



## Full wwPDB EM Validation Report ⓘ

Jun 25, 2025 – 03:11 PM JST

PDB ID : 8I03 / pdb\_00008i03  
EMDB ID : EMD-35093  
Title : Cryo-EM structure of the SIN3L complex from *S. pombe*  
Authors : Wang, C.; Guo, Z.; Zhan, X.  
Deposited on : 2023-01-10  
Resolution : 3.20 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

EMDB validation analysis : 0.0.1.dev118  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4-5-2 with Phenix2.0rc1  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.44

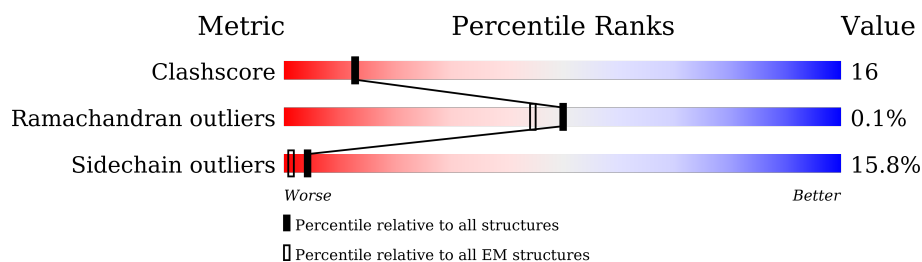
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.20 Å.

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



| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) |
|-----------------------|-----------------------------|-----------------------------|
| Clashscore            | 210492                      | 15764                       |
| Ramachandran outliers | 207382                      | 16835                       |
| Sidechain outliers    | 206894                      | 16415                       |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion  $< 40\%$ ). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 1522   |                  |
| 2   | B     | 1154   |                  |
| 3   | C     | 405    |                  |
| 3   | D     | 405    |                  |
| 4   | E     | 491    |                  |
| 5   | F     | 240    |                  |
| 6   | G     | 267    |                  |
| 7   | H     | 305    |                  |

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| Mol | Chain | Length | Quality of chain                                                                   |
|-----|-------|--------|------------------------------------------------------------------------------------|
| 8   | I     | 351    |  |
| 9   | J     | 431    |  |
| 9   | K     | 431    |  |

## 2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 29430 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Paired amphipathic helix protein pst1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | A     | 616      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5072  | 3237 | 869 | 941 | 25 |         |       |

- Molecule 2 is a protein called Paired amphipathic helix protein pst3.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | B     | 639      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 5305  | 3399 | 909 | 975 | 22 |         |       |

- Molecule 3 is a protein called Histone deacetylase clr6.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 3   | C     | 370      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2962  | 1881 | 505 | 557 | 19 |         |       |
| 3   | D     | 363      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2911  | 1847 | 496 | 549 | 19 |         |       |

- Molecule 4 is a protein called Transcriptional regulatory protein dep1.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 4   | E     | 169      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1328  | 829 | 242 | 249 | 8 |         |       |

- Molecule 5 is a protein called Transcriptional regulatory protein rxt2.

| Mol | Chain | Residues | Atoms |      |     |     |   |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---|---------|-------|
| 5   | F     | 228      | Total | C    | N   | O   | P | S | 0       | 0     |
|     |       |          | 1831  | 1137 | 314 | 368 | 4 | 8 |         |       |

- Molecule 6 is a protein called Transcriptional regulatory protein sds3.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 6   | G     | 166      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1306  | 805 | 235 | 261 | 5 |         |       |

- Molecule 7 is a protein called Chromatin modification-related protein png2.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 7   | H     | 126      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 994   | 621 | 167 | 200 | 6 |         |       |

- Molecule 8 is a protein called Transcriptional regulatory protein rxt3.

| Mol | Chain | Residues | Atoms |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| 8   | I     | 185      | Total | C   | N   | O   | S | 0       | 0     |
|     |       |          | 1505  | 972 | 256 | 273 | 4 |         |       |

- Molecule 9 is a protein called RbAp48-related WD40 repeat-containing protein prw1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 9   | J     | 388      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3105  | 1957 | 533 | 599 | 16 |         |       |
| 9   | K     | 388      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 3105  | 1957 | 533 | 599 | 16 |         |       |

- Molecule 10 is ZINC ION (CCD ID: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 10  | C     | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |
| 10  | D     | 1        | Total | Zn | 0       |
|     |       |          | 1     | 1  |         |

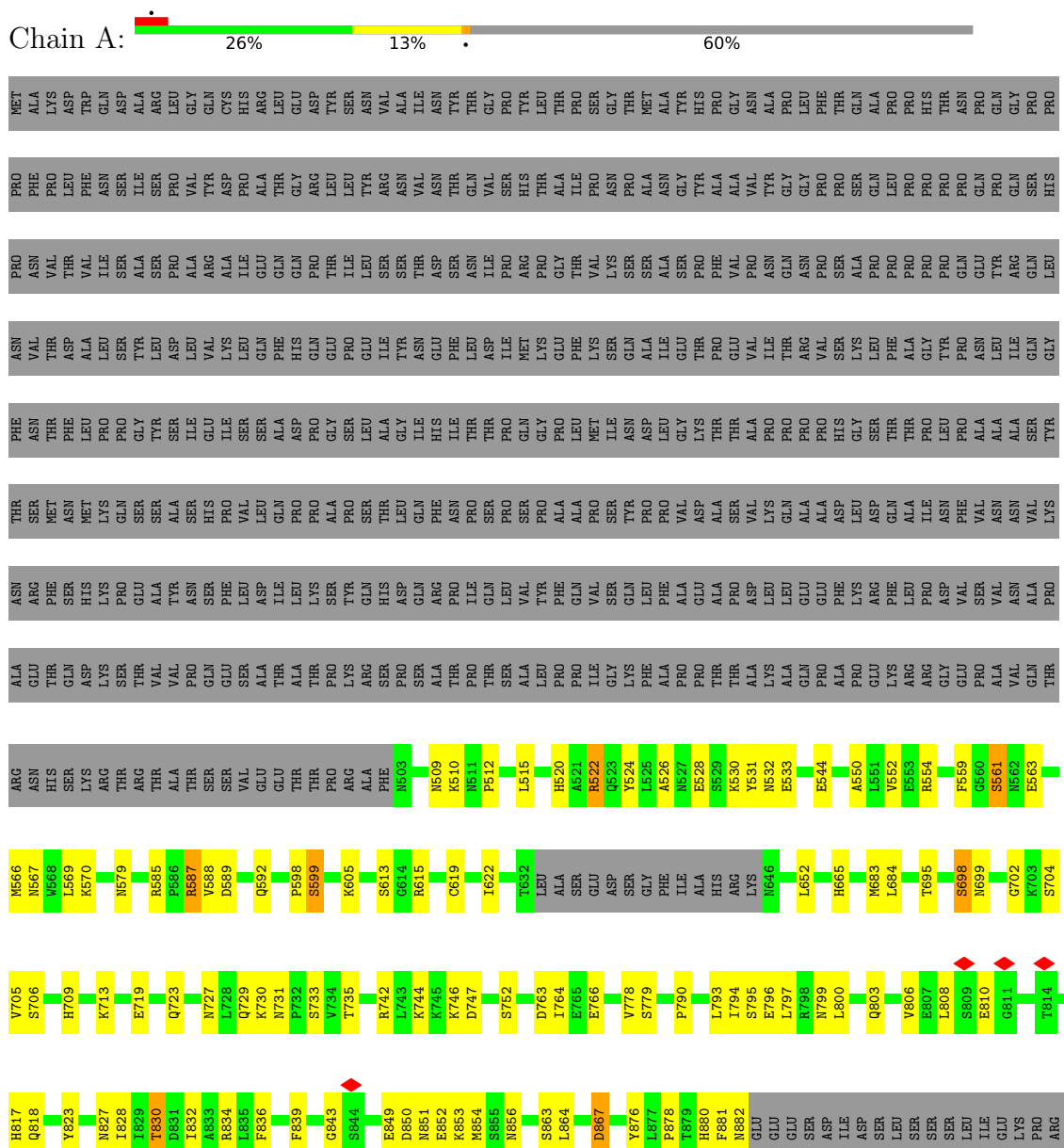
- Molecule 11 is POTASSIUM ION (CCD ID: K) (formula: K).

| Mol | Chain | Residues | Atoms |   | AltConf |
|-----|-------|----------|-------|---|---------|
| 11  | C     | 2        | Total | K | 0       |
|     |       |          | 2     | 2 |         |
| 11  | D     | 2        | Total | K | 0       |
|     |       |          | 2     | 2 |         |

### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

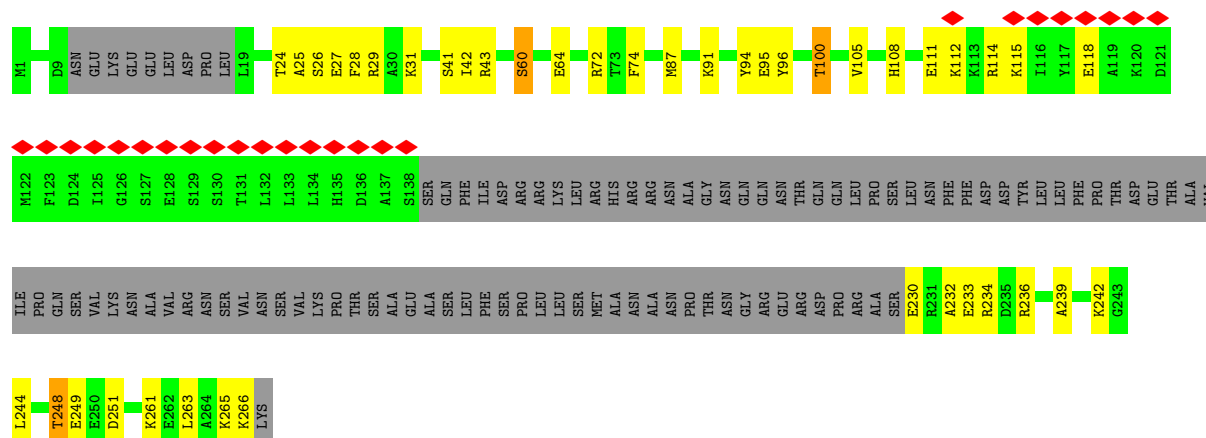
- Molecule 1: Paired amphipathic helix protein pst1





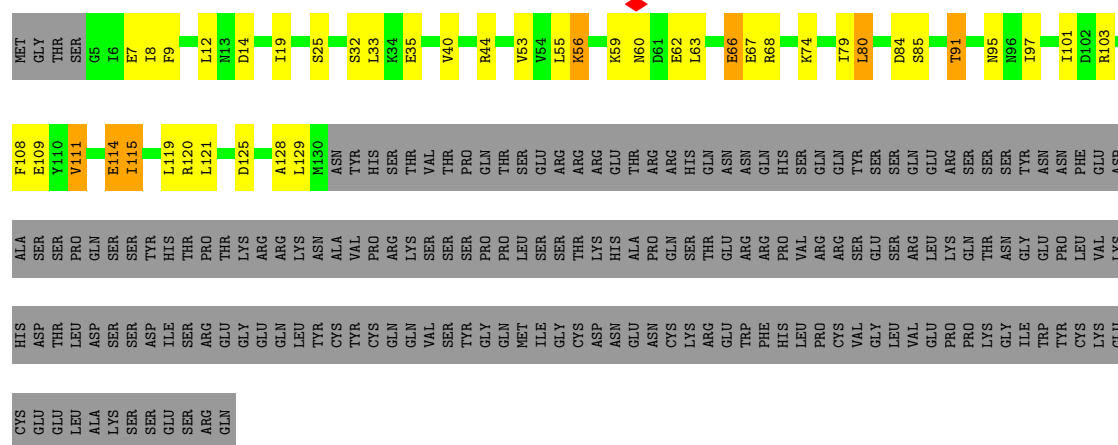






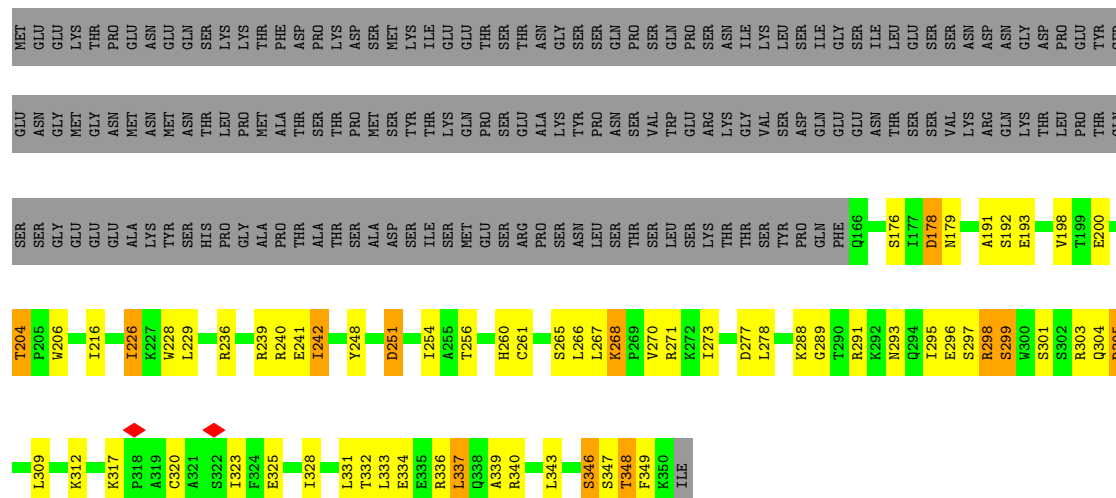
• Molecule 7: Chromatin modification-related protein png2

Chain H: 27% 12% 59%

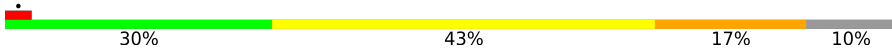


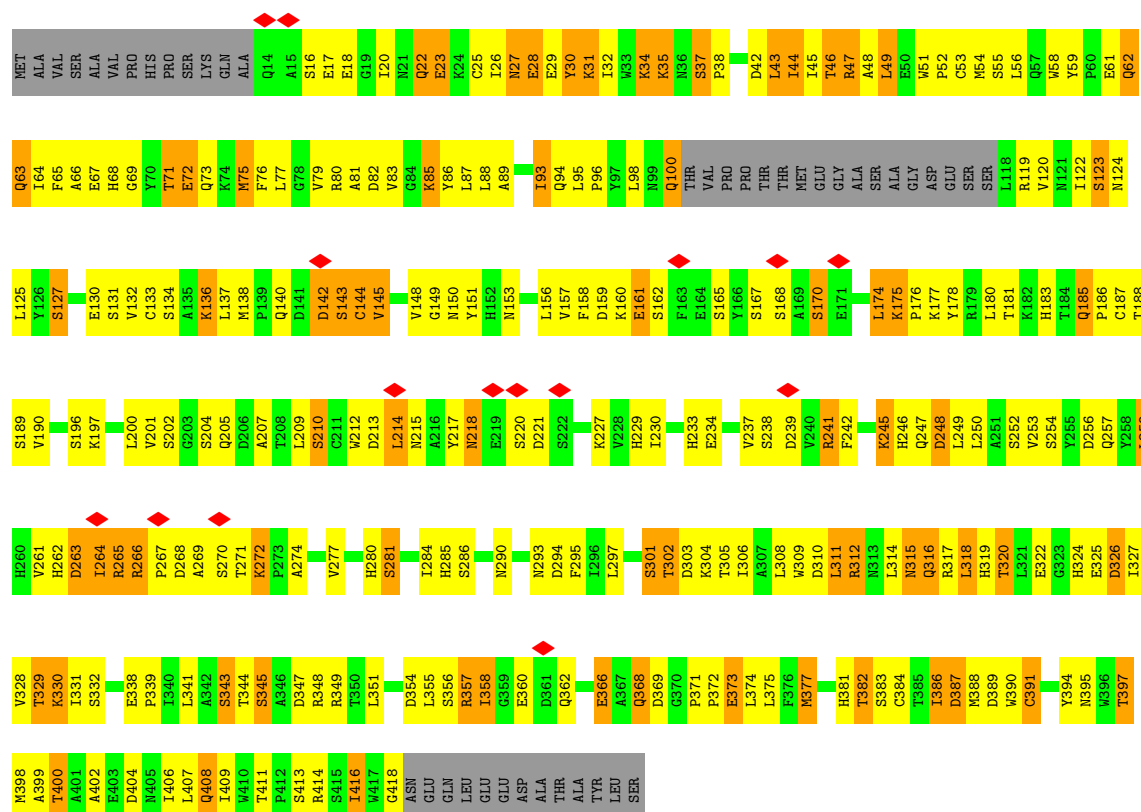
• Molecule 8: Transcriptional regulatory protein rxt3

Chain I: 34% 16% 47%

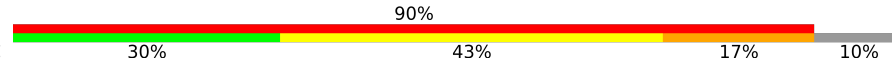


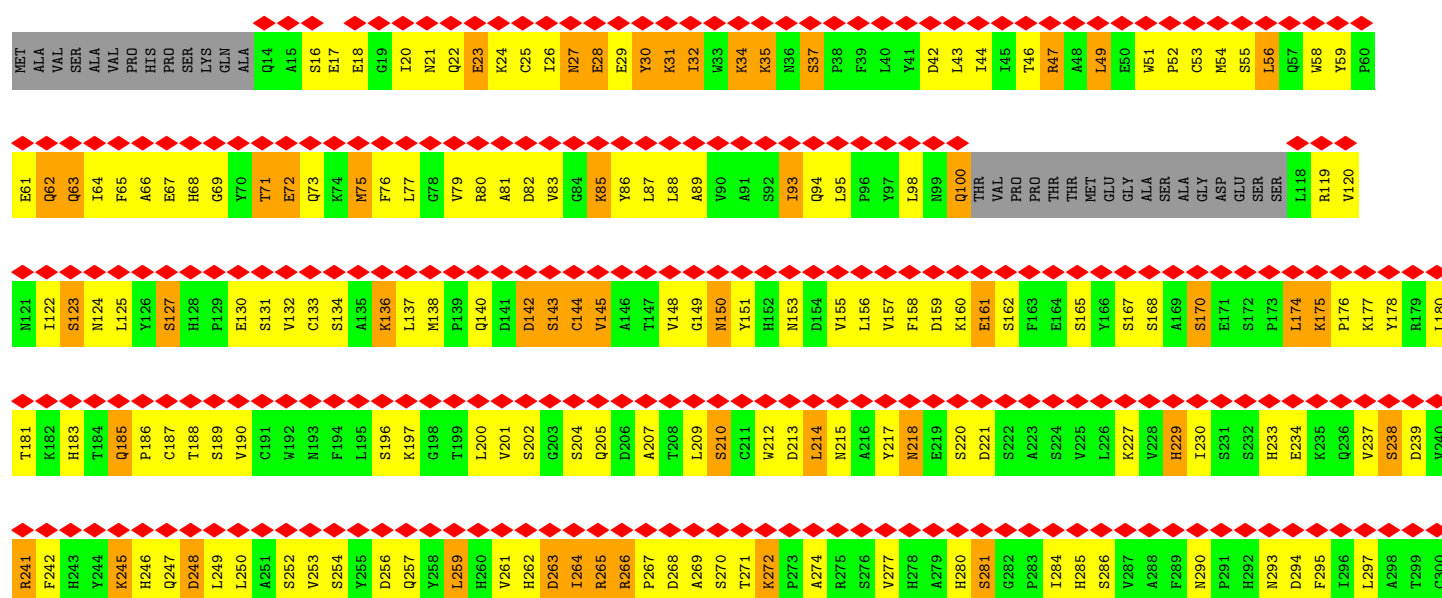
• Molecule 9: RbAp48-related WD40 repeat-containing protein prw1

Chain J:  30% 43% 17% 10%



• Molecule 9: RbAp48-related WD40 repeat-containing protein prw1

Chain K:  30% 43% 17% 10%





## 4 Experimental information

| Property                             | Value                  | Source    |
|--------------------------------------|------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE        | Depositor |
| Imposed symmetry                     | POINT, Not provided    |           |
| Number of particles used             | 389222                 | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF      | Depositor |
| CTF correction method                | NONE                   | Depositor |
| Microscope                           | FEI TITAN KRIOS        | Depositor |
| Voltage (kV)                         | 300                    | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 50.00                  | Depositor |
| Minimum defocus (nm)                 | 1800                   | Depositor |
| Maximum defocus (nm)                 | 2300                   | Depositor |
| Magnification                        | Not provided           |           |
| Image detector                       | GATAN K3 (6k x 4k)     | Depositor |
| Maximum map value                    | 0.124                  | Depositor |
| Minimum map value                    | -0.065                 | Depositor |
| Average map value                    | 0.000                  | Depositor |
| Map value standard deviation         | 0.003                  | Depositor |
| Recommended contour level            | 0.012                  | Depositor |
| Map size ( $\text{\AA}$ )            | 391.32, 391.32, 391.32 | wwPDB     |
| Map dimensions                       | 360, 360, 360          | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0       | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 1.087, 1.087, 1.087    | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: K, ZN, SEP

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

| Mol | Chain | Bond lengths |         | Bond angles |                |
|-----|-------|--------------|---------|-------------|----------------|
|     |       | RMSZ         | # Z  >5 | RMSZ        | # Z  >5        |
| 1   | A     | 0.40         | 0/5194  | 0.49        | 0/7023         |
| 2   | B     | 0.40         | 0/5421  | 0.49        | 0/7321         |
| 3   | C     | 0.62         | 0/3040  | 0.49        | 0/4121         |
| 3   | D     | 0.59         | 0/2988  | 0.48        | 0/4054         |
| 4   | E     | 0.41         | 0/1342  | 0.52        | 0/1804         |
| 5   | F     | 0.56         | 0/1823  | 0.66        | 0/2458         |
| 6   | G     | 0.37         | 0/1314  | 0.41        | 0/1755         |
| 7   | H     | 0.45         | 0/1004  | 0.54        | 0/1353         |
| 8   | I     | 0.47         | 0/1543  | 0.49        | 0/2099         |
| 9   | J     | 0.25         | 0/3190  | 0.61        | 3/4345 (0.1%)  |
| 9   | K     | 0.25         | 0/3190  | 0.61        | 3/4345 (0.1%)  |
| All | All   | 0.44         | 0/30049 | 0.53        | 6/40678 (0.0%) |

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A     | 0                   | 3                   |
| 5   | F     | 0                   | 1                   |
| All | All   | 0                   | 4                   |

There are no bond length outliers.

All (6) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 9   | K     | 31  | LYS  | N-CA-CB | 5.48  | 119.62      | 110.41   |
| 9   | J     | 31  | LYS  | N-CA-CB | 5.48  | 119.61      | 110.41   |
| 9   | K     | 30  | TYR  | CA-C-N  | -5.04 | 111.75      | 121.58   |

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| Mol | Chain | Res | Type | Atoms  | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|--------|-------|-------------|----------|
| 9   | K     | 30  | TYR  | C-N-CA | -5.04 | 111.75      | 121.58   |
| 9   | J     | 30  | TYR  | CA-C-N | -5.03 | 111.78      | 121.58   |
| 9   | J     | 30  | TYR  | C-N-CA | -5.03 | 111.78      | 121.58   |

There are no chirality outliers.

All (4) planarity outliers are listed below:

| Mol | Chain | Res  | Type | Group   |
|-----|-------|------|------|---------|
| 1   | A     | 1204 | TYR  | Peptide |
| 1   | A     | 977  | TRP  | Peptide |
| 1   | A     | 978  | VAL  | Peptide |
| 5   | F     | 49   | GLY  | Peptide |

## 5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 5072  | 0        | 4988     | 188     | 0            |
| 2   | B     | 5305  | 0        | 5285     | 220     | 0            |
| 3   | C     | 2962  | 0        | 2818     | 38      | 0            |
| 3   | D     | 2911  | 0        | 2761     | 42      | 0            |
| 4   | E     | 1328  | 0        | 1304     | 34      | 0            |
| 5   | F     | 1831  | 0        | 1769     | 70      | 0            |
| 6   | G     | 1306  | 0        | 1267     | 29      | 0            |
| 7   | H     | 994   | 0        | 997      | 26      | 0            |
| 8   | I     | 1505  | 0        | 1524     | 54      | 0            |
| 9   | J     | 3105  | 0        | 2960     | 197     | 0            |
| 9   | K     | 3105  | 0        | 2960     | 207     | 0            |
| 10  | C     | 1     | 0        | 0        | 0       | 0            |
| 10  | D     | 1     | 0        | 0        | 0       | 0            |
| 11  | C     | 2     | 0        | 0        | 0       | 0            |
| 11  | D     | 2     | 0        | 0        | 0       | 0            |
| All | All   | 29430 | 0        | 28633    | 951     | 0            |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 16.

All (951) close contacts within the same asymmetric unit are listed below, sorted by their clash

magnitude.

| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:435:LEU:HD11  | 5:F:11:PHE:CD1    | 1.64                     | 1.30              |
| 2:B:1076:LEU:HD13 | 2:B:1095:ASN:ND2  | 1.55                     | 1.21              |
| 2:B:1093:THR:OG1  | 9:J:48:ALA:HB3    | 1.44                     | 1.16              |
| 2:B:1076:LEU:HD22 | 2:B:1095:ASN:OD1  | 1.46                     | 1.15              |
| 2:B:1093:THR:HG1  | 9:J:48:ALA:HB3    | 1.08                     | 1.09              |
| 1:A:1204:TYR:HD2  | 9:K:17:GLU:HB3    | 1.16                     | 1.08              |
| 2:B:1093:THR:OG1  | 9:J:48:ALA:CB     | 2.07                     | 1.01              |
| 2:B:435:LEU:CD1   | 5:F:11:PHE:CD1    | 2.43                     | 1.01              |
| 5:F:27:SEP:O3P    | 5:F:57:SER:OG     | 1.84                     | 0.96              |
| 2:B:1076:LEU:HD13 | 2:B:1095:ASN:HD21 | 1.18                     | 0.96              |
| 1:A:1201:TRP:O    | 1:A:1205:ILE:HB   | 1.65                     | 0.95              |
| 2:B:412:LEU:HD21  | 5:F:5:GLU:HG2     | 1.49                     | 0.94              |
| 2:B:1097:TYR:HB3  | 9:J:44:ILE:HG13   | 1.48                     | 0.93              |
| 9:K:266:ARG:HH11  | 9:K:266:ARG:HG3   | 1.34                     | 0.93              |
| 2:B:435:LEU:HD11  | 5:F:11:PHE:HD1    | 1.22                     | 0.92              |
| 2:B:405:TYR:CE1   | 5:F:13:GLN:HB2    | 2.04                     | 0.91              |
| 8:I:273:ILE:HB    | 8:I:317:LYS:HD2   | 1.51                     | 0.90              |
| 9:J:266:ARG:HG3   | 9:J:266:ARG:HH11  | 1.34                     | 0.90              |
| 2:B:1098:ILE:HD13 | 9:J:43:LEU:CD1    | 2.03                     | 0.89              |
| 1:A:1204:TYR:CD2  | 9:K:17:GLU:HB3    | 2.06                     | 0.89              |
| 2:B:1075:ASN:O    | 2:B:1093:THR:HG22 | 1.74                     | 0.88              |
| 1:A:977:TRP:CD2   | 9:K:28:GLU:HB3    | 2.08                     | 0.88              |
| 2:B:1098:ILE:HD13 | 9:J:43:LEU:HD11   | 1.58                     | 0.86              |
| 2:B:435:LEU:HD21  | 5:F:11:PHE:HB2    | 1.56                     | 0.86              |
| 2:B:1098:ILE:CD1  | 9:J:43:LEU:CD1    | 2.54                     | 0.86              |
| 9:K:263:ASP:OD1   | 9:K:265:ARG:NH2   | 2.09                     | 0.86              |
| 1:A:978:VAL:N     | 9:K:28:GLU:OE1    | 2.10                     | 0.85              |
| 2:B:405:TYR:CZ    | 5:F:13:GLN:HG3    | 2.11                     | 0.85              |
| 9:J:263:ASP:OD1   | 9:J:265:ARG:NH2   | 2.09                     | 0.85              |
| 1:A:977:TRP:HB2   | 9:K:28:GLU:O      | 1.77                     | 0.84              |
| 2:B:1076:LEU:CD1  | 2:B:1095:ASN:HD21 | 1.91                     | 0.84              |
| 1:A:977:TRP:O     | 9:K:31:LYS:HG2    | 1.79                     | 0.83              |
| 9:J:345:SER:OG    | 9:J:347:ASP:OD2   | 1.97                     | 0.82              |
| 2:B:405:TYR:OH    | 5:F:13:GLN:CD     | 2.22                     | 0.81              |
| 9:K:345:SER:OG    | 9:K:347:ASP:OD2   | 1.97                     | 0.81              |
| 3:D:329:ASP:OD1   | 3:D:329:ASP:N     | 2.13                     | 0.80              |
| 1:A:978:VAL:HG21  | 9:K:27:ASN:HB3    | 1.65                     | 0.79              |
| 9:K:148:VAL:HG11  | 9:K:187:CYS:HB2   | 1.66                     | 0.78              |
| 1:A:1206:GLY:HA2  | 9:K:24:LYS:HZ2    | 1.49                     | 0.78              |
| 8:I:178:ASP:OD1   | 8:I:178:ASP:N     | 2.17                     | 0.78              |
| 1:A:1202:CYS:O    | 1:A:1205:ILE:HG22 | 1.83                     | 0.78              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 9:J:148:VAL:HG11  | 9:J:187:CYS:HB2  | 1.65                     | 0.77              |
| 2:B:839:LYS:NZ    | 2:B:957:ASN:O    | 2.16                     | 0.77              |
| 1:A:563:GLU:OE1   | 1:A:567:ASN:ND2  | 2.18                     | 0.77              |
| 1:A:978:VAL:HA    | 9:K:31:LYS:CD    | 2.15                     | 0.76              |
| 2:B:1095:ASN:HB2  | 9:J:46:THR:OG1   | 1.84                     | 0.76              |
| 9:K:27:ASN:H      | 9:K:27:ASN:HD22  | 1.34                     | 0.76              |
| 9:J:27:ASN:HD22   | 9:J:27:ASN:H     | 1.34                     | 0.76              |
| 1:A:544:GLU:O     | 1:A:585:ARG:NH1  | 2.19                     | 0.76              |
| 9:J:66:ALA:O      | 9:J:100:GLN:NE2  | 2.19                     | 0.75              |
| 1:A:978:VAL:HA    | 9:K:31:LYS:HD3   | 1.67                     | 0.75              |
| 9:K:66:ALA:O      | 9:K:100:GLN:NE2  | 2.19                     | 0.74              |
| 1:A:980:CYS:N     | 1:A:992:ASP:OD1  | 2.16                     | 0.74              |
| 9:K:23:GLU:O      | 9:K:27:ASN:ND2   | 2.19                     | 0.74              |
| 9:K:144:CYS:HA    | 9:K:158:PHE:O    | 1.88                     | 0.74              |
| 1:A:1210:MET:HE1  | 1:A:1215:GLU:HG2 | 1.69                     | 0.74              |
| 9:J:23:GLU:O      | 9:J:27:ASN:ND2   | 2.19                     | 0.74              |
| 1:A:1173:ASN:ND2  | 1:A:1176:THR:OG1 | 2.21                     | 0.74              |
| 8:I:240:ARG:O     | 8:I:298:ARG:NH1  | 2.21                     | 0.73              |
| 8:I:273:ILE:CB    | 8:I:317:LYS:HD2  | 2.19                     | 0.73              |
| 2:B:1098:ILE:HD13 | 9:J:96:PRO:HG2   | 1.70                     | 0.73              |
| 9:J:144:CYS:HA    | 9:J:158:PHE:O    | 1.88                     | 0.73              |
| 1:A:1169:CYS:SG   | 1:A:1182:ARG:NH1 | 2.61                     | 0.72              |
| 5:F:2:LYS:HD2     | 5:F:2:LYS:N      | 2.04                     | 0.72              |
| 9:J:280:HIS:HB2   | 9:J:284:ILE:HD11 | 1.71                     | 0.72              |
| 2:B:1098:ILE:CD1  | 9:J:96:PRO:HG2   | 2.19                     | 0.72              |
| 3:C:58:ARG:NH1    | 3:C:71:GLU:OE1   | 2.22                     | 0.72              |
| 2:B:405:TYR:CE1   | 5:F:13:GLN:CB    | 2.73                     | 0.72              |
| 2:B:1073:LYS:HB3  | 2:B:1094:GLU:OE2 | 1.90                     | 0.71              |
| 2:B:1098:ILE:HD12 | 9:J:43:LEU:HD12  | 1.72                     | 0.71              |
| 9:K:280:HIS:HB2   | 9:K:284:ILE:HD11 | 1.71                     | 0.71              |
| 3:C:239:LYS:O     | 3:C:243:SER:OG   | 2.07                     | 0.71              |
| 3:D:169:TYR:OH    | 3:D:171:ASP:OD1  | 2.08                     | 0.71              |
| 2:B:1098:ILE:CD1  | 9:J:43:LEU:HD12  | 2.20                     | 0.71              |
| 1:A:1050:LEU:HD21 | 4:E:373:LYS:HD2  | 1.73                     | 0.70              |
| 1:A:999:ARG:NH2   | 1:A:1139:ASP:O   | 2.24                     | 0.70              |
| 2:B:523:LEU:HD11  | 3:D:158:LEU:HD11 | 1.71                     | 0.70              |
| 2:B:1094:GLU:HB3  | 9:J:47:ARG:NH1   | 2.06                     | 0.70              |
| 9:J:233:HIS:NE2   | 9:J:252:SER:OG   | 2.22                     | 0.70              |
| 1:A:1173:ASN:O    | 1:A:1177:ARG:N   | 2.23                     | 0.70              |
| 4:E:340:MET:HB3   | 4:E:345:THR:HA   | 1.71                     | 0.70              |
| 9:J:190:VAL:HB    | 9:J:200:LEU:HD11 | 1.74                     | 0.70              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:532:ASN:ND2   | 7:H:109:GLU:OE2   | 2.25                     | 0.70              |
| 2:B:1076:LEU:HD23 | 2:B:1076:LEU:N    | 2.05                     | 0.70              |
| 9:J:375:LEU:HG    | 9:J:416:ILE:HD11  | 1.74                     | 0.70              |
| 2:B:640:ASP:OD2   | 2:B:644:ARG:NH1   | 2.24                     | 0.69              |
| 7:H:63:LEU:HD22   | 7:H:68:ARG:HG2    | 1.72                     | 0.69              |
| 8:I:242:ILE:HG12  | 8:I:297:SER:HB2   | 1.74                     | 0.69              |
| 8:I:337:LEU:HB3   | 9:J:80:ARG:NH2    | 2.07                     | 0.69              |
| 9:J:254:SER:OG    | 9:J:256:ASP:OD2   | 2.08                     | 0.69              |
| 1:A:977:TRP:HB3   | 9:K:32:ILE:HB     | 1.73                     | 0.69              |
| 4:E:464:THR:O     | 5:F:71:ARG:NH2    | 2.26                     | 0.69              |
| 9:K:375:LEU:HG    | 9:K:416:ILE:HD11  | 1.74                     | 0.69              |
| 9:K:233:HIS:NE2   | 9:K:252:SER:OG    | 2.21                     | 0.69              |
| 9:K:315:ASN:OD1   | 9:K:315:ASN:N     | 2.23                     | 0.69              |
| 1:A:1205:ILE:HG13 | 9:K:20:ILE:O      | 1.93                     | 0.69              |
| 8:I:323:ILE:HG13  | 9:J:22:GLN:HE21   | 1.58                     | 0.69              |
| 2:B:1076:LEU:HD23 | 2:B:1076:LEU:H    | 1.58                     | 0.69              |
| 5:F:15:LEU:HD23   | 5:F:15:LEU:C      | 2.18                     | 0.69              |
| 9:J:157:VAL:O     | 9:J:177:LYS:N     | 2.26                     | 0.69              |
| 9:K:157:VAL:O     | 9:K:177:LYS:N     | 2.26                     | 0.69              |
| 2:B:444:ASP:OD1   | 2:B:445:LYS:N     | 2.26                     | 0.68              |
| 9:J:123:SER:OG    | 9:J:124:ASN:OD1   | 2.12                     | 0.68              |
| 9:K:123:SER:OG    | 9:K:124:ASN:OD1   | 2.12                     | 0.68              |
| 1:A:793:LEU:HD23  | 1:A:1015:ARG:HH21 | 1.57                     | 0.68              |
| 9:K:29:GLU:OE2    | 9:K:349:ARG:NH2   | 2.26                     | 0.68              |
| 9:J:381:HIS:HE2   | 9:J:400:THR:HG1   | 1.41                     | 0.68              |
| 1:A:1136:TYR:OH   | 1:A:1140:ARG:NH1  | 2.27                     | 0.68              |
| 9:J:201:VAL:HB    | 9:J:242:PHE:HE2   | 1.58                     | 0.68              |
| 9:K:190:VAL:HB    | 9:K:200:LEU:HD11  | 1.74                     | 0.68              |
| 1:A:978:VAL:HG13  | 9:K:27:ASN:O      | 1.93                     | 0.68              |
| 1:A:1205:ILE:HG12 | 9:K:24:LYS:HD2    | 1.74                     | 0.68              |
| 2:B:1042:LEU:HD22 | 9:J:369:ASP:HB3   | 1.75                     | 0.68              |
| 9:K:284:ILE:HD13  | 9:K:301:SER:HB2   | 1.76                     | 0.68              |
| 7:H:56:LYS:HG3    | 7:H:59:LYS:HD3    | 1.76                     | 0.67              |
| 2:B:405:TYR:CZ    | 5:F:13:GLN:CG     | 2.76                     | 0.67              |
| 8:I:331:LEU:O     | 8:I:336:ARG:NH1   | 2.27                     | 0.67              |
| 5:F:191:GLU:OE2   | 5:F:194:ARG:NH2   | 2.24                     | 0.67              |
| 9:J:29:GLU:OE2    | 9:J:349:ARG:NH2   | 2.26                     | 0.67              |
| 1:A:587:ARG:NH2   | 3:C:143:GLU:OE1   | 2.27                     | 0.67              |
| 6:G:248:THR:HG23  | 6:G:251:ASP:HB2   | 1.77                     | 0.67              |
| 1:A:1196:SER:O    | 1:A:1200:LYS:N    | 2.17                     | 0.67              |
| 9:J:284:ILE:HD13  | 9:J:301:SER:HB2   | 1.76                     | 0.67              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 2:B:568:THR:OG1  | 2:B:640:ASP:OD1   | 2.10                     | 0.67              |
| 1:A:790:PRO:HA   | 1:A:793:LEU:HD12  | 1.76                     | 0.66              |
| 9:J:382:THR:OG1  | 9:J:404:ASP:OD1   | 2.09                     | 0.66              |
| 2:B:412:LEU:CD2  | 5:F:5:GLU:HG2     | 2.24                     | 0.66              |
| 9:K:201:VAL:HB   | 9:K:242:PHE:HE2   | 1.59                     | 0.66              |
| 2:B:497:SER:OG   | 2:B:498:LEU:N     | 2.26                     | 0.66              |
| 5:F:121:GLU:HG2  | 5:F:228:VAL:HG11  | 1.77                     | 0.65              |
| 9:J:81:ALA:HB3   | 9:J:85:LYS:HB3    | 1.78                     | 0.65              |
| 9:K:266:ARG:HB3  | 9:K:269:ALA:HB2   | 1.79                     | 0.65              |
| 8:I:239:ARG:NH1  | 8:I:241:GLU:OE1   | 2.29                     | 0.65              |
| 9:K:382:THR:OG1  | 9:K:404:ASP:OD1   | 2.09                     | 0.65              |
| 1:A:998:ASP:HA   | 1:A:1144:ARG:HG2  | 1.77                     | 0.65              |
| 7:H:91:THR:O     | 7:H:95:ASN:ND2    | 2.29                     | 0.65              |
| 9:K:81:ALA:HB3   | 9:K:85:LYS:HB3    | 1.78                     | 0.65              |
| 9:K:254:SER:OG   | 9:K:256:ASP:OD2   | 2.08                     | 0.65              |
| 1:A:834:ARG:HA   | 1:A:876:TYR:HB3   | 1.79                     | 0.64              |
| 1:A:982:PHE:HE2  | 1:A:992:ASP:HA    | 1.61                     | 0.64              |
| 3:D:232:GLU:N    | 3:D:232:GLU:OE1   | 2.28                     | 0.64              |
| 7:H:53:VAL:HG23  | 7:H:60:ASN:HB3    | 1.79                     | 0.64              |
| 2:B:435:LEU:CD1  | 5:F:11:PHE:CE1    | 2.80                     | 0.64              |
| 1:A:818:GLN:HE22 | 1:A:1183:LEU:H    | 1.45                     | 0.64              |
| 1:A:1206:GLY:HA2 | 9:K:24:LYS:NZ     | 2.12                     | 0.64              |
| 2:B:473:ASP:OD1  | 2:B:473:ASP:N     | 2.27                     | 0.64              |
| 2:B:718:LEU:HA   | 2:B:721:LEU:HD12  | 1.79                     | 0.64              |
| 2:B:1076:LEU:HA  | 2:B:1093:THR:HG22 | 1.79                     | 0.64              |
| 2:B:1044:ARG:NH1 | 9:J:366:GLU:OE1   | 2.30                     | 0.64              |
| 1:A:550:ALA:O    | 1:A:554:ARG:NH1   | 2.30                     | 0.63              |
| 3:D:188:ASP:OD1  | 3:D:188:ASP:N     | 2.26                     | 0.63              |
| 2:B:1070:HIS:CE1 | 2:B:1100:SER:OG   | 2.52                     | 0.63              |
| 8:I:291:ARG:HB2  | 8:I:296:GLU:HG3   | 1.80                     | 0.63              |
| 9:J:266:ARG:HB3  | 9:J:269:ALA:HB2   | 1.79                     | 0.63              |
| 1:A:723:GLN:O    | 1:A:727:ASN:ND2   | 2.29                     | 0.63              |
| 2:B:916:GLU:HA   | 2:B:919:TYR:HB2   | 1.79                     | 0.63              |
| 4:E:406:THR:O    | 4:E:410:THR:HG23  | 1.98                     | 0.63              |
| 9:J:187:CYS:HA   | 9:J:204:SER:HA    | 1.80                     | 0.63              |
| 1:A:779:SER:O    | 1:A:779:SER:OG    | 2.17                     | 0.63              |
| 9:J:207:ALA:HA   | 9:J:237:VAL:HG23  | 1.81                     | 0.63              |
| 1:A:852:GLU:O    | 1:A:856:ASN:ND2   | 2.32                     | 0.62              |
| 1:A:977:TRP:CE3  | 9:K:28:GLU:HB3    | 2.34                     | 0.62              |
| 1:A:977:TRP:HB2  | 9:K:28:GLU:C      | 2.22                     | 0.62              |
| 9:K:187:CYS:HA   | 9:K:204:SER:HA    | 1.80                     | 0.62              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:827:ASN:O     | 1:A:830:THR:OG1   | 2.14                     | 0.62              |
| 1:A:1166:ASN:HD21 | 1:A:1183:LEU:HD21 | 1.64                     | 0.62              |
| 2:B:934:ARG:HH21  | 5:F:83:PRO:HG3    | 1.65                     | 0.62              |
| 9:J:315:ASN:OD1   | 9:J:315:ASN:N     | 2.23                     | 0.62              |
| 1:A:992:ASP:HB3   | 1:A:994:THR:HG23  | 1.81                     | 0.62              |
| 3:C:231:ASP:OD1   | 3:C:231:ASP:N     | 2.32                     | 0.62              |
| 9:J:159:ASP:HB3   | 9:J:177:LYS:HD3   | 1.81                     | 0.62              |
| 2:B:480:ASN:ND2   | 8:I:179:ASN:OD1   | 2.33                     | 0.62              |
| 3:C:261:ASP:OD1   | 3:C:261:ASP:N     | 2.27                     | 0.61              |
| 1:A:1031:GLU:OE1  | 1:A:1070:VAL:N    | 2.29                     | 0.61              |
| 2:B:544:GLU:OE1   | 2:B:679:ARG:NH1   | 2.33                     | 0.61              |
| 5:F:19:SEP:O3P    | 8:I:299:SER:CB    | 2.47                     | 0.61              |
| 8:I:337:LEU:HB3   | 9:J:80:ARG:HH22   | 1.66                     | 0.61              |
| 1:A:849:GLU:H     | 1:A:849:GLU:CD    | 2.09                     | 0.61              |
| 9:J:311:LEU:HA    | 9:J:314:LEU:HD21  | 1.82                     | 0.61              |
| 9:J:338:GLU:HG2   | 9:J:339:PRO:HD3   | 1.82                     | 0.61              |
| 2:B:947:LEU:HD21  | 2:B:975:ILE:HG21  | 1.82                     | 0.61              |
| 9:K:159:ASP:HB3   | 9:K:177:LYS:HD3   | 1.81                     | 0.61              |
| 3:D:349:ASN:OD1   | 3:D:350:HIS:N     | 2.34                     | 0.61              |
| 9:K:207:ALA:HA    | 9:K:237:VAL:HG23  | 1.81                     | 0.61              |
| 1:A:1201:TRP:HA   | 9:K:20:ILE:HG21   | 1.81                     | 0.61              |
| 2:B:430:LYS:O     | 2:B:434:LEU:HG    | 2.00                     | 0.61              |
| 2:B:1121:ARG:HA   | 2:B:1124:LEU:HD12 | 1.81                     | 0.61              |
| 9:K:311:LEU:HA    | 9:K:314:LEU:HD21  | 1.82                     | 0.61              |
| 8:I:334:GLU:OE2   | 9:J:80:ARG:NH1    | 2.33                     | 0.61              |
| 1:A:977:TRP:NE1   | 1:A:1209:ILE:O    | 2.33                     | 0.61              |
| 2:B:884:GLY:O     | 2:B:888:ASN:N     | 2.27                     | 0.61              |
| 5:F:15:LEU:HD23   | 5:F:15:LEU:O      | 2.01                     | 0.61              |
| 2:B:1093:THR:OG1  | 9:J:48:ALA:HB2    | 2.00                     | 0.60              |
| 9:J:156:LEU:HB3   | 9:J:176:PRO:HG3   | 1.83                     | 0.60              |
| 1:A:853:LYS:HD2   | 1:A:1124:THR:HB   | 1.82                     | 0.60              |
| 1:A:1202:CYS:SG   | 1:A:1203:TYR:N    | 2.73                     | 0.60              |
| 2:B:436:HIS:NE2   | 2:B:440:GLU:OE1   | 2.34                     | 0.60              |
| 2:B:737:TYR:HB3   | 2:B:741:ASP:HB2   | 1.83                     | 0.60              |
| 1:A:1131:GLN:HA   | 1:A:1134:MET:HG2  | 1.83                     | 0.60              |
| 2:B:435:LEU:HD21  | 5:F:11:PHE:CB     | 2.30                     | 0.60              |
| 9:K:156:LEU:HB3   | 9:K:176:PRO:HG3   | 1.83                     | 0.60              |
| 9:J:94:GLN:HG3    | 9:J:119:ARG:H     | 1.67                     | 0.60              |
| 3:C:263:LEU:HD11  | 3:C:308:VAL:HG21  | 1.83                     | 0.59              |
| 1:A:1205:ILE:HG12 | 9:K:24:LYS:HB2    | 1.84                     | 0.59              |
| 9:K:338:GLU:HG2   | 9:K:339:PRO:HD3   | 1.83                     | 0.59              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 9:K:241:ARG:HH11  | 9:K:241:ARG:HG2  | 1.67                     | 0.59              |
| 3:C:140:LYS:NZ    | 3:C:178:ASP:OD2  | 2.36                     | 0.59              |
| 5:F:143:THR:OG1   | 5:F:189:SER:OG   | 2.20                     | 0.59              |
| 1:A:796:GLU:O     | 1:A:800:LEU:HG   | 2.02                     | 0.59              |
| 8:I:323:ILE:HG13  | 9:J:22:GLN:NE2   | 2.16                     | 0.59              |
| 9:J:241:ARG:HG2   | 9:J:241:ARG:HH11 | 1.68                     | 0.59              |
| 9:K:94:GLN:HG3    | 9:K:119:ARG:H    | 1.68                     | 0.59              |
| 3:D:261:ASP:N     | 3:D:261:ASP:OD1  | 2.33                     | 0.59              |
| 9:K:266:ARG:HG3   | 9:K:266:ARG:NH1  | 2.12                     | 0.59              |
| 9:K:217:TYR:HD2   | 9:K:218:ASN:H    | 1.51                     | 0.59              |
| 2:B:944:LEU:O     | 2:B:947:LEU:HB2  | 2.03                     | 0.59              |
| 3:D:178:ASP:OD1   | 3:D:178:ASP:N    | 2.25                     | 0.59              |
| 9:K:143:SER:HB2   | 9:K:160:LYS:HD2  | 1.85                     | 0.59              |
| 1:A:977:TRP:CG    | 9:K:28:GLU:HB3   | 2.38                     | 0.59              |
| 2:B:1070:HIS:HE1  | 2:B:1100:SER:H   | 1.49                     | 0.59              |
| 9:K:25:CYS:HA     | 9:K:28:GLU:HB2   | 1.85                     | 0.59              |
| 1:A:1205:ILE:HG23 | 9:K:24:LYS:HD2   | 1.83                     | 0.58              |
| 2:B:887:GLU:OE1   | 2:B:891:ASN:ND2  | 2.36                     | 0.58              |
| 7:H:108:PHE:HA    | 7:H:111:VAL:HG13 | 1.84                     | 0.58              |
| 9:J:217:TYR:HD2   | 9:J:218:ASN:H    | 1.51                     | 0.58              |
| 9:J:25:CYS:HA     | 9:J:28:GLU:HB2   | 1.85                     | 0.58              |
| 2:B:405:TYR:CE1   | 5:F:13:GLN:CG    | 2.87                     | 0.58              |
| 2:B:413:LEU:O     | 2:B:417:THR:HG23 | 2.04                     | 0.58              |
| 9:J:143:SER:HB2   | 9:J:160:LYS:HD2  | 1.85                     | 0.58              |
| 1:A:599:SER:OG    | 3:C:210:ASP:OD2  | 2.21                     | 0.58              |
| 2:B:1093:THR:HG1  | 9:J:48:ALA:CB    | 1.94                     | 0.58              |
| 5:F:2:LYS:HD2     | 5:F:2:LYS:H      | 1.68                     | 0.58              |
| 2:B:1076:LEU:HA   | 2:B:1093:THR:CG2 | 2.33                     | 0.58              |
| 2:B:1095:ASN:O    | 9:J:45:ILE:HA    | 2.03                     | 0.58              |
| 9:K:319:HIS:CD2   | 9:K:320:THR:H    | 2.22                     | 0.58              |
| 2:B:516:ASP:OD1   | 2:B:516:ASP:N    | 2.25                     | 0.58              |
| 2:B:941:ASP:OD1   | 2:B:944:LEU:N    | 2.37                     | 0.58              |
| 2:B:1113:LYS:HD3  | 9:J:338:GLU:CD   | 2.29                     | 0.57              |
| 3:C:119:GLN:O     | 3:C:123:SER:OG   | 2.21                     | 0.57              |
| 1:A:1148:ARG:O    | 1:A:1152:MET:HG3 | 2.04                     | 0.57              |
| 2:B:944:LEU:HD11  | 2:B:948:LEU:HD22 | 1.86                     | 0.57              |
| 9:J:209:LEU:HB2   | 9:J:230:ILE:HB   | 1.86                     | 0.57              |
| 9:K:209:LEU:HB2   | 9:K:230:ILE:HB   | 1.86                     | 0.57              |
| 3:D:322:ASP:OD1   | 3:D:323:GLU:N    | 2.34                     | 0.57              |
| 1:A:1004:LEU:HD12 | 1:A:1005:PHE:H   | 1.69                     | 0.57              |
| 2:B:905:GLU:OE1   | 2:B:905:GLU:N    | 2.34                     | 0.57              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:F:10:ARG:O      | 5:F:10:ARG:HD3    | 2.05                     | 0.57              |
| 9:J:319:HIS:CD2   | 9:J:320:THR:H     | 2.22                     | 0.57              |
| 1:A:1154:ARG:HH11 | 1:A:1190:THR:HG22 | 1.69                     | 0.57              |
| 3:D:213:ILE:HG22  | 3:D:214:GLY:H     | 1.70                     | 0.57              |
| 8:I:191:ALA:O     | 8:I:192:SER:OG    | 2.22                     | 0.57              |
| 9:K:59:TYR:HB3    | 9:K:61:GLU:OE2    | 2.05                     | 0.57              |
| 1:A:742:ARG:NH1   | 6:G:251:ASP:OD2   | 2.37                     | 0.57              |
| 1:A:795:SER:O     | 1:A:799:ASN:ND2   | 2.38                     | 0.57              |
| 1:A:1151:ILE:HD13 | 1:A:1207:SER:HA   | 1.86                     | 0.57              |
| 2:B:969:ARG:NH1   | 2:B:1005:THR:OG1  | 2.38                     | 0.57              |
| 2:B:1075:ASN:O    | 2:B:1093:THR:CG2  | 2.51                     | 0.57              |
| 9:J:59:TYR:HB3    | 9:J:61:GLU:OE2    | 2.05                     | 0.56              |
| 1:A:550:ALA:HB1   | 1:A:554:ARG:HH12  | 1.70                     | 0.56              |
| 1:A:977:TRP:HB3   | 9:K:32:ILE:HD12   | 1.86                     | 0.56              |
| 1:A:1151:ILE:O    | 1:A:1155:ILE:HG12 | 2.05                     | 0.56              |
| 2:B:533:LYS:HE3   | 5:F:48:TYR:CD2    | 2.41                     | 0.56              |
| 2:B:1070:HIS:HE1  | 2:B:1100:SER:CB   | 2.19                     | 0.56              |
| 2:B:1141:PHE:CE1  | 9:J:312:ARG:HB3   | 2.41                     | 0.56              |
| 4:E:340:MET:HA    | 4:E:343:ASN:HB2   | 1.88                     | 0.56              |
| 9:J:187:CYS:SG    | 9:J:202:SER:OG    | 2.55                     | 0.56              |
| 1:A:799:ASN:C     | 1:A:803:GLN:HE21  | 2.13                     | 0.56              |
| 3:C:138:HIS:O     | 3:C:145:SER:HB3   | 2.06                     | 0.56              |
| 3:D:123:SER:OG    | 3:D:125:ASN:ND2   | 2.39                     | 0.56              |
| 3:D:235:GLU:HG3   | 3:D:239:LYS:HE3   | 1.87                     | 0.56              |
| 1:A:979:ASN:H     | 9:K:31:LYS:NZ     | 2.04                     | 0.56              |
| 2:B:1075:ASN:HB2  | 2:B:1094:GLU:H    | 1.69                     | 0.56              |
| 3:D:67:ASP:OD2    | 3:D:67:ASP:N      | 2.33                     | 0.56              |
| 9:K:178:TYR:HE2   | 9:K:214:LEU:HB3   | 1.71                     | 0.56              |
| 2:B:405:TYR:CD2   | 5:F:16:PHE:CD1    | 2.94                     | 0.56              |
| 3:D:239:LYS:O     | 3:D:243:SER:OG    | 2.19                     | 0.55              |
| 9:J:65:PHE:O      | 9:J:69:GLY:N      | 2.34                     | 0.55              |
| 9:J:177:LYS:HE3   | 9:J:178:TYR:CZ    | 2.41                     | 0.55              |
| 9:K:330:LYS:NZ    | 9:K:387:ASP:OD1   | 2.39                     | 0.55              |
| 2:B:470:ARG:HH11  | 5:F:15:LEU:HD21   | 1.71                     | 0.55              |
| 2:B:1113:LYS:HD3  | 9:J:338:GLU:OE2   | 2.07                     | 0.55              |
| 3:D:231:ASP:OD1   | 3:D:231:ASP:N     | 2.39                     | 0.55              |
| 1:A:699:ASN:ND2   | 1:A:702:GLY:O     | 2.39                     | 0.55              |
| 4:E:443:LYS:HE2   | 7:H:8:ILE:HD12    | 1.88                     | 0.55              |
| 6:G:233:GLU:HA    | 6:G:236:ARG:HG2   | 1.88                     | 0.55              |
| 1:A:1208:TYR:HB2  | 9:K:21:ASN:HB3    | 1.89                     | 0.55              |
| 2:B:1070:HIS:CE1  | 2:B:1100:SER:H    | 2.24                     | 0.55              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 4:E:359:ARG:HA   | 4:E:362:ASP:OD1   | 2.06                     | 0.55              |
| 8:I:192:SER:OG   | 8:I:193:GLU:OE1   | 2.25                     | 0.55              |
| 9:J:178:TYR:HE2  | 9:J:214:LEU:HB3   | 1.71                     | 0.55              |
| 9:J:330:LYS:NZ   | 9:J:387:ASP:OD1   | 2.39                     | 0.55              |
| 9:K:395:ASN:OD1  | 9:K:395:ASN:N     | 2.30                     | 0.55              |
| 2:B:582:THR:O    | 2:B:582:THR:OG1   | 2.23                     | 0.55              |
| 1:A:598:PRO:HD2  | 3:C:210:ASP:OD1   | 2.07                     | 0.55              |
| 2:B:984:ASN:ND2  | 2:B:997:GLN:OE1   | 2.28                     | 0.55              |
| 9:J:183:HIS:NE2  | 9:J:210:SER:OG    | 2.39                     | 0.55              |
| 1:A:1149:GLN:HA  | 1:A:1152:MET:HE2  | 1.88                     | 0.55              |
| 2:B:1073:LYS:CB  | 2:B:1094:GLU:OE2  | 2.55                     | 0.55              |
| 6:G:24:THR:OG1   | 6:G:25:ALA:N      | 2.38                     | 0.55              |
| 9:K:167:SER:OG   | 9:K:170:SER:OG    | 2.19                     | 0.55              |
| 4:E:382:MET:HG3  | 6:G:72:ARG:HB2    | 1.89                     | 0.55              |
| 3:D:8:VAL:HG13   | 3:D:128:ILE:HB    | 1.89                     | 0.55              |
| 9:J:167:SER:OG   | 9:J:170:SER:OG    | 2.19                     | 0.55              |
| 9:K:177:LYS:HE3  | 9:K:178:TYR:CZ    | 2.41                     | 0.55              |
| 9:K:183:HIS:NE2  | 9:K:210:SER:OG    | 2.39                     | 0.55              |
| 1:A:1128:ARG:O   | 1:A:1132:VAL:HG23 | 2.07                     | 0.54              |
| 1:A:1136:TYR:CZ  | 1:A:1140:ARG:HD2  | 2.41                     | 0.54              |
| 2:B:468:PHE:HE1  | 5:F:11:PHE:HE2    | 1.54                     | 0.54              |
| 2:B:734:SER:OG   | 2:B:735:SER:N     | 2.38                     | 0.54              |
| 2:B:1042:LEU:HB3 | 9:J:369:ASP:OD2   | 2.07                     | 0.54              |
| 1:A:1145:THR:O   | 1:A:1150:GLN:NE2  | 2.41                     | 0.54              |
| 2:B:453:SER:HA   | 2:B:456:VAL:HG12  | 1.89                     | 0.54              |
| 2:B:838:SER:HB2  | 2:B:959:VAL:HG21  | 1.87                     | 0.54              |
| 9:J:27:ASN:HD22  | 9:J:27:ASN:N      | 2.04                     | 0.54              |
| 9:J:53:CYS:HA    | 9:J:79:VAL:HG12   | 1.89                     | 0.54              |
| 1:A:880:HIS:CE1  | 1:A:882:ASN:HB2   | 2.43                     | 0.54              |
| 9:K:58:TRP:CE2   | 9:K:75:MET:HE1    | 2.43                     | 0.54              |
| 1:A:763:ASP:O    | 1:A:766:GLU:HG3   | 2.08                     | 0.54              |
| 9:K:27:ASN:HD22  | 9:K:27:ASN:N      | 2.04                     | 0.54              |
| 9:K:153:ASN:HA   | 9:K:186:PRO:HA    | 1.90                     | 0.54              |
| 2:B:716:ASP:OD1  | 2:B:717:SER:N     | 2.40                     | 0.54              |
| 4:E:402:GLN:O    | 4:E:406:THR:HG23  | 2.07                     | 0.54              |
| 9:K:400:THR:HG23 | 9:K:408:GLN:HB3   | 1.90                     | 0.54              |
| 2:B:1094:GLU:HB3 | 9:J:47:ARG:HH11   | 1.73                     | 0.54              |
| 9:K:53:CYS:HA    | 9:K:79:VAL:HG12   | 1.89                     | 0.54              |
| 1:A:978:VAL:HA   | 9:K:31:LYS:HE2    | 1.90                     | 0.54              |
| 2:B:669:ARG:NE   | 3:D:348:GLU:HB2   | 2.23                     | 0.54              |
| 2:B:1076:LEU:HB3 | 2:B:1095:ASN:HD21 | 1.72                     | 0.54              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 9:K:185:GLN:HB3   | 9:K:205:GLN:HB2   | 1.89                     | 0.54              |
| 2:B:1073:LYS:CG   | 2:B:1094:GLU:OE2  | 2.56                     | 0.54              |
| 8:I:289:GLY:N     | 8:I:299:SER:OG    | 2.41                     | 0.54              |
| 9:J:326:ASP:CG    | 9:J:327:ILE:H     | 2.14                     | 0.54              |
| 9:K:65:PHE:O      | 9:K:69:GLY:N      | 2.34                     | 0.54              |
| 9:K:326:ASP:CG    | 9:K:327:ILE:H     | 2.14                     | 0.54              |
| 1:A:588:VAL:HB    | 7:H:128:ALA:HB3   | 1.90                     | 0.53              |
| 3:D:57:THR:OG1    | 3:D:58:ARG:N      | 2.39                     | 0.53              |
| 1:A:977:TRP:HB3   | 9:K:32:ILE:CD1    | 2.37                     | 0.53              |
| 9:J:31:LYS:HA     | 9:J:34:LYS:HB3    | 1.90                     | 0.53              |
| 9:J:58:TRP:CE2    | 9:J:75:MET:HE1    | 2.43                     | 0.53              |
| 9:J:400:THR:HG23  | 9:J:408:GLN:HB3   | 1.90                     | 0.53              |
| 1:A:683:MET:SD    | 1:A:733:SER:HA    | 2.48                     | 0.53              |
| 3:C:105:GLU:O     | 3:C:109:ILE:HG13  | 2.08                     | 0.53              |
| 8:I:267:LEU:HB3   | 9:J:368:GLN:NE2   | 2.24                     | 0.53              |
| 1:A:1204:TYR:O    | 9:K:21:ASN:ND2    | 2.41                     | 0.53              |
| 2:B:997:GLN:HE22  | 2:B:1007:HIS:CE1  | 2.27                     | 0.53              |
| 9:K:381:HIS:HE2   | 9:K:400:THR:HG1   | 1.50                     | 0.53              |
| 2:B:435:LEU:HD13  | 5:F:11:PHE:CE1    | 2.44                     | 0.53              |
| 2:B:902:SER:OG    | 2:B:903:ARG:N     | 2.42                     | 0.53              |
| 3:D:128:ILE:HG21  | 3:D:316:LEU:HD22  | 1.91                     | 0.53              |
| 4:E:394:LEU:HD13  | 5:F:158:PRO:HA    | 1.91                     | 0.53              |
| 8:I:337:LEU:HD22  | 9:J:80:ARG:HH21   | 1.73                     | 0.53              |
| 9:K:31:LYS:HA     | 9:K:34:LYS:HB3    | 1.90                     | 0.53              |
| 2:B:904:LEU:HD23  | 2:B:904:LEU:H     | 1.74                     | 0.53              |
| 3:D:96:ASP:OD1    | 5:F:47:TYR:OH     | 2.26                     | 0.53              |
| 9:J:302:THR:HA    | 9:J:327:ILE:HG23  | 1.91                     | 0.53              |
| 1:A:1132:VAL:HG13 | 1:A:1157:THR:HG22 | 1.91                     | 0.52              |
| 2:B:1070:HIS:CE1  | 2:B:1100:SER:CB   | 2.92                     | 0.52              |
| 2:B:1142:PHE:HA   | 2:B:1145:THR:HG22 | 1.91                     | 0.52              |
| 3:C:3:PHE:CE1     | 3:C:6:LYS:HE3     | 2.44                     | 0.52              |
| 5:F:2:LYS:H       | 5:F:2:LYS:CD      | 2.22                     | 0.52              |
| 9:K:167:SER:O     | 9:K:170:SER:OG    | 2.21                     | 0.52              |
| 2:B:424:ASP:OD1   | 2:B:425:THR:N     | 2.42                     | 0.52              |
| 2:B:1096:VAL:HA   | 9:J:44:ILE:O      | 2.09                     | 0.52              |
| 4:E:341:ILE:HD11  | 6:G:105:VAL:HG12  | 1.89                     | 0.52              |
| 1:A:978:VAL:HG21  | 9:K:27:ASN:CB     | 2.37                     | 0.52              |
| 1:A:978:VAL:HA    | 9:K:31:LYS:CE     | 2.38                     | 0.52              |
| 9:J:257:GLN:HG2   | 9:J:281:SER:C     | 2.34                     | 0.52              |
| 2:B:748:VAL:HG21  | 2:B:939:LEU:HD21  | 1.89                     | 0.52              |
| 8:I:229:LEU:HD12  | 8:I:270:VAL:HG11  | 1.92                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:I:273:ILE:HB   | 8:I:317:LYS:CD   | 2.34                     | 0.52              |
| 1:A:817:HIS:HA   | 1:A:1182:ARG:HB2 | 1.90                     | 0.52              |
| 1:A:864:LEU:HG   | 1:A:1140:ARG:HD3 | 1.92                     | 0.52              |
| 4:E:340:MET:O    | 4:E:345:THR:N    | 2.42                     | 0.52              |
| 5:F:163:PRO:HG2  | 5:F:166:GLU:HB2  | 1.92                     | 0.52              |
| 6:G:261:LYS:HG2  | 6:G:265:LYS:HZ3  | 1.74                     | 0.52              |
| 9:K:257:GLN:HG2  | 9:K:281:SER:C    | 2.34                     | 0.52              |
| 3:D:164:HIS:H    | 3:D:164:HIS:CD2  | 2.26                     | 0.52              |
| 4:E:457:ASN:HA   | 4:E:461:GLY:O    | 2.10                     | 0.52              |
| 7:H:115:ILE:HG22 | 7:H:120:ARG:HE   | 1.75                     | 0.52              |
| 9:J:185:GLN:HB3  | 9:J:205:GLN:HB2  | 1.89                     | 0.52              |
| 2:B:1076:LEU:N   | 2:B:1076:LEU:CD2 | 2.73                     | 0.52              |
| 5:F:82:ASP:OD1   | 5:F:83:PRO:HD2   | 2.09                     | 0.52              |
| 9:J:153:ASN:HA   | 9:J:186:PRO:HA   | 1.90                     | 0.52              |
| 2:B:1018:TYR:OH  | 2:B:1030:GLU:OE2 | 2.28                     | 0.52              |
| 3:C:178:ASP:OD1  | 3:C:178:ASP:N    | 2.31                     | 0.52              |
| 3:C:191:MET:HE1  | 3:C:370:LEU:HD11 | 1.91                     | 0.52              |
| 9:J:62:GLN:HB2   | 9:J:73:GLN:OE1   | 2.10                     | 0.52              |
| 9:K:187:CYS:SG   | 9:K:202:SER:OG   | 2.55                     | 0.52              |
| 9:K:302:THR:HA   | 9:K:327:ILE:HG23 | 1.91                     | 0.52              |
| 2:B:697:GLN:HE21 | 2:B:709:GLN:HE21 | 1.58                     | 0.52              |
| 2:B:1076:LEU:CD1 | 2:B:1095:ASN:ND2 | 2.48                     | 0.52              |
| 5:F:19:SEP:O3P   | 8:I:299:SER:HB2  | 2.09                     | 0.52              |
| 5:F:170:ILE:HG22 | 7:H:66:GLU:HA    | 1.90                     | 0.52              |
| 9:J:49:LEU:HD23  | 9:J:53:CYS:SG    | 2.49                     | 0.52              |
| 9:J:136:LYS:HG3  | 9:J:190:VAL:HG23 | 1.92                     | 0.52              |
| 9:K:326:ASP:CG   | 9:K:327:ILE:N    | 2.68                     | 0.52              |
| 2:B:564:VAL:HG22 | 2:B:607:ILE:HD13 | 1.92                     | 0.52              |
| 9:J:30:TYR:C     | 9:J:30:TYR:CD1   | 2.88                     | 0.52              |
| 9:J:326:ASP:CG   | 9:J:327:ILE:N    | 2.68                     | 0.52              |
| 9:K:136:LYS:HG3  | 9:K:190:VAL:HG23 | 1.92                     | 0.52              |
| 1:A:1208:TYR:CD1 | 9:K:25:CYS:HB2   | 2.45                     | 0.51              |
| 2:B:840:ASN:HB3  | 2:B:990:LEU:HB2  | 1.91                     | 0.51              |
| 5:F:150:MET:HE2  | 5:F:183:GLN:HG2  | 1.91                     | 0.51              |
| 9:J:167:SER:O    | 9:J:170:SER:OG   | 2.21                     | 0.51              |
| 9:K:261:VAL:O    | 9:K:274:ALA:N    | 2.43                     | 0.51              |
| 1:A:1072:GLU:O   | 1:A:1076:GLN:HG3 | 2.09                     | 0.51              |
| 1:A:1110:GLU:OE2 | 1:A:1111:LYS:N   | 2.42                     | 0.51              |
| 3:C:92:ASN:ND2   | 3:C:144:ALA:O    | 2.44                     | 0.51              |
| 7:H:14:ASP:CG    | 7:H:103:ARG:HH12 | 2.18                     | 0.51              |
| 1:A:977:TRP:C    | 9:K:31:LYS:HG2   | 2.35                     | 0.51              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:D:186:THR:O     | 3:D:186:THR:OG1   | 2.27                     | 0.51              |
| 9:K:49:LEU:HD23   | 9:K:53:CYS:SG     | 2.49                     | 0.51              |
| 1:A:983:THR:HB    | 1:A:987:GLY:HA2   | 1.91                     | 0.51              |
| 2:B:717:SER:OG    | 2:B:759:ILE:HD12  | 2.10                     | 0.51              |
| 1:A:1194:LEU:O    | 1:A:1195:LYS:HE2  | 2.10                     | 0.51              |
| 4:E:419:GLN:HG3   | 6:G:28:PHE:CD1    | 2.45                     | 0.51              |
| 9:K:30:TYR:CD1    | 9:K:30:TYR:C      | 2.88                     | 0.51              |
| 1:A:790:PRO:O     | 1:A:794:ILE:HG12  | 2.10                     | 0.51              |
| 2:B:1098:ILE:HD12 | 9:J:43:LEU:CD1    | 2.32                     | 0.51              |
| 1:A:520:HIS:O     | 1:A:520:HIS:ND1   | 2.36                     | 0.51              |
| 1:A:1151:ILE:CD1  | 1:A:1207:SER:HA   | 2.40                     | 0.51              |
| 9:J:257:GLN:HB3   | 9:J:280:HIS:O     | 2.10                     | 0.51              |
| 2:B:915:ASN:O     | 2:B:919:TYR:N     | 2.44                     | 0.51              |
| 2:B:405:TYR:OH    | 5:F:13:GLN:HG3    | 2.11                     | 0.51              |
| 2:B:580:GLU:HG3   | 2:B:583:ILE:HB    | 1.93                     | 0.51              |
| 2:B:722:ASN:ND2   | 2:B:886:TYR:OH    | 2.43                     | 0.51              |
| 6:G:96:TYR:O      | 6:G:100:THR:OG1   | 2.22                     | 0.51              |
| 8:I:339:ALA:O     | 8:I:343:LEU:HG    | 2.11                     | 0.51              |
| 9:J:261:VAL:O     | 9:J:274:ALA:N     | 2.43                     | 0.51              |
| 9:J:371:PRO:HB2   | 9:J:373:GLU:OE1   | 2.11                     | 0.51              |
| 9:K:371:PRO:HB2   | 9:K:373:GLU:OE1   | 2.11                     | 0.51              |
| 2:B:405:TYR:OH    | 5:F:13:GLN:CG     | 2.58                     | 0.51              |
| 2:B:1070:HIS:HE1  | 2:B:1100:SER:OG   | 1.93                     | 0.51              |
| 9:K:326:ASP:OD2   | 9:K:327:ILE:N     | 2.34                     | 0.51              |
| 3:D:166:ARG:NH2   | 3:D:250:ARG:O     | 2.31                     | 0.50              |
| 4:E:344:GLU:O     | 4:E:350:ASN:ND2   | 2.44                     | 0.50              |
| 1:A:1205:ILE:HG13 | 9:K:20:ILE:C      | 2.35                     | 0.50              |
| 3:C:351:ASN:HB3   | 3:C:356:LEU:HD21  | 1.93                     | 0.50              |
| 9:K:62:GLN:HB2    | 9:K:73:GLN:OE1    | 2.10                     | 0.50              |
| 2:B:1021:ASP:O    | 2:B:1025:ILE:HG22 | 2.12                     | 0.50              |
| 8:I:254:ILE:HD13  | 8:I:278:LEU:HD11  | 1.93                     | 0.50              |
| 9:K:58:TRP:HD1    | 9:K:389:ASP:CG    | 2.20                     | 0.50              |
| 2:B:979:GLU:N     | 2:B:979:GLU:OE2   | 2.45                     | 0.50              |
| 9:K:257:GLN:HB3   | 9:K:280:HIS:O     | 2.10                     | 0.50              |
| 1:A:867:ASP:OD1   | 1:A:867:ASP:N     | 2.45                     | 0.50              |
| 5:F:37:LEU:HB2    | 5:F:40:LYS:HG3    | 1.94                     | 0.50              |
| 1:A:852:GLU:HG3   | 1:A:881:PHE:CD2   | 2.46                     | 0.50              |
| 2:B:916:GLU:H     | 2:B:916:GLU:CD    | 2.20                     | 0.50              |
| 2:B:1073:LYS:HG2  | 2:B:1094:GLU:OE2  | 2.11                     | 0.50              |
| 9:J:326:ASP:OD2   | 9:J:327:ILE:N     | 2.34                     | 0.50              |
| 9:K:71:THR:OG1    | 9:K:73:GLN:NE2    | 2.45                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:967:VAL:HG22 | 2:B:971:HIS:CE1  | 2.47                     | 0.50              |
| 4:E:469:GLU:OE2  | 4:E:469:GLU:N    | 2.43                     | 0.50              |
| 9:J:414:ARG:O    | 9:J:418:GLY:N    | 2.33                     | 0.50              |
| 9:K:217:TYR:HD2  | 9:K:218:ASN:N    | 2.09                     | 0.50              |
| 1:A:559:PHE:HB2  | 1:A:566:MET:HE2  | 1.93                     | 0.50              |
| 1:A:977:TRP:CD1  | 1:A:977:TRP:N    | 2.79                     | 0.50              |
| 2:B:437:LEU:HB3  | 2:B:443:LEU:HD12 | 1.94                     | 0.50              |
| 4:E:432:THR:OG1  | 4:E:433:MET:N    | 2.44                     | 0.50              |
| 2:B:903:ARG:HE   | 2:B:907:ARG:NH2  | 2.09                     | 0.50              |
| 2:B:1097:TYR:CZ  | 9:J:38:PRO:HA    | 2.46                     | 0.50              |
| 7:H:62:GLU:O     | 7:H:68:ARG:NH1   | 2.45                     | 0.50              |
| 9:K:47:ARG:HG2   | 9:K:120:VAL:HB   | 1.94                     | 0.50              |
| 2:B:624:LYS:HG2  | 2:B:627:THR:HG23 | 1.94                     | 0.49              |
| 2:B:728:ASP:O    | 2:B:732:THR:HG23 | 2.12                     | 0.49              |
| 2:B:926:ARG:NH2  | 5:F:89:ASP:OD2   | 2.45                     | 0.49              |
| 8:I:325:GLU:HA   | 8:I:328:ILE:HG12 | 1.94                     | 0.49              |
| 9:K:133:CYS:H    | 9:K:149:GLY:HA2  | 1.77                     | 0.49              |
| 6:G:248:THR:OG1  | 6:G:249:GLU:N    | 2.43                     | 0.49              |
| 9:K:51:TRP:HB3   | 9:K:80:ARG:O     | 2.13                     | 0.49              |
| 9:K:58:TRP:HZ3   | 9:K:73:GLN:HB2   | 1.78                     | 0.49              |
| 9:J:47:ARG:HG2   | 9:J:120:VAL:HB   | 1.94                     | 0.49              |
| 2:B:970:ASN:HD21 | 2:B:1027:HIS:HB2 | 1.75                     | 0.49              |
| 5:F:225:ASN:ND2  | 5:F:227:GLN:H    | 2.10                     | 0.49              |
| 8:I:325:GLU:OE2  | 9:J:348:ARG:NH1  | 2.36                     | 0.49              |
| 9:K:354:ASP:HB2  | 9:K:375:LEU:HD13 | 1.94                     | 0.49              |
| 1:A:1013:PHE:HB2 | 1:A:1119:GLN:HB3 | 1.93                     | 0.49              |
| 3:C:173:ASP:OD1  | 3:C:174:VAL:N    | 2.46                     | 0.49              |
| 9:J:58:TRP:HD1   | 9:J:389:ASP:CG   | 2.20                     | 0.49              |
| 9:J:177:LYS:HG2  | 9:J:178:TYR:CE1  | 2.47                     | 0.49              |
| 1:A:605:LYS:NZ   | 5:F:219:GLY:O    | 2.40                     | 0.49              |
| 2:B:988:TYR:O    | 2:B:992:LYS:N    | 2.45                     | 0.49              |
| 2:B:1071:PHE:CD1 | 2:B:1071:PHE:C   | 2.91                     | 0.49              |
| 5:F:2:LYS:N      | 5:F:2:LYS:CD     | 2.73                     | 0.49              |
| 6:G:114:ARG:O    | 6:G:118:GLU:HG3  | 2.13                     | 0.49              |
| 9:J:133:CYS:H    | 9:J:149:GLY:HA2  | 1.77                     | 0.49              |
| 9:J:217:TYR:HD2  | 9:J:218:ASN:N    | 2.09                     | 0.49              |
| 1:A:982:PHE:HE1  | 9:K:27:ASN:OD1   | 1.95                     | 0.49              |
| 9:J:51:TRP:HB3   | 9:J:80:ARG:O     | 2.13                     | 0.49              |
| 9:K:87:LEU:HG    | 9:K:127:SER:HA   | 1.95                     | 0.49              |
| 9:K:177:LYS:HG2  | 9:K:178:TYR:CE1  | 2.47                     | 0.49              |
| 2:B:752:LEU:HD21 | 2:B:948:LEU:HD21 | 1.94                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 6:G:233:GLU:OE1  | 6:G:234:ARG:HG2  | 2.12                     | 0.49              |
| 9:J:241:ARG:HH11 | 9:J:241:ARG:CG   | 2.26                     | 0.49              |
| 9:K:241:ARG:HH11 | 9:K:241:ARG:CG   | 2.26                     | 0.49              |
| 1:A:832:ILE:HG22 | 1:A:836:PHE:CE2  | 2.48                     | 0.49              |
| 9:J:58:TRP:HZ3   | 9:J:73:GLN:HB2   | 1.78                     | 0.49              |
| 9:J:71:THR:OG1   | 9:J:73:GLN:NE2   | 2.45                     | 0.49              |
| 9:K:27:ASN:O     | 9:K:30:TYR:HB3   | 2.13                     | 0.49              |
| 1:A:589:ASP:OD1  | 1:A:589:ASP:N    | 2.38                     | 0.48              |
| 1:A:665:HIS:CD2  | 6:G:244:LEU:HG   | 2.48                     | 0.48              |
| 2:B:490:PRO:HA   | 2:B:493:PHE:CE2  | 2.47                     | 0.48              |
| 2:B:608:VAL:HG13 | 2:B:639:LYS:HG3  | 1.94                     | 0.48              |
| 2:B:838:SER:O    | 2:B:841:ILE:HG22 | 2.13                     | 0.48              |
| 2:B:984:ASN:HB3  | 2:B:997:GLN:HG2  | 1.94                     | 0.48              |
| 6:G:24:THR:HG23  | 6:G:27:GLU:H     | 1.77                     | 0.48              |
| 9:J:140:GLN:CD   | 9:J:140:GLN:H    | 2.21                     | 0.48              |
| 9:K:290:ASN:HB3  | 9:K:293:ASN:O    | 2.13                     | 0.48              |
| 9:K:414:ARG:O    | 9:K:418:GLY:N    | 2.33                     | 0.48              |
| 1:A:977:TRP:CZ3  | 9:K:29:GLU:HG2   | 2.47                     | 0.48              |
| 9:K:140:GLN:CD   | 9:K:140:GLN:H    | 2.21                     | 0.48              |
| 1:A:589:ASP:OD1  | 7:H:128:ALA:HB1  | 2.13                     | 0.48              |
| 1:A:981:LYS:HB2  | 1:A:989:LEU:HD22 | 1.95                     | 0.48              |
| 3:D:191:MET:HE2  | 3:D:219:TYR:HA   | 1.94                     | 0.48              |
| 8:I:337:LEU:O    | 8:I:340:ARG:HB3  | 2.14                     | 0.48              |
| 9:J:290:ASN:HB3  | 9:J:293:ASN:O    | 2.13                     | 0.48              |
| 9:K:266:ARG:HD3  | 9:K:268:ASP:HB3  | 1.94                     | 0.48              |
| 1:A:1065:PRO:HG3 | 1:A:1080:ARG:CZ  | 2.43                     | 0.48              |
| 5:F:15:LEU:C     | 5:F:15:LEU:CD2   | 2.85                     | 0.48              |
| 7:H:9:PHE:HB3    | 7:H:12:LEU:HB3   | 1.94                     | 0.48              |
| 8:I:236:ARG:HG3  | 8:I:239:ARG:NH1  | 2.29                     | 0.48              |
| 9:J:27:ASN:O     | 9:J:30:TYR:HB3   | 2.13                     | 0.48              |
| 3:C:337:ASP:OD2  | 3:C:337:ASP:N    | 2.29                     | 0.48              |
| 5:F:87:ASP:HB3   | 5:F:93:ASN:HD21  | 1.79                     | 0.48              |
| 9:J:133:CYS:N    | 9:J:149:GLY:HA2  | 2.29                     | 0.48              |
| 9:J:354:ASP:HB2  | 9:J:375:LEU:HD13 | 1.94                     | 0.48              |
| 1:A:704:SER:O    | 1:A:704:SER:OG   | 2.32                     | 0.48              |
| 1:A:991:ASP:HB3  | 1:A:1202:CYS:HB2 | 1.95                     | 0.48              |
| 3:C:275:MET:HG3  | 3:C:308:VAL:HG22 | 1.96                     | 0.48              |
| 9:J:180:LEU:HD23 | 9:J:212:TRP:CE3  | 2.49                     | 0.48              |
| 9:J:266:ARG:HG2  | 9:J:267:PRO:HD2  | 1.96                     | 0.48              |
| 9:J:386:ILE:HG22 | 9:J:387:ASP:OD1  | 2.14                     | 0.48              |
| 9:K:55:SER:HA    | 9:K:387:ASP:OD2  | 2.14                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:B:449:LEU:HD21  | 2:B:466:SER:OG    | 2.14                     | 0.48              |
| 2:B:1141:PHE:CE2  | 9:J:311:LEU:HB2   | 2.49                     | 0.48              |
| 9:J:63:GLN:OE1    | 9:J:63:GLN:HA     | 2.13                     | 0.48              |
| 9:J:266:ARG:HD3   | 9:J:268:ASP:HB3   | 1.94                     | 0.48              |
| 9:K:180:LEU:HD23  | 9:K:212:TRP:CE3   | 2.49                     | 0.48              |
| 2:B:405:TYR:HD2   | 5:F:16:PHE:CD1    | 2.32                     | 0.48              |
| 5:F:38:LYS:NZ     | 8:I:251:ASP:OD2   | 2.38                     | 0.48              |
| 9:J:30:TYR:C      | 9:J:30:TYR:HD1    | 2.22                     | 0.48              |
| 9:K:63:GLN:HA     | 9:K:63:GLN:OE1    | 2.13                     | 0.48              |
| 9:K:75:MET:HE3    | 9:K:75:MET:HB2    | 1.77                     | 0.48              |
| 9:K:386:ILE:HG22  | 9:K:387:ASP:OD1   | 2.14                     | 0.48              |
| 2:B:711:THR:HG22  | 2:B:995:CYS:SG    | 2.54                     | 0.47              |
| 9:K:133:CYS:N     | 9:K:149:GLY:HA2   | 2.29                     | 0.47              |
| 9:K:331:ILE:HG22  | 9:K:343:SER:HB3   | 1.95                     | 0.47              |
| 2:B:569:GLU:OE1   | 2:B:644:ARG:NH1   | 2.37                     | 0.47              |
| 2:B:1076:LEU:CB   | 2:B:1095:ASN:HD21 | 2.27                     | 0.47              |
| 2:B:1077:GLN:NE2  | 2:B:1077:GLN:N    | 2.62                     | 0.47              |
| 9:J:87:LEU:HG     | 9:J:127:SER:HA    | 1.95                     | 0.47              |
| 2:B:613:HIS:HD2   | 4:E:480:LEU:HD11  | 1.79                     | 0.47              |
| 3:C:349:ASN:OD1   | 3:C:350:HIS:N     | 2.48                     | 0.47              |
| 9:J:55:SER:HA     | 9:J:387:ASP:OD2   | 2.14                     | 0.47              |
| 9:J:295:PHE:HB3   | 9:J:310:ASP:OD2   | 2.15                     | 0.47              |
| 9:K:397:THR:HG23  | 9:K:411:THR:HB    | 1.97                     | 0.47              |
| 1:A:1020:LEU:HD13 | 1:A:1112:LEU:HD23 | 1.96                     | 0.47              |
| 2:B:453:SER:OG    | 2:B:462:THR:OG1   | 2.18                     | 0.47              |
| 2:B:604:ALA:O     | 2:B:608:VAL:HG23  | 2.14                     | 0.47              |
| 2:B:1114:GLN:O    | 2:B:1118:THR:HG23 | 2.13                     | 0.47              |
| 2:B:1141:PHE:CZ   | 9:J:312:ARG:HB3   | 2.49                     | 0.47              |
| 6:G:60:SER:O      | 6:G:64:GLU:HG3    | 2.15                     | 0.47              |
| 9:J:248:ASP:OD1   | 9:J:264:ILE:HG23  | 2.15                     | 0.47              |
| 1:A:744:LYS:HE2   | 6:G:74:PHE:HE2    | 1.78                     | 0.47              |
| 1:A:977:TRP:C     | 9:K:28:GLU:HA     | 2.38                     | 0.47              |
| 2:B:1118:THR:C    | 2:B:1122:ARG:HE   | 2.23                     | 0.47              |
| 9:J:331:ILE:HG22  | 9:J:343:SER:HB3   | 1.95                     | 0.47              |
| 9:K:248:ASP:OD1   | 9:K:264:ILE:HG23  | 2.15                     | 0.47              |
| 1:A:522:ARG:C     | 1:A:524:TYR:H     | 2.22                     | 0.47              |
| 1:A:982:PHE:CE2   | 9:K:24:LYS:HE3    | 2.49                     | 0.47              |
| 8:I:268:LYS:HZ1   | 8:I:270:VAL:HA    | 1.79                     | 0.47              |
| 9:J:72:GLU:OE1    | 9:J:94:GLN:NE2    | 2.48                     | 0.47              |
| 9:J:397:THR:HG23  | 9:J:411:THR:HB    | 1.97                     | 0.47              |
| 9:K:295:PHE:HB3   | 9:K:310:ASP:OD2   | 2.15                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:806:VAL:HG12  | 1:A:810:GLU:OE1   | 2.15                     | 0.47              |
| 2:B:564:VAL:O     | 2:B:568:THR:HG23  | 2.14                     | 0.47              |
| 4:E:382:MET:HB3   | 6:G:72:ARG:HH11   | 1.80                     | 0.47              |
| 5:F:193:ILE:O     | 5:F:197:THR:OG1   | 2.30                     | 0.47              |
| 9:K:178:TYR:CD1   | 9:K:217:TYR:HE1   | 2.33                     | 0.47              |
| 1:A:977:TRP:CZ2   | 1:A:1211:SER:HA   | 2.49                     | 0.47              |
| 2:B:870:LYS:HB2   | 2:B:886:TYR:CE2   | 2.49                     | 0.47              |
| 2:B:1000:LEU:HB3  | 2:B:1001:PRO:HD2  | 1.96                     | 0.47              |
| 3:C:3:PHE:HE1     | 3:C:6:LYS:HE3     | 1.80                     | 0.47              |
| 3:D:165:GLN:HG3   | 3:D:166:ARG:HG3   | 1.96                     | 0.47              |
| 9:K:72:GLU:OE1    | 9:K:94:GLN:NE2    | 2.48                     | 0.47              |
| 1:A:579:ASN:O     | 1:A:579:ASN:ND2   | 2.48                     | 0.47              |
| 1:A:797:LEU:HD21  | 1:A:1183:LEU:HD13 | 1.96                     | 0.47              |
| 1:A:1194:LEU:C    | 1:A:1195:LYS:HE2  | 2.40                     | 0.47              |
| 5:F:77:PHE:HB3    | 5:F:90:ASN:OD1    | 2.15                     | 0.47              |
| 9:K:30:TYR:C      | 9:K:30:TYR:HD1    | 2.22                     | 0.47              |
| 1:A:719:GLU:OE2   | 1:A:719:GLU:N     | 2.48                     | 0.47              |
| 1:A:1206:GLY:CA   | 9:K:24:LYS:HZ2    | 2.23                     | 0.47              |
| 3:D:33:ARG:HD3    | 3:D:330:TYR:OH    | 2.15                     | 0.47              |
| 5:F:23:ASP:OD1    | 5:F:23:ASP:N      | 2.43                     | 0.47              |
| 9:K:266:ARG:HG2   | 9:K:267:PRO:HD2   | 1.96                     | 0.47              |
| 1:A:1127:ARG:NH1  | 1:A:1127:ARG:HA   | 2.30                     | 0.46              |
| 1:A:1208:TYR:CG   | 9:K:25:CYS:SG     | 3.06                     | 0.46              |
| 9:J:138:MET:HG2   | 9:J:140:GLN:NE2   | 2.30                     | 0.46              |
| 8:I:347:SER:O     | 8:I:349:PHE:N     | 2.48                     | 0.46              |
| 2:B:725:ARG:NE    | 2:B:894:GLU:OE2   | 2.48                     | 0.46              |
| 2:B:878:ILE:O     | 2:B:881:SER:OG    | 2.32                     | 0.46              |
| 1:A:1089:ASN:OD1  | 1:A:1090:GLY:N    | 2.47                     | 0.46              |
| 2:B:426:LEU:HD23  | 2:B:426:LEU:HA    | 1.80                     | 0.46              |
| 2:B:445:LYS:HD3   | 2:B:471:TRP:HD1   | 1.80                     | 0.46              |
| 2:B:741:ASP:OD1   | 2:B:741:ASP:N     | 2.48                     | 0.46              |
| 1:A:850:ASP:HA    | 1:A:853:LYS:HE2   | 1.96                     | 0.46              |
| 1:A:1201:TRP:O    | 9:K:20:ILE:HD12   | 2.15                     | 0.46              |
| 2:B:491:GLU:H     | 2:B:491:GLU:HG2   | 1.37                     | 0.46              |
| 2:B:700:ARG:HG3   | 2:B:704:ALA:O     | 2.16                     | 0.46              |
| 2:B:1076:LEU:HD22 | 2:B:1095:ASN:CG   | 2.32                     | 0.46              |
| 3:D:136:LEU:O     | 3:D:151:ASN:ND2   | 2.46                     | 0.46              |
| 7:H:74:LYS:HA     | 7:H:74:LYS:HD3    | 1.76                     | 0.46              |
| 9:K:86:TYR:C      | 9:K:87:LEU:HD12   | 2.41                     | 0.46              |
| 9:K:136:LYS:HB3   | 9:K:136:LYS:HE3   | 1.58                     | 0.46              |
| 9:K:406:ILE:HD12  | 9:K:406:ILE:HA    | 1.76                     | 0.46              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:563:GLU:O     | 1:A:567:ASN:ND2   | 2.48                     | 0.46              |
| 2:B:885:GLY:HA2   | 2:B:888:ASN:HD22  | 1.81                     | 0.46              |
| 2:B:1098:ILE:HD11 | 9:J:96:PRO:HG2    | 1.94                     | 0.46              |
| 9:K:150:ASN:OD1   | 9:K:150:ASN:N     | 2.44                     | 0.46              |
| 3:D:44:LEU:HD11   | 3:D:321:LEU:HD21  | 1.98                     | 0.46              |
| 5:F:177:GLU:O     | 5:F:181:THR:HG23  | 2.16                     | 0.46              |
| 9:J:175:LYS:HE2   | 9:J:175:LYS:HB3   | 1.48                     | 0.46              |
| 9:J:178:TYR:CD1   | 9:J:217:TYR:HE1   | 2.33                     | 0.46              |
| 9:J:301:SER:OG    | 9:J:302:THR:N     | 2.49                     | 0.46              |
| 9:K:399:ALA:HA    | 9:K:408:GLN:O     | 2.16                     | 0.46              |
| 1:A:1036:SER:O    | 1:A:1040:ASP:HB3  | 2.16                     | 0.46              |
| 2:B:1113:LYS:O    | 2:B:1117:THR:HG23 | 2.16                     | 0.46              |
| 5:F:10:ARG:C      | 5:F:10:ARG:CD     | 2.89                     | 0.46              |
| 6:G:244:LEU:H     | 6:G:244:LEU:HD22  | 1.81                     | 0.46              |
| 9:J:86:TYR:C      | 9:J:87:LEU:HD12   | 2.41                     | 0.46              |
| 2:B:971:HIS:O     | 2:B:974:SER:OG    | 2.28                     | 0.46              |
| 3:C:301:THR:O     | 3:C:305:VAL:HG23  | 2.16                     | 0.46              |
| 4:E:475:ASP:OD1   | 4:E:475:ASP:N     | 2.47                     | 0.46              |
| 6:G:108:HIS:NE2   | 6:G:112:LYS:HE3   | 2.31                     | 0.46              |
| 6:G:111:GLU:O     | 6:G:115:LYS:HG3   | 2.15                     | 0.46              |
| 9:K:86:TYR:CD2    | 9:K:131:SER:HA    | 2.51                     | 0.46              |
| 1:A:709:HIS:O     | 1:A:713:LYS:HG3   | 2.15                     | 0.46              |
| 8:I:251:ASP:OD1   | 8:I:251:ASP:N     | 2.47                     | 0.46              |
| 8:I:266:LEU:HD12  | 8:I:266:LEU:H     | 1.80                     | 0.46              |
| 9:J:399:ALA:HA    | 9:J:408:GLN:O     | 2.16                     | 0.46              |
| 9:K:324:HIS:CE1   | 9:K:351:LEU:HD12  | 2.51                     | 0.46              |
| 1:A:510:LYS:HD3   | 1:A:510:LYS:HA    | 1.59                     | 0.45              |
| 9:J:86:TYR:CD2    | 9:J:131:SER:HA    | 2.51                     | 0.45              |
| 9:J:27:ASN:H      | 9:J:27:ASN:ND2    | 2.09                     | 0.45              |
| 9:J:142:ASP:OD2   | 9:J:142:ASP:N     | 2.49                     | 0.45              |
| 9:K:54:MET:HG2    | 9:K:132:VAL:O     | 2.16                     | 0.45              |
| 9:K:138:MET:HG2   | 9:K:140:GLN:NE2   | 2.30                     | 0.45              |
| 9:K:263:ASP:OD2   | 9:K:266:ARG:HB2   | 2.16                     | 0.45              |
| 1:A:1072:GLU:HG3  | 1:A:1076:GLN:HE21 | 1.81                     | 0.45              |
| 4:E:339:GLU:O     | 4:E:343:ASN:N     | 2.48                     | 0.45              |
| 4:E:364:VAL:HG13  | 6:G:87:MET:HE2    | 1.98                     | 0.45              |
| 9:J:54:MET:HG2    | 9:J:132:VAL:O     | 2.16                     | 0.45              |
| 9:J:263:ASP:OD2   | 9:J:266:ARG:HB2   | 2.16                     | 0.45              |
| 9:J:391:CYS:SG    | 9:J:394:TYR:HB2   | 2.57                     | 0.45              |
| 1:A:1056:PRO:C    | 1:A:1058:GLU:H    | 2.24                     | 0.45              |
| 2:B:1120:TRP:HZ2  | 9:J:318:LEU:HD11  | 1.82                     | 0.45              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 6:G:26:SER:HA     | 6:G:29:ARG:NH1   | 2.31                     | 0.45              |
| 7:H:14:ASP:OD1    | 7:H:103:ARG:NH1  | 2.38                     | 0.45              |
| 9:J:253:VAL:HG12  | 9:J:259:LEU:HG   | 1.99                     | 0.45              |
| 9:J:285:HIS:HD2   | 9:J:329:THR:HA   | 1.81                     | 0.45              |
| 9:K:301:SER:OG    | 9:K:302:THR:N    | 2.49                     | 0.45              |
| 2:B:916:GLU:OE2   | 2:B:916:GLU:N    | 2.38                     | 0.45              |
| 3:D:213:ILE:O     | 3:D:216:GLY:N    | 2.49                     | 0.45              |
| 4:E:329:LYS:HA    | 4:E:329:LYS:HD3  | 1.60                     | 0.45              |
| 4:E:345:THR:O     | 4:E:347:GLU:HB2  | 2.16                     | 0.45              |
| 9:K:386:ILE:H     | 9:K:402:ALA:HA   | 1.82                     | 0.45              |
| 9:K:391:CYS:SG    | 9:K:394:TYR:HB2  | 2.57                     | 0.45              |
| 1:A:978:VAL:HB    | 1:A:979:ASN:C    | 2.42                     | 0.45              |
| 1:A:1117:ILE:HD12 | 1:A:1117:ILE:HA  | 1.77                     | 0.45              |
| 2:B:926:ARG:O     | 2:B:930:VAL:HG23 | 2.16                     | 0.45              |
| 4:E:366:LEU:HD12  | 4:E:366:LEU:HA   | 1.81                     | 0.45              |
| 9:J:245:LYS:HB2   | 9:J:294:ASP:OD1  | 2.17                     | 0.45              |
| 1:A:1131:GLN:HB3  | 1:A:1135:TYR:CZ  | 2.52                     | 0.45              |
| 2:B:470:ARG:HH11  | 5:F:15:LEU:CD2   | 2.29                     | 0.45              |
| 2:B:918:CYS:O     | 2:B:921:ILE:HG22 | 2.17                     | 0.45              |
| 3:C:275:MET:HE3   | 3:C:311:TYR:CD1  | 2.51                     | 0.45              |
| 8:I:242:ILE:HD11  | 8:I:248:TYR:CE1  | 2.51                     | 0.45              |
| 9:J:324:HIS:CE1   | 9:J:351:LEU:HD12 | 2.51                     | 0.45              |
| 1:A:512:PRO:HA    | 1:A:515:LEU:HD12 | 1.99                     | 0.45              |
| 2:B:405:TYR:HE1   | 5:F:13:GLN:HB2   | 1.72                     | 0.45              |
| 9:J:157:VAL:O     | 9:J:176:PRO:HB2  | 2.17                     | 0.45              |
| 9:K:245:LYS:HB2   | 9:K:294:ASP:OD1  | 2.17                     | 0.45              |
| 9:K:328:VAL:HA    | 9:K:345:SER:HB2  | 1.99                     | 0.45              |
| 1:A:852:GLU:HG3   | 1:A:881:PHE:HD2  | 1.80                     | 0.45              |
| 2:B:478:VAL:HG22  | 8:I:288:LYS:HG2  | 1.98                     | 0.45              |
| 2:B:491:GLU:OE2   | 2:B:533:LYS:NZ   | 2.46                     | 0.45              |
| 2:B:562:ASP:OD1   | 2:B:647:LYS:NZ   | 2.50                     | 0.45              |
| 3:D:137:HIS:HA    | 3:D:151:ASN:HD21 | 1.81                     | 0.45              |
| 9:J:328:VAL:HA    | 9:J:345:SER:HB2  | 1.99                     | 0.45              |
| 9:K:142:ASP:OD2   | 9:K:142:ASP:N    | 2.49                     | 0.45              |
| 9:K:253:VAL:HG12  | 9:K:259:LEU:HG   | 1.98                     | 0.45              |
| 1:A:615:ARG:HB3   | 1:A:619:CYS:HB2  | 1.99                     | 0.44              |
| 1:A:1132:VAL:HA   | 1:A:1135:TYR:CD2 | 2.52                     | 0.44              |
| 1:A:1194:LEU:HB3  | 1:A:1199:GLU:OE2 | 2.17                     | 0.44              |
| 3:C:347:MET:HE2   | 3:C:347:MET:HB3  | 1.69                     | 0.44              |
| 3:D:47:LYS:HE2    | 3:D:319:GLU:OE2  | 2.17                     | 0.44              |
| 9:K:175:LYS:HB3   | 9:K:175:LYS:HE2  | 1.48                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 9:K:210:SER:HB2   | 9:K:212:TRP:CE2   | 2.52                     | 0.44              |
| 1:A:828:ILE:O     | 1:A:832:ILE:HG13  | 2.17                     | 0.44              |
| 1:A:977:TRP:HE1   | 1:A:1210:MET:C    | 2.25                     | 0.44              |
| 1:A:1208:TYR:CZ   | 1:A:1214:THR:HB   | 2.52                     | 0.44              |
| 4:E:360:ARG:HD3   | 6:G:94:TYR:CD1    | 2.52                     | 0.44              |
| 6:G:263:LEU:HD23  | 6:G:263:LEU:HA    | 1.84                     | 0.44              |
| 9:K:407:LEU:HD12  | 9:K:408:GLN:H     | 1.82                     | 0.44              |
| 3:C:67:ASP:O      | 3:C:71:GLU:HB2    | 2.18                     | 0.44              |
| 3:C:136:LEU:HB3   | 3:C:148:CYS:HB3   | 1.97                     | 0.44              |
| 7:H:84:ASP:N      | 7:H:84:ASP:OD1    | 2.50                     | 0.44              |
| 2:B:526:ASP:O     | 2:B:527:TYR:CG    | 2.70                     | 0.44              |
| 1:A:528:GLU:HA    | 1:A:531:TYR:HB3   | 1.99                     | 0.44              |
| 8:I:333:LEU:O     | 8:I:337:LEU:HB2   | 2.15                     | 0.44              |
| 7:H:114:GLU:O     | 7:H:114:GLU:HG2   | 2.18                     | 0.44              |
| 9:J:210:SER:HB2   | 9:J:212:TRP:CE2   | 2.52                     | 0.44              |
| 9:J:217:TYR:CD2   | 9:J:218:ASN:N     | 2.86                     | 0.44              |
| 9:K:157:VAL:O     | 9:K:176:PRO:HB2   | 2.17                     | 0.44              |
| 2:B:838:SER:HB2   | 2:B:959:VAL:CG2   | 2.46                     | 0.44              |
| 4:E:340:MET:O     | 4:E:344:GLU:N     | 2.50                     | 0.44              |
| 1:A:698:SER:HA    | 1:A:729:GLN:NE2   | 2.32                     | 0.44              |
| 1:A:744:LYS:HE2   | 6:G:74:PHE:CE2    | 2.52                     | 0.44              |
| 2:B:1076:LEU:CG   | 2:B:1095:ASN:HD21 | 2.30                     | 0.44              |
| 3:D:14:GLU:CD     | 3:D:14:GLU:H      | 2.26                     | 0.44              |
| 3:D:132:TRP:CE3   | 3:D:132:TRP:HA    | 2.53                     | 0.44              |
| 6:G:230:GLU:HG3   | 6:G:232:ALA:H     | 1.82                     | 0.44              |
| 7:H:80:LEU:HD13   | 7:H:80:LEU:HA     | 1.77                     | 0.44              |
| 9:J:316:GLN:O     | 9:J:316:GLN:HG3   | 2.18                     | 0.44              |
| 9:J:369:ASP:N     | 9:J:369:ASP:OD1   | 2.50                     | 0.44              |
| 9:K:238:SER:OG    | 9:K:284:ILE:O     | 2.33                     | 0.44              |
| 1:A:1205:ILE:HG23 | 9:K:24:LYS:CD     | 2.48                     | 0.44              |
| 2:B:1019:TYR:CD2  | 2:B:1019:TYR:C    | 2.96                     | 0.44              |
| 3:C:28:LYS:O      | 3:C:31:ARG:HD3    | 2.18                     | 0.44              |
| 8:I:260:HIS:HB2   | 8:I:295:ILE:HG21  | 1.99                     | 0.44              |
| 9:J:386:ILE:H     | 9:J:402:ALA:HA    | 1.82                     | 0.44              |
| 1:A:876:TYR:O     | 1:A:878:PRO:HD3   | 2.18                     | 0.43              |
| 2:B:452:PHE:HE1   | 2:B:462:THR:HA    | 1.82                     | 0.43              |
| 2:B:591:LEU:HD22  | 2:B:591:LEU:HA    | 1.78                     | 0.43              |
| 7:H:7:GLU:OE2     | 7:H:7:GLU:N       | 2.51                     | 0.43              |
| 8:I:236:ARG:HG3   | 8:I:239:ARG:HH12  | 1.82                     | 0.43              |
| 9:J:407:LEU:HD12  | 9:J:408:GLN:H     | 1.82                     | 0.43              |
| 9:K:285:HIS:HD2   | 9:K:329:THR:HA    | 1.81                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:A:854:MET:SD    | 1:A:1120:LEU:HD23 | 2.58                     | 0.43              |
| 2:B:424:ASP:OD2   | 2:B:426:LEU:HB2   | 2.17                     | 0.43              |
| 1:A:1186:ARG:HD2  | 1:A:1186:ARG:N    | 2.34                     | 0.43              |
| 2:B:405:TYR:CZ    | 5:F:13:GLN:CD     | 2.95                     | 0.43              |
| 2:B:916:GLU:O     | 2:B:920:MET:HG2   | 2.18                     | 0.43              |
| 2:B:1116:ARG:O    | 2:B:1120:TRP:HB3  | 2.19                     | 0.43              |
| 9:K:233:HIS:CD2   | 9:K:237:VAL:HG22  | 2.53                     | 0.43              |
| 1:A:1057:SER:HB3  | 1:A:1097:CYS:HB3  | 2.01                     | 0.43              |
| 4:E:433:MET:HG3   | 4:E:433:MET:O     | 2.19                     | 0.43              |
| 9:K:123:SER:OG    | 9:K:124:ASN:N     | 2.52                     | 0.43              |
| 2:B:728:ASP:OD1   | 2:B:729:ALA:N     | 2.51                     | 0.43              |
| 2:B:1087:ILE:HG13 | 9:J:27:ASN:OD1    | 2.18                     | 0.43              |
| 3:C:330:TYR:HB3   | 3:C:333:TYR:CD2   | 2.53                     | 0.43              |
| 5:F:142:TYR:HB2   | 7:H:44:ARG:HD2    | 2.00                     | 0.43              |
| 8:I:303:ARG:H     | 8:I:303:ARG:HG2   | 1.60                     | 0.43              |
| 1:A:524:TYR:C     | 1:A:526:ALA:H     | 2.26                     | 0.43              |
| 1:A:763:ASP:OD2   | 1:A:764:ILE:N     | 2.51                     | 0.43              |
| 2:B:842:ILE:HB    | 2:B:959:VAL:HG22  | 2.00                     | 0.43              |
| 3:C:31:ARG:HG2    | 3:C:32:VAL:N      | 2.32                     | 0.43              |
| 5:F:110:LEU:HD22  | 5:F:217:CYS:SG    | 2.59                     | 0.43              |
| 8:I:200:GLU:N     | 8:I:200:GLU:OE2   | 2.51                     | 0.43              |
| 9:J:156:LEU:HD23  | 9:J:176:PRO:HG3   | 2.00                     | 0.43              |
| 1:A:746:LYS:HA    | 1:A:746:LYS:HD2   | 1.80                     | 0.43              |
| 1:A:1104:PHE:HA   | 1:A:1107:TYR:CZ   | 2.54                     | 0.43              |
| 1:A:1204:TYR:O    | 9:K:20:ILE:HG13   | 2.19                     | 0.43              |
| 5:F:31:ALA:O      | 5:F:33:THR:N      | 2.52                     | 0.43              |
| 9:K:131:SER:OG    | 9:K:151:TYR:HB2   | 2.18                     | 0.43              |
| 9:K:217:TYR:CD2   | 9:K:218:ASN:N     | 2.86                     | 0.43              |
| 2:B:961:THR:HG1   | 2:B:964:GLU:CD    | 2.26                     | 0.43              |
| 3:C:232:GLU:CD    | 3:C:232:GLU:H     | 2.27                     | 0.43              |
| 8:I:293:ASN:OD1   | 8:I:293:ASN:N     | 2.51                     | 0.43              |
| 9:J:127:SER:O     | 9:J:174:LEU:HD12  | 2.19                     | 0.43              |
| 9:J:266:ARG:HG3   | 9:J:266:ARG:NH1   | 2.11                     | 0.43              |
| 9:K:316:GLN:O     | 9:K:316:GLN:HG3   | 2.18                     | 0.43              |
| 1:A:1143:ARG:HB3  | 1:A:1143:ARG:NH1  | 2.34                     | 0.43              |
| 2:B:1034:LEU:HD23 | 2:B:1034:LEU:HA   | 1.75                     | 0.43              |
| 3:D:301:THR:O     | 3:D:305:VAL:HG23  | 2.19                     | 0.43              |
| 5:F:35:ARG:O      | 5:F:37:LEU:HD23   | 2.19                     | 0.43              |
| 9:J:362:GLN:OE1   | 9:J:372:PRO:HD3   | 2.19                     | 0.43              |
| 9:J:374:LEU:HD12  | 9:J:375:LEU:H     | 1.84                     | 0.43              |
| 9:K:23:GLU:HA     | 9:K:26:ILE:HD12   | 2.01                     | 0.43              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 9:K:156:LEU:HD23 | 9:K:176:PRO:HG3   | 2.00                     | 0.43              |
| 9:K:358:ILE:H    | 9:K:358:ILE:HG12  | 1.41                     | 0.43              |
| 1:A:730:LYS:HB2  | 1:A:730:LYS:HE3   | 1.70                     | 0.43              |
| 1:A:978:VAL:CA   | 9:K:31:LYS:HE2    | 2.49                     | 0.43              |
| 2:B:941:ASP:O    | 2:B:944:LEU:HB3   | 2.19                     | 0.43              |
| 3:D:136:LEU:HB3  | 3:D:148:CYS:SG    | 2.59                     | 0.43              |
| 4:E:440:LEU:HA   | 4:E:440:LEU:HD23  | 1.71                     | 0.43              |
| 8:I:204:THR:C    | 8:I:206:TRP:H     | 2.27                     | 0.43              |
| 8:I:305:ASP:OD1  | 8:I:305:ASP:N     | 2.52                     | 0.43              |
| 9:J:123:SER:OG   | 9:J:124:ASN:N     | 2.52                     | 0.43              |
| 9:J:136:LYS:HE3  | 9:J:136:LYS:HB3   | 1.58                     | 0.43              |
| 9:K:161:GLU:O    | 9:K:165:SER:N     | 2.42                     | 0.43              |
| 9:K:230:ILE:HG21 | 9:K:262:HIS:CD2   | 2.54                     | 0.43              |
| 2:B:840:ASN:OD1  | 2:B:989:PRO:HB2   | 2.18                     | 0.42              |
| 9:J:65:PHE:HB3   | 9:J:68:HIS:HB2    | 2.01                     | 0.42              |
| 9:J:131:SER:OG   | 9:J:151:TYR:HB2   | 2.18                     | 0.42              |
| 9:J:230:ILE:HG21 | 9:J:262:HIS:CD2   | 2.54                     | 0.42              |
| 9:J:316:GLN:HE21 | 9:J:316:GLN:HB2   | 1.69                     | 0.42              |
| 9:K:389:ASP:OD2  | 9:K:390:TRP:N     | 2.52                     | 0.42              |
| 2:B:561:TYR:CD1  | 2:B:647:LYS:HB2   | 2.54                     | 0.42              |
| 9:K:17:GLU:HA    | 9:K:20:ILE:HD11   | 2.01                     | 0.42              |
| 9:K:145:VAL:HG23 | 9:K:158:PHE:HB2   | 2.00                     | 0.42              |
| 1:A:1110:GLU:O   | 1:A:1113:VAL:HG12 | 2.19                     | 0.42              |
| 1:A:1134:MET:O   | 1:A:1138:LYS:HG3  | 2.19                     | 0.42              |
| 2:B:1079:PHE:HB3 | 2:B:1088:PHE:HB2  | 2.01                     | 0.42              |
| 5:F:104:LEU:O    | 5:F:105:THR:OG1   | 2.29                     | 0.42              |
| 8:I:228:TRP:HA   | 8:I:228:TRP:CE3   | 2.55                     | 0.42              |
| 9:J:233:HIS:CD2  | 9:J:237:VAL:HG22  | 2.53                     | 0.42              |
| 9:K:16:SER:O     | 9:K:20:ILE:HG12   | 2.20                     | 0.42              |
| 9:K:362:GLN:OE1  | 9:K:372:PRO:HD3   | 2.19                     | 0.42              |
| 2:B:593:GLU:OE1  | 2:B:596:ARG:NH1   | 2.52                     | 0.42              |
| 2:B:839:LYS:HG3  | 2:B:844:TYR:OH    | 2.19                     | 0.42              |
| 5:F:106:LYS:HE2  | 5:F:108:GLN:HG3   | 2.02                     | 0.42              |
| 9:J:23:GLU:HA    | 9:J:26:ILE:HD12   | 2.01                     | 0.42              |
| 9:J:145:VAL:HG23 | 9:J:158:PHE:HB2   | 2.01                     | 0.42              |
| 1:A:880:HIS:NE2  | 1:A:882:ASN:HB2   | 2.34                     | 0.42              |
| 2:B:905:GLU:O    | 2:B:908:LYS:HG3   | 2.20                     | 0.42              |
| 3:C:280:MET:HE3  | 3:C:280:MET:HB3   | 1.90                     | 0.42              |
| 5:F:23:ASP:OD2   | 8:I:298:ARG:NH2   | 2.53                     | 0.42              |
| 9:K:72:GLU:HA    | 9:K:93:ILE:O      | 2.19                     | 0.42              |
| 2:B:698:LYS:HB3  | 2:B:698:LYS:HE2   | 1.67                     | 0.42              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 6:G:91:LYS:O      | 6:G:95:GLU:HG2   | 2.19                     | 0.42              |
| 9:J:338:GLU:HG2   | 9:J:339:PRO:CD   | 2.50                     | 0.42              |
| 9:K:374:LEU:HD12  | 9:K:375:LEU:H    | 1.84                     | 0.42              |
| 3:D:252:GLU:O     | 3:D:291:PRO:HD2  | 2.20                     | 0.42              |
| 8:I:346:SER:C     | 8:I:348:THR:H    | 2.28                     | 0.42              |
| 9:J:17:GLU:HA     | 9:J:20:ILE:HD11  | 2.01                     | 0.42              |
| 9:J:72:GLU:HA     | 9:J:93:ILE:O     | 2.19                     | 0.42              |
| 9:J:308:LEU:HD12  | 9:J:319:HIS:HB3  | 2.01                     | 0.42              |
| 9:J:358:ILE:H     | 9:J:358:ILE:HG12 | 1.41                     | 0.42              |
| 1:A:1111:LYS:O    | 1:A:1114:THR:HB  | 2.20                     | 0.42              |
| 1:A:1201:TRP:HA   | 9:K:20:ILE:HD13  | 2.01                     | 0.42              |
| 2:B:491:GLU:OE1   | 2:B:533:LYS:HD2  | 2.20                     | 0.42              |
| 2:B:1075:ASN:O    | 2:B:1093:THR:CB  | 2.68                     | 0.42              |
| 2:B:1092:ASN:OD1  | 9:J:47:ARG:NH2   | 2.53                     | 0.42              |
| 3:D:135:GLY:HA2   | 3:D:153:ILE:HD11 | 2.02                     | 0.42              |
| 4:E:347:GLU:HG2   | 4:E:348:ARG:HD3  | 2.00                     | 0.42              |
| 9:J:16:SER:O      | 9:J:20:ILE:HG12  | 2.19                     | 0.42              |
| 9:K:127:SER:O     | 9:K:174:LEU:HD12 | 2.19                     | 0.42              |
| 1:A:1044:ASN:OD1  | 3:C:324:ASN:HB3  | 2.19                     | 0.42              |
| 1:A:1086:ILE:HG22 | 1:A:1087:ASP:O   | 2.19                     | 0.42              |
| 1:A:1132:VAL:HG21 | 1:A:1161:PHE:CZ  | 2.54                     | 0.42              |
| 2:B:972:VAL:O     | 2:B:975:ILE:HG22 | 2.20                     | 0.42              |
| 4:E:352:CYS:HA    | 4:E:355:LEU:HG   | 2.01                     | 0.42              |
| 7:H:55:LEU:HD23   | 7:H:55:LEU:HA    | 1.92                     | 0.42              |
| 8:I:271:ARG:HG3   | 8:I:271:ARG:HH11 | 1.84                     | 0.42              |
| 9:J:389:ASP:OD2   | 9:J:390:TRP:N    | 2.52                     | 0.42              |
| 2:B:1097:TYR:OH   | 9:J:38:PRO:HB3   | 2.20                     | 0.41              |
| 3:C:347:MET:HG2   | 3:C:348:GLU:N    | 2.34                     | 0.41              |
| 9:K:185:GLN:O     | 9:K:204:SER:OG   | 2.38                     | 0.41              |
| 5:F:48:TYR:CE2    | 8:I:305:ASP:HB2  | 2.55                     | 0.41              |
| 9:K:161:GLU:O     | 9:K:165:SER:OG   | 2.29                     | 0.41              |
| 9:K:269:ALA:HA    | 9:K:272:LYS:O    | 2.20                     | 0.41              |
| 1:A:509:ASN:O     | 1:A:510:LYS:HB2  | 2.21                     | 0.41              |
| 2:B:477:LEU:HD23  | 8:I:176:SER:OG   | 2.20                     | 0.41              |
| 7:H:56:LYS:HA     | 7:H:56:LYS:HD3   | 1.70                     | 0.41              |
| 9:J:161:GLU:O     | 9:J:165:SER:N    | 2.42                     | 0.41              |
| 9:J:269:ALA:HA    | 9:J:272:LYS:O    | 2.20                     | 0.41              |
| 9:K:65:PHE:HB3    | 9:K:68:HIS:HB2   | 2.01                     | 0.41              |
| 9:K:308:LEU:HD12  | 9:K:319:HIS:HB3  | 2.01                     | 0.41              |
| 9:K:309:TRP:CZ2   | 9:K:317:ARG:HG2  | 2.56                     | 0.41              |
| 9:K:310:ASP:HB2   | 9:K:318:LEU:HD11 | 2.03                     | 0.41              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 9:K:357:ARG:HA    | 9:K:360:GLU:HG3  | 2.02                     | 0.41              |
| 1:A:977:TRP:CD1   | 1:A:1209:ILE:O   | 2.73                     | 0.41              |
| 4:E:421:SER:O     | 4:E:424:ASP:HB3  | 2.20                     | 0.41              |
| 7:H:63:LEU:HB3    | 7:H:68:ARG:NH1   | 2.35                     | 0.41              |
| 9:J:310:ASP:HB2   | 9:J:318:LEU:HD11 | 2.03                     | 0.41              |
| 9:K:89:ALA:HA     | 9:K:124:ASN:O    | 2.21                     | 0.41              |
| 1:A:999:ARG:NH1   | 1:A:1139:ASP:OD1 | 2.53                     | 0.41              |
| 1:A:1129:LEU:HD12 | 1:A:1132:VAL:HB  | 2.01                     | 0.41              |
| 2:B:1124:LEU:HD13 | 9:J:312:ARG:HH21 | 1.86                     | 0.41              |
| 5:F:223:ASN:O     | 5:F:225:ASN:N    | 2.53                     | 0.41              |
| 6:G:239:ALA:O     | 6:G:242:LYS:HE3  | 2.21                     | 0.41              |
| 9:J:59:TYR:CE2    | 9:J:76:PHE:HB2   | 2.55                     | 0.41              |
| 9:K:250:LEU:HG    | 9:K:262:HIS:HB2  | 2.02                     | 0.41              |
| 9:K:351:LEU:HD22  | 9:K:377:MET:HB2  | 2.01                     | 0.41              |
| 9:K:369:ASP:OD1   | 9:K:369:ASP:N    | 2.50                     | 0.41              |
| 3:C:354:GLN:CD    | 3:C:354:GLN:H    | 2.28                     | 0.41              |
| 3:D:58:ARG:O      | 3:D:62:THR:HG23  | 2.21                     | 0.41              |
| 9:K:31:LYS:O      | 9:K:35:LYS:HB2   | 2.21                     | 0.41              |
| 9:K:56:LEU:HD21   | 9:K:401:ALA:HB2  | 2.03                     | 0.41              |
| 1:A:530:LYS:HA    | 1:A:533:GLU:HG3  | 2.01                     | 0.41              |
| 1:A:566:MET:O     | 1:A:570:LYS:HG3  | 2.21                     | 0.41              |
| 2:B:446:THR:HG22  | 2:B:471:TRP:CZ2  | 2.55                     | 0.41              |
| 2:B:489:LEU:N     | 2:B:490:PRO:HD2  | 2.36                     | 0.41              |
| 2:B:1070:HIS:HE1  | 2:B:1100:SER:N   | 2.17                     | 0.41              |
| 9:J:27:ASN:ND2    | 9:J:27:ASN:N     | 2.68                     | 0.41              |
| 9:J:75:MET:HE3    | 9:J:75:MET:HB2   | 1.77                     | 0.41              |
| 9:J:351:LEU:HD22  | 9:J:377:MET:HB2  | 2.01                     | 0.41              |
| 1:A:561:SER:O     | 1:A:563:GLU:N    | 2.54                     | 0.41              |
| 1:A:587:ARG:HE    | 1:A:587:ARG:HB2  | 1.49                     | 0.41              |
| 1:A:991:ASP:CG    | 1:A:993:GLY:H    | 2.28                     | 0.41              |
| 2:B:692:ASP:O     | 2:B:696:ARG:HG3  | 2.21                     | 0.41              |
| 3:C:261:ASP:HA    | 3:C:266:ASP:OD1  | 2.21                     | 0.41              |
| 9:J:31:LYS:O      | 9:J:35:LYS:HB2   | 2.21                     | 0.41              |
| 9:J:309:TRP:CZ2   | 9:J:317:ARG:HG2  | 2.56                     | 0.41              |
| 9:K:59:TYR:CE2    | 9:K:76:PHE:HB2   | 2.56                     | 0.41              |
| 9:K:201:VAL:HB    | 9:K:242:PHE:CE2  | 2.48                     | 0.41              |
| 1:A:839:PHE:O     | 1:A:843:GLY:N    | 2.54                     | 0.41              |
| 2:B:435:LEU:HD21  | 5:F:11:PHE:CG    | 2.55                     | 0.41              |
| 2:B:749:LEU:HD13  | 2:B:935:ILE:HD11 | 2.03                     | 0.41              |
| 2:B:752:LEU:HD21  | 2:B:948:LEU:CD2  | 2.51                     | 0.41              |
| 2:B:944:LEU:HG    | 2:B:945:GLY:N    | 2.34                     | 0.41              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:B:949:LEU:HA    | 2:B:952:GLU:HG3  | 2.03                     | 0.41              |
| 3:D:191:MET:HB2   | 3:D:191:MET:HE3  | 1.83                     | 0.41              |
| 9:J:253:VAL:HB    | 9:J:284:ILE:HG21 | 2.03                     | 0.41              |
| 9:K:27:ASN:ND2    | 9:K:27:ASN:N     | 2.68                     | 0.41              |
| 9:K:52:PRO:HD2    | 9:K:80:ARG:O     | 2.21                     | 0.41              |
| 9:K:253:VAL:HB    | 9:K:284:ILE:HG21 | 2.03                     | 0.41              |
| 3:C:55:ARG:H      | 3:C:55:ARG:HG2   | 1.67                     | 0.41              |
| 8:I:277:ASP:O     | 8:I:312:LYS:N    | 2.44                     | 0.41              |
| 9:J:34:LYS:O      | 9:J:37:SER:OG    | 2.39                     | 0.41              |
| 9:K:155:VAL:HB    | 9:K:180:LEU:HB2  | 2.03                     | 0.41              |
| 9:K:158:PHE:CE2   | 9:K:176:PRO:HB3  | 2.56                     | 0.41              |
| 1:A:818:GLN:HE22  | 1:A:1183:LEU:N   | 2.14                     | 0.40              |
| 1:A:1070:VAL:HA   | 1:A:1073:GLN:HG3 | 2.02                     | 0.40              |
| 1:A:1127:ARG:HA   | 1:A:1127:ARG:CZ  | 2.50                     | 0.40              |
| 4:E:345:THR:O     | 4:E:346:HIS:C    | 2.64                     | 0.40              |
| 9:K:34:LYS:O      | 9:K:37:SER:OG    | 2.39                     | 0.40              |
| 1:A:978:VAL:CG1   | 9:K:27:ASN:O     | 2.65                     | 0.40              |
| 1:A:995:LYS:HE2   | 1:A:995:LYS:HB3  | 1.89                     | 0.40              |
| 1:A:1218:LEU:HD13 | 1:A:1218:LEU:HA  | 1.89                     | 0.40              |
| 2:B:558:ARG:HH11  | 2:B:558:ARG:HD2  | 1.77                     | 0.40              |
| 5:F:106:LYS:HD3   | 5:F:109:ASP:OD1  | 2.21                     | 0.40              |
| 5:F:183:GLN:HG3   | 6:G:43:ARG:HD3   | 2.03                     | 0.40              |
| 9:J:89:ALA:HA     | 9:J:124:ASN:O    | 2.20                     | 0.40              |
| 9:J:158:PHE:CE2   | 9:J:176:PRO:HB3  | 2.56                     | 0.40              |
| 2:B:489:LEU:O     | 2:B:492:THR:HG23 | 2.20                     | 0.40              |
| 2:B:554:VAL:O     | 2:B:558:ARG:HG2  | 2.22                     | 0.40              |
| 2:B:702:ASP:OD1   | 2:B:702:ASP:N    | 2.53                     | 0.40              |
| 2:B:705:LYS:HG2   | 2:B:706:LEU:H    | 1.86                     | 0.40              |
| 2:B:1140:LYS:HE2  | 9:J:263:ASP:HB2  | 2.02                     | 0.40              |
| 7:H:120:ARG:O     | 7:H:121:LEU:HD23 | 2.21                     | 0.40              |
| 8:I:226:ILE:HD11  | 8:I:320:CYS:HB2  | 2.04                     | 0.40              |
| 9:K:214:LEU:H     | 9:K:214:LEU:HG   | 1.56                     | 0.40              |
| 2:B:725:ARG:HA    | 2:B:728:ASP:OD2  | 2.21                     | 0.40              |
| 2:B:946:GLN:O     | 2:B:950:LEU:N    | 2.27                     | 0.40              |
| 3:D:40:VAL:HG21   | 7:H:35:GLU:HG2   | 2.04                     | 0.40              |
| 4:E:453:LEU:HD23  | 4:E:453:LEU:HA   | 1.77                     | 0.40              |
| 9:J:52:PRO:HD2    | 9:J:80:ARG:O     | 2.21                     | 0.40              |
| 9:J:250:LEU:HG    | 9:J:262:HIS:HB2  | 2.02                     | 0.40              |
| 9:K:229:HIS:ND1   | 9:K:229:HIS:C    | 2.79                     | 0.40              |
| 1:A:977:TRP:HZ3   | 9:K:29:GLU:HG2   | 1.85                     | 0.40              |
| 2:B:648:ARG:O     | 2:B:651:SER:OG   | 2.33                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 3:C:353:ARG:HA   | 3:C:353:ARG:HD2  | 1.89                     | 0.40              |
| 3:D:213:ILE:HG22 | 3:D:214:GLY:N    | 2.36                     | 0.40              |
| 3:D:275:MET:HE2  | 3:D:275:MET:HB3  | 1.86                     | 0.40              |
| 8:I:273:ILE:CG2  | 8:I:317:LYS:HD2  | 2.51                     | 0.40              |
| 8:I:337:LEU:O    | 8:I:337:LEU:HD23 | 2.22                     | 0.40              |
| 9:J:157:VAL:HG13 | 9:J:178:TYR:H    | 1.86                     | 0.40              |
| 9:J:357:ARG:HA   | 9:J:360:GLU:HG3  | 2.02                     | 0.40              |
| 9:K:157:VAL:HG13 | 9:K:178:TYR:H    | 1.86                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM 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     | 610/1522 (40%)  | 555 (91%)  | 55 (9%)  | 0        | 100         | 100 |
| 2   | B     | 629/1154 (54%)  | 585 (93%)  | 44 (7%)  | 0        | 100         | 100 |
| 3   | C     | 368/405 (91%)   | 341 (93%)  | 27 (7%)  | 0        | 100         | 100 |
| 3   | D     | 361/405 (89%)   | 330 (91%)  | 31 (9%)  | 0        | 100         | 100 |
| 4   | E     | 165/491 (34%)   | 158 (96%)  | 7 (4%)   | 0        | 100         | 100 |
| 5   | F     | 222/240 (92%)   | 190 (86%)  | 30 (14%) | 2 (1%)   | 14          | 49  |
| 6   | G     | 160/267 (60%)   | 155 (97%)  | 5 (3%)   | 0        | 100         | 100 |
| 7   | H     | 124/305 (41%)   | 113 (91%)  | 11 (9%)  | 0        | 100         | 100 |
| 8   | I     | 183/351 (52%)   | 167 (91%)  | 16 (9%)  | 0        | 100         | 100 |
| 9   | J     | 384/431 (89%)   | 368 (96%)  | 16 (4%)  | 0        | 100         | 100 |
| 9   | K     | 384/431 (89%)   | 368 (96%)  | 16 (4%)  | 0        | 100         | 100 |
| All | All   | 3590/6002 (60%) | 3330 (93%) | 258 (7%) | 2 (0%)   | 50          | 80  |

All (2) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5   | F     | 32  | LEU  |
| 5   | F     | 31  | ALA  |

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM 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     | 567/1364 (42%)  | 515 (91%)  | 52 (9%)   | 7           | 29 |
| 2   | B     | 590/1060 (56%)  | 526 (89%)  | 64 (11%)  | 5           | 23 |
| 3   | C     | 320/351 (91%)   | 300 (94%)  | 20 (6%)   | 15          | 46 |
| 3   | D     | 315/351 (90%)   | 284 (90%)  | 31 (10%)  | 6           | 27 |
| 4   | E     | 137/448 (31%)   | 125 (91%)  | 12 (9%)   | 8           | 32 |
| 5   | F     | 198/209 (95%)   | 179 (90%)  | 19 (10%)  | 7           | 28 |
| 6   | G     | 130/238 (55%)   | 123 (95%)  | 7 (5%)    | 18          | 51 |
| 7   | H     | 112/280 (40%)   | 92 (82%)   | 20 (18%)  | 1           | 7  |
| 8   | I     | 170/322 (53%)   | 149 (88%)  | 21 (12%)  | 4           | 18 |
| 9   | J     | 348/382 (91%)   | 215 (62%)  | 133 (38%) | 0           | 0  |
| 9   | K     | 348/382 (91%)   | 215 (62%)  | 133 (38%) | 0           | 0  |
| All | All   | 3235/5387 (60%) | 2723 (84%) | 512 (16%) | 4           | 10 |

All (512) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 522 | ARG  |
| 1   | A     | 552 | VAL  |
| 1   | A     | 561 | SER  |
| 1   | A     | 569 | LEU  |
| 1   | A     | 587 | ARG  |
| 1   | A     | 592 | GLN  |
| 1   | A     | 599 | SER  |
| 1   | A     | 613 | SER  |
| 1   | A     | 622 | ILE  |
| 1   | A     | 652 | LEU  |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 684  | LEU  |
| 1   | A     | 695  | THR  |
| 1   | A     | 698  | SER  |
| 1   | A     | 705  | VAL  |
| 1   | A     | 706  | SER  |
| 1   | A     | 731  | ASN  |
| 1   | A     | 735  | THR  |
| 1   | A     | 747  | ASP  |
| 1   | A     | 752  | SER  |
| 1   | A     | 778  | VAL  |
| 1   | A     | 808  | LEU  |
| 1   | A     | 823  | TYR  |
| 1   | A     | 830  | THR  |
| 1   | A     | 851  | ASN  |
| 1   | A     | 863  | SER  |
| 1   | A     | 867  | ASP  |
| 1   | A     | 973  | THR  |
| 1   | A     | 977  | TRP  |
| 1   | A     | 978  | VAL  |
| 1   | A     | 983  | THR  |
| 1   | A     | 1019 | THR  |
| 1   | A     | 1022 | SER  |
| 1   | A     | 1033 | MET  |
| 1   | A     | 1041 | VAL  |
| 1   | A     | 1043 | SER  |
| 1   | A     | 1055 | HIS  |
| 1   | A     | 1060 | LEU  |
| 1   | A     | 1079 | GLU  |
| 1   | A     | 1085 | GLU  |
| 1   | A     | 1102 | HIS  |
| 1   | A     | 1113 | VAL  |
| 1   | A     | 1116 | ILE  |
| 1   | A     | 1117 | ILE  |
| 1   | A     | 1125 | THR  |
| 1   | A     | 1164 | ASP  |
| 1   | A     | 1176 | THR  |
| 1   | A     | 1182 | ARG  |
| 1   | A     | 1193 | THR  |
| 1   | A     | 1196 | SER  |
| 1   | A     | 1208 | TYR  |
| 1   | A     | 1210 | MET  |
| 1   | A     | 1214 | THR  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | B     | 403 | SER  |
| 2   | B     | 408 | THR  |
| 2   | B     | 413 | LEU  |
| 2   | B     | 416 | THR  |
| 2   | B     | 418 | ILE  |
| 2   | B     | 437 | LEU  |
| 2   | B     | 440 | GLU  |
| 2   | B     | 443 | LEU  |
| 2   | B     | 448 | LEU  |
| 2   | B     | 449 | LEU  |
| 2   | B     | 469 | ILE  |
| 2   | B     | 473 | ASP  |
| 2   | B     | 477 | LEU  |
| 2   | B     | 483 | VAL  |
| 2   | B     | 491 | GLU  |
| 2   | B     | 492 | THR  |
| 2   | B     | 495 | CYS  |
| 2   | B     | 496 | ILE  |
| 2   | B     | 497 | SER  |
| 2   | B     | 506 | SER  |
| 2   | B     | 516 | ASP  |
| 2   | B     | 523 | LEU  |
| 2   | B     | 528 | ILE  |
| 2   | B     | 529 | SER  |
| 2   | B     | 537 | VAL  |
| 2   | B     | 560 | ASP  |
| 2   | B     | 566 | ASN  |
| 2   | B     | 567 | THR  |
| 2   | B     | 582 | THR  |
| 2   | B     | 591 | LEU  |
| 2   | B     | 611 | LYS  |
| 2   | B     | 619 | ASP  |
| 2   | B     | 627 | THR  |
| 2   | B     | 638 | THR  |
| 2   | B     | 653 | ILE  |
| 2   | B     | 681 | LEU  |
| 2   | B     | 706 | LEU  |
| 2   | B     | 719 | ILE  |
| 2   | B     | 738 | SER  |
| 2   | B     | 741 | ASP  |
| 2   | B     | 836 | GLU  |
| 2   | B     | 839 | LYS  |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 2   | B     | 841  | ILE  |
| 2   | B     | 876  | SER  |
| 2   | B     | 878  | ILE  |
| 2   | B     | 881  | SER  |
| 2   | B     | 892  | ILE  |
| 2   | B     | 910  | LEU  |
| 2   | B     | 917  | THR  |
| 2   | B     | 937  | GLU  |
| 2   | B     | 944  | LEU  |
| 2   | B     | 959  | VAL  |
| 2   | B     | 960  | THR  |
| 2   | B     | 961  | THR  |
| 2   | B     | 1034 | LEU  |
| 2   | B     | 1076 | LEU  |
| 2   | B     | 1077 | GLN  |
| 2   | B     | 1081 | SER  |
| 2   | B     | 1086 | VAL  |
| 2   | B     | 1093 | THR  |
| 2   | B     | 1116 | ARG  |
| 2   | B     | 1119 | ASN  |
| 2   | B     | 1136 | ASN  |
| 2   | B     | 1137 | THR  |
| 3   | C     | 44   | LEU  |
| 3   | C     | 90   | LYS  |
| 3   | C     | 93   | VAL  |
| 3   | C     | 96   | ASP  |
| 3   | C     | 99   | VAL  |
| 3   | C     | 123  | SER  |
| 3   | C     | 152  | ASP  |
| 3   | C     | 174  | VAL  |
| 3   | C     | 180  | VAL  |
| 3   | C     | 189  | ARG  |
| 3   | C     | 192  | THR  |
| 3   | C     | 201  | TYR  |
| 3   | C     | 208  | ILE  |
| 3   | C     | 213  | ILE  |
| 3   | C     | 231  | ASP  |
| 3   | C     | 233  | SER  |
| 3   | C     | 243  | SER  |
| 3   | C     | 303  | ARG  |
| 3   | C     | 337  | ASP  |
| 3   | C     | 344  | SER  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | D     | 8   | VAL  |
| 3   | D     | 16  | VAL  |
| 3   | D     | 42  | TYR  |
| 3   | D     | 46  | GLU  |
| 3   | D     | 57  | THR  |
| 3   | D     | 60  | ASP  |
| 3   | D     | 71  | GLU  |
| 3   | D     | 89  | LEU  |
| 3   | D     | 127 | GLU  |
| 3   | D     | 132 | TRP  |
| 3   | D     | 174 | VAL  |
| 3   | D     | 178 | ASP  |
| 3   | D     | 180 | VAL  |
| 3   | D     | 186 | THR  |
| 3   | D     | 188 | ASP  |
| 3   | D     | 191 | MET  |
| 3   | D     | 192 | THR  |
| 3   | D     | 194 | SER  |
| 3   | D     | 213 | ILE  |
| 3   | D     | 215 | THR  |
| 3   | D     | 227 | ASP  |
| 3   | D     | 229 | ILE  |
| 3   | D     | 231 | ASP  |
| 3   | D     | 233 | SER  |
| 3   | D     | 236 | SER  |
| 3   | D     | 260 | THR  |
| 3   | D     | 315 | LEU  |
| 3   | D     | 329 | ASP  |
| 3   | D     | 348 | GLU  |
| 3   | D     | 361 | SER  |
| 3   | D     | 369 | ASN  |
| 4   | E     | 353 | ILE  |
| 4   | E     | 366 | LEU  |
| 4   | E     | 401 | ARG  |
| 4   | E     | 406 | THR  |
| 4   | E     | 412 | CYS  |
| 4   | E     | 415 | LEU  |
| 4   | E     | 416 | LEU  |
| 4   | E     | 422 | VAL  |
| 4   | E     | 424 | ASP  |
| 4   | E     | 438 | SER  |
| 4   | E     | 459 | PHE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 4   | E     | 468 | ILE  |
| 5   | F     | 23  | ASP  |
| 5   | F     | 37  | LEU  |
| 5   | F     | 54  | SER  |
| 5   | F     | 59  | ILE  |
| 5   | F     | 61  | ILE  |
| 5   | F     | 75  | SER  |
| 5   | F     | 82  | ASP  |
| 5   | F     | 84  | GLU  |
| 5   | F     | 108 | GLN  |
| 5   | F     | 116 | ILE  |
| 5   | F     | 151 | VAL  |
| 5   | F     | 154 | LEU  |
| 5   | F     | 156 | ASP  |
| 5   | F     | 167 | VAL  |
| 5   | F     | 168 | PHE  |
| 5   | F     | 183 | GLN  |
| 5   | F     | 213 | VAL  |
| 5   | F     | 225 | ASN  |
| 5   | F     | 228 | VAL  |
| 6   | G     | 31  | LYS  |
| 6   | G     | 41  | SER  |
| 6   | G     | 42  | ILE  |
| 6   | G     | 60  | SER  |
| 6   | G     | 100 | THR  |
| 6   | G     | 248 | THR  |
| 6   | G     | 266 | LYS  |
| 7   | H     | 19  | ILE  |
| 7   | H     | 25  | SER  |
| 7   | H     | 32  | SER  |
| 7   | H     | 33  | LEU  |
| 7   | H     | 40  | VAL  |
| 7   | H     | 56  | LYS  |
| 7   | H     | 66  | GLU  |
| 7   | H     | 67  | GLU  |
| 7   | H     | 79  | ILE  |
| 7   | H     | 80  | LEU  |
| 7   | H     | 85  | SER  |
| 7   | H     | 91  | THR  |
| 7   | H     | 97  | ILE  |
| 7   | H     | 101 | ILE  |
| 7   | H     | 111 | VAL  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7   | H     | 114 | GLU  |
| 7   | H     | 115 | ILE  |
| 7   | H     | 119 | LEU  |
| 7   | H     | 125 | ASP  |
| 7   | H     | 129 | LEU  |
| 8   | I     | 178 | ASP  |
| 8   | I     | 198 | VAL  |
| 8   | I     | 204 | THR  |
| 8   | I     | 216 | ILE  |
| 8   | I     | 226 | ILE  |
| 8   | I     | 242 | ILE  |
| 8   | I     | 251 | ASP  |
| 8   | I     | 256 | THR  |
| 8   | I     | 261 | CYS  |
| 8   | I     | 265 | SER  |
| 8   | I     | 268 | LYS  |
| 8   | I     | 298 | ARG  |
| 8   | I     | 299 | SER  |
| 8   | I     | 301 | SER  |
| 8   | I     | 304 | GLN  |
| 8   | I     | 305 | ASP  |
| 8   | I     | 309 | LEU  |
| 8   | I     | 332 | THR  |
| 8   | I     | 337 | LEU  |
| 8   | I     | 346 | SER  |
| 8   | I     | 348 | THR  |
| 9   | J     | 18  | GLU  |
| 9   | J     | 22  | GLN  |
| 9   | J     | 23  | GLU  |
| 9   | J     | 27  | ASN  |
| 9   | J     | 28  | GLU  |
| 9   | J     | 32  | ILE  |
| 9   | J     | 34  | LYS  |
| 9   | J     | 35  | LYS  |
| 9   | J     | 37  | SER  |
| 9   | J     | 42  | ASP  |
| 9   | J     | 43  | LEU  |
| 9   | J     | 44  | ILE  |
| 9   | J     | 46  | THR  |
| 9   | J     | 47  | ARG  |
| 9   | J     | 49  | LEU  |
| 9   | J     | 56  | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 9   | J     | 62  | GLN  |
| 9   | J     | 63  | GLN  |
| 9   | J     | 64  | ILE  |
| 9   | J     | 67  | GLU  |
| 9   | J     | 71  | THR  |
| 9   | J     | 72  | GLU  |
| 9   | J     | 75  | MET  |
| 9   | J     | 77  | LEU  |
| 9   | J     | 82  | ASP  |
| 9   | J     | 83  | VAL  |
| 9   | J     | 85  | LYS  |
| 9   | J     | 88  | LEU  |
| 9   | J     | 93  | ILE  |
| 9   | J     | 95  | LEU  |
| 9   | J     | 98  | LEU  |
| 9   | J     | 100 | GLN  |
| 9   | J     | 122 | ILE  |
| 9   | J     | 123 | SER  |
| 9   | J     | 125 | LEU  |
| 9   | J     | 127 | SER  |
| 9   | J     | 130 | GLU  |
| 9   | J     | 134 | SER  |
| 9   | J     | 136 | LYS  |
| 9   | J     | 137 | LEU  |
| 9   | J     | 142 | ASP  |
| 9   | J     | 143 | SER  |
| 9   | J     | 144 | CYS  |
| 9   | J     | 145 | VAL  |
| 9   | J     | 150 | ASN  |
| 9   | J     | 161 | GLU  |
| 9   | J     | 162 | SER  |
| 9   | J     | 168 | SER  |
| 9   | J     | 170 | SER  |
| 9   | J     | 174 | LEU  |
| 9   | J     | 175 | LYS  |
| 9   | J     | 181 | THR  |
| 9   | J     | 185 | GLN  |
| 9   | J     | 188 | THR  |
| 9   | J     | 189 | SER  |
| 9   | J     | 196 | SER  |
| 9   | J     | 197 | LYS  |
| 9   | J     | 210 | SER  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 9   | J     | 213 | ASP  |
| 9   | J     | 214 | LEU  |
| 9   | J     | 215 | ASN  |
| 9   | J     | 218 | ASN  |
| 9   | J     | 220 | SER  |
| 9   | J     | 221 | ASP  |
| 9   | J     | 227 | LYS  |
| 9   | J     | 229 | HIS  |
| 9   | J     | 234 | GLU  |
| 9   | J     | 238 | SER  |
| 9   | J     | 239 | ASP  |
| 9   | J     | 241 | ARG  |
| 9   | J     | 245 | LYS  |
| 9   | J     | 246 | HIS  |
| 9   | J     | 247 | GLN  |
| 9   | J     | 248 | ASP  |
| 9   | J     | 249 | LEU  |
| 9   | J     | 259 | LEU  |
| 9   | J     | 263 | ASP  |
| 9   | J     | 264 | ILE  |
| 9   | J     | 265 | ARG  |
| 9   | J     | 266 | ARG  |
| 9   | J     | 270 | SER  |
| 9   | J     | 271 | THR  |
| 9   | J     | 272 | LYS  |
| 9   | J     | 277 | VAL  |
| 9   | J     | 281 | SER  |
| 9   | J     | 286 | SER  |
| 9   | J     | 297 | LEU  |
| 9   | J     | 301 | SER  |
| 9   | J     | 302 | THR  |
| 9   | J     | 303 | ASP  |
| 9   | J     | 304 | LYS  |
| 9   | J     | 305 | THR  |
| 9   | J     | 306 | ILE  |
| 9   | J     | 311 | LEU  |
| 9   | J     | 312 | ARG  |
| 9   | J     | 315 | ASN  |
| 9   | J     | 316 | GLN  |
| 9   | J     | 318 | LEU  |
| 9   | J     | 320 | THR  |
| 9   | J     | 322 | GLU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 9   | J     | 325 | GLU  |
| 9   | J     | 326 | ASP  |
| 9   | J     | 329 | THR  |
| 9   | J     | 330 | LYS  |
| 9   | J     | 332 | SER  |
| 9   | J     | 341 | LEU  |
| 9   | J     | 343 | SER  |
| 9   | J     | 344 | THR  |
| 9   | J     | 345 | SER  |
| 9   | J     | 355 | LEU  |
| 9   | J     | 356 | SER  |
| 9   | J     | 357 | ARG  |
| 9   | J     | 358 | ILE  |
| 9   | J     | 366 | GLU  |
| 9   | J     | 368 | GLN  |
| 9   | J     | 373 | GLU  |
| 9   | J     | 377 | MET  |
| 9   | J     | 382 | THR  |
| 9   | J     | 383 | SER  |
| 9   | J     | 384 | CYS  |
| 9   | J     | 386 | ILE  |
| 9   | J     | 387 | ASP  |
| 9   | J     | 388 | MET  |
| 9   | J     | 391 | CYS  |
| 9   | J     | 395 | ASN  |
| 9   | J     | 397 | THR  |
| 9   | J     | 398 | MET  |
| 9   | J     | 400 | THR  |
| 9   | J     | 406 | ILE  |
| 9   | J     | 408 | GLN  |
| 9   | J     | 409 | ILE  |
| 9   | J     | 413 | SER  |
| 9   | J     | 416 | ILE  |
| 9   | K     | 18  | GLU  |
| 9   | K     | 22  | GLN  |
| 9   | K     | 23  | GLU  |
| 9   | K     | 27  | ASN  |
| 9   | K     | 28  | GLU  |
| 9   | K     | 32  | ILE  |
| 9   | K     | 34  | LYS  |
| 9   | K     | 35  | LYS  |
| 9   | K     | 37  | SER  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 9   | K     | 42  | ASP  |
| 9   | K     | 43  | LEU  |
| 9   | K     | 44  | ILE  |
| 9   | K     | 46  | THR  |
| 9   | K     | 47  | ARG  |
| 9   | K     | 49  | LEU  |
| 9   | K     | 56  | LEU  |
| 9   | K     | 62  | GLN  |
| 9   | K     | 63  | GLN  |
| 9   | K     | 64  | ILE  |
| 9   | K     | 67  | GLU  |
| 9   | K     | 71  | THR  |
| 9   | K     | 72  | GLU  |
| 9   | K     | 75  | MET  |
| 9   | K     | 77  | LEU  |
| 9   | K     | 82  | ASP  |
| 9   | K     | 83  | VAL  |
| 9   | K     | 85  | LYS  |
| 9   | K     | 88  | LEU  |
| 9   | K     | 93  | ILE  |
| 9   | K     | 95  | LEU  |
| 9   | K     | 98  | LEU  |
| 9   | K     | 100 | GLN  |
| 9   | K     | 122 | ILE  |
| 9   | K     | 123 | SER  |
| 9   | K     | 125 | LEU  |
| 9   | K     | 127 | SER  |
| 9   | K     | 130 | GLU  |
| 9   | K     | 134 | SER  |
| 9   | K     | 136 | LYS  |
| 9   | K     | 137 | LEU  |
| 9   | K     | 142 | ASP  |
| 9   | K     | 143 | SER  |
| 9   | K     | 144 | CYS  |
| 9   | K     | 145 | VAL  |
| 9   | K     | 150 | ASN  |
| 9   | K     | 161 | GLU  |
| 9   | K     | 162 | SER  |
| 9   | K     | 168 | SER  |
| 9   | K     | 170 | SER  |
| 9   | K     | 174 | LEU  |
| 9   | K     | 175 | LYS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 9   | K     | 181 | THR  |
| 9   | K     | 185 | GLN  |
| 9   | K     | 188 | THR  |
| 9   | K     | 189 | SER  |
| 9   | K     | 196 | SER  |
| 9   | K     | 197 | LYS  |
| 9   | K     | 210 | SER  |
| 9   | K     | 213 | ASP  |
| 9   | K     | 214 | LEU  |
| 9   | K     | 215 | ASN  |
| 9   | K     | 218 | ASN  |
| 9   | K     | 220 | SER  |
| 9   | K     | 221 | ASP  |
| 9   | K     | 227 | LYS  |
| 9   | K     | 229 | HIS  |
| 9   | K     | 234 | GLU  |
| 9   | K     | 238 | SER  |
| 9   | K     | 239 | ASP  |
| 9   | K     | 241 | ARG  |
| 9   | K     | 245 | LYS  |
| 9   | K     | 246 | HIS  |
| 9   | K     | 247 | GLN  |
| 9   | K     | 248 | ASP  |
| 9   | K     | 249 | LEU  |
| 9   | K     | 259 | LEU  |
| 9   | K     | 263 | ASP  |
| 9   | K     | 264 | ILE  |
| 9   | K     | 265 | ARG  |
| 9   | K     | 266 | ARG  |
| 9   | K     | 270 | SER  |
| 9   | K     | 271 | THR  |
| 9   | K     | 272 | LYS  |
| 9   | K     | 277 | VAL  |
| 9   | K     | 281 | SER  |
| 9   | K     | 286 | SER  |
| 9   | K     | 297 | LEU  |
| 9   | K     | 301 | SER  |
| 9   | K     | 302 | THR  |
| 9   | K     | 303 | ASP  |
| 9   | K     | 304 | LYS  |
| 9   | K     | 305 | THR  |
| 9   | K     | 306 | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 9   | K     | 311 | LEU  |
| 9   | K     | 312 | ARG  |
| 9   | K     | 315 | ASN  |
| 9   | K     | 316 | GLN  |
| 9   | K     | 318 | LEU  |
| 9   | K     | 320 | THR  |
| 9   | K     | 322 | GLU  |
| 9   | K     | 325 | GLU  |
| 9   | K     | 326 | ASP  |
| 9   | K     | 329 | THR  |
| 9   | K     | 330 | LYS  |
| 9   | K     | 332 | SER  |
| 9   | K     | 341 | LEU  |
| 9   | K     | 343 | SER  |
| 9   | K     | 344 | THR  |
| 9   | K     | 345 | SER  |
| 9   | K     | 355 | LEU  |
| 9   | K     | 356 | SER  |
| 9   | K     | 357 | ARG  |
| 9   | K     | 358 | ILE  |
| 9   | K     | 366 | GLU  |
| 9   | K     | 368 | GLN  |
| 9   | K     | 373 | GLU  |
| 9   | K     | 377 | MET  |
| 9   | K     | 382 | THR  |
| 9   | K     | 383 | SER  |
| 9   | K     | 384 | CYS  |
| 9   | K     | 386 | ILE  |
| 9   | K     | 387 | ASP  |
| 9   | K     | 388 | MET  |
| 9   | K     | 391 | CYS  |
| 9   | K     | 395 | ASN  |
| 9   | K     | 397 | THR  |
| 9   | K     | 398 | MET  |
| 9   | K     | 400 | THR  |
| 9   | K     | 406 | ILE  |
| 9   | K     | 408 | GLN  |
| 9   | K     | 409 | ILE  |
| 9   | K     | 413 | SER  |
| 9   | K     | 416 | ILE  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (82) such sidechains are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 511  | ASN  |
| 1   | A     | 549  | ASN  |
| 1   | A     | 579  | ASN  |
| 1   | A     | 665  | HIS  |
| 1   | A     | 720  | HIS  |
| 1   | A     | 729  | GLN  |
| 1   | A     | 799  | ASN  |
| 1   | A     | 803  | GLN  |
| 1   | A     | 827  | ASN  |
| 1   | A     | 846  | HIS  |
| 1   | A     | 856  | ASN  |
| 1   | A     | 882  | ASN  |
| 1   | A     | 979  | ASN  |
| 1   | A     | 1088 | GLN  |
| 1   | A     | 1119 | GLN  |
| 1   | A     | 1178 | GLN  |
| 2   | B     | 421  | HIS  |
| 2   | B     | 474  | ASN  |
| 2   | B     | 549  | GLN  |
| 2   | B     | 584  | HIS  |
| 2   | B     | 697  | GLN  |
| 2   | B     | 722  | ASN  |
| 2   | B     | 888  | ASN  |
| 2   | B     | 970  | ASN  |
| 2   | B     | 984  | ASN  |
| 2   | B     | 997  | GLN  |
| 2   | B     | 1036 | GLN  |
| 2   | B     | 1070 | HIS  |
| 2   | B     | 1075 | ASN  |
| 2   | B     | 1077 | GLN  |
| 2   | B     | 1095 | ASN  |
| 2   | B     | 1110 | GLN  |
| 2   | B     | 1114 | GLN  |
| 2   | B     | 1115 | ASN  |
| 2   | B     | 1119 | ASN  |
| 3   | C     | 88   | GLN  |
| 3   | C     | 164  | HIS  |
| 3   | C     | 222  | ASN  |
| 3   | C     | 324  | ASN  |
| 3   | C     | 350  | HIS  |
| 3   | D     | 20   | HIS  |
| 3   | D     | 85   | GLN  |
| 3   | D     | 125  | ASN  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | D     | 151 | ASN  |
| 3   | D     | 164 | HIS  |
| 3   | D     | 218 | ASN  |
| 3   | D     | 222 | ASN  |
| 3   | D     | 324 | ASN  |
| 4   | E     | 335 | ASN  |
| 4   | E     | 392 | GLN  |
| 4   | E     | 417 | ASN  |
| 4   | E     | 437 | GLN  |
| 4   | E     | 442 | GLN  |
| 5   | F     | 108 | GLN  |
| 5   | F     | 122 | GLN  |
| 5   | F     | 165 | HIS  |
| 5   | F     | 174 | GLN  |
| 5   | F     | 225 | ASN  |
| 7   | H     | 95  | ASN  |
| 8   | I     | 166 | GLN  |
| 9   | J     | 21  | ASN  |
| 9   | J     | 22  | GLN  |
| 9   | J     | 27  | ASN  |
| 9   | J     | 94  | GLN  |
| 9   | J     | 99  | ASN  |
| 9   | J     | 152 | HIS  |
| 9   | J     | 205 | GLN  |
| 9   | J     | 246 | HIS  |
| 9   | J     | 260 | HIS  |
| 9   | J     | 285 | HIS  |
| 9   | J     | 316 | GLN  |
| 9   | J     | 319 | HIS  |
| 9   | J     | 324 | HIS  |
| 9   | K     | 21  | ASN  |
| 9   | K     | 27  | ASN  |
| 9   | K     | 152 | HIS  |
| 9   | K     | 205 | GLN  |
| 9   | K     | 260 | HIS  |
| 9   | K     | 285 | HIS  |
| 9   | K     | 316 | GLN  |
| 9   | K     | 319 | HIS  |
| 9   | K     | 324 | HIS  |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues are modelled in this entry.

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

| Mol | Type | Chain | Res | Link | Bond lengths |      |             | Bond angles |      |             |
|-----|------|-------|-----|------|--------------|------|-------------|-------------|------|-------------|
|     |      |       |     |      | Counts       | RMSZ | $\# Z  > 2$ | Counts      | RMSZ | $\# Z  > 2$ |
| 5   | SEP  | F     | 19  | 5    | 8,9,10       | 0.63 | 0           | 8,12,14     | 0.71 | 0           |
| 5   | SEP  | F     | 24  | 5    | 8,9,10       | 0.64 | 0           | 8,12,14     | 0.62 | 0           |
| 5   | SEP  | F     | 27  | 5    | 8,9,10       | 0.64 | 0           | 8,12,14     | 0.61 | 0           |
| 5   | SEP  | F     | 22  | 5    | 8,9,10       | 0.64 | 0           | 8,12,14     | 0.61 | 0           |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|----------|-------|
| 5   | SEP  | F     | 19  | 5    | -       | 1/5/8/10 | -     |
| 5   | SEP  | F     | 24  | 5    | -       | 1/5/8/10 | -     |
| 5   | SEP  | F     | 27  | 5    | -       | 0/5/8/10 | -     |
| 5   | SEP  | F     | 22  | 5    | -       | 3/5/8/10 | -     |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 5   | F     | 19  | SEP  | N-CA-CB-OG  |
| 5   | F     | 22  | SEP  | CB-OG-P-O1P |
| 5   | F     | 22  | SEP  | CB-OG-P-O3P |

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| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 5   | F     | 24  | SEP  | N-CA-CB-OG  |
| 5   | F     | 22  | SEP  | CB-OG-P-O2P |

There are no ring outliers.

2 monomers are involved in 3 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 5   | F     | 19  | SEP  | 2       | 0            |
| 5   | F     | 27  | SEP  | 1       | 0            |

## 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

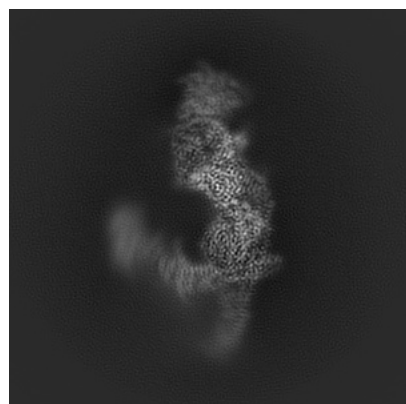
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-35093. These allow visual inspection of the internal detail of the map and identification of artifacts.

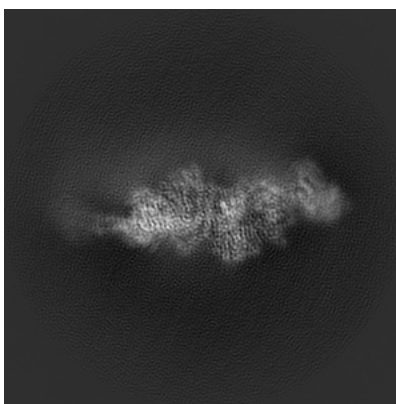
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

### 6.1 Orthogonal projections [i](#)

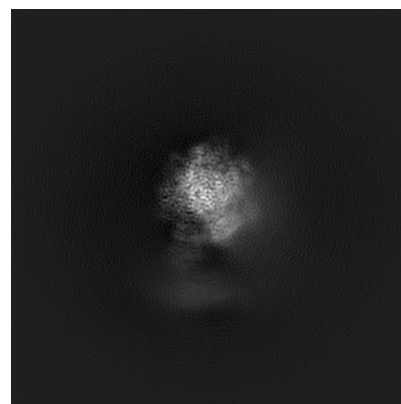
#### 6.1.1 Primary map



X

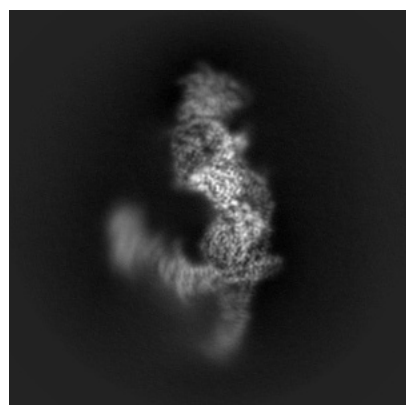


Y

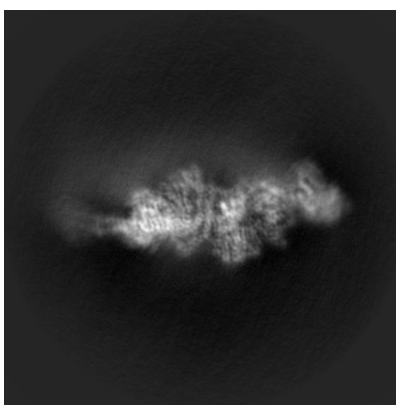


Z

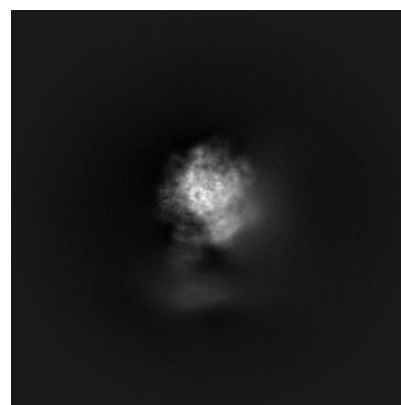
#### 6.1.2 Raw map



X



Y

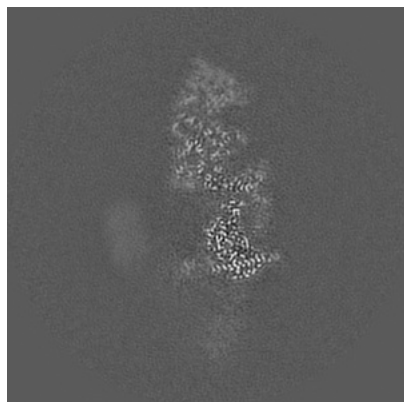


Z

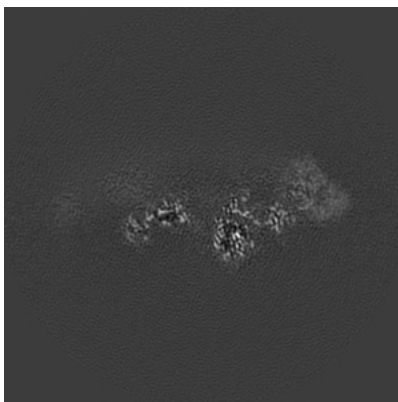
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

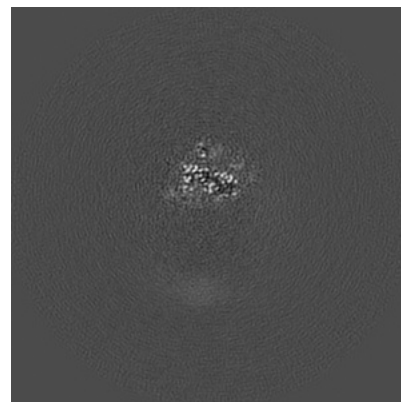
### 6.2.1 Primary map



X Index: 180

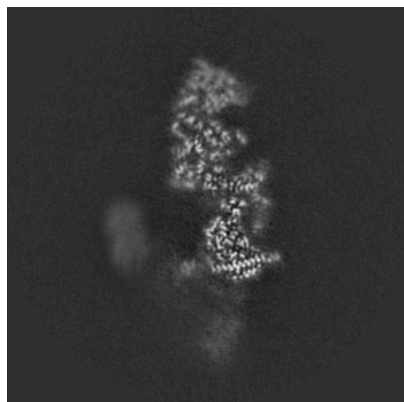


Y Index: 180

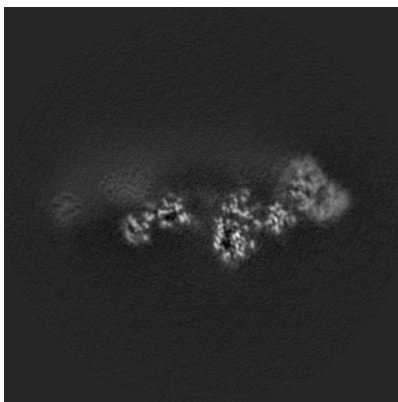


Z Index: 180

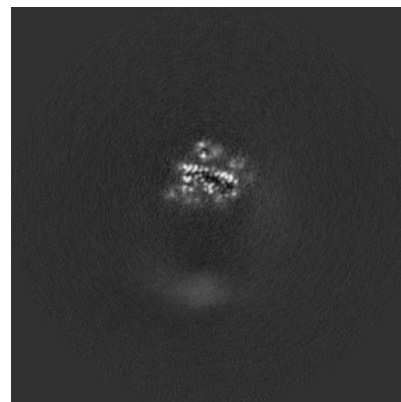
### 6.2.2 Raw map



X Index: 180



Y Index: 180

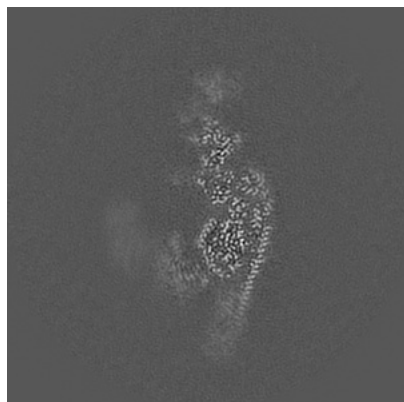


Z Index: 180

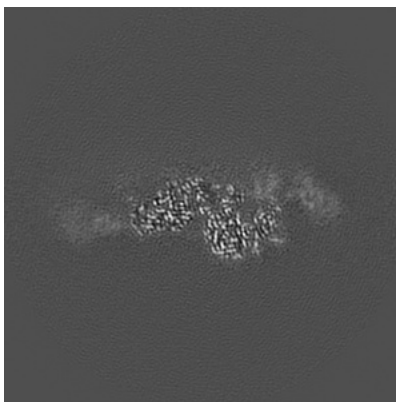
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices [i](#)

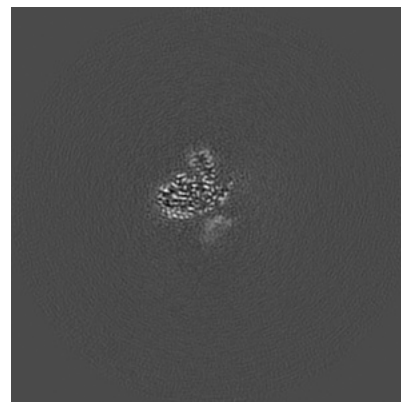
### 6.3.1 Primary map



X Index: 170

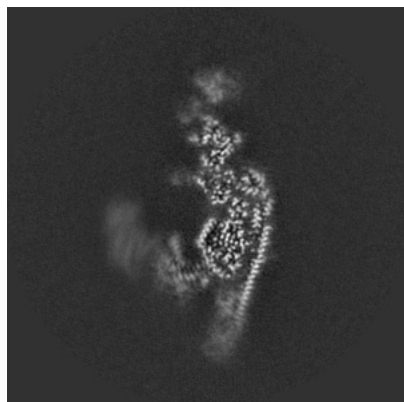


Y Index: 197

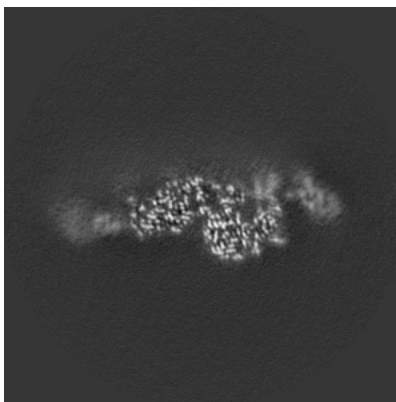


Z Index: 200

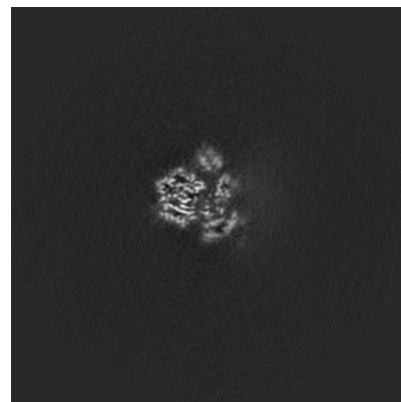
### 6.3.2 Raw map



X Index: 170



Y Index: 197

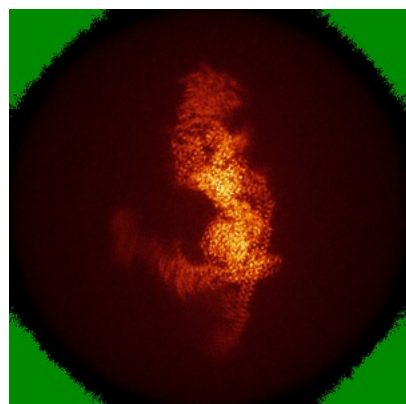


Z Index: 210

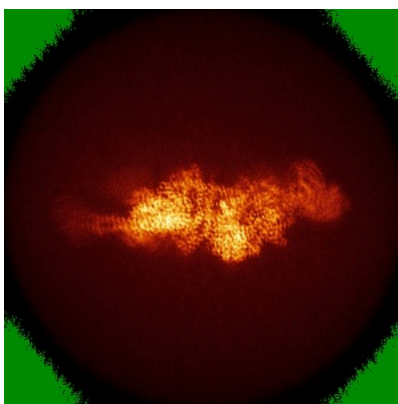
The images above show the largest variance slices of the map in three orthogonal directions.

## 6.4 Orthogonal standard-deviation projections (False-color) [i](#)

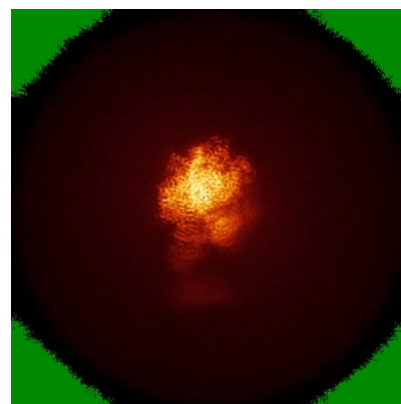
### 6.4.1 Primary map



X

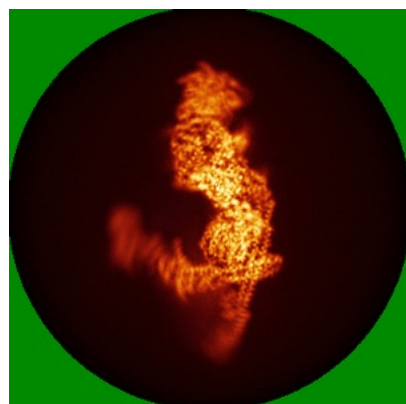


Y



Z

### 6.4.2 Raw map



X



Y

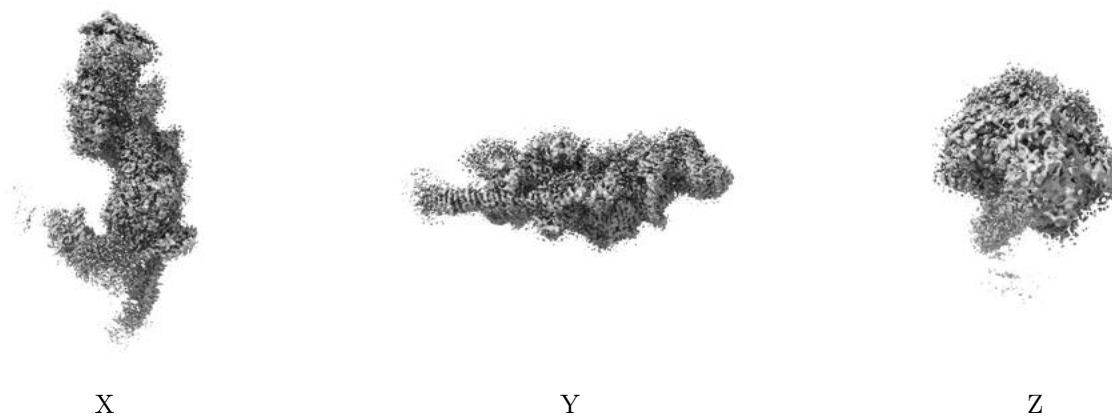


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.012. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

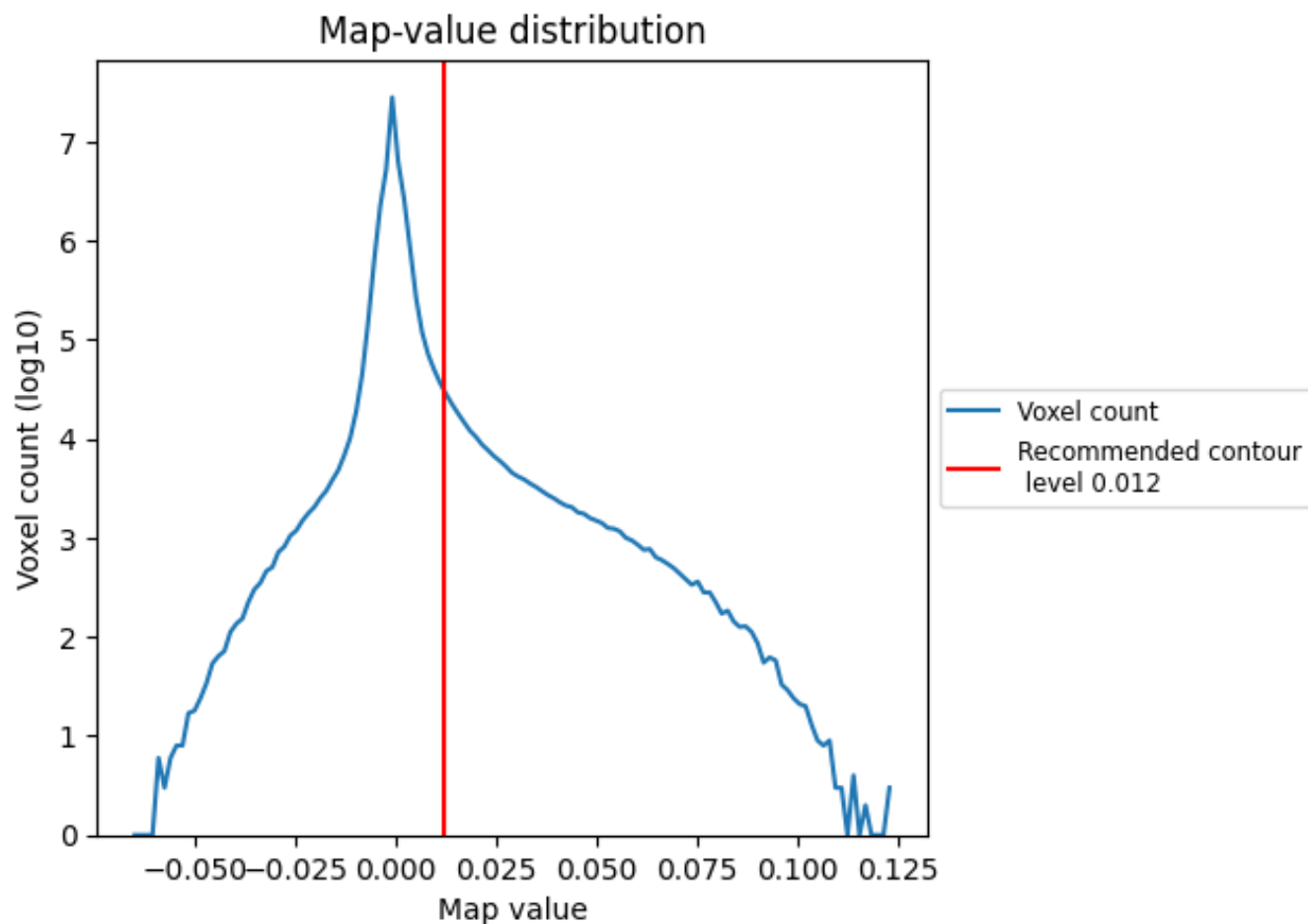
## 6.6 Mask visualisation [i](#)

This section was not generated. No masks/segmentation were deposited.

## 7 Map analysis [i](#)

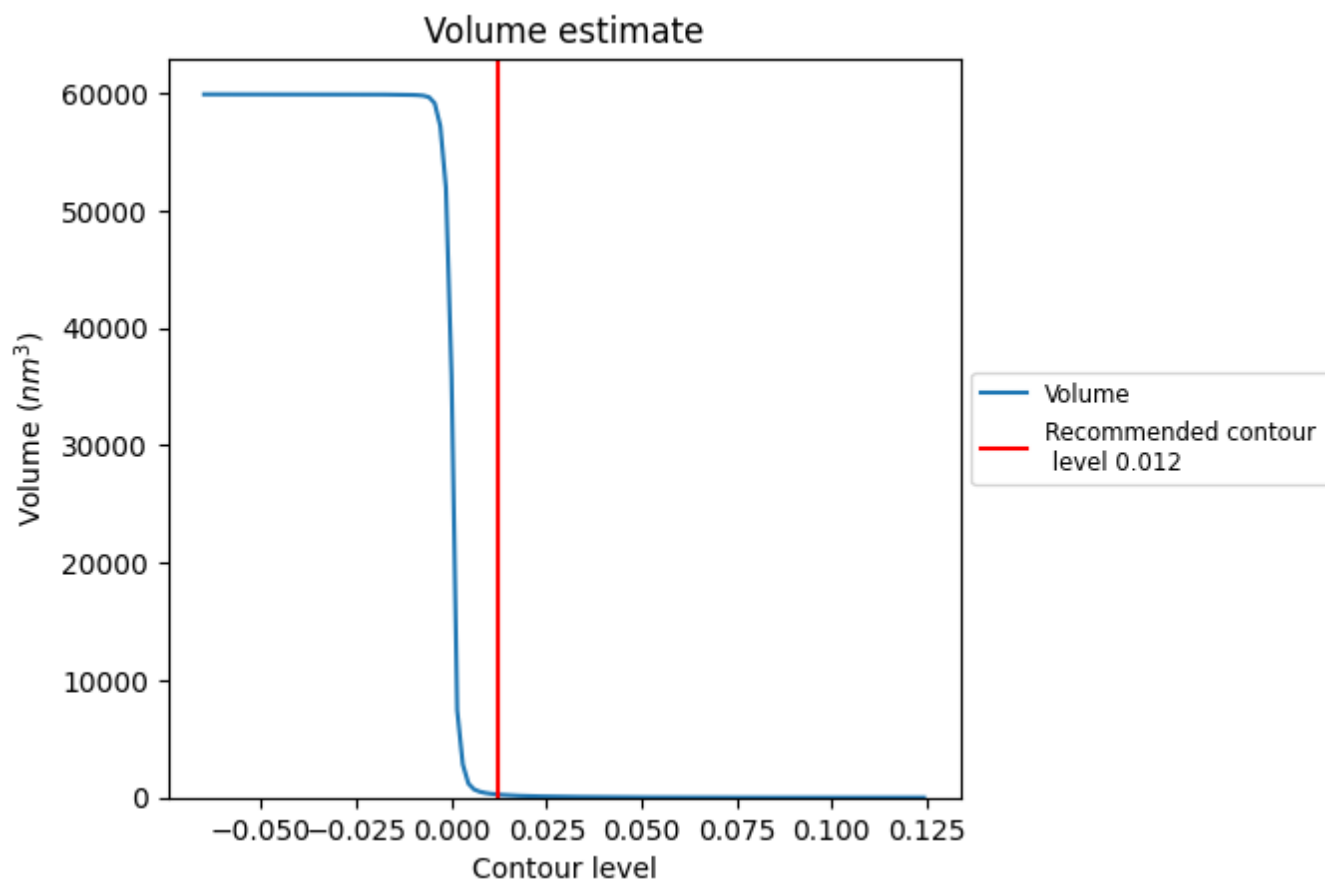
This section contains the results of statistical analysis of the map.

### 7.1 Map-value distribution [i](#)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

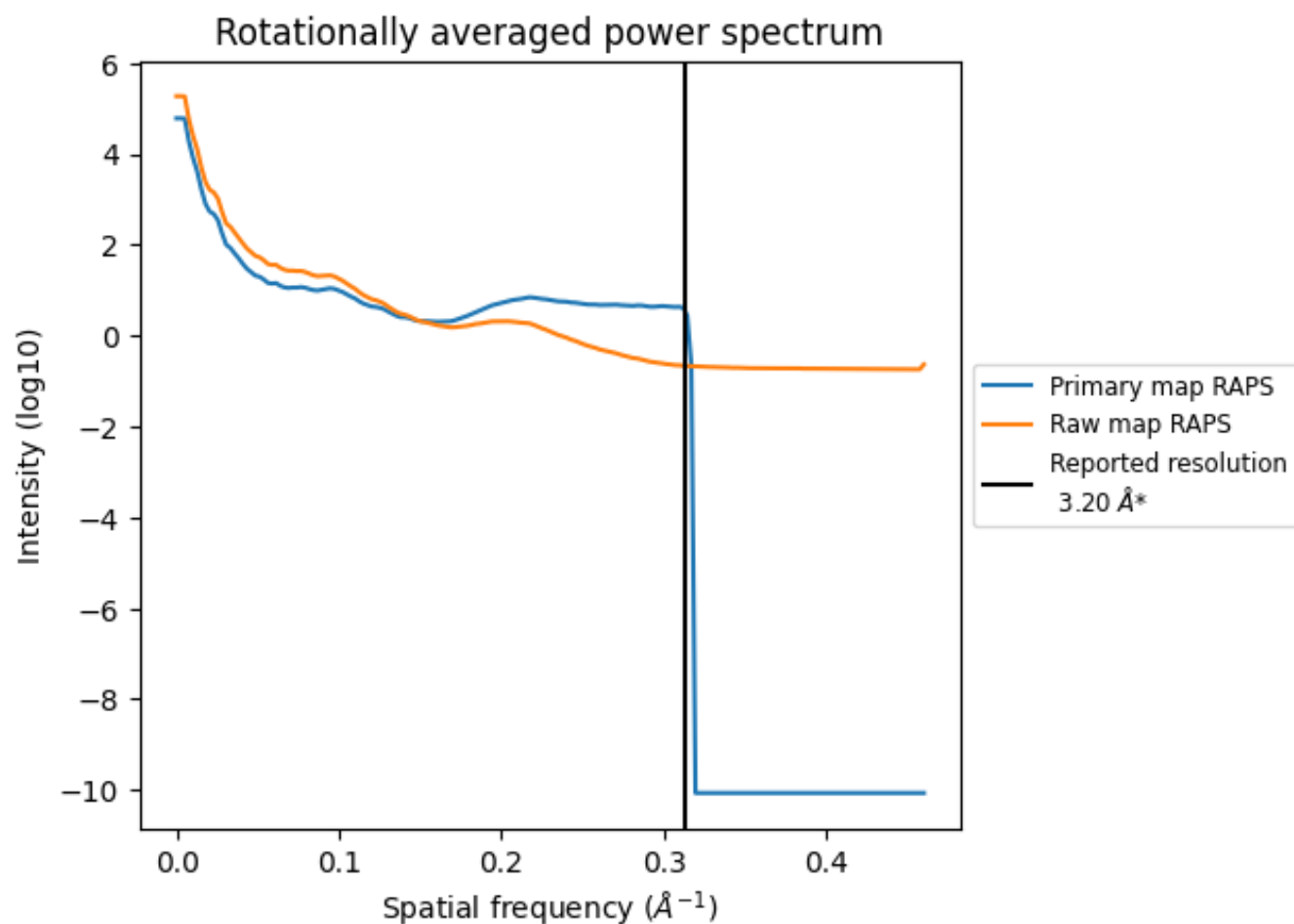
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 265  $\text{nm}^3$ ; this corresponds to an approximate mass of 240 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

### 7.3 Rotationally averaged power spectrum ⓘ

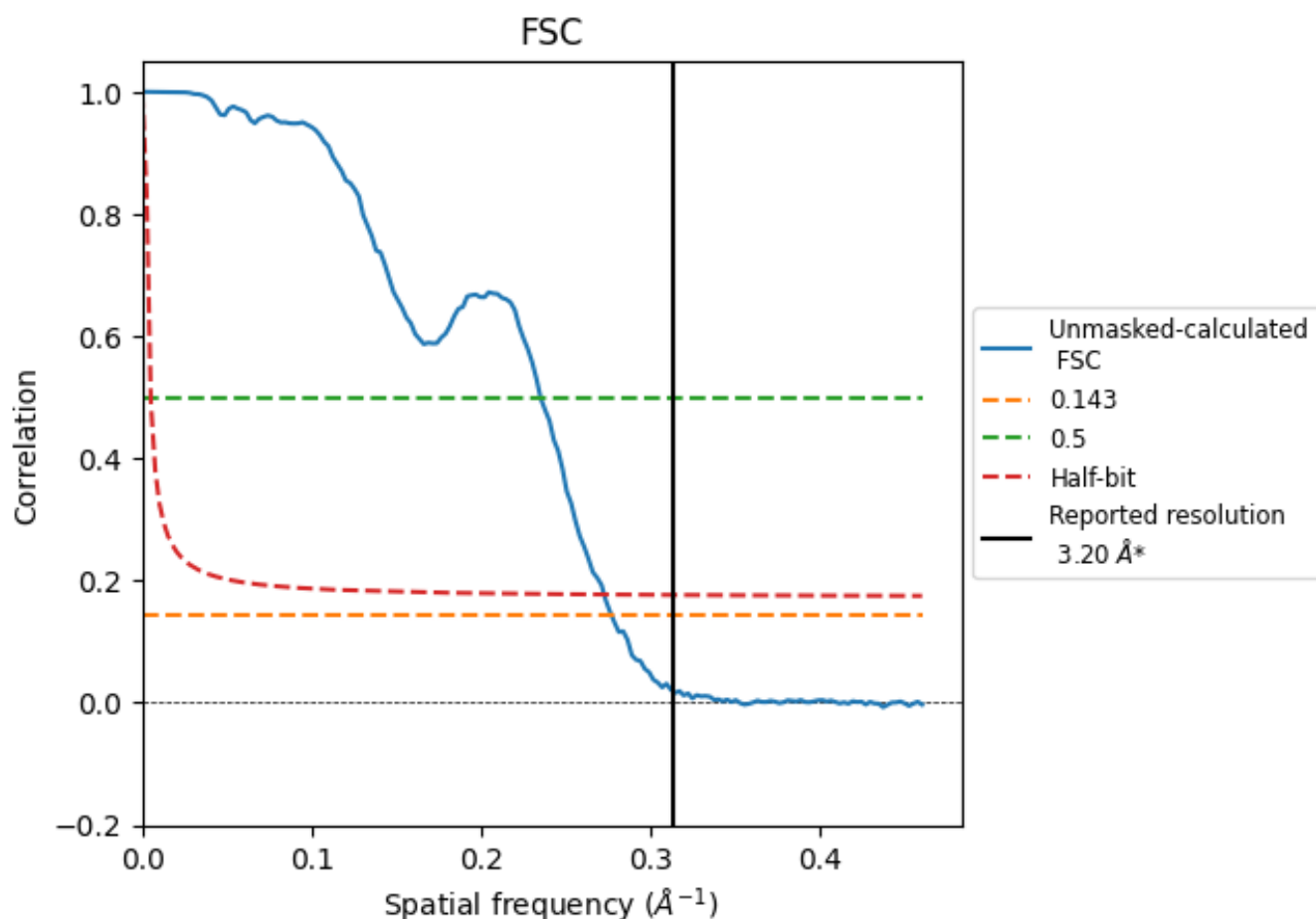


\*Reported resolution corresponds to spatial frequency of 0.312  $\text{\AA}^{-1}$

## 8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of  $0.312 \text{ \AA}^{-1}$

## 8.2 Resolution estimates [i](#)

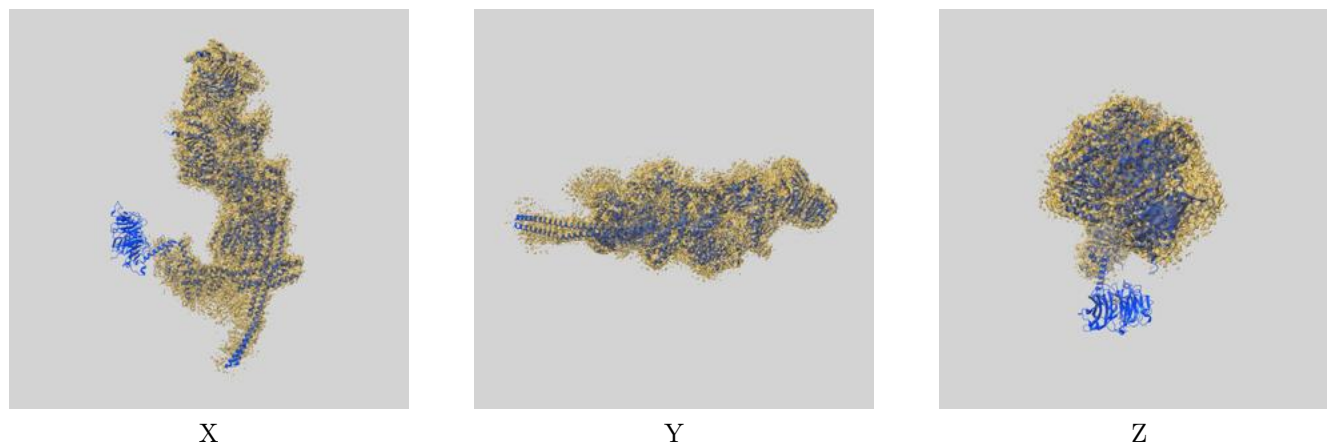
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.20                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 3.61                               | 4.26 | 3.67     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.61 differs from the reported value 3.2 by more than 10 %

## 9 Map-model fit [i](#)

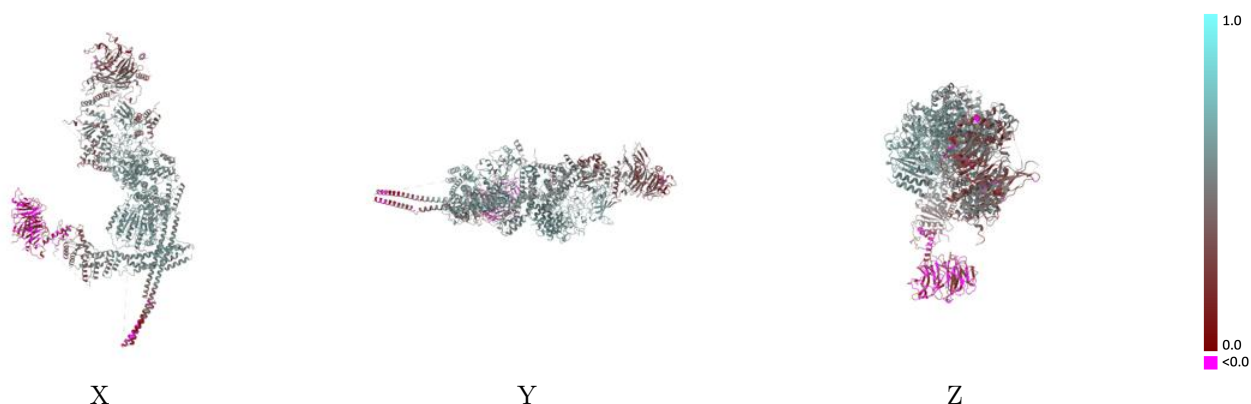
This section contains information regarding the fit between EMDB map EMD-35093 and PDB model 8I03. Per-residue inclusion information can be found in section [3](#) on page [6](#).

### 9.1 Map-model overlay [i](#)



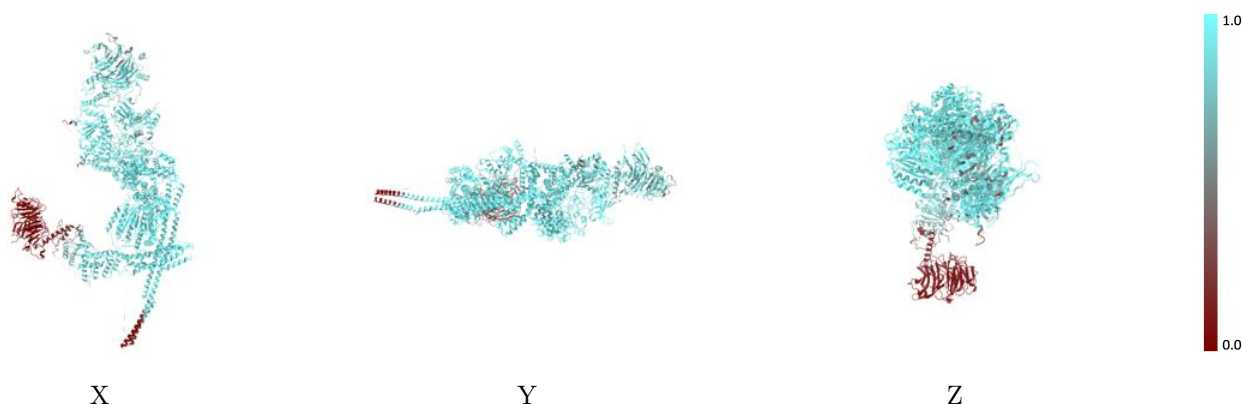
The images above show the 3D surface view of the map at the recommended contour level 0.012 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

## 9.2 Q-score mapped to coordinate model [i](#)



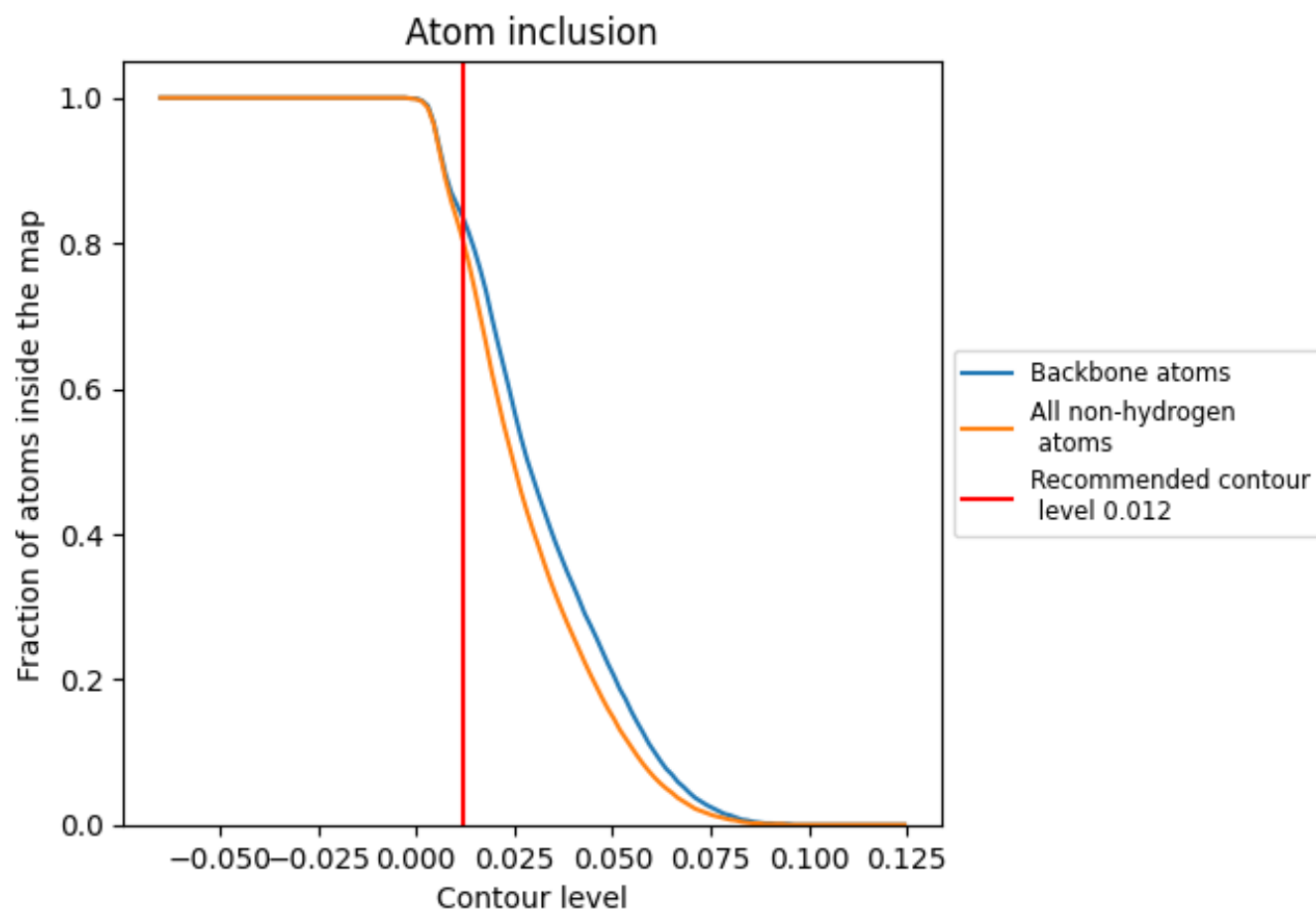
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

## 9.3 Atom inclusion mapped to coordinate model [i](#)



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.012).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 83% of all backbone atoms, 80% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.012) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion     | Q-score            |
|-------|--------------------|--------------------|
| All   | <div></div> 0.8020 | <div></div> 0.4440 |
| A     | <div></div> 0.8470 | <div></div> 0.4620 |
| B     | <div></div> 0.9070 | <div></div> 0.4810 |
| C     | <div></div> 0.9780 | <div></div> 0.5940 |
| D     | <div></div> 0.9780 | <div></div> 0.5890 |
| E     | <div></div> 0.8730 | <div></div> 0.4760 |
| F     | <div></div> 0.9310 | <div></div> 0.5430 |
| G     | <div></div> 0.8140 | <div></div> 0.4590 |
| H     | <div></div> 0.9380 | <div></div> 0.5430 |
| I     | <div></div> 0.9300 | <div></div> 0.5300 |
| J     | <div></div> 0.8000 | <div></div> 0.3300 |
| K     | <div></div> 0.0070 | <div></div> 0.0360 |

1.0

0.0

<0.0