91:GLU:H | 1.76 | 0.49 |
| 1:E:96:TRP:HZ2 | 1:E:273:ARG:HB3 | 1.76 | 0.49 |
| 1:A:371:VAL:CG2 | 4:D:43:PHE:HB3 | 2.43 | 0.49 |
| 1:A:455:THR:HG23 | 1:A:471:GLY:HA3 | 1.95 | 0.49 |
| 1:E:55:ALA:HB3 | 1:E:216:HIS:CB | 2.42 | 0.49 |
| 1:E:129:LEU:HA | 1:E:159:PHE:CE1 | 2.47 | 0.49 |
| 1:A:129:LEU:HA | 1:A:159:PHE:CE1 | 2.48 | 0.49 |
| 2:B:37:GLN:HB2 | 2:B:47:ILE:CG1 | 2.43 | 0.49 |
| 1:I:226:LEU:HA | 1:I:243:SER:O | 2.12 | 0.49 |
| 1:I:455:THR:HG23 | 1:I:471:GLY:HA3 | 1.95 | 0.49 |
| 1:E:226:LEU:HA | 1:E:243:SER:O | 2.12 | 0.48 |
| 1:E:286:VAL:HB | 1:E:452:LEU:HB2 | 1.94 | 0.48 |
| 1:E:455:THR:HG23 | 1:E:471:GLY:HA3 | 1.95 | 0.48 |
| 1:E:85:HIS:CE1 | 1:E:241:SER:HA | 2.49 | 0.48 |
| 1:E:129:LEU:HA | 1:E:159:PHE:HE1 | 1.79 | 0.48 |
| 1:E:65:LYS:HG3 | 1:E:208:VAL:HB | 1.96 | 0.48 |
| 1:I:129:LEU:HA | 1:I:159:PHE:HE1 | 1.79 | 0.48 |
| 1:A:65:LYS:HG3 | 1:A:208:VAL:HB | 1.96 | 0.48 |
| 1:A:96:TRP:HZ2 | 1:A:273:ARG:HB3 | 1.77 | 0.48 |
| 1:A:286:VAL:HB | 1:A:452:LEU:HB2 | 1.94 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:B:36:TYR:HB3 | 2:B:45:SER:O | 2.14 | 0.47 |
| 4:D:21:LYS:HD3 | 1:I:61:TYR:CB | 2.37 | 0.47 |
| 1:E:365:SER:HB2 | 1:E:469:ARG:HD3 | 1.96 | 0.47 |
| 1:I:65:LYS:HG3 | 1:I:208:VAL:HB | 1.96 | 0.47 |
| 1:I:375:SER:HA | 1:I:383:PHE:O | 2.14 | 0.47 |
| 1:A:129:LEU:HA | 1:A:159:PHE:HE1 | 1.79 | 0.47 |
| 1:A:473:GLY:HA3 | 4:D:40:GLN:HB3 | 1.96 | 0.47 |
| 1:E:49:GLU:HG3 | 1:E:223:PHE:HE2 | 1.79 | 0.47 |
| 1:E:375:SER:HA | 1:E:383:PHE:O | 2.14 | 0.47 |
| 4:D:157:TRP:CE2 | 4:D:174:ILE:HD12 | 2.49 | 0.47 |
| 1:E:161:MET:HE2 | 1:E:172:VAL:HG11 | 1.97 | 0.47 |
| 1:E:239:CYS:HA | 1:E:240:PRO:HD3 | 1.46 | 0.47 |
| 1:A:129:LEU:HG | 1:A:159:PHE:CZ | 2.49 | 0.47 |
| 1:A:202:THR:HA | 1:A:434:MET:HB2 | 1.96 | 0.47 |
| 1:I:64:GLU:OE2 | 1:I:211:GLU:N | 2.48 | 0.47 |
| 1:I:85:HIS:CE1 | 1:I:241:SER:HA | 2.49 | 0.47 |
| 1:A:365:SER:HB2 | 1:A:469:ARG:HD3 | 1.96 | 0.47 |
| 1:A:85:HIS:CE1 | 1:A:241:SER:HA | 2.49 | 0.47 |
| 1:A:375:SER:HA | 1:A:383:PHE:O | 2.14 | 0.47 |
| 2:B:17:GLN:CD | 2:B:18:THR:H | 2.18 | 0.47 |
| 1:E:64:GLU:OE2 | 1:E:211:GLU:N | 2.48 | 0.47 |
| 1:E:202:THR:HA | 1:E:434:MET:HB2 | 1.96 | 0.47 |
| 1:I:49:GLU:HG3 | 1:I:223:PHE:HE2 | 1.79 | 0.47 |
| 1:I:175:LEU:HD21 | 1:I:320:GLY:HA3 | 1.97 | 0.47 |
| 1:A:75:VAL:HG22 | 1:A:76:PRO:HD2 | 1.97 | 0.47 |
| 1:A:259:LEU:HD13 | 1:A:449:ILE:HD13 | 1.97 | 0.47 |
| 1:E:64:GLU:HG2 | 1:E:67:ASN:H | 1.80 | 0.47 |
| 1:E:75:VAL:HG22 | 1:E:76:PRO:HD2 | 1.97 | 0.47 |
| 1:E:175:LEU:HD21 | 1:E:320:GLY:HA3 | 1.97 | 0.47 |
| 4:D:114:LEU:HB2 | 4:D:149:LEU:HD11 | 1.96 | 0.47 |
| 1:E:85:HIS:CE1 | 1:E:242:VAL:H | 2.34 | 0.47 |
| 1:E:272:ILE:HG22 | 1:E:286:VAL:HG13 | 1.98 | 0.46 |
| 1:A:49:GLU:HG3 | 1:A:223:PHE:HE2 | 1.79 | 0.46 |
| 1:A:64:GLU:HG2 | 1:A:67:ASN:H | 1.80 | 0.46 |
| 1:I:129:LEU:HG | 1:I:159:PHE:CZ | 2.49 | 0.46 |
| 1:I:202:THR:HA | 1:I:434:MET:HB2 | 1.96 | 0.46 |
| 1:I:332:ASN:OD1 | 1:I:415:THR:HG23 | 2.16 | 0.46 |
| 1:A:55:ALA:HB3 | 1:A:216:HIS:CB | 2.42 | 0.46 |
| 3:C:36:TRP:HE1 | 3:C:78:VAL:HG12 | 1.80 | 0.46 |
| 1:E:85:HIS:ND1 | 1:E:242:VAL:O | 2.37 | 0.46 |
| 1:I:57:ASP:OD1 | 1:I:58:ALA:N | 2.49 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:272:ILE:HG22 | 1:I:286:VAL:HG13 | 1.98 | 0.46 |
| 1:A:64:GLU:OE2 | 1:A:211:GLU:N | 2.48 | 0.46 |
| 1:A:85:HIS:CE1 | 1:A:242:VAL:H | 2.34 | 0.46 |
| 1:A:333:VAL:HG13 | 1:A:414:ILE:HD12 | 1.97 | 0.46 |
| 1:A:354:GLY:O | 1:A:357:THR:OG1 | 2.34 | 0.46 |
| 4:D:83:ILE:HD12 | 4:D:83:ILE:C | 2.35 | 0.46 |
| 1:E:57:ASP:OD1 | 1:E:58:ALA:N | 2.49 | 0.46 |
| 1:E:333:VAL:HG13 | 1:E:414:ILE:HD12 | 1.97 | 0.46 |
| 1:A:57:ASP:OD1 | 1:A:58:ALA:N | 2.49 | 0.46 |
| 3:C:124:PRO:HG3 | 3:C:136:LEU:HG | 1.97 | 0.46 |
| 1:E:354:GLY:O | 1:E:357:THR:OG1 | 2.34 | 0.46 |
| 1:I:75:VAL:HG22 | 1:I:76:PRO:HD2 | 1.97 | 0.46 |
| 1:A:161:MET:HE2 | 1:A:172:VAL:HG11 | 1.98 | 0.46 |
| 1:I:298:ARG:HB3 | 1:I:329:ALA:HB1 | 1.98 | 0.46 |
| 1:A:332:ASN:OD1 | 1:A:415:THR:HG23 | 2.16 | 0.46 |
| 1:I:85:HIS:CE1 | 1:I:242:VAL:H | 2.33 | 0.46 |
| 1:A:96:TRP:CH2 | 1:A:235:GLY:HA3 | 2.51 | 0.46 |
| 1:A:371:VAL:CG1 | 4:D:45:THR:HG22 | 2.46 | 0.46 |
| 1:E:129:LEU:HG | 1:E:159:PHE:CZ | 2.49 | 0.46 |
| 1:E:259:LEU:HD13 | 1:E:449:ILE:HD13 | 1.98 | 0.46 |
| 1:E:298:ARG:HB3 | 1:E:329:ALA:HB1 | 1.98 | 0.46 |
| 1:A:175:LEU:HD21 | 1:A:320:GLY:HA3 | 1.97 | 0.46 |
| 1:I:55:ALA:HB3 | 1:I:216:HIS:CB | 2.41 | 0.45 |
| 1:I:64:GLU:HG2 | 1:I:67:ASN:H | 1.80 | 0.45 |
| 1:I:96:TRP:CH2 | 1:I:235:GLY:HA3 | 2.51 | 0.45 |
| 1:I:354:GLY:O | 1:I:357:THR:OG1 | 2.34 | 0.45 |
| 1:A:272:ILE:HG22 | 1:A:286:VAL:HG13 | 1.98 | 0.45 |
| 1:I:333:VAL:HG13 | 1:I:414:ILE:HD12 | 1.97 | 0.45 |
| 1:A:65:LYS:NZ | 1:A:208:VAL:HG11 | 2.32 | 0.45 |
| 1:E:65:LYS:NZ | 1:E:208:VAL:HG11 | 2.32 | 0.45 |
| 1:I:65:LYS:NZ | 1:I:208:VAL:HG11 | 2.32 | 0.45 |
| 1:I:365:SER:HB2 | 1:I:469:ARG:HD3 | 1.96 | 0.45 |
| 3:C:47:TRP:O | 3:C:48:ILE:HG13 | 2.16 | 0.45 |
| 1:A:474:ASP:OD1 | 4:D:40:GLN:O | 2.35 | 0.45 |
| 1:E:96:TRP:CH2 | 1:E:235:GLY:HA3 | 2.51 | 0.45 |
| 1:I:259:LEU:HD13 | 1:I:449:ILE:HD13 | 1.97 | 0.45 |
| 1:A:472:GLY:CA | 4:D:40:GLN:HE21 | 2.30 | 0.45 |
| 3:C:66:ARG:HD2 | 3:C:82(A):THR:O | 2.17 | 0.45 |
| 1:E:332:ASN:OD1 | 1:E:415:THR:HG23 | 2.16 | 0.45 |
| 1:E:440:GLN:HB3 | 1:E:441:GLY:H | 1.53 | 0.45 |
| 1:A:298:ARG:HB3 | 1:A:329:ALA:HB1 | 1.98 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:422:GLN:OE1 | 1:I:436:ALA:HA | 2.17 | 0.45 |
| 1:E:478:ASN:O | 1:E:481:SER:OG | 2.20 | 0.44 |
| 2:B:37:GLN:O | 2:B:45:SER:C | 2.56 | 0.44 |
| 2:B:116:VAL:HG23 | 2:B:205:LYS:HD2 | 2.00 | 0.44 |
| 1:E:298:ARG:HG2 | 1:E:383:PHE:HZ | 1.82 | 0.44 |
| 1:E:422:GLN:OE1 | 1:E:436:ALA:HA | 2.17 | 0.44 |
| 1:E:260:LEU:HD21 | 1:E:481:SER:OG | 2.18 | 0.44 |
| 1:I:259:LEU:HA | 1:I:451:GLY:O | 2.18 | 0.44 |
| 1:A:219:ALA:HB2 | 1:A:225:ILE:HG13 | 2.00 | 0.44 |
| 1:A:220:PRO:HG2 | 1:A:223:PHE:CD1 | 2.53 | 0.44 |
| 1:I:219:ALA:HB2 | 1:I:225:ILE:HG13 | 2.00 | 0.44 |
| 1:I:220:PRO:HG2 | 1:I:223:PHE:CD1 | 2.53 | 0.44 |
| 1:I:239:CYS:HA | 1:I:240:PRO:HD3 | 1.46 | 0.44 |
| 1:A:259:LEU:HA | 1:A:451:GLY:O | 2.18 | 0.44 |
| 1:A:298:ARG:H | 1:A:298:ARG:HG3 | 1.58 | 0.44 |
| 1:A:474:ASP:CG | 4:D:41:GLY:N | 2.70 | 0.44 |
| 1:E:219:ALA:HB2 | 1:E:225:ILE:HG13 | 2.00 | 0.44 |
| 1:A:260:LEU:HD21 | 1:A:481:SER:OG | 2.18 | 0.44 |
| 1:A:369:LEU:H | 1:A:369:LEU:HG | 1.58 | 0.44 |
| 1:A:422:GLN:OE1 | 1:A:436:ALA:HA | 2.17 | 0.44 |
| 1:A:239:CYS:HA | 1:A:240:PRO:HD3 | 1.46 | 0.43 |
| 1:E:220:PRO:HG2 | 1:E:223:PHE:CD1 | 2.53 | 0.43 |
| 1:A:63:THR:O | 1:A:208:VAL:HA | 2.18 | 0.43 |
| 1:E:61:TYR:HB3 | 1:E:62:GLU:H | 1.53 | 0.43 |
| 1:I:54:CYS:SG | 1:I:215:ILE:HG23 | 2.58 | 0.43 |
| 1:I:255:VAL:HG13 | 1:I:475:MET:SD | 2.58 | 0.43 |
| 1:I:298:ARG:HG2 | 1:I:383:PHE:HZ | 1.82 | 0.43 |
| 1:A:255:VAL:HG13 | 1:A:475:MET:SD | 2.58 | 0.43 |
| 1:A:85:HIS:ND1 | 1:A:242:VAL:O | 2.36 | 0.43 |
| 1:E:93:PHE:HD2 | 1:E:239:CYS:HB3 | 1.84 | 0.43 |
| 1:A:436:ALA:CB | 1:A:437:PRO:HD3 | 2.46 | 0.43 |
| 2:B:46:LEU:HD23 | 2:B:55:PRO:HG3 | 1.99 | 0.43 |
| 1:E:54:CYS:SG | 1:E:215:ILE:HG23 | 2.58 | 0.43 |
| 1:I:260:LEU:HD21 | 1:I:481:SER:OG | 2.18 | 0.43 |
| 2:B:167:LYS:HE3 | 2:B:173:TYR:CE1 | 2.52 | 0.43 |
| 2:B:186:TRP:HH2 | 2:B:207:VAL:HG22 | 1.83 | 0.43 |
| 1:E:259:LEU:HA | 1:E:451:GLY:O | 2.18 | 0.43 |
| 1:A:54:CYS:SG | 1:A:215:ILE:HG23 | 2.58 | 0.43 |
| 1:A:129:LEU:HG | 1:A:159:PHE:HZ | 1.84 | 0.43 |
| 1:A:416:LEU:HA | 1:A:417:PRO:HD3 | 1.65 | 0.43 |
| 1:E:255:VAL:HG13 | 1:E:475:MET:SD | 2.58 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:453:ILE:O | 1:I:454:LEU:HD23 | 2.19 | 0.43 |
| 1:A:453:ILE:O | 1:A:454:LEU:HD23 | 2.19 | 0.43 |
| 1:E:63:THR:O | 1:E:208:VAL:HA | 2.19 | 0.43 |
| 1:E:330:HIS:CE1 | 1:E:415:THR:HG21 | 2.54 | 0.43 |
| 1:E:416:LEU:HA | 1:E:417:PRO:HD3 | 1.65 | 0.43 |
| 3:C:38:ARG:O | 3:C:46:GLU:C | 2.57 | 0.43 |
| 1:A:199:SER:CA | 1:I:312:PRO:HB3 | 2.45 | 0.42 |
| 1:E:369:LEU:H | 1:E:369:LEU:HG | 1.58 | 0.42 |
| 1:A:104:MET:HG3 | 1:A:217:TYR:OH | 2.19 | 0.42 |
| 1:E:292:VAL:HB | 1:E:449:ILE:HB | 2.01 | 0.42 |
| 1:I:85:HIS:ND1 | 1:I:242:VAL:O | 2.37 | 0.42 |
| 1:I:359:ILE:HD13 | 1:I:466:GLU:HB2 | 2.02 | 0.42 |
| 1:I:63:THR:O | 1:I:208:VAL:HA | 2.18 | 0.42 |
| 1:I:292:VAL:HB | 1:I:449:ILE:HB | 2.01 | 0.42 |
| 1:A:223:PHE:CE2 | 1:A:490:LYS:HB3 | 2.54 | 0.42 |
| 1:A:335:LYS:O | 1:A:339:ASN:N | 2.48 | 0.42 |
| 3:C:18:LEU:HD11 | 3:C:20:LEU:HD21 | 2.01 | 0.42 |
| 1:I:231:LYS:HD3 | 1:I:231:LYS:H | 1.85 | 0.42 |
| 1:A:198:THR:O | 1:I:312:PRO:HA | 2.19 | 0.42 |
| 1:A:292:VAL:HB | 1:A:449:ILE:HB | 2.01 | 0.42 |
| 2:B:47:ILE:HD12 | 2:B:47:ILE:HG23 | 1.81 | 0.42 |
| 1:I:223:PHE:CE2 | 1:I:490:LYS:HB3 | 2.54 | 0.42 |
| 1:A:330:HIS:CE1 | 1:A:415:THR:HG21 | 2.54 | 0.42 |
| 1:E:231:LYS:H | 1:E:231:LYS:HD3 | 1.85 | 0.42 |
| 1:E:453:ILE:O | 1:E:454:LEU:HD23 | 2.19 | 0.42 |
| 1:E:44:VAL:HB | 1:E:492:GLU:HB2 | 2.01 | 0.42 |
| 1:E:223:PHE:CE2 | 1:E:490:LYS:HB3 | 2.54 | 0.42 |
| 1:I:93:PHE:HD2 | 1:I:239:CYS:HB3 | 1.84 | 0.42 |
| 1:A:44:VAL:HB | 1:A:492:GLU:HB2 | 2.01 | 0.42 |
| 1:A:93:PHE:HD2 | 1:A:239:CYS:HB3 | 1.84 | 0.42 |
| 1:A:298:ARG:HG2 | 1:A:383:PHE:HZ | 1.82 | 0.42 |
| 1:E:54:CYS:HA | 1:E:216:HIS:O | 2.20 | 0.42 |
| 1:I:330:HIS:CE1 | 1:I:415:THR:HG21 | 2.54 | 0.42 |
| 4:D:11:THR:HG22 | 4:D:72:LYS:HA | 2.02 | 0.41 |
| 4:D:93:VAL:O | 4:D:93:VAL:HG13 | 2.20 | 0.41 |
| 4:D:157:TRP:CD1 | 4:D:174:ILE:HD12 | 2.55 | 0.41 |
| 1:E:330:HIS:CE1 | 1:E:415:THR:CG2 | 3.03 | 0.41 |
| 1:I:330:HIS:CE1 | 1:I:415:THR:CG2 | 3.03 | 0.41 |
| 1:A:231:LYS:H | 1:A:231:LYS:HD3 | 1.85 | 0.41 |
| 1:I:129:LEU:HG | 1:I:159:PHE:HZ | 1.84 | 0.41 |
| 1:I:335:LYS:O | 1:I:339:ASN:N | 2.48 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:385:CYS:O | 1:I:387:THR:HG23 | 2.21 | 0.41 |
| 1:A:370:GLU:HB2 | 4:D:43:PHE:CE1 | 2.55 | 0.41 |
| 1:E:104:MET:HG3 | 1:E:217:TYR:OH | 2.19 | 0.41 |
| 1:E:129:LEU:HG | 1:E:159:PHE:HZ | 1.84 | 0.41 |
| 1:E:161:MET:SD | 1:E:172:VAL:HG21 | 2.61 | 0.41 |
| 1:E:301:ASN:O | 1:E:302:ASN:ND2 | 2.54 | 0.41 |
| 1:E:385:CYS:O | 1:E:387:THR:HG23 | 2.20 | 0.41 |
| 3:C:43:LYS:HB3 | 3:C:43:LYS:HE3 | 1.65 | 0.41 |
| 4:D:120:SER:HA | 4:D:121:PRO:HD3 | 1.86 | 0.41 |
| 1:E:359:ILE:HD13 | 1:E:466:GLU:HB2 | 2.02 | 0.41 |
| 1:A:61:TYR:HB3 | 1:A:62:GLU:H | 1.53 | 0.41 |
| 1:A:301:ASN:O | 1:A:302:ASN:ND2 | 2.54 | 0.41 |
| 1:A:330:HIS:CE1 | 1:A:415:THR:CG2 | 3.03 | 0.41 |
| 1:A:359:ILE:HD13 | 1:A:466:GLU:HB2 | 2.02 | 0.41 |
| 4:D:12:VAL:HG22 | 4:D:13:GLU:N | 2.35 | 0.41 |
| 1:I:44:VAL:HB | 1:I:492:GLU:HB2 | 2.01 | 0.41 |
| 1:I:54:CYS:HA | 1:I:216:HIS:O | 2.20 | 0.41 |
| 1:I:104:MET:HG3 | 1:I:217:TYR:OH | 2.19 | 0.41 |
| 3:C:1:GLN:H3 | 3:C:1:GLN:CD | 2.24 | 0.41 |
| 4:D:121:PRO:HA | 4:D:122:PRO:HD3 | 1.97 | 0.41 |
| 1:I:62:GLU:HB3 | 1:I:63:THR:H | 1.67 | 0.41 |
| 1:A:54:CYS:HA | 1:A:216:HIS:O | 2.20 | 0.41 |
| 1:A:359:ILE:HD12 | 1:A:468:PHE:CE1 | 2.51 | 0.41 |
| 1:I:56:SER:O | 1:I:57:ASP:HB2 | 2.21 | 0.41 |
| 1:I:161:MET:SD | 1:I:172:VAL:HG21 | 2.61 | 0.41 |
| 4:D:13:GLU:HG3 | 4:D:70:ILE:HG22 | 2.03 | 0.41 |
| 1:E:83:GLU:HA | 1:E:244:THR:O | 2.21 | 0.41 |
| 1:E:335:LYS:HE2 | 1:E:339:ASN:ND2 | 2.36 | 0.41 |
| 1:A:325:ASP:C | 3:C:100(E):VAL:HG21 | 2.39 | 0.40 |
| 1:A:385:CYS:O | 1:A:387:THR:HG23 | 2.21 | 0.40 |
| 3:C:197:ASN:OD1 | 3:C:199:LYS:HG3 | 2.21 | 0.40 |
| 1:I:301:ASN:O | 1:I:302:ASN:ND2 | 2.54 | 0.40 |
| 1:A:161:MET:SD | 1:A:172:VAL:HG21 | 2.61 | 0.40 |
| 1:A:344:LYS:HA | 1:A:347:LYS:HB2 | 2.03 | 0.40 |
| 1:E:53:PHE:CB | 1:E:218:CYS:HB2 | 2.51 | 0.40 |
| 1:I:335:LYS:HA | 1:I:338:TRP:HB3 | 2.03 | 0.40 |
| 1:A:231:LYS:HB2 | 1:A:231:LYS:NZ | 2.36 | 0.40 |
| 2:B:47:ILE:HD13 | 2:B:47:ILE:HA | 1.87 | 0.40 |
| 3:C:117:PRO:HB3 | 3:C:143:TYR:HB3 | 2.03 | 0.40 |
| 3:C:36:TRP:O | 3:C:48:ILE:HB | 2.21 | 0.40 |
| 1:E:342:LEU:HB3 | 1:E:395:TRP:HE1 | 1.87 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:62:GLU:O | 1:I:63:THR:OG1 | 2.35 | 0.40 |
| 1:I:335:LYS:HE2 | 1:I:339:ASN:ND2 | 2.36 | 0.40 |
| 1:I:342:LEU:HB3 | 1:I:395:TRP:HE1 | 1.87 | 0.40 |
| 1:I:440:GLN:HB3 | 1:I:441:GLY:H | 1.53 | 0.40 |
| 1:A:83:GLU:HA | 1:A:244:THR:O | 2.21 | 0.40 |
| 1:E:298:ARG:H | 1:E:298:ARG:HG3 | 1.58 | 0.40 |
| 1:I:104:MET:HG3 | 1:I:217:TYR:CZ | 2.57 | 0.40 |
| 1:I:292:VAL:HG11 | 1:I:338:TRP:HE3 | 1.87 | 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 PDB entries followed by that with respect to all EM entries.

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 1 | A | 414/448 (92%) | 349 (84%) | 51 (12%) | 14 (3%) | 3 3 |
| 1 | E | 414/448 (92%) | 348 (84%) | 52 (13%) | 14 (3%) | 3 3 |
| 1 | I | 414/448 (92%) | 349 (84%) | 51 (12%) | 14 (3%) | 3 3 |
| 2 | B | 198/207 (96%) | 191 (96%) | 7 (4%) | 0 | 100 100 |
| 3 | C | 220/232 (95%) | 213 (97%) | 6 (3%) | 1 (0%) | 29 29 |
| 4 | D | 173/175 (99%) | 158 (91%) | 15 (9%) | 0 | 100 100 |
| All | All | 1833/1958 (94%) | 1608 (88%) | 182 (10%) | 43 (2%) | 9 6 |

All (43) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 57 | ASP |
| 1 | A | 83 | GLU |
| 1 | A | 323 | ILE |
| 1 | A | 429 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | E | 57 | ASP |
| 1 | E | 83 | GLU |
| 1 | E | 323 | ILE |
| 1 | E | 429 | ARG |
| 1 | I | 57 | ASP |
| 1 | I | 83 | GLU |
| 1 | I | 323 | ILE |
| 1 | I | 429 | ARG |
| 1 | A | 195 | ASN |
| 1 | A | 322 | ILE |
| 3 | C | 189 | THR |
| 1 | E | 195 | ASN |
| 1 | E | 322 | ILE |
| 1 | I | 195 | ASN |
| 1 | I | 322 | ILE |
| 1 | A | 56 | SER |
| 1 | E | 56 | SER |
| 1 | I | 56 | SER |
| 1 | A | 63 | THR |
| 1 | A | 220 | PRO |
| 1 | E | 63 | THR |
| 1 | E | 220 | PRO |
| 1 | I | 63 | THR |
| 1 | I | 220 | PRO |
| 1 | A | 84 | ILE |
| 1 | A | 118 | PRO |
| 1 | E | 84 | ILE |
| 1 | E | 118 | PRO |
| 1 | I | 84 | ILE |
| 1 | I | 118 | PRO |
| 1 | A | 89 | VAL |
| 1 | A | 437 | PRO |
| 1 | E | 89 | VAL |
| 1 | E | 437 | PRO |
| 1 | I | 89 | VAL |
| 1 | I | 437 | PRO |
| 1 | A | 442 | VAL |
| 1 | E | 442 | VAL |
| 1 | I | 442 | 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 PDB entries followed by that with respect to all EM entries.

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|---|---|---|---|---|---|---|
| 1 | A | 317/400 (79%) | 293 (92%) | 24 (8%) | 13 | 13 |
| 1 | E | 317/400 (79%) | 293 (92%) | 24 (8%) | 13 | 13 |
| 1 | I | 317/400 (79%) | 293 (92%) | 24 (8%) | 13 | 13 |
| 2 | B | 171/176 (97%) | 164 (96%) | 7 (4%) | 30 | 30 |
| 3 | C | 196/202 (97%) | 189 (96%) | 7 (4%) | 35 | 35 |
| 4 | D | 159/159 (100%) | 154 (97%) | 5 (3%) | 40 | 40 |
| All | All | 1477/1737 (85%) | 1386 (94%) | 91 (6%) | 22 | 18 |

All (91) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 47 | ASP |
| 1 | A | 53 | PHE |
| 1 | A | 61 | TYR |
| 1 | A | 75 | VAL |
| 1 | A | 90 | THR |
| 1 | A | 100 | MET |
| 1 | A | 107 | ASP |
| 1 | A | 125 | LEU |
| 1 | A | 156 | ASN |
| 1 | A | 197 | ASN |
| 1 | A | 226 | LEU |
| 1 | A | 231 | LYS |
| 1 | A | 277 | ILE |
| 1 | A | 298 | ARG |
| 1 | A | 330 | HIS |
| 1 | A | 357 | THR |
| 1 | A | 369 | LEU |
| 1 | A | 374 | HIS |
| 1 | A | 382 | PHE |
| 1 | A | 386 | ASN |
| 1 | A | 399 | THR |
| 1 | A | 412 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 414 | ILE |
| 1 | A | 467 | THR |
| 2 | B | 13 | VAL |
| 2 | B | 17 | GLN |
| 2 | B | 31 | ARG |
| 2 | B | 130 | LYS |
| 2 | B | 136 | LEU |
| 2 | B | 161 | GLU |
| 2 | B | 164 | THR |
| 3 | C | 1 | GLN |
| 3 | C | 16 | GLU |
| 3 | C | 69 | LEU |
| 3 | C | 70 | SER |
| 3 | C | 71 | LEU |
| 3 | C | 181 | THR |
| 3 | C | 191 | THR |
| 4 | D | 63 | ASP |
| 4 | D | 119 | GLU |
| 4 | D | 134 | ARG |
| 4 | D | 152 | GLN |
| 4 | D | 162 | LEU |
| 1 | E | 47 | ASP |
| 1 | E | 53 | PHE |
| 1 | E | 61 | TYR |
| 1 | E | 75 | VAL |
| 1 | E | 90 | THR |
| 1 | E | 100 | MET |
| 1 | E | 107 | ASP |
| 1 | E | 125 | LEU |
| 1 | E | 156 | ASN |
| 1 | E | 197 | ASN |
| 1 | E | 226 | LEU |
| 1 | E | 231 | LYS |
| 1 | E | 277 | ILE |
| 1 | E | 298 | ARG |
| 1 | E | 330 | HIS |
| 1 | E | 357 | THR |
| 1 | E | 369 | LEU |
| 1 | E | 374 | HIS |
| 1 | E | 382 | PHE |
| 1 | E | 386 | ASN |
| 1 | E | 399 | THR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | E | 412 | ASP |
| 1 | E | 414 | ILE |
| 1 | E | 467 | THR |
| 1 | I | 47 | ASP |
| 1 | I | 53 | PHE |
| 1 | I | 61 | TYR |
| 1 | I | 75 | VAL |
| 1 | I | 90 | THR |
| 1 | I | 100 | MET |
| 1 | I | 107 | ASP |
| 1 | I | 125 | LEU |
| 1 | I | 156 | ASN |
| 1 | I | 197 | ASN |
| 1 | I | 226 | LEU |
| 1 | I | 231 | LYS |
| 1 | I | 277 | ILE |
| 1 | I | 298 | ARG |
| 1 | I | 330 | HIS |
| 1 | I | 357 | THR |
| 1 | I | 369 | LEU |
| 1 | I | 374 | HIS |
| 1 | I | 382 | PHE |
| 1 | I | 386 | ASN |
| 1 | I | 399 | THR |
| 1 | I | 412 | ASP |
| 1 | I | 414 | ILE |
| 1 | I | 467 | THR |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 130 | GLN |
| 1 | A | 280 | ASN |
| 1 | A | 330 | HIS |
| 1 | A | 374 | HIS |
| 1 | A | 386 | ASN |
| 4 | D | 40 | GLN |
| 4 | D | 103 | ASN |
| 4 | D | 112 | GLN |
| 1 | E | 130 | GLN |
| 1 | E | 330 | HIS |
| 1 | E | 374 | HIS |

*Continued on next page...*

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | E | 386 | ASN |
| 1 | I | 130 | GLN |
| 1 | I | 289 | ASN |
| 1 | I | 330 | HIS |
| 1 | I | 374 | HIS |
| 1 | I | 386 | ASN |

#### 5.3.3 RNA

There are no RNA molecules in this entry.

### 5.4 Non-standard residues in protein, DNA, RNA chains

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

### 5.5 Carbohydrates

There are no monosaccharides in this entry.

### 5.6 Ligand geometry

There are no ligands in this entry.

### 5.7 Other polymers

There are no such residues in this entry.

### 5.8 Polymer linkage issues

There are no chain breaks in this entry.

# 6 Tomogram visualisation

This section contains visualisations of the EMDB entry EMD-6542. These allow visual inspection of the internal detail of the tomogram and identification of artifacts.

## 6.1 Orthogonal projections

This section was not generated.

## 6.2 Central slices

This section was not generated.

## 6.3 Largest variance slices

This section was not generated.

## 6.4 Mask visualisation

This section was not generated. No masks/segmentation were deposited.

# 7 Tomogram analysis (i)

This section contains the results of statistical analysis of the tomogram.

## 7.1 Map-value distribution (i)

This section was not generated.

# 8 Map-model fit

This section was not generated.