



## Full wwPDB EM Validation Report ⓘ

Mar 25, 2026 – 02:51 AM UTC

PDB ID : 9JI5 / pdb\_00009ji5  
EMDB ID : EMD-61497  
Title : Cryo-EM structure of Mycobacterium tuberculosis transcription activation complex with six PhoP molecules  
Authors : Lin, W.; Feng, Y.  
Deposited on : 2024-09-11  
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:

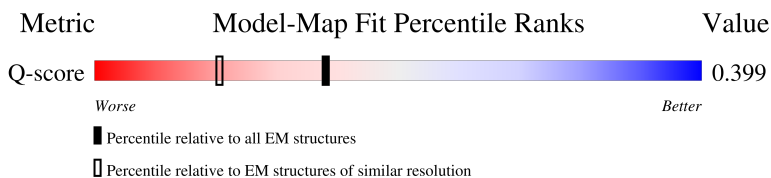
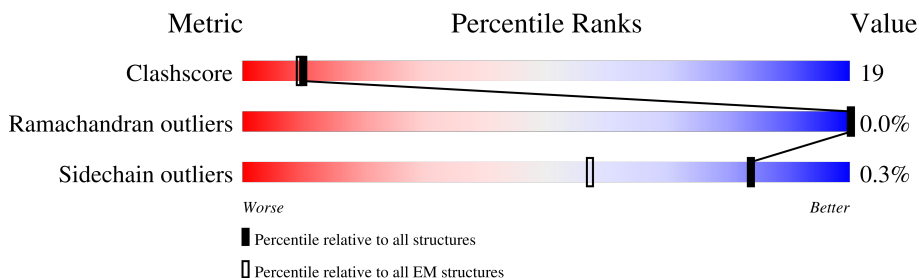
EMDB validation analysis : 0.0.1.dev132  
MolProbity : 4-5-2 with Phenix2.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

# 1 Overall quality at a glance i

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.





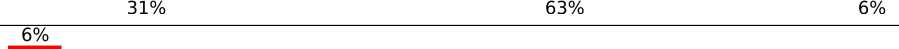
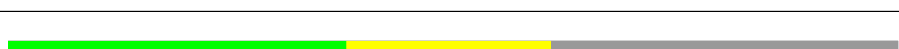


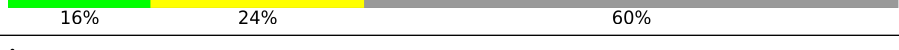
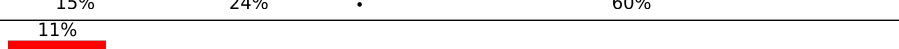



| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|--|
| Clashscore            | 229148                      | 23984                       | -  |
| Ramachandran outliers | 224038                      | 23583                       | -  |
| Sidechain outliers    | 223484                      | 23102                       | -  |
| Q-score               | -                           | 25397                       | 15020 ( 2.70 - 3.70 )                                    |

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     | 347    | 45% (green), 20% (yellow), 35% (grey)          |
| 1   | B     | 347    | 45% (green), 22% (yellow), 33% (grey)          |
| 1   | I     | 347    | 5% (red), 9% (orange), 8% (yellow), 84% (grey) |
| 2   | C     | 1178   | 66% (green), 28% (yellow), 6% (grey)           |

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| Mol | Chain | Length | Quality of chain   |
|-----|-------|--------|--|
| 3   | D     | 1316   |    |
| 4   | E     | 110    |    |
| 5   | H     | 108    |    |
| 6   | G     | 108    |    |
| 7   | F     | 528    |    |
| 8   | J     | 247    |    |
| 8   | K     | 247    |    |
| 8   | L     | 247    |    |
| 8   | M     | 247    |    |
| 8   | N     | 247    |   |
| 8   | O     | 247    |  |

## 2 Entry composition [i](#)

There are 10 unique types of molecules in this entry. The entry contains 34369 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 DNA-directed RNA polymerase subunit alpha.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 1   | A     | 225      | 1710  | 1077 | 293 | 338 | 2 | 0       | 0     |
| 1   | B     | 234      | 1748  | 1105 | 298 | 342 | 3 | 0       | 0     |
| 1   | I     | 57       | 433   | 273  | 78  | 81  | 1 | 0       | 0     |

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
|     |       |          | Total | C    | N    | O    | S  |         |       |
| 2   | C     | 1111     | 8554  | 5360 | 1500 | 1655 | 39 | 0       | 0     |

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
|     |       |          | Total | C    | N    | O    | S  |         |       |
| 3   | D     | 1263     | 9838  | 6162 | 1784 | 1851 | 41 | 0       | 0     |

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit omega.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 4   | E     | 83       | 649   | 414 | 108 | 127 | 0       | 0     |

- Molecule 5 is a DNA chain called Non-template strand DNA.

| Mol | Chain | Residues | Atoms |     |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   | P   |         |       |
| 5   | H     | 102      | 2105  | 994 | 401 | 608 | 102 | 0       | 0     |

- Molecule 6 is a DNA chain called Template strand DNA.

| Mol | Chain | Residues | Atoms |     |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   | P   |         |       |
| 6   | G     | 100      | 2047  | 970 | 374 | 603 | 100 | 0       | 0     |

- Molecule 7 is a protein called RNA polymerase sigma factor SigA.

| Mol | Chain | Residues | Atoms |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
|     |       |          | Total | C    | N   | O   | S |         |       |
| 7   | F     | 322      | 2529  | 1577 | 454 | 489 | 9 | 0       | 0     |

- Molecule 8 is a protein called DNA-binding response regulator.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
|     |       |          | Total | C   | N   | O   |         |       |
| 8   | J     | 96       | 776   | 503 | 133 | 140 | 0       | 0     |
| 8   | M     | 98       | 792   | 513 | 135 | 144 | 0       | 0     |
| 8   | O     | 98       | 792   | 513 | 135 | 144 | 0       | 0     |
| 8   | K     | 97       | 795   | 513 | 137 | 145 | 0       | 0     |
| 8   | L     | 98       | 796   | 512 | 138 | 146 | 0       | 0     |
| 8   | N     | 98       | 802   | 518 | 138 | 146 | 0       | 0     |

- Molecule 9 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

| Mol | Chain | Residues | Atoms |    | AltConf |
|-----|-------|----------|-------|----|---------|
| 9   | D     | 2        | Total | Zn | 0       |
|     |       |          | 2     | 2  |         |

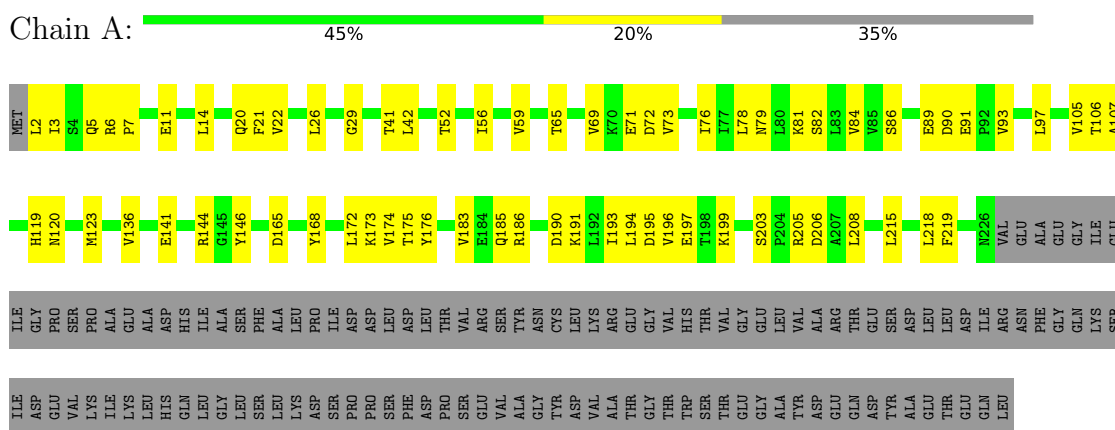
- Molecule 10 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

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

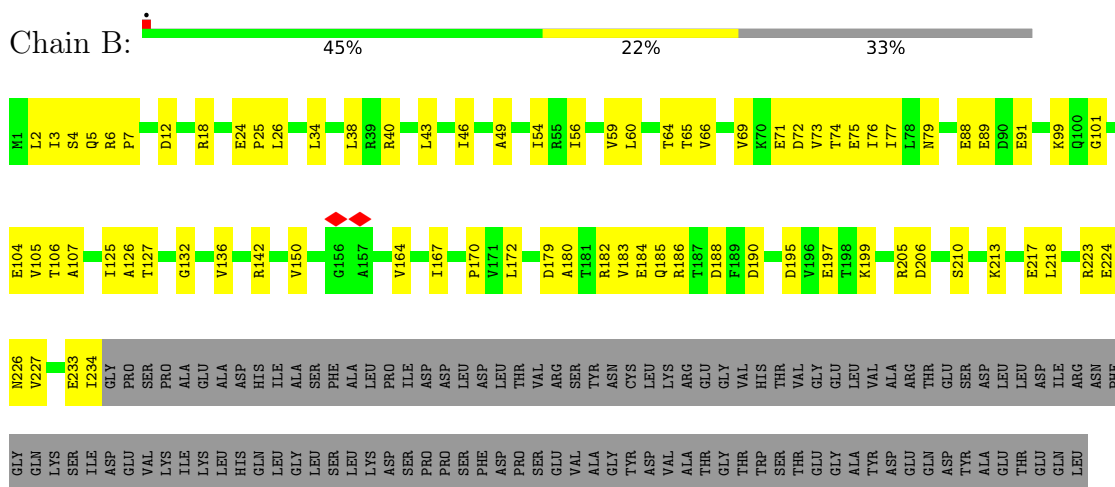
### 3 Residue-property plots [i](#)

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.

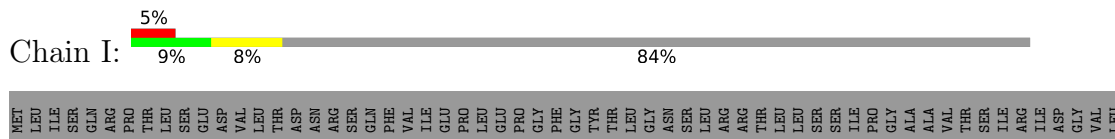
- Molecule 1: DNA-directed RNA polymerase subunit alpha

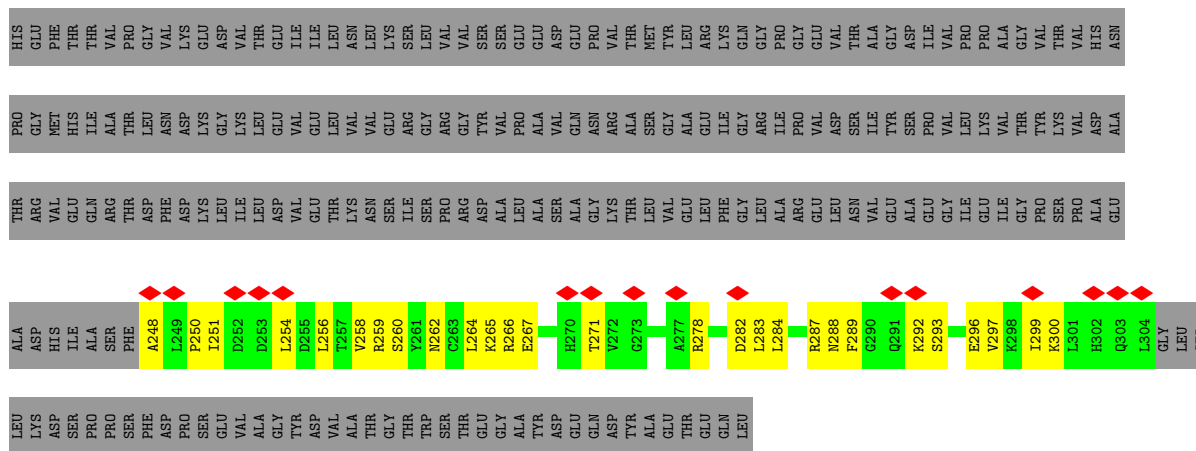


- Molecule 1: DNA-directed RNA polymerase subunit alpha

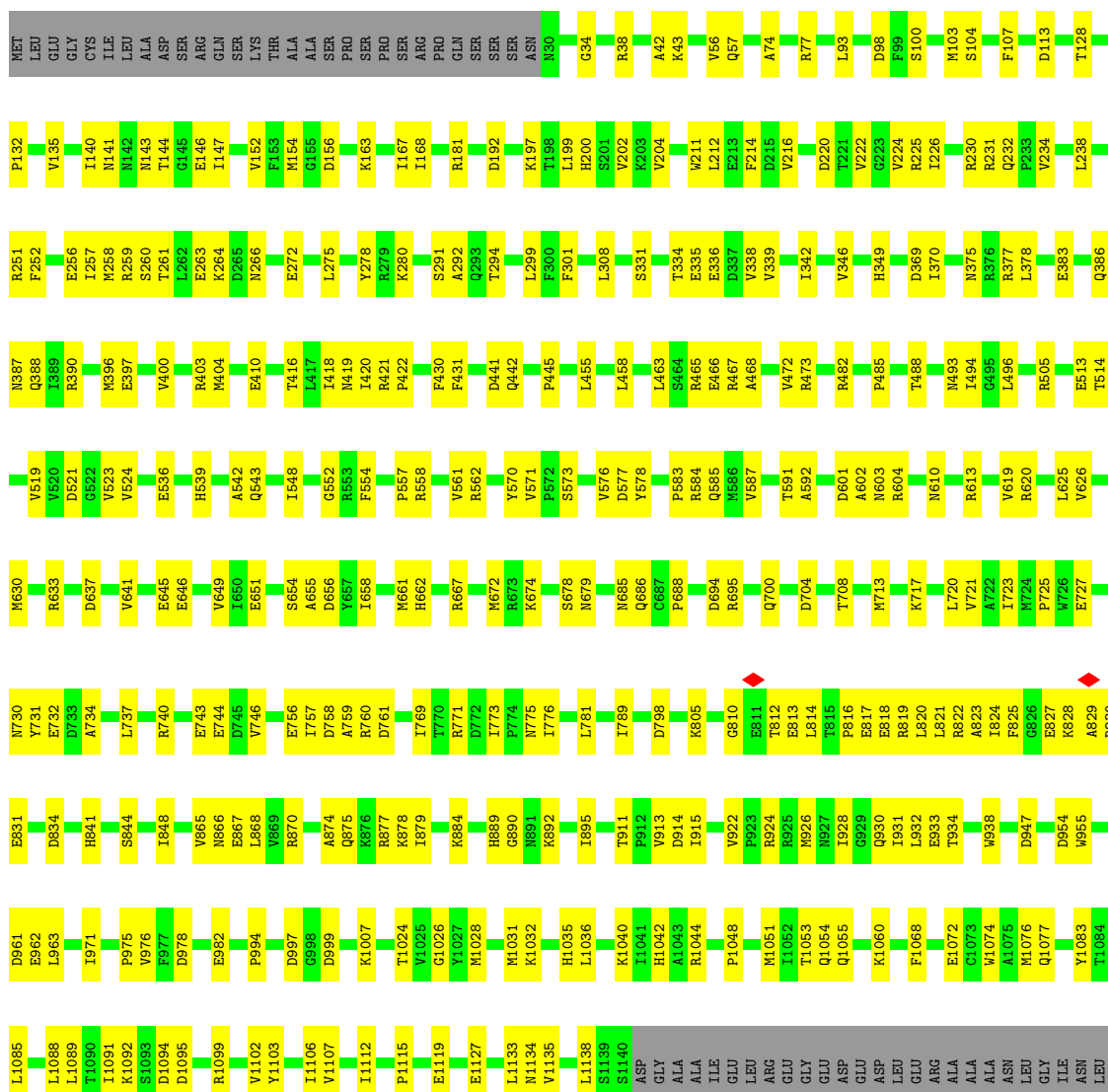


- Molecule 1: DNA-directed RNA polymerase subunit alpha



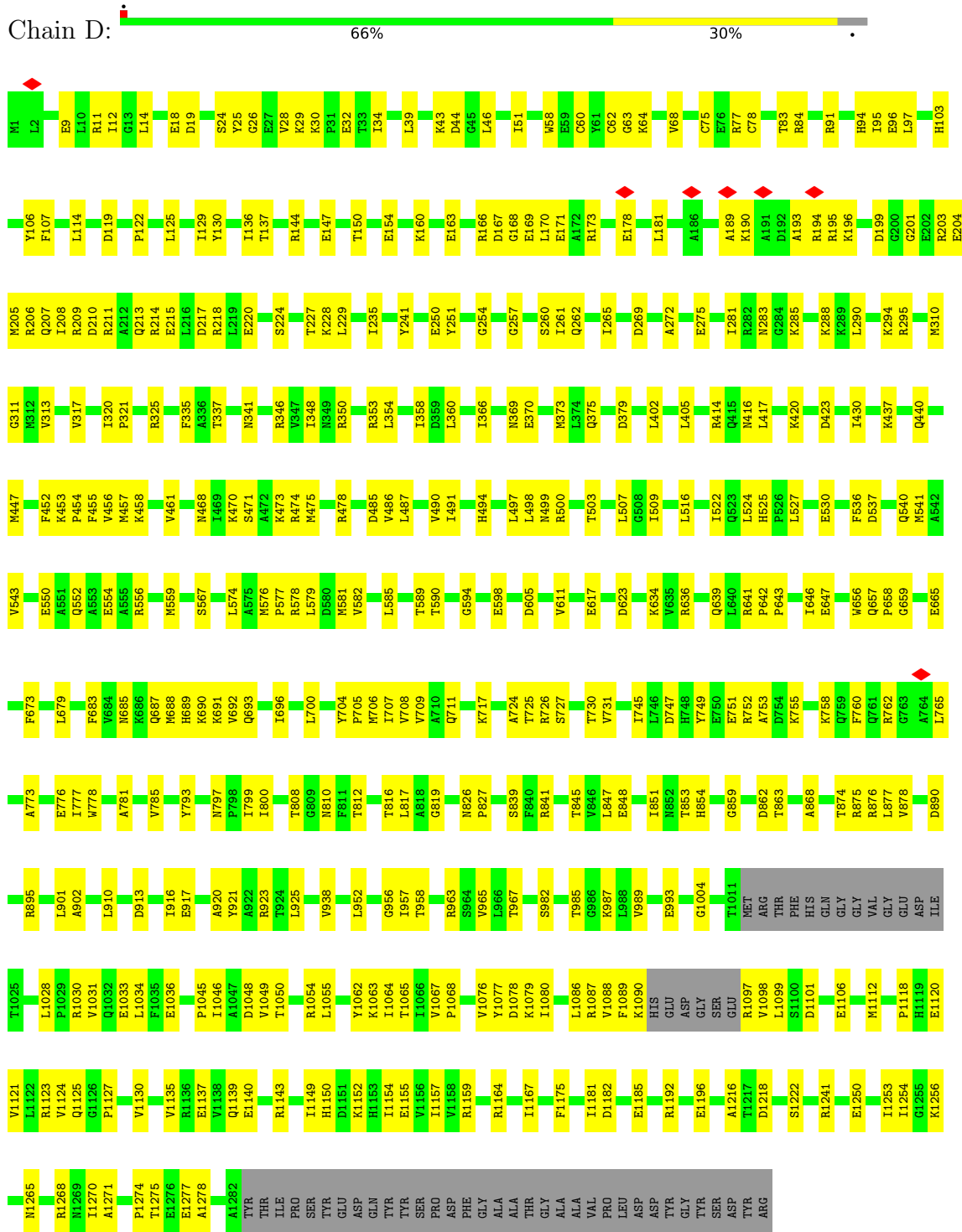


• Molecule 2: DNA-directed RNA polymerase subunit beta



|     |
|-----|
| SER |
| ARG |
| ASN |
| GLU |
| SER |
| ALA |
| SER |
| VAL |
| GLU |
| ASP |
| LEU |
| ALA |

• Molecule 3: DNA-directed RNA polymerase subunit beta'



• Molecule 4: DNA-directed RNA polymerase subunit omega









## 4 Experimental information

| Property                             | Value               | Source    |
|--------------------------------------|---------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE     | Depositor |
| Imposed symmetry                     | POINT, Not provided |           |
| Number of particles used             | 227755              | 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 ( $e^-/\text{\AA}^2$ ) | 52                  | Depositor |
| Minimum defocus (nm)                 | 1000                | Depositor |
| Maximum defocus (nm)                 | 2000                | Depositor |
| Magnification                        | Not provided        |           |
| Image detector                       | GATAN K3 (6k x 4k)  | Depositor |
| Maximum map value                    | 0.251               | Depositor |
| Minimum map value                    | -0.112              | Depositor |
| Average map value                    | -0.000              | Depositor |
| Map value standard deviation         | 0.009               | Depositor |
| Recommended contour level            | 0.02                | Depositor |
| Map size ( $\text{\AA}$ )            | 360.0, 360.0, 360.0 | wwPDB     |
| Map dimensions                       | 600, 600, 600       | wwPDB     |
| Map angles ( $^\circ$ )              | 90.0, 90.0, 90.0    | wwPDB     |
| Pixel spacing ( $\text{\AA}$ )       | 0.6, 0.6, 0.6       | Depositor |

## 5 Model quality

### 5.1 Standard geometry

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

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     | 0.18         | 0/1736  | 0.39        | 0/2363  |
| 1   | B     | 0.19         | 0/1774  | 0.41        | 0/2417  |
| 1   | I     | 0.22         | 0/436   | 0.50        | 0/588   |
| 2   | C     | 0.16         | 0/8709  | 0.37        | 0/11811 |
| 3   | D     | 0.20         | 0/10002 | 0.41        | 0/13526 |
| 4   | E     | 0.17         | 0/662   | 0.38        | 0/901   |
| 5   | H     | 0.25         | 0/2365  | 0.48        | 0/3651  |
| 6   | G     | 0.21         | 0/2293  | 0.42        | 0/3534  |
| 7   | F     | 0.19         | 0/2559  | 0.38        | 0/3453  |
| 8   | J     | 0.28         | 0/794   | 0.52        | 0/1079  |
| 8   | K     | 0.36         | 0/813   | 0.53        | 0/1103  |
| 8   | L     | 0.35         | 0/814   | 0.58        | 0/1106  |
| 8   | M     | 0.52         | 0/811   | 0.77        | 0/1103  |
| 8   | N     | 0.40         | 0/821   | 0.55        | 0/1115  |
| 8   | O     | 0.27         | 0/811   | 0.47        | 0/1103  |
| All | All   | 0.23         | 0/35400 | 0.43        | 0/48853 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 1710  | 0        | 1745     | 64      | 0            |
| 1   | B     | 1748  | 0        | 1779     | 74      | 0            |
| 1   | I     | 433   | 0        | 440      | 29      | 0            |
| 2   | C     | 8554  | 0        | 8457     | 289     | 0            |
| 3   | D     | 9838  | 0        | 9880     | 321     | 0            |
| 4   | E     | 649   | 0        | 645      | 27      | 0            |
| 5   | H     | 2105  | 0        | 1142     | 73      | 0            |
| 6   | G     | 2047  | 0        | 1124     | 69      | 0            |
| 7   | F     | 2529  | 0        | 2536     | 108     | 0            |
| 8   | J     | 776   | 0        | 776      | 48      | 0            |
| 8   | K     | 795   | 0        | 797      | 64      | 0            |
| 8   | L     | 796   | 0        | 797      | 70      | 0            |
| 8   | M     | 792   | 0        | 789      | 74      | 0            |
| 8   | N     | 802   | 0        | 804      | 59      | 0            |
| 8   | O     | 792   | 0        | 789      | 47      | 0            |
| 9   | D     | 2     | 0        | 0        | 0       | 0            |
| 10  | D     | 1     | 0        | 0        | 0       | 0            |
| All | All   | 34369 | 0        | 32500    | 1289    | 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 19.

All (1289) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:I:265:LYS:HB3  | 1:I:266:ARG:NH2  | 1.61                     | 1.16              |
| 2:C:222:VAL:HG23 | 2:C:234:VAL:HG23 | 1.39                     | 1.04              |
| 1:B:59:VAL:HG11  | 1:B:66:VAL:HG12  | 1.40                     | 1.04              |
| 2:C:445:PRO:HB2  | 2:C:713:MET:HE1  | 1.41                     | 1.02              |
| 2:C:222:VAL:CG2  | 2:C:234:VAL:HG23 | 1.90                     | 1.01              |
| 8:K:166:TRP:O    | 8:K:167:LYS:NZ   | 1.96                     | 0.98              |
| 2:C:817:GLU:O    | 2:C:821:LEU:HG   | 1.67                     | 0.95              |
| 2:C:154:MET:HE3  | 2:C:420:ILE:HG22 | 1.51                     | 0.93              |
| 3:D:360:LEU:HD21 | 7:F:329:ILE:HG21 | 1.50                     | 0.92              |
| 3:D:500:ARG:HB2  | 3:D:541:MET:HE2  | 1.50                     | 0.91              |
| 2:C:445:PRO:HB2  | 2:C:713:MET:CE   | 1.99                     | 0.91              |
| 1:B:59:VAL:CG1   | 1:B:66:VAL:HG12  | 2.03                     | 0.88              |
| 8:J:210:ASP:OD1  | 8:J:211:VAL:N    | 2.06                     | 0.88              |
| 8:K:166:TRP:C    | 8:K:167:LYS:HD2  | 2.00                     | 0.87              |
| 1:I:265:LYS:HB3  | 1:I:266:ARG:HH21 | 1.35                     | 0.86              |
| 6:G:87:DC:H2''   | 6:G:88:DT:H5'    | 1.57                     | 0.86              |
| 3:D:173:ARG:HH22 | 3:D:208:ILE:HG21 | 1.40                     | 0.85              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:G:46:DC:H5'     | 8:K:237:ARG:HH12  | 1.41                     | 0.85              |
| 8:K:156:ILE:HA    | 8:K:167:LYS:HZ1   | 1.42                     | 0.85              |
| 8:K:167:LYS:HA    | 8:K:167:LYS:HE3   | 1.60                     | 0.84              |
| 6:G:69:DC:H4'     | 8:L:235:THR:HG21  | 1.59                     | 0.83              |
| 1:A:42:LEU:HD21   | 1:A:208:LEU:HD12  | 1.61                     | 0.82              |
| 1:A:203:SER:HB3   | 1:A:206:ASP:OD2   | 1.80                     | 0.82              |
| 4:E:43:LEU:HB3    | 4:E:53:LEU:HD11   | 1.63                     | 0.80              |
| 8:M:165:VAL:HG23  | 8:M:172:VAL:HG13  | 1.63                     | 0.80              |
| 8:O:189:ALA:HA    | 8:O:243:LEU:HD21  | 1.64                     | 0.80              |
| 8:M:184:TYR:O     | 8:M:187:ILE:HG12  | 1.81                     | 0.80              |
| 7:F:294:HIS:HA    | 7:F:297:GLU:OE1   | 1.81                     | 0.79              |
| 5:H:26:DG:H2'     | 5:H:27:DA:C5      | 2.18                     | 0.79              |
| 8:N:194:SER:H     | 8:N:197:LYS:HD3   | 1.47                     | 0.79              |
| 8:M:195:LYS:H     | 8:M:195:LYS:HD2   | 1.47                     | 0.79              |
| 2:C:1024:THR:H    | 3:D:730:THR:HG21  | 1.47                     | 0.78              |
| 1:I:248:ALA:N     | 1:I:271:THR:HG1   | 1.82                     | 0.78              |
| 8:O:230:LYS:HD2   | 8:O:232:LEU:HD23  | 1.66                     | 0.77              |
| 8:M:181:LEU:HB3   | 8:M:202:VAL:HG11  | 1.66                     | 0.77              |
| 7:F:386:LEU:CD2   | 7:F:394:PRO:HB3   | 2.13                     | 0.76              |
| 8:K:157:GLU:H     | 8:K:167:LYS:NZ    | 1.83                     | 0.76              |
| 8:M:214:VAL:HA    | 8:M:217:TYR:CD2   | 2.20                     | 0.76              |
| 1:A:90:ASP:OD1    | 1:A:91:GLU:N      | 2.19                     | 0.75              |
| 3:D:1270:ILE:HG22 | 4:E:108:GLU:HA    | 1.67                     | 0.75              |
| 8:M:178:GLU:HB3   | 8:M:221:LEU:HD11  | 1.69                     | 0.75              |
| 8:K:188:ASN:HD22  | 8:K:193:LEU:HD21  | 1.52                     | 0.75              |
| 8:K:165:VAL:HG22  | 8:K:167:LYS:HD3   | 1.69                     | 0.75              |
| 2:C:658:ILE:HD11  | 2:C:688:PRO:HB3   | 1.67                     | 0.75              |
| 8:K:156:ILE:HA    | 8:K:167:LYS:NZ    | 2.01                     | 0.74              |
| 2:C:821:LEU:HD22  | 7:F:523:LEU:HD12  | 1.69                     | 0.74              |
| 5:H:17:DT:H4'     | 1:I:262:ASN:OD1   | 1.87                     | 0.74              |
| 8:N:165:VAL:HG13  | 8:N:172:VAL:HG13  | 1.70                     | 0.74              |
| 1:I:256:LEU:HD13  | 1:I:260:SER:HB3   | 1.71                     | 0.73              |
| 8:K:198:ILE:O     | 8:K:202:VAL:HG12  | 1.88                     | 0.73              |
| 3:D:320:ILE:O     | 3:D:325:ARG:NH1   | 2.22                     | 0.72              |
| 8:J:185:PHE:HE1   | 8:J:198:ILE:HD11  | 1.55                     | 0.72              |
| 3:D:793:TYR:CD1   | 3:D:800:ILE:HG13  | 2.24                     | 0.72              |
| 1:A:205:ARG:HG3   | 1:B:225:LEU:HD21  | 1.71                     | 0.72              |
| 3:D:1054:ARG:HH21 | 3:D:1065:THR:HG23 | 1.55                     | 0.72              |
| 8:K:181:LEU:HD22  | 8:K:202:VAL:HG21  | 1.70                     | 0.71              |
| 8:N:150:ARG:NH1   | 8:N:151:LEU:O     | 2.22                     | 0.71              |
| 5:H:53:DC:H2''    | 5:H:54:DG:N7      | 2.05                     | 0.71              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:M:222:ARG:HD2  | 8:M:226:ASP:HB3  | 1.71                     | 0.71              |
| 3:D:370:GLU:HA   | 3:D:373:MET:HE2  | 1.72                     | 0.71              |
| 5:H:52:DC:H4'    | 5:H:53:DC:OP1    | 1.90                     | 0.71              |
| 8:L:165:VAL:HG21 | 8:L:174:LEU:HD13 | 1.73                     | 0.71              |
| 1:A:72:ASP:OD2   | 1:A:73:VAL:N     | 2.23                     | 0.70              |
| 3:D:1164:ARG:NH2 | 3:D:1216:ALA:O   | 2.24                     | 0.70              |
| 5:H:92:DA:H2''   | 5:H:93:DC:H5'    | 1.72                     | 0.70              |
| 8:J:167:LYS:HZ1  | 8:J:172:VAL:HG12 | 1.57                     | 0.70              |
| 8:L:167:LYS:NZ   | 8:L:227:THR:OG1  | 2.24                     | 0.70              |
| 2:C:396:MET:HE1  | 2:C:419:ASN:O    | 1.91                     | 0.70              |
| 4:E:70:GLN:HE22  | 4:E:75:ILE:HA    | 1.57                     | 0.70              |
| 8:N:167:LYS:O    | 8:N:170:GLN:HG3  | 1.91                     | 0.70              |
| 3:D:75:CYS:HB3   | 3:D:78:CYS:SG    | 2.32                     | 0.70              |
| 2:C:924:ARG:HD3  | 3:D:808:THR:HB   | 1.74                     | 0.70              |
| 7:F:306:LEU:HD21 | 7:F:348:THR:HG23 | 1.73                     | 0.70              |
| 1:A:206:ASP:OD1  | 1:B:226:ASN:ND2  | 2.24                     | 0.70              |
| 8:M:183:ARG:O    | 8:M:187:ILE:HG23 | 1.91                     | 0.69              |
| 3:D:46:LEU:O     | 3:D:325:ARG:NH2  | 2.25                     | 0.69              |
| 6:G:9:DT:H2'     | 6:G:10:DG:C8     | 2.27                     | 0.69              |
| 8:M:192:VAL:H    | 8:K:163:HIS:CD2  | 2.09                     | 0.69              |
| 6:G:87:DC:OP1    | 1:I:259:ARG:NH1  | 2.26                     | 0.69              |
| 3:D:28:VAL:HG13  | 3:D:95:ILE:HG22  | 1.75                     | 0.69              |
| 3:D:353:ARG:NH1  | 7:F:323:GLU:OE2  | 2.24                     | 0.69              |
| 8:M:151:LEU:HD21 | 8:M:183:ARG:HH11 | 1.56                     | 0.69              |
| 8:O:184:TYR:O    | 8:O:188:ASN:ND2  | 2.26                     | 0.69              |
| 1:A:6:ARG:HE     | 1:A:7:PRO:HD2    | 1.57                     | 0.69              |
| 2:C:1044:ARG:NH1 | 3:D:423:ASP:OD1  | 2.26                     | 0.69              |
| 5:H:97:DT:H2''   | 5:H:98:DG:C5     | 2.28                     | 0.69              |
| 8:K:226:ASP:OD2  | 8:K:231:ARG:NE   | 2.26                     | 0.69              |
| 3:D:530:GLU:HB2  | 3:D:578:ARG:HD2  | 1.74                     | 0.69              |
| 8:O:243:LEU:O    | 8:O:244:ARG:NE   | 2.26                     | 0.68              |
| 6:G:68:DC:H2'    | 6:G:69:DC:C6     | 2.28                     | 0.68              |
| 8:M:174:LEU:HD11 | 8:M:178:GLU:HB2  | 1.75                     | 0.68              |
| 2:C:816:PRO:HA   | 2:C:819:ARG:HD2  | 1.73                     | 0.68              |
| 6:G:69:DC:H3'    | 6:G:70:DT:H71    | 1.75                     | 0.68              |
| 2:C:519:VAL:HG21 | 2:C:576:VAL:HG23 | 1.76                     | 0.68              |
| 3:D:447:MET:HE3  | 3:D:543:VAL:HG11 | 1.75                     | 0.68              |
| 3:D:643:PRO:HD3  | 3:D:683:PHE:HB3  | 1.75                     | 0.68              |
| 8:J:219:SER:OG   | 8:J:223:ARG:NH2  | 2.27                     | 0.68              |
| 8:N:218:VAL:HA   | 8:N:221:LEU:HD12 | 1.75                     | 0.68              |
| 3:D:589:THR:HG21 | 3:D:688:MET:HG3  | 1.74                     | 0.68              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 3:D:910:LEU:HD11 | 3:D:956:GLY:HA2   | 1.75                     | 0.68              |
| 1:B:18:ARG:NE    | 1:B:195:ASP:OD1   | 2.26                     | 0.68              |
| 1:A:2:LEU:N      | 1:A:186:ARG:O     | 2.28                     | 0.67              |
| 3:D:201:GLY:O    | 3:D:205:MET:HE2   | 1.93                     | 0.67              |
| 8:J:167:LYS:NZ   | 8:J:172:VAL:HG12  | 2.08                     | 0.67              |
| 8:L:243:LEU:O    | 8:L:244:ARG:NE    | 2.27                     | 0.67              |
| 8:N:199:LEU:HA   | 8:N:203:TRP:HD1   | 1.59                     | 0.67              |
| 8:J:172:VAL:HG21 | 8:J:224:LYS:HD2   | 1.75                     | 0.67              |
| 8:M:193:LEU:HA   | 8:M:197:LYS:HE2   | 1.75                     | 0.67              |
| 2:C:761:ASP:OD1  | 2:C:866:ASN:ND2   | 2.26                     | 0.67              |
| 8:M:164:GLU:HB3  | 8:M:166:TRP:CZ3   | 2.28                     | 0.67              |
| 3:D:169:GLU:OE1  | 3:D:209:ARG:NH2   | 2.28                     | 0.67              |
| 8:O:167:LYS:HE2  | 8:O:232:LEU:HD11  | 1.76                     | 0.67              |
| 8:L:215:GLU:HA   | 8:L:218:VAL:HG12  | 1.77                     | 0.67              |
| 2:C:369:ASP:O    | 2:C:375:ASN:ND2   | 2.28                     | 0.67              |
| 8:K:180:THR:HA   | 8:K:183:ARG:HG2   | 1.77                     | 0.66              |
| 1:I:251:ILE:HG22 | 1:I:256:LEU:HD21  | 1.77                     | 0.66              |
| 8:K:160:GLU:O    | 8:K:163:HIS:ND1   | 2.28                     | 0.66              |
| 6:G:88:DT:OP2    | 1:I:288:ASN:ND2   | 2.28                     | 0.66              |
| 8:O:157:GLU:HB2  | 8:O:166:TRP:HB2   | 1.77                     | 0.66              |
| 3:D:793:TYR:CD1  | 3:D:800:ILE:CG1   | 2.79                     | 0.66              |
| 3:D:75:CYS:CB    | 3:D:78:CYS:SG     | 2.81                     | 0.66              |
| 8:L:157:GLU:HB2  | 8:L:166:TRP:HB3   | 1.76                     | 0.66              |
| 2:C:771:ARG:NH2  | 2:C:781:LEU:O     | 2.29                     | 0.66              |
| 1:B:182:ARG:HG3  | 1:B:186:ARG:HB2   | 1.78                     | 0.66              |
| 8:K:156:ILE:CA   | 8:K:167:LYS:HZ1   | 2.09                     | 0.66              |
| 3:D:708:VAL:HG12 | 4:E:29:TYR:HB3    | 1.77                     | 0.65              |
| 8:L:234:HIS:NE2  | 8:L:244:ARG:O     | 2.26                     | 0.65              |
| 2:C:884:LYS:HZ2  | 2:C:892:LYS:HB2   | 1.61                     | 0.65              |
| 8:O:177:THR:O    | 8:O:181:LEU:HG    | 1.96                     | 0.65              |
| 2:C:234:VAL:HG12 | 2:C:238:LEU:HD23  | 1.77                     | 0.65              |
| 3:D:1045:PRO:C   | 3:D:1046:ILE:HD13 | 2.22                     | 0.65              |
| 7:F:456:LEU:HD12 | 7:F:526:TYR:HB3   | 1.78                     | 0.65              |
| 1:B:179:ASP:OD2  | 1:B:180:ALA:N     | 2.28                     | 0.65              |
| 2:C:222:VAL:HG21 | 2:C:234:VAL:HG23  | 1.79                     | 0.65              |
| 8:O:167:LYS:HB3  | 8:O:170:GLN:HG3   | 1.79                     | 0.65              |
| 3:D:1089:PHE:O   | 3:D:1097:ARG:N    | 2.30                     | 0.65              |
| 8:N:159:ASP:HB3  | 8:N:166:TRP:HH2   | 1.62                     | 0.65              |
| 2:C:222:VAL:HG23 | 2:C:234:VAL:CG2   | 2.22                     | 0.65              |
| 6:G:76:DC:H2''   | 6:G:77:DA:N7      | 2.12                     | 0.65              |
| 3:D:641:ARG:NH2  | 3:D:647:GLU:OE2   | 2.30                     | 0.64              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 3:D:826:ASN:OD1   | 3:D:827:PRO:HD2  | 1.97                     | 0.64              |
| 2:C:1053:THR:HG21 | 3:D:416:ASN:HD21 | 1.63                     | 0.64              |
| 7:F:426:THR:HG21  | 7:F:431:GLY:HA2  | 1.79                     | 0.64              |
| 3:D:369:ASN:ND2   | 7:F:322:GLN:OE1  | 2.29                     | 0.64              |
| 3:D:585:LEU:HD13  | 3:D:673:PHE:HE2  | 1.61                     | 0.64              |
| 8:M:217:TYR:HA    | 8:M:220:TYR:CD2  | 2.33                     | 0.64              |
| 1:B:6:ARG:HG3     | 1:B:234:ILE:HG12 | 1.79                     | 0.64              |
| 1:B:91:GLU:OE1    | 1:B:91:GLU:N     | 2.23                     | 0.64              |
| 2:C:222:VAL:CG2   | 2:C:234:VAL:CG2  | 2.71                     | 0.64              |
| 8:J:183:ARG:HD3   | 8:J:183:ARG:C    | 2.23                     | 0.64              |
| 2:C:200:HIS:H     | 2:C:216:VAL:HG22 | 1.63                     | 0.64              |
| 8:O:185:PHE:HE1   | 8:O:243:LEU:HB3  | 1.62                     | 0.64              |
| 8:O:233:LEU:HD11  | 8:O:241:TYR:HB3  | 1.79                     | 0.63              |
| 3:D:579:LEU:HD23  | 3:D:808:THR:HG22 | 1.79                     | 0.63              |
| 6:G:90:DG:O3'     | 8:N:237:ARG:NH1  | 2.32                     | 0.63              |
| 3:D:773:ALA:O     | 3:D:777:ILE:HG23 | 1.98                     | 0.63              |
| 3:D:1050:THR:HG23 | 3:D:1106:GLU:HA  | 1.81                     | 0.63              |
| 5:H:42:DA:H3'     | 5:H:43:DT:H71    | 1.80                     | 0.63              |
| 8:M:214:VAL:HA    | 8:M:217:TYR:CE2  | 2.34                     | 0.63              |
| 2:C:1107:VAL:HG11 | 7:F:451:VAL:HG11 | 1.79                     | 0.63              |
| 2:C:926:MET:HE1   | 3:D:817:LEU:HA   | 1.79                     | 0.63              |
| 3:D:468:ASN:HD21  | 7:F:525:ASP:HB3  | 1.62                     | 0.63              |
| 5:H:33:DG:H2''    | 5:H:34:DG:C8     | 2.34                     | 0.63              |
| 2:C:604:ARG:NH2   | 2:C:890:GLY:O    | 2.31                     | 0.63              |
| 3:D:827:PRO:HG3   | 3:D:854:HIS:CD2  | 2.34                     | 0.63              |
| 8:L:181:LEU:HD12  | 8:L:182:LEU:N    | 2.14                     | 0.63              |
| 8:L:194:SER:O     | 8:L:198:ILE:HG12 | 1.99                     | 0.63              |
| 2:C:645:GLU:HG3   | 2:C:646:GLU:HG2  | 1.81                     | 0.63              |
| 8:M:188:ASN:HD21  | 8:M:193:LEU:HD11 | 1.64                     | 0.63              |
| 1:A:22:VAL:HG22   | 1:A:193:ILE:HD12 | 1.81                     | 0.62              |
| 5:H:54:DG:H1'     | 5:H:55:DG:H5'    | 1.80                     | 0.62              |
| 8:M:151:LEU:HD21  | 8:M:183:ARG:NH1  | 2.15                     | 0.62              |
| 8:L:192:VAL:O     | 8:L:197:LYS:NZ   | 2.30                     | 0.62              |
| 2:C:104:SER:HB3   | 2:C:140:ILE:HD11 | 1.81                     | 0.62              |
| 1:B:99:LYS:HD3    | 1:B:105:VAL:HG22 | 1.81                     | 0.62              |
| 2:C:202:VAL:HG12  | 2:C:214:PHE:HB2  | 1.80                     | 0.62              |
| 2:C:485:PRO:HB2   | 3:D:853:THR:HG21 | 1.81                     | 0.62              |
| 8:J:185:PHE:HE1   | 8:J:198:ILE:CD1  | 2.12                     | 0.62              |
| 8:O:222:ARG:HA    | 8:O:226:ASP:HB3  | 1.82                     | 0.62              |
| 2:C:154:MET:HE3   | 2:C:420:ILE:CG2  | 2.27                     | 0.62              |
| 2:C:252:PHE:HD2   | 2:C:258:MET:HE1  | 1.65                     | 0.62              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:C:442:GLN:NE2   | 2:C:679:ASN:OD1  | 2.33                     | 0.62              |
| 3:D:83:THR:HG22   | 3:D:84:ARG:H     | 1.64                     | 0.62              |
| 4:E:46:ARG:HG3    | 4:E:46:ARG:HH11  | 1.65                     | 0.61              |
| 8:K:167:LYS:HD2   | 8:K:167:LYS:N    | 2.15                     | 0.61              |
| 8:L:194:SER:H     | 8:L:197:LYS:HE3  | 1.65                     | 0.61              |
| 2:C:403:ARG:NH2   | 2:C:416:THR:O    | 2.32                     | 0.61              |
| 2:C:558:ARG:HB2   | 2:C:570:TYR:HD2  | 1.65                     | 0.61              |
| 4:E:73:GLU:OE1    | 4:E:73:GLU:N     | 2.33                     | 0.61              |
| 8:J:188:ASN:HD22  | 8:J:193:LEU:HD21 | 1.65                     | 0.61              |
| 2:C:1127:GLU:OE1  | 2:C:1127:GLU:HA  | 2.01                     | 0.61              |
| 6:G:66:DT:H2''    | 6:G:67:DC:C5     | 2.35                     | 0.61              |
| 3:D:901:LEU:HD12  | 3:D:916:ILE:HD12 | 1.81                     | 0.61              |
| 3:D:1192:ARG:NH1  | 3:D:1196:GLU:OE1 | 2.34                     | 0.61              |
| 8:L:165:VAL:HG13  | 8:L:179:PHE:CE2  | 2.36                     | 0.61              |
| 2:C:211:TRP:HH2   | 5:H:88:DT:H2'    | 1.65                     | 0.61              |
| 8:N:192:VAL:HG22  | 8:N:242:VAL:HB   | 1.82                     | 0.61              |
| 2:C:339:VAL:HA    | 2:C:342:ILE:HD12 | 1.81                     | 0.61              |
| 6:G:24:DA:H2'     | 6:G:25:DA:H4'    | 1.81                     | 0.61              |
| 2:C:141:ASN:ND2   | 2:C:410:GLU:OE2  | 2.34                     | 0.61              |
| 3:D:1030:ARG:NH1  | 3:D:1033:GLU:OE2 | 2.32                     | 0.61              |
| 3:D:1140:GLU:HA   | 3:D:1143:ARG:HG2 | 1.82                     | 0.61              |
| 2:C:442:GLN:HG3   | 2:C:678:SER:HB2  | 1.82                     | 0.61              |
| 8:K:185:PHE:HE1   | 8:K:198:ILE:HD11 | 1.66                     | 0.61              |
| 3:D:25:TYR:HD2    | 3:D:91:ARG:HG3   | 1.65                     | 0.61              |
| 8:J:165:VAL:O     | 8:J:171:PRO:HA   | 2.01                     | 0.61              |
| 2:C:542:ALA:HA    | 2:C:561:VAL:HG12 | 1.82                     | 0.60              |
| 8:L:173:SER:O     | 8:L:224:LYS:NZ   | 2.28                     | 0.60              |
| 8:L:234:HIS:HB2   | 8:L:242:VAL:HG12 | 1.83                     | 0.60              |
| 1:B:18:ARG:HD3    | 1:B:197:GLU:HG3  | 1.84                     | 0.60              |
| 3:D:201:GLY:HA2   | 3:D:205:MET:HE2  | 1.82                     | 0.60              |
| 5:H:83:DG:H2'     | 5:H:84:DG:C5     | 2.37                     | 0.60              |
| 6:G:76:DC:H2''    | 6:G:77:DA:C8     | 2.36                     | 0.60              |
| 3:D:210:ASP:O     | 3:D:214:ARG:HG3  | 2.01                     | 0.60              |
| 2:C:651:GLU:OE1   | 2:C:667:ARG:NH1  | 2.35                     | 0.60              |
| 3:D:137:THR:HG23  | 3:D:254:GLY:HA2  | 1.83                     | 0.60              |
| 3:D:1080:ILE:HD12 | 3:D:1112:MET:HE1 | 1.83                     | 0.60              |
| 5:H:53:DC:H2''    | 5:H:54:DG:C8     | 2.37                     | 0.60              |
| 8:M:193:LEU:HB3   | 8:M:198:ILE:HD11 | 1.83                     | 0.60              |
| 8:O:161:GLU:HG2   | 8:O:162:THR:HG23 | 1.84                     | 0.60              |
| 8:O:236:LEU:HB2   | 8:O:239:VAL:HB   | 1.82                     | 0.60              |
| 8:K:159:ASP:O     | 8:K:159:ASP:OD1  | 2.20                     | 0.60              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 8:M:213:VAL:HG22  | 8:M:217:TYR:CZ    | 2.36                     | 0.60              |
| 8:M:234:HIS:HB2   | 8:M:242:VAL:HG12  | 1.83                     | 0.60              |
| 3:D:1270:ILE:HA   | 4:E:107:THR:O     | 2.01                     | 0.60              |
| 8:J:166:TRP:C     | 8:J:167:LYS:HD3   | 2.26                     | 0.60              |
| 7:F:244:GLU:OE2   | 7:F:244:GLU:N     | 2.32                     | 0.60              |
| 2:C:1076:MET:SD   | 3:D:559:MET:HE1   | 2.42                     | 0.59              |
| 3:D:208:ILE:HG23  | 3:D:211:ARG:HH21  | 1.67                     | 0.59              |
| 1:B:101:GLY:N     | 1:B:132:GLY:O     | 2.35                     | 0.59              |
| 1:A:78:LEU:HD22   | 2:C:620:ARG:HD3   | 1.84                     | 0.59              |
| 1:A:218:LEU:HD22  | 1:B:34:LEU:HD11   | 1.83                     | 0.59              |
| 2:C:674:LYS:NZ    | 2:C:686:GLN:O     | 2.34                     | 0.59              |
| 3:D:373:MET:SD    | 7:F:318:LEU:HB3   | 2.41                     | 0.59              |
| 1:B:75:GLU:OE2    | 1:B:75:GLU:N      | 2.35                     | 0.59              |
| 1:B:79:ASN:HD21   | 3:D:636:ARG:HH22  | 1.50                     | 0.59              |
| 2:C:818:GLU:OE1   | 2:C:830:ARG:NH2   | 2.36                     | 0.59              |
| 8:J:230:LYS:HE3   | 8:J:232:LEU:HD21  | 1.84                     | 0.59              |
| 8:K:199:LEU:HD11  | 8:K:214:VAL:HG21  | 1.83                     | 0.59              |
| 1:I:259:ARG:HH12  | 1:I:292:LYS:HB3   | 1.66                     | 0.59              |
| 8:N:204:ARG:HG3   | 8:N:207:PHE:H     | 1.68                     | 0.59              |
| 2:C:737:LEU:HD11  | 2:C:895:ILE:HG12  | 1.84                     | 0.59              |
| 2:C:798:ASP:O     | 3:D:478:ARG:NH1   | 2.29                     | 0.59              |
| 3:D:1048:ASP:OD1  | 3:D:1077:TYR:OH   | 2.21                     | 0.59              |
| 8:J:236:LEU:HD11  | 8:J:242:VAL:HG23  | 1.84                     | 0.59              |
| 3:D:201:GLY:O     | 3:D:205:MET:HG2   | 2.02                     | 0.58              |
| 1:A:186:ARG:HE    | 1:B:150:VAL:HG22  | 1.68                     | 0.58              |
| 3:D:1062:TYR:HB2  | 3:D:1080:ILE:HD11 | 1.83                     | 0.58              |
| 3:D:1088:VAL:HG12 | 3:D:1098:VAL:HA   | 1.85                     | 0.58              |
| 1:B:206:ASP:OD1   | 1:B:206:ASP:N     | 2.32                     | 0.58              |
| 2:C:441:ASP:OD1   | 2:C:441:ASP:N     | 2.36                     | 0.58              |
| 2:C:649:VAL:HG12  | 2:C:661:MET:HB3   | 1.84                     | 0.58              |
| 8:O:230:LYS:HZ1   | 8:O:245:GLU:HA    | 1.68                     | 0.58              |
| 3:D:18:GLU:N      | 3:D:18:GLU:OE2    | 2.37                     | 0.58              |
| 7:F:492:ILE:HG23  | 7:F:503:ILE:HD13  | 1.85                     | 0.58              |
| 8:N:170:GLN:HE22  | 8:N:172:VAL:HB    | 1.67                     | 0.58              |
| 3:D:205:MET:SD    | 3:D:205:MET:N     | 2.77                     | 0.58              |
| 3:D:471:SER:O     | 3:D:475:MET:HG2   | 2.03                     | 0.58              |
| 8:K:157:GLU:H     | 8:K:167:LYS:HZ2   | 1.51                     | 0.58              |
| 1:A:21:PHE:CE2    | 1:A:208:LEU:HD22  | 2.39                     | 0.58              |
| 3:D:497:LEU:HD13  | 3:D:509:ILE:HD11  | 1.84                     | 0.58              |
| 6:G:26:DC:H2''    | 6:G:27:DG:C8      | 2.39                     | 0.58              |
| 6:G:68:DC:H2''    | 8:L:237:ARG:HG3   | 1.85                     | 0.58              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 8:L:203:TRP:HB3   | 8:L:207:PHE:HD2  | 1.69                     | 0.58              |
| 3:D:556:ARG:NH2   | 4:E:35:ILE:O     | 2.36                     | 0.58              |
| 6:G:78:DA:H2''    | 6:G:79:DG:C8     | 2.39                     | 0.58              |
| 2:C:654:SER:OG    | 2:C:655:ALA:N    | 2.35                     | 0.58              |
| 2:C:1138:LEU:HB2  | 3:D:9:GLU:HB3    | 1.85                     | 0.58              |
| 2:C:694:ASP:OD1   | 2:C:694:ASP:N    | 2.36                     | 0.58              |
| 1:I:287:ARG:NH1   | 1:I:288:ASN:OD1  | 2.36                     | 0.58              |
| 2:C:231:ARG:HB2   | 2:C:232:GLN:CD   | 2.29                     | 0.57              |
| 2:C:1127:GLU:HG2  | 3:D:405:LEU:HD11 | 1.86                     | 0.57              |
| 8:J:195:LYS:HD3   | 8:J:211:VAL:HG11 | 1.85                     | 0.57              |
| 3:D:876:ARG:NH1   | 3:D:1036:GLU:OE2 | 2.37                     | 0.57              |
| 8:N:193:LEU:HD13  | 8:N:197:LYS:HE2  | 1.85                     | 0.57              |
| 8:N:217:TYR:HA    | 8:N:220:TYR:HD1  | 1.68                     | 0.57              |
| 7:F:252:ARG:NH2   | 7:F:287:ASP:OD1  | 2.31                     | 0.57              |
| 3:D:95:ILE:HG21   | 3:D:348:ILE:HD11 | 1.85                     | 0.57              |
| 3:D:793:TYR:OH    | 3:D:797:ASN:ND2  | 2.37                     | 0.57              |
| 2:C:38:ARG:HE     | 2:C:971:ILE:HB   | 1.69                     | 0.57              |
| 2:C:817:GLU:O     | 2:C:821:LEU:CG   | 2.49                     | 0.57              |
| 7:F:397:GLU:O     | 7:F:401:LYS:HG2  | 2.04                     | 0.57              |
| 8:O:194:SER:O     | 8:O:198:ILE:HG12 | 2.05                     | 0.57              |
| 1:A:146:TYR:OH    | 2:C:878:LYS:NZ   | 2.38                     | 0.57              |
| 8:J:184:TYR:HE2   | 8:J:198:ILE:HD13 | 1.68                     | 0.57              |
| 2:C:672:MET:HE1   | 2:C:688:PRO:HD3  | 1.87                     | 0.57              |
| 2:C:758:ASP:HB3   | 2:C:868:LEU:HD13 | 1.86                     | 0.57              |
| 3:D:862:ASP:OD1   | 3:D:863:THR:N    | 2.38                     | 0.57              |
| 8:J:206:ASP:OD1   | 8:J:206:ASP:N    | 2.35                     | 0.57              |
| 8:M:194:SER:H     | 8:M:197:LYS:HE2  | 1.69                     | 0.57              |
| 8:L:222:ARG:O     | 8:L:222:ARG:NH1  | 2.32                     | 0.57              |
| 2:C:1076:MET:HE1  | 3:D:509:ILE:HD13 | 1.86                     | 0.57              |
| 1:I:259:ARG:NE    | 1:I:293:SER:HB3  | 2.19                     | 0.57              |
| 2:C:225:ARG:HB3   | 2:C:230:ARG:HA   | 1.86                     | 0.56              |
| 2:C:98:ASP:OD2    | 2:C:100:SER:OG   | 2.24                     | 0.56              |
| 3:D:773:ALA:O     | 3:D:776:GLU:HG3  | 2.06                     | 0.56              |
| 3:D:1054:ARG:NE   | 3:D:1065:THR:OG1 | 2.38                     | 0.56              |
| 5:H:83:DG:H1      | 7:F:228:VAL:HG11 | 1.69                     | 0.56              |
| 7:F:509:LYS:O     | 7:F:513:LYS:HG2  | 2.05                     | 0.56              |
| 8:O:151:LEU:HD12  | 8:O:183:ARG:HH21 | 1.70                     | 0.56              |
| 3:D:1275:THR:HG22 | 3:D:1277:GLU:OE2 | 2.06                     | 0.56              |
| 6:G:10:DG:H2'     | 6:G:11:DA:C8     | 2.40                     | 0.56              |
| 8:L:188:ASN:HB3   | 8:L:191:THR:HB   | 1.88                     | 0.56              |
| 8:O:185:PHE:CE1   | 8:O:243:LEU:HB3  | 2.38                     | 0.56              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:C:773:ILE:HG12  | 2:C:776:ILE:HG13 | 1.88                     | 0.56              |
| 8:K:234:HIS:HE1   | 8:K:244:ARG:HB3  | 1.71                     | 0.56              |
| 1:B:88:GLU:O      | 1:B:142:ARG:NH2  | 2.39                     | 0.56              |
| 2:C:823:ALA:HB1   | 7:F:511:MET:HE1  | 1.88                     | 0.56              |
| 3:D:32:GLU:OE2    | 7:F:367:ARG:NH1  | 2.39                     | 0.56              |
| 3:D:494:HIS:NE2   | 3:D:552:GLN:OE1  | 2.39                     | 0.56              |
| 6:G:63:DC:H2''    | 6:G:64:DC:C5     | 2.41                     | 0.56              |
| 8:M:194:SER:O     | 8:M:198:ILE:HG12 | 2.05                     | 0.56              |
| 8:N:193:LEU:HB3   | 8:N:198:ILE:HD11 | 1.87                     | 0.56              |
| 2:C:505:ARG:NH1   | 2:C:513:GLU:OE2  | 2.39                     | 0.56              |
| 2:C:601:ASP:OD1   | 2:C:602:ALA:N    | 2.39                     | 0.56              |
| 8:J:150:ARG:NH1   | 8:J:157:GLU:OE2  | 2.38                     | 0.56              |
| 1:A:69:VAL:HG22   | 1:A:71:GLU:H     | 1.71                     | 0.56              |
| 1:A:97:LEU:HB3    | 1:A:136:VAL:HG12 | 1.88                     | 0.56              |
| 3:D:577:PRO:HB3   | 3:D:581:MET:HB2  | 1.86                     | 0.56              |
| 8:K:156:ILE:HD11  | 8:K:225:ILE:HD11 | 1.88                     | 0.56              |
| 3:D:353:ARG:NH2   | 7:F:319:ASP:OD1  | 2.39                     | 0.56              |
| 7:F:467:LEU:HD21  | 7:F:519:ARG:HH12 | 1.71                     | 0.55              |
| 1:B:233:GLU:OE2   | 1:B:234:ILE:O    | 2.24                     | 0.55              |
| 2:C:128:THR:HG23  | 2:C:168:ILE:HA   | 1.87                     | 0.55              |
| 2:C:818:GLU:OE2   | 2:C:822:ARG:NE   | 2.32                     | 0.55              |
| 7:F:263:MET:HE2   | 7:F:263:MET:HA   | 1.88                     | 0.55              |
| 7:F:392:ARG:HG2   | 7:F:393:GLU:N    | 2.21                     | 0.55              |
| 8:N:236:LEU:HB2   | 8:N:239:VAL:HB   | 1.88                     | 0.55              |
| 3:D:373:MET:HE1   | 7:F:322:GLN:HG3  | 1.89                     | 0.55              |
| 6:G:97:DA:H2''    | 6:G:98:DG:N7     | 2.21                     | 0.55              |
| 8:M:214:VAL:O     | 8:M:218:VAL:HG12 | 2.07                     | 0.55              |
| 2:C:231:ARG:C     | 2:C:232:GLN:OE1  | 2.49                     | 0.55              |
| 2:C:587:VAL:HG22  | 2:C:591:THR:HB   | 1.89                     | 0.55              |
| 8:J:183:ARG:NH1   | 8:J:187:ILE:HG21 | 2.22                     | 0.55              |
| 1:A:84:VAL:HG12   | 1:A:120:ASN:ND2  | 2.21                     | 0.55              |
| 2:C:523:VAL:HG13  | 2:C:552:GLY:HA3  | 1.88                     | 0.55              |
| 2:C:1088:LEU:HD23 | 2:C:1092:LYS:HD2 | 1.89                     | 0.55              |
| 8:M:177:THR:HG23  | 8:M:178:GLU:CD   | 2.31                     | 0.55              |
| 2:C:204:VAL:HB    | 2:C:212:LEU:HB3  | 1.88                     | 0.55              |
| 2:C:1089:LEU:HD22 | 3:D:420:LYS:HD2  | 1.89                     | 0.55              |
| 4:E:95:ALA:O      | 4:E:99:ILE:HG12  | 2.07                     | 0.55              |
| 5:H:8:DC:H2'      | 5:H:9:DG:H8      | 1.72                     | 0.55              |
| 2:C:473:ARG:NH1   | 2:C:494:ILE:O    | 2.37                     | 0.55              |
| 2:C:1094:ASP:HB3  | 2:C:1119:GLU:H   | 1.72                     | 0.55              |
| 7:F:486:PRO:HG2   | 8:J:205:TYR:CD2  | 2.42                     | 0.55              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 8:J:184:TYR:CE2   | 8:J:198:ILE:HD13 | 2.42                     | 0.55              |
| 6:G:46:DC:H2''    | 6:G:47:DC:H5     | 1.71                     | 0.54              |
| 8:J:198:ILE:HG21  | 8:J:214:VAL:HG21 | 1.90                     | 0.54              |
| 8:K:202:VAL:HG13  | 8:K:203:TRP:HD1  | 1.72                     | 0.54              |
| 2:C:818:GLU:O     | 2:C:822:ARG:HG2  | 2.07                     | 0.54              |
| 2:C:222:VAL:HG21  | 2:C:234:VAL:CG2  | 2.37                     | 0.54              |
| 2:C:388:GLN:HG3   | 2:C:430:PHE:HB2  | 1.89                     | 0.54              |
| 3:D:656:TRP:NE1   | 3:D:659:GLY:H    | 2.06                     | 0.54              |
| 8:M:161:GLU:C     | 8:M:161:GLU:OE1  | 2.51                     | 0.54              |
| 8:L:167:LYS:NZ    | 8:L:224:LYS:O    | 2.40                     | 0.54              |
| 1:A:218:LEU:HD12  | 1:A:218:LEU:H    | 1.72                     | 0.54              |
| 1:B:56:ILE:CG2    | 1:B:136:VAL:HG13 | 2.37                     | 0.54              |
| 3:D:474:ARG:O     | 3:D:478:ARG:HG2  | 2.07                     | 0.54              |
| 2:C:1072:GLU:HG3  | 3:D:503:THR:HG21 | 1.89                     | 0.54              |
| 3:D:1055:LEU:HD11 | 3:D:1062:TYR:HB3 | 1.88                     | 0.54              |
| 5:H:52:DC:H2''    | 5:H:53:DC:O5'    | 2.07                     | 0.54              |
| 8:O:191:THR:HG23  | 8:L:162:THR:HA   | 1.90                     | 0.54              |
| 8:O:230:LYS:HE2   | 8:O:246:PRO:HD2  | 1.88                     | 0.54              |
| 8:L:222:ARG:HD2   | 8:L:226:ASP:HB3  | 1.89                     | 0.54              |
| 1:A:97:LEU:HD21   | 1:A:105:VAL:HG21 | 1.90                     | 0.54              |
| 3:D:283:ASN:C     | 3:D:285:LYS:HZ3  | 2.15                     | 0.54              |
| 7:F:382:ILE:HD11  | 7:F:403:MET:SD   | 2.48                     | 0.54              |
| 8:N:185:PHE:HE2   | 8:N:221:LEU:HD13 | 1.72                     | 0.54              |
| 1:B:2:LEU:HG      | 1:B:4:SER:H      | 1.73                     | 0.54              |
| 3:D:95:ILE:HG12   | 3:D:317:VAL:HG22 | 1.89                     | 0.54              |
| 3:D:201:GLY:CA    | 3:D:205:MET:HE2  | 2.38                     | 0.54              |
| 3:D:793:TYR:CE1   | 3:D:800:ILE:HG12 | 2.42                     | 0.54              |
| 2:C:231:ARG:HB2   | 2:C:232:GLN:NE2  | 2.23                     | 0.54              |
| 3:D:335:PHE:HB3   | 7:F:420:PRO:HB3  | 1.90                     | 0.54              |
| 3:D:1265:ASN:OD1  | 3:D:1268:ARG:NH2 | 2.40                     | 0.54              |
| 8:J:167:LYS:HD3   | 8:J:167:LYS:N    | 2.23                     | 0.54              |
| 1:B:18:ARG:NH1    | 1:B:197:GLU:OE2  | 2.41                     | 0.54              |
| 5:H:75:DG:OP2     | 7:F:330:ARG:NH2  | 2.41                     | 0.54              |
| 6:G:37:DC:H2'     | 6:G:38:DG:C8     | 2.43                     | 0.54              |
| 7:F:489:LEU:HD11  | 8:J:204:ARG:HH12 | 1.73                     | 0.54              |
| 8:M:218:VAL:HG23  | 8:M:233:LEU:HD11 | 1.90                     | 0.54              |
| 8:L:183:ARG:C     | 8:L:183:ARG:HD3  | 2.33                     | 0.54              |
| 8:L:218:VAL:HA    | 8:L:221:LEU:HG   | 1.88                     | 0.54              |
| 1:A:165:ASP:OD2   | 2:C:878:LYS:NZ   | 2.24                     | 0.54              |
| 1:B:74:THR:O      | 1:B:77:ILE:HG22  | 2.08                     | 0.54              |
| 2:C:757:ILE:HD11  | 2:C:805:LYS:HD2  | 1.90                     | 0.54              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 5:H:8:DC:H2'     | 5:H:9:DG:C8       | 2.42                     | 0.54              |
| 2:C:231:ARG:HB2  | 2:C:232:GLN:OE1   | 2.08                     | 0.53              |
| 2:C:814:LEU:HD12 | 2:C:818:GLU:HG3   | 1.89                     | 0.53              |
| 2:C:821:LEU:HA   | 2:C:824:ILE:HG22  | 1.91                     | 0.53              |
| 3:D:642:PRO:HG2  | 3:D:647:GLU:HB2   | 1.89                     | 0.53              |
| 3:D:178:GLU:HA   | 3:D:181:LEU:HD12  | 1.90                     | 0.53              |
| 3:D:437:LYS:HB2  | 3:D:440:GLN:CD    | 2.34                     | 0.53              |
| 4:E:70:GLN:NE2   | 4:E:75:ILE:HA     | 2.21                     | 0.53              |
| 1:A:56:ILE:HG13  | 1:A:136:VAL:HG23  | 1.90                     | 0.53              |
| 2:C:257:ILE:HG23 | 2:C:258:MET:H     | 1.72                     | 0.53              |
| 3:D:130:TYR:OH   | 3:D:379:ASP:OD2   | 2.22                     | 0.53              |
| 3:D:213:GLN:O    | 3:D:217:ASP:OD1   | 2.26                     | 0.53              |
| 8:M:217:TYR:O    | 8:M:221:LEU:HD22  | 2.08                     | 0.53              |
| 8:L:178:GLU:HA   | 8:L:181:LEU:HD21  | 1.90                     | 0.53              |
| 1:B:40:ARG:NH2   | 3:D:623:ASP:OD2   | 2.41                     | 0.53              |
| 3:D:150:THR:O    | 3:D:154:GLU:HG2   | 2.08                     | 0.53              |
| 3:D:170:LEU:O    | 3:D:173:ARG:HG2   | 2.08                     | 0.53              |
| 3:D:812:THR:O    | 3:D:816:THR:HG23  | 2.08                     | 0.53              |
| 8:L:182:LEU:C    | 8:L:182:LEU:HD12  | 2.33                     | 0.53              |
| 1:B:3:ILE:HD13   | 1:B:7:PRO:HD3     | 1.91                     | 0.53              |
| 2:C:514:THR:OG1  | 2:C:585:GLN:NE2   | 2.42                     | 0.53              |
| 3:D:25:TYR:CD2   | 3:D:91:ARG:HG3    | 2.43                     | 0.53              |
| 5:H:83:DG:H2'    | 5:H:84:DG:C8      | 2.42                     | 0.53              |
| 6:G:6:DC:H2''    | 6:G:7:DC:H2'      | 1.89                     | 0.53              |
| 7:F:386:LEU:HD21 | 7:F:394:PRO:HB3   | 1.90                     | 0.53              |
| 2:C:620:ARG:HB2  | 2:C:717:LYS:HE2   | 1.91                     | 0.53              |
| 3:D:169:GLU:HB3  | 3:D:173:ARG:NH2   | 2.23                     | 0.53              |
| 1:I:278:ARG:NH2  | 1:I:282:ASP:O     | 2.42                     | 0.53              |
| 3:D:890:ASP:OD1  | 3:D:963:ARG:NH2   | 2.41                     | 0.53              |
| 3:D:1045:PRO:O   | 3:D:1046:ILE:HD13 | 2.08                     | 0.53              |
| 6:G:60:DG:H2'    | 6:G:61:DA:H8      | 1.74                     | 0.53              |
| 3:D:402:LEU:O    | 3:D:405:LEU:HG    | 2.09                     | 0.53              |
| 5:H:57:DA:H2''   | 5:H:58:DA:C8      | 2.44                     | 0.53              |
| 6:G:60:DG:H2'    | 6:G:61:DA:C8      | 2.44                     | 0.53              |
| 8:N:204:ARG:HB2  | 8:N:206:ASP:OD1   | 2.09                     | 0.53              |
| 2:C:152:VAL:HG21 | 2:C:418:ILE:HD12  | 1.90                     | 0.53              |
| 2:C:263:GLU:OE1  | 2:C:263:GLU:HA    | 2.09                     | 0.53              |
| 2:C:1068:PHE:HZ  | 2:C:1076:MET:HE3  | 1.74                     | 0.53              |
| 1:I:278:ARG:HH21 | 1:I:283:LEU:HA    | 1.74                     | 0.53              |
| 8:N:199:LEU:HA   | 8:N:203:TRP:CD1   | 2.42                     | 0.53              |
| 3:D:576:MET:HE1  | 3:D:693:GLN:HB3   | 1.91                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 2:C:577:ASP:OD1  | 2:C:577:ASP:N     | 2.42                     | 0.52              |
| 2:C:994:PRO:HB3  | 2:C:999:ASP:H     | 1.74                     | 0.52              |
| 3:D:797:ASN:OD1  | 3:D:799:ILE:N     | 2.36                     | 0.52              |
| 8:K:216:SER:O    | 8:K:219:SER:OG    | 2.25                     | 0.52              |
| 2:C:192:ASP:OD1  | 2:C:197:LYS:N     | 2.43                     | 0.52              |
| 3:D:60:CYS:SG    | 3:D:63:GLY:N      | 2.83                     | 0.52              |
| 3:D:611:VAL:HG22 | 3:D:634:LYS:HB2   | 1.91                     | 0.52              |
| 1:B:73:VAL:O     | 1:B:76:ILE:HG22   | 2.10                     | 0.52              |
| 2:C:224:VAL:O    | 2:C:226:ILE:HG23  | 2.09                     | 0.52              |
| 3:D:235:ILE:HD11 | 3:D:241:TYR:HD1   | 1.74                     | 0.52              |
| 3:D:1086:LEU:HB3 | 3:D:1099:LEU:HD13 | 1.89                     | 0.52              |
| 6:G:90:DG:H4'    | 8:N:237:ARG:NH2   | 2.23                     | 0.52              |
| 6:G:91:DG:H1'    | 6:G:92:DC:H5'     | 1.90                     | 0.52              |
| 2:C:278:TYR:HD2  | 2:C:292:ALA:HA    | 1.74                     | 0.52              |
| 2:C:820:LEU:HD12 | 7:F:460:LEU:HD13  | 1.91                     | 0.52              |
| 3:D:499:ASN:O    | 3:D:541:MET:HG3   | 2.10                     | 0.52              |
| 2:C:378:LEU:HD11 | 2:C:455:LEU:HD22  | 1.91                     | 0.52              |
| 4:E:47:VAL:HG11  | 4:E:53:LEU:HB2    | 1.92                     | 0.52              |
| 7:F:282:MET:O    | 7:F:286:ARG:HG2   | 2.09                     | 0.52              |
| 2:C:649:VAL:HG23 | 2:C:695:ARG:HG2   | 1.91                     | 0.52              |
| 3:D:923:ARG:NH2  | 3:D:1155:GLU:OE2  | 2.32                     | 0.52              |
| 3:D:1067:VAL:CG1 | 3:D:1067:VAL:O    | 2.57                     | 0.52              |
| 3:D:1067:VAL:O   | 3:D:1067:VAL:HG13 | 2.09                     | 0.52              |
| 7:F:294:HIS:CA   | 7:F:297:GLU:OE1   | 2.56                     | 0.52              |
| 8:K:157:GLU:HB2  | 8:K:166:TRP:HB3   | 1.92                     | 0.52              |
| 1:B:5:GLN:OE1    | 1:B:25:PRO:HD2    | 2.10                     | 0.52              |
| 2:C:1044:ARG:NH2 | 2:C:1048:PRO:O    | 2.42                     | 0.52              |
| 3:D:793:TYR:HD1  | 3:D:800:ILE:HG13  | 1.71                     | 0.52              |
| 2:C:251:ARG:HB3  | 2:C:252:PHE:CD1   | 2.44                     | 0.52              |
| 3:D:163:GLU:HA   | 3:D:166:ARG:HG2   | 1.92                     | 0.52              |
| 5:H:90:DT:H2''   | 5:H:91:DC:C6      | 2.45                     | 0.52              |
| 8:J:194:SER:H    | 8:J:197:LYS:HG3   | 1.74                     | 0.52              |
| 3:D:354:LEU:O    | 3:D:358:ILE:HG23  | 2.10                     | 0.52              |
| 2:C:386:GLN:OE1  | 2:C:390:ARG:NH2   | 2.43                     | 0.51              |
| 3:D:1090:LYS:HE3 | 3:D:1097:ARG:HE   | 1.75                     | 0.51              |
| 4:E:56:TYR:HE2   | 4:E:106:HIS:CG    | 2.28                     | 0.51              |
| 6:G:46:DC:H2''   | 6:G:47:DC:C5      | 2.44                     | 0.51              |
| 7:F:501:GLU:O    | 7:F:505:GLN:NE2   | 2.43                     | 0.51              |
| 1:B:183:VAL:HG12 | 1:B:188:ASP:HA    | 1.91                     | 0.51              |
| 2:C:141:ASN:HB3  | 2:C:146:GLU:HB2   | 1.92                     | 0.51              |
| 2:C:1068:PHE:HZ  | 2:C:1076:MET:CE   | 2.23                     | 0.51              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:C:1133:LEU:HD13 | 3:D:12:ILE:HD11   | 1.91                     | 0.51              |
| 3:D:1222:SER:OG   | 3:D:1250:GLU:OE1  | 2.27                     | 0.51              |
| 5:H:47:DG:H2''    | 5:H:48:DG:H8      | 1.75                     | 0.51              |
| 7:F:210:GLU:HA    | 7:F:213:ARG:HD2   | 1.93                     | 0.51              |
| 7:F:245:GLU:HA    | 7:F:248:GLU:OE2   | 2.10                     | 0.51              |
| 8:K:215:GLU:OE1   | 8:K:215:GLU:N     | 2.42                     | 0.51              |
| 2:C:543:GLN:HE21  | 3:D:845:THR:HG22  | 1.75                     | 0.51              |
| 7:F:269:ARG:C     | 7:F:269:ARG:HH11  | 2.19                     | 0.51              |
| 7:F:516:HIS:CE1   | 7:F:518:SER:H     | 2.28                     | 0.51              |
| 8:M:156:ILE:HD12  | 8:M:166:TRP:O     | 2.10                     | 0.51              |
| 2:C:192:ASP:HB3   | 2:C:199:LEU:HD11  | 1.93                     | 0.51              |
| 2:C:396:MET:HE2   | 2:C:396:MET:HA    | 1.91                     | 0.51              |
| 2:C:633:ARG:NH2   | 2:C:637:ASP:OD2   | 2.39                     | 0.51              |
| 2:C:848:ILE:N     | 2:C:848:ILE:HD13  | 2.25                     | 0.51              |
| 3:D:114:LEU:HD11  | 3:D:265:ILE:HD11  | 1.91                     | 0.51              |
| 3:D:916:ILE:HG23  | 3:D:920:ALA:HB3   | 1.92                     | 0.51              |
| 8:O:178:GLU:O     | 8:O:182:LEU:HG    | 2.10                     | 0.51              |
| 8:N:192:VAL:HG11  | 8:N:239:VAL:HG12  | 1.93                     | 0.51              |
| 1:B:223:ARG:NH2   | 1:B:224:GLU:HA    | 2.26                     | 0.51              |
| 3:D:747:ASP:O     | 3:D:751:GLU:HG2   | 2.10                     | 0.51              |
| 3:D:1089:PHE:HD2  | 3:D:1090:LYS:HG3  | 1.75                     | 0.51              |
| 3:D:1250:GLU:HA   | 3:D:1253:ILE:HG22 | 1.93                     | 0.51              |
| 8:J:192:VAL:HA    | 8:J:242:VAL:HG22  | 1.91                     | 0.51              |
| 8:N:194:SER:O     | 8:N:198:ILE:HG12  | 2.11                     | 0.51              |
| 3:D:925:LEU:HD11  | 3:D:938:VAL:HG23  | 1.93                     | 0.51              |
| 6:G:85:DC:H2''    | 6:G:86:DT:H72     | 1.92                     | 0.51              |
| 8:K:221:LEU:O     | 8:K:225:ILE:HG22  | 2.09                     | 0.51              |
| 8:N:236:LEU:HD11  | 8:N:242:VAL:HG12  | 1.92                     | 0.51              |
| 2:C:463:LEU:HD11  | 2:C:472:VAL:HG11  | 1.93                     | 0.51              |
| 4:E:84:GLU:OE1    | 4:E:85:PRO:HD2    | 2.11                     | 0.51              |
| 5:H:35:DA:H4'     | 5:H:36:DC:OP1     | 2.09                     | 0.51              |
| 1:A:14:LEU:HD11   | 1:A:20:GLN:HB2    | 1.92                     | 0.51              |
| 3:D:706:MET:HA    | 3:D:709:VAL:HG12  | 1.92                     | 0.51              |
| 7:F:478:ARG:HH22  | 8:J:204:ARG:HD2   | 1.76                     | 0.51              |
| 3:D:262:GLN:HG3   | 3:D:310:MET:HE1   | 1.93                     | 0.51              |
| 3:D:642:PRO:HB2   | 3:D:646:ILE:HG23  | 1.93                     | 0.51              |
| 5:H:27:DA:H1'     | 5:H:28:DG:O4'     | 2.10                     | 0.51              |
| 5:H:61:DG:H2''    | 5:H:62:DA:C8      | 2.46                     | 0.51              |
| 7:F:296:LEU:O     | 7:F:300:LEU:HG    | 2.11                     | 0.51              |
| 8:M:174:LEU:HA    | 8:M:224:LYS:NZ    | 2.26                     | 0.51              |
| 8:K:165:VAL:HG22  | 8:K:167:LYS:CD    | 2.40                     | 0.51              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:C:387:ASN:OD1   | 2:C:388:GLN:NE2   | 2.44                     | 0.50              |
| 2:C:727:GLU:H     | 3:D:725:THR:CG2   | 2.24                     | 0.50              |
| 3:D:730:THR:HG22  | 3:D:731:VAL:H     | 1.76                     | 0.50              |
| 5:H:93:DC:H1'     | 5:H:94:DG:N7      | 2.26                     | 0.50              |
| 6:G:9:DT:H2'      | 6:G:10:DG:H8      | 1.76                     | 0.50              |
| 8:L:174:LEU:HB3   | 8:L:178:GLU:HB2   | 1.93                     | 0.50              |
| 1:A:65:THR:HG21   | 2:C:656:ASP:OD1   | 2.11                     | 0.50              |
| 1:B:105:VAL:HB    | 1:B:126:ALA:HB3   | 1.93                     | 0.50              |
| 3:D:793:TYR:CD1   | 3:D:800:ILE:HG12  | 2.46                     | 0.50              |
| 7:F:492:ILE:HA    | 7:F:495:VAL:HG22  | 1.93                     | 0.50              |
| 8:N:159:ASP:HB3   | 8:N:166:TRP:CH2   | 2.46                     | 0.50              |
| 1:A:89:GLU:N      | 1:A:89:GLU:OE1    | 2.45                     | 0.50              |
| 4:E:81:PRO:HB3    | 4:E:94:ILE:HG21   | 1.92                     | 0.50              |
| 5:H:55:DG:H2''    | 5:H:56:DA:C8      | 2.46                     | 0.50              |
| 8:K:167:LYS:HA    | 8:K:167:LYS:CE    | 2.37                     | 0.50              |
| 8:L:225:ILE:HD12  | 8:L:232:LEU:HD11  | 1.92                     | 0.50              |
| 8:N:237:ARG:NH1   | 8:N:238:GLY:H     | 2.10                     | 0.50              |
| 2:C:34:GLY:HA3    | 2:C:700:GLN:HG3   | 1.93                     | 0.50              |
| 2:C:56:VAL:HG13   | 2:C:57:GLN:HG2    | 1.94                     | 0.50              |
| 3:D:447:MET:CE    | 3:D:543:VAL:HG11  | 2.42                     | 0.50              |
| 5:H:69:DC:H2''    | 5:H:70:DA:C8      | 2.46                     | 0.50              |
| 8:M:213:VAL:HG22  | 8:M:217:TYR:CE1   | 2.47                     | 0.50              |
| 8:O:217:TYR:HA    | 8:O:220:TYR:CD2   | 2.47                     | 0.50              |
| 2:C:954:ASP:OD2   | 2:C:955:TRP:N     | 2.44                     | 0.50              |
| 5:H:83:DG:H2'     | 5:H:84:DG:N7      | 2.26                     | 0.50              |
| 8:M:216:SER:O     | 8:M:219:SER:OG    | 2.24                     | 0.50              |
| 8:K:156:ILE:HG13  | 8:K:167:LYS:HE2   | 1.94                     | 0.50              |
| 8:L:207:PHE:HD1   | 8:L:209:GLY:H     | 1.60                     | 0.50              |
| 2:C:260:SER:O     | 2:C:264:LYS:HG2   | 2.11                     | 0.50              |
| 2:C:717:LYS:NZ    | 2:C:746:VAL:O     | 2.38                     | 0.50              |
| 2:C:822:ARG:HA    | 2:C:827:GLU:HB2   | 1.94                     | 0.50              |
| 2:C:831:GLU:H     | 2:C:831:GLU:CD    | 2.18                     | 0.50              |
| 3:D:1065:THR:HG22 | 3:D:1076:VAL:HG12 | 1.92                     | 0.50              |
| 5:H:13:DA:H2''    | 5:H:14:DG:C8      | 2.47                     | 0.50              |
| 2:C:934:THR:OG1   | 2:C:1028:MET:HE2  | 2.12                     | 0.50              |
| 3:D:262:GLN:HB2   | 3:D:313:VAL:HG21  | 1.93                     | 0.50              |
| 7:F:381:ARG:O     | 7:F:385:GLU:HG3   | 2.12                     | 0.50              |
| 7:F:478:ARG:HH12  | 8:J:204:ARG:NE    | 2.09                     | 0.50              |
| 8:J:204:ARG:HB3   | 8:J:206:ASP:OD1   | 2.12                     | 0.50              |
| 8:L:184:TYR:O     | 8:L:187:ILE:HG13  | 2.11                     | 0.50              |
| 1:A:21:PHE:CZ     | 1:A:208:LEU:HD22  | 2.47                     | 0.50              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:D:1106:GLU:N    | 3:D:1106:GLU:OE1  | 2.44                     | 0.50              |
| 8:K:159:ASP:O     | 8:K:163:HIS:N     | 2.44                     | 0.50              |
| 1:B:77:ILE:HD11   | 1:B:164:VAL:HG12  | 1.94                     | 0.50              |
| 2:C:42:ALA:HB2    | 2:C:975:PRO:HG2   | 1.94                     | 0.50              |
| 2:C:252:PHE:HD2   | 2:C:258:MET:CE    | 2.25                     | 0.50              |
| 3:D:167:ASP:HA    | 3:D:170:LEU:HD12  | 1.94                     | 0.50              |
| 3:D:215:GLU:O     | 3:D:218:ARG:HG2   | 2.11                     | 0.50              |
| 5:H:61:DG:H2''    | 5:H:62:DA:H8      | 1.76                     | 0.50              |
| 6:G:49:DG:H2'     | 6:G:50:DC:C6      | 2.47                     | 0.50              |
| 6:G:90:DG:H4'     | 8:N:237:ARG:CZ    | 2.42                     | 0.50              |
| 1:A:106:THR:OG1   | 1:A:107:ALA:N     | 2.45                     | 0.49              |
| 3:D:525:HIS:HD2   | 3:D:527:LEU:HB2   | 1.77                     | 0.49              |
| 2:C:947:ASP:OD1   | 2:C:947:ASP:N     | 2.45                     | 0.49              |
| 8:K:202:VAL:HG13  | 8:K:203:TRP:CD1   | 2.48                     | 0.49              |
| 8:L:224:LYS:HG3   | 8:L:225:ILE:HG23  | 1.93                     | 0.49              |
| 1:B:213:LYS:O     | 1:B:217:GLU:OE1   | 2.30                     | 0.49              |
| 3:D:752:ARG:HA    | 3:D:755:LYS:HE3   | 1.93                     | 0.49              |
| 3:D:1055:LEU:HD13 | 3:D:1064:ILE:HG13 | 1.94                     | 0.49              |
| 3:D:1118:PRO:HA   | 3:D:1121:VAL:HG12 | 1.94                     | 0.49              |
| 3:D:1124:VAL:HG23 | 3:D:1125:GLN:HG2  | 1.94                     | 0.49              |
| 7:F:311:THR:OG1   | 7:F:312:GLY:N     | 2.45                     | 0.49              |
| 8:M:150:ARG:NH2   | 8:M:160:GLU:H     | 2.10                     | 0.49              |
| 1:B:59:VAL:HG11   | 1:B:66:VAL:CG1    | 2.28                     | 0.49              |
| 5:H:16:DG:H2''    | 5:H:17:DT:H71     | 1.94                     | 0.49              |
| 8:M:194:SER:H     | 8:M:197:LYS:CE    | 2.25                     | 0.49              |
| 8:L:160:GLU:OE1   | 8:L:160:GLU:N     | 2.41                     | 0.49              |
| 2:C:222:VAL:HG23  | 2:C:222:VAL:O     | 2.12                     | 0.49              |
| 2:C:257:ILE:O     | 2:C:260:SER:OG    | 2.24                     | 0.49              |
| 2:C:661:MET:SD    | 2:C:667:ARG:NH1   | 2.86                     | 0.49              |
| 3:D:204:GLU:O     | 3:D:207:GLN:HG3   | 2.13                     | 0.49              |
| 8:N:230:LYS:HE2   | 8:N:246:PRO:HD2   | 1.94                     | 0.49              |
| 1:A:90:ASP:OD1    | 1:A:90:ASP:C      | 2.55                     | 0.49              |
| 2:C:301:PHE:CD1   | 2:C:301:PHE:N     | 2.80                     | 0.49              |
| 3:D:43:LYS:HG2    | 3:D:44:ASP:OD1    | 2.12                     | 0.49              |
| 5:H:81:DT:C2      | 7:F:302:LEU:HB2   | 2.47                     | 0.49              |
| 3:D:793:TYR:CE1   | 3:D:797:ASN:HB3   | 2.47                     | 0.49              |
| 8:L:218:VAL:HG11  | 8:L:241:TYR:CZ    | 2.48                     | 0.49              |
| 2:C:103:MET:HE1   | 2:C:404:MET:HG3   | 1.94                     | 0.49              |
| 3:D:1167:ILE:HD13 | 3:D:1175:PHE:HB3  | 1.93                     | 0.49              |
| 5:H:80:DA:H62     | 7:F:345:THR:HA    | 1.78                     | 0.49              |
| 7:F:249:LEU:O     | 7:F:253:ILE:HG12  | 2.13                     | 0.49              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:F:303:VAL:HG11  | 7:F:325:ASN:OD1   | 2.12                     | 0.49              |
| 8:M:178:GLU:HA    | 8:M:181:LEU:HG    | 1.95                     | 0.49              |
| 8:N:202:VAL:HG12  | 8:N:203:TRP:CD2   | 2.48                     | 0.49              |
| 3:D:28:VAL:HG21   | 3:D:46:LEU:HD23   | 1.94                     | 0.49              |
| 8:K:157:GLU:N     | 8:K:167:LYS:NZ    | 2.56                     | 0.49              |
| 8:N:195:LYS:HE2   | 8:N:240:GLY:HA2   | 1.95                     | 0.49              |
| 1:B:72:ASP:OD2    | 1:B:72:ASP:C      | 2.56                     | 0.49              |
| 2:C:823:ALA:HB1   | 7:F:511:MET:SD    | 2.52                     | 0.49              |
| 3:D:707:ILE:O     | 3:D:711:GLN:HG3   | 2.12                     | 0.49              |
| 5:H:35:DA:N6      | 6:G:65:DG:O6      | 2.45                     | 0.49              |
| 7:F:328:LEU:HD13  | 7:F:351:ILE:HD11  | 1.94                     | 0.49              |
| 8:O:176:PRO:O     | 8:O:180:THR:HG23  | 2.13                     | 0.49              |
| 1:A:191:LYS:HZ3   | 1:A:193:ILE:HD11  | 1.78                     | 0.48              |
| 2:C:140:ILE:HG22  | 2:C:147:ILE:HD12  | 1.95                     | 0.48              |
| 2:C:557:PRO:O     | 2:C:573:SER:N     | 2.45                     | 0.48              |
| 3:D:845:THR:HB    | 3:D:848:GLU:HG3   | 1.95                     | 0.48              |
| 7:F:369:PRO:O     | 7:F:373:VAL:HG23  | 2.13                     | 0.48              |
| 8:K:217:TYR:O     | 8:K:221:LEU:HD23  | 2.13                     | 0.48              |
| 1:I:284:LEU:HA    | 1:I:289:PHE:HD2   | 1.78                     | 0.48              |
| 2:C:558:ARG:HA    | 2:C:571:VAL:O     | 2.13                     | 0.48              |
| 3:D:917:GLU:HA    | 3:D:921:TYR:HD2   | 1.76                     | 0.48              |
| 8:M:176:PRO:O     | 8:M:177:THR:C     | 2.56                     | 0.48              |
| 8:N:234:HIS:CE1   | 8:N:236:LEU:HG    | 2.48                     | 0.48              |
| 1:B:89:GLU:N      | 1:B:89:GLU:OE2    | 2.47                     | 0.48              |
| 2:C:723:ILE:HG22  | 2:C:723:ILE:O     | 2.14                     | 0.48              |
| 3:D:366:ILE:HD11  | 7:F:300:LEU:HD21  | 1.95                     | 0.48              |
| 5:H:34:DG:N2      | 6:G:68:DC:O2      | 2.47                     | 0.48              |
| 1:A:174:VAL:HG22  | 1:A:196:VAL:HG13  | 1.96                     | 0.48              |
| 1:A:205:ARG:HG3   | 1:B:225:LEU:CD2   | 2.42                     | 0.48              |
| 3:D:107:PHE:HE1   | 3:D:125:LEU:HB2   | 1.78                     | 0.48              |
| 3:D:877:LEU:HD22  | 3:D:1157:ILE:HD13 | 1.94                     | 0.48              |
| 8:M:190:GLY:H     | 8:M:244:ARG:HH21  | 1.61                     | 0.48              |
| 8:L:216:SER:O     | 8:L:220:TYR:HD1   | 1.95                     | 0.48              |
| 2:C:1051:MET:HE3  | 2:C:1051:MET:HB2  | 1.76                     | 0.48              |
| 2:C:1102:VAL:HG23 | 2:C:1112:ILE:HG23 | 1.94                     | 0.48              |
| 3:D:337:THR:O     | 7:F:423:LEU:N     | 2.40                     | 0.48              |
| 3:D:985:THR:HG23  | 3:D:987:LYS:H     | 1.77                     | 0.48              |
| 3:D:1137:GLU:O    | 3:D:1140:GLU:HG3  | 2.13                     | 0.48              |
| 2:C:848:ILE:HD11  | 2:C:874:ALA:CB    | 2.43                     | 0.48              |
| 3:D:1028:LEU:HA   | 3:D:1031:VAL:HG12 | 1.95                     | 0.48              |
| 5:H:87:DC:H1'     | 5:H:88:DT:C2      | 2.49                     | 0.48              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:O:230:LYS:HZ3  | 8:O:232:LEU:HA   | 1.79                     | 0.48              |
| 8:L:174:LEU:HD21 | 8:L:182:LEU:CD2  | 2.43                     | 0.48              |
| 2:C:725:PRO:HA   | 2:C:730:ASN:HD21 | 1.78                     | 0.48              |
| 2:C:1074:TRP:CE2 | 3:D:878:VAL:HG11 | 2.48                     | 0.48              |
| 3:D:34:ILE:O     | 7:F:366:ILE:HG23 | 2.14                     | 0.48              |
| 3:D:447:MET:HE1  | 3:D:522:ILE:HD11 | 1.95                     | 0.48              |
| 7:F:462:SER:O    | 7:F:466:THR:HG23 | 2.14                     | 0.48              |
| 8:M:153:PHE:HZ   | 8:M:244:ARG:NH2  | 2.11                     | 0.48              |
| 8:O:163:HIS:O    | 8:O:163:HIS:ND1  | 2.46                     | 0.48              |
| 8:O:195:LYS:NZ   | 8:O:215:GLU:OE1  | 2.36                     | 0.48              |
| 8:K:187:ILE:HG22 | 8:K:188:ASN:OD1  | 2.14                     | 0.48              |
| 8:L:151:LEU:HD12 | 8:L:158:LEU:HG   | 1.94                     | 0.48              |
| 8:N:194:SER:OG   | 8:N:196:PRO:HD2  | 2.14                     | 0.48              |
| 2:C:220:ASP:HB3  | 2:C:257:ILE:HG13 | 1.95                     | 0.48              |
| 3:D:250:GLU:HG2  | 3:D:251:TYR:CD2  | 2.49                     | 0.48              |
| 3:D:868:ALA:HB1  | 6:G:11:DA:H4'    | 1.95                     | 0.48              |
| 8:J:159:ASP:OD1  | 8:J:159:ASP:C    | 2.56                     | 0.48              |
| 8:N:151:LEU:HD13 | 8:N:186:VAL:HG12 | 1.96                     | 0.48              |
| 2:C:224:VAL:HG21 | 2:C:234:VAL:HA   | 1.96                     | 0.48              |
| 3:D:952:LEU:HD22 | 3:D:957:ILE:HD11 | 1.94                     | 0.48              |
| 8:N:233:LEU:HG   | 8:N:241:TYR:CD1  | 2.49                     | 0.48              |
| 5:H:50:DT:H1'    | 5:H:51:DG:C8     | 2.49                     | 0.47              |
| 6:G:87:DC:H4'    | 1:I:259:ARG:HD3  | 1.95                     | 0.47              |
| 8:M:151:LEU:HB2  | 8:M:158:LEU:HB2  | 1.95                     | 0.47              |
| 8:O:218:VAL:HG21 | 8:O:241:TYR:CZ   | 2.50                     | 0.47              |
| 8:N:211:VAL:O    | 8:N:214:VAL:HG12 | 2.14                     | 0.47              |
| 2:C:810:GLY:HA3  | 8:J:197:LYS:HE3  | 1.96                     | 0.47              |
| 2:C:1103:TYR:HE1 | 3:D:454:PRO:HB3  | 1.79                     | 0.47              |
| 3:D:917:GLU:HA   | 3:D:921:TYR:CD2  | 2.49                     | 0.47              |
| 8:J:159:ASP:OD1  | 8:J:161:GLU:N    | 2.46                     | 0.47              |
| 2:C:821:LEU:CD2  | 7:F:523:LEU:HD12 | 2.42                     | 0.47              |
| 3:D:507:LEU:HD12 | 3:D:574:LEU:HD12 | 1.97                     | 0.47              |
| 3:D:692:VAL:O    | 3:D:696:ILE:HG22 | 2.15                     | 0.47              |
| 8:M:176:PRO:HG3  | 8:L:239:VAL:HG23 | 1.95                     | 0.47              |
| 8:M:193:LEU:N    | 8:M:241:TYR:O    | 2.40                     | 0.47              |
| 8:N:178:GLU:HA   | 8:N:181:LEU:HD12 | 1.96                     | 0.47              |
| 1:A:173:LYS:NZ   | 2:C:911:THR:HG22 | 2.29                     | 0.47              |
| 2:C:769:ILE:HD12 | 2:C:867:GLU:HG2  | 1.96                     | 0.47              |
| 8:N:174:LEU:HB3  | 8:N:178:GLU:HB2  | 1.96                     | 0.47              |
| 3:D:1164:ARG:HA  | 3:D:1182:ASP:HA  | 1.96                     | 0.47              |
| 6:G:35:DC:H2'    | 8:J:215:GLU:OE1  | 2.14                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:F:317:PHE:O    | 7:F:321:ILE:HG12 | 2.14                     | 0.47              |
| 7:F:390:LEU:HD23 | 7:F:392:ARG:H    | 1.79                     | 0.47              |
| 7:F:470:ARG:HD2  | 7:F:496:TYR:CE2  | 2.50                     | 0.47              |
| 2:C:465:ARG:NH1  | 2:C:493:ASN:HB3  | 2.29                     | 0.47              |
| 3:D:656:TRP:C    | 3:D:656:TRP:CD1  | 2.93                     | 0.47              |
| 4:E:46:ARG:HG3   | 4:E:46:ARG:NH1   | 2.28                     | 0.47              |
| 8:K:151:LEU:HD22 | 8:K:186:VAL:HG23 | 1.97                     | 0.47              |
| 8:N:204:ARG:HG3  | 8:N:207:PHE:N    | 2.28                     | 0.47              |
| 1:A:42:LEU:HD11  | 1:A:208:LEU:HD11 | 1.97                     | 0.47              |
| 1:B:205:ARG:HH21 | 1:B:206:ASP:HB3  | 1.80                     | 0.47              |
| 2:C:251:ARG:C    | 2:C:252:PHE:HD1  | 2.22                     | 0.47              |
| 2:C:543:GLN:NE2  | 3:D:845:THR:HG22 | 2.30                     | 0.47              |
| 2:C:884:LYS:NZ   | 3:D:537:ASP:O    | 2.48                     | 0.47              |
| 2:C:1103:TYR:CE1 | 3:D:454:PRO:HB3  | 2.50                     | 0.47              |
| 5:H:48:DG:H2''   | 5:H:49:DG:O5'    | 2.15                     | 0.47              |
| 8:M:156:ILE:HG13 | 8:M:158:LEU:HG   | 1.97                     | 0.47              |
| 8:K:183:ARG:HG3  | 8:K:184:TYR:N    | 2.30                     | 0.47              |
| 8:L:178:GLU:O    | 8:L:181:LEU:HG   | 2.14                     | 0.47              |
| 1:I:296:GLU:HA   | 1:I:299:ILE:HG22 | 1.97                     | 0.47              |
| 1:A:206:ASP:HA   | 1:B:226:ASN:HD22 | 1.79                     | 0.47              |
| 2:C:789:ILE:HD12 | 2:C:789:ILE:N    | 2.30                     | 0.47              |
| 2:C:879:ILE:HD13 | 2:C:1032:LYS:HD2 | 1.97                     | 0.47              |
| 3:D:195:ARG:NH2  | 3:D:199:ASP:OD2  | 2.48                     | 0.47              |
| 3:D:901:LEU:HB3  | 3:D:958:THR:O    | 2.15                     | 0.47              |
| 8:L:150:ARG:HH22 | 8:L:157:GLU:HB3  | 1.79                     | 0.47              |
| 2:C:225:ARG:HD2  | 2:C:230:ARG:HA   | 1.97                     | 0.47              |
| 2:C:419:ASN:O    | 2:C:422:PRO:HD2  | 2.15                     | 0.47              |
| 3:D:454:PRO:HA   | 3:D:457:MET:HE3  | 1.96                     | 0.47              |
| 3:D:762:ARG:HA   | 3:D:762:ARG:HD3  | 1.61                     | 0.47              |
| 5:H:41:DC:H2''   | 5:H:42:DA:C8     | 2.50                     | 0.47              |
| 2:C:336:GLU:HA   | 2:C:339:VAL:HG22 | 1.96                     | 0.47              |
| 3:D:190:LYS:HE2  | 3:D:193:ALA:HB2  | 1.97                     | 0.47              |
| 5:H:100:DA:H1'   | 6:G:1:DT:O2      | 2.14                     | 0.47              |
| 7:F:524:ARG:NH1  | 7:F:524:ARG:O    | 2.48                     | 0.47              |
| 2:C:154:MET:CE   | 2:C:420:ILE:HG22 | 2.35                     | 0.46              |
| 2:C:641:VAL:HG13 | 2:C:704:ASP:HA   | 1.97                     | 0.46              |
| 3:D:375:GLN:NE2  | 3:D:379:ASP:OD1  | 2.48                     | 0.46              |
| 7:F:293:ASN:O    | 7:F:297:GLU:OE1  | 2.33                     | 0.46              |
| 8:L:184:TYR:O    | 8:L:188:ASN:ND2  | 2.48                     | 0.46              |
| 8:N:220:TYR:HA   | 8:N:223:ARG:HG3  | 1.97                     | 0.46              |
| 1:A:52:THR:OG1   | 1:A:141:GLU:OE2  | 2.32                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:79:ASN:O     | 1:A:123:MET:HE1  | 2.14                     | 0.46              |
| 1:A:191:LYS:HG2  | 1:A:193:ILE:HD11 | 1.97                     | 0.46              |
| 1:B:65:THR:OG1   | 1:B:66:VAL:N     | 2.48                     | 0.46              |
| 1:B:182:ARG:NH2  | 1:B:185:GLN:H    | 2.13                     | 0.46              |
| 2:C:291:SER:HA   | 2:C:294:THR:HG22 | 1.97                     | 0.46              |
| 3:D:605:ASP:OD1  | 3:D:605:ASP:N    | 2.46                     | 0.46              |
| 3:D:1055:LEU:N   | 3:D:1101:ASP:OD1 | 2.44                     | 0.46              |
| 6:G:73:DC:H2''   | 6:G:74:DT:C6     | 2.51                     | 0.46              |
| 2:C:661:MET:HE3  | 2:C:662:HIS:N    | 2.30                     | 0.46              |
| 2:C:704:ASP:HB2  | 2:C:708:THR:OG1  | 2.15                     | 0.46              |
| 3:D:530:GLU:OE2  | 3:D:530:GLU:HA   | 2.15                     | 0.46              |
| 3:D:582:VAL:HG11 | 3:D:690:LYS:HD3  | 1.97                     | 0.46              |
| 1:A:78:LEU:CD2   | 2:C:620:ARG:HD3  | 2.45                     | 0.46              |
| 2:C:212:LEU:HD12 | 2:C:226:ILE:HG22 | 1.97                     | 0.46              |
| 2:C:1127:GLU:OE1 | 2:C:1127:GLU:CA  | 2.63                     | 0.46              |
| 3:D:58:TRP:CE2   | 3:D:68:VAL:HG23  | 2.51                     | 0.46              |
| 3:D:203:ARG:O    | 3:D:206:ARG:HG3  | 2.14                     | 0.46              |
| 4:E:89:GLU:HG2   | 4:E:94:ILE:HG13  | 1.97                     | 0.46              |
| 7:F:516:HIS:HE1  | 7:F:518:SER:HB3  | 1.81                     | 0.46              |
| 8:M:176:PRO:HG3  | 8:L:239:VAL:CG2  | 2.46                     | 0.46              |
| 8:K:167:LYS:HE3  | 8:K:167:LYS:CA   | 2.36                     | 0.46              |
| 2:C:256:GLU:OE1  | 2:C:259:ARG:NE   | 2.48                     | 0.46              |
| 6:G:68:DC:H2'    | 6:G:69:DC:H6     | 1.78                     | 0.46              |
| 8:J:176:PRO:O    | 8:J:180:THR:HG23 | 2.16                     | 0.46              |
| 8:M:150:ARG:CZ   | 8:M:150:ARG:HA   | 2.46                     | 0.46              |
| 8:M:195:LYS:HA   | 8:M:198:ILE:HG12 | 1.96                     | 0.46              |
| 8:K:217:TYR:CD2  | 8:K:217:TYR:N    | 2.83                     | 0.46              |
| 2:C:844:SER:O    | 2:C:875:GLN:HG2  | 2.15                     | 0.46              |
| 3:D:578:ARG:O    | 3:D:582:VAL:HG22 | 2.15                     | 0.46              |
| 3:D:590:THR:HA   | 3:D:687:GLN:HG3  | 1.98                     | 0.46              |
| 8:O:150:ARG:NE   | 8:O:152:THR:OG1  | 2.48                     | 0.46              |
| 8:O:159:ASP:HB2  | 8:O:164:GLU:HB2  | 1.98                     | 0.46              |
| 8:N:167:LYS:HB3  | 8:N:170:GLN:HE21 | 1.79                     | 0.46              |
| 2:C:759:ALA:HB3  | 2:C:867:GLU:HB3  | 1.96                     | 0.46              |
| 2:C:928:ILE:HD12 | 2:C:931:ILE:HB   | 1.97                     | 0.46              |
| 3:D:895:ARG:HG3  | 3:D:967:THR:HB   | 1.98                     | 0.46              |
| 7:F:386:LEU:HD23 | 7:F:394:PRO:HB3  | 1.95                     | 0.46              |
| 1:B:167:ILE:HD11 | 3:D:617:GLU:HG3  | 1.98                     | 0.46              |
| 2:C:938:TRP:HB2  | 2:C:1026:GLY:HA2 | 1.97                     | 0.46              |
| 3:D:634:LYS:HG2  | 3:D:665:GLU:HG2  | 1.97                     | 0.46              |
| 6:G:46:DC:H5'    | 8:K:237:ARG:NH1  | 2.19                     | 0.46              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 7:F:232:LEU:HA    | 7:F:235:ILE:HG22 | 1.98                     | 0.46              |
| 8:M:166:TRP:HD1   | 8:M:169:GLY:C    | 2.24                     | 0.46              |
| 1:I:248:ALA:N     | 1:I:271:THR:OG1  | 2.45                     | 0.46              |
| 1:A:11:GLU:HG3    | 1:A:21:PHE:CE1   | 2.51                     | 0.46              |
| 1:A:56:ILE:HB     | 1:A:59:VAL:HG22  | 1.97                     | 0.46              |
| 2:C:562:ARG:HD2   | 3:D:847:LEU:HD11 | 1.98                     | 0.46              |
| 2:C:934:THR:OG1   | 2:C:1028:MET:CE  | 2.64                     | 0.46              |
| 2:C:1040:LYS:HD3  | 3:D:540:GLN:NE2  | 2.31                     | 0.46              |
| 3:D:567:SER:HB2   | 3:D:574:LEU:HG   | 1.97                     | 0.46              |
| 3:D:1034:LEU:HD21 | 3:D:1137:GLU:HG2 | 1.97                     | 0.46              |
| 7:F:243:ALA:O     | 7:F:246:GLU:HG2  | 2.15                     | 0.46              |
| 7:F:305:SER:O     | 7:F:308:LYS:NZ   | 2.34                     | 0.46              |
| 8:O:211:VAL:O     | 8:O:214:VAL:HG22 | 2.16                     | 0.46              |
| 8:K:230:LYS:HD2   | 8:K:245:GLU:HG2  | 1.98                     | 0.46              |
| 8:N:179:PHE:O     | 8:N:183:ARG:HG2  | 2.15                     | 0.46              |
| 1:I:266:ARG:HB2   | 1:I:267:GLU:OE1  | 2.16                     | 0.46              |
| 2:C:397:GLU:HA    | 2:C:400:VAL:HG12 | 1.97                     | 0.46              |
| 3:D:122:PRO:HA    | 3:D:125:LEU:HD12 | 1.98                     | 0.46              |
| 3:D:1049:VAL:HG21 | 3:D:1068:PRO:HB3 | 1.97                     | 0.46              |
| 6:G:19:DG:H4'     | 6:G:20:DT:C5     | 2.50                     | 0.46              |
| 8:J:172:VAL:HG13  | 8:J:174:LEU:CD1  | 2.46                     | 0.46              |
| 8:L:194:SER:N     | 8:L:197:LYS:HE3  | 2.30                     | 0.46              |
| 2:C:257:ILE:HG23  | 2:C:258:MET:N    | 2.31                     | 0.45              |
| 2:C:523:VAL:HA    | 2:C:552:GLY:O    | 2.16                     | 0.45              |
| 2:C:1024:THR:HG22 | 3:D:730:THR:CG2  | 2.46                     | 0.45              |
| 3:D:97:LEU:HD11   | 3:D:317:VAL:HG13 | 1.97                     | 0.45              |
| 3:D:485:ASP:OD1   | 3:D:486:VAL:N    | 2.48                     | 0.45              |
| 3:D:700:LEU:O     | 3:D:704:TYR:HB2  | 2.16                     | 0.45              |
| 6:G:10:DG:H8      | 6:G:10:DG:O5'    | 2.00                     | 0.45              |
| 6:G:52:DC:H2'     | 6:G:53:DC:C5     | 2.51                     | 0.45              |
| 8:M:181:LEU:HD12  | 8:M:182:LEU:N    | 2.31                     | 0.45              |
| 8:O:204:ARG:NE    | 8:O:204:ARG:H    | 2.14                     | 0.45              |
| 8:N:174:LEU:HD12  | 8:N:179:PHE:HA   | 1.98                     | 0.45              |
| 1:A:175:THR:HG23  | 1:A:195:ASP:OD2  | 2.16                     | 0.45              |
| 3:D:29:LYS:HE2    | 3:D:29:LYS:HB3   | 1.74                     | 0.45              |
| 3:D:214:ARG:CZ    | 7:F:213:ARG:HD3  | 2.45                     | 0.45              |
| 3:D:1112:MET:HE3  | 3:D:1112:MET:HB2 | 1.67                     | 0.45              |
| 7:F:273:LEU:HD12  | 7:F:274:PRO:HD2  | 1.98                     | 0.45              |
| 8:N:158:LEU:HD22  | 8:N:183:ARG:NH1  | 2.31                     | 0.45              |
| 1:B:56:ILE:HG22   | 1:B:136:VAL:HG13 | 1.97                     | 0.45              |
| 3:D:1120:GLU:HA   | 3:D:1123:ARG:HG2 | 1.98                     | 0.45              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:G:62:DA:H2''   | 6:G:63:DC:H2'     | 1.98                     | 0.45              |
| 7:F:408:GLU:OE1  | 7:F:408:GLU:N     | 2.41                     | 0.45              |
| 7:F:516:HIS:HE1  | 7:F:518:SER:CB    | 2.29                     | 0.45              |
| 8:J:187:ILE:HG23 | 8:J:188:ASN:OD1   | 2.16                     | 0.45              |
| 8:M:173:SER:O    | 8:M:224:LYS:NZ    | 2.50                     | 0.45              |
| 1:B:3:ILE:HG23   | 1:B:5:GLN:O       | 2.17                     | 0.45              |
| 1:B:60:LEU:HD12  | 1:B:60:LEU:HA     | 1.82                     | 0.45              |
| 2:C:773:ILE:HD11 | 2:C:834:ASP:HB2   | 1.99                     | 0.45              |
| 3:D:641:ARG:HA   | 3:D:657:GLN:CB    | 2.46                     | 0.45              |
| 3:D:1218:ASP:C   | 3:D:1241:ARG:HH22 | 2.24                     | 0.45              |
| 5:H:78:DT:H5'    | 5:H:78:DT:H6      | 1.82                     | 0.45              |
| 6:G:47:DC:H2''   | 6:G:48:DG:O5'     | 2.17                     | 0.45              |
| 8:J:211:VAL:O    | 8:J:213:VAL:N     | 2.49                     | 0.45              |
| 8:L:221:LEU:O    | 8:L:224:LYS:HG2   | 2.16                     | 0.45              |
| 2:C:603:ASN:OD1  | 2:C:604:ARG:N     | 2.50                     | 0.45              |
| 2:C:827:GLU:OE1  | 2:C:827:GLU:N     | 2.49                     | 0.45              |
| 2:C:1035:HIS:HB3 | 2:C:1040:LYS:HZ2  | 1.81                     | 0.45              |
| 2:C:1099:ARG:O   | 2:C:1102:VAL:HG12 | 2.16                     | 0.45              |
| 8:M:174:LEU:HD11 | 8:M:178:GLU:CB    | 2.46                     | 0.45              |
| 8:N:245:GLU:HG2  | 8:N:246:PRO:HD2   | 1.98                     | 0.45              |
| 3:D:725:THR:OG1  | 3:D:726:ARG:NH1   | 2.49                     | 0.45              |
| 8:K:156:ILE:HA   | 8:K:167:LYS:CE    | 2.46                     | 0.45              |
| 8:K:215:GLU:HG3  | 8:K:241:TYR:OH    | 2.16                     | 0.45              |
| 8:N:159:ASP:CB   | 8:N:166:TRP:HH2   | 2.29                     | 0.45              |
| 3:D:170:LEU:HA   | 3:D:173:ARG:HD2   | 1.98                     | 0.45              |
| 3:D:579:LEU:HD12 | 3:D:579:LEU:H     | 1.81                     | 0.45              |
| 6:G:47:DC:H2'    | 6:G:48:DG:C8      | 2.51                     | 0.45              |
| 7:F:243:ALA:O    | 7:F:247:VAL:HG13  | 2.16                     | 0.45              |
| 8:O:194:SER:OG   | 8:O:239:VAL:O     | 2.35                     | 0.45              |
| 1:I:259:ARG:HH22 | 1:I:292:LYS:HG3   | 1.80                     | 0.45              |
| 1:A:91:GLU:O     | 1:A:93:VAL:HG23   | 2.15                     | 0.45              |
| 1:B:183:VAL:O    | 1:B:188:ASP:N     | 2.44                     | 0.45              |
| 2:C:466:GLU:OE2  | 2:C:466:GLU:HA    | 2.16                     | 0.45              |
| 2:C:482:ARG:HH12 | 2:C:536:GLU:CD    | 2.24                     | 0.45              |
| 2:C:539:HIS:ND1  | 2:C:577:ASP:OD2   | 2.40                     | 0.45              |
| 2:C:848:ILE:HD11 | 2:C:874:ALA:HB3   | 1.98                     | 0.45              |
| 3:D:290:LEU:O    | 3:D:294:LYS:HG2   | 2.16                     | 0.45              |
| 3:D:758:LYS:HD2  | 3:D:758:LYS:HA    | 1.68                     | 0.45              |
| 6:G:87:DC:H2'    | 6:G:88:DT:H72     | 1.99                     | 0.45              |
| 8:J:150:ARG:HE   | 8:J:159:ASP:HB2   | 1.82                     | 0.45              |
| 8:L:190:GLY:H    | 8:L:244:ARG:HD2   | 1.81                     | 0.45              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:C:583:PRO:O     | 2:C:584:ARG:HG2  | 2.16                     | 0.45              |
| 8:O:230:LYS:NZ    | 8:O:232:LEU:HA   | 2.32                     | 0.45              |
| 8:L:179:PHE:O     | 8:L:182:LEU:HG   | 2.17                     | 0.45              |
| 8:L:182:LEU:O     | 8:L:186:VAL:HG23 | 2.17                     | 0.45              |
| 8:L:217:TYR:O     | 8:L:221:LEU:HG   | 2.16                     | 0.45              |
| 1:B:64:THR:O      | 1:B:72:ASP:HB2   | 2.15                     | 0.45              |
| 3:D:724:ALA:O     | 3:D:727:SER:OG   | 2.34                     | 0.45              |
| 6:G:68:DC:H2''    | 8:L:237:ARG:CG   | 2.47                     | 0.45              |
| 7:F:405:ILE:HG13  | 7:F:406:THR:H    | 1.81                     | 0.45              |
| 7:F:483:ASP:OD1   | 7:F:483:ASP:N    | 2.43                     | 0.45              |
| 3:D:257:GLY:O     | 3:D:260:SER:OG   | 2.26                     | 0.44              |
| 4:E:56:TYR:CD1    | 4:E:99:ILE:HD12  | 2.52                     | 0.44              |
| 8:K:172:VAL:HB    | 8:K:224:LYS:HD3  | 1.99                     | 0.44              |
| 1:I:297:VAL:HG23  | 1:I:300:LYS:HE2  | 1.98                     | 0.44              |
| 2:C:465:ARG:HH11  | 2:C:493:ASN:HB3  | 1.81                     | 0.44              |
| 2:C:1077:GLN:HE21 | 2:C:1077:GLN:HB2 | 1.64                     | 0.44              |
| 2:C:1135:VAL:HA   | 3:D:11:ARG:O     | 2.18                     | 0.44              |
| 5:H:33:DG:H2''    | 5:H:34:DG:H8     | 1.78                     | 0.44              |
| 7:F:232:LEU:O     | 7:F:235:ILE:HG22 | 2.17                     | 0.44              |
| 1:I:254:LEU:HD13  | 1:I:300:LYS:HE3  | 1.98                     | 0.44              |
| 1:A:81:LYS:NZ     | 1:A:165:ASP:O    | 2.50                     | 0.44              |
| 2:C:1055:GLN:NE2  | 3:D:416:ASN:OD1  | 2.37                     | 0.44              |
| 3:D:144:ARG:NH1   | 3:D:227:THR:O    | 2.51                     | 0.44              |
| 3:D:582:VAL:HG12  | 3:D:693:GLN:OE1  | 2.17                     | 0.44              |
| 5:H:42:DA:O5'     | 5:H:42:DA:H8     | 2.00                     | 0.44              |
| 6:G:24:DA:C6      | 6:G:25:DA:H1'    | 2.52                     | 0.44              |
| 8:M:183:ARG:O     | 8:M:186:VAL:HG22 | 2.17                     | 0.44              |
| 2:C:93:LEU:HD12   | 2:C:93:LEU:HA    | 1.90                     | 0.44              |
| 2:C:107:PHE:HD1   | 2:C:135:VAL:HG11 | 1.82                     | 0.44              |
| 2:C:335:GLU:O     | 2:C:339:VAL:HG13 | 2.17                     | 0.44              |
| 2:C:825:PHE:HD1   | 7:F:520:SER:HB2  | 1.83                     | 0.44              |
| 3:D:793:TYR:HE1   | 3:D:797:ASN:HB3  | 1.82                     | 0.44              |
| 5:H:34:DG:H21     | 8:L:237:ARG:CZ   | 2.31                     | 0.44              |
| 5:H:68:DA:H2''    | 5:H:69:DC:C6     | 2.53                     | 0.44              |
| 7:F:296:LEU:HD22  | 7:F:332:VAL:HG21 | 1.99                     | 0.44              |
| 7:F:456:LEU:HB2   | 7:F:526:TYR:CD1  | 2.52                     | 0.44              |
| 8:M:194:SER:H     | 8:M:197:LYS:NZ   | 2.15                     | 0.44              |
| 8:M:198:ILE:HD13  | 8:M:198:ILE:N    | 2.31                     | 0.44              |
| 8:M:231:ARG:O     | 8:M:234:HIS:HE1  | 2.00                     | 0.44              |
| 2:C:156:ASP:OD1   | 2:C:156:ASP:N    | 2.43                     | 0.44              |
| 3:D:14:LEU:HD13   | 3:D:311:GLY:HA3  | 1.99                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 3:D:217:ASP:HA   | 3:D:220:GLU:HG2   | 1.99                     | 0.44              |
| 3:D:272:ALA:O    | 3:D:275:GLU:HG3   | 2.17                     | 0.44              |
| 7:F:379:LEU:HB2  | 7:F:403:MET:HE2   | 1.99                     | 0.44              |
| 8:L:231:ARG:C    | 8:L:234:HIS:HE1   | 2.25                     | 0.44              |
| 2:C:400:VAL:O    | 2:C:404:MET:HB3   | 2.18                     | 0.44              |
| 2:C:1007:LYS:HA  | 2:C:1024:THR:HA   | 2.00                     | 0.44              |
| 3:D:24:SER:OG    | 3:D:26:GLY:O      | 2.32                     | 0.44              |
| 3:D:417:LEU:HD13 | 3:D:1253:ILE:HD11 | 2.00                     | 0.44              |
| 3:D:550:GLU:HG3  | 4:E:58:ALA:HB1    | 1.99                     | 0.44              |
| 3:D:705:PRO:O    | 3:D:708:VAL:HG22  | 2.18                     | 0.44              |
| 7:F:386:LEU:CG   | 7:F:394:PRO:HB3   | 2.47                     | 0.44              |
| 8:M:174:LEU:HA   | 8:M:224:LYS:HZ3   | 1.83                     | 0.44              |
| 8:O:221:LEU:HD22 | 8:O:233:LEU:HD22  | 1.99                     | 0.44              |
| 8:K:157:GLU:HG2  | 8:K:166:TRP:HE3   | 1.83                     | 0.44              |
| 8:L:212:ASN:HA   | 8:L:215:GLU:OE1   | 2.17                     | 0.44              |
| 1:I:284:LEU:HA   | 1:I:289:PHE:CD2   | 2.53                     | 0.44              |
| 1:A:144:ARG:HA   | 1:A:168:TYR:HB2   | 1.98                     | 0.44              |
| 3:D:498:LEU:HD12 | 3:D:524:LEU:HD21  | 2.00                     | 0.44              |
| 6:G:6:DC:H2''    | 6:G:7:DC:H5'      | 2.00                     | 0.44              |
| 8:M:217:TYR:HA   | 8:M:220:TYR:CE2   | 2.53                     | 0.44              |
| 8:K:195:LYS:O    | 8:K:198:ILE:HG22  | 2.18                     | 0.44              |
| 2:C:445:PRO:HB2  | 2:C:713:MET:HE2   | 1.92                     | 0.44              |
| 2:C:458:LEU:HD21 | 2:C:496:LEU:HD13  | 1.98                     | 0.44              |
| 3:D:346:ARG:O    | 3:D:350:ARG:HG2   | 2.17                     | 0.44              |
| 3:D:993:GLU:OE1  | 4:E:51:TYR:OH     | 2.36                     | 0.44              |
| 1:B:91:GLU:H     | 1:B:91:GLU:CD     | 2.16                     | 0.44              |
| 2:C:181:ARG:HE   | 2:C:370:ILE:HD11  | 1.83                     | 0.44              |
| 5:H:36:DC:H2''   | 5:H:37:DG:N7      | 2.32                     | 0.44              |
| 5:H:65:DC:H2''   | 5:H:66:DG:H8      | 1.83                     | 0.44              |
| 7:F:372:MET:O    | 7:F:375:VAL:HG12  | 2.17                     | 0.44              |
| 8:O:184:TYR:HA   | 8:O:187:ILE:HG12  | 2.00                     | 0.44              |
| 8:K:165:VAL:CG2  | 8:K:167:LYS:HD3   | 2.42                     | 0.44              |
| 8:K:167:LYS:CE   | 8:K:167:LYS:CA    | 2.96                     | 0.44              |
| 8:L:211:VAL:O    | 8:L:214:VAL:HG22  | 2.18                     | 0.44              |
| 2:C:542:ALA:N    | 2:C:578:TYR:O     | 2.34                     | 0.43              |
| 2:C:592:ALA:HA   | 2:C:976:VAL:HG11  | 2.00                     | 0.43              |
| 3:D:129:ILE:HD11 | 3:D:261:ILE:HG13  | 2.00                     | 0.43              |
| 3:D:749:TYR:CG   | 3:D:781:ALA:HB2   | 2.53                     | 0.43              |
| 3:D:1078:ASP:OD1 | 3:D:1078:ASP:N    | 2.51                     | 0.43              |
| 5:H:36:DC:H2''   | 5:H:37:DG:C8      | 2.53                     | 0.43              |
| 8:M:203:TRP:CE3  | 8:M:207:PHE:HE2   | 2.36                     | 0.43              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 8:O:204:ARG:N     | 8:O:204:ARG:CD   | 2.81                     | 0.43              |
| 1:B:79:ASN:ND2    | 3:D:636:ARG:HH22 | 2.15                     | 0.43              |
| 1:B:104:GLU:OE2   | 1:B:127:THR:HG22 | 2.18                     | 0.43              |
| 2:C:1042:HIS:ND1  | 2:C:1060:LYS:HG2 | 2.34                     | 0.43              |
| 8:M:164:GLU:HB3   | 8:M:166:TRP:HZ3  | 1.81                     | 0.43              |
| 8:M:199:LEU:HA    | 8:M:203:TRP:HB2  | 2.00                     | 0.43              |
| 8:K:195:LYS:NZ    | 8:K:211:VAL:HG22 | 2.33                     | 0.43              |
| 8:N:165:VAL:HG21  | 8:N:182:LEU:HD21 | 1.99                     | 0.43              |
| 8:N:242:VAL:HG22  | 8:N:244:ARG:HB2  | 2.00                     | 0.43              |
| 2:C:740:ARG:NH1   | 2:C:914:ASP:OD2  | 2.52                     | 0.43              |
| 3:D:119:ASP:OD2   | 3:D:295:ARG:NH1  | 2.50                     | 0.43              |
| 3:D:125:LEU:O     | 3:D:129:ILE:HG12 | 2.17                     | 0.43              |
| 3:D:201:GLY:C     | 3:D:205:MET:HE2  | 2.43                     | 0.43              |
| 3:D:487:LEU:O     | 3:D:491:ILE:HG12 | 2.18                     | 0.43              |
| 6:G:26:DC:H2''    | 6:G:27:DG:H8     | 1.80                     | 0.43              |
| 7:F:249:LEU:HD22  | 7:F:291:ALA:HB1  | 2.00                     | 0.43              |
| 7:F:491:GLU:O     | 7:F:494:GLN:HG3  | 2.18                     | 0.43              |
| 8:M:219:SER:O     | 8:M:223:ARG:NE   | 2.44                     | 0.43              |
| 8:N:190:GLY:HA2   | 8:N:244:ARG:HD2  | 2.00                     | 0.43              |
| 1:A:215:LEU:HD12  | 1:A:219:PHE:CE2  | 2.53                     | 0.43              |
| 2:C:1036:LEU:H    | 2:C:1036:LEU:HG  | 1.69                     | 0.43              |
| 2:C:1091:ILE:HG23 | 2:C:1115:PRO:HB3 | 2.00                     | 0.43              |
| 2:C:1134:ASN:ND2  | 3:D:19:ASP:OD2   | 2.51                     | 0.43              |
| 3:D:103:HIS:HB3   | 3:D:106:TYR:HD2  | 1.83                     | 0.43              |
| 8:K:157:GLU:N     | 8:K:167:LYS:HZ1  | 2.17                     | 0.43              |
| 8:L:151:LEU:HB2   | 8:L:158:LEU:O    | 2.18                     | 0.43              |
| 1:I:262:ASN:O     | 1:I:266:ARG:HG2  | 2.19                     | 0.43              |
| 1:A:84:VAL:HG13   | 1:A:119:HIS:HB2  | 2.00                     | 0.43              |
| 1:A:175:THR:OG1   | 1:A:176:TYR:N    | 2.52                     | 0.43              |
| 2:C:143:ASN:OD1   | 2:C:144:THR:N    | 2.50                     | 0.43              |
| 2:C:222:VAL:CG2   | 2:C:222:VAL:O    | 2.66                     | 0.43              |
| 2:C:258:MET:HA    | 2:C:261:THR:HB   | 2.01                     | 0.43              |
| 3:D:730:THR:HG22  | 3:D:731:VAL:N    | 2.33                     | 0.43              |
| 5:H:57:DA:H2''    | 5:H:58:DA:H8     | 1.82                     | 0.43              |
| 8:J:181:LEU:HA    | 8:J:202:VAL:HG21 | 1.99                     | 0.43              |
| 8:O:156:ILE:HD11  | 8:O:232:LEU:HD13 | 1.99                     | 0.43              |
| 8:K:158:LEU:HD22  | 8:K:182:LEU:HG   | 2.00                     | 0.43              |
| 8:L:174:LEU:HD21  | 8:L:182:LEU:HD23 | 2.01                     | 0.43              |
| 1:A:173:LYS:HB2   | 1:A:173:LYS:HE2  | 1.66                     | 0.43              |
| 1:B:170:PRO:HA    | 1:B:199:LYS:HD2  | 2.01                     | 0.43              |
| 1:B:183:VAL:HA    | 1:B:188:ASP:HA   | 2.01                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:C:231:ARG:HG3  | 2:C:280:LYS:HD3  | 1.99                     | 0.43              |
| 2:C:961:ASP:C    | 2:C:963:LEU:H    | 2.27                     | 0.43              |
| 2:C:1048:PRO:HB3 | 7:F:440:GLU:HG2  | 2.00                     | 0.43              |
| 3:D:499:ASN:OD1  | 3:D:500:ARG:N    | 2.52                     | 0.43              |
| 3:D:819:GLY:O    | 3:D:839:SER:HB3  | 2.18                     | 0.43              |
| 6:G:82:DG:H2'    | 6:G:83:DA:C8     | 2.53                     | 0.43              |
| 8:M:150:ARG:HH21 | 8:M:160:GLU:H    | 1.66                     | 0.43              |
| 8:M:195:LYS:CA   | 8:M:198:ILE:HG12 | 2.48                     | 0.43              |
| 8:L:150:ARG:HH22 | 8:L:157:GLU:CB   | 2.30                     | 0.43              |
| 8:L:153:PHE:O    | 8:L:156:ILE:HG13 | 2.18                     | 0.43              |
| 1:A:205:ARG:HG3  | 1:B:225:LEU:HD11 | 2.00                     | 0.43              |
| 1:B:223:ARG:NH1  | 1:B:226:ASN:O    | 2.51                     | 0.43              |
| 2:C:334:THR:O    | 2:C:338:VAL:HG23 | 2.19                     | 0.43              |
| 2:C:554:PHE:HD2  | 2:C:573:SER:HB3  | 1.82                     | 0.43              |
| 2:C:760:ARG:HB3  | 2:C:865:VAL:HG22 | 2.00                     | 0.43              |
| 2:C:997:ASP:OD1  | 2:C:997:ASP:N    | 2.42                     | 0.43              |
| 3:D:452:PHE:O    | 3:D:456:VAL:HG12 | 2.18                     | 0.43              |
| 3:D:486:VAL:O    | 3:D:490:VAL:HG23 | 2.19                     | 0.43              |
| 3:D:589:THR:HG22 | 3:D:687:GLN:HA   | 2.01                     | 0.43              |
| 5:H:26:DG:H2'    | 5:H:27:DA:N7     | 2.33                     | 0.43              |
| 5:H:77:DA:H5'    | 7:F:349:TRP:NE1  | 2.33                     | 0.43              |
| 5:H:87:DC:H1'    | 5:H:88:DT:C6     | 2.54                     | 0.43              |
| 6:G:92:DC:H41    | 8:N:212:ASN:HD21 | 1.64                     | 0.43              |
| 7:F:229:ARG:HA   | 7:F:229:ARG:HD3  | 1.82                     | 0.43              |
| 8:M:178:GLU:HA   | 8:M:181:LEU:CG   | 2.48                     | 0.43              |
| 8:M:190:GLY:H    | 8:M:244:ARG:NH2  | 2.17                     | 0.43              |
| 2:C:548:ILE:HD12 | 2:C:548:ILE:HA   | 1.86                     | 0.43              |
| 3:D:320:ILE:HG13 | 3:D:321:PRO:HD2  | 2.01                     | 0.43              |
| 3:D:982:SER:HB2  | 3:D:989:VAL:HG23 | 2.01                     | 0.43              |
| 3:D:1274:PRO:HB3 | 4:E:82:LEU:HD11  | 2.00                     | 0.43              |
| 8:M:150:ARG:HA   | 8:M:150:ARG:NE   | 2.33                     | 0.43              |
| 8:M:203:TRP:CD2  | 8:M:207:PHE:HE2  | 2.37                     | 0.43              |
| 8:O:195:LYS:O    | 8:O:199:LEU:HG   | 2.18                     | 0.43              |
| 8:K:160:GLU:OE1  | 8:K:160:GLU:N    | 2.51                     | 0.43              |
| 2:C:626:VAL:HG21 | 2:C:933:GLU:HG3  | 1.99                     | 0.43              |
| 2:C:744:GLU:N    | 2:C:744:GLU:OE1  | 2.52                     | 0.43              |
| 3:D:689:HIS:CE1  | 3:D:691:LYS:HG3  | 2.54                     | 0.43              |
| 3:D:810:ASN:N    | 3:D:810:ASN:OD1  | 2.52                     | 0.43              |
| 5:H:49:DG:H4'    | 5:H:50:DT:OP1    | 2.19                     | 0.43              |
| 5:H:85:DA:H4'    | 5:H:86:DG:OP1    | 2.17                     | 0.43              |
| 7:F:244:GLU:O    | 7:F:247:VAL:HG22 | 2.19                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:O:170:GLN:HE22 | 8:O:172:VAL:HB   | 1.83                     | 0.43              |
| 8:N:235:THR:HB   | 8:N:241:TYR:CZ   | 2.54                     | 0.43              |
| 1:A:86:SER:HG    | 1:A:119:HIS:CE1  | 2.28                     | 0.43              |
| 1:A:175:THR:O    | 1:A:194:LEU:HD12 | 2.19                     | 0.43              |
| 1:B:40:ARG:HA    | 1:B:40:ARG:HD3   | 1.76                     | 0.43              |
| 1:B:106:THR:OG1  | 1:B:107:ALA:N    | 2.52                     | 0.43              |
| 2:C:163:LYS:HB3  | 2:C:163:LYS:HE3  | 1.90                     | 0.43              |
| 2:C:721:VAL:HG23 | 2:C:915:ILE:HG23 | 2.01                     | 0.43              |
| 2:C:756:GLU:OE2  | 2:C:870:ARG:NH2  | 2.52                     | 0.43              |
| 3:D:168:GLY:O    | 3:D:171:GLU:HG3  | 2.18                     | 0.43              |
| 3:D:1079:LYS:HD2 | 3:D:1079:LYS:HA  | 1.72                     | 0.43              |
| 7:F:316:ALA:O    | 7:F:320:LEU:HG   | 2.19                     | 0.43              |
| 8:O:175:SER:HB2  | 8:O:217:TYR:OH   | 2.18                     | 0.43              |
| 8:O:188:ASN:HB2  | 8:O:193:LEU:HD21 | 2.00                     | 0.43              |
| 8:K:166:TRP:O    | 8:K:167:LYS:CE   | 2.65                     | 0.43              |
| 1:A:6:ARG:NE     | 1:A:7:PRO:HD2    | 2.31                     | 0.42              |
| 1:A:172:LEU:HB3  | 1:A:197:GLU:HG2  | 2.01                     | 0.42              |
| 5:H:54:DG:C5     | 5:H:55:DG:C5     | 3.07                     | 0.42              |
| 1:B:182:ARG:HH21 | 1:B:184:GLU:H    | 1.67                     | 0.42              |
| 1:B:190:ASP:OD1  | 1:B:190:ASP:N    | 2.50                     | 0.42              |
| 2:C:146:GLU:O    | 2:C:147:ILE:HD13 | 2.19                     | 0.42              |
| 2:C:889:HIS:NE2  | 2:C:933:GLU:OE1  | 2.51                     | 0.42              |
| 2:C:1054:GLN:HG2 | 2:C:1119:GLU:HG2 | 2.01                     | 0.42              |
| 5:H:12:DC:H2''   | 5:H:13:DA:H8     | 1.84                     | 0.42              |
| 5:H:24:DT:H2'    | 5:H:24:DT:OP2    | 2.20                     | 0.42              |
| 5:H:82:DG:H21    | 7:F:236:GLY:HA2  | 1.83                     | 0.42              |
| 5:H:84:DG:C5     | 5:H:85:DA:C6     | 3.07                     | 0.42              |
| 6:G:41:DC:H2''   | 6:G:42:DG:C8     | 2.53                     | 0.42              |
| 8:J:155:ASP:OD1  | 8:J:156:ILE:N    | 2.52                     | 0.42              |
| 8:J:222:ARG:O    | 8:J:226:ASP:HB3  | 2.19                     | 0.42              |
| 8:O:229:GLU:H    | 8:O:229:GLU:HG3  | 1.60                     | 0.42              |
| 8:L:231:ARG:HD2  | 8:L:231:ARG:HA   | 1.87                     | 0.42              |
| 2:C:272:GLU:O    | 2:C:275:LEU:HG   | 2.19                     | 0.42              |
| 2:C:922:VAL:HG11 | 2:C:931:ILE:CD1  | 2.49                     | 0.42              |
| 5:H:30:DC:H2''   | 5:H:31:DA:O5'    | 2.20                     | 0.42              |
| 6:G:44:DT:H2'    | 6:G:45:DT:H71    | 2.01                     | 0.42              |
| 6:G:63:DC:OP2    | 6:G:63:DC:H3'    | 2.19                     | 0.42              |
| 7:F:516:HIS:ND1  | 7:F:519:ARG:HD2  | 2.34                     | 0.42              |
| 8:M:203:TRP:CE3  | 8:M:207:PHE:CE2  | 3.06                     | 0.42              |
| 8:K:201:HIS:CD2  | 8:K:201:HIS:C    | 2.96                     | 0.42              |
| 8:L:242:VAL:HG22 | 8:L:244:ARG:HG2  | 2.02                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:41:THR:OG1   | 1:A:215:LEU:HD21 | 2.18                     | 0.42              |
| 1:A:205:ARG:NH1  | 1:A:205:ARG:HB3  | 2.34                     | 0.42              |
| 2:C:377:ARG:NH1  | 2:C:383:GLU:OE2  | 2.48                     | 0.42              |
| 3:D:60:CYS:SG    | 3:D:64:LYS:N     | 2.78                     | 0.42              |
| 3:D:594:GLY:N    | 3:D:598:GLU:OE2  | 2.51                     | 0.42              |
| 4:E:56:TYR:CE1   | 4:E:99:ILE:HD12  | 2.55                     | 0.42              |
| 7:F:474:VAL:O    | 7:F:478:ARG:HB2  | 2.19                     | 0.42              |
| 8:M:194:SER:O    | 8:M:195:LYS:C    | 2.62                     | 0.42              |
| 1:A:26:LEU:HD21  | 1:B:218:LEU:HD11 | 2.02                     | 0.42              |
| 1:A:71:GLU:HB3   | 1:A:76:ILE:HG13  | 2.02                     | 0.42              |
| 2:C:421:ARG:NH1  | 6:G:22:DA:H3'    | 2.34                     | 0.42              |
| 3:D:717:LYS:HB3  | 3:D:717:LYS:HE3  | 1.71                     | 0.42              |
| 6:G:46:DC:C2     | 6:G:47:DC:N4     | 2.87                     | 0.42              |
| 6:G:62:DA:H2''   | 6:G:63:DC:H5'    | 2.02                     | 0.42              |
| 6:G:68:DC:C2     | 6:G:69:DC:C5     | 3.08                     | 0.42              |
| 7:F:292:LYS:HB3  | 7:F:292:LYS:HE2  | 1.78                     | 0.42              |
| 8:L:158:LEU:HD22 | 8:L:182:LEU:CD1  | 2.49                     | 0.42              |
| 2:C:1095:ASP:O   | 2:C:1099:ARG:HG3 | 2.19                     | 0.42              |
| 6:G:24:DA:N6     | 6:G:25:DA:N3     | 2.68                     | 0.42              |
| 7:F:478:ARG:HH12 | 8:J:204:ARG:CZ   | 2.32                     | 0.42              |
| 8:M:166:TRP:NE1  | 8:M:171:PRO:HG3  | 2.35                     | 0.42              |
| 8:M:195:LYS:O    | 8:M:196:PRO:C    | 2.63                     | 0.42              |
| 8:N:201:HIS:O    | 8:N:202:VAL:C    | 2.62                     | 0.42              |
| 8:N:204:ARG:CZ   | 8:N:207:PHE:HA   | 2.49                     | 0.42              |
| 8:N:231:ARG:HH22 | 8:N:235:THR:HG22 | 1.85                     | 0.42              |
| 1:I:258:VAL:CG1  | 1:I:262:ASN:HD21 | 2.32                     | 0.42              |
| 1:B:3:ILE:O      | 1:B:3:ILE:HG12   | 2.20                     | 0.42              |
| 1:B:56:ILE:HG22  | 1:B:136:VAL:HA   | 2.01                     | 0.42              |
| 2:C:216:VAL:HG21 | 2:C:349:HIS:CE1  | 2.55                     | 0.42              |
| 2:C:467:ARG:HG2  | 2:C:467:ARG:HH11 | 1.85                     | 0.42              |
| 2:C:823:ALA:HB1  | 7:F:511:MET:CE   | 2.48                     | 0.42              |
| 2:C:1031:MET:HE2 | 2:C:1031:MET:HB3 | 1.90                     | 0.42              |
| 3:D:147:GLU:OE2  | 3:D:147:GLU:HA   | 2.20                     | 0.42              |
| 3:D:160:LYS:HE3  | 3:D:160:LYS:HB3  | 1.69                     | 0.42              |
| 3:D:753:ALA:HB2  | 3:D:777:ILE:HD11 | 2.01                     | 0.42              |
| 5:H:45:DT:H1'    | 5:H:46:DG:N7     | 2.35                     | 0.42              |
| 5:H:78:DT:H2''   | 5:H:79:DA:C8     | 2.54                     | 0.42              |
| 5:H:84:DG:C8     | 5:H:84:DG:H5''   | 2.54                     | 0.42              |
| 6:G:74:DT:H2''   | 6:G:75:DC:O5'    | 2.19                     | 0.42              |
| 6:G:82:DG:H8     | 6:G:82:DG:H5''   | 1.84                     | 0.42              |
| 6:G:86:DT:H1'    | 6:G:87:DC:O4'    | 2.20                     | 0.42              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 7:F:247:VAL:O     | 7:F:251:LYS:HG2  | 2.19                     | 0.42              |
| 8:M:195:LYS:HB2   | 8:M:196:PRO:HD3  | 2.01                     | 0.42              |
| 2:C:212:LEU:HD12  | 2:C:212:LEU:HA   | 1.82                     | 0.42              |
| 2:C:828:LYS:HE3   | 2:C:829:ALA:H    | 1.84                     | 0.42              |
| 3:D:269:ASP:OD1   | 3:D:269:ASP:N    | 2.47                     | 0.42              |
| 3:D:487:LEU:HG    | 3:D:516:LEU:HD11 | 2.01                     | 0.42              |
| 3:D:760:PHE:HB2   | 3:D:765:LEU:HD11 | 2.01                     | 0.42              |
| 3:D:1063:LYS:HD3  | 3:D:1078:ASP:HB3 | 2.02                     | 0.42              |
| 3:D:1254:ILE:HD11 | 3:D:1256:LYS:HE3 | 2.01                     | 0.42              |
| 5:H:82:DG:N2      | 7:F:236:GLY:HA2  | 2.34                     | 0.42              |
| 7:F:408:GLU:H     | 7:F:408:GLU:CD   | 2.25                     | 0.42              |
| 8:M:155:ASP:OD2   | 8:M:230:LYS:HE3  | 2.20                     | 0.42              |
| 8:M:191:THR:HG22  | 8:M:192:VAL:O    | 2.20                     | 0.42              |
| 8:O:177:THR:HG23  | 8:O:217:TYR:OH   | 2.19                     | 0.42              |
| 1:A:84:VAL:HG21   | 1:A:199:LYS:O    | 2.20                     | 0.42              |
| 2:C:619:VAL:HG23  | 2:C:620:ARG:HG2  | 2.02                     | 0.42              |
| 2:C:982:GLU:HG3   | 3:D:841:ARG:HE   | 1.84                     | 0.42              |
| 3:D:414:ARG:HD2   | 3:D:875:ARG:HH21 | 1.84                     | 0.42              |
| 3:D:679:LEU:HD23  | 3:D:679:LEU:H    | 1.83                     | 0.42              |
| 3:D:1150:HIS:CE1  | 3:D:1152:LYS:HE3 | 2.55                     | 0.42              |
| 5:H:44:DT:H2''    | 5:H:45:DT:O5'    | 2.19                     | 0.42              |
| 5:H:87:DC:H1'     | 5:H:88:DT:N1     | 2.35                     | 0.42              |
| 8:K:175:SER:O     | 8:K:178:GLU:HG2  | 2.20                     | 0.42              |
| 8:K:230:LYS:HE3   | 8:K:232:LEU:HD21 | 2.01                     | 0.42              |
| 8:L:159:ASP:OD1   | 8:L:162:THR:OG1  | 2.21                     | 0.42              |
| 2:C:43:LYS:N      | 2:C:978:ASP:OD2  | 2.53                     | 0.42              |
| 2:C:584:ARG:O     | 2:C:587:VAL:HG12 | 2.19                     | 0.42              |
| 2:C:884:LYS:HZ1   | 2:C:892:LYS:HD2  | 1.83                     | 0.42              |
| 2:C:1072:GLU:OE1  | 2:C:1072:GLU:N   | 2.49                     | 0.42              |
| 3:D:777:ILE:HG13  | 3:D:778:TRP:N    | 2.34                     | 0.42              |
| 3:D:1152:LYS:HE2  | 3:D:1152:LYS:HB3 | 1.77                     | 0.42              |
| 4:E:94:ILE:O      | 4:E:98:GLU:HG3   | 2.20                     | 0.42              |
| 5:H:94:DG:C6      | 5:H:95:DG:C6     | 3.08                     | 0.42              |
| 6:G:8:DG:C2       | 6:G:9:DT:C4      | 3.07                     | 0.42              |
| 7:F:258:TYR:CE1   | 7:F:262:LEU:HG   | 2.55                     | 0.42              |
| 8:J:213:VAL:O     | 8:J:217:TYR:HD1  | 2.02                     | 0.42              |
| 8:O:179:PHE:HZ    | 8:O:183:ARG:HH11 | 1.67                     | 0.42              |
| 1:I:265:LYS:HD3   | 1:I:265:LYS:HA   | 1.78                     | 0.42              |
| 1:A:173:LYS:HZ3   | 2:C:911:THR:HG22 | 1.85                     | 0.41              |
| 1:B:223:ARG:HG2   | 1:B:223:ARG:HH11 | 1.85                     | 0.41              |
| 2:C:181:ARG:HG3   | 5:H:89:DG:N1     | 2.35                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 2:C:266:ASN:ND2   | 2:C:266:ASN:O     | 2.53                     | 0.41              |
| 2:C:521:ASP:CG    | 2:C:521:ASP:O     | 2.62                     | 0.41              |
| 3:D:62:CYS:H      | 3:D:77:ARG:NH2    | 2.17                     | 0.41              |
| 3:D:851:ILE:O     | 3:D:854:HIS:HB2   | 2.20                     | 0.41              |
| 3:D:965:VAL:O     | 3:D:1159:ARG:HD2  | 2.20                     | 0.41              |
| 3:D:1250:GLU:O    | 3:D:1253:ILE:HG22 | 2.20                     | 0.41              |
| 7:F:488:THR:HB    | 7:F:490:ASP:OD1   | 2.20                     | 0.41              |
| 2:C:342:ILE:O     | 2:C:346:VAL:HG22  | 2.21                     | 0.41              |
| 2:C:758:ASP:N     | 2:C:758:ASP:OD1   | 2.52                     | 0.41              |
| 2:C:1028:MET:HE3  | 2:C:1028:MET:HB2  | 1.84                     | 0.41              |
| 3:D:470:LYS:O     | 3:D:474:ARG:HG3   | 2.21                     | 0.41              |
| 3:D:1139:GLN:NE2  | 3:D:1149:ILE:O    | 2.52                     | 0.41              |
| 5:H:96:DA:C5      | 5:H:97:DT:C4      | 3.09                     | 0.41              |
| 7:F:488:THR:O     | 7:F:492:ILE:HG22  | 2.20                     | 0.41              |
| 8:M:193:LEU:HB3   | 8:M:198:ILE:CD1   | 2.49                     | 0.41              |
| 1:B:24:GLU:HA     | 1:B:25:PRO:HA     | 1.81                     | 0.41              |
| 1:B:225:LEU:HD12  | 1:B:225:LEU:O     | 2.20                     | 0.41              |
| 2:C:730:ASN:HA    | 2:C:734:ALA:HB3   | 2.02                     | 0.41              |
| 2:C:1083:TYR:HB2  | 3:D:554:GLU:OE2   | 2.20                     | 0.41              |
| 2:C:1106:ILE:HD11 | 3:D:455:PHE:CE2   | 2.55                     | 0.41              |
| 3:D:576:MET:CE    | 3:D:693:GLN:HB3   | 2.50                     | 0.41              |
| 3:D:859:GLY:O     | 3:D:863:THR:HG22  | 2.20                     | 0.41              |
| 5:H:8:DC:H2''     | 5:H:9:DG:C5'      | 2.50                     | 0.41              |
| 7:F:258:TYR:OH    | 7:F:262:LEU:HD11  | 2.21                     | 0.41              |
| 8:J:156:ILE:HD11  | 8:J:165:VAL:HB    | 2.01                     | 0.41              |
| 1:A:82:SER:O      | 1:A:82:SER:OG     | 2.33                     | 0.41              |
| 1:B:12:ASP:OD1    | 1:B:12:ASP:N      | 2.53                     | 0.41              |
| 2:C:877:ARG:HE    | 2:C:877:ARG:HB2   | 1.70                     | 0.41              |
| 2:C:928:ILE:HG13  | 2:C:932:LEU:HD23  | 2.02                     | 0.41              |
| 3:D:136:ILE:HG13  | 3:D:229:LEU:HD11  | 2.01                     | 0.41              |
| 3:D:705:PRO:HB3   | 4:E:41:ASP:OD2    | 2.19                     | 0.41              |
| 3:D:902:ALA:H     | 3:D:913:ASP:HB2   | 1.85                     | 0.41              |
| 7:F:502:ARG:NH1   | 8:K:209:GLY:O     | 2.39                     | 0.41              |
| 8:O:198:ILE:O     | 8:O:202:VAL:HG22  | 2.19                     | 0.41              |
| 1:I:251:ILE:H     | 1:I:251:ILE:HD12  | 1.85                     | 0.41              |
| 2:C:685:ASN:OD1   | 2:C:686:GLN:N     | 2.54                     | 0.41              |
| 3:D:224:SER:O     | 3:D:228:LYS:HG2   | 2.20                     | 0.41              |
| 3:D:471:SER:HA    | 3:D:474:ARG:NE    | 2.36                     | 0.41              |
| 8:J:161:GLU:HG3   | 8:J:162:THR:N     | 2.35                     | 0.41              |
| 1:B:38:LEU:HD23   | 1:B:38:LEU:HA     | 1.86                     | 0.41              |
| 2:C:74:ALA:HA     | 2:C:77:ARG:HH21   | 1.85                     | 0.41              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 2:C:812:THR:OG1  | 2:C:813:GLU:N     | 2.53                     | 0.41              |
| 2:C:961:ASP:OD1  | 2:C:962:GLU:N     | 2.46                     | 0.41              |
| 3:D:503:THR:O    | 3:D:503:THR:OG1   | 2.30                     | 0.41              |
| 3:D:1278:ALA:HB1 | 4:E:82:LEU:HD13   | 2.01                     | 0.41              |
| 7:F:406:THR:HG1  | 7:F:408:GLU:CD    | 2.25                     | 0.41              |
| 8:J:188:ASN:ND2  | 8:J:193:LEU:HD21  | 2.34                     | 0.41              |
| 8:J:224:LYS:HE2  | 8:J:224:LYS:HB2   | 1.79                     | 0.41              |
| 8:M:230:LYS:HB2  | 8:M:246:PRO:HG3   | 2.03                     | 0.41              |
| 8:O:204:ARG:N    | 8:O:204:ARG:HD3   | 2.36                     | 0.41              |
| 8:K:203:TRP:CZ2  | 8:K:217:TYR:CE1   | 3.07                     | 0.41              |
| 8:N:162:THR:O    | 8:N:162:THR:HG22  | 2.20                     | 0.41              |
| 8:N:173:SER:O    | 8:N:174:LEU:HD23  | 2.21                     | 0.41              |
| 1:B:71:GLU:OE1   | 1:B:127:THR:OG1   | 2.37                     | 0.41              |
| 2:C:98:ASP:HB3   | 2:C:404:MET:HE2   | 2.02                     | 0.41              |
| 2:C:1054:GLN:HB3 | 2:C:1099:ARG:HH12 | 1.85                     | 0.41              |
| 3:D:173:ARG:NH2  | 3:D:208:ILE:HG21  | 2.20                     | 0.41              |
| 3:D:250:GLU:H    | 3:D:250:GLU:CD    | 2.29                     | 0.41              |
| 3:D:458:LYS:O    | 3:D:461:VAL:HG12  | 2.21                     | 0.41              |
| 3:D:745:ILE:HG21 | 3:D:785:VAL:HG23  | 2.02                     | 0.41              |
| 1:A:29:GLY:N     | 1:A:190:ASP:OD2   | 2.46                     | 0.41              |
| 2:C:543:GLN:OE1  | 3:D:847:LEU:HD23  | 2.21                     | 0.41              |
| 2:C:720:LEU:HD22 | 2:C:913:VAL:HA    | 2.02                     | 0.41              |
| 2:C:825:PHE:HB3  | 2:C:827:GLU:OE1   | 2.21                     | 0.41              |
| 2:C:922:VAL:HG22 | 2:C:930:GLN:NE2   | 2.35                     | 0.41              |
| 3:D:30:LYS:HE3   | 3:D:30:LYS:HB2    | 1.79                     | 0.41              |
| 3:D:189:ALA:O    | 3:D:194:ARG:NH2   | 2.53                     | 0.41              |
| 3:D:320:ILE:HG22 | 3:D:325:ARG:HH11  | 1.86                     | 0.41              |
| 3:D:639:GLN:HA   | 3:D:658:PRO:HA    | 2.02                     | 0.41              |
| 5:H:25:DG:C4     | 5:H:26:DG:C8      | 3.09                     | 0.41              |
| 8:J:211:VAL:O    | 8:J:214:VAL:HG12  | 2.20                     | 0.41              |
| 8:L:178:GLU:HA   | 8:L:181:LEU:CD2   | 2.50                     | 0.41              |
| 1:A:69:VAL:HG22  | 1:A:71:GLU:N      | 2.36                     | 0.41              |
| 1:A:183:VAL:HG13 | 1:A:185:GLN:HG2   | 2.03                     | 0.41              |
| 1:B:7:PRO:HD2    | 1:B:234:ILE:HG13  | 2.03                     | 0.41              |
| 1:B:43:LEU:HD23  | 1:B:43:LEU:HA     | 1.81                     | 0.41              |
| 1:B:76:ILE:HD11  | 1:B:125:ILE:HG22  | 2.02                     | 0.41              |
| 2:C:197:LYS:HD3  | 2:C:197:LYS:HA    | 1.65                     | 0.41              |
| 2:C:519:VAL:HG12 | 2:C:524:VAL:HA    | 2.02                     | 0.41              |
| 3:D:39:LEU:HD13  | 3:D:39:LEU:HA     | 1.82                     | 0.41              |
| 3:D:46:LEU:HD23  | 3:D:46:LEU:HA     | 1.94                     | 0.41              |
| 3:D:288:LYS:HA   | 3:D:288:LYS:HD3   | 1.94                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:D:341:ASN:OD1   | 3:D:341:ASN:N     | 2.54                     | 0.41              |
| 3:D:453:LYS:HE3   | 3:D:473:LYS:HD2   | 2.02                     | 0.41              |
| 3:D:525:HIS:NE2   | 3:D:717:LYS:HE2   | 2.36                     | 0.41              |
| 3:D:862:ASP:OD1   | 3:D:862:ASP:C     | 2.64                     | 0.41              |
| 3:D:1087:ARG:HB2  | 3:D:1112:MET:C    | 2.46                     | 0.41              |
| 3:D:1135:VAL:HG22 | 3:D:1154:ILE:HG22 | 2.02                     | 0.41              |
| 3:D:1181:ILE:HG21 | 3:D:1185:GLU:OE2  | 2.20                     | 0.41              |
| 7:F:208:GLU:HA    | 7:F:213:ARG:NH2   | 2.36                     | 0.41              |
| 7:F:214:GLN:N     | 7:F:214:GLN:OE1   | 2.54                     | 0.41              |
| 7:F:259:ALA:HB1   | 7:F:281:MET:HG3   | 2.03                     | 0.41              |
| 8:M:194:SER:C     | 8:M:198:ILE:HG12  | 2.44                     | 0.41              |
| 8:K:153:PHE:CZ    | 8:K:244:ARG:HA    | 2.56                     | 0.41              |
| 8:L:189:ALA:HA    | 8:L:244:ARG:CZ    | 2.51                     | 0.41              |
| 8:N:159:ASP:C     | 8:N:183:ARG:HH22  | 2.28                     | 0.41              |
| 1:B:210:SER:O     | 1:B:213:LYS:HE2   | 2.21                     | 0.41              |
| 2:C:299:LEU:HD12  | 2:C:299:LEU:HA    | 1.83                     | 0.41              |
| 2:C:467:ARG:O     | 2:C:467:ARG:HG3   | 2.21                     | 0.41              |
| 2:C:613:ARG:H     | 2:C:613:ARG:HG2   | 1.62                     | 0.41              |
| 2:C:625:LEU:HD23  | 2:C:625:LEU:HA    | 1.86                     | 0.41              |
| 3:D:94:HIS:HE2    | 3:D:96:GLU:HG2    | 1.86                     | 0.41              |
| 3:D:1127:PRO:O    | 3:D:1130:VAL:HG12 | 2.21                     | 0.41              |
| 3:D:1271:ALA:O    | 4:E:106:HIS:HA    | 2.21                     | 0.41              |
| 6:G:6:DC:H1'      | 6:G:7:DC:H5'      | 2.01                     | 0.41              |
| 8:O:193:LEU:HB3   | 8:O:198:ILE:HD11  | 2.03                     | 0.41              |
| 8:K:167:LYS:N     | 8:K:167:LYS:CD    | 2.84                     | 0.41              |
| 8:K:217:TYR:N     | 8:K:217:TYR:HD2   | 2.19                     | 0.41              |
| 8:L:231:ARG:O     | 8:L:234:HIS:HE1   | 2.04                     | 0.41              |
| 8:N:158:LEU:HD13  | 8:N:183:ARG:NE    | 2.36                     | 0.41              |
| 1:I:251:ILE:HD13  | 1:I:264:LEU:HD13  | 2.01                     | 0.41              |
| 1:A:3:ILE:CG2     | 1:A:5:GLN:HG2     | 2.52                     | 0.40              |
| 1:B:49:ALA:HA     | 1:B:142:ARG:HA    | 2.03                     | 0.40              |
| 1:B:223:ARG:NH2   | 1:B:227:VAL:HA    | 2.36                     | 0.40              |
| 2:C:113:ASP:HB3   | 2:C:132:PRO:HD2   | 2.03                     | 0.40              |
| 2:C:308:LEU:O     | 2:C:331:SER:HB3   | 2.21                     | 0.40              |
| 2:C:488:THR:O     | 2:C:610:ASN:ND2   | 2.54                     | 0.40              |
| 2:C:1076:MET:HB3  | 2:C:1085:LEU:HD13 | 2.02                     | 0.40              |
| 3:D:683:PHE:CD1   | 3:D:685:ASN:HB2   | 2.56                     | 0.40              |
| 5:H:17:DT:H4'     | 1:I:262:ASN:CG    | 2.45                     | 0.40              |
| 6:G:53:DC:H2'     | 6:G:54:DC:H4'     | 2.03                     | 0.40              |
| 7:F:460:LEU:HD23  | 7:F:460:LEU:HA    | 1.83                     | 0.40              |
| 8:N:173:SER:C     | 8:N:174:LEU:HD23  | 2.47                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:I:250:PRO:HA   | 1:I:271:THR:HA   | 2.02                     | 0.40              |
| 1:B:46:ILE:HB    | 1:B:170:PRO:HD2  | 2.04                     | 0.40              |
| 3:D:414:ARG:HE   | 3:D:414:ARG:HB3  | 1.53                     | 0.40              |
| 3:D:430:ILE:HD13 | 3:D:522:ILE:HB   | 2.03                     | 0.40              |
| 4:E:67:TYR:CD1   | 4:E:67:TYR:C     | 2.99                     | 0.40              |
| 5:H:25:DG:C2     | 5:H:26:DG:C4     | 3.10                     | 0.40              |
| 6:G:53:DC:H2'    | 6:G:54:DC:C4'    | 2.52                     | 0.40              |
| 8:O:216:SER:O    | 8:O:219:SER:OG   | 2.23                     | 0.40              |
| 8:K:235:THR:HG22 | 8:K:241:TYR:CE2  | 2.56                     | 0.40              |
| 8:L:204:ARG:H    | 8:L:204:ARG:HG2  | 1.69                     | 0.40              |
| 8:N:206:ASP:O    | 8:N:207:PHE:C    | 2.64                     | 0.40              |
| 2:C:463:LEU:HD12 | 2:C:468:ALA:HA   | 2.03                     | 0.40              |
| 2:C:732:GLU:HB3  | 3:D:536:PHE:HD1  | 1.85                     | 0.40              |
| 3:D:26:GLY:HA3   | 3:D:51:ILE:HG23  | 2.04                     | 0.40              |
| 3:D:196:LYS:HE3  | 3:D:196:LYS:HB3  | 1.90                     | 0.40              |
| 3:D:281:ILE:HD13 | 3:D:281:ILE:HA   | 1.97                     | 0.40              |
| 3:D:704:TYR:HD2  | 3:D:705:PRO:HD2  | 1.86                     | 0.40              |
| 3:D:874:THR:HB   | 3:D:1004:GLY:HA3 | 2.02                     | 0.40              |
| 8:K:167:LYS:O    | 8:K:169:GLY:N    | 2.53                     | 0.40              |
| 8:L:173:SER:C    | 8:L:174:LEU:HD12 | 2.47                     | 0.40              |
| 8:L:226:ASP:OD1  | 8:L:231:ARG:HD2  | 2.22                     | 0.40              |
| 8:N:177:THR:HB   | 8:N:203:TRP:CH2  | 2.57                     | 0.40              |
| 8:N:231:ARG:O    | 8:N:246:PRO:HD3  | 2.21                     | 0.40              |
| 1:B:172:LEU:HD23 | 1:B:172:LEU:HA   | 1.91                     | 0.40              |
| 2:C:167:ILE:HD13 | 2:C:167:ILE:HA   | 1.99                     | 0.40              |
| 2:C:168:ILE:HD11 | 2:C:431:PHE:CD2  | 2.57                     | 0.40              |
| 2:C:731:TYR:OH   | 3:D:578:ARG:HB2  | 2.22                     | 0.40              |
| 2:C:732:GLU:HB3  | 3:D:536:PHE:CD1  | 2.57                     | 0.40              |
| 2:C:961:ASP:O    | 2:C:962:GLU:HG2  | 2.21                     | 0.40              |
| 3:D:913:ASP:HB3  | 3:D:916:ILE:HD11 | 2.03                     | 0.40              |
| 4:E:87:LEU:HD12  | 4:E:87:LEU:HA    | 1.91                     | 0.40              |
| 6:G:20:DT:H3'    | 6:G:21:DA:C2     | 2.56                     | 0.40              |
| 8:J:218:VAL:HG12 | 8:J:222:ARG:HE   | 1.87                     | 0.40              |
| 8:L:157:GLU:OE1  | 8:L:166:TRP:HD1  | 2.04                     | 0.40              |
| 8:L:181:LEU:HA   | 8:L:202:VAL:HG21 | 2.04                     | 0.40              |
| 1:A:146:TYR:CG   | 2:C:743:GLU:HG2  | 2.56                     | 0.40              |
| 2:C:514:THR:HG1  | 2:C:585:GLN:NE2  | 2.20                     | 0.40              |
| 2:C:630:MET:HE2  | 2:C:630:MET:HB2  | 1.89                     | 0.40              |
| 7:F:306:LEU:HA   | 7:F:306:LEU:HD12 | 1.89                     | 0.40              |
| 8:L:150:ARG:HA   | 8:L:150:ARG:HD2  | 1.87                     | 0.40              |
| 8:L:181:LEU:HA   | 8:L:202:VAL:CG2  | 2.52                     | 0.40              |

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| Atom-1          | Atom-2         | Interatomic distance (Å) | Clash overlap (Å) |
|-----------------|----------------|--------------------------|-------------------|
| 8:L:204:ARG:NH1 | 8:L:207:PHE:HA | 2.36                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all 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     | 223/347 (64%)   | 220 (99%)  | 3 (1%)   | 0        | 100         | 100 |
| 1   | B     | 232/347 (67%)   | 214 (92%)  | 18 (8%)  | 0        | 100         | 100 |
| 1   | I     | 55/347 (16%)    | 52 (94%)   | 3 (6%)   | 0        | 100         | 100 |
| 2   | C     | 1109/1178 (94%) | 1041 (94%) | 68 (6%)  | 0        | 100         | 100 |
| 3   | D     | 1257/1316 (96%) | 1211 (96%) | 46 (4%)  | 0        | 100         | 100 |
| 4   | E     | 81/110 (74%)    | 77 (95%)   | 4 (5%)   | 0        | 100         | 100 |
| 7   | F     | 320/528 (61%)   | 313 (98%)  | 7 (2%)   | 0        | 100         | 100 |
| 8   | J     | 94/247 (38%)    | 86 (92%)   | 8 (8%)   | 0        | 100         | 100 |
| 8   | K     | 95/247 (38%)    | 90 (95%)   | 5 (5%)   | 0        | 100         | 100 |
| 8   | L     | 96/247 (39%)    | 85 (88%)   | 11 (12%) | 0        | 100         | 100 |
| 8   | M     | 96/247 (39%)    | 85 (88%)   | 10 (10%) | 1 (1%)   | 12          | 45  |
| 8   | N     | 96/247 (39%)    | 90 (94%)   | 6 (6%)   | 0        | 100         | 100 |
| 8   | O     | 96/247 (39%)    | 93 (97%)   | 3 (3%)   | 0        | 100         | 100 |
| All | All   | 3850/5655 (68%) | 3657 (95%) | 192 (5%) | 1 (0%)   | 100         | 100 |

All (1) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 8   | M     | 154 | ALA  |

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

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all 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     | 193/297 (65%)   | 193 (100%)  | 0        | 100         | 100 |
| 1   | B     | 193/297 (65%)   | 190 (98%)   | 3 (2%)   | 55          | 75  |
| 1   | I     | 46/297 (16%)    | 46 (100%)   | 0        | 100         | 100 |
| 2   | C     | 924/998 (93%)   | 922 (100%)  | 2 (0%)   | 87          | 89  |
| 3   | D     | 1037/1095 (95%) | 1037 (100%) | 0        | 100         | 100 |
| 4   | E     | 69/90 (77%)     | 69 (100%)   | 0        | 100         | 100 |
| 7   | F     | 264/427 (62%)   | 264 (100%)  | 0        | 100         | 100 |
| 8   | J     | 84/208 (40%)    | 84 (100%)   | 0        | 100         | 100 |
| 8   | K     | 87/208 (42%)    | 85 (98%)    | 2 (2%)   | 44          | 70  |
| 8   | L     | 87/208 (42%)    | 87 (100%)   | 0        | 100         | 100 |
| 8   | M     | 86/208 (41%)    | 83 (96%)    | 3 (4%)   | 32          | 64  |
| 8   | N     | 88/208 (42%)    | 87 (99%)    | 1 (1%)   | 65          | 79  |
| 8   | O     | 86/208 (41%)    | 86 (100%)   | 0        | 100         | 100 |
| All | All   | 3244/4749 (68%) | 3233 (100%) | 11 (0%)  | 84          | 88  |

All (11) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | B     | 26  | LEU  |
| 1   | B     | 54  | ILE  |
| 1   | B     | 69  | VAL  |
| 2   | C     | 775 | ASN  |
| 2   | C     | 841 | HIS  |
| 8   | M     | 172 | VAL  |
| 8   | M     | 175 | SER  |
| 8   | M     | 177 | THR  |
| 8   | K     | 151 | LEU  |
| 8   | K     | 234 | HIS  |
| 8   | N     | 172 | VAL  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 185  | GLN  |
| 1   | B     | 61   | HIS  |
| 1   | B     | 79   | ASN  |
| 1   | B     | 226  | ASN  |
| 2   | C     | 178  | GLN  |
| 2   | C     | 388  | GLN  |
| 2   | C     | 442  | GLN  |
| 2   | C     | 612  | GLN  |
| 2   | C     | 930  | GLN  |
| 2   | C     | 1077 | GLN  |
| 2   | C     | 1134 | ASN  |
| 3   | D     | 262  | GLN  |
| 3   | D     | 540  | GLN  |
| 3   | D     | 1251 | ASN  |
| 4   | E     | 70   | GLN  |
| 7   | F     | 434  | GLN  |
| 7   | F     | 516  | HIS  |
| 8   | O     | 170  | GLN  |
| 8   | O     | 188  | ASN  |
| 8   | N     | 170  | GLN  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

### 5.6 Ligand geometry [i](#)

Of 3 ligands modelled in this entry, 3 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

There are no such residues in this entry.

## 5.8 Polymer linkage issues

There are no chain breaks in this entry.

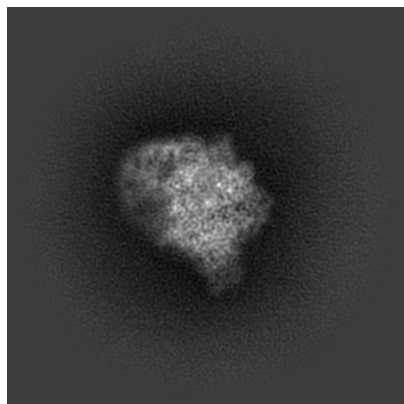
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-61497. These allow visual inspection of the internal detail of the map and identification of artifacts.

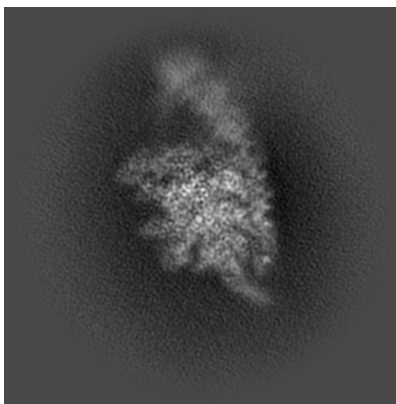
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

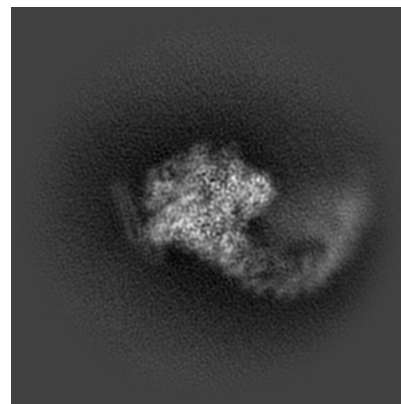
#### 6.1.1 Primary map



X

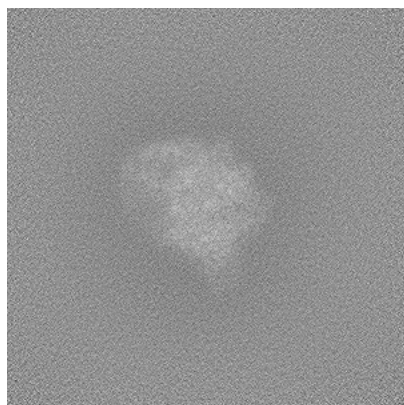


Y

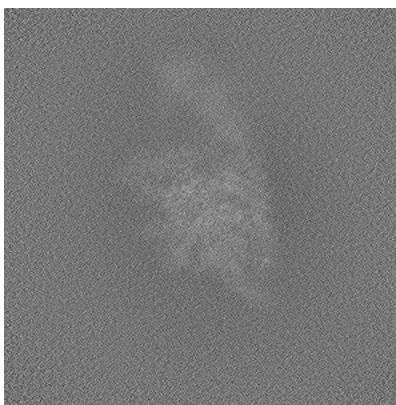


Z

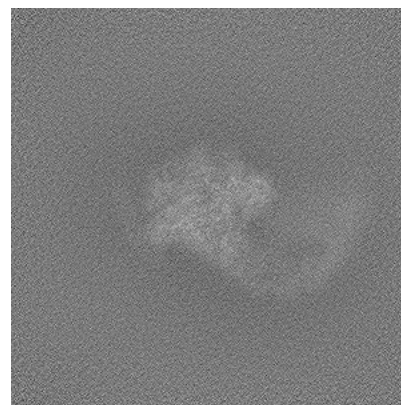
#### 6.1.2 Raw map



X



Y

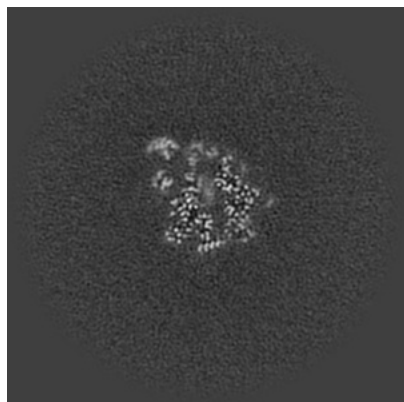


Z

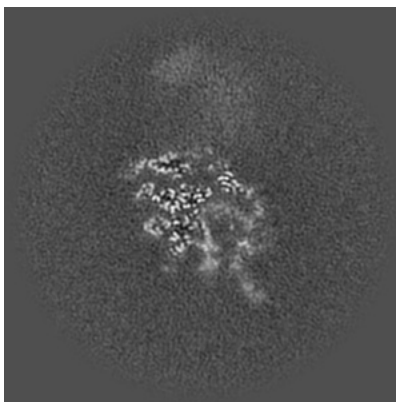
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

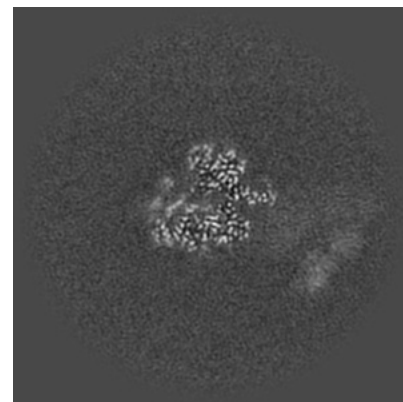
### 6.2.1 Primary map



X Index: 300

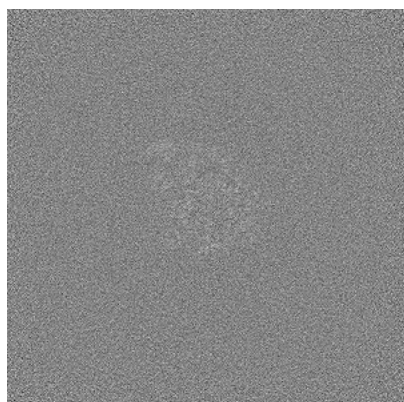


Y Index: 300

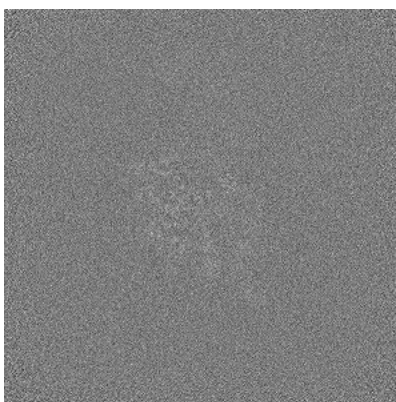


Z Index: 300

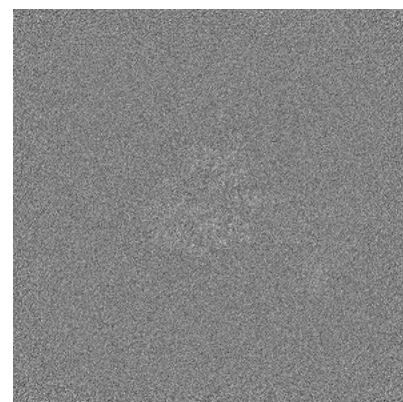
### 6.2.2 Raw map



X Index: 300



Y Index: 300

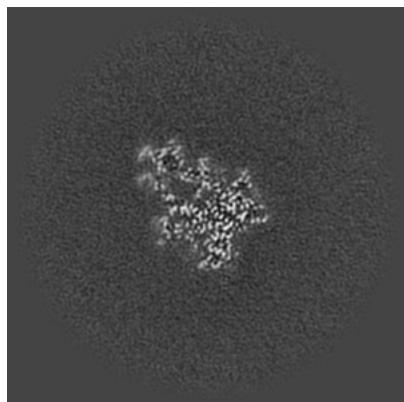


Z Index: 300

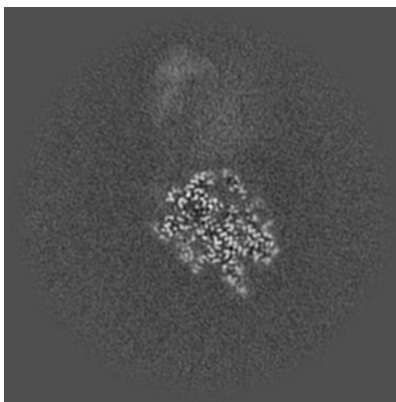
The images above show central slices of the map in three orthogonal directions.

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

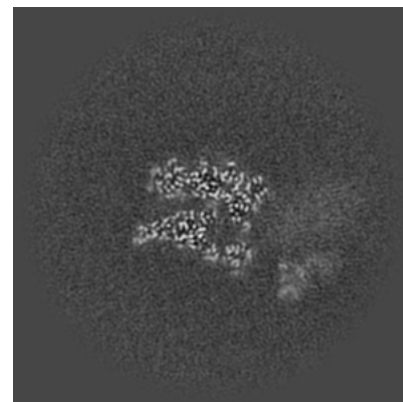
### 6.3.1 Primary map



X Index: 326

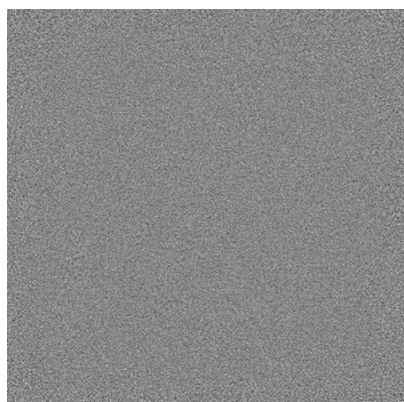


Y Index: 272

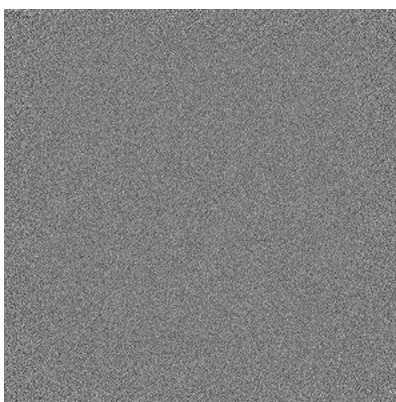


Z Index: 332

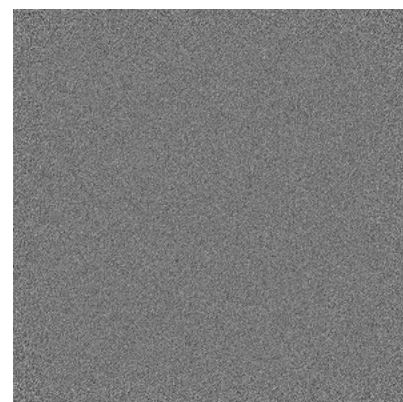
### 6.3.2 Raw map



X Index: 0



Y Index: 0

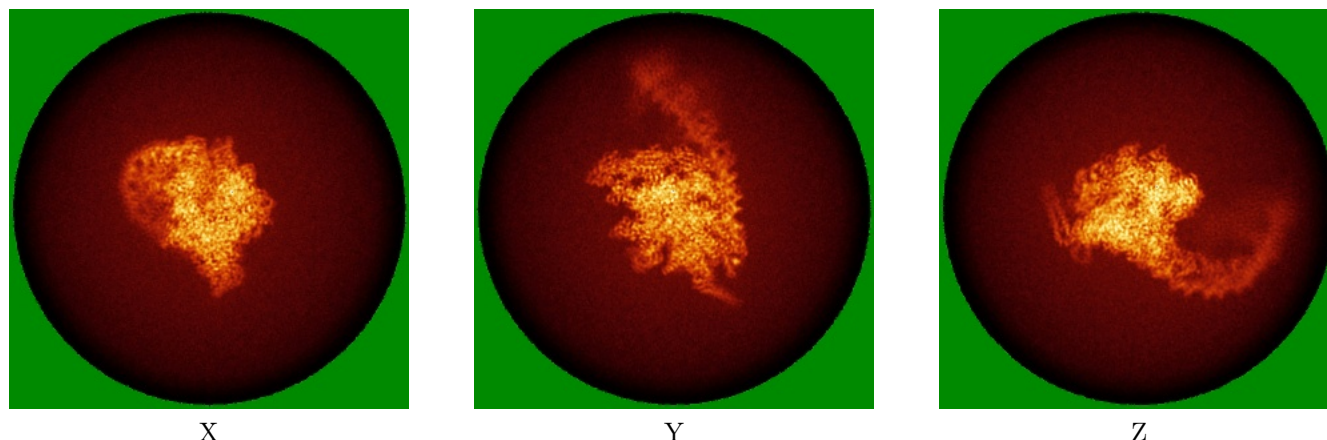


Z Index: 0

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

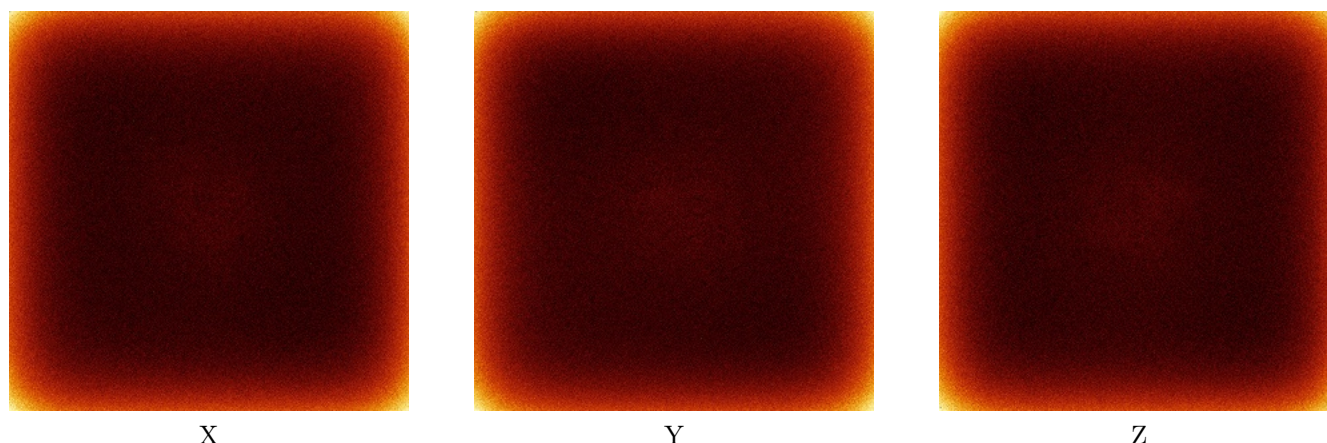


X

Y

Z

### 6.4.2 Raw map



X

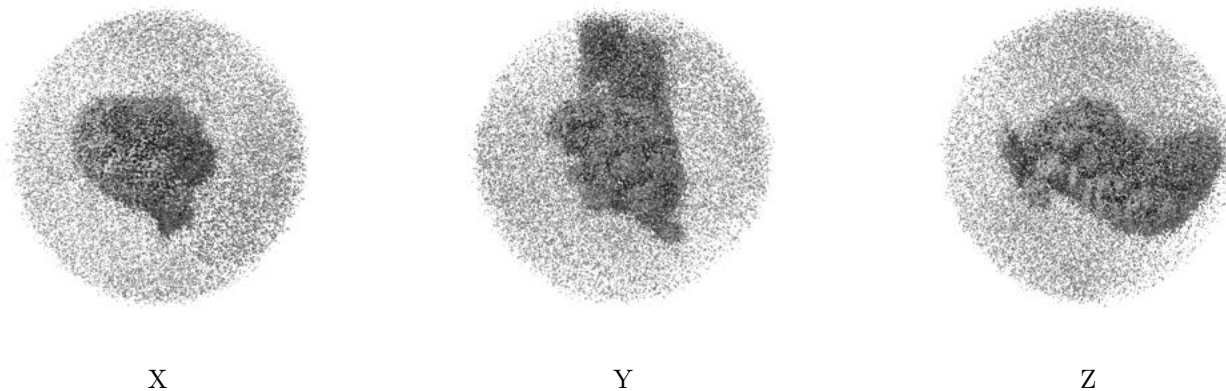
Y

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.

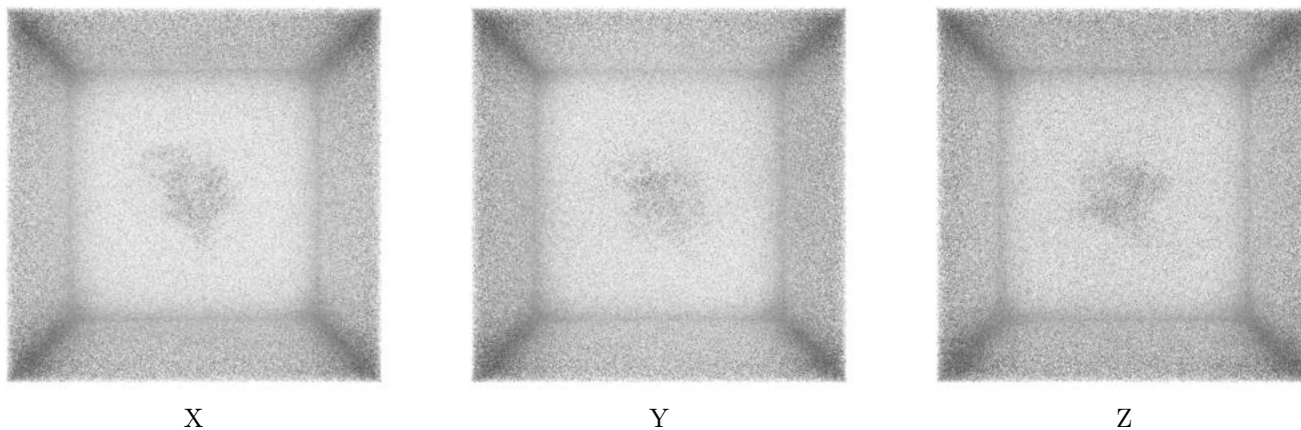
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.02. 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.

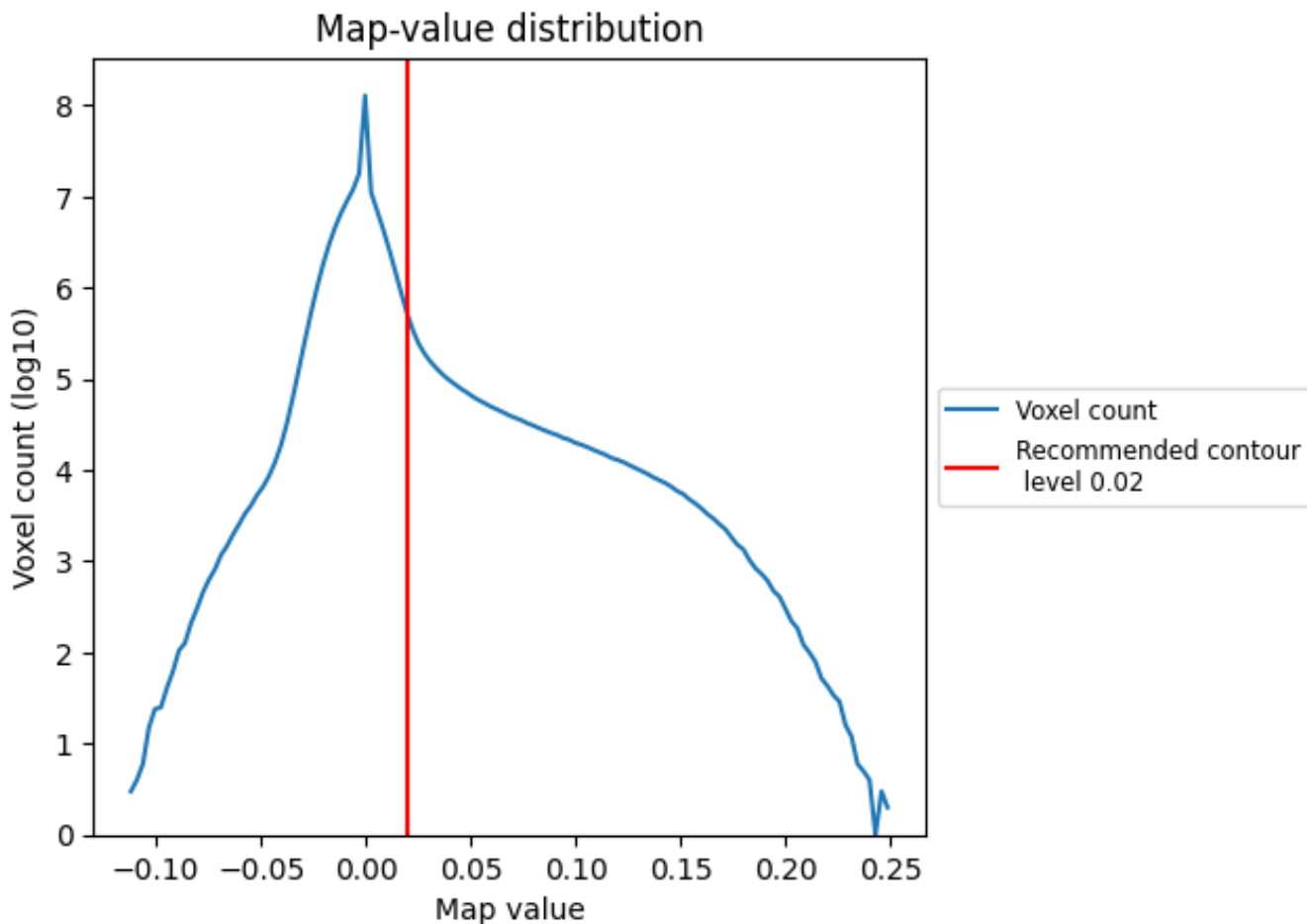
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

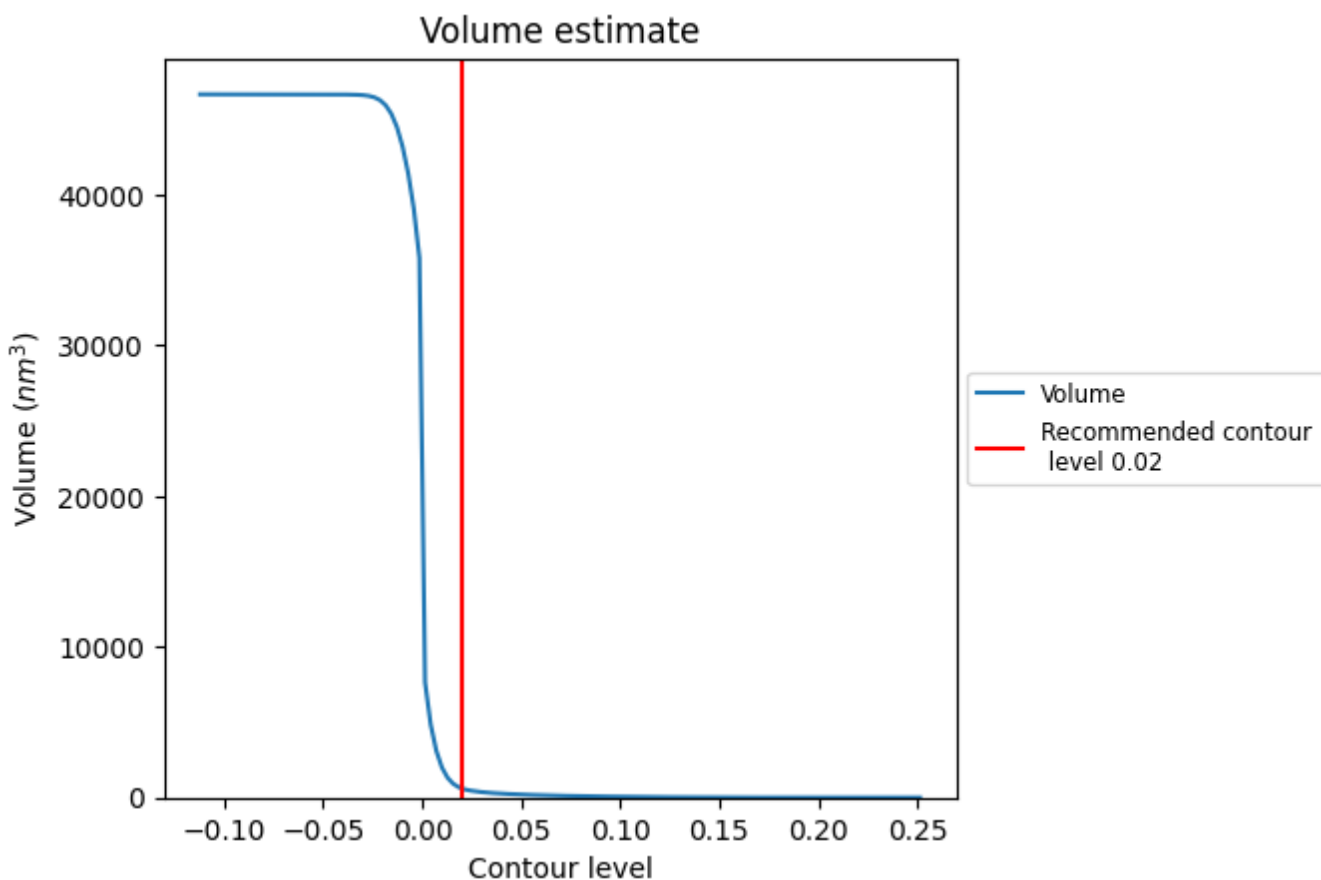
This section contains the results of statistical analysis of the map.

### 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.

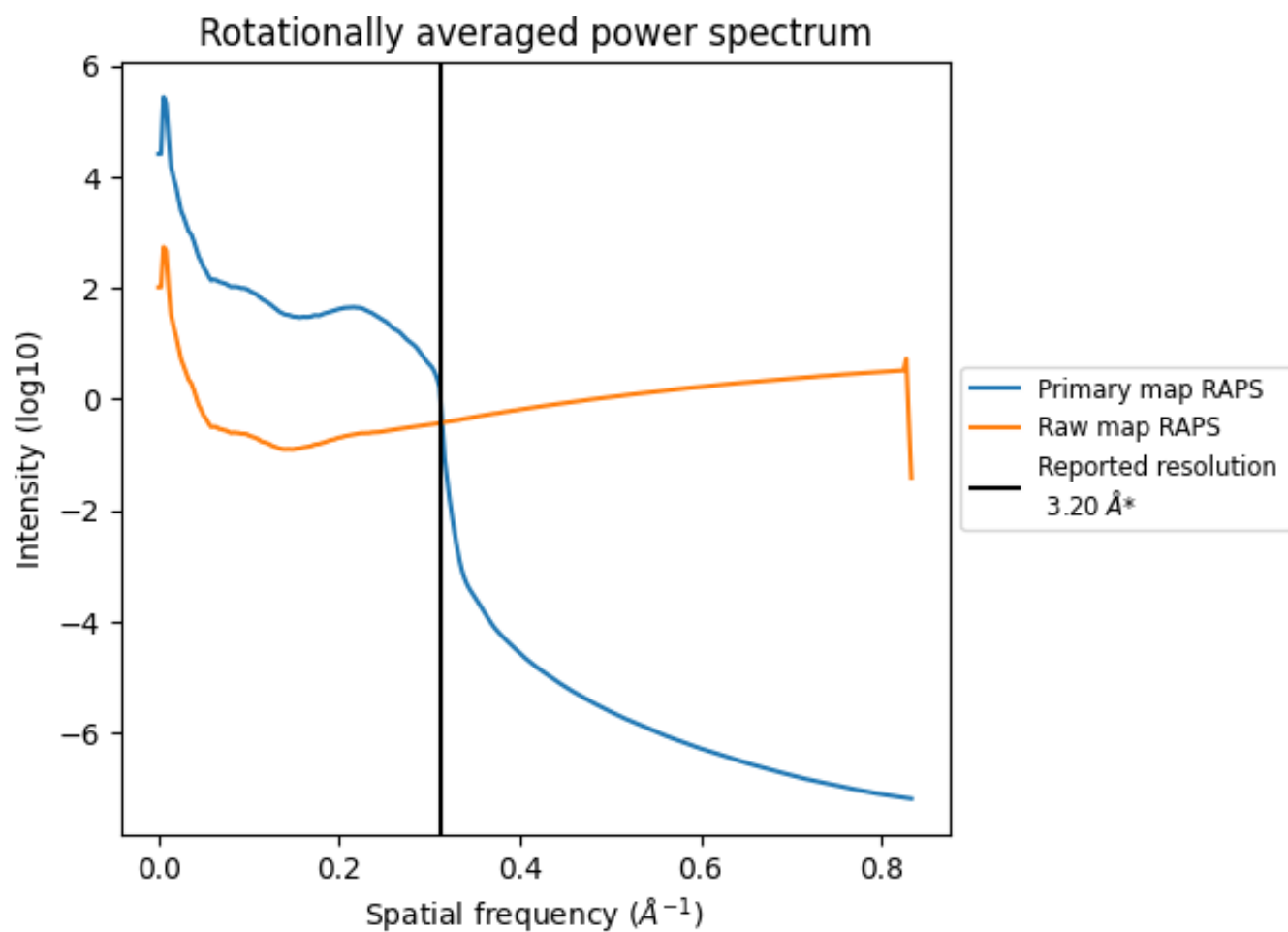
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 617 nm<sup>3</sup>; this corresponds to an approximate mass of 557 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 i

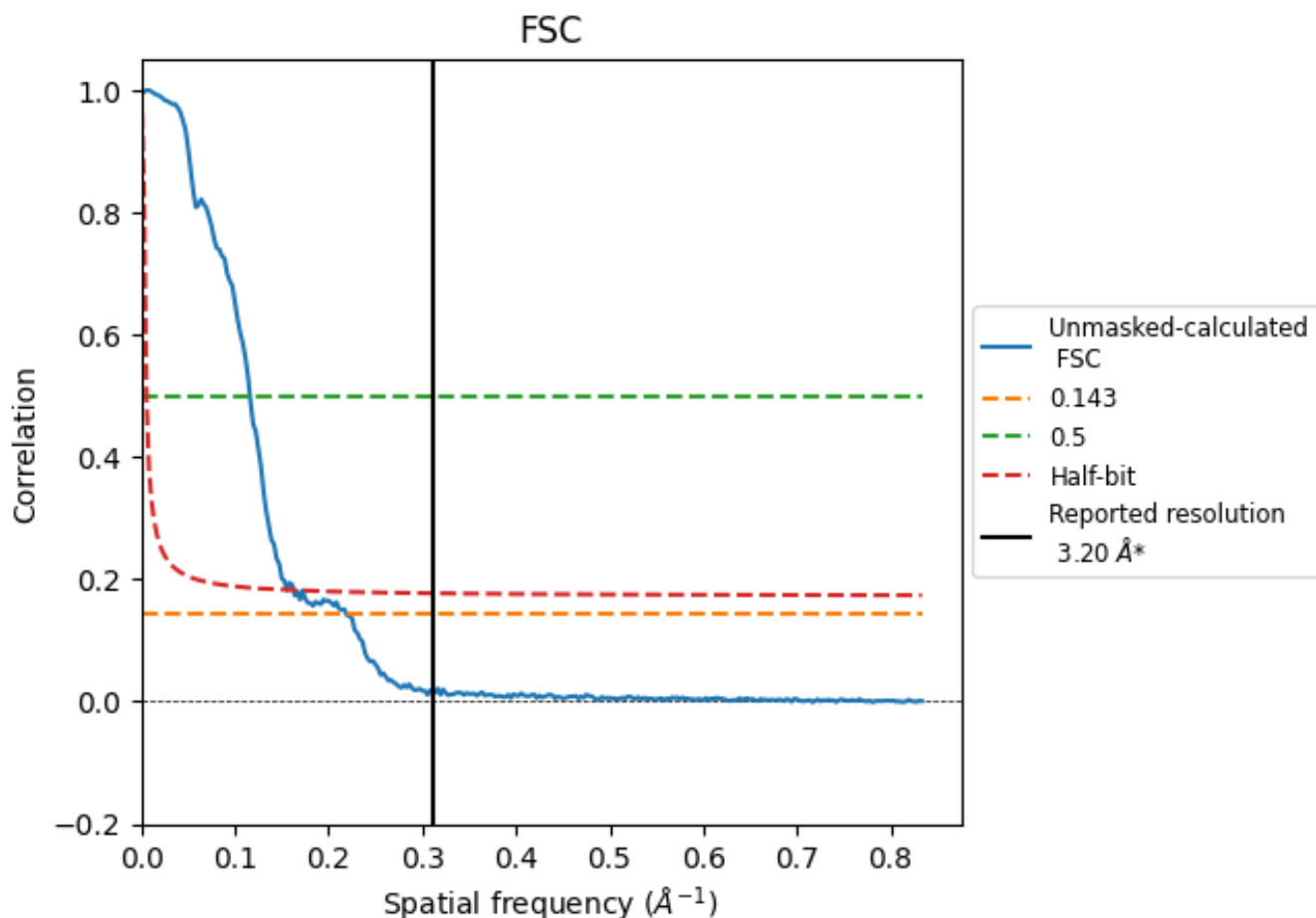


\*Reported resolution corresponds to spatial frequency of 0.312 Å<sup>-1</sup>

## 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 Å<sup>-1</sup>

## 8.2 Resolution estimates [i](#)

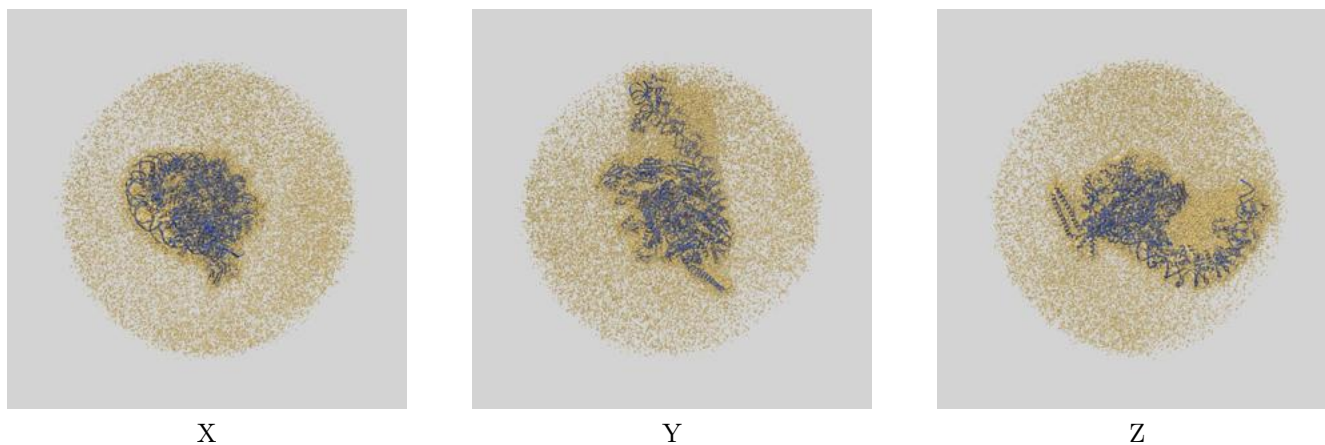
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.20                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 4.57                               | 8.63 | 6.43     |

\*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 4.57 differs from the reported value 3.2 by more than 10 %

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

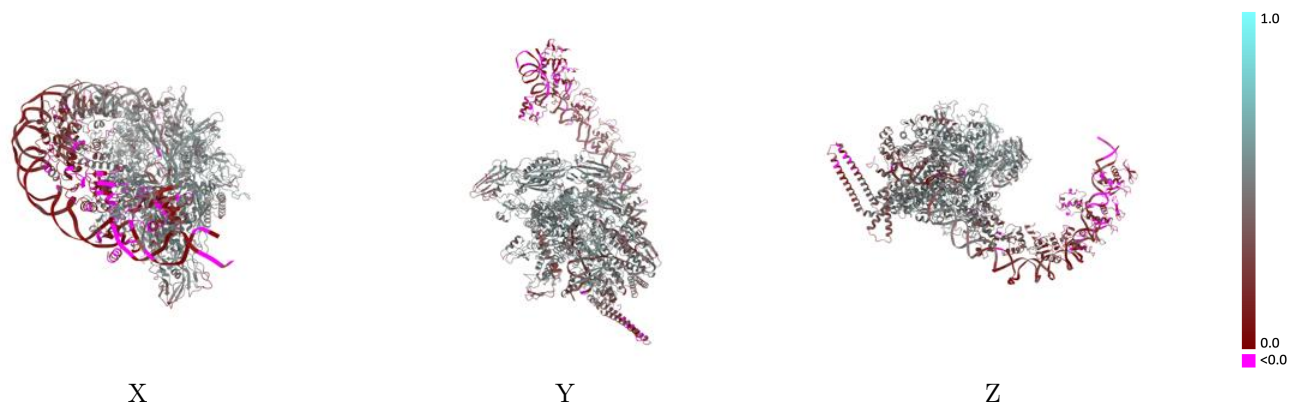
This section contains information regarding the fit between EMDB map EMD-61497 and PDB model 9JI5. Per-residue inclusion information can be found in section [3](#) on page [6](#).

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



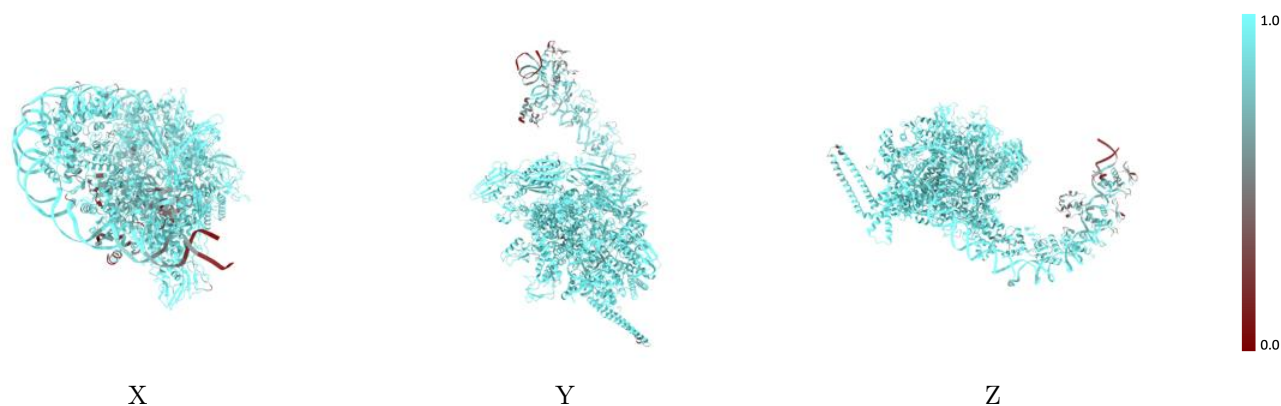
The images above show the 3D surface view of the map at the recommended contour level 0.02 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



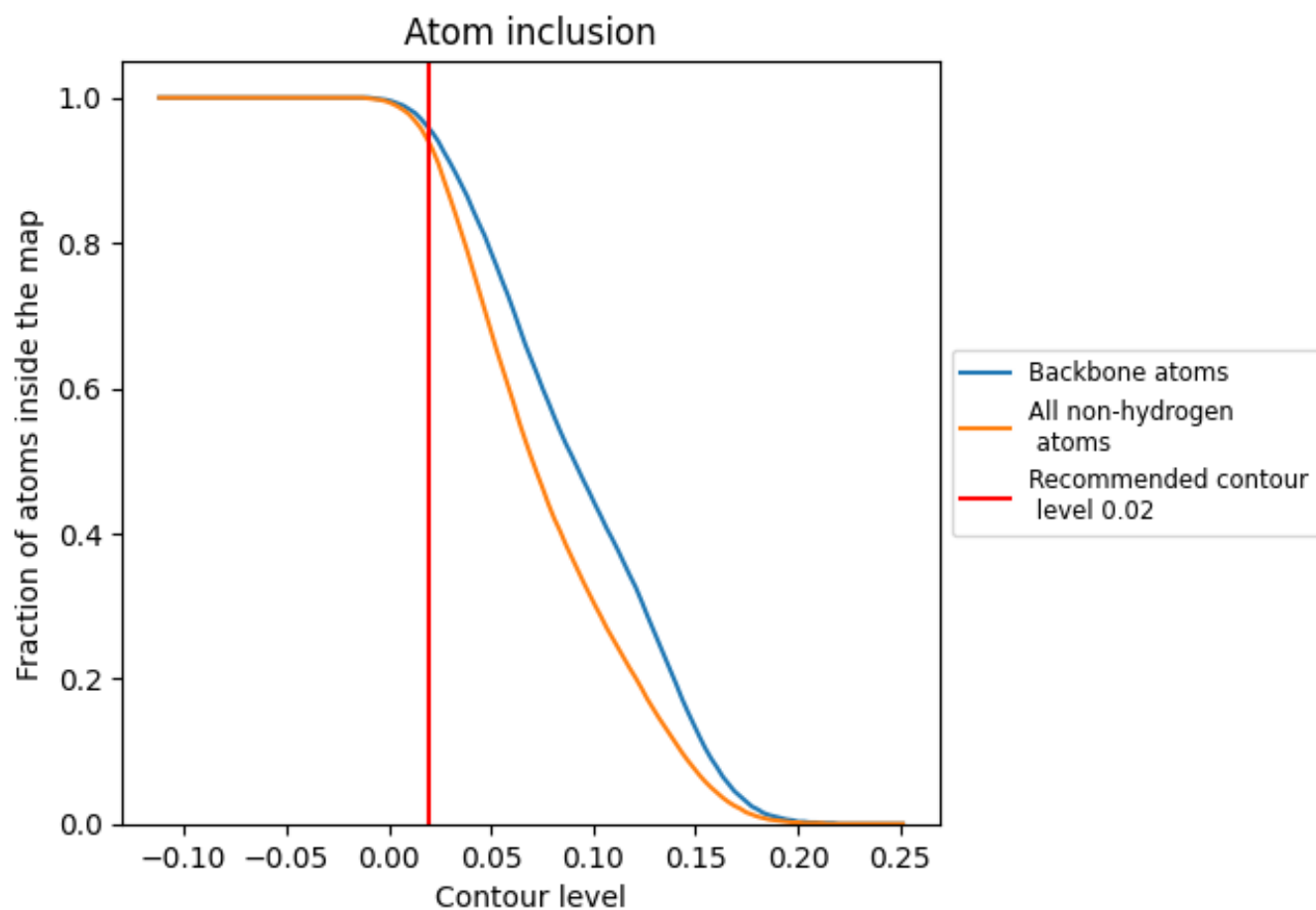
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.02).

































## 9.4 Atom inclusion [i](#)



At the recommended contour level, 96% of all backbone atoms, 94% 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 (0.02) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion   | Q-score  |
|-------|--|--|
| All   |  0.9370   |  0.3990   |
| A     |  0.9840   |  0.4970   |
| B     |  0.9650   |  0.4440   |
| C     |  0.9790   |  0.4900   |
| D     |  0.9750   |  0.4680   |
| E     |  0.9920   |  0.5040   |
| F     |  0.9760   |  0.4170   |
| G     |  0.8680   |  0.1730   |
| H     |  0.8930   |  0.2350   |
| I     |  0.6130   |  0.0920   |
| J     |  0.9240   |  0.4220   |
| K     |  0.8950   |  0.3260   |
| L     |  0.8490   |  0.1740   |
| M     |  0.8560   |  0.2220   |
| N     |  0.6110  |  0.0770  |
| O     |  0.7350 |  0.0740 |

