



Full wwPDB X-ray Structure Validation Report ⓘ

May 21, 2020 – 07:26 pm BST

PDB ID : 5RB3
Title : PanDDA analysis group deposition – Crystal Structure of JMJD1B in complex with XS039249d
Authors : Snee, M.; Nowak, R.; Johansson, C.; Burgess-Brown, N.A.; Arrowsmith, C.H.; Bountra, C.; Edwards, A.M.; Oppermann, U.
Deposited on : 2020-03-16
Resolution : 1.53 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 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 : 2.11
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) : 2.11

2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 6303 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 Lysine-specific demethylase 3B.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 1 | A | 340 | 2759 | 1746 | 481 | 515 | 17 | 0 | 4 | 0 |
| 1 | B | 344 | 2801 | 1775 | 492 | 519 | 15 | 0 | 2 | 0 |

There are 50 discrepancies between the modelled and reference sequences:

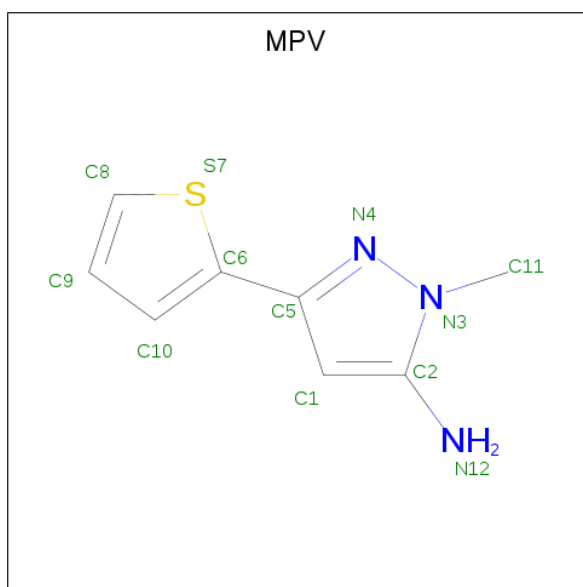
| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|-----------------------|------------|
| A | 1357 | MET | - | initiating methionine | UNP Q7LBC6 |
| A | 1358 | HIS | - | expression tag | UNP Q7LBC6 |
| A | 1359 | HIS | - | expression tag | UNP Q7LBC6 |
| A | 1360 | HIS | - | expression tag | UNP Q7LBC6 |
| A | 1361 | HIS | - | expression tag | UNP Q7LBC6 |
| A | 1362 | HIS | - | expression tag | UNP Q7LBC6 |
| A | 1363 | HIS | - | expression tag | UNP Q7LBC6 |
| A | 1364 | SER | - | expression tag | UNP Q7LBC6 |
| A | 1365 | SER | - | expression tag | UNP Q7LBC6 |
| A | 1366 | GLY | - | expression tag | UNP Q7LBC6 |
| A | 1367 | VAL | - | expression tag | UNP Q7LBC6 |
| A | 1368 | ASP | - | expression tag | UNP Q7LBC6 |
| A | 1369 | LEU | - | expression tag | UNP Q7LBC6 |
| A | 1370 | GLY | - | expression tag | UNP Q7LBC6 |
| A | 1371 | THR | - | expression tag | UNP Q7LBC6 |
| A | 1372 | GLU | - | expression tag | UNP Q7LBC6 |
| A | 1373 | ASN | - | expression tag | UNP Q7LBC6 |
| A | 1374 | LEU | - | expression tag | UNP Q7LBC6 |
| A | 1375 | TYR | - | expression tag | UNP Q7LBC6 |
| A | 1376 | PHE | - | expression tag | UNP Q7LBC6 |
| A | 1377 | GLN | - | expression tag | UNP Q7LBC6 |
| A | 1378 | SER | - | expression tag | UNP Q7LBC6 |
| A | 1379 | MET | - | expression tag | UNP Q7LBC6 |
| A | 1601 | GLU | GLN | conflict | UNP Q7LBC6 |
| A | 1606 | HIS | GLY | conflict | UNP Q7LBC6 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|-----------------------|------------|
| B | 1357 | MET | - | initiating methionine | UNP Q7LBC6 |
| B | 1358 | HIS | - | expression tag | UNP Q7LBC6 |
| B | 1359 | HIS | - | expression tag | UNP Q7LBC6 |
| B | 1360 | HIS | - | expression tag | UNP Q7LBC6 |
| B | 1361 | HIS | - | expression tag | UNP Q7LBC6 |
| B | 1362 | HIS | - | expression tag | UNP Q7LBC6 |
| B | 1363 | HIS | - | expression tag | UNP Q7LBC6 |
| B | 1364 | SER | - | expression tag | UNP Q7LBC6 |
| B | 1365 | SER | - | expression tag | UNP Q7LBC6 |
| B | 1366 | GLY | - | expression tag | UNP Q7LBC6 |
| B | 1367 | VAL | - | expression tag | UNP Q7LBC6 |
| B | 1368 | ASP | - | expression tag | UNP Q7LBC6 |
| B | 1369 | LEU | - | expression tag | UNP Q7LBC6 |
| B | 1370 | GLY | - | expression tag | UNP Q7LBC6 |
| B | 1371 | THR | - | expression tag | UNP Q7LBC6 |
| B | 1372 | GLU | - | expression tag | UNP Q7LBC6 |
| B | 1373 | ASN | - | expression tag | UNP Q7LBC6 |
| B | 1374 | LEU | - | expression tag | UNP Q7LBC6 |
| B | 1375 | TYR | - | expression tag | UNP Q7LBC6 |
| B | 1376 | PHE | - | expression tag | UNP Q7LBC6 |
| B | 1377 | GLN | - | expression tag | UNP Q7LBC6 |
| B | 1378 | SER | - | expression tag | UNP Q7LBC6 |
| B | 1379 | MET | - | expression tag | UNP Q7LBC6 |
| B | 1601 | GLU | GLN | conflict | UNP Q7LBC6 |
| B | 1606 | HIS | GLY | conflict | UNP Q7LBC6 |

- Molecule 2 is 1-methyl-3-(thiophen-2-yl)-1H-pyrazol-5-amine (three-letter code: MPV) (formula: C₈H₉N₃S) (labeled as "Ligand of Interest" by author).



| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
| 2 | A | 1 | Total | C | N | S | 0 | 0 |
| | | | 12 | 8 | 3 | 1 | | |
| 2 | B | 1 | Total | C | N | S | 0 | 0 |
| | | | 12 | 8 | 3 | 1 | | |
| 2 | B | 1 | Total | C | N | S | 0 | 0 |
| | | | 12 | 8 | 3 | 1 | | |

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
| 3 | B | 1 | Total | Cl | 0 | 0 |
| | | | 1 | 1 | | |
| 3 | A | 4 | Total | Cl | 0 | 0 |
| | | | 4 | 4 | | |

- Molecule 4 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
| 4 | B | 1 | Total | Mn | 0 | 0 |
| | | | 1 | 1 | | |
| 4 | A | 1 | Total | Mn | 0 | 0 |
| | | | 1 | 1 | | |

- Molecule 5 is water.

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|------------|--------------|-----------------|--------------|----------|----------------|----------------|
| 5 | A | 389 | Total 389 | O 389 | 0 | 0 |
| 5 | B | 311 | Total 311 | O 311 | 0 | 0 |

4 Data and refinement statistics

| Property | Value | Source |
|---|---|------------------|
| Space group | P 1 21 1 | Depositor |
| Cell constants a, b, c, α , β , γ | 58.04Å 93.46Å 94.34Å 90.00° 107.86° 90.00° | Depositor |
| Resolution (Å) | 89.79 – 1.53 89.79 – 1.53 | Depositor EDS |
| % Data completeness (in resolution range) | 99.0 (89.79-1.53) 99.1 (89.79-1.53) | Depositor EDS |
| R_{merge} | 0.04 | Depositor |
| R_{sym} | (Not available) | Depositor |
| $\langle I/\sigma(I) \rangle$ ¹ | 1.51 (at 1.53Å) | Xtrriage |
| Refinement program | REFMAC 5.8.0238 | Depositor |
| R, R_{free} | 0.187 , 0.208 0.198 , 0.217 | Depositor DCC |
| R_{free} test set | 7129 reflections (4.99%) | wwPDB-VP |
| Wilson B-factor (Å ²) | 23.5 | Xtrriage |
| Anisotropy | 0.064 | Xtrriage |
| Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²) | 0.31 , 47.7 | EDS |
| L-test for twinning ² | $\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$ | Xtrriage |
| Estimated twinning fraction | 0.022 for h,-k,-h-l | Xtrriage |
| F_o, F_c correlation | 0.96 | EDS |
| Total number of atoms | 6303 | wwPDB-VP |
| Average B, all atoms (Å ²) | 31.0 | wwPDB-VP |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.37% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: MPV, MN, CL

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 | 0.89 | 2/2832 (0.1%) | 0.92 | 4/3843 (0.1%) |
| 1 | B | 0.88 | 0/2875 | 0.89 | 1/3899 (0.0%) |
| All | All | 0.88 | 2/5707 (0.0%) | 0.90 | 5/7742 (0.1%) |

All (2) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|--------|------|-------------|----------|
| 1 | A | 1708 | GLU | CD-OE2 | 5.60 | 1.31 | 1.25 |
| 1 | A | 1427 | GLU | CD-OE1 | 5.30 | 1.31 | 1.25 |

All (5) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 1 | A | 1481 | MET | CG-SD-CE | -6.90 | 89.16 | 100.20 |
| 1 | A | 1540 | MET | CG-SD-CE | -6.41 | 89.95 | 100.20 |
| 1 | A | 1661 | ARG | NE-CZ-NH2 | -5.74 | 117.43 | 120.30 |
| 1 | B | 1708 | GLU | CB-CG-CD | 5.34 | 128.61 | 114.20 |
| 1 | A | 1659 | ARG | NE-CZ-NH1 | 5.07 | 122.84 | 120.30 |

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 2759 | 0 | 2638 | 21 | 0 |
| 1 | B | 2801 | 0 | 2687 | 29 | 0 |
| 2 | A | 12 | 0 | 9 | 0 | 0 |
| 2 | B | 24 | 0 | 18 | 0 | 0 |
| 3 | A | 4 | 0 | 0 | 0 | 0 |
| 3 | B | 1 | 0 | 0 | 0 | 0 |
| 4 | A | 1 | 0 | 0 | 0 | 0 |
| 4 | B | 1 | 0 | 0 | 0 | 0 |
| 5 | A | 389 | 0 | 0 | 6 | 3 |
| 5 | B | 311 | 0 | 0 | 11 | 1 |
| All | All | 6303 | 0 | 5352 | 50 | 3 |

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 5.

All (50) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|----------------------|----------------------|--------------------------|-------------------|
| 1:A:1406[A]:ARG:NH1 | 5:A:1901:HOH:O | 1.85 | 1.09 |
| 1:B:1516:LYS:HE3 | 5:B:1945:HOH:O | 1.67 | 0.93 |
| 1:B:1715:ARG:HG3 | 5:B:2113:HOH:O | 1.80 | 0.81 |
| 1:B:1644:HIS:NE2 | 1:B:1649:ASP:OD2 | 2.15 | 0.79 |
| 1:B:1518:ASP:HB3 | 5:B:2146:HOH:O | 1.84 | 0.76 |
| 1:B:1517[B]:ARG:HH11 | 1:B:1517[B]:ARG:CG | 1.99 | 0.74 |
| 1:A:1606:HIS:O | 5:A:1902:HOH:O | 2.04 | 0.74 |
| 1:B:1635:GLU:OE1 | 5:B:1902:HOH:O | 2.07 | 0.71 |
| 1:B:1552:ARG:NH1 | 1:B:1592:GLU:OE1 | 2.23 | 0.70 |
| 1:B:1518:ASP:OD1 | 5:B:1903:HOH:O | 2.11 | 0.68 |
| 1:B:1517[B]:ARG:HH11 | 1:B:1517[B]:ARG:HG3 | 1.59 | 0.66 |
| 1:A:1547:ILE:O | 1:A:1585:GLU:HG3 | 1.97 | 0.64 |
| 1:B:1590:ILE:HG13 | 1:B:1603:ILE:HD12 | 1.78 | 0.64 |
| 1:A:1406[A]:ARG:NH2 | 5:A:1908:HOH:O | 2.30 | 0.63 |
| 1:B:1517[B]:ARG:CB | 1:B:1517[B]:ARG:HH11 | 2.13 | 0.62 |
| 1:A:1407:GLU:HG3 | 1:A:1410:LYS:HE2 | 1.83 | 0.61 |
| 1:B:1715:ARG:HD3 | 5:B:2174:HOH:O | 2.01 | 0.59 |
| 1:B:1506:MET:O | 1:B:1516:LYS:HE2 | 2.02 | 0.59 |
| 1:B:1517[B]:ARG:NH1 | 1:B:1517[B]:ARG:HG3 | 2.17 | 0.59 |
| 1:B:1517[B]:ARG:HB2 | 1:B:1517[B]:ARG:HH11 | 1.67 | 0.59 |
| 1:B:1599:THR:O | 1:B:1603:ILE:HG22 | 2.03 | 0.58 |
| 1:B:1600:LYS:O | 1:B:1603:ILE:HG23 | 2.03 | 0.58 |
| 1:A:1407:GLU:O | 1:A:1410:LYS:HG2 | 2.05 | 0.57 |
| 1:A:1518:ASP:OD1 | 5:A:1903:HOH:O | 2.18 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---------------------|--------------------|--------------------------|-------------------|
| 1:A:1644:HIS:NE2 | 1:A:1649:ASP:OD2 | 2.39 | 0.55 |
| 1:B:1516:LYS:CE | 5:B:1945:HOH:O | 2.40 | 0.54 |
| 1:B:1631:LYS:HG2 | 5:B:2128:HOH:O | 2.07 | 0.54 |
| 1:A:1469:ILE:HD12 | 1:A:1580:GLY:HA3 | 1.89 | 0.53 |
| 1:B:1517[A]:ARG:NH1 | 5:B:1901:HOH:O | 2.03 | 0.53 |
| 1:B:1505:LEU:HD22 | 1:B:1700:VAL:HG11 | 1.90 | 0.53 |
| 1:B:1644:HIS:CE1 | 1:B:1649:ASP:OD2 | 2.64 | 0.51 |
| 1:A:1631:LYS:HE2 | 1:A:1666:TYR:OH | 2.11 | 0.50 |
| 1:A:1476:GLU:CB | 5:A:2284:HOH:O | 2.61 | 0.49 |
| 1:A:1407:GLU:HG3 | 1:A:1410:LYS:CE | 2.44 | 0.47 |
| 1:B:1520:ARG:NE | 5:B:1915:HOH:O | 2.47 | 0.47 |
| 1:B:1494:PHE:CZ | 1:B:1498:MET:HE3 | 2.50 | 0.46 |
| 1:B:1600:LYS:HE3 | 5:B:1917:HOH:O | 2.16 | 0.46 |
| 1:A:1502:PHE:CE2 | 1:A:1506:MET:HE2 | 2.51 | 0.45 |
| 1:B:1506:MET:HE3 | 1:B:1538:PRO:HD3 | 1.98 | 0.45 |
| 1:B:1600:LYS:HA | 1:B:1603:ILE:CG2 | 2.47 | 0.45 |
| 1:A:1590:ILE:HD13 | 1:A:1603:ILE:HD12 | 1.99 | 0.44 |
| 1:A:1407:GLU:HA | 1:A:1410:LYS:HZ3 | 1.82 | 0.44 |
| 1:A:1591:ASP:OD1 | 1:A:1604:HIS:HE1 | 2.00 | 0.44 |
| 1:A:1385:LEU:HD12 | 1:A:1392[B]:CYS:SG | 2.58 | 0.44 |
| 1:A:1561:LEU:C | 1:A:1561:LEU:HD12 | 2.37 | 0.43 |
| 1:B:1590:ILE:HG21 | 1:B:1603:ILE:HG21 | 1.99 | 0.43 |
| 1:A:1506:MET:HE1 | 1:A:1538:PRO:HD3 | 1.99 | 0.42 |
| 1:B:1443:VAL:HG21 | 1:B:1485:LEU:HD11 | 2.01 | 0.42 |
| 1:A:1398:ASN:CG | 5:A:2103:HOH:O | 2.58 | 0.41 |
| 1:A:1407:GLU:HG3 | 1:A:1410:LYS:NZ | 2.36 | 0.41 |

All (3) 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) |
|----------------|-----------------------|--------------------------|-------------------|
| 5:A:2021:HOH:O | 5:A:2053:HOH:O[2_648] | 1.86 | 0.34 |
| 5:A:2185:HOH:O | 5:A:2260:HOH:O[2_648] | 2.11 | 0.09 |
| 5:A:2209:HOH:O | 5:B:1915:HOH:O[2_557] | 2.13 | 0.07 |

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 | 342/372 (92%) | 337 (98%) | 5 (2%) | 0 | 100 | 100 |
| 1 | B | 342/372 (92%) | 332 (97%) | 9 (3%) | 1 (0%) | 41 | 19 |
| All | All | 684/744 (92%) | 669 (98%) | 14 (2%) | 1 (0%) | 51 | 26 |

All (1) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | B | 1591 | ASP |

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 | 298/331 (90%) | 293 (98%) | 5 (2%) | 60 | 31 |
| 1 | B | 303/331 (92%) | 296 (98%) | 7 (2%) | 50 | 20 |
| All | All | 601/662 (91%) | 589 (98%) | 12 (2%) | 55 | 24 |

All (12) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 1584 | GLU |
| 1 | A | 1594 | ASP |
| 1 | A | 1606 | HIS |
| 1 | A | 1644 | HIS |
| 1 | A | 1717 | THR |

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| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | B | 1577 | ILE |
| 1 | B | 1587 | LEU |
| 1 | B | 1588 | LYS |
| 1 | B | 1602 | ARG |
| 1 | B | 1603 | ILE |
| 1 | B | 1607 | LYS |
| 1 | B | 1724 | SER |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 1582 | HIS |
| 1 | A | 1604 | HIS |
| 1 | A | 1650 | GLN |
| 1 | B | 1656 | GLN |
| 1 | B | 1669 | 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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 7 are monoatomic - leaving 3 for Mogul analysis.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|------|------|--------------|------|----------|-------------|------|----------|
| | | | | | Counts | RMSZ | # Z > 2 | Counts | RMSZ | # Z > 2 |
| 2 | MPV | B | 1801 | - | 11,13,13 | 1.48 | 3 (27%) | 8,18,18 | 1.39 | 1 (12%) |
| 2 | MPV | A | 1801 | - | 11,13,13 | 1.19 | 1 (9%) | 8,18,18 | 1.07 | 1 (12%) |
| 2 | MPV | B | 1802 | - | 11,13,13 | 1.28 | 1 (9%) | 8,18,18 | 0.80 | 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 |
|-----|------|-------|------|------|---------|----------|---------|
| 2 | MPV | B | 1801 | - | - | 1/1/4/4 | 0/2/2/2 |
| 2 | MPV | A | 1801 | - | - | 0/1/4/4 | 0/2/2/2 |
| 2 | MPV | B | 1802 | - | - | 1/1/4/4 | 0/2/2/2 |

All (5) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|------|------|-------|-------|-------------|----------|
| 2 | B | 1802 | MPV | C5-C6 | -3.56 | 1.41 | 1.49 |
| 2 | B | 1801 | MPV | C6-S7 | -2.71 | 1.70 | 1.72 |
| 2 | B | 1801 | MPV | C5-N4 | 2.59 | 1.39 | 1.34 |
| 2 | A | 1801 | MPV | C5-C6 | -2.57 | 1.43 | 1.49 |
| 2 | B | 1801 | MPV | C5-C6 | -2.46 | 1.43 | 1.49 |

All (2) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|------|------|-----------|-------|-------------|----------|
| 2 | B | 1801 | MPV | C1-C5-C6 | -3.12 | 124.78 | 129.32 |
| 2 | A | 1801 | MPV | C11-N3-C2 | -2.48 | 125.88 | 128.86 |

There are no chirality outliers.

All (2) torsion outliers are listed below:

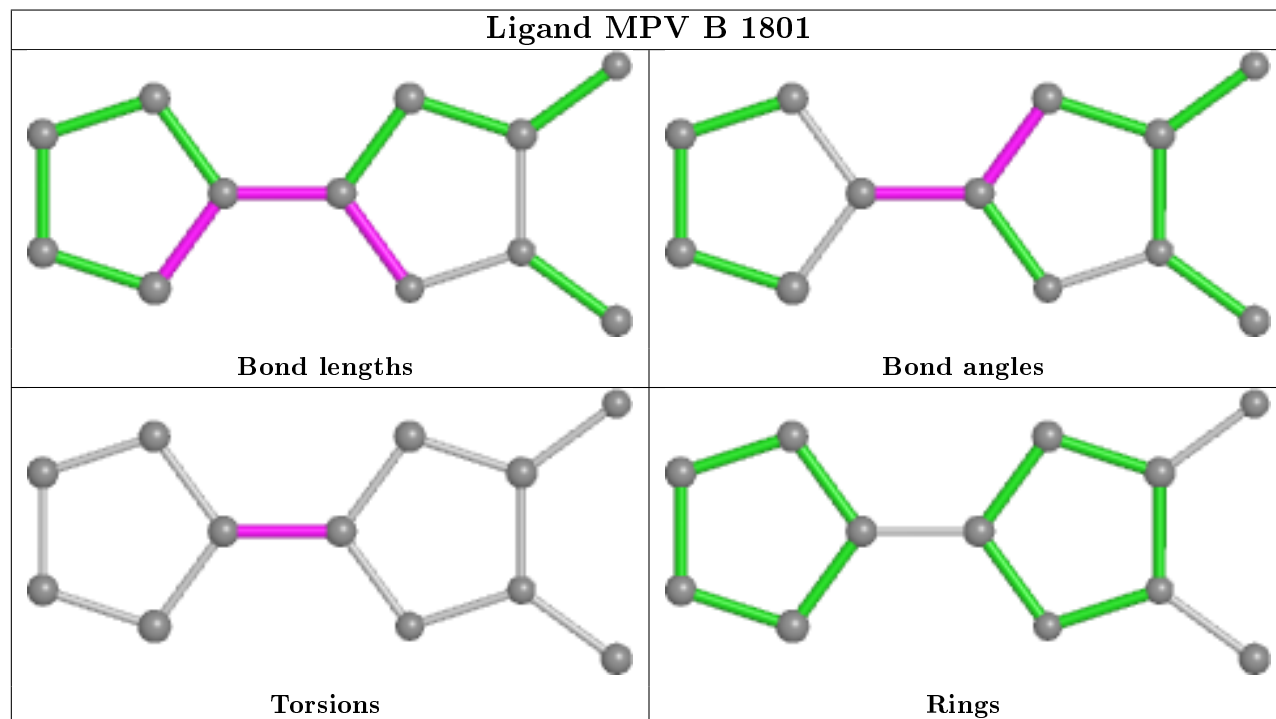
| Mol | Chain | Res | Type | Atoms |
|-----|-------|------|------|-------------|
| 2 | B | 1801 | MPV | C1-C5-C6-S7 |
| 2 | B | 1802 | MPV | C1-C5-C6-S7 |

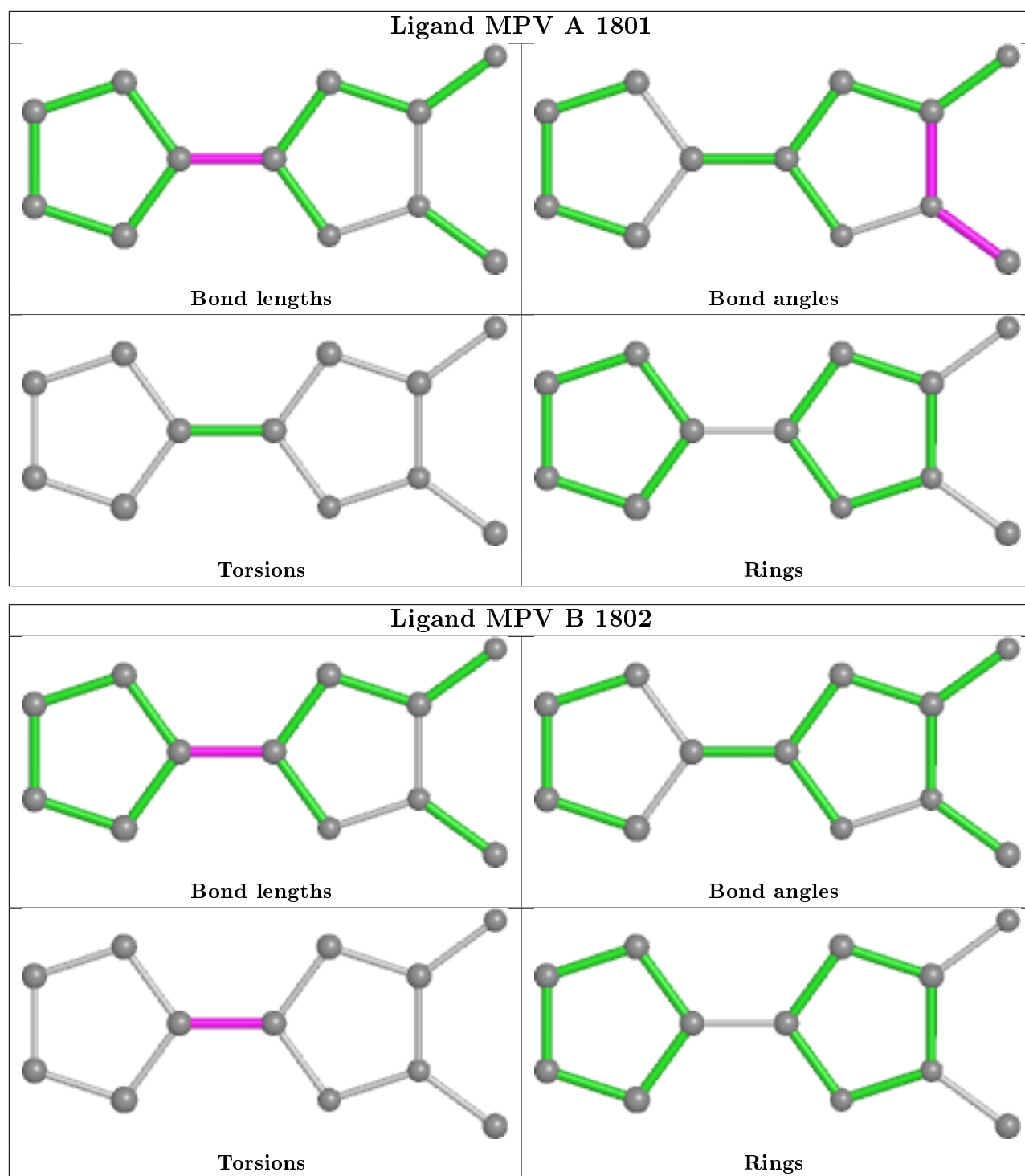
There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In

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





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed | <RSRZ> | #RSRZ>2 | OWAB(Å ²) | Q<0.9 |
|-----|-------|---------------|--------|-----------------------------|-----------------------|----------|
| 1 | A | 340/372 (91%) | 0.09 | 32 (9%) 8 9 | 15, 26, 44, 74 | 38 (11%) |
| 1 | B | 344/372 (92%) | 0.16 | 28 (8%) 12 13 | 17, 30, 59, 84 | 22 (6%) |
| All | All | 684/744 (91%) | 0.12 | 60 (8%) 10 11 | 15, 27, 53, 84 | 60 (8%) |

All (60) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|---------|------|------|
| 1 | B | 1668 | VAL | 11.2 |
| 1 | B | 1603 | ILE | 10.0 |
| 1 | A | 1392[A] | CYS | 9.5 |
| 1 | B | 1666 | TYR | 8.8 |
| 1 | B | 1586 | VAL | 8.3 |
| 1 | A | 1586 | VAL | 6.9 |
| 1 | B | 1587 | LEU | 6.9 |
| 1 | A | 1598 | VAL | 6.8 |
| 1 | A | 1379[A] | MET | 6.8 |
| 1 | A | 1575 | ILE | 6.6 |
| 1 | A | 1590 | ILE | 5.8 |
| 1 | B | 1667 | GLY | 5.7 |
| 1 | B | 1577 | ILE | 5.3 |
| 1 | A | 1564[A] | SER | 5.3 |
| 1 | A | 1595 | ALA | 5.1 |
| 1 | A | 1587 | LEU | 5.1 |
| 1 | B | 1517[A] | ARG | 5.1 |
| 1 | B | 1664[A] | GLU | 5.0 |
| 1 | A | 1406[A] | ARG | 5.0 |
| 1 | A | 1589 | THR | 4.6 |
| 1 | B | 1665 | GLU | 4.5 |
| 1 | A | 1599 | THR | 4.5 |
| 1 | B | 1592 | GLU | 4.4 |
| 1 | B | 1581 | ALA | 4.1 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|------|------|------|
| 1 | B | 1607 | LYS | 4.0 |
| 1 | B | 1605 | ASP | 4.0 |
| 1 | A | 1717 | THR | 4.0 |
| 1 | B | 1602 | ARG | 3.9 |
| 1 | A | 1577 | ILE | 3.8 |
| 1 | A | 1594 | ASP | 3.7 |
| 1 | B | 1609 | LYS | 3.5 |
| 1 | B | 1585 | GLU | 3.5 |
| 1 | B | 1606 | HIS | 3.5 |
| 1 | B | 1604 | HIS | 3.4 |
| 1 | B | 1584 | GLU | 3.3 |
| 1 | B | 1601 | GLU | 3.3 |
| 1 | A | 1600 | LYS | 3.3 |
| 1 | A | 1606 | HIS | 3.3 |
| 1 | B | 1669 | GLN | 3.2 |
| 1 | A | 1576 | PRO | 3.2 |
| 1 | B | 1593 | GLY | 3.2 |
| 1 | A | 1593 | GLY | 3.1 |
| 1 | B | 1590 | ILE | 3.1 |
| 1 | A | 1609 | LYS | 3.1 |
| 1 | A | 1603 | ILE | 3.1 |
| 1 | A | 1585 | GLU | 2.9 |
| 1 | A | 1602 | ARG | 2.8 |
| 1 | B | 1608 | GLU | 2.8 |
| 1 | A | 1608 | GLU | 2.8 |
| 1 | A | 1552 | ARG | 2.7 |
| 1 | A | 1607 | LYS | 2.6 |
| 1 | B | 1583 | ASP | 2.6 |
| 1 | A | 1580 | GLY | 2.5 |
| 1 | B | 1582 | HIS | 2.3 |
| 1 | A | 1578 | GLY | 2.2 |
| 1 | A | 1579 | GLU | 2.1 |
| 1 | B | 1643 | ASP | 2.1 |
| 1 | A | 1605 | ASP | 2.0 |
| 1 | A | 1604 | HIS | 2.0 |
| 1 | A | 1378 | SER | 2.0 |

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

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

6.3 Carbohydrates

There are no carbohydrates in this entry.

6.4 Ligands

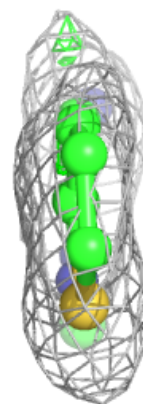
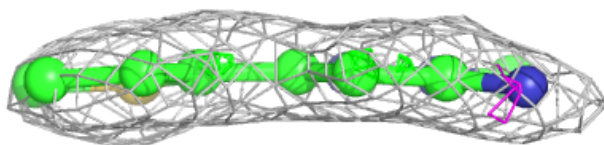
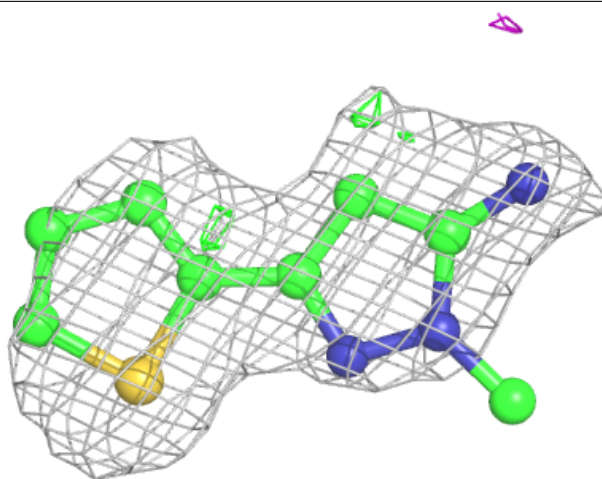
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

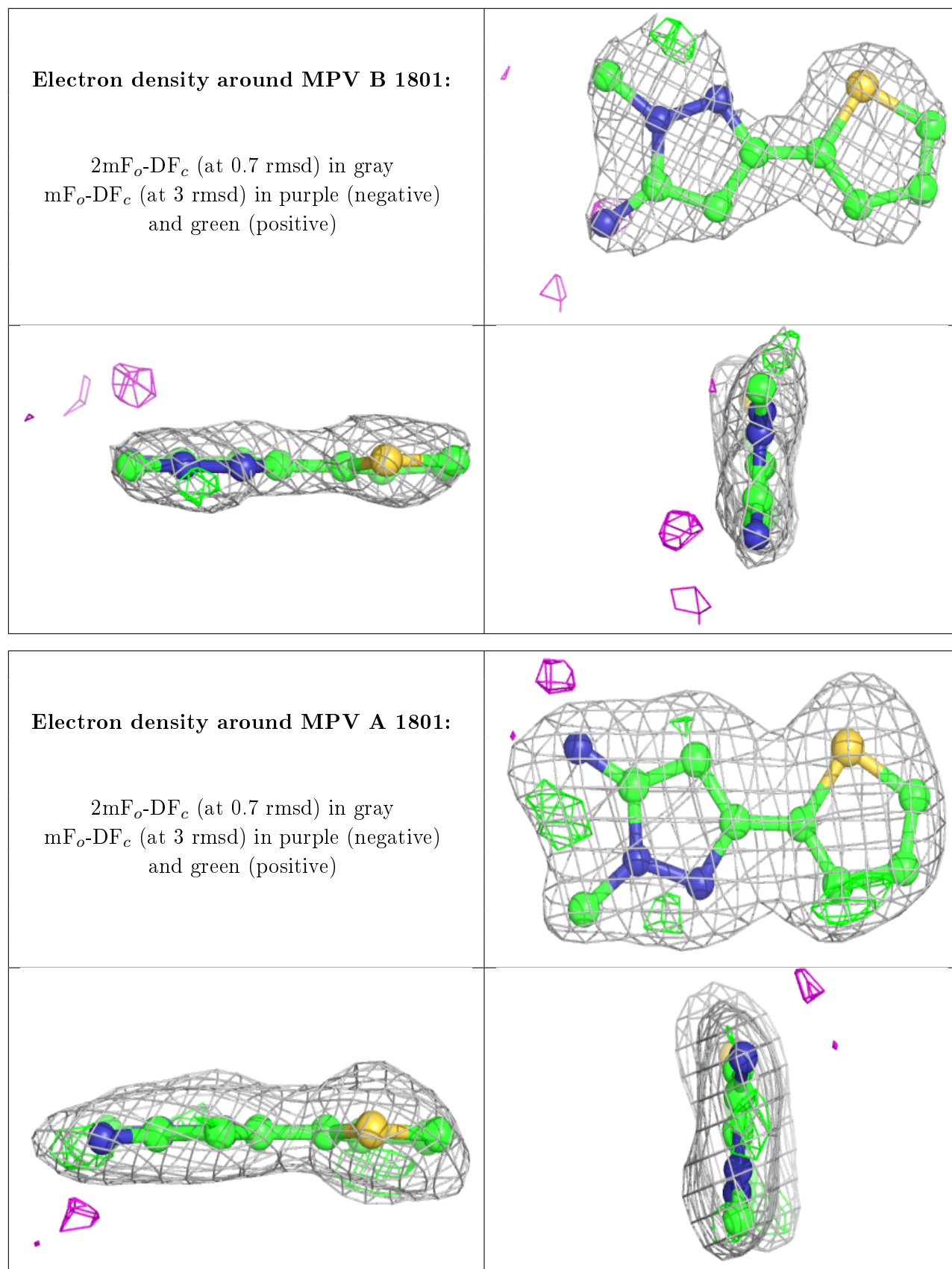
| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(\AA^2) | Q<0.9 |
|-----|------|-------|------|-------|------|------|-----------------------------|-------|
| 2 | MPV | B | 1802 | 12/12 | 0.81 | 0.18 | 34,36,40,41 | 12 |
| 2 | MPV | B | 1801 | 12/12 | 0.85 | 0.15 | 37,38,41,46 | 12 |
| 2 | MPV | A | 1801 | 12/12 | 0.87 | 0.22 | 29,31,37,37 | 12 |
| 3 | CL | A | 1804 | 1/1 | 0.91 | 0.11 | 43,43,43,43 | 0 |
| 4 | MN | A | 1806 | 1/1 | 0.94 | 0.05 | 48,48,48,48 | 0 |
| 3 | CL | A | 1805 | 1/1 | 0.96 | 0.06 | 50,50,50,50 | 0 |
| 3 | CL | B | 1803 | 1/1 | 0.97 | 0.05 | 41,41,41,41 | 0 |
| 4 | MN | B | 1804 | 1/1 | 0.98 | 0.04 | 32,32,32,32 | 0 |
| 3 | CL | A | 1802 | 1/1 | 0.99 | 0.12 | 22,22,22,22 | 0 |
| 3 | CL | A | 1803 | 1/1 | 0.99 | 0.05 | 38,38,38,38 | 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 MPV B 1802:

$2mF_o-DF_c$ (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.