



wwPDB X-ray Structure Validation Summary Report ⓘ

Sep 13, 2020 – 11:17 AM BST

PDB ID : 3EUH
Title : Crystal Structure of the MukE-MukF Complex
Authors : Suh, M.K.; Ku, B.; Ha, N.C.; Woo, J.S.; Oh, B.H.
Deposited on : 2008-10-10
Resolution : 2.90 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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 : 2.14.4.dev1
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) : 2.14.4.dev1

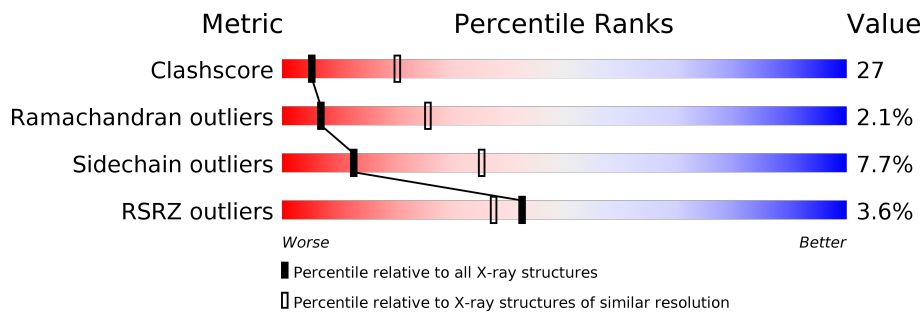
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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)) |
|-----------------------|-----------------------------|---|
| Clashscore | 141614 | 2172 (2.90-2.90) |
| Ramachandran outliers | 138981 | 2115 (2.90-2.90) |
| Sidechain outliers | 138945 | 2117 (2.90-2.90) |
| RSRZ outliers | 127900 | 1906 (2.90-2.90) |

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 on 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 $\leq 5\%$. 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 | 440 | |
| 1 | B | 440 | |
| 2 | C | 234 | |
| 2 | D | 234 | |
| 2 | E | 234 | |
| 2 | F | 234 | |

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 11564 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.

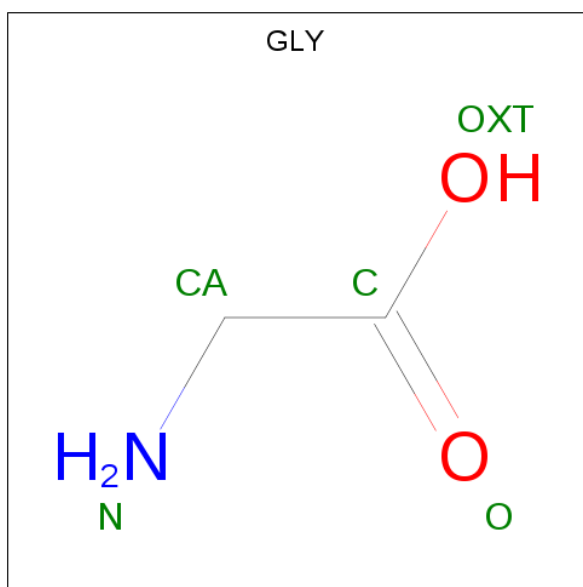
- Molecule 1 is a protein called Chromosome partition protein mukF.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 1 | A | 315 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2549 | 1598 | 454 | 489 | 8 | | | |
| 1 | B | 321 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2596 | 1625 | 463 | 500 | 8 | | | |

- Molecule 2 is a protein called MukE.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 2 | C | 206 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1673 | 1058 | 298 | 309 | 8 | | | |
| 2 | D | 188 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1542 | 984 | 274 | 277 | 7 | | | |
| 2 | E | 201 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1629 | 1035 | 287 | 299 | 8 | | | |
| 2 | F | 182 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1498 | 960 | 265 | 266 | 7 | | | |

- Molecule 3 is GLYCINE (three-letter code: GLY) (formula: C₂H₅NO₂).



| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
| | | | Total | C | N | O | | |
| 3 | A | 1 | 5 | 2 | 1 | 2 | 0 | 0 |
| 3 | D | 1 | 5 | 2 | 1 | 2 | 0 | 0 |
| 3 | D | 1 | 5 | 2 | 1 | 2 | 0 | 0 |
| 3 | D | 1 | 5 | 2 | 1 | 2 | 0 | 0 |

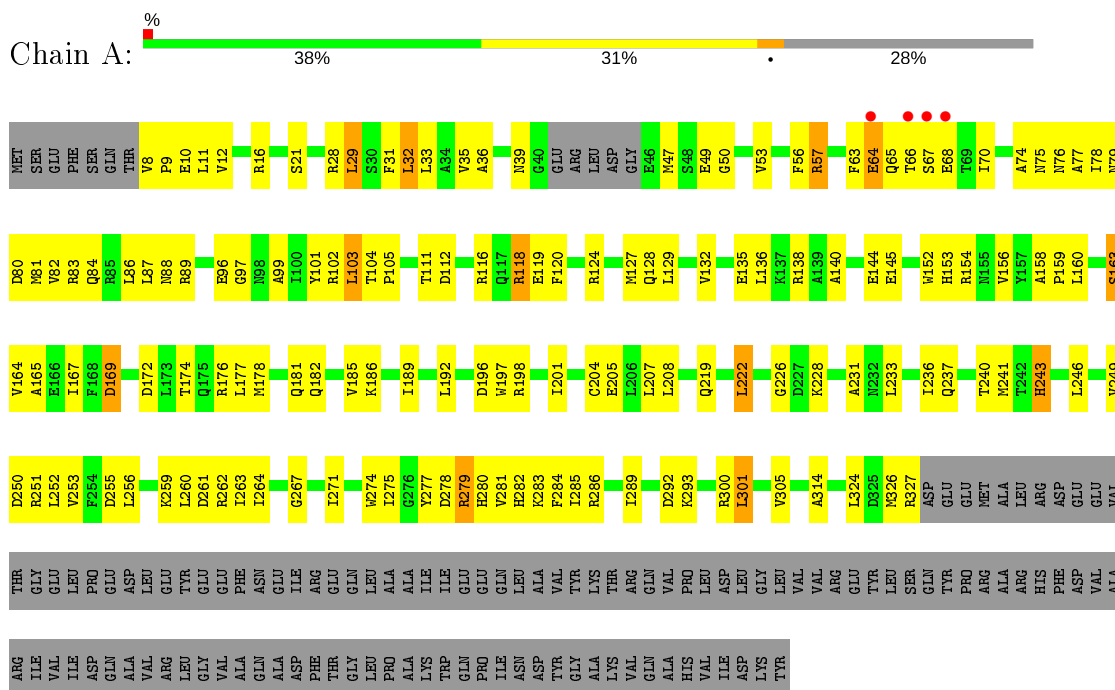
- Molecule 4 is water.

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
| 4 | A | 14 | Total | O | 0 | 0 |
| | | | 14 | 14 | | |
| 4 | B | 11 | Total | O | 0 | 0 |
| | | | 11 | 11 | | |
| 4 | C | 12 | Total | O | 0 | 0 |
| | | | 12 | 12 | | |
| 4 | D | 10 | Total | O | 0 | 0 |
| | | | 10 | 10 | | |
| 4 | E | 6 | Total | O | 0 | 0 |
| | | | 6 | 6 | | |
| 4 | F | 4 | Total | O | 0 | 0 |
| | | | 4 | 4 | | |

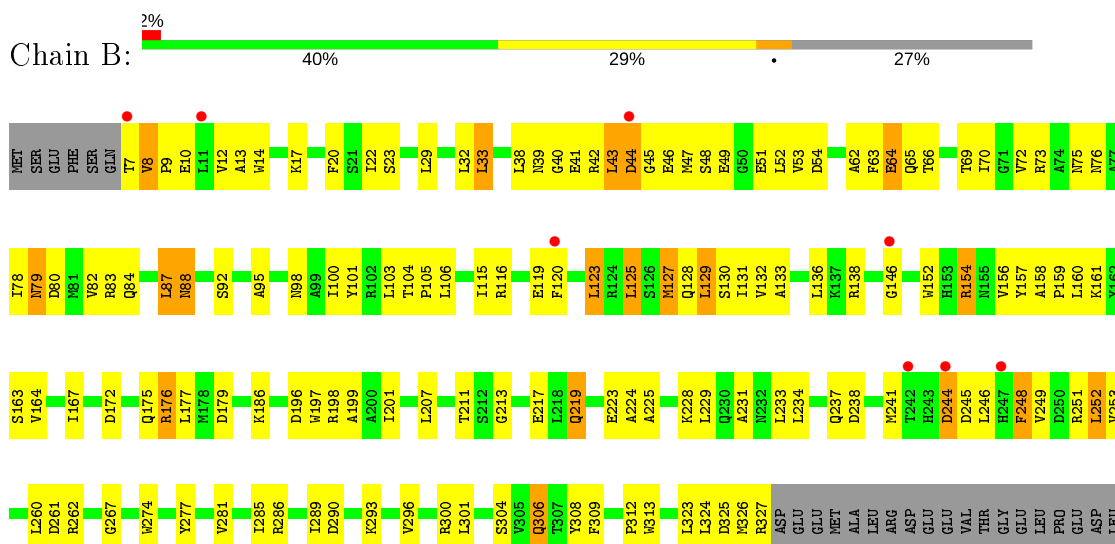
3 Residue-property plots [i](#)

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: Chromosome partition protein mukF



- Molecule 1: Chromosome partition protein mukF



GLU TYR ARG
LEU GLU GLY
GLU PHE ASN
GLN ASN
ILE ILE ARG
GLU ARG
GLN GLY
LEU LEU
ALA LEU
ALA ALA

ARG
LEU GLY
VAL VAL
GLN ALA
ASP ASP
PHE ARG
THR GLY
LEU LEU
PRO LEU
ALA ALA
TRP TRP
ILE ILE
GLN GLN
PRO PRO
ILE ILE
ASN ASN
ASP ASP
VAL VAL
TYR TYR
GLY GLY
ALA LYS
THR THR
VAL VAL
GLN GLN
VAL VAL
ALA ALA
HIS HIS
PRO PRO
LEU LEU
VAL VAL
ILE ILE
ASP ASP
LYS LYS
TYR TYR

● Molecule 2: MukE



MET SER SER THR ASN ILE GLU VAL
M19 K22 K23 A26 L27 R40 R43 R44 D48 E49 L50 F59 Y62 N71 L74 L75 A77 P78 E79 G80 F81 F82 R87 T90 L91 R94 R99 M103 I107 L108 C109 R117 L118

E121 T125 Q126 Q127 L129 L133 L134 T135 L136 L142 N148 L149 S150 T151 A152 S153 D154 V155 D156 R157 Q158 K159 L160 Q161 L168 M169 M180 G181 H182 A77 D183 S184 S185 K186 F187 R188 I189 T190 E191 V193 F194 R94 R195 V200 R201 G203 G204 D205 P206 R207 E208 A209

Q210 R211 R212 L213 R214 D216 M220 P221 I222 E223 M224 HIS LEU GLN LEU ASN ASP THR GLU ASN PRO ASP SER GLY GLU GLU

● Molecule 2: MukE



MET SER SER THR ILE GLU V18 F32 P33 A34 L35 D36 R40 R41 G42 R43 H44 L47 D48 E49 M52 F55 D58 Q60 E64 Y70 N71 V72 I75 F82 Y83 L84 R85 P86 R87 S88 T89 T90 S95 S96 L97 L100 D101 M102 M103

V104 G105 F107 L108 G109 Y110 L111 Y112 P115 E116 R117 L118 T125 Q126 G127 E128 L129 Y130 E132 L133 L134 T135 L136 A137 D138 E139 A140 K141 L142 L143 K144 L145 VAL ASN ASN ARG THR GLY SER ASP VAL ASN ARG S157 Q158 K159 L160 Q161 E162 R165 S166 S167 R170 L171

R172 R173 L174 G175 M176 V177 W178 F179 M180 H181 D183 S184 S185 K186 F187 R188 I189 T190 V193 F194 R195 F196 G197 R207 Q210 R211 T214 R215 D216 GLY ALA MET PRO ILE GLU ASN HIS LEU GLN LEU LEU MET ASN ASP THR GLU GLU GLU Q161 E162 S95 S96 L97 L100 D101 M102 M103

GLU

● Molecule 2: MukE

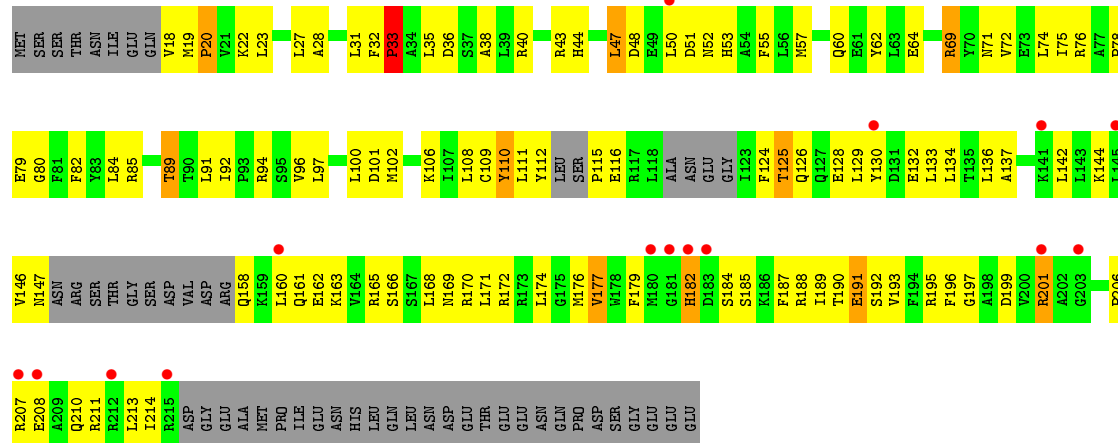


MET SER SER THR ILE GLU V18 V21 K22 K23 A26 L27 D199 N29 P30 F32 P33 A34 L35 D36 S37 R43 H44 I45 E49 L50 D51 M57 D58 F59 Q60 E61 R69 Y70 N71 V72 E73 L74 I75 R76 R85 P86 R87 S88 T89 T90 L91 I92 P93 R94

S95 V96 L97 L100 M102 M103 K106 I107 L118 T125 Q126 D127 E128 A202 Y130 D131 L134 T135 L136 E139 K141 L142 L143 L144 L145 VAL ASN ARG MET PRO ILE GLU D154 W155 D156 R157 R165 M169 R170 L171 R172 V177 W178 F179 M180

G181 S184 S185 K186 T180 E191 S192 F193 R194 R195 F196 L196 G197 A198 D199 R200 R201 A202 G203 D204 E208 A209 Q210 I214 R215 D216 M220 P221 I222 GLU HIS LEU GLN LEU ASN ASP THR GLU ASN HIS LEU MET PRO THR GLU ASP GLY

● Molecule 2: MukE



4 Data and refinement statistics

| Property | Value | Source |
|---|---|------------------|
| Space group | P 21 21 21 | Depositor |
| Cell constants a, b, c, α , β , γ | 77.34Å 151.15Å 188.07Å 90.00° 90.00° 90.00° | Depositor |
| Resolution (Å) | 20.00 – 2.90 29.87 – 2.69 | Depositor EDS |
| % Data completeness (in resolution range) | 98.0 (20.00-2.90) 96.5 (29.87-2.69) | Depositor EDS |
| R_{merge} | 0.07 | Depositor |
| R_{sym} | (Not available) | Depositor |
| $\langle I/\sigma(I) \rangle$ ¹ | 3.55 (at 2.68Å) | Xtrriage |
| Refinement program | CNS | Depositor |
| R, R_{free} | 0.225 , 0.274 0.240 , (Not available) | Depositor DCC |
| R_{free} test set | No test flags present. | wwPDB-VP |
| Wilson B-factor (Å ²) | 60.5 | Xtrriage |
| Anisotropy | 0.246 | Xtrriage |
| Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²) | 0.31 , 55.2 | EDS |
| L-test for twinning ² | $\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$ | Xtrriage |
| Estimated twinning fraction | No twinning to report. | Xtrriage |
| F_o, F_c correlation | 0.92 | EDS |
| Total number of atoms | 11564 | wwPDB-VP |
| Average B, all atoms (Å ²) | 68.0 | wwPDB-VP |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.15% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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 [\(i\)](#)

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 | 0.39 | 0/2592 | 0.59 | 0/3506 |
| 1 | B | 0.37 | 0/2640 | 0.59 | 0/3572 |
| 2 | C | 0.46 | 0/1704 | 0.69 | 1/2296 (0.0%) |
| 2 | D | 0.47 | 0/1571 | 0.70 | 0/2114 |
| 2 | E | 0.41 | 0/1659 | 0.64 | 0/2234 |
| 2 | F | 0.36 | 0/1525 | 0.61 | 0/2049 |
| All | All | 0.41 | 0/11691 | 0.63 | 1/15771 (0.0%) |

There are no bond length outliers.

All (1) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|------|-------------|----------|
| 2 | C | 80 | GLY | N-CA-C | 5.18 | 126.05 | 113.10 |

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 | 2549 | 0 | 2498 | 169 | 0 |
| 1 | B | 2596 | 0 | 2543 | 139 | 0 |
| 2 | C | 1673 | 0 | 1672 | 82 | 0 |
| 2 | D | 1542 | 0 | 1556 | 67 | 0 |
| 2 | E | 1629 | 0 | 1634 | 95 | 0 |
| 2 | F | 1498 | 0 | 1517 | 125 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 3 | A | 5 | 0 | 2 | 0 | 0 |
| 3 | D | 15 | 0 | 9 | 0 | 0 |
| 4 | A | 14 | 0 | 0 | 0 | 0 |
| 4 | B | 11 | 0 | 0 | 0 | 0 |
| 4 | C | 12 | 0 | 0 | 0 | 0 |
| 4 | D | 10 | 0 | 0 | 0 | 0 |
| 4 | E | 6 | 0 | 0 | 1 | 0 |
| 4 | F | 4 | 0 | 0 | 0 | 0 |
| All | All | 11564 | 0 | 11431 | 609 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 27.

The worst 5 of 609 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:B:8:VAL:HB | 1:B:9:PRO:HD3 | 1.28 | 1.09 |
| 2:E:125:THR:HG22 | 2:E:127:GLN:H | 1.27 | 0.99 |
| 1:A:300:ARG:HH22 | 2:C:203:GLY:HA2 | 1.26 | 0.99 |
| 2:C:205:ASP:HB3 | 2:C:208:GLU:HB2 | 1.44 | 0.97 |
| 1:B:196:ASP:HB3 | 1:B:199:ALA:HB3 | 1.45 | 0.96 |

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|-----|-------|---------------|-----------|---------|----------|-------------|
| 1 | A | 311/440 (71%) | 287 (92%) | 20 (6%) | 4 (1%) | 12 37 |
| 1 | B | 319/440 (72%) | 282 (88%) | 30 (9%) | 7 (2%) | 6 24 |
| 2 | C | 204/234 (87%) | 186 (91%) | 15 (7%) | 3 (2%) | 10 34 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-----------------|------------|----------|----------|-------------|----|
| 2 | D | 184/234 (79%) | 171 (93%) | 8 (4%) | 5 (3%) | 5 | 19 |
| 2 | E | 197/234 (84%) | 176 (89%) | 15 (8%) | 6 (3%) | 4 | 17 |
| 2 | F | 174/234 (74%) | 144 (83%) | 26 (15%) | 4 (2%) | 6 | 23 |
| All | All | 1389/1816 (76%) | 1246 (90%) | 114 (8%) | 29 (2%) | 7 | 26 |

5 of 29 Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | D | 185 | SER |
| 1 | A | 64 | GLU |
| 1 | A | 145 | GLU |
| 1 | A | 292 | ASP |
| 1 | B | 146 | GLY |

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 | 273/380 (72%) | 255 (93%) | 18 (7%) | 16 | 44 |
| 1 | B | 278/380 (73%) | 254 (91%) | 24 (9%) | 10 | 30 |
| 2 | C | 180/207 (87%) | 163 (91%) | 17 (9%) | 8 | 26 |
| 2 | D | 165/207 (80%) | 155 (94%) | 10 (6%) | 18 | 48 |
| 2 | E | 175/207 (84%) | 163 (93%) | 12 (7%) | 15 | 41 |
| 2 | F | 161/207 (78%) | 147 (91%) | 14 (9%) | 10 | 30 |
| All | All | 1232/1588 (78%) | 1137 (92%) | 95 (8%) | 13 | 35 |

5 of 95 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | C | 23 | LEU |
| 2 | C | 169 | ASN |
| 2 | F | 89 | THR |
| 2 | C | 50 | LEU |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | C | 108 | LEU |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 43 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 98 | ASN |
| 1 | B | 299 | GLN |
| 2 | F | 25 | GLN |
| 1 | B | 219 | GLN |
| 1 | B | 230 | 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](#)

4 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 | GLY | D | 245 | - | 1,4,4 | 0.13 | 0 | 0,4,4 | 0.00 | - |
| 3 | GLY | D | 244 | - | 1,4,4 | 0.14 | 0 | 0,4,4 | 0.00 | - |
| 3 | GLY | A | 441 | - | 1,4,4 | 0.10 | 0 | 0,4,4 | 0.00 | - |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
| | | | | | Counts | RMSZ | # Z > 2 | Counts | RMSZ | # Z > 2 |
| 3 | GLY | D | 1 | - | 1,4,4 | 0.14 | 0 | 0,4,4 | 0.00 | - |

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 | GLY | D | 245 | - | - | 0/0/2/2 | - |
| 3 | GLY | D | 244 | - | - | 0/0/2/2 | - |
| 3 | GLY | A | 441 | - | - | 0/0/2/2 | - |
| 3 | GLY | D | 1 | - | - | 0/0/2/2 | - |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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 | 315/440 (71%) | -0.22 | 4 (1%) 77 77 | 27, 60, 105, 132 | 0 |
| 1 | B | 321/440 (72%) | -0.05 | 8 (2%) 57 55 | 42, 68, 113, 127 | 0 |
| 2 | C | 206/234 (88%) | -0.26 | 7 (3%) 45 40 | 26, 48, 94, 119 | 0 |
| 2 | D | 188/234 (80%) | -0.18 | 11 (5%) 22 18 | 27, 51, 115, 152 | 0 |
| 2 | E | 201/234 (85%) | -0.15 | 6 (2%) 50 45 | 34, 56, 105, 119 | 0 |
| 2 | F | 182/234 (77%) | 0.31 | 15 (8%) 11 9 | 40, 94, 143, 153 | 0 |
| All | All | 1413/1816 (77%) | -0.10 | 51 (3%) 42 37 | 26, 63, 122, 153 | 0 |

The worst 5 of 51 RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | A | 68 | GLU | 6.5 |
| 2 | D | 145 | LEU | 4.6 |
| 2 | F | 181 | GLY | 4.5 |
| 2 | F | 182 | HIS | 4.5 |
| 2 | C | 182 | HIS | 4.4 |

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, 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(Å ²) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 3 | GLY | D | 244 | 5/5 | 0.77 | 0.30 | 78,80,80,80 | 0 |
| 3 | GLY | D | 245 | 5/5 | 0.93 | 0.21 | 83,84,84,85 | 0 |
| 3 | GLY | A | 441 | 5/5 | 0.93 | 0.17 | 76,78,78,79 | 0 |
| 3 | GLY | D | 1 | 5/5 | 0.93 | 0.24 | 73,74,74,75 | 0 |

6.5 Other polymers [i](#)

There are no such residues in this entry.