# W O R L D W I D E

# wwPDB

## P R O T E I N   D A T A   B A N K

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

Nov 22, 2023 – 03:50 PM JST

| | | |
|---|---|---|
| PDB ID | : | 6JIX |
| Title | : | The cyrstal structure of taurine:2-oxoglutarate aminotransferase from Bifidobacterium kashiwanohense, in complex with PLP and glutamate |
| Authors | : | Li, M.; Lin, L.; Zhang, Y.; Yuchi, Z. |
| Deposited on | : | 2019-02-23 |
| Resolution | : | 2.65 Å(reported) |

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

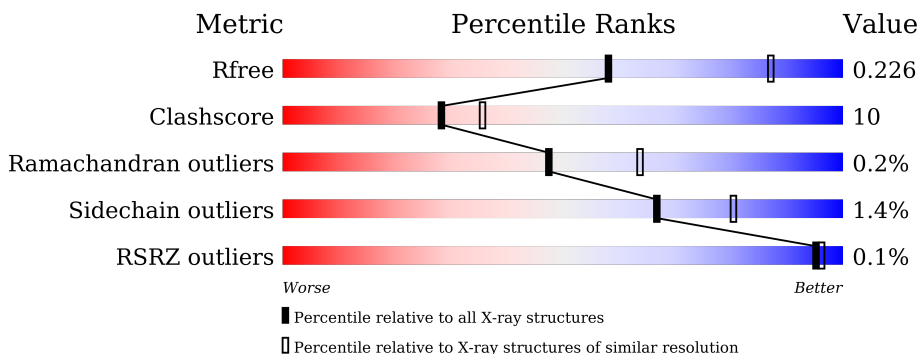| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.36 |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 5.8.0158 |
| CCP4 | : | 7.0.044 (Gargrove) |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.36 |

# 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 2.65 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 | | 0.226 |
| Clashscore | | 10 |
| Ramachandran outliers | | 0.2% |
| Sidechain outliers | | 1.4% |
| RSRZ outliers | | 0.1% |

*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 | 1426 (2.66-2.62) |
| Clashscore | 141614 | 1472 (2.66-2.62) |
| Ramachandran outliers | 138981 | 1446 (2.66-2.62) |
| Sidechain outliers | 138945 | 1446 (2.66-2.62) |
| RSRZ outliers | 127900 | 1408 (2.66-2.62) |

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 | 449 | 82% 17% |
| 1 | B | 449 | 78% 20% •• |
| 1 | C | 449 | 71% 27% •• |
| 1 | D | 449 | 78% 20% •• |

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 crite-

ria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 2 | GLU | B | 501 | - | - | X | - |
| 2 | GLU | B | 502 | - | - | X | - |
| 2 | GLU | C | 502 | - | - | - | X |
| 2 | GLU | C | 503 | - | - | X | - |
| 2 | GLU | D | 502 | - | - | X | - |

## 2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 14305 atoms, of which 92 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 taurine:2-oxoglutarate aminotransferase.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 1 | B | 446 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 3428 | 2177 | 566 | 650 | 35 | | | |
| 1 | A | 447 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 3442 | 2185 | 571 | 651 | 35 | | | |
| 1 | C | 446 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 3421 | 2175 | 568 | 644 | 34 | | | |
| 1 | D | 446 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 3413 | 2169 | 566 | 644 | 34 | | | |

There are 8 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| B | -1 | SER | - | expression tag | UNP A0A0A7I435 |
| B | 0 | ASN | - | expression tag | UNP A0A0A7I435 |
| A | -1 | SER | - | expression tag | UNP A0A0A7I435 |
| A | 0 | ASN | - | expression tag | UNP A0A0A7I435 |
| C | -1 | SER | - | expression tag | UNP A0A0A7I435 |
| C | 0 | ASN | - | expression tag | UNP A0A0A7I435 |
| D | -1 | SER | - | expression tag | UNP A0A0A7I435 |
| D | 0 | ASN | - | expression tag | UNP A0A0A7I435 |

- Molecule 2 is GLUTAMIC ACID (three-letter code: GLU) (formula: $C_5H_9NO_4$).

W O R L D W I D E
PDB
PROTEIN DATA BANK
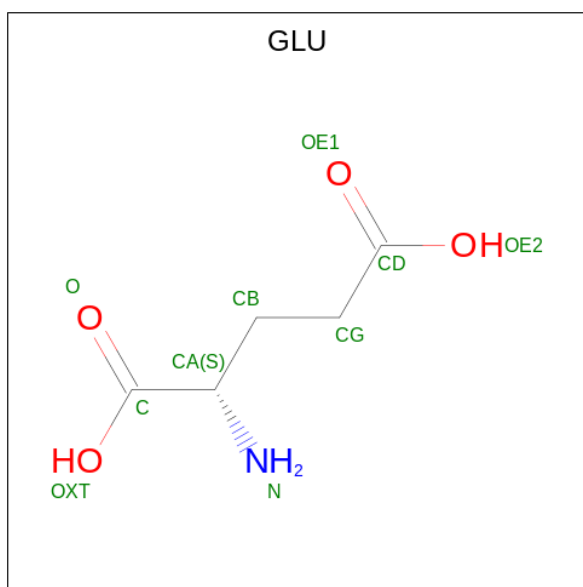
| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|---|---|
| 2 | B | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | B | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | A | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | C | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | C | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | C | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | D | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |
| 2 | D | 1 | Total | C | H | N | O | 0 | 0 |
| | | | 17 | 5 | 7 | 1 | 4 | | |

- Molecule 3 is PYRIDOXAL-5'-PHOSPHATE (three-letter code: PLP) (formula: $C_8H_{10}NO_6P$).

PLP
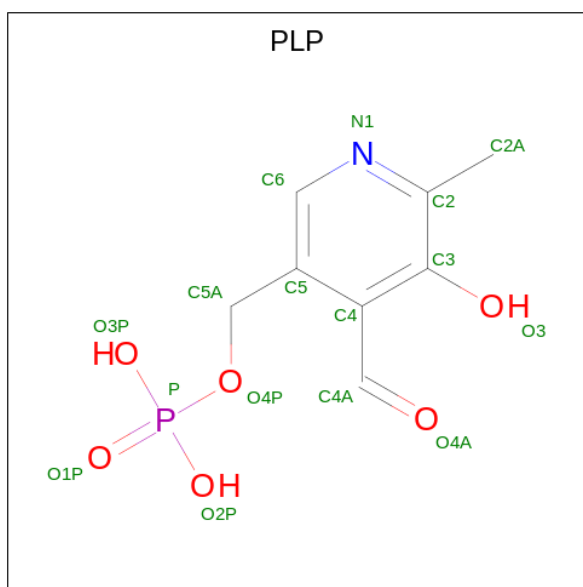
| Mol | Chain | Residues | Atoms | | | | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | B | 1 | Total | C | H | N | O | P | 0 | 0 |
| | | | 25 | 8 | 9 | 1 | 6 | 1 | | |
| 3 | A | 1 | Total | C | H | N | O | P | 0 | 0 |
| | | | 25 | 8 | 9 | 1 | 6 | 1 | | |
| 3 | C | 1 | Total | C | H | N | O | P | 0 | 0 |
| | | | 25 | 8 | 9 | 1 | 6 | 1 | | |
| 3 | D | 1 | Total | C | H | N | O | P | 0 | 0 |
| | | | 25 | 8 | 9 | 1 | 6 | 1 | | |

- Molecule 4 is water.

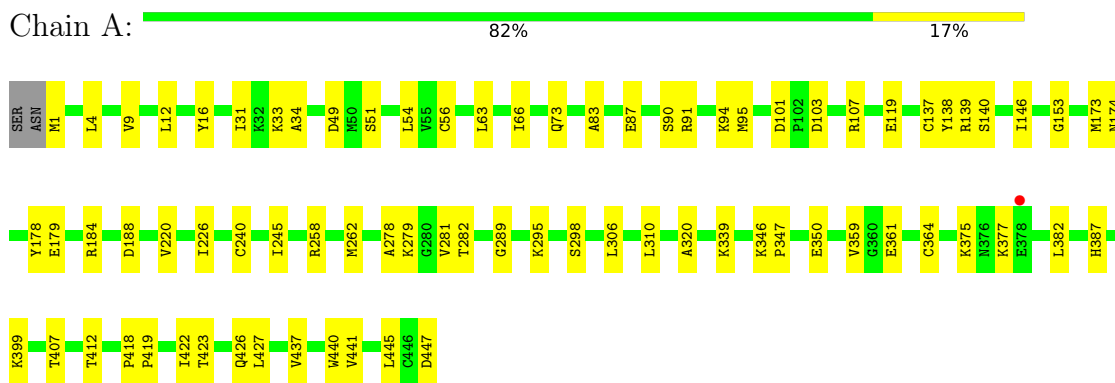| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|
| 4 | B | 110 | Total | O | 0 | 0 |
| | | | 110 | 110 | | |
| 4 | A | 119 | Total | O | 0 | 0 |
| | | | 119 | 119 | | |
| 4 | C | 72 | Total | O | 0 | 0 |
| | | | 72 | 72 | | |
| 4 | D | 64 | Total | O | 0 | 0 |
| | | | 64 | 64 | | |

# 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.
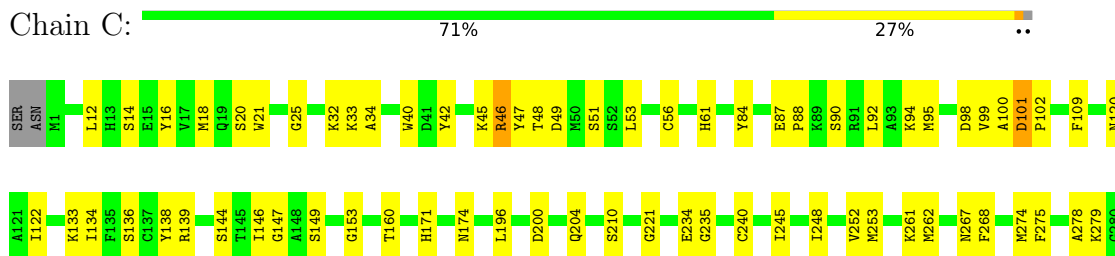
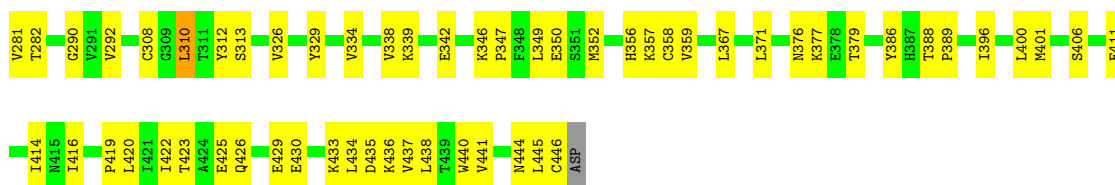- Molecule 1: taurine:2-oxoglutarate aminotransferase

Chain B:



- Molecule 1: taurine:2-oxoglutarate aminotransferase

Chain A:



- Molecule 1: taurine:2-oxoglutarate aminotransferase

Chain C:

V281 T282 G290 V291 V292 C308 G309 L310 T311 Y312 S313 V326 Y329 V334 V338 K339 E342 K346 P347 F348 L349 E350 S351 M352 H356 K357 C358 V359 L367 L371 N376 K377 E378 T379 Y386 H387 T388 P389 I396 L400 M401 S406 E411

I414 N415 I416 P419 L420 I421 I422 T423 A424 E425 Q426 E429 E430 K433 L434 D435 K436 V437 L438 T439 W440 V441 N444 L445 C446 ASP

• Molecule 1: taurine:2-oxoglutarate aminotransferase

**Chain D:**

78%                    20%

SER ASN M1 E7 S11 S14 E15 Y16 V17 M18 Q19 S20 W21 G26 I31 K32 K33 A34 I37 Y38 K45 R46 Y47 T48 D49 C56 L59 L63 P82 K94 M95 D98 V99 A100 D101 P102 E119 Y138 R139 I146 G153 T160

G163 N174 M177 Y178 E179 D188 T192 V211 E217 P229 E234 C240 I245 D250 R258 T259 G260 K261 N267 F268 D269 M274 A278 K279 G280 V281 T282 C283 G284 Y285 V286 P287 V293 I297 L306 L310 H315 T316 L317

V326 K346 P347 F348 L349 K357 I365 S369 A370 L371 K377 L382 N390 S391 V392 M393 P394 L400 E411 T412 I416 C417 P418 P419 I422 L427 L431 V437 V441 L445 C446 ASP

# 4 Data and refinement statistics (i)

| Property | Value | Source |
|---|---|---|
| Space group | P 1 21 1 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 68.39Å 164.54Å 109.24Å<br>90.00° 105.81° 90.00° | Depositor |
| Resolution (Å) | 44.29 – 2.65<br>44.29 – 2.65 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 98.5 (44.29-2.65)<br>93.3 (44.29-2.65) | Depositor<br>EDS |
| $R_{merge}$ | 0.11 | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 1.84 (at 2.65Å) | Xtriage |
| Refinement program | PHENIX 1.14_3247 | Depositor |
| R, $R_{free}$ | 0.167 , 0.227<br>0.166 , 0.226 | Depositor<br>DCC |
| $R_{free}$ test set | 1996 reflections (3.00%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 26.3 | Xtriage |
| Anisotropy | 0.825 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.34 , 36.3 | EDS |
| L-test for twinning[2] | $< |L| > = 0.49, < L^2 > = 0.32$ | Xtriage |
| Estimated twinning fraction | 0.025 for h,-k,-h-l | Xtriage |
| $F_o$,$F_c$ correlation | 0.94 | EDS |
| Total number of atoms | 14305 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 31.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.22% 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: PLP

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 | 0.43 | 0/3523 | 0.58 | 0/4775 |
| 1 | B | 0.41 | 0/3509 | 0.59 | 0/4758 |
| 1 | C | 0.40 | 0/3502 | 0.56 | 0/4748 |
| 1 | D | 0.42 | 0/3494 | 0.57 | 0/4740 |
| All | All | 0.42 | 0/14028 | 0.57 | 0/19021 |

There are no bond length outliers.

There are no bond angle outliers.

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 | A | 3442 | 0 | 3327 | 53 | 0 |
| 1 | B | 3428 | 0 | 3304 | 71 | 0 |
| 1 | C | 3421 | 0 | 3308 | 97 | 0 |
| 1 | D | 3413 | 0 | 3286 | 68 | 0 |
| 2 | A | 10 | 7 | 5 | 1 | 0 |
| 2 | B | 20 | 14 | 10 | 10 | 0 |
| 2 | C | 30 | 21 | 15 | 9 | 0 |
| 2 | D | 20 | 14 | 10 | 5 | 0 |
| 3 | A | 16 | 9 | 8 | 0 | 0 |

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*Continued from previous page...*

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 3 | B | 16 | 9 | 8 | 0 | 0 |
| 3 | C | 16 | 9 | 8 | 0 | 0 |
| 3 | D | 16 | 9 | 8 | 0 | 0 |
| 4 | A | 119 | 0 | 0 | 0 | 0 |
| 4 | B | 110 | 0 | 0 | 1 | 0 |
| 4 | C | 72 | 0 | 0 | 0 | 0 |
| 4 | D | 64 | 0 | 0 | 0 | 0 |
| All | All | 14213 | 92 | 13297 | 266 | 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 10.

The worst 5 of 266 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) |
|--------|--------|--------------------------|-------------------|
| 2:B:502:GLU:HG2 | 1:D:82:PRO:HB2 | 1.52 | 0.92 |
| 1:C:423:THR:OG1 | 1:C:426:GLN:HG3 | 1.71 | 0.90 |
| 1:C:99:VAL:CG1 | 1:C:262:MET:HG2 | 2.07 | 0.85 |
| 1:C:99:VAL:HG11 | 1:C:262:MET:HG2 | 1.61 | 0.82 |
| 1:B:278:ALA:O | 1:B:281:VAL:HG12 | 1.82 | 0.80 |

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 | |
|-----|-------|----------|----------|---------|----------|-----|-----|
| 1 | A | 445/449 (99%) | 425 (96%) | 19 (4%) | 1 (0%) | 47 | 64 |
| 1 | B | 444/449 (99%) | 424 (96%) | 19 (4%) | 1 (0%) | 47 | 64 |
| 1 | C | 444/449 (99%) | 423 (95%) | 20 (4%) | 1 (0%) | 47 | 64 |
| 1 | D | 444/449 (99%) | 421 (95%) | 22 (5%) | 1 (0%) | 47 | 64 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|-----|-------|----------|----------|---------|----------|-------------|
| All | All | 1777/1796 (99%) | 1693 (95%) | 80 (4%) | 4 (0%) | 47　64 |

All (4) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 101 | ASP |
| 1 | A | 101 | ASP |
| 1 | D | 101 | ASP |
| 1 | C | 101 | ASP |

### 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 |
|-----|-------|----------|-----------|----------|-------------|
| 1 | A | 366/375 (98%) | 361 (99%) | 5 (1%) | 67　80 |
| 1 | B | 364/375 (97%) | 357 (98%) | 7 (2%) | 57　74 |
| 1 | C | 362/375 (96%) | 359 (99%) | 3 (1%) | 81　89 |
| 1 | D | 360/375 (96%) | 356 (99%) | 4 (1%) | 73　85 |
| All | All | 1452/1500 (97%) | 1433 (99%) | 19 (1%) | 67　82 |

5 of 19 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | C | 310 | LEU |
| 1 | D | 310 | LEU |
| 1 | D | 390 | ASN |
| 1 | D | 18 | MET |
| 1 | A | 188 | ASP |

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

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 19 | GLN |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 5.6 Ligand geometry ⓘ

12 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 | #$|Z| > 2$ |
| 2 | GLU | C | 501 | - | 8,9,9 | 1.22 | 0 | 10,11,11 | 1.61 | 2 (20%) |
| 2 | GLU | C | 502 | - | 8,9,9 | 1.20 | 0 | 10,11,11 | 1.39 | 1 (10%) |
| 3 | PLP | A | 502 | - | 16,16,16 | 1.87 | 3 (18%) | 20,23,23 | 1.42 | 3 (15%) |
| 2 | GLU | B | 502 | - | 8,9,9 | 1.09 | 0 | 10,11,11 | 1.43 | 1 (10%) |
| 3 | PLP | B | 503 | - | 16,16,16 | 1.84 | 3 (18%) | 20,23,23 | 1.43 | 2 (10%) |
| 2 | GLU | D | 501 | - | 8,9,9 | 1.11 | 1 (12%) | 10,11,11 | 1.48 | 2 (20%) |
| 2 | GLU | D | 502 | - | 8,9,9 | 1.08 | 0 | 10,11,11 | 1.33 | 2 (20%) |
| 2 | GLU | B | 501 | - | 8,9,9 | 1.47 | 2 (25%) | 10,11,11 | 1.78 | 2 (20%) |
| 3 | PLP | D | 503 | - | 16,16,16 | 1.87 | 5 (31%) | 20,23,23 | 1.38 | 2 (10%) |
| 3 | PLP | C | 504 | - | 16,16,16 | 1.88 | 4 (25%) | 20,23,23 | 1.31 | 2 (10%) |
| 2 | GLU | C | 503 | - | 8,9,9 | 1.18 | 0 | 10,11,11 | 2.30 | 3 (30%) |
| 2 | GLU | A | 501 | - | 8,9,9 | 1.20 | 0 | 10,11,11 | 1.49 | 2 (20%) |

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 | GLU | C | 501 | - | - | 6/9/9/9 | - |
| 2 | GLU | C | 502 | - | - | 7/9/9/9 | - |
| 3 | PLP | A | 502 | - | - | 3/8/8/8 | 0/1/1/1 |
| 2 | GLU | B | 502 | - | - | 5/9/9/9 | - |
| 3 | PLP | B | 503 | - | - | 2/8/8/8 | 0/1/1/1 |
| 2 | GLU | D | 501 | - | - | 4/9/9/9 | - |
| 2 | GLU | D | 502 | - | - | 5/9/9/9 | - |
| 2 | GLU | B | 501 | - | - | 3/9/9/9 | - |
| 3 | PLP | D | 503 | - | - | 2/8/8/8 | 0/1/1/1 |
| 3 | PLP | C | 504 | - | - | 2/8/8/8 | 0/1/1/1 |
| 2 | GLU | C | 503 | - | - | 4/9/9/9 | - |
| 2 | GLU | A | 501 | - | - | 0/9/9/9 | - |

The worst 5 of 18 bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|---|-------------|----------|
| 3 | B | 503 | PLP | C4-C4A | 4.19 | 1.56 | 1.46 |
| 3 | C | 504 | PLP | C4-C4A | 4.01 | 1.55 | 1.46 |
| 3 | A | 502 | PLP | C4-C4A | 3.98 | 1.55 | 1.46 |
| 3 | A | 502 | PLP | P-O3P | 3.94 | 1.70 | 1.54 |
| 3 | D | 503 | PLP | P-O2P | 3.71 | 1.69 | 1.54 |

The worst 5 of 24 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------|---|-------------|----------|
| 2 | C | 503 | GLU | CB-CA-C | 5.65 | 123.75 | 110.30 |
| 2 | B | 501 | GLU | CG-CB-CA | 3.98 | 123.12 | 113.84 |
| 3 | D | 503 | PLP | O4A-C4A-C4 | -3.00 | 118.37 | 124.91 |
| 2 | C | 501 | GLU | OXT-C-CA | 2.96 | 123.47 | 113.38 |
| 2 | B | 501 | GLU | CB-CG-CD | -2.95 | 104.68 | 112.51 |

There are no chirality outliers.

5 of 43 torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 2 | B | 502 | GLU | N-CA-CB-CG |
| 2 | C | 501 | GLU | O-C-CA-N |

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*Continued from previous page...*

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 2 | C | 502 | GLU | O-C-CA-N |
| 2 | C | 503 | GLU | O-C-CA-N |
| 2 | D | 501 | GLU | O-C-CA-N |

There are no ring outliers.

8 monomers are involved in 23 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 2 | C | 501 | GLU | 1 | 0 |
| 2 | C | 502 | GLU | 3 | 0 |
| 2 | B | 502 | GLU | 5 | 0 |
| 2 | D | 501 | GLU | 1 | 0 |
| 2 | D | 502 | GLU | 4 | 0 |
| 2 | B | 501 | GLU | 5 | 0 |
| 2 | C | 503 | GLU | 5 | 0 |
| 2 | A | 501 | GLU | 1 | 0 |

### 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 | A | 447/449 (99%) | -0.64 | 1 (0%) | 95 | 96 | 18, 27, 39, 57 | 0 |
| 1 | B | 446/449 (99%) | -0.60 | 0 | 100 | 100 | 19, 29, 42, 64 | 0 |
| 1 | C | 446/449 (99%) | -0.46 | 0 | 100 | 100 | 24, 34, 47, 62 | 0 |
| 1 | D | 446/449 (99%) | -0.56 | 1 (0%) | 95 | 96 | 19, 31, 46, 78 | 0 |
| All | All | 1785/1796 (99%) | -0.56 | 2 (0%) | 95 | 96 | 18, 30, 45, 78 | 0 |

All (2) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | D | 1 | MET | 5.2 |
| 1 | A | 378 | GLU | 2.1 |

## 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(Å$^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|------------------|-------|
| 2 | GLU | C | 502 | 10/10 | 0.65 | 0.42 | 39,48,65,65 | 17 |
| 2 | GLU | C | 503 | 10/10 | 0.73 | 0.38 | 29,43,57,57 | 17 |
| 2 | GLU | D | 502 | 10/10 | 0.78 | 0.35 | 30,37,49,49 | 17 |
| 2 | GLU | B | 502 | 10/10 | 0.79 | 0.36 | 26,33,40,40 | 17 |
| 2 | GLU | D | 501 | 10/10 | 0.82 | 0.29 | 27,33,44,44 | 17 |
| 2 | GLU | A | 501 | 10/10 | 0.85 | 0.30 | 27,31,39,39 | 17 |
| 2 | GLU | C | 501 | 10/10 | 0.85 | 0.29 | 23,33,42,44 | 17 |
| 2 | GLU | B | 501 | 10/10 | 0.86 | 0.26 | 25,35,48,48 | 17 |
| 3 | PLP | A | 502 | 16/16 | 0.97 | 0.14 | 26,33,38,41 | 0 |
| 3 | PLP | C | 504 | 16/16 | 0.97 | 0.14 | 27,32,38,45 | 0 |
| 3 | PLP | B | 503 | 16/16 | 0.98 | 0.14 | 23,29,34,38 | 0 |
| 3 | PLP | D | 503 | 16/16 | 0.98 | 0.12 | 29,35,41,46 | 0 |

## 6.5 Other polymers ⓘ

There are no such residues in this entry.