



# Full wwPDB X-ray Structure Validation Report ⓘ

Aug 22, 2020 – 05:43 PM BST

PDB ID : 4NZB  
Title : NS9283 bound to Ls-AChBP  
Authors : Olsen, J.A.; Kastrup, J.S.; Gajhede, M.  
Deposited on : 2013-12-11  
Resolution : 2.68 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.13.1  
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) : 2.13.1

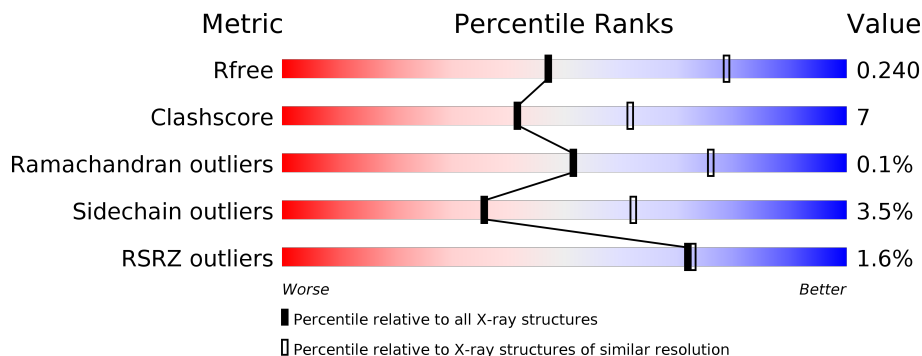
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.68 Å.

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



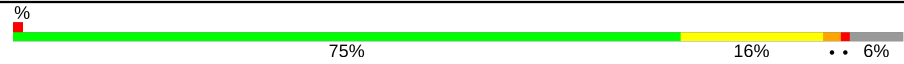





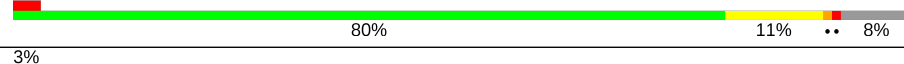

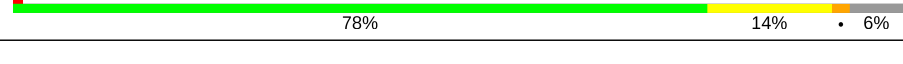
| Metric                | Whole archive<br>(#Entries) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| $R_{free}$            | 130704                      | 3863 (2.70-2.66)                                      |
| Clashscore            | 141614                      | 4210 (2.70-2.66)                                      |
| Ramachandran outliers | 138981                      | 4141 (2.70-2.66)                                      |
| Sidechain outliers    | 138945                      | 4141 (2.70-2.66)                                      |
| RSRZ outliers         | 127900                      | 3780 (2.70-2.66)                                      |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain  |
|-----|-------|--------|-------------------|
| 1   | A     | 210    | <br>77% 15% • 6%  |
| 1   | B     | 210    | <br>77% 14% • 6%  |
| 1   | C     | 210    | <br>77% 14% •• 6% |
| 1   | D     | 210    | <br>80% 11% • 6%  |
| 1   | E     | 210    | <br>76% 14% •• 6% |
| 1   | F     | 210    | <br>77% 15% •• 5% |

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| Mol | Chain | Length | Quality of chain   |    |
|-----|-------|--------|--|----|
| 1   | G     | 210    |  | %  |
| 1   | H     | 210    |  | %  |
| 1   | I     | 210    |  | 2% |
| 1   | J     | 210    |  | %  |
| 1   | K     | 210    |  | %  |
| 1   | L     | 210    |  | %  |
| 1   | M     | 210    |  | 3% |
| 1   | N     | 210    |  | 3% |
| 1   | O     | 210    |  | %  |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 4   | SO4  | F     | 302 | -         | -        | -       | X                |

## 2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 24523 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 Acetylcholine-binding protein.

| Mol | Chain | Residues | Atoms         |           |          |          |        | ZeroOcc | AltConf | Trace |
|-----|-------|----------|---------------|-----------|----------|----------|--------|---------|---------|-------|
|     |       |          | Total         | C         | N        | O        | S      |         |         |       |
| 1   | G     | 198      | Total<br>1591 | C<br>1002 | N<br>272 | O<br>312 | S<br>5 | 0       | 1       | 0     |
| 1   | D     | 197      | Total<br>1578 | C<br>991  | N<br>271 | O<br>311 | S<br>5 | 0       | 0       | 0     |
| 1   | E     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | A     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | B     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | C     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | F     | 200      | Total<br>1607 | C<br>1010 | N<br>274 | O<br>318 | S<br>5 | 0       | 1       | 0     |
| 1   | H     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | I     | 195      | Total<br>1568 | C<br>988  | N<br>269 | O<br>308 | S<br>3 | 0       | 0       | 0     |
| 1   | J     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | K     | 197      | Total<br>1571 | C<br>989  | N<br>268 | O<br>309 | S<br>5 | 0       | 0       | 0     |
| 1   | L     | 198      | Total<br>1591 | C<br>1000 | N<br>272 | O<br>314 | S<br>5 | 0       | 1       | 0     |
| 1   | M     | 194      | Total<br>1566 | C<br>988  | N<br>268 | O<br>307 | S<br>3 | 0       | 1       | 0     |
| 1   | N     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |
| 1   | O     | 198      | Total<br>1586 | C<br>997  | N<br>272 | O<br>312 | S<br>5 | 0       | 0       | 0     |

- Molecule 2 is PENTAETHYLENE GLYCOL (three-letter code: 1PE) (formula: C<sub>10</sub>H<sub>22</sub>O<sub>6</sub>).



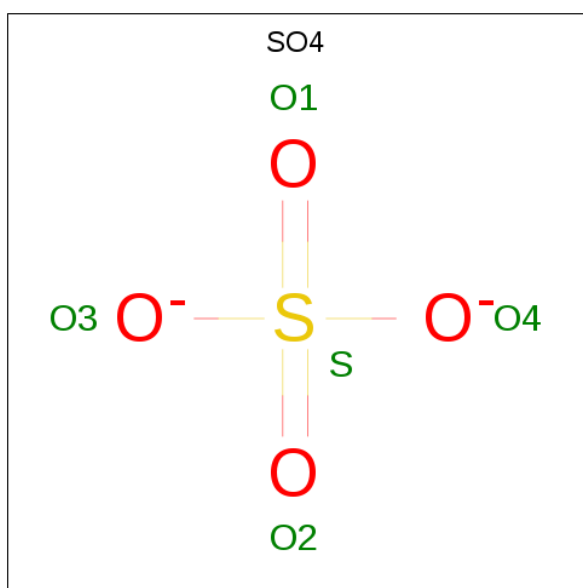
| Mol | Chain | Residues | Atoms |    |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---------|---------|
| 2   | G     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | D     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | E     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | A     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | B     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | C     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | H     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |
| 2   | I     | 1        | Total | C  | O | 0       | 0       |
|     |       |          | 16    | 10 | 6 |         |         |

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



| Mol | Chain | Residues | Atoms |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
|     |       |          | Total | C | N | O |         |         |
| 3   | G     | 1        | 14    | 8 | 1 | 5 | 0       | 0       |
| 3   | D     | 1        | 14    | 8 | 1 | 5 | 0       | 0       |

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



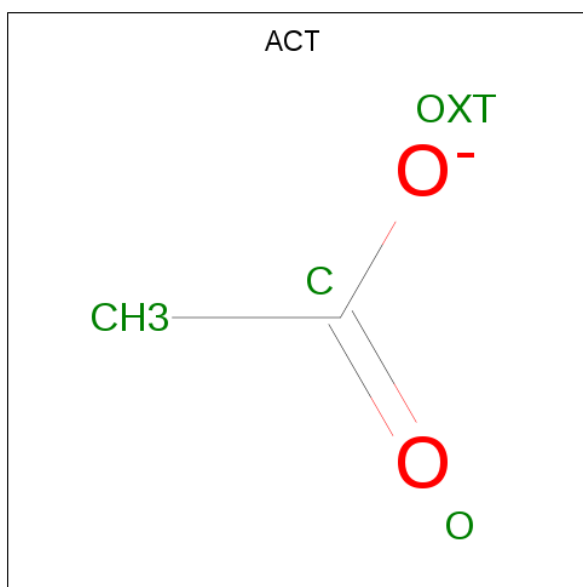
| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
|     |       |          | Total | O | S |         |         |
| 4   | G     | 1        | 5     | 4 | 1 | 0       | 0       |
| 4   | G     | 1        | 5     | 4 | 1 | 0    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

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| Mol | Chain | Residues | Atoms      |        |        | ZeroOcc | AltConf |
|-----|-------|----------|------------|--------|--------|---------|---------|
| 4   | G     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | D     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | D     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | E     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | E     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | E     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | E     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | E     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | E     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | A     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | A     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | B     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | B     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | C     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | F     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | F     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | I     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | J     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |
| 4   | M     | 1        | Total<br>5 | O<br>4 | S<br>1 | 0       | 0       |

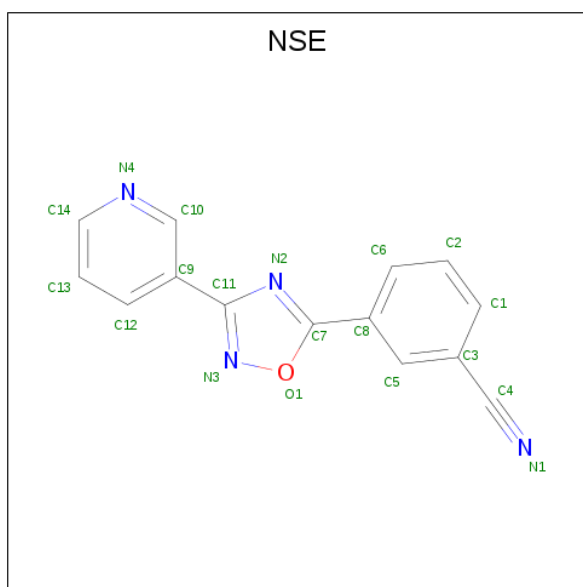
- Molecule 5 is ACETATE ION (three-letter code: ACT) (formula: C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>).



| Mol | Chain | Residues | Atoms              | ZeroOcc | AltConf |
|-----|-------|----------|--------------------|---------|---------|
| 5   | G     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | G     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | G     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | D     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | A     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | A     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | F     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | F     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | F     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | F     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | J     | 1        | Total C O<br>4 2 2 | 0       | 0       |
| 5   | O     | 1        | Total C O<br>4 2 2 | 0       | 0       |

- Molecule 6 is 3-[3-(pyridin-3-yl)-1,2,4-oxadiazol-5-yl]benzotrile (three-letter code: NSE) (formula: C<sub>14</sub>H<sub>8</sub>N<sub>4</sub>O).



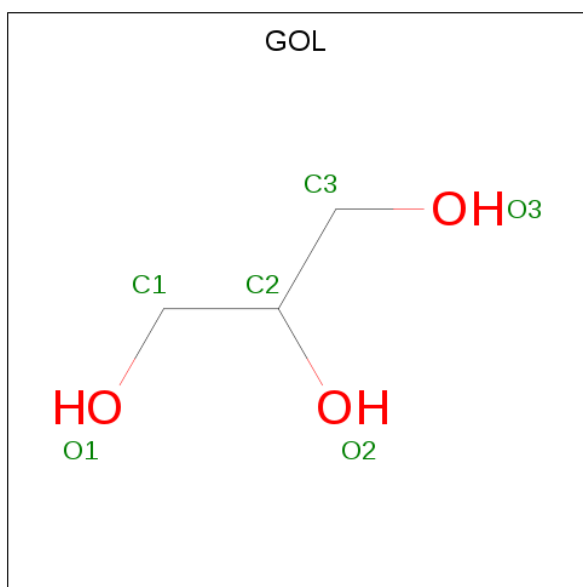


| Mol | Chain | Residues | Atoms |    |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---|---|---------|---------|
|     |       |          | Total | C  | N | O |         |         |
| 6   | E     | 1        | 19    | 14 | 4 | 1 | 0       | 0       |
| 6   | A     | 1        | 19    | 14 | 4 | 1 | 0       | 0       |
| 6   | B     | 1        | 19    | 14 | 4 | 1 | 0       | 0       |
| 6   | I     | 1        | 19    | 14 | 4 | 1 | 0       | 0       |
| 6   | K     | 1        | 19    | 14 | 4 | 1 | 0       | 0       |
| 6   | M     | 1        | 19    | 14 | 4 | 1 | 0       | 0       |

- Molecule 7 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

| Mol | Chain | Residues | Atoms |    | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
|     |       |          | Total | Cl |         |         |
| 7   | A     | 1        | 1     | 1  | 0       | 0       |
| 7   | L     | 1        | 1     | 1  | 0       | 0       |
| 7   | K     | 1        | 1     | 1  | 0       | 0       |
| 7   | N     | 1        | 1     | 1  | 0       | 0       |

- Molecule 8 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 8   | J     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 6     | 3 | 3 |         |         |

- Molecule 9 is water.

| Mol | Chain | Residues | Atoms |    | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
| 9   | G     | 28       | Total | O  | 0       | 0       |
|     |       |          | 28    | 28 |         |         |
| 9   | D     | 27       | Total | O  | 0       | 0       |
|     |       |          | 27    | 27 |         |         |
| 9   | E     | 23       | Total | O  | 0       | 0       |
|     |       |          | 23    | 23 |         |         |
| 9   | A     | 28       | Total | O  | 0       | 0       |
|     |       |          | 28    | 28 |         |         |
| 9   | B     | 19       | Total | O  | 0       | 0       |
|     |       |          | 19    | 19 |         |         |
| 9   | C     | 22       | Total | O  | 0       | 0       |
|     |       |          | 22    | 22 |         |         |
| 9   | F     | 31       | Total | O  | 0       | 0       |
|     |       |          | 31    | 31 |         |         |
| 9   | H     | 26       | Total | O  | 0       | 0       |
|     |       |          | 26    | 26 |         |         |
| 9   | I     | 21       | Total | O  | 0       | 0       |
|     |       |          | 21    | 21 |         |         |
| 9   | J     | 21       | Total | O  | 0       | 0       |
|     |       |          | 21    | 21 |         |         |
| 9   | K     | 26       | Total | O  | 0       | 0       |
|     |       |          | 26    | 26 |         |         |

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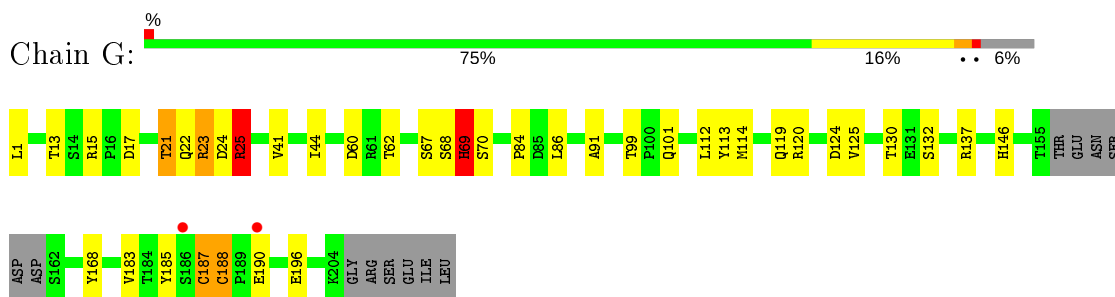
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| <b>Mol</b> | <b>Chain</b> | <b>Residues</b> | <b>Atoms</b> |         | <b>ZeroOcc</b> | <b>AltConf</b> |
|------------|--------------|-----------------|--------------|---------|----------------|----------------|
| 9          | L            | 24              | Total<br>24  | O<br>24 | 0              | 0              |
| 9          | M            | 21              | Total<br>21  | O<br>21 | 0              | 0              |
| 9          | N            | 5               | Total<br>5   | O<br>5  | 0              | 0              |
| 9          | O            | 13              | Total<br>13  | O<br>13 | 0              | 0              |

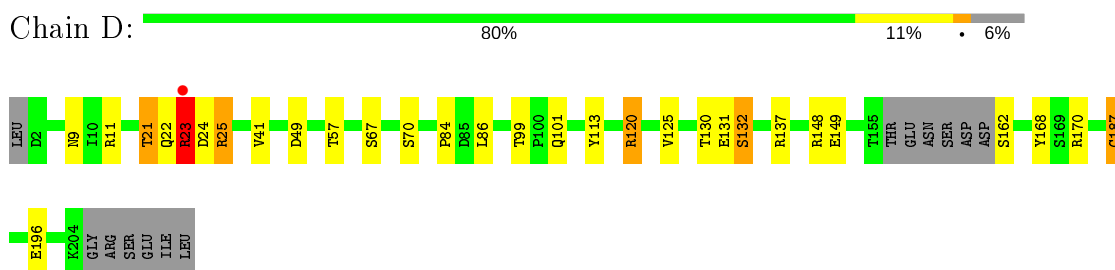
### 3 Residue-property plots [i](#)

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

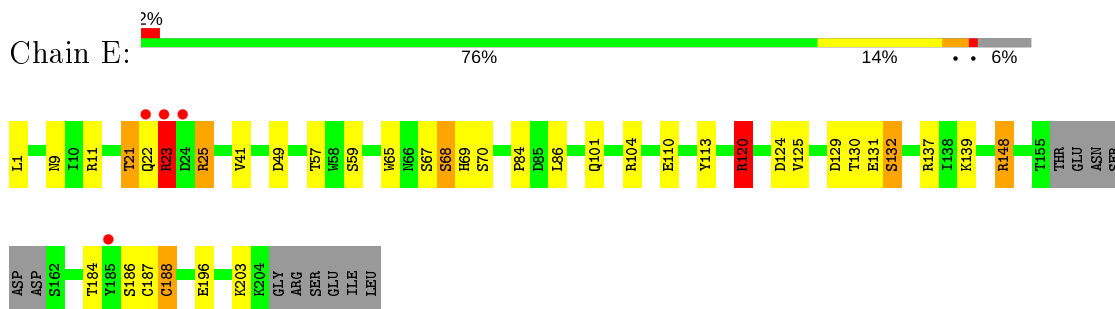
- Molecule 1: Acetylcholine-binding protein



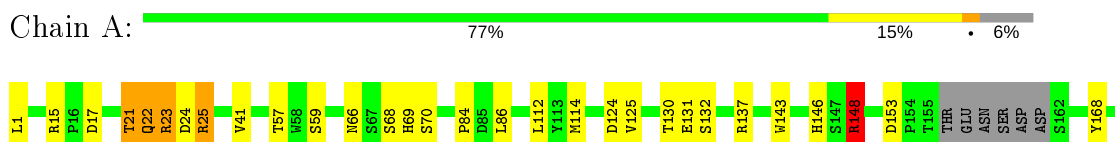
- Molecule 1: Acetylcholine-binding protein



- Molecule 1: Acetylcholine-binding protein

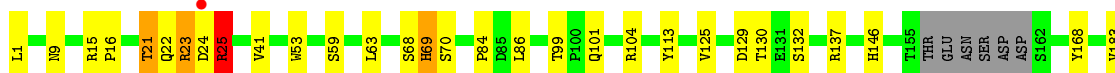
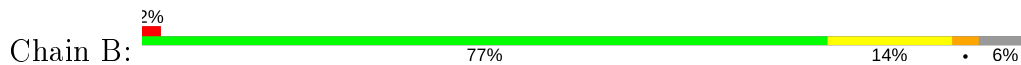


- Molecule 1: Acetylcholine-binding protein

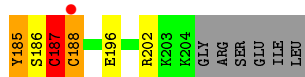
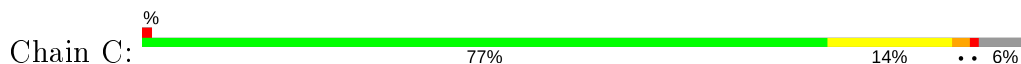




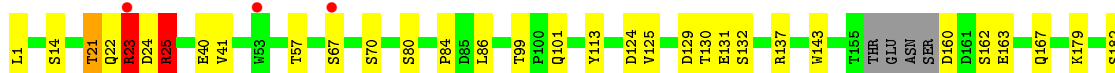
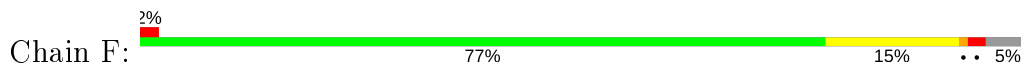
• Molecule 1: Acetylcholine-binding protein



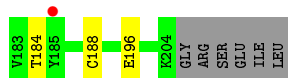
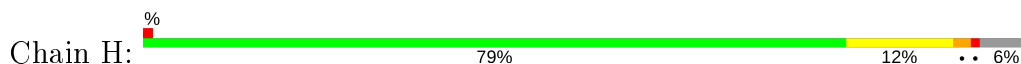
• Molecule 1: Acetylcholine-binding protein



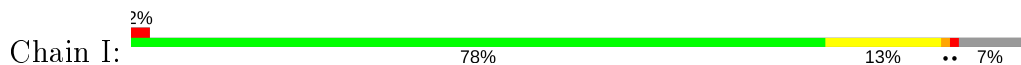
• Molecule 1: Acetylcholine-binding protein

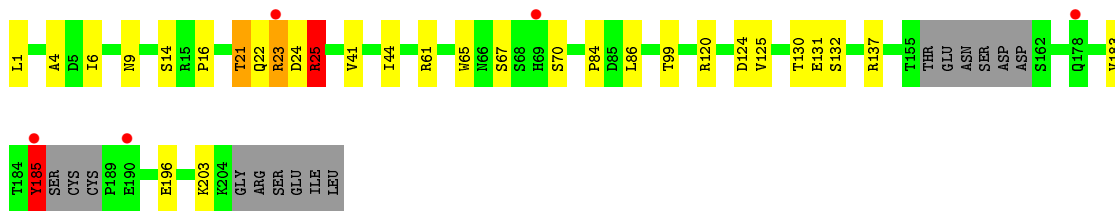


• Molecule 1: Acetylcholine-binding protein

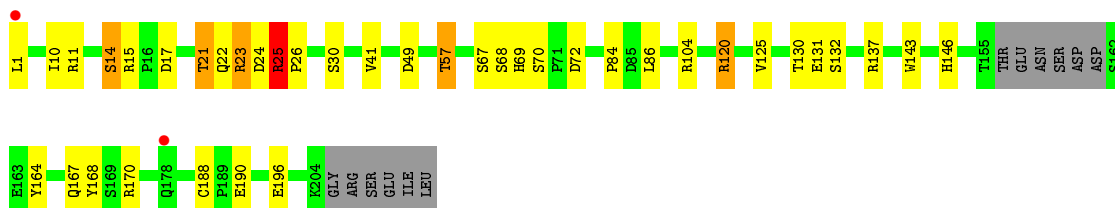
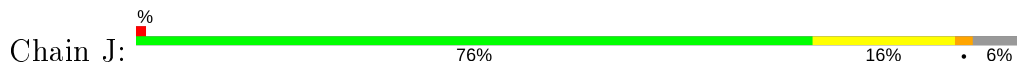


• Molecule 1: Acetylcholine-binding protein

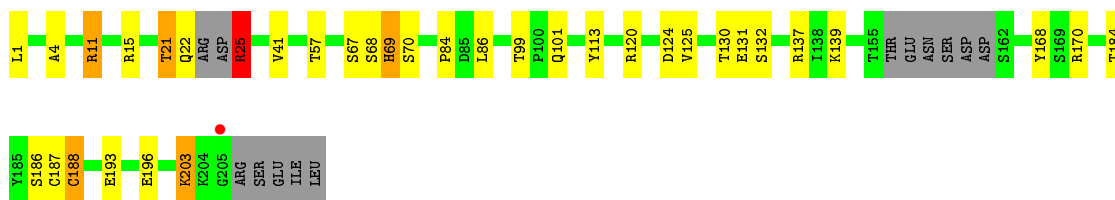
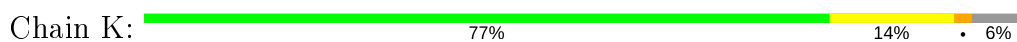




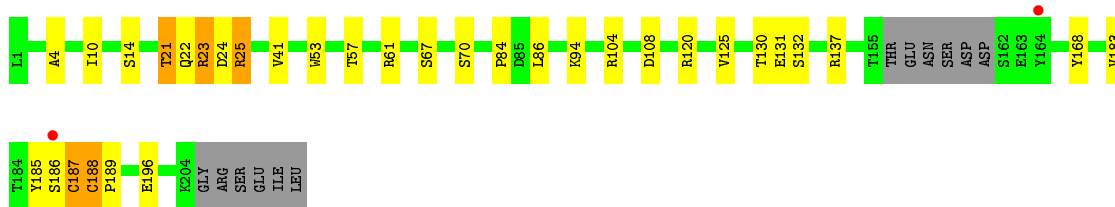
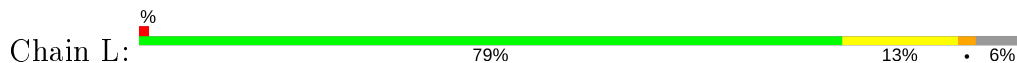
• Molecule 1: Acetylcholine-binding protein



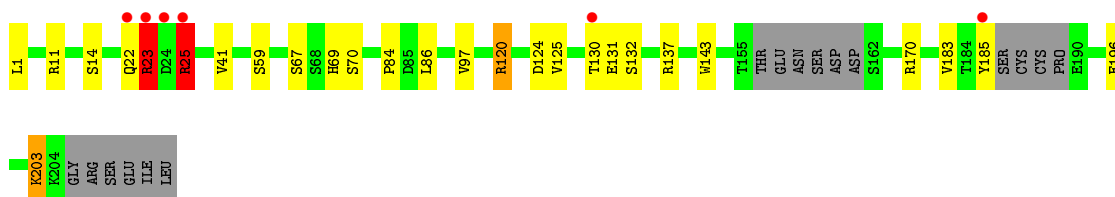
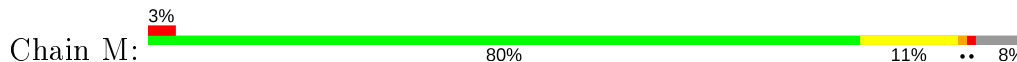
• Molecule 1: Acetylcholine-binding protein




• Molecule 1: Acetylcholine-binding protein

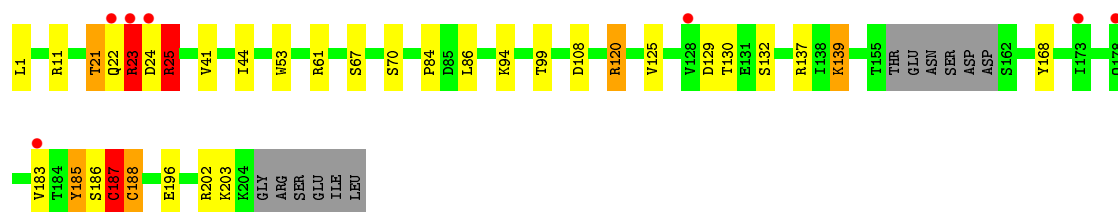


• Molecule 1: Acetylcholine-binding protein




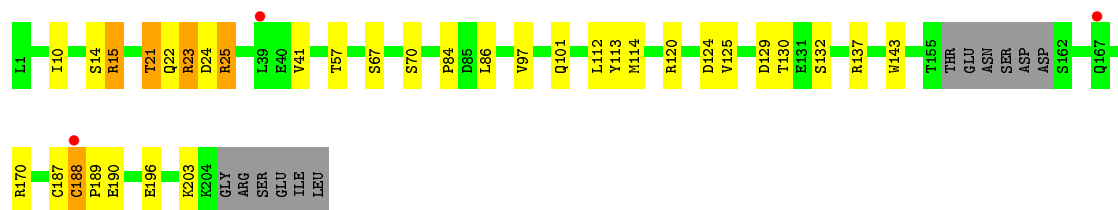
- Molecule 1: Acetylcholine-binding protein

Chain N:  3% 78% 12% •• 6%



- Molecule 1: Acetylcholine-binding protein

Chain O:  1% 78% 14% • 6%



## 4 Data and refinement statistics i

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | C 1 2 1   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 231.73Å 140.38Å 119.55Å<br>90.00° 89.98° 90.00°   | Depositor        |
| Resolution (Å)  | 28.24 – 2.68<br>28.24 – 2.68  | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 98.2 (28.24-2.68)<br>98.1 (28.24-2.68)  | Depositor<br>EDS |
| $R_{merge}$   | (Not available)   | Depositor        |
| $R_{sym}$   | 0.07  | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 1.69 (at 2.68Å)   | Xtrriage         |
| Refinement program  | PHENIX 1.8.4_1496   | Depositor        |
| R, $R_{free}$   | 0.207 , 0.240<br>0.208 , 0.240  | Depositor<br>DCC |
| $R_{free}$ test set   | 5278 reflections (5.01%)  | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 52.7  | Xtrriage         |
| Anisotropy  | 0.296   | Xtrriage         |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.35 , 28.9   | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.40$ , $\langle L^2 \rangle = 0.22$   | Xtrriage         |
| Estimated twinning fraction   | 0.069 for -1/2*h+3/2*k,1/2*h+1/2*k,-l<br>0.064 for -1/2*h-3/2*k,-1/2*h+1/2*k,-l<br>0.075 for 1/2*h+3/2*k,1/2*h-1/2*k,-l<br>0.064 for 1/2*h-3/2*k,-1/2*h-1/2*k,-l<br>0.104 for -h,-k,l | Xtrriage         |
| $F_o, F_c$ correlation  | 0.93  | EDS              |
| Total number of atoms   | 24523   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 53.0  | wwPDB-VP         |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.88% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup> Intensities estimated from amplitudes.

<sup>2</sup> Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.



## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, NAG, CL, NSE, 1PE, SO4, ACT

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     | 0.64         | 4/1621 (0.2%)   | 0.91        | 10/2211 (0.5%)   |
| 1   | B     | 0.64         | 3/1621 (0.2%)   | 0.83        | 8/2211 (0.4%)    |
| 1   | C     | 0.60         | 4/1621 (0.2%)   | 0.81        | 10/2211 (0.5%)   |
| 1   | D     | 0.84         | 8/1613 (0.5%)   | 1.45        | 16/2200 (0.7%)   |
| 1   | E     | 0.68         | 5/1621 (0.3%)   | 0.85        | 7/2211 (0.3%)    |
| 1   | F     | 0.76         | 7/1645 (0.4%)   | 0.94        | 8/2244 (0.4%)    |
| 1   | G     | 0.72         | 4/1629 (0.2%)   | 1.01        | 4/2222 (0.2%)    |
| 1   | H     | 0.81         | 8/1621 (0.5%)   | 0.93        | 15/2211 (0.7%)   |
| 1   | I     | 0.70         | 6/1602 (0.4%)   | 0.79        | 10/2183 (0.5%)   |
| 1   | J     | 0.67         | 7/1621 (0.4%)   | 0.84        | 9/2211 (0.4%)    |
| 1   | K     | 0.55         | 3/1605 (0.2%)   | 0.81        | 7/2188 (0.3%)    |
| 1   | L     | 0.76         | 2/1629 (0.1%)   | 0.81        | 9/2222 (0.4%)    |
| 1   | M     | 0.80         | 7/1602 (0.4%)   | 0.85        | 10/2183 (0.5%)   |
| 1   | N     | 0.77         | 6/1621 (0.4%)   | 1.17        | 13/2211 (0.6%)   |
| 1   | O     | 0.59         | 3/1621 (0.2%)   | 0.79        | 7/2211 (0.3%)    |
| All | All   | 0.71         | 77/24293 (0.3%) | 0.93        | 143/33130 (0.4%) |

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A     | 0                   | 1                   |
| 1   | D     | 0                   | 1                   |
| 1   | F     | 0                   | 4                   |
| 1   | G     | 0                   | 2                   |
| 1   | M     | 0                   | 1                   |
| 1   | N     | 0                   | 2                   |
| 1   | O     | 0                   | 1                   |
| All | All   | 0                   | 12                  |

All (77) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms  | Z      | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|--------|-------------|----------|
| 1   | L     | 131 | GLU  | CD-OE1 | -18.59 | 1.05        | 1.25     |
| 1   | H     | 131 | GLU  | CD-OE1 | -16.84 | 1.07        | 1.25     |
| 1   | N     | 25  | ARG  | CZ-NH1 | -16.34 | 1.11        | 1.33     |
| 1   | G     | 23  | ARG  | CZ-NH1 | -14.01 | 1.14        | 1.33     |
| 1   | D     | 131 | GLU  | CD-OE1 | -13.45 | 1.10        | 1.25     |
| 1   | M     | 25  | ARG  | CZ-NH2 | -12.53 | 1.16        | 1.33     |
| 1   | D     | 11  | ARG  | CZ-NH1 | -12.22 | 1.17        | 1.33     |
| 1   | D     | 23  | ARG  | CZ-NH1 | -11.46 | 1.18        | 1.33     |
| 1   | E     | 23  | ARG  | CG-CD  | -11.04 | 1.24        | 1.51     |
| 1   | N     | 25  | ARG  | CG-CD  | -10.93 | 1.24        | 1.51     |
| 1   | D     | 25  | ARG  | CG-CD  | -10.65 | 1.25        | 1.51     |
| 1   | M     | 25  | ARG  | CB-CG  | -10.55 | 1.24        | 1.52     |
| 1   | J     | 23  | ARG  | CG-CD  | -10.19 | 1.26        | 1.51     |
| 1   | F     | 23  | ARG  | CZ-NH1 | -10.13 | 1.19        | 1.33     |
| 1   | M     | 131 | GLU  | CB-CG  | -10.12 | 1.32        | 1.52     |
| 1   | H     | 131 | GLU  | CB-CG  | -9.58  | 1.33        | 1.52     |
| 1   | L     | 23  | ARG  | CG-CD  | -9.55  | 1.28        | 1.51     |
| 1   | I     | 23  | ARG  | CB-CG  | -9.37  | 1.27        | 1.52     |
| 1   | O     | 23  | ARG  | CG-CD  | -9.24  | 1.28        | 1.51     |
| 1   | I     | 131 | GLU  | CB-CG  | -9.06  | 1.34        | 1.52     |
| 1   | B     | 23  | ARG  | CG-CD  | -8.87  | 1.29        | 1.51     |
| 1   | F     | 23  | ARG  | CG-CD  | -8.71  | 1.30        | 1.51     |
| 1   | I     | 131 | GLU  | CD-OE1 | -8.65  | 1.16        | 1.25     |
| 1   | A     | 23  | ARG  | CG-CD  | -8.64  | 1.30        | 1.51     |
| 1   | F     | 25  | ARG  | CB-CG  | -8.07  | 1.30        | 1.52     |
| 1   | F     | 187 | CYS  | CB-SG  | -7.90  | 1.68        | 1.82     |
| 1   | G     | 23  | ARG  | CB-CG  | -7.81  | 1.31        | 1.52     |
| 1   | B     | 25  | ARG  | CB-CG  | -7.63  | 1.31        | 1.52     |
| 1   | M     | 25  | ARG  | CD-NE  | -7.60  | 1.33        | 1.46     |
| 1   | B     | 25  | ARG  | CG-CD  | -7.57  | 1.33        | 1.51     |
| 1   | J     | 167 | GLN  | CB-CG  | -7.57  | 1.32        | 1.52     |
| 1   | N     | 23  | ARG  | CB-CG  | -7.51  | 1.32        | 1.52     |
| 1   | I     | 23  | ARG  | CZ-NH1 | -7.51  | 1.23        | 1.33     |
| 1   | D     | 25  | ARG  | CB-CG  | -7.48  | 1.32        | 1.52     |
| 1   | H     | 23  | ARG  | CB-CG  | -7.35  | 1.32        | 1.52     |
| 1   | D     | 23  | ARG  | CD-NE  | -7.33  | 1.33        | 1.46     |
| 1   | J     | 23  | ARG  | CB-CG  | -7.18  | 1.33        | 1.52     |
| 1   | H     | 23  | ARG  | CZ-NH1 | -7.16  | 1.23        | 1.33     |
| 1   | H     | 23  | ARG  | CG-CD  | -7.13  | 1.34        | 1.51     |
| 1   | G     | 25  | ARG  | CB-CG  | -7.12  | 1.33        | 1.52     |
| 1   | A     | 131 | GLU  | CB-CG  | -7.11  | 1.38        | 1.52     |
| 1   | M     | 25  | ARG  | CG-CD  | -7.00  | 1.34        | 1.51     |

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| Mol | Chain | Res | Type | Atoms  | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 1   | K     | 25  | ARG  | CZ-NH1 | -6.92 | 1.24        | 1.33     |
| 1   | I     | 23  | ARG  | CG-CD  | -6.71 | 1.35        | 1.51     |
| 1   | E     | 23  | ARG  | CB-CG  | -6.70 | 1.34        | 1.52     |
| 1   | C     | 23  | ARG  | CB-CG  | -6.70 | 1.34        | 1.52     |
| 1   | H     | 25  | ARG  | CG-CD  | -6.44 | 1.35        | 1.51     |
| 1   | D     | 23  | ARG  | CB-CG  | -6.28 | 1.35        | 1.52     |
| 1   | M     | 23  | ARG  | CG-CD  | -6.26 | 1.36        | 1.51     |
| 1   | H     | 25  | ARG  | CB-CG  | -6.23 | 1.35        | 1.52     |
| 1   | H     | 131 | GLU  | CG-CD  | -6.17 | 1.42        | 1.51     |
| 1   | E     | 25  | ARG  | CB-CG  | -6.17 | 1.35        | 1.52     |
| 1   | E     | 25  | ARG  | CG-CD  | -6.16 | 1.36        | 1.51     |
| 1   | C     | 187 | CYS  | CB-SG  | -6.12 | 1.71        | 1.82     |
| 1   | M     | 25  | ARG  | NE-CZ  | -6.12 | 1.25        | 1.33     |
| 1   | N     | 25  | ARG  | CB-CG  | -5.98 | 1.36        | 1.52     |
| 1   | F     | 23  | ARG  | CB-CG  | -5.97 | 1.36        | 1.52     |
| 1   | J     | 25  | ARG  | CG-CD  | -5.94 | 1.37        | 1.51     |
| 1   | D     | 131 | GLU  | CB-CG  | -5.92 | 1.41        | 1.52     |
| 1   | O     | 25  | ARG  | CB-CG  | -5.83 | 1.36        | 1.52     |
| 1   | N     | 23  | ARG  | CG-CD  | -5.82 | 1.37        | 1.51     |
| 1   | I     | 25  | ARG  | CG-CD  | -5.80 | 1.37        | 1.51     |
| 1   | O     | 25  | ARG  | CG-CD  | -5.75 | 1.37        | 1.51     |
| 1   | C     | 25  | ARG  | CB-CG  | -5.65 | 1.37        | 1.52     |
| 1   | A     | 148 | ARG  | CG-CD  | -5.64 | 1.37        | 1.51     |
| 1   | J     | 22  | GLN  | CD-OE1 | -5.59 | 1.11        | 1.24     |
| 1   | F     | 25  | ARG  | CG-CD  | -5.54 | 1.38        | 1.51     |
| 1   | K     | 25  | ARG  | CB-CG  | -5.53 | 1.37        | 1.52     |
| 1   | A     | 131 | GLU  | CD-OE1 | -5.53 | 1.19        | 1.25     |
| 1   | F     | 131 | GLU  | CB-CG  | -5.53 | 1.41        | 1.52     |
| 1   | G     | 23  | ARG  | CG-CD  | -5.44 | 1.38        | 1.51     |
| 1   | N     | 139 | LYS  | CB-CG  | -5.34 | 1.38        | 1.52     |
| 1   | E     | 131 | GLU  | CB-CG  | -5.32 | 1.42        | 1.52     |
| 1   | J     | 22  | GLN  | CB-CG  | -5.20 | 1.38        | 1.52     |
| 1   | K     | 131 | GLU  | CB-CG  | -5.19 | 1.42        | 1.52     |
| 1   | J     | 131 | GLU  | CD-OE1 | -5.15 | 1.20        | 1.25     |
| 1   | C     | 23  | ARG  | CG-CD  | -5.15 | 1.39        | 1.51     |

All (143) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1   | D     | 23  | ARG  | NE-CZ-NH2 | 32.15 | 136.38      | 120.30   |
| 1   | N     | 25  | ARG  | NE-CZ-NH2 | 28.76 | 134.68      | 120.30   |
| 1   | D     | 11  | ARG  | NE-CZ-NH2 | 26.92 | 133.76      | 120.30   |

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| Mol | Chain | Res | Type | Atoms      | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|--------|-------------|----------|
| 1   | G     | 23  | ARG  | NE-CZ-NH2  | 24.77  | 132.69      | 120.30   |
| 1   | D     | 11  | ARG  | NE-CZ-NH1  | -23.80 | 108.40      | 120.30   |
| 1   | G     | 23  | ARG  | NE-CZ-NH1  | -23.38 | 108.61      | 120.30   |
| 1   | N     | 25  | ARG  | NE-CZ-NH1  | -22.79 | 108.91      | 120.30   |
| 1   | D     | 23  | ARG  | NE-CZ-NH1  | -22.74 | 108.93      | 120.30   |
| 1   | F     | 23  | ARG  | NE-CZ-NH2  | 20.58  | 130.59      | 120.30   |
| 1   | D     | 25  | ARG  | CG-CD-NE   | 16.20  | 145.81      | 111.80   |
| 1   | H     | 131 | GLU  | CA-CB-CG   | 15.88  | 148.34      | 113.40   |
| 1   | F     | 23  | ARG  | NE-CZ-NH1  | -13.91 | 113.35      | 120.30   |
| 1   | K     | 25  | ARG  | NE-CZ-NH1  | -13.73 | 113.43      | 120.30   |
| 1   | K     | 25  | ARG  | NE-CZ-NH2  | 13.67  | 127.13      | 120.30   |
| 1   | M     | 25  | ARG  | NE-CZ-NH2  | -13.17 | 113.71      | 120.30   |
| 1   | A     | 148 | ARG  | CG-CD-NE   | 12.78  | 138.63      | 111.80   |
| 1   | I     | 23  | ARG  | NE-CZ-NH2  | 12.26  | 126.43      | 120.30   |
| 1   | B     | 23  | ARG  | NE-CZ-NH2  | 12.25  | 126.42      | 120.30   |
| 1   | A     | 23  | ARG  | NE-CZ-NH1  | -12.07 | 114.26      | 120.30   |
| 1   | L     | 131 | GLU  | CG-CD-OE2  | 11.55  | 141.41      | 118.30   |
| 1   | A     | 148 | ARG  | NE-CZ-NH2  | -11.54 | 114.53      | 120.30   |
| 1   | A     | 148 | ARG  | CB-CG-CD   | -11.53 | 81.63       | 111.60   |
| 1   | B     | 25  | ARG  | NE-CZ-NH1  | -11.39 | 114.61      | 120.30   |
| 1   | L     | 131 | GLU  | OE1-CD-OE2 | -11.32 | 109.72      | 123.30   |
| 1   | E     | 23  | ARG  | NE-CZ-NH2  | 11.21  | 125.91      | 120.30   |
| 1   | B     | 23  | ARG  | NE-CZ-NH1  | -11.19 | 114.70      | 120.30   |
| 1   | D     | 25  | ARG  | NE-CZ-NH1  | -11.15 | 114.73      | 120.30   |
| 1   | H     | 23  | ARG  | NE-CZ-NH2  | 10.83  | 125.72      | 120.30   |
| 1   | O     | 23  | ARG  | NE-CZ-NH2  | 10.78  | 125.69      | 120.30   |
| 1   | J     | 23  | ARG  | NE-CZ-NH2  | 10.71  | 125.65      | 120.30   |
| 1   | O     | 23  | ARG  | NE-CZ-NH1  | -10.54 | 115.03      | 120.30   |
| 1   | N     | 120 | ARG  | NE-CZ-NH1  | -10.43 | 115.09      | 120.30   |
| 1   | E     | 23  | ARG  | NE-CZ-NH1  | -10.12 | 115.24      | 120.30   |
| 1   | E     | 148 | ARG  | CB-CG-CD   | -10.04 | 85.49       | 111.60   |
| 1   | O     | 25  | ARG  | NE-CZ-NH1  | -9.84  | 115.38      | 120.30   |
| 1   | M     | 203 | LYS  | CG-CD-CE   | 9.79   | 141.27      | 111.90   |
| 1   | I     | 23  | ARG  | NE-CZ-NH1  | -9.75  | 115.43      | 120.30   |
| 1   | J     | 120 | ARG  | CG-CD-NE   | 9.72   | 132.20      | 111.80   |
| 1   | L     | 23  | ARG  | NE-CZ-NH2  | 9.63   | 125.12      | 120.30   |
| 1   | A     | 148 | ARG  | CD-NE-CZ   | 9.57   | 137.00      | 123.60   |
| 1   | N     | 139 | LYS  | CG-CD-CE   | 9.57   | 140.61      | 111.90   |
| 1   | A     | 23  | ARG  | NE-CZ-NH2  | 9.51   | 125.05      | 120.30   |
| 1   | D     | 120 | ARG  | CG-CD-NE   | 9.37   | 131.48      | 111.80   |
| 1   | D     | 25  | ARG  | NE-CZ-NH2  | 9.31   | 124.96      | 120.30   |
| 1   | C     | 23  | ARG  | NE-CZ-NH2  | 9.29   | 124.94      | 120.30   |

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| Mol | Chain | Res | Type | Atoms      | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|------------|-------|-------------|----------|
| 1   | D     | 25  | ARG  | CD-NE-CZ   | -9.23 | 110.67      | 123.60   |
| 1   | H     | 131 | GLU  | CB-CA-C    | -9.06 | 92.28       | 110.40   |
| 1   | H     | 25  | ARG  | NE-CZ-NH1  | -8.99 | 115.81      | 120.30   |
| 1   | F     | 25  | ARG  | CG-CD-NE   | 8.83  | 130.34      | 111.80   |
| 1   | N     | 23  | ARG  | CG-CD-NE   | 8.68  | 130.02      | 111.80   |
| 1   | J     | 164 | TYR  | CB-CG-CD2  | -8.65 | 115.81      | 121.00   |
| 1   | B     | 25  | ARG  | CG-CD-NE   | 8.63  | 129.93      | 111.80   |
| 1   | E     | 25  | ARG  | NE-CZ-NH1  | -8.57 | 116.01      | 120.30   |
| 1   | H     | 120 | ARG  | CG-CD-NE   | 8.49  | 129.64      | 111.80   |
| 1   | E     | 120 | ARG  | CG-CD-NE   | 8.46  | 129.57      | 111.80   |
| 1   | J     | 22  | GLN  | CA-CB-CG   | 8.40  | 131.89      | 113.40   |
| 1   | C     | 11  | ARG  | NE-CZ-NH1  | -8.38 | 116.11      | 120.30   |
| 1   | C     | 25  | ARG  | NE-CZ-NH1  | 8.36  | 124.48      | 120.30   |
| 1   | H     | 179 | LYS  | CD-CE-NZ   | 8.34  | 130.89      | 111.70   |
| 1   | M     | 203 | LYS  | CB-CG-CD   | -8.23 | 90.19       | 111.60   |
| 1   | D     | 131 | GLU  | CG-CD-OE2  | 8.14  | 134.57      | 118.30   |
| 1   | C     | 25  | ARG  | NE-CZ-NH2  | -8.14 | 116.23      | 120.30   |
| 1   | K     | 203 | LYS  | CG-CD-CE   | 8.08  | 136.15      | 111.90   |
| 1   | J     | 25  | ARG  | CG-CD-NE   | 7.96  | 128.52      | 111.80   |
| 1   | M     | 23  | ARG  | NE-CZ-NH1  | -7.95 | 116.33      | 120.30   |
| 1   | D     | 23  | ARG  | CD-NE-CZ   | 7.88  | 134.63      | 123.60   |
| 1   | H     | 24  | ASP  | CB-CG-OD1  | -7.85 | 111.23      | 118.30   |
| 1   | G     | 25  | ARG  | CG-CD-NE   | 7.80  | 128.18      | 111.80   |
| 1   | J     | 23  | ARG  | NE-CZ-NH1  | -7.79 | 116.41      | 120.30   |
| 1   | F     | 186 | SER  | CA-CB-OG   | 7.78  | 132.19      | 111.20   |
| 1   | I     | 131 | GLU  | CG-CD-OE2  | 7.72  | 133.74      | 118.30   |
| 1   | D     | 131 | GLU  | OE1-CD-OE2 | -7.57 | 114.22      | 123.30   |
| 1   | F     | 185 | TYR  | CB-CG-CD2  | -7.47 | 116.52      | 121.00   |
| 1   | B     | 25  | ARG  | NE-CZ-NH2  | 7.41  | 124.00      | 120.30   |
| 1   | D     | 23  | ARG  | NH1-CZ-NH2 | -7.32 | 111.34      | 119.40   |
| 1   | M     | 120 | ARG  | CB-CG-CD   | 7.29  | 130.56      | 111.60   |
| 1   | N     | 120 | ARG  | CG-CD-NE   | 7.27  | 127.08      | 111.80   |
| 1   | I     | 203 | LYS  | CD-CE-NZ   | 7.20  | 128.27      | 111.70   |
| 1   | H     | 23  | ARG  | NE-CZ-NH1  | -7.14 | 116.73      | 120.30   |
| 1   | K     | 203 | LYS  | CB-CG-CD   | -7.03 | 93.33       | 111.60   |
| 1   | L     | 23  | ARG  | NE-CZ-NH1  | -6.99 | 116.80      | 120.30   |
| 1   | L     | 23  | ARG  | CD-NE-CZ   | -6.89 | 113.95      | 123.60   |
| 1   | B     | 25  | ARG  | CD-NE-CZ   | -6.86 | 114.00      | 123.60   |
| 1   | F     | 23  | ARG  | NH1-CZ-NH2 | -6.81 | 111.91      | 119.40   |
| 1   | C     | 11  | ARG  | NE-CZ-NH2  | 6.78  | 123.69      | 120.30   |
| 1   | D     | 120 | ARG  | CB-CG-CD   | 6.78  | 129.22      | 111.60   |
| 1   | J     | 164 | TYR  | CB-CG-CD1  | 6.77  | 125.06      | 121.00   |

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| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1   | N     | 139 | LYS  | CB-CG-CD  | 6.74  | 129.12      | 111.60   |
| 1   | K     | 120 | ARG  | CG-CD-NE  | 6.72  | 125.90      | 111.80   |
| 1   | M     | 203 | LYS  | CD-CE-NZ  | 6.67  | 127.05      | 111.70   |
| 1   | M     | 25  | ARG  | NE-CZ-NH1 | 6.67  | 123.63      | 120.30   |
| 1   | N     | 23  | ARG  | CB-CG-CD  | 6.65  | 128.88      | 111.60   |
| 1   | H     | 131 | GLU  | CG-CD-OE2 | 6.62  | 131.54      | 118.30   |
| 1   | I     | 23  | ARG  | CB-CA-C   | -6.49 | 97.41       | 110.40   |
| 1   | M     | 11  | ARG  | NE-CZ-NH1 | -6.47 | 117.07      | 120.30   |
| 1   | A     | 25  | ARG  | CB-CG-CD  | -6.43 | 94.87       | 111.60   |
| 1   | E     | 11  | ARG  | NE-CZ-NH1 | -6.32 | 117.14      | 120.30   |
| 1   | M     | 23  | ARG  | CA-CB-CG  | 6.26  | 127.17      | 113.40   |
| 1   | N     | 11  | ARG  | NE-CZ-NH1 | -6.26 | 117.17      | 120.30   |
| 1   | J     | 120 | ARG  | CB-CG-CD  | 6.25  | 127.86      | 111.60   |
| 1   | I     | 203 | LYS  | CG-CD-CE  | 6.17  | 130.41      | 111.90   |
| 1   | H     | 120 | ARG  | CB-CG-CD  | 6.16  | 127.60      | 111.60   |
| 1   | B     | 190 | GLU  | CA-CB-CG  | -6.14 | 99.89       | 113.40   |
| 1   | H     | 25  | ARG  | NE-CZ-NH2 | 6.14  | 123.37      | 120.30   |
| 1   | L     | 25  | ARG  | CB-CG-CD  | -6.11 | 95.71       | 111.60   |
| 1   | I     | 25  | ARG  | CB-CG-CD  | -6.11 | 95.72       | 111.60   |
| 1   | N     | 25  | ARG  | CA-CB-CG  | 6.10  | 126.82      | 113.40   |
| 1   | C     | 23  | ARG  | CA-CB-CG  | 6.01  | 126.61      | 113.40   |
| 1   | L     | 131 | GLU  | CA-CB-CG  | 5.89  | 126.37      | 113.40   |
| 1   | K     | 11  | ARG  | NE-CZ-NH2 | 5.86  | 123.23      | 120.30   |
| 1   | O     | 25  | ARG  | CB-CG-CD  | -5.83 | 96.43       | 111.60   |
| 1   | H     | 131 | GLU  | CG-CD-OE1 | -5.79 | 106.72      | 118.30   |
| 1   | M     | 131 | GLU  | CA-CB-CG  | 5.79  | 126.13      | 113.40   |
| 1   | H     | 120 | ARG  | CA-CB-CG  | 5.75  | 126.06      | 113.40   |
| 1   | H     | 131 | GLU  | N-CA-CB   | 5.75  | 120.95      | 110.60   |
| 1   | C     | 23  | ARG  | NE-CZ-NH1 | -5.75 | 117.43      | 120.30   |
| 1   | D     | 25  | ARG  | CB-CG-CD  | 5.75  | 126.54      | 111.60   |
| 1   | F     | 23  | ARG  | CG-CD-NE  | 5.73  | 123.83      | 111.80   |
| 1   | L     | 120 | ARG  | NE-CZ-NH1 | -5.65 | 117.47      | 120.30   |
| 1   | N     | 23  | ARG  | CD-NE-CZ  | 5.64  | 131.50      | 123.60   |
| 1   | N     | 25  | ARG  | CB-CA-C   | -5.62 | 99.15       | 110.40   |
| 1   | C     | 120 | ARG  | NE-CZ-NH1 | -5.62 | 117.49      | 120.30   |
| 1   | A     | 23  | ARG  | CD-NE-CZ  | -5.59 | 115.78      | 123.60   |
| 1   | A     | 22  | GLN  | N-CA-C    | -5.58 | 95.92       | 111.00   |
| 1   | H     | 25  | ARG  | CG-CD-NE  | 5.56  | 123.48      | 111.80   |
| 1   | G     | 23  | ARG  | CB-CA-C   | -5.55 | 99.30       | 110.40   |
| 1   | C     | 25  | ARG  | CD-NE-CZ  | 5.52  | 131.33      | 123.60   |
| 1   | K     | 11  | ARG  | NE-CZ-NH1 | -5.50 | 117.55      | 120.30   |
| 1   | E     | 25  | ARG  | NE-CZ-NH2 | 5.47  | 123.04      | 120.30   |

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| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1   | O     | 25  | ARG  | NE-CZ-NH2 | 5.45  | 123.02      | 120.30   |
| 1   | C     | 23  | ARG  | CB-CA-C   | -5.39 | 99.62       | 110.40   |
| 1   | N     | 23  | ARG  | CA-CB-CG  | 5.38  | 125.23      | 113.40   |
| 1   | O     | 120 | ARG  | NE-CZ-NH1 | -5.34 | 117.63      | 120.30   |
| 1   | I     | 185 | TYR  | CB-CG-CD2 | -5.29 | 117.82      | 121.00   |
| 1   | D     | 120 | ARG  | CA-CB-CG  | 5.24  | 124.94      | 113.40   |
| 1   | A     | 25  | ARG  | CG-CD-NE  | 5.24  | 122.81      | 111.80   |
| 1   | O     | 23  | ARG  | CD-NE-CZ  | -5.20 | 116.32      | 123.60   |
| 1   | L     | 131 | GLU  | CG-CD-OE1 | -5.11 | 108.09      | 118.30   |
| 1   | I     | 131 | GLU  | CG-CD-OE1 | -5.08 | 108.14      | 118.30   |
| 1   | B     | 23  | ARG  | CD-NE-CZ  | -5.05 | 116.53      | 123.60   |
| 1   | F     | 162 | SER  | C-N-CA    | -5.04 | 109.11      | 121.70   |
| 1   | J     | 11  | ARG  | NE-CZ-NH1 | -5.04 | 117.78      | 120.30   |
| 1   | I     | 120 | ARG  | NE-CZ-NH1 | -5.03 | 117.79      | 120.30   |

There are no chirality outliers.

All (12) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group     |
|-----|-------|-----|------|-----------|
| 1   | A     | 148 | ARG  | Sidechain |
| 1   | D     | 23  | ARG  | Sidechain |
| 1   | F     | 185 | TYR  | Sidechain |
| 1   | F     | 23  | ARG  | Sidechain |
| 1   | F     | 25  | ARG  | Sidechain |
| 1   | F     | 40  | GLU  | Sidechain |
| 1   | G     | 25  | ARG  | Sidechain |
| 1   | G     | 69  | HIS  | Sidechain |
| 1   | M     | 25  | ARG  | Sidechain |
| 1   | N     | 120 | ARG  | Sidechain |
| 1   | N     | 23  | ARG  | Sidechain |
| 1   | O     | 170 | ARG  | Sidechain |

## 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     | 1586  | 0        | 1545     | 26      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | B     | 1586  | 0        | 1545     | 28      | 0            |
| 1   | C     | 1586  | 0        | 1545     | 22      | 0            |
| 1   | D     | 1578  | 0        | 1530     | 18      | 0            |
| 1   | E     | 1586  | 0        | 1545     | 35      | 0            |
| 1   | F     | 1607  | 0        | 1564     | 34      | 0            |
| 1   | G     | 1591  | 0        | 1557     | 29      | 0            |
| 1   | H     | 1586  | 0        | 1545     | 21      | 0            |
| 1   | I     | 1568  | 0        | 1532     | 26      | 0            |
| 1   | J     | 1586  | 0        | 1545     | 25      | 0            |
| 1   | K     | 1571  | 0        | 1530     | 20      | 0            |
| 1   | L     | 1591  | 0        | 1549     | 21      | 0            |
| 1   | M     | 1566  | 0        | 1535     | 30      | 0            |
| 1   | N     | 1586  | 0        | 1545     | 21      | 0            |
| 1   | O     | 1586  | 0        | 1545     | 20      | 0            |
| 2   | A     | 16    | 0        | 22       | 0       | 0            |
| 2   | B     | 16    | 0        | 22       | 2       | 0            |
| 2   | C     | 16    | 0        | 22       | 1       | 0            |
| 2   | D     | 16    | 0        | 22       | 3       | 0            |
| 2   | E     | 16    | 0        | 22       | 2       | 0            |
| 2   | G     | 16    | 0        | 22       | 1       | 0            |
| 2   | H     | 16    | 0        | 22       | 3       | 0            |
| 2   | I     | 16    | 0        | 22       | 5       | 0            |
| 3   | D     | 14    | 0        | 13       | 0       | 0            |
| 3   | G     | 14    | 0        | 12       | 0       | 0            |
| 4   | A     | 10    | 0        | 0        | 1       | 0            |
| 4   | B     | 10    | 0        | 0        | 1       | 0            |
| 4   | C     | 5     | 0        | 0        | 0       | 0            |
| 4   | D     | 10    | 0        | 0        | 0       | 0            |
| 4   | E     | 25    | 0        | 0        | 1       | 0            |
| 4   | F     | 10    | 0        | 0        | 0       | 0            |
| 4   | G     | 15    | 0        | 0        | 0       | 0            |
| 4   | I     | 5     | 0        | 0        | 0       | 0            |
| 4   | J     | 5     | 0        | 0        | 1       | 0            |
| 4   | M     | 5     | 0        | 0        | 0       | 0            |
| 5   | A     | 8     | 0        | 6        | 0       | 0            |
| 5   | D     | 4     | 0        | 3        | 0       | 0            |
| 5   | F     | 16    | 0        | 12       | 1       | 0            |
| 5   | G     | 12    | 0        | 9        | 0       | 0            |
| 5   | J     | 4     | 0        | 3        | 0       | 0            |
| 5   | O     | 4     | 0        | 3        | 0       | 0            |
| 6   | A     | 19    | 0        | 8        | 2       | 0            |
| 6   | B     | 19    | 0        | 8        | 0       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 6   | E     | 19    | 0        | 8        | 1       | 0            |
| 6   | I     | 19    | 0        | 8        | 1       | 0            |
| 6   | K     | 19    | 0        | 8        | 2       | 0            |
| 6   | M     | 19    | 0        | 8        | 2       | 0            |
| 7   | A     | 1     | 0        | 0        | 0       | 0            |
| 7   | K     | 1     | 0        | 0        | 0       | 0            |
| 7   | L     | 1     | 0        | 0        | 0       | 0            |
| 7   | N     | 1     | 0        | 0        | 0       | 0            |
| 8   | J     | 6     | 0        | 8        | 0       | 0            |
| 9   | A     | 28    | 0        | 0        | 1       | 0            |
| 9   | B     | 19    | 0        | 0        | 0       | 0            |
| 9   | C     | 22    | 0        | 0        | 1       | 0            |
| 9   | D     | 27    | 0        | 0        | 2       | 0            |
| 9   | E     | 23    | 0        | 0        | 1       | 0            |
| 9   | F     | 31    | 0        | 0        | 0       | 0            |
| 9   | G     | 28    | 0        | 0        | 0       | 0            |
| 9   | H     | 26    | 0        | 0        | 1       | 0            |
| 9   | I     | 21    | 0        | 0        | 0       | 0            |
| 9   | J     | 21    | 0        | 0        | 1       | 0            |
| 9   | K     | 26    | 0        | 0        | 2       | 0            |
| 9   | L     | 24    | 0        | 0        | 0       | 0            |
| 9   | M     | 21    | 0        | 0        | 1       | 0            |
| 9   | N     | 5     | 0        | 0        | 0       | 0            |
| 9   | O     | 13    | 0        | 0        | 0       | 0            |
| All | All   | 24523 | 0        | 23450    | 332     | 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 7.

All (332) 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:E:148:ARG:CZ  | 1:M:25:ARG:HH22  | 1.57                     | 1.18              |
| 1:E:148:ARG:CZ  | 1:M:25:ARG:NH2   | 2.21                     | 1.02              |
| 1:A:153:ASP:OD1 | 1:F:179:LYS:NZ   | 1.93                     | 1.01              |
| 1:E:65:TRP:HB3  | 2:E:302:1PE:H261 | 1.43                     | 0.98              |
| 1:D:23:ARG:HG3  | 1:D:23:ARG:O     | 1.67                     | 0.93              |
| 1:E:148:ARG:HD3 | 1:M:25:ARG:CZ    | 2.04                     | 0.88              |
| 1:E:148:ARG:HD3 | 1:M:25:ARG:NH2   | 1.93                     | 0.84              |
| 1:J:30:SER:HB2  | 1:J:57:THR:HG22  | 1.61                     | 0.82              |
| 1:I:65:TRP:HB3  | 2:I:302:1PE:H151 | 1.62                     | 0.82              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:9:ASN:HD22   | 2:E:302:1PE:H162 | 1.44                     | 0.82              |
| 1:H:15:ARG:NH2   | 1:I:4:ALA:O      | 2.13                     | 0.81              |
| 1:H:22:GLN:O     | 1:H:23:ARG:HB3   | 1.81                     | 0.80              |
| 1:F:23:ARG:HG3   | 1:F:25:ARG:HD2   | 1.63                     | 0.80              |
| 1:E:148:ARG:NE   | 1:M:25:ARG:HH22  | 1.78                     | 0.80              |
| 1:E:148:ARG:NE   | 1:M:25:ARG:NH2   | 2.31                     | 0.77              |
| 1:K:170:ARG:HH21 | 1:K:203:LYS:HE2  | 1.50                     | 0.77              |
| 1:F:160:ASP:HB3  | 1:F:163:GLU:HB2  | 1.67                     | 0.77              |
| 1:C:22:GLN:O     | 1:C:23:ARG:HB2   | 1.82                     | 0.77              |
| 1:L:23:ARG:HB3   | 1:L:25:ARG:HG3   | 1.66                     | 0.77              |
| 1:M:170:ARG:HH21 | 1:M:203:LYS:HE2  | 1.50                     | 0.76              |
| 1:G:91:ALA:HB1   | 1:G:119:GLN:HE21 | 1.51                     | 0.75              |
| 1:N:22:GLN:O     | 1:N:23:ARG:HB3   | 1.86                     | 0.74              |
| 1:E:148:ARG:CD   | 1:M:25:ARG:NH2   | 2.50                     | 0.74              |
| 1:F:23:ARG:HH11  | 1:F:23:ARG:HG2   | 1.52                     | 0.74              |
| 1:G:23:ARG:HB2   | 1:G:25:ARG:HD2   | 1.69                     | 0.73              |
| 1:H:130:THR:HG22 | 1:H:132:SER:H    | 1.53                     | 0.73              |
| 1:M:130:THR:HG22 | 1:M:132:SER:H    | 1.55                     | 0.72              |
| 1:D:130:THR:HG22 | 1:D:132:SER:H    | 1.55                     | 0.71              |
| 1:E:148:ARG:NH1  | 1:M:25:ARG:NH2   | 2.38                     | 0.71              |
| 1:L:61:ARG:NH1   | 1:L:108:ASP:O    | 2.24                     | 0.71              |
| 1:G:15:ARG:NH2   | 1:G:17:ASP:OD2   | 2.23                     | 0.70              |
| 1:M:22:GLN:O     | 1:M:23:ARG:HB3   | 1.89                     | 0.70              |
| 1:D:148:ARG:NH1  | 9:D:407:HOH:O    | 2.25                     | 0.69              |
| 1:I:1:LEU:HD11   | 2:I:302:1PE:H161 | 1.75                     | 0.69              |
| 1:A:23:ARG:HB3   | 1:A:25:ARG:HG3   | 1.75                     | 0.68              |
| 1:B:130:THR:HG22 | 1:B:132:SER:H    | 1.58                     | 0.67              |
| 1:C:202:ARG:NH2  | 9:C:412:HOH:O    | 2.17                     | 0.67              |
| 1:G:22:GLN:O     | 1:G:23:ARG:HB2   | 1.94                     | 0.67              |
| 1:I:130:THR:HG22 | 1:I:132:SER:H    | 1.58                     | 0.67              |
| 1:E:148:ARG:CD   | 1:M:25:ARG:CZ    | 2.72                     | 0.67              |
| 1:O:130:THR:HG22 | 1:O:132:SER:H    | 1.58                     | 0.67              |
| 1:F:130:THR:HG22 | 1:F:132:SER:H    | 1.60                     | 0.67              |
| 1:A:181:ASN:HA   | 1:F:182:SER:O    | 1.94                     | 0.67              |
| 1:F:22:GLN:O     | 1:F:23:ARG:HB3   | 1.94                     | 0.67              |
| 1:K:130:THR:HG22 | 1:K:132:SER:H    | 1.61                     | 0.66              |
| 1:K:15:ARG:NH2   | 1:L:4:ALA:O      | 2.28                     | 0.66              |
| 6:M:301:NSE:H5   | 1:N:53:TRP:CH2   | 2.30                     | 0.66              |
| 1:F:183:VAL:CG1  | 1:F:185:TYR:HE1  | 2.08                     | 0.66              |
| 1:G:124:ASP:HB2  | 1:H:168:TYR:CE1  | 2.31                     | 0.65              |
| 1:O:187:CYS:SG   | 1:O:188:CYS:N    | 2.69                     | 0.65              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:130:THR:HG22 | 1:G:132:SER:H    | 1.61                     | 0.65              |
| 1:J:130:THR:HG22 | 1:J:132:SER:H    | 1.62                     | 0.65              |
| 1:C:130:THR:HG22 | 1:C:132:SER:H    | 1.61                     | 0.65              |
| 1:M:170:ARG:NH2  | 1:M:203:LYS:HE2  | 2.11                     | 0.65              |
| 1:C:65:TRP:HB3   | 2:C:301:1PE:H261 | 1.78                     | 0.65              |
| 1:F:187:CYS:SG   | 1:F:188:CYS:N    | 2.70                     | 0.64              |
| 1:N:130:THR:HG22 | 1:N:132:SER:H    | 1.61                     | 0.64              |
| 1:H:61:ARG:NH2   | 9:H:403:HOH:O    | 2.29                     | 0.64              |
| 1:L:130:THR:HG22 | 1:L:132:SER:H    | 1.62                     | 0.64              |
| 1:F:23:ARG:CG    | 1:F:25:ARG:HD2   | 2.28                     | 0.64              |
| 1:B:129:ASP:OD1  | 1:B:203:LYS:HE3  | 1.98                     | 0.64              |
| 1:A:130:THR:HG22 | 1:A:132:SER:H    | 1.63                     | 0.63              |
| 1:O:23:ARG:HB3   | 1:O:25:ARG:HG3   | 1.80                     | 0.63              |
| 1:J:25:ARG:HH11  | 1:J:25:ARG:HG2   | 1.62                     | 0.63              |
| 1:A:22:GLN:O     | 1:A:23:ARG:HB3   | 1.99                     | 0.62              |
| 1:O:22:GLN:O     | 1:O:23:ARG:HB3   | 2.00                     | 0.62              |
| 1:K:22:GLN:O     | 1:K:25:ARG:HG3   | 2.00                     | 0.62              |
| 1:O:129:ASP:OD1  | 1:O:203:LYS:HE3  | 1.98                     | 0.62              |
| 1:D:168:TYR:CE1  | 1:C:124:ASP:HB2  | 2.35                     | 0.62              |
| 1:I:14:SER:O     | 1:I:16:PRO:HD3   | 2.00                     | 0.62              |
| 1:L:23:ARG:O     | 1:L:24:ASP:HB2   | 2.00                     | 0.62              |
| 1:K:4:ALA:O      | 1:O:15:ARG:NH1   | 2.32                     | 0.62              |
| 6:M:301:NSE:H5   | 1:N:53:TRP:CZ3   | 2.35                     | 0.62              |
| 1:B:22:GLN:O     | 1:B:23:ARG:HB3   | 2.00                     | 0.61              |
| 6:K:301:NSE:H8   | 1:L:104:ARG:HB2  | 1.81                     | 0.61              |
| 1:C:187:CYS:SG   | 1:C:188:CYS:N    | 2.74                     | 0.60              |
| 1:A:181:ASN:OD1  | 1:F:182:SER:HB3  | 2.01                     | 0.60              |
| 1:L:22:GLN:O     | 1:L:23:ARG:HB3   | 2.01                     | 0.60              |
| 1:N:23:ARG:O     | 1:N:24:ASP:HB2   | 2.01                     | 0.60              |
| 1:D:162:SER:O    | 9:D:413:HOH:O    | 2.17                     | 0.60              |
| 1:A:15:ARG:NH2   | 1:A:17:ASP:OD2   | 2.35                     | 0.59              |
| 1:L:94:LYS:HE3   | 1:M:97:VAL:O     | 2.01                     | 0.59              |
| 1:G:44:ILE:HG22  | 1:H:170:ARG:HD2  | 1.84                     | 0.59              |
| 1:G:23:ARG:O     | 1:G:24:ASP:HB2   | 2.03                     | 0.59              |
| 1:D:170:ARG:HD2  | 1:C:44:ILE:HG22  | 1.84                     | 0.59              |
| 1:F:160:ASP:OD1  | 1:L:189:PRO:HB3  | 2.03                     | 0.58              |
| 1:B:137:ARG:NH1  | 4:B:303:SO4:O2   | 2.33                     | 0.58              |
| 1:E:21:THR:HG22  | 1:E:25:ARG:O     | 2.04                     | 0.58              |
| 1:L:21:THR:HG22  | 1:L:25:ARG:O     | 2.03                     | 0.58              |
| 1:L:10:ILE:O     | 1:L:14:SER:HB3   | 2.03                     | 0.58              |
| 1:N:21:THR:HG22  | 1:N:25:ARG:O     | 2.04                     | 0.57              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:23:ARG:CB    | 1:G:25:ARG:HD2   | 2.35                     | 0.57              |
| 1:E:148:ARG:CD   | 1:M:25:ARG:NH1   | 2.67                     | 0.57              |
| 1:M:124:ASP:HB2  | 1:N:168:TYR:CE1  | 2.40                     | 0.56              |
| 1:L:187:CYS:SG   | 1:L:188:CYS:N    | 2.78                     | 0.56              |
| 1:B:23:ARG:O     | 1:B:24:ASP:HB2   | 2.05                     | 0.56              |
| 1:B:187:CYS:SG   | 1:B:188:CYS:N    | 2.79                     | 0.56              |
| 1:G:91:ALA:HB1   | 1:G:119:GLN:NE2  | 2.19                     | 0.56              |
| 1:A:21:THR:HG22  | 1:A:25:ARG:O     | 2.05                     | 0.56              |
| 1:B:23:ARG:HB3   | 1:B:25:ARG:HG3   | 1.87                     | 0.56              |
| 1:G:60:ASP:OD1   | 1:G:62:THR:HB    | 2.06                     | 0.56              |
| 1:F:183:VAL:CG1  | 1:F:185:TYR:CE1  | 2.89                     | 0.55              |
| 1:D:23:ARG:O     | 1:D:24:ASP:HB2   | 2.06                     | 0.55              |
| 1:A:23:ARG:O     | 1:A:24:ASP:HB2   | 2.08                     | 0.54              |
| 1:H:15:ARG:HH21  | 1:I:4:ALA:HA     | 1.72                     | 0.54              |
| 1:K:21:THR:HG22  | 1:K:25:ARG:O     | 2.08                     | 0.54              |
| 1:E:148:ARG:CG   | 1:M:25:ARG:NH1   | 2.70                     | 0.54              |
| 1:C:23:ARG:O     | 1:C:24:ASP:HB2   | 2.08                     | 0.54              |
| 1:O:23:ARG:O     | 1:O:24:ASP:HB2   | 2.07                     | 0.54              |
| 1:I:6:ILE:HG23   | 2:I:302:1PE:H152 | 1.88                     | 0.54              |
| 1:K:170:ARG:NH2  | 1:K:203:LYS:HE2  | 2.19                     | 0.54              |
| 1:F:14:SER:OG    | 1:F:80:SER:O     | 2.17                     | 0.54              |
| 1:I:21:THR:HG22  | 1:I:25:ARG:O     | 2.08                     | 0.54              |
| 1:F:183:VAL:HG12 | 1:F:185:TYR:CE1  | 2.42                     | 0.54              |
| 1:G:21:THR:HG22  | 1:G:25:ARG:O     | 2.08                     | 0.54              |
| 1:O:21:THR:HG22  | 1:O:25:ARG:O     | 2.07                     | 0.54              |
| 1:E:148:ARG:HG3  | 1:M:25:ARG:NH1   | 2.22                     | 0.54              |
| 1:C:11:ARG:O     | 1:C:14:SER:HB3   | 2.08                     | 0.53              |
| 1:L:22:GLN:O     | 1:L:23:ARG:CB    | 2.55                     | 0.53              |
| 6:A:301:NSE:H5   | 1:B:53:TRP:CZ3   | 2.43                     | 0.53              |
| 1:C:14:SER:C     | 1:C:16:PRO:HD3   | 2.28                     | 0.53              |
| 1:D:21:THR:HG22  | 1:D:25:ARG:O     | 2.07                     | 0.53              |
| 1:K:124:ASP:HB2  | 1:L:168:TYR:CE1  | 2.43                     | 0.53              |
| 1:I:9:ASN:ND2    | 2:I:302:1PE:H162 | 2.24                     | 0.53              |
| 1:E:148:ARG:NH1  | 1:M:25:ARG:HH21  | 2.05                     | 0.53              |
| 1:H:22:GLN:O     | 1:H:25:ARG:HG3   | 2.09                     | 0.53              |
| 1:I:23:ARG:HG2   | 1:I:23:ARG:HH11  | 1.72                     | 0.53              |
| 1:B:9:ASN:HB3    | 2:B:302:1PE:H151 | 1.90                     | 0.52              |
| 1:G:187:CYS:C    | 1:G:188:CYS:SG   | 2.87                     | 0.52              |
| 1:M:14:SER:HB3   | 9:M:401:HOH:O    | 2.08                     | 0.52              |
| 1:M:23:ARG:HG2   | 1:M:25:ARG:HE    | 1.73                     | 0.52              |
| 1:I:22:GLN:O     | 1:I:23:ARG:HB2   | 2.07                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:184:THR:O    | 1:F:186:SER:HB3  | 2.09                     | 0.52              |
| 6:K:301:NSE:H5   | 1:L:53:TRP:CH2   | 2.44                     | 0.52              |
| 1:N:94:LYS:HE3   | 1:O:97:VAL:O     | 2.07                     | 0.52              |
| 1:A:22:GLN:O     | 1:A:23:ARG:CB    | 2.57                     | 0.52              |
| 1:I:22:GLN:O     | 1:I:25:ARG:HG3   | 2.09                     | 0.52              |
| 1:M:143:TRP:CZ2  | 1:N:99:THR:HG21  | 2.45                     | 0.52              |
| 1:E:124:ASP:HB2  | 1:A:168:TYR:CE1  | 2.44                     | 0.52              |
| 1:J:21:THR:HG22  | 1:J:25:ARG:O     | 2.10                     | 0.52              |
| 1:C:21:THR:HG22  | 1:C:25:ARG:O     | 2.10                     | 0.52              |
| 1:F:129:ASP:OD1  | 1:F:203:LYS:HE3  | 2.10                     | 0.52              |
| 1:H:21:THR:HG22  | 1:H:25:ARG:O     | 2.09                     | 0.51              |
| 1:I:23:ARG:HB2   | 1:I:25:ARG:HG3   | 1.92                     | 0.51              |
| 1:M:22:GLN:O     | 1:M:25:ARG:HG3   | 2.11                     | 0.51              |
| 1:B:21:THR:HG22  | 1:B:25:ARG:O     | 2.10                     | 0.51              |
| 1:F:167:GLN:NE2  | 5:F:306:ACT:OXT  | 2.44                     | 0.51              |
| 1:C:15:ARG:NH2   | 1:C:17:ASP:OD2   | 2.43                     | 0.51              |
| 1:H:137:ARG:HD2  | 1:H:196:GLU:OE1  | 2.10                     | 0.51              |
| 1:D:9:ASN:HB2    | 2:D:301:1PE:H162 | 1.94                     | 0.50              |
| 1:G:68:SER:OG    | 1:G:69:HIS:N     | 2.44                     | 0.50              |
| 1:I:124:ASP:HB2  | 1:J:168:TYR:CE1  | 2.46                     | 0.50              |
| 1:I:137:ARG:HD2  | 1:I:196:GLU:OE1  | 2.10                     | 0.50              |
| 1:A:84:PRO:HB2   | 1:A:86:LEU:HG    | 1.94                     | 0.50              |
| 1:A:137:ARG:HD2  | 1:A:196:GLU:OE1  | 2.11                     | 0.50              |
| 1:G:13:THR:HG21  | 2:G:301:1PE:H142 | 1.93                     | 0.50              |
| 1:F:21:THR:HG22  | 1:F:25:ARG:O     | 2.12                     | 0.50              |
| 1:E:22:GLN:O     | 1:E:25:ARG:HG3   | 2.12                     | 0.49              |
| 1:O:22:GLN:O     | 1:O:23:ARG:CB    | 2.60                     | 0.49              |
| 1:H:9:ASN:HB2    | 2:H:301:1PE:H161 | 1.92                     | 0.49              |
| 1:A:112:LEU:HD11 | 1:A:114:MET:HE2  | 1.94                     | 0.49              |
| 1:F:183:VAL:HG12 | 1:F:185:TYR:HE1  | 1.77                     | 0.49              |
| 1:J:190:GLU:HG3  | 9:J:412:HOH:O    | 2.12                     | 0.49              |
| 1:I:44:ILE:HG22  | 1:J:170:ARG:HD2  | 1.95                     | 0.49              |
| 1:L:137:ARG:HD2  | 1:L:196:GLU:OE1  | 2.13                     | 0.49              |
| 1:G:137:ARG:HD2  | 1:G:196:GLU:OE1  | 2.13                     | 0.49              |
| 1:A:180:LYS:O    | 1:F:182:SER:N    | 2.37                     | 0.49              |
| 1:J:137:ARG:HD2  | 1:J:196:GLU:OE1  | 2.13                     | 0.48              |
| 1:J:49:ASP:OD2   | 1:J:120:ARG:HD2  | 2.11                     | 0.48              |
| 1:F:137:ARG:HD2  | 1:F:196:GLU:OE1  | 2.13                     | 0.48              |
| 1:D:49:ASP:OD2   | 1:D:120:ARG:HD2  | 2.12                     | 0.48              |
| 1:E:137:ARG:HD2  | 1:E:196:GLU:OE1  | 2.14                     | 0.48              |
| 1:F:23:ARG:O     | 1:F:24:ASP:HB2   | 2.13                     | 0.48              |

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| Atom-1              | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|---------------------|------------------|--------------------------|-------------------|
| 1:E:23:ARG:HB3      | 1:E:25:ARG:HG3   | 1.94                     | 0.48              |
| 1:E:139:LYS:HE3     | 4:E:307:SO4:O4   | 2.14                     | 0.48              |
| 1:F:99:THR:HG21     | 1:J:143:TRP:CZ2  | 2.49                     | 0.47              |
| 1:N:22:GLN:O        | 1:N:25:ARG:HG2   | 2.14                     | 0.47              |
| 1:O:137:ARG:HD2     | 1:O:196:GLU:OE1  | 2.14                     | 0.47              |
| 6:A:301:NSE:H8      | 1:B:104:ARG:HB2  | 1.96                     | 0.47              |
| 1:B:41:VAL:HG13     | 1:B:125:VAL:HG11 | 1.97                     | 0.47              |
| 1:E:139:LYS:NZ      | 9:E:414:HOH:O    | 2.33                     | 0.47              |
| 1:D:22:GLN:O        | 1:D:23:ARG:HB3   | 2.14                     | 0.47              |
| 1:I:185:TYR:CD1     | 1:I:185:TYR:N    | 2.82                     | 0.47              |
| 1:K:99:THR:HG21     | 1:O:143:TRP:CZ2  | 2.49                     | 0.47              |
| 1:A:66:ASN:ND2      | 9:A:416:HOH:O    | 2.46                     | 0.47              |
| 1:H:23:ARG:O        | 1:H:23:ARG:HG3   | 2.14                     | 0.47              |
| 1:J:146:HIS:CD2     | 1:J:190:GLU:HG2  | 2.50                     | 0.47              |
| 1:O:10:ILE:O        | 1:O:14:SER:HB2   | 2.14                     | 0.47              |
| 1:B:146:HIS:CE1     | 1:B:190:GLU:OE1  | 2.68                     | 0.47              |
| 1:K:137:ARG:HD2     | 1:K:196:GLU:OE1  | 2.14                     | 0.47              |
| 1:B:15:ARG:N        | 1:B:16:PRO:HD3   | 2.29                     | 0.47              |
| 1:J:84:PRO:HB2      | 1:J:86:LEU:HG    | 1.96                     | 0.47              |
| 1:B:137:ARG:HD2     | 1:B:196:GLU:OE1  | 2.14                     | 0.47              |
| 1:D:101:GLN:OE1     | 1:D:113:TYR:OH   | 2.31                     | 0.47              |
| 1:G:112[A]:LEU:HD11 | 1:G:114:MET:HE2  | 1.97                     | 0.47              |
| 1:N:137:ARG:HD2     | 1:N:196:GLU:OE1  | 2.14                     | 0.47              |
| 1:J:72:ASP:N        | 4:J:301:SO4:O1   | 2.26                     | 0.47              |
| 1:K:84:PRO:HB2      | 1:K:86:LEU:HG    | 1.96                     | 0.47              |
| 1:K:168:TYR:CE1     | 1:O:124:ASP:HB2  | 2.50                     | 0.46              |
| 1:A:137:ARG:NH2     | 4:A:303:SO4:O1   | 2.36                     | 0.46              |
| 1:L:41:VAL:HG13     | 1:L:125:VAL:HG11 | 1.97                     | 0.46              |
| 1:O:101:GLN:OE1     | 1:O:113:TYR:OH   | 2.29                     | 0.46              |
| 1:E:129:ASP:OD1     | 1:E:203:LYS:HE3  | 2.14                     | 0.46              |
| 1:F:101:GLN:OE1     | 1:F:113:TYR:OH   | 2.28                     | 0.46              |
| 1:F:41:VAL:HG13     | 1:F:125:VAL:HG11 | 1.97                     | 0.46              |
| 1:H:49:ASP:OD2      | 1:H:120:ARG:HD2  | 2.16                     | 0.46              |
| 1:J:146:HIS:CG      | 1:J:190:GLU:HG2  | 2.50                     | 0.46              |
| 1:N:84:PRO:HB2      | 1:N:86:LEU:HG    | 1.96                     | 0.46              |
| 1:A:185:TYR:HA      | 1:F:186:SER:HB3  | 1.97                     | 0.46              |
| 1:C:137:ARG:HD2     | 1:C:196:GLU:OE1  | 2.14                     | 0.46              |
| 2:D:301:1PE:OH2     | 2:D:301:1PE:H232 | 2.16                     | 0.46              |
| 1:H:41:VAL:HG13     | 1:H:125:VAL:HG11 | 1.97                     | 0.46              |
| 1:J:10:ILE:O        | 1:J:14:SER:HB2   | 2.16                     | 0.46              |
| 1:I:185:TYR:HD1     | 1:I:185:TYR:N    | 2.13                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:91:ALA:CB    | 1:G:119:GLN:NE2  | 2.79                     | 0.46              |
| 1:L:185:TYR:CD1  | 1:L:185:TYR:N    | 2.84                     | 0.46              |
| 1:J:23:ARG:O     | 1:J:24:ASP:HB2   | 2.14                     | 0.46              |
| 1:A:143:TRP:CZ2  | 1:B:99:THR:HG21  | 2.50                     | 0.45              |
| 1:E:59:SER:OG    | 1:E:110:GLU:OE2  | 2.32                     | 0.45              |
| 1:M:41:VAL:HG13  | 1:M:125:VAL:HG11 | 1.98                     | 0.45              |
| 1:M:137:ARG:HD2  | 1:M:196:GLU:OE1  | 2.17                     | 0.45              |
| 1:D:137:ARG:HD2  | 1:D:196:GLU:OE1  | 2.17                     | 0.45              |
| 1:D:41:VAL:HG13  | 1:D:125:VAL:HG11 | 1.98                     | 0.45              |
| 1:B:22:GLN:O     | 1:B:25:ARG:HG3   | 2.17                     | 0.45              |
| 1:B:23:ARG:HB3   | 1:B:25:ARG:CG    | 2.47                     | 0.45              |
| 1:F:67:SER:HA    | 1:F:70:SER:HB2   | 1.98                     | 0.45              |
| 1:G:101:GLN:OE1  | 1:G:113:TYR:OH   | 2.32                     | 0.45              |
| 1:N:41:VAL:HG13  | 1:N:125:VAL:HG11 | 1.97                     | 0.45              |
| 1:N:25:ARG:HH11  | 1:N:25:ARG:HD3   | 1.33                     | 0.45              |
| 1:A:41:VAL:HG13  | 1:A:125:VAL:HG11 | 1.98                     | 0.45              |
| 1:C:185:TYR:N    | 1:C:185:TYR:CD1  | 2.85                     | 0.45              |
| 1:C:84:PRO:HB2   | 1:C:86:LEU:HG    | 1.99                     | 0.45              |
| 1:K:41:VAL:HG13  | 1:K:125:VAL:HG11 | 1.97                     | 0.45              |
| 1:O:41:VAL:HG13  | 1:O:125:VAL:HG11 | 1.99                     | 0.45              |
| 1:E:101:GLN:OE1  | 1:E:113:TYR:OH   | 2.31                     | 0.45              |
| 1:C:101:GLN:OE1  | 1:C:113:TYR:OH   | 2.30                     | 0.45              |
| 1:G:99:THR:HG21  | 1:F:143:TRP:CZ2  | 2.52                     | 0.45              |
| 1:L:183:VAL:HG12 | 1:L:185:TYR:CE1  | 2.52                     | 0.45              |
| 1:E:22:GLN:O     | 1:E:23:ARG:CB    | 2.64                     | 0.44              |
| 1:I:84:PRO:HB2   | 1:I:86:LEU:HG    | 1.99                     | 0.44              |
| 1:J:25:ARG:HB3   | 1:J:26:PRO:HD2   | 1.99                     | 0.44              |
| 1:B:185:TYR:N    | 1:B:185:TYR:CD1  | 2.85                     | 0.44              |
| 1:B:183:VAL:HG12 | 1:B:185:TYR:CE1  | 2.52                     | 0.44              |
| 1:D:84:PRO:HB2   | 1:D:86:LEU:HG    | 1.99                     | 0.44              |
| 1:E:49:ASP:OD2   | 1:E:120:ARG:HD2  | 2.17                     | 0.44              |
| 1:E:187:CYS:SG   | 1:E:188:CYS:N    | 2.90                     | 0.44              |
| 1:O:25:ARG:HD3   | 1:O:25:ARG:HH11  | 1.40                     | 0.44              |
| 2:D:301:1PE:H131 | 2:D:301:1PE:H141 | 1.79                     | 0.44              |
| 1:K:193:GLU:O    | 9:K:408:HOH:O    | 2.21                     | 0.44              |
| 1:B:68:SER:OG    | 1:B:69:HIS:N     | 2.51                     | 0.44              |
| 1:K:139:LYS:NZ   | 9:K:426:HOH:O    | 2.39                     | 0.44              |
| 1:A:1:LEU:HB2    | 1:A:70:SER:OG    | 2.18                     | 0.44              |
| 1:D:67:SER:HA    | 1:D:70:SER:HB2   | 2.00                     | 0.44              |
| 1:G:185:TYR:N    | 1:G:185:TYR:CD1  | 2.86                     | 0.44              |
| 1:J:68:SER:OG    | 1:J:69:HIS:N     | 2.51                     | 0.44              |

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| Atom-1          | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|------------------|--------------------------|-------------------|
| 1:M:84:PRO:HB2  | 1:M:86:LEU:HG    | 1.99                     | 0.44              |
| 1:N:187:CYS:SG  | 1:N:188:CYS:N    | 2.91                     | 0.44              |
| 1:A:124:ASP:HB2 | 1:B:168:TYR:CE1  | 2.52                     | 0.43              |
| 1:H:84:PRO:HB2  | 1:H:86:LEU:HG    | 1.99                     | 0.43              |
| 1:B:84:PRO:HB2  | 1:B:86:LEU:HG    | 1.99                     | 0.43              |
| 1:D:99:THR:HG21 | 1:C:143:TRP:CZ2  | 2.54                     | 0.43              |
| 1:C:41:VAL:HG13 | 1:C:125:VAL:HG11 | 2.00                     | 0.43              |
| 1:E:67:SER:HA   | 1:E:70:SER:HB2   | 2.00                     | 0.43              |
| 1:J:41:VAL:HG13 | 1:J:125:VAL:HG11 | 1.99                     | 0.43              |
| 1:K:68:SER:OG   | 1:K:69:HIS:N     | 2.51                     | 0.43              |
| 1:B:101:GLN:OE1 | 1:B:113:TYR:OH   | 2.30                     | 0.43              |
| 1:B:22:GLN:O    | 1:B:23:ARG:CB    | 2.59                     | 0.43              |
| 1:C:67:SER:HA   | 1:C:70:SER:HB2   | 2.00                     | 0.43              |
| 1:E:41:VAL:HG13 | 1:E:125:VAL:HG11 | 1.99                     | 0.43              |
| 6:I:301:NSE:H8  | 1:J:104:ARG:HB2  | 2.00                     | 0.43              |
| 1:J:1:LEU:HB2   | 1:J:70:SER:OG    | 2.18                     | 0.43              |
| 1:O:67:SER:HA   | 1:O:70:SER:HB2   | 2.00                     | 0.43              |
| 1:I:41:VAL:HG13 | 1:I:125:VAL:HG11 | 2.00                     | 0.43              |
| 1:K:1:LEU:HB2   | 1:K:70:SER:OG    | 2.18                     | 0.43              |
| 1:M:1:LEU:HB2   | 1:M:70:SER:OG    | 2.18                     | 0.43              |
| 1:F:1:LEU:HB2   | 1:F:70:SER:OG    | 2.19                     | 0.43              |
| 1:H:25:ARG:HH11 | 1:H:25:ARG:HD3   | 1.39                     | 0.43              |
| 1:J:15:ARG:HB3  | 1:J:15:ARG:HE    | 1.77                     | 0.43              |
| 1:A:146:HIS:CE1 | 1:A:190:GLU:HG2  | 2.54                     | 0.42              |
| 1:E:1:LEU:HB2   | 1:E:70:SER:OG    | 2.19                     | 0.42              |
| 1:G:41:VAL:HG13 | 1:G:125:VAL:HG11 | 2.00                     | 0.42              |
| 1:F:99:THR:HG21 | 1:J:143:TRP:CE2  | 2.54                     | 0.42              |
| 1:H:101:GLN:OE1 | 1:H:113:TYR:OH   | 2.33                     | 0.42              |
| 1:L:84:PRO:HB2  | 1:L:86:LEU:HG    | 2.00                     | 0.42              |
| 1:H:67:SER:HA   | 1:H:70:SER:HB2   | 2.00                     | 0.42              |
| 1:E:68:SER:OG   | 1:E:69:HIS:N     | 2.52                     | 0.42              |
| 1:I:23:ARG:O    | 1:I:24:ASP:HB2   | 2.20                     | 0.42              |
| 1:L:67:SER:HA   | 1:L:70:SER:HB2   | 2.00                     | 0.42              |
| 1:F:84:PRO:HB2  | 1:F:86:LEU:HG    | 2.01                     | 0.42              |
| 1:I:67:SER:HA   | 1:I:70:SER:HB2   | 2.01                     | 0.42              |
| 1:J:67:SER:HA   | 1:J:70:SER:HB2   | 2.02                     | 0.42              |
| 1:N:129:ASP:OD1 | 1:N:203:LYS:HE3  | 2.19                     | 0.42              |
| 1:N:185:TYR:N   | 1:N:185:TYR:CD1  | 2.87                     | 0.42              |
| 1:B:1:LEU:HB2   | 1:B:70:SER:OG    | 2.19                     | 0.42              |
| 6:E:301:NSE:C2  | 1:A:114:MET:HB3  | 2.49                     | 0.42              |
| 1:K:187:CYS:SG  | 1:K:188:CYS:N    | 2.93                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:B:23:ARG:HD3   | 1:B:23:ARG:HH11  | 1.40                     | 0.42              |
| 1:D:149:GLU:CD   | 1:E:104:ARG:HH22 | 2.23                     | 0.42              |
| 2:H:301:1PE:H142 | 2:H:301:1PE:H151 | 1.81                     | 0.42              |
| 1:M:183:VAL:HG12 | 1:M:185:TYR:CE1  | 2.55                     | 0.42              |
| 1:O:84:PRO:HB2   | 1:O:86:LEU:HG    | 2.01                     | 0.42              |
| 1:C:112:LEU:HD11 | 1:C:114:MET:HE2  | 2.01                     | 0.41              |
| 1:G:67:SER:HA    | 1:G:70:SER:HB2   | 2.01                     | 0.41              |
| 1:G:1:LEU:HB2    | 1:G:70:SER:OG    | 2.20                     | 0.41              |
| 1:J:17:ASP:N     | 1:J:17:ASP:OD1   | 2.50                     | 0.41              |
| 1:B:63:LEU:O     | 2:B:302:1PE:H262 | 2.20                     | 0.41              |
| 1:C:1:LEU:HB2    | 1:C:70:SER:OG    | 2.21                     | 0.41              |
| 1:G:168:TYR:CE1  | 1:F:124:ASP:HB2  | 2.55                     | 0.41              |
| 1:H:143:TRP:CZ2  | 1:I:99:THR:HG21  | 2.55                     | 0.41              |
| 1:H:1:LEU:HB2    | 1:H:70:SER:OG    | 2.20                     | 0.41              |
| 1:M:185:TYR:N    | 1:M:185:TYR:CD1  | 2.88                     | 0.41              |
| 1:N:183:VAL:HG12 | 1:N:185:TYR:CE1  | 2.55                     | 0.41              |
| 1:E:84:PRO:HB2   | 1:E:86:LEU:HG    | 2.02                     | 0.41              |
| 1:G:84:PRO:HB2   | 1:G:86:LEU:HG    | 2.03                     | 0.41              |
| 1:K:101:GLN:OE1  | 1:K:113:TYR:OH   | 2.34                     | 0.41              |
| 1:C:183:VAL:HG12 | 1:C:185:TYR:CE1  | 2.56                     | 0.41              |
| 1:E:130:THR:HG22 | 1:E:132:SER:H    | 1.85                     | 0.41              |
| 1:G:183:VAL:HG12 | 1:G:185:TYR:CE1  | 2.56                     | 0.41              |
| 1:G:1:LEU:HA     | 1:G:1:LEU:HD23   | 1.90                     | 0.41              |
| 1:O:112:LEU:HD11 | 1:O:114:MET:HE2  | 2.02                     | 0.41              |
| 1:G:146:HIS:CE1  | 1:G:190:GLU:OE1  | 2.74                     | 0.41              |
| 1:N:67:SER:HA    | 1:N:70:SER:HB2   | 2.03                     | 0.41              |
| 1:A:68:SER:OG    | 1:A:69:HIS:N     | 2.54                     | 0.40              |
| 1:I:183:VAL:HG12 | 1:I:185:TYR:CE1  | 2.56                     | 0.40              |
| 1:N:1:LEU:HB2    | 1:N:70:SER:OG    | 2.21                     | 0.40              |
| 1:I:9:ASN:HD22   | 2:I:302:1PE:H162 | 1.84                     | 0.40              |
| 1:K:67:SER:HA    | 1:K:70:SER:HB2   | 2.03                     | 0.40              |
| 1:N:61:ARG:NH1   | 1:N:108:ASP:O    | 2.50                     | 0.40              |
| 1:F:23:ARG:HH11  | 1:F:23:ARG:CG    | 2.23                     | 0.40              |
| 2:H:301:1PE:H151 | 2:H:301:1PE:H162 | 1.66                     | 0.40              |
| 1:H:143:TRP:CE2  | 1:I:99:THR:HG21  | 2.56                     | 0.40              |
| 1:M:67:SER:HA    | 1:M:70:SER:HB2   | 2.02                     | 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     | 194/210 (92%)   | 187 (96%)  | 7 (4%)  | 0        | 100         | 100 |
| 1   | B     | 194/210 (92%)   | 189 (97%)  | 5 (3%)  | 0        | 100         | 100 |
| 1   | C     | 194/210 (92%)   | 185 (95%)  | 9 (5%)  | 0        | 100         | 100 |
| 1   | D     | 193/210 (92%)   | 186 (96%)  | 6 (3%)  | 1 (0%)   | 29          | 52  |
| 1   | E     | 194/210 (92%)   | 189 (97%)  | 5 (3%)  | 0        | 100         | 100 |
| 1   | F     | 197/210 (94%)   | 186 (94%)  | 11 (6%) | 0        | 100         | 100 |
| 1   | G     | 195/210 (93%)   | 189 (97%)  | 6 (3%)  | 0        | 100         | 100 |
| 1   | H     | 194/210 (92%)   | 187 (96%)  | 7 (4%)  | 0        | 100         | 100 |
| 1   | I     | 189/210 (90%)   | 185 (98%)  | 4 (2%)  | 0        | 100         | 100 |
| 1   | J     | 194/210 (92%)   | 186 (96%)  | 8 (4%)  | 0        | 100         | 100 |
| 1   | K     | 191/210 (91%)   | 186 (97%)  | 5 (3%)  | 0        | 100         | 100 |
| 1   | L     | 195/210 (93%)   | 189 (97%)  | 6 (3%)  | 0        | 100         | 100 |
| 1   | M     | 189/210 (90%)   | 184 (97%)  | 5 (3%)  | 0        | 100         | 100 |
| 1   | N     | 194/210 (92%)   | 186 (96%)  | 7 (4%)  | 1 (0%)   | 29          | 52  |
| 1   | O     | 194/210 (92%)   | 185 (95%)  | 7 (4%)  | 2 (1%)   | 15          | 34  |
| All | All   | 2901/3150 (92%) | 2799 (96%) | 98 (3%) | 4 (0%)   | 51          | 76  |

All (4) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | D     | 187 | CYS  |
| 1   | O     | 189 | PRO  |
| 1   | N     | 187 | CYS  |
| 1   | O     | 190 | GLU  |

### 5.3.2 Protein sidechains [i](#)

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

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

| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |    |
|-----|-------|-----------------|------------|----------|-------------|----|
| 1   | A     | 185/196 (94%)   | 179 (97%)  | 6 (3%)   | 39          | 65 |
| 1   | B     | 185/196 (94%)   | 177 (96%)  | 8 (4%)   | 29          | 54 |
| 1   | C     | 185/196 (94%)   | 178 (96%)  | 7 (4%)   | 33          | 59 |
| 1   | D     | 184/196 (94%)   | 179 (97%)  | 5 (3%)   | 44          | 71 |
| 1   | E     | 185/196 (94%)   | 176 (95%)  | 9 (5%)   | 25          | 49 |
| 1   | F     | 188/196 (96%)   | 182 (97%)  | 6 (3%)   | 39          | 65 |
| 1   | G     | 186/196 (95%)   | 180 (97%)  | 6 (3%)   | 39          | 65 |
| 1   | H     | 185/196 (94%)   | 176 (95%)  | 9 (5%)   | 25          | 49 |
| 1   | I     | 182/196 (93%)   | 178 (98%)  | 4 (2%)   | 52          | 77 |
| 1   | J     | 185/196 (94%)   | 180 (97%)  | 5 (3%)   | 44          | 71 |
| 1   | K     | 183/196 (93%)   | 175 (96%)  | 8 (4%)   | 28          | 53 |
| 1   | L     | 186/196 (95%)   | 181 (97%)  | 5 (3%)   | 44          | 71 |
| 1   | M     | 182/196 (93%)   | 177 (97%)  | 5 (3%)   | 44          | 71 |
| 1   | N     | 185/196 (94%)   | 176 (95%)  | 9 (5%)   | 25          | 49 |
| 1   | O     | 185/196 (94%)   | 181 (98%)  | 4 (2%)   | 52          | 77 |
| All | All   | 2771/2940 (94%) | 2675 (96%) | 96 (4%)  | 36          | 62 |

All (96) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | G     | 21  | THR  |
| 1   | G     | 25  | ARG  |
| 1   | G     | 69  | HIS  |
| 1   | G     | 120 | ARG  |
| 1   | G     | 187 | CYS  |
| 1   | G     | 188 | CYS  |
| 1   | D     | 21  | THR  |
| 1   | D     | 23  | ARG  |
| 1   | D     | 57  | THR  |
| 1   | D     | 132 | SER  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | D            | 187        | CYS         |
| 1          | E            | 21         | THR         |
| 1          | E            | 23         | ARG         |
| 1          | E            | 57         | THR         |
| 1          | E            | 68         | SER         |
| 1          | E            | 120        | ARG         |
| 1          | E            | 132        | SER         |
| 1          | E            | 184        | THR         |
| 1          | E            | 186        | SER         |
| 1          | E            | 188        | CYS         |
| 1          | A            | 21         | THR         |
| 1          | A            | 57         | THR         |
| 1          | A            | 59         | SER         |
| 1          | A            | 148        | ARG         |
| 1          | A            | 184        | THR         |
| 1          | A            | 188        | CYS         |
| 1          | B            | 21         | THR         |
| 1          | B            | 25         | ARG         |
| 1          | B            | 59         | SER         |
| 1          | B            | 69         | HIS         |
| 1          | B            | 185        | TYR         |
| 1          | B            | 186        | SER         |
| 1          | B            | 187        | CYS         |
| 1          | B            | 188        | CYS         |
| 1          | C            | 21         | THR         |
| 1          | C            | 25         | ARG         |
| 1          | C            | 129        | ASP         |
| 1          | C            | 185        | TYR         |
| 1          | C            | 186        | SER         |
| 1          | C            | 187        | CYS         |
| 1          | C            | 188        | CYS         |
| 1          | F            | 21         | THR         |
| 1          | F            | 25         | ARG         |
| 1          | F            | 57         | THR         |
| 1          | F            | 185        | TYR         |
| 1          | F            | 187        | CYS         |
| 1          | F            | 188        | CYS         |
| 1          | H            | 21         | THR         |
| 1          | H            | 23         | ARG         |
| 1          | H            | 57         | THR         |
| 1          | H            | 61         | ARG         |
| 1          | H            | 120        | ARG         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | H            | 179        | LYS         |
| 1          | H            | 182        | SER         |
| 1          | H            | 184        | THR         |
| 1          | H            | 188        | CYS         |
| 1          | I            | 21         | THR         |
| 1          | I            | 25         | ARG         |
| 1          | I            | 61         | ARG         |
| 1          | I            | 185        | TYR         |
| 1          | J            | 14         | SER         |
| 1          | J            | 21         | THR         |
| 1          | J            | 25         | ARG         |
| 1          | J            | 57         | THR         |
| 1          | J            | 188        | CYS         |
| 1          | K            | 11         | ARG         |
| 1          | K            | 21         | THR         |
| 1          | K            | 25         | ARG         |
| 1          | K            | 57         | THR         |
| 1          | K            | 69         | HIS         |
| 1          | K            | 184        | THR         |
| 1          | K            | 186        | SER         |
| 1          | K            | 188        | CYS         |
| 1          | L            | 21         | THR         |
| 1          | L            | 57         | THR         |
| 1          | L            | 186        | SER         |
| 1          | L            | 187        | CYS         |
| 1          | L            | 188        | CYS         |
| 1          | M            | 23         | ARG         |
| 1          | M            | 25         | ARG         |
| 1          | M            | 59         | SER         |
| 1          | M            | 69         | HIS         |
| 1          | M            | 120        | ARG         |
| 1          | N            | 21         | THR         |
| 1          | N            | 25         | ARG         |
| 1          | N            | 44         | ILE         |
| 1          | N            | 139        | LYS         |
| 1          | N            | 185        | TYR         |
| 1          | N            | 186        | SER         |
| 1          | N            | 187        | CYS         |
| 1          | N            | 188        | CYS         |
| 1          | N            | 202        | ARG         |
| 1          | O            | 15         | ARG         |
| 1          | O            | 21         | THR         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | O     | 57  | THR  |
| 1   | O     | 188 | CYS  |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | G     | 119 | GLN  |
| 1   | D     | 167 | GLN  |
| 1   | E     | 9   | ASN  |
| 1   | C     | 9   | ASN  |
| 1   | I     | 9   | ASN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 53 ligands modelled in this entry, 4 are monoatomic - leaving 49 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   | SO4  | F     | 302 | -    | 4,4,4        | 0.16 | 0           | 6,6,6       | 0.33 | 0           |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 6   | NSE  | E     | 301 | -    | 17,21,21     | 0.89 | 1 (5%)   | 23,28,28    | 1.15 | 1 (4%)   |
| 4   | SO4  | I     | 303 | -    | 4,4,4        | 0.16 | 0        | 6,6,6       | 0.08 | 0        |
| 2   | 1PE  | E     | 302 | -    | 15,15,15     | 0.73 | 0        | 14,14,14    | 2.00 | 4 (28%)  |
| 2   | 1PE  | H     | 301 | -    | 15,15,15     | 0.82 | 0        | 14,14,14    | 1.30 | 2 (14%)  |
| 4   | SO4  | A     | 303 | -    | 4,4,4        | 0.14 | 0        | 6,6,6       | 0.24 | 0        |
| 5   | ACT  | F     | 305 | -    | 1,3,3        | 0.89 | 0        | 0,3,3       | 0.00 | -        |
| 6   | NSE  | I     | 301 | -    | 17,21,21     | 0.88 | 0        | 23,28,28    | 1.65 | 5 (21%)  |
| 5   | ACT  | F     | 306 | -    | 1,3,3        | 0.76 | 0        | 0,3,3       | 0.00 | -        |
| 2   | 1PE  | C     | 301 | -    | 15,15,15     | 1.02 | 0        | 14,14,14    | 1.37 | 3 (21%)  |
| 5   | ACT  | G     | 307 | -    | 1,3,3        | 1.63 | 0        | 0,3,3       | 0.00 | -        |
| 4   | SO4  | E     | 304 | -    | 4,4,4        | 0.19 | 0        | 6,6,6       | 0.33 | 0        |
| 6   | NSE  | A     | 301 | -    | 17,21,21     | 0.74 | 0        | 23,28,28    | 1.97 | 5 (21%)  |
| 4   | SO4  | E     | 307 | -    | 4,4,4        | 0.17 | 0        | 6,6,6       | 0.20 | 0        |
| 2   | 1PE  | G     | 301 | -    | 15,15,15     | 0.60 | 0        | 14,14,14    | 1.36 | 2 (14%)  |
| 8   | GOL  | J     | 303 | -    | 5,5,5        | 0.34 | 0        | 5,5,5       | 0.45 | 0        |
| 4   | SO4  | E     | 306 | -    | 4,4,4        | 0.19 | 0        | 6,6,6       | 0.20 | 0        |
| 4   | SO4  | D     | 305 | -    | 4,4,4        | 0.13 | 0        | 6,6,6       | 0.15 | 0        |
| 4   | SO4  | E     | 305 | -    | 4,4,4        | 0.17 | 0        | 6,6,6       | 0.06 | 0        |
| 6   | NSE  | K     | 301 | -    | 17,21,21     | 0.78 | 0        | 23,28,28    | 1.96 | 6 (26%)  |
| 5   | ACT  | O     | 301 | -    | 1,3,3        | 1.04 | 0        | 0,3,3       | 0.00 | -        |
| 5   | ACT  | G     | 306 | -    | 1,3,3        | 1.51 | 0        | 0,3,3       | 0.00 | -        |
| 4   | SO4  | A     | 304 | -    | 4,4,4        | 0.18 | 0        | 6,6,6       | 0.10 | 0        |
| 5   | ACT  | F     | 304 | -    | 1,3,3        | 1.44 | 0        | 0,3,3       | 0.00 | -        |
| 5   | ACT  | A     | 305 | -    | 1,3,3        | 1.62 | 0        | 0,3,3       | 0.00 | -        |
| 4   | SO4  | B     | 303 | -    | 4,4,4        | 0.14 | 0        | 6,6,6       | 0.20 | 0        |
| 4   | SO4  | D     | 303 | -    | 4,4,4        | 0.27 | 0        | 6,6,6       | 0.23 | 0        |
| 5   | ACT  | J     | 302 | -    | 1,3,3        | 2.40 | 1 (100%) | 0,3,3       | 0.00 | -        |
| 3   | NAG  | G     | 302 | 1    | 14,14,15     | 4.14 | 7 (50%)  | 17,19,21    | 3.90 | 12 (70%) |
| 3   | NAG  | D     | 302 | 1    | 14,14,15     | 2.07 | 2 (14%)  | 17,19,21    | 2.02 | 5 (29%)  |
| 4   | SO4  | B     | 304 | -    | 4,4,4        | 0.20 | 0        | 6,6,6       | 0.25 | 0        |
| 5   | ACT  | A     | 307 | -    | 1,3,3        | 1.25 | 0        | 0,3,3       | 0.00 | -        |
| 4   | SO4  | G     | 305 | -    | 4,4,4        | 0.20 | 0        | 6,6,6       | 0.23 | 0        |
| 5   | ACT  | F     | 303 | -    | 1,3,3        | 1.03 | 0        | 0,3,3       | 0.00 | -        |
| 5   | ACT  | D     | 304 | -    | 1,3,3        | 1.10 | 0        | 0,3,3       | 0.00 | -        |
| 4   | SO4  | G     | 304 | -    | 4,4,4        | 0.13 | 0        | 6,6,6       | 0.18 | 0        |
| 4   | SO4  | E     | 303 | -    | 4,4,4        | 0.13 | 0        | 6,6,6       | 0.27 | 0        |
| 5   | ACT  | G     | 308 | -    | 1,3,3        | 0.98 | 0        | 0,3,3       | 0.00 | -        |
| 4   | SO4  | G     | 303 | -    | 4,4,4        | 0.19 | 0        | 6,6,6       | 0.14 | 0        |
| 2   | 1PE  | B     | 302 | -    | 15,15,15     | 0.76 | 0        | 14,14,14    | 1.93 | 4 (28%)  |
| 2   | 1PE  | A     | 302 | -    | 15,15,15     | 0.77 | 0        | 14,14,14    | 1.17 | 2 (14%)  |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 4   | SO4  | C     | 302 | -    | 4,4,4        | 0.15 | 0        | 6,6,6       | 0.11 | 0        |
| 6   | NSE  | M     | 301 | -    | 17,21,21     | 0.77 | 0        | 23,28,28    | 1.12 | 2 (8%)   |
| 2   | 1PE  | I     | 302 | -    | 15,15,15     | 0.88 | 0        | 14,14,14    | 1.11 | 2 (14%)  |
| 6   | NSE  | B     | 301 | -    | 17,21,21     | 0.84 | 0        | 23,28,28    | 1.24 | 2 (8%)   |
| 4   | SO4  | F     | 301 | -    | 4,4,4        | 0.11 | 0        | 6,6,6       | 0.26 | 0        |
| 4   | SO4  | M     | 302 | -    | 4,4,4        | 0.13 | 0        | 6,6,6       | 0.13 | 0        |
| 2   | 1PE  | D     | 301 | -    | 15,15,15     | 0.83 | 0        | 14,14,14    | 1.16 | 1 (7%)   |
| 4   | SO4  | J     | 301 | -    | 4,4,4        | 0.13 | 0        | 6,6,6       | 0.21 | 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   |
|-----|------|-------|-----|------|---------|------------|---------|
| 6   | NSE  | E     | 301 | -    | -       | 1/8/10/10  | 0/3/3/3 |
| 3   | NAG  | G     | 302 | 1    | -       | 2/6/23/26  | 0/1/1/1 |
| 6   | NSE  | A     | 301 | -    | -       | 2/8/10/10  | 0/3/3/3 |
| 2   | 1PE  | E     | 302 | -    | -       | 4/13/13/13 | -       |
| 6   | NSE  | M     | 301 | -    | -       | 0/8/10/10  | 0/3/3/3 |
| 2   | 1PE  | H     | 301 | -    | -       | 3/13/13/13 | -       |
| 6   | NSE  | K     | 301 | -    | -       | 1/8/10/10  | 0/3/3/3 |
| 2   | 1PE  | A     | 302 | -    | -       | 3/13/13/13 | -       |
| 6   | NSE  | I     | 301 | -    | -       | 2/8/10/10  | 0/3/3/3 |
| 3   | NAG  | D     | 302 | 1    | -       | 2/6/23/26  | 0/1/1/1 |
| 2   | 1PE  | G     | 301 | -    | -       | 1/13/13/13 | -       |
| 2   | 1PE  | B     | 302 | -    | -       | 5/13/13/13 | -       |
| 8   | GOL  | J     | 303 | -    | -       | 3/4/4/4    | -       |
| 2   | 1PE  | C     | 301 | -    | -       | 5/13/13/13 | -       |
| 6   | NSE  | B     | 301 | -    | -       | 1/8/10/10  | 0/3/3/3 |
| 2   | 1PE  | I     | 302 | -    | -       | 3/13/13/13 | -       |
| 2   | 1PE  | D     | 301 | -    | -       | 1/13/13/13 | -       |

All (11) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 3   | G     | 302 | NAG  | C1-C2 | -9.97 | 1.37        | 1.52     |
| 3   | G     | 302 | NAG  | C8-C7 | 8.20  | 1.67        | 1.50     |
| 3   | G     | 302 | NAG  | O7-C7 | -5.90 | 1.09        | 1.23     |

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| Mol | Chain | Res | Type | Atoms  | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 3   | D     | 302 | NAG  | C1-C2  | 5.26  | 1.60        | 1.52     |
| 3   | D     | 302 | NAG  | C2-N2  | 4.85  | 1.54        | 1.46     |
| 3   | G     | 302 | NAG  | C2-N2  | -3.77 | 1.39        | 1.46     |
| 3   | G     | 302 | NAG  | C7-N2  | 2.74  | 1.43        | 1.34     |
| 6   | E     | 301 | NSE  | C11-N2 | 2.41  | 1.38        | 1.35     |
| 5   | J     | 302 | ACT  | CH3-C  | 2.40  | 1.51        | 1.48     |
| 3   | G     | 302 | NAG  | C3-C2  | -2.32 | 1.47        | 1.52     |
| 3   | G     | 302 | NAG  | C4-C3  | -2.25 | 1.46        | 1.52     |

All (58) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 3   | G     | 302 | NAG  | C1-O5-C5    | 7.30  | 122.08      | 112.19   |
| 3   | G     | 302 | NAG  | C2-N2-C7    | 6.66  | 132.39      | 122.90   |
| 6   | A     | 301 | NSE  | C9-C11-N3   | 6.25  | 127.25      | 119.12   |
| 3   | G     | 302 | NAG  | O7-C7-N2    | -6.17 | 110.61      | 121.95   |
| 3   | D     | 302 | NAG  | O5-C1-C2    | -5.48 | 102.63      | 111.29   |
| 6   | K     | 301 | NSE  | C9-C11-N3   | 5.39  | 126.13      | 119.12   |
| 3   | G     | 302 | NAG  | O5-C1-C2    | -4.94 | 103.49      | 111.29   |
| 6   | I     | 301 | NSE  | C9-C11-N3   | 4.45  | 124.91      | 119.12   |
| 3   | D     | 302 | NAG  | C1-O5-C5    | 4.24  | 117.93      | 112.19   |
| 3   | G     | 302 | NAG  | O5-C5-C6    | 4.23  | 113.84      | 107.20   |
| 3   | G     | 302 | NAG  | O5-C5-C4    | 3.94  | 120.42      | 110.83   |
| 2   | E     | 302 | 1PE  | C26-OH6-C15 | 3.93  | 130.33      | 113.29   |
| 2   | E     | 302 | 1PE  | OH6-C26-C16 | 3.87  | 127.08      | 110.07   |
| 3   | G     | 302 | NAG  | O3-C3-C4    | -3.84 | 101.47      | 110.35   |
| 6   | A     | 301 | NSE  | C9-C11-N2   | -3.84 | 118.92      | 123.71   |
| 2   | B     | 302 | 1PE  | OH3-C23-C13 | 3.80  | 127.53      | 110.39   |
| 6   | E     | 301 | NSE  | C8-C7-N2    | 3.77  | 128.62      | 123.56   |
| 6   | K     | 301 | NSE  | C5-C8-C7    | -3.69 | 114.66      | 120.06   |
| 3   | G     | 302 | NAG  | C6-C5-C4    | 3.60  | 121.43      | 113.00   |
| 2   | E     | 302 | 1PE  | C25-OH5-C14 | -3.58 | 97.76       | 113.29   |
| 2   | B     | 302 | 1PE  | OH6-C26-C16 | 3.22  | 124.23      | 110.07   |
| 6   | I     | 301 | NSE  | C9-C11-N2   | -3.22 | 119.69      | 123.71   |
| 6   | B     | 301 | NSE  | C9-C11-N3   | 3.13  | 123.20      | 119.12   |
| 3   | G     | 302 | NAG  | C1-C2-N2    | -3.03 | 105.31      | 110.49   |
| 2   | G     | 301 | 1PE  | OH3-C23-C13 | -3.02 | 96.78       | 110.39   |
| 6   | A     | 301 | NSE  | C5-C8-C7    | -2.99 | 115.69      | 120.06   |
| 2   | A     | 302 | 1PE  | OH3-C23-C13 | -2.94 | 97.15       | 110.39   |
| 6   | K     | 301 | NSE  | C9-C11-N2   | -2.92 | 120.07      | 123.71   |
| 6   | I     | 301 | NSE  | C10-C9-C11  | -2.90 | 117.47      | 121.31   |
| 2   | D     | 301 | 1PE  | OH6-C15-C25 | -2.81 | 97.73       | 110.39   |

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| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 3   | G     | 302 | NAG  | O6-C6-C5    | 2.79  | 120.88      | 111.29   |
| 2   | B     | 302 | 1PE  | C23-OH3-C22 | 2.72  | 125.05      | 113.29   |
| 6   | K     | 301 | NSE  | C11-N2-C7   | 2.71  | 103.32      | 101.13   |
| 6   | K     | 301 | NSE  | C6-C8-C7    | 2.70  | 124.56      | 120.44   |
| 2   | C     | 301 | 1PE  | OH6-C15-C25 | -2.70 | 98.24       | 110.39   |
| 6   | M     | 301 | NSE  | C9-C11-N3   | 2.67  | 122.60      | 119.12   |
| 2   | I     | 302 | 1PE  | OH4-C24-C14 | -2.65 | 98.47       | 110.39   |
| 6   | A     | 301 | NSE  | C11-N2-C7   | 2.57  | 103.21      | 101.13   |
| 2   | C     | 301 | 1PE  | OH3-C23-C13 | 2.57  | 121.98      | 110.39   |
| 2   | B     | 302 | 1PE  | OH3-C22-C12 | 2.56  | 121.31      | 110.07   |
| 2   | I     | 302 | 1PE  | OH6-C15-C25 | 2.52  | 121.77      | 110.39   |
| 3   | G     | 302 | NAG  | C3-C4-C5    | -2.48 | 105.82      | 110.24   |
| 6   | I     | 301 | NSE  | C6-C8-C5    | 2.43  | 121.60      | 118.16   |
| 6   | M     | 301 | NSE  | C8-C7-N2    | 2.42  | 126.81      | 123.56   |
| 2   | H     | 301 | 1PE  | OH3-C22-C12 | 2.40  | 120.63      | 110.07   |
| 2   | H     | 301 | 1PE  | OH4-C13-C23 | 2.39  | 121.17      | 110.39   |
| 6   | K     | 301 | NSE  | C5-C3-C4    | -2.34 | 116.42      | 119.54   |
| 3   | D     | 302 | NAG  | C4-C3-C2    | -2.33 | 107.61      | 111.02   |
| 6   | B     | 301 | NSE  | C8-C7-N2    | 2.32  | 126.67      | 123.56   |
| 3   | D     | 302 | NAG  | O5-C5-C4    | -2.24 | 105.39      | 110.83   |
| 3   | D     | 302 | NAG  | C1-C2-N2    | -2.23 | 106.69      | 110.49   |
| 2   | C     | 301 | 1PE  | OH6-C26-C16 | -2.19 | 100.44      | 110.07   |
| 2   | G     | 301 | 1PE  | OH6-C15-C25 | 2.18  | 120.23      | 110.39   |
| 2   | A     | 302 | 1PE  | OH6-C26-C16 | 2.18  | 119.62      | 110.07   |
| 3   | G     | 302 | NAG  | O4-C4-C3    | -2.15 | 105.38      | 110.35   |
| 6   | A     | 301 | NSE  | C6-C8-C5    | 2.13  | 121.17      | 118.16   |
| 2   | E     | 302 | 1PE  | OH4-C24-C14 | -2.03 | 101.25      | 110.39   |
| 6   | I     | 301 | NSE  | C5-C8-C7    | -2.00 | 117.13      | 120.06   |

There are no chirality outliers.

All (39) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 6   | A     | 301 | NSE  | N3-C11-C9-C12   |
| 3   | G     | 302 | NAG  | O7-C7-N2-C2     |
| 3   | G     | 302 | NAG  | O5-C5-C6-O6     |
| 3   | D     | 302 | NAG  | O5-C5-C6-O6     |
| 2   | E     | 302 | 1PE  | C14-C24-OH4-C13 |
| 3   | D     | 302 | NAG  | C4-C5-C6-O6     |
| 2   | B     | 302 | 1PE  | C15-C25-OH5-C14 |
| 8   | J     | 303 | GOL  | O1-C1-C2-C3     |
| 8   | J     | 303 | GOL  | C1-C2-C3-O3     |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 2   | E     | 302 | 1PE  | C25-C15-OH6-C26 |
| 2   | A     | 302 | 1PE  | C15-C25-OH5-C14 |
| 2   | B     | 302 | 1PE  | C16-C26-OH6-C15 |
| 2   | I     | 302 | 1PE  | C13-C23-OH3-C22 |
| 2   | H     | 301 | 1PE  | C16-C26-OH6-C15 |
| 6   | A     | 301 | NSE  | N2-C11-C9-C12   |
| 2   | I     | 302 | 1PE  | C25-C15-OH6-C26 |
| 8   | J     | 303 | GOL  | O2-C2-C3-O3     |
| 6   | I     | 301 | NSE  | N2-C7-C8-C6     |
| 2   | C     | 301 | 1PE  | C13-C23-OH3-C22 |
| 2   | G     | 301 | 1PE  | C25-C15-OH6-C26 |
| 2   | A     | 302 | 1PE  | C16-C26-OH6-C15 |
| 2   | B     | 302 | 1PE  | C12-C22-OH3-C23 |
| 2   | C     | 301 | 1PE  | C12-C22-OH3-C23 |
| 2   | C     | 301 | 1PE  | C23-C13-OH4-C24 |
| 6   | E     | 301 | NSE  | N2-C7-C8-C6     |
| 6   | I     | 301 | NSE  | N2-C7-C8-C5     |
| 6   | K     | 301 | NSE  | N2-C7-C8-C6     |
| 6   | B     | 301 | NSE  | N2-C7-C8-C6     |
| 2   | E     | 302 | 1PE  | C24-C14-OH5-C25 |
| 2   | B     | 302 | 1PE  | C13-C23-OH3-C22 |
| 2   | H     | 301 | 1PE  | OH6-C15-C25-OH5 |
| 2   | B     | 302 | 1PE  | OH6-C15-C25-OH5 |
| 2   | D     | 301 | 1PE  | OH4-C13-C23-OH3 |
| 2   | A     | 302 | 1PE  | OH6-C15-C25-OH5 |
| 2   | C     | 301 | 1PE  | OH4-C13-C23-OH3 |
| 2   | I     | 302 | 1PE  | OH4-C13-C23-OH3 |
| 2   | H     | 301 | 1PE  | C15-C25-OH5-C14 |
| 2   | E     | 302 | 1PE  | OH5-C14-C24-OH4 |
| 2   | C     | 301 | 1PE  | C14-C24-OH4-C13 |

There are no ring outliers.

17 monomers are involved in 30 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 6   | E     | 301 | NSE  | 1       | 0            |
| 2   | E     | 302 | 1PE  | 2       | 0            |
| 2   | H     | 301 | 1PE  | 3       | 0            |
| 4   | A     | 303 | SO4  | 1       | 0            |
| 6   | I     | 301 | NSE  | 1       | 0            |
| 5   | F     | 306 | ACT  | 1       | 0            |
| 2   | C     | 301 | 1PE  | 1       | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 6   | A     | 301 | NSE  | 2       | 0            |
| 4   | E     | 307 | SO4  | 1       | 0            |
| 2   | G     | 301 | 1PE  | 1       | 0            |
| 6   | K     | 301 | NSE  | 2       | 0            |
| 4   | B     | 303 | SO4  | 1       | 0            |
| 2   | B     | 302 | 1PE  | 2       | 0            |
| 6   | M     | 301 | NSE  | 2       | 0            |
| 2   | I     | 302 | 1PE  | 5       | 0            |
| 2   | D     | 301 | 1PE  | 3       | 0            |
| 4   | J     | 301 | SO4  | 1       | 0            |

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data

### 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<sup>th</sup> 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 <sup>2</sup> ) | Q<0.9 |
|-----|-------|-----------------|--------|-------------------------|-----------------------|-------|
| 1   | A     | 198/210 (94%)   | -0.12  | 0 <b>100</b> <b>100</b> | 28, 45, 79, 97        | 0     |
| 1   | B     | 198/210 (94%)   | -0.07  | 5 (2%) 57 57            | 33, 51, 87, 102       | 0     |
| 1   | C     | 198/210 (94%)   | 0.03   | 3 (1%) 73 74            | 34, 51, 82, 101       | 0     |
| 1   | D     | 197/210 (93%)   | -0.06  | 1 (0%) 91 92            | 30, 47, 76, 99        | 0     |
| 1   | E     | 198/210 (94%)   | -0.05  | 4 (2%) 65 65            | 29, 47, 81, 99        | 0     |
| 1   | F     | 200/210 (95%)   | 0.00   | 5 (2%) 57 57            | 26, 43, 78, 95        | 0     |
| 1   | G     | 198/210 (94%)   | -0.04  | 2 (1%) 82 82            | 27, 46, 79, 102       | 0     |
| 1   | H     | 198/210 (94%)   | 0.01   | 2 (1%) 82 82            | 29, 50, 82, 103       | 0     |
| 1   | I     | 195/210 (92%)   | 0.15   | 5 (2%) 56 55            | 37, 56, 84, 106       | 0     |
| 1   | J     | 198/210 (94%)   | 0.05   | 2 (1%) 82 82            | 32, 50, 74, 96        | 0     |
| 1   | K     | 197/210 (93%)   | 0.09   | 1 (0%) 91 92            | 31, 54, 78, 88        | 0     |
| 1   | L     | 198/210 (94%)   | -0.02  | 2 (1%) 82 82            | 32, 48, 77, 99        | 0     |
| 1   | M     | 194/210 (92%)   | 0.10   | 6 (3%) 49 48            | 33, 57, 80, 107       | 0     |
| 1   | N     | 198/210 (94%)   | 0.27   | 7 (3%) 44 43            | 38, 64, 89, 112       | 0     |
| 1   | O     | 198/210 (94%)   | 0.14   | 3 (1%) 73 74            | 41, 58, 83, 98        | 0     |
| All | All   | 2963/3150 (94%) | 0.03   | 48 (1%) 72 73           | 26, 51, 83, 112       | 0     |

All (48) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1   | I     | 185 | TYR  | 5.6  |
| 1   | O     | 39  | LEU  | 5.1  |
| 1   | N     | 23  | ARG  | 5.1  |
| 1   | J     | 1   | LEU  | 4.6  |
| 1   | B     | 186 | SER  | 4.5  |
| 1   | E     | 23  | ARG  | 4.1  |
| 1   | N     | 183 | VAL  | 4.0  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> | <b>RSRZ</b> |
|------------|--------------|------------|-------------|-------------|
| 1          | F            | 189        | PRO         | 3.7         |
| 1          | F            | 67         | SER         | 3.5         |
| 1          | M            | 23         | ARG         | 3.5         |
| 1          | O            | 188        | CYS         | 3.3         |
| 1          | B            | 24         | ASP         | 3.2         |
| 1          | G            | 186        | SER         | 3.2         |
| 1          | C            | 188        | CYS         | 3.1         |
| 1          | H            | 185        | TYR         | 3.1         |
| 1          | M            | 185        | TYR         | 3.0         |
| 1          | E            | 24         | ASP         | 2.9         |
| 1          | B            | 187        | CYS         | 2.9         |
| 1          | F            | 53         | TRP         | 2.8         |
| 1          | N            | 24         | ASP         | 2.8         |
| 1          | M            | 22         | GLN         | 2.7         |
| 1          | C            | 184        | THR         | 2.7         |
| 1          | J            | 178        | GLN         | 2.7         |
| 1          | B            | 188        | CYS         | 2.7         |
| 1          | N            | 22         | GLN         | 2.6         |
| 1          | O            | 167        | GLN         | 2.6         |
| 1          | M            | 24         | ASP         | 2.5         |
| 1          | N            | 128        | VAL         | 2.5         |
| 1          | I            | 69         | HIS         | 2.4         |
| 1          | D            | 23         | ARG         | 2.4         |
| 1          | C            | 130        | THR         | 2.3         |
| 1          | G            | 190        | GLU         | 2.3         |
| 1          | L            | 164        | TYR         | 2.3         |
| 1          | E            | 22         | GLN         | 2.2         |
| 1          | B            | 185        | TYR         | 2.2         |
| 1          | N            | 178        | GLN         | 2.2         |
| 1          | E            | 185        | TYR         | 2.2         |
| 1          | F            | 186        | SER         | 2.2         |
| 1          | K            | 205        | GLY         | 2.2         |
| 1          | L            | 186        | SER         | 2.2         |
| 1          | N            | 173        | ILE         | 2.1         |
| 1          | I            | 178        | GLN         | 2.1         |
| 1          | M            | 25         | ARG         | 2.1         |
| 1          | I            | 23         | ARG         | 2.1         |
| 1          | I            | 190        | GLU         | 2.1         |
| 1          | F            | 23         | ARG         | 2.1         |
| 1          | H            | 179        | LYS         | 2.1         |
| 1          | M            | 130        | THR         | 2.1         |

## 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 8   | GOL  | J     | 303 | 6/6   | 0.66 | 0.25 | 64,75,83,86                | 0     |
| 4   | SO4  | J     | 301 | 5/5   | 0.68 | 0.23 | 88,90,97,112               | 0     |
| 3   | NAG  | G     | 302 | 14/15 | 0.70 | 0.34 | 93,103,106,109             | 0     |
| 3   | NAG  | D     | 302 | 14/15 | 0.77 | 0.19 | 80,85,91,92                | 0     |
| 5   | ACT  | G     | 306 | 4/4   | 0.78 | 0.23 | 48,52,60,62                | 0     |
| 6   | NSE  | I     | 301 | 19/19 | 0.78 | 0.33 | 60,70,78,80                | 0     |
| 4   | SO4  | F     | 302 | 5/5   | 0.79 | 0.42 | 64,69,75,106               | 0     |
| 5   | ACT  | F     | 305 | 4/4   | 0.82 | 0.22 | 51,60,67,69                | 0     |
| 5   | ACT  | A     | 307 | 4/4   | 0.83 | 0.15 | 43,66,70,71                | 0     |
| 4   | SO4  | C     | 302 | 5/5   | 0.83 | 0.25 | 84,85,107,110              | 0     |
| 4   | SO4  | A     | 304 | 5/5   | 0.83 | 0.29 | 78,80,93,104               | 0     |
| 4   | SO4  | M     | 302 | 5/5   | 0.84 | 0.43 | 80,82,96,100               | 0     |
| 6   | NSE  | B     | 301 | 19/19 | 0.85 | 0.33 | 54,67,78,78                | 0     |
| 4   | SO4  | D     | 305 | 5/5   | 0.85 | 0.34 | 75,85,105,110              | 0     |
| 5   | ACT  | J     | 302 | 4/4   | 0.85 | 0.20 | 34,35,41,55                | 0     |
| 4   | SO4  | D     | 303 | 5/5   | 0.86 | 0.39 | 56,61,72,92                | 0     |
| 4   | SO4  | G     | 304 | 5/5   | 0.86 | 0.19 | 87,91,106,110              | 0     |
| 4   | SO4  | E     | 304 | 5/5   | 0.86 | 0.23 | 64,67,85,94                | 0     |
| 2   | 1PE  | E     | 302 | 16/16 | 0.87 | 0.31 | 46,55,63,64                | 0     |
| 4   | SO4  | E     | 306 | 5/5   | 0.87 | 0.24 | 82,85,104,121              | 0     |
| 6   | NSE  | M     | 301 | 19/19 | 0.87 | 0.42 | 61,74,79,80                | 0     |
| 5   | ACT  | A     | 305 | 4/4   | 0.88 | 0.20 | 47,60,61,61                | 0     |
| 2   | 1PE  | I     | 302 | 16/16 | 0.88 | 0.23 | 46,59,67,69                | 0     |
| 5   | ACT  | G     | 308 | 4/4   | 0.88 | 0.23 | 44,44,58,59                | 0     |
| 2   | 1PE  | B     | 302 | 16/16 | 0.88 | 0.31 | 47,57,64,69                | 0     |
| 6   | NSE  | E     | 301 | 19/19 | 0.88 | 0.25 | 45,57,74,75                | 0     |
| 5   | ACT  | F     | 303 | 4/4   | 0.89 | 0.13 | 59,62,64,69                | 0     |

*Continued on next page...*

*Continued from previous page...*

| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 5   | ACT  | F     | 304 | 4/4   | 0.89 | 0.22 | 36,51,56,68                | 0     |
| 6   | NSE  | K     | 301 | 19/19 | 0.89 | 0.32 | 51,58,68,68                | 0     |
| 4   | SO4  | E     | 307 | 5/5   | 0.89 | 0.18 | 76,82,96,96                | 0     |
| 2   | 1PE  | D     | 301 | 16/16 | 0.89 | 0.23 | 47,55,67,70                | 0     |
| 6   | NSE  | A     | 301 | 19/19 | 0.89 | 0.34 | 50,58,68,69                | 0     |
| 5   | ACT  | D     | 304 | 4/4   | 0.90 | 0.14 | 62,63,63,72                | 0     |
| 4   | SO4  | B     | 303 | 5/5   | 0.91 | 0.12 | 86,87,91,101               | 0     |
| 5   | ACT  | G     | 307 | 4/4   | 0.92 | 0.13 | 58,61,70,73                | 0     |
| 7   | CL   | L     | 301 | 1/1   | 0.92 | 0.20 | 60,60,60,60                | 0     |
| 7   | CL   | A     | 306 | 1/1   | 0.92 | 0.18 | 86,86,86,86                | 0     |
| 2   | 1PE  | C     | 301 | 16/16 | 0.93 | 0.16 | 49,57,61,63                | 0     |
| 4   | SO4  | B     | 304 | 5/5   | 0.93 | 0.30 | 54,61,89,90                | 0     |
| 4   | SO4  | G     | 305 | 5/5   | 0.94 | 0.36 | 64,81,87,93                | 0     |
| 2   | 1PE  | H     | 301 | 16/16 | 0.94 | 0.24 | 38,46,58,62                | 0     |
| 4   | SO4  | F     | 301 | 5/5   | 0.94 | 0.18 | 67,71,76,78                | 0     |
| 2   | 1PE  | A     | 302 | 16/16 | 0.94 | 0.18 | 36,48,56,62                | 0     |
| 2   | 1PE  | G     | 301 | 16/16 | 0.94 | 0.22 | 33,34,35,35                | 16    |
| 4   | SO4  | A     | 303 | 5/5   | 0.94 | 0.13 | 71,75,77,79                | 0     |
| 7   | CL   | K     | 302 | 1/1   | 0.95 | 0.08 | 69,69,69,69                | 0     |
| 5   | ACT  | F     | 306 | 4/4   | 0.95 | 0.11 | 45,52,57,58                | 0     |
| 5   | ACT  | O     | 301 | 4/4   | 0.95 | 0.20 | 37,43,45,49                | 0     |
| 4   | SO4  | I     | 303 | 5/5   | 0.95 | 0.08 | 95,97,105,111              | 0     |
| 4   | SO4  | G     | 303 | 5/5   | 0.95 | 0.14 | 63,64,79,83                | 0     |
| 7   | CL   | N     | 301 | 1/1   | 0.97 | 0.10 | 54,54,54,54                | 0     |
| 4   | SO4  | E     | 305 | 5/5   | 0.97 | 0.11 | 79,79,90,94                | 0     |
| 4   | SO4  | E     | 303 | 5/5   | 0.98 | 0.08 | 58,60,66,74                | 0     |

## 6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.