# WORLDWIDE PDB
## PROTEIN DATA BANK

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

Sep 24, 2025 – 05:07 am BST

| | | |
|---|---|---|
| PDB ID | : | 5JWE / pdb_00005jwe |
| Title | : | Crystal structure of H-2Db in complex with the LCMV-derived GP92-101 peptide |
| Authors | : | Buratto, J.; Badia-Martinez, D.; Norstrom, M.; Sandalova, T.; Achour, A. |
| Deposited on | : | 2016-05-12 |
| Resolution | : | 2.40 Å(reported) |

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

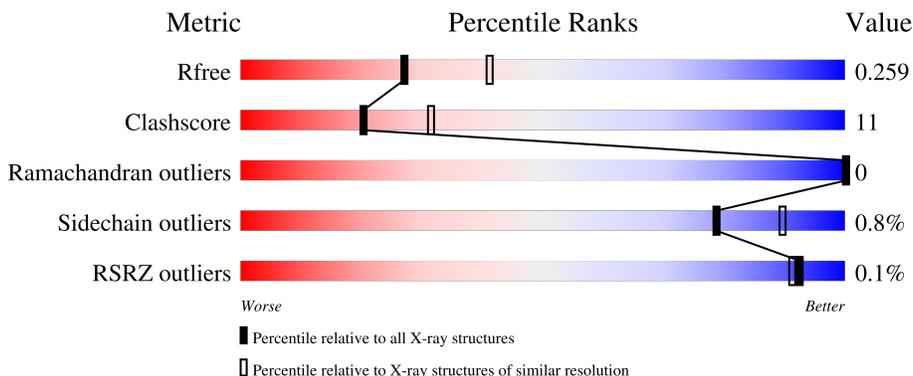| | | |
|---|---|---|
| MolProbity | : | 4-5-2 with Phenix2.0 |
| Mogul | : | 1.8.4, CSD as541be (2020) |
| Xtriage (Phenix) | : | 2.0 |
| EDS | : | 3.0 |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| CCP4 | : | 9.0.010 (Gargrove) |
| Density-Fitness | : | 1.0.12 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.46 |

# 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 2.40 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 | | 0.259 |
| Clashscore | | 11 |
| Ramachandran outliers | | 0 |
| Sidechain outliers | | 0.8% |
| 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)) |
|--------|--------------------------|---------------------------------------------------|
| $R_{free}$ | 164625 | 4642 (2.40-2.40) |
| Clashscore | 180529 | 5218 (2.40-2.40) |
| Ramachandran outliers | 177936 | 5158 (2.40-2.40) |
| Sidechain outliers | 177891 | 5159 (2.40-2.40) |
| RSRZ outliers | 164620 | 4642 (2.40-2.40) |

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 | 276 | 77% / 22% |
| 1 | C | 276 | 76% / 22% / · |
| 1 | E | 276 | 78% / 19% / · · |
| 1 | G | 276 | 76% / 22% / · |
| 2 | B | 99 | 74% / 26% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 2 | D | 99 | 65%     35% |
| 2 | F | 99 | 70%     29%   . |
| 2 | H | 99 | 82%     18% |
| 3 | P | 10 | 90%     10% |
| 3 | Q | 10 | 80%     20% |
| 3 | R | 10 | 80%     20% |
| 3 | S | 10 | 70%     30% |

## 2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 12734 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 H-2 class I histocompatibility antigen, D-B alpha chain.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|---------|-------|
| 1 | A | 276 | Total | C | N | O | S | 0 | 1 | 0 |
| | | | 2243 | 1420 | 397 | 417 | 9 | | | |
| 1 | C | 276 | Total | C | N | O | S | 0 | 1 | 0 |
| | | | 2234 | 1414 | 396 | 416 | 8 | | | |
| 1 | E | 268 | Total | C | N | O | S | 0 | 2 | 0 |
| | | | 2098 | 1337 | 363 | 389 | 9 | | | |
| 1 | G | 273 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2156 | 1364 | 378 | 405 | 9 | | | |

- Molecule 2 is a protein called Beta-2-microglobulin.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
| 2 | B | 99 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 803 | 513 | 133 | 150 | 7 | | | |
| 2 | D | 99 | Total | C | N | O | S | 0 | 1 | 0 |
| | | | 814 | 521 | 135 | 150 | 8 | | | |
| 2 | F | 99 | Total | C | N | O | S | 0 | 1 | 0 |
| | | | 817 | 522 | 138 | 150 | 7 | | | |
| 2 | H | 99 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 821 | 524 | 138 | 152 | 7 | | | |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|-------------|
| B | 85 | ASP | ALA | conflict | UNP P01887 |
| D | 85 | ASP | ALA | conflict | UNP P01887 |
| F | 85 | ASP | ALA | conflict | UNP P01887 |
| H | 85 | ASP | ALA | conflict | UNP P01887 |

- Molecule 3 is a protein called Pre-glycoprotein polyprotein GP complex.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | P | 10 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 80 | 47 | 16 | 16 | 1 | | | |
| 3 | Q | 10 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 80 | 47 | 16 | 16 | 1 | | | |
| 3 | R | 10 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 80 | 47 | 16 | 16 | 1 | | | |
| 3 | S | 10 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 80 | 47 | 16 | 16 | 1 | | | |

- Molecule 4 is SULFATE ION (CCD ID: SO4) (formula: $O_4S$).
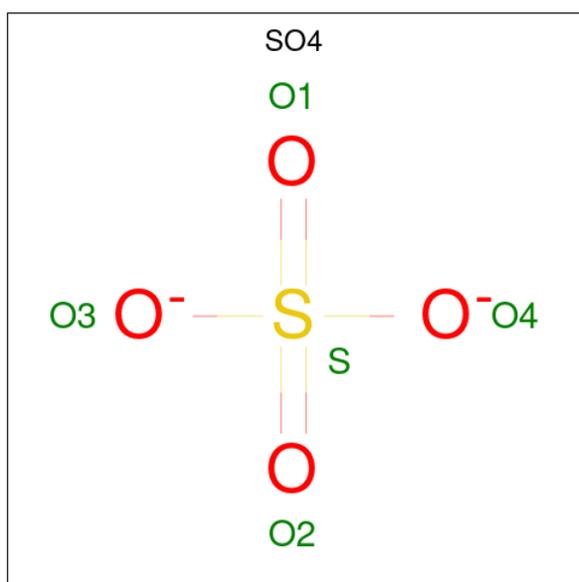


| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf |
|---|---|---|---|---|---|---|---|
| 4 | A | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | B | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | B | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | D | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | D | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | F | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | F | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |
| 4 | F | 1 | Total | O | S | 0 | 0 |
| | | | 5 | 4 | 1 | | |

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| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 4 | G | 1 | Total 5 | O 4 | S 1 | 0 | 0 |
| 4 | H | 1 | Total 5 | O 4 | S 1 | 0 | 0 |
| 4 | H | 1 | Total 5 | O 4 | S 1 | 0 | 0 |
| 4 | H | 1 | Total 5 | O 4 | S 1 | 0 | 0 |
| 4 | H | 1 | Total 5 | O 4 | S 1 | 0 | 0 |

- Molecule 5 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



GOL
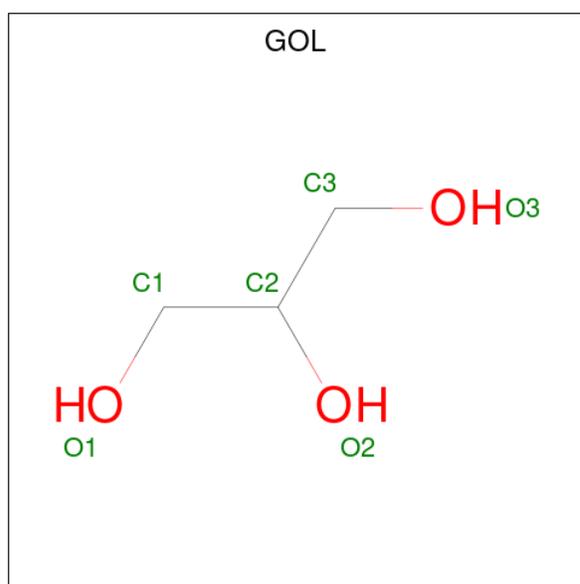
| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 5 | A | 1 | Total 6 | C 3 | O 3 | 0 | 0 |
| 5 | B | 1 | Total 6 | C 3 | O 3 | 0 | 0 |
| 5 | B | 1 | Total 6 | C 3 | O 3 | 0 | 0 |
| 5 | B | 1 | Total 6 | C 3 | O 3 | 0 | 0 |
| 5 | C | 1 | Total 6 | C 3 | O 3 | 0 | 0 |
| 5 | D | 1 | Total 6 | C 3 | O 3 | 0 | 0 |

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| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 5 | D | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | D | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | D | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | E | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | F | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | G | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | G | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | H | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |
| 5 | H | 1 | Total<br>6 | C<br>3 | O<br>3 | 0 | 0 |

- Molecule 6 is water.

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---------|---------|
| 6 | A | 48 | Total<br>48 | O<br>48 | 0 | 0 |
| 6 | B | 23 | Total<br>23 | O<br>23 | 0 | 0 |
| 6 | C | 59 | Total<br>59 | O<br>59 | 0 | 0 |
| 6 | D | 24 | Total<br>24 | O<br>24 | 0 | 0 |
| 6 | E | 35 | Total<br>35 | O<br>35 | 0 | 0 |
| 6 | F | 28 | Total<br>28 | O<br>28 | 0 | 0 |
| 6 | G | 27 | Total<br>27 | O<br>27 | 0 | 0 |
| 6 | H | 25 | Total<br>25 | O<br>25 | 0 | 0 |
| 6 | P | 2 | Total<br>2 | O<br>2 | 0 | 0 |
| 6 | Q | 2 | Total<br>2 | O<br>2 | 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: H-2 class I histocompatibility antigen, D-B alpha chain
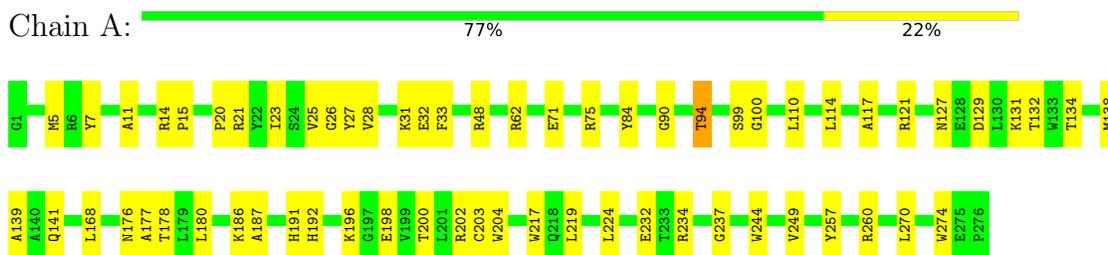
Chain A:



- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain
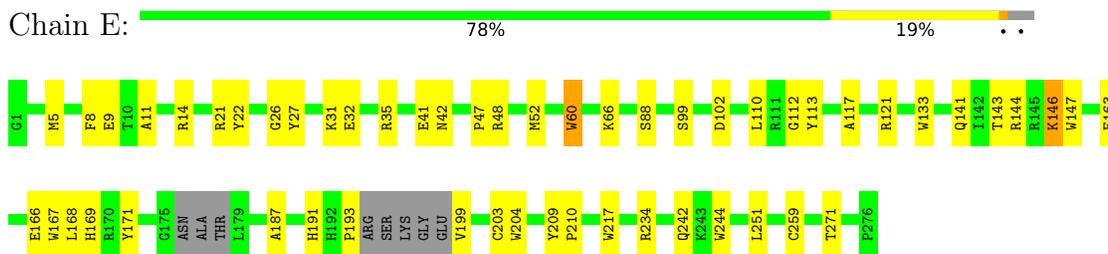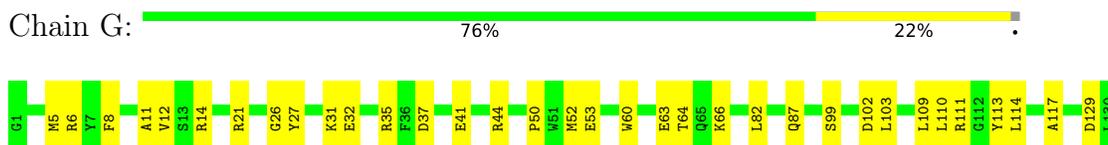
Chain C:



- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

Chain E:



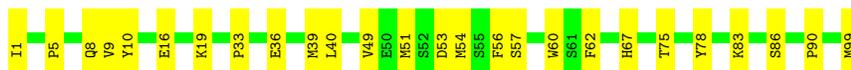- Molecule 1: H-2 class I histocompatibility antigen, D-B alpha chain

Chain G:

K131 K146 W147 S150 E166 W167 L168 H169 R170 Y171 N176 L180 R181 A187 H188 V189 R194 SER LYS GLY E198 L201 R202 C203 W204 W217 Q218 E222 R234 Q242 V247 V248 V249 P250 L251 G252 K253 E254 C259 E268 P276

• Molecule 2: Beta-2-microglobulin

Chain B:

| 74% | 26% |

I1 P5 Q8 V9 Y10 E16 K19 P33 E36 M39 L40 V49 E50 M51 S52 D53 M54 S55 F56 S57 W60 S61 F62 H67 T75 Y78 K83 S86 P90 M99

• Molecule 2: Beta-2-microglobulin

Chain D:

| 65% | 35% |

I1 T4 P5 Q6 I7 Q8 H13 P14 P15 K19 P20 N21 I22 L23 N24 V27 T28 Q29 P33 E36 M39 L40 V49 E50 M51 S52 D53 M54 S55 F56 S57 W60 S61 F62 H67 F70 T75 Y78 K83 P90 R97 D98 M99

• Molecule 2: Beta-2-microglobulin

Chain F:

| 70% | 29% |

I1 Q8 V9 Y10 P14 P15 E16 N17 G18 K19 L23 Q29 P33 H34 Q38 M39 K44 K45 V49 E50 M51 S52 D53 M54 W60 S61 F62 Y63 I64 H67 A79 K83 P90 Y94 R97 D98 M99

• Molecule 2: Beta-2-microglobulin

Chain H:

| 82% | 18% |

I1 Y10 E16 N17 P33 H34 I35 K48 V49 E50 M54 K58 D59 W60 S61 F62 H67 P72 A79 K83 P90 Y94 M99

• Molecule 3: Pre-glycoprotein polyprotein GP complex

Chain P:

| 90% | 10% |

C1 S2 I10

• Molecule 3: Pre-glycoprotein polyprotein GP complex

Chain Q:

| 80% | 20% |

C1 S2 I10

• Molecule 3: Pre-glycoprotein polyprotein GP complex

Chain R:

| 80% | 20% |

• Molecule 3: Pre-glycoprotein polyprotein GP complex

Chain S:

# 4 Data and refinement statistics ⓘ

| Property | Value | Source |
|---|---|---|
| Space group | P 1 21 1 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 85.50Å    176.30Å    85.60Å<br>90.00°    119.80°    90.00° | Depositor |
| Resolution (Å) | 19.45    –    2.40<br>19.45    –    2.40 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 98.8 (19.45-2.40)<br>98.2 (19.45-2.40) | Depositor<br>EDS |
| $R_{merge}$ | 0.07 | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 1.84 (at 2.41Å) | Xtriage |
| Refinement program | PHENIX 1.10.1_2155 | Depositor |
| R, $R_{free}$ | 0.199    ,    0.259<br>0.200    ,    0.259 | Depositor<br>DCC |
| $R_{free}$ test set | 4220 reflections (4.93%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 52.7 | Xtriage |
| Anisotropy | 0.169 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.32 , 48.0 | EDS |
| L-test for twinning[2] | $< \|L\| > = 0.47, < L^2 > = 0.30$ | Xtriage |
| Estimated twinning fraction | 0.024 for -h-l,k,h<br>0.024 for l,k,-h-l<br>0.478 for h,-k,-h-l<br>0.027 for -h-l,-k,l<br>0.028 for l,-k,h | Xtriage |
| $F_o$,$F_c$ correlation | 0.97 | EDS |
| Total number of atoms | 12734 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 67.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.04% 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: GOL, SO4

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 | 0/2313 | 0.70 | 0/3144 |
| 1 | C | 0.56 | 4/2304 (0.2%) | 0.71 | 3/3134 (0.1%) |
| 1 | E | 0.45 | 0/2167 | 0.78 | 5/2954 (0.2%) |
| 1 | G | 0.49 | 2/2220 (0.1%) | 0.67 | 0/3024 |
| 2 | B | 0.39 | 0/829 | 0.66 | 0/1128 |
| 2 | D | 0.41 | 0/843 | 0.65 | 0/1145 |
| 2 | F | 0.45 | 0/847 | 0.73 | 0/1151 |
| 2 | H | 0.49 | 0/847 | 0.74 | 1/1148 (0.1%) |
| 3 | P | 0.31 | 0/82 | 0.72 | 0/109 |
| 3 | Q | 0.28 | 0/82 | 0.73 | 0/109 |
| 3 | R | 0.34 | 0/82 | 0.55 | 0/109 |
| 3 | S | 0.35 | 0/82 | 0.68 | 0/109 |
| All | All | 0.47 | 6/12698 (0.0%) | 0.71 | 9/17264 (0.1%) |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 1 | C | 194 | ARG | NE-CZ | -9.64 | 1.22 | 1.33 |
| 1 | G | 181 | ARG | NE-CZ | -9.10 | 1.23 | 1.33 |
| 1 | G | 181 | ARG | CZ-NH2 | -8.91 | 1.21 | 1.33 |
| 1 | C | 194 | ARG | CZ-NH2 | -8.48 | 1.22 | 1.33 |
| 1 | C | 113 | TYR | CB-CG | -6.06 | 1.38 | 1.51 |
| 1 | C | 194 | ARG | CD-NE | -5.89 | 1.38 | 1.46 |

All (9) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|---|---|---|---|---|---|---|---|
| 1 | E | 146 | LYS | CA-CB-CG | 8.83 | 131.75 | 114.10 |
| 1 | E | 146 | LYS | CG-CD-CE | -8.70 | 91.30 | 111.30 |
| 1 | E | 60 | TRP | CA-CB-CG | -7.29 | 99.76 | 113.60 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | C | 113 | TYR | CB-CA-C | -6.34 | 98.56 | 109.65 |
| 1 | E | 146 | LYS | CD-CE-NZ | 6.14 | 131.55 | 111.90 |
| 1 | E | 146 | LYS | N-CA-CB | -5.91 | 101.14 | 109.94 |
| 2 | H | 48 | LYS | N-CA-CB | 5.82 | 120.12 | 110.47 |
| 1 | C | 6 | ARG | CG-CD-NE | -5.49 | 99.92 | 112.00 |
| 1 | C | 17 | LEU | CA-CB-CG | 5.07 | 134.06 | 116.30 |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts (i)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 2243 | 0 | 2102 | 52 | 0 |
| 1 | C | 2234 | 0 | 2085 | 54 | 0 |
| 1 | E | 2098 | 0 | 1894 | 42 | 1 |
| 1 | G | 2156 | 0 | 1956 | 51 | 0 |
| 2 | B | 803 | 0 | 758 | 29 | 0 |
| 2 | D | 814 | 0 | 776 | 33 | 0 |
| 2 | F | 817 | 0 | 779 | 24 | 0 |
| 2 | H | 821 | 0 | 796 | 15 | 0 |
| 3 | P | 80 | 0 | 68 | 1 | 0 |
| 3 | Q | 80 | 0 | 68 | 2 | 0 |
| 3 | R | 80 | 0 | 68 | 2 | 0 |
| 3 | S | 80 | 0 | 68 | 3 | 0 |
| 4 | A | 5 | 0 | 0 | 0 | 0 |
| 4 | B | 10 | 0 | 0 | 0 | 0 |
| 4 | D | 10 | 0 | 0 | 1 | 0 |
| 4 | F | 15 | 0 | 0 | 0 | 0 |
| 4 | G | 5 | 0 | 0 | 0 | 0 |
| 4 | H | 20 | 0 | 0 | 0 | 0 |
| 5 | A | 6 | 0 | 8 | 3 | 0 |
| 5 | B | 18 | 0 | 24 | 4 | 0 |
| 5 | C | 6 | 0 | 8 | 0 | 0 |
| 5 | D | 24 | 0 | 32 | 4 | 0 |
| 5 | E | 6 | 0 | 8 | 1 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 5 | F | 6 | 0 | 8 | 0 | 0 |
| 5 | G | 12 | 0 | 16 | 4 | 0 |
| 5 | H | 12 | 0 | 16 | 1 | 0 |
| 6 | A | 48 | 0 | 0 | 2 | 0 |
| 6 | B | 23 | 0 | 0 | 1 | 0 |
| 6 | C | 59 | 0 | 0 | 2 | 1 |
| 6 | D | 24 | 0 | 0 | 0 | 0 |
| 6 | E | 35 | 0 | 0 | 0 | 0 |
| 6 | F | 28 | 0 | 0 | 0 | 0 |
| 6 | G | 27 | 0 | 0 | 1 | 0 |
| 6 | H | 25 | 0 | 0 | 0 | 0 |
| 6 | P | 2 | 0 | 0 | 0 | 0 |
| 6 | Q | 2 | 0 | 0 | 0 | 0 |
| All | All | 12734 | 0 | 11538 | 267 | 1 |

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 (267) 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:D:21:ASN:HD22 | 2:D:22:ILE:H | 1.13 | 0.95 |
| 2:F:17:ASN:ND2 | 2:F:97:ARG:HH12 | 1.68 | 0.92 |
| 1:A:20:PRO:O | 6:A:401:HOH:O | 1.94 | 0.85 |
| 1:E:187:ALA:HA | 1:E:204:TRP:O | 1.81 | 0.80 |
| 1:G:21:ARG:HH12 | 5:G:303:GOL:H2 | 1.45 | 0.80 |
| 1:G:111:ARG:HD3 | 1:G:113:TYR:CE2 | 2.20 | 0.76 |
| 1:G:189:VAL:HG12 | 1:G:201:LEU:HD21 | 1.68 | 0.75 |
| 2:D:21:ASN:ND2 | 2:D:22:ILE:H | 1.85 | 0.73 |
| 1:C:102:ASP:OD2 | 1:C:113:TYR:OH | 2.07 | 0.73 |
| 1:E:47:PRO:HG3 | 1:E:60:TRP:CH2 | 2.24 | 0.72 |
| 1:G:189:VAL:CG1 | 1:G:201:LEU:HD21 | 2.19 | 0.72 |
| 2:F:33:PRO:HG3 | 2:F:62:PHE:CZ | 2.24 | 0.71 |
| 2:D:13:HIS:H | 2:D:21:ASN:HD21 | 1.35 | 0.71 |
| 1:C:194:ARG:HB2 | 1:C:198:GLU:O | 1.91 | 0.70 |
| 1:E:234:ARG:HE | 1:E:242:GLN:HE21 | 1.38 | 0.69 |
| 1:E:234:ARG:HE | 1:E:242:GLN:NE2 | 1.91 | 0.69 |
| 2:B:9:VAL:H | 5:B:105:GOL:H32 | 1.58 | 0.69 |
| 1:C:219:LEU:HB2 | 1:C:224:LEU:HD11 | 1.76 | 0.68 |
| 1:G:111:ARG:HD3 | 1:G:113:TYR:CZ | 2.28 | 0.68 |
| 1:A:244:TRP:HZ2 | 2:B:99:MET:HE3 | 1.58 | 0.67 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:187:ALA:HA | 1:A:204:TRP:O | 1.95 | 0.66 |
| 1:C:219:LEU:HB3 | 1:C:224:LEU:HD21 | 1.78 | 0.66 |
| 1:A:62:ARG:NH2 | 6:A:403:HOH:O | 2.28 | 0.65 |
| 2:D:21:ASN:HD22 | 2:D:22:ILE:N | 1.90 | 0.64 |
| 1:C:27:TYR:CZ | 5:D:103:GOL:H12 | 2.32 | 0.64 |
| 1:C:129:ASP:OD1 | 1:C:131:LYS:N | 2.30 | 0.64 |
| 1:A:127:ASN:OD1 | 1:A:134:THR:HG23 | 1.97 | 0.64 |
| 1:G:203:CYS:HB2 | 1:G:217:TRP:CZ2 | 2.33 | 0.64 |
| 2:H:16:GLU:OE2 | 2:H:17:ASN:N | 2.32 | 0.63 |
| 2:B:8:GLN:HB3 | 5:B:105:GOL:H11 | 1.81 | 0.62 |
| 1:G:5:MET:HB2 | 1:G:168:LEU:HD13 | 1.80 | 0.62 |
| 2:H:33:PRO:HG3 | 2:H:62:PHE:CZ | 2.34 | 0.62 |
| 1:C:163:GLU:HG3 | 6:C:404:HOH:O | 2.00 | 0.62 |
| 1:C:191:HIS:HE1 | 1:C:254:GLU:HG2 | 1.65 | 0.62 |
| 1:G:99:SER:HA | 1:G:113:TYR:O | 2.00 | 0.61 |
| 1:G:27:TYR:HA | 1:G:31:LYS:O | 2.01 | 0.61 |
| 1:G:12:VAL:HG11 | 2:H:34:HIS:HE1 | 1.65 | 0.60 |
| 1:E:203:CYS:HB2 | 1:E:217:TRP:CZ2 | 2.35 | 0.60 |
| 1:G:35:ARG:NH2 | 2:H:54:MET:O | 2.28 | 0.60 |
| 2:B:16:GLU:HB3 | 2:B:19:LYS:HB2 | 1.82 | 0.60 |
| 1:E:234:ARG:HH11 | 2:F:8:GLN:NE2 | 1.99 | 0.60 |
| 1:G:234:ARG:HD2 | 1:G:242:GLN:HE21 | 1.67 | 0.59 |
| 2:D:33:PRO:HG3 | 2:D:62:PHE:CE1 | 2.37 | 0.59 |
| 1:E:99:SER:HA | 1:E:113:TYR:O | 2.02 | 0.59 |
| 1:E:191:HIS:CD2 | 1:E:193:PRO:HD3 | 2.37 | 0.59 |
| 2:B:83:LYS:HG2 | 2:B:90:PRO:HG3 | 1.84 | 0.59 |
| 1:E:27:TYR:HA | 1:E:31:LYS:O | 2.03 | 0.59 |
| 1:A:219:LEU:HB2 | 1:A:224:LEU:HD11 | 1.83 | 0.58 |
| 1:C:247:VAL:HG12 | 1:C:249:VAL:HG23 | 1.86 | 0.58 |
| 1:C:255:GLN:CD | 1:C:255:GLN:H | 2.12 | 0.58 |
| 1:G:52:MET:HE1 | 1:G:171:TYR:CE1 | 2.39 | 0.58 |
| 1:E:5:MET:HB2 | 1:E:168:LEU:HD13 | 1.86 | 0.57 |
| 1:G:187:ALA:HA | 1:G:204:TRP:O | 2.04 | 0.57 |
| 1:G:52:MET:HE1 | 1:G:171:TYR:HE1 | 1.69 | 0.57 |
| 2:D:4:THR:N | 4:D:102:SO4:O3 | 2.37 | 0.57 |
| 1:G:27:TYR:CZ | 5:G:302:GOL:H32 | 2.40 | 0.57 |
| 1:C:187:ALA:HA | 1:C:204:TRP:O | 2.05 | 0.57 |
| 1:A:5:MET:HB2 | 1:A:168:LEU:HD13 | 1.86 | 0.56 |
| 1:C:260:ARG:HA | 1:C:270:LEU:O | 2.05 | 0.56 |
| 1:G:117:ALA:HB2 | 2:H:60:TRP:CE2 | 2.41 | 0.56 |
| 1:G:8:PHE:CE2 | 5:G:302:GOL:H31 | 2.41 | 0.56 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:234:ARG:HD2 | 2:F:10:TYR:CE2 | 2.42 | 0.55 |
| 1:G:217:TRP:CH2 | 1:G:259:CYS:HB2 | 2.42 | 0.55 |
| 1:E:112:GLY:C | 1:E:113:TYR:HD1 | 2.15 | 0.55 |
| 1:G:102:ASP:O | 1:G:110:LEU:N | 2.37 | 0.54 |
| 1:G:234:ARG:HD3 | 2:H:10:TYR:CE2 | 2.42 | 0.54 |
| 1:C:232:GLU:HG2 | 2:D:8:GLN:NE2 | 2.23 | 0.54 |
| 1:G:129:ASP:OD2 | 1:G:131:LYS:N | 2.31 | 0.54 |
| 1:A:234:ARG:HH11 | 2:B:8:GLN:NE2 | 2.05 | 0.54 |
| 1:E:203:CYS:O | 1:E:244:TRP:HA | 2.08 | 0.53 |
| 2:D:39:MET:HE1 | 2:D:67:HIS:C | 2.33 | 0.53 |
| 1:E:191:HIS:CE1 | 1:E:199:VAL:HG21 | 2.43 | 0.53 |
| 1:C:191:HIS:CE1 | 1:C:254:GLU:HG2 | 2.43 | 0.53 |
| 1:E:52:MET:HE1 | 1:E:171:TYR:CE1 | 2.43 | 0.53 |
| 2:B:33:PRO:HG3 | 2:B:62:PHE:CZ | 2.43 | 0.53 |
| 1:C:117:ALA:HB2 | 2:D:60:TRP:CE2 | 2.44 | 0.53 |
| 1:G:201:LEU:HD23 | 1:G:202:ARG:N | 2.24 | 0.53 |
| 2:H:58:LYS:H | 2:H:58:LYS:HD2 | 1.74 | 0.53 |
| 1:A:260:ARG:HA | 1:A:270:LEU:O | 2.09 | 0.53 |
| 1:C:195:SER:O | 1:C:198:GLU:HG2 | 2.09 | 0.53 |
| 1:E:193:PRO:HA | 1:E:199:VAL:HA | 1.91 | 0.53 |
| 2:F:33:PRO:HG3 | 2:F:62:PHE:CE1 | 2.44 | 0.53 |
| 1:E:35:ARG:NH2 | 2:F:54:MET:O | 2.32 | 0.53 |
| 2:F:39:MET:HE1 | 2:F:67:HIS:C | 2.34 | 0.53 |
| 1:A:28:VAL:HG23 | 1:A:33:PHE:CE1 | 2.43 | 0.52 |
| 1:A:121:ARG:HH12 | 2:B:1:ILE:N | 2.05 | 0.52 |
| 1:G:176:ASN:O | 1:G:180:LEU:HD13 | 2.09 | 0.52 |
| 2:B:39:MET:HE1 | 2:B:67:HIS:C | 2.35 | 0.52 |
| 1:C:232:GLU:HG2 | 2:D:8:GLN:HE21 | 1.73 | 0.52 |
| 2:D:33:PRO:HG3 | 2:D:62:PHE:CZ | 2.45 | 0.52 |
| 1:A:203:CYS:O | 1:A:244:TRP:HA | 2.10 | 0.52 |
| 2:D:83:LYS:HG2 | 2:D:90:PRO:HG3 | 1.92 | 0.52 |
| 1:G:37:ASP:OD2 | 6:G:401:HOH:O | 2.19 | 0.52 |
| 2:B:56:PHE:HB3 | 2:B:62:PHE:CD1 | 2.45 | 0.52 |
| 2:H:83:LYS:HG2 | 2:H:90:PRO:HG3 | 1.92 | 0.52 |
| 1:A:27:TYR:CE2 | 5:A:302:GOL:H12 | 2.46 | 0.51 |
| 2:D:36:GLU:HB2 | 2:D:83:LYS:HB2 | 1.92 | 0.51 |
| 2:D:8:GLN:OE1 | 5:D:105:GOL:O1 | 2.29 | 0.51 |
| 1:A:176:ASN:O | 1:A:180:LEU:HD13 | 2.11 | 0.51 |
| 1:A:203:CYS:HB2 | 1:A:217:TRP:CZ2 | 2.45 | 0.51 |
| 1:C:244:TRP:HZ2 | 2:D:99:MET:HE3 | 1.75 | 0.51 |
| 1:E:52:MET:HE1 | 1:E:171:TYR:HE1 | 1.76 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:6:ARG:NH2 | 1:C:102:ASP:OD1 | 2.43 | 0.51 |
| 1:A:117:ALA:HB2 | 2:B:60:TRP:CE2 | 2.46 | 0.51 |
| 1:E:11:ALA:HA | 1:E:21:ARG:O | 2.10 | 0.51 |
| 1:E:141:GLN:OE1 | 1:E:144:ARG:NH2 | 2.43 | 0.51 |
| 1:E:143:THR:O | 1:E:146:LYS:HB3 | 2.11 | 0.51 |
| 1:G:146:LYS:O | 1:G:150:SER:OG | 2.22 | 0.51 |
| 2:B:40:LEU:O | 2:B:78:TYR:HA | 2.11 | 0.50 |
| 1:A:219:LEU:HB3 | 1:A:224:LEU:HD21 | 1.93 | 0.50 |
| 1:E:66:LYS:HE3 | 3:R:2:SER:HB2 | 1.93 | 0.50 |
| 1:G:50:PRO:HA | 1:G:53:GLU:OE2 | 2.12 | 0.50 |
| 2:F:83:LYS:HG2 | 2:F:90:PRO:HG3 | 1.92 | 0.50 |
| 1:C:82:LEU:HA | 1:C:87:GLN:HE21 | 1.77 | 0.50 |
| 2:D:39:MET:HE2 | 2:D:49:VAL:HG13 | 1.94 | 0.49 |
| 1:A:71:GLU:O | 1:A:75:ARG:HG3 | 2.10 | 0.49 |
| 2:B:36:GLU:HB2 | 2:B:83:LYS:HB2 | 1.95 | 0.49 |
| 1:E:166:GLU:O | 1:E:169:HIS:HB2 | 2.12 | 0.49 |
| 2:H:50:GLU:HB2 | 2:H:67:HIS:CE1 | 2.48 | 0.49 |
| 1:A:177:ALA:O | 1:C:177:ALA:HB1 | 2.13 | 0.49 |
| 1:G:111:ARG:HG3 | 1:G:113:TYR:HE2 | 1.78 | 0.49 |
| 1:A:191:HIS:HB2 | 1:A:274:TRP:NE1 | 2.28 | 0.48 |
| 1:A:15:PRO:HB3 | 1:A:90:GLY:HA2 | 1.96 | 0.48 |
| 1:A:127:ASN:HD22 | 1:A:132:THR:C | 2.22 | 0.48 |
| 1:C:130:LEU:HB2 | 1:C:157:LYS:HD2 | 1.95 | 0.48 |
| 1:C:145[B]:ARG:NH2 | 6:C:405:HOH:O | 2.46 | 0.48 |
| 1:E:117:ALA:HB2 | 2:F:60:TRP:CE2 | 2.48 | 0.48 |
| 2:B:33:PRO:HG3 | 2:B:62:PHE:CE2 | 2.48 | 0.48 |
| 1:A:237:GLY:HA3 | 6:B:205:HOH:O | 2.14 | 0.48 |
| 1:A:27:TYR:HA | 1:A:31:LYS:O | 2.14 | 0.47 |
| 2:B:16:GLU:HG2 | 2:B:19:LYS:CG | 2.44 | 0.47 |
| 1:C:181:ARG:NE | 1:C:183:ASP:OD2 | 2.44 | 0.47 |
| 1:G:103:LEU:HD23 | 1:G:109:LEU:HA | 1.96 | 0.47 |
| 1:C:6:ARG:NH2 | 1:C:113:TYR:CZ | 2.82 | 0.47 |
| 1:E:133:TRP:HB2 | 1:E:144:ARG:HG3 | 1.95 | 0.47 |
| 1:G:234:ARG:HD3 | 2:H:10:TYR:CD2 | 2.50 | 0.47 |
| 1:G:247:VAL:HG22 | 1:G:249:VAL:HG13 | 1.97 | 0.47 |
| 1:A:27:TYR:CZ | 5:A:302:GOL:H12 | 2.49 | 0.47 |
| 1:C:113:TYR:N | 1:C:113:TYR:CD2 | 2.82 | 0.47 |
| 1:C:215:LEU:HD22 | 1:C:261:VAL:HG22 | 1.97 | 0.47 |
| 2:D:56:PHE:HB3 | 2:D:62:PHE:CD2 | 2.50 | 0.47 |
| 1:E:60:TRP:HD1 | 1:E:60:TRP:HA | 1.50 | 0.47 |
| 1:A:232:GLU:HG3 | 2:B:8:GLN:OE1 | 2.15 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:A:244:TRP:CZ2 | 2:B:99:MET:HE3 | 2.44 | 0.46 |
| 1:C:5:MET:C | 1:C:6:ARG:HG2 | 2.40 | 0.46 |
| 1:C:191:HIS:HB2 | 1:C:274:TRP:NE1 | 2.30 | 0.46 |
| 2:H:33:PRO:HG3 | 2:H:62:PHE:CE1 | 2.50 | 0.46 |
| 2:B:39:MET:HE2 | 2:B:49:VAL:HG13 | 1.98 | 0.46 |
| 2:D:36:GLU:OE2 | 2:D:83:LYS:HD2 | 2.15 | 0.46 |
| 2:D:56:PHE:O | 5:D:103:GOL:O1 | 2.28 | 0.46 |
| 2:D:24:ASN:HD22 | 2:D:67:HIS:HB3 | 1.80 | 0.46 |
| 1:A:94:THR:HG21 | 2:B:33:PRO:HD3 | 1.97 | 0.46 |
| 2:D:40:LEU:O | 2:D:78:TYR:HA | 2.15 | 0.46 |
| 1:E:102:ASP:O | 1:E:110:LEU:N | 2.43 | 0.46 |
| 1:E:48:ARG:NH2 | 2:F:53:ASP:OD2 | 2.48 | 0.46 |
| 2:H:35:ILE:O | 5:H:106:GOL:H32 | 2.15 | 0.46 |
| 1:A:48:ARG:NH2 | 2:B:53:ASP:OD2 | 2.47 | 0.46 |
| 1:C:48:ARG:NH2 | 2:D:53:ASP:OD2 | 2.44 | 0.46 |
| 1:C:209:TYR:CD1 | 1:C:210:PRO:HA | 2.51 | 0.46 |
| 1:G:21:ARG:HH12 | 5:G:303:GOL:C2 | 2.22 | 0.46 |
| 1:G:44:ARG:HH12 | 1:G:60:TRP:HB3 | 1.81 | 0.46 |
| 1:A:129:ASP:OD1 | 1:A:131:LYS:N | 2.49 | 0.46 |
| 1:A:202:ARG:HD3 | 1:A:244:TRP:CD2 | 2.51 | 0.46 |
| 1:A:21:ARG:CZ | 1:A:23:ILE:HD11 | 2.46 | 0.45 |
| 1:C:21:ARG:NE | 1:C:23:ILE:HD11 | 2.31 | 0.45 |
| 1:C:203:CYS:O | 1:C:244:TRP:HA | 2.17 | 0.45 |
| 1:G:63:GLU:OE1 | 3:S:1:CYS:HA | 2.17 | 0.45 |
| 1:G:82:LEU:HD23 | 1:G:87:GLN:HB2 | 1.97 | 0.45 |
| 1:G:5:MET:O | 1:G:6:ARG:HG3 | 2.17 | 0.45 |
| 1:G:41:GLU:N | 1:G:41:GLU:CD | 2.73 | 0.45 |
| 2:F:38:GLN:HG2 | 2:F:45:LYS:HE3 | 1.98 | 0.45 |
| 1:C:99:SER:HB3 | 1:C:114:LEU:HD12 | 1.99 | 0.45 |
| 2:F:52:SER:O | 2:F:64:ILE:HD11 | 2.16 | 0.45 |
| 1:G:66:LYS:HE3 | 3:S:2:SER:HB2 | 1.98 | 0.45 |
| 1:A:5:MET:O | 1:A:100:GLY:HA3 | 2.16 | 0.45 |
| 1:E:191:HIS:ND1 | 1:E:199:VAL:HG21 | 2.31 | 0.45 |
| 1:G:11:ALA:HA | 1:G:21:ARG:O | 2.16 | 0.45 |
| 1:E:14:ARG:HD3 | 2:F:34[A]:HIS:CE1 | 2.52 | 0.45 |
| 1:E:163:GLU:O | 1:E:167:TRP:HB2 | 2.17 | 0.45 |
| 1:A:192:HIS:HB2 | 1:A:200:THR:HB | 1.99 | 0.45 |
| 2:D:23:LEU:O | 2:D:67:HIS:HA | 2.16 | 0.45 |
| 1:A:27:TYR:CG | 5:A:302:GOL:H31 | 2.52 | 0.44 |
| 1:A:234:ARG:HD2 | 2:B:10:TYR:CE1 | 2.52 | 0.44 |
| 1:E:147:TRP:NE1 | 3:R:9:TYR:O | 2.49 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:B:5:PRO:HD3 | 2:B:86:SER:OG | 2.18 | 0.44 |
| 1:G:44:ARG:HA | 1:G:64:THR:HG23 | 2.00 | 0.44 |
| 1:C:203:CYS:HB2 | 1:C:217:TRP:CZ2 | 2.52 | 0.44 |
| 1:C:194:ARG:HB2 | 1:C:198:GLU:C | 2.42 | 0.44 |
| 1:E:121:ARG:NH1 | 2:F:1:ILE:HG12 | 2.32 | 0.44 |
| 1:A:110:LEU:HA | 1:A:110:LEU:HD23 | 1.73 | 0.44 |
| 1:E:234:ARG:HD2 | 2:F:10:TYR:CD2 | 2.52 | 0.44 |
| 1:A:23:ILE:HD12 | 2:B:54:MET:SD | 2.58 | 0.44 |
| 2:B:51:MET:HE2 | 2:B:51:MET:HB2 | 1.91 | 0.43 |
| 1:E:41:GLU:OE1 | 1:E:41:GLU:N | 2.47 | 0.43 |
| 1:G:14:ARG:HD3 | 2:H:34:HIS:CE1 | 2.53 | 0.43 |
| 1:A:99:SER:HB3 | 1:A:114:LEU:HD12 | 2.00 | 0.43 |
| 2:B:16:GLU:HG2 | 2:B:19:LYS:HG3 | 2.00 | 0.43 |
| 1:C:217:TRP:CD1 | 1:C:247:VAL:HG23 | 2.53 | 0.43 |
| 2:D:21:ASN:HB3 | 2:D:70:PHE:CE1 | 2.53 | 0.43 |
| 1:G:41:GLU:CD | 1:G:41:GLU:H | 2.25 | 0.43 |
| 1:A:7:TYR:CE2 | 3:P:2:SER:HB3 | 2.53 | 0.43 |
| 1:A:31:LYS:HD2 | 1:A:31:LYS:HA | 1.67 | 0.43 |
| 1:C:231:VAL:HG13 | 1:C:244:TRP:CZ2 | 2.54 | 0.43 |
| 1:E:217:TRP:CH2 | 1:E:259:CYS:HB2 | 2.54 | 0.43 |
| 1:G:99:SER:HB3 | 1:G:114:LEU:HD23 | 2.00 | 0.43 |
| 2:H:17:ASN:HA | 2:H:72:PRO:O | 2.18 | 0.43 |
| 1:A:138:MET:HA | 1:A:141:GLN:HG3 | 2.01 | 0.43 |
| 1:G:6:ARG:NH2 | 1:G:113:TYR:CE2 | 2.86 | 0.43 |
| 1:A:84:TYR:HB3 | 1:A:139:ALA:HB1 | 2.01 | 0.43 |
| 1:G:201:LEU:HD23 | 1:G:201:LEU:C | 2.43 | 0.43 |
| 1:C:66:LYS:HE3 | 3:Q:2:SER:OG | 2.19 | 0.43 |
| 2:D:29:GLN:HA | 2:D:61:SER:HB2 | 2.00 | 0.43 |
| 1:C:21:ARG:CZ | 1:C:23:ILE:HD11 | 2.49 | 0.42 |
| 1:C:167:TRP:CG | 3:Q:1:CYS:HB2 | 2.54 | 0.42 |
| 1:G:251:LEU:C | 1:G:253:LYS:H | 2.27 | 0.42 |
| 1:A:186:LYS:HE3 | 1:A:186:LYS:HB3 | 1.74 | 0.42 |
| 1:C:196:LYS:HB2 | 1:C:196:LYS:HE3 | 1.91 | 0.42 |
| 2:D:57:SER:OG | 5:D:106:GOL:H2 | 2.19 | 0.42 |
| 1:E:110:LEU:HD12 | 1:E:110:LEU:HA | 1.82 | 0.42 |
| 2:H:79:ALA:HB2 | 2:H:94:TYR:CD1 | 2.55 | 0.42 |
| 2:F:17:ASN:HD22 | 2:F:17:ASN:HA | 1.71 | 0.42 |
| 1:A:11:ALA:HA | 1:A:21:ARG:O | 2.20 | 0.42 |
| 1:C:23:ILE:HD12 | 2:D:54[A]:MET:SD | 2.60 | 0.42 |
| 2:F:44:LYS:HB3 | 2:F:44:LYS:HE2 | 1.83 | 0.42 |
| 2:D:1:ILE:HD12 | 2:D:1:ILE:HA | 1.92 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:209:TYR:CD1 | 1:E:210:PRO:HA | 2.55 | 0.42 |
| 1:C:11:ALA:HA | 1:C:21:ARG:O | 2.20 | 0.42 |
| 1:C:192:HIS:C | 1:C:199:VAL:HG23 | 2.45 | 0.42 |
| 1:C:201:LEU:O | 1:C:246:SER:HA | 2.20 | 0.42 |
| 1:G:147:TRP:NE1 | 3:S:9:TYR:O | 2.46 | 0.42 |
| 1:A:121:ARG:HH12 | 2:B:1:ILE:H1 | 1.68 | 0.41 |
| 1:G:218:GLN:HA | 1:G:222:GLU:O | 2.20 | 0.41 |
| 1:A:7:TYR:HA | 1:A:25:VAL:O | 2.20 | 0.41 |
| 1:E:26:GLY:O | 1:E:32:GLU:HA | 2.19 | 0.41 |
| 2:F:14:PRO:HA | 2:F:15:PRO:HD3 | 1.98 | 0.41 |
| 1:A:249:VAL:HG22 | 1:A:257:TYR:CE2 | 2.55 | 0.41 |
| 2:B:8:GLN:HA | 5:B:105:GOL:O2 | 2.19 | 0.41 |
| 1:A:196:LYS:N | 1:A:196:LYS:HD2 | 2.35 | 0.41 |
| 1:C:26:GLY:O | 1:C:32:GLU:HA | 2.20 | 0.41 |
| 1:C:137:ASP:O | 1:C:141:GLN:HG2 | 2.20 | 0.41 |
| 1:E:9:GLU:OE2 | 1:E:22:TYR:OH | 2.37 | 0.41 |
| 2:D:56:PHE:HB3 | 2:D:62:PHE:CE2 | 2.55 | 0.41 |
| 1:E:8:PHE:CE2 | 5:E:301:GOL:H11 | 2.56 | 0.41 |
| 2:F:39:MET:HE2 | 2:F:49:VAL:HG13 | 2.01 | 0.41 |
| 2:D:51:MET:HE2 | 2:D:51:MET:HB2 | 1.92 | 0.41 |
| 1:G:26:GLY:O | 1:G:32:GLU:HA | 2.20 | 0.41 |
| 1:C:6:ARG:NH2 | 1:C:113:TYR:CE2 | 2.89 | 0.41 |
| 1:C:230:LEU:HD12 | 1:C:230:LEU:C | 2.45 | 0.41 |
| 2:B:19:LYS:HA | 2:B:19:LYS:HD2 | 1.90 | 0.41 |
| 1:C:173:LYS:HE2 | 1:G:268:GLU:OE1 | 2.21 | 0.41 |
| 2:D:6:GLN:O | 2:D:27:VAL:HA | 2.20 | 0.41 |
| 2:F:51:MET:HE2 | 2:F:51:MET:HB2 | 1.92 | 0.41 |
| 1:A:26:GLY:O | 1:A:32:GLU:HA | 2.22 | 0.40 |
| 1:C:176:ASN:CG | 1:C:177:ALA:H | 2.29 | 0.40 |
| 2:F:19:LYS:HE3 | 2:F:19:LYS:HB2 | 1.90 | 0.40 |
| 2:F:79:ALA:HB2 | 2:F:94:TYR:CD1 | 2.56 | 0.40 |
| 1:G:166:GLU:O | 1:G:169:HIS:HB2 | 2.21 | 0.40 |
| 1:A:14:ARG:HH21 | 1:A:15:PRO:HG2 | 1.85 | 0.40 |
| 1:A:14:ARG:NH2 | 1:A:15:PRO:HG2 | 2.35 | 0.40 |
| 1:C:123:TYR:CZ | 1:C:140:ALA:HA | 2.56 | 0.40 |
| 1:E:41:GLU:HG2 | 1:E:42:ASN:H | 1.86 | 0.40 |
| 2:F:29:GLN:HA | 2:F:61:SER:HB2 | 2.03 | 0.40 |
| 1:C:167:TRP:CZ3 | 1:C:170:ARG:HD3 | 2.57 | 0.40 |
| 2:D:6:GLN:HB2 | 2:D:28:THR:OG1 | 2.22 | 0.40 |
| 2:B:57:SER:OG | 5:B:104:GOL:H11 | 2.22 | 0.40 |
| 2:D:15:PRO:HG2 | 2:D:97:ARG:HB2 | 2.03 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:F:23:LEU:O | 2:F:67:HIS:HA | 2.22 | 0.40 |

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:E:88:SER:N | 6:C:401:HOH:O[2_555] | 2.18 | 0.02 |

## 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 | 275/276 (100%) | 271 (98%) | 4 (2%) | 0 | 100 | 100 |
| 1 | C | 275/276 (100%) | 268 (98%) | 7 (2%) | 0 | 100 | 100 |
| 1 | E | 264/276 (96%) | 256 (97%) | 8 (3%) | 0 | 100 | 100 |
| 1 | G | 269/276 (98%) | 265 (98%) | 4 (2%) | 0 | 100 | 100 |
| 2 | B | 97/99 (98%) | 95 (98%) | 2 (2%) | 0 | 100 | 100 |
| 2 | D | 98/99 (99%) | 97 (99%) | 1 (1%) | 0 | 100 | 100 |
| 2 | F | 98/99 (99%) | 97 (99%) | 1 (1%) | 0 | 100 | 100 |
| 2 | H | 97/99 (98%) | 95 (98%) | 2 (2%) | 0 | 100 | 100 |
| 3 | P | 8/10 (80%) | 7 (88%) | 1 (12%) | 0 | 100 | 100 |
| 3 | Q | 8/10 (80%) | 7 (88%) | 1 (12%) | 0 | 100 | 100 |
| 3 | R | 8/10 (80%) | 7 (88%) | 1 (12%) | 0 | 100 | 100 |
| 3 | S | 8/10 (80%) | 7 (88%) | 1 (12%) | 0 | 100 | 100 |
| All | All | 1505/1540 (98%) | 1472 (98%) | 33 (2%) | 0 | 100 | 100 |

There are no Ramachandran outliers to report.

### 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 | 227/234 (97%) | 224 (99%) | 3 (1%) | 65 | 81 |
| 1 | C | 225/234 (96%) | 224 (100%) | 1 (0%) | 89 | 95 |
| 1 | E | 200/234 (86%) | 198 (99%) | 2 (1%) | 73 | 86 |
| 1 | G | 209/234 (89%) | 209 (100%) | 0 | 100 | 100 |
| 2 | B | 90/94 (96%) | 89 (99%) | 1 (1%) | 70 | 84 |
| 2 | D | 91/94 (97%) | 89 (98%) | 2 (2%) | 47 | 67 |
| 2 | F | 92/94 (98%) | 91 (99%) | 1 (1%) | 70 | 84 |
| 2 | H | 94/94 (100%) | 94 (100%) | 0 | 100 | 100 |
| 3 | P | 9/9 (100%) | 9 (100%) | 0 | 100 | 100 |
| 3 | Q | 9/9 (100%) | 9 (100%) | 0 | 100 | 100 |
| 3 | R | 9/9 (100%) | 9 (100%) | 0 | 100 | 100 |
| 3 | S | 9/9 (100%) | 9 (100%) | 0 | 100 | 100 |
| All | All | 1264/1348 (94%) | 1254 (99%) | 10 (1%) | 79 | 90 |

All (10) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 94 | THR |
| 1 | A | 178 | THR |
| 1 | A | 198 | GLU |
| 2 | B | 75 | THR |
| 1 | C | 17 | LEU |
| 2 | D | 19 | LYS |
| 2 | D | 75 | THR |
| 1 | E | 251 | LEU |
| 1 | E | 271 | THR |
| 2 | F | 54 | MET |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 30 | ASN |
| 1 | A | 54 | GLN |
| 1 | A | 96 | GLN |
| 1 | A | 115 | GLN |
| 1 | A | 141 | GLN |
| 1 | A | 188 | HIS |
| 1 | A | 218 | GLN |
| 2 | B | 6 | GLN |
| 2 | B | 8 | GLN |
| 2 | B | 31 | HIS |
| 1 | C | 54 | GLN |
| 1 | C | 87 | GLN |
| 1 | C | 96 | GLN |
| 1 | C | 191 | HIS |
| 2 | D | 21 | ASN |
| 2 | D | 24 | ASN |
| 2 | D | 67 | HIS |
| 1 | E | 54 | GLN |
| 1 | E | 127 | ASN |
| 1 | E | 191 | HIS |
| 1 | E | 242 | GLN |
| 2 | F | 8 | GLN |
| 2 | F | 17 | ASN |
| 1 | G | 188 | HIS |
| 1 | G | 191 | HIS |
| 1 | G | 192 | HIS |
| 1 | G | 218 | GLN |
| 1 | G | 242 | GLN |
| 2 | H | 34 | HIS |
| 2 | H | 67 | HIS |
| 3 | P | 7 | HIS |
| 3 | Q | 7 | HIS |
| 3 | R | 7 | 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 oligosaccharides in this entry.

## 5.6 Ligand geometry ⓘ

28 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 | #$|Z| > 2$ |
| 5 | GOL | A | 302 | - | 5,5,5 | 0.52 | 0 | 5,5,5 | 1.00 | 0 |
| 5 | GOL | B | 103 | - | 5,5,5 | 0.33 | 0 | 5,5,5 | 0.70 | 0 |
| 4 | SO4 | H | 103 | - | 4,4,4 | 0.12 | 0 | 6,6,6 | 0.18 | 0 |
| 5 | GOL | G | 302 | - | 5,5,5 | 0.41 | 0 | 5,5,5 | 0.51 | 0 |
| 5 | GOL | D | 105 | - | 5,5,5 | 0.39 | 0 | 5,5,5 | 0.59 | 0 |
| 5 | GOL | H | 106 | - | 5,5,5 | 0.35 | 0 | 5,5,5 | 0.44 | 0 |
| 5 | GOL | F | 104 | - | 5,5,5 | 0.41 | 0 | 5,5,5 | 0.50 | 0 |
| 4 | SO4 | F | 102 | - | 4,4,4 | 0.16 | 0 | 6,6,6 | 0.11 | 0 |
| 5 | GOL | B | 104 | - | 5,5,5 | 0.46 | 0 | 5,5,5 | 0.33 | 0 |
| 4 | SO4 | H | 104 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.07 | 0 |
| 5 | GOL | E | 301 | - | 5,5,5 | 0.33 | 0 | 5,5,5 | 0.30 | 0 |
| 4 | SO4 | F | 103 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.18 | 0 |
| 5 | GOL | D | 104 | - | 5,5,5 | 0.35 | 0 | 5,5,5 | 0.26 | 0 |
| 4 | SO4 | B | 102 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.18 | 0 |
| 5 | GOL | C | 301 | - | 5,5,5 | 0.34 | 0 | 5,5,5 | 0.49 | 0 |
| 4 | SO4 | B | 101 | - | 4,4,4 | 0.34 | 0 | 6,6,6 | 0.29 | 0 |
| 5 | GOL | B | 105 | - | 5,5,5 | 0.55 | 0 | 5,5,5 | 0.66 | 0 |
| 4 | SO4 | A | 301 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.15 | 0 |
| 4 | SO4 | D | 101 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.15 | 0 |
| 4 | SO4 | F | 101 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.15 | 0 |
| 4 | SO4 | G | 301 | - | 4,4,4 | 0.15 | 0 | 6,6,6 | 0.08 | 0 |
| 5 | GOL | H | 105 | - | 5,5,5 | 0.37 | 0 | 5,5,5 | 0.34 | 0 |
| 4 | SO4 | H | 102 | - | 4,4,4 | 0.13 | 0 | 6,6,6 | 0.08 | 0 |
| 4 | SO4 | H | 101 | - | 4,4,4 | 0.14 | 0 | 6,6,6 | 0.14 | 0 |
| 5 | GOL | D | 103 | - | 5,5,5 | 0.41 | 0 | 5,5,5 | 0.69 | 0 |
| 5 | GOL | D | 106 | - | 5,5,5 | 0.35 | 0 | 5,5,5 | 0.28 | 0 |
| 5 | GOL | G | 303 | - | 5,5,5 | 0.30 | 0 | 5,5,5 | 0.45 | 0 |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------|------|--------|--------|------|--------|
| | | | | | Counts | RMSZ | #\|Z\| > 2 | Counts | RMSZ | #\|Z\| > 2 |
| 4 | SO4 | D | 102 | - | 4,4,4 | 0.17 | 0 | 6,6,6 | 0.15 | 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 |
|-----|------|-------|-----|------|---------|----------|-------|
| 5 | GOL | A | 302 | - | - | 4/4/4/4 | - |
| 5 | GOL | B | 103 | - | - | 3/4/4/4 | - |
| 5 | GOL | D | 103 | - | - | 4/4/4/4 | - |
| 5 | GOL | B | 104 | - | - | 3/4/4/4 | - |
| 5 | GOL | D | 106 | - | - | 2/4/4/4 | - |
| 5 | GOL | G | 302 | - | - | 4/4/4/4 | - |
| 5 | GOL | G | 303 | - | - | 2/4/4/4 | - |
| 5 | GOL | H | 105 | - | - | 4/4/4/4 | - |
| 5 | GOL | E | 301 | - | - | 3/4/4/4 | - |
| 5 | GOL | D | 104 | - | - | 0/4/4/4 | - |
| 5 | GOL | C | 301 | - | - | 2/4/4/4 | - |
| 5 | GOL | D | 105 | - | - | 2/4/4/4 | - |
| 5 | GOL | B | 105 | - | - | 0/4/4/4 | - |
| 5 | GOL | H | 106 | - | - | 2/4/4/4 | - |
| 5 | GOL | F | 104 | - | - | 2/4/4/4 | - |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (37) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 5 | A | 302 | GOL | O1-C1-C2-C3 |
| 5 | C | 301 | GOL | O1-C1-C2-O2 |
| 5 | D | 103 | GOL | O1-C1-C2-C3 |
| 5 | D | 103 | GOL | C1-C2-C3-O3 |
| 5 | D | 105 | GOL | O1-C1-C2-C3 |
| 5 | D | 106 | GOL | O1-C1-C2-C3 |
| 5 | E | 301 | GOL | O1-C1-C2-O2 |
| 5 | E | 301 | GOL | O1-C1-C2-C3 |

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| Mol | Chain | Res | Type | Atoms |
| --- | --- | --- | --- | --- |
| 5 | F | 104 | GOL | O1-C1-C2-C3 |
| 5 | G | 302 | GOL | O1-C1-C2-C3 |
| 5 | G | 302 | GOL | C1-C2-C3-O3 |
| 5 | H | 105 | GOL | O1-C1-C2-C3 |
| 5 | H | 105 | GOL | C1-C2-C3-O3 |
| 5 | H | 105 | GOL | O2-C2-C3-O3 |
| 5 | D | 103 | GOL | O1-C1-C2-O2 |
| 5 | D | 105 | GOL | O1-C1-C2-O2 |
| 5 | B | 103 | GOL | C1-C2-C3-O3 |
| 5 | B | 104 | GOL | C1-C2-C3-O3 |
| 5 | C | 301 | GOL | O1-C1-C2-C3 |
| 5 | G | 303 | GOL | O1-C1-C2-C3 |
| 5 | H | 106 | GOL | O1-C1-C2-C3 |
| 5 | A | 302 | GOL | O1-C1-C2-O2 |
| 5 | B | 103 | GOL | O2-C2-C3-O3 |
| 5 | G | 302 | GOL | O1-C1-C2-O2 |
| 5 | H | 106 | GOL | O1-C1-C2-O2 |
| 5 | D | 103 | GOL | O2-C2-C3-O3 |
| 5 | A | 302 | GOL | O2-C2-C3-O3 |
| 5 | B | 103 | GOL | O1-C1-C2-O2 |
| 5 | G | 302 | GOL | O2-C2-C3-O3 |
| 5 | H | 105 | GOL | O1-C1-C2-O2 |
| 5 | A | 302 | GOL | C1-C2-C3-O3 |
| 5 | E | 301 | GOL | O2-C2-C3-O3 |
| 5 | F | 104 | GOL | O1-C1-C2-O2 |
| 5 | B | 104 | GOL | O1-C1-C2-O2 |
| 5 | G | 303 | GOL | O1-C1-C2-O2 |
| 5 | B | 104 | GOL | O2-C2-C3-O3 |
| 5 | D | 106 | GOL | O1-C1-C2-O2 |

There are no ring outliers.

11 monomers are involved in 18 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
| --- | --- | --- | --- | --- | --- |
| 5 | A | 302 | GOL | 3 | 0 |
| 5 | G | 302 | GOL | 2 | 0 |
| 5 | D | 105 | GOL | 1 | 0 |
| 5 | H | 106 | GOL | 1 | 0 |
| 5 | B | 104 | GOL | 1 | 0 |
| 5 | E | 301 | GOL | 1 | 0 |
| 5 | B | 105 | GOL | 3 | 0 |
| 5 | D | 103 | GOL | 2 | 0 |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 5 | D | 106 | GOL | 1 | 0 |
| 5 | G | 303 | GOL | 2 | 0 |
| 4 | D | 102 | SO4 | 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(Å$^2$) | Q<0.9 |
|-----|-------|----------|--------|---------|------|------|-------------|-------|
| 1 | A | 276/276 (100%) | -1.54 | 0 | 100 | 100 | 36, 59, 96, 172 | 1 (0%) |
| 1 | C | 276/276 (100%) | -1.55 | 0 | 100 | 100 | 36, 58, 97, 156 | 1 (0%) |
| 1 | E | 268/276 (97%) | -1.36 | 0 | 100 | 100 | 28, 74, 122, 193 | 2 (0%) |
| 1 | G | 273/276 (98%) | -1.35 | 1 (0%) | 89 | 87 | 39, 77, 136, 184 | 0 |
| 2 | B | 99/99 (100%) | -1.61 | 0 | 100 | 100 | 38, 60, 87, 125 | 0 |
| 2 | D | 99/99 (100%) | -1.58 | 0 | 100 | 100 | 38, 60, 93, 149 | 1 (1%) |
| 2 | F | 99/99 (100%) | -1.65 | 0 | 100 | 100 | 35, 53, 82, 105 | 1 (1%) |
| 2 | H | 99/99 (100%) | -1.63 | 0 | 100 | 100 | 37, 54, 84, 108 | 0 |
| 3 | P | 10/10 (100%) | -1.57 | 0 | 100 | 100 | 50, 60, 68, 70 | 0 |
| 3 | Q | 10/10 (100%) | -1.57 | 0 | 100 | 100 | 50, 61, 74, 79 | 0 |
| 3 | R | 10/10 (100%) | -1.41 | 0 | 100 | 100 | 64, 75, 96, 104 | 0 |
| 3 | S | 10/10 (100%) | -1.49 | 0 | 100 | 100 | 66, 78, 92, 96 | 0 |
| All | All | 1529/1540 (99%) | -1.50 | 1 (0%) | 92 | 91 | 28, 64, 112, 193 | 6 (0%) |

All (1) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | G | 254 | GLU | 2.5 |

## 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 oligosaccharides in this entry.

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PROTEIN DATA BANK

## 6.4 Ligands ⓘ

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

| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors($\text{Å}^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|--------------------------|-------|
| 4 | SO4 | A | 301 | 5/5 | 0.96 | 0.06 | 149,149,150,153 | 0 |
| 4 | SO4 | G | 301 | 5/5 | 0.97 | 0.05 | 133,136,136,139 | 0 |
| 4 | SO4 | H | 104 | 5/5 | 0.97 | 0.04 | 135,137,139,139 | 0 |
| 4 | SO4 | F | 103 | 5/5 | 0.98 | 0.04 | 122,122,126,133 | 0 |
| 4 | SO4 | B | 101 | 5/5 | 0.98 | 0.03 | 125,130,132,134 | 0 |
| 4 | SO4 | H | 103 | 5/5 | 0.98 | 0.05 | 87,94,100,101 | 5 |
| 4 | SO4 | D | 102 | 5/5 | 0.98 | 0.04 | 115,119,121,122 | 5 |
| 5 | GOL | A | 302 | 6/6 | 0.98 | 0.04 | 48,49,61,64 | 0 |
| 5 | GOL | B | 104 | 6/6 | 0.98 | 0.06 | 77,98,105,106 | 0 |
| 5 | GOL | G | 303 | 6/6 | 0.98 | 0.04 | 80,85,89,90 | 0 |
| 4 | SO4 | H | 102 | 5/5 | 0.99 | 0.04 | 93,103,108,109 | 0 |
| 4 | SO4 | F | 101 | 5/5 | 0.99 | 0.04 | 113,115,119,120 | 0 |
| 4 | SO4 | F | 102 | 5/5 | 0.99 | 0.06 | 105,112,114,114 | 0 |
| 4 | SO4 | D | 101 | 5/5 | 0.99 | 0.04 | 113,120,122,125 | 0 |
| 5 | GOL | B | 103 | 6/6 | 0.99 | 0.05 | 73,76,78,78 | 0 |
| 4 | SO4 | B | 102 | 5/5 | 0.99 | 0.06 | 124,128,131,133 | 5 |
| 5 | GOL | B | 105 | 6/6 | 0.99 | 0.04 | 61,67,82,91 | 0 |
| 5 | GOL | C | 301 | 6/6 | 0.99 | 0.04 | 70,75,79,89 | 0 |
| 5 | GOL | D | 105 | 6/6 | 0.99 | 0.06 | 65,84,86,89 | 0 |
| 5 | GOL | D | 106 | 6/6 | 0.99 | 0.03 | 83,92,95,103 | 0 |
| 5 | GOL | E | 301 | 6/6 | 0.99 | 0.04 | 49,53,59,64 | 0 |
| 5 | GOL | F | 104 | 6/6 | 0.99 | 0.04 | 56,72,78,78 | 0 |
| 5 | GOL | G | 302 | 6/6 | 0.99 | 0.03 | 61,65,67,80 | 0 |
| 4 | SO4 | H | 101 | 5/5 | 0.99 | 0.04 | 100,106,113,114 | 0 |
| 5 | GOL | H | 105 | 6/6 | 0.99 | 0.04 | 73,86,89,91 | 0 |
| 5 | GOL | H | 106 | 6/6 | 0.99 | 0.04 | 90,96,100,104 | 0 |
| 5 | GOL | D | 103 | 6/6 | 1.00 | 0.02 | 42,54,58,65 | 0 |
| 5 | GOL | D | 104 | 6/6 | 1.00 | 0.05 | 62,90,98,99 | 0 |

## 6.5 Other polymers ⓘ

There are no such residues in this entry.