# Full wwPDB X-ray Structure Validation Report (i)

Sep 17, 2023 – 07:39 AM EDT

PDB ID : 4PI0
Title : Crystal structure of particulate methane monooxygenase from Methylocystis sp. ATCC 49242 (Rockwell) soaked in copper
Authors : Sirajuddin, S.; Rosenzweig, A.C.
Deposited on : 2014-05-07
Resolution : 3.15 Å(reported)

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

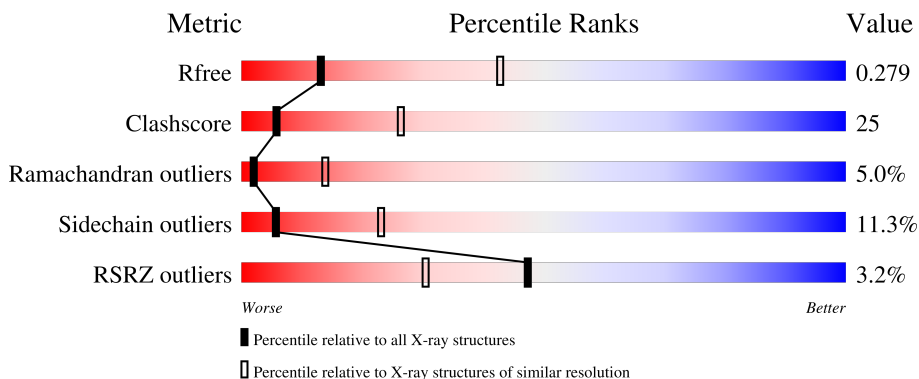| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.35.1 |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 5.8.0158 |
| CCP4 | : | 7.0.044 (Gargrove) |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.35.1 |

# 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 3.15 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 | Percentile Ranks | Value |
|--------|------------------|-------|
| Rfree | | 0.279 |
| Clashscore | | 25 |
| Ramachandran outliers | | 5.0% |
| Sidechain outliers | | 11.3% |
| RSRZ outliers | | 3.2% |

*Worse* ———— *Better*

∎ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|--------|--------------------------|----------------------------------------------------|
| R$_{free}$ | 130704 | 1665 (3.20-3.12) |
| Clashscore | 141614 | 1804 (3.20-3.12) |
| Ramachandran outliers | 138981 | 1770 (3.20-3.12) |
| Sidechain outliers | 138945 | 1769 (3.20-3.12) |
| RSRZ outliers | 127900 | 1616 (3.20-3.12) |

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 <=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 | D | 25 | 60% 16% 24% |
| 1 | H | 25 | 64% 16% 20% |
| 1 | N | 25 | 60% 40% |
| 2 | B | 252 | % 56% 36% · · · |
| 2 | F | 252 | % 57% 34% 5% · · |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 2 | J | 252 | 55% 37% · · · |
| 3 | C | 256 | 3% 46% 29% 10% 15% |
| 3 | G | 256 | 4% 43% 32% 8% 17% |
| 3 | K | 256 | 5% 43% 32% 11% 15% |
| 4 | A | 420 | 7% 51% 33% 7% · 7% |
| 4 | E | 420 | 51% 33% 8% · 7% |
| 4 | I | 420 | 4% 52% 34% 6% · 7% |

# 2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 20630 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 unknown peptide.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---------|---------|-------|
| 1 | D | 19 | Total | C | N | O | 0 | 0 | 0 |
| | | | 95 | 57 | 19 | 19 | | | |
| 1 | H | 20 | Total | C | N | O | 0 | 0 | 0 |
| | | | 100 | 60 | 20 | 20 | | | |
| 1 | N | 25 | Total | C | N | O | 0 | 0 | 0 |
| | | | 125 | 75 | 25 | 25 | | | |

- Molecule 2 is a protein called Particulate methane monooxygenase subunit A.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 2 | F | 244 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1974 | 1336 | 311 | 316 | 11 | | | |
| 2 | J | 244 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1974 | 1336 | 311 | 316 | 11 | | | |
| 2 | B | 244 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1974 | 1336 | 311 | 316 | 11 | | | |

- Molecule 3 is a protein called Particulate methane monooxygenase subunit C.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 3 | K | 217 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1765 | 1185 | 279 | 293 | 8 | | | |
| 3 | C | 217 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1765 | 1185 | 279 | 293 | 8 | | | |
| 3 | G | 213 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1738 | 1168 | 274 | 288 | 8 | | | |

- Molecule 4 is a protein called Particulate methane monooxygenase subunit B.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 4 | E | 390 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 3038 | 1952 | 523 | 559 | 4 | | | |

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| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 4 | A | 390 | Total 3038 | C 1952 | N 523 | O 559 | S 4 | 0 | 0 | 0 |
| 4 | I | 390 | Total 3038 | C 1952 | N 523 | O 559 | S 4 | 0 | 0 | 0 |

- Molecule 5 is COPPER (II) ION (three-letter code: CU) (formula: Cu).

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---------|---------|
| 5 | K | 1 | Total 1 | Cu 1 | 0 | 0 |
| 5 | E | 1 | Total 1 | Cu 1 | 0 | 0 |
| 5 | A | 1 | Total 1 | Cu 1 | 0 | 0 |
| 5 | I | 1 | Total 1 | Cu 1 | 0 | 0 |
| 5 | C | 1 | Total 1 | Cu 1 | 0 | 0 |
| 5 | G | 1 | Total 1 | Cu 1 | 0 | 0 |

# 3 Residue-property plots ⓘ

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.

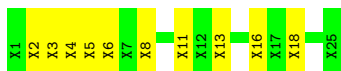- Molecule 1: unknown peptide

Chain D:
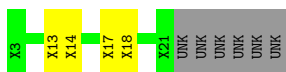
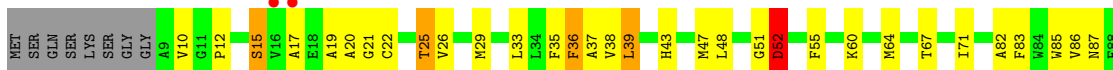- Molecule 1: unknown peptide

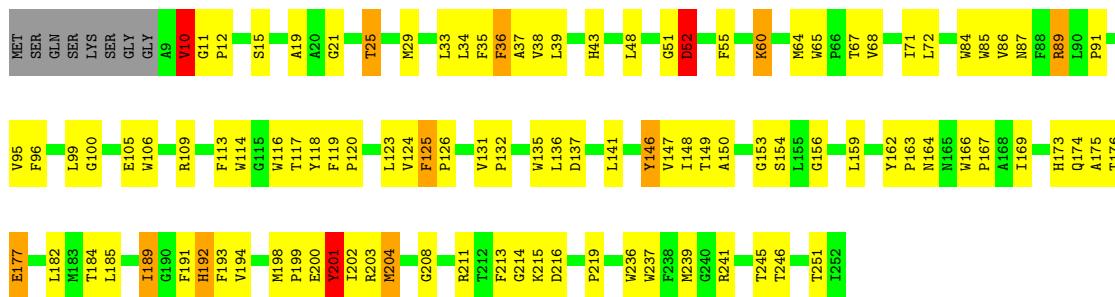Chain H:

- Molecule 1: unknown peptide

Chain N:

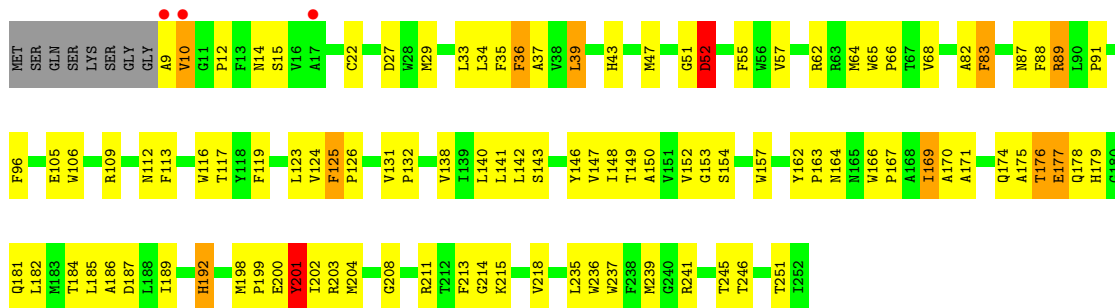- Molecule 2: Particulate methane monooxygenase subunit A

Chain F:

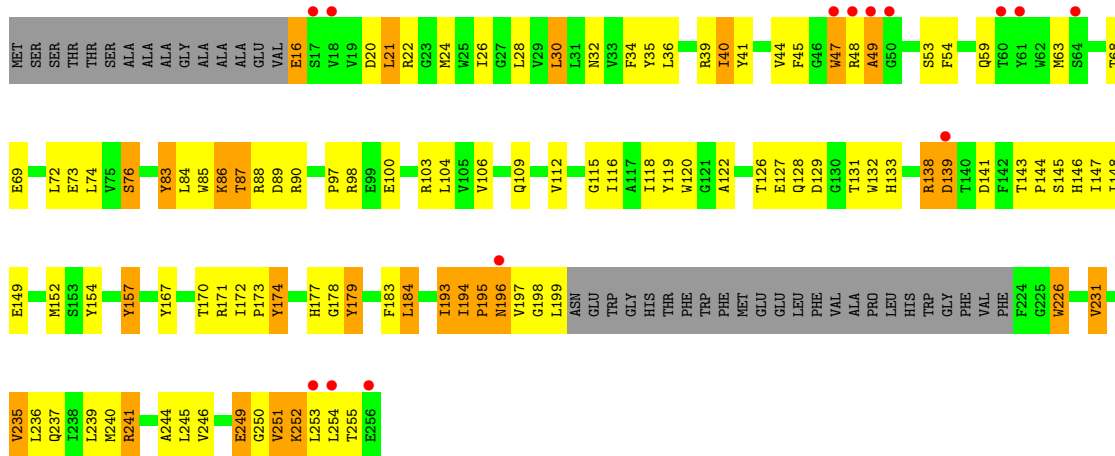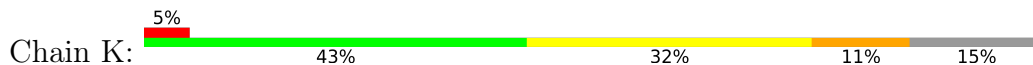- Molecule 2: Particulate methane monooxygenase subunit A

Chain J:

MET GLN SER LYS SER GLY A9 V10 G11 P12 S15 A19 A20 G21 T25 M29 L33 L34 F35 F36 A37 V38 L39 H43 L48 G51 D52 F55 K60 M64 W65 P66 T67 V68 I71 L72 W84 W85 V86 N87 F88 R89 L90 P91

V95 F96 L99 G100 E105 W106 R109 F113 W116 T117 Y118 F119 P120 L123 V124 F125 P126 V131 P132 W135 L136 D137 L141 Y146 V147 I148 T149 A150 G153 S154 L155 G156 L159 Y162 P163 N164 W166 P167 A168 I169 H173 Q174 A175 T176

E177 L182 M183 T184 L185 I189 G190 F191 H192 F193 V194 M198 P199 E200 Y201 I202 R203 M204 G208 R211 T212 F213 G214 K215 D216 P219 W236 W237 F238 M239 G240 R241 T245 T246 T251 I252

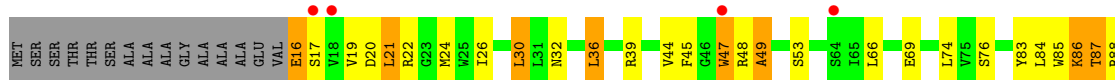● Molecule 2: Particulate methane monooxygenase subunit A

Chain B:

MET SER GLN LYS SER GLY A9 V10 G11 P12 F13 N14 S15 V16 A17 C22 D27 W28 M29 L33 L34 F35 F36 A37 V38 L39 H43 M47 G51 D52 F55 W56 V57 R62 M64 W65 P66 T67 V68 A82 F83 N87 F88 R89 L90 P91

F96 E105 W106 R109 N112 F113 W116 T117 Y118 F119 L123 V124 F125 P126 V131 P132 V138 I139 L140 L141 L142 S143 Y146 V147 I148 T149 A150 V151 V152 G153 S154 W157 Y162 P163 N164 N165 W166 P167 A168 I169 A170 A171 Q174 A175 T176 E177 Q178 H179 G180

Q181 L182 M183 T184 L185 A186 D187 L188 I189 H192 M198 P199 E200 Y201 I202 R203 M204 G208 R211 T212 F213 G214 K215 V218 L235 W236 W237 F238 M239 G240 R241 T245 T246 T251 I252

● Molecule 3: Particulate methane monooxygenase subunit C

Chain K:

MET SER SER THR SER ALA ALA GLY ALA ALA ALA GLU VAL E16 S17 V18 V19 D20 L21 R22 G23 M24 W25 I26 C27 L28 V29 L30 L31 N32 V33 F34 Y35 L36 R39 I40 Y41 V44 F45 G46 W47 R48 A49 G50 S53 F54 Q59 T60 Y61 W62 M63 S64 T68

E69 L72 E73 L74 V75 S76 Y83 L84 W85 K86 T87 R88 D89 R90 P97 R98 E99 E100 R103 L104 V105 V106 Q109 V112 G115 I116 A117 I118 V119 W120 G121 A122 T126 E127 Q128 D129 G130 T131 W132 H133 R138 D139 T140 D141 F142 T143 P144 S145 H146 I147 I148

E149 M152 S153 V154 Y157 Y167 T170 R171 I172 P173 Y174 H177 G178 Y179 F183 L184 I193 I194 P195 N196 V197 G198 L199 ASN GLU TRP GLY HIS THR PHE TRP PHE MET GLU GLU PHE VAL ALA PRO LEU HIS TRP GLY PHE VAL PHE F224 G225 W226 V231

V235 I236 Q237 I238 L239 M240 R241 A244 L245 V246 E249 G250 V251 K252 L253 L254 T255 E256

● Molecule 3: Particulate methane monooxygenase subunit C

Chain C:

MET SER SER THR THR SER ALA ALA ALA GLY ALA ALA ALA GLU VAL E16 S17 V18 V19 D20 L21 R22 G23 M24 W25 I26 L30 L31 N32 L36 R39 V44 F45 G46 W47 R48 A49 S53 S64 I65 L66 E69 L74 V75 S76 Y83 L84 W85 K86 T87 R88

• Molecule 3: Particulate methane monooxygenase subunit C

Chain G:



• Molecule 4: Particulate methane monooxygenase subunit B
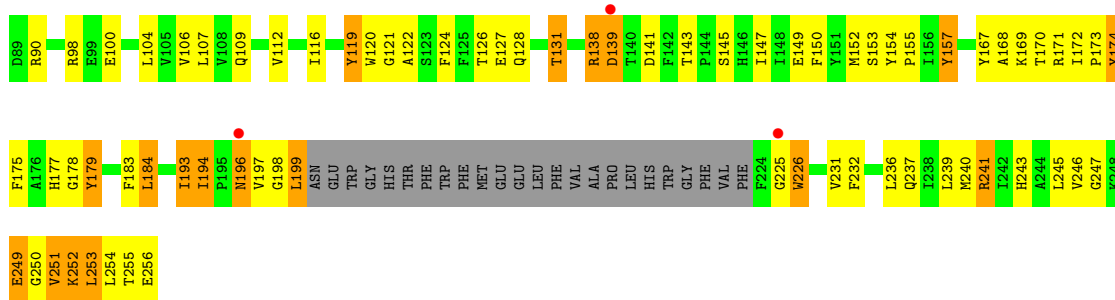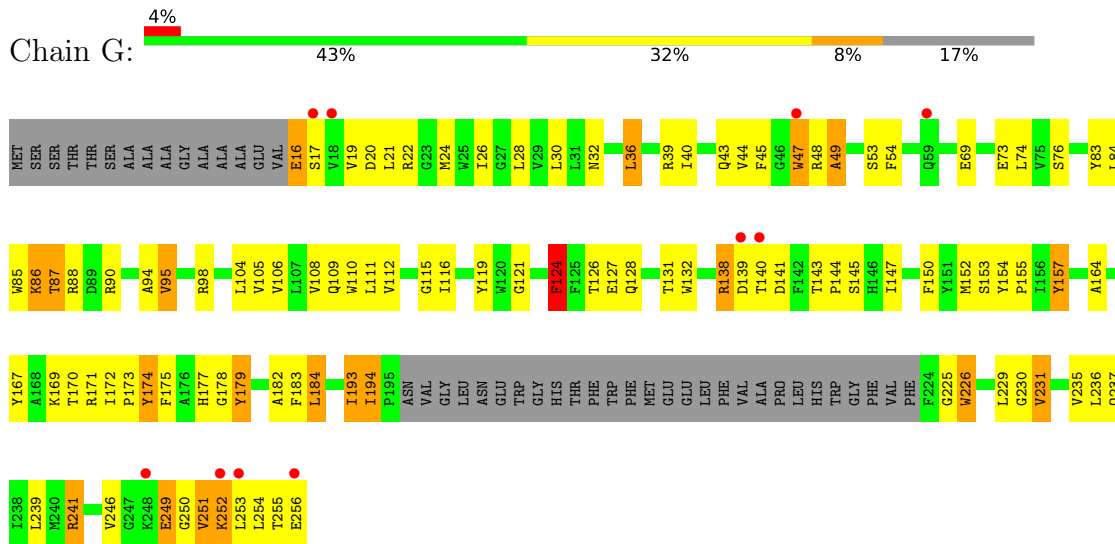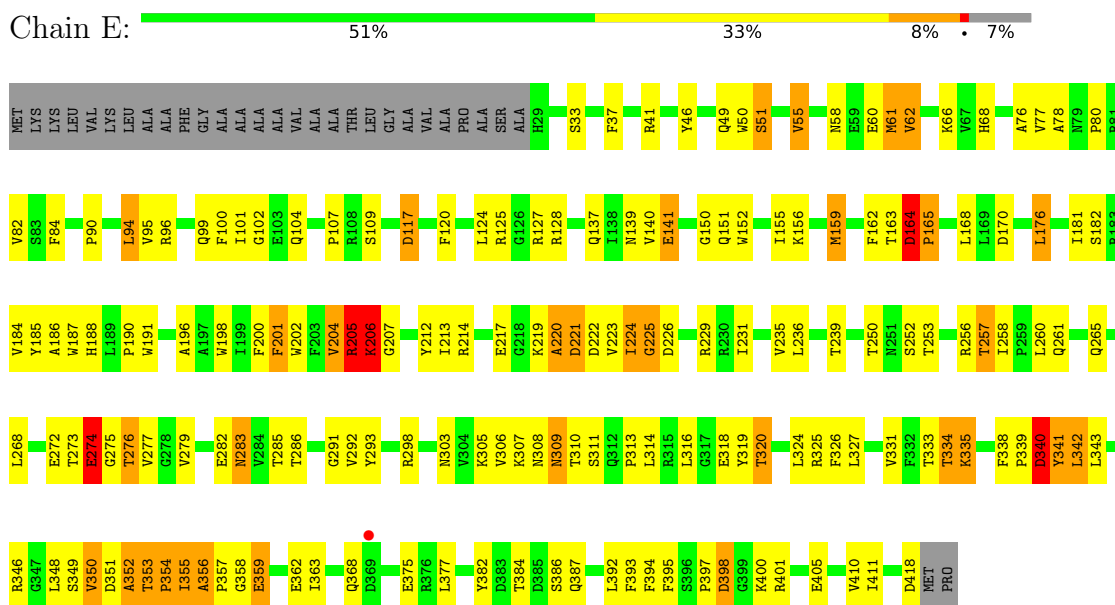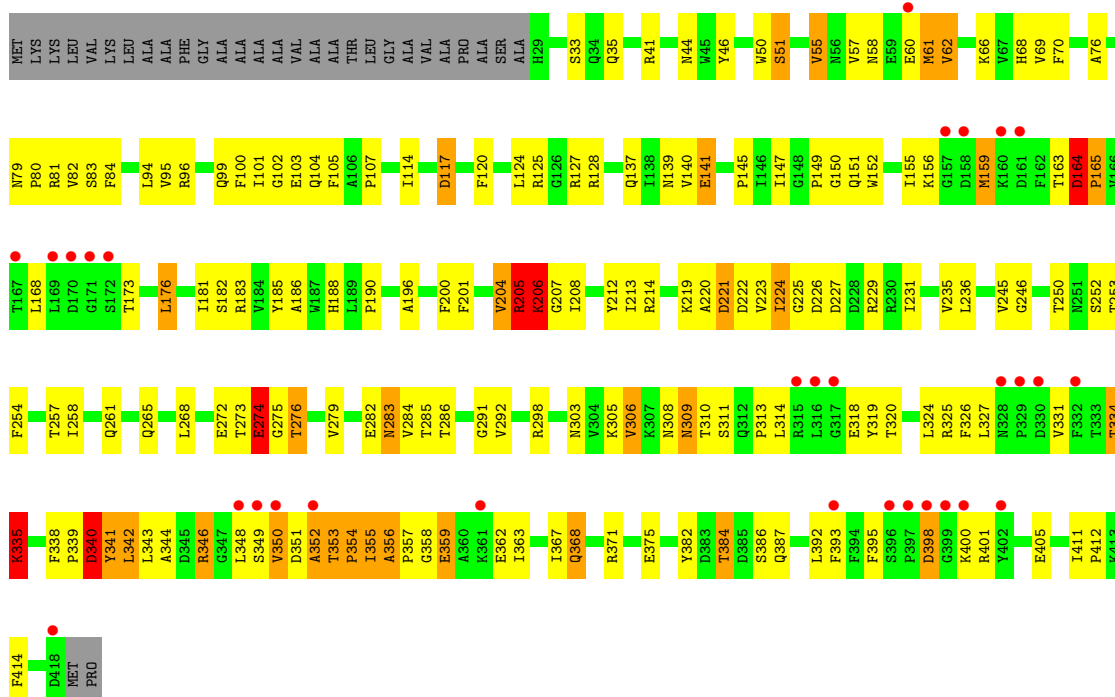
Chain E:



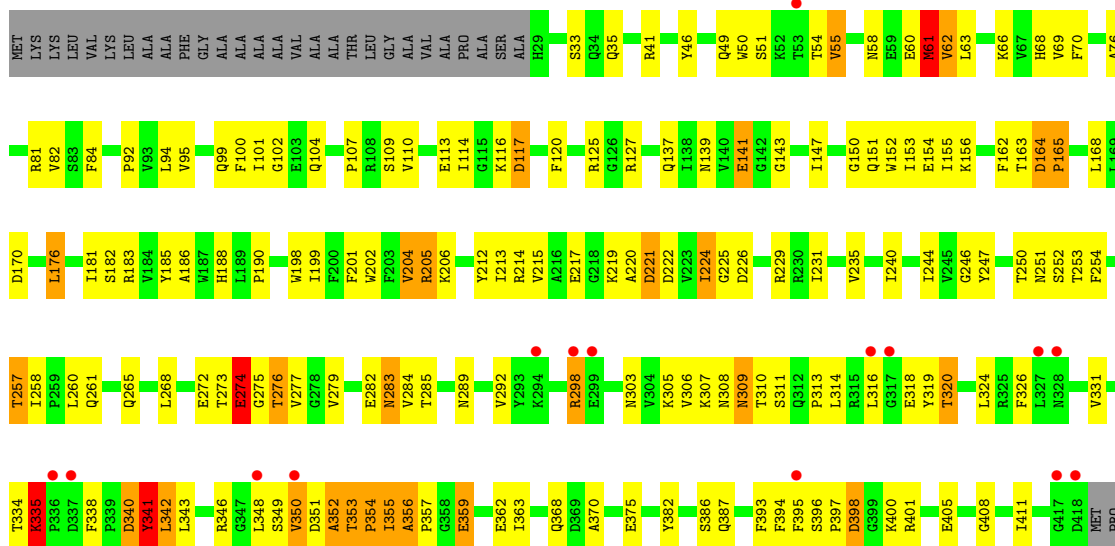• Molecule 4: Particulate methane monooxygenase subunit B

Chain A:

• Molecule 4: Particulate methane monooxygenase subunit B

Chain I:

4%

52% 34% 6% • 7%

# 4 Data and refinement statistics (i)

| Property | Value | Source |
|---|---|---|
| Space group | P 21 21 21 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 116.36Å    184.74Å    188.64Å<br>90.00°    90.00°    90.00° | Depositor |
| Resolution (Å) | 50.00   –   3.15<br>49.52   –   3.15 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 78.2 (50.00-3.15)<br>78.5 (49.52-3.15) | Depositor<br>EDS |
| $R_{merge}$ | (Not available) | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 2.38 (at 3.12Å) | Xtriage |
| Refinement program | REFMAC 5.8.0049 | Depositor |
| R, $R_{free}$ | 0.221   ,   0.280<br>0.221   ,   0.279 | Depositor<br>DCC |
| $R_{free}$ test set | 2796 reflections (5.01%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 64.8 | Xtriage |
| Anisotropy | 0.030 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.29 , 42.2 | EDS |
| L-test for twinning[2] | $< |L| > = 0.45, < L^2 > = 0.27$ | Xtriage |
| Estimated twinning fraction | 0.028 for -h,l,k | Xtriage |
| $F_o$,$F_c$ correlation | 0.85 | EDS |
| Total number of atoms | 20630 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 57.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.70% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

# 5 Model quality ⓘ

## 5.1 Standard geometry ⓘ

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

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 |
| 2 | B | 0.64 | 0/2052 | 0.79 | 0/2814 |
| 2 | F | 0.75 | 1/2052 (0.0%) | 0.84 | 0/2814 |
| 2 | J | 0.74 | 0/2052 | 0.86 | 0/2814 |
| 3 | C | 0.61 | 2/1820 (0.1%) | 0.75 | 1/2481 (0.0%) |
| 3 | G | 0.65 | 2/1793 (0.1%) | 0.78 | 1/2444 (0.0%) |
| 3 | K | 0.67 | 0/1820 | 0.82 | 1/2481 (0.0%) |
| 4 | A | 0.60 | 0/3115 | 0.80 | 0/4243 |
| 4 | E | 0.67 | 0/3115 | 0.83 | 0/4243 |
| 4 | I | 0.60 | 0/3115 | 0.81 | 0/4243 |
| All | All | 0.66 | 5/20934 (0.0%) | 0.81 | 3/28577 (0.0%) |

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 |
|-----|-------|---------------------|---------------------|
| 4 | A | 0 | 2 |
| 4 | E | 0 | 3 |
| 4 | I | 0 | 2 |
| All | All | 0 | 7 |

All (5) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-----|-------------|----------|
| 3 | G | 119 | TYR | CE1-CZ | -6.83 | 1.29 | 1.38 |
| 3 | C | 119 | TYR | CG-CD2 | -6.31 | 1.30 | 1.39 |
| 3 | G | 119 | TYR | CG-CD1 | -5.63 | 1.31 | 1.39 |
| 3 | C | 119 | TYR | CE1-CZ | -5.62 | 1.31 | 1.38 |
| 2 | F | 83 | PHE | CG-CD1 | -5.54 | 1.30 | 1.38 |

All (3) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|-------------|----------|
| 3 | G | 229 | LEU | CA-CB-CG | 5.37 | 127.65 | 115.30 |
| 3 | K | 199 | LEU | CA-CB-CG | 5.14 | 127.13 | 115.30 |
| 3 | C | 199 | LEU | CA-CB-CG | 5.02 | 126.84 | 115.30 |

There are no chirality outliers.

All (7) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|-------|
| 4 | A | 340 | ASP | Peptide |
| 4 | A | 341 | TYR | Peptide |
| 4 | E | 333 | THR | Peptide |
| 4 | E | 340 | ASP | Peptide |
| 4 | E | 341 | TYR | Peptide |
| 4 | I | 340 | ASP | Peptide |
| 4 | I | 341 | TYR | Peptide |

## 5.2 Too-close contacts ⓘ

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 | D | 95 | 0 | 22 | 4 | 0 |
| 1 | H | 100 | 0 | 23 | 3 | 0 |
| 1 | N | 125 | 0 | 27 | 7 | 0 |
| 2 | B | 1974 | 0 | 1932 | 116 | 0 |
| 2 | F | 1974 | 0 | 1932 | 110 | 0 |
| 2 | J | 1974 | 0 | 1932 | 115 | 0 |
| 3 | C | 1765 | 0 | 1772 | 94 | 0 |
| 3 | G | 1738 | 0 | 1743 | 91 | 0 |
| 3 | K | 1765 | 0 | 1772 | 103 | 0 |
| 4 | A | 3038 | 0 | 3022 | 182 | 0 |
| 4 | E | 3038 | 0 | 3022 | 178 | 0 |
| 4 | I | 3038 | 0 | 3022 | 160 | 0 |
| 5 | A | 1 | 0 | 0 | 0 | 0 |
| 5 | C | 1 | 0 | 0 | 0 | 0 |
| 5 | E | 1 | 0 | 0 | 0 | 0 |
| 5 | G | 1 | 0 | 0 | 0 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 5 | I | 1 | 0 | 0 | 0 | 0 |
| 5 | K | 1 | 0 | 0 | 0 | 0 |
| All | All | 20630 | 0 | 20221 | 1032 | 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 25.

All (1032) 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) |
|---|---|---|---|
| 2:F:51:GLY:CA | 2:F:52:ASP:HB2 | 1.63 | 1.26 |
| 2:J:51:GLY:CA | 2:J:52:ASP:HB2 | 1.72 | 1.16 |
| 2:J:146:TYR:HD2 | 2:J:237:TRP:CE2 | 1.63 | 1.15 |
| 2:B:51:GLY:CA | 2:B:52:ASP:HB2 | 1.76 | 1.15 |
| 4:E:352:ALA:O | 4:E:354:PRO:HD3 | 1.46 | 1.13 |
| 2:F:51:GLY:HA3 | 2:F:52:ASP:CB | 1.71 | 1.11 |
| 2:B:51:GLY:HA3 | 2:B:52:ASP:HB2 | 1.13 | 1.10 |
| 2:J:51:GLY:HA3 | 2:J:52:ASP:CB | 1.79 | 1.10 |
| 4:E:334:THR:HA | 4:E:335:LYS:HB2 | 1.15 | 1.10 |
| 4:A:334:THR:HA | 4:A:335:LYS:HB2 | 1.13 | 1.10 |
| 4:I:334:THR:HA | 4:I:335:LYS:HB2 | 1.08 | 1.07 |
| 2:J:200:GLU:HG2 | 2:J:203:ARG:HD2 | 1.37 | 1.06 |
| 2:B:51:GLY:HA3 | 2:B:52:ASP:CB | 1.80 | 1.06 |
| 4:A:352:ALA:O | 4:A:354:PRO:HD3 | 1.54 | 1.04 |
| 4:I:352:ALA:O | 4:I:354:PRO:HD3 | 1.55 | 1.03 |
| 2:F:51:GLY:HA3 | 2:F:52:ASP:HB2 | 1.08 | 1.03 |
| 2:F:200:GLU:HG2 | 2:F:203:ARG:HD2 | 1.41 | 1.03 |
| 3:K:104:LEU:HD23 | 3:K:172:ILE:HD13 | 1.37 | 1.02 |
| 4:E:356:ALA:HB1 | 4:E:357:PRO:CA | 1.90 | 1.02 |
| 4:A:356:ALA:HB1 | 4:A:357:PRO:C | 1.77 | 1.02 |
| 3:C:104:LEU:HD23 | 3:C:172:ILE:HD13 | 1.41 | 1.02 |
| 4:E:275:GLY:HA2 | 4:E:276:THR:HB | 1.41 | 1.01 |
| 4:I:334:THR:CA | 4:I:335:LYS:HB2 | 1.90 | 1.00 |
| 4:I:220:ALA:O | 4:I:222:ASP:N | 1.93 | 1.00 |
| 2:B:200:GLU:HG2 | 2:B:203:ARG:HD2 | 1.43 | 0.99 |
| 4:A:356:ALA:HB1 | 4:A:357:PRO:CA | 1.92 | 0.98 |
| 2:J:51:GLY:HA3 | 2:J:52:ASP:HB2 | 1.01 | 0.98 |
| 4:E:356:ALA:HB1 | 4:E:357:PRO:C | 1.84 | 0.97 |
| 4:I:356:ALA:HB1 | 4:I:357:PRO:CA | 1.95 | 0.96 |
| 3:G:246:VAL:HG11 | 3:G:250:GLY:HA3 | 1.48 | 0.96 |
| 4:E:308:ASN:HA | 4:E:309:ASN:HB2 | 1.46 | 0.95 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:E:334:THR:CA | 4:E:335:LYS:HB2 | 1.95 | 0.95 |
| 4:I:356:ALA:HB1 | 4:I:357:PRO:C | 1.87 | 0.95 |
| 4:A:308:ASN:HA | 4:A:309:ASN:HB2 | 1.49 | 0.94 |
| 4:E:350:VAL:HG12 | 4:E:351:ASP:H | 1.32 | 0.94 |
| 4:A:334:THR:CA | 4:A:335:LYS:HB2 | 1.97 | 0.94 |
| 4:I:331:VAL:HG11 | 4:I:395:PHE:HD2 | 1.30 | 0.93 |
| 2:F:213:PHE:HD1 | 4:A:33:SER:HG | 0.95 | 0.93 |
| 2:J:146:TYR:CD2 | 2:J:237:TRP:CE2 | 2.56 | 0.92 |
| 4:I:58:ASN:HD21 | 4:I:163:THR:H | 1.15 | 0.92 |
| 4:A:219:LYS:HA | 4:A:220:ALA:HB3 | 1.51 | 0.92 |
| 3:G:246:VAL:CG1 | 3:G:250:GLY:HA3 | 1.99 | 0.92 |
| 4:I:308:ASN:HA | 4:I:309:ASN:HB2 | 1.49 | 0.92 |
| 4:E:58:ASN:HD21 | 4:E:163:THR:H | 1.08 | 0.92 |
| 3:K:83:TYR:HD1 | 3:K:83:TYR:O | 1.51 | 0.91 |
| 4:A:188:HIS:HD2 | 2:B:106:TRP:HE1 | 1.19 | 0.90 |
| 4:I:58:ASN:HD22 | 4:I:125:ARG:NH2 | 1.69 | 0.90 |
| 4:I:58:ASN:HD22 | 4:I:125:ARG:HH21 | 1.18 | 0.90 |
| 4:E:382:TYR:CD1 | 2:J:215:LYS:HE3 | 2.07 | 0.90 |
| 4:A:350:VAL:HG12 | 4:A:351:ASP:H | 1.34 | 0.89 |
| 2:J:146:TYR:CE1 | 2:J:147:VAL:HG23 | 2.07 | 0.89 |
| 2:J:146:TYR:HD1 | 2:J:147:VAL:N | 1.70 | 0.89 |
| 4:A:58:ASN:HD21 | 4:A:163:THR:H | 1.14 | 0.88 |
| 4:I:60:GLU:O | 4:I:60:GLU:HG3 | 1.71 | 0.88 |
| 4:A:58:ASN:HD22 | 4:A:125:ARG:HH21 | 1.18 | 0.88 |
| 4:I:219:LYS:HA | 4:I:220:ALA:HB3 | 1.56 | 0.88 |
| 4:A:100:PHE:HD1 | 4:A:105:PHE:HA | 1.38 | 0.87 |
| 3:C:246:VAL:HG11 | 3:C:250:GLY:HA3 | 1.53 | 0.86 |
| 4:I:350:VAL:HG12 | 4:I:351:ASP:H | 1.39 | 0.86 |
| 4:I:276:THR:HG22 | 4:I:279:VAL:HB | 1.57 | 0.86 |
| 4:E:219:LYS:HA | 4:E:220:ALA:HB3 | 1.58 | 0.86 |
| 4:I:275:GLY:HA2 | 4:I:276:THR:HB | 1.58 | 0.86 |
| 4:A:220:ALA:O | 4:A:222:ASP:N | 2.09 | 0.85 |
| 3:G:104:LEU:HD23 | 3:G:172:ILE:HD13 | 1.58 | 0.85 |
| 2:F:106:TRP:HE1 | 4:E:188:HIS:HD2 | 1.22 | 0.85 |
| 4:E:356:ALA:HB1 | 4:E:357:PRO:HA | 1.56 | 0.85 |
| 4:I:334:THR:HA | 4:I:335:LYS:CB | 2.03 | 0.85 |
| 3:K:44:VAL:HG12 | 3:K:45:PHE:CD1 | 2.11 | 0.85 |
| 4:E:331:VAL:HG11 | 4:E:395:PHE:HD2 | 1.42 | 0.84 |
| 4:E:137:GLN:HE21 | 4:E:139:ASN:HD21 | 1.25 | 0.84 |
| 4:A:137:GLN:HE21 | 4:A:139:ASN:HD21 | 1.25 | 0.84 |
| 4:I:356:ALA:HB1 | 4:I:357:PRO:HA | 1.60 | 0.83 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:C:83:TYR:HE1 | 3:C:87:THR:HG21 | 1.43 | 0.83 |
| 4:A:324:LEU:HD11 | 4:A:375:GLU:HG3 | 1.60 | 0.83 |
| 3:C:246:VAL:CG1 | 3:C:250:GLY:HA3 | 2.07 | 0.83 |
| 4:I:324:LEU:HD11 | 4:I:375:GLU:HG3 | 1.60 | 0.83 |
| 2:J:146:TYR:CD2 | 2:J:237:TRP:NE1 | 2.46 | 0.83 |
| 4:A:275:GLY:HA2 | 4:A:276:THR:HB | 1.59 | 0.83 |
| 2:J:146:TYR:HD2 | 2:J:237:TRP:NE1 | 1.76 | 0.83 |
| 4:E:220:ALA:O | 4:E:222:ASP:N | 2.10 | 0.83 |
| 3:G:138:ARG:HH12 | 3:G:141:ASP:HA | 1.43 | 0.83 |
| 4:E:33:SER:HG | 2:J:213:PHE:HD1 | 1.25 | 0.83 |
| 4:E:276:THR:HG22 | 4:E:279:VAL:HB | 1.59 | 0.82 |
| 4:A:188:HIS:CD2 | 2:B:106:TRP:HE1 | 1.97 | 0.82 |
| 3:K:246:VAL:HG11 | 3:K:250:GLY:HA3 | 1.61 | 0.82 |
| 4:E:356:ALA:CB | 4:E:357:PRO:CA | 2.57 | 0.82 |
| 4:I:231:ILE:O | 4:I:235:VAL:HG23 | 1.80 | 0.82 |
| 4:E:324:LEU:HD11 | 4:E:375:GLU:HG3 | 1.62 | 0.81 |
| 3:K:83:TYR:HD1 | 3:K:83:TYR:C | 1.81 | 0.81 |
| 4:E:60:GLU:HG3 | 4:E:60:GLU:O | 1.77 | 0.81 |
| 4:A:219:LYS:HD3 | 4:A:220:ALA:HB3 | 1.61 | 0.81 |
| 2:J:146:TYR:HD1 | 2:J:147:VAL:H | 1.25 | 0.81 |
| 4:E:308:ASN:CA | 4:E:309:ASN:HB2 | 2.12 | 0.80 |
| 3:C:26:ILE:O | 3:C:30:LEU:HB2 | 1.81 | 0.80 |
| 2:F:177:GLU:HG3 | 4:A:411:ILE:HG12 | 1.62 | 0.80 |
| 3:K:83:TYR:C | 3:K:83:TYR:CD1 | 2.52 | 0.80 |
| 3:K:246:VAL:CG1 | 3:K:250:GLY:HA3 | 2.11 | 0.80 |
| 4:E:308:ASN:ND2 | 4:E:356:ALA:HB3 | 1.97 | 0.80 |
| 4:A:231:ILE:O | 4:A:235:VAL:HG23 | 1.82 | 0.80 |
| 4:I:219:LYS:HD3 | 4:I:220:ALA:HB3 | 1.63 | 0.80 |
| 4:E:356:ALA:CB | 4:E:357:PRO:HA | 2.13 | 0.79 |
| 4:I:188:HIS:HD2 | 2:J:106:TRP:HE1 | 1.28 | 0.79 |
| 2:J:146:TYR:HE1 | 2:J:147:VAL:HG23 | 1.47 | 0.79 |
| 4:A:58:ASN:HD22 | 4:A:125:ARG:NH2 | 1.80 | 0.78 |
| 3:K:26:ILE:O | 3:K:30:LEU:HB2 | 1.83 | 0.78 |
| 4:A:356:ALA:HB1 | 4:A:357:PRO:HA | 1.63 | 0.78 |
| 2:F:51:GLY:HA2 | 2:F:52:ASP:HB2 | 1.64 | 0.78 |
| 3:G:85:TRP:O | 3:G:88:ARG:HB3 | 1.84 | 0.78 |
| 4:A:356:ALA:CB | 4:A:357:PRO:CA | 2.61 | 0.77 |
| 2:J:200:GLU:O | 2:J:201:TYR:HB3 | 1.83 | 0.77 |
| 2:B:185:LEU:O | 2:B:189:ILE:HD12 | 1.84 | 0.77 |
| 2:F:106:TRP:HE1 | 4:E:188:HIS:CD2 | 2.03 | 0.77 |
| 4:I:137:GLN:HE21 | 4:I:139:ASN:HD21 | 1.31 | 0.77 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:G:86:LYS:HE3 | 3:G:86:LYS:HA | 1.67 | 0.77 |
| 4:A:308:ASN:CA | 4:A:309:ASN:HB2 | 2.15 | 0.76 |
| 3:K:138:ARG:HH12 | 3:K:141:ASP:HA | 1.50 | 0.76 |
| 4:E:231:ILE:O | 4:E:235:VAL:HG23 | 1.86 | 0.76 |
| 4:A:60:GLU:O | 4:A:60:GLU:HG3 | 1.85 | 0.76 |
| 3:G:53:SER:OG | 3:G:139:ASP:HB3 | 1.85 | 0.76 |
| 3:K:83:TYR:HE1 | 3:K:87:THR:HG21 | 1.50 | 0.76 |
| 3:C:86:LYS:HE3 | 3:C:86:LYS:HA | 1.68 | 0.75 |
| 4:I:58:ASN:ND2 | 4:I:125:ARG:HH21 | 1.84 | 0.75 |
| 3:C:83:TYR:CE1 | 3:C:87:THR:HG21 | 2.22 | 0.75 |
| 3:C:138:ARG:HH12 | 3:C:141:ASP:HA | 1.52 | 0.74 |
| 4:E:58:ASN:HD22 | 4:E:125:ARG:HH21 | 1.32 | 0.74 |
| 4:A:308:ASN:ND2 | 4:A:356:ALA:HB3 | 2.03 | 0.74 |
| 4:A:276:THR:HG22 | 4:A:279:VAL:HB | 1.69 | 0.74 |
| 2:J:200:GLU:HG2 | 2:J:203:ARG:CD | 2.17 | 0.74 |
| 3:K:69:GLU:OE1 | 3:K:152:MET:HG3 | 1.87 | 0.74 |
| 4:A:334:THR:HA | 4:A:335:LYS:CB | 2.06 | 0.73 |
| 2:B:198:MET:O | 2:B:198:MET:HG3 | 1.86 | 0.73 |
| 3:K:197:VAL:HG22 | 3:K:198:GLY:H | 1.52 | 0.73 |
| 4:E:164:ASP:CB | 4:E:165:PRO:HA | 2.17 | 0.73 |
| 3:K:122:ALA:O | 3:K:126:THR:HB | 1.89 | 0.73 |
| 4:E:320:THR:HG22 | 4:E:324:LEU:O | 1.89 | 0.73 |
| 4:I:341:TYR:CZ | 4:I:342:LEU:HD22 | 2.23 | 0.72 |
| 2:F:213:PHE:HD1 | 4:A:33:SER:OG | 1.70 | 0.72 |
| 3:C:44:VAL:HG12 | 3:C:45:PHE:CD1 | 2.24 | 0.72 |
| 2:J:146:TYR:CD1 | 2:J:147:VAL:N | 2.54 | 0.72 |
| 2:B:201:TYR:HE1 | 2:B:202:ILE:HD13 | 1.54 | 0.72 |
| 3:G:44:VAL:HG12 | 3:G:45:PHE:CD1 | 2.25 | 0.72 |
| 3:G:83:TYR:CE1 | 3:G:87:THR:HG21 | 2.24 | 0.72 |
| 4:I:308:ASN:CA | 4:I:309:ASN:HB2 | 2.20 | 0.72 |
| 4:E:331:VAL:HG11 | 4:E:395:PHE:CD2 | 2.25 | 0.72 |
| 4:I:356:ALA:CB | 4:I:357:PRO:CA | 2.66 | 0.72 |
| 2:F:198:MET:HG3 | 2:F:198:MET:O | 1.90 | 0.72 |
| 2:B:200:GLU:HG2 | 2:B:203:ARG:CD | 2.20 | 0.72 |
| 4:A:356:ALA:CB | 4:A:357:PRO:HA | 2.20 | 0.72 |
| 2:F:185:LEU:O | 2:F:189:ILE:HD12 | 1.89 | 0.71 |
| 3:C:85:TRP:O | 3:C:88:ARG:HB3 | 1.91 | 0.71 |
| 4:I:188:HIS:CD2 | 2:J:106:TRP:HE1 | 2.09 | 0.71 |
| 3:C:194:ILE:HD13 | 3:C:194:ILE:H | 1.54 | 0.71 |
| 3:K:86:LYS:HE3 | 3:K:86:LYS:HA | 1.72 | 0.70 |
| 4:E:224:ILE:HG22 | 4:E:225:GLY:N | 2.07 | 0.70 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:C:109:GLN:HG3 | 2:B:29:MET:CE | 2.22 | 0.70 |
| 4:E:58:ASN:HD22 | 4:E:125:ARG:NH2 | 1.90 | 0.70 |
| 2:B:125:PHE:HD1 | 2:B:125:PHE:H | 1.37 | 0.69 |
| 2:F:215:LYS:HE3 | 4:A:382:TYR:CD1 | 2.27 | 0.69 |
| 3:K:83:TYR:CE1 | 3:K:87:THR:HG21 | 2.27 | 0.69 |
| 2:J:198:MET:O | 2:J:198:MET:HG3 | 1.91 | 0.69 |
| 2:B:174:GLN:HB2 | 2:B:185:LEU:HD12 | 1.74 | 0.69 |
| 4:A:224:ILE:HG22 | 4:A:225:GLY:N | 2.06 | 0.69 |
| 4:A:341:TYR:H | 4:A:342:LEU:CB | 2.06 | 0.69 |
| 3:C:225:GLY:O | 3:C:226:TRP:HE3 | 1.76 | 0.69 |
| 4:E:96:ARG:HH21 | 4:E:99:GLN:NE2 | 1.89 | 0.68 |
| 4:A:283:ASN:O | 4:A:309:ASN:HB3 | 1.93 | 0.68 |
| 2:F:200:GLU:O | 2:F:201:TYR:HB3 | 1.93 | 0.68 |
| 4:I:311:SER:HA | 4:I:357:PRO:HB3 | 1.74 | 0.68 |
| 4:E:353:THR:O | 4:E:355:ILE:N | 2.26 | 0.68 |
| 4:I:331:VAL:HG11 | 4:I:395:PHE:CD2 | 2.21 | 0.68 |
| 3:G:138:ARG:NH1 | 3:G:141:ASP:HA | 2.09 | 0.68 |
| 4:I:204:VAL:HG12 | 4:I:204:VAL:O | 1.92 | 0.68 |
| 4:I:341:TYR:CE2 | 4:I:342:LEU:HD22 | 2.29 | 0.68 |
| 2:F:201:TYR:C | 2:F:201:TYR:HD1 | 1.96 | 0.68 |
| 2:J:166:TRP:HB3 | 2:J:167:PRO:HD3 | 1.76 | 0.68 |
| 2:F:146:TYR:CD1 | 2:F:147:VAL:N | 2.61 | 0.68 |
| 2:B:235:LEU:HG | 2:B:239:MET:HE2 | 1.76 | 0.68 |
| 3:K:143:THR:O | 3:K:147:ILE:HG12 | 1.92 | 0.68 |
| 1:N:3:UNK:C | 1:N:5:UNK:N | 2.55 | 0.68 |
| 3:K:104:LEU:HD23 | 3:K:172:ILE:CD1 | 2.22 | 0.67 |
| 4:I:168:LEU:N | 4:I:168:LEU:HD12 | 2.09 | 0.67 |
| 4:I:341:TYR:H | 4:I:342:LEU:CA | 2.07 | 0.67 |
| 3:C:119:TYR:CD1 | 3:C:119:TYR:C | 2.66 | 0.67 |
| 4:A:219:LYS:HB3 | 4:A:220:ALA:O | 1.94 | 0.67 |
| 2:J:201:TYR:HD1 | 2:J:201:TYR:C | 1.97 | 0.67 |
| 4:I:356:ALA:CB | 4:I:357:PRO:HA | 2.24 | 0.67 |
| 3:G:143:THR:O | 3:G:147:ILE:HG12 | 1.94 | 0.67 |
| 4:E:283:ASN:O | 4:E:309:ASN:HB3 | 1.94 | 0.67 |
| 2:F:146:TYR:HD1 | 2:F:147:VAL:N | 1.92 | 0.67 |
| 2:F:175:ALA:HB1 | 2:F:182:LEU:HD11 | 1.77 | 0.67 |
| 2:B:35:PHE:HA | 2:B:96:PHE:CZ | 2.29 | 0.67 |
| 3:G:45:PHE:O | 3:G:49:ALA:HB3 | 1.95 | 0.67 |
| 4:I:274:GLU:N | 4:I:275:GLY:HA2 | 2.09 | 0.67 |
| 4:E:311:SER:HA | 4:E:357:PRO:HB3 | 1.77 | 0.67 |
| 3:K:194:ILE:N | 3:K:194:ILE:HD13 | 2.10 | 0.66 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:E:341:TYR:H | 4:E:342:LEU:CA | 2.08 | 0.66 |
| 4:I:382:TYR:CD1 | 2:B:215:LYS:HE3 | 2.29 | 0.66 |
| 2:F:10:VAL:HG21 | 3:G:254:LEU:HD11 | 1.77 | 0.66 |
| 4:E:260:LEU:O | 4:A:384:THR:HG22 | 1.95 | 0.66 |
| 4:I:338:PHE:HB3 | 4:I:343:LEU:HD22 | 1.77 | 0.66 |
| 3:K:194:ILE:HD13 | 3:K:194:ILE:H | 1.60 | 0.66 |
| 4:E:164:ASP:HB3 | 4:E:165:PRO:CA | 2.26 | 0.66 |
| 4:E:219:LYS:HB3 | 4:E:220:ALA:O | 1.95 | 0.66 |
| 3:C:193:ILE:HG13 | 3:C:194:ILE:HD13 | 1.77 | 0.66 |
| 3:C:194:ILE:HD13 | 3:C:194:ILE:N | 2.10 | 0.66 |
| 3:G:225:GLY:O | 3:G:226:TRP:HE3 | 1.78 | 0.66 |
| 2:J:120:PRO:HG3 | 2:J:193:PHE:CE2 | 2.31 | 0.66 |
| 2:F:146:TYR:CD2 | 2:F:237:TRP:CE2 | 2.83 | 0.66 |
| 4:A:164:ASP:CB | 4:A:165:PRO:HA | 2.26 | 0.66 |
| 4:A:186:ALA:O | 4:A:190:PRO:HG2 | 1.94 | 0.66 |
| 3:C:53:SER:OG | 3:C:139:ASP:HB3 | 1.95 | 0.66 |
| 4:E:164:ASP:HB3 | 4:E:165:PRO:HA | 1.76 | 0.65 |
| 3:G:26:ILE:O | 3:G:30:LEU:HB2 | 1.96 | 0.65 |
| 3:K:83:TYR:HE1 | 3:K:87:THR:CG2 | 2.08 | 0.65 |
| 2:F:201:TYR:C | 2:F:201:TYR:CD1 | 2.70 | 0.65 |
| 2:F:246:THR:HG22 | 3:G:237:GLN:HG3 | 1.78 | 0.65 |
| 4:E:101:ILE:HG13 | 4:E:120:PHE:HB3 | 1.79 | 0.65 |
| 4:A:356:ALA:HA | 4:A:359:GLU:HB2 | 1.78 | 0.65 |
| 3:K:241:ARG:HE | 3:K:241:ARG:HA | 1.62 | 0.65 |
| 4:E:204:VAL:O | 4:E:204:VAL:HG12 | 1.97 | 0.65 |
| 4:E:261:GLN:HE22 | 4:A:386:SER:H | 1.42 | 0.65 |
| 2:J:201:TYR:C | 2:J:201:TYR:CD1 | 2.70 | 0.65 |
| 3:C:109:GLN:HG3 | 2:B:29:MET:HE3 | 1.79 | 0.65 |
| 2:F:235:LEU:HG | 2:F:239:MET:HE2 | 1.77 | 0.65 |
| 4:A:100:PHE:CD1 | 4:A:105:PHE:HA | 2.29 | 0.65 |
| 4:I:164:ASP:CB | 4:I:165:PRO:HA | 2.27 | 0.65 |
| 4:E:219:LYS:HD3 | 4:E:220:ALA:HB3 | 1.78 | 0.65 |
| 4:I:219:LYS:HD2 | 4:I:221:ASP:HB2 | 1.77 | 0.65 |
| 4:A:363:ILE:O | 4:A:363:ILE:HG13 | 1.96 | 0.64 |
| 3:C:83:TYR:HE1 | 3:C:87:THR:CG2 | 2.10 | 0.64 |
| 2:J:146:TYR:CD1 | 2:J:147:VAL:HG23 | 2.32 | 0.64 |
| 4:A:311:SER:HA | 4:A:357:PRO:HB3 | 1.78 | 0.64 |
| 2:B:150:ALA:O | 2:B:154:SER:OG | 2.14 | 0.64 |
| 4:I:33:SER:HG | 2:B:213:PHE:HD1 | 1.46 | 0.64 |
| 4:I:341:TYR:CG | 4:I:342:LEU:HB2 | 2.32 | 0.64 |
| 2:J:175:ALA:HB1 | 2:J:182:LEU:HD11 | 1.80 | 0.63 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|--------|--------|--------------------------|-------------------|
| 2:J:200:GLU:O | 2:J:201:TYR:CB | 2.45 | 0.63 |
| 3:G:24:MET:HB2 | 3:G:109:GLN:HG2 | 1.78 | 0.63 |
| 2:J:203:ARG:O | 2:J:204:MET:HB2 | 1.98 | 0.63 |
| 2:B:36:PHE:HB3 | 2:B:39:LEU:HB3 | 1.80 | 0.63 |
| 3:C:128:GLN:HG3 | 2:B:112:ASN:CG | 2.18 | 0.63 |
| 2:F:10:VAL:HG12 | 2:F:10:VAL:O | 1.98 | 0.63 |
| 2:F:125:PHE:H | 2:F:125:PHE:HD1 | 1.44 | 0.63 |
| 2:F:146:TYR:HD2 | 2:F:237:TRP:CZ2 | 2.16 | 0.63 |
| 1:N:2:UNK:O | 1:N:4:UNK:N | 2.31 | 0.63 |
| 4:A:212:TYR:CD2 | 3:C:239:LEU:HD22 | 2.33 | 0.63 |
| 2:B:83:PHE:CD1 | 2:B:83:PHE:C | 2.72 | 0.63 |
| 4:A:94:LEU:HD22 | 4:A:124:LEU:HB3 | 1.80 | 0.63 |
| 2:B:203:ARG:O | 2:B:204:MET:HB2 | 1.98 | 0.63 |
| 4:A:219:LYS:HA | 4:A:220:ALA:CB | 2.27 | 0.63 |
| 3:C:24:MET:HB2 | 3:C:109:GLN:HG2 | 1.80 | 0.63 |
| 2:F:91:PRO:HB3 | 2:F:141:LEU:HD13 | 1.80 | 0.63 |
| 4:A:58:ASN:ND2 | 4:A:125:ARG:HH21 | 1.93 | 0.63 |
| 3:G:226:TRP:CE3 | 3:G:226:TRP:HA | 2.34 | 0.63 |
| 2:B:64:MET:HG3 | 2:B:204:MET:O | 1.99 | 0.63 |
| 2:B:119:PHE:HB3 | 2:B:123:LEU:HD23 | 1.79 | 0.63 |
| 4:A:261:GLN:HE22 | 4:I:386:SER:H | 1.45 | 0.63 |
| 4:A:82:VAL:HB | 4:A:141:GLU:HB2 | 1.80 | 0.62 |
| 4:A:101:ILE:HG13 | 4:A:120:PHE:HB3 | 1.79 | 0.62 |
| 4:I:51:SER:CB | 4:I:62:VAL:H | 2.12 | 0.62 |
| 3:C:154:TYR:HD1 | 3:C:157:TYR:HE2 | 1.47 | 0.62 |
| 4:I:308:ASN:ND2 | 4:I:356:ALA:HB3 | 2.13 | 0.62 |
| 4:A:204:VAL:HG12 | 4:A:204:VAL:O | 2.00 | 0.62 |
| 2:B:91:PRO:HB3 | 2:B:141:LEU:HD13 | 1.80 | 0.62 |
| 4:E:51:SER:HB3 | 4:E:62:VAL:H | 1.64 | 0.62 |
| 3:K:24:MET:HB2 | 3:K:109:GLN:HG2 | 1.82 | 0.62 |
| 3:K:44:VAL:HG12 | 3:K:45:PHE:CE1 | 2.33 | 0.62 |
| 4:I:341:TYR:CD1 | 4:I:342:LEU:HB2 | 2.35 | 0.62 |
| 3:C:251:VAL:HG12 | 3:C:252:LYS:N | 2.14 | 0.62 |
| 3:G:39:ARG:HH22 | 3:G:43:GLN:HB2 | 1.64 | 0.62 |
| 4:A:273:THR:HA | 4:A:274:GLU:CB | 2.30 | 0.62 |
| 3:K:16:GLU:N | 3:K:16:GLU:OE2 | 2.33 | 0.62 |
| 4:A:212:TYR:CE2 | 3:C:239:LEU:HB3 | 2.34 | 0.62 |
| 4:A:224:ILE:HG22 | 4:A:225:GLY:H | 1.64 | 0.62 |
| 4:A:341:TYR:CD1 | 4:A:342:LEU:HB2 | 2.35 | 0.62 |
| 4:A:341:TYR:CZ | 4:A:342:LEU:HD22 | 2.35 | 0.62 |
| 4:I:224:ILE:HG22 | 4:I:225:GLY:N | 2.14 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:B:201:TYR:HD1 | 2:B:201:TYR:C | 2.03 | 0.62 |
| 3:K:226:TRP:HA | 3:K:226:TRP:CE3 | 2.34 | 0.61 |
| 4:E:334:THR:HA | 4:E:335:LYS:CB | 2.09 | 0.61 |
| 4:E:411:ILE:HG12 | 2:J:177:GLU:HG3 | 1.81 | 0.61 |
| 4:E:341:TYR:CG | 4:E:342:LEU:HB2 | 2.35 | 0.61 |
| 2:J:201:TYR:HE1 | 2:J:202:ILE:HD13 | 1.64 | 0.61 |
| 4:I:51:SER:HB3 | 4:I:62:VAL:H | 1.63 | 0.61 |
| 4:I:151:GLN:HE21 | 4:I:152:TRP:H | 1.48 | 0.61 |
| 4:I:164:ASP:OD2 | 2:J:192:HIS:HD2 | 1.83 | 0.61 |
| 3:G:83:TYR:CE1 | 3:G:87:THR:CG2 | 2.83 | 0.61 |
| 3:G:249:GLU:O | 3:G:253:LEU:HB2 | 2.00 | 0.61 |
| 4:A:273:THR:HA | 4:A:274:GLU:CG | 2.31 | 0.61 |
| 4:E:55:VAL:HG23 | 4:E:155:ILE:HG12 | 1.83 | 0.61 |
| 4:I:168:LEU:N | 4:I:168:LEU:CD1 | 2.64 | 0.61 |
| 4:I:95:VAL:HG23 | 4:I:127:ARG:HD2 | 1.82 | 0.61 |
| 2:J:236:TRP:CE2 | 2:J:239:MET:HE3 | 2.35 | 0.61 |
| 3:K:47:TRP:CH2 | 2:J:117:THR:HA | 2.35 | 0.61 |
| 4:I:33:SER:OG | 2:B:213:PHE:HD1 | 1.84 | 0.60 |
| 4:A:51:SER:HB3 | 4:A:62:VAL:H | 1.66 | 0.60 |
| 2:F:150:ALA:O | 2:F:154:SER:OG | 2.20 | 0.60 |
| 4:E:58:ASN:ND2 | 4:E:125:ARG:HH21 | 2.00 | 0.60 |
| 4:E:82:VAL:HB | 4:E:141:GLU:HB2 | 1.83 | 0.60 |
| 4:A:341:TYR:CG | 4:A:342:LEU:HB2 | 2.36 | 0.60 |
| 4:I:411:ILE:HG12 | 2:B:177:GLU:HG3 | 1.82 | 0.60 |
| 4:E:58:ASN:ND2 | 4:E:163:THR:H | 1.88 | 0.60 |
| 4:E:273:THR:HA | 4:E:274:GLU:CB | 2.31 | 0.60 |
| 4:I:353:THR:O | 4:I:355:ILE:N | 2.33 | 0.60 |
| 4:A:151:GLN:HE21 | 4:A:152:TRP:H | 1.50 | 0.60 |
| 4:A:341:TYR:H | 4:A:342:LEU:HB3 | 1.64 | 0.60 |
| 4:E:275:GLY:CA | 4:E:276:THR:HB | 2.25 | 0.60 |
| 4:A:55:VAL:HG23 | 4:A:155:ILE:HG12 | 1.84 | 0.60 |
| 4:A:164:ASP:OD2 | 2:B:192:HIS:CD2 | 2.54 | 0.60 |
| 4:I:50:TRP:HD1 | 4:I:61:MET:HE1 | 1.66 | 0.60 |
| 3:G:193:ILE:HG13 | 3:G:194:ILE:HD13 | 1.84 | 0.60 |
| 4:I:250:THR:HG21 | 2:J:167:PRO:HA | 1.83 | 0.60 |
| 2:F:146:TYR:CD1 | 2:F:146:TYR:C | 2.76 | 0.59 |
| 4:E:224:ILE:HG22 | 4:E:225:GLY:H | 1.67 | 0.59 |
| 4:E:363:ILE:HG13 | 4:E:363:ILE:O | 2.01 | 0.59 |
| 3:G:121:GLY:HA2 | 3:G:153:SER:OG | 2.02 | 0.59 |
| 3:C:98:ARG:HA | 2:B:12:PRO:HB2 | 1.84 | 0.59 |
| 2:B:201:TYR:C | 2:B:201:TYR:CD1 | 2.75 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:C:83:TYR:CE1 | 3:C:87:THR:CG2 | 2.85 | 0.59 |
| 3:C:143:THR:O | 3:C:147:ILE:HG12 | 2.02 | 0.59 |
| 3:C:226:TRP:HA | 3:C:226:TRP:CE3 | 2.35 | 0.59 |
| 2:F:189:ILE:HG13 | 4:E:176:LEU:HD13 | 1.84 | 0.59 |
| 3:K:85:TRP:O | 3:K:88:ARG:HB3 | 2.03 | 0.59 |
| 4:A:107:PRO:HD2 | 4:A:265:GLN:HE22 | 1.68 | 0.59 |
| 4:A:341:TYR:H | 4:A:342:LEU:CA | 2.16 | 0.59 |
| 2:F:51:GLY:CA | 2:F:52:ASP:CB | 2.44 | 0.59 |
| 4:A:250:THR:HG21 | 2:B:167:PRO:HA | 1.84 | 0.59 |
| 4:I:101:ILE:HG13 | 4:I:120:PHE:HB3 | 1.84 | 0.59 |
| 2:F:51:GLY:HA3 | 2:F:52:ASP:HB3 | 1.80 | 0.59 |
| 3:C:138:ARG:NH1 | 3:C:141:ASP:HA | 2.17 | 0.59 |
| 2:F:35:PHE:HA | 2:F:96:PHE:CZ | 2.38 | 0.59 |
| 4:E:219:LYS:HD2 | 4:E:221:ASP:HB2 | 1.85 | 0.59 |
| 4:I:219:LYS:HA | 4:I:220:ALA:CB | 2.30 | 0.59 |
| 4:I:164:ASP:HB3 | 4:I:165:PRO:HA | 1.84 | 0.59 |
| 3:K:195:PRO:O | 3:K:196:ASN:C | 2.41 | 0.58 |
| 4:I:164:ASP:OD2 | 2:J:192:HIS:CD2 | 2.55 | 0.58 |
| 3:C:104:LEU:HD23 | 3:C:172:ILE:CD1 | 2.26 | 0.58 |
| 2:F:192:HIS:CD2 | 4:E:164:ASP:OD2 | 2.56 | 0.58 |
| 2:F:201:TYR:HE1 | 2:F:202:ILE:HD13 | 1.68 | 0.58 |
| 2:F:64:MET:HG3 | 2:F:204:MET:O | 2.02 | 0.58 |
| 3:G:88:ARG:HB2 | 3:G:170:THR:HB | 1.86 | 0.58 |
| 3:K:231:VAL:O | 3:K:235:VAL:HG13 | 2.02 | 0.58 |
| 4:E:33:SER:HB3 | 3:G:54:PHE:HE2 | 1.68 | 0.58 |
| 4:E:341:TYR:CD1 | 4:E:342:LEU:HB2 | 2.37 | 0.58 |
| 2:F:146:TYR:HD1 | 2:F:146:TYR:C | 2.07 | 0.58 |
| 4:E:356:ALA:HA | 4:E:359:GLU:HB2 | 1.85 | 0.58 |
| 3:G:154:TYR:HD1 | 3:G:157:TYR:HE2 | 1.50 | 0.58 |
| 2:B:82:ALA:HB1 | 2:B:241:ARG:HD2 | 1.84 | 0.58 |
| 3:K:157:TYR:C | 3:K:157:TYR:CD1 | 2.77 | 0.58 |
| 2:F:166:TRP:HB3 | 2:F:167:PRO:HD3 | 1.85 | 0.58 |
| 3:C:237:GLN:HG3 | 2:B:246:THR:HG22 | 1.86 | 0.58 |
| 2:J:125:PHE:HD1 | 2:J:125:PHE:H | 1.52 | 0.58 |
| 4:E:350:VAL:HG12 | 4:E:351:ASP:N | 2.12 | 0.57 |
| 3:C:48:ARG:O | 3:C:49:ALA:HB2 | 2.04 | 0.57 |
| 3:K:241:ARG:HH21 | 3:K:244:ALA:HB3 | 1.69 | 0.57 |
| 4:E:96:ARG:HH21 | 4:E:99:GLN:HE22 | 1.50 | 0.57 |
| 4:E:386:SER:H | 4:I:261:GLN:HE22 | 1.50 | 0.57 |
| 4:A:314:LEU:N | 4:A:354:PRO:O | 2.36 | 0.57 |
| 3:C:112:VAL:HG22 | 2:B:33:LEU:HB3 | 1.85 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:J:64:MET:HG3 | 2:J:204:MET:O | 2.05 | 0.57 |
| 2:F:29:MET:CE | 3:G:109:GLN:HG3 | 2.34 | 0.57 |
| 4:E:341:TYR:H | 4:E:342:LEU:CB | 2.17 | 0.57 |
| 3:K:39:ARG:NH1 | 2:J:116:TRP:HB2 | 2.19 | 0.57 |
| 3:K:178:GLY:O | 3:K:179:TYR:CD2 | 2.57 | 0.57 |
| 2:F:200:GLU:O | 2:F:201:TYR:CB | 2.52 | 0.57 |
| 4:E:51:SER:CB | 4:E:62:VAL:H | 2.18 | 0.57 |
| 4:E:341:TYR:CZ | 4:E:342:LEU:HD22 | 2.40 | 0.57 |
| 4:A:326:PHE:HD1 | 4:A:344:ALA:HB3 | 1.69 | 0.57 |
| 4:I:137:GLN:HG3 | 4:I:147:ILE:HD13 | 1.86 | 0.57 |
| 2:F:33:LEU:HB3 | 3:G:112:VAL:HG22 | 1.86 | 0.57 |
| 3:K:236:LEU:HD11 | 2:J:87:ASN:ND2 | 2.20 | 0.57 |
| 4:E:334:THR:CA | 4:E:335:LYS:CB | 2.76 | 0.57 |
| 4:A:150:GLY:O | 4:A:341:TYR:HE2 | 1.87 | 0.57 |
| 4:I:313:PRO:HB2 | 4:I:354:PRO:HB3 | 1.87 | 0.57 |
| 3:C:249:GLU:O | 3:C:253:LEU:HB2 | 2.05 | 0.57 |
| 4:E:313:PRO:HB2 | 4:E:354:PRO:HB3 | 1.87 | 0.57 |
| 4:A:236:LEU:HB2 | 2:B:138:VAL:HG11 | 1.87 | 0.56 |
| 2:J:33:LEU:O | 2:J:37:ALA:HB2 | 2.05 | 0.56 |
| 4:A:331:VAL:HG11 | 4:A:395:PHE:CD2 | 2.39 | 0.56 |
| 4:I:35:GLN:OE1 | 2:B:208:GLY:HA2 | 2.06 | 0.56 |
| 4:I:151:GLN:HE21 | 4:I:152:TRP:N | 2.04 | 0.56 |
| 4:I:283:ASN:O | 4:I:309:ASN:HB3 | 2.05 | 0.56 |
| 2:J:85:TRP:CE2 | 2:J:89:ARG:HD3 | 2.41 | 0.56 |
| 2:J:150:ALA:O | 2:J:154:SER:OG | 2.22 | 0.56 |
| 2:F:199:PRO:HB3 | 4:E:84:PHE:HB3 | 1.87 | 0.56 |
| 4:E:340:ASP:HB3 | 4:E:341:TYR:HA | 1.86 | 0.56 |
| 4:A:340:ASP:HB3 | 4:A:341:TYR:HA | 1.86 | 0.56 |
| 3:G:170:THR:O | 3:G:171:ARG:HD2 | 2.06 | 0.56 |
| 3:K:138:ARG:NH1 | 3:K:141:ASP:HA | 2.18 | 0.56 |
| 4:I:274:GLU:H | 4:I:275:GLY:HA2 | 1.70 | 0.56 |
| 3:K:83:TYR:CE1 | 3:K:87:THR:CG2 | 2.86 | 0.56 |
| 4:E:76:ALA:HB1 | 2:J:208:GLY:O | 2.05 | 0.56 |
| 4:I:273:THR:HA | 4:I:274:GLU:CB | 2.34 | 0.56 |
| 2:F:125:PHE:CZ | 2:F:169:ILE:CD1 | 2.88 | 0.56 |
| 3:K:173:PRO:O | 3:K:174:TYR:HB2 | 2.06 | 0.56 |
| 4:E:164:ASP:CB | 4:E:165:PRO:CA | 2.82 | 0.56 |
| 3:C:44:VAL:HG12 | 3:C:45:PHE:CE1 | 2.41 | 0.56 |
| 3:C:178:GLY:O | 3:C:179:TYR:CD2 | 2.59 | 0.56 |
| 2:F:47:MET:SD | 3:G:126:THR:HG22 | 2.47 | 0.56 |
| 2:F:167:PRO:HA | 4:E:250:THR:HG21 | 1.88 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:B:33:LEU:O | 2:B:37:ALA:HB2 | 2.05 | 0.56 |
| 4:A:338:PHE:HB3 | 4:A:343:LEU:HD22 | 1.88 | 0.55 |
| 4:E:226:ASP:H | 4:E:229:ARG:NH2 | 2.04 | 0.55 |
| 2:B:214:GLY:HA2 | 2:B:215:LYS:HB2 | 1.88 | 0.55 |
| 2:F:117:THR:HA | 3:G:47:TRP:CH2 | 2.41 | 0.55 |
| 4:A:68:HIS:HD2 | 4:A:117:ASP:OD1 | 1.89 | 0.55 |
| 2:J:146:TYR:CE2 | 2:J:237:TRP:NE1 | 2.75 | 0.55 |
| 2:F:125:PHE:HZ | 2:F:169:ILE:CD1 | 2.19 | 0.55 |
| 3:K:237:GLN:HG3 | 2:J:246:THR:HG22 | 1.88 | 0.55 |
| 4:E:219:LYS:HA | 4:E:220:ALA:CB | 2.35 | 0.55 |
| 4:A:282:GLU:HB3 | 4:A:310:THR:HG22 | 1.88 | 0.55 |
| 3:K:241:ARG:HH21 | 3:K:244:ALA:CB | 2.20 | 0.55 |
| 4:E:94:LEU:HD22 | 4:E:124:LEU:HB3 | 1.89 | 0.55 |
| 4:A:353:THR:O | 4:A:355:ILE:N | 2.36 | 0.55 |
| 3:G:173:PRO:O | 3:G:174:TYR:HB2 | 2.07 | 0.55 |
| 3:C:47:TRP:CH2 | 2:B:117:THR:HA | 2.41 | 0.55 |
| 3:G:44:VAL:HG12 | 3:G:45:PHE:CE1 | 2.42 | 0.55 |
| 3:K:251:VAL:HG12 | 3:K:252:LYS:N | 2.21 | 0.55 |
| 4:E:58:ASN:HD21 | 4:E:163:THR:N | 1.90 | 0.55 |
| 4:E:282:GLU:HB3 | 4:E:310:THR:HA | 1.89 | 0.55 |
| 4:I:314:LEU:N | 4:I:354:PRO:O | 2.40 | 0.55 |
| 2:J:36:PHE:HB3 | 2:J:39:LEU:HB3 | 1.89 | 0.55 |
| 2:J:174:GLN:HB2 | 2:J:185:LEU:HD12 | 1.87 | 0.55 |
| 2:F:200:GLU:HG2 | 2:F:203:ARG:CD | 2.28 | 0.54 |
| 3:K:254:LEU:HD11 | 2:J:10:VAL:HG11 | 1.89 | 0.54 |
| 2:F:87:ASN:ND2 | 3:G:236:LEU:HD11 | 2.22 | 0.54 |
| 3:K:129:ASP:O | 3:K:133:HIS:CD2 | 2.60 | 0.54 |
| 3:K:154:TYR:HD1 | 3:K:157:TYR:HE2 | 1.54 | 0.54 |
| 4:E:33:SER:OG | 2:J:213:PHE:HD1 | 1.89 | 0.54 |
| 4:E:273:THR:HA | 4:E:274:GLU:CG | 2.37 | 0.54 |
| 3:G:246:VAL:HG12 | 3:G:250:GLY:HA3 | 1.84 | 0.54 |
| 2:F:138:VAL:HG11 | 4:E:236:LEU:HB2 | 1.88 | 0.54 |
| 4:E:68:HIS:HD2 | 4:E:117:ASP:OD1 | 1.89 | 0.54 |
| 4:E:95:VAL:HG21 | 4:E:162:PHE:CZ | 2.43 | 0.54 |
| 4:A:96:ARG:HH21 | 4:A:99:GLN:NE2 | 2.04 | 0.54 |
| 4:I:350:VAL:HG12 | 4:I:351:ASP:N | 2.17 | 0.54 |
| 4:A:164:ASP:CB | 4:A:165:PRO:CA | 2.85 | 0.54 |
| 4:A:214:ARG:HD3 | 4:A:222:ASP:HB2 | 1.88 | 0.54 |
| 4:I:84:PHE:HB3 | 2:J:199:PRO:HB3 | 1.89 | 0.54 |
| 4:I:204:VAL:O | 4:I:204:VAL:CG1 | 2.56 | 0.54 |
| 4:I:348:LEU:HB2 | 4:I:349:SER:HB2 | 1.89 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:K:178:GLY:O | 3:K:179:TYR:CG | 2.61 | 0.54 |
| 4:A:164:ASP:HB3 | 4:A:165:PRO:CA | 2.37 | 0.54 |
| 4:A:313:PRO:HB2 | 4:A:354:PRO:CB | 2.37 | 0.54 |
| 4:I:68:HIS:HD2 | 4:I:117:ASP:OD1 | 1.90 | 0.54 |
| 4:I:164:ASP:HB3 | 4:I:165:PRO:CA | 2.38 | 0.54 |
| 2:J:185:LEU:O | 2:J:189:ILE:HD12 | 2.08 | 0.54 |
| 2:B:43:HIS:HE2 | 2:B:105:GLU:HG2 | 1.72 | 0.54 |
| 3:G:84:LEU:HD22 | 3:G:167:TYR:HA | 1.90 | 0.54 |
| 2:B:162:TYR:HB3 | 2:B:163:PRO:HD3 | 1.90 | 0.54 |
| 2:B:200:GLU:O | 2:B:201:TYR:HB3 | 2.08 | 0.54 |
| 1:N:5:UNK:O | 1:N:6:UNK:O | 2.25 | 0.54 |
| 4:E:350:VAL:CG1 | 4:E:351:ASP:H | 2.12 | 0.54 |
| 4:E:212:TYR:CE2 | 3:G:239:LEU:HB3 | 2.43 | 0.54 |
| 4:I:46:TYR:CE2 | 4:I:66:LYS:HD2 | 2.43 | 0.54 |
| 4:I:313:PRO:HB2 | 4:I:354:PRO:CB | 2.38 | 0.54 |
| 2:F:12:PRO:HB2 | 3:G:98:ARG:HA | 1.90 | 0.53 |
| 4:A:181:ILE:HG22 | 4:A:185:TYR:CE2 | 2.43 | 0.53 |
| 4:A:168:LEU:N | 4:A:168:LEU:HD12 | 2.22 | 0.53 |
| 2:B:36:PHE:HD1 | 2:B:36:PHE:O | 1.90 | 0.53 |
| 2:B:201:TYR:CE1 | 2:B:202:ILE:HD13 | 2.38 | 0.53 |
| 4:A:102:GLY:HA3 | 4:A:268:LEU:HB3 | 1.90 | 0.53 |
| 4:I:331:VAL:CG1 | 4:I:395:PHE:HD2 | 2.12 | 0.53 |
| 3:C:150:PHE:O | 3:C:155:PRO:HD3 | 2.07 | 0.53 |
| 3:C:173:PRO:O | 3:C:174:TYR:HB2 | 2.08 | 0.53 |
| 2:B:201:TYR:HD1 | 2:B:202:ILE:N | 2.06 | 0.53 |
| 2:F:149:THR:O | 2:F:153:GLY:HA3 | 2.09 | 0.53 |
| 3:K:20:ASP:O | 3:K:21:LEU:HB2 | 2.09 | 0.53 |
| 4:E:316:LEU:HB2 | 4:E:394:PHE:CE1 | 2.43 | 0.53 |
| 4:I:41:ARG:NE | 4:I:387:GLN:HG2 | 2.24 | 0.53 |
| 3:C:16:GLU:OE2 | 3:C:16:GLU:N | 2.41 | 0.53 |
| 3:C:254:LEU:HD11 | 2:B:10:VAL:HG21 | 1.91 | 0.53 |
| 4:E:318:GLU:OE2 | 4:E:325:ARG:HG2 | 2.07 | 0.53 |
| 4:I:341:TYR:H | 4:I:342:LEU:CB | 2.21 | 0.53 |
| 2:B:175:ALA:HB1 | 2:B:182:LEU:HD11 | 1.90 | 0.53 |
| 1:H:12:UNK:O | 1:H:16:UNK:CB | 2.56 | 0.53 |
| 2:F:192:HIS:HD2 | 4:E:164:ASP:OD2 | 1.92 | 0.53 |
| 4:A:350:VAL:HG12 | 4:A:351:ASP:N | 2.14 | 0.53 |
| 4:I:110:VAL:HG12 | 4:I:265:GLN:HB2 | 1.90 | 0.53 |
| 3:K:54:PHE:HE2 | 4:I:33:SER:HB3 | 1.74 | 0.53 |
| 4:E:33:SER:HB3 | 3:G:54:PHE:CE2 | 2.44 | 0.53 |
| 4:E:382:TYR:HD1 | 2:J:215:LYS:HE3 | 1.71 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:F:36:PHE:HB3 | 2:F:39:LEU:HB3 | 1.90 | 0.52 |
| 4:I:58:ASN:ND2 | 4:I:125:ARG:NH2 | 2.45 | 0.52 |
| 4:I:224:ILE:HG22 | 4:I:225:GLY:H | 1.74 | 0.52 |
| 3:C:98:ARG:HG3 | 2:B:12:PRO:O | 2.09 | 0.52 |
| 3:G:48:ARG:O | 3:G:49:ALA:HB2 | 2.08 | 0.52 |
| 2:J:146:TYR:CE1 | 2:J:147:VAL:CG2 | 2.88 | 0.52 |
| 4:I:226:ASP:H | 4:I:229:ARG:NH2 | 2.06 | 0.52 |
| 2:F:236:TRP:CD2 | 2:F:239:MET:HE3 | 2.43 | 0.52 |
| 4:A:164:ASP:OD2 | 2:B:192:HIS:HD2 | 1.93 | 0.52 |
| 2:B:237:TRP:O | 2:B:241:ARG:HG2 | 2.10 | 0.52 |
| 4:A:168:LEU:N | 4:A:168:LEU:CD1 | 2.72 | 0.52 |
| 4:I:151:GLN:O | 4:I:153:ILE:HG12 | 2.09 | 0.52 |
| 4:I:356:ALA:HA | 4:I:359:GLU:HB2 | 1.91 | 0.52 |
| 3:K:193:ILE:HG13 | 3:K:194:ILE:HD13 | 1.90 | 0.52 |
| 4:E:274:GLU:N | 4:E:275:GLY:HA2 | 2.25 | 0.52 |
| 4:I:82:VAL:HB | 4:I:141:GLU:HB2 | 1.91 | 0.52 |
| 3:C:236:LEU:HD11 | 2:B:87:ASN:ND2 | 2.24 | 0.52 |
| 2:F:214:GLY:HA2 | 2:F:215:LYS:HB2 | 1.92 | 0.52 |
| 3:K:249:GLU:O | 3:K:253:LEU:HB2 | 2.10 | 0.52 |
| 4:E:95:VAL:HG21 | 4:E:162:PHE:HZ | 1.74 | 0.52 |
| 4:A:219:LYS:HD2 | 4:A:221:ASP:HB2 | 1.92 | 0.52 |
| 4:E:314:LEU:N | 4:E:354:PRO:O | 2.42 | 0.52 |
| 3:C:109:GLN:HG3 | 2:B:29:MET:HE1 | 1.90 | 0.52 |
| 2:F:213:PHE:CD1 | 4:A:33:SER:OG | 2.54 | 0.52 |
| 4:A:292:VAL:HA | 4:A:411:ILE:O | 2.10 | 0.52 |
| 2:J:146:TYR:HE1 | 2:J:147:VAL:CG2 | 2.18 | 0.52 |
| 2:F:162:TYR:HB3 | 2:F:163:PRO:HD3 | 1.91 | 0.52 |
| 4:E:151:GLN:HE21 | 4:E:152:TRP:H | 1.56 | 0.52 |
| 4:A:188:HIS:CD2 | 2:B:106:TRP:NE1 | 2.73 | 0.52 |
| 4:A:274:GLU:N | 4:A:275:GLY:HA2 | 2.24 | 0.52 |
| 4:I:92:PRO:O | 4:I:127:ARG:HD3 | 2.10 | 0.52 |
| 2:B:200:GLU:CG | 2:B:203:ARG:HH11 | 2.23 | 0.52 |
| 2:F:101:LEU:O | 2:F:105:GLU:HG3 | 2.09 | 0.51 |
| 2:F:119:PHE:HB3 | 2:F:123:LEU:HD23 | 1.91 | 0.51 |
| 3:K:98:ARG:HA | 2:J:12:PRO:HB2 | 1.91 | 0.51 |
| 4:E:96:ARG:NH2 | 4:E:99:GLN:HE22 | 2.08 | 0.51 |
| 4:E:223:VAL:O | 4:E:224:ILE:HD13 | 2.10 | 0.51 |
| 3:G:150:PHE:O | 3:G:155:PRO:HD3 | 2.10 | 0.51 |
| 4:I:183:ARG:O | 4:I:186:ALA:HB3 | 2.10 | 0.51 |
| 4:I:285:THR:HB | 4:I:307:LYS:HB3 | 1.93 | 0.51 |
| 3:C:246:VAL:HG12 | 3:C:250:GLY:HA3 | 1.91 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:B:36:PHE:O | 2:B:36:PHE:CD1 | 2.62 | 0.51 |
| 2:F:112:ASN:CG | 3:G:128:GLN:HG3 | 2.31 | 0.51 |
| 2:F:174:GLN:HB2 | 2:F:185:LEU:HD12 | 1.92 | 0.51 |
| 4:E:41:ARG:NE | 4:E:387:GLN:HG2 | 2.25 | 0.51 |
| 4:I:363:ILE:O | 4:I:363:ILE:HG13 | 2.09 | 0.51 |
| 3:G:69:GLU:O | 3:G:73:GLU:N | 2.32 | 0.51 |
| 2:F:67:THR:O | 2:F:71:ILE:HD12 | 2.11 | 0.51 |
| 2:F:201:TYR:HD1 | 2:F:202:ILE:N | 2.08 | 0.51 |
| 4:A:308:ASN:CG | 4:A:356:ALA:HB3 | 2.31 | 0.51 |
| 2:J:67:THR:O | 2:J:71:ILE:HD12 | 2.10 | 0.51 |
| 2:B:132:PRO:HB3 | 2:B:157:TRP:HA | 1.93 | 0.51 |
| 4:E:327:LEU:HD11 | 4:E:343:LEU:HD11 | 1.93 | 0.51 |
| 4:A:291:GLY:O | 4:A:292:VAL:CG2 | 2.58 | 0.51 |
| 3:C:232:PHE:CD1 | 2:B:83:PHE:CD2 | 2.99 | 0.51 |
| 3:G:48:ARG:O | 3:G:49:ALA:CB | 2.58 | 0.51 |
| 2:F:36:PHE:O | 3:G:115:GLY:O | 2.28 | 0.51 |
| 2:F:125:PHE:CZ | 2:F:169:ILE:HD11 | 2.45 | 0.51 |
| 2:F:131:VAL:HB | 2:F:132:PRO:HD3 | 1.93 | 0.51 |
| 2:F:149:THR:O | 2:F:153:GLY:CA | 2.59 | 0.51 |
| 2:F:82:ALA:HB1 | 2:F:241:ARG:HD2 | 1.93 | 0.51 |
| 3:K:48:ARG:O | 3:K:49:ALA:HB2 | 2.11 | 0.51 |
| 3:K:34:PHE:HE2 | 3:K:152:MET:HE3 | 1.76 | 0.51 |
| 4:E:168:LEU:HD12 | 4:E:168:LEU:N | 2.27 | 0.51 |
| 4:A:331:VAL:HG11 | 4:A:395:PHE:HD2 | 1.75 | 0.51 |
| 4:A:348:LEU:HB2 | 4:A:349:SER:HB2 | 1.92 | 0.51 |
| 3:C:48:ARG:O | 3:C:49:ALA:CB | 2.59 | 0.51 |
| 3:C:197:VAL:HG22 | 3:C:198:GLY:N | 2.26 | 0.51 |
| 3:K:86:LYS:HA | 3:K:86:LYS:CE | 2.36 | 0.50 |
| 4:I:260:LEU:HD13 | 2:J:203:ARG:HH21 | 1.76 | 0.50 |
| 4:I:313:PRO:HG2 | 4:I:397:PRO:HD3 | 1.92 | 0.50 |
| 2:F:166:TRP:CE2 | 2:F:170:ALA:HB2 | 2.46 | 0.50 |
| 4:E:292:VAL:HA | 4:E:411:ILE:O | 2.11 | 0.50 |
| 4:I:76:ALA:HB1 | 2:B:208:GLY:O | 2.12 | 0.50 |
| 4:I:308:ASN:ND2 | 4:I:314:LEU:HD12 | 2.25 | 0.50 |
| 3:C:250:GLY:HA2 | 3:C:254:LEU:HG | 1.93 | 0.50 |
| 3:K:236:LEU:O | 3:K:240:MET:HG3 | 2.11 | 0.50 |
| 4:E:313:PRO:HB2 | 4:E:354:PRO:CB | 2.42 | 0.50 |
| 4:E:382:TYR:CZ | 2:J:215:LYS:HA | 2.45 | 0.50 |
| 2:J:135:TRP:NE1 | 2:J:156:GLY:HA3 | 2.27 | 0.50 |
| 4:E:214:ARG:HD3 | 4:E:222:ASP:HB2 | 1.94 | 0.50 |
| 1:N:5:UNK:O | 1:N:6:UNK:C | 2.59 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:I:275:GLY:CA | 4:I:276:THR:HB | 2.37 | 0.50 |
| 3:C:69:GLU:OE1 | 3:C:152:MET:HG3 | 2.12 | 0.50 |
| 2:F:43:HIS:HE1 | 3:G:127:GLU:HB2 | 1.76 | 0.50 |
| 2:F:201:TYR:HB3 | 4:E:109:SER:HB3 | 1.94 | 0.50 |
| 1:N:16:UNK:C | 1:N:18:UNK:N | 2.75 | 0.50 |
| 4:A:84:PHE:HB3 | 2:B:199:PRO:HB3 | 1.93 | 0.50 |
| 4:A:313:PRO:HB2 | 4:A:354:PRO:HB3 | 1.93 | 0.50 |
| 4:I:109:SER:HB3 | 2:J:201:TYR:HB3 | 1.93 | 0.50 |
| 3:G:86:LYS:C | 3:G:88:ARG:H | 2.14 | 0.50 |
| 2:J:34:LEU:HD13 | 2:J:84:TRP:CZ2 | 2.46 | 0.50 |
| 2:J:68:VAL:HG23 | 2:J:72:LEU:HD12 | 1.92 | 0.50 |
| 3:K:53:SER:OG | 3:K:139:ASP:HB3 | 2.10 | 0.50 |
| 4:E:181:ILE:HG22 | 4:E:185:TYR:CE2 | 2.47 | 0.50 |
| 4:I:107:PRO:HD2 | 4:I:265:GLN:HE22 | 1.76 | 0.50 |
| 3:K:119:TYR:CD1 | 3:K:119:TYR:C | 2.83 | 0.50 |
| 4:I:141:GLU:HA | 4:I:141:GLU:OE2 | 2.10 | 0.50 |
| 2:B:201:TYR:CD1 | 2:B:202:ILE:N | 2.80 | 0.50 |
| 4:I:199:ILE:HD11 | 2:J:95:VAL:HG12 | 1.93 | 0.50 |
| 3:C:39:ARG:NH1 | 2:B:116:TRP:HB2 | 2.27 | 0.50 |
| 3:C:241:ARG:HE | 3:C:241:ARG:HA | 1.76 | 0.50 |
| 4:A:117:ASP:OD1 | 4:A:117:ASP:N | 2.45 | 0.50 |
| 4:A:285:THR:O | 4:A:306:VAL:HA | 2.11 | 0.50 |
| 4:I:246:GLY:O | 4:I:250:THR:OG1 | 2.23 | 0.50 |
| 3:G:178:GLY:O | 3:G:179:TYR:CD2 | 2.65 | 0.50 |
| 2:J:162:TYR:HB3 | 2:J:163:PRO:HD3 | 1.93 | 0.50 |
| 2:B:166:TRP:HB3 | 2:B:167:PRO:HD3 | 1.94 | 0.50 |
| 2:F:146:TYR:HD2 | 2:F:237:TRP:CE2 | 2.25 | 0.49 |
| 3:K:154:TYR:HD1 | 3:K:157:TYR:CE2 | 2.30 | 0.49 |
| 4:E:37:PHE:O | 4:E:41:ARG:HG3 | 2.12 | 0.49 |
| 4:E:68:HIS:HE1 | 4:E:405:GLU:OE1 | 1.95 | 0.49 |
| 4:E:96:ARG:NH2 | 4:E:99:GLN:NE2 | 2.59 | 0.49 |
| 4:E:275:GLY:HA2 | 4:E:276:THR:CB | 2.28 | 0.49 |
| 4:E:95:VAL:HG23 | 4:E:127:ARG:HD2 | 1.94 | 0.49 |
| 4:A:149:PRO:HB3 | 4:A:342:LEU:HD21 | 1.94 | 0.49 |
| 4:A:318:GLU:HB3 | 4:A:393:PHE:HB2 | 1.94 | 0.49 |
| 4:I:55:VAL:HG23 | 4:I:155:ILE:HG12 | 1.94 | 0.49 |
| 4:I:273:THR:HA | 4:I:274:GLU:CG | 2.42 | 0.49 |
| 3:K:104:LEU:CD2 | 3:K:172:ILE:HD13 | 2.25 | 0.49 |
| 4:A:46:TYR:CE2 | 4:A:66:LYS:HD2 | 2.48 | 0.49 |
| 3:K:83:TYR:O | 3:K:83:TYR:CD1 | 2.44 | 0.49 |
| 3:K:250:GLY:HA2 | 3:K:254:LEU:HG | 1.94 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:A:291:GLY:O | 4:A:292:VAL:HG23 | 2.13 | 0.49 |
| 2:B:125:PHE:CD1 | 2:B:125:PHE:N | 2.81 | 0.49 |
| 2:F:146:TYR:CE1 | 2:F:147:VAL:HG23 | 2.48 | 0.49 |
| 4:E:170:ASP:C | 4:E:170:ASP:OD1 | 2.50 | 0.49 |
| 4:A:50:TRP:HB3 | 4:A:61:MET:HE1 | 1.94 | 0.49 |
| 4:I:170:ASP:OD1 | 4:I:170:ASP:C | 2.49 | 0.49 |
| 3:C:100:GLU:OE1 | 3:C:245:LEU:HD11 | 2.12 | 0.49 |
| 3:K:167:TYR:CE1 | 3:K:171:ARG:HG2 | 2.48 | 0.49 |
| 4:E:305:LYS:HD3 | 4:E:362:GLU:OE1 | 2.13 | 0.49 |
| 3:C:86:LYS:C | 3:C:88:ARG:H | 2.16 | 0.49 |
| 3:C:154:TYR:HD1 | 3:C:157:TYR:CE2 | 2.27 | 0.49 |
| 2:J:201:TYR:HD1 | 2:J:202:ILE:N | 2.09 | 0.49 |
| 4:I:257:THR:HA | 2:J:173:HIS:O | 2.13 | 0.49 |
| 4:I:334:THR:CA | 4:I:335:LYS:CB | 2.71 | 0.49 |
| 3:K:106:VAL:O | 3:K:109:GLN:HB2 | 2.13 | 0.49 |
| 3:C:66:LEU:HD13 | 3:C:147:ILE:HD13 | 1.95 | 0.49 |
| 2:J:131:VAL:HB | 2:J:132:PRO:HD3 | 1.94 | 0.49 |
| 2:J:200:GLU:CG | 2:J:203:ARG:HH11 | 2.25 | 0.49 |
| 2:B:55:PHE:O | 2:B:124:VAL:HA | 2.13 | 0.49 |
| 3:K:126:THR:HA | 3:K:149:GLU:OE1 | 2.13 | 0.49 |
| 3:K:246:VAL:HG12 | 3:K:250:GLY:HA3 | 1.93 | 0.49 |
| 4:I:176:LEU:HD13 | 2:J:189:ILE:HG13 | 1.94 | 0.49 |
| 2:J:91:PRO:HB3 | 2:J:141:LEU:HD13 | 1.94 | 0.49 |
| 2:B:162:TYR:CD2 | 2:B:218:VAL:HG11 | 2.48 | 0.49 |
| 2:B:178:GLN:O | 2:B:179:HIS:C | 2.51 | 0.49 |
| 2:F:149:THR:O | 2:F:153:GLY:N | 2.46 | 0.48 |
| 3:C:126:THR:HA | 3:C:149:GLU:OE1 | 2.13 | 0.48 |
| 3:G:32:ASN:O | 3:G:36:LEU:HB2 | 2.13 | 0.48 |
| 4:I:150:GLY:O | 4:I:341:TYR:HE2 | 1.96 | 0.48 |
| 4:I:186:ALA:O | 4:I:190:PRO:HG2 | 2.12 | 0.48 |
| 2:F:21:GLY:O | 2:F:25:THR:HG23 | 2.13 | 0.48 |
| 3:K:84:LEU:HD22 | 3:K:167:TYR:HA | 1.95 | 0.48 |
| 3:K:127:GLU:HB2 | 2:J:43:HIS:HE1 | 1.78 | 0.48 |
| 4:E:117:ASP:OD1 | 4:E:117:ASP:N | 2.45 | 0.48 |
| 4:A:214:ARG:HH21 | 3:C:256:GLU:CD | 2.16 | 0.48 |
| 2:J:35:PHE:HA | 2:J:96:PHE:CZ | 2.48 | 0.48 |
| 2:J:43:HIS:HE2 | 2:J:105:GLU:HG2 | 1.78 | 0.48 |
| 4:A:80:PRO:HA | 4:A:140:VAL:HG13 | 1.94 | 0.48 |
| 3:C:106:VAL:O | 3:C:109:GLN:HB2 | 2.13 | 0.48 |
| 3:C:121:GLY:HA2 | 3:C:153:SER:OG | 2.13 | 0.48 |
| 2:F:146:TYR:CD2 | 2:F:237:TRP:NE1 | 2.81 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:E:308:ASN:HA | 4:E:309:ASN:CB | 2.31 | 0.48 |
| 4:A:319:TYR:HD2 | 4:A:326:PHE:HD2 | 1.61 | 0.48 |
| 4:I:69:VAL:HG12 | 4:I:114:ILE:HA | 1.96 | 0.48 |
| 3:C:179:TYR:HB3 | 3:C:184:LEU:HD23 | 1.96 | 0.48 |
| 1:H:5:UNK:O | 1:H:9:UNK:N | 2.46 | 0.48 |
| 4:A:57:VAL:HG12 | 4:A:58:ASN:OD1 | 2.14 | 0.48 |
| 4:A:314:LEU:O | 4:A:355:ILE:HD12 | 2.14 | 0.48 |
| 2:J:174:GLN:HB2 | 2:J:185:LEU:CD1 | 2.44 | 0.48 |
| 2:J:245:THR:HG23 | 2:J:245:THR:O | 2.14 | 0.48 |
| 2:F:33:LEU:O | 2:F:37:ALA:HB2 | 2.14 | 0.48 |
| 4:I:292:VAL:HA | 4:I:411:ILE:O | 2.13 | 0.48 |
| 3:K:131:THR:OG1 | 2:J:113:PHE:HA | 2.14 | 0.48 |
| 4:E:341:TYR:CE2 | 4:E:342:LEU:HD22 | 2.49 | 0.48 |
| 4:I:247:TYR:O | 4:I:251:ASN:HB2 | 2.14 | 0.48 |
| 2:B:125:PHE:CZ | 2:B:169:ILE:CD1 | 2.96 | 0.48 |
| 4:A:398:ASP:OD1 | 4:A:398:ASP:N | 2.39 | 0.47 |
| 3:K:98:ARG:HG3 | 2:J:12:PRO:O | 2.14 | 0.47 |
| 3:C:122:ALA:O | 3:C:126:THR:HB | 2.15 | 0.47 |
| 4:E:186:ALA:O | 4:E:190:PRO:HG2 | 2.14 | 0.47 |
| 4:E:273:THR:CA | 4:E:274:GLU:HB2 | 2.44 | 0.47 |
| 3:G:182:ALA:HB1 | 3:G:230:GLY:O | 2.14 | 0.47 |
| 3:G:250:GLY:HA2 | 3:G:254:LEU:HG | 1.97 | 0.47 |
| 2:J:236:TRP:CD2 | 2:J:239:MET:HE3 | 2.48 | 0.47 |
| 1:D:13:UNK:O | 1:D:17:UNK:CB | 2.62 | 0.47 |
| 4:E:204:VAL:O | 4:E:204:VAL:CG1 | 2.61 | 0.47 |
| 3:C:20:ASP:O | 3:C:21:LEU:HB2 | 2.14 | 0.47 |
| 4:A:58:ASN:ND2 | 4:A:163:THR:H | 1.95 | 0.47 |
| 4:A:205:ARG:O | 4:A:206:LYS:HE2 | 2.13 | 0.47 |
| 4:I:305:LYS:HD3 | 4:I:362:GLU:OE1 | 2.15 | 0.47 |
| 3:G:174:TYR:CD1 | 3:G:174:TYR:C | 2.88 | 0.47 |
| 3:G:194:ILE:HD13 | 3:G:194:ILE:N | 2.29 | 0.47 |
| 2:F:29:MET:HE1 | 3:G:109:GLN:HG3 | 1.96 | 0.47 |
| 4:E:151:GLN:HE21 | 4:E:152:TRP:N | 2.12 | 0.47 |
| 4:I:298:ARG:HH11 | 4:I:370:ALA:HA | 1.78 | 0.47 |
| 4:I:340:ASP:HB3 | 4:I:341:TYR:HA | 1.96 | 0.47 |
| 2:B:43:HIS:NE2 | 2:B:105:GLU:HG2 | 2.29 | 0.47 |
| 2:B:235:LEU:HG | 2:B:239:MET:CE | 2.42 | 0.47 |
| 1:D:13:UNK:HA | 3:C:30:LEU:CD2 | 2.44 | 0.47 |
| 3:K:28:LEU:O | 3:K:32:ASN:ND2 | 2.42 | 0.47 |
| 3:K:68:THR:HG21 | 1:N:8:UNK:O | 2.15 | 0.47 |
| 4:A:79:ASN:OD1 | 4:A:81:ARG:HB2 | 2.15 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:A:181:ILE:O | 4:A:185:TYR:CD2 | 2.68 | 0.47 |
| 4:A:283:ASN:O | 4:A:309:ASN:CB | 2.63 | 0.47 |
| 3:C:45:PHE:O | 3:C:49:ALA:HB3 | 2.14 | 0.47 |
| 3:G:124:PHE:C | 3:G:124:PHE:HD1 | 2.17 | 0.47 |
| 3:G:251:VAL:HG12 | 3:G:252:LYS:N | 2.30 | 0.47 |
| 2:B:149:THR:O | 2:B:153:GLY:HA3 | 2.14 | 0.47 |
| 4:I:58:ASN:ND2 | 4:I:163:THR:H | 1.98 | 0.47 |
| 3:K:128:GLN:O | 3:K:131:THR:HG22 | 2.15 | 0.47 |
| 4:A:207:GLY:HA3 | 2:B:27:ASP:OD2 | 2.15 | 0.47 |
| 3:G:124:PHE:C | 3:G:124:PHE:CD1 | 2.88 | 0.47 |
| 2:B:65:TRP:CE3 | 2:B:66:PRO:HD3 | 2.50 | 0.47 |
| 4:A:342:LEU:H | 4:A:371:ARG:HD3 | 1.79 | 0.47 |
| 4:I:289:ASN:ND2 | 4:I:305:LYS:HE3 | 2.29 | 0.47 |
| 4:E:273:THR:CA | 4:E:274:GLU:CB | 2.93 | 0.46 |
| 4:A:226:ASP:H | 4:A:229:ARG:NH2 | 2.13 | 0.46 |
| 2:F:208:GLY:HA2 | 4:A:35:GLN:OE1 | 2.14 | 0.46 |
| 1:N:11:UNK:C | 1:N:13:UNK:N | 2.76 | 0.46 |
| 4:I:127:ARG:HG3 | 4:I:162:PHE:CG | 2.51 | 0.46 |
| 3:C:157:TYR:CD1 | 3:C:157:TYR:C | 2.89 | 0.46 |
| 3:G:194:ILE:HD13 | 3:G:194:ILE:H | 1.79 | 0.46 |
| 2:B:131:VAL:HB | 2:B:132:PRO:HD3 | 1.97 | 0.46 |
| 2:B:169:ILE:HA | 2:B:169:ILE:HD12 | 1.65 | 0.46 |
| 2:B:200:GLU:O | 2:B:201:TYR:CB | 2.63 | 0.46 |
| 2:F:29:MET:HE3 | 3:G:109:GLN:HG3 | 1.97 | 0.46 |
| 3:K:47:TRP:CZ3 | 2:J:116:TRP:O | 2.69 | 0.46 |
| 4:I:164:ASP:CB | 4:I:165:PRO:CA | 2.94 | 0.46 |
| 3:C:126:THR:HG22 | 2:B:47:MET:SD | 2.55 | 0.46 |
| 2:J:214:GLY:HA2 | 2:J:215:LYS:HB2 | 1.95 | 0.46 |
| 3:C:154:TYR:CD1 | 3:C:157:TYR:HE2 | 2.30 | 0.46 |
| 2:J:149:THR:O | 2:J:153:GLY:N | 2.48 | 0.46 |
| 2:B:109:ARG:HG3 | 2:B:126:PRO:HD3 | 1.98 | 0.46 |
| 3:K:179:TYR:HB3 | 3:K:184:LEU:HD23 | 1.97 | 0.46 |
| 4:A:41:ARG:NE | 4:A:387:GLN:HG2 | 2.30 | 0.46 |
| 2:B:162:TYR:HB3 | 2:B:163:PRO:CD | 2.44 | 0.46 |
| 3:K:194:ILE:H | 3:K:194:ILE:CD1 | 2.16 | 0.46 |
| 4:I:396:SER:HB2 | 4:I:397:PRO:HD2 | 1.98 | 0.46 |
| 2:B:149:THR:O | 2:B:153:GLY:CA | 2.64 | 0.46 |
| 2:F:200:GLU:CG | 2:F:203:ARG:HH11 | 2.29 | 0.46 |
| 2:F:203:ARG:O | 2:F:204:MET:HB2 | 2.15 | 0.46 |
| 3:K:194:ILE:O | 3:K:197:VAL:O | 2.34 | 0.46 |
| 3:C:32:ASN:O | 3:C:36:LEU:HB2 | 2.16 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:C:232:PHE:CG | 2:B:83:PHE:CD2 | 3.03 | 0.46 |
| 2:J:148:ILE:N | 2:J:148:ILE:HD12 | 2.30 | 0.46 |
| 2:J:237:TRP:O | 2:J:241:ARG:HG2 | 2.16 | 0.46 |
| 3:K:241:ARG:HA | 3:K:241:ARG:NE | 2.28 | 0.46 |
| 4:I:164:ASP:HB2 | 4:I:176:LEU:H | 1.79 | 0.46 |
| 2:J:109:ARG:HG3 | 2:J:126:PRO:HD3 | 1.98 | 0.46 |
| 2:F:175:ALA:HB2 | 4:E:258:ILE:HG12 | 1.98 | 0.46 |
| 3:G:53:SER:HG | 3:G:139:ASP:HB3 | 1.80 | 0.46 |
| 3:G:194:ILE:H | 3:G:194:ILE:CD1 | 2.28 | 0.46 |
| 4:E:285:THR:HB | 4:E:307:LYS:HB3 | 1.97 | 0.46 |
| 4:A:164:ASP:HB2 | 4:A:165:PRO:HA | 1.98 | 0.46 |
| 4:A:226:ASP:HA | 4:A:229:ARG:H | 1.81 | 0.46 |
| 4:I:198:TRP:HZ3 | 4:I:235:VAL:HG21 | 1.79 | 0.46 |
| 2:B:51:GLY:HA2 | 2:B:52:ASP:HB2 | 1.82 | 0.46 |
| 2:B:87:ASN:HB2 | 2:B:88:PHE:CE1 | 2.50 | 0.46 |
| 3:K:54:PHE:CE2 | 4:I:33:SER:HB3 | 2.51 | 0.45 |
| 4:E:282:GLU:HB3 | 4:E:310:THR:HG22 | 1.98 | 0.45 |
| 4:E:393:PHE:CD1 | 4:E:401:ARG:HD2 | 2.52 | 0.45 |
| 4:I:214:ARG:HD3 | 4:I:222:ASP:HB2 | 1.99 | 0.45 |
| 4:I:355:ILE:HG22 | 4:I:356:ALA:N | 2.30 | 0.45 |
| 3:G:128:GLN:O | 3:G:131:THR:HG22 | 2.17 | 0.45 |
| 2:B:34:LEU:O | 2:B:37:ALA:HB3 | 2.15 | 0.45 |
| 3:K:85:TRP:HA | 3:K:170:THR:HG21 | 1.97 | 0.45 |
| 4:E:318:GLU:HB3 | 4:E:393:PHE:HB2 | 1.98 | 0.45 |
| 2:F:55:PHE:O | 2:F:124:VAL:HA | 2.16 | 0.45 |
| 4:A:151:GLN:HE21 | 4:A:152:TRP:N | 2.14 | 0.45 |
| 2:B:105:GLU:O | 2:B:109:ARG:HG2 | 2.16 | 0.45 |
| 2:B:146:TYR:CD1 | 2:B:147:VAL:N | 2.84 | 0.45 |
| 4:A:68:HIS:HE1 | 4:A:405:GLU:OE1 | 1.99 | 0.45 |
| 3:K:109:GLN:HG3 | 2:J:29:MET:CE | 2.46 | 0.45 |
| 3:K:239:LEU:HB3 | 4:I:212:TYR:CE2 | 2.51 | 0.45 |
| 4:A:102:GLY:O | 4:A:103:GLU:HB2 | 2.17 | 0.45 |
| 4:I:398:ASP:OD1 | 4:I:398:ASP:N | 2.42 | 0.45 |
| 3:C:119:TYR:CD1 | 3:C:120:TRP:N | 2.85 | 0.45 |
| 3:G:241:ARG:HE | 3:G:241:ARG:HA | 1.82 | 0.45 |
| 2:F:176:THR:O | 2:F:182:LEU:HD12 | 2.17 | 0.45 |
| 3:K:239:LEU:HD22 | 4:I:212:TYR:CD2 | 2.52 | 0.45 |
| 4:A:411:ILE:HG23 | 4:A:412:PRO:HD2 | 1.97 | 0.45 |
| 3:K:167:TYR:CD1 | 3:K:171:ARG:HD3 | 2.52 | 0.45 |
| 4:E:100:PHE:HA | 4:E:104:GLN:O | 2.17 | 0.45 |
| 4:A:212:TYR:CD2 | 3:C:239:LEU:HB3 | 2.52 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:F:237:TRP:O | 2:F:241:ARG:HG2 | 2.16 | 0.45 |
| 4:E:168:LEU:N | 4:E:168:LEU:CD1 | 2.80 | 0.45 |
| 4:A:245:VAL:HG12 | 4:A:246:GLY:N | 2.30 | 0.45 |
| 4:A:273:THR:CA | 4:A:274:GLU:CB | 2.95 | 0.45 |
| 4:I:181:ILE:HG22 | 4:I:185:TYR:CE2 | 2.52 | 0.45 |
| 3:G:83:TYR:HE1 | 3:G:87:THR:HG21 | 1.73 | 0.45 |
| 4:E:354:PRO:O | 4:E:355:ILE:HB | 2.16 | 0.45 |
| 4:A:128:ARG:HG2 | 4:A:159:MET:HG3 | 1.98 | 0.45 |
| 4:I:318:GLU:HB3 | 4:I:393:PHE:HB2 | 1.99 | 0.45 |
| 2:B:125:PHE:HZ | 2:B:169:ILE:CD1 | 2.29 | 0.45 |
| 2:B:236:TRP:CD2 | 2:B:239:MET:HE3 | 2.52 | 0.45 |
| 2:F:201:TYR:CD1 | 2:F:202:ILE:N | 2.85 | 0.45 |
| 3:K:173:PRO:O | 3:K:174:TYR:CB | 2.64 | 0.45 |
| 4:E:348:LEU:HA | 4:E:349:SER:HA | 1.77 | 0.45 |
| 4:I:320:THR:HG22 | 4:I:324:LEU:O | 2.16 | 0.45 |
| 3:G:85:TRP:HA | 3:G:170:THR:HG21 | 1.99 | 0.45 |
| 3:K:35:TYR:CD2 | 3:K:120:TRP:CG | 3.05 | 0.44 |
| 4:E:341:TYR:H | 4:E:342:LEU:HB3 | 1.81 | 0.44 |
| 4:I:395:PHE:HD1 | 4:I:401:ARG:HA | 1.82 | 0.44 |
| 2:J:203:ARG:O | 2:J:204:MET:CB | 2.64 | 0.44 |
| 4:E:137:GLN:HE21 | 4:E:139:ASN:ND2 | 2.04 | 0.44 |
| 4:E:212:TYR:CD2 | 3:G:239:LEU:HD22 | 2.53 | 0.44 |
| 4:A:204:VAL:O | 4:A:204:VAL:CG1 | 2.64 | 0.44 |
| 4:A:363:ILE:O | 4:A:363:ILE:CG1 | 2.63 | 0.44 |
| 4:I:54:THR:HA | 4:I:154:GLU:O | 2.18 | 0.44 |
| 4:I:69:VAL:CG1 | 4:I:114:ILE:HA | 2.47 | 0.44 |
| 3:C:247:GLY:O | 3:C:251:VAL:HG23 | 2.17 | 0.44 |
| 2:J:33:LEU:O | 2:J:37:ALA:CB | 2.64 | 0.44 |
| 2:B:148:ILE:N | 2:B:148:ILE:HD12 | 2.31 | 0.44 |
| 3:K:115:GLY:O | 2:J:36:PHE:O | 2.34 | 0.44 |
| 4:E:164:ASP:HB2 | 4:E:176:LEU:H | 1.82 | 0.44 |
| 4:E:198:TRP:O | 4:E:202:TRP:HD1 | 2.00 | 0.44 |
| 4:A:164:ASP:HB3 | 4:A:165:PRO:HA | 1.97 | 0.44 |
| 4:A:339:PRO:O | 4:A:340:ASP:C | 2.55 | 0.44 |
| 3:G:20:ASP:O | 3:G:21:LEU:HB2 | 2.17 | 0.44 |
| 2:J:146:TYR:CD2 | 2:J:237:TRP:CD1 | 3.05 | 0.44 |
| 3:K:174:TYR:CD1 | 3:K:174:TYR:C | 2.91 | 0.44 |
| 4:A:176:LEU:HD13 | 2:B:189:ILE:HG13 | 1.98 | 0.44 |
| 3:C:85:TRP:HA | 3:C:170:THR:HG21 | 1.99 | 0.44 |
| 3:C:169:LYS:HD2 | 3:C:175:PHE:O | 2.17 | 0.44 |
| 3:G:106:VAL:O | 3:G:109:GLN:HB2 | 2.17 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|--------|--------|--------------------------|-------------------|
| 2:J:114:TRP:CE3 | 2:J:118:TYR:HA | 2.53 | 0.44 |
| 2:B:65:TRP:HE3 | 2:B:66:PRO:HD3 | 1.83 | 0.44 |
| 3:K:48:ARG:O | 3:K:49:ALA:CB | 2.65 | 0.44 |
| 4:E:201:PHE:CZ | 4:E:231:ILE:HD13 | 2.53 | 0.44 |
| 4:I:100:PHE:HA | 4:I:104:GLN:O | 2.17 | 0.44 |
| 3:G:154:TYR:HD1 | 3:G:157:TYR:CE2 | 2.33 | 0.44 |
| 2:B:62:ARG:HB3 | 2:B:218:VAL:HG22 | 2.00 | 0.44 |
| 2:B:176:THR:O | 2:B:182:LEU:HD12 | 2.17 | 0.44 |
| 4:A:223:VAL:O | 4:A:224:ILE:HD13 | 2.17 | 0.44 |
| 2:F:85:TRP:CE2 | 2:F:89:ARG:HD3 | 2.53 | 0.44 |
| 4:A:305:LYS:HD3 | 4:A:362:GLU:OE1 | 2.18 | 0.44 |
| 3:G:28:LEU:O | 3:G:32:ASN:ND2 | 2.43 | 0.44 |
| 2:B:214:GLY:CA | 2:B:215:LYS:HB2 | 2.48 | 0.44 |
| 2:F:35:PHE:CZ | 2:F:100:GLY:HA2 | 2.53 | 0.44 |
| 3:K:89:ASP:OD2 | 3:K:103:ARG:NH1 | 2.41 | 0.44 |
| 3:K:154:TYR:CD1 | 3:K:157:TYR:HE2 | 2.33 | 0.44 |
| 2:J:21:GLY:O | 2:J:25:THR:HG23 | 2.17 | 0.44 |
| 2:B:64:MET:O | 2:B:68:VAL:HG13 | 2.17 | 0.44 |
| 1:H:9:UNK:HA | 1:H:12:UNK:CB | 2.48 | 0.44 |
| 3:G:21:LEU:HD23 | 3:G:109:GLN:NE2 | 2.33 | 0.44 |
| 3:K:45:PHE:O | 3:K:49:ALA:HB3 | 2.17 | 0.43 |
| 4:E:350:VAL:CG1 | 4:E:351:ASP:N | 2.77 | 0.43 |
| 3:C:104:LEU:CD2 | 3:C:172:ILE:HD13 | 2.29 | 0.43 |
| 3:G:121:GLY:HA2 | 3:G:153:SER:CB | 2.48 | 0.43 |
| 2:J:52:ASP:H | 2:J:55:PHE:H | 1.65 | 0.43 |
| 2:J:192:HIS:O | 2:J:194:VAL:HG23 | 2.18 | 0.43 |
| 4:E:213:ILE:O | 4:E:217:GLU:HG2 | 2.17 | 0.43 |
| 4:A:273:THR:CA | 4:A:274:GLU:HB2 | 2.48 | 0.43 |
| 4:I:68:HIS:HE1 | 4:I:405:GLU:OE1 | 2.00 | 0.43 |
| 4:I:316:LEU:HB2 | 4:I:394:PHE:CE2 | 2.53 | 0.43 |
| 3:G:231:VAL:O | 3:G:235:VAL:HG13 | 2.18 | 0.43 |
| 1:D:14:UNK:O | 1:D:18:UNK:N | 2.52 | 0.43 |
| 2:F:106:TRP:NE1 | 4:E:188:HIS:CD2 | 2.80 | 0.43 |
| 2:F:113:PHE:HA | 3:G:131:THR:OG1 | 2.19 | 0.43 |
| 4:E:226:ASP:HA | 4:E:229:ARG:H | 1.83 | 0.43 |
| 4:E:340:ASP:HB3 | 4:E:341:TYR:CA | 2.46 | 0.43 |
| 4:I:188:HIS:HD2 | 2:J:106:TRP:NE1 | 2.04 | 0.43 |
| 3:C:167:TYR:CD1 | 3:C:171:ARG:HD3 | 2.53 | 0.43 |
| 4:A:96:ARG:HH21 | 4:A:99:GLN:HE22 | 1.65 | 0.43 |
| 2:J:99:LEU:O | 2:J:100:GLY:C | 2.56 | 0.43 |
| 4:E:46:TYR:CE2 | 4:E:66:LYS:HD2 | 2.54 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:E:313:PRO:HG2 | 4:E:397:PRO:HD3 | 2.01 | 0.43 |
| 3:G:16:GLU:N | 3:G:16:GLU:OE2 | 2.51 | 0.43 |
| 2:J:120:PRO:HG3 | 2:J:193:PHE:CD2 | 2.52 | 0.43 |
| 3:K:72:LEU:O | 3:K:76:SER:HB2 | 2.19 | 0.43 |
| 4:A:348:LEU:HA | 4:A:349:SER:HA | 1.76 | 0.43 |
| 4:I:258:ILE:HG13 | 2:J:184:THR:HG22 | 2.00 | 0.43 |
| 3:C:84:LEU:HD22 | 3:C:167:TYR:HA | 2.00 | 0.43 |
| 3:G:252:LYS:O | 3:G:256:GLU:C | 2.56 | 0.43 |
| 2:J:119:PHE:HB3 | 2:J:123:LEU:HD23 | 1.99 | 0.43 |
| 4:E:127:ARG:HG3 | 4:E:162:PHE:CG | 2.53 | 0.43 |
| 4:E:363:ILE:O | 4:E:363:ILE:CG1 | 2.65 | 0.43 |
| 3:G:179:TYR:HB3 | 3:G:184:LEU:HD23 | 2.00 | 0.43 |
| 2:F:125:PHE:N | 2:F:125:PHE:CD1 | 2.82 | 0.43 |
| 4:A:318:GLU:OE2 | 4:A:325:ARG:HG2 | 2.18 | 0.43 |
| 4:I:219:LYS:HD2 | 4:I:221:ASP:OD2 | 2.18 | 0.43 |
| 4:E:398:ASP:OD1 | 4:E:398:ASP:N | 2.41 | 0.43 |
| 2:F:129:LEU:O | 2:F:132:PRO:HD2 | 2.19 | 0.43 |
| 3:K:122:ALA:O | 3:K:126:THR:CB | 2.62 | 0.43 |
| 3:K:132:TRP:CZ2 | 3:K:144:PRO:HG2 | 2.54 | 0.43 |
| 4:A:95:VAL:HG23 | 4:A:127:ARG:HD2 | 2.01 | 0.43 |
| 4:A:196:ALA:O | 4:A:200:PHE:HD1 | 2.02 | 0.43 |
| 4:A:308:ASN:HA | 4:A:309:ASN:CB | 2.33 | 0.43 |
| 4:A:319:TYR:CD2 | 4:A:326:PHE:HD2 | 2.36 | 0.43 |
| 4:A:341:TYR:CE2 | 4:A:342:LEU:HD22 | 2.54 | 0.43 |
| 2:B:166:TRP:CE2 | 2:B:170:ALA:HB2 | 2.54 | 0.43 |
| 4:E:128:ARG:HG2 | 4:E:159:MET:HG3 | 2.01 | 0.42 |
| 4:A:105:PHE:HD2 | 2:B:181:GLN:OE1 | 2.01 | 0.42 |
| 4:A:212:TYR:OH | 3:C:240:MET:HG2 | 2.19 | 0.42 |
| 4:A:183:ARG:O | 4:A:186:ALA:HB3 | 2.19 | 0.42 |
| 2:F:117:THR:HG22 | 3:G:47:TRP:CH2 | 2.54 | 0.42 |
| 4:E:50:TRP:CE2 | 4:E:151:GLN:HB3 | 2.55 | 0.42 |
| 4:E:80:PRO:HA | 4:E:140:VAL:HG13 | 2.02 | 0.42 |
| 2:B:57:VAL:HG12 | 2:B:123:LEU:HD12 | 2.02 | 0.42 |
| 3:K:148:ILE:N | 3:K:148:ILE:HD13 | 2.34 | 0.42 |
| 4:A:44:ASN:HD21 | 4:A:70:PHE:HD1 | 1.68 | 0.42 |
| 4:A:313:PRO:HB2 | 4:A:354:PRO:HB2 | 2.00 | 0.42 |
| 4:A:327:LEU:HD11 | 4:A:343:LEU:HD11 | 2.02 | 0.42 |
| 2:B:198:MET:O | 2:B:198:MET:CG | 2.57 | 0.42 |
| 4:I:198:TRP:O | 4:I:202:TRP:HD1 | 2.02 | 0.42 |
| 3:C:47:TRP:CZ3 | 2:B:116:TRP:O | 2.72 | 0.42 |
| 2:J:146:TYR:CD1 | 2:J:146:TYR:C | 2.91 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:F:245:THR:O | 2:F:245:THR:HG23 | 2.20 | 0.42 |
| 3:K:138:ARG:HH11 | 3:K:146:HIS:CE1 | 2.37 | 0.42 |
| 4:E:95:VAL:CG2 | 4:E:162:PHE:CZ | 3.02 | 0.42 |
| 4:A:100:PHE:HA | 4:A:104:GLN:O | 2.18 | 0.42 |
| 4:A:213:ILE:HG12 | 3:C:243:HIS:CD2 | 2.55 | 0.42 |
| 4:A:334:THR:CA | 4:A:335:LYS:CB | 2.78 | 0.42 |
| 4:I:273:THR:CA | 4:I:274:GLU:HB2 | 2.49 | 0.42 |
| 3:C:174:TYR:C | 3:C:174:TYR:CD1 | 2.93 | 0.42 |
| 4:E:196:ALA:O | 4:E:200:PHE:HD1 | 2.03 | 0.42 |
| 4:E:319:TYR:CD2 | 4:E:326:PHE:HD2 | 2.37 | 0.42 |
| 4:A:99:GLN:O | 4:A:100:PHE:CD1 | 2.73 | 0.42 |
| 4:I:274:GLU:H | 4:I:275:GLY:CA | 2.33 | 0.42 |
| 3:G:138:ARG:NH2 | 3:G:140:THR:O | 2.52 | 0.42 |
| 2:F:146:TYR:CE1 | 2:F:147:VAL:CG2 | 3.02 | 0.42 |
| 3:K:86:LYS:C | 3:K:88:ARG:H | 2.22 | 0.42 |
| 4:E:256:ARG:HG2 | 4:A:414:PHE:CD2 | 2.54 | 0.42 |
| 4:A:100:PHE:O | 4:A:120:PHE:HA | 2.20 | 0.42 |
| 4:A:137:GLN:HG3 | 4:A:147:ILE:HD13 | 2.01 | 0.42 |
| 4:I:314:LEU:O | 4:I:355:ILE:HD12 | 2.19 | 0.42 |
| 2:F:26:VAL:HG21 | 3:G:105:VAL:HG22 | 2.00 | 0.42 |
| 3:K:35:TYR:HE1 | 3:K:152:MET:CE | 2.32 | 0.42 |
| 4:E:286:THR:HG21 | 4:E:392:LEU:HD12 | 2.02 | 0.42 |
| 4:E:318:GLU:HG3 | 4:E:327:LEU:HD23 | 2.02 | 0.42 |
| 3:C:88:ARG:HB2 | 3:C:170:THR:HB | 2.01 | 0.42 |
| 2:F:82:ALA:O | 2:F:86:VAL:HB | 2.19 | 0.41 |
| 4:E:308:ASN:CG | 4:E:356:ALA:HB3 | 2.39 | 0.41 |
| 4:E:375:GLU:O | 4:E:377:LEU:N | 2.52 | 0.41 |
| 4:A:318:GLU:HG3 | 4:A:327:LEU:HD23 | 2.02 | 0.41 |
| 2:J:201:TYR:CD1 | 2:J:202:ILE:N | 2.86 | 0.41 |
| 1:D:13:UNK:HA | 3:C:30:LEU:HD22 | 2.03 | 0.41 |
| 2:F:178:GLN:O | 2:F:179:HIS:C | 2.58 | 0.41 |
| 3:K:112:VAL:HG22 | 2:J:33:LEU:HB3 | 2.02 | 0.41 |
| 4:A:188:HIS:HD2 | 2:B:106:TRP:NE1 | 2.02 | 0.41 |
| 4:A:274:GLU:H | 4:A:275:GLY:HA2 | 1.85 | 0.41 |
| 4:A:291:GLY:C | 4:A:292:VAL:HG23 | 2.41 | 0.41 |
| 4:I:113:GLU:HB2 | 4:I:116:LYS:HG3 | 2.01 | 0.41 |
| 3:G:132:TRP:CZ2 | 3:G:144:PRO:HG2 | 2.55 | 0.41 |
| 3:G:184:LEU:HA | 3:G:184:LEU:HD13 | 1.81 | 0.41 |
| 2:F:125:PHE:HD1 | 2:F:125:PHE:N | 2.13 | 0.41 |
| 4:E:291:GLY:O | 4:E:292:VAL:CG2 | 2.68 | 0.41 |
| 4:A:69:VAL:CG1 | 4:A:114:ILE:HA | 2.50 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:A:227:ASP:OD1 | 4:A:227:ASP:N | 2.49 | 0.41 |
| 4:A:346:ARG:HB3 | 4:A:368:GLN:O | 2.20 | 0.41 |
| 4:I:382:TYR:CZ | 2:B:215:LYS:HA | 2.55 | 0.41 |
| 3:C:131:THR:OG1 | 2:B:113:PHE:HA | 2.21 | 0.41 |
| 2:J:125:PHE:HD1 | 2:J:125:PHE:N | 2.17 | 0.41 |
| 4:E:68:HIS:HB2 | 4:E:117:ASP:OD2 | 2.21 | 0.41 |
| 4:A:219:LYS:HA | 4:A:219:LYS:HD3 | 1.89 | 0.41 |
| 2:J:43:HIS:NE2 | 2:J:105:GLU:HG2 | 2.35 | 0.41 |
| 2:J:149:THR:O | 2:J:153:GLY:CA | 2.68 | 0.41 |
| 2:B:39:LEU:HD12 | 2:B:39:LEU:C | 2.40 | 0.41 |
| 2:B:245:THR:O | 2:B:245:THR:HG23 | 2.21 | 0.41 |
| 2:F:162:TYR:HB3 | 2:F:163:PRO:CD | 2.50 | 0.41 |
| 2:F:167:PRO:HG2 | 4:E:187:TRP:CZ2 | 2.56 | 0.41 |
| 3:K:59:GLN:HA | 3:K:63:MET:HB2 | 2.02 | 0.41 |
| 4:E:225:GLY:HA2 | 4:E:229:ARG:HH22 | 1.84 | 0.41 |
| 2:F:202:ILE:HD12 | 2:F:202:ILE:HA | 1.82 | 0.41 |
| 4:E:339:PRO:O | 4:E:340:ASP:C | 2.59 | 0.41 |
| 4:A:83:SER:HA | 4:A:139:ASN:O | 2.20 | 0.41 |
| 4:A:342:LEU:N | 4:A:371:ARG:HD3 | 2.35 | 0.41 |
| 3:C:86:LYS:HA | 3:C:86:LYS:CE | 2.38 | 0.41 |
| 3:C:178:GLY:O | 3:C:179:TYR:CG | 2.74 | 0.41 |
| 3:C:241:ARG:HA | 3:C:241:ARG:NE | 2.36 | 0.41 |
| 3:G:86:LYS:O | 3:G:88:ARG:N | 2.53 | 0.41 |
| 3:G:110:TRP:HB3 | 3:G:164:ALA:HB2 | 2.01 | 0.41 |
| 2:J:113:PHE:HB3 | 2:J:124:VAL:HG21 | 2.02 | 0.41 |
| 2:J:159:LEU:HD23 | 2:J:159:LEU:HA | 1.88 | 0.41 |
| 2:B:9:ALA:N | 2:B:14:ASN:O | 2.53 | 0.41 |
| 3:K:83:TYR:HE1 | 3:K:87:THR:HG1 | 1.68 | 0.41 |
| 4:A:340:ASP:HB3 | 4:A:341:TYR:CA | 2.48 | 0.41 |
| 4:I:213:ILE:O | 4:I:217:GLU:HG2 | 2.21 | 0.41 |
| 4:I:273:THR:CA | 4:I:274:GLU:CB | 2.96 | 0.41 |
| 3:C:107:LEU:CD1 | 3:C:168:ALA:HB2 | 2.51 | 0.41 |
| 2:F:166:TRP:HB3 | 2:F:167:PRO:CD | 2.48 | 0.41 |
| 3:K:100:GLU:OE1 | 3:K:245:LEU:HD11 | 2.20 | 0.41 |
| 4:E:102:GLY:HA3 | 4:E:268:LEU:HB3 | 2.01 | 0.41 |
| 4:E:348:LEU:HB2 | 4:E:349:SER:HB2 | 2.02 | 0.41 |
| 4:A:58:ASN:HD21 | 4:A:163:THR:N | 1.97 | 0.41 |
| 4:I:215:VAL:O | 4:I:217:GLU:O | 2.39 | 0.41 |
| 4:I:319:TYR:CD2 | 4:I:326:PHE:HD2 | 2.39 | 0.41 |
| 3:C:173:PRO:O | 3:C:174:TYR:CB | 2.69 | 0.41 |
| 3:C:252:LYS:O | 3:C:256:GLU:C | 2.59 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:G:69:GLU:OE1 | 3:G:152:MET:HG3 | 2.20 | 0.41 |
| 2:J:34:LEU:O | 2:J:37:ALA:HB3 | 2.21 | 0.41 |
| 2:J:60:LYS:HB3 | 2:J:65:TRP:CE3 | 2.56 | 0.41 |
| 2:F:173:HIS:O | 4:E:257:THR:HA | 2.21 | 0.41 |
| 3:K:34:PHE:HE2 | 3:K:152:MET:CE | 2.32 | 0.41 |
| 4:E:150:GLY:O | 4:E:341:TYR:HE2 | 2.03 | 0.41 |
| 4:E:351:ASP:O | 4:E:353:THR:N | 2.54 | 0.41 |
| 4:A:286:THR:HG21 | 4:A:392:LEU:HD12 | 2.02 | 0.41 |
| 4:A:310:THR:O | 4:A:357:PRO:HB3 | 2.21 | 0.41 |
| 4:I:99:GLN:HG2 | 2:J:191:PHE:CZ | 2.56 | 0.41 |
| 3:G:39:ARG:NH2 | 3:G:43:GLN:HB2 | 2.32 | 0.41 |
| 2:J:64:MET:H | 2:J:64:MET:HG2 | 1.64 | 0.41 |
| 2:J:136:LEU:HD12 | 2:J:136:LEU:HA | 1.84 | 0.41 |
| 2:F:109:ARG:HG3 | 2:F:126:PRO:HD3 | 2.02 | 0.41 |
| 2:F:162:TYR:CD2 | 2:F:218:VAL:HG11 | 2.56 | 0.41 |
| 4:E:191:TRP:CZ3 | 4:E:239:THR:HG23 | 2.56 | 0.41 |
| 4:E:338:PHE:HB3 | 4:E:343:LEU:HD22 | 2.03 | 0.41 |
| 4:A:51:SER:CB | 4:A:62:VAL:H | 2.32 | 0.41 |
| 4:I:95:VAL:HG21 | 4:I:162:PHE:CZ | 2.56 | 0.41 |
| 4:I:102:GLY:HA3 | 4:I:268:LEU:HB3 | 2.03 | 0.41 |
| 4:I:348:LEU:HA | 4:I:349:SER:HA | 1.86 | 0.41 |
| 2:B:149:THR:O | 2:B:153:GLY:N | 2.54 | 0.41 |
| 2:F:15:SER:HB2 | 2:F:17:ALA:H | 1.86 | 0.40 |
| 2:F:33:LEU:HD13 | 3:G:111:LEU:HB3 | 2.01 | 0.40 |
| 4:E:219:LYS:HA | 4:E:219:LYS:HD3 | 1.92 | 0.40 |
| 4:E:338:PHE:CG | 4:E:339:PRO:HD2 | 2.56 | 0.40 |
| 4:A:393:PHE:CD1 | 4:A:401:ARG:HD2 | 2.56 | 0.40 |
| 4:I:308:ASN:CG | 4:I:356:ALA:HB3 | 2.40 | 0.40 |
| 4:I:387:GLN:HG3 | 4:I:408:GLY:C | 2.41 | 0.40 |
| 3:G:226:TRP:HE3 | 3:G:226:TRP:HA | 1.86 | 0.40 |
| 4:E:198:TRP:HZ3 | 4:E:235:VAL:HG21 | 1.86 | 0.40 |
| 4:E:205:ARG:O | 4:E:206:LYS:HE2 | 2.21 | 0.40 |
| 4:E:293:TYR:CE1 | 4:E:410:VAL:HG23 | 2.56 | 0.40 |
| 4:A:208:ILE:HG23 | 2:B:88:PHE:CE2 | 2.56 | 0.40 |
| 3:G:94:ALA:O | 3:G:95:VAL:C | 2.60 | 0.40 |
| 2:B:162:TYR:N | 2:B:163:PRO:HD2 | 2.36 | 0.40 |
| 2:B:186:ALA:O | 2:B:187:ASP:C | 2.59 | 0.40 |
| 3:K:40:ILE:HG22 | 3:K:41:TYR:N | 2.36 | 0.40 |
| 4:E:107:PRO:HD2 | 4:E:265:GLN:HE22 | 1.87 | 0.40 |
| 4:A:139:ASN:OD1 | 4:A:145:PRO:HA | 2.22 | 0.40 |
| 4:A:326:PHE:CD2 | 4:A:367:ILE:HG21 | 2.57 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:I:240:ILE:O | 4:I:244:ILE:HG13 | 2.21 | 0.40 |
| 3:K:69:GLU:O | 3:K:73:GLU:N | 2.48 | 0.40 |
| 4:A:392:LEU:HD23 | 4:A:392:LEU:HA | 1.86 | 0.40 |
| 4:I:282:GLU:HB3 | 4:I:310:THR:HG22 | 2.04 | 0.40 |
| 3:C:109:GLN:CG | 2:B:29:MET:HE3 | 2.49 | 0.40 |
| 3:C:225:GLY:O | 3:C:226:TRP:CE3 | 2.66 | 0.40 |
| 2:J:35:PHE:CZ | 2:J:100:GLY:HA2 | 2.57 | 0.40 |
| 2:J:123:LEU:HD13 | 2:J:189:ILE:HG22 | 2.04 | 0.40 |
| 2:J:216:ASP:O | 2:J:219:PRO:HD2 | 2.21 | 0.40 |
| 2:B:140:LEU:O | 2:B:143:SER:O | 2.40 | 0.40 |
| 2:B:199:PRO:O | 2:B:200:GLU:C | 2.57 | 0.40 |
| 4:E:77:VAL:O | 4:E:78:ALA:C | 2.59 | 0.40 |
| 4:A:258:ILE:HG13 | 2:B:184:THR:HG22 | 2.03 | 0.40 |
| 3:G:104:LEU:O | 3:G:108:VAL:HG23 | 2.22 | 0.40 |
| 3:G:169:LYS:HD2 | 3:G:175:PHE:O | 2.22 | 0.40 |
| 2:J:60:LYS:HB3 | 2:J:65:TRP:CD2 | 2.57 | 0.40 |
| 2:B:125:PHE:CZ | 2:B:169:ILE:HD11 | 2.56 | 0.40 |

There are no symmetry-related clashes.

## 5.3 Torsion angles ⓘ

### 5.3.1 Protein backbone ⓘ

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 | |
|---|---|---|---|---|---|---|---|
| 2 | B | 242/252 (96%) | 197 (81%) | 40 (16%) | 5 (2%) | 7 | 33 |
| 2 | F | 242/252 (96%) | 204 (84%) | 32 (13%) | 6 (2%) | 5 | 29 |
| 2 | J | 242/252 (96%) | 200 (83%) | 35 (14%) | 7 (3%) | 4 | 25 |
| 3 | C | 213/256 (83%) | 171 (80%) | 31 (15%) | 11 (5%) | 2 | 13 |
| 3 | G | 209/256 (82%) | 172 (82%) | 28 (13%) | 9 (4%) | 2 | 17 |
| 3 | K | 213/256 (83%) | 167 (78%) | 36 (17%) | 10 (5%) | 2 | 15 |
| 4 | A | 388/420 (92%) | 310 (80%) | 53 (14%) | 25 (6%) | 1 | 9 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|-------------|---|
| 4 | E | 388/420 (92%) | 315 (81%) | 43 (11%) | 30 (8%) | 1 | 5 |
| 4 | I | 388/420 (92%) | 315 (81%) | 50 (13%) | 23 (6%) | 1 | 11 |
| All | All | 2525/2784 (91%) | 2051 (81%) | 348 (14%) | 126 (5%) | 2 | 14 |

All (126) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | F | 52 | ASP |
| 3 | K | 174 | TYR |
| 3 | K | 179 | TYR |
| 3 | K | 251 | VAL |
| 4 | E | 141 | GLU |
| 4 | E | 164 | ASP |
| 4 | E | 205 | ARG |
| 4 | E | 221 | ASP |
| 4 | E | 257 | THR |
| 4 | E | 274 | GLU |
| 4 | E | 335 | LYS |
| 4 | E | 342 | LEU |
| 4 | E | 352 | ALA |
| 4 | E | 353 | THR |
| 4 | E | 354 | PRO |
| 4 | E | 356 | ALA |
| 4 | A | 205 | ARG |
| 4 | A | 221 | ASP |
| 4 | A | 257 | THR |
| 4 | A | 274 | GLU |
| 4 | A | 335 | LYS |
| 4 | A | 342 | LEU |
| 4 | A | 352 | ALA |
| 4 | A | 354 | PRO |
| 4 | A | 356 | ALA |
| 4 | I | 141 | GLU |
| 4 | I | 164 | ASP |
| 4 | I | 205 | ARG |
| 4 | I | 221 | ASP |
| 4 | I | 257 | THR |
| 4 | I | 274 | GLU |
| 4 | I | 335 | LYS |
| 4 | I | 342 | LEU |
| 4 | I | 352 | ALA |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4 | I | 353 | THR |
| 4 | I | 354 | PRO |
| 3 | C | 174 | TYR |
| 3 | C | 179 | TYR |
| 3 | C | 251 | VAL |
| 3 | G | 174 | TYR |
| 3 | G | 251 | VAL |
| 2 | J | 52 | ASP |
| 2 | B | 52 | ASP |
| 2 | F | 201 | TYR |
| 3 | K | 49 | ALA |
| 3 | K | 87 | THR |
| 3 | K | 138 | ARG |
| 3 | K | 177 | HIS |
| 3 | K | 196 | ASN |
| 4 | E | 206 | LYS |
| 4 | E | 298 | ARG |
| 4 | E | 309 | ASN |
| 4 | E | 355 | ILE |
| 4 | A | 141 | GLU |
| 4 | A | 164 | ASP |
| 4 | A | 298 | ARG |
| 4 | A | 355 | ILE |
| 4 | I | 298 | ARG |
| 4 | I | 309 | ASN |
| 4 | I | 355 | ILE |
| 4 | I | 356 | ALA |
| 3 | C | 49 | ALA |
| 3 | C | 87 | THR |
| 3 | C | 138 | ARG |
| 3 | C | 196 | ASN |
| 3 | G | 49 | ALA |
| 3 | G | 87 | THR |
| 3 | G | 138 | ARG |
| 3 | G | 179 | TYR |
| 2 | J | 19 | ALA |
| 2 | J | 201 | TYR |
| 2 | B | 142 | LEU |
| 2 | B | 201 | TYR |
| 2 | F | 19 | ALA |
| 2 | F | 20 | ALA |
| 2 | F | 142 | LEU |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | K | 21 | LEU |
| 4 | E | 51 | SER |
| 4 | A | 309 | ASN |
| 4 | A | 340 | ASP |
| 4 | A | 353 | THR |
| 4 | A | 400 | LYS |
| 4 | I | 400 | LYS |
| 3 | C | 177 | HIS |
| 3 | G | 177 | HIS |
| 2 | J | 60 | LYS |
| 2 | B | 89 | ARG |
| 2 | B | 171 | ALA |
| 4 | E | 61 | MET |
| 4 | E | 224 | ILE |
| 4 | E | 225 | GLY |
| 4 | E | 400 | LYS |
| 4 | A | 51 | SER |
| 4 | A | 224 | ILE |
| 4 | I | 61 | MET |
| 4 | I | 224 | ILE |
| 3 | C | 21 | LEU |
| 3 | C | 124 | PHE |
| 3 | G | 95 | VAL |
| 2 | J | 11 | GLY |
| 2 | F | 60 | LYS |
| 4 | E | 201 | PHE |
| 4 | E | 220 | ALA |
| 4 | A | 76 | ALA |
| 4 | A | 201 | PHE |
| 4 | A | 206 | LYS |
| 4 | I | 70 | PHE |
| 4 | I | 201 | PHE |
| 3 | G | 124 | PHE |
| 2 | J | 10 | VAL |
| 4 | E | 340 | ASP |
| 4 | A | 165 | PRO |
| 4 | A | 350 | VAL |
| 3 | C | 253 | LEU |
| 2 | J | 204 | MET |
| 4 | E | 350 | VAL |
| 4 | A | 358 | GLY |
| 4 | I | 143 | GLY |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4 | E | 184 | VAL |
| 4 | I | 350 | VAL |
| 4 | E | 358 | GLY |
| 3 | K | 195 | PRO |
| 4 | E | 207 | GLY |
| 4 | E | 90 | PRO |
| 4 | E | 165 | PRO |
| 4 | I | 165 | PRO |

## 5.3.2 Protein sidechains ⓘ

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 | |
|-----|-------|----------|-----------|----------|-------------|---|
| 2 | B | 202/208 (97%) | 184 (91%) | 18 (9%) | 9 | 33 |
| 2 | F | 202/208 (97%) | 179 (89%) | 23 (11%) | 5 | 23 |
| 2 | J | 202/208 (97%) | 181 (90%) | 21 (10%) | 7 | 26 |
| 3 | C | 184/213 (86%) | 155 (84%) | 29 (16%) | 2 | 11 |
| 3 | G | 181/213 (85%) | 156 (86%) | 25 (14%) | 3 | 16 |
| 3 | K | 184/213 (86%) | 156 (85%) | 28 (15%) | 3 | 12 |
| 4 | A | 320/336 (95%) | 289 (90%) | 31 (10%) | 8 | 29 |
| 4 | E | 320/336 (95%) | 289 (90%) | 31 (10%) | 8 | 29 |
| 4 | I | 320/336 (95%) | 288 (90%) | 32 (10%) | 7 | 28 |
| All | All | 2115/2271 (93%) | 1877 (89%) | 238 (11%) | 6 | 23 |

All (238) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | F | 15 | SER |
| 2 | F | 22 | CYS |
| 2 | F | 25 | THR |
| 2 | F | 36 | PHE |
| 2 | F | 38 | VAL |
| 2 | F | 39 | LEU |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | F | 48 | LEU |
| 2 | F | 52 | ASP |
| 2 | F | 89 | ARG |
| 2 | F | 92 | PHE |
| 2 | F | 125 | PHE |
| 2 | F | 137 | ASP |
| 2 | F | 146 | TYR |
| 2 | F | 163 | PRO |
| 2 | F | 164 | ASN |
| 2 | F | 169 | ILE |
| 2 | F | 176 | THR |
| 2 | F | 177 | GLU |
| 2 | F | 189 | ILE |
| 2 | F | 192 | HIS |
| 2 | F | 201 | TYR |
| 2 | F | 211 | ARG |
| 2 | F | 251 | THR |
| 3 | K | 16 | GLU |
| 3 | K | 22 | ARG |
| 3 | K | 30 | LEU |
| 3 | K | 36 | LEU |
| 3 | K | 40 | ILE |
| 3 | K | 47 | TRP |
| 3 | K | 74 | LEU |
| 3 | K | 76 | SER |
| 3 | K | 83 | TYR |
| 3 | K | 86 | LYS |
| 3 | K | 90 | ARG |
| 3 | K | 97 | PRO |
| 3 | K | 116 | ILE |
| 3 | K | 118 | ILE |
| 3 | K | 139 | ASP |
| 3 | K | 145 | SER |
| 3 | K | 157 | TYR |
| 3 | K | 183 | PHE |
| 3 | K | 184 | LEU |
| 3 | K | 193 | ILE |
| 3 | K | 194 | ILE |
| 3 | K | 226 | TRP |
| 3 | K | 231 | VAL |
| 3 | K | 235 | VAL |
| 3 | K | 241 | ARG |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | K | 249 | GLU |
| 3 | K | 252 | LYS |
| 3 | K | 255 | THR |
| 4 | E | 49 | GLN |
| 4 | E | 55 | VAL |
| 4 | E | 61 | MET |
| 4 | E | 62 | VAL |
| 4 | E | 94 | LEU |
| 4 | E | 117 | ASP |
| 4 | E | 156 | LYS |
| 4 | E | 159 | MET |
| 4 | E | 164 | ASP |
| 4 | E | 176 | LEU |
| 4 | E | 182 | SER |
| 4 | E | 204 | VAL |
| 4 | E | 205 | ARG |
| 4 | E | 206 | LYS |
| 4 | E | 252 | SER |
| 4 | E | 253 | THR |
| 4 | E | 272 | GLU |
| 4 | E | 274 | GLU |
| 4 | E | 276 | THR |
| 4 | E | 277 | VAL |
| 4 | E | 283 | ASN |
| 4 | E | 303 | ASN |
| 4 | E | 306 | VAL |
| 4 | E | 320 | THR |
| 4 | E | 334 | THR |
| 4 | E | 346 | ARG |
| 4 | E | 359 | GLU |
| 4 | E | 368 | GLN |
| 4 | E | 384 | THR |
| 4 | E | 398 | ASP |
| 4 | E | 418 | ASP |
| 4 | A | 55 | VAL |
| 4 | A | 61 | MET |
| 4 | A | 62 | VAL |
| 4 | A | 117 | ASP |
| 4 | A | 156 | LYS |
| 4 | A | 159 | MET |
| 4 | A | 164 | ASP |
| 4 | A | 173 | THR |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4 | A | 176 | LEU |
| 4 | A | 182 | SER |
| 4 | A | 204 | VAL |
| 4 | A | 205 | ARG |
| 4 | A | 206 | LYS |
| 4 | A | 252 | SER |
| 4 | A | 253 | THR |
| 4 | A | 254 | PHE |
| 4 | A | 272 | GLU |
| 4 | A | 274 | GLU |
| 4 | A | 276 | THR |
| 4 | A | 283 | ASN |
| 4 | A | 284 | VAL |
| 4 | A | 303 | ASN |
| 4 | A | 306 | VAL |
| 4 | A | 320 | THR |
| 4 | A | 334 | THR |
| 4 | A | 335 | LYS |
| 4 | A | 346 | ARG |
| 4 | A | 359 | GLU |
| 4 | A | 368 | GLN |
| 4 | A | 384 | THR |
| 4 | A | 398 | ASP |
| 4 | I | 49 | GLN |
| 4 | I | 55 | VAL |
| 4 | I | 61 | MET |
| 4 | I | 62 | VAL |
| 4 | I | 63 | LEU |
| 4 | I | 81 | ARG |
| 4 | I | 94 | LEU |
| 4 | I | 117 | ASP |
| 4 | I | 156 | LYS |
| 4 | I | 176 | LEU |
| 4 | I | 182 | SER |
| 4 | I | 204 | VAL |
| 4 | I | 205 | ARG |
| 4 | I | 206 | LYS |
| 4 | I | 252 | SER |
| 4 | I | 253 | THR |
| 4 | I | 254 | PHE |
| 4 | I | 272 | GLU |
| 4 | I | 274 | GLU |

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| Mol | Chain | Res | Type |
| --- | --- | --- | --- |
| 4 | I | 276 | THR |
| 4 | I | 277 | VAL |
| 4 | I | 283 | ASN |
| 4 | I | 284 | VAL |
| 4 | I | 303 | ASN |
| 4 | I | 306 | VAL |
| 4 | I | 320 | THR |
| 4 | I | 335 | LYS |
| 4 | I | 341 | TYR |
| 4 | I | 346 | ARG |
| 4 | I | 359 | GLU |
| 4 | I | 368 | GLN |
| 4 | I | 398 | ASP |
| 3 | C | 16 | GLU |
| 3 | C | 17 | SER |
| 3 | C | 19 | VAL |
| 3 | C | 22 | ARG |
| 3 | C | 30 | LEU |
| 3 | C | 36 | LEU |
| 3 | C | 47 | TRP |
| 3 | C | 74 | LEU |
| 3 | C | 76 | SER |
| 3 | C | 86 | LYS |
| 3 | C | 90 | ARG |
| 3 | C | 116 | ILE |
| 3 | C | 127 | GLU |
| 3 | C | 131 | THR |
| 3 | C | 139 | ASP |
| 3 | C | 145 | SER |
| 3 | C | 157 | TYR |
| 3 | C | 183 | PHE |
| 3 | C | 184 | LEU |
| 3 | C | 193 | ILE |
| 3 | C | 194 | ILE |
| 3 | C | 196 | ASN |
| 3 | C | 199 | LEU |
| 3 | C | 226 | TRP |
| 3 | C | 231 | VAL |
| 3 | C | 241 | ARG |
| 3 | C | 249 | GLU |
| 3 | C | 252 | LYS |
| 3 | C | 255 | THR |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | G | 16 | GLU |
| 3 | G | 17 | SER |
| 3 | G | 19 | VAL |
| 3 | G | 22 | ARG |
| 3 | G | 36 | LEU |
| 3 | G | 40 | ILE |
| 3 | G | 47 | TRP |
| 3 | G | 74 | LEU |
| 3 | G | 76 | SER |
| 3 | G | 86 | LYS |
| 3 | G | 90 | ARG |
| 3 | G | 116 | ILE |
| 3 | G | 124 | PHE |
| 3 | G | 145 | SER |
| 3 | G | 157 | TYR |
| 3 | G | 183 | PHE |
| 3 | G | 184 | LEU |
| 3 | G | 193 | ILE |
| 3 | G | 194 | ILE |
| 3 | G | 226 | TRP |
| 3 | G | 231 | VAL |
| 3 | G | 241 | ARG |
| 3 | G | 249 | GLU |
| 3 | G | 252 | LYS |
| 3 | G | 255 | THR |
| 2 | J | 10 | VAL |
| 2 | J | 15 | SER |
| 2 | J | 25 | THR |
| 2 | J | 36 | PHE |
| 2 | J | 38 | VAL |
| 2 | J | 48 | LEU |
| 2 | J | 52 | ASP |
| 2 | J | 86 | VAL |
| 2 | J | 89 | ARG |
| 2 | J | 125 | PHE |
| 2 | J | 137 | ASP |
| 2 | J | 146 | TYR |
| 2 | J | 164 | ASN |
| 2 | J | 169 | ILE |
| 2 | J | 176 | THR |
| 2 | J | 177 | GLU |
| 2 | J | 189 | ILE |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | J | 192 | HIS |
| 2 | J | 201 | TYR |
| 2 | J | 211 | ARG |
| 2 | J | 251 | THR |
| 2 | B | 10 | VAL |
| 2 | B | 15 | SER |
| 2 | B | 22 | CYS |
| 2 | B | 36 | PHE |
| 2 | B | 39 | LEU |
| 2 | B | 52 | ASP |
| 2 | B | 83 | PHE |
| 2 | B | 89 | ARG |
| 2 | B | 125 | PHE |
| 2 | B | 152 | VAL |
| 2 | B | 164 | ASN |
| 2 | B | 169 | ILE |
| 2 | B | 176 | THR |
| 2 | B | 177 | GLU |
| 2 | B | 192 | HIS |
| 2 | B | 201 | TYR |
| 2 | B | 211 | ARG |
| 2 | B | 251 | THR |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | F | 45 | HIS |
| 2 | F | 173 | HIS |
| 2 | F | 178 | GLN |
| 2 | F | 192 | HIS |
| 3 | K | 133 | HIS |
| 3 | K | 177 | HIS |
| 4 | E | 44 | ASN |
| 4 | E | 58 | ASN |
| 4 | E | 68 | HIS |
| 4 | E | 99 | GLN |
| 4 | E | 137 | GLN |
| 4 | E | 151 | GLN |
| 4 | E | 188 | HIS |
| 4 | E | 261 | GLN |
| 4 | E | 265 | GLN |
| 4 | E | 283 | ASN |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4 | A | 44 | ASN |
| 4 | A | 58 | ASN |
| 4 | A | 68 | HIS |
| 4 | A | 99 | GLN |
| 4 | A | 137 | GLN |
| 4 | A | 151 | GLN |
| 4 | A | 188 | HIS |
| 4 | A | 261 | GLN |
| 4 | A | 265 | GLN |
| 4 | A | 283 | ASN |
| 4 | I | 44 | ASN |
| 4 | I | 58 | ASN |
| 4 | I | 68 | HIS |
| 4 | I | 75 | GLN |
| 4 | I | 99 | GLN |
| 4 | I | 137 | GLN |
| 4 | I | 151 | GLN |
| 4 | I | 188 | HIS |
| 4 | I | 261 | GLN |
| 4 | I | 265 | GLN |
| 4 | I | 283 | ASN |
| 3 | C | 133 | HIS |
| 3 | C | 177 | HIS |
| 3 | C | 196 | ASN |
| 3 | G | 109 | GLN |
| 3 | G | 133 | HIS |
| 2 | J | 87 | ASN |
| 2 | J | 174 | GLN |
| 2 | J | 178 | GLN |
| 2 | J | 192 | HIS |
| 2 | B | 192 | HIS |

### 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 ⓘ

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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 Fit of model and data ⓘ

## 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, $95^{th}$ 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 | D | 0/25 | - | - | | | - | - |
| 1 | H | 0/25 | - | - | | | - | - |
| 1 | N | 0/25 | - | - | | | - | - |
| 2 | B | 244/252 (96%) | -0.40 | 3 (1%) | 79 | 68 | 29, 55, 88, 135 | 0 |
| 2 | F | 244/252 (96%) | -0.53 | 2 (0%) | 86 | 78 | 19, 37, 78, 118 | 0 |
| 2 | J | 244/252 (96%) | -0.55 | 0 | 100 | 100 | 21, 38, 69, 115 | 0 |
| 3 | C | 217/256 (84%) | -0.19 | 7 (3%) | 47 | 30 | 35, 67, 127, 170 | 0 |
| 3 | G | 213/256 (83%) | -0.20 | 10 (4%) | 31 | 17 | 26, 56, 108, 176 | 0 |
| 3 | K | 217/256 (84%) | -0.25 | 14 (6%) | 18 | 10 | 23, 50, 123, 166 | 0 |
| 4 | A | 390/420 (92%) | 0.03 | 30 (7%) | 13 | 6 | 30, 66, 102, 159 | 0 |
| 4 | E | 390/420 (92%) | -0.43 | 1 (0%) | 94 | 92 | 22, 41, 71, 120 | 0 |
| 4 | I | 390/420 (92%) | -0.13 | 15 (3%) | 40 | 25 | 27, 60, 106, 160 | 0 |
| All | All | 2549/2859 (89%) | -0.28 | 82 (3%) | 47 | 30 | 19, 52, 102, 176 | 0 |

All (82) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 4 | A | 418 | ASP | 5.7 |
| 3 | C | 18 | VAL | 5.3 |
| 3 | G | 252 | LYS | 5.2 |
| 3 | G | 253 | LEU | 5.2 |
| 4 | A | 328 | ASN | 5.1 |
| 3 | G | 139 | ASP | 4.9 |
| 3 | C | 17 | SER | 4.5 |
| 3 | G | 256 | GLU | 4.5 |
| 3 | K | 139 | ASP | 4.3 |
| 4 | I | 316 | LEU | 4.2 |
| 4 | A | 399 | GLY | 4.2 |
| 3 | C | 196 | ASN | 4.1 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 4 | I | 418 | ASP | 4.0 |
| 3 | G | 47 | TRP | 3.9 |
| 3 | G | 140 | THR | 3.8 |
| 3 | C | 139 | ASP | 3.8 |
| 4 | I | 337 | ASP | 3.8 |
| 4 | A | 170 | ASP | 3.6 |
| 3 | K | 48 | ARG | 3.5 |
| 4 | I | 350 | VAL | 3.5 |
| 4 | A | 317 | GLY | 3.4 |
| 4 | A | 157 | GLY | 3.4 |
| 4 | A | 348 | LEU | 3.3 |
| 4 | I | 348 | LEU | 3.3 |
| 3 | K | 196 | ASN | 3.3 |
| 4 | A | 315 | ARG | 3.2 |
| 3 | K | 17 | SER | 3.2 |
| 4 | A | 316 | LEU | 3.1 |
| 3 | K | 64 | SER | 3.1 |
| 4 | A | 169 | LEU | 3.0 |
| 4 | I | 317 | GLY | 3.0 |
| 4 | A | 400 | LYS | 3.0 |
| 4 | A | 396 | SER | 2.9 |
| 4 | A | 397 | PRO | 2.9 |
| 3 | G | 18 | VAL | 2.8 |
| 4 | A | 352 | ALA | 2.8 |
| 3 | K | 61 | TYR | 2.8 |
| 3 | G | 17 | SER | 2.8 |
| 4 | I | 395 | PHE | 2.8 |
| 4 | I | 327 | LEU | 2.8 |
| 3 | K | 50 | GLY | 2.7 |
| 4 | I | 417 | GLY | 2.7 |
| 2 | B | 9 | ALA | 2.7 |
| 3 | K | 47 | TRP | 2.6 |
| 4 | I | 328 | ASN | 2.6 |
| 4 | A | 60 | GLU | 2.6 |
| 4 | A | 171 | GLY | 2.5 |
| 4 | E | 369 | ASP | 2.4 |
| 4 | A | 398 | ASP | 2.4 |
| 4 | A | 350 | VAL | 2.4 |
| 3 | C | 47 | TRP | 2.4 |
| 4 | A | 349 | SER | 2.4 |
| 2 | B | 17 | ALA | 2.3 |
| 4 | I | 294 | LYS | 2.3 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 3 | K | 60 | THR | 2.3 |
| 4 | A | 330 | ASP | 2.3 |
| 4 | A | 361 | LYS | 2.3 |
| 4 | A | 393 | PHE | 2.3 |
| 2 | F | 16 | VAL | 2.3 |
| 4 | A | 158 | ASP | 2.3 |
| 3 | K | 254 | LEU | 2.3 |
| 4 | A | 172 | SER | 2.3 |
| 4 | A | 332 | PHE | 2.2 |
| 4 | A | 329 | PRO | 2.2 |
| 4 | I | 53 | THR | 2.2 |
| 3 | K | 18 | VAL | 2.2 |
| 4 | I | 336 | PRO | 2.2 |
| 3 | C | 225 | GLY | 2.2 |
| 3 | C | 64 | SER | 2.2 |
| 3 | K | 49 | ALA | 2.1 |
| 4 | A | 160 | LYS | 2.1 |
| 4 | A | 167 | THR | 2.1 |
| 3 | G | 248 | LYS | 2.1 |
| 4 | A | 161 | ASP | 2.1 |
| 2 | B | 10 | VAL | 2.1 |
| 3 | K | 253 | LEU | 2.1 |
| 3 | K | 256 | GLU | 2.1 |
| 4 | A | 402 | TYR | 2.1 |
| 2 | F | 17 | ALA | 2.0 |
| 3 | G | 59 | GLN | 2.0 |
| 4 | I | 298 | ARG | 2.0 |
| 4 | I | 299 | GLU | 2.0 |

## 6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 6.4 Ligands ⓘ

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, $95^{th}$ 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($\text{Å}^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|--------------------------|-------|
| 5 | CU | A | 501 | 1/1 | 0.96 | 0.06 | 108,108,108,108 | 0 |
| 5 | CU | I | 501 | 1/1 | 0.97 | 0.06 | 85,85,85,85 | 0 |
| 5 | CU | G | 301 | 1/1 | 0.97 | 0.08 | 69,69,69,69 | 0 |
| 5 | CU | K | 301 | 1/1 | 0.98 | 0.11 | 85,85,85,85 | 0 |
| 5 | CU | C | 301 | 1/1 | 0.99 | 0.06 | 71,71,71,71 | 0 |
| 5 | CU | E | 501 | 1/1 | 0.99 | 0.07 | 53,53,53,53 | 0 |

## 6.5 Other polymers (i)

There are no such residues in this entry.