# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 7, 2023 – 10:09 PM JST

| | | |
|---|---|---|
| PDB ID | : | 7YRS |
| Title | : | Crystal structure of Lactobacillus rhamnosus 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase KduI complexed with MOPS |
| Authors | : | Yamamoto, Y.; Oiki, S.; Takase, R.; Mikami, B.; Hashimoto, W. |
| Deposited on | : | 2022-08-10 |
| Resolution | : | 2.80 Å(reported) |

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

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

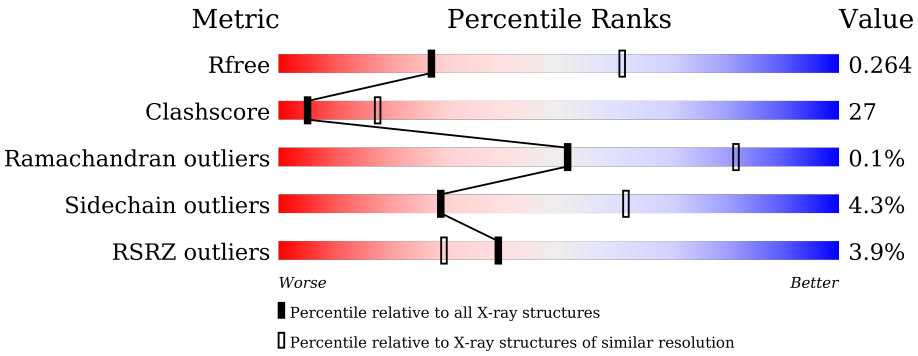
| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.35 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 5.8.0158 |
| CCP4 | : | 7.0.044 (Gargrove) |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.35 |

# 1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.




| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|---|---|---|
| $R_{free}$ | 130704 | 3140 (2.80-2.80) |
| Clashscore | 141614 | 3569 (2.80-2.80) |
| Ramachandran outliers | 138981 | 3498 (2.80-2.80) |
| Sidechain outliers | 138945 | 3500 (2.80-2.80) |
| RSRZ outliers | 127900 | 3078 (2.80-2.80) |

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 | A | 289 | 54% 38% |
| 1 | B | 289 | 5% 51% 39% |
| 1 | C | 289 | 7% 52% 41% |
| 1 | D | 289 | 48% 38% 10% |
| 1 | E | 289 | 4% 55% 38% |
| 1 | F | 289 | 4% 45% 43% 7% |

# 2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 13304 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 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 279 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2243 | 1423 | 378 | 424 | 18 | | | |
| 1 | B | 276 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2219 | 1408 | 374 | 420 | 17 | | | |
| 1 | C | 279 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2243 | 1423 | 378 | 424 | 18 | | | |
| 1 | D | 261 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2100 | 1337 | 355 | 392 | 16 | | | |
| 1 | E | 276 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2222 | 1409 | 375 | 421 | 17 | | | |
| 1 | F | 276 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2219 | 1411 | 374 | 416 | 18 | | | |

There are 48 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| A | 282 | LEU | - | expression tag | UNP C2JUP1 |
| A | 283 | GLU | - | expression tag | UNP C2JUP1 |
| A | 284 | HIS | - | expression tag | UNP C2JUP1 |
| A | 285 | HIS | - | expression tag | UNP C2JUP1 |
| A | 286 | HIS | - | expression tag | UNP C2JUP1 |
| A | 287 | HIS | - | expression tag | UNP C2JUP1 |
| A | 288 | HIS | - | expression tag | UNP C2JUP1 |
| A | 289 | HIS | - | expression tag | UNP C2JUP1 |
| B | 282 | LEU | - | expression tag | UNP C2JUP1 |
| B | 283 | GLU | - | expression tag | UNP C2JUP1 |
| B | 284 | HIS | - | expression tag | UNP C2JUP1 |
| B | 285 | HIS | - | expression tag | UNP C2JUP1 |
| B | 286 | HIS | - | expression tag | UNP C2JUP1 |
| B | 287 | HIS | - | expression tag | UNP C2JUP1 |
| B | 288 | HIS | - | expression tag | UNP C2JUP1 |
| B | 289 | HIS | - | expression tag | UNP C2JUP1 |
| C | 282 | LEU | - | expression tag | UNP C2JUP1 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| C | 283 | GLU | - | expression tag | UNP C2JUP1 |
| C | 284 | HIS | - | expression tag | UNP C2JUP1 |
| C | 285 | HIS | - | expression tag | UNP C2JUP1 |
| C | 286 | HIS | - | expression tag | UNP C2JUP1 |
| C | 287 | HIS | - | expression tag | UNP C2JUP1 |
| C | 288 | HIS | - | expression tag | UNP C2JUP1 |
| C | 289 | HIS | - | expression tag | UNP C2JUP1 |
| D | 282 | LEU | - | expression tag | UNP C2JUP1 |
| D | 283 | GLU | - | expression tag | UNP C2JUP1 |
| D | 284 | HIS | - | expression tag | UNP C2JUP1 |
| D | 285 | HIS | - | expression tag | UNP C2JUP1 |
| D | 286 | HIS | - | expression tag | UNP C2JUP1 |
| D | 287 | HIS | - | expression tag | UNP C2JUP1 |
| D | 288 | HIS | - | expression tag | UNP C2JUP1 |
| D | 289 | HIS | - | expression tag | UNP C2JUP1 |
| E | 282 | LEU | - | expression tag | UNP C2JUP1 |
| E | 283 | GLU | - | expression tag | UNP C2JUP1 |
| E | 284 | HIS | - | expression tag | UNP C2JUP1 |
| E | 285 | HIS | - | expression tag | UNP C2JUP1 |
| E | 286 | HIS | - | expression tag | UNP C2JUP1 |
| E | 287 | HIS | - | expression tag | UNP C2JUP1 |
| E | 288 | HIS | - | expression tag | UNP C2JUP1 |
| E | 289 | HIS | - | expression tag | UNP C2JUP1 |
| F | 282 | LEU | - | expression tag | UNP C2JUP1 |
| F | 283 | GLU | - | expression tag | UNP C2JUP1 |
| F | 284 | HIS | - | expression tag | UNP C2JUP1 |
| F | 285 | HIS | - | expression tag | UNP C2JUP1 |
| F | 286 | HIS | - | expression tag | UNP C2JUP1 |
| F | 287 | HIS | - | expression tag | UNP C2JUP1 |
| F | 288 | HIS | - | expression tag | UNP C2JUP1 |
| F | 289 | HIS | - | expression tag | UNP C2JUP1 |

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 2 | A | 1 | Total Zn<br>1 1 | 0 | 0 |
| 2 | B | 1 | Total Zn<br>1 1 | 0 | 0 |
| 2 | C | 1 | Total Zn<br>1 1 | 0 | 0 |

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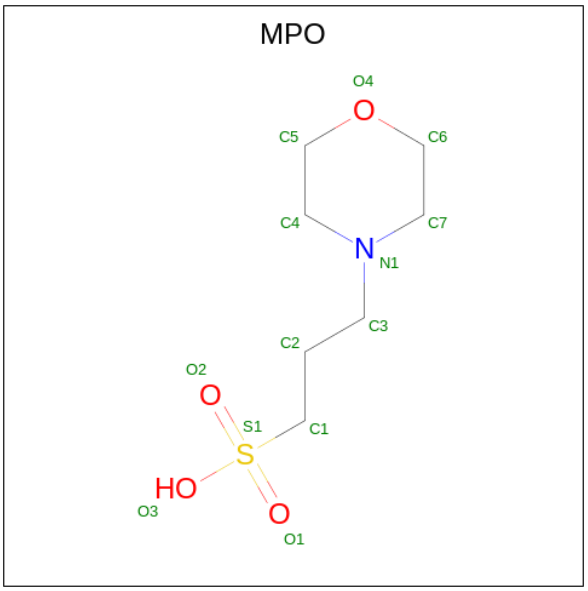
| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 2 | D | 1 | Total Zn<br>1 1 | 0 | 0 |
| 2 | E | 1 | Total Zn<br>1 1 | 0 | 0 |
| 2 | F | 1 | Total Zn<br>1 1 | 0 | 0 |

- Molecule 3 is 3[N-MORPHOLINO]PROPANE SULFONIC ACID (three-letter code: MPO) (formula: $C_7H_{15}NO_4S$) (labeled as "Ligand of Interest" by depositor).



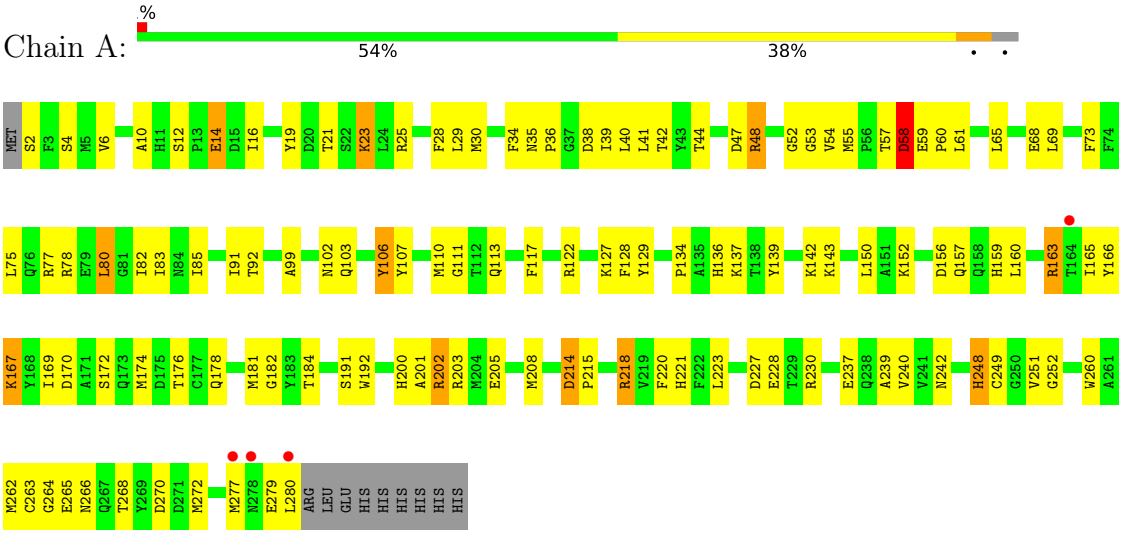

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 3 | A | 1 | Total C N O S<br>13 7 1 4 1 | 0 | 0 |
| 3 | B | 1 | Total C N O S<br>13 7 1 4 1 | 0 | 0 |
| 3 | E | 1 | Total C N O S<br>13 7 1 4 1 | 0 | 0 |
| 3 | F | 1 | Total C N O S<br>13 7 1 4 1 | 0 | 0 |

# 3 Residue-property plots (i)

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

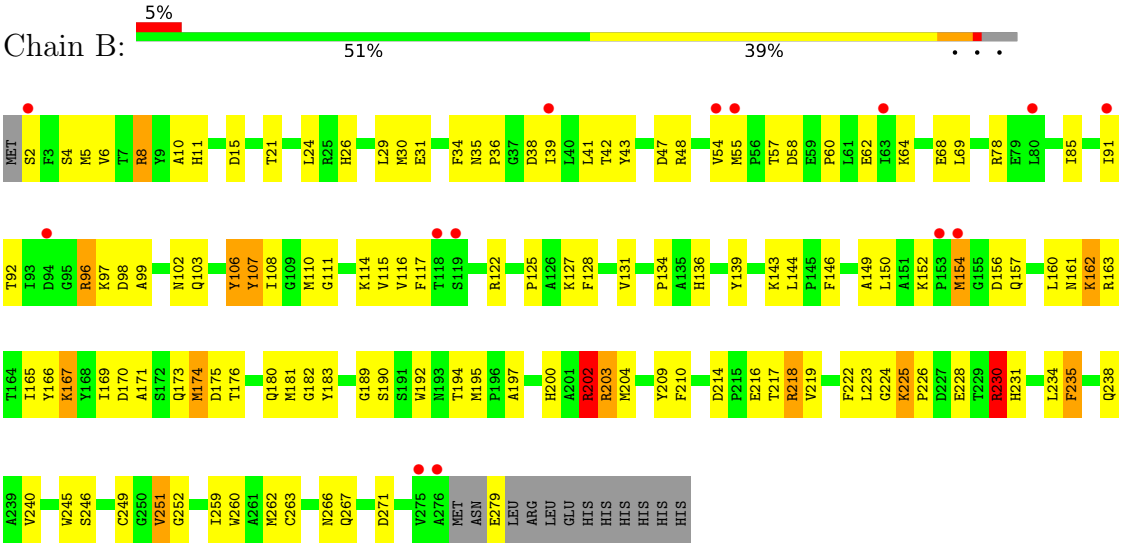
• Molecule 1: 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase

Chain A:



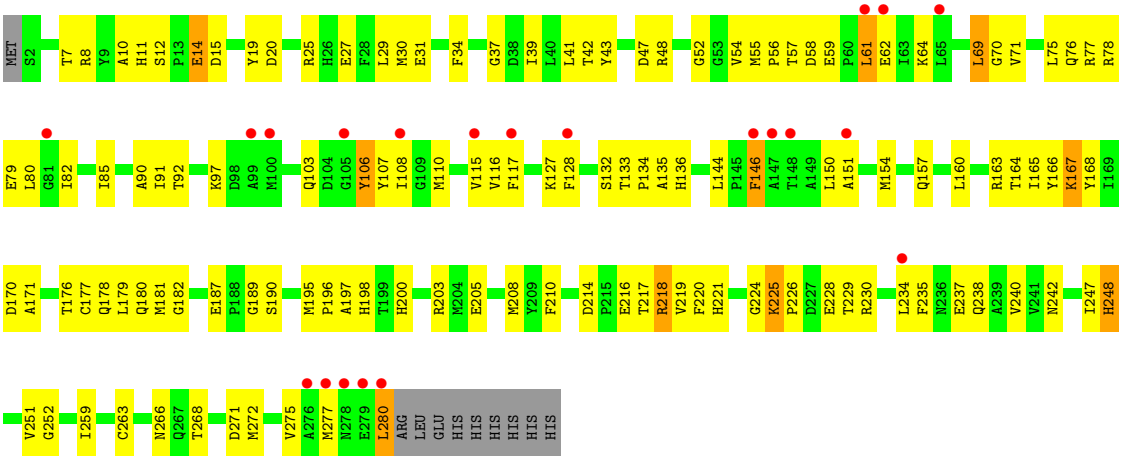

• Molecule 1: 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase

Chain B:



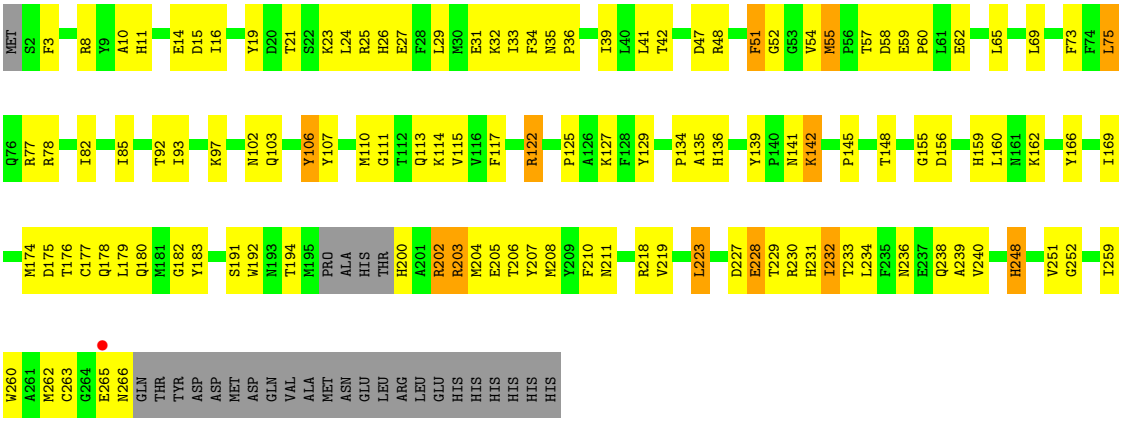

• Molecule 1: 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase

Chain C:



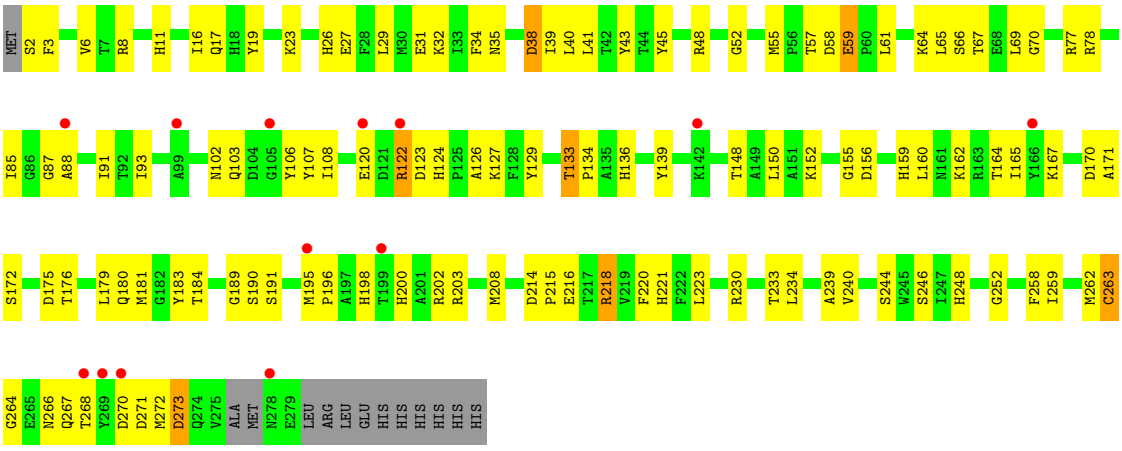
• Molecule 1: 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase

Chain D:

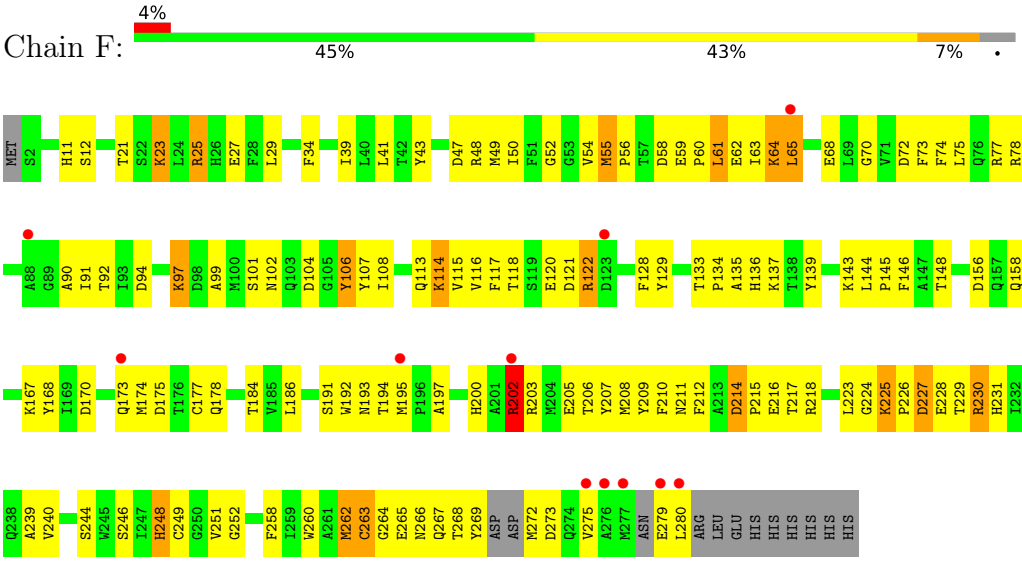
• Molecule 1: 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase

Chain E:

• Molecule 1: 4-deoxy-L-threo-5-hexosulose-uronate ketol-isomerase

Chain F:


4%
45%
43%
7%
MET S2 H11 S12 T21 S22 K23 L24 R25 H26 E27 F28 L29 F34 I39 L40 L41 T42 Y43 D47 R48 M49 I50 F51 G52 G53 V54 M55 P56 T57 D58 E59 P60 L61 E62 I63 K64 L65 E68 L69 G70 V71 D72 F73 F74 L75 Q76 R77 R78 I82 I83 N84 I85
A88 G89 A90 I91 T92 I93 D94 K97 D98 A99 M100 S101 N102 Q103 D104 G105 Y106 Y107 I108 Q113 K114 V115 V116 F117 T118 S119 E120 D121 R122 D123 F128 Y129 T133 P134 A135 H136 K137 T138 Y139 K143 L144 P145 F146 A147 T148 D156 Q157 Q158 H159 L160 N161 K162 R163
K167 Y168 I169 D170 Q173 M174 D175 T176 C177 Q178 T184 V185 L186 S191 W192 N193 T194 M195 P196 A197 H200 A201 R202 R203 M204 E205 T206 Y207 M208 Y209 F210 N211 F212 A213 D214 P215 E216 T217 R218 L223 G224 K225 P226 D227 E228 T229 R230 H231 I232 T233 L234 F235 N236 E237
Q238 A239 V240 S244 W245 S246 I247 H248 C249 G250 V251 G252 F258 I259 W260 A261 M262 C263 G264 E265 N266 Q267 T268 Y269 ASP ASP M272 D273 Q274 V275 A276 M277 ASN E279 L280 ARG LEU GLU HIS HIS HIS HIS HIS HIS

# 4 Data and refinement statistics (i)

| Property | Value | Source |
|---|---|---|
| Space group | C 1 2 1 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 90.40Å 187.40Å 108.93Å<br>90.00° 112.49° 90.00° | Depositor |
| Resolution (Å) | 49.55 – 2.80<br>49.55 – 2.80 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 99.1 (49.55-2.80)<br>99.1 (49.55-2.80) | Depositor<br>EDS |
| $R_{merge}$ | 0.10 | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 1.75 (at 2.81Å) | Xtriage |
| Refinement program | PHENIX 1.10.1_2155 | Depositor |
| R, $R_{free}$ | 0.189 , 0.265<br>0.190 , 0.264 | Depositor<br>DCC |
| $R_{free}$ test set | 2034 reflections (5.00%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 71.7 | Xtriage |
| Anisotropy | 0.698 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.32 , 57.8 | EDS |
| L-test for twinning[2] | $< \|L\| > = 0.48$, $< L^2 > = 0.31$ | Xtriage |
| Estimated twinning fraction | 0.017 for h,-k,-h-l | Xtriage |
| $F_o$,$F_c$ correlation | 0.95 | EDS |
| Total number of atoms | 13304 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 82.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.41% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: MPO, ZN

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

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #$\|Z\|$ >5 | RMSZ | #$\|Z\|$ >5 |
| 1 | A | 0.57 | 1/2303 (0.0%) | 0.93 | 12/3121 (0.4%) |
| 1 | B | 0.71 | 6/2278 (0.3%) | 0.99 | 10/3086 (0.3%) |
| 1 | C | 0.65 | 4/2303 (0.2%) | 0.96 | 10/3121 (0.3%) |
| 1 | D | 0.63 | 3/2156 (0.1%) | 0.98 | 10/2918 (0.3%) |
| 1 | E | 0.53 | 2/2281 (0.1%) | 0.89 | 5/3090 (0.2%) |
| 1 | F | 0.74 | 10/2277 (0.4%) | 1.02 | 15/3082 (0.5%) |
| All | All | 0.64 | 26/13598 (0.2%) | 0.96 | 62/18418 (0.3%) |

All (26) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 1 | F | 202 | ARG | CG-CD | -10.10 | 1.26 | 1.51 |
| 1 | D | 202 | ARG | CZ-NH1 | -8.82 | 1.21 | 1.33 |
| 1 | D | 202 | ARG | NE-CZ | -8.11 | 1.22 | 1.33 |
| 1 | B | 202 | ARG | CZ-NH1 | -8.09 | 1.22 | 1.33 |
| 1 | F | 202 | ARG | NE-CZ | -7.86 | 1.22 | 1.33 |
| 1 | F | 216 | GLU | CD-OE1 | -7.42 | 1.17 | 1.25 |
| 1 | C | 14 | GLU | CD-OE1 | -7.39 | 1.17 | 1.25 |
| 1 | F | 216 | GLU | CG-CD | -6.79 | 1.41 | 1.51 |
| 1 | B | 251 | VAL | CB-CG1 | -6.73 | 1.38 | 1.52 |
| 1 | A | 58 | ASP | C-N | 6.65 | 1.49 | 1.34 |
| 1 | F | 23 | LYS | CD-CE | -6.60 | 1.34 | 1.51 |
| 1 | C | 235 | PHE | CE2-CZ | -6.44 | 1.25 | 1.37 |
| 1 | B | 202 | ARG | NE-CZ | -6.37 | 1.24 | 1.33 |
| 1 | B | 203 | ARG | CZ-NH1 | -6.16 | 1.25 | 1.33 |
| 1 | F | 202 | ARG | CZ-NH1 | -6.15 | 1.25 | 1.33 |
| 1 | C | 14 | GLU | CD-OE2 | -6.12 | 1.19 | 1.25 |
| 1 | E | 59 | GLU | CD-OE1 | -6.08 | 1.19 | 1.25 |
| 1 | E | 59 | GLU | CB-CG | 5.78 | 1.63 | 1.52 |
| 1 | F | 23 | LYS | CE-NZ | -5.77 | 1.34 | 1.49 |
| 1 | F | 202 | ARG | CZ-NH2 | -5.67 | 1.25 | 1.33 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 1 | D | 202 | ARG | CZ-NH2 | -5.66 | 1.25 | 1.33 |
| 1 | B | 203 | ARG | CZ-NH2 | -5.56 | 1.25 | 1.33 |
| 1 | B | 203 | ARG | NE-CZ | -5.37 | 1.26 | 1.33 |
| 1 | C | 235 | PHE | CE1-CZ | -5.34 | 1.27 | 1.37 |
| 1 | F | 64 | LYS | CE-NZ | -5.32 | 1.35 | 1.49 |
| 1 | F | 216 | GLU | CB-CG | -5.17 | 1.42 | 1.52 |

All (62) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | C | 77 | ARG | CG-CD-NE | -14.40 | 81.57 | 111.80 |
| 1 | F | 202 | ARG | NE-CZ-NH1 | -13.89 | 113.35 | 120.30 |
| 1 | E | 122 | ARG | CB-CG-CD | -13.46 | 76.62 | 111.60 |
| 1 | B | 218 | ARG | NE-CZ-NH2 | -10.25 | 115.17 | 120.30 |
| 1 | F | 144 | LEU | CA-CB-CG | 9.33 | 136.75 | 115.30 |
| 1 | A | 48 | ARG | NE-CZ-NH1 | -8.93 | 115.84 | 120.30 |
| 1 | C | 69 | LEU | CA-CB-CG | 8.80 | 135.53 | 115.30 |
| 1 | D | 75 | LEU | CB-CG-CD2 | -8.74 | 96.15 | 111.00 |
| 1 | F | 122 | ARG | NE-CZ-NH2 | -8.71 | 115.94 | 120.30 |
| 1 | A | 218 | ARG | NE-CZ-NH2 | -8.28 | 116.16 | 120.30 |
| 1 | D | 232 | ILE | CG1-CB-CG2 | -8.27 | 93.21 | 111.40 |
| 1 | C | 218 | ARG | NE-CZ-NH1 | 8.24 | 124.42 | 120.30 |
| 1 | E | 122 | ARG | CA-CB-CG | 8.16 | 131.35 | 113.40 |
| 1 | F | 65 | LEU | CB-CG-CD2 | 8.06 | 124.71 | 111.00 |
| 1 | D | 114 | LYS | CA-CB-CG | 7.66 | 130.25 | 113.40 |
| 1 | D | 114 | LYS | CB-CG-CD | -7.63 | 91.77 | 111.60 |
| 1 | F | 230 | ARG | NE-CZ-NH1 | -7.53 | 116.53 | 120.30 |
| 1 | A | 167 | LYS | CD-CE-NZ | -7.49 | 94.48 | 111.70 |
| 1 | B | 64 | LYS | CA-CB-CG | 7.42 | 129.73 | 113.40 |
| 1 | D | 75 | LEU | CA-CB-CG | -7.12 | 98.93 | 115.30 |
| 1 | D | 122 | ARG | NE-CZ-NH2 | -7.11 | 116.75 | 120.30 |
| 1 | D | 75 | LEU | CB-CG-CD1 | 7.08 | 123.03 | 111.00 |
| 1 | B | 202 | ARG | CG-CD-NE | 7.05 | 126.61 | 111.80 |
| 1 | B | 235 | PHE | CB-CG-CD1 | 7.00 | 125.70 | 120.80 |
| 1 | C | 167 | LYS | CA-CB-CG | 6.89 | 128.56 | 113.40 |
| 1 | F | 202 | ARG | CG-CD-NE | -6.80 | 97.52 | 111.80 |
| 1 | B | 202 | ARG | NE-CZ-NH1 | -6.76 | 116.92 | 120.30 |
| 1 | F | 225 | LYS | CB-CG-CD | -6.67 | 94.26 | 111.60 |
| 1 | A | 218 | ARG | CG-CD-NE | -6.57 | 98.01 | 111.80 |
| 1 | D | 55 | MET | CA-CB-CG | 6.52 | 124.38 | 113.30 |
| 1 | A | 214 | ASP | CB-CG-OD1 | 6.39 | 124.05 | 118.30 |
| 1 | B | 154 | MET | N-CA-CB | -6.22 | 99.40 | 110.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | A | 58 | ASP | C-N-CA | 6.14 | 137.05 | 121.70 |
| 1 | A | 80 | LEU | CA-CB-CG | 6.06 | 129.25 | 115.30 |
| 1 | C | 25 | ARG | CG-CD-NE | 6.06 | 124.52 | 111.80 |
| 1 | C | 61 | LEU | CB-CA-C | 6.02 | 121.65 | 110.20 |
| 1 | F | 120 | GLU | CA-CB-CG | 6.02 | 126.64 | 113.40 |
| 1 | C | 235 | PHE | CB-CG-CD2 | 5.90 | 124.93 | 120.80 |
| 1 | E | 59 | GLU | N-CA-CB | -5.77 | 100.21 | 110.60 |
| 1 | A | 167 | LYS | CB-CG-CD | -5.77 | 96.60 | 111.60 |
| 1 | C | 77 | ARG | NE-CZ-NH1 | -5.70 | 117.45 | 120.30 |
| 1 | F | 163 | ARG | NE-CZ-NH2 | -5.69 | 117.46 | 120.30 |
| 1 | A | 58 | ASP | CB-CG-OD1 | 5.67 | 123.41 | 118.30 |
| 1 | D | 203 | ARG | CA-CB-CG | 5.67 | 125.87 | 113.40 |
| 1 | E | 218 | ARG | NE-CZ-NH1 | -5.57 | 117.51 | 120.30 |
| 1 | A | 218 | ARG | NE-CZ-NH1 | 5.57 | 123.08 | 120.30 |
| 1 | F | 202 | ARG | CB-CA-C | -5.41 | 99.57 | 110.40 |
| 1 | F | 64 | LYS | CA-CB-CG | 5.27 | 124.99 | 113.40 |
| 1 | F | 25 | ARG | CB-CG-CD | 5.24 | 125.23 | 111.60 |
| 1 | B | 230 | ARG | NE-CZ-NH1 | -5.22 | 117.69 | 120.30 |
| 1 | A | 48 | ARG | NE-CZ-NH2 | 5.21 | 122.91 | 120.30 |
| 1 | F | 122 | ARG | CG-CD-NE | -5.21 | 100.86 | 111.80 |
| 1 | C | 280 | LEU | CA-CB-CG | 5.17 | 127.19 | 115.30 |
| 1 | B | 154 | MET | CG-SD-CE | -5.16 | 91.94 | 100.20 |
| 1 | B | 162 | LYS | CA-CB-CG | 5.14 | 124.72 | 113.40 |
| 1 | F | 227 | ASP | CB-CG-OD1 | 5.13 | 122.92 | 118.30 |
| 1 | C | 25 | ARG | CD-NE-CZ | 5.08 | 130.71 | 123.60 |
| 1 | D | 122 | ARG | CD-NE-CZ | 5.07 | 130.70 | 123.60 |
| 1 | E | 38 | ASP | CB-CG-OD2 | 5.05 | 122.84 | 118.30 |
| 1 | A | 14 | GLU | N-CA-CB | -5.05 | 101.52 | 110.60 |
| 1 | F | 262 | MET | CB-CG-SD | -5.02 | 97.33 | 112.40 |
| 1 | B | 152 | LYS | N-CA-CB | 5.00 | 119.60 | 110.60 |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts (i)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 2243 | 0 | 2144 | 113 | 0 |
| 1 | B | 2219 | 0 | 2117 | 154 | 0 |
| 1 | C | 2243 | 0 | 2144 | 129 | 0 |
| 1 | D | 2100 | 0 | 2018 | 119 | 0 |
| 1 | E | 2222 | 0 | 2118 | 112 | 0 |
| 1 | F | 2219 | 0 | 2128 | 148 | 0 |
| 2 | A | 1 | 0 | 0 | 0 | 0 |
| 2 | B | 1 | 0 | 0 | 0 | 0 |
| 2 | C | 1 | 0 | 0 | 0 | 0 |
| 2 | D | 1 | 0 | 0 | 0 | 0 |
| 2 | E | 1 | 0 | 0 | 0 | 0 |
| 2 | F | 1 | 0 | 0 | 0 | 0 |
| 3 | A | 13 | 0 | 14 | 1 | 0 |
| 3 | B | 13 | 0 | 14 | 2 | 0 |
| 3 | E | 13 | 0 | 15 | 0 | 0 |
| 3 | F | 13 | 0 | 15 | 4 | 0 |
| All | All | 13304 | 0 | 12727 | 698 | 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 27.

All (698) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:19:TYR:CG | 1:A:23:LYS:NZ | 2.00 | 1.28 |
| 1:B:154:MET:HE1 | 1:B:163:ARG:NH1 | 1.51 | 1.24 |
| 1:D:75:LEU:HD12 | 1:D:78:ARG:HB2 | 1.31 | 1.08 |
| 1:A:19:TYR:CD2 | 1:A:23:LYS:NZ | 2.21 | 1.07 |
| 1:B:154:MET:CE | 1:B:163:ARG:CZ | 2.34 | 1.06 |
| 1:F:92:THR:HG22 | 1:F:97:LYS:HG3 | 1.38 | 1.06 |
| 1:E:48:ARG:NH1 | 1:F:47:ASP:OD1 | 1.91 | 1.03 |
| 1:A:279:GLU:H | 1:E:218:ARG:HH12 | 1.07 | 0.99 |
| 1:B:154:MET:CE | 1:B:163:ARG:NH1 | 2.27 | 0.98 |
| 1:A:142:LYS:NZ | 1:A:174:MET:HB3 | 1.77 | 0.98 |
| 1:B:154:MET:HE1 | 1:B:163:ARG:CZ | 1.93 | 0.98 |
| 1:F:228:GLU:HG3 | 1:F:230:ARG:HH12 | 1.29 | 0.97 |
| 1:B:216:GLU:HB3 | 1:C:277:MET:HG3 | 1.44 | 0.97 |
| 1:C:78:ARG:NH1 | 1:D:265:GLU:OE2 | 2.01 | 0.94 |
| 1:B:154:MET:HE3 | 1:B:163:ARG:NE | 1.83 | 0.93 |
| 1:D:75:LEU:CD1 | 1:D:78:ARG:HB2 | 1.98 | 0.93 |
| 1:B:154:MET:HE1 | 1:B:163:ARG:HH11 | 1.20 | 0.93 |
| 1:B:39:ILE:HD13 | 1:B:54:VAL:HG12 | 1.52 | 0.90 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:F:99:ALA:O | 1:F:143:LYS:NZ | 2.04 | 0.90 |
| 1:B:85:ILE:HD11 | 1:B:210:PHE:CG | 2.07 | 0.89 |
| 1:D:203:ARG:HB2 | 1:D:263:CYS:O | 1.71 | 0.88 |
| 1:F:65:LEU:HD22 | 1:F:68:GLU:OE1 | 1.72 | 0.88 |
| 1:A:48:ARG:NH1 | 1:B:47:ASP:OD1 | 2.07 | 0.87 |
| 1:D:55:MET:HE3 | 1:D:127:LYS:HG2 | 1.54 | 0.87 |
| 1:B:154:MET:CE | 1:B:163:ARG:NE | 2.37 | 0.87 |
| 1:A:69:LEU:HA | 1:B:202:ARG:NE | 1.91 | 0.86 |
| 1:A:142:LYS:HZ3 | 1:A:174:MET:HB3 | 1.41 | 0.84 |
| 1:F:225:LYS:NZ | 1:F:225:LYS:HB3 | 1.91 | 0.84 |
| 1:B:131:VAL:HB | 1:B:181:MET:HE2 | 1.60 | 0.83 |
| 1:D:16:ILE:O | 1:D:230:ARG:NH2 | 2.13 | 0.82 |
| 1:C:92:THR:OG1 | 1:C:116:VAL:HG12 | 1.81 | 0.81 |
| 1:B:99:ALA:O | 1:B:143:LYS:NZ | 2.14 | 0.80 |
| 1:F:58:ASP:HB2 | 1:F:122:ARG:NH1 | 1.96 | 0.80 |
| 1:F:163:ARG:NH1 | 3:F:302:MPO:O3 | 2.15 | 0.79 |
| 1:C:226:PRO:HB3 | 1:C:275:VAL:HG21 | 1.64 | 0.79 |
| 1:A:279:GLU:H | 1:E:218:ARG:NH1 | 1.80 | 0.78 |
| 1:A:279:GLU:N | 1:E:218:ARG:HH12 | 1.81 | 0.78 |
| 1:E:85:ILE:HD11 | 1:E:259:ILE:HD11 | 1.65 | 0.78 |
| 1:C:136:HIS:H | 1:D:136:HIS:HD2 | 1.32 | 0.77 |
| 1:C:221:HIS:HE1 | 1:C:242:ASN:HD21 | 1.32 | 0.77 |
| 1:A:48:ARG:HH12 | 1:B:47:ASP:CG | 1.86 | 0.77 |
| 1:A:200:HIS:NE2 | 1:A:205:GLU:OE2 | 2.14 | 0.77 |
| 1:A:160:LEU:HD23 | 1:E:160:LEU:HD23 | 1.67 | 0.77 |
| 1:D:32:LYS:HD3 | 1:D:33:ILE:H | 1.47 | 0.77 |
| 1:E:48:ARG:O | 1:E:78:ARG:NH2 | 2.18 | 0.77 |
| 1:E:200:HIS:HB3 | 1:E:272:MET:HE1 | 1.64 | 0.77 |
| 1:F:167:LYS:HD2 | 1:F:173:GLN:HB2 | 1.65 | 0.77 |
| 1:E:267:GLN:HE21 | 1:F:77:ARG:HH22 | 1.30 | 0.77 |
| 1:D:203:ARG:HH11 | 1:D:263:CYS:HA | 1.50 | 0.77 |
| 1:E:203:ARG:NH2 | 1:E:268:THR:O | 2.18 | 0.77 |
| 1:C:266:ASN:ND2 | 1:C:268:THR:H | 1.83 | 0.76 |
| 1:C:78:ARG:HD2 | 1:C:132:SER:OG | 1.85 | 0.76 |
| 1:A:169:ILE:HD12 | 1:A:181:MET:HG3 | 1.68 | 0.76 |
| 1:F:92:THR:HG22 | 1:F:97:LYS:CG | 2.16 | 0.76 |
| 1:A:19:TYR:CB | 1:A:23:LYS:NZ | 2.48 | 0.76 |
| 1:D:191:SER:OG | 1:D:252:GLY:N | 2.18 | 0.76 |
| 1:D:233:THR:HG23 | 1:F:280:LEU:HD22 | 1.68 | 0.75 |
| 1:C:266:ASN:HD21 | 1:C:268:THR:HG23 | 1.51 | 0.75 |
| 1:A:19:TYR:HB3 | 1:A:23:LYS:HZ1 | 1.52 | 0.75 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:142:LYS:HZ1 | 1:A:174:MET:HB3 | 1.50 | 0.75 |
| 1:B:214:ASP:HB3 | 1:B:217:THR:OG1 | 1.87 | 0.75 |
| 1:B:114:LYS:HE2 | 1:B:116:VAL:HB | 1.68 | 0.75 |
| 1:D:75:LEU:HD12 | 1:D:78:ARG:CB | 2.13 | 0.74 |
| 1:E:8:ARG:NH1 | 1:E:26:HIS:O | 2.19 | 0.74 |
| 1:E:200:HIS:HB2 | 1:E:202:ARG:NH2 | 2.02 | 0.74 |
| 1:B:225:LYS:H | 1:B:225:LYS:HD3 | 1.51 | 0.74 |
| 1:E:32:LYS:HE3 | 1:E:35:ASN:HB2 | 1.69 | 0.73 |
| 1:C:136:HIS:H | 1:D:136:HIS:CD2 | 2.06 | 0.73 |
| 1:B:160:LEU:HD23 | 1:C:160:LEU:HD23 | 1.71 | 0.72 |
| 1:D:32:LYS:HD3 | 1:D:33:ILE:N | 2.04 | 0.72 |
| 1:D:174:MET:HG2 | 1:D:175:ASP:H | 1.55 | 0.72 |
| 1:D:160:LEU:HD23 | 1:F:160:LEU:HD23 | 1.71 | 0.72 |
| 1:E:78:ARG:NH1 | 1:F:265:GLU:OE1 | 2.22 | 0.72 |
| 1:D:39:ILE:HG12 | 1:D:54:VAL:HG13 | 1.72 | 0.71 |
| 1:D:59:GLU:HG3 | 1:D:60:PRO:HD2 | 1.73 | 0.71 |
| 1:F:210:PHE:HD2 | 1:F:211:ASN:HD22 | 1.38 | 0.71 |
| 1:E:202:ARG:HH21 | 1:E:203:ARG:NH1 | 1.87 | 0.71 |
| 1:F:228:GLU:CG | 1:F:230:ARG:HH12 | 2.03 | 0.71 |
| 1:E:69:LEU:C | 1:F:202:ARG:HH12 | 1.94 | 0.71 |
| 1:E:266:ASN:ND2 | 1:F:70:GLY:O | 2.24 | 0.71 |
| 1:B:225:LYS:HE2 | 1:B:228:GLU:HB3 | 1.72 | 0.70 |
| 1:E:195:MET:HB3 | 1:E:196:PRO:HD3 | 1.73 | 0.70 |
| 1:B:54:VAL:HG22 | 1:B:128:PHE:HB2 | 1.74 | 0.70 |
| 1:E:129:TYR:CE1 | 1:E:208:MET:HG3 | 2.27 | 0.69 |
| 1:F:167:LYS:HG3 | 1:F:170:ASP:HB3 | 1.74 | 0.69 |
| 1:F:203:ARG:HB2 | 1:F:263:CYS:O | 1.92 | 0.69 |
| 1:D:19:TYR:O | 1:D:230:ARG:NH1 | 2.19 | 0.69 |
| 1:D:19:TYR:CD1 | 1:D:23:LYS:HG2 | 2.27 | 0.69 |
| 1:E:34:PHE:HZ | 1:E:129:TYR:HB2 | 1.57 | 0.69 |
| 1:B:21:THR:HG23 | 1:C:230:ARG:HH12 | 1.57 | 0.69 |
| 1:D:16:ILE:HA | 1:D:19:TYR:CD2 | 2.26 | 0.69 |
| 1:F:56:PRO:HG2 | 1:F:128:PHE:HE2 | 1.56 | 0.69 |
| 1:F:225:LYS:HB3 | 1:F:225:LYS:HZ2 | 1.54 | 0.69 |
| 1:F:200:HIS:ND1 | 1:F:203:ARG:O | 2.23 | 0.69 |
| 1:D:203:ARG:NH2 | 1:D:266:ASN:O | 2.20 | 0.68 |
| 1:A:191:SER:OG | 1:A:252:GLY:N | 2.26 | 0.68 |
| 1:A:200:HIS:ND1 | 1:A:203:ARG:O | 2.26 | 0.68 |
| 1:F:191:SER:HB2 | 1:F:252:GLY:H | 1.58 | 0.68 |
| 1:B:161:ASN:HB2 | 1:B:163:ARG:NH2 | 2.08 | 0.68 |
| 1:B:154:MET:HE3 | 1:B:163:ARG:CZ | 2.14 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:219:VAL:HA | 1:C:252:GLY:HA2 | 1.74 | 0.68 |
| 1:C:91:ILE:HD11 | 1:C:106:TYR:CE2 | 2.29 | 0.68 |
| 1:B:176:THR:OG1 | 1:B:267:GLN:NE2 | 2.27 | 0.68 |
| 1:E:57:THR:OG1 | 1:E:58:ASP:N | 2.27 | 0.68 |
| 1:C:203:ARG:NH2 | 1:C:271:ASP:O | 2.27 | 0.68 |
| 1:C:221:HIS:CE1 | 1:C:242:ASN:HD21 | 2.12 | 0.67 |
| 1:D:41:LEU:HD23 | 1:D:52:GLY:HA3 | 1.75 | 0.67 |
| 1:C:225:LYS:CD | 1:C:225:LYS:H | 2.07 | 0.67 |
| 1:E:155:GLY:HA3 | 1:E:162:LYS:HA | 1.76 | 0.67 |
| 1:B:169:ILE:HA | 1:B:174:MET:HE1 | 1.77 | 0.67 |
| 1:C:195:MET:O | 1:C:197:ALA:N | 2.27 | 0.67 |
| 1:F:202:ARG:HG2 | 1:F:265:GLU:HB3 | 1.77 | 0.67 |
| 1:B:167:LYS:HG2 | 1:B:170:ASP:HB2 | 1.77 | 0.66 |
| 1:E:133:THR:HG21 | 1:E:179:LEU:HB2 | 1.75 | 0.66 |
| 1:B:150:LEU:O | 1:B:166:TYR:HA | 1.95 | 0.66 |
| 1:C:177:CYS:O | 1:D:77:ARG:NH2 | 2.29 | 0.66 |
| 1:D:223:LEU:HD21 | 1:D:232:ILE:HD11 | 1.78 | 0.66 |
| 1:C:78:ARG:HG3 | 1:C:134:PRO:HA | 1.77 | 0.66 |
| 1:F:228:GLU:HG3 | 1:F:230:ARG:NH1 | 2.06 | 0.66 |
| 1:E:167:LYS:HD2 | 1:E:170:ASP:OD2 | 1.95 | 0.66 |
| 1:E:6:VAL:HG21 | 1:E:8:ARG:HH21 | 1.62 | 0.65 |
| 1:B:85:ILE:HD11 | 1:B:210:PHE:CD2 | 2.32 | 0.65 |
| 1:B:39:ILE:HD13 | 1:B:54:VAL:CG1 | 2.24 | 0.65 |
| 1:A:203:ARG:HH11 | 1:A:266:ASN:HD21 | 1.45 | 0.65 |
| 1:A:69:LEU:HA | 1:B:202:ARG:HE | 1.61 | 0.64 |
| 1:F:114:LYS:HD2 | 1:F:114:LYS:C | 2.16 | 0.64 |
| 1:A:59:GLU:HG3 | 1:A:60:PRO:HD2 | 1.79 | 0.64 |
| 1:F:193:ASN:OD1 | 1:F:194:THR:HG22 | 1.97 | 0.64 |
| 1:B:230:ARG:HH12 | 1:C:230:ARG:CZ | 2.10 | 0.64 |
| 1:C:54:VAL:HG22 | 1:C:128:PHE:HB2 | 1.77 | 0.64 |
| 1:A:68:GLU:O | 1:B:202:ARG:NH2 | 2.30 | 0.64 |
| 1:C:165:ILE:C | 1:C:166:TYR:HD2 | 2.02 | 0.63 |
| 1:E:69:LEU:HA | 1:F:202:ARG:NH1 | 2.14 | 0.63 |
| 1:D:75:LEU:CD1 | 1:D:78:ARG:CB | 2.74 | 0.63 |
| 1:C:43:TYR:OH | 1:C:48:ARG:HG2 | 1.98 | 0.63 |
| 1:F:203:ARG:HB3 | 1:F:264:GLY:HA3 | 1.79 | 0.63 |
| 1:F:21:THR:O | 1:F:25:ARG:HG3 | 1.99 | 0.62 |
| 1:A:21:THR:O | 1:A:25:ARG:HG3 | 1.99 | 0.62 |
| 1:B:107:TYR:HD1 | 1:B:108:ILE:N | 1.97 | 0.62 |
| 1:E:202:ARG:CZ | 1:E:271:ASP:HB2 | 2.29 | 0.62 |
| 1:E:266:ASN:OD1 | 1:E:267:GLN:N | 2.32 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:92:THR:HG22 | 1:C:97:LYS:HB2 | 1.80 | 0.62 |
| 1:B:102:ASN:OD1 | 1:B:103:GLN:HG2 | 2.00 | 0.62 |
| 1:F:83:ILE:HD13 | 1:F:168:TYR:CD2 | 2.34 | 0.62 |
| 1:C:11:HIS:HD2 | 1:D:15:ASP:OD1 | 1.82 | 0.61 |
| 1:F:48:ARG:O | 1:F:78:ARG:NH1 | 2.31 | 0.61 |
| 1:E:38:ASP:OD2 | 1:E:39:ILE:N | 2.33 | 0.61 |
| 1:F:41:LEU:HD23 | 1:F:52:GLY:HA3 | 1.83 | 0.61 |
| 1:B:85:ILE:HG22 | 1:B:127:LYS:O | 2.00 | 0.61 |
| 1:B:225:LYS:H | 1:B:225:LYS:CD | 2.13 | 0.61 |
| 1:F:91:ILE:HG22 | 1:F:117:PHE:HA | 1.81 | 0.61 |
| 1:F:200:HIS:HB3 | 1:F:272:MET:HG3 | 1.82 | 0.61 |
| 1:B:218:ARG:O | 1:B:252:GLY:HA2 | 2.01 | 0.61 |
| 1:F:63:ILE:HD11 | 1:F:74:PHE:CE2 | 2.36 | 0.61 |
| 1:A:182:GLY:HA3 | 1:A:260:TRP:CE2 | 2.36 | 0.61 |
| 1:A:57:THR:OG1 | 1:A:58:ASP:N | 2.33 | 0.61 |
| 1:A:150:LEU:O | 1:A:166:TYR:HA | 2.01 | 0.61 |
| 1:B:54:VAL:CG2 | 1:B:128:PHE:HB2 | 2.31 | 0.61 |
| 1:F:163:ARG:NH1 | 3:F:302:MPO:S1 | 2.74 | 0.61 |
| 1:B:24:LEU:HD12 | 1:B:230:ARG:HH21 | 1.66 | 0.60 |
| 1:C:214:ASP:OD1 | 1:C:217:THR:OG1 | 2.19 | 0.60 |
| 1:F:203:ARG:HE | 1:F:262:MET:CE | 2.13 | 0.60 |
| 1:B:103:GLN:OE1 | 1:B:103:GLN:HA | 2.02 | 0.60 |
| 1:B:146:PHE:HE1 | 1:B:166:TYR:CD1 | 2.20 | 0.60 |
| 1:E:136:HIS:H | 1:F:136:HIS:CD2 | 2.19 | 0.60 |
| 1:E:170:ASP:OD2 | 1:E:172:SER:OG | 2.13 | 0.60 |
| 1:C:62:GLU:OE1 | 1:C:115:VAL:N | 2.34 | 0.60 |
| 1:F:62:GLU:HB2 | 1:F:115:VAL:O | 2.01 | 0.60 |
| 1:B:131:VAL:HB | 1:B:181:MET:CE | 2.31 | 0.60 |
| 1:E:58:ASP:HA | 1:E:122:ARG:CZ | 2.31 | 0.60 |
| 1:A:41:LEU:HD23 | 1:A:52:GLY:HA3 | 1.84 | 0.60 |
| 1:B:203:ARG:HH11 | 1:B:262:MET:HE2 | 1.66 | 0.60 |
| 1:F:203:ARG:NH1 | 1:F:266:ASN:OD1 | 2.35 | 0.60 |
| 1:C:135:ALA:HA | 1:D:136:HIS:HD2 | 1.67 | 0.60 |
| 1:B:139:TYR:CE1 | 1:B:175:ASP:HB3 | 2.37 | 0.59 |
| 1:E:203:ARG:HB2 | 1:E:263:CYS:O | 2.02 | 0.59 |
| 1:A:34:PHE:CE1 | 1:A:127:LYS:HB3 | 2.37 | 0.59 |
| 1:B:156:ASP:HA | 1:B:162:LYS:HD2 | 1.83 | 0.59 |
| 1:C:92:THR:HG22 | 1:C:97:LYS:CB | 2.32 | 0.59 |
| 1:F:43:TYR:OH | 1:F:48:ARG:NH1 | 2.36 | 0.59 |
| 1:B:57:THR:OG1 | 1:B:58:ASP:N | 2.35 | 0.59 |
| 1:B:235:PHE:H | 1:B:238:GLN:NE2 | 2.01 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:D:21:THR:O | 1:D:25:ARG:HG3 | 2.02 | 0.59 |
| 1:B:150:LEU:HD13 | 1:B:173:GLN:HE22 | 1.66 | 0.59 |
| 1:A:65:LEU:HD13 | 1:A:69:LEU:HD11 | 1.85 | 0.59 |
| 1:C:103:GLN:HB2 | 1:C:146:PHE:CD2 | 2.37 | 0.58 |
| 1:F:23:LYS:O | 1:F:23:LYS:HG3 | 2.03 | 0.58 |
| 1:F:203:ARG:CB | 1:F:264:GLY:HA3 | 2.33 | 0.58 |
| 1:C:58:ASP:OD1 | 1:C:59:GLU:N | 2.36 | 0.58 |
| 1:E:191:SER:OG | 1:E:252:GLY:N | 2.37 | 0.58 |
| 1:C:135:ALA:HA | 1:D:136:HIS:CD2 | 2.39 | 0.58 |
| 1:D:35:ASN:OD1 | 1:D:36:PRO:HD2 | 2.02 | 0.58 |
| 1:F:223:LEU:HD12 | 1:F:224:GLY:H | 1.69 | 0.58 |
| 1:B:107:TYR:CE2 | 1:B:176:THR:HG22 | 2.39 | 0.58 |
| 1:F:192:TRP:CD2 | 1:F:251:VAL:HG22 | 2.39 | 0.58 |
| 1:A:48:ARG:O | 1:A:78:ARG:NH1 | 2.29 | 0.58 |
| 1:D:182:GLY:HA3 | 1:D:260:TRP:CZ2 | 2.39 | 0.58 |
| 1:C:70:GLY:HA3 | 1:D:202:ARG:NH1 | 2.19 | 0.57 |
| 1:F:174:MET:HG2 | 1:F:175:ASP:H | 1.70 | 0.57 |
| 1:D:85:ILE:HG13 | 1:D:127:LYS:HB2 | 1.86 | 0.57 |
| 1:F:50:ILE:HG13 | 1:F:78:ARG:NH1 | 2.19 | 0.57 |
| 1:A:35:ASN:OD1 | 1:A:36:PRO:HD2 | 2.05 | 0.57 |
| 1:D:174:MET:HG2 | 1:D:175:ASP:N | 2.19 | 0.57 |
| 1:E:39:ILE:HD11 | 1:E:61:LEU:HB3 | 1.84 | 0.57 |
| 1:C:34:PHE:HB3 | 1:C:55:MET:CE | 2.34 | 0.57 |
| 1:B:157:GLN:O | 1:C:189:GLY:HA2 | 2.04 | 0.57 |
| 1:D:102:ASN:OD1 | 1:D:103:GLN:HG2 | 2.05 | 0.57 |
| 1:B:154:MET:HE1 | 3:B:302:MPO:O1 | 2.04 | 0.57 |
| 1:C:75:LEU:HD21 | 1:C:80:LEU:HB2 | 1.85 | 0.57 |
| 1:E:45:TYR:HE2 | 1:F:244:SER:HB2 | 1.70 | 0.57 |
| 1:B:182:GLY:HA3 | 1:B:260:TRP:CZ2 | 2.40 | 0.57 |
| 1:C:205:GLU:OE1 | 1:C:248:HIS:NE2 | 2.38 | 0.56 |
| 1:E:43:TYR:OH | 1:E:48:ARG:HD3 | 2.05 | 0.56 |
| 1:A:165:ILE:HD11 | 1:A:260:TRP:HE1 | 1.70 | 0.56 |
| 1:A:136:HIS:HB2 | 1:B:136:HIS:HB2 | 1.86 | 0.56 |
| 1:A:279:GLU:O | 1:E:233:THR:OG1 | 2.12 | 0.56 |
| 1:B:34:PHE:CD1 | 1:B:127:LYS:HB3 | 2.39 | 0.56 |
| 1:B:234:LEU:HD21 | 1:B:240:VAL:HG23 | 1.87 | 0.56 |
| 1:B:30:MET:CE | 1:B:42:THR:HG23 | 2.36 | 0.56 |
| 1:A:68:GLU:O | 1:B:202:ARG:NE | 2.36 | 0.56 |
| 1:C:91:ILE:O | 1:C:91:ILE:HD12 | 2.05 | 0.56 |
| 1:F:163:ARG:NH1 | 3:F:302:MPO:O2 | 2.39 | 0.56 |
| 1:E:64:LYS:O | 1:E:65:LEU:HD23 | 2.05 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:F:205:GLU:OE2 | 1:F:248:HIS:NE2 | 2.38 | 0.56 |
| 1:C:154:MET:HG3 | 1:C:165:ILE:CD1 | 2.35 | 0.56 |
| 1:D:107:TYR:CE1 | 1:D:176:THR:HG22 | 2.41 | 0.56 |
| 1:B:150:LEU:CD1 | 1:B:173:GLN:HE22 | 2.19 | 0.56 |
| 1:D:203:ARG:HH11 | 1:D:263:CYS:CA | 2.19 | 0.56 |
| 1:E:133:THR:CG2 | 1:E:179:LEU:HB2 | 2.35 | 0.56 |
| 1:E:148:THR:O | 1:E:150:LEU:HD12 | 2.06 | 0.56 |
| 1:A:260:TRP:CD2 | 3:A:302:MPO:H72 | 2.41 | 0.55 |
| 1:B:34:PHE:HB3 | 1:B:55:MET:CE | 2.37 | 0.55 |
| 1:D:182:GLY:O | 1:D:259:ILE:HG23 | 2.06 | 0.55 |
| 1:E:268:THR:HG22 | 1:E:270:ASP:H | 1.71 | 0.55 |
| 1:D:8:ARG:HH12 | 1:D:26:HIS:CD2 | 2.23 | 0.55 |
| 1:D:57:THR:OG1 | 1:D:58:ASP:N | 2.37 | 0.55 |
| 1:A:203:ARG:HB2 | 1:A:263:CYS:O | 2.06 | 0.55 |
| 1:C:134:PRO:O | 1:C:178:GLN:NE2 | 2.33 | 0.55 |
| 1:D:218:ARG:O | 1:D:252:GLY:HA2 | 2.06 | 0.55 |
| 1:C:146:PHE:HD1 | 1:C:146:PHE:O | 1.89 | 0.55 |
| 1:A:69:LEU:HA | 1:B:202:ARG:CZ | 2.35 | 0.55 |
| 1:B:92:THR:O | 1:B:114:LYS:NZ | 2.39 | 0.55 |
| 1:D:33:ILE:HD13 | 1:D:238:GLN:HA | 1.87 | 0.55 |
| 1:D:203:ARG:NH1 | 1:D:263:CYS:HA | 2.19 | 0.55 |
| 1:F:62:GLU:OE1 | 1:F:116:VAL:HG12 | 2.06 | 0.55 |
| 1:C:200:HIS:ND1 | 1:C:203:ARG:O | 2.39 | 0.55 |
| 1:A:242:ASN:ND2 | 1:A:248:HIS:HB3 | 2.22 | 0.55 |
| 1:B:203:ARG:HH11 | 1:B:262:MET:CE | 2.19 | 0.55 |
| 1:D:93:ILE:HD11 | 1:D:141:ASN:ND2 | 2.22 | 0.55 |
| 1:E:266:ASN:OD1 | 1:E:268:THR:N | 2.28 | 0.55 |
| 1:F:25:ARG:HH12 | 1:F:233:THR:H | 1.55 | 0.55 |
| 1:F:121:ASP:OD1 | 1:F:122:ARG:N | 2.39 | 0.55 |
| 1:A:30:MET:SD | 1:A:42:THR:HG23 | 2.47 | 0.54 |
| 1:D:156:ASP:OD1 | 1:D:159:HIS:N | 2.39 | 0.54 |
| 1:E:123:ASP:O | 1:E:124:HIS:ND1 | 2.39 | 0.54 |
| 1:D:14:GLU:O | 1:D:14:GLU:HG2 | 2.05 | 0.54 |
| 1:D:223:LEU:HD21 | 1:D:232:ILE:CD1 | 2.37 | 0.54 |
| 1:E:220:PHE:CD1 | 1:E:233:THR:HG22 | 2.42 | 0.54 |
| 1:F:137:LYS:HE2 | 1:F:139:TYR:CE1 | 2.43 | 0.54 |
| 1:B:171:ALA:H | 1:B:180:GLN:HE22 | 1.55 | 0.54 |
| 1:C:92:THR:HA | 1:C:97:LYS:HA | 1.90 | 0.54 |
| 1:B:210:PHE:HE1 | 1:B:259:ILE:HG13 | 1.71 | 0.54 |
| 1:C:47:ASP:OD1 | 1:D:48:ARG:NH1 | 2.41 | 0.54 |
| 1:E:34:PHE:HB3 | 1:E:55:MET:CE | 2.38 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:267:GLN:HE21 | 1:F:77:ARG:NH2 | 2.01 | 0.54 |
| 1:C:57:THR:OG1 | 1:C:58:ASP:N | 2.39 | 0.54 |
| 1:E:139:TYR:CD1 | 1:E:175:ASP:HB3 | 2.42 | 0.54 |
| 1:D:210:PHE:HA | 1:D:236:ASN:ND2 | 2.23 | 0.54 |
| 1:C:108:ILE:CD1 | 1:C:115:VAL:HG21 | 2.38 | 0.54 |
| 1:C:103:GLN:HB2 | 1:C:146:PHE:HD2 | 1.73 | 0.53 |
| 1:D:55:MET:HE3 | 1:D:127:LYS:CG | 2.34 | 0.53 |
| 1:B:195:MET:O | 1:B:197:ALA:N | 2.41 | 0.53 |
| 1:D:219:VAL:HA | 1:D:251:VAL:O | 2.08 | 0.53 |
| 1:F:83:ILE:HD13 | 1:F:168:TYR:CE2 | 2.44 | 0.53 |
| 1:B:43:TYR:OH | 1:B:48:ARG:NE | 2.36 | 0.53 |
| 1:E:34:PHE:HB3 | 1:E:55:MET:HE2 | 1.89 | 0.53 |
| 1:D:106:TYR:CD1 | 1:D:142:LYS:O | 2.62 | 0.53 |
| 1:F:207:TYR:OH | 1:F:248:HIS:HD2 | 1.91 | 0.53 |
| 1:A:4:SER:HB3 | 1:A:40:LEU:HD23 | 1.91 | 0.53 |
| 1:A:107:TYR:CE2 | 1:A:176:THR:HG22 | 2.44 | 0.53 |
| 1:A:265:GLU:OE1 | 1:B:69:LEU:HD23 | 2.09 | 0.53 |
| 1:B:183:TYR:CE1 | 1:B:210:PHE:HZ | 2.27 | 0.53 |
| 1:E:17:GLN:O | 1:E:230:ARG:NH2 | 2.33 | 0.53 |
| 1:E:34:PHE:CD1 | 1:E:127:LYS:HB3 | 2.43 | 0.53 |
| 1:F:203:ARG:HE | 1:F:262:MET:HE2 | 1.72 | 0.53 |
| 1:F:234:LEU:HD21 | 1:F:240:VAL:HG23 | 1.91 | 0.53 |
| 1:C:47:ASP:OD2 | 1:D:48:ARG:NH1 | 2.42 | 0.53 |
| 1:C:170:ASP:OD1 | 1:C:171:ALA:N | 2.42 | 0.53 |
| 1:E:223:LEU:HD12 | 1:E:246:SER:OG | 2.09 | 0.53 |
| 1:F:34:PHE:HB3 | 1:F:55:MET:HE2 | 1.91 | 0.53 |
| 1:C:136:HIS:N | 1:D:136:HIS:HD2 | 2.02 | 0.52 |
| 1:D:58:ASP:HA | 1:D:122:ARG:HD3 | 1.90 | 0.52 |
| 1:E:88:ALA:CB | 1:E:120:GLU:HG3 | 2.40 | 0.52 |
| 1:C:208:MET:HE2 | 1:C:237:GLU:HA | 1.91 | 0.52 |
| 1:E:200:HIS:CB | 1:E:202:ARG:HH22 | 2.23 | 0.52 |
| 1:F:59:GLU:CD | 1:F:59:GLU:H | 2.12 | 0.52 |
| 1:F:104:ASP:OD1 | 1:F:146:PHE:N | 2.38 | 0.52 |
| 1:B:5:MET:HE3 | 1:B:43:TYR:HD2 | 1.75 | 0.52 |
| 1:A:10:ALA:HB3 | 1:B:10:ALA:HB3 | 1.91 | 0.52 |
| 1:A:47:ASP:OD2 | 1:B:48:ARG:HD2 | 2.10 | 0.51 |
| 1:A:205:GLU:HG2 | 1:A:262:MET:HB2 | 1.91 | 0.51 |
| 1:B:78:ARG:HB3 | 1:B:134:PRO:HA | 1.92 | 0.51 |
| 1:B:165:ILE:C | 1:B:166:TYR:HD2 | 2.14 | 0.51 |
| 1:B:154:MET:CE | 1:B:163:ARG:HE | 2.21 | 0.51 |
| 1:C:179:LEU:HD12 | 1:C:180:GLN:N | 2.25 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:D:155:GLY:HA3 | 1:D:162:LYS:HA | 1.93 | 0.51 |
| 1:B:223:LEU:HD12 | 1:B:246:SER:OG | 2.11 | 0.51 |
| 1:C:56:PRO:HA | 1:C:61:LEU:HD12 | 1.91 | 0.51 |
| 1:C:198:HIS:CD2 | 1:C:248:HIS:HE2 | 2.28 | 0.51 |
| 1:F:227:ASP:O | 1:F:280:LEU:HA | 2.11 | 0.51 |
| 1:B:57:THR:HG22 | 1:B:125:PRO:HG3 | 1.91 | 0.51 |
| 1:D:78:ARG:HD3 | 1:D:134:PRO:HA | 1.91 | 0.51 |
| 1:E:77:ARG:HH11 | 1:E:77:ARG:HB3 | 1.75 | 0.51 |
| 1:F:161:ASN:O | 1:F:163:ARG:HD3 | 2.10 | 0.51 |
| 1:A:218:ARG:O | 1:A:252:GLY:HA2 | 2.09 | 0.51 |
| 1:B:167:LYS:HD3 | 1:B:170:ASP:OD1 | 2.11 | 0.51 |
| 1:A:137:LYS:HE2 | 1:A:139:TYR:CE1 | 2.46 | 0.51 |
| 1:F:62:GLU:HB3 | 1:F:116:VAL:HA | 1.91 | 0.51 |
| 1:A:107:TYR:CZ | 1:A:176:THR:HG22 | 2.46 | 0.51 |
| 1:B:139:TYR:CD1 | 1:B:175:ASP:HB3 | 2.46 | 0.51 |
| 1:B:230:ARG:HH12 | 1:C:230:ARG:NE | 2.09 | 0.51 |
| 1:C:76:GLN:O | 1:C:110:MET:HG3 | 2.11 | 0.51 |
| 1:C:79:GLU:HG2 | 1:C:133:THR:O | 2.11 | 0.51 |
| 1:F:163:ARG:HB3 | 1:F:186:LEU:HD13 | 1.92 | 0.51 |
| 1:A:54:VAL:HG12 | 1:A:61:LEU:HD12 | 1.93 | 0.51 |
| 1:C:225:LYS:HE2 | 1:C:228:GLU:HB3 | 1.92 | 0.51 |
| 1:E:11:HIS:CE1 | 1:F:12:SER:HB3 | 2.46 | 0.51 |
| 1:E:136:HIS:HB2 | 1:F:136:HIS:HB2 | 1.93 | 0.51 |
| 1:B:34:PHE:CE1 | 1:B:127:LYS:HB3 | 2.46 | 0.50 |
| 1:C:10:ALA:HB3 | 1:D:10:ALA:HB3 | 1.93 | 0.50 |
| 1:E:88:ALA:HB3 | 1:E:120:GLU:HG3 | 1.93 | 0.50 |
| 1:B:154:MET:SD | 1:B:163:ARG:NH1 | 2.84 | 0.50 |
| 1:C:218:ARG:HH21 | 1:C:234:LEU:C | 2.14 | 0.50 |
| 1:E:58:ASP:HA | 1:E:122:ARG:NH1 | 2.26 | 0.50 |
| 1:E:66:SER:O | 1:E:70:GLY:N | 2.45 | 0.50 |
| 1:C:37:GLY:O | 1:C:61:LEU:HD11 | 2.11 | 0.50 |
| 1:C:240:VAL:HG12 | 1:C:242:ASN:OD1 | 2.11 | 0.50 |
| 1:C:182:GLY:O | 1:C:259:ILE:HG23 | 2.12 | 0.50 |
| 1:D:31:GLU:O | 1:D:238:GLN:HG2 | 2.12 | 0.50 |
| 1:E:170:ASP:OD1 | 1:E:171:ALA:N | 2.44 | 0.50 |
| 1:F:91:ILE:HD11 | 1:F:106:TYR:CD2 | 2.46 | 0.50 |
| 1:A:2:SER:HB3 | 1:A:38:ASP:OD1 | 2.11 | 0.50 |
| 1:C:225:LYS:H | 1:C:225:LYS:HD2 | 1.75 | 0.50 |
| 1:D:59:GLU:HG3 | 1:D:60:PRO:CD | 2.42 | 0.50 |
| 1:A:36:PRO:N | 1:A:55:MET:HE3 | 2.26 | 0.50 |
| 1:A:110:MET:HG2 | 1:A:111:GLY:N | 2.27 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:34:PHE:HB3 | 1:C:55:MET:HE2 | 1.94 | 0.50 |
| 1:F:90:ALA:O | 1:F:118:THR:HG22 | 2.11 | 0.50 |
| 1:B:210:PHE:CE1 | 1:B:259:ILE:HG13 | 2.46 | 0.49 |
| 1:C:12:SER:HB3 | 1:C:15:ASP:CG | 2.32 | 0.49 |
| 1:F:133:THR:HG21 | 1:F:178:GLN:HG3 | 1.93 | 0.49 |
| 1:A:170:ASP:OD2 | 1:A:172:SER:OG | 2.29 | 0.49 |
| 1:F:210:PHE:HA | 1:F:236:ASN:OD1 | 2.13 | 0.49 |
| 1:D:203:ARG:NE | 1:D:262:MET:HG2 | 2.27 | 0.49 |
| 1:F:203:ARG:NH2 | 1:F:268:THR:O | 2.44 | 0.49 |
| 1:A:16:ILE:HG22 | 1:A:19:TYR:CE2 | 2.47 | 0.49 |
| 1:D:82:ILE:HD13 | 1:D:117:PHE:HE2 | 1.77 | 0.49 |
| 1:E:200:HIS:HB2 | 1:E:202:ARG:HH22 | 1.78 | 0.49 |
| 1:F:63:ILE:O | 1:F:63:ILE:HG13 | 2.11 | 0.49 |
| 1:F:75:LEU:HD12 | 1:F:78:ARG:HB2 | 1.94 | 0.49 |
| 1:B:218:ARG:NH2 | 1:B:235:PHE:CD2 | 2.79 | 0.49 |
| 1:C:225:LYS:HD3 | 1:C:228:GLU:O | 2.13 | 0.49 |
| 1:D:166:TYR:HB2 | 1:D:183:TYR:HB3 | 1.95 | 0.49 |
| 1:F:39:ILE:HG23 | 1:F:54:VAL:HG12 | 1.94 | 0.49 |
| 1:B:183:TYR:HE1 | 1:B:210:PHE:CZ | 2.30 | 0.49 |
| 1:A:19:TYR:CD1 | 1:A:23:LYS:NZ | 2.54 | 0.49 |
| 1:C:39:ILE:HG23 | 1:C:54:VAL:HG12 | 1.94 | 0.49 |
| 1:B:161:ASN:HB2 | 1:B:163:ARG:HH22 | 1.77 | 0.49 |
| 1:E:198:HIS:HB3 | 1:E:272:MET:HE3 | 1.94 | 0.49 |
| 1:A:99:ALA:O | 1:A:143:LYS:NZ | 2.42 | 0.48 |
| 1:B:170:ASP:H | 1:B:174:MET:HE3 | 1.78 | 0.48 |
| 1:D:62:GLU:HG3 | 1:D:115:VAL:O | 2.13 | 0.48 |
| 1:E:200:HIS:CB | 1:E:202:ARG:NH2 | 2.74 | 0.48 |
| 1:E:203:ARG:CB | 1:E:264:GLY:HA3 | 2.43 | 0.48 |
| 1:F:223:LEU:HD12 | 1:F:246:SER:OG | 2.13 | 0.48 |
| 1:A:157:GLN:O | 1:E:189:GLY:HA2 | 2.13 | 0.48 |
| 1:A:205:GLU:OE2 | 1:A:248:HIS:CE1 | 2.66 | 0.48 |
| 1:B:21:THR:HG21 | 1:C:228:GLU:HA | 1.94 | 0.48 |
| 1:F:11:HIS:NE2 | 1:F:27:GLU:OE2 | 2.46 | 0.48 |
| 1:F:137:LYS:HD3 | 1:F:139:TYR:CZ | 2.48 | 0.48 |
| 1:F:167:LYS:HG3 | 1:F:170:ASP:CB | 2.43 | 0.48 |
| 1:B:154:MET:HE1 | 1:B:163:ARG:NE | 2.12 | 0.48 |
| 1:A:156:ASP:OD1 | 1:A:159:HIS:N | 2.42 | 0.48 |
| 1:F:64:LYS:O | 1:F:65:LEU:HD23 | 2.13 | 0.48 |
| 1:C:225:LYS:H | 1:C:225:LYS:HD3 | 1.76 | 0.48 |
| 1:F:56:PRO:HG2 | 1:F:128:PHE:CE2 | 2.44 | 0.48 |
| 1:B:117:PHE:HB3 | 1:B:128:PHE:CE2 | 2.48 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:69:LEU:CA | 1:F:202:ARG:HH12 | 2.26 | 0.48 |
| 1:B:110:MET:HG2 | 1:B:111:GLY:N | 2.28 | 0.48 |
| 1:C:115:VAL:HG13 | 1:C:115:VAL:O | 2.12 | 0.48 |
| 1:F:91:ILE:HD12 | 1:F:91:ILE:O | 2.13 | 0.48 |
| 1:C:41:LEU:HD23 | 1:C:52:GLY:HA3 | 1.96 | 0.48 |
| 1:A:53:GLY:HA2 | 1:A:128:PHE:O | 2.13 | 0.47 |
| 1:C:266:ASN:ND2 | 1:C:268:THR:HG23 | 2.24 | 0.47 |
| 1:E:29:LEU:CD2 | 1:E:31:GLU:HG2 | 2.44 | 0.47 |
| 1:F:39:ILE:HD13 | 1:F:63:ILE:HG22 | 1.96 | 0.47 |
| 1:F:82:ILE:HD13 | 1:F:106:TYR:HB3 | 1.96 | 0.47 |
| 1:B:144:LEU:HD21 | 1:B:174:MET:SD | 2.54 | 0.47 |
| 1:C:82:ILE:HD13 | 1:C:117:PHE:HE2 | 1.78 | 0.47 |
| 1:F:63:ILE:HD11 | 1:F:74:PHE:CZ | 2.49 | 0.47 |
| 1:F:94:ASP:HA | 1:F:114:LYS:HE3 | 1.96 | 0.47 |
| 1:C:203:ARG:HB2 | 1:C:263:CYS:O | 2.15 | 0.47 |
| 1:C:214:ASP:OD1 | 1:C:214:ASP:N | 2.46 | 0.47 |
| 1:D:207:TYR:HH | 1:D:248:HIS:HD1 | 1.58 | 0.47 |
| 1:E:107:TYR:O | 1:E:108:ILE:HD13 | 2.14 | 0.47 |
| 1:E:200:HIS:ND1 | 1:E:203:ARG:O | 2.48 | 0.47 |
| 1:C:91:ILE:HA | 1:C:116:VAL:O | 2.14 | 0.47 |
| 1:D:203:ARG:HH21 | 1:D:266:ASN:C | 2.14 | 0.47 |
| 1:E:67:THR:C | 1:E:70:GLY:H | 2.18 | 0.47 |
| 1:F:91:ILE:HA | 1:F:116:VAL:O | 2.14 | 0.47 |
| 1:F:205:GLU:HG2 | 1:F:262:MET:HB2 | 1.96 | 0.47 |
| 1:B:171:ALA:N | 1:B:180:GLN:HE22 | 2.11 | 0.47 |
| 1:C:144:LEU:HD22 | 1:C:168:TYR:O | 2.14 | 0.47 |
| 1:A:34:PHE:CD1 | 1:A:127:LYS:HB3 | 2.50 | 0.47 |
| 1:A:83:ILE:HG13 | 1:A:181:MET:HE3 | 1.97 | 0.47 |
| 1:A:137:LYS:HE2 | 1:A:139:TYR:CZ | 2.49 | 0.47 |
| 1:A:163:ARG:HD3 | 1:A:184:THR:CG2 | 2.44 | 0.47 |
| 1:A:182:GLY:HA3 | 1:A:260:TRP:CZ2 | 2.50 | 0.47 |
| 1:B:29:LEU:HD23 | 1:B:31:GLU:HG2 | 1.96 | 0.47 |
| 1:B:170:ASP:H | 1:B:174:MET:CE | 2.28 | 0.47 |
| 1:C:150:LEU:HG | 1:C:151:ALA:N | 2.30 | 0.47 |
| 1:C:166:TYR:N | 1:C:166:TYR:CD2 | 2.83 | 0.47 |
| 1:D:115:VAL:HG12 | 1:D:117:PHE:CE1 | 2.50 | 0.47 |
| 1:E:29:LEU:CD1 | 1:E:234:LEU:HD22 | 2.44 | 0.47 |
| 1:E:179:LEU:HD11 | 1:E:181:MET:HG3 | 1.97 | 0.47 |
| 1:A:142:LYS:HZ1 | 1:A:174:MET:CB | 2.22 | 0.47 |
| 1:C:29:LEU:CD2 | 1:C:31:GLU:HG2 | 2.45 | 0.47 |
| 1:D:19:TYR:HE1 | 1:D:27:GLU:HG3 | 1.79 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:29:LEU:HD23 | 1:C:31:GLU:HG2 | 1.97 | 0.47 |
| 1:A:202:ARG:HB2 | 1:A:266:ASN:ND2 | 2.29 | 0.47 |
| 1:B:29:LEU:CD2 | 1:B:31:GLU:HG2 | 2.45 | 0.47 |
| 1:B:226:PRO:O | 1:B:279:GLU:HA | 2.15 | 0.47 |
| 1:F:73:PHE:CD2 | 1:F:113:GLN:HA | 2.50 | 0.47 |
| 1:F:210:PHE:HD2 | 1:F:211:ASN:ND2 | 2.10 | 0.47 |
| 1:F:212:PHE:HB3 | 1:F:217:THR:HB | 1.96 | 0.47 |
| 1:A:228:GLU:HG3 | 1:A:230:ARG:HH12 | 1.80 | 0.46 |
| 1:B:146:PHE:HE1 | 1:B:166:TYR:HD1 | 1.61 | 0.46 |
| 1:C:92:THR:OG1 | 1:C:116:VAL:CG1 | 2.60 | 0.46 |
| 1:C:220:PHE:N | 1:C:251:VAL:O | 2.30 | 0.46 |
| 1:E:40:LEU:O | 1:E:52:GLY:HA3 | 2.15 | 0.46 |
| 1:E:136:HIS:H | 1:F:136:HIS:HD2 | 1.60 | 0.46 |
| 1:F:25:ARG:NH1 | 1:F:233:THR:H | 2.13 | 0.46 |
| 1:E:179:LEU:HD12 | 1:E:180:GLN:N | 2.30 | 0.46 |
| 1:E:195:MET:HB3 | 1:E:196:PRO:CD | 2.44 | 0.46 |
| 1:F:226:PRO:O | 1:F:279:GLU:HA | 2.16 | 0.46 |
| 1:B:35:ASN:OD1 | 1:B:36:PRO:HD2 | 2.15 | 0.46 |
| 1:A:277:MET:HG3 | 1:E:216:GLU:HB3 | 1.98 | 0.46 |
| 1:B:6:VAL:HG22 | 1:B:42:THR:HG22 | 1.98 | 0.46 |
| 1:F:200:HIS:NE2 | 1:F:205:GLU:OE2 | 2.48 | 0.46 |
| 1:D:205:GLU:HG2 | 1:D:262:MET:HB2 | 1.98 | 0.46 |
| 1:C:82:ILE:HD13 | 1:C:117:PHE:CE2 | 2.51 | 0.46 |
| 1:A:279:GLU:N | 1:E:218:ARG:NH1 | 2.52 | 0.46 |
| 1:B:5:MET:HA | 1:B:41:LEU:O | 2.15 | 0.46 |
| 1:D:35:ASN:O | 1:D:55:MET:HG2 | 2.16 | 0.46 |
| 1:E:77:ARG:HH21 | 1:F:267:GLN:HE21 | 1.64 | 0.46 |
| 1:F:34:PHE:HE2 | 1:F:208:MET:HE3 | 1.80 | 0.46 |
| 1:F:56:PRO:HA | 1:F:61:LEU:HD12 | 1.98 | 0.46 |
| 1:F:195:MET:O | 1:F:197:ALA:N | 2.49 | 0.46 |
| 1:C:165:ILE:O | 1:C:166:TYR:HD2 | 1.99 | 0.46 |
| 1:C:198:HIS:HB2 | 1:C:272:MET:HB2 | 1.98 | 0.46 |
| 1:D:231:HIS:NE2 | 1:F:229:THR:OG1 | 2.41 | 0.46 |
| 1:A:110:MET:HE1 | 1:A:136:HIS:C | 2.37 | 0.45 |
| 1:D:21:THR:HG23 | 1:F:230:ARG:NH1 | 2.31 | 0.45 |
| 1:F:260:TRP:CE2 | 3:F:302:MPO:H72 | 2.51 | 0.45 |
| 1:B:21:THR:N | 1:C:228:GLU:OE2 | 2.45 | 0.45 |
| 1:B:96:ARG:NH1 | 1:B:96:ARG:HA | 2.29 | 0.45 |
| 1:B:107:TYR:CD1 | 1:B:108:ILE:N | 2.80 | 0.45 |
| 1:B:189:GLY:HA2 | 1:C:157:GLN:O | 2.15 | 0.45 |
| 1:B:202:ARG:C | 1:B:203:ARG:HG2 | 2.36 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:210:PHE:HE1 | 1:C:259:ILE:HG13 | 1.81 | 0.45 |
| 1:D:32:LYS:HD2 | 1:D:34:PHE:O | 2.16 | 0.45 |
| 1:B:2:SER:HB2 | 1:B:38:ASP:OD1 | 2.16 | 0.45 |
| 1:C:165:ILE:C | 1:C:166:TYR:CD2 | 2.86 | 0.45 |
| 1:C:179:LEU:HD12 | 1:C:180:GLN:H | 1.81 | 0.45 |
| 1:C:187:GLU:O | 1:C:190:SER:HB2 | 2.16 | 0.45 |
| 1:F:59:GLU:O | 1:F:60:PRO:C | 2.55 | 0.45 |
| 1:F:61:LEU:O | 1:F:117:PHE:N | 2.37 | 0.45 |
| 1:F:158:GLN:O | 1:F:158:GLN:HG3 | 2.15 | 0.45 |
| 1:B:11:HIS:HB3 | 1:B:15:ASP:HB2 | 1.98 | 0.45 |
| 1:C:19:TYR:HE2 | 1:C:27:GLU:HG3 | 1.81 | 0.45 |
| 1:C:216:GLU:N | 1:C:216:GLU:OE1 | 2.49 | 0.45 |
| 1:D:3:PHE:HD1 | 1:D:39:ILE:HB | 1.80 | 0.45 |
| 1:A:19:TYR:CB | 1:A:23:LYS:HZ1 | 2.15 | 0.45 |
| 1:C:224:GLY:O | 1:C:247:ILE:HG12 | 2.16 | 0.45 |
| 1:D:218:ARG:NH2 | 1:F:279:GLU:O | 2.48 | 0.45 |
| 1:F:62:GLU:CB | 1:F:116:VAL:HA | 2.46 | 0.45 |
| 1:A:91:ILE:HD11 | 1:A:106:TYR:CD2 | 2.52 | 0.45 |
| 1:C:30:MET:SD | 1:C:42:THR:HG23 | 2.57 | 0.45 |
| 1:C:71:VAL:HB | 1:C:76:GLN:OE1 | 2.16 | 0.45 |
| 1:D:194:THR:HG22 | 1:D:194:THR:O | 2.15 | 0.45 |
| 1:E:152:LYS:O | 1:E:165:ILE:HG22 | 2.17 | 0.45 |
| 1:E:203:ARG:HH21 | 1:E:262:MET:CE | 2.29 | 0.45 |
| 1:B:200:HIS:ND1 | 1:B:203:ARG:O | 2.50 | 0.45 |
| 1:D:192:TRP:CD2 | 1:D:251:VAL:HG12 | 2.51 | 0.45 |
| 1:F:214:ASP:OD1 | 1:F:215:PRO:HD3 | 2.17 | 0.45 |
| 1:B:21:THR:HB | 1:C:280:LEU:CD1 | 2.47 | 0.45 |
| 1:B:98:ASP:OD1 | 1:B:143:LYS:NZ | 2.49 | 0.45 |
| 1:D:42:THR:HB | 1:D:51:PHE:CE1 | 2.51 | 0.45 |
| 1:D:179:LEU:HD12 | 1:D:180:GLN:N | 2.32 | 0.45 |
| 1:D:227:ASP:OD1 | 1:D:228:GLU:N | 2.50 | 0.45 |
| 1:E:3:PHE:CZ | 1:E:65:LEU:HD21 | 2.51 | 0.45 |
| 1:A:85:ILE:HA | 1:A:103:GLN:NE2 | 2.32 | 0.45 |
| 1:A:221:HIS:CD2 | 1:A:240:VAL:HG11 | 2.52 | 0.45 |
| 3:B:302:MPO:H42 | 3:B:302:MPO:H11 | 1.98 | 0.45 |
| 1:D:92:THR:HG22 | 1:D:97:LYS:HB2 | 1.98 | 0.45 |
| 1:B:48:ARG:O | 1:B:78:ARG:NH2 | 2.49 | 0.44 |
| 1:F:129:TYR:CE1 | 1:F:208:MET:HG3 | 2.53 | 0.44 |
| 1:C:34:PHE:CD1 | 1:C:127:LYS:HB3 | 2.52 | 0.44 |
| 1:D:129:TYR:CE2 | 1:D:208:MET:HG3 | 2.52 | 0.44 |
| 1:A:6:VAL:HG22 | 1:A:42:THR:HG22 | 1.98 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:114:LYS:HE2 | 1:B:116:VAL:CB | 2.41 | 0.44 |
| 1:C:92:THR:HG22 | 1:C:97:LYS:CG | 2.47 | 0.44 |
| 1:D:73:PHE:CD2 | 1:D:113:GLN:HA | 2.53 | 0.44 |
| 1:D:145:PRO:HD2 | 1:D:148:THR:OG1 | 2.17 | 0.44 |
| 1:A:23:LYS:HB3 | 1:A:23:LYS:HE3 | 1.20 | 0.44 |
| 1:A:102:ASN:OD1 | 1:A:103:GLN:HG2 | 2.17 | 0.44 |
| 1:B:231:HIS:NE2 | 1:C:229:THR:HG23 | 2.33 | 0.44 |
| 1:C:210:PHE:CE1 | 1:C:259:ILE:HG13 | 2.52 | 0.44 |
| 1:E:6:VAL:HG21 | 1:E:8:ARG:NH2 | 2.31 | 0.44 |
| 1:E:214:ASP:OD1 | 1:E:215:PRO:HD2 | 2.17 | 0.44 |
| 1:F:92:THR:HG22 | 1:F:97:LYS:CD | 2.48 | 0.44 |
| 1:A:19:TYR:HB3 | 1:A:23:LYS:NZ | 2.15 | 0.44 |
| 1:A:277:MET:HE2 | 1:E:216:GLU:O | 2.18 | 0.44 |
| 1:B:69:LEU:N | 1:B:69:LEU:HD12 | 2.33 | 0.44 |
| 1:C:179:LEU:O | 1:C:180:GLN:HG2 | 2.18 | 0.44 |
| 1:E:102:ASN:OD1 | 1:E:103:GLN:HG2 | 2.18 | 0.44 |
| 1:E:208:MET:HG2 | 1:E:239:ALA:HB2 | 1.99 | 0.44 |
| 1:A:68:GLU:O | 1:B:202:ARG:CZ | 2.65 | 0.44 |
| 1:A:129:TYR:CE1 | 1:A:208:MET:HG3 | 2.52 | 0.44 |
| 1:E:2:SER:OG | 1:E:3:PHE:N | 2.51 | 0.44 |
| 1:F:174:MET:HG2 | 1:F:175:ASP:N | 2.32 | 0.44 |
| 1:A:75:LEU:HD21 | 1:A:80:LEU:HB2 | 2.00 | 0.44 |
| 1:B:203:ARG:NH2 | 1:B:271:ASP:O | 2.51 | 0.44 |
| 1:B:224:GLY:HA2 | 1:B:245:TRP:HZ3 | 1.82 | 0.44 |
| 1:C:54:VAL:HG21 | 1:C:117:PHE:CG | 2.53 | 0.44 |
| 1:F:107:TYR:O | 1:F:108:ILE:HD13 | 2.17 | 0.44 |
| 1:A:12:SER:OG | 1:A:14:GLU:HB2 | 2.18 | 0.44 |
| 1:A:39:ILE:HG12 | 1:A:54:VAL:HG13 | 1.98 | 0.44 |
| 1:B:91:ILE:HD11 | 1:B:106:TYR:CD1 | 2.53 | 0.44 |
| 1:C:75:LEU:CD2 | 1:C:80:LEU:HB2 | 2.46 | 0.44 |
| 1:D:82:ILE:HD13 | 1:D:117:PHE:CE2 | 2.52 | 0.44 |
| 1:A:73:PHE:CD2 | 1:A:113:GLN:HA | 2.53 | 0.43 |
| 1:F:49:MET:HE1 | 1:F:206:THR:HB | 2.00 | 0.43 |
| 1:D:51:PHE:CD2 | 1:D:206:THR:HG21 | 2.53 | 0.43 |
| 1:D:93:ILE:HD11 | 1:D:141:ASN:HD22 | 1.81 | 0.43 |
| 1:D:134:PRO:HD2 | 1:D:178:GLN:NE2 | 2.33 | 0.43 |
| 1:D:234:LEU:HD21 | 1:D:240:VAL:HG23 | 1.99 | 0.43 |
| 1:E:272:MET:HE3 | 1:E:272:MET:HA | 2.00 | 0.43 |
| 1:A:178:GLN:HE21 | 1:A:264:GLY:N | 2.17 | 0.43 |
| 1:B:30:MET:SD | 1:B:42:THR:HG23 | 2.58 | 0.43 |
| 1:F:209:TYR:HB3 | 1:F:212:PHE:HE1 | 1.83 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:221:HIS:HE1 | 1:C:242:ASN:ND2 | 2.08 | 0.43 |
| 1:D:34:PHE:CE2 | 1:D:85:ILE:HD11 | 2.53 | 0.43 |
| 1:F:225:LYS:HB3 | 1:F:225:LYS:HZ3 | 1.80 | 0.43 |
| 1:C:78:ARG:HG3 | 1:C:134:PRO:CA | 2.45 | 0.43 |
| 1:E:48:ARG:HD2 | 1:F:265:GLU:HB2 | 1.99 | 0.43 |
| 1:F:226:PRO:HG3 | 1:F:275:VAL:HG11 | 2.01 | 0.43 |
| 1:A:16:ILE:O | 1:A:19:TYR:HB2 | 2.19 | 0.43 |
| 1:A:77:ARG:NE | 1:B:266:ASN:HA | 2.34 | 0.43 |
| 1:A:270:ASP:OD2 | 1:A:270:ASP:N | 2.42 | 0.43 |
| 1:B:85:ILE:CG2 | 1:B:127:LYS:HB2 | 2.49 | 0.43 |
| 1:B:218:ARG:NH2 | 1:B:235:PHE:CE2 | 2.83 | 0.43 |
| 1:C:7:THR:O | 1:C:8:ARG:NH1 | 2.52 | 0.43 |
| 1:E:70:GLY:HA3 | 1:F:202:ARG:HH22 | 1.84 | 0.43 |
| 1:F:139:TYR:HD1 | 1:F:139:TYR:HA | 1.73 | 0.43 |
| 1:F:156:ASP:OD1 | 1:F:159:HIS:N | 2.47 | 0.43 |
| 1:A:200:HIS:CE1 | 1:A:203:ARG:O | 2.72 | 0.43 |
| 1:A:202:ARG:HD2 | 1:B:68:GLU:O | 2.17 | 0.43 |
| 1:B:92:THR:HA | 1:B:97:LYS:HA | 1.99 | 0.43 |
| 1:C:15:ASP:OD1 | 1:D:11:HIS:HD2 | 2.02 | 0.43 |
| 1:C:266:ASN:HD21 | 1:C:268:THR:CG2 | 2.26 | 0.43 |
| 1:E:162:LYS:N | 1:E:190:SER:OG | 2.51 | 0.43 |
| 1:F:11:HIS:CE1 | 1:F:27:GLU:OE2 | 2.72 | 0.43 |
| 1:B:68:GLU:HB2 | 1:B:69:LEU:HD12 | 2.01 | 0.43 |
| 1:B:228:GLU:OE1 | 1:C:20:ASP:HB2 | 2.18 | 0.43 |
| 1:B:222:PHE:HB2 | 1:B:249:CYS:HB2 | 2.01 | 0.43 |
| 1:E:77:ARG:NH2 | 1:F:267:GLN:HE21 | 2.17 | 0.43 |
| 1:E:198:HIS:HB3 | 1:E:272:MET:CE | 2.48 | 0.43 |
| 1:E:203:ARG:HB2 | 1:E:264:GLY:HA3 | 2.00 | 0.43 |
| 1:F:202:ARG:HE | 1:F:202:ARG:HB2 | 1.22 | 0.43 |
| 1:A:82:ILE:HD13 | 1:A:117:PHE:HE1 | 1.84 | 0.43 |
| 1:C:69:LEU:HD13 | 1:D:265:GLU:OE1 | 2.18 | 0.43 |
| 1:E:40:LEU:O | 1:E:41:LEU:HD23 | 2.19 | 0.43 |
| 1:E:78:ARG:HG2 | 1:E:134:PRO:HA | 1.99 | 0.43 |
| 1:E:221:HIS:CG | 1:E:240:VAL:HG11 | 2.53 | 0.43 |
| 1:F:145:PRO:O | 1:F:148:THR:HG22 | 2.19 | 0.43 |
| 1:B:21:THR:HG23 | 1:C:228:GLU:HG3 | 2.01 | 0.42 |
| 1:B:62:GLU:HG3 | 1:B:115:VAL:O | 2.19 | 0.42 |
| 1:B:146:PHE:HE1 | 1:B:166:TYR:CE1 | 2.36 | 0.42 |
| 1:E:165:ILE:HD12 | 1:E:183:TYR:O | 2.19 | 0.42 |
| 1:F:208:MET:HE2 | 1:F:237:GLU:HA | 2.01 | 0.42 |
| 1:A:266:ASN:OD1 | 1:A:268:THR:N | 2.52 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:202:ARG:HD3 | 1:B:202:ARG:HA | 1.57 | 0.42 |
| 1:E:23:LYS:O | 1:E:27:GLU:HB2 | 2.19 | 0.42 |
| 1:F:184:THR:HB | 1:F:258:PHE:CE1 | 2.54 | 0.42 |
| 1:C:31:GLU:O | 1:C:238:GLN:HG2 | 2.20 | 0.42 |
| 1:A:28:PHE:CD2 | 1:A:223:LEU:HD21 | 2.53 | 0.42 |
| 1:B:166:TYR:N | 1:B:166:TYR:CD2 | 2.88 | 0.42 |
| 1:D:3:PHE:CD1 | 1:D:39:ILE:HB | 2.54 | 0.42 |
| 1:D:24:LEU:HD23 | 1:D:24:LEU:HA | 1.81 | 0.42 |
| 1:D:25:ARG:HG2 | 1:D:232:ILE:HG23 | 2.00 | 0.42 |
| 1:F:25:ARG:O | 1:F:29:LEU:HB3 | 2.19 | 0.42 |
| 1:F:202:ARG:NH2 | 1:F:266:ASN:ND2 | 2.67 | 0.42 |
| 1:A:152:LYS:HB3 | 1:A:165:ILE:CG2 | 2.49 | 0.42 |
| 1:A:227:ASP:OD2 | 1:A:280:LEU:HD13 | 2.19 | 0.42 |
| 1:C:136:HIS:CG | 1:D:177:CYS:HB3 | 2.54 | 0.42 |
| 1:D:16:ILE:HA | 1:D:19:TYR:CE2 | 2.54 | 0.42 |
| 1:D:25:ARG:O | 1:D:29:LEU:HB3 | 2.18 | 0.42 |
| 1:D:39:ILE:HG23 | 1:D:54:VAL:HG22 | 2.01 | 0.42 |
| 1:D:169:ILE:HA | 1:D:174:MET:HE3 | 2.00 | 0.42 |
| 1:B:209:TYR:CE2 | 1:B:219:VAL:HG11 | 2.55 | 0.42 |
| 1:D:36:PRO:HA | 1:D:55:MET:HG3 | 2.01 | 0.42 |
| 1:A:152:LYS:HB3 | 1:A:165:ILE:HG23 | 2.02 | 0.42 |
| 1:A:44:THR:O | 1:A:48:ARG:HA | 2.19 | 0.42 |
| 1:C:133:THR:CG2 | 1:C:178:GLN:HG3 | 2.50 | 0.42 |
| 1:D:135:ALA:HB1 | 1:D:177:CYS:SG | 2.60 | 0.42 |
| 1:E:16:ILE:HG22 | 1:E:19:TYR:CE2 | 2.54 | 0.42 |
| 1:F:202:ARG:CG | 1:F:265:GLU:HB3 | 2.48 | 0.42 |
| 1:B:106:TYR:CE1 | 1:B:143:LYS:HB2 | 2.55 | 0.42 |
| 1:E:184:THR:HB | 1:E:258:PHE:CE1 | 2.54 | 0.42 |
| 1:F:202:ARG:HH11 | 1:F:202:ARG:HD2 | 1.31 | 0.42 |
| 1:A:12:SER:HB2 | 1:B:11:HIS:HE1 | 1.85 | 0.42 |
| 1:A:40:LEU:O | 1:A:52:GLY:HA3 | 2.20 | 0.42 |
| 1:A:91:ILE:HG22 | 1:A:117:PHE:HA | 2.02 | 0.42 |
| 1:A:201:ALA:O | 1:B:48:ARG:NH2 | 2.53 | 0.42 |
| 1:D:11:HIS:CE1 | 1:D:27:GLU:OE1 | 2.73 | 0.42 |
| 1:E:203:ARG:C | 1:E:244:SER:HG | 2.23 | 0.42 |
| 1:B:107:TYR:CD1 | 1:B:107:TYR:C | 2.93 | 0.41 |
| 1:C:217:THR:C | 1:C:218:ARG:HG2 | 2.41 | 0.41 |
| 1:D:139:TYR:CE1 | 1:D:175:ASP:HB3 | 2.55 | 0.41 |
| 1:D:200:HIS:CE1 | 1:D:203:ARG:O | 2.73 | 0.41 |
| 1:D:229:THR:HG23 | 1:F:231:HIS:NE2 | 2.35 | 0.41 |
| 1:E:107:TYR:CZ | 1:E:176:THR:HG22 | 2.54 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:92:THR:HG22 | 1:B:116:VAL:HG12 | 2.02 | 0.41 |
| 1:B:234:LEU:HD21 | 1:B:240:VAL:CG2 | 2.50 | 0.41 |
| 1:C:92:THR:CG2 | 1:C:97:LYS:HB2 | 2.48 | 0.41 |
| 1:D:8:ARG:NH1 | 1:D:26:HIS:O | 2.53 | 0.41 |
| 1:A:29:LEU:HD12 | 1:A:239:ALA:O | 2.19 | 0.41 |
| 1:A:178:GLN:HG2 | 1:A:264:GLY:O | 2.20 | 0.41 |
| 1:B:69:LEU:CD2 | 1:B:78:ARG:HH11 | 2.33 | 0.41 |
| 1:E:273:ASP:OD1 | 1:E:273:ASP:N | 2.54 | 0.41 |
| 1:F:94:ASP:CA | 1:F:114:LYS:HE3 | 2.49 | 0.41 |
| 1:D:65:LEU:HD13 | 1:D:69:LEU:HD11 | 2.02 | 0.41 |
| 1:D:200:HIS:ND1 | 1:D:203:ARG:O | 2.53 | 0.41 |
| 1:D:207:TYR:O | 1:D:239:ALA:HA | 2.19 | 0.41 |
| 1:F:101:SER:O | 1:F:104:ASP:HB2 | 2.20 | 0.41 |
| 1:B:85:ILE:HG21 | 1:B:85:ILE:HD13 | 1.77 | 0.41 |
| 1:B:192:TRP:CD2 | 1:B:251:VAL:HG12 | 2.54 | 0.41 |
| 1:A:150:LEU:HD13 | 1:A:167:LYS:HG3 | 2.02 | 0.41 |
| 1:B:57:THR:HB | 1:B:122:ARG:HG3 | 2.03 | 0.41 |
| 1:C:107:TYR:CZ | 1:C:176:THR:HG22 | 2.56 | 0.41 |
| 1:F:29:LEU:HD12 | 1:F:239:ALA:O | 2.20 | 0.41 |
| 1:F:218:ARG:O | 1:F:252:GLY:HA2 | 2.20 | 0.41 |
| 1:B:114:LYS:HZ2 | 1:B:114:LYS:HG3 | 1.65 | 0.41 |
| 1:F:39:ILE:HG12 | 1:F:54:VAL:HG12 | 2.03 | 0.41 |
| 1:C:78:ARG:HG3 | 1:C:133:THR:C | 2.41 | 0.41 |
| 1:C:78:ARG:HH21 | 1:C:78:ARG:HD3 | 1.67 | 0.41 |
| 1:E:136:HIS:N | 1:F:136:HIS:HD2 | 2.17 | 0.41 |
| 1:A:220:PHE:HB2 | 1:A:251:VAL:CG2 | 2.51 | 0.41 |
| 1:B:202:ARG:HD3 | 1:B:202:ARG:HH11 | 1.61 | 0.41 |
| 1:C:90:ALA:HB3 | 1:C:97:LYS:NZ | 2.36 | 0.41 |
| 1:D:55:MET:HE2 | 1:D:125:PRO:HG2 | 2.03 | 0.41 |
| 1:D:191:SER:OG | 1:D:252:GLY:O | 2.28 | 0.41 |
| 1:D:211:ASN:N | 1:D:236:ASN:HD21 | 2.19 | 0.41 |
| 1:E:87:GLY:N | 1:E:126:ALA:HA | 2.36 | 0.41 |
| 1:F:91:ILE:HG21 | 1:F:117:PHE:CD2 | 2.56 | 0.41 |
| 1:B:8:ARG:NH1 | 1:B:26:HIS:O | 2.50 | 0.41 |
| 1:C:43:TYR:CZ | 1:C:48:ARG:HG2 | 2.56 | 0.41 |
| 1:D:110:MET:HG2 | 1:D:111:GLY:N | 2.33 | 0.41 |
| 1:E:107:TYR:CE1 | 1:E:176:THR:HG22 | 2.56 | 0.41 |
| 1:F:78:ARG:HG2 | 1:F:134:PRO:HA | 2.01 | 0.41 |
| 1:F:143:LYS:O | 1:F:145:PRO:HD3 | 2.21 | 0.41 |
| 1:B:60:PRO:HB2 | 1:B:116:VAL:HG21 | 2.02 | 0.40 |
| 1:B:156:ASP:CA | 1:B:162:LYS:HD2 | 2.48 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:F:135:ALA:HB1 | 1:F:177:CYS:SG | 2.61 | 0.40 |
| 1:B:169:ILE:CG2 | 1:B:176:THR:HG21 | 2.51 | 0.40 |
| 1:C:48:ARG:NH1 | 1:D:47:ASP:OD2 | 2.45 | 0.40 |
| 1:C:164:THR:HG1 | 1:C:166:TYR:HE2 | 1.69 | 0.40 |
| 1:D:41:LEU:HD23 | 1:D:52:GLY:CA | 2.49 | 0.40 |
| 1:E:156:ASP:OD2 | 1:E:159:HIS:N | 2.50 | 0.40 |
| 1:F:55:MET:HE2 | 1:F:55:MET:HB2 | 1.91 | 0.40 |
| 1:A:192:TRP:CD2 | 1:A:251:VAL:HG12 | 2.56 | 0.40 |
| 1:B:24:LEU:HD23 | 1:B:24:LEU:HA | 1.75 | 0.40 |
| 1:B:169:ILE:HA | 1:B:174:MET:CE | 2.46 | 0.40 |
| 1:B:235:PHE:N | 1:B:238:GLN:NE2 | 2.69 | 0.40 |
| 1:C:34:PHE:CE2 | 1:C:85:ILE:HD11 | 2.56 | 0.40 |
| 1:C:198:HIS:CD2 | 1:C:248:HIS:NE2 | 2.88 | 0.40 |
| 1:E:29:LEU:HD12 | 1:E:234:LEU:HD22 | 2.04 | 0.40 |
| 1:A:127:LYS:NZ | 1:A:237:GLU:OE2 | 2.46 | 0.40 |
| 1:D:8:ARG:NH1 | 1:D:26:HIS:CE1 | 2.89 | 0.40 |
| 1:D:36:PRO:HA | 1:D:55:MET:CG | 2.51 | 0.40 |
| 1:F:65:LEU:HD23 | 1:F:65:LEU:HA | 1.96 | 0.40 |
| 1:F:115:VAL:O | 1:F:115:VAL:HG13 | 2.21 | 0.40 |
| 1:A:78:ARG:HG2 | 1:A:134:PRO:HA | 2.04 | 0.40 |
| 1:A:178:GLN:HE21 | 1:A:264:GLY:H | 1.68 | 0.40 |
| 1:A:214:ASP:OD1 | 1:A:215:PRO:N | 2.54 | 0.40 |
| 1:B:114:LYS:HD2 | 1:B:115:VAL:N | 2.36 | 0.40 |
| 1:E:91:ILE:HG22 | 1:E:93:ILE:HG13 | 2.03 | 0.40 |

There are no symmetry-related clashes.

## 5.3 Torsion angles (i)

### 5.3.1 Protein backbone (i)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 1 | A | 277/289 (96%) | 270 (98%) | 7 (2%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 1 | B | 273/289 (94%) | 261 (96%) | 11 (4%) | 1 (0%) | 34 66 |
| 1 | C | 277/289 (96%) | 268 (97%) | 8 (3%) | 1 (0%) | 34 66 |
| 1 | D | 257/289 (89%) | 250 (97%) | 7 (3%) | 0 | 100 100 |
| 1 | E | 272/289 (94%) | 264 (97%) | 8 (3%) | 0 | 100 100 |
| 1 | F | 270/289 (93%) | 262 (97%) | 8 (3%) | 0 | 100 100 |
| All | All | 1626/1734 (94%) | 1575 (97%) | 49 (3%) | 2 (0%) | 51 81 |

All (2) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | B | 149 | ALA |
| 1 | C | 196 | PRO |

### 5.3.2 Protein sidechains (i)

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 1 | A | 243/253 (96%) | 233 (96%) | 10 (4%) | 30 64 |
| 1 | B | 240/253 (95%) | 226 (94%) | 14 (6%) | 20 50 |
| 1 | C | 243/253 (96%) | 234 (96%) | 9 (4%) | 34 68 |
| 1 | D | 227/253 (90%) | 220 (97%) | 7 (3%) | 40 74 |
| 1 | E | 241/253 (95%) | 234 (97%) | 7 (3%) | 42 76 |
| 1 | F | 240/253 (95%) | 225 (94%) | 15 (6%) | 18 46 |
| All | All | 1434/1518 (94%) | 1372 (96%) | 62 (4%) | 29 62 |

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

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 23 | LYS |
| 1 | A | 58 | ASP |
| 1 | A | 92 | THR |
| 1 | A | 106 | TYR |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 122 | ARG |
| 1 | A | 163 | ARG |
| 1 | A | 202 | ARG |
| 1 | A | 248 | HIS |
| 1 | A | 249 | CYS |
| 1 | A | 272 | MET |
| 1 | B | 4 | SER |
| 1 | B | 8 | ARG |
| 1 | B | 96 | ARG |
| 1 | B | 106 | TYR |
| 1 | B | 107 | TYR |
| 1 | B | 167 | LYS |
| 1 | B | 174 | MET |
| 1 | B | 190 | SER |
| 1 | B | 194 | THR |
| 1 | B | 202 | ARG |
| 1 | B | 204 | MET |
| 1 | B | 225 | LYS |
| 1 | B | 230 | ARG |
| 1 | B | 263 | CYS |
| 1 | C | 14 | GLU |
| 1 | C | 64 | LYS |
| 1 | C | 106 | TYR |
| 1 | C | 146 | PHE |
| 1 | C | 163 | ARG |
| 1 | C | 167 | LYS |
| 1 | C | 181 | MET |
| 1 | C | 225 | LYS |
| 1 | C | 248 | HIS |
| 1 | D | 51 | PHE |
| 1 | D | 106 | TYR |
| 1 | D | 142 | LYS |
| 1 | D | 204 | MET |
| 1 | D | 223 | LEU |
| 1 | D | 228 | GLU |
| 1 | D | 248 | HIS |
| 1 | E | 59 | GLU |
| 1 | E | 106 | TYR |
| 1 | E | 133 | THR |
| 1 | E | 164 | THR |
| 1 | E | 248 | HIS |
| 1 | E | 263 | CYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | E | 273 | ASP |
| 1 | F | 55 | MET |
| 1 | F | 61 | LEU |
| 1 | F | 72 | ASP |
| 1 | F | 83 | ILE |
| 1 | F | 97 | LYS |
| 1 | F | 102 | ASN |
| 1 | F | 106 | TYR |
| 1 | F | 114 | LYS |
| 1 | F | 202 | ARG |
| 1 | F | 214 | ASP |
| 1 | F | 248 | HIS |
| 1 | F | 249 | CYS |
| 1 | F | 263 | CYS |
| 1 | F | 269 | TYR |
| 1 | F | 273 | ASP |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 103 | GLN |
| 1 | A | 178 | GLN |
| 1 | A | 242 | ASN |
| 1 | B | 173 | GLN |
| 1 | B | 180 | GLN |
| 1 | B | 238 | GLN |
| 1 | B | 248 | HIS |
| 1 | C | 11 | HIS |
| 1 | C | 84 | ASN |
| 1 | C | 221 | HIS |
| 1 | C | 266 | ASN |
| 1 | D | 11 | HIS |
| 1 | D | 84 | ASN |
| 1 | D | 136 | HIS |
| 1 | D | 157 | GLN |
| 1 | D | 236 | ASN |
| 1 | E | 84 | ASN |
| 1 | E | 157 | GLN |
| 1 | E | 267 | GLN |
| 1 | F | 136 | HIS |
| 1 | F | 267 | GLN |
| 1 | F | 274 | GLN |

### 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 10 ligands modelled in this entry, 6 are monoatomic - leaving 4 for Mogul analysis.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 3 | MPO | E | 302 | - | 13,13,13 | 0.67 | 1 (7%) | 17,17,17 | 0.57 | 0 |
| 3 | MPO | B | 302 | - | 13,13,13 | 1.06 | 1 (7%) | 17,17,17 | 1.13 | 1 (5%) |
| 3 | MPO | F | 302 | - | 13,13,13 | 0.61 | 1 (7%) | 17,17,17 | 0.93 | 2 (11%) |
| 3 | MPO | A | 302 | - | 13,13,13 | 1.08 | 1 (7%) | 17,17,17 | 1.55 | 2 (11%) |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 3 | MPO | E | 302 | - | - | 0/7/15/15 | 0/1/1/1 |
| 3 | MPO | B | 302 | - | - | 1/7/15/15 | 0/1/1/1 |
| 3 | MPO | F | 302 | - | - | 3/7/15/15 | 0/1/1/1 |
| 3 | MPO | A | 302 | - | - | 2/7/15/15 | 0/1/1/1 |

All (4) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 3 | A | 302 | MPO | O1-S1 | 3.70 | 1.55 | 1.45 |
| 3 | B | 302 | MPO | O2-S1 | 3.63 | 1.55 | 1.45 |
| 3 | E | 302 | MPO | O3-S1 | 2.33 | 1.55 | 1.47 |
| 3 | F | 302 | MPO | O3-S1 | 2.13 | 1.55 | 1.47 |

All (5) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | A | 302 | MPO | O1-S1-C1 | -4.58 | 101.40 | 106.92 |
| 3 | A | 302 | MPO | O3-S1-O2 | 3.85 | 120.69 | 111.27 |
| 3 | B | 302 | MPO | O3-S1-O1 | 3.50 | 119.82 | 111.27 |
| 3 | F | 302 | MPO | O3-S1-C1 | -2.36 | 101.95 | 105.77 |
| 3 | F | 302 | MPO | O2-S1-O1 | 2.17 | 121.47 | 113.95 |

There are no chirality outliers.

All (6) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 3 | F | 302 | MPO | C2-C3-N1-C4 |
| 3 | F | 302 | MPO | C2-C3-N1-C7 |
| 3 | A | 302 | MPO | C2-C1-S1-O1 |
| 3 | A | 302 | MPO | C2-C1-S1-O2 |
| 3 | B | 302 | MPO | C1-C2-C3-N1 |
| 3 | F | 302 | MPO | C2-C1-S1-O2 |

There are no ring outliers.

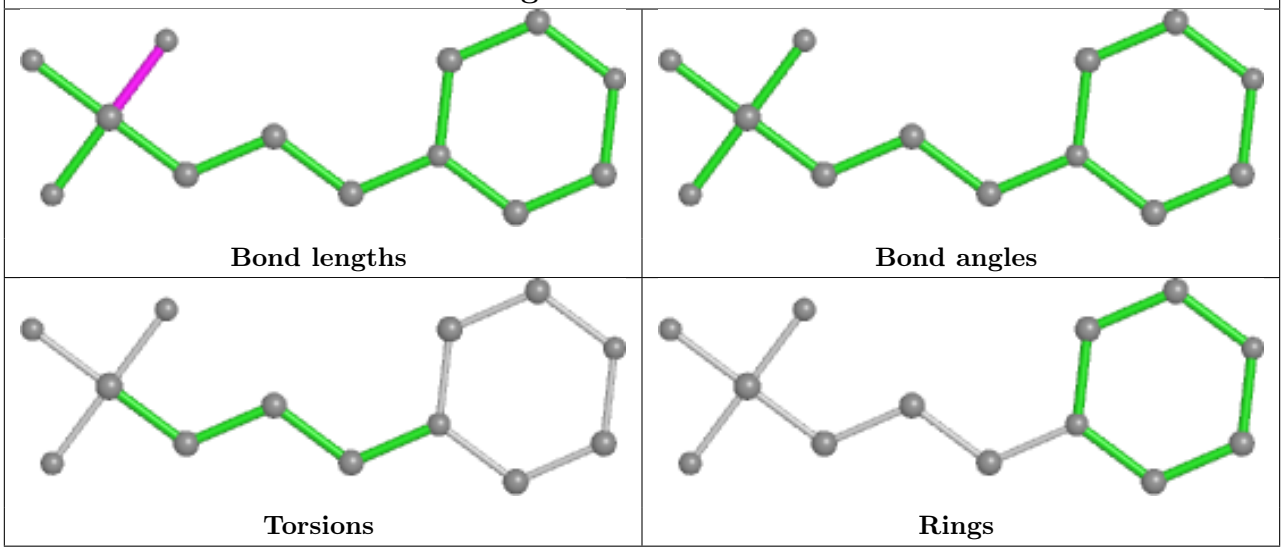
3 monomers are involved in 7 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 3 | B | 302 | MPO | 2 | 0 |
| 3 | F | 302 | MPO | 4 | 0 |
| 3 | A | 302 | MPO | 1 | 0 |

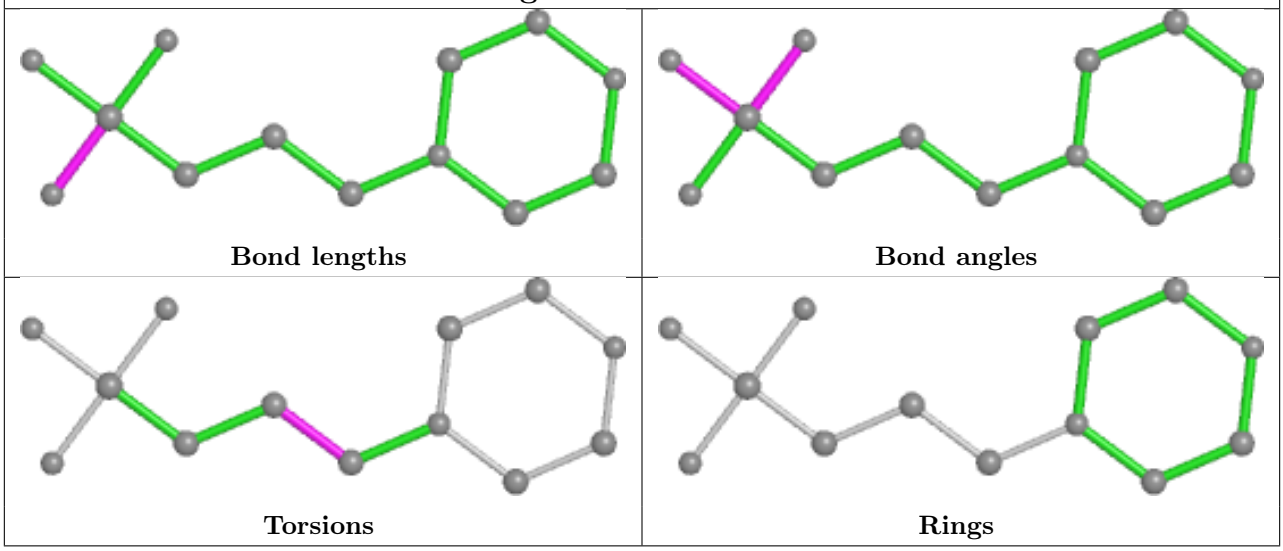
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring

in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

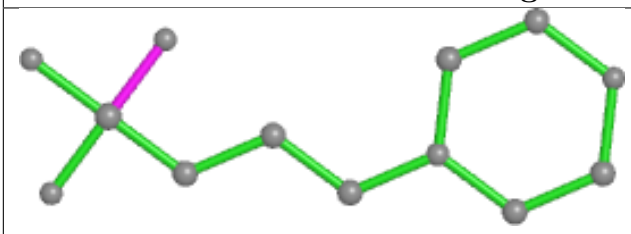
**Ligand MPO E 302**



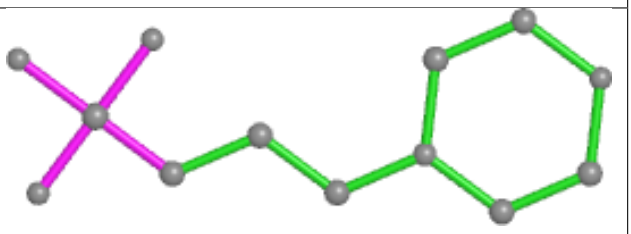

**Ligand MPO B 302**



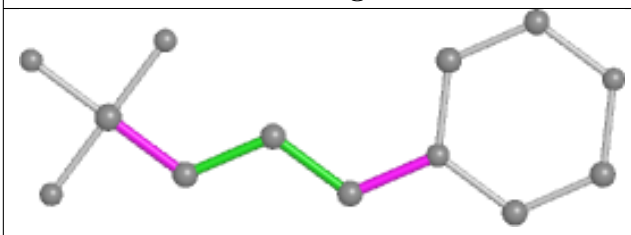
**Ligand MPO F 302**



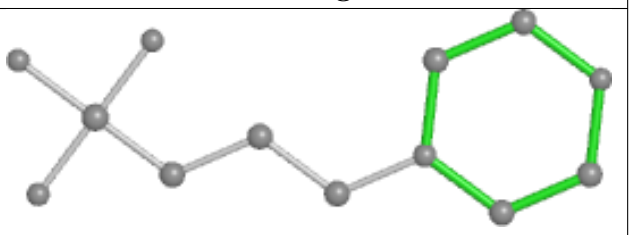
Bond lengths



Bond angles

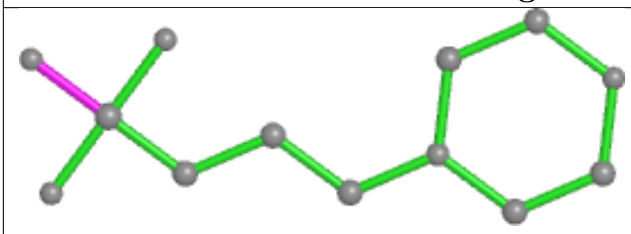


Torsions

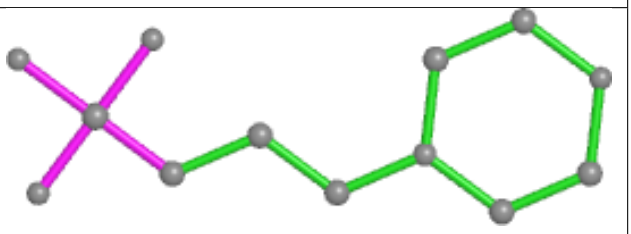


Rings

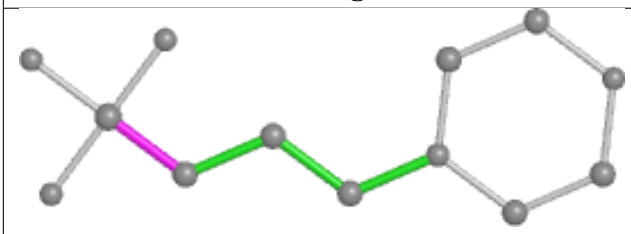
**Ligand MPO A 302**



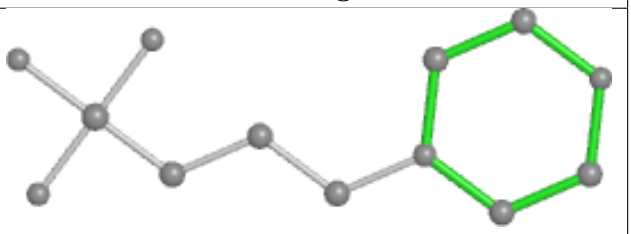
Bond lengths



Bond angles



Torsions



Rings

## 5.7 Other polymers (i)

There are no such residues in this entry.

## 5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

# 6 Fit of model and data

## 6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, $95^{th}$ 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 | A | 279/289 (96%) | -0.07 | 4 (1%) 75 70 | 46, 68, 113, 171 | 0 |
| 1 | B | 276/289 (95%) | 0.28 | 14 (5%) 28 19 | 30, 81, 129, 175 | 0 |
| 1 | C | 279/289 (96%) | 0.38 | 21 (7%) 14 8 | 49, 88, 132, 160 | 0 |
| 1 | D | 261/289 (90%) | -0.09 | 1 (0%) 92 91 | 41, 73, 110, 164 | 0 |
| 1 | E | 276/289 (95%) | 0.29 | 13 (4%) 31 22 | 42, 78, 137, 226 | 0 |
| 1 | F | 276/289 (95%) | 0.23 | 12 (4%) 35 25 | 44, 80, 131, 200 | 0 |
| All | All | 1647/1734 (94%) | 0.17 | 65 (3%) 39 29 | 30, 77, 130, 226 | 0 |

All (65) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | B | 276 | ALA | 4.9 |
| 1 | C | 280 | LEU | 4.7 |
| 1 | C | 81 | GLY | 4.6 |
| 1 | F | 277 | MET | 4.6 |
| 1 | B | 153 | PRO | 4.4 |
| 1 | C | 277 | MET | 4.2 |
| 1 | E | 122 | ARG | 4.1 |
| 1 | B | 2 | SER | 4.0 |
| 1 | E | 195 | MET | 3.8 |
| 1 | E | 270 | ASP | 3.7 |
| 1 | C | 276 | ALA | 3.6 |
| 1 | F | 280 | LEU | 3.5 |
| 1 | C | 151 | ALA | 3.5 |
| 1 | F | 275 | VAL | 3.5 |
| 1 | C | 278 | ASN | 3.3 |
| 1 | C | 279 | GLU | 3.2 |
| 1 | E | 269 | TYR | 3.1 |
| 1 | B | 39 | ILE | 3.1 |
| 1 | B | 55 | MET | 3.1 |

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| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | A | 277 | MET | 3.0 |
| 1 | A | 278 | ASN | 3.0 |
| 1 | C | 148 | THR | 3.0 |
| 1 | E | 142 | LYS | 2.9 |
| 1 | F | 279 | GLU | 2.9 |
| 1 | A | 280 | LEU | 2.9 |
| 1 | E | 88 | ALA | 2.8 |
| 1 | F | 276 | ALA | 2.8 |
| 1 | E | 99 | ALA | 2.8 |
| 1 | B | 119 | SER | 2.7 |
| 1 | C | 115 | VAL | 2.7 |
| 1 | E | 166 | TYR | 2.7 |
| 1 | B | 54 | VAL | 2.7 |
| 1 | E | 199 | THR | 2.7 |
| 1 | C | 146 | PHE | 2.6 |
| 1 | F | 195 | MET | 2.6 |
| 1 | F | 173 | GLN | 2.5 |
| 1 | E | 278 | ASN | 2.5 |
| 1 | A | 164 | THR | 2.5 |
| 1 | C | 147 | ALA | 2.5 |
| 1 | C | 62 | GLU | 2.4 |
| 1 | F | 123 | ASP | 2.4 |
| 1 | C | 128 | PHE | 2.4 |
| 1 | C | 234 | LEU | 2.3 |
| 1 | B | 94 | ASP | 2.3 |
| 1 | E | 120 | GLU | 2.3 |
| 1 | F | 202 | ARG | 2.3 |
| 1 | B | 63 | ILE | 2.3 |
| 1 | D | 265 | GLU | 2.2 |
| 1 | B | 275 | VAL | 2.2 |
| 1 | E | 105 | GLY | 2.2 |
| 1 | B | 154 | MET | 2.2 |
| 1 | C | 61 | LEU | 2.1 |
| 1 | B | 80 | LEU | 2.1 |
| 1 | F | 88 | ALA | 2.1 |
| 1 | E | 268 | THR | 2.1 |
| 1 | F | 65 | LEU | 2.1 |
| 1 | B | 91 | ILE | 2.1 |
| 1 | C | 99 | ALA | 2.1 |
| 1 | C | 105 | GLY | 2.1 |
| 1 | F | 85 | ILE | 2.0 |
| 1 | B | 118 | THR | 2.0 |

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| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | C | 100 | MET | 2.0 |
| 1 | C | 65 | LEU | 2.0 |
| 1 | C | 108 | ILE | 2.0 |
| 1 | C | 117 | PHE | 2.0 |

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

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

## 6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

## 6.4 Ligands (i)

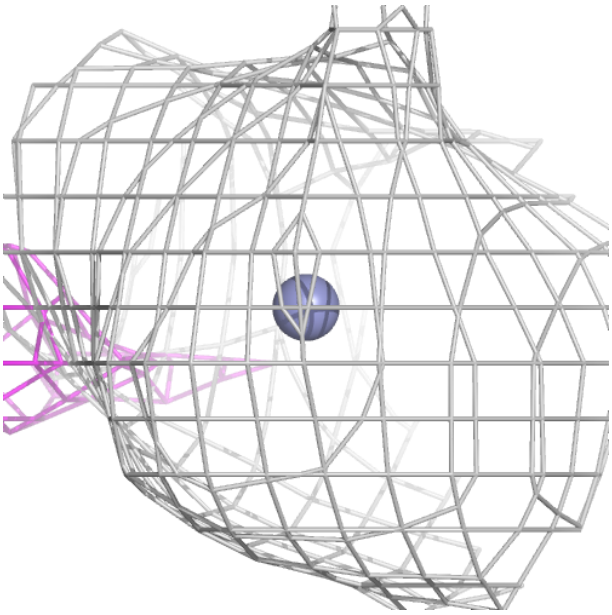
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, $95^{th}$ percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

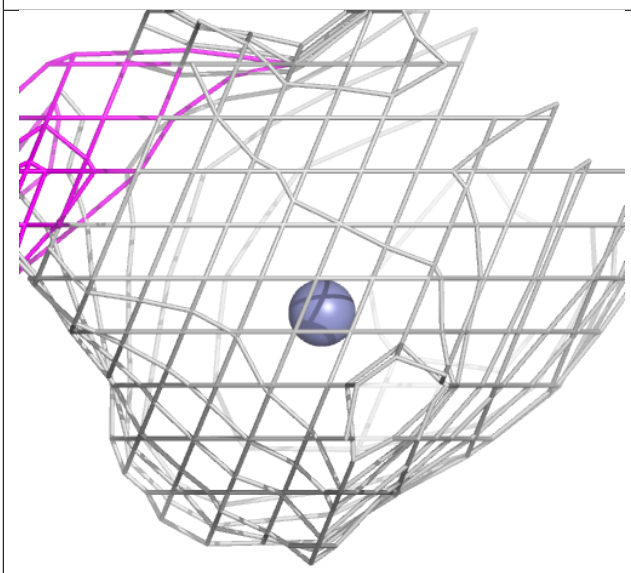
| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(Å$^2$) | Q<0.9 |
|---|---|---|---|---|---|---|---|---|
| 2 | ZN | D | 301 | 1/1 | 0.88 | 0.06 | 163,163,163,163 | 0 |
| 3 | MPO | E | 302 | 13/13 | 0.89 | 0.29 | 102,114,124,128 | 0 |
| 2 | ZN | E | 301 | 1/1 | 0.92 | 0.12 | 134,134,134,134 | 0 |
| 3 | MPO | F | 302 | 13/13 | 0.93 | 0.23 | 93,102,108,117 | 0 |
| 3 | MPO | B | 302 | 13/13 | 0.94 | 0.18 | 80,92,114,116 | 0 |
| 3 | MPO | A | 302 | 13/13 | 0.95 | 0.19 | 86,96,102,102 | 0 |
| 2 | ZN | C | 301 | 1/1 | 0.98 | 0.04 | 122,122,122,122 | 0 |
| 2 | ZN | A | 301 | 1/1 | 0.98 | 0.12 | 87,87,87,87 | 0 |
| 2 | ZN | B | 301 | 1/1 | 0.98 | 0.07 | 108,108,108,108 | 0 |
| 2 | ZN | F | 301 | 1/1 | 0.98 | 0.07 | 110,110,110,110 | 0 |

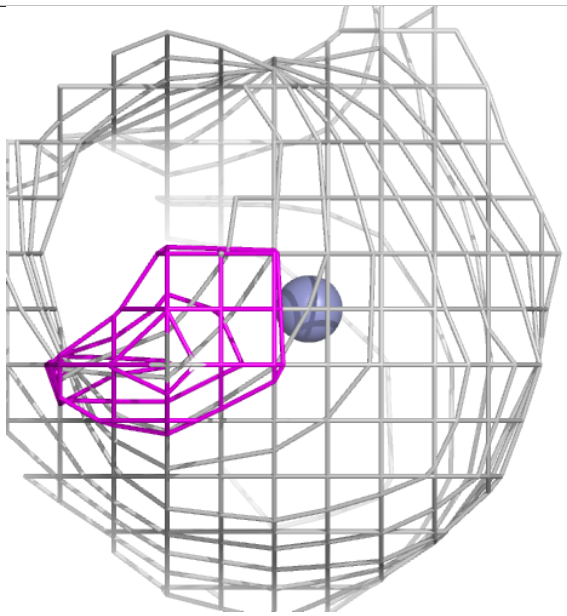
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

**Electron density around ZN D 301:**

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

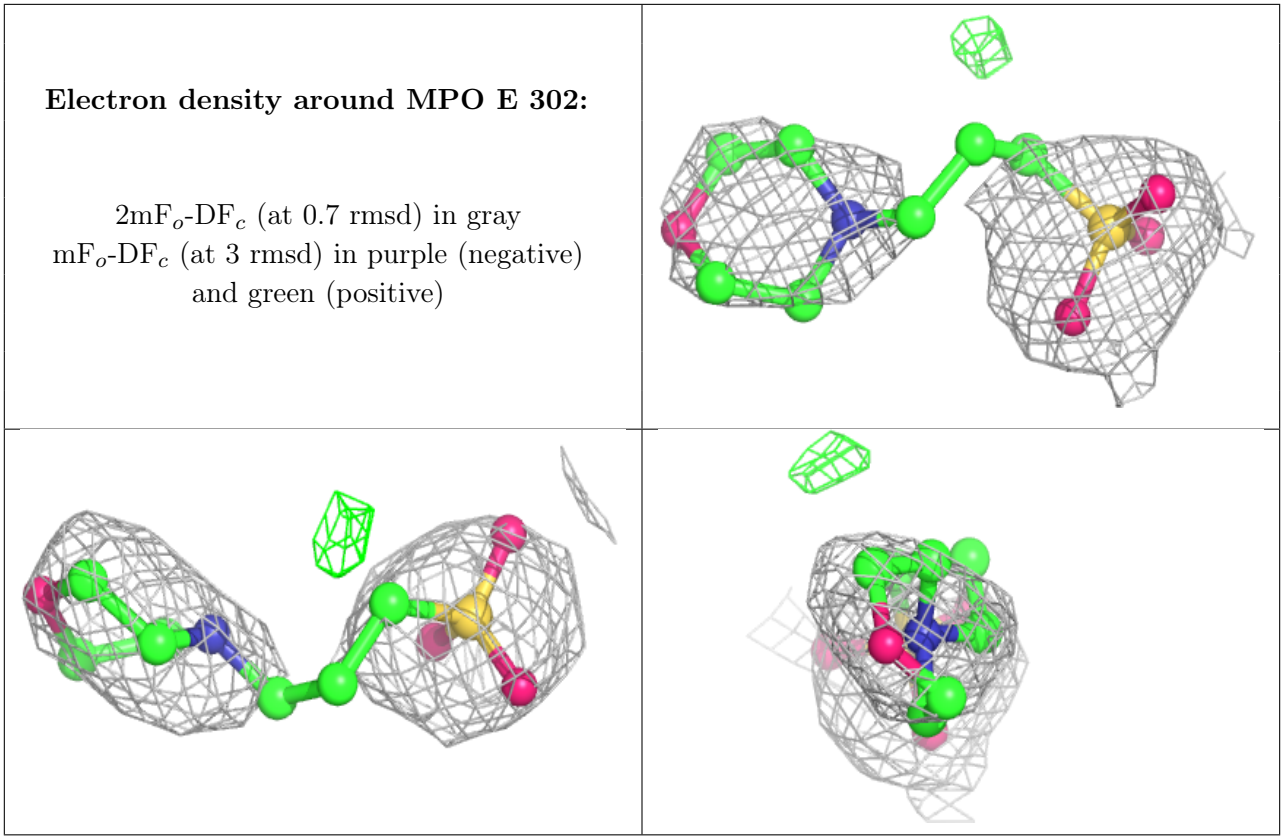






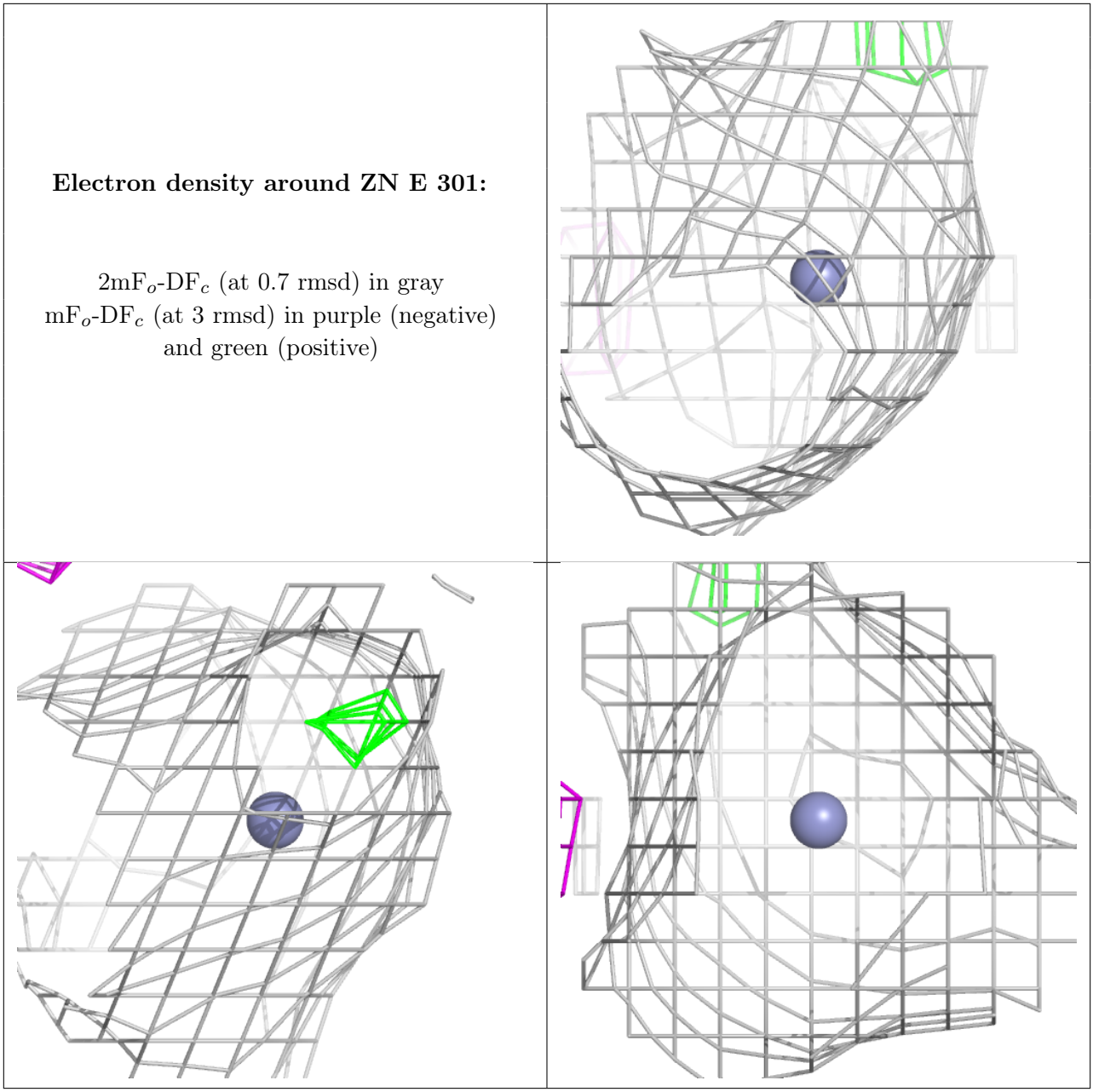
**Electron density around MPO E 302:**

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



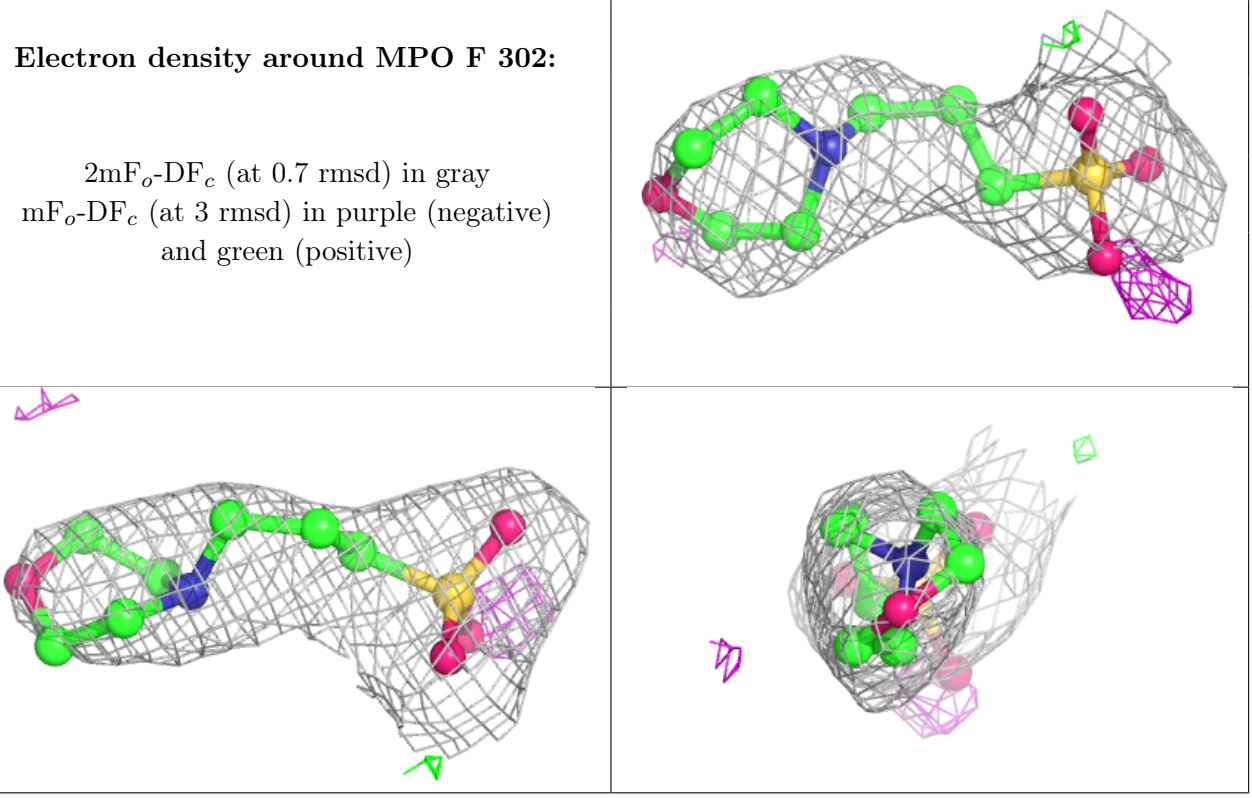
**Electron density around ZN E 301:**

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



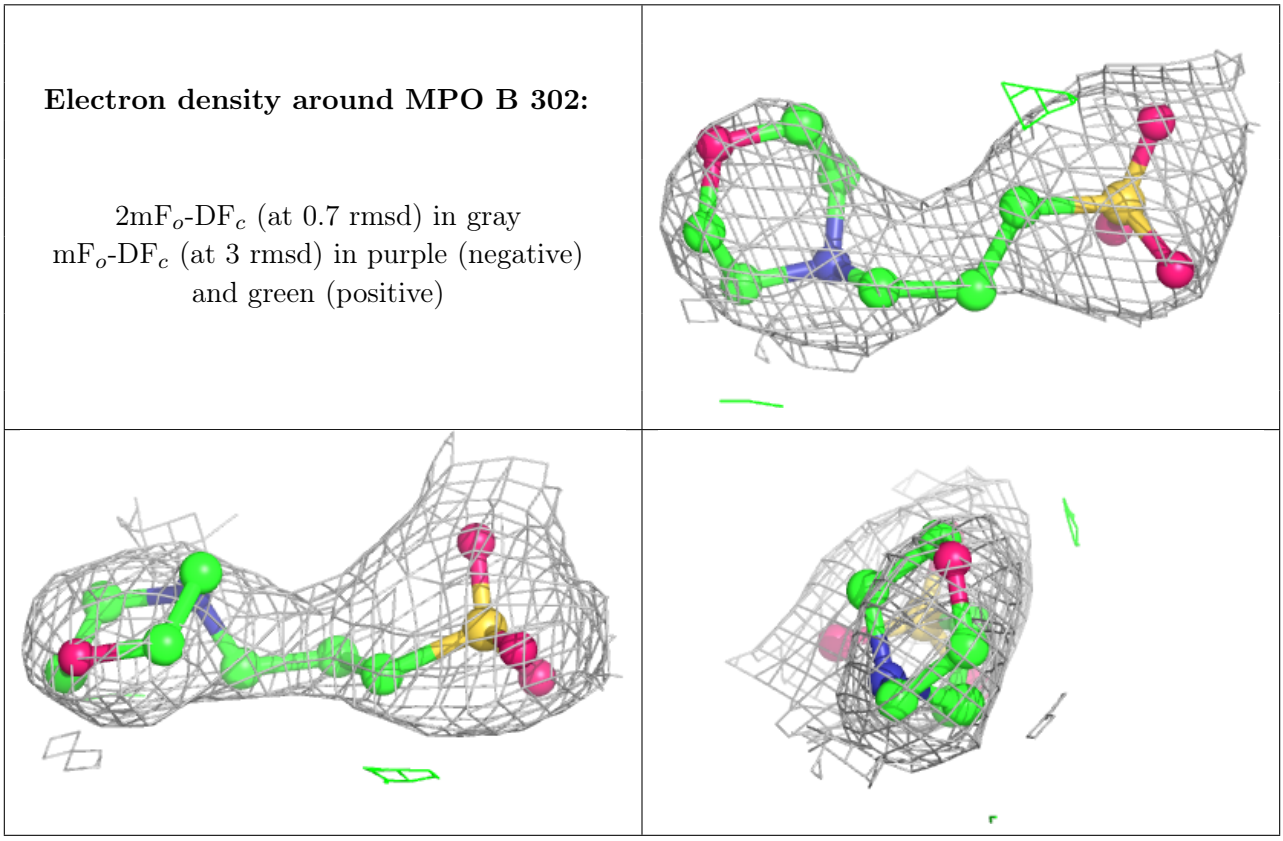
**Electron density around MPO F 302:**

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



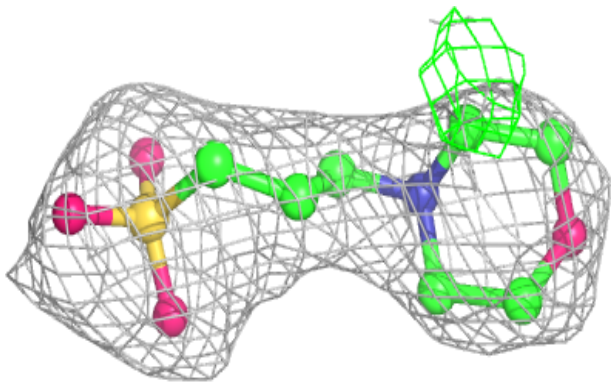
**Electron density around MPO B 302:**

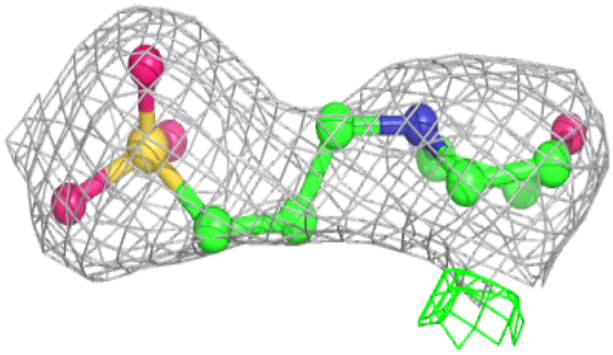
$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative) and green (positive)

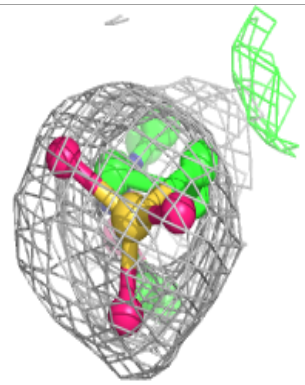


**Electron density around MPO A 302:**

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

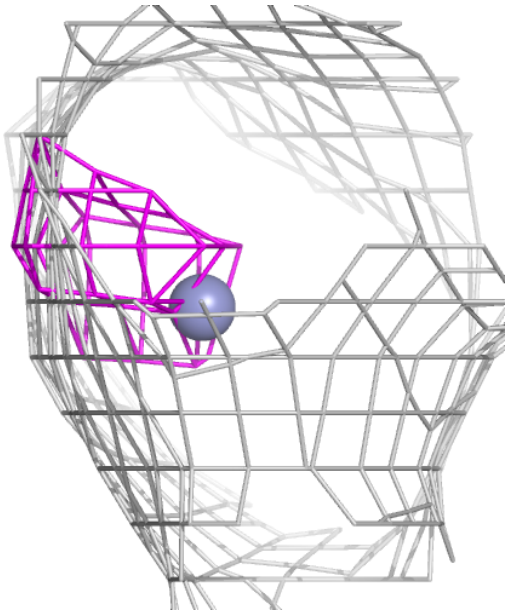


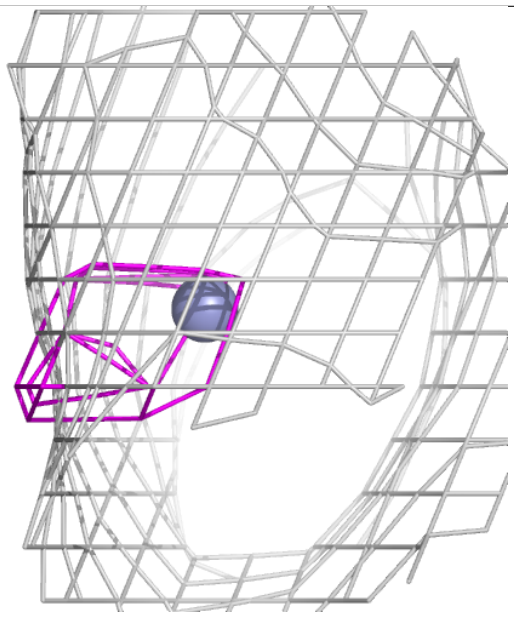


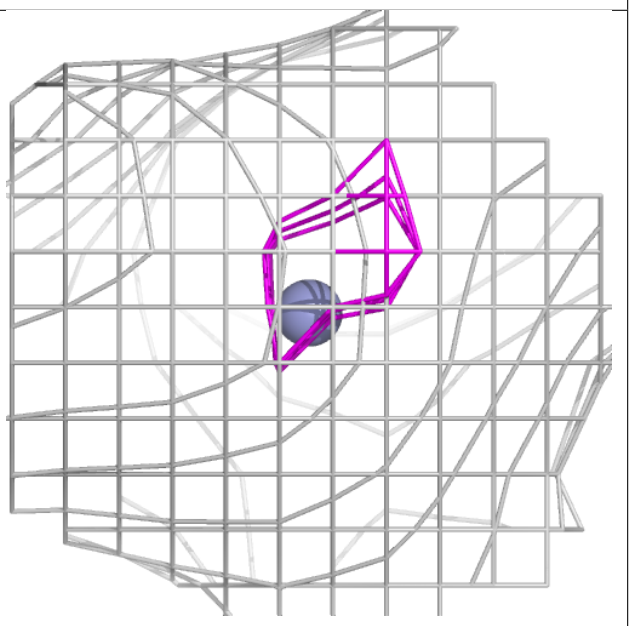


**Electron density around ZN C 301:**

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

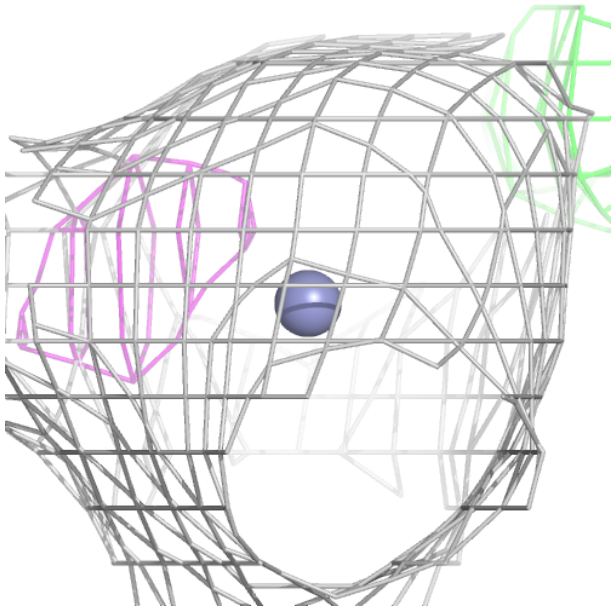


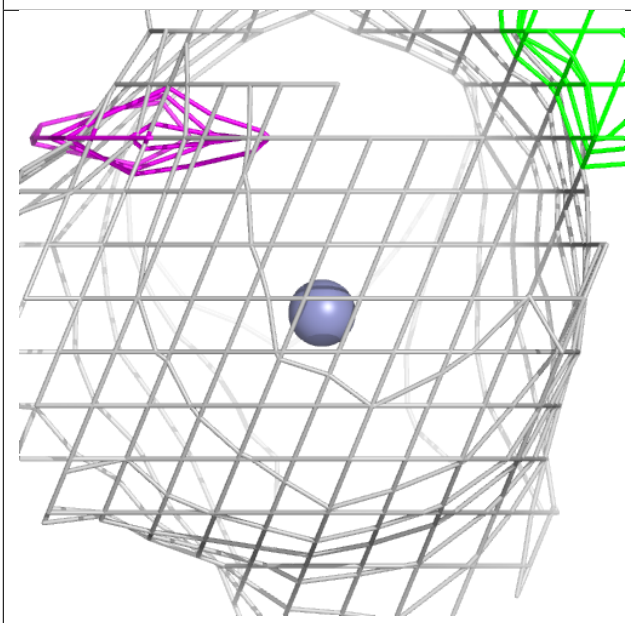


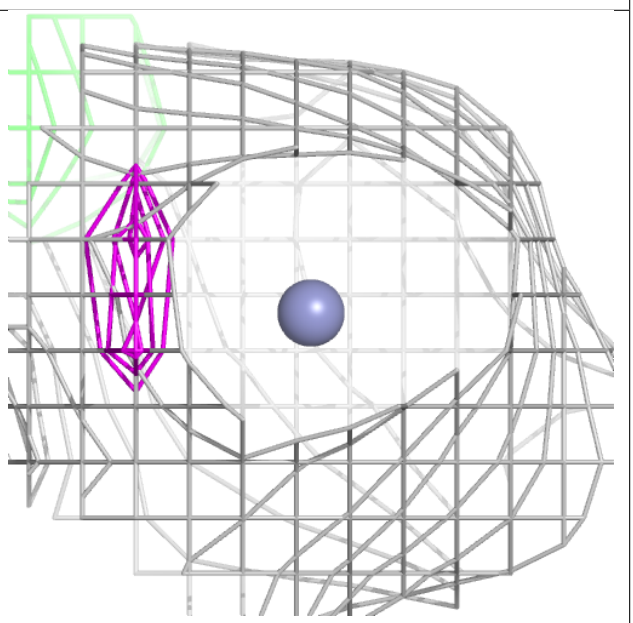


**Electron density around ZN A 301:**

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

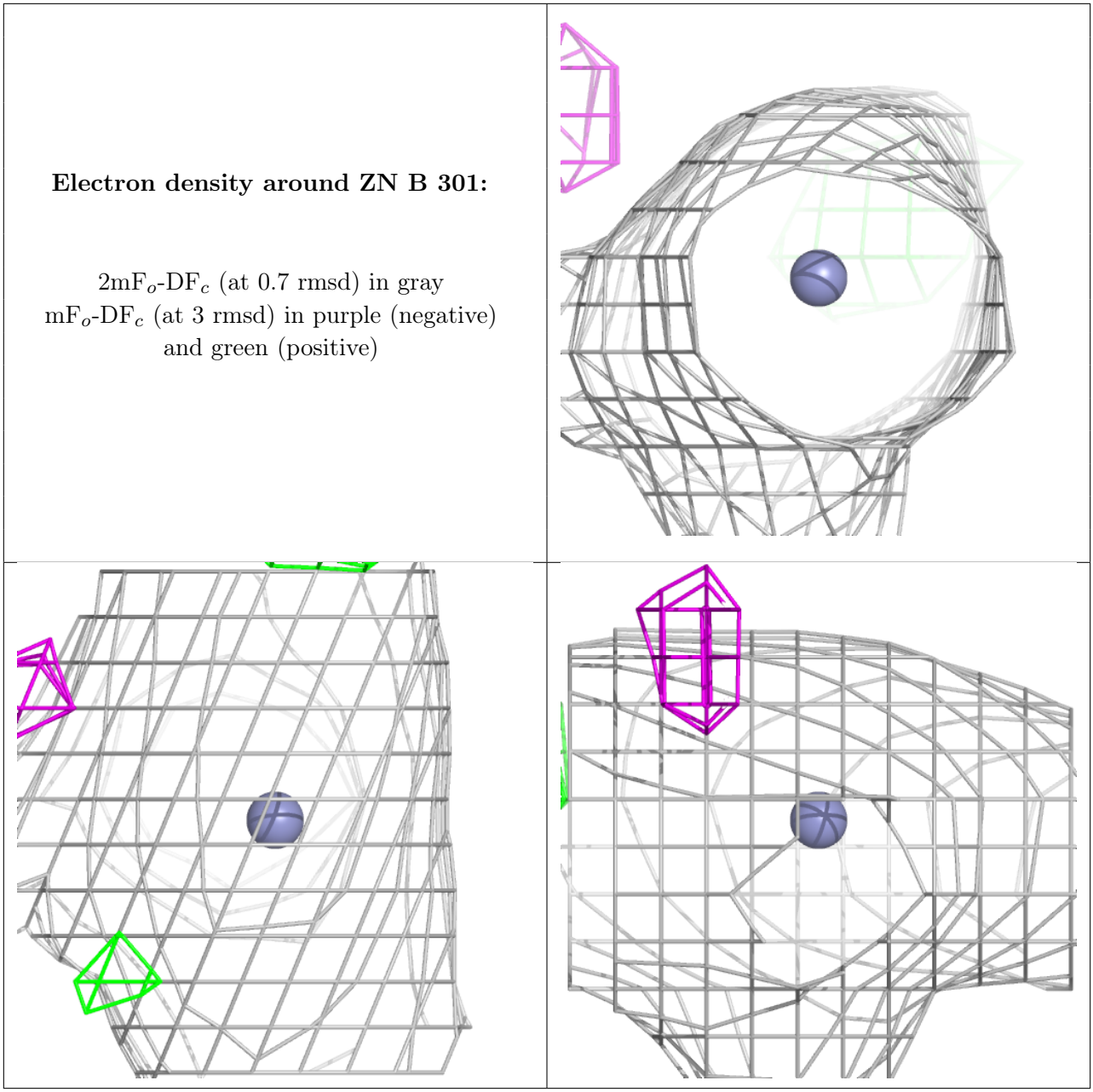






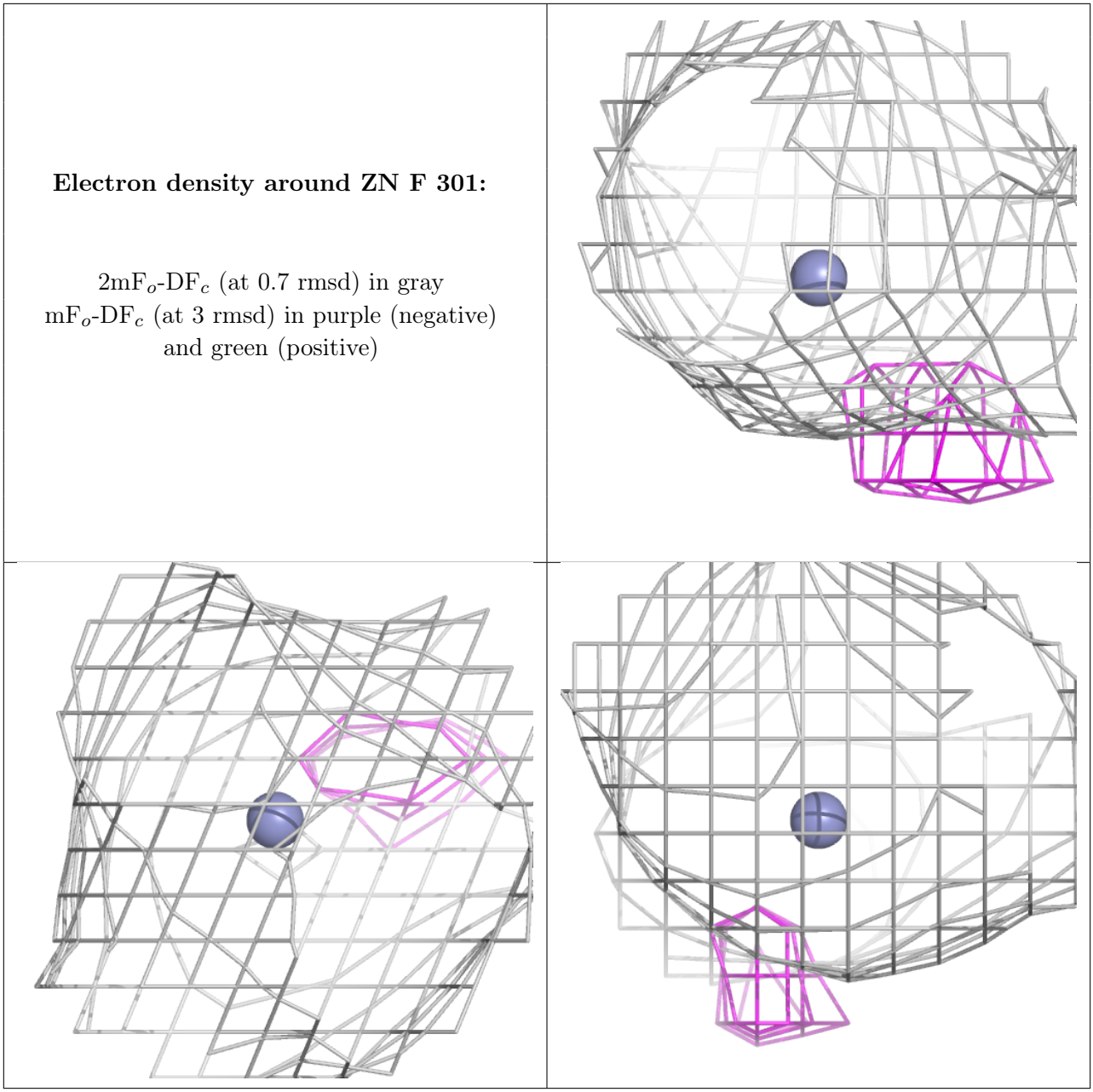
**Electron density around ZN B 301:**

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



**Electron density around ZN F 301:**

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



## 6.5 Other polymers

There are no such residues in this entry.