# WORLDWIDE wwPDB PROTEIN DATA BANK

# Full wwPDB NMR Structure Validation Report ⓘ

Feb 13, 2022 – 11:21 PM EST

|         |   |                                                                          |
|---------|---|--------------------------------------------------------------------------|
| PDB ID  | : | 1IRP                                                                      |
| Title   | : | SOLUTION STRUCTURE OF HUMAN INTERLEUKIN-1 RECEPTOR ANTAGONIST PROTEIN     |
| Authors | : | Stockman, B.J.; Scahill, T.A.; Strakalaitis, N.A.                         |
| Deposited on | : | 1994-10-18                                                           |

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

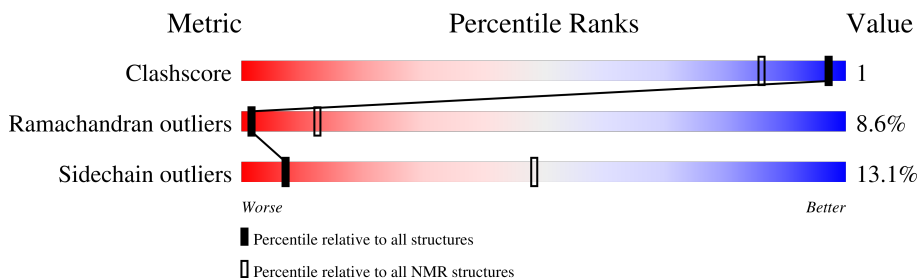|                              |   |                                                                        |
|------------------------------|---|------------------------------------------------------------------------|
| MolProbity                   | : | 4.02b-467                                                              |
| Percentile statistics        | : | 20191225.v01 (using entries in the PDB archive December 25th 2019)     |
| RCI                          | : | v_1n_11_5_13_A (Berjanski et al., 2005)                                |
| PANAV                        | : | Wang et al. (2010)                                                     |
| ShiftChecker                 | : | 2.26                                                                   |
| Ideal geometry (proteins)    | : | Engh & Huber (2001)                                                    |
| Ideal geometry (DNA, RNA)    | : | Parkinson et al. (1996)                                                |
| Validation Pipeline (wwPDB-VP) | : | 2.26                                                                 |

# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
*SOLUTION NMR*

The overall completeness of chemical shifts assignment was not calculated.

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 |
|---|---|---|
| Clashscore | | 1 |
| Ramachandran outliers | | 8.6% |
| Sidechain outliers | | 13.1% |

*Worse*        *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all NMR structures

| Metric | Whole archive (#Entries) | NMR archive (#Entries) |
|---|---|---|
| Clashscore | 158937 | 12864 |
| Ramachandran outliers | 154571 | 11451 |
| Sidechain outliers | 154315 | 11428 |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and 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%

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | A | 153 | 75%      21%    • |

## 2 Ensemble composition and analysis ⓘ

This entry contains 12 models. Model 1 is the overall representative, medoid model (most similar to other models).

The following residues are included in the computation of the global validation metrics.

| Well-defined (core) protein residues | | | |
|---|---|---|---|
| Well-defined core | Residue range (total) | Backbone RMSD (Å) | Medoid model |
| 1 | A:1-A:153 (153) | 1.49 | 1 |

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 2 clusters. No single-model clusters were found.

| Cluster number | Models |
|---|---|
| 1 | 1, 2, 3, 4, 5, 7, 8, 9, 10, 11 |
| 2 | 6, 12 |

# 3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 2392 atoms, of which 1183 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called INTERLEUKIN-1 RECEPTOR ANTAGONIST.

| Mol | Chain | Residues | Atoms | | | | | | Trace |
|-----|-------|----------|-------|---|---|---|---|---|-------|
| 1 | A | 153 | Total | C | H | N | O | S | 0 |
| | | | 2392 | 759 | 1183 | 208 | 232 | 10 | |

# 4 Residue-property plots ⓘ

## 4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-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. Stretches of 2 or more consecutive residues without any outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A:
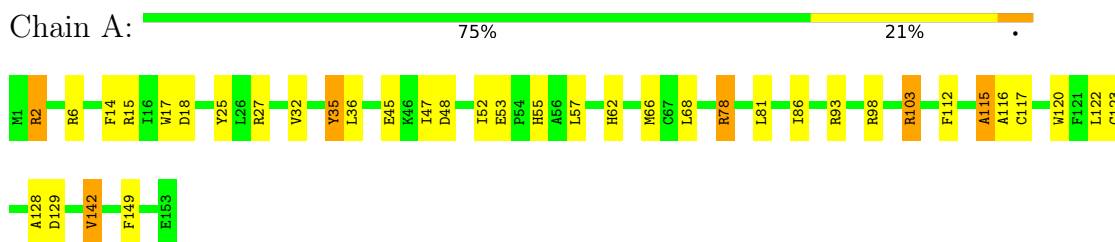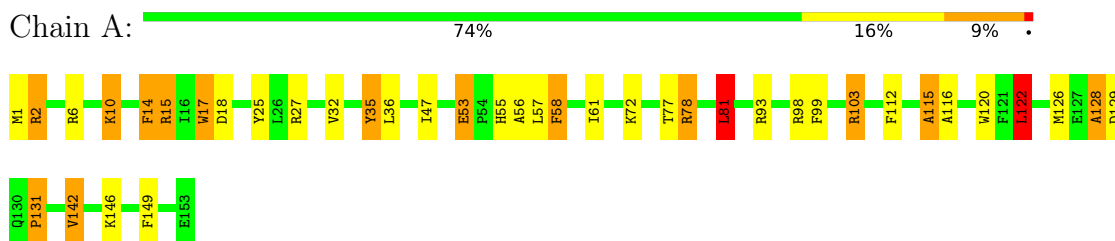


## 4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

### 4.2.1 Score per residue for model 1 (medoid)

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A:



### 4.2.2 Score per residue for model 2

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST
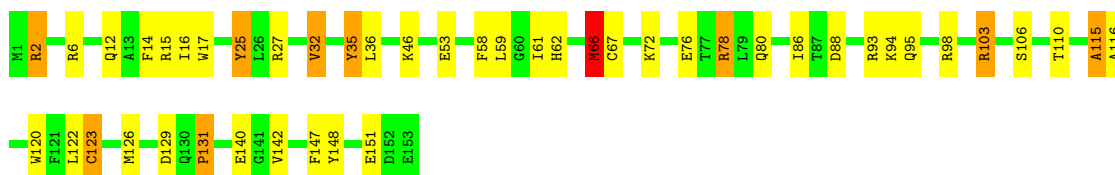
Chain A:

### 4.2.3 Score per residue for model 3

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 73% 19% 8%



### 4.2.4 Score per residue for model 4

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 69% 20% 9%



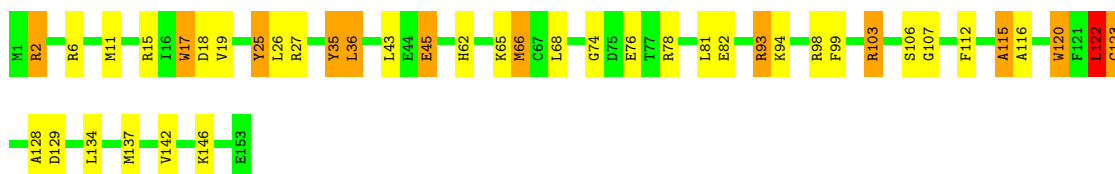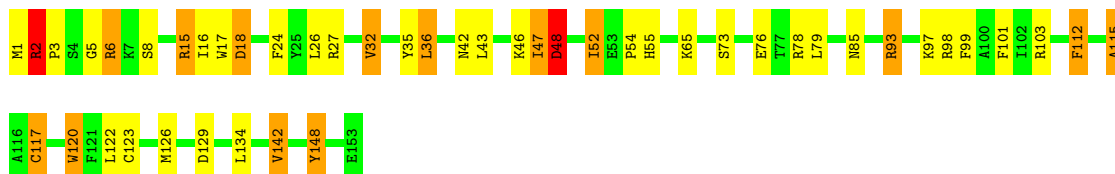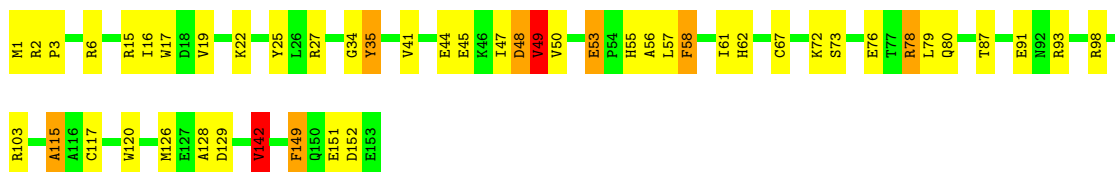### 4.2.5 Score per residue for model 5

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 68% 26% 5%



### 4.2.6 Score per residue for model 6

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 65% 28% 7%

M1 R2 R6 F14 R15 I16 W17 D18 F24 R27 L31 V32 A33 G34 Y35 G38 V41 E45 K46 I47 D48 E53 P54 H55 A56 L57 F58 L59 G60 I61 H62 G63 L68 S69 C70 V71 G74 D75 E76 T77 R78 R93 K94 Q95 D96 K97 R98

R103 F112 A115 A116 C117 W120 F121 L122 C123 T124 A128 V142 F149 D152 E153
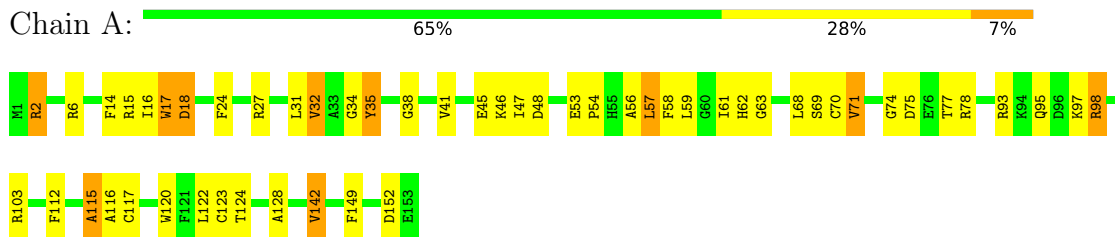
### 4.2.7 Score per residue for model 7

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 79% 14% 6% •

M1 R2 R6 F14 R15 I16 W17 D18 Y25 L26 R27 Y35 G38 E45 K46 I47 H55 L59 H62 K65 M66 R78 N85 I86 T87 R93 R98 R103 A115 A116 W120 V142 M143 K146 D152 E153
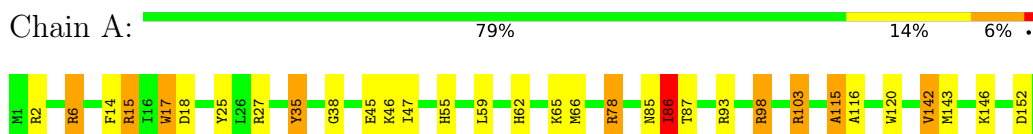
### 4.2.8 Score per residue for model 8

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 69% 23% 7% •

M1 R2 R6 S9 K10 R15 I16 W17 D18 R27 V32 Y35 V41 E45 K46 I47 D48 I52 E53 P54 L57 H62 C70 V71 K72 D75 E76 T77 R78 L79 Q80 L81 I86 R93 K94 Q95 R98 F101 I102 R103 S104 D105

T110 S111 F112 A115 A116 W120 F121 L122 C123 T124 A125 A128 L134 V142 M143 F149 E153
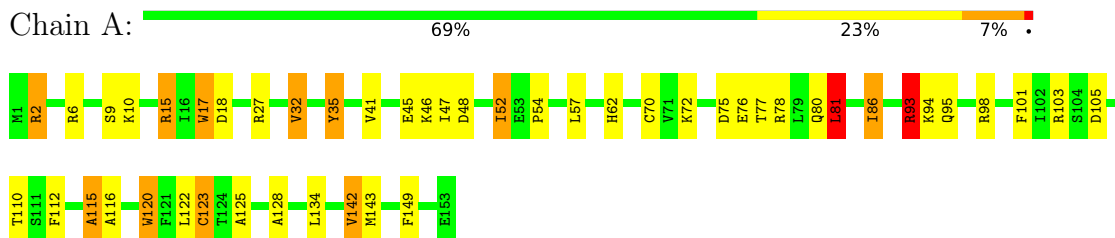
### 4.2.9 Score per residue for model 9

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 78% 16% 5%

M1 R2 R6 K7 S8 F14 R15 I16 W17 D18 Y25 L26 R27 Q30 L31 V32 L36 N42 K46 I52 L57 C67 L68 D75 R78 R93 R98 R103 F112 E113 S114 C117 W120 T124 D129 M137 V142

K146 E153
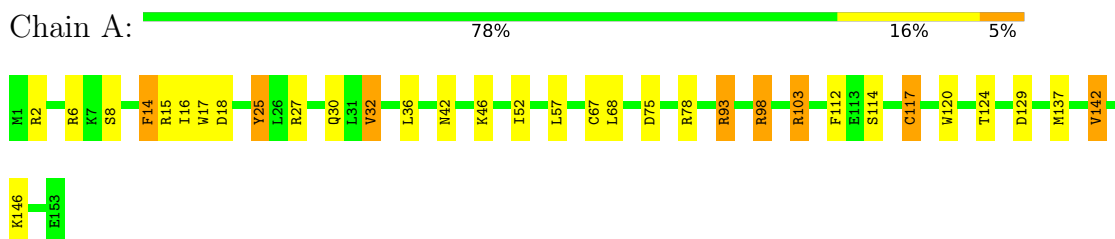
### 4.2.10 Score per residue for model 10

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A: 73% 20% 6% •

M1 R2 R6 F14 R15 I16 W17 D18 Y25 L26 R27 Y35 L36 L43 E44 E45 K46 I47 D48 H55 A56 L57 I61 H62 K65 V71 R78 L81 E82 I86 T87 R93 R98 F99 R103 T110 A115 A116 W120 A125 M126

E127 A128 M137 V142 K146 F149 E153

### 4.2.11 Score per residue for model 11

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A:

76%      18%    5%

M1 R2 R6 F14 R15 I16 W17 D18 V19 F24 Y25 L26 R27 V32 Y35 N42 H55 H62 C67 L68 S69 E76 T77 R78 L81 R93 K94 R98 R103 S104 D105 S114 C117 W120 F121 L122 C123 A128 D129 T135 N136

M137 V142 M143 E153
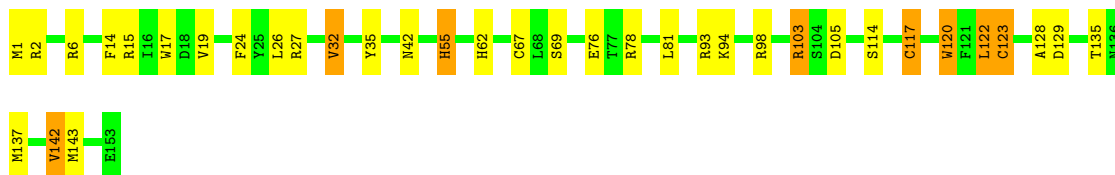
### 4.2.12 Score per residue for model 12

• Molecule 1: INTERLEUKIN-1 RECEPTOR ANTAGONIST

Chain A:

69%      24%    5% •

M1 R2 R6 K7 F14 R15 I16 W17 D18 V19 F24 R27 V32 Y35 N40 I47 D48 V49 I52 E53 P54 H55 A56 L57 I61 H62 M66 C67 L68 K72 R78 L79 Q80 T87 R93 K94 Q95 R98 F101 I102 R103 F112

A115 A116 C117 P118 G119 W120 D129 V142 F149 Q150 E151 D152 E153
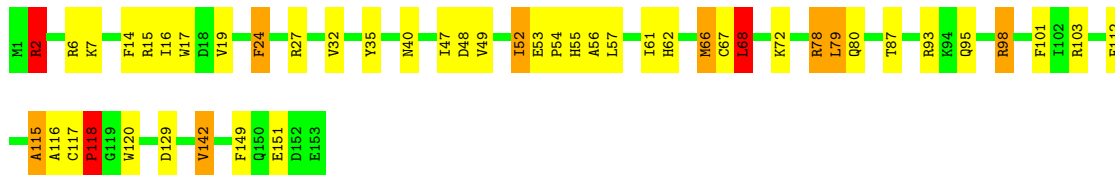
# 5 Refinement protocol and experimental data overview ⓘ

Of the ? calculated structures, 12 were deposited, based on the following criterion: ?.

The following table shows the software used for structure solution, optimisation and refinement.

| Software name | Classification | Version |
|---|---|---|
| DGII | refinement | |

No chemical shift data was provided.

# 6 Model quality ⓘ

## 6.1 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 (average) 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 | 1.25±0.01 | 0±0/1234 ( 0.0± 0.0%) | 1.62±0.04 | 25±5/1664 ( 1.5± 0.3%) |
| All | All | 1.25 | 0/14808 ( 0.0%) | 1.62 | 296/19968 ( 1.5%) |

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 | Planarity |
|-----|-------|-----------|-----------|
| 1 | A | 0.0±0.0 | 2.8±1.4 |
| All | All | 0 | 33 |

There are no bond-length outliers.

All unique angle outliers are listed below. They are sorted according to the Z-score of the worst occurrence in the ensemble.

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) | Models Worst | Total |
|-----|-------|-----|------|-------|---|----------------|-------------|--------------|-------|
| 1 | A | 15 | ARG | NE-CZ-NH1 | 11.80 | 126.20 | 120.30 | 11 | 12 |
| 1 | A | 78 | ARG | NE-CZ-NH1 | 10.29 | 125.44 | 120.30 | 11 | 12 |
| 1 | A | 103 | ARG | NE-CZ-NH1 | 10.16 | 125.38 | 120.30 | 12 | 12 |
| 1 | A | 27 | ARG | NE-CZ-NH1 | 9.41 | 125.00 | 120.30 | 9 | 12 |
| 1 | A | 2 | ARG | NE-CZ-NH1 | 9.37 | 124.98 | 120.30 | 2 | 12 |
| 1 | A | 115 | ALA | CB-CA-C | 9.26 | 123.99 | 110.10 | 2 | 10 |
| 1 | A | 25 | TYR | CB-CG-CD2 | -9.16 | 115.51 | 121.00 | 3 | 2 |
| 1 | A | 35 | TYR | CB-CG-CD2 | -9.01 | 115.60 | 121.00 | 5 | 7 |
| 1 | A | 93 | ARG | NE-CZ-NH1 | 8.82 | 124.71 | 120.30 | 11 | 12 |
| 1 | A | 122 | LEU | N-CA-C | 8.64 | 134.34 | 111.00 | 1 | 1 |
| 1 | A | 103 | ARG | NE-CZ-NH2 | -8.37 | 116.11 | 120.30 | 12 | 4 |
| 1 | A | 14 | PHE | CB-CG-CD2 | -8.21 | 115.06 | 120.80 | 10 | 1 |
| 1 | A | 142 | VAL | CA-CB-CG1 | 7.95 | 122.83 | 110.90 | 1 | 11 |
| 1 | A | 35 | TYR | CB-CG-CD1 | 7.94 | 125.76 | 121.00 | 10 | 7 |
| 1 | A | 98 | ARG | NE-CZ-NH1 | 7.80 | 124.20 | 120.30 | 10 | 12 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) | Models Worst | Total |
|-----|-------|-----|------|-------|---|----------------|-------------|--------------|-------|
| 1 | A | 128 | ALA | N-CA-CB | -7.75 | 99.25 | 110.10 | 1 | 5 |
| 1 | A | 25 | TYR | CB-CG-CD1 | 7.68 | 125.61 | 121.00 | 3 | 1 |
| 1 | A | 6 | ARG | NE-CZ-NH1 | 7.63 | 124.11 | 120.30 | 12 | 12 |
| 1 | A | 78 | ARG | NE-CZ-NH2 | -7.61 | 116.50 | 120.30 | 3 | 4 |
| 1 | A | 114 | SER | N-CA-CB | -7.47 | 99.30 | 110.50 | 11 | 2 |
| 1 | A | 15 | ARG | NE-CZ-NH2 | -7.46 | 116.57 | 120.30 | 11 | 7 |
| 1 | A | 6 | ARG | NE-CZ-NH2 | -6.97 | 116.81 | 120.30 | 12 | 3 |
| 1 | A | 148 | TYR | CB-CG-CD2 | -6.86 | 116.88 | 121.00 | 4 | 1 |
| 1 | A | 71 | VAL | CA-CB-CG1 | 6.71 | 120.97 | 110.90 | 6 | 1 |
| 1 | A | 112 | PHE | CB-CG-CD2 | -6.66 | 116.14 | 120.80 | 8 | 7 |
| 1 | A | 14 | PHE | CA-CB-CG | 6.51 | 129.51 | 113.90 | 10 | 1 |
| 1 | A | 149 | PHE | N-CA-CB | -6.46 | 98.97 | 110.60 | 6 | 3 |
| 1 | A | 117 | CYS | N-CA-C | -6.46 | 93.57 | 111.00 | 11 | 2 |
| 1 | A | 27 | ARG | NE-CZ-NH2 | -6.39 | 117.10 | 120.30 | 12 | 1 |
| 1 | A | 69 | SER | N-CA-CB | -6.30 | 101.05 | 110.50 | 6 | 2 |
| 1 | A | 25 | TYR | CA-CB-CG | 6.21 | 125.20 | 113.40 | 3 | 3 |
| 1 | A | 120 | TRP | CD1-NE1-CE2 | -6.17 | 103.45 | 109.00 | 1 | 12 |
| 1 | A | 98 | ARG | NE-CZ-NH2 | -6.11 | 117.25 | 120.30 | 9 | 2 |
| 1 | A | 14 | PHE | N-CA-CB | -6.09 | 99.63 | 110.60 | 6 | 4 |
| 1 | A | 128 | ALA | CB-CA-C | 6.06 | 119.19 | 110.10 | 10 | 1 |
| 1 | A | 66 | MET | N-CA-CB | 6.04 | 121.48 | 110.60 | 2 | 2 |
| 1 | A | 118 | PRO | CB-CA-C | 5.92 | 126.81 | 112.00 | 12 | 1 |
| 1 | A | 93 | ARG | NE-CZ-NH2 | -5.92 | 117.34 | 120.30 | 4 | 4 |
| 1 | A | 122 | LEU | N-CA-CB | -5.89 | 98.62 | 110.40 | 1 | 1 |
| 1 | A | 118 | PRO | N-CA-CB | -5.88 | 96.13 | 102.60 | 12 | 1 |
| 1 | A | 112 | PHE | CB-CG-CD1 | 5.87 | 124.91 | 120.80 | 12 | 4 |
| 1 | A | 115 | ALA | N-CA-CB | 5.78 | 118.19 | 110.10 | 4 | 5 |
| 1 | A | 117 | CYS | CB-CA-C | 5.77 | 121.95 | 110.40 | 11 | 3 |
| 1 | A | 18 | ASP | CA-CB-CG | 5.74 | 126.02 | 113.40 | 4 | 2 |
| 1 | A | 148 | TYR | CB-CG-CD1 | 5.71 | 124.43 | 121.00 | 4 | 1 |
| 1 | A | 17 | TRP | CD1-NE1-CE2 | -5.68 | 103.89 | 109.00 | 7 | 12 |
| 1 | A | 131 | PRO | N-CA-CB | -5.66 | 96.38 | 102.60 | 1 | 2 |
| 1 | A | 49 | VAL | CA-CB-CG1 | 5.65 | 119.37 | 110.90 | 5 | 1 |
| 1 | A | 101 | PHE | CB-CG-CD2 | -5.58 | 116.90 | 120.80 | 4 | 1 |
| 1 | A | 58 | PHE | CB-CG-CD2 | -5.56 | 116.91 | 120.80 | 6 | 2 |
| 1 | A | 2 | ARG | NE-CZ-NH2 | -5.54 | 117.53 | 120.30 | 4 | 2 |
| 1 | A | 52 | ILE | CB-CA-C | 5.49 | 122.58 | 111.60 | 8 | 2 |
| 1 | A | 62 | HIS | CG-ND1-CE1 | -5.47 | 98.59 | 105.70 | 10 | 7 |
| 1 | A | 115 | ALA | N-CA-C | -5.46 | 96.25 | 111.00 | 4 | 1 |
| 1 | A | 24 | PHE | CB-CG-CD2 | -5.46 | 116.98 | 120.80 | 4 | 3 |
| 1 | A | 81 | LEU | CB-CA-C | 5.45 | 120.56 | 110.20 | 8 | 1 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) | Models Worst | Models Total |
|-----|-------|-----|------|-------|---|-------------|----------|-------|-------|
| 1 | A | 32 | VAL | CA-CB-CG2 | 5.42 | 119.03 | 110.90 | 6 | 6 |
| 1 | A | 22 | LYS | CB-CA-C | 5.34 | 121.08 | 110.40 | 5 | 1 |
| 1 | A | 55 | HIS | CG-ND1-CE1 | -5.30 | 98.81 | 105.70 | 5 | 7 |
| 1 | A | 81 | LEU | CA-CB-CG | 5.28 | 127.43 | 115.30 | 1 | 1 |
| 1 | A | 101 | PHE | CB-CG-CD1 | 5.27 | 124.49 | 120.80 | 4 | 1 |
| 1 | A | 48 | ASP | N-CA-CB | -5.24 | 101.17 | 110.60 | 4 | 1 |
| 1 | A | 142 | VAL | CG1-CB-CG2 | -5.23 | 102.53 | 110.90 | 8 | 2 |
| 1 | A | 99 | PHE | CB-CG-CD2 | -5.22 | 117.15 | 120.80 | 10 | 2 |
| 1 | A | 56 | ALA | N-CA-CB | -5.21 | 102.80 | 110.10 | 1 | 2 |
| 1 | A | 149 | PHE | CB-CG-CD1 | 5.20 | 124.44 | 120.80 | 5 | 1 |
| 1 | A | 24 | PHE | CB-CG-CD1 | 5.18 | 124.43 | 120.80 | 4 | 1 |
| 1 | A | 53 | GLU | CB-CA-C | 5.17 | 120.74 | 110.40 | 5 | 1 |
| 1 | A | 48 | ASP | CA-CB-CG | 5.16 | 124.74 | 113.40 | 5 | 1 |
| 1 | A | 82 | GLU | N-CA-CB | -5.13 | 101.36 | 110.60 | 10 | 2 |
| 1 | A | 41 | VAL | CA-CB-CG2 | 5.12 | 118.58 | 110.90 | 6 | 1 |
| 1 | A | 122 | LEU | CA-CB-CG | 5.10 | 127.03 | 115.30 | 1 | 1 |
| 1 | A | 38 | GLY | N-CA-C | 5.10 | 125.84 | 113.10 | 6 | 1 |
| 1 | A | 149 | PHE | CB-CG-CD2 | -5.09 | 117.24 | 120.80 | 5 | 1 |
| 1 | A | 86 | ILE | CB-CA-C | 5.08 | 121.76 | 111.60 | 7 | 1 |
| 1 | A | 68 | LEU | CB-CA-C | 5.07 | 119.83 | 110.20 | 12 | 1 |
| 1 | A | 128 | ALA | N-CA-C | 5.05 | 124.64 | 111.00 | 11 | 1 |
| 1 | A | 88 | ASP | N-CA-CB | -5.02 | 101.56 | 110.60 | 2 | 1 |

There are no chirality outliers.

All unique planar outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

| Mol | Chain | Res | Type | Group | Models (Total) |
|-----|-------|-----|------|-------|----------------|
| 1 | A | 2 | ARG | Sidechain | 5 |
| 1 | A | 103 | ARG | Sidechain | 5 |
| 1 | A | 14 | PHE | Sidechain | 4 |
| 1 | A | 25 | TYR | Sidechain | 4 |
| 1 | A | 15 | ARG | Sidechain | 3 |
| 1 | A | 35 | TYR | Sidechain | 3 |
| 1 | A | 93 | ARG | Sidechain | 2 |
| 1 | A | 98 | ARG | Sidechain | 2 |
| 1 | A | 148 | TYR | Sidechain | 1 |
| 1 | A | 49 | VAL | Mainchain | 1 |
| 1 | A | 78 | ARG | Sidechain | 1 |
| 1 | A | 101 | PHE | Sidechain | 1 |
| 1 | A | 117 | CYS | Mainchain | 1 |

## 6.2   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 each 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 averaged over the ensemble.

| Mol | Chain | Non-H | H(model) | H(added) | Clashes |
|-----|-------|-------|----------|----------|---------|
| 1 | A | 1209 | 1183 | 1183 | 2±1 |
| All | All | 14508 | 14196 | 14196 | 18 |

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 1.

All unique clashes are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Clash(Å) | Distance(Å) | Models Worst | Total |
|--------|--------|----------|-------------|--------------|-------|
| 1:A:47:ILE:HG23 | 1:A:48:ASP:H | 0.62 | 1.53 | 4 | 1 |
| 1:A:123:CYS:SG | 1:A:143:MET:HB3 | 0.51 | 2.46 | 8 | 2 |
| 1:A:123:CYS:SG | 1:A:147:PHE:CD1 | 0.50 | 3.05 | 2 | 1 |
| 1:A:66:MET:SD | 1:A:79:LEU:O | 0.48 | 2.71 | 12 | 1 |
| 1:A:1:MET:SD | 1:A:67:CYS:SG | 0.47 | 3.12 | 5 | 2 |
| 1:A:86:ILE:HG23 | 1:A:87:THR:H | 0.46 | 1.70 | 7 | 1 |
| 1:A:70:CYS:SG | 1:A:77:THR:HG22 | 0.46 | 2.51 | 8 | 2 |
| 1:A:52:ILE:HG22 | 1:A:53:GLU:H | 0.43 | 1.74 | 12 | 1 |
| 1:A:67:CYS:SG | 1:A:68:LEU:N | 0.42 | 2.93 | 12 | 1 |
| 1:A:81:LEU:HD13 | 1:A:81:LEU:H | 0.41 | 1.76 | 1 | 1 |
| 1:A:70:CYS:SG | 1:A:77:THR:CG2 | 0.41 | 3.09 | 8 | 1 |
| 1:A:49:VAL:HG13 | 1:A:58:PHE:O | 0.40 | 2.16 | 5 | 1 |
| 1:A:122:LEU:HD22 | 1:A:123:CYS:SG | 0.40 | 2.57 | 3 | 1 |
| 1:A:66:MET:SD | 1:A:67:CYS:HB2 | 0.40 | 2.56 | 2 | 1 |
| 1:A:123:CYS:SG | 1:A:143:MET:CB | 0.40 | 3.10 | 8 | 1 |

## 6.3   Torsion angles (i)

### 6.3.1   Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. 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 | 151/153 (99%) | 105±4 (70±3%) | 33±4 (22±2%) | 13±4 (9±3%) | 2 | 12 |
| All | All | 1812/1836 (99%) | 1265 (70%) | 391 (22%) | 156 (9%) | 2 | 12 |

All 63 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|:--------------:|
| 1 | A | 115 | ALA | 10 |
| 1 | A | 116 | ALA | 8 |
| 1 | A | 122 | LEU | 7 |
| 1 | A | 129 | ASP | 6 |
| 1 | A | 123 | CYS | 6 |
| 1 | A | 36 | LEU | 5 |
| 1 | A | 117 | CYS | 5 |
| 1 | A | 57 | LEU | 4 |
| 1 | A | 95 | GLN | 4 |
| 1 | A | 19 | VAL | 4 |
| 1 | A | 45 | GLU | 4 |
| 1 | A | 137 | MET | 4 |
| 1 | A | 48 | ASP | 4 |
| 1 | A | 52 | ILE | 4 |
| 1 | A | 54 | PRO | 4 |
| 1 | A | 53 | GLU | 3 |
| 1 | A | 61 | ILE | 3 |
| 1 | A | 86 | ILE | 3 |
| 1 | A | 47 | ILE | 3 |
| 1 | A | 87 | THR | 3 |
| 1 | A | 68 | LEU | 3 |
| 1 | A | 99 | PHE | 2 |
| 1 | A | 131 | PRO | 2 |
| 1 | A | 66 | MET | 2 |
| 1 | A | 106 | SER | 2 |
| 1 | A | 142 | VAL | 2 |
| 1 | A | 74 | GLY | 2 |
| 1 | A | 3 | PRO | 2 |
| 1 | A | 8 | SER | 2 |
| 1 | A | 42 | ASN | 2 |
| 1 | A | 34 | GLY | 2 |
| 1 | A | 41 | VAL | 2 |
| 1 | A | 49 | VAL | 2 |
| 1 | A | 56 | ALA | 2 |
| 1 | A | 62 | HIS | 2 |
| 1 | A | 152 | ASP | 2 |

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| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1 | A | 80 | GLN | 2 |
| 1 | A | 125 | ALA | 2 |
| 1 | A | 10 | LYS | 1 |
| 1 | A | 128 | ALA | 1 |
| 1 | A | 59 | LEU | 1 |
| 1 | A | 11 | MET | 1 |
| 1 | A | 65 | LYS | 1 |
| 1 | A | 107 | GLY | 1 |
| 1 | A | 2 | ARG | 1 |
| 1 | A | 5 | GLY | 1 |
| 1 | A | 50 | VAL | 1 |
| 1 | A | 31 | LEU | 1 |
| 1 | A | 63 | GLY | 1 |
| 1 | A | 75 | ASP | 1 |
| 1 | A | 98 | ARG | 1 |
| 1 | A | 38 | GLY | 1 |
| 1 | A | 85 | ASN | 1 |
| 1 | A | 9 | SER | 1 |
| 1 | A | 81 | LEU | 1 |
| 1 | A | 67 | CYS | 1 |
| 1 | A | 127 | GLU | 1 |
| 1 | A | 55 | HIS | 1 |
| 1 | A | 94 | LYS | 1 |
| 1 | A | 135 | THR | 1 |
| 1 | A | 7 | LYS | 1 |
| 1 | A | 40 | ASN | 1 |
| 1 | A | 118 | PRO | 1 |

## 6.3.2   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 PDB entries followed by that with respect to all NMR entries. 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 | 134/134 (100%) | 116±4 (87±3%) | 18±4 (13±3%) | 7 | 48 |
| All | All | 1608/1608 (100%) | 1397 (87%) | 211 (13%) | 7 | 48 |

All 71 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

WORLDWIDE
wwPDB
PROTEIN DATA BANK

| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1 | A | 142 | VAL | 10 |
| 1 | A | 35 | TYR | 9 |
| 1 | A | 18 | ASP | 8 |
| 1 | A | 32 | VAL | 8 |
| 1 | A | 16 | ILE | 6 |
| 1 | A | 46 | LYS | 6 |
| 1 | A | 76 | GLU | 6 |
| 1 | A | 17 | TRP | 5 |
| 1 | A | 47 | ILE | 5 |
| 1 | A | 72 | LYS | 5 |
| 1 | A | 78 | ARG | 5 |
| 1 | A | 81 | LEU | 5 |
| 1 | A | 146 | LYS | 5 |
| 1 | A | 126 | MET | 4 |
| 1 | A | 36 | LEU | 4 |
| 1 | A | 2 | ARG | 4 |
| 1 | A | 120 | TRP | 4 |
| 1 | A | 57 | LEU | 4 |
| 1 | A | 1 | MET | 3 |
| 1 | A | 14 | PHE | 3 |
| 1 | A | 58 | PHE | 3 |
| 1 | A | 122 | LEU | 3 |
| 1 | A | 149 | PHE | 3 |
| 1 | A | 66 | MET | 3 |
| 1 | A | 94 | LYS | 3 |
| 1 | A | 110 | THR | 3 |
| 1 | A | 151 | GLU | 3 |
| 1 | A | 25 | TYR | 3 |
| 1 | A | 26 | LEU | 3 |
| 1 | A | 43 | LEU | 3 |
| 1 | A | 45 | GLU | 3 |
| 1 | A | 93 | ARG | 3 |
| 1 | A | 134 | LEU | 3 |
| 1 | A | 65 | LYS | 3 |
| 1 | A | 79 | LEU | 3 |
| 1 | A | 61 | ILE | 3 |
| 1 | A | 86 | ILE | 3 |
| 1 | A | 10 | LYS | 2 |
| 1 | A | 53 | GLU | 2 |
| 1 | A | 80 | GLN | 2 |
| 1 | A | 68 | LEU | 2 |
| 1 | A | 6 | ARG | 2 |
| 1 | A | 15 | ARG | 2 |

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| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1 | A | 73 | SER | 2 |
| 1 | A | 97 | LYS | 2 |
| 1 | A | 48 | ASP | 2 |
| 1 | A | 129 | ASP | 2 |
| 1 | A | 24 | PHE | 2 |
| 1 | A | 59 | LEU | 2 |
| 1 | A | 71 | VAL | 2 |
| 1 | A | 124 | THR | 2 |
| 1 | A | 75 | ASP | 2 |
| 1 | A | 105 | ASP | 2 |
| 1 | A | 98 | ARG | 2 |
| 1 | A | 77 | THR | 1 |
| 1 | A | 12 | GLN | 1 |
| 1 | A | 140 | GLU | 1 |
| 1 | A | 85 | ASN | 1 |
| 1 | A | 112 | PHE | 1 |
| 1 | A | 148 | TYR | 1 |
| 1 | A | 44 | GLU | 1 |
| 1 | A | 49 | VAL | 1 |
| 1 | A | 91 | GLU | 1 |
| 1 | A | 103 | ARG | 1 |
| 1 | A | 143 | MET | 1 |
| 1 | A | 152 | ASP | 1 |
| 1 | A | 101 | PHE | 1 |
| 1 | A | 30 | GLN | 1 |
| 1 | A | 42 | ASN | 1 |
| 1 | A | 27 | ARG | 1 |
| 1 | A | 118 | PRO | 1 |

### 6.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 6.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

## 6.6 Ligand geometry ⓘ

There are no ligands in this entry.

## 6.7 Other polymers ⓘ

There are no such molecules in this entry.

## 6.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

# 7  Chemical shift validation ⓘ

No chemical shift data were provided