# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 16, 2024 – 10:42 AM EDT

|  |  |  |
|---|---|---|
| PDB ID | : | 5D8D |
| Title | : | Crystal structure of D-alanine-D-alanine ligase from Acinetobacter baumannii |
| Authors | : | Huynh, K.H.; Hong, M.K.; Kang, L.W. |
| Deposited on | : | 2015-08-17 |
| Resolution | : | 2.19 Å(reported) |

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

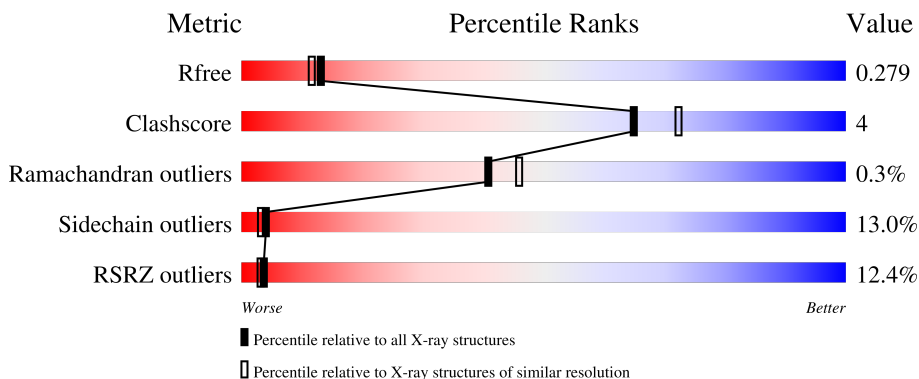|  |  |  |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.37.1 |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 5.8.0158 |
| CCP4 | : | 7.0.044 (Gargrove) |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.37.1 |

# 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 2.19 Å.

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

| Metric | Percentile Ranks | Value |
|---|---|---|
| Rfree | | 0.279 |
| Clashscore | | 4 |
| Ramachandran outliers | | 0.3% |
| Sidechain outliers | | 13.0% |
| RSRZ outliers | | 12.4% |

*Worse*        *Better*

■ Percentile relative to all X-ray structures
▯ Percentile relative to X-ray structures of similar resolution

| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|---|---|---|
| R$_{free}$ | 130704 | 4898 (2.20-2.20) |
| Clashscore | 141614 | 5594 (2.20-2.20) |
| Ramachandran outliers | 138981 | 5503 (2.20-2.20) |
| Sidechain outliers | 138945 | 5504 (2.20-2.20) |
| RSRZ outliers | 127900 | 4800 (2.20-2.20) |

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

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | A | 308 | 6% / 77% 12% · 8% |
| 1 | B | 308 | 5% / 74% 13% 5% 8% |
| 1 | C | 308 | 16% / 74% 12% · 11% |
| 1 | D | 308 | 8% / 74% 16% ·· 8% |
| 1 | E | 308 | 10% / 75% 12% · 10% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | F | 308 | |

21%

74%                                                                    14%      ··    10%

# 2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 12910 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 D-alanine–D-alanine ligase.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|---------|-------|
| 1 | A | 282 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2139 | 1356 | 363 | 412 | 8 | | | |
| 1 | B | 282 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2141 | 1357 | 363 | 413 | 8 | | | |
| 1 | C | 274 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2082 | 1323 | 354 | 397 | 8 | | | |
| 1 | D | 284 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2154 | 1364 | 365 | 417 | 8 | | | |
| 1 | E | 276 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2083 | 1322 | 353 | 400 | 8 | | | |
| 1 | F | 278 | Total | C | N | O | S | 0 | 0 | 0 |
| | | | 2112 | 1336 | 358 | 410 | 8 | | | |

- Molecule 2 is water.

| Mol | Chain | Residues | Atoms | | ZeroOcc | AltConf |
|-----|-------|----------|-------|----|---------|---------|
| 2 | A | 33 | Total | O | 0 | 0 |
| | | | 33 | 33 | | |
| 2 | B | 30 | Total | O | 0 | 0 |
| | | | 30 | 30 | | |
| 2 | C | 29 | Total | O | 0 | 0 |
| | | | 29 | 29 | | |
| 2 | D | 36 | Total | O | 0 | 0 |
| | | | 36 | 36 | | |
| 2 | E | 37 | Total | O | 0 | 0 |
| | | | 37 | 37 | | |
| 2 | F | 34 | Total | O | 0 | 0 |
| | | | 34 | 34 | | |

# 3 Residue-property plots ⓘ

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

- Molecule 1: D-alanine–D-alanine ligase



- Molecule 1: D-alanine–D-alanine ligase



- Molecule 1: D-alanine–D-alanine ligase

ASP TYR GLU ALA LYS TYR GLN ARG ASN VAL GLU Y221 G222 I223 P224 C225 G226 L227 T230 K234 L235 Q244 A245 V246 M257 Q258 D259 E260 Q261 G262 N263 F264 W265 V272 D293 L304 GLU GLY THR ALA

• Molecule 1: D-alanine–D-alanine ligase

Chain D:

8%
74%
16%
8%

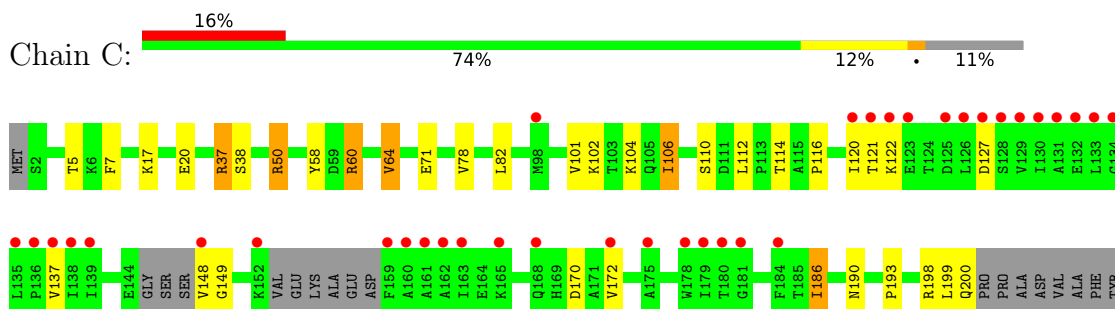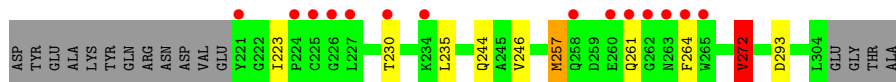MET S2 N3 A4 T5 K6 F7 L13 L14 Q29 R37 V40 Q41 Q48 D49 R50 Y58 D59 R60 G73 V78 L82 V91 Q92 G93 S94 A95 I96 G97 M98 V101 K102 T103 K104 Q105 I106 L112 A115 R118 K122 E123 T124 D125 L126 D127

S128 L135 P136 I139 G145 V148 G149 V153 E154 K155 A156 E157 D158 I163 E164 T167 Q168 H169 D170 A171 I179 R182 R183 F184 T185 I186 V196 I197 R198 L199 Q200 PRO PRO ALA ASP VAL ALA PHE TYR ASP TYR GLU ALA LYS TYR GLN ARG ASN ASP VAL

GLU Y221 G222 I223 P224 T230 E231 E232 L235 A245 V246 W251 M257 L267 V272 P273 E305 GLY THR ALA

• Molecule 1: D-alanine–D-alanine ligase

Chain E:

10%
75%
12%
10%

MET S2 V10 L13 K17 R37 S38 Q48 D49 T53 R60 V64 V78 L82 K102 T103 K104 Q105 I106 D111 L112 P113 T114 A115 T121 K122 E123 T124 D125 L126 D127 S128 V129 I130 A131 E132 L133 G134 L135 P136 V137 H143 GLU GLY SER SER

V148 G149 M150 S151 K152 V153 GLU LYS A156 E157 D158 F159 A160 I163 E164 K165 A166 T167 GLN HIS ASP A171 V172 W178 I179 R182 I186 V196 I197 R198 L199 Q200 PRO PRO ALA ASP VAL ALA PHE TYR ASP TYR GLU ALA LYS TYR GLN ARG ASN ASP VAL GLU TYR G222 I223

T230 K233 K234 L235 A256 M257 Q258 F264 W265 L266 L267 V272 V288 L304 T307 ALA

• Molecule 1: D-alanine–D-alanine ligase

Chain F:

21%
74%
14%
10%

MET S2 F7 L13 L14 E20 Q29 R37 D46 R60 V64 G73 V78 T89 G90 V91 Q92 G93 S94 A95 I96 V101 K104 Q105 I106 W107 D111 L112 P113 T114 Y117 R118 I119 I120 THR LYS E123 T124 D125 L126 D127 S128 V129 I130 A131

E132 L133 GLY LEU PRO VAL I138 I139 K140 P141 V142 G145 S146 S147 V148 G149 M150 S151 K152 V153 E154 K155 A156 E157 D158 F159 A160 A161 A162 I163 E164 K165 T167 Q168 H169 D170 A171 V172 V173 W178 G181 R182 I186 I197 R198 L199 Q200 PRO PRO ALA ASP VAL ALA PHE

TYR ASP TYR GLU ALA LYS TYR GLN ARG ASN ASP VAL GLU Y221 L227 S228 E229 T230 K233 K234 L235 A242 V246 E249 G252 Q258 D259 E260 Q261 G262 W265 E268 V269 N270 T271 V272 L280 K283 V288 D293 E305 GLY THR ALA

# 4 Data and refinement statistics (i)

| Property | Value | Source |
|:---:|:---:|:---:|
| Space group | C 1 2 1 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 221.62Å    74.77Å    143.12Å<br>90.00°    103.27°    90.00° | Depositor |
| Resolution (Å) | 36.05   –   2.19<br>36.05   –   2.19 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 98.4 (36.05-2.19)<br>98.5 (36.05-2.19) | Depositor<br>EDS |
| $R_{merge}$ | (Not available) | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 2.33 (at 2.20Å) | Xtriage |
| Refinement program | REFMAC 5.8.0103 | Depositor |
| R, $R_{free}$ | 0.221   ,   0.281<br>0.224   ,   0.279 | Depositor<br>DCC |
| $R_{free}$ test set | 5778 reflections (5.01%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 45.2 | Xtriage |
| Anisotropy | 0.118 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.33 , 45.5 | EDS |
| L-test for twinning[2] | $< |L| > = 0.48, < L^2 > = 0.31$ | Xtriage |
| Estimated twinning fraction | No twinning to report. | Xtriage |
| $F_o,F_c$ correlation | 0.95 | EDS |
| Total number of atoms | 12910 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 64.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.70% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

# 5 Model quality ⓘ

## 5.1 Standard geometry ⓘ

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 | 0.68 | 0/2175 | 0.86 | 4/2945 (0.1%) |
| 1 | B | 0.70 | 0/2177 | 0.93 | 4/2948 (0.1%) |
| 1 | C | 0.68 | 0/2117 | 0.86 | 5/2866 (0.2%) |
| 1 | D | 0.68 | 0/2191 | 0.90 | 7/2968 (0.2%) |
| 1 | E | 0.68 | 0/2115 | 0.87 | 4/2862 (0.1%) |
| 1 | F | 0.68 | 0/2146 | 0.89 | 6/2903 (0.2%) |
| All | All | 0.68 | 0/12921 | 0.89 | 30/17492 (0.2%) |

There are no bond length outliers.

All (30) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | F | 37 | ARG | NE-CZ-NH2 | -12.91 | 113.84 | 120.30 |
| 1 | C | 37 | ARG | NE-CZ-NH2 | -8.58 | 116.01 | 120.30 |
| 1 | F | 37 | ARG | NE-CZ-NH1 | 8.55 | 124.57 | 120.30 |
| 1 | D | 60 | ARG | NE-CZ-NH2 | -8.47 | 116.06 | 120.30 |
| 1 | D | 37 | ARG | NE-CZ-NH2 | -7.89 | 116.35 | 120.30 |
| 1 | D | 37 | ARG | NE-CZ-NH1 | 7.47 | 124.04 | 120.30 |
| 1 | D | 60 | ARG | NE-CZ-NH1 | 7.33 | 123.97 | 120.30 |
| 1 | F | 60 | ARG | NE-CZ-NH1 | 6.96 | 123.78 | 120.30 |
| 1 | E | 13 | LEU | CA-CB-CG | 6.16 | 129.47 | 115.30 |
| 1 | B | 259 | ASP | CB-CG-OD1 | 6.15 | 123.83 | 118.30 |
| 1 | E | 37 | ARG | NE-CZ-NH1 | 6.00 | 123.30 | 120.30 |
| 1 | C | 50 | ARG | NE-CZ-NH1 | 5.95 | 123.27 | 120.30 |
| 1 | C | 37 | ARG | NE-CZ-NH1 | 5.85 | 123.23 | 120.30 |
| 1 | D | 118 | ARG | NE-CZ-NH1 | 5.84 | 123.22 | 120.30 |
| 1 | F | 60 | ARG | NE-CZ-NH2 | -5.62 | 117.49 | 120.30 |
| 1 | B | 118 | ARG | NE-CZ-NH1 | 5.51 | 123.06 | 120.30 |
| 1 | D | 50 | ARG | NE-CZ-NH1 | 5.37 | 122.98 | 120.30 |
| 1 | A | 49 | ASP | CB-CG-OD1 | 5.33 | 123.10 | 118.30 |
| 1 | E | 37 | ARG | NE-CZ-NH2 | -5.24 | 117.68 | 120.30 |
| 1 | B | 64 | VAL | CB-CA-C | 5.24 | 121.35 | 111.40 |
| 1 | F | 14 | LEU | CA-CB-CG | 5.22 | 127.30 | 115.30 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 1 | C | 64 | VAL | CB-CA-C | 5.22 | 121.31 | 111.40 |
| 1 | F | 64 | VAL | CB-CA-C | 5.17 | 121.23 | 111.40 |
| 1 | D | 118 | ARG | NE-CZ-NH2 | -5.16 | 117.72 | 120.30 |
| 1 | A | 37 | ARG | NE-CZ-NH2 | -5.16 | 117.72 | 120.30 |
| 1 | E | 60 | ARG | NE-CZ-NH1 | 5.15 | 122.87 | 120.30 |
| 1 | C | 272 | VAL | CB-CA-C | 5.14 | 121.16 | 111.40 |
| 1 | A | 13 | LEU | CA-CB-CG | 5.09 | 127.01 | 115.30 |
| 1 | A | 60 | ARG | NE-CZ-NH1 | 5.07 | 122.84 | 120.30 |
| 1 | B | 21 | ARG | NE-CZ-NH1 | 5.03 | 122.81 | 120.30 |

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | A | 2139 | 0 | 2144 | 21 | 0 |
| 1 | B | 2141 | 0 | 2146 | 23 | 0 |
| 1 | C | 2082 | 0 | 2092 | 13 | 0 |
| 1 | D | 2154 | 0 | 2156 | 21 | 0 |
| 1 | E | 2083 | 0 | 2097 | 15 | 0 |
| 1 | F | 2112 | 0 | 2104 | 16 | 0 |
| 2 | A | 33 | 0 | 0 | 1 | 0 |
| 2 | B | 30 | 0 | 0 | 0 | 0 |
| 2 | C | 29 | 0 | 0 | 0 | 0 |
| 2 | D | 36 | 0 | 0 | 0 | 0 |
| 2 | E | 37 | 0 | 0 | 0 | 0 |
| 2 | F | 34 | 0 | 0 | 0 | 0 |
| All | All | 12910 | 0 | 12739 | 103 | 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 4.

All (103) 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:179:ILE:HD11 | 1:E:265:TRP:CD1 | 2.20 | 0.76 |
| 1:A:122:LYS:HE3 | 1:A:122:LYS:HA | 1.67 | 0.74 |
| 1:A:120:ILE:HA | 1:A:124:THR:HG21 | 1.71 | 0.73 |
| 1:F:125:ASP:O | 1:F:128:SER:OG | 2.09 | 0.70 |
| 1:C:104:LYS:NZ | 1:C:114:THR:OG1 | 2.25 | 0.69 |
| 1:B:50:ARG:NH2 | 1:B:58:TYR:OH | 2.26 | 0.68 |
| 1:B:226:GLY:HA2 | 1:D:5:THR:HG21 | 1.76 | 0.67 |
| 1:B:186:ILE:HD11 | 1:B:193:PRO:HB3 | 1.76 | 0.67 |
| 1:A:121:THR:H | 1:A:124:THR:HG23 | 1.60 | 0.67 |
| 1:F:129:VAL:HG12 | 1:F:133:LEU:HD12 | 1.77 | 0.67 |
| 1:F:7:PHE:O | 1:F:60:ARG:HD2 | 1.95 | 0.66 |
| 1:E:150:MET:HG2 | 1:E:151:SER:N | 2.12 | 0.65 |
| 1:A:122:LYS:HA | 1:A:122:LYS:CE | 2.30 | 0.62 |
| 1:D:183:GLU:HG2 | 1:D:199:LEU:HD12 | 1.83 | 0.61 |
| 1:E:104:LYS:NZ | 1:E:114:THR:OG1 | 2.34 | 0.61 |
| 1:F:104:LYS:NZ | 1:F:114:THR:OG1 | 2.32 | 0.60 |
| 1:A:123:GLU:HG3 | 1:A:123:GLU:O | 2.02 | 0.59 |
| 1:E:135:LEU:HD12 | 1:E:136:PRO:HA | 1.85 | 0.59 |
| 1:A:121:THR:O | 1:A:123:GLU:N | 2.30 | 0.59 |
| 1:A:13:LEU:HD11 | 1:A:55:LEU:HD21 | 1.86 | 0.57 |
| 1:D:7:PHE:O | 1:D:60:ARG:HD2 | 2.04 | 0.57 |
| 1:F:181:GLY:HA3 | 1:F:258:GLN:O | 2.06 | 0.56 |
| 1:C:20:GLU:N | 1:C:20:GLU:OE2 | 2.39 | 0.56 |
| 1:C:71:GLU:HG3 | 1:C:272:VAL:HG13 | 1.88 | 0.56 |
| 1:D:118:ARG:NH2 | 1:D:128:SER:OG | 2.40 | 0.55 |
| 1:A:121:THR:H | 1:A:124:THR:CG2 | 2.20 | 0.55 |
| 1:D:115:ALA:HB2 | 1:D:179:ILE:HD11 | 1.87 | 0.55 |
| 1:A:122:LYS:HE3 | 1:A:122:LYS:CA | 2.37 | 0.54 |
| 1:D:197:ILE:HG23 | 1:D:222:GLY:HA3 | 1.89 | 0.54 |
| 1:A:130:ILE:HG23 | 1:A:135:LEU:HD12 | 1.89 | 0.54 |
| 1:C:102:LYS:O | 1:C:106:ILE:HG23 | 2.08 | 0.54 |
| 1:B:71:GLU:OE1 | 1:B:270:ASN:ND2 | 2.42 | 0.53 |
| 1:E:102:LYS:O | 1:E:106:ILE:HG23 | 2.08 | 0.53 |
| 1:A:50:ARG:NH2 | 1:A:58:TYR:OH | 2.42 | 0.53 |
| 1:F:20:GLU:N | 1:F:20:GLU:OE2 | 2.42 | 0.52 |
| 1:B:186:ILE:C | 1:B:186:ILE:HD12 | 2.30 | 0.52 |
| 1:D:186:ILE:HD12 | 1:D:186:ILE:N | 2.25 | 0.52 |
| 1:D:106:ILE:HD11 | 1:D:245:ALA:HB1 | 1.92 | 0.51 |
| 1:A:71:GLU:HG3 | 1:A:272:VAL:HG13 | 1.92 | 0.51 |
| 1:C:121:THR:HG22 | 1:C:172:VAL:HA | 1.92 | 0.51 |
| 1:A:66:HIS:HD1 | 1:A:272:VAL:HG22 | 1.75 | 0.51 |
| 1:D:102:LYS:O | 1:D:106:ILE:HG23 | 2.12 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:B:120:ILE:HD11 | 1:B:163:ILE:HG21 | 1.92 | 0.50 |
| 1:B:81:TRP:CH2 | 1:E:17:LYS:HD3 | 2.47 | 0.50 |
| 1:D:106:ILE:HG22 | 1:F:106:ILE:HG22 | 1.93 | 0.49 |
| 1:F:101:VAL:HG13 | 1:F:142:VAL:CG2 | 2.41 | 0.49 |
| 1:F:129:VAL:CG1 | 1:F:133:LEU:HD12 | 2.41 | 0.49 |
| 1:F:138:ILE:HD11 | 1:F:150:MET:CE | 2.42 | 0.49 |
| 1:A:130:ILE:HG23 | 1:A:135:LEU:CD1 | 2.42 | 0.49 |
| 1:C:186:ILE:HD11 | 1:C:193:PRO:HB3 | 1.94 | 0.49 |
| 1:F:14:LEU:O | 1:F:46:ASP:HA | 2.14 | 0.47 |
| 1:D:185:THR:C | 1:D:186:ILE:HD12 | 2.35 | 0.47 |
| 1:D:153:VAL:HG13 | 1:D:158:ASP:HB2 | 1.96 | 0.47 |
| 1:D:2:SER:O | 1:D:5:THR:HG22 | 2.15 | 0.47 |
| 1:C:7:PHE:O | 1:C:60:ARG:HD2 | 2.14 | 0.47 |
| 1:C:148:VAL:HG12 | 1:C:149:GLY:N | 2.30 | 0.47 |
| 1:F:197:ILE:HG21 | 1:F:280:LEU:CD2 | 2.45 | 0.47 |
| 1:A:78:VAL:HG12 | 1:C:78:VAL:HA | 1.96 | 0.46 |
| 1:E:198:ARG:NH1 | 1:E:199:LEU:O | 2.49 | 0.46 |
| 1:F:153:VAL:HG11 | 1:F:159:PHE:CZ | 2.50 | 0.46 |
| 1:E:182:ARG:HH21 | 1:E:258:GLN:HE22 | 1.63 | 0.46 |
| 1:B:179:ILE:HD13 | 1:B:265:TRP:CD1 | 2.51 | 0.46 |
| 1:B:35:LEU:HB3 | 1:B:40:VAL:HG22 | 1.99 | 0.45 |
| 1:F:107:TRP:NE1 | 1:F:242:ALA:HB1 | 2.31 | 0.45 |
| 1:B:179:ILE:HD12 | 1:B:259:ASP:HB3 | 1.99 | 0.44 |
| 1:A:64:VAL:HG13 | 1:A:64:VAL:O | 2.16 | 0.44 |
| 1:B:179:ILE:HD11 | 1:B:257:MET:HB3 | 2.00 | 0.44 |
| 1:F:138:ILE:HD11 | 1:F:150:MET:HE1 | 2.00 | 0.44 |
| 1:C:257:MET:O | 1:C:264:PHE:HA | 2.18 | 0.44 |
| 1:A:35:LEU:HB3 | 1:A:40:VAL:HG22 | 1.99 | 0.43 |
| 1:B:7:PHE:HB3 | 1:B:60:ARG:HD2 | 2.01 | 0.43 |
| 1:E:182:ARG:NH2 | 1:E:258:GLN:HE22 | 2.15 | 0.43 |
| 1:C:37:ARG:HD2 | 1:C:293:ASP:OD2 | 2.18 | 0.43 |
| 1:D:135:LEU:HA | 1:D:136:PRO:C | 2.38 | 0.43 |
| 1:B:34:ALA:HB1 | 1:B:293:ASP:HA | 2.01 | 0.43 |
| 1:B:106:ILE:HD11 | 1:B:245:ALA:HB1 | 2.01 | 0.43 |
| 1:D:106:ILE:HD11 | 1:D:245:ALA:C | 2.39 | 0.43 |
| 1:A:186:ILE:HD12 | 1:A:186:ILE:N | 2.33 | 0.43 |
| 1:B:33:ASP:HB3 | 1:B:37:ARG:NH2 | 2.34 | 0.42 |
| 1:D:104:LYS:NZ | 1:D:115:ALA:O | 2.51 | 0.42 |
| 1:B:53:THR:HG22 | 1:E:53:THR:HG22 | 2.00 | 0.42 |
| 1:B:179:ILE:CD1 | 1:B:265:TRP:CD1 | 3.02 | 0.42 |
| 1:E:114:THR:O | 1:E:115:ALA:C | 2.57 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:C:50:ARG:NH2 | 1:C:58:TYR:OH | 2.45 | 0.42 |
| 1:E:49:ASP:OD1 | 1:E:49:ASP:N | 2.52 | 0.42 |
| 1:A:121:THR:O | 1:A:121:THR:OG1 | 2.34 | 0.42 |
| 1:B:101:VAL:HG12 | 1:B:174:MET:HE3 | 2.01 | 0.42 |
| 1:C:148:VAL:HG12 | 1:C:149:GLY:H | 1.85 | 0.42 |
| 1:D:223:ILE:HA | 1:D:224:PRO:C | 2.39 | 0.42 |
| 1:B:235:LEU:HD22 | 1:B:239:CYS:SG | 2.60 | 0.42 |
| 1:D:196:VAL:HG13 | 1:D:232:GLU:CG | 2.50 | 0.42 |
| 1:B:78:VAL:HA | 1:E:78:VAL:HG12 | 2.02 | 0.42 |
| 1:F:37:ARG:HD2 | 1:F:293:ASP:OD2 | 2.20 | 0.42 |
| 1:E:106:ILE:HD12 | 1:E:106:ILE:O | 2.20 | 0.41 |
| 1:B:45:PHE:CE1 | 1:B:50:ARG:HB2 | 2.54 | 0.41 |
| 1:B:225:CYS:SG | 1:B:227:LEU:HB2 | 2.61 | 0.41 |
| 1:D:50:ARG:NH2 | 1:D:58:TYR:OH | 2.51 | 0.41 |
| 1:D:106:ILE:O | 1:D:106:ILE:HD12 | 2.20 | 0.41 |
| 1:B:158:ASP:N | 1:B:158:ASP:OD1 | 2.54 | 0.41 |
| 1:A:98:MET:HB3 | 2:A:426:HOH:O | 2.20 | 0.41 |
| 1:D:251:TRP:CH2 | 1:D:273:PRO:HD2 | 2.56 | 0.41 |
| 1:E:150:MET:HG2 | 1:E:151:SER:H | 1.85 | 0.40 |
| 1:A:50:ARG:HD3 | 1:A:54:GLU:OE1 | 2.21 | 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 | 276/308 (90%) | 265 (96%) | 11 (4%) | 0 | 100 | 100 |
| 1 | B | 276/308 (90%) | 264 (96%) | 12 (4%) | 0 | 100 | 100 |
| 1 | C | 266/308 (86%) | 252 (95%) | 12 (4%) | 2 (1%) | 19 | 19 |
| 1 | D | 280/308 (91%) | 266 (95%) | 13 (5%) | 1 (0%) | 34 | 37 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|----------|----------|---------|----------|-------------|---|
| 1 | E | 266/308 (86%) | 255 (96%) | 10 (4%) | 1 (0%) | 34 | 37 |
| 1 | F | 270/308 (88%) | 253 (94%) | 16 (6%) | 1 (0%) | 34 | 37 |
| All | All | 1634/1848 (88%) | 1555 (95%) | 74 (4%) | 5 (0%) | 41 | 46 |

All (5) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | D | 123 | GLU |
| 1 | E | 111 | ASP |
| 1 | F | 260 | GLU |
| 1 | C | 116 | PRO |
| 1 | C | 190 | ASN |

### 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 | 226/247 (92%) | 195 (86%) | 31 (14%) | 3 | 3 |
| 1 | B | 227/247 (92%) | 197 (87%) | 30 (13%) | 4 | 3 |
| 1 | C | 220/247 (89%) | 193 (88%) | 27 (12%) | 4 | 4 |
| 1 | D | 228/247 (92%) | 198 (87%) | 30 (13%) | 4 | 3 |
| 1 | E | 220/247 (89%) | 191 (87%) | 29 (13%) | 4 | 3 |
| 1 | F | 223/247 (90%) | 195 (87%) | 28 (13%) | 4 | 3 |
| All | All | 1344/1482 (91%) | 1169 (87%) | 175 (13%) | 4 | 3 |

All (175) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 10 | VAL |
| 1 | A | 13 | LEU |
| 1 | A | 29 | GLN |
| 1 | A | 50 | ARG |
| 1 | A | 60 | ARG |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 64 | VAL |
| 1 | A | 68 | ARG |
| 1 | A | 78 | VAL |
| 1 | A | 82 | LEU |
| 1 | A | 111 | ASP |
| 1 | A | 112 | LEU |
| 1 | A | 120 | ILE |
| 1 | A | 122 | LYS |
| 1 | A | 123 | GLU |
| 1 | A | 132 | GLU |
| 1 | A | 133 | LEU |
| 1 | A | 151 | SER |
| 1 | A | 154 | GLU |
| 1 | A | 165 | LYS |
| 1 | A | 170 | ASP |
| 1 | A | 174 | MET |
| 1 | A | 179 | ILE |
| 1 | A | 221 | TYR |
| 1 | A | 227 | LEU |
| 1 | A | 230 | THR |
| 1 | A | 234 | LYS |
| 1 | A | 235 | LEU |
| 1 | A | 257 | MET |
| 1 | A | 267 | LEU |
| 1 | A | 272 | VAL |
| 1 | A | 288 | VAL |
| 1 | B | 13 | LEU |
| 1 | B | 14 | LEU |
| 1 | B | 17 | LYS |
| 1 | B | 29 | GLN |
| 1 | B | 40 | VAL |
| 1 | B | 50 | ARG |
| 1 | B | 64 | VAL |
| 1 | B | 78 | VAL |
| 1 | B | 82 | LEU |
| 1 | B | 101 | VAL |
| 1 | B | 106 | ILE |
| 1 | B | 112 | LEU |
| 1 | B | 120 | ILE |
| 1 | B | 123 | GLU |
| 1 | B | 137 | VAL |
| 1 | B | 151 | SER |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 158 | ASP |
| 1 | B | 159 | PHE |
| 1 | B | 165 | LYS |
| 1 | B | 168 | GLN |
| 1 | B | 179 | ILE |
| 1 | B | 180 | THR |
| 1 | B | 186 | ILE |
| 1 | B | 196 | VAL |
| 1 | B | 198 | ARG |
| 1 | B | 227 | LEU |
| 1 | B | 235 | LEU |
| 1 | B | 257 | MET |
| 1 | B | 272 | VAL |
| 1 | B | 304 | LEU |
| 1 | C | 5 | THR |
| 1 | C | 17 | LYS |
| 1 | C | 38 | SER |
| 1 | C | 60 | ARG |
| 1 | C | 64 | VAL |
| 1 | C | 82 | LEU |
| 1 | C | 101 | VAL |
| 1 | C | 106 | ILE |
| 1 | C | 110 | SER |
| 1 | C | 112 | LEU |
| 1 | C | 120 | ILE |
| 1 | C | 122 | LYS |
| 1 | C | 127 | ASP |
| 1 | C | 137 | VAL |
| 1 | C | 170 | ASP |
| 1 | C | 186 | ILE |
| 1 | C | 198 | ARG |
| 1 | C | 199 | LEU |
| 1 | C | 200 | GLN |
| 1 | C | 223 | ILE |
| 1 | C | 230 | THR |
| 1 | C | 235 | LEU |
| 1 | C | 244 | GLN |
| 1 | C | 246 | VAL |
| 1 | C | 257 | MET |
| 1 | C | 261 | GLN |
| 1 | C | 272 | VAL |
| 1 | D | 2 | SER |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | D | 3 | ASN |
| 1 | D | 13 | LEU |
| 1 | D | 14 | LEU |
| 1 | D | 29 | GLN |
| 1 | D | 40 | VAL |
| 1 | D | 41 | GLN |
| 1 | D | 48 | GLN |
| 1 | D | 50 | ARG |
| 1 | D | 60 | ARG |
| 1 | D | 78 | VAL |
| 1 | D | 82 | LEU |
| 1 | D | 101 | VAL |
| 1 | D | 106 | ILE |
| 1 | D | 112 | LEU |
| 1 | D | 118 | ARG |
| 1 | D | 163 | ILE |
| 1 | D | 167 | THR |
| 1 | D | 168 | GLN |
| 1 | D | 182 | ARG |
| 1 | D | 196 | VAL |
| 1 | D | 198 | ARG |
| 1 | D | 223 | ILE |
| 1 | D | 230 | THR |
| 1 | D | 231 | GLU |
| 1 | D | 235 | LEU |
| 1 | D | 246 | VAL |
| 1 | D | 257 | MET |
| 1 | D | 267 | LEU |
| 1 | D | 272 | VAL |
| 1 | E | 2 | SER |
| 1 | E | 10 | VAL |
| 1 | E | 13 | LEU |
| 1 | E | 38 | SER |
| 1 | E | 48 | GLN |
| 1 | E | 49 | ASP |
| 1 | E | 64 | VAL |
| 1 | E | 78 | VAL |
| 1 | E | 82 | LEU |
| 1 | E | 106 | ILE |
| 1 | E | 112 | LEU |
| 1 | E | 114 | THR |
| 1 | E | 122 | LYS |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | E | 137 | VAL |
| 1 | E | 148 | VAL |
| 1 | E | 150 | MET |
| 1 | E | 158 | ASP |
| 1 | E | 163 | ILE |
| 1 | E | 165 | LYS |
| 1 | E | 167 | THR |
| 1 | E | 179 | ILE |
| 1 | E | 186 | ILE |
| 1 | E | 196 | VAL |
| 1 | E | 233 | LYS |
| 1 | E | 235 | LEU |
| 1 | E | 267 | LEU |
| 1 | E | 272 | VAL |
| 1 | E | 288 | VAL |
| 1 | E | 304 | LEU |
| 1 | F | 13 | LEU |
| 1 | F | 14 | LEU |
| 1 | F | 29 | GLN |
| 1 | F | 60 | ARG |
| 1 | F | 64 | VAL |
| 1 | F | 78 | VAL |
| 1 | F | 106 | ILE |
| 1 | F | 112 | LEU |
| 1 | F | 114 | THR |
| 1 | F | 120 | ILE |
| 1 | F | 124 | THR |
| 1 | F | 127 | ASP |
| 1 | F | 128 | SER |
| 1 | F | 132 | GLU |
| 1 | F | 163 | ILE |
| 1 | F | 182 | ARG |
| 1 | F | 186 | ILE |
| 1 | F | 198 | ARG |
| 1 | F | 227 | LEU |
| 1 | F | 229 | GLU |
| 1 | F | 230 | THR |
| 1 | F | 233 | LYS |
| 1 | F | 235 | LEU |
| 1 | F | 249 | GLU |
| 1 | F | 268 | GLU |
| 1 | F | 270 | ASN |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | F | 283 | LYS |
| 1 | F | 288 | VAL |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | A | 74 | GLN |
| 1 | A | 92 | GLN |
| 1 | A | 105 | GLN |
| 1 | A | 244 | GLN |
| 1 | A | 258 | GLN |
| 1 | B | 244 | GLN |
| 1 | B | 261 | GLN |
| 1 | C | 244 | GLN |
| 1 | D | 244 | GLN |
| 1 | E | 190 | ASN |
| 1 | E | 244 | GLN |
| 1 | E | 258 | GLN |
| 1 | F | 244 | GLN |
| 1 | F | 270 | 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 ⓘ

There are no ligands in this entry.

## 5.7 Other polymers ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

# 6   Fit of model and data ⓘ

## 6.1   Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, $95^{th}$ percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed | <RSRZ> | #RSRZ>2 | | | OWAB(Å$^2$) | Q<0.9 |
|---|---|---|---|---|---|---|---|---|
| 1 | A | 282/308 (91%) | 0.36 | 20 (7%) | 16 | 14 | 32, 49, 106, 133 | 0 |
| 1 | B | 282/308 (91%) | 0.33 | 16 (5%) | 23 | 22 | 31, 52, 98, 125 | 0 |
| 1 | C | 274/308 (88%) | 0.91 | 50 (18%) | 1 | 1 | 33, 57, 133, 163 | 0 |
| 1 | D | 284/308 (92%) | 0.46 | 25 (8%) | 10 | 8 | 32, 51, 106, 147 | 0 |
| 1 | E | 276/308 (89%) | 0.56 | 32 (11%) | 4 | 4 | 35, 57, 111, 131 | 0 |
| 1 | F | 278/308 (90%) | 1.22 | 65 (23%) | 0 | 0 | 34, 64, 143, 170 | 0 |
| All | All | 1676/1848 (90%) | 0.64 | 208 (12%) | 4 | 3 | 31, 54, 120, 170 | 0 |

All (208) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|---|---|---|---|---|
| 1 | C | 159 | PHE | 12.0 |
| 1 | F | 126 | LEU | 9.5 |
| 1 | D | 148 | VAL | 9.5 |
| 1 | F | 148 | VAL | 8.2 |
| 1 | F | 172 | VAL | 8.0 |
| 1 | F | 160 | ALA | 7.9 |
| 1 | C | 133 | LEU | 6.9 |
| 1 | C | 178 | TRP | 6.8 |
| 1 | F | 159 | PHE | 6.8 |
| 1 | A | 169 | HIS | 6.7 |
| 1 | F | 123 | GLU | 6.4 |
| 1 | F | 131 | ALA | 6.4 |
| 1 | F | 124 | THR | 6.4 |
| 1 | C | 129 | VAL | 6.4 |
| 1 | F | 154 | GLU | 6.3 |
| 1 | D | 122 | LYS | 6.1 |
| 1 | F | 157 | GLU | 6.0 |
| 1 | F | 169 | HIS | 6.0 |
| 1 | F | 133 | LEU | 5.8 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | C | 126 | LEU | 5.8 |
| 1 | F | 120 | ILE | 5.3 |
| 1 | F | 178 | TRP | 5.3 |
| 1 | C | 135 | LEU | 5.3 |
| 1 | F | 173 | VAL | 5.2 |
| 1 | C | 130 | ILE | 5.1 |
| 1 | C | 221 | TYR | 5.0 |
| 1 | C | 134 | GLY | 4.9 |
| 1 | F | 155 | LYS | 4.9 |
| 1 | F | 119 | ILE | 4.8 |
| 1 | C | 131 | ALA | 4.7 |
| 1 | C | 180 | THR | 4.7 |
| 1 | F | 166 | ALA | 4.7 |
| 1 | F | 125 | ASP | 4.7 |
| 1 | B | 161 | ALA | 4.7 |
| 1 | C | 132 | GLU | 4.6 |
| 1 | E | 122 | LYS | 4.6 |
| 1 | E | 131 | ALA | 4.6 |
| 1 | F | 171 | ALA | 4.6 |
| 1 | F | 153 | VAL | 4.6 |
| 1 | D | 169 | HIS | 4.5 |
| 1 | F | 129 | VAL | 4.5 |
| 1 | F | 305 | GLU | 4.5 |
| 1 | A | 129 | VAL | 4.5 |
| 1 | F | 156 | ALA | 4.5 |
| 1 | E | 132 | GLU | 4.5 |
| 1 | E | 148 | VAL | 4.5 |
| 1 | E | 135 | LEU | 4.4 |
| 1 | E | 264 | PHE | 4.4 |
| 1 | E | 156 | ALA | 4.3 |
| 1 | D | 163 | ILE | 4.3 |
| 1 | E | 128 | SER | 4.3 |
| 1 | F | 96 | ILE | 4.2 |
| 1 | F | 164 | GLU | 4.2 |
| 1 | C | 152 | LYS | 4.2 |
| 1 | F | 161 | ALA | 4.2 |
| 1 | C | 136 | PRO | 4.1 |
| 1 | C | 162 | ALA | 4.1 |
| 1 | A | 168 | GLN | 4.0 |
| 1 | B | 126 | LEU | 4.0 |
| 1 | E | 136 | PRO | 4.0 |
| 1 | F | 127 | ASP | 4.0 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | F | 163 | ILE | 4.0 |
| 1 | B | 165 | LYS | 3.9 |
| 1 | C | 137 | VAL | 3.9 |
| 1 | C | 125 | ASP | 3.9 |
| 1 | C | 160 | ALA | 3.9 |
| 1 | F | 162 | ALA | 3.9 |
| 1 | E | 130 | ILE | 3.8 |
| 1 | D | 95 | ALA | 3.8 |
| 1 | F | 139 | ILE | 3.7 |
| 1 | B | 221 | TYR | 3.7 |
| 1 | F | 147 | SER | 3.7 |
| 1 | E | 157 | GLU | 3.7 |
| 1 | E | 143 | HIS | 3.6 |
| 1 | E | 129 | VAL | 3.6 |
| 1 | E | 127 | ASP | 3.6 |
| 1 | F | 118 | ARG | 3.6 |
| 1 | C | 120 | ILE | 3.6 |
| 1 | E | 165 | LYS | 3.6 |
| 1 | F | 167 | THR | 3.6 |
| 1 | E | 160 | ALA | 3.6 |
| 1 | D | 171 | ALA | 3.5 |
| 1 | E | 126 | LEU | 3.5 |
| 1 | A | 148 | VAL | 3.5 |
| 1 | C | 161 | ALA | 3.5 |
| 1 | C | 165 | LYS | 3.5 |
| 1 | F | 165 | LYS | 3.5 |
| 1 | A | 126 | LEU | 3.5 |
| 1 | B | 158 | ASP | 3.5 |
| 1 | A | 147 | SER | 3.5 |
| 1 | F | 168 | GLN | 3.4 |
| 1 | C | 260 | GLU | 3.4 |
| 1 | E | 134 | GLY | 3.4 |
| 1 | D | 164 | GLU | 3.4 |
| 1 | A | 165 | LYS | 3.4 |
| 1 | F | 221 | TYR | 3.3 |
| 1 | E | 159 | PHE | 3.3 |
| 1 | D | 2 | SER | 3.3 |
| 1 | B | 123 | GLU | 3.3 |
| 1 | C | 224 | PRO | 3.2 |
| 1 | F | 150 | MET | 3.2 |
| 1 | E | 121 | THR | 3.2 |
| 1 | E | 230 | THR | 3.2 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | C | 168 | GLN | 3.2 |
| 1 | F | 132 | GLU | 3.2 |
| 1 | B | 162 | ALA | 3.2 |
| 1 | E | 172 | VAL | 3.2 |
| 1 | E | 133 | LEU | 3.1 |
| 1 | F | 94 | SER | 3.1 |
| 1 | D | 123 | GLU | 3.1 |
| 1 | B | 159 | PHE | 3.1 |
| 1 | F | 91 | VAL | 3.1 |
| 1 | C | 122 | LYS | 3.1 |
| 1 | F | 145 | GLY | 3.1 |
| 1 | C | 265 | TRP | 3.1 |
| 1 | F | 271 | THR | 3.1 |
| 1 | C | 179 | ILE | 3.1 |
| 1 | F | 265 | TRP | 3.0 |
| 1 | D | 153 | VAL | 3.0 |
| 1 | D | 94 | SER | 3.0 |
| 1 | C | 226 | GLY | 3.0 |
| 1 | C | 227 | LEU | 3.0 |
| 1 | E | 171 | ALA | 3.0 |
| 1 | E | 256 | ALA | 3.0 |
| 1 | D | 96 | ILE | 2.9 |
| 1 | D | 98 | MET | 2.9 |
| 1 | E | 137 | VAL | 2.9 |
| 1 | A | 153 | VAL | 2.9 |
| 1 | C | 163 | ILE | 2.8 |
| 1 | A | 124 | THR | 2.8 |
| 1 | C | 181 | GLY | 2.8 |
| 1 | F | 170 | ASP | 2.8 |
| 1 | F | 269 | VAL | 2.8 |
| 1 | C | 138 | ILE | 2.8 |
| 1 | C | 261 | GLN | 2.8 |
| 1 | D | 170 | ASP | 2.8 |
| 1 | F | 93 | GLY | 2.8 |
| 1 | B | 166 | ALA | 2.7 |
| 1 | C | 172 | VAL | 2.7 |
| 1 | A | 121 | THR | 2.7 |
| 1 | F | 92 | GLN | 2.7 |
| 1 | B | 122 | LYS | 2.6 |
| 1 | D | 139 | ILE | 2.6 |
| 1 | E | 178 | TRP | 2.6 |
| 1 | F | 151 | SER | 2.6 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | C | 262 | GLY | 2.6 |
| 1 | C | 128 | SER | 2.6 |
| 1 | D | 97 | GLY | 2.6 |
| 1 | E | 164 | GLU | 2.5 |
| 1 | C | 225 | CYS | 2.5 |
| 1 | D | 145 | GLY | 2.5 |
| 1 | A | 130 | ILE | 2.5 |
| 1 | C | 258 | GLN | 2.5 |
| 1 | B | 157 | GLU | 2.5 |
| 1 | B | 168 | GLN | 2.5 |
| 1 | B | 164 | GLU | 2.5 |
| 1 | C | 230 | THR | 2.4 |
| 1 | D | 91 | VAL | 2.4 |
| 1 | E | 223 | ILE | 2.4 |
| 1 | A | 166 | ALA | 2.4 |
| 1 | C | 123 | GLU | 2.4 |
| 1 | D | 127 | ASP | 2.4 |
| 1 | F | 140 | LYS | 2.3 |
| 1 | D | 93 | GLY | 2.3 |
| 1 | E | 123 | GLU | 2.3 |
| 1 | B | 4 | ALA | 2.3 |
| 1 | C | 139 | ILE | 2.3 |
| 1 | F | 130 | ILE | 2.3 |
| 1 | C | 184 | PHE | 2.3 |
| 1 | D | 73 | GLY | 2.3 |
| 1 | A | 158 | ASP | 2.3 |
| 1 | F | 261 | GLN | 2.3 |
| 1 | C | 234 | LYS | 2.3 |
| 1 | D | 155 | LYS | 2.3 |
| 1 | F | 149 | GLY | 2.3 |
| 1 | A | 157 | GLU | 2.3 |
| 1 | C | 127 | ASP | 2.2 |
| 1 | F | 262 | GLY | 2.2 |
| 1 | A | 125 | ASP | 2.2 |
| 1 | A | 127 | ASP | 2.2 |
| 1 | B | 153 | VAL | 2.2 |
| 1 | F | 272 | VAL | 2.2 |
| 1 | F | 142 | VAL | 2.2 |
| 1 | C | 98 | MET | 2.2 |
| 1 | F | 280 | LEU | 2.2 |
| 1 | C | 264 | PHE | 2.2 |
| 1 | D | 157 | GLU | 2.2 |

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*Continued from previous page...*

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1 | D | 149 | GLY | 2.2 |
| 1 | C | 263 | ASN | 2.1 |
| 1 | D | 125 | ASP | 2.1 |
| 1 | F | 234 | LYS | 2.1 |
| 1 | A | 145 | GLY | 2.1 |
| 1 | A | 128 | SER | 2.1 |
| 1 | E | 124 | THR | 2.1 |
| 1 | C | 148 | VAL | 2.1 |
| 1 | F | 111 | ASP | 2.1 |
| 1 | F | 106 | ILE | 2.1 |
| 1 | C | 175 | ALA | 2.1 |
| 1 | F | 117 | TYR | 2.1 |
| 1 | E | 125 | ASP | 2.1 |
| 1 | F | 89 | THR | 2.1 |
| 1 | A | 170 | ASP | 2.1 |
| 1 | A | 5 | THR | 2.1 |
| 1 | F | 246 | VAL | 2.0 |
| 1 | F | 73 | GLY | 2.0 |
| 1 | B | 5 | THR | 2.0 |
| 1 | F | 252 | GLY | 2.0 |
| 1 | C | 121 | THR | 2.0 |

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

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

## 6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 6.4 Ligands ⓘ

There are no ligands in this entry.

## 6.5 Other polymers ⓘ

There are no such residues in this entry.