



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 6, 2023 – 12:58 PM EST

PDB ID : 3USU  
Title : Crystal structure of Butea monosperma seed lectin  
Authors : Abhilash, J.; Geethanandan, K.; Bharath, S.R.; Sadasivan, C.; Haridas, M.  
Deposited on : 2011-11-24  
Resolution : 2.46 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

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

A user guide is available at

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

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:

MolProbity : 4.02b-467  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

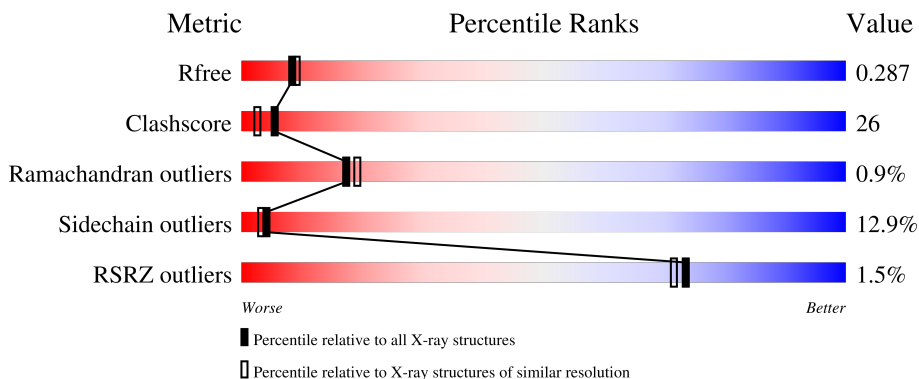
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.46 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) | Similar resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|---|
| $R_{free}$            | 130704                      | 1544 (2.48-2.44)                                      |
| Clashscore            | 141614                      | 1613 (2.48-2.44)                                      |
| Ramachandran outliers | 138981                      | 1598 (2.48-2.44)                                      |
| Sidechain outliers    | 138945                      | 1598 (2.48-2.44)                                      |
| RSRZ outliers         | 127900                      | 1523 (2.48-2.44)                                      |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 electron density. The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain     |
|-----|-------|--------|----------------------|
| 1   | A     | 256    | <br>51% 38% 9% 2% 2% |
| 1   | C     | 256    | <br>58% 36% 6% 2% 2% |
| 1   | E     | 256    | <br>52% 37% 8% 3% 2% |
| 1   | G     | 256    | <br>53% 37% 8% 2% 2% |
| 2   | B     | 242    | <br>60% 33% 6% 1% 2% |

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| Mol | Chain | Length | Quality of chain  |
|-----|-------|--------|-------------------|
| 2   | D     | 242    | <br>2% 63% 31% 5% |
| 2   | F     | 242    | <br>2% 58% 35% 7% |
| 2   | H     | 242    | <br>2% 60% 34% 6% |
| 3   | I     | 4      | <br>100%          |
| 3   | K     | 4      | <br>100%          |
| 3   | L     | 4      | <br>50% 50%       |
| 4   | J     | 5      | <br>40% 60%       |
| 5   | M     | 2      | <br>100%          |
| 6   | N     | 2      | <br>100%          |

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 11  | XYP  | B     | 306 | -         | -        | X       | -                |
| 4   | BMA  | J     | 3   | -         | -        | X       | -                |
| 9   | ABU  | C     | 282 | -         | -        | X       | -                |
| 9   | ABU  | F     | 290 | -         | -        | X       | -                |

## 2 Entry composition [i](#)

There are 13 unique types of molecules in this entry. The entry contains 15748 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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.

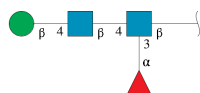
- Molecule 1 is a protein called Lectin Alpha chain.

| Mol | Chain | Residues | Atoms |      |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|---------|-------|
|     |       |          | Total | C    | N   | O   |         |         |       |
| 1   | A     | 250      | 1892  | 1227 | 296 | 369 | 0       | 0       | 0     |
| 1   | C     | 250      | 1892  | 1227 | 296 | 369 | 0       | 0       | 0     |
| 1   | E     | 250      | 1892  | 1227 | 296 | 369 | 0       | 0       | 0     |
| 1   | G     | 250      | 1892  | 1227 | 296 | 369 | 0       | 0       | 0     |

- Molecule 2 is a protein called Lectin Beta Chain.

| Mol | Chain | Residues | Atoms |      |     |     | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---------|---------|-------|
|     |       |          | Total | C    | N   | O   |         |         |       |
| 2   | B     | 242      | 1828  | 1184 | 287 | 357 | 0       | 0       | 0     |
| 2   | D     | 242      | 1828  | 1184 | 287 | 357 | 0       | 0       | 0     |
| 2   | F     | 242      | 1828  | 1184 | 287 | 357 | 0       | 0       | 0     |
| 2   | H     | 242      | 1828  | 1184 | 287 | 357 | 0       | 0       | 0     |

- Molecule 3 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose.



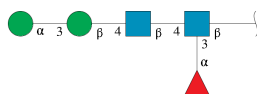
| Mol | Chain | Residues | Atoms |    |   |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|---------|-------|
|     |       |          | Total | C  | N | O  |         |         |       |
| 3   | I     | 4        | 49    | 28 | 2 | 19 | 0       | 0       | 0     |

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| Mol | Chain | Residues | Atoms |    |   |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|---------|-------|
| 3   | K     | 4        | Total | C  | N | O  | 0       | 0       | 0     |
|     |       |          | 49    | 28 | 2 | 19 |         |         |       |
| 3   | L     | 4        | Total | C  | N | O  | 0       | 0       | 0     |
|     |       |          | 49    | 28 | 2 | 19 |         |         |       |

- Molecule 4 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |   |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|---------|-------|
| 4   | J     | 5        | Total | C  | N | O  | 0       | 0       | 0     |
|     |       |          | 60    | 34 | 2 | 24 |         |         |       |

- Molecule 5 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |   |    | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|---------|-------|
| 5   | M     | 2        | Total | C  | N | O  | 0       | 0       | 0     |
|     |       |          | 28    | 16 | 2 | 10 |         |         |       |

- Molecule 6 is an oligosaccharide called alpha-L-fucopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |   |   | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|----|---|---|---------|---------|-------|
| 6   | N     | 2        | Total | C  | N | O | 0       | 0       | 0     |
|     |       |          | 24    | 14 | 1 | 9 |         |         |       |

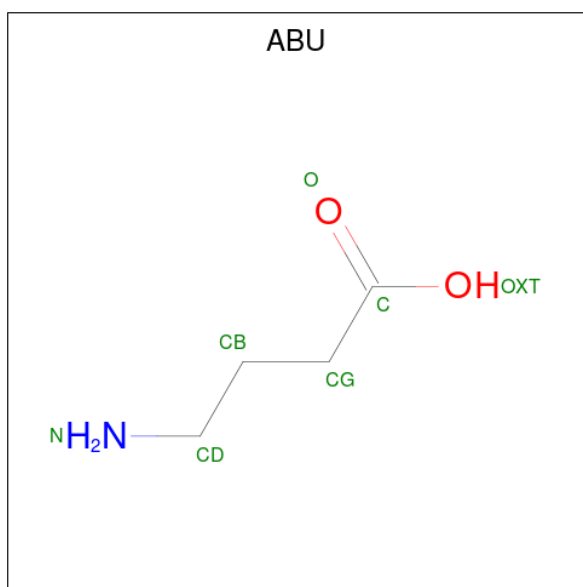
- Molecule 7 is CALCIUM ION (three-letter code: CA) (formula: Ca).

| Mol | Chain | Residues | Atoms           | ZeroOcc | AltConf |
|-----|-------|----------|-----------------|---------|---------|
| 7   | A     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | B     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | C     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | D     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | E     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | F     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | G     | 1        | Total Ca<br>1 1 | 0       | 0       |
| 7   | H     | 1        | Total Ca<br>1 1 | 0       | 0       |

- Molecule 8 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

| Mol | Chain | Residues | Atoms           | ZeroOcc | AltConf |
|-----|-------|----------|-----------------|---------|---------|
| 8   | A     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | B     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | C     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | D     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | E     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | F     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | G     | 1        | Total Mn<br>1 1 | 0       | 0       |
| 8   | H     | 1        | Total Mn<br>1 1 | 0       | 0       |

- Molecule 9 is GAMMA-AMINO-BUTANOIC ACID (three-letter code: ABU) (formula: C<sub>4</sub>H<sub>9</sub>NO<sub>2</sub>).



| Mol | Chain | Residues | Atoms |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
| 9   | A     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | B     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | C     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | D     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | E     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | E     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | F     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |
| 9   | G     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 7     | 4 | 1 | 2 |         |         |

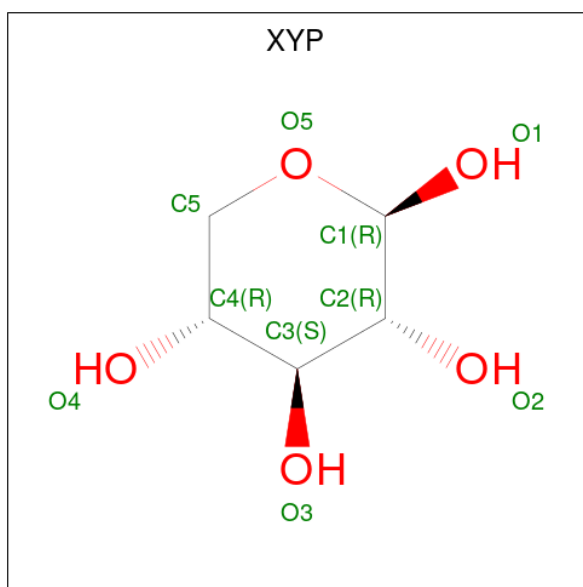
- Molecule 10 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



| Mol | Chain | Residues | Atoms              | ZeroOcc | AltConf |
|-----|-------|----------|--------------------|---------|---------|
| 10  | A     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | B     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | C     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | D     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | E     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | E     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | G     | 1        | Total C O<br>6 3 3 | 0       | 0       |
| 10  | H     | 1        | Total C O<br>6 3 3 | 0       | 0       |

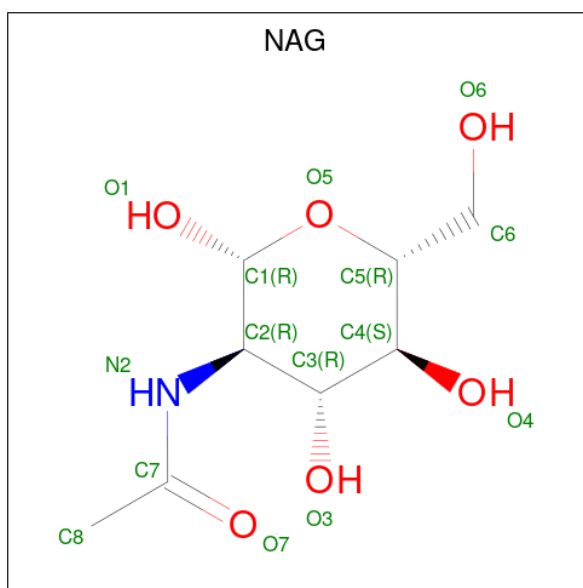
- Molecule 11 is beta-D-xylopyranose (three-letter code: XYP) (formula: C<sub>5</sub>H<sub>10</sub>O<sub>5</sub>).





| Mol | Chain | Residues | Atoms |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 11  | B     | 1        | Total | C | O | 0       | 0       |
|     |       |          | 9     | 5 | 4 |         |         |

- Molecule 12 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



| Mol | Chain | Residues | Atoms |   |   |   | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
| 12  | D     | 1        | Total | C | N | O | 0       | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |         |

- Molecule 13 is water.

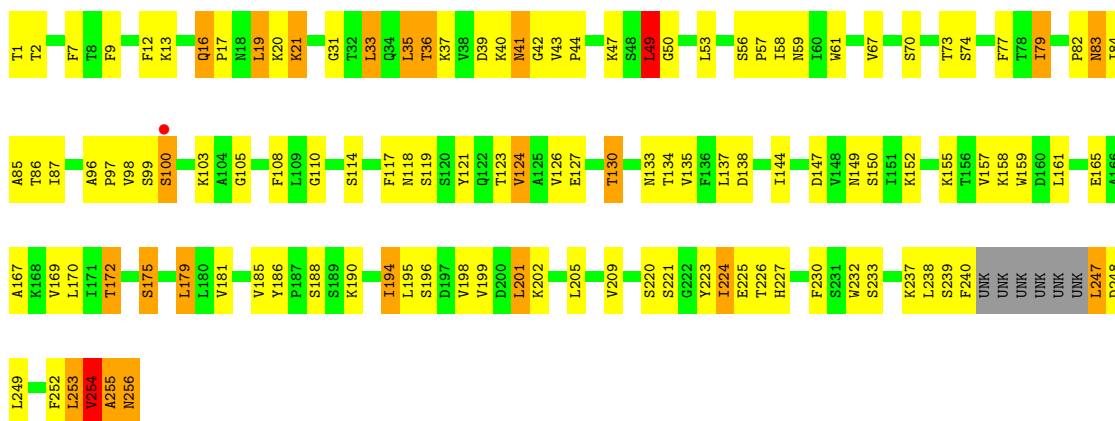
| Mol | Chain | Residues | Atoms            | ZeroOcc | AltConf |
|-----|-------|----------|------------------|---------|---------|
| 13  | A     | 65       | Total O<br>65 65 | 0       | 0       |
| 13  | B     | 70       | Total O<br>70 70 | 0       | 0       |
| 13  | C     | 64       | Total O<br>64 64 | 0       | 0       |
| 13  | D     | 47       | Total O<br>47 47 | 0       | 0       |
| 13  | E     | 51       | Total O<br>51 51 | 0       | 0       |
| 13  | F     | 65       | Total O<br>65 65 | 0       | 0       |
| 13  | G     | 60       | Total O<br>60 60 | 0       | 0       |
| 13  | H     | 44       | Total O<br>44 44 | 0       | 0       |

### 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 electron 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 dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). 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.

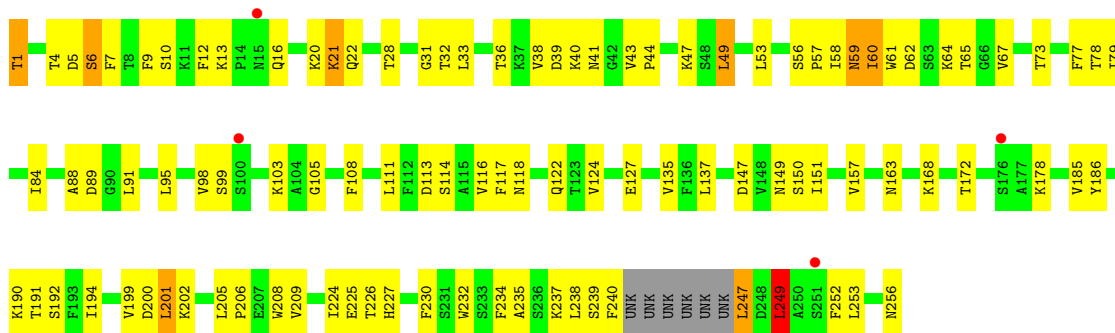
- Molecule 1: Lectin Alpha chain

Chain A: 



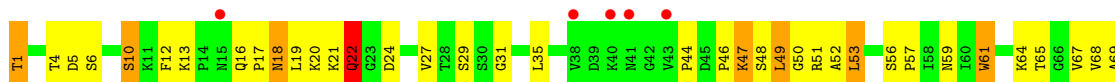
- Molecule 1: Lectin Alpha chain

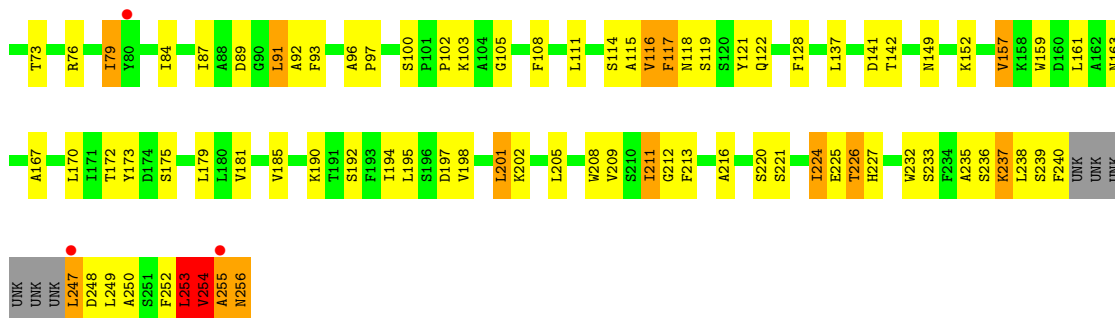
Chain C: 



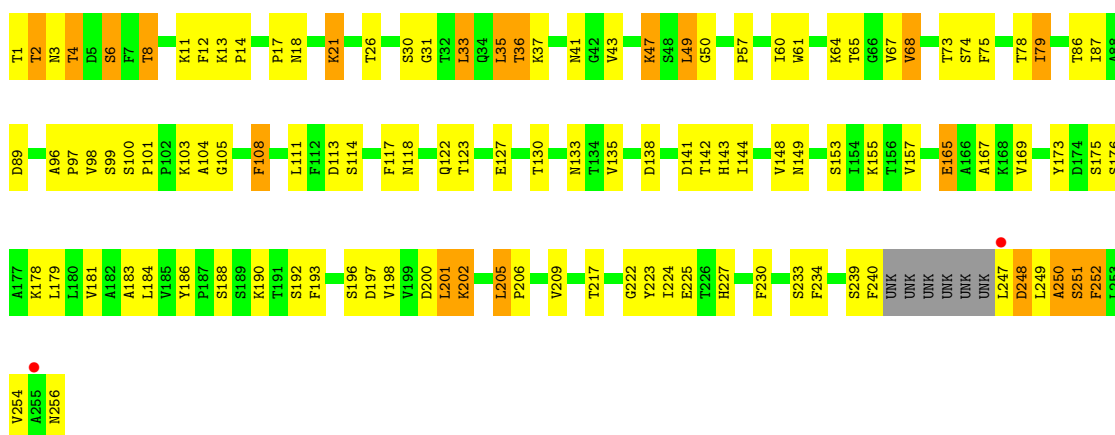
- Molecule 1: Lectin Alpha chain

Chain E: 

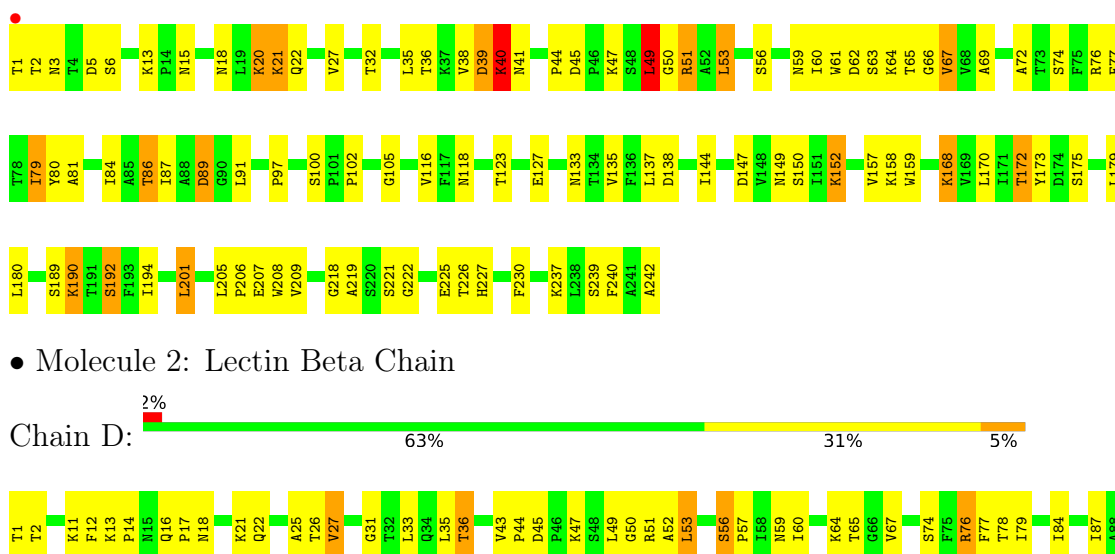




• Molecule 1: Lectin Alpha chain

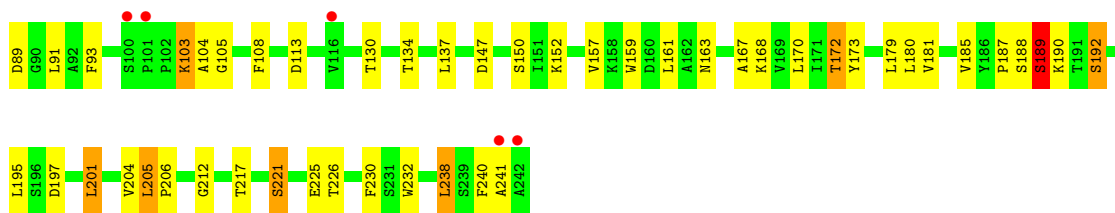


• Molecule 2: Lectin Beta Chain

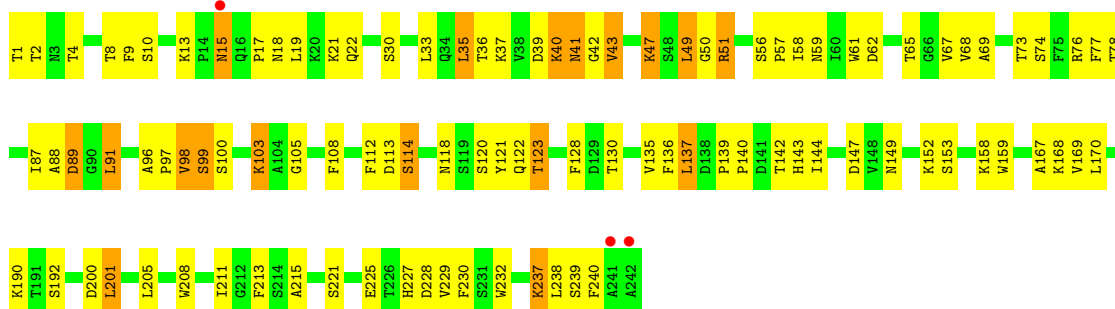


• Molecule 2: Lectin Beta Chain

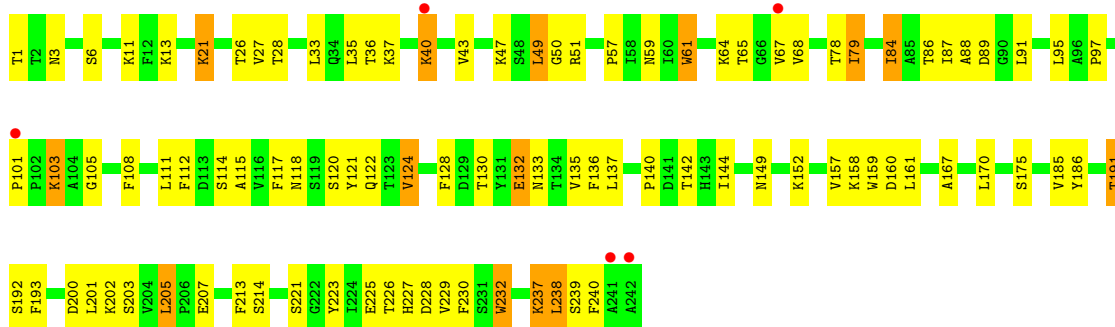




● Molecule 2: Lectin Beta Chain



● Molecule 2: Lectin Beta Chain



● Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose



● Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 3: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain L:  50% 50%

MAG1  
MAG2  
BMA3  
FUC4

- Molecule 4: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-3)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:  40% 60%

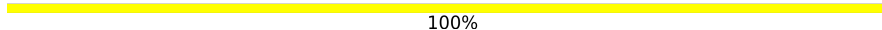
MAG1  
MAG2  
BMA3  
MAV4  
FUC5

- Molecule 5: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M:  100%

MAG1  
MAG2

- Molecule 6: alpha-L-fucopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain N:  100%

MAG1  
FUC2

## 4 Data and refinement statistics i

| Property  | Value   | Source           |
|---|---|------------------|
| Space group   | P 1   | Depositor        |
| Cell constants<br>a, b, c, $\alpha$ , $\beta$ , $\gamma$                | 78.45Å 78.91Å 101.85Å<br>74.30° 76.65° 86.88°               | Depositor        |
| Resolution (Å)  | 69.06 – 2.46<br>69.06 – 2.46                                | Depositor<br>EDS |
| % Data completeness<br>(in resolution range)                            | 94.7 (69.06-2.46)<br>94.7 (69.06-2.46)                      | Depositor<br>EDS |
| $R_{merge}$   | 0.12  | Depositor        |
| $R_{sym}$   | (Not available)   | Depositor        |
| $\langle I/\sigma(I) \rangle$ <sup>1</sup>                              | 1.99 (at 2.45Å)   | Xtrriage         |
| Refinement program  | REFMAC 5.6.0117   | Depositor        |
| R, $R_{free}$   | 0.205 , 0.287<br>0.206 , 0.287                              | Depositor<br>DCC |
| $R_{free}$ test set   | 3944 reflections (5.01%)                                    | wwPDB-VP         |
| Wilson B-factor (Å <sup>2</sup> )                                       | 26.1  | Xtrriage         |
| Anisotropy  | 0.245   | Xtrriage         |
| Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> ) | 0.35 , 46.4   | EDS              |
| L-test for twinning <sup>2</sup>  | $\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.29$ | Xtrriage         |
| Estimated twinning fraction   | 0.022 for -k,-h,-l  | Xtrriage         |
| $F_o, F_c$ correlation  | 0.92  | EDS              |
| Total number of atoms   | 15748   | wwPDB-VP         |
| Average B, all atoms (Å <sup>2</sup> )                                  | 23.0  | wwPDB-VP         |

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.94% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality i

### 5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: XYP, CA, GOL, FUC, MAN, MN, NAG, ABU, BMA

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     | 0.90         | 2/1939 (0.1%)   | 0.96        | 0/2646          |
| 1   | C     | 0.79         | 3/1939 (0.2%)   | 0.91        | 1/2646 (0.0%)   |
| 1   | E     | 0.77         | 2/1939 (0.1%)   | 0.89        | 3/2646 (0.1%)   |
| 1   | G     | 0.74         | 1/1939 (0.1%)   | 0.89        | 0/2646          |
| 2   | B     | 0.85         | 1/1875 (0.1%)   | 0.94        | 3/2560 (0.1%)   |
| 2   | D     | 0.75         | 2/1875 (0.1%)   | 0.84        | 2/2560 (0.1%)   |
| 2   | F     | 0.83         | 2/1875 (0.1%)   | 0.93        | 3/2560 (0.1%)   |
| 2   | H     | 0.72         | 2/1875 (0.1%)   | 0.85        | 0/2560          |
| All | All   | 0.80         | 15/15256 (0.1%) | 0.90        | 12/20824 (0.1%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A     | 0                   | 1                   |
| 1   | C     | 0                   | 1                   |
| 1   | E     | 0                   | 1                   |
| All | All   | 0                   | 3                   |

All (15) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|------|-------------|----------|
| 1   | A     | 232 | TRP  | CD2-CE2 | 5.96 | 1.48        | 1.41     |
| 2   | H     | 61  | TRP  | CD2-CE2 | 5.95 | 1.48        | 1.41     |
| 1   | C     | 208 | TRP  | CD2-CE2 | 5.78 | 1.48        | 1.41     |
| 1   | E     | 61  | TRP  | CD2-CE2 | 5.58 | 1.48        | 1.41     |
| 2   | D     | 232 | TRP  | CD2-CE2 | 5.58 | 1.48        | 1.41     |
| 1   | G     | 61  | TRP  | CD2-CE2 | 5.48 | 1.48        | 1.41     |
| 2   | F     | 61  | TRP  | CD2-CE2 | 5.38 | 1.47        | 1.41     |

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| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 1   | C     | 61  | TRP  | CD2-CE2 | 5.31  | 1.47        | 1.41     |
| 1   | A     | 159 | TRP  | CD2-CE2 | 5.30  | 1.47        | 1.41     |
| 2   | D     | 159 | TRP  | CD2-CE2 | 5.27  | 1.47        | 1.41     |
| 2   | F     | 208 | TRP  | CD2-CE2 | 5.10  | 1.47        | 1.41     |
| 1   | E     | 208 | TRP  | CD2-CE2 | 5.04  | 1.47        | 1.41     |
| 2   | B     | 61  | TRP  | CD2-CE2 | 5.03  | 1.47        | 1.41     |
| 1   | C     | 232 | TRP  | NE1-CE2 | -5.02 | 1.31        | 1.37     |
| 2   | H     | 232 | TRP  | CD2-CE2 | 5.01  | 1.47        | 1.41     |

All (12) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms     | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 2   | B     | 39  | ASP  | CB-CG-OD1 | 7.57  | 125.11      | 118.30   |
| 1   | E     | 253 | LEU  | CA-CB-CG  | 6.04  | 129.19      | 115.30   |
| 2   | B     | 49  | LEU  | CA-CB-CG  | -5.96 | 101.60      | 115.30   |
| 1   | C     | 249 | LEU  | CA-CB-CG  | 5.89  | 128.84      | 115.30   |
| 1   | E     | 253 | LEU  | CB-CG-CD2 | -5.72 | 101.28      | 111.00   |
| 2   | D     | 241 | ALA  | CB-CA-C   | -5.65 | 101.63      | 110.10   |
| 2   | B     | 53  | LEU  | CA-CB-CG  | 5.45  | 127.84      | 115.30   |
| 2   | F     | 47  | LYS  | CD-CE-NZ  | -5.33 | 99.44       | 111.70   |
| 1   | E     | 19  | LEU  | CA-CB-CG  | 5.27  | 127.42      | 115.30   |
| 2   | F     | 200 | ASP  | CB-CG-OD1 | 5.23  | 123.00      | 118.30   |
| 2   | F     | 114 | SER  | CB-CA-C   | -5.23 | 100.17      | 110.10   |
| 2   | D     | 103 | LYS  | CB-CA-C   | -5.09 | 100.21      | 110.40   |

There are no chirality outliers.

All (3) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 1   | A     | 98  | VAL  | Peptide |
| 1   | C     | 247 | LEU  | Peptide |
| 1   | E     | 22  | GLN  | Peptide |

## 5.2 Too-close contacts

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | A     | 1892  | 0        | 1874     | 126     | 0            |
| 1   | C     | 1892  | 0        | 1875     | 96      | 0            |
| 1   | E     | 1892  | 0        | 1875     | 111     | 0            |
| 1   | G     | 1892  | 0        | 1875     | 113     | 0            |
| 2   | B     | 1828  | 0        | 1809     | 105     | 0            |
| 2   | D     | 1828  | 0        | 1810     | 79      | 0            |
| 2   | F     | 1828  | 0        | 1810     | 94      | 0            |
| 2   | H     | 1828  | 0        | 1810     | 106     | 0            |
| 3   | I     | 49    | 0        | 43       | 4       | 0            |
| 3   | K     | 49    | 0        | 42       | 0       | 0            |
| 3   | L     | 49    | 0        | 43       | 1       | 0            |
| 4   | J     | 60    | 0        | 47       | 9       | 0            |
| 5   | M     | 28    | 0        | 25       | 0       | 0            |
| 6   | N     | 24    | 0        | 21       | 0       | 0            |
| 7   | A     | 1     | 0        | 0        | 0       | 0            |
| 7   | B     | 1     | 0        | 0        | 0       | 0            |
| 7   | C     | 1     | 0        | 0        | 0       | 0            |
| 7   | D     | 1     | 0        | 0        | 0       | 0            |
| 7   | E     | 1     | 0        | 0        | 0       | 0            |
| 7   | F     | 1     | 0        | 0        | 0       | 0            |
| 7   | G     | 1     | 0        | 0        | 0       | 0            |
| 7   | H     | 1     | 0        | 0        | 0       | 0            |
| 8   | A     | 1     | 0        | 0        | 0       | 0            |
| 8   | B     | 1     | 0        | 0        | 0       | 0            |
| 8   | C     | 1     | 0        | 0        | 0       | 0            |
| 8   | D     | 1     | 0        | 0        | 0       | 0            |
| 8   | E     | 1     | 0        | 0        | 0       | 0            |
| 8   | F     | 1     | 0        | 0        | 0       | 0            |
| 8   | G     | 1     | 0        | 0        | 0       | 0            |
| 8   | H     | 1     | 0        | 0        | 0       | 0            |
| 9   | A     | 7     | 0        | 0        | 3       | 0            |
| 9   | B     | 7     | 0        | 0        | 2       | 0            |
| 9   | C     | 7     | 0        | 0        | 5       | 0            |
| 9   | D     | 7     | 0        | 0        | 0       | 0            |
| 9   | E     | 14    | 0        | 0        | 4       | 0            |
| 9   | F     | 7     | 0        | 0        | 4       | 0            |
| 9   | G     | 7     | 0        | 0        | 0       | 0            |
| 10  | A     | 6     | 0        | 8        | 2       | 0            |
| 10  | B     | 6     | 0        | 8        | 0       | 0            |
| 10  | C     | 6     | 0        | 8        | 1       | 0            |
| 10  | D     | 6     | 0        | 8        | 0       | 0            |
| 10  | E     | 12    | 0        | 16       | 2       | 0            |
| 10  | G     | 6     | 0        | 8        | 0       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 10  | H     | 6     | 0        | 8        | 3       | 0            |
| 11  | B     | 9     | 0        | 0        | 6       | 0            |
| 12  | D     | 14    | 0        | 12       | 0       | 0            |
| 13  | A     | 65    | 0        | 0        | 16      | 0            |
| 13  | B     | 70    | 0        | 0        | 19      | 0            |
| 13  | C     | 64    | 0        | 0        | 13      | 0            |
| 13  | D     | 47    | 0        | 0        | 11      | 0            |
| 13  | E     | 51    | 0        | 0        | 5       | 0            |
| 13  | F     | 65    | 0        | 0        | 12      | 0            |
| 13  | G     | 60    | 0        | 0        | 17      | 0            |
| 13  | H     | 44    | 0        | 0        | 15      | 0            |
| All | All   | 15748 | 0        | 15035    | 787     | 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 26.

All (787) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:H:238:LEU:HG   | 13:H:261:HOH:O   | 1.30                     | 1.28              |
| 1:G:101:PRO:HD2  | 13:G:542:HOH:O   | 1.34                     | 1.23              |
| 11:B:306:XYP:C1  | 4:J:3:BMA:O2     | 1.87                     | 1.21              |
| 10:H:289:GOL:H2  | 13:H:411:HOH:O   | 1.45                     | 1.15              |
| 1:A:36:THR:HG21  | 1:A:227:HIS:HD2  | 1.04                     | 1.13              |
| 1:A:67:VAL:HG11  | 1:A:239:SER:O    | 1.47                     | 1.13              |
| 2:B:40:LYS:HD3   | 2:B:40:LYS:H     | 1.02                     | 1.13              |
| 1:E:254:VAL:HG12 | 1:E:255:ALA:N    | 1.58                     | 1.13              |
| 1:C:157:VAL:HG22 | 13:C:321:HOH:O   | 1.51                     | 1.09              |
| 2:H:67:VAL:HG21  | 2:H:239:SER:O    | 1.55                     | 1.05              |
| 1:E:254:VAL:HG12 | 1:E:255:ALA:H    | 1.08                     | 1.05              |
| 1:E:93:PHE:CE1   | 1:E:211:ILE:HD11 | 1.91                     | 1.04              |
| 2:H:84:ILE:HD12  | 2:H:84:ILE:H     | 1.22                     | 1.03              |
| 1:A:252:PHE:O    | 1:A:256:ASN:HB2  | 1.57                     | 1.03              |
| 2:D:36:THR:HG22  | 13:D:253:HOH:O   | 1.57                     | 1.03              |
| 2:F:49:LEU:HD21  | 2:F:105:GLY:HA2  | 1.39                     | 1.01              |
| 1:G:49:LEU:HD21  | 1:G:105:GLY:HA3  | 1.39                     | 1.01              |
| 1:A:56:SER:HB2   | 13:D:289:HOH:O   | 1.60                     | 1.00              |
| 1:E:252:PHE:HD2  | 1:E:253:LEU:H    | 1.04                     | 1.00              |
| 1:G:100:SER:HA   | 13:G:542:HOH:O   | 1.62                     | 1.00              |
| 1:C:62:ASP:OD2   | 1:C:65:THR:HG22  | 1.59                     | 1.00              |
| 10:A:277:GOL:H11 | 2:B:172:THR:HG21 | 1.40                     | 0.99              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:44:PRO:HG2   | 1:E:224:ILE:HG23 | 1.43                     | 0.99              |
| 1:A:36:THR:HG21  | 1:A:227:HIS:CD2  | 1.97                     | 0.99              |
| 2:H:117:PHE:HZ   | 13:H:386:HOH:O   | 1.47                     | 0.98              |
| 2:B:168:LYS:HE3  | 13:B:429:HOH:O   | 1.62                     | 0.97              |
| 1:C:67:VAL:HG11  | 1:C:239:SER:O    | 1.65                     | 0.97              |
| 1:E:67:VAL:HG21  | 1:E:239:SER:O    | 1.64                     | 0.96              |
| 2:F:56:SER:HB2   | 13:G:547:HOH:O   | 1.64                     | 0.96              |
| 1:E:252:PHE:CD2  | 1:E:253:LEU:N    | 2.33                     | 0.95              |
| 1:A:124:VAL:HG23 | 13:A:297:HOH:O   | 1.65                     | 0.95              |
| 2:F:40:LYS:HG2   | 13:F:373:HOH:O   | 1.64                     | 0.95              |
| 2:B:40:LYS:H     | 2:B:40:LYS:CD    | 1.72                     | 0.95              |
| 2:D:65:THR:OG1   | 2:D:67:VAL:HG22  | 1.66                     | 0.94              |
| 2:B:67:VAL:HG21  | 2:B:239:SER:O    | 1.66                     | 0.93              |
| 1:G:248:ASP:OD2  | 1:G:251:SER:HB2  | 1.67                     | 0.93              |
| 1:E:252:PHE:O    | 1:E:256:ASN:HB2  | 1.68                     | 0.92              |
| 2:F:9:PHE:HE1    | 2:F:18:ASN:HD22  | 1.17                     | 0.92              |
| 1:E:254:VAL:CG1  | 1:E:255:ALA:N    | 2.29                     | 0.92              |
| 1:E:47:LYS:NZ    | 1:E:47:LYS:HB3   | 1.85                     | 0.91              |
| 1:G:36:THR:HG23  | 13:G:559:HOH:O   | 1.70                     | 0.91              |
| 2:H:118:ASN:O    | 2:H:149:ASN:HB3  | 1.69                     | 0.91              |
| 2:D:201:LEU:HG   | 2:D:205:LEU:HD22 | 1.53                     | 0.91              |
| 2:H:67:VAL:HG11  | 2:H:240:PHE:HA   | 1.51                     | 0.90              |
| 2:F:59:ASN:ND2   | 1:G:13:LYS:HZ2   | 1.70                     | 0.90              |
| 2:B:49:LEU:HD11  | 2:B:105:GLY:HA2  | 1.53                     | 0.90              |
| 1:G:47:LYS:HB3   | 1:G:47:LYS:NZ    | 1.85                     | 0.90              |
| 1:A:172:THR:HG23 | 13:A:275:HOH:O   | 1.71                     | 0.89              |
| 2:B:49:LEU:HD11  | 2:B:105:GLY:CA   | 2.02                     | 0.89              |
| 1:C:28:THR:HG22  | 1:C:32:THR:H     | 1.38                     | 0.88              |
| 1:E:252:PHE:HD2  | 1:E:253:LEU:N    | 1.71                     | 0.88              |
| 1:A:36:THR:CG2   | 1:A:227:HIS:HD2  | 1.86                     | 0.88              |
| 2:H:36:THR:OG1   | 2:H:227:HIS:HD2  | 1.56                     | 0.88              |
| 2:D:230:PHE:HD2  | 13:D:244:HOH:O   | 1.56                     | 0.87              |
| 1:A:67:VAL:HG13  | 13:A:291:HOH:O   | 1.75                     | 0.87              |
| 1:A:254:VAL:O    | 1:A:255:ALA:HB2  | 1.74                     | 0.86              |
| 2:B:40:LYS:HD3   | 2:B:40:LYS:N     | 1.76                     | 0.85              |
| 1:C:185:VAL:HG11 | 2:D:179:LEU:HD21 | 1.57                     | 0.85              |
| 2:H:40:LYS:H     | 2:H:40:LYS:HD3   | 1.41                     | 0.85              |
| 1:G:79:ILE:CD1   | 1:G:225:GLU:HB2  | 2.04                     | 0.85              |
| 2:H:40:LYS:HD3   | 2:H:40:LYS:N     | 1.91                     | 0.84              |
| 2:F:65:THR:OG1   | 2:F:67:VAL:HG12  | 1.77                     | 0.83              |
| 2:F:67:VAL:HG21  | 2:F:239:SER:O    | 1.78                     | 0.83              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:39:ASP:OD2   | 1:A:41:ASN:HB2   | 1.78                     | 0.83              |
| 1:C:4:THR:HG23   | 13:C:259:HOH:O   | 1.76                     | 0.83              |
| 2:H:1:THR:O      | 2:H:240:PHE:HD1  | 1.62                     | 0.82              |
| 2:H:105:GLY:O    | 2:H:108:PHE:HD2  | 1.61                     | 0.82              |
| 2:D:137:LEU:HD23 | 2:D:152:LYS:HD2  | 1.61                     | 0.81              |
| 1:G:49:LEU:HD21  | 1:G:105:GLY:CA   | 2.11                     | 0.81              |
| 2:D:188:SER:O    | 2:D:189:SER:HB3  | 1.80                     | 0.81              |
| 1:C:118:ASN:O    | 1:C:149:ASN:HB3  | 1.79                     | 0.81              |
| 1:C:20:LYS:HE2   | 1:C:22:GLN:HG2   | 1.63                     | 0.81              |
| 11:B:306:XYP:C1  | 4:J:3:BMA:C2     | 2.59                     | 0.80              |
| 1:C:201:LEU:HD22 | 1:C:205:LEU:HD12 | 1.63                     | 0.80              |
| 1:A:254:VAL:O    | 1:A:254:VAL:CG1  | 2.30                     | 0.80              |
| 1:A:230:PHE:HD1  | 13:A:567:HOH:O   | 1.65                     | 0.80              |
| 2:F:15:ASN:HB2   | 13:F:268:HOH:O   | 1.80                     | 0.80              |
| 1:E:22:GLN:HE22  | 1:E:51:ARG:HH11  | 1.28                     | 0.80              |
| 2:B:36:THR:OG1   | 2:B:227:HIS:HD2  | 1.65                     | 0.79              |
| 2:D:221:SER:HA   | 13:D:257:HOH:O   | 1.80                     | 0.79              |
| 1:A:124:VAL:CG2  | 13:A:297:HOH:O   | 2.28                     | 0.79              |
| 1:A:157:VAL:HG22 | 13:A:259:HOH:O   | 1.80                     | 0.79              |
| 2:F:4:THR:HG22   | 2:F:237:LYS:HB2  | 1.63                     | 0.79              |
| 1:E:93:PHE:HE1   | 1:E:211:ILE:HD11 | 1.42                     | 0.79              |
| 2:F:123:THR:HG21 | 13:F:561:HOH:O   | 1.82                     | 0.79              |
| 2:D:67:VAL:HG21  | 2:D:240:PHE:HA   | 1.64                     | 0.79              |
| 2:H:67:VAL:HG13  | 2:H:238:LEU:HD21 | 1.64                     | 0.79              |
| 1:E:93:PHE:CZ    | 1:E:211:ILE:HD11 | 2.18                     | 0.78              |
| 1:G:47:LYS:HB3   | 1:G:47:LYS:HZ3   | 1.47                     | 0.78              |
| 1:C:247:LEU:N    | 1:C:247:LEU:HD23 | 1.97                     | 0.78              |
| 1:C:28:THR:HG22  | 1:C:32:THR:N     | 1.98                     | 0.78              |
| 1:E:157:VAL:HG22 | 1:E:195:LEU:HB2  | 1.64                     | 0.78              |
| 9:F:290:ABU:N    | 1:G:18:ASN:HD22  | 1.80                     | 0.78              |
| 1:C:201:LEU:HD22 | 1:C:205:LEU:CD1  | 2.14                     | 0.77              |
| 2:D:36:THR:HG21  | 2:D:217:THR:HG23 | 1.65                     | 0.77              |
| 1:A:49:LEU:HD11  | 1:A:105:GLY:CA   | 2.15                     | 0.77              |
| 2:B:172:THR:HG23 | 13:B:250:HOH:O   | 1.83                     | 0.77              |
| 2:F:58:ILE:HA    | 9:F:290:ABU:CD   | 2.13                     | 0.76              |
| 1:C:28:THR:CG2   | 1:C:32:THR:H     | 1.98                     | 0.76              |
| 1:E:47:LYS:HB3   | 1:E:47:LYS:HZ2   | 1.50                     | 0.76              |
| 2:B:86:THR:HG22  | 2:B:86:THR:O     | 1.83                     | 0.76              |
| 2:D:33:LEU:HG    | 2:D:35:LEU:HD12  | 1.68                     | 0.76              |
| 2:H:84:ILE:HD12  | 2:H:84:ILE:N     | 1.99                     | 0.76              |
| 1:E:253:LEU:HD21 | 2:F:170:LEU:HD21 | 1.65                     | 0.76              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:G:201:LEU:HG   | 1:G:205:LEU:HD22 | 1.67                     | 0.75              |
| 1:E:118:ASN:O    | 1:E:149:ASN:HB3  | 1.86                     | 0.75              |
| 1:E:172:THR:HG21 | 1:E:249:LEU:HD11 | 1.67                     | 0.75              |
| 1:G:179:LEU:CD1  | 13:G:290:HOH:O   | 2.32                     | 0.75              |
| 2:H:40:LYS:H     | 2:H:40:LYS:CD    | 2.00                     | 0.75              |
| 2:B:207:GLU:HG2  | 13:B:256:HOH:O   | 1.87                     | 0.75              |
| 1:E:22:GLN:NE2   | 1:E:51:ARG:HH11  | 1.85                     | 0.74              |
| 13:F:258:HOH:O   | 1:G:4:THR:CG2    | 2.36                     | 0.74              |
| 2:B:67:VAL:HG11  | 2:B:240:PHE:HA   | 1.68                     | 0.74              |
| 2:F:140:PRO:HD2  | 13:F:391:HOH:O   | 1.88                     | 0.74              |
| 2:D:35:LEU:O     | 2:D:50:GLY:HA3   | 1.86                     | 0.74              |
| 2:F:108:PHE:HE1  | 2:F:114:SER:HA   | 1.52                     | 0.74              |
| 13:F:258:HOH:O   | 1:G:4:THR:HG23   | 1.88                     | 0.74              |
| 1:C:230:PHE:HD1  | 13:C:494:HOH:O   | 1.70                     | 0.73              |
| 2:F:9:PHE:HE1    | 2:F:18:ASN:ND2   | 1.86                     | 0.73              |
| 2:B:1:THR:HG22   | 2:B:1:THR:O      | 1.87                     | 0.73              |
| 1:A:79:ILE:HD13  | 1:A:225:GLU:HB2  | 1.70                     | 0.73              |
| 11:B:306:XYP:C2  | 4:J:3:BMA:O2     | 2.36                     | 0.73              |
| 13:F:258:HOH:O   | 1:G:6:SER:HB2    | 1.88                     | 0.72              |
| 1:A:36:THR:HG23  | 13:A:395:HOH:O   | 1.90                     | 0.72              |
| 1:C:200:ASP:O    | 1:C:201:LEU:HB2  | 1.89                     | 0.72              |
| 1:A:44:PRO:HG2   | 1:A:224:ILE:HG23 | 1.71                     | 0.72              |
| 1:E:1:THR:HG22   | 1:E:240:PHE:HD2  | 1.55                     | 0.72              |
| 2:H:84:ILE:H     | 2:H:84:ILE:CD1   | 1.98                     | 0.72              |
| 2:H:87:ILE:HG13  | 2:H:130:THR:HG22 | 1.71                     | 0.72              |
| 2:B:201:LEU:HG   | 2:B:205:LEU:HD12 | 1.71                     | 0.72              |
| 10:A:277:GOL:C1  | 2:B:172:THR:HG21 | 2.19                     | 0.71              |
| 1:A:67:VAL:CG1   | 1:A:239:SER:O    | 2.34                     | 0.71              |
| 1:G:103:LYS:HB3  | 1:G:113:ASP:OD1  | 1.89                     | 0.71              |
| 1:A:1:THR:O      | 1:A:240:PHE:HD2  | 1.73                     | 0.71              |
| 2:B:63:SER:N     | 13:B:256:HOH:O   | 2.22                     | 0.71              |
| 1:C:1:THR:HG23   | 1:C:240:PHE:HB2  | 1.71                     | 0.71              |
| 1:E:1:THR:HG22   | 1:E:240:PHE:CD2  | 2.25                     | 0.71              |
| 1:E:198:VAL:HG22 | 2:F:190:LYS:HE3  | 1.73                     | 0.71              |
| 1:A:79:ILE:CD1   | 1:A:225:GLU:HB2  | 2.21                     | 0.70              |
| 1:C:247:LEU:N    | 13:C:284:HOH:O   | 2.23                     | 0.70              |
| 1:E:201:LEU:HG   | 1:E:205:LEU:HD12 | 1.73                     | 0.70              |
| 1:C:79:ILE:HD11  | 1:C:91:LEU:HD22  | 1.73                     | 0.70              |
| 1:A:19:LEU:HD12  | 1:A:21:LYS:HZ1   | 1.57                     | 0.70              |
| 1:E:22:GLN:HE22  | 1:E:51:ARG:NH1   | 1.88                     | 0.70              |
| 2:F:49:LEU:HD21  | 2:F:105:GLY:CA   | 2.20                     | 0.70              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:49:LEU:HD11  | 1:A:105:GLY:HA2  | 1.72                     | 0.69              |
| 2:B:18:ASN:HD22  | 9:C:282:ABU:N    | 1.88                     | 0.69              |
| 1:C:194:ILE:HG23 | 2:D:192:SER:HB3  | 1.74                     | 0.69              |
| 1:C:58:ILE:HD13  | 9:C:282:ABU:CD   | 2.23                     | 0.69              |
| 2:H:185:VAL:HG22 | 2:H:192:SER:HB3  | 1.74                     | 0.69              |
| 2:F:152:LYS:HE3  | 13:F:277:HOH:O   | 1.92                     | 0.69              |
| 1:G:36:THR:CG2   | 13:G:559:HOH:O   | 2.34                     | 0.69              |
| 2:B:135:VAL:HG12 | 13:B:271:HOH:O   | 1.93                     | 0.69              |
| 1:C:44:PRO:HG3   | 1:C:226:THR:HG23 | 1.75                     | 0.69              |
| 1:A:253:LEU:C    | 1:A:255:ALA:H    | 1.95                     | 0.69              |
| 1:G:33:LEU:HD22  | 1:G:35:LEU:HD13  | 1.73                     | 0.69              |
| 2:B:62:ASP:HA    | 13:B:256:HOH:O   | 1.93                     | 0.69              |
| 2:D:56:SER:HB3   | 13:D:289:HOH:O   | 1.91                     | 0.69              |
| 2:H:157:VAL:HG22 | 13:H:254:HOH:O   | 1.91                     | 0.69              |
| 2:F:59:ASN:HD21  | 1:G:13:LYS:HZ2   | 1.38                     | 0.69              |
| 13:A:381:HOH:O   | 2:B:237:LYS:HD3  | 1.92                     | 0.69              |
| 1:G:21:LYS:HB2   | 1:G:21:LYS:HZ2   | 1.58                     | 0.69              |
| 1:E:254:VAL:C    | 1:E:256:ASN:H    | 1.97                     | 0.68              |
| 1:G:68:VAL:HG22  | 1:G:175:SER:HB2  | 1.74                     | 0.68              |
| 2:F:59:ASN:HD21  | 1:G:13:LYS:NZ    | 1.90                     | 0.68              |
| 2:F:108:PHE:CE1  | 2:F:114:SER:HA   | 2.28                     | 0.68              |
| 2:H:36:THR:OG1   | 2:H:227:HIS:CD2  | 2.45                     | 0.68              |
| 3:I:2:NAG:H61    | 3:I:4:FUC:H3     | 1.75                     | 0.68              |
| 2:H:225:GLU:OE2  | 2:H:227:HIS:HE1  | 1.77                     | 0.68              |
| 1:C:65:THR:HG23  | 1:C:67:VAL:H     | 1.59                     | 0.68              |
| 2:B:239:SER:OG   | 2:B:242:ALA:HA   | 1.93                     | 0.67              |
| 1:C:41:ASN:HB2   | 1:C:43:VAL:HG23  | 1.76                     | 0.67              |
| 1:E:59:ASN:H     | 9:E:284:ABU:CB   | 2.07                     | 0.67              |
| 2:F:17:PRO:HB2   | 1:G:57:PRO:HG2   | 1.76                     | 0.67              |
| 2:B:137:LEU:HB3  | 2:B:152:LYS:HD3  | 1.76                     | 0.67              |
| 1:C:108:PHE:CE1  | 1:C:114:SER:HA   | 2.30                     | 0.67              |
| 2:F:59:ASN:ND2   | 1:G:13:LYS:NZ    | 2.43                     | 0.67              |
| 1:C:59:ASN:H     | 9:C:282:ABU:CG   | 2.08                     | 0.67              |
| 2:F:39:ASP:HB3   | 2:F:41:ASN:ND2   | 2.10                     | 0.67              |
| 1:A:254:VAL:O    | 1:A:254:VAL:HG13 | 1.93                     | 0.67              |
| 2:H:67:VAL:CG2   | 13:H:384:HOH:O   | 2.43                     | 0.67              |
| 1:E:105:GLY:O    | 1:E:108:PHE:HD2  | 1.78                     | 0.66              |
| 1:G:105:GLY:O    | 1:G:108:PHE:HD2  | 1.78                     | 0.66              |
| 2:H:95:LEU:HD13  | 2:H:124:VAL:HG22 | 1.77                     | 0.66              |
| 2:D:201:LEU:HG   | 2:D:205:LEU:CD2  | 2.26                     | 0.66              |
| 1:E:111:LEU:HD12 | 13:E:436:HOH:O   | 1.94                     | 0.66              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 10:H:289:GOL:H32 | 13:H:452:HOH:O   | 1.95                     | 0.66              |
| 2:F:73:THR:O     | 2:F:170:LEU:HD12 | 1.94                     | 0.66              |
| 1:G:135:VAL:CG1  | 13:G:371:HOH:O   | 2.43                     | 0.66              |
| 2:B:172:THR:CG2  | 13:B:250:HOH:O   | 2.43                     | 0.66              |
| 1:C:77:PHE:CE1   | 1:C:79:ILE:HD13  | 2.31                     | 0.65              |
| 2:D:33:LEU:HG    | 2:D:35:LEU:CD1   | 2.26                     | 0.65              |
| 13:E:270:HOH:O   | 2:F:190:LYS:HD3  | 1.94                     | 0.65              |
| 2:F:35:LEU:O     | 2:F:50:GLY:HA3   | 1.94                     | 0.65              |
| 1:E:22:GLN:NE2   | 1:E:102:PRO:HD3  | 2.11                     | 0.65              |
| 1:C:249:LEU:HD22 | 1:C:253:LEU:CD2  | 2.27                     | 0.65              |
| 2:H:67:VAL:HG23  | 13:H:384:HOH:O   | 1.94                     | 0.65              |
| 1:C:49:LEU:O     | 1:C:49:LEU:HG    | 1.93                     | 0.65              |
| 2:D:76:ARG:NH1   | 13:D:431:HOH:O   | 2.28                     | 0.65              |
| 1:A:82:PRO:HD2   | 1:A:224:ILE:HG22 | 1.77                     | 0.65              |
| 2:H:118:ASN:OD1  | 2:H:120:SER:HB2  | 1.97                     | 0.65              |
| 1:A:108:PHE:HE1  | 1:A:114:SER:HA   | 1.62                     | 0.65              |
| 1:A:253:LEU:O    | 1:A:255:ALA:N    | 2.30                     | 0.65              |
| 2:F:10:SER:H     | 1:G:3:ASN:ND2    | 1.95                     | 0.65              |
| 1:G:65:THR:OG1   | 1:G:67:VAL:HG22  | 1.95                     | 0.64              |
| 1:C:67:VAL:CG1   | 1:C:239:SER:O    | 2.43                     | 0.64              |
| 2:D:212:GLY:C    | 13:D:469:HOH:O   | 2.35                     | 0.64              |
| 1:C:185:VAL:HG22 | 1:C:192:SER:HB3  | 1.80                     | 0.64              |
| 1:A:170:LEU:HD22 | 1:A:253:LEU:HD21 | 1.79                     | 0.64              |
| 1:E:16:GLN:HE21  | 1:E:18:ASN:HD21  | 1.46                     | 0.64              |
| 2:H:35:LEU:O     | 2:H:50:GLY:HA3   | 1.97                     | 0.64              |
| 2:B:51:ARG:HD2   | 2:B:102:PRO:HB3  | 1.79                     | 0.64              |
| 1:E:254:VAL:O    | 1:E:256:ASN:N    | 2.29                     | 0.64              |
| 2:F:112:PHE:HE1  | 13:F:257:HOH:O   | 1.81                     | 0.64              |
| 2:H:1:THR:O      | 2:H:240:PHE:CD1  | 2.49                     | 0.64              |
| 2:D:204:VAL:HG12 | 2:D:205:LEU:HD13 | 1.80                     | 0.63              |
| 2:H:117:PHE:CZ   | 13:H:386:HOH:O   | 2.32                     | 0.63              |
| 2:H:47:LYS:HB2   | 2:H:47:LYS:NZ    | 2.13                     | 0.63              |
| 1:C:186:TYR:HB2  | 1:C:191:THR:HG22 | 1.80                     | 0.63              |
| 1:E:181:VAL:HG11 | 10:E:279:GOL:H11 | 1.80                     | 0.63              |
| 2:B:80:TYR:H     | 2:B:226:THR:HG22 | 1.64                     | 0.63              |
| 2:B:226:THR:HG21 | 13:B:565:HOH:O   | 1.98                     | 0.63              |
| 2:H:21:LYS:HD3   | 13:H:280:HOH:O   | 1.98                     | 0.63              |
| 1:A:59:ASN:HD21  | 2:D:13:LYS:HZ2   | 1.45                     | 0.63              |
| 2:B:86:THR:O     | 2:B:86:THR:CG2   | 2.46                     | 0.63              |
| 1:G:135:VAL:HG11 | 13:G:371:HOH:O   | 1.97                     | 0.63              |
| 1:G:108:PHE:HE1  | 1:G:114:SER:HA   | 1.64                     | 0.63              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:H:130:THR:HA   | 2:H:142:THR:HG22 | 1.80                     | 0.63              |
| 1:A:253:LEU:C    | 1:A:255:ALA:N    | 2.52                     | 0.63              |
| 2:F:108:PHE:HE1  | 2:F:114:SER:CA   | 2.13                     | 0.62              |
| 2:B:39:ASP:HB2   | 2:B:40:LYS:HE2   | 1.81                     | 0.62              |
| 2:D:84:ILE:HD11  | 2:D:161:LEU:HD23 | 1.81                     | 0.62              |
| 1:E:253:LEU:CD2  | 2:F:170:LEU:HD21 | 2.29                     | 0.62              |
| 2:D:79:ILE:HD11  | 2:D:91:LEU:HD22  | 1.82                     | 0.62              |
| 1:E:84:ILE:HD13  | 1:E:163:ASN:HB2  | 1.82                     | 0.62              |
| 2:F:158:LYS:HD3  | 13:F:273:HOH:O   | 1.99                     | 0.61              |
| 1:E:211:ILE:HD13 | 1:E:212:GLY:N    | 2.14                     | 0.61              |
| 2:B:3:ASN:ND2    | 1:C:10:SER:H     | 1.99                     | 0.61              |
| 1:G:41:ASN:OD1   | 1:G:43:VAL:HG23  | 2.00                     | 0.61              |
| 2:B:49:LEU:HD11  | 2:B:105:GLY:HA3  | 1.83                     | 0.61              |
| 1:C:6:SER:HB3    | 1:C:235:ALA:HA   | 1.82                     | 0.61              |
| 2:D:22:GLN:OE1   | 2:D:53:LEU:HD21  | 2.01                     | 0.61              |
| 2:F:18:ASN:ND2   | 13:F:552:HOH:O   | 2.34                     | 0.61              |
| 3:I:2:NAG:O3     | 3:I:3:BMA:C1     | 2.48                     | 0.61              |
| 1:A:13:LYS:HZ2   | 2:D:59:ASN:HD21  | 1.48                     | 0.60              |
| 2:D:67:VAL:HG23  | 2:D:238:LEU:HD21 | 1.83                     | 0.60              |
| 2:B:40:LYS:CD    | 2:B:40:LYS:N     | 2.49                     | 0.60              |
| 1:G:179:LEU:HD21 | 2:H:185:VAL:HG11 | 1.83                     | 0.60              |
| 2:D:1:THR:O      | 2:D:240:PHE:HD2  | 1.85                     | 0.60              |
| 2:F:137:LEU:HB2  | 2:F:152:LYS:HE2  | 1.82                     | 0.60              |
| 1:A:13:LYS:NZ    | 2:D:240:PHE:HZ   | 2.00                     | 0.60              |
| 1:E:67:VAL:HG13  | 1:E:238:LEU:HD11 | 1.84                     | 0.60              |
| 1:E:185:VAL:HG22 | 1:E:192:SER:HB3  | 1.83                     | 0.60              |
| 2:H:61:TRP:CE3   | 2:H:202:LYS:HG3  | 2.37                     | 0.60              |
| 1:A:9:PHE:CZ     | 1:A:19:LEU:HD22  | 2.37                     | 0.59              |
| 1:A:252:PHE:C    | 1:A:252:PHE:CD2  | 2.76                     | 0.59              |
| 2:D:21:LYS:NZ    | 13:D:434:HOH:O   | 2.35                     | 0.59              |
| 1:A:172:THR:CG2  | 13:A:275:HOH:O   | 2.41                     | 0.59              |
| 1:E:47:LYS:HB3   | 1:E:47:LYS:HZ3   | 1.67                     | 0.59              |
| 2:H:186:TYR:HB2  | 2:H:191:THR:HG22 | 1.83                     | 0.59              |
| 1:A:13:LYS:NZ    | 2:D:59:ASN:HD21  | 1.99                     | 0.59              |
| 1:E:211:ILE:CD1  | 1:E:232:TRP:HZ2  | 2.15                     | 0.59              |
| 1:G:8:THR:HB     | 1:G:233:SER:HB3  | 1.84                     | 0.59              |
| 2:D:105:GLY:O    | 2:D:108:PHE:HD2  | 1.84                     | 0.59              |
| 2:F:91:LEU:CD1   | 2:F:128:PHE:HB2  | 2.33                     | 0.59              |
| 2:H:61:TRP:HA    | 13:H:261:HOH:O   | 2.01                     | 0.59              |
| 1:A:108:PHE:HE1  | 1:A:114:SER:CA   | 2.16                     | 0.59              |
| 11:B:306:XYP:O2  | 4:J:3:BMA:O2     | 2.21                     | 0.59              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:D:188:SER:O    | 2:D:189:SER:CB   | 2.51                     | 0.59              |
| 2:F:87:ILE:HD12  | 2:F:130:THR:HB   | 1.85                     | 0.59              |
| 1:G:47:LYS:HB3   | 1:G:47:LYS:HZ2   | 1.65                     | 0.59              |
| 2:H:78:THR:CG2   | 2:H:230:PHE:HZ   | 2.14                     | 0.59              |
| 2:D:76:ARG:HH21  | 2:D:168:LYS:NZ   | 2.00                     | 0.59              |
| 2:H:79:ILE:HG13  | 2:H:161:LEU:HD11 | 1.85                     | 0.59              |
| 2:F:97:PRO:O     | 2:F:100:SER:N    | 2.36                     | 0.59              |
| 1:C:230:PHE:CD1  | 13:C:494:HOH:O   | 2.48                     | 0.59              |
| 1:A:127:GLU:OE1  | 1:A:147:ASP:OD2  | 2.20                     | 0.58              |
| 1:E:252:PHE:O    | 1:E:256:ASN:CB   | 2.47                     | 0.58              |
| 2:F:57:PRO:HG2   | 1:G:17:PRO:HB2   | 1.85                     | 0.58              |
| 2:F:135:VAL:HG12 | 2:F:136:PHE:CE1  | 2.38                     | 0.58              |
| 2:H:87:ILE:HD12  | 2:H:130:THR:CG2  | 2.33                     | 0.58              |
| 1:A:185:VAL:HG11 | 2:B:179:LEU:HD21 | 1.84                     | 0.58              |
| 2:F:139:PRO:HD2  | 2:F:143:HIS:CE1  | 2.39                     | 0.58              |
| 1:A:108:PHE:CE1  | 1:A:114:SER:HA   | 2.38                     | 0.58              |
| 1:C:108:PHE:HE1  | 1:C:114:SER:HA   | 1.68                     | 0.58              |
| 1:A:134:THR:HA   | 13:A:299:HOH:O   | 2.02                     | 0.58              |
| 2:H:230:PHE:HD1  | 13:H:257:HOH:O   | 1.86                     | 0.57              |
| 2:B:80:TYR:H     | 2:B:226:THR:CG2  | 2.17                     | 0.57              |
| 1:G:123:THR:H    | 1:G:149:ASN:ND2  | 2.01                     | 0.57              |
| 1:A:130:THR:HG21 | 1:A:225:GLU:OE2  | 2.04                     | 0.57              |
| 1:E:10:SER:HB3   | 2:H:1:THR:HG22   | 1.86                     | 0.57              |
| 2:F:1:THR:O      | 2:F:240:PHE:HD2  | 1.87                     | 0.57              |
| 2:D:87:ILE:HD12  | 2:D:130:THR:HB   | 1.86                     | 0.57              |
| 1:A:12:PHE:HB2   | 1:A:31:GLY:O     | 2.04                     | 0.57              |
| 1:G:254:VAL:O    | 2:H:237:LYS:HE2  | 2.05                     | 0.57              |
| 2:H:122:GLN:N    | 2:H:149:ASN:ND2  | 2.53                     | 0.57              |
| 2:B:157:VAL:HG21 | 13:B:252:HOH:O   | 2.05                     | 0.57              |
| 1:A:157:VAL:HG22 | 1:A:158:LYS:H    | 1.70                     | 0.57              |
| 1:E:5:ASP:OD2    | 9:E:284:ABU:N    | 2.38                     | 0.57              |
| 1:G:179:LEU:HD12 | 13:G:290:HOH:O   | 2.02                     | 0.57              |
| 1:A:179:LEU:HD13 | 1:A:181:VAL:HG23 | 1.85                     | 0.56              |
| 1:G:36:THR:HG21  | 1:G:227:HIS:ND1  | 2.20                     | 0.56              |
| 1:G:47:LYS:NZ    | 1:G:47:LYS:CB    | 2.64                     | 0.56              |
| 1:A:133:ASN:O    | 1:A:138:ASP:HB2  | 2.05                     | 0.56              |
| 1:A:254:VAL:O    | 1:A:255:ALA:CB   | 2.42                     | 0.56              |
| 2:F:22:GLN:NE2   | 2:F:51:ARG:HE    | 2.02                     | 0.56              |
| 2:F:69:ALA:HB2   | 2:F:238:LEU:HB2  | 1.87                     | 0.56              |
| 2:B:1:THR:O      | 2:B:240:PHE:HD1  | 1.88                     | 0.56              |
| 2:B:173:TYR:CE2  | 2:B:201:LEU:HD22 | 2.41                     | 0.56              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:240:PHE:HE2  | 1:C:13:LYS:HZ1   | 1.52                     | 0.56              |
| 10:C:283:GOL:H31 | 2:D:181:VAL:HG11 | 1.87                     | 0.56              |
| 1:E:249:LEU:O    | 1:E:250:ALA:C    | 2.43                     | 0.56              |
| 1:G:142:THR:HG23 | 13:G:259:HOH:O   | 2.03                     | 0.56              |
| 1:E:157:VAL:CG2  | 1:E:195:LEU:HB2  | 2.34                     | 0.56              |
| 2:H:105:GLY:O    | 2:H:108:PHE:CD2  | 2.52                     | 0.56              |
| 1:A:13:LYS:HZ2   | 2:D:59:ASN:ND2   | 2.03                     | 0.56              |
| 1:E:254:VAL:C    | 1:E:256:ASN:N    | 2.59                     | 0.56              |
| 2:F:22:GLN:HE22  | 2:F:51:ARG:HE    | 1.52                     | 0.56              |
| 1:G:78:THR:HG1   | 1:G:230:PHE:HZ   | 1.45                     | 0.56              |
| 2:H:65:THR:OG1   | 2:H:67:VAL:HG12  | 2.06                     | 0.56              |
| 2:F:65:THR:OG1   | 2:F:67:VAL:CG1   | 2.51                     | 0.56              |
| 1:A:59:ASN:HD21  | 2:D:13:LYS:NZ    | 2.03                     | 0.56              |
| 1:A:67:VAL:HG12  | 1:A:238:LEU:CD1  | 2.36                     | 0.56              |
| 1:C:122:GLN:HB3  | 1:C:206:PRO:HD3  | 1.87                     | 0.56              |
| 1:G:178:LYS:O    | 1:G:198:VAL:HA   | 2.06                     | 0.56              |
| 1:E:59:ASN:HD21  | 2:H:13:LYS:HZ2   | 1.53                     | 0.55              |
| 1:G:79:ILE:HD12  | 1:G:225:GLU:HB2  | 1.88                     | 0.55              |
| 1:A:237:LYS:HZ3  | 1:A:247:LEU:N    | 2.04                     | 0.55              |
| 2:B:79:ILE:HB    | 2:B:226:THR:O    | 2.05                     | 0.55              |
| 1:E:194:ILE:HG23 | 2:F:192:SER:HB3  | 1.89                     | 0.55              |
| 2:B:86:THR:HG22  | 2:B:222:GLY:O    | 2.05                     | 0.55              |
| 1:E:57:PRO:HA    | 1:E:209:VAL:O    | 2.06                     | 0.55              |
| 1:E:115:ALA:CB   | 13:E:271:HOH:O   | 2.54                     | 0.55              |
| 1:C:5:ASP:OD2    | 9:C:282:ABU:N    | 2.40                     | 0.55              |
| 1:E:59:ASN:HD21  | 2:H:13:LYS:NZ    | 2.05                     | 0.55              |
| 1:C:157:VAL:CG2  | 13:C:321:HOH:O   | 2.29                     | 0.55              |
| 2:H:79:ILE:HD13  | 2:H:225:GLU:CG   | 2.37                     | 0.55              |
| 1:A:13:LYS:NZ    | 2:D:240:PHE:CZ   | 2.74                     | 0.55              |
| 11:B:306:XYP:C1  | 4:J:3:BMA:HO2    | 2.12                     | 0.55              |
| 1:C:77:PHE:HE1   | 1:C:79:ILE:HD13  | 1.69                     | 0.55              |
| 2:H:79:ILE:HG13  | 2:H:79:ILE:O     | 2.07                     | 0.55              |
| 1:A:165:GLU:CG   | 1:A:188:SER:OG   | 2.55                     | 0.55              |
| 1:C:7:PHE:CE1    | 1:C:9:PHE:CE2    | 2.95                     | 0.55              |
| 2:F:91:LEU:HD13  | 2:F:128:PHE:HB2  | 1.88                     | 0.55              |
| 1:A:137:LEU:HG   | 1:A:152:LYS:HE2  | 1.89                     | 0.55              |
| 2:H:132:GLU:HG3  | 2:H:140:PRO:HA   | 1.89                     | 0.55              |
| 2:B:77:PHE:CE1   | 2:B:91:LEU:HD21  | 2.42                     | 0.54              |
| 2:D:22:GLN:HB2   | 2:D:51:ARG:HB2   | 1.88                     | 0.54              |
| 2:F:36:THR:OG1   | 2:F:227:HIS:HD2  | 1.90                     | 0.54              |
| 2:B:35:LEU:O     | 2:B:50:GLY:HA3   | 2.08                     | 0.54              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:44:PRO:O     | 1:C:224:ILE:HD12 | 2.06                     | 0.54              |
| 2:B:206:PRO:HD2  | 2:B:209:VAL:CG1  | 2.37                     | 0.54              |
| 1:E:18:ASN:OD1   | 9:E:288:ABU:N    | 2.41                     | 0.54              |
| 2:F:59:ASN:H     | 9:F:290:ABU:CB   | 2.19                     | 0.54              |
| 2:H:158:LYS:HE3  | 2:H:160:ASP:OD1  | 2.07                     | 0.54              |
| 2:H:225:GLU:OE2  | 2:H:227:HIS:CE1  | 2.59                     | 0.54              |
| 1:A:1:THR:O      | 1:A:240:PHE:CD2  | 2.57                     | 0.54              |
| 2:B:86:THR:CG2   | 2:B:222:GLY:O    | 2.56                     | 0.54              |
| 2:B:240:PHE:HE2  | 1:C:13:LYS:NZ    | 2.05                     | 0.54              |
| 2:D:36:THR:HG21  | 2:D:217:THR:CG2  | 2.35                     | 0.54              |
| 1:A:144:ILE:HG22 | 1:A:195:LEU:HD23 | 1.90                     | 0.54              |
| 1:E:170:LEU:HD22 | 1:E:253:LEU:HD11 | 1.89                     | 0.54              |
| 2:H:201:LEU:HG   | 2:H:205:LEU:CD2  | 2.38                     | 0.54              |
| 10:H:289:GOL:C2  | 13:H:411:HOH:O   | 2.26                     | 0.54              |
| 2:B:118:ASN:O    | 2:B:149:ASN:HB3  | 2.07                     | 0.54              |
| 2:D:76:ARG:HH21  | 2:D:168:LYS:HZ1  | 1.56                     | 0.54              |
| 1:E:211:ILE:HD13 | 1:E:211:ILE:C    | 2.28                     | 0.54              |
| 1:C:135:VAL:HG12 | 13:C:305:HOH:O   | 2.07                     | 0.53              |
| 1:A:49:LEU:CD1   | 1:A:105:GLY:CA   | 2.85                     | 0.53              |
| 1:A:57:PRO:HG2   | 2:D:17:PRO:HB2   | 1.91                     | 0.53              |
| 1:C:1:THR:O      | 1:C:240:PHE:HD1  | 1.91                     | 0.53              |
| 1:G:68:VAL:HG22  | 1:G:175:SER:CB   | 2.37                     | 0.53              |
| 2:H:86:THR:HG22  | 2:H:223:TYR:HA   | 1.89                     | 0.53              |
| 2:H:122:GLN:N    | 2:H:149:ASN:HD21 | 2.07                     | 0.53              |
| 1:A:79:ILE:HD13  | 1:A:225:GLU:CB   | 2.37                     | 0.53              |
| 1:C:127:GLU:OE1  | 1:C:147:ASP:OD2  | 2.27                     | 0.53              |
| 2:F:41:ASN:ND2   | 2:F:43:VAL:HG13  | 2.23                     | 0.53              |
| 1:A:79:ILE:HG13  | 1:A:161:LEU:HD11 | 1.91                     | 0.53              |
| 1:E:13:LYS:NZ    | 2:H:59:ASN:HD21  | 2.06                     | 0.53              |
| 2:H:78:THR:HG22  | 2:H:230:PHE:CZ   | 2.44                     | 0.53              |
| 1:E:249:LEU:O    | 1:E:252:PHE:HB3  | 2.09                     | 0.53              |
| 2:F:135:VAL:HG12 | 2:F:136:PHE:CD1  | 2.43                     | 0.53              |
| 2:F:201:LEU:HG   | 2:F:205:LEU:HD12 | 1.91                     | 0.53              |
| 1:E:67:VAL:CG2   | 1:E:239:SER:O    | 2.49                     | 0.52              |
| 1:E:79:ILE:HG13  | 1:E:161:LEU:HD11 | 1.90                     | 0.52              |
| 2:F:121:TYR:O    | 2:F:123:THR:HG23 | 2.09                     | 0.52              |
| 1:E:97:PRO:HD3   | 1:E:122:GLN:O    | 2.08                     | 0.52              |
| 1:E:173:TYR:CE2  | 1:E:201:LEU:HD22 | 2.44                     | 0.52              |
| 1:A:99:SER:HB3   | 13:A:575:HOH:O   | 2.09                     | 0.52              |
| 2:B:97:PRO:O     | 2:B:100:SER:HB2  | 2.10                     | 0.52              |
| 2:D:84:ILE:HD13  | 2:D:163:ASN:HB2  | 1.91                     | 0.52              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:E:1:THR:HG22   | 1:E:1:THR:O      | 2.10                     | 0.52              |
| 2:F:35:LEU:HD21  | 2:F:213:PHE:HB3  | 1.92                     | 0.52              |
| 2:H:27:VAL:HG12  | 2:H:28:THR:O     | 2.09                     | 0.52              |
| 2:B:5:ASP:C      | 2:B:6:SER:OG     | 2.47                     | 0.52              |
| 2:B:22:GLN:OE1   | 2:B:51:ARG:HD3   | 2.08                     | 0.52              |
| 2:H:67:VAL:HG23  | 13:H:258:HOH:O   | 2.09                     | 0.52              |
| 1:A:172:THR:HG22 | 1:A:181:VAL:HB   | 1.91                     | 0.52              |
| 2:B:147:ASP:HB3  | 2:B:150:SER:O    | 2.10                     | 0.52              |
| 1:A:247:LEU:HD13 | 1:A:248:ASP:H    | 1.74                     | 0.52              |
| 1:A:82:PRO:HD2   | 1:A:224:ILE:CG2  | 2.40                     | 0.52              |
| 1:C:78:THR:HG1   | 1:C:230:PHE:HE2  | 1.54                     | 0.52              |
| 1:G:2:THR:HB     | 1:G:239:SER:HA   | 1.91                     | 0.52              |
| 1:G:60:ILE:HG21  | 1:G:205:LEU:HD23 | 1.91                     | 0.52              |
| 1:C:226:THR:HA   | 13:C:277:HOH:O   | 2.08                     | 0.52              |
| 1:A:103:LYS:O    | 1:A:110:GLY:HA2  | 2.10                     | 0.52              |
| 2:B:49:LEU:HD13  | 13:B:278:HOH:O   | 2.10                     | 0.52              |
| 2:B:127:GLU:OE1  | 2:B:147:ASP:OD2  | 2.28                     | 0.52              |
| 1:E:93:PHE:CE1   | 1:E:211:ILE:CD1  | 2.80                     | 0.52              |
| 2:F:123:THR:H    | 2:F:149:ASN:ND2  | 2.08                     | 0.52              |
| 1:G:196:SER:HB2  | 13:G:290:HOH:O   | 2.09                     | 0.52              |
| 1:A:135:VAL:HG22 | 13:A:362:HOH:O   | 2.09                     | 0.51              |
| 1:A:254:VAL:O    | 1:A:254:VAL:HG12 | 2.09                     | 0.51              |
| 1:C:185:VAL:CG1  | 2:D:179:LEU:HD21 | 2.36                     | 0.51              |
| 1:E:44:PRO:HG2   | 1:E:224:ILE:CG2  | 2.30                     | 0.51              |
| 1:G:117:PHE:C    | 1:G:117:PHE:CD2  | 2.84                     | 0.51              |
| 1:C:21:LYS:NZ    | 1:C:33:LEU:HD13  | 2.25                     | 0.51              |
| 2:H:133:ASN:HB3  | 2:H:135:VAL:HG13 | 1.92                     | 0.51              |
| 1:C:249:LEU:CD2  | 1:C:253:LEU:CD2  | 2.89                     | 0.51              |
| 2:D:179:LEU:HD12 | 2:D:197:ASP:O    | 2.10                     | 0.51              |
| 1:G:200:ASP:OD1  | 1:G:202:LYS:HE2  | 2.11                     | 0.51              |
| 1:E:201:LEU:HG   | 1:E:205:LEU:CD1  | 2.38                     | 0.51              |
| 2:H:117:PHE:CD2  | 2:H:118:ASN:N    | 2.78                     | 0.51              |
| 1:G:79:ILE:HD13  | 1:G:225:GLU:CG   | 2.41                     | 0.51              |
| 2:H:47:LYS:HB2   | 2:H:47:LYS:HZ3   | 1.74                     | 0.51              |
| 1:A:157:VAL:HG22 | 1:A:158:LYS:N    | 2.26                     | 0.51              |
| 2:D:157:VAL:HG12 | 2:D:195:LEU:HB2  | 1.93                     | 0.51              |
| 1:G:157:VAL:HG22 | 13:G:272:HOH:O   | 2.11                     | 0.51              |
| 1:A:59:ASN:H     | 9:A:280:ABU:CG   | 2.23                     | 0.50              |
| 1:C:58:ILE:HA    | 9:C:282:ABU:CD   | 2.41                     | 0.50              |
| 2:F:56:SER:CB    | 13:G:547:HOH:O   | 2.40                     | 0.50              |
| 1:G:108:PHE:CE1  | 1:G:114:SER:HA   | 2.44                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:H:87:ILE:CG1   | 2:H:130:THR:HG22 | 2.40                     | 0.50              |
| 2:H:238:LEU:C    | 2:H:238:LEU:CD2  | 2.80                     | 0.50              |
| 1:A:165:GLU:HG2  | 1:A:188:SER:OG   | 2.10                     | 0.50              |
| 1:E:73:THR:HG21  | 1:E:93:PHE:CZ    | 2.46                     | 0.50              |
| 1:G:73:THR:HB    | 1:G:234:PHE:HD1  | 1.76                     | 0.50              |
| 2:B:36:THR:OG1   | 2:B:227:HIS:CD2  | 2.56                     | 0.50              |
| 2:H:108:PHE:HE1  | 2:H:114:SER:HA   | 1.76                     | 0.50              |
| 2:H:191:THR:HG23 | 2:H:193:PHE:CE2  | 2.47                     | 0.50              |
| 1:A:17:PRO:HB2   | 2:D:57:PRO:HG2   | 1.92                     | 0.50              |
| 1:C:237:LYS:HB3  | 1:C:247:LEU:HD13 | 1.93                     | 0.50              |
| 1:E:22:GLN:HE22  | 1:E:102:PRO:HD3  | 1.73                     | 0.50              |
| 2:B:62:ASP:O     | 2:B:66:GLY:N     | 2.44                     | 0.50              |
| 2:B:65:THR:OG1   | 2:B:67:VAL:HG12  | 2.11                     | 0.50              |
| 2:B:76:ARG:CB    | 13:B:429:HOH:O   | 2.59                     | 0.50              |
| 1:G:117:PHE:CD2  | 1:G:118:ASN:N    | 2.80                     | 0.50              |
| 1:A:201:LEU:HG   | 1:A:205:LEU:HD12 | 1.94                     | 0.49              |
| 2:F:142:THR:CG2  | 2:F:159:TRP:CE3  | 2.95                     | 0.49              |
| 1:A:36:THR:CG2   | 1:A:227:HIS:CD2  | 2.76                     | 0.49              |
| 1:A:170:LEU:CD2  | 1:A:253:LEU:HD21 | 2.42                     | 0.49              |
| 1:C:36:THR:OG1   | 1:C:227:HIS:HD2  | 1.95                     | 0.49              |
| 1:G:179:LEU:HD21 | 2:H:185:VAL:CG1  | 2.41                     | 0.49              |
| 2:H:68:VAL:HB    | 2:H:175:SER:OG   | 2.12                     | 0.49              |
| 2:H:122:GLN:H    | 2:H:149:ASN:ND2  | 2.10                     | 0.49              |
| 1:A:194:ILE:HD13 | 2:B:192:SER:HB3  | 1.93                     | 0.49              |
| 2:B:5:ASP:OD2    | 9:B:276:ABU:N    | 2.45                     | 0.49              |
| 2:D:49:LEU:HD12  | 2:D:105:GLY:CA   | 2.42                     | 0.49              |
| 1:E:115:ALA:HB3  | 13:E:271:HOH:O   | 2.11                     | 0.49              |
| 1:G:181:VAL:HG22 | 1:G:196:SER:HB2  | 1.93                     | 0.49              |
| 2:H:61:TRP:CD2   | 2:H:202:LYS:HG3  | 2.48                     | 0.49              |
| 1:C:124:VAL:HG21 | 1:C:201:LEU:CD2  | 2.42                     | 0.49              |
| 2:H:11:LYS:O     | 13:H:432:HOH:O   | 2.20                     | 0.49              |
| 2:H:137:LEU:HB3  | 3:I:1:NAG:H83    | 1.95                     | 0.49              |
| 1:A:67:VAL:HG12  | 1:A:238:LEU:HD11 | 1.95                     | 0.49              |
| 2:B:144:ILE:HG13 | 2:B:159:TRP:HB2  | 1.93                     | 0.49              |
| 1:G:247:LEU:O    | 1:G:248:ASP:HB3  | 2.12                     | 0.49              |
| 2:H:136:PHE:O    | 2:H:152:LYS:HG2  | 2.12                     | 0.49              |
| 2:H:238:LEU:C    | 2:H:238:LEU:HD22 | 2.33                     | 0.49              |
| 1:A:194:ILE:HG13 | 2:B:194:ILE:HB   | 1.95                     | 0.49              |
| 2:D:16:GLN:HG2   | 2:D:18:ASN:OD1   | 2.13                     | 0.49              |
| 1:E:69:ALA:O     | 1:E:175:SER:HB3  | 2.12                     | 0.49              |
| 2:H:101:PRO:O    | 2:H:103:LYS:NZ   | 2.40                     | 0.49              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:H:186:TYR:HD2  | 2:H:191:THR:CG2  | 2.26                     | 0.49              |
| 4:J:3:BMA:O4     | 4:J:4:MAN:C1     | 2.60                     | 0.49              |
| 1:C:41:ASN:HA    | 13:C:467:HOH:O   | 2.12                     | 0.49              |
| 2:D:1:THR:HB     | 2:D:240:PHE:HB2  | 1.94                     | 0.49              |
| 2:B:59:ASN:HB3   | 13:B:589:HOH:O   | 2.12                     | 0.48              |
| 2:D:60:ILE:HD11  | 2:D:206:PRO:O    | 2.13                     | 0.48              |
| 2:D:76:ARG:HA    | 2:D:167:ALA:O    | 2.14                     | 0.48              |
| 2:H:115:ALA:O    | 2:H:152:LYS:HD2  | 2.14                     | 0.48              |
| 2:D:52:ALA:O     | 2:D:212:GLY:HA3  | 2.13                     | 0.48              |
| 2:D:172:THR:O    | 2:D:180:LEU:HD12 | 2.12                     | 0.48              |
| 2:D:185:VAL:O    | 2:D:187:PRO:HD3  | 2.12                     | 0.48              |
| 2:F:74:SER:HA    | 2:F:169:VAL:O    | 2.14                     | 0.48              |
| 1:G:87:ILE:HB    | 1:G:225:GLU:OE1  | 2.13                     | 0.48              |
| 1:G:153:SER:HB3  | 1:G:155:LYS:O    | 2.13                     | 0.48              |
| 2:B:206:PRO:HD2  | 2:B:209:VAL:HG12 | 1.95                     | 0.48              |
| 1:C:79:ILE:HG23  | 1:C:225:GLU:HG3  | 1.96                     | 0.48              |
| 9:E:288:ABU:CG   | 2:H:3:ASN:ND2    | 2.77                     | 0.48              |
| 2:F:78:THR:HG1   | 2:F:230:PHE:HE2  | 1.55                     | 0.48              |
| 2:H:33:LEU:HD23  | 2:H:229:VAL:HB   | 1.95                     | 0.48              |
| 2:H:137:LEU:HB3  | 3:I:1:NAG:C8     | 2.43                     | 0.48              |
| 1:G:130:THR:HA   | 1:G:142:THR:HG22 | 1.96                     | 0.48              |
| 2:B:157:VAL:HG22 | 13:B:286:HOH:O   | 2.13                     | 0.48              |
| 1:E:76:ARG:HA    | 1:E:167:ALA:O    | 2.14                     | 0.48              |
| 2:H:27:VAL:HG23  | 13:H:280:HOH:O   | 2.13                     | 0.48              |
| 1:E:4:THR:HG22   | 1:E:237:LYS:HB3  | 1.96                     | 0.48              |
| 2:F:76:ARG:HA    | 2:F:167:ALA:O    | 2.13                     | 0.48              |
| 2:F:121:TYR:O    | 2:F:123:THR:CG2  | 2.62                     | 0.48              |
| 2:B:76:ARG:HG2   | 2:B:230:PHE:HD2  | 1.79                     | 0.48              |
| 2:B:76:ARG:HB2   | 13:B:429:HOH:O   | 2.13                     | 0.48              |
| 1:G:205:LEU:HG   | 1:G:209:VAL:HG21 | 1.96                     | 0.48              |
| 1:A:130:THR:HG21 | 1:A:225:GLU:CD   | 2.34                     | 0.48              |
| 1:A:157:VAL:CG2  | 13:A:259:HOH:O   | 2.53                     | 0.48              |
| 1:A:225:GLU:OE2  | 1:A:227:HIS:HE1  | 1.97                     | 0.48              |
| 2:F:1:THR:O      | 2:F:240:PHE:CD2  | 2.67                     | 0.48              |
| 2:F:13:LYS:HZ3   | 1:G:240:PHE:HE1  | 1.60                     | 0.48              |
| 1:G:12:PHE:O     | 1:G:31:GLY:HA2   | 2.13                     | 0.48              |
| 1:A:86:THR:O     | 1:A:223:TYR:HA   | 2.14                     | 0.47              |
| 1:C:7:PHE:CE1    | 1:C:9:PHE:HE2    | 2.32                     | 0.47              |
| 1:G:75:PHE:CZ    | 1:G:169:VAL:HG11 | 2.48                     | 0.47              |
| 2:H:121:TYR:HB2  | 2:H:149:ASN:HD22 | 1.78                     | 0.47              |
| 2:B:207:GLU:CG   | 13:B:256:HOH:O   | 2.51                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:F:77:PHE:HA    | 2:F:228:ASP:O    | 2.14                     | 0.47              |
| 11:B:306:XYP:C1  | 4:J:3:BMA:H2     | 2.44                     | 0.47              |
| 1:C:1:THR:O      | 1:C:240:PHE:CD1  | 2.66                     | 0.47              |
| 1:E:142:THR:HG22 | 1:E:159:TRP:CE3  | 2.49                     | 0.47              |
| 1:C:151:ILE:HG22 | 13:C:258:HOH:O   | 2.12                     | 0.47              |
| 1:G:21:LYS:HB2   | 1:G:21:LYS:NZ    | 2.28                     | 0.47              |
| 2:B:47:LYS:HE3   | 2:B:219:ALA:HA   | 1.96                     | 0.47              |
| 2:F:33:LEU:HG    | 2:F:35:LEU:HD13  | 1.97                     | 0.47              |
| 1:G:49:LEU:HD13  | 1:G:49:LEU:HA    | 1.70                     | 0.47              |
| 2:B:47:LYS:HA    | 2:B:47:LYS:HD3   | 1.60                     | 0.47              |
| 1:C:116:VAL:HG22 | 13:C:265:HOH:O   | 2.14                     | 0.47              |
| 2:F:98:VAL:O     | 2:F:98:VAL:HG13  | 2.15                     | 0.47              |
| 1:A:96:ALA:HB1   | 1:A:97:PRO:HD2   | 1.96                     | 0.47              |
| 1:A:179:LEU:HD13 | 1:A:181:VAL:CG2  | 2.44                     | 0.47              |
| 1:E:105:GLY:O    | 1:E:108:PHE:CD2  | 2.63                     | 0.47              |
| 2:F:240:PHE:HE1  | 1:G:13:LYS:HZ1   | 1.61                     | 0.47              |
| 1:G:78:THR:HG1   | 1:G:230:PHE:HE2  | 1.53                     | 0.47              |
| 1:G:117:PHE:HZ   | 13:G:438:HOH:O   | 1.97                     | 0.47              |
| 1:A:58:ILE:HA    | 9:A:280:ABU:CD   | 2.45                     | 0.47              |
| 2:B:21:LYS:NZ    | 2:B:21:LYS:HB3   | 2.26                     | 0.47              |
| 2:B:79:ILE:O     | 2:B:79:ILE:HG13  | 2.15                     | 0.47              |
| 2:F:33:LEU:HD23  | 2:F:229:VAL:HB   | 1.96                     | 0.47              |
| 2:B:225:GLU:OE2  | 2:B:227:HIS:HE1  | 1.97                     | 0.47              |
| 1:C:21:LYS:HA    | 1:C:21:LYS:HD3   | 1.61                     | 0.47              |
| 1:E:67:VAL:HG11  | 1:E:240:PHE:HA   | 1.96                     | 0.47              |
| 1:C:206:PRO:HD2  | 1:C:209:VAL:HG12 | 1.97                     | 0.47              |
| 1:E:1:THR:O      | 1:E:240:PHE:HD2  | 1.97                     | 0.46              |
| 1:E:46:PRO:HB3   | 1:E:224:ILE:HD11 | 1.97                     | 0.46              |
| 2:F:4:THR:OG1    | 1:G:8:THR:HG23   | 2.14                     | 0.46              |
| 2:D:12:PHE:HB2   | 2:D:31:GLY:O     | 2.14                     | 0.46              |
| 1:E:52:ALA:C     | 1:E:53:LEU:HD12  | 2.36                     | 0.46              |
| 2:F:225:GLU:OE2  | 2:F:227:HIS:HE1  | 1.99                     | 0.46              |
| 1:A:123:THR:H    | 1:A:149:ASN:ND2  | 2.13                     | 0.46              |
| 1:C:124:VAL:HG21 | 1:C:201:LEU:HD23 | 1.98                     | 0.46              |
| 1:G:37:LYS:HE3   | 13:G:282:HOH:O   | 2.15                     | 0.46              |
| 1:C:47:LYS:HE3   | 1:C:47:LYS:HB3   | 1.54                     | 0.46              |
| 1:G:197:ASP:N    | 13:G:290:HOH:O   | 2.48                     | 0.46              |
| 1:A:67:VAL:HG11  | 1:A:239:SER:C    | 2.28                     | 0.46              |
| 2:F:41:ASN:HD22  | 2:F:42:GLY:N     | 2.13                     | 0.46              |
| 1:G:167:ALA:HB2  | 1:G:186:TYR:CE1  | 2.51                     | 0.46              |
| 2:H:78:THR:HG22  | 2:H:228:ASP:HB2  | 1.96                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:B:21:LYS:HZ2   | 2:B:21:LYS:CB    | 2.28                     | 0.46              |
| 1:A:247:LEU:HD13 | 1:A:248:ASP:N    | 2.30                     | 0.46              |
| 2:B:123:THR:H    | 2:B:149:ASN:ND2  | 2.14                     | 0.46              |
| 1:C:190:LYS:HD2  | 2:D:197:ASP:OD1  | 2.16                     | 0.46              |
| 2:F:98:VAL:HA    | 2:F:99:SER:HA    | 1.62                     | 0.46              |
| 1:A:1:THR:HG21   | 2:D:11:LYS:HG3   | 1.97                     | 0.46              |
| 1:A:225:GLU:OE2  | 1:A:227:HIS:CE1  | 2.69                     | 0.46              |
| 2:B:22:GLN:HB2   | 2:B:51:ARG:HB2   | 1.98                     | 0.46              |
| 2:H:79:ILE:HD13  | 2:H:225:GLU:HG3  | 1.98                     | 0.46              |
| 1:A:79:ILE:HD13  | 1:A:225:GLU:CG   | 2.46                     | 0.45              |
| 2:F:225:GLU:OE2  | 2:F:227:HIS:CE1  | 2.69                     | 0.45              |
| 1:G:178:LYS:HB2  | 1:G:198:VAL:HG13 | 1.97                     | 0.45              |
| 13:B:422:HOH:O   | 1:G:133:ASN:HA   | 2.15                     | 0.45              |
| 1:C:39:ASP:OD2   | 1:C:39:ASP:C     | 2.54                     | 0.45              |
| 9:F:290:ABU:N    | 1:G:18:ASN:ND2   | 2.58                     | 0.45              |
| 2:H:78:THR:CG2   | 2:H:230:PHE:CZ   | 2.98                     | 0.45              |
| 2:H:78:THR:HG22  | 2:H:230:PHE:HZ   | 1.79                     | 0.45              |
| 1:A:224:ILE:HG22 | 1:A:224:ILE:O    | 2.16                     | 0.45              |
| 2:B:226:THR:HA   | 13:B:287:HOH:O   | 2.16                     | 0.45              |
| 2:F:144:ILE:HD12 | 2:F:159:TRP:HB2  | 1.98                     | 0.45              |
| 4:J:3:BMA:O4     | 4:J:4:MAN:C2     | 2.64                     | 0.45              |
| 1:G:79:ILE:CD1   | 1:G:225:GLU:CB   | 2.88                     | 0.45              |
| 1:A:83:ASN:HD22  | 1:A:85:ALA:H     | 1.65                     | 0.45              |
| 1:C:12:PHE:HB2   | 1:C:31:GLY:O     | 2.17                     | 0.45              |
| 1:C:56:SER:HA    | 1:C:57:PRO:HD3   | 1.77                     | 0.45              |
| 1:E:79:ILE:HD13  | 1:E:225:GLU:CD   | 2.37                     | 0.45              |
| 1:G:201:LEU:HG   | 1:G:205:LEU:CD2  | 2.39                     | 0.45              |
| 2:H:67:VAL:HG13  | 2:H:238:LEU:CD2  | 2.43                     | 0.45              |
| 2:B:89:ASP:OD2   | 2:B:218:GLY:HA2  | 2.16                     | 0.45              |
| 2:B:133:ASN:O    | 2:B:138:ASP:HB2  | 2.17                     | 0.45              |
| 1:C:78:THR:OG1   | 1:C:230:PHE:HE2  | 1.99                     | 0.45              |
| 1:A:61:TRP:CE3   | 1:A:202:LYS:HG3  | 2.52                     | 0.45              |
| 1:A:67:VAL:HG12  | 1:A:238:LEU:HD12 | 1.98                     | 0.45              |
| 1:A:233:SER:OG   | 1:A:256:ASN:HB3  | 2.16                     | 0.45              |
| 2:B:207:GLU:CD   | 13:B:256:HOH:O   | 2.55                     | 0.45              |
| 1:E:79:ILE:HB    | 1:E:226:THR:O    | 2.17                     | 0.45              |
| 1:A:73:THR:HA    | 1:A:233:SER:O    | 2.16                     | 0.45              |
| 1:A:77:PHE:HE1   | 1:A:79:ILE:CG2   | 2.30                     | 0.45              |
| 2:D:77:PHE:HE1   | 2:D:79:ILE:HG12  | 1.82                     | 0.45              |
| 1:E:235:ALA:HB1  | 1:E:247:LEU:HD13 | 1.98                     | 0.45              |
| 2:H:137:LEU:HG   | 2:H:152:LYS:HE2  | 1.98                     | 0.45              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:117:PHE:HZ   | 13:A:272:HOH:O   | 1.99                     | 0.45              |
| 1:E:17:PRO:HB2   | 2:H:57:PRO:HG2   | 1.99                     | 0.45              |
| 1:G:78:THR:CB    | 1:G:230:PHE:HZ   | 2.30                     | 0.45              |
| 2:H:213:PHE:HE2  | 2:H:232:TRP:CD2  | 2.35                     | 0.45              |
| 2:F:9:PHE:CE1    | 2:F:18:ASN:ND2   | 2.71                     | 0.45              |
| 2:H:108:PHE:HB3  | 2:H:112:PHE:O    | 2.17                     | 0.45              |
| 1:C:122:GLN:H    | 1:C:149:ASN:ND2  | 2.14                     | 0.44              |
| 1:G:173:TYR:CE2  | 1:G:201:LEU:HD22 | 2.52                     | 0.44              |
| 1:G:183:ALA:HA   | 1:G:193:PHE:O    | 2.17                     | 0.44              |
| 1:A:196:SER:CB   | 2:B:192:SER:HG   | 2.29                     | 0.44              |
| 2:B:81:ALA:HB1   | 2:B:87:ILE:HG22  | 1.99                     | 0.44              |
| 1:C:77:PHE:CD1   | 1:C:79:ILE:HD13  | 2.53                     | 0.44              |
| 2:D:103:LYS:HB3  | 2:D:113:ASP:OD1  | 2.17                     | 0.44              |
| 1:E:12:PHE:O     | 1:E:31:GLY:HA2   | 2.18                     | 0.44              |
| 1:E:24:ASP:HB2   | 1:E:49:LEU:O     | 2.16                     | 0.44              |
| 1:E:225:GLU:OE2  | 1:E:227:HIS:HE1  | 2.00                     | 0.44              |
| 2:H:144:ILE:HG13 | 2:H:159:TRP:HB2  | 1.98                     | 0.44              |
| 1:E:18:ASN:C     | 1:E:18:ASN:HD22  | 2.20                     | 0.44              |
| 2:D:188:SER:N    | 13:D:461:HOH:O   | 2.48                     | 0.44              |
| 2:F:103:LYS:HG2  | 2:F:113:ASP:OD1  | 2.17                     | 0.44              |
| 1:E:68:VAL:HB    | 1:E:175:SER:HB2  | 1.99                     | 0.44              |
| 1:C:122:GLN:H    | 1:C:149:ASN:HD21 | 1.66                     | 0.44              |
| 1:C:135:VAL:CG1  | 13:C:305:HOH:O   | 2.64                     | 0.44              |
| 2:B:21:LYS:HB3   | 2:B:21:LYS:HZ2   | 1.83                     | 0.44              |
| 2:F:41:ASN:HD22  | 2:F:41:ASN:C     | 2.21                     | 0.44              |
| 2:F:49:LEU:CD2   | 2:F:105:GLY:CA   | 2.93                     | 0.44              |
| 2:F:118:ASN:OD1  | 2:F:120:SER:HB2  | 2.18                     | 0.44              |
| 1:G:122:GLN:HB3  | 1:G:206:PRO:HD3  | 1.98                     | 0.44              |
| 2:H:200:ASP:O    | 2:H:203:SER:HB2  | 2.17                     | 0.44              |
| 2:B:20:LYS:HE3   | 2:B:22:GLN:HE21  | 1.82                     | 0.44              |
| 1:E:194:ILE:CG2  | 2:F:192:SER:HB3  | 2.48                     | 0.44              |
| 2:F:59:ASN:HD22  | 1:G:13:LYS:HZ2   | 1.59                     | 0.44              |
| 1:A:124:VAL:CB   | 13:A:297:HOH:O   | 2.63                     | 0.43              |
| 2:B:59:ASN:H     | 9:B:276:ABU:CB   | 2.31                     | 0.43              |
| 2:B:79:ILE:HD12  | 2:B:225:GLU:HB2  | 2.00                     | 0.43              |
| 1:C:88:ALA:HA    | 1:C:89:ASP:HA    | 1.77                     | 0.43              |
| 1:E:211:ILE:HD12 | 1:E:232:TRP:HZ2  | 1.80                     | 0.43              |
| 1:G:35:LEU:O     | 1:G:50:GLY:HA3   | 2.18                     | 0.43              |
| 1:G:79:ILE:HD13  | 1:G:225:GLU:HB2  | 1.96                     | 0.43              |
| 1:G:222:GLY:O    | 1:G:224:ILE:HG12 | 2.18                     | 0.43              |
| 1:A:13:LYS:CE    | 2:D:240:PHE:CZ   | 3.01                     | 0.43              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:77:PHE:CD1   | 1:C:79:ILE:CD1   | 3.02                     | 0.43              |
| 1:E:100:SER:HB2  | 13:E:267:HOH:O   | 2.17                     | 0.43              |
| 1:C:60:ILE:HD13  | 1:C:60:ILE:HA    | 1.84                     | 0.43              |
| 2:D:147:ASP:HB3  | 2:D:150:SER:O    | 2.18                     | 0.43              |
| 2:F:62:ASP:HB3   | 2:F:67:VAL:CG1   | 2.49                     | 0.43              |
| 1:G:252:PHE:CD1  | 1:G:256:ASN:HB2  | 2.53                     | 0.43              |
| 1:G:252:PHE:O    | 1:G:256:ASN:N    | 2.36                     | 0.43              |
| 1:E:35:LEU:O     | 1:E:50:GLY:HA3   | 2.18                     | 0.43              |
| 1:C:240:PHE:CD1  | 1:C:240:PHE:N    | 2.86                     | 0.43              |
| 1:G:138:ASP:HB3  | 1:G:143:HIS:CE1  | 2.53                     | 0.43              |
| 1:A:7:PHE:CD1    | 1:A:7:PHE:C      | 2.92                     | 0.43              |
| 2:B:41:ASN:O     | 1:G:135:VAL:HB   | 2.19                     | 0.43              |
| 1:E:61:TRP:CE3   | 1:E:202:LYS:HG3  | 2.52                     | 0.43              |
| 1:E:65:THR:HB    | 1:E:67:VAL:HG12  | 2.00                     | 0.43              |
| 2:F:213:PHE:HE2  | 2:F:232:TRP:CD2  | 2.36                     | 0.43              |
| 1:G:122:GLN:N    | 1:G:149:ASN:HD21 | 2.17                     | 0.43              |
| 2:D:43:VAL:HA    | 2:D:44:PRO:HD2   | 1.75                     | 0.43              |
| 1:E:114:SER:OG   | 1:E:116:VAL:CG2  | 2.66                     | 0.43              |
| 2:H:79:ILE:CD1   | 2:H:225:GLU:HB2  | 2.48                     | 0.43              |
| 1:A:84:ILE:HD12  | 1:A:87:ILE:HG21  | 2.01                     | 0.43              |
| 1:A:254:VAL:HG23 | 2:B:72:ALA:CB    | 2.48                     | 0.43              |
| 2:B:69:ALA:O     | 2:B:175:SER:HB3  | 2.18                     | 0.43              |
| 2:B:201:LEU:HG   | 2:B:205:LEU:CD1  | 2.47                     | 0.43              |
| 2:D:79:ILE:HG23  | 2:D:225:GLU:HG3  | 2.01                     | 0.43              |
| 1:A:19:LEU:HD12  | 1:A:21:LYS:NZ    | 2.28                     | 0.43              |
| 1:C:105:GLY:O    | 1:C:108:PHE:HD2  | 2.00                     | 0.43              |
| 1:C:185:VAL:HG11 | 2:D:179:LEU:CD2  | 2.40                     | 0.43              |
| 1:E:22:GLN:NE2   | 1:E:102:PRO:HG3  | 2.34                     | 0.43              |
| 1:E:22:GLN:HE21  | 1:E:102:PRO:HG3  | 1.82                     | 0.43              |
| 1:E:170:LEU:HD22 | 1:E:253:LEU:CD1  | 2.48                     | 0.43              |
| 2:F:37:LYS:HE2   | 13:F:255:HOH:O   | 2.18                     | 0.43              |
| 2:F:88:ALA:HA    | 2:F:89:ASP:HA    | 1.67                     | 0.43              |
| 1:G:1:THR:O      | 1:G:240:PHE:HD2  | 2.02                     | 0.43              |
| 1:A:35:LEU:O     | 1:A:50:GLY:HA3   | 2.19                     | 0.42              |
| 1:A:58:ILE:HG23  | 9:A:280:ABU:CG   | 2.49                     | 0.42              |
| 2:B:158:LYS:N    | 13:B:282:HOH:O   | 2.46                     | 0.42              |
| 2:D:14:PRO:HA    | 2:D:27:VAL:HG13  | 2.01                     | 0.42              |
| 2:F:49:LEU:CD2   | 2:F:105:GLY:HA2  | 2.27                     | 0.42              |
| 2:H:79:ILE:HB    | 2:H:226:THR:O    | 2.19                     | 0.42              |
| 2:H:87:ILE:CD1   | 2:H:130:THR:CG2  | 2.97                     | 0.42              |
| 1:A:249:LEU:HD21 | 2:B:170:LEU:HD22 | 2.01                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:C:103:LYS:HB3  | 1:C:113:ASP:OD1  | 2.20                     | 0.42              |
| 1:E:201:LEU:HD12 | 1:E:201:LEU:HA   | 1.84                     | 0.42              |
| 2:F:91:LEU:HB3   | 2:F:215:ALA:HB2  | 2.01                     | 0.42              |
| 1:G:74:SER:HA    | 1:G:169:VAL:O    | 2.20                     | 0.42              |
| 1:A:144:ILE:HG22 | 1:A:195:LEU:CD2  | 2.49                     | 0.42              |
| 1:C:84:ILE:HG12  | 1:C:163:ASN:HD22 | 1.84                     | 0.42              |
| 2:F:57:PRO:HG3   | 2:F:98:VAL:HG21  | 2.00                     | 0.42              |
| 1:G:21:LYS:HD3   | 1:G:21:LYS:HA    | 1.84                     | 0.42              |
| 3:L:2:NAG:O5     | 3:L:4:FUC:H5     | 2.19                     | 0.42              |
| 1:A:41:ASN:HB3   | 1:A:43:VAL:HG23  | 2.02                     | 0.42              |
| 2:D:188:SER:O    | 2:D:188:SER:OG   | 2.37                     | 0.42              |
| 2:D:230:PHE:CD2  | 13:D:244:HOH:O   | 2.43                     | 0.42              |
| 1:E:4:THR:HA     | 1:E:236:SER:O    | 2.19                     | 0.42              |
| 1:G:96:ALA:HB1   | 1:G:97:PRO:HD2   | 2.00                     | 0.42              |
| 2:B:5:ASP:C      | 2:B:6:SER:HG     | 2.23                     | 0.42              |
| 2:B:13:LYS:HE2   | 1:C:240:PHE:CE2  | 2.54                     | 0.42              |
| 2:B:38:VAL:HA    | 2:B:44:PRO:HA    | 2.01                     | 0.42              |
| 1:A:117:PHE:HA   | 1:A:150:SER:HB2  | 2.01                     | 0.42              |
| 2:F:76:ARG:HG3   | 2:F:230:PHE:HB2  | 2.00                     | 0.42              |
| 2:F:147:ASP:OD1  | 2:F:153:SER:OG   | 2.20                     | 0.42              |
| 1:G:21:LYS:NZ    | 1:G:21:LYS:CB    | 2.83                     | 0.42              |
| 2:H:51:ARG:HG3   | 2:H:214:SER:OG   | 2.19                     | 0.42              |
| 2:B:59:ASN:HB2   | 2:B:208:TRP:CH2  | 2.55                     | 0.42              |
| 2:B:240:PHE:CE2  | 1:C:13:LYS:NZ    | 2.84                     | 0.42              |
| 2:D:21:LYS:HE3   | 2:D:25:ALA:O     | 2.20                     | 0.42              |
| 1:E:252:PHE:O    | 1:E:256:ASN:N    | 2.52                     | 0.42              |
| 1:G:36:THR:HG21  | 1:G:217:THR:HG23 | 2.02                     | 0.42              |
| 2:H:49:LEU:HD22  | 2:H:50:GLY:N     | 2.34                     | 0.42              |
| 2:H:167:ALA:HB2  | 2:H:186:TYR:CE1  | 2.55                     | 0.42              |
| 1:A:74:SER:HA    | 1:A:169:VAL:O    | 2.20                     | 0.42              |
| 1:C:21:LYS:HZ2   | 1:C:33:LEU:HD13  | 1.84                     | 0.42              |
| 1:C:36:THR:O     | 1:C:38:VAL:HG23  | 2.20                     | 0.42              |
| 1:C:200:ASP:O    | 1:C:201:LEU:CB   | 2.58                     | 0.42              |
| 1:E:117:PHE:CD2  | 1:E:117:PHE:C    | 2.92                     | 0.42              |
| 2:H:137:LEU:CD2  | 2:H:152:LYS:HE2  | 2.50                     | 0.42              |
| 1:G:47:LYS:HZ2   | 1:G:47:LYS:CB    | 2.29                     | 0.42              |
| 2:H:91:LEU:HD23  | 2:H:128:PHE:HB2  | 2.02                     | 0.42              |
| 1:E:181:VAL:HG21 | 10:E:279:GOL:O2  | 2.19                     | 0.41              |
| 1:A:100:SER:HB3  | 13:A:472:HOH:O   | 2.20                     | 0.41              |
| 2:B:116:VAL:HG21 | 4:J:1:NAG:H81    | 2.01                     | 0.41              |
| 2:B:157:VAL:HG22 | 2:B:158:LYS:H    | 1.85                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:D:93:PHE:HD1   | 13:D:469:HOH:O   | 2.03                     | 0.41              |
| 1:E:96:ALA:HB1   | 1:E:97:PRO:CD    | 2.50                     | 0.41              |
| 2:F:97:PRO:HD3   | 2:F:122:GLN:O    | 2.20                     | 0.41              |
| 1:G:78:THR:HB    | 1:G:230:PHE:HZ   | 1.84                     | 0.41              |
| 2:B:21:LYS:HB3   | 2:B:21:LYS:HE3   | 1.64                     | 0.41              |
| 1:G:8:THR:HB     | 1:G:233:SER:CB   | 2.50                     | 0.41              |
| 1:A:33:LEU:HD22  | 1:A:35:LEU:HD13  | 2.02                     | 0.41              |
| 2:B:97:PRO:O     | 2:B:100:SER:CB   | 2.69                     | 0.41              |
| 1:C:249:LEU:HD22 | 1:C:253:LEU:HD23 | 1.99                     | 0.41              |
| 1:A:40:LYS:C     | 1:A:42:GLY:H     | 2.24                     | 0.41              |
| 2:B:87:ILE:HB    | 2:B:225:GLU:OE1  | 2.20                     | 0.41              |
| 1:C:65:THR:HG23  | 1:C:67:VAL:HG23  | 2.02                     | 0.41              |
| 2:D:49:LEU:HD12  | 2:D:105:GLY:HA2  | 2.01                     | 0.41              |
| 1:G:86:THR:HG23  | 1:G:223:TYR:CE2  | 2.55                     | 0.41              |
| 1:G:249:LEU:O    | 1:G:250:ALA:C    | 2.58                     | 0.41              |
| 1:A:118:ASN:HB3  | 1:A:121:TYR:CD2  | 2.56                     | 0.41              |
| 1:A:252:PHE:CD2  | 1:A:253:LEU:N    | 2.89                     | 0.41              |
| 1:C:73:THR:HB    | 1:C:234:PHE:HD1  | 1.86                     | 0.41              |
| 1:E:87:ILE:HB    | 1:E:225:GLU:OE1  | 2.19                     | 0.41              |
| 2:F:8:THR:HB     | 1:G:4:THR:HB     | 2.02                     | 0.41              |
| 2:F:39:ASP:HB3   | 2:F:41:ASN:HD21  | 1.85                     | 0.41              |
| 1:G:123:THR:H    | 1:G:149:ASN:HD21 | 1.67                     | 0.41              |
| 1:G:165:GLU:HG2  | 1:G:188:SER:OG   | 2.19                     | 0.41              |
| 1:A:79:ILE:HB    | 1:A:226:THR:O    | 2.20                     | 0.41              |
| 1:A:155:LYS:HB3  | 1:A:195:LEU:HD11 | 2.02                     | 0.41              |
| 2:B:189:SER:O    | 2:B:190:LYS:HB2  | 2.21                     | 0.41              |
| 2:D:21:LYS:HE2   | 2:D:21:LYS:HB2   | 1.78                     | 0.41              |
| 1:E:22:GLN:NE2   | 1:E:51:ARG:HD3   | 2.35                     | 0.41              |
| 1:C:252:PHE:HD1  | 1:C:253:LEU:HD22 | 1.86                     | 0.41              |
| 1:E:92:ALA:O     | 1:E:213:PHE:HA   | 2.21                     | 0.41              |
| 1:G:127:GLU:O    | 1:G:144:ILE:HA   | 2.21                     | 0.41              |
| 2:H:95:LEU:HD13  | 2:H:124:VAL:CG2  | 2.49                     | 0.41              |
| 1:A:155:LYS:HD3  | 1:A:195:LEU:CD1  | 2.51                     | 0.41              |
| 1:C:117:PHE:HB2  | 1:C:150:SER:HB2  | 2.03                     | 0.41              |
| 2:D:67:VAL:HG11  | 2:D:240:PHE:O    | 2.21                     | 0.41              |
| 2:D:78:THR:OG1   | 2:D:230:PHE:HE1  | 2.04                     | 0.41              |
| 2:D:105:GLY:O    | 2:D:108:PHE:CD2  | 2.70                     | 0.41              |
| 1:G:8:THR:HG21   | 1:G:256:ASN:HA   | 2.02                     | 0.41              |
| 1:G:13:LYS:O     | 1:G:14:PRO:C     | 2.58                     | 0.41              |
| 1:G:184:LEU:O    | 1:G:192:SER:HA   | 2.21                     | 0.41              |
| 2:H:97:PRO:HG3   | 2:H:122:GLN:HB2  | 2.03                     | 0.41              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 1:A:194:ILE:HD13 | 2:B:192:SER:C    | 2.42                     | 0.41              |
| 1:C:168:LYS:HG2  | 13:C:270:HOH:O   | 2.21                     | 0.41              |
| 1:C:249:LEU:HD11 | 2:D:170:LEU:HD22 | 2.01                     | 0.41              |
| 1:E:48:SER:O     | 1:E:216:ALA:HA   | 2.21                     | 0.41              |
| 1:E:49:LEU:HD11  | 1:E:103:LYS:O    | 2.20                     | 0.41              |
| 1:E:79:ILE:HD13  | 1:E:225:GLU:CG   | 2.51                     | 0.41              |
| 2:H:213:PHE:CE2  | 2:H:232:TRP:CD2  | 3.09                     | 0.41              |
| 2:B:39:ASP:HB2   | 2:B:40:LYS:CE    | 2.48                     | 0.40              |
| 1:C:237:LYS:N    | 1:C:247:LEU:HD13 | 2.35                     | 0.40              |
| 1:E:121:TYR:O    | 1:E:122:GLN:C    | 2.59                     | 0.40              |
| 2:B:27:VAL:HA    | 2:B:32:THR:O     | 2.20                     | 0.40              |
| 2:D:104:ALA:O    | 2:D:108:PHE:HB2  | 2.20                     | 0.40              |
| 1:G:142:THR:CG2  | 13:G:259:HOH:O   | 2.67                     | 0.40              |
| 1:A:49:LEU:CD1   | 1:A:105:GLY:HA3  | 2.51                     | 0.40              |
| 1:C:252:PHE:CD1  | 1:C:253:LEU:N    | 2.89                     | 0.40              |
| 2:D:173:TYR:CE2  | 2:D:201:LEU:HD22 | 2.56                     | 0.40              |
| 1:E:91:LEU:HG    | 1:E:128:PHE:HB2  | 2.04                     | 0.40              |
| 2:H:40:LYS:H     | 2:H:40:LYS:CE    | 2.34                     | 0.40              |
| 2:H:88:ALA:HA    | 2:H:89:ASP:HA    | 1.90                     | 0.40              |
| 1:A:167:ALA:HB2  | 1:A:186:TYR:CE1  | 2.56                     | 0.40              |
| 2:D:79:ILE:HD12  | 2:D:226:THR:O    | 2.22                     | 0.40              |
| 2:F:96:ALA:HB2   | 2:F:123:THR:HB   | 2.03                     | 0.40              |
| 1:G:249:LEU:HD21 | 2:H:170:LEU:HD22 | 2.02                     | 0.40              |
| 1:A:70:SER:OG    | 1:A:175:SER:HB2  | 2.22                     | 0.40              |
| 2:B:201:LEU:HD12 | 2:B:201:LEU:HA   | 1.79                     | 0.40              |
| 1:E:179:LEU:HD12 | 1:E:197:ASP:O    | 2.21                     | 0.40              |
| 1:E:240:PHE:CZ   | 2:H:13:LYS:HE2   | 2.57                     | 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 X-ray entries followed by that with respect to entries of similar resolution.

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     | 246/256 (96%)   | 229 (93%)  | 12 (5%)  | 5 (2%)   | 7           | 5   |
| 1   | C     | 246/256 (96%)   | 230 (94%)  | 13 (5%)  | 3 (1%)   | 13          | 12  |
| 1   | E     | 246/256 (96%)   | 228 (93%)  | 15 (6%)  | 3 (1%)   | 13          | 12  |
| 1   | G     | 246/256 (96%)   | 231 (94%)  | 12 (5%)  | 3 (1%)   | 13          | 12  |
| 2   | B     | 240/242 (99%)   | 227 (95%)  | 11 (5%)  | 2 (1%)   | 19          | 22  |
| 2   | D     | 240/242 (99%)   | 224 (93%)  | 15 (6%)  | 1 (0%)   | 34          | 41  |
| 2   | F     | 240/242 (99%)   | 230 (96%)  | 9 (4%)   | 1 (0%)   | 34          | 41  |
| 2   | H     | 240/242 (99%)   | 226 (94%)  | 14 (6%)  | 0        | 100         | 100 |
| All | All   | 1944/1992 (98%) | 1825 (94%) | 101 (5%) | 18 (1%)  | 17          | 19  |

All (18) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 41  | ASN  |
| 1   | A     | 255 | ALA  |
| 2   | B     | 40  | LYS  |
| 1   | C     | 178 | LYS  |
| 1   | E     | 253 | LEU  |
| 1   | E     | 255 | ALA  |
| 2   | D     | 189 | SER  |
| 2   | F     | 15  | ASN  |
| 1   | G     | 104 | ALA  |
| 1   | G     | 248 | ASP  |
| 1   | C     | 16  | GLN  |
| 1   | G     | 250 | ALA  |
| 1   | A     | 49  | LEU  |
| 1   | A     | 254 | VAL  |
| 2   | B     | 15  | ASN  |
| 1   | A     | 16  | GLN  |
| 1   | C     | 201 | LEU  |
| 1   | E     | 254 | VAL  |

### 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 X-ray entries followed by that with respect to entries of similar resolution.

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     | 210/210 (100%)   | 175 (83%)  | 35 (17%)  | 2           | 1 |
| 1   | C     | 210/210 (100%)   | 190 (90%)  | 20 (10%)  | 8           | 9 |
| 1   | E     | 210/210 (100%)   | 173 (82%)  | 37 (18%)  | 2           | 1 |
| 1   | G     | 210/210 (100%)   | 179 (85%)  | 31 (15%)  | 3           | 2 |
| 2   | B     | 202/202 (100%)   | 177 (88%)  | 25 (12%)  | 4           | 4 |
| 2   | D     | 202/202 (100%)   | 181 (90%)  | 21 (10%)  | 7           | 7 |
| 2   | F     | 202/202 (100%)   | 178 (88%)  | 24 (12%)  | 5           | 4 |
| 2   | H     | 202/202 (100%)   | 182 (90%)  | 20 (10%)  | 8           | 7 |
| All | All   | 1648/1648 (100%) | 1435 (87%) | 213 (13%) | 4           | 3 |

All (213) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 2   | THR  |
| 1   | A     | 16  | GLN  |
| 1   | A     | 19  | LEU  |
| 1   | A     | 20  | LYS  |
| 1   | A     | 21  | LYS  |
| 1   | A     | 33  | LEU  |
| 1   | A     | 35  | LEU  |
| 1   | A     | 36  | THR  |
| 1   | A     | 37  | LYS  |
| 1   | A     | 47  | LYS  |
| 1   | A     | 49  | LEU  |
| 1   | A     | 53  | LEU  |
| 1   | A     | 79  | ILE  |
| 1   | A     | 83  | ASN  |
| 1   | A     | 100 | SER  |
| 1   | A     | 119 | SER  |
| 1   | A     | 124 | VAL  |
| 1   | A     | 126 | VAL  |
| 1   | A     | 130 | THR  |
| 1   | A     | 172 | THR  |
| 1   | A     | 175 | SER  |
| 1   | A     | 179 | LEU  |
| 1   | A     | 190 | LYS  |
| 1   | A     | 194 | ILE  |
| 1   | A     | 198 | VAL  |
| 1   | A     | 199 | VAL  |
| 1   | A     | 201 | LEU  |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 209        | VAL         |
| 1          | A            | 220        | SER         |
| 1          | A            | 221        | SER         |
| 1          | A            | 224        | ILE         |
| 1          | A            | 247        | LEU         |
| 1          | A            | 253        | LEU         |
| 1          | A            | 254        | VAL         |
| 1          | A            | 256        | ASN         |
| 2          | B            | 2          | THR         |
| 2          | B            | 20         | LYS         |
| 2          | B            | 21         | LYS         |
| 2          | B            | 40         | LYS         |
| 2          | B            | 45         | ASP         |
| 2          | B            | 49         | LEU         |
| 2          | B            | 51         | ARG         |
| 2          | B            | 53         | LEU         |
| 2          | B            | 56         | SER         |
| 2          | B            | 60         | ILE         |
| 2          | B            | 64         | LYS         |
| 2          | B            | 67         | VAL         |
| 2          | B            | 74         | SER         |
| 2          | B            | 79         | ILE         |
| 2          | B            | 84         | ILE         |
| 2          | B            | 86         | THR         |
| 2          | B            | 89         | ASP         |
| 2          | B            | 152        | LYS         |
| 2          | B            | 168        | LYS         |
| 2          | B            | 172        | THR         |
| 2          | B            | 180        | LEU         |
| 2          | B            | 190        | LYS         |
| 2          | B            | 192        | SER         |
| 2          | B            | 201        | LEU         |
| 2          | B            | 221        | SER         |
| 1          | C            | 1          | THR         |
| 1          | C            | 6          | SER         |
| 1          | C            | 21         | LYS         |
| 1          | C            | 40         | LYS         |
| 1          | C            | 49         | LEU         |
| 1          | C            | 53         | LEU         |
| 1          | C            | 59         | ASN         |
| 1          | C            | 60         | ILE         |
| 1          | C            | 64         | LYS         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | C            | 95         | LEU         |
| 1          | C            | 98         | VAL         |
| 1          | C            | 99         | SER         |
| 1          | C            | 111        | LEU         |
| 1          | C            | 137        | LEU         |
| 1          | C            | 172        | THR         |
| 1          | C            | 199        | VAL         |
| 1          | C            | 202        | LYS         |
| 1          | C            | 238        | LEU         |
| 1          | C            | 249        | LEU         |
| 1          | C            | 256        | ASN         |
| 2          | D            | 2          | THR         |
| 2          | D            | 26         | THR         |
| 2          | D            | 27         | VAL         |
| 2          | D            | 36         | THR         |
| 2          | D            | 45         | ASP         |
| 2          | D            | 47         | LYS         |
| 2          | D            | 53         | LEU         |
| 2          | D            | 56         | SER         |
| 2          | D            | 64         | LYS         |
| 2          | D            | 74         | SER         |
| 2          | D            | 76         | ARG         |
| 2          | D            | 89         | ASP         |
| 2          | D            | 134        | THR         |
| 2          | D            | 172        | THR         |
| 2          | D            | 189        | SER         |
| 2          | D            | 190        | LYS         |
| 2          | D            | 192        | SER         |
| 2          | D            | 201        | LEU         |
| 2          | D            | 205        | LEU         |
| 2          | D            | 221        | SER         |
| 2          | D            | 238        | LEU         |
| 1          | E            | 1          | THR         |
| 1          | E            | 6          | SER         |
| 1          | E            | 10         | SER         |
| 1          | E            | 18         | ASN         |
| 1          | E            | 20         | LYS         |
| 1          | E            | 21         | LYS         |
| 1          | E            | 22         | GLN         |
| 1          | E            | 27         | VAL         |
| 1          | E            | 29         | SER         |
| 1          | E            | 47         | LYS         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | E            | 49         | LEU         |
| 1          | E            | 53         | LEU         |
| 1          | E            | 56         | SER         |
| 1          | E            | 64         | LYS         |
| 1          | E            | 79         | ILE         |
| 1          | E            | 89         | ASP         |
| 1          | E            | 91         | LEU         |
| 1          | E            | 116        | VAL         |
| 1          | E            | 117        | PHE         |
| 1          | E            | 119        | SER         |
| 1          | E            | 137        | LEU         |
| 1          | E            | 141        | ASP         |
| 1          | E            | 152        | LYS         |
| 1          | E            | 157        | VAL         |
| 1          | E            | 190        | LYS         |
| 1          | E            | 201        | LEU         |
| 1          | E            | 211        | ILE         |
| 1          | E            | 220        | SER         |
| 1          | E            | 221        | SER         |
| 1          | E            | 224        | ILE         |
| 1          | E            | 226        | THR         |
| 1          | E            | 233        | SER         |
| 1          | E            | 237        | LYS         |
| 1          | E            | 247        | LEU         |
| 1          | E            | 248        | ASP         |
| 1          | E            | 254        | VAL         |
| 1          | E            | 256        | ASN         |
| 2          | F            | 2          | THR         |
| 2          | F            | 19         | LEU         |
| 2          | F            | 21         | LYS         |
| 2          | F            | 30         | SER         |
| 2          | F            | 35         | LEU         |
| 2          | F            | 40         | LYS         |
| 2          | F            | 41         | ASN         |
| 2          | F            | 43         | VAL         |
| 2          | F            | 47         | LYS         |
| 2          | F            | 49         | LEU         |
| 2          | F            | 51         | ARG         |
| 2          | F            | 68         | VAL         |
| 2          | F            | 89         | ASP         |
| 2          | F            | 91         | LEU         |
| 2          | F            | 98         | VAL         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 2          | F            | 99         | SER         |
| 2          | F            | 103        | LYS         |
| 2          | F            | 123        | THR         |
| 2          | F            | 137        | LEU         |
| 2          | F            | 168        | LYS         |
| 2          | F            | 201        | LEU         |
| 2          | F            | 211        | ILE         |
| 2          | F            | 221        | SER         |
| 2          | F            | 237        | LYS         |
| 1          | G            | 2          | THR         |
| 1          | G            | 4          | THR         |
| 1          | G            | 6          | SER         |
| 1          | G            | 8          | THR         |
| 1          | G            | 11         | LYS         |
| 1          | G            | 21         | LYS         |
| 1          | G            | 26         | THR         |
| 1          | G            | 30         | SER         |
| 1          | G            | 33         | LEU         |
| 1          | G            | 35         | LEU         |
| 1          | G            | 36         | THR         |
| 1          | G            | 47         | LYS         |
| 1          | G            | 49         | LEU         |
| 1          | G            | 64         | LYS         |
| 1          | G            | 68         | VAL         |
| 1          | G            | 79         | ILE         |
| 1          | G            | 89         | ASP         |
| 1          | G            | 98         | VAL         |
| 1          | G            | 99         | SER         |
| 1          | G            | 108        | PHE         |
| 1          | G            | 111        | LEU         |
| 1          | G            | 141        | ASP         |
| 1          | G            | 148        | VAL         |
| 1          | G            | 165        | GLU         |
| 1          | G            | 176        | SER         |
| 1          | G            | 190        | LYS         |
| 1          | G            | 201        | LEU         |
| 1          | G            | 202        | LYS         |
| 1          | G            | 205        | LEU         |
| 1          | G            | 251        | SER         |
| 1          | G            | 252        | PHE         |
| 2          | H            | 6          | SER         |
| 2          | H            | 21         | LYS         |

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| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 2          | H            | 26         | THR         |
| 2          | H            | 37         | LYS         |
| 2          | H            | 40         | LYS         |
| 2          | H            | 43         | VAL         |
| 2          | H            | 49         | LEU         |
| 2          | H            | 64         | LYS         |
| 2          | H            | 79         | ILE         |
| 2          | H            | 84         | ILE         |
| 2          | H            | 103        | LYS         |
| 2          | H            | 111        | LEU         |
| 2          | H            | 124        | VAL         |
| 2          | H            | 132        | GLU         |
| 2          | H            | 191        | THR         |
| 2          | H            | 205        | LEU         |
| 2          | H            | 207        | GLU         |
| 2          | H            | 221        | SER         |
| 2          | H            | 237        | LYS         |
| 2          | H            | 238        | LEU         |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (33) such sidechains are listed below:

| <b>Mol</b> | <b>Chain</b> | <b>Res</b> | <b>Type</b> |
|------------|--------------|------------|-------------|
| 1          | A            | 3          | ASN         |
| 1          | A            | 15         | ASN         |
| 1          | A            | 59         | ASN         |
| 1          | A            | 83         | ASN         |
| 1          | A            | 149        | ASN         |
| 1          | A            | 227        | HIS         |
| 2          | B            | 3          | ASN         |
| 2          | B            | 59         | ASN         |
| 2          | B            | 149        | ASN         |
| 2          | B            | 227        | HIS         |
| 1          | C            | 16         | GLN         |
| 1          | C            | 149        | ASN         |
| 1          | C            | 227        | HIS         |
| 2          | D            | 59         | ASN         |
| 2          | D            | 227        | HIS         |
| 1          | E            | 18         | ASN         |
| 1          | E            | 22         | GLN         |
| 1          | E            | 59         | ASN         |
| 1          | E            | 227        | HIS         |
| 1          | E            | 256        | ASN         |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2   | F     | 18  | ASN  |
| 2   | F     | 22  | GLN  |
| 2   | F     | 41  | ASN  |
| 2   | F     | 59  | ASN  |
| 2   | F     | 149 | ASN  |
| 2   | F     | 227 | HIS  |
| 1   | G     | 3   | ASN  |
| 1   | G     | 59  | ASN  |
| 1   | G     | 149 | ASN  |
| 2   | H     | 16  | GLN  |
| 2   | H     | 59  | ASN  |
| 2   | H     | 149 | ASN  |
| 2   | H     | 227 | HIS  |

### 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](#)

21 monosaccharides are modelled in this entry.

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

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 3   | NAG  | I     | 1   | 3,1  | 14,14,15     | 0.71 | 1 (7%)   | 17,19,21    | 1.51 | 3 (17%)  |
| 3   | NAG  | I     | 2   | 3    | 14,14,15     | 0.59 | 0        | 17,19,21    | 2.18 | 4 (23%)  |
| 3   | BMA  | I     | 3   | 3    | 11,11,12     | 1.30 | 3 (27%)  | 15,15,17    | 2.36 | 5 (33%)  |
| 3   | FUC  | I     | 4   | 3    | 10,10,11     | 0.73 | 0        | 14,14,16    | 1.52 | 3 (21%)  |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 4   | NAG  | J     | 1   | 4,2  | 14,14,15     | 0.89 | 1 (7%)   | 17,19,21    | 2.35 | 3 (17%)  |
| 4   | NAG  | J     | 2   | 4    | 14,14,15     | 1.05 | 1 (7%)   | 17,19,21    | 1.98 | 4 (23%)  |
| 4   | BMA  | J     | 3   | 4    | 11,11,12     | 2.32 | 3 (27%)  | 15,15,17    | 4.21 | 6 (40%)  |
| 4   | MAN  | J     | 4   | 4    | 11,11,12     | 6.34 | 8 (72%)  | 15,15,17    | 3.98 | 8 (53%)  |
| 4   | FUC  | J     | 5   | 4    | 10,10,11     | 0.75 | 0        | 14,14,16    | 1.27 | 3 (21%)  |
| 3   | NAG  | K     | 1   | 3,1  | 14,14,15     | 0.58 | 0        | 17,19,21    | 1.35 | 2 (11%)  |
| 3   | NAG  | K     | 2   | 3    | 14,14,15     | 0.59 | 0        | 17,19,21    | 1.60 | 5 (29%)  |
| 3   | BMA  | K     | 3   | 3    | 11,11,12     | 0.81 | 0        | 15,15,17    | 1.14 | 1 (6%)   |
| 3   | FUC  | K     | 4   | 3    | 10,10,11     | 4.32 | 4 (40%)  | 14,14,16    | 4.37 | 5 (35%)  |
| 3   | NAG  | L     | 1   | 3,1  | 14,14,15     | 1.18 | 2 (14%)  | 17,19,21    | 1.62 | 4 (23%)  |
| 3   | NAG  | L     | 2   | 3    | 14,14,15     | 0.71 | 0        | 17,19,21    | 2.31 | 7 (41%)  |
| 3   | BMA  | L     | 3   | 3    | 11,11,12     | 0.81 | 0        | 15,15,17    | 1.45 | 3 (20%)  |
| 3   | FUC  | L     | 4   | 3    | 10,10,11     | 0.80 | 0        | 14,14,16    | 1.00 | 1 (7%)   |
| 5   | NAG  | M     | 1   | 1,5  | 14,14,15     | 0.71 | 0        | 17,19,21    | 1.49 | 3 (17%)  |
| 5   | NAG  | M     | 2   | 5    | 14,14,15     | 0.87 | 1 (7%)   | 17,19,21    | 1.93 | 4 (23%)  |
| 6   | NAG  | N     | 1   | 2,6  | 14,14,15     | 1.41 | 3 (21%)  | 17,19,21    | 2.69 | 6 (35%)  |
| 6   | FUC  | N     | 2   | 6    | 10,10,11     | 3.78 | 4 (40%)  | 14,14,16    | 4.08 | 8 (57%)  |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 3   | NAG  | I     | 1   | 3,1  | -       | 0/6/23/26 | 0/1/1/1 |
| 3   | NAG  | I     | 2   | 3    | -       | 2/6/23/26 | 0/1/1/1 |
| 3   | BMA  | I     | 3   | 3    | -       | 0/2/19/22 | 0/1/1/1 |
| 3   | FUC  | I     | 4   | 3    | -       | -         | 0/1/1/1 |
| 4   | NAG  | J     | 1   | 4,2  | -       | 2/6/23/26 | 0/1/1/1 |
| 4   | NAG  | J     | 2   | 4    | -       | 0/6/23/26 | 0/1/1/1 |
| 4   | BMA  | J     | 3   | 4    | -       | 1/2/19/22 | 0/1/1/1 |
| 4   | MAN  | J     | 4   | 4    | -       | 2/2/19/22 | 0/1/1/1 |
| 4   | FUC  | J     | 5   | 4    | -       | -         | 0/1/1/1 |
| 3   | NAG  | K     | 1   | 3,1  | -       | 0/6/23/26 | 0/1/1/1 |
| 3   | NAG  | K     | 2   | 3    | -       | 0/6/23/26 | 0/1/1/1 |
| 3   | BMA  | K     | 3   | 3    | -       | 1/2/19/22 | 0/1/1/1 |
| 3   | FUC  | K     | 4   | 3    | -       | -         | 0/1/1/1 |
| 3   | NAG  | L     | 1   | 3,1  | -       | 1/6/23/26 | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 3   | NAG  | L     | 2   | 3    | -       | 2/6/23/26 | 0/1/1/1 |
| 3   | BMA  | L     | 3   | 3    | -       | 2/2/19/22 | 0/1/1/1 |
| 3   | FUC  | L     | 4   | 3    | -       | -         | 0/1/1/1 |
| 5   | NAG  | M     | 1   | 1,5  | -       | 0/6/23/26 | 0/1/1/1 |
| 5   | NAG  | M     | 2   | 5    | -       | 0/6/23/26 | 0/1/1/1 |
| 6   | NAG  | N     | 1   | 2,6  | -       | 1/6/23/26 | 0/1/1/1 |
| 6   | FUC  | N     | 2   | 6    | -       | -         | 0/1/1/1 |

All (31) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z      | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|--------|-------------|----------|
| 3   | K     | 4   | FUC  | C2-C3 | -12.58 | 1.34        | 1.52     |
| 4   | J     | 4   | MAN  | O5-C5 | -12.03 | 1.19        | 1.43     |
| 4   | J     | 4   | MAN  | C2-C3 | -9.27  | 1.38        | 1.52     |
| 4   | J     | 4   | MAN  | O2-C2 | 8.96   | 1.62        | 1.43     |
| 6   | N     | 2   | FUC  | C4-C5 | -7.19  | 1.36        | 1.52     |
| 4   | J     | 4   | MAN  | C1-C2 | -6.95  | 1.36        | 1.52     |
| 6   | N     | 2   | FUC  | C2-C3 | 6.67   | 1.62        | 1.52     |
| 4   | J     | 4   | MAN  | C4-C5 | -6.16  | 1.40        | 1.53     |
| 6   | N     | 2   | FUC  | O3-C3 | 5.66   | 1.56        | 1.43     |
| 4   | J     | 4   | MAN  | O3-C3 | -4.79  | 1.31        | 1.43     |
| 4   | J     | 3   | BMA  | O3-C3 | -4.70  | 1.31        | 1.43     |
| 4   | J     | 3   | BMA  | O4-C4 | -3.87  | 1.33        | 1.43     |
| 4   | J     | 3   | BMA  | C2-C3 | 3.58   | 1.57        | 1.52     |
| 4   | J     | 4   | MAN  | C4-C3 | 3.53   | 1.61        | 1.52     |
| 3   | K     | 4   | FUC  | C6-C5 | 3.32   | 1.59        | 1.51     |
| 4   | J     | 1   | NAG  | O5-C1 | -3.10  | 1.38        | 1.43     |
| 6   | N     | 1   | NAG  | C4-C3 | -3.05  | 1.44        | 1.52     |
| 6   | N     | 1   | NAG  | O5-C1 | 2.98   | 1.48        | 1.43     |
| 4   | J     | 4   | MAN  | O5-C1 | -2.81  | 1.39        | 1.43     |
| 3   | L     | 1   | NAG  | O5-C1 | -2.74  | 1.39        | 1.43     |
| 6   | N     | 2   | FUC  | O5-C5 | 2.70   | 1.49        | 1.43     |
| 3   | L     | 1   | NAG  | C4-C5 | 2.60   | 1.58        | 1.53     |
| 3   | I     | 3   | BMA  | O5-C1 | 2.26   | 1.47        | 1.43     |
| 6   | N     | 1   | NAG  | C3-C2 | -2.26  | 1.47        | 1.52     |
| 4   | J     | 2   | NAG  | C2-N2 | -2.20  | 1.42        | 1.46     |
| 3   | K     | 4   | FUC  | O3-C3 | -2.16  | 1.37        | 1.43     |
| 3   | K     | 4   | FUC  | O4-C4 | 2.15   | 1.48        | 1.43     |
| 3   | I     | 3   | BMA  | C2-C3 | 2.13   | 1.55        | 1.52     |
| 5   | M     | 2   | NAG  | C4-C5 | -2.09  | 1.48        | 1.53     |
| 3   | I     | 3   | BMA  | O5-C5 | 2.04   | 1.47        | 1.43     |
| 3   | I     | 1   | NAG  | O5-C1 | -2.03  | 1.40        | 1.43     |



All (88) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 3   | K     | 4   | FUC  | C1-C2-C3 | 12.71 | 125.29      | 109.67   |
| 4   | J     | 3   | BMA  | O4-C4-C5 | 11.56 | 138.01      | 109.30   |
| 6   | N     | 2   | FUC  | C6-C5-C4 | 10.45 | 132.39      | 113.07   |
| 4   | J     | 3   | BMA  | O3-C3-C2 | 9.83  | 128.82      | 109.99   |
| 4   | J     | 4   | MAN  | C1-C2-C3 | 8.28  | 119.84      | 109.67   |
| 4   | J     | 1   | NAG  | C1-O5-C5 | 7.57  | 122.45      | 112.19   |
| 6   | N     | 1   | NAG  | C1-O5-C5 | 7.04  | 121.73      | 112.19   |
| 3   | K     | 4   | FUC  | O5-C5-C4 | 6.83  | 121.78      | 109.52   |
| 3   | I     | 3   | BMA  | O5-C5-C6 | 6.60  | 117.56      | 107.20   |
| 4   | J     | 4   | MAN  | O5-C5-C4 | 6.23  | 125.99      | 110.83   |
| 4   | J     | 4   | MAN  | O3-C3-C4 | -6.22 | 95.97       | 110.35   |
| 3   | I     | 2   | NAG  | C1-O5-C5 | 6.14  | 120.51      | 112.19   |
| 3   | L     | 2   | NAG  | C1-C2-N2 | -6.10 | 100.07      | 110.49   |
| 6   | N     | 2   | FUC  | O3-C3-C2 | -5.97 | 98.57       | 109.99   |
| 6   | N     | 2   | FUC  | O4-C4-C5 | -5.08 | 98.41       | 109.67   |
| 6   | N     | 2   | FUC  | C3-C4-C5 | 4.92  | 117.43      | 109.77   |
| 4   | J     | 2   | NAG  | O4-C4-C3 | -4.87 | 99.08       | 110.35   |
| 4   | J     | 4   | MAN  | O4-C4-C5 | 4.85  | 121.34      | 109.30   |
| 4   | J     | 4   | MAN  | C3-C4-C5 | -4.80 | 101.67      | 110.24   |
| 3   | K     | 4   | FUC  | O2-C2-C3 | 4.58  | 119.31      | 110.14   |
| 5   | M     | 2   | NAG  | C1-O5-C5 | 4.50  | 118.29      | 112.19   |
| 3   | L     | 1   | NAG  | O5-C5-C6 | -4.20 | 100.62      | 107.20   |
| 6   | N     | 1   | NAG  | O5-C5-C6 | -3.97 | 100.98      | 107.20   |
| 5   | M     | 2   | NAG  | O4-C4-C5 | 3.97  | 119.15      | 109.30   |
| 3   | K     | 4   | FUC  | C6-C5-C4 | -3.90 | 105.87      | 113.07   |
| 5   | M     | 1   | NAG  | C2-N2-C7 | 3.73  | 128.22      | 122.90   |
| 6   | N     | 1   | NAG  | C2-N2-C7 | 3.72  | 128.20      | 122.90   |
| 4   | J     | 4   | MAN  | O2-C2-C3 | -3.62 | 102.89      | 110.14   |
| 6   | N     | 1   | NAG  | C4-C3-C2 | 3.60  | 116.29      | 111.02   |
| 3   | L     | 2   | NAG  | C1-O5-C5 | -3.53 | 107.41      | 112.19   |
| 4   | J     | 2   | NAG  | C1-C2-N2 | -3.48 | 104.55      | 110.49   |
| 3   | I     | 1   | NAG  | C3-C4-C5 | -3.45 | 104.08      | 110.24   |
| 3   | I     | 2   | NAG  | O5-C5-C6 | -3.41 | 101.86      | 107.20   |
| 3   | L     | 2   | NAG  | C2-N2-C7 | 3.30  | 127.60      | 122.90   |
| 4   | J     | 4   | MAN  | C1-O5-C5 | 3.29  | 116.64      | 112.19   |
| 3   | K     | 2   | NAG  | O4-C4-C3 | -3.18 | 102.99      | 110.35   |
| 4   | J     | 3   | BMA  | O3-C3-C4 | -3.08 | 103.24      | 110.35   |
| 3   | L     | 3   | BMA  | C1-O5-C5 | 3.07  | 116.35      | 112.19   |
| 3   | I     | 2   | NAG  | C6-C5-C4 | -3.06 | 105.84      | 113.00   |
| 4   | J     | 3   | BMA  | C3-C4-C5 | -3.00 | 104.88      | 110.24   |
| 3   | I     | 4   | FUC  | O5-C5-C6 | 2.98  | 113.74      | 107.33   |
| 4   | J     | 2   | NAG  | C8-C7-N2 | -2.86 | 111.25      | 116.10   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 3   | L     | 1   | NAG  | C1-O5-C5 | 2.83  | 116.03      | 112.19   |
| 3   | I     | 3   | BMA  | C6-C5-C4 | -2.81 | 106.41      | 113.00   |
| 3   | I     | 4   | FUC  | O5-C1-C2 | -2.81 | 106.43      | 110.77   |
| 4   | J     | 4   | MAN  | O6-C6-C5 | -2.79 | 101.71      | 111.29   |
| 3   | K     | 1   | NAG  | O5-C1-C2 | 2.79  | 115.69      | 111.29   |
| 5   | M     | 1   | NAG  | C1-C2-N2 | -2.79 | 105.73      | 110.49   |
| 3   | K     | 4   | FUC  | O4-C4-C3 | -2.76 | 103.96      | 110.35   |
| 6   | N     | 2   | FUC  | O4-C4-C3 | 2.73  | 116.65      | 110.35   |
| 5   | M     | 2   | NAG  | C3-C4-C5 | 2.71  | 115.08      | 110.24   |
| 6   | N     | 2   | FUC  | C1-C2-C3 | -2.69 | 106.36      | 109.67   |
| 6   | N     | 1   | NAG  | O3-C3-C4 | 2.68  | 116.55      | 110.35   |
| 3   | I     | 3   | BMA  | C2-C3-C4 | 2.67  | 115.52      | 110.89   |
| 3   | I     | 1   | NAG  | O6-C6-C5 | -2.61 | 102.33      | 111.29   |
| 6   | N     | 2   | FUC  | C1-O5-C5 | 2.58  | 118.62      | 112.78   |
| 3   | K     | 2   | NAG  | C2-N2-C7 | 2.51  | 126.47      | 122.90   |
| 3   | K     | 1   | NAG  | C2-N2-C7 | 2.44  | 126.38      | 122.90   |
| 3   | L     | 2   | NAG  | O5-C1-C2 | -2.44 | 107.44      | 111.29   |
| 3   | L     | 3   | BMA  | O5-C5-C6 | 2.41  | 110.98      | 107.20   |
| 5   | M     | 1   | NAG  | O3-C3-C2 | 2.38  | 114.39      | 109.47   |
| 3   | I     | 1   | NAG  | C1-C2-N2 | 2.38  | 114.55      | 110.49   |
| 4   | J     | 1   | NAG  | O5-C1-C2 | 2.37  | 115.03      | 111.29   |
| 6   | N     | 1   | NAG  | O7-C7-N2 | 2.36  | 126.28      | 121.95   |
| 4   | J     | 2   | NAG  | C4-C3-C2 | -2.35 | 107.57      | 111.02   |
| 3   | I     | 4   | FUC  | O2-C2-C1 | 2.33  | 113.92      | 109.15   |
| 3   | I     | 3   | BMA  | O5-C1-C2 | 2.32  | 114.35      | 110.77   |
| 3   | I     | 2   | NAG  | C3-C4-C5 | 2.31  | 114.36      | 110.24   |
| 3   | L     | 2   | NAG  | C4-C3-C2 | -2.25 | 107.71      | 111.02   |
| 3   | L     | 4   | FUC  | C1-O5-C5 | 2.22  | 117.80      | 112.78   |
| 4   | J     | 5   | FUC  | C2-C3-C4 | 2.21  | 114.71      | 110.89   |
| 3   | K     | 2   | NAG  | O5-C1-C2 | 2.17  | 114.72      | 111.29   |
| 4   | J     | 3   | BMA  | O4-C4-C3 | -2.16 | 105.36      | 110.35   |
| 4   | J     | 3   | BMA  | C1-O5-C5 | 2.14  | 115.09      | 112.19   |
| 4   | J     | 5   | FUC  | C1-O5-C5 | 2.13  | 117.61      | 112.78   |
| 3   | I     | 3   | BMA  | C3-C4-C5 | 2.13  | 114.04      | 110.24   |
| 3   | L     | 1   | NAG  | O4-C4-C3 | -2.13 | 105.43      | 110.35   |
| 3   | L     | 2   | NAG  | C8-C7-N2 | 2.11  | 119.68      | 116.10   |
| 3   | L     | 1   | NAG  | O6-C6-C5 | -2.10 | 104.09      | 111.29   |
| 4   | J     | 5   | FUC  | C3-C4-C5 | 2.09  | 113.03      | 109.77   |
| 3   | L     | 3   | BMA  | C1-C2-C3 | -2.09 | 107.10      | 109.67   |
| 4   | J     | 1   | NAG  | C6-C5-C4 | -2.09 | 108.12      | 113.00   |
| 3   | L     | 2   | NAG  | O3-C3-C4 | -2.05 | 105.62      | 110.35   |
| 3   | K     | 3   | BMA  | O5-C5-C6 | 2.04  | 110.41      | 107.20   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 6   | N     | 2   | FUC  | C2-C3-C4 | 2.04  | 114.42      | 110.89   |
| 3   | K     | 2   | NAG  | C1-C2-N2 | -2.02 | 107.03      | 110.49   |
| 3   | K     | 2   | NAG  | C1-O5-C5 | 2.00  | 114.90      | 112.19   |
| 5   | M     | 2   | NAG  | C2-N2-C7 | 2.00  | 125.75      | 122.90   |

There are no chirality outliers.

All (14) torsion outliers are listed below:

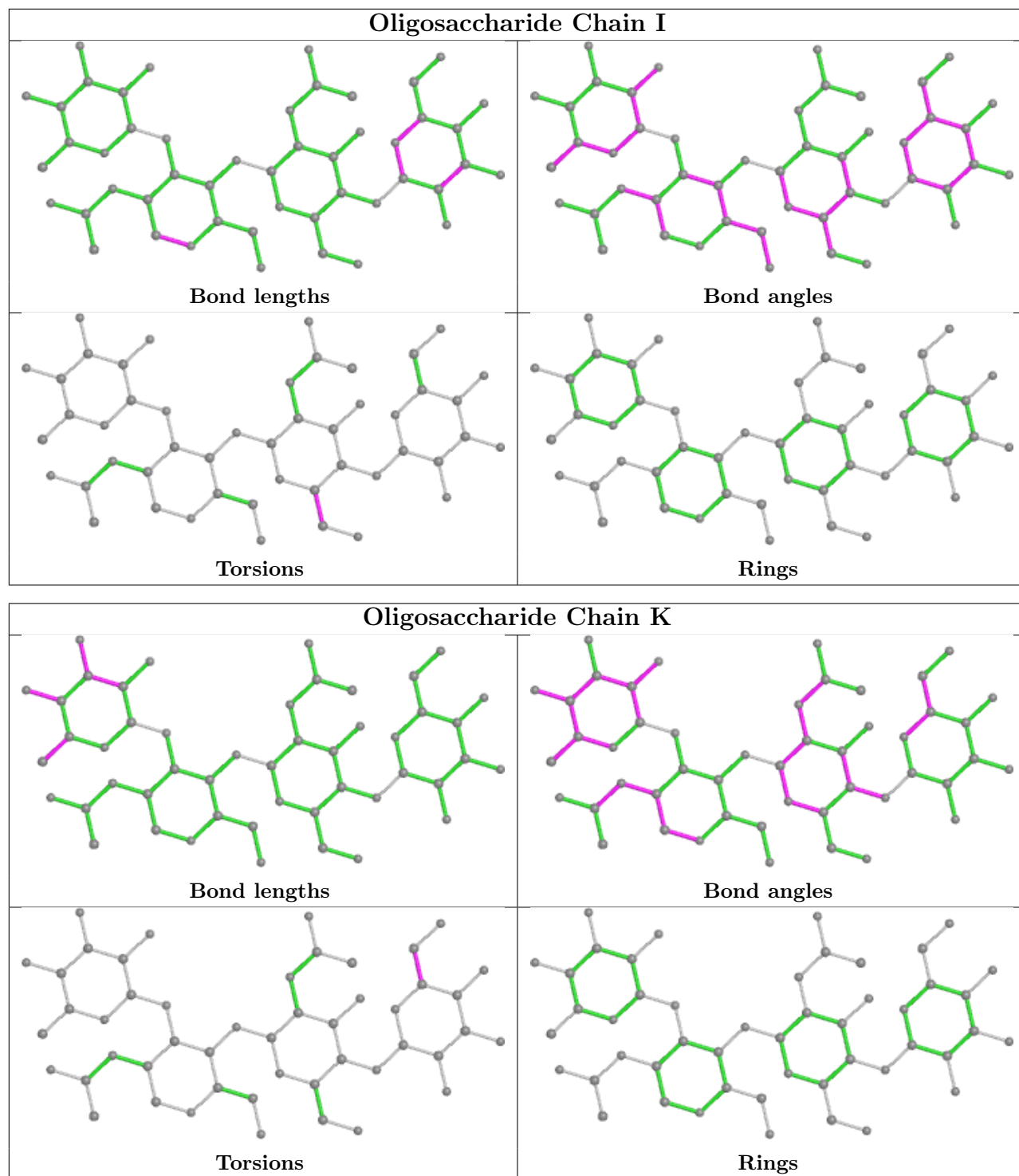
| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 3   | I     | 2   | NAG  | O5-C5-C6-O6 |
| 3   | I     | 2   | NAG  | C4-C5-C6-O6 |
| 3   | L     | 3   | BMA  | C4-C5-C6-O6 |
| 4   | J     | 1   | NAG  | C4-C5-C6-O6 |
| 4   | J     | 4   | MAN  | C4-C5-C6-O6 |
| 3   | L     | 2   | NAG  | C8-C7-N2-C2 |
| 3   | L     | 2   | NAG  | O7-C7-N2-C2 |
| 4   | J     | 1   | NAG  | O5-C5-C6-O6 |
| 4   | J     | 4   | MAN  | O5-C5-C6-O6 |
| 3   | L     | 3   | BMA  | O5-C5-C6-O6 |
| 3   | L     | 1   | NAG  | O5-C5-C6-O6 |
| 6   | N     | 1   | NAG  | O5-C5-C6-O6 |
| 4   | J     | 3   | BMA  | O5-C5-C6-O6 |
| 3   | K     | 3   | BMA  | O5-C5-C6-O6 |

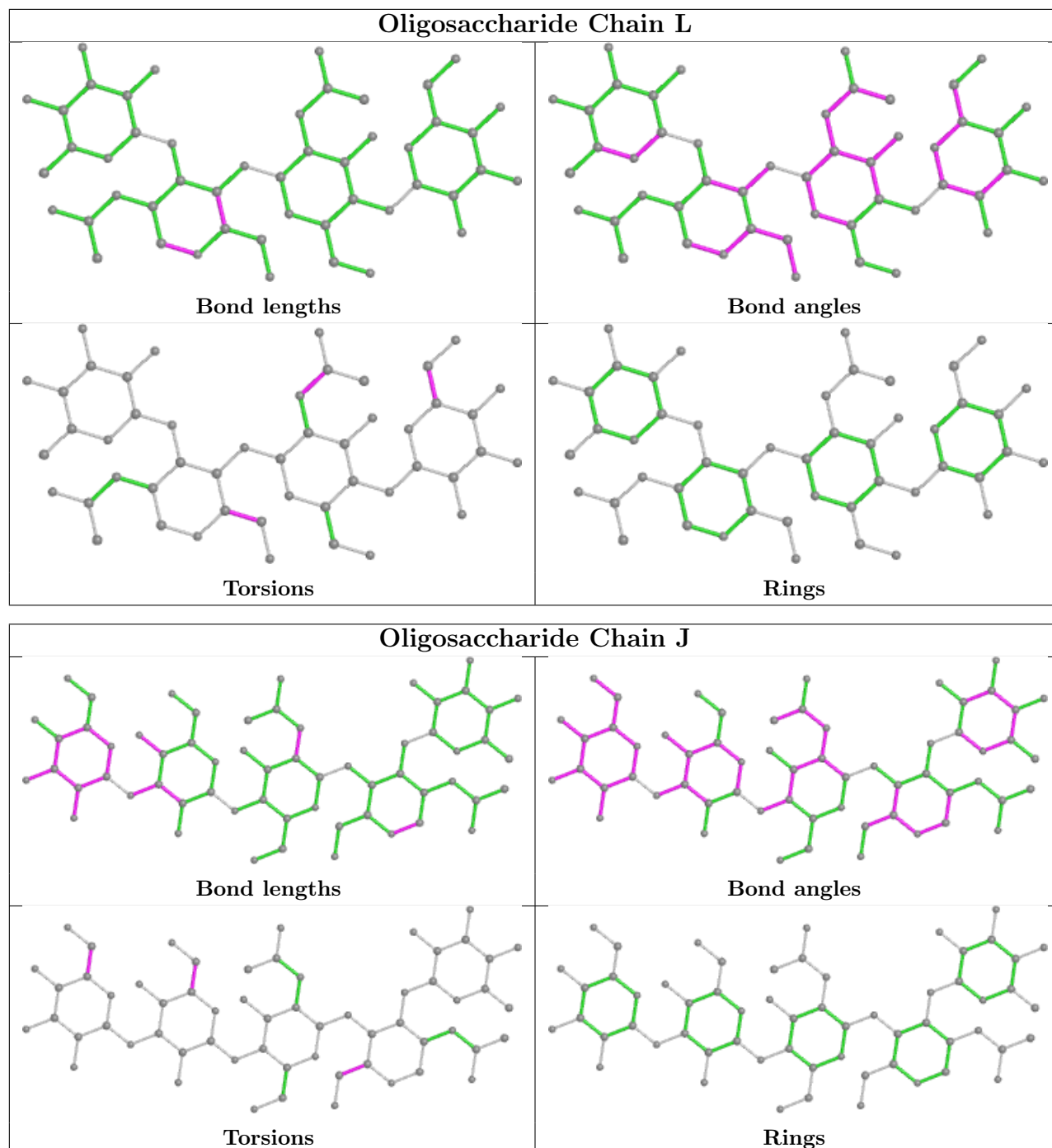
There are no ring outliers.

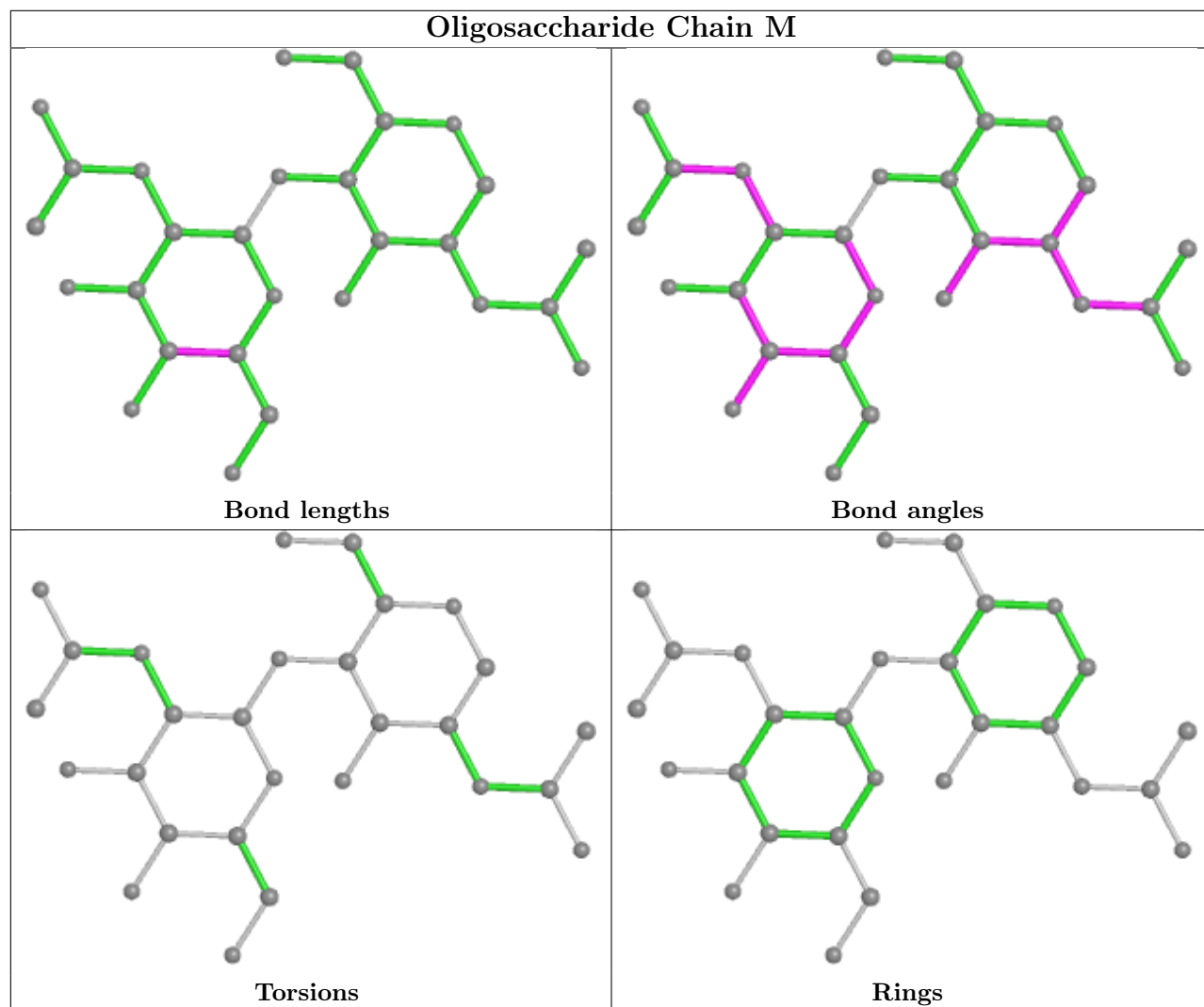
9 monomers are involved in 14 short contacts:

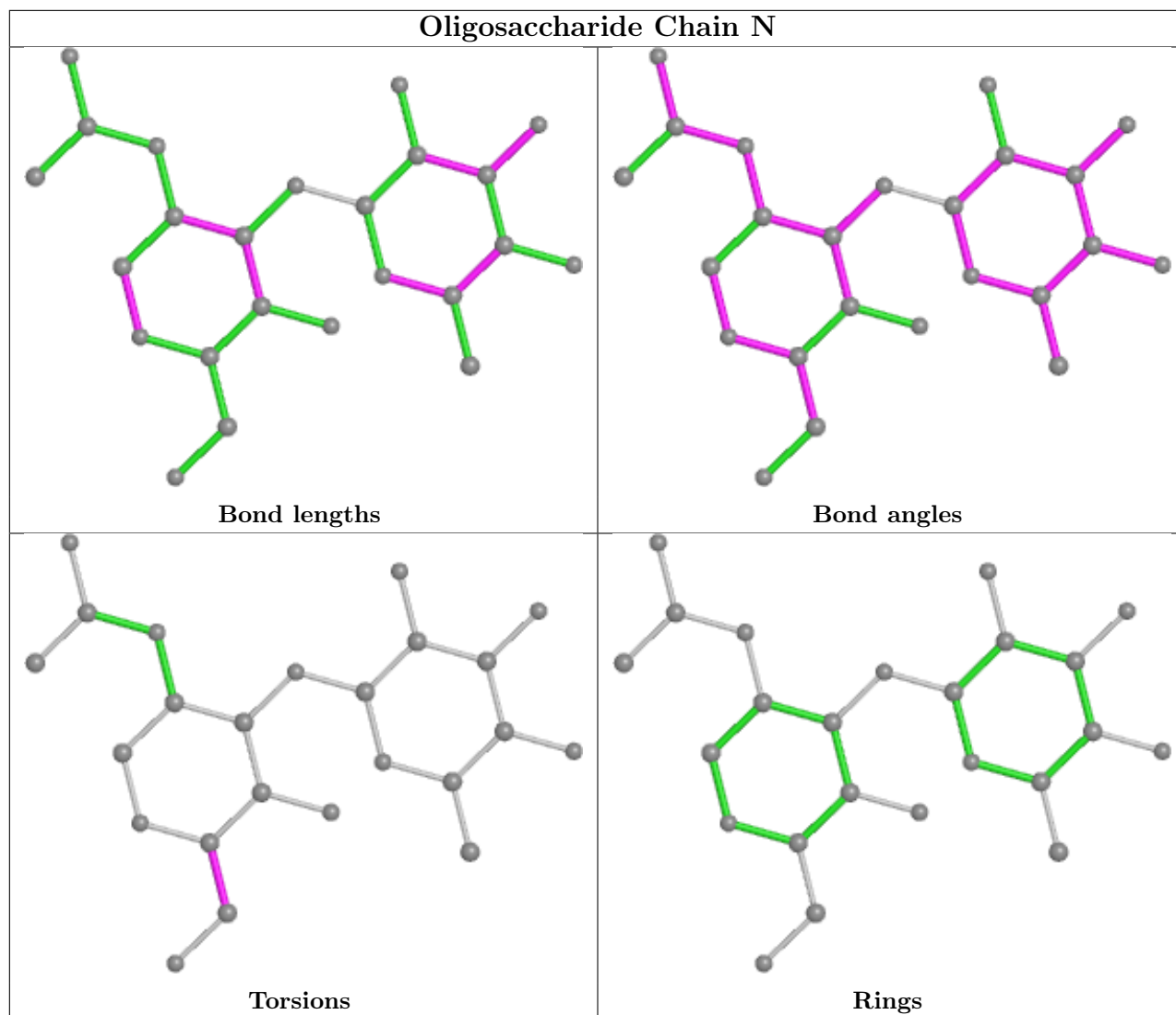
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 3   | I     | 4   | FUC  | 1       | 0            |
| 4   | J     | 3   | BMA  | 8       | 0            |
| 3   | I     | 3   | BMA  | 1       | 0            |
| 3   | I     | 1   | NAG  | 2       | 0            |
| 4   | J     | 4   | MAN  | 2       | 0            |
| 3   | L     | 2   | NAG  | 1       | 0            |
| 3   | I     | 2   | NAG  | 2       | 0            |
| 4   | J     | 1   | NAG  | 1       | 0            |
| 3   | L     | 4   | FUC  | 1       | 0            |

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.









## 5.6 Ligand geometry [i](#)

Of 34 ligands modelled in this entry, 16 are monoatomic - leaving 18 for Mogul analysis.

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

| Mol | Type | Chain | Res | Link | Bond lengths |      |             | Bond angles |      |             |
|-----|------|-------|-----|------|--------------|------|-------------|-------------|------|-------------|
|     |      |       |     |      | Counts       | RMSZ | $\# Z  > 2$ | Counts      | RMSZ | $\# Z  > 2$ |
| 9   | ABU  | E     | 284 | -    | 6,6,6        | 1.15 | 0           | 6,6,6       | 1.33 | 1 (16%)     |
| 10  | GOL  | C     | 283 | -    | 5,5,5        | 0.35 | 0           | 5,5,5       | 0.70 | 0           |
| 9   | ABU  | B     | 276 | -    | 6,6,6        | 1.00 | 0           | 6,6,6       | 0.89 | 0           |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 11  | XYP  | B     | 306 | -    | 9,9,10       | 2.45 | 3 (33%)  | 10,12,14    | 6.50 | 5 (50%)  |
| 9   | ABU  | G     | 286 | -    | 6,6,6        | 0.90 | 0        | 6,6,6       | 0.70 | 0        |
| 9   | ABU  | E     | 288 | -    | 6,6,6        | 0.87 | 0        | 6,6,6       | 0.99 | 0        |
| 10  | GOL  | D     | 285 | -    | 5,5,5        | 0.32 | 0        | 5,5,5       | 0.65 | 0        |
| 10  | GOL  | A     | 277 | -    | 5,5,5        | 0.28 | 0        | 5,5,5       | 0.60 | 0        |
| 12  | NAG  | D     | 301 | 2    | 14,14,15     | 1.81 | 3 (21%)  | 17,19,21    | 1.64 | 4 (23%)  |
| 9   | ABU  | D     | 278 | -    | 6,6,6        | 0.93 | 0        | 6,6,6       | 0.63 | 0        |
| 10  | GOL  | B     | 281 | -    | 5,5,5        | 0.29 | 0        | 5,5,5       | 0.92 | 0        |
| 10  | GOL  | H     | 289 | -    | 5,5,5        | 0.31 | 0        | 5,5,5       | 0.43 | 0        |
| 10  | GOL  | G     | 287 | -    | 5,5,5        | 0.31 | 0        | 5,5,5       | 0.32 | 0        |
| 10  | GOL  | E     | 279 | -    | 5,5,5        | 0.27 | 0        | 5,5,5       | 1.14 | 1 (20%)  |
| 9   | ABU  | A     | 280 | -    | 6,6,6        | 1.07 | 0        | 6,6,6       | 0.65 | 0        |
| 9   | ABU  | F     | 290 | -    | 6,6,6        | 0.84 | 0        | 6,6,6       | 1.20 | 1 (16%)  |
| 9   | ABU  | C     | 282 | -    | 6,6,6        | 0.77 | 0        | 6,6,6       | 1.16 | 0        |
| 10  | GOL  | E     | 291 | -    | 5,5,5        | 0.42 | 0        | 5,5,5       | 0.64 | 0        |

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

| Mol | Type | Chain | Res | Link | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 9   | ABU  | E     | 284 | -    | -       | 2/4/4/4   | -       |
| 10  | GOL  | C     | 283 | -    | -       | 0/4/4/4   | -       |
| 9   | ABU  | B     | 276 | -    | -       | 1/4/4/4   | -       |
| 11  | XYP  | B     | 306 | -    | -       | -         | 0/1/1/1 |
| 9   | ABU  | G     | 286 | -    | -       | 4/4/4/4   | -       |
| 9   | ABU  | E     | 288 | -    | -       | 1/4/4/4   | -       |
| 10  | GOL  | D     | 285 | -    | -       | 4/4/4/4   | -       |
| 10  | GOL  | A     | 277 | -    | -       | 2/4/4/4   | -       |
| 12  | NAG  | D     | 301 | 2    | -       | 2/6/23/26 | 0/1/1/1 |
| 9   | ABU  | D     | 278 | -    | -       | 2/4/4/4   | -       |
| 10  | GOL  | B     | 281 | -    | -       | 0/4/4/4   | -       |
| 10  | GOL  | H     | 289 | -    | -       | 2/4/4/4   | -       |
| 10  | GOL  | G     | 287 | -    | -       | 2/4/4/4   | -       |
| 10  | GOL  | E     | 279 | -    | -       | 2/4/4/4   | -       |
| 9   | ABU  | A     | 280 | -    | -       | 3/4/4/4   | -       |
| 9   | ABU  | F     | 290 | -    | -       | 3/4/4/4   | -       |
| 9   | ABU  | C     | 282 | -    | -       | 3/4/4/4   | -       |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|----------|-------|
| 10  | GOL  | E     | 291 | -    | -       | 4/4/4/4  | -     |

All (6) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 11  | B     | 306 | XYP  | O5-C1 | 5.75  | 1.54        | 1.42     |
| 12  | D     | 301 | NAG  | C1-C2 | -4.27 | 1.46        | 1.52     |
| 12  | D     | 301 | NAG  | C3-C2 | -4.03 | 1.43        | 1.52     |
| 11  | B     | 306 | XYP  | C5-C4 | 2.91  | 1.58        | 1.52     |
| 11  | B     | 306 | XYP  | C4-C3 | 2.80  | 1.56        | 1.52     |
| 12  | D     | 301 | NAG  | C2-N2 | 2.76  | 1.51        | 1.46     |

All (12) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 11  | B     | 306 | XYP  | C1-C2-C3 | 16.27 | 129.67      | 109.67   |
| 11  | B     | 306 | XYP  | C5-O5-C1 | 9.43  | 126.02      | 111.52   |
| 11  | B     | 306 | XYP  | O4-C4-C3 | -6.03 | 98.05       | 110.14   |
| 11  | B     | 306 | XYP  | O4-C4-C5 | -4.76 | 99.42       | 109.15   |
| 12  | D     | 301 | NAG  | C1-O5-C5 | 4.14  | 117.80      | 112.19   |
| 12  | D     | 301 | NAG  | O3-C3-C2 | 3.08  | 115.84      | 109.47   |
| 12  | D     | 301 | NAG  | C2-N2-C7 | -2.45 | 119.41      | 122.90   |
| 11  | B     | 306 | XYP  | O3-C3-C2 | -2.44 | 105.32      | 109.99   |
| 9   | E     | 284 | ABU  | OXT-C-CG | 2.34  | 121.55      | 114.03   |
| 9   | F     | 290 | ABU  | CD-CB-CG | -2.27 | 106.11      | 112.84   |
| 10  | E     | 279 | GOL  | O3-C3-C2 | -2.20 | 99.64       | 110.20   |
| 12  | D     | 301 | NAG  | C1-C2-N2 | 2.13  | 114.12      | 110.49   |

There are no chirality outliers.

All (37) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 10  | A     | 277 | GOL  | C1-C2-C3-O3 |
| 10  | D     | 285 | GOL  | O1-C1-C2-C3 |
| 10  | D     | 285 | GOL  | C1-C2-C3-O3 |
| 10  | E     | 279 | GOL  | O1-C1-C2-C3 |
| 10  | E     | 291 | GOL  | O1-C1-C2-C3 |
| 10  | G     | 287 | GOL  | O1-C1-C2-C3 |
| 10  | H     | 289 | GOL  | O1-C1-C2-C3 |
| 12  | D     | 301 | NAG  | O5-C5-C6-O6 |
| 12  | D     | 301 | NAG  | C4-C5-C6-O6 |

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| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 10  | E     | 279 | GOL  | O1-C1-C2-O2 |
| 9   | E     | 288 | ABU  | CD-CB-CG-C  |
| 9   | G     | 286 | ABU  | CD-CB-CG-C  |
| 10  | E     | 291 | GOL  | C1-C2-C3-O3 |
| 10  | D     | 285 | GOL  | O2-C2-C3-O3 |
| 10  | E     | 291 | GOL  | O1-C1-C2-O2 |
| 10  | H     | 289 | GOL  | O1-C1-C2-O2 |
| 9   | C     | 282 | ABU  | CD-CB-CG-C  |
| 10  | A     | 277 | GOL  | O2-C2-C3-O3 |
| 10  | G     | 287 | GOL  | O1-C1-C2-O2 |
| 9   | D     | 278 | ABU  | CG-CB-CD-N  |
| 10  | D     | 285 | GOL  | O1-C1-C2-O2 |
| 9   | G     | 286 | ABU  | CG-CB-CD-N  |
| 10  | E     | 291 | GOL  | O2-C2-C3-O3 |
| 9   | A     | 280 | ABU  | CG-CB-CD-N  |
| 9   | E     | 284 | ABU  | OXT-C-CG-CB |
| 9   | E     | 284 | ABU  | O-C-CG-CB   |
| 9   | G     | 286 | ABU  | OXT-C-CG-CB |
| 9   | A     | 280 | ABU  | O-C-CG-CB   |
| 9   | G     | 286 | ABU  | O-C-CG-CB   |
| 9   | C     | 282 | ABU  | OXT-C-CG-CB |
| 9   | F     | 290 | ABU  | CG-CB-CD-N  |
| 9   | A     | 280 | ABU  | OXT-C-CG-CB |
| 9   | C     | 282 | ABU  | O-C-CG-CB   |
| 9   | D     | 278 | ABU  | CD-CB-CG-C  |
| 9   | B     | 276 | ABU  | CG-CB-CD-N  |
| 9   | F     | 290 | ABU  | O-C-CG-CB   |
| 9   | F     | 290 | ABU  | OXT-C-CG-CB |

There are no ring outliers.

11 monomers are involved in 32 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 9   | E     | 284 | ABU  | 2       | 0            |
| 10  | C     | 283 | GOL  | 1       | 0            |
| 9   | B     | 276 | ABU  | 2       | 0            |
| 11  | B     | 306 | XYP  | 6       | 0            |
| 9   | E     | 288 | ABU  | 2       | 0            |
| 10  | A     | 277 | GOL  | 2       | 0            |
| 10  | H     | 289 | GOL  | 3       | 0            |
| 10  | E     | 279 | GOL  | 2       | 0            |
| 9   | A     | 280 | ABU  | 3       | 0            |

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| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 9   | F     | 290 | ABU  | 4       | 0            |
| 9   | C     | 282 | ABU  | 5       | 0            |

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

| Mol | Chain | Analysed        | <RSRZ> | #RSRZ>2       | OWAB(Å <sup>2</sup> ) | Q<0.9  |
|-----|-------|-----------------|--------|---------------|-----------------------|--------|
| 1   | A     | 250/256 (97%)   | -0.02  | 1 (0%) 92 93  | 12, 20, 30, 48        | 1 (0%) |
| 1   | C     | 250/256 (97%)   | -0.03  | 4 (1%) 72 69  | 12, 21, 39, 63        | 0      |
| 1   | E     | 250/256 (97%)   | 0.22   | 8 (3%) 47 44  | 14, 24, 40, 59        | 0      |
| 1   | G     | 250/256 (97%)   | -0.05  | 2 (0%) 86 86  | 14, 22, 35, 52        | 0      |
| 2   | B     | 242/242 (100%)  | -0.05  | 1 (0%) 92 93  | 11, 18, 26, 35        | 2 (0%) |
| 2   | D     | 242/242 (100%)  | 0.11   | 5 (2%) 63 60  | 15, 26, 41, 58        | 0      |
| 2   | F     | 242/242 (100%)  | -0.15  | 3 (1%) 79 77  | 14, 19, 28, 50        | 1 (0%) |
| 2   | H     | 242/242 (100%)  | 0.03   | 5 (2%) 63 60  | 17, 26, 39, 55        | 0      |
| All | All   | 1968/1992 (98%) | 0.01   | 29 (1%) 73 71 | 11, 22, 38, 63        | 4 (0%) |

All (29) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1   | G     | 255 | ALA  | 5.8  |
| 2   | H     | 241 | ALA  | 4.6  |
| 1   | E     | 247 | LEU  | 4.3  |
| 2   | F     | 241 | ALA  | 4.1  |
| 1   | E     | 255 | ALA  | 3.9  |
| 2   | F     | 242 | ALA  | 3.6  |
| 2   | D     | 242 | ALA  | 3.4  |
| 1   | E     | 43  | VAL  | 3.4  |
| 2   | D     | 101 | PRO  | 3.1  |
| 1   | E     | 40  | LYS  | 2.9  |
| 2   | D     | 241 | ALA  | 2.9  |
| 1   | C     | 251 | SER  | 2.8  |
| 2   | D     | 100 | SER  | 2.8  |
| 2   | H     | 101 | PRO  | 2.7  |
| 2   | D     | 116 | VAL  | 2.7  |
| 1   | E     | 38  | VAL  | 2.6  |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 1   | E     | 80  | TYR  | 2.5  |
| 2   | H     | 242 | ALA  | 2.4  |
| 1   | C     | 176 | SER  | 2.3  |
| 1   | C     | 100 | SER  | 2.2  |
| 1   | E     | 15  | ASN  | 2.2  |
| 1   | E     | 41  | ASN  | 2.2  |
| 2   | H     | 40  | LYS  | 2.1  |
| 1   | C     | 15  | ASN  | 2.1  |
| 1   | G     | 247 | LEU  | 2.1  |
| 1   | A     | 100 | SER  | 2.1  |
| 2   | F     | 15  | ASN  | 2.0  |
| 2   | B     | 1   | THR  | 2.0  |
| 2   | H     | 67  | VAL  | 2.0  |

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

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

## 6.3 Carbohydrates [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists the number of atoms with occupancy less than 0.9.

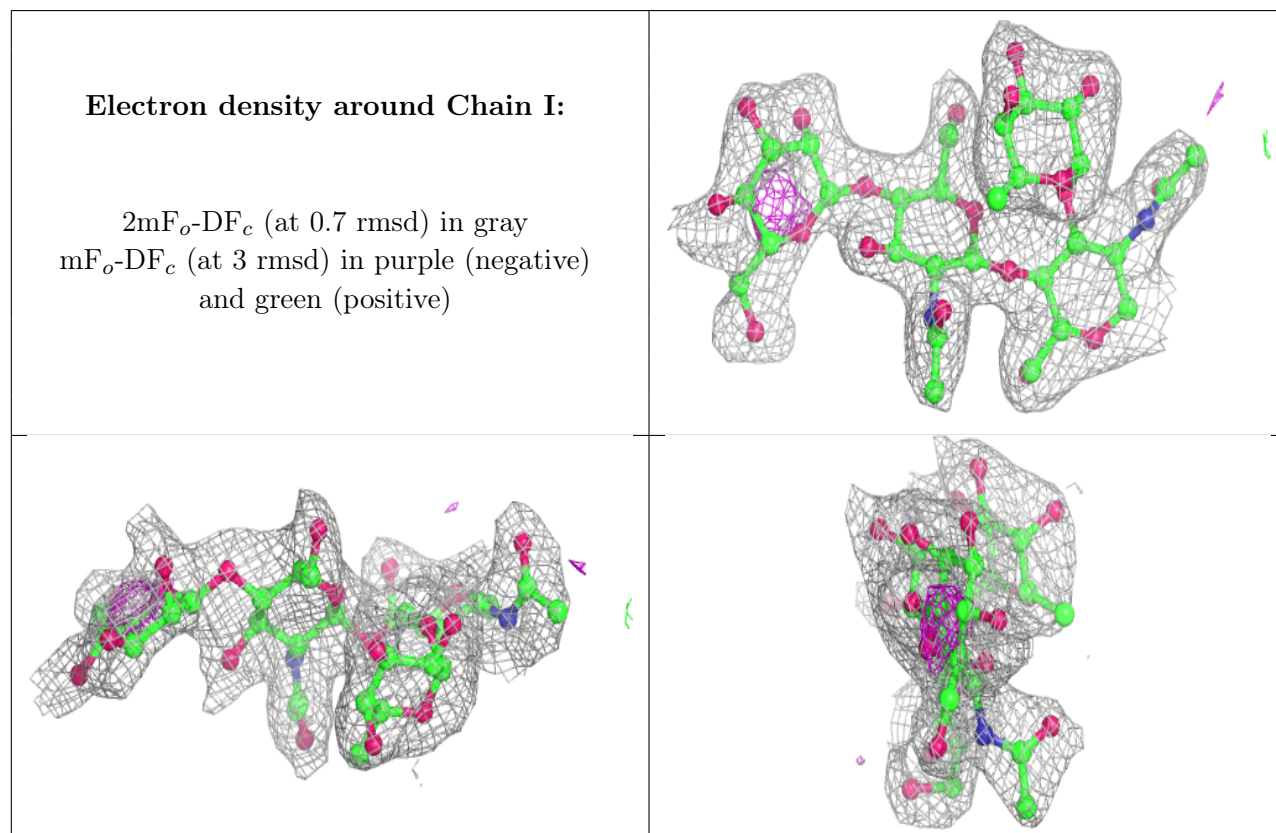
| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 3   | BMA  | I     | 3   | 11/12 | 0.58 | 0.26 | 39,42,44,46                | 0     |
| 5   | NAG  | M     | 2   | 14/15 | 0.69 | 0.33 | 60,70,79,81                | 0     |
| 3   | BMA  | L     | 3   | 11/12 | 0.72 | 0.19 | 42,46,48,49                | 0     |
| 6   | FUC  | N     | 2   | 10/11 | 0.76 | 0.27 | 60,63,68,70                | 0     |
| 3   | BMA  | K     | 3   | 11/12 | 0.79 | 0.15 | 42,46,48,48                | 0     |
| 4   | BMA  | J     | 3   | 11/12 | 0.81 | 0.17 | 34,38,39,42                | 0     |
| 4   | MAN  | J     | 4   | 11/12 | 0.83 | 0.23 | 39,41,44,45                | 0     |
| 6   | NAG  | N     | 1   | 14/15 | 0.89 | 0.14 | 40,46,48,55                | 0     |
| 5   | NAG  | M     | 1   | 14/15 | 0.89 | 0.21 | 44,52,59,60                | 0     |
| 3   | NAG  | K     | 1   | 14/15 | 0.90 | 0.14 | 28,32,33,35                | 0     |
| 3   | NAG  | K     | 2   | 14/15 | 0.90 | 0.17 | 36,39,42,42                | 0     |
| 3   | NAG  | L     | 1   | 14/15 | 0.93 | 0.15 | 24,26,28,30                | 0     |
| 4   | NAG  | J     | 1   | 14/15 | 0.93 | 0.13 | 20,22,25,25                | 0     |
| 3   | NAG  | L     | 2   | 14/15 | 0.94 | 0.10 | 32,34,38,40                | 0     |
| 3   | NAG  | I     | 2   | 14/15 | 0.94 | 0.12 | 32,33,36,37                | 0     |

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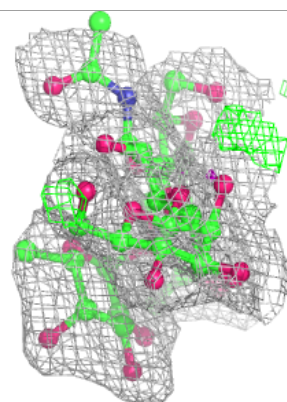
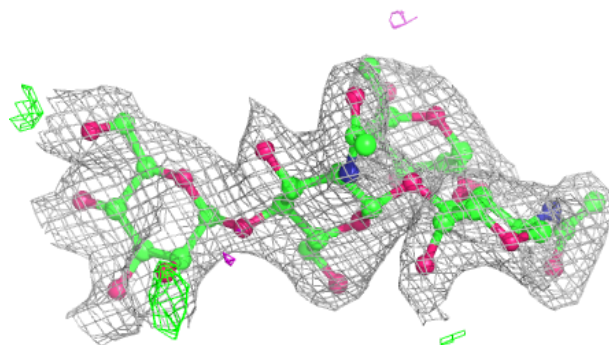
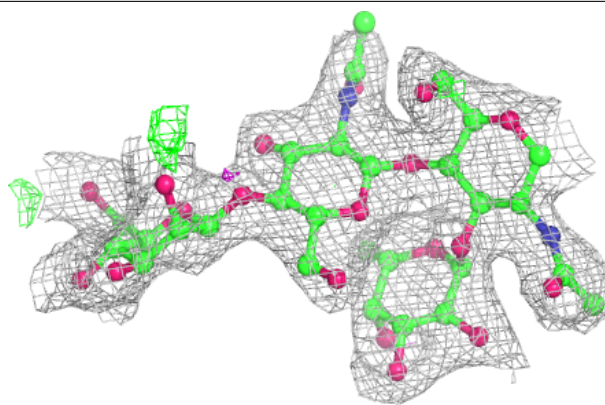
| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|-----------------------------|-------|
| 3   | FUC  | L     | 4   | 10/11 | 0.94 | 0.13 | 28,30,32,32                 | 0     |
| 4   | FUC  | J     | 5   | 10/11 | 0.94 | 0.15 | 25,27,29,30                 | 0     |
| 3   | FUC  | I     | 4   | 10/11 | 0.95 | 0.18 | 33,35,37,37                 | 0     |
| 3   | NAG  | I     | 1   | 14/15 | 0.95 | 0.14 | 26,29,31,32                 | 0     |
| 3   | FUC  | K     | 4   | 10/11 | 0.95 | 0.09 | 32,34,35,36                 | 0     |
| 4   | NAG  | J     | 2   | 14/15 | 0.97 | 0.13 | 26,28,31,32                 | 0     |

The following is a graphical depiction of the model fit to experimental electron density for oligosaccharide. Each fit is shown from different orientation to approximate a three-dimensional view.

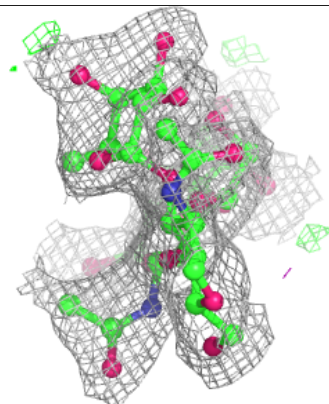
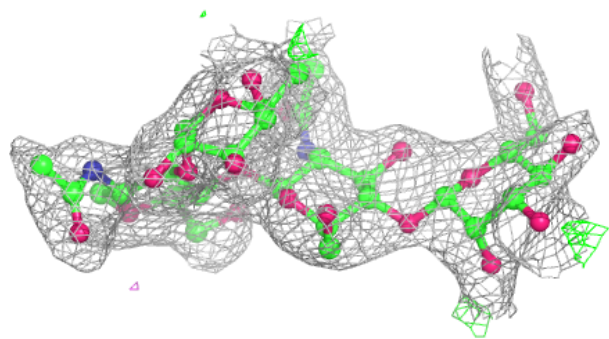
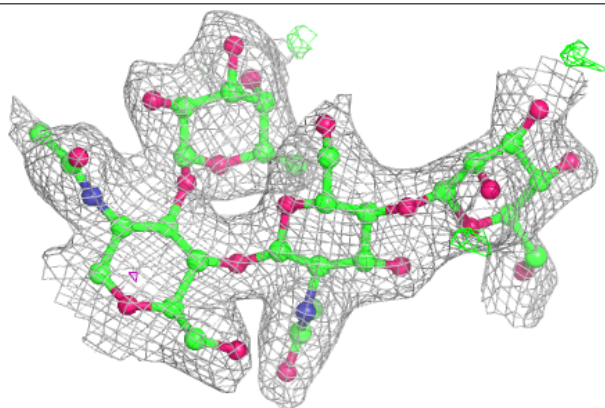


**Electron density around Chain K:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

**Electron density around Chain L:**

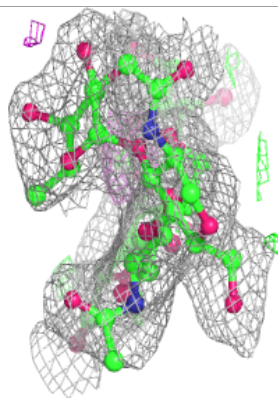
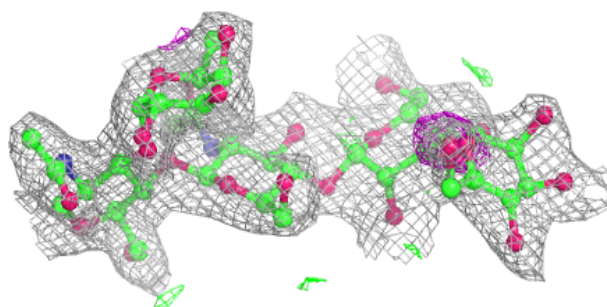
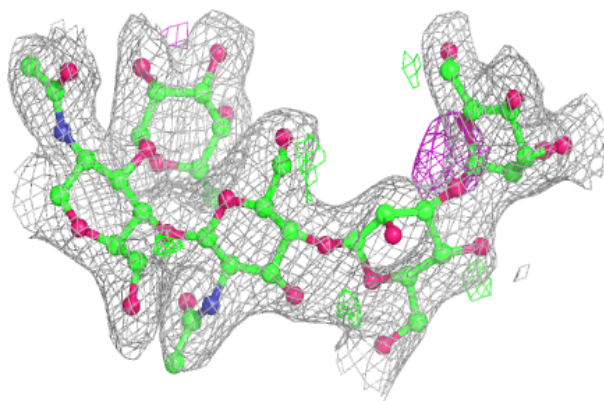
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)



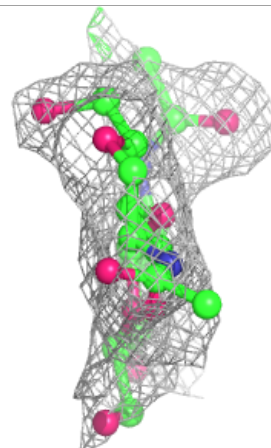
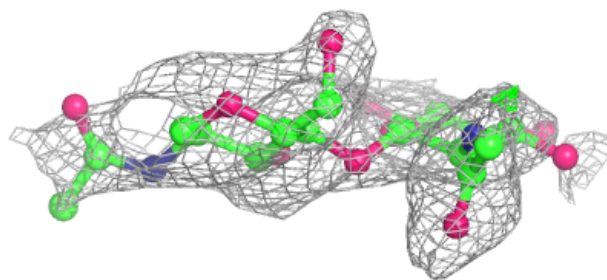
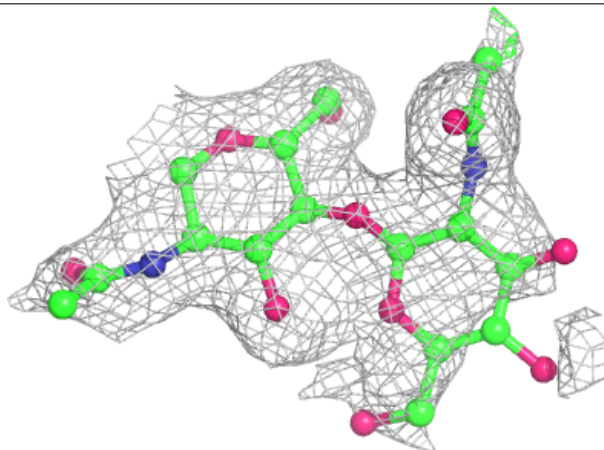


**Electron density around Chain J:**

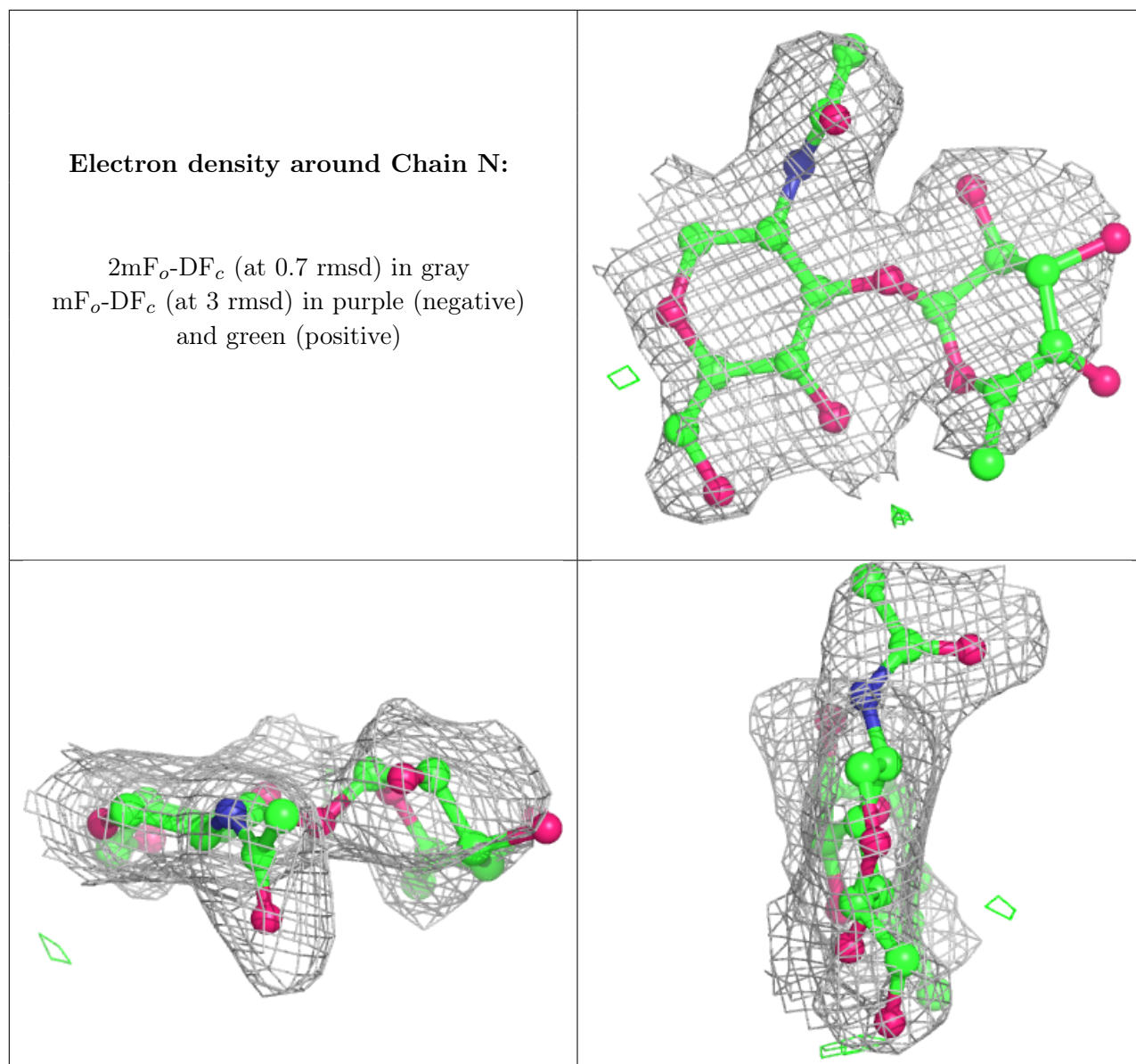
$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)

**Electron density around Chain M:**

$2mF_o-DF_c$  (at 0.7 rmsd) in gray  
 $mF_o-DF_c$  (at 3 rmsd) in purple (negative)  
and green (positive)







## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists the number of atoms with occupancy less than 0.9.

| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors(Å <sup>2</sup> ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|----------------------------|-------|
| 12  | NAG  | D     | 301 | 14/15 | 0.77 | 0.23 | 50,56,59,60                | 0     |
| 11  | XYP  | B     | 306 | 9/10  | 0.85 | 0.17 | 41,41,43,43                | 0     |
| 9   | ABU  | E     | 284 | 7/7   | 0.88 | 0.26 | 25,28,33,33                | 0     |
| 10  | GOL  | D     | 285 | 6/6   | 0.89 | 0.20 | 32,33,33,34                | 0     |
| 10  | GOL  | A     | 277 | 6/6   | 0.90 | 0.18 | 30,33,34,36                | 0     |

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| Mol | Type | Chain | Res | Atoms | RSCC | RSR  | B-factors( $\text{\AA}^2$ ) | Q<0.9 |
|-----|------|-------|-----|-------|------|------|-----------------------------|-------|
| 10  | GOL  | H     | 289 | 6/6   | 0.90 | 0.15 | 29,31,31,34                 | 0     |
| 9   | ABU  | D     | 278 | 7/7   | 0.91 | 0.29 | 29,30,33,35                 | 0     |
| 9   | ABU  | E     | 288 | 7/7   | 0.92 | 0.38 | 32,36,38,38                 | 0     |
| 9   | ABU  | B     | 276 | 7/7   | 0.92 | 0.31 | 27,30,34,35                 | 0     |
| 10  | GOL  | E     | 291 | 6/6   | 0.93 | 0.13 | 29,29,31,33                 | 0     |
| 10  | GOL  | C     | 283 | 6/6   | 0.93 | 0.17 | 25,25,26,26                 | 0     |
| 9   | ABU  | F     | 290 | 7/7   | 0.93 | 0.28 | 14,16,20,22                 | 0     |
| 10  | GOL  | E     | 279 | 6/6   | 0.93 | 0.19 | 31,32,33,35                 | 0     |
| 9   | ABU  | A     | 280 | 7/7   | 0.94 | 0.20 | 22,24,27,28                 | 0     |
| 9   | ABU  | C     | 282 | 7/7   | 0.94 | 0.29 | 29,30,33,34                 | 0     |
| 9   | ABU  | G     | 286 | 7/7   | 0.95 | 0.27 | 31,33,35,37                 | 0     |
| 10  | GOL  | B     | 281 | 6/6   | 0.95 | 0.13 | 20,21,22,23                 | 0     |
| 10  | GOL  | G     | 287 | 6/6   | 0.95 | 0.14 | 29,29,30,31                 | 0     |
| 7   | CA   | F     | 274 | 1/1   | 0.96 | 0.07 | 23,23,23,23                 | 0     |
| 7   | CA   | D     | 268 | 1/1   | 0.97 | 0.08 | 31,31,31,31                 | 0     |
| 7   | CA   | H     | 272 | 1/1   | 0.97 | 0.11 | 30,30,30,30                 | 0     |
| 8   | MN   | C     | 267 | 1/1   | 0.98 | 0.09 | 20,20,20,20                 | 0     |
| 8   | MN   | E     | 263 | 1/1   | 0.98 | 0.06 | 25,25,25,25                 | 0     |
| 8   | MN   | H     | 273 | 1/1   | 0.98 | 0.09 | 23,23,23,23                 | 0     |
| 7   | CA   | C     | 266 | 1/1   | 0.99 | 0.10 | 19,19,19,19                 | 0     |
| 8   | MN   | F     | 275 | 1/1   | 0.99 | 0.07 | 21,21,21,21                 | 0     |
| 7   | CA   | G     | 270 | 1/1   | 0.99 | 0.05 | 17,17,17,17                 | 0     |
| 7   | CA   | A     | 264 | 1/1   | 0.99 | 0.09 | 19,19,19,19                 | 0     |
| 8   | MN   | B     | 261 | 1/1   | 0.99 | 0.07 | 13,13,13,13                 | 0     |
| 7   | CA   | E     | 262 | 1/1   | 0.99 | 0.06 | 20,20,20,20                 | 0     |
| 8   | MN   | D     | 269 | 1/1   | 0.99 | 0.04 | 38,38,38,38                 | 0     |
| 7   | CA   | B     | 260 | 1/1   | 1.00 | 0.10 | 15,15,15,15                 | 0     |
| 8   | MN   | G     | 271 | 1/1   | 1.00 | 0.06 | 19,19,19,19                 | 0     |
| 8   | MN   | A     | 265 | 1/1   | 1.00 | 0.10 | 13,13,13,13                 | 0     |

## 6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.