



## Full wwPDB EM Validation Report ⓘ

Dec 22, 2025 – 07:14 PM JST

PDB ID : 9UBW / pdb\_00009ubw  
EMDB ID : EMD-64017  
Title : The atomic coordinates of the mouse CatSper dimer  
Authors : Xu, Q.; Lin, S.; Zhao, Q.; Yan, Z.; Wu, J.  
Deposited on : 2025-04-03  
Resolution : 3.90 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

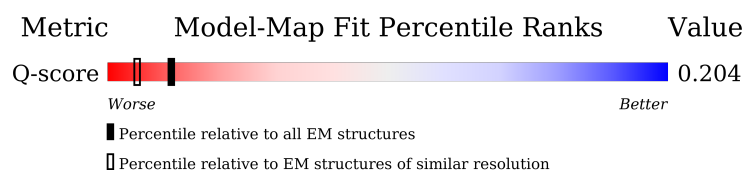
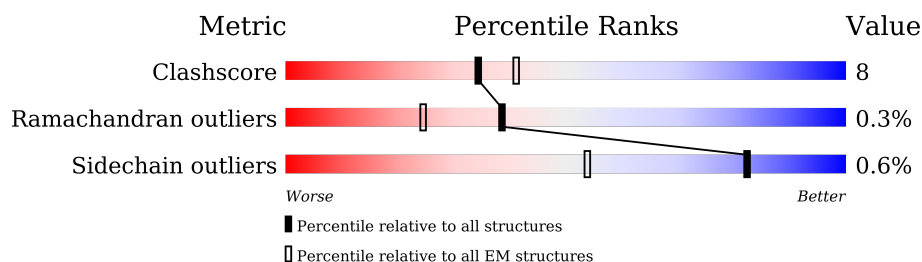
EMDB validation analysis : 0.0.1.dev129  
Mogul : 1.8.5 (274361), CSD as541be (2020)  
MolProbity : 4-5-2 with Phenix2.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive up until May 2025)  
MapQ : 1.9.13  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.47

# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:  
*ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.90 Å.

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



| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 210492                      | 15764                       | -                                                        |
| Ramachandran outliers | 207382                      | 16835                       | -                                                        |
| Sidechain outliers    | 206894                      | 16415                       | -                                                        |
| Q-score               | -                           | 25397                       | 8855 ( 3.40 - 4.40 )                                     |

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

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1   | A     | 251    |                  |
| 1   | a     | 251    |                  |
| 2   | B     | 281    |                  |
| 2   | b     | 281    |                  |

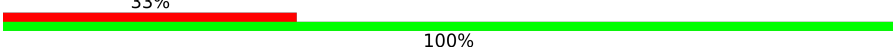
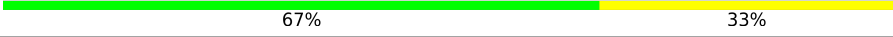
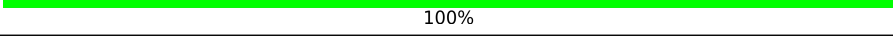
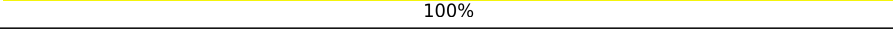
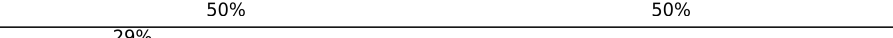
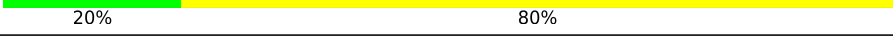
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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 3   | C     | 278    |                  |
| 3   | c     | 278    |                  |
| 4   | D     | 250    |                  |
| 4   | d     | 250    |                  |
| 5   | E     | 1065   |                  |
| 5   | e     | 1065   |                  |
| 6   | F     | 1042   |                  |
| 6   | f     | 1042   |                  |
| 7   | G     | 733    |                  |
| 7   | g     | 733    |                  |
| 8   | H     | 921    |                  |
| 8   | h     | 921    |                  |
| 9   | I     | 174    |                  |
| 9   | i     | 174    |                  |
| 10  | J     | 168    |                  |
| 10  | j     | 168    |                  |
| 11  | K     | 149    |                  |
| 11  | k     | 149    |                  |
| 12  | L     | 610    |                  |
| 12  | l     | 610    |                  |
| 13  | M     | 115    |                  |
| 13  | m     | 115    |                  |
| 14  | N     | 28     |                  |
| 14  | n     | 28     |                  |
| 15  | O     | 7      |                  |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 15  | Y     | 7      |    |
| 16  | P     | 3      |    |
| 16  | Q     | 3      |    |
| 16  | S     | 3      |    |
| 16  | T     | 3      |    |
| 16  | U     | 3      |    |
| 16  | Z     | 3      |    |
| 16  | o     | 3      |    |
| 16  | q     | 3      |    |
| 16  | r     | 3      |    |
| 16  | s     | 3      |    |
| 17  | R     | 2      |   |
| 17  | W     | 2      |  |
| 17  | p     | 2      |  |
| 17  | u     | 2      |  |
| 18  | V     | 7      |  |
| 18  | t     | 7      |  |
| 19  | X     | 5      |  |
| 19  | v     | 5      |  |

## 2 Entry composition

There are 21 unique types of molecules in this entry. The entry contains 96544 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Cation channel sperm-associated protein 1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 1   | A     | 251      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2053  | 1383 | 313 | 346 | 11 |         |       |
| 1   | a     | 251      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2053  | 1383 | 313 | 346 | 11 |         |       |

- Molecule 2 is a protein called Cation channel sperm-associated protein 2.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 2   | B     | 281      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2343  | 1585 | 363 | 384 | 11 |         |       |
| 2   | b     | 281      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2343  | 1585 | 363 | 384 | 11 |         |       |

- Molecule 3 is a protein called Cation channel sperm-associated protein 3.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 3   | C     | 278      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2277  | 1506 | 359 | 400 | 12 |         |       |
| 3   | c     | 278      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2277  | 1506 | 359 | 400 | 12 |         |       |

- Molecule 4 is a protein called Cation channel sperm-associated protein 4.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 4   | D     | 250      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2035  | 1370 | 311 | 338 | 16 |         |       |
| 4   | d     | 250      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 2035  | 1370 | 311 | 338 | 16 |         |       |

- Molecule 5 is a protein called Cation channel sperm-associated auxiliary subunit beta.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 5   | E     | 1058     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8510  | 5524 | 1395 | 1547 | 44 |         |       |
| 5   | e     | 1058     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8510  | 5524 | 1395 | 1547 | 44 |         |       |

- Molecule 6 is a protein called Cation channel sperm-associated auxiliary subunit gamma 2.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 6   | F     | 1042     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8454  | 5515 | 1354 | 1538 | 47 |         |       |
| 6   | f     | 1042     | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 8454  | 5515 | 1354 | 1538 | 47 |         |       |

- Molecule 7 is a protein called Cation channel sperm-associated auxiliary subunit delta.

| Mol | Chain | Residues | Atoms |      |     |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|------|----|---------|-------|
| 7   | G     | 714      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5680  | 3669 | 923 | 1056 | 32 |         |       |
| 7   | g     | 714      | Total | C    | N   | O    | S  | 0       | 0     |
|     |       |          | 5680  | 3669 | 923 | 1056 | 32 |         |       |

- Molecule 8 is a protein called Cation channel sperm-associated auxiliary subunit epsilon.

| Mol | Chain | Residues | Atoms |      |      |      |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| 8   | H     | 916      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 7502  | 4865 | 1208 | 1389 | 40 |         |       |
| 8   | h     | 916      | Total | C    | N    | O    | S  | 0       | 0     |
|     |       |          | 7502  | 4865 | 1208 | 1389 | 40 |         |       |

- Molecule 9 is a protein called EF-hand calcium-binding domain-containing protein 9.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 9   | I     | 174      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 863   | 515 | 174 | 174 |         |       |
| 9   | i     | 174      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 863   | 515 | 174 | 174 |         |       |

- Molecule 10 is a protein called Cation channel sperm-associated auxiliary subunit TMEM249.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 10  | J     | 168      | Total | C   | N   | O   | S  | 0       | 0     |
|     |       |          | 1398  | 921 | 238 | 225 | 14 |         |       |

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| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 10  | j     | 168      | Total | C   | N   | O   | S  | 0       | 0     |
|     |       |          | 1398  | 921 | 238 | 225 | 14 |         |       |

There are 46 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment               | Reference      |
|-------|---------|----------|--------|-----------------------|----------------|
| J     | 1       | MET      | -      | initiating methionine | UNP A0A2R8VHF7 |
| J     | 2       | CYS      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 3       | TRP      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 4       | VAL      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 5       | MET      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 6       | PRO      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 7       | PRO      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 8       | SER      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 9       | VAL      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 10      | PHE      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 11      | VAL      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 12      | LEU      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 13      | GLU      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 14      | TYR      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 15      | TYR      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 16      | LEU      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 17      | ASP      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 18      | THR      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 19      | LEU      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 20      | TRP      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 21      | LYS      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 22      | GLY      | -      | expression tag        | UNP A0A2R8VHF7 |
| J     | 23      | THR      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 1       | MET      | -      | initiating methionine | UNP A0A2R8VHF7 |
| j     | 2       | CYS      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 3       | TRP      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 4       | VAL      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 5       | MET      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 6       | PRO      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 7       | PRO      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 8       | SER      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 9       | VAL      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 10      | PHE      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 11      | VAL      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 12      | LEU      | -      | expression tag        | UNP A0A2R8VHF7 |
| j     | 13      | GLU      | -      | expression tag        | UNP A0A2R8VHF7 |

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| Chain | Residue | Modelled | Actual | Comment        | Reference      |
|-------|---------|----------|--------|----------------|----------------|
| j     | 14      | TYR      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 15      | TYR      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 16      | LEU      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 17      | ASP      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 18      | THR      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 19      | LEU      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 20      | TRP      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 21      | LYS      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 22      | GLY      | -      | expression tag | UNP A0A2R8VHF7 |
| j     | 23      | THR      | -      | expression tag | UNP A0A2R8VHF7 |

- Molecule 11 is a protein called Cation channel sperm-associated auxiliary subunit zeta.

| Mol | Chain | Residues | Atoms |     |     |     | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---------|-------|
| 11  | K     | 149      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 755   | 453 | 152 | 150 |         |       |
| 11  | k     | 149      | Total | C   | N   | O   | 0       | 0     |
|     |       |          | 755   | 453 | 152 | 150 |         |       |

- Molecule 12 is a protein called Solute carrier organic anion transporter family member 6C1.

| Mol | Chain | Residues | Atoms |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| 12  | L     | 597      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4694  | 3079 | 747 | 829 | 39 |         |       |
| 12  | l     | 597      | Total | C    | N   | O   | S  | 0       | 0     |
|     |       |          | 4694  | 3079 | 747 | 829 | 39 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment             | Reference  |
|-------|---------|----------|--------|---------------------|------------|
| L     | 224     | GLY      | ALA    | engineered mutation | UNP Q8C0X7 |
| l     | 224     | GLY      | ALA    | engineered mutation | UNP Q8C0X7 |

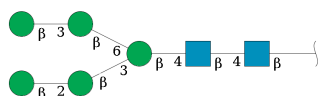
- Molecule 13 is a protein called Cation channel sperm-associated auxiliary subunit TMEM262.

| Mol | Chain | Residues | Atoms |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| 13  | M     | 115      | Total | C   | N   | O   | S  | 0       | 0     |
|     |       |          | 936   | 619 | 156 | 150 | 11 |         |       |
| 13  | m     | 115      | Total | C   | N   | O   | S  | 0       | 0     |
|     |       |          | 936   | 619 | 156 | 150 | 11 |         |       |

- Molecule 14 is a protein called Unknown protein.

| Mol | Chain | Residues | Atoms |    |    |    | AltConf | Trace |
|-----|-------|----------|-------|----|----|----|---------|-------|
| 14  | N     | 28       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 140   | 84 | 28 | 28 |         |       |
| 14  | n     | 28       | Total | C  | N  | O  | 0       | 0     |
|     |       |          | 140   | 84 | 28 | 28 |         |       |

- Molecule 15 is an oligosaccharide called beta-D-mannopyranose-(1-2)-beta-D-mannopyranos e-(1-3)-[beta-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopy ranose.



| Mol | Chain | Residues | Atoms |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|-------|
| 15  | O     | 7        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 83    | 46 | 2 | 35 |         |       |
| 15  | Y     | 7        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 83    | 46 | 2 | 35 |         |       |

- Molecule 16 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|-------|
| 16  | P     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | Q     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | S     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | T     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | U     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | Z     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | o     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |

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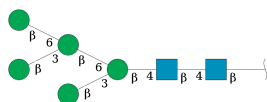
| Mol | Chain | Residues | Atoms |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|-------|
| 16  | q     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | r     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |
| 16  | s     | 3        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 39    | 22 | 2 | 15 |         |       |

- Molecule 17 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



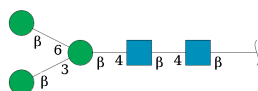
| Mol | Chain | Residues | Atoms |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|-------|
| 17  | R     | 2        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 28    | 16 | 2 | 10 |         |       |
| 17  | W     | 2        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 28    | 16 | 2 | 10 |         |       |
| 17  | p     | 2        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 28    | 16 | 2 | 10 |         |       |
| 17  | u     | 2        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 28    | 16 | 2 | 10 |         |       |

- Molecule 18 is an oligosaccharide called beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-6)-[beta-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



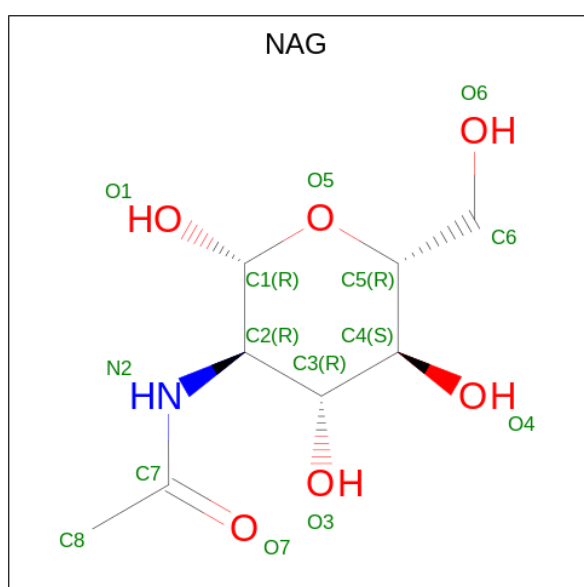
| Mol | Chain | Residues | Atoms |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|-------|
| 18  | V     | 7        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 83    | 46 | 2 | 35 |         |       |
| 18  | t     | 7        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 83    | 46 | 2 | 35 |         |       |

- Molecule 19 is an oligosaccharide called beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms |    |   |    | AltConf | Trace |
|-----|-------|----------|-------|----|---|----|---------|-------|
| 19  | X     | 5        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 61    | 34 | 2 | 25 |         |       |
| 19  | v     | 5        | Total | C  | N | O  | 0       | 0     |
|     |       |          | 61    | 34 | 2 | 25 |         |       |

- Molecule 20 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula:  $C_8H_{15}NO_6$ ) (labeled as "Ligand of Interest" by depositor).



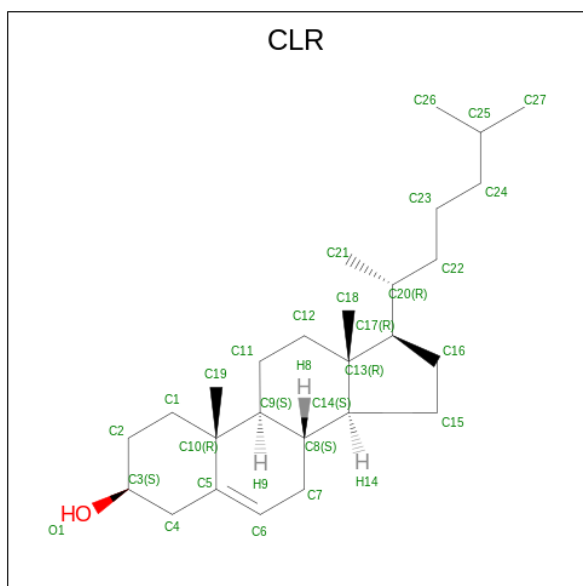
| Mol | Chain | Residues | Atoms |   |   |   | AltConf |
|-----|-------|----------|-------|---|---|---|---------|
| 20  | E     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | E     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | E     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | E     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | E     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | F     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |

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| Mol | Chain | Residues | Atoms |   |   |   | AltConf |
|-----|-------|----------|-------|---|---|---|---------|
| 20  | G     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | G     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | e     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | e     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | e     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | e     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | e     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | f     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | g     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |
| 20  | g     | 1        | Total | C | N | O | 0       |
|     |       |          | 14    | 8 | 1 | 5 |         |

- Molecule 21 is CHOLESTEROL (CCD ID: CLR) (formula:  $C_{27}H_{46}O$ ) (labeled as "Ligand of Interest" by depositor).

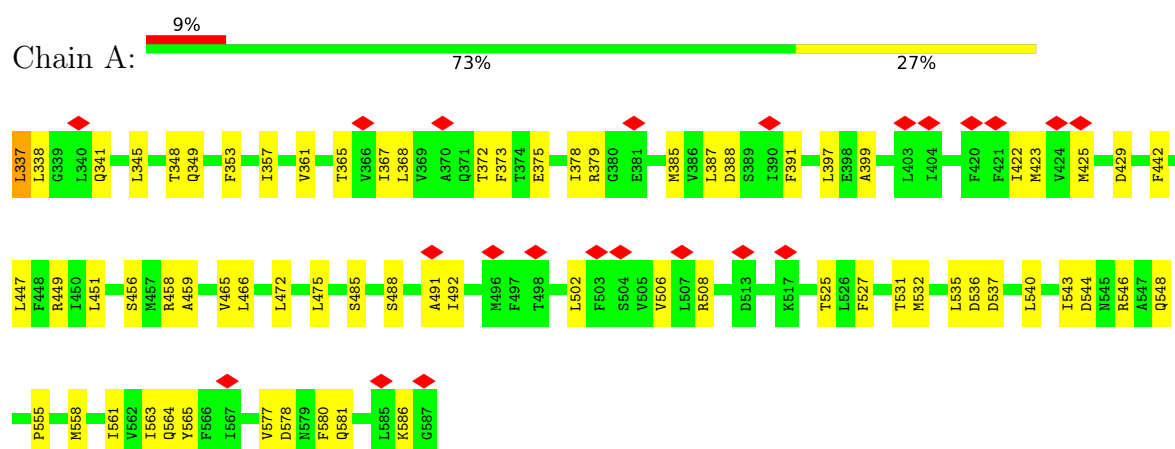


| Mol | Chain | Residues | Atoms |    |   | AltConf |
|-----|-------|----------|-------|----|---|---------|
| 21  | M     | 1        | Total | C  | O | 0       |
|     |       |          | 28    | 27 | 1 |         |
| 21  | m     | 1        | Total | C  | O | 0       |
|     |       |          | 28    | 27 | 1 |         |

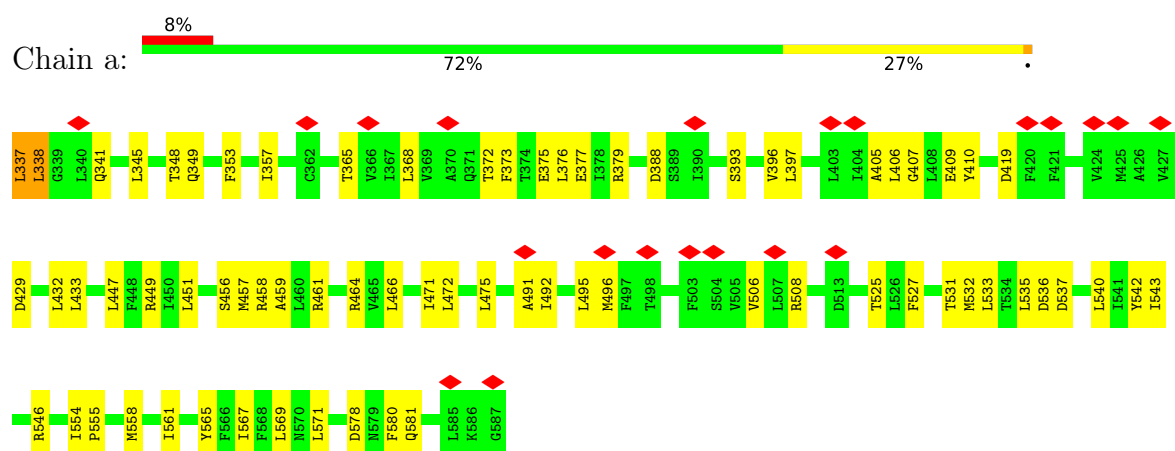
### 3 Residue-property plots

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

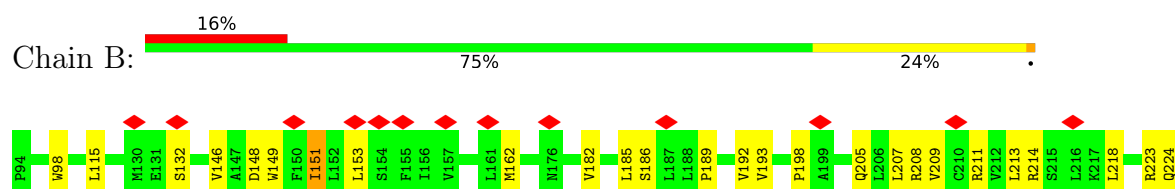
- Molecule 1: Cation channel sperm-associated protein 1

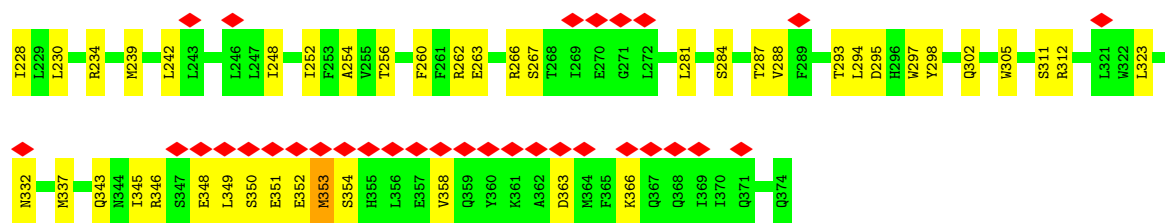


- Molecule 1: Cation channel sperm-associated protein 1

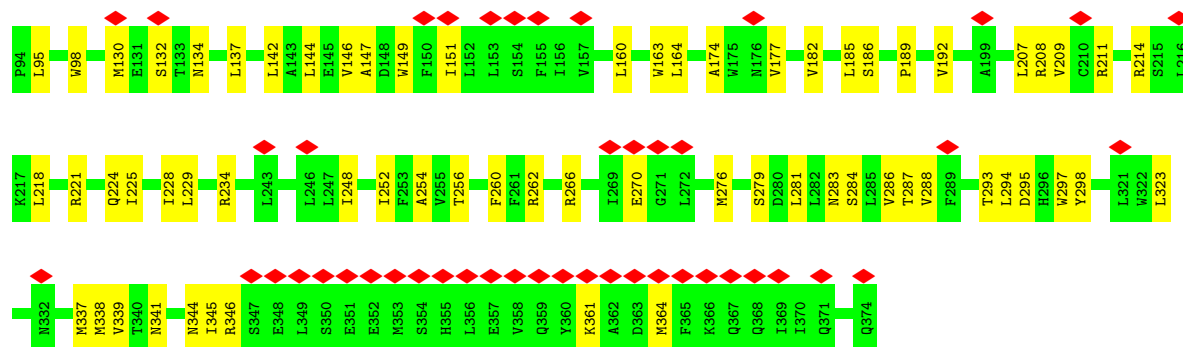
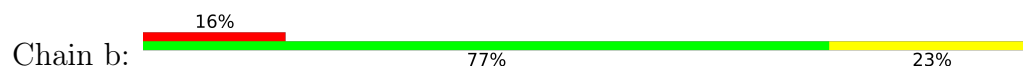


- Molecule 2: Cation channel sperm-associated protein 2

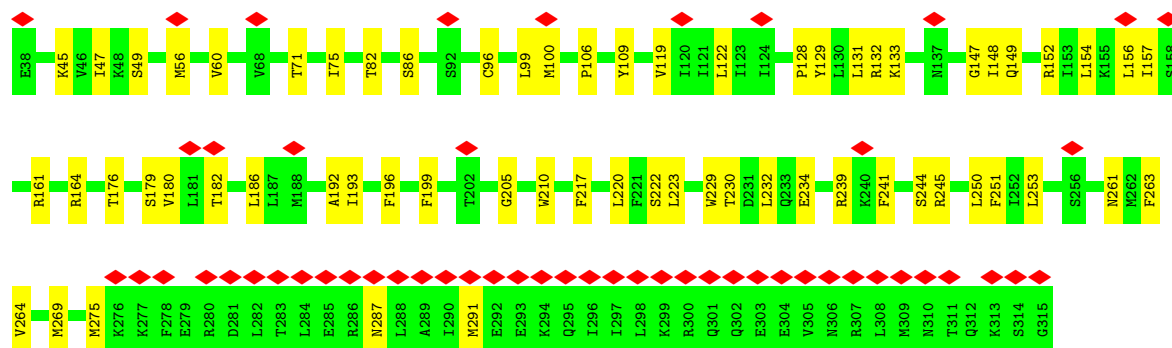
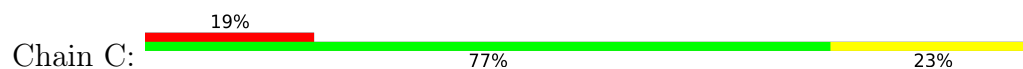




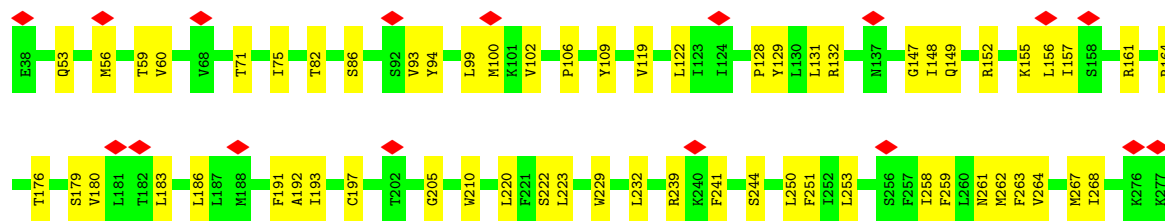
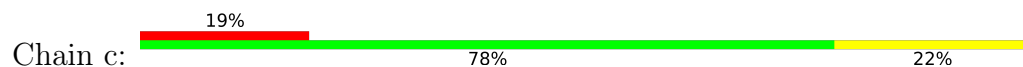
• Molecule 2: Cation channel sperm-associated protein 2

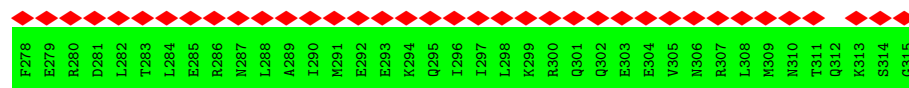


• Molecule 3: Cation channel sperm-associated protein 3

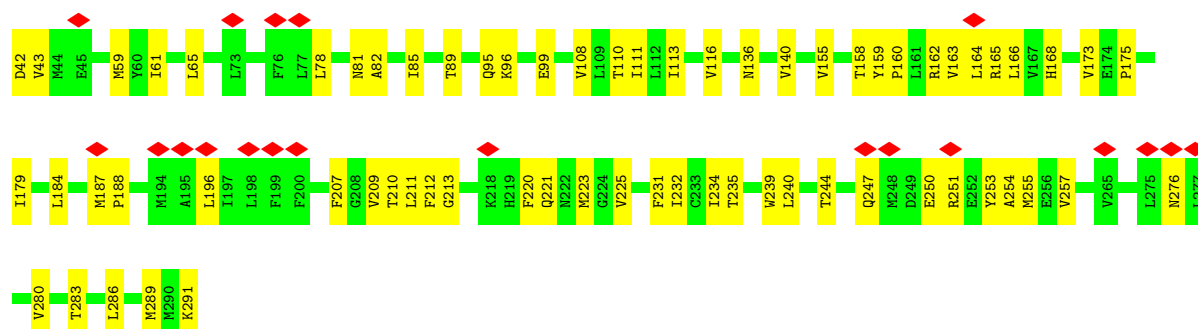
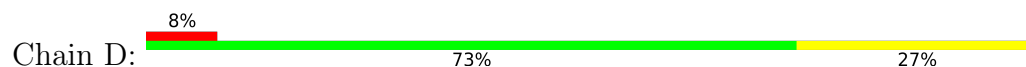


• Molecule 3: Cation channel sperm-associated protein 3

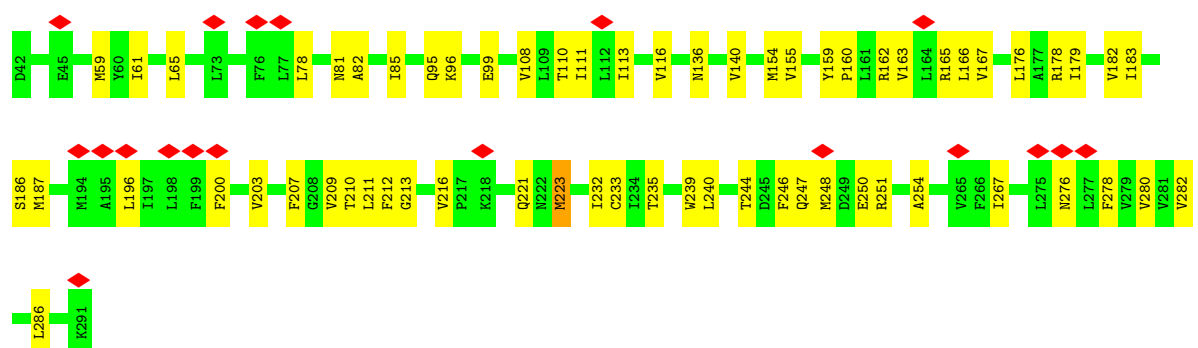
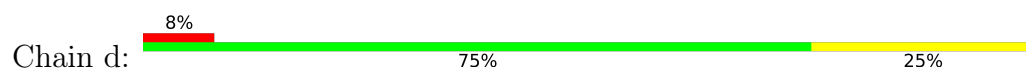




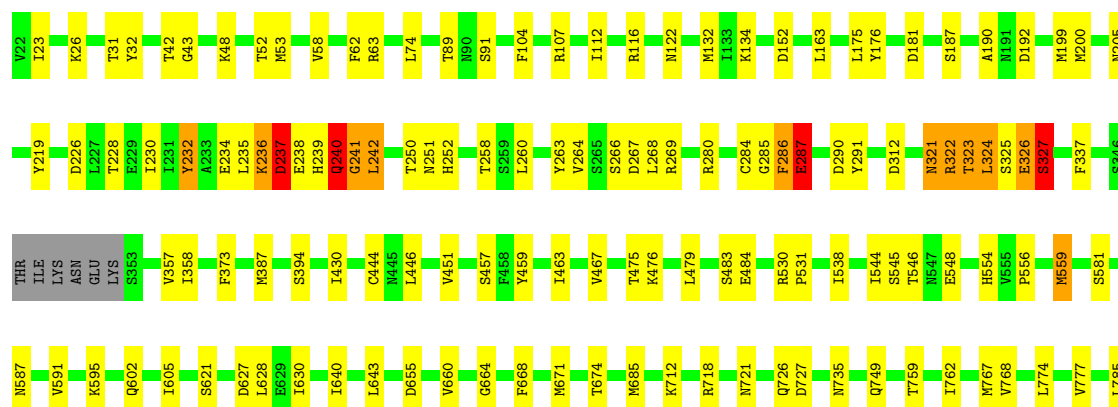
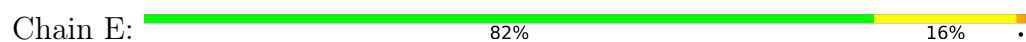
• Molecule 4: Cation channel sperm-associated protein 4

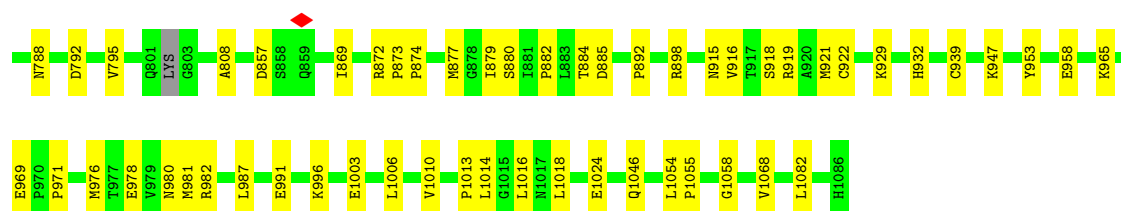


• Molecule 4: Cation channel sperm-associated protein 4



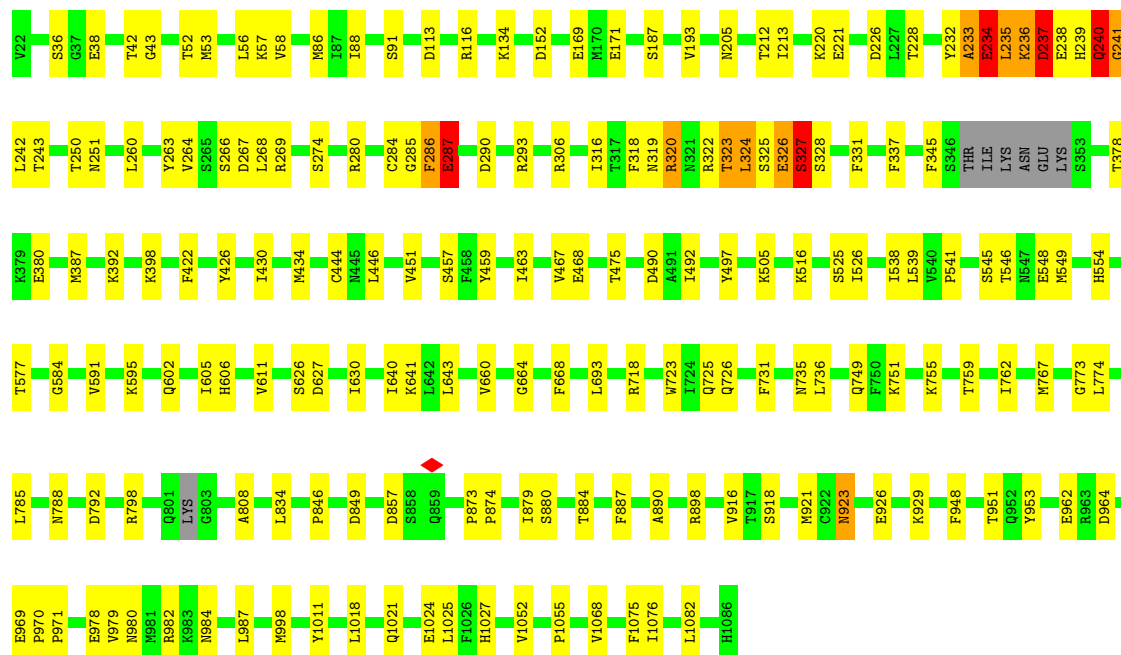
• Molecule 5: Cation channel sperm-associated auxiliary subunit beta





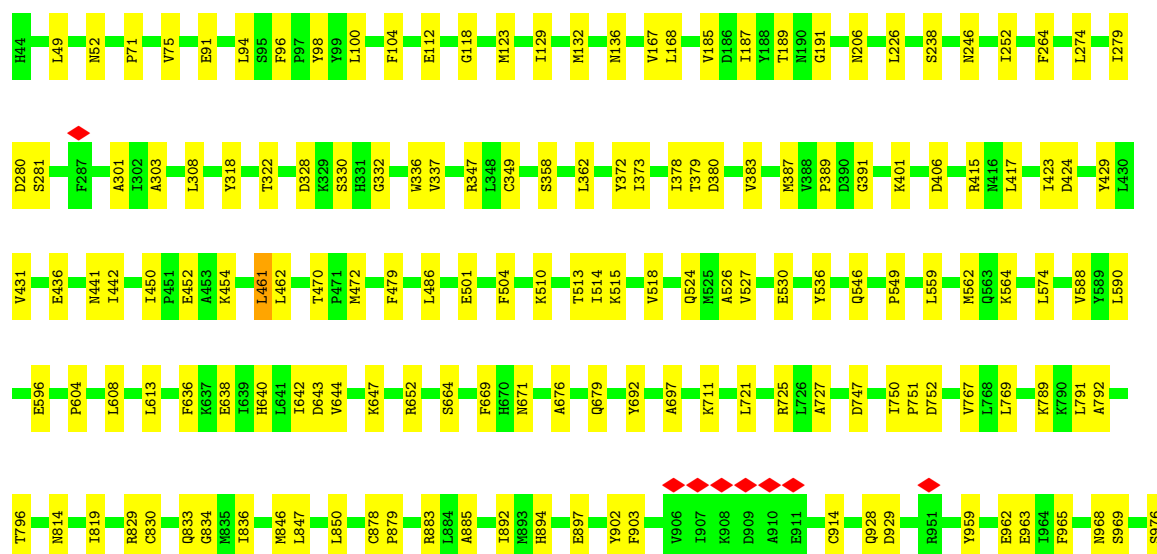
• Molecule 5: Cation channel sperm-associated auxiliary subunit beta

Chain e: 82% 16%



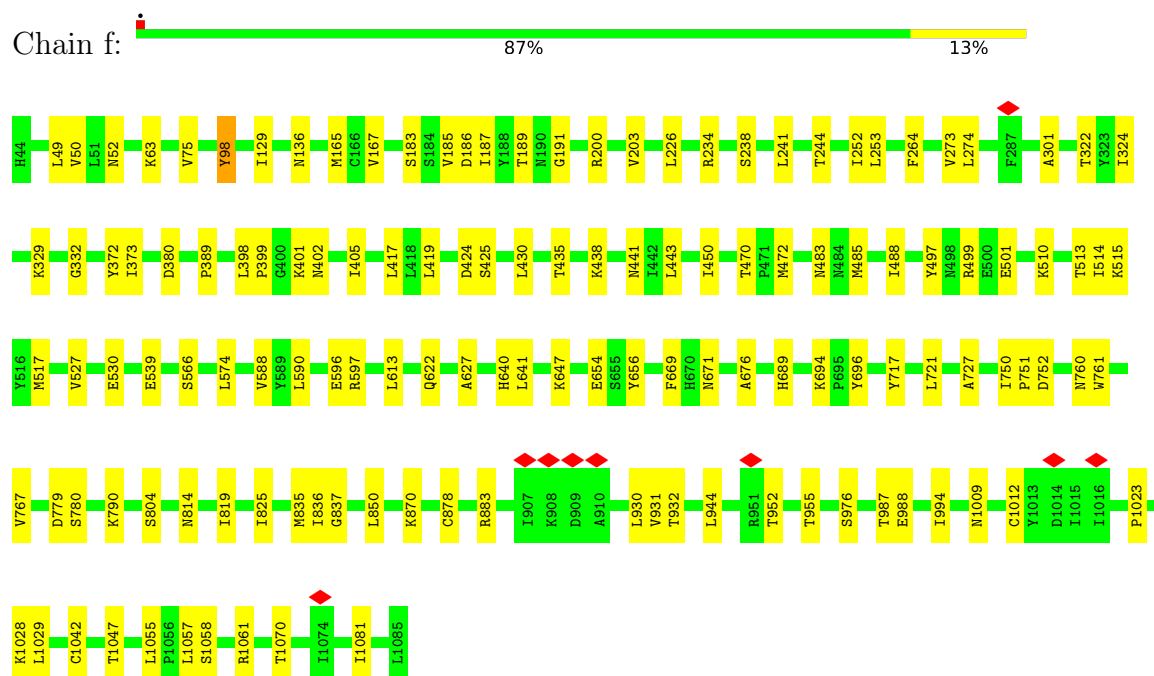
• Molecule 6: Cation channel sperm-associated auxiliary subunit gamma 2

Chain F: 84% 16%

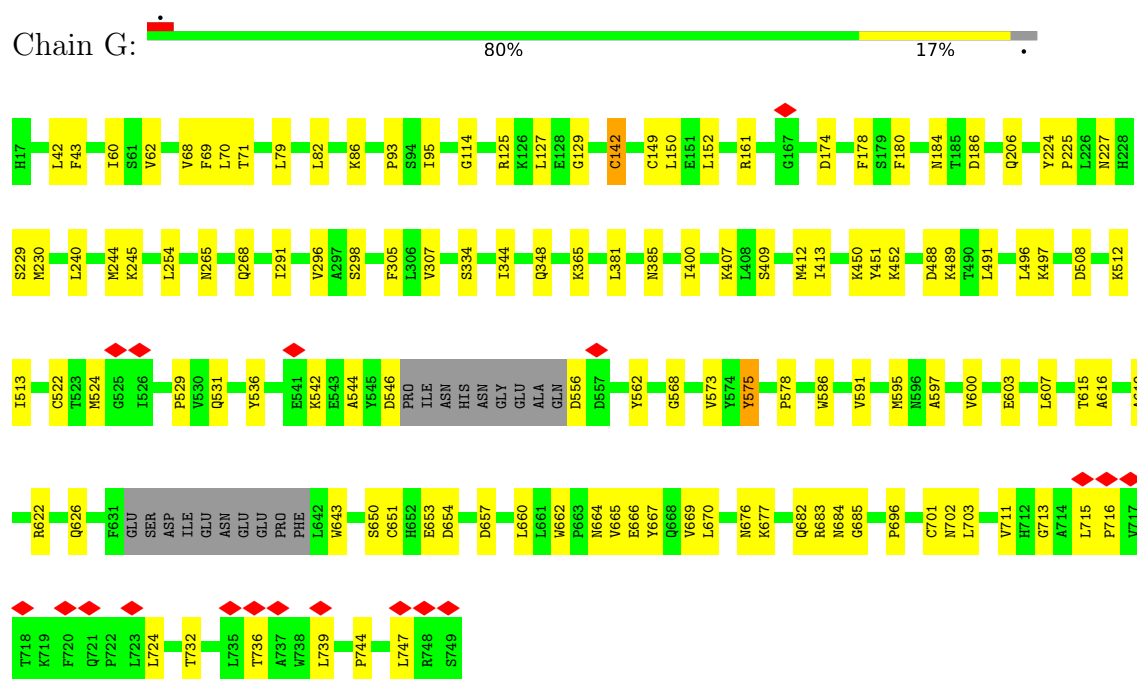




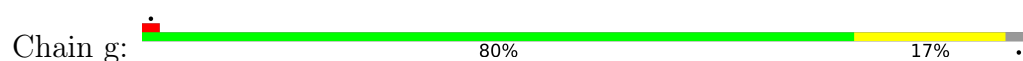
• Molecule 6: Cation channel sperm-associated auxiliary subunit gamma 2

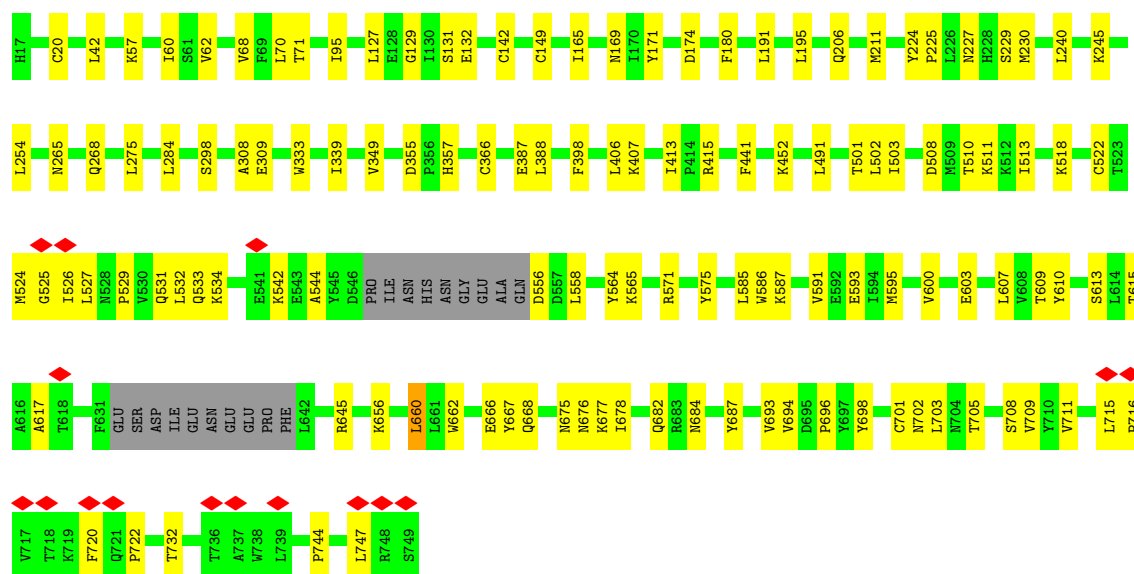


• Molecule 7: Cation channel sperm-associated auxiliary subunit delta



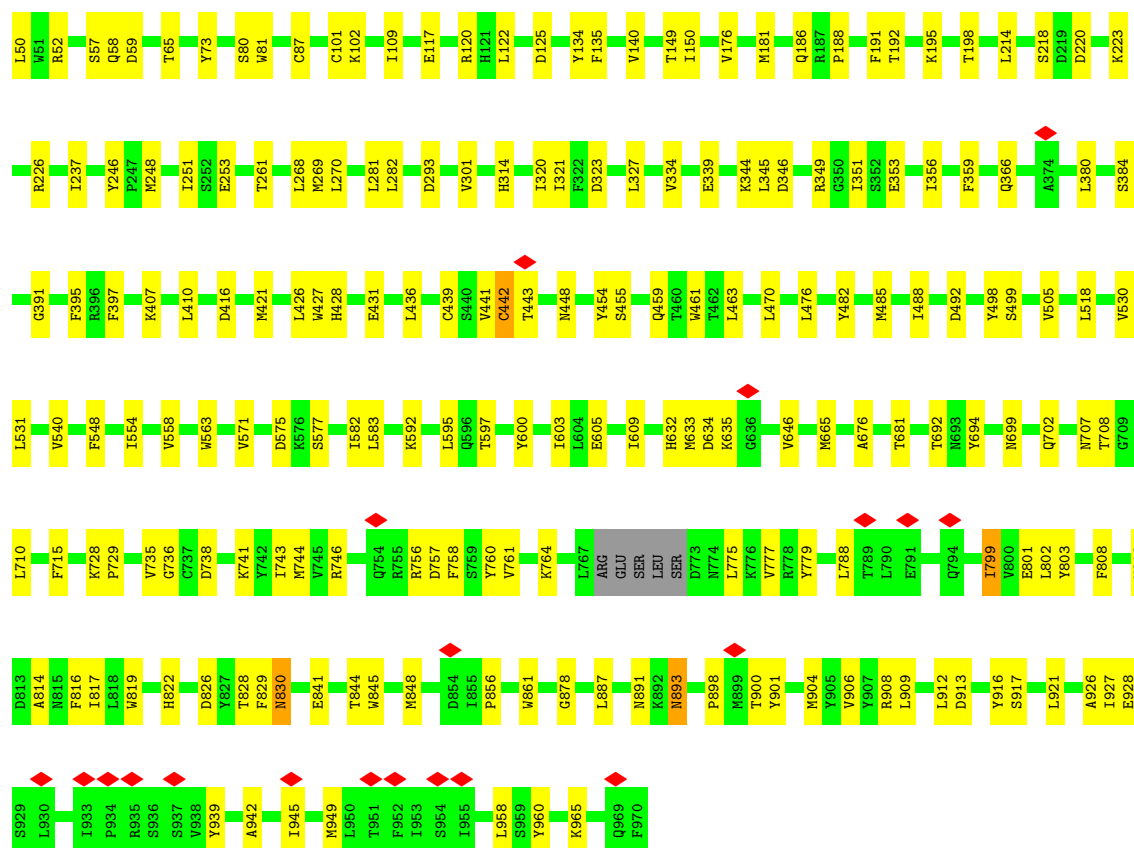
• Molecule 7: Cation channel sperm-associated auxiliary subunit delta





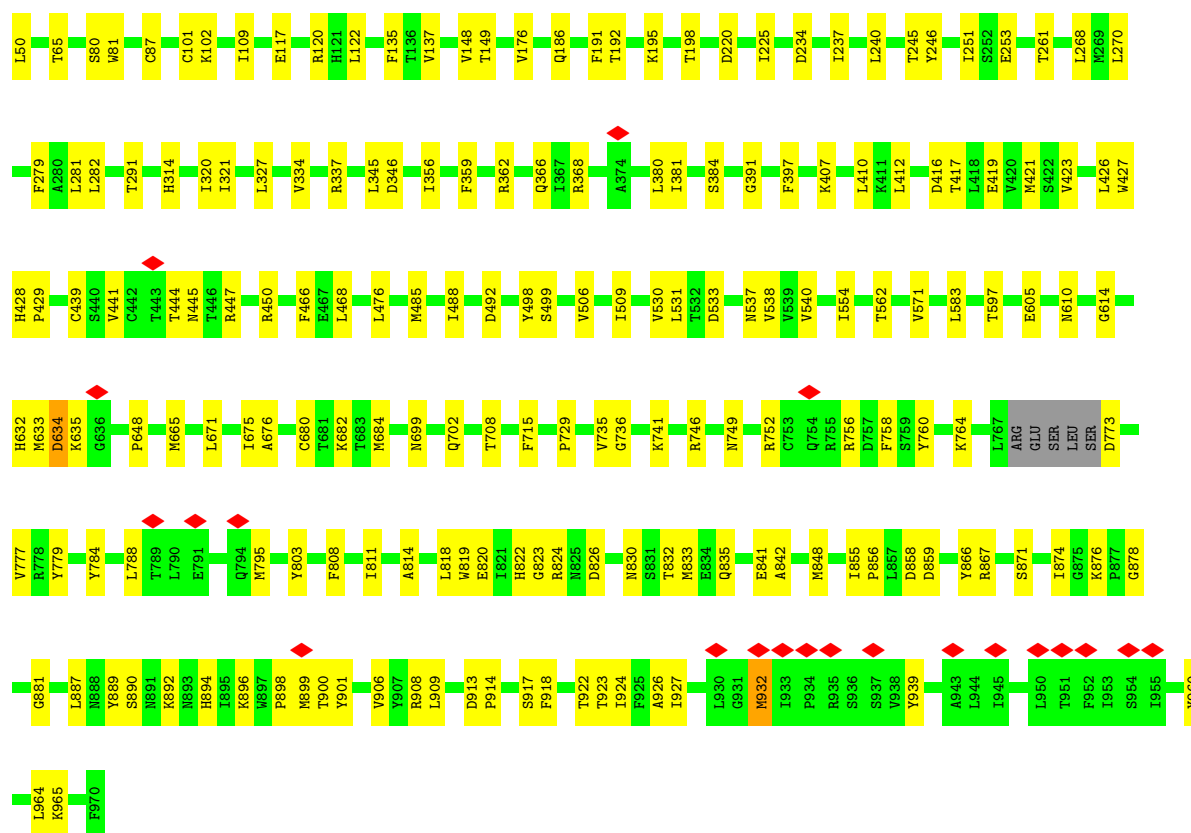
• Molecule 8: Cation channel sperm-associated auxiliary subunit epsilon

Chain H: 78% 21%

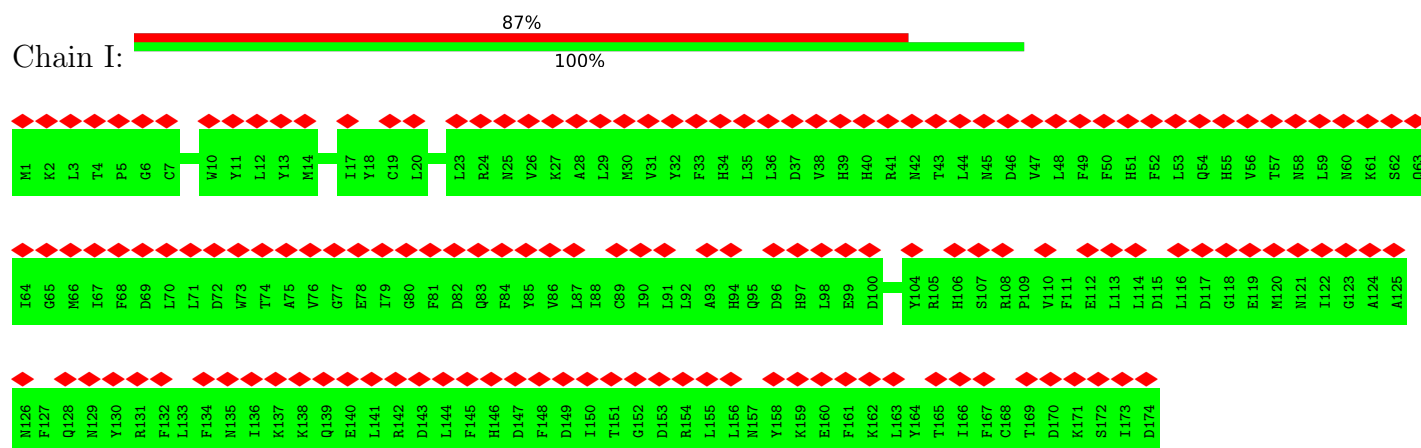


• Molecule 8: Cation channel sperm-associated auxiliary subunit epsilon

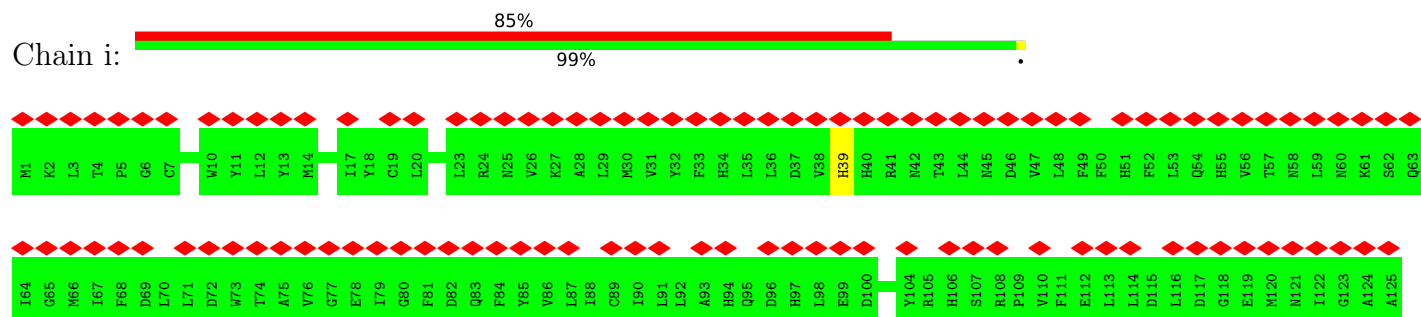
Chain h: 79% 20%

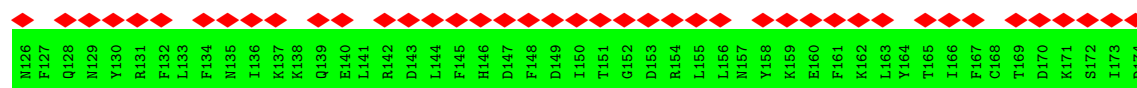


• Molecule 9: EF-hand calcium-binding domain-containing protein 9

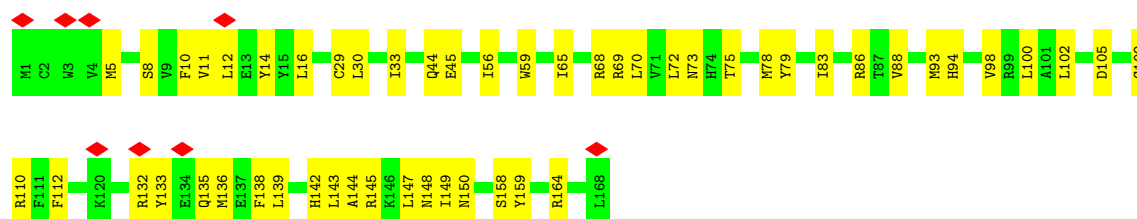


• Molecule 9: EF-hand calcium-binding domain-containing protein 9

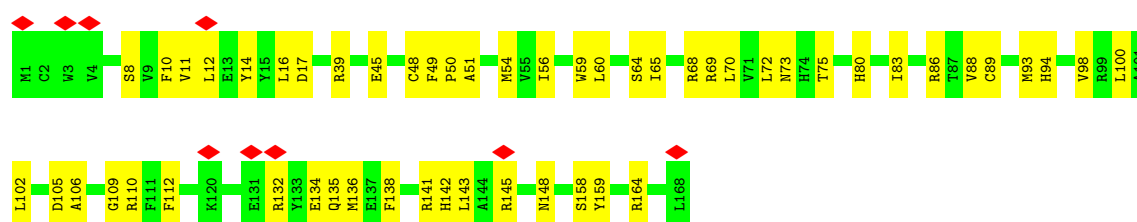




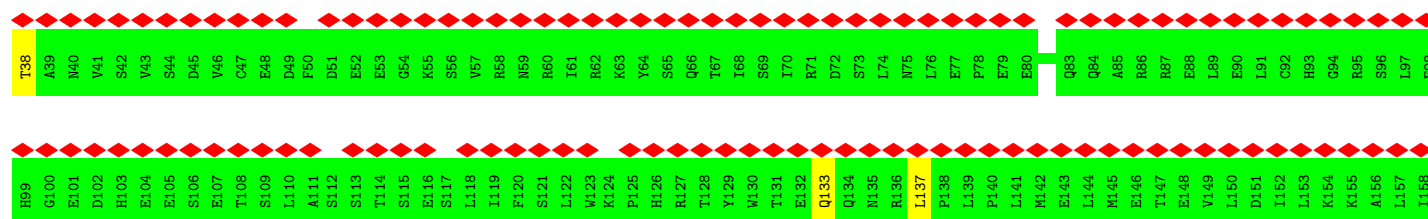
- Molecule 10: Cation channel sperm-associated auxiliary subunit TMEM249



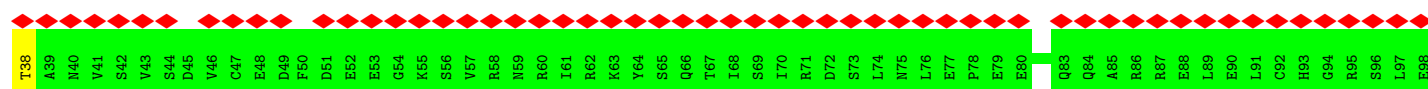
- Molecule 10: Cation channel sperm-associated auxiliary subunit TMEM249

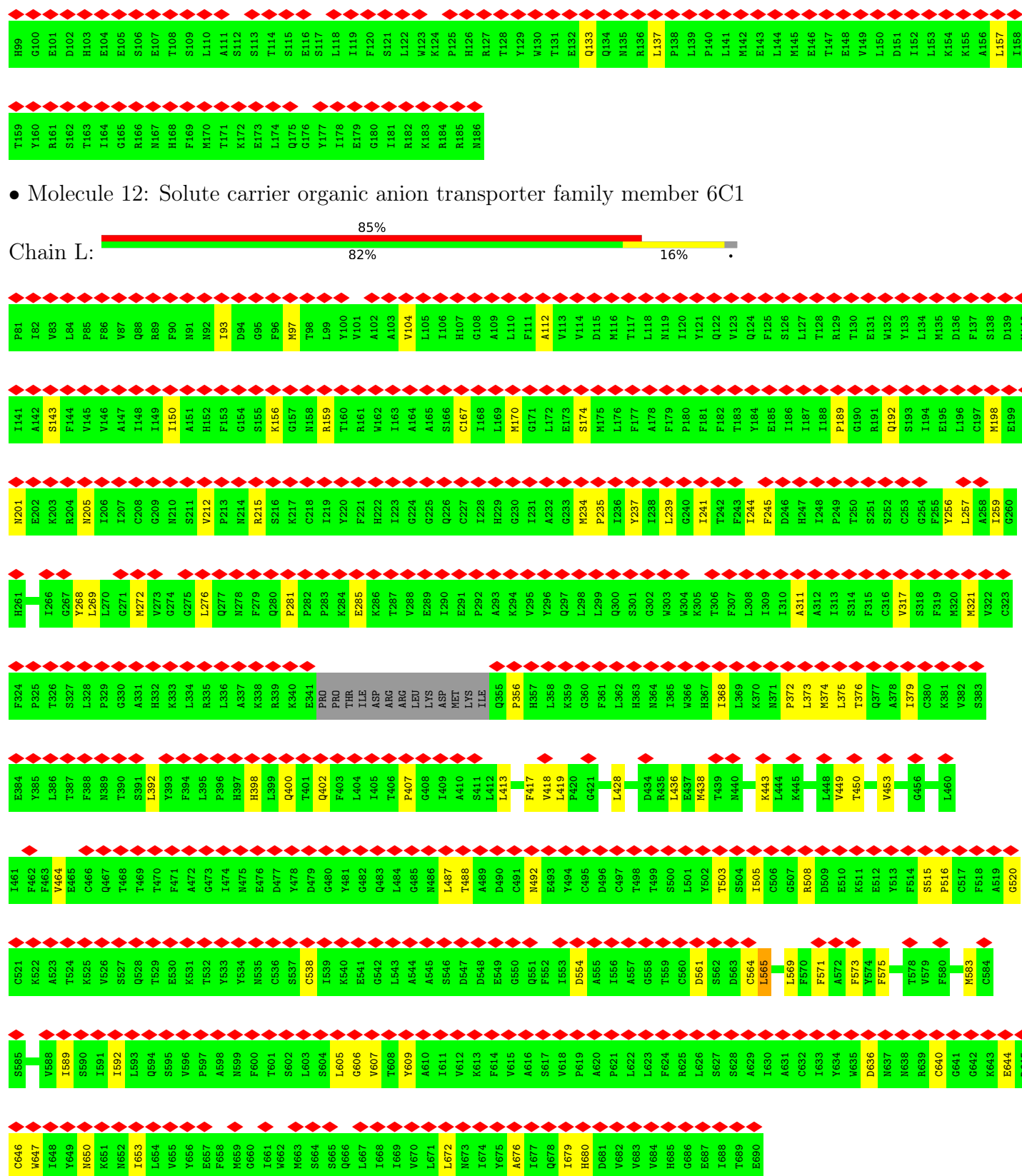


- Molecule 11: Cation channel sperm-associated auxiliary subunit zeta



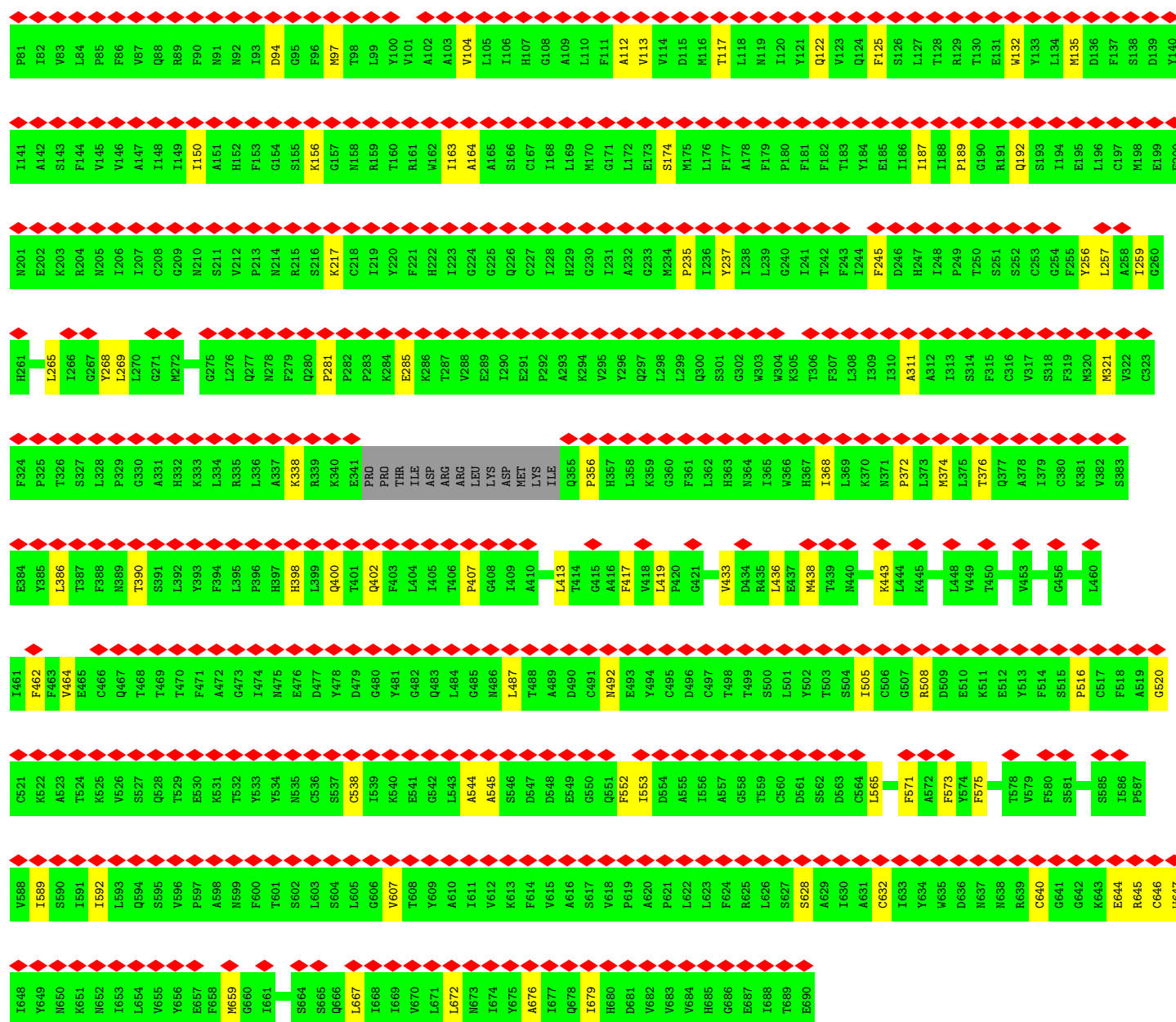
- Molecule 11: Cation channel sperm-associated auxiliary subunit zeta





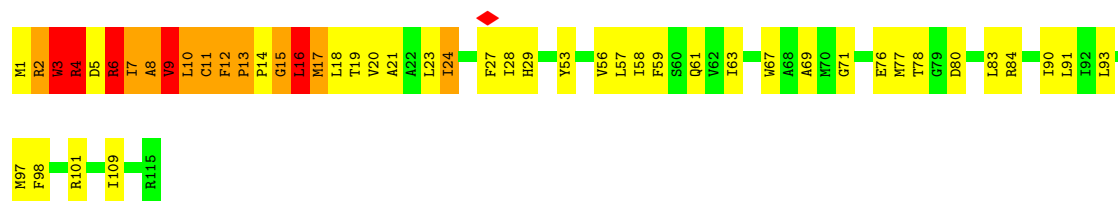
- Molecule 12: Solute carrier organic anion transporter family member 6C1

Chain L: 

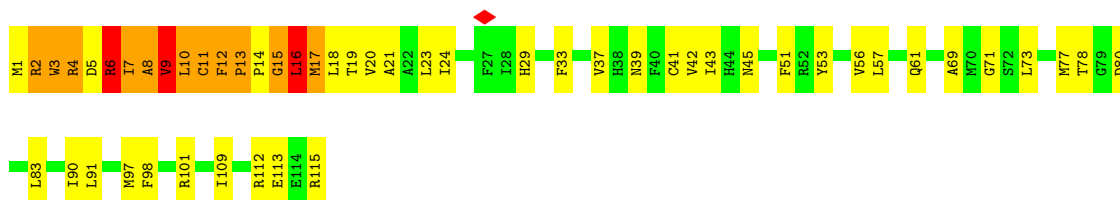


• Molecule 13: Cation channel sperm-associated auxiliary subunit TMEM262

Chain M: 



• Molecule 13: Cation channel sperm-associated auxiliary subunit TMEM262



- Molecule 14: Unknown protein



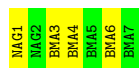
There are no outlier residues recorded for this chain.

- Molecule 14: Unknown protein

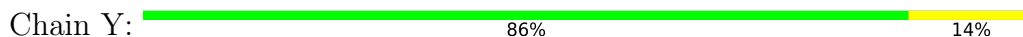


There are no outlier residues recorded for this chain.

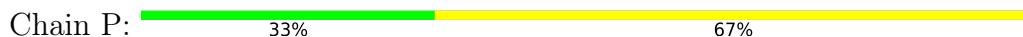
- Molecule 15: beta-D-mannopyranose-(1-2)-beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 15: beta-D-mannopyranose-(1-2)-beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain r:  100%

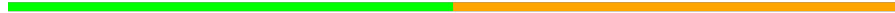
MAG1  
MAG2  
EM/13

- Molecule 16: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain s:  67% 33%

MAG1  
MAG2  
EM/13

- Molecule 17: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:  50% 50%

MAG1  
MAG2

- Molecule 17: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:  50% 50%

MAG1  
MAG2

- Molecule 17: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain p:  100%

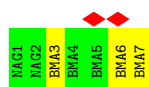
MAG1  
MAG2

- Molecule 17: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

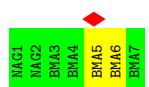
Chain u:  50% 50%

MAG1  
MAG2

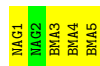
- Molecule 18: beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-6)-[beta-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 18: beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-6)-[beta-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 19: beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 19: beta-D-mannopyranose-(1-3)-[beta-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, Not provided                     |           |
| Number of particles used             | 459159                                  | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | TFS KRIOS                               | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 50                                      | Depositor |
| Minimum defocus (nm)                 | 1500                                    | Depositor |
| Maximum defocus (nm)                 | 2500                                    | Depositor |
| Magnification                        | Not provided                            |           |
| Image detector                       | GATAN K3 (6k x 4k)                      | Depositor |
| Maximum map value                    | 2.316                                   | Depositor |
| Minimum map value                    | -1.157                                  | Depositor |
| Average map value                    | 0.007                                   | Depositor |
| Map value standard deviation         | 0.068                                   | Depositor |
| Recommended contour level            | 0.178                                   | Depositor |
| Map size (Å)                         | 421.756, 421.756, 421.756               | wwPDB     |
| Map dimensions                       | 388, 388, 388                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 1.087, 1.087, 1.087                     | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CLR, BMA, NAG

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     | 0.20         | 0/2100          | 0.50        | 0/2855           |
| 1   | a     | 0.21         | 0/2100          | 0.54        | 1/2855 (0.0%)    |
| 2   | B     | 0.18         | 0/2406          | 0.45        | 2/3270 (0.1%)    |
| 2   | b     | 0.18         | 0/2406          | 0.45        | 0/3270           |
| 3   | C     | 0.16         | 0/2324          | 0.42        | 0/3141           |
| 3   | c     | 0.17         | 0/2324          | 0.43        | 0/3141           |
| 4   | D     | 0.21         | 0/2087          | 0.58        | 2/2835 (0.1%)    |
| 4   | d     | 0.22         | 0/2087          | 0.60        | 1/2835 (0.0%)    |
| 5   | E     | 0.37         | 7/8746 (0.1%)   | 0.56        | 13/11874 (0.1%)  |
| 5   | e     | 0.41         | 7/8746 (0.1%)   | 0.59        | 16/11874 (0.1%)  |
| 6   | F     | 0.23         | 0/8695          | 0.42        | 0/11809          |
| 6   | f     | 0.23         | 0/8695          | 0.45        | 0/11809          |
| 7   | G     | 0.20         | 0/5823          | 0.43        | 1/7921 (0.0%)    |
| 7   | g     | 0.24         | 0/5823          | 0.49        | 0/7921           |
| 8   | H     | 0.22         | 0/7706          | 0.45        | 1/10491 (0.0%)   |
| 8   | h     | 0.23         | 0/7706          | 0.50        | 3/10491 (0.0%)   |
| 9   | I     | 0.11         | 0/862           | 0.33        | 0/1201           |
| 9   | i     | 0.11         | 0/862           | 0.33        | 0/1201           |
| 10  | J     | 0.21         | 0/1441          | 0.57        | 0/1955           |
| 10  | j     | 0.22         | 0/1441          | 0.61        | 0/1955           |
| 11  | K     | 0.11         | 0/755           | 0.33        | 0/1051           |
| 11  | k     | 0.12         | 0/755           | 0.34        | 0/1051           |
| 12  | L     | 0.15         | 0/4817          | 0.38        | 1/6543 (0.0%)    |
| 12  | l     | 0.16         | 0/4817          | 0.39        | 0/6543           |
| 13  | M     | 0.62         | 2/961 (0.2%)    | 0.91        | 7/1299 (0.5%)    |
| 13  | m     | 0.67         | 3/961 (0.3%)    | 1.02        | 7/1299 (0.5%)    |
| All | All   | 0.26         | 19/97446 (0.0%) | 0.49        | 55/132490 (0.0%) |

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

sidechain that are expected to be planar.

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|-----|-------|---------------------|---------------------|
| 1   | A     | 0                   | 1                   |
| 1   | a     | 0                   | 1                   |
| 5   | E     | 0                   | 1                   |
| 5   | e     | 0                   | 2                   |
| 6   | f     | 0                   | 1                   |
| 7   | G     | 0                   | 1                   |
| 7   | g     | 0                   | 1                   |
| 8   | h     | 0                   | 1                   |
| All | All   | 0                   | 9                   |

All (19) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 5   | e     | 327 | SER  | C-N   | 17.70 | 1.57        | 1.33     |
| 13  | M     | 24  | ILE  | C-N   | 10.96 | 1.48        | 1.33     |
| 13  | m     | 24  | ILE  | C-N   | 10.36 | 1.47        | 1.33     |
| 13  | m     | 21  | ALA  | C-N   | -9.33 | 1.21        | 1.34     |
| 5   | E     | 287 | GLU  | C-N   | 8.50  | 1.45        | 1.34     |
| 5   | E     | 242 | LEU  | C-N   | 7.88  | 1.44        | 1.33     |
| 5   | E     | 327 | SER  | C-N   | 7.52  | 1.44        | 1.33     |
| 5   | e     | 232 | TYR  | C-N   | -7.14 | 1.25        | 1.33     |
| 5   | e     | 233 | ALA  | CA-CB | -6.29 | 1.45        | 1.53     |
| 5   | E     | 321 | ASN  | C-N   | -6.25 | 1.25        | 1.33     |
| 5   | E     | 241 | GLY  | CA-C  | -6.00 | 1.43        | 1.51     |
| 5   | e     | 241 | GLY  | CA-C  | -5.97 | 1.43        | 1.51     |
| 5   | e     | 243 | THR  | C-N   | 5.75  | 1.41        | 1.33     |
| 13  | M     | 3   | TRP  | CA-C  | -5.67 | 1.45        | 1.52     |
| 5   | e     | 286 | PHE  | N-CA  | -5.63 | 1.39        | 1.46     |
| 5   | E     | 286 | PHE  | N-CA  | -5.60 | 1.39        | 1.46     |
| 13  | m     | 3   | TRP  | CA-C  | -5.47 | 1.45        | 1.52     |
| 5   | E     | 327 | SER  | CA-C  | -5.27 | 1.45        | 1.52     |
| 5   | e     | 327 | SER  | CA-C  | -5.27 | 1.45        | 1.52     |

All (55) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|---------|--------|-------------|----------|
| 13  | M     | 3   | TRP  | N-CA-C  | -12.91 | 95.62       | 111.11   |
| 13  | m     | 3   | TRP  | N-CA-C  | -12.87 | 95.76       | 111.33   |
| 5   | E     | 287 | GLU  | O-C-N   | 11.12  | 137.38      | 122.59   |
| 8   | h     | 856 | PRO  | CA-N-CD | -11.00 | 96.59       | 112.00   |
| 13  | M     | 6   | ARG  | N-CA-C  | -10.55 | 99.78       | 111.07   |

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| Mol | Chain | Res | Type | Atoms    | Z      | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|--------|-------------|----------|
| 13  | m     | 6   | ARG  | N-CA-C   | -10.55 | 99.78       | 111.07   |
| 5   | e     | 287 | GLU  | CA-C-N   | -10.10 | 105.74      | 120.28   |
| 5   | e     | 287 | GLU  | C-N-CA   | -10.10 | 105.74      | 120.28   |
| 5   | E     | 287 | GLU  | CA-C-N   | -9.97  | 105.16      | 120.31   |
| 5   | E     | 287 | GLU  | C-N-CA   | -9.97  | 105.16      | 120.31   |
| 5   | e     | 287 | GLU  | O-C-N    | 9.00   | 134.74      | 122.59   |
| 13  | m     | 21  | ALA  | O-C-N    | -8.71  | 112.88      | 122.12   |
| 5   | E     | 327 | SER  | CB-CA-C  | -8.59  | 93.33       | 110.42   |
| 5   | e     | 327 | SER  | CB-CA-C  | -8.58  | 93.34       | 110.42   |
| 7   | G     | 696 | PRO  | CA-N-CD  | -7.99  | 100.82      | 112.00   |
| 8   | h     | 932 | MET  | CB-CG-SD | 7.98   | 136.65      | 112.70   |
| 5   | E     | 240 | GLN  | N-CA-C   | 7.96   | 127.75      | 110.80   |
| 5   | e     | 240 | GLN  | N-CA-C   | 7.95   | 127.73      | 110.80   |
| 5   | e     | 322 | ARG  | CB-CA-C  | -7.92  | 100.21      | 111.85   |
| 13  | m     | 9   | VAL  | N-CA-C   | 6.93   | 123.76      | 109.34   |
| 13  | m     | 21  | ALA  | CA-C-N   | 6.93   | 130.50      | 120.38   |
| 13  | m     | 21  | ALA  | C-N-CA   | 6.93   | 130.50      | 120.38   |
| 13  | M     | 9   | VAL  | N-CA-C   | 6.93   | 123.75      | 109.34   |
| 13  | M     | 21  | ALA  | O-C-N    | -6.76  | 114.95      | 122.12   |
| 13  | m     | 9   | VAL  | CB-CA-C  | -6.74  | 100.24      | 111.29   |
| 13  | M     | 9   | VAL  | CB-CA-C  | -6.72  | 100.27      | 111.29   |
| 2   | B     | 353 | MET  | CA-CB-CG | 6.58   | 127.27      | 114.10   |
| 5   | E     | 882 | PRO  | CA-N-CD  | -6.44  | 102.98      | 112.00   |
| 4   | d     | 223 | MET  | CA-CB-CG | 6.22   | 126.55      | 114.10   |
| 5   | E     | 323 | THR  | N-CA-C   | 6.20   | 117.88      | 110.19   |
| 5   | e     | 323 | THR  | N-CA-C   | 6.19   | 117.86      | 110.19   |
| 5   | e     | 235 | LEU  | N-CA-C   | 5.99   | 117.74      | 109.54   |
| 4   | D     | 223 | MET  | CA-CB-CG | 5.95   | 126.00      | 114.10   |
| 8   | H     | 856 | PRO  | CA-N-CD  | -5.93  | 103.70      | 112.00   |
| 4   | D     | 223 | MET  | CB-CG-SD | 5.84   | 130.21      | 112.70   |
| 5   | E     | 685 | MET  | CA-CB-CG | 5.78   | 125.65      | 114.10   |
| 5   | e     | 327 | SER  | CA-C-N   | -5.61  | 113.84      | 122.87   |
| 5   | e     | 327 | SER  | C-N-CA   | -5.61  | 113.84      | 122.87   |
| 1   | a     | 338 | LEU  | CB-CA-C  | -5.56  | 109.18      | 115.79   |
| 5   | e     | 284 | CYS  | N-CA-C   | 5.54   | 117.76      | 108.23   |
| 5   | E     | 284 | CYS  | N-CA-C   | 5.54   | 117.75      | 108.23   |
| 5   | e     | 322 | ARG  | N-CA-C   | 5.52   | 117.59      | 108.49   |
| 5   | E     | 240 | GLN  | N-CA-CB  | -5.49  | 101.21      | 110.49   |
| 5   | e     | 240 | GLN  | N-CA-CB  | -5.49  | 101.22      | 110.49   |
| 5   | E     | 324 | LEU  | N-CA-C   | -5.42  | 106.62      | 113.18   |
| 13  | M     | 21  | ALA  | CA-C-N   | 5.40   | 128.26      | 120.38   |
| 13  | M     | 21  | ALA  | C-N-CA   | 5.40   | 128.26      | 120.38   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 5   | e     | 324 | LEU  | N-CA-C   | -5.38 | 106.67      | 113.18   |
| 8   | h     | 856 | PRO  | N-CD-CG  | -5.31 | 95.23       | 103.20   |
| 5   | e     | 468 | GLU  | CA-C-N   | 5.16  | 135.29      | 126.32   |
| 5   | e     | 468 | GLU  | C-N-CA   | 5.16  | 135.29      | 126.32   |
| 2   | B     | 353 | MET  | N-CA-CB  | 5.15  | 118.80      | 110.40   |
| 12  | L     | 565 | LEU  | CA-CB-CG | 5.14  | 134.29      | 116.30   |
| 5   | E     | 882 | PRO  | N-CD-CG  | -5.13 | 95.51       | 103.20   |
| 5   | E     | 559 | MET  | CB-CG-SD | 5.11  | 128.04      | 112.70   |

There are no chirality outliers.

All (9) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group   |
|-----|-------|-----|------|---------|
| 1   | A     | 372 | THR  | Peptide |
| 5   | E     | 916 | VAL  | Peptide |
| 7   | G     | 660 | LEU  | Peptide |
| 1   | a     | 372 | THR  | Peptide |
| 5   | e     | 916 | VAL  | Peptide |
| 5   | e     | 970 | PRO  | Peptide |
| 6   | f     | 244 | THR  | Peptide |
| 7   | g     | 660 | LEU  | Peptide |
| 8   | h     | 648 | PRO  | Peptide |

## 5.2 Too-close contacts [i](#)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in 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     | 2053  | 0        | 2142     | 53      | 0            |
| 1   | a     | 2053  | 0        | 2142     | 59      | 0            |
| 2   | B     | 2343  | 0        | 2435     | 52      | 0            |
| 2   | b     | 2343  | 0        | 2435     | 50      | 0            |
| 3   | C     | 2277  | 0        | 2339     | 45      | 0            |
| 3   | c     | 2277  | 0        | 2339     | 48      | 0            |
| 4   | D     | 2035  | 0        | 2088     | 49      | 0            |
| 4   | d     | 2035  | 0        | 2088     | 50      | 0            |
| 5   | E     | 8510  | 0        | 8442     | 132     | 0            |
| 5   | e     | 8510  | 0        | 8442     | 125     | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 6   | F     | 8454  | 0        | 8307     | 104     | 0            |
| 6   | f     | 8454  | 0        | 8307     | 81      | 0            |
| 7   | G     | 5680  | 0        | 5597     | 81      | 0            |
| 7   | g     | 5680  | 0        | 5597     | 77      | 0            |
| 8   | H     | 7502  | 0        | 7358     | 123     | 0            |
| 8   | h     | 7502  | 0        | 7358     | 122     | 0            |
| 9   | I     | 863   | 0        | 370      | 0       | 0            |
| 9   | i     | 863   | 0        | 370      | 1       | 0            |
| 10  | J     | 1398  | 0        | 1410     | 40      | 0            |
| 10  | j     | 1398  | 0        | 1410     | 33      | 0            |
| 11  | K     | 755   | 0        | 351      | 2       | 0            |
| 11  | k     | 755   | 0        | 351      | 3       | 0            |
| 12  | L     | 4694  | 0        | 4700     | 59      | 0            |
| 12  | l     | 4694  | 0        | 4700     | 51      | 0            |
| 13  | M     | 936   | 0        | 943      | 93      | 0            |
| 13  | m     | 936   | 0        | 943      | 94      | 0            |
| 14  | N     | 140   | 0        | 31       | 0       | 0            |
| 14  | n     | 140   | 0        | 31       | 0       | 0            |
| 15  | O     | 83    | 0        | 70       | 1       | 0            |
| 15  | Y     | 83    | 0        | 70       | 0       | 0            |
| 16  | P     | 39    | 0        | 34       | 1       | 0            |
| 16  | Q     | 39    | 0        | 34       | 0       | 0            |
| 16  | S     | 39    | 0        | 34       | 0       | 0            |
| 16  | T     | 39    | 0        | 34       | 0       | 0            |
| 16  | U     | 39    | 0        | 34       | 1       | 0            |
| 16  | Z     | 39    | 0        | 34       | 1       | 0            |
| 16  | o     | 39    | 0        | 34       | 0       | 0            |
| 16  | q     | 39    | 0        | 34       | 0       | 0            |
| 16  | r     | 39    | 0        | 34       | 0       | 0            |
| 16  | s     | 39    | 0        | 34       | 1       | 0            |
| 17  | R     | 28    | 0        | 25       | 1       | 0            |
| 17  | W     | 28    | 0        | 25       | 0       | 0            |
| 17  | p     | 28    | 0        | 25       | 0       | 0            |
| 17  | u     | 28    | 0        | 25       | 0       | 0            |
| 18  | V     | 83    | 0        | 70       | 0       | 0            |
| 18  | t     | 83    | 0        | 70       | 0       | 0            |
| 19  | X     | 61    | 0        | 52       | 1       | 0            |
| 19  | v     | 61    | 0        | 52       | 0       | 0            |
| 20  | E     | 84    | 0        | 78       | 1       | 0            |
| 20  | F     | 14    | 0        | 13       | 0       | 0            |
| 20  | G     | 28    | 0        | 26       | 0       | 0            |
| 20  | e     | 84    | 0        | 78       | 0       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 20  | f     | 14    | 0        | 13       | 0       | 0            |
| 20  | g     | 28    | 0        | 26       | 0       | 0            |
| 21  | M     | 28    | 0        | 46       | 1       | 0            |
| 21  | m     | 28    | 0        | 46       | 0       | 0            |
| All | All   | 96544 | 0        | 94176    | 1513    | 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 8.

All (1513) 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) |
|------------------|-------------------|--------------------------|-------------------|
| 5:e:205:ASN:OD1  | 5:e:242:LEU:HD23  | 1.43                     | 1.15              |
| 13:m:23:LEU:CD2  | 13:m:90:ILE:HD12  | 1.79                     | 1.13              |
| 13:m:23:LEU:HD21 | 13:m:90:ILE:HD12  | 1.39                     | 1.01              |
| 13:M:2:ARG:HB3   | 13:M:5:ASP:H      | 1.28                     | 0.97              |
| 13:m:5:ASP:HA    | 13:m:8:ALA:HB2    | 1.46                     | 0.96              |
| 13:M:5:ASP:HA    | 13:M:8:ALA:HB2    | 1.46                     | 0.95              |
| 13:m:9:VAL:HB    | 13:m:10:LEU:HD13  | 1.48                     | 0.95              |
| 13:m:23:LEU:HD21 | 13:m:90:ILE:CD1   | 1.95                     | 0.95              |
| 13:m:2:ARG:HB3   | 13:m:5:ASP:H      | 1.29                     | 0.93              |
| 13:M:9:VAL:HB    | 13:M:10:LEU:HD13  | 1.48                     | 0.92              |
| 5:E:323:THR:HG23 | 5:E:326:GLU:H     | 1.39                     | 0.88              |
| 5:e:323:THR:HG23 | 5:e:326:GLU:H     | 1.41                     | 0.85              |
| 12:L:97:MET:HE1  | 12:L:244:ILE:HG12 | 1.58                     | 0.85              |
| 10:J:59:TRP:CZ2  | 13:M:17:MET:HE2   | 2.12                     | 0.82              |
| 8:H:87:CYS:HA    | 8:H:101:CYS:HB3   | 1.63                     | 0.81              |
| 13:m:23:LEU:HD22 | 13:m:90:ILE:HD12  | 1.61                     | 0.80              |
| 5:E:205:ASN:OD1  | 5:E:242:LEU:HD23  | 1.82                     | 0.79              |
| 13:m:15:GLY:HA2  | 13:m:18:LEU:HD23  | 1.65                     | 0.79              |
| 5:E:285:GLY:O    | 5:E:286:PHE:C     | 2.26                     | 0.78              |
| 5:e:285:GLY:O    | 5:e:286:PHE:C     | 2.26                     | 0.78              |
| 6:f:52:ASN:O     | 6:f:98:TYR:HA     | 1.84                     | 0.78              |
| 13:m:15:GLY:HA2  | 13:m:18:LEU:CD2   | 2.13                     | 0.78              |
| 13:M:7:ILE:HA    | 13:M:12:PHE:CE1   | 2.19                     | 0.78              |
| 13:m:7:ILE:HA    | 13:m:12:PHE:CE1   | 2.19                     | 0.78              |
| 13:M:15:GLY:HA2  | 13:M:18:LEU:CD2   | 2.13                     | 0.78              |
| 13:M:23:LEU:CD2  | 13:M:90:ILE:HD12  | 2.13                     | 0.78              |
| 8:h:87:CYS:HA    | 8:h:101:CYS:HB3   | 1.65                     | 0.78              |
| 8:h:819:TRP:HE1  | 8:h:908:ARG:HB2   | 1.48                     | 0.77              |
| 5:E:228:THR:HG23 | 5:E:242:LEU:HD11  | 1.65                     | 0.77              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 2:b:276:MET:HE3  | 2:b:283:ASN:HD21 | 1.50                     | 0.76              |
| 13:M:15:GLY:HA2  | 13:M:18:LEU:HD23 | 1.65                     | 0.76              |
| 6:f:721:LEU:HB3  | 6:f:727:ALA:HB2  | 1.68                     | 0.76              |
| 2:B:115:LEU:HB3  | 2:B:151:ILE:HD11 | 1.68                     | 0.76              |
| 13:M:23:LEU:HD22 | 13:M:90:ILE:HD12 | 1.65                     | 0.75              |
| 7:g:165:ILE:HG13 | 7:g:211:MET:HE1  | 1.68                     | 0.75              |
| 6:f:761:TRP:HB3  | 6:f:825:ILE:HG13 | 1.69                     | 0.74              |
| 5:e:918:SER:H    | 5:e:921:MET:HB3  | 1.54                     | 0.73              |
| 4:D:187:MET:HG3  | 4:D:188:PRO:HD3  | 1.69                     | 0.73              |
| 6:F:52:ASN:O     | 6:F:98:TYR:HA    | 1.88                     | 0.72              |
| 5:e:205:ASN:OD1  | 5:e:242:LEU:CD2  | 2.33                     | 0.72              |
| 8:H:439:CYS:SG   | 8:H:442:CYS:N    | 2.58                     | 0.72              |
| 7:G:669:VAL:O    | 7:G:676:ASN:ND2  | 2.23                     | 0.72              |
| 13:M:9:VAL:C     | 13:M:11:CYS:H    | 1.98                     | 0.71              |
| 8:h:391:GLY:HA2  | 8:h:397:PHE:HB3  | 1.73                     | 0.71              |
| 10:j:8:SER:HB2   | 10:j:12:LEU:HD13 | 1.71                     | 0.71              |
| 13:M:23:LEU:HD21 | 13:M:90:ILE:CD1  | 2.21                     | 0.71              |
| 10:J:86:ARG:NH2  | 13:M:10:LEU:HD23 | 2.06                     | 0.71              |
| 13:m:9:VAL:C     | 13:m:11:CYS:H    | 1.98                     | 0.71              |
| 12:l:462:PHE:HB2 | 12:l:659:MET:HE2 | 1.73                     | 0.70              |
| 1:A:365:THR:HG21 | 1:A:466:LEU:HD11 | 1.72                     | 0.70              |
| 3:C:106:PRO:HA   | 3:C:109:TYR:HB2  | 1.72                     | 0.70              |
| 8:h:819:TRP:NE1  | 8:h:908:ARG:HB2  | 2.06                     | 0.70              |
| 4:D:209:VAL:HA   | 4:D:212:PHE:HB2  | 1.74                     | 0.70              |
| 13:m:16:LEU:O    | 13:m:19:THR:N    | 2.24                     | 0.70              |
| 13:m:61:GLN:NE2  | 13:m:97:MET:SD   | 2.65                     | 0.70              |
| 13:M:16:LEU:O    | 13:M:19:THR:N    | 2.24                     | 0.69              |
| 13:M:29:HIS:ND1  | 13:M:61:GLN:OE1  | 2.25                     | 0.69              |
| 1:a:419:ASP:OD1  | 1:a:461:ARG:NH1  | 2.25                     | 0.69              |
| 8:H:391:GLY:HA2  | 8:H:397:PHE:HB3  | 1.74                     | 0.69              |
| 13:M:5:ASP:O     | 13:M:8:ALA:HB3   | 1.93                     | 0.69              |
| 13:M:23:LEU:CD2  | 13:M:90:ILE:CD1  | 2.71                     | 0.69              |
| 13:m:5:ASP:O     | 13:m:8:ALA:HB3   | 1.93                     | 0.69              |
| 3:C:99:LEU:HD11  | 7:G:732:THR:HG22 | 1.72                     | 0.69              |
| 3:C:128:PRO:HB2  | 3:C:148:ILE:HD11 | 1.75                     | 0.69              |
| 5:E:58:VAL:HG12  | 5:E:112:ILE:HG22 | 1.74                     | 0.69              |
| 1:a:397:LEU:HD11 | 6:f:1070:THR:HA  | 1.73                     | 0.69              |
| 8:h:320:ILE:HG22 | 8:h:327:LEU:HB2  | 1.74                     | 0.69              |
| 13:m:12:PHE:CG   | 13:m:13:PRO:HD2  | 2.28                     | 0.69              |
| 13:M:12:PHE:CG   | 13:M:13:PRO:HD2  | 2.28                     | 0.69              |
| 12:l:94:ASP:HA   | 12:l:97:MET:HG2  | 1.75                     | 0.69              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:H:320:ILE:HG22 | 8:H:327:LEU:HB2   | 1.74                     | 0.69              |
| 4:d:209:VAL:HA   | 4:d:212:PHE:HB2   | 1.74                     | 0.69              |
| 3:c:119:VAL:HA   | 3:c:122:LEU:HD12  | 1.75                     | 0.68              |
| 3:C:161:ARG:HG3  | 3:C:164:ARG:HH21  | 1.59                     | 0.68              |
| 4:d:116:VAL:HG21 | 4:d:140:VAL:HG21  | 1.74                     | 0.68              |
| 6:f:398:LEU:HD12 | 6:f:399:PRO:HD2   | 1.75                     | 0.68              |
| 8:H:109:ILE:HD12 | 8:H:122:LEU:HD13  | 1.75                     | 0.68              |
| 4:D:116:VAL:HG21 | 4:D:140:VAL:HG21  | 1.76                     | 0.68              |
| 7:G:129:GLY:HA3  | 7:G:180:PHE:H     | 1.58                     | 0.68              |
| 5:e:982:ARG:NH2  | 5:e:1025:LEU:O    | 2.27                     | 0.68              |
| 8:H:939:TYR:HB2  | 12:L:565:LEU:HD22 | 1.76                     | 0.67              |
| 5:E:23:ILE:HD13  | 5:E:26:LYS:HE2    | 1.74                     | 0.67              |
| 7:g:744:PRO:HA   | 7:g:747:LEU:HB2   | 1.75                     | 0.67              |
| 13:m:29:HIS:ND1  | 13:m:61:GLN:OE1   | 2.27                     | 0.67              |
| 10:J:102:LEU:HB3 | 10:J:110:ARG:HH21 | 1.58                     | 0.67              |
| 7:G:744:PRO:HA   | 7:G:747:LEU:HB2   | 1.77                     | 0.67              |
| 3:c:161:ARG:HG3  | 3:c:164:ARG:HH21  | 1.60                     | 0.67              |
| 8:H:186:GLN:HE21 | 8:H:237:ILE:HD12  | 1.60                     | 0.67              |
| 1:A:353:PHE:O    | 1:A:357:ILE:HB    | 1.96                     | 0.66              |
| 3:c:106:PRO:HA   | 3:c:109:TYR:HB2   | 1.76                     | 0.66              |
| 1:a:388:ASP:OD2  | 1:a:458:ARG:NH1   | 2.29                     | 0.66              |
| 6:F:796:THR:HB   | 6:F:846:MET:HB3   | 1.77                     | 0.66              |
| 13:m:57:LEU:HB3  | 13:m:101:ARG:HH12 | 1.61                     | 0.66              |
| 13:M:61:GLN:NE2  | 13:M:97:MET:SD    | 2.68                     | 0.66              |
| 13:m:77:MET:SD   | 13:m:77:MET:N     | 2.68                     | 0.66              |
| 13:m:18:LEU:HD11 | 13:m:71:GLY:HA2   | 1.78                     | 0.66              |
| 1:A:388:ASP:OD2  | 1:A:458:ARG:NH1   | 2.29                     | 0.66              |
| 8:H:251:ILE:HD11 | 8:H:301:VAL:HG22  | 1.77                     | 0.66              |
| 8:H:816:PHE:HB3  | 8:H:909:LEU:HD11  | 1.76                     | 0.66              |
| 11:K:133:GLN:HA  | 11:K:137:LEU:HB2  | 1.78                     | 0.66              |
| 2:B:242:LEU:HD11 | 2:B:337:MET:HE3   | 1.78                     | 0.66              |
| 7:G:62:VAL:HG22  | 7:G:70:LEU:HD13   | 1.78                     | 0.65              |
| 2:b:266:ARG:HH12 | 2:b:279:SER:HA    | 1.61                     | 0.65              |
| 13:m:113:GLU:HG3 | 13:m:115:ARG:HH12 | 1.61                     | 0.65              |
| 5:e:228:THR:HG23 | 5:e:242:LEU:HD21  | 1.78                     | 0.65              |
| 7:G:522:CYS:HB3  | 7:G:529:PRO:HD3   | 1.78                     | 0.65              |
| 6:F:590:LEU:O    | 6:F:596:GLU:HA    | 1.97                     | 0.65              |
| 5:e:264:VAL:HG11 | 5:e:337:PHE:HB2   | 1.79                     | 0.65              |
| 6:F:894:HIS:HA   | 6:F:897:GLU:HG2   | 1.79                     | 0.65              |
| 13:m:3:TRP:O     | 13:m:7:ILE:HG12   | 1.97                     | 0.65              |
| 6:F:814:ASN:HB2  | 8:H:676:ALA:HB3   | 1.78                     | 0.64              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:e:630:ILE:HG22  | 5:e:640:ILE:HG12  | 1.79                     | 0.64              |
| 2:b:98:TRP:HZ2    | 8:h:960:TYR:HA    | 1.62                     | 0.64              |
| 2:b:189:PRO:HA    | 2:b:192:VAL:HG22  | 1.78                     | 0.64              |
| 3:c:223:LEU:HD13  | 3:c:232:LEU:HD23  | 1.79                     | 0.64              |
| 3:c:99:LEU:HD11   | 7:g:732:THR:HG22  | 1.78                     | 0.64              |
| 13:m:5:ASP:C      | 13:m:8:ALA:H      | 2.06                     | 0.64              |
| 12:L:520:GLY:HA3  | 12:L:538:CYS:H    | 1.63                     | 0.64              |
| 3:c:229:TRP:HE1   | 4:d:232:ILE:HG12  | 1.62                     | 0.64              |
| 6:f:1012:CYS:O    | 6:f:1061:ARG:NH2  | 2.31                     | 0.64              |
| 1:A:349:GLN:O     | 1:A:353:PHE:CB    | 2.46                     | 0.64              |
| 2:B:189:PRO:HA    | 2:B:192:VAL:HG22  | 1.79                     | 0.64              |
| 3:c:183:LEU:HG    | 4:d:176:LEU:HD11  | 1.80                     | 0.64              |
| 7:G:626:GLN:HG2   | 7:G:643:TRP:HZ2   | 1.63                     | 0.64              |
| 11:k:133:GLN:HA   | 11:k:137:LEU:HB2  | 1.80                     | 0.64              |
| 13:M:3:TRP:O      | 13:M:4:ARG:C      | 2.41                     | 0.64              |
| 13:M:5:ASP:C      | 13:M:8:ALA:H      | 2.05                     | 0.64              |
| 7:g:245:LYS:HE2   | 7:g:298:SER:HB2   | 1.80                     | 0.64              |
| 5:E:874:PRO:HB3   | 5:E:879:ILE:HA    | 1.79                     | 0.63              |
| 7:G:69:PHE:HB3    | 7:G:79:LEU:HD23   | 1.80                     | 0.63              |
| 13:M:57:LEU:HB3   | 13:M:101:ARG:HH12 | 1.62                     | 0.63              |
| 13:m:3:TRP:O      | 13:m:4:ARG:C      | 2.41                     | 0.63              |
| 5:e:926:GLU:HA    | 5:e:929:LYS:HD2   | 1.79                     | 0.63              |
| 12:l:368:ILE:HD13 | 12:l:607:VAL:HG11 | 1.79                     | 0.63              |
| 13:m:15:GLY:O     | 13:m:16:LEU:C     | 2.41                     | 0.63              |
| 1:A:397:LEU:HD11  | 6:F:1070:THR:HA   | 1.79                     | 0.63              |
| 12:l:376:THR:HG23 | 12:l:672:LEU:HB3  | 1.80                     | 0.63              |
| 5:E:587:ASN:HB3   | 5:E:718:ARG:HH21  | 1.63                     | 0.63              |
| 6:f:483:ASN:ND2   | 6:f:539:GLU:OE1   | 2.32                     | 0.63              |
| 6:F:450:ILE:HG22  | 6:F:472:MET:HE3   | 1.81                     | 0.63              |
| 8:H:268:LEU:HD12  | 8:H:282:LEU:HD11  | 1.80                     | 0.63              |
| 8:h:758:PHE:HB3   | 8:h:779:TYR:HB3   | 1.81                     | 0.63              |
| 13:M:3:TRP:HE1    | 13:m:4:ARG:HH11   | 1.45                     | 0.62              |
| 1:A:506:VAL:HB    | 2:B:209:VAL:HG21  | 1.80                     | 0.62              |
| 4:d:155:VAL:HG13  | 4:d:159:TYR:HD1   | 1.64                     | 0.62              |
| 6:f:804:SER:HB3   | 6:f:825:ILE:HG22  | 1.82                     | 0.62              |
| 3:c:128:PRO:HB2   | 3:c:148:ILE:HD11  | 1.80                     | 0.62              |
| 5:e:235:LEU:HD13  | 5:e:263:TYR:OH    | 1.99                     | 0.62              |
| 7:G:508:ASP:N     | 7:G:701:CYS:SG    | 2.73                     | 0.62              |
| 12:L:374:MET:HE1  | 12:L:592:ILE:HG12 | 1.81                     | 0.62              |
| 5:e:923:ASN:OD1   | 5:e:923:ASN:N     | 2.32                     | 0.62              |
| 6:f:647:LYS:HA    | 6:f:751:PRO:HB3   | 1.82                     | 0.62              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:g:645:ARG:NH2   | 7:g:696:PRO:O     | 2.33                     | 0.62              |
| 7:G:616:ALA:HB2   | 7:G:667:TYR:HB2   | 1.82                     | 0.62              |
| 8:H:743:ILE:HG12  | 8:H:921:LEU:HB3   | 1.81                     | 0.62              |
| 12:L:376:THR:HG21 | 12:L:676:ALA:HB2  | 1.82                     | 0.62              |
| 5:E:556:PRO:HG2   | 5:E:559:MET:HG2   | 1.81                     | 0.62              |
| 8:H:814:ALA:HB1   | 8:H:913:ASP:HB2   | 1.81                     | 0.62              |
| 5:e:516:LYS:O     | 5:e:525:SER:OG    | 2.18                     | 0.62              |
| 6:F:415:ARG:NH1   | 6:F:436:GLU:OE2   | 2.32                     | 0.61              |
| 13:M:3:TRP:O      | 13:M:7:ILE:HG12   | 1.99                     | 0.61              |
| 8:h:939:TYR:HB2   | 12:l:565:LEU:HB3  | 1.81                     | 0.61              |
| 6:F:652:ARG:NH2   | 6:F:929:ASP:OD1   | 2.33                     | 0.61              |
| 8:H:359:PHE:HB2   | 8:H:380:LEU:HD11  | 1.82                     | 0.61              |
| 12:L:281:PRO:HB2  | 12:L:285:GLU:HG2  | 1.81                     | 0.61              |
| 10:j:86:ARG:NH2   | 13:m:10:LEU:HD23  | 2.14                     | 0.61              |
| 10:J:29:CYS:SG    | 10:J:30:LEU:N     | 2.73                     | 0.61              |
| 5:E:538:ILE:HB    | 5:E:554:HIS:HB3   | 1.83                     | 0.61              |
| 5:e:323:THR:OG1   | 5:e:324:LEU:N     | 2.34                     | 0.61              |
| 7:g:355:ASP:OD1   | 7:g:357:HIS:ND1   | 2.33                     | 0.61              |
| 8:H:407:LYS:NZ    | 8:H:416:ASP:O     | 2.34                     | 0.61              |
| 1:A:349:GLN:O     | 1:A:353:PHE:HB3   | 2.01                     | 0.61              |
| 8:h:899:MET:SD    | 8:h:899:MET:N     | 2.74                     | 0.61              |
| 10:j:102:LEU:HB3  | 10:j:110:ARG:HH21 | 1.65                     | 0.61              |
| 3:C:229:TRP:HE1   | 4:D:232:ILE:HG12  | 1.64                     | 0.61              |
| 1:a:349:GLN:O     | 1:a:353:PHE:CB    | 2.48                     | 0.61              |
| 8:h:186:GLN:HE21  | 8:h:237:ILE:HD12  | 1.66                     | 0.60              |
| 8:H:582:ILE:HD11  | 8:H:600:TYR:HD2   | 1.66                     | 0.60              |
| 13:M:15:GLY:O     | 13:M:16:LEU:C     | 2.41                     | 0.60              |
| 1:a:506:VAL:HB    | 2:b:209:VAL:HG21  | 1.83                     | 0.60              |
| 5:e:874:PRO:HB3   | 5:e:879:ILE:HA    | 1.82                     | 0.60              |
| 10:j:132:ARG:HD3  | 10:j:134:GLU:H    | 1.66                     | 0.60              |
| 5:E:322:ARG:O     | 5:E:322:ARG:HG3   | 2.01                     | 0.60              |
| 8:H:758:PHE:HB3   | 8:H:779:TYR:HB3   | 1.84                     | 0.60              |
| 5:e:323:THR:HG23  | 5:e:326:GLU:N     | 2.14                     | 0.60              |
| 10:j:70:LEU:HB2   | 10:j:72:LEU:HG    | 1.83                     | 0.60              |
| 8:H:351:ILE:HD11  | 8:H:356:ILE:HD11  | 1.83                     | 0.60              |
| 6:f:654:GLU:HG3   | 6:f:931:VAL:HG12  | 1.83                     | 0.60              |
| 8:h:120:ARG:NH1   | 8:h:605:GLU:OE1   | 2.35                     | 0.60              |
| 8:h:530:VAL:HG22  | 8:h:540:VAL:HG22  | 1.84                     | 0.60              |
| 8:h:708:THR:HA    | 8:h:735:VAL:HG23  | 1.84                     | 0.60              |
| 1:A:578:ASP:HA    | 1:A:581:GLN:HB3   | 1.82                     | 0.60              |
| 6:f:944:LEU:HD11  | 6:f:1029:LEU:HD12 | 1.83                     | 0.60              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:F:322:THR:HG22  | 6:F:332:GLY:HA3   | 1.83                     | 0.60              |
| 5:E:323:THR:OG1   | 5:E:324:LEU:N     | 2.34                     | 0.60              |
| 6:F:767:VAL:HG22  | 6:F:819:ILE:HD12  | 1.82                     | 0.60              |
| 12:L:156:LYS:HB3  | 12:L:356:PRO:HG3  | 1.84                     | 0.60              |
| 13:M:18:LEU:HD11  | 13:M:71:GLY:HA2   | 1.84                     | 0.60              |
| 2:B:98:TRP:HZ2    | 8:H:960:TYR:HA    | 1.65                     | 0.60              |
| 5:E:874:PRO:O     | 5:E:982:ARG:NH1   | 2.32                     | 0.60              |
| 5:E:235:LEU:O     | 5:E:236:LYS:C     | 2.43                     | 0.59              |
| 12:L:269:LEU:HD13 | 12:L:419:LEU:HD23 | 1.84                     | 0.59              |
| 1:a:353:PHE:O     | 1:a:357:ILE:HB    | 2.02                     | 0.59              |
| 5:e:286:PHE:HA    | 5:e:320:ARG:HH21  | 1.67                     | 0.59              |
| 6:f:656:TYR:HH    | 6:f:689:HIS:HD1   | 1.49                     | 0.59              |
| 10:j:65:ILE:HD11  | 10:j:68:ARG:HG3   | 1.84                     | 0.59              |
| 1:a:496:MET:HE2   | 1:a:533:LEU:HD21  | 1.84                     | 0.59              |
| 10:J:70:LEU:HB2   | 10:J:72:LEU:HG    | 1.83                     | 0.59              |
| 5:e:387:MET:HG3   | 5:e:398:LYS:HG3   | 1.84                     | 0.59              |
| 6:f:470:THR:HG21  | 6:f:510:LYS:HD3   | 1.84                     | 0.59              |
| 7:g:62:VAL:HG22   | 7:g:70:LEU:HD13   | 1.83                     | 0.59              |
| 5:E:323:THR:HG23  | 5:E:326:GLU:N     | 2.14                     | 0.59              |
| 6:F:833:GLN:NE2   | 6:F:1034:ARG:O    | 2.36                     | 0.59              |
| 6:f:656:TYR:OH    | 6:f:689:HIS:ND1   | 2.36                     | 0.59              |
| 6:f:750:ILE:HG21  | 6:f:870:LYS:HE2   | 1.85                     | 0.59              |
| 7:g:571:ARG:HH21  | 7:g:708:SER:H     | 1.50                     | 0.59              |
| 12:l:156:LYS:HB3  | 12:l:356:PRO:HG3  | 1.85                     | 0.59              |
| 4:d:160:PRO:HA    | 4:d:163:VAL:HG22  | 1.85                     | 0.59              |
| 12:L:400:GLN:HG3  | 12:L:407:PRO:HG3  | 1.85                     | 0.59              |
| 13:M:5:ASP:HA     | 13:M:8:ALA:CB     | 2.27                     | 0.59              |
| 5:e:326:GLU:O     | 5:e:327:SER:OG    | 2.17                     | 0.59              |
| 8:h:80:SER:OG     | 8:h:81:TRP:N      | 2.35                     | 0.59              |
| 7:G:245:LYS:HE2   | 7:G:298:SER:HB3   | 1.84                     | 0.59              |
| 8:H:891:ASN:ND2   | 19:X:1:NAG:O6     | 2.36                     | 0.59              |
| 10:J:44:GLN:HE22  | 13:M:56:VAL:HB    | 1.68                     | 0.59              |
| 8:h:485:MET:HE1   | 16:s:1:NAG:H82    | 1.83                     | 0.59              |
| 8:h:832:THR:OG1   | 8:h:835:GLN:OE1   | 2.20                     | 0.59              |
| 12:L:438:MET:HG3  | 12:L:443:LYS:HG3  | 1.85                     | 0.59              |
| 13:m:3:TRP:HA     | 13:m:6:ARG:HB2    | 1.83                     | 0.59              |
| 1:A:422:ILE:HA    | 1:A:425:MET:HE2   | 1.85                     | 0.58              |
| 7:g:542:LYS:HG3   | 7:g:556:ASP:HA    | 1.86                     | 0.58              |
| 8:h:426:LEU:HD12  | 8:h:428:HIS:H     | 1.68                     | 0.58              |
| 8:h:632:HIS:NE2   | 8:h:736:GLY:O     | 2.26                     | 0.58              |
| 2:b:294:LEU:HD21  | 2:b:323:LEU:HD13  | 1.85                     | 0.58              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:e:969:GLU:HG3   | 5:e:971:PRO:HG2   | 1.85                     | 0.58              |
| 8:h:749:ASN:HB3   | 8:h:752:ARG:HG2   | 1.84                     | 0.58              |
| 6:F:373:ILE:HD11  | 6:F:417:LEU:HD21  | 1.86                     | 0.58              |
| 8:H:80:SER:OG     | 8:H:81:TRP:N      | 2.35                     | 0.58              |
| 13:m:2:ARG:O      | 13:m:3:TRP:C      | 2.46                     | 0.58              |
| 13:m:10:LEU:HD13  | 13:m:10:LEU:N     | 2.18                     | 0.58              |
| 12:L:368:ILE:HD13 | 12:L:607:VAL:HG11 | 1.85                     | 0.58              |
| 4:d:276:ASN:O     | 4:d:280:VAL:HG23  | 2.03                     | 0.58              |
| 5:e:235:LEU:O     | 5:e:236:LYS:C     | 2.44                     | 0.58              |
| 1:A:535:LEU:HG    | 2:B:295:ASP:HB3   | 1.86                     | 0.58              |
| 5:E:263:TYR:CE2   | 5:E:280:ARG:HB2   | 2.38                     | 0.58              |
| 5:E:969:GLU:HG3   | 5:E:971:PRO:HG2   | 1.86                     | 0.58              |
| 5:e:457:SER:OG    | 5:e:459:TYR:O     | 2.21                     | 0.58              |
| 4:D:231:PHE:HA    | 4:D:234:ILE:HD12  | 1.86                     | 0.58              |
| 8:H:788:LEU:HD23  | 8:H:927:ILE:HG12  | 1.85                     | 0.58              |
| 12:L:376:THR:HG23 | 12:L:672:LEU:HB3  | 1.84                     | 0.58              |
| 13:M:10:LEU:HD13  | 13:M:10:LEU:N     | 2.18                     | 0.58              |
| 13:m:69:ALA:HA    | 13:m:91:LEU:HD11  | 1.86                     | 0.58              |
| 1:A:546:ARG:O     | 1:A:546:ARG:NH1   | 2.35                     | 0.58              |
| 8:H:120:ARG:NH1   | 8:H:605:GLU:OE1   | 2.37                     | 0.58              |
| 10:J:8:SER:O      | 10:J:8:SER:OG     | 2.22                     | 0.58              |
| 12:L:174:SER:HB3  | 12:L:311:ALA:HB2  | 1.85                     | 0.58              |
| 12:L:450:THR:HG21 | 12:L:583:MET:HB2  | 1.84                     | 0.58              |
| 1:a:406:LEU:HD11  | 1:a:409:GLU:HB3   | 1.86                     | 0.58              |
| 5:e:541:PRO:HB2   | 5:e:549:MET:HE2   | 1.86                     | 0.58              |
| 6:f:373:ILE:HD11  | 6:f:417:LEU:HD21  | 1.86                     | 0.58              |
| 13:m:1:MET:HG3    | 13:m:2:ARG:H      | 1.68                     | 0.58              |
| 13:M:2:ARG:O      | 13:M:3:TRP:C      | 2.44                     | 0.58              |
| 2:B:193:VAL:HG12  | 2:B:198:PRO:HG3   | 1.86                     | 0.57              |
| 13:M:1:MET:HG3    | 13:M:2:ARG:H      | 1.69                     | 0.57              |
| 5:e:57:LYS:HD3    | 5:e:113:ASP:HB3   | 1.84                     | 0.57              |
| 6:f:566:SER:O     | 6:f:597:ARG:NH2   | 2.36                     | 0.57              |
| 5:E:726:GLN:NE2   | 5:E:749:GLN:O     | 2.36                     | 0.57              |
| 8:H:633:MET:HE2   | 8:H:665:MET:HE1   | 1.85                     | 0.57              |
| 8:h:715:PHE:HB2   | 8:h:729:PRO:HG2   | 1.84                     | 0.57              |
| 8:h:871:SER:HB2   | 8:h:874:ILE:HG13  | 1.85                     | 0.57              |
| 13:m:3:TRP:HE3    | 13:m:7:ILE:HD11   | 1.68                     | 0.57              |
| 8:H:699:ASN:HB3   | 8:H:702:GLN:HB2   | 1.85                     | 0.57              |
| 12:l:505:ILE:HD12 | 12:l:516:PRO:HB3  | 1.85                     | 0.57              |
| 5:E:239:HIS:HB2   | 5:E:260:LEU:HD11  | 1.86                     | 0.57              |
| 5:E:251:ASN:ND2   | 5:E:312:ASP:OD2   | 2.38                     | 0.57              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:B:252:ILE:O     | 2:B:256:THR:OG1  | 2.18                     | 0.57              |
| 3:C:119:VAL:HA    | 3:C:122:LEU:HD12 | 1.87                     | 0.57              |
| 8:H:52:ARG:NH1    | 8:H:563:TRP:O    | 2.38                     | 0.57              |
| 8:H:760:TYR:HE1   | 8:H:779:TYR:HB2  | 1.70                     | 0.57              |
| 13:M:23:LEU:HD11  | 13:M:90:ILE:HD11 | 1.87                     | 0.57              |
| 12:l:376:THR:HG21 | 12:l:676:ALA:HB2 | 1.87                     | 0.57              |
| 12:l:646:CYS:SG   | 12:l:647:TRP:N   | 2.77                     | 0.57              |
| 5:E:430:ILE:HB    | 5:E:444:CYS:HB3  | 1.87                     | 0.57              |
| 5:E:591:VAL:HG22  | 5:E:605:ILE:HG22 | 1.86                     | 0.57              |
| 8:H:904:MET:HB3   | 8:H:928:GLU:HG3  | 1.87                     | 0.57              |
| 1:a:456:SER:HB2   | 4:d:210:THR:HG21 | 1.86                     | 0.57              |
| 5:e:116:ARG:NH2   | 5:e:152:ASP:OD1  | 2.36                     | 0.57              |
| 5:e:286:PHE:HD1   | 5:e:286:PHE:H    | 1.53                     | 0.57              |
| 7:g:603:GLU:HG3   | 7:g:607:LEU:HG   | 1.87                     | 0.57              |
| 8:h:50:LEU:HD13   | 8:h:562:THR:HG22 | 1.85                     | 0.57              |
| 12:l:164:ALA:HB2  | 12:l:321:MET:HE1 | 1.85                     | 0.57              |
| 12:l:281:PRO:HB2  | 12:l:285:GLU:HG2 | 1.87                     | 0.57              |
| 13:m:5:ASP:HA     | 13:m:8:ALA:CB    | 2.28                     | 0.57              |
| 8:H:708:THR:OG1   | 8:H:735:VAL:O    | 2.22                     | 0.57              |
| 5:e:984:ASN:ND2   | 5:e:1021:GLN:O   | 2.38                     | 0.57              |
| 8:h:245:THR:HG22  | 8:h:246:TYR:H    | 1.70                     | 0.57              |
| 13:m:2:ARG:O      | 13:m:6:ARG:N     | 2.37                     | 0.57              |
| 13:M:77:MET:SD    | 13:M:77:MET:N    | 2.76                     | 0.56              |
| 6:f:931:VAL:HG23  | 6:f:932:THR:HG23 | 1.87                     | 0.56              |
| 8:H:426:LEU:HD12  | 8:H:428:HIS:H    | 1.68                     | 0.56              |
| 8:H:485:MET:HE1   | 16:U:1:NAG:H82   | 1.87                     | 0.56              |
| 8:h:634:ASP:OD2   | 8:h:741:LYS:NZ   | 2.38                     | 0.56              |
| 12:l:520:GLY:HA3  | 12:l:538:CYS:H   | 1.69                     | 0.56              |
| 8:h:261:THR:OG1   | 8:h:314:HIS:ND1  | 2.36                     | 0.56              |
| 6:F:252:ILE:HD13  | 6:F:308:LEU:HD13 | 1.86                     | 0.56              |
| 4:d:183:ILE:HG23  | 4:d:187:MET:HE3  | 1.86                     | 0.56              |
| 7:g:508:ASP:N     | 7:g:701:CYS:SG   | 2.77                     | 0.56              |
| 6:F:752:ASP:OD1   | 6:F:752:ASP:N    | 2.38                     | 0.56              |
| 7:G:615:THR:OG1   | 7:G:664:ASN:OD1  | 2.23                     | 0.56              |
| 12:l:132:TRP:HA   | 12:l:135:MET:HE1 | 1.87                     | 0.56              |
| 8:H:746:ARG:HB2   | 8:H:799:ILE:HG23 | 1.88                     | 0.56              |
| 13:M:3:TRP:HA     | 13:M:6:ARG:HB2   | 1.88                     | 0.56              |
| 1:A:345:LEU:O     | 1:A:349:GLN:HB2  | 2.06                     | 0.56              |
| 5:E:239:HIS:HB2   | 5:E:260:LEU:CD1  | 2.36                     | 0.56              |
| 5:E:286:PHE:HD1   | 5:E:286:PHE:H    | 1.53                     | 0.56              |
| 5:E:545:SER:OG    | 5:E:546:THR:N    | 2.39                     | 0.56              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:F:647:LYS:HA   | 6:F:751:PRO:HB3   | 1.88                     | 0.56              |
| 7:G:715:LEU:HD12 | 7:G:716:PRO:HD2   | 1.87                     | 0.56              |
| 12:L:646:CYS:SG  | 12:L:647:TRP:N    | 2.79                     | 0.56              |
| 10:j:142:HIS:HA  | 10:j:145:ARG:HD2  | 1.88                     | 0.56              |
| 6:F:91:GLU:OE2   | 6:F:711:LYS:NZ    | 2.37                     | 0.56              |
| 8:h:137:VAL:HG12 | 8:h:148:VAL:HG12  | 1.87                     | 0.56              |
| 8:h:635:LYS:NZ   | 8:h:917:SER:O     | 2.36                     | 0.56              |
| 6:F:238:SER:OG   | 6:F:515:LYS:NZ    | 2.37                     | 0.56              |
| 7:g:615:THR:HB   | 7:g:666:GLU:HA    | 1.87                     | 0.56              |
| 7:g:687:TYR:HB2  | 7:g:709:VAL:HG12  | 1.88                     | 0.56              |
| 5:E:264:VAL:HG11 | 5:E:337:PHE:HB2   | 1.88                     | 0.56              |
| 6:F:49:LEU:HD11  | 6:F:100:LEU:HB3   | 1.87                     | 0.56              |
| 6:F:347:ARG:NH2  | 6:F:406:ASP:O     | 2.39                     | 0.56              |
| 7:G:348:GLN:HE21 | 7:G:365:LYS:HB3   | 1.71                     | 0.56              |
| 13:M:16:LEU:O    | 13:M:18:LEU:N     | 2.39                     | 0.56              |
| 12:l:374:MET:HE1 | 12:l:592:ILE:HG12 | 1.87                     | 0.56              |
| 13:m:16:LEU:O    | 13:m:18:LEU:N     | 2.39                     | 0.56              |
| 7:G:240:LEU:HD13 | 7:G:254:LEU:HB3   | 1.86                     | 0.55              |
| 8:H:251:ILE:HG22 | 8:H:339:GLU:HG2   | 1.88                     | 0.55              |
| 1:a:492:ILE:HD11 | 2:b:228:ILE:HG12  | 1.88                     | 0.55              |
| 5:E:457:SER:OG   | 5:E:459:TYR:O     | 2.21                     | 0.55              |
| 7:G:184:ASN:ND2  | 7:G:186:ASP:OD1   | 2.39                     | 0.55              |
| 8:H:488:ILE:HG12 | 8:H:499:SER:HB3   | 1.87                     | 0.55              |
| 7:g:522:CYS:HB3  | 7:g:529:PRO:HD3   | 1.88                     | 0.55              |
| 12:l:400:GLN:HG3 | 12:l:407:PRO:HG3  | 1.87                     | 0.55              |
| 13:m:9:VAL:C     | 13:m:11:CYS:N     | 2.63                     | 0.55              |
| 5:E:187:SER:O    | 5:E:187:SER:OG    | 2.16                     | 0.55              |
| 5:E:595:LYS:HA   | 5:E:602:GLN:HG2   | 1.88                     | 0.55              |
| 5:E:759:THR:OG1  | 5:E:762:ILE:O     | 2.24                     | 0.55              |
| 6:F:49:LEU:HD22  | 6:F:187:ILE:HD11  | 1.88                     | 0.55              |
| 6:F:692:TYR:O    | 6:F:883:ARG:NH1   | 2.40                     | 0.55              |
| 5:e:630:ILE:HD11 | 5:e:693:LEU:HD12  | 1.88                     | 0.55              |
| 6:F:976:SER:HB2  | 6:F:1009:ASN:HB2  | 1.89                     | 0.55              |
| 1:a:561:ILE:O    | 1:a:565:TYR:HB2   | 2.06                     | 0.55              |
| 8:h:760:TYR:HE1  | 8:h:779:TYR:HB2   | 1.71                     | 0.55              |
| 6:F:664:SER:O    | 6:F:725:ARG:NH2   | 2.40                     | 0.55              |
| 7:g:132:GLU:OE1  | 7:g:169:ASN:ND2   | 2.39                     | 0.55              |
| 8:h:450:ARG:NH1  | 8:h:466:PHE:O     | 2.39                     | 0.55              |
| 1:A:449:ARG:NH2  | 4:D:255:MET:SD    | 2.69                     | 0.55              |
| 5:E:258:THR:HG23 | 5:E:260:LEU:H     | 1.71                     | 0.55              |
| 13:M:69:ALA:HA   | 13:M:91:LEU:HD11  | 1.88                     | 0.55              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 5:e:318:PHE:HE1   | 5:e:331:PHE:HD2  | 1.53                     | 0.55              |
| 6:f:850:LEU:HD22  | 8:h:234:ASP:HA   | 1.87                     | 0.55              |
| 8:H:634:ASP:OD2   | 8:H:741:LYS:NZ   | 2.39                     | 0.55              |
| 1:a:536:ASP:OD2   | 4:d:239:TRP:NE1  | 2.39                     | 0.55              |
| 6:f:590:LEU:O     | 6:f:596:GLU:HA   | 2.06                     | 0.55              |
| 8:H:261:THR:OG1   | 8:H:314:HIS:ND1  | 2.37                     | 0.55              |
| 8:H:410:LEU:HG    | 8:H:463:LEU:HD22 | 1.89                     | 0.55              |
| 3:c:223:LEU:HD11  | 3:c:229:TRP:HE3  | 1.72                     | 0.55              |
| 5:E:326:GLU:O     | 5:E:327:SER:OG   | 2.19                     | 0.55              |
| 5:E:785:LEU:HD11  | 6:F:642:ILE:HG12 | 1.88                     | 0.55              |
| 12:L:505:ILE:HD12 | 12:L:516:PRO:HB3 | 1.89                     | 0.55              |
| 5:e:316:ILE:HG12  | 5:e:318:PHE:CZ   | 2.42                     | 0.55              |
| 5:e:627:ASP:HB2   | 5:e:643:LEU:HB2  | 1.88                     | 0.55              |
| 5:e:725:GLN:HB3   | 5:e:751:LYS:HB3  | 1.89                     | 0.55              |
| 13:m:7:ILE:HG23   | 13:m:12:PHE:CZ   | 2.42                     | 0.55              |
| 7:G:544:ALA:HA    | 7:G:607:LEU:HA   | 1.88                     | 0.55              |
| 13:M:7:ILE:HG23   | 13:M:12:PHE:CZ   | 2.42                     | 0.55              |
| 5:e:187:SER:O     | 5:e:187:SER:OG   | 2.15                     | 0.55              |
| 6:f:226:LEU:HB3   | 6:f:274:LEU:HD23 | 1.89                     | 0.55              |
| 8:h:571:VAL:HG12  | 8:h:583:LEU:HB3  | 1.88                     | 0.55              |
| 13:m:16:LEU:O     | 13:m:17:MET:C    | 2.50                     | 0.54              |
| 7:G:412:MET:HE2   | 7:G:451:TYR:HB2  | 1.88                     | 0.54              |
| 8:H:349:ARG:NH1   | 8:H:395:PHE:O    | 2.40                     | 0.54              |
| 8:H:841:GLU:HB2   | 8:H:878:GLY:H    | 1.72                     | 0.54              |
| 8:h:366:GLN:NE2   | 8:h:427:TRP:O    | 2.40                     | 0.54              |
| 3:c:197:CYS:SG    | 4:d:155:VAL:HG12 | 2.47                     | 0.54              |
| 5:e:726:GLN:NE2   | 5:e:749:GLN:O    | 2.40                     | 0.54              |
| 13:M:61:GLN:HE21  | 13:M:98:PHE:HA   | 1.72                     | 0.54              |
| 4:d:95:GLN:HG3    | 4:d:96:LYS:HD2   | 1.88                     | 0.54              |
| 7:g:684:ASN:HA    | 7:g:711:VAL:HG23 | 1.88                     | 0.54              |
| 8:h:833:MET:HB2   | 8:h:881:GLY:H    | 1.72                     | 0.54              |
| 8:h:848:MET:SD    | 8:h:867:ARG:NH2  | 2.80                     | 0.54              |
| 8:H:366:GLN:NE2   | 8:H:427:TRP:O    | 2.40                     | 0.54              |
| 5:e:880:SER:HA    | 5:e:898:ARG:HH21 | 1.71                     | 0.54              |
| 1:A:368:LEU:HD23  | 1:A:459:ALA:HB2  | 1.90                     | 0.54              |
| 2:B:294:LEU:HD21  | 2:B:323:LEU:HD13 | 1.88                     | 0.54              |
| 10:J:78:MET:SD    | 10:J:78:MET:N    | 2.80                     | 0.54              |
| 5:e:887:PHE:HB3   | 5:e:890:ALA:HB2  | 1.89                     | 0.54              |
| 8:h:356:ILE:HD13  | 8:h:384:SER:HB2  | 1.90                     | 0.54              |
| 5:E:116:ARG:NH2   | 5:E:152:ASP:OD1  | 2.38                     | 0.54              |
| 13:M:8:ALA:O      | 13:M:9:VAL:HG13  | 2.08                     | 0.54              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 13:M:11:CYS:O     | 13:M:12:PHE:HB2   | 2.07                     | 0.54              |
| 12:l:640:CYS:HB3  | 12:l:644:GLU:HB2  | 1.89                     | 0.54              |
| 5:e:545:SER:OG    | 5:e:546:THR:N     | 2.40                     | 0.54              |
| 6:f:424:ASP:OD2   | 6:f:425:SER:N     | 2.40                     | 0.54              |
| 8:h:488:ILE:HG12  | 8:h:499:SER:HB3   | 1.90                     | 0.54              |
| 5:E:42:THR:OG1    | 5:E:43:GLY:N      | 2.41                     | 0.54              |
| 2:b:256:THR:HG23  | 3:c:147:GLY:HA2   | 1.89                     | 0.54              |
| 8:h:814:ALA:HB1   | 8:h:913:ASP:HB2   | 1.90                     | 0.54              |
| 6:f:574:LEU:HA    | 6:f:588:VAL:HG23  | 1.90                     | 0.54              |
| 6:F:132:MET:HE3   | 6:F:246:ASN:HB3   | 1.89                     | 0.53              |
| 6:F:721:LEU:HB3   | 6:F:727:ALA:HB2   | 1.89                     | 0.53              |
| 13:M:13:PRO:CB    | 13:M:14:PRO:HD2   | 2.38                     | 0.53              |
| 13:M:90:ILE:HD13  | 13:M:93:LEU:HD21  | 1.91                     | 0.53              |
| 3:c:149:GLN:HA    | 3:c:152:ARG:HD3   | 1.90                     | 0.53              |
| 5:e:767:MET:HA    | 5:e:808:ALA:O     | 2.07                     | 0.53              |
| 6:f:136:ASN:ND2   | 6:f:380:ASP:OD1   | 2.41                     | 0.53              |
| 2:b:252:ILE:O     | 2:b:256:THR:OG1   | 2.17                     | 0.53              |
| 4:d:250:GLU:HB3   | 4:d:254:ALA:HB2   | 1.90                     | 0.53              |
| 6:f:401:LYS:HD3   | 6:f:402:ASN:HD22  | 1.73                     | 0.53              |
| 6:f:767:VAL:HG22  | 6:f:819:ILE:HD12  | 1.90                     | 0.53              |
| 5:E:953:TYR:HB3   | 5:E:1018:LEU:HB3  | 1.89                     | 0.53              |
| 10:J:158:SER:OG   | 10:J:159:TYR:N    | 2.39                     | 0.53              |
| 12:L:373:LEU:HD21 | 12:L:680:HIS:HB2  | 1.89                     | 0.53              |
| 6:f:329:LYS:O     | 6:f:329:LYS:NZ    | 2.40                     | 0.53              |
| 7:g:42:LEU:HD13   | 7:g:95:ILE:HD11   | 1.88                     | 0.53              |
| 8:h:855:ILE:HD12  | 8:h:859:ASP:HB3   | 1.89                     | 0.53              |
| 13:M:3:TRP:CE3    | 13:M:7:ILE:HD11   | 2.43                     | 0.53              |
| 13:M:16:LEU:O     | 13:M:17:MET:C     | 2.50                     | 0.53              |
| 13:m:8:ALA:O      | 13:m:9:VAL:HG13   | 2.08                     | 0.53              |
| 5:E:621:SER:OG    | 5:E:655:ASP:OD2   | 2.23                     | 0.53              |
| 5:E:976:MET:HE3   | 5:E:987:LEU:HD21  | 1.90                     | 0.53              |
| 5:E:987:LEU:HD23  | 5:E:1016:LEU:HD22 | 1.90                     | 0.53              |
| 6:F:574:LEU:HA    | 6:F:588:VAL:HG23  | 1.91                     | 0.53              |
| 6:f:49:LEU:HD12   | 6:f:187:ILE:HD11  | 1.90                     | 0.53              |
| 12:l:174:SER:HB3  | 12:l:311:ALA:HB2  | 1.90                     | 0.53              |
| 13:m:2:ARG:HB3    | 13:m:5:ASP:N      | 2.12                     | 0.53              |
| 1:A:536:ASP:OD2   | 4:D:239:TRP:NE1   | 2.41                     | 0.53              |
| 8:H:181:MET:HE3   | 8:H:237:ILE:HD11  | 1.89                     | 0.53              |
| 3:c:122:LEU:HD21  | 3:c:155:LYS:HE3   | 1.91                     | 0.53              |
| 13:m:11:CYS:O     | 13:m:12:PHE:HB2   | 2.07                     | 0.53              |
| 13:m:13:PRO:CB    | 13:m:14:PRO:HD2   | 2.38                     | 0.53              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 1:A:348:THR:HG21 | 6:F:1081:ILE:HG23 | 1.91                     | 0.53              |
| 1:A:540:LEU:HA   | 1:A:543:ILE:HG22  | 1.91                     | 0.53              |
| 8:H:958:LEU:HD21 | 12:L:428:LEU:HD11 | 1.91                     | 0.53              |
| 13:M:12:PHE:CD2  | 13:M:13:PRO:HD2   | 2.43                     | 0.53              |
| 5:e:591:VAL:HG22 | 5:e:605:ILE:HG22  | 1.91                     | 0.53              |
| 2:b:146:VAL:HA   | 2:b:149:TRP:CD1   | 2.44                     | 0.53              |
| 12:l:487:LEU:O   | 12:l:492:ASN:ND2  | 2.41                     | 0.53              |
| 13:m:12:PHE:CD2  | 13:m:13:PRO:HD2   | 2.43                     | 0.53              |
| 5:E:451:VAL:HG12 | 5:E:467:VAL:HB    | 1.90                     | 0.53              |
| 8:H:571:VAL:HG12 | 8:H:583:LEU:HB3   | 1.91                     | 0.53              |
| 8:H:715:PHE:HB2  | 8:H:729:PRO:HG2   | 1.91                     | 0.53              |
| 13:m:39:ASN:HD21 | 13:m:45:ASN:H     | 1.57                     | 0.53              |
| 1:A:532:MET:HB3  | 1:A:561:ILE:HD11  | 1.91                     | 0.53              |
| 2:B:186:SER:HB2  | 2:B:211:ARG:HD2   | 1.91                     | 0.53              |
| 6:f:987:THR:OG1  | 6:f:988:GLU:N     | 2.42                     | 0.52              |
| 8:h:906:VAL:HG13 | 8:h:926:ALA:HB2   | 1.91                     | 0.52              |
| 4:D:276:ASN:O    | 4:D:280:VAL:HG23  | 2.10                     | 0.52              |
| 7:G:622:ARG:NH2  | 7:G:654:ASP:OD1   | 2.36                     | 0.52              |
| 1:a:349:GLN:O    | 1:a:353:PHE:HB3   | 2.08                     | 0.52              |
| 1:a:578:ASP:HA   | 1:a:581:GLN:HB3   | 1.90                     | 0.52              |
| 5:e:490:ASP:OD2  | 5:e:505:LYS:NZ    | 2.42                     | 0.52              |
| 13:m:78:THR:HG23 | 13:m:80:ASP:H     | 1.75                     | 0.52              |
| 1:a:540:LEU:HA   | 1:a:543:ILE:HG22  | 1.90                     | 0.52              |
| 13:m:5:ASP:OD1   | 13:m:8:ALA:HB3    | 2.09                     | 0.52              |
| 2:B:311:SER:O    | 2:B:312:ARG:NH1   | 2.34                     | 0.52              |
| 2:B:349:LEU:O    | 2:B:352:GLU:HG3   | 2.10                     | 0.52              |
| 5:E:991:GLU:O    | 5:E:996:LYS:NZ    | 2.42                     | 0.52              |
| 1:a:345:LEU:O    | 1:a:349:GLN:HB2   | 2.09                     | 0.52              |
| 4:d:59:MET:HG3   | 5:e:1082:LEU:HD21 | 1.91                     | 0.52              |
| 6:f:976:SER:HB2  | 6:f:1009:ASN:HB2  | 1.90                     | 0.52              |
| 11:k:38:THR:HA   | 11:k:137:LEU:HD11 | 1.91                     | 0.52              |
| 3:C:223:LEU:HD11 | 3:C:229:TRP:HE3   | 1.75                     | 0.52              |
| 4:D:232:ILE:O    | 4:D:235:THR:OG1   | 2.27                     | 0.52              |
| 8:H:58:GLN:OE1   | 8:H:58:GLN:N      | 2.37                     | 0.52              |
| 12:L:488:THR:HA  | 12:L:492:ASN:HD22 | 1.75                     | 0.52              |
| 1:A:337:LEU:HD13 | 1:A:341:GLN:HG2   | 1.91                     | 0.52              |
| 13:M:11:CYS:SG   | 13:M:12:PHE:N     | 2.83                     | 0.52              |
| 1:a:345:LEU:O    | 1:a:349:GLN:CB    | 2.57                     | 0.52              |
| 1:a:348:THR:HG21 | 6:f:1081:ILE:HG23 | 1.90                     | 0.52              |
| 5:e:979:VAL:HG22 | 5:e:1027:HIS:HB3  | 1.92                     | 0.52              |
| 7:g:174:ASP:OD1  | 7:g:174:ASP:N     | 2.39                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 6:F:518:VAL:HG22 | 6:F:526:ALA:HB3   | 1.91                     | 0.52              |
| 6:F:829:ARG:HG2  | 6:F:830:CYS:H     | 1.75                     | 0.52              |
| 8:H:906:VAL:HG13 | 8:H:926:ALA:HB2   | 1.92                     | 0.52              |
| 13:M:5:ASP:OD1   | 13:M:8:ALA:HB3    | 2.09                     | 0.52              |
| 13:M:57:LEU:HD23 | 13:M:101:ARG:HH22 | 1.75                     | 0.52              |
| 3:c:250:LEU:HD23 | 3:c:253:LEU:HD21  | 1.92                     | 0.52              |
| 4:d:213:GLY:HA2  | 4:d:221:GLN:HG3   | 1.90                     | 0.52              |
| 5:e:538:ILE:HB   | 5:e:554:HIS:HB3   | 1.91                     | 0.52              |
| 6:f:372:TYR:HA   | 6:f:389:PRO:HG2   | 1.92                     | 0.52              |
| 8:h:583:LEU:HD12 | 8:h:597:THR:HG22  | 1.91                     | 0.52              |
| 13:m:39:ASN:HD22 | 13:m:43:ILE:HG23  | 1.75                     | 0.52              |
| 4:D:59:MET:HG3   | 5:E:1082:LEU:HD21 | 1.92                     | 0.52              |
| 5:E:226:ASP:OD1  | 5:E:228:THR:OG1   | 2.28                     | 0.52              |
| 6:F:883:ARG:NH2  | 6:F:928:GLN:OE1   | 2.42                     | 0.52              |
| 8:H:191:PHE:HD1  | 8:H:198:THR:HG22  | 1.75                     | 0.52              |
| 13:M:2:ARG:O     | 13:M:6:ARG:N      | 2.37                     | 0.52              |
| 2:b:234:ARG:HD3  | 2:b:345:ILE:HD11  | 1.92                     | 0.52              |
| 2:b:361:LYS:HA   | 2:b:364:MET:SD    | 2.49                     | 0.52              |
| 5:e:326:GLU:OE2  | 5:e:328:SER:N     | 2.30                     | 0.52              |
| 7:g:206:GLN:NE2  | 7:g:225:PRO:O     | 2.42                     | 0.52              |
| 8:h:756:ARG:NH2  | 12:l:545:ALA:O    | 2.36                     | 0.52              |
| 5:E:228:THR:CG2  | 5:E:242:LEU:HD21  | 2.40                     | 0.52              |
| 6:F:501:GLU:HG2  | 8:H:176:VAL:HG13  | 1.92                     | 0.52              |
| 8:H:428:HIS:HB3  | 8:H:431:GLU:HB2   | 1.92                     | 0.52              |
| 5:e:664:GLY:HA2  | 6:f:613:LEU:HB3   | 1.92                     | 0.52              |
| 7:g:531:GLN:HG2  | 7:g:532:LEU:HD23  | 1.92                     | 0.52              |
| 1:A:561:ILE:O    | 1:A:565:TYR:HB2   | 2.09                     | 0.51              |
| 8:H:192:THR:OG1  | 8:H:195:LYS:O     | 2.19                     | 0.51              |
| 8:H:803:TYR:HA   | 8:H:808:PHE:HA    | 1.92                     | 0.51              |
| 10:j:93:MET:O    | 10:j:94:HIS:ND1   | 2.43                     | 0.51              |
| 13:M:8:ALA:C     | 13:M:9:VAL:HG22   | 2.35                     | 0.51              |
| 5:e:548:GLU:OE1  | 5:e:606:HIS:NE2   | 2.37                     | 0.51              |
| 5:e:595:LYS:HA   | 5:e:602:GLN:HG2   | 1.93                     | 0.51              |
| 13:m:8:ALA:C     | 13:m:9:VAL:HG22   | 2.35                     | 0.51              |
| 4:d:163:VAL:HA   | 4:d:166:LEU:HD12  | 1.92                     | 0.51              |
| 5:e:953:TYR:HB3  | 5:e:1018:LEU:HB3  | 1.91                     | 0.51              |
| 12:l:645:ARG:NH1 | 12:l:646:CYS:O    | 2.43                     | 0.51              |
| 13:m:3:TRP:CE3   | 13:m:7:ILE:HD11   | 2.44                     | 0.51              |
| 1:A:544:ASP:O    | 1:A:548:GLN:NE2   | 2.44                     | 0.51              |
| 1:A:577:VAL:HA   | 4:D:280:VAL:HG13  | 1.91                     | 0.51              |
| 3:C:223:LEU:HD13 | 3:C:232:LEU:HD23  | 1.92                     | 0.51              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:E:176:TYR:HH    | 5:E:219:TYR:HH    | 1.56                     | 0.51              |
| 5:E:792:ASP:N     | 5:E:792:ASP:OD1   | 2.42                     | 0.51              |
| 2:b:221:ARG:HH21  | 2:b:229:LEU:HD23  | 1.74                     | 0.51              |
| 5:e:285:GLY:O     | 5:e:287:GLU:HG2   | 2.10                     | 0.51              |
| 6:f:814:ASN:HB2   | 8:h:676:ALA:HB3   | 1.92                     | 0.51              |
| 12:l:163:ILE:HG22 | 12:l:321:MET:HE3  | 1.92                     | 0.51              |
| 13:m:3:TRP:O      | 13:m:6:ARG:N      | 2.43                     | 0.51              |
| 1:A:399:ALA:HB2   | 1:A:423:MET:HG3   | 1.92                     | 0.51              |
| 5:E:387:MET:O     | 5:E:394:SER:OG    | 2.24                     | 0.51              |
| 5:E:727:ASP:OD1   | 5:E:727:ASP:N     | 2.33                     | 0.51              |
| 13:M:3:TRP:O      | 13:M:6:ARG:N      | 2.43                     | 0.51              |
| 5:e:290:ASP:OD2   | 5:e:320:ARG:HB3   | 2.10                     | 0.51              |
| 7:g:191:LEU:HB3   | 7:g:211:MET:HE3   | 1.93                     | 0.51              |
| 8:h:444:THR:HG22  | 8:h:445:ASN:H     | 1.76                     | 0.51              |
| 12:l:112:ALA:HB2  | 12:l:268:TYR:HA   | 1.92                     | 0.51              |
| 10:J:149:ILE:HG13 | 10:J:150:ASN:H    | 1.76                     | 0.51              |
| 8:h:251:ILE:HD12  | 8:h:337:ARG:HH21  | 1.75                     | 0.51              |
| 8:h:708:THR:OG1   | 8:h:735:VAL:O     | 2.24                     | 0.51              |
| 8:h:841:GLU:HB2   | 8:h:878:GLY:H     | 1.75                     | 0.51              |
| 12:l:122:GLN:HG3  | 12:l:132:TRP:HB2  | 1.90                     | 0.51              |
| 12:l:150:ILE:HG12 | 12:l:235:PRO:HB3  | 1.92                     | 0.51              |
| 12:L:143:SER:HB3  | 12:L:234:MET:SD   | 2.49                     | 0.51              |
| 5:e:834:LEU:HD13  | 5:e:962:GLU:HG3   | 1.92                     | 0.51              |
| 12:l:372:PRO:HG2  | 12:l:679:ILE:HG21 | 1.91                     | 0.51              |
| 8:H:334:VAL:HG22  | 8:H:345:LEU:HD13  | 1.93                     | 0.51              |
| 8:H:530:VAL:HG22  | 8:H:540:VAL:HG22  | 1.93                     | 0.51              |
| 1:a:457:MET:HG2   | 4:d:207:PHE:HE2   | 1.74                     | 0.51              |
| 2:b:339:VAL:HG21  | 3:c:268:ILE:HG23  | 1.91                     | 0.51              |
| 7:g:68:VAL:HG21   | 7:g:95:ILE:HD13   | 1.92                     | 0.51              |
| 8:H:942:ALA:HA    | 8:H:945:ILE:HG13  | 1.92                     | 0.51              |
| 10:j:158:SER:OG   | 10:j:159:TYR:N    | 2.39                     | 0.51              |
| 1:A:456:SER:HB2   | 4:D:210:THR:HG21  | 1.91                     | 0.51              |
| 8:H:738:ASP:OD1   | 8:H:738:ASP:N     | 2.42                     | 0.51              |
| 8:H:828:THR:OG1   | 8:H:829:PHE:N     | 2.43                     | 0.51              |
| 1:a:492:ILE:HD12  | 1:a:571:LEU:HD13  | 1.93                     | 0.51              |
| 4:d:61:ILE:HA     | 4:d:65:LEU:HD13   | 1.92                     | 0.51              |
| 5:e:792:ASP:OD1   | 5:e:792:ASP:N     | 2.42                     | 0.51              |
| 8:h:909:LEU:O     | 8:h:922:THR:HA    | 2.11                     | 0.51              |
| 1:A:345:LEU:O     | 1:A:349:GLN:CB    | 2.59                     | 0.50              |
| 1:A:491:ALA:HB2   | 2:B:224:GLN:HG3   | 1.93                     | 0.50              |
| 5:E:250:THR:HG22  | 5:E:251:ASN:H     | 1.77                     | 0.50              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 8:H:421:MET:HE1  | 8:H:476:LEU:HD23 | 1.93                     | 0.50              |
| 13:M:13:PRO:HB2  | 13:M:14:PRO:HD2  | 1.94                     | 0.50              |
| 4:d:248:MET:HG2  | 4:d:251:ARG:HD2  | 1.92                     | 0.50              |
| 8:h:841:GLU:N    | 8:h:876:LYS:O    | 2.35                     | 0.50              |
| 1:A:555:PRO:HA   | 1:A:558:MET:HG2  | 1.93                     | 0.50              |
| 2:B:256:THR:HG23 | 3:C:147:GLY:HA2  | 1.93                     | 0.50              |
| 7:G:513:ILE:HG23 | 7:G:703:LEU:HD22 | 1.93                     | 0.50              |
| 1:a:532:MET:HB3  | 1:a:561:ILE:HD11 | 1.94                     | 0.50              |
| 2:b:147:ALA:O    | 2:b:151:ILE:HG12 | 2.11                     | 0.50              |
| 7:g:339:ILE:HG22 | 7:g:349:VAL:HG22 | 1.93                     | 0.50              |
| 7:g:667:TYR:O    | 7:g:676:ASN:ND2  | 2.44                     | 0.50              |
| 10:j:135:GLN:HG3 | 10:j:138:PHE:HB2 | 1.93                     | 0.50              |
| 13:m:11:CYS:SG   | 13:m:12:PHE:N    | 2.83                     | 0.50              |
| 7:G:409:SER:OG   | 7:G:452:LYS:NZ   | 2.37                     | 0.50              |
| 7:G:513:ILE:HD13 | 7:G:703:LEU:HB3  | 1.93                     | 0.50              |
| 6:f:640:HIS:HB2  | 6:f:767:VAL:HB   | 1.93                     | 0.50              |
| 7:g:675:ASN:O    | 7:g:677:LYS:NZ   | 2.44                     | 0.50              |
| 4:D:95:GLN:HG3   | 4:D:96:LYS:NZ    | 2.27                     | 0.50              |
| 6:F:129:ILE:HG12 | 6:F:185:VAL:HG22 | 1.94                     | 0.50              |
| 7:G:684:ASN:OD1  | 7:G:713:GLY:N    | 2.37                     | 0.50              |
| 1:a:535:LEU:HG   | 2:b:295:ASP:HB3  | 1.93                     | 0.50              |
| 3:c:223:LEU:HB3  | 3:c:251:PHE:HE2  | 1.76                     | 0.50              |
| 8:h:823:GLY:H    | 8:h:824:ARG:HH11 | 1.60                     | 0.50              |
| 4:D:173:VAL:HG12 | 4:D:175:PRO:HD2  | 1.94                     | 0.50              |
| 6:F:118:GLY:HA3  | 6:F:123:MET:HE2  | 1.94                     | 0.50              |
| 7:G:670:LEU:HA   | 7:G:676:ASN:HD21 | 1.76                     | 0.50              |
| 13:M:17:MET:HA   | 13:M:20:VAL:HG22 | 1.93                     | 0.50              |
| 2:b:298:TYR:HB2  | 3:c:222:SER:HB2  | 1.94                     | 0.50              |
| 8:h:268:LEU:HD12 | 8:h:282:LEU:HD11 | 1.92                     | 0.50              |
| 2:B:263:GLU:O    | 2:B:267:SER:OG   | 2.24                     | 0.50              |
| 8:H:830:ASN:HB2  | 8:H:893:ASN:HA   | 1.94                     | 0.50              |
| 7:g:668:GLN:OE1  | 7:g:668:GLN:N    | 2.45                     | 0.50              |
| 8:h:819:TRP:CD1  | 8:h:908:ARG:HB2  | 2.46                     | 0.50              |
| 6:F:372:TYR:CD1  | 6:F:387:MET:HE1  | 2.46                     | 0.50              |
| 7:G:206:GLN:HE21 | 7:G:225:PRO:HB2  | 1.77                     | 0.50              |
| 12:L:413:LEU:HB3 | 12:L:571:PHE:HZ  | 1.76                     | 0.50              |
| 5:e:463:ILE:HB   | 5:e:475:THR:HG23 | 1.94                     | 0.50              |
| 8:h:784:TYR:HD1  | 8:h:906:VAL:HG11 | 1.77                     | 0.50              |
| 12:l:269:LEU:HB2 | 12:l:419:LEU:HG  | 1.93                     | 0.50              |
| 7:G:616:ALA:HA   | 7:G:619:ALA:HB3  | 1.94                     | 0.50              |
| 8:H:218:SER:HB3  | 8:H:246:TYR:HE1  | 1.77                     | 0.50              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 8:H:635:LYS:NZ    | 8:H:917:SER:O    | 2.32                     | 0.50              |
| 13:M:7:ILE:HG23   | 13:M:12:PHE:HZ   | 1.77                     | 0.50              |
| 1:a:449:ARG:HG3   | 4:d:211:LEU:HD13 | 1.94                     | 0.50              |
| 4:d:85:ILE:HG12   | 4:d:159:TYR:CE2  | 2.47                     | 0.50              |
| 4:d:244:THR:HA    | 4:d:247:GLN:HB2  | 1.94                     | 0.50              |
| 5:e:91:SER:OG     | 5:e:735:ASN:ND2  | 2.45                     | 0.50              |
| 8:h:833:MET:HE2   | 8:h:842:ALA:HB3  | 1.94                     | 0.50              |
| 5:E:234:GLU:CD    | 5:E:280:ARG:HB3  | 2.37                     | 0.49              |
| 5:E:777:VAL:HG22  | 5:E:795:VAL:HG22 | 1.94                     | 0.49              |
| 4:d:155:VAL:HG13  | 4:d:159:TYR:CD1  | 2.44                     | 0.49              |
| 7:g:129:GLY:HA3   | 7:g:180:PHE:H    | 1.77                     | 0.49              |
| 1:A:581:GLN:OE1   | 2:B:346:ARG:NH2  | 2.45                     | 0.49              |
| 6:F:104:PHE:CE1   | 6:F:123:MET:HE1  | 2.47                     | 0.49              |
| 6:F:452:GLU:OE1   | 6:F:454:LYS:NZ   | 2.45                     | 0.49              |
| 7:G:206:GLN:NE2   | 7:G:225:PRO:O    | 2.45                     | 0.49              |
| 7:G:224:TYR:HA    | 7:G:227:ASN:HB3  | 1.94                     | 0.49              |
| 8:H:583:LEU:HD21  | 8:H:595:LEU:HD23 | 1.94                     | 0.49              |
| 10:J:132:ARG:HH21 | 10:J:133:TYR:HD2 | 1.61                     | 0.49              |
| 7:G:291:ILE:HB    | 7:G:307:VAL:HG11 | 1.94                     | 0.49              |
| 8:H:900:THR:OG1   | 8:H:901:TYR:N    | 2.43                     | 0.49              |
| 3:c:259:PHE:O     | 3:c:263:PHE:HB2  | 2.12                     | 0.49              |
| 4:d:99:GLU:OE1    | 4:d:99:GLU:N     | 2.39                     | 0.49              |
| 8:h:253:GLU:N     | 8:h:253:GLU:OE1  | 2.45                     | 0.49              |
| 13:m:17:MET:HA    | 13:m:20:VAL:HG22 | 1.93                     | 0.49              |
| 13:m:41:CYS:SG    | 13:m:42:VAL:HG22 | 2.52                     | 0.49              |
| 6:F:524:GLN:OE1   | 6:F:536:TYR:OH   | 2.30                     | 0.49              |
| 12:L:487:LEU:O    | 12:L:492:ASN:ND2 | 2.45                     | 0.49              |
| 8:h:407:LYS:NZ    | 8:h:416:ASP:O    | 2.44                     | 0.49              |
| 13:m:13:PRO:HB2   | 13:m:14:PRO:HD2  | 1.94                     | 0.49              |
| 2:B:248:ILE:HG12  | 3:C:157:ILE:HG13 | 1.94                     | 0.49              |
| 3:C:205:GLY:HA3   | 3:C:239:ARG:HD2  | 1.94                     | 0.49              |
| 6:F:401:LYS:N     | 6:F:424:ASP:OD1  | 2.46                     | 0.49              |
| 7:g:387:GLU:HG3   | 7:g:415:ARG:HA   | 1.95                     | 0.49              |
| 8:h:633:MET:HE2   | 8:h:665:MET:HE1  | 1.95                     | 0.49              |
| 8:h:841:GLU:HB3   | 8:h:876:LYS:HB3  | 1.95                     | 0.49              |
| 2:B:132:SER:O     | 2:B:132:SER:OG   | 2.27                     | 0.49              |
| 8:H:220:ASP:OD1   | 8:H:220:ASP:N    | 2.45                     | 0.49              |
| 8:H:756:ARG:NH1   | 8:H:757:ASP:O    | 2.40                     | 0.49              |
| 8:h:334:VAL:HG12  | 8:h:345:LEU:HD13 | 1.95                     | 0.49              |
| 8:h:819:TRP:CH2   | 8:h:858:ASP:HA   | 2.48                     | 0.49              |
| 4:D:78:LEU:HD23   | 4:D:81:ASN:HD21  | 1.76                     | 0.49              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 5:E:187:SER:OG    | 5:E:190:ALA:O    | 2.31                     | 0.49              |
| 12:L:150:ILE:HG12 | 12:L:235:PRO:HB3 | 1.95                     | 0.49              |
| 4:d:182:VAL:O     | 4:d:186:SER:OG   | 2.28                     | 0.49              |
| 5:e:42:THR:OG1    | 5:e:43:GLY:N     | 2.44                     | 0.49              |
| 5:e:193:VAL:HG12  | 5:e:213:ILE:HD12 | 1.95                     | 0.49              |
| 6:f:501:GLU:HG2   | 8:h:176:VAL:HG13 | 1.93                     | 0.49              |
| 6:F:252:ILE:HD12  | 6:F:301:ALA:HB1  | 1.94                     | 0.49              |
| 7:G:68:VAL:HG21   | 7:G:95:ILE:HD13  | 1.94                     | 0.49              |
| 3:c:192:ALA:HA    | 3:c:220:LEU:HD11 | 1.95                     | 0.49              |
| 7:g:702:ASN:OD1   | 7:g:702:ASN:N    | 2.44                     | 0.49              |
| 8:h:960:TYR:O     | 8:h:964:LEU:HG   | 2.13                     | 0.49              |
| 7:G:546:ASP:O     | 7:G:556:ASP:N    | 2.45                     | 0.49              |
| 8:H:802:LEU:HB2   | 8:H:812:VAL:HG13 | 1.94                     | 0.49              |
| 1:a:349:GLN:O     | 1:a:353:PHE:HB2  | 2.12                     | 0.49              |
| 3:c:186:LEU:HD13  | 4:d:167:VAL:HG22 | 1.94                     | 0.49              |
| 5:e:266:SER:OG    | 5:e:267:ASP:N    | 2.46                     | 0.49              |
| 5:e:451:VAL:HG12  | 5:e:467:VAL:HB   | 1.94                     | 0.49              |
| 7:g:571:ARG:NE    | 7:g:708:SER:O    | 2.41                     | 0.49              |
| 8:h:65:THR:HB     | 8:h:102:LYS:HA   | 1.95                     | 0.49              |
| 8:h:192:THR:OG1   | 8:h:195:LYS:O    | 2.19                     | 0.49              |
| 6:f:443:LEU:HD22  | 6:f:499:ARG:HB3  | 1.95                     | 0.49              |
| 5:E:175:LEU:HD11  | 5:E:200:MET:HE1  | 1.95                     | 0.48              |
| 5:E:357:VAL:HG22  | 5:E:373:PHE:HE1  | 1.78                     | 0.48              |
| 6:F:513:THR:OG1   | 6:F:530:GLU:OE1  | 2.31                     | 0.48              |
| 7:G:512:LYS:HG2   | 7:G:586:TRP:HB2  | 1.94                     | 0.48              |
| 1:a:571:LEU:HD23  | 2:b:338:MET:HE1  | 1.95                     | 0.48              |
| 2:b:254:ALA:HB2   | 2:b:288:VAL:HG21 | 1.95                     | 0.48              |
| 4:d:82:ALA:HA     | 4:d:85:ILE:HD12  | 1.94                     | 0.48              |
| 6:f:450:ILE:HG22  | 6:f:472:MET:HE3  | 1.94                     | 0.48              |
| 8:h:746:ARG:HH22  | 8:h:811:ILE:HG13 | 1.78                     | 0.48              |
| 5:E:107:ARG:NH2   | 17:R:2:NAG:O6    | 2.45                     | 0.48              |
| 5:E:228:THR:HG23  | 5:E:242:LEU:HD21 | 1.94                     | 0.48              |
| 8:H:575:ASP:OD2   | 8:H:577:SER:OG   | 2.31                     | 0.48              |
| 8:h:610:ASN:O     | 8:h:614:GLY:N    | 2.46                     | 0.48              |
| 1:A:361:VAL:HG11  | 1:A:465:VAL:HG23 | 1.94                     | 0.48              |
| 2:B:343:GLN:HE22  | 2:B:346:ARG:HH22 | 1.61                     | 0.48              |
| 3:C:261:ASN:HA    | 3:C:264:VAL:HG22 | 1.95                     | 0.48              |
| 7:G:229:SER:OG    | 7:G:230:MET:N    | 2.46                     | 0.48              |
| 6:f:976:SER:O     | 6:f:976:SER:OG   | 2.28                     | 0.48              |
| 7:g:265:ASN:ND2   | 7:g:268:GLN:OE1  | 2.46                     | 0.48              |
| 12:l:113:VAL:O    | 12:l:117:THR:OG1 | 2.27                     | 0.48              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:E:42:THR:HG21   | 5:E:48:LYS:HB2    | 1.95                     | 0.48              |
| 5:E:880:SER:HA    | 5:E:898:ARG:HH21  | 1.78                     | 0.48              |
| 6:F:189:THR:HG23  | 6:F:191:GLY:H     | 1.78                     | 0.48              |
| 13:M:9:VAL:O      | 13:M:11:CYS:N     | 2.42                     | 0.48              |
| 6:f:241:LEU:HD13  | 6:f:253:LEU:HD13  | 1.95                     | 0.48              |
| 8:h:220:ASP:OD1   | 8:h:220:ASP:N     | 2.45                     | 0.48              |
| 4:D:184:LEU:HA    | 4:D:187:MET:HG2   | 1.95                     | 0.48              |
| 5:E:91:SER:OG     | 5:E:735:ASN:ND2   | 2.45                     | 0.48              |
| 8:H:50:LEU:N      | 8:H:117:GLU:OE1   | 2.46                     | 0.48              |
| 4:d:232:ILE:O     | 4:d:235:THR:OG1   | 2.30                     | 0.48              |
| 5:e:239:HIS:HB2   | 5:e:260:LEU:CD1   | 2.43                     | 0.48              |
| 5:e:846:PRO:HG2   | 5:e:849:ASP:HB2   | 1.95                     | 0.48              |
| 12:l:464:VAL:HG21 | 12:l:573:PHE:HE2  | 1.78                     | 0.48              |
| 5:E:978:GLU:HG3   | 5:E:980:ASN:H     | 1.77                     | 0.48              |
| 6:F:461:LEU:HD11  | 6:F:504:PHE:HB2   | 1.94                     | 0.48              |
| 8:H:848:MET:HE3   | 8:H:861:TRP:CD1   | 2.49                     | 0.48              |
| 12:L:372:PRO:HG2  | 12:L:679:ILE:HG21 | 1.96                     | 0.48              |
| 5:e:237:ASP:HB2   | 5:e:238:GLU:H     | 1.53                     | 0.48              |
| 5:e:250:THR:HG22  | 5:e:251:ASN:H     | 1.79                     | 0.48              |
| 2:B:254:ALA:HB2   | 2:B:288:VAL:HG21  | 1.96                     | 0.48              |
| 8:H:384:SER:O     | 8:H:384:SER:OG    | 2.25                     | 0.48              |
| 12:L:317:VAL:O    | 12:L:321:MET:HG2  | 2.13                     | 0.48              |
| 13:M:9:VAL:C      | 13:M:10:LEU:HD22  | 2.39                     | 0.48              |
| 13:M:57:LEU:HD23  | 13:M:101:ARG:NH2  | 2.28                     | 0.48              |
| 2:b:174:ALA:O     | 2:b:177:VAL:HG12  | 2.13                     | 0.48              |
| 9:i:39:HIS:HA     | 11:k:157:LEU:HA   | 1.94                     | 0.48              |
| 13:m:9:VAL:C      | 13:m:10:LEU:HD22  | 2.39                     | 0.48              |
| 3:C:47:ILE:HD13   | 3:C:100:MET:HE2   | 1.95                     | 0.48              |
| 4:D:160:PRO:HA    | 4:D:163:VAL:HG22  | 1.95                     | 0.48              |
| 6:F:636:PHE:HB3   | 6:F:791:LEU:HD11  | 1.96                     | 0.48              |
| 6:F:968:ASN:OD1   | 6:F:979:TRP:NE1   | 2.46                     | 0.48              |
| 10:J:148:ASN:HB2  | 10:J:164:ARG:HG3  | 1.95                     | 0.48              |
| 1:A:580:PHE:HB2   | 4:D:280:VAL:HG11  | 1.96                     | 0.48              |
| 8:H:214:LEU:HD21  | 8:H:223:LYS:HE2   | 1.96                     | 0.48              |
| 13:M:9:VAL:C      | 13:M:11:CYS:N     | 2.63                     | 0.48              |
| 2:b:134:ASN:HB3   | 2:b:137:LEU:HB2   | 1.94                     | 0.48              |
| 4:d:78:LEU:HA     | 4:d:81:ASN:ND2    | 2.29                     | 0.48              |
| 6:f:441:ASN:N     | 6:f:441:ASN:OD1   | 2.47                     | 0.48              |
| 6:f:1023:PRO:HG2  | 6:f:1055:LEU:HB2  | 1.95                     | 0.48              |
| 8:h:421:MET:HE1   | 8:h:476:LEU:HD23  | 1.96                     | 0.48              |
| 8:h:848:MET:HE3   | 8:h:848:MET:HA    | 1.96                     | 0.48              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:h:965:LYS:HD3  | 12:l:436:LEU:HD22 | 1.95                     | 0.48              |
| 1:A:502:LEU:HD22 | 2:B:213:LEU:HG    | 1.95                     | 0.48              |
| 5:E:627:ASP:HB2  | 5:E:643:LEU:HB2   | 1.96                     | 0.48              |
| 5:E:892:PRO:HD2  | 5:E:918:SER:HA    | 1.96                     | 0.48              |
| 10:J:11:VAL:HG11 | 10:J:69:ARG:HH21  | 1.79                     | 0.48              |
| 10:J:86:ARG:HB3  | 13:M:5:ASP:OD2    | 2.14                     | 0.48              |
| 8:h:281:LEU:HB3  | 8:h:321:ILE:HD11  | 1.95                     | 0.48              |
| 10:j:98:VAL:HG21 | 10:j:143:LEU:HD23 | 1.96                     | 0.48              |
| 6:F:349:CYS:HB2  | 6:F:362:LEU:HB2   | 1.95                     | 0.47              |
| 6:F:441:ASN:OD1  | 6:F:441:ASN:N     | 2.46                     | 0.47              |
| 7:G:174:ASP:OD1  | 7:G:174:ASP:N     | 2.39                     | 0.47              |
| 8:H:761:VAL:HA   | 8:H:775:LEU:O     | 2.14                     | 0.47              |
| 12:L:256:TYR:HA  | 12:L:259:ILE:HG12 | 1.95                     | 0.47              |
| 6:f:165:MET:HE3  | 6:f:669:PHE:HZ    | 1.78                     | 0.47              |
| 6:f:264:PHE:HB3  | 6:f:273:VAL:HG12  | 1.95                     | 0.47              |
| 7:g:20:CYS:HB2   | 7:g:366:CYS:HB3   | 1.32                     | 0.47              |
| 7:g:533:GLN:HG3  | 7:g:534:LYS:HD2   | 1.95                     | 0.47              |
| 8:h:932:MET:HE3  | 8:h:932:MET:O     | 2.14                     | 0.47              |
| 10:j:68:ARG:HG2  | 10:j:83:ILE:HD11  | 1.96                     | 0.47              |
| 7:G:600:VAL:HG21 | 7:G:643:TRP:HE3   | 1.78                     | 0.47              |
| 8:H:73:TYR:HE2   | 8:H:117:GLU:HG3   | 1.79                     | 0.47              |
| 12:L:245:PHE:HE1 | 12:L:257:LEU:HD11 | 1.79                     | 0.47              |
| 13:M:3:TRP:CG    | 13:m:3:TRP:CG     | 3.02                     | 0.47              |
| 7:g:544:ALA:HA   | 7:g:607:LEU:HA    | 1.95                     | 0.47              |
| 8:h:671:LEU:HD12 | 8:h:684:MET:HB2   | 1.96                     | 0.47              |
| 8:h:823:GLY:H    | 8:h:824:ARG:NH1   | 2.12                     | 0.47              |
| 1:A:378:ILE:HD12 | 6:F:903:PHE:HB2   | 1.95                     | 0.47              |
| 6:F:226:LEU:HB3  | 6:F:274:LEU:HD23  | 1.96                     | 0.47              |
| 1:a:368:LEU:HD23 | 1:a:459:ALA:HB2   | 1.96                     | 0.47              |
| 1:a:491:ALA:HB2  | 2:b:224:GLN:HG3   | 1.95                     | 0.47              |
| 5:e:239:HIS:HB2  | 5:e:260:LEU:HD13  | 1.96                     | 0.47              |
| 13:m:9:VAL:O     | 13:m:11:CYS:N     | 2.42                     | 0.47              |
| 7:G:265:ASN:ND2  | 7:G:268:GLN:OE1   | 2.47                     | 0.47              |
| 2:b:297:TRP:HE1  | 3:c:222:SER:HA    | 1.79                     | 0.47              |
| 7:g:513:ILE:HG13 | 7:g:705:THR:HB    | 1.96                     | 0.47              |
| 7:g:607:LEU:HD13 | 7:g:609:THR:HG22  | 1.95                     | 0.47              |
| 10:j:17:ASP:OD1  | 10:j:17:ASP:N     | 2.41                     | 0.47              |
| 13:m:7:ILE:HG23  | 13:m:12:PHE:HZ    | 1.77                     | 0.47              |
| 2:b:281:LEU:HD13 | 3:c:71:THR:HG21   | 1.97                     | 0.47              |
| 5:e:293:ARG:HB2  | 5:e:319:ASN:HB3   | 1.97                     | 0.47              |
| 5:e:978:GLU:HG2  | 5:e:982:ARG:HB2   | 1.96                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:j:49:PHE:HB2   | 10:j:50:PRO:HD3   | 1.96                     | 0.47              |
| 4:D:78:LEU:HA     | 4:D:81:ASN:ND2    | 2.30                     | 0.47              |
| 8:H:253:GLU:N     | 8:H:253:GLU:OE1   | 2.48                     | 0.47              |
| 8:H:269:MET:HE2   | 8:H:269:MET:HB3   | 1.73                     | 0.47              |
| 8:H:281:LEU:HB3   | 8:H:321:ILE:HD11  | 1.96                     | 0.47              |
| 5:e:318:PHE:CE1   | 5:e:331:PHE:HD2   | 2.32                     | 0.47              |
| 5:e:964:ASP:OD1   | 5:e:964:ASP:N     | 2.47                     | 0.47              |
| 5:e:1068:VAL:HG21 | 13:m:98:PHE:CE2   | 2.50                     | 0.47              |
| 13:m:78:THR:HG21  | 13:m:83:LEU:HD22  | 1.96                     | 0.47              |
| 1:A:508:ARG:HB2   | 1:A:525:THR:HG21  | 1.95                     | 0.47              |
| 4:D:163:VAL:HA    | 4:D:166:LEU:HD12  | 1.96                     | 0.47              |
| 5:E:287:GLU:O     | 5:E:291:TYR:CD2   | 2.67                     | 0.47              |
| 5:E:788:ASN:N     | 5:E:788:ASN:OD1   | 2.46                     | 0.47              |
| 5:E:918:SER:OG    | 5:E:921:MET:SD    | 2.63                     | 0.47              |
| 5:E:1055:PRO:HG2  | 13:M:109:ILE:HD11 | 1.97                     | 0.47              |
| 8:H:518:LEU:HB3   | 8:H:548:PHE:HE2   | 1.80                     | 0.47              |
| 21:M:201:CLR:H162 | 21:M:201:CLR:H222 | 1.66                     | 0.47              |
| 1:a:508:ARG:HB2   | 1:a:525:THR:HG21  | 1.97                     | 0.47              |
| 2:b:262:ARG:HH11  | 2:b:266:ARG:HD2   | 1.78                     | 0.47              |
| 3:c:267:MET:HE2   | 3:c:267:MET:HA    | 1.97                     | 0.47              |
| 6:f:641:LEU:HD12  | 6:f:641:LEU:HA    | 1.82                     | 0.47              |
| 8:h:795:MET:HE1   | 8:h:896:LYS:HG3   | 1.97                     | 0.47              |
| 8:h:819:TRP:HH2   | 8:h:858:ASP:HA    | 1.78                     | 0.47              |
| 12:l:628:SER:O    | 12:l:632:CYS:N    | 2.36                     | 0.47              |
| 2:B:252:ILE:HD13  | 3:C:154:LEU:HD21  | 1.97                     | 0.47              |
| 2:B:298:TYR:HB2   | 3:C:222:SER:HB2   | 1.97                     | 0.47              |
| 7:G:86:LYS:HD3    | 7:G:86:LYS:O      | 2.15                     | 0.47              |
| 7:G:385:ASN:HD21  | 7:G:489:LYS:HA    | 1.79                     | 0.47              |
| 7:G:736:THR:HA    | 7:G:739:LEU:HD12  | 1.97                     | 0.47              |
| 12:L:112:ALA:HB2  | 12:L:268:TYR:HA   | 1.96                     | 0.47              |
| 13:M:5:ASP:O      | 13:M:8:ALA:CB     | 2.61                     | 0.47              |
| 5:e:422:PHE:HE1   | 5:e:434:MET:HG3   | 1.80                     | 0.47              |
| 6:f:622:GLN:HE21  | 6:f:627:ALA:HB2   | 1.80                     | 0.47              |
| 7:g:229:SER:OG    | 7:g:230:MET:N     | 2.48                     | 0.47              |
| 8:h:756:ARG:HG2   | 12:l:552:PHE:HB3  | 1.97                     | 0.47              |
| 12:l:413:LEU:HB3  | 12:l:571:PHE:HZ   | 1.80                     | 0.47              |
| 2:B:146:VAL:HA    | 2:B:149:TRP:CD1   | 2.49                     | 0.47              |
| 2:B:363:ASP:HA    | 2:B:366:LYS:HE3   | 1.97                     | 0.47              |
| 4:D:213:GLY:HA2   | 4:D:221:GLN:HG3   | 1.96                     | 0.47              |
| 5:E:266:SER:OG    | 5:E:267:ASP:N     | 2.48                     | 0.47              |
| 6:F:671:ASN:OD1   | 6:F:671:ASN:N     | 2.48                     | 0.47              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:G:385:ASN:ND2  | 7:G:488:ASP:O    | 2.47                     | 0.47              |
| 13:M:23:LEU:HD21 | 13:M:90:ILE:HD11 | 1.97                     | 0.47              |
| 1:a:461:ARG:HE   | 1:a:464:ARG:HG2  | 1.80                     | 0.47              |
| 2:b:248:ILE:HG12 | 3:c:157:ILE:HG13 | 1.96                     | 0.47              |
| 6:f:322:THR:HG22 | 6:f:332:GLY:HA3  | 1.96                     | 0.47              |
| 6:f:405:ILE:HD12 | 6:f:419:LEU:HD12 | 1.97                     | 0.47              |
| 7:g:586:TRP:HE1  | 7:g:591:VAL:HG22 | 1.80                     | 0.47              |
| 8:h:270:LEU:HB2  | 8:h:282:LEU:HD12 | 1.96                     | 0.47              |
| 13:m:6:ARG:C     | 13:m:8:ALA:N     | 2.73                     | 0.47              |
| 5:E:919:ARG:HA   | 5:E:922:CYS:SG   | 2.55                     | 0.47              |
| 5:E:929:LYS:HE2  | 5:E:939:CYS:HB2  | 1.97                     | 0.47              |
| 6:F:846:MET:SD   | 6:F:847:LEU:N    | 2.88                     | 0.47              |
| 7:G:578:PRO:HB2  | 7:G:677:LYS:HD2  | 1.96                     | 0.47              |
| 12:L:201:ASN:O   | 12:L:205:ASN:ND2 | 2.48                     | 0.47              |
| 12:L:561:ASP:HB2 | 12:L:564:CYS:HB3 | 1.97                     | 0.47              |
| 6:f:167:VAL:HG13 | 16:Z:1:NAG:H81   | 1.95                     | 0.47              |
| 7:g:240:LEU:HD13 | 7:g:254:LEU:HB3  | 1.96                     | 0.47              |
| 7:g:309:GLU:N    | 7:g:309:GLU:OE1  | 2.48                     | 0.47              |
| 13:m:57:LEU:HD23 | 13:m:101:ARG:NH2 | 2.30                     | 0.47              |
| 4:D:81:ASN:HB2   | 4:D:162:ARG:HH21 | 1.80                     | 0.46              |
| 5:E:915:ASN:OD1  | 5:E:915:ASN:N    | 2.47                     | 0.46              |
| 7:G:60:ILE:HA    | 7:G:71:THR:O     | 2.14                     | 0.46              |
| 13:M:28:ILE:HG23 | 13:M:29:HIS:HD2  | 1.80                     | 0.46              |
| 1:a:377:GLU:OE2  | 1:a:377:GLU:N    | 2.42                     | 0.46              |
| 1:a:554:ILE:HG22 | 1:a:558:MET:HE3  | 1.96                     | 0.46              |
| 2:b:146:VAL:HA   | 2:b:149:TRP:HD1  | 1.79                     | 0.46              |
| 5:e:212:THR:OG1  | 5:e:221:GLU:OE2  | 2.28                     | 0.46              |
| 8:h:109:ILE:HD12 | 8:h:122:LEU:HD13 | 1.96                     | 0.46              |
| 1:A:367:ILE:HD13 | 1:A:387:LEU:HB3  | 1.96                     | 0.46              |
| 3:C:133:LYS:HB3  | 7:G:724:LEU:HD11 | 1.97                     | 0.46              |
| 4:D:250:GLU:O    | 4:D:251:ARG:HD3  | 2.16                     | 0.46              |
| 4:d:251:ARG:O    | 4:d:251:ARG:NE   | 2.43                     | 0.46              |
| 5:e:978:GLU:HG3  | 5:e:980:ASN:H    | 1.80                     | 0.46              |
| 8:H:293:ASP:OD1  | 8:H:293:ASP:N    | 2.46                     | 0.46              |
| 12:L:636:ASP:OD2 | 12:L:647:TRP:NE1 | 2.45                     | 0.46              |
| 13:M:6:ARG:C     | 13:M:8:ALA:H     | 2.23                     | 0.46              |
| 1:a:558:MET:HE1  | 2:b:286:VAL:HG13 | 1.96                     | 0.46              |
| 1:a:581:GLN:OE1  | 2:b:346:ARG:NH2  | 2.48                     | 0.46              |
| 5:e:293:ARG:CB   | 5:e:319:ASN:HB3  | 2.45                     | 0.46              |
| 5:e:788:ASN:N    | 5:e:788:ASN:OD1  | 2.48                     | 0.46              |
| 6:f:752:ASP:OD1  | 6:f:752:ASP:N    | 2.45                     | 0.46              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:g:60:ILE:HA     | 7:g:71:THR:O      | 2.16                     | 0.46              |
| 12:l:386:LEU:O    | 12:l:390:THR:OG1  | 2.28                     | 0.46              |
| 2:B:185:LEU:HB3   | 2:B:207:LEU:HD22  | 1.96                     | 0.46              |
| 6:F:372:TYR:CG    | 6:F:387:MET:HE1   | 2.51                     | 0.46              |
| 8:H:344:LYS:NZ    | 8:H:353:GLU:OE1   | 2.48                     | 0.46              |
| 12:L:241:ILE:HA   | 12:L:244:ILE:HD12 | 1.97                     | 0.46              |
| 2:b:262:ARG:NH1   | 2:b:266:ARG:HD2   | 2.31                     | 0.46              |
| 7:g:715:LEU:HD12  | 7:g:716:PRO:HD2   | 1.98                     | 0.46              |
| 12:l:508:ARG:HD2  | 12:l:508:ARG:HA   | 1.71                     | 0.46              |
| 13:m:51:PHE:HA    | 13:m:112:ARG:NH2  | 2.31                     | 0.46              |
| 1:A:537:ASP:HB3   | 1:A:540:LEU:HB2   | 1.97                     | 0.46              |
| 4:D:108:VAL:HA    | 4:D:111:ILE:HG12  | 1.98                     | 0.46              |
| 8:H:57:SER:OG     | 8:H:59:ASP:O      | 2.32                     | 0.46              |
| 8:h:820:GLU:HG3   | 8:h:824:ARG:HD2   | 1.97                     | 0.46              |
| 13:m:5:ASP:O      | 13:m:8:ALA:CB     | 2.61                     | 0.46              |
| 2:B:256:THR:HG22  | 2:B:260:PHE:HE2   | 1.81                     | 0.46              |
| 3:C:45:LYS:NZ     | 3:C:49:SER:OG     | 2.47                     | 0.46              |
| 8:H:482:TYR:O     | 8:H:728:LYS:NZ    | 2.49                     | 0.46              |
| 1:a:471:ILE:HD12  | 1:a:471:ILE:H     | 1.80                     | 0.46              |
| 5:e:213:ILE:HD12  | 5:e:213:ILE:HA    | 1.79                     | 0.46              |
| 12:l:189:PRO:HG2  | 12:l:192:GLN:HB2  | 1.98                     | 0.46              |
| 5:E:286:PHE:N     | 5:E:286:PHE:CD1   | 2.81                     | 0.46              |
| 7:G:573:VAL:HG23  | 7:G:711:VAL:HG12  | 1.96                     | 0.46              |
| 8:H:965:LYS:HD3   | 12:L:436:LEU:HD22 | 1.98                     | 0.46              |
| 1:a:475:LEU:HD13  | 4:d:196:LEU:HD21  | 1.98                     | 0.46              |
| 2:b:185:LEU:HB3   | 2:b:207:LEU:HD22  | 1.98                     | 0.46              |
| 5:e:220:LYS:HA    | 5:e:220:LYS:HD3   | 1.82                     | 0.46              |
| 5:e:978:GLU:OE2   | 5:e:982:ARG:NH1   | 2.48                     | 0.46              |
| 5:e:1055:PRO:HG2  | 13:m:109:ILE:HG13 | 1.97                     | 0.46              |
| 8:h:900:THR:OG1   | 8:h:901:TYR:N     | 2.48                     | 0.46              |
| 10:j:100:LEU:HD11 | 10:j:112:PHE:HB3  | 1.98                     | 0.46              |
| 3:c:258:ILE:HD13  | 3:c:258:ILE:HA    | 1.80                     | 0.46              |
| 7:g:308:ALA:HA    | 7:g:333:TRP:CD1   | 2.51                     | 0.46              |
| 8:h:50:LEU:N      | 8:h:117:GLU:OE1   | 2.49                     | 0.46              |
| 12:l:398:HIS:NE2  | 12:l:402:GLN:OE1  | 2.48                     | 0.46              |
| 1:A:449:ARG:HG3   | 4:D:211:LEU:HD13  | 1.98                     | 0.46              |
| 13:M:3:TRP:HB2    | 13:m:3:TRP:CD1    | 2.51                     | 0.46              |
| 1:a:555:PRO:HA    | 1:a:558:MET:HG2   | 1.97                     | 0.46              |
| 3:c:59:THR:HG21   | 3:c:93:VAL:HG21   | 1.98                     | 0.46              |
| 5:e:226:ASP:OD1   | 5:e:228:THR:OG1   | 2.31                     | 0.46              |
| 6:f:780:SER:O     | 6:f:780:SER:OG    | 2.34                     | 0.46              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 7:g:491:LEU:HD23 | 7:g:491:LEU:HA   | 1.82                     | 0.46              |
| 8:h:699:ASN:HB3  | 8:h:702:GLN:HB2  | 1.97                     | 0.46              |
| 8:h:889:TYR:HD2  | 8:h:890:SER:H    | 1.64                     | 0.46              |
| 1:A:349:GLN:O    | 1:A:353:PHE:HB2  | 2.15                     | 0.46              |
| 6:F:75:VAL:HG23  | 6:F:676:ALA:HB1  | 1.98                     | 0.46              |
| 6:F:372:TYR:OH   | 6:F:391:GLY:O    | 2.34                     | 0.46              |
| 7:G:586:TRP:NE1  | 7:G:591:VAL:HG22 | 2.31                     | 0.46              |
| 7:G:650:SER:OG   | 7:G:651:CYS:N    | 2.49                     | 0.46              |
| 13:M:9:VAL:O     | 13:M:10:LEU:HD22 | 2.15                     | 0.46              |
| 3:c:179:SER:HB2  | 4:d:179:ILE:HD12 | 1.96                     | 0.46              |
| 4:d:108:VAL:HA   | 4:d:111:ILE:HG12 | 1.98                     | 0.46              |
| 6:f:252:ILE:HD12 | 6:f:301:ALA:HB1  | 1.98                     | 0.46              |
| 8:h:417:THR:HB   | 8:h:439:CYS:HB2  | 1.98                     | 0.46              |
| 4:D:212:PHE:CG   | 4:D:220:PHE:HB3  | 2.51                     | 0.45              |
| 5:E:232:TYR:HE1  | 5:E:239:HIS:H    | 1.64                     | 0.45              |
| 5:E:581:SER:HB2  | 5:E:712:LYS:HD3  | 1.97                     | 0.45              |
| 13:M:3:TRP:HB2   | 13:m:3:TRP:NE1   | 2.31                     | 0.45              |
| 5:e:426:TYR:HB2  | 5:e:451:VAL:HG21 | 1.98                     | 0.45              |
| 7:g:526:ILE:HG22 | 7:g:527:LEU:HG   | 1.98                     | 0.45              |
| 12:l:508:ARG:HG3 | 12:l:544:ALA:HB3 | 1.98                     | 0.45              |
| 13:m:9:VAL:O     | 13:m:10:LEU:HD22 | 2.15                     | 0.45              |
| 4:D:61:ILE:HA    | 4:D:65:LEU:HD13  | 1.98                     | 0.45              |
| 6:F:308:LEU:HD11 | 6:F:336:TRP:HH2  | 1.81                     | 0.45              |
| 6:F:1008:GLU:HG3 | 6:F:1013:TYR:CZ  | 2.52                     | 0.45              |
| 7:G:496:LEU:HD23 | 7:G:496:LEU:HA   | 1.75                     | 0.45              |
| 8:H:428:HIS:CE1  | 8:H:710:LEU:HD11 | 2.51                     | 0.45              |
| 7:g:720:PHE:HB2  | 7:g:722:PRO:HD2  | 1.97                     | 0.45              |
| 8:h:381:ILE:HG21 | 8:h:423:VAL:HG11 | 1.97                     | 0.45              |
| 1:A:535:LEU:HD11 | 2:B:293:THR:HB   | 1.99                     | 0.45              |
| 3:C:193:ILE:HD12 | 3:C:193:ILE:HA   | 1.86                     | 0.45              |
| 6:F:644:VAL:HG21 | 6:F:750:ILE:HA   | 1.99                     | 0.45              |
| 5:e:228:THR:CG2  | 5:e:242:LEU:HD21 | 2.46                     | 0.45              |
| 6:f:513:THR:OG1  | 6:f:530:GLU:OE1  | 2.34                     | 0.45              |
| 5:E:286:PHE:HD1  | 5:E:286:PHE:N    | 2.13                     | 0.45              |
| 6:F:318:TYR:CE1  | 6:F:337:VAL:HB   | 2.51                     | 0.45              |
| 8:H:692:THR:HG21 | 8:H:707:ASN:HD22 | 1.81                     | 0.45              |
| 3:c:258:ILE:O    | 3:c:262:MET:HG2  | 2.16                     | 0.45              |
| 4:d:282:VAL:O    | 4:d:286:LEU:HG   | 2.17                     | 0.45              |
| 5:e:626:SER:OG   | 5:e:627:ASP:N    | 2.48                     | 0.45              |
| 10:j:14:TYR:O    | 10:j:68:ARG:N    | 2.50                     | 0.45              |
| 2:B:234:ARG:HD3  | 2:B:345:ILE:HD11 | 1.98                     | 0.45              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 3:C:129:TYR:HA   | 3:C:132:ARG:HB3   | 1.99                     | 0.45              |
| 3:C:269:MET:SD   | 4:D:286:LEU:HB3   | 2.56                     | 0.45              |
| 10:J:135:GLN:HG3 | 10:J:138:PHE:HB2  | 1.97                     | 0.45              |
| 3:c:100:MET:HE2  | 3:c:100:MET:HB3   | 1.82                     | 0.45              |
| 5:e:286:PHE:N    | 5:e:286:PHE:CD1   | 2.80                     | 0.45              |
| 5:e:755:LYS:HA   | 5:e:755:LYS:HD3   | 1.72                     | 0.45              |
| 6:f:75:VAL:HG23  | 6:f:676:ALA:HB1   | 1.97                     | 0.45              |
| 7:g:575:TYR:CZ   | 7:g:682:GLN:HB3   | 2.51                     | 0.45              |
| 1:A:475:LEU:HD13 | 4:D:196:LEU:HD21  | 1.98                     | 0.45              |
| 2:B:350:SER:HA   | 2:B:353:MET:HE3   | 1.99                     | 0.45              |
| 5:E:463:ILE:HB   | 5:E:475:THR:HG23  | 1.98                     | 0.45              |
| 5:E:674:THR:HA   | 20:E:1104:NAG:H81 | 1.98                     | 0.45              |
| 7:G:615:THR:HB   | 7:G:666:GLU:HA    | 1.97                     | 0.45              |
| 12:L:198:MET:HE2 | 12:L:198:MET:HB3  | 1.92                     | 0.45              |
| 8:h:191:PHE:HD1  | 8:h:198:THR:HG22  | 1.82                     | 0.45              |
| 13:m:6:ARG:C     | 13:m:8:ALA:H      | 2.23                     | 0.45              |
| 5:E:544:ILE:HG13 | 5:E:548:GLU:HB2   | 1.98                     | 0.45              |
| 5:E:978:GLU:HG2  | 5:E:982:ARG:HG3   | 1.99                     | 0.45              |
| 6:F:252:ILE:HG12 | 6:F:303:ALA:HB2   | 1.99                     | 0.45              |
| 8:H:632:HIS:NE2  | 8:H:736:GLY:O     | 2.33                     | 0.45              |
| 8:H:760:TYR:CE1  | 8:H:779:TYR:HB2   | 2.50                     | 0.45              |
| 12:L:508:ARG:HD2 | 12:L:508:ARG:HA   | 1.72                     | 0.45              |
| 2:b:186:SER:HB2  | 2:b:211:ARG:HD2   | 1.99                     | 0.45              |
| 5:e:239:HIS:O    | 5:e:240:GLN:HB3   | 2.17                     | 0.45              |
| 8:h:788:LEU:HD23 | 8:h:927:ILE:HG22  | 1.98                     | 0.45              |
| 3:C:192:ALA:HA   | 3:C:220:LEU:HD11  | 1.97                     | 0.45              |
| 3:C:199:PHE:HB2  | 3:C:210:TRP:HB2   | 1.99                     | 0.45              |
| 4:D:207:PHE:O    | 4:D:210:THR:OG1   | 2.35                     | 0.45              |
| 5:E:89:THR:HG23  | 5:E:132:MET:HB2   | 1.99                     | 0.45              |
| 5:E:1003:GLU:HG2 | 5:E:1010:VAL:HG23 | 1.98                     | 0.45              |
| 6:F:206:ASN:HD21 | 6:F:264:PHE:HE2   | 1.62                     | 0.45              |
| 13:M:78:THR:HG23 | 13:M:80:ASP:H     | 1.81                     | 0.45              |
| 3:c:258:ILE:HD11 | 4:d:187:MET:HE1   | 1.98                     | 0.45              |
| 7:g:398:PHE:HB2  | 7:g:503:ILE:HG12  | 1.99                     | 0.45              |
| 3:C:196:PHE:CE1  | 4:D:89:THR:HG23   | 2.52                     | 0.45              |
| 4:D:244:THR:HA   | 4:D:247:GLN:HB2   | 1.99                     | 0.45              |
| 5:E:181:ASP:HB3  | 5:E:199:MET:SD    | 2.57                     | 0.45              |
| 6:F:328:ASP:OD2  | 6:F:330:SER:OG    | 2.33                     | 0.45              |
| 6:F:959:TYR:HB3  | 6:F:963:GLU:HB3   | 1.99                     | 0.45              |
| 7:G:42:LEU:HD12  | 7:G:82:LEU:HB3    | 1.98                     | 0.45              |
| 8:H:939:TYR:HB3  | 12:L:569:LEU:HD21 | 1.97                     | 0.45              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:J:56:ILE:HD11  | 13:M:67:TRP:CZ2   | 2.52                     | 0.45              |
| 10:J:98:VAL:HG21  | 10:J:143:LEU:HD23 | 1.99                     | 0.45              |
| 1:a:345:LEU:HD13  | 1:a:405:ALA:HA    | 1.99                     | 0.45              |
| 5:e:56:LEU:O      | 5:e:113:ASP:HA    | 2.16                     | 0.45              |
| 7:g:441:PHE:CE1   | 7:g:452:LYS:HB2   | 2.52                     | 0.45              |
| 8:h:359:PHE:HB2   | 8:h:380:LEU:HD11  | 1.99                     | 0.45              |
| 8:h:499:SER:HB2   | 8:h:506:VAL:HG12  | 1.99                     | 0.45              |
| 10:j:45:GLU:HB2   | 13:m:53:TYR:HE1   | 1.81                     | 0.45              |
| 1:A:537:ASP:HB2   | 4:D:240:LEU:HD12  | 1.99                     | 0.45              |
| 5:E:239:HIS:O     | 5:E:240:GLN:HB3   | 2.17                     | 0.45              |
| 5:E:1068:VAL:HG21 | 13:M:98:PHE:CE2   | 2.52                     | 0.45              |
| 4:d:183:ILE:O     | 4:d:187:MET:HG2   | 2.17                     | 0.45              |
| 5:e:52:THR:OG1    | 5:e:53:MET:N      | 2.49                     | 0.45              |
| 5:e:773:GLY:O     | 5:e:798:ARG:NE    | 2.50                     | 0.45              |
| 7:g:510:THR:HG23  | 7:g:587:LYS:HG2   | 1.99                     | 0.45              |
| 10:j:48:CYS:HB3   | 13:m:56:VAL:HG21  | 1.99                     | 0.45              |
| 12:l:125:PHE:HE2  | 12:l:187:ILE:HD12 | 1.82                     | 0.45              |
| 1:A:485:SER:OG    | 1:A:488:SER:OG    | 2.29                     | 0.44              |
| 2:B:332:ASN:HD21  | 3:C:263:PHE:HB3   | 1.82                     | 0.44              |
| 4:D:155:VAL:HA    | 4:D:158:THR:HG1   | 1.81                     | 0.44              |
| 8:H:65:THR:HB     | 8:H:102:LYS:HA    | 1.99                     | 0.44              |
| 8:H:125:ASP:OD1   | 8:H:125:ASP:N     | 2.50                     | 0.44              |
| 8:H:635:LYS:HE2   | 8:H:694:TYR:CE2   | 2.52                     | 0.44              |
| 7:g:127:LEU:HD13  | 7:g:180:PHE:HE1   | 1.81                     | 0.44              |
| 6:F:431:VAL:HG12  | 6:F:442:ILE:HA    | 1.98                     | 0.44              |
| 13:M:28:ILE:HG23  | 13:M:29:HIS:CD2   | 2.53                     | 0.44              |
| 3:c:193:ILE:HD12  | 3:c:193:ILE:HA    | 1.91                     | 0.44              |
| 4:d:200:PHE:HA    | 4:d:203:VAL:HG22  | 1.99                     | 0.44              |
| 7:g:224:TYR:HA    | 7:g:227:ASN:HB3   | 1.98                     | 0.44              |
| 8:h:671:LEU:HD11  | 8:h:682:LYS:HG2   | 1.99                     | 0.44              |
| 13:m:57:LEU:HD23  | 13:m:101:ARG:HH22 | 1.82                     | 0.44              |
| 3:C:56:MET:O      | 3:C:60:VAL:HG23   | 2.18                     | 0.44              |
| 6:F:136:ASN:ND2   | 6:F:380:ASP:OD1   | 2.50                     | 0.44              |
| 7:G:125:ARG:NH2   | 7:G:178:PHE:O     | 2.51                     | 0.44              |
| 7:G:497:LYS:H     | 7:G:497:LYS:HG2   | 1.55                     | 0.44              |
| 10:J:100:LEU:HD11 | 10:J:112:PHE:HB3  | 2.00                     | 0.44              |
| 5:e:873:PRO:HG2   | 5:e:884:THR:HG21  | 1.98                     | 0.44              |
| 8:h:909:LEU:HB3   | 8:h:923:THR:HG22  | 1.98                     | 0.44              |
| 3:C:245:ARG:HH12  | 4:D:225:VAL:HA    | 1.83                     | 0.44              |
| 4:D:280:VAL:HA    | 4:D:283:THR:HG22  | 1.99                     | 0.44              |
| 7:G:400:ILE:HD13  | 7:G:400:ILE:HA    | 1.84                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 7:G:653:GLU:OE1  | 7:G:653:GLU:N     | 2.47                     | 0.44              |
| 7:G:682:GLN:N    | 7:G:682:GLN:OE1   | 2.50                     | 0.44              |
| 10:J:105:ASP:OD1 | 10:J:109:GLY:N    | 2.50                     | 0.44              |
| 13:M:2:ARG:HB3   | 13:M:5:ASP:N      | 2.13                     | 0.44              |
| 13:M:5:ASP:OD1   | 13:M:8:ALA:CB     | 2.66                     | 0.44              |
| 2:b:337:MET:HE2  | 2:b:337:MET:HB3   | 1.81                     | 0.44              |
| 4:d:78:LEU:HD23  | 4:d:81:ASN:HD21   | 1.81                     | 0.44              |
| 5:e:378:THR:HG22 | 5:e:380:GLU:H     | 1.82                     | 0.44              |
| 5:e:759:THR:O    | 5:e:759:THR:OG1   | 2.34                     | 0.44              |
| 5:e:982:ARG:NE   | 5:e:1024:GLU:HG3  | 2.33                     | 0.44              |
| 7:g:165:ILE:HD11 | 7:g:195:LEU:HD13  | 1.99                     | 0.44              |
| 7:g:407:LYS:HE3  | 7:g:407:LYS:HB3   | 1.75                     | 0.44              |
| 10:j:11:VAL:HG11 | 10:j:69:ARG:HH21  | 1.81                     | 0.44              |
| 5:E:630:ILE:HG13 | 5:E:640:ILE:HG12  | 2.00                     | 0.44              |
| 7:G:42:LEU:HD22  | 7:G:95:ILE:HD11   | 1.98                     | 0.44              |
| 10:J:93:MET:O    | 10:J:94:HIS:ND1   | 2.50                     | 0.44              |
| 4:d:216:VAL:HG21 | 4:d:246:PHE:HB3   | 1.99                     | 0.44              |
| 5:e:274:SER:O    | 5:e:274:SER:OG    | 2.33                     | 0.44              |
| 5:e:759:THR:OG1  | 5:e:762:ILE:O     | 2.34                     | 0.44              |
| 10:j:10:PHE:HA   | 10:j:73:ASN:HA    | 1.99                     | 0.44              |
| 5:E:627:ASP:N    | 5:E:627:ASP:OD1   | 2.51                     | 0.44              |
| 5:E:721:ASN:OD1  | 5:E:721:ASN:N     | 2.50                     | 0.44              |
| 5:E:768:VAL:HG22 | 5:E:808:ALA:HB3   | 2.00                     | 0.44              |
| 8:H:476:LEU:HD13 | 8:H:492:ASP:HB3   | 1.99                     | 0.44              |
| 4:d:233:CYS:HB3  | 4:d:267:ILE:HD11  | 2.00                     | 0.44              |
| 5:e:446:LEU:HD13 | 5:e:467:VAL:HG21  | 1.99                     | 0.44              |
| 6:f:485:MET:HE1  | 6:f:497:TYR:CD2   | 2.52                     | 0.44              |
| 7:g:513:ILE:HG23 | 7:g:703:LEU:HD22  | 1.98                     | 0.44              |
| 8:h:195:LYS:HE3  | 8:h:368:ARG:HH12  | 1.82                     | 0.44              |
| 12:l:256:TYR:HA  | 12:l:259:ILE:HG12 | 2.00                     | 0.44              |
| 5:E:267:ASP:OD1  | 5:E:268:LEU:N     | 2.51                     | 0.44              |
| 5:E:321:ASN:O    | 5:E:322:ARG:HG2   | 2.17                     | 0.44              |
| 5:E:664:GLY:HA2  | 6:F:613:LEU:HB3   | 1.99                     | 0.44              |
| 6:F:462:LEU:HD12 | 6:F:462:LEU:HA    | 1.82                     | 0.44              |
| 6:F:892:ILE:HD11 | 6:F:902:TYR:CZ    | 2.52                     | 0.44              |
| 8:H:646:VAL:HG22 | 8:H:681:THR:HG23  | 1.99                     | 0.44              |
| 13:M:6:ARG:C     | 13:M:8:ALA:N      | 2.73                     | 0.44              |
| 8:h:764:LYS:HA   | 8:h:764:LYS:HD3   | 1.81                     | 0.44              |
| 13:m:2:ARG:C     | 13:m:4:ARG:N      | 2.63                     | 0.44              |
| 3:C:128:PRO:HA   | 3:C:131:LEU:HG    | 2.00                     | 0.44              |
| 3:C:149:GLN:HA   | 3:C:152:ARG:HD3   | 1.99                     | 0.44              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 5:E:483:SER:OG   | 5:E:484:GLU:N     | 2.51                     | 0.44              |
| 8:H:134:TYR:O    | 8:H:150:ILE:HA    | 2.17                     | 0.44              |
| 8:H:455:SER:O    | 8:H:459:GLN:HA    | 2.18                     | 0.44              |
| 10:J:79:TYR:HE1  | 10:J:147:LEU:HD23 | 1.83                     | 0.44              |
| 1:a:429:ASP:HB2  | 1:a:451:LEU:HD13  | 1.99                     | 0.44              |
| 3:c:129:TYR:HA   | 3:c:132:ARG:HB3   | 1.99                     | 0.44              |
| 3:c:205:GLY:HA3  | 3:c:239:ARG:HD2   | 2.00                     | 0.44              |
| 4:d:207:PHE:O    | 4:d:210:THR:OG1   | 2.35                     | 0.44              |
| 5:e:969:GLU:HB2  | 5:e:971:PRO:HD2   | 2.00                     | 0.44              |
| 7:g:656:LYS:HA   | 7:g:656:LYS:HD3   | 1.72                     | 0.44              |
| 10:j:148:ASN:HB2 | 10:j:164:ARG:HG3  | 2.00                     | 0.44              |
| 5:E:628:LEU:HD23 | 5:E:628:LEU:HA    | 1.87                     | 0.44              |
| 5:E:767:MET:HE3  | 5:E:767:MET:HB2   | 1.76                     | 0.44              |
| 5:E:872:ARG:HH21 | 5:E:885:ASP:H     | 1.65                     | 0.44              |
| 6:F:564:LYS:HD2  | 6:F:564:LYS:HA    | 1.82                     | 0.44              |
| 6:F:914:CYS:SG   | 6:F:1051:HIS:ND1  | 2.90                     | 0.44              |
| 8:H:448:ASN:OD1  | 8:H:448:ASN:N     | 2.51                     | 0.44              |
| 8:H:554:ILE:HD13 | 8:H:554:ILE:HA    | 1.88                     | 0.44              |
| 11:K:38:THR:HA   | 11:K:137:LEU:HD11 | 1.99                     | 0.44              |
| 12:L:97:MET:HE3  | 12:L:256:TYR:CG   | 2.53                     | 0.44              |
| 13:M:23:LEU:CD1  | 13:M:90:ILE:CD1   | 2.96                     | 0.44              |
| 5:e:228:THR:HG23 | 5:e:242:LEU:HD11  | 1.99                     | 0.44              |
| 5:e:457:SER:HB3  | 5:e:497:TYR:HB3   | 1.99                     | 0.44              |
| 6:f:129:ILE:HG12 | 6:f:185:VAL:HG22  | 1.99                     | 0.44              |
| 6:f:987:THR:HB   | 6:f:994:ILE:HD11  | 2.00                     | 0.44              |
| 7:g:142:CYS:HB3  | 7:g:149:CYS:HB2   | 1.74                     | 0.44              |
| 8:h:410:LEU:HB2  | 8:h:412:LEU:HG    | 2.00                     | 0.44              |
| 10:j:59:TRP:HD1  | 10:j:60:LEU:HD22  | 1.82                     | 0.44              |
| 13:m:2:ARG:O     | 13:m:5:ASP:N      | 2.51                     | 0.44              |
| 5:E:874:PRO:HB2  | 5:E:982:ARG:HH22  | 1.82                     | 0.43              |
| 5:E:877:MET:H    | 5:E:877:MET:HG3   | 1.63                     | 0.43              |
| 6:F:642:ILE:HG22 | 6:F:643:ASP:H     | 1.81                     | 0.43              |
| 8:H:135:PHE:HA   | 8:H:149:THR:O     | 2.18                     | 0.43              |
| 12:L:93:ILE:O    | 12:L:97:MET:HG2   | 2.18                     | 0.43              |
| 7:g:501:THR:OG1  | 7:g:502:LEU:N     | 2.51                     | 0.43              |
| 7:g:532:LEU:HD12 | 7:g:564:TYR:CE2   | 2.52                     | 0.43              |
| 8:h:554:ILE:HD13 | 8:h:554:ILE:HA    | 1.91                     | 0.43              |
| 2:B:205:GLN:HG3  | 2:B:208:ARG:HH22  | 1.82                     | 0.43              |
| 7:G:413:ILE:HD11 | 7:G:450:LYS:HD3   | 2.00                     | 0.43              |
| 7:G:595:MET:HE3  | 7:G:597:ALA:HB3   | 2.00                     | 0.43              |
| 10:J:142:HIS:HA  | 10:J:145:ARG:HD2  | 1.99                     | 0.43              |

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| Atom-1            | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|------------------|--------------------------|-------------------|
| 2:b:270:GLU:HG2   | 7:g:518:LYS:HD2  | 2.00                     | 0.43              |
| 3:c:56:MET:O      | 3:c:60:VAL:HG23  | 2.18                     | 0.43              |
| 3:c:241:PHE:HD2   | 3:c:244:SER:HB3  | 1.83                     | 0.43              |
| 1:A:586:LYS:HB2   | 1:A:586:LYS:HE2  | 1.85                     | 0.43              |
| 3:C:182:THR:O     | 3:C:186:LEU:HG   | 2.18                     | 0.43              |
| 5:E:287:GLU:N     | 5:E:290:ASP:OD1  | 2.45                     | 0.43              |
| 6:F:789:LYS:HE3   | 6:F:789:LYS:HB3  | 1.82                     | 0.43              |
| 6:f:760:ASN:OD1   | 6:f:760:ASN:N    | 2.49                     | 0.43              |
| 2:B:182:VAL:HG11  | 2:B:214:ARG:HB2  | 2.00                     | 0.43              |
| 4:D:95:GLN:HG3    | 4:D:96:LYS:HZ2   | 1.83                     | 0.43              |
| 4:D:164:LEU:O     | 4:D:168:HIS:ND1  | 2.51                     | 0.43              |
| 5:E:785:LEU:HD13  | 6:F:640:HIS:HB3  | 2.01                     | 0.43              |
| 10:J:29:CYS:O     | 10:J:33:ILE:HG12 | 2.18                     | 0.43              |
| 10:J:147:LEU:HD12 | 10:J:147:LEU:HA  | 1.85                     | 0.43              |
| 12:L:167:CYS:HA   | 12:L:170:MET:HE2 | 2.00                     | 0.43              |
| 13:M:78:THR:HG21  | 13:M:83:LEU:HD22 | 2.00                     | 0.43              |
| 1:a:535:LEU:HD11  | 2:b:293:THR:HB   | 2.00                     | 0.43              |
| 3:c:75:ILE:H      | 3:c:75:ILE:HG13  | 1.67                     | 0.43              |
| 5:e:36:SER:OG     | 5:e:38:GLU:OE2   | 2.37                     | 0.43              |
| 6:f:165:MET:HE2   | 6:f:165:MET:HB3  | 1.92                     | 0.43              |
| 6:f:1057:LEU:HB3  | 6:f:1061:ARG:HD2 | 2.00                     | 0.43              |
| 13:m:18:LEU:HD11  | 13:m:71:GLY:CA   | 2.45                     | 0.43              |
| 6:F:279:ILE:HG22  | 6:F:281:SER:H    | 1.83                     | 0.43              |
| 6:F:792:ALA:HB3   | 6:F:850:LEU:HB2  | 2.00                     | 0.43              |
| 7:G:114:GLY:HA3   | 7:G:127:LEU:HD12 | 2.00                     | 0.43              |
| 8:H:248:MET:HE2   | 8:H:323:ASP:HB2  | 2.00                     | 0.43              |
| 8:H:270:LEU:HB2   | 8:H:282:LEU:HD12 | 1.99                     | 0.43              |
| 1:a:373:PHE:HD2   | 1:a:376:LEU:HB2  | 1.83                     | 0.43              |
| 1:a:537:ASP:HB2   | 4:d:240:LEU:HD12 | 2.00                     | 0.43              |
| 5:e:286:PHE:HD1   | 5:e:286:PHE:N    | 2.13                     | 0.43              |
| 6:f:238:SER:OG    | 6:f:515:LYS:NZ   | 2.52                     | 0.43              |
| 13:m:16:LEU:HB3   | 13:m:17:MET:H    | 1.57                     | 0.43              |
| 3:C:132:ARG:HA    | 3:C:132:ARG:HD2  | 1.86                     | 0.43              |
| 3:C:223:LEU:HB3   | 3:C:251:PHE:HE2  | 1.84                     | 0.43              |
| 5:E:252:HIS:CE1   | 5:E:269:ARG:HD3  | 2.53                     | 0.43              |
| 5:E:446:LEU:HD13  | 5:E:467:VAL:HG21 | 2.00                     | 0.43              |
| 8:H:268:LEU:H     | 8:H:268:LEU:HD23 | 1.83                     | 0.43              |
| 12:L:413:LEU:HD22 | 12:L:571:PHE:HE2 | 1.84                     | 0.43              |
| 12:L:605:LEU:O    | 12:L:609:TYR:N   | 2.49                     | 0.43              |
| 13:M:6:ARG:CZ     | 13:M:13:PRO:HB3  | 2.49                     | 0.43              |
| 13:M:15:GLY:O     | 13:M:17:MET:N    | 2.51                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 13:M:59:PHE:O     | 13:M:63:ILE:HG22  | 2.17                     | 0.43              |
| 3:c:229:TRP:NE1   | 4:d:232:ILE:HG12  | 2.30                     | 0.43              |
| 5:e:987:LEU:HD13  | 5:e:1011:TYR:CE2  | 2.53                     | 0.43              |
| 6:f:779:ASP:OD2   | 6:f:790:LYS:NZ    | 2.51                     | 0.43              |
| 1:A:442:PHE:HD1   | 1:A:442:PHE:HA    | 1.74                     | 0.43              |
| 3:C:217:PHE:HA    | 3:C:220:LEU:HD12  | 2.01                     | 0.43              |
| 6:F:546:GLN:HG2   | 6:F:549:PRO:HD2   | 2.00                     | 0.43              |
| 7:G:161:ARG:NH1   | 7:G:240:LEU:O     | 2.52                     | 0.43              |
| 7:G:657:ASP:OD1   | 7:G:657:ASP:N     | 2.51                     | 0.43              |
| 8:H:454:TYR:HB2   | 8:H:461:TRP:CZ3   | 2.54                     | 0.43              |
| 8:H:817:ILE:HD13  | 8:H:912:LEU:HD13  | 2.01                     | 0.43              |
| 12:L:503:THR:O    | 12:L:515:SER:N    | 2.50                     | 0.43              |
| 7:g:593:GLU:OE2   | 7:g:698:TYR:OH    | 2.36                     | 0.43              |
| 7:g:610:TYR:HD2   | 7:g:678:ILE:HD11  | 1.84                     | 0.43              |
| 13:m:5:ASP:OD1    | 13:m:8:ALA:CB     | 2.66                     | 0.43              |
| 13:m:15:GLY:O     | 13:m:17:MET:N     | 2.51                     | 0.43              |
| 3:C:230:THR:O     | 3:C:234:GLU:HG2   | 2.18                     | 0.43              |
| 4:D:291:LYS:HA    | 4:D:291:LYS:HD2   | 1.88                     | 0.43              |
| 6:F:697:ALA:HB2   | 6:F:885:ALA:HB1   | 2.01                     | 0.43              |
| 3:c:261:ASN:HA    | 3:c:264:VAL:HG22  | 2.00                     | 0.43              |
| 5:e:234:GLU:OE1   | 5:e:280:ARG:HB3   | 2.18                     | 0.43              |
| 6:f:1058:SER:H    | 6:f:1061:ARG:NE   | 2.16                     | 0.43              |
| 2:B:311:SER:C     | 2:B:312:ARG:HD3   | 2.44                     | 0.43              |
| 7:G:296:VAL:HG22  | 7:G:305:PHE:HB3   | 1.99                     | 0.43              |
| 7:G:407:LYS:HB3   | 7:G:407:LYS:HE3   | 1.75                     | 0.43              |
| 8:H:558:VAL:HG11  | 8:H:609:ILE:HG21  | 2.01                     | 0.43              |
| 13:M:76:GLU:HG2   | 13:M:84:ARG:HD3   | 2.00                     | 0.43              |
| 1:a:393:SER:HA    | 1:a:396:VAL:HG12  | 2.01                     | 0.43              |
| 5:e:660:VAL:HG13  | 5:e:668:PHE:HB2   | 2.01                     | 0.43              |
| 6:f:435:THR:O     | 6:f:438:LYS:NZ    | 2.50                     | 0.43              |
| 6:f:694:LYS:HG3   | 6:f:696:TYR:H     | 1.82                     | 0.43              |
| 6:f:1047:THR:O    | 6:f:1047:THR:OG1  | 2.31                     | 0.43              |
| 7:g:275:LEU:HD12  | 7:g:284:LEU:HD22  | 2.00                     | 0.43              |
| 10:j:73:ASN:O     | 10:j:75:THR:N     | 2.48                     | 0.43              |
| 13:m:109:ILE:HD12 | 13:m:109:ILE:HA   | 1.83                     | 0.43              |
| 2:B:343:GLN:NE2   | 2:B:346:ARG:HH22  | 2.17                     | 0.43              |
| 6:F:1015:ILE:HG22 | 6:F:1061:ARG:HH22 | 1.84                     | 0.43              |
| 10:J:73:ASN:O     | 10:J:75:THR:N     | 2.51                     | 0.43              |
| 12:L:104:VAL:HG22 | 12:L:237:TYR:HE1  | 1.84                     | 0.43              |
| 2:b:160:LEU:HA    | 2:b:163:TRP:CD1   | 2.54                     | 0.43              |
| 2:b:341:ASN:HA    | 2:b:344:ASN:HD21  | 1.83                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 8:h:764:LYS:NZ    | 8:h:773:ASP:OD1   | 2.34                     | 0.43              |
| 8:h:892:LYS:O     | 8:h:894:HIS:ND1   | 2.52                     | 0.43              |
| 10:j:141:ARG:HA   | 10:j:141:ARG:HD3  | 1.76                     | 0.43              |
| 5:E:982:ARG:NH2   | 5:E:1024:GLU:OE2  | 2.52                     | 0.42              |
| 7:G:43:PHE:HE1    | 7:G:93:PRO:HD2    | 1.83                     | 0.42              |
| 13:M:16:LEU:C     | 13:M:18:LEU:N     | 2.77                     | 0.42              |
| 1:a:373:PHE:O     | 1:a:375:GLU:N     | 2.46                     | 0.42              |
| 3:c:99:LEU:O      | 3:c:102:VAL:HG12  | 2.18                     | 0.42              |
| 5:e:267:ASP:OD1   | 5:e:268:LEU:N     | 2.52                     | 0.42              |
| 5:e:430:ILE:HB    | 5:e:444:CYS:HB3   | 2.01                     | 0.42              |
| 5:e:785:LEU:HD12  | 5:e:785:LEU:HA    | 1.78                     | 0.42              |
| 7:g:558:LEU:HD23  | 7:g:558:LEU:HA    | 1.92                     | 0.42              |
| 12:l:433:VAL:HG13 | 12:l:438:MET:HB3  | 2.00                     | 0.42              |
| 1:A:373:PHE:O     | 1:A:375:GLU:N     | 2.44                     | 0.42              |
| 1:A:527:PHE:O     | 1:A:531:THR:HG23  | 2.18                     | 0.42              |
| 2:B:262:ARG:HH11  | 2:B:266:ARG:HD2   | 1.84                     | 0.42              |
| 5:E:932:HIS:ND1   | 5:E:1046:GLN:OE1  | 2.48                     | 0.42              |
| 10:J:135:GLN:HE21 | 10:J:139:LEU:HD23 | 1.84                     | 0.42              |
| 13:M:2:ARG:C      | 13:M:4:ARG:N      | 2.63                     | 0.42              |
| 13:M:58:ILE:HD13  | 13:M:58:ILE:HA    | 1.88                     | 0.42              |
| 2:b:132:SER:O     | 2:b:132:SER:OG    | 2.27                     | 0.42              |
| 8:h:758:PHE:CZ    | 12:l:545:ALA:HA   | 2.55                     | 0.42              |
| 1:A:429:ASP:HB2   | 1:A:451:LEU:HD13  | 2.01                     | 0.42              |
| 2:B:223:ARG:H     | 2:B:223:ARG:HG2   | 1.59                     | 0.42              |
| 5:E:52:THR:OG1    | 5:E:53:MET:N      | 2.51                     | 0.42              |
| 5:E:1054:LEU:HD12 | 5:E:1054:LEU:HA   | 1.86                     | 0.42              |
| 6:F:96:PHE:O      | 6:F:679:GLN:NE2   | 2.52                     | 0.42              |
| 6:F:647:LYS:HE2   | 6:F:647:LYS:HB2   | 1.88                     | 0.42              |
| 8:H:346:ASP:OD1   | 8:H:346:ASP:N     | 2.52                     | 0.42              |
| 13:M:5:ASP:O      | 13:M:6:ARG:C      | 2.61                     | 0.42              |
| 13:M:24:ILE:HD12  | 13:M:27:PHE:HD2   | 1.84                     | 0.42              |
| 3:c:82:THR:O      | 3:c:86:SER:OG     | 2.23                     | 0.42              |
| 8:h:675:ILE:HG12  | 8:h:680:CYS:SG    | 2.58                     | 0.42              |
| 10:j:16:LEU:HG    | 10:j:65:ILE:HD13  | 2.00                     | 0.42              |
| 13:m:33:PHE:O     | 13:m:37:VAL:HG22  | 2.19                     | 0.42              |
| 1:A:379:ARG:HD3   | 1:A:379:ARG:HA    | 1.80                     | 0.42              |
| 5:E:1006:LEU:HD23 | 5:E:1006:LEU:HA   | 1.90                     | 0.42              |
| 6:F:479:PHE:HD2   | 6:F:486:LEU:HD13  | 1.83                     | 0.42              |
| 7:G:575:TYR:HB3   | 7:G:713:GLY:HA2   | 2.01                     | 0.42              |
| 8:H:188:PRO:HA    | 8:H:226:ARG:O     | 2.19                     | 0.42              |
| 8:H:531:LEU:HD23  | 8:H:531:LEU:HA    | 1.91                     | 0.42              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 10:J:5:MET:HE1   | 10:J:12:LEU:HD21 | 2.01                     | 0.42              |
| 12:L:189:PRO:HG2 | 12:L:192:GLN:HB2 | 2.01                     | 0.42              |
| 13:M:2:ARG:O     | 13:M:5:ASP:N     | 2.53                     | 0.42              |
| 8:h:803:TYR:HA   | 8:h:808:PHE:HA   | 2.00                     | 0.42              |
| 13:m:1:MET:O     | 13:m:3:TRP:N     | 2.52                     | 0.42              |
| 13:m:23:LEU:HD22 | 13:m:90:ILE:HG21 | 2.01                     | 0.42              |
| 3:C:82:THR:O     | 3:C:86:SER:OG    | 2.23                     | 0.42              |
| 6:F:965:PHE:O    | 6:F:969:SER:OG   | 2.29                     | 0.42              |
| 7:G:662:TRP:HD1  | 7:G:665:VAL:HB   | 1.84                     | 0.42              |
| 8:H:743:ILE:HA   | 8:H:801:GLU:O    | 2.19                     | 0.42              |
| 3:c:210:TRP:HZ3  | 3:c:220:LEU:HG   | 1.84                     | 0.42              |
| 6:f:189:THR:HG23 | 6:f:191:GLY:H    | 1.84                     | 0.42              |
| 6:f:878:CYS:HB3  | 6:f:1042:CYS:HB3 | 1.90                     | 0.42              |
| 6:f:952:THR:O    | 6:f:955:THR:OG1  | 2.38                     | 0.42              |
| 7:g:600:VAL:HG13 | 7:g:694:VAL:HG21 | 2.01                     | 0.42              |
| 8:h:818:LEU:HD12 | 8:h:887:LEU:HD21 | 2.02                     | 0.42              |
| 13:m:6:ARG:CZ    | 13:m:13:PRO:HB3  | 2.49                     | 0.42              |
| 6:F:372:TYR:HA   | 6:F:389:PRO:HG2  | 2.01                     | 0.42              |
| 6:F:640:HIS:HB2  | 6:F:767:VAL:HB   | 2.01                     | 0.42              |
| 6:F:834:GLY:H    | 6:F:1042:CYS:HA  | 1.85                     | 0.42              |
| 12:L:650:ASN:HB3 | 12:L:653:ILE:HB  | 2.01                     | 0.42              |
| 13:M:16:LEU:HD22 | 13:M:16:LEU:HA   | 1.66                     | 0.42              |
| 1:a:407:GLY:O    | 1:a:410:TYR:HB3  | 2.20                     | 0.42              |
| 3:c:60:VAL:HB    | 3:c:156:LEU:HG   | 2.02                     | 0.42              |
| 3:c:128:PRO:HA   | 3:c:131:LEU:HG   | 2.02                     | 0.42              |
| 5:e:306:ARG:HA   | 5:e:306:ARG:HD3  | 1.79                     | 0.42              |
| 6:f:883:ARG:HH11 | 6:f:930:LEU:HD21 | 1.85                     | 0.42              |
| 7:g:571:ARG:HB2  | 7:g:709:VAL:HG23 | 2.01                     | 0.42              |
| 7:g:617:ALA:HA   | 7:g:662:TRP:HH2  | 1.83                     | 0.42              |
| 8:h:476:LEU:HD13 | 8:h:492:ASP:HB3  | 2.01                     | 0.42              |
| 10:j:64:SER:O    | 13:m:10:LEU:O    | 2.38                     | 0.42              |
| 13:m:23:LEU:HD21 | 13:m:90:ILE:HD11 | 1.91                     | 0.42              |
| 3:C:287:ASN:O    | 3:C:291:MET:HG2  | 2.20                     | 0.42              |
| 5:E:981:MET:N    | 5:E:981:MET:HE2  | 2.35                     | 0.42              |
| 6:F:962:GLU:H    | 6:F:962:GLU:HG3  | 1.61                     | 0.42              |
| 7:G:142:CYS:HB3  | 7:G:149:CYS:HB2  | 1.85                     | 0.42              |
| 8:H:498:TYR:HE2  | 8:H:505:VAL:HG12 | 1.84                     | 0.42              |
| 12:L:417:PHE:HD2 | 12:L:575:PHE:HZ  | 1.67                     | 0.42              |
| 13:M:57:LEU:HD12 | 13:M:57:LEU:HA   | 1.83                     | 0.42              |
| 8:h:531:LEU:O    | 8:h:538:VAL:HA   | 2.20                     | 0.42              |
| 2:B:208:ARG:O    | 2:B:211:ARG:HG2  | 2.19                     | 0.42              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 6:F:168:LEU:HD13  | 6:F:669:PHE:HE1   | 1.85                     | 0.42              |
| 7:G:702:ASN:OD1   | 7:G:702:ASN:N     | 2.52                     | 0.42              |
| 8:H:592:LYS:HB2   | 8:H:592:LYS:HE2   | 1.78                     | 0.42              |
| 10:J:70:LEU:HD12  | 10:J:72:LEU:HD11  | 2.02                     | 0.42              |
| 12:L:159:ARG:HG2  | 12:L:239:LEU:HD22 | 2.01                     | 0.42              |
| 3:c:56:MET:HE1    | 3:c:155:LYS:NZ    | 2.34                     | 0.42              |
| 4:d:81:ASN:HB2    | 4:d:162:ARG:HH21  | 1.85                     | 0.42              |
| 5:e:723:TRP:CE2   | 5:e:755:LYS:HE3   | 2.54                     | 0.42              |
| 10:j:51:ALA:HA    | 10:j:54:MET:HG2   | 2.02                     | 0.42              |
| 10:j:88:VAL:HG13  | 13:m:1:MET:HG2    | 2.00                     | 0.42              |
| 2:B:348:GLU:O     | 2:B:351:GLU:HG3   | 2.19                     | 0.42              |
| 4:D:99:GLU:OE2    | 4:D:99:GLU:N      | 2.41                     | 0.42              |
| 5:E:134:LYS:HE2   | 5:E:134:LYS:HB3   | 1.85                     | 0.42              |
| 5:E:205:ASN:OD1   | 5:E:242:LEU:CD2   | 2.62                     | 0.42              |
| 7:G:491:LEU:HD23  | 7:G:491:LEU:HA    | 1.84                     | 0.42              |
| 10:J:14:TYR:O     | 10:J:68:ARG:N     | 2.53                     | 0.42              |
| 1:a:546:ARG:HE    | 2:b:276:MET:HE2   | 1.85                     | 0.42              |
| 2:b:130:MET:SD    | 2:b:130:MET:N     | 2.92                     | 0.42              |
| 2:b:182:VAL:HG11  | 2:b:214:ARG:HB2   | 2.02                     | 0.42              |
| 2:b:256:THR:HG22  | 2:b:260:PHE:CE2   | 2.55                     | 0.42              |
| 5:e:641:LYS:HE2   | 5:e:641:LYS:HB2   | 1.92                     | 0.42              |
| 8:h:833:MET:HE1   | 8:h:841:GLU:OE2   | 2.20                     | 0.42              |
| 10:j:56:ILE:HD13  | 10:j:56:ILE:HA    | 1.79                     | 0.42              |
| 2:B:148:ASP:O     | 2:B:151:ILE:HG22  | 2.20                     | 0.42              |
| 2:B:294:LEU:HD23  | 2:B:294:LEU:HA    | 1.90                     | 0.42              |
| 3:C:250:LEU:HD23  | 3:C:253:LEU:HD21  | 2.01                     | 0.42              |
| 4:D:110:THR:HA    | 4:D:113:ILE:HG12  | 2.02                     | 0.42              |
| 5:E:1054:LEU:HG   | 5:E:1058:GLY:HA3  | 2.02                     | 0.42              |
| 10:J:45:GLU:HB2   | 13:M:53:TYR:HE1   | 1.85                     | 0.42              |
| 12:L:392:LEU:HD11 | 12:L:418:VAL:HG21 | 2.02                     | 0.42              |
| 12:L:398:HIS:NE2  | 12:L:402:GLN:OE1  | 2.45                     | 0.42              |
| 1:a:447:LEU:O     | 1:a:451:LEU:HG    | 2.20                     | 0.42              |
| 5:e:169:GLU:C     | 5:e:171:GLU:H     | 2.28                     | 0.42              |
| 5:e:948:PHE:CD2   | 5:e:1052:VAL:HG12 | 2.55                     | 0.42              |
| 6:f:1028:LYS:HE2  | 6:f:1028:LYS:HB2  | 1.82                     | 0.42              |
| 10:j:105:ASP:OD1  | 10:j:109:GLY:N    | 2.52                     | 0.42              |
| 12:l:217:LYS:HE2  | 12:l:217:LYS:HB2  | 1.91                     | 0.42              |
| 12:l:245:PHE:HE1  | 12:l:257:LEU:HD11 | 1.85                     | 0.42              |
| 2:B:281:LEU:HD13  | 3:C:71:THR:HG21   | 2.02                     | 0.41              |
| 4:D:136:ASN:HD22  | 4:D:165:ARG:HH11  | 1.67                     | 0.41              |
| 5:E:759:THR:OG1   | 5:E:759:THR:O     | 2.37                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:E:947:LYS:HB3   | 5:E:947:LYS:HE3   | 1.79                     | 0.41              |
| 8:H:819:TRP:CE2   | 8:H:908:ARG:HB2   | 2.55                     | 0.41              |
| 10:J:10:PHE:HA    | 10:J:73:ASN:HA    | 2.02                     | 0.41              |
| 12:L:464:VAL:HG21 | 12:L:573:PHE:HE2  | 1.84                     | 0.41              |
| 2:b:142:LEU:O     | 2:b:146:VAL:HG23  | 2.20                     | 0.41              |
| 6:f:50:VAL:HG13   | 6:f:63:LYS:HA     | 2.02                     | 0.41              |
| 7:g:586:TRP:NE1   | 7:g:591:VAL:HG22  | 2.35                     | 0.41              |
| 8:h:917:SER:OG    | 8:h:918:PHE:N     | 2.53                     | 0.41              |
| 15:O:3:BMA:H61    | 15:O:6:BMA:H2     | 1.87                     | 0.41              |
| 2:B:218:LEU:HD23  | 2:B:218:LEU:HA    | 1.90                     | 0.41              |
| 3:C:60:VAL:HB     | 3:C:156:LEU:HG    | 2.02                     | 0.41              |
| 3:C:96:CYS:O      | 3:C:100:MET:HG2   | 2.20                     | 0.41              |
| 3:C:176:THR:O     | 3:C:180:VAL:HG23  | 2.20                     | 0.41              |
| 7:G:531:GLN:HB2   | 7:G:536:TYR:CZ    | 2.55                     | 0.41              |
| 12:L:606:GLY:HA2  | 12:L:609:TYR:HB2  | 2.01                     | 0.41              |
| 13:M:13:PRO:CB    | 13:M:14:PRO:CD    | 2.98                     | 0.41              |
| 6:f:514:ILE:HG23  | 6:f:527:VAL:HG13  | 2.02                     | 0.41              |
| 7:g:388:LEU:HB3   | 7:g:413:ILE:HB    | 2.00                     | 0.41              |
| 8:h:887:LEU:H     | 8:h:887:LEU:HD23  | 1.84                     | 0.41              |
| 12:l:265:LEU:O    | 12:l:419:LEU:HD11 | 2.20                     | 0.41              |
| 1:A:492:ILE:HD11  | 2:B:228:ILE:HG12  | 2.01                     | 0.41              |
| 2:B:162:MET:HE3   | 2:B:162:MET:HB3   | 1.92                     | 0.41              |
| 5:E:874:PRO:HD2   | 5:E:1024:GLU:HB2  | 2.01                     | 0.41              |
| 6:F:167:VAL:HG13  | 16:P:1:NAG:H81    | 2.02                     | 0.41              |
| 6:F:387:MET:HB3   | 6:F:387:MET:HE3   | 1.82                     | 0.41              |
| 6:F:423:ILE:HD13  | 6:F:429:TYR:HE1   | 1.85                     | 0.41              |
| 6:F:559:LEU:HA    | 6:F:562:MET:HG2   | 2.01                     | 0.41              |
| 10:J:16:LEU:HD12  | 10:J:65:ILE:HD12  | 2.02                     | 0.41              |
| 1:a:542:TYR:HD1   | 1:a:554:ILE:HG21  | 1.86                     | 0.41              |
| 1:a:546:ARG:HA    | 1:a:546:ARG:HD2   | 1.78                     | 0.41              |
| 1:a:567:ILE:HD13  | 1:a:567:ILE:HA    | 1.90                     | 0.41              |
| 1:a:580:PHE:HB2   | 4:d:280:VAL:HG11  | 2.00                     | 0.41              |
| 5:e:86:MET:HE2    | 5:e:88:ILE:HD11   | 2.00                     | 0.41              |
| 13:m:16:LEU:C     | 13:m:18:LEU:N     | 2.77                     | 0.41              |
| 2:B:297:TRP:HE1   | 3:C:222:SER:HA    | 1.85                     | 0.41              |
| 5:E:671:MET:HE3   | 5:E:671:MET:HB2   | 1.77                     | 0.41              |
| 1:a:365:THR:HG21  | 1:a:466:LEU:HD11  | 2.01                     | 0.41              |
| 1:a:546:ARG:O     | 1:a:546:ARG:NH1   | 2.45                     | 0.41              |
| 2:b:144:LEU:HD12  | 2:b:144:LEU:HA    | 1.90                     | 0.41              |
| 2:b:262:ARG:O     | 2:b:266:ARG:NE    | 2.35                     | 0.41              |
| 3:c:53:GLN:H      | 3:c:53:GLN:HG2    | 1.70                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:c:94:TYR:CE2    | 3:c:152:ARG:HG2   | 2.55                     | 0.41              |
| 4:d:136:ASN:OD1   | 4:d:165:ARG:NH1   | 2.53                     | 0.41              |
| 6:f:186:ASP:OD1   | 6:f:200:ARG:NE    | 2.53                     | 0.41              |
| 8:h:777:VAL:HG21  | 8:h:822:HIS:NE2   | 2.35                     | 0.41              |
| 8:h:830:ASN:HD22  | 8:h:830:ASN:C     | 2.28                     | 0.41              |
| 10:j:80:HIS:ND1   | 10:j:89:CYS:O     | 2.52                     | 0.41              |
| 13:m:13:PRO:CB    | 13:m:14:PRO:CD    | 2.98                     | 0.41              |
| 2:B:239:MET:HE3   | 2:B:239:MET:HB3   | 1.84                     | 0.41              |
| 2:B:302:GLN:HA    | 2:B:305:TRP:HD1   | 1.85                     | 0.41              |
| 5:E:857:ASP:OD1   | 5:E:857:ASP:N     | 2.54                     | 0.41              |
| 5:E:958:GLU:HG3   | 5:E:965:LYS:HD2   | 2.02                     | 0.41              |
| 6:F:71:PRO:HB2    | 6:F:94:LEU:HD13   | 2.02                     | 0.41              |
| 6:F:604:PRO:O     | 6:F:608:LEU:HG    | 2.21                     | 0.41              |
| 6:F:747:ASP:OD1   | 6:F:747:ASP:N     | 2.53                     | 0.41              |
| 6:F:878:CYS:HA    | 6:F:879:PRO:HD3   | 1.94                     | 0.41              |
| 7:G:150:LEU:HD23  | 7:G:150:LEU:HA    | 1.88                     | 0.41              |
| 7:G:562:TYR:OH    | 7:G:568:GLY:O     | 2.27                     | 0.41              |
| 2:b:95:LEU:HA     | 2:b:164:LEU:HD22  | 2.02                     | 0.41              |
| 2:b:218:LEU:HD23  | 2:b:218:LEU:HA    | 1.93                     | 0.41              |
| 5:e:235:LEU:CD1   | 5:e:263:TYR:OH    | 2.66                     | 0.41              |
| 5:e:269:ARG:HE    | 5:e:269:ARG:HB2   | 1.67                     | 0.41              |
| 5:e:1075:PHE:CZ   | 13:m:73:LEU:HB2   | 2.55                     | 0.41              |
| 7:g:613:SER:HB3   | 7:g:676:ASN:HB2   | 2.02                     | 0.41              |
| 8:h:419:GLU:OE1   | 8:h:447:ARG:NH1   | 2.53                     | 0.41              |
| 8:h:826:ASP:HB2   | 8:h:898:PRO:HG2   | 2.03                     | 0.41              |
| 12:l:269:LEU:HD13 | 12:l:419:LEU:HG   | 2.02                     | 0.41              |
| 12:l:667:LEU:HD23 | 12:l:667:LEU:HA   | 1.87                     | 0.41              |
| 2:B:337:MET:HE2   | 3:C:275:MET:HE1   | 2.02                     | 0.41              |
| 2:B:354:SER:O     | 2:B:358:VAL:HG12  | 2.21                     | 0.41              |
| 5:E:237:ASP:HB2   | 5:E:238:GLU:H     | 1.53                     | 0.41              |
| 5:E:321:ASN:O     | 5:E:322:ARG:CG    | 2.68                     | 0.41              |
| 6:F:470:THR:HG21  | 6:F:510:LYS:HD3   | 2.02                     | 0.41              |
| 7:G:683:ARG:NH2   | 7:G:685:GLY:HA3   | 2.35                     | 0.41              |
| 8:H:356:ILE:HD13  | 8:H:384:SER:HB2   | 2.02                     | 0.41              |
| 8:H:764:LYS:HD3   | 8:H:764:LYS:HA    | 1.87                     | 0.41              |
| 8:H:844:THR:OG1   | 8:H:845:TRP:N     | 2.54                     | 0.41              |
| 10:J:56:ILE:HD13  | 10:J:56:ILE:HA    | 1.85                     | 0.41              |
| 12:L:272:MET:HG3  | 12:L:276:LEU:HD12 | 2.02                     | 0.41              |
| 1:a:432:LEU:HD23  | 1:a:433:LEU:HD23  | 2.02                     | 0.41              |
| 5:e:857:ASP:OD1   | 5:e:857:ASP:N     | 2.53                     | 0.41              |
| 6:f:234:ARG:HA    | 6:f:234:ARG:HD3   | 1.86                     | 0.41              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 8:h:225:ILE:HG23 | 8:h:240:LEU:HB3   | 2.03                     | 0.41              |
| 8:h:346:ASP:OD1  | 8:h:346:ASP:N     | 2.54                     | 0.41              |
| 1:A:535:LEU:HB2  | 1:A:565:TYR:OH    | 2.21                     | 0.41              |
| 3:C:241:PHE:HD2  | 3:C:244:SER:HB3   | 1.85                     | 0.41              |
| 6:F:514:ILE:HG23 | 6:F:527:VAL:HG13  | 2.02                     | 0.41              |
| 6:F:638:GLU:HB2  | 6:F:769:LEU:HB2   | 2.01                     | 0.41              |
| 4:d:110:THR:HA   | 4:d:113:ILE:HG12  | 2.02                     | 0.41              |
| 5:e:1075:PHE:HZ  | 13:m:73:LEU:HB2   | 1.85                     | 0.41              |
| 6:f:430:LEU:HD22 | 6:f:488:ILE:HD11  | 2.03                     | 0.41              |
| 7:g:511:LYS:HD3  | 7:g:585:LEU:HD21  | 2.02                     | 0.41              |
| 2:B:153:LEU:HD12 | 8:H:949:MET:HE2   | 2.03                     | 0.41              |
| 2:B:284:SER:HA   | 2:B:287:THR:HG22  | 2.02                     | 0.41              |
| 4:D:42:ASP:HB3   | 4:D:43:VAL:H      | 1.63                     | 0.41              |
| 4:D:82:ALA:HB2   | 4:D:166:LEU:HD11  | 2.03                     | 0.41              |
| 4:D:85:ILE:HG12  | 4:D:159:TYR:CE1   | 2.56                     | 0.41              |
| 5:E:479:LEU:HD23 | 5:E:479:LEU:HA    | 1.93                     | 0.41              |
| 6:F:976:SER:O    | 6:F:976:SER:OG    | 2.31                     | 0.41              |
| 7:G:334:SER:O    | 7:G:334:SER:OG    | 2.28                     | 0.41              |
| 8:H:603:ILE:HD13 | 8:H:603:ILE:HA    | 1.92                     | 0.41              |
| 12:L:589:ILE:HA  | 12:L:592:ILE:HD12 | 2.03                     | 0.41              |
| 2:b:208:ARG:O    | 2:b:211:ARG:HG2   | 2.20                     | 0.41              |
| 5:e:345:PHE:CZ   | 5:e:392:LYS:HE3   | 2.55                     | 0.41              |
| 6:f:183:SER:OG   | 6:f:203:VAL:O     | 2.39                     | 0.41              |
| 6:f:671:ASN:OD1  | 6:f:671:ASN:N     | 2.53                     | 0.41              |
| 8:h:362:ARG:NH1  | 8:h:429:PRO:O     | 2.44                     | 0.41              |
| 13:m:16:LEU:HD22 | 13:m:16:LEU:HA    | 1.66                     | 0.41              |
| 1:A:447:LEU:O    | 1:A:451:LEU:HG    | 2.21                     | 0.41              |
| 5:E:929:LYS:HD3  | 5:E:929:LYS:HA    | 1.82                     | 0.41              |
| 5:E:1013:PRO:O   | 5:E:1014:LEU:HG   | 2.21                     | 0.41              |
| 7:G:149:CYS:HA   | 7:G:152:LEU:HB3   | 2.03                     | 0.41              |
| 7:G:244:MET:HE3  | 7:G:244:MET:HB3   | 1.95                     | 0.41              |
| 8:H:777:VAL:HG11 | 8:H:822:HIS:NE2   | 2.36                     | 0.41              |
| 10:J:68:ARG:HG2  | 10:J:83:ILE:HD11  | 2.03                     | 0.41              |
| 12:L:449:VAL:O   | 12:L:453:VAL:HG23 | 2.21                     | 0.41              |
| 1:a:379:ARG:HA   | 1:a:379:ARG:HD3   | 1.87                     | 0.41              |
| 1:a:537:ASP:HB3  | 1:a:540:LEU:HB2   | 2.03                     | 0.41              |
| 2:b:284:SER:HA   | 2:b:287:THR:HG22  | 2.03                     | 0.41              |
| 4:d:178:ARG:O    | 4:d:182:VAL:HG13  | 2.20                     | 0.41              |
| 5:e:584:GLY:HA2  | 5:e:611:VAL:HB    | 2.03                     | 0.41              |
| 7:g:131:SER:OG   | 7:g:171:TYR:OH    | 2.31                     | 0.41              |
| 7:g:357:HIS:H    | 7:g:357:HIS:HD1   | 1.69                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:g:524:MET:HE2   | 7:g:525:GLY:N     | 2.36                     | 0.41              |
| 7:g:595:MET:HE3   | 7:g:693:VAL:HG21  | 2.03                     | 0.41              |
| 8:h:135:PHE:HA    | 8:h:149:THR:O     | 2.21                     | 0.41              |
| 8:h:279:PHE:HA    | 8:h:291:THR:O     | 2.21                     | 0.41              |
| 8:h:924:ILE:HD12  | 8:h:924:ILE:HA    | 1.94                     | 0.41              |
| 12:l:438:MET:HG3  | 12:l:443:LYS:HG3  | 2.03                     | 0.41              |
| 13:m:5:ASP:O      | 13:m:6:ARG:C      | 2.61                     | 0.41              |
| 13:m:11:CYS:O     | 13:m:12:PHE:CB    | 2.69                     | 0.41              |
| 4:D:286:LEU:HG    | 4:D:289:MET:HE2   | 2.03                     | 0.41              |
| 5:E:767:MET:HA    | 5:E:808:ALA:O     | 2.20                     | 0.41              |
| 6:F:914:CYS:HB3   | 6:F:1053:HIS:CE1  | 2.56                     | 0.41              |
| 7:G:79:LEU:HD12   | 7:G:79:LEU:HA     | 1.90                     | 0.41              |
| 7:G:381:LEU:HA    | 7:G:381:LEU:HD23  | 1.79                     | 0.41              |
| 8:H:913:ASP:HB3   | 8:H:916:TYR:HB2   | 2.03                     | 0.41              |
| 5:e:731:PHE:HA    | 5:e:736:LEU:HD21  | 2.02                     | 0.41              |
| 5:e:998:MET:HG2   | 6:f:717:TYR:HB2   | 2.03                     | 0.41              |
| 10:j:39:ARG:HD2   | 10:j:39:ARG:HA    | 1.81                     | 0.41              |
| 12:l:417:PHE:HD2  | 12:l:575:PHE:HZ   | 1.69                     | 0.41              |
| 5:E:660:VAL:HG13  | 5:E:668:PHE:HB2   | 2.03                     | 0.40              |
| 7:G:542:LYS:HG3   | 7:G:556:ASP:HA    | 2.01                     | 0.40              |
| 7:G:670:LEU:HA    | 7:G:676:ASN:ND2   | 2.35                     | 0.40              |
| 8:H:442:CYS:HB3   | 8:H:443:THR:H     | 1.65                     | 0.40              |
| 10:J:65:ILE:HD11  | 10:J:68:ARG:HG3   | 2.03                     | 0.40              |
| 10:J:86:ARG:HH21  | 13:M:10:LEU:HD23  | 1.84                     | 0.40              |
| 10:J:88:VAL:HG13  | 13:M:1:MET:HG2    | 2.03                     | 0.40              |
| 10:J:133:TYR:HB3  | 10:J:136:MET:SD   | 2.61                     | 0.40              |
| 12:L:212:VAL:HG22 | 12:L:215:ARG:HH11 | 1.85                     | 0.40              |
| 1:a:527:PHE:O     | 1:a:531:THR:HG23  | 2.21                     | 0.40              |
| 5:e:233:ALA:O     | 5:e:235:LEU:N     | 2.54                     | 0.40              |
| 5:e:236:LYS:HB2   | 5:e:237:ASP:H     | 1.60                     | 0.40              |
| 5:e:1076:ILE:HD13 | 5:e:1076:ILE:HA   | 1.89                     | 0.40              |
| 7:g:565:LYS:HE3   | 7:g:565:LYS:HB2   | 1.86                     | 0.40              |
| 12:l:338:LYS:HA   | 12:l:338:LYS:HD3  | 1.85                     | 0.40              |
| 12:l:589:ILE:HA   | 12:l:592:ILE:HD12 | 2.03                     | 0.40              |
| 3:C:179:SER:HB2   | 4:D:179:ILE:HD12  | 2.02                     | 0.40              |
| 4:D:253:TYR:O     | 4:D:257:VAL:HG22  | 2.21                     | 0.40              |
| 5:E:32:TYR:HB3    | 5:E:62:PHE:HE1    | 1.87                     | 0.40              |
| 5:E:74:LEU:HD23   | 5:E:104:PHE:HB2   | 2.03                     | 0.40              |
| 5:E:237:ASP:OD2   | 5:E:239:HIS:NE2   | 2.55                     | 0.40              |
| 5:E:475:THR:OG1   | 5:E:476:LYS:N     | 2.55                     | 0.40              |
| 5:E:873:PRO:HG2   | 5:E:884:THR:HG21  | 2.02                     | 0.40              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:E:918:SER:H     | 5:E:921:MET:HB2   | 1.85                     | 0.40              |
| 7:G:344:ILE:HD13  | 7:G:497:LYS:HD3   | 2.04                     | 0.40              |
| 7:G:488:ASP:OD1   | 7:G:488:ASP:N     | 2.51                     | 0.40              |
| 8:H:470:LEU:HD23  | 8:H:470:LEU:HA    | 1.89                     | 0.40              |
| 8:H:518:LEU:HB3   | 8:H:548:PHE:CE2   | 2.57                     | 0.40              |
| 8:H:826:ASP:HB2   | 8:H:898:PRO:HG2   | 2.04                     | 0.40              |
| 12:L:413:LEU:HB3  | 12:L:571:PHE:CZ   | 2.55                     | 0.40              |
| 1:a:337:LEU:CB    | 1:a:341:GLN:HB2   | 2.51                     | 0.40              |
| 1:a:495:LEU:HD21  | 2:b:225:ILE:HG23  | 2.03                     | 0.40              |
| 4:d:278:PHE:O     | 4:d:282:VAL:HG23  | 2.21                     | 0.40              |
| 5:e:577:THR:HG23  | 5:e:718:ARG:HB3   | 2.03                     | 0.40              |
| 8:h:908:ARG:HA    | 8:h:923:THR:O     | 2.21                     | 0.40              |
| 12:l:104:VAL:HG22 | 12:l:237:TYR:HE1  | 1.85                     | 0.40              |
| 5:E:122:ASN:OD1   | 5:E:122:ASN:N     | 2.54                     | 0.40              |
| 6:F:280:ASP:N     | 6:F:280:ASP:OD1   | 2.54                     | 0.40              |
| 8:H:743:ILE:O     | 8:H:744:MET:HE2   | 2.22                     | 0.40              |
| 10:J:135:GLN:C    | 10:J:136:MET:HE2  | 2.46                     | 0.40              |
| 10:J:144:ALA:HA   | 10:J:148:ASN:HA   | 2.03                     | 0.40              |
| 3:c:191:PHE:CZ    | 3:c:251:PHE:HB2   | 2.56                     | 0.40              |
| 6:f:324:ILE:HD13  | 6:f:324:ILE:HA    | 1.89                     | 0.40              |
| 6:f:835:MET:O     | 6:f:837:GLY:N     | 2.55                     | 0.40              |
| 8:h:356:ILE:HA    | 8:h:384:SER:HB2   | 2.03                     | 0.40              |
| 1:A:385:MET:SD    | 1:A:385:MET:N     | 2.94                     | 0.40              |
| 1:A:563:ILE:HG13  | 1:A:564:GLN:N     | 2.35                     | 0.40              |
| 5:E:31:THR:HG1    | 5:E:63:ARG:HH12   | 1.64                     | 0.40              |
| 6:F:112:GLU:H     | 6:F:112:GLU:HG2   | 1.64                     | 0.40              |
| 6:F:378:ILE:HG12  | 6:F:383:VAL:HG12  | 2.03                     | 0.40              |
| 8:H:436:LEU:HD23  | 8:H:436:LEU:HA    | 1.92                     | 0.40              |
| 12:L:375:LEU:O    | 12:L:379:ILE:HG13 | 2.21                     | 0.40              |
| 12:L:554:ASP:OD1  | 12:L:554:ASP:N    | 2.55                     | 0.40              |
| 12:L:640:CYS:HB3  | 12:L:644:GLU:HB2  | 2.04                     | 0.40              |
| 1:a:565:TYR:CD1   | 1:a:569:LEU:HD13  | 2.56                     | 0.40              |
| 5:e:134:LYS:HE2   | 5:e:134:LYS:HB3   | 1.90                     | 0.40              |
| 7:g:660:LEU:HA    | 7:g:662:TRP:HD1   | 1.86                     | 0.40              |
| 1:A:387:LEU:HD12  | 1:A:391:PHE:HE1   | 1.87                     | 0.40              |
| 3:C:75:ILE:H      | 3:C:75:ILE:HG13   | 1.67                     | 0.40              |
| 4:D:254:ALA:C     | 4:D:255:MET:HE2   | 2.47                     | 0.40              |
| 5:E:230:ILE:H     | 5:E:230:ILE:HG13  | 1.70                     | 0.40              |
| 5:E:530:ARG:HG3   | 5:E:531:PRO:HD2   | 2.03                     | 0.40              |
| 6:F:358:SER:HB3   | 6:F:379:THR:HG22  | 2.02                     | 0.40              |
| 8:H:583:LEU:HD12  | 8:H:597:THR:HG22  | 2.03                     | 0.40              |

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| Atom-1           | Atom-2           | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|------------------|--------------------------|-------------------|
| 13:M:1:MET:O     | 13:M:3:TRP:N     | 2.54                     | 0.40              |
| 3:c:176:THR:O    | 3:c:180:VAL:HG23 | 2.22                     | 0.40              |
| 4:d:65:LEU:HD23  | 10:j:106:ALA:HB2 | 2.04                     | 0.40              |
| 8:h:468:LEU:HD12 | 8:h:468:LEU:HA   | 1.92                     | 0.40              |
| 8:h:498:TYR:CD1  | 8:h:509:ILE:HG13 | 2.57                     | 0.40              |
| 8:h:533:ASP:OD1  | 8:h:537:ASN:N    | 2.52                     | 0.40              |
| 8:h:866:TYR:HD2  | 8:h:914:PRO:HD3  | 1.86                     | 0.40              |
| 13:m:14:PRO:O    | 13:m:16:LEU:N    | 2.54                     | 0.40              |

There are no symmetry-related clashes.

## 5.3 Torsion angles

### 5.3.1 Protein backbone

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

| Mol | Chain | Analysed         | Favoured  | Allowed | Outliers | Percentiles |     |
|-----|-------|------------------|-----------|---------|----------|-------------|-----|
| 1   | A     | 249/251 (99%)    | 226 (91%) | 22 (9%) | 1 (0%)   | 30          | 65  |
| 1   | a     | 249/251 (99%)    | 225 (90%) | 23 (9%) | 1 (0%)   | 30          | 65  |
| 2   | B     | 279/281 (99%)    | 257 (92%) | 22 (8%) | 0        | 100         | 100 |
| 2   | b     | 279/281 (99%)    | 253 (91%) | 26 (9%) | 0        | 100         | 100 |
| 3   | C     | 276/278 (99%)    | 264 (96%) | 12 (4%) | 0        | 100         | 100 |
| 3   | c     | 276/278 (99%)    | 263 (95%) | 13 (5%) | 0        | 100         | 100 |
| 4   | D     | 248/250 (99%)    | 226 (91%) | 22 (9%) | 0        | 100         | 100 |
| 4   | d     | 248/250 (99%)    | 228 (92%) | 18 (7%) | 2 (1%)   | 16          | 51  |
| 5   | E     | 1052/1065 (99%)  | 953 (91%) | 95 (9%) | 4 (0%)   | 30          | 65  |
| 5   | e     | 1052/1065 (99%)  | 953 (91%) | 94 (9%) | 5 (0%)   | 25          | 60  |
| 6   | F     | 1040/1042 (100%) | 984 (95%) | 55 (5%) | 1 (0%)   | 48          | 80  |
| 6   | f     | 1040/1042 (100%) | 976 (94%) | 62 (6%) | 2 (0%)   | 44          | 75  |
| 7   | G     | 708/733 (97%)    | 650 (92%) | 58 (8%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed          | Favoured    | Allowed  | Outliers | Percentiles |     |
|-----|-------|-------------------|-------------|----------|----------|-------------|-----|
| 7   | g     | 708/733 (97%)     | 643 (91%)   | 64 (9%)  | 1 (0%)   | 48          | 80  |
| 8   | H     | 912/921 (99%)     | 830 (91%)   | 80 (9%)  | 2 (0%)   | 44          | 75  |
| 8   | h     | 912/921 (99%)     | 832 (91%)   | 79 (9%)  | 1 (0%)   | 48          | 80  |
| 9   | I     | 172/174 (99%)     | 163 (95%)   | 9 (5%)   | 0        | 100         | 100 |
| 9   | i     | 172/174 (99%)     | 162 (94%)   | 10 (6%)  | 0        | 100         | 100 |
| 10  | J     | 166/168 (99%)     | 127 (76%)   | 39 (24%) | 0        | 100         | 100 |
| 10  | j     | 166/168 (99%)     | 134 (81%)   | 31 (19%) | 1 (1%)   | 22          | 57  |
| 11  | K     | 147/149 (99%)     | 139 (95%)   | 8 (5%)   | 0        | 100         | 100 |
| 11  | k     | 147/149 (99%)     | 139 (95%)   | 8 (5%)   | 0        | 100         | 100 |
| 12  | L     | 593/610 (97%)     | 556 (94%)   | 37 (6%)  | 0        | 100         | 100 |
| 12  | l     | 593/610 (97%)     | 557 (94%)   | 35 (6%)  | 1 (0%)   | 44          | 75  |
| 13  | M     | 113/115 (98%)     | 96 (85%)    | 8 (7%)   | 9 (8%)   | 1           | 12  |
| 13  | m     | 113/115 (98%)     | 95 (84%)    | 10 (9%)  | 8 (7%)   | 1           | 14  |
| All | All   | 11910/12074 (99%) | 10931 (92%) | 940 (8%) | 39 (0%)  | 38          | 70  |

All (39) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5   | E     | 237 | ASP  |
| 5   | E     | 240 | GLN  |
| 13  | M     | 9   | VAL  |
| 13  | M     | 11  | CYS  |
| 5   | e     | 237 | ASP  |
| 5   | e     | 240 | GLN  |
| 13  | m     | 9   | VAL  |
| 13  | m     | 11  | CYS  |
| 5   | E     | 327 | SER  |
| 13  | M     | 8   | ALA  |
| 13  | M     | 15  | GLY  |
| 13  | M     | 16  | LEU  |
| 13  | M     | 17  | MET  |
| 5   | e     | 234 | GLU  |
| 5   | e     | 327 | SER  |
| 10  | j     | 136 | MET  |
| 13  | m     | 8   | ALA  |
| 13  | m     | 15  | GLY  |
| 13  | m     | 16  | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 13  | m     | 17  | MET  |
| 4   | d     | 154 | MET  |
| 7   | g     | 57  | LYS  |
| 8   | H     | 442 | CYS  |
| 13  | M     | 13  | PRO  |
| 8   | h     | 441 | VAL  |
| 13  | m     | 13  | PRO  |
| 13  | M     | 4   | ARG  |
| 1   | a     | 472 | LEU  |
| 1   | A     | 472 | LEU  |
| 5   | E     | 241 | GLY  |
| 8   | H     | 441 | VAL  |
| 13  | M     | 12  | PHE  |
| 4   | d     | 223 | MET  |
| 5   | e     | 241 | GLY  |
| 6   | f     | 98  | TYR  |
| 13  | m     | 12  | PHE  |
| 6   | F     | 836 | ILE  |
| 6   | f     | 836 | ILE  |
| 12  | l     | 553 | ILE  |

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

| Mol | Chain | Analysed       | Rotameric  | Outliers | Percentiles |     |
|-----|-------|----------------|------------|----------|-------------|-----|
| 1   | A     | 230/230 (100%) | 228 (99%)  | 2 (1%)   | 75          | 83  |
| 1   | a     | 230/230 (100%) | 228 (99%)  | 2 (1%)   | 75          | 83  |
| 2   | B     | 262/262 (100%) | 260 (99%)  | 2 (1%)   | 79          | 84  |
| 2   | b     | 262/262 (100%) | 262 (100%) | 0        | 100         | 100 |
| 3   | C     | 253/253 (100%) | 253 (100%) | 0        | 100         | 100 |
| 3   | c     | 253/253 (100%) | 253 (100%) | 0        | 100         | 100 |
| 4   | D     | 220/220 (100%) | 220 (100%) | 0        | 100         | 100 |
| 4   | d     | 220/220 (100%) | 220 (100%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed          | Rotameric   | Outliers | Percentiles |     |
|-----|-------|-------------------|-------------|----------|-------------|-----|
| 5   | E     | 962/969 (99%)     | 950 (99%)   | 12 (1%)  | 67          | 78  |
| 5   | e     | 962/969 (99%)     | 948 (98%)   | 14 (2%)  | 60          | 74  |
| 6   | F     | 946/946 (100%)    | 945 (100%)  | 1 (0%)   | 92          | 95  |
| 6   | f     | 946/946 (100%)    | 945 (100%)  | 1 (0%)   | 92          | 95  |
| 7   | G     | 642/659 (97%)     | 638 (99%)   | 4 (1%)   | 84          | 88  |
| 7   | g     | 642/659 (97%)     | 641 (100%)  | 1 (0%)   | 92          | 94  |
| 8   | H     | 842/847 (99%)     | 837 (99%)   | 5 (1%)   | 84          | 88  |
| 8   | h     | 842/847 (99%)     | 841 (100%)  | 1 (0%)   | 92          | 95  |
| 10  | J     | 153/153 (100%)    | 153 (100%)  | 0        | 100         | 100 |
| 10  | j     | 153/153 (100%)    | 153 (100%)  | 0        | 100         | 100 |
| 11  | K     | 5/139 (4%)        | 5 (100%)    | 0        | 100         | 100 |
| 11  | k     | 5/139 (4%)        | 5 (100%)    | 0        | 100         | 100 |
| 12  | L     | 516/529 (98%)     | 516 (100%)  | 0        | 100         | 100 |
| 12  | l     | 516/529 (98%)     | 516 (100%)  | 0        | 100         | 100 |
| 13  | M     | 99/99 (100%)      | 91 (92%)    | 8 (8%)   | 9           | 33  |
| 13  | m     | 99/99 (100%)      | 92 (93%)    | 7 (7%)   | 12          | 36  |
| All | All   | 10260/10612 (97%) | 10200 (99%) | 60 (1%)  | 82          | 88  |

All (60) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | A     | 337 | LEU  |
| 1   | A     | 338 | LEU  |
| 2   | B     | 151 | ILE  |
| 2   | B     | 230 | LEU  |
| 5   | E     | 163 | LEU  |
| 5   | E     | 192 | ASP  |
| 5   | E     | 232 | TYR  |
| 5   | E     | 236 | LYS  |
| 5   | E     | 237 | ASP  |
| 5   | E     | 287 | GLU  |
| 5   | E     | 322 | ARG  |
| 5   | E     | 325 | SER  |
| 5   | E     | 326 | GLU  |
| 5   | E     | 358 | ILE  |
| 5   | E     | 774 | LEU  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 5   | E     | 869 | ILE  |
| 6   | F     | 461 | LEU  |
| 7   | G     | 142 | CYS  |
| 7   | G     | 524 | MET  |
| 7   | G     | 575 | TYR  |
| 7   | G     | 603 | GLU  |
| 8   | H     | 140 | VAL  |
| 8   | H     | 799 | ILE  |
| 8   | H     | 830 | ASN  |
| 8   | H     | 887 | LEU  |
| 8   | H     | 893 | ASN  |
| 13  | M     | 2   | ARG  |
| 13  | M     | 3   | TRP  |
| 13  | M     | 4   | ARG  |
| 13  | M     | 6   | ARG  |
| 13  | M     | 7   | ILE  |
| 13  | M     | 9   | VAL  |
| 13  | M     | 10  | LEU  |
| 13  | M     | 16  | LEU  |
| 1   | a     | 337 | LEU  |
| 1   | a     | 338 | LEU  |
| 5   | e     | 58  | VAL  |
| 5   | e     | 234 | GLU  |
| 5   | e     | 236 | LYS  |
| 5   | e     | 237 | ASP  |
| 5   | e     | 287 | GLU  |
| 5   | e     | 320 | ARG  |
| 5   | e     | 325 | SER  |
| 5   | e     | 326 | GLU  |
| 5   | e     | 492 | ILE  |
| 5   | e     | 526 | ILE  |
| 5   | e     | 539 | LEU  |
| 5   | e     | 774 | LEU  |
| 5   | e     | 923 | ASN  |
| 5   | e     | 951 | THR  |
| 6   | f     | 517 | MET  |
| 7   | g     | 406 | LEU  |
| 8   | h     | 634 | ASP  |
| 13  | m     | 2   | ARG  |
| 13  | m     | 4   | ARG  |
| 13  | m     | 6   | ARG  |
| 13  | m     | 7   | ILE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 13  | m     | 9   | VAL  |
| 13  | m     | 10  | LEU  |
| 13  | m     | 16  | LEU  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (109) such sidechains are listed below:

| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 1   | A     | 548  | GLN  |
| 2   | B     | 134  | ASN  |
| 2   | B     | 224  | GLN  |
| 2   | B     | 302  | GLN  |
| 2   | B     | 341  | ASN  |
| 3   | C     | 63   | ASN  |
| 3   | C     | 209  | ASN  |
| 3   | C     | 295  | GLN  |
| 4   | D     | 71   | GLN  |
| 4   | D     | 151  | GLN  |
| 5   | E     | 130  | GLN  |
| 5   | E     | 138  | HIS  |
| 5   | E     | 374  | ASN  |
| 5   | E     | 421  | HIS  |
| 5   | E     | 499  | GLN  |
| 5   | E     | 692  | ASN  |
| 5   | E     | 862  | ASN  |
| 5   | E     | 870  | ASN  |
| 5   | E     | 912  | GLN  |
| 5   | E     | 928  | GLN  |
| 6   | F     | 110  | ASN  |
| 6   | F     | 130  | ASN  |
| 6   | F     | 146  | GLN  |
| 6   | F     | 169  | ASN  |
| 6   | F     | 299  | HIS  |
| 6   | F     | 312  | GLN  |
| 6   | F     | 558  | ASN  |
| 6   | F     | 621  | ASN  |
| 6   | F     | 743  | ASN  |
| 6   | F     | 833  | GLN  |
| 6   | F     | 1009 | ASN  |
| 7   | G     | 181  | GLN  |
| 7   | G     | 228  | HIS  |
| 7   | G     | 265  | ASN  |
| 7   | G     | 668  | GLN  |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 8   | H     | 182  | ASN  |
| 8   | H     | 464  | GLN  |
| 8   | H     | 523  | GLN  |
| 8   | H     | 544  | ASN  |
| 8   | H     | 588  | ASN  |
| 8   | H     | 623  | GLN  |
| 8   | H     | 704  | GLN  |
| 8   | H     | 840  | ASN  |
| 8   | H     | 891  | ASN  |
| 10  | J     | 44   | GLN  |
| 12  | L     | 192  | GLN  |
| 12  | L     | 280  | GLN  |
| 12  | L     | 367  | HIS  |
| 12  | L     | 492  | ASN  |
| 12  | L     | 594  | GLN  |
| 12  | L     | 637  | ASN  |
| 12  | L     | 650  | ASN  |
| 1   | a     | 371  | GLN  |
| 1   | a     | 548  | GLN  |
| 2   | b     | 283  | ASN  |
| 2   | b     | 341  | ASN  |
| 3   | c     | 115  | ASN  |
| 3   | c     | 143  | HIS  |
| 3   | c     | 209  | ASN  |
| 4   | d     | 71   | GLN  |
| 4   | d     | 95   | GLN  |
| 4   | d     | 288  | GLN  |
| 5   | e     | 85   | ASN  |
| 5   | e     | 252  | HIS  |
| 5   | e     | 499  | GLN  |
| 5   | e     | 692  | ASN  |
| 5   | e     | 862  | ASN  |
| 5   | e     | 899  | ASN  |
| 5   | e     | 912  | GLN  |
| 5   | e     | 928  | GLN  |
| 5   | e     | 952  | GLN  |
| 5   | e     | 1086 | HIS  |
| 6   | f     | 110  | ASN  |
| 6   | f     | 144  | ASN  |
| 6   | f     | 434  | ASN  |
| 6   | f     | 558  | ASN  |
| 6   | f     | 612  | ASN  |

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| Mol | Chain | Res  | Type |
|-----|-------|------|------|
| 6   | f     | 621  | ASN  |
| 6   | f     | 632  | HIS  |
| 6   | f     | 701  | HIS  |
| 6   | f     | 771  | HIS  |
| 6   | f     | 867  | GLN  |
| 6   | f     | 1009 | ASN  |
| 7   | g     | 48   | ASN  |
| 7   | g     | 202  | HIS  |
| 7   | g     | 228  | HIS  |
| 7   | g     | 265  | ASN  |
| 7   | g     | 292  | ASN  |
| 7   | g     | 403  | ASN  |
| 7   | g     | 675  | ASN  |
| 7   | g     | 704  | ASN  |
| 7   | g     | 746  | GLN  |
| 8   | h     | 58   | GLN  |
| 8   | h     | 186  | GLN  |
| 8   | h     | 312  | GLN  |
| 8   | h     | 544  | ASN  |
| 8   | h     | 623  | GLN  |
| 8   | h     | 699  | ASN  |
| 8   | h     | 754  | GLN  |
| 8   | h     | 840  | ASN  |
| 12  | l     | 107  | HIS  |
| 12  | l     | 152  | HIS  |
| 12  | l     | 229  | HIS  |
| 12  | l     | 280  | GLN  |
| 12  | l     | 355  | GLN  |
| 12  | l     | 389  | ASN  |
| 12  | l     | 594  | GLN  |
| 12  | l     | 650  | ASN  |
| 13  | m     | 39   | ASN  |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

76 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 |
| 15  | NAG  | O     | 1   | 5,15 | 14,14,15     | 0.18 | 0        | 17,19,21    | 0.63 | 1 (5%)   |
| 15  | NAG  | O     | 2   | 15   | 14,14,15     | 0.29 | 0        | 17,19,21    | 0.49 | 0        |
| 15  | BMA  | O     | 3   | 15   | 11,11,12     | 0.72 | 0        | 15,15,17    | 0.97 | 0        |
| 15  | BMA  | O     | 4   | 15   | 11,11,12     | 0.55 | 0        | 15,15,17    | 1.03 | 1 (6%)   |
| 15  | BMA  | O     | 5   | 15   | 11,11,12     | 0.75 | 0        | 15,15,17    | 0.79 | 0        |
| 15  | BMA  | O     | 6   | 15   | 11,11,12     | 0.69 | 0        | 15,15,17    | 0.88 | 0        |
| 15  | BMA  | O     | 7   | 15   | 11,11,12     | 0.81 | 0        | 15,15,17    | 0.76 | 0        |
| 16  | NAG  | P     | 1   | 6,16 | 14,14,15     | 0.41 | 0        | 17,19,21    | 0.50 | 0        |
| 16  | NAG  | P     | 2   | 16   | 14,14,15     | 0.28 | 0        | 17,19,21    | 0.47 | 0        |
| 16  | BMA  | P     | 3   | 16   | 11,11,12     | 0.45 | 0        | 15,15,17    | 0.97 | 2 (13%)  |
| 16  | NAG  | Q     | 1   | 6,16 | 14,14,15     | 0.65 | 1 (7%)   | 17,19,21    | 0.62 | 0        |
| 16  | NAG  | Q     | 2   | 16   | 14,14,15     | 0.24 | 0        | 17,19,21    | 0.42 | 0        |
| 16  | BMA  | Q     | 3   | 16   | 11,11,12     | 0.62 | 0        | 15,15,17    | 0.80 | 0        |
| 17  | NAG  | R     | 1   | 17,7 | 14,14,15     | 0.38 | 0        | 17,19,21    | 0.70 | 0        |
| 17  | NAG  | R     | 2   | 17   | 14,14,15     | 0.53 | 0        | 17,19,21    | 0.66 | 1 (5%)   |
| 16  | NAG  | S     | 1   | 7,16 | 14,14,15     | 0.18 | 0        | 17,19,21    | 0.48 | 0        |
| 16  | NAG  | S     | 2   | 16   | 14,14,15     | 0.21 | 0        | 17,19,21    | 0.48 | 0        |
| 16  | BMA  | S     | 3   | 16   | 11,11,12     | 0.68 | 0        | 15,15,17    | 0.69 | 0        |
| 16  | NAG  | T     | 1   | 8,16 | 14,14,15     | 0.23 | 0        | 17,19,21    | 0.47 | 0        |
| 16  | NAG  | T     | 2   | 16   | 14,14,15     | 0.21 | 0        | 17,19,21    | 0.43 | 0        |
| 16  | BMA  | T     | 3   | 16   | 11,11,12     | 0.87 | 1 (9%)   | 15,15,17    | 0.83 | 1 (6%)   |
| 16  | NAG  | U     | 1   | 8,16 | 14,14,15     | 0.38 | 0        | 17,19,21    | 0.42 | 0        |
| 16  | NAG  | U     | 2   | 16   | 14,14,15     | 0.20 | 0        | 17,19,21    | 0.46 | 0        |
| 16  | BMA  | U     | 3   | 16   | 11,11,12     | 0.58 | 0        | 15,15,17    | 0.74 | 0        |
| 18  | NAG  | V     | 1   | 18,8 | 14,14,15     | 0.25 | 0        | 17,19,21    | 0.52 | 0        |
| 18  | NAG  | V     | 2   | 18   | 14,14,15     | 0.21 | 0        | 17,19,21    | 0.46 | 0        |
| 18  | BMA  | V     | 3   | 18   | 11,11,12     | 0.79 | 0        | 15,15,17    | 1.36 | 3 (20%)  |
| 18  | BMA  | V     | 4   | 18   | 11,11,12     | 0.46 | 0        | 15,15,17    | 0.81 | 0        |
| 18  | BMA  | V     | 5   | 18   | 11,11,12     | 0.58 | 0        | 15,15,17    | 0.81 | 0        |
| 18  | BMA  | V     | 6   | 18   | 11,11,12     | 0.70 | 1 (9%)   | 15,15,17    | 0.86 | 0        |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 18  | BMA  | V     | 7   | 18   | 11,11,12     | 0.63 | 0        | 15,15,17    | 0.96 | 1 (6%)   |
| 17  | NAG  | W     | 1   | 17,8 | 14,14,15     | 1.00 | 1 (7%)   | 17,19,21    | 0.83 | 1 (5%)   |
| 17  | NAG  | W     | 2   | 17   | 14,14,15     | 0.22 | 0        | 17,19,21    | 0.53 | 0        |
| 19  | NAG  | X     | 1   | 19,8 | 14,14,15     | 0.39 | 0        | 17,19,21    | 0.41 | 0        |
| 19  | NAG  | X     | 2   | 19   | 14,14,15     | 0.22 | 0        | 17,19,21    | 0.60 | 0        |
| 19  | BMA  | X     | 3   | 19   | 11,11,12     | 0.82 | 0        | 15,15,17    | 1.49 | 2 (13%)  |
| 19  | BMA  | X     | 4   | 19   | 11,11,12     | 0.97 | 1 (9%)   | 15,15,17    | 1.00 | 1 (6%)   |
| 19  | BMA  | X     | 5   | 19   | 11,11,12     | 0.57 | 0        | 15,15,17    | 0.86 | 1 (6%)   |
| 15  | NAG  | Y     | 1   | 5,15 | 14,14,15     | 0.23 | 0        | 17,19,21    | 0.57 | 0        |
| 15  | NAG  | Y     | 2   | 15   | 14,14,15     | 0.22 | 0        | 17,19,21    | 0.41 | 0        |
| 15  | BMA  | Y     | 3   | 15   | 11,11,12     | 0.92 | 1 (9%)   | 15,15,17    | 0.93 | 0        |
| 15  | BMA  | Y     | 4   | 15   | 11,11,12     | 0.49 | 0        | 15,15,17    | 0.80 | 0        |
| 15  | BMA  | Y     | 5   | 15   | 11,11,12     | 0.65 | 0        | 15,15,17    | 0.76 | 0        |
| 15  | BMA  | Y     | 6   | 15   | 11,11,12     | 0.67 | 0        | 15,15,17    | 0.84 | 0        |
| 15  | BMA  | Y     | 7   | 15   | 11,11,12     | 0.71 | 0        | 15,15,17    | 0.75 | 0        |
| 16  | NAG  | Z     | 1   | 6,16 | 14,14,15     | 0.45 | 0        | 17,19,21    | 0.38 | 0        |
| 16  | NAG  | Z     | 2   | 16   | 14,14,15     | 0.23 | 0        | 17,19,21    | 0.46 | 0        |
| 16  | BMA  | Z     | 3   | 16   | 11,11,12     | 0.62 | 0        | 15,15,17    | 0.89 | 0        |
| 16  | NAG  | o     | 1   | 6,16 | 14,14,15     | 0.71 | 1 (7%)   | 17,19,21    | 0.69 | 0        |
| 16  | NAG  | o     | 2   | 16   | 14,14,15     | 0.18 | 0        | 17,19,21    | 0.43 | 0        |
| 16  | BMA  | o     | 3   | 16   | 11,11,12     | 0.53 | 0        | 15,15,17    | 0.76 | 0        |
| 17  | NAG  | p     | 1   | 17,7 | 14,14,15     | 0.46 | 0        | 17,19,21    | 0.90 | 1 (5%)   |
| 17  | NAG  | p     | 2   | 17   | 14,14,15     | 0.66 | 0        | 17,19,21    | 0.62 | 1 (5%)   |
| 16  | NAG  | q     | 1   | 7,16 | 14,14,15     | 0.29 | 0        | 17,19,21    | 0.36 | 0        |
| 16  | NAG  | q     | 2   | 16   | 14,14,15     | 0.33 | 0        | 17,19,21    | 0.65 | 0        |
| 16  | BMA  | q     | 3   | 16   | 11,11,12     | 0.89 | 1 (9%)   | 15,15,17    | 0.78 | 0        |
| 16  | NAG  | r     | 1   | 8,16 | 14,14,15     | 0.29 | 0        | 17,19,21    | 0.40 | 0        |
| 16  | NAG  | r     | 2   | 16   | 14,14,15     | 0.28 | 0        | 17,19,21    | 0.45 | 0        |
| 16  | BMA  | r     | 3   | 16   | 11,11,12     | 0.77 | 0        | 15,15,17    | 0.75 | 0        |
| 16  | NAG  | s     | 1   | 8,16 | 14,14,15     | 0.30 | 0        | 17,19,21    | 0.40 | 0        |
| 16  | NAG  | s     | 2   | 16   | 14,14,15     | 0.22 | 0        | 17,19,21    | 0.49 | 0        |
| 16  | BMA  | s     | 3   | 16   | 11,11,12     | 0.64 | 0        | 15,15,17    | 0.79 | 0        |
| 18  | NAG  | t     | 1   | 18,8 | 14,14,15     | 0.31 | 0        | 17,19,21    | 0.60 | 0        |
| 18  | NAG  | t     | 2   | 18   | 14,14,15     | 0.24 | 0        | 17,19,21    | 0.44 | 0        |
| 18  | BMA  | t     | 3   | 18   | 11,11,12     | 0.69 | 0        | 15,15,17    | 1.07 | 0        |
| 18  | BMA  | t     | 4   | 18   | 11,11,12     | 0.54 | 0        | 15,15,17    | 0.80 | 0        |
| 18  | BMA  | t     | 5   | 18   | 11,11,12     | 0.57 | 0        | 15,15,17    | 0.88 | 1 (6%)   |
| 18  | BMA  | t     | 6   | 18   | 11,11,12     | 1.01 | 1 (9%)   | 15,15,17    | 1.23 | 1 (6%)   |
| 18  | BMA  | t     | 7   | 18   | 11,11,12     | 0.62 | 0        | 15,15,17    | 0.86 | 0        |
| 17  | NAG  | u     | 1   | 17,8 | 14,14,15     | 0.75 | 1 (7%)   | 17,19,21    | 0.85 | 0        |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 17  | NAG  | u     | 2   | 17   | 14,14,15     | 0.28 | 0        | 17,19,21    | 0.46 | 0        |
| 19  | NAG  | v     | 1   | 19,8 | 14,14,15     | 0.38 | 0        | 17,19,21    | 0.47 | 0        |
| 19  | NAG  | v     | 2   | 19   | 14,14,15     | 0.45 | 0        | 17,19,21    | 0.81 | 1 (5%)   |
| 19  | BMA  | v     | 3   | 19   | 11,11,12     | 0.81 | 1 (9%)   | 15,15,17    | 1.39 | 1 (6%)   |
| 19  | BMA  | v     | 4   | 19   | 11,11,12     | 0.86 | 1 (9%)   | 15,15,17    | 0.97 | 1 (6%)   |
| 19  | BMA  | v     | 5   | 19   | 11,11,12     | 0.58 | 0        | 15,15,17    | 0.87 | 2 (13%)  |

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   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 15  | NAG  | O     | 1   | 5,15 | -       | 1/6/23/26 | 0/1/1/1 |
| 15  | NAG  | O     | 2   | 15   | -       | 2/6/23/26 | 0/1/1/1 |
| 15  | BMA  | O     | 3   | 15   | -       | 0/2/19/22 | 0/1/1/1 |
| 15  | BMA  | O     | 4   | 15   | -       | 1/2/19/22 | 0/1/1/1 |
| 15  | BMA  | O     | 5   | 15   | -       | 2/2/19/22 | 0/1/1/1 |
| 15  | BMA  | O     | 6   | 15   | -       | 0/2/19/22 | 0/1/1/1 |
| 15  | BMA  | O     | 7   | 15   | -       | 0/2/19/22 | 0/1/1/1 |
| 16  | NAG  | P     | 1   | 6,16 | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | P     | 2   | 16   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | BMA  | P     | 3   | 16   | -       | 2/2/19/22 | 0/1/1/1 |
| 16  | NAG  | Q     | 1   | 6,16 | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | Q     | 2   | 16   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | BMA  | Q     | 3   | 16   | -       | 1/2/19/22 | 0/1/1/1 |
| 17  | NAG  | R     | 1   | 17,7 | -       | 2/6/23/26 | 0/1/1/1 |
| 17  | NAG  | R     | 2   | 17   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | S     | 1   | 7,16 | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | S     | 2   | 16   | -       | 0/6/23/26 | 0/1/1/1 |
| 16  | BMA  | S     | 3   | 16   | -       | 0/2/19/22 | 0/1/1/1 |
| 16  | NAG  | T     | 1   | 8,16 | -       | 1/6/23/26 | 0/1/1/1 |
| 16  | NAG  | T     | 2   | 16   | -       | 0/6/23/26 | 0/1/1/1 |
| 16  | BMA  | T     | 3   | 16   | -       | 1/2/19/22 | 0/1/1/1 |
| 16  | NAG  | U     | 1   | 8,16 | -       | 1/6/23/26 | 0/1/1/1 |
| 16  | NAG  | U     | 2   | 16   | -       | 0/6/23/26 | 0/1/1/1 |
| 16  | BMA  | U     | 3   | 16   | -       | 0/2/19/22 | 0/1/1/1 |
| 18  | NAG  | V     | 1   | 18,8 | -       | 2/6/23/26 | 0/1/1/1 |
| 18  | NAG  | V     | 2   | 18   | -       | 2/6/23/26 | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 18  | BMA  | V     | 3   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | V     | 4   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | V     | 5   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | V     | 6   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | V     | 7   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 17  | NAG  | W     | 1   | 17,8 | -       | 2/6/23/26 | 0/1/1/1 |
| 17  | NAG  | W     | 2   | 17   | -       | 2/6/23/26 | 0/1/1/1 |
| 19  | NAG  | X     | 1   | 19,8 | -       | 2/6/23/26 | 0/1/1/1 |
| 19  | NAG  | X     | 2   | 19   | -       | 2/6/23/26 | 0/1/1/1 |
| 19  | BMA  | X     | 3   | 19   | -       | 2/2/19/22 | 0/1/1/1 |
| 19  | BMA  | X     | 4   | 19   | -       | 2/2/19/22 | 0/1/1/1 |
| 19  | BMA  | X     | 5   | 19   | -       | 1/2/19/22 | 0/1/1/1 |
| 15  | NAG  | Y     | 1   | 5,15 | -       | 1/6/23/26 | 0/1/1/1 |
| 15  | NAG  | Y     | 2   | 15   | -       | 2/6/23/26 | 0/1/1/1 |
| 15  | BMA  | Y     | 3   | 15   | -       | 0/2/19/22 | 0/1/1/1 |
| 15  | BMA  | Y     | 4   | 15   | -       | 2/2/19/22 | 0/1/1/1 |
| 15  | BMA  | Y     | 5   | 15   | -       | 0/2/19/22 | 0/1/1/1 |
| 15  | BMA  | Y     | 6   | 15   | -       | 1/2/19/22 | 0/1/1/1 |
| 15  | BMA  | Y     | 7   | 15   | -       | 2/2/19/22 | 0/1/1/1 |
| 16  | NAG  | Z     | 1   | 6,16 | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | Z     | 2   | 16   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | BMA  | Z     | 3   | 16   | -       | 2/2/19/22 | 0/1/1/1 |
| 16  | NAG  | o     | 1   | 6,16 | -       | 0/6/23/26 | 0/1/1/1 |
| 16  | NAG  | o     | 2   | 16   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | BMA  | o     | 3   | 16   | -       | 0/2/19/22 | 0/1/1/1 |
| 17  | NAG  | p     | 1   | 17,7 | -       | 2/6/23/26 | 0/1/1/1 |
| 17  | NAG  | p     | 2   | 17   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | q     | 1   | 7,16 | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | NAG  | q     | 2   | 16   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | BMA  | q     | 3   | 16   | -       | 0/2/19/22 | 0/1/1/1 |
| 16  | NAG  | r     | 1   | 8,16 | -       | 1/6/23/26 | 0/1/1/1 |
| 16  | NAG  | r     | 2   | 16   | -       | 2/6/23/26 | 0/1/1/1 |
| 16  | BMA  | r     | 3   | 16   | -       | 1/2/19/22 | 0/1/1/1 |
| 16  | NAG  | s     | 1   | 8,16 | -       | 1/6/23/26 | 0/1/1/1 |
| 16  | NAG  | s     | 2   | 16   | -       | 0/6/23/26 | 0/1/1/1 |
| 16  | BMA  | s     | 3   | 16   | -       | 0/2/19/22 | 0/1/1/1 |
| 18  | NAG  | t     | 1   | 18,8 | -       | 2/6/23/26 | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 18  | NAG  | t     | 2   | 18   | -       | 2/6/23/26 | 0/1/1/1 |
| 18  | BMA  | t     | 3   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | t     | 4   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | t     | 5   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | t     | 6   | 18   | -       | 2/2/19/22 | 0/1/1/1 |
| 18  | BMA  | t     | 7   | 18   | -       | 0/2/19/22 | 0/1/1/1 |
| 17  | NAG  | u     | 1   | 17,8 | -       | 2/6/23/26 | 0/1/1/1 |
| 17  | NAG  | u     | 2   | 17   | -       | 2/6/23/26 | 0/1/1/1 |
| 19  | NAG  | v     | 1   | 19,8 | -       | 0/6/23/26 | 0/1/1/1 |
| 19  | NAG  | v     | 2   | 19   | -       | 0/6/23/26 | 0/1/1/1 |
| 19  | BMA  | v     | 3   | 19   | -       | 1/2/19/22 | 0/1/1/1 |
| 19  | BMA  | v     | 4   | 19   | -       | 1/2/19/22 | 0/1/1/1 |
| 19  | BMA  | v     | 5   | 19   | -       | 0/2/19/22 | 0/1/1/1 |

All (12) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|-------|-------------|----------|
| 17  | W     | 1   | NAG  | O5-C1 | -3.53 | 1.38        | 1.43     |
| 18  | t     | 6   | BMA  | C1-C2 | 2.97  | 1.59        | 1.52     |
| 19  | X     | 4   | BMA  | C1-C2 | 2.89  | 1.58        | 1.52     |
| 17  | u     | 1   | NAG  | O5-C1 | -2.62 | 1.39        | 1.43     |
| 16  | o     | 1   | NAG  | O5-C1 | -2.53 | 1.39        | 1.43     |
| 16  | T     | 3   | BMA  | C1-C2 | 2.37  | 1.57        | 1.52     |
| 16  | Q     | 1   | NAG  | O5-C1 | -2.27 | 1.40        | 1.43     |
| 19  | v     | 3   | BMA  | O5-C5 | 2.27  | 1.48        | 1.43     |
| 19  | v     | 4   | BMA  | C1-C2 | 2.27  | 1.57        | 1.52     |
| 15  | Y     | 3   | BMA  | O3-C3 | 2.12  | 1.48        | 1.43     |
| 16  | q     | 3   | BMA  | C1-C2 | 2.10  | 1.57        | 1.52     |
| 18  | V     | 6   | BMA  | C1-C2 | 2.08  | 1.56        | 1.52     |

All (24) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 19  | v     | 3   | BMA  | C1-O5-C5 | 4.27  | 117.98      | 112.19   |
| 19  | X     | 3   | BMA  | C1-C2-C3 | -3.58 | 105.27      | 109.67   |
| 18  | V     | 3   | BMA  | C1-C2-C3 | 3.14  | 113.53      | 109.67   |
| 19  | X     | 3   | BMA  | C1-O5-C5 | 2.82  | 116.01      | 112.19   |
| 17  | p     | 1   | NAG  | C1-O5-C5 | 2.74  | 115.91      | 112.19   |
| 16  | P     | 3   | BMA  | C1-O5-C5 | 2.58  | 115.68      | 112.19   |
| 19  | v     | 4   | BMA  | O2-C2-C3 | -2.44 | 105.25      | 110.14   |

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| Mol | Chain | Res | Type | Atoms    | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|----------|-------|-------------|----------|
| 18  | t     | 6   | BMA  | C1-O5-C5 | 2.27  | 115.27      | 112.19   |
| 19  | X     | 4   | BMA  | O2-C2-C3 | -2.27 | 105.59      | 110.14   |
| 17  | R     | 2   | NAG  | C1-O5-C5 | 2.24  | 115.23      | 112.19   |
| 18  | V     | 3   | BMA  | O5-C1-C2 | 2.22  | 114.20      | 110.77   |
| 19  | v     | 2   | NAG  | O4-C4-C3 | 2.20  | 115.44      | 110.35   |
| 15  | O     | 1   | NAG  | C1-O5-C5 | 2.18  | 115.15      | 112.19   |
| 15  | O     | 4   | BMA  | C1-O5-C5 | 2.12  | 115.07      | 112.19   |
| 18  | V     | 3   | BMA  | C1-O5-C5 | 2.12  | 115.06      | 112.19   |
| 19  | v     | 5   | BMA  | O2-C2-C3 | -2.10 | 105.92      | 110.14   |
| 19  | X     | 5   | BMA  | O2-C2-C3 | -2.10 | 105.93      | 110.14   |
| 19  | v     | 5   | BMA  | C1-O5-C5 | 2.09  | 115.03      | 112.19   |
| 18  | t     | 5   | BMA  | C1-O5-C5 | 2.07  | 114.99      | 112.19   |
| 16  | P     | 3   | BMA  | O2-C2-C3 | -2.05 | 106.02      | 110.14   |
| 17  | p     | 2   | NAG  | C1-O5-C5 | 2.05  | 114.97      | 112.19   |
| 18  | V     | 7   | BMA  | C1-O5-C5 | 2.05  | 114.97      | 112.19   |
| 16  | T     | 3   | BMA  | O2-C2-C3 | -2.04 | 106.06      | 110.14   |
| 17  | W     | 1   | NAG  | C3-C4-C5 | 2.01  | 113.82      | 110.24   |

There are no chirality outliers.

All (100) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 18  | V     | 3   | BMA  | C4-C5-C6-O6 |
| 17  | R     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | P     | 1   | NAG  | O5-C5-C6-O6 |
| 16  | P     | 2   | NAG  | O5-C5-C6-O6 |
| 17  | u     | 1   | NAG  | O5-C5-C6-O6 |
| 17  | u     | 2   | NAG  | C4-C5-C6-O6 |
| 18  | V     | 3   | BMA  | O5-C5-C6-O6 |
| 17  | W     | 2   | NAG  | C4-C5-C6-O6 |
| 15  | Y     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | Z     | 1   | NAG  | O5-C5-C6-O6 |
| 18  | V     | 4   | BMA  | O5-C5-C6-O6 |
| 18  | t     | 2   | NAG  | O5-C5-C6-O6 |
| 18  | t     | 4   | BMA  | O5-C5-C6-O6 |
| 19  | X     | 2   | NAG  | O5-C5-C6-O6 |
| 17  | W     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | P     | 1   | NAG  | C4-C5-C6-O6 |
| 16  | Z     | 2   | NAG  | O5-C5-C6-O6 |
| 17  | W     | 1   | NAG  | O5-C5-C6-O6 |
| 17  | u     | 2   | NAG  | O5-C5-C6-O6 |
| 19  | X     | 3   | BMA  | O5-C5-C6-O6 |

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| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 15  | Y     | 2   | NAG  | C4-C5-C6-O6 |
| 16  | o     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | q     | 1   | NAG  | O5-C5-C6-O6 |
| 17  | p     | 1   | NAG  | O5-C5-C6-O6 |
| 16  | Z     | 1   | NAG  | C4-C5-C6-O6 |
| 16  | Z     | 2   | NAG  | C4-C5-C6-O6 |
| 17  | W     | 1   | NAG  | C4-C5-C6-O6 |
| 17  | R     | 1   | NAG  | O5-C5-C6-O6 |
| 18  | t     | 3   | BMA  | O5-C5-C6-O6 |
| 19  | X     | 1   | NAG  | O5-C5-C6-O6 |
| 16  | P     | 2   | NAG  | C4-C5-C6-O6 |
| 17  | R     | 2   | NAG  | C4-C5-C6-O6 |
| 17  | u     | 1   | NAG  | C4-C5-C6-O6 |
| 18  | t     | 3   | BMA  | C4-C5-C6-O6 |
| 19  | X     | 2   | NAG  | C4-C5-C6-O6 |
| 18  | V     | 2   | NAG  | O5-C5-C6-O6 |
| 18  | t     | 6   | BMA  | O5-C5-C6-O6 |
| 18  | t     | 2   | NAG  | C4-C5-C6-O6 |
| 15  | O     | 2   | NAG  | C4-C5-C6-O6 |
| 18  | V     | 5   | BMA  | C4-C5-C6-O6 |
| 18  | V     | 6   | BMA  | O5-C5-C6-O6 |
| 16  | o     | 2   | NAG  | C4-C5-C6-O6 |
| 16  | q     | 1   | NAG  | C4-C5-C6-O6 |
| 18  | t     | 4   | BMA  | C4-C5-C6-O6 |
| 18  | V     | 4   | BMA  | C4-C5-C6-O6 |
| 18  | V     | 2   | NAG  | C4-C5-C6-O6 |
| 19  | X     | 1   | NAG  | C4-C5-C6-O6 |
| 19  | X     | 4   | BMA  | C4-C5-C6-O6 |
| 16  | Z     | 3   | BMA  | O5-C5-C6-O6 |
| 15  | O     | 2   | NAG  | O5-C5-C6-O6 |
| 18  | V     | 5   | BMA  | O5-C5-C6-O6 |
| 18  | t     | 5   | BMA  | C4-C5-C6-O6 |
| 19  | X     | 3   | BMA  | C4-C5-C6-O6 |
| 16  | Q     | 2   | NAG  | O5-C5-C6-O6 |
| 15  | Y     | 4   | BMA  | O5-C5-C6-O6 |
| 16  | P     | 3   | BMA  | O5-C5-C6-O6 |
| 17  | p     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | Q     | 2   | NAG  | C4-C5-C6-O6 |
| 18  | V     | 1   | NAG  | C4-C5-C6-O6 |
| 16  | Z     | 3   | BMA  | C4-C5-C6-O6 |
| 17  | p     | 2   | NAG  | C4-C5-C6-O6 |
| 16  | P     | 3   | BMA  | C4-C5-C6-O6 |

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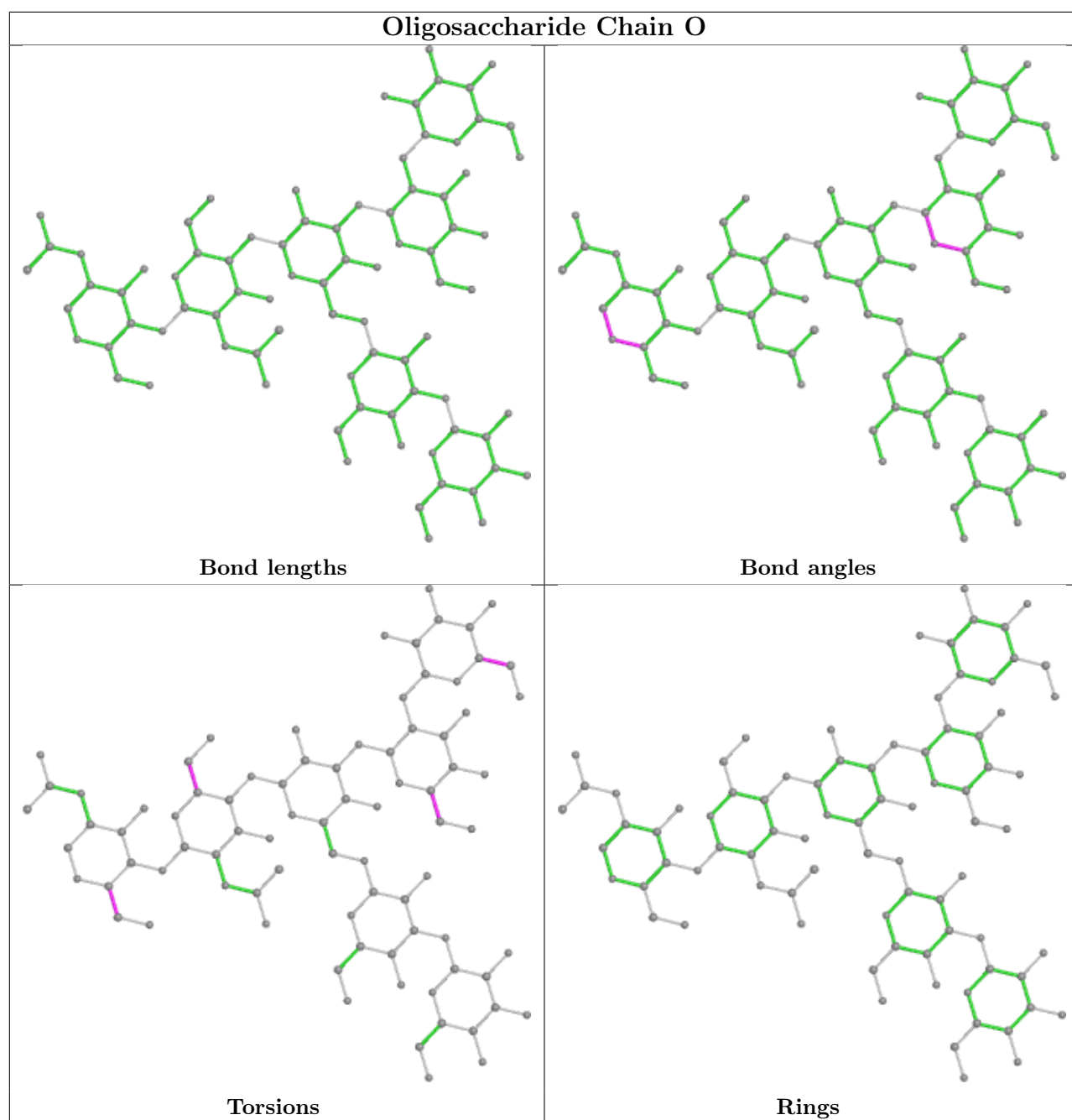
| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 17  | R     | 1   | NAG  | C4-C5-C6-O6 |
| 18  | t     | 5   | BMA  | O5-C5-C6-O6 |
| 19  | X     | 4   | BMA  | O5-C5-C6-O6 |
| 15  | Y     | 4   | BMA  | C4-C5-C6-O6 |
| 16  | S     | 1   | NAG  | C4-C5-C6-O6 |
| 17  | p     | 1   | NAG  | C4-C5-C6-O6 |
| 15  | O     | 1   | NAG  | O5-C5-C6-O6 |
| 18  | t     | 1   | NAG  | C4-C5-C6-O6 |
| 15  | Y     | 1   | NAG  | O5-C5-C6-O6 |
| 18  | V     | 7   | BMA  | O5-C5-C6-O6 |
| 16  | r     | 3   | BMA  | O5-C5-C6-O6 |
| 16  | T     | 1   | NAG  | O5-C5-C6-O6 |
| 19  | v     | 3   | BMA  | O5-C5-C6-O6 |
| 16  | T     | 3   | BMA  | O5-C5-C6-O6 |
| 16  | r     | 1   | NAG  | O5-C5-C6-O6 |
| 19  | v     | 4   | BMA  | O5-C5-C6-O6 |
| 19  | X     | 5   | BMA  | O5-C5-C6-O6 |
| 18  | V     | 1   | NAG  | O5-C5-C6-O6 |
| 16  | S     | 1   | NAG  | O5-C5-C6-O6 |
| 18  | V     | 7   | BMA  | C4-C5-C6-O6 |
| 16  | q     | 2   | NAG  | C4-C5-C6-O6 |
| 15  | Y     | 7   | BMA  | C4-C5-C6-O6 |
| 15  | O     | 4   | BMA  | C4-C5-C6-O6 |
| 15  | O     | 5   | BMA  | C4-C5-C6-O6 |
| 18  | t     | 1   | NAG  | O5-C5-C6-O6 |
| 16  | q     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | r     | 2   | NAG  | C4-C5-C6-O6 |
| 16  | s     | 1   | NAG  | C4-C5-C6-O6 |
| 15  | Y     | 7   | BMA  | O5-C5-C6-O6 |
| 16  | Q     | 1   | NAG  | C4-C5-C6-O6 |
| 15  | O     | 5   | BMA  | O5-C5-C6-O6 |
| 16  | U     | 1   | NAG  | C4-C5-C6-O6 |
| 16  | Q     | 1   | NAG  | O5-C5-C6-O6 |
| 16  | r     | 2   | NAG  | O5-C5-C6-O6 |
| 16  | Q     | 3   | BMA  | C4-C5-C6-O6 |
| 18  | V     | 6   | BMA  | C4-C5-C6-O6 |
| 18  | t     | 6   | BMA  | C4-C5-C6-O6 |
| 15  | Y     | 6   | BMA  | C4-C5-C6-O6 |

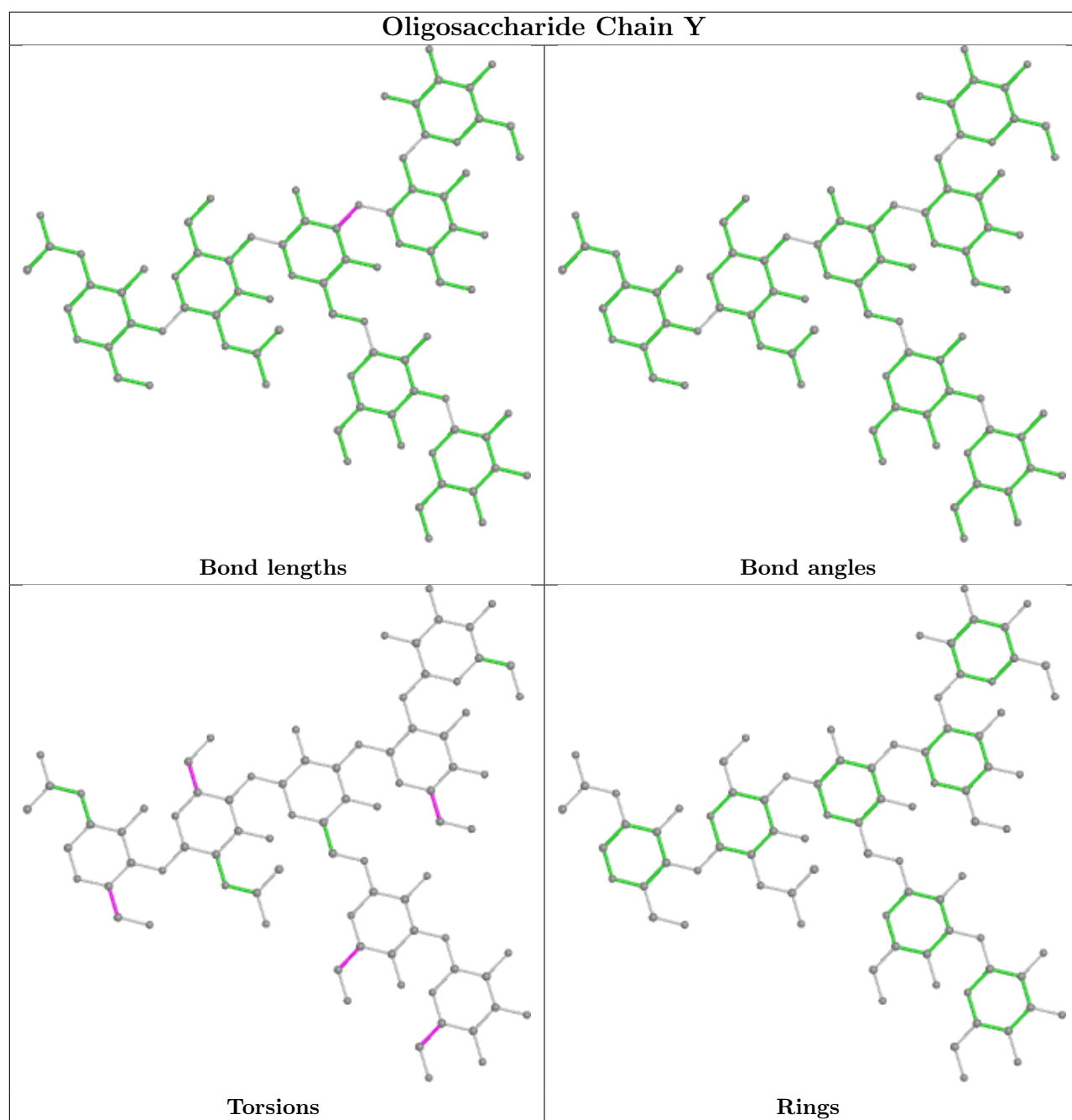
There are no ring outliers.

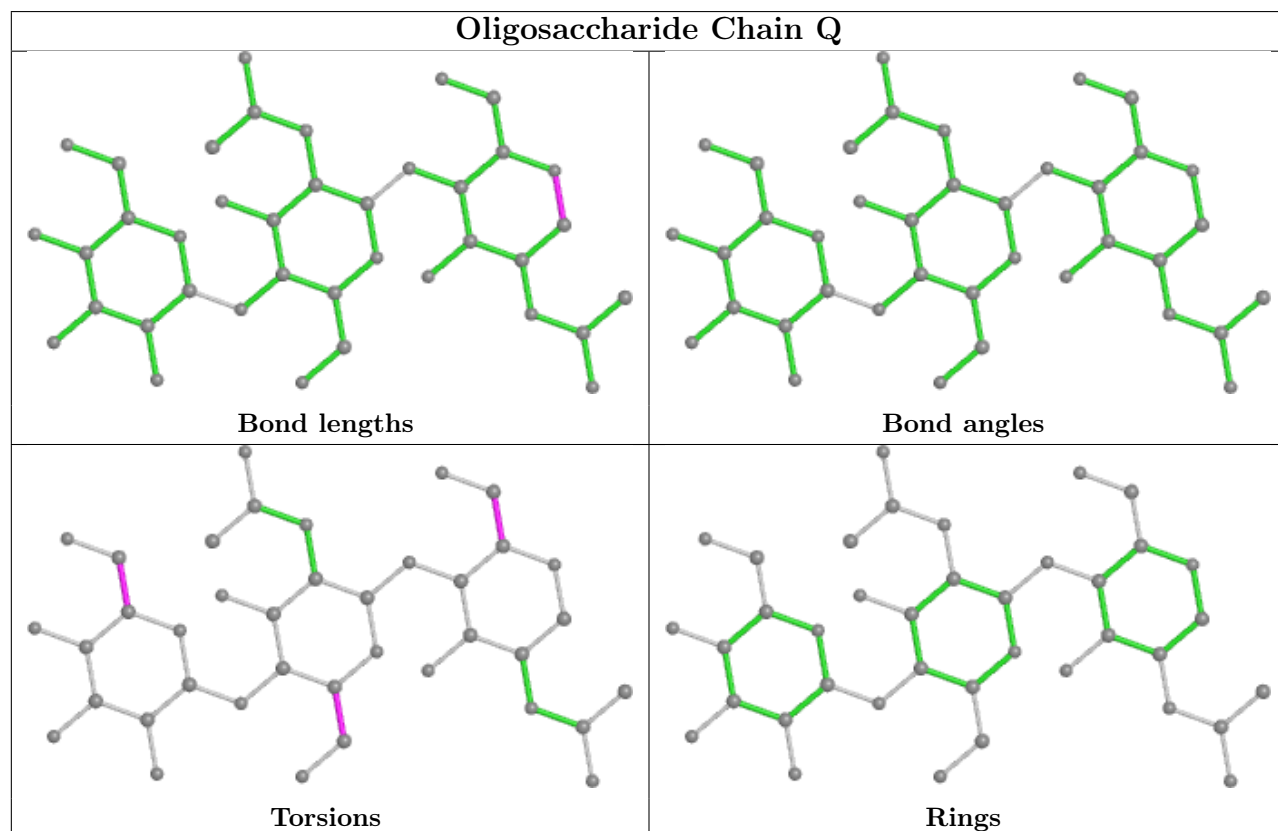
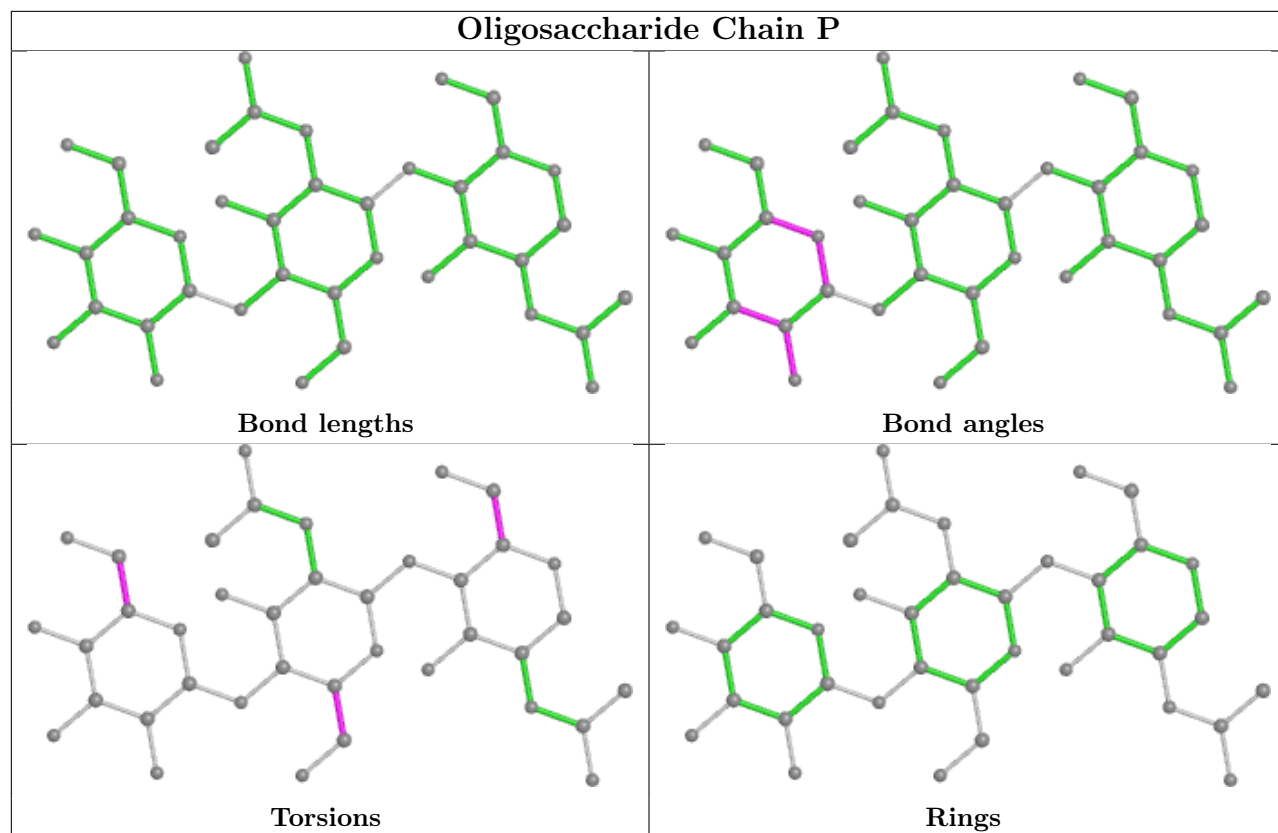
8 monomers are involved in 7 short contacts:

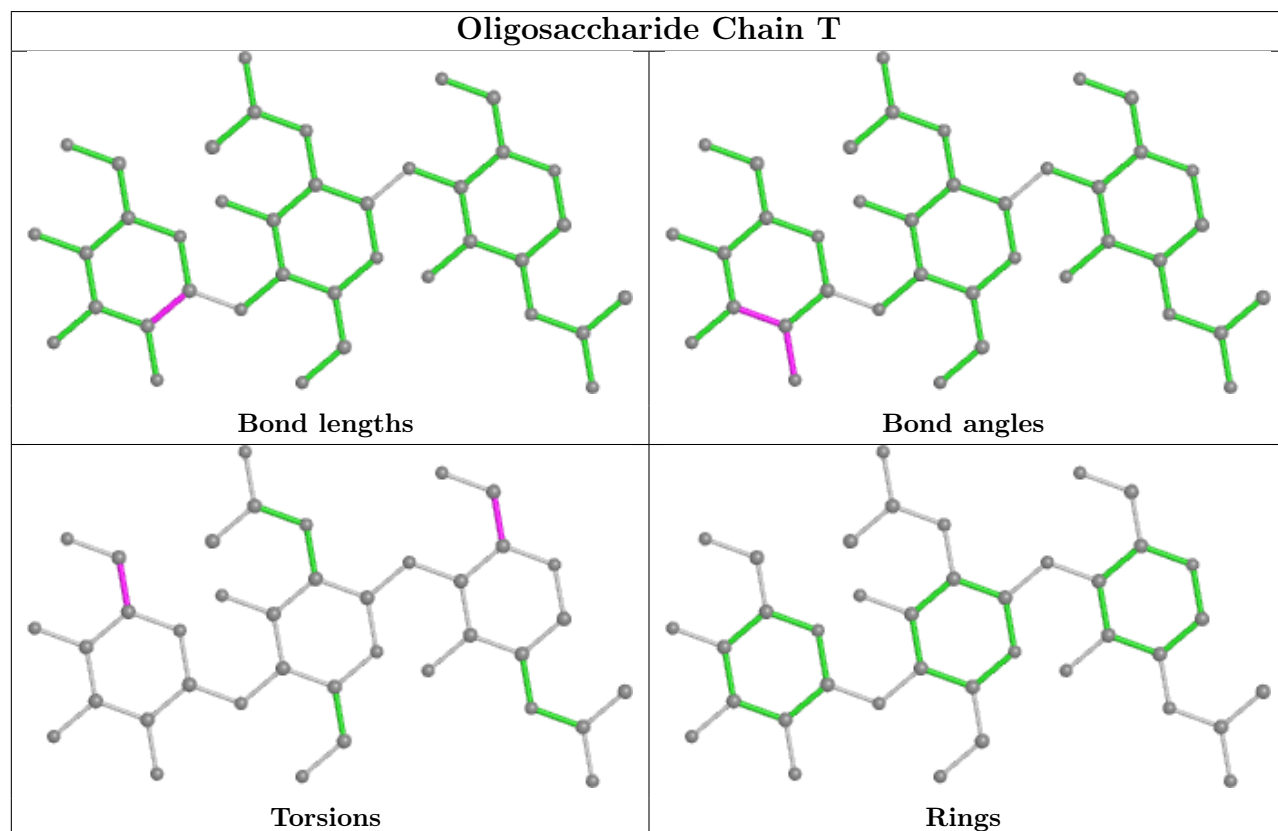
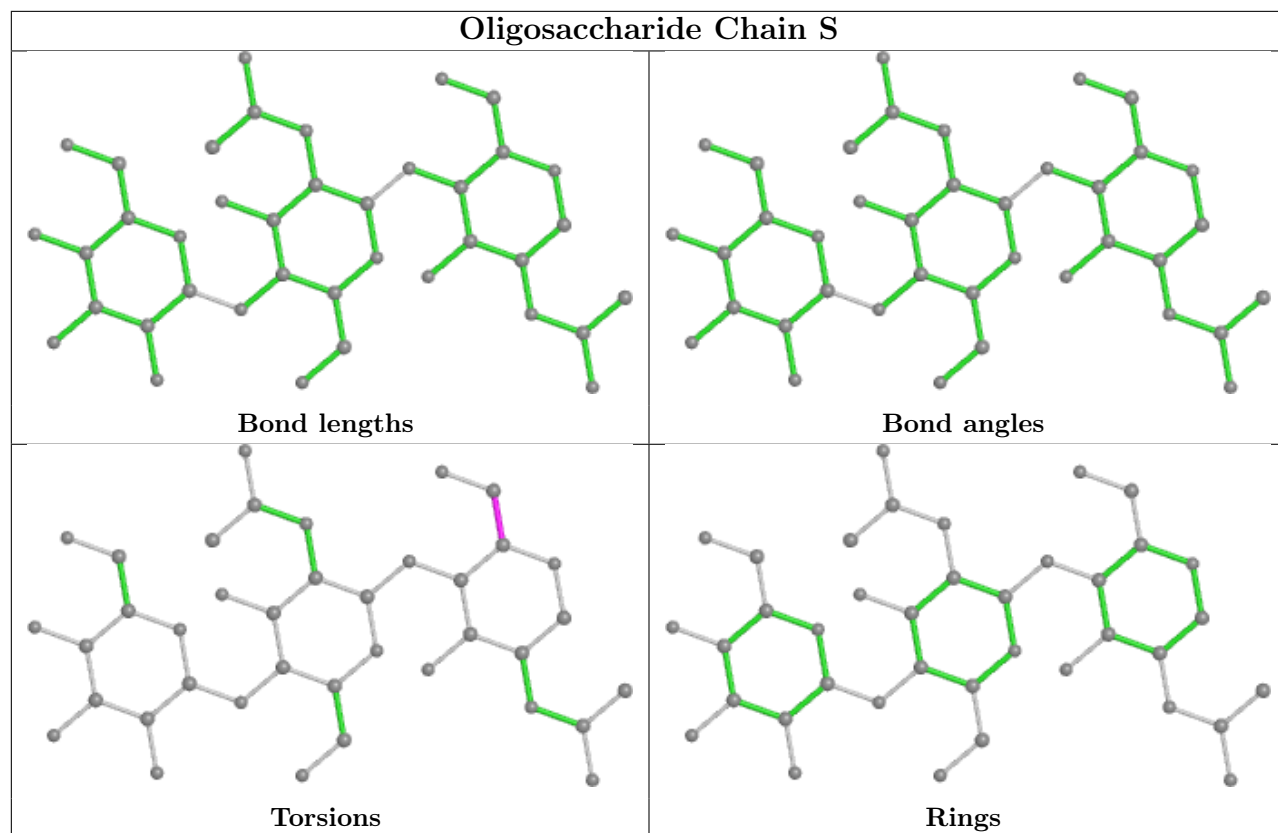
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 17  | R     | 2   | NAG  | 1       | 0            |
| 16  | Z     | 1   | NAG  | 1       | 0            |
| 15  | O     | 3   | BMA  | 1       | 0            |
| 19  | X     | 1   | NAG  | 1       | 0            |
| 16  | U     | 1   | NAG  | 1       | 0            |
| 16  | P     | 1   | NAG  | 1       | 0            |
| 16  | s     | 1   | NAG  | 1       | 0            |
| 15  | O     | 6   | BMA  | 1       | 0            |

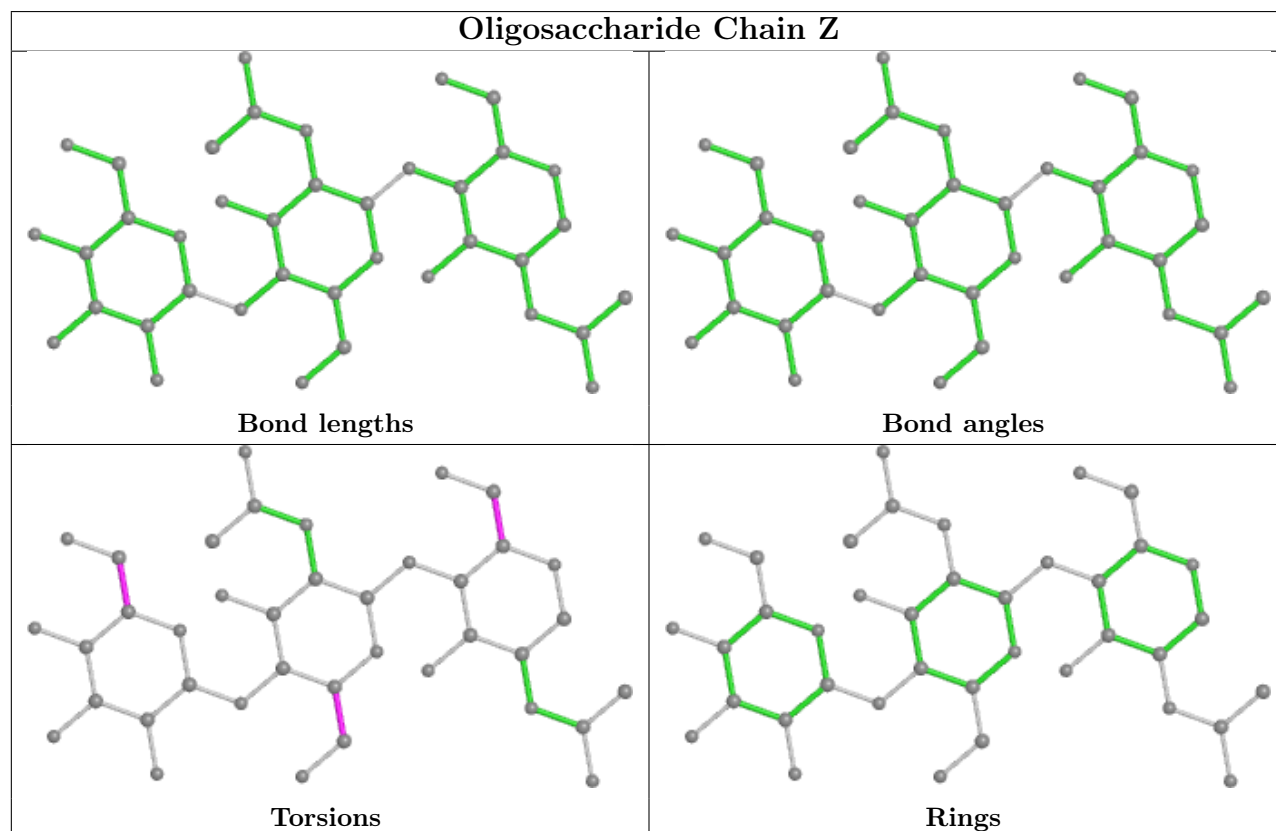
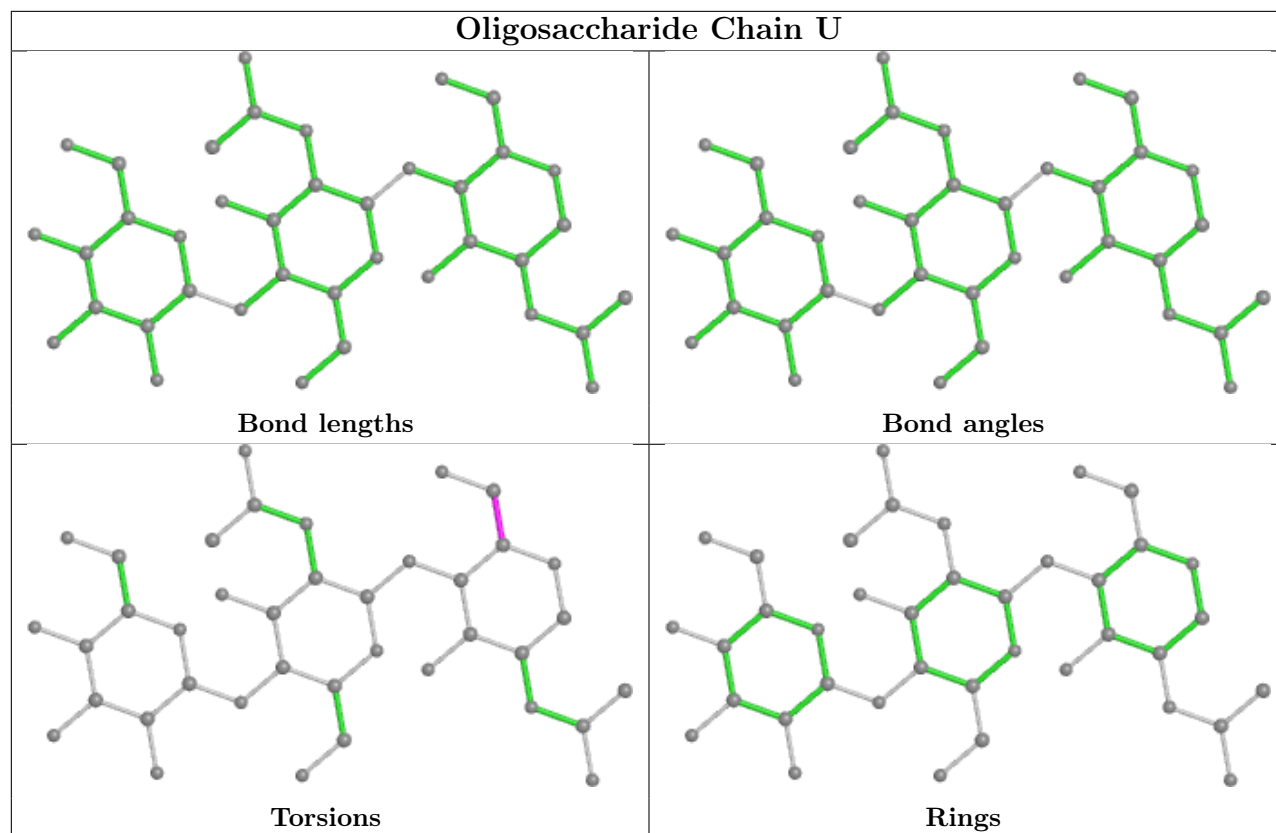
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

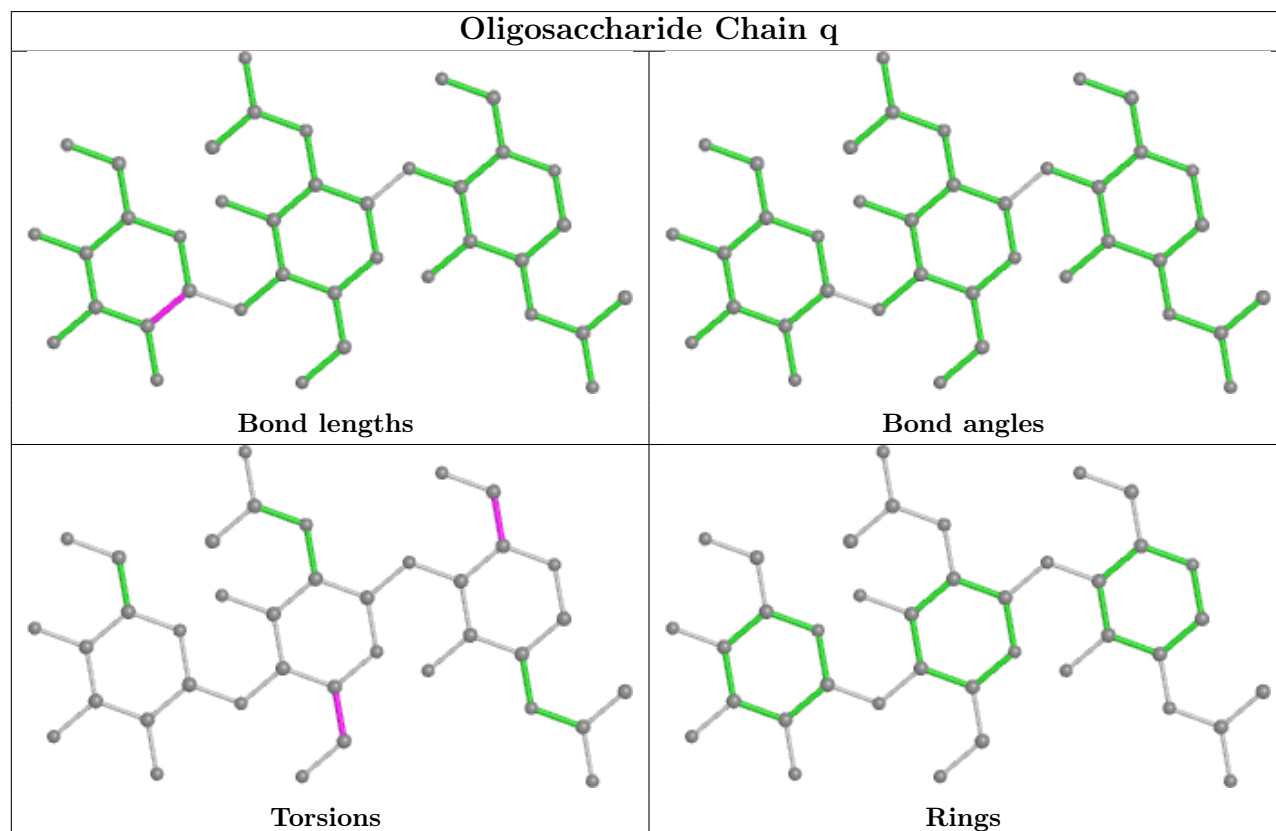
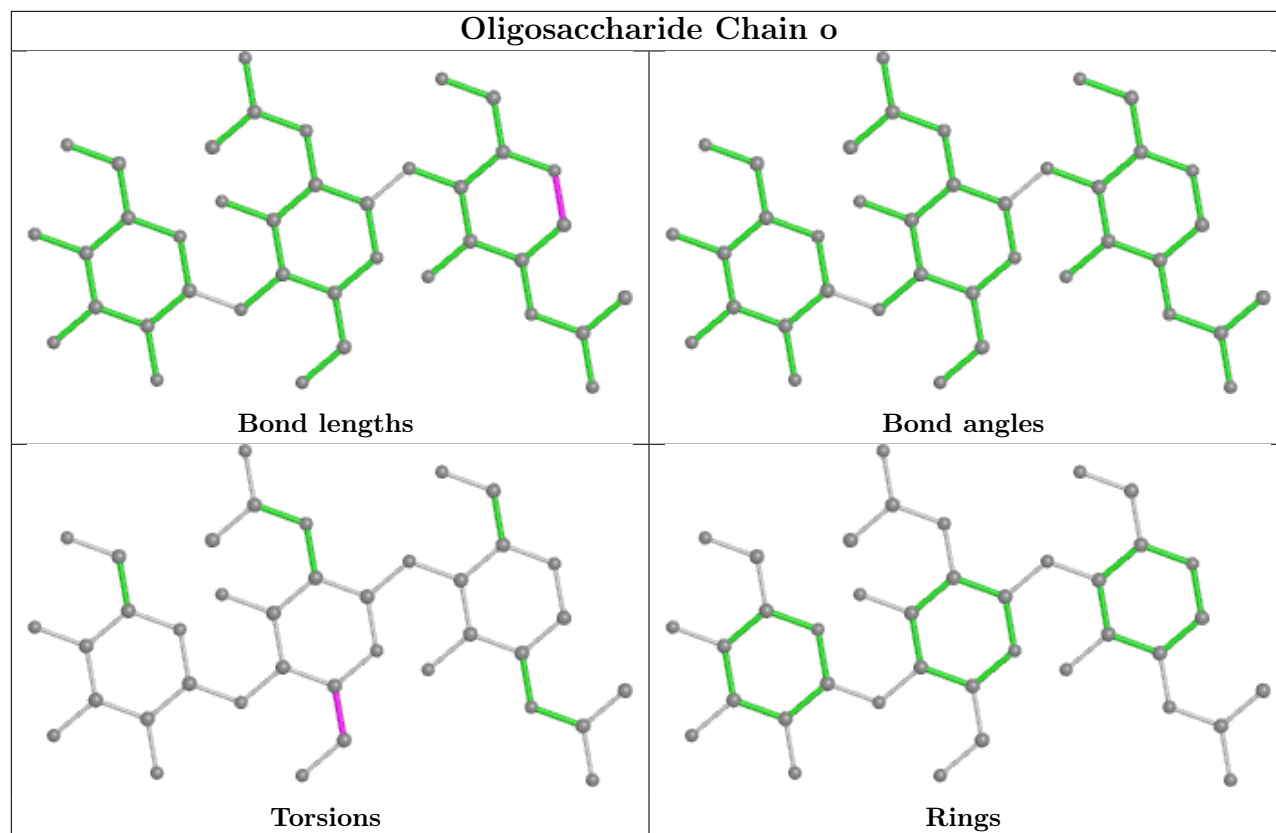


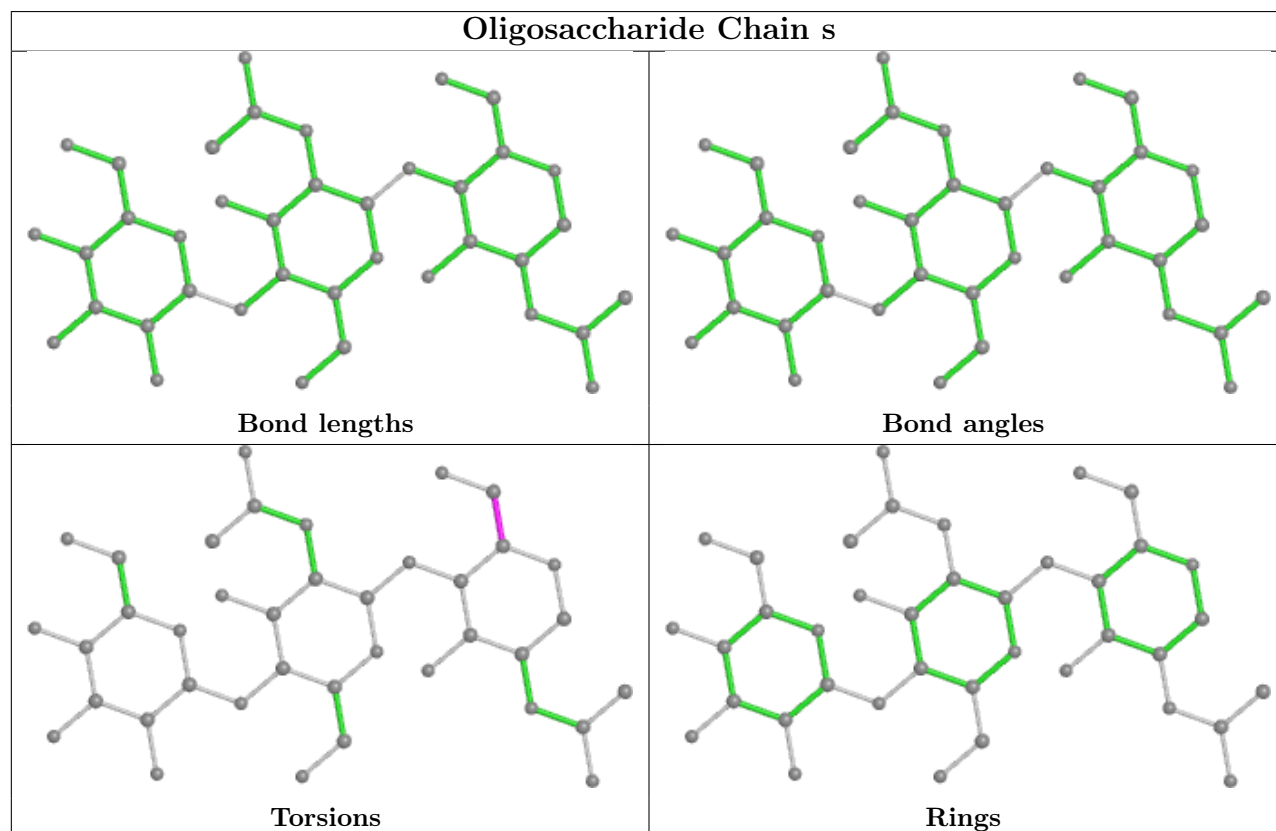
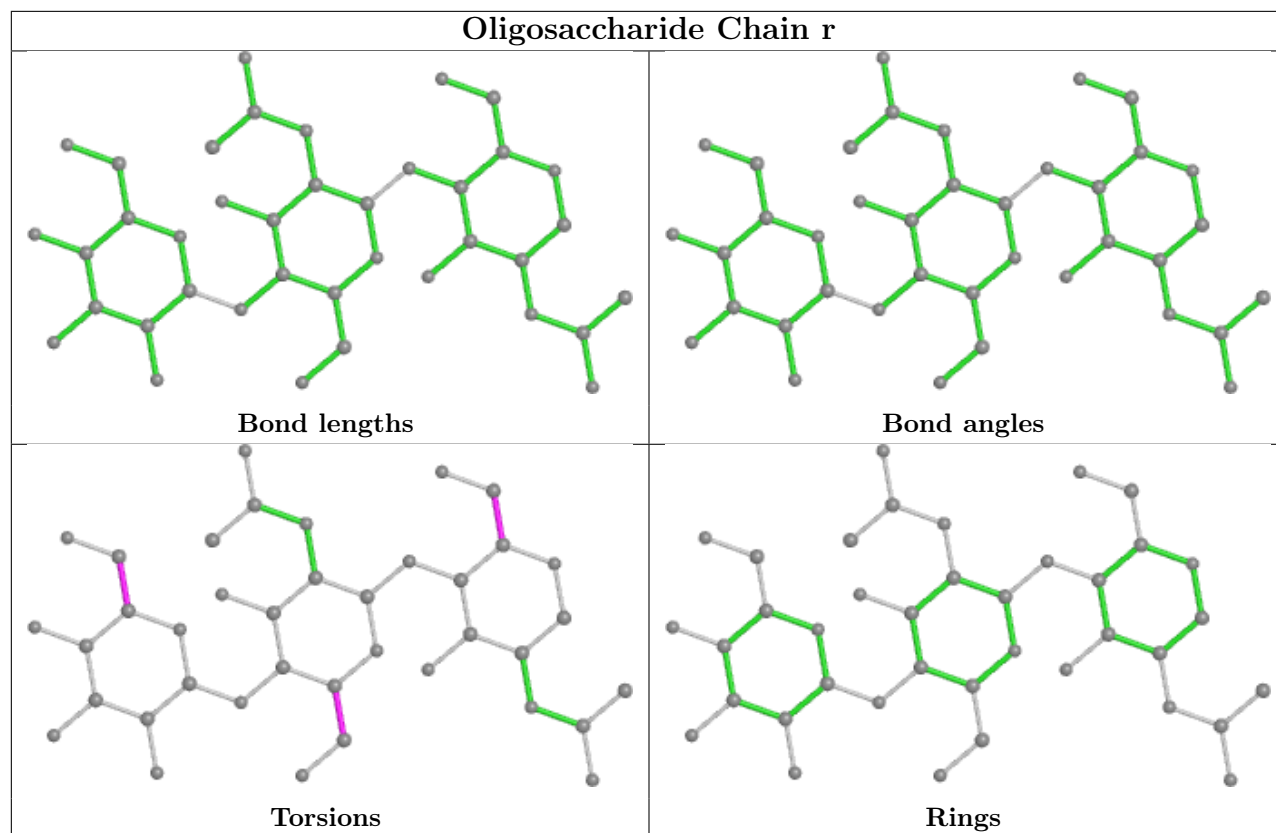


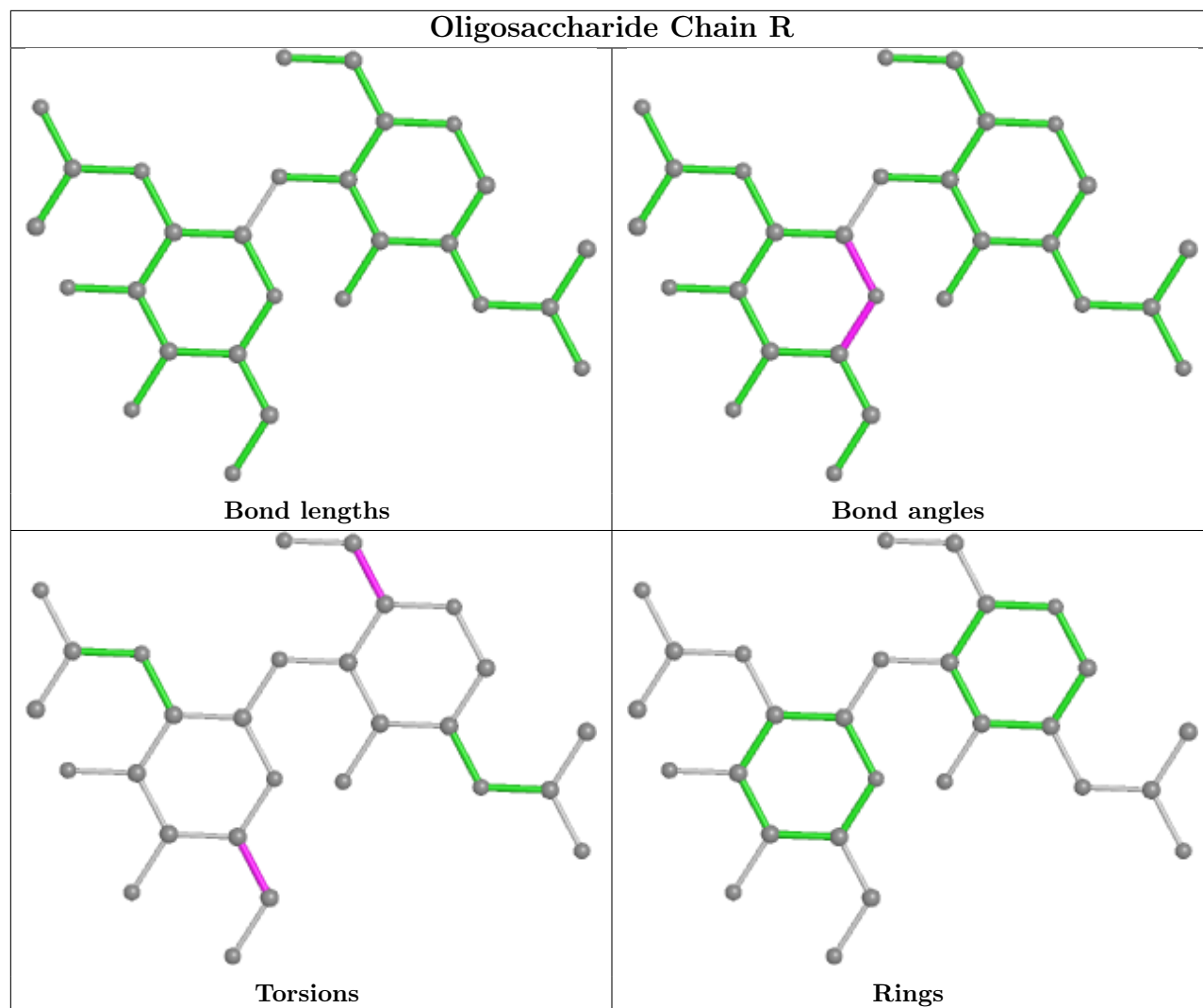


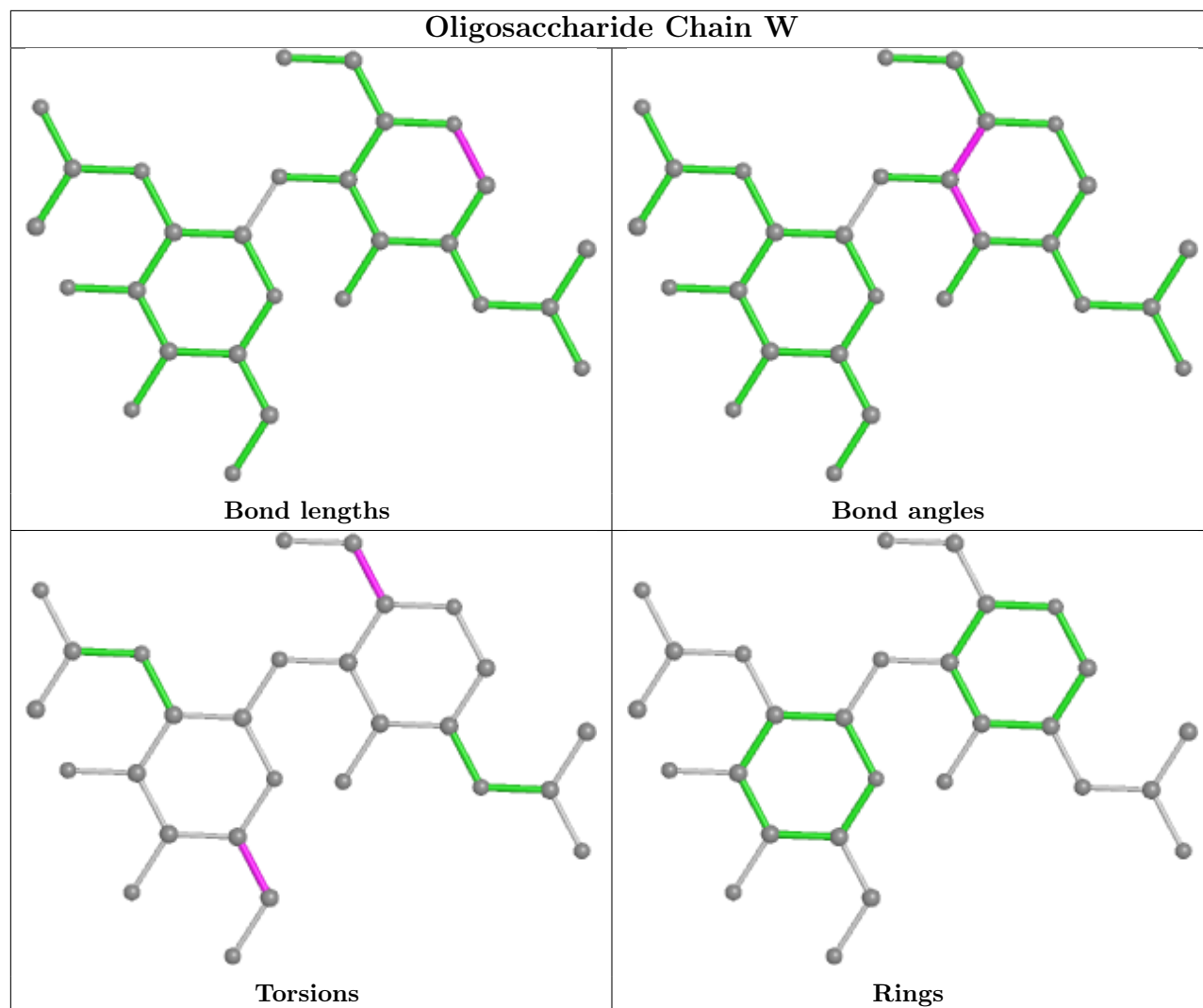


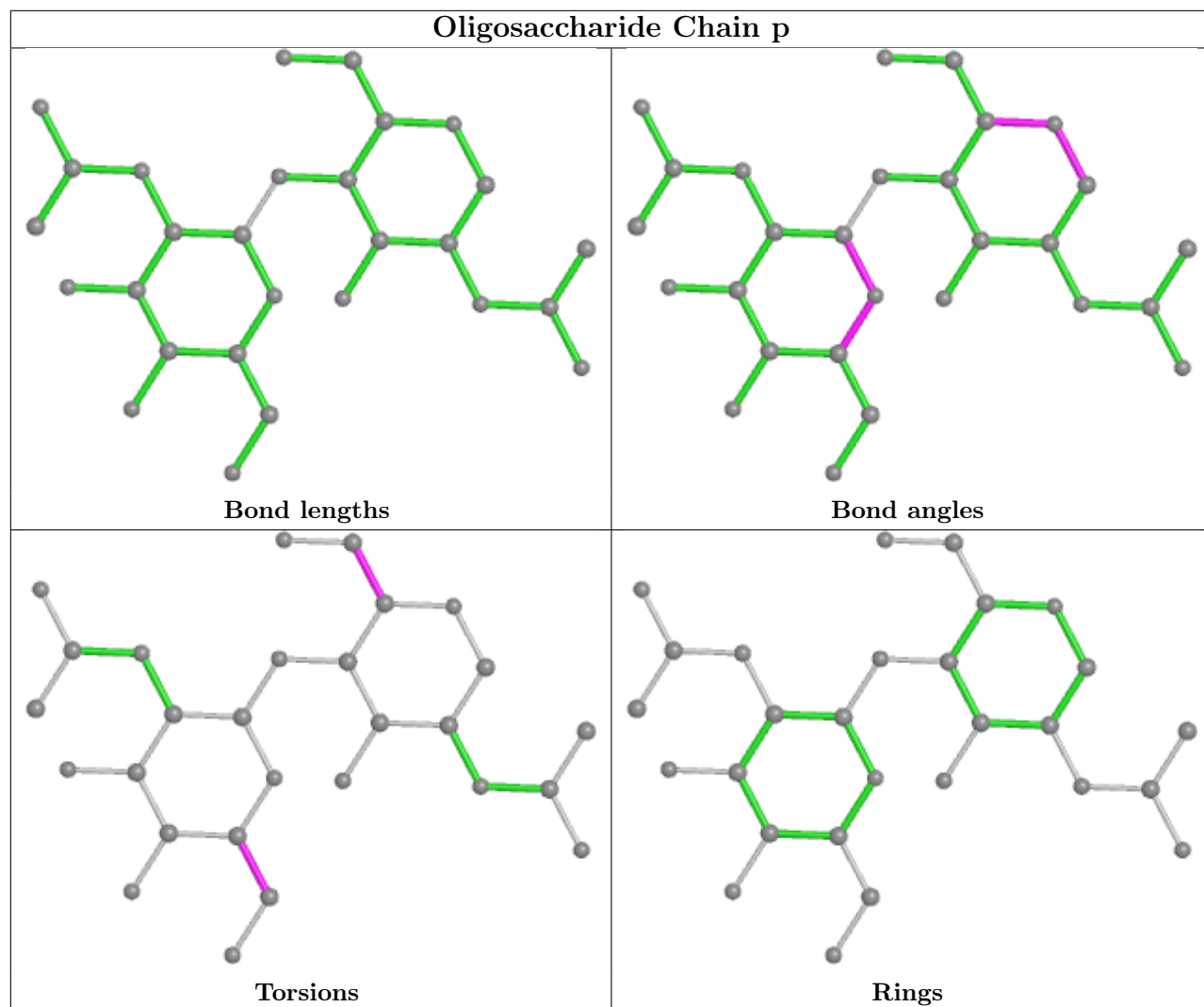


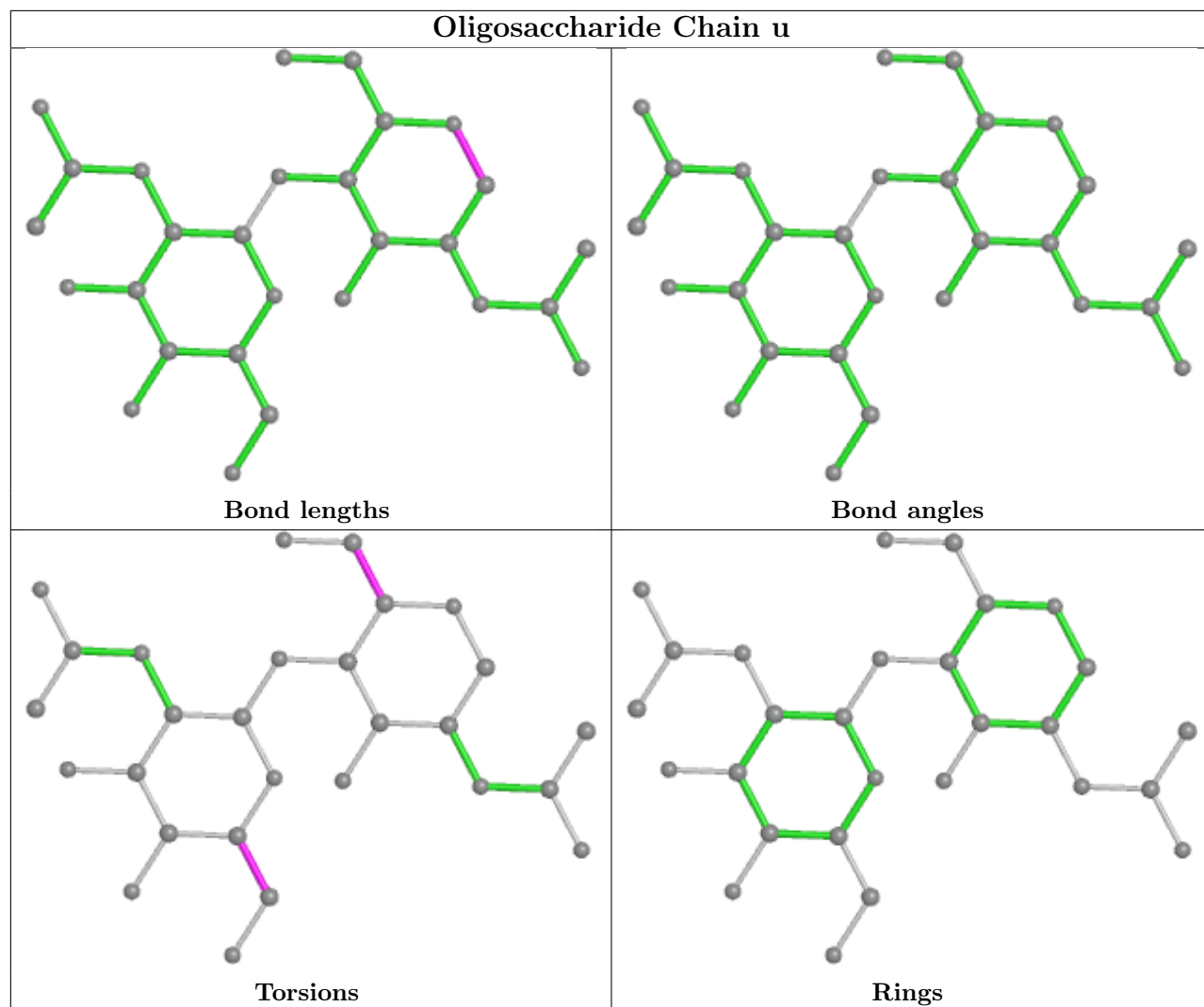


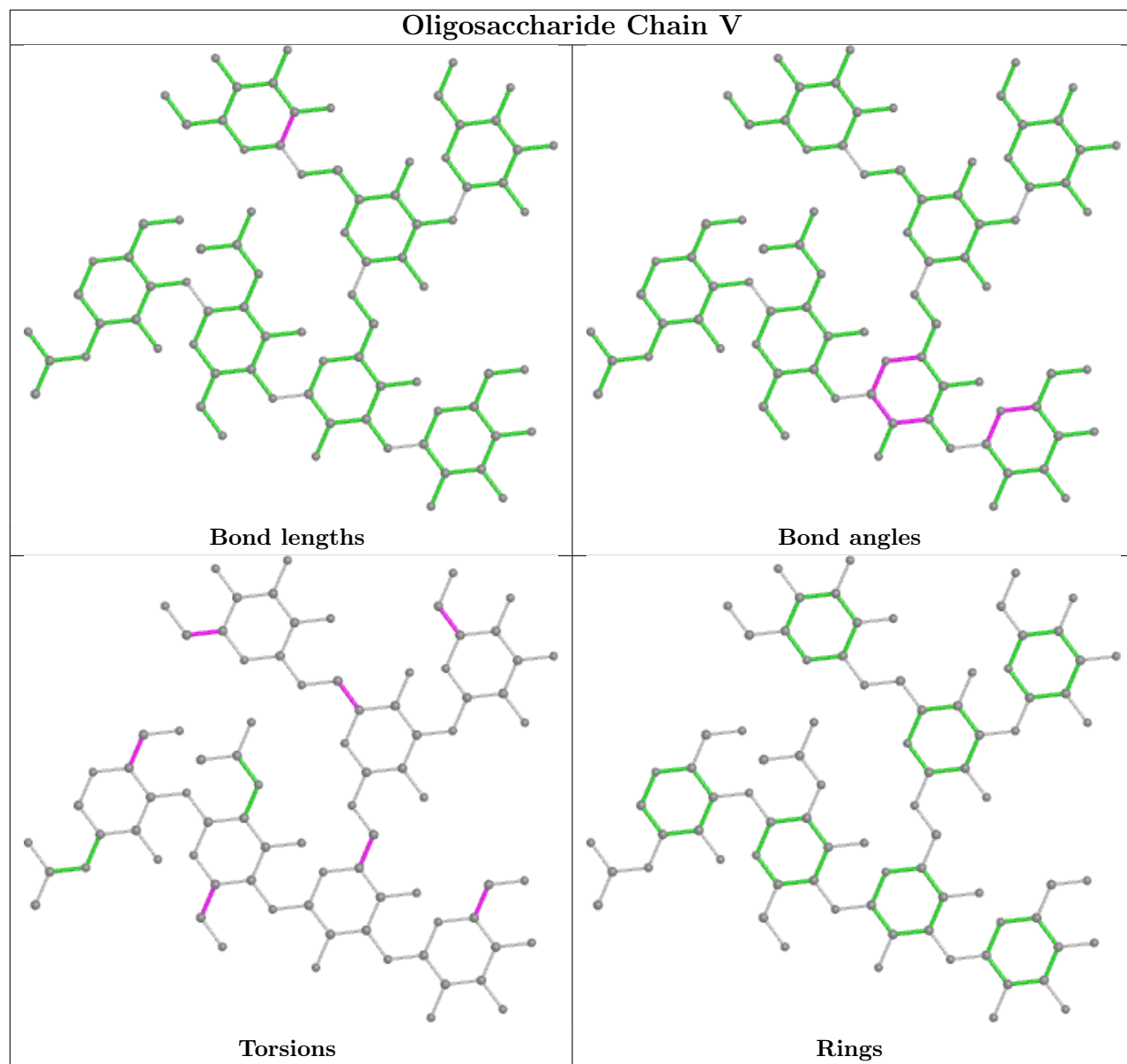


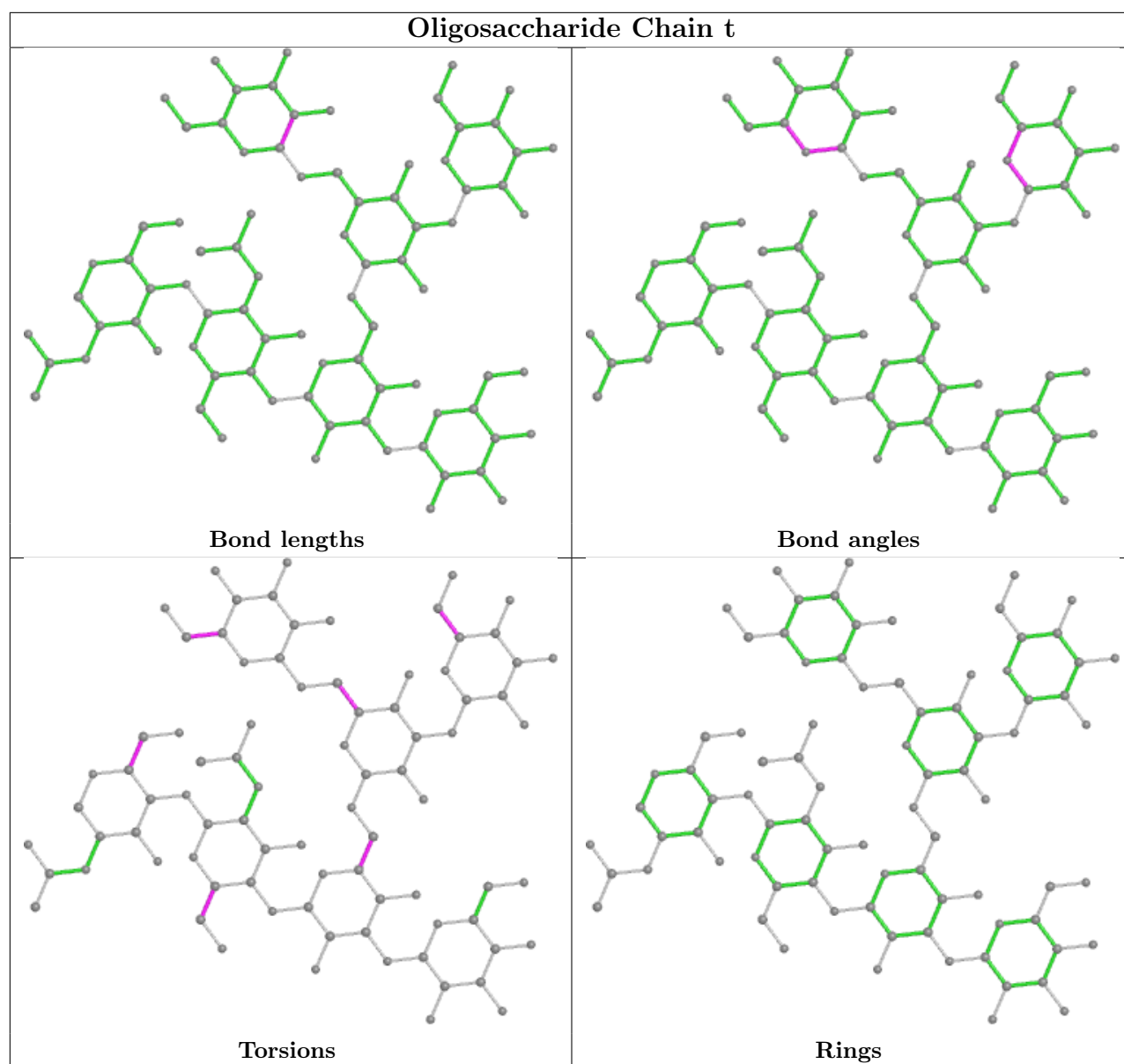


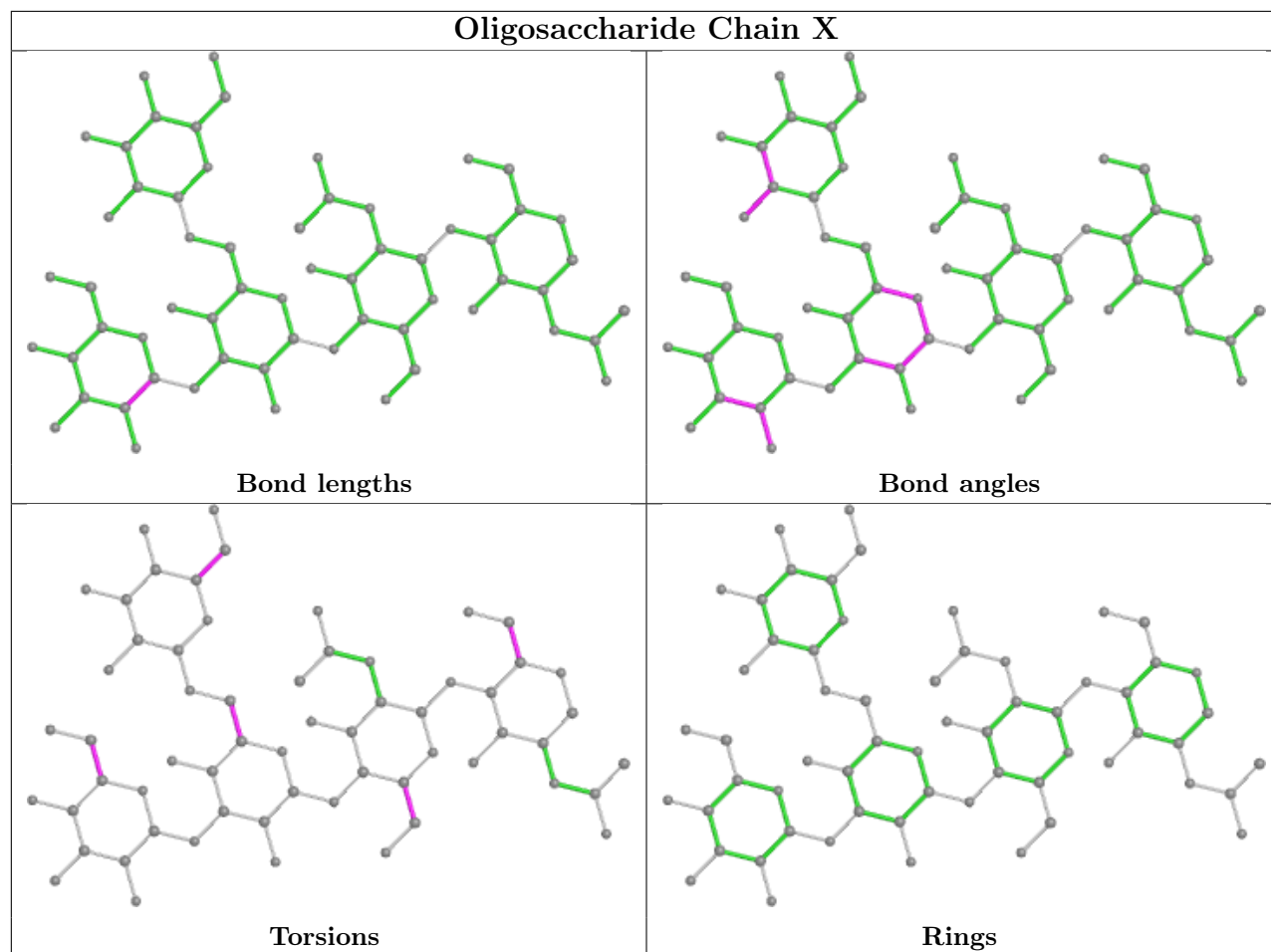


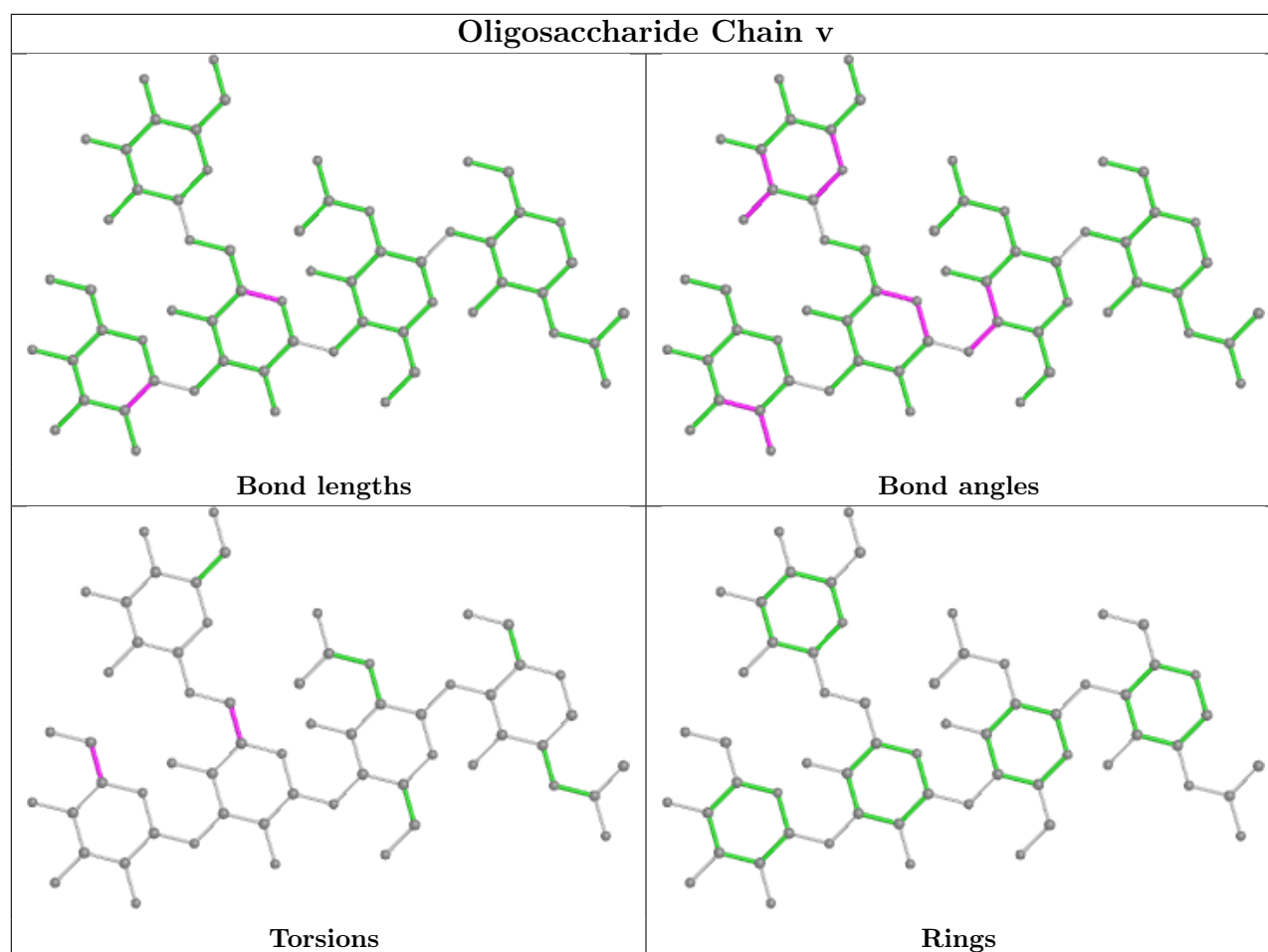












## 5.6 Ligand geometry [i](#)

20 ligands 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 | $\# Z  > 2$ |
| 20  | NAG  | E     | 1105 | 5    | 14,14,15     | 0.21 | 0           | 17,19,21    | 0.54 | 0           |
| 20  | NAG  | E     | 1102 | 5    | 14,14,15     | 0.39 | 0           | 17,19,21    | 0.50 | 0           |
| 20  | NAG  | e     | 1105 | 5    | 14,14,15     | 0.26 | 0           | 17,19,21    | 0.48 | 0           |
| 20  | NAG  | e     | 1103 | 5    | 14,14,15     | 0.24 | 0           | 17,19,21    | 0.44 | 0           |
| 21  | CLR  | m     | 201  | -    | 31,31,31     | 0.43 | 0           | 48,48,48    | 0.86 | 1 (2%)      |
| 20  | NAG  | E     | 1101 | 5    | 14,14,15     | 0.21 | 0           | 17,19,21    | 0.46 | 0           |

| Mol | Type | Chain | Res  | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|------|------|--------------|------|----------|-------------|------|----------|
|     |      |       |      |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 20  | NAG  | g     | 802  | 7    | 14,14,15     | 0.29 | 0        | 17,19,21    | 0.46 | 0        |
| 20  | NAG  | G     | 802  | 7    | 14,14,15     | 0.29 | 0        | 17,19,21    | 0.46 | 0        |
| 20  | NAG  | e     | 1102 | 5    | 14,14,15     | 0.53 | 0        | 17,19,21    | 0.73 | 1 (5%)   |
| 21  | CLR  | M     | 201  | -    | 31,31,31     | 0.44 | 0        | 48,48,48    | 0.93 | 1 (2%)   |
| 20  | NAG  | E     | 1104 | 5    | 14,14,15     | 0.20 | 0        | 17,19,21    | 0.44 | 0        |
| 20  | NAG  | E     | 1106 | 5    | 14,14,15     | 0.51 | 0        | 17,19,21    | 0.74 | 0        |
| 20  | NAG  | F     | 1101 | 6    | 14,14,15     | 0.20 | 0        | 17,19,21    | 0.42 | 0        |
| 20  | NAG  | e     | 1104 | 5    | 14,14,15     | 0.27 | 0        | 17,19,21    | 0.47 | 0        |
| 20  | NAG  | g     | 801  | 7    | 14,14,15     | 0.34 | 0        | 17,19,21    | 0.50 | 0        |
| 20  | NAG  | e     | 1101 | 5    | 14,14,15     | 0.21 | 0        | 17,19,21    | 0.42 | 0        |
| 20  | NAG  | e     | 1106 | 5    | 14,14,15     | 0.42 | 0        | 17,19,21    | 0.88 | 0        |
| 20  | NAG  | E     | 1103 | 5    | 14,14,15     | 0.51 | 0        | 17,19,21    | 0.73 | 1 (5%)   |
| 20  | NAG  | f     | 1101 | 6    | 14,14,15     | 0.43 | 0        | 17,19,21    | 0.49 | 0        |
| 20  | NAG  | G     | 801  | 7    | 14,14,15     | 0.33 | 0        | 17,19,21    | 0.50 | 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   |
|-----|------|-------|------|------|---------|------------|---------|
| 20  | NAG  | E     | 1105 | 5    | -       | 0/6/23/26  | 0/1/1/1 |
| 20  | NAG  | E     | 1102 | 5    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | e     | 1105 | 5    | -       | 0/6/23/26  | 0/1/1/1 |
| 20  | NAG  | e     | 1103 | 5    | -       | 1/6/23/26  | 0/1/1/1 |
| 21  | CLR  | m     | 201  | -    | -       | 1/10/68/68 | 0/4/4/4 |
| 20  | NAG  | E     | 1101 | 5    | -       | 0/6/23/26  | 0/1/1/1 |
| 20  | NAG  | g     | 802  | 7    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | G     | 802  | 7    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | e     | 1102 | 5    | -       | 2/6/23/26  | 0/1/1/1 |
| 21  | CLR  | M     | 201  | -    | -       | 1/10/68/68 | 0/4/4/4 |
| 20  | NAG  | E     | 1104 | 5    | -       | 0/6/23/26  | 0/1/1/1 |
| 20  | NAG  | E     | 1106 | 5    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | F     | 1101 | 6    | -       | 0/6/23/26  | 0/1/1/1 |
| 20  | NAG  | e     | 1104 | 5    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | g     | 801  | 7    | -       | 1/6/23/26  | 0/1/1/1 |
| 20  | NAG  | e     | 1101 | 5    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | e     | 1106 | 5    | -       | 6/6/23/26  | 0/1/1/1 |
| 20  | NAG  | E     | 1103 | 5    | -       | 2/6/23/26  | 0/1/1/1 |
| 20  | NAG  | f     | 1101 | 6    | -       | 0/6/23/26  | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions  | Rings   |
|-----|------|-------|-----|------|---------|-----------|---------|
| 20  | NAG  | G     | 801 | 7    | -       | 1/6/23/26 | 0/1/1/1 |

There are no bond length outliers.

All (4) bond angle outliers are listed below:

| Mol | Chain | Res  | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|------|------|-------------|-------|-------------|----------|
| 20  | e     | 1102 | NAG  | C1-O5-C5    | 2.70  | 115.85      | 112.19   |
| 20  | E     | 1103 | NAG  | C1-O5-C5    | 2.66  | 115.79      | 112.19   |
| 21  | M     | 201  | CLR  | C16-C15-C14 | -2.52 | 100.14      | 105.13   |
| 21  | m     | 201  | CLR  | C16-C15-C14 | -2.37 | 100.44      | 105.13   |

There are no chirality outliers.

All (27) torsion outliers are listed below:

| Mol | Chain | Res  | Type | Atoms           |
|-----|-------|------|------|-----------------|
| 20  | e     | 1106 | NAG  | O7-C7-N2-C2     |
| 20  | E     | 1103 | NAG  | C4-C5-C6-O6     |
| 20  | e     | 1106 | NAG  | C8-C7-N2-C2     |
| 20  | e     | 1106 | NAG  | C1-C2-N2-C7     |
| 20  | E     | 1103 | NAG  | O5-C5-C6-O6     |
| 20  | e     | 1102 | NAG  | O5-C5-C6-O6     |
| 20  | E     | 1106 | NAG  | O5-C5-C6-O6     |
| 20  | E     | 1106 | NAG  | C4-C5-C6-O6     |
| 20  | G     | 802  | NAG  | O5-C5-C6-O6     |
| 20  | E     | 1102 | NAG  | O5-C5-C6-O6     |
| 20  | G     | 802  | NAG  | C4-C5-C6-O6     |
| 20  | e     | 1102 | NAG  | C4-C5-C6-O6     |
| 20  | g     | 802  | NAG  | C4-C5-C6-O6     |
| 20  | E     | 1102 | NAG  | C4-C5-C6-O6     |
| 21  | M     | 201  | CLR  | C22-C23-C24-C25 |
| 20  | e     | 1106 | NAG  | O5-C5-C6-O6     |
| 20  | e     | 1101 | NAG  | C4-C5-C6-O6     |
| 20  | g     | 802  | NAG  | O5-C5-C6-O6     |
| 21  | m     | 201  | CLR  | C22-C23-C24-C25 |
| 20  | e     | 1103 | NAG  | O5-C5-C6-O6     |
| 20  | e     | 1101 | NAG  | O5-C5-C6-O6     |
| 20  | e     | 1106 | NAG  | C4-C5-C6-O6     |
| 20  | e     | 1104 | NAG  | C4-C5-C6-O6     |
| 20  | G     | 801  | NAG  | O5-C5-C6-O6     |
| 20  | e     | 1106 | NAG  | C3-C2-N2-C7     |
| 20  | e     | 1104 | NAG  | O5-C5-C6-O6     |

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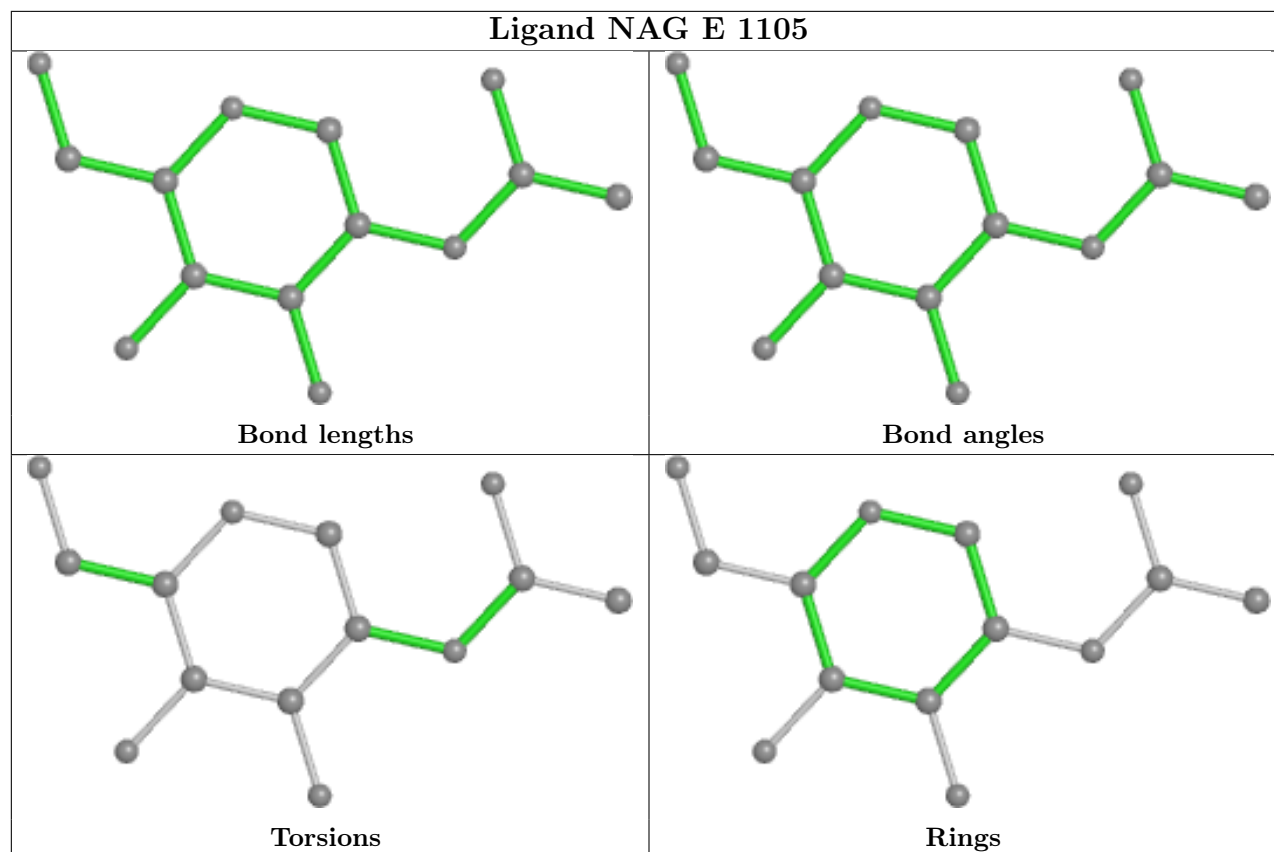
| Mol | Chain | Res | Type | Atoms       |
|-----|-------|-----|------|-------------|
| 20  | g     | 801 | NAG  | O5-C5-C6-O6 |

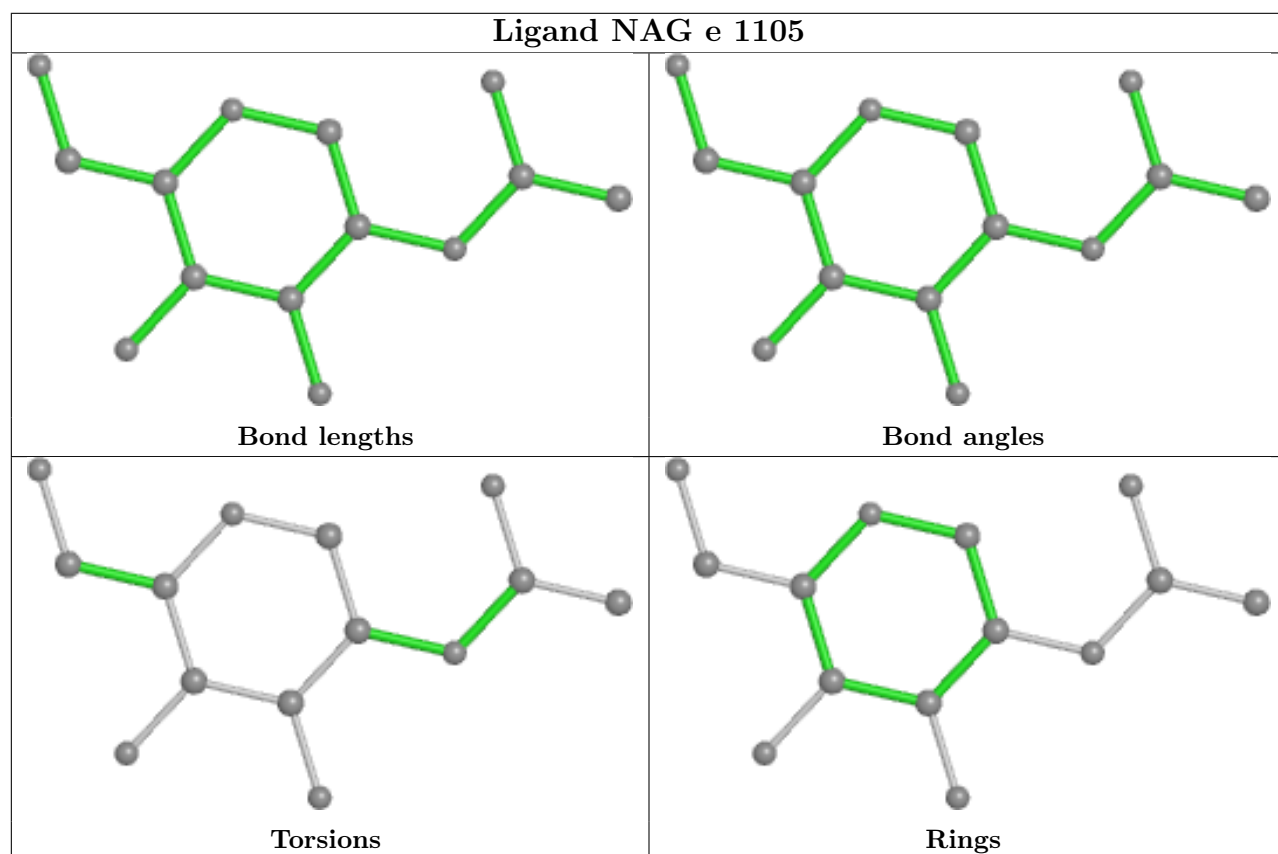
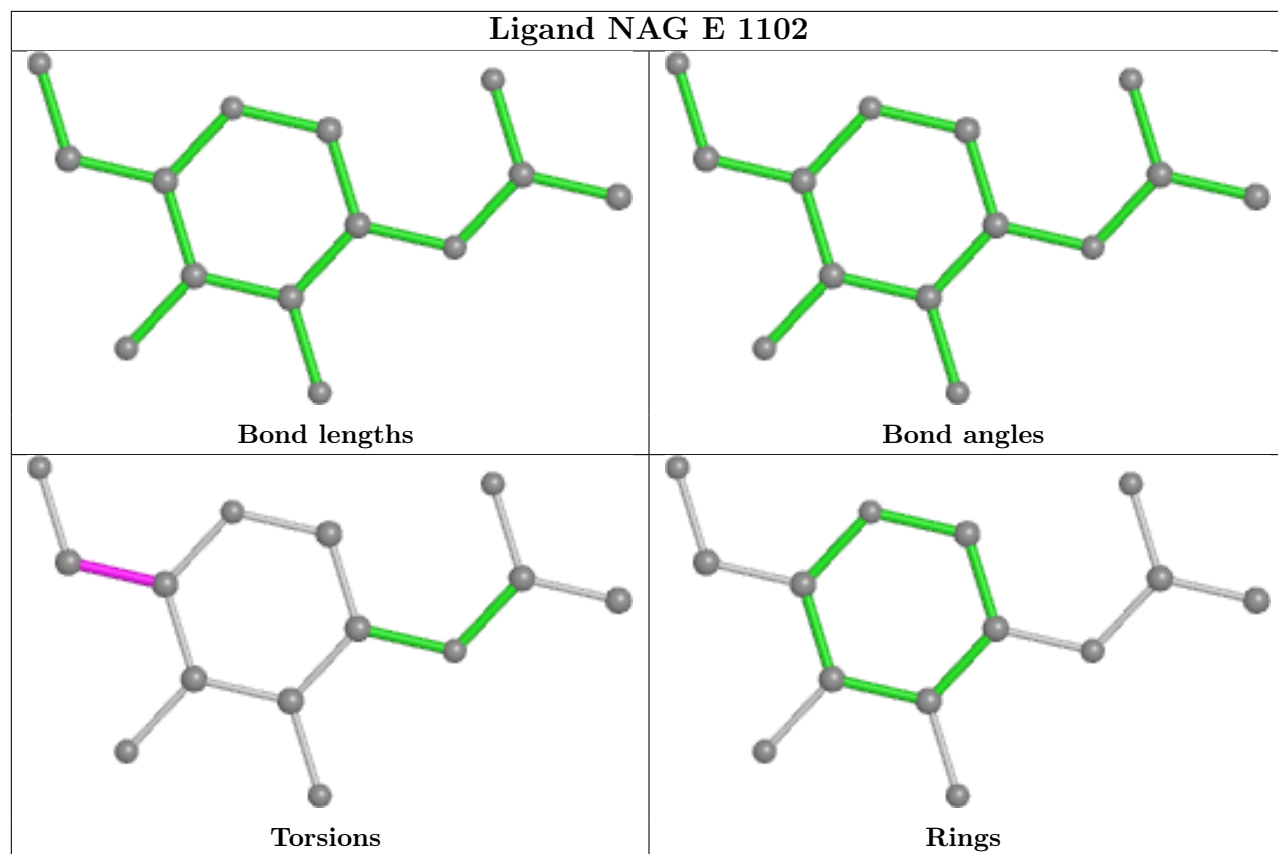
There are no ring outliers.

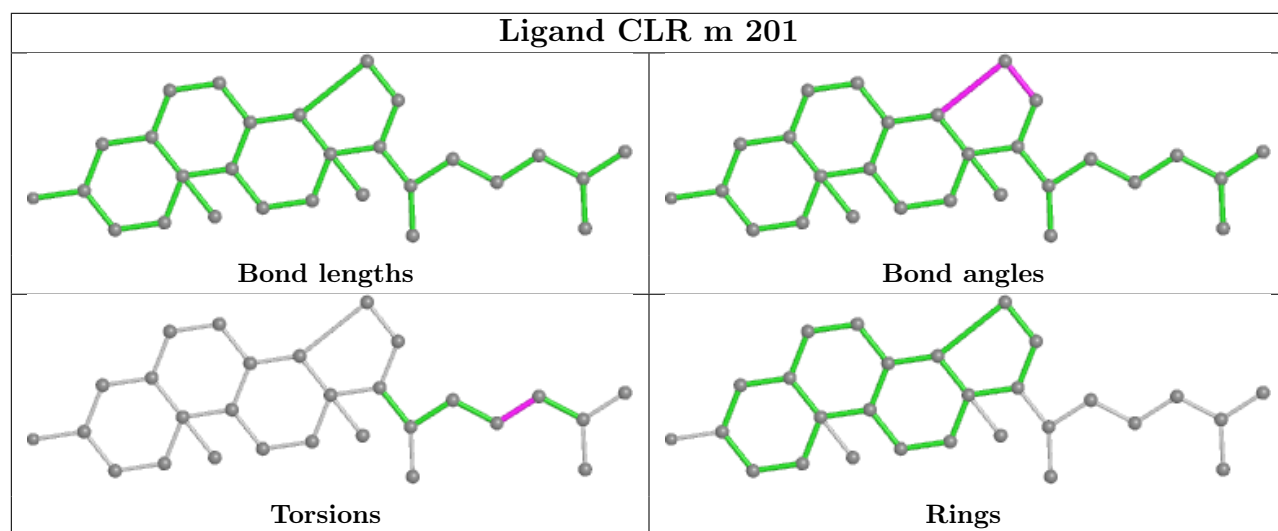
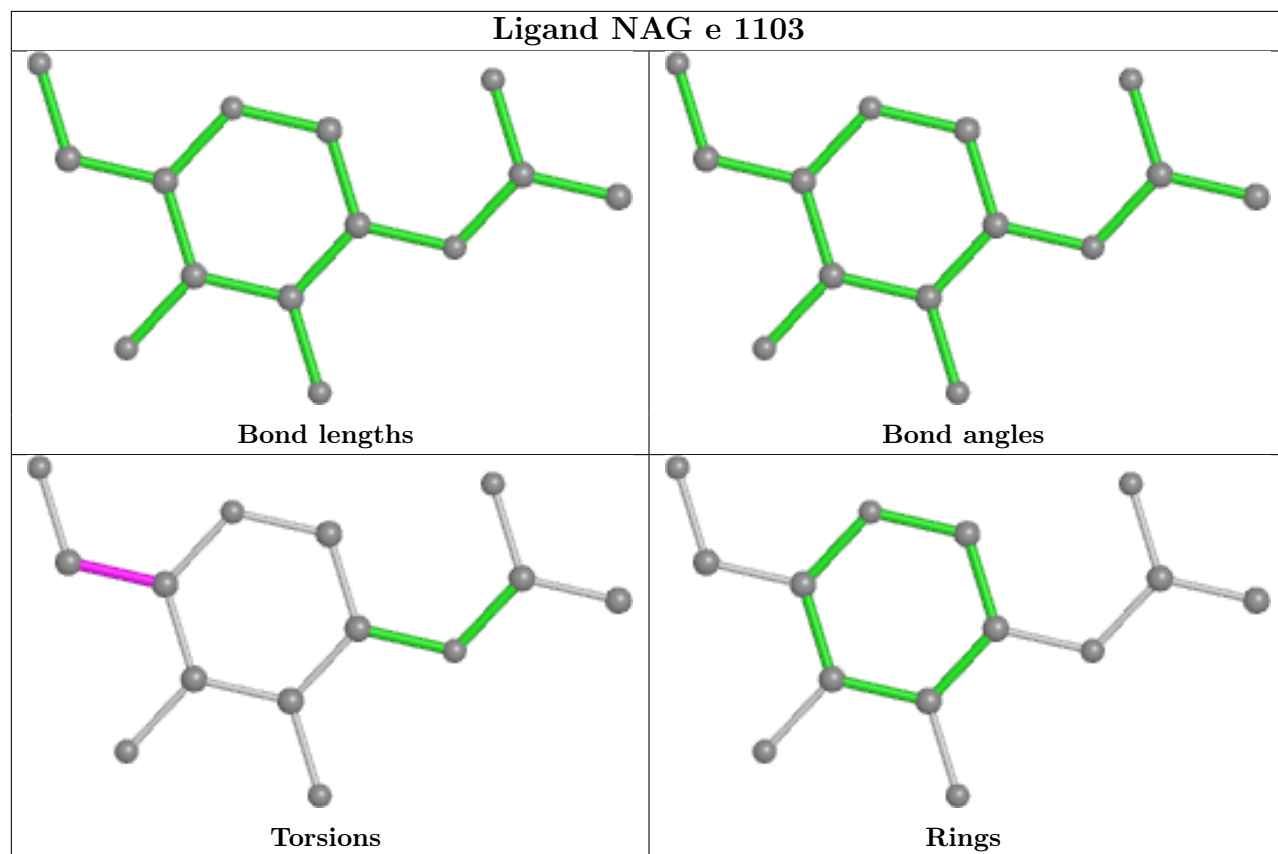
2 monomers are involved in 2 short contacts:

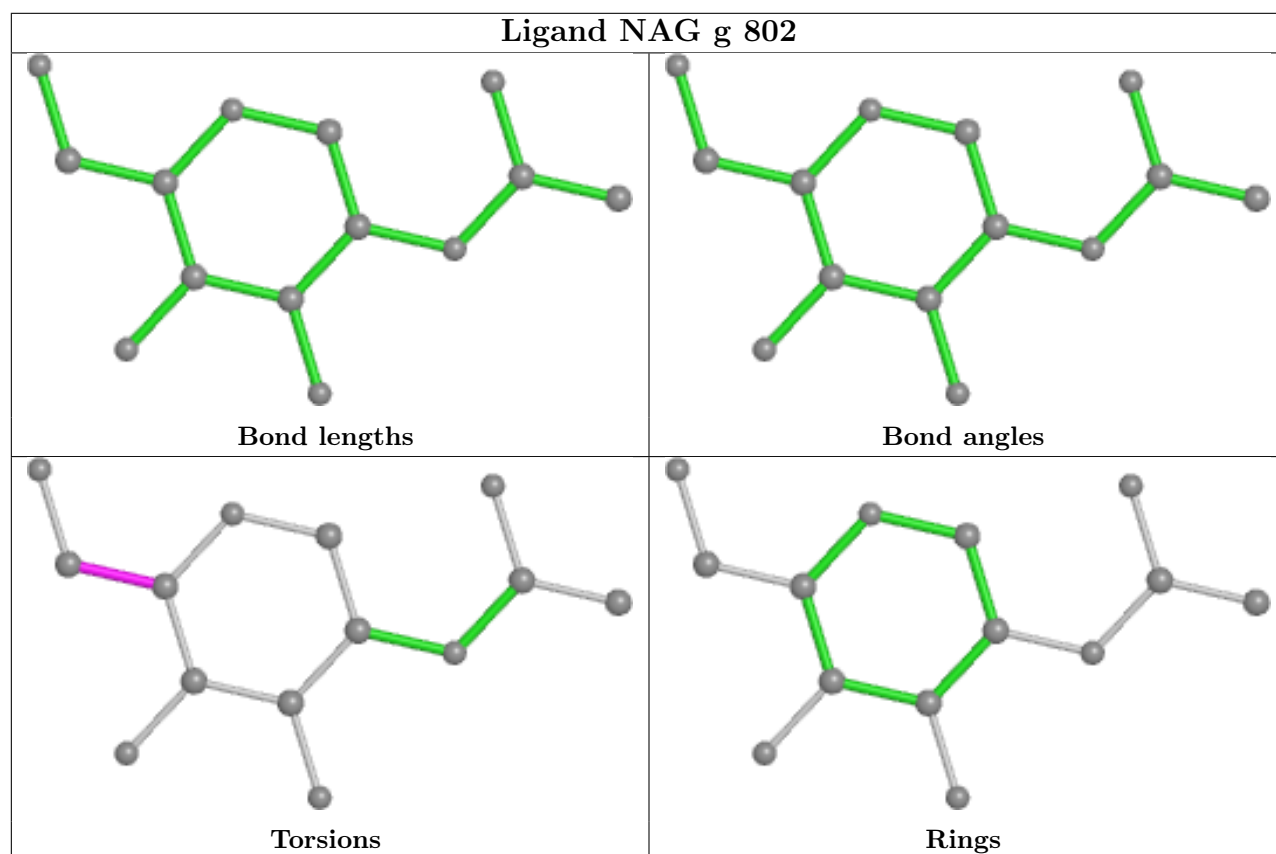
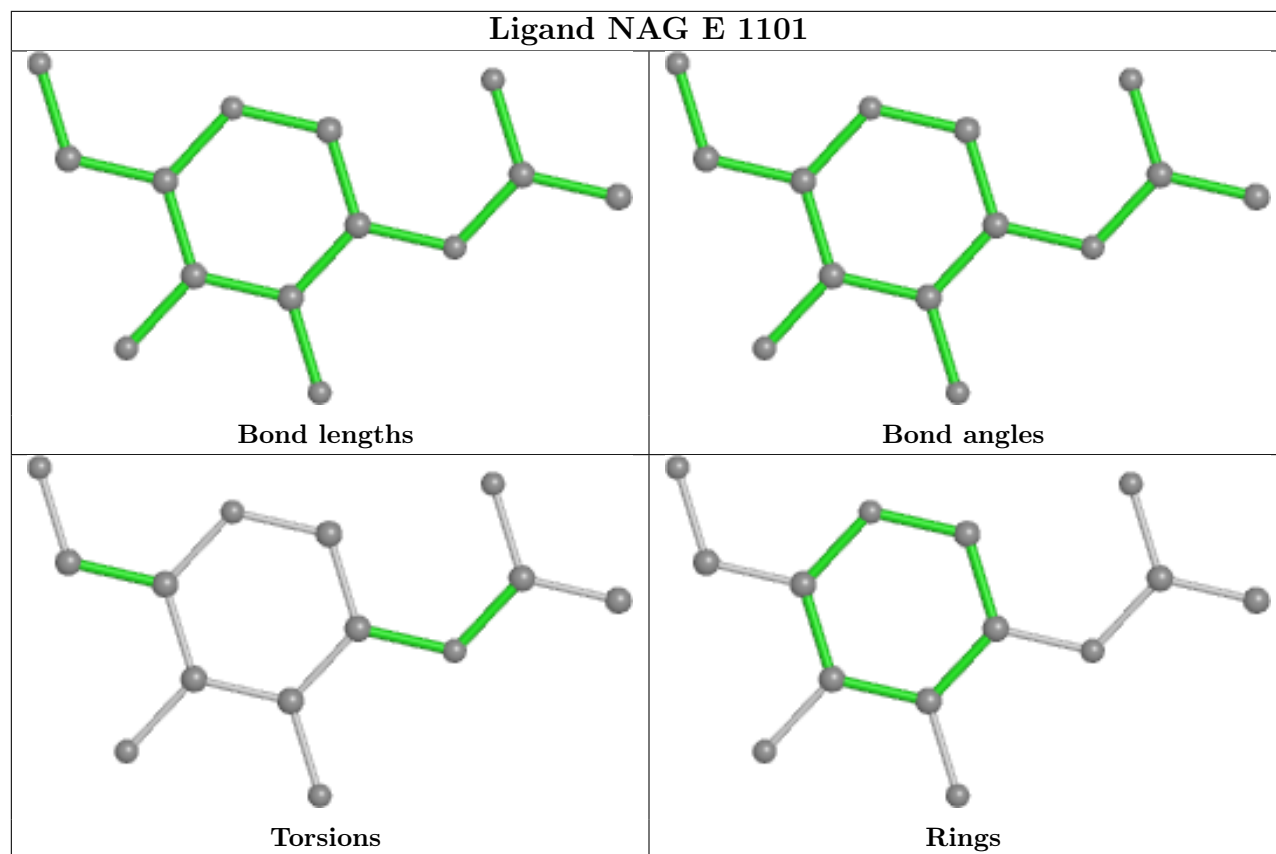
| Mol | Chain | Res  | Type | Clashes | Symm-Clashes |
|-----|-------|------|------|---------|--------------|
| 21  | M     | 201  | CLR  | 1       | 0            |
| 20  | E     | 1104 | NAG  | 1       | 0            |

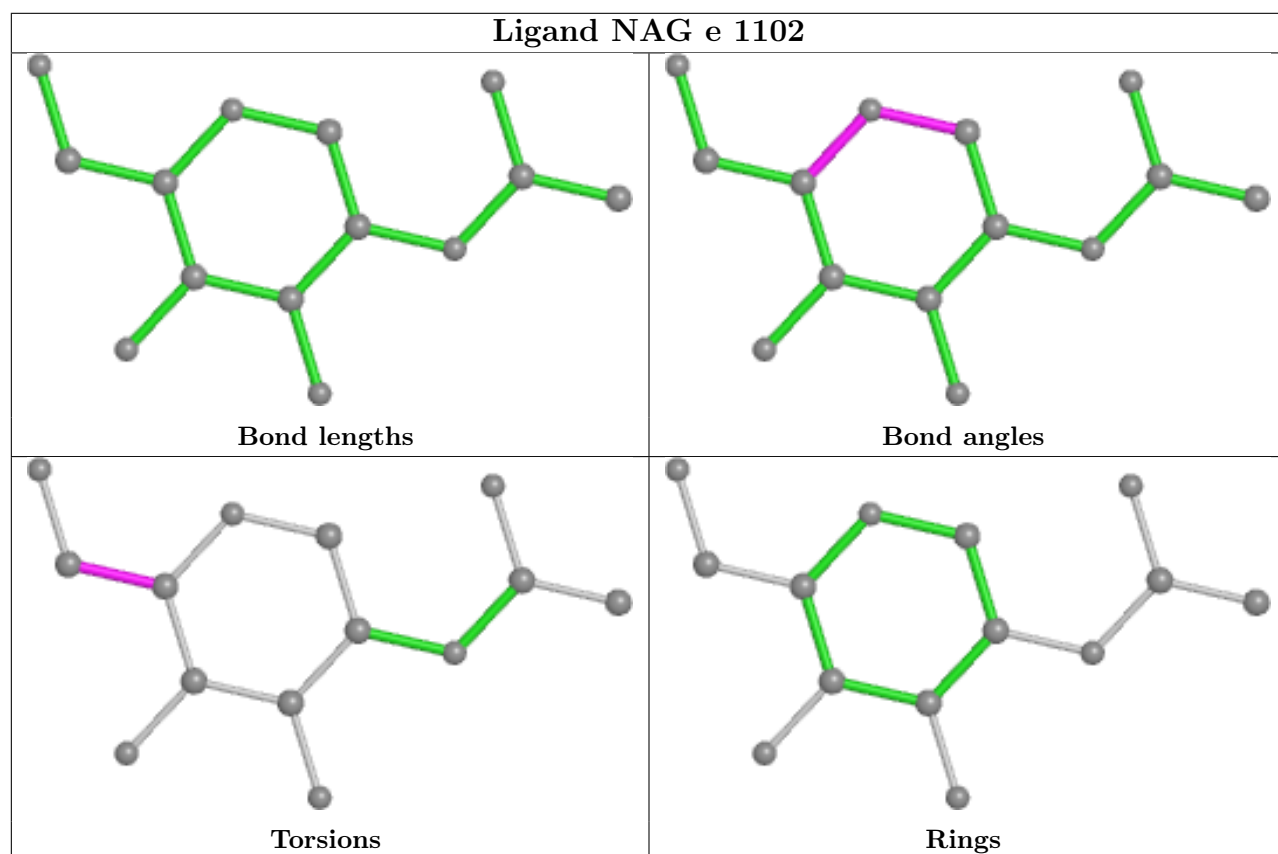
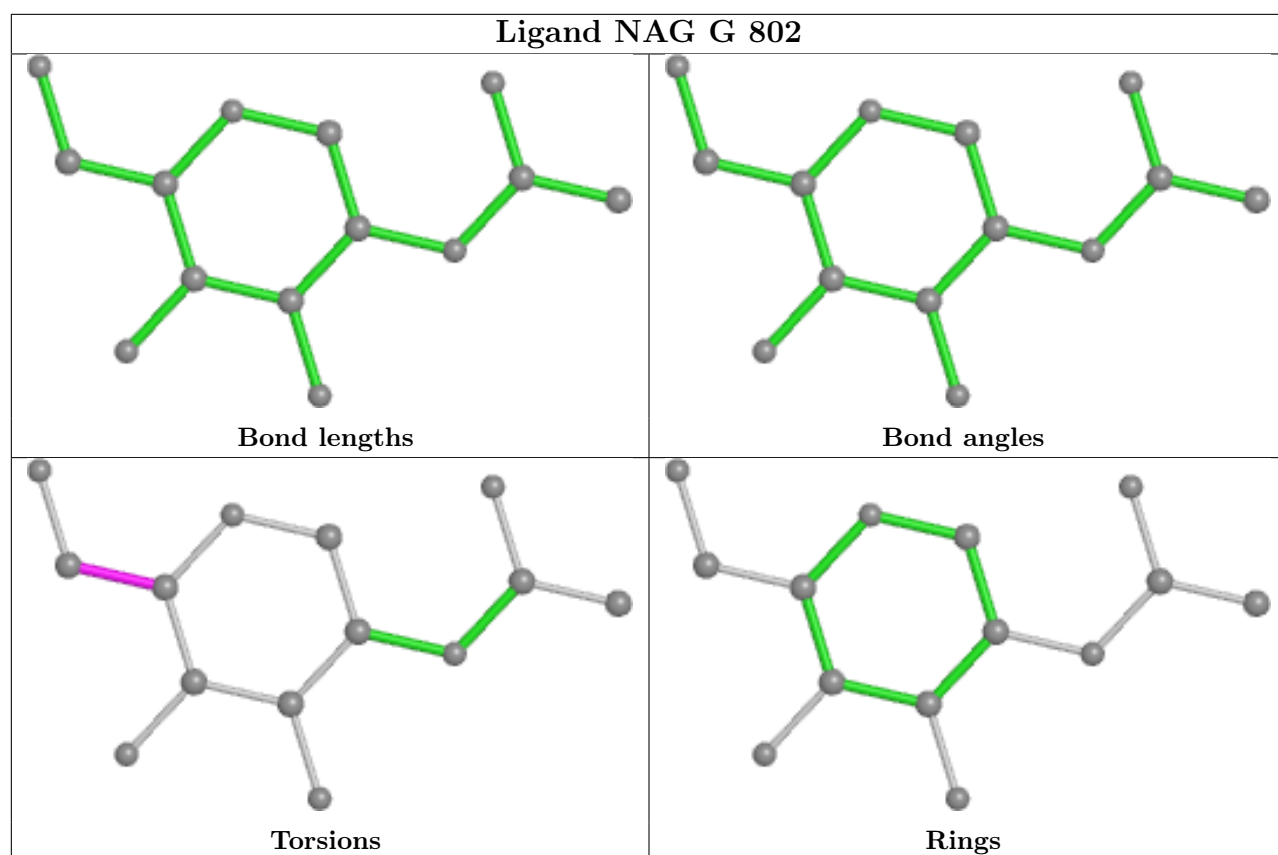
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

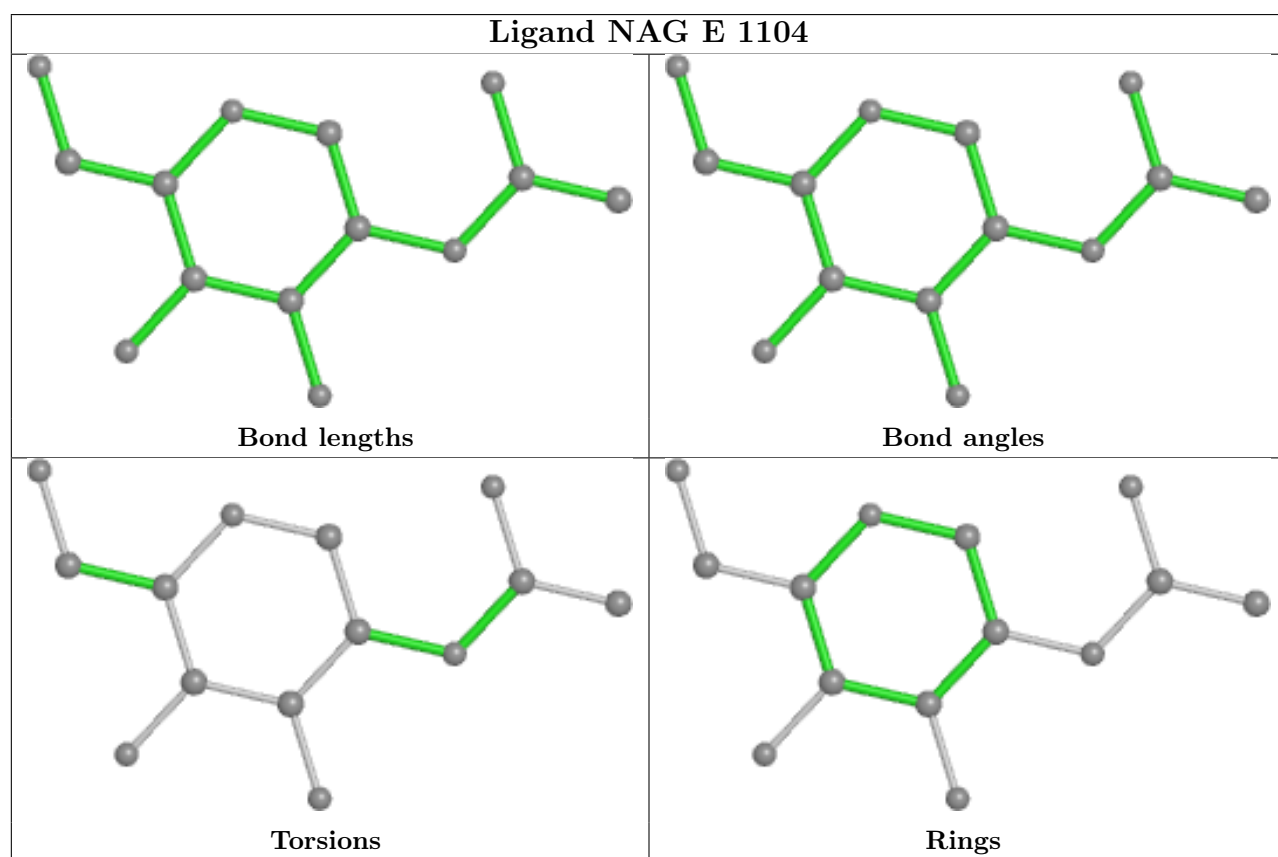
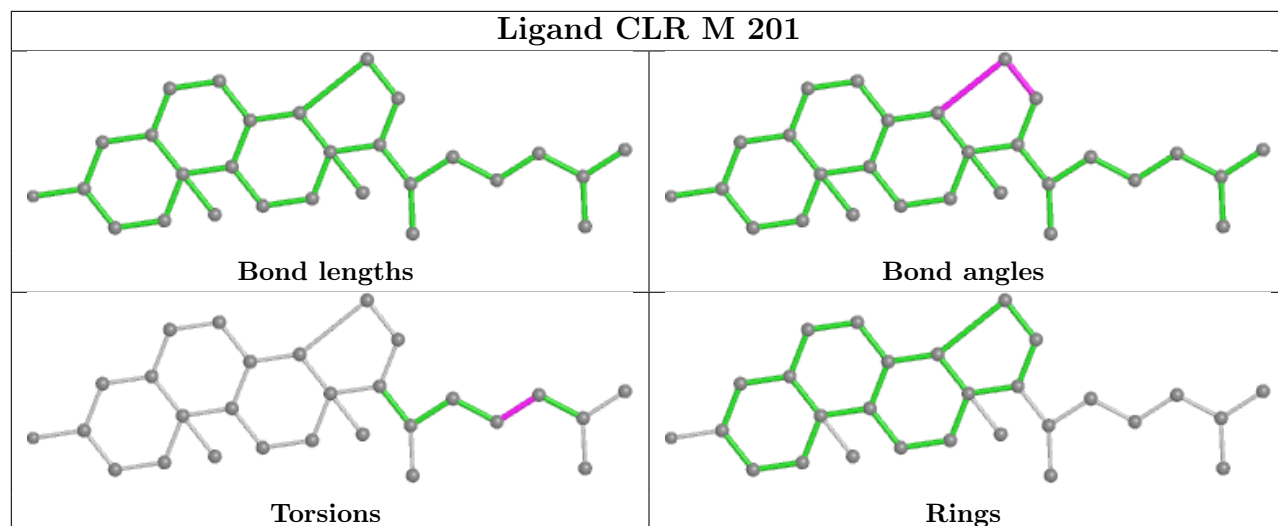


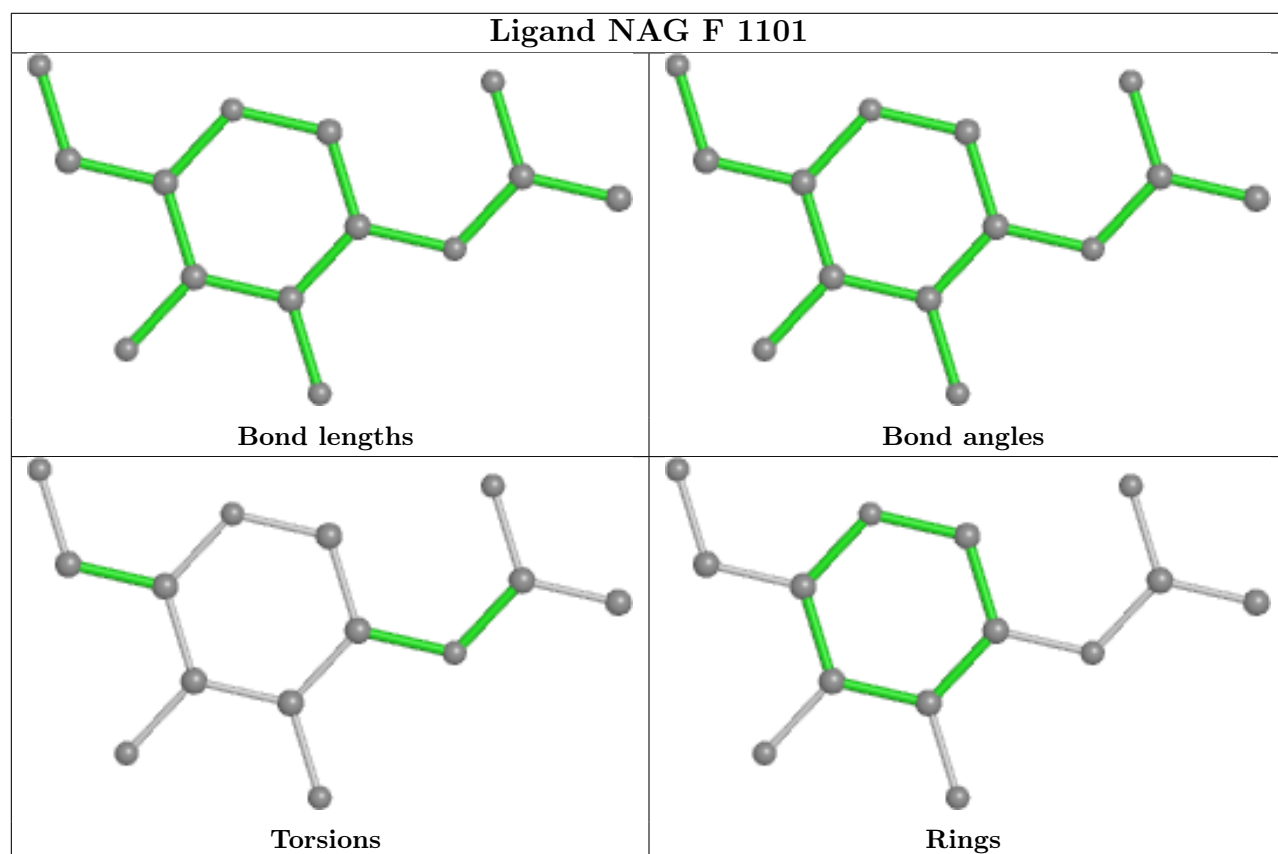
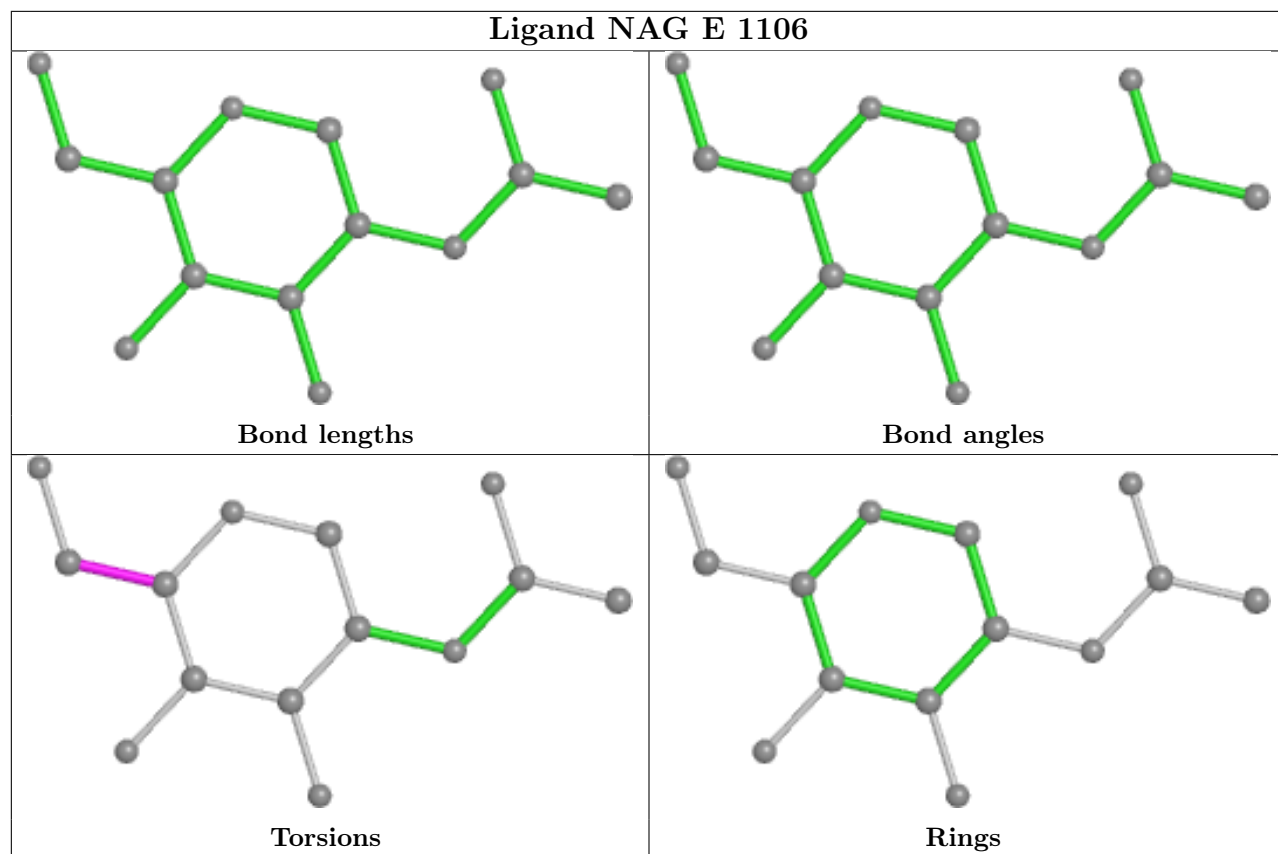


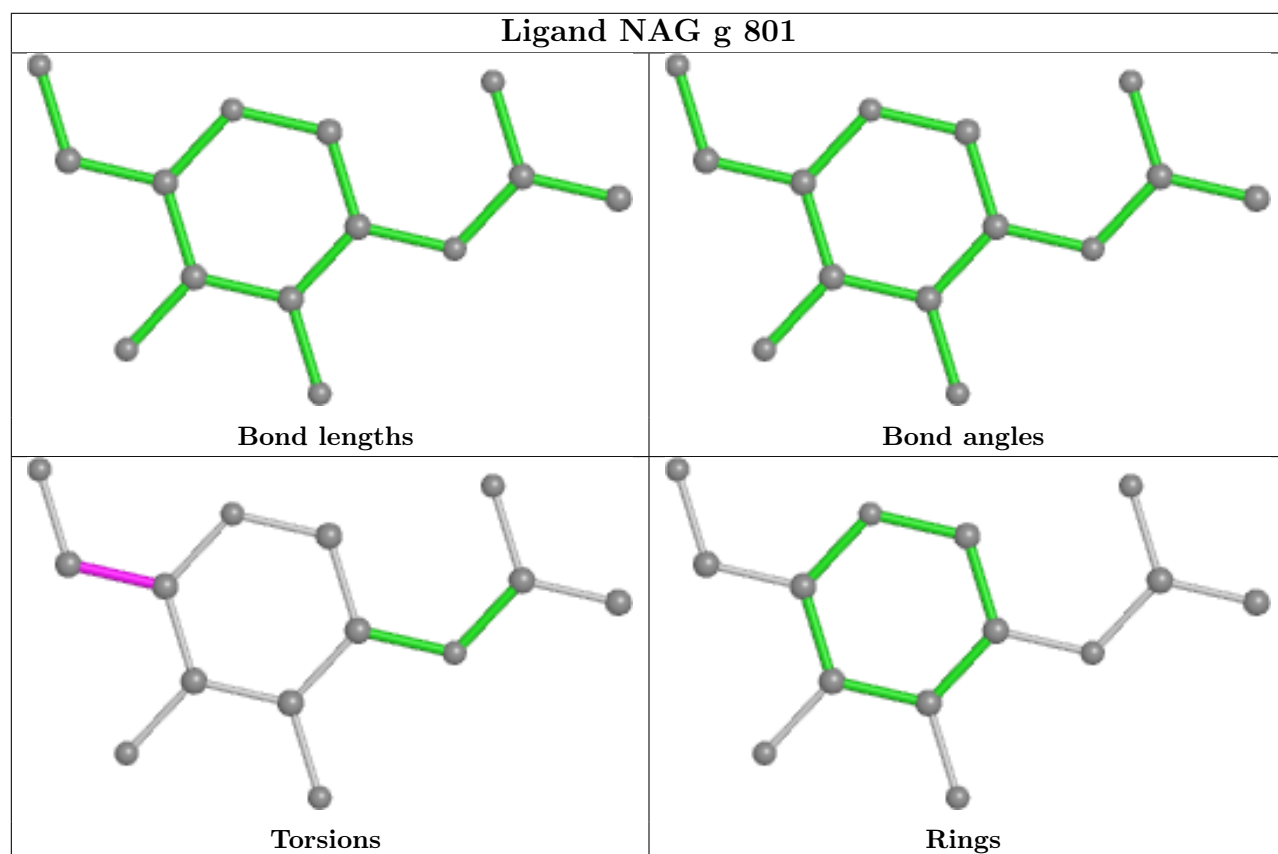
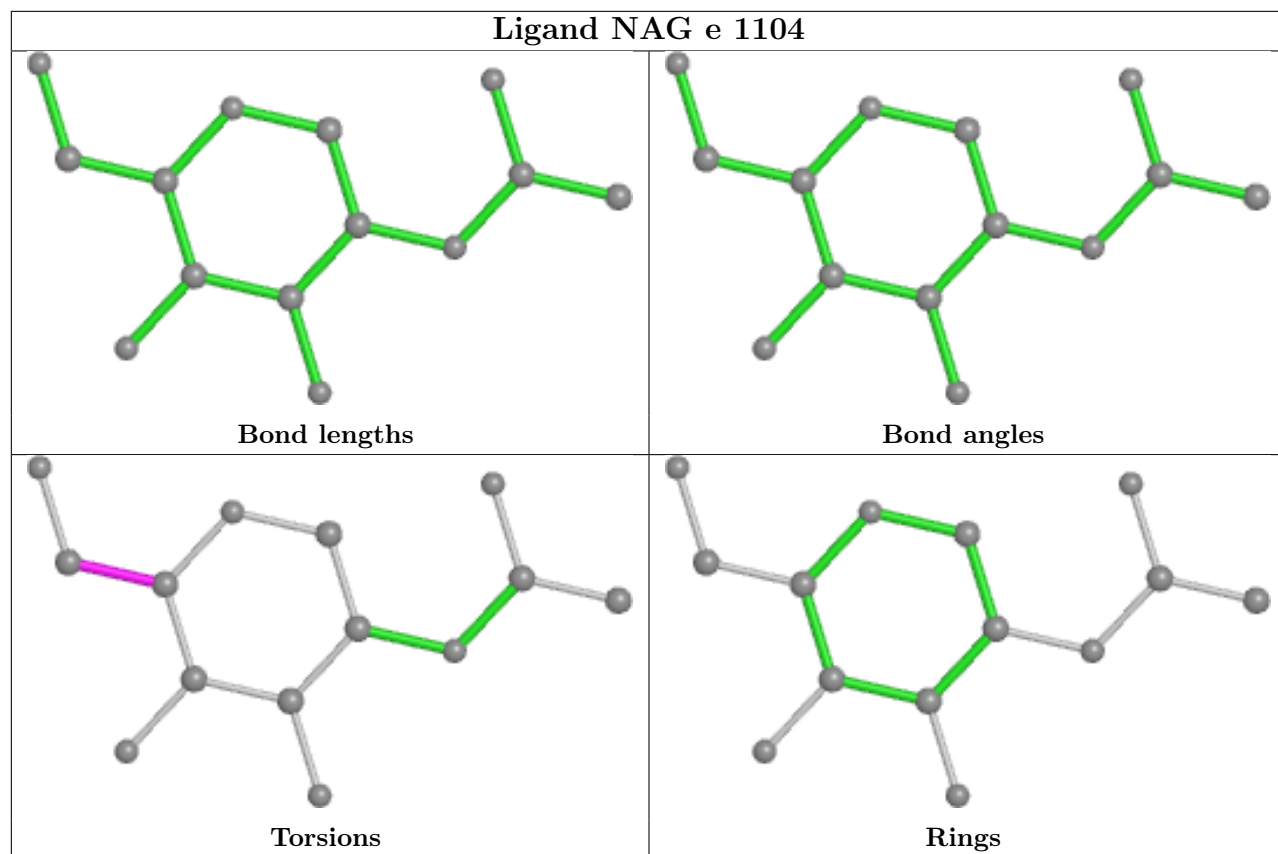


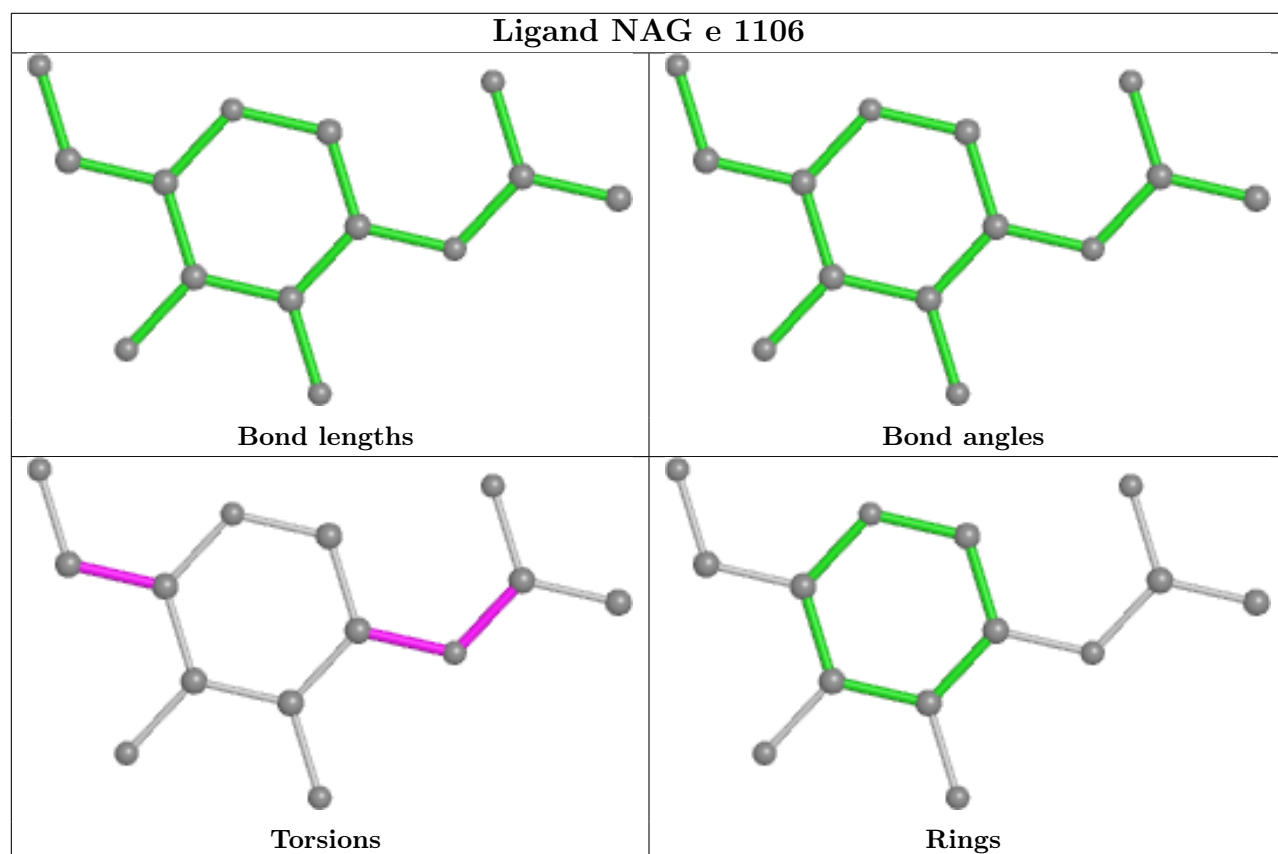
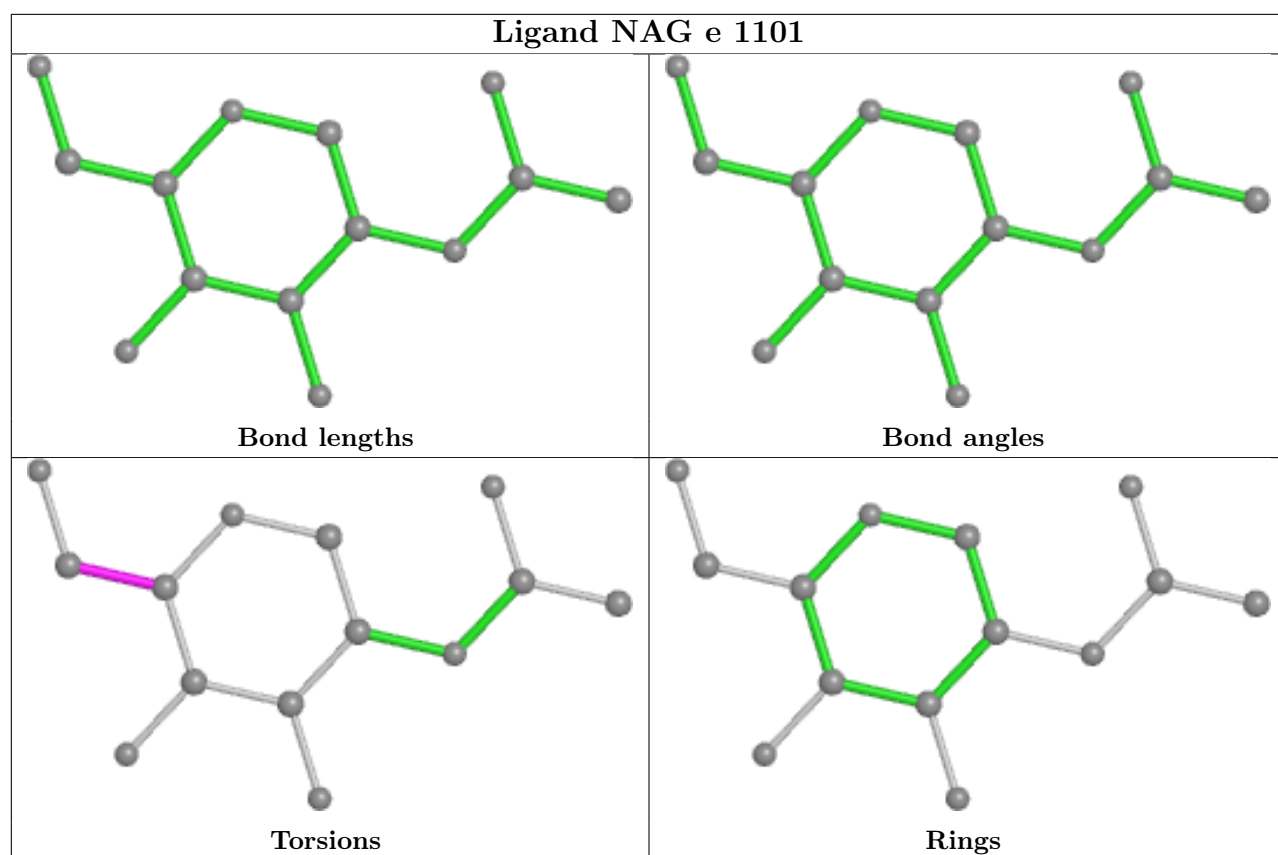


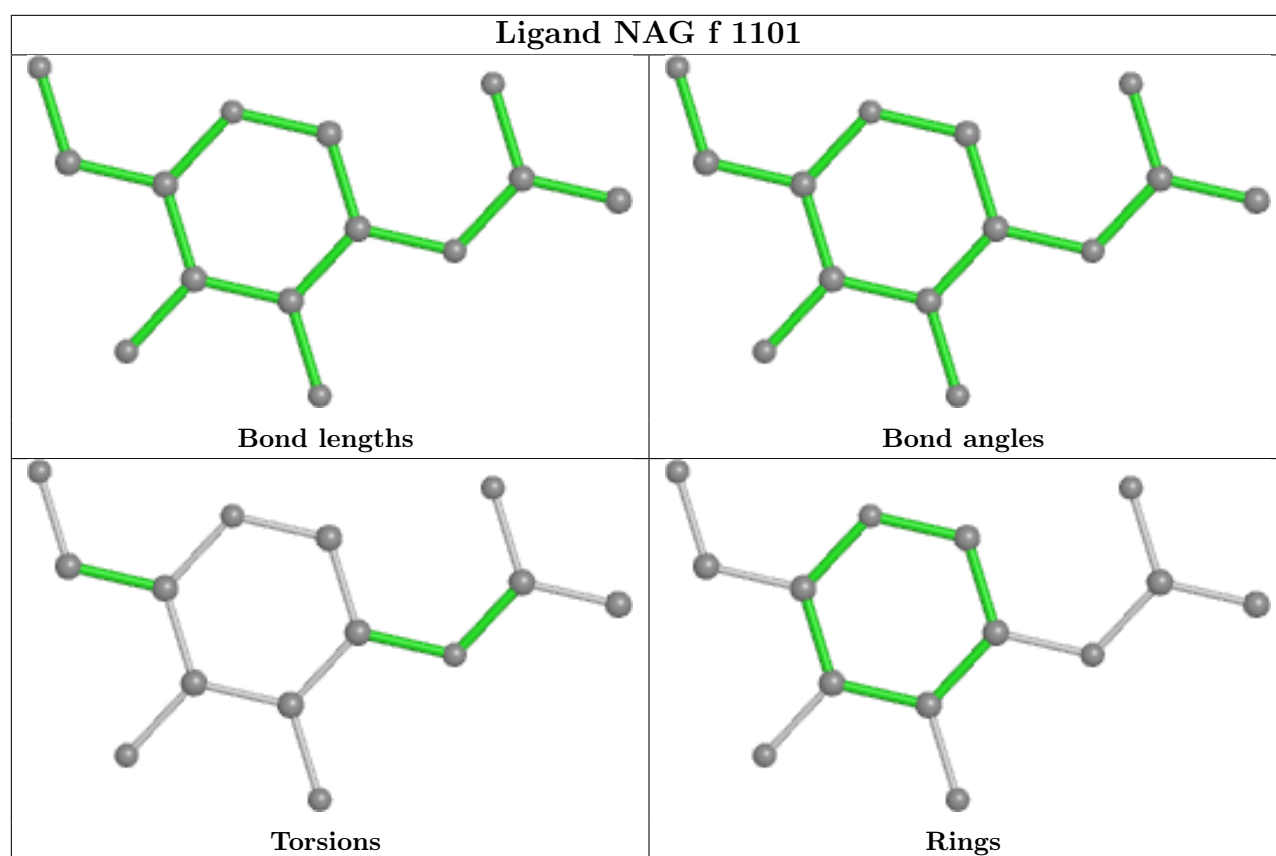
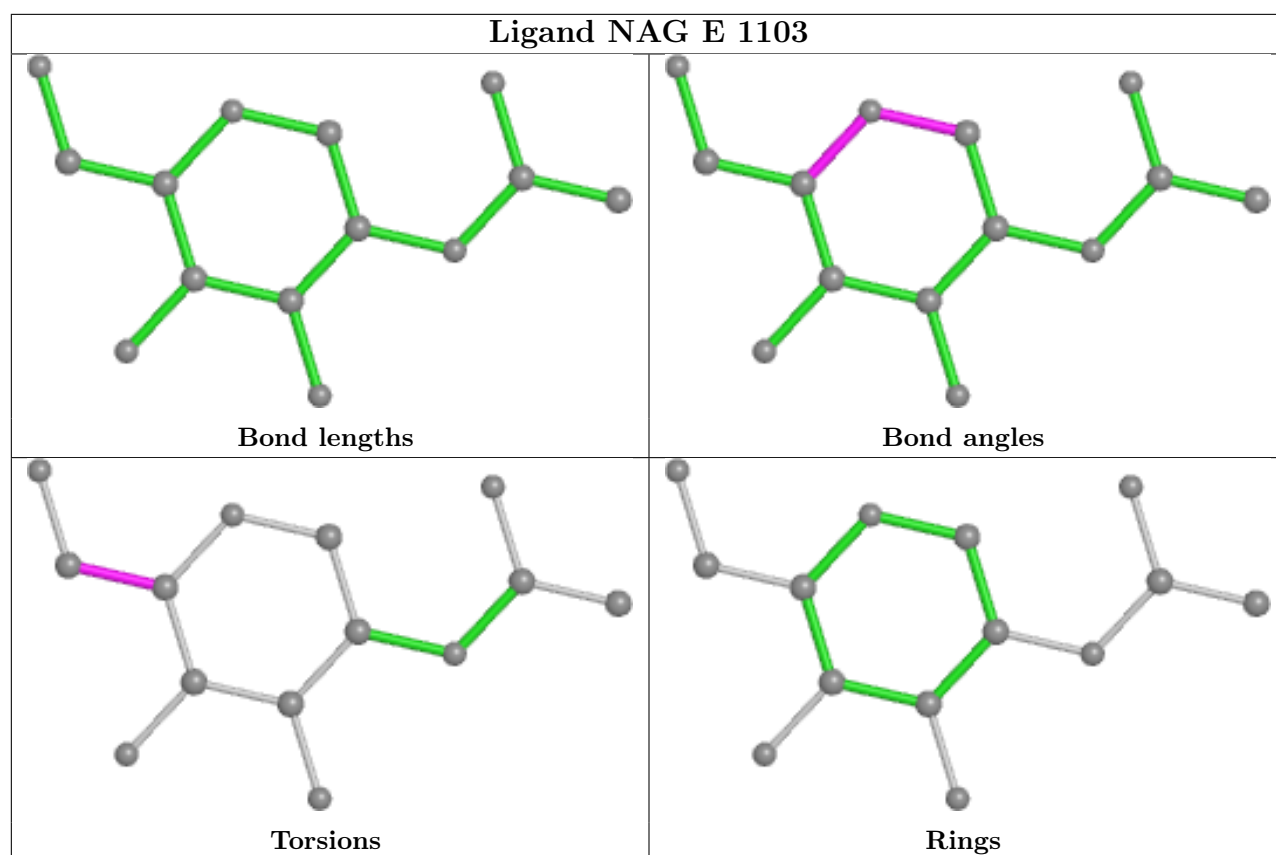


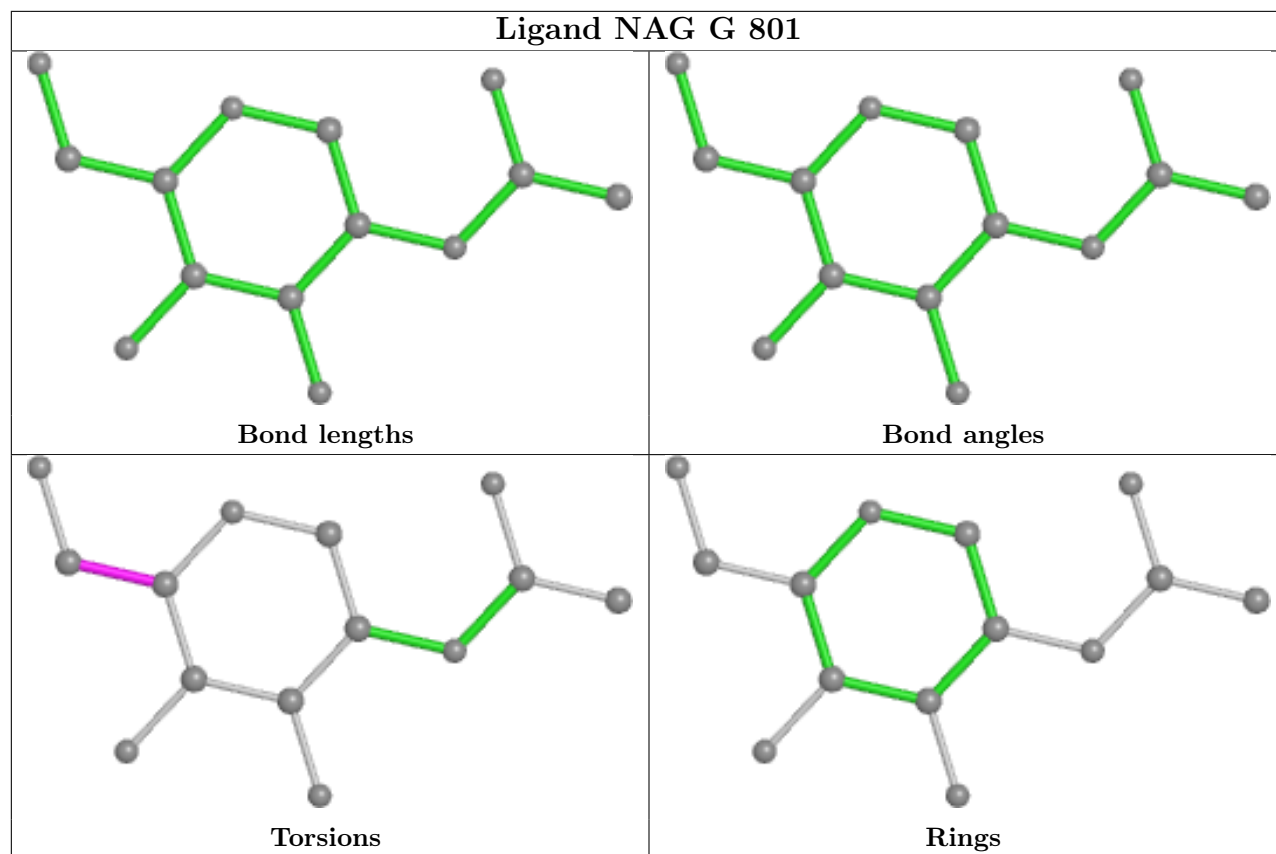












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

There are no chain breaks in this entry.

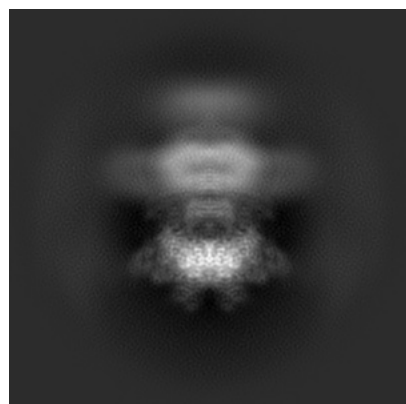
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-64017. These allow visual inspection of the internal detail of the map and identification of artifacts.

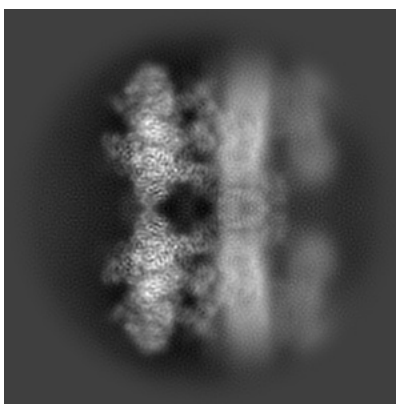
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

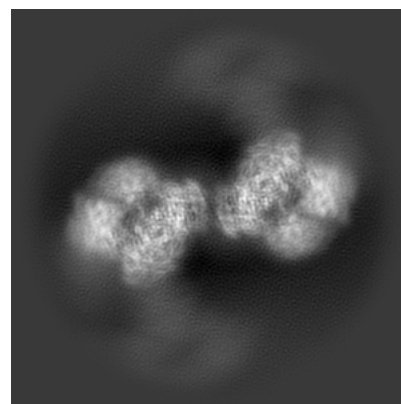
#### 6.1.1 Primary map



X

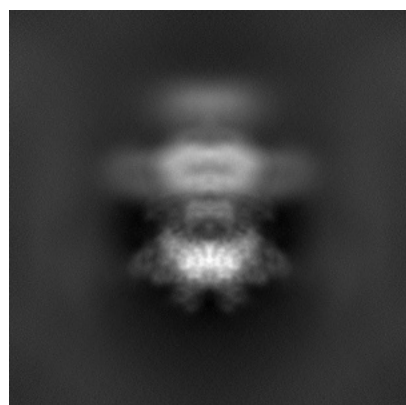


Y

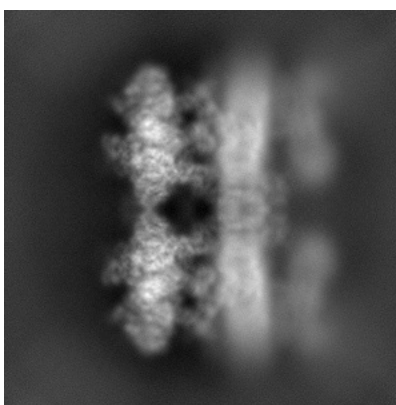


Z

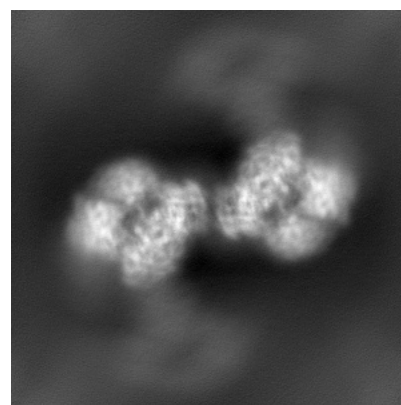
#### 6.1.2 Raw map



X



Y

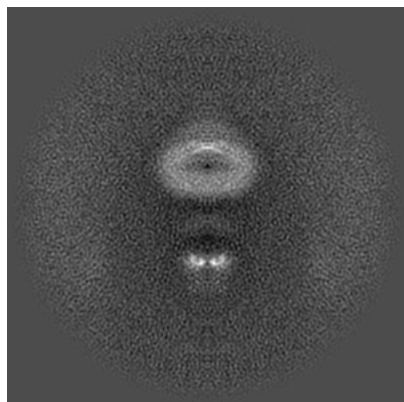


Z

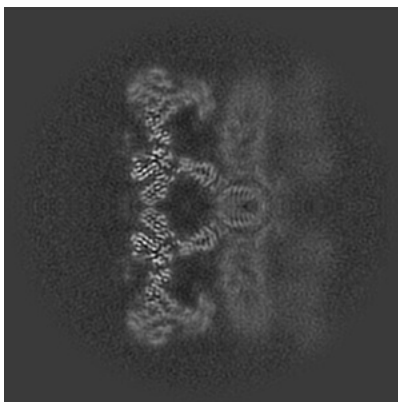
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

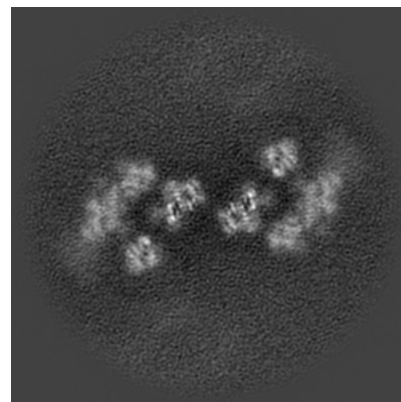
### 6.2.1 Primary map



X Index: 194

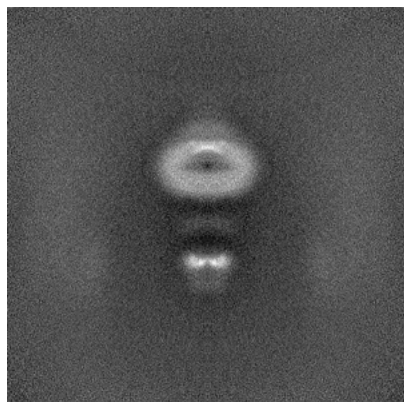


Y Index: 194

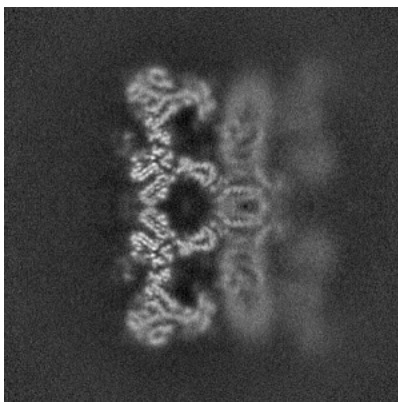


Z Index: 194

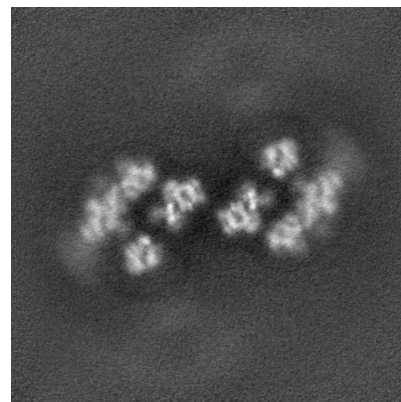
### 6.2.2 Raw map



X Index: 194



Y Index: 194

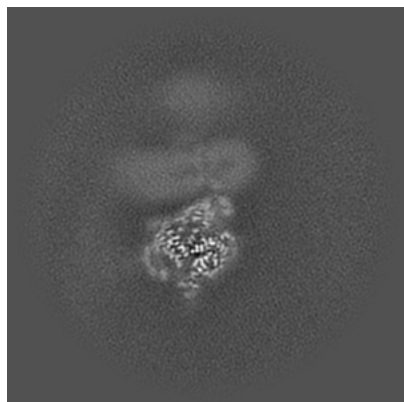


Z Index: 194

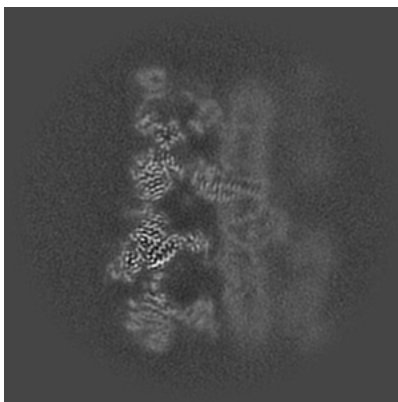
The images above show central slices of the map in three orthogonal directions.

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

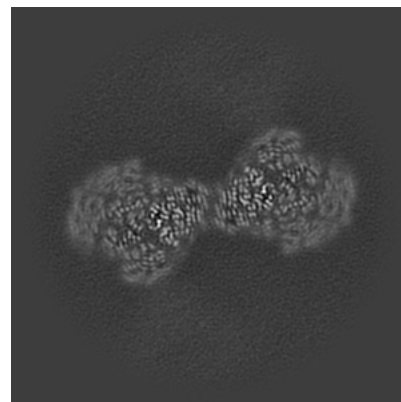
### 6.3.1 Primary map



X Index: 154

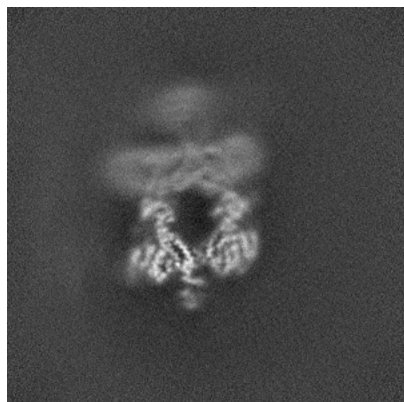


Y Index: 185

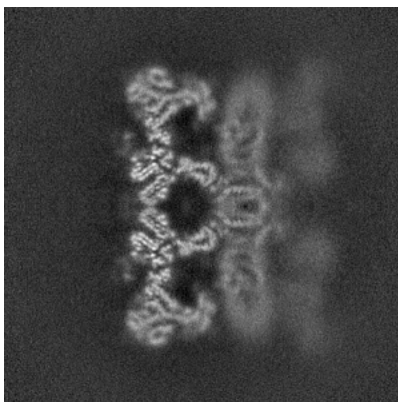


Z Index: 146

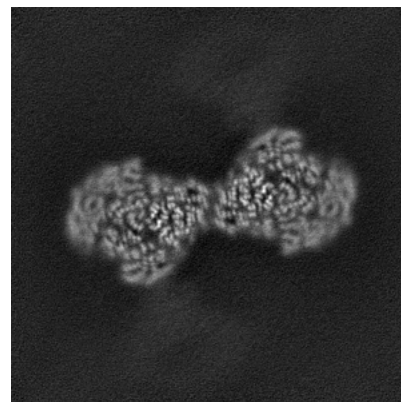
### 6.3.2 Raw map



X Index: 121



Y Index: 194

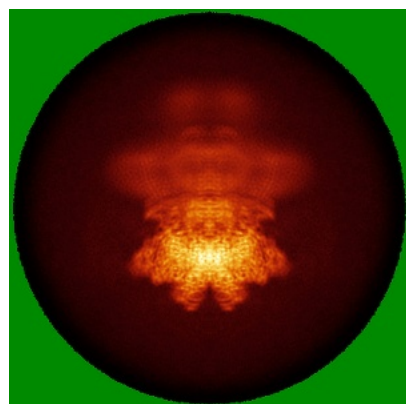


Z Index: 146

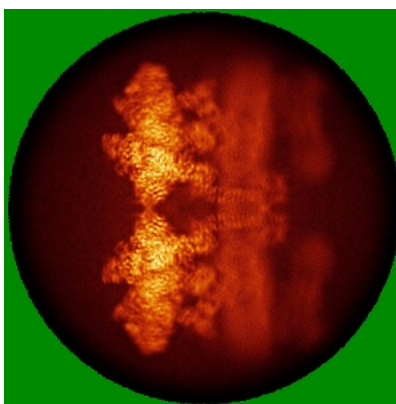
The images above show the largest variance slices of the map in three orthogonal directions.

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

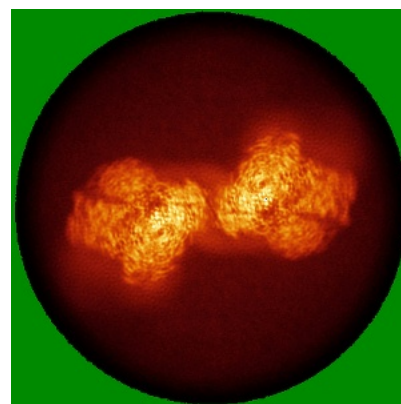
### 6.4.1 Primary map



X

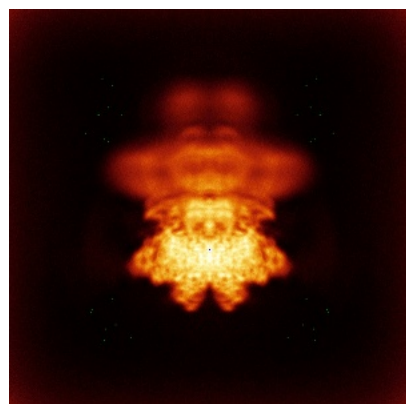


Y

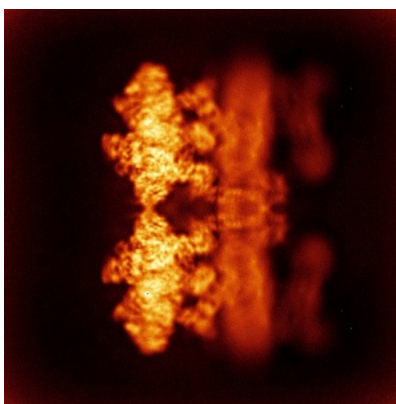


Z

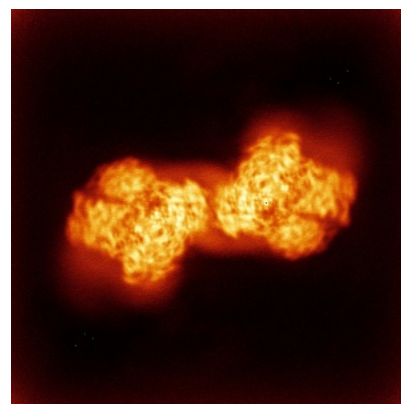
### 6.4.2 Raw map



X



Y

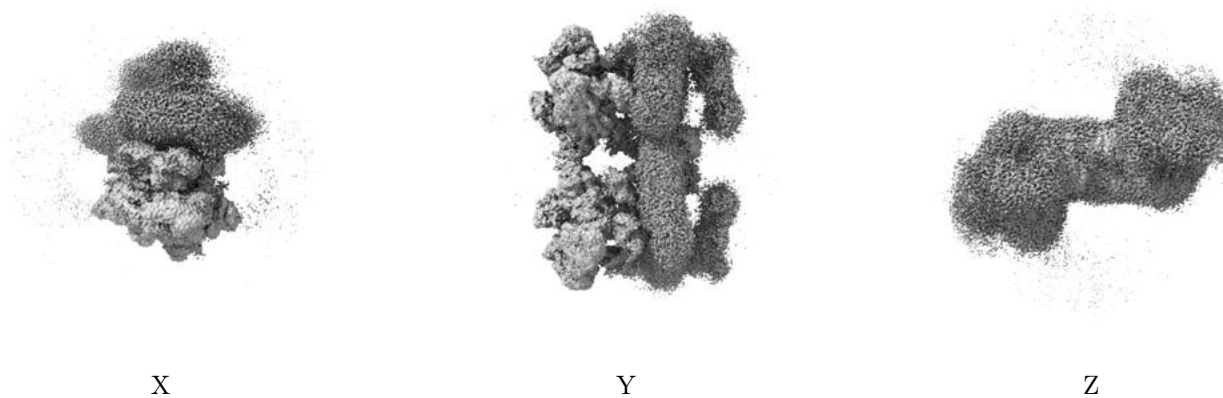


Z

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

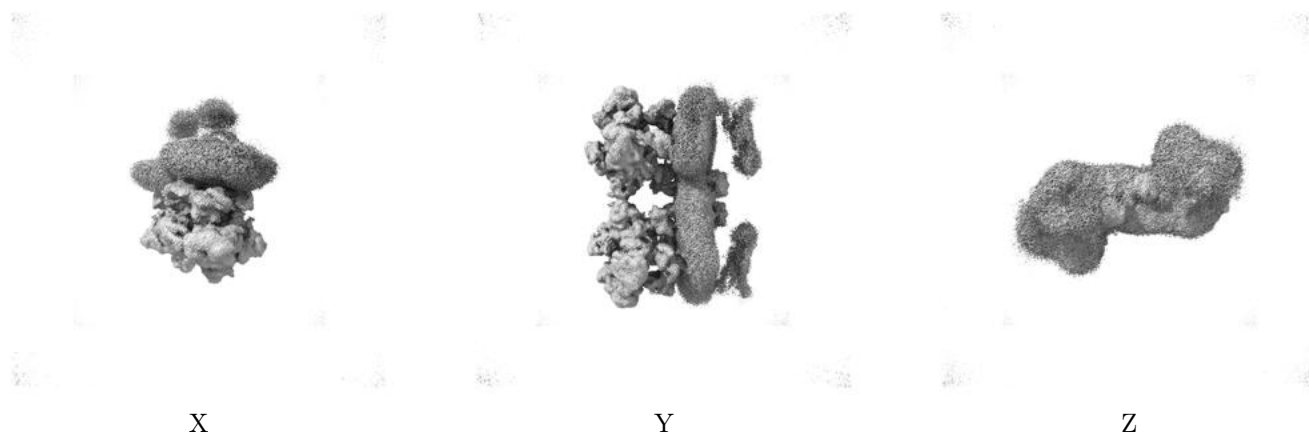
## 6.5 Orthogonal surface views [i](#)

### 6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.178. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map



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

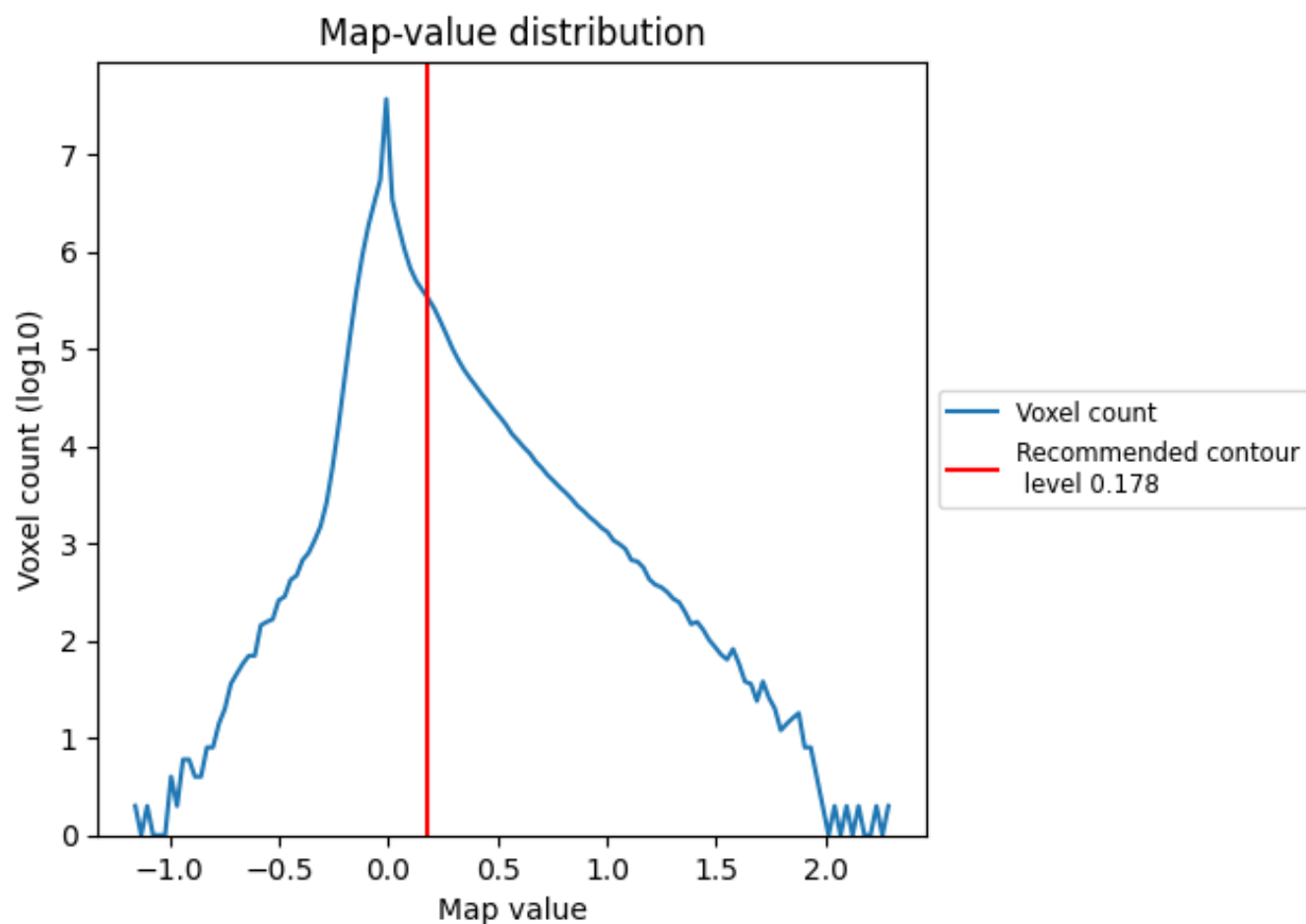
## 6.6 Mask visualisation [i](#)

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

## 7 Map analysis [i](#)

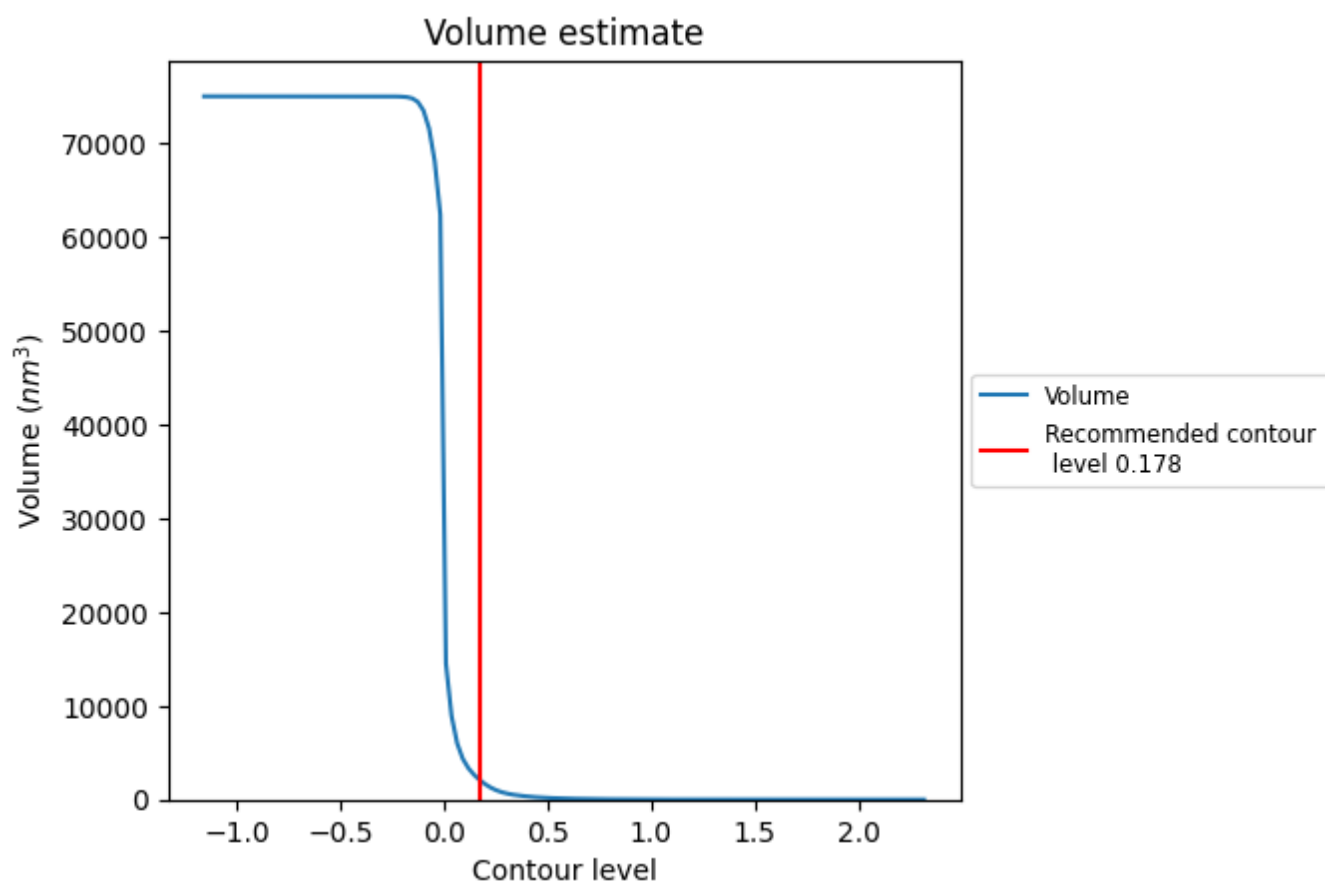
This section contains the results of statistical analysis of the map.

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



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

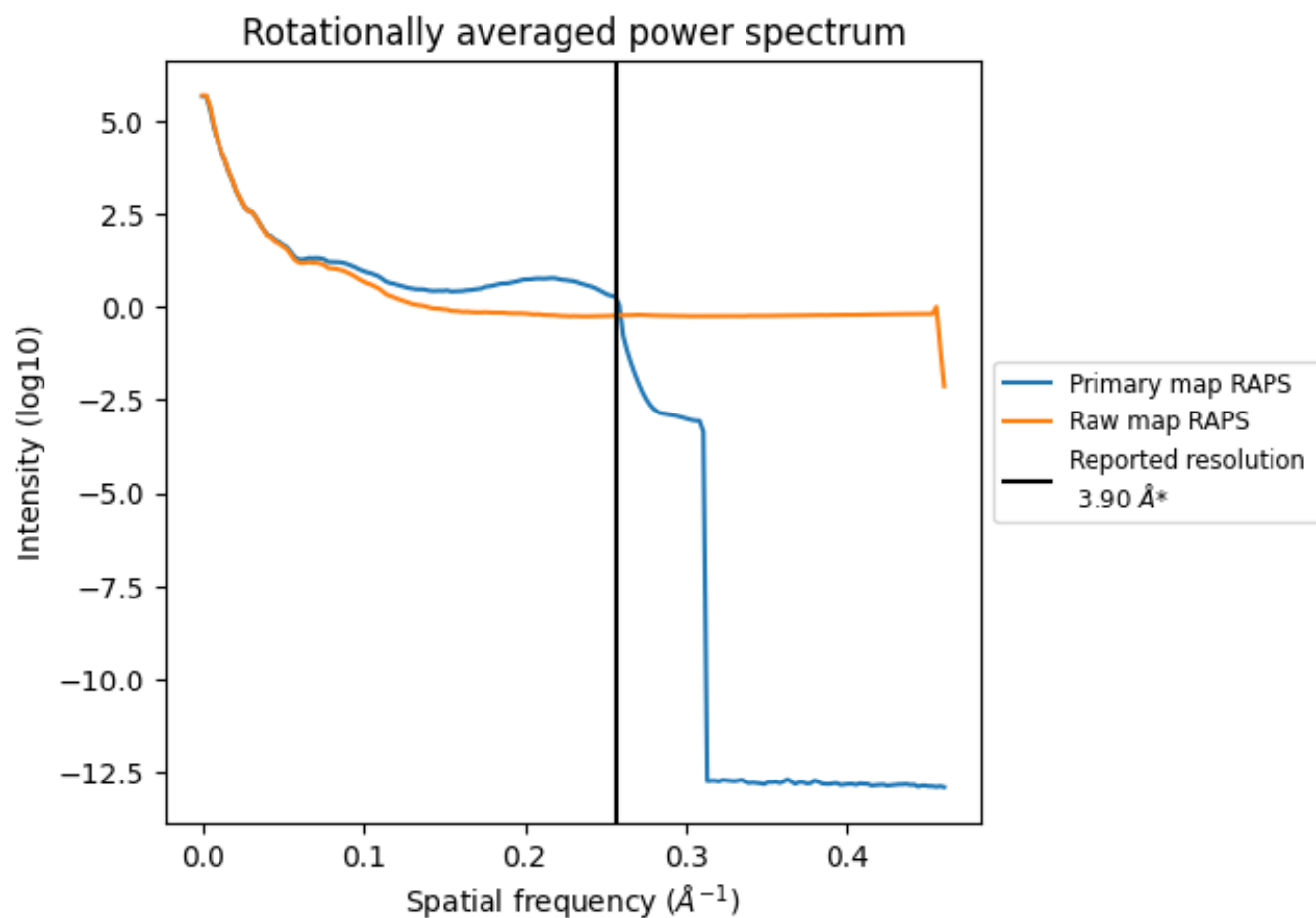
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is  $1998 \text{ nm}^3$ ; this corresponds to an approximate mass of 1805 kDa.

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

### 7.3 Rotationally averaged power spectrum ⓘ

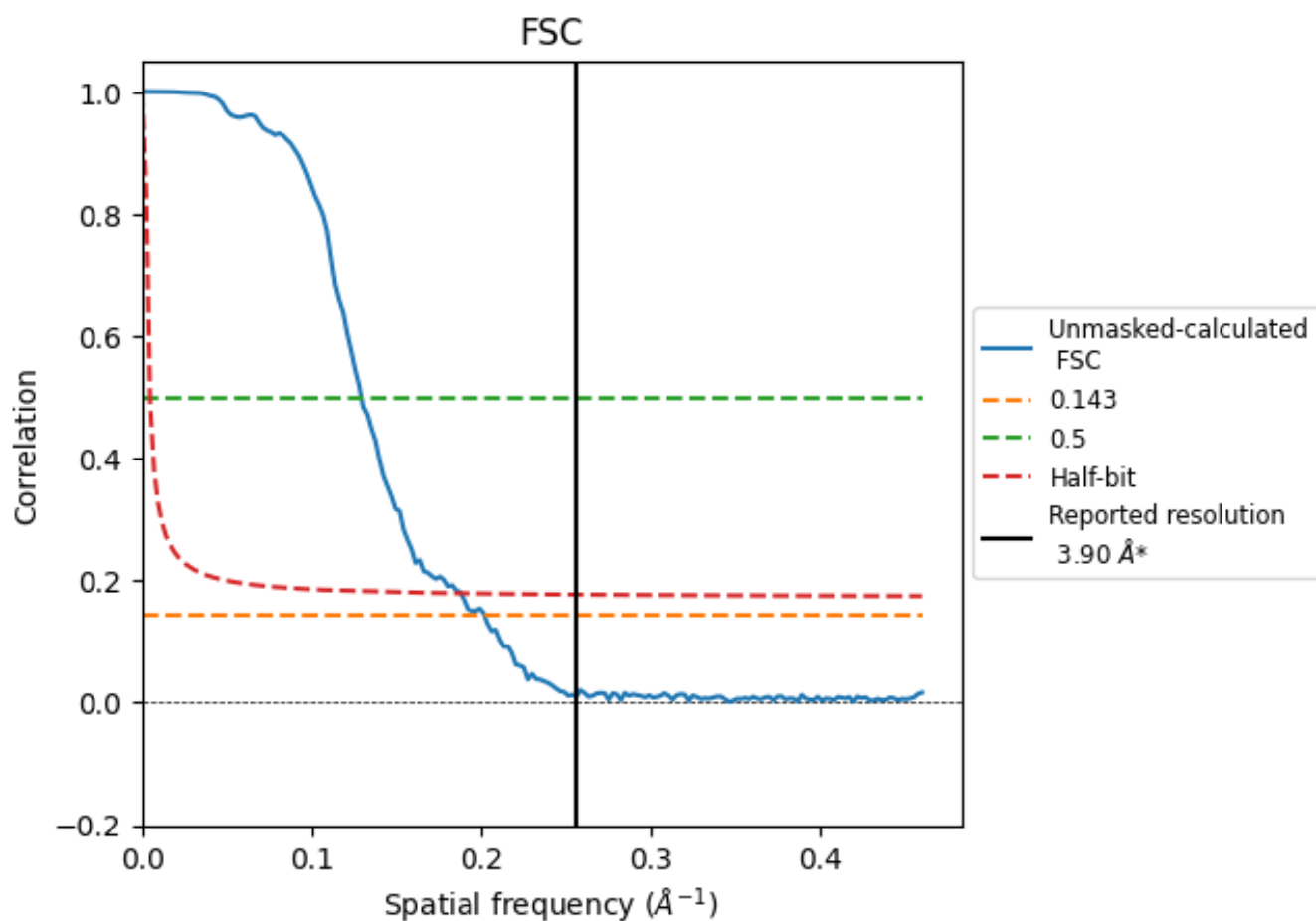


\*Reported resolution corresponds to spatial frequency of 0.256 Å<sup>-1</sup>

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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of 0.256  $\text{\AA}^{-1}$

## 8.2 Resolution estimates [i](#)

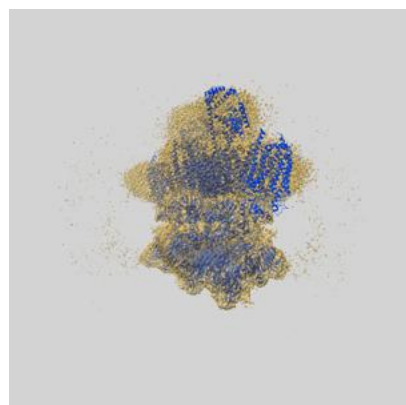
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 3.90                               | -    | -        |
| Author-provided FSC curve | -                                  | -    | -        |
| Unmasked-calculated*      | 4.95                               | 7.73 | 5.33     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.95 differs from the reported value 3.9 by more than 10 %

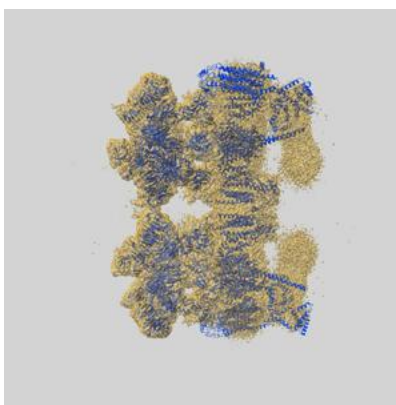
## 9 Map-model fit [i](#)

This section contains information regarding the fit between EMDB map EMD-64017 and PDB model 9UBW. Per-residue inclusion information can be found in section [3](#) on page [14](#).

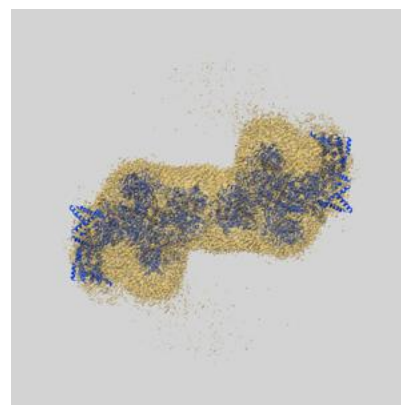
### 9.1 Map-model overlay [i](#)



X



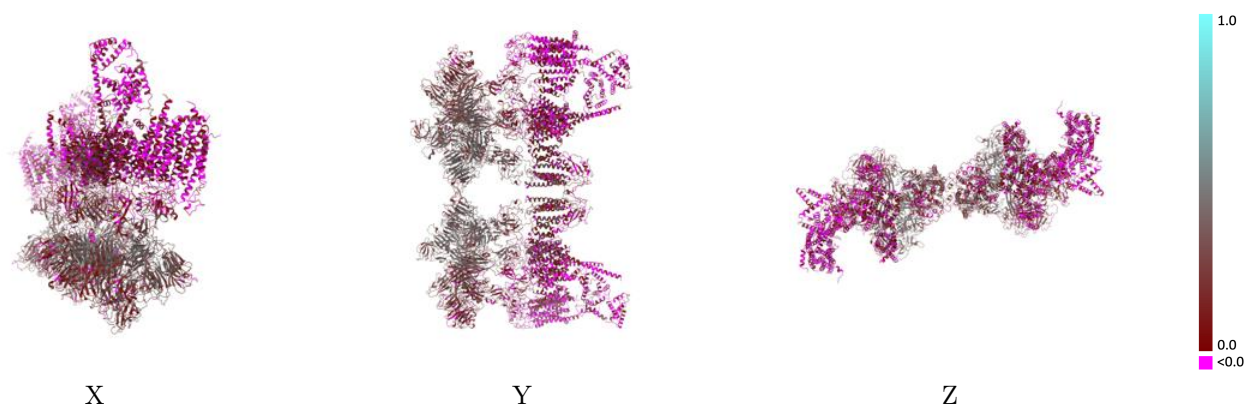
Y



Z

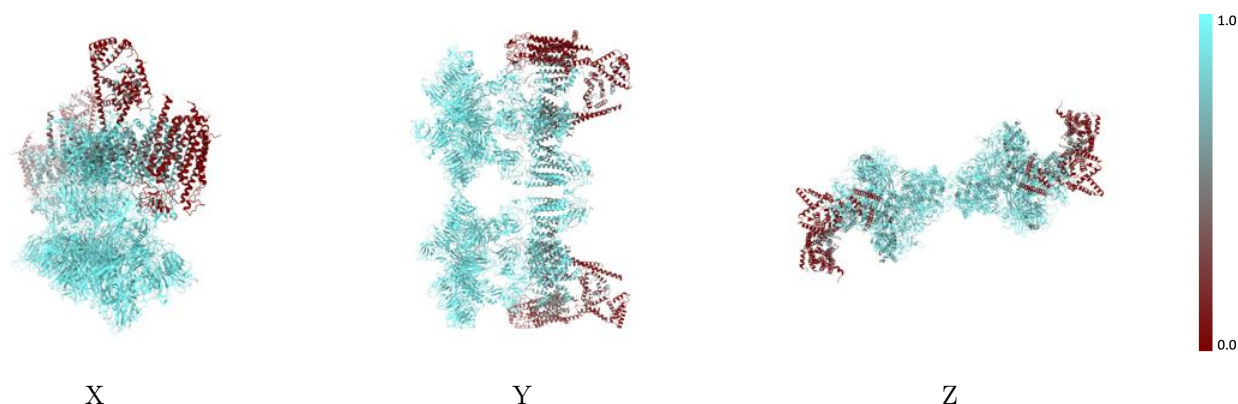
The images above show the 3D surface view of the map at the recommended contour level 0.178 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



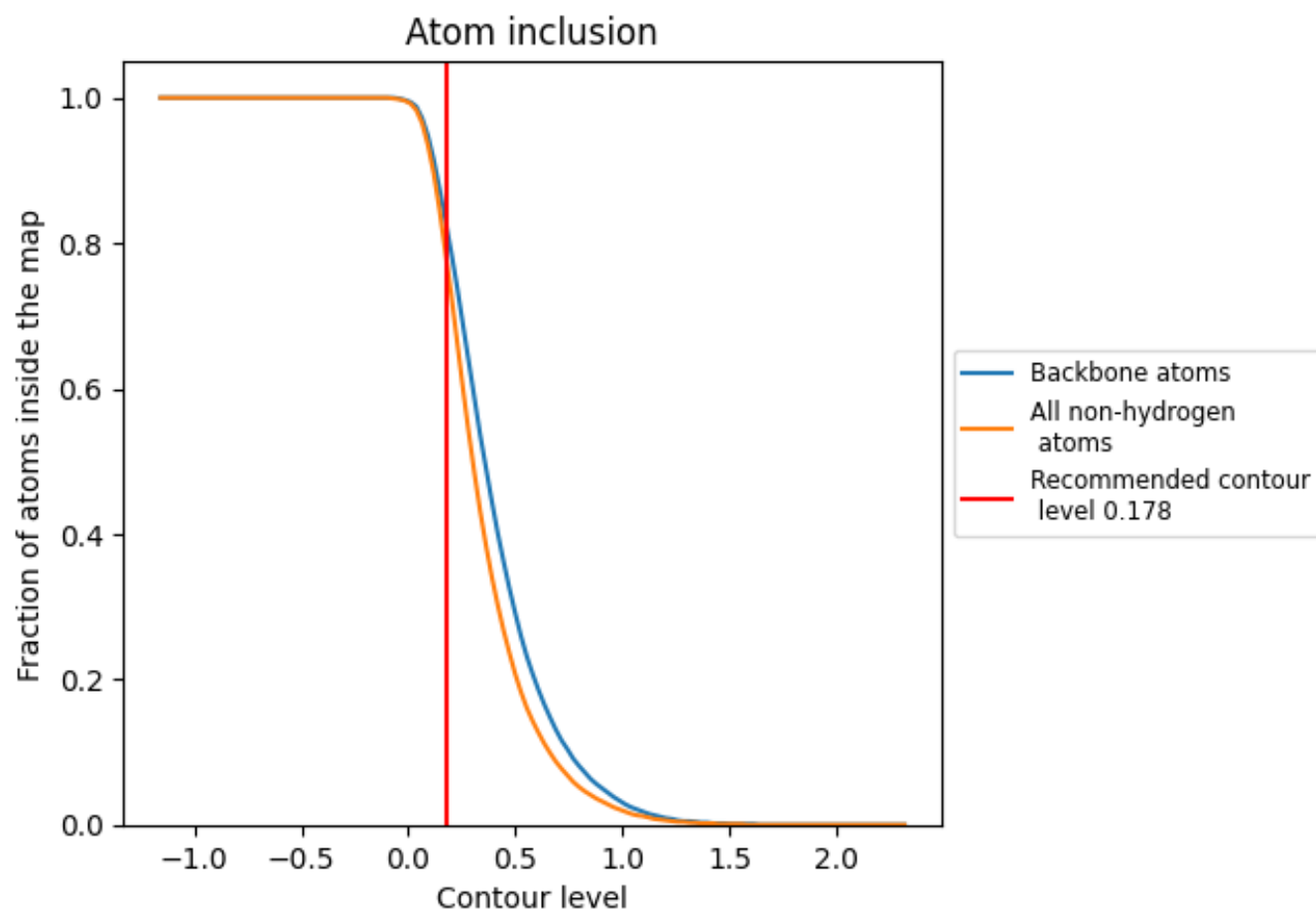
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.178).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 82% of all backbone atoms, 78% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.178) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.7780   |  0.2040   |
| A     |  0.7770   |  0.0600   |
| B     |  0.7130   |  0.0730   |
| C     |  0.6940   |  0.0820   |
| D     |  0.7710   |  0.1090   |
| E     |  0.9320   |  0.3480   |
| F     |  0.9200   |  0.3330   |
| G     |  0.8940   |  0.2060   |
| H     |  0.9100   |  0.2200   |
| I     |  0.2370   |  0.0070   |
| J     |  0.8020   |  0.1080   |
| K     |  0.0920   |  0.0220   |
| L     |  0.1410   |  -0.0110  |
| M     |  0.8800   |  0.2500   |
| N     |  0.9570  |  0.2070  |
| O     |  0.9280 |  0.3930 |
| P     |  0.9740 |  0.3840 |
| Q     |  0.8720 |  0.2650 |
| R     |  0.6070 |  0.1730 |
| S     |  0.6920 |  0.1060 |
| T     |  0.8720 |  0.2540 |
| U     |  0.9740 |  0.2440 |
| V     |  0.7950 |  0.1400 |
| W     |  0.7500 |  0.1200 |
| X     |  0.8850 |  0.2270 |
| Y     |  0.9280 |  0.3830 |
| Z     |  0.9740 |  0.3980 |
| a     |  0.7740 |  0.0610 |
| b     |  0.7100 |  0.0720 |
| c     |  0.6940 |  0.0860 |
| d     |  0.7690 |  0.1100 |
| e     |  0.9320 |  0.3490 |
| f     |  0.9220 |  0.3330 |
| g     |  0.8950 |  0.2040 |
| h     |  0.9100 |  0.2210 |



*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion                                                                           | Q-score                                                                                   |
|-------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| i     |  0.2360 |  0.0000  |
| j     |  0.7970 |  0.1060  |
| k     |  0.0930 |  0.0160  |
| l     |  0.1430 |  -0.0090 |
| m     |  0.8780 |  0.2480  |
| n     |  0.9570 |  0.2020  |
| o     |  0.8720 |  0.2740  |
| p     |  0.6430 |  0.2060  |
| q     |  0.7440 |  0.1460  |
| r     |  0.8720 |  0.2730  |
| s     |  0.9490 |  0.2420  |
| t     |  0.8190 |  0.1450  |
| u     |  0.8210 |  0.1670  |
| v     |  0.8850 |  0.2350  |