# WORLDWIDE PDB
## PROTEIN DATA BANK

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

Sep 2, 2023 – 11:30 PM EDT

|               |   |                                                                                          |
|---------------|---|------------------------------------------------------------------------------------------|
| PDB ID        | : | 3QC9                                                                                      |
| Title         | : | Crystal structure of cross-linked bovine GRK1 T8C/N480C double mutant complexed with ADP and Mg |
| Authors       | : | Huang, C.-C.; Tesmer, J.J.G.                                                              |
| Deposited on  | : | 2011-01-15                                                                                |
| Resolution    | : | 2.70 Å(reported)                                                                         |

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

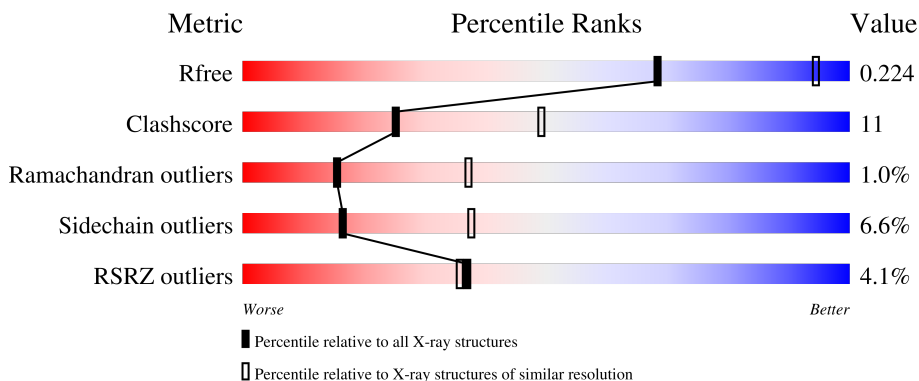|                              |   |                                                                             |
|------------------------------|---|-----------------------------------------------------------------------------|
| MolProbity                   | : | 4.02b-467                                                                   |
| 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 2.70 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 | | 0.224 |
| Clashscore | | 11 |
| Ramachandran outliers | | 1.0% |
| Sidechain outliers | | 6.6% |
| RSRZ outliers | | 4.1% |

*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 | 2808 (2.70-2.70) |
| Clashscore | 141614 | 3122 (2.70-2.70) |
| Ramachandran outliers | 138981 | 3069 (2.70-2.70) |
| Sidechain outliers | 138945 | 3069 (2.70-2.70) |
| RSRZ outliers | 127900 | 2737 (2.70-2.70) |

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 | 543 | 4% / 66% 20% • 10% |
| 1 | B | 543 | 4% / 65% 21% • 11% |
| 1 | C | 543 | 3% / 67% 20% • 11% |
| 1 | D | 543 | 4% / 65% 22% • 10% |

# 2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 15806 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 Rhodopsin kinase.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 1 | A | 486 | Total 3904 | C 2507 | N 673 | O 705 | S 19 | 0 | 0 | 0 |
| 1 | B | 481 | Total 3872 | C 2486 | N 667 | O 700 | S 19 | 0 | 0 | 0 |
| 1 | C | 482 | Total 3885 | C 2497 | N 669 | O 700 | S 19 | 0 | 0 | 0 |
| 1 | D | 486 | Total 3904 | C 2507 | N 673 | O 705 | S 19 | 0 | 0 | 0 |

There are 40 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| A | 8 | CYS | THR | engineered mutation | UNP P28327 |
| A | 480 | CYS | ASN | engineered mutation | UNP P28327 |
| A | 536 | VAL | - | expression tag | UNP P28327 |
| A | 537 | ASP | - | expression tag | UNP P28327 |
| A | 538 | HIS | - | expression tag | UNP P28327 |
| A | 539 | HIS | - | expression tag | UNP P28327 |
| A | 540 | HIS | - | expression tag | UNP P28327 |
| A | 541 | HIS | - | expression tag | UNP P28327 |
| A | 542 | HIS | - | expression tag | UNP P28327 |
| A | 543 | HIS | - | expression tag | UNP P28327 |
| B | 8 | CYS | THR | engineered mutation | UNP P28327 |
| B | 480 | CYS | ASN | engineered mutation | UNP P28327 |
| B | 536 | VAL | - | expression tag | UNP P28327 |
| B | 537 | ASP | - | expression tag | UNP P28327 |
| B | 538 | HIS | - | expression tag | UNP P28327 |
| B | 539 | HIS | - | expression tag | UNP P28327 |
| B | 540 | HIS | - | expression tag | UNP P28327 |
| B | 541 | HIS | - | expression tag | UNP P28327 |
| B | 542 | HIS | - | expression tag | UNP P28327 |
| B | 543 | HIS | - | expression tag | UNP P28327 |
| C | 8 | CYS | THR | engineered mutation | UNP P28327 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| C | 480 | CYS | ASN | engineered mutation | UNP P28327 |
| C | 536 | VAL | - | expression tag | UNP P28327 |
| C | 537 | ASP | - | expression tag | UNP P28327 |
| C | 538 | HIS | - | expression tag | UNP P28327 |
| C | 539 | HIS | - | expression tag | UNP P28327 |
| C | 540 | HIS | - | expression tag | UNP P28327 |
| C | 541 | HIS | - | expression tag | UNP P28327 |
| C | 542 | HIS | - | expression tag | UNP P28327 |
| C | 543 | HIS | - | expression tag | UNP P28327 |
| D | 8 | CYS | THR | engineered mutation | UNP P28327 |
| D | 480 | CYS | ASN | engineered mutation | UNP P28327 |
| D | 536 | VAL | - | expression tag | UNP P28327 |
| D | 537 | ASP | - | expression tag | UNP P28327 |
| D | 538 | HIS | - | expression tag | UNP P28327 |
| D | 539 | HIS | - | expression tag | UNP P28327 |
| D | 540 | HIS | - | expression tag | UNP P28327 |
| D | 541 | HIS | - | expression tag | UNP P28327 |
| D | 542 | HIS | - | expression tag | UNP P28327 |
| D | 543 | HIS | - | expression tag | UNP P28327 |

- Molecule 2 is A D E N O S I N E - 5 ' - D I P H O S P H A T E (three-letter code: ADP) (formula: $C_{10}H_{15}N_5O_{10}P_2$).
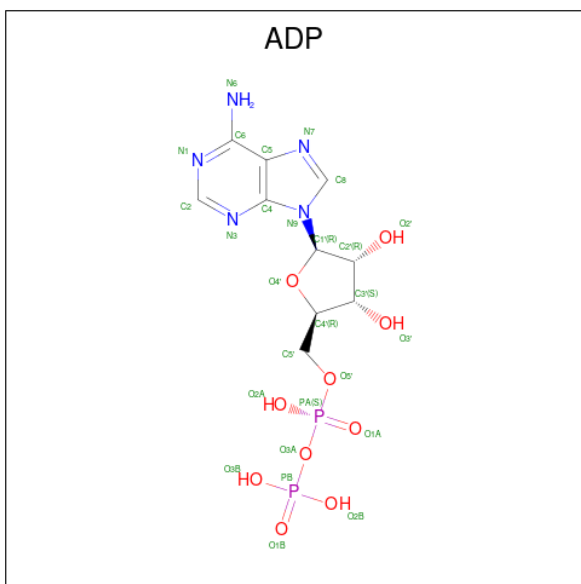


| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---|---------|---------|
| | | | Total | C | N | O | P | | |
| 2 | A | 1 | 27 | 10 | 5 | 10 | 2 | 0 | 0 |

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

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|
| 3 | A | 2 | Total | Mg | 0 | 0 |
| | | | 2 | 2 | | |
| 3 | B | 2 | Total | Mg | 0 | 0 |
| | | | 2 | 2 | | |
| 3 | C | 2 | Total | Mg | 0 | 0 |
| | | | 2 | 2 | | |
| 3 | D | 2 | Total | Mg | 0 | 0 |
| | | | 2 | 2 | | |

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).
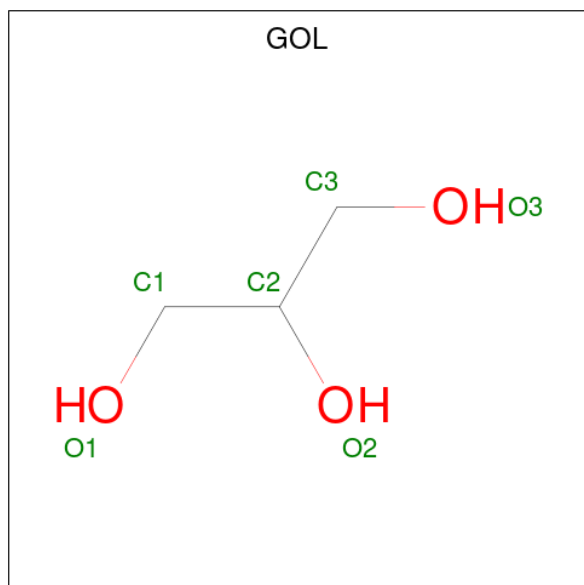


| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|
| 4 | A | 1 | Total | C | O | 0 | 0 |
| | | | 6 | 3 | 3 | | |
| 4 | B | 1 | Total | C | O | 0 | 0 |
| | | | 6 | 3 | 3 | | |

• Molecule 5 is water.

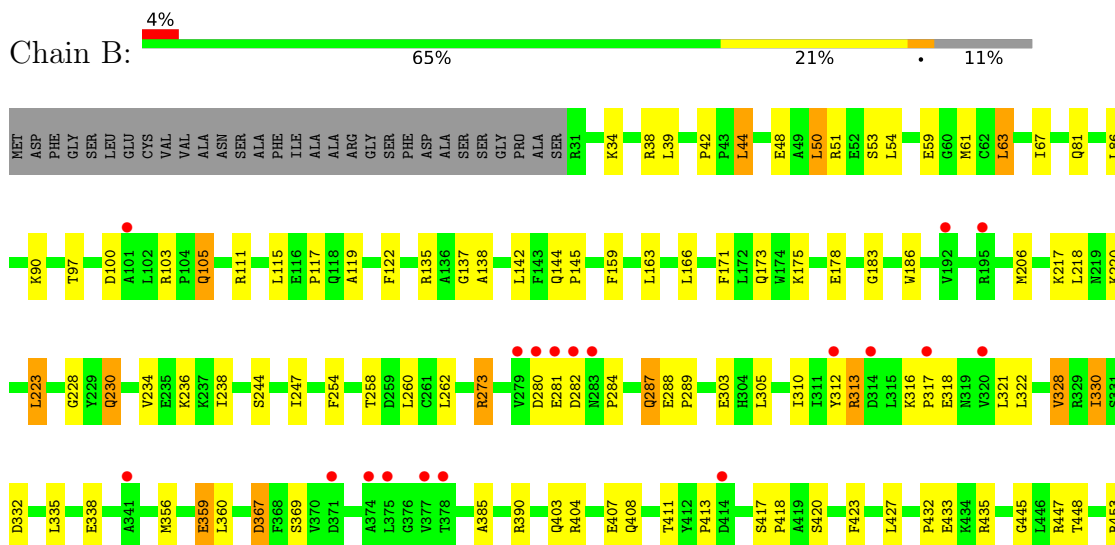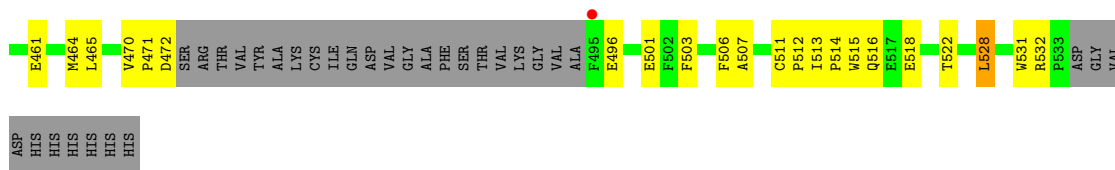| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|
| 5 | A | 30 | Total 30 | O 30 | 0 | 0 |
| 5 | B | 32 | Total 32 | O 32 | 0 | 0 |
| 5 | C | 26 | Total 26 | O 26 | 0 | 0 |
| 5 | D | 25 | Total 25 | O 25 | 0 | 0 |

# 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.
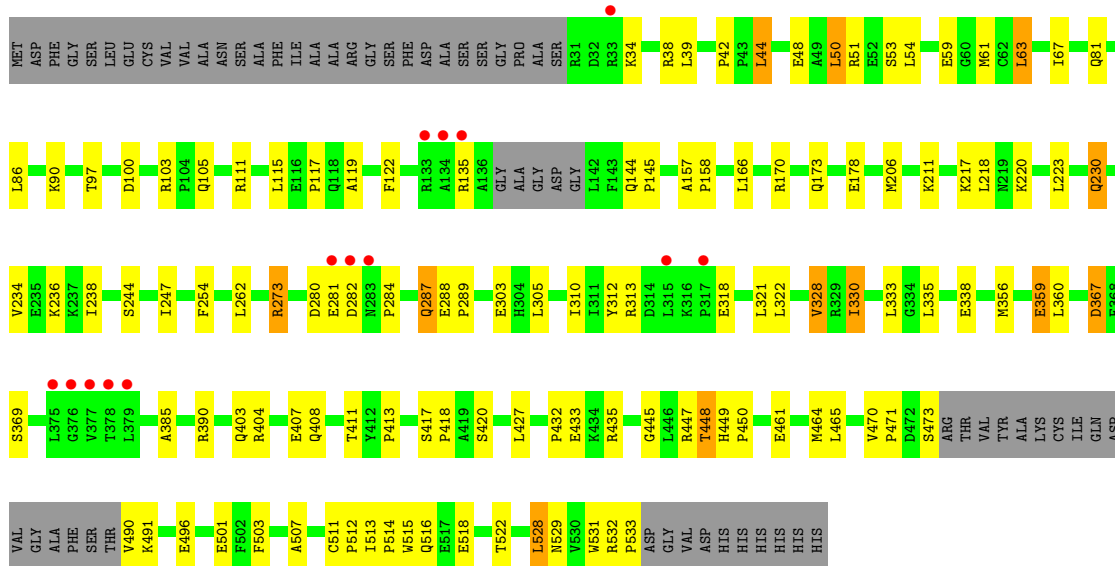
• Molecule 1: Rhodopsin kinase
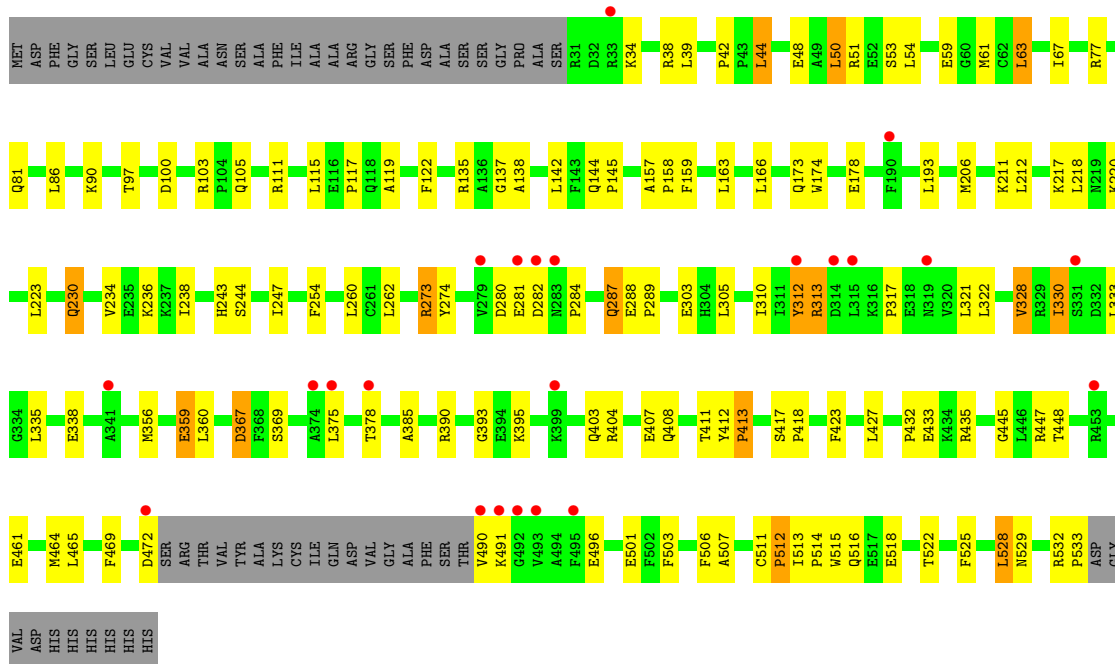
Chain A:



• Molecule 1: Rhodopsin kinase

Chain B:

E461 M464 L465 V470 P471 D472 SER ARG THR VAL TYR ALA LYS CYS ILE GLN ASP VAL GLY ALA PHE SER THR VAL LYS GLY VAL ALA F495 E496 E501 F502 F503 F506 A507 C511 P512 I513 P514 W515 Q516 E517 E518 T522 L528 W531 R532 P533 ASP GLY VAL

ASP HIS HIS HIS HIS HIS

- Molecule 1: Rhodopsin kinase

Chain C:

3%

67%　　　20%　　　·　11%

MET ASP PHE GLY SER LEU GLU CYS VAL VAL ALA ASN SER ALA PHE ILE ALA ALA ARG GLY SER PHE ASP ALA SER SER GLY PRO ALA SER R31 D32 R33 K34 R38 L39 P42 P43 L44 E48 A49 L50 R51 E52 S53 L54 E59 G60 M61 C62 L63 I67 Q81

L86 K90 T97 D100 R103 P104 Q105 R111 L115 E116 P117 Q118 A119 F122 R133 A134 R135 A136 GLY ALA GLY GLY L142 F143 Q144 P145 A157 P158 L166 R170 Q173 E178 M206 K211 K217 L218 N219 K220 L223 Q230

V234 E235 K236 K237 I238 S244 I247 F254 L262 R273 D280 E281 D282 N283 P284 Q287 E288 P289 E303 H304 L305 I310 I311 Y312 R313 D314 L315 K316 P317 E318 L321 L322 V328 R329 I330 L333 G334 L335 E338 M356 E359 L360 D367 F368

S369 L375 G376 V377 T378 L379 A385 R390 Q403 R404 E407 Q408 T411 Y412 P413 S417 P418 A419 S420 L427 P432 E433 K434 R435 G445 L446 R447 T448 H449 P450 E461 M464 L465 V470 P471 D472 S473 ARG THR VAL ALA LYS CYS ILE GLN ASP

VAL GLY ALA PHE SER THR V490 K491 E496 E501 F502 F503 A507 C511 P512 I513 P514 W515 Q516 E517 E518 T522 L528 N529 V530 W531 R532 P533 ASP GLY VAL ASP HIS HIS HIS HIS HIS HIS

- Molecule 1: Rhodopsin kinase

Chain D:

4%

65%　　　22%　　　·　10%

MET ASP PHE GLY SER LEU GLU CYS VAL VAL ALA ASN SER ALA PHE ILE ALA ALA ARG GLY SER PHE ASP ALA SER SER GLY PRO ALA SER R31 D32 R33 K34 R38 L39 P42 P43 L44 E48 A49 L50 R51 E52 S53 L54 E59 G60 M61 C62 L63 I67 R77

Q81 L86 K90 T97 D100 R103 P104 Q105 R111 L115 E116 P117 Q118 A119 F122 R135 A136 G137 A138 L142 F143 Q144 P145 A157 P158 F159 L163 L166 Q173 W174 E178 F190 L193 M206 K211 L212 K217 L218 N219 K220

L223 Q230 V234 E235 K236 K237 I238 H243 S244 I247 F254 L260 C261 L262 R273 Y274 V279 D280 E281 D282 N283 P284 Q287 E288 P289 E303 H304 L305 I310 I311 Y312 R313 D314 L315 K316 P317 E318 N319 V320 L321 L322 V328 R329 I330 S331 D332 L333

G334 L335 E338 A341 M356 E359 L360 D367 F368 S369 A374 L375 T378 A385 R390 G393 E394 K395 K399 Q403 R404 E407 Q408 T411 Y412 P413 S417 P418 F423 L427 P432 E433 K434 R435 G445 L446 R447 T448 R453

E461 M464 L465 F469 D472 SER ARG THR VAL TYR ALA LYS CYS ILE GLN ASP VAL GLY ALA PHE SER THR V490 K491 G492 V493 A494 F495 E496 E501 F502 F503 F506 A507 C511 P512 P514 W515 Q516 E517 E518 T522 F525 L528 N529 R532 P533 ASP GLY

VAL ASP HIS HIS HIS HIS HIS HIS

# 4 Data and refinement statistics ⓘ

| Property | Value | Source |
|---|---|---|
| Space group | P 1 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 58.70Å   89.97Å   122.64Å<br>88.07°   90.26°   68.78° | Depositor |
| Resolution (Å) | 29.60  –  2.70<br>29.60  –  2.68 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 89.2 (29.60-2.70)<br>88.1 (29.60-2.68) | Depositor<br>EDS |
| $R_{merge}$ | 0.06 | Depositor |
| $R_{sym}$ | 0.06 | Depositor |
| $< I/\sigma(I) >$ [1] | 2.02 (at 2.68Å) | Xtriage |
| Refinement program | PHENIX (phenix.refine: 1.6.4_486) | Depositor |
| R, $R_{free}$ | 0.192  ,  0.229<br>0.187  ,  0.224 | Depositor<br>DCC |
| $R_{free}$ test set | 3089 reflections (5.01%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 50.0 | Xtriage |
| Anisotropy | 0.570 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.33 , 51.3 | EDS |
| L-test for twinning[2] | $< |L| > = 0.47, < L^2 > = 0.30$ | Xtriage |
| Estimated twinning fraction | 0.125 for -h,-k,l | Xtriage |
| $F_o$,$F_c$ correlation | 0.95 | EDS |
| Total number of atoms | 15806 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 61.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.75% 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, GOL

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 | 0.44 | 0/3997 | 0.56 | 0/5391 |
| 1 | B | 0.43 | 0/3965 | 0.56 | 0/5348 |
| 1 | C | 0.42 | 0/3977 | 0.56 | 0/5363 |
| 1 | D | 0.43 | 0/3997 | 0.56 | 0/5391 |
| All | All | 0.43 | 0/15936 | 0.56 | 0/21493 |

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 | 3904 | 0 | 3874 | 84 | 0 |
| 1 | B | 3872 | 0 | 3835 | 89 | 0 |
| 1 | C | 3885 | 0 | 3860 | 77 | 0 |
| 1 | D | 3904 | 0 | 3874 | 92 | 0 |
| 2 | A | 27 | 0 | 12 | 3 | 0 |
| 2 | B | 27 | 0 | 12 | 3 | 0 |
| 2 | C | 27 | 0 | 12 | 1 | 0 |
| 2 | D | 27 | 0 | 12 | 2 | 0 |
| 3 | A | 2 | 0 | 0 | 0 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 3 | B | 2 | 0 | 0 | 0 | 0 |
| 3 | C | 2 | 0 | 0 | 0 | 0 |
| 3 | D | 2 | 0 | 0 | 0 | 0 |
| 4 | A | 6 | 0 | 8 | 1 | 0 |
| 4 | B | 6 | 0 | 8 | 0 | 0 |
| 5 | A | 30 | 0 | 0 | 3 | 0 |
| 5 | B | 32 | 0 | 0 | 4 | 0 |
| 5 | C | 26 | 0 | 0 | 3 | 0 |
| 5 | D | 25 | 0 | 0 | 2 | 0 |
| All | All | 15806 | 0 | 15507 | 334 | 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 11.

All (334) 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:D:359:GLU:HG2 | 1:D:432:PRO:HG3 | 1.42 | 0.98 |
| 1:A:359:GLU:HG2 | 1:A:432:PRO:HG3 | 1.48 | 0.94 |
| 1:B:359:GLU:HG2 | 1:B:432:PRO:HG3 | 1.46 | 0.94 |
| 1:C:359:GLU:HG2 | 1:C:432:PRO:HG3 | 1.49 | 0.93 |
| 1:B:166:LEU:HD23 | 1:C:44:LEU:HD21 | 1.56 | 0.87 |
| 1:D:238:ILE:HD12 | 1:D:310:ILE:HD13 | 1.56 | 0.87 |
| 1:C:238:ILE:HD12 | 1:C:310:ILE:HD13 | 1.58 | 0.85 |
| 1:B:322:LEU:HD23 | 1:B:328:VAL:HG23 | 1.57 | 0.85 |
| 1:B:238:ILE:HD12 | 1:B:310:ILE:HD13 | 1.60 | 0.83 |
| 1:A:322:LEU:HD23 | 1:A:328:VAL:HG23 | 1.59 | 0.83 |
| 1:C:322:LEU:HD23 | 1:C:328:VAL:HG23 | 1.61 | 0.82 |
| 1:B:111:ARG:HA | 1:B:115:LEU:HD12 | 1.62 | 0.82 |
| 1:A:111:ARG:HA | 1:A:115:LEU:HD12 | 1.61 | 0.80 |
| 1:D:111:ARG:HA | 1:D:115:LEU:HD12 | 1.63 | 0.80 |
| 1:A:238:ILE:HD12 | 1:A:310:ILE:HD13 | 1.62 | 0.80 |
| 1:C:111:ARG:HA | 1:C:115:LEU:HD12 | 1.64 | 0.80 |
| 1:D:322:LEU:HD23 | 1:D:328:VAL:HG23 | 1.63 | 0.78 |
| 1:A:518:GLU:O | 1:A:522:THR:HG22 | 1.86 | 0.74 |
| 1:B:234:VAL:O | 1:B:238:ILE:HG12 | 1.87 | 0.74 |
| 1:D:518:GLU:O | 1:D:522:THR:HG22 | 1.87 | 0.74 |
| 1:D:34:LYS:HE2 | 1:D:38:ARG:HH21 | 1.53 | 0.73 |
| 1:C:322:LEU:CD2 | 1:C:328:VAL:HG23 | 2.17 | 0.73 |
| 1:B:34:LYS:HE2 | 1:B:38:ARG:HH21 | 1.53 | 0.73 |
| 1:D:234:VAL:O | 1:D:238:ILE:HG12 | 1.89 | 0.73 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:234:VAL:O | 1:A:238:ILE:HG12 | 1.88 | 0.73 |
| 1:D:511:CYS:O | 1:D:514:PRO:HD2 | 1.90 | 0.72 |
| 1:B:511:CYS:O | 1:B:514:PRO:HD2 | 1.90 | 0.72 |
| 1:C:234:VAL:O | 1:C:238:ILE:HG12 | 1.90 | 0.72 |
| 1:A:322:LEU:CD2 | 1:A:328:VAL:HG23 | 2.19 | 0.71 |
| 1:B:322:LEU:CD2 | 1:B:328:VAL:HG23 | 2.20 | 0.71 |
| 1:D:367:ASP:HB3 | 1:D:369:SER:H | 1.55 | 0.71 |
| 1:C:367:ASP:HB3 | 1:C:369:SER:H | 1.56 | 0.71 |
| 1:C:518:GLU:O | 1:C:522:THR:HG22 | 1.91 | 0.71 |
| 1:C:34:LYS:HE2 | 1:C:38:ARG:HH21 | 1.54 | 0.71 |
| 1:B:44:LEU:HD21 | 1:C:166:LEU:HD23 | 1.72 | 0.70 |
| 1:B:518:GLU:O | 1:B:522:THR:HG22 | 1.91 | 0.70 |
| 1:C:511:CYS:O | 1:C:514:PRO:HD2 | 1.92 | 0.69 |
| 1:A:511:CYS:O | 1:A:514:PRO:HD2 | 1.91 | 0.69 |
| 1:A:34:LYS:HE2 | 1:A:38:ARG:HH21 | 1.57 | 0.69 |
| 1:D:39:LEU:O | 1:D:528:LEU:HD11 | 1.93 | 0.69 |
| 1:B:39:LEU:O | 1:B:528:LEU:HD11 | 1.92 | 0.69 |
| 1:A:44:LEU:HD21 | 1:D:166:LEU:HD23 | 1.75 | 0.69 |
| 1:D:322:LEU:CD2 | 1:D:328:VAL:HG23 | 2.23 | 0.68 |
| 1:B:111:ARG:HH22 | 1:B:137:GLY:HA3 | 1.58 | 0.67 |
| 1:D:111:ARG:HH22 | 1:D:137:GLY:HA3 | 1.60 | 0.67 |
| 1:B:367:ASP:HB3 | 1:B:369:SER:H | 1.58 | 0.67 |
| 1:A:367:ASP:HB3 | 1:A:369:SER:H | 1.59 | 0.67 |
| 1:A:39:LEU:O | 1:A:528:LEU:HD11 | 1.95 | 0.66 |
| 2:A:700:ADP:O2B | 5:A:548:HOH:O | 2.12 | 0.66 |
| 1:C:39:LEU:O | 1:C:528:LEU:HD11 | 1.95 | 0.66 |
| 1:A:97:THR:HG22 | 1:A:97:THR:O | 1.96 | 0.65 |
| 1:A:166:LEU:HD23 | 1:D:44:LEU:HD21 | 1.79 | 0.65 |
| 1:A:453:ARG:HH12 | 1:B:105:GLN:HB3 | 1.62 | 0.64 |
| 1:A:111:ARG:HH22 | 1:A:137:GLY:HA3 | 1.62 | 0.64 |
| 1:A:59:GLU:HA | 1:A:63:LEU:HD22 | 1.81 | 0.63 |
| 1:B:59:GLU:HA | 1:B:63:LEU:HD22 | 1.81 | 0.63 |
| 1:A:490:VAL:HG22 | 1:A:491:LYS:H | 1.65 | 0.62 |
| 2:B:700:ADP:H5'2 | 5:B:545:HOH:O | 1.99 | 0.62 |
| 2:D:700:ADP:H5'2 | 5:D:544:HOH:O | 1.99 | 0.62 |
| 1:D:59:GLU:HA | 1:D:63:LEU:HD22 | 1.80 | 0.61 |
| 1:A:220:LYS:HE2 | 1:A:503:PHE:CD1 | 2.35 | 0.61 |
| 1:B:230:GLN:O | 1:B:234:VAL:HG23 | 2.00 | 0.61 |
| 1:B:42:PRO:HD2 | 1:B:173:GLN:HB3 | 1.82 | 0.61 |
| 1:C:490:VAL:HG22 | 1:C:491:LYS:H | 1.64 | 0.60 |
| 1:A:105:GLN:HB3 | 1:B:453:ARG:HH12 | 1.64 | 0.60 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:59:GLU:HA | 1:C:63:LEU:HD22 | 1.82 | 0.60 |
| 1:D:490:VAL:HG22 | 1:D:491:LYS:H | 1.66 | 0.60 |
| 1:D:305:LEU:HD11 | 1:D:330:ILE:HD11 | 1.83 | 0.60 |
| 1:D:97:THR:HG22 | 1:D:97:THR:O | 2.01 | 0.60 |
| 1:B:217:LYS:O | 1:B:218:LEU:HD23 | 2.02 | 0.60 |
| 1:C:42:PRO:HD2 | 1:C:173:GLN:HB3 | 1.83 | 0.59 |
| 1:C:513:ILE:HD13 | 5:C:559:HOH:O | 2.02 | 0.59 |
| 1:D:230:GLN:O | 1:D:234:VAL:HG23 | 2.01 | 0.59 |
| 1:C:220:LYS:HE2 | 1:C:503:PHE:CD1 | 2.38 | 0.59 |
| 1:D:50:LEU:HD23 | 1:D:50:LEU:C | 2.23 | 0.59 |
| 1:D:117:PRO:HA | 1:D:122:PHE:CD1 | 2.38 | 0.59 |
| 1:C:97:THR:HG22 | 1:C:97:THR:O | 2.03 | 0.59 |
| 2:A:700:ADP:PB | 5:A:548:HOH:O | 2.59 | 0.58 |
| 1:D:220:LYS:HE2 | 1:D:503:PHE:CD1 | 2.38 | 0.58 |
| 1:B:220:LYS:HE2 | 1:B:503:PHE:CD1 | 2.39 | 0.58 |
| 1:B:230:GLN:HG2 | 5:B:565:HOH:O | 2.03 | 0.58 |
| 1:D:303:GLU:CD | 1:D:447:ARG:HH21 | 2.07 | 0.57 |
| 1:A:42:PRO:HD2 | 1:A:173:GLN:HB3 | 1.87 | 0.57 |
| 1:C:230:GLN:O | 1:C:234:VAL:HG23 | 2.03 | 0.57 |
| 1:C:50:LEU:C | 1:C:50:LEU:HD23 | 2.24 | 0.57 |
| 1:A:50:LEU:HD23 | 1:A:50:LEU:C | 2.25 | 0.57 |
| 1:A:230:GLN:O | 1:A:234:VAL:HG23 | 2.05 | 0.57 |
| 1:B:303:GLU:CD | 1:B:447:ARG:HH21 | 2.07 | 0.57 |
| 1:D:42:PRO:HD2 | 1:D:173:GLN:HB3 | 1.87 | 0.57 |
| 1:B:117:PRO:HA | 1:B:122:PHE:CD1 | 2.40 | 0.57 |
| 1:B:50:LEU:C | 1:B:50:LEU:HD23 | 2.27 | 0.55 |
| 1:A:117:PRO:HA | 1:A:122:PHE:CD1 | 2.40 | 0.55 |
| 1:D:404:ARG:O | 1:D:408:GLN:HB3 | 2.07 | 0.55 |
| 1:A:303:GLU:CD | 1:A:447:ARG:HH21 | 2.10 | 0.55 |
| 1:A:67:ILE:HG13 | 1:A:516:GLN:HB3 | 1.87 | 0.55 |
| 1:B:305:LEU:HD11 | 1:B:330:ILE:HD11 | 1.89 | 0.55 |
| 1:B:97:THR:O | 1:B:97:THR:HG22 | 2.06 | 0.54 |
| 1:D:50:LEU:O | 1:D:54:LEU:HG | 2.08 | 0.54 |
| 1:C:513:ILE:HB | 1:C:514:PRO:HD3 | 1.90 | 0.54 |
| 1:A:97:THR:O | 1:A:97:THR:CG2 | 2.55 | 0.53 |
| 1:A:404:ARG:O | 1:A:408:GLN:HB3 | 2.09 | 0.53 |
| 1:C:403:GLN:O | 1:C:407:GLU:HG2 | 2.09 | 0.53 |
| 1:B:321:LEU:O | 1:B:328:VAL:HA | 2.09 | 0.53 |
| 1:C:117:PRO:HA | 1:C:122:PHE:CD1 | 2.44 | 0.53 |
| 1:D:67:ILE:HG13 | 1:D:516:GLN:HB3 | 1.89 | 0.53 |
| 1:D:178:GLU:HB2 | 1:D:515:TRP:CZ3 | 2.44 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|--------|--------|--------------------------|-------------------|
| 1:C:305:LEU:HD11 | 1:C:330:ILE:HD11 | 1.91 | 0.53 |
| 1:B:111:ARG:NH2 | 1:B:137:GLY:HA3 | 2.23 | 0.52 |
| 1:D:97:THR:O | 1:D:97:THR:CG2 | 2.57 | 0.52 |
| 1:A:533:PRO:HG2 | 1:D:77:ARG:HG3 | 1.90 | 0.52 |
| 1:C:404:ARG:O | 1:C:408:GLN:HB3 | 2.09 | 0.52 |
| 1:A:445:GLY:O | 1:A:448:THR:HB | 2.10 | 0.52 |
| 1:C:303:GLU:CD | 1:C:447:ARG:HH21 | 2.12 | 0.52 |
| 1:A:100:ASP:HA | 1:A:103:ARG:HG3 | 1.92 | 0.51 |
| 1:A:97:THR:HG23 | 1:A:464:MET:HE1 | 1.92 | 0.51 |
| 1:D:403:GLN:O | 1:D:407:GLU:HG2 | 2.10 | 0.51 |
| 1:B:359:GLU:CG | 1:B:432:PRO:HG3 | 2.31 | 0.51 |
| 1:D:445:GLY:O | 1:D:448:THR:HB | 2.10 | 0.51 |
| 1:C:313:ARG:HD3 | 1:C:335:LEU:O | 2.10 | 0.51 |
| 1:B:50:LEU:O | 1:B:54:LEU:HG | 2.10 | 0.51 |
| 1:B:97:THR:HG23 | 1:B:464:MET:HE1 | 1.92 | 0.51 |
| 1:B:86:LEU:HD11 | 1:B:90:LYS:HE3 | 1.92 | 0.51 |
| 1:B:178:GLU:HB2 | 1:B:515:TRP:CZ3 | 2.45 | 0.51 |
| 1:C:50:LEU:O | 1:C:54:LEU:HG | 2.11 | 0.51 |
| 1:A:313:ARG:HD3 | 1:A:335:LEU:O | 2.11 | 0.50 |
| 1:A:321:LEU:O | 1:A:328:VAL:HA | 2.10 | 0.50 |
| 1:B:403:GLN:O | 1:B:407:GLU:HG2 | 2.10 | 0.50 |
| 1:D:321:LEU:O | 1:D:328:VAL:HA | 2.11 | 0.50 |
| 1:A:77:ARG:HG3 | 1:D:533:PRO:HG2 | 1.93 | 0.50 |
| 1:B:67:ILE:HG13 | 1:B:516:GLN:HB3 | 1.93 | 0.50 |
| 1:B:282:ASP:C | 1:B:284:PRO:HD3 | 2.32 | 0.50 |
| 1:C:97:THR:O | 1:C:97:THR:CG2 | 2.59 | 0.50 |
| 1:C:528:LEU:HD23 | 1:C:528:LEU:N | 2.27 | 0.50 |
| 1:A:403:GLN:O | 1:A:407:GLU:HG2 | 2.12 | 0.50 |
| 1:C:97:THR:HG23 | 1:C:464:MET:HE1 | 1.92 | 0.50 |
| 1:D:111:ARG:NH2 | 1:D:137:GLY:HA3 | 2.25 | 0.50 |
| 1:D:359:GLU:CG | 1:D:432:PRO:HG3 | 2.28 | 0.50 |
| 1:C:321:LEU:O | 1:C:328:VAL:HA | 2.11 | 0.50 |
| 1:A:282:ASP:C | 1:A:284:PRO:HD3 | 2.32 | 0.49 |
| 1:B:50:LEU:HA | 1:B:53:SER:OG | 2.11 | 0.49 |
| 1:B:404:ARG:O | 1:B:408:GLN:HB3 | 2.11 | 0.49 |
| 1:A:453:ARG:HH12 | 1:B:105:GLN:CB | 2.25 | 0.49 |
| 1:D:313:ARG:HD3 | 1:D:335:LEU:O | 2.12 | 0.49 |
| 1:D:518:GLU:O | 1:D:522:THR:CG2 | 2.59 | 0.49 |
| 1:A:305:LEU:HD11 | 1:A:330:ILE:HD11 | 1.93 | 0.49 |
| 1:A:111:ARG:NH2 | 1:A:137:GLY:HA3 | 2.26 | 0.49 |
| 1:A:528:LEU:HD23 | 1:A:528:LEU:N | 2.27 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:445:GLY:O | 1:B:448:THR:HB | 2.13 | 0.49 |
| 1:C:445:GLY:O | 1:C:448:THR:HB | 2.13 | 0.49 |
| 2:A:700:ADP:H5'2 | 5:A:545:HOH:O | 2.11 | 0.49 |
| 1:D:50:LEU:HA | 1:D:53:SER:OG | 2.12 | 0.49 |
| 1:B:513:ILE:HB | 1:B:514:PRO:HD3 | 1.95 | 0.49 |
| 1:C:67:ILE:HG13 | 1:C:516:GLN:HB3 | 1.94 | 0.49 |
| 2:C:700:ADP:PB | 5:C:547:HOH:O | 2.71 | 0.49 |
| 1:A:137:GLY:HA2 | 1:A:142:LEU:HD11 | 1.94 | 0.48 |
| 1:A:513:ILE:HB | 1:A:514:PRO:HD3 | 1.94 | 0.48 |
| 1:B:137:GLY:HA2 | 1:B:142:LEU:HD11 | 1.94 | 0.48 |
| 1:D:217:LYS:O | 1:D:218:LEU:HD23 | 2.13 | 0.48 |
| 1:A:217:LYS:O | 1:A:218:LEU:HD23 | 2.13 | 0.48 |
| 1:A:50:LEU:HA | 1:A:53:SER:OG | 2.14 | 0.48 |
| 1:B:417:SER:O | 1:B:418:PRO:C | 2.51 | 0.48 |
| 1:A:86:LEU:HD11 | 1:A:90:LYS:HE3 | 1.94 | 0.48 |
| 1:D:193:LEU:HD13 | 2:D:700:ADP:C2 | 2.49 | 0.48 |
| 1:B:273:ARG:HB3 | 1:B:317:PRO:HB2 | 1.95 | 0.48 |
| 1:B:531:TRP:HB2 | 1:C:531:TRP:CG | 2.48 | 0.48 |
| 1:D:513:ILE:HB | 1:D:514:PRO:HD3 | 1.95 | 0.48 |
| 1:A:219:ASN:HD22 | 4:A:544:GOL:H2 | 1.79 | 0.48 |
| 1:C:282:ASP:C | 1:C:284:PRO:HD3 | 2.34 | 0.48 |
| 1:B:313:ARG:HD3 | 1:B:335:LEU:O | 2.14 | 0.47 |
| 1:C:217:LYS:O | 1:C:218:LEU:HD23 | 2.14 | 0.47 |
| 1:C:449:HIS:CG | 1:C:450:PRO:HD2 | 2.49 | 0.47 |
| 1:D:282:ASP:C | 1:D:284:PRO:HD3 | 2.34 | 0.47 |
| 1:A:50:LEU:O | 1:A:54:LEU:HG | 2.15 | 0.47 |
| 1:A:322:LEU:HD23 | 1:A:328:VAL:CG2 | 2.39 | 0.47 |
| 1:B:236:LYS:HG3 | 1:B:262:LEU:HD21 | 1.96 | 0.47 |
| 1:A:236:LYS:HG3 | 1:A:262:LEU:HD21 | 1.95 | 0.47 |
| 1:D:97:THR:HG23 | 1:D:464:MET:HE1 | 1.96 | 0.47 |
| 1:C:312:TYR:O | 1:C:313:ARG:HB2 | 2.15 | 0.47 |
| 1:A:312:TYR:O | 1:A:313:ARG:HB2 | 2.14 | 0.47 |
| 2:B:700:ADP:H8 | 2:B:700:ADP:O5' | 1.98 | 0.47 |
| 1:C:144:GLN:N | 1:C:145:PRO:HD2 | 2.30 | 0.47 |
| 1:B:254:PHE:HA | 1:B:507:ALA:HB1 | 1.97 | 0.46 |
| 1:C:86:LEU:HD11 | 1:C:90:LYS:HE3 | 1.97 | 0.46 |
| 1:C:490:VAL:HG22 | 1:C:491:LYS:N | 2.30 | 0.46 |
| 1:A:254:PHE:HA | 1:A:507:ALA:HB1 | 1.97 | 0.46 |
| 1:B:159:PHE:CZ | 1:B:163:LEU:HD21 | 2.49 | 0.46 |
| 1:B:423:PHE:CE2 | 1:B:427:LEU:HD11 | 2.50 | 0.46 |
| 1:C:50:LEU:HA | 1:C:53:SER:OG | 2.15 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:D:236:LYS:HG3 | 1:D:262:LEU:HD21 | 1.98 | 0.46 |
| 1:B:97:THR:O | 1:B:97:THR:CG2 | 2.63 | 0.46 |
| 1:A:356:MET:HB3 | 1:A:360:LEU:HD22 | 1.96 | 0.46 |
| 1:D:287:GLN:HE21 | 1:D:287:GLN:HA | 1.81 | 0.46 |
| 1:C:322:LEU:HD23 | 1:C:328:VAL:CG2 | 2.39 | 0.46 |
| 1:D:144:GLN:N | 1:D:145:PRO:HD2 | 2.30 | 0.46 |
| 1:A:287:GLN:HE21 | 1:A:287:GLN:HA | 1.80 | 0.46 |
| 1:C:496:GLU:OE1 | 1:C:496:GLU:HA | 2.16 | 0.46 |
| 1:D:86:LEU:HD11 | 1:D:90:LYS:HE3 | 1.97 | 0.46 |
| 1:C:287:GLN:HE21 | 1:C:287:GLN:HA | 1.79 | 0.46 |
| 1:D:34:LYS:CE | 1:D:38:ARG:HH21 | 2.27 | 0.46 |
| 1:D:137:GLY:HA2 | 1:D:142:LEU:HD11 | 1.97 | 0.46 |
| 1:D:211:LYS:HD3 | 1:D:518:GLU:HG3 | 1.97 | 0.46 |
| 1:D:356:MET:HB3 | 1:D:360:LEU:HD22 | 1.98 | 0.46 |
| 1:B:287:GLN:HE21 | 1:B:287:GLN:HA | 1.80 | 0.46 |
| 1:C:288:GLU:CD | 1:C:420:SER:HG | 2.20 | 0.46 |
| 1:C:417:SER:O | 1:C:418:PRO:C | 2.54 | 0.46 |
| 1:D:412:TYR:HA | 1:D:413:PRO:HD2 | 1.85 | 0.45 |
| 1:B:531:TRP:CB | 1:C:531:TRP:CB | 2.94 | 0.45 |
| 1:B:260:LEU:HB3 | 1:B:506:PHE:CE2 | 2.51 | 0.45 |
| 1:B:228:GLY:HA2 | 5:B:565:HOH:O | 2.16 | 0.45 |
| 1:C:254:PHE:HA | 1:C:507:ALA:HB1 | 1.98 | 0.45 |
| 1:D:254:PHE:HA | 1:D:507:ALA:HB1 | 1.98 | 0.45 |
| 1:D:423:PHE:CE2 | 1:D:427:LEU:HD11 | 2.51 | 0.45 |
| 1:A:238:ILE:HG21 | 1:A:333:LEU:HD22 | 1.98 | 0.45 |
| 1:A:273:ARG:HG3 | 1:A:274:TYR:N | 2.31 | 0.45 |
| 1:B:111:ARG:NH2 | 1:B:137:GLY:CA | 2.80 | 0.45 |
| 1:B:427:LEU:O | 1:B:435:ARG:HD3 | 2.17 | 0.45 |
| 1:D:159:PHE:CZ | 1:D:163:LEU:HD21 | 2.52 | 0.45 |
| 1:D:427:LEU:O | 1:D:435:ARG:HD3 | 2.17 | 0.45 |
| 1:B:312:TYR:O | 1:B:313:ARG:HB2 | 2.16 | 0.44 |
| 1:A:312:TYR:CE2 | 1:A:330:ILE:HD12 | 2.52 | 0.44 |
| 1:D:312:TYR:O | 1:D:313:ARG:HB2 | 2.17 | 0.44 |
| 1:A:518:GLU:O | 1:A:522:THR:CG2 | 2.60 | 0.44 |
| 1:B:100:ASP:HA | 1:B:103:ARG:HG3 | 1.98 | 0.44 |
| 1:B:518:GLU:O | 1:B:522:THR:CG2 | 2.63 | 0.44 |
| 1:A:137:GLY:HA2 | 1:A:142:LEU:CD1 | 2.48 | 0.44 |
| 1:B:531:TRP:CG | 1:C:531:TRP:HB2 | 2.53 | 0.44 |
| 1:C:238:ILE:HG21 | 1:C:333:LEU:HD22 | 1.99 | 0.44 |
| 1:C:288:GLU:HB2 | 1:C:289:PRO:HD3 | 2.00 | 0.44 |
| 1:D:465:LEU:HD23 | 1:D:465:LEU:HA | 1.83 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:144:GLN:N | 1:B:145:PRO:HD2 | 2.33 | 0.44 |
| 1:C:100:ASP:HA | 1:C:103:ARG:HG3 | 1.99 | 0.44 |
| 1:C:157:ALA:N | 1:C:158:PRO:CD | 2.80 | 0.44 |
| 1:A:490:VAL:HG22 | 1:A:491:LYS:N | 2.30 | 0.44 |
| 1:C:356:MET:HB3 | 1:C:360:LEU:HD22 | 2.00 | 0.44 |
| 1:C:359:GLU:CG | 1:C:432:PRO:HG3 | 2.33 | 0.44 |
| 1:D:244:SER:HB3 | 1:D:247:ILE:HG12 | 1.99 | 0.44 |
| 1:B:322:LEU:HD23 | 1:B:328:VAL:CG2 | 2.38 | 0.44 |
| 1:D:288:GLU:HB2 | 1:D:289:PRO:HD3 | 1.99 | 0.44 |
| 1:A:144:GLN:N | 1:A:145:PRO:HD2 | 2.32 | 0.43 |
| 1:A:244:SER:HB3 | 1:A:247:ILE:HG12 | 2.00 | 0.43 |
| 1:A:359:GLU:CG | 1:A:432:PRO:HG3 | 2.33 | 0.43 |
| 1:D:157:ALA:N | 1:D:158:PRO:CD | 2.81 | 0.43 |
| 1:A:449:HIS:CG | 1:A:450:PRO:HD2 | 2.53 | 0.43 |
| 1:C:427:LEU:O | 1:C:435:ARG:HD3 | 2.18 | 0.43 |
| 1:C:513:ILE:CD1 | 5:C:559:HOH:O | 2.61 | 0.43 |
| 1:B:217:LYS:C | 1:B:218:LEU:HD23 | 2.38 | 0.43 |
| 1:D:211:LYS:CD | 1:D:518:GLU:HG3 | 2.48 | 0.43 |
| 1:B:284:PRO:HB2 | 1:B:385:ALA:CB | 2.48 | 0.43 |
| 1:A:496:GLU:HA | 1:A:496:GLU:OE1 | 2.19 | 0.43 |
| 1:B:244:SER:HB3 | 1:B:247:ILE:HG12 | 2.01 | 0.43 |
| 1:A:288:GLU:CD | 1:A:420:SER:HG | 2.22 | 0.43 |
| 1:A:417:SER:O | 1:A:418:PRO:C | 2.57 | 0.43 |
| 1:B:288:GLU:HB2 | 1:B:289:PRO:HD3 | 2.00 | 0.43 |
| 1:B:137:GLY:HA2 | 1:B:142:LEU:CD1 | 2.49 | 0.43 |
| 1:B:470:VAL:HA | 1:B:471:PRO:HD3 | 1.87 | 0.43 |
| 1:C:244:SER:HB3 | 1:C:247:ILE:HG12 | 1.99 | 0.43 |
| 1:C:287:GLN:HE21 | 1:C:287:GLN:CA | 2.32 | 0.43 |
| 1:D:97:THR:HA | 1:D:464:MET:HE1 | 2.01 | 0.43 |
| 1:D:212:LEU:HA | 1:D:212:LEU:HD23 | 1.71 | 0.42 |
| 1:D:393:GLY:O | 1:D:395:LYS:HG2 | 2.19 | 0.42 |
| 1:B:238:ILE:HD11 | 1:B:338:GLU:HG2 | 2.00 | 0.42 |
| 1:B:356:MET:HB3 | 1:B:360:LEU:HD22 | 2.00 | 0.42 |
| 1:C:211:LYS:CD | 1:C:518:GLU:HG3 | 2.49 | 0.42 |
| 1:C:465:LEU:HD23 | 1:C:465:LEU:HA | 1.91 | 0.42 |
| 1:C:449:HIS:HA | 1:C:450:PRO:HD3 | 1.87 | 0.42 |
| 1:B:496:GLU:OE1 | 1:B:496:GLU:HA | 2.20 | 0.42 |
| 1:D:48:GLU:O | 1:D:51:ARG:HB3 | 2.20 | 0.42 |
| 1:D:322:LEU:HD23 | 1:D:328:VAL:CG2 | 2.42 | 0.42 |
| 1:D:417:SER:O | 1:D:418:PRO:C | 2.58 | 0.42 |
| 1:D:496:GLU:HA | 1:D:496:GLU:OE1 | 2.19 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|--------|--------|--------------------------|-------------------|
| 1:D:512:PRO:O | 1:D:516:GLN:HG3 | 2.20 | 0.42 |
| 1:C:178:GLU:HB2 | 1:C:515:TRP:CZ3 | 2.55 | 0.42 |
| 1:A:316:LYS:HB2 | 1:A:317:PRO:HD2 | 2.02 | 0.42 |
| 1:A:532:ARG:NH2 | 1:D:529:ASN:HB3 | 2.35 | 0.42 |
| 1:B:48:GLU:O | 1:B:51:ARG:HB3 | 2.20 | 0.42 |
| 1:C:236:LYS:HG3 | 1:C:262:LEU:HD21 | 2.00 | 0.42 |
| 1:D:238:ILE:CD1 | 1:D:310:ILE:HD13 | 2.38 | 0.42 |
| 1:D:260:LEU:HB3 | 1:D:506:PHE:CE2 | 2.55 | 0.42 |
| 1:A:512:PRO:O | 1:A:516:GLN:HG3 | 2.20 | 0.42 |
| 1:B:223:LEU:HD23 | 1:B:223:LEU:HA | 1.87 | 0.42 |
| 1:C:238:ILE:HD11 | 1:C:338:GLU:HG2 | 2.02 | 0.42 |
| 1:C:284:PRO:HB2 | 1:C:385:ALA:CB | 2.49 | 0.42 |
| 1:D:238:ILE:HG21 | 1:D:333:LEU:HD22 | 2.02 | 0.42 |
| 1:A:284:PRO:HB2 | 1:A:385:ALA:CB | 2.50 | 0.41 |
| 1:A:174:TRP:CZ2 | 1:A:525:PHE:CD1 | 3.07 | 0.41 |
| 1:B:273:ARG:HG2 | 1:B:318:GLU:HB3 | 2.02 | 0.41 |
| 1:C:144:GLN:N | 1:C:145:PRO:CD | 2.83 | 0.41 |
| 1:D:243:HIS:HB3 | 5:D:566:HOH:O | 2.20 | 0.41 |
| 1:B:34:LYS:CE | 1:B:38:ARG:HH21 | 2.27 | 0.41 |
| 1:D:238:ILE:HD11 | 1:D:338:GLU:HG2 | 2.02 | 0.41 |
| 1:D:273:ARG:HB3 | 1:D:317:PRO:HB2 | 2.02 | 0.41 |
| 1:A:111:ARG:NH2 | 1:A:137:GLY:CA | 2.84 | 0.41 |
| 1:A:287:GLN:HE21 | 1:A:287:GLN:CA | 2.33 | 0.41 |
| 1:A:427:LEU:O | 1:A:435:ARG:HD3 | 2.19 | 0.41 |
| 1:B:59:GLU:HG2 | 5:B:573:HOH:O | 2.20 | 0.41 |
| 1:B:528:LEU:N | 1:B:528:LEU:HD23 | 2.34 | 0.41 |
| 1:D:490:VAL:HG22 | 1:D:491:LYS:N | 2.33 | 0.41 |
| 1:B:316:LYS:HB2 | 1:B:317:PRO:HD2 | 2.02 | 0.41 |
| 1:B:332:ASP:OD2 | 2:B:700:ADP:O2A | 2.39 | 0.41 |
| 1:D:100:ASP:HA | 1:D:103:ARG:HG3 | 2.03 | 0.41 |
| 1:D:287:GLN:HE21 | 1:D:287:GLN:CA | 2.34 | 0.41 |
| 1:A:216:LYS:HE2 | 1:A:218:LEU:HD21 | 2.03 | 0.41 |
| 1:A:238:ILE:HD11 | 1:A:338:GLU:HG2 | 2.02 | 0.41 |
| 1:D:528:LEU:N | 1:D:528:LEU:HD23 | 2.36 | 0.41 |
| 1:C:312:TYR:CE2 | 1:C:330:ILE:HD12 | 2.56 | 0.41 |
| 1:C:330:ILE:HG21 | 1:C:330:ILE:HD13 | 1.79 | 0.41 |
| 1:D:111:ARG:NH2 | 1:D:137:GLY:CA | 2.83 | 0.41 |
| 1:D:144:GLN:N | 1:D:145:PRO:CD | 2.84 | 0.41 |
| 1:A:206:MET:SD | 1:A:208:ALA:HB3 | 2.61 | 0.41 |
| 1:A:212:LEU:HA | 1:A:212:LEU:HD23 | 1.77 | 0.41 |
| 1:A:529:ASN:HB3 | 1:D:532:ARG:HH22 | 1.86 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:532:ARG:HH22 | 1:C:529:ASN:HB3 | 1.86 | 0.41 |
| 1:C:470:VAL:HA | 1:C:471:PRO:HD3 | 1.85 | 0.41 |
| 1:D:469:PHE:CD2 | 1:D:469:PHE:C | 2.94 | 0.41 |
| 1:D:174:TRP:CZ2 | 1:D:525:PHE:CD1 | 3.09 | 0.41 |
| 1:D:284:PRO:HB2 | 1:D:385:ALA:CB | 2.50 | 0.41 |
| 1:B:465:LEU:HD23 | 1:B:465:LEU:HA | 1.88 | 0.40 |
| 1:A:223:LEU:HA | 1:A:223:LEU:HD23 | 1.82 | 0.40 |
| 1:A:412:TYR:HA | 1:A:413:PRO:HD2 | 1.87 | 0.40 |
| 1:C:273:ARG:HG2 | 1:C:318:GLU:HB3 | 2.03 | 0.40 |
| 1:B:183:GLY:O | 1:B:186:TRP:HB2 | 2.21 | 0.40 |
| 1:D:273:ARG:HG3 | 1:D:274:TYR:N | 2.37 | 0.40 |
| 1:D:375:LEU:O | 1:D:378:THR:HB | 2.21 | 0.40 |
| 1:B:238:ILE:HG23 | 1:B:310:ILE:HD13 | 2.04 | 0.40 |
| 1:C:48:GLU:O | 1:C:51:ARG:HB3 | 2.22 | 0.40 |
| 1:C:532:ARG:HA | 1:C:533:PRO:HD3 | 1.86 | 0.40 |
| 1:D:54:LEU:HD23 | 1:D:54:LEU:HA | 1.88 | 0.40 |
| 1:D:137:GLY:HA2 | 1:D:142:LEU:CD1 | 2.52 | 0.40 |
| 1:A:103:ARG:N | 1:A:104:PRO:CD | 2.84 | 0.40 |
| 1:A:288:GLU:HB2 | 1:A:289:PRO:HD3 | 2.02 | 0.40 |
| 1:B:171:PHE:O | 1:B:175:LYS:HG2 | 2.21 | 0.40 |
| 1:B:220:LYS:HG2 | 1:B:503:PHE:CZ | 2.56 | 0.40 |
| 1:B:287:GLN:HA | 1:B:287:GLN:NE2 | 2.36 | 0.40 |
| 1:B:288:GLU:CD | 1:B:420:SER:HG | 2.23 | 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 | |
|---|---|---|---|---|---|---|---|
| 1 | A | 482/543 (89%) | 447 (93%) | 30 (6%) | 5 (1%) | 15 | 37 |
| 1 | B | 477/543 (88%) | 443 (93%) | 29 (6%) | 5 (1%) | 15 | 37 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|-----|-----|
| 1 | C | 476/543 (88%) | 444 (93%) | 28 (6%) | 4 (1%) | 19 | 43 |
| 1 | D | 482/543 (89%) | 449 (93%) | 28 (6%) | 5 (1%) | 15 | 37 |
| All | All | 1917/2172 (88%) | 1783 (93%) | 115 (6%) | 19 (1%) | 15 | 37 |

All (19) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 281 | GLU |
| 1 | B | 281 | GLU |
| 1 | C | 281 | GLU |
| 1 | D | 281 | GLU |
| 1 | A | 138 | ALA |
| 1 | B | 119 | ALA |
| 1 | B | 138 | ALA |
| 1 | B | 413 | PRO |
| 1 | C | 119 | ALA |
| 1 | D | 138 | ALA |
| 1 | A | 413 | PRO |
| 1 | C | 413 | PRO |
| 1 | D | 119 | ALA |
| 1 | D | 413 | PRO |
| 1 | A | 119 | ALA |
| 1 | B | 512 | PRO |
| 1 | A | 512 | PRO |
| 1 | D | 512 | PRO |
| 1 | C | 512 | 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 | |
|-----|-------|----------|-----------|----------|-----|-----|
| 1 | A | 405/449 (90%) | 377 (93%) | 28 (7%) | 15 | 35 |
| 1 | B | 402/449 (90%) | 376 (94%) | 26 (6%) | 17 | 38 |
| 1 | C | 405/449 (90%) | 379 (94%) | 26 (6%) | 17 | 39 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------|-----------|----------|---------|---------|
| 1 | D | 405/449 (90%) | 379 (94%) | 26 (6%) | 17 | 39 |
| All | All | 1617/1796 (90%) | 1511 (93%) | 106 (7%) | 16 | 38 |

All (106) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 44 | LEU |
| 1 | A | 50 | LEU |
| 1 | A | 61 | MET |
| 1 | A | 63 | LEU |
| 1 | A | 81 | GLN |
| 1 | A | 105 | GLN |
| 1 | A | 135 | ARG |
| 1 | A | 170 | ARG |
| 1 | A | 206 | MET |
| 1 | A | 223 | LEU |
| 1 | A | 230 | GLN |
| 1 | A | 258 | THR |
| 1 | A | 273 | ARG |
| 1 | A | 280 | ASP |
| 1 | A | 287 | GLN |
| 1 | A | 313 | ARG |
| 1 | A | 328 | VAL |
| 1 | A | 330 | ILE |
| 1 | A | 359 | GLU |
| 1 | A | 367 | ASP |
| 1 | A | 390 | ARG |
| 1 | A | 411 | THR |
| 1 | A | 433 | GLU |
| 1 | A | 448 | THR |
| 1 | A | 461 | GLU |
| 1 | A | 472 | ASP |
| 1 | A | 501 | GLU |
| 1 | A | 528 | LEU |
| 1 | B | 44 | LEU |
| 1 | B | 50 | LEU |
| 1 | B | 61 | MET |
| 1 | B | 63 | LEU |
| 1 | B | 81 | GLN |
| 1 | B | 105 | GLN |
| 1 | B | 135 | ARG |
| 1 | B | 206 | MET |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 223 | LEU |
| 1 | B | 230 | GLN |
| 1 | B | 258 | THR |
| 1 | B | 273 | ARG |
| 1 | B | 280 | ASP |
| 1 | B | 287 | GLN |
| 1 | B | 313 | ARG |
| 1 | B | 328 | VAL |
| 1 | B | 330 | ILE |
| 1 | B | 359 | GLU |
| 1 | B | 367 | ASP |
| 1 | B | 390 | ARG |
| 1 | B | 411 | THR |
| 1 | B | 433 | GLU |
| 1 | B | 461 | GLU |
| 1 | B | 472 | ASP |
| 1 | B | 501 | GLU |
| 1 | B | 528 | LEU |
| 1 | C | 44 | LEU |
| 1 | C | 50 | LEU |
| 1 | C | 61 | MET |
| 1 | C | 63 | LEU |
| 1 | C | 81 | GLN |
| 1 | C | 105 | GLN |
| 1 | C | 135 | ARG |
| 1 | C | 170 | ARG |
| 1 | C | 206 | MET |
| 1 | C | 223 | LEU |
| 1 | C | 230 | GLN |
| 1 | C | 273 | ARG |
| 1 | C | 280 | ASP |
| 1 | C | 287 | GLN |
| 1 | C | 328 | VAL |
| 1 | C | 330 | ILE |
| 1 | C | 359 | GLU |
| 1 | C | 367 | ASP |
| 1 | C | 390 | ARG |
| 1 | C | 411 | THR |
| 1 | C | 433 | GLU |
| 1 | C | 448 | THR |
| 1 | C | 461 | GLU |
| 1 | C | 473 | SER |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | C | 501 | GLU |
| 1 | C | 528 | LEU |
| 1 | D | 44 | LEU |
| 1 | D | 50 | LEU |
| 1 | D | 61 | MET |
| 1 | D | 63 | LEU |
| 1 | D | 81 | GLN |
| 1 | D | 105 | GLN |
| 1 | D | 135 | ARG |
| 1 | D | 206 | MET |
| 1 | D | 223 | LEU |
| 1 | D | 230 | GLN |
| 1 | D | 273 | ARG |
| 1 | D | 280 | ASP |
| 1 | D | 287 | GLN |
| 1 | D | 312 | TYR |
| 1 | D | 313 | ARG |
| 1 | D | 328 | VAL |
| 1 | D | 330 | ILE |
| 1 | D | 359 | GLU |
| 1 | D | 367 | ASP |
| 1 | D | 390 | ARG |
| 1 | D | 411 | THR |
| 1 | D | 433 | GLU |
| 1 | D | 461 | GLU |
| 1 | D | 472 | ASP |
| 1 | D | 501 | GLU |
| 1 | D | 528 | LEU |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (24) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 81 | GLN |
| 1 | A | 118 | GLN |
| 1 | A | 160 | GLN |
| 1 | A | 268 | ASN |
| 1 | A | 287 | GLN |
| 1 | A | 304 | HIS |
| 1 | B | 81 | GLN |
| 1 | B | 118 | GLN |
| 1 | B | 268 | ASN |
| 1 | B | 287 | GLN |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 304 | HIS |
| 1 | C | 81 | GLN |
| 1 | C | 118 | GLN |
| 1 | C | 160 | GLN |
| 1 | C | 268 | ASN |
| 1 | C | 287 | GLN |
| 1 | C | 304 | HIS |
| 1 | D | 81 | GLN |
| 1 | D | 118 | GLN |
| 1 | D | 160 | GLN |
| 1 | D | 180 | GLN |
| 1 | D | 268 | ASN |
| 1 | D | 287 | GLN |
| 1 | D | 304 | HIS |

### 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 14 ligands modelled in this entry, 8 are monoatomic - leaving 6 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 |
| 4 | GOL | A | 544 | - | 5,5,5 | 0.47 | 0 | 5,5,5 | 0.70 | 0 |
| 2 | ADP | C | 700 | 3 | 24,29,29 | 0.92 | 1 (4%) | 29,45,45 | 1.41 | 5 (17%) |
| 2 | ADP | B | 700 | 3 | 24,29,29 | 1.01 | 2 (8%) | 29,45,45 | 1.24 | 3 (10%) |
| 2 | ADP | A | 700 | 3 | 24,29,29 | 1.02 | 2 (8%) | 29,45,45 | 1.24 | 4 (13%) |
| 2 | ADP | D | 700 | 3 | 24,29,29 | 0.96 | 1 (4%) | 29,45,45 | 1.37 | 4 (13%) |
| 4 | GOL | B | 544 | - | 5,5,5 | 0.37 | 0 | 5,5,5 | 0.29 | 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 |
|-----|------|-------|-----|------|---------|----------|-------|
| 4 | GOL | A | 544 | - | - | 4/4/4/4 | - |
| 2 | ADP | C | 700 | 3 | - | 0/12/32/32 | 0/3/3/3 |
| 2 | ADP | B | 700 | 3 | - | 0/12/32/32 | 0/3/3/3 |
| 2 | ADP | A | 700 | 3 | - | 0/12/32/32 | 0/3/3/3 |
| 2 | ADP | D | 700 | 3 | - | 0/12/32/32 | 0/3/3/3 |
| 4 | GOL | B | 544 | - | - | 4/4/4/4 | - |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 2 | D | 700 | ADP | C5-C4 | 2.70 | 1.48 | 1.40 |
| 2 | A | 700 | ADP | C5-C4 | 2.69 | 1.48 | 1.40 |
| 2 | B | 700 | ADP | C5-C4 | 2.67 | 1.48 | 1.40 |
| 2 | C | 700 | ADP | C5-C4 | 2.40 | 1.47 | 1.40 |
| 2 | A | 700 | ADP | C2-N3 | 2.20 | 1.35 | 1.32 |
| 2 | B | 700 | ADP | C2-N3 | 2.02 | 1.35 | 1.32 |

All (16) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 2 | C | 700 | ADP | N3-C2-N1 | -3.78 | 122.77 | 128.68 |
| 2 | D | 700 | ADP | N3-C2-N1 | -3.33 | 123.47 | 128.68 |
| 2 | A | 700 | ADP | N3-C2-N1 | -2.75 | 124.39 | 128.68 |
| 2 | D | 700 | ADP | C3'-C2'-C1' | 2.72 | 105.08 | 100.98 |
| 2 | B | 700 | ADP | N3-C2-N1 | -2.67 | 124.50 | 128.68 |
| 2 | A | 700 | ADP | PA-O3A-PB | -2.66 | 123.71 | 132.83 |
| 2 | D | 700 | ADP | N6-C6-N1 | 2.60 | 123.96 | 118.57 |
| 2 | C | 700 | ADP | PA-O3A-PB | -2.51 | 124.21 | 132.83 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 2 | D | 700 | ADP | PA-O3A-PB | -2.41 | 124.57 | 132.83 |
| 2 | B | 700 | ADP | O3A-PB-O1B | -2.39 | 97.95 | 111.19 |
| 2 | A | 700 | ADP | C3'-C2'-C1' | 2.35 | 104.51 | 100.98 |
| 2 | A | 700 | ADP | C4-C5-N7 | -2.25 | 107.06 | 109.40 |
| 2 | B | 700 | ADP | N6-C6-N1 | 2.24 | 123.23 | 118.57 |
| 2 | C | 700 | ADP | C2-N1-C6 | 2.14 | 122.42 | 118.75 |
| 2 | C | 700 | ADP | O3A-PB-O1B | -2.11 | 99.51 | 111.19 |
| 2 | C | 700 | ADP | O3B-PB-O1B | 2.00 | 118.53 | 110.68 |

There are no chirality outliers.

All (8) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 4 | A | 544 | GOL | O1-C1-C2-C3 |
| 4 | B | 544 | GOL | O1-C1-C2-C3 |
| 4 | A | 544 | GOL | C1-C2-C3-O3 |
| 4 | B | 544 | GOL | C1-C2-C3-O3 |
| 4 | A | 544 | GOL | O2-C2-C3-O3 |
| 4 | B | 544 | GOL | O1-C1-C2-O2 |
| 4 | A | 544 | GOL | O1-C1-C2-O2 |
| 4 | B | 544 | GOL | O2-C2-C3-O3 |

There are no ring outliers.

5 monomers are involved in 10 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|---|---|---|---|---|---|
| 4 | A | 544 | GOL | 1 | 0 |
| 2 | C | 700 | ADP | 1 | 0 |
| 2 | B | 700 | ADP | 3 | 0 |
| 2 | A | 700 | ADP | 3 | 0 |
| 2 | D | 700 | ADP | 2 | 0 |

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier.

The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

**Ligand ADP C 700**



Bond lengths



Bond angles



Torsions



Rings

**Ligand ADP B 700**



Bond lengths



Bond angles



Torsions



Rings

## Ligand ADP A 700



Bond lengths



Bond angles



Torsions



Rings

## Ligand ADP D 700



Bond lengths



Bond angles



Torsions



Rings
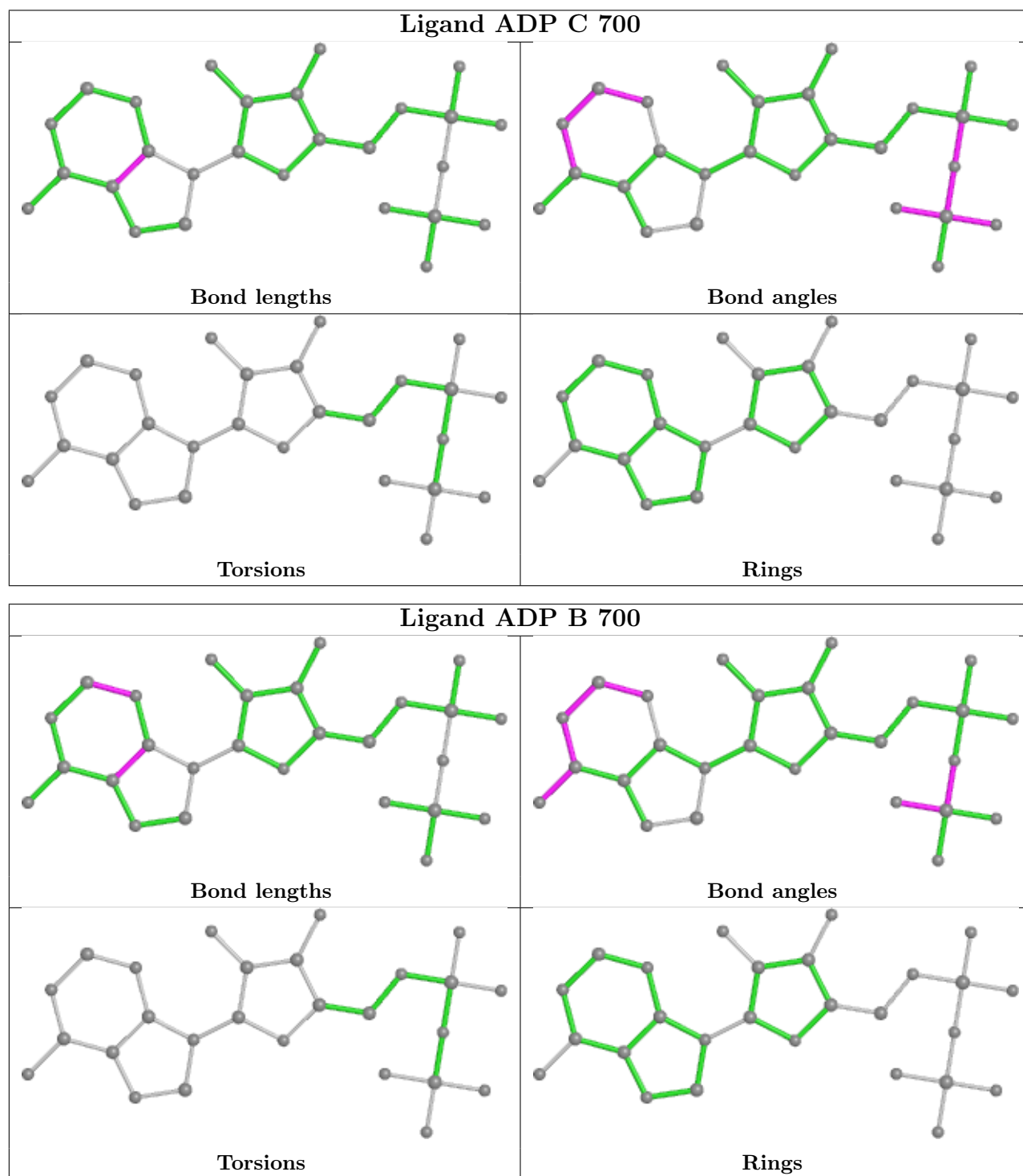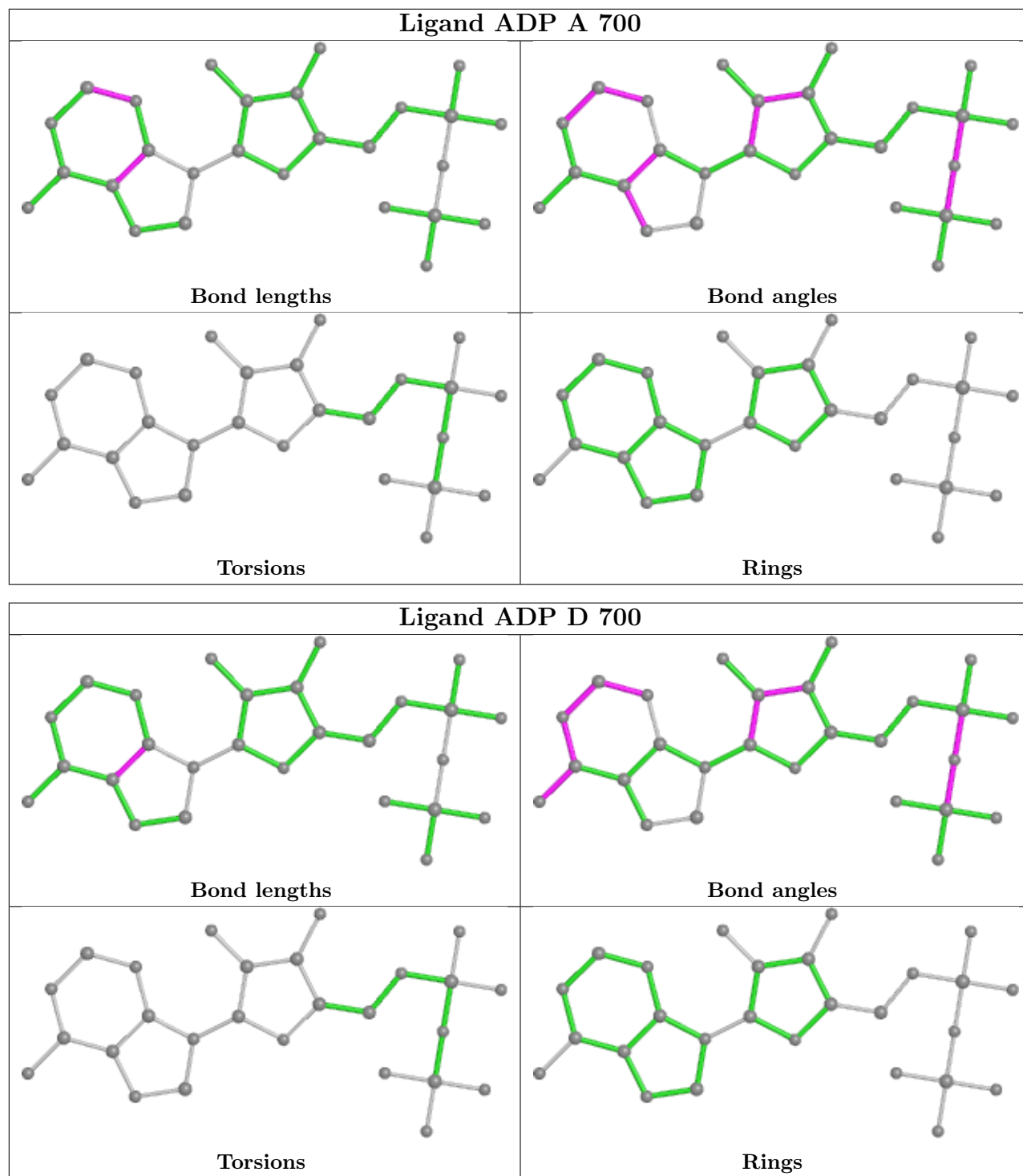
## 5.7 Other polymers ⓘ

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(Å$^2$) | Q<0.9 |
|-----|-------|----------|--------|---------|-----|-----|-------------|-------|
| 1 | A | 486/543 (89%) | 0.12 | 23 (4%) | 31 | 30 | 31, 59, 110, 132 | 1 (0%) |
| 1 | B | 481/543 (88%) | 0.01 | 20 (4%) | 36 | 35 | 34, 60, 97, 126 | 1 (0%) |
| 1 | C | 482/543 (88%) | -0.04 | 14 (2%) | 51 | 52 | 31, 58, 93, 123 | 1 (0%) |
| 1 | D | 486/543 (89%) | -0.01 | 23 (4%) | 31 | 30 | 29, 56, 95, 120 | 1 (0%) |
| All | All | 1935/2172 (89%) | 0.02 | 80 (4%) | 37 | 36 | 29, 58, 98, 132 | 4 (0%) |

All (80) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | D | 490 | VAL | 5.3 |
| 1 | D | 281 | GLU | 4.5 |
| 1 | D | 493 | VAL | 4.0 |
| 1 | D | 495 | PHE | 4.0 |
| 1 | B | 281 | GLU | 3.9 |
| 1 | D | 492 | GLY | 3.8 |
| 1 | A | 140 | ASP | 3.8 |
| 1 | C | 281 | GLU | 3.7 |
| 1 | B | 283 | ASN | 3.6 |
| 1 | D | 282 | ASP | 3.5 |
| 1 | A | 99 | ASP | 3.4 |
| 1 | B | 341 | ALA | 3.3 |
| 1 | B | 282 | ASP | 3.1 |
| 1 | A | 472 | ASP | 3.1 |
| 1 | D | 279 | VAL | 3.1 |
| 1 | A | 132 | ALA | 3.0 |
| 1 | B | 101 | ALA | 2.9 |
| 1 | D | 453 | ARG | 2.9 |
| 1 | C | 315 | LEU | 2.9 |
| 1 | A | 375 | LEU | 2.8 |
| 1 | C | 282 | ASP | 2.8 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | A | 101 | ALA | 2.8 |
| 1 | B | 279 | VAL | 2.8 |
| 1 | D | 312 | TYR | 2.8 |
| 1 | D | 491 | LYS | 2.8 |
| 1 | B | 495 | PHE | 2.7 |
| 1 | C | 133 | ARG | 2.7 |
| 1 | A | 378 | THR | 2.7 |
| 1 | B | 378 | THR | 2.7 |
| 1 | C | 33 | ARG | 2.7 |
| 1 | B | 377 | VAL | 2.6 |
| 1 | C | 377 | VAL | 2.6 |
| 1 | D | 472 | ASP | 2.6 |
| 1 | B | 195 | ARG | 2.6 |
| 1 | D | 33 | ARG | 2.6 |
| 1 | D | 283 | ASN | 2.6 |
| 1 | C | 379 | LEU | 2.6 |
| 1 | A | 116 | GLU | 2.6 |
| 1 | C | 135 | ARG | 2.6 |
| 1 | A | 283 | ASN | 2.5 |
| 1 | A | 317 | PRO | 2.5 |
| 1 | B | 317 | PRO | 2.5 |
| 1 | C | 376 | GLY | 2.5 |
| 1 | A | 131 | VAL | 2.5 |
| 1 | A | 453 | ARG | 2.4 |
| 1 | C | 283 | ASN | 2.4 |
| 1 | C | 378 | THR | 2.4 |
| 1 | D | 374 | ALA | 2.4 |
| 1 | D | 399 | LYS | 2.3 |
| 1 | A | 102 | LEU | 2.3 |
| 1 | A | 376 | GLY | 2.3 |
| 1 | D | 378 | THR | 2.3 |
| 1 | B | 374 | ALA | 2.3 |
| 1 | B | 320 | VAL | 2.3 |
| 1 | A | 115 | LEU | 2.3 |
| 1 | A | 315 | LEU | 2.3 |
| 1 | C | 134 | ALA | 2.3 |
| 1 | C | 317 | PRO | 2.2 |
| 1 | D | 375 | LEU | 2.2 |
| 1 | D | 341 | ALA | 2.2 |
| 1 | A | 135 | ARG | 2.2 |
| 1 | B | 375 | LEU | 2.2 |
| 1 | C | 375 | LEU | 2.2 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | D | 190 | PHE | 2.2 |
| 1 | A | 118 | GLN | 2.2 |
| 1 | A | 119 | ALA | 2.2 |
| 1 | B | 371 | ASP | 2.2 |
| 1 | A | 320 | VAL | 2.2 |
| 1 | B | 414 | ASP | 2.1 |
| 1 | D | 314 | ASP | 2.1 |
| 1 | D | 319 | ASN | 2.1 |
| 1 | B | 192 | VAL | 2.1 |
| 1 | D | 315 | LEU | 2.1 |
| 1 | B | 280 | ASP | 2.1 |
| 1 | A | 490 | VAL | 2.1 |
| 1 | B | 312 | TYR | 2.1 |
| 1 | B | 314 | ASP | 2.1 |
| 1 | D | 331 | SER | 2.1 |
| 1 | A | 331 | SER | 2.0 |
| 1 | A | 112 | ALA | 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(Å$^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|------------------|-------|
| 4 | GOL | B | 544 | 6/6 | 0.86 | 0.19 | 53,61,81,92 | 0 |
| 4 | GOL | A | 544 | 6/6 | 0.87 | 0.17 | 50,58,72,74 | 0 |
| 3 | MG | B | 800 | 1/1 | 0.92 | 0.15 | 43,43,43,43 | 0 |
| 3 | MG | C | 801 | 1/1 | 0.94 | 0.18 | 38,38,38,38 | 0 |
| 3 | MG | C | 800 | 1/1 | 0.96 | 0.17 | 29,29,29,29 | 0 |
| 3 | MG | D | 801 | 1/1 | 0.96 | 0.30 | 44,44,44,44 | 0 |

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| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors($\text{Å}^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|------------------------|-------|
| 2 | ADP | C | 700 | 27/27 | 0.97 | 0.15 | 29,42,53,65 | 0 |
| 3 | MG | A | 801 | 1/1 | 0.97 | 0.26 | 28,28,28,28 | 0 |
| 2 | ADP | D | 700 | 27/27 | 0.98 | 0.17 | 34,41,47,53 | 0 |
| 3 | MG | A | 800 | 1/1 | 0.98 | 0.12 | 23,23,23,23 | 0 |
| 3 | MG | D | 800 | 1/1 | 0.98 | 0.19 | 31,31,31,31 | 0 |
| 2 | ADP | B | 700 | 27/27 | 0.98 | 0.18 | 35,46,55,59 | 0 |
| 2 | ADP | A | 700 | 27/27 | 0.98 | 0.18 | 25,40,51,53 | 0 |
| 3 | MG | B | 801 | 1/1 | 0.98 | 0.30 | 51,51,51,51 | 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.
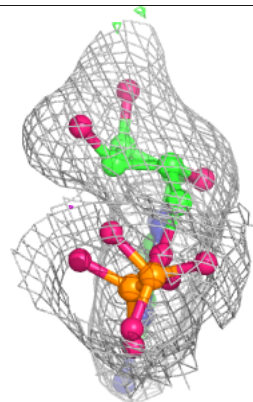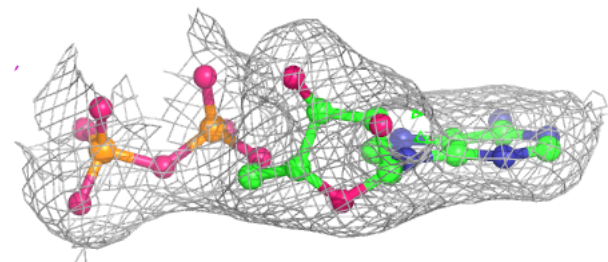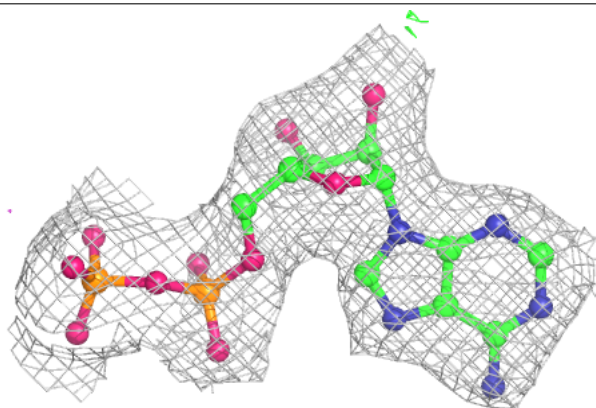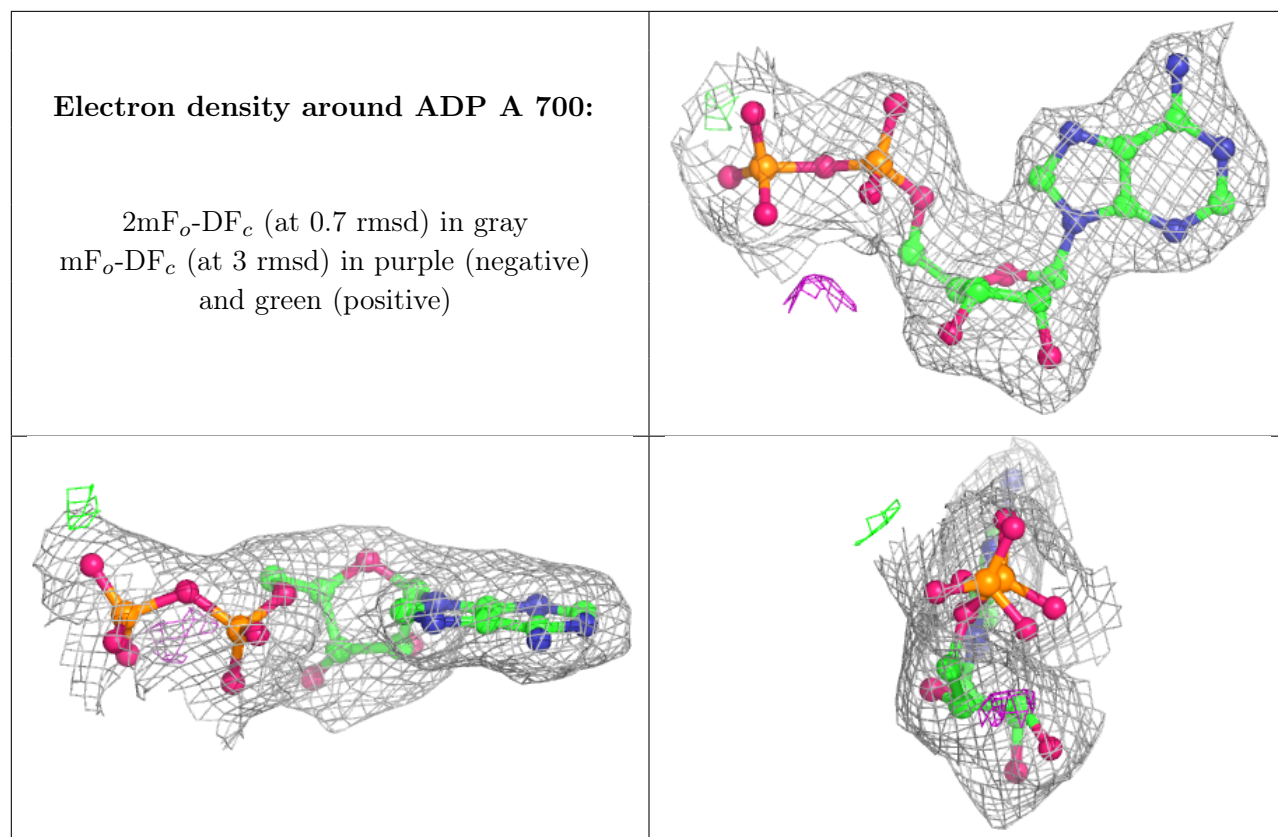


**Electron density around ADP C 700:**

$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative) and green (positive)
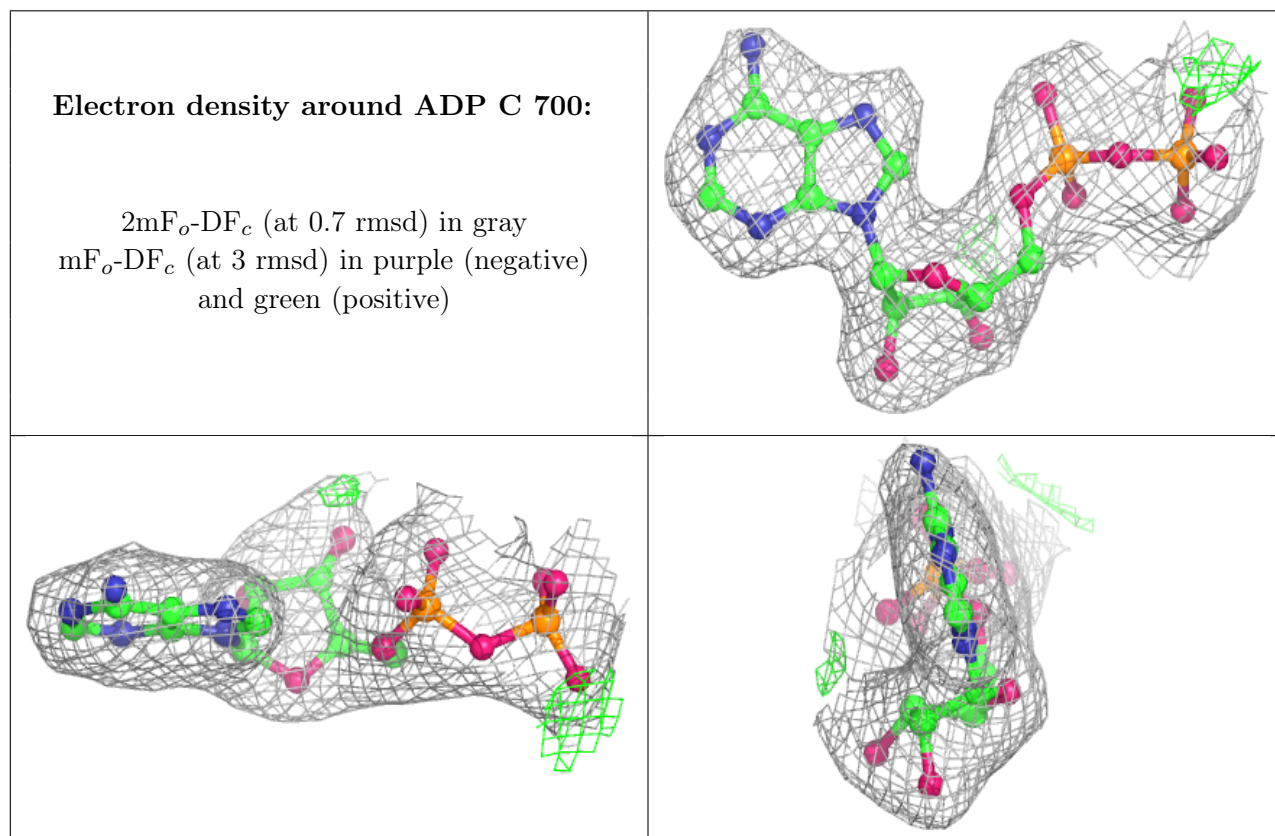
**Electron density around ADP D 700:**

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)
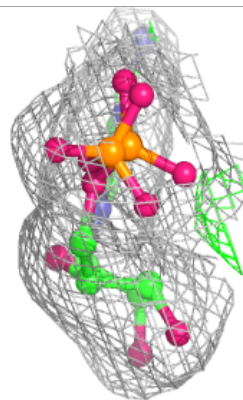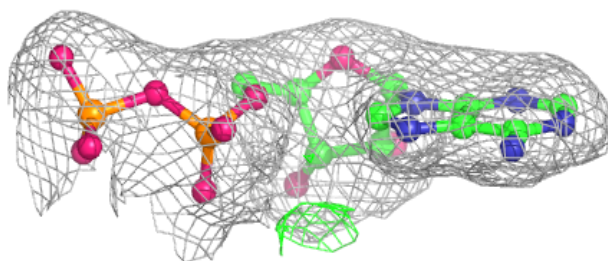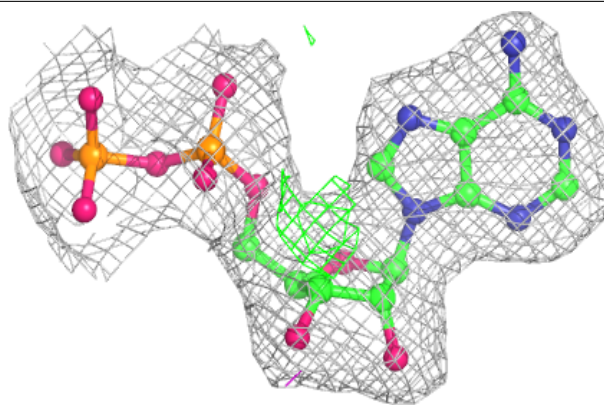


**Electron density around ADP B 700:**

2mF$_o$-DF$_c$ (at 0.7 rmsd) in gray
mF$_o$-DF$_c$ (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around ADP A 700:**

$2mF_o$-$DF_c$ (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.