# W O R L D W I D E
# wwPDB
## PROTEIN DATA BANK

# wwPDB NMR Structure Validation Summary Report ⓘ

Oct 12, 2021 – 04:41 PM EDT

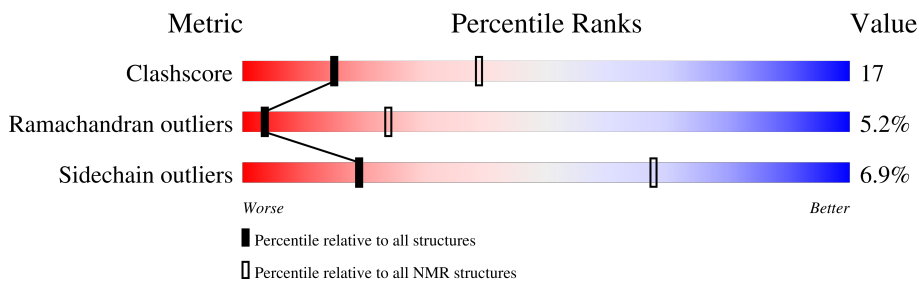| | | |
|---|---|---|
| PDB ID | : | 2FIN |
| Title | : | Solution Structure of the complex between poxvirus-encoded CC chemokine inhibitor vCCI and human MIP-1beta, ensemble structure |
| Authors | : | Zhang, L. |
| Deposited on | : | 2005-12-29 |

# 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 | | 17 |
| Ramachandran outliers | | 5.2% |
| Sidechain outliers | | 6.9% |

*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 | 242 | 61%    26%    •    12% |
| 2 | B | 69 | 58%    25%    •    13% |

## 2 Ensemble composition and analysis (i)

This entry contains 15 models. Model 15 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:8-A:54, A:77-A:242, B:10-B:69 (273) | 0.31 | 15 |

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 4 clusters and 1 single-model cluster was found.

| Cluster number | Models |
|---|---|
| 1 | 3, 5, 7, 8, 12, 15 |
| 2 | 2, 4, 13 |
| 3 | 1, 6, 9 |
| 4 | 10, 14 |
| Single-model clusters | 11 |

# 3  Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 4601 atoms, of which 2247 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called rabbitpox encoded CC chemokine inhibitor.

| Mol | Chain | Residues | Atoms | | | | | | Trace |
|-----|-------|----------|-------|---|---|---|---|---|-------|
| | | | Total | C | H | N | O | S | |
| 1 | A | 242 | 3575 | 1104 | 1755 | 298 | 405 | 13 | 0 |

- Molecule 2 is a protein called Small inducible cytokine A4.

| Mol | Chain | Residues | Atoms | | | | | | Trace |
|-----|-------|----------|-------|---|---|---|---|---|-------|
| | | | Total | C | H | N | O | S | |
| 2 | B | 69 | 1026 | 337 | 492 | 83 | 109 | 5 | 0 |

There are 3 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| B | 45 | ALA | LYS | engineered mutation | UNP P13236 |
| B | 46 | ALA | ARG | engineered mutation | UNP P13236 |
| B | 48 | ALA | LYS | engineered mutation | UNP P13236 |

# 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: rabbitpox encoded CC chemokine inhibitor
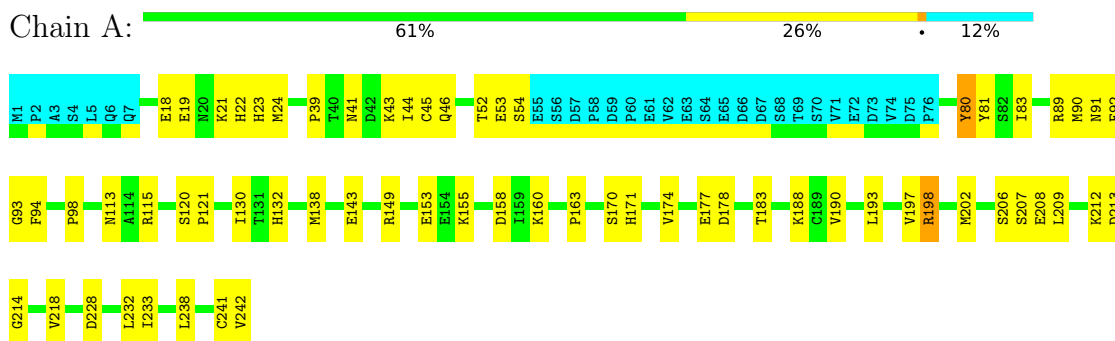


• Molecule 2: Small inducible cytokine A4
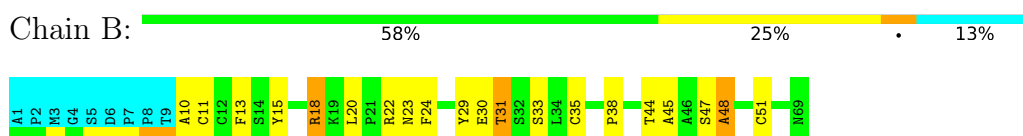


## 4.2 Residue scores for the representative (medoid) model from the NMR ensemble

The representative model is number 15. Colouring as in section 4.1 above.

• Molecule 1: rabbitpox encoded CC chemokine inhibitor

E210 V211 K212 D213 G214 Y217 V218 D219 G220 S235 T236 K237 L238 V242
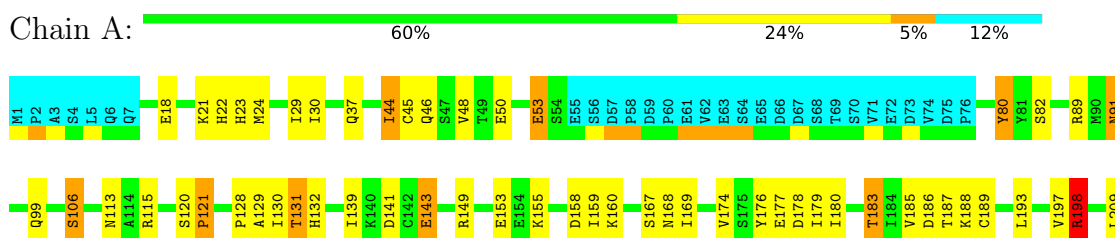
• Molecule 2: Small inducible cytokine A4

Chain B:

55%                                    26%              • •    13%

A1 P2 M3 G4 S5 D6 P7 P8 T9 A10 C11 C12 F13 N18 K19 L20 P21 R22 N23 F24 D27 Y28 Y29 E30 T31 S32 S33 L34 C35 Q43 T44 A45 A46 S47 A48 W58 Y62 N69

# 5   Refinement protocol and experimental data overview ⓘ

Of the 100 calculated structures, 15 were deposited, based on the following criterion: *structures with the least restraint violations,structures with the lowest energy.*

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

| Software name | Classification | Version |
|---|---|---|
| DYNAMO | structure solution | 3.1 |
| DYNAMO | refinement | 3.1 |

No chemical shift data was provided.

# 6 Model quality (i)

## 6.1 Standard geometry (i)

There are no covalent bond-length or bond-angle outliers.

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 | 3.9±0.6 |
| 2 | B | 0.0±0.0 | 1.7±0.5 |
| All | All | 0 | 84 |

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

5 of 8 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 | 89 | ARG | Sidechain | 15 |
| 1 | A | 149 | ARG | Sidechain | 15 |
| 2 | B | 18 | ARG | Sidechain | 14 |
| 1 | A | 198 | ARG | Sidechain | 13 |
| 1 | A | 115 | ARG | Sidechain | 11 |

## 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 | 1602 | 1571 | 1571 | 54±10 |
| 2 | B | 475 | 436 | 436 | 17±2 |
| All | All | 31155 | 30105 | 30105 | 1026 |

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 17.

5 of 598 unique clashes are listed below, sorted by their clash magnitude.

| Atom-1 | Atom-2 | Clash(Å) | Distance(Å) | Models | |
|---|---|---|---|---|---|
| | | | | Worst | Total |
| 1:A:139:ILE:HD13 | 1:A:140:LYS:N | 0.85 | 1.86 | 4 | 2 |
| 1:A:116:LEU:N | 1:A:116:LEU:HD22 | 0.79 | 1.92 | 11 | 2 |
| 2:B:68:LEU:HD23 | 2:B:69:ASN:N | 0.75 | 1.96 | 2 | 1 |
| 1:A:116:LEU:HD12 | 1:A:116:LEU:N | 0.71 | 1.99 | 3 | 1 |
| 1:A:174:VAL:HG22 | 1:A:175:SER:H | 0.70 | 1.46 | 11 | 2 |

## 6.3   Torsion angles ⓘ

### 6.3.1   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 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 | 212/242 (88%) | 168±4 (79±2%) | 34±3 (16±1%) | 10±2 (5±1%) | 4 | 27 |
| 2 | B | 59/69 (86%) | 41±2 (70±3%) | 14±3 (23±4%) | 4±1 (7±2%) | 2 | 17 |
| All | All | 4065/4665 (87%) | 3142 (77%) | 711 (17%) | 212 (5%) | 4 | 24 |

5 of 49 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

| Mol | Chain | Res | Type | Models (Total) |
|---|---|---|---|---|
| 2 | B | 31 | THR | 15 |
| 2 | B | 48 | ALA | 15 |
| 1 | A | 163 | PRO | 13 |
| 1 | A | 207 | SER | 11 |
| 1 | A | 39 | PRO | 10 |

### 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 | 191/219 (87%) | 176±4 (92±2%) | 15±4 (8±2%) | 17 | 65 |
| 2 | B | 53/60 (88%) | 51±1 (96±2%) | 2±1 (4±2%) | 33 | 81 |
| All | All | 3660/4185 (87%) | 3407 (93%) | 253 (7%) | 19 | 68 |

5 of 109 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1 | A | 80 | TYR | 11 |
| 1 | A | 232 | LEU | 8 |
| 2 | B | 18 | ARG | 8 |
| 1 | A | 24 | MET | 6 |
| 1 | A | 153 | GLU | 6 |

### 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