# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 4, 2023 – 01:46 AM EDT

| | | |
|---|---|---|
| PDB ID | : | 6Q2A |
| Title | : | Trypanosoma brucei CLK1 kinase domain in complex with a covalent aminobenzimidazole inhibitor AB1 |
| Authors | : | Ma, X.; Ornelas, E. |
| Deposited on | : | 2019-08-07 |
| Resolution | : | 2.60 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:

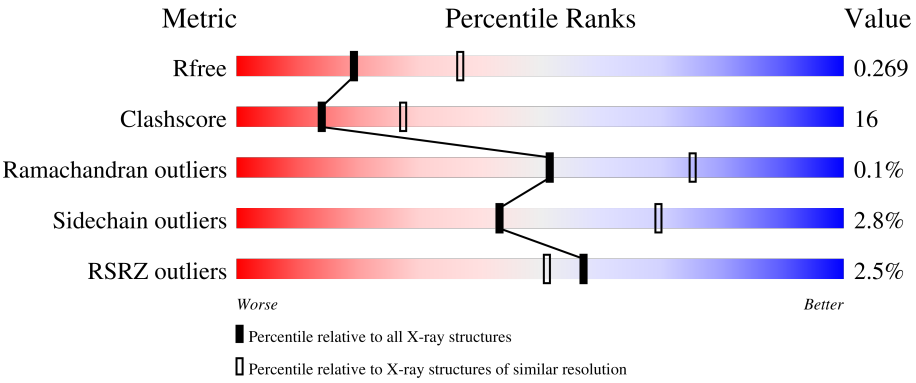
| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.35.1 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 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 |

# 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 2.60 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 | 3163 (2.60-2.60) |
| Clashscore | 141614 | 3518 (2.60-2.60) |
| Ramachandran outliers | 138981 | 3455 (2.60-2.60) |
| Sidechain outliers | 138945 | 3455 (2.60-2.60) |
| RSRZ outliers | 127900 | 3104 (2.60-2.60) |

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 | 354 | 2% 63% 28% |
| 1 | B | 354 | 69% 23% |
| 1 | C | 354 | 3% 66% 26% |
| 1 | D | 354 | 4% 71% 23% |
| 1 | E | 354 | 73% 20% |

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| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | F | 354 | 3% 68% 25% |
| 1 | G | 354 | 2% 61% 30% |
| 1 | H | 354 | 6% 60% 30% 5% |
| 1 | I | 354 | 2% 68% 24% |
| 1 | J | 354 | % 71% 21% |
| 1 | K | 354 | % 72% 21% |
| 1 | L | 354 | % 73% 21% |
| 1 | M | 354 | 2% 65% 27% |
| 1 | N | 354 | 5% 63% 30% |
| 1 | O | 354 | 4% 63% 27% 5% |
| 1 | P | 354 | 2% 60% 32% |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|---|---|---|---|---|---|---|---|
| 2 | SO4 | E | 501 | - | - | X | - |

## 2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 45588 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 Protein kinase, putative.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | B | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | C | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | D | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | E | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | F | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | G | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | H | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | I | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | J | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | K | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | L | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | M | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | N | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | O | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |
| 1 | P | 339 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2772 | 1755 | 508 | 483 | 26 | | | |

There are 80 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| A | 112 | GLY | - | expression tag | UNP Q382U0 |
| A | 113 | PRO | - | expression tag | UNP Q382U0 |
| A | 114 | SER | - | expression tag | UNP Q382U0 |
| A | 115 | MET | - | expression tag | UNP Q382U0 |
| A | 116 | HIS | - | expression tag | UNP Q382U0 |
| B | 112 | GLY | - | expression tag | UNP Q382U0 |
| B | 113 | PRO | - | expression tag | UNP Q382U0 |
| B | 114 | SER | - | expression tag | UNP Q382U0 |
| B | 115 | MET | - | expression tag | UNP Q382U0 |
| B | 116 | HIS | - | expression tag | UNP Q382U0 |
| C | 112 | GLY | - | expression tag | UNP Q382U0 |
| C | 113 | PRO | - | expression tag | UNP Q382U0 |
| C | 114 | SER | - | expression tag | UNP Q382U0 |
| C | 115 | MET | - | expression tag | UNP Q382U0 |
| C | 116 | HIS | - | expression tag | UNP Q382U0 |
| D | 112 | GLY | - | expression tag | UNP Q382U0 |
| D | 113 | PRO | - | expression tag | UNP Q382U0 |
| D | 114 | SER | - | expression tag | UNP Q382U0 |
| D | 115 | MET | - | expression tag | UNP Q382U0 |
| D | 116 | HIS | - | expression tag | UNP Q382U0 |
| E | 112 | GLY | - | expression tag | UNP Q382U0 |
| E | 113 | PRO | - | expression tag | UNP Q382U0 |
| E | 114 | SER | - | expression tag | UNP Q382U0 |
| E | 115 | MET | - | expression tag | UNP Q382U0 |
| E | 116 | HIS | - | expression tag | UNP Q382U0 |
| F | 112 | GLY | - | expression tag | UNP Q382U0 |
| F | 113 | PRO | - | expression tag | UNP Q382U0 |
| F | 114 | SER | - | expression tag | UNP Q382U0 |
| F | 115 | MET | - | expression tag | UNP Q382U0 |
| F | 116 | HIS | - | expression tag | UNP Q382U0 |
| G | 112 | GLY | - | expression tag | UNP Q382U0 |
| G | 113 | PRO | - | expression tag | UNP Q382U0 |
| G | 114 | SER | - | expression tag | UNP Q382U0 |
| G | 115 | MET | - | expression tag | UNP Q382U0 |
| G | 116 | HIS | - | expression tag | UNP Q382U0 |
| H | 112 | GLY | - | expression tag | UNP Q382U0 |
| H | 113 | PRO | - | expression tag | UNP Q382U0 |
| H | 114 | SER | - | expression tag | UNP Q382U0 |
| H | 115 | MET | - | expression tag | UNP Q382U0 |
| H | 116 | HIS | - | expression tag | UNP Q382U0 |
| I | 112 | GLY | - | expression tag | UNP Q382U0 |
| I | 113 | PRO | - | expression tag | UNP Q382U0 |

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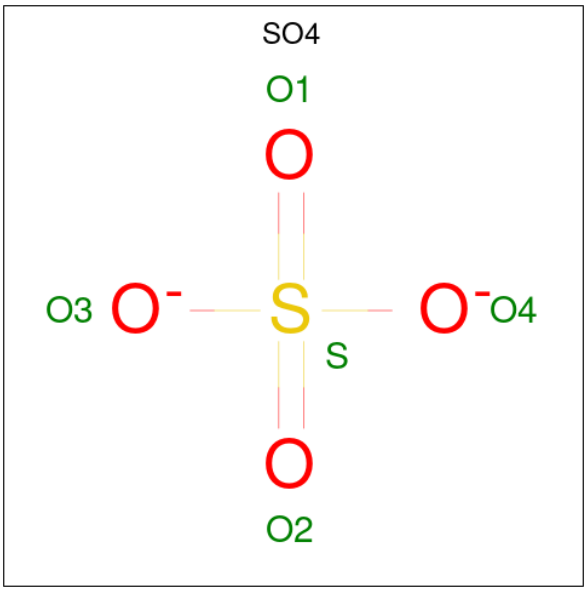
| Chain | Residue | Modelled | Actual | Comment | Reference |
|---|---|---|---|---|---|
| I | 114 | SER | - | expression tag | UNP Q382U0 |
| I | 115 | MET | - | expression tag | UNP Q382U0 |
| I | 116 | HIS | - | expression tag | UNP Q382U0 |
| J | 112 | GLY | - | expression tag | UNP Q382U0 |
| J | 113 | PRO | - | expression tag | UNP Q382U0 |
| J | 114 | SER | - | expression tag | UNP Q382U0 |
| J | 115 | MET | - | expression tag | UNP Q382U0 |
| J | 116 | HIS | - | expression tag | UNP Q382U0 |
| K | 112 | GLY | - | expression tag | UNP Q382U0 |
| K | 113 | PRO | - | expression tag | UNP Q382U0 |
| K | 114 | SER | - | expression tag | UNP Q382U0 |
| K | 115 | MET | - | expression tag | UNP Q382U0 |
| K | 116 | HIS | - | expression tag | UNP Q382U0 |
| L | 112 | GLY | - | expression tag | UNP Q382U0 |
| L | 113 | PRO | - | expression tag | UNP Q382U0 |
| L | 114 | SER | - | expression tag | UNP Q382U0 |
| L | 115 | MET | - | expression tag | UNP Q382U0 |
| L | 116 | HIS | - | expression tag | UNP Q382U0 |
| M | 112 | GLY | - | expression tag | UNP Q382U0 |
| M | 113 | PRO | - | expression tag | UNP Q382U0 |
| M | 114 | SER | - | expression tag | UNP Q382U0 |
| M | 115 | MET | - | expression tag | UNP Q382U0 |
| M | 116 | HIS | - | expression tag | UNP Q382U0 |
| N | 112 | GLY | - | expression tag | UNP Q382U0 |
| N | 113 | PRO | - | expression tag | UNP Q382U0 |
| N | 114 | SER | - | expression tag | UNP Q382U0 |
| N | 115 | MET | - | expression tag | UNP Q382U0 |
| N | 116 | HIS | - | expression tag | UNP Q382U0 |
| O | 112 | GLY | - | expression tag | UNP Q382U0 |
| O | 113 | PRO | - | expression tag | UNP Q382U0 |
| O | 114 | SER | - | expression tag | UNP Q382U0 |
| O | 115 | MET | - | expression tag | UNP Q382U0 |
| O | 116 | HIS | - | expression tag | UNP Q382U0 |
| P | 112 | GLY | - | expression tag | UNP Q382U0 |
| P | 113 | PRO | - | expression tag | UNP Q382U0 |
| P | 114 | SER | - | expression tag | UNP Q382U0 |
| P | 115 | MET | - | expression tag | UNP Q382U0 |
| P | 116 | HIS | - | expression tag | UNP Q382U0 |

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: $O_4S$).




| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 2 | A | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | B | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | B | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | B | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | C | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | C | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | C | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | D | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | E | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | E | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | E | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | F | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | F | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | F | 1 | Total O S<br>5 4 1 | 0 | 0 |

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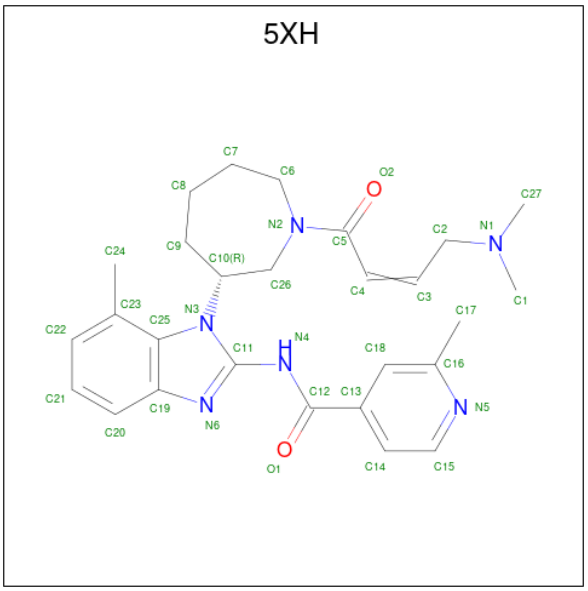
| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 2 | G | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | H | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | H | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | I | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | I | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | I | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | J | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | J | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | J | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | K | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | K | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | L | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | L | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | M | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | N | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | O | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | O | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | P | 1 | Total O S<br>5 4 1 | 0 | 0 |
| 2 | P | 1 | Total O S<br>5 4 1 | 0 | 0 |

- Molecule 3 is {N}-[1-[(3 {R})-1-[4-(dimethylamino)but-2-enoyl]azepan-3-yl]-7-methyl-benzimidazol-2-yl]-2-methyl-pyridine-4-carboxamide (three-letter code: 5XH) (formula: $C_{27}H_{34}N_6O_2$) (labeled as "Ligand of Interest" by depositor).




| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | | |
| 3 | A | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | B | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | C | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | D | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | E | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | F | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | G | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | H | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | I | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | J | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | K | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | L | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | M | 1 | 35 | 27 | 6 | 2 | 0 | 0 |
| 3 | N | 1 | 35 | 27 | 6 | 2 | 0 | 0 |

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| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 3 | O | 1 | Total C N O<br>35 27 6 2 | 0 | 0 |
| 3 | P | 1 | Total C N O<br>35 27 6 2 | 0 | 0 |

- Molecule 4 is water.

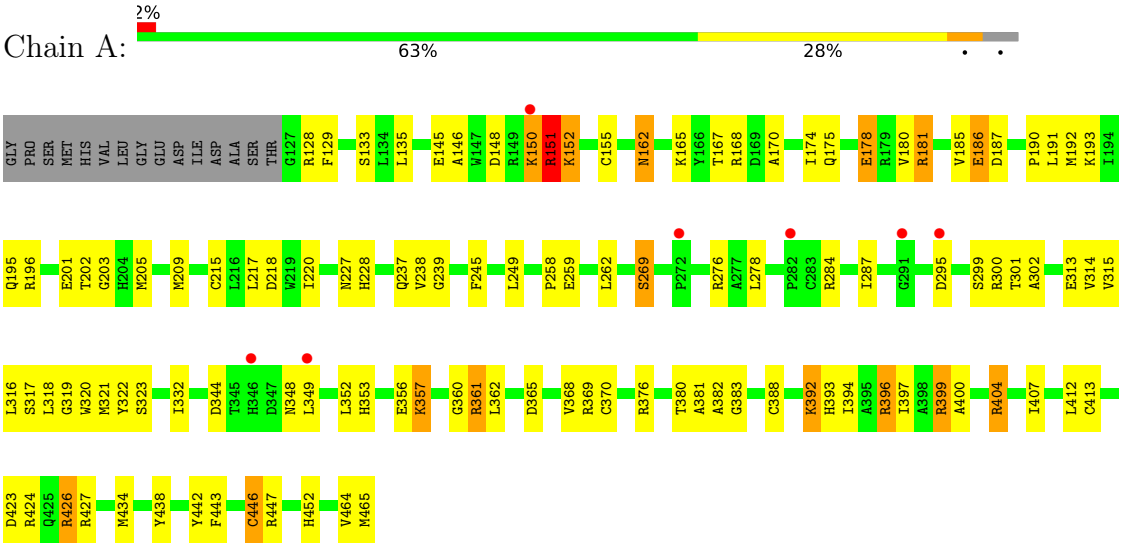
| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 4 | A | 33 | Total O<br>33 33 | 0 | 0 |
| 4 | B | 27 | Total O<br>27 27 | 0 | 0 |
| 4 | C | 37 | Total O<br>37 37 | 0 | 0 |
| 4 | D | 32 | Total O<br>32 32 | 0 | 0 |
| 4 | E | 39 | Total O<br>39 39 | 0 | 0 |
| 4 | F | 37 | Total O<br>37 37 | 0 | 0 |
| 4 | G | 31 | Total O<br>31 31 | 0 | 0 |
| 4 | H | 22 | Total O<br>22 22 | 0 | 0 |
| 4 | I | 34 | Total O<br>34 34 | 0 | 0 |
| 4 | J | 29 | Total O<br>29 29 | 0 | 0 |
| 4 | K | 29 | Total O<br>29 29 | 0 | 0 |
| 4 | L | 34 | Total O<br>34 34 | 0 | 0 |
| 4 | M | 43 | Total O<br>43 43 | 0 | 0 |
| 4 | N | 26 | Total O<br>26 26 | 0 | 0 |
| 4 | O | 28 | Total O<br>28 28 | 0 | 0 |
| 4 | P | 30 | Total O<br>30 30 | 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.

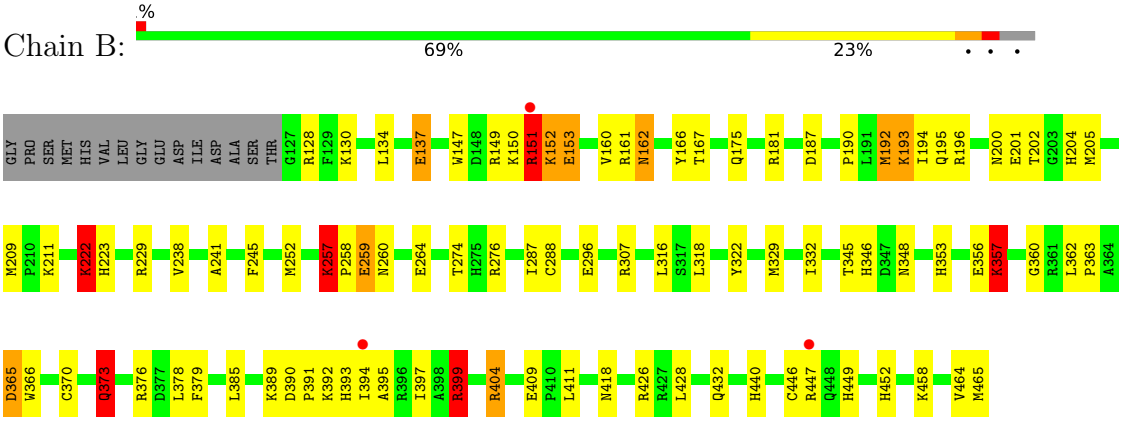
• Molecule 1: Protein kinase, putative

Chain A:



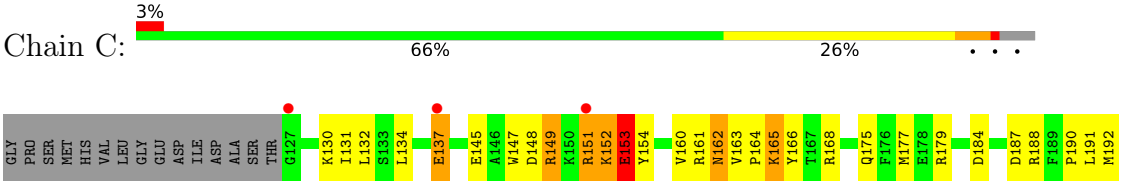

• Molecule 1: Protein kinase, putative

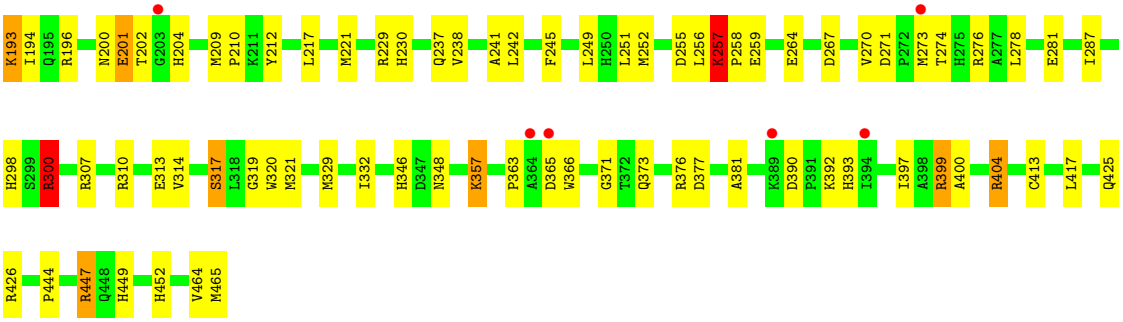
Chain B:



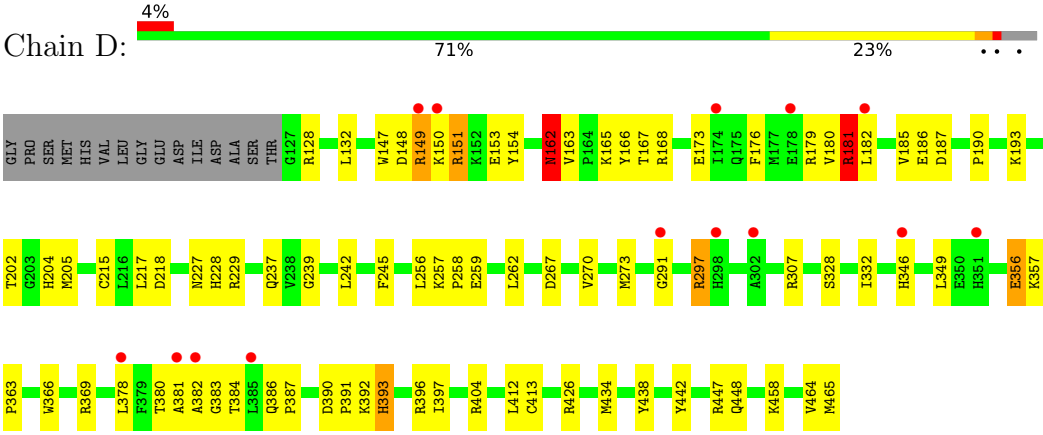

• Molecule 1: Protein kinase, putative

Chain C:

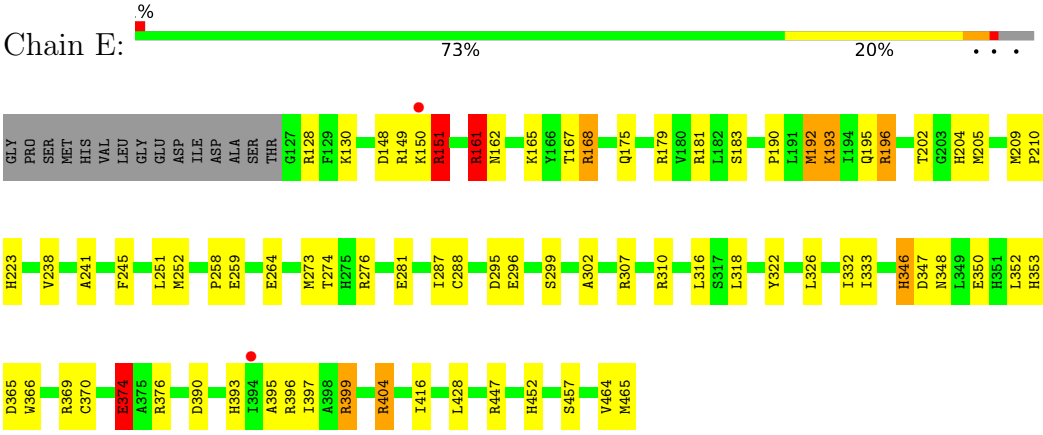




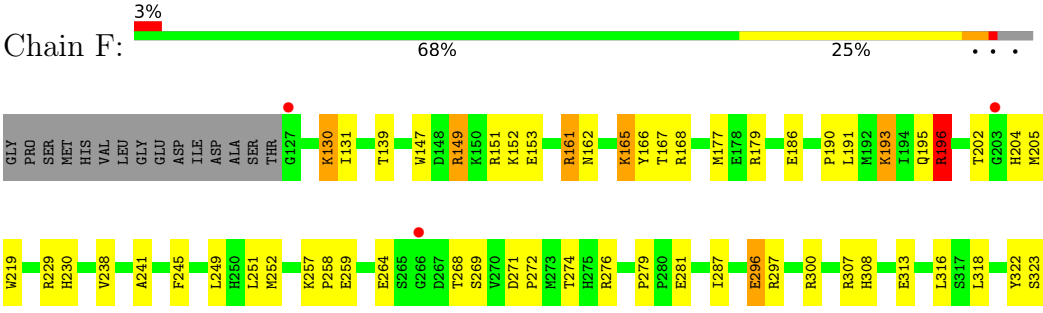

• Molecule 1: Protein kinase, putative

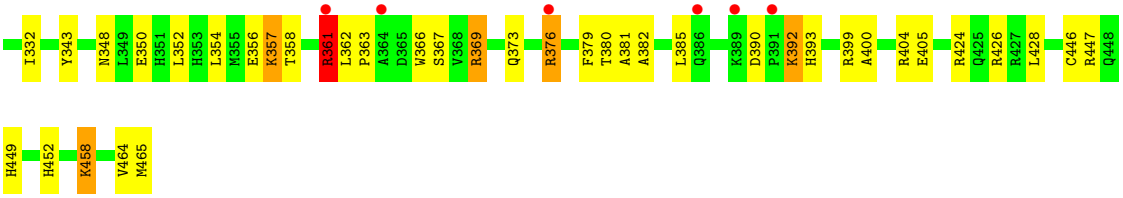



• Molecule 1: Protein kinase, putative



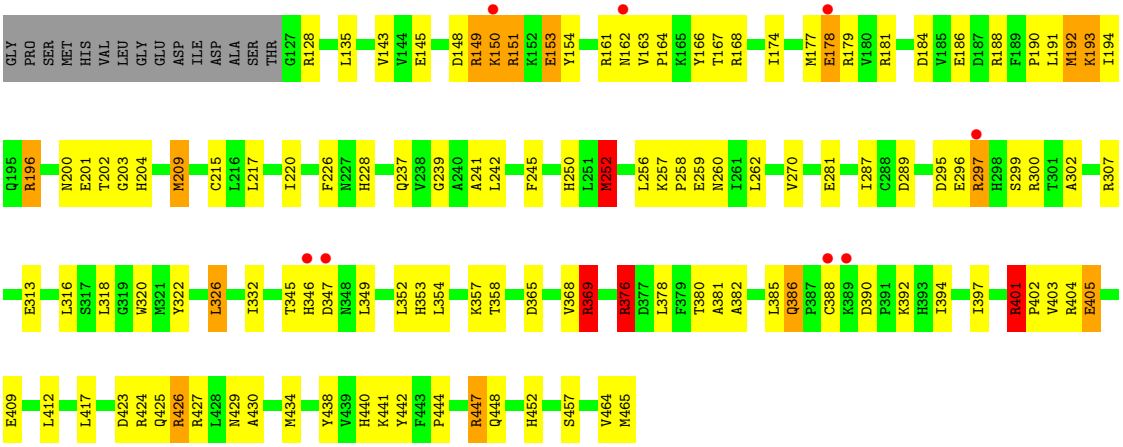

• Molecule 1: Protein kinase, putative





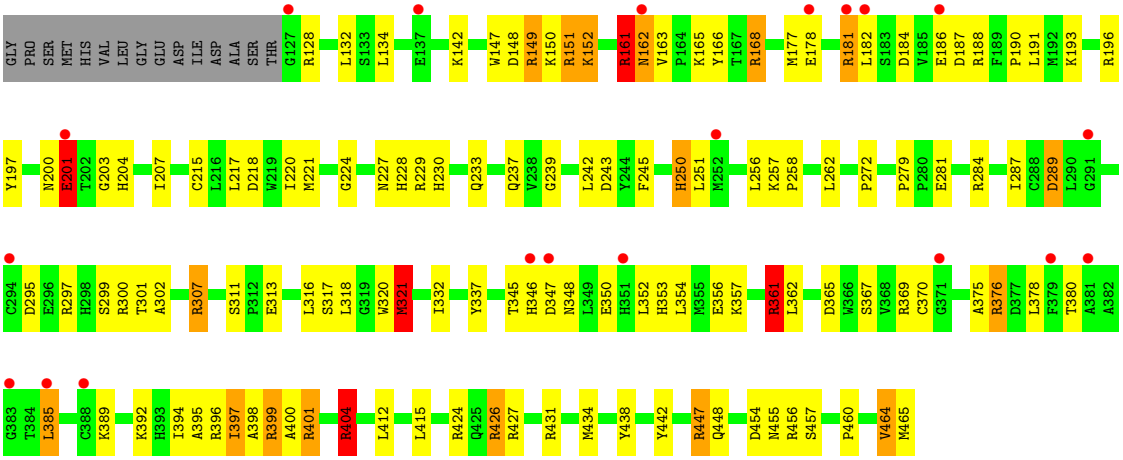
• Molecule 1: Protein kinase, putative

Chain G:

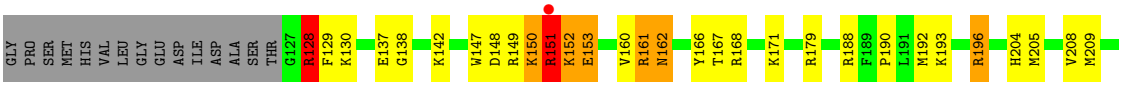
• Molecule 1: Protein kinase, putative

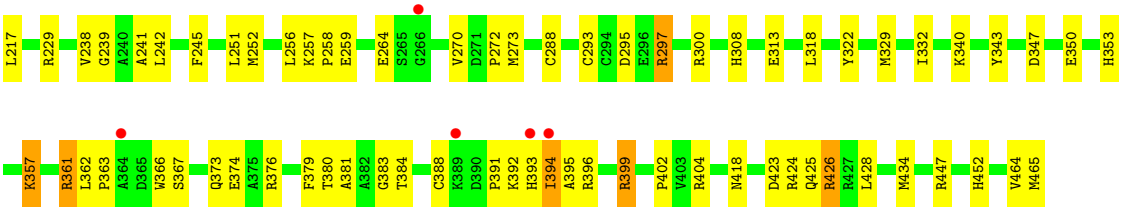
Chain H:

• Molecule 1: Protein kinase, putative

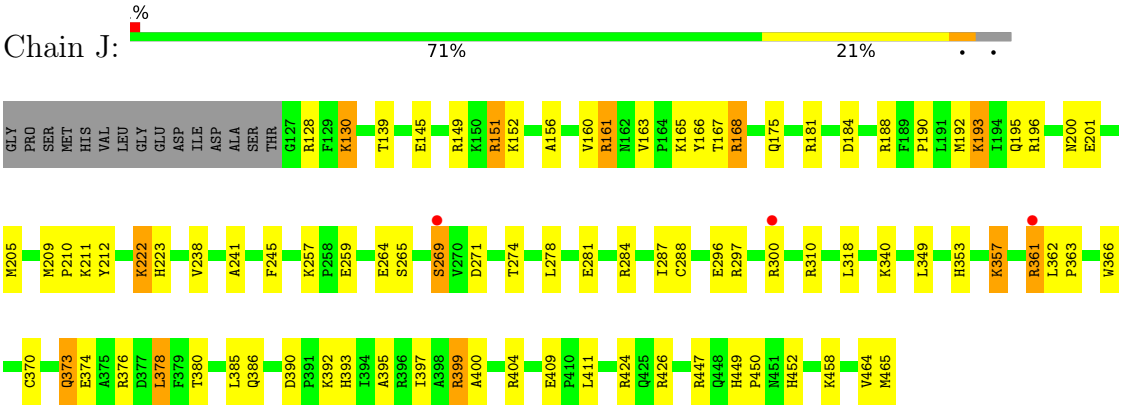
Chain I:



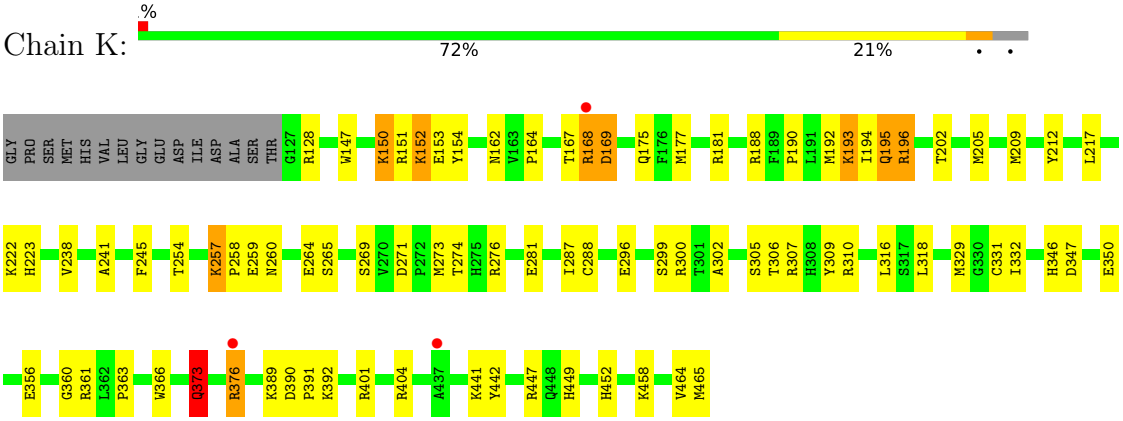
• Molecule 1: Protein kinase, putative

Chain J:



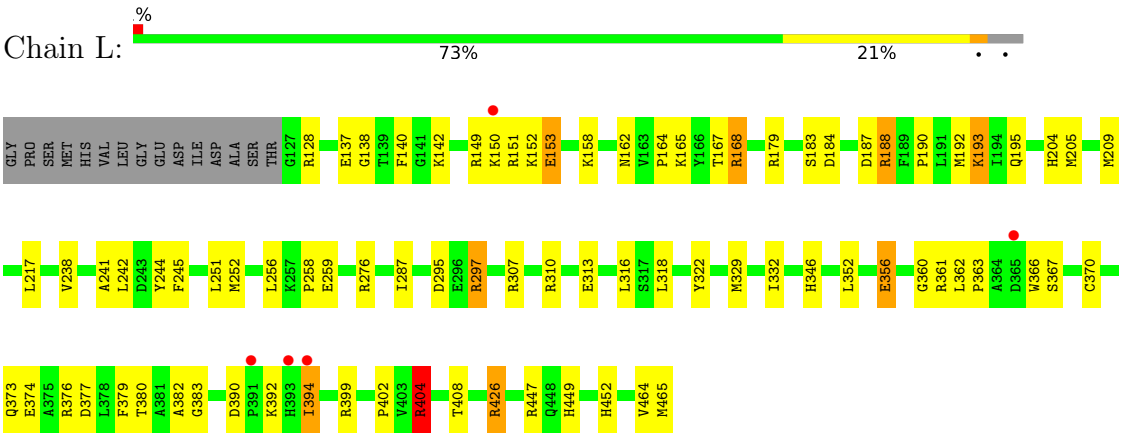
• Molecule 1: Protein kinase, putative

Chain K:



• Molecule 1: Protein kinase, putative

Chain L:

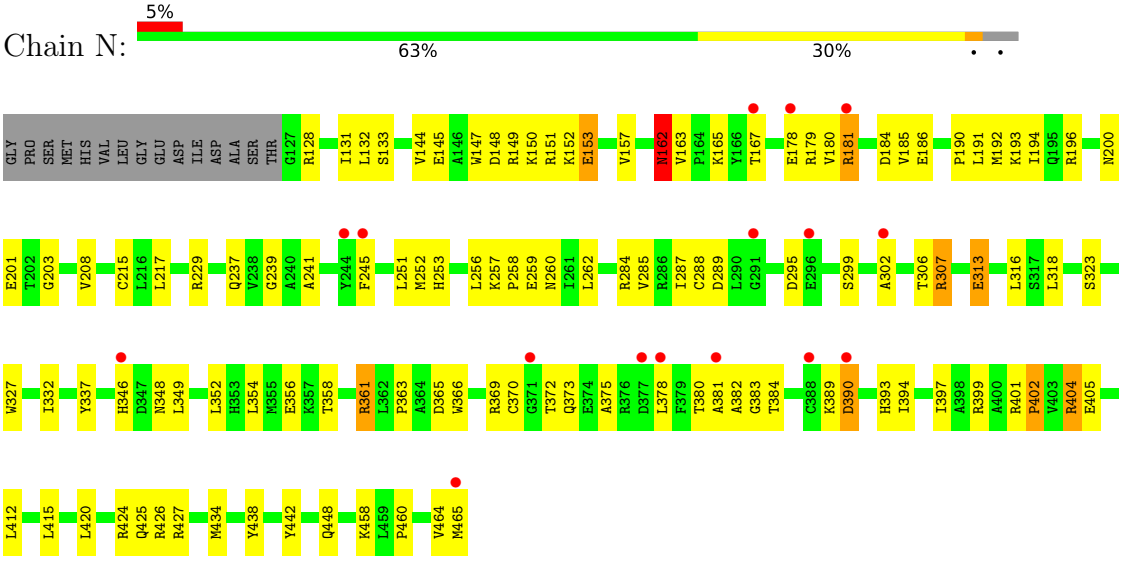


• Molecule 1: Protein kinase, putative

Chain M:

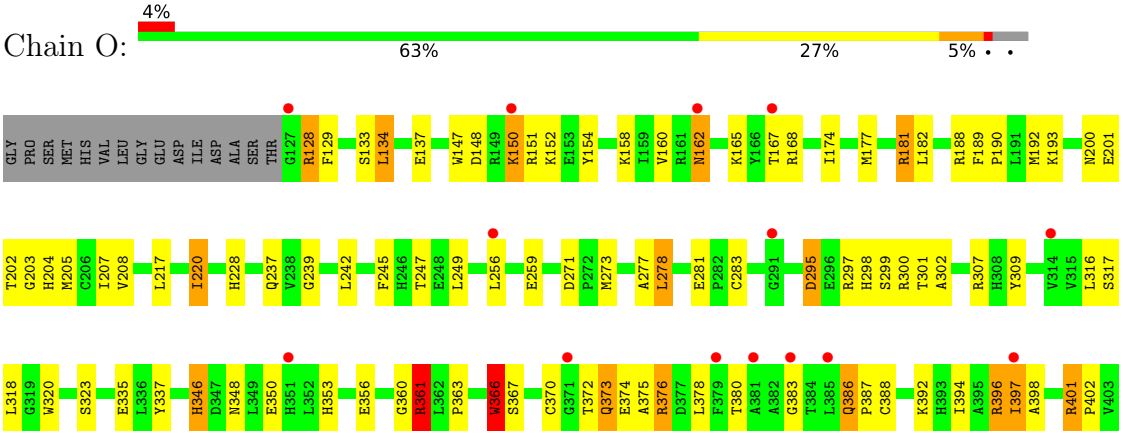

• Molecule 1: Protein kinase, putative

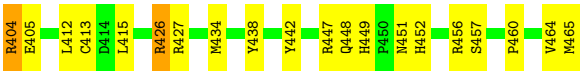
Chain N:



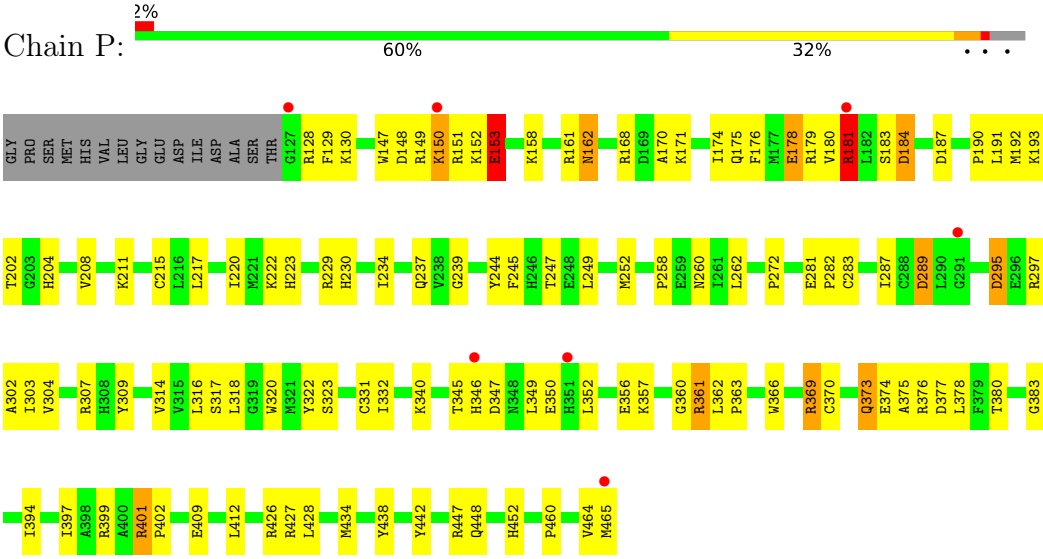

• Molecule 1: Protein kinase, putative

Chain O:






• Molecule 1: Protein kinase, putative



# 4 Data and refinement statistics (i)

| Property | Value | Source |
|---|---|---|
| Space group | P 31 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 147.15Å 147.15Å 264.80Å<br>90.00° 90.00° 120.00° | Depositor |
| Resolution (Å) | 47.39 – 2.60<br>47.39 – 2.60 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 98.6 (47.39-2.60)<br>98.7 (47.39-2.60) | Depositor<br>EDS |
| $R_{merge}$ | 0.24 | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 1.70 (at 2.61Å) | Xtriage |
| Refinement program | PHENIX 1.15.2_3472 | Depositor |
| R, $R_{free}$ | 0.266 , 0.313<br>0.266 , 0.269 | Depositor<br>DCC |
| $R_{free}$ test set | 9696 reflections (4.98%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 38.2 | Xtriage |
| Anisotropy | 0.067 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.34 , 22.8 | EDS |
| L-test for twinning[2] | $< \|L\| > = 0.48$, $< L^2 > = 0.31$ | Xtriage |
| Estimated twinning fraction | 0.448 for -h,-k,l<br>0.449 for h,-h-k,-l<br>0.449 for -k,-h,-l | Xtriage |
| $F_o$,$F_c$ correlation | 0.92 | EDS |
| Total number of atoms | 45588 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 53.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 31.39 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.1155e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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 (i)

## 5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 5XH, SO4

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 | 0.50 | 2/2844 (0.1%) | 0.99 | 33/3847 (0.9%) |
| 1 | B | 0.55 | 7/2844 (0.2%) | 0.88 | 19/3847 (0.5%) |
| 1 | C | 0.62 | 7/2844 (0.2%) | 1.19 | 38/3847 (1.0%) |
| 1 | D | 0.44 | 1/2844 (0.0%) | 0.77 | 16/3847 (0.4%) |
| 1 | E | 0.44 | 2/2844 (0.1%) | 0.82 | 20/3847 (0.5%) |
| 1 | F | 0.48 | 3/2844 (0.1%) | 1.02 | 32/3847 (0.8%) |
| 1 | G | 0.56 | 2/2844 (0.1%) | 1.07 | 36/3847 (0.9%) |
| 1 | H | 0.56 | 1/2844 (0.0%) | 1.17 | 45/3847 (1.2%) |
| 1 | I | 0.46 | 2/2844 (0.1%) | 0.83 | 22/3847 (0.6%) |
| 1 | J | 0.57 | 5/2844 (0.2%) | 1.06 | 34/3847 (0.9%) |
| 1 | K | 0.50 | 4/2844 (0.1%) | 0.81 | 16/3847 (0.4%) |
| 1 | L | 0.50 | 2/2844 (0.1%) | 0.94 | 21/3847 (0.5%) |
| 1 | M | 0.52 | 5/2844 (0.2%) | 0.89 | 22/3847 (0.6%) |
| 1 | N | 0.53 | 2/2844 (0.1%) | 0.92 | 21/3847 (0.5%) |
| 1 | O | 0.60 | 5/2844 (0.2%) | 0.93 | 19/3847 (0.5%) |
| 1 | P | 0.51 | 2/2844 (0.1%) | 0.89 | 17/3847 (0.4%) |
| All | All | 0.52 | 52/45504 (0.1%) | 0.96 | 411/61552 (0.7%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 1 | A | 0 | 2 |
| 1 | B | 0 | 2 |
| 1 | C | 0 | 1 |
| 1 | D | 0 | 1 |
| 1 | E | 0 | 2 |
| 1 | F | 0 | 1 |
| 1 | G | 0 | 1 |

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| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 1 | H | 0 | 3 |
| 1 | I | 0 | 1 |
| 1 | K | 0 | 1 |
| 1 | L | 0 | 1 |
| 1 | M | 0 | 1 |
| 1 | N | 0 | 1 |
| 1 | O | 0 | 2 |
| 1 | P | 0 | 3 |
| All | All | 0 | 23 |

All (52) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 1 | O | 150 | LYS | CD-CE | -10.51 | 1.25 | 1.51 |
| 1 | J | 404 | ARG | CB-CG | -8.83 | 1.28 | 1.52 |
| 1 | J | 361 | ARG | CB-CG | -8.67 | 1.29 | 1.52 |
| 1 | N | 402 | PRO | N-CD | -8.03 | 1.36 | 1.47 |
| 1 | B | 259 | GLU | CD-OE1 | 7.92 | 1.34 | 1.25 |
| 1 | B | 458 | LYS | CD-CE | 7.89 | 1.71 | 1.51 |
| 1 | C | 137 | GLU | CD-OE2 | 7.81 | 1.34 | 1.25 |
| 1 | C | 153 | GLU | CD-OE2 | 7.79 | 1.34 | 1.25 |
| 1 | M | 367 | SER | CB-OG | 7.79 | 1.52 | 1.42 |
| 1 | L | 193 | LYS | CE-NZ | 7.74 | 1.68 | 1.49 |
| 1 | B | 153 | GLU | CG-CD | -7.48 | 1.40 | 1.51 |
| 1 | P | 181 | ARG | CG-CD | 7.45 | 1.70 | 1.51 |
| 1 | O | 128 | ARG | NE-CZ | -7.31 | 1.23 | 1.33 |
| 1 | F | 196 | ARG | CB-CG | 7.14 | 1.71 | 1.52 |
| 1 | E | 361 | ARG | NE-CZ | 6.81 | 1.42 | 1.33 |
| 1 | B | 357 | LYS | CD-CE | 6.68 | 1.68 | 1.51 |
| 1 | O | 361 | ARG | CZ-NH1 | 6.62 | 1.41 | 1.33 |
| 1 | O | 404 | ARG | CB-CG | -6.58 | 1.34 | 1.52 |
| 1 | L | 356 | GLU | CD-OE2 | 6.46 | 1.32 | 1.25 |
| 1 | P | 150 | LYS | CG-CD | -6.33 | 1.30 | 1.52 |
| 1 | F | 196 | ARG | CG-CD | 6.33 | 1.67 | 1.51 |
| 1 | C | 196 | ARG | CG-CD | 6.29 | 1.67 | 1.51 |
| 1 | G | 297 | ARG | CB-CG | 6.21 | 1.69 | 1.52 |
| 1 | A | 178 | GLU | CB-CG | -6.17 | 1.40 | 1.52 |
| 1 | H | 186 | GLU | CB-CG | 6.01 | 1.63 | 1.52 |
| 1 | M | 201 | GLU | CD-OE2 | 6.00 | 1.32 | 1.25 |
| 1 | M | 152 | LYS | CG-CD | -5.82 | 1.32 | 1.52 |
| 1 | I | 153 | GLU | CB-CG | 5.79 | 1.63 | 1.52 |
| 1 | C | 257 | LYS | CB-CG | -5.71 | 1.37 | 1.52 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 1 | N | 399 | ARG | CG-CD | 5.68 | 1.66 | 1.51 |
| 1 | M | 181 | ARG | CG-CD | -5.67 | 1.37 | 1.51 |
| 1 | M | 376 | ARG | CD-NE | -5.63 | 1.36 | 1.46 |
| 1 | K | 193 | LYS | CE-NZ | 5.59 | 1.63 | 1.49 |
| 1 | C | 317 | SER | CB-OG | 5.50 | 1.49 | 1.42 |
| 1 | J | 376 | ARG | CG-CD | 5.48 | 1.65 | 1.51 |
| 1 | D | 153 | GLU | CD-OE1 | 5.46 | 1.31 | 1.25 |
| 1 | I | 196 | ARG | CG-CD | 5.39 | 1.65 | 1.51 |
| 1 | B | 151 | ARG | CZ-NH1 | 5.32 | 1.40 | 1.33 |
| 1 | K | 152 | LYS | CD-CE | 5.29 | 1.64 | 1.51 |
| 1 | A | 181 | ARG | CG-CD | -5.22 | 1.38 | 1.51 |
| 1 | C | 300 | ARG | CD-NE | -5.21 | 1.37 | 1.46 |
| 1 | G | 297 | ARG | CG-CD | 5.21 | 1.65 | 1.51 |
| 1 | B | 137 | GLU | CD-OE2 | 5.16 | 1.31 | 1.25 |
| 1 | K | 389 | LYS | C-N | -5.14 | 1.22 | 1.34 |
| 1 | J | 426 | ARG | CG-CD | -5.13 | 1.39 | 1.51 |
| 1 | O | 361 | ARG | CG-CD | -5.11 | 1.39 | 1.51 |
| 1 | E | 193 | LYS | CE-NZ | 5.10 | 1.61 | 1.49 |
| 1 | K | 150 | LYS | CE-NZ | 5.07 | 1.61 | 1.49 |
| 1 | C | 152 | LYS | CB-CG | 5.06 | 1.66 | 1.52 |
| 1 | F | 161 | ARG | CG-CD | -5.03 | 1.39 | 1.51 |
| 1 | B | 259 | GLU | CG-CD | 5.02 | 1.59 | 1.51 |
| 1 | J | 300 | ARG | CG-CD | 5.00 | 1.64 | 1.51 |

All (411) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | L | 404 | ARG | NE-CZ-NH2 | -24.96 | 107.82 | 120.30 |
| 1 | C | 300 | ARG | NE-CZ-NH1 | 24.11 | 132.36 | 120.30 |
| 1 | F | 196 | ARG | NE-CZ-NH2 | -21.71 | 109.45 | 120.30 |
| 1 | B | 399 | ARG | NE-CZ-NH2 | -19.63 | 110.49 | 120.30 |
| 1 | C | 300 | ARG | CG-CD-NE | -19.26 | 71.36 | 111.80 |
| 1 | J | 404 | ARG | NE-CZ-NH2 | -19.06 | 110.77 | 120.30 |
| 1 | J | 404 | ARG | NE-CZ-NH1 | 15.47 | 128.03 | 120.30 |
| 1 | P | 385 | LEU | CB-CG-CD2 | -15.04 | 85.44 | 111.00 |
| 1 | H | 361 | ARG | NE-CZ-NH1 | -14.31 | 113.14 | 120.30 |
| 1 | A | 404 | ARG | NE-CZ-NH1 | -13.50 | 113.55 | 120.30 |
| 1 | F | 297 | ARG | CB-CG-CD | -13.45 | 76.64 | 111.60 |
| 1 | O | 278 | LEU | CB-CG-CD1 | -13.37 | 88.27 | 111.00 |
| 1 | O | 392 | LYS | CB-CG-CD | -13.24 | 77.19 | 111.60 |
| 1 | C | 399 | ARG | NE-CZ-NH2 | 12.86 | 126.73 | 120.30 |
| 1 | G | 369 | ARG | NE-CZ-NH2 | -12.71 | 113.94 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | M | 405 | GLU | CA-CB-CG | -12.24 | 86.47 | 113.40 |
| 1 | C | 399 | ARG | NE-CZ-NH1 | -12.17 | 114.21 | 120.30 |
| 1 | L | 399 | ARG | NE-CZ-NH1 | -12.11 | 114.25 | 120.30 |
| 1 | J | 426 | ARG | CG-CD-NE | -12.02 | 86.56 | 111.80 |
| 1 | H | 361 | ARG | NE-CZ-NH2 | 11.94 | 126.27 | 120.30 |
| 1 | G | 326 | LEU | CB-CG-CD2 | -11.72 | 91.07 | 111.00 |
| 1 | J | 404 | ARG | CG-CD-NE | -11.68 | 87.28 | 111.80 |
| 1 | A | 168 | ARG | CG-CD-NE | -11.63 | 87.38 | 111.80 |
| 1 | C | 300 | ARG | CA-CB-CG | -11.30 | 88.53 | 113.40 |
| 1 | F | 196 | ARG | CD-NE-CZ | 11.12 | 139.16 | 123.60 |
| 1 | C | 426 | ARG | CG-CD-NE | -10.96 | 88.79 | 111.80 |
| 1 | N | 426 | ARG | CG-CD-NE | -10.93 | 88.85 | 111.80 |
| 1 | A | 181 | ARG | CA-CB-CG | -10.88 | 89.46 | 113.40 |
| 1 | C | 196 | ARG | CG-CD-NE | 10.73 | 134.34 | 111.80 |
| 1 | L | 399 | ARG | NE-CZ-NH2 | 10.69 | 125.64 | 120.30 |
| 1 | C | 151 | ARG | CG-CD-NE | -10.68 | 89.36 | 111.80 |
| 1 | P | 184 | ASP | CB-CG-OD2 | -10.59 | 108.77 | 118.30 |
| 1 | C | 165 | LYS | CB-CG-CD | -10.53 | 84.21 | 111.60 |
| 1 | C | 300 | ARG | CD-NE-CZ | 10.53 | 138.34 | 123.60 |
| 1 | I | 151 | ARG | NE-CZ-NH1 | 10.49 | 125.54 | 120.30 |
| 1 | M | 376 | ARG | NE-CZ-NH2 | -10.47 | 115.06 | 120.30 |
| 1 | F | 130 | LYS | CA-CB-CG | -10.40 | 90.52 | 113.40 |
| 1 | H | 404 | ARG | CB-CG-CD | 10.39 | 138.60 | 111.60 |
| 1 | G | 376 | ARG | CB-CG-CD | -10.38 | 84.60 | 111.60 |
| 1 | E | 151 | ARG | NE-CZ-NH1 | 10.37 | 125.48 | 120.30 |
| 1 | F | 130 | LYS | CD-CE-NZ | -10.31 | 87.99 | 111.70 |
| 1 | J | 426 | ARG | CA-CB-CG | -10.29 | 90.77 | 113.40 |
| 1 | N | 426 | ARG | CA-CB-CG | -10.29 | 90.77 | 113.40 |
| 1 | J | 378 | LEU | CB-CG-CD1 | 10.26 | 128.44 | 111.00 |
| 1 | L | 404 | ARG | CD-NE-CZ | 10.24 | 137.94 | 123.60 |
| 1 | H | 399 | ARG | NE-CZ-NH1 | 10.22 | 125.41 | 120.30 |
| 1 | G | 385 | LEU | CB-CG-CD2 | -10.21 | 93.64 | 111.00 |
| 1 | H | 161 | ARG | CA-CB-CG | -10.00 | 91.41 | 113.40 |
| 1 | G | 300 | ARG | NE-CZ-NH2 | -9.99 | 115.30 | 120.30 |
| 1 | I | 196 | ARG | CG-CD-NE | 9.98 | 132.76 | 111.80 |
| 1 | M | 181 | ARG | CA-CB-CG | -9.93 | 91.56 | 113.40 |
| 1 | D | 181 | ARG | CA-CB-CG | -9.91 | 91.59 | 113.40 |
| 1 | F | 161 | ARG | CA-CB-CG | -9.83 | 91.77 | 113.40 |
| 1 | M | 401 | ARG | NE-CZ-NH2 | -9.83 | 115.38 | 120.30 |
| 1 | A | 295 | ASP | CB-CG-OD2 | -9.79 | 109.49 | 118.30 |
| 1 | B | 222 | LYS | CD-CE-NZ | -9.72 | 89.33 | 111.70 |
| 1 | F | 361 | ARG | NE-CZ-NH1 | -9.69 | 115.45 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | K | 300 | ARG | CG-CD-NE | 9.59 | 131.95 | 111.80 |
| 1 | F | 399 | ARG | NE-CZ-NH2 | -9.55 | 115.52 | 120.30 |
| 1 | N | 153 | GLU | CA-CB-CG | -9.54 | 92.41 | 113.40 |
| 1 | J | 161 | ARG | CB-CG-CD | 9.52 | 136.35 | 111.60 |
| 1 | G | 300 | ARG | CG-CD-NE | -9.51 | 91.84 | 111.80 |
| 1 | H | 297 | ARG | NE-CZ-NH1 | -9.49 | 115.56 | 120.30 |
| 1 | M | 181 | ARG | CG-CD-NE | -9.49 | 91.88 | 111.80 |
| 1 | K | 193 | LYS | CD-CE-NZ | -9.46 | 89.95 | 111.70 |
| 1 | C | 152 | LYS | CB-CG-CD | -9.44 | 87.06 | 111.60 |
| 1 | J | 168 | ARG | CA-CB-CG | -9.43 | 92.66 | 113.40 |
| 1 | O | 386 | GLN | CA-CB-CG | -9.43 | 92.66 | 113.40 |
| 1 | E | 151 | ARG | NE-CZ-NH2 | -9.42 | 115.59 | 120.30 |
| 1 | H | 426 | ARG | CB-CG-CD | -9.39 | 87.17 | 111.60 |
| 1 | A | 165 | LYS | CD-CE-NZ | 9.39 | 133.30 | 111.70 |
| 1 | F | 399 | ARG | CB-CG-CD | -9.33 | 87.33 | 111.60 |
| 1 | H | 307 | ARG | NE-CZ-NH2 | -9.29 | 115.66 | 120.30 |
| 1 | P | 184 | ASP | CB-CG-OD1 | 9.28 | 126.65 | 118.30 |
| 1 | C | 426 | ARG | NE-CZ-NH1 | 9.23 | 124.92 | 120.30 |
| 1 | O | 181 | ARG | CA-CB-CG | -9.20 | 93.15 | 113.40 |
| 1 | K | 376 | ARG | CG-CD-NE | 9.19 | 131.10 | 111.80 |
| 1 | C | 426 | ARG | NE-CZ-NH2 | -9.18 | 115.71 | 120.30 |
| 1 | O | 128 | ARG | NE-CZ-NH2 | -9.16 | 115.72 | 120.30 |
| 1 | A | 404 | ARG | CB-CG-CD | -9.15 | 87.81 | 111.60 |
| 1 | D | 181 | ARG | NE-CZ-NH1 | -9.05 | 115.77 | 120.30 |
| 1 | L | 399 | ARG | CD-NE-CZ | -8.95 | 111.08 | 123.60 |
| 1 | P | 181 | ARG | NE-CZ-NH2 | -8.94 | 115.83 | 120.30 |
| 1 | H | 300 | ARG | CG-CD-NE | 8.94 | 130.56 | 111.80 |
| 1 | I | 357 | LYS | CD-CE-NZ | -8.92 | 91.19 | 111.70 |
| 1 | C | 153 | GLU | CA-CB-CG | 8.91 | 133.01 | 113.40 |
| 1 | K | 152 | LYS | CD-CE-NZ | -8.91 | 91.21 | 111.70 |
| 1 | M | 401 | ARG | NE-CZ-NH1 | 8.90 | 124.75 | 120.30 |
| 1 | C | 300 | ARG | NH1-CZ-NH2 | -8.89 | 109.62 | 119.40 |
| 1 | E | 193 | LYS | CB-CG-CD | -8.87 | 88.54 | 111.60 |
| 1 | G | 401 | ARG | CB-CG-CD | -8.85 | 88.58 | 111.60 |
| 1 | H | 201 | GLU | CA-CB-CG | -8.85 | 93.94 | 113.40 |
| 1 | J | 300 | ARG | CB-CG-CD | -8.82 | 88.66 | 111.60 |
| 1 | K | 373 | GLN | CA-CB-CG | -8.81 | 94.01 | 113.40 |
| 1 | K | 193 | LYS | CA-CB-CG | 8.79 | 132.74 | 113.40 |
| 1 | L | 193 | LYS | CD-CE-NZ | -8.76 | 91.56 | 111.70 |
| 1 | J | 361 | ARG | CG-CD-NE | -8.72 | 93.49 | 111.80 |
| 1 | J | 376 | ARG | NE-CZ-NH1 | 8.72 | 124.66 | 120.30 |
| 1 | H | 426 | ARG | NE-CZ-NH2 | -8.70 | 115.95 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | C | 257 | LYS | CG-CD-CE | -8.69 | 85.82 | 111.90 |
| 1 | H | 297 | ARG | CG-CD-NE | -8.68 | 93.56 | 111.80 |
| 1 | I | 151 | ARG | NE-CZ-NH2 | -8.68 | 115.96 | 120.30 |
| 1 | G | 369 | ARG | CD-NE-CZ | 8.65 | 135.71 | 123.60 |
| 1 | P | 153 | GLU | CB-CA-C | -8.62 | 93.16 | 110.40 |
| 1 | F | 161 | ARG | NE-CZ-NH1 | -8.62 | 115.99 | 120.30 |
| 1 | H | 376 | ARG | CA-CB-CG | -8.59 | 94.50 | 113.40 |
| 1 | C | 399 | ARG | CG-CD-NE | 8.58 | 129.82 | 111.80 |
| 1 | A | 181 | ARG | NE-CZ-NH1 | -8.55 | 116.03 | 120.30 |
| 1 | F | 399 | ARG | NE-CZ-NH1 | 8.52 | 124.56 | 120.30 |
| 1 | M | 152 | LYS | CD-CE-NZ | 8.52 | 131.29 | 111.70 |
| 1 | A | 396 | ARG | NE-CZ-NH1 | 8.48 | 124.54 | 120.30 |
| 1 | E | 168 | ARG | CA-CB-CG | -8.47 | 94.77 | 113.40 |
| 1 | G | 447 | ARG | NE-CZ-NH1 | 8.42 | 124.51 | 120.30 |
| 1 | H | 404 | ARG | NE-CZ-NH1 | 8.41 | 124.50 | 120.30 |
| 1 | I | 161 | ARG | NE-CZ-NH1 | 8.27 | 124.43 | 120.30 |
| 1 | A | 396 | ARG | NE-CZ-NH2 | -8.26 | 116.17 | 120.30 |
| 1 | I | 161 | ARG | CD-NE-CZ | 8.26 | 135.16 | 123.60 |
| 1 | A | 151 | ARG | NE-CZ-NH1 | 8.25 | 124.43 | 120.30 |
| 1 | B | 259 | GLU | CA-CB-CG | 8.25 | 131.56 | 113.40 |
| 1 | E | 193 | LYS | CD-CE-NZ | -8.24 | 92.75 | 111.70 |
| 1 | E | 361 | ARG | NE-CZ-NH1 | -8.23 | 116.18 | 120.30 |
| 1 | J | 300 | ARG | NE-CZ-NH1 | 8.23 | 124.42 | 120.30 |
| 1 | L | 188 | ARG | NE-CZ-NH1 | -8.22 | 116.19 | 120.30 |
| 1 | N | 196 | ARG | NE-CZ-NH2 | -8.20 | 116.20 | 120.30 |
| 1 | J | 373 | GLN | CA-CB-CG | -8.19 | 95.39 | 113.40 |
| 1 | N | 361 | ARG | NE-CZ-NH1 | 8.18 | 124.39 | 120.30 |
| 1 | M | 161 | ARG | NE-CZ-NH1 | 8.13 | 124.36 | 120.30 |
| 1 | C | 300 | ARG | NE-CZ-NH2 | -8.12 | 116.24 | 120.30 |
| 1 | P | 181 | ARG | CG-CD-NE | -8.12 | 94.75 | 111.80 |
| 1 | L | 399 | ARG | CA-CB-CG | -8.10 | 95.57 | 113.40 |
| 1 | D | 181 | ARG | NE-CZ-NH2 | 8.09 | 124.34 | 120.30 |
| 1 | P | 303 | ILE | CG1-CB-CG2 | -8.07 | 93.64 | 111.40 |
| 1 | H | 181 | ARG | NE-CZ-NH1 | 8.06 | 124.33 | 120.30 |
| 1 | B | 365 | ASP | CB-CA-C | -8.05 | 94.30 | 110.40 |
| 1 | O | 396 | ARG | NE-CZ-NH2 | -8.05 | 116.27 | 120.30 |
| 1 | P | 181 | ARG | CD-NE-CZ | 8.03 | 134.84 | 123.60 |
| 1 | G | 196 | ARG | CA-CB-CG | 8.02 | 131.03 | 113.40 |
| 1 | H | 401 | ARG | NE-CZ-NH1 | -8.01 | 116.30 | 120.30 |
| 1 | B | 399 | ARG | NE-CZ-NH1 | 7.98 | 124.29 | 120.30 |
| 1 | H | 464 | VAL | CG1-CB-CG2 | -7.94 | 98.20 | 110.90 |
| 1 | L | 128 | ARG | NE-CZ-NH2 | -7.94 | 116.33 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | C | 426 | ARG | CA-CB-CG | -7.93 | 95.95 | 113.40 |
| 1 | H | 404 | ARG | NE-CZ-NH2 | -7.93 | 116.34 | 120.30 |
| 1 | I | 161 | ARG | NE-CZ-NH2 | -7.84 | 116.38 | 120.30 |
| 1 | P | 192 | MET | CB-CG-SD | -7.84 | 88.88 | 112.40 |
| 1 | G | 196 | ARG | NE-CZ-NH1 | 7.77 | 124.19 | 120.30 |
| 1 | F | 296 | GLU | C-N-CA | -7.74 | 102.36 | 121.70 |
| 1 | B | 193 | LYS | CB-CG-CD | -7.71 | 91.57 | 111.60 |
| 1 | H | 321 | MET | CG-SD-CE | -7.66 | 87.95 | 100.20 |
| 1 | B | 151 | ARG | NE-CZ-NH2 | -7.59 | 116.50 | 120.30 |
| 1 | A | 201 | GLU | CA-CB-CG | -7.59 | 96.70 | 113.40 |
| 1 | F | 196 | ARG | NE-CZ-NH1 | 7.57 | 124.08 | 120.30 |
| 1 | B | 399 | ARG | CD-NE-CZ | 7.53 | 134.14 | 123.60 |
| 1 | C | 447 | ARG | NE-CZ-NH1 | 7.53 | 124.06 | 120.30 |
| 1 | C | 149 | ARG | CA-CB-CG | -7.52 | 96.85 | 113.40 |
| 1 | G | 376 | ARG | CG-CD-NE | 7.52 | 127.59 | 111.80 |
| 1 | E | 161 | ARG | NE-CZ-NH2 | -7.51 | 116.55 | 120.30 |
| 1 | J | 168 | ARG | NE-CZ-NH1 | -7.51 | 116.55 | 120.30 |
| 1 | L | 193 | LYS | CA-CB-CG | -7.49 | 96.92 | 113.40 |
| 1 | A | 180 | VAL | CG1-CB-CG2 | -7.45 | 98.98 | 110.90 |
| 1 | H | 149 | ARG | CB-CG-CD | -7.45 | 92.23 | 111.60 |
| 1 | G | 401 | ARG | NE-CZ-NH2 | -7.44 | 116.58 | 120.30 |
| 1 | F | 149 | ARG | CB-CG-CD | -7.43 | 92.28 | 111.60 |
| 1 | H | 300 | ARG | CA-CB-CG | 7.42 | 129.72 | 113.40 |
| 1 | H | 404 | ARG | CA-CB-CG | 7.42 | 129.72 | 113.40 |
| 1 | N | 181 | ARG | CG-CD-NE | 7.40 | 127.34 | 111.80 |
| 1 | M | 165 | LYS | CB-CA-C | -7.39 | 95.62 | 110.40 |
| 1 | I | 394 | ILE | CA-CB-CG1 | -7.37 | 96.99 | 111.00 |
| 1 | N | 361 | ARG | CG-CD-NE | 7.34 | 127.21 | 111.80 |
| 1 | O | 404 | ARG | NE-CZ-NH1 | 7.31 | 123.95 | 120.30 |
| 1 | M | 401 | ARG | CB-CG-CD | -7.30 | 92.62 | 111.60 |
| 1 | H | 178 | GLU | CA-CB-CG | 7.29 | 129.43 | 113.40 |
| 1 | C | 151 | ARG | NE-CZ-NH2 | -7.28 | 116.66 | 120.30 |
| 1 | C | 201 | GLU | CB-CA-C | -7.28 | 95.85 | 110.40 |
| 1 | I | 361 | ARG | CG-CD-NE | -7.21 | 96.65 | 111.80 |
| 1 | H | 289 | ASP | CB-CG-OD2 | 7.19 | 124.77 | 118.30 |
| 1 | G | 150 | LYS | CD-CE-NZ | 7.18 | 128.21 | 111.70 |
| 1 | J | 161 | ARG | NE-CZ-NH2 | -7.14 | 116.73 | 120.30 |
| 1 | F | 193 | LYS | CB-CG-CD | -7.14 | 93.04 | 111.60 |
| 1 | A | 426 | ARG | NE-CZ-NH2 | 7.13 | 123.87 | 120.30 |
| 1 | H | 361 | ARG | CG-CD-NE | -7.11 | 96.86 | 111.80 |
| 1 | E | 399 | ARG | NE-CZ-NH1 | -7.11 | 116.75 | 120.30 |
| 1 | J | 168 | ARG | CG-CD-NE | 7.10 | 126.71 | 111.80 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | P | 373 | GLN | CA-CB-CG | -7.09 | 97.81 | 113.40 |
| 1 | D | 181 | ARG | CD-NE-CZ | -7.08 | 113.69 | 123.60 |
| 1 | L | 188 | ARG | CG-CD-NE | -7.07 | 96.95 | 111.80 |
| 1 | A | 165 | LYS | CG-CD-CE | -7.05 | 90.74 | 111.90 |
| 1 | H | 289 | ASP | CB-CG-OD1 | -7.04 | 111.96 | 118.30 |
| 1 | J | 426 | ARG | NE-CZ-NH2 | -7.04 | 116.78 | 120.30 |
| 1 | N | 349 | LEU | CB-CG-CD2 | -7.02 | 99.06 | 111.00 |
| 1 | N | 165 | LYS | CD-CE-NZ | -7.02 | 95.56 | 111.70 |
| 1 | D | 447 | ARG | NE-CZ-NH1 | -7.01 | 116.80 | 120.30 |
| 1 | C | 153 | GLU | CG-CD-OE1 | -7.00 | 104.29 | 118.30 |
| 1 | A | 181 | ARG | CD-NE-CZ | -7.00 | 113.80 | 123.60 |
| 1 | H | 376 | ARG | CB-CG-CD | 6.98 | 129.75 | 111.60 |
| 1 | E | 346 | HIS | CB-CA-C | -6.96 | 96.47 | 110.40 |
| 1 | A | 186 | GLU | CA-CB-CG | -6.96 | 98.10 | 113.40 |
| 1 | H | 447 | ARG | NE-CZ-NH1 | -6.95 | 116.82 | 120.30 |
| 1 | A | 151 | ARG | CD-NE-CZ | 6.94 | 133.31 | 123.60 |
| 1 | I | 150 | LYS | CA-CB-CG | 6.92 | 128.62 | 113.40 |
| 1 | N | 390 | ASP | CB-CG-OD1 | -6.90 | 112.09 | 118.30 |
| 1 | K | 376 | ARG | CD-NE-CZ | 6.88 | 133.23 | 123.60 |
| 1 | A | 151 | ARG | NE-CZ-NH2 | -6.86 | 116.87 | 120.30 |
| 1 | C | 300 | ARG | CB-CG-CD | 6.86 | 129.42 | 111.60 |
| 1 | J | 404 | ARG | CD-NE-CZ | 6.85 | 133.19 | 123.60 |
| 1 | F | 161 | ARG | NE-CZ-NH2 | 6.84 | 123.72 | 120.30 |
| 1 | K | 193 | LYS | CB-CG-CD | 6.82 | 129.34 | 111.60 |
| 1 | P | 369 | ARG | NE-CZ-NH2 | 6.80 | 123.70 | 120.30 |
| 1 | O | 220 | ILE | CG1-CB-CG2 | 6.75 | 126.26 | 111.40 |
| 1 | G | 201 | GLU | CA-CB-CG | -6.74 | 98.57 | 113.40 |
| 1 | G | 300 | ARG | NE-CZ-NH1 | 6.74 | 123.67 | 120.30 |
| 1 | I | 152 | LYS | CG-CD-CE | 6.73 | 132.09 | 111.90 |
| 1 | I | 399 | ARG | CB-CG-CD | -6.71 | 94.16 | 111.60 |
| 1 | A | 426 | ARG | NE-CZ-NH1 | -6.70 | 116.95 | 120.30 |
| 1 | I | 361 | ARG | NE-CZ-NH2 | -6.68 | 116.96 | 120.30 |
| 1 | F | 165 | LYS | CD-CE-NZ | -6.68 | 96.34 | 111.70 |
| 1 | A | 150 | LYS | CD-CE-NZ | 6.67 | 127.05 | 111.70 |
| 1 | G | 153 | GLU | CA-CB-CG | -6.67 | 98.74 | 113.40 |
| 1 | I | 340 | LYS | CD-CE-NZ | -6.66 | 96.38 | 111.70 |
| 1 | C | 193 | LYS | CD-CE-NZ | -6.64 | 96.43 | 111.70 |
| 1 | G | 196 | ARG | CB-CG-CD | -6.64 | 94.35 | 111.60 |
| 1 | K | 300 | ARG | NE-CZ-NH1 | 6.63 | 123.61 | 120.30 |
| 1 | N | 399 | ARG | NE-CZ-NH1 | 6.62 | 123.61 | 120.30 |
| 1 | D | 150 | LYS | CD-CE-NZ | -6.62 | 96.48 | 111.70 |
| 1 | H | 178 | GLU | CB-CA-C | -6.61 | 97.18 | 110.40 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | F | 399 | ARG | CA-CB-CG | 6.58 | 127.88 | 113.40 |
| 1 | M | 390 | ASP | N-CA-CB | -6.58 | 98.75 | 110.60 |
| 1 | A | 357 | LYS | CD-CE-NZ | -6.57 | 96.60 | 111.70 |
| 1 | E | 165 | LYS | CD-CE-NZ | -6.57 | 96.60 | 111.70 |
| 1 | F | 399 | ARG | CD-NE-CZ | 6.55 | 132.78 | 123.60 |
| 1 | O | 426 | ARG | CD-NE-CZ | 6.55 | 132.77 | 123.60 |
| 1 | G | 252 | MET | CA-CB-CG | 6.55 | 124.43 | 113.30 |
| 1 | J | 222 | LYS | CA-CB-CG | 6.54 | 127.80 | 113.40 |
| 1 | P | 289 | ASP | CB-CG-OD2 | -6.54 | 112.42 | 118.30 |
| 1 | N | 196 | ARG | CB-CG-CD | -6.51 | 94.67 | 111.60 |
| 1 | P | 153 | GLU | N-CA-CB | 6.51 | 122.32 | 110.60 |
| 1 | N | 426 | ARG | NE-CZ-NH2 | -6.50 | 117.05 | 120.30 |
| 1 | C | 399 | ARG | CD-NE-CZ | -6.50 | 114.50 | 123.60 |
| 1 | J | 168 | ARG | NE-CZ-NH2 | 6.43 | 123.51 | 120.30 |
| 1 | G | 326 | LEU | CB-CG-CD1 | 6.39 | 121.87 | 111.00 |
| 1 | A | 178 | GLU | CA-CB-CG | -6.39 | 99.34 | 113.40 |
| 1 | E | 222 | LYS | CA-CB-CG | 6.38 | 127.44 | 113.40 |
| 1 | B | 373 | GLN | CA-CB-CG | -6.37 | 99.38 | 113.40 |
| 1 | N | 181 | ARG | CD-NE-CZ | -6.37 | 114.68 | 123.60 |
| 1 | H | 401 | ARG | NE-CZ-NH2 | 6.37 | 123.48 | 120.30 |
| 1 | L | 394 | ILE | CG1-CB-CG2 | -6.35 | 97.44 | 111.40 |
| 1 | K | 193 | LYS | N-CA-CB | 6.32 | 121.98 | 110.60 |
| 1 | J | 357 | LYS | CA-CB-CG | 6.32 | 127.29 | 113.40 |
| 1 | M | 390 | ASP | CB-CG-OD1 | -6.30 | 112.63 | 118.30 |
| 1 | J | 168 | ARG | CD-NE-CZ | -6.29 | 114.80 | 123.60 |
| 1 | N | 399 | ARG | NE-CZ-NH2 | -6.27 | 117.16 | 120.30 |
| 1 | G | 401 | ARG | NE-CZ-NH1 | 6.27 | 123.44 | 120.30 |
| 1 | J | 361 | ARG | CA-CB-CG | -6.27 | 99.61 | 113.40 |
| 1 | G | 405 | GLU | N-CA-CB | -6.22 | 99.39 | 110.60 |
| 1 | J | 193 | LYS | CD-CE-NZ | -6.22 | 97.39 | 111.70 |
| 1 | L | 361 | ARG | CA-CB-CG | 6.21 | 127.07 | 113.40 |
| 1 | H | 404 | ARG | CD-NE-CZ | 6.20 | 132.27 | 123.60 |
| 1 | J | 300 | ARG | NE-CZ-NH2 | -6.19 | 117.20 | 120.30 |
| 1 | A | 426 | ARG | CD-NE-CZ | -6.19 | 114.94 | 123.60 |
| 1 | G | 150 | LYS | CB-CA-C | -6.18 | 98.04 | 110.40 |
| 1 | N | 404 | ARG | CA-CB-CG | 6.17 | 126.98 | 113.40 |
| 1 | O | 392 | LYS | CA-CB-CG | 6.15 | 126.94 | 113.40 |
| 1 | A | 152 | LYS | CD-CE-NZ | 6.15 | 125.84 | 111.70 |
| 1 | O | 150 | LYS | CG-CD-CE | 6.14 | 130.32 | 111.90 |
| 1 | F | 369 | ARG | NE-CZ-NH2 | -6.14 | 117.23 | 120.30 |
| 1 | K | 361 | ARG | CG-CD-NE | 6.13 | 124.67 | 111.80 |
| 1 | P | 399 | ARG | NE-CZ-NH1 | -6.13 | 117.24 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | M | 161 | ARG | NE-CZ-NH2 | -6.12 | 117.24 | 120.30 |
| 1 | A | 404 | ARG | CG-CD-NE | -6.10 | 98.99 | 111.80 |
| 1 | B | 161 | ARG | NE-CZ-NH1 | 6.09 | 123.35 | 120.30 |
| 1 | O | 366 | TRP | C-N-CA | -6.06 | 106.56 | 121.70 |
| 1 | I | 426 | ARG | CA-CB-CG | 6.05 | 126.71 | 113.40 |
| 1 | O | 397 | ILE | CG1-CB-CG2 | 6.04 | 124.70 | 111.40 |
| 1 | E | 151 | ARG | CD-NE-CZ | 6.04 | 132.06 | 123.60 |
| 1 | B | 357 | LYS | CG-CD-CE | 6.03 | 130.00 | 111.90 |
| 1 | O | 134 | LEU | CB-CG-CD2 | -6.02 | 100.77 | 111.00 |
| 1 | C | 151 | ARG | NE-CZ-NH1 | 6.01 | 123.31 | 120.30 |
| 1 | H | 152 | LYS | CD-CE-NZ | -6.00 | 97.91 | 111.70 |
| 1 | J | 376 | ARG | CA-CB-CG | 5.99 | 126.57 | 113.40 |
| 1 | E | 374 | GLU | CB-CA-C | -5.99 | 98.43 | 110.40 |
| 1 | H | 181 | ARG | CD-NE-CZ | 5.97 | 131.96 | 123.60 |
| 1 | J | 376 | ARG | NE-CZ-NH2 | -5.97 | 117.31 | 120.30 |
| 1 | A | 181 | ARG | NE-CZ-NH2 | 5.97 | 123.28 | 120.30 |
| 1 | J | 300 | ARG | CD-NE-CZ | 5.97 | 131.95 | 123.60 |
| 1 | J | 458 | LYS | CD-CE-NZ | 5.97 | 125.42 | 111.70 |
| 1 | G | 426 | ARG | CA-CB-CG | 5.95 | 126.50 | 113.40 |
| 1 | L | 150 | LYS | CA-CB-CG | 5.95 | 126.49 | 113.40 |
| 1 | I | 150 | LYS | CD-CE-NZ | -5.94 | 98.03 | 111.70 |
| 1 | E | 399 | ARG | NE-CZ-NH2 | 5.92 | 123.26 | 120.30 |
| 1 | D | 458 | LYS | CD-CE-NZ | 5.91 | 125.30 | 111.70 |
| 1 | G | 209 | MET | CG-SD-CE | -5.91 | 90.74 | 100.20 |
| 1 | P | 369 | ARG | NE-CZ-NH1 | -5.90 | 117.35 | 120.30 |
| 1 | F | 193 | LYS | CD-CE-NZ | -5.90 | 98.13 | 111.70 |
| 1 | L | 399 | ARG | CG-CD-NE | 5.89 | 124.18 | 111.80 |
| 1 | O | 386 | GLN | CG-CD-OE1 | -5.89 | 109.81 | 121.60 |
| 1 | A | 357 | LYS | CG-CD-CE | -5.89 | 94.23 | 111.90 |
| 1 | H | 397 | ILE | CG1-CB-CG2 | 5.89 | 124.35 | 111.40 |
| 1 | M | 376 | ARG | CG-CD-NE | -5.88 | 99.44 | 111.80 |
| 1 | H | 168 | ARG | NE-CZ-NH1 | -5.88 | 117.36 | 120.30 |
| 1 | D | 447 | ARG | NE-CZ-NH2 | 5.87 | 123.23 | 120.30 |
| 1 | N | 196 | ARG | N-CA-CB | 5.85 | 121.13 | 110.60 |
| 1 | A | 295 | ASP | CB-CG-OD1 | 5.83 | 123.55 | 118.30 |
| 1 | I | 357 | LYS | CA-CB-CG | -5.82 | 100.60 | 113.40 |
| 1 | J | 269 | SER | CB-CA-C | -5.81 | 99.06 | 110.10 |
| 1 | L | 399 | ARG | CB-CG-CD | 5.81 | 126.71 | 111.60 |
| 1 | K | 376 | ARG | CB-CA-C | -5.80 | 98.80 | 110.40 |
| 1 | G | 149 | ARG | CD-NE-CZ | 5.79 | 131.71 | 123.60 |
| 1 | H | 399 | ARG | CB-CG-CD | 5.79 | 126.64 | 111.60 |
| 1 | F | 152 | LYS | CG-CD-CE | -5.78 | 94.57 | 111.90 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | C | 399 | ARG | CA-CB-CG | -5.77 | 100.71 | 113.40 |
| 1 | B | 151 | ARG | CG-CD-NE | -5.75 | 99.72 | 111.80 |
| 1 | B | 458 | LYS | CG-CD-CE | -5.70 | 94.79 | 111.90 |
| 1 | B | 161 | ARG | CA-CB-CG | 5.70 | 125.94 | 113.40 |
| 1 | F | 297 | ARG | N-CA-CB | 5.68 | 120.83 | 110.60 |
| 1 | D | 181 | ARG | CG-CD-NE | 5.68 | 123.73 | 111.80 |
| 1 | J | 399 | ARG | CG-CD-NE | 5.68 | 123.73 | 111.80 |
| 1 | H | 151 | ARG | NE-CZ-NH2 | -5.67 | 117.46 | 120.30 |
| 1 | G | 178 | GLU | N-CA-CB | 5.67 | 120.80 | 110.60 |
| 1 | L | 361 | ARG | CG-CD-NE | -5.67 | 99.90 | 111.80 |
| 1 | E | 390 | ASP | N-CA-CB | -5.66 | 100.41 | 110.60 |
| 1 | G | 447 | ARG | NE-CZ-NH2 | -5.66 | 117.47 | 120.30 |
| 1 | C | 177 | MET | CB-CG-SD | 5.64 | 129.31 | 112.40 |
| 1 | M | 295 | ASP | CB-CA-C | 5.63 | 121.66 | 110.40 |
| 1 | N | 196 | ARG | CB-CA-C | -5.61 | 99.18 | 110.40 |
| 1 | F | 130 | LYS | CB-CG-CD | 5.61 | 126.19 | 111.60 |
| 1 | J | 340 | LYS | N-CA-CB | -5.61 | 100.51 | 110.60 |
| 1 | H | 385 | LEU | CA-CB-CG | 5.60 | 128.18 | 115.30 |
| 1 | N | 196 | ARG | CG-CD-NE | 5.60 | 123.55 | 111.80 |
| 1 | O | 165 | LYS | CD-CE-NZ | 5.59 | 124.56 | 111.70 |
| 1 | M | 181 | ARG | NE-CZ-NH2 | -5.59 | 117.51 | 120.30 |
| 1 | F | 369 | ARG | NE-CZ-NH1 | -5.58 | 117.51 | 120.30 |
| 1 | O | 150 | LYS | CB-CG-CD | 5.58 | 126.11 | 111.60 |
| 1 | C | 151 | ARG | CB-CG-CD | -5.57 | 97.11 | 111.60 |
| 1 | O | 426 | ARG | CA-CB-CG | -5.57 | 101.15 | 113.40 |
| 1 | D | 153 | GLU | CB-CG-CD | -5.56 | 99.18 | 114.20 |
| 1 | C | 447 | ARG | NE-CZ-NH2 | -5.56 | 117.52 | 120.30 |
| 1 | D | 361 | ARG | NE-CZ-NH1 | -5.56 | 117.52 | 120.30 |
| 1 | F | 161 | ARG | CB-CG-CD | 5.55 | 126.03 | 111.60 |
| 1 | B | 150 | LYS | CG-CD-CE | -5.54 | 95.28 | 111.90 |
| 1 | P | 178 | GLU | CA-CB-CG | -5.54 | 101.21 | 113.40 |
| 1 | A | 165 | LYS | CB-CG-CD | 5.53 | 125.98 | 111.60 |
| 1 | G | 149 | ARG | NE-CZ-NH1 | 5.53 | 123.06 | 120.30 |
| 1 | L | 188 | ARG | NE-CZ-NH2 | 5.51 | 123.06 | 120.30 |
| 1 | G | 186 | GLU | CG-CD-OE2 | -5.51 | 107.28 | 118.30 |
| 1 | C | 193 | LYS | CA-CB-CG | -5.50 | 101.30 | 113.40 |
| 1 | D | 165 | LYS | CB-CA-C | -5.50 | 99.40 | 110.40 |
| 1 | M | 367 | SER | CB-CA-C | 5.50 | 120.55 | 110.10 |
| 1 | K | 300 | ARG | CA-CB-CG | 5.50 | 125.49 | 113.40 |
| 1 | E | 222 | LYS | CD-CE-NZ | 5.48 | 124.31 | 111.70 |
| 1 | H | 181 | ARG | NE-CZ-NH2 | -5.48 | 117.56 | 120.30 |
| 1 | O | 181 | ARG | CD-NE-CZ | -5.48 | 115.93 | 123.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | I | 188 | ARG | NE-CZ-NH2 | -5.47 | 117.57 | 120.30 |
| 1 | J | 399 | ARG | CB-CG-CD | 5.47 | 125.81 | 111.60 |
| 1 | B | 259 | GLU | CB-CG-CD | -5.46 | 99.44 | 114.20 |
| 1 | C | 399 | ARG | CB-CA-C | -5.46 | 99.48 | 110.40 |
| 1 | D | 356 | GLU | OE1-CD-OE2 | 5.44 | 129.82 | 123.30 |
| 1 | A | 357 | LYS | CB-CG-CD | 5.43 | 125.71 | 111.60 |
| 1 | L | 168 | ARG | CB-CG-CD | 5.42 | 125.70 | 111.60 |
| 1 | G | 426 | ARG | CG-CD-NE | 5.40 | 123.15 | 111.80 |
| 1 | E | 404 | ARG | CA-CB-CG | 5.39 | 125.27 | 113.40 |
| 1 | G | 447 | ARG | CD-NE-CZ | 5.39 | 131.14 | 123.60 |
| 1 | M | 295 | ASP | N-CA-CB | -5.38 | 100.92 | 110.60 |
| 1 | P | 295 | ASP | CB-CA-C | -5.34 | 99.72 | 110.40 |
| 1 | E | 390 | ASP | CB-CG-OD1 | -5.34 | 113.50 | 118.30 |
| 1 | I | 151 | ARG | CD-NE-CZ | 5.33 | 131.07 | 123.60 |
| 1 | B | 152 | LYS | CG-CD-CE | 5.32 | 127.86 | 111.90 |
| 1 | F | 139 | THR | OG1-CB-CG2 | 5.31 | 122.22 | 110.00 |
| 1 | M | 150 | LYS | CD-CE-NZ | -5.29 | 99.54 | 111.70 |
| 1 | J | 130 | LYS | CD-CE-NZ | 5.28 | 123.84 | 111.70 |
| 1 | F | 161 | ARG | CD-NE-CZ | -5.28 | 116.21 | 123.60 |
| 1 | K | 361 | ARG | N-CA-CB | -5.27 | 101.12 | 110.60 |
| 1 | N | 181 | ARG | CA-CB-CG | -5.26 | 101.83 | 113.40 |
| 1 | H | 152 | LYS | CB-CG-CD | 5.25 | 125.26 | 111.60 |
| 1 | F | 369 | ARG | NH1-CZ-NH2 | 5.25 | 125.17 | 119.40 |
| 1 | E | 374 | GLU | CA-CB-CG | 5.22 | 124.89 | 113.40 |
| 1 | A | 399 | ARG | N-CA-CB | -5.22 | 101.20 | 110.60 |
| 1 | C | 317 | SER | CB-CA-C | 5.22 | 120.02 | 110.10 |
| 1 | C | 365 | ASP | CB-CG-OD2 | 5.17 | 122.96 | 118.30 |
| 1 | H | 404 | ARG | CB-CA-C | -5.17 | 100.07 | 110.40 |
| 1 | M | 297 | ARG | NE-CZ-NH1 | -5.16 | 117.72 | 120.30 |
| 1 | D | 153 | GLU | CG-CD-OE1 | -5.16 | 107.99 | 118.30 |
| 1 | F | 297 | ARG | CA-CB-CG | 5.16 | 124.75 | 113.40 |
| 1 | A | 404 | ARG | CA-CB-CG | 5.16 | 124.74 | 113.40 |
| 1 | N | 390 | ASP | CB-CG-OD2 | 5.15 | 122.94 | 118.30 |
| 1 | L | 168 | ARG | CA-CB-CG | -5.15 | 102.06 | 113.40 |
| 1 | H | 399 | ARG | CA-CB-CG | 5.15 | 124.72 | 113.40 |
| 1 | H | 376 | ARG | NE-CZ-NH1 | -5.14 | 117.73 | 120.30 |
| 1 | H | 149 | ARG | CG-CD-NE | 5.14 | 122.59 | 111.80 |
| 1 | G | 386 | GLN | CA-CB-CG | 5.13 | 124.69 | 113.40 |
| 1 | D | 151 | ARG | CG-CD-NE | -5.12 | 101.05 | 111.80 |
| 1 | G | 326 | LEU | CD1-CG-CD2 | -5.12 | 95.15 | 110.50 |
| 1 | M | 161 | ARG | CA-CB-CG | -5.12 | 102.14 | 113.40 |
| 1 | G | 426 | ARG | NE-CZ-NH2 | -5.12 | 117.74 | 120.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | I | 128 | ARG | NE-CZ-NH2 | 5.12 | 122.86 | 120.30 |
| 1 | H | 300 | ARG | CB-CG-CD | -5.10 | 98.33 | 111.60 |
| 1 | G | 193 | LYS | CD-CE-NZ | -5.09 | 99.99 | 111.70 |
| 1 | B | 389 | LYS | CB-CA-C | -5.08 | 100.24 | 110.40 |
| 1 | F | 369 | ARG | CG-CD-NE | 5.07 | 122.44 | 111.80 |
| 1 | C | 399 | ARG | CB-CG-CD | 5.07 | 124.77 | 111.60 |
| 1 | K | 150 | LYS | CB-CA-C | -5.06 | 100.28 | 110.40 |
| 1 | B | 257 | LYS | CA-CB-CG | 5.06 | 124.52 | 113.40 |
| 1 | I | 426 | ARG | CG-CD-NE | 5.05 | 122.40 | 111.80 |
| 1 | F | 376 | ARG | CA-CB-CG | -5.05 | 102.30 | 113.40 |
| 1 | I | 161 | ARG | CG-CD-NE | -5.04 | 101.22 | 111.80 |
| 1 | D | 396 | ARG | NE-CZ-NH1 | 5.02 | 122.81 | 120.30 |
| 1 | E | 168 | ARG | CB-CG-CD | 5.02 | 124.65 | 111.60 |
| 1 | A | 399 | ARG | NE-CZ-NH2 | 5.01 | 122.81 | 120.30 |
| 1 | C | 404 | ARG | CA-CB-CG | 5.01 | 124.43 | 113.40 |
| 1 | K | 196 | ARG | N-CA-CB | 5.01 | 119.62 | 110.60 |
| 1 | M | 376 | ARG | CB-CG-CD | -5.00 | 98.59 | 111.60 |
| 1 | L | 297 | ARG | NE-CZ-NH1 | -5.00 | 117.80 | 120.30 |

There are no chirality outliers.

All (23) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | A | 151 | ARG | Peptide |
| 1 | A | 162 | ASN | Sidechain |
| 1 | B | 373 | GLN | Sidechain |
| 1 | B | 399 | ARG | Sidechain |
| 1 | C | 300 | ARG | Sidechain |
| 1 | D | 162 | ASN | Sidechain |
| 1 | E | 150 | LYS | Peptide |
| 1 | E | 374 | GLU | Sidechain |
| 1 | F | 196 | ARG | Sidechain |
| 1 | G | 369 | ARG | Sidechain |
| 1 | H | 162 | ASN | Sidechain |
| 1 | H | 201 | GLU | Sidechain |
| 1 | H | 250 | HIS | Sidechain |
| 1 | I | 151 | ARG | Mainchain |
| 1 | K | 195 | GLN | Peptide |
| 1 | L | 404 | ARG | Sidechain |
| 1 | M | 162 | ASN | Sidechain |
| 1 | N | 162 | ASN | Sidechain |
| 1 | O | 162 | ASN | Sidechain |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 1 | O | 346 | HIS | Sidechain |
| 1 | P | 153 | GLU | Peptide |
| 1 | P | 162 | ASN | Sidechain |
| 1 | P | 181 | ARG | Sidechain |

## 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 | 2772 | 0 | 2765 | 101 | 4 |
| 1 | B | 2772 | 0 | 2767 | 74 | 0 |
| 1 | C | 2772 | 0 | 2767 | 102 | 4 |
| 1 | D | 2772 | 0 | 2767 | 67 | 0 |
| 1 | E | 2772 | 0 | 2767 | 65 | 0 |
| 1 | F | 2772 | 0 | 2767 | 83 | 0 |
| 1 | G | 2772 | 0 | 2767 | 95 | 0 |
| 1 | H | 2772 | 0 | 2767 | 118 | 0 |
| 1 | I | 2772 | 0 | 2767 | 91 | 0 |
| 1 | J | 2772 | 0 | 2766 | 67 | 3 |
| 1 | K | 2772 | 0 | 2767 | 87 | 1 |
| 1 | L | 2772 | 0 | 2767 | 67 | 0 |
| 1 | M | 2772 | 0 | 2767 | 89 | 1 |
| 1 | N | 2772 | 0 | 2765 | 110 | 0 |
| 1 | O | 2772 | 0 | 2767 | 120 | 3 |
| 1 | P | 2772 | 0 | 2767 | 134 | 0 |
| 2 | A | 5 | 0 | 0 | 0 | 0 |
| 2 | B | 15 | 0 | 0 | 1 | 0 |
| 2 | C | 15 | 0 | 0 | 1 | 0 |
| 2 | D | 5 | 0 | 0 | 0 | 0 |
| 2 | E | 15 | 0 | 0 | 3 | 0 |
| 2 | F | 15 | 0 | 0 | 1 | 0 |
| 2 | G | 5 | 0 | 0 | 1 | 0 |
| 2 | H | 10 | 0 | 0 | 2 | 0 |
| 2 | I | 15 | 0 | 0 | 0 | 0 |
| 2 | J | 15 | 0 | 0 | 0 | 0 |
| 2 | K | 10 | 0 | 0 | 1 | 0 |
| 2 | L | 10 | 0 | 0 | 1 | 0 |
| 2 | M | 5 | 0 | 0 | 1 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 2 | N | 5 | 0 | 0 | 0 | 0 |
| 2 | O | 10 | 0 | 0 | 1 | 0 |
| 2 | P | 10 | 0 | 0 | 0 | 0 |
| 3 | A | 35 | 0 | 0 | 2 | 0 |
| 3 | B | 35 | 0 | 0 | 0 | 0 |
| 3 | C | 35 | 0 | 0 | 0 | 0 |
| 3 | D | 35 | 0 | 0 | 1 | 0 |
| 3 | E | 35 | 0 | 0 | 0 | 0 |
| 3 | F | 35 | 0 | 0 | 0 | 0 |
| 3 | G | 35 | 0 | 0 | 0 | 0 |
| 3 | H | 35 | 0 | 0 | 1 | 0 |
| 3 | I | 35 | 0 | 0 | 0 | 0 |
| 3 | J | 35 | 0 | 0 | 0 | 0 |
| 3 | K | 35 | 0 | 0 | 0 | 0 |
| 3 | L | 35 | 0 | 0 | 0 | 0 |
| 3 | M | 35 | 0 | 0 | 0 | 0 |
| 3 | N | 35 | 0 | 0 | 0 | 0 |
| 3 | O | 35 | 0 | 0 | 0 | 0 |
| 3 | P | 35 | 0 | 0 | 0 | 0 |
| 4 | A | 33 | 0 | 0 | 7 | 0 |
| 4 | B | 27 | 0 | 0 | 0 | 0 |
| 4 | C | 37 | 0 | 0 | 7 | 0 |
| 4 | D | 32 | 0 | 0 | 2 | 0 |
| 4 | E | 39 | 0 | 0 | 5 | 0 |
| 4 | F | 37 | 0 | 0 | 5 | 0 |
| 4 | G | 31 | 0 | 0 | 2 | 0 |
| 4 | H | 22 | 0 | 0 | 6 | 0 |
| 4 | I | 34 | 0 | 0 | 6 | 0 |
| 4 | J | 29 | 0 | 0 | 3 | 0 |
| 4 | K | 29 | 0 | 0 | 3 | 0 |
| 4 | L | 34 | 0 | 0 | 8 | 0 |
| 4 | M | 43 | 0 | 0 | 8 | 0 |
| 4 | N | 26 | 0 | 0 | 3 | 0 |
| 4 | O | 28 | 0 | 0 | 4 | 0 |
| 4 | P | 30 | 0 | 0 | 11 | 0 |
| All | All | 45588 | 0 | 44267 | 1403 | 8 |

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 16.

All (1403) 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:L:193:LYS:CE | 1:L:193:LYS:NZ | 1.68 | 1.52 |
| 1:N:307:ARG:NH2 | 1:N:346:HIS:CD2 | 2.08 | 1.22 |
| 1:B:151:ARG:HG2 | 1:B:153:GLU:OE1 | 1.40 | 1.21 |
| 1:K:151:ARG:HB2 | 1:K:153:GLU:OE2 | 1.43 | 1.18 |
| 1:N:402:PRO:HD2 | 1:N:405:GLU:CD | 1.65 | 1.17 |
| 1:P:181:ARG:NH1 | 1:P:187:ASP:HA | 1.63 | 1.13 |
| 1:N:356:GLU:OE2 | 1:N:361:ARG:HD2 | 1.47 | 1.12 |
| 1:B:357:LYS:HE2 | 1:D:361:ARG:HH12 | 1.13 | 1.10 |
| 1:O:402:PRO:HB2 | 1:O:405:GLU:HG3 | 1.32 | 1.09 |
| 1:J:373:GLN:HG2 | 1:J:374:GLU:N | 1.56 | 1.09 |
| 1:O:353:HIS:HB3 | 1:O:397:ILE:HD13 | 1.35 | 1.08 |
| 1:N:402:PRO:HD2 | 1:N:405:GLU:OE1 | 1.55 | 1.06 |
| 1:I:361:ARG:HH21 | 1:P:361:ARG:HD2 | 1.15 | 1.06 |
| 1:H:161:ARG:HG3 | 1:H:162:ASN:H | 0.98 | 1.05 |
| 1:H:307:ARG:NH2 | 2:H:501:SO4:O4 | 1.90 | 1.03 |
| 1:O:350:GLU:OE2 | 1:O:396:ARG:NH1 | 1.92 | 1.03 |
| 1:J:373:GLN:HG2 | 1:J:374:GLU:H | 1.03 | 1.02 |
| 1:F:161:ARG:HG3 | 1:F:162:ASN:N | 1.69 | 1.02 |
| 1:D:148:ASP:OD2 | 1:D:151:ARG:HB2 | 1.59 | 1.02 |
| 1:O:181:ARG:HH11 | 1:O:193:LYS:HB3 | 1.23 | 1.01 |
| 1:P:181:ARG:NH1 | 1:P:193:LYS:HE3 | 1.76 | 1.01 |
| 1:A:396:ARG:HG3 | 1:A:399:ARG:HH21 | 1.22 | 1.00 |
| 1:A:396:ARG:HG3 | 1:A:399:ARG:NH2 | 1.77 | 0.99 |
| 1:I:128:ARG:NE | 1:I:150:LYS:HB3 | 1.75 | 0.99 |
| 1:A:181:ARG:NH2 | 1:A:185:VAL:O | 1.96 | 0.98 |
| 1:O:128:ARG:HG3 | 1:O:150:LYS:HG3 | 1.42 | 0.97 |
| 1:C:298:HIS:HE1 | 1:C:300:ARG:NH1 | 1.62 | 0.97 |
| 1:H:161:ARG:HG3 | 1:H:162:ASN:N | 1.56 | 0.96 |
| 1:H:353:HIS:HB3 | 1:H:397:ILE:HD13 | 1.46 | 0.96 |
| 1:C:152:LYS:O | 1:C:153:GLU:HB3 | 1.61 | 0.95 |
| 1:L:193:LYS:NZ | 1:L:193:LYS:CD | 2.29 | 0.95 |
| 1:C:257:LYS:HB2 | 1:C:259:GLU:OE2 | 1.64 | 0.95 |
| 1:O:300:ARG:NH2 | 1:O:320:TRP:O | 2.00 | 0.94 |
| 1:O:162:ASN:OD1 | 1:O:203:GLY:C | 2.04 | 0.94 |
| 1:H:289:ASP:OD2 | 4:H:601:HOH:O | 1.83 | 0.94 |
| 1:K:151:ARG:CB | 1:K:153:GLU:OE2 | 2.16 | 0.93 |
| 1:P:380:THR:HG23 | 1:P:383:GLY:H | 1.31 | 0.93 |
| 1:H:181:ARG:NE | 1:H:184:ASP:O | 2.01 | 0.92 |
| 1:M:181:ARG:HH21 | 1:M:185:VAL:HA | 1.32 | 0.92 |
| 1:A:174:ILE:HG22 | 1:A:178:GLU:OE2 | 1.70 | 0.92 |
| 1:J:373:GLN:CG | 1:J:374:GLU:N | 2.32 | 0.92 |
| 1:H:147:TRP:HE1 | 1:H:149:ARG:HH11 | 1.07 | 0.92 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:N:307:ARG:HH22 | 1:N:346:HIS:HD2 | 1.12 | 0.92 |
| 1:P:373:GLN:CD | 1:P:376:ARG:HD2 | 1.90 | 0.92 |
| 1:B:357:LYS:HE2 | 1:D:361:ARG:NH1 | 1.85 | 0.92 |
| 1:F:202:THR:HG1 | 1:F:204:HIS:HD1 | 1.17 | 0.91 |
| 1:P:181:ARG:HH12 | 1:P:187:ASP:HA | 1.33 | 0.90 |
| 1:P:300:ARG:NH2 | 1:P:320:TRP:O | 2.04 | 0.90 |
| 1:D:186:GLU:OE1 | 1:K:188:ARG:NH2 | 2.05 | 0.89 |
| 1:O:301:THR:HG22 | 1:O:317:SER:HB3 | 1.53 | 0.89 |
| 1:O:386:GLN:HG2 | 1:O:387:PRO:HD2 | 1.54 | 0.89 |
| 1:F:272:PRO:HB2 | 1:O:273:MET:HE1 | 1.55 | 0.89 |
| 1:H:404:ARG:HH21 | 1:K:404:ARG:CD | 1.85 | 0.88 |
| 1:L:390:ASP:O | 1:L:394:ILE:HD12 | 1.74 | 0.88 |
| 1:A:181:ARG:O | 1:A:181:ARG:HG3 | 1.74 | 0.88 |
| 1:C:300:ARG:HE | 1:C:319:GLY:HA2 | 1.39 | 0.87 |
| 1:E:151:ARG:NH2 | 1:E:196:ARG:HH12 | 1.71 | 0.87 |
| 1:C:300:ARG:NH1 | 1:C:320:TRP:O | 2.07 | 0.87 |
| 1:C:298:HIS:CE1 | 1:C:300:ARG:NH1 | 2.43 | 0.87 |
| 1:B:187:ASP:OD1 | 1:B:193:LYS:HE2 | 1.75 | 0.86 |
| 1:P:148:ASP:HB3 | 1:P:153:GLU:HG2 | 1.56 | 0.86 |
| 1:N:356:GLU:OE2 | 1:N:361:ARG:CD | 2.23 | 0.86 |
| 1:K:347:ASP:HB3 | 1:K:350:GLU:HG2 | 1.57 | 0.86 |
| 1:O:181:ARG:NH1 | 1:O:193:LYS:HB3 | 1.90 | 0.86 |
| 1:P:318:LEU:HD12 | 1:P:369:ARG:NH2 | 1.90 | 0.86 |
| 1:F:219:TRP:CZ3 | 1:F:268:THR:HG21 | 2.10 | 0.85 |
| 1:I:153:GLU:O | 4:I:601:HOH:O | 1.94 | 0.85 |
| 1:F:130:LYS:HG2 | 1:F:131:ILE:N | 1.90 | 0.84 |
| 1:A:181:ARG:NH2 | 1:A:185:VAL:C | 2.31 | 0.84 |
| 1:G:354:LEU:HD21 | 1:G:397:ILE:HA | 1.58 | 0.84 |
| 1:C:300:ARG:NE | 1:C:319:GLY:HA2 | 1.92 | 0.84 |
| 1:K:193:LYS:HG3 | 1:K:195:GLN:HE22 | 1.44 | 0.83 |
| 1:G:148:ASP:OD2 | 1:G:151:ARG:HD2 | 1.76 | 0.83 |
| 1:D:349:LEU:HG | 1:D:378:LEU:HD22 | 1.61 | 0.82 |
| 1:M:249:LEU:O | 4:M:601:HOH:O | 1.97 | 0.82 |
| 1:M:380:THR:HG22 | 1:M:382:ALA:H | 1.44 | 0.82 |
| 1:K:257:LYS:NZ | 1:K:259:GLU:HB2 | 1.95 | 0.82 |
| 1:L:380:THR:HG22 | 1:L:382:ALA:H | 1.44 | 0.82 |
| 1:G:380:THR:HG22 | 1:G:382:ALA:H | 1.45 | 0.82 |
| 1:H:181:ARG:HB2 | 1:H:193:LYS:HD2 | 1.60 | 0.82 |
| 1:P:300:ARG:HH21 | 1:P:320:TRP:H | 1.28 | 0.82 |
| 1:N:152:LYS:C | 1:N:153:GLU:HG2 | 2.01 | 0.81 |
| 1:A:300:ARG:NH2 | 4:A:602:HOH:O | 2.13 | 0.81 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:D:147:TRP:HD1 | 1:D:149:ARG:HD3 | 1.44 | 0.81 |
| 1:G:192:MET:HG3 | 1:G:209:MET:HE1 | 1.61 | 0.81 |
| 1:H:376:ARG:O | 1:H:376:ARG:HG2 | 1.63 | 0.81 |
| 1:N:313:GLU:OE1 | 1:N:427:ARG:NH2 | 2.13 | 0.81 |
| 1:I:128:ARG:NH1 | 1:I:150:LYS:HG3 | 1.95 | 0.81 |
| 1:E:151:ARG:HH21 | 1:E:196:ARG:HH22 | 1.29 | 0.81 |
| 1:C:314:VAL:HG22 | 1:C:320:TRP:CD1 | 2.16 | 0.81 |
| 1:F:219:TRP:HZ3 | 1:F:268:THR:HG21 | 1.44 | 0.81 |
| 1:K:147:TRP:HZ2 | 1:K:152:LYS:HD3 | 1.45 | 0.81 |
| 1:H:376:ARG:NH2 | 1:H:380:THR:O | 2.13 | 0.81 |
| 1:P:374:GLU:O | 4:P:601:HOH:O | 1.99 | 0.81 |
| 1:A:407:ILE:O | 4:A:601:HOH:O | 1.98 | 0.81 |
| 1:N:152:LYS:O | 1:N:153:GLU:HG2 | 1.81 | 0.81 |
| 1:E:365:ASP:OD2 | 1:E:369:ARG:NH2 | 2.13 | 0.80 |
| 1:H:353:HIS:HB3 | 1:H:397:ILE:CD1 | 2.10 | 0.80 |
| 1:P:130:LYS:HD2 | 1:P:149:ARG:HH21 | 1.44 | 0.80 |
| 1:G:202:THR:HG23 | 1:G:204:HIS:HD1 | 1.47 | 0.80 |
| 1:I:361:ARG:NH2 | 1:P:361:ARG:HD2 | 1.96 | 0.80 |
| 1:C:165:LYS:HD2 | 1:C:168:ARG:HH21 | 1.47 | 0.80 |
| 1:N:148:ASP:OD2 | 1:N:151:ARG:HG3 | 1.82 | 0.80 |
| 1:P:181:ARG:NH1 | 1:P:193:LYS:CE | 2.44 | 0.80 |
| 1:C:298:HIS:CE1 | 1:C:300:ARG:HH12 | 2.00 | 0.80 |
| 1:M:373:GLN:OE1 | 1:M:376:ARG:NH1 | 2.15 | 0.80 |
| 1:K:151:ARG:NH1 | 1:K:153:GLU:OE2 | 2.14 | 0.80 |
| 1:P:380:THR:CG2 | 1:P:383:GLY:H | 1.95 | 0.80 |
| 1:P:174:ILE:HG22 | 1:P:178:GLU:OE2 | 1.82 | 0.79 |
| 1:O:299:SER:HB3 | 1:O:302:ALA:HB2 | 1.63 | 0.79 |
| 1:M:162:ASN:O | 1:M:162:ASN:ND2 | 2.14 | 0.79 |
| 1:P:345:THR:HG22 | 1:P:347:ASP:H | 1.48 | 0.79 |
| 1:H:404:ARG:NH2 | 1:K:404:ARG:HG2 | 1.98 | 0.79 |
| 1:F:268:THR:HG22 | 1:F:279:PRO:HA | 1.64 | 0.79 |
| 1:I:388:CYS:O | 1:I:394:ILE:HD11 | 1.83 | 0.78 |
| 1:P:181:ARG:NH1 | 1:P:187:ASP:CA | 2.43 | 0.78 |
| 1:L:426:ARG:NH2 | 4:L:603:HOH:O | 2.15 | 0.78 |
| 1:N:372:THR:HG23 | 1:N:375:ALA:H | 1.49 | 0.78 |
| 1:A:181:ARG:HH22 | 1:A:185:VAL:C | 1.87 | 0.78 |
| 1:F:271:ASP:OD2 | 1:F:274:THR:OG1 | 2.02 | 0.78 |
| 1:M:153:GLU:HG3 | 1:M:154:TYR:H | 1.47 | 0.78 |
| 1:H:301:THR:HG22 | 1:H:317:SER:HB3 | 1.66 | 0.77 |
| 1:N:237:GLN:HE22 | 1:N:284:ARG:HA | 1.47 | 0.77 |
| 1:D:346:HIS:O | 1:D:346:HIS:ND1 | 2.17 | 0.77 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:357:LYS:CE | 1:D:361:ARG:HH12 | 1.94 | 0.77 |
| 1:I:137:GLU:HG3 | 1:I:142:LYS:HG2 | 1.67 | 0.76 |
| 1:C:300:ARG:CZ | 1:C:320:TRP:H | 1.99 | 0.76 |
| 1:C:165:LYS:NZ | 1:L:373:GLN:HG3 | 2.01 | 0.76 |
| 1:C:397:ILE:O | 4:C:601:HOH:O | 2.03 | 0.76 |
| 1:P:181:ARG:CZ | 1:P:193:LYS:NZ | 2.49 | 0.76 |
| 1:P:373:GLN:HG3 | 1:P:373:GLN:O | 1.82 | 0.75 |
| 1:A:185:VAL:HG23 | 1:A:186:GLU:HG3 | 1.68 | 0.75 |
| 1:N:402:PRO:HD2 | 1:N:405:GLU:CG | 2.17 | 0.75 |
| 1:C:400:ALA:N | 4:C:601:HOH:O | 2.19 | 0.74 |
| 1:M:252:MET:HG2 | 1:M:322:TYR:HA | 1.69 | 0.74 |
| 1:M:181:ARG:NH2 | 1:M:185:VAL:HA | 2.02 | 0.74 |
| 1:O:353:HIS:CB | 1:O:397:ILE:HD13 | 2.14 | 0.74 |
| 1:P:181:ARG:HD2 | 1:P:193:LYS:HD3 | 1.68 | 0.74 |
| 1:F:390:ASP:OD2 | 1:F:392:LYS:HB2 | 1.88 | 0.74 |
| 1:P:318:LEU:HD12 | 1:P:369:ARG:CZ | 2.18 | 0.74 |
| 1:M:179:ARG:HE | 1:M:249:LEU:HD22 | 1.52 | 0.73 |
| 1:O:128:ARG:CG | 1:O:150:LYS:HG3 | 2.17 | 0.73 |
| 1:G:162:ASN:HB2 | 1:G:204:HIS:HA | 1.70 | 0.73 |
| 1:M:404:ARG:C | 1:M:405:GLU:HG2 | 2.03 | 0.73 |
| 1:A:162:ASN:O | 1:A:162:ASN:ND2 | 2.21 | 0.73 |
| 1:F:376:ARG:HG3 | 1:F:376:ARG:HH11 | 1.53 | 0.73 |
| 1:I:148:ASP:OD2 | 1:I:151:ARG:HB2 | 1.88 | 0.73 |
| 1:M:323:SER:HB2 | 4:M:603:HOH:O | 1.87 | 0.73 |
| 1:P:181:ARG:HH11 | 1:P:187:ASP:HA | 1.51 | 0.73 |
| 1:G:316:LEU:HB2 | 1:G:318:LEU:HD23 | 1.69 | 0.73 |
| 1:K:212:TYR:OH | 4:K:601:HOH:O | 2.07 | 0.73 |
| 1:N:285:VAL:O | 4:N:601:HOH:O | 2.05 | 0.72 |
| 1:P:299:SER:HB3 | 1:P:302:ALA:HB2 | 1.69 | 0.72 |
| 1:F:161:ARG:HG3 | 1:F:162:ASN:H | 1.52 | 0.72 |
| 1:N:307:ARG:NH2 | 1:N:346:HIS:HD2 | 1.65 | 0.72 |
| 1:K:151:ARG:HD3 | 1:K:153:GLU:OE2 | 1.89 | 0.72 |
| 1:L:276:ARG:NH2 | 4:L:605:HOH:O | 2.22 | 0.72 |
| 1:H:361:ARG:H | 1:H:361:ARG:HD3 | 1.55 | 0.72 |
| 1:K:193:LYS:HG3 | 1:K:195:GLN:NE2 | 2.05 | 0.72 |
| 1:P:380:THR:CG2 | 1:P:384:THR:H | 2.02 | 0.72 |
| 1:A:370:CYS:O | 1:A:376:ARG:NH2 | 2.23 | 0.72 |
| 1:K:151:ARG:HH11 | 1:K:153:GLU:CD | 1.92 | 0.72 |
| 1:K:181:ARG:NH1 | 1:K:193:LYS:HD2 | 2.05 | 0.72 |
| 1:P:170:ALA:O | 1:P:174:ILE:HG13 | 1.90 | 0.72 |
| 1:P:181:ARG:CZ | 1:P:193:LYS:HZ2 | 2.03 | 0.72 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:K:257:LYS:HG3 | 1:K:259:GLU:H | 1.54 | 0.71 |
| 1:F:379:PHE:HA | 1:F:385:LEU:HA | 1.72 | 0.71 |
| 1:G:153:GLU:HG3 | 1:G:154:TYR:H | 1.55 | 0.71 |
| 1:H:190:PRO:HG3 | 1:H:237:GLN:HB3 | 1.72 | 0.71 |
| 1:C:192:MET:HG2 | 1:C:193:LYS:H | 1.55 | 0.71 |
| 1:N:307:ARG:NH1 | 1:N:346:HIS:HA | 2.05 | 0.71 |
| 1:O:386:GLN:HG2 | 1:O:387:PRO:CD | 2.19 | 0.71 |
| 1:G:346:HIS:O | 1:G:346:HIS:ND1 | 2.22 | 0.71 |
| 1:G:349:LEU:HD13 | 1:G:378:LEU:HD22 | 1.73 | 0.71 |
| 1:H:181:ARG:HH22 | 1:H:193:LYS:NZ | 1.89 | 0.71 |
| 1:D:147:TRP:CD1 | 1:D:149:ARG:HD3 | 2.24 | 0.70 |
| 1:J:195:GLN:HE22 | 1:J:210:PRO:HD3 | 1.56 | 0.70 |
| 1:A:316:LEU:HB2 | 1:A:318:LEU:HD21 | 1.70 | 0.70 |
| 1:G:349:LEU:HD21 | 1:G:386:GLN:HB2 | 1.71 | 0.70 |
| 1:J:395:ALA:O | 1:J:399:ARG:HG3 | 1.91 | 0.70 |
| 1:E:151:ARG:NH2 | 1:E:196:ARG:NH1 | 2.39 | 0.70 |
| 1:I:167:THR:HG23 | 1:I:205:MET:HG2 | 1.73 | 0.70 |
| 1:J:195:GLN:OE1 | 1:J:209:MET:HA | 1.92 | 0.70 |
| 1:M:181:ARG:O | 1:M:181:ARG:HG3 | 1.85 | 0.70 |
| 1:H:200:ASN:OD1 | 1:H:201:GLU:N | 2.25 | 0.70 |
| 1:A:396:ARG:CG | 1:A:399:ARG:HH21 | 2.01 | 0.70 |
| 1:B:151:ARG:CG | 1:B:153:GLU:OE1 | 2.30 | 0.70 |
| 1:K:276:ARG:NH2 | 4:K:602:HOH:O | 2.23 | 0.70 |
| 1:P:181:ARG:NH2 | 1:P:184:ASP:O | 2.25 | 0.70 |
| 1:I:423:ASP:HB3 | 1:I:426:ARG:HG3 | 1.73 | 0.70 |
| 1:G:153:GLU:HG3 | 1:G:154:TYR:N | 2.07 | 0.69 |
| 1:K:257:LYS:HZ3 | 1:K:259:GLU:HB2 | 1.53 | 0.69 |
| 1:D:380:THR:HB | 1:D:383:GLY:H | 1.57 | 0.69 |
| 1:G:376:ARG:HD3 | 1:G:376:ARG:O | 1.93 | 0.69 |
| 1:O:300:ARG:HH21 | 1:O:320:TRP:H | 1.40 | 0.69 |
| 1:D:163:VAL:HB | 1:D:166:TYR:HD2 | 1.57 | 0.69 |
| 1:P:181:ARG:HD2 | 1:P:193:LYS:CG | 2.22 | 0.69 |
| 1:P:349:LEU:HB2 | 1:P:378:LEU:HD22 | 1.73 | 0.69 |
| 1:M:128:ARG:NE | 1:M:148:ASP:OD1 | 2.19 | 0.69 |
| 1:M:364:ALA:O | 4:M:602:HOH:O | 2.10 | 0.69 |
| 1:O:353:HIS:NE2 | 1:O:386:GLN:O | 2.18 | 0.69 |
| 1:E:310:ARG:NH1 | 4:E:603:HOH:O | 2.26 | 0.69 |
| 1:H:299:SER:HB3 | 1:H:302:ALA:HB2 | 1.75 | 0.69 |
| 1:D:132:LEU:HD11 | 1:D:147:TRP:HB2 | 1.74 | 0.69 |
| 1:H:161:ARG:CG | 1:H:162:ASN:N | 2.47 | 0.69 |
| 1:A:167:THR:HG23 | 1:A:205:MET:HG2 | 1.74 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:F:361:ARG:NH1 | 1:M:361:ARG:HB2 | 2.07 | 0.68 |
| 1:C:192:MET:C | 1:C:193:LYS:HG2 | 2.13 | 0.68 |
| 1:F:147:TRP:HE1 | 1:F:149:ARG:HH11 | 1.42 | 0.68 |
| 1:C:200:ASN:OD1 | 4:C:602:HOH:O | 2.11 | 0.68 |
| 1:F:380:THR:HG22 | 1:F:382:ALA:H | 1.58 | 0.68 |
| 1:H:389:LYS:HA | 1:H:394:ILE:HD11 | 1.74 | 0.68 |
| 1:L:252:MET:HG2 | 1:L:322:TYR:HA | 1.76 | 0.68 |
| 1:I:130:LYS:HE2 | 1:I:149:ARG:HH21 | 1.59 | 0.68 |
| 1:P:323:SER:HB2 | 4:P:602:HOH:O | 1.93 | 0.68 |
| 1:K:441:LYS:HG2 | 1:K:442:TYR:CE2 | 2.29 | 0.68 |
| 1:P:181:ARG:HB2 | 1:P:193:LYS:HG2 | 1.75 | 0.67 |
| 1:P:196:ARG:HG3 | 1:P:197:TYR:N | 2.08 | 0.67 |
| 1:E:347:ASP:OD2 | 4:E:601:HOH:O | 2.13 | 0.67 |
| 1:F:405:GLU:O | 1:F:405:GLU:HG3 | 1.92 | 0.67 |
| 1:C:134:LEU:HD11 | 1:C:137:GLU:HG2 | 1.75 | 0.67 |
| 1:E:151:ARG:HH21 | 1:E:196:ARG:NH2 | 1.91 | 0.67 |
| 1:G:313:GLU:HA | 1:G:318:LEU:HB2 | 1.77 | 0.67 |
| 1:O:128:ARG:NE | 1:O:148:ASP:OD1 | 2.26 | 0.67 |
| 1:C:187:ASP:OD1 | 1:C:193:LYS:HE3 | 1.95 | 0.67 |
| 1:K:310:ARG:NH1 | 4:K:606:HOH:O | 2.27 | 0.67 |
| 1:P:300:ARG:NH2 | 1:P:320:TRP:H | 1.92 | 0.67 |
| 1:O:278:LEU:N | 1:O:278:LEU:HD12 | 2.08 | 0.67 |
| 1:E:162:ASN:ND2 | 1:E:202:THR:O | 2.28 | 0.67 |
| 1:M:153:GLU:HG3 | 1:M:154:TYR:N | 2.09 | 0.67 |
| 1:N:307:ARG:HH22 | 1:N:346:HIS:CD2 | 1.88 | 0.67 |
| 1:A:185:VAL:C | 1:A:186:GLU:HG3 | 2.11 | 0.67 |
| 1:L:183:SER:O | 4:L:601:HOH:O | 2.12 | 0.67 |
| 1:G:192:MET:CG | 1:G:209:MET:HE1 | 2.24 | 0.67 |
| 1:N:348:ASN:HB3 | 1:N:378:LEU:HD21 | 1.77 | 0.67 |
| 1:C:264:GLU:HG2 | 1:H:448:GLN:HG2 | 1.78 | 0.66 |
| 1:F:230:HIS:HE1 | 1:F:281:GLU:OE2 | 1.78 | 0.66 |
| 1:M:401:ARG:HD2 | 1:M:402:PRO:CD | 2.25 | 0.66 |
| 1:G:162:ASN:ND2 | 1:G:203:GLY:O | 2.28 | 0.66 |
| 1:A:192:MET:CE | 1:A:209:MET:SD | 2.83 | 0.66 |
| 1:A:300:ARG:O | 1:A:300:ARG:HG2 | 1.95 | 0.66 |
| 1:G:135:LEU:HD21 | 1:G:145:GLU:HB2 | 1.78 | 0.66 |
| 1:B:393:HIS:O | 1:B:397:ILE:HG13 | 1.95 | 0.66 |
| 1:J:393:HIS:O | 1:J:397:ILE:HG13 | 1.95 | 0.66 |
| 1:M:251:LEU:HG | 4:M:601:HOH:O | 1.95 | 0.66 |
| 1:E:393:HIS:O | 1:E:397:ILE:HG13 | 1.95 | 0.66 |
| 1:H:454:ASP:OD2 | 4:H:602:HOH:O | 2.13 | 0.66 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:H:404:ARG:NH2 | 1:K:404:ARG:CG | 2.59 | 0.66 |
| 1:I:264:GLU:HG2 | 1:M:448:GLN:HG2 | 1.78 | 0.66 |
| 1:P:301:THR:HG22 | 1:P:317:SER:HB3 | 1.78 | 0.66 |
| 1:M:428:LEU:O | 4:M:603:HOH:O | 2.13 | 0.65 |
| 1:N:337:TYR:O | 4:N:602:HOH:O | 2.15 | 0.65 |
| 1:A:348:ASN:OD1 | 4:A:603:HOH:O | 2.14 | 0.65 |
| 1:F:252:MET:HG2 | 1:F:322:TYR:HA | 1.77 | 0.65 |
| 1:C:271:ASP:HB2 | 1:C:278:LEU:HD13 | 1.78 | 0.65 |
| 1:H:162:ASN:OD1 | 1:H:203:GLY:C | 2.35 | 0.65 |
| 1:J:257:LYS:HD3 | 1:J:259:GLU:HG2 | 1.77 | 0.65 |
| 1:O:386:GLN:CG | 1:O:387:PRO:HD2 | 2.23 | 0.65 |
| 1:G:226:PHE:O | 4:G:601:HOH:O | 2.14 | 0.65 |
| 1:N:316:LEU:HB2 | 1:N:318:LEU:HD23 | 1.79 | 0.65 |
| 1:A:276:ARG:HH21 | 1:B:130:LYS:NZ | 1.94 | 0.65 |
| 1:H:257:LYS:NZ | 4:H:605:HOH:O | 2.29 | 0.65 |
| 1:M:167:THR:HG23 | 1:M:205:MET:HG2 | 1.79 | 0.65 |
| 1:A:181:ARG:CD | 1:A:193:LYS:HD2 | 2.26 | 0.65 |
| 1:M:299:SER:OG | 1:M:302:ALA:HB2 | 1.95 | 0.65 |
| 1:A:388:CYS:O | 1:A:394:ILE:HD11 | 1.97 | 0.64 |
| 1:H:311:SER:HB2 | 1:H:313:GLU:OE1 | 1.96 | 0.64 |
| 1:K:222:LYS:HD3 | 1:K:223:HIS:NE2 | 2.11 | 0.64 |
| 1:E:167:THR:HG23 | 1:E:205:MET:HG2 | 1.79 | 0.64 |
| 1:H:361:ARG:HD3 | 1:H:361:ARG:N | 2.11 | 0.64 |
| 1:D:187:ASP:OD2 | 1:D:193:LYS:HD2 | 1.98 | 0.64 |
| 1:J:193:LYS:O | 1:J:195:GLN:NE2 | 2.30 | 0.64 |
| 1:P:181:ARG:HD2 | 1:P:193:LYS:HG2 | 1.79 | 0.64 |
| 1:P:181:ARG:HH22 | 1:P:184:ASP:CB | 2.11 | 0.64 |
| 1:G:401:ARG:HD2 | 1:G:402:PRO:CD | 2.27 | 0.64 |
| 1:I:128:ARG:CZ | 1:I:150:LYS:HG3 | 2.27 | 0.64 |
| 1:N:380:THR:HB | 1:N:383:GLY:H | 1.63 | 0.64 |
| 1:H:307:ARG:HH21 | 1:H:346:HIS:HA | 1.63 | 0.64 |
| 1:I:392:LYS:H | 1:I:392:LYS:HE2 | 1.63 | 0.64 |
| 1:O:316:LEU:CB | 1:O:318:LEU:HD13 | 2.28 | 0.64 |
| 1:C:200:ASN:OD1 | 1:C:201:GLU:N | 2.29 | 0.64 |
| 1:P:158:LYS:HD2 | 4:P:625:HOH:O | 1.96 | 0.64 |
| 1:A:170:ALA:O | 1:A:174:ILE:HG13 | 1.98 | 0.64 |
| 1:B:151:ARG:NH1 | 1:B:153:GLU:OE1 | 2.31 | 0.64 |
| 1:H:161:ARG:CG | 1:H:162:ASN:H | 1.91 | 0.64 |
| 1:K:257:LYS:HG3 | 1:K:259:GLU:OE2 | 1.97 | 0.64 |
| 1:G:299:SER:OG | 1:G:302:ALA:HB2 | 1.98 | 0.64 |
| 1:K:147:TRP:CZ2 | 1:K:152:LYS:HD3 | 2.30 | 0.64 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:O:316:LEU:HB3 | 1:O:318:LEU:CD1 | 2.27 | 0.64 |
| 1:M:378:LEU:C | 1:M:386:GLN:HG3 | 2.18 | 0.64 |
| 1:C:147:TRP:CD1 | 1:C:149:ARG:HG2 | 2.32 | 0.63 |
| 1:C:258:PRO:HD3 | 1:C:332:ILE:HG12 | 1.80 | 0.63 |
| 1:J:264:GLU:HG2 | 1:N:448:GLN:HG2 | 1.80 | 0.63 |
| 1:N:147:TRP:CZ2 | 1:N:152:LYS:HG3 | 2.33 | 0.63 |
| 1:I:423:ASP:CB | 1:I:426:ARG:HG3 | 2.28 | 0.63 |
| 1:J:139:THR:OG1 | 4:J:601:HOH:O | 2.15 | 0.63 |
| 1:L:402:PRO:HB3 | 1:L:404:ARG:NH1 | 2.13 | 0.63 |
| 1:P:380:THR:HG22 | 1:P:384:THR:H | 1.63 | 0.63 |
| 1:B:147:TRP:HZ2 | 1:B:152:LYS:HD3 | 1.62 | 0.63 |
| 1:O:372:THR:HB | 1:O:374:GLU:OE1 | 1.98 | 0.63 |
| 1:K:257:LYS:NZ | 1:K:259:GLU:CB | 2.61 | 0.63 |
| 1:P:148:ASP:CB | 1:P:153:GLU:HG2 | 2.29 | 0.63 |
| 1:A:133:SER:HB3 | 1:A:145:GLU:HB3 | 1.80 | 0.63 |
| 1:A:175:GLN:HA | 1:A:178:GLU:OE1 | 1.98 | 0.63 |
| 1:B:162:ASN:HB2 | 1:B:204:HIS:CD2 | 2.34 | 0.63 |
| 1:P:181:ARG:HD2 | 1:P:193:LYS:CD | 2.27 | 0.63 |
| 1:D:297:ARG:NH1 | 1:N:299:SER:H | 1.97 | 0.63 |
| 1:H:396:ARG:HH11 | 1:H:396:ARG:HG3 | 1.63 | 0.63 |
| 1:L:192:MET:C | 1:L:193:LYS:HG2 | 2.18 | 0.63 |
| 1:A:396:ARG:HA | 1:A:399:ARG:HE | 1.64 | 0.62 |
| 1:O:188:ARG:HD3 | 1:O:189:PHE:CZ | 2.34 | 0.62 |
| 1:O:404:ARG:HA | 1:O:413:CYS:SG | 2.38 | 0.62 |
| 1:A:181:ARG:HD3 | 1:A:193:LYS:HD2 | 1.81 | 0.62 |
| 1:H:251:LEU:HD23 | 1:H:295:ASP:OD1 | 1.98 | 0.62 |
| 1:K:373:GLN:HG3 | 1:K:373:GLN:O | 1.98 | 0.62 |
| 1:A:353:HIS:HB3 | 1:A:397:ILE:HD13 | 1.82 | 0.62 |
| 1:C:192:MET:HG2 | 1:C:193:LYS:N | 2.14 | 0.62 |
| 1:D:390:ASP:OD2 | 1:D:392:LYS:HB2 | 1.99 | 0.62 |
| 1:F:165:LYS:HD2 | 1:F:168:ARG:HH21 | 1.63 | 0.62 |
| 1:C:165:LYS:CD | 1:C:168:ARG:HH21 | 2.13 | 0.62 |
| 1:J:373:GLN:CG | 1:J:374:GLU:H | 1.92 | 0.62 |
| 1:I:313:GLU:HA | 1:I:318:LEU:HD12 | 1.81 | 0.62 |
| 1:H:398:ALA:O | 1:H:401:ARG:NH1 | 2.32 | 0.62 |
| 1:L:149:ARG:O | 1:L:152:LYS:NZ | 2.27 | 0.62 |
| 1:P:190:PRO:HG3 | 1:P:237:GLN:HB3 | 1.82 | 0.62 |
| 1:O:162:ASN:OD1 | 1:O:203:GLY:O | 2.18 | 0.62 |
| 1:P:181:ARG:CZ | 1:P:184:ASP:O | 2.47 | 0.62 |
| 1:A:380:THR:HB | 1:A:383:GLY:H | 1.64 | 0.62 |
| 1:B:147:TRP:HE1 | 1:B:149:ARG:HD3 | 1.65 | 0.62 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:O:373:GLN:HA | 1:O:376:ARG:NE | 2.15 | 0.62 |
| 1:L:362:LEU:HB3 | 1:L:366:TRP:CE3 | 2.35 | 0.61 |
| 1:N:147:TRP:HD1 | 1:N:149:ARG:HD3 | 1.64 | 0.61 |
| 1:H:345:THR:HG22 | 1:H:347:ASP:H | 1.64 | 0.61 |
| 1:J:181:ARG:HD2 | 1:J:193:LYS:HD3 | 1.81 | 0.61 |
| 1:P:196:ARG:HG3 | 1:P:197:TYR:H | 1.63 | 0.61 |
| 1:E:151:ARG:HH21 | 1:E:196:ARG:HH12 | 1.48 | 0.61 |
| 1:J:128:ARG:O | 1:J:149:ARG:HG3 | 2.00 | 0.61 |
| 1:E:222:LYS:HG3 | 1:E:223:HIS:NE2 | 2.16 | 0.61 |
| 1:H:181:ARG:HH22 | 1:H:187:ASP:HA | 1.65 | 0.61 |
| 1:P:230:HIS:O | 1:P:234:ILE:HG13 | 2.00 | 0.61 |
| 1:F:257:LYS:HE3 | 1:F:259:GLU:HG3 | 1.83 | 0.61 |
| 1:N:157:VAL:HG22 | 1:N:208:VAL:HG22 | 1.81 | 0.61 |
| 1:K:167:THR:HG23 | 1:K:205:MET:HG2 | 1.82 | 0.61 |
| 1:P:401:ARG:HG3 | 1:P:402:PRO:HD2 | 1.83 | 0.61 |
| 1:E:365:ASP:OD2 | 1:E:369:ARG:NE | 2.34 | 0.61 |
| 1:H:307:ARG:NH2 | 1:H:346:HIS:HA | 2.15 | 0.61 |
| 1:L:184:ASP:O | 1:L:193:LYS:NZ | 2.33 | 0.61 |
| 1:L:258:PRO:HD3 | 1:L:332:ILE:HG12 | 1.81 | 0.60 |
| 1:B:353:HIS:O | 1:B:357:LYS:HB2 | 2.01 | 0.60 |
| 1:H:365:ASP:OD2 | 1:H:369:ARG:NH2 | 2.33 | 0.60 |
| 1:O:402:PRO:CB | 1:O:405:GLU:HG3 | 2.20 | 0.60 |
| 1:F:274:THR:HB | 1:F:276:ARG:NE | 2.16 | 0.60 |
| 1:J:200:ASN:OD1 | 1:J:201:GLU:N | 2.28 | 0.60 |
| 1:P:181:ARG:HH22 | 1:P:184:ASP:CG | 2.05 | 0.60 |
| 1:E:252:MET:HG2 | 1:E:322:TYR:HA | 1.84 | 0.60 |
| 1:H:163:VAL:CG2 | 1:H:166:TYR:HD2 | 2.14 | 0.60 |
| 1:L:167:THR:HG23 | 1:L:205:MET:HG2 | 1.84 | 0.60 |
| 1:M:415:LEU:HD12 | 1:M:438:TYR:HB3 | 1.83 | 0.60 |
| 1:C:300:ARG:NH2 | 1:C:320:TRP:CD1 | 2.69 | 0.60 |
| 1:M:353:HIS:HE1 | 1:M:386:GLN:O | 1.84 | 0.60 |
| 1:I:128:ARG:HE | 1:I:150:LYS:HB3 | 1.66 | 0.60 |
| 1:O:316:LEU:HB3 | 1:O:318:LEU:HD11 | 1.83 | 0.60 |
| 1:A:151:ARG:O | 1:A:151:ARG:HG2 | 2.00 | 0.60 |
| 1:H:396:ARG:O | 1:H:399:ARG:HB2 | 2.01 | 0.60 |
| 1:N:401:ARG:HB3 | 1:N:405:GLU:OE1 | 1.99 | 0.60 |
| 1:N:402:PRO:CD | 1:N:405:GLU:CD | 2.56 | 0.60 |
| 1:J:195:GLN:OE1 | 1:J:195:GLN:N | 2.34 | 0.60 |
| 1:K:128:ARG:HH22 | 1:K:196:ARG:NH2 | 2.00 | 0.60 |
| 1:N:307:ARG:CZ | 1:N:346:HIS:HA | 2.31 | 0.60 |
| 1:P:151:ARG:NE | 1:P:153:GLU:OE1 | 2.29 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:G:190:PRO:HG3 | 1:G:237:GLN:HB3 | 1.83 | 0.60 |
| 1:G:326:LEU:HD21 | 1:G:430:ALA:N | 2.16 | 0.60 |
| 1:L:390:ASP:O | 1:L:394:ILE:CD1 | 2.50 | 0.60 |
| 1:A:190:PRO:HG3 | 1:A:237:GLN:HB3 | 1.82 | 0.59 |
| 1:A:316:LEU:HB2 | 1:A:318:LEU:CD2 | 2.32 | 0.59 |
| 1:B:252:MET:HG2 | 1:B:322:TYR:HA | 1.84 | 0.59 |
| 1:H:404:ARG:HH21 | 1:K:404:ARG:CG | 2.14 | 0.59 |
| 1:N:190:PRO:HG3 | 1:N:237:GLN:HB3 | 1.84 | 0.59 |
| 1:H:404:ARG:HH21 | 1:K:404:ARG:HD3 | 1.67 | 0.59 |
| 1:I:380:THR:HG23 | 1:I:383:GLY:H | 1.66 | 0.59 |
| 1:K:259:GLU:OE2 | 1:K:259:GLU:N | 2.34 | 0.59 |
| 1:O:426:ARG:NH1 | 4:O:605:HOH:O | 2.34 | 0.59 |
| 1:G:153:GLU:CG | 1:G:154:TYR:N | 2.64 | 0.59 |
| 1:B:222:LYS:HD2 | 1:B:223:HIS:NE2 | 2.18 | 0.59 |
| 1:B:257:LYS:HG2 | 1:B:260:ASN:CG | 2.22 | 0.59 |
| 1:F:356:GLU:OE2 | 1:F:361:ARG:HB3 | 2.03 | 0.59 |
| 1:G:128:ARG:NH2 | 1:G:196:ARG:HD3 | 2.17 | 0.59 |
| 1:H:134:LEU:HD13 | 1:H:142:LYS:HE3 | 1.83 | 0.59 |
| 1:A:380:THR:HG22 | 1:A:382:ALA:H | 1.67 | 0.59 |
| 1:N:402:PRO:CB | 1:N:405:GLU:HG3 | 2.33 | 0.59 |
| 1:O:367:SER:HA | 1:O:370:CYS:SG | 2.43 | 0.59 |
| 1:P:357:LYS:HE3 | 1:P:397:ILE:O | 2.03 | 0.59 |
| 1:A:181:ARG:CZ | 1:A:185:VAL:C | 2.71 | 0.59 |
| 1:B:202:THR:HG23 | 1:B:204:HIS:ND1 | 2.17 | 0.59 |
| 1:C:151:ARG:O | 1:C:152:LYS:HB2 | 2.01 | 0.59 |
| 1:C:230:HIS:HE1 | 1:C:281:GLU:OE2 | 1.85 | 0.59 |
| 1:F:258:PRO:HD3 | 1:F:332:ILE:HG12 | 1.85 | 0.59 |
| 1:G:177:MET:HE2 | 1:G:194:ILE:HB | 1.82 | 0.59 |
| 1:J:195:GLN:NE2 | 1:J:210:PRO:HD3 | 2.18 | 0.59 |
| 1:O:337:TYR:OH | 4:O:601:HOH:O | 2.12 | 0.59 |
| 1:M:362:LEU:HD22 | 1:M:366:TRP:CZ3 | 2.38 | 0.59 |
| 1:F:376:ARG:HG3 | 1:F:376:ARG:O | 2.01 | 0.59 |
| 1:H:163:VAL:HG21 | 1:H:166:TYR:HD2 | 1.68 | 0.59 |
| 1:J:257:LYS:HD3 | 1:J:259:GLU:CG | 2.32 | 0.59 |
| 1:H:350:GLU:OE2 | 1:H:396:ARG:HD2 | 2.02 | 0.58 |
| 1:N:402:PRO:HB2 | 1:N:405:GLU:HG3 | 1.84 | 0.58 |
| 1:B:167:THR:HG23 | 1:B:205:MET:HG2 | 1.86 | 0.58 |
| 1:G:297:ARG:HB3 | 1:P:295:ASP:OD2 | 2.03 | 0.58 |
| 1:I:245:PHE:HZ | 1:I:293:CYS:HG | 1.50 | 0.58 |
| 1:O:316:LEU:HD12 | 1:O:375:ALA:HB1 | 1.83 | 0.58 |
| 1:P:318:LEU:CD1 | 1:P:369:ARG:CZ | 2.81 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:H:181:ARG:NH2 | 1:H:193:LYS:NZ | 2.51 | 0.58 |
| 1:O:158:LYS:HD3 | 1:O:207:ILE:HD12 | 1.84 | 0.58 |
| 1:B:151:ARG:CZ | 1:B:153:GLU:OE1 | 2.51 | 0.58 |
| 1:C:165:LYS:HZ2 | 1:C:168:ARG:HH21 | 1.51 | 0.58 |
| 1:F:356:GLU:HG2 | 1:F:361:ARG:HA | 1.85 | 0.58 |
| 1:B:194:ILE:HA | 1:B:209:MET:HG2 | 1.85 | 0.58 |
| 1:F:186:GLU:O | 1:F:186:GLU:HG3 | 2.03 | 0.58 |
| 1:G:444:PRO:O | 1:G:447:ARG:HD2 | 2.04 | 0.58 |
| 1:M:192:MET:CE | 1:M:290:LEU:HG | 2.33 | 0.58 |
| 1:N:299:SER:HB3 | 1:N:302:ALA:HB2 | 1.84 | 0.58 |
| 1:H:237:GLN:HE22 | 1:H:284:ARG:HA | 1.68 | 0.58 |
| 1:I:148:ASP:CG | 1:I:151:ARG:HB2 | 2.23 | 0.58 |
| 1:J:464:VAL:O | 1:J:465:MET:HG2 | 2.03 | 0.58 |
| 1:O:128:ARG:HG3 | 1:O:150:LYS:CG | 2.27 | 0.58 |
| 1:A:269:SER:OG | 1:A:278:LEU:HB2 | 2.04 | 0.58 |
| 1:B:373:GLN:O | 1:B:373:GLN:HG3 | 2.02 | 0.58 |
| 1:C:165:LYS:HZ1 | 1:L:373:GLN:HG3 | 1.67 | 0.58 |
| 1:C:192:MET:CG | 1:C:193:LYS:N | 2.66 | 0.58 |
| 1:H:147:TRP:CD1 | 1:H:149:ARG:HD3 | 2.39 | 0.58 |
| 1:L:217:LEU:HD22 | 1:L:259:GLU:HG3 | 1.86 | 0.58 |
| 1:A:181:ARG:HH22 | 1:A:186:GLU:N | 2.01 | 0.58 |
| 1:D:167:THR:HG22 | 1:D:205:MET:HG2 | 1.85 | 0.58 |
| 1:L:310:ARG:NH1 | 4:L:610:HOH:O | 2.30 | 0.58 |
| 1:P:181:ARG:NH2 | 1:P:184:ASP:CB | 2.66 | 0.58 |
| 1:J:167:THR:HG23 | 1:J:205:MET:HG2 | 1.85 | 0.57 |
| 1:M:323:SER:HA | 1:M:326:LEU:HD23 | 1.85 | 0.57 |
| 1:A:313:GLU:HA | 1:A:318:LEU:HD23 | 1.86 | 0.57 |
| 1:F:161:ARG:HD2 | 1:F:162:ASN:H | 1.68 | 0.57 |
| 1:H:313:GLU:CD | 1:H:427:ARG:HH22 | 2.08 | 0.57 |
| 1:D:239:GLY:HA3 | 1:D:434:MET:HB3 | 1.86 | 0.57 |
| 1:O:323:SER:OG | 1:O:427:ARG:HD2 | 2.04 | 0.57 |
| 1:P:183:SER:OG | 1:P:244:TYR:OH | 2.19 | 0.57 |
| 1:P:380:THR:HG22 | 1:P:384:THR:N | 2.18 | 0.57 |
| 1:E:181:ARG:NH2 | 4:E:608:HOH:O | 2.37 | 0.57 |
| 1:O:134:LEU:HD21 | 1:O:137:GLU:OE2 | 2.04 | 0.57 |
| 1:D:390:ASP:OD1 | 1:D:391:PRO:HD2 | 2.05 | 0.57 |
| 1:N:415:LEU:HD12 | 1:N:438:TYR:HB3 | 1.87 | 0.57 |
| 1:O:217:LEU:HD12 | 1:O:220:ILE:HD11 | 1.86 | 0.57 |
| 1:P:181:ARG:HH22 | 1:P:184:ASP:HB3 | 1.67 | 0.57 |
| 1:A:162:ASN:OD1 | 1:A:203:GLY:C | 2.43 | 0.57 |
| 1:F:323:SER:HB2 | 4:F:613:HOH:O | 2.03 | 0.57 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:153:GLU:N | 4:I:601:HOH:O | 2.23 | 0.57 |
| 1:N:163:VAL:O | 1:N:167:THR:HG22 | 2.05 | 0.57 |
| 1:D:190:PRO:HG3 | 1:D:237:GLN:HB3 | 1.87 | 0.57 |
| 1:L:193:LYS:CD | 1:L:193:LYS:HZ3 | 2.15 | 0.57 |
| 1:L:190:PRO:HG2 | 1:L:241:ALA:HB2 | 1.87 | 0.57 |
| 1:A:276:ARG:HH21 | 1:B:130:LYS:HZ1 | 1.53 | 0.56 |
| 1:H:181:ARG:HH22 | 1:H:193:LYS:HZ1 | 1.53 | 0.56 |
| 1:I:128:ARG:CZ | 1:I:150:LYS:CG | 2.83 | 0.56 |
| 1:I:147:TRP:CZ2 | 1:I:152:LYS:HD3 | 2.40 | 0.56 |
| 1:L:151:ARG:HB3 | 1:L:153:GLU:OE1 | 2.05 | 0.56 |
| 1:O:348:ASN:HB3 | 1:O:378:LEU:HD21 | 1.87 | 0.56 |
| 1:P:181:ARG:HH12 | 1:P:193:LYS:HE3 | 1.64 | 0.56 |
| 1:A:369:ARG:HH11 | 1:A:369:ARG:HG3 | 1.70 | 0.56 |
| 1:F:390:ASP:OD2 | 1:F:392:LYS:HD3 | 2.05 | 0.56 |
| 1:P:239:GLY:HA3 | 1:P:434:MET:HB3 | 1.87 | 0.56 |
| 1:C:175:GLN:HE22 | 1:F:296:GLU:CD | 2.07 | 0.56 |
| 1:H:337:TYR:OH | 4:H:603:HOH:O | 2.14 | 0.56 |
| 1:I:217:LEU:HD22 | 1:I:259:GLU:HG3 | 1.88 | 0.56 |
| 1:I:425:GLN:HG2 | 1:I:465:MET:HB3 | 1.86 | 0.56 |
| 1:K:151:ARG:NH1 | 1:K:153:GLU:CD | 2.55 | 0.56 |
| 1:L:383:GLY:O | 4:L:604:HOH:O | 2.17 | 0.56 |
| 1:B:264:GLU:HG2 | 1:G:448:GLN:HG2 | 1.87 | 0.56 |
| 1:D:380:THR:HG22 | 1:D:382:ALA:H | 1.70 | 0.56 |
| 1:G:128:ARG:O | 1:G:149:ARG:HB2 | 2.06 | 0.56 |
| 1:G:250:HIS:CD2 | 1:P:179:ARG:NH1 | 2.74 | 0.56 |
| 1:H:162:ASN:O | 1:H:162:ASN:ND2 | 2.38 | 0.56 |
| 1:I:171:LYS:NZ | 4:I:606:HOH:O | 2.36 | 0.56 |
| 1:K:257:LYS:HZ3 | 1:K:259:GLU:CB | 2.18 | 0.56 |
| 1:L:137:GLU:HG2 | 1:L:138:GLY:N | 2.20 | 0.56 |
| 1:D:182:LEU:HD13 | 1:N:460:PRO:HA | 1.87 | 0.56 |
| 1:H:316:LEU:HB2 | 1:H:318:LEU:HD13 | 1.87 | 0.56 |
| 1:L:390:ASP:OD2 | 1:L:392:LYS:HB2 | 2.06 | 0.56 |
| 1:I:147:TRP:HZ2 | 1:I:152:LYS:CD | 2.18 | 0.56 |
| 1:O:128:ARG:HG3 | 1:O:150:LYS:HZ2 | 1.71 | 0.56 |
| 1:P:181:ARG:HH11 | 1:P:187:ASP:CA | 2.16 | 0.56 |
| 1:P:362:LEU:CD1 | 1:P:385:LEU:HD11 | 2.36 | 0.56 |
| 1:P:428:LEU:O | 4:P:602:HOH:O | 2.18 | 0.56 |
| 1:H:357:LYS:NZ | 1:H:397:ILE:O | 2.39 | 0.56 |
| 1:O:174:ILE:HA | 1:O:177:MET:HE2 | 1.88 | 0.56 |
| 1:P:323:SER:OG | 1:P:427:ARG:NH1 | 2.39 | 0.56 |
| 1:A:299:SER:HB3 | 1:A:302:ALA:HB2 | 1.88 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:H:415:LEU:HD12 | 1:H:438:TYR:HB3 | 1.88 | 0.56 |
| 1:I:192:MET:HG2 | 1:I:193:LYS:N | 2.21 | 0.56 |
| 1:B:357:LYS:HG2 | 1:B:397:ILE:HG22 | 1.88 | 0.55 |
| 1:C:165:LYS:NZ | 1:C:168:ARG:HH21 | 2.03 | 0.55 |
| 1:P:388:CYS:O | 1:P:394:ILE:HD11 | 2.05 | 0.55 |
| 1:H:313:GLU:HG2 | 1:H:424:ARG:HD2 | 1.88 | 0.55 |
| 1:L:187:ASP:OD1 | 1:L:193:LYS:HE3 | 2.06 | 0.55 |
| 1:B:390:ASP:OD2 | 1:B:392:LYS:HE2 | 2.05 | 0.55 |
| 1:C:270:VAL:HG11 | 1:D:154:TYR:OH | 2.07 | 0.55 |
| 1:C:310:ARG:NH1 | 4:C:609:HOH:O | 2.36 | 0.55 |
| 1:F:264:GLU:HG2 | 1:O:448:GLN:HG2 | 1.87 | 0.55 |
| 1:G:163:VAL:CG1 | 1:G:166:TYR:HB2 | 2.37 | 0.55 |
| 1:F:161:ARG:CG | 1:F:162:ASN:N | 2.55 | 0.55 |
| 1:H:404:ARG:NH2 | 1:K:404:ARG:CD | 2.64 | 0.55 |
| 1:L:464:VAL:O | 1:L:465:MET:HG2 | 2.06 | 0.55 |
| 1:N:365:ASP:OD2 | 1:N:369:ARG:NH2 | 2.39 | 0.55 |
| 1:O:277:ALA:C | 1:O:278:LEU:HD12 | 2.26 | 0.55 |
| 1:L:187:ASP:CG | 1:L:193:LYS:HE3 | 2.26 | 0.55 |
| 1:C:202:THR:HG23 | 1:C:204:HIS:ND1 | 2.21 | 0.55 |
| 1:D:464:VAL:HG13 | 1:D:464:VAL:O | 2.05 | 0.55 |
| 1:H:162:ASN:OD1 | 1:H:204:HIS:N | 2.39 | 0.55 |
| 1:K:217:LEU:HD22 | 1:K:259:GLU:HG3 | 1.88 | 0.55 |
| 1:P:181:ARG:NH2 | 1:P:184:ASP:HB3 | 2.20 | 0.55 |
| 1:G:316:LEU:CB | 1:G:318:LEU:HD23 | 2.34 | 0.55 |
| 1:A:423:ASP:OD2 | 4:A:604:HOH:O | 2.18 | 0.55 |
| 1:C:376:ARG:HD2 | 1:C:376:ARG:O | 2.07 | 0.55 |
| 1:G:184:ASP:OD2 | 1:G:193:LYS:NZ | 2.32 | 0.55 |
| 1:J:152:LYS:O | 1:J:152:LYS:HG3 | 2.07 | 0.55 |
| 1:O:129:PHE:CZ | 1:O:208:VAL:HG21 | 2.42 | 0.55 |
| 1:E:222:LYS:HG3 | 1:E:223:HIS:CD2 | 2.42 | 0.55 |
| 1:E:464:VAL:O | 1:E:465:MET:HG2 | 2.07 | 0.55 |
| 1:P:373:GLN:HA | 1:P:376:ARG:HD2 | 1.89 | 0.55 |
| 1:E:179:ARG:NH2 | 1:E:251:LEU:HD21 | 2.22 | 0.54 |
| 1:E:195:GLN:OE1 | 1:E:210:PRO:HD3 | 2.07 | 0.54 |
| 1:E:222:LYS:CG | 1:E:223:HIS:CE1 | 2.89 | 0.54 |
| 1:E:365:ASP:OD2 | 1:E:369:ARG:CZ | 2.54 | 0.54 |
| 1:A:181:ARG:HH22 | 1:A:186:GLU:CA | 2.19 | 0.54 |
| 1:B:162:ASN:HB2 | 1:B:204:HIS:NE2 | 2.22 | 0.54 |
| 1:D:162:ASN:OD1 | 1:D:202:THR:O | 2.25 | 0.54 |
| 1:F:202:THR:HG1 | 1:F:204:HIS:CE1 | 2.25 | 0.54 |
| 1:H:404:ARG:HH21 | 1:K:404:ARG:HD2 | 1.71 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:P:168:ARG:NH1 | 1:P:171:LYS:HB2 | 2.22 | 0.54 |
| 1:F:350:GLU:HG3 | 1:F:393:HIS:HB3 | 1.90 | 0.54 |
| 1:I:179:ARG:NH1 | 1:I:251:LEU:HD21 | 2.23 | 0.54 |
| 1:C:300:ARG:O | 1:C:300:ARG:HG2 | 2.05 | 0.54 |
| 1:I:128:ARG:CD | 1:I:150:LYS:HB3 | 2.38 | 0.54 |
| 1:K:464:VAL:O | 1:K:465:MET:HG2 | 2.07 | 0.54 |
| 1:M:183:SER:OG | 1:M:244:TYR:OH | 2.21 | 0.54 |
| 1:O:200:ASN:OD1 | 1:O:201:GLU:N | 2.40 | 0.54 |
| 1:P:175:GLN:HA | 1:P:178:GLU:OE1 | 2.07 | 0.54 |
| 1:I:148:ASP:O | 1:I:152:LYS:N | 2.36 | 0.54 |
| 1:J:222:LYS:HG3 | 1:J:223:HIS:CE1 | 2.42 | 0.54 |
| 1:M:316:LEU:HD21 | 1:M:352:LEU:HD21 | 1.90 | 0.54 |
| 1:B:147:TRP:NE1 | 1:B:149:ARG:HD3 | 2.22 | 0.54 |
| 1:C:161:ARG:HG3 | 1:C:162:ASN:H | 1.72 | 0.54 |
| 1:G:349:LEU:HD21 | 1:G:386:GLN:CB | 2.37 | 0.54 |
| 1:N:132:LEU:HD11 | 1:N:147:TRP:HB2 | 1.90 | 0.54 |
| 1:P:252:MET:HG2 | 1:P:322:TYR:HA | 1.90 | 0.54 |
| 1:C:165:LYS:HD2 | 1:C:168:ARG:NH2 | 2.21 | 0.54 |
| 1:G:196:ARG:HH21 | 1:G:196:ARG:HG3 | 1.73 | 0.54 |
| 1:H:258:PRO:HD3 | 1:H:332:ILE:HG12 | 1.89 | 0.54 |
| 1:P:373:GLN:NE2 | 1:P:376:ARG:HD2 | 2.22 | 0.54 |
| 1:D:448:GLN:HG2 | 1:K:264:GLU:HG2 | 1.89 | 0.54 |
| 1:H:215:CYS:HA | 1:H:262:LEU:HA | 1.90 | 0.54 |
| 1:P:128:ARG:NH1 | 1:P:151:ARG:HD3 | 2.22 | 0.54 |
| 1:A:369:ARG:O | 1:A:369:ARG:HG2 | 2.08 | 0.54 |
| 1:B:464:VAL:O | 1:B:465:MET:HG2 | 2.08 | 0.54 |
| 1:C:192:MET:HG3 | 1:C:212:TYR:HE2 | 1.73 | 0.54 |
| 1:D:215:CYS:HA | 1:D:262:LEU:HA | 1.90 | 0.54 |
| 1:H:217:LEU:O | 1:H:221:MET:HG2 | 2.08 | 0.54 |
| 1:G:148:ASP:OD2 | 1:G:151:ARG:CD | 2.53 | 0.53 |
| 1:A:181:ARG:HD2 | 1:A:193:LYS:HD2 | 1.90 | 0.53 |
| 1:F:179:ARG:NH1 | 1:F:251:LEU:HD11 | 2.22 | 0.53 |
| 1:J:284:ARG:O | 4:J:603:HOH:O | 2.19 | 0.53 |
| 1:C:249:LEU:HB3 | 1:C:251:LEU:HD13 | 1.90 | 0.53 |
| 1:E:222:LYS:HG3 | 1:E:223:HIS:CE1 | 2.43 | 0.53 |
| 1:E:274:THR:HB | 1:E:276:ARG:CZ | 2.38 | 0.53 |
| 1:N:185:VAL:HG23 | 1:N:186:GLU:HG3 | 1.90 | 0.53 |
| 1:N:200:ASN:OD1 | 1:N:201:GLU:N | 2.40 | 0.53 |
| 1:N:307:ARG:HH21 | 1:N:346:HIS:CD2 | 2.15 | 0.53 |
| 1:C:271:ASP:HB2 | 1:C:278:LEU:CD1 | 2.38 | 0.53 |
| 1:H:229:ARG:NH1 | 4:H:604:HOH:O | 2.22 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:H:400:ALA:O | 1:H:401:ARG:HD3 | 2.08 | 0.53 |
| 1:J:190:PRO:HG2 | 1:J:241:ALA:HB2 | 1.90 | 0.53 |
| 1:J:390:ASP:OD2 | 1:J:392:LYS:HD2 | 2.09 | 0.53 |
| 1:N:181:ARG:O | 1:N:181:ARG:HG3 | 2.06 | 0.53 |
| 1:E:151:ARG:HH21 | 1:E:196:ARG:NH1 | 2.04 | 0.53 |
| 1:H:456:ARG:NH1 | 4:H:607:HOH:O | 2.42 | 0.53 |
| 1:P:128:ARG:NH1 | 1:P:148:ASP:OD1 | 2.39 | 0.53 |
| 1:I:447:ARG:HA | 1:I:452:HIS:CD2 | 2.43 | 0.53 |
| 1:L:187:ASP:OD1 | 1:L:193:LYS:CE | 2.57 | 0.53 |
| 1:N:402:PRO:CD | 1:N:405:GLU:HG3 | 2.39 | 0.53 |
| 1:O:316:LEU:CB | 1:O:318:LEU:CD1 | 2.86 | 0.53 |
| 1:E:192:MET:HG2 | 1:E:288:CYS:HA | 1.90 | 0.53 |
| 1:H:181:ARG:NH2 | 1:H:187:ASP:HA | 2.23 | 0.53 |
| 1:H:320:TRP:O | 1:H:321:MET:HG2 | 2.09 | 0.53 |
| 1:L:179:ARG:NH1 | 1:L:251:LEU:HD21 | 2.24 | 0.53 |
| 1:B:192:MET:HE2 | 1:B:288:CYS:HA | 1.91 | 0.53 |
| 1:G:252:MET:HE3 | 1:G:320:TRP:HZ3 | 1.74 | 0.53 |
| 1:L:162:ASN:HB2 | 1:L:204:HIS:CD2 | 2.44 | 0.53 |
| 1:M:191:LEU:HD23 | 1:M:287:ILE:HB | 1.89 | 0.53 |
| 1:P:222:LYS:HD3 | 1:P:223:HIS:NE2 | 2.23 | 0.53 |
| 1:C:242:LEU:HD21 | 1:C:256:LEU:HD11 | 1.91 | 0.53 |
| 1:J:160:VAL:HG12 | 1:J:166:TYR:HB3 | 1.91 | 0.53 |
| 1:N:442:TYR:O | 4:N:604:HOH:O | 2.19 | 0.53 |
| 1:B:307:ARG:NH1 | 1:B:348:ASN:OD1 | 2.41 | 0.53 |
| 1:F:165:LYS:HD2 | 1:F:168:ARG:NH2 | 2.23 | 0.53 |
| 1:F:202:THR:OG1 | 1:F:204:HIS:ND1 | 2.22 | 0.53 |
| 1:G:239:GLY:HA3 | 1:G:434:MET:HB3 | 1.89 | 0.53 |
| 1:I:258:PRO:HD3 | 1:I:332:ILE:HG12 | 1.90 | 0.53 |
| 1:J:175:GLN:NE2 | 1:K:296:GLU:OE2 | 2.37 | 0.53 |
| 1:O:128:ARG:HD3 | 1:O:129:PHE:CE2 | 2.44 | 0.53 |
| 1:J:238:VAL:HG13 | 1:J:287:ILE:HD11 | 1.91 | 0.52 |
| 1:L:259:GLU:N | 1:L:259:GLU:OE1 | 2.39 | 0.52 |
| 1:M:316:LEU:HD12 | 1:M:375:ALA:HB1 | 1.90 | 0.52 |
| 1:A:464:VAL:O | 1:A:465:MET:HG2 | 2.09 | 0.52 |
| 1:H:242:LEU:HD21 | 1:H:256:LEU:HD11 | 1.91 | 0.52 |
| 1:A:357:LYS:NZ | 1:A:400:ALA:O | 2.41 | 0.52 |
| 1:G:215:CYS:HA | 1:G:262:LEU:HA | 1.92 | 0.52 |
| 1:K:392:LYS:H | 1:K:392:LYS:CD | 2.22 | 0.52 |
| 1:N:390:ASP:O | 1:N:394:ILE:HD12 | 2.10 | 0.52 |
| 1:D:307:ARG:HD2 | 1:D:346:HIS:HA | 1.91 | 0.52 |
| 1:F:190:PRO:HG2 | 1:F:241:ALA:HB2 | 1.92 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:I:270:VAL:HG11 | 1:O:154:TYR:OH | 2.10 | 0.52 |
| 1:J:161:ARG:NH1 | 1:J:163:VAL:HG13 | 2.24 | 0.52 |
| 1:P:129:PHE:CZ | 1:P:208:VAL:HG21 | 2.44 | 0.52 |
| 1:A:185:VAL:HG23 | 1:A:186:GLU:CG | 2.37 | 0.52 |
| 1:F:249:LEU:HB3 | 1:F:251:LEU:HD13 | 1.91 | 0.52 |
| 1:M:367:SER:HB3 | 1:M:379:PHE:CG | 2.45 | 0.52 |
| 1:N:147:TRP:CD1 | 1:N:149:ARG:HD3 | 2.44 | 0.52 |
| 1:O:300:ARG:NH2 | 1:O:320:TRP:H | 2.05 | 0.52 |
| 1:A:424:ARG:NH2 | 1:A:465:MET:HG3 | 2.24 | 0.52 |
| 1:H:196:ARG:HG2 | 1:H:197:TYR:H | 1.74 | 0.52 |
| 1:I:147:TRP:CZ2 | 1:I:152:LYS:CD | 2.93 | 0.52 |
| 1:L:183:SER:HB3 | 1:L:244:TYR:OH | 2.09 | 0.52 |
| 1:C:444:PRO:O | 1:C:447:ARG:HD2 | 2.09 | 0.52 |
| 1:E:238:VAL:HG13 | 1:E:287:ILE:HD11 | 1.92 | 0.52 |
| 1:M:163:VAL:HG23 | 1:M:166:TYR:HB2 | 1.91 | 0.52 |
| 1:N:215:CYS:HA | 1:N:262:LEU:HA | 1.91 | 0.52 |
| 1:D:393:HIS:O | 1:D:397:ILE:HD12 | 2.09 | 0.52 |
| 1:G:135:LEU:HD12 | 1:G:143:VAL:HG12 | 1.92 | 0.52 |
| 1:H:147:TRP:HE1 | 1:H:149:ARG:NH1 | 1.90 | 0.52 |
| 1:I:130:LYS:HE2 | 1:I:149:ARG:NH2 | 2.24 | 0.52 |
| 1:K:151:ARG:NH1 | 1:K:153:GLU:OE1 | 2.43 | 0.52 |
| 1:M:404:ARG:HG3 | 1:M:405:GLU:HG2 | 1.92 | 0.52 |
| 1:F:464:VAL:O | 1:F:465:MET:HG2 | 2.09 | 0.52 |
| 1:I:252:MET:HG2 | 1:I:322:TYR:HA | 1.91 | 0.52 |
| 1:F:161:ARG:CG | 1:F:162:ASN:H | 2.19 | 0.52 |
| 1:I:257:LYS:HE3 | 1:I:259:GLU:HB2 | 1.92 | 0.52 |
| 1:J:188:ARG:HH22 | 1:N:186:GLU:CD | 2.14 | 0.52 |
| 1:M:190:PRO:HG3 | 1:M:237:GLN:HB3 | 1.92 | 0.52 |
| 1:O:128:ARG:HE | 1:O:150:LYS:HB2 | 1.75 | 0.52 |
| 1:B:404:ARG:HH21 | 1:D:404:ARG:HD3 | 1.75 | 0.51 |
| 1:O:167:THR:HG22 | 1:O:205:MET:HG2 | 1.92 | 0.51 |
| 1:C:164:PRO:HG2 | 1:L:377:ASP:HB3 | 1.92 | 0.51 |
| 1:E:395:ALA:O | 1:E:399:ARG:HG3 | 2.10 | 0.51 |
| 1:G:440:HIS:HB3 | 1:G:447:ARG:HH21 | 1.75 | 0.51 |
| 1:H:412:LEU:HD13 | 1:H:438:TYR:CZ | 2.46 | 0.51 |
| 1:I:423:ASP:HB3 | 1:I:426:ARG:HB2 | 1.92 | 0.51 |
| 1:J:175:GLN:HE22 | 1:K:296:GLU:CD | 2.13 | 0.51 |
| 1:J:310:ARG:NH1 | 4:J:607:HOH:O | 2.33 | 0.51 |
| 1:L:193:LYS:NZ | 1:L:193:LYS:HD3 | 2.22 | 0.51 |
| 1:A:393:HIS:O | 1:A:397:ILE:HG13 | 2.10 | 0.51 |
| 1:B:365:ASP:N | 1:B:365:ASP:OD1 | 2.44 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:202:THR:HB | 1:E:204:HIS:ND1 | 2.26 | 0.51 |
| 1:F:362:LEU:HB3 | 1:F:366:TRP:CE3 | 2.45 | 0.51 |
| 1:G:181:ARG:HD3 | 1:G:194:ILE:O | 2.10 | 0.51 |
| 1:I:464:VAL:O | 1:I:465:MET:HG2 | 2.10 | 0.51 |
| 1:J:156:ALA:O | 1:J:209:MET:N | 2.40 | 0.51 |
| 1:K:238:VAL:HG13 | 1:K:287:ILE:HD11 | 1.91 | 0.51 |
| 1:L:140:PHE:CD2 | 1:L:158:LYS:HD2 | 2.45 | 0.51 |
| 1:P:128:ARG:NE | 1:P:148:ASP:OD1 | 2.38 | 0.51 |
| 1:P:237:GLN:NE2 | 1:P:283:CYS:O | 2.37 | 0.51 |
| 1:A:392:LYS:N | 1:A:392:LYS:HD3 | 2.24 | 0.51 |
| 1:C:179:ARG:NH1 | 1:C:251:LEU:HD11 | 2.25 | 0.51 |
| 1:D:412:LEU:HD13 | 1:D:438:TYR:CZ | 2.45 | 0.51 |
| 1:F:161:ARG:CD | 1:F:162:ASN:H | 2.22 | 0.51 |
| 1:F:161:ARG:HB3 | 1:F:166:TYR:HD2 | 1.76 | 0.51 |
| 1:F:357:LYS:NZ | 1:F:400:ALA:O | 2.43 | 0.51 |
| 1:F:447:ARG:HA | 1:F:452:HIS:CD2 | 2.45 | 0.51 |
| 1:I:380:THR:HG22 | 1:I:384:THR:O | 2.10 | 0.51 |
| 1:O:415:LEU:HD12 | 1:O:438:TYR:HB3 | 1.93 | 0.51 |
| 1:P:316:LEU:CB | 1:P:318:LEU:HD23 | 2.41 | 0.51 |
| 1:A:151:ARG:O | 1:A:152:LYS:HG2 | 2.11 | 0.51 |
| 1:E:264:GLU:HG2 | 1:P:448:GLN:HG2 | 1.92 | 0.51 |
| 1:F:130:LYS:HG2 | 1:F:131:ILE:H | 1.73 | 0.51 |
| 1:H:191:LEU:HD23 | 1:H:287:ILE:HB | 1.93 | 0.51 |
| 1:A:258:PRO:HD3 | 1:A:332:ILE:HG12 | 1.92 | 0.51 |
| 1:B:258:PRO:HD3 | 1:B:332:ILE:HG12 | 1.91 | 0.51 |
| 1:N:358:THR:HA | 1:N:402:PRO:HA | 1.91 | 0.51 |
| 1:P:374:GLU:HA | 4:P:607:HOH:O | 2.11 | 0.51 |
| 1:A:412:LEU:HD13 | 1:A:438:TYR:CZ | 2.45 | 0.51 |
| 1:B:353:HIS:HB3 | 1:B:397:ILE:HD13 | 1.92 | 0.51 |
| 1:C:273:MET:HE1 | 1:H:272:PRO:HB2 | 1.92 | 0.51 |
| 1:D:464:VAL:O | 1:D:465:MET:HG2 | 2.11 | 0.51 |
| 1:E:130:LYS:HE2 | 4:E:637:HOH:O | 2.11 | 0.51 |
| 1:G:326:LEU:HD23 | 1:G:429:ASN:HA | 1.93 | 0.51 |
| 1:I:149:ARG:O | 1:I:152:LYS:HE2 | 2.11 | 0.51 |
| 1:J:447:ARG:HA | 1:J:452:HIS:CD2 | 2.45 | 0.51 |
| 1:N:148:ASP:OD2 | 1:N:151:ARG:CG | 2.56 | 0.51 |
| 1:O:147:TRP:CZ2 | 1:O:152:LYS:HA | 2.45 | 0.51 |
| 1:P:373:GLN:OE1 | 1:P:376:ARG:HD2 | 2.11 | 0.51 |
| 1:B:357:LYS:CE | 1:D:361:ARG:NH1 | 2.65 | 0.51 |
| 1:G:258:PRO:HD3 | 1:G:332:ILE:HG12 | 1.92 | 0.51 |
| 1:G:424:ARG:NH2 | 1:G:465:MET:HG3 | 2.25 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:L:193:LYS:HZ3 | 1:L:193:LYS:HD3 | 1.76 | 0.51 |
| 1:N:133:SER:OG | 1:N:145:GLU:HB3 | 2.11 | 0.51 |
| 1:G:174:ILE:O | 1:G:178:GLU:OE1 | 2.29 | 0.51 |
| 1:N:402:PRO:HD2 | 1:N:405:GLU:HG3 | 1.92 | 0.51 |
| 1:O:249:LEU:O | 4:O:602:HOH:O | 2.19 | 0.51 |
| 1:O:363:PRO:HD2 | 1:O:366:TRP:CD2 | 2.45 | 0.51 |
| 1:O:447:ARG:HA | 1:O:452:HIS:CD2 | 2.46 | 0.51 |
| 1:F:361:ARG:HH12 | 1:M:361:ARG:HB2 | 1.75 | 0.50 |
| 1:H:460:PRO:HB3 | 1:O:182:LEU:HD13 | 1.93 | 0.50 |
| 1:P:298:HIS:CE1 | 1:P:300:ARG:NH2 | 2.79 | 0.50 |
| 1:G:217:LEU:HD12 | 1:G:220:ILE:HD11 | 1.92 | 0.50 |
| 1:M:162:ASN:ND2 | 1:M:162:ASN:C | 2.64 | 0.50 |
| 1:O:190:PRO:HG3 | 1:O:237:GLN:HB3 | 1.93 | 0.50 |
| 1:K:151:ARG:HB2 | 1:K:153:GLU:CD | 2.25 | 0.50 |
| 1:L:373:GLN:HG2 | 1:L:374:GLU:N | 2.25 | 0.50 |
| 1:M:464:VAL:O | 1:M:465:MET:HG2 | 2.12 | 0.50 |
| 1:N:313:GLU:CD | 1:N:424:ARG:HG2 | 2.31 | 0.50 |
| 1:N:380:THR:HG22 | 1:N:382:ALA:H | 1.75 | 0.50 |
| 1:P:181:ARG:CZ | 1:P:193:LYS:CE | 2.90 | 0.50 |
| 1:D:185:VAL:HG23 | 1:D:186:GLU:CG | 2.41 | 0.50 |
| 1:E:183:SER:O | 4:E:602:HOH:O | 2.18 | 0.50 |
| 1:O:464:VAL:O | 1:O:465:MET:HG2 | 2.11 | 0.50 |
| 1:G:257:LYS:HD2 | 1:G:259:GLU:OE2 | 2.12 | 0.50 |
| 1:I:395:ALA:O | 1:I:399:ARG:HG3 | 2.12 | 0.50 |
| 1:K:441:LYS:HG2 | 1:K:442:TYR:CD2 | 2.46 | 0.50 |
| 1:M:362:LEU:HD12 | 1:M:385:LEU:HD11 | 1.93 | 0.50 |
| 1:N:251:LEU:HD23 | 1:N:295:ASP:HB3 | 1.94 | 0.50 |
| 1:P:196:ARG:CG | 1:P:197:TYR:N | 2.74 | 0.50 |
| 1:E:259:GLU:N | 1:E:259:GLU:OE1 | 2.43 | 0.50 |
| 1:I:161:ARG:HG3 | 1:I:162:ASN:N | 2.27 | 0.50 |
| 1:A:187:ASP:OD2 | 1:A:193:LYS:HG3 | 2.12 | 0.50 |
| 1:E:307:ARG:NE | 2:E:501:SO4:O2 | 2.29 | 0.50 |
| 1:G:200:ASN:OD1 | 1:G:202:THR:HG22 | 2.12 | 0.50 |
| 1:G:357:LYS:HE2 | 1:G:401:ARG:HH11 | 1.76 | 0.50 |
| 1:M:187:ASP:OD1 | 1:M:193:LYS:NZ | 2.44 | 0.50 |
| 1:O:412:LEU:HD13 | 1:O:438:TYR:CZ | 2.47 | 0.50 |
| 1:E:217:LEU:HD22 | 1:E:259:GLU:HG3 | 1.94 | 0.49 |
| 1:I:350:GLU:OE2 | 1:I:396:ARG:HD2 | 2.11 | 0.49 |
| 1:I:362:LEU:HB3 | 1:I:366:TRP:CE3 | 2.47 | 0.49 |
| 1:P:377:ASP:N | 4:P:601:HOH:O | 2.44 | 0.49 |
| 1:M:187:ASP:HA | 1:M:193:LYS:HZ3 | 1.78 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:M:217:LEU:HD22 | 1:M:259:GLU:HG3 | 1.94 | 0.49 |
| 1:O:128:ARG:HG3 | 1:O:150:LYS:NZ | 2.27 | 0.49 |
| 1:O:128:ARG:CZ | 1:O:148:ASP:OD1 | 2.60 | 0.49 |
| 1:B:128:ARG:HH12 | 1:B:196:ARG:NH2 | 2.10 | 0.49 |
| 1:B:274:THR:HB | 1:B:276:ARG:CZ | 2.42 | 0.49 |
| 1:B:440:HIS:CD2 | 1:B:447:ARG:NE | 2.80 | 0.49 |
| 1:E:366:TRP:CD1 | 1:E:369:ARG:NH2 | 2.80 | 0.49 |
| 1:I:162:ASN:HB2 | 1:I:204:HIS:CE1 | 2.47 | 0.49 |
| 1:I:192:MET:HG2 | 1:I:193:LYS:H | 1.77 | 0.49 |
| 1:N:131:ILE:HG23 | 1:N:144:VAL:HG21 | 1.95 | 0.49 |
| 1:P:362:LEU:HD11 | 1:P:385:LEU:HD11 | 1.93 | 0.49 |
| 1:B:418:ASN:HB3 | 1:B:428:LEU:HG | 1.93 | 0.49 |
| 1:E:190:PRO:HG2 | 1:E:241:ALA:HB2 | 1.94 | 0.49 |
| 1:I:273:MET:HG3 | 1:M:273:MET:HG2 | 1.94 | 0.49 |
| 1:N:327:TRP:CD2 | 1:N:420:LEU:HD23 | 2.47 | 0.49 |
| 1:O:316:LEU:HB2 | 1:O:318:LEU:HD13 | 1.95 | 0.49 |
| 1:P:464:VAL:O | 1:P:465:MET:HG2 | 2.12 | 0.49 |
| 1:A:215:CYS:HA | 1:A:262:LEU:HA | 1.94 | 0.49 |
| 1:C:148:ASP:OD2 | 1:C:151:ARG:HB2 | 2.12 | 0.49 |
| 1:N:192:MET:HE2 | 1:N:288:CYS:HA | 1.94 | 0.49 |
| 1:O:370:CYS:HB3 | 1:O:375:ALA:HB3 | 1.93 | 0.49 |
| 1:B:238:VAL:HG13 | 1:B:287:ILE:HD11 | 1.94 | 0.49 |
| 1:B:428:LEU:HD22 | 1:B:432:GLN:HB3 | 1.94 | 0.49 |
| 1:C:273:MET:CE | 1:H:272:PRO:HB2 | 2.43 | 0.49 |
| 1:E:258:PRO:HD3 | 1:E:332:ILE:HG12 | 1.94 | 0.49 |
| 1:F:167:THR:HG23 | 1:F:205:MET:HG2 | 1.93 | 0.49 |
| 1:N:380:THR:N | 1:N:384:THR:O | 2.34 | 0.49 |
| 1:P:380:THR:HG23 | 1:P:383:GLY:N | 2.14 | 0.49 |
| 1:E:151:ARG:HE | 1:E:196:ARG:NH2 | 2.10 | 0.49 |
| 1:J:271:ASP:OD2 | 1:J:274:THR:HG23 | 2.12 | 0.49 |
| 1:J:380:THR:HG22 | 1:J:386:GLN:OE1 | 2.12 | 0.49 |
| 1:A:238:VAL:HG13 | 1:A:287:ILE:HD11 | 1.93 | 0.49 |
| 1:B:391:PRO:HD2 | 1:B:392:LYS:NZ | 2.28 | 0.49 |
| 1:F:151:ARG:O | 1:F:153:GLU:HG2 | 2.13 | 0.49 |
| 1:G:270:VAL:HG11 | 1:K:154:TYR:OH | 2.12 | 0.49 |
| 1:H:233:GLN:O | 1:H:237:GLN:HG3 | 2.13 | 0.49 |
| 1:O:148:ASP:OD2 | 1:O:151:ARG:HB2 | 2.12 | 0.49 |
| 1:O:177:MET:HE1 | 1:O:207:ILE:HD13 | 1.95 | 0.49 |
| 1:A:323:SER:OG | 1:A:427:ARG:HD2 | 2.13 | 0.49 |
| 1:G:365:ASP:O | 1:G:368:VAL:HG22 | 2.12 | 0.49 |
| 1:K:151:ARG:CD | 1:K:153:GLU:OE2 | 2.57 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:O:217:LEU:HD22 | 1:O:259:GLU:HG3 | 1.93 | 0.49 |
| 1:O:323:SER:OG | 1:O:427:ARG:NH1 | 2.46 | 0.49 |
| 1:D:307:ARG:CD | 1:D:346:HIS:HA | 2.43 | 0.49 |
| 1:G:388:CYS:O | 1:G:394:ILE:HD11 | 2.12 | 0.49 |
| 1:B:379:PHE:CE2 | 1:B:385:LEU:HD13 | 2.48 | 0.48 |
| 1:C:298:HIS:HE1 | 1:C:300:ARG:CZ | 2.22 | 0.48 |
| 1:G:164:PRO:HA | 1:G:167:THR:OG1 | 2.13 | 0.48 |
| 1:G:464:VAL:O | 1:G:465:MET:HG2 | 2.12 | 0.48 |
| 1:P:260:ASN:HB3 | 1:P:289:ASP:OD2 | 2.13 | 0.48 |
| 1:A:192:MET:HE2 | 1:A:209:MET:SD | 2.53 | 0.48 |
| 1:D:356:GLU:HA | 1:D:360:GLY:O | 2.13 | 0.48 |
| 1:G:177:MET:HG2 | 1:G:192:MET:HE1 | 1.95 | 0.48 |
| 1:H:181:ARG:CZ | 1:H:193:LYS:HD2 | 2.43 | 0.48 |
| 1:L:363:PRO:HD2 | 1:L:366:TRP:CE2 | 2.48 | 0.48 |
| 1:B:356:GLU:HA | 1:B:360:GLY:O | 2.13 | 0.48 |
| 1:C:161:ARG:HG3 | 1:C:162:ASN:N | 2.28 | 0.48 |
| 1:C:194:ILE:HA | 1:C:209:MET:HG2 | 1.94 | 0.48 |
| 1:C:464:VAL:O | 1:C:465:MET:HG2 | 2.13 | 0.48 |
| 1:F:313:GLU:HA | 1:F:318:LEU:HD12 | 1.95 | 0.48 |
| 1:H:147:TRP:HD1 | 1:H:149:ARG:HD3 | 1.78 | 0.48 |
| 1:M:372:THR:HG23 | 1:M:375:ALA:H | 1.78 | 0.48 |
| 1:I:190:PRO:HG2 | 1:I:241:ALA:HB2 | 1.95 | 0.48 |
| 1:K:258:PRO:HD3 | 1:K:332:ILE:HG12 | 1.94 | 0.48 |
| 1:M:215:CYS:HA | 1:M:262:LEU:HA | 1.95 | 0.48 |
| 1:M:258:PRO:HD3 | 1:M:332:ILE:HG12 | 1.94 | 0.48 |
| 1:C:160:VAL:HG12 | 1:C:166:TYR:HB3 | 1.94 | 0.48 |
| 1:C:252:MET:HE1 | 1:C:321:MET:SD | 2.53 | 0.48 |
| 1:E:366:TRP:HD1 | 1:E:369:ARG:NH2 | 2.11 | 0.48 |
| 1:I:353:HIS:O | 1:I:357:LYS:HG2 | 2.13 | 0.48 |
| 1:K:162:ASN:ND2 | 1:K:202:THR:O | 2.45 | 0.48 |
| 1:K:190:PRO:HG2 | 1:K:241:ALA:HB2 | 1.95 | 0.48 |
| 1:O:353:HIS:CB | 1:O:397:ILE:CD1 | 2.90 | 0.48 |
| 1:C:357:LYS:NZ | 1:C:400:ALA:O | 2.47 | 0.48 |
| 1:G:260:ASN:HB2 | 1:G:289:ASP:HB2 | 1.95 | 0.48 |
| 1:M:175:GLN:HA | 1:M:178:GLU:OE1 | 2.12 | 0.48 |
| 1:C:274:THR:HB | 1:C:276:ARG:NE | 2.29 | 0.48 |
| 1:C:317:SER:O | 1:C:371:GLY:HA3 | 2.13 | 0.48 |
| 1:I:257:LYS:HB2 | 1:I:259:GLU:OE1 | 2.14 | 0.48 |
| 1:I:347:ASP:HB3 | 1:I:350:GLU:HB3 | 1.95 | 0.48 |
| 1:K:390:ASP:OD2 | 1:K:392:LYS:HD3 | 2.13 | 0.48 |
| 1:N:464:VAL:O | 1:N:465:MET:HG2 | 2.14 | 0.48 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:O:307:ARG:HD2 | 1:O:346:HIS:HA | 1.96 | 0.48 |
| 1:P:249:LEU:HA | 4:P:606:HOH:O | 2.13 | 0.48 |
| 1:N:147:TRP:HZ2 | 1:N:152:LYS:HG3 | 1.77 | 0.48 |
| 1:N:239:GLY:HA3 | 1:N:434:MET:HB3 | 1.95 | 0.48 |
| 1:C:271:ASP:OD2 | 1:C:274:THR:HG23 | 2.14 | 0.48 |
| 1:E:353:HIS:HB3 | 1:E:397:ILE:HD13 | 1.95 | 0.48 |
| 1:J:184:ASP:O | 1:J:193:LYS:NZ | 2.47 | 0.48 |
| 1:J:362:LEU:HB3 | 1:J:366:TRP:CE3 | 2.48 | 0.48 |
| 1:K:192:MET:HB2 | 1:K:288:CYS:SG | 2.54 | 0.48 |
| 1:C:314:VAL:HG22 | 1:C:320:TRP:CG | 2.48 | 0.48 |
| 1:G:402:PRO:HB2 | 1:G:405:GLU:HB2 | 1.95 | 0.48 |
| 1:O:380:THR:HB | 1:O:383:GLY:H | 1.79 | 0.48 |
| 1:C:161:ARG:HG2 | 1:C:163:VAL:HG23 | 1.96 | 0.47 |
| 1:D:162:ASN:HB2 | 1:D:204:HIS:CD2 | 2.48 | 0.47 |
| 1:F:179:ARG:CZ | 1:F:251:LEU:HD11 | 2.44 | 0.47 |
| 1:H:181:ARG:NH2 | 1:H:193:LYS:CE | 2.77 | 0.47 |
| 1:K:150:LYS:O | 1:K:150:LYS:HG2 | 2.12 | 0.47 |
| 1:P:318:LEU:HD12 | 1:P:369:ARG:HH22 | 1.74 | 0.47 |
| 1:C:130:LYS:HE3 | 1:C:131:ILE:O | 2.14 | 0.47 |
| 1:O:181:ARG:NH1 | 1:O:193:LYS:CB | 2.71 | 0.47 |
| 1:P:176:PHE:O | 1:P:180:VAL:HG23 | 2.14 | 0.47 |
| 1:P:307:ARG:HD2 | 1:P:346:HIS:HA | 1.96 | 0.47 |
| 1:F:238:VAL:HG11 | 1:F:329:MET:SD | 2.54 | 0.47 |
| 1:I:137:GLU:HG2 | 1:I:138:GLY:N | 2.30 | 0.47 |
| 1:J:145:GLU:OE2 | 1:J:211:LYS:HE3 | 2.14 | 0.47 |
| 1:P:298:HIS:HE1 | 1:P:300:ARG:NH2 | 2.12 | 0.47 |
| 1:C:190:PRO:HG2 | 1:C:241:ALA:HB2 | 1.95 | 0.47 |
| 1:C:193:LYS:O | 1:C:210:PRO:HD3 | 2.15 | 0.47 |
| 1:F:367:SER:O | 1:F:376:ARG:HD2 | 2.14 | 0.47 |
| 1:I:363:PRO:HD2 | 1:I:366:TRP:CE2 | 2.50 | 0.47 |
| 1:I:376:ARG:HH22 | 1:I:381:ALA:HA | 1.79 | 0.47 |
| 1:A:218:ASP:OD1 | 3:A:501:5XH:N1 | 2.47 | 0.47 |
| 1:B:362:LEU:HD22 | 1:B:366:TRP:CZ3 | 2.49 | 0.47 |
| 1:B:447:ARG:HA | 1:B:452:HIS:CD2 | 2.49 | 0.47 |
| 1:G:326:LEU:HD23 | 4:G:603:HOH:O | 2.15 | 0.47 |
| 1:I:308:HIS:ND1 | 1:I:343:TYR:O | 2.47 | 0.47 |
| 1:M:323:SER:OG | 1:M:427:ARG:NH1 | 2.47 | 0.47 |
| 1:N:425:GLN:OE1 | 1:N:464:VAL:HG13 | 2.14 | 0.47 |
| 1:O:162:ASN:OD1 | 1:O:204:HIS:N | 2.47 | 0.47 |
| 1:B:175:GLN:HE22 | 1:E:296:GLU:CD | 2.17 | 0.47 |
| 1:K:306:THR:HG23 | 1:K:309:TYR:HD2 | 1.80 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:M:192:MET:HE3 | 1:M:290:LEU:HG | 1.95 | 0.47 |
| 1:M:362:LEU:CD1 | 1:M:385:LEU:HD11 | 2.45 | 0.47 |
| 1:A:249:LEU:O | 4:A:605:HOH:O | 2.20 | 0.47 |
| 1:B:160:VAL:HG12 | 1:B:166:TYR:HB3 | 1.96 | 0.47 |
| 1:C:373:GLN:HG3 | 4:C:623:HOH:O | 2.15 | 0.47 |
| 1:C:413:CYS:SG | 1:C:417:LEU:HD12 | 2.55 | 0.47 |
| 1:D:173:GLU:HG3 | 1:D:291:GLY:N | 2.29 | 0.47 |
| 1:D:328:SER:O | 1:D:332:ILE:HG13 | 2.15 | 0.47 |
| 1:E:222:LYS:HG2 | 1:E:223:HIS:CE1 | 2.48 | 0.47 |
| 1:E:316:LEU:HB3 | 1:E:370:CYS:SG | 2.54 | 0.47 |
| 1:G:191:LEU:HD23 | 1:G:287:ILE:HB | 1.97 | 0.47 |
| 1:H:353:HIS:CB | 1:H:397:ILE:CD1 | 2.90 | 0.47 |
| 1:N:361:ARG:HA | 1:N:361:ARG:HD3 | 1.30 | 0.47 |
| 1:O:160:VAL:CG1 | 1:O:205:MET:HB2 | 2.45 | 0.47 |
| 1:O:298:HIS:CE1 | 1:O:300:ARG:NH2 | 2.82 | 0.47 |
| 1:O:350:GLU:CD | 1:O:396:ARG:HH11 | 2.04 | 0.47 |
| 1:I:242:LEU:HD21 | 1:I:256:LEU:HD11 | 1.95 | 0.47 |
| 1:M:188:ARG:NH2 | 2:M:500:SO4:O2 | 2.45 | 0.47 |
| 1:M:361:ARG:HG3 | 1:M:362:LEU:O | 2.13 | 0.47 |
| 1:D:297:ARG:HH11 | 1:N:299:SER:HB2 | 1.80 | 0.47 |
| 1:E:151:ARG:HH21 | 1:E:196:ARG:CZ | 2.28 | 0.47 |
| 1:F:376:ARG:HG3 | 1:F:376:ARG:NH1 | 2.24 | 0.47 |
| 1:N:180:VAL:HG12 | 1:N:193:LYS:HZ3 | 1.80 | 0.47 |
| 1:O:181:ARG:HG3 | 1:O:193:LYS:HD2 | 1.97 | 0.47 |
| 1:C:217:LEU:HD22 | 1:C:259:GLU:HG3 | 1.95 | 0.47 |
| 1:E:316:LEU:HD21 | 1:E:352:LEU:HD11 | 1.97 | 0.47 |
| 1:K:257:LYS:HZ2 | 1:K:259:GLU:CB | 2.27 | 0.47 |
| 1:A:353:HIS:CB | 1:A:397:ILE:HD13 | 2.45 | 0.46 |
| 1:D:273:MET:HA | 1:K:273:MET:SD | 2.56 | 0.46 |
| 1:H:239:GLY:HA3 | 1:H:434:MET:HB3 | 1.97 | 0.46 |
| 1:I:272:PRO:HB2 | 1:M:273:MET:SD | 2.56 | 0.46 |
| 1:A:191:LEU:HD23 | 1:A:287:ILE:HB | 1.97 | 0.46 |
| 1:B:392:LYS:HD3 | 1:B:392:LYS:N | 2.30 | 0.46 |
| 1:D:200:ASN:ND2 | 1:D:202:THR:HG22 | 2.31 | 0.46 |
| 1:H:243:ASP:OD2 | 1:H:431:ARG:HB2 | 2.14 | 0.46 |
| 1:J:385:LEU:HD23 | 1:J:385:LEU:HA | 1.74 | 0.46 |
| 1:L:318:LEU:HD23 | 1:L:370:CYS:HA | 1.96 | 0.46 |
| 1:M:390:ASP:O | 1:M:394:ILE:HD12 | 2.14 | 0.46 |
| 1:M:412:LEU:HD13 | 1:M:438:TYR:CZ | 2.50 | 0.46 |
| 1:P:202:THR:HG23 | 1:P:204:HIS:ND1 | 2.30 | 0.46 |
| 1:E:350:GLU:OE2 | 1:E:396:ARG:HD2 | 2.15 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:G:376:ARG:HD3 | 1:G:376:ARG:C | 2.35 | 0.46 |
| 1:H:147:TRP:CH2 | 1:H:152:LYS:HG3 | 2.50 | 0.46 |
| 1:H:148:ASP:OD2 | 1:H:151:ARG:HG3 | 2.15 | 0.46 |
| 1:F:369:ARG:NH1 | 4:F:606:HOH:O | 2.39 | 0.46 |
| 1:G:390:ASP:OD1 | 1:G:392:LYS:HB2 | 2.14 | 0.46 |
| 1:H:348:ASN:HB3 | 1:H:378:LEU:HD21 | 1.96 | 0.46 |
| 1:K:447:ARG:HA | 1:K:452:HIS:CD2 | 2.49 | 0.46 |
| 1:C:191:LEU:HD23 | 1:C:287:ILE:HB | 1.98 | 0.46 |
| 1:C:307:ARG:NH1 | 1:C:348:ASN:OD1 | 2.47 | 0.46 |
| 1:D:185:VAL:HG23 | 1:D:186:GLU:HG3 | 1.97 | 0.46 |
| 1:L:195:GLN:HG2 | 1:L:209:MET:HA | 1.97 | 0.46 |
| 1:M:192:MET:HE2 | 1:M:290:LEU:HG | 1.97 | 0.46 |
| 1:N:191:LEU:HD23 | 1:N:287:ILE:HB | 1.97 | 0.46 |
| 1:P:412:LEU:HD13 | 1:P:438:TYR:CZ | 2.51 | 0.46 |
| 1:C:425:GLN:HG2 | 1:C:465:MET:HB3 | 1.98 | 0.46 |
| 1:E:346:HIS:NE2 | 2:E:501:SO4:S | 2.89 | 0.46 |
| 1:H:187:ASP:OD1 | 1:H:193:LYS:NZ | 2.49 | 0.46 |
| 1:K:147:TRP:HE3 | 1:K:154:TYR:CD1 | 2.34 | 0.46 |
| 1:K:257:LYS:HG3 | 1:K:259:GLU:N | 2.26 | 0.46 |
| 1:N:217:LEU:HD22 | 1:N:259:GLU:HG3 | 1.98 | 0.46 |
| 1:O:356:GLU:HA | 1:O:360:GLY:O | 2.15 | 0.46 |
| 1:P:128:ARG:HG3 | 1:P:150:LYS:HG2 | 1.98 | 0.46 |
| 1:A:313:GLU:OE2 | 1:A:427:ARG:NH1 | 2.46 | 0.46 |
| 1:C:300:ARG:NH1 | 1:C:320:TRP:H | 2.12 | 0.46 |
| 1:I:238:VAL:HG11 | 1:I:329:MET:SD | 2.56 | 0.46 |
| 1:L:137:GLU:HG3 | 1:L:142:LYS:CG | 2.45 | 0.46 |
| 1:L:137:GLU:HG3 | 1:L:142:LYS:HG2 | 1.96 | 0.46 |
| 1:M:362:LEU:HD23 | 1:M:422:TYR:CZ | 2.51 | 0.46 |
| 1:P:373:GLN:HA | 1:P:376:ARG:CD | 2.45 | 0.46 |
| 1:P:447:ARG:HA | 1:P:452:HIS:CD2 | 2.50 | 0.46 |
| 1:A:128:ARG:HD3 | 1:A:129:PHE:CE2 | 2.51 | 0.46 |
| 1:A:174:ILE:CG2 | 1:A:178:GLU:OE2 | 2.52 | 0.46 |
| 1:A:227:ASN:HB2 | 4:A:624:HOH:O | 2.15 | 0.46 |
| 1:A:369:ARG:HG2 | 4:A:602:HOH:O | 2.15 | 0.46 |
| 1:E:333:ILE:HG22 | 1:E:416:ILE:HD11 | 1.98 | 0.46 |
| 1:A:404:ARG:HA | 1:A:413:CYS:SG | 2.56 | 0.46 |
| 1:H:132:LEU:HD11 | 1:H:147:TRP:HB2 | 1.97 | 0.46 |
| 1:J:409:GLU:OE2 | 1:J:411:LEU:N | 2.49 | 0.46 |
| 1:L:153:GLU:N | 1:L:153:GLU:OE2 | 2.49 | 0.46 |
| 1:L:464:VAL:N | 4:L:616:HOH:O | 2.45 | 0.46 |
| 1:M:456:ARG:NH1 | 4:M:613:HOH:O | 2.48 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:P:181:ARG:CD | 1:P:193:LYS:HD3 | 2.43 | 0.46 |
| 1:B:222:LYS:HD2 | 1:B:223:HIS:CE1 | 2.51 | 0.46 |
| 1:B:363:PRO:HB2 | 1:B:365:ASP:OD1 | 2.16 | 0.46 |
| 1:C:175:GLN:NE2 | 1:F:296:GLU:OE2 | 2.43 | 0.46 |
| 1:C:313:GLU:HG3 | 1:C:320:TRP:HB3 | 1.98 | 0.46 |
| 1:H:464:VAL:O | 1:H:465:MET:HG2 | 2.16 | 0.46 |
| 1:J:424:ARG:NH2 | 1:J:465:MET:HG3 | 2.31 | 0.46 |
| 1:M:135:LEU:HD11 | 1:M:145:GLU:HB2 | 1.97 | 0.46 |
| 1:O:396:ARG:HB2 | 1:O:396:ARG:CZ | 2.46 | 0.46 |
| 1:B:395:ALA:O | 1:B:399:ARG:HG2 | 2.16 | 0.45 |
| 1:C:184:ASP:O | 1:C:193:LYS:NZ | 2.49 | 0.45 |
| 1:E:192:MET:HE1 | 1:E:209:MET:HG2 | 1.98 | 0.45 |
| 1:G:354:LEU:HA | 1:G:354:LEU:HD23 | 1.47 | 0.45 |
| 1:I:147:TRP:HZ2 | 1:I:152:LYS:HD2 | 1.81 | 0.45 |
| 1:C:192:MET:HG3 | 1:C:212:TYR:CE2 | 2.51 | 0.45 |
| 1:G:163:VAL:HG13 | 1:G:166:TYR:HB2 | 1.98 | 0.45 |
| 1:I:128:ARG:CZ | 1:I:150:LYS:HB3 | 2.44 | 0.45 |
| 1:K:257:LYS:HG2 | 1:K:260:ASN:H | 1.80 | 0.45 |
| 1:O:239:GLY:HA3 | 1:O:434:MET:HB3 | 1.98 | 0.45 |
| 1:B:190:PRO:HG2 | 1:B:241:ALA:HB2 | 1.96 | 0.45 |
| 1:B:257:LYS:HD2 | 1:B:259:GLU:OE2 | 2.16 | 0.45 |
| 1:G:188:ARG:NH2 | 2:G:500:SO4:O4 | 2.44 | 0.45 |
| 1:J:192:MET:HB2 | 1:J:288:CYS:SG | 2.56 | 0.45 |
| 1:C:192:MET:HE1 | 1:C:209:MET:SD | 2.57 | 0.45 |
| 1:C:363:PRO:HD2 | 1:C:366:TRP:CD2 | 2.51 | 0.45 |
| 1:H:182:LEU:HD13 | 1:O:460:PRO:HA | 1.99 | 0.45 |
| 1:I:168:ARG:HG3 | 4:I:615:HOH:O | 2.15 | 0.45 |
| 1:M:401:ARG:HD2 | 1:M:402:PRO:HD3 | 1.99 | 0.45 |
| 1:N:181:ARG:NE | 1:N:193:LYS:HB3 | 2.32 | 0.45 |
| 1:N:191:LEU:HG | 1:N:241:ALA:HB1 | 1.98 | 0.45 |
| 1:A:228:HIS:HB3 | 1:A:442:TYR:CG | 2.51 | 0.45 |
| 1:B:399:ARG:HD2 | 1:B:399:ARG:HA | 1.45 | 0.45 |
| 1:C:190:PRO:HG3 | 1:C:237:GLN:HB3 | 1.99 | 0.45 |
| 1:C:447:ARG:HA | 1:C:452:HIS:CD2 | 2.51 | 0.45 |
| 1:D:181:ARG:HH11 | 1:D:181:ARG:HD2 | 1.32 | 0.45 |
| 1:E:161:ARG:HG3 | 1:E:162:ASN:N | 2.31 | 0.45 |
| 1:F:316:LEU:HD21 | 1:F:352:LEU:HD11 | 1.97 | 0.45 |
| 1:G:181:ARG:HA | 1:G:193:LYS:HE2 | 1.97 | 0.45 |
| 1:H:168:ARG:HH11 | 1:H:168:ARG:HD3 | 1.47 | 0.45 |
| 1:L:242:LEU:HD21 | 1:L:256:LEU:HD11 | 1.99 | 0.45 |
| 1:O:404:ARG:HB3 | 1:O:404:ARG:CZ | 2.45 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:128:ARG:HE | 1:A:148:ASP:CG | 2.20 | 0.45 |
| 1:D:242:LEU:HD21 | 1:D:256:LEU:HD11 | 1.99 | 0.45 |
| 1:E:353:HIS:CB | 1:E:397:ILE:HD13 | 2.47 | 0.45 |
| 1:G:358:THR:HB | 1:G:403:VAL:HG23 | 1.98 | 0.45 |
| 1:I:367:SER:HB3 | 1:I:379:PHE:CD2 | 2.52 | 0.45 |
| 1:J:296:GLU:CD | 1:K:175:GLN:HE22 | 2.20 | 0.45 |
| 1:O:128:ARG:NE | 1:O:150:LYS:HB2 | 2.32 | 0.45 |
| 1:C:192:MET:SD | 1:C:193:LYS:N | 2.90 | 0.45 |
| 1:F:166:TYR:N | 1:F:166:TYR:CD1 | 2.85 | 0.45 |
| 1:G:403:VAL:HB | 1:G:417:LEU:HD21 | 1.99 | 0.45 |
| 1:G:423:ASP:OD1 | 1:G:425:GLN:N | 2.50 | 0.45 |
| 1:M:152:LYS:HB3 | 1:M:152:LYS:HE3 | 1.64 | 0.45 |
| 1:P:181:ARG:NH1 | 1:P:187:ASP:N | 2.65 | 0.45 |
| 1:A:217:LEU:HD12 | 1:A:220:ILE:HD11 | 1.98 | 0.45 |
| 1:B:296:GLU:OE2 | 1:E:175:GLN:NE2 | 2.48 | 0.45 |
| 1:B:376:ARG:O | 1:B:376:ARG:HD3 | 2.17 | 0.45 |
| 1:B:390:ASP:CG | 1:B:392:LYS:HE2 | 2.36 | 0.45 |
| 1:F:229:ARG:NH2 | 1:O:281:GLU:O | 2.49 | 0.45 |
| 1:F:257:LYS:HB2 | 1:F:259:GLU:OE1 | 2.16 | 0.45 |
| 1:I:423:ASP:CG | 1:I:426:ARG:HG3 | 2.37 | 0.45 |
| 1:M:273:MET:HE3 | 1:M:273:MET:HB3 | 1.87 | 0.45 |
| 1:N:389:LYS:HA | 1:N:394:ILE:HD11 | 1.99 | 0.45 |
| 1:O:128:ARG:HD2 | 1:O:150:LYS:HZ3 | 1.81 | 0.45 |
| 1:O:372:THR:O | 1:O:376:ARG:HD3 | 2.17 | 0.45 |
| 1:O:398:ALA:O | 1:O:401:ARG:NH2 | 2.50 | 0.45 |
| 1:D:202:THR:HG23 | 1:D:204:HIS:ND1 | 2.32 | 0.45 |
| 1:G:178:GLU:OE1 | 1:G:178:GLU:N | 2.47 | 0.45 |
| 1:H:162:ASN:HB2 | 1:H:204:HIS:CD2 | 2.51 | 0.45 |
| 1:H:447:ARG:O | 1:H:455:ASN:ND2 | 2.50 | 0.45 |
| 1:I:464:VAL:N | 4:I:610:HOH:O | 2.48 | 0.45 |
| 1:M:316:LEU:HB3 | 1:M:370:CYS:SG | 2.56 | 0.45 |
| 1:N:178:GLU:HG2 | 1:N:194:ILE:HG21 | 1.98 | 0.45 |
| 1:O:402:PRO:O | 1:O:405:GLU:HB2 | 2.17 | 0.45 |
| 1:P:318:LEU:O | 4:P:603:HOH:O | 2.21 | 0.45 |
| 1:A:301:THR:HG22 | 1:A:317:SER:HB3 | 1.98 | 0.45 |
| 1:A:447:ARG:HA | 1:A:452:HIS:CD2 | 2.52 | 0.45 |
| 1:L:408:THR:OG1 | 4:L:602:HOH:O | 2.14 | 0.45 |
| 1:N:162:ASN:OD1 | 1:N:203:GLY:C | 2.55 | 0.45 |
| 1:N:373:GLN:O | 1:N:373:GLN:HG3 | 2.15 | 0.45 |
| 1:N:412:LEU:HD13 | 1:N:438:TYR:CZ | 2.52 | 0.45 |
| 1:O:271:ASP:HB2 | 1:O:278:LEU:HD11 | 1.99 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:O:404:ARG:HH11 | 1:O:404:ARG:HB2 | 1.81 | 0.45 |
| 1:P:211:LYS:NZ | 4:P:605:HOH:O | 2.40 | 0.45 |
| 1:D:229:ARG:NH2 | 1:K:281:GLU:O | 2.50 | 0.44 |
| 1:F:380:THR:HG22 | 1:F:381:ALA:N | 2.32 | 0.44 |
| 1:J:362:LEU:HD22 | 1:J:366:TRP:CZ3 | 2.53 | 0.44 |
| 1:O:160:VAL:HG12 | 1:O:205:MET:HB2 | 1.99 | 0.44 |
| 1:O:237:GLN:NE2 | 1:O:283:CYS:O | 2.39 | 0.44 |
| 1:O:297:ARG:HE | 1:O:297:ARG:HB2 | 1.21 | 0.44 |
| 1:C:188:ARG:HE | 1:C:188:ARG:HB3 | 1.34 | 0.44 |
| 1:D:363:PRO:HD2 | 1:D:366:TRP:CD2 | 2.52 | 0.44 |
| 1:G:368:VAL:HG23 | 1:G:369:ARG:HG3 | 1.98 | 0.44 |
| 1:H:395:ALA:O | 1:H:399:ARG:HG2 | 2.17 | 0.44 |
| 1:J:353:HIS:HB3 | 1:J:397:ILE:HD13 | 1.99 | 0.44 |
| 1:L:390:ASP:C | 1:L:394:ILE:CD1 | 2.85 | 0.44 |
| 1:M:168:ARG:HD2 | 1:M:168:ARG:HA | 1.55 | 0.44 |
| 1:N:390:ASP:HB3 | 1:N:393:HIS:H | 1.82 | 0.44 |
| 1:P:151:ARG:HB2 | 1:P:153:GLU:OE1 | 2.17 | 0.44 |
| 1:P:281:GLU:OE2 | 1:P:282:PRO:HA | 2.16 | 0.44 |
| 1:A:195:GLN:O | 1:A:196:ARG:HG3 | 2.17 | 0.44 |
| 1:E:346:HIS:NE2 | 2:E:501:SO4:O3 | 2.49 | 0.44 |
| 1:F:307:ARG:NH1 | 1:F:348:ASN:OD1 | 2.51 | 0.44 |
| 1:F:354:LEU:O | 1:F:358:THR:HG23 | 2.17 | 0.44 |
| 1:H:181:ARG:HB2 | 1:H:193:LYS:CD | 2.40 | 0.44 |
| 1:L:313:GLU:HA | 1:L:318:LEU:HD12 | 1.99 | 0.44 |
| 1:B:162:ASN:OD1 | 1:B:202:THR:O | 2.34 | 0.44 |
| 1:C:376:ARG:HH22 | 1:C:381:ALA:HA | 1.83 | 0.44 |
| 1:H:258:PRO:HG3 | 1:H:332:ILE:HG23 | 2.00 | 0.44 |
| 1:I:192:MET:HB2 | 1:I:288:CYS:SG | 2.58 | 0.44 |
| 1:N:316:LEU:CB | 1:N:318:LEU:HD23 | 2.47 | 0.44 |
| 1:B:345:THR:O | 1:B:346:HIS:HD2 | 2.00 | 0.44 |
| 1:I:179:ARG:HH12 | 1:I:251:LEU:HD21 | 1.81 | 0.44 |
| 1:K:147:TRP:CE3 | 1:K:154:TYR:CE1 | 3.06 | 0.44 |
| 1:N:258:PRO:HD3 | 1:N:332:ILE:HG12 | 1.99 | 0.44 |
| 1:O:456:ARG:NH1 | 4:O:608:HOH:O | 2.51 | 0.44 |
| 1:G:196:ARG:HG3 | 1:G:196:ARG:NH2 | 2.33 | 0.44 |
| 1:G:447:ARG:HA | 1:G:452:HIS:CD2 | 2.53 | 0.44 |
| 1:M:239:GLY:HA3 | 1:M:434:MET:HB3 | 1.99 | 0.44 |
| 1:N:162:ASN:C | 1:N:162:ASN:ND2 | 2.71 | 0.44 |
| 1:N:352:LEU:CD1 | 1:N:378:LEU:HD23 | 2.48 | 0.44 |
| 1:P:151:ARG:O | 1:P:152:LYS:HB2 | 2.17 | 0.44 |
| 1:P:357:LYS:HA | 4:P:608:HOH:O | 2.16 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:315:VAL:HG12 | 1:A:316:LEU:HD13 | 2.00 | 0.44 |
| 1:F:404:ARG:H | 1:F:404:ARG:HG3 | 1.60 | 0.44 |
| 1:G:252:MET:CG | 1:G:322:TYR:HA | 2.48 | 0.44 |
| 1:G:345:THR:HG22 | 1:G:347:ASP:H | 1.82 | 0.44 |
| 1:M:179:ARG:HH11 | 1:M:179:ARG:HD2 | 1.68 | 0.44 |
| 1:N:346:HIS:CG | 1:N:346:HIS:O | 2.70 | 0.44 |
| 1:I:239:GLY:HA3 | 1:I:434:MET:HB3 | 1.98 | 0.44 |
| 1:J:188:ARG:NH2 | 1:N:186:GLU:CD | 2.70 | 0.44 |
| 1:K:391:PRO:HD2 | 1:K:392:LYS:NZ | 2.33 | 0.44 |
| 1:L:449:HIS:NE2 | 2:L:501:SO4:O2 | 2.51 | 0.44 |
| 1:M:179:ARG:CZ | 4:M:601:HOH:O | 2.66 | 0.44 |
| 1:N:260:ASN:HB2 | 1:N:289:ASP:HB2 | 1.99 | 0.44 |
| 1:P:191:LEU:HD23 | 1:P:287:ILE:HB | 2.00 | 0.44 |
| 1:P:373:GLN:O | 1:P:376:ARG:HG2 | 2.18 | 0.44 |
| 1:A:192:MET:HE1 | 1:A:209:MET:SD | 2.56 | 0.44 |
| 1:A:361:ARG:H | 1:A:361:ARG:NE | 2.16 | 0.44 |
| 1:F:257:LYS:HD2 | 1:F:259:GLU:OE1 | 2.17 | 0.44 |
| 1:H:163:VAL:CG2 | 1:H:166:TYR:CD2 | 2.99 | 0.44 |
| 1:I:128:ARG:HH12 | 1:I:196:ARG:CZ | 2.31 | 0.44 |
| 1:I:391:PRO:HD2 | 1:I:392:LYS:NZ | 2.33 | 0.44 |
| 1:J:374:GLU:O | 1:J:378:LEU:HD12 | 2.18 | 0.44 |
| 1:P:181:ARG:NH2 | 1:P:184:ASP:C | 2.70 | 0.44 |
| 1:A:356:GLU:HA | 1:A:360:GLY:O | 2.18 | 0.43 |
| 1:D:218:ASP:OD1 | 3:D:501:5XH:N1 | 2.51 | 0.43 |
| 1:E:361:ARG:HE | 1:E:361:ARG:HB3 | 1.39 | 0.43 |
| 1:F:458:LYS:HD3 | 1:F:458:LYS:HA | 1.64 | 0.43 |
| 1:I:192:MET:CG | 1:I:193:LYS:N | 2.81 | 0.43 |
| 1:J:151:ARG:O | 1:J:152:LYS:HG2 | 2.17 | 0.43 |
| 1:L:164:PRO:O | 1:L:168:ARG:HG3 | 2.18 | 0.43 |
| 1:M:404:ARG:HG3 | 1:M:405:GLU:CG | 2.47 | 0.43 |
| 1:B:316:LEU:HB2 | 1:B:318:LEU:HG | 2.00 | 0.43 |
| 1:C:307:ARG:HD2 | 1:C:346:HIS:HA | 2.00 | 0.43 |
| 1:E:362:LEU:HD22 | 1:E:366:TRP:CZ3 | 2.53 | 0.43 |
| 1:F:326:LEU:HG | 1:F:428:LEU:O | 2.18 | 0.43 |
| 1:G:163:VAL:HG12 | 1:G:166:TYR:HB2 | 1.99 | 0.43 |
| 1:M:316:LEU:HA | 1:M:375:ALA:HB1 | 2.00 | 0.43 |
| 1:N:191:LEU:O | 1:N:193:LYS:HG3 | 2.17 | 0.43 |
| 1:P:345:THR:CG2 | 1:P:347:ASP:H | 2.25 | 0.43 |
| 1:A:319:GLY:O | 1:A:424:ARG:NH1 | 2.51 | 0.43 |
| 1:C:255:ASP:CG | 1:C:257:LYS:NZ | 2.71 | 0.43 |
| 1:G:412:LEU:HD13 | 1:G:438:TYR:CZ | 2.53 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:L:307:ARG:HD2 | 1:L:346:HIS:HA | 1.99 | 0.43 |
| 1:N:313:GLU:HG2 | 1:N:424:ARG:HD2 | 2.01 | 0.43 |
| 1:O:188:ARG:HD3 | 1:O:189:PHE:CE2 | 2.52 | 0.43 |
| 1:O:388:CYS:O | 1:O:394:ILE:HD11 | 2.18 | 0.43 |
| 1:C:165:LYS:NZ | 1:L:373:GLN:CG | 2.79 | 0.43 |
| 1:G:128:ARG:HH22 | 1:G:196:ARG:NH2 | 2.16 | 0.43 |
| 1:I:423:ASP:HB3 | 1:I:426:ARG:CG | 2.47 | 0.43 |
| 1:B:229:ARG:NH2 | 1:G:281:GLU:O | 2.51 | 0.43 |
| 1:G:316:LEU:HD21 | 1:G:352:LEU:HD11 | 2.01 | 0.43 |
| 1:M:253:HIS:ND1 | 1:M:256:LEU:HG | 2.33 | 0.43 |
| 1:O:188:ARG:NH2 | 2:O:502:SO4:O4 | 2.51 | 0.43 |
| 1:O:228:HIS:HB3 | 1:O:442:TYR:CG | 2.53 | 0.43 |
| 1:P:356:GLU:HA | 1:P:360:GLY:O | 2.18 | 0.43 |
| 1:C:202:THR:HG22 | 4:C:602:HOH:O | 2.19 | 0.43 |
| 1:C:300:ARG:CD | 1:C:319:GLY:HA2 | 2.46 | 0.43 |
| 1:E:316:LEU:HB2 | 1:E:318:LEU:HG | 2.01 | 0.43 |
| 1:G:313:GLU:CD | 1:G:427:ARG:HH22 | 2.22 | 0.43 |
| 1:G:401:ARG:HD2 | 1:G:402:PRO:HD3 | 1.99 | 0.43 |
| 1:G:409:GLU:OE1 | 1:G:442:TYR:OH | 2.30 | 0.43 |
| 1:N:257:LYS:HG2 | 1:N:260:ASN:ND2 | 2.34 | 0.43 |
| 1:O:202:THR:HG23 | 1:O:204:HIS:ND1 | 2.34 | 0.43 |
| 1:O:373:GLN:HG3 | 1:O:374:GLU:OE1 | 2.19 | 0.43 |
| 1:C:377:ASP:HB3 | 1:L:164:PRO:HG2 | 2.00 | 0.43 |
| 1:E:447:ARG:HA | 1:E:452:HIS:CD2 | 2.52 | 0.43 |
| 1:K:128:ARG:HH22 | 1:K:196:ARG:HH21 | 1.66 | 0.43 |
| 1:K:181:ARG:HH12 | 1:K:193:LYS:HD2 | 1.79 | 0.43 |
| 1:O:309:TYR:OH | 1:O:335:GLU:OE1 | 2.31 | 0.43 |
| 1:P:217:LEU:HD12 | 1:P:220:ILE:HD11 | 1.99 | 0.43 |
| 1:D:179:ARG:HH22 | 1:N:179:ARG:NH2 | 2.16 | 0.43 |
| 1:F:426:ARG:HD2 | 1:F:426:ARG:HA | 1.72 | 0.43 |
| 1:N:252:MET:HE2 | 1:N:252:MET:HB2 | 1.85 | 0.43 |
| 1:O:151:ARG:O | 1:O:152:LYS:HB2 | 2.19 | 0.43 |
| 1:D:228:HIS:HB3 | 1:D:442:TYR:CG | 2.54 | 0.43 |
| 1:E:326:LEU:HG | 1:E:428:LEU:O | 2.19 | 0.43 |
| 1:F:191:LEU:HD23 | 1:F:287:ILE:HB | 2.01 | 0.43 |
| 1:H:367:SER:HA | 1:H:370:CYS:SG | 2.58 | 0.43 |
| 1:I:380:THR:OG1 | 1:I:381:ALA:N | 2.52 | 0.43 |
| 1:K:307:ARG:HD2 | 1:K:346:HIS:HA | 2.01 | 0.43 |
| 1:M:401:ARG:HD2 | 1:M:402:PRO:HD2 | 1.99 | 0.43 |
| 1:N:370:CYS:HB3 | 1:N:375:ALA:HB3 | 2.00 | 0.43 |
| 1:B:147:TRP:CD1 | 1:B:149:ARG:HD3 | 2.53 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:D:128:ARG:HH22 | 1:D:196:ARG:NH2 | 2.17 | 0.43 |
| 1:F:424:ARG:NH2 | 1:F:465:MET:HG3 | 2.34 | 0.43 |
| 1:I:402:PRO:HB3 | 1:I:404:ARG:HE | 1.83 | 0.43 |
| 1:K:164:PRO:O | 1:K:168:ARG:HB2 | 2.19 | 0.43 |
| 1:A:174:ILE:HD13 | 1:A:174:ILE:HG21 | 1.84 | 0.42 |
| 1:A:217:LEU:O | 1:A:220:ILE:HG13 | 2.18 | 0.42 |
| 1:A:239:GLY:HA3 | 1:A:434:MET:HB3 | 2.01 | 0.42 |
| 1:C:363:PRO:HD2 | 1:C:366:TRP:CE2 | 2.54 | 0.42 |
| 1:D:227:ASN:HB2 | 4:D:610:HOH:O | 2.18 | 0.42 |
| 1:F:257:LYS:HD2 | 1:F:259:GLU:CD | 2.40 | 0.42 |
| 1:M:229:ARG:NH1 | 4:M:606:HOH:O | 2.28 | 0.42 |
| 1:P:184:ASP:O | 1:P:184:ASP:CG | 2.56 | 0.42 |
| 1:P:409:GLU:OE1 | 1:P:442:TYR:OH | 2.32 | 0.42 |
| 1:A:316:LEU:HD21 | 1:A:352:LEU:HD21 | 2.00 | 0.42 |
| 1:A:356:GLU:CG | 1:A:362:LEU:HG | 2.49 | 0.42 |
| 1:D:173:GLU:HG3 | 1:D:291:GLY:CA | 2.49 | 0.42 |
| 1:D:179:ARG:NH2 | 1:N:179:ARG:NH2 | 2.67 | 0.42 |
| 1:D:257:LYS:HD2 | 1:D:259:GLU:OE2 | 2.18 | 0.42 |
| 1:F:149:ARG:HA | 1:F:149:ARG:HD2 | 1.83 | 0.42 |
| 1:F:195:GLN:C | 1:F:196:ARG:HG3 | 2.39 | 0.42 |
| 1:L:390:ASP:N | 4:L:617:HOH:O | 2.51 | 0.42 |
| 1:M:316:LEU:HA | 1:M:375:ALA:CB | 2.49 | 0.42 |
| 1:M:367:SER:HB3 | 1:M:379:PHE:CD2 | 2.54 | 0.42 |
| 1:N:184:ASP:OD2 | 1:N:193:LYS:HE3 | 2.19 | 0.42 |
| 1:N:380:THR:OG1 | 1:N:384:THR:O | 2.29 | 0.42 |
| 1:O:402:PRO:HD2 | 1:O:405:GLU:OE1 | 2.19 | 0.42 |
| 1:P:215:CYS:HA | 1:P:262:LEU:HA | 2.01 | 0.42 |
| 1:B:449:HIS:NE2 | 2:B:502:SO4:O4 | 2.53 | 0.42 |
| 1:H:362:LEU:HD11 | 1:H:385:LEU:HD21 | 2.01 | 0.42 |
| 1:L:238:VAL:HG13 | 1:L:287:ILE:HD11 | 2.02 | 0.42 |
| 1:M:237:GLN:NE2 | 1:M:283:CYS:O | 2.37 | 0.42 |
| 1:N:253:HIS:ND1 | 1:N:256:LEU:HG | 2.35 | 0.42 |
| 1:P:258:PRO:HD3 | 1:P:332:ILE:HG12 | 2.00 | 0.42 |
| 1:A:217:LEU:HD22 | 1:A:259:GLU:HG3 | 2.02 | 0.42 |
| 1:D:369:ARG:O | 1:D:369:ARG:HG2 | 2.20 | 0.42 |
| 1:E:148:ASP:OD2 | 1:E:151:ARG:HG3 | 2.19 | 0.42 |
| 1:J:281:GLU:O | 1:N:229:ARG:NH2 | 2.52 | 0.42 |
| 1:K:401:ARG:HA | 1:K:401:ARG:HD2 | 1.66 | 0.42 |
| 1:O:380:THR:H | 1:O:380:THR:HG1 | 1.60 | 0.42 |
| 1:A:365:ASP:O | 1:A:368:VAL:HG22 | 2.20 | 0.42 |
| 1:D:404:ARG:HA | 1:D:413:CYS:SG | 2.60 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:F:363:PRO:HD2 | 1:F:366:TRP:CE2 | 2.54 | 0.42 |
| 1:H:230:HIS:CE1 | 1:H:279:PRO:HG2 | 2.55 | 0.42 |
| 1:J:168:ARG:HH11 | 1:J:168:ARG:HD3 | 1.32 | 0.42 |
| 1:J:357:LYS:NZ | 1:J:400:ALA:O | 2.28 | 0.42 |
| 1:J:363:PRO:HD2 | 1:J:366:TRP:CD2 | 2.54 | 0.42 |
| 1:P:295:ASP:OD1 | 1:P:295:ASP:C | 2.58 | 0.42 |
| 1:P:370:CYS:HB3 | 1:P:375:ALA:HB3 | 2.00 | 0.42 |
| 1:D:380:THR:HG22 | 1:D:381:ALA:N | 2.34 | 0.42 |
| 1:D:386:GLN:HG3 | 1:D:387:PRO:HD2 | 2.00 | 0.42 |
| 1:F:177:MET:HE1 | 1:F:209:MET:SD | 2.60 | 0.42 |
| 1:I:350:GLU:HG3 | 1:I:393:HIS:HB3 | 2.02 | 0.42 |
| 1:K:316:LEU:HB2 | 1:K:318:LEU:HG | 2.01 | 0.42 |
| 1:M:313:GLU:OE2 | 1:M:427:ARG:NH1 | 2.50 | 0.42 |
| 1:N:402:PRO:CD | 1:N:405:GLU:CG | 2.91 | 0.42 |
| 1:P:349:LEU:HD12 | 1:P:349:LEU:HA | 1.78 | 0.42 |
| 1:P:363:PRO:HD2 | 1:P:366:TRP:CD2 | 2.54 | 0.42 |
| 1:A:380:THR:HG22 | 1:A:381:ALA:N | 2.35 | 0.42 |
| 1:B:378:LEU:O | 1:B:385:LEU:HD12 | 2.20 | 0.42 |
| 1:C:154:TYR:OH | 1:D:270:VAL:HG11 | 2.19 | 0.42 |
| 1:G:380:THR:HG22 | 1:G:381:ALA:N | 2.35 | 0.42 |
| 1:H:177:MET:HB2 | 1:H:177:MET:HE3 | 1.84 | 0.42 |
| 1:H:188:ARG:NH2 | 2:H:502:SO4:O4 | 2.48 | 0.42 |
| 1:H:218:ASP:OD1 | 3:H:503:5XH:N1 | 2.53 | 0.42 |
| 1:I:208:VAL:C | 1:I:209:MET:HG3 | 2.40 | 0.42 |
| 1:I:357:LYS:HA | 1:I:357:LYS:HD2 | 1.77 | 0.42 |
| 1:L:356:GLU:HA | 1:L:360:GLY:O | 2.19 | 0.42 |
| 1:N:128:ARG:O | 1:N:149:ARG:HG2 | 2.20 | 0.42 |
| 1:N:323:SER:HB3 | 1:N:427:ARG:NH1 | 2.35 | 0.42 |
| 1:N:402:PRO:CD | 1:N:405:GLU:OE1 | 2.45 | 0.42 |
| 1:A:426:ARG:HH11 | 1:A:426:ARG:HD2 | 1.39 | 0.42 |
| 1:I:150:LYS:HD2 | 1:I:150:LYS:O | 2.19 | 0.42 |
| 1:I:295:ASP:OD2 | 1:I:297:ARG:NH1 | 2.53 | 0.42 |
| 1:J:353:HIS:CB | 1:J:397:ILE:HD13 | 2.49 | 0.42 |
| 1:K:271:ASP:OD2 | 1:K:274:THR:HG23 | 2.19 | 0.42 |
| 1:L:192:MET:HG2 | 1:L:193:LYS:N | 2.34 | 0.42 |
| 1:O:247:THR:HB | 1:O:460:PRO:HG2 | 2.02 | 0.42 |
| 1:P:345:THR:HG23 | 1:P:350:GLU:OE1 | 2.20 | 0.42 |
| 1:B:385:LEU:HD12 | 1:B:385:LEU:HA | 1.74 | 0.42 |
| 1:K:177:MET:HE3 | 1:K:209:MET:SD | 2.60 | 0.42 |
| 1:M:300:ARG:HD3 | 1:M:300:ARG:C | 2.41 | 0.42 |
| 1:N:313:GLU:HA | 1:N:318:LEU:HB2 | 2.01 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:P:373:GLN:HA | 1:P:376:ARG:NE | 2.35 | 0.42 |
| 1:B:195:GLN:HG2 | 1:B:209:MET:HA | 2.02 | 0.42 |
| 1:D:185:VAL:N | 4:D:604:HOH:O | 2.34 | 0.42 |
| 1:G:242:LEU:HD21 | 1:G:256:LEU:HD11 | 2.01 | 0.42 |
| 1:G:326:LEU:CD2 | 1:G:429:ASN:HA | 2.49 | 0.42 |
| 1:H:165:LYS:HE3 | 1:H:168:ARG:NH2 | 2.35 | 0.42 |
| 1:H:354:LEU:HD23 | 1:H:354:LEU:HA | 1.87 | 0.42 |
| 1:J:160:VAL:CG1 | 1:J:166:TYR:HB3 | 2.50 | 0.42 |
| 1:J:193:LYS:O | 1:J:210:PRO:HD3 | 2.20 | 0.42 |
| 1:J:349:LEU:HB2 | 1:J:378:LEU:HD23 | 2.02 | 0.42 |
| 1:L:367:SER:HB2 | 1:L:379:PHE:CD2 | 2.55 | 0.42 |
| 1:O:181:ARG:HD2 | 1:O:193:LYS:HB3 | 2.02 | 0.42 |
| 1:A:323:SER:O | 1:A:427:ARG:NH1 | 2.47 | 0.41 |
| 1:D:217:LEU:HD23 | 1:D:259:GLU:HG3 | 2.03 | 0.41 |
| 1:E:151:ARG:NH2 | 1:E:196:ARG:HH22 | 2.07 | 0.41 |
| 1:H:163:VAL:HG21 | 1:H:166:TYR:CD2 | 2.50 | 0.41 |
| 1:H:177:MET:HE1 | 1:H:207:ILE:HD13 | 2.01 | 0.41 |
| 1:H:376:ARG:HG2 | 1:H:376:ARG:HH11 | 1.85 | 0.41 |
| 1:I:160:VAL:HG12 | 1:I:166:TYR:HB3 | 2.02 | 0.41 |
| 1:M:228:HIS:HB3 | 1:M:442:TYR:CG | 2.55 | 0.41 |
| 1:M:380:THR:HG22 | 1:M:381:ALA:N | 2.35 | 0.41 |
| 1:M:392:LYS:HD2 | 1:M:392:LYS:HA | 1.71 | 0.41 |
| 1:N:162:ASN:C | 1:N:162:ASN:HD22 | 2.22 | 0.41 |
| 1:O:386:GLN:HG2 | 1:O:387:PRO:N | 2.35 | 0.41 |
| 1:A:146:ALA:HB3 | 1:A:155:CYS:SG | 2.60 | 0.41 |
| 1:H:316:LEU:HD21 | 1:H:352:LEU:HD11 | 2.02 | 0.41 |
| 1:I:424:ARG:NH2 | 1:I:465:MET:HG3 | 2.34 | 0.41 |
| 1:M:447:ARG:O | 1:M:455:ASN:ND2 | 2.51 | 0.41 |
| 1:O:148:ASP:OD2 | 1:O:151:ARG:CB | 2.69 | 0.41 |
| 1:P:309:TYR:HD1 | 1:P:331:CYS:HB2 | 1.85 | 0.41 |
| 1:B:134:LEU:HD11 | 1:B:137:GLU:HG2 | 2.01 | 0.41 |
| 1:C:132:LEU:HD12 | 1:C:145:GLU:HG2 | 2.01 | 0.41 |
| 1:C:229:ARG:NH2 | 1:H:281:GLU:HB3 | 2.35 | 0.41 |
| 1:C:393:HIS:HD2 | 4:C:620:HOH:O | 2.03 | 0.41 |
| 1:E:307:ARG:NH1 | 1:E:348:ASN:OD1 | 2.53 | 0.41 |
| 1:G:353:HIS:NE2 | 1:G:386:GLN:O | 2.35 | 0.41 |
| 1:J:449:HIS:CG | 1:J:450:PRO:HD2 | 2.55 | 0.41 |
| 1:K:181:ARG:NH1 | 1:K:193:LYS:CG | 2.83 | 0.41 |
| 1:K:309:TYR:HD1 | 1:K:331:CYS:HB2 | 1.86 | 0.41 |
| 1:M:380:THR:HB | 1:M:383:GLY:H | 1.86 | 0.41 |
| 1:N:380:THR:HG22 | 1:N:381:ALA:N | 2.35 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:O:373:GLN:HG3 | 1:O:374:GLU:N | 2.36 | 0.41 |
| 1:B:151:ARG:HG2 | 1:B:153:GLU:CD | 2.29 | 0.41 |
| 1:C:217:LEU:O | 1:C:221:MET:HG3 | 2.20 | 0.41 |
| 1:C:238:VAL:HG11 | 1:C:329:MET:SD | 2.60 | 0.41 |
| 1:F:218:ASP:OD2 | 4:F:601:HOH:O | 2.21 | 0.41 |
| 1:F:449:HIS:NE2 | 2:F:502:SO4:O4 | 2.52 | 0.41 |
| 1:G:191:LEU:HG | 1:G:241:ALA:HB1 | 2.02 | 0.41 |
| 1:H:228:HIS:HB3 | 1:H:442:TYR:CG | 2.55 | 0.41 |
| 1:J:210:PRO:HG2 | 1:J:212:TYR:OH | 2.19 | 0.41 |
| 1:L:238:VAL:HG11 | 1:L:329:MET:SD | 2.60 | 0.41 |
| 1:M:301:THR:HB | 1:M:317:SER:HB3 | 2.03 | 0.41 |
| 1:N:147:TRP:CH2 | 1:N:152:LYS:HG3 | 2.55 | 0.41 |
| 1:O:128:ARG:HD2 | 1:O:128:ARG:HH21 | 1.54 | 0.41 |
| 1:P:304:VAL:H | 1:P:314:VAL:HG11 | 1.85 | 0.41 |
| 1:A:443:PHE:O | 1:A:446:CYS:HB3 | 2.21 | 0.41 |
| 1:J:222:LYS:CG | 1:J:223:HIS:CE1 | 3.03 | 0.41 |
| 1:N:181:ARG:HD3 | 1:N:181:ARG:HA | 1.78 | 0.41 |
| 1:N:257:LYS:NZ | 1:N:306:THR:OG1 | 2.29 | 0.41 |
| 1:O:181:ARG:HH11 | 1:O:181:ARG:HD2 | 1.52 | 0.41 |
| 1:P:181:ARG:NH1 | 1:P:187:ASP:H | 2.19 | 0.41 |
| 1:P:316:LEU:HD21 | 1:P:352:LEU:HD21 | 2.01 | 0.41 |
| 1:P:380:THR:HG21 | 1:P:384:THR:H | 1.84 | 0.41 |
| 1:A:349:LEU:HD23 | 1:A:349:LEU:O | 2.21 | 0.41 |
| 1:G:441:LYS:HD3 | 1:G:442:TYR:CZ | 2.56 | 0.41 |
| 1:H:128:ARG:HG3 | 1:H:150:LYS:HG3 | 2.02 | 0.41 |
| 1:I:128:ARG:HG2 | 1:I:129:PHE:CE2 | 2.56 | 0.41 |
| 1:I:152:LYS:HD3 | 1:I:152:LYS:HA | 1.89 | 0.41 |
| 1:J:128:ARG:HH22 | 1:J:196:ARG:NH2 | 2.19 | 0.41 |
| 1:K:169:ASP:OD1 | 1:K:169:ASP:N | 2.54 | 0.41 |
| 1:L:447:ARG:HA | 1:L:452:HIS:CD2 | 2.55 | 0.41 |
| 1:P:147:TRP:CZ2 | 1:P:152:LYS:HA | 2.55 | 0.41 |
| 1:C:217:LEU:HG | 1:C:221:MET:SD | 2.61 | 0.41 |
| 1:E:128:ARG:HA | 1:E:149:ARG:HD2 | 2.01 | 0.41 |
| 1:E:273:MET:SD | 1:P:272:PRO:HB2 | 2.60 | 0.41 |
| 1:H:376:ARG:O | 1:H:376:ARG:NH1 | 2.54 | 0.41 |
| 1:I:192:MET:HE1 | 1:I:209:MET:SD | 2.61 | 0.41 |
| 1:I:373:GLN:HG2 | 1:I:374:GLU:N | 2.34 | 0.41 |
| 1:K:257:LYS:HG3 | 1:K:259:GLU:HB2 | 2.02 | 0.41 |
| 1:K:356:GLU:HA | 1:K:360:GLY:O | 2.21 | 0.41 |
| 1:K:392:LYS:CD | 1:K:392:LYS:N | 2.84 | 0.41 |
| 1:M:174:ILE:O | 1:M:178:GLU:HG3 | 2.21 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:N:363:PRO:HD2 | 1:N:366:TRP:CD2 | 2.56 | 0.41 |
| 1:O:278:LEU:N | 1:O:278:LEU:CD1 | 2.79 | 0.41 |
| 1:H:361:ARG:N | 1:H:361:ARG:CD | 2.82 | 0.41 |
| 1:P:316:LEU:HD12 | 1:P:375:ALA:HB1 | 2.03 | 0.41 |
| 1:A:192:MET:HE2 | 3:A:501:5XH:C15 | 2.51 | 0.41 |
| 1:A:314:VAL:HG22 | 1:A:320:TRP:CD1 | 2.56 | 0.41 |
| 1:B:318:LEU:HD23 | 1:B:370:CYS:HA | 2.02 | 0.41 |
| 1:G:295:ASP:OD1 | 1:G:296:GLU:N | 2.52 | 0.41 |
| 1:G:401:ARG:HD2 | 1:G:402:PRO:HD2 | 2.01 | 0.41 |
| 1:H:356:GLU:OE2 | 1:H:361:ARG:HB3 | 2.21 | 0.41 |
| 1:H:396:ARG:HG3 | 1:H:396:ARG:NH1 | 2.29 | 0.41 |
| 1:I:161:ARG:HG3 | 1:I:162:ASN:H | 1.86 | 0.41 |
| 1:J:297:ARG:HE | 1:J:297:ARG:HB2 | 1.57 | 0.41 |
| 1:J:349:LEU:HD11 | 1:J:386:GLN:O | 2.20 | 0.41 |
| 1:K:392:LYS:H | 1:K:392:LYS:HD2 | 1.86 | 0.41 |
| 1:O:316:LEU:C | 1:O:318:LEU:HD13 | 2.41 | 0.41 |
| 1:P:181:ARG:CD | 1:P:193:LYS:HG2 | 2.50 | 0.41 |
| 1:A:135:LEU:HD11 | 1:A:145:GLU:HB2 | 2.03 | 0.41 |
| 1:A:344:ASP:O | 1:A:396:ARG:NH1 | 2.54 | 0.41 |
| 1:D:412:LEU:HB2 | 1:D:438:TYR:CE1 | 2.56 | 0.41 |
| 1:E:281:GLU:O | 1:P:229:ARG:NH2 | 2.54 | 0.41 |
| 1:E:299:SER:HB3 | 1:E:302:ALA:HB2 | 2.01 | 0.41 |
| 1:H:220:ILE:HA | 1:H:224:GLY:O | 2.21 | 0.41 |
| 1:H:227:ASN:HD21 | 1:H:230:HIS:CD2 | 2.39 | 0.41 |
| 1:I:229:ARG:NH2 | 1:M:281:GLU:O | 2.53 | 0.41 |
| 1:I:362:LEU:N | 1:I:362:LEU:HD23 | 2.35 | 0.41 |
| 1:J:139:THR:HG22 | 1:J:166:TYR:OH | 2.20 | 0.41 |
| 1:K:147:TRP:HE3 | 1:K:154:TYR:CE1 | 2.38 | 0.41 |
| 1:L:295:ASP:OD2 | 1:L:297:ARG:NH1 | 2.54 | 0.41 |
| 1:L:316:LEU:HD21 | 1:L:352:LEU:HD11 | 2.02 | 0.41 |
| 1:L:394:ILE:HD12 | 1:L:394:ILE:H | 1.86 | 0.41 |
| 1:M:215:CYS:HB2 | 1:M:258:PRO:O | 2.20 | 0.41 |
| 1:M:378:LEU:O | 1:M:386:GLN:HG3 | 2.20 | 0.41 |
| 1:P:247:THR:HB | 1:P:460:PRO:HG2 | 2.03 | 0.41 |
| 1:P:373:GLN:HE21 | 1:P:373:GLN:HB2 | 1.38 | 0.41 |
| 1:A:321:MET:HB3 | 1:A:322:TYR:H | 1.56 | 0.40 |
| 1:B:200:ASN:OD1 | 1:B:201:GLU:N | 2.54 | 0.40 |
| 1:B:238:VAL:HG11 | 1:B:329:MET:SD | 2.61 | 0.40 |
| 1:C:134:LEU:HD21 | 1:C:137:GLU:CG | 2.51 | 0.40 |
| 1:C:390:ASP:OD2 | 1:C:392:LYS:HB2 | 2.21 | 0.40 |
| 1:G:179:ARG:HE | 1:G:179:ARG:HB2 | 1.69 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:J:195:GLN:N | 1:J:195:GLN:CD | 2.74 | 0.40 |
| 1:L:376:ARG:HD3 | 1:L:376:ARG:O | 2.20 | 0.40 |
| 1:O:242:LEU:HD21 | 1:O:256:LEU:HD11 | 2.02 | 0.40 |
| 1:A:181:ARG:NH1 | 1:A:185:VAL:CA | 2.84 | 0.40 |
| 1:A:237:GLN:OE1 | 1:A:284:ARG:HA | 2.21 | 0.40 |
| 1:C:449:HIS:NE2 | 2:C:502:SO4:O4 | 2.52 | 0.40 |
| 1:F:313:GLU:OE2 | 4:F:603:HOH:O | 2.22 | 0.40 |
| 1:F:373:GLN:OE1 | 4:F:602:HOH:O | 2.22 | 0.40 |
| 1:G:192:MET:HE2 | 1:G:192:MET:HB3 | 1.89 | 0.40 |
| 1:I:418:ASN:HB3 | 1:I:428:LEU:HG | 2.04 | 0.40 |
| 1:K:177:MET:CE | 1:K:194:ILE:HB | 2.52 | 0.40 |
| 1:K:254:THR:O | 1:K:305:SER:OG | 2.34 | 0.40 |
| 1:N:162:ASN:ND2 | 1:N:162:ASN:O | 2.48 | 0.40 |
| 1:N:313:GLU:OE1 | 1:N:427:ARG:NH1 | 2.55 | 0.40 |
| 1:O:298:HIS:HE1 | 1:O:300:ARG:NH2 | 2.19 | 0.40 |
| 1:O:316:LEU:CD1 | 1:O:375:ALA:HB1 | 2.51 | 0.40 |
| 1:O:374:GLU:O | 1:O:378:LEU:HD12 | 2.21 | 0.40 |
| 1:O:412:LEU:HB2 | 1:O:438:TYR:CE1 | 2.57 | 0.40 |
| 1:B:409:GLU:OE2 | 1:B:411:LEU:N | 2.55 | 0.40 |
| 1:D:380:THR:OG1 | 1:D:384:THR:O | 2.32 | 0.40 |
| 1:G:307:ARG:HD2 | 1:G:346:HIS:HA | 2.04 | 0.40 |
| 1:K:238:VAL:HG11 | 1:K:329:MET:SD | 2.62 | 0.40 |
| 1:M:202:THR:HG23 | 1:M:204:HIS:ND1 | 2.36 | 0.40 |
| 1:A:181:ARG:NH1 | 1:A:185:VAL:C | 2.75 | 0.40 |
| 1:D:176:PHE:O | 1:D:180:VAL:HG23 | 2.22 | 0.40 |
| 1:D:258:PRO:HG3 | 1:D:332:ILE:HG23 | 2.03 | 0.40 |
| 1:F:308:HIS:ND1 | 1:F:343:TYR:O | 2.53 | 0.40 |
| 1:F:446:CYS:O | 1:F:452:HIS:HB2 | 2.21 | 0.40 |
| 1:H:375:ALA:HA | 1:H:378:LEU:HD13 | 2.02 | 0.40 |
| 1:K:299:SER:HB2 | 1:K:302:ALA:HB2 | 2.02 | 0.40 |
| 1:N:215:CYS:HB2 | 1:N:258:PRO:O | 2.22 | 0.40 |
| 1:O:295:ASP:C | 1:O:295:ASP:OD1 | 2.60 | 0.40 |
| 1:O:449:HIS:ND1 | 1:O:451:ASN:HB2 | 2.37 | 0.40 |
| 1:B:390:ASP:O | 1:B:394:ILE:HG12 | 2.21 | 0.40 |
| 1:C:399:ARG:HH11 | 1:C:399:ARG:HD2 | 1.53 | 0.40 |
| 1:D:357:LYS:NZ | 1:D:397:ILE:O | 2.54 | 0.40 |
| 1:F:313:GLU:HA | 1:F:318:LEU:HB2 | 2.02 | 0.40 |
| 1:G:228:HIS:HB3 | 1:G:442:TYR:CG | 2.56 | 0.40 |
| 1:H:227:ASN:OD1 | 1:H:230:HIS:HD2 | 2.03 | 0.40 |
| 1:I:300:ARG:NH1 | 4:I:602:HOH:O | 2.18 | 0.40 |
| 1:J:269:SER:HB2 | 1:J:278:LEU:HB2 | 2.03 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:J:318:LEU:HD23 | 1:J:370:CYS:HA | 2.04 | 0.40 |
| 1:K:222:LYS:HD3 | 1:K:223:HIS:CD2 | 2.56 | 0.40 |
| 1:K:363:PRO:HD2 | 1:K:366:TRP:CE2 | 2.56 | 0.40 |
| 1:K:449:HIS:NE2 | 2:K:501:SO4:O2 | 2.52 | 0.40 |
| 1:L:404:ARG:HG3 | 1:L:404:ARG:HH11 | 1.86 | 0.40 |
| 1:N:313:GLU:OE1 | 1:N:427:ARG:CZ | 2.69 | 0.40 |
| 1:N:354:LEU:HD21 | 1:N:397:ILE:HA | 2.03 | 0.40 |
| 1:P:378:LEU:N | 4:P:601:HOH:O | 2.53 | 0.40 |

All (8) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:J:361:ARG:NH1 | 1:O:361:ARG:NH1[1_455] | 1.32 | 0.88 |
| 1:A:404:ARG:NH1 | 1:C:404:ARG:NE[1_445] | 1.80 | 0.40 |
| 1:A:404:ARG:NE | 1:C:404:ARG:NH2[1_445] | 1.98 | 0.22 |
| 1:A:404:ARG:NH1 | 1:C:404:ARG:NH2[1_445] | 2.05 | 0.15 |
| 1:K:168:ARG:NH2 | 1:M:377:ASP:OD2[2_445] | 2.06 | 0.14 |
| 1:J:361:ARG:NH1 | 1:O:361:ARG:CZ[1_455] | 2.10 | 0.10 |
| 1:A:404:ARG:NH1 | 1:C:404:ARG:CZ[1_445] | 2.15 | 0.05 |
| 1:J:361:ARG:CZ | 1:O:361:ARG:CZ[1_455] | 2.19 | 0.01 |

## 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 | 337/354 (95%) | 330 (98%) | 7 (2%) | 0 | 100 | 100 |
| 1 | B | 337/354 (95%) | 326 (97%) | 11 (3%) | 0 | 100 | 100 |
| 1 | C | 337/354 (95%) | 326 (97%) | 10 (3%) | 1 (0%) | 41 | 64 |
| 1 | D | 337/354 (95%) | 328 (97%) | 9 (3%) | 0 | 100 | 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 1 | E | 337/354 (95%) | 325 (96%) | 12 (4%) | 0 | 100 | 100 |
| 1 | F | 337/354 (95%) | 328 (97%) | 9 (3%) | 0 | 100 | 100 |
| 1 | G | 337/354 (95%) | 324 (96%) | 12 (4%) | 1 (0%) | 41 | 64 |
| 1 | H | 337/354 (95%) | 324 (96%) | 11 (3%) | 2 (1%) | 25 | 47 |
| 1 | I | 337/354 (95%) | 328 (97%) | 9 (3%) | 0 | 100 | 100 |
| 1 | J | 337/354 (95%) | 326 (97%) | 11 (3%) | 0 | 100 | 100 |
| 1 | K | 337/354 (95%) | 327 (97%) | 10 (3%) | 0 | 100 | 100 |
| 1 | L | 337/354 (95%) | 326 (97%) | 11 (3%) | 0 | 100 | 100 |
| 1 | M | 337/354 (95%) | 328 (97%) | 9 (3%) | 0 | 100 | 100 |
| 1 | N | 337/354 (95%) | 326 (97%) | 11 (3%) | 0 | 100 | 100 |
| 1 | O | 337/354 (95%) | 326 (97%) | 11 (3%) | 0 | 100 | 100 |
| 1 | P | 337/354 (95%) | 325 (96%) | 12 (4%) | 0 | 100 | 100 |
| All | All | 5392/5664 (95%) | 5223 (97%) | 165 (3%) | 4 (0%) | 51 | 75 |

All (4) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | G | 457 | SER |
| 1 | C | 153 | GLU |
| 1 | H | 457 | SER |
| 1 | H | 321 | MET |

### 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 | 305/317 (96%) | 297 (97%) | 8 (3%) | 46 | 72 |
| 1 | B | 305/317 (96%) | 293 (96%) | 12 (4%) | 32 | 58 |
| 1 | C | 305/317 (96%) | 299 (98%) | 6 (2%) | 55 | 78 |
| 1 | D | 305/317 (96%) | 296 (97%) | 9 (3%) | 41 | 67 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 1 | E | 305/317 (96%) | 293 (96%) | 12 (4%) | 32 58 |
| 1 | F | 305/317 (96%) | 297 (97%) | 8 (3%) | 46 72 |
| 1 | G | 305/317 (96%) | 294 (96%) | 11 (4%) | 35 61 |
| 1 | H | 305/317 (96%) | 298 (98%) | 7 (2%) | 50 75 |
| 1 | I | 305/317 (96%) | 301 (99%) | 4 (1%) | 69 86 |
| 1 | J | 305/317 (96%) | 300 (98%) | 5 (2%) | 62 82 |
| 1 | K | 305/317 (96%) | 296 (97%) | 9 (3%) | 41 67 |
| 1 | L | 305/317 (96%) | 300 (98%) | 5 (2%) | 62 82 |
| 1 | M | 305/317 (96%) | 294 (96%) | 11 (4%) | 35 61 |
| 1 | N | 305/317 (96%) | 298 (98%) | 7 (2%) | 50 75 |
| 1 | O | 305/317 (96%) | 294 (96%) | 11 (4%) | 35 61 |
| 1 | P | 305/317 (96%) | 295 (97%) | 10 (3%) | 38 64 |
| All | All | 4880/5072 (96%) | 4745 (97%) | 135 (3%) | 43 69 |

All (135) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 150 | LYS |
| 1 | A | 151 | ARG |
| 1 | A | 202 | THR |
| 1 | A | 245 | PHE |
| 1 | A | 269 | SER |
| 1 | A | 361 | ARG |
| 1 | A | 392 | LYS |
| 1 | A | 446 | CYS |
| 1 | B | 151 | ARG |
| 1 | B | 162 | ASN |
| 1 | B | 181 | ARG |
| 1 | B | 192 | MET |
| 1 | B | 211 | LYS |
| 1 | B | 222 | LYS |
| 1 | B | 245 | PHE |
| 1 | B | 257 | LYS |
| 1 | B | 357 | LYS |
| 1 | B | 404 | ARG |
| 1 | B | 426 | ARG |
| 1 | B | 446 | CYS |
| 1 | C | 153 | GLU |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | C | 162 | ASN |
| 1 | C | 245 | PHE |
| 1 | C | 257 | LYS |
| 1 | C | 267 | ASP |
| 1 | C | 357 | LYS |
| 1 | D | 149 | ARG |
| 1 | D | 162 | ASN |
| 1 | D | 168 | ARG |
| 1 | D | 181 | ARG |
| 1 | D | 245 | PHE |
| 1 | D | 267 | ASP |
| 1 | D | 297 | ARG |
| 1 | D | 393 | HIS |
| 1 | D | 426 | ARG |
| 1 | E | 151 | ARG |
| 1 | E | 161 | ARG |
| 1 | E | 168 | ARG |
| 1 | E | 192 | MET |
| 1 | E | 193 | LYS |
| 1 | E | 196 | ARG |
| 1 | E | 245 | PHE |
| 1 | E | 295 | ASP |
| 1 | E | 374 | GLU |
| 1 | E | 376 | ARG |
| 1 | E | 404 | ARG |
| 1 | E | 457 | SER |
| 1 | F | 193 | LYS |
| 1 | F | 245 | PHE |
| 1 | F | 269 | SER |
| 1 | F | 300 | ARG |
| 1 | F | 357 | LYS |
| 1 | F | 361 | ARG |
| 1 | F | 392 | LYS |
| 1 | F | 458 | LYS |
| 1 | G | 150 | LYS |
| 1 | G | 151 | ARG |
| 1 | G | 161 | ARG |
| 1 | G | 168 | ARG |
| 1 | G | 192 | MET |
| 1 | G | 245 | PHE |
| 1 | G | 252 | MET |
| 1 | G | 376 | ARG |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | G | 401 | ARG |
| 1 | G | 404 | ARG |
| 1 | G | 426 | ARG |
| 1 | H | 161 | ARG |
| 1 | H | 245 | PHE |
| 1 | H | 250 | HIS |
| 1 | H | 361 | ARG |
| 1 | H | 392 | LYS |
| 1 | H | 404 | ARG |
| 1 | H | 426 | ARG |
| 1 | I | 128 | ARG |
| 1 | I | 151 | ARG |
| 1 | I | 162 | ASN |
| 1 | I | 297 | ARG |
| 1 | J | 130 | LYS |
| 1 | J | 151 | ARG |
| 1 | J | 165 | LYS |
| 1 | J | 245 | PHE |
| 1 | J | 265 | SER |
| 1 | K | 168 | ARG |
| 1 | K | 169 | ASP |
| 1 | K | 245 | PHE |
| 1 | K | 257 | LYS |
| 1 | K | 265 | SER |
| 1 | K | 269 | SER |
| 1 | K | 373 | GLN |
| 1 | K | 376 | ARG |
| 1 | K | 458 | LYS |
| 1 | L | 153 | GLU |
| 1 | L | 165 | LYS |
| 1 | L | 188 | ARG |
| 1 | L | 245 | PHE |
| 1 | L | 426 | ARG |
| 1 | M | 128 | ARG |
| 1 | M | 179 | ARG |
| 1 | M | 181 | ARG |
| 1 | M | 196 | ARG |
| 1 | M | 245 | PHE |
| 1 | M | 273 | MET |
| 1 | M | 295 | ASP |
| 1 | M | 323 | SER |
| 1 | M | 390 | ASP |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | M | 399 | ARG |
| 1 | M | 401 | ARG |
| 1 | N | 150 | LYS |
| 1 | N | 162 | ASN |
| 1 | N | 245 | PHE |
| 1 | N | 307 | ARG |
| 1 | N | 313 | GLU |
| 1 | N | 404 | ARG |
| 1 | N | 458 | LYS |
| 1 | O | 133 | SER |
| 1 | O | 168 | ARG |
| 1 | O | 192 | MET |
| 1 | O | 245 | PHE |
| 1 | O | 295 | ASP |
| 1 | O | 361 | ARG |
| 1 | O | 366 | TRP |
| 1 | O | 373 | GLN |
| 1 | O | 376 | ARG |
| 1 | O | 401 | ARG |
| 1 | O | 457 | SER |
| 1 | P | 161 | ARG |
| 1 | P | 162 | ASN |
| 1 | P | 181 | ARG |
| 1 | P | 196 | ARG |
| 1 | P | 245 | PHE |
| 1 | P | 297 | ARG |
| 1 | P | 340 | LYS |
| 1 | P | 361 | ARG |
| 1 | P | 401 | ARG |
| 1 | P | 426 | ARG |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (36) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | A | 250 | HIS |
| 1 | A | 425 | GLN |
| 1 | B | 162 | ASN |
| 1 | B | 195 | GLN |
| 1 | B | 346 | HIS |
| 1 | C | 162 | ASN |
| 1 | C | 195 | GLN |
| 1 | C | 230 | HIS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | C | 298 | HIS |
| 1 | D | 175 | GLN |
| 1 | F | 162 | ASN |
| 1 | F | 230 | HIS |
| 1 | F | 393 | HIS |
| 1 | F | 418 | ASN |
| 1 | G | 162 | ASN |
| 1 | H | 195 | GLN |
| 1 | H | 230 | HIS |
| 1 | H | 237 | GLN |
| 1 | I | 162 | ASN |
| 1 | J | 393 | HIS |
| 1 | K | 195 | GLN |
| 1 | K | 230 | HIS |
| 1 | K | 373 | GLN |
| 1 | K | 393 | HIS |
| 1 | K | 455 | ASN |
| 1 | L | 162 | ASN |
| 1 | L | 195 | GLN |
| 1 | L | 393 | HIS |
| 1 | L | 455 | ASN |
| 1 | M | 195 | GLN |
| 1 | M | 353 | HIS |
| 1 | N | 230 | HIS |
| 1 | N | 237 | GLN |
| 1 | N | 346 | HIS |
| 1 | O | 373 | GLN |
| 1 | P | 373 | GLN |

### 5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry (i)

49 ligands are modelled in this entry.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 3 | 5XH | F | 504 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.40 | 1 (2%) |
| 2 | SO4 | P | 501 | - | 4,4,4 | 0.40 | 0 | 6,6,6 | 0.24 | 0 |
| 3 | 5XH | A | 501 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.39 | 1 (2%) |
| 3 | 5XH | I | 504 | 1 | 31,38,38 | 1.56 | 2 (6%) | 35,53,53 | 1.40 | 1 (2%) |
| 2 | SO4 | P | 502 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.07 | 0 |
| 2 | SO4 | F | 502 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.17 | 0 |
| 2 | SO4 | E | 503 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.06 | 0 |
| 3 | 5XH | C | 504 | 1 | 31,38,38 | 1.54 | 2 (6%) | 35,53,53 | 1.67 | 1 (2%) |
| 3 | 5XH | K | 503 | 1 | 31,38,38 | 1.54 | 2 (6%) | 35,53,53 | 1.41 | 1 (2%) |
| 2 | SO4 | F | 501 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.14 | 0 |
| 2 | SO4 | A | 500 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.08 | 0 |
| 2 | SO4 | G | 500 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.09 | 0 |
| 2 | SO4 | D | 500 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.09 | 0 |
| 2 | SO4 | I | 501 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.04 | 0 |
| 2 | SO4 | K | 502 | - | 4,4,4 | 0.17 | 0 | 6,6,6 | 0.08 | 0 |
| 2 | SO4 | L | 502 | - | 4,4,4 | 0.16 | 0 | 6,6,6 | 0.06 | 0 |
| 2 | SO4 | K | 501 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.12 | 0 |
| 2 | SO4 | J | 503 | - | 4,4,4 | 0.16 | 0 | 6,6,6 | 0.09 | 0 |
| 2 | SO4 | C | 501 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.05 | 0 |
| 2 | SO4 | I | 502 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.09 | 0 |
| 2 | SO4 | L | 501 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.10 | 0 |
| 3 | 5XH | B | 504 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.39 | 1 (2%) |
| 3 | 5XH | N | 501 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.38 | 1 (2%) |
| 3 | 5XH | P | 503 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.41 | 1 (2%) |
| 3 | 5XH | J | 504 | 1 | 31,38,38 | 1.56 | 2 (6%) | 35,53,53 | 1.40 | 1 (2%) |
| 2 | SO4 | B | 502 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.16 | 0 |
| 2 | SO4 | C | 502 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.16 | 0 |
| 3 | 5XH | G | 501 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.42 | 1 (2%) |
| 2 | SO4 | O | 502 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.06 | 0 |
| 3 | 5XH | L | 503 | 1 | 31,38,38 | 1.53 | 2 (6%) | 35,53,53 | 1.36 | 1 (2%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\|>2$ | Counts | RMSZ | $\#\|Z\|>2$ |
| 2 | SO4 | H | 502 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.06 | 0 |
| 2 | SO4 | B | 503 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.09 | 0 |
| 2 | SO4 | B | 501 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.07 | 0 |
| 2 | SO4 | E | 501 | - | 4,4,4 | 0.23 | 0 | 6,6,6 | 0.37 | 0 |
| 2 | SO4 | H | 501 | - | 4,4,4 | 0.30 | 0 | 6,6,6 | 1.50 | 1 (16%) |
| 2 | SO4 | N | 500 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.07 | 0 |
| 3 | 5XH | M | 501 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.39 | 1 (2%) |
| 2 | SO4 | E | 502 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.20 | 0 |
| 2 | SO4 | M | 500 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.06 | 0 |
| 2 | SO4 | F | 503 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.07 | 0 |
| 2 | SO4 | J | 501 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.08 | 0 |
| 3 | 5XH | O | 503 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.38 | 1 (2%) |
| 3 | 5XH | D | 501 | 1 | 31,38,38 | 1.55 | 2 (6%) | 35,53,53 | 1.38 | 1 (2%) |
| 2 | SO4 | O | 501 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.11 | 0 |
| 2 | SO4 | J | 502 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.06 | 0 |
| 3 | 5XH | H | 503 | 1 | 31,38,38 | 1.54 | 2 (6%) | 35,53,53 | 1.39 | 1 (2%) |
| 3 | 5XH | E | 504 | 1 | 31,38,38 | 1.56 | 2 (6%) | 35,53,53 | 1.39 | 1 (2%) |
| 2 | SO4 | C | 503 | - | 4,4,4 | 0.12 | 0 | 6,6,6 | 0.09 | 0 |
| 2 | SO4 | I | 503 | - | 4,4,4 | 0.16 | 0 | 6,6,6 | 0.06 | 0 |

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 | 5XH | J | 504 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | D | 501 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | F | 504 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | G | 501 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | L | 503 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | A | 501 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | I | 504 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | K | 503 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | M | 501 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | H | 503 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | B | 504 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | E | 504 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | C | 504 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | N | 501 | 1 | - | 1/14/33/33 | 0/4/4/4 |
| 3 | 5XH | P | 503 | 1 | - | 1/14/33/33 | 0/4/4/4 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|---|---|---|---|---|---|---|---|
| 3 | 5XH | O | 503 | 1 | - | 1/14/33/33 | 0/4/4/4 |

All (32) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 3 | E | 504 | 5XH | C4-C3 | 8.01 | 1.52 | 1.32 |
| 3 | J | 504 | 5XH | C4-C3 | 7.99 | 1.52 | 1.32 |
| 3 | P | 503 | 5XH | C4-C3 | 7.97 | 1.52 | 1.32 |
| 3 | I | 504 | 5XH | C4-C3 | 7.96 | 1.52 | 1.32 |
| 3 | A | 501 | 5XH | C4-C3 | 7.96 | 1.52 | 1.32 |
| 3 | F | 504 | 5XH | C4-C3 | 7.96 | 1.52 | 1.32 |
| 3 | G | 501 | 5XH | C4-C3 | 7.95 | 1.52 | 1.32 |
| 3 | O | 503 | 5XH | C4-C3 | 7.95 | 1.52 | 1.32 |
| 3 | M | 501 | 5XH | C4-C3 | 7.94 | 1.52 | 1.32 |
| 3 | N | 501 | 5XH | C4-C3 | 7.94 | 1.52 | 1.32 |
| 3 | D | 501 | 5XH | C4-C3 | 7.92 | 1.52 | 1.32 |
| 3 | B | 504 | 5XH | C4-C3 | 7.91 | 1.52 | 1.32 |
| 3 | H | 503 | 5XH | C4-C3 | 7.91 | 1.52 | 1.32 |
| 3 | C | 504 | 5XH | C4-C3 | 7.89 | 1.52 | 1.32 |
| 3 | K | 503 | 5XH | C4-C3 | 7.88 | 1.52 | 1.32 |
| 3 | L | 503 | 5XH | C4-C3 | 7.82 | 1.52 | 1.32 |
| 3 | N | 501 | 5XH | C4-C5 | 2.17 | 1.51 | 1.48 |
| 3 | I | 504 | 5XH | C4-C5 | 2.16 | 1.51 | 1.48 |
| 3 | O | 503 | 5XH | C4-C5 | 2.15 | 1.51 | 1.48 |
| 3 | J | 504 | 5XH | C4-C5 | 2.13 | 1.51 | 1.48 |
| 3 | E | 504 | 5XH | C4-C5 | 2.12 | 1.51 | 1.48 |
| 3 | A | 501 | 5XH | C4-C5 | 2.12 | 1.51 | 1.48 |
| 3 | F | 504 | 5XH | C4-C5 | 2.11 | 1.51 | 1.48 |
| 3 | L | 503 | 5XH | C4-C5 | 2.11 | 1.51 | 1.48 |
| 3 | B | 504 | 5XH | C4-C5 | 2.10 | 1.51 | 1.48 |
| 3 | C | 504 | 5XH | C4-C5 | 2.10 | 1.51 | 1.48 |
| 3 | D | 501 | 5XH | C4-C5 | 2.10 | 1.51 | 1.48 |
| 3 | P | 503 | 5XH | C4-C5 | 2.09 | 1.51 | 1.48 |
| 3 | K | 503 | 5XH | C4-C5 | 2.08 | 1.51 | 1.48 |
| 3 | H | 503 | 5XH | C4-C5 | 2.08 | 1.51 | 1.48 |
| 3 | G | 501 | 5XH | C4-C5 | 2.07 | 1.51 | 1.48 |
| 3 | M | 501 | 5XH | C4-C5 | 2.06 | 1.51 | 1.48 |

All (17) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | C | 504 | 5XH | C2-C3-C4 | -9.15 | 109.94 | 124.67 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 3 | G | 501 | 5XH | C2-C3-C4 | -7.70 | 112.28 | 124.67 |
| 3 | I | 504 | 5XH | C2-C3-C4 | -7.60 | 112.43 | 124.67 |
| 3 | K | 503 | 5XH | C2-C3-C4 | -7.60 | 112.44 | 124.67 |
| 3 | J | 504 | 5XH | C2-C3-C4 | -7.59 | 112.45 | 124.67 |
| 3 | H | 503 | 5XH | C2-C3-C4 | -7.56 | 112.50 | 124.67 |
| 3 | B | 504 | 5XH | C2-C3-C4 | -7.55 | 112.52 | 124.67 |
| 3 | E | 504 | 5XH | C2-C3-C4 | -7.54 | 112.53 | 124.67 |
| 3 | P | 503 | 5XH | C2-C3-C4 | -7.54 | 112.53 | 124.67 |
| 3 | F | 504 | 5XH | C2-C3-C4 | -7.53 | 112.54 | 124.67 |
| 3 | M | 501 | 5XH | C2-C3-C4 | -7.49 | 112.61 | 124.67 |
| 3 | N | 501 | 5XH | C2-C3-C4 | -7.42 | 112.72 | 124.67 |
| 3 | A | 501 | 5XH | C2-C3-C4 | -7.42 | 112.73 | 124.67 |
| 3 | O | 503 | 5XH | C2-C3-C4 | -7.42 | 112.73 | 124.67 |
| 3 | D | 501 | 5XH | C2-C3-C4 | -7.39 | 112.77 | 124.67 |
| 3 | L | 503 | 5XH | C2-C3-C4 | -7.28 | 112.96 | 124.67 |
| 2 | H | 501 | SO4 | O4-S-O1 | -3.03 | 93.50 | 109.31 |

There are no chirality outliers.

All (16) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 3 | A | 501 | 5XH | C2-C3-C4-C5 |
| 3 | B | 504 | 5XH | C2-C3-C4-C5 |
| 3 | C | 504 | 5XH | C2-C3-C4-C5 |
| 3 | D | 501 | 5XH | C2-C3-C4-C5 |
| 3 | E | 504 | 5XH | C2-C3-C4-C5 |
| 3 | F | 504 | 5XH | C2-C3-C4-C5 |
| 3 | G | 501 | 5XH | C2-C3-C4-C5 |
| 3 | H | 503 | 5XH | C2-C3-C4-C5 |
| 3 | I | 504 | 5XH | C2-C3-C4-C5 |
| 3 | J | 504 | 5XH | C2-C3-C4-C5 |
| 3 | K | 503 | 5XH | C2-C3-C4-C5 |
| 3 | L | 503 | 5XH | C2-C3-C4-C5 |
| 3 | M | 501 | 5XH | C2-C3-C4-C5 |
| 3 | N | 501 | 5XH | C2-C3-C4-C5 |
| 3 | O | 503 | 5XH | C2-C3-C4-C5 |
| 3 | P | 503 | 5XH | C2-C3-C4-C5 |

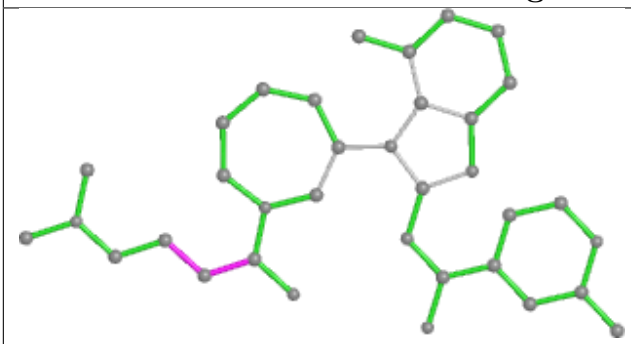
There are no ring outliers.

14 monomers are involved in 17 short contacts:

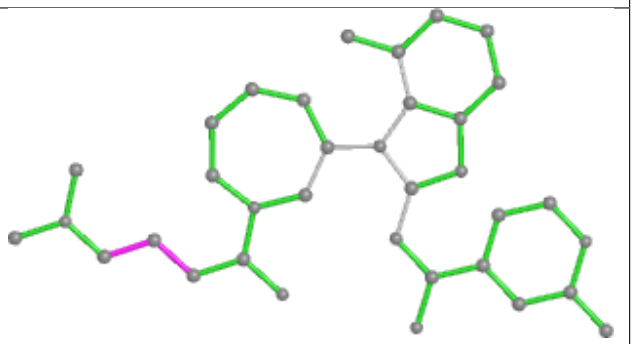
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 3 | A | 501 | 5XH | 2 | 0 |
| 2 | F | 502 | SO4 | 1 | 0 |
| 2 | G | 500 | SO4 | 1 | 0 |
| 2 | K | 501 | SO4 | 1 | 0 |
| 2 | L | 501 | SO4 | 1 | 0 |
| 2 | B | 502 | SO4 | 1 | 0 |
| 2 | C | 502 | SO4 | 1 | 0 |
| 2 | O | 502 | SO4 | 1 | 0 |
| 2 | H | 502 | SO4 | 1 | 0 |
| 2 | E | 501 | SO4 | 3 | 0 |
| 2 | H | 501 | SO4 | 1 | 0 |
| 2 | M | 500 | SO4 | 1 | 0 |
| 3 | D | 501 | 5XH | 1 | 0 |
| 3 | H | 503 | 5XH | 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.

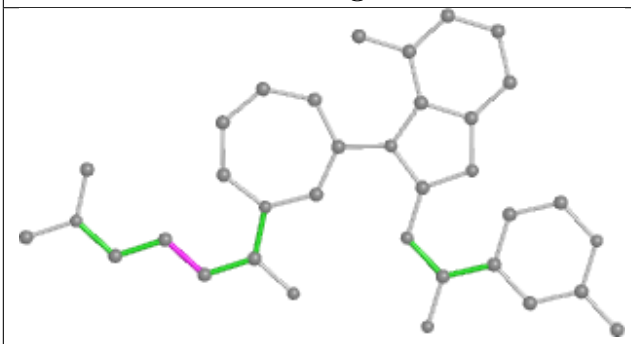
**Ligand 5XH F 504**



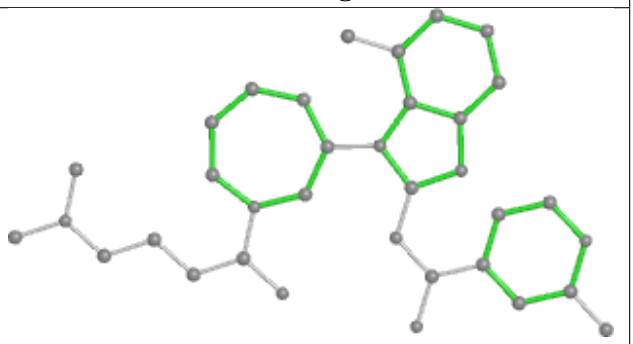
Bond lengths



Bond angles

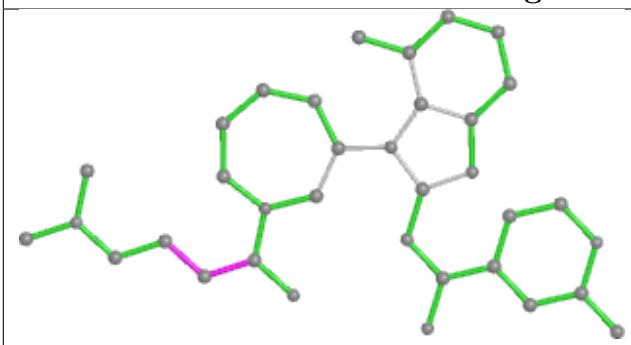


Torsions

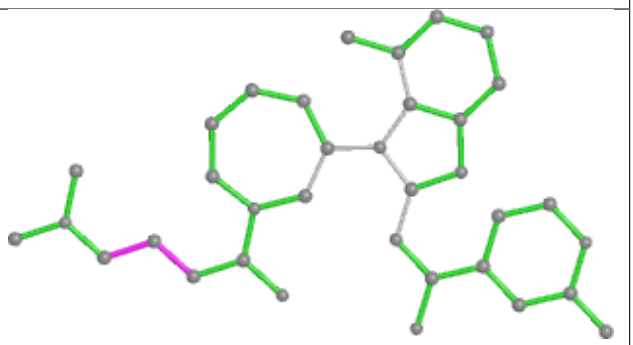


Rings

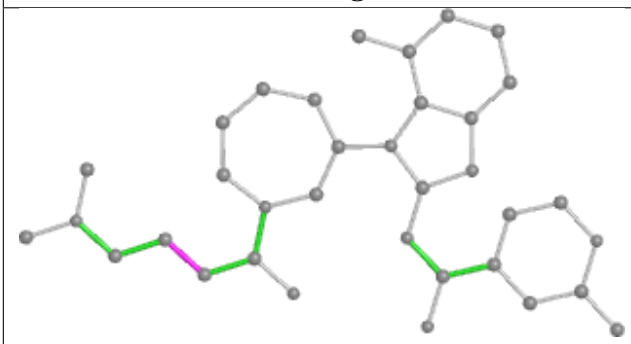
**Ligand 5XH A 501**



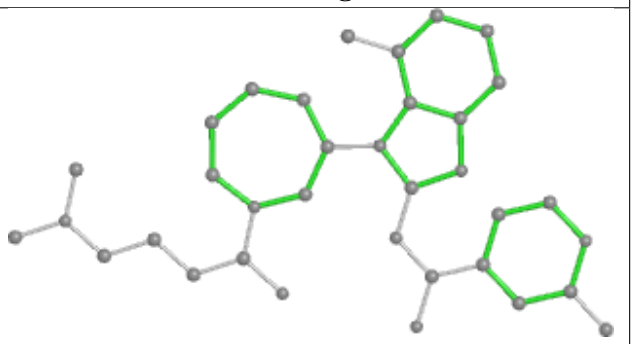
Bond lengths



Bond angles

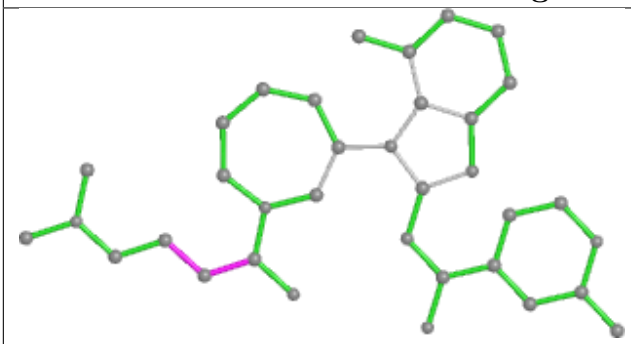


Torsions

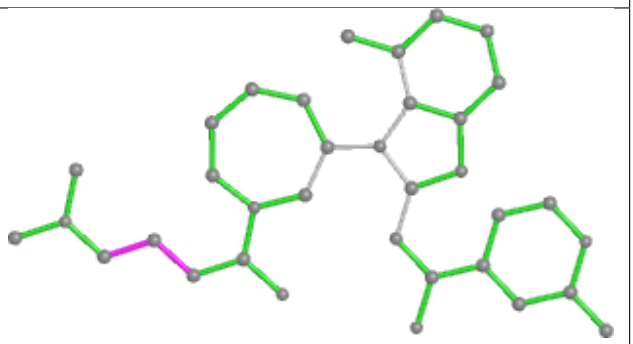


Rings

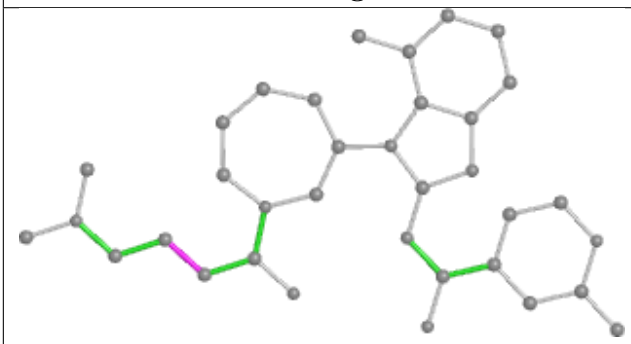
### Ligand 5XH I 504



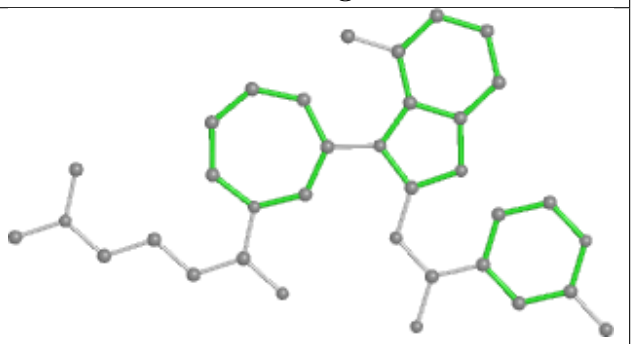
Bond lengths



Bond angles

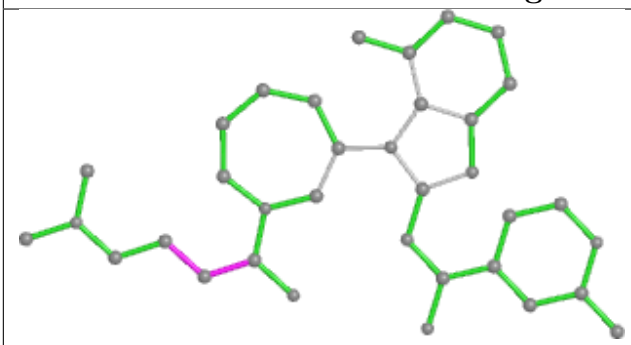


Torsions

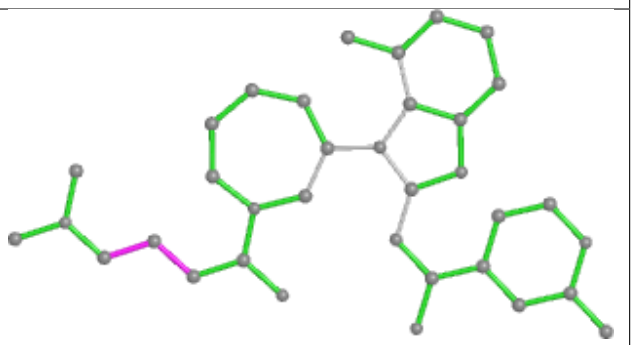


Rings

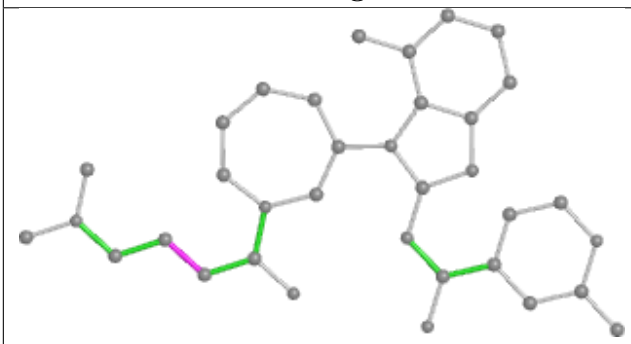
### Ligand 5XH C 504



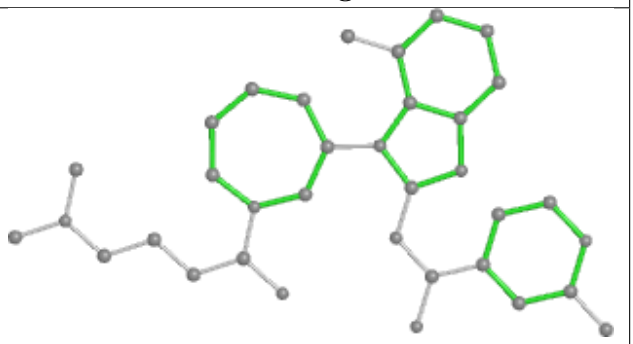
Bond lengths



Bond angles

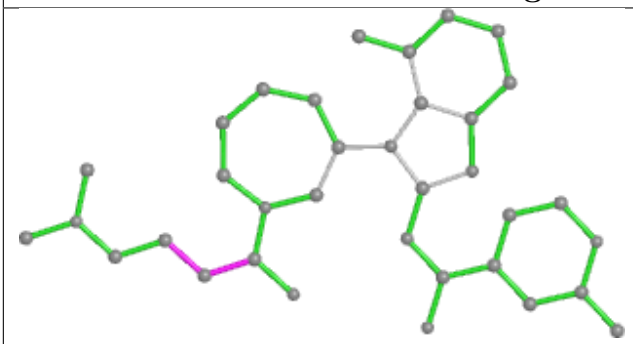


Torsions

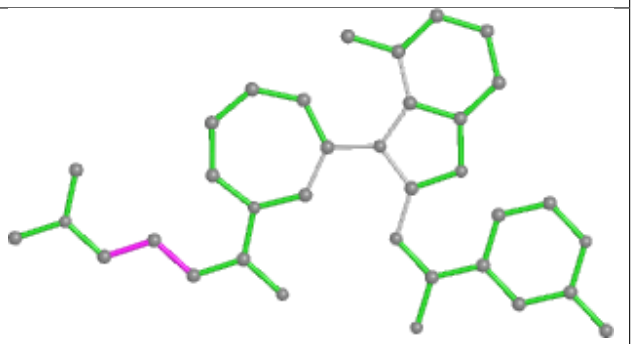


Rings

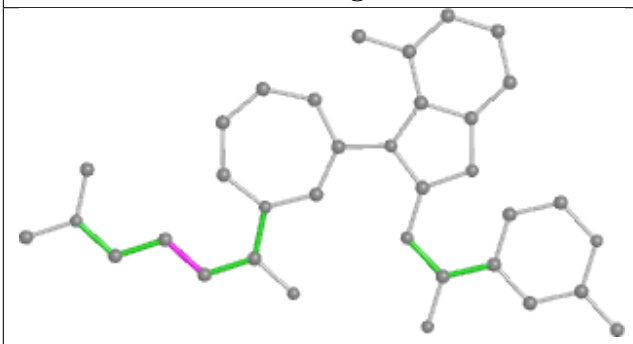
### Ligand 5XH K 503



Bond lengths



Bond angles



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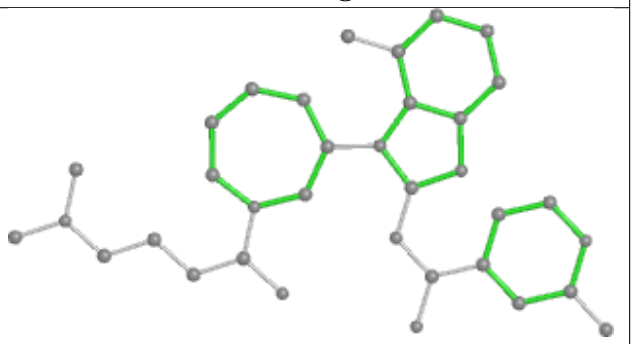

Rings

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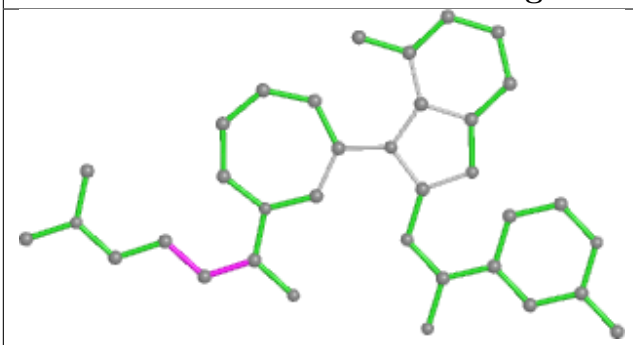

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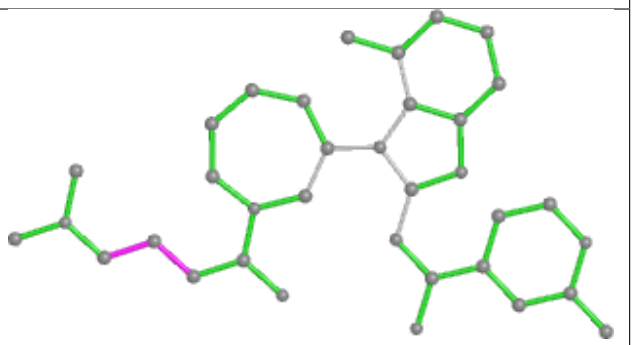
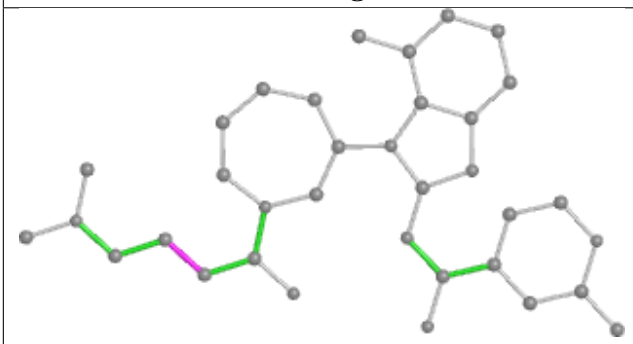


Bond angles



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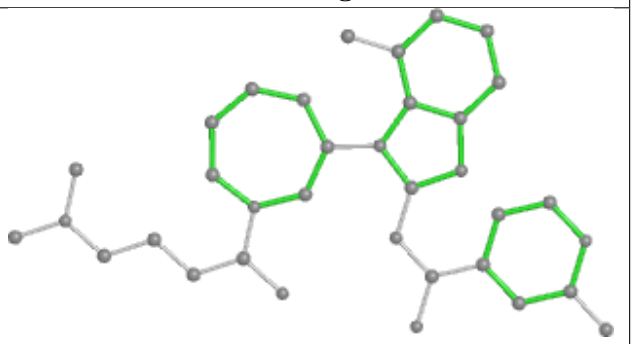
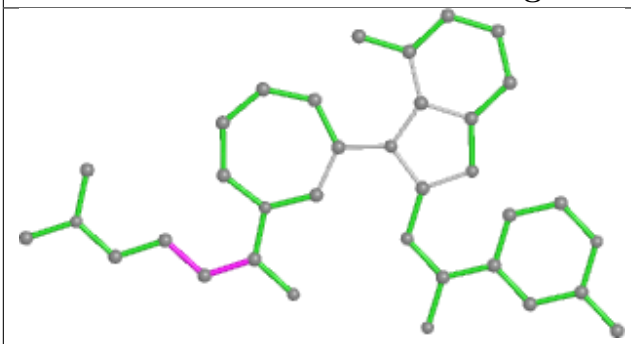


Rings

**Ligand 5XH N 501**



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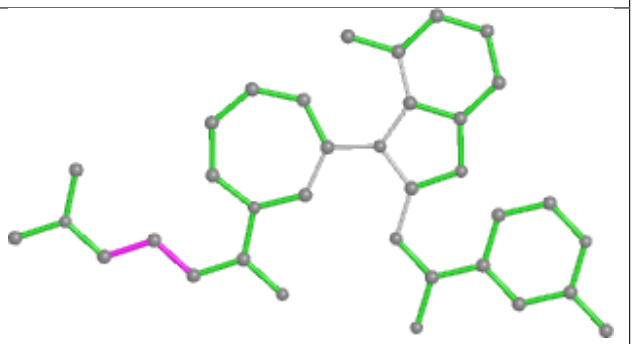
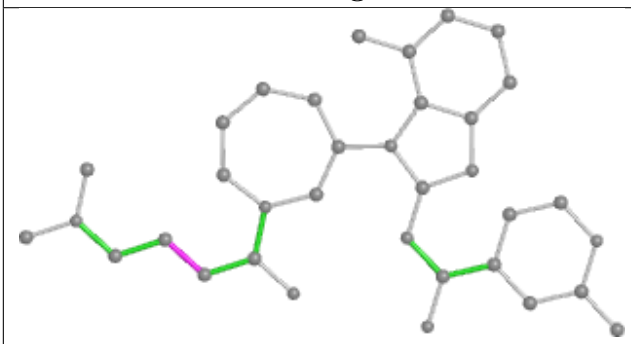
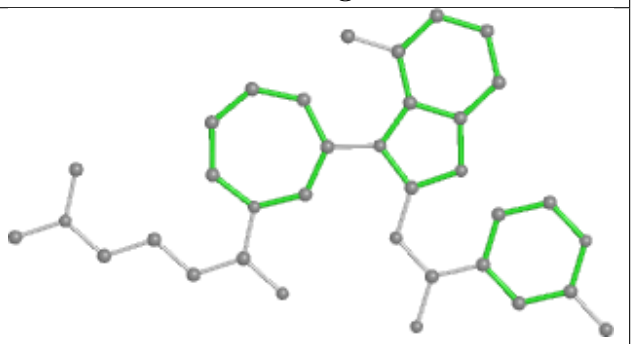


Bond angles

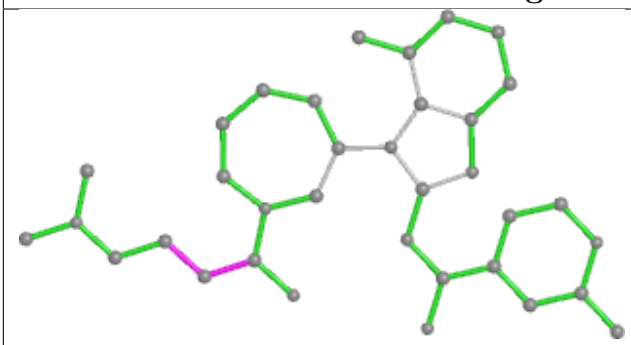


Torsions



Rings

**Ligand 5XH P 503**



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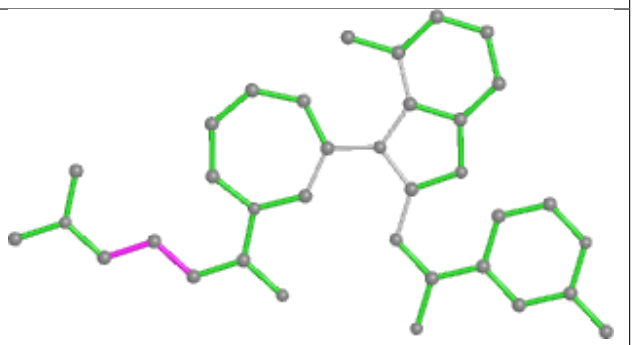
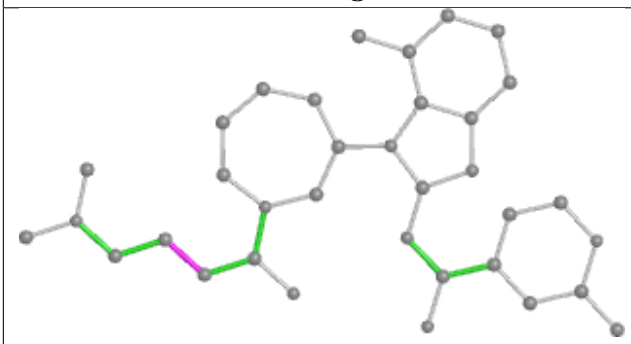


Bond angles



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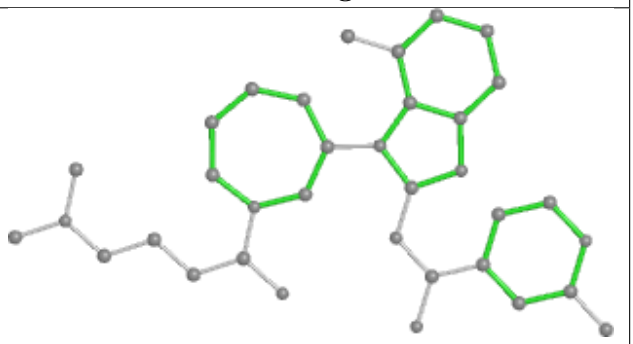

Rings

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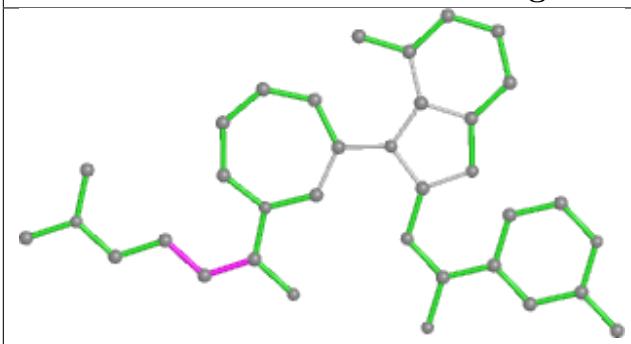

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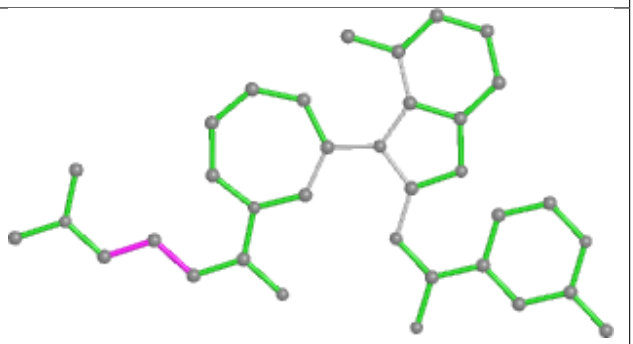

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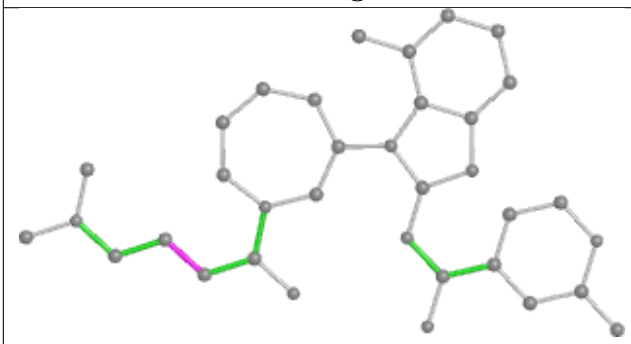

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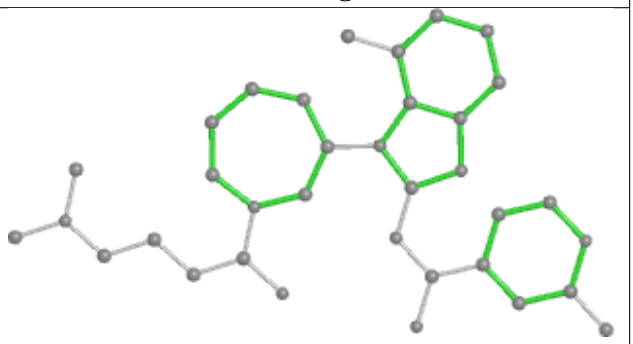
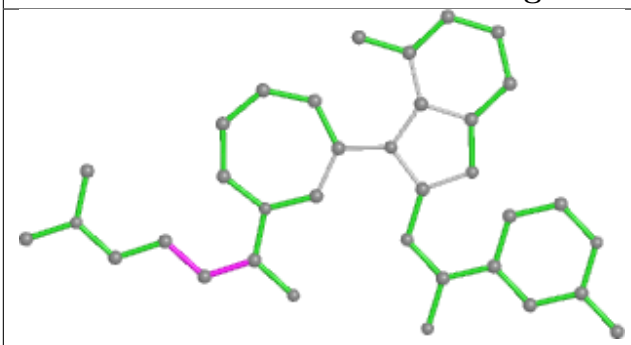


Rings

**Ligand 5XH G 501**



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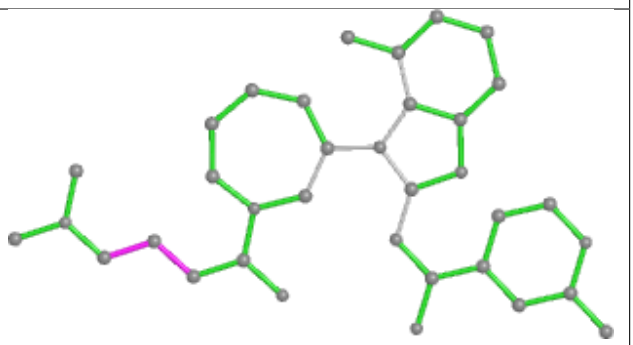
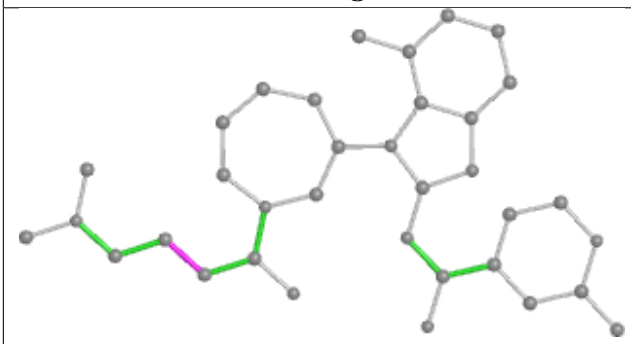


Bond angles



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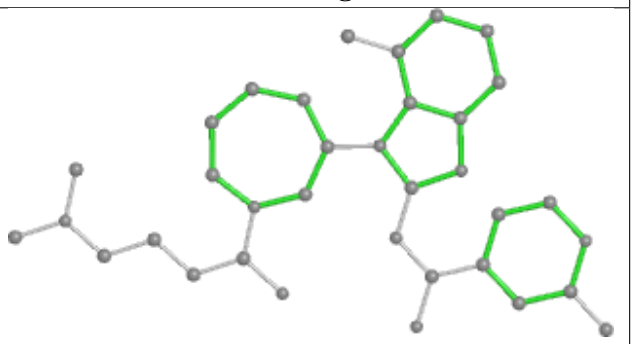
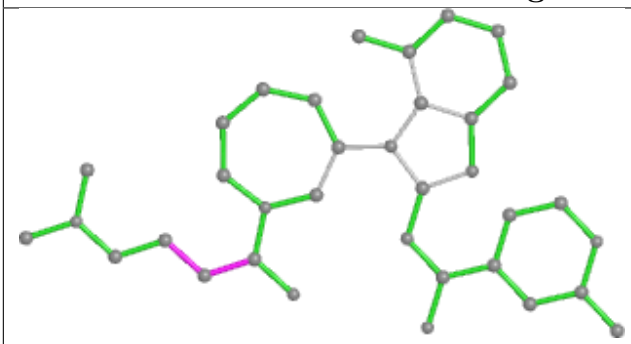


Rings

**Ligand 5XH L 503**



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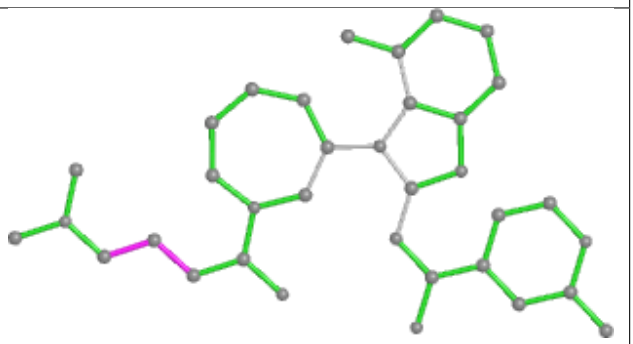
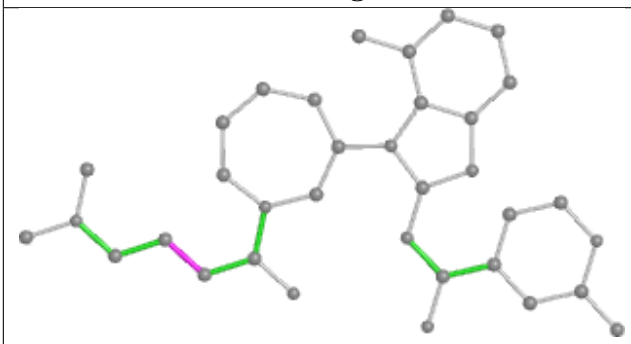


Bond angles



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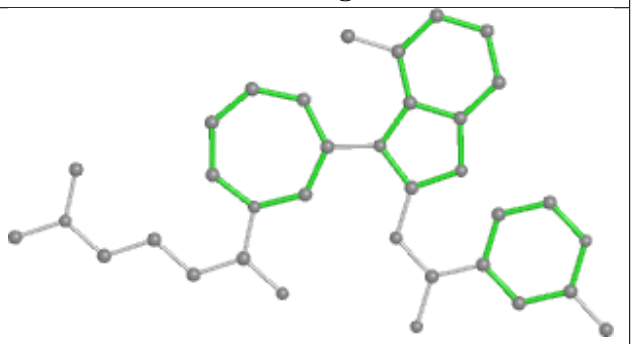

Rings

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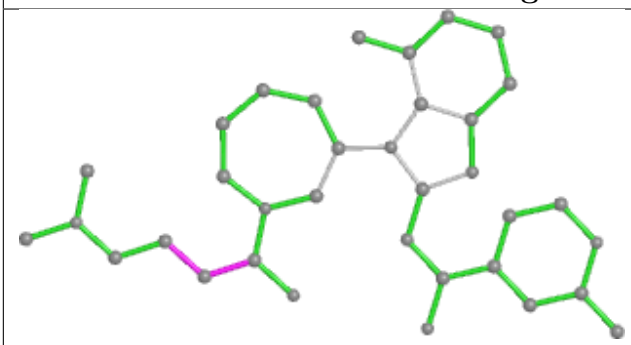

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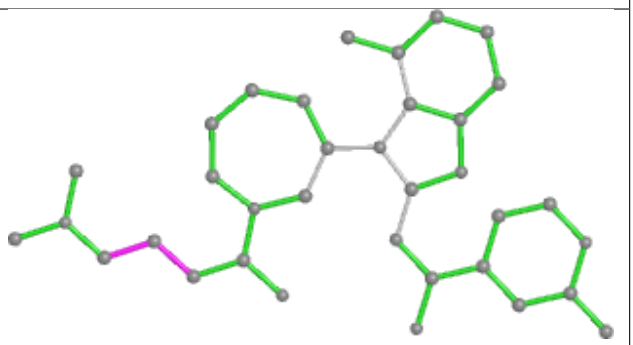
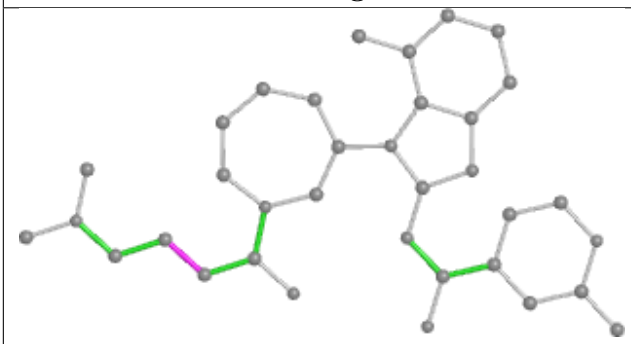
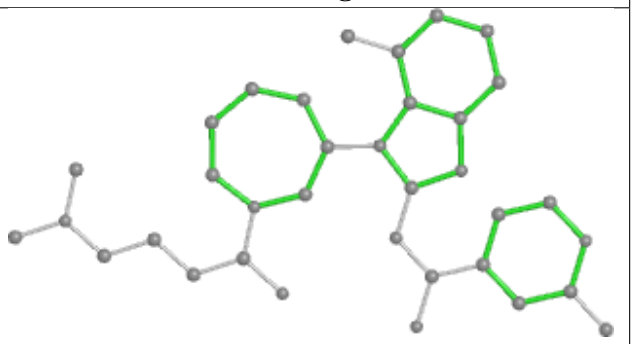


Bond angles



Torsions



Rings

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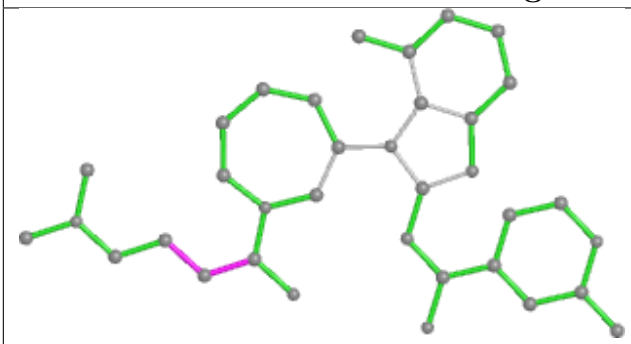

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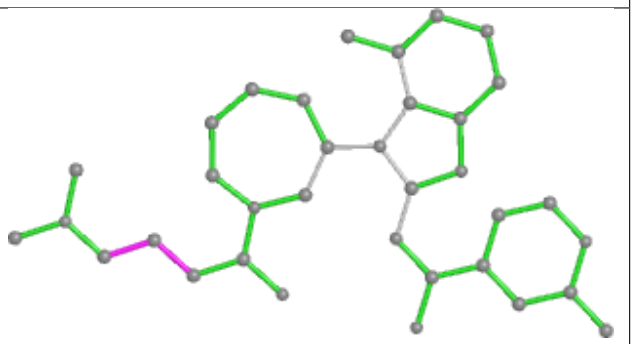

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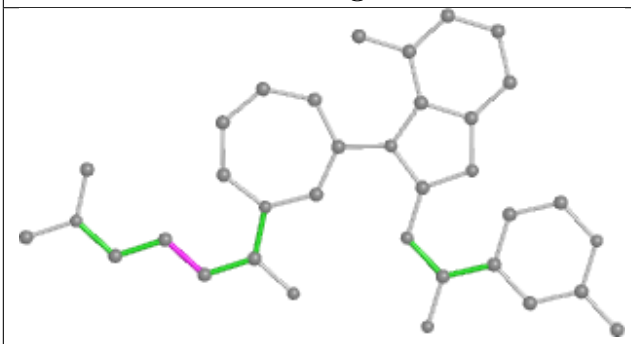

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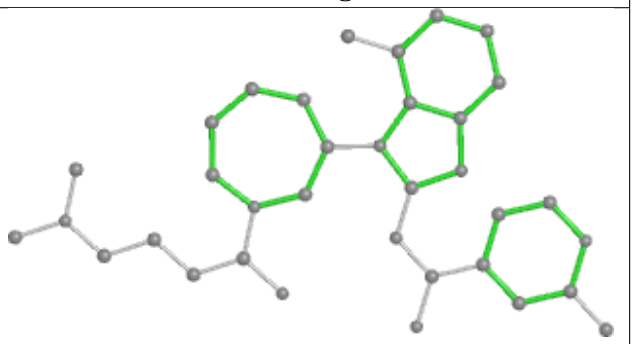

Rings

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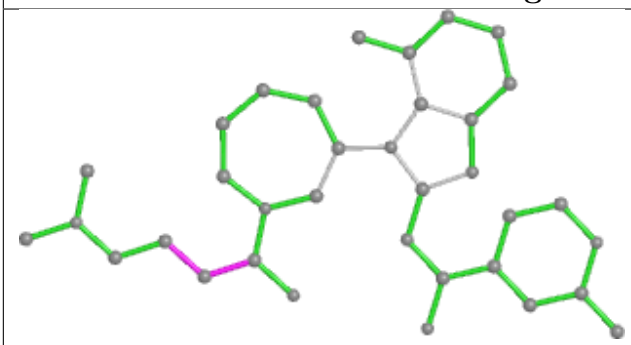

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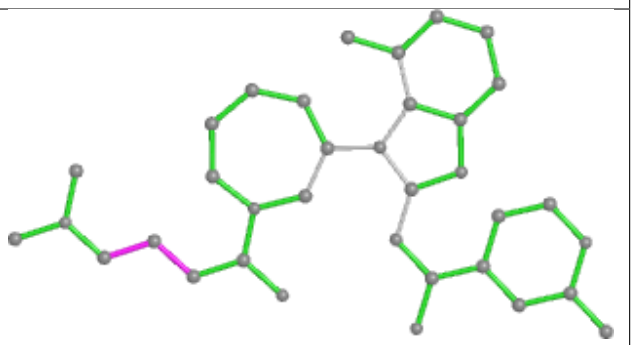
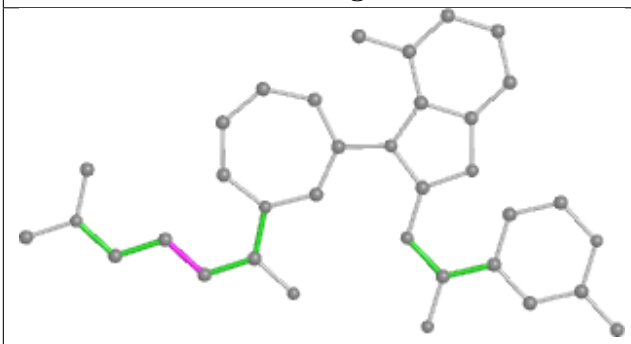


Bond angles



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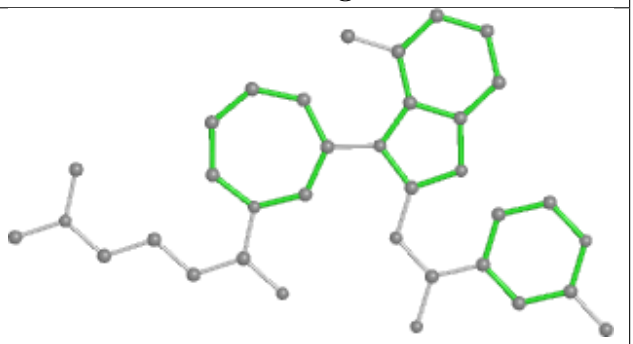
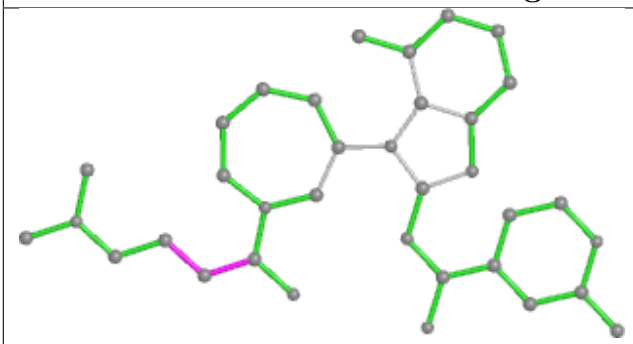


Rings

**Ligand 5XH H 503**



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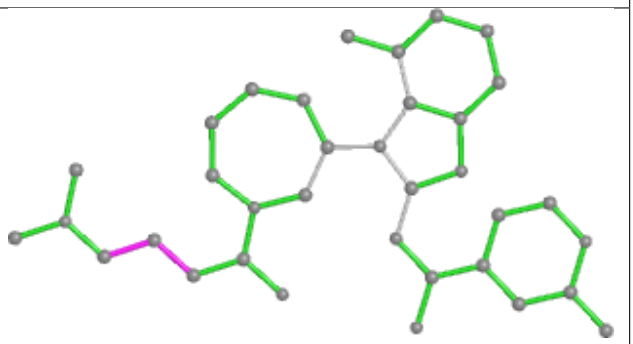
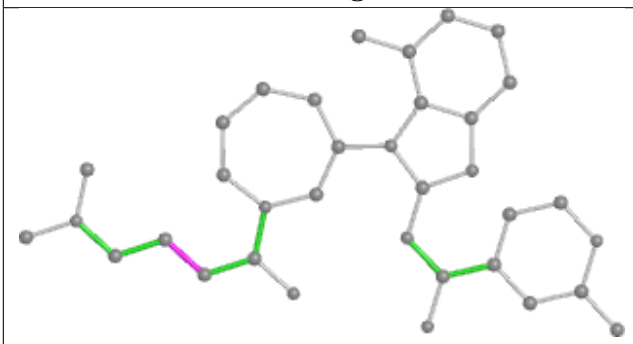


Bond angles



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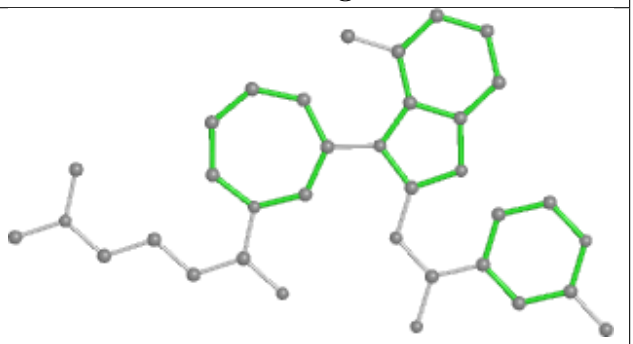
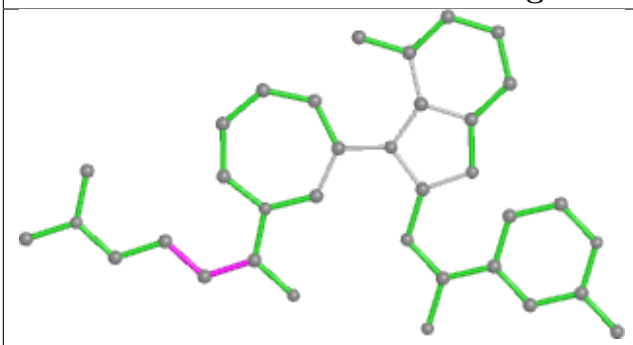
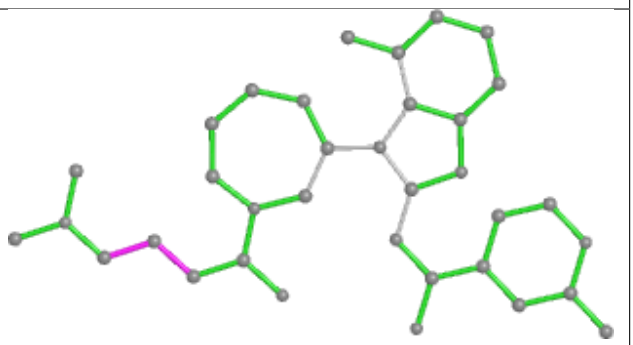


Rings

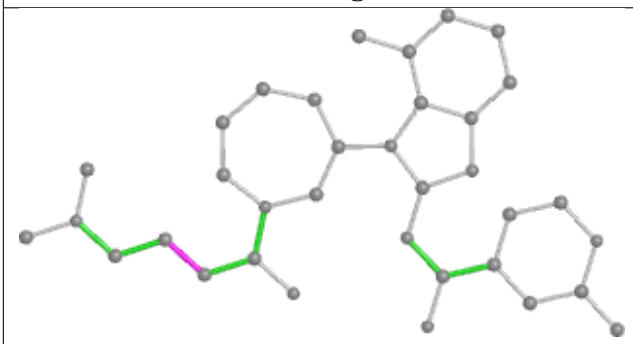
**Ligand 5XH E 504**



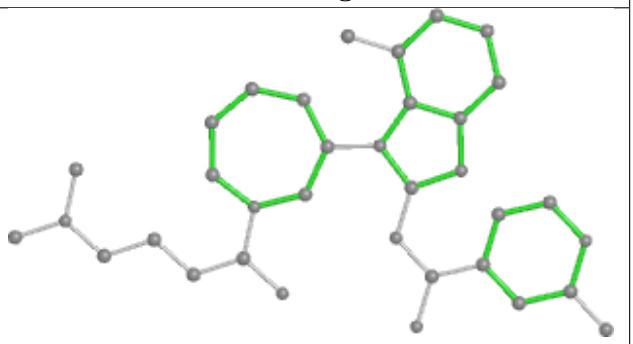
Bond lengths



Bond angles



Torsions



Rings

## 5.7 Other polymers

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 | 339/354 (95%) | 0.19 | 7 (2%) | 63 | 58 | 26, 53, 92, 116 | 0 |
| 1 | B | 339/354 (95%) | 0.00 | 3 (0%) | 84 | 82 | 26, 45, 82, 114 | 0 |
| 1 | C | 339/354 (95%) | 0.14 | 9 (2%) | 54 | 48 | 25, 46, 89, 118 | 0 |
| 1 | D | 339/354 (95%) | 0.28 | 14 (4%) | 37 | 30 | 25, 55, 97, 117 | 0 |
| 1 | E | 339/354 (95%) | 0.01 | 3 (0%) | 84 | 82 | 25, 45, 82, 106 | 0 |
| 1 | F | 339/354 (95%) | 0.10 | 9 (2%) | 54 | 48 | 25, 46, 87, 107 | 0 |
| 1 | G | 339/354 (95%) | 0.20 | 8 (2%) | 59 | 53 | 26, 52, 93, 115 | 0 |
| 1 | H | 339/354 (95%) | 0.41 | 20 (5%) | 22 | 17 | 29, 55, 102, 128 | 0 |
| 1 | I | 339/354 (95%) | 0.03 | 6 (1%) | 68 | 64 | 23, 45, 84, 111 | 0 |
| 1 | J | 339/354 (95%) | -0.00 | 3 (0%) | 84 | 82 | 27, 46, 81, 103 | 0 |
| 1 | K | 339/354 (95%) | -0.01 | 3 (0%) | 84 | 82 | 26, 45, 78, 101 | 0 |
| 1 | L | 339/354 (95%) | 0.05 | 5 (1%) | 73 | 70 | 23, 45, 84, 111 | 0 |
| 1 | M | 339/354 (95%) | 0.21 | 8 (2%) | 59 | 53 | 28, 53, 93, 109 | 0 |
| 1 | N | 339/354 (95%) | 0.32 | 16 (4%) | 31 | 25 | 29, 55, 96, 121 | 0 |
| 1 | O | 339/354 (95%) | 0.35 | 14 (4%) | 37 | 30 | 30, 54, 96, 142 | 0 |
| 1 | P | 339/354 (95%) | 0.20 | 7 (2%) | 63 | 58 | 27, 52, 90, 116 | 0 |
| All | All | 5424/5664 (95%) | 0.15 | 135 (2%) | 57 | 51 | 23, 49, 91, 142 | 0 |

All (135) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | H | 127 | GLY | 9.2 |
| 1 | O | 383 | GLY | 5.7 |
| 1 | H | 181 | ARG | 4.4 |
| 1 | D | 291 | GLY | 4.3 |
| 1 | H | 346 | HIS | 4.3 |

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| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | H | 291 | GLY | 3.9 |
| 1 | G | 347 | ASP | 3.9 |
| 1 | O | 291 | GLY | 3.8 |
| 1 | C | 389 | LYS | 3.7 |
| 1 | O | 127 | GLY | 3.7 |
| 1 | G | 297 | ARG | 3.7 |
| 1 | F | 266 | GLY | 3.7 |
| 1 | C | 365 | ASP | 3.7 |
| 1 | I | 151 | ARG | 3.6 |
| 1 | C | 394 | ILE | 3.6 |
| 1 | L | 150 | LYS | 3.5 |
| 1 | F | 376 | ARG | 3.5 |
| 1 | O | 371 | GLY | 3.5 |
| 1 | A | 295 | ASP | 3.5 |
| 1 | P | 150 | LYS | 3.4 |
| 1 | H | 385 | LEU | 3.4 |
| 1 | F | 203 | GLY | 3.4 |
| 1 | H | 371 | GLY | 3.3 |
| 1 | O | 150 | LYS | 3.3 |
| 1 | M | 295 | ASP | 3.2 |
| 1 | M | 297 | ARG | 3.2 |
| 1 | P | 465 | MET | 3.1 |
| 1 | G | 178 | GLU | 3.1 |
| 1 | G | 162 | ASN | 3.0 |
| 1 | A | 150 | LYS | 3.0 |
| 1 | G | 388 | CYS | 3.0 |
| 1 | A | 291 | GLY | 3.0 |
| 1 | C | 364 | ALA | 3.0 |
| 1 | M | 150 | LYS | 3.0 |
| 1 | D | 351 | HIS | 3.0 |
| 1 | N | 291 | GLY | 3.0 |
| 1 | G | 346 | HIS | 3.0 |
| 1 | H | 388 | CYS | 3.0 |
| 1 | J | 361 | ARG | 3.0 |
| 1 | N | 346 | HIS | 2.9 |
| 1 | I | 394 | ILE | 2.9 |
| 1 | B | 394 | ILE | 2.9 |
| 1 | P | 346 | HIS | 2.8 |
| 1 | D | 149 | ARG | 2.8 |
| 1 | H | 381 | ALA | 2.8 |
| 1 | F | 361 | ARG | 2.8 |
| 1 | O | 381 | ALA | 2.8 |

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| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | L | 394 | ILE | 2.8 |
| 1 | O | 385 | LEU | 2.8 |
| 1 | C | 127 | GLY | 2.8 |
| 1 | N | 371 | GLY | 2.8 |
| 1 | H | 162 | ASN | 2.7 |
| 1 | N | 381 | ALA | 2.7 |
| 1 | F | 364 | ALA | 2.6 |
| 1 | D | 302 | ALA | 2.6 |
| 1 | P | 127 | GLY | 2.6 |
| 1 | H | 294 | CYS | 2.6 |
| 1 | O | 167 | THR | 2.5 |
| 1 | M | 291 | GLY | 2.5 |
| 1 | H | 347 | ASP | 2.5 |
| 1 | H | 351 | HIS | 2.5 |
| 1 | P | 351 | HIS | 2.5 |
| 1 | N | 378 | LEU | 2.5 |
| 1 | C | 203 | GLY | 2.5 |
| 1 | P | 291 | GLY | 2.5 |
| 1 | I | 266 | GLY | 2.5 |
| 1 | D | 382 | ALA | 2.5 |
| 1 | N | 178 | GLU | 2.5 |
| 1 | K | 168 | ARG | 2.5 |
| 1 | N | 388 | CYS | 2.4 |
| 1 | H | 201 | GLU | 2.4 |
| 1 | H | 383 | GLY | 2.4 |
| 1 | D | 298 | HIS | 2.4 |
| 1 | O | 351 | HIS | 2.4 |
| 1 | G | 389 | LYS | 2.4 |
| 1 | F | 386 | GLN | 2.4 |
| 1 | M | 346 | HIS | 2.4 |
| 1 | O | 379 | PHE | 2.4 |
| 1 | M | 162 | ASN | 2.4 |
| 1 | O | 397 | ILE | 2.4 |
| 1 | L | 393 | HIS | 2.3 |
| 1 | E | 361 | ARG | 2.3 |
| 1 | D | 346 | HIS | 2.3 |
| 1 | H | 178 | GLU | 2.3 |
| 1 | N | 167 | THR | 2.3 |
| 1 | D | 174 | ILE | 2.3 |
| 1 | H | 137 | GLU | 2.3 |
| 1 | A | 272 | PRO | 2.3 |
| 1 | F | 391 | PRO | 2.3 |

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| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | L | 391 | PRO | 2.3 |
| 1 | D | 381 | ALA | 2.3 |
| 1 | B | 447 | ARG | 2.3 |
| 1 | O | 162 | ASN | 2.3 |
| 1 | N | 302 | ALA | 2.3 |
| 1 | P | 181 | ARG | 2.2 |
| 1 | E | 394 | ILE | 2.2 |
| 1 | A | 282 | PRO | 2.2 |
| 1 | M | 465 | MET | 2.2 |
| 1 | N | 390 | ASP | 2.2 |
| 1 | B | 151 | ARG | 2.2 |
| 1 | D | 378 | LEU | 2.2 |
| 1 | F | 127 | GLY | 2.2 |
| 1 | O | 256 | LEU | 2.2 |
| 1 | E | 150 | LYS | 2.2 |
| 1 | K | 437 | ALA | 2.2 |
| 1 | N | 465 | MET | 2.2 |
| 1 | H | 379 | PHE | 2.2 |
| 1 | I | 364 | ALA | 2.2 |
| 1 | N | 244 | TYR | 2.1 |
| 1 | M | 267 | ASP | 2.1 |
| 1 | N | 181 | ARG | 2.1 |
| 1 | I | 393 | HIS | 2.1 |
| 1 | H | 252 | MET | 2.1 |
| 1 | I | 389 | LYS | 2.1 |
| 1 | H | 186 | GLU | 2.1 |
| 1 | D | 150 | LYS | 2.1 |
| 1 | F | 389 | LYS | 2.1 |
| 1 | G | 150 | LYS | 2.1 |
| 1 | J | 300 | ARG | 2.1 |
| 1 | D | 385 | LEU | 2.1 |
| 1 | C | 137 | GLU | 2.1 |
| 1 | L | 365 | ASP | 2.1 |
| 1 | A | 346 | HIS | 2.1 |
| 1 | D | 182 | LEU | 2.1 |
| 1 | C | 151 | ARG | 2.1 |
| 1 | K | 376 | ARG | 2.1 |
| 1 | C | 273 | MET | 2.1 |
| 1 | D | 178 | GLU | 2.1 |
| 1 | N | 245 | PHE | 2.1 |
| 1 | A | 349 | LEU | 2.0 |
| 1 | J | 269 | SER | 2.0 |

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| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | H | 182 | LEU | 2.0 |
| 1 | N | 296 | GLU | 2.0 |
| 1 | N | 377 | ASP | 2.0 |
| 1 | O | 314 | VAL | 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 | SO4 | K | 501 | 5/5 | 0.65 | 0.30 | 100,102,103,104 | 0 |
| 2 | SO4 | L | 501 | 5/5 | 0.84 | 0.22 | 99,100,101,101 | 0 |
| 2 | SO4 | C | 502 | 5/5 | 0.87 | 0.24 | 92,94,95,96 | 0 |
| 2 | SO4 | P | 501 | 5/5 | 0.87 | 0.29 | 98,102,105,106 | 0 |
| 2 | SO4 | B | 502 | 5/5 | 0.88 | 0.22 | 95,97,99,100 | 0 |
| 2 | SO4 | O | 501 | 5/5 | 0.89 | 0.25 | 95,98,102,103 | 0 |
| 2 | SO4 | H | 501 | 5/5 | 0.91 | 0.17 | 92,97,102,104 | 0 |
| 2 | SO4 | J | 502 | 5/5 | 0.91 | 0.13 | 85,87,89,89 | 0 |
| 2 | SO4 | F | 502 | 5/5 | 0.91 | 0.30 | 96,98,99,100 | 0 |
| 3 | 5XH | N | 501 | 35/35 | 0.91 | 0.21 | 18,35,50,53 | 0 |
| 2 | SO4 | E | 503 | 5/5 | 0.92 | 0.15 | 70,71,72,79 | 0 |
| 2 | SO4 | E | 501 | 5/5 | 0.92 | 0.20 | 91,94,97,101 | 0 |
| 3 | 5XH | M | 501 | 35/35 | 0.92 | 0.20 | 21,36,51,54 | 0 |
| 2 | SO4 | E | 502 | 5/5 | 0.92 | 0.21 | 93,96,99,100 | 0 |
| 3 | 5XH | P | 503 | 35/35 | 0.92 | 0.20 | 22,30,52,59 | 0 |
| 3 | 5XH | G | 501 | 35/35 | 0.93 | 0.19 | 21,34,56,58 | 0 |
| 3 | 5XH | L | 503 | 35/35 | 0.93 | 0.19 | 22,35,51,53 | 0 |
| 2 | SO4 | C | 503 | 5/5 | 0.93 | 0.17 | 78,81,83,84 | 0 |
| 2 | SO4 | F | 503 | 5/5 | 0.93 | 0.15 | 76,78,79,83 | 0 |

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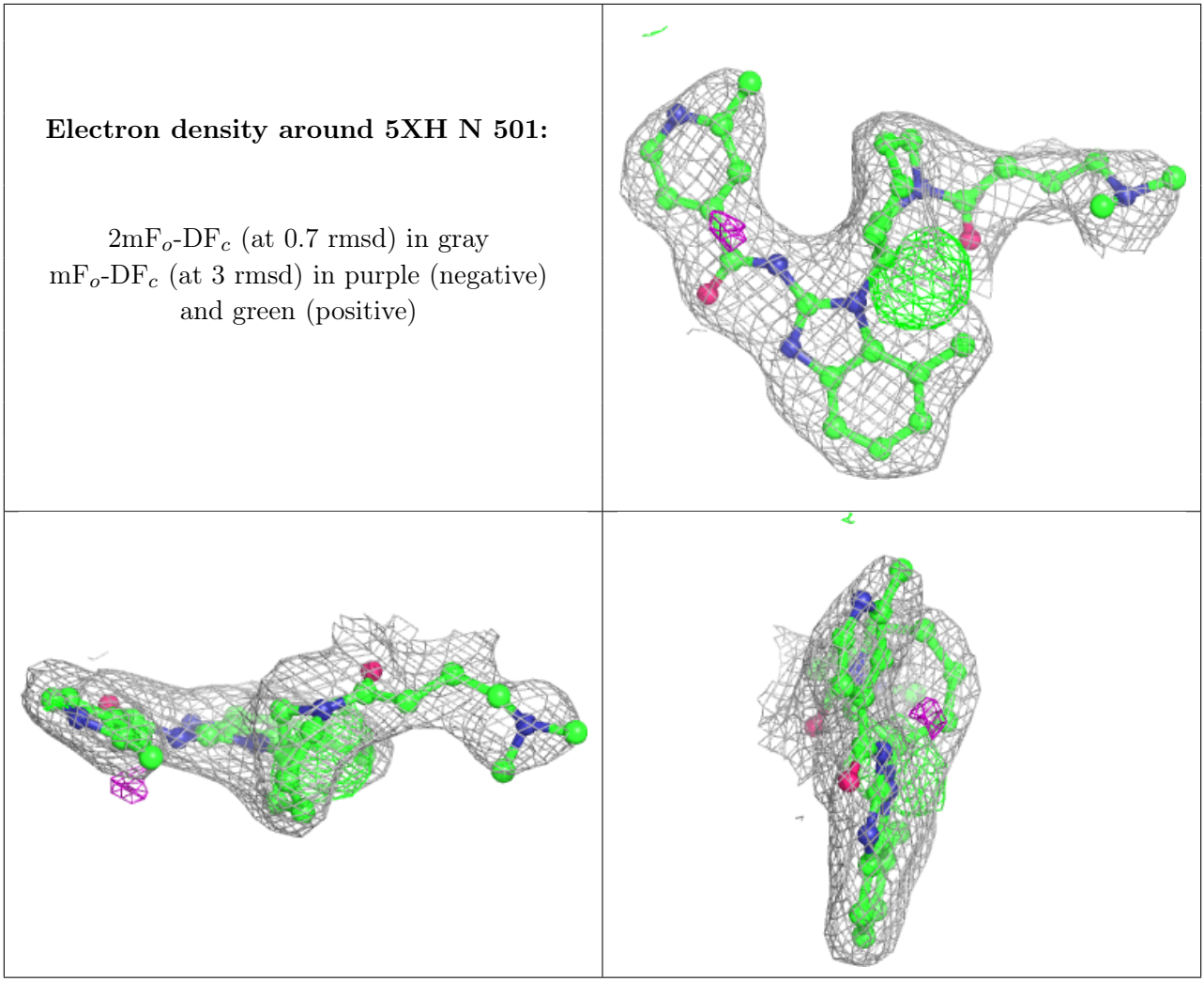
| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(Å$^2$) | Q<0.9 |
|---|---|---|---|---|---|---|---|---|
| 3 | 5XH | O | 503 | 35/35 | 0.93 | 0.19 | 25,36,55,60 | 0 |
| 3 | 5XH | D | 501 | 35/35 | 0.93 | 0.19 | 24,37,51,53 | 0 |
| 3 | 5XH | H | 503 | 35/35 | 0.94 | 0.18 | 26,35,51,57 | 0 |
| 3 | 5XH | I | 504 | 35/35 | 0.94 | 0.17 | 18,35,61,62 | 0 |
| 3 | 5XH | J | 504 | 35/35 | 0.94 | 0.17 | 17,35,52,62 | 0 |
| 3 | 5XH | K | 503 | 35/35 | 0.94 | 0.17 | 18,33,49,53 | 0 |
| 2 | SO4 | H | 502 | 5/5 | 0.94 | 0.18 | 77,77,78,84 | 0 |
| 3 | 5XH | A | 501 | 35/35 | 0.94 | 0.20 | 22,33,57,58 | 0 |
| 2 | SO4 | I | 502 | 5/5 | 0.94 | 0.17 | 85,86,88,88 | 0 |
| 3 | 5XH | F | 504 | 35/35 | 0.94 | 0.18 | 17,30,56,57 | 0 |
| 2 | SO4 | O | 502 | 5/5 | 0.94 | 0.14 | 79,82,84,85 | 0 |
| 3 | 5XH | E | 504 | 35/35 | 0.95 | 0.17 | 20,31,54,57 | 0 |
| 2 | SO4 | K | 502 | 5/5 | 0.95 | 0.16 | 71,71,77,78 | 0 |
| 2 | SO4 | A | 500 | 5/5 | 0.95 | 0.22 | 81,82,86,87 | 0 |
| 2 | SO4 | L | 502 | 5/5 | 0.95 | 0.16 | 75,77,82,86 | 0 |
| 2 | SO4 | D | 500 | 5/5 | 0.95 | 0.17 | 79,83,86,86 | 0 |
| 2 | SO4 | J | 501 | 5/5 | 0.95 | 0.14 | 91,92,93,96 | 0 |
| 2 | SO4 | B | 503 | 5/5 | 0.95 | 0.15 | 68,71,75,78 | 0 |
| 2 | SO4 | P | 502 | 5/5 | 0.95 | 0.20 | 76,78,83,83 | 0 |
| 2 | SO4 | J | 503 | 5/5 | 0.95 | 0.15 | 72,74,78,79 | 0 |
| 3 | 5XH | B | 504 | 35/35 | 0.95 | 0.15 | 11,27,49,50 | 0 |
| 3 | 5XH | C | 504 | 35/35 | 0.95 | 0.17 | 14,31,53,53 | 0 |
| 2 | SO4 | B | 501 | 5/5 | 0.95 | 0.14 | 74,77,81,84 | 0 |
| 2 | SO4 | I | 503 | 5/5 | 0.96 | 0.17 | 73,74,75,79 | 0 |
| 2 | SO4 | G | 500 | 5/5 | 0.96 | 0.19 | 76,76,80,81 | 0 |
| 2 | SO4 | M | 500 | 5/5 | 0.96 | 0.16 | 72,73,73,77 | 0 |
| 2 | SO4 | N | 500 | 5/5 | 0.96 | 0.16 | 80,81,87,87 | 0 |
| 2 | SO4 | I | 501 | 5/5 | 0.97 | 0.09 | 81,82,86,89 | 0 |
| 2 | SO4 | C | 501 | 5/5 | 0.97 | 0.12 | 75,76,76,77 | 0 |
| 2 | SO4 | F | 501 | 5/5 | 0.98 | 0.12 | 75,76,80,84 | 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.

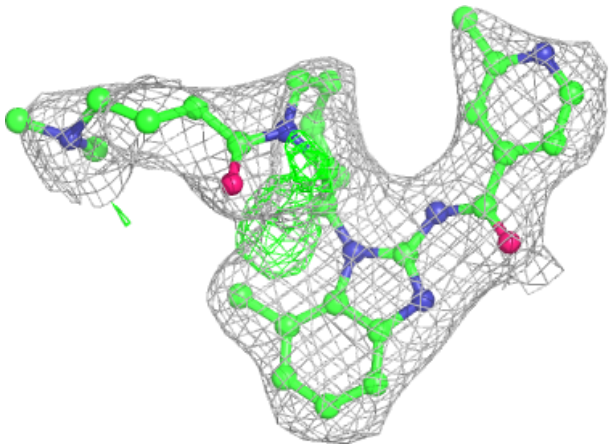
**Electron density around 5XH N 501:**

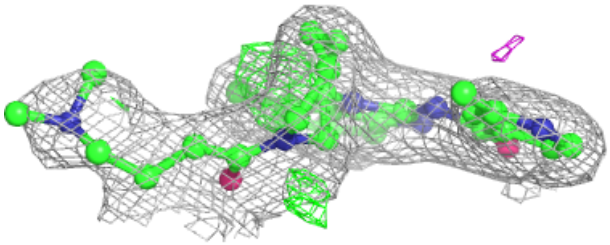
$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative) and green (positive)

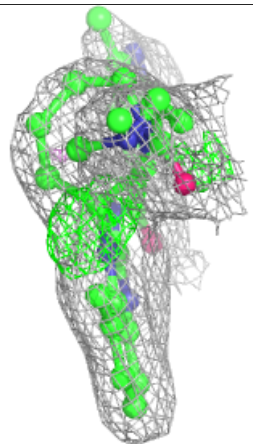


**Electron density around 5XH M 501:**

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

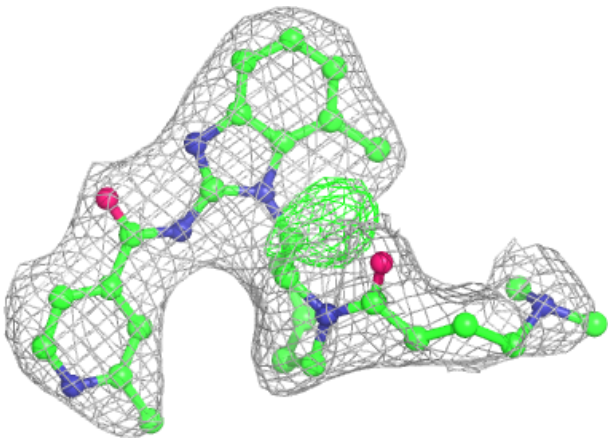


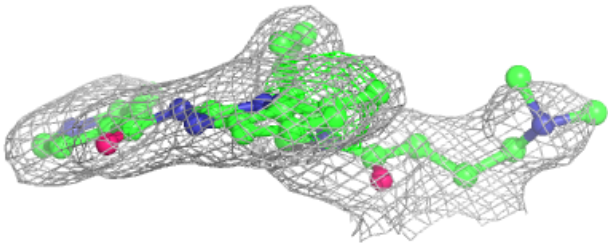


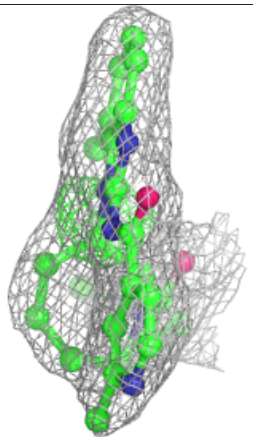


**Electron density around 5XH P 503:**

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

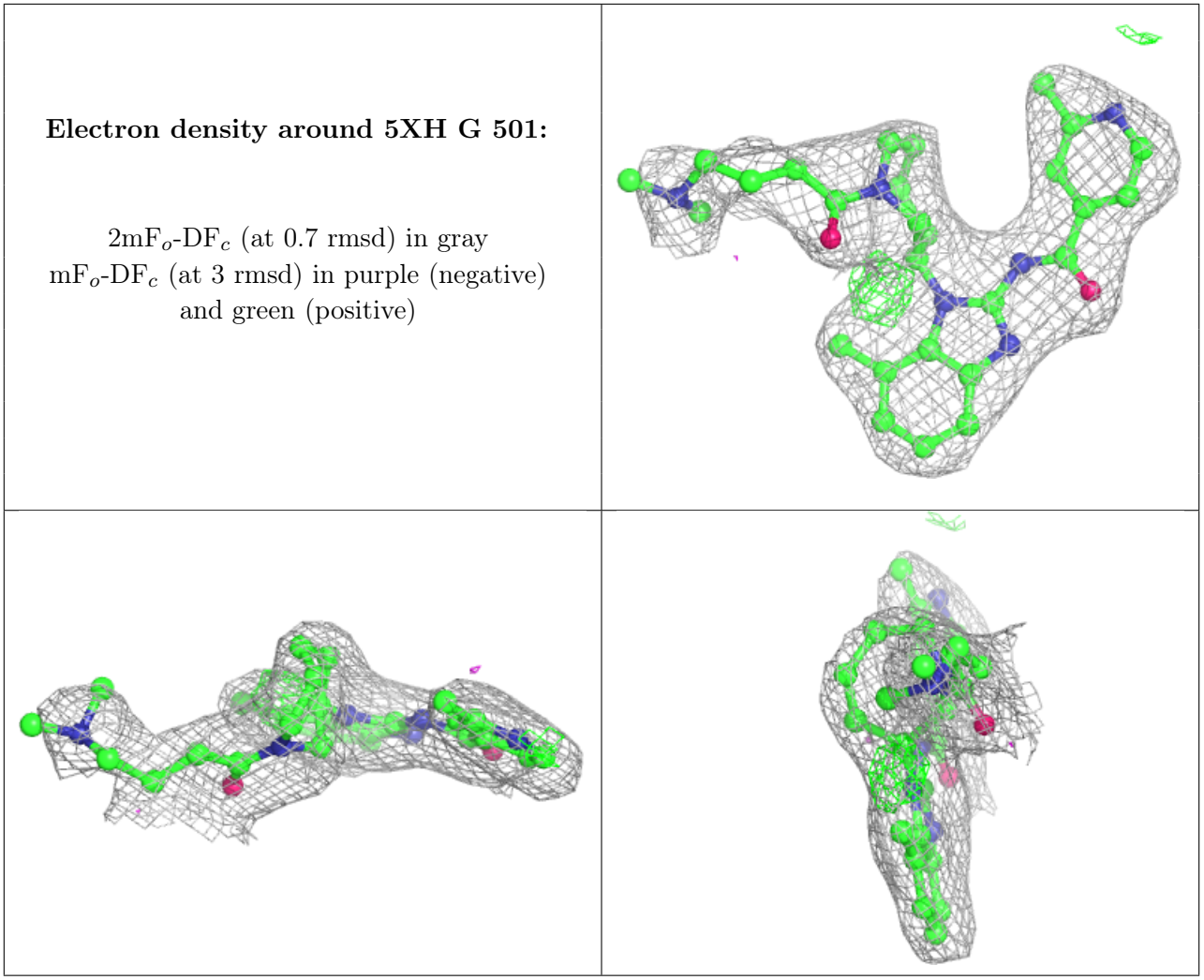






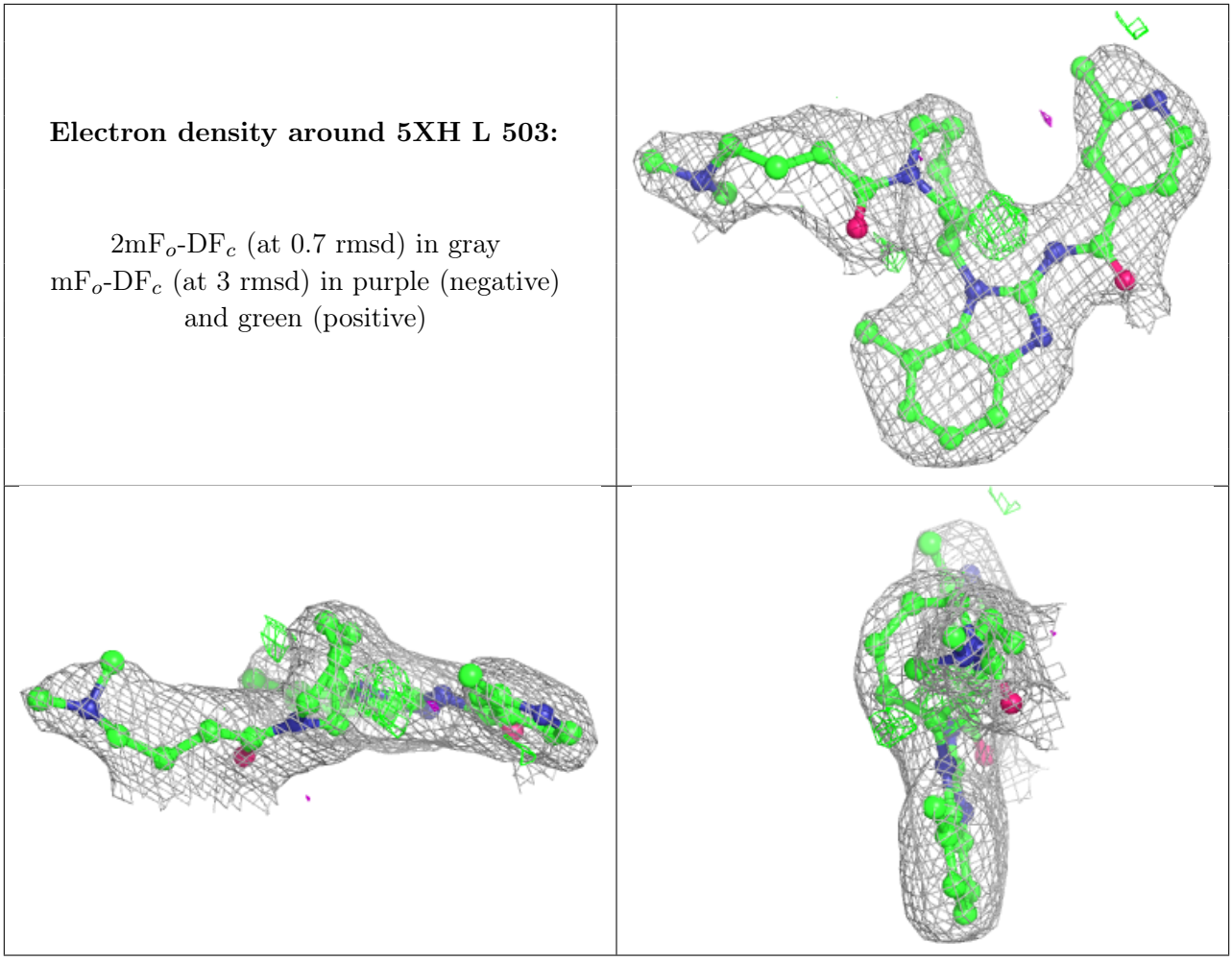
**Electron density around 5XH G 501:**

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



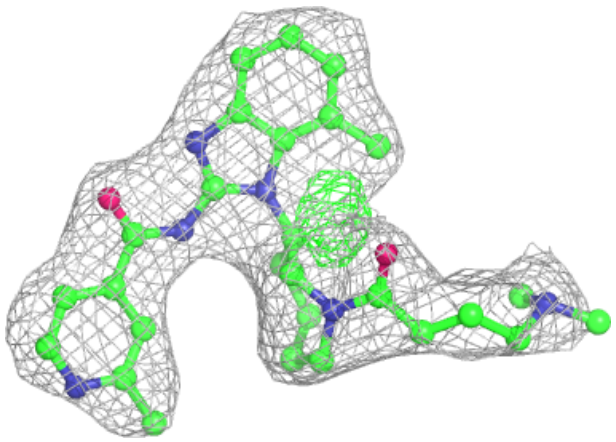
**Electron density around 5XH L 503:**

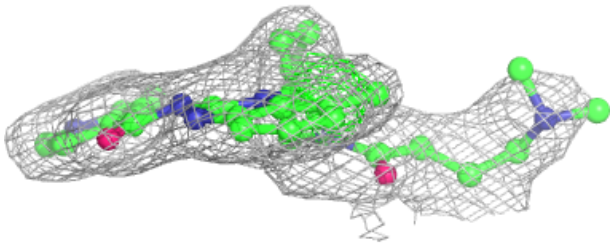
$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative) and green (positive)

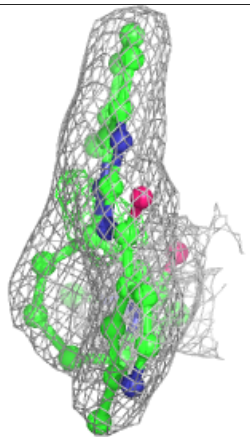


**Electron density around 5XH O 503:**

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

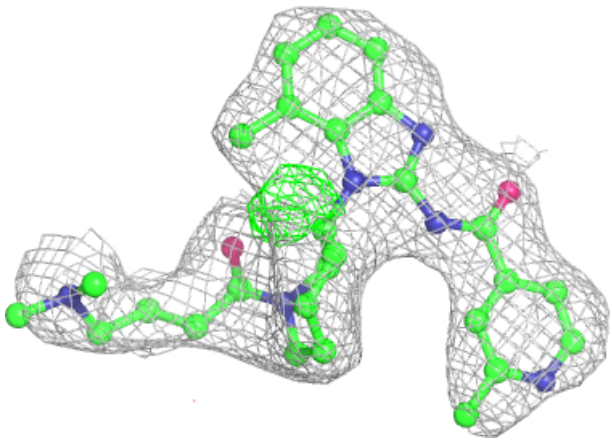


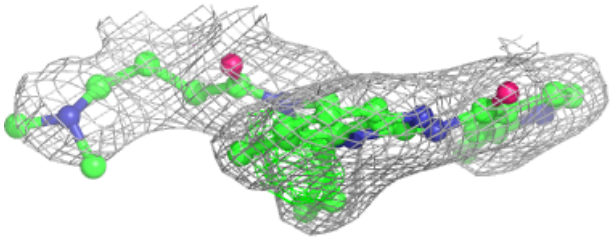


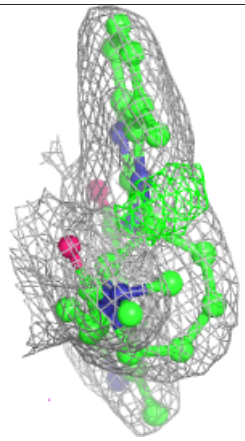


**Electron density around 5XH D 501:**

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

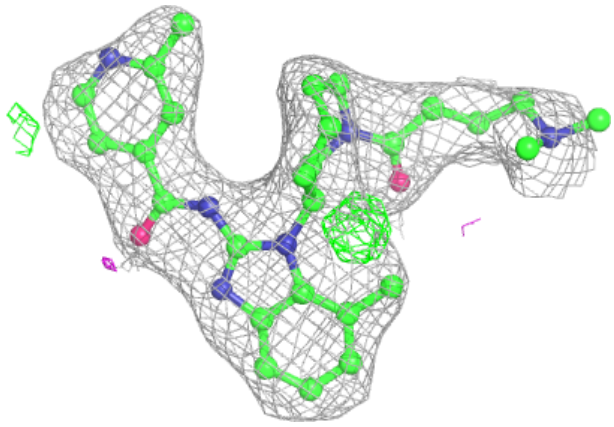


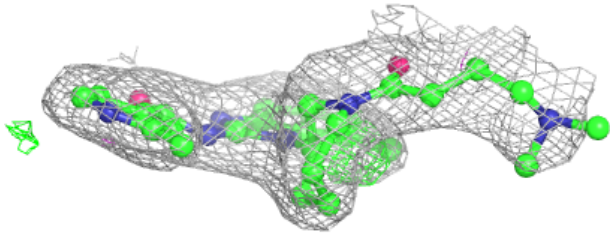


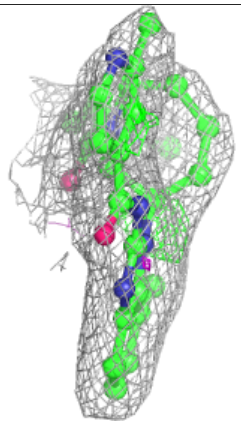


**Electron density around 5XH H 503:**

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

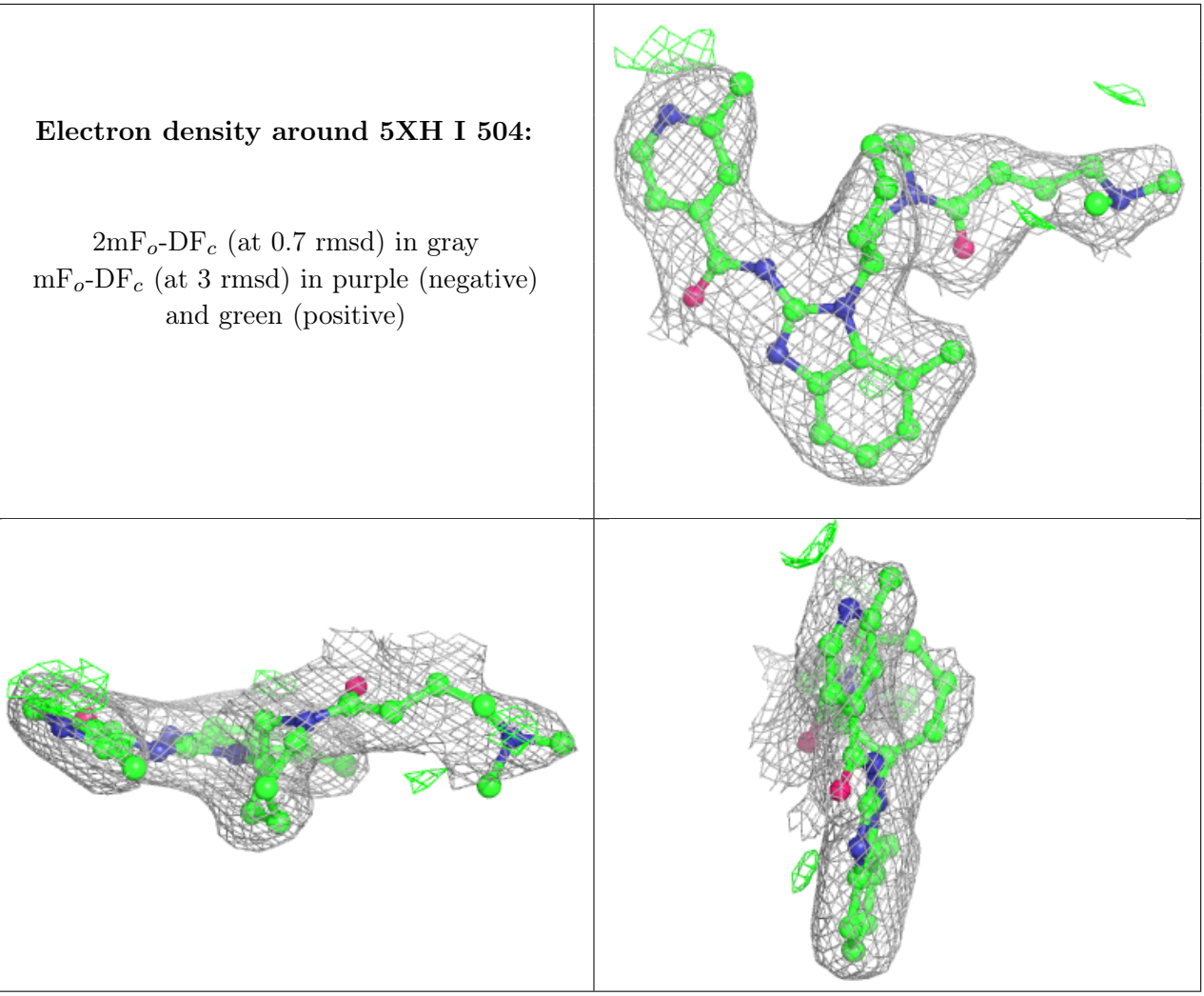






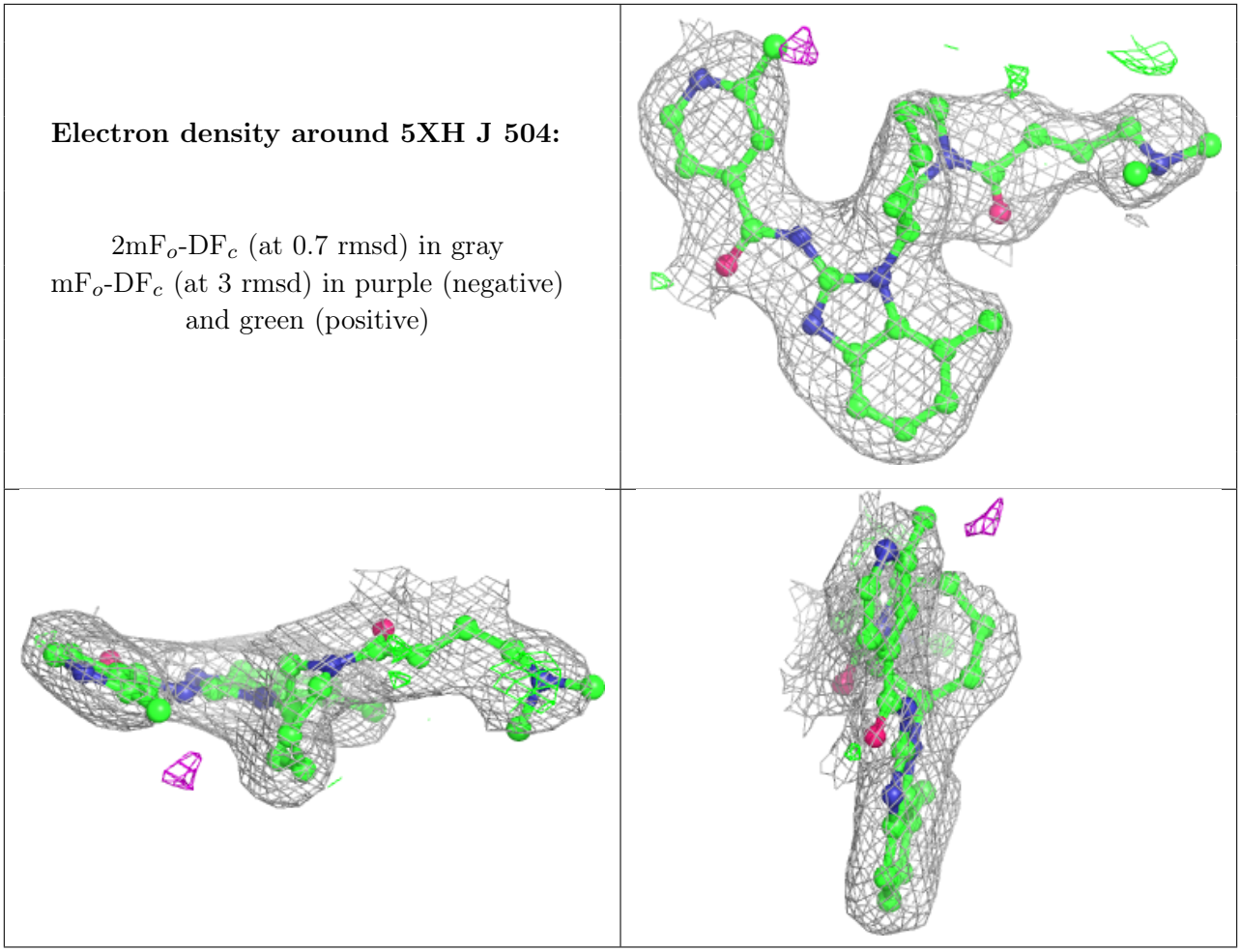
**Electron density around 5XH I 504:**

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



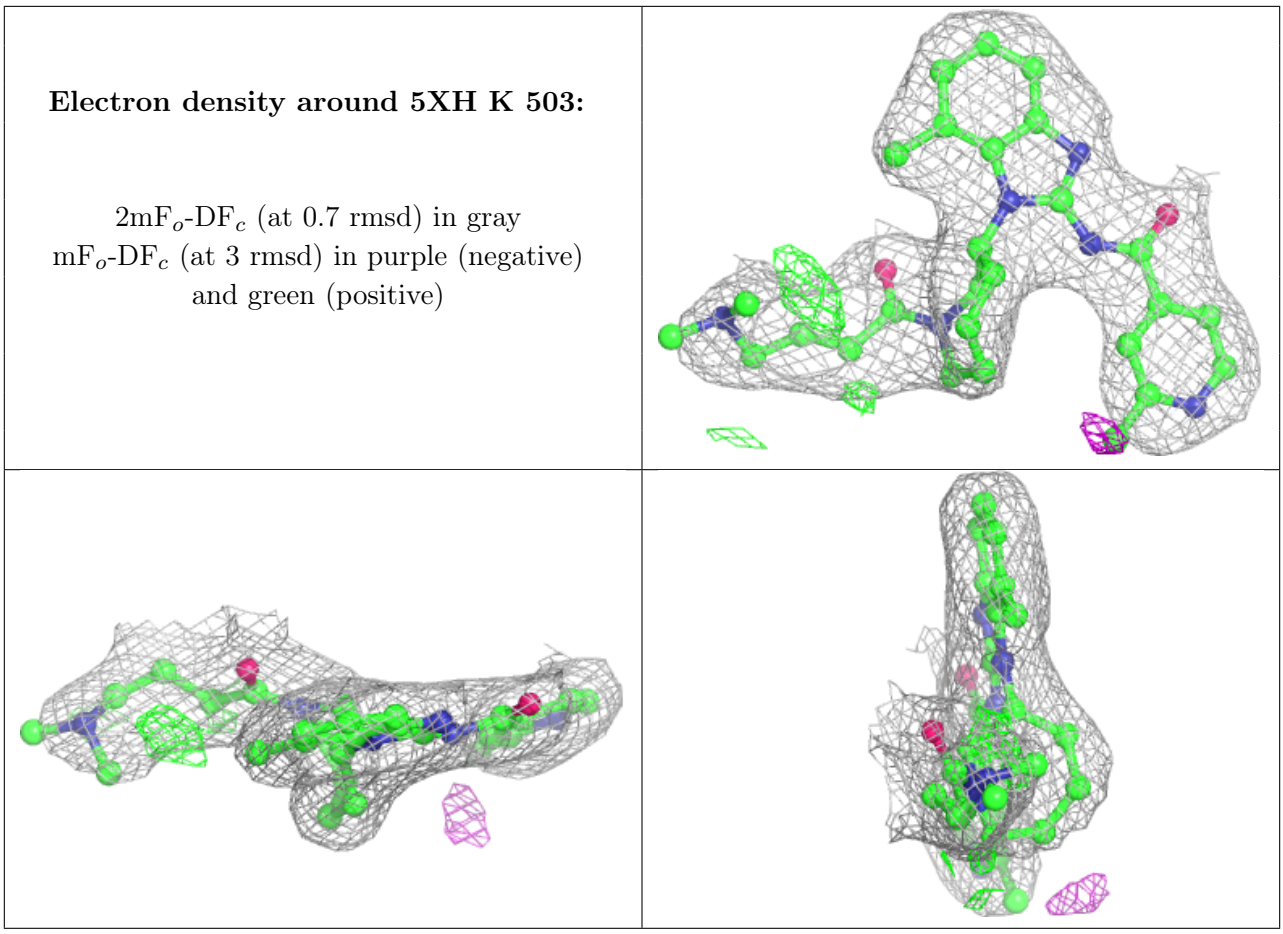
**Electron density around 5XH J 504:**

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



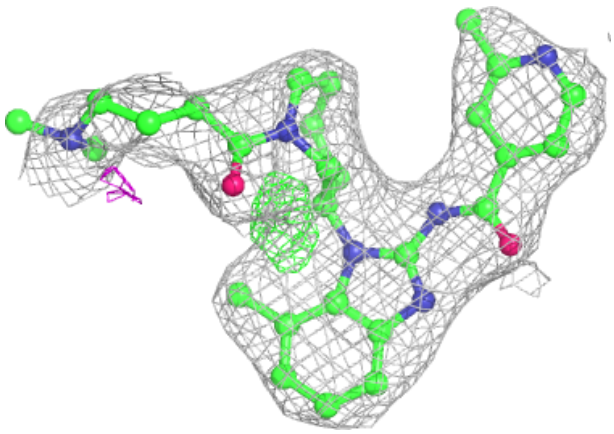
**Electron density around 5XH K 503:**

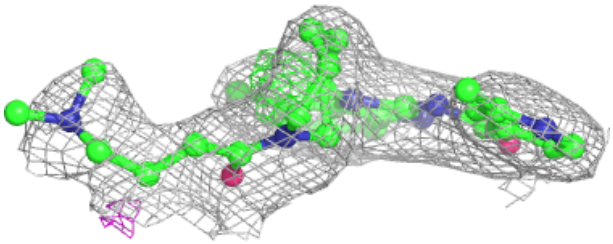
$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative) and green (positive)

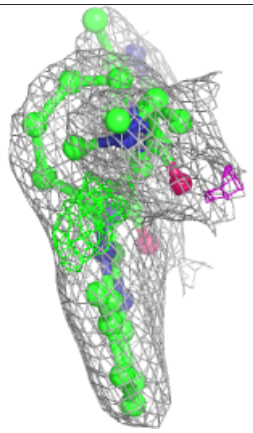


**Electron density around 5XH A 501:**

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

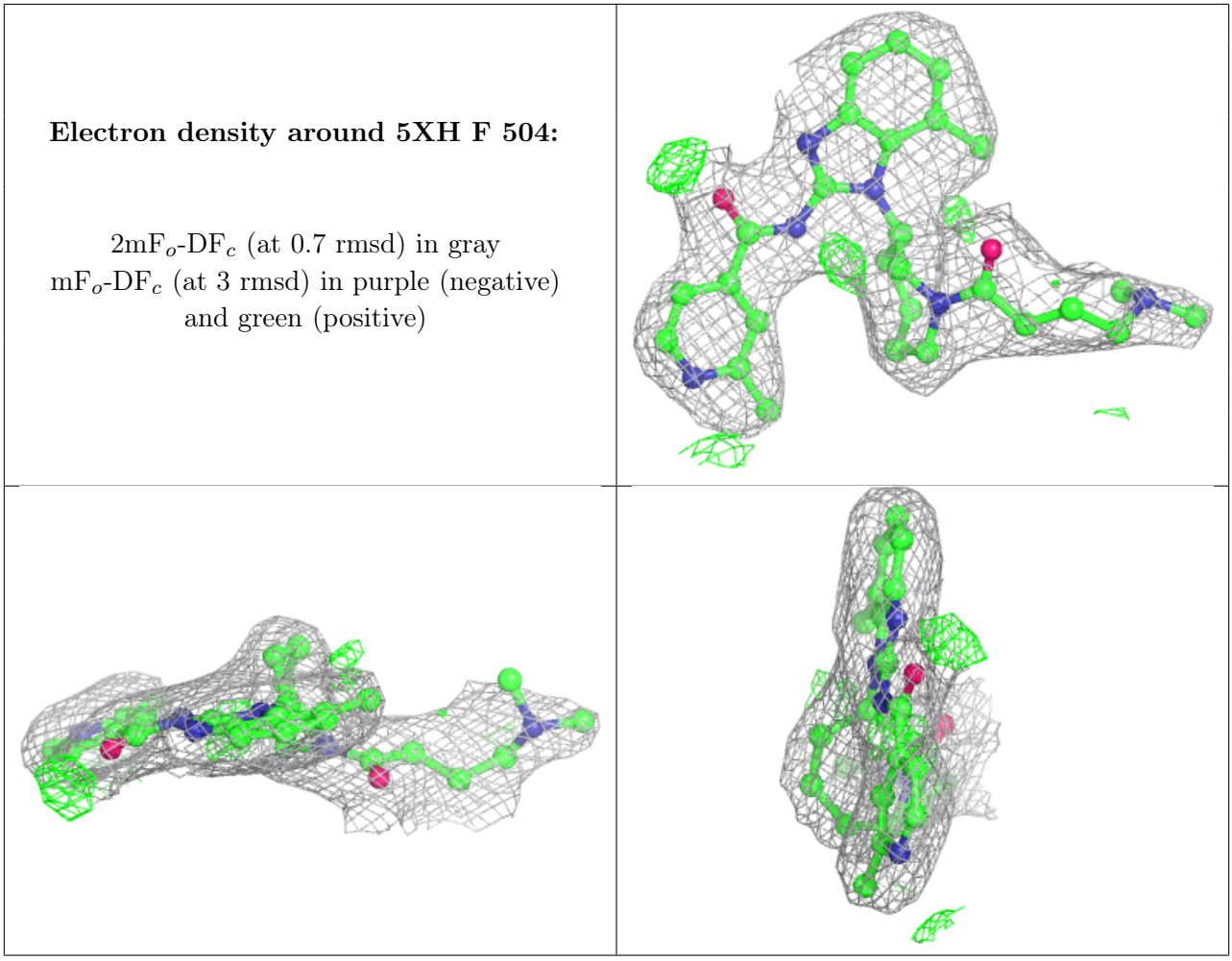






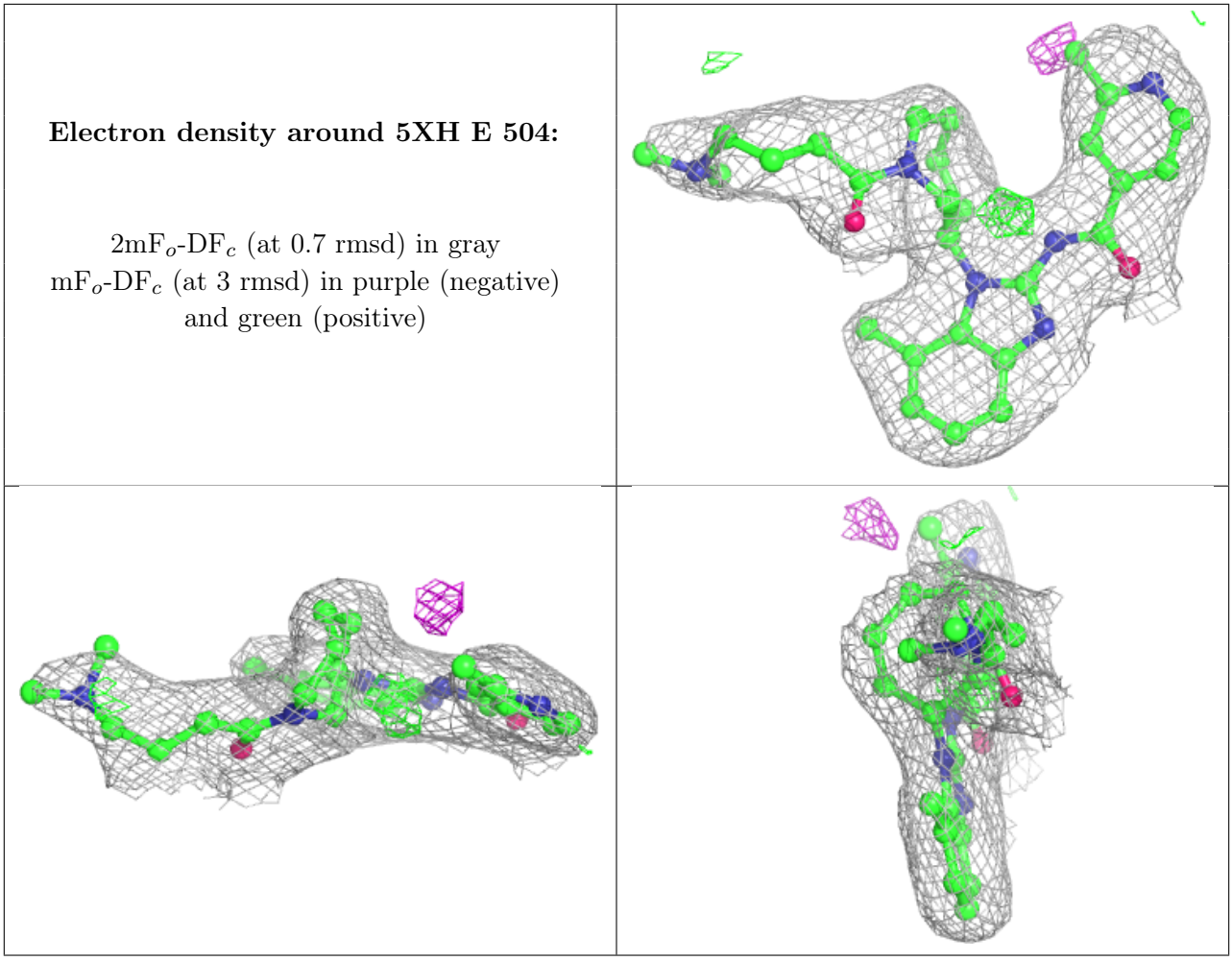
**Electron density around 5XH F 504:**

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



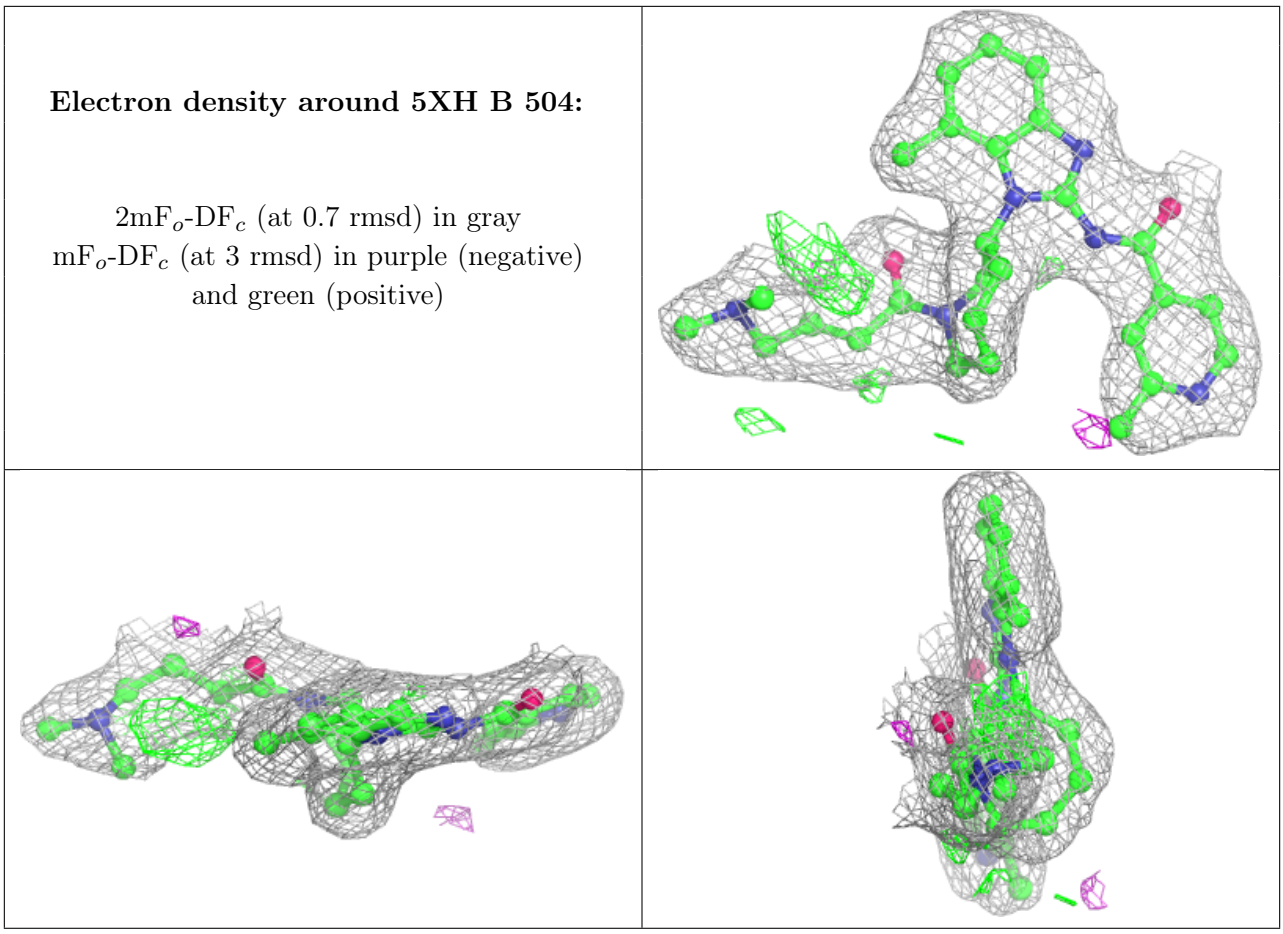
**Electron density around 5XH E 504:**

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



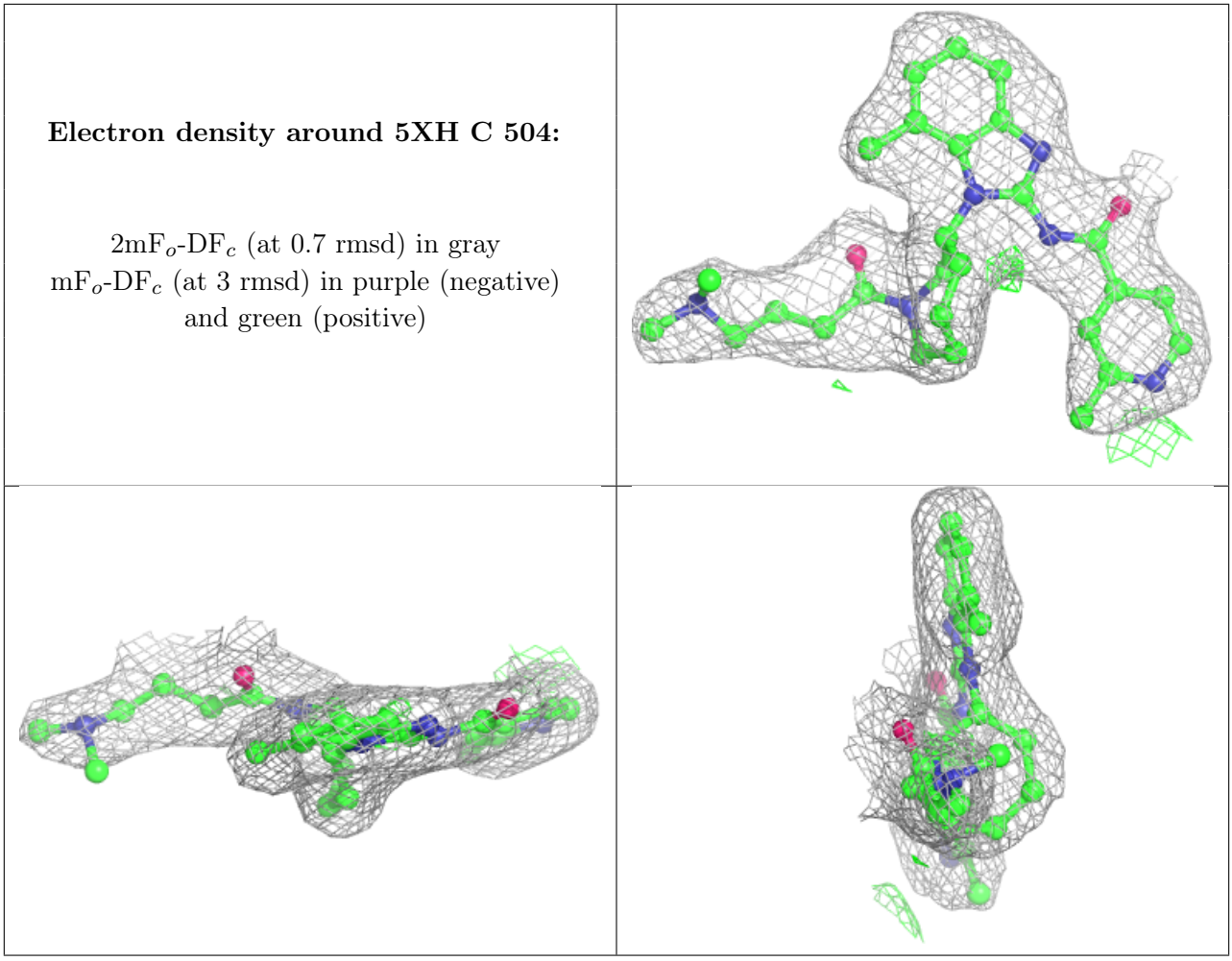
**Electron density around 5XH B 504:**

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



**Electron density around 5XH C 504:**

$2mF_o$-$DF_c$ (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.