# WORLDWIDE wwPDB PROTEIN DATA BANK

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

Aug 20, 2023 – 11:31 AM EDT

| | | |
|---|---|---|
| PDB ID | : | 2O8F |
| Title | : | human MutSalpha (MSH2/MSH6) bound to DNA with a single base T insert |
| Authors | : | Warren, J.J.; Pohlhaus, T.J.; Changela, A.; Modrich, P.L.; Beese, L.S. |
| Deposited on | : | 2006-12-12 |
| Resolution | : | 3.25 Å(reported) |

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

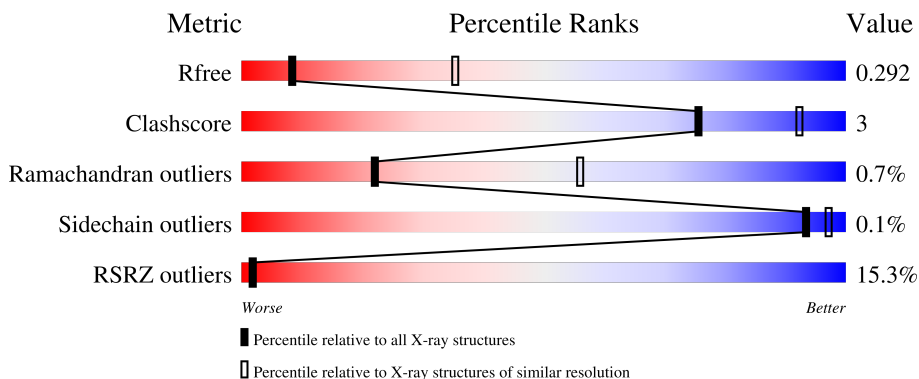| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.35 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac |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

# 1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.25 Å.

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



| Metric | Percentile Ranks | Value |
|---|---|---|
| Rfree | | 0.292 |
| Clashscore | | 3 |
| Ramachandran outliers | | 0.7% |
| Sidechain outliers | | 0.1% |
| RSRZ outliers | | 15.3% |

Worse — Better

▮ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|---|---|---|
| R$_{free}$ | 130704 | 1191 (3.30-3.22) |
| Clashscore | 141614 | 1251 (3.30-3.22) |
| Ramachandran outliers | 138981 | 1229 (3.30-3.22) |
| Sidechain outliers | 138945 | 1228 (3.30-3.22) |
| RSRZ outliers | 127900 | 1154 (3.30-3.22) |

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 | E | 17 | 6% / 71% 24% 6% |
| 2 | F | 18 | 17% / 78% 11% 11% |
| 3 | A | 934 | 17% / 81% 8% 11% |
| 4 | B | 1022 | 11% / 83% 8% 9% |

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# 2 Entry composition ⓘ

There are 7 unique types of molecules in this entry. The entry contains 14708 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 DNA chain called 5'-D(*GP*AP*CP*GP*GP*CP*CP*GP*CP*CP*GP*CP*TP*AP*GP*CP*G)-3'.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---------|---------|-------|
| 1 | E | 17 | Total | C | N | O | P | 0 | 0 | 0 |
| | | | 346 | 163 | 68 | 99 | 16 | | | |

- Molecule 2 is a DNA chain called 5'-D(*CP*GP*CP*TP*AP*GP*CP*GP*TP*GP*CP*GP*GP*CP*CP*GP*TP*C)-3'.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---------|---------|-------|
| 2 | F | 18 | Total | C | N | O | P | 0 | 0 | 0 |
| | | | 365 | 173 | 67 | 108 | 17 | | | |

- Molecule 3 is a protein called DNA mismatch repair protein Msh2.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|-----|---------|---------|-------|
| 3 | A | 832 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 6494 | 4119 | 1103 | 1238 | 34 | | | |

- Molecule 4 is a protein called DNA mismatch repair protein MSH6.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|-----|---------|---------|-------|
| 4 | B | 933 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 7456 | 4730 | 1279 | 1396 | 51 | | | |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| B | 339 | MET | - | initiating methionine | UNP P52701 |
| B | 340 | GLY | - | cloning artifact | UNP P52701 |

- Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | ZeroOcc | AltConf |
|---|---|---|---|---|---|
| 5 | A | 1 | Total　Mg<br>1　　1 | 0 | 0 |

- Molecule 6 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).



| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 6 | A | 1 | 27 | 10 | 5 | 10 | 2 | 0 | 0 |

- Molecule 7 is water.

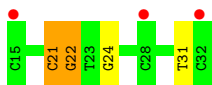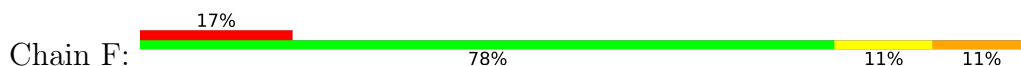| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|
| 7 | E | 1 | Total<br>1 | O<br>1 | 0 | 0 |
| 7 | A | 1 | Total<br>1 | O<br>1 | 0 | 0 |
| 7 | B | 17 | Total<br>17 | O<br>17 | 0 | 0 |

# 3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.
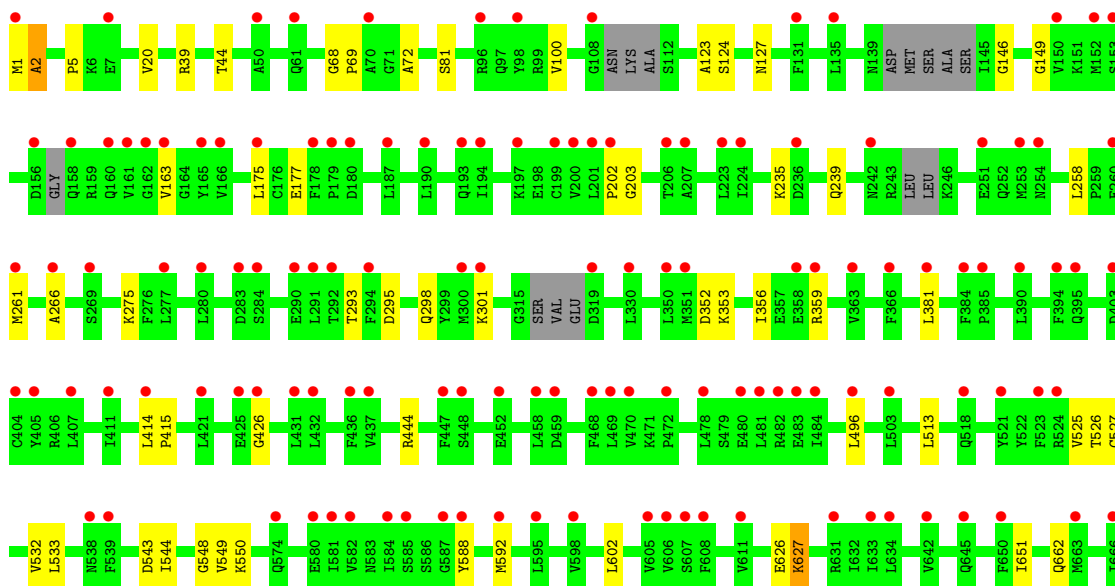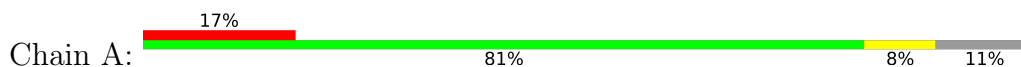
• Molecule 1: 5'-D(*GP*AP*CP*GP*GP*CP*CP*GP*CP*CP*GP*CP*TP*AP*GP*CP*G)-3'
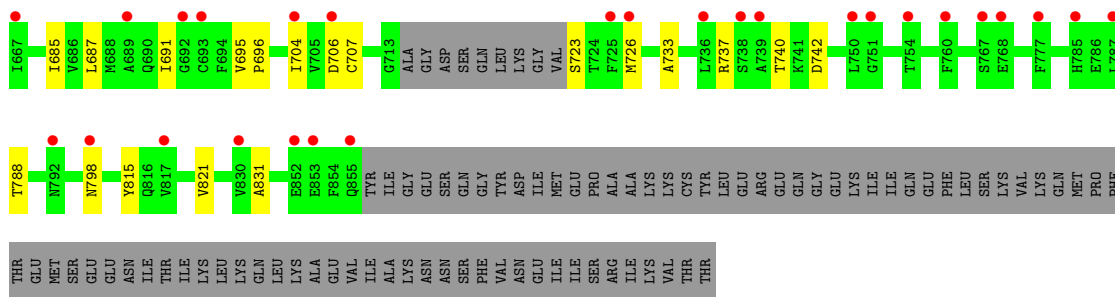
Chain E:

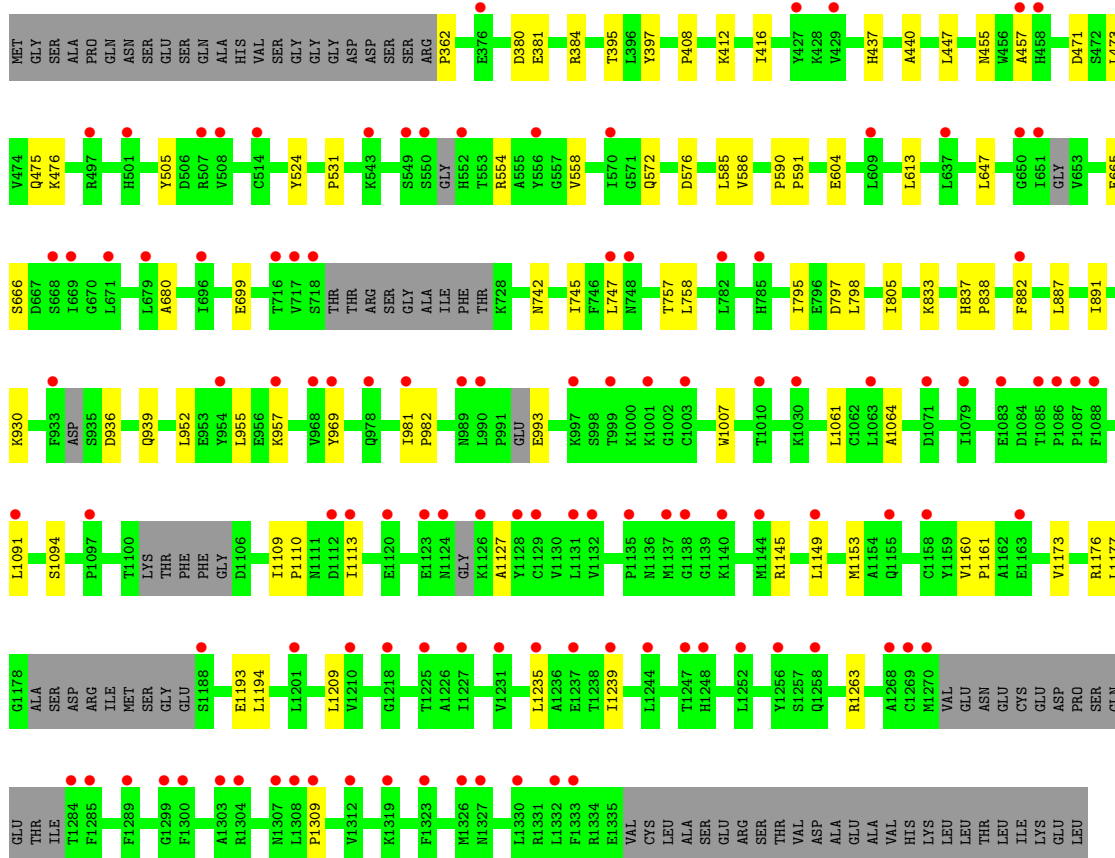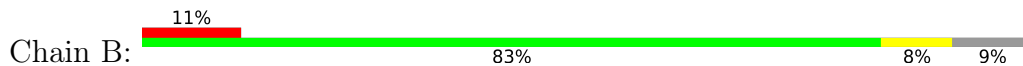• Molecule 2: 5'-D(*CP*GP*CP*TP*AP*GP*CP*GP*TP*GP*CP*GP*GP*CP*CP*GP*TP*C)-3'

Chain F:

• Molecule 3: DNA mismatch repair protein Msh2

Chain A:

I667 I685 V686 L687 M688 A689 Q690 I691 G692 C693 F694 V695 P696 I704 V705 D706 C707 G713 ALA GLY ASP GLN SER GLN LEU LYS GLY VAL S723 T724 F725 M726 A733 L736 R737 S738 A739 T740 K741 D742 L750 G751 T754 F760 S767 E768 F777 H785 E786 L787

T788 N792 N798 Y815 Q816 V817 V821 V830 A831 E852 E853 F854 Q855 TYR ILE GLY GLU SER GLN GLY TYR ASP ILE MET GLU PRO ALA ALA LYS LYS CYS TYR LEU GLU ARG GLU GLN GLY GLU LYS ILE ILE GLN GLU PHE LEU SER LYS VAL LYS GLN MET PRO PHE

THR GLU MET SER GLU GLU GLN ASN ILE THR ILE LYS LEU LYS GLN LEU LYS LYS ALA GLU GLU VAL ILE ALA LYS ASN ASN SER SER PHE VAL ASN GLU ILE ILE SER ARG ILE LYS VAL VAL THR THR

• Molecule 4: DNA mismatch repair protein MSH6

Chain B:



MET GLY SER ALA PRO GLN ASN ASN SER GLU SER GLN SER GLN ALA HIS VAL SER GLY GLY GLY ASP ASP SER SER ARG P362 E376 D380 E381 R384 T395 L396 Y397 P408 K412 I416 Y427 K428 V429 H437 A440 L447 N455 W456 A457 H458 D471 S472 L473

V474 Q475 K476 R497 H501 Y505 D506 R507 V508 C514 Y524 P531 K543 S549 S550 GLY H552 T553 R554 A555 Y556 G557 V558 I570 G571 Q572 D576 L585 V586 P590 P591 E604 L609 L613 L637 L647 G650 I651 GLY V653 E665

S666 D667 S668 I669 G670 L671 L679 A680 I696 E699 T716 V717 S718 THR THR ARG SER GLY ALA ILE PHE THR K728 N742 I745 F746 L747 N748 T757 L758 L782 H785 I795 E796 D797 L798 I805 K833 H837 P838 F882 L887 I891

K930 F933 ASP S935 D936 Q939 L952 E953 Y954 L955 E956 K957 V968 Y969 Q978 I981 P982 N989 L990 P991 GLU E993 K997 S998 T999 K1000 K1001 G1002 C1003 W1007 T1010 K1030 L1061 C1062 L1063 A1064 D1071 I1079 E1083 D1084 T1085 P1086 P1087 F1088

L1091 S1094 P1097 T1100 LYS THR PHE PHE GLY D1106 I1109 P1110 N1111 D1112 I1113 E1120 E1123 N1124 GLY K1126 A1127 Y1128 C1129 V1130 L1131 V1132 P1135 N1136 M1137 G1138 G1139 K1140 M1144 R1145 L1149 M1153 A1154 Q1155 C1158 Y1159 V1160 P1161 A1162 E1163 V1173 R1176 L1177

G1178 ALA SER ASP ARG ILE MET SER GLY GLU S1188 E1193 L1194 L1201 L1209 V1210 G1218 T1225 A1226 I1227 V1231 L1235 A1236 E1237 T1238 I1239 L1244 T1247 H1248 L1252 Y1256 S1257 Q1258 R1263 A1268 C1269 M1270 VAL GLU ASN GLU CYS GLU ASP PRO SER GLN

GLU THR ILE T1284 F1285 F1289 G1299 F1300 A1303 R1304 N1307 L1308 P1309 V1312 K1319 F1323 M1326 N1327 L1330 R1331 L1332 F1333 R1334 E1335 VAL CYS LEU ALA SER GLU ARG SER THR VAL ASP ALA GLU ALA VAL HIS LYS LEU LEU THR LEU ILE LYS GLU LEU

# 4 Data and refinement statistics (i)

| Property | Value | Source |
|----------|-------|--------|
| Space group | P 43 3 2 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 259.55Å 259.55Å 259.55Å<br>90.00° 90.00° 90.00° | Depositor |
| Resolution (Å) | 20.00 – 3.25<br>82.08 – 3.25 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 99.6 (20.00-3.25)<br>99.5 (82.08-3.25) | Depositor<br>EDS |
| $R_{merge}$ | 0.13 | Depositor |
| $R_{sym}$ | 0.13 | Depositor |
| $< I/\sigma(I) >$ [1] | 2.47 (at 3.26Å) | Xtriage |
| Refinement program | REFMAC | Depositor |
| R, $R_{free}$ | 0.243 , 0.293<br>0.250 , 0.292 | Depositor<br>DCC |
| $R_{free}$ test set | 2382 reflections (5.05%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 85.0 | Xtriage |
| Anisotropy | 0.000 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.30 , 136.1 | EDS |
| L-test for twinning[2] | $< |L| > = 0.42, < L^2 > = 0.24$ | Xtriage |
| Estimated twinning fraction | No twinning to report. | Xtriage |
| $F_o$,$F_c$ correlation | 0.88 | EDS |
| Total number of atoms | 14708 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 111.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.32% of the height of the origin peak. No significant pseudotranslation is detected.*

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

# 5  Model quality ⓘ

## 5.1  Standard geometry ⓘ

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

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   | E     | 0.61 | 0/388   | 1.32 | 5/597 (0.8%) |
| 2   | F     | 0.61 | 0/408   | 1.46 | 6/628 (1.0%) |
| 3   | A     | 0.30 | 0/6595  | 0.56 | 0/8898  |
| 4   | B     | 0.32 | 0/7600  | 0.58 | 0/10244 |
| All | All   | 0.33 | 0/14991 | 0.65 | 11/20367 (0.1%) |

There are no bond length outliers.

All (11) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|------|-----------|--------|
| 2 | F | 22 | DG | O3'-P-O5' | -11.73 | 81.71 | 104.00 |
| 2 | F | 22 | DG | OP1-P-O3' | -7.96 | 87.68 | 105.20 |
| 2 | F | 22 | DG | OP2-P-O3' | -7.58 | 88.53 | 105.20 |
| 1 | E | 2 | DA | P-O3'-C3' | 7.20 | 128.34 | 119.70 |
| 1 | E | 1 | DG | P-O3'-C3' | 7.11 | 128.23 | 119.70 |
| 1 | E | 5 | DG | P-O3'-C3' | 7.10 | 128.22 | 119.70 |
| 1 | E | 6 | DC | O4'-C1'-N1 | 6.83 | 112.78 | 108.00 |
| 1 | E | 16 | DC | P-O3'-C3' | 6.20 | 127.14 | 119.70 |
| 2 | F | 21 | DC | P-O3'-C3' | 5.97 | 126.86 | 119.70 |
| 2 | F | 21 | DC | O4'-C1'-N1 | 5.50 | 111.85 | 108.00 |
| 2 | F | 24 | DG | O4'-C1'-N9 | -5.15 | 104.39 | 108.00 |

There are no chirality outliers.

There are no planarity outliers.

## 5.2  Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen

atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | E | 346 | 0 | 190 | 1 | 0 |
| 2 | F | 365 | 0 | 203 | 2 | 0 |
| 3 | A | 6494 | 0 | 6491 | 43 | 0 |
| 4 | B | 7456 | 0 | 7431 | 48 | 0 |
| 5 | A | 1 | 0 | 0 | 0 | 0 |
| 6 | A | 27 | 0 | 12 | 0 | 0 |
| 7 | A | 1 | 0 | 0 | 0 | 0 |
| 7 | B | 17 | 0 | 0 | 0 | 0 |
| 7 | E | 1 | 0 | 0 | 0 | 0 |
| All | All | 14708 | 0 | 14327 | 90 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 3.

All (90) 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) |
|--------|--------|--------------------------|-------------------|
| 3:A:39:ARG:HE | 3:A:44:THR:HG21 | 1.52 | 0.74 |
| 4:B:936:ASP:HA | 4:B:939:GLN:HB3 | 1.70 | 0.73 |
| 4:B:747:LEU:HA | 4:B:757:THR:HG21 | 1.70 | 0.73 |
| 4:B:554:ARG:HH22 | 4:B:604:GLU:HG3 | 1.55 | 0.72 |
| 4:B:699:GLU:HG2 | 4:B:833:LYS:HD2 | 1.75 | 0.67 |
| 4:B:993:GLU:HB3 | 4:B:1007:TRP:HD1 | 1.62 | 0.65 |
| 3:A:175:LEU:H | 3:A:293:THR:HG21 | 1.63 | 0.64 |
| 3:A:588:TYR:O | 3:A:592:MET:HG2 | 1.98 | 0.63 |
| 4:B:380:ASP:HB2 | 4:B:384:ARG:H | 1.64 | 0.62 |
| 3:A:627:LYS:HA | 3:A:704:ILE:HB | 1.80 | 0.62 |
| 3:A:651:ILE:HD12 | 3:A:815:TYR:HB2 | 1.83 | 0.61 |
| 4:B:1176:ARG:HE | 4:B:1193:GLU:HG3 | 1.66 | 0.61 |
| 4:B:797:ASP:HB3 | 4:B:882:PHE:CD1 | 2.37 | 0.60 |
| 3:A:359:ARG:NH2 | 3:A:691:ILE:O | 2.34 | 0.59 |
| 3:A:20:VAL:HG21 | 3:A:68:GLY:HA2 | 1.84 | 0.59 |
| 4:B:380:ASP:O | 4:B:397:TYR:HB2 | 2.02 | 0.58 |
| 3:A:301:LYS:HB2 | 3:A:707:CYS:HB3 | 1.86 | 0.57 |
| 4:B:798:LEU:HD13 | 4:B:1061:LEU:HD23 | 1.85 | 0.57 |
| 4:B:437:HIS:HA | 4:B:457:ALA:HB3 | 1.86 | 0.57 |
| 3:A:5:PRO:HB3 | 3:A:81:SER:HB3 | 1.86 | 0.57 |
| 3:A:175:LEU:HB2 | 3:A:266:ALA:HB1 | 1.87 | 0.56 |
| 3:A:415:PRO:HB3 | 3:A:444:ARG:HE | 1.71 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:A:527:CYS:HB2 | 3:A:548:GLY:HA2 | 1.88 | 0.55 |
| 4:B:758:LEU:HD22 | 4:B:1149:LEU:HD22 | 1.89 | 0.54 |
| 4:B:1173:VAL:HG22 | 4:B:1209:LEU:HB3 | 1.91 | 0.53 |
| 3:A:740:THR:HG23 | 3:A:742:ASP:H | 1.75 | 0.52 |
| 4:B:795:ILE:HG23 | 4:B:1064:ALA:HA | 1.91 | 0.52 |
| 3:A:543:ASP:HB3 | 3:A:550:LYS:HD2 | 1.92 | 0.51 |
| 4:B:1149:LEU:O | 4:B:1153:MET:HG2 | 2.11 | 0.51 |
| 4:B:981:ILE:HD12 | 4:B:982:PRO:HD2 | 1.94 | 0.50 |
| 4:B:412:LYS:O | 4:B:416:ILE:HG12 | 2.11 | 0.50 |
| 4:B:447:LEU:HD21 | 4:B:473:LEU:HG | 1.94 | 0.49 |
| 3:A:525:VAL:C | 3:A:527:CYS:H | 2.16 | 0.49 |
| 4:B:952:LEU:HD23 | 4:B:955:LEU:HD12 | 1.92 | 0.49 |
| 3:A:124:SER:HB2 | 3:A:127:ASN:HB3 | 1.95 | 0.49 |
| 3:A:100:VAL:HB | 3:A:123:ALA:HB3 | 1.95 | 0.49 |
| 4:B:742:ASN:HB3 | 4:B:1177:LEU:HD12 | 1.94 | 0.49 |
| 3:A:381:LEU:HD21 | 3:A:602:LEU:HD22 | 1.94 | 0.49 |
| 1:E:2:DA:H61 | 2:F:31:DT:H3 | 1.60 | 0.48 |
| 3:A:788:THR:HG21 | 3:A:821:VAL:HG21 | 1.95 | 0.48 |
| 3:A:177:GLU:HG3 | 3:A:266:ALA:HB2 | 1.96 | 0.47 |
| 4:B:665:GLU:HG3 | 4:B:666:SER:H | 1.79 | 0.47 |
| 4:B:798:LEU:HB3 | 4:B:805:ILE:HD11 | 1.97 | 0.47 |
| 3:A:258:LEU:H | 3:A:261:MET:HB2 | 1.80 | 0.47 |
| 3:A:295:ASP:HB3 | 3:A:298:GLN:HG3 | 1.96 | 0.47 |
| 3:A:544:ILE:HG12 | 3:A:549:VAL:HG13 | 1.97 | 0.47 |
| 4:B:957:LYS:HE3 | 4:B:969:TYR:CD2 | 2.50 | 0.47 |
| 4:B:440:ALA:HB3 | 4:B:457:ALA:HB1 | 1.97 | 0.46 |
| 4:B:1127:ALA:HB1 | 4:B:1263:ARG:HD2 | 1.96 | 0.46 |
| 4:B:471:ASP:O | 4:B:475:GLN:HG2 | 2.16 | 0.45 |
| 3:A:695:VAL:HA | 3:A:696:PRO:HD3 | 1.86 | 0.45 |
| 3:A:39:ARG:HE | 3:A:44:THR:CG2 | 2.27 | 0.44 |
| 3:A:175:LEU:N | 3:A:293:THR:HG21 | 2.31 | 0.44 |
| 3:A:69:PRO:HG2 | 3:A:72:ALA:HB3 | 1.99 | 0.44 |
| 3:A:235:LYS:HB2 | 3:A:239:GLN:HG3 | 1.98 | 0.44 |
| 4:B:524:TYR:CE1 | 4:B:531:PRO:HA | 2.53 | 0.44 |
| 3:A:733:ALA:O | 3:A:737:ARG:HG2 | 2.17 | 0.44 |
| 3:A:687:LEU:O | 3:A:691:ILE:HG13 | 2.18 | 0.43 |
| 4:B:586:VAL:HG11 | 4:B:613:LEU:HD11 | 1.99 | 0.43 |
| 4:B:837:HIS:HA | 4:B:838:PRO:HD3 | 1.87 | 0.43 |
| 3:A:1:MET:H2 | 4:B:476:LYS:HG3 | 1.83 | 0.43 |
| 4:B:381:GLU:HB2 | 4:B:395:THR:HB | 2.00 | 0.43 |
| 4:B:993:GLU:HB3 | 4:B:1007:TRP:CD1 | 2.49 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 3:A:2:ALA:H | 4:B:476:LYS:HE2 | 1.84 | 0.43 |
| 3:A:831:ALA:HA | 4:B:1194:LEU:HD13 | 1.99 | 0.43 |
| 4:B:408:PRO:HA | 4:B:505:TYR:HD1 | 1.84 | 0.43 |
| 4:B:1091:LEU:HB3 | 4:B:1094:SER:HB3 | 2.00 | 0.43 |
| 3:A:353:LYS:HE2 | 3:A:626:GLU:HG2 | 2.01 | 0.42 |
| 3:A:352:ASP:O | 3:A:356:ILE:HG13 | 2.19 | 0.42 |
| 3:A:662:GLN:OE1 | 3:A:798:ASN:HB2 | 2.19 | 0.42 |
| 4:B:590:PRO:HA | 4:B:591:PRO:HD3 | 1.81 | 0.42 |
| 3:A:723:SER:HB2 | 3:A:726:MET:H | 1.85 | 0.42 |
| 4:B:887:LEU:O | 4:B:891:ILE:HG12 | 2.18 | 0.42 |
| 3:A:414:LEU:N | 3:A:415:PRO:HD2 | 2.34 | 0.42 |
| 3:A:496:LEU:HB2 | 3:A:513:LEU:HD12 | 2.01 | 0.42 |
| 4:B:1091:LEU:HB2 | 4:B:1113:ILE:HB | 2.02 | 0.42 |
| 4:B:572:GLN:HB2 | 4:B:680:ALA:HB2 | 2.01 | 0.42 |
| 4:B:742:ASN:O | 4:B:1145:ARG:NH1 | 2.53 | 0.42 |
| 4:B:362:PRO:HG2 | 4:B:455:ASN:HA | 2.02 | 0.42 |
| 4:B:1160:VAL:HA | 4:B:1161:PRO:HD3 | 1.88 | 0.42 |
| 4:B:554:ARG:NH2 | 4:B:604:GLU:HG3 | 2.29 | 0.41 |
| 4:B:1109:ILE:HA | 4:B:1110:PRO:HD3 | 1.91 | 0.41 |
| 4:B:1235:LEU:HD23 | 4:B:1239:ILE:HD12 | 2.03 | 0.41 |
| 4:B:797:ASP:HB3 | 4:B:882:PHE:HD1 | 1.84 | 0.41 |
| 4:B:558:VAL:HG21 | 4:B:585:LEU:HD11 | 2.03 | 0.41 |
| 3:A:685:ILE:HG12 | 3:A:696:PRO:HD2 | 2.04 | 0.40 |
| 3:A:706:ASP:HB2 | 3:A:742:ASP:HB2 | 2.03 | 0.40 |
| 2:F:21:DC:H4' | 2:F:22:DG:OP1 | 2.21 | 0.40 |
| 3:A:235:LYS:HE2 | 3:A:275:LYS:HE3 | 2.03 | 0.40 |
| 3:A:149:GLY:O | 3:A:163:VAL:HA | 2.22 | 0.40 |

There are no symmetry-related clashes.

## 5.3   Torsion angles ⓘ

### 5.3.1   Protein backbone ⓘ

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|-------------|----|
| 3 | A | 818/934 (88%) | 723 (88%) | 86 (10%) | 9 (1%) | 14 | 46 |
| 4 | B | 913/1022 (89%) | 830 (91%) | 80 (9%) | 3 (0%) | 41 | 72 |
| All | All | 1731/1956 (88%) | 1553 (90%) | 166 (10%) | 12 (1%) | 22 | 56 |

All (12) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | A | 533 | LEU |
| 3 | A | 526 | THR |
| 3 | A | 627 | LYS |
| 3 | A | 2 | ALA |
| 4 | B | 930 | LYS |
| 4 | B | 1309 | PRO |
| 3 | A | 426 | GLY |
| 3 | A | 146 | GLY |
| 3 | A | 532 | VAL |
| 4 | B | 745 | ILE |
| 3 | A | 203 | GLY |
| 3 | A | 202 | PRO |

### 5.3.2 Protein sidechains ⓘ

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------|-----------|----------|-------------|-----|
| 3 | A | 704/808 (87%) | 704 (100%) | 0 | 100 | 100 |
| 4 | B | 821/899 (91%) | 819 (100%) | 2 (0%) | 93 | 96 |
| All | All | 1525/1707 (89%) | 1523 (100%) | 2 (0%) | 93 | 97 |

All (2) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4 | B | 576 | ASP |
| 4 | B | 647 | LEU |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such

sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3 | A | 798 | ASN |

### 5.3.3  RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5  Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 5.6  Ligand geometry ⓘ

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 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 | #$|Z| > 2$ |
| 6 | ADP | A | 936 | 5 | 24,29,29 | 1.03 | 1 (4%) | 29,45,45 | 1.32 | 4 (13%) |

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 |
|-----|------|-------|-----|------|---------|----------|-------|
| 6 | ADP | A | 936 | 5 | - | 5/12/32/32 | 0/3/3/3 |

All (1) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 6 | A | 936 | ADP | C5-C4 | 2.64 | 1.47 | 1.40 |

All (4) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 6 | A | 936 | ADP | N3-C2-N1 | -3.29 | 123.54 | 128.68 |
| 6 | A | 936 | ADP | PA-O3A-PB | -3.15 | 122.03 | 132.83 |
| 6 | A | 936 | ADP | C4-C5-N7 | -2.51 | 106.78 | 109.40 |
| 6 | A | 936 | ADP | C3'-C2'-C1' | 2.49 | 104.72 | 100.98 |

There are no chirality outliers.

All (5) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 6 | A | 936 | ADP | C5'-O5'-PA-O2A |
| 6 | A | 936 | ADP | C5'-O5'-PA-O3A |
| 6 | A | 936 | ADP | O4'-C4'-C5'-O5' |
| 6 | A | 936 | ADP | C5'-O5'-PA-O1A |
| 6 | A | 936 | ADP | C3'-C4'-C5'-O5' |

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 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 ADP A 936**



Bond lengths

Bond angles

Torsions

Rings
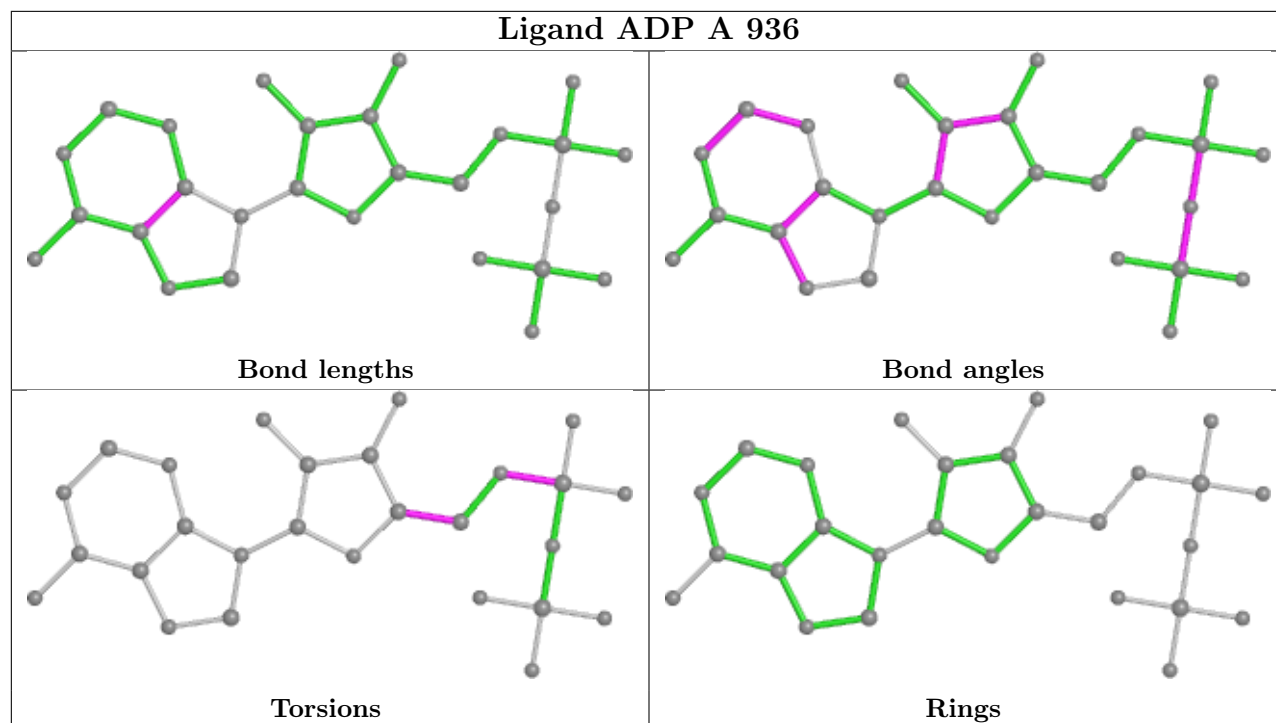
## 5.7 Other polymers ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

# 6 Fit of model and data ⓘ

## 6.1 Protein, DNA and RNA chains ⓘ

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

| Mol | Chain | Analysed | <RSRZ> | #RSRZ>2 | | | OWAB(Å²) | Q<0.9 |
|-----|-------|----------|--------|---------|---|---|----------|-------|
| 1 | E | 17/17 (100%) | 0.69 | 1 (5%) | 22 | 21 | 105, 113, 127, 132 | 0 |
| 2 | F | 18/18 (100%) | 1.06 | 3 (16%) | 1 | 1 | 102, 112, 118, 118 | 0 |
| 3 | A | 832/934 (89%) | 1.07 | 158 (18%) | 1 | 1 | 38, 111, 114, 120 | 0 |
| 4 | B | 933/1022 (91%) | 0.84 | 114 (12%) | 4 | 4 | 38, 110, 121, 126 | 0 |
| All | All | 1800/1991 (90%) | 0.95 | 276 (15%) | 2 | 2 | 38, 111, 118, 132 | 0 |

All (276) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 4 | B | 550 | SER | 11.0 |
| 3 | A | 153 | SER | 8.8 |
| 3 | A | 426 | GLY | 7.1 |
| 4 | B | 1308 | LEU | 6.8 |
| 3 | A | 366 | PHE | 6.6 |
| 3 | A | 206 | THR | 6.3 |
| 3 | A | 152 | MET | 6.0 |
| 4 | B | 1330 | LEU | 5.8 |
| 4 | B | 1285 | PHE | 5.8 |
| 3 | A | 284 | SER | 5.4 |
| 4 | B | 1269 | CYS | 5.4 |
| 3 | A | 131 | PHE | 5.4 |
| 3 | A | 166 | VAL | 5.3 |
| 3 | A | 692 | GLY | 5.3 |
| 3 | A | 291 | LEU | 5.3 |
| 3 | A | 852 | GLU | 5.2 |
| 4 | B | 651 | ILE | 5.1 |
| 3 | A | 469 | LEU | 5.1 |
| 1 | E | 17 | DG | 5.0 |
| 3 | A | 161 | VAL | 4.9 |
| 3 | A | 395 | GLN | 4.8 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|------|------|------|
| 4 | B | 954 | TYR | 4.8 |
| 4 | B | 1284 | THR | 4.7 |
| 3 | A | 587 | GLY | 4.7 |
| 4 | B | 669 | ILE | 4.7 |
| 3 | A | 202 | PRO | 4.7 |
| 2 | F | 15 | DC | 4.6 |
| 3 | A | 421 | LEU | 4.6 |
| 4 | B | 716 | THR | 4.6 |
| 3 | A | 693 | CYS | 4.6 |
| 3 | A | 319 | ASP | 4.5 |
| 3 | A | 292 | THR | 4.5 |
| 3 | A | 706 | ASP | 4.5 |
| 3 | A | 798 | ASN | 4.5 |
| 4 | B | 717 | VAL | 4.4 |
| 3 | A | 480 | GLU | 4.3 |
| 3 | A | 236 | ASP | 4.3 |
| 4 | B | 997 | LYS | 4.2 |
| 3 | A | 750 | LEU | 4.1 |
| 4 | B | 1309 | PRO | 4.1 |
| 3 | A | 242 | ASN | 4.1 |
| 4 | B | 552 | HIS | 4.0 |
| 4 | B | 1235 | LEU | 4.0 |
| 4 | B | 1087 | PRO | 4.0 |
| 3 | A | 156 | ASP | 3.9 |
| 3 | A | 726 | MET | 3.9 |
| 3 | A | 478 | LEU | 3.9 |
| 4 | B | 1137 | MET | 3.9 |
| 4 | B | 1085 | THR | 3.9 |
| 3 | A | 390 | LEU | 3.9 |
| 3 | A | 574 | GLN | 3.8 |
| 3 | A | 108 | GLY | 3.8 |
| 3 | A | 384 | PHE | 3.8 |
| 3 | A | 330 | LEU | 3.7 |
| 3 | A | 598 | VAL | 3.7 |
| 3 | A | 608 | PHE | 3.7 |
| 4 | B | 1323 | PHE | 3.7 |
| 4 | B | 1303 | ALA | 3.7 |
| 4 | B | 1135 | PRO | 3.7 |
| 3 | A | 767 | SER | 3.7 |
| 4 | B | 1300 | PHE | 3.7 |
| 3 | A | 1 | MET | 3.6 |
| 4 | B | 1131 | LEU | 3.6 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 4 | B | 1138 | GLY | 3.6 |
| 3 | A | 394 | PHE | 3.5 |
| 3 | A | 582 | VAL | 3.5 |
| 3 | A | 585 | SER | 3.5 |
| 4 | B | 1129 | CYS | 3.5 |
| 3 | A | 436 | PHE | 3.5 |
| 3 | A | 350 | LEU | 3.5 |
| 4 | B | 989 | ASN | 3.5 |
| 4 | B | 747 | LEU | 3.5 |
| 3 | A | 179 | PRO | 3.4 |
| 4 | B | 1120 | GLU | 3.4 |
| 3 | A | 197 | LYS | 3.4 |
| 3 | A | 736 | LEU | 3.4 |
| 4 | B | 679 | LEU | 3.4 |
| 4 | B | 508 | VAL | 3.4 |
| 4 | B | 1091 | LEU | 3.4 |
| 3 | A | 704 | ILE | 3.4 |
| 3 | A | 754 | THR | 3.3 |
| 4 | B | 1332 | LEU | 3.3 |
| 3 | A | 254 | ASN | 3.3 |
| 3 | A | 483 | GLU | 3.3 |
| 3 | A | 175 | LEU | 3.3 |
| 3 | A | 404 | CYS | 3.3 |
| 3 | A | 431 | LEU | 3.3 |
| 4 | B | 637 | LEU | 3.3 |
| 3 | A | 224 | ILE | 3.3 |
| 3 | A | 458 | LEU | 3.2 |
| 4 | B | 556 | TYR | 3.2 |
| 3 | A | 201 | LEU | 3.2 |
| 3 | A | 269 | SER | 3.2 |
| 3 | A | 751 | GLY | 3.2 |
| 3 | A | 830 | VAL | 3.2 |
| 4 | B | 1248 | HIS | 3.2 |
| 3 | A | 251 | GLU | 3.1 |
| 3 | A | 363 | VAL | 3.1 |
| 3 | A | 452 | GLU | 3.1 |
| 3 | A | 459 | ASP | 3.1 |
| 3 | A | 414 | LEU | 3.1 |
| 3 | A | 425 | GLU | 3.1 |
| 3 | A | 817 | VAL | 3.1 |
| 3 | A | 785 | HIS | 3.1 |
| 4 | B | 543 | LYS | 3.1 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 3 | A | 777 | PHE | 3.0 |
| 4 | B | 1132 | VAL | 3.0 |
| 3 | A | 787 | LEU | 3.0 |
| 2 | F | 32 | DC | 3.0 |
| 4 | B | 1268 | ALA | 3.0 |
| 3 | A | 738 | SER | 3.0 |
| 4 | B | 507 | ARG | 3.0 |
| 2 | F | 28 | DC | 3.0 |
| 4 | B | 1327 | ASN | 3.0 |
| 3 | A | 768 | GLU | 3.0 |
| 3 | A | 437 | VAL | 2.9 |
| 4 | B | 1270 | MET | 2.9 |
| 4 | B | 1299 | GLY | 2.9 |
| 4 | B | 981 | ILE | 2.9 |
| 4 | B | 1252 | LEU | 2.9 |
| 3 | A | 180 | ASP | 2.9 |
| 3 | A | 187 | LEU | 2.9 |
| 3 | A | 359 | ARG | 2.9 |
| 3 | A | 158 | GLN | 2.8 |
| 3 | A | 689 | ALA | 2.8 |
| 4 | B | 990 | LEU | 2.8 |
| 4 | B | 501 | HIS | 2.8 |
| 4 | B | 1128 | TYR | 2.8 |
| 3 | A | 468 | PHE | 2.8 |
| 4 | B | 1113 | ILE | 2.8 |
| 4 | B | 1086 | PRO | 2.8 |
| 3 | A | 150 | VAL | 2.8 |
| 3 | A | 725 | PHE | 2.8 |
| 3 | A | 518 | GLN | 2.8 |
| 4 | B | 1258 | GLN | 2.8 |
| 3 | A | 223 | LEU | 2.8 |
| 4 | B | 1304 | ARG | 2.8 |
| 4 | B | 1312 | VAL | 2.8 |
| 4 | B | 1144 | MET | 2.7 |
| 4 | B | 1001 | LYS | 2.7 |
| 3 | A | 163 | VAL | 2.7 |
| 3 | A | 667 | ILE | 2.7 |
| 3 | A | 190 | LEU | 2.7 |
| 3 | A | 351 | MET | 2.7 |
| 4 | B | 933 | PHE | 2.7 |
| 4 | B | 1149 | LEU | 2.7 |
| 4 | B | 1231 | VAL | 2.7 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 3 | A | 484 | ILE | 2.7 |
| 3 | A | 666 | ILE | 2.7 |
| 4 | B | 514 | CYS | 2.7 |
| 3 | A | 470 | VAL | 2.7 |
| 4 | B | 1003 | CYS | 2.7 |
| 3 | A | 194 | ILE | 2.7 |
| 3 | A | 482 | ARG | 2.6 |
| 4 | B | 1307 | ASN | 2.6 |
| 4 | B | 1126 | LYS | 2.6 |
| 3 | A | 50 | ALA | 2.6 |
| 3 | A | 301 | LYS | 2.6 |
| 3 | A | 448 | SER | 2.6 |
| 3 | A | 381 | LEU | 2.6 |
| 3 | A | 294 | PHE | 2.6 |
| 3 | A | 588 | TYR | 2.6 |
| 3 | A | 283 | ASP | 2.6 |
| 3 | A | 260 | GLU | 2.5 |
| 3 | A | 538 | ASN | 2.5 |
| 4 | B | 1218 | GLY | 2.5 |
| 4 | B | 1326 | MET | 2.5 |
| 4 | B | 1333 | PHE | 2.5 |
| 3 | A | 496 | LEU | 2.5 |
| 3 | A | 592 | MET | 2.5 |
| 3 | A | 207 | ALA | 2.5 |
| 3 | A | 135 | LEU | 2.5 |
| 3 | A | 634 | LEU | 2.5 |
| 4 | B | 1289 | PHE | 2.5 |
| 4 | B | 549 | SER | 2.5 |
| 3 | A | 631 | ARG | 2.5 |
| 3 | A | 405 | TYR | 2.5 |
| 3 | A | 266 | ALA | 2.5 |
| 3 | A | 760 | PHE | 2.5 |
| 4 | B | 1155 | GLN | 2.5 |
| 4 | B | 1158 | CYS | 2.4 |
| 4 | B | 978 | GLN | 2.4 |
| 3 | A | 253 | MET | 2.4 |
| 3 | A | 61 | GLN | 2.4 |
| 4 | B | 1237 | GLU | 2.4 |
| 4 | B | 1227 | ILE | 2.4 |
| 4 | B | 1247 | THR | 2.4 |
| 3 | A | 523 | PHE | 2.4 |
| 4 | B | 1079 | ILE | 2.4 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 3 | A | 200 | VAL | 2.4 |
| 3 | A | 300 | MET | 2.4 |
| 3 | A | 584 | ILE | 2.4 |
| 3 | A | 358 | GLU | 2.4 |
| 3 | A | 411 | ILE | 2.4 |
| 4 | B | 1140 | LYS | 2.4 |
| 3 | A | 178 | PHE | 2.4 |
| 3 | A | 739 | ALA | 2.4 |
| 4 | B | 957 | LYS | 2.4 |
| 4 | B | 1256 | TYR | 2.4 |
| 3 | A | 407 | LEU | 2.4 |
| 4 | B | 1063 | LEU | 2.4 |
| 3 | A | 447 | PHE | 2.4 |
| 4 | B | 668 | SER | 2.4 |
| 3 | A | 642 | VAL | 2.3 |
| 3 | A | 595 | LEU | 2.3 |
| 4 | B | 696 | ILE | 2.3 |
| 4 | B | 1010 | THR | 2.3 |
| 4 | B | 1239 | ILE | 2.3 |
| 3 | A | 472 | PRO | 2.3 |
| 4 | B | 497 | ARG | 2.3 |
| 4 | B | 882 | PHE | 2.3 |
| 3 | A | 580 | GLU | 2.3 |
| 4 | B | 376 | GLU | 2.3 |
| 4 | B | 609 | LEU | 2.3 |
| 3 | A | 261 | MET | 2.3 |
| 4 | B | 718 | SER | 2.3 |
| 3 | A | 524 | ARG | 2.3 |
| 3 | A | 162 | GLY | 2.3 |
| 3 | A | 199 | CYS | 2.3 |
| 3 | A | 280 | LEU | 2.2 |
| 3 | A | 432 | LEU | 2.2 |
| 3 | A | 581 | ILE | 2.2 |
| 4 | B | 570 | ILE | 2.2 |
| 4 | B | 1225 | THR | 2.2 |
| 4 | B | 1244 | LEU | 2.2 |
| 3 | A | 96 | ARG | 2.2 |
| 4 | B | 427 | TYR | 2.2 |
| 4 | B | 650 | GLY | 2.2 |
| 3 | A | 792 | ASN | 2.2 |
| 4 | B | 1124 | ASN | 2.2 |
| 4 | B | 1083 | GLU | 2.2 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|------|------|------|
| 3 | A | 605 | VAL | 2.2 |
| 3 | A | 606 | VAL | 2.2 |
| 4 | B | 1088 | PHE | 2.2 |
| 3 | A | 290 | GLU | 2.2 |
| 3 | A | 403 | ASP | 2.2 |
| 3 | A | 607 | SER | 2.1 |
| 3 | A | 539 | PHE | 2.1 |
| 3 | A | 165 | TYR | 2.1 |
| 3 | A | 521 | TYR | 2.1 |
| 4 | B | 1123 | GLU | 2.1 |
| 3 | A | 663 | MET | 2.1 |
| 4 | B | 1188 | SER | 2.1 |
| 3 | A | 503 | LEU | 2.1 |
| 4 | B | 1112 | ASP | 2.1 |
| 3 | A | 160 | GLN | 2.1 |
| 3 | A | 193 | GLN | 2.1 |
| 3 | A | 611 | VAL | 2.1 |
| 3 | A | 633 | ILE | 2.1 |
| 4 | B | 968 | VAL | 2.1 |
| 4 | B | 1210 | VAL | 2.1 |
| 4 | B | 785 | HIS | 2.1 |
| 3 | A | 855 | GLN | 2.1 |
| 4 | B | 969 | TYR | 2.1 |
| 4 | B | 1071 | ASP | 2.1 |
| 3 | A | 650 | PHE | 2.1 |
| 4 | B | 748 | ASN | 2.1 |
| 3 | A | 98 | TYR | 2.1 |
| 3 | A | 481 | LEU | 2.1 |
| 3 | A | 385 | PRO | 2.1 |
| 4 | B | 457 | ALA | 2.1 |
| 4 | B | 1097 | PRO | 2.1 |
| 3 | A | 277 | LEU | 2.1 |
| 4 | B | 671 | LEU | 2.1 |
| 3 | A | 645 | GLN | 2.0 |
| 4 | B | 1030 | LYS | 2.0 |
| 3 | A | 70 | ALA | 2.0 |
| 4 | B | 458 | HIS | 2.0 |
| 4 | B | 782 | LEU | 2.0 |
| 3 | A | 7 | GLU | 2.0 |
| 4 | B | 1163 | GLU | 2.0 |
| 4 | B | 429 | VAL | 2.0 |
| 4 | B | 1201 | LEU | 2.0 |

*Continued from previous page...*

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|------|------|------|
| 3 | A | 853 | GLU | 2.0 |
| 4 | B | 999 | THR | 2.0 |
| 4 | B | 1319 | LYS | 2.0 |

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

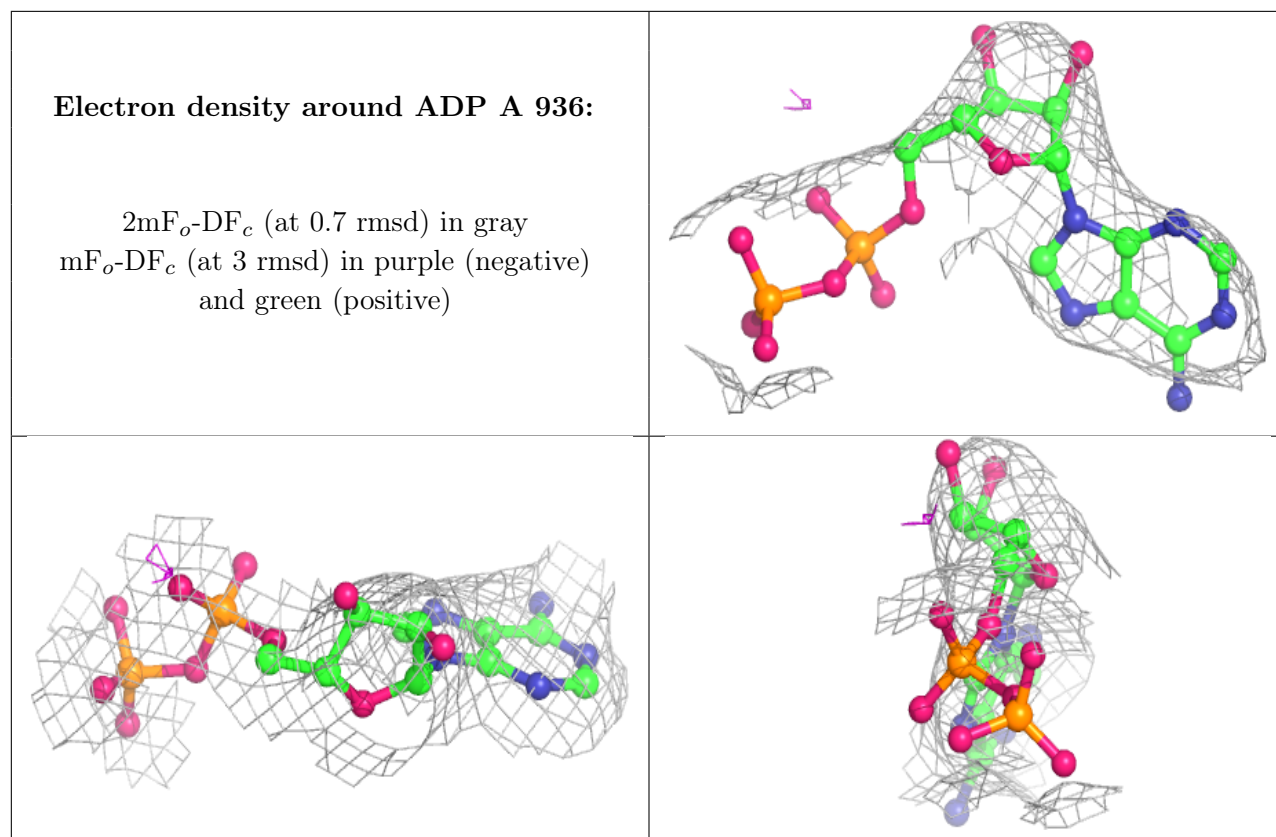There are no non-standard protein/DNA/RNA residues in this entry.

## 6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 6.4 Ligands ⓘ

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

| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors($\text{Å}^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|------------------------|-------|
| 5 | MG | A | 935 | 1/1 | 0.95 | 0.24 | 92,92,92,92 | 0 |
| 6 | ADP | A | 936 | 27/27 | 0.95 | 0.22 | 110,110,111,111 | 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 ADP A 936:**

$2mF_o$-$DF_c$ (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.