



# Full wwPDB NMR Structure Validation Report ⓘ

Mar 7, 2022 – 03:31 AM EST

PDB ID : 3RPB  
Title : THE C2B-DOMAIN OF RABPHILIN: STRUCTURAL VARIATIONS IN A JANUS-FACED DOMAIN  
Authors : Ubach, J.; Garcia, J.; Nittler, M.P.; Sudhof, T.C.; Rizo, J.  
Deposited on : 1999-04-19

This is a Full wwPDB NMR Structure Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
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 : 2.27  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.27

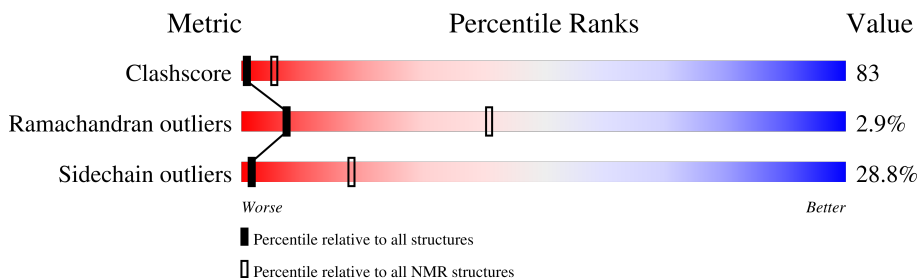
# 1 Overall quality at a glance

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                | 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  $\geq 3$ , 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  $\leq 5\%$

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 140    |                  |

## 2 Ensemble composition and analysis

This entry contains 20 models. Model 10 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:542-A:585, A:592-A:650,<br>A:654-A:677 (127) | 0.20              | 10           |

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                     | 2, 4, 5, 6, 7, 13, 15     |
| 2                     | 8, 10, 11, 14, 16, 18, 19 |
| 3                     | 1, 9, 20                  |
| 4                     | 3, 17                     |
| Single-model clusters | 12                        |

### 3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 2302 atoms, of which 1159 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called RABPHILIN 3-A.

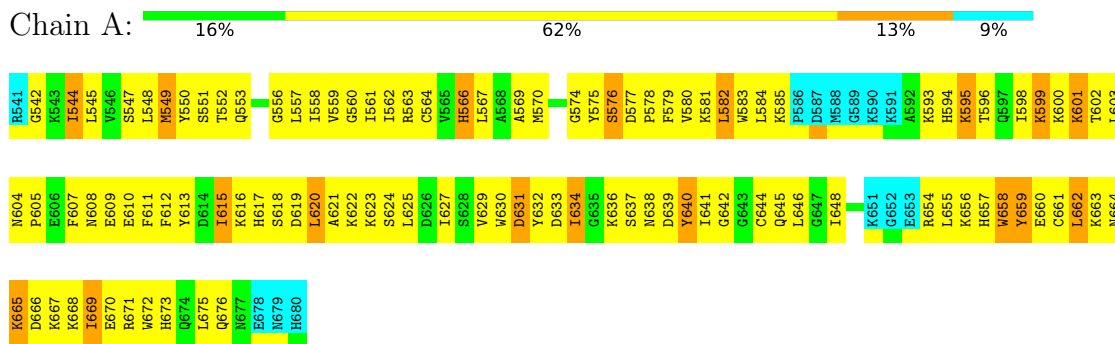
| Mol | Chain | Residues | Atoms |     |      |     |     | Trace |   |
|-----|-------|----------|-------|-----|------|-----|-----|-------|---|
|     |       |          | Total | C   | H    | N   | O   |       | S |
| 1   | A     | 140      | 2302  | 731 | 1159 | 201 | 205 | 6     | 0 |

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

### 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: RABPHILIN 3-A

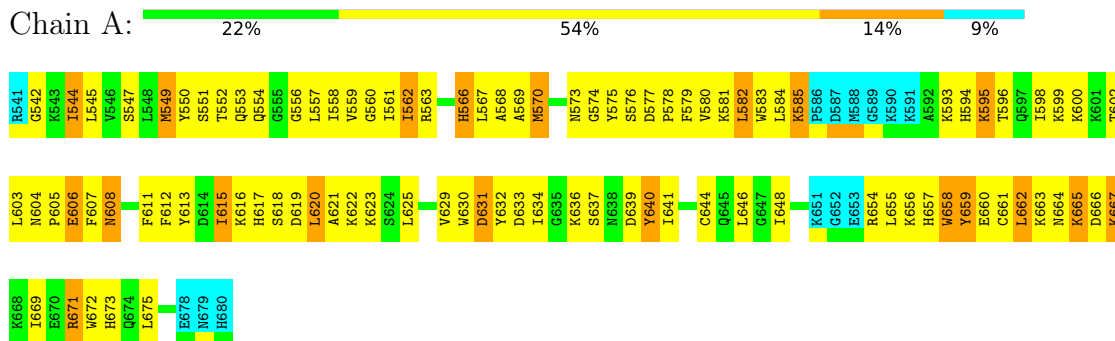


### 4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

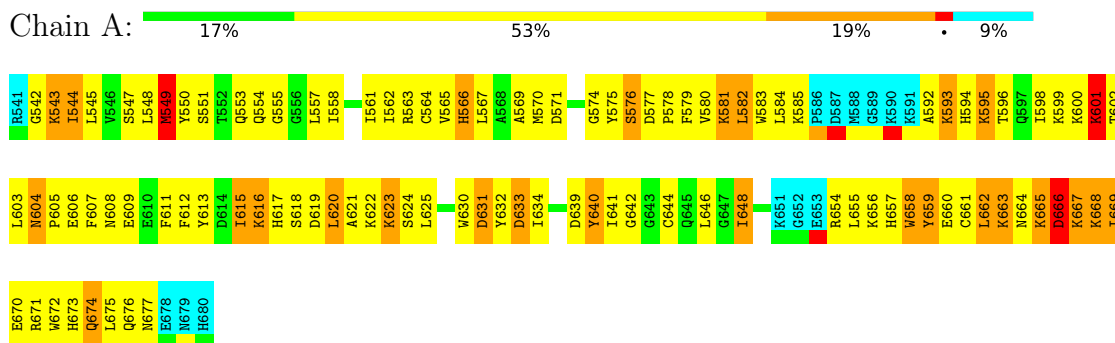
#### 4.2.1 Score per residue for model 1

- Molecule 1: RABPHILIN 3-A



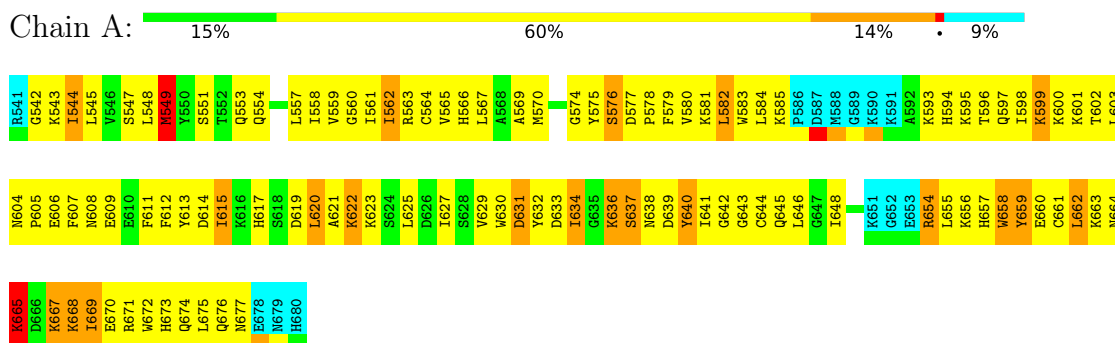
## 4.2.2 Score per residue for model 2

- Molecule 1: RABPHILIN 3-A



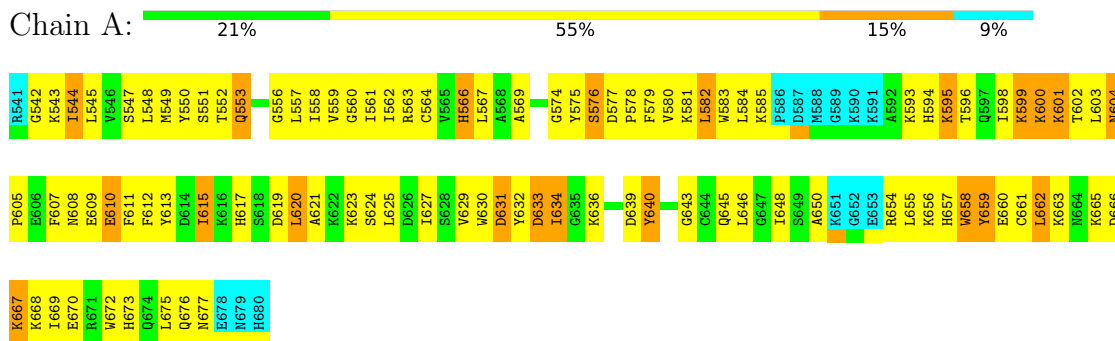
## 4.2.3 Score per residue for model 3

- Molecule 1: RABPHILIN 3-A



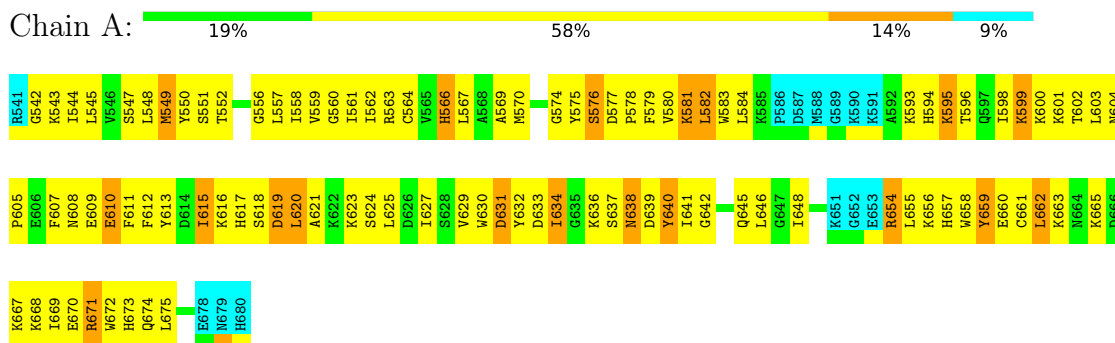
## 4.2.4 Score per residue for model 4

- Molecule 1: RABPHILIN 3-A



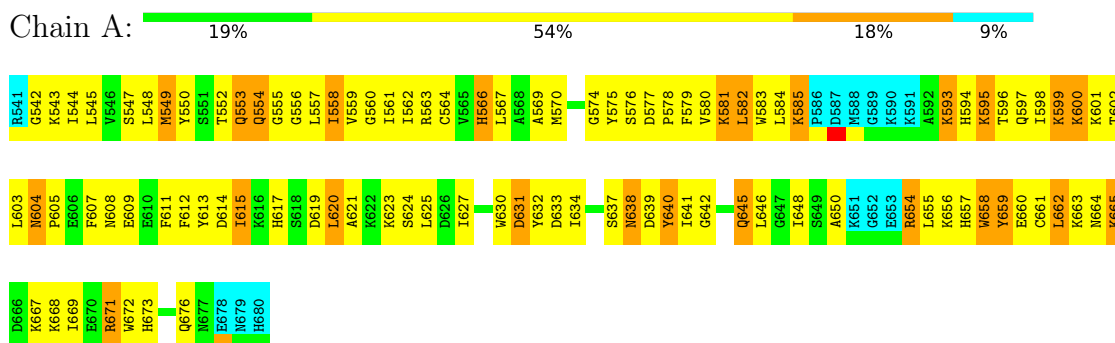
### 4.2.5 Score per residue for model 5

- Molecule 1: RABPHILIN 3-A



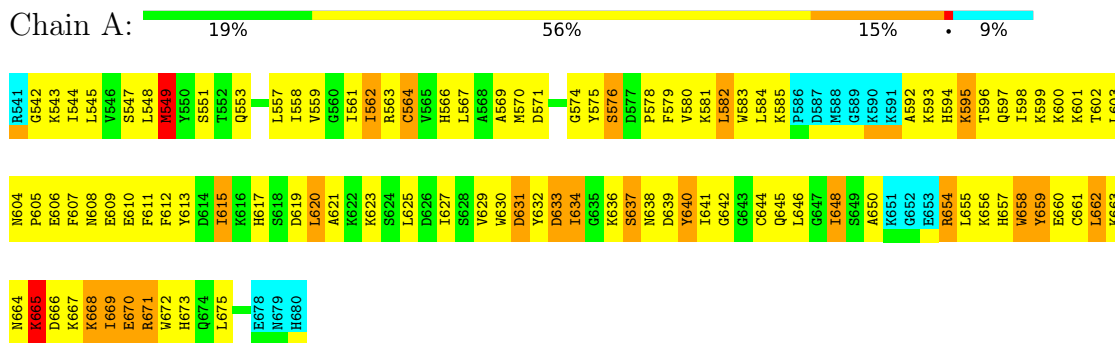
### 4.2.6 Score per residue for model 6

- Molecule 1: RABPHILIN 3-A



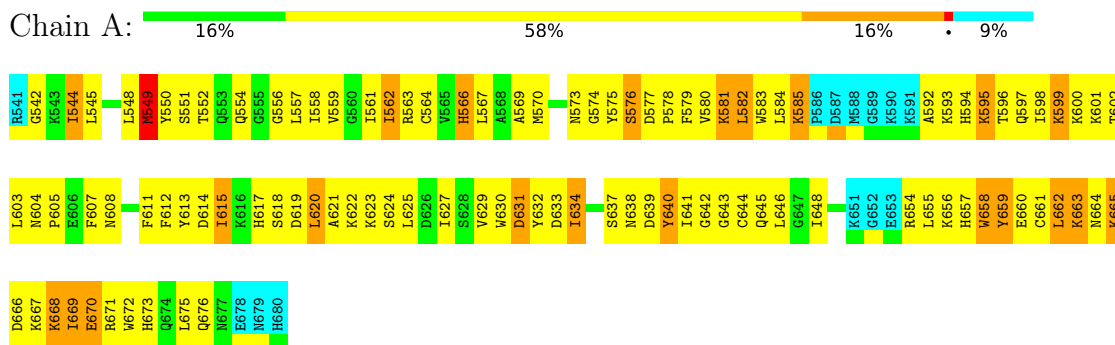
### 4.2.7 Score per residue for model 7

- Molecule 1: RABPHILIN 3-A



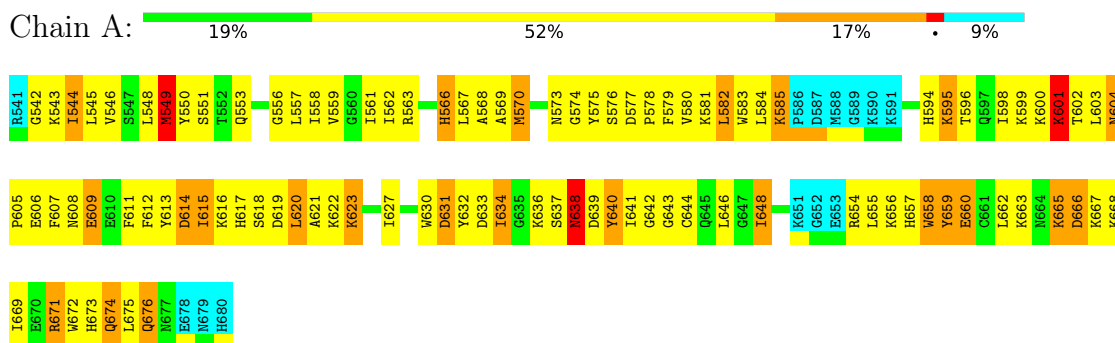
### 4.2.8 Score per residue for model 8

- Molecule 1: RABPHILIN 3-A



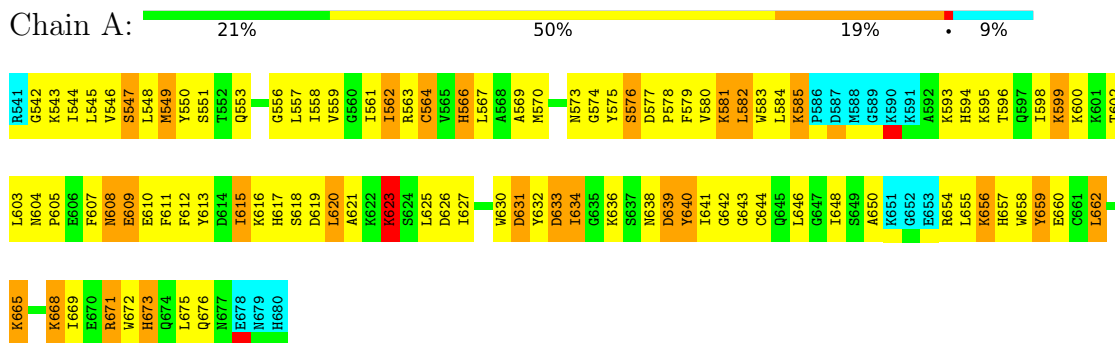
### 4.2.9 Score per residue for model 9

- Molecule 1: RABPHILIN 3-A



### 4.2.10 Score per residue for model 10 (medoid)

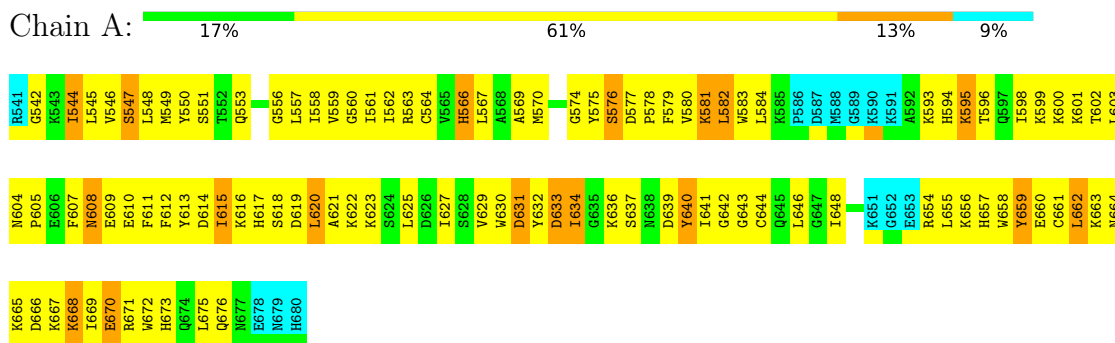
- Molecule 1: RABPHILIN 3-A





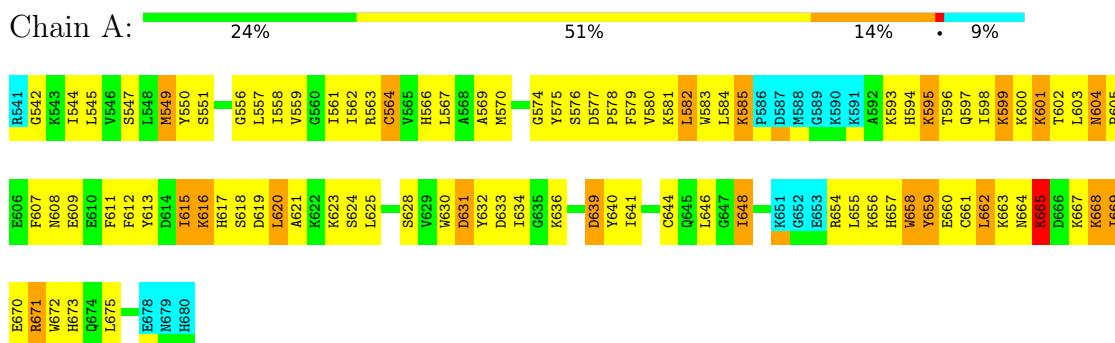
### 4.2.11 Score per residue for model 11

- Molecule 1: RABPHILIN 3-A



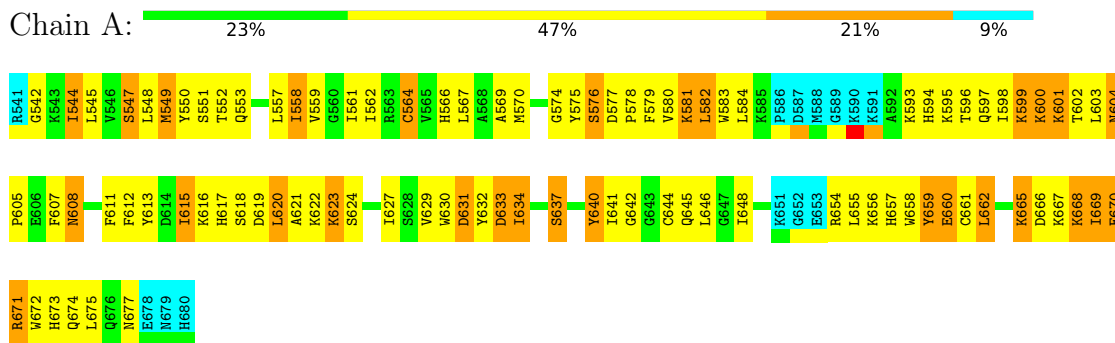
### 4.2.12 Score per residue for model 12

- Molecule 1: RABPHILIN 3-A



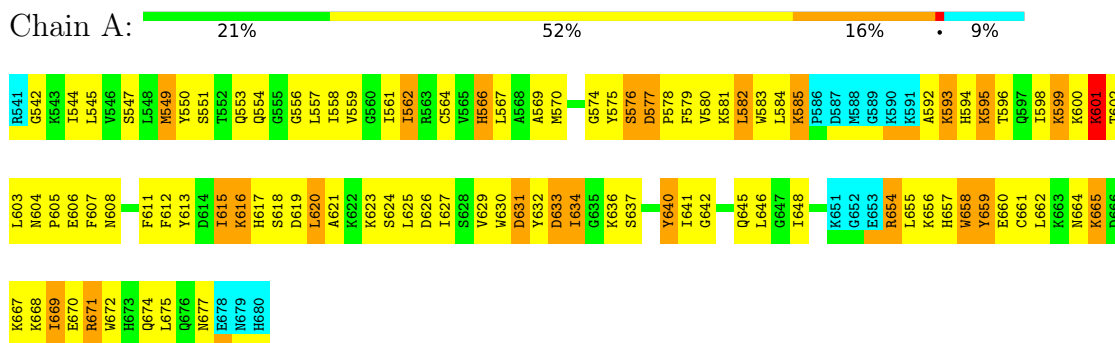
### 4.2.13 Score per residue for model 13

- Molecule 1: RABPHILIN 3-A



### 4.2.14 Score per residue for model 14

- Molecule 1: RABPHILIN 3-A



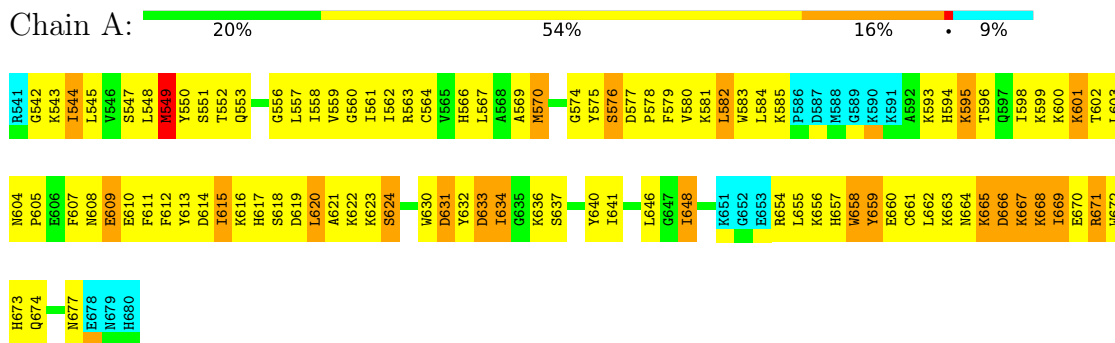
### 4.2.15 Score per residue for model 15

- Molecule 1: RABPHILIN 3-A



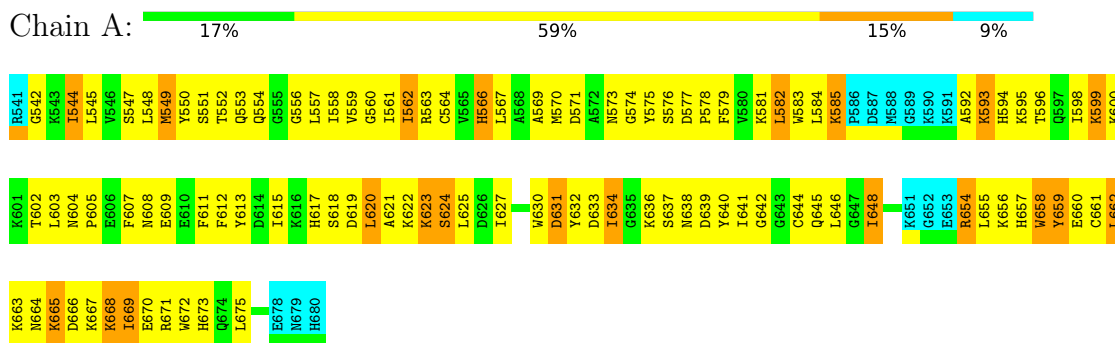
### 4.2.16 Score per residue for model 16

- Molecule 1: RABPHILIN 3-A



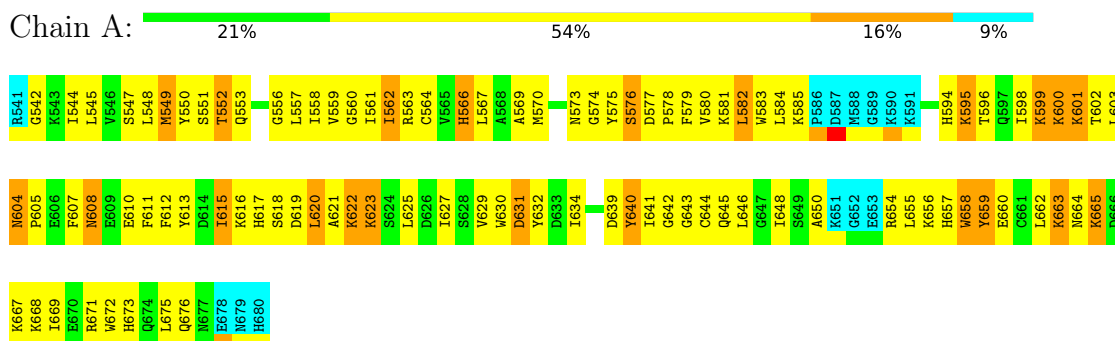
## 4.2.17 Score per residue for model 17

- Molecule 1: RABPHILIN 3-A



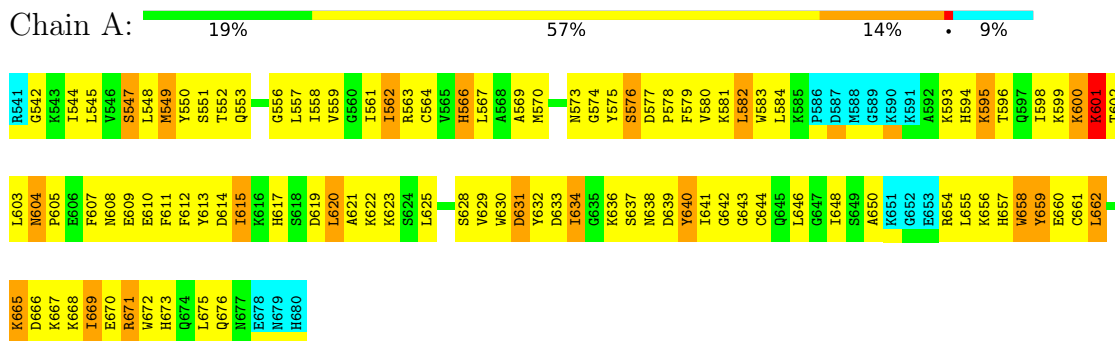
## 4.2.18 Score per residue for model 18

- Molecule 1: RABPHILIN 3-A



## 4.2.19 Score per residue for model 19

- Molecule 1: RABPHILIN 3-A



## 4.2.20 Score per residue for model 20

### • Molecule 1: RABPHILIN 3-A



## 5 Refinement protocol and experimental data overview

The models were refined using the following method: *TORSION ANGLE SIMULATED ANNEALING*.

Of the ? calculated structures, 20 were deposited, based on the following criterion: *LOWEST OVERALL ENERGY*.

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

| Software name | Classification     | Version |
|---------------|--------------------|---------|
| CNS           | refinement         |         |
| CNS           | structure solution |         |

No chemical shift data was provided.

## 6 Model quality

### 6.1 Standard geometry

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

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 6.2 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 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     | 1037  | 1053     | 1049     | 172±11  |
| All | All   | 20740 | 21060    | 20980    | 3445    |

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 83.

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

| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:561:ILE:HD11 | 1:A:582:LEU:HD21 | 1.13     | 1.15        | 4      | 20    |
| 1:A:646:LEU:HD11 | 1:A:673:HIS:NE2  | 0.96     | 1.73        | 17     | 19    |
| 1:A:561:ILE:HD11 | 1:A:582:LEU:CD2  | 0.94     | 1.91        | 13     | 19    |
| 1:A:567:LEU:O    | 1:A:603:LEU:HD13 | 0.92     | 1.64        | 14     | 20    |
| 1:A:648:ILE:HD11 | 1:A:659:TYR:CE2  | 0.90     | 2.02        | 1      | 15    |
| 1:A:545:LEU:HD13 | 1:A:672:TRP:NE1  | 0.89     | 1.82        | 8      | 20    |
| 1:A:648:ILE:HD11 | 1:A:659:TYR:CD2  | 0.88     | 2.03        | 14     | 20    |
| 1:A:599:LYS:O    | 1:A:602:THR:HG22 | 0.87     | 1.69        | 19     | 20    |
| 1:A:545:LEU:HG   | 1:A:562:ILE:HD13 | 0.83     | 1.48        | 13     | 20    |
| 1:A:657:HIS:CD2  | 1:A:669:ILE:HG22 | 0.83     | 2.08        | 2      | 8     |
| 1:A:561:ILE:CD1  | 1:A:582:LEU:HD21 | 0.82     | 2.03        | 13     | 19    |
| 1:A:615:ILE:HD11 | 1:A:619:ASP:CB   | 0.81     | 2.05        | 2      | 20    |
| 1:A:545:LEU:HD13 | 1:A:672:TRP:CE2  | 0.81     | 2.10        | 3      | 20    |
| 1:A:564:CYS:SG   | 1:A:567:LEU:HD11 | 0.81     | 2.16        | 8      | 17    |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:648:ILE:HA   | 1:A:655:LEU:HD12 | 0.80     | 1.51        | 4      | 20    |
| 1:A:558:ILE:HD13 | 1:A:612:PHE:CD1  | 0.77     | 2.14        | 6      | 20    |
| 1:A:631:ASP:HB2  | 1:A:641:ILE:HD11 | 0.75     | 1.58        | 15     | 12    |
| 1:A:584:LEU:HD11 | 1:A:623:LYS:HB2  | 0.75     | 1.57        | 17     | 2     |
| 1:A:559:VAL:HG11 | 1:A:582:LEU:HD22 | 0.74     | 1.60        | 14     | 13    |
| 1:A:561:ILE:HG22 | 1:A:607:PHE:HB2  | 0.74     | 1.60        | 17     | 9     |
| 1:A:598:ILE:HD12 | 1:A:632:TYR:CD2  | 0.74     | 2.17        | 6      | 14    |
| 1:A:561:ILE:HG21 | 1:A:596:THR:HG21 | 0.73     | 1.60        | 4      | 12    |
| 1:A:615:ILE:HD13 | 1:A:623:LYS:HD2  | 0.73     | 1.60        | 2      | 20    |
| 1:A:561:ILE:HG22 | 1:A:607:PHE:CB   | 0.73     | 2.14        | 5      | 7     |
| 1:A:627:ILE:HD11 | 1:A:646:LEU:HD12 | 0.72     | 1.60        | 14     | 10    |
| 1:A:547:SER:HB3  | 1:A:562:ILE:HD11 | 0.72     | 1.60        | 5      | 9     |
| 1:A:558:ILE:HD13 | 1:A:612:PHE:HD1  | 0.71     | 1.45        | 6      | 20    |
| 1:A:615:ILE:HD11 | 1:A:619:ASP:HB2  | 0.71     | 1.62        | 17     | 20    |
| 1:A:648:ILE:O    | 1:A:655:LEU:HD13 | 0.71     | 1.86        | 1      | 20    |
| 1:A:602:THR:HG21 | 1:A:605:PRO:HB3  | 0.71     | 1.62        | 20     | 20    |
| 1:A:646:LEU:HD21 | 1:A:673:HIS:CE1  | 0.71     | 2.21        | 1      | 11    |
| 1:A:660:GLU:HB3  | 1:A:669:ILE:HD12 | 0.71     | 1.61        | 9      | 5     |
| 1:A:621:ALA:H    | 1:A:662:LEU:HD21 | 0.69     | 1.47        | 1      | 20    |
| 1:A:598:ILE:HG21 | 1:A:632:TYR:CG   | 0.69     | 2.23        | 4      | 20    |
| 1:A:621:ALA:O    | 1:A:648:ILE:HG22 | 0.69     | 1.87        | 16     | 20    |
| 1:A:542:GLY:H    | 1:A:675:LEU:HD12 | 0.69     | 1.48        | 3      | 1     |
| 1:A:545:LEU:HD13 | 1:A:672:TRP:CD1  | 0.69     | 2.23        | 8      | 20    |
| 1:A:576:SER:N    | 1:A:603:LEU:HD21 | 0.68     | 2.03        | 5      | 14    |
| 1:A:615:ILE:HD13 | 1:A:623:LYS:CD   | 0.67     | 2.19        | 2      | 20    |
| 1:A:648:ILE:HG12 | 1:A:655:LEU:HD11 | 0.67     | 1.66        | 1      | 20    |
| 1:A:582:LEU:HD12 | 1:A:594:HIS:HB2  | 0.66     | 1.67        | 1      | 10    |
| 1:A:630:TRP:CH2  | 1:A:640:TYR:CD2  | 0.66     | 2.83        | 10     | 12    |
| 1:A:545:LEU:CG   | 1:A:562:ILE:HD13 | 0.66     | 2.20        | 4      | 20    |
| 1:A:580:VAL:HG22 | 1:A:629:VAL:HG22 | 0.66     | 1.66        | 4      | 7     |
| 1:A:545:LEU:HD12 | 1:A:671:ARG:O    | 0.65     | 1.91        | 18     | 2     |
| 1:A:615:ILE:HD13 | 1:A:623:LYS:CE   | 0.65     | 2.22        | 9      | 18    |
| 1:A:615:ILE:HD13 | 1:A:623:LYS:HE3  | 0.65     | 1.67        | 9      | 8     |
| 1:A:657:HIS:CD2  | 1:A:671:ARG:CG   | 0.65     | 2.80        | 2      | 2     |
| 1:A:579:PHE:CE2  | 1:A:581:LYS:CE   | 0.65     | 2.80        | 7      | 6     |
| 1:A:615:ILE:HD13 | 1:A:623:LYS:NZ   | 0.65     | 2.07        | 16     | 9     |
| 1:A:615:ILE:HG23 | 1:A:620:LEU:CD2  | 0.65     | 2.22        | 5      | 20    |
| 1:A:648:ILE:CD1  | 1:A:659:TYR:CD2  | 0.64     | 2.79        | 20     | 14    |
| 1:A:596:THR:HG22 | 1:A:611:PHE:CE1  | 0.64     | 2.27        | 18     | 6     |
| 1:A:632:TYR:CD1  | 1:A:633:ASP:N    | 0.64     | 2.66        | 4      | 19    |
| 1:A:547:SER:HB2  | 1:A:562:ILE:HD11 | 0.64     | 1.69        | 13     | 2     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:657:HIS:CD2  | 1:A:669:ILE:CG2  | 0.64     | 2.81        | 3      | 11    |
| 1:A:581:LYS:CD   | 1:A:630:TRP:CD1  | 0.64     | 2.80        | 6      | 2     |
| 1:A:615:ILE:HG23 | 1:A:620:LEU:HD21 | 0.63     | 1.69        | 6      | 20    |
| 1:A:648:ILE:N    | 1:A:658:TRP:CD1  | 0.63     | 2.67        | 10     | 20    |
| 1:A:584:LEU:HD11 | 1:A:623:LYS:HB3  | 0.63     | 1.69        | 1      | 16    |
| 1:A:584:LEU:CB   | 1:A:613:TYR:CE2  | 0.63     | 2.81        | 2      | 19    |
| 1:A:578:PRO:HB3  | 1:A:641:ILE:HD12 | 0.62     | 1.71        | 20     | 10    |
| 1:A:615:ILE:HD11 | 1:A:619:ASP:HB3  | 0.62     | 1.69        | 2      | 20    |
| 1:A:559:VAL:CG1  | 1:A:582:LEU:HD22 | 0.62     | 2.24        | 14     | 6     |
| 1:A:642:GLY:O    | 1:A:675:LEU:HD22 | 0.62     | 1.94        | 15     | 13    |
| 1:A:580:VAL:HG23 | 1:A:607:PHE:CE2  | 0.61     | 2.30        | 11     | 10    |
| 1:A:648:ILE:HD11 | 1:A:659:TYR:CZ   | 0.61     | 2.30        | 6      | 8     |
| 1:A:660:GLU:CD   | 1:A:669:ILE:HD12 | 0.60     | 2.16        | 1      | 1     |
| 1:A:648:ILE:CG1  | 1:A:659:TYR:CD2  | 0.60     | 2.84        | 18     | 17    |
| 1:A:559:VAL:HG21 | 1:A:613:TYR:CE1  | 0.60     | 2.31        | 11     | 15    |
| 1:A:584:LEU:HD11 | 1:A:623:LYS:CB   | 0.59     | 2.27        | 17     | 17    |
| 1:A:615:ILE:CG2  | 1:A:620:LEU:CD2  | 0.59     | 2.80        | 5      | 20    |
| 1:A:627:ILE:CD1  | 1:A:646:LEU:HD12 | 0.59     | 2.27        | 8      | 2     |
| 1:A:648:ILE:HD11 | 1:A:659:TYR:CG   | 0.59     | 2.32        | 10     | 16    |
| 1:A:579:PHE:CZ   | 1:A:581:LYS:CE   | 0.59     | 2.85        | 6      | 2     |
| 1:A:656:LYS:CG   | 1:A:657:HIS:N    | 0.58     | 2.66        | 13     | 7     |
| 1:A:621:ALA:N    | 1:A:662:LEU:HD21 | 0.58     | 2.13        | 1      | 20    |
| 1:A:657:HIS:CD2  | 1:A:669:ILE:HG21 | 0.58     | 2.33        | 4      | 3     |
| 1:A:580:VAL:HG23 | 1:A:607:PHE:CZ   | 0.58     | 2.33        | 11     | 12    |
| 1:A:579:PHE:CD1  | 1:A:630:TRP:O    | 0.58     | 2.57        | 5      | 18    |
| 1:A:629:VAL:CG2  | 1:A:675:LEU:HD21 | 0.58     | 2.29        | 18     | 6     |
| 1:A:567:LEU:HD12 | 1:A:578:PRO:CG   | 0.58     | 2.29        | 2      | 13    |
| 1:A:552:THR:CG2  | 1:A:665:LYS:CD   | 0.57     | 2.81        | 1      | 4     |
| 1:A:582:LEU:HD11 | 1:A:611:PHE:CE1  | 0.57     | 2.34        | 14     | 8     |
| 1:A:584:LEU:HB2  | 1:A:613:TYR:CE2  | 0.57     | 2.34        | 2      | 18    |
| 1:A:583:TRP:CD1  | 1:A:585:LYS:CD   | 0.57     | 2.86        | 14     | 1     |
| 1:A:660:GLU:CG   | 1:A:669:ILE:HD12 | 0.57     | 2.28        | 1      | 2     |
| 1:A:604:ASN:N    | 1:A:605:PRO:CD   | 0.57     | 2.67        | 13     | 20    |
| 1:A:545:LEU:CD1  | 1:A:672:TRP:CD1  | 0.57     | 2.87        | 8      | 15    |
| 1:A:598:ILE:CG2  | 1:A:632:TYR:CB   | 0.57     | 2.83        | 1      | 15    |
| 1:A:581:LYS:HD3  | 1:A:630:TRP:CD1  | 0.57     | 2.34        | 6      | 4     |
| 1:A:621:ALA:O    | 1:A:648:ILE:CG2  | 0.57     | 2.53        | 17     | 20    |
| 1:A:621:ALA:HB1  | 1:A:648:ILE:CD1  | 0.57     | 2.30        | 11     | 9     |
| 1:A:617:HIS:CD2  | 1:A:665:LYS:HE2  | 0.57     | 2.35        | 8      | 1     |
| 1:A:558:ILE:CD1  | 1:A:612:PHE:CD1  | 0.57     | 2.88        | 17     | 19    |
| 1:A:545:LEU:CD2  | 1:A:562:ILE:HD13 | 0.57     | 2.30        | 18     | 11    |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:567:LEU:HD12 | 1:A:578:PRO:HG3  | 0.56     | 1.77        | 14     | 15    |
| 1:A:600:LYS:NZ   | 1:A:632:TYR:CE1  | 0.56     | 2.72        | 12     | 1     |
| 1:A:583:TRP:CD1  | 1:A:583:TRP:C    | 0.56     | 2.77        | 8      | 20    |
| 1:A:552:THR:HG22 | 1:A:665:LYS:HD3  | 0.56     | 1.78        | 1      | 4     |
| 1:A:620:LEU:O    | 1:A:623:LYS:N    | 0.56     | 2.38        | 6      | 19    |
| 1:A:664:ASN:HB2  | 1:A:669:ILE:HD11 | 0.56     | 1.76        | 1      | 2     |
| 1:A:575:TYR:HA   | 1:A:603:LEU:HD21 | 0.56     | 1.77        | 9      | 4     |
| 1:A:648:ILE:HA   | 1:A:655:LEU:CD1  | 0.55     | 2.30        | 13     | 20    |
| 1:A:551:SER:OG   | 1:A:558:ILE:HD11 | 0.55     | 2.01        | 2      | 1     |
| 1:A:558:ILE:HG23 | 1:A:611:PHE:O    | 0.55     | 2.02        | 11     | 19    |
| 1:A:580:VAL:O    | 1:A:596:THR:HG23 | 0.55     | 2.02        | 14     | 16    |
| 1:A:584:LEU:HB3  | 1:A:613:TYR:CE2  | 0.55     | 2.36        | 17     | 12    |
| 1:A:548:LEU:N    | 1:A:669:ILE:O    | 0.55     | 2.40        | 7      | 7     |
| 1:A:569:ALA:HB1  | 1:A:575:TYR:N    | 0.55     | 2.17        | 15     | 11    |
| 1:A:648:ILE:O    | 1:A:655:LEU:CD1  | 0.55     | 2.54        | 10     | 20    |
| 1:A:657:HIS:CD2  | 1:A:671:ARG:HG3  | 0.55     | 2.35        | 2      | 1     |
| 1:A:660:GLU:HG3  | 1:A:669:ILE:CD1  | 0.55     | 2.31        | 6      | 13    |
| 1:A:579:PHE:CZ   | 1:A:581:LYS:HE2  | 0.55     | 2.36        | 7      | 2     |
| 1:A:570:MET:SD   | 1:A:570:MET:N    | 0.55     | 2.79        | 20     | 3     |
| 1:A:657:HIS:CE1  | 1:A:671:ARG:CG   | 0.55     | 2.90        | 6      | 1     |
| 1:A:662:LEU:O    | 1:A:665:LYS:CD   | 0.55     | 2.55        | 12     | 4     |
| 1:A:600:LYS:HE3  | 1:A:632:TYR:CE1  | 0.54     | 2.37        | 6      | 7     |
| 1:A:661:CYS:HA   | 1:A:669:ILE:HD11 | 0.54     | 1.79        | 12     | 2     |
| 1:A:579:PHE:CE2  | 1:A:581:LYS:HE2  | 0.54     | 2.35        | 7      | 2     |
| 1:A:627:ILE:H    | 1:A:627:ILE:HD12 | 0.54     | 1.62        | 18     | 2     |
| 1:A:550:TYR:CE1  | 1:A:556:GLY:C    | 0.54     | 2.81        | 1      | 14    |
| 1:A:600:LYS:HE2  | 1:A:632:TYR:CE1  | 0.54     | 2.38        | 11     | 2     |
| 1:A:631:ASP:OD2  | 1:A:639:ASP:CB   | 0.54     | 2.55        | 12     | 1     |
| 1:A:549:MET:O    | 1:A:558:ILE:CB   | 0.54     | 2.56        | 18     | 15    |
| 1:A:629:VAL:HG23 | 1:A:675:LEU:CD2  | 0.54     | 2.32        | 18     | 4     |
| 1:A:621:ALA:HB1  | 1:A:648:ILE:HD12 | 0.54     | 1.80        | 7      | 7     |
| 1:A:656:LYS:O    | 1:A:660:GLU:CG   | 0.54     | 2.56        | 7      | 16    |
| 1:A:659:TYR:O    | 1:A:662:LEU:N    | 0.54     | 2.39        | 8      | 20    |
| 1:A:559:VAL:CG1  | 1:A:625:LEU:HD21 | 0.54     | 2.32        | 17     | 1     |
| 1:A:542:GLY:CA   | 1:A:566:HIS:O    | 0.54     | 2.56        | 3      | 20    |
| 1:A:549:MET:O    | 1:A:558:ILE:CG1  | 0.54     | 2.56        | 5      | 18    |
| 1:A:594:HIS:CD2  | 1:A:611:PHE:CD2  | 0.54     | 2.96        | 15     | 6     |
| 1:A:598:ILE:CG2  | 1:A:632:TYR:HB3  | 0.54     | 2.33        | 20     | 8     |
| 1:A:580:VAL:CG2  | 1:A:607:PHE:CE2  | 0.54     | 2.91        | 11     | 5     |
| 1:A:581:LYS:HE3  | 1:A:630:TRP:CD1  | 0.54     | 2.38        | 7      | 7     |
| 1:A:585:LYS:CG   | 1:A:624:SER:OG   | 0.54     | 2.56        | 16     | 1     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:644:CYS:SG   | 1:A:673:HIS:CG   | 0.53     | 3.01        | 13     | 1     |
| 1:A:600:LYS:CE   | 1:A:632:TYR:CE1  | 0.53     | 2.91        | 6      | 2     |
| 1:A:575:TYR:CD2  | 1:A:602:THR:HA   | 0.53     | 2.39        | 12     | 19    |
| 1:A:581:LYS:CB   | 1:A:594:HIS:O    | 0.53     | 2.57        | 14     | 6     |
| 1:A:657:HIS:CD2  | 1:A:671:ARG:HG2  | 0.53     | 2.38        | 18     | 1     |
| 1:A:594:HIS:HB3  | 1:A:611:PHE:CE2  | 0.53     | 2.38        | 15     | 15    |
| 1:A:657:HIS:CE1  | 1:A:671:ARG:HG2  | 0.53     | 2.38        | 6      | 1     |
| 1:A:570:MET:SD   | 1:A:631:ASP:CB   | 0.53     | 2.97        | 16     | 1     |
| 1:A:598:ILE:HG21 | 1:A:632:TYR:CB   | 0.53     | 2.33        | 20     | 9     |
| 1:A:617:HIS:CD2  | 1:A:665:LYS:HD3  | 0.53     | 2.39        | 7      | 5     |
| 1:A:561:ILE:O    | 1:A:608:ASN:N    | 0.53     | 2.42        | 18     | 20    |
| 1:A:562:ILE:O    | 1:A:607:PHE:N    | 0.53     | 2.42        | 11     | 20    |
| 1:A:548:LEU:O    | 1:A:669:ILE:N    | 0.53     | 2.42        | 2      | 7     |
| 1:A:549:MET:CG   | 1:A:667:LYS:O    | 0.53     | 2.57        | 18     | 2     |
| 1:A:625:LEU:O    | 1:A:646:LEU:N    | 0.53     | 2.42        | 18     | 15    |
| 1:A:583:TRP:CE3  | 1:A:593:LYS:HE2  | 0.53     | 2.38        | 10     | 8     |
| 1:A:585:LYS:O    | 1:A:624:SER:N    | 0.53     | 2.42        | 17     | 1     |
| 1:A:558:ILE:CG2  | 1:A:610:GLU:OE1  | 0.53     | 2.57        | 4      | 1     |
| 1:A:668:LYS:O    | 1:A:668:LYS:CE   | 0.53     | 2.57        | 16     | 1     |
| 1:A:593:LYS:O    | 1:A:594:HIS:ND1  | 0.52     | 2.42        | 1      | 9     |
| 1:A:631:ASP:N    | 1:A:639:ASP:O    | 0.52     | 2.43        | 12     | 16    |
| 1:A:657:HIS:CG   | 1:A:671:ARG:HG2  | 0.52     | 2.39        | 7      | 4     |
| 1:A:545:LEU:HD23 | 1:A:562:ILE:HG21 | 0.52     | 1.81        | 13     | 9     |
| 1:A:549:MET:O    | 1:A:558:ILE:N    | 0.52     | 2.42        | 8      | 18    |
| 1:A:632:TYR:HE1  | 1:A:634:ILE:HG23 | 0.52     | 1.64        | 5      | 11    |
| 1:A:575:TYR:C    | 1:A:603:LEU:HD21 | 0.52     | 2.25        | 12     | 7     |
| 1:A:595:LYS:CE   | 1:A:595:LYS:O    | 0.52     | 2.57        | 2      | 1     |
| 1:A:595:LYS:O    | 1:A:595:LYS:CD   | 0.52     | 2.57        | 14     | 7     |
| 1:A:665:LYS:O    | 1:A:667:LYS:N    | 0.52     | 2.42        | 2      | 5     |
| 1:A:661:CYS:O    | 1:A:665:LYS:NZ   | 0.52     | 2.42        | 8      | 1     |
| 1:A:629:VAL:HG23 | 1:A:675:LEU:HD21 | 0.52     | 1.82        | 18     | 4     |
| 1:A:630:TRP:CZ2  | 1:A:640:TYR:CD2  | 0.52     | 2.98        | 8      | 6     |
| 1:A:657:HIS:NE2  | 1:A:669:ILE:O    | 0.52     | 2.43        | 9      | 5     |
| 1:A:557:LEU:HD13 | 1:A:620:LEU:HD11 | 0.52     | 1.80        | 17     | 1     |
| 1:A:552:THR:CG2  | 1:A:665:LYS:HD2  | 0.52     | 2.35        | 1      | 4     |
| 1:A:548:LEU:CB   | 1:A:661:CYS:SG   | 0.52     | 2.98        | 16     | 3     |
| 1:A:630:TRP:CZ3  | 1:A:640:TYR:HB2  | 0.52     | 2.40        | 7      | 19    |
| 1:A:648:ILE:HD11 | 1:A:659:TYR:CD1  | 0.52     | 2.40        | 13     | 4     |
| 1:A:655:LEU:O    | 1:A:659:TYR:N    | 0.52     | 2.43        | 11     | 4     |
| 1:A:599:LYS:CG   | 1:A:605:PRO:HB2  | 0.52     | 2.35        | 17     | 5     |
| 1:A:628:SER:HB2  | 1:A:640:TYR:CZ   | 0.52     | 2.40        | 12     | 1     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:549:MET:SD   | 1:A:668:LYS:CB   | 0.52     | 2.98        | 12     | 1     |
| 1:A:655:LEU:O    | 1:A:659:TYR:CB   | 0.52     | 2.58        | 13     | 4     |
| 1:A:674:GLN:OE1  | 1:A:676:GLN:CG   | 0.52     | 2.57        | 2      | 1     |
| 1:A:579:PHE:CZ   | 1:A:630:TRP:HB2  | 0.51     | 2.40        | 18     | 18    |
| 1:A:567:LEU:CD1  | 1:A:578:PRO:CB   | 0.51     | 2.88        | 16     | 10    |
| 1:A:550:TYR:O    | 1:A:665:LYS:CB   | 0.51     | 2.57        | 8      | 1     |
| 1:A:579:PHE:CE1  | 1:A:630:TRP:HB2  | 0.51     | 2.40        | 4      | 11    |
| 1:A:671:ARG:HD2  | 1:A:673:HIS:CE1  | 0.51     | 2.40        | 7      | 4     |
| 1:A:562:ILE:O    | 1:A:608:ASN:N    | 0.51     | 2.43        | 1      | 14    |
| 1:A:664:ASN:OD1  | 1:A:667:LYS:CD   | 0.51     | 2.58        | 3      | 2     |
| 1:A:559:VAL:HG21 | 1:A:613:TYR:HE1  | 0.51     | 1.65        | 11     | 7     |
| 1:A:584:LEU:CD2  | 1:A:615:ILE:HG21 | 0.51     | 2.36        | 17     | 8     |
| 1:A:547:SER:O    | 1:A:560:GLY:N    | 0.51     | 2.43        | 17     | 10    |
| 1:A:569:ALA:CB   | 1:A:574:GLY:C    | 0.51     | 2.79        | 16     | 20    |
| 1:A:621:ALA:CB   | 1:A:648:ILE:HD12 | 0.51     | 2.35        | 4      | 10    |
| 1:A:610:GLU:CG   | 1:A:610:GLU:O    | 0.51     | 2.58        | 11     | 1     |
| 1:A:579:PHE:CE2  | 1:A:581:LYS:HD2  | 0.51     | 2.41        | 8      | 8     |
| 1:A:599:LYS:HD3  | 1:A:607:PHE:CD1  | 0.51     | 2.41        | 17     | 2     |
| 1:A:615:ILE:CG1  | 1:A:620:LEU:HD23 | 0.51     | 2.36        | 4      | 20    |
| 1:A:660:GLU:OE2  | 1:A:669:ILE:CG2  | 0.51     | 2.58        | 1      | 1     |
| 1:A:542:GLY:N    | 1:A:675:LEU:HD12 | 0.51     | 2.21        | 3      | 1     |
| 1:A:546:VAL:HB   | 1:A:673:HIS:CE1  | 0.51     | 2.41        | 10     | 1     |
| 1:A:599:LYS:HG2  | 1:A:607:PHE:CE1  | 0.51     | 2.41        | 1      | 1     |
| 1:A:656:LYS:HG3  | 1:A:657:HIS:N    | 0.51     | 2.20        | 13     | 5     |
| 1:A:633:ASP:CB   | 1:A:637:SER:O    | 0.51     | 2.58        | 14     | 2     |
| 1:A:670:GLU:N    | 1:A:670:GLU:OE1  | 0.51     | 2.43        | 13     | 1     |
| 1:A:544:ILE:HD11 | 1:A:561:ILE:HG23 | 0.50     | 1.81        | 8      | 5     |
| 1:A:615:ILE:CD1  | 1:A:619:ASP:HB2  | 0.50     | 2.35        | 12     | 20    |
| 1:A:660:GLU:HG3  | 1:A:669:ILE:HD12 | 0.50     | 1.81        | 1      | 4     |
| 1:A:630:TRP:CE3  | 1:A:640:TYR:HA   | 0.50     | 2.42        | 4      | 4     |
| 1:A:600:LYS:HE2  | 1:A:632:TYR:CD1  | 0.50     | 2.41        | 12     | 1     |
| 1:A:567:LEU:CD1  | 1:A:578:PRO:CG   | 0.50     | 2.89        | 1      | 7     |
| 1:A:570:MET:N    | 1:A:576:SER:OG   | 0.50     | 2.43        | 10     | 9     |
| 1:A:582:LEU:O    | 1:A:594:HIS:N    | 0.50     | 2.44        | 13     | 5     |
| 1:A:665:LYS:HD2  | 1:A:665:LYS:N    | 0.50     | 2.21        | 8      | 1     |
| 1:A:549:MET:N    | 1:A:661:CYS:SG   | 0.50     | 2.84        | 14     | 1     |
| 1:A:563:ARG:NH2  | 1:A:606:GLU:OE1  | 0.50     | 2.44        | 9      | 1     |
| 1:A:621:ALA:HB2  | 1:A:662:LEU:HD22 | 0.50     | 1.83        | 5      | 11    |
| 1:A:583:TRP:CE3  | 1:A:593:LYS:HE3  | 0.50     | 2.41        | 12     | 3     |
| 1:A:545:LEU:O    | 1:A:562:ILE:HD12 | 0.50     | 2.06        | 5      | 2     |
| 1:A:548:LEU:HD12 | 1:A:658:TRP:HA   | 0.50     | 1.83        | 20     | 2     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:567:LEU:CD1  | 1:A:578:PRO:HG3  | 0.50     | 2.37        | 1      | 5     |
| 1:A:668:LYS:CE   | 1:A:670:GLU:OE1  | 0.50     | 2.60        | 3      | 2     |
| 1:A:569:ALA:HB1  | 1:A:575:TYR:O    | 0.50     | 2.07        | 16     | 11    |
| 1:A:662:LEU:O    | 1:A:665:LYS:CE   | 0.50     | 2.60        | 6      | 2     |
| 1:A:660:GLU:OE1  | 1:A:663:LYS:CD   | 0.50     | 2.60        | 18     | 1     |
| 1:A:617:HIS:CE1  | 1:A:665:LYS:HE2  | 0.50     | 2.42        | 1      | 4     |
| 1:A:570:MET:CG   | 1:A:631:ASP:CG   | 0.49     | 2.81        | 8      | 11    |
| 1:A:564:CYS:SG   | 1:A:607:PHE:CE2  | 0.49     | 2.99        | 18     | 6     |
| 1:A:615:ILE:CD1  | 1:A:623:LYS:HE3  | 0.49     | 2.37        | 2      | 7     |
| 1:A:648:ILE:HG12 | 1:A:655:LEU:CD1  | 0.49     | 2.37        | 1      | 12    |
| 1:A:666:ASP:N    | 1:A:666:ASP:OD1  | 0.49     | 2.45        | 20     | 2     |
| 1:A:657:HIS:O    | 1:A:660:GLU:HG2  | 0.49     | 2.07        | 1      | 2     |
| 1:A:615:ILE:HG12 | 1:A:620:LEU:HD23 | 0.49     | 1.84        | 9      | 18    |
| 1:A:583:TRP:CE3  | 1:A:585:LYS:HE3  | 0.49     | 2.42        | 9      | 1     |
| 1:A:583:TRP:CE3  | 1:A:593:LYS:CE   | 0.49     | 2.96        | 10     | 3     |
| 1:A:660:GLU:CD   | 1:A:669:ILE:CD1  | 0.49     | 2.81        | 13     | 2     |
| 1:A:604:ASN:N    | 1:A:605:PRO:HD3  | 0.49     | 2.23        | 8      | 18    |
| 1:A:580:VAL:O    | 1:A:596:THR:N    | 0.49     | 2.46        | 10     | 2     |
| 1:A:545:LEU:HD12 | 1:A:671:ARG:C    | 0.49     | 2.28        | 18     | 1     |
| 1:A:658:TRP:O    | 1:A:661:CYS:N    | 0.49     | 2.43        | 1      | 3     |
| 1:A:602:THR:C    | 1:A:603:LEU:HD23 | 0.49     | 2.28        | 8      | 8     |
| 1:A:552:THR:OG1  | 1:A:553:GLN:NE2  | 0.49     | 2.45        | 4      | 1     |
| 1:A:657:HIS:ND1  | 1:A:671:ARG:HG2  | 0.49     | 2.23        | 5      | 6     |
| 1:A:617:HIS:CD2  | 1:A:665:LYS:CE   | 0.49     | 2.96        | 8      | 1     |
| 1:A:585:LYS:N    | 1:A:585:LYS:HD3  | 0.49     | 2.23        | 14     | 1     |
| 1:A:598:ILE:HG21 | 1:A:632:TYR:HB3  | 0.49     | 1.85        | 20     | 1     |
| 1:A:557:LEU:HG   | 1:A:558:ILE:N    | 0.49     | 2.23        | 16     | 18    |
| 1:A:583:TRP:CD2  | 1:A:593:LYS:HE3  | 0.49     | 2.43        | 12     | 2     |
| 1:A:632:TYR:CG   | 1:A:633:ASP:N    | 0.49     | 2.81        | 5      | 9     |
| 1:A:615:ILE:CD1  | 1:A:623:LYS:CE   | 0.49     | 2.91        | 18     | 7     |
| 1:A:604:ASN:N    | 1:A:604:ASN:ND2  | 0.49     | 2.61        | 18     | 1     |
| 1:A:545:LEU:HD23 | 1:A:562:ILE:CB   | 0.48     | 2.38        | 13     | 10    |
| 1:A:553:GLN:NE2  | 1:A:553:GLN:N    | 0.48     | 2.61        | 4      | 1     |
| 1:A:599:LYS:O    | 1:A:602:THR:CG2  | 0.48     | 2.57        | 20     | 2     |
| 1:A:631:ASP:O    | 1:A:631:ASP:OD1  | 0.48     | 2.31        | 12     | 2     |
| 1:A:664:ASN:O    | 1:A:667:LYS:O    | 0.48     | 2.32        | 14     | 8     |
| 1:A:547:SER:N    | 1:A:560:GLY:O    | 0.48     | 2.44        | 11     | 1     |
| 1:A:557:LEU:HD13 | 1:A:620:LEU:CD1  | 0.48     | 2.38        | 17     | 1     |
| 1:A:569:ALA:CB   | 1:A:574:GLY:O    | 0.48     | 2.61        | 4      | 4     |
| 1:A:660:GLU:O    | 1:A:663:LYS:N    | 0.48     | 2.46        | 9      | 2     |
| 1:A:600:LYS:HE3  | 1:A:634:ILE:CD1  | 0.48     | 2.39        | 16     | 1     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:602:THR:CG2  | 1:A:605:PRO:HB3  | 0.48     | 2.39        | 8      | 19    |
| 1:A:638:ASN:OD1  | 1:A:638:ASN:N    | 0.48     | 2.47        | 6      | 1     |
| 1:A:546:VAL:HG21 | 1:A:627:ILE:HG21 | 0.48     | 1.84        | 10     | 3     |
| 1:A:664:ASN:CB   | 1:A:667:LYS:HB2  | 0.48     | 2.38        | 18     | 3     |
| 1:A:648:ILE:HG13 | 1:A:659:TYR:CG   | 0.48     | 2.43        | 6      | 6     |
| 1:A:581:LYS:HG3  | 1:A:630:TRP:CD1  | 0.48     | 2.44        | 4      | 2     |
| 1:A:617:HIS:NE2  | 1:A:662:LEU:O    | 0.48     | 2.46        | 4      | 7     |
| 1:A:550:TYR:CE2  | 1:A:556:GLY:C    | 0.48     | 2.86        | 6      | 1     |
| 1:A:577:ASP:N    | 1:A:578:PRO:CD   | 0.48     | 2.76        | 9      | 14    |
| 1:A:549:MET:HG3  | 1:A:668:LYS:CA   | 0.48     | 2.39        | 16     | 5     |
| 1:A:550:TYR:CE1  | 1:A:620:LEU:HG   | 0.48     | 2.44        | 5      | 1     |
| 1:A:546:VAL:CG2  | 1:A:627:ILE:HG21 | 0.48     | 2.38        | 11     | 1     |
| 1:A:549:MET:SD   | 1:A:668:LYS:CA   | 0.48     | 3.02        | 12     | 1     |
| 1:A:657:HIS:HD2  | 1:A:669:ILE:HG22 | 0.48     | 1.69        | 18     | 1     |
| 1:A:545:LEU:HD23 | 1:A:562:ILE:CG2  | 0.48     | 2.38        | 13     | 5     |
| 1:A:545:LEU:HD13 | 1:A:672:TRP:CD2  | 0.48     | 2.43        | 9      | 1     |
| 1:A:599:LYS:CD   | 1:A:605:PRO:HB2  | 0.48     | 2.39        | 14     | 15    |
| 1:A:550:TYR:CE2  | 1:A:617:HIS:HB2  | 0.48     | 2.44        | 12     | 9     |
| 1:A:567:LEU:CD2  | 1:A:675:LEU:CD1  | 0.48     | 2.92        | 19     | 3     |
| 1:A:610:GLU:N    | 1:A:610:GLU:CD   | 0.48     | 2.67        | 5      | 1     |
| 1:A:671:ARG:CD   | 1:A:672:TRP:O    | 0.48     | 2.62        | 14     | 2     |
| 1:A:550:TYR:CD1  | 1:A:557:LEU:HA   | 0.48     | 2.44        | 8      | 7     |
| 1:A:575:TYR:CA   | 1:A:603:LEU:HD21 | 0.48     | 2.39        | 9      | 4     |
| 1:A:625:LEU:N    | 1:A:646:LEU:O    | 0.48     | 2.43        | 20     | 4     |
| 1:A:583:TRP:CZ3  | 1:A:585:LYS:HE3  | 0.48     | 2.43        | 9      | 1     |
| 1:A:628:SER:HB2  | 1:A:640:TYR:CE2  | 0.48     | 2.43        | 12     | 1     |
| 1:A:664:ASN:OD1  | 1:A:667:LYS:CE   | 0.48     | 2.62        | 20     | 1     |
| 1:A:656:LYS:O    | 1:A:660:GLU:HG2  | 0.48     | 2.09        | 1      | 11    |
| 1:A:544:ILE:HD13 | 1:A:545:LEU:N    | 0.48     | 2.23        | 2      | 4     |
| 1:A:663:LYS:HG2  | 1:A:664:ASN:N    | 0.48     | 2.23        | 16     | 2     |
| 1:A:670:GLU:O    | 1:A:671:ARG:NE   | 0.48     | 2.47        | 11     | 1     |
| 1:A:615:ILE:CD1  | 1:A:623:LYS:HD2  | 0.47     | 2.39        | 17     | 14    |
| 1:A:656:LYS:O    | 1:A:660:GLU:CB   | 0.47     | 2.61        | 11     | 11    |
| 1:A:554:GLN:OE1  | 1:A:612:PHE:CZ   | 0.47     | 2.67        | 8      | 1     |
| 1:A:657:HIS:CD2  | 1:A:669:ILE:HB   | 0.47     | 2.44        | 14     | 2     |
| 1:A:663:LYS:CG   | 1:A:664:ASN:OD1  | 0.47     | 2.61        | 2      | 1     |
| 1:A:567:LEU:CD2  | 1:A:675:LEU:HD11 | 0.47     | 2.40        | 3      | 3     |
| 1:A:599:LYS:HG2  | 1:A:605:PRO:CB   | 0.47     | 2.39        | 12     | 7     |
| 1:A:631:ASP:O    | 1:A:639:ASP:N    | 0.47     | 2.46        | 11     | 2     |
| 1:A:557:LEU:O    | 1:A:613:TYR:N    | 0.47     | 2.43        | 17     | 1     |
| 1:A:568:ALA:O    | 1:A:603:LEU:HD22 | 0.47     | 2.09        | 1      | 3     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:599:LYS:HB3  | 1:A:602:THR:CG2  | 0.47     | 2.39        | 16     | 10    |
| 1:A:593:LYS:HD2  | 1:A:593:LYS:N    | 0.47     | 2.24        | 17     | 1     |
| 1:A:567:LEU:HD13 | 1:A:578:PRO:CB   | 0.47     | 2.40        | 11     | 15    |
| 1:A:584:LEU:CD1  | 1:A:623:LYS:HB3  | 0.47     | 2.40        | 8      | 16    |
| 1:A:547:SER:CB   | 1:A:670:GLU:HG3  | 0.47     | 2.39        | 12     | 4     |
| 1:A:597:GLN:HG3  | 1:A:599:LYS:CE   | 0.47     | 2.39        | 3      | 3     |
| 1:A:643:GLY:O    | 1:A:676:GLN:N    | 0.47     | 2.42        | 3      | 9     |
| 1:A:549:MET:CG   | 1:A:668:LYS:HA   | 0.47     | 2.40        | 2      | 3     |
| 1:A:561:ILE:HG22 | 1:A:607:PHE:CG   | 0.47     | 2.44        | 5      | 4     |
| 1:A:657:HIS:NE2  | 1:A:669:ILE:HG22 | 0.47     | 2.24        | 2      | 2     |
| 1:A:630:TRP:CZ3  | 1:A:640:TYR:CG   | 0.47     | 3.02        | 4      | 1     |
| 1:A:634:ILE:N    | 1:A:634:ILE:HD13 | 0.47     | 2.25        | 13     | 9     |
| 1:A:600:LYS:HE2  | 1:A:634:ILE:HD12 | 0.47     | 1.86        | 10     | 2     |
| 1:A:583:TRP:CD2  | 1:A:585:LYS:HE3  | 0.47     | 2.45        | 9      | 1     |
| 1:A:617:HIS:CE1  | 1:A:665:LYS:HD3  | 0.47     | 2.44        | 17     | 1     |
| 1:A:627:ILE:HD12 | 1:A:627:ILE:N    | 0.47     | 2.23        | 18     | 2     |
| 1:A:570:MET:HE1  | 1:A:641:ILE:HG12 | 0.47     | 1.87        | 7      | 4     |
| 1:A:631:ASP:OD2  | 1:A:639:ASP:HB2  | 0.47     | 2.10        | 12     | 1     |
| 1:A:585:LYS:CD   | 1:A:585:LYS:N    | 0.47     | 2.78        | 14     | 1     |
| 1:A:646:LEU:HD11 | 1:A:673:HIS:CE1  | 0.47     | 2.43        | 17     | 1     |
| 1:A:561:ILE:HD13 | 1:A:561:ILE:N    | 0.47     | 2.24        | 19     | 1     |
| 1:A:547:SER:CB   | 1:A:562:ILE:HD11 | 0.47     | 2.40        | 1      | 2     |
| 1:A:579:PHE:CE2  | 1:A:581:LYS:CD   | 0.47     | 2.98        | 6      | 1     |
| 1:A:597:GLN:CD   | 1:A:599:LYS:NZ   | 0.47     | 2.69        | 12     | 1     |
| 1:A:569:ALA:HB1  | 1:A:574:GLY:C    | 0.47     | 2.30        | 20     | 12    |
| 1:A:617:HIS:NE2  | 1:A:665:LYS:HE2  | 0.47     | 2.25        | 3      | 6     |
| 1:A:545:LEU:HG   | 1:A:562:ILE:CD1  | 0.47     | 2.40        | 10     | 4     |
| 1:A:577:ASP:O    | 1:A:632:TYR:N    | 0.46     | 2.44        | 1      | 7     |
| 1:A:578:PRO:HA   | 1:A:630:TRP:O    | 0.46     | 2.10        | 4      | 18    |
| 1:A:583:TRP:CG   | 1:A:593:LYS:HD3  | 0.46     | 2.45        | 4      | 2     |
| 1:A:621:ALA:HB1  | 1:A:648:ILE:HD13 | 0.46     | 1.88        | 5      | 3     |
| 1:A:550:TYR:CD2  | 1:A:557:LEU:HA   | 0.46     | 2.45        | 6      | 1     |
| 1:A:598:ILE:CD1  | 1:A:632:TYR:CD2  | 0.46     | 2.98        | 16     | 4     |
| 1:A:563:ARG:HG3  | 1:A:672:TRP:CH2  | 0.46     | 2.45        | 1      | 1     |
| 1:A:632:TYR:O    | 1:A:633:ASP:OD1  | 0.46     | 2.33        | 12     | 4     |
| 1:A:666:ASP:OD1  | 1:A:667:LYS:N    | 0.46     | 2.47        | 11     | 1     |
| 1:A:600:LYS:CE   | 1:A:634:ILE:HD12 | 0.46     | 2.40        | 16     | 1     |
| 1:A:562:ILE:HD11 | 1:A:670:GLU:HG2  | 0.46     | 1.85        | 17     | 1     |
| 1:A:552:THR:HG22 | 1:A:665:LYS:CD   | 0.46     | 2.39        | 1      | 2     |
| 1:A:658:TRP:O    | 1:A:661:CYS:HB3  | 0.46     | 2.10        | 19     | 12    |
| 1:A:648:ILE:HG13 | 1:A:659:TYR:CB   | 0.46     | 2.41        | 16     | 9     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:598:ILE:HG23 | 1:A:632:TYR:CB   | 0.46     | 2.40        | 16     | 3     |
| 1:A:630:TRP:CA   | 1:A:639:ASP:O    | 0.46     | 2.63        | 12     | 1     |
| 1:A:600:LYS:HD3  | 1:A:632:TYR:CD1  | 0.46     | 2.45        | 20     | 2     |
| 1:A:581:LYS:HA   | 1:A:594:HIS:O    | 0.46     | 2.11        | 8      | 18    |
| 1:A:658:TRP:O    | 1:A:661:CYS:CB   | 0.46     | 2.63        | 2      | 7     |
| 1:A:676:GLN:HG3  | 1:A:677:ASN:N    | 0.46     | 2.25        | 3      | 1     |
| 1:A:583:TRP:CD1  | 1:A:585:LYS:HD3  | 0.46     | 2.45        | 14     | 1     |
| 1:A:583:TRP:CE2  | 1:A:585:LYS:HG2  | 0.46     | 2.45        | 1      | 1     |
| 1:A:547:SER:HA   | 1:A:669:ILE:O    | 0.46     | 2.11        | 19     | 14    |
| 1:A:631:ASP:OD1  | 1:A:633:ASP:OD1  | 0.46     | 2.34        | 12     | 1     |
| 1:A:549:MET:O    | 1:A:558:ILE:HG12 | 0.46     | 2.11        | 20     | 17    |
| 1:A:549:MET:HG2  | 1:A:667:LYS:O    | 0.46     | 2.11        | 18     | 9     |
| 1:A:674:GLN:NE2  | 1:A:675:LEU:O    | 0.46     | 2.48        | 2      | 1     |
| 1:A:552:THR:HG22 | 1:A:665:LYS:HD2  | 0.46     | 1.86        | 17     | 2     |
| 1:A:583:TRP:CZ2  | 1:A:585:LYS:HG2  | 0.46     | 2.46        | 20     | 1     |
| 1:A:638:ASN:O    | 1:A:639:ASP:OD1  | 0.46     | 2.34        | 8      | 2     |
| 1:A:583:TRP:CZ2  | 1:A:585:LYS:HD3  | 0.46     | 2.46        | 7      | 1     |
| 1:A:656:LYS:O    | 1:A:660:GLU:OE1  | 0.46     | 2.33        | 19     | 3     |
| 1:A:663:LYS:HE2  | 1:A:664:ASN:ND2  | 0.46     | 2.25        | 16     | 1     |
| 1:A:552:THR:CG2  | 1:A:665:LYS:HD3  | 0.46     | 2.41        | 4      | 2     |
| 1:A:671:ARG:HD2  | 1:A:672:TRP:O    | 0.46     | 2.11        | 1      | 1     |
| 1:A:543:LYS:N    | 1:A:565:VAL:O    | 0.46     | 2.45        | 3      | 1     |
| 1:A:594:HIS:C    | 1:A:595:LYS:CD   | 0.46     | 2.84        | 6      | 2     |
| 1:A:600:LYS:HE3  | 1:A:632:TYR:CD1  | 0.46     | 2.45        | 7      | 3     |
| 1:A:650:ALA:CB   | 1:A:654:ARG:HB2  | 0.46     | 2.41        | 6      | 3     |
| 1:A:662:LEU:O    | 1:A:665:LYS:HD3  | 0.46     | 2.10        | 9      | 3     |
| 1:A:600:LYS:CE   | 1:A:632:TYR:CD1  | 0.46     | 2.99        | 11     | 1     |
| 1:A:561:ILE:CG1  | 1:A:582:LEU:HD21 | 0.46     | 2.40        | 1      | 1     |
| 1:A:549:MET:SD   | 1:A:665:LYS:O    | 0.46     | 2.74        | 8      | 3     |
| 1:A:631:ASP:OD1  | 1:A:639:ASP:OD1  | 0.46     | 2.34        | 10     | 1     |
| 1:A:599:LYS:CB   | 1:A:605:PRO:HG3  | 0.46     | 2.40        | 18     | 4     |
| 1:A:621:ALA:HB1  | 1:A:648:ILE:HG21 | 0.46     | 1.88        | 2      | 10    |
| 1:A:664:ASN:OD1  | 1:A:667:LYS:HD2  | 0.46     | 2.11        | 3      | 1     |
| 1:A:557:LEU:CD1  | 1:A:661:CYS:SG   | 0.46     | 3.04        | 20     | 1     |
| 1:A:601:LYS:O    | 1:A:602:THR:HB   | 0.45     | 2.11        | 13     | 8     |
| 1:A:599:LYS:CG   | 1:A:607:PHE:CE1  | 0.45     | 2.99        | 1      | 1     |
| 1:A:646:LEU:HD23 | 1:A:654:ARG:HB3  | 0.45     | 1.89        | 12     | 4     |
| 1:A:645:GLN:O    | 1:A:654:ARG:CD   | 0.45     | 2.63        | 4      | 2     |
| 1:A:662:LEU:O    | 1:A:665:LYS:HE2  | 0.45     | 2.11        | 13     | 1     |
| 1:A:660:GLU:OE1  | 1:A:669:ILE:CD1  | 0.45     | 2.65        | 1      | 1     |
| 1:A:645:GLN:O    | 1:A:654:ARG:HD2  | 0.45     | 2.11        | 18     | 11    |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:559:VAL:HG11 | 1:A:625:LEU:HD21 | 0.45     | 1.88        | 17     | 1     |
| 1:A:595:LYS:O    | 1:A:595:LYS:CG   | 0.45     | 2.64        | 12     | 4     |
| 1:A:607:PHE:O    | 1:A:608:ASN:OD1  | 0.45     | 2.34        | 17     | 1     |
| 1:A:568:ALA:O    | 1:A:576:SER:OG   | 0.45     | 2.33        | 1      | 3     |
| 1:A:644:CYS:SG   | 1:A:674:GLN:O    | 0.45     | 2.74        | 2      | 1     |
| 1:A:561:ILE:HG13 | 1:A:596:THR:CG2  | 0.45     | 2.41        | 3      | 6     |
| 1:A:581:LYS:CE   | 1:A:630:TRP:CD1  | 0.45     | 2.99        | 7      | 3     |
| 1:A:615:ILE:HD13 | 1:A:623:LYS:HZ2  | 0.45     | 1.70        | 3      | 1     |
| 1:A:594:HIS:CG   | 1:A:611:PHE:CE2  | 0.45     | 3.03        | 12     | 3     |
| 1:A:671:ARG:HD3  | 1:A:672:TRP:O    | 0.45     | 2.11        | 14     | 3     |
| 1:A:659:TYR:O    | 1:A:660:GLU:C    | 0.45     | 2.55        | 8      | 10    |
| 1:A:618:SER:O    | 1:A:622:LYS:CE   | 0.45     | 2.64        | 15     | 1     |
| 1:A:548:LEU:HB2  | 1:A:661:CYS:SG   | 0.45     | 2.50        | 16     | 1     |
| 1:A:549:MET:O    | 1:A:558:ILE:HB   | 0.45     | 2.12        | 18     | 5     |
| 1:A:583:TRP:HB2  | 1:A:593:LYS:CG   | 0.45     | 2.42        | 16     | 7     |
| 1:A:642:GLY:HA2  | 1:A:676:GLN:O    | 0.45     | 2.12        | 3      | 3     |
| 1:A:579:PHE:CE2  | 1:A:581:LYS:CG   | 0.45     | 3.00        | 6      | 1     |
| 1:A:599:LYS:HD2  | 1:A:599:LYS:N    | 0.45     | 2.27        | 17     | 1     |
| 1:A:633:ASP:OD2  | 1:A:639:ASP:OD2  | 0.45     | 2.34        | 3      | 1     |
| 1:A:630:TRP:CZ2  | 1:A:640:TYR:CE2  | 0.45     | 3.05        | 8      | 2     |
| 1:A:582:LEU:HD11 | 1:A:611:PHE:CZ   | 0.45     | 2.47        | 14     | 2     |
| 1:A:576:SER:N    | 1:A:603:LEU:CD2  | 0.45     | 2.78        | 5      | 5     |
| 1:A:620:LEU:O    | 1:A:623:LYS:HB2  | 0.45     | 2.12        | 1      | 9     |
| 1:A:674:GLN:OE1  | 1:A:676:GLN:HG3  | 0.45     | 2.12        | 2      | 1     |
| 1:A:580:VAL:CG1  | 1:A:627:ILE:CG2  | 0.45     | 2.95        | 13     | 2     |
| 1:A:646:LEU:CD2  | 1:A:654:ARG:HB3  | 0.44     | 2.43        | 1      | 3     |
| 1:A:547:SER:HB3  | 1:A:670:GLU:CG   | 0.44     | 2.42        | 2      | 2     |
| 1:A:630:TRP:CE3  | 1:A:640:TYR:CA   | 0.44     | 3.01        | 20     | 3     |
| 1:A:561:ILE:CG2  | 1:A:607:PHE:CD2  | 0.44     | 3.00        | 17     | 4     |
| 1:A:551:SER:O    | 1:A:555:GLY:N    | 0.44     | 2.50        | 2      | 1     |
| 1:A:561:ILE:HG22 | 1:A:607:PHE:CD2  | 0.44     | 2.47        | 18     | 12    |
| 1:A:610:GLU:O    | 1:A:610:GLU:HG3  | 0.44     | 2.12        | 11     | 1     |
| 1:A:580:VAL:HG11 | 1:A:627:ILE:CG2  | 0.44     | 2.43        | 13     | 1     |
| 1:A:614:ASP:O    | 1:A:614:ASP:CG   | 0.44     | 2.55        | 19     | 1     |
| 1:A:619:ASP:O    | 1:A:620:LEU:C    | 0.44     | 2.56        | 2      | 20    |
| 1:A:620:LEU:O    | 1:A:623:LYS:CB   | 0.44     | 2.66        | 1      | 9     |
| 1:A:550:TYR:CD1  | 1:A:620:LEU:HD11 | 0.44     | 2.48        | 2      | 1     |
| 1:A:648:ILE:CG1  | 1:A:659:TYR:CG   | 0.44     | 3.00        | 6      | 6     |
| 1:A:655:LEU:O    | 1:A:659:TYR:HB3  | 0.44     | 2.12        | 12     | 6     |
| 1:A:656:LYS:O    | 1:A:660:GLU:HB3  | 0.44     | 2.13        | 6      | 14    |
| 1:A:577:ASP:OD1  | 1:A:601:LYS:N    | 0.44     | 2.44        | 4      | 2     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:582:LEU:O    | 1:A:593:LYS:HA   | 0.44     | 2.12        | 14     | 4     |
| 1:A:671:ARG:HD3  | 1:A:672:TRP:N    | 0.44     | 2.27        | 16     | 3     |
| 1:A:627:ILE:CD1  | 1:A:646:LEU:CD1  | 0.44     | 2.95        | 14     | 1     |
| 1:A:633:ASP:HB3  | 1:A:637:SER:O    | 0.44     | 2.12        | 14     | 1     |
| 1:A:648:ILE:HG13 | 1:A:659:TYR:HB2  | 0.44     | 1.88        | 17     | 14    |
| 1:A:577:ASP:CB   | 1:A:600:LYS:HA   | 0.44     | 2.42        | 5      | 7     |
| 1:A:581:LYS:HE3  | 1:A:630:TRP:NE1  | 0.44     | 2.28        | 4      | 1     |
| 1:A:621:ALA:O    | 1:A:648:ILE:HB   | 0.44     | 2.13        | 11     | 4     |
| 1:A:581:LYS:HG2  | 1:A:595:LYS:HG3  | 0.44     | 1.89        | 6      | 1     |
| 1:A:570:MET:HG3  | 1:A:631:ASP:CG   | 0.44     | 2.33        | 12     | 6     |
| 1:A:581:LYS:CG   | 1:A:595:LYS:HG3  | 0.44     | 2.43        | 6      | 1     |
| 1:A:664:ASN:HB3  | 1:A:667:LYS:CG   | 0.44     | 2.42        | 2      | 1     |
| 1:A:548:LEU:HG   | 1:A:657:HIS:NE2  | 0.44     | 2.28        | 3      | 3     |
| 1:A:577:ASP:CB   | 1:A:632:TYR:HB3  | 0.44     | 2.42        | 4      | 5     |
| 1:A:600:LYS:HE3  | 1:A:634:ILE:HD12 | 0.44     | 1.88        | 16     | 1     |
| 1:A:549:MET:SD   | 1:A:666:ASP:O    | 0.44     | 2.75        | 17     | 1     |
| 1:A:668:LYS:N    | 1:A:668:LYS:HD3  | 0.44     | 2.26        | 3      | 1     |
| 1:A:554:GLN:HG3  | 1:A:555:GLY:N    | 0.44     | 2.28        | 6      | 1     |
| 1:A:593:LYS:N    | 1:A:593:LYS:CD   | 0.44     | 2.81        | 17     | 1     |
| 1:A:615:ILE:CD1  | 1:A:623:LYS:CD   | 0.44     | 2.95        | 2      | 4     |
| 1:A:634:ILE:O    | 1:A:636:LYS:HG2  | 0.44     | 2.12        | 3      | 1     |
| 1:A:615:ILE:HG13 | 1:A:616:LYS:N    | 0.44     | 2.27        | 14     | 3     |
| 1:A:662:LEU:O    | 1:A:665:LYS:HE3  | 0.44     | 2.12        | 6      | 4     |
| 1:A:544:ILE:HD13 | 1:A:544:ILE:C    | 0.44     | 2.33        | 11     | 1     |
| 1:A:615:ILE:CG2  | 1:A:620:LEU:HD23 | 0.44     | 2.43        | 19     | 3     |
| 1:A:629:VAL:CG2  | 1:A:675:LEU:CD2  | 0.44     | 2.95        | 18     | 3     |
| 1:A:542:GLY:O    | 1:A:675:LEU:CG   | 0.43     | 2.66        | 10     | 1     |
| 1:A:597:GLN:CD   | 1:A:599:LYS:CE   | 0.43     | 2.86        | 12     | 1     |
| 1:A:549:MET:CA   | 1:A:661:CYS:SG   | 0.43     | 3.06        | 14     | 1     |
| 1:A:595:LYS:O    | 1:A:595:LYS:HD2  | 0.43     | 2.13        | 16     | 1     |
| 1:A:616:LYS:O    | 1:A:619:ASP:N    | 0.43     | 2.46        | 13     | 5     |
| 1:A:584:LEU:CG   | 1:A:623:LYS:HB3  | 0.43     | 2.43        | 12     | 8     |
| 1:A:674:GLN:O    | 1:A:674:GLN:HG3  | 0.43     | 2.13        | 2      | 1     |
| 1:A:570:MET:CG   | 1:A:631:ASP:OD1  | 0.43     | 2.66        | 3      | 1     |
| 1:A:656:LYS:O    | 1:A:660:GLU:HB2  | 0.43     | 2.13        | 18     | 5     |
| 1:A:631:ASP:HB3  | 1:A:641:ILE:CG1  | 0.43     | 2.43        | 12     | 1     |
| 1:A:584:LEU:HD12 | 1:A:625:LEU:N    | 0.43     | 2.29        | 2      | 1     |
| 1:A:656:LYS:O    | 1:A:660:GLU:CD   | 0.43     | 2.57        | 10     | 4     |
| 1:A:548:LEU:HB3  | 1:A:661:CYS:SG   | 0.43     | 2.53        | 5      | 7     |
| 1:A:561:ILE:O    | 1:A:607:PHE:HB2  | 0.43     | 2.14        | 6      | 4     |
| 1:A:581:LYS:HD3  | 1:A:595:LYS:CG   | 0.43     | 2.43        | 7      | 1     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:548:LEU:CD1  | 1:A:658:TRP:HA   | 0.43     | 2.43        | 18     | 3     |
| 1:A:596:THR:HG22 | 1:A:611:PHE:HE1  | 0.43     | 1.68        | 14     | 2     |
| 1:A:569:ALA:HA   | 1:A:575:TYR:O    | 0.43     | 2.13        | 12     | 3     |
| 1:A:578:PRO:HB3  | 1:A:641:ILE:CD1  | 0.43     | 2.44        | 18     | 10    |
| 1:A:617:HIS:NE2  | 1:A:665:LYS:HD3  | 0.43     | 2.29        | 2      | 5     |
| 1:A:561:ILE:HG13 | 1:A:596:THR:HG21 | 0.43     | 1.89        | 18     | 4     |
| 1:A:576:SER:HB2  | 1:A:603:LEU:CD2  | 0.43     | 2.44        | 17     | 6     |
| 1:A:595:LYS:O    | 1:A:595:LYS:HD3  | 0.43     | 2.13        | 20     | 3     |
| 1:A:550:TYR:OH   | 1:A:555:GLY:C    | 0.43     | 2.57        | 6      | 1     |
| 1:A:630:TRP:CH2  | 1:A:640:TYR:CG   | 0.43     | 3.07        | 14     | 5     |
| 1:A:631:ASP:HB3  | 1:A:641:ILE:HD11 | 0.43     | 1.91        | 12     | 1     |
| 1:A:615:ILE:CD1  | 1:A:623:LYS:NZ   | 0.43     | 2.81        | 1      | 3     |
| 1:A:553:GLN:HG3  | 1:A:554:GLN:N    | 0.43     | 2.28        | 14     | 2     |
| 1:A:646:LEU:CD2  | 1:A:654:ARG:HA   | 0.43     | 2.43        | 3      | 1     |
| 1:A:569:ALA:HB2  | 1:A:603:LEU:HD11 | 0.43     | 1.89        | 7      | 1     |
| 1:A:644:CYS:SG   | 1:A:673:HIS:CB   | 0.43     | 3.07        | 13     | 1     |
| 1:A:563:ARG:CB   | 1:A:606:GLU:HA   | 0.43     | 2.44        | 7      | 3     |
| 1:A:561:ILE:N    | 1:A:609:GLU:O    | 0.43     | 2.52        | 17     | 11    |
| 1:A:662:LEU:O    | 1:A:665:LYS:HG3  | 0.43     | 2.14        | 6      | 1     |
| 1:A:574:GLY:O    | 1:A:603:LEU:HD11 | 0.43     | 2.13        | 12     | 1     |
| 1:A:661:CYS:HA   | 1:A:669:ILE:CD1  | 0.43     | 2.44        | 12     | 1     |
| 1:A:599:LYS:O    | 1:A:600:LYS:C    | 0.43     | 2.56        | 20     | 1     |
| 1:A:550:TYR:CD1  | 1:A:556:GLY:O    | 0.43     | 2.72        | 17     | 3     |
| 1:A:665:LYS:O    | 1:A:666:ASP:C    | 0.43     | 2.57        | 2      | 1     |
| 1:A:549:MET:HG2  | 1:A:665:LYS:O    | 0.43     | 2.13        | 8      | 6     |
| 1:A:668:LYS:HG2  | 1:A:669:ILE:N    | 0.43     | 2.29        | 11     | 2     |
| 1:A:664:ASN:OD1  | 1:A:667:LYS:HE3  | 0.43     | 2.13        | 20     | 2     |
| 1:A:547:SER:HB2  | 1:A:670:GLU:CG   | 0.43     | 2.43        | 17     | 1     |
| 1:A:607:PHE:O    | 1:A:608:ASN:CG   | 0.43     | 2.57        | 17     | 1     |
| 1:A:543:LYS:O    | 1:A:564:CYS:HA   | 0.43     | 2.13        | 3      | 1     |
| 1:A:669:ILE:HG22 | 1:A:670:GLU:N    | 0.43     | 2.29        | 4      | 2     |
| 1:A:543:LYS:CG   | 1:A:674:GLN:HA   | 0.43     | 2.44        | 3      | 2     |
| 1:A:569:ALA:CB   | 1:A:575:TYR:CA   | 0.43     | 2.97        | 4      | 4     |
| 1:A:660:GLU:CG   | 1:A:669:ILE:CD1  | 0.43     | 2.97        | 6      | 1     |
| 1:A:583:TRP:CE2  | 1:A:585:LYS:HE3  | 0.43     | 2.48        | 9      | 1     |
| 1:A:670:GLU:CD   | 1:A:670:GLU:O    | 0.43     | 2.58        | 13     | 1     |
| 1:A:544:ILE:O    | 1:A:544:ILE:CG2  | 0.42     | 2.67        | 4      | 4     |
| 1:A:602:THR:O    | 1:A:603:LEU:HD23 | 0.42     | 2.14        | 10     | 2     |
| 1:A:559:VAL:CG2  | 1:A:613:TYR:CE1  | 0.42     | 3.02        | 11     | 1     |
| 1:A:656:LYS:C    | 1:A:660:GLU:OE1  | 0.42     | 2.57        | 11     | 1     |
| 1:A:550:TYR:CE1  | 1:A:617:HIS:HB2  | 0.42     | 2.49        | 15     | 1     |

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| Atom-1          | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|-----------------|------------------|----------|-------------|--------|-------|
|                 |                  |          |             | Worst  | Total |
| 1:A:543:LYS:HD2 | 1:A:565:VAL:HG23 | 0.42     | 1.90        | 2      | 1     |
| 1:A:550:TYR:O   | 1:A:665:LYS:HB3  | 0.42     | 2.14        | 16     | 5     |
| 1:A:621:ALA:HB3 | 1:A:622:LYS:HE2  | 0.42     | 1.91        | 3      | 1     |
| 1:A:621:ALA:CB  | 1:A:648:ILE:CD1  | 0.42     | 2.97        | 11     | 3     |
| 1:A:630:TRP:CZ3 | 1:A:640:TYR:CB   | 0.42     | 3.02        | 4      | 6     |
| 1:A:548:LEU:O   | 1:A:668:LYS:CA   | 0.42     | 2.67        | 8      | 1     |
| 1:A:583:TRP:CH2 | 1:A:585:LYS:HE3  | 0.42     | 2.49        | 9      | 1     |
| 1:A:617:HIS:NE2 | 1:A:665:LYS:HD2  | 0.42     | 2.29        | 9      | 2     |
| 1:A:630:TRP:HA  | 1:A:639:ASP:O    | 0.42     | 2.14        | 12     | 1     |
| 1:A:585:LYS:CD  | 1:A:624:SER:OG   | 0.42     | 2.67        | 16     | 1     |
| 1:A:567:LEU:HG  | 1:A:603:LEU:O    | 0.42     | 2.14        | 20     | 7     |
| 1:A:581:LYS:HB3 | 1:A:594:HIS:O    | 0.42     | 2.15        | 2      | 5     |
| 1:A:638:ASN:C   | 1:A:639:ASP:OD1  | 0.42     | 2.58        | 19     | 2     |
| 1:A:657:HIS:CD2 | 1:A:657:HIS:C    | 0.42     | 2.92        | 9      | 3     |
| 1:A:670:GLU:O   | 1:A:670:GLU:OE1  | 0.42     | 2.37        | 7      | 1     |
| 1:A:657:HIS:ND1 | 1:A:671:ARG:HB2  | 0.42     | 2.29        | 8      | 1     |
| 1:A:599:LYS:HG3 | 1:A:605:PRO:CG   | 0.42     | 2.44        | 16     | 2     |
| 1:A:547:SER:CB  | 1:A:670:GLU:CG   | 0.42     | 2.97        | 14     | 1     |
| 1:A:618:SER:O   | 1:A:622:LYS:HE3  | 0.42     | 2.15        | 15     | 1     |
| 1:A:664:ASN:O   | 1:A:665:LYS:C    | 0.42     | 2.57        | 20     | 3     |
| 1:A:548:LEU:O   | 1:A:549:MET:HB2  | 0.42     | 2.15        | 6      | 6     |
| 1:A:576:SER:O   | 1:A:602:THR:N    | 0.42     | 2.47        | 8      | 3     |
| 1:A:671:ARG:HB2 | 1:A:671:ARG:NH1  | 0.42     | 2.30        | 19     | 1     |
| 1:A:658:TRP:O   | 1:A:659:TYR:C    | 0.42     | 2.57        | 18     | 3     |
| 1:A:660:GLU:HG3 | 1:A:661:CYS:N    | 0.42     | 2.29        | 1      | 1     |
| 1:A:542:GLY:O   | 1:A:675:LEU:HG   | 0.42     | 2.14        | 10     | 2     |
| 1:A:633:ASP:HB2 | 1:A:637:SER:O    | 0.42     | 2.14        | 13     | 4     |
| 1:A:626:ASP:OD1 | 1:A:626:ASP:C    | 0.42     | 2.58        | 10     | 2     |
| 1:A:671:ARG:O   | 1:A:673:HIS:CE1  | 0.42     | 2.72        | 10     | 1     |
| 1:A:630:TRP:HB3 | 1:A:639:ASP:O    | 0.42     | 2.14        | 12     | 1     |
| 1:A:658:TRP:O   | 1:A:661:CYS:HB2  | 0.42     | 2.15        | 16     | 1     |
| 1:A:583:TRP:CD1 | 1:A:584:LEU:N    | 0.42     | 2.87        | 4      | 1     |
| 1:A:671:ARG:HD2 | 1:A:672:TRP:N    | 0.42     | 2.29        | 1      | 1     |
| 1:A:600:LYS:O   | 1:A:601:LYS:C    | 0.42     | 2.57        | 14     | 5     |
| 1:A:577:ASP:OD2 | 1:A:600:LYS:HD2  | 0.42     | 2.14        | 17     | 3     |
| 1:A:634:ILE:O   | 1:A:636:LYS:CG   | 0.42     | 2.67        | 3      | 1     |
| 1:A:599:LYS:HG2 | 1:A:605:PRO:HB2  | 0.42     | 1.91        | 20     | 2     |
| 1:A:548:LEU:O   | 1:A:668:LYS:HA   | 0.42     | 2.14        | 8      | 2     |
| 1:A:552:THR:O   | 1:A:553:GLN:C    | 0.42     | 2.57        | 6      | 1     |
| 1:A:648:ILE:CD1 | 1:A:659:TYR:CG   | 0.42     | 3.03        | 6      | 4     |
| 1:A:599:LYS:HG3 | 1:A:605:PRO:HB2  | 0.42     | 1.92        | 17     | 1     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:570:MET:HG3  | 1:A:631:ASP:OD1  | 0.42     | 2.15        | 3      | 2     |
| 1:A:542:GLY:HA3  | 1:A:567:LEU:HD23 | 0.42     | 1.90        | 5      | 1     |
| 1:A:583:TRP:CG   | 1:A:593:LYS:HG3  | 0.42     | 2.50        | 11     | 1     |
| 1:A:664:ASN:ND2  | 1:A:667:LYS:HD3  | 0.42     | 2.30        | 15     | 1     |
| 1:A:599:LYS:CG   | 1:A:605:PRO:CB   | 0.42     | 2.98        | 17     | 1     |
| 1:A:663:LYS:CG   | 1:A:664:ASN:ND2  | 0.42     | 2.82        | 8      | 1     |
| 1:A:583:TRP:O    | 1:A:626:ASP:N    | 0.42     | 2.50        | 14     | 1     |
| 1:A:664:ASN:OD1  | 1:A:667:LYS:HD3  | 0.42     | 2.15        | 20     | 1     |
| 1:A:663:LYS:HG3  | 1:A:664:ASN:OD1  | 0.41     | 2.16        | 2      | 1     |
| 1:A:559:VAL:O    | 1:A:611:PHE:N    | 0.41     | 2.43        | 4      | 1     |
| 1:A:576:SER:C    | 1:A:578:PRO:HD3  | 0.41     | 2.36        | 7      | 4     |
| 1:A:594:HIS:O    | 1:A:595:LYS:HG3  | 0.41     | 2.15        | 6      | 5     |
| 1:A:558:ILE:CG2  | 1:A:611:PHE:O    | 0.41     | 2.68        | 11     | 1     |
| 1:A:662:LEU:O    | 1:A:665:LYS:HD2  | 0.41     | 2.14        | 12     | 2     |
| 1:A:585:LYS:HG3  | 1:A:624:SER:OG   | 0.41     | 2.15        | 16     | 1     |
| 1:A:668:LYS:O    | 1:A:668:LYS:HE3  | 0.41     | 2.15        | 16     | 1     |
| 1:A:567:LEU:HD13 | 1:A:578:PRO:HB3  | 0.41     | 1.92        | 4      | 1     |
| 1:A:595:LYS:O    | 1:A:595:LYS:HE3  | 0.41     | 2.16        | 14     | 1     |
| 1:A:554:GLN:OE1  | 1:A:554:GLN:HA   | 0.41     | 2.15        | 1      | 1     |
| 1:A:557:LEU:CG   | 1:A:558:ILE:N    | 0.41     | 2.83        | 16     | 6     |
| 1:A:659:TYR:O    | 1:A:662:LEU:HB2  | 0.41     | 2.16        | 1      | 3     |
| 1:A:670:GLU:O    | 1:A:670:GLU:HG2  | 0.41     | 2.16        | 11     | 1     |
| 1:A:631:ASP:OD2  | 1:A:639:ASP:HB3  | 0.41     | 2.15        | 12     | 1     |
| 1:A:547:SER:HB3  | 1:A:670:GLU:HG2  | 0.41     | 1.92        | 14     | 1     |
| 1:A:622:LYS:HD3  | 1:A:622:LYS:N    | 0.41     | 2.30        | 18     | 1     |
| 1:A:569:ALA:HA   | 1:A:576:SER:OG   | 0.41     | 2.15        | 1      | 4     |
| 1:A:570:MET:HG2  | 1:A:631:ASP:CG   | 0.41     | 2.35        | 3      | 1     |
| 1:A:668:LYS:NZ   | 1:A:670:GLU:OE2  | 0.41     | 2.52        | 7      | 1     |
| 1:A:665:LYS:N    | 1:A:665:LYS:HD3  | 0.41     | 2.31        | 10     | 1     |
| 1:A:668:LYS:O    | 1:A:668:LYS:HE2  | 0.41     | 2.16        | 10     | 1     |
| 1:A:629:VAL:HG21 | 1:A:675:LEU:HD21 | 0.41     | 1.92        | 11     | 1     |
| 1:A:569:ALA:CA   | 1:A:575:TYR:O    | 0.41     | 2.68        | 12     | 1     |
| 1:A:607:PHE:C    | 1:A:608:ASN:OD1  | 0.41     | 2.59        | 17     | 1     |
| 1:A:557:LEU:HD12 | 1:A:558:ILE:H    | 0.41     | 1.75        | 14     | 6     |
| 1:A:620:LEU:CB   | 1:A:662:LEU:HD21 | 0.41     | 2.45        | 6      | 1     |
| 1:A:665:LYS:N    | 1:A:665:LYS:CD   | 0.41     | 2.83        | 8      | 1     |
| 1:A:664:ASN:O    | 1:A:665:LYS:O    | 0.41     | 2.38        | 20     | 1     |
| 1:A:544:ILE:O    | 1:A:544:ILE:HG23 | 0.41     | 2.14        | 4      | 2     |
| 1:A:570:MET:HG3  | 1:A:631:ASP:CB   | 0.41     | 2.46        | 9      | 1     |
| 1:A:547:SER:HB2  | 1:A:668:LYS:CD   | 0.41     | 2.46        | 12     | 1     |
| 1:A:665:LYS:C    | 1:A:667:LYS:N    | 0.41     | 2.74        | 2      | 1     |

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| Atom-1           | Atom-2           | Clash(Å) | Distance(Å) | Models |       |
|------------------|------------------|----------|-------------|--------|-------|
|                  |                  |          |             | Worst  | Total |
| 1:A:596:THR:O    | 1:A:597:GLN:C    | 0.41     | 2.59        | 6      | 1     |
| 1:A:663:LYS:CG   | 1:A:664:ASN:N    | 0.41     | 2.84        | 16     | 1     |
| 1:A:576:SER:C    | 1:A:578:PRO:CD   | 0.41     | 2.89        | 2      | 1     |
| 1:A:668:LYS:HE3  | 1:A:670:GLU:OE1  | 0.41     | 2.15        | 3      | 2     |
| 1:A:657:HIS:ND1  | 1:A:671:ARG:CG   | 0.41     | 2.84        | 14     | 2     |
| 1:A:585:LYS:HG3  | 1:A:624:SER:HG   | 0.41     | 1.75        | 6      | 1     |
| 1:A:620:LEU:O    | 1:A:621:ALA:C    | 0.41     | 2.59        | 6      | 1     |
| 1:A:570:MET:SD   | 1:A:639:ASP:HB3  | 0.41     | 2.56        | 15     | 3     |
| 1:A:549:MET:HG3  | 1:A:668:LYS:HA   | 0.41     | 1.93        | 11     | 2     |
| 1:A:542:GLY:O    | 1:A:675:LEU:HB2  | 0.41     | 2.16        | 12     | 1     |
| 1:A:671:ARG:HD2  | 1:A:673:HIS:ND1  | 0.41     | 2.31        | 12     | 1     |
| 1:A:585:LYS:HD3  | 1:A:624:SER:OG   | 0.41     | 2.15        | 16     | 1     |
| 1:A:550:TYR:CD2  | 1:A:665:LYS:HG2  | 0.41     | 2.51        | 20     | 1     |
| 1:A:600:LYS:O    | 1:A:601:LYS:HB2  | 0.40     | 2.16        | 4      | 2     |
| 1:A:595:LYS:HD3  | 1:A:595:LYS:O    | 0.40     | 2.16        | 9      | 1     |
| 1:A:657:HIS:CE1  | 1:A:673:HIS:CE1  | 0.40     | 3.09        | 10     | 1     |
| 1:A:671:ARG:CD   | 1:A:671:ARG:C    | 0.40     | 2.89        | 10     | 1     |
| 1:A:561:ILE:O    | 1:A:609:GLU:N    | 0.40     | 2.49        | 11     | 1     |
| 1:A:660:GLU:CD   | 1:A:669:ILE:HD13 | 0.40     | 2.37        | 13     | 1     |
| 1:A:570:MET:HE3  | 1:A:576:SER:OG   | 0.40     | 2.16        | 15     | 1     |
| 1:A:631:ASP:HB2  | 1:A:641:ILE:CD1  | 0.40     | 2.40        | 15     | 1     |
| 1:A:579:PHE:CE2  | 1:A:581:LYS:HE3  | 0.40     | 2.51        | 17     | 1     |
| 1:A:584:LEU:CD1  | 1:A:623:LYS:CB   | 0.40     | 2.99        | 17     | 1     |
| 1:A:594:HIS:C    | 1:A:595:LYS:HD3  | 0.40     | 2.37        | 11     | 1     |
| 1:A:549:MET:SD   | 1:A:668:LYS:HG2  | 0.40     | 2.55        | 12     | 1     |
| 1:A:585:LYS:O    | 1:A:623:LYS:HA   | 0.40     | 2.15        | 17     | 1     |
| 1:A:554:GLN:OE1  | 1:A:554:GLN:CA   | 0.40     | 2.68        | 1      | 1     |
| 1:A:569:ALA:HB1  | 1:A:575:TYR:CA   | 0.40     | 2.45        | 4      | 1     |
| 1:A:664:ASN:O    | 1:A:667:LYS:N    | 0.40     | 2.54        | 11     | 2     |
| 1:A:547:SER:CA   | 1:A:669:ILE:O    | 0.40     | 2.69        | 10     | 1     |
| 1:A:582:LEU:HD12 | 1:A:594:HIS:CB   | 0.40     | 2.47        | 5      | 1     |
| 1:A:645:GLN:O    | 1:A:646:LEU:HD23 | 0.40     | 2.17        | 5      | 1     |
| 1:A:617:HIS:CD2  | 1:A:665:LYS:CD   | 0.40     | 3.05        | 7      | 1     |
| 1:A:543:LYS:HG2  | 1:A:674:GLN:HA   | 0.40     | 1.94        | 9      | 1     |
| 1:A:637:SER:O    | 1:A:638:ASN:O    | 0.40     | 2.40        | 9      | 1     |
| 1:A:581:LYS:CA   | 1:A:594:HIS:O    | 0.40     | 2.70        | 2      | 2     |
| 1:A:667:LYS:HD2  | 1:A:668:LYS:O    | 0.40     | 2.17        | 2      | 1     |
| 1:A:550:TYR:O    | 1:A:665:LYS:C    | 0.40     | 2.60        | 5      | 1     |
| 1:A:542:GLY:HA2  | 1:A:566:HIS:O    | 0.40     | 2.16        | 7      | 1     |
| 1:A:601:LYS:O    | 1:A:601:LYS:HG2  | 0.40     | 2.16        | 19     | 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     | 127/140 (91%)   | 108±2 (85±2%) | 15±2 (12±2%) | 4±2 (3±1%) | 7           | 41 |
| All | All   | 2540/2800 (91%) | 2162 (85%)    | 304 (12%)    | 74 (3%)    | 7           | 41 |

All 11 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     | 549 | MET  | 17             |
| 1   | A     | 658 | TRP  | 16             |
| 1   | A     | 665 | LYS  | 11             |
| 1   | A     | 562 | ILE  | 9              |
| 1   | A     | 601 | LYS  | 6              |
| 1   | A     | 666 | ASP  | 5              |
| 1   | A     | 592 | ALA  | 3              |
| 1   | A     | 638 | ASN  | 3              |
| 1   | A     | 600 | LYS  | 2              |
| 1   | A     | 597 | GLN  | 1              |
| 1   | A     | 623 | LYS  | 1              |

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

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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     | 112/123 (91%)   | 80±3 (71±3%) | 32±3 (29±3%) | 2           | 18 |
| All | All   | 2240/2460 (91%) | 1595 (71%)   | 645 (29%)    | 2           | 18 |

All 70 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     | 544 | ILE  | 20             |
| 1   | A     | 582 | LEU  | 20             |
| 1   | A     | 595 | LYS  | 20             |
| 1   | A     | 620 | LEU  | 20             |
| 1   | A     | 634 | ILE  | 20             |
| 1   | A     | 659 | TYR  | 20             |
| 1   | A     | 615 | ILE  | 19             |
| 1   | A     | 631 | ASP  | 19             |
| 1   | A     | 551 | SER  | 18             |
| 1   | A     | 640 | TYR  | 17             |
| 1   | A     | 668 | LYS  | 17             |
| 1   | A     | 566 | HIS  | 15             |
| 1   | A     | 618 | SER  | 15             |
| 1   | A     | 636 | LYS  | 15             |
| 1   | A     | 662 | LEU  | 15             |
| 1   | A     | 576 | SER  | 15             |
| 1   | A     | 553 | GLN  | 14             |
| 1   | A     | 563 | ARG  | 14             |
| 1   | A     | 601 | LYS  | 14             |
| 1   | A     | 622 | LYS  | 13             |
| 1   | A     | 644 | CYS  | 13             |
| 1   | A     | 663 | LYS  | 13             |
| 1   | A     | 671 | ARG  | 13             |
| 1   | A     | 599 | LYS  | 12             |
| 1   | A     | 585 | LYS  | 11             |
| 1   | A     | 669 | ILE  | 11             |
| 1   | A     | 637 | SER  | 10             |
| 1   | A     | 624 | SER  | 10             |
| 1   | A     | 665 | LYS  | 10             |
| 1   | A     | 654 | ARG  | 10             |
| 1   | A     | 581 | LYS  | 9              |
| 1   | A     | 604 | ASN  | 9              |
| 1   | A     | 633 | ASP  | 9              |
| 1   | A     | 670 | GLU  | 9              |
| 1   | A     | 666 | ASP  | 8              |
| 1   | A     | 610 | GLU  | 8              |
| 1   | A     | 573 | ASN  | 7              |
| 1   | A     | 667 | LYS  | 7              |
| 1   | A     | 543 | LYS  | 7              |
| 1   | A     | 616 | LYS  | 7              |
| 1   | A     | 623 | LYS  | 7              |
| 1   | A     | 648 | ILE  | 7              |
| 1   | A     | 674 | GLN  | 7              |

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| Mol | Chain | Res | Type | Models (Total) |
|-----|-------|-----|------|----------------|
| 1   | A     | 609 | GLU  | 7              |
| 1   | A     | 608 | ASN  | 6              |
| 1   | A     | 549 | MET  | 6              |
| 1   | A     | 564 | CYS  | 6              |
| 1   | A     | 606 | GLU  | 5              |
| 1   | A     | 554 | GLN  | 5              |
| 1   | A     | 614 | ASP  | 5              |
| 1   | A     | 638 | ASN  | 5              |
| 1   | A     | 547 | SER  | 5              |
| 1   | A     | 570 | MET  | 4              |
| 1   | A     | 593 | LYS  | 4              |
| 1   | A     | 677 | ASN  | 4              |
| 1   | A     | 600 | LYS  | 4              |
| 1   | A     | 552 | THR  | 4              |
| 1   | A     | 571 | ASP  | 3              |
| 1   | A     | 660 | GLU  | 3              |
| 1   | A     | 619 | ASP  | 2              |
| 1   | A     | 558 | ILE  | 2              |
| 1   | A     | 639 | ASP  | 2              |
| 1   | A     | 597 | GLN  | 2              |
| 1   | A     | 645 | GLN  | 1              |
| 1   | A     | 676 | GLN  | 1              |
| 1   | A     | 656 | LYS  | 1              |
| 1   | A     | 673 | HIS  | 1              |
| 1   | A     | 577 | ASP  | 1              |
| 1   | A     | 628 | SER  | 1              |
| 1   | A     | 598 | ILE  | 1              |

### 6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 6.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.



## 6.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 6.7 Other polymers [i](#)

There are no such molecules in this entry.

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

There are no chain breaks in this entry.

## 7 Chemical shift validation

No chemical shift data were provided