



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 9, 2020 – 10:54 PM BST

PDB ID : 4F9L
Title : Crystal Structure of the Human BTN3A1 Ectodomain in Complex with the 20.1 Single Chain Antibody
Authors : Palakodeti, A.; Sandstrom, A.; Sundaresan, L.; Harly, C.; Nedellec, S.; Olive, D.; Scotet, E.; Bonneville, M.; Adams, E.J.
Deposited on : 2012-05-18
Resolution : 3.14 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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

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

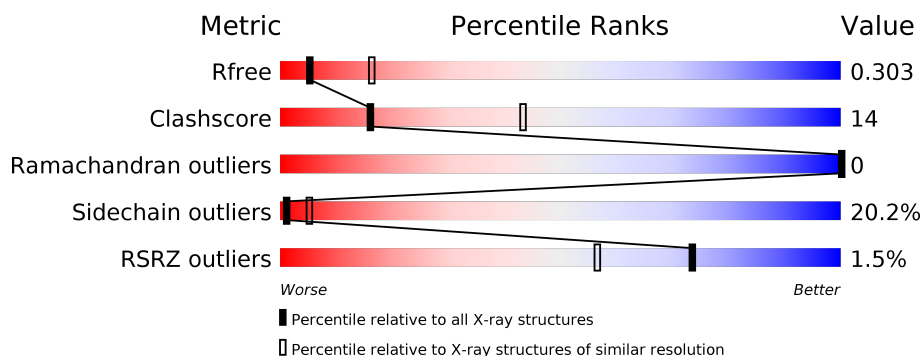
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.14 Å.

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



| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| R_{free} | 130704 | 1626 (3.18-3.10) |
| Clashscore | 141614 | 1735 (3.18-3.10) |
| Ramachandran outliers | 138981 | 1677 (3.18-3.10) |
| Sidechain outliers | 138945 | 1677 (3.18-3.10) |
| RSRZ outliers | 127900 | 1588 (3.18-3.10) |

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|--|
| 1 | A | 220 | <div> <div>5%</div> <div> <div></div> <div>69%</div> <div>25%</div> <div>• •</div> </div> </div> |
| 1 | B | 220 | <div> <div>%</div> <div> <div></div> <div>64%</div> <div>28%</div> <div>• •</div> </div> </div> |
| 2 | C | 259 | <div> <div></div> <div> <div>54%</div> <div>30%</div> <div>5%</div> <div>10%</div> </div> </div> |
| 2 | D | 259 | <div> <div></div> <div> <div>56%</div> <div>28%</div> <div>5%</div> <div>10%</div> </div> </div> |

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 6598 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 Butyrophilin subfamily 3 member A1.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|---------|-------|
| 1 | A | 214 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1528 | 963 | 262 | 295 | 8 | | | |
| 1 | B | 213 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1523 | 963 | 264 | 289 | 7 | | | |

There are 6 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------------|------------|
| A | -2 | ALA | - | expression tag | UNP O00481 |
| A | -1 | ASP | - | expression tag | UNP O00481 |
| A | 0 | LEU | - | expression tag | UNP O00481 |
| B | -2 | ALA | - | expression tag | UNP O00481 |
| B | -1 | ASP | - | expression tag | UNP O00481 |
| B | 0 | LEU | - | expression tag | UNP O00481 |

- Molecule 2 is a protein called 20.1 anti-BTN3A1 antibody fragment.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
| 2 | D | 232 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1763 | 1112 | 294 | 352 | 5 | | | |
| 2 | C | 232 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 1756 | 1106 | 292 | 353 | 5 | | | |

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



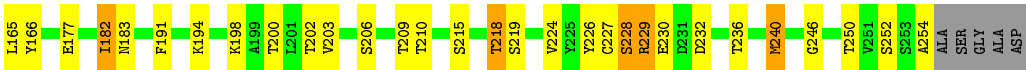
| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
| 3 | A | 1 | Total | C | N | O | 0 | 0 |
| | | | 14 | 8 | 1 | 5 | | |
| 3 | B | 1 | Total | C | N | O | 0 | 0 |
| | | | 14 | 8 | 1 | 5 | | |

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.

- Chain A:
-
- 5% 69% 25%
- ALA ASP LEU Q1 Y29 E32 L36 K37 W38 V39 S40 S41 S42 L43 R44 N48 V56 R59 T68 D73 G74 I75 I76 A80 A81 S90 K94 Y95 L96 C97 Y98 F99 Q100 D101 G102 D103 F104 Y105 E106 A115 A116 L117 G118 S119 D120 L121 H122 G127 D130 H134 L135 E136 C137 R138 S139 T140 G141 W142 Y143 H150 S151 N152 M153 I158 P159 T160 V161 V170 G171 V175 S178 V179 I180 M181 R182 G183 E187 S190 C191 T192 S195 S196 L197 L198 G199 L200 E201 K202 T203 T206 S207 I208 F212 F213

- Chain B:
-
- 64%
- 28%
- ALA ASP LEU Q1 S8 M29 E32 T33 M34 K37 W38 V39 S40 I43 R44 M49 V56 R59 A62 T68 L71 I75 T76 A80 A81 N86 S90 I96 C97 Y98 D101 E106 A115 A116 L117 G118 S119 D120 D124 I125
- K126 G127 I128 D129 G131 G132 I133 H134 L135 E136 T140 G141 W142 Y143 W150 S151 M152 M153 I158 P159 T160 V161 E162 A163 V170 V175 S178 V179 I180 M181 R182 G183 S184 S185 G186 I187 G188 V189 S190 C191 T192 I195 S196 L197 L198 K202 S205 I206 S207 T208
- ASP LEU Q1 S8 M29 E32 T33 M34 K37 W38 V39 S40 I43 R44 M49 V56 R59 A62 T68 L71 I75 T76 A80 A81 N86 S90 I96 C97 Y98 D101 E106 A115 A116 L117 G118 S119 D120 D124 I125
- K126 G127 I128 D129 G131 G132 I133 H134 L135 E136 T140 G141 W142 Y143 W150 S151 M152 M153 I158 P159 T160 V161 E162 A163 V170 V175 S178 V179 I180 M181 R182 G183 S184 S185 G186 I187 G188 V189 S190 C191 T192 I195 S196 L197 L198 K202 S205 I206 S207 T208

- [illegible]



● Molecule 2: 20.1 anti-BTN3A1 antibody fragment



4 Data and refinement statistics

| Property | Value | Source |
|---|---|------------------|
| Space group | P 4 | Depositor |
| Cell constants a, b, c, α , β , γ | 165.14Å 165.14Å 53.81Å 90.00° 90.00° 90.00° | Depositor |
| Resolution (Å) | 45.80 – 3.14 45.80 – 3.14 | Depositor EDS |
| % Data completeness (in resolution range) | 99.7 (45.80-3.14) 99.8 (45.80-3.14) | Depositor EDS |
| R_{merge} | (Not available) | Depositor |
| R_{sym} | (Not available) | Depositor |
| $\langle I/\sigma(I) \rangle$ ¹ | 2.75 (at 3.12Å) | Xtriage |
| Refinement program | PHENIX 1.7.2_869 | Depositor |
| R, R_{free} | 0.254 , 0.303 0.256 , 0.303 | Depositor DCC |
| R_{free} test set | 1326 reflections (5.13%) | wwPDB-VP |
| Wilson B-factor (Å ²) | 75.2 | Xtriage |
| Anisotropy | 0.269 | Xtriage |
| Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²) | 0.30 , 58.1 | EDS |
| L-test for twinning ² | $\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$ | Xtriage |
| Estimated twinning fraction | 0.021 for h,-k,-l | Xtriage |
| F_o, F_c correlation | 0.89 | EDS |
| Total number of atoms | 6598 | wwPDB-VP |
| Average B, all atoms (Å ²) | 85.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.98% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: NAG

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 | 0.38 | 0/1560 | 0.60 | 0/2131 |
| 1 | B | 0.41 | 0/1555 | 0.64 | 1/2124 (0.0%) |
| 2 | C | 0.45 | 0/1798 | 0.63 | 1/2453 (0.0%) |
| 2 | D | 0.47 | 0/1805 | 0.63 | 2/2460 (0.1%) |
| All | All | 0.43 | 0/6718 | 0.62 | 4/9168 (0.0%) |

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 |
| 2 | C | 0 | 5 |
| 2 | D | 0 | 5 |
| All | All | 0 | 11 |

There are no bond length outliers.

All (4) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 1 | B | 101 | ASP | CB-CG-OD1 | 5.84 | 123.55 | 118.30 |
| 2 | D | 99 | GLY | N-CA-C | -5.17 | 100.17 | 113.10 |
| 2 | C | 102 | THR | CA-CB-CG2 | -5.14 | 105.20 | 112.40 |
| 2 | D | 61 | ARG | NE-CZ-NH1 | 5.00 | 122.80 | 120.30 |

There are no chirality outliers.

All (11) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|---------|
| 1 | A | 183 | GLY | Peptide |
| 2 | C | 101 | GLY | Peptide |
| 2 | C | 132 | GLN | Peptide |
| 2 | C | 133 | VAL | Peptide |
| 2 | C | 140 | ALA | Peptide |
| 2 | C | 238 | ASP | Peptide |
| 2 | D | 101 | GLY | Peptide |
| 2 | D | 106 | ILE | Peptide |
| 2 | D | 140 | ALA | Peptide |
| 2 | D | 146 | GLY | Peptide |
| 2 | D | 147 | ALA | Peptide |

5.2 Too-close contacts [i](#)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1 | A | 1528 | 0 | 1419 | 37 | 0 |
| 1 | B | 1523 | 0 | 1421 | 51 | 0 |
| 2 | C | 1756 | 0 | 1651 | 56 | 0 |
| 2 | D | 1763 | 0 | 1670 | 49 | 0 |
| 3 | A | 14 | 0 | 13 | 0 | 0 |
| 3 | B | 14 | 0 | 13 | 5 | 0 |
| All | All | 6598 | 0 | 6187 | 184 | 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 14.

All (184) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:B:86:ASN:HD21 | 3:B:301:NAG:C1 | 1.14 | 1.55 |
| 1:A:212:PHE:CZ | 1:B:127:GLY:HA2 | 1.95 | 1.00 |
| 2:C:166:TYR:HB2 | 2:C:228:SER:HB2 | 1.39 | 0.99 |
| 2:C:85:THR:HG23 | 2:C:102:THR:O | 1.66 | 0.94 |
| 2:C:61:ARG:HH11 | 2:C:61:ARG:HG3 | 1.33 | 0.91 |
| 2:C:61:ARG:NH1 | 2:C:61:ARG:HG3 | 1.87 | 0.89 |
| 2:C:61:ARG:CG | 2:C:61:ARG:HH11 | 1.89 | 0.86 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:212:PHE:HZ | 1:B:127:GLY:HA2 | 1.39 | 0.83 |
| 2:D:61:ARG:HG3 | 2:D:61:ARG:HH11 | 1.44 | 0.80 |
| 1:B:129:LYS:HE3 | 1:B:134:HIS:ND1 | 1.97 | 0.80 |
| 2:D:226:TYR:CE1 | 2:D:246:GLY:HA3 | 2.17 | 0.79 |
| 1:B:182:ARG:HH11 | 1:B:182:ARG:CG | 1.94 | 0.79 |
| 1:A:48:ASN:HD22 | 1:A:68:THR:HG22 | 1.49 | 0.78 |
| 1:B:48:ASN:HD22 | 1:B:68:THR:HG22 | 1.49 | 0.77 |
| 1:B:182:ARG:HH11 | 1:B:182:ARG:HG3 | 1.49 | 0.77 |
| 1:A:181:MET:SD | 1:A:208:ILE:HG13 | 2.24 | 0.77 |
| 2:C:231:ASP:OD2 | 2:C:238:ASP:HB2 | 1.85 | 0.76 |
| 1:B:188:GLY:O | 1:B:189:VAL:HG13 | 1.86 | 0.76 |
| 2:C:85:THR:CG2 | 2:C:102:THR:O | 2.32 | 0.76 |
| 1:A:182:ARG:HA | 1:A:213:PHE:CE1 | 2.22 | 0.75 |
| 2:C:91:GLY:O | 1:B:59:ARG:NH2 | 2.21 | 0.73 |
| 2:C:105:ASP:OD1 | 2:C:106:ILE:N | 2.21 | 0.73 |
| 2:D:50:ARG:HG2 | 2:D:50:ARG:HH11 | 1.51 | 0.73 |
| 1:A:206:ILE:HG13 | 1:A:207:SER:N | 2.03 | 0.73 |
| 1:B:182:ARG:CG | 1:B:182:ARG:NH1 | 2.52 | 0.71 |
| 2:D:153:CYS:O | 2:D:209:THR:HG23 | 1.91 | 0.70 |
| 1:B:135:LEU:HD13 | 1:B:206:ILE:HG21 | 1.73 | 0.69 |
| 2:D:49:TYR:CZ | 2:D:53:ASN:HB2 | 2.28 | 0.69 |
| 2:D:90:GLN:HE21 | 2:D:93:SER:H | 1.40 | 0.68 |
| 1:B:188:GLY:O | 1:B:189:VAL:CG1 | 2.41 | 0.68 |
| 2:C:90:GLN:HE21 | 2:C:93:SER:H | 1.41 | 0.67 |
| 1:B:71:LEU:HD12 | 1:B:81:ALA:HB3 | 1.76 | 0.66 |
| 2:C:32:TRP:HE3 | 2:C:238:ASP:OD1 | 1.79 | 0.66 |
| 1:B:115:ALA:HB1 | 1:B:198:LEU:HD22 | 1.76 | 0.66 |
| 2:C:87:TYR:CD2 | 2:C:100:GLY:HA2 | 2.32 | 0.64 |
| 2:C:159:THR:HG23 | 2:C:162:ARG:HD3 | 1.79 | 0.64 |
| 2:C:58:VAL:HG13 | 2:C:62:PHE:HD2 | 1.62 | 0.64 |
| 2:D:228:SER:HB2 | 2:D:240:MET:HB2 | 1.80 | 0.64 |
| 2:D:229:ARG:NH1 | 2:D:230:GLU:O | 2.31 | 0.63 |
| 2:D:11:LEU:HD23 | 2:D:104:LEU:HD13 | 1.79 | 0.62 |
| 2:C:53:ASN:OD1 | 2:C:53:ASN:N | 2.27 | 0.62 |
| 2:C:62:PHE:CE1 | 2:C:75:ILE:HG23 | 2.34 | 0.62 |
| 2:C:49:TYR:O | 2:C:50:ARG:HB2 | 1.99 | 0.61 |
| 2:C:136:GLN:NE2 | 2:C:242:TYR:O | 2.34 | 0.61 |
| 2:C:142:LEU:HD22 | 2:C:149:VAL:HG21 | 1.83 | 0.60 |
| 1:A:122:HIS:ND1 | 1:B:205:SER:OG | 2.23 | 0.60 |
| 2:D:90:GLN:NE2 | 2:D:93:SER:O | 2.35 | 0.59 |
| 1:A:40:SER:OG | 1:A:43:LEU:O | 2.21 | 0.59 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:181:MET:SD | 1:A:208:ILE:CG1 | 2.90 | 0.59 |
| 1:A:181:MET:O | 1:A:213:PHE:HE1 | 1.86 | 0.59 |
| 1:A:48:ASN:HB2 | 1:A:68:THR:HG21 | 1.85 | 0.58 |
| 1:B:150:TRP:H | 1:B:160:THR:HG21 | 1.68 | 0.58 |
| 2:C:55:HIS:NE2 | 2:C:241:ASP:OD2 | 2.37 | 0.58 |
| 1:B:181:MET:SD | 1:B:208:ILE:HG13 | 2.44 | 0.58 |
| 1:B:181:MET:HG2 | 1:B:181:MET:O | 2.04 | 0.57 |
| 1:B:86:ASN:CG | 3:B:301:NAG:C1 | 2.71 | 0.57 |
| 1:A:115:ALA:HB2 | 1:A:197:LEU:HD22 | 1.85 | 0.57 |
| 1:B:34:MET:HG2 | 1:B:101:ASP:HB2 | 1.86 | 0.57 |
| 1:A:122:HIS:CE1 | 1:B:205:SER:HG | 2.19 | 0.57 |
| 2:D:37:GLN:HB2 | 2:D:47:LEU:HD11 | 1.86 | 0.57 |
| 1:B:124:ASP:O | 1:B:135:LEU:HA | 2.04 | 0.57 |
| 1:B:48:ASN:HB2 | 1:B:68:THR:HG21 | 1.86 | 0.57 |
| 2:D:50:ARG:CG | 2:D:50:ARG:HH11 | 2.16 | 0.57 |
| 1:A:150:TRP:H | 1:A:160:THR:HG21 | 1.70 | 0.57 |
| 1:B:86:ASN:ND2 | 3:B:301:NAG:C2 | 2.68 | 0.57 |
| 2:D:226:TYR:CD1 | 2:D:246:GLY:HA3 | 2.40 | 0.57 |
| 1:A:203:THR:HB | 1:B:120:ASP:OD2 | 2.05 | 0.57 |
| 2:C:37:GLN:HB2 | 2:C:47:LEU:HD11 | 1.86 | 0.57 |
| 1:A:120:ASP:OD1 | 1:A:202:LYS:NZ | 2.30 | 0.56 |
| 2:C:218:THR:OG1 | 2:C:219:SER:N | 2.38 | 0.56 |
| 1:B:188:GLY:C | 1:B:189:VAL:HG13 | 2.25 | 0.56 |
| 2:D:6:GLN:HE21 | 2:D:102:THR:H | 1.53 | 0.56 |
| 2:C:136:GLN:HG2 | 2:C:227:CYS:SG | 2.47 | 0.55 |
| 2:C:87:TYR:HD2 | 2:C:100:GLY:HA2 | 1.72 | 0.55 |
| 1:B:124:ASP:O | 1:B:136:GLU:N | 2.35 | 0.55 |
| 1:B:125:VAL:HA | 1:B:134:HIS:O | 2.07 | 0.55 |
| 2:C:49:TYR:CZ | 2:C:53:ASN:HB2 | 2.41 | 0.55 |
| 2:C:90:GLN:NE2 | 2:C:93:SER:O | 2.39 | 0.55 |
| 2:D:8:PRO:O | 2:D:102:THR:HG23 | 2.07 | 0.54 |
| 2:C:65:SER:OG | 2:C:66:GLY:N | 2.41 | 0.54 |
| 2:C:58:VAL:CG1 | 2:C:62:PHE:HD2 | 2.19 | 0.54 |
| 2:C:166:TYR:HB2 | 2:C:228:SER:CB | 2.26 | 0.54 |
| 1:B:133:ILE:HG21 | 1:B:208:ILE:HD12 | 1.90 | 0.53 |
| 2:C:6:GLN:OE1 | 2:C:99:GLY:O | 2.25 | 0.53 |
| 1:A:136:GLU:OE1 | 1:A:138:ARG:NH1 | 2.39 | 0.53 |
| 2:D:78:LEU:HD23 | 2:D:106:ILE:HD11 | 1.90 | 0.53 |
| 2:D:65:SER:OG | 2:D:66:GLY:N | 2.42 | 0.53 |
| 1:A:182:ARG:HA | 1:A:213:PHE:HE1 | 1.72 | 0.52 |
| 1:A:59:ARG:NH2 | 2:D:92:HIS:O | 2.42 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:104:LEU:HD12 | 2:C:105:ASP:N | 2.25 | 0.52 |
| 2:D:61:ARG:NH2 | 2:D:79:GLN:HB2 | 2.25 | 0.52 |
| 1:A:212:PHE:CE2 | 1:B:127:GLY:HA2 | 2.42 | 0.51 |
| 2:C:90:GLN:HG2 | 2:C:92:HIS:H | 1.76 | 0.51 |
| 2:D:2:ILE:O | 2:D:97:THR:HG21 | 2.10 | 0.51 |
| 1:B:120:ASP:OD1 | 1:B:202:LYS:NZ | 2.29 | 0.51 |
| 2:C:136:GLN:HB3 | 2:C:153:CYS:SG | 2.50 | 0.51 |
| 1:A:101:ASP:OD1 | 1:A:101:ASP:C | 2.49 | 0.51 |
| 1:A:181:MET:HE1 | 1:A:208:ILE:H | 1.76 | 0.51 |
| 1:B:86:ASN:ND2 | 3:B:301:NAG:O5 | 2.30 | 0.50 |
| 1:A:206:ILE:CG1 | 1:A:207:SER:N | 2.75 | 0.50 |
| 2:D:90:GLN:HG2 | 2:D:92:HIS:H | 1.77 | 0.50 |
| 2:C:61:ARG:CB | 2:C:61:ARG:HH11 | 2.25 | 0.50 |
| 1:B:130:ASP:C | 1:B:132:GLY:H | 2.15 | 0.49 |
| 2:D:61:ARG:NH1 | 2:D:61:ARG:HG3 | 2.23 | 0.49 |
| 1:A:130:ASP:HB3 | 1:A:180:ILE:HD13 | 1.93 | 0.49 |
| 1:A:41:SER:OG | 1:A:94:LYS:O | 2.20 | 0.48 |
| 1:A:1:GLN:HA | 1:A:104:PHE:CZ | 2.48 | 0.48 |
| 1:A:118:GLY:HA3 | 1:A:142:TRP:CE2 | 2.48 | 0.48 |
| 1:A:153:ASN:N | 1:A:153:ASN:OD1 | 2.41 | 0.48 |
| 1:A:117:LEU:HD13 | 1:A:198:LEU:HD13 | 1.95 | 0.48 |
| 1:B:182:ARG:HG2 | 1:B:182:ARG:NH1 | 2.26 | 0.48 |
| 2:D:61:ARG:NH1 | 2:D:62:PHE:HE1 | 2.11 | 0.48 |
| 2:D:25:ALA:O | 2:D:69:THR:HG22 | 2.13 | 0.48 |
| 1:B:184:SER:HB2 | 1:B:213:PHE:CE2 | 2.49 | 0.48 |
| 1:A:134:HIS:NE2 | 1:A:178:SER:OG | 2.33 | 0.48 |
| 2:C:25:ALA:O | 2:C:69:THR:HG22 | 2.13 | 0.47 |
| 2:C:147:ALA:O | 2:C:217:LEU:HD12 | 2.15 | 0.47 |
| 2:D:226:TYR:CD1 | 2:D:246:GLY:CA | 2.98 | 0.47 |
| 2:D:53:ASN:N | 2:D:53:ASN:OD1 | 2.29 | 0.47 |
| 2:D:153:CYS:HB3 | 2:D:210:THR:CG2 | 2.45 | 0.47 |
| 1:B:118:GLY:HA3 | 1:B:142:TRP:CE2 | 2.50 | 0.47 |
| 2:C:106:ILE:O | 2:C:107:LYS:O | 2.32 | 0.47 |
| 2:C:67:SER:OG | 2:C:68:ALA:N | 2.48 | 0.47 |
| 1:B:115:ALA:CB | 1:B:198:LEU:HD22 | 2.45 | 0.46 |
| 1:A:37:LYS:HB3 | 1:A:98:TYR:HB2 | 1.96 | 0.46 |
| 2:D:153:CYS:HB3 | 2:D:210:THR:HG23 | 1.97 | 0.46 |
| 2:C:49:TYR:O | 2:C:50:ARG:CB | 2.64 | 0.46 |
| 2:D:49:TYR:O | 2:D:50:ARG:CB | 2.63 | 0.46 |
| 2:C:153:CYS:O | 2:C:209:THR:HG23 | 2.15 | 0.45 |
| 2:D:182:ILE:HG13 | 2:D:183:ASN:N | 2.31 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:116:ALA:HB3 | 1:A:143:TYR:H | 1.82 | 0.45 |
| 2:C:78:LEU:HD23 | 2:C:106:ILE:HD11 | 1.98 | 0.45 |
| 2:D:29:ILE:HD11 | 2:D:71:PHE:CE2 | 2.52 | 0.45 |
| 2:D:29:ILE:O | 2:D:32:TRP:HD1 | 2.00 | 0.45 |
| 2:C:106:ILE:C | 2:C:107:LYS:O | 2.52 | 0.45 |
| 2:C:32:TRP:CE3 | 2:C:238:ASP:OD1 | 2.65 | 0.45 |
| 1:A:119:SER:HB3 | 1:A:140:THR:H | 1.82 | 0.45 |
| 2:C:152:SER:HB3 | 2:C:211:TYR:CD2 | 2.52 | 0.45 |
| 2:D:85:THR:HG22 | 2:D:101:GLY:O | 2.17 | 0.45 |
| 2:D:218:THR:OG1 | 2:D:219:SER:N | 2.48 | 0.44 |
| 1:B:116:ALA:HB3 | 1:B:143:TYR:H | 1.83 | 0.44 |
| 1:A:44:ARG:HA | 1:A:44:ARG:HD3 | 1.47 | 0.44 |
| 1:B:125:VAL:HG22 | 1:B:135:LEU:HD23 | 1.99 | 0.44 |
| 2:C:85:THR:HA | 2:C:103:LYS:HA | 2.00 | 0.44 |
| 2:C:183:ASN:OD1 | 1:B:62:ALA:HB1 | 2.17 | 0.44 |
| 2:C:62:PHE:HE1 | 2:C:75:ILE:HG23 | 1.78 | 0.44 |
| 2:D:50:ARG:NH1 | 2:D:50:ARG:CG | 2.74 | 0.44 |
| 1:B:125:VAL:HG22 | 1:B:135:LEU:CD2 | 2.47 | 0.44 |
| 1:B:153:ASN:N | 1:B:153:ASN:OD1 | 2.40 | 0.44 |
| 2:D:96:TYR:N | 2:D:96:TYR:CD1 | 2.86 | 0.44 |
| 1:B:119:SER:HB3 | 1:B:140:THR:H | 1.83 | 0.44 |
| 2:D:163:TYR:HB3 | 2:D:229:ARG:HD3 | 2.00 | 0.43 |
| 2:D:198:LYS:HA | 2:D:198:LYS:HD3 | 1.88 | 0.43 |
| 2:D:36:TYR:OH | 2:D:240:MET:HG2 | 2.19 | 0.43 |
| 2:D:61:ARG:HH21 | 2:D:79:GLN:HB2 | 1.83 | 0.43 |
| 2:D:153:CYS:O | 2:D:209:THR:CG2 | 2.64 | 0.43 |
| 2:D:165:LEU:HB2 | 2:D:182:ILE:HG23 | 2.00 | 0.43 |
| 2:D:224:VAL:HG11 | 2:D:226:TYR:CZ | 2.54 | 0.42 |
| 1:B:126:LYS:HZ2 | 1:B:126:LYS:HG2 | 1.55 | 0.42 |
| 1:B:75:ILE:HD12 | 1:B:80:ALA:HB2 | 2.02 | 0.42 |
| 2:C:13:ALA:O | 2:C:106:ILE:HA | 2.19 | 0.42 |
| 2:C:61:ARG:HH11 | 2:C:61:ARG:HB2 | 1.83 | 0.42 |
| 2:C:29:ILE:O | 2:C:32:TRP:HD1 | 2.02 | 0.42 |
| 2:D:252:SER:OG | 2:D:254:ALA:O | 2.37 | 0.42 |
| 2:C:29:ILE:HD11 | 2:C:71:PHE:CE2 | 2.55 | 0.42 |
| 2:D:229:ARG:HD2 | 2:D:230:GLU:N | 2.35 | 0.41 |
| 2:C:236:THR:OG1 | 2:C:237:PRO:HD2 | 2.20 | 0.41 |
| 2:C:102:THR:CG2 | 2:C:103:LYS:N | 2.74 | 0.41 |
| 1:B:153:ASN:HB3 | 1:B:187:GLU:O | 2.20 | 0.41 |
| 2:C:144:LYS:HA | 2:C:145:PRO:HD3 | 1.89 | 0.41 |
| 1:B:197:LEU:HG | 1:B:198:LEU:N | 2.35 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|-----------------|--------------------------|-------------------|
| 1:A:75:ILE:HD12 | 1:A:80:ALA:HB2 | 2.02 | 0.41 |
| 1:B:37:LYS:HB3 | 1:B:98:TYR:HB2 | 2.03 | 0.41 |
| 1:B:40:SER:O | 1:B:44:ARG:HA | 2.21 | 0.41 |
| 1:A:181:MET:O | 1:A:213:PHE:CE1 | 2.70 | 0.41 |
| 1:B:188:GLY:C | 1:B:189:VAL:CG1 | 2.89 | 0.40 |
| 2:C:23:CYS:HB3 | 2:C:71:PHE:HB2 | 2.03 | 0.40 |
| 2:D:50:ARG:NH1 | 2:D:50:ARG:HG2 | 2.28 | 0.40 |
| 1:A:198:LEU:HB3 | 1:A:200:LEU:HG | 2.03 | 0.40 |
| 2:C:62:PHE:HE1 | 2:C:75:ILE:CG2 | 2.34 | 0.40 |
| 2:D:177:GLU:OE2 | 2:D:194:LYS:NZ | 2.37 | 0.40 |
| 1:B:86:ASN:OD1 | 3:B:301:NAG:N2 | 2.54 | 0.40 |
| 2:D:166:TYR:O | 2:D:227:CYS:HA | 2.22 | 0.40 |
| 2:D:23:CYS:HB3 | 2:D:71:PHE:HB2 | 2.04 | 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 | 212/220 (96%) | 210 (99%) | 2 (1%) | 0 | 100 | 100 |
| 1 | B | 211/220 (96%) | 205 (97%) | 6 (3%) | 0 | 100 | 100 |
| 2 | C | 228/259 (88%) | 209 (92%) | 19 (8%) | 0 | 100 | 100 |
| 2 | D | 228/259 (88%) | 214 (94%) | 14 (6%) | 0 | 100 | 100 |
| All | All | 879/958 (92%) | 838 (95%) | 41 (5%) | 0 | 100 | 100 |

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|---------------|-----------|-----------|-------------|---|
| 1 | A | 149/178 (84%) | 124 (83%) | 25 (17%) | 2 | 9 |
| 1 | B | 146/178 (82%) | 114 (78%) | 32 (22%) | 1 | 4 |
| 2 | C | 188/204 (92%) | 149 (79%) | 39 (21%) | 1 | 5 |
| 2 | D | 189/204 (93%) | 149 (79%) | 40 (21%) | 1 | 5 |
| All | All | 672/764 (88%) | 536 (80%) | 136 (20%) | 1 | 5 |

All (136) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 29 | MET |
| 1 | A | 38 | TRP |
| 1 | A | 40 | SER |
| 1 | A | 43 | LEU |
| 1 | A | 44 | ARG |
| 1 | A | 56 | VAL |
| 1 | A | 59 | ARG |
| 1 | A | 68 | THR |
| 1 | A | 76 | THR |
| 1 | A | 90 | SER |
| 1 | A | 96 | LEU |
| 1 | A | 106 | GLU |
| 1 | A | 151 | SER |
| 1 | A | 158 | ILE |
| 1 | A | 160 | THR |
| 1 | A | 161 | VAL |
| 1 | A | 170 | VAL |
| 1 | A | 175 | VAL |
| 1 | A | 178 | SER |
| 1 | A | 179 | VAL |
| 1 | A | 190 | SER |
| 1 | A | 192 | THR |
| 1 | A | 195 | SER |
| 1 | A | 197 | LEU |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 208 | ILE |
| 2 | D | 1 | ASP |
| 2 | D | 5 | THR |
| 2 | D | 6 | GLN |
| 2 | D | 10 | SER |
| 2 | D | 14 | SER |
| 2 | D | 15 | LEU |
| 2 | D | 19 | ILE |
| 2 | D | 26 | SER |
| 2 | D | 27 | GLN |
| 2 | D | 31 | LEU |
| 2 | D | 43 | ILE |
| 2 | D | 50 | ARG |
| 2 | D | 53 | ASN |
| 2 | D | 56 | THR |
| 2 | D | 61 | ARG |
| 2 | D | 69 | THR |
| 2 | D | 76 | SER |
| 2 | D | 79 | GLN |
| 2 | D | 97 | THR |
| 2 | D | 105 | ASP |
| 2 | D | 135 | LEU |
| 2 | D | 137 | GLU |
| 2 | D | 142 | LEU |
| 2 | D | 143 | VAL |
| 2 | D | 149 | VAL |
| 2 | D | 156 | SER |
| 2 | D | 182 | ILE |
| 2 | D | 191 | PHE |
| 2 | D | 200 | THR |
| 2 | D | 202 | THR |
| 2 | D | 203 | VAL |
| 2 | D | 206 | SER |
| 2 | D | 215 | SER |
| 2 | D | 218 | THR |
| 2 | D | 228 | SER |
| 2 | D | 229 | ARG |
| 2 | D | 232 | ASP |
| 2 | D | 236 | THR |
| 2 | D | 240 | MET |
| 2 | D | 250 | THR |
| 2 | C | 5 | THR |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | C | 6 | GLN |
| 2 | C | 10 | SER |
| 2 | C | 14 | SER |
| 2 | C | 15 | LEU |
| 2 | C | 19 | ILE |
| 2 | C | 26 | SER |
| 2 | C | 27 | GLN |
| 2 | C | 31 | LEU |
| 2 | C | 43 | ILE |
| 2 | C | 53 | ASN |
| 2 | C | 56 | THR |
| 2 | C | 61 | ARG |
| 2 | C | 69 | THR |
| 2 | C | 76 | SER |
| 2 | C | 79 | GLN |
| 2 | C | 102 | THR |
| 2 | C | 104 | LEU |
| 2 | C | 133 | VAL |
| 2 | C | 135 | LEU |
| 2 | C | 136 | GLN |
| 2 | C | 142 | LEU |
| 2 | C | 143 | VAL |
| 2 | C | 148 | SER |
| 2 | C | 149 | VAL |
| 2 | C | 151 | LEU |
| 2 | C | 156 | SER |
| 2 | C | 159 | THR |
| 2 | C | 165 | LEU |
| 2 | C | 186 | ASN |
| 2 | C | 191 | PHE |
| 2 | C | 200 | THR |
| 2 | C | 203 | VAL |
| 2 | C | 215 | SER |
| 2 | C | 218 | THR |
| 2 | C | 228 | SER |
| 2 | C | 229 | ARG |
| 2 | C | 245 | GLN |
| 2 | C | 253 | SER |
| 1 | B | 8 | SER |
| 1 | B | 29 | MET |
| 1 | B | 32 | GLU |
| 1 | B | 38 | TRP |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 43 | LEU |
| 1 | B | 56 | VAL |
| 1 | B | 59 | ARG |
| 1 | B | 68 | THR |
| 1 | B | 76 | THR |
| 1 | B | 90 | SER |
| 1 | B | 96 | LEU |
| 1 | B | 101 | ASP |
| 1 | B | 106 | GLU |
| 1 | B | 128 | TYR |
| 1 | B | 130 | ASP |
| 1 | B | 151 | SER |
| 1 | B | 158 | ILE |
| 1 | B | 160 | THR |
| 1 | B | 161 | VAL |
| 1 | B | 170 | VAL |
| 1 | B | 175 | VAL |
| 1 | B | 178 | SER |
| 1 | B | 179 | VAL |
| 1 | B | 181 | MET |
| 1 | B | 182 | ARG |
| 1 | B | 190 | SER |
| 1 | B | 192 | THR |
| 1 | B | 195 | SER |
| 1 | B | 198 | LEU |
| 1 | B | 206 | ILE |
| 1 | B | 208 | ILE |
| 1 | B | 210 | ASP |

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | D | 6 | GLN |
| 2 | D | 90 | GLN |
| 2 | D | 134 | GLN |
| 2 | D | 136 | GLN |
| 2 | D | 174 | GLN |
| 2 | C | 170 | GLN |
| 1 | B | 86 | ASN |

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------------|------|-------------|-------------|------|-------------|
| | | | | | Counts | RMSZ | $\# Z > 2$ | Counts | RMSZ | $\# Z > 2$ |
| 3 | NAG | B | 301 | 1 | 14,14,15 | 0.53 | 0 | 17,19,21 | 0.75 | 0 |
| 3 | NAG | A | 301 | 1 | 14,14,15 | 0.53 | 0 | 17,19,21 | 0.88 | 1 (5%) |

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|-----------|---------|
| 3 | NAG | B | 301 | 1 | - | 4/6/23/26 | 0/1/1/1 |
| 3 | NAG | A | 301 | 1 | - | 2/6/23/26 | 0/1/1/1 |

There are no bond length outliers.

All (1) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 3 | A | 301 | NAG | O5-C1-C2 | -2.33 | 107.60 | 111.29 |

There are no chirality outliers.

All (6) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------------|
| 3 | B | 301 | NAG | C8-C7-N2-C2 |
| 3 | B | 301 | NAG | O7-C7-N2-C2 |
| 3 | B | 301 | NAG | C4-C5-C6-O6 |
| 3 | B | 301 | NAG | O5-C5-C6-O6 |
| 3 | A | 301 | NAG | O5-C5-C6-O6 |
| 3 | A | 301 | NAG | C4-C5-C6-O6 |

There are no ring outliers.

1 monomer is involved in 5 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 3 | B | 301 | NAG | 5 | 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, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed | <RSRZ> | #RSRZ>2 | OWAB(Å ²) | Q<0.9 |
|-----|-------|---------------|--------|---------------|-----------------------|-------|
| 1 | A | 214/220 (97%) | 0.40 | 11 (5%) 28 13 | 55, 95, 157, 220 | 0 |
| 1 | B | 213/220 (96%) | 0.30 | 2 (0%) 84 72 | 53, 96, 150, 210 | 0 |
| 2 | C | 232/259 (89%) | -0.17 | 0 100 100 | 46, 74, 106, 131 | 0 |
| 2 | D | 232/259 (89%) | -0.19 | 0 100 100 | 36, 66, 100, 144 | 0 |
| All | All | 891/958 (93%) | 0.07 | 13 (1%) 73 56 | 36, 81, 143, 220 | 0 |

All (13) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | A | 81 | ALA | 3.4 |
| 1 | B | 163 | ALA | 3.4 |
| 1 | A | 127 | GLY | 3.4 |
| 1 | A | 32 | GLU | 3.2 |
| 1 | A | 99 | PHE | 3.1 |
| 1 | A | 36 | LEU | 2.7 |
| 1 | A | 171 | GLY | 2.5 |
| 1 | A | 74 | GLY | 2.3 |
| 1 | B | 185 | SER | 2.3 |
| 1 | A | 102 | GLY | 2.2 |
| 1 | A | 187 | GLU | 2.1 |
| 1 | A | 133 | ILE | 2.1 |
| 1 | A | 73 | ASP | 2.1 |

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

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

| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(\AA^2) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|-----------------------------|-------|
| 3 | NAG | B | 301 | 14/15 | 0.61 | 0.30 | 83,118,145,160 | 0 |
| 3 | NAG | A | 301 | 14/15 | 0.64 | 0.26 | 79,122,136,137 | 0 |

6.5 Other polymers [i](#)

There are no such residues in this entry.