



## Full wwPDB EM Validation Report ⓘ

Sep 24, 2025 – 05:18 pm BST

PDB ID : 6TMG / pdb\_00006tmg  
EMDB ID : EMD-10520  
Title : Cryo-EM structure of Toxoplasma gondii mitochondrial ATP synthase dimer, membrane region model  
Authors : Muhleip, A.; Kock Flygaard, R.; Amunts, A.  
Deposited on : 2019-12-04  
Resolution : 2.80 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:

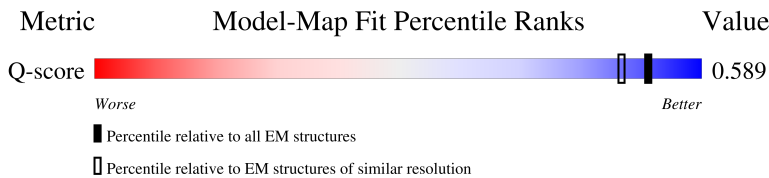
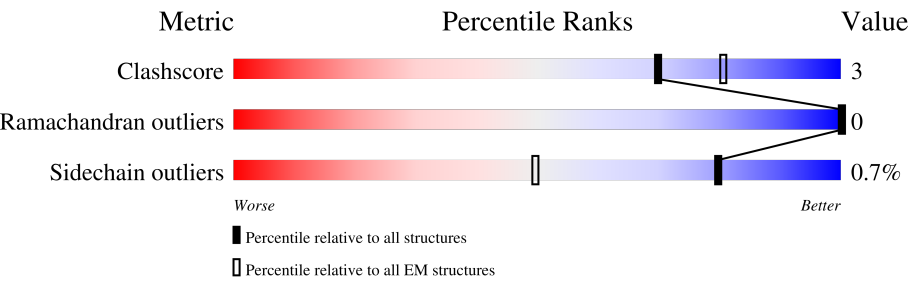
EMDB validation analysis : 0.0.1.dev129  
Mogul : 1.8.4, CSD as541be (2020)  
MolProbity : 4-5-2 with Phenix2.0  
buster-report : 1.1.7 (2018)  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
EM percentile statistics : 202505.v01 (Using data in the EMDB archive 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) : 2.46

# 1 Overall quality at a glance i

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

The reported resolution of this entry is 2.80 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.



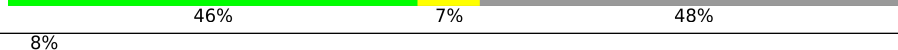
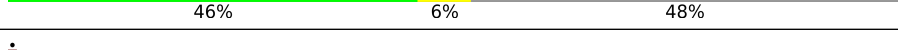
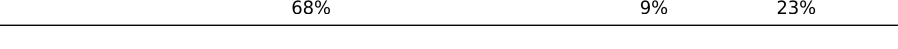
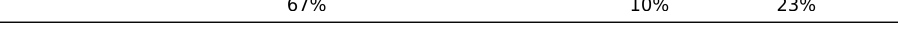
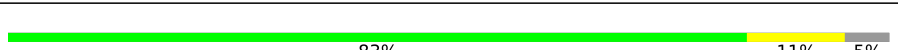
| Metric                | Whole archive<br>(#Entries) | EM structures<br>(#Entries) | Similar EM resolution<br>(#Entries, resolution range(Å)) |
|-----------------------|-----------------------------|-----------------------------|----------------------------------------------------------|
| Clashscore            | 210492                      | 15764                       | -                                                        |
| Ramachandran outliers | 207382                      | 16835                       | -                                                        |
| Sidechain outliers    | 206894                      | 16415                       | -                                                        |
| Q-score               | -                           | 25397                       | 11806 ( 2.30 - 3.30 )                                    |

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   | Q     | 134    | <div><div>7%</div><div>83%</div><div>16%</div><div>..</div></div> |
| 1   | q     | 134    | <div><div>6%</div><div>85%</div><div>13%</div><div>..</div></div> |
| 2   | I     | 236    | <div><div>35%</div><div>62%</div></div>                           |
| 2   | i     | 236    | <div><div>34%</div><div>62%</div></div>                           |

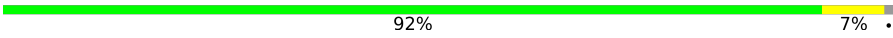
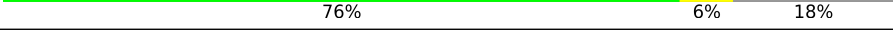
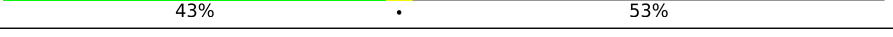
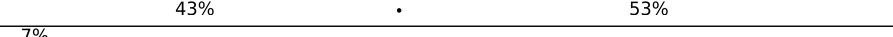
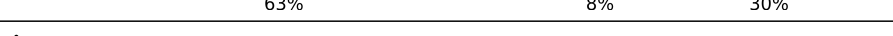
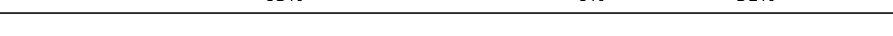
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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 3   | T     | 133    |    |
| 3   | t     | 133    |    |
| 4   | G     | 252    |    |
| 4   | g     | 252    |    |
| 5   | O     | 157    |    |
| 5   | o     | 157    |    |
| 6   | K     | 224    |    |
| 6   | k     | 224    |    |
| 7   | J     | 229    |    |
| 7   | j     | 229    |    |
| 8   | S     | 128    |    |
| 8   | s     | 128    |  |
| 9   | U     | 126    |  |
| 9   | u     | 126    |  |
| 10  | H     | 239    |  |
| 10  | h     | 239    |  |
| 11  | E     | 325    |  |
| 11  | e     | 325    |  |
| 12  | X     | 83     |  |
| 12  | x     | 83     |  |
| 13  | B     | 571    |  |
| 13  | b     | 571    |  |
| 14  | R     | 134    |  |
| 14  | r     | 134    |  |
| 15  | P     | 138    |  |

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| Mol | Chain | Length | Quality of chain                                                                     |
|-----|-------|--------|--------------------------------------------------------------------------------------|
| 15  | p     | 138    |    |
| 16  | V     | 111    |    |
| 16  | v     | 111    |    |
| 17  | L     | 208    |    |
| 17  | l     | 208    |    |
| 18  | C     | 398    |    |
| 18  | c     | 398    |    |
| 19  | D     | 310    |    |
| 19  | d     | 310    |    |
| 20  | M     | 205    |    |
| 20  | m     | 205    |    |
| 21  | N     | 166    |   |
| 21  | n     | 166    |  |
| 22  | F     | 267    |  |
| 22  | f     | 267    |  |
| 23  | W     | 106    |  |
| 23  | w     | 106    |  |
| 24  | A     | 536    |  |
| 24  | a     | 536    |  |

## 2 Entry composition

There are 28 unique types of molecules in this entry. The entry contains 121066 atoms, of which 60518 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 ATPTG11.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 1   | q     | 133      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2119  | 674 | 1044 | 194 | 202 | 5 |         |       |
| 1   | Q     | 133      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2119  | 674 | 1044 | 194 | 202 | 5 |         |       |

- Molecule 2 is a protein called ATPTG7.

| Mol | Chain | Residues | Atoms |     |     |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|----|---------|-------|
| 2   | i     | 90       | Total | C   | H   | N   | O   | S  | 0       | 0     |
|     |       |          | 1386  | 433 | 678 | 136 | 129 | 10 |         |       |
| 2   | I     | 90       | Total | C   | H   | N   | O   | S  | 0       | 0     |
|     |       |          | 1386  | 433 | 678 | 136 | 129 | 10 |         |       |

- Molecule 3 is a protein called ATPTG14.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 3   | t     | 92       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1439  | 463 | 716 | 127 | 129 | 4 |         |       |
| 3   | T     | 92       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1439  | 463 | 716 | 127 | 129 | 4 |         |       |

- Molecule 4 is a protein called ATPTG5.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 4   | g     | 112      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1732  | 548 | 856 | 152 | 168 | 8 |         |       |
| 4   | G     | 112      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1732  | 548 | 856 | 152 | 168 | 8 |         |       |

There are 8 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| g     | 51      | VAL      | PHE    | conflict | UNP S7WD71 |

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| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| g     | 73      | CYS      | SER    | conflict | UNP S7WD71 |
| g     | 110     | LYS      | GLU    | conflict | UNP S7WD71 |
| g     | 233     | THR      | MET    | conflict | UNP S7WD71 |
| G     | 51      | VAL      | PHE    | conflict | UNP S7WD71 |
| G     | 73      | CYS      | SER    | conflict | UNP S7WD71 |
| G     | 110     | LYS      | GLU    | conflict | UNP S7WD71 |
| G     | 233     | THR      | MET    | conflict | UNP S7WD71 |

- Molecule 5 is a protein called subunit k.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 5   | o     | 149      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2415  | 786 | 1195 | 210 | 219 | 5 |         |       |
| 5   | O     | 149      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2415  | 786 | 1195 | 210 | 219 | 5 |         |       |

- Molecule 6 is a protein called subunit a.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 6   | k     | 117      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1904  | 645 | 952 | 145 | 155 | 7 |         |       |
| 6   | K     | 117      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1904  | 645 | 952 | 145 | 155 | 7 |         |       |

- Molecule 7 is a protein called subunit i/j.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 7   | j     | 176      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2981  | 1003 | 1469 | 261 | 244 | 4 |         |       |
| 7   | J     | 176      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2981  | 1003 | 1469 | 261 | 244 | 4 |         |       |

- Molecule 8 is a protein called ATPTG13.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 8   | s     | 95       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1570  | 526 | 770 | 130 | 142 | 2 |         |       |
| 8   | S     | 95       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1570  | 526 | 770 | 130 | 142 | 2 |         |       |

- Molecule 9 is a protein called ATPTG15.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 9   | u     | 94       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1492  | 482 | 741 | 132 | 133 | 4 |         |       |
| 9   | U     | 94       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1492  | 482 | 741 | 132 | 133 | 4 |         |       |

- Molecule 10 is a protein called ATPTG6.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 10  | h     | 226      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3589  | 1157 | 1741 | 334 | 348 | 9 |         |       |
| 10  | H     | 226      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 3589  | 1157 | 1741 | 334 | 348 | 9 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| h     | 89      | ASN      | HIS    | conflict | UNP A0A125YLR0 |
| H     | 89      | ASN      | HIS    | conflict | UNP A0A125YLR0 |

- Molecule 11 is a protein called ATPTG3.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 11  | e     | 140      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2179  | 719 | 1064 | 187 | 204 | 5 |         |       |
| 11  | E     | 140      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2179  | 719 | 1064 | 187 | 204 | 5 |         |       |

There are 8 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| e     | ?       | -        | LYS    | deletion | UNP A0A125YLR0 |
| e     | 63      | PRO      | SER    | conflict | UNP A0A125YLR0 |
| e     | 99      | LEU      | PRO    | conflict | UNP A0A125YLR0 |
| e     | 312     | ALA      | THR    | conflict | UNP A0A125YLR0 |
| E     | ?       | -        | LYS    | deletion | UNP A0A125YLR0 |
| E     | 63      | PRO      | SER    | conflict | UNP A0A125YLR0 |
| E     | 99      | LEU      | PRO    | conflict | UNP A0A125YLR0 |
| E     | 312     | ALA      | THR    | conflict | UNP A0A125YLR0 |

- Molecule 12 is a protein called ATPTG17.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 12  | x     | 82       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1298  | 420 | 639 | 116 | 120 | 3 |         |       |
| 12  | X     | 82       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1298  | 420 | 639 | 116 | 120 | 3 |         |       |

There are 14 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment        | Reference  |
|-------|---------|----------|--------|----------------|------------|
| x     | 77      | TRP      | -      | expression tag | UNP S7W180 |
| x     | 78      | MET      | -      | expression tag | UNP S7W180 |
| x     | 79      | PHE      | -      | expression tag | UNP S7W180 |
| x     | 80      | GLY      | -      | expression tag | UNP S7W180 |
| x     | 81      | ASN      | -      | expression tag | UNP S7W180 |
| x     | 82      | SER      | -      | expression tag | UNP S7W180 |
| x     | 83      | TYR      | -      | expression tag | UNP S7W180 |
| X     | 77      | TRP      | -      | expression tag | UNP S7W180 |
| X     | 78      | MET      | -      | expression tag | UNP S7W180 |
| X     | 79      | PHE      | -      | expression tag | UNP S7W180 |
| X     | 80      | GLY      | -      | expression tag | UNP S7W180 |
| X     | 81      | ASN      | -      | expression tag | UNP S7W180 |
| X     | 82      | SER      | -      | expression tag | UNP S7W180 |
| X     | 83      | TYR      | -      | expression tag | UNP S7W180 |

- Molecule 13 is a protein called subunit b.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 13  | b     | 253      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 4157  | 1374 | 2056 | 328 | 390 | 9 |         |       |
| 13  | B     | 253      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 4157  | 1374 | 2056 | 328 | 390 | 9 |         |       |

There are 4 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| b     | 50      | LEU      | SER    | conflict | UNP S7V2T0 |
| b     | 474     | THR      | ALA    | conflict | UNP S7V2T0 |
| B     | 50      | LEU      | SER    | conflict | UNP S7V2T0 |
| B     | 474     | THR      | ALA    | conflict | UNP S7V2T0 |

- Molecule 14 is a protein called ATPTG12.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 14  | r     | 90       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1485  | 470 | 750 | 128 | 133 | 4 |         |       |
| 14  | R     | 90       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1485  | 470 | 750 | 128 | 133 | 4 |         |       |

- Molecule 15 is a protein called ATPTG10.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 15  | p     | 108      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1711  | 553 | 847 | 148 | 157 | 6 |         |       |
| 15  | P     | 108      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1711  | 553 | 847 | 148 | 157 | 6 |         |       |

- Molecule 16 is a protein called subunit f.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 16  | v     | 110      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1801  | 590 | 888 | 170 | 148 | 5 |         |       |
| 16  | V     | 110      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1801  | 590 | 888 | 170 | 148 | 5 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| v     | 54      | ALA      | VAL    | conflict | UNP S7UQT7 |
| V     | 54      | ALA      | VAL    | conflict | UNP S7UQT7 |

- Molecule 17 is a protein called ATPTG8.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 17  | l     | 207      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 3273  | 1013 | 1647 | 298 | 305 | 10 |         |       |
| 17  | L     | 207      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 3273  | 1013 | 1647 | 298 | 305 | 10 |         |       |

- Molecule 18 is a protein called ATPTG1.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 18  | c     | 122      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 2029  | 656 | 999 | 189 | 184 | 1 |         |       |
| 18  | C     | 122      | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 2029  | 656 | 999 | 189 | 184 | 1 |         |       |

- Molecule 19 is a protein called ATPTG2.

| Mol | Chain | Residues | Atoms |      |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|---|---------|-------|
| 19  | d     | 254      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 4046  | 1323 | 1970 | 365 | 380 | 8 |         |       |
| 19  | D     | 254      | Total | C    | H    | N   | O   | S | 0       | 0     |
|     |       |          | 4046  | 1323 | 1970 | 365 | 380 | 8 |         |       |

- Molecule 20 is a protein called subunit 8.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 20  | m     | 96       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1509  | 501 | 744 | 126 | 131 | 7 |         |       |
| 20  | M     | 96       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1509  | 501 | 744 | 126 | 131 | 7 |         |       |

- Molecule 21 is a protein called ATPTG9.

| Mol | Chain | Residues | Atoms |     |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|----|---------|-------|
| 21  | n     | 160      | Total | C   | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 2451  | 774 | 1204 | 227 | 235 | 11 |         |       |
| 21  | N     | 160      | Total | C   | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 2451  | 774 | 1204 | 227 | 235 | 11 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference      |
|-------|---------|----------|--------|----------|----------------|
| n     | 140     | SER      | ALA    | conflict | UNP A0A125YUZ2 |
| N     | 140     | SER      | ALA    | conflict | UNP A0A125YUZ2 |

- Molecule 22 is a protein called ATPTG4.

| Mol | Chain | Residues | Atoms |     |      |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|------|-----|-----|---|---------|-------|
| 22  | f     | 188      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2867  | 919 | 1425 | 245 | 274 | 4 |         |       |
| 22  | F     | 188      | Total | C   | H    | N   | O   | S | 0       | 0     |
|     |       |          | 2867  | 919 | 1425 | 245 | 274 | 4 |         |       |

- Molecule 23 is a protein called ATPTG16.

| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 23  | w     | 96       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1509  | 494 | 755 | 127 | 129 | 4 |         |       |

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| Mol | Chain | Residues | Atoms |     |     |     |     |   | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|-----|---|---------|-------|
| 23  | W     | 96       | Total | C   | H   | N   | O   | S | 0       | 0     |
|     |       |          | 1509  | 494 | 755 | 127 | 129 | 4 |         |       |

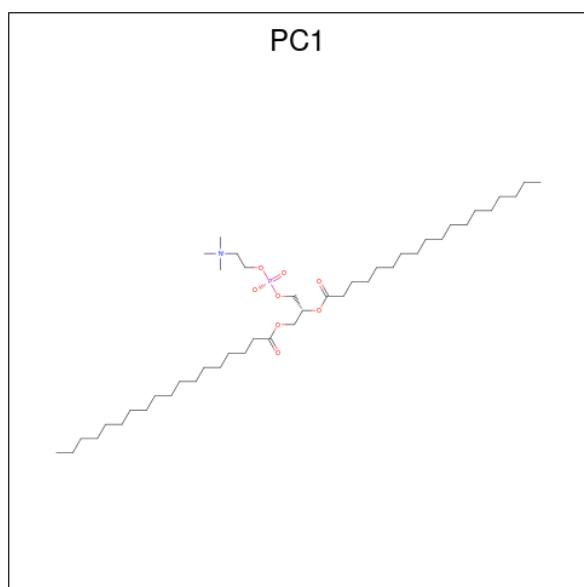
- Molecule 24 is a protein called subunit d.

| Mol | Chain | Residues | Atoms |      |      |     |     |    | AltConf | Trace |
|-----|-------|----------|-------|------|------|-----|-----|----|---------|-------|
| 24  | a     | 371      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 5895  | 1923 | 2873 | 523 | 558 | 18 |         |       |
| 24  | A     | 371      | Total | C    | H    | N   | O   | S  | 0       | 0     |
|     |       |          | 5895  | 1923 | 2873 | 523 | 558 | 18 |         |       |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment  | Reference  |
|-------|---------|----------|--------|----------|------------|
| a     | 351     | THR      | ALA    | conflict | UNP S7V493 |
| A     | 351     | THR      | ALA    | conflict | UNP S7V493 |

- Molecule 25 is 1,2-DIACYL-SN-GLYCERO-3-PHOSPHOCHOLINE (CCD ID: PC1) (formula:  $C_{44}H_{88}NO_8P$ ) (labeled as "Ligand of Interest" by depositor).



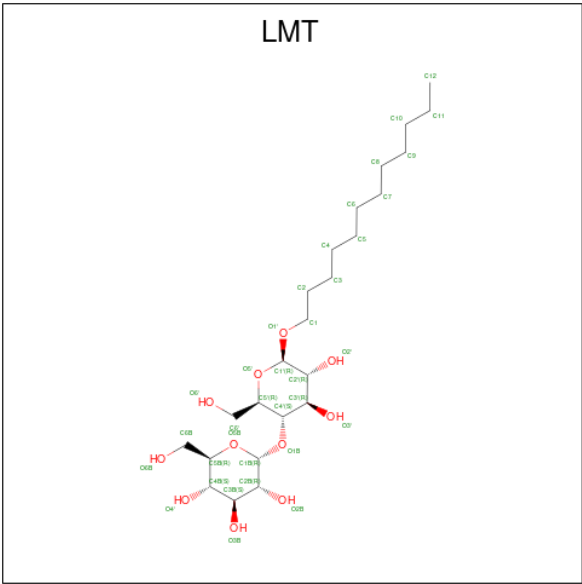
| Mol | Chain | Residues | Atoms |    |    |   |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---|---------|
| 25  | o     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 142   | 44 | 88 | 1 | 8 | 1 |         |
| 25  | o     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 142   | 44 | 88 | 1 | 8 | 1 |         |

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| Mol | Chain | Residues | Atoms |    |    |   |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---|---------|
| 25  | v     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 142   | 44 | 88 | 1 | 8 | 1 |         |
| 25  | O     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 142   | 44 | 88 | 1 | 8 | 1 |         |
| 25  | O     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 142   | 44 | 88 | 1 | 8 | 1 |         |
| 25  | V     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 142   | 44 | 88 | 1 | 8 | 1 |         |

- Molecule 26 is DODECYL-BETA-D-MALTOSE (CCD ID: LMT) (formula: C<sub>24</sub>H<sub>46</sub>O<sub>11</sub>).



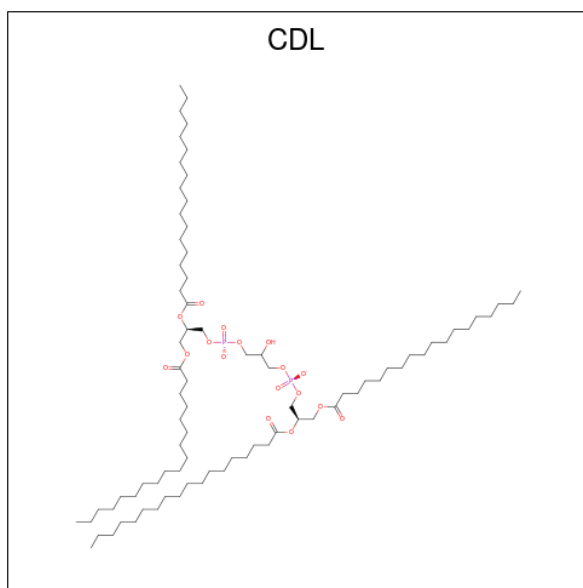
| Mol | Chain | Residues | Atoms |    |    |    | AltConf |
|-----|-------|----------|-------|----|----|----|---------|
| 26  | o     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | h     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | x     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | c     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | c     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | d     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | d     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |

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| Mol | Chain | Residues | Atoms |    |    |    | AltConf |
|-----|-------|----------|-------|----|----|----|---------|
| 26  | O     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | H     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | X     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | C     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | C     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | D     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |
| 26  | D     | 1        | Total | C  | H  | O  | 0       |
|     |       |          | 81    | 24 | 46 | 11 |         |

- Molecule 27 is CARDIOLIPIN (CCD ID: CDL) (formula:  $C_{81}H_{156}O_{17}P_2$ ) (labeled as "Ligand of Interest" by depositor).



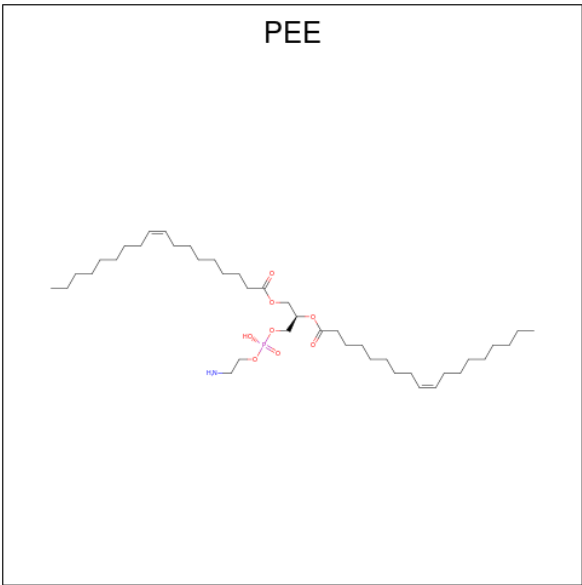
| Mol | Chain | Residues | Atoms |    |     |    |   | AltConf |
|-----|-------|----------|-------|----|-----|----|---|---------|
| 27  | o     | 1        | Total | C  | H   | O  | P | 0       |
|     |       |          | 256   | 81 | 156 | 17 | 2 |         |
| 27  | u     | 1        | Total | C  | H   | O  | P | 0       |
|     |       |          | 256   | 81 | 156 | 17 | 2 |         |
| 27  | h     | 1        | Total | C  | H   | O  | P | 0       |
|     |       |          | 256   | 81 | 156 | 17 | 2 |         |
| 27  | e     | 1        | Total | C  | H   | O  | P | 0       |
|     |       |          | 256   | 81 | 156 | 17 | 2 |         |

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| Mol | Chain | Residues | Atoms        |         |          |         |        | AltConf |
|-----|-------|----------|--------------|---------|----------|---------|--------|---------|
| 27  | b     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | v     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | c     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | d     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | O     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | U     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | H     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | E     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | B     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | B     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | V     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | V     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | C     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |
| 27  | D     | 1        | Total<br>256 | C<br>81 | H<br>156 | O<br>17 | P<br>2 | 0       |

- Molecule 28 is 1,2-dioleoyl-sn-glycero-3-phosphoethanolamine (CCD ID: PEE) (formula:  $C_{41}H_{78}NO_8P$ ) (labeled as "Ligand of Interest" by depositor).

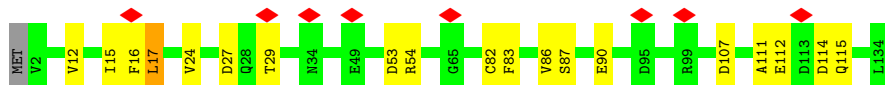
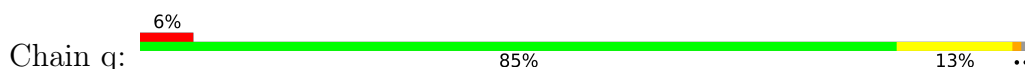


| Mol | Chain | Residues | Atoms |    |    |   |   |   | AltConf |
|-----|-------|----------|-------|----|----|---|---|---|---------|
| 28  | j     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 133   | 41 | 82 | 1 | 8 | 1 |         |
| 28  | j     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 133   | 41 | 82 | 1 | 8 | 1 |         |
| 28  | c     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 133   | 41 | 82 | 1 | 8 | 1 |         |
| 28  | J     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 133   | 41 | 82 | 1 | 8 | 1 |         |
| 28  | J     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 133   | 41 | 82 | 1 | 8 | 1 |         |
| 28  | C     | 1        | Total | C  | H  | N | O | P | 0       |
|     |       |          | 133   | 41 | 82 | 1 | 8 | 1 |         |

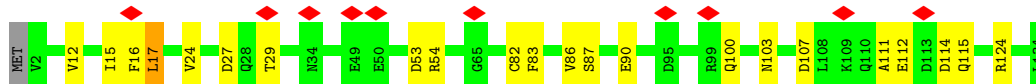
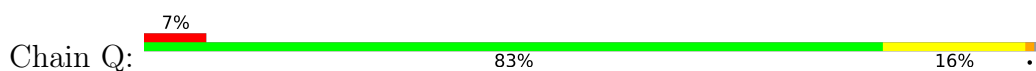
### 3 Residue-property plots [i](#)

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

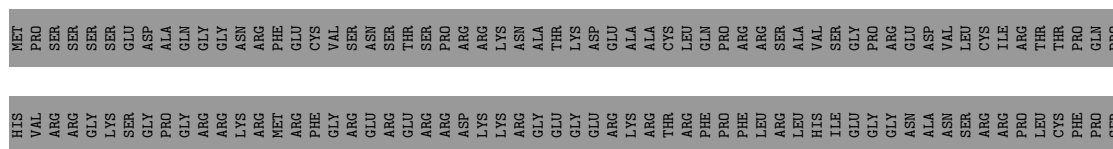
- Molecule 1: ATPTG11



- Molecule 1: ATPTG11



- Molecule 2: ATPTG7



- Molecule 2: ATPTG7

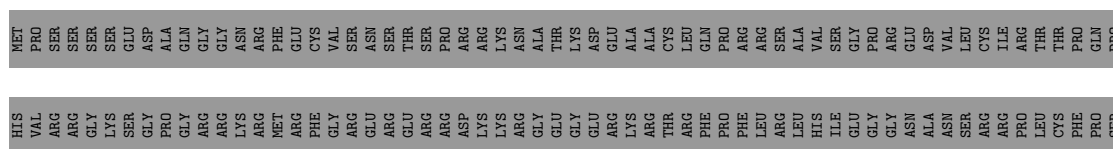
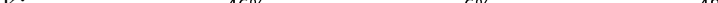


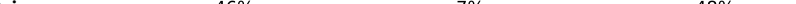


Figure 1: Schematic representation of the 150 amino acid protein sequence of the 150A protein. The sequence is shown as a bar with various amino acids labeled. A red diamond is above R22, and four red diamonds are above N84, Y85, F86, and E119. The sequence is: MET, ALA, PHE, GLY, ALA, ALA, ALA, P9, R22, S35, S39, F51, P52, R59, T64, K65, L66, N84, Y85, F86, E119, R128, R141, R149, L157.

- Chain 0:  85% 9% 5%

- Chain k: 

|      |      |     |
|------|------|-----|
| K124 | VAL  | MET |
| T125 | GLY  | ALA |
| R126 | ASN  | ALA |
| G127 | ARG  | GLY |
| L128 | LEU  | SER |
| L129 | GLY  | ARG |
| G130 | VAL  | PHE |
| V131 | SER  | PRO |
| G132 | SER  | PHE |
| F133 | ALA  | CYS |
| L134 | ARG  | THR |
| R135 | ALA  | ALA |
| A144 | LEU  | ARG |
| L148 | ASN  | SER |
| R151 | ALA  | SER |
| F154 | MET  | ARG |
| M157 | GLU  | GLY |
| R166 | PRO  | LEU |
| P167 | ARG  | GLY |
| L182 | PHE  | ALA |
| M186 | ALA  | GLY |
| T214 | ALA  | ALA |
| T217 | THR  | GLU |
| T221 | HIS  | SER |
| F224 | ALA  | GLN |
|      | LEU  | ARG |
|      | PRO  | SER |
|      | THR  | THR |
|      | VAL  | LYS |
|      | ALA  | ALA |
|      | PHE  | PHE |
|      | THR  | GLY |
|      | THR  | ALA |
|      | THR  | GLY |
|      | THR  | GLN |
|      | THR  | ARG |
|      | R108 | PRO |
|      | Q111 | PHE |
|      | A115 | ARG |
|      | Q116 | ALA |
|      | F117 | PRO |
|      | Q118 | SER |
|      | T119 | THR |
|      | S120 | GLN |
|      | L121 | LEU |
|      | A122 | PHE |
|      | T123 | PRO |

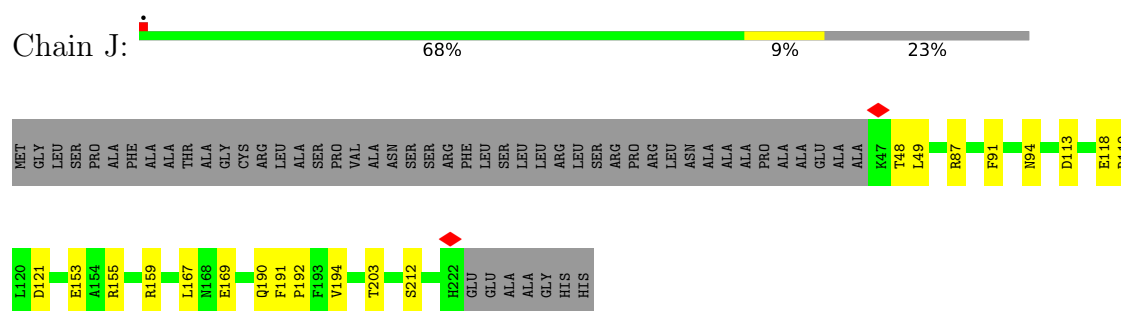
- Chain K: 

[illegible]

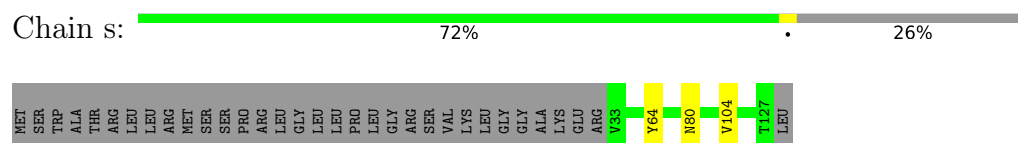
- Chain j:  67% 10% 23%

Sequence logo for the 10th position. The y-axis represents information content in bits, ranging from 0 to 0.4. The x-axis lists amino acids. MET is the most frequent residue at this position, with an information content of approximately 0.35 bits. Other residues with significant information content include GLY, LEU, SER, PRO, ALA, PHE, THR, CYS, ARG, LEU, ALA, SER, ARG, PHE, LEU, LEU, ARG, LEU, SER, ARG, PRO, PRO, LEU, ASN, ALA, ALA, ALA, ALA, ALA, GLU, ALA, ALA, K47, T48, L49, R67, F91, F92, G93, N94, S98, and F100.

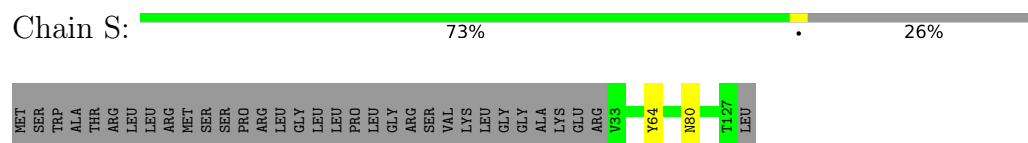
- Molecule 7: subunit i/j



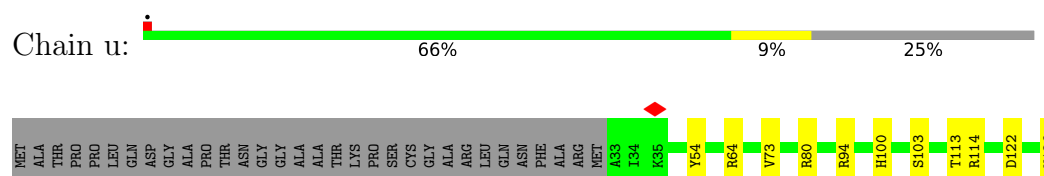
- Molecule 8: ATPTG13



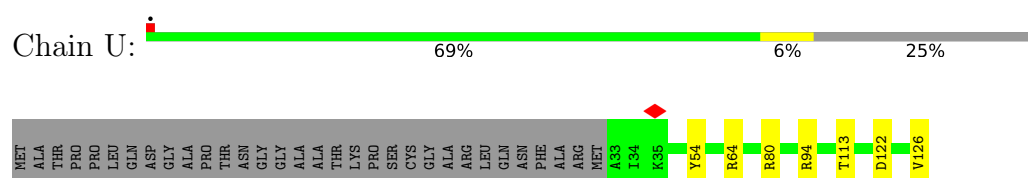
- Molecule 8: ATPTG13



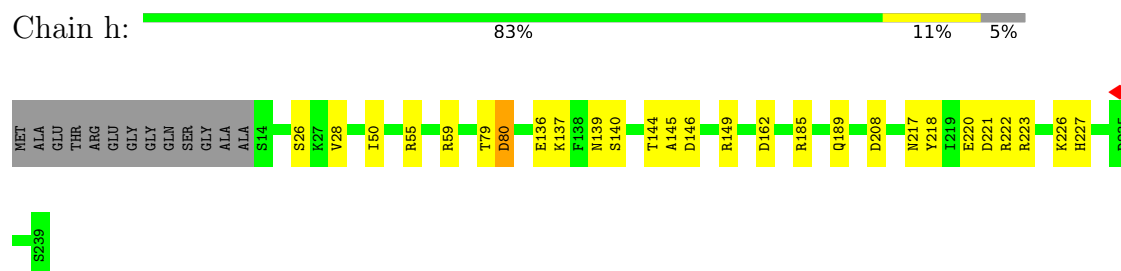
- Molecule 9: ATPTG15



- Molecule 9: ATPTG15

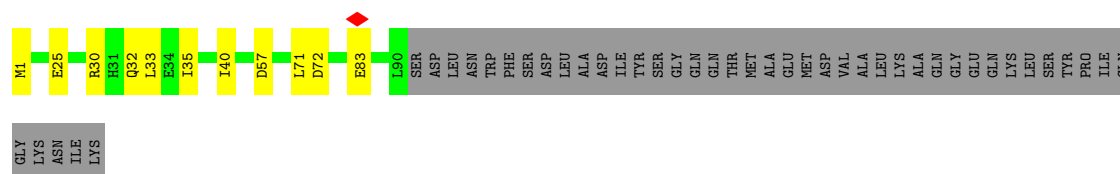


- Molecule 10: ATPTG6

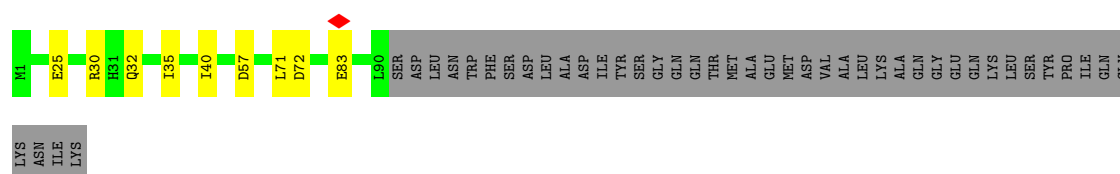








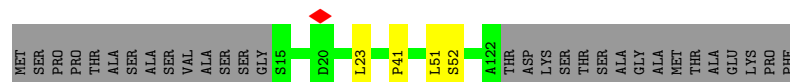
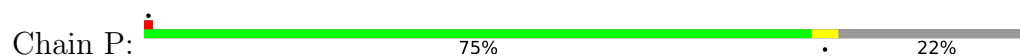
• Molecule 14: ATPTG12



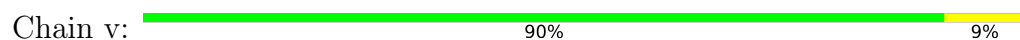
• Molecule 15: ATPTG10



• Molecule 15: ATPTG10



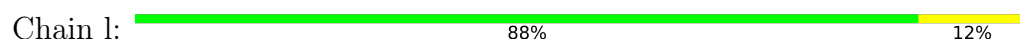
• Molecule 16: subunit f



• Molecule 16: subunit f



• Molecule 17: ATPTG8

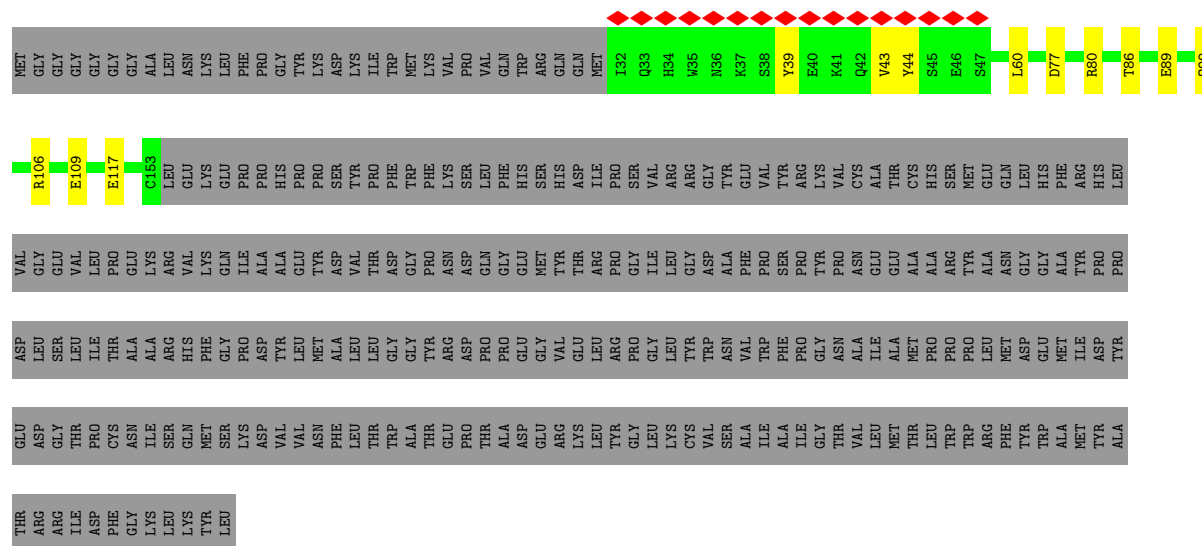




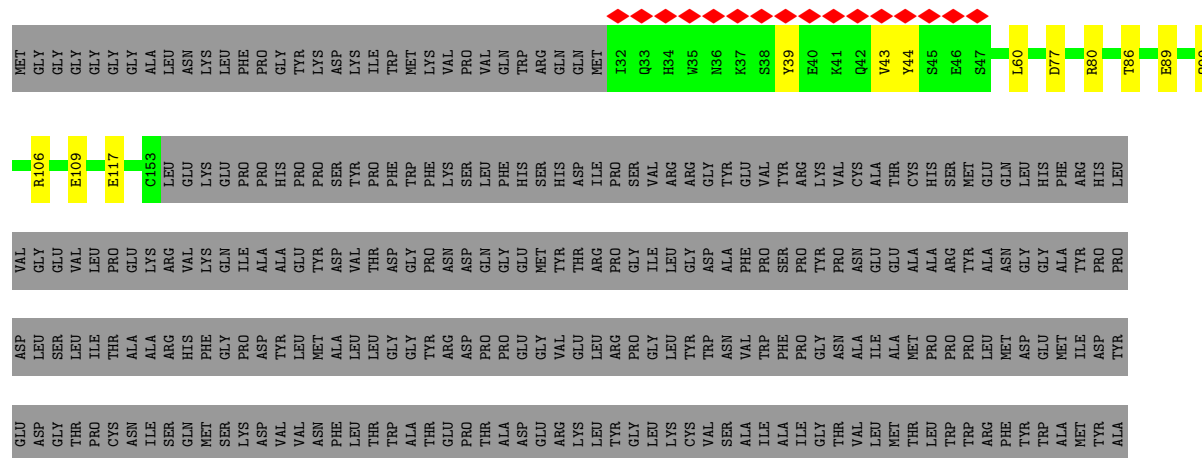
- Molecule 17: ATPTG8



- Molecule 18: ATPTG1

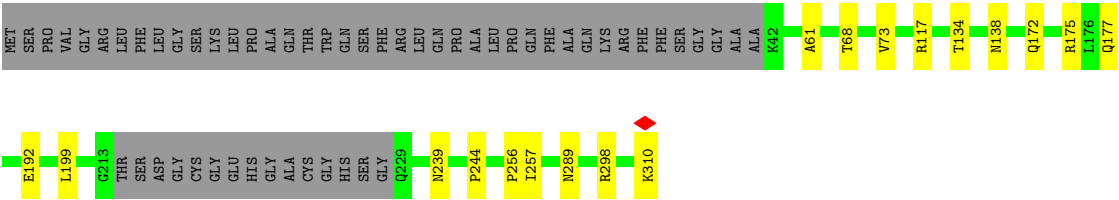


- Molecule 18: ATPTG1

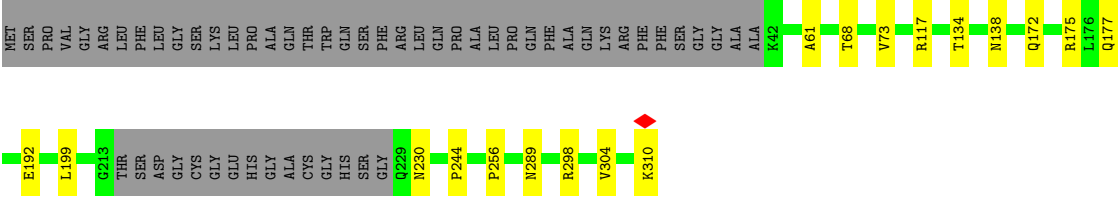


THR  
ARG  
TLE  
ASP  
PHE  
GLY  
LYS  
LEU  
TYR  
LEU

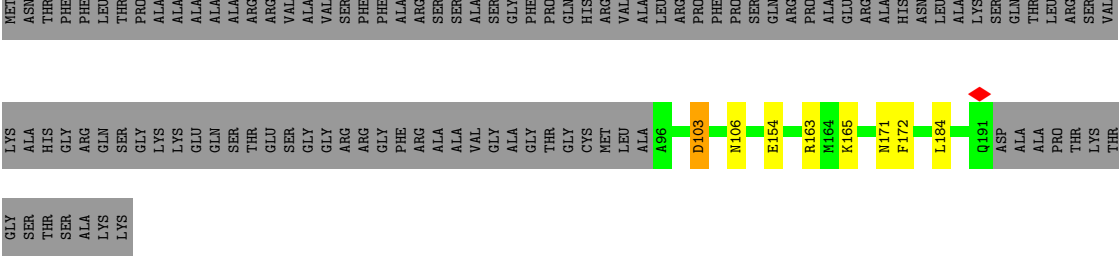
• Molecule 19: ATPTG2



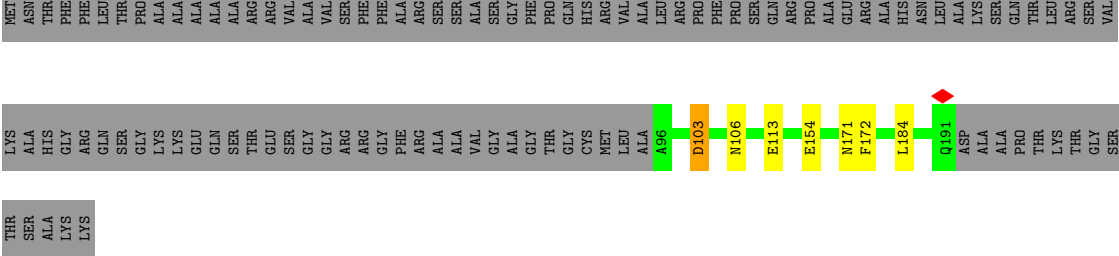
• Molecule 19: ATPTG2



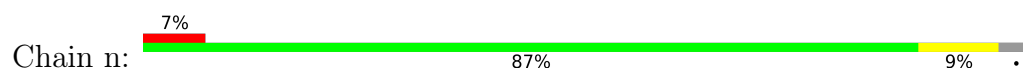
• Molecule 20: subunit 8



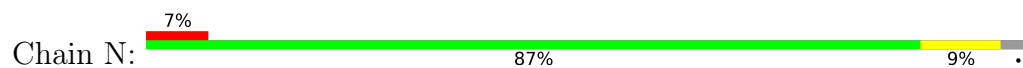
• Molecule 20: subunit 8



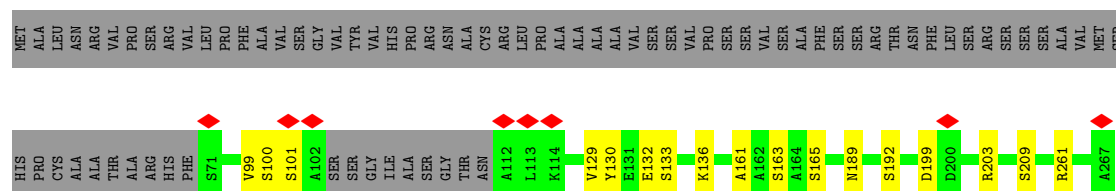
• Molecule 21: ATPTG9



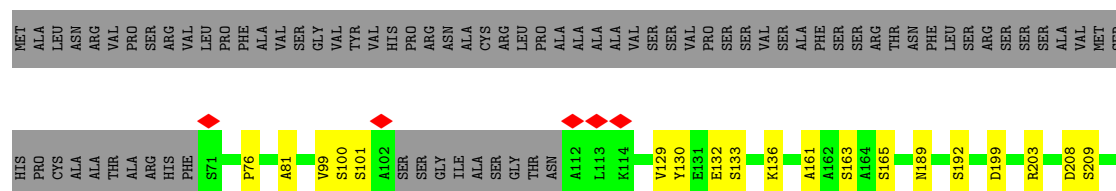
• Molecule 21: ATPTG9



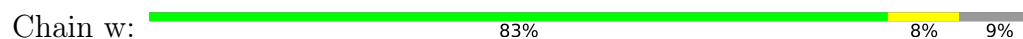
• Molecule 22: ATPTG4



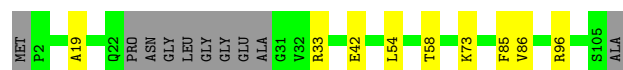
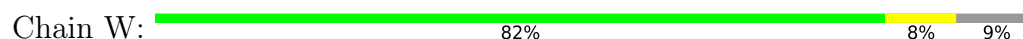
• Molecule 22: ATPTG4



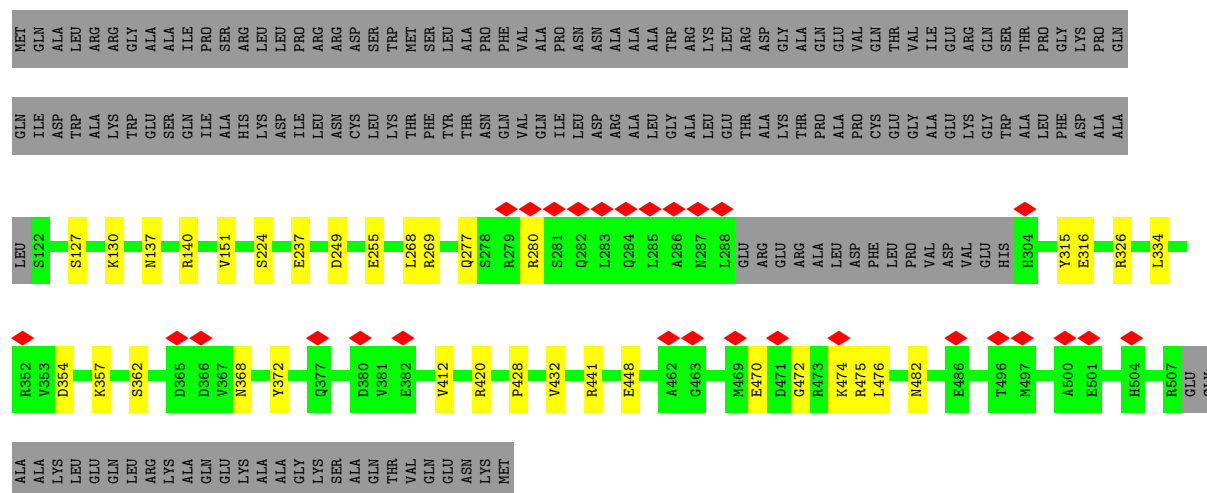
• Molecule 23: ATPTG16



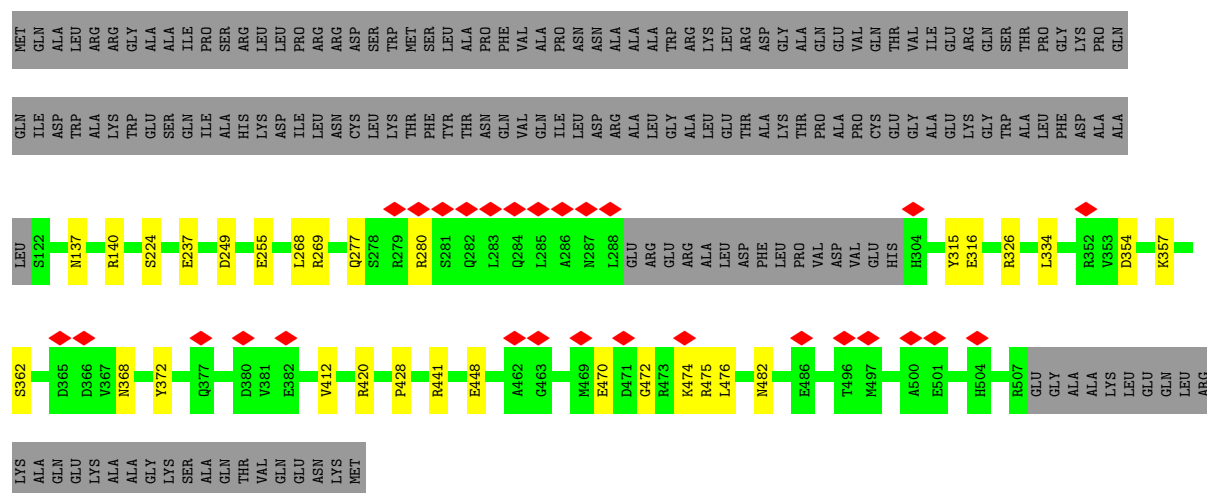
• Molecule 23: ATPTG16



Chain a:  5% 63% 6% 26%



Chain A:  5% 64% 6% 25%



## 4 Experimental information

| Property                             | Value                                   | Source    |
|--------------------------------------|-----------------------------------------|-----------|
| EM reconstruction method             | SINGLE PARTICLE                         | Depositor |
| Imposed symmetry                     | POINT, C2                               | Depositor |
| Number of particles used             | 101505                                  | Depositor |
| Resolution determination method      | FSC 0.143 CUT-OFF                       | Depositor |
| CTF correction method                | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope                           | FEI TITAN KRIOS                         | Depositor |
| Voltage (kV)                         | 300                                     | Depositor |
| Electron dose ( $e^-/\text{\AA}^2$ ) | 30                                      | Depositor |
| Minimum defocus (nm)                 | Not provided                            |           |
| Maximum defocus (nm)                 | Not provided                            |           |
| Magnification                        | 165000                                  | Depositor |
| Image detector                       | GATAN K2 QUANTUM (4k x 4k)              | Depositor |
| Maximum map value                    | 0.346                                   | Depositor |
| Minimum map value                    | -0.157                                  | Depositor |
| Average map value                    | 0.001                                   | Depositor |
| Map value standard deviation         | 0.007                                   | Depositor |
| Recommended contour level            | 0.04                                    | Depositor |
| Map size (Å)                         | 464.8, 464.8, 464.8                     | wwPDB     |
| Map dimensions                       | 560, 560, 560                           | wwPDB     |
| Map angles (°)                       | 90.0, 90.0, 90.0                        | wwPDB     |
| Pixel spacing (Å)                    | 0.83, 0.83, 0.83                        | Depositor |

## 5 Model quality

### 5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CDL, LMT, PEE, PC1

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   | Q     | 0.15         | 0/1103  | 0.28        | 0/1496  |
| 1   | q     | 0.15         | 0/1103  | 0.28        | 0/1496  |
| 2   | I     | 0.17         | 0/719   | 0.28        | 0/962   |
| 2   | i     | 0.17         | 0/719   | 0.28        | 0/962   |
| 3   | T     | 0.17         | 0/741   | 0.29        | 0/1007  |
| 3   | t     | 0.17         | 0/741   | 0.29        | 0/1007  |
| 4   | G     | 0.19         | 0/896   | 0.27        | 0/1216  |
| 4   | g     | 0.18         | 0/896   | 0.27        | 0/1216  |
| 5   | O     | 0.20         | 0/1250  | 0.28        | 0/1682  |
| 5   | o     | 0.20         | 0/1250  | 0.28        | 0/1682  |
| 6   | K     | 0.18         | 0/981   | 0.25        | 0/1321  |
| 6   | k     | 0.18         | 0/981   | 0.25        | 0/1321  |
| 7   | J     | 0.26         | 0/1573  | 0.33        | 0/2137  |
| 7   | j     | 0.26         | 0/1573  | 0.33        | 0/2137  |
| 8   | S     | 0.20         | 0/826   | 0.26        | 0/1119  |
| 8   | s     | 0.20         | 0/826   | 0.26        | 0/1119  |
| 9   | U     | 0.22         | 0/770   | 0.31        | 0/1040  |
| 9   | u     | 0.22         | 0/770   | 0.31        | 0/1040  |
| 10  | H     | 0.23         | 0/1902  | 0.30        | 0/2575  |
| 10  | h     | 0.23         | 0/1902  | 0.30        | 0/2575  |
| 11  | E     | 0.22         | 0/1154  | 0.29        | 0/1572  |
| 11  | e     | 0.22         | 0/1154  | 0.29        | 0/1572  |
| 12  | X     | 0.19         | 0/678   | 0.26        | 0/923   |
| 12  | x     | 0.19         | 0/678   | 0.27        | 0/923   |
| 13  | B     | 0.20         | 0/2159  | 0.26        | 0/2920  |
| 13  | b     | 0.20         | 0/2159  | 0.26        | 0/2920  |
| 14  | R     | 0.20         | 0/750   | 0.31        | 0/1008  |
| 14  | r     | 0.21         | 0/750   | 0.31        | 0/1008  |
| 15  | P     | 0.20         | 0/888   | 0.28        | 0/1202  |
| 15  | p     | 0.20         | 0/888   | 0.28        | 0/1202  |
| 16  | V     | 0.24         | 0/944   | 0.31        | 0/1280  |
| 16  | v     | 0.24         | 0/944   | 0.31        | 0/1280  |

| Mol | Chain | Bond lengths |         | Bond angles |         |
|-----|-------|--------------|---------|-------------|---------|
|     |       | RMSZ         | # Z  >5 | RMSZ        | # Z  >5 |
| 17  | L     | 0.22         | 0/1651  | 0.27        | 0/2227  |
| 17  | l     | 0.22         | 0/1651  | 0.27        | 0/2227  |
| 18  | C     | 0.21         | 0/1057  | 0.31        | 0/1428  |
| 18  | c     | 0.21         | 0/1057  | 0.31        | 0/1428  |
| 19  | D     | 0.23         | 0/2138  | 0.28        | 0/2905  |
| 19  | d     | 0.23         | 0/2138  | 0.28        | 0/2905  |
| 20  | M     | 0.21         | 0/789   | 0.28        | 0/1065  |
| 20  | m     | 0.21         | 0/789   | 0.28        | 0/1065  |
| 21  | N     | 0.16         | 0/1280  | 0.27        | 0/1734  |
| 21  | n     | 0.16         | 0/1280  | 0.27        | 0/1734  |
| 22  | F     | 0.18         | 0/1475  | 0.30        | 0/2009  |
| 22  | f     | 0.18         | 0/1475  | 0.30        | 0/2009  |
| 23  | W     | 0.21         | 0/778   | 0.25        | 0/1057  |
| 23  | w     | 0.21         | 0/778   | 0.25        | 0/1057  |
| 24  | A     | 0.17         | 0/3107  | 0.26        | 0/4207  |
| 24  | a     | 0.17         | 0/3107  | 0.26        | 0/4207  |
| All | All   | 0.20         | 0/59218 | 0.28        | 0/80184 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

## 5.2 Too-close contacts ⓘ

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 1   | Q     | 1075  | 1044     | 1044     | 14      | 0            |
| 1   | q     | 1075  | 1044     | 1044     | 12      | 0            |
| 2   | I     | 708   | 678      | 678      | 7       | 0            |
| 2   | i     | 708   | 678      | 678      | 8       | 0            |
| 3   | T     | 723   | 716      | 728      | 12      | 0            |
| 3   | t     | 723   | 716      | 728      | 10      | 0            |
| 4   | G     | 876   | 856      | 856      | 9       | 0            |
| 4   | g     | 876   | 856      | 856      | 10      | 0            |
| 5   | O     | 1220  | 1195     | 1195     | 14      | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 5   | o     | 1220  | 1195     | 1195     | 11      | 0            |
| 6   | K     | 952   | 952      | 952      | 10      | 0            |
| 6   | k     | 952   | 952      | 952      | 9       | 0            |
| 7   | J     | 1512  | 1469     | 1469     | 15      | 0            |
| 7   | j     | 1512  | 1469     | 1469     | 16      | 0            |
| 8   | S     | 800   | 770      | 770      | 2       | 0            |
| 8   | s     | 800   | 770      | 770      | 4       | 0            |
| 9   | U     | 751   | 741      | 741      | 6       | 0            |
| 9   | u     | 751   | 741      | 741      | 9       | 0            |
| 10  | H     | 1848  | 1741     | 1741     | 15      | 0            |
| 10  | h     | 1848  | 1741     | 1741     | 18      | 0            |
| 11  | E     | 1115  | 1064     | 1064     | 10      | 0            |
| 11  | e     | 1115  | 1064     | 1064     | 9       | 0            |
| 12  | X     | 659   | 639      | 639      | 6       | 0            |
| 12  | x     | 659   | 639      | 639      | 7       | 0            |
| 13  | B     | 2101  | 2056     | 2056     | 20      | 0            |
| 13  | b     | 2101  | 2056     | 2056     | 20      | 0            |
| 14  | R     | 735   | 750      | 750      | 7       | 0            |
| 14  | r     | 735   | 750      | 750      | 9       | 0            |
| 15  | P     | 864   | 847      | 847      | 3       | 0            |
| 15  | p     | 864   | 847      | 847      | 5       | 0            |
| 16  | V     | 913   | 888      | 888      | 7       | 0            |
| 16  | v     | 913   | 888      | 888      | 8       | 0            |
| 17  | L     | 1626  | 1647     | 1647     | 14      | 0            |
| 17  | l     | 1626  | 1647     | 1647     | 17      | 0            |
| 18  | C     | 1030  | 999      | 999      | 7       | 0            |
| 18  | c     | 1030  | 999      | 999      | 7       | 0            |
| 19  | D     | 2076  | 1970     | 1970     | 16      | 0            |
| 19  | d     | 2076  | 1970     | 1970     | 16      | 0            |
| 20  | M     | 765   | 744      | 744      | 5       | 0            |
| 20  | m     | 765   | 744      | 744      | 7       | 0            |
| 21  | N     | 1247  | 1204     | 1202     | 12      | 0            |
| 21  | n     | 1247  | 1204     | 1202     | 12      | 0            |
| 22  | F     | 1442  | 1425     | 1425     | 12      | 0            |
| 22  | f     | 1442  | 1425     | 1425     | 9       | 0            |
| 23  | W     | 754   | 755      | 755      | 9       | 0            |
| 23  | w     | 754   | 755      | 755      | 8       | 0            |
| 24  | A     | 3022  | 2873     | 2872     | 20      | 0            |
| 24  | a     | 3022  | 2873     | 2872     | 23      | 0            |
| 25  | O     | 108   | 176      | 176      | 2       | 0            |
| 25  | V     | 54    | 88       | 88       | 0       | 0            |
| 25  | o     | 108   | 176      | 176      | 1       | 0            |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|-----|-------|-------|----------|----------|---------|--------------|
| 25  | v     | 54    | 88       | 88       | 0       | 0            |
| 26  | C     | 70    | 92       | 92       | 1       | 0            |
| 26  | D     | 70    | 92       | 92       | 0       | 0            |
| 26  | H     | 35    | 46       | 46       | 2       | 0            |
| 26  | O     | 35    | 46       | 46       | 3       | 0            |
| 26  | X     | 35    | 46       | 46       | 0       | 0            |
| 26  | c     | 70    | 92       | 92       | 1       | 0            |
| 26  | d     | 70    | 92       | 92       | 0       | 0            |
| 26  | h     | 35    | 46       | 46       | 2       | 0            |
| 26  | o     | 35    | 46       | 46       | 3       | 0            |
| 26  | x     | 35    | 46       | 46       | 0       | 0            |
| 27  | B     | 200   | 312      | 312      | 7       | 0            |
| 27  | C     | 100   | 156      | 156      | 1       | 0            |
| 27  | D     | 100   | 156      | 156      | 0       | 0            |
| 27  | E     | 100   | 156      | 156      | 9       | 0            |
| 27  | H     | 100   | 156      | 156      | 0       | 0            |
| 27  | O     | 100   | 156      | 156      | 0       | 0            |
| 27  | U     | 100   | 156      | 156      | 1       | 0            |
| 27  | V     | 200   | 312      | 312      | 7       | 0            |
| 27  | b     | 100   | 156      | 156      | 0       | 0            |
| 27  | c     | 100   | 156      | 156      | 1       | 0            |
| 27  | d     | 100   | 156      | 156      | 1       | 0            |
| 27  | e     | 100   | 156      | 156      | 5       | 0            |
| 27  | h     | 100   | 156      | 156      | 0       | 0            |
| 27  | o     | 100   | 156      | 156      | 0       | 0            |
| 27  | u     | 100   | 156      | 156      | 1       | 0            |
| 27  | v     | 100   | 156      | 156      | 1       | 0            |
| 28  | C     | 51    | 82       | 82       | 0       | 0            |
| 28  | J     | 102   | 164      | 164      | 3       | 0            |
| 28  | c     | 51    | 82       | 82       | 0       | 0            |
| 28  | j     | 102   | 164      | 164      | 3       | 0            |
| All | All   | 60548 | 60518    | 60536    | 412     | 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 3.

All (412) 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) |
|------------------|-----------------|--------------------------|-------------------|
| 27:E:401:CDL:OB5 | 27:E:401:CDL:O1 | 1.90                     | 0.88              |
| 27:E:401:CDL:OB3 | 16:V:90:LYS:NZ  | 2.09                     | 0.86              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 10:H:50:ILE:O     | 10:H:55:ARG:NH1   | 2.09                     | 0.85              |
| 1:Q:27:ASP:OD2    | 1:Q:29:THR:OG1    | 1.94                     | 0.85              |
| 10:h:50:ILE:O     | 10:h:55:ARG:NH1   | 2.09                     | 0.85              |
| 19:d:61:ALA:O     | 23:w:96:ARG:NH2   | 2.09                     | 0.85              |
| 18:C:77:ASP:OD2   | 18:C:80:ARG:NH1   | 2.10                     | 0.85              |
| 19:D:61:ALA:O     | 23:W:96:ARG:NH2   | 2.11                     | 0.84              |
| 5:O:128:ARG:NH1   | 10:H:208:ASP:OD2  | 2.09                     | 0.84              |
| 27:E:401:CDL:OA4  | 21:N:159:SER:OG   | 1.93                     | 0.84              |
| 5:o:128:ARG:NH1   | 10:h:208:ASP:OD2  | 2.11                     | 0.84              |
| 8:s:80:ASN:OD1    | 9:u:80:ARG:NH2    | 2.11                     | 0.84              |
| 18:c:77:ASP:OD2   | 18:c:80:ARG:NH1   | 2.10                     | 0.84              |
| 16:v:86:ARG:NH2   | 21:n:158:GLU:OE1  | 2.12                     | 0.83              |
| 1:q:27:ASP:OD2    | 1:q:29:THR:OG1    | 1.94                     | 0.82              |
| 24:a:357:LYS:O    | 24:a:372:TYR:OH   | 1.98                     | 0.81              |
| 16:V:86:ARG:NH2   | 21:N:158:GLU:OE1  | 2.14                     | 0.81              |
| 3:t:73:ASP:OD1    | 24:a:441:ARG:NH1  | 2.15                     | 0.80              |
| 22:f:129:VAL:O    | 22:f:133:SER:OG   | 1.99                     | 0.80              |
| 24:A:357:LYS:O    | 24:A:372:TYR:OH   | 1.98                     | 0.80              |
| 14:r:25:GLU:OE1   | 14:r:30:ARG:NH2   | 2.15                     | 0.80              |
| 22:F:129:VAL:O    | 22:F:133:SER:OG   | 1.99                     | 0.79              |
| 14:R:25:GLU:OE1   | 14:R:30:ARG:NH2   | 2.15                     | 0.79              |
| 10:h:136:GLU:OE2  | 10:h:185:ARG:NH1  | 2.16                     | 0.79              |
| 22:F:101:SER:OG   | 24:A:428:PRO:O    | 1.99                     | 0.79              |
| 8:S:80:ASN:OD1    | 9:U:80:ARG:NH2    | 2.15                     | 0.79              |
| 10:H:136:GLU:OE2  | 10:H:185:ARG:NH1  | 2.16                     | 0.79              |
| 5:O:39:SER:OG     | 25:O:201:PC1:O22  | 2.00                     | 0.79              |
| 3:T:73:ASP:OD1    | 24:A:441:ARG:NH1  | 2.17                     | 0.77              |
| 17:l:40:ASN:OD1   | 17:l:43:ARG:NH2   | 2.18                     | 0.77              |
| 19:d:298:ARG:NH2  | 19:D:310:LYS:O    | 2.19                     | 0.76              |
| 3:t:82:ARG:NH1    | 24:a:316:GLU:OE2  | 2.19                     | 0.76              |
| 7:j:153:GLU:OE1   | 23:w:58:THR:OG1   | 2.02                     | 0.76              |
| 17:L:40:ASN:OD1   | 17:L:43:ARG:NH2   | 2.18                     | 0.76              |
| 7:j:121:ASP:OD1   | 7:j:159:ARG:NH2   | 2.19                     | 0.76              |
| 13:b:132:LYS:NZ   | 13:b:204:LYS:O    | 2.20                     | 0.75              |
| 19:d:310:LYS:O    | 19:D:298:ARG:NH2  | 2.20                     | 0.75              |
| 7:J:153:GLU:OE1   | 23:W:58:THR:OG1   | 2.04                     | 0.75              |
| 7:J:121:ASP:OD1   | 7:J:159:ARG:NH2   | 2.19                     | 0.74              |
| 9:U:113:THR:O     | 17:L:56:ARG:NH1   | 2.20                     | 0.74              |
| 13:B:132:LYS:NZ   | 13:B:204:LYS:O    | 2.20                     | 0.74              |
| 2:I:186:ALA:HB1   | 11:E:286:GLU:HG3  | 1.68                     | 0.74              |
| 24:A:268:LEU:HD22 | 24:A:412:VAL:HG23 | 1.70                     | 0.74              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 3:T:82:ARG:NH1    | 24:A:316:GLU:OE2  | 2.21                     | 0.73              |
| 10:H:223:ARG:O    | 26:H:301:LMT:O3B  | 2.03                     | 0.73              |
| 1:Q:111:ALA:O     | 4:G:225:LYS:NZ    | 2.22                     | 0.72              |
| 3:T:19:ARG:O      | 3:T:22:ARG:NH1    | 2.22                     | 0.72              |
| 4:g:213:ARG:NH2   | 4:g:217:GLU:OE1   | 2.22                     | 0.72              |
| 5:o:39:SER:OG     | 25:o:201:PC1:O22  | 2.05                     | 0.72              |
| 20:M:154:GLU:OE2  | 23:W:73:LYS:NZ    | 2.19                     | 0.72              |
| 16:v:25:TRP:O     | 19:d:117:ARG:NH1  | 2.21                     | 0.72              |
| 3:T:104:LEU:O     | 24:A:315:TYR:OH   | 2.07                     | 0.72              |
| 22:F:161:ALA:O    | 22:F:165:SER:OG   | 2.04                     | 0.72              |
| 4:G:213:ARG:NH2   | 4:G:217:GLU:OE1   | 2.22                     | 0.72              |
| 3:t:19:ARG:O      | 3:t:22:ARG:NH1    | 2.22                     | 0.71              |
| 2:i:186:ALA:HB1   | 11:e:286:GLU:HG3  | 1.70                     | 0.71              |
| 4:g:147:GLN:OE1   | 4:g:179:ARG:NH2   | 2.24                     | 0.71              |
| 24:a:268:LEU:HD22 | 24:a:412:VAL:HG23 | 1.70                     | 0.71              |
| 19:D:172:GLN:OE1  | 19:D:175:ARG:NH1  | 2.24                     | 0.71              |
| 22:f:161:ALA:O    | 22:f:165:SER:OG   | 2.04                     | 0.71              |
| 22:f:101:SER:OG   | 24:a:428:PRO:O    | 2.04                     | 0.70              |
| 17:l:113:ASP:OD1  | 17:l:141:ARG:NH1  | 2.24                     | 0.70              |
| 17:L:113:ASP:OD1  | 17:L:141:ARG:NH1  | 2.24                     | 0.70              |
| 27:e:401:CDL:OA4  | 21:n:159:SER:OG   | 2.08                     | 0.70              |
| 17:L:100:GLU:N    | 17:L:100:GLU:OE1  | 2.25                     | 0.70              |
| 27:e:401:CDL:H671 | 27:B:601:CDL:H811 | 1.73                     | 0.70              |
| 17:l:100:GLU:OE1  | 17:l:100:GLU:N    | 2.25                     | 0.70              |
| 4:G:147:GLN:OE1   | 4:G:179:ARG:NH2   | 2.24                     | 0.70              |
| 19:d:172:GLN:OE1  | 19:d:175:ARG:NH1  | 2.24                     | 0.69              |
| 22:f:199:ASP:OD2  | 22:f:203:ARG:NH2  | 2.26                     | 0.69              |
| 1:Q:53:ASP:OD1    | 1:Q:54:ARG:N      | 2.26                     | 0.69              |
| 13:B:262:LEU:HD21 | 27:V:201:CDL:H832 | 1.75                     | 0.69              |
| 1:q:53:ASP:OD1    | 1:q:54:ARG:N      | 2.26                     | 0.68              |
| 9:u:113:THR:O     | 17:l:56:ARG:NH1   | 2.26                     | 0.68              |
| 22:F:199:ASP:OD2  | 22:F:203:ARG:NH2  | 2.26                     | 0.68              |
| 13:B:133:GLU:N    | 13:B:133:GLU:OE1  | 2.28                     | 0.66              |
| 13:b:133:GLU:N    | 13:b:133:GLU:OE1  | 2.28                     | 0.66              |
| 3:t:104:LEU:O     | 24:a:315:TYR:OH   | 2.14                     | 0.65              |
| 1:q:111:ALA:O     | 4:g:225:LYS:NZ    | 2.30                     | 0.65              |
| 13:B:217:THR:OG1  | 13:B:220:ASP:OD1  | 2.15                     | 0.65              |
| 27:e:401:CDL:OB3  | 16:v:90:LYS:NZ    | 2.24                     | 0.64              |
| 12:x:3:THR:OG1    | 12:x:4:SER:N      | 2.30                     | 0.64              |
| 3:T:84:CYS:HB3    | 24:A:334:LEU:HD21 | 1.78                     | 0.64              |
| 7:j:192:PRO:O     | 7:J:212:SER:N     | 2.29                     | 0.64              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 8:S:64:TYR:OH     | 12:X:32:GLU:OE1   | 2.14                     | 0.64              |
| 8:s:64:TYR:OH     | 12:x:32:GLU:OE1   | 2.15                     | 0.64              |
| 24:a:237:GLU:OE1  | 24:a:269:ARG:NH1  | 2.31                     | 0.64              |
| 4:G:134:SER:O     | 4:G:137:ASN:ND2   | 2.31                     | 0.64              |
| 13:b:217:THR:OG1  | 13:b:220:ASP:OD1  | 2.15                     | 0.64              |
| 12:X:3:THR:OG1    | 12:X:4:SER:N      | 2.30                     | 0.64              |
| 4:g:134:SER:O     | 4:g:137:ASN:ND2   | 2.31                     | 0.63              |
| 7:j:212:SER:N     | 7:J:192:PRO:O     | 2.31                     | 0.63              |
| 9:U:64:ARG:NH1    | 27:U:201:CDL:OA4  | 2.31                     | 0.63              |
| 24:A:237:GLU:OE1  | 24:A:269:ARG:NH1  | 2.31                     | 0.63              |
| 22:F:130:TYR:OH   | 22:F:261:ARG:NH1  | 2.32                     | 0.63              |
| 13:b:292:ARG:NH1  | 13:B:109:THR:O    | 2.31                     | 0.63              |
| 3:T:83:GLU:OE2    | 24:A:420:ARG:NH2  | 2.30                     | 0.63              |
| 3:t:84:CYS:HB3    | 24:a:334:LEU:HD21 | 1.81                     | 0.63              |
| 21:n:115:ASN:OD1  | 23:w:33:ARG:NH2   | 2.32                     | 0.63              |
| 20:m:154:GLU:OE2  | 23:w:73:LYS:NZ    | 2.26                     | 0.62              |
| 22:f:130:TYR:OH   | 22:f:261:ARG:NH1  | 2.31                     | 0.62              |
| 2:I:186:ALA:HB1   | 11:E:286:GLU:CG   | 2.30                     | 0.62              |
| 2:i:186:ALA:HB1   | 11:e:286:GLU:CG   | 2.29                     | 0.62              |
| 7:j:155:ARG:NH1   | 7:j:169:GLU:OE2   | 2.31                     | 0.62              |
| 27:B:601:CDL:H472 | 27:V:201:CDL:H472 | 1.82                     | 0.62              |
| 24:A:472:GLY:O    | 24:A:476:LEU:N    | 2.30                     | 0.62              |
| 10:H:162:ASP:O    | 17:L:138:ARG:NH2  | 2.32                     | 0.61              |
| 3:t:83:GLU:OE2    | 24:a:420:ARG:NH2  | 2.33                     | 0.61              |
| 9:U:94:ARG:NH2    | 23:W:42:GLU:OE2   | 2.27                     | 0.61              |
| 3:T:76:GLN:NE2    | 24:A:249:ASP:OD1  | 2.33                     | 0.61              |
| 24:a:472:GLY:O    | 24:a:476:LEU:N    | 2.30                     | 0.60              |
| 21:n:83:GLU:OE1   | 21:n:86:ARG:NH1   | 2.35                     | 0.60              |
| 3:T:95:LEU:O      | 24:A:326:ARG:NH2  | 2.35                     | 0.60              |
| 20:M:103:ASP:OD2  | 20:M:106:ASN:ND2  | 2.35                     | 0.60              |
| 7:J:155:ARG:NH1   | 7:J:169:GLU:OE2   | 2.31                     | 0.60              |
| 27:E:401:CDL:H671 | 27:V:201:CDL:H811 | 1.83                     | 0.60              |
| 13:B:246:ASN:OD1  | 16:V:14:ARG:NH2   | 2.33                     | 0.60              |
| 20:m:103:ASP:OD2  | 20:m:106:ASN:ND2  | 2.35                     | 0.60              |
| 13:B:103:ARG:NH1  | 27:V:201:CDL:OA3  | 2.32                     | 0.60              |
| 21:N:83:GLU:OE1   | 21:N:86:ARG:NH1   | 2.35                     | 0.59              |
| 21:N:115:ASN:OD1  | 23:W:33:ARG:NH2   | 2.35                     | 0.59              |
| 9:u:54:TYR:HH     | 19:d:134:THR:HG1  | 1.50                     | 0.59              |
| 26:O:202:LMT:O6B  | 26:O:202:LMT:O3B  | 2.17                     | 0.59              |
| 26:o:202:LMT:O6B  | 26:o:202:LMT:O3B  | 2.17                     | 0.58              |
| 28:J:301:PEE:H46  | 23:W:85:PHE:HB3   | 1.85                     | 0.58              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 7:J:113:ASP:OD1   | 28:J:302:PEE:N    | 2.35                     | 0.58              |
| 1:Q:16:PHE:CE2    | 1:Q:17:LEU:HD23   | 2.39                     | 0.58              |
| 13:b:262:LEU:HD21 | 27:B:601:CDL:H832 | 1.86                     | 0.58              |
| 13:B:125:GLU:N    | 13:B:125:GLU:OE1  | 2.36                     | 0.58              |
| 1:q:16:PHE:CE2    | 1:q:17:LEU:HD23   | 2.39                     | 0.57              |
| 24:a:137:ASN:OD1  | 24:a:140:ARG:NH1  | 2.37                     | 0.57              |
| 13:b:103:ARG:NH1  | 27:B:601:CDL:OA3  | 2.37                     | 0.57              |
| 14:R:72:ASP:OD2   | 24:A:137:ASN:ND2  | 2.38                     | 0.57              |
| 13:B:151:GLN:OE1  | 13:B:151:GLN:N    | 2.37                     | 0.57              |
| 24:A:137:ASN:OD1  | 24:A:140:ARG:NH1  | 2.37                     | 0.57              |
| 13:b:125:GLU:N    | 13:b:125:GLU:OE1  | 2.36                     | 0.57              |
| 13:b:151:GLN:OE1  | 13:b:151:GLN:N    | 2.37                     | 0.57              |
| 10:h:162:ASP:O    | 17:l:138:ARG:NH2  | 2.37                     | 0.56              |
| 13:b:115:ASP:OD1  | 13:b:116:ASP:N    | 2.39                     | 0.56              |
| 7:j:191:PHE:HA    | 7:j:194:VAL:O     | 2.06                     | 0.56              |
| 7:J:119:ARG:NH2   | 10:H:226:LYS:O    | 2.39                     | 0.56              |
| 21:n:58:GLU:N     | 21:n:58:GLU:OE1   | 2.37                     | 0.56              |
| 3:t:76:GLN:NE2    | 24:a:249:ASP:OD1  | 2.38                     | 0.56              |
| 21:N:58:GLU:OE1   | 21:N:58:GLU:N     | 2.38                     | 0.55              |
| 5:o:64:THR:HG21   | 26:o:202:LMT:C6'  | 2.36                     | 0.55              |
| 28:j:301:PEE:H46  | 23:w:85:PHE:HB3   | 1.88                     | 0.55              |
| 7:j:119:ARG:NH2   | 10:h:226:LYS:O    | 2.40                     | 0.55              |
| 1:Q:24:VAL:HG12   | 15:P:41:PRO:HB3   | 1.89                     | 0.55              |
| 13:b:134:ALA:HB2  | 13:b:161:CYS:SG   | 2.47                     | 0.55              |
| 13:B:227:ARG:NH1  | 14:R:57:ASP:OD2   | 2.40                     | 0.55              |
| 1:q:24:VAL:HG12   | 15:p:41:PRO:HB3   | 1.89                     | 0.54              |
| 7:J:191:PHE:HA    | 7:J:194:VAL:O     | 2.06                     | 0.54              |
| 10:h:223:ARG:O    | 26:h:301:LMT:O3B  | 2.18                     | 0.54              |
| 13:b:168:GLU:N    | 13:b:168:GLU:OE2  | 2.39                     | 0.54              |
| 11:e:189:SER:O    | 21:n:161:ARG:NH1  | 2.38                     | 0.54              |
| 13:B:134:ALA:HB2  | 13:B:161:CYS:SG   | 2.47                     | 0.54              |
| 3:t:30:VAL:O      | 3:t:30:VAL:HG23   | 2.08                     | 0.53              |
| 18:c:99:GLN:O     | 18:c:106:ARG:NH2  | 2.42                     | 0.53              |
| 4:G:149:ASP:OD2   | 4:G:155:ARG:NH2   | 2.39                     | 0.53              |
| 3:T:30:VAL:HG23   | 3:T:30:VAL:O      | 2.08                     | 0.53              |
| 16:V:25:TRP:O     | 19:D:117:ARG:NH1  | 2.42                     | 0.53              |
| 9:u:94:ARG:NH2    | 23:w:42:GLU:OE2   | 2.31                     | 0.53              |
| 5:O:66:LEU:HD23   | 5:O:66:LEU:H      | 1.74                     | 0.52              |
| 4:g:149:ASP:OD2   | 4:g:155:ARG:NH2   | 2.39                     | 0.52              |
| 14:r:35:ILE:HG21  | 14:r:40:ILE:HD11  | 1.92                     | 0.52              |
| 23:w:54:LEU:O     | 23:w:58:THR:HG23  | 2.09                     | 0.52              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 23:W:54:LEU:O    | 23:W:58:THR:HG23  | 2.09                     | 0.52              |
| 5:O:35:SER:O     | 5:O:39:SER:OG     | 2.28                     | 0.52              |
| 14:R:35:ILE:HG21 | 14:R:40:ILE:HD11  | 1.92                     | 0.52              |
| 18:C:39:TYR:O    | 18:C:43:VAL:HG23  | 2.10                     | 0.52              |
| 18:C:99:GLN:O    | 18:C:106:ARG:NH2  | 2.42                     | 0.52              |
| 5:o:66:LEU:HD23  | 5:o:66:LEU:H      | 1.74                     | 0.52              |
| 6:K:124:LYS:HB2  | 18:C:60:LEU:HD11  | 1.91                     | 0.52              |
| 5:o:35:SER:O     | 5:o:39:SER:OG     | 2.28                     | 0.52              |
| 13:b:170:ASP:OD2 | 13:b:238:GLU:N    | 2.41                     | 0.52              |
| 18:c:39:TYR:O    | 18:c:43:VAL:HG23  | 2.10                     | 0.52              |
| 13:B:115:ASP:OD1 | 13:B:116:ASP:N    | 2.39                     | 0.52              |
| 3:t:95:LEU:O     | 24:a:326:ARG:NH2  | 2.43                     | 0.51              |
| 6:k:217:THR:O    | 6:k:221:THR:OG1   | 2.27                     | 0.51              |
| 13:B:170:ASP:OD2 | 13:B:238:GLU:N    | 2.41                     | 0.51              |
| 13:B:168:GLU:OE2 | 13:B:168:GLU:N    | 2.39                     | 0.51              |
| 24:A:277:GLN:OE1 | 24:A:280:ARG:NH2  | 2.39                     | 0.51              |
| 12:x:18:VAL:HG22 | 12:x:19:PRO:HD3   | 1.93                     | 0.51              |
| 2:I:171:GLU:O    | 2:I:175:GLN:NE2   | 2.42                     | 0.51              |
| 12:X:18:VAL:HG22 | 12:X:19:PRO:HD3   | 1.93                     | 0.51              |
| 11:E:189:SER:O   | 21:N:161:ARG:NH1  | 2.40                     | 0.51              |
| 6:k:124:LYS:HB2  | 18:c:60:LEU:HD11  | 1.93                     | 0.50              |
| 21:n:161:ARG:NH2 | 21:n:166:ALA:OXT  | 2.44                     | 0.50              |
| 24:a:224:SER:OG  | 24:a:255:GLU:O    | 2.29                     | 0.50              |
| 19:d:177:GLN:NE2 | 10:H:80:ASP:OD1   | 2.37                     | 0.50              |
| 24:a:277:GLN:OE1 | 24:a:280:ARG:NH2  | 2.39                     | 0.50              |
| 1:Q:16:PHE:HE2   | 1:Q:17:LEU:HD23   | 1.77                     | 0.50              |
| 9:u:114:ARG:NE   | 17:l:184:GLN:OE1  | 2.43                     | 0.50              |
| 26:c:401:LMT:O2' | 26:c:403:LMT:O6B  | 2.14                     | 0.50              |
| 17:L:123:ALA:O   | 17:L:130:ARG:NH1  | 2.45                     | 0.50              |
| 11:e:261:GLU:N   | 11:e:261:GLU:OE2  | 2.44                     | 0.50              |
| 11:E:261:GLU:OE2 | 11:E:261:GLU:N    | 2.44                     | 0.50              |
| 1:q:16:PHE:HE2   | 1:q:17:LEU:HD23   | 1.77                     | 0.50              |
| 10:h:26:SER:O    | 10:h:28:VAL:N     | 2.45                     | 0.50              |
| 2:I:219:THR:HG23 | 15:P:23:LEU:HD13  | 1.93                     | 0.50              |
| 10:h:222:ARG:NH1 | 26:h:301:LMT:O4'  | 2.45                     | 0.49              |
| 14:r:71:LEU:HD21 | 20:m:184:LEU:HD22 | 1.94                     | 0.49              |
| 7:j:113:ASP:OD1  | 28:j:302:PEE:N    | 2.44                     | 0.49              |
| 10:H:26:SER:O    | 10:H:28:VAL:N     | 2.45                     | 0.49              |
| 17:l:123:ALA:O   | 17:l:130:ARG:NH1  | 2.45                     | 0.49              |
| 11:E:177:GLU:OE2 | 19:D:289:ASN:ND2  | 2.46                     | 0.49              |
| 13:b:227:ARG:NH1 | 14:r:57:ASP:OD2   | 2.45                     | 0.49              |

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| Atom-1           | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|------------------|-------------------|--------------------------|-------------------|
| 5:O:64:THR:HG21  | 26:O:202:LMT:C6'  | 2.43                     | 0.49              |
| 21:N:161:ARG:NH2 | 21:N:166:ALA:OXT  | 2.44                     | 0.49              |
| 11:e:193:LYS:O   | 19:d:138:ASN:ND2  | 2.40                     | 0.49              |
| 7:J:191:PHE:CD1  | 7:J:191:PHE:C     | 2.91                     | 0.49              |
| 14:R:83:GLU:OE1  | 14:R:83:GLU:N     | 2.46                     | 0.49              |
| 14:r:83:GLU:OE1  | 14:r:83:GLU:N     | 2.46                     | 0.49              |
| 19:D:199:LEU:C   | 19:D:199:LEU:HD12 | 2.38                     | 0.49              |
| 22:F:199:ASP:O   | 22:F:203:ARG:NH2  | 2.45                     | 0.49              |
| 17:l:206:GLU:HG2 | 2:I:146:MET:HE3   | 1.95                     | 0.49              |
| 19:d:199:LEU:C   | 19:d:199:LEU:HD12 | 2.38                     | 0.49              |
| 7:j:191:PHE:CD1  | 7:j:191:PHE:C     | 2.91                     | 0.48              |
| 24:A:448:GLU:OE2 | 24:A:448:GLU:N    | 2.42                     | 0.48              |
| 1:q:83:PHE:O     | 1:q:86:VAL:HG22   | 2.13                     | 0.48              |
| 28:j:302:PEE:H64 | 27:c:404:CDL:H272 | 1.95                     | 0.48              |
| 14:R:32:GLN:N    | 14:R:32:GLN:OE1   | 2.46                     | 0.48              |
| 13:b:301:GLU:OE2 | 20:m:163:ARG:NE   | 2.37                     | 0.48              |
| 1:Q:83:PHE:O     | 1:Q:86:VAL:HG22   | 2.13                     | 0.48              |
| 13:B:261:GLY:O   | 13:B:264:ASN:ND2  | 2.42                     | 0.48              |
| 12:x:18:VAL:N    | 12:x:19:PRO:CD    | 2.77                     | 0.48              |
| 14:r:32:GLN:N    | 14:r:32:GLN:OE1   | 2.46                     | 0.48              |
| 22:f:189:ASN:O   | 22:f:192:SER:OG   | 2.31                     | 0.48              |
| 6:k:148:LEU:O    | 6:k:151:ARG:NH2   | 2.47                     | 0.48              |
| 22:f:199:ASP:O   | 22:f:203:ARG:NH2  | 2.45                     | 0.48              |
| 26:C:401:LMT:O2' | 26:C:403:LMT:O6B  | 2.14                     | 0.48              |
| 13:b:321:TYR:HE1 | 14:r:33:LEU:HD13  | 1.76                     | 0.48              |
| 6:K:182:LEU:HD23 | 6:K:185:MET:HE2   | 1.95                     | 0.48              |
| 9:U:54:TYR:HH    | 19:D:134:THR:HG1  | 1.56                     | 0.48              |
| 11:E:193:LYS:O   | 19:D:138:ASN:ND2  | 2.39                     | 0.48              |
| 12:X:18:VAL:N    | 12:X:19:PRO:CD    | 2.77                     | 0.48              |
| 6:k:182:LEU:HD23 | 6:k:185:MET:HE2   | 1.95                     | 0.48              |
| 24:a:368:ASN:ND2 | 24:a:482:ASN:OD1  | 2.46                     | 0.48              |
| 9:u:64:ARG:NH1   | 27:u:201:CDL:OA4  | 2.47                     | 0.47              |
| 17:L:14:VAL:HG23 | 17:L:14:VAL:O     | 2.14                     | 0.47              |
| 24:A:368:ASN:ND2 | 24:A:482:ASN:OD1  | 2.46                     | 0.47              |
| 11:e:177:GLU:OE2 | 19:d:289:ASN:ND2  | 2.47                     | 0.47              |
| 2:i:171:GLU:O    | 2:i:175:GLN:NE2   | 2.42                     | 0.47              |
| 6:k:224:PHE:OXT  | 7:j:87:ARG:NE     | 2.48                     | 0.47              |
| 21:n:28:ASN:ND2  | 21:n:36:CYS:SG    | 2.88                     | 0.47              |
| 21:n:77:GLU:OE1  | 21:n:77:GLU:N     | 2.45                     | 0.47              |
| 21:N:28:ASN:ND2  | 21:N:36:CYS:SG    | 2.88                     | 0.47              |
| 22:F:189:ASN:O   | 22:F:192:SER:OG   | 2.31                     | 0.47              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 1:q:107:ASP:OD1   | 1:q:107:ASP:N     | 2.48                     | 0.47              |
| 17:l:14:VAL:O     | 17:l:14:VAL:HG23  | 2.14                     | 0.47              |
| 24:a:448:GLU:OE2  | 24:a:448:GLU:N    | 2.42                     | 0.47              |
| 28:J:302:PEE:H64  | 27:C:404:CDL:H272 | 1.95                     | 0.47              |
| 7:J:118:GLU:OE2   | 10:H:227:HIS:ND1  | 2.48                     | 0.47              |
| 10:h:80:ASP:OD1   | 19:D:177:GLN:NE2  | 2.38                     | 0.46              |
| 6:K:148:LEU:O     | 6:K:151:ARG:NH2   | 2.47                     | 0.46              |
| 17:L:2:THR:N      | 19:D:192:GLU:OE1  | 2.49                     | 0.46              |
| 7:j:118:GLU:OE2   | 10:h:227:HIS:ND1  | 2.48                     | 0.46              |
| 5:o:149:ARG:NH2   | 19:d:256:PRO:O    | 2.42                     | 0.46              |
| 1:Q:107:ASP:OD1   | 1:Q:107:ASP:N     | 2.48                     | 0.46              |
| 10:H:222:ARG:NH1  | 26:H:301:LMT:O4'  | 2.49                     | 0.46              |
| 21:N:92:LEU:CD1   | 21:N:121:LEU:HD12 | 2.46                     | 0.46              |
| 1:q:112:GLU:C     | 4:g:225:LYS:HZ2   | 2.24                     | 0.46              |
| 7:j:94:ASN:HB3    | 23:w:86:VAL:HG22  | 1.97                     | 0.46              |
| 24:A:224:SER:OG   | 24:A:255:GLU:O    | 2.29                     | 0.46              |
| 21:n:92:LEU:CD1   | 21:n:121:LEU:HD12 | 2.46                     | 0.46              |
| 27:E:401:CDL:H673 | 27:V:201:CDL:H762 | 1.97                     | 0.46              |
| 2:i:219:THR:HG23  | 15:p:23:LEU:HD13  | 1.99                     | 0.46              |
| 11:e:294:ASP:OD2  | 11:e:298:LYS:NZ   | 2.49                     | 0.46              |
| 6:K:224:PHE:OXT   | 7:J:87:ARG:NE     | 2.49                     | 0.45              |
| 7:J:94:ASN:HB3    | 23:W:86:VAL:HG22  | 1.97                     | 0.45              |
| 13:b:261:GLY:O    | 13:b:264:ASN:ND2  | 2.42                     | 0.45              |
| 27:E:401:CDL:H1O1 | 27:E:401:CDL:PB2  | 2.37                     | 0.45              |
| 8:s:80:ASN:HB2    | 9:u:73:VAL:HG13   | 1.97                     | 0.45              |
| 3:T:99:GLU:OE1    | 3:T:99:GLU:N      | 2.46                     | 0.45              |
| 16:v:111:ARG:HB3  | 19:d:257:ILE:HD13 | 1.99                     | 0.45              |
| 1:q:15:ILE:HD12   | 1:q:15:ILE:N      | 2.32                     | 0.45              |
| 2:i:191:ARG:NH1   | 17:L:207:GLY:O    | 2.45                     | 0.45              |
| 6:k:144:ALA:O     | 6:k:148:LEU:HD23  | 2.17                     | 0.45              |
| 17:l:202:LEU:O    | 17:l:205:VAL:HG12 | 2.17                     | 0.45              |
| 21:N:77:GLU:OE1   | 21:N:77:GLU:N     | 2.45                     | 0.45              |
| 1:Q:15:ILE:HD12   | 1:Q:15:ILE:N      | 2.32                     | 0.45              |
| 14:R:71:LEU:HD21  | 20:M:184:LEU:HD22 | 1.99                     | 0.45              |
| 24:A:470:GLU:O    | 24:A:474:LYS:NZ   | 2.49                     | 0.45              |
| 10:h:59:ARG:NH2   | 10:h:137:LYS:O    | 2.50                     | 0.45              |
| 11:E:294:ASP:OD2  | 11:E:298:LYS:NZ   | 2.49                     | 0.45              |
| 1:q:114:ASP:OD1   | 1:q:115:GLN:N     | 2.47                     | 0.44              |
| 24:a:470:GLU:O    | 24:a:474:LYS:NZ   | 2.49                     | 0.44              |
| 5:O:43:THR:OG1    | 25:O:201:PC1:O14  | 2.35                     | 0.44              |
| 2:i:198:ASP:OD1   | 11:e:282:ARG:NH2  | 2.45                     | 0.44              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 12:x:61:GLU:O     | 12:x:73:ASN:ND2   | 2.51                     | 0.44              |
| 9:U:122:ASP:HA    | 9:U:126:VAL:HG23  | 2.00                     | 0.44              |
| 10:H:59:ARG:NH2   | 10:H:137:LYS:O    | 2.50                     | 0.44              |
| 3:T:59:ARG:NH1    | 22:F:81:ALA:O     | 2.51                     | 0.44              |
| 7:J:48:THR:HG22   | 7:J:49:LEU:N      | 2.33                     | 0.44              |
| 6:k:214:THR:O     | 6:k:217:THR:HG22  | 2.18                     | 0.44              |
| 1:Q:114:ASP:OD1   | 1:Q:115:GLN:N     | 2.47                     | 0.44              |
| 24:A:362:SER:OG   | 24:A:475:ARG:NH1  | 2.51                     | 0.44              |
| 6:K:214:THR:O     | 6:K:217:THR:HG22  | 2.18                     | 0.44              |
| 24:a:362:SER:OG   | 24:a:475:ARG:NH1  | 2.51                     | 0.43              |
| 17:L:202:LEU:O    | 17:L:205:VAL:HG12 | 2.17                     | 0.43              |
| 5:o:119:GLU:OE1   | 5:o:119:GLU:N     | 2.49                     | 0.43              |
| 22:f:99:VAL:HG12  | 22:f:100:SER:N    | 2.33                     | 0.43              |
| 20:M:171:ASN:O    | 20:M:172:PHE:HB2  | 2.19                     | 0.43              |
| 13:b:173:VAL:HG23 | 13:b:225:CYS:SG   | 2.59                     | 0.43              |
| 20:m:171:ASN:O    | 20:m:172:PHE:HB2  | 2.18                     | 0.43              |
| 5:o:59:ARG:NH2    | 12:x:20:GLN:OE1   | 2.51                     | 0.43              |
| 6:k:154:PHE:HA    | 6:k:157:MET:HG2   | 2.00                     | 0.43              |
| 10:H:217:ASN:OD1  | 10:H:218:TYR:N    | 2.46                     | 0.43              |
| 7:j:48:THR:HG22   | 7:j:49:LEU:N      | 2.33                     | 0.43              |
| 9:u:122:ASP:HA    | 9:u:126:VAL:HG23  | 1.99                     | 0.43              |
| 17:l:98:ASP:OD1   | 17:l:99:VAL:N     | 2.52                     | 0.43              |
| 1:Q:124:ARG:NH2   | 5:O:156:ASN:OD1   | 2.51                     | 0.43              |
| 6:K:144:ALA:O     | 6:K:148:LEU:HD23  | 2.17                     | 0.43              |
| 17:l:112:VAL:HG11 | 17:l:141:ARG:HG2  | 2.01                     | 0.43              |
| 18:c:106:ARG:NH1  | 18:c:109:GLU:O    | 2.52                     | 0.43              |
| 27:E:401:CDL:H672 | 16:V:78:ALA:HB2   | 2.00                     | 0.43              |
| 17:L:98:ASP:OD1   | 17:L:99:VAL:N     | 2.52                     | 0.43              |
| 16:v:72:LEU:HB3   | 27:d:402:CDL:H371 | 2.01                     | 0.43              |
| 21:n:52:THR:HG22  | 21:n:53:SER:N     | 2.33                     | 0.43              |
| 1:Q:12:VAL:HG12   | 1:Q:16:PHE:CE1    | 2.54                     | 0.43              |
| 6:K:154:PHE:HA    | 6:K:157:MET:HG2   | 2.00                     | 0.43              |
| 13:B:173:VAL:HG23 | 13:B:225:CYS:SG   | 2.59                     | 0.43              |
| 27:B:601:CDL:H273 | 27:V:201:CDL:H802 | 2.00                     | 0.43              |
| 17:L:197:ARG:O    | 17:L:200:VAL:HG22 | 2.19                     | 0.43              |
| 18:C:89:GLU:O     | 19:D:68:THR:HG21  | 2.19                     | 0.43              |
| 4:g:145:GLU:N     | 4:g:145:GLU:OE1   | 2.52                     | 0.43              |
| 4:G:145:GLU:OE1   | 4:G:145:GLU:N     | 2.52                     | 0.43              |
| 6:K:217:THR:O     | 6:K:221:THR:OG1   | 2.27                     | 0.43              |
| 16:V:5:PHE:O      | 16:V:9:ILE:HG12   | 2.19                     | 0.43              |
| 18:C:106:ARG:NH1  | 18:C:109:GLU:O    | 2.52                     | 0.43              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 21:N:52:THR:HG22  | 21:N:53:SER:N     | 2.33                     | 0.43              |
| 21:n:92:LEU:HD11  | 21:n:121:LEU:HD12 | 2.01                     | 0.42              |
| 1:q:12:VAL:HG12   | 1:q:16:PHE:CE1    | 2.54                     | 0.42              |
| 11:e:271:ALA:O    | 11:e:274:ARG:C    | 2.62                     | 0.42              |
| 14:r:1:MET:HE2    | 20:m:172:PHE:CE1  | 2.54                     | 0.42              |
| 16:v:83:TYR:OH    | 27:v:201:CDL:OB4  | 2.28                     | 0.42              |
| 5:O:59:ARG:NH2    | 12:X:20:GLN:OE1   | 2.52                     | 0.42              |
| 5:O:97:TYR:OH     | 20:M:113:GLU:OE2  | 2.36                     | 0.42              |
| 5:O:100:ASP:OD2   | 26:O:202:LMT:O6B  | 2.38                     | 0.42              |
| 10:H:139:ASN:O    | 10:H:140:SER:OG   | 2.32                     | 0.42              |
| 17:L:112:VAL:HG11 | 17:L:141:ARG:HG2  | 2.01                     | 0.42              |
| 27:e:401:CDL:H673 | 27:B:601:CDL:H762 | 2.01                     | 0.42              |
| 5:O:119:GLU:N     | 5:O:119:GLU:OE1   | 2.49                     | 0.42              |
| 15:P:51:LEU:O     | 15:P:52:SER:C     | 2.62                     | 0.42              |
| 3:t:99:GLU:OE1    | 3:t:99:GLU:N      | 2.46                     | 0.42              |
| 22:F:99:VAL:HG12  | 22:F:100:SER:N    | 2.33                     | 0.42              |
| 17:l:2:THR:N      | 19:d:192:GLU:OE1  | 2.52                     | 0.42              |
| 18:c:89:GLU:O     | 19:d:68:THR:HG21  | 2.20                     | 0.42              |
| 21:N:92:LEU:HD11  | 21:N:121:LEU:HD12 | 2.01                     | 0.42              |
| 7:j:191:PHE:O     | 7:j:192:PRO:C     | 2.63                     | 0.42              |
| 15:p:51:LEU:O     | 15:p:52:SER:C     | 2.62                     | 0.42              |
| 3:T:40:ALA:HB3    | 22:F:76:PRO:O     | 2.19                     | 0.42              |
| 13:B:134:ALA:HB1  | 13:B:138:LEU:CD1  | 2.50                     | 0.42              |
| 2:i:226:GLN:HE22  | 15:p:19:MET:HE3   | 1.85                     | 0.42              |
| 27:e:401:CDL:H622 | 13:b:258:VAL:HG13 | 2.02                     | 0.42              |
| 17:l:197:ARG:O    | 17:l:200:VAL:HG22 | 2.19                     | 0.42              |
| 20:m:165:LYS:HG2  | 24:a:151:VAL:HG22 | 2.02                     | 0.42              |
| 27:V:201:CDL:H171 | 27:V:201:CDL:H211 | 2.02                     | 0.42              |
| 14:r:72:ASP:OD2   | 24:a:137:ASN:ND2  | 2.49                     | 0.42              |
| 16:v:5:PHE:O      | 16:v:9:ILE:HG12   | 2.19                     | 0.42              |
| 18:c:44:TYR:N     | 18:c:44:TYR:CD2   | 2.87                     | 0.42              |
| 11:E:271:ALA:O    | 11:E:274:ARG:C    | 2.62                     | 0.42              |
| 19:D:230:ASN:ND2  | 23:W:19:ALA:O     | 2.52                     | 0.42              |
| 4:g:134:SER:N     | 4:g:137:ASN:OD1   | 2.52                     | 0.41              |
| 4:g:190:LEU:HD12  | 4:g:190:LEU:N     | 2.35                     | 0.41              |
| 10:h:217:ASN:OD1  | 10:h:218:TYR:N    | 2.46                     | 0.41              |
| 6:k:166:ARG:HB3   | 6:k:167:PRO:HD3   | 2.03                     | 0.41              |
| 6:K:202:VAL:HG22  | 13:B:279:PHE:CE2  | 2.56                     | 0.41              |
| 22:F:132:GLU:O    | 22:F:136:LYS:O    | 2.39                     | 0.41              |
| 10:h:139:ASN:O    | 10:h:140:SER:OG   | 2.32                     | 0.41              |
| 17:l:36:LEU:O     | 17:l:39:GLN:HG2   | 2.21                     | 0.41              |

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| Atom-1            | Atom-2            | Interatomic distance (Å) | Clash overlap (Å) |
|-------------------|-------------------|--------------------------|-------------------|
| 5:O:149:ARG:NH2   | 19:D:256:PRO:O    | 2.41                     | 0.41              |
| 27:E:401:CDL:H622 | 13:B:258:VAL:HG13 | 2.02                     | 0.41              |
| 2:i:205:ARG:NH2   | 15:p:82:ALA:O     | 2.54                     | 0.41              |
| 4:G:190:LEU:N     | 4:G:190:LEU:HD12  | 2.35                     | 0.41              |
| 6:K:166:ARG:HB3   | 6:K:167:PRO:HD3   | 2.03                     | 0.41              |
| 10:H:221:ASP:OD1  | 10:H:222:ARG:N    | 2.50                     | 0.41              |
| 13:b:134:ALA:HB1  | 13:b:138:LEU:CD1  | 2.50                     | 0.41              |
| 2:I:198:ASP:OD1   | 11:E:282:ARG:NH2  | 2.49                     | 0.41              |
| 18:C:44:TYR:N     | 18:C:44:TYR:CD2   | 2.87                     | 0.41              |
| 7:J:167:LEU:HD23  | 19:D:244:PRO:HG2  | 2.02                     | 0.41              |
| 8:s:104:VAL:HG21  | 17:l:103:LEU:HD21 | 2.03                     | 0.41              |
| 9:u:100:HIS:O     | 9:u:103:SER:OG    | 2.32                     | 0.41              |
| 12:x:61:GLU:OE1   | 12:x:61:GLU:N     | 2.48                     | 0.41              |
| 1:Q:112:GLU:C     | 4:G:225:LYS:HZ2   | 2.29                     | 0.41              |
| 5:O:51:PHE:HB2    | 5:O:52:PRO:HD3    | 2.02                     | 0.41              |
| 5:O:141:ARG:NH2   | 10:H:220:GLU:OE2  | 2.46                     | 0.41              |
| 7:J:191:PHE:O     | 7:J:192:PRO:C     | 2.63                     | 0.41              |
| 13:B:134:ALA:N    | 13:B:135:PRO:CD   | 2.84                     | 0.41              |
| 5:o:141:ARG:NH2   | 10:h:220:GLU:OE2  | 2.44                     | 0.41              |
| 10:h:144:THR:HG22 | 10:h:145:ALA:N    | 2.36                     | 0.41              |
| 10:h:146:ASP:OD1  | 10:h:149:ARG:NH2  | 2.54                     | 0.41              |
| 10:h:221:ASP:OD1  | 10:h:222:ARG:N    | 2.50                     | 0.41              |
| 1:Q:100:GLN:HA    | 1:Q:103:ASN:OD1   | 2.21                     | 0.41              |
| 27:B:601:CDL:H171 | 27:B:601:CDL:H211 | 2.02                     | 0.41              |
| 22:F:208:ASP:OD2  | 22:F:213:LYS:N    | 2.54                     | 0.41              |
| 5:o:51:PHE:HB2    | 5:o:52:PRO:HD3    | 2.02                     | 0.40              |
| 13:b:134:ALA:N    | 13:b:135:PRO:CD   | 2.84                     | 0.40              |
| 24:a:334:LEU:HD22 | 24:a:432:VAL:HG12 | 2.03                     | 0.40              |
| 7:j:167:LEU:HD23  | 19:d:244:PRO:HG2  | 2.03                     | 0.40              |
| 22:f:132:GLU:O    | 22:f:136:LYS:O    | 2.39                     | 0.40              |
| 4:g:151:LEU:HD23  | 17:L:14:VAL:HG12  | 2.03                     | 0.40              |
| 10:h:189:GLN:NE2  | 19:d:239:ASN:OD1  | 2.54                     | 0.40              |
| 16:v:64:ASN:HB2   | 16:v:65:PRO:HD2   | 2.03                     | 0.40              |
| 5:o:64:THR:HG21   | 26:o:202:LMT:H6E  | 2.02                     | 0.40              |
| 24:a:127:SER:O    | 24:a:130:LYS:HG3  | 2.22                     | 0.40              |
| 12:X:61:GLU:O     | 12:X:73:ASN:ND2   | 2.51                     | 0.40              |
| 7:j:92:PHE:O      | 7:j:98:SER:OG     | 2.31                     | 0.40              |
| 17:l:14:VAL:HG12  | 4:G:151:LEU:CD2   | 2.51                     | 0.40              |
| 2:I:178:ARG:NE    | 11:E:294:ASP:OD1  | 2.55                     | 0.40              |
| 27:E:401:CDL:O1   | 27:E:401:CDL:PB2  | 2.78                     | 0.40              |
| 16:V:89:LYS:HA    | 19:D:304:VAL:HG21 | 2.03                     | 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   | Q     | 131/134 (98%) | 128 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 1   | q     | 131/134 (98%) | 128 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 2   | I     | 88/236 (37%)  | 85 (97%)  | 3 (3%)  | 0        | 100         | 100 |
| 2   | i     | 88/236 (37%)  | 85 (97%)  | 3 (3%)  | 0        | 100         | 100 |
| 3   | T     | 90/133 (68%)  | 87 (97%)  | 3 (3%)  | 0        | 100         | 100 |
| 3   | t     | 90/133 (68%)  | 87 (97%)  | 3 (3%)  | 0        | 100         | 100 |
| 4   | G     | 110/252 (44%) | 107 (97%) | 3 (3%)  | 0        | 100         | 100 |
| 4   | g     | 110/252 (44%) | 107 (97%) | 3 (3%)  | 0        | 100         | 100 |
| 5   | O     | 147/157 (94%) | 141 (96%) | 6 (4%)  | 0        | 100         | 100 |
| 5   | o     | 147/157 (94%) | 140 (95%) | 7 (5%)  | 0        | 100         | 100 |
| 6   | K     | 115/224 (51%) | 111 (96%) | 4 (4%)  | 0        | 100         | 100 |
| 6   | k     | 115/224 (51%) | 112 (97%) | 3 (3%)  | 0        | 100         | 100 |
| 7   | J     | 174/229 (76%) | 171 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 7   | j     | 174/229 (76%) | 171 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 8   | S     | 93/128 (73%)  | 92 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 8   | s     | 93/128 (73%)  | 92 (99%)  | 1 (1%)  | 0        | 100         | 100 |
| 9   | U     | 92/126 (73%)  | 90 (98%)  | 2 (2%)  | 0        | 100         | 100 |
| 9   | u     | 92/126 (73%)  | 90 (98%)  | 2 (2%)  | 0        | 100         | 100 |
| 10  | H     | 224/239 (94%) | 215 (96%) | 9 (4%)  | 0        | 100         | 100 |
| 10  | h     | 224/239 (94%) | 214 (96%) | 10 (4%) | 0        | 100         | 100 |
| 11  | E     | 138/325 (42%) | 135 (98%) | 3 (2%)  | 0        | 100         | 100 |
| 11  | e     | 138/325 (42%) | 135 (98%) | 3 (2%)  | 0        | 100         | 100 |

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| Mol | Chain | Analysed         | Favoured   | Allowed  | Outliers | Percentiles |     |
|-----|-------|------------------|------------|----------|----------|-------------|-----|
| 12  | X     | 80/83 (96%)      | 76 (95%)   | 4 (5%)   | 0        | 100         | 100 |
| 12  | x     | 80/83 (96%)      | 76 (95%)   | 4 (5%)   | 0        | 100         | 100 |
| 13  | B     | 251/571 (44%)    | 247 (98%)  | 4 (2%)   | 0        | 100         | 100 |
| 13  | b     | 251/571 (44%)    | 247 (98%)  | 4 (2%)   | 0        | 100         | 100 |
| 14  | R     | 88/134 (66%)     | 84 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 14  | r     | 88/134 (66%)     | 84 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 15  | P     | 106/138 (77%)    | 104 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 15  | p     | 106/138 (77%)    | 104 (98%)  | 2 (2%)   | 0        | 100         | 100 |
| 16  | V     | 108/111 (97%)    | 108 (100%) | 0        | 0        | 100         | 100 |
| 16  | v     | 108/111 (97%)    | 108 (100%) | 0        | 0        | 100         | 100 |
| 17  | L     | 205/208 (99%)    | 200 (98%)  | 5 (2%)   | 0        | 100         | 100 |
| 17  | l     | 205/208 (99%)    | 200 (98%)  | 5 (2%)   | 0        | 100         | 100 |
| 18  | C     | 120/398 (30%)    | 114 (95%)  | 6 (5%)   | 0        | 100         | 100 |
| 18  | c     | 120/398 (30%)    | 114 (95%)  | 6 (5%)   | 0        | 100         | 100 |
| 19  | D     | 250/310 (81%)    | 247 (99%)  | 3 (1%)   | 0        | 100         | 100 |
| 19  | d     | 250/310 (81%)    | 247 (99%)  | 3 (1%)   | 0        | 100         | 100 |
| 20  | M     | 94/205 (46%)     | 88 (94%)   | 6 (6%)   | 0        | 100         | 100 |
| 20  | m     | 94/205 (46%)     | 89 (95%)   | 5 (5%)   | 0        | 100         | 100 |
| 21  | N     | 158/166 (95%)    | 154 (98%)  | 4 (2%)   | 0        | 100         | 100 |
| 21  | n     | 158/166 (95%)    | 154 (98%)  | 4 (2%)   | 0        | 100         | 100 |
| 22  | F     | 184/267 (69%)    | 176 (96%)  | 8 (4%)   | 0        | 100         | 100 |
| 22  | f     | 184/267 (69%)    | 176 (96%)  | 8 (4%)   | 0        | 100         | 100 |
| 23  | W     | 92/106 (87%)     | 88 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 23  | w     | 92/106 (87%)     | 88 (96%)   | 4 (4%)   | 0        | 100         | 100 |
| 24  | A     | 367/536 (68%)    | 356 (97%)  | 11 (3%)  | 0        | 100         | 100 |
| 24  | a     | 367/536 (68%)    | 356 (97%)  | 11 (3%)  | 0        | 100         | 100 |
| All | All   | 7010/10832 (65%) | 6808 (97%) | 202 (3%) | 0        | 100         | 100 |

There are no Ramachandran outliers to report.

### 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   | Q     | 119/120 (99%) | 115 (97%)  | 4 (3%)   | 32          | 66  |
| 1   | q     | 119/120 (99%) | 115 (97%)  | 4 (3%)   | 32          | 66  |
| 2   | I     | 71/197 (36%)  | 70 (99%)   | 1 (1%)   | 62          | 87  |
| 2   | i     | 71/197 (36%)  | 70 (99%)   | 1 (1%)   | 62          | 87  |
| 3   | T     | 77/106 (73%)  | 77 (100%)  | 0        | 100         | 100 |
| 3   | t     | 77/106 (73%)  | 77 (100%)  | 0        | 100         | 100 |
| 4   | G     | 93/214 (44%)  | 93 (100%)  | 0        | 100         | 100 |
| 4   | g     | 93/214 (44%)  | 93 (100%)  | 0        | 100         | 100 |
| 5   | O     | 127/129 (98%) | 126 (99%)  | 1 (1%)   | 79          | 93  |
| 5   | o     | 127/129 (98%) | 126 (99%)  | 1 (1%)   | 79          | 93  |
| 6   | K     | 100/175 (57%) | 100 (100%) | 0        | 100         | 100 |
| 6   | k     | 100/175 (57%) | 100 (100%) | 0        | 100         | 100 |
| 7   | J     | 160/195 (82%) | 157 (98%)  | 3 (2%)   | 52          | 82  |
| 7   | j     | 160/195 (82%) | 157 (98%)  | 3 (2%)   | 52          | 82  |
| 8   | S     | 86/113 (76%)  | 86 (100%)  | 0        | 100         | 100 |
| 8   | s     | 86/113 (76%)  | 86 (100%)  | 0        | 100         | 100 |
| 9   | U     | 76/98 (78%)   | 76 (100%)  | 0        | 100         | 100 |
| 9   | u     | 76/98 (78%)   | 76 (100%)  | 0        | 100         | 100 |
| 10  | H     | 197/204 (97%) | 195 (99%)  | 2 (1%)   | 73          | 91  |
| 10  | h     | 197/204 (97%) | 195 (99%)  | 2 (1%)   | 73          | 91  |
| 11  | E     | 118/258 (46%) | 117 (99%)  | 1 (1%)   | 79          | 93  |
| 11  | e     | 118/258 (46%) | 117 (99%)  | 1 (1%)   | 79          | 93  |
| 12  | X     | 70/71 (99%)   | 69 (99%)   | 1 (1%)   | 62          | 87  |
| 12  | x     | 70/71 (99%)   | 69 (99%)   | 1 (1%)   | 62          | 87  |
| 13  | B     | 227/491 (46%) | 227 (100%) | 0        | 100         | 100 |
| 13  | b     | 227/491 (46%) | 227 (100%) | 0        | 100         | 100 |

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| Mol | Chain | Analysed        | Rotameric  | Outliers | Percentiles |     |
|-----|-------|-----------------|------------|----------|-------------|-----|
| 14  | R     | 80/117 (68%)    | 80 (100%)  | 0        | 100         | 100 |
| 14  | r     | 80/117 (68%)    | 80 (100%)  | 0        | 100         | 100 |
| 15  | P     | 91/113 (80%)    | 91 (100%)  | 0        | 100         | 100 |
| 15  | p     | 91/113 (80%)    | 91 (100%)  | 0        | 100         | 100 |
| 16  | V     | 86/87 (99%)     | 86 (100%)  | 0        | 100         | 100 |
| 16  | v     | 86/87 (99%)     | 86 (100%)  | 0        | 100         | 100 |
| 17  | L     | 177/178 (99%)   | 176 (99%)  | 1 (1%)   | 84          | 95  |
| 17  | l     | 177/178 (99%)   | 176 (99%)  | 1 (1%)   | 84          | 95  |
| 18  | C     | 107/338 (32%)   | 105 (98%)  | 2 (2%)   | 52          | 82  |
| 18  | c     | 107/338 (32%)   | 105 (98%)  | 2 (2%)   | 52          | 82  |
| 19  | D     | 218/259 (84%)   | 217 (100%) | 1 (0%)   | 86          | 95  |
| 19  | d     | 218/259 (84%)   | 217 (100%) | 1 (0%)   | 86          | 95  |
| 20  | M     | 77/156 (49%)    | 76 (99%)   | 1 (1%)   | 65          | 88  |
| 20  | m     | 77/156 (49%)    | 76 (99%)   | 1 (1%)   | 65          | 88  |
| 21  | N     | 138/144 (96%)   | 138 (100%) | 0        | 100         | 100 |
| 21  | n     | 138/144 (96%)   | 138 (100%) | 0        | 100         | 100 |
| 22  | F     | 155/218 (71%)   | 153 (99%)  | 2 (1%)   | 65          | 88  |
| 22  | f     | 155/218 (71%)   | 153 (99%)  | 2 (1%)   | 65          | 88  |
| 23  | W     | 84/89 (94%)     | 84 (100%)  | 0        | 100         | 100 |
| 23  | w     | 84/89 (94%)     | 84 (100%)  | 0        | 100         | 100 |
| 24  | A     | 315/447 (70%)   | 314 (100%) | 1 (0%)   | 91          | 97  |
| 24  | a     | 315/447 (70%)   | 314 (100%) | 1 (0%)   | 91          | 97  |
| All | All   | 6098/9034 (68%) | 6056 (99%) | 42 (1%)  | 80          | 94  |

All (42) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | q     | 17  | LEU  |
| 1   | q     | 82  | CYS  |
| 1   | q     | 87  | SER  |
| 1   | q     | 90  | GLU  |
| 2   | i     | 153 | SER  |
| 5   | o     | 66  | LEU  |
| 7   | j     | 91  | PHE  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 7   | j     | 190 | GLN  |
| 7   | j     | 203 | THR  |
| 10  | h     | 79  | THR  |
| 10  | h     | 80  | ASP  |
| 11  | e     | 261 | GLU  |
| 12  | x     | 3   | THR  |
| 17  | l     | 47  | ASP  |
| 18  | c     | 86  | THR  |
| 18  | c     | 117 | GLU  |
| 19  | d     | 73  | VAL  |
| 20  | m     | 103 | ASP  |
| 22  | f     | 163 | SER  |
| 22  | f     | 209 | SER  |
| 24  | a     | 354 | ASP  |
| 1   | Q     | 17  | LEU  |
| 1   | Q     | 82  | CYS  |
| 1   | Q     | 87  | SER  |
| 1   | Q     | 90  | GLU  |
| 2   | I     | 153 | SER  |
| 5   | O     | 66  | LEU  |
| 7   | J     | 91  | PHE  |
| 7   | J     | 190 | GLN  |
| 7   | J     | 203 | THR  |
| 10  | H     | 79  | THR  |
| 10  | H     | 80  | ASP  |
| 11  | E     | 261 | GLU  |
| 12  | X     | 3   | THR  |
| 17  | L     | 47  | ASP  |
| 18  | C     | 86  | THR  |
| 18  | C     | 117 | GLU  |
| 19  | D     | 73  | VAL  |
| 20  | M     | 103 | ASP  |
| 22  | F     | 163 | SER  |
| 22  | F     | 209 | SER  |
| 24  | A     | 354 | ASP  |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (53) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1   | q     | 25  | GLN  |
| 1   | q     | 133 | HIS  |
| 2   | i     | 206 | HIS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 3   | t     | 88  | GLN  |
| 4   | g     | 156 | GLN  |
| 4   | g     | 169 | GLN  |
| 5   | o     | 69  | HIS  |
| 7   | j     | 86  | ASN  |
| 7   | j     | 137 | HIS  |
| 7   | j     | 199 | ASN  |
| 7   | j     | 210 | HIS  |
| 7   | j     | 217 | GLN  |
| 10  | h     | 33  | GLN  |
| 10  | h     | 39  | HIS  |
| 14  | r     | 54  | HIS  |
| 17  | l     | 172 | GLN  |
| 18  | c     | 42  | GLN  |
| 19  | d     | 46  | HIS  |
| 20  | m     | 132 | ASN  |
| 21  | n     | 10  | GLN  |
| 22  | f     | 115 | ASN  |
| 22  | f     | 167 | ASN  |
| 22  | f     | 251 | HIS  |
| 23  | w     | 49  | GLN  |
| 24  | a     | 155 | ASN  |
| 24  | a     | 321 | GLN  |
| 24  | a     | 411 | HIS  |
| 1   | Q     | 25  | GLN  |
| 1   | Q     | 133 | HIS  |
| 2   | I     | 206 | HIS  |
| 3   | T     | 88  | GLN  |
| 4   | G     | 156 | GLN  |
| 4   | G     | 169 | GLN  |
| 5   | O     | 69  | HIS  |
| 7   | J     | 86  | ASN  |
| 7   | J     | 137 | HIS  |
| 7   | J     | 199 | ASN  |
| 7   | J     | 210 | HIS  |
| 10  | H     | 39  | HIS  |
| 12  | X     | 28  | ASN  |
| 14  | R     | 54  | HIS  |
| 16  | V     | 80  | HIS  |
| 16  | V     | 88  | GLN  |
| 17  | L     | 172 | GLN  |
| 19  | D     | 46  | HIS  |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 22  | F     | 115 | ASN  |
| 22  | F     | 250 | HIS  |
| 22  | F     | 251 | HIS  |
| 23  | W     | 49  | GLN  |
| 24  | A     | 155 | ASN  |
| 24  | A     | 180 | GLN  |
| 24  | A     | 321 | GLN  |
| 24  | A     | 411 | HIS  |

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

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

44 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 |
| 26  | LMT  | h     | 301 | -    | 36,36,36     | 1.13 | 2 (5%)   | 47,47,47    | 0.98 | 2 (4%)   |
| 27  | CDL  | h     | 302 | -    | 99,99,99     | 0.88 | 8 (8%)   | 105,111,111 | 1.03 | 4 (3%)   |
| 27  | CDL  | D     | 402 | -    | 99,99,99     | 0.87 | 8 (8%)   | 105,111,111 | 1.04 | 4 (3%)   |
| 28  | PEE  | J     | 302 | -    | 50,50,50     | 1.14 | 6 (12%)  | 53,55,55    | 1.16 | 3 (5%)   |
| 27  | CDL  | c     | 404 | -    | 99,99,99     | 0.87 | 7 (7%)   | 105,111,111 | 1.04 | 4 (3%)   |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 27  | CDL  | d     | 402 | -    | 99,99,99     | 0.87 | 8 (8%)   | 105,111,111 | 1.04 | 4 (3%)   |
| 27  | CDL  | v     | 201 | -    | 99,99,99     | 0.89 | 7 (7%)   | 105,111,111 | 1.00 | 4 (3%)   |
| 26  | LMT  | X     | 101 | -    | 36,36,36     | 1.17 | 3 (8%)   | 47,47,47    | 1.05 | 2 (4%)   |
| 28  | PEE  | J     | 301 | -    | 50,50,50     | 1.13 | 6 (12%)  | 53,55,55    | 1.13 | 3 (5%)   |
| 26  | LMT  | D     | 401 | -    | 36,36,36     | 1.14 | 2 (5%)   | 47,47,47    | 0.94 | 1 (2%)   |
| 28  | PEE  | j     | 301 | -    | 50,50,50     | 1.13 | 6 (12%)  | 53,55,55    | 1.13 | 3 (5%)   |
| 26  | LMT  | o     | 202 | -    | 36,36,36     | 1.12 | 2 (5%)   | 47,47,47    | 0.93 | 1 (2%)   |
| 27  | CDL  | O     | 203 | -    | 99,99,99     | 0.88 | 7 (7%)   | 105,111,111 | 1.05 | 5 (4%)   |
| 27  | CDL  | B     | 601 | -    | 99,99,99     | 0.88 | 7 (7%)   | 105,111,111 | 1.05 | 4 (3%)   |
| 26  | LMT  | c     | 401 | -    | 36,36,36     | 1.09 | 2 (5%)   | 47,47,47    | 1.13 | 2 (4%)   |
| 27  | CDL  | B     | 602 | -    | 99,99,99     | 0.88 | 8 (8%)   | 105,111,111 | 1.03 | 4 (3%)   |
| 27  | CDL  | H     | 302 | -    | 99,99,99     | 0.87 | 7 (7%)   | 105,111,111 | 1.03 | 4 (3%)   |
| 28  | PEE  | c     | 402 | -    | 50,50,50     | 1.14 | 6 (12%)  | 53,55,55    | 1.05 | 2 (3%)   |
| 26  | LMT  | O     | 202 | -    | 36,36,36     | 1.12 | 2 (5%)   | 47,47,47    | 0.93 | 1 (2%)   |
| 26  | LMT  | C     | 403 | -    | 36,36,36     | 1.11 | 2 (5%)   | 47,47,47    | 1.02 | 1 (2%)   |
| 27  | CDL  | C     | 404 | -    | 99,99,99     | 0.88 | 7 (7%)   | 105,111,111 | 1.04 | 4 (3%)   |
| 28  | PEE  | C     | 402 | -    | 50,50,50     | 1.14 | 6 (12%)  | 53,55,55    | 1.05 | 2 (3%)   |
| 27  | CDL  | U     | 201 | -    | 99,99,99     | 0.88 | 7 (7%)   | 105,111,111 | 1.05 | 4 (3%)   |
| 27  | CDL  | b     | 601 | -    | 99,99,99     | 0.88 | 8 (8%)   | 105,111,111 | 1.03 | 4 (3%)   |
| 27  | CDL  | V     | 202 | -    | 99,99,99     | 0.89 | 7 (7%)   | 105,111,111 | 1.00 | 4 (3%)   |
| 26  | LMT  | H     | 301 | -    | 36,36,36     | 1.13 | 2 (5%)   | 47,47,47    | 0.98 | 1 (2%)   |
| 25  | PC1  | O     | 201 | -    | 53,53,53     | 0.94 | 3 (5%)   | 59,61,61    | 1.04 | 3 (5%)   |
| 27  | CDL  | V     | 201 | -    | 99,99,99     | 0.87 | 7 (7%)   | 105,111,111 | 1.05 | 4 (3%)   |
| 27  | CDL  | e     | 401 | -    | 99,99,99     | 0.88 | 8 (8%)   | 105,111,111 | 1.02 | 4 (3%)   |
| 28  | PEE  | j     | 302 | -    | 50,50,50     | 1.14 | 6 (12%)  | 53,55,55    | 1.16 | 3 (5%)   |
| 25  | PC1  | O     | 204 | -    | 53,53,53     | 0.94 | 4 (7%)   | 59,61,61    | 1.00 | 2 (3%)   |
| 26  | LMT  | c     | 403 | -    | 36,36,36     | 1.11 | 2 (5%)   | 47,47,47    | 1.02 | 1 (2%)   |
| 27  | CDL  | E     | 401 | -    | 99,99,99     | 0.87 | 8 (8%)   | 105,111,111 | 1.02 | 4 (3%)   |
| 26  | LMT  | D     | 403 | -    | 36,36,36     | 1.12 | 2 (5%)   | 47,47,47    | 0.90 | 0        |
| 25  | PC1  | o     | 204 | -    | 53,53,53     | 0.94 | 4 (7%)   | 59,61,61    | 1.00 | 2 (3%)   |
| 27  | CDL  | u     | 201 | -    | 99,99,99     | 0.88 | 7 (7%)   | 105,111,111 | 1.05 | 4 (3%)   |
| 25  | PC1  | o     | 201 | -    | 53,53,53     | 0.94 | 3 (5%)   | 59,61,61    | 1.03 | 3 (5%)   |
| 26  | LMT  | d     | 403 | -    | 36,36,36     | 1.12 | 2 (5%)   | 47,47,47    | 0.91 | 0        |
| 25  | PC1  | v     | 202 | -    | 53,53,53     | 0.96 | 4 (7%)   | 59,61,61    | 0.95 | 2 (3%)   |
| 27  | CDL  | o     | 203 | -    | 99,99,99     | 0.87 | 7 (7%)   | 105,111,111 | 1.05 | 5 (4%)   |

| Mol | Type | Chain | Res | Link | Bond lengths |      |          | Bond angles |      |          |
|-----|------|-------|-----|------|--------------|------|----------|-------------|------|----------|
|     |      |       |     |      | Counts       | RMSZ | # Z  > 2 | Counts      | RMSZ | # Z  > 2 |
| 25  | PC1  | V     | 203 | -    | 53,53,53     | 0.96 | 4 (7%)   | 59,61,61    | 0.95 | 2 (3%)   |
| 26  | LMT  | d     | 401 | -    | 36,36,36     | 1.14 | 2 (5%)   | 47,47,47    | 0.94 | 1 (2%)   |
| 26  | LMT  | x     | 101 | -    | 36,36,36     | 1.16 | 3 (8%)   | 47,47,47    | 1.05 | 2 (4%)   |
| 26  | LMT  | C     | 401 | -    | 36,36,36     | 1.09 | 2 (5%)   | 47,47,47    | 1.13 | 2 (4%)   |

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   |
|-----|------|-------|-----|------|---------|----------------|---------|
| 26  | LMT  | h     | 301 | -    | -       | 7/21/61/61     | 0/2/2/2 |
| 27  | CDL  | h     | 302 | -    | -       | 46/110/110/110 | -       |
| 27  | CDL  | D     | 402 | -    | -       | 36/110/110/110 | -       |
| 28  | PEE  | J     | 302 | -    | -       | 23/54/54/54    | -       |
| 27  | CDL  | c     | 404 | -    | -       | 42/110/110/110 | -       |
| 27  | CDL  | d     | 402 | -    | -       | 36/110/110/110 | -       |
| 27  | CDL  | v     | 201 | -    | -       | 38/110/110/110 | -       |
| 26  | LMT  | X     | 101 | -    | -       | 11/21/61/61    | 0/2/2/2 |
| 28  | PEE  | J     | 301 | -    | -       | 20/54/54/54    | -       |
| 26  | LMT  | D     | 401 | -    | -       | 12/21/61/61    | 0/2/2/2 |
| 28  | PEE  | j     | 301 | -    | -       | 20/54/54/54    | -       |
| 26  | LMT  | o     | 202 | -    | -       | 3/21/61/61     | 0/2/2/2 |
| 27  | CDL  | O     | 203 | -    | -       | 49/110/110/110 | -       |
| 27  | CDL  | B     | 601 | -    | -       | 44/110/110/110 | -       |
| 26  | LMT  | c     | 401 | -    | -       | 6/21/61/61     | 0/2/2/2 |
| 27  | CDL  | B     | 602 | -    | -       | 42/110/110/110 | -       |
| 27  | CDL  | H     | 302 | -    | -       | 46/110/110/110 | -       |
| 28  | PEE  | c     | 402 | -    | -       | 19/54/54/54    | -       |
| 26  | LMT  | O     | 202 | -    | -       | 3/21/61/61     | 0/2/2/2 |
| 26  | LMT  | C     | 403 | -    | -       | 4/21/61/61     | 0/2/2/2 |
| 27  | CDL  | C     | 404 | -    | -       | 42/110/110/110 | -       |
| 28  | PEE  | C     | 402 | -    | -       | 19/54/54/54    | -       |
| 27  | CDL  | U     | 201 | -    | -       | 35/110/110/110 | -       |
| 27  | CDL  | b     | 601 | -    | -       | 42/110/110/110 | -       |
| 27  | CDL  | V     | 202 | -    | -       | 38/110/110/110 | -       |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions       | Rings   |
|-----|------|-------|-----|------|---------|----------------|---------|
| 26  | LMT  | H     | 301 | -    | -       | 8/21/61/61     | 0/2/2/2 |
| 25  | PC1  | O     | 201 | -    | -       | 18/57/57/57    | -       |
| 27  | CDL  | V     | 201 | -    | -       | 44/110/110/110 | -       |
| 27  | CDL  | e     | 401 | -    | -       | 35/110/110/110 | -       |
| 28  | PEE  | j     | 302 | -    | -       | 23/54/54/54    | -       |
| 25  | PC1  | O     | 204 | -    | -       | 27/57/57/57    | -       |
| 26  | LMT  | c     | 403 | -    | -       | 4/21/61/61     | 0/2/2/2 |
| 27  | CDL  | E     | 401 | -    | -       | 35/110/110/110 | -       |
| 26  | LMT  | D     | 403 | -    | -       | 5/21/61/61     | 0/2/2/2 |
| 25  | PC1  | o     | 204 | -    | -       | 27/57/57/57    | -       |
| 27  | CDL  | u     | 201 | -    | -       | 35/110/110/110 | -       |
| 25  | PC1  | o     | 201 | -    | -       | 18/57/57/57    | -       |
| 26  | LMT  | d     | 403 | -    | -       | 5/21/61/61     | 0/2/2/2 |
| 25  | PC1  | v     | 202 | -    | -       | 26/57/57/57    | -       |
| 27  | CDL  | o     | 203 | -    | -       | 49/110/110/110 | -       |
| 25  | PC1  | V     | 203 | -    | -       | 26/57/57/57    | -       |
| 26  | LMT  | d     | 401 | -    | -       | 12/21/61/61    | 0/2/2/2 |
| 26  | LMT  | x     | 101 | -    | -       | 11/21/61/61    | 0/2/2/2 |
| 26  | LMT  | C     | 401 | -    | -       | 6/21/61/61     | 0/2/2/2 |

All (221) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms   | Z    | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|------|-------------|----------|
| 28  | c     | 402 | PEE  | C18-C19 | 3.73 | 1.53        | 1.31     |
| 28  | J     | 302 | PEE  | C39-C38 | 3.73 | 1.53        | 1.31     |
| 28  | j     | 302 | PEE  | C39-C38 | 3.73 | 1.53        | 1.31     |
| 28  | C     | 402 | PEE  | C18-C19 | 3.73 | 1.53        | 1.31     |
| 28  | c     | 402 | PEE  | C39-C38 | 3.72 | 1.53        | 1.31     |
| 28  | C     | 402 | PEE  | C39-C38 | 3.72 | 1.53        | 1.31     |
| 28  | j     | 301 | PEE  | C39-C38 | 3.71 | 1.53        | 1.31     |
| 28  | J     | 301 | PEE  | C39-C38 | 3.71 | 1.53        | 1.31     |
| 28  | J     | 302 | PEE  | C18-C19 | 3.69 | 1.53        | 1.31     |
| 28  | j     | 302 | PEE  | C18-C19 | 3.68 | 1.53        | 1.31     |
| 28  | j     | 301 | PEE  | C18-C19 | 3.62 | 1.52        | 1.31     |
| 28  | J     | 301 | PEE  | C18-C19 | 3.61 | 1.52        | 1.31     |
| 26  | O     | 202 | LMT  | O5B-C1B | 3.45 | 1.50        | 1.41     |
| 26  | d     | 401 | LMT  | O5B-C1B | 3.44 | 1.50        | 1.41     |
| 26  | D     | 401 | LMT  | O5B-C1B | 3.43 | 1.50        | 1.41     |

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| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 26  | o     | 202 | LMT  | O5B-C1B | 3.43  | 1.50        | 1.41     |
| 26  | X     | 101 | LMT  | O5B-C1B | 3.40  | 1.50        | 1.41     |
| 26  | x     | 101 | LMT  | O5B-C1B | 3.38  | 1.50        | 1.41     |
| 26  | H     | 301 | LMT  | O5'-C1' | 3.37  | 1.50        | 1.41     |
| 26  | H     | 301 | LMT  | O5B-C1B | 3.37  | 1.50        | 1.41     |
| 26  | h     | 301 | LMT  | O5'-C1' | 3.37  | 1.50        | 1.41     |
| 26  | X     | 101 | LMT  | O5'-C1' | 3.35  | 1.50        | 1.41     |
| 26  | d     | 403 | LMT  | O5B-C1B | 3.35  | 1.50        | 1.41     |
| 26  | h     | 301 | LMT  | O5B-C1B | 3.34  | 1.50        | 1.41     |
| 26  | C     | 401 | LMT  | O5B-C1B | 3.34  | 1.50        | 1.41     |
| 26  | c     | 401 | LMT  | O5B-C1B | 3.33  | 1.50        | 1.41     |
| 26  | D     | 403 | LMT  | O5B-C1B | 3.32  | 1.50        | 1.41     |
| 26  | x     | 101 | LMT  | O5'-C1' | 3.32  | 1.50        | 1.41     |
| 26  | c     | 403 | LMT  | O5B-C1B | 3.28  | 1.50        | 1.41     |
| 26  | C     | 403 | LMT  | O5B-C1B | 3.26  | 1.50        | 1.41     |
| 26  | d     | 401 | LMT  | O5'-C1' | 3.23  | 1.50        | 1.41     |
| 26  | D     | 401 | LMT  | O5'-C1' | 3.19  | 1.50        | 1.41     |
| 26  | d     | 403 | LMT  | O5'-C1' | 3.05  | 1.49        | 1.41     |
| 26  | D     | 403 | LMT  | O5'-C1' | 3.05  | 1.49        | 1.41     |
| 26  | c     | 403 | LMT  | O5'-C1' | 3.04  | 1.49        | 1.41     |
| 26  | C     | 403 | LMT  | O5'-C1' | 3.04  | 1.49        | 1.41     |
| 26  | o     | 202 | LMT  | O5'-C1' | 2.98  | 1.49        | 1.41     |
| 26  | O     | 202 | LMT  | O5'-C1' | 2.98  | 1.49        | 1.41     |
| 26  | c     | 401 | LMT  | O5'-C1' | 2.95  | 1.49        | 1.41     |
| 26  | C     | 401 | LMT  | O5'-C1' | 2.91  | 1.49        | 1.41     |
| 27  | o     | 203 | CDL  | OA6-CA4 | -2.73 | 1.39        | 1.46     |
| 25  | o     | 201 | PC1  | O21-C2  | -2.73 | 1.39        | 1.46     |
| 25  | O     | 201 | PC1  | O21-C2  | -2.72 | 1.39        | 1.46     |
| 27  | u     | 201 | CDL  | OA6-CA4 | -2.72 | 1.39        | 1.46     |
| 27  | U     | 201 | CDL  | OA6-CA4 | -2.71 | 1.39        | 1.46     |
| 27  | O     | 203 | CDL  | OA6-CA4 | -2.70 | 1.39        | 1.46     |
| 27  | e     | 401 | CDL  | OB6-CB4 | -2.69 | 1.39        | 1.46     |
| 27  | B     | 601 | CDL  | OA6-CA4 | -2.68 | 1.39        | 1.46     |
| 27  | V     | 201 | CDL  | OB6-CB4 | -2.68 | 1.39        | 1.46     |
| 27  | E     | 401 | CDL  | OB6-CB4 | -2.67 | 1.39        | 1.46     |
| 27  | V     | 201 | CDL  | OA6-CA4 | -2.67 | 1.39        | 1.46     |
| 27  | B     | 601 | CDL  | OB6-CB4 | -2.66 | 1.40        | 1.46     |
| 27  | h     | 302 | CDL  | OB6-CB4 | -2.64 | 1.40        | 1.46     |
| 27  | H     | 302 | CDL  | OB6-CB4 | -2.64 | 1.40        | 1.46     |
| 27  | B     | 602 | CDL  | OB6-CB4 | -2.62 | 1.40        | 1.46     |
| 27  | C     | 404 | CDL  | OB6-CB4 | -2.62 | 1.40        | 1.46     |
| 27  | b     | 601 | CDL  | OB6-CB4 | -2.62 | 1.40        | 1.46     |

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| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 27  | V     | 202 | CDL  | OB8-CB7 | 2.61  | 1.41        | 1.33     |
| 27  | v     | 201 | CDL  | OB8-CB7 | 2.60  | 1.40        | 1.33     |
| 27  | h     | 302 | CDL  | OA6-CA4 | -2.60 | 1.40        | 1.46     |
| 27  | U     | 201 | CDL  | OB6-CB4 | -2.59 | 1.40        | 1.46     |
| 27  | c     | 404 | CDL  | OB6-CB4 | -2.59 | 1.40        | 1.46     |
| 27  | O     | 203 | CDL  | OB6-CB4 | -2.59 | 1.40        | 1.46     |
| 27  | H     | 302 | CDL  | OA6-CA4 | -2.59 | 1.40        | 1.46     |
| 27  | o     | 203 | CDL  | OB6-CB4 | -2.58 | 1.40        | 1.46     |
| 27  | D     | 402 | CDL  | OB6-CB4 | -2.58 | 1.40        | 1.46     |
| 27  | d     | 402 | CDL  | OB6-CB4 | -2.57 | 1.40        | 1.46     |
| 27  | C     | 404 | CDL  | OA8-CA7 | 2.55  | 1.40        | 1.33     |
| 27  | u     | 201 | CDL  | OB6-CB4 | -2.55 | 1.40        | 1.46     |
| 27  | v     | 201 | CDL  | OA6-CA4 | -2.53 | 1.40        | 1.46     |
| 27  | u     | 201 | CDL  | OB8-CB7 | 2.53  | 1.40        | 1.33     |
| 27  | V     | 202 | CDL  | OA6-CA4 | -2.53 | 1.40        | 1.46     |
| 27  | c     | 404 | CDL  | OA8-CA7 | 2.53  | 1.40        | 1.33     |
| 27  | V     | 202 | CDL  | OB6-CB4 | -2.52 | 1.40        | 1.46     |
| 27  | U     | 201 | CDL  | OB8-CB7 | 2.51  | 1.40        | 1.33     |
| 27  | B     | 602 | CDL  | OA8-CA7 | 2.51  | 1.40        | 1.33     |
| 27  | u     | 201 | CDL  | OA8-CA7 | 2.51  | 1.40        | 1.33     |
| 28  | j     | 301 | PEE  | O2-C2   | -2.51 | 1.40        | 1.46     |
| 27  | v     | 201 | CDL  | OB6-CB4 | -2.51 | 1.40        | 1.46     |
| 27  | U     | 201 | CDL  | OA8-CA7 | 2.50  | 1.40        | 1.33     |
| 28  | J     | 301 | PEE  | O2-C2   | -2.50 | 1.40        | 1.46     |
| 25  | O     | 204 | PC1  | O21-C2  | -2.50 | 1.40        | 1.46     |
| 27  | e     | 401 | CDL  | OA8-CA7 | 2.49  | 1.40        | 1.33     |
| 27  | E     | 401 | CDL  | OA6-CA4 | -2.49 | 1.40        | 1.46     |
| 27  | b     | 601 | CDL  | OA8-CA7 | 2.49  | 1.40        | 1.33     |
| 25  | o     | 204 | PC1  | O21-C2  | -2.48 | 1.40        | 1.46     |
| 28  | j     | 302 | PEE  | O2-C2   | -2.47 | 1.40        | 1.46     |
| 27  | B     | 601 | CDL  | OA8-CA7 | 2.47  | 1.40        | 1.33     |
| 27  | E     | 401 | CDL  | OA8-CA7 | 2.47  | 1.40        | 1.33     |
| 27  | V     | 202 | CDL  | OA8-CA7 | 2.47  | 1.40        | 1.33     |
| 27  | v     | 201 | CDL  | OA8-CA7 | 2.46  | 1.40        | 1.33     |
| 27  | e     | 401 | CDL  | OA6-CA4 | -2.46 | 1.40        | 1.46     |
| 27  | C     | 404 | CDL  | OA6-CA4 | -2.46 | 1.40        | 1.46     |
| 28  | J     | 302 | PEE  | O2-C2   | -2.46 | 1.40        | 1.46     |
| 28  | j     | 302 | PEE  | O3-C30  | 2.44  | 1.40        | 1.33     |
| 27  | c     | 404 | CDL  | OA6-CA4 | -2.44 | 1.40        | 1.46     |
| 25  | v     | 202 | PC1  | O31-C31 | 2.44  | 1.40        | 1.33     |
| 27  | C     | 404 | CDL  | OB8-CB7 | 2.44  | 1.40        | 1.33     |
| 27  | c     | 404 | CDL  | OB8-CB7 | 2.43  | 1.40        | 1.33     |

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| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 27  | b     | 601 | CDL  | OA6-CA4 | -2.43 | 1.40        | 1.46     |
| 25  | V     | 203 | PC1  | O31-C31 | 2.42  | 1.40        | 1.33     |
| 27  | O     | 203 | CDL  | OB8-CB7 | 2.42  | 1.40        | 1.33     |
| 27  | b     | 601 | CDL  | OB8-CB7 | 2.42  | 1.40        | 1.33     |
| 27  | V     | 201 | CDL  | OA8-CA7 | 2.42  | 1.40        | 1.33     |
| 27  | O     | 203 | CDL  | OA8-CA7 | 2.42  | 1.40        | 1.33     |
| 27  | d     | 402 | CDL  | OB8-CB7 | 2.42  | 1.40        | 1.33     |
| 27  | o     | 203 | CDL  | OB8-CB7 | 2.42  | 1.40        | 1.33     |
| 28  | J     | 302 | PEE  | O3-C30  | 2.41  | 1.40        | 1.33     |
| 28  | C     | 402 | PEE  | O3-C30  | 2.41  | 1.40        | 1.33     |
| 28  | c     | 402 | PEE  | O3-C30  | 2.41  | 1.40        | 1.33     |
| 27  | B     | 602 | CDL  | OB8-CB7 | 2.40  | 1.40        | 1.33     |
| 27  | H     | 302 | CDL  | OB8-CB7 | 2.40  | 1.40        | 1.33     |
| 27  | B     | 602 | CDL  | OA6-CA4 | -2.40 | 1.40        | 1.46     |
| 25  | V     | 203 | PC1  | O21-C2  | -2.40 | 1.40        | 1.46     |
| 27  | h     | 302 | CDL  | OB8-CB7 | 2.40  | 1.40        | 1.33     |
| 25  | O     | 204 | PC1  | O31-C31 | 2.39  | 1.40        | 1.33     |
| 25  | v     | 202 | PC1  | O21-C2  | -2.39 | 1.40        | 1.46     |
| 28  | c     | 402 | PEE  | O2-C2   | -2.39 | 1.40        | 1.46     |
| 28  | C     | 402 | PEE  | O2-C2   | -2.38 | 1.40        | 1.46     |
| 27  | o     | 203 | CDL  | OA8-CA7 | 2.38  | 1.40        | 1.33     |
| 27  | h     | 302 | CDL  | OA8-CA7 | 2.38  | 1.40        | 1.33     |
| 25  | o     | 204 | PC1  | O31-C31 | 2.37  | 1.40        | 1.33     |
| 27  | H     | 302 | CDL  | OA8-CA7 | 2.37  | 1.40        | 1.33     |
| 27  | D     | 402 | CDL  | OB8-CB7 | 2.36  | 1.40        | 1.33     |
| 27  | e     | 401 | CDL  | OB8-CB7 | 2.36  | 1.40        | 1.33     |
| 27  | V     | 201 | CDL  | OB8-CB7 | 2.35  | 1.40        | 1.33     |
| 27  | d     | 402 | CDL  | OA8-CA7 | 2.35  | 1.40        | 1.33     |
| 27  | E     | 401 | CDL  | OB8-CB7 | 2.35  | 1.40        | 1.33     |
| 27  | B     | 601 | CDL  | OB8-CB7 | 2.34  | 1.40        | 1.33     |
| 25  | o     | 201 | PC1  | O31-C3  | -2.33 | 1.39        | 1.45     |
| 28  | J     | 301 | PEE  | O3-C30  | 2.31  | 1.40        | 1.33     |
| 27  | D     | 402 | CDL  | OA8-CA7 | 2.30  | 1.40        | 1.33     |
| 27  | D     | 402 | CDL  | OA6-CA4 | -2.30 | 1.40        | 1.46     |
| 28  | j     | 301 | PEE  | O3-C30  | 2.30  | 1.40        | 1.33     |
| 27  | d     | 402 | CDL  | OA6-CA4 | -2.29 | 1.40        | 1.46     |
| 25  | o     | 201 | PC1  | O31-C31 | 2.28  | 1.40        | 1.33     |
| 25  | O     | 201 | PC1  | O31-C3  | -2.28 | 1.40        | 1.45     |
| 25  | O     | 201 | PC1  | O31-C31 | 2.28  | 1.40        | 1.33     |
| 27  | b     | 601 | CDL  | OA6-CA5 | 2.26  | 1.40        | 1.34     |
| 27  | B     | 602 | CDL  | OA6-CA5 | 2.25  | 1.40        | 1.34     |
| 28  | J     | 301 | PEE  | O3-C3   | -2.24 | 1.40        | 1.45     |

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| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 27  | V     | 202 | CDL  | OA6-CA5 | 2.23  | 1.40        | 1.34     |
| 27  | V     | 202 | CDL  | OB6-CB5 | 2.22  | 1.40        | 1.34     |
| 27  | v     | 201 | CDL  | OA6-CA5 | 2.21  | 1.40        | 1.34     |
| 28  | j     | 301 | PEE  | O3-C3   | -2.20 | 1.40        | 1.45     |
| 27  | d     | 402 | CDL  | OA8-CA6 | -2.20 | 1.40        | 1.45     |
| 27  | e     | 401 | CDL  | OB8-CB6 | -2.20 | 1.40        | 1.45     |
| 27  | d     | 402 | CDL  | OB8-CB6 | -2.20 | 1.40        | 1.45     |
| 27  | D     | 402 | CDL  | OA8-CA6 | -2.20 | 1.40        | 1.45     |
| 27  | B     | 601 | CDL  | OB8-CB6 | -2.20 | 1.40        | 1.45     |
| 25  | O     | 204 | PC1  | O21-C21 | 2.19  | 1.40        | 1.34     |
| 27  | b     | 601 | CDL  | OB8-CB6 | -2.19 | 1.40        | 1.45     |
| 25  | o     | 204 | PC1  | O21-C21 | 2.19  | 1.40        | 1.34     |
| 27  | C     | 404 | CDL  | OB8-CB6 | -2.19 | 1.40        | 1.45     |
| 27  | d     | 402 | CDL  | OB6-CB5 | 2.18  | 1.40        | 1.34     |
| 27  | v     | 201 | CDL  | OB6-CB5 | 2.18  | 1.40        | 1.34     |
| 27  | O     | 203 | CDL  | OB8-CB6 | -2.18 | 1.40        | 1.45     |
| 27  | V     | 201 | CDL  | OB8-CB6 | -2.18 | 1.40        | 1.45     |
| 25  | V     | 203 | PC1  | O21-C21 | 2.17  | 1.40        | 1.34     |
| 27  | D     | 402 | CDL  | OB8-CB6 | -2.17 | 1.40        | 1.45     |
| 27  | c     | 404 | CDL  | OB8-CB6 | -2.17 | 1.40        | 1.45     |
| 27  | D     | 402 | CDL  | OB6-CB5 | 2.17  | 1.40        | 1.34     |
| 27  | O     | 203 | CDL  | OA8-CA6 | -2.17 | 1.40        | 1.45     |
| 27  | B     | 602 | CDL  | OB8-CB6 | -2.17 | 1.40        | 1.45     |
| 27  | E     | 401 | CDL  | OB8-CB6 | -2.17 | 1.40        | 1.45     |
| 25  | v     | 202 | PC1  | O21-C21 | 2.16  | 1.40        | 1.34     |
| 27  | o     | 203 | CDL  | OB8-CB6 | -2.16 | 1.40        | 1.45     |
| 28  | J     | 302 | PEE  | O2-C10  | 2.16  | 1.40        | 1.34     |
| 27  | o     | 203 | CDL  | OA8-CA6 | -2.16 | 1.40        | 1.45     |
| 27  | D     | 402 | CDL  | OA6-CA5 | 2.15  | 1.40        | 1.34     |
| 27  | B     | 601 | CDL  | OA8-CA6 | -2.15 | 1.40        | 1.45     |
| 27  | U     | 201 | CDL  | OA6-CA5 | 2.15  | 1.40        | 1.34     |
| 28  | c     | 402 | PEE  | O3-C3   | -2.14 | 1.40        | 1.45     |
| 27  | d     | 402 | CDL  | OA6-CA5 | 2.14  | 1.40        | 1.34     |
| 27  | V     | 201 | CDL  | OA8-CA6 | -2.14 | 1.40        | 1.45     |
| 27  | h     | 302 | CDL  | OB8-CB6 | -2.14 | 1.40        | 1.45     |
| 27  | u     | 201 | CDL  | OA6-CA5 | 2.14  | 1.40        | 1.34     |
| 27  | C     | 404 | CDL  | OA6-CA5 | 2.13  | 1.40        | 1.34     |
| 27  | O     | 203 | CDL  | OB6-CB5 | 2.13  | 1.40        | 1.34     |
| 27  | H     | 302 | CDL  | OB8-CB6 | -2.13 | 1.40        | 1.45     |
| 28  | j     | 302 | PEE  | O2-C10  | 2.13  | 1.40        | 1.34     |
| 27  | h     | 302 | CDL  | OA8-CA6 | -2.12 | 1.40        | 1.45     |
| 27  | C     | 404 | CDL  | OB6-CB5 | 2.12  | 1.40        | 1.34     |

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| Mol | Chain | Res | Type | Atoms   | Z     | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|---------|-------|-------------|----------|
| 27  | b     | 601 | CDL  | OA8-CA6 | -2.12 | 1.40        | 1.45     |
| 28  | c     | 402 | PEE  | O2-C10  | 2.11  | 1.40        | 1.34     |
| 27  | h     | 302 | CDL  | OA6-CA5 | 2.11  | 1.40        | 1.34     |
| 27  | H     | 302 | CDL  | OA6-CA5 | 2.10  | 1.40        | 1.34     |
| 28  | j     | 301 | PEE  | O2-C10  | 2.10  | 1.40        | 1.34     |
| 28  | C     | 402 | PEE  | O2-C10  | 2.10  | 1.40        | 1.34     |
| 28  | C     | 402 | PEE  | O3-C3   | -2.10 | 1.40        | 1.45     |
| 27  | c     | 404 | CDL  | OB6-CB5 | 2.09  | 1.40        | 1.34     |
| 28  | J     | 301 | PEE  | O2-C10  | 2.09  | 1.40        | 1.34     |
| 27  | o     | 203 | CDL  | OB6-CB5 | 2.09  | 1.40        | 1.34     |
| 26  | x     | 101 | LMT  | O5'-C5' | 2.08  | 1.49        | 1.44     |
| 27  | B     | 602 | CDL  | OA8-CA6 | -2.08 | 1.40        | 1.45     |
| 27  | c     | 404 | CDL  | OA6-CA5 | 2.08  | 1.40        | 1.34     |
| 27  | U     | 201 | CDL  | OA8-CA6 | -2.08 | 1.40        | 1.45     |
| 27  | H     | 302 | CDL  | OA8-CA6 | -2.07 | 1.40        | 1.45     |
| 27  | V     | 201 | CDL  | OB6-CB5 | 2.07  | 1.40        | 1.34     |
| 27  | b     | 601 | CDL  | OB6-CB5 | 2.07  | 1.40        | 1.34     |
| 27  | B     | 602 | CDL  | OB6-CB5 | 2.06  | 1.40        | 1.34     |
| 26  | X     | 101 | LMT  | O5'-C5' | 2.06  | 1.49        | 1.44     |
| 27  | e     | 401 | CDL  | OB6-CB5 | 2.06  | 1.40        | 1.34     |
| 27  | V     | 202 | CDL  | OA8-CA6 | -2.06 | 1.40        | 1.45     |
| 27  | U     | 201 | CDL  | OB6-CB5 | 2.06  | 1.40        | 1.34     |
| 27  | B     | 601 | CDL  | OB6-CB5 | 2.05  | 1.40        | 1.34     |
| 25  | o     | 204 | PC1  | O31-C3  | -2.05 | 1.40        | 1.45     |
| 27  | u     | 201 | CDL  | OA8-CA6 | -2.05 | 1.40        | 1.45     |
| 27  | e     | 401 | CDL  | OA6-CA5 | 2.05  | 1.40        | 1.34     |
| 27  | E     | 401 | CDL  | OB6-CB5 | 2.05  | 1.40        | 1.34     |
| 25  | O     | 204 | PC1  | O31-C3  | -2.05 | 1.40        | 1.45     |
| 27  | E     | 401 | CDL  | OA6-CA5 | 2.04  | 1.40        | 1.34     |
| 25  | V     | 203 | PC1  | O31-C3  | -2.04 | 1.40        | 1.45     |
| 25  | v     | 202 | PC1  | O31-C3  | -2.04 | 1.40        | 1.45     |
| 27  | u     | 201 | CDL  | OB6-CB5 | 2.03  | 1.40        | 1.34     |
| 27  | v     | 201 | CDL  | OA8-CA6 | -2.03 | 1.40        | 1.45     |
| 27  | E     | 401 | CDL  | OA8-CA6 | -2.03 | 1.40        | 1.45     |
| 27  | e     | 401 | CDL  | OA8-CA6 | -2.02 | 1.40        | 1.45     |
| 28  | j     | 302 | PEE  | O3-C3   | -2.02 | 1.40        | 1.45     |
| 28  | J     | 302 | PEE  | O3-C3   | -2.02 | 1.40        | 1.45     |
| 27  | h     | 302 | CDL  | OB6-CB5 | 2.02  | 1.40        | 1.34     |

All (121) bond angle outliers are listed below:

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| Mol | Chain | Res | Type | Atoms       | Z    | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|------|-------------|----------|
| 27  | D     | 402 | CDL  | OB6-CB5-C51 | 4.17 | 120.50      | 111.50   |
| 27  | d     | 402 | CDL  | OB6-CB5-C51 | 4.16 | 120.47      | 111.50   |
| 27  | B     | 602 | CDL  | OB6-CB5-C51 | 4.11 | 120.37      | 111.50   |
| 25  | o     | 204 | PC1  | O21-C21-C22 | 4.10 | 120.34      | 111.50   |
| 27  | b     | 601 | CDL  | OB6-CB5-C51 | 4.10 | 120.33      | 111.50   |
| 27  | c     | 404 | CDL  | OB6-CB5-C51 | 4.08 | 120.30      | 111.50   |
| 25  | O     | 204 | PC1  | O21-C21-C22 | 4.08 | 120.29      | 111.50   |
| 27  | C     | 404 | CDL  | OB6-CB5-C51 | 4.08 | 120.29      | 111.50   |
| 25  | O     | 201 | PC1  | O21-C21-C22 | 4.08 | 120.29      | 111.50   |
| 25  | o     | 201 | PC1  | O21-C21-C22 | 4.07 | 120.27      | 111.50   |
| 27  | U     | 201 | CDL  | OB6-CB5-C51 | 4.05 | 120.24      | 111.50   |
| 27  | u     | 201 | CDL  | OB6-CB5-C51 | 4.05 | 120.23      | 111.50   |
| 27  | v     | 201 | CDL  | OB6-CB5-C51 | 4.00 | 120.13      | 111.50   |
| 27  | V     | 202 | CDL  | OB6-CB5-C51 | 3.98 | 120.07      | 111.50   |
| 27  | B     | 601 | CDL  | OB6-CB5-C51 | 3.95 | 120.00      | 111.50   |
| 28  | J     | 301 | PEE  | O2-C10-C11  | 3.95 | 120.00      | 111.50   |
| 28  | j     | 301 | PEE  | O2-C10-C11  | 3.94 | 120.00      | 111.50   |
| 27  | V     | 201 | CDL  | OB6-CB5-C51 | 3.94 | 119.99      | 111.50   |
| 27  | h     | 302 | CDL  | OB6-CB5-C51 | 3.89 | 119.89      | 111.50   |
| 27  | H     | 302 | CDL  | OB6-CB5-C51 | 3.86 | 119.82      | 111.50   |
| 28  | j     | 302 | PEE  | O2-C10-C11  | 3.80 | 119.69      | 111.50   |
| 27  | o     | 203 | CDL  | OA6-CA5-C11 | 3.79 | 119.67      | 111.50   |
| 27  | O     | 203 | CDL  | OA6-CA5-C11 | 3.78 | 119.64      | 111.50   |
| 27  | d     | 402 | CDL  | OA6-CA5-C11 | 3.77 | 119.63      | 111.50   |
| 27  | D     | 402 | CDL  | OA6-CA5-C11 | 3.77 | 119.63      | 111.50   |
| 25  | v     | 202 | PC1  | O21-C21-C22 | 3.77 | 119.62      | 111.50   |
| 28  | J     | 302 | PEE  | O2-C10-C11  | 3.77 | 119.62      | 111.50   |
| 27  | O     | 203 | CDL  | OB6-CB5-C51 | 3.76 | 119.61      | 111.50   |
| 25  | V     | 203 | PC1  | O21-C21-C22 | 3.76 | 119.61      | 111.50   |
| 27  | o     | 203 | CDL  | OB6-CB5-C51 | 3.76 | 119.61      | 111.50   |
| 27  | e     | 401 | CDL  | OA6-CA5-C11 | 3.67 | 119.41      | 111.50   |
| 27  | E     | 401 | CDL  | OA6-CA5-C11 | 3.66 | 119.40      | 111.50   |
| 27  | B     | 602 | CDL  | OA6-CA5-C11 | 3.61 | 119.28      | 111.50   |
| 27  | B     | 601 | CDL  | OA6-CA5-C11 | 3.60 | 119.27      | 111.50   |
| 27  | V     | 201 | CDL  | OA6-CA5-C11 | 3.60 | 119.26      | 111.50   |
| 27  | b     | 601 | CDL  | OA6-CA5-C11 | 3.58 | 119.22      | 111.50   |
| 26  | x     | 101 | LMT  | O5'-C5'-C4' | 3.51 | 117.14      | 109.75   |
| 26  | X     | 101 | LMT  | O5'-C5'-C4' | 3.47 | 117.07      | 109.75   |
| 28  | c     | 402 | PEE  | O2-C10-C11  | 3.47 | 118.98      | 111.50   |
| 27  | v     | 201 | CDL  | OA6-CA5-C11 | 3.46 | 118.95      | 111.50   |
| 27  | V     | 202 | CDL  | OA6-CA5-C11 | 3.45 | 118.94      | 111.50   |

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| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 28  | C     | 402 | PEE  | O2-C10-C11  | 3.45  | 118.94      | 111.50   |
| 27  | h     | 302 | CDL  | OA6-CA5-C11 | 3.37  | 118.77      | 111.50   |
| 27  | H     | 302 | CDL  | OA6-CA5-C11 | 3.37  | 118.76      | 111.50   |
| 27  | c     | 404 | CDL  | OA6-CA5-C11 | 3.34  | 118.69      | 111.50   |
| 27  | C     | 404 | CDL  | OA6-CA5-C11 | 3.31  | 118.64      | 111.50   |
| 27  | u     | 201 | CDL  | OA6-CA5-C11 | 3.27  | 118.55      | 111.50   |
| 27  | c     | 404 | CDL  | OA8-CA7-C31 | 3.25  | 122.11      | 111.91   |
| 27  | U     | 201 | CDL  | OA6-CA5-C11 | 3.24  | 118.49      | 111.50   |
| 27  | C     | 404 | CDL  | OA8-CA7-C31 | 3.24  | 122.06      | 111.91   |
| 27  | e     | 401 | CDL  | OB6-CB5-C51 | 2.95  | 117.86      | 111.50   |
| 27  | E     | 401 | CDL  | OB6-CB5-C51 | 2.95  | 117.85      | 111.50   |
| 27  | U     | 201 | CDL  | OA8-CA7-C31 | 2.93  | 121.11      | 111.91   |
| 27  | u     | 201 | CDL  | OA8-CA7-C31 | 2.92  | 121.07      | 111.91   |
| 26  | d     | 401 | LMT  | C1B-O1B-C4' | -2.79 | 111.06      | 117.96   |
| 26  | D     | 401 | LMT  | C1B-O1B-C4' | -2.78 | 111.09      | 117.96   |
| 27  | B     | 601 | CDL  | OA8-CA7-C31 | 2.78  | 120.62      | 111.91   |
| 27  | V     | 201 | CDL  | OA8-CA7-C31 | 2.77  | 120.59      | 111.91   |
| 27  | h     | 302 | CDL  | OA8-CA7-C31 | 2.68  | 120.32      | 111.91   |
| 27  | H     | 302 | CDL  | OA8-CA7-C31 | 2.67  | 120.27      | 111.91   |
| 27  | E     | 401 | CDL  | OB8-CB7-C71 | 2.65  | 120.24      | 111.91   |
| 27  | e     | 401 | CDL  | OB8-CB7-C71 | 2.65  | 120.24      | 111.91   |
| 25  | v     | 202 | PC1  | O31-C31-C32 | 2.64  | 120.20      | 111.91   |
| 25  | V     | 203 | PC1  | O31-C31-C32 | 2.63  | 120.16      | 111.91   |
| 28  | J     | 302 | PEE  | O3-C30-C31  | 2.59  | 120.05      | 111.91   |
| 27  | D     | 402 | CDL  | OB8-CB7-C71 | 2.59  | 120.03      | 111.91   |
| 27  | d     | 402 | CDL  | OB8-CB7-C71 | 2.58  | 120.00      | 111.91   |
| 25  | O     | 204 | PC1  | O31-C31-C32 | 2.58  | 120.00      | 111.91   |
| 25  | o     | 204 | PC1  | O31-C31-C32 | 2.58  | 120.00      | 111.91   |
| 28  | j     | 302 | PEE  | O3-C30-C31  | 2.57  | 119.99      | 111.91   |
| 27  | b     | 601 | CDL  | OA8-CA7-C31 | 2.54  | 119.88      | 111.91   |
| 27  | B     | 602 | CDL  | OA8-CA7-C31 | 2.54  | 119.87      | 111.91   |
| 27  | v     | 201 | CDL  | OB8-CB7-C71 | 2.53  | 119.85      | 111.91   |
| 27  | E     | 401 | CDL  | OA8-CA7-C31 | 2.53  | 119.84      | 111.91   |
| 27  | e     | 401 | CDL  | OA8-CA7-C31 | 2.53  | 119.83      | 111.91   |
| 25  | O     | 201 | PC1  | O31-C31-C32 | 2.52  | 119.81      | 111.91   |
| 27  | V     | 202 | CDL  | OB8-CB7-C71 | 2.52  | 119.80      | 111.91   |
| 25  | o     | 201 | PC1  | O31-C31-C32 | 2.51  | 119.79      | 111.91   |
| 27  | U     | 201 | CDL  | OB8-CB7-C71 | 2.48  | 119.68      | 111.91   |
| 27  | u     | 201 | CDL  | OB8-CB7-C71 | 2.46  | 119.63      | 111.91   |
| 27  | O     | 203 | CDL  | OB8-CB7-C71 | 2.46  | 119.61      | 111.91   |
| 26  | C     | 403 | LMT  | C1B-O1B-C4' | -2.45 | 111.91      | 117.96   |
| 26  | c     | 403 | LMT  | C1B-O1B-C4' | -2.45 | 111.91      | 117.96   |

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| Mol | Chain | Res | Type | Atoms       | Z     | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------------|-------|-------------|----------|
| 27  | o     | 203 | CDL  | OB8-CB7-C71 | 2.44  | 119.58      | 111.91   |
| 27  | h     | 302 | CDL  | OB8-CB7-C71 | 2.43  | 119.53      | 111.91   |
| 27  | B     | 601 | CDL  | OB8-CB7-C71 | 2.42  | 119.51      | 111.91   |
| 27  | V     | 201 | CDL  | OB8-CB7-C71 | 2.42  | 119.51      | 111.91   |
| 25  | o     | 201 | PC1  | C2-O21-C21  | -2.41 | 111.86      | 117.79   |
| 27  | H     | 302 | CDL  | OB8-CB7-C71 | 2.41  | 119.46      | 111.91   |
| 25  | O     | 201 | PC1  | C2-O21-C21  | -2.40 | 111.88      | 117.79   |
| 28  | c     | 402 | PEE  | O3-C30-C31  | 2.38  | 119.38      | 111.91   |
| 27  | o     | 203 | CDL  | CA4-OA6-CA5 | -2.37 | 111.96      | 117.79   |
| 27  | O     | 203 | CDL  | CA4-OA6-CA5 | -2.37 | 111.96      | 117.79   |
| 28  | j     | 301 | PEE  | O3-C30-C31  | 2.37  | 119.33      | 111.91   |
| 27  | b     | 601 | CDL  | OB8-CB7-C71 | 2.36  | 119.31      | 111.91   |
| 27  | C     | 404 | CDL  | OB8-CB7-C71 | 2.36  | 119.31      | 111.91   |
| 28  | C     | 402 | PEE  | O3-C30-C31  | 2.36  | 119.30      | 111.91   |
| 27  | c     | 404 | CDL  | OB8-CB7-C71 | 2.35  | 119.29      | 111.91   |
| 27  | o     | 203 | CDL  | OA8-CA7-C31 | 2.35  | 119.29      | 111.91   |
| 28  | J     | 301 | PEE  | O3-C30-C31  | 2.35  | 119.28      | 111.91   |
| 27  | O     | 203 | CDL  | OA8-CA7-C31 | 2.35  | 119.27      | 111.91   |
| 27  | B     | 602 | CDL  | OB8-CB7-C71 | 2.34  | 119.25      | 111.91   |
| 26  | c     | 401 | LMT  | C1'-O5'-C5' | -2.31 | 109.15      | 113.69   |
| 27  | V     | 202 | CDL  | OA8-CA7-C31 | 2.29  | 119.10      | 111.91   |
| 27  | v     | 201 | CDL  | OA8-CA7-C31 | 2.29  | 119.10      | 111.91   |
| 27  | D     | 402 | CDL  | OA8-CA7-C31 | 2.29  | 119.09      | 111.91   |
| 26  | C     | 401 | LMT  | C1'-O5'-C5' | -2.29 | 109.20      | 113.69   |
| 27  | d     | 402 | CDL  | OA8-CA7-C31 | 2.27  | 119.05      | 111.91   |
| 26  | X     | 101 | LMT  | C1B-O1B-C4' | -2.27 | 112.34      | 117.96   |
| 26  | x     | 101 | LMT  | C1B-O1B-C4' | -2.26 | 112.36      | 117.96   |
| 26  | O     | 202 | LMT  | O5'-C5'-C4' | 2.16  | 114.30      | 109.75   |
| 26  | o     | 202 | LMT  | O5'-C5'-C4' | 2.16  | 114.30      | 109.75   |
| 26  | C     | 401 | LMT  | C2'-C3'-C4' | 2.10  | 114.48      | 109.68   |
| 26  | c     | 401 | LMT  | C2'-C3'-C4' | 2.08  | 114.43      | 109.68   |
| 28  | j     | 301 | PEE  | C17-C18-C19 | -2.06 | 108.92      | 124.73   |
| 28  | J     | 301 | PEE  | C17-C18-C19 | -2.05 | 108.96      | 124.73   |
| 28  | j     | 302 | PEE  | C40-C39-C38 | -2.04 | 109.07      | 124.73   |
| 28  | J     | 302 | PEE  | C40-C39-C38 | -2.04 | 109.09      | 124.73   |
| 26  | H     | 301 | LMT  | C3B-C4B-C5B | 2.04  | 113.87      | 110.24   |
| 26  | h     | 301 | LMT  | C3B-C4B-C5B | 2.03  | 113.85      | 110.24   |
| 26  | h     | 301 | LMT  | O1B-C4'-C3' | 2.01  | 112.63      | 107.28   |

There are no chirality outliers.

All (1097) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 25  | o     | 201 | PC1  | O13-C11-C12-N   |
| 25  | o     | 201 | PC1  | C22-C21-O21-C2  |
| 25  | o     | 204 | PC1  | C22-C21-O21-C2  |
| 25  | v     | 202 | PC1  | C1-O11-P-O13    |
| 25  | v     | 202 | PC1  | C12-C11-O13-P   |
| 25  | v     | 202 | PC1  | O13-C11-C12-N   |
| 25  | v     | 202 | PC1  | O22-C21-O21-C2  |
| 25  | v     | 202 | PC1  | C22-C21-O21-C2  |
| 25  | O     | 201 | PC1  | O13-C11-C12-N   |
| 25  | O     | 201 | PC1  | C22-C21-O21-C2  |
| 25  | O     | 204 | PC1  | C22-C21-O21-C2  |
| 25  | V     | 203 | PC1  | C1-O11-P-O13    |
| 25  | V     | 203 | PC1  | C12-C11-O13-P   |
| 25  | V     | 203 | PC1  | O13-C11-C12-N   |
| 25  | V     | 203 | PC1  | O22-C21-O21-C2  |
| 26  | h     | 301 | LMT  | O5'-C1'-O1'-C1  |
| 26  | x     | 101 | LMT  | C2'-C1'-O1'-C1  |
| 26  | c     | 403 | LMT  | O5'-C1'-O1'-C1  |
| 26  | d     | 403 | LMT  | C2-C1-O1'-C1'   |
| 26  | H     | 301 | LMT  | O5'-C1'-O1'-C1  |
| 26  | X     | 101 | LMT  | C2'-C1'-O1'-C1  |
| 26  | C     | 403 | LMT  | O5'-C1'-O1'-C1  |
| 26  | D     | 403 | LMT  | C2-C1-O1'-C1'   |
| 27  | o     | 203 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | o     | 203 | CDL  | C11-CA5-OA6-CA4 |
| 27  | o     | 203 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | o     | 203 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | o     | 203 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | o     | 203 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | u     | 201 | CDL  | CA3-OA5-PA1-OA4 |
| 27  | h     | 302 | CDL  | OA6-CA4-CA6-OA8 |
| 27  | e     | 401 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | e     | 401 | CDL  | C1-CB2-OB2-PB2  |
| 27  | e     | 401 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | e     | 401 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | e     | 401 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | b     | 601 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | b     | 601 | CDL  | CA2-OA2-PA1-OA4 |
| 27  | b     | 601 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | b     | 601 | CDL  | CA3-OA5-PA1-OA3 |
| 27  | b     | 601 | CDL  | C51-CB5-OB6-CB4 |
| 27  | v     | 201 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | v     | 201 | CDL  | CA3-OA5-PA1-OA3 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | v     | 201 | CDL  | CA3-OA5-PA1-OA4 |
| 27  | v     | 201 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | v     | 201 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | v     | 201 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | c     | 404 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | c     | 404 | CDL  | C51-CB5-OB6-CB4 |
| 27  | d     | 402 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | d     | 402 | CDL  | C1-CB2-OB2-PB2  |
| 27  | d     | 402 | CDL  | OB6-CB4-CB6-OB8 |
| 27  | d     | 402 | CDL  | C51-CB5-OB6-CB4 |
| 27  | O     | 203 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | O     | 203 | CDL  | C11-CA5-OA6-CA4 |
| 27  | O     | 203 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | O     | 203 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | O     | 203 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | O     | 203 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | U     | 201 | CDL  | CA3-OA5-PA1-OA4 |
| 27  | H     | 302 | CDL  | OA6-CA4-CA6-OA8 |
| 27  | E     | 401 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | E     | 401 | CDL  | C1-CB2-OB2-PB2  |
| 27  | E     | 401 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | E     | 401 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | E     | 401 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | B     | 601 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | B     | 601 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | B     | 602 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | B     | 602 | CDL  | CA2-OA2-PA1-OA4 |
| 27  | B     | 602 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | B     | 602 | CDL  | CA3-OA5-PA1-OA3 |
| 27  | B     | 602 | CDL  | C51-CB5-OB6-CB4 |
| 27  | V     | 201 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | V     | 201 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | V     | 202 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | V     | 202 | CDL  | CA3-OA5-PA1-OA3 |
| 27  | V     | 202 | CDL  | CA3-OA5-PA1-OA4 |
| 27  | V     | 202 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | V     | 202 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | V     | 202 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | C     | 404 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | C     | 404 | CDL  | C51-CB5-OB6-CB4 |
| 27  | D     | 402 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | D     | 402 | CDL  | C1-CB2-OB2-PB2  |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | D     | 402 | CDL  | OB6-CB4-CB6-OB8 |
| 27  | D     | 402 | CDL  | C51-CB5-OB6-CB4 |
| 28  | j     | 301 | PEE  | O4P-C4-C5-N     |
| 28  | j     | 302 | PEE  | C4-O4P-P-O1P    |
| 28  | j     | 302 | PEE  | O4P-C4-C5-N     |
| 28  | J     | 301 | PEE  | O4P-C4-C5-N     |
| 28  | J     | 302 | PEE  | C4-O4P-P-O1P    |
| 28  | J     | 302 | PEE  | O4P-C4-C5-N     |
| 27  | v     | 201 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | c     | 404 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | V     | 202 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | C     | 404 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | v     | 201 | CDL  | C31-CA7-OA8-CA6 |
| 27  | c     | 404 | CDL  | C31-CA7-OA8-CA6 |
| 27  | V     | 202 | CDL  | C31-CA7-OA8-CA6 |
| 27  | C     | 404 | CDL  | C31-CA7-OA8-CA6 |
| 27  | h     | 302 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | b     | 601 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | H     | 302 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | B     | 601 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | B     | 602 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | V     | 201 | CDL  | OB9-CB7-OB8-CB6 |
| 25  | o     | 201 | PC1  | O22-C21-O21-C2  |
| 25  | O     | 201 | PC1  | O22-C21-O21-C2  |
| 27  | o     | 203 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | b     | 601 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | c     | 404 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | c     | 404 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | d     | 402 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | O     | 203 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | B     | 602 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | C     | 404 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | C     | 404 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | D     | 402 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | h     | 302 | CDL  | C71-CB7-OB8-CB6 |
| 27  | c     | 404 | CDL  | C71-CB7-OB8-CB6 |
| 27  | H     | 302 | CDL  | C71-CB7-OB8-CB6 |
| 27  | B     | 601 | CDL  | C71-CB7-OB8-CB6 |
| 27  | V     | 201 | CDL  | C71-CB7-OB8-CB6 |
| 27  | C     | 404 | CDL  | C71-CB7-OB8-CB6 |
| 25  | V     | 203 | PC1  | C22-C21-O21-C2  |
| 27  | c     | 404 | CDL  | C11-CA5-OA6-CA4 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | B     | 601 | CDL  | C51-CB5-OB6-CB4 |
| 27  | V     | 201 | CDL  | C51-CB5-OB6-CB4 |
| 27  | C     | 404 | CDL  | C11-CA5-OA6-CA4 |
| 26  | x     | 101 | LMT  | O5B-C5B-C6B-O6B |
| 26  | X     | 101 | LMT  | O5B-C5B-C6B-O6B |
| 27  | b     | 601 | CDL  | C31-CA7-OA8-CA6 |
| 27  | B     | 602 | CDL  | C31-CA7-OA8-CA6 |
| 26  | h     | 301 | LMT  | O5'-C5'-C6'-O6' |
| 26  | d     | 403 | LMT  | O5B-C5B-C6B-O6B |
| 26  | H     | 301 | LMT  | O5'-C5'-C6'-O6' |
| 26  | D     | 403 | LMT  | O5B-C5B-C6B-O6B |
| 28  | j     | 301 | PEE  | C37-C38-C39-C40 |
| 28  | c     | 402 | PEE  | C17-C18-C19-C20 |
| 28  | J     | 301 | PEE  | C37-C38-C39-C40 |
| 28  | C     | 402 | PEE  | C17-C18-C19-C20 |
| 26  | h     | 301 | LMT  | C3'-C4'-O1B-C1B |
| 26  | H     | 301 | LMT  | C3'-C4'-O1B-C1B |
| 25  | o     | 204 | PC1  | O22-C21-O21-C2  |
| 25  | O     | 204 | PC1  | O22-C21-O21-C2  |
| 27  | c     | 404 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | C     | 404 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | h     | 302 | CDL  | O1-C1-CA2-OA2   |
| 27  | d     | 402 | CDL  | O1-C1-CB2-OB2   |
| 27  | H     | 302 | CDL  | O1-C1-CA2-OA2   |
| 27  | D     | 402 | CDL  | O1-C1-CB2-OB2   |
| 26  | D     | 403 | LMT  | C4B-C5B-C6B-O6B |
| 26  | h     | 301 | LMT  | C4'-C5'-C6'-O6' |
| 26  | d     | 403 | LMT  | C4B-C5B-C6B-O6B |
| 26  | H     | 301 | LMT  | C4'-C5'-C6'-O6' |
| 27  | o     | 203 | CDL  | C31-CA7-OA8-CA6 |
| 27  | O     | 203 | CDL  | C31-CA7-OA8-CA6 |
| 26  | d     | 401 | LMT  | O5B-C5B-C6B-O6B |
| 26  | D     | 401 | LMT  | O5B-C5B-C6B-O6B |
| 27  | h     | 302 | CDL  | CA4-CA3-OA5-PA1 |
| 27  | H     | 302 | CDL  | CA4-CA3-OA5-PA1 |
| 26  | d     | 401 | LMT  | O5'-C5'-C6'-O6' |
| 26  | x     | 101 | LMT  | C4B-C5B-C6B-O6B |
| 26  | X     | 101 | LMT  | C4B-C5B-C6B-O6B |
| 26  | D     | 401 | LMT  | O5'-C5'-C6'-O6' |
| 26  | x     | 101 | LMT  | O5'-C1'-O1'-C1  |
| 26  | X     | 101 | LMT  | O5'-C1'-O1'-C1  |
| 26  | h     | 301 | LMT  | O5B-C5B-C6B-O6B |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 26  | H     | 301 | LMT  | O5B-C5B-C6B-O6B |
| 27  | o     | 203 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | O     | 203 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | h     | 302 | CDL  | CB2-C1-CA2-OA2  |
| 27  | H     | 302 | CDL  | CB2-C1-CA2-OA2  |
| 25  | o     | 201 | PC1  | C32-C31-O31-C3  |
| 25  | O     | 201 | PC1  | C32-C31-O31-C3  |
| 27  | e     | 401 | CDL  | C71-CB7-OB8-CB6 |
| 27  | d     | 402 | CDL  | C71-CB7-OB8-CB6 |
| 27  | E     | 401 | CDL  | C71-CB7-OB8-CB6 |
| 27  | B     | 601 | CDL  | C31-CA7-OA8-CA6 |
| 27  | V     | 201 | CDL  | C31-CA7-OA8-CA6 |
| 27  | D     | 402 | CDL  | C71-CB7-OB8-CB6 |
| 26  | d     | 401 | LMT  | C4B-C5B-C6B-O6B |
| 26  | D     | 401 | LMT  | C4B-C5B-C6B-O6B |
| 27  | v     | 201 | CDL  | OA6-CA4-CA6-OA8 |
| 27  | V     | 202 | CDL  | OA6-CA4-CA6-OA8 |
| 25  | o     | 201 | PC1  | O32-C31-O31-C3  |
| 25  | O     | 201 | PC1  | O32-C31-O31-C3  |
| 27  | d     | 402 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | D     | 402 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | c     | 404 | CDL  | CA5-C11-C12-C13 |
| 28  | C     | 402 | PEE  | C31-C30-O3-C3   |
| 27  | C     | 404 | CDL  | CA5-C11-C12-C13 |
| 25  | o     | 201 | PC1  | C31-C32-C33-C34 |
| 25  | O     | 201 | PC1  | C31-C32-C33-C34 |
| 27  | v     | 201 | CDL  | CB5-C51-C52-C53 |
| 27  | V     | 202 | CDL  | CB5-C51-C52-C53 |
| 28  | c     | 402 | PEE  | C31-C30-O3-C3   |
| 27  | u     | 201 | CDL  | CB5-C51-C52-C53 |
| 27  | h     | 302 | CDL  | CA5-C11-C12-C13 |
| 27  | U     | 201 | CDL  | CB5-C51-C52-C53 |
| 27  | H     | 302 | CDL  | CA5-C11-C12-C13 |
| 27  | e     | 401 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | E     | 401 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | B     | 601 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | V     | 201 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | o     | 203 | CDL  | C33-C34-C35-C36 |
| 27  | O     | 203 | CDL  | C33-C34-C35-C36 |
| 27  | d     | 402 | CDL  | C11-CA5-OA6-CA4 |
| 27  | D     | 402 | CDL  | C11-CA5-OA6-CA4 |
| 25  | v     | 202 | PC1  | C11-O13-P-O11   |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 25  | V     | 203 | PC1  | C11-O13-P-O11   |
| 27  | u     | 201 | CDL  | CB2-OB2-PB2-OB5 |
| 27  | h     | 302 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | d     | 402 | CDL  | CB2-OB2-PB2-OB5 |
| 27  | U     | 201 | CDL  | CB2-OB2-PB2-OB5 |
| 27  | H     | 302 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | D     | 402 | CDL  | CB2-OB2-PB2-OB5 |
| 28  | j     | 302 | PEE  | C4-O4P-P-O3P    |
| 28  | J     | 302 | PEE  | C4-O4P-P-O3P    |
| 27  | u     | 201 | CDL  | CA7-C31-C32-C33 |
| 27  | U     | 201 | CDL  | CA7-C31-C32-C33 |
| 27  | h     | 302 | CDL  | C20-C21-C22-C23 |
| 27  | H     | 302 | CDL  | C20-C21-C22-C23 |
| 26  | h     | 301 | LMT  | C4B-C5B-C6B-O6B |
| 26  | H     | 301 | LMT  | C4B-C5B-C6B-O6B |
| 27  | d     | 402 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | D     | 402 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | e     | 401 | CDL  | CB7-C71-C72-C73 |
| 27  | E     | 401 | CDL  | CB7-C71-C72-C73 |
| 27  | h     | 302 | CDL  | C63-C64-C65-C66 |
| 27  | e     | 401 | CDL  | C11-CA5-OA6-CA4 |
| 27  | E     | 401 | CDL  | C11-CA5-OA6-CA4 |
| 25  | o     | 204 | PC1  | C32-C33-C34-C35 |
| 25  | O     | 204 | PC1  | C32-C33-C34-C35 |
| 26  | c     | 401 | LMT  | C11-C10-C9-C8   |
| 26  | d     | 401 | LMT  | C3-C4-C5-C6     |
| 26  | C     | 401 | LMT  | C11-C10-C9-C8   |
| 26  | D     | 401 | LMT  | C3-C4-C5-C6     |
| 27  | h     | 302 | CDL  | C59-C60-C61-C62 |
| 27  | e     | 401 | CDL  | C59-C60-C61-C62 |
| 27  | v     | 201 | CDL  | C58-C59-C60-C61 |
| 27  | H     | 302 | CDL  | C59-C60-C61-C62 |
| 27  | H     | 302 | CDL  | C63-C64-C65-C66 |
| 27  | E     | 401 | CDL  | C59-C60-C61-C62 |
| 27  | B     | 601 | CDL  | C72-C73-C74-C75 |
| 27  | V     | 201 | CDL  | C72-C73-C74-C75 |
| 27  | V     | 202 | CDL  | C58-C59-C60-C61 |
| 27  | d     | 402 | CDL  | C52-C53-C54-C55 |
| 27  | D     | 402 | CDL  | C52-C53-C54-C55 |
| 28  | C     | 402 | PEE  | C40-C41-C42-C43 |
| 27  | e     | 401 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | E     | 401 | CDL  | OA7-CA5-OA6-CA4 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | o     | 203 | CDL  | C16-C17-C18-C19 |
| 27  | B     | 601 | CDL  | C41-C42-C43-C44 |
| 27  | V     | 201 | CDL  | C41-C42-C43-C44 |
| 28  | c     | 402 | PEE  | C40-C41-C42-C43 |
| 25  | v     | 202 | PC1  | C25-C26-C27-C28 |
| 25  | V     | 203 | PC1  | C25-C26-C27-C28 |
| 27  | e     | 401 | CDL  | C74-C75-C76-C77 |
| 27  | b     | 601 | CDL  | C58-C59-C60-C61 |
| 27  | O     | 203 | CDL  | C16-C17-C18-C19 |
| 27  | E     | 401 | CDL  | C74-C75-C76-C77 |
| 27  | B     | 602 | CDL  | C58-C59-C60-C61 |
| 25  | o     | 201 | PC1  | C37-C38-C39-C3A |
| 25  | o     | 204 | PC1  | C3A-C3B-C3C-C3D |
| 25  | O     | 201 | PC1  | C37-C38-C39-C3A |
| 25  | O     | 204 | PC1  | C3A-C3B-C3C-C3D |
| 27  | B     | 602 | CDL  | C56-C57-C58-C59 |
| 27  | h     | 302 | CDL  | CB5-C51-C52-C53 |
| 27  | H     | 302 | CDL  | CB5-C51-C52-C53 |
| 27  | o     | 203 | CDL  | C37-C38-C39-C40 |
| 27  | b     | 601 | CDL  | C56-C57-C58-C59 |
| 27  | c     | 404 | CDL  | C63-C64-C65-C66 |
| 27  | O     | 203 | CDL  | C37-C38-C39-C40 |
| 27  | B     | 601 | CDL  | C74-C75-C76-C77 |
| 27  | V     | 201 | CDL  | C74-C75-C76-C77 |
| 27  | C     | 404 | CDL  | C63-C64-C65-C66 |
| 28  | c     | 402 | PEE  | C23-C24-C25-C26 |
| 28  | c     | 402 | PEE  | O5-C30-O3-C3    |
| 27  | b     | 601 | CDL  | C52-C53-C54-C55 |
| 27  | B     | 602 | CDL  | C52-C53-C54-C55 |
| 27  | C     | 404 | CDL  | C39-C40-C41-C42 |
| 28  | C     | 402 | PEE  | C23-C24-C25-C26 |
| 27  | u     | 201 | CDL  | C14-C15-C16-C17 |
| 27  | b     | 601 | CDL  | C62-C63-C64-C65 |
| 27  | v     | 201 | CDL  | C23-C24-C25-C26 |
| 27  | v     | 201 | CDL  | C78-C79-C80-C81 |
| 27  | c     | 404 | CDL  | C39-C40-C41-C42 |
| 27  | U     | 201 | CDL  | C14-C15-C16-C17 |
| 27  | H     | 302 | CDL  | C76-C77-C78-C79 |
| 27  | B     | 601 | CDL  | C16-C17-C18-C19 |
| 27  | B     | 601 | CDL  | C61-C62-C63-C64 |
| 27  | B     | 602 | CDL  | C62-C63-C64-C65 |
| 27  | V     | 201 | CDL  | C16-C17-C18-C19 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | V     | 201 | CDL  | C61-C62-C63-C64 |
| 27  | V     | 202 | CDL  | C78-C79-C80-C81 |
| 28  | j     | 301 | PEE  | C23-C24-C25-C26 |
| 28  | J     | 301 | PEE  | C23-C24-C25-C26 |
| 28  | C     | 402 | PEE  | O5-C30-O3-C3    |
| 27  | h     | 302 | CDL  | C76-C77-C78-C79 |
| 27  | v     | 201 | CDL  | C81-C82-C83-C84 |
| 27  | V     | 202 | CDL  | C23-C24-C25-C26 |
| 27  | V     | 202 | CDL  | C81-C82-C83-C84 |
| 27  | h     | 302 | CDL  | C71-C72-C73-C74 |
| 27  | c     | 404 | CDL  | C53-C54-C55-C56 |
| 27  | c     | 404 | CDL  | C82-C83-C84-C85 |
| 27  | H     | 302 | CDL  | C71-C72-C73-C74 |
| 27  | C     | 404 | CDL  | C82-C83-C84-C85 |
| 27  | o     | 203 | CDL  | C83-C84-C85-C86 |
| 27  | u     | 201 | CDL  | C79-C80-C81-C82 |
| 27  | d     | 402 | CDL  | C36-C37-C38-C39 |
| 27  | d     | 402 | CDL  | C71-C72-C73-C74 |
| 27  | O     | 203 | CDL  | C83-C84-C85-C86 |
| 27  | U     | 201 | CDL  | C79-C80-C81-C82 |
| 27  | C     | 404 | CDL  | C53-C54-C55-C56 |
| 27  | D     | 402 | CDL  | C36-C37-C38-C39 |
| 27  | D     | 402 | CDL  | C71-C72-C73-C74 |
| 28  | j     | 301 | PEE  | C34-C35-C36-C37 |
| 28  | c     | 402 | PEE  | C13-C14-C15-C16 |
| 28  | J     | 301 | PEE  | C34-C35-C36-C37 |
| 28  | J     | 302 | PEE  | C23-C24-C25-C26 |
| 28  | C     | 402 | PEE  | C13-C14-C15-C16 |
| 27  | o     | 203 | CDL  | C31-C32-C33-C34 |
| 27  | o     | 203 | CDL  | C61-C62-C63-C64 |
| 27  | O     | 203 | CDL  | C31-C32-C33-C34 |
| 27  | O     | 203 | CDL  | C61-C62-C63-C64 |
| 28  | j     | 302 | PEE  | C23-C24-C25-C26 |
| 27  | o     | 203 | CDL  | C59-C60-C61-C62 |
| 27  | u     | 201 | CDL  | C35-C36-C37-C38 |
| 27  | v     | 201 | CDL  | C14-C15-C16-C17 |
| 27  | d     | 402 | CDL  | C63-C64-C65-C66 |
| 27  | O     | 203 | CDL  | C59-C60-C61-C62 |
| 27  | U     | 201 | CDL  | C35-C36-C37-C38 |
| 27  | V     | 202 | CDL  | C14-C15-C16-C17 |
| 27  | D     | 402 | CDL  | C63-C64-C65-C66 |
| 28  | j     | 302 | PEE  | C14-C15-C16-C17 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 28  | J     | 302 | PEE  | C14-C15-C16-C17 |
| 25  | v     | 202 | PC1  | C35-C36-C37-C38 |
| 25  | V     | 203 | PC1  | C35-C36-C37-C38 |
| 27  | e     | 401 | CDL  | C76-C77-C78-C79 |
| 27  | E     | 401 | CDL  | C76-C77-C78-C79 |
| 27  | b     | 601 | CDL  | C40-C41-C42-C43 |
| 27  | B     | 602 | CDL  | C40-C41-C42-C43 |
| 26  | x     | 101 | LMT  | O5B-C1B-O1B-C4' |
| 26  | X     | 101 | LMT  | O5B-C1B-O1B-C4' |
| 26  | o     | 202 | LMT  | C2-C1-O1'-C1'   |
| 26  | O     | 202 | LMT  | C2-C1-O1'-C1'   |
| 25  | o     | 201 | PC1  | C3E-C3F-C3G-C3H |
| 25  | v     | 202 | PC1  | C3B-C3C-C3D-C3E |
| 25  | O     | 201 | PC1  | C3E-C3F-C3G-C3H |
| 25  | V     | 203 | PC1  | C3B-C3C-C3D-C3E |
| 27  | e     | 401 | CDL  | C31-C32-C33-C34 |
| 27  | e     | 401 | CDL  | C35-C36-C37-C38 |
| 27  | E     | 401 | CDL  | C31-C32-C33-C34 |
| 27  | E     | 401 | CDL  | C35-C36-C37-C38 |
| 27  | E     | 401 | CDL  | C62-C63-C64-C65 |
| 27  | v     | 201 | CDL  | CB7-C71-C72-C73 |
| 27  | V     | 202 | CDL  | CB7-C71-C72-C73 |
| 27  | e     | 401 | CDL  | C62-C63-C64-C65 |
| 27  | B     | 601 | CDL  | C11-CA5-OA6-CA4 |
| 27  | V     | 201 | CDL  | C11-CA5-OA6-CA4 |
| 27  | H     | 302 | CDL  | C22-C23-C24-C25 |
| 27  | E     | 401 | CDL  | C15-C16-C17-C18 |
| 27  | h     | 302 | CDL  | C22-C23-C24-C25 |
| 27  | e     | 401 | CDL  | C15-C16-C17-C18 |
| 27  | b     | 601 | CDL  | C41-C42-C43-C44 |
| 27  | v     | 201 | CDL  | C42-C43-C44-C45 |
| 27  | B     | 602 | CDL  | C41-C42-C43-C44 |
| 27  | V     | 202 | CDL  | C42-C43-C44-C45 |
| 27  | b     | 601 | CDL  | C77-C78-C79-C80 |
| 27  | B     | 602 | CDL  | C77-C78-C79-C80 |
| 26  | C     | 403 | LMT  | C1-C2-C3-C4     |
| 27  | h     | 302 | CDL  | C74-C75-C76-C77 |
| 26  | c     | 403 | LMT  | C1-C2-C3-C4     |
| 27  | H     | 302 | CDL  | C74-C75-C76-C77 |
| 27  | B     | 602 | CDL  | C51-C52-C53-C54 |
| 27  | B     | 601 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | V     | 201 | CDL  | OA7-CA5-OA6-CA4 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | b     | 601 | CDL  | C51-C52-C53-C54 |
| 27  | B     | 601 | CDL  | C18-C19-C20-C21 |
| 27  | B     | 601 | CDL  | C32-C33-C34-C35 |
| 27  | V     | 201 | CDL  | C18-C19-C20-C21 |
| 25  | o     | 204 | PC1  | C23-C24-C25-C26 |
| 25  | O     | 204 | PC1  | C23-C24-C25-C26 |
| 26  | c     | 401 | LMT  | C3-C4-C5-C6     |
| 26  | C     | 401 | LMT  | C3-C4-C5-C6     |
| 27  | V     | 201 | CDL  | C32-C33-C34-C35 |
| 27  | h     | 302 | CDL  | C56-C57-C58-C59 |
| 27  | b     | 601 | CDL  | C38-C39-C40-C41 |
| 27  | H     | 302 | CDL  | C56-C57-C58-C59 |
| 27  | H     | 302 | CDL  | C77-C78-C79-C80 |
| 27  | B     | 602 | CDL  | C22-C23-C24-C25 |
| 27  | B     | 602 | CDL  | C38-C39-C40-C41 |
| 27  | u     | 201 | CDL  | C11-CA5-OA6-CA4 |
| 28  | c     | 402 | PEE  | C11-C10-O2-C2   |
| 28  | C     | 402 | PEE  | C11-C10-O2-C2   |
| 25  | o     | 201 | PC1  | C29-C2A-C2B-C2C |
| 25  | o     | 204 | PC1  | C25-C26-C27-C28 |
| 25  | O     | 201 | PC1  | C29-C2A-C2B-C2C |
| 25  | O     | 204 | PC1  | C25-C26-C27-C28 |
| 26  | c     | 403 | LMT  | C2-C3-C4-C5     |
| 26  | C     | 403 | LMT  | C2-C3-C4-C5     |
| 27  | u     | 201 | CDL  | C41-C42-C43-C44 |
| 27  | h     | 302 | CDL  | C77-C78-C79-C80 |
| 27  | b     | 601 | CDL  | C22-C23-C24-C25 |
| 27  | v     | 201 | CDL  | C37-C38-C39-C40 |
| 27  | U     | 201 | CDL  | C41-C42-C43-C44 |
| 27  | V     | 202 | CDL  | C37-C38-C39-C40 |
| 27  | V     | 202 | CDL  | C74-C75-C76-C77 |
| 28  | j     | 301 | PEE  | C19-C20-C21-C22 |
| 28  | J     | 301 | PEE  | C19-C20-C21-C22 |
| 27  | u     | 201 | CDL  | C23-C24-C25-C26 |
| 27  | v     | 201 | CDL  | C74-C75-C76-C77 |
| 27  | U     | 201 | CDL  | C23-C24-C25-C26 |
| 27  | V     | 201 | CDL  | C63-C64-C65-C66 |
| 27  | B     | 601 | CDL  | C63-C64-C65-C66 |
| 28  | J     | 301 | PEE  | C14-C15-C16-C17 |
| 28  | j     | 301 | PEE  | C14-C15-C16-C17 |
| 25  | O     | 201 | PC1  | C3D-C3E-C3F-C3G |
| 27  | e     | 401 | CDL  | C72-C73-C74-C75 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | c     | 404 | CDL  | C14-C15-C16-C17 |
| 27  | E     | 401 | CDL  | C72-C73-C74-C75 |
| 27  | C     | 404 | CDL  | C14-C15-C16-C17 |
| 25  | o     | 201 | PC1  | C3D-C3E-C3F-C3G |
| 26  | D     | 401 | LMT  | C4-C5-C6-C7     |
| 25  | o     | 204 | PC1  | C27-C28-C29-C2A |
| 25  | O     | 204 | PC1  | C27-C28-C29-C2A |
| 26  | d     | 401 | LMT  | C4-C5-C6-C7     |
| 27  | h     | 302 | CDL  | C61-C62-C63-C64 |
| 27  | v     | 201 | CDL  | C31-C32-C33-C34 |
| 27  | H     | 302 | CDL  | C61-C62-C63-C64 |
| 27  | V     | 202 | CDL  | C31-C32-C33-C34 |
| 27  | U     | 201 | CDL  | C11-CA5-OA6-CA4 |
| 27  | b     | 601 | CDL  | OB5-CB3-CB4-OB6 |
| 27  | B     | 602 | CDL  | OB5-CB3-CB4-OB6 |
| 27  | u     | 201 | CDL  | OA7-CA5-OA6-CA4 |
| 27  | U     | 201 | CDL  | OA7-CA5-OA6-CA4 |
| 26  | x     | 101 | LMT  | C2-C3-C4-C5     |
| 26  | X     | 101 | LMT  | C2-C3-C4-C5     |
| 27  | h     | 302 | CDL  | C31-CA7-OA8-CA6 |
| 27  | o     | 203 | CDL  | C12-C13-C14-C15 |
| 27  | O     | 203 | CDL  | C12-C13-C14-C15 |
| 27  | o     | 203 | CDL  | C72-C73-C74-C75 |
| 27  | O     | 203 | CDL  | C72-C73-C74-C75 |
| 28  | j     | 301 | PEE  | C42-C43-C44-C45 |
| 26  | x     | 101 | LMT  | C3-C4-C5-C6     |
| 26  | X     | 101 | LMT  | C3-C4-C5-C6     |
| 27  | D     | 402 | CDL  | C75-C76-C77-C78 |
| 28  | j     | 301 | PEE  | C22-C23-C24-C25 |
| 28  | J     | 301 | PEE  | C22-C23-C24-C25 |
| 28  | J     | 301 | PEE  | C42-C43-C44-C45 |
| 27  | H     | 302 | CDL  | C31-CA7-OA8-CA6 |
| 27  | o     | 203 | CDL  | C38-C39-C40-C41 |
| 27  | d     | 402 | CDL  | C60-C61-C62-C63 |
| 27  | d     | 402 | CDL  | C75-C76-C77-C78 |
| 27  | O     | 203 | CDL  | C38-C39-C40-C41 |
| 27  | D     | 402 | CDL  | C60-C61-C62-C63 |
| 28  | c     | 402 | PEE  | O4-C10-O2-C2    |
| 28  | C     | 402 | PEE  | O4-C10-O2-C2    |
| 27  | c     | 404 | CDL  | C74-C75-C76-C77 |
| 27  | C     | 404 | CDL  | C74-C75-C76-C77 |
| 27  | o     | 203 | CDL  | CA3-OA5-PA1-OA2 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | u     | 201 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | c     | 404 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | O     | 203 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | U     | 201 | CDL  | CA3-OA5-PA1-OA2 |
| 27  | B     | 601 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | V     | 201 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | C     | 404 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | c     | 404 | CDL  | C42-C43-C44-C45 |
| 27  | C     | 404 | CDL  | C42-C43-C44-C45 |
| 27  | b     | 601 | CDL  | C82-C83-C84-C85 |
| 27  | B     | 602 | CDL  | C82-C83-C84-C85 |
| 27  | B     | 601 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | V     | 201 | CDL  | OB5-CB3-CB4-CB6 |
| 25  | O     | 201 | PC1  | C26-C27-C28-C29 |
| 27  | b     | 601 | CDL  | C73-C74-C75-C76 |
| 27  | B     | 602 | CDL  | C73-C74-C75-C76 |
| 25  | o     | 201 | PC1  | C26-C27-C28-C29 |
| 25  | o     | 204 | PC1  | C37-C38-C39-C3A |
| 25  | O     | 204 | PC1  | C37-C38-C39-C3A |
| 25  | o     | 204 | PC1  | C26-C27-C28-C29 |
| 25  | o     | 204 | PC1  | C39-C3A-C3B-C3C |
| 25  | O     | 204 | PC1  | C26-C27-C28-C29 |
| 26  | o     | 202 | LMT  | C5-C6-C7-C8     |
| 26  | O     | 202 | LMT  | C5-C6-C7-C8     |
| 25  | O     | 204 | PC1  | C39-C3A-C3B-C3C |
| 27  | v     | 201 | CDL  | CA3-CA4-CA6-OA8 |
| 27  | V     | 202 | CDL  | CA3-CA4-CA6-OA8 |
| 28  | j     | 301 | PEE  | C1-C2-C3-O3     |
| 28  | J     | 301 | PEE  | C1-C2-C3-O3     |
| 27  | u     | 201 | CDL  | C11-C12-C13-C14 |
| 27  | U     | 201 | CDL  | C11-C12-C13-C14 |
| 25  | o     | 204 | PC1  | C3E-C3F-C3G-C3H |
| 25  | O     | 204 | PC1  | C3E-C3F-C3G-C3H |
| 27  | C     | 404 | CDL  | C81-C82-C83-C84 |
| 27  | c     | 404 | CDL  | C81-C82-C83-C84 |
| 27  | h     | 302 | CDL  | C16-C17-C18-C19 |
| 27  | h     | 302 | CDL  | C64-C65-C66-C67 |
| 27  | b     | 601 | CDL  | C76-C77-C78-C79 |
| 27  | H     | 302 | CDL  | C16-C17-C18-C19 |
| 25  | v     | 202 | PC1  | C23-C24-C25-C26 |
| 27  | e     | 401 | CDL  | C61-C62-C63-C64 |
| 27  | H     | 302 | CDL  | C64-C65-C66-C67 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | E     | 401 | CDL  | C61-C62-C63-C64 |
| 27  | B     | 602 | CDL  | C76-C77-C78-C79 |
| 25  | V     | 203 | PC1  | C23-C24-C25-C26 |
| 27  | b     | 601 | CDL  | C71-CB7-OB8-CB6 |
| 27  | B     | 602 | CDL  | C71-CB7-OB8-CB6 |
| 27  | c     | 404 | CDL  | CA6-CA4-OA6-CA5 |
| 27  | C     | 404 | CDL  | CA6-CA4-OA6-CA5 |
| 28  | c     | 402 | PEE  | C1-C2-O2-C10    |
| 28  | C     | 402 | PEE  | C1-C2-O2-C10    |
| 27  | h     | 302 | CDL  | C53-C54-C55-C56 |
| 27  | e     | 401 | CDL  | C78-C79-C80-C81 |
| 27  | H     | 302 | CDL  | C53-C54-C55-C56 |
| 27  | E     | 401 | CDL  | C78-C79-C80-C81 |
| 27  | o     | 203 | CDL  | C44-C45-C46-C47 |
| 27  | u     | 201 | CDL  | C58-C59-C60-C61 |
| 27  | O     | 203 | CDL  | C44-C45-C46-C47 |
| 27  | U     | 201 | CDL  | C58-C59-C60-C61 |
| 27  | V     | 201 | CDL  | C56-C57-C58-C59 |
| 27  | h     | 302 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | H     | 302 | CDL  | OA9-CA7-OA8-CA6 |
| 27  | B     | 601 | CDL  | C56-C57-C58-C59 |
| 25  | v     | 202 | PC1  | C33-C34-C35-C36 |
| 25  | V     | 203 | PC1  | C33-C34-C35-C36 |
| 27  | D     | 402 | CDL  | C33-C34-C35-C36 |
| 27  | d     | 402 | CDL  | C33-C34-C35-C36 |
| 27  | B     | 602 | CDL  | OB9-CB7-OB8-CB6 |
| 26  | c     | 403 | LMT  | C5-C6-C7-C8     |
| 27  | C     | 404 | CDL  | C22-C23-C24-C25 |
| 27  | u     | 201 | CDL  | C51-CB5-OB6-CB4 |
| 27  | U     | 201 | CDL  | C51-CB5-OB6-CB4 |
| 27  | c     | 404 | CDL  | C22-C23-C24-C25 |
| 27  | H     | 302 | CDL  | C24-C25-C26-C27 |
| 27  | b     | 601 | CDL  | OB9-CB7-OB8-CB6 |
| 26  | C     | 403 | LMT  | C5-C6-C7-C8     |
| 27  | u     | 201 | CDL  | C75-C76-C77-C78 |
| 27  | u     | 201 | CDL  | C78-C79-C80-C81 |
| 27  | h     | 302 | CDL  | C24-C25-C26-C27 |
| 27  | U     | 201 | CDL  | C78-C79-C80-C81 |
| 28  | j     | 301 | PEE  | C10-C11-C12-C13 |
| 28  | J     | 301 | PEE  | C10-C11-C12-C13 |
| 27  | H     | 302 | CDL  | C13-C14-C15-C16 |
| 27  | h     | 302 | CDL  | C13-C14-C15-C16 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | U     | 201 | CDL  | C75-C76-C77-C78 |
| 27  | b     | 601 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | v     | 201 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | c     | 404 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | d     | 402 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | B     | 602 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | V     | 202 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | C     | 404 | CDL  | OB5-CB3-CB4-CB6 |
| 27  | D     | 402 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | v     | 201 | CDL  | C19-C20-C21-C22 |
| 27  | B     | 601 | CDL  | CA7-C31-C32-C33 |
| 27  | V     | 201 | CDL  | CA7-C31-C32-C33 |
| 27  | V     | 202 | CDL  | C19-C20-C21-C22 |
| 27  | b     | 601 | CDL  | C83-C84-C85-C86 |
| 27  | B     | 602 | CDL  | C83-C84-C85-C86 |
| 27  | d     | 402 | CDL  | C42-C43-C44-C45 |
| 28  | c     | 402 | PEE  | C12-C13-C14-C15 |
| 28  | C     | 402 | PEE  | C12-C13-C14-C15 |
| 27  | b     | 601 | CDL  | C44-C45-C46-C47 |
| 27  | B     | 602 | CDL  | C44-C45-C46-C47 |
| 27  | D     | 402 | CDL  | C42-C43-C44-C45 |
| 26  | c     | 401 | LMT  | C4'-C5'-C6'-O6' |
| 26  | C     | 401 | LMT  | C4'-C5'-C6'-O6' |
| 28  | c     | 402 | PEE  | C21-C22-C23-C24 |
| 27  | o     | 203 | CDL  | CA3-CA4-CA6-OA8 |
| 27  | h     | 302 | CDL  | CA3-CA4-CA6-OA8 |
| 27  | c     | 404 | CDL  | CB3-CB4-CB6-OB8 |
| 27  | O     | 203 | CDL  | CA3-CA4-CA6-OA8 |
| 27  | H     | 302 | CDL  | CA3-CA4-CA6-OA8 |
| 27  | C     | 404 | CDL  | CB3-CB4-CB6-OB8 |
| 27  | v     | 201 | CDL  | C17-C18-C19-C20 |
| 27  | H     | 302 | CDL  | C80-C81-C82-C83 |
| 27  | V     | 202 | CDL  | C17-C18-C19-C20 |
| 28  | j     | 301 | PEE  | C41-C42-C43-C44 |
| 28  | J     | 301 | PEE  | C41-C42-C43-C44 |
| 27  | h     | 302 | CDL  | C80-C81-C82-C83 |
| 28  | C     | 402 | PEE  | C21-C22-C23-C24 |
| 25  | v     | 202 | PC1  | C38-C39-C3A-C3B |
| 25  | V     | 203 | PC1  | C38-C39-C3A-C3B |
| 27  | b     | 601 | CDL  | C11-C12-C13-C14 |
| 27  | B     | 602 | CDL  | C11-C12-C13-C14 |
| 26  | c     | 401 | LMT  | C3'-C4'-O1B-C1B |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 26  | C     | 401 | LMT  | C3'-C4'-O1B-C1B |
| 27  | c     | 404 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | d     | 402 | CDL  | CB3-OB5-PB2-OB2 |
| 27  | C     | 404 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | D     | 402 | CDL  | CB3-OB5-PB2-OB2 |
| 26  | H     | 301 | LMT  | C5'-C4'-O1B-C1B |
| 27  | b     | 601 | CDL  | C43-C44-C45-C46 |
| 26  | d     | 401 | LMT  | C4'-C5'-C6'-O6' |
| 26  | D     | 401 | LMT  | C4'-C5'-C6'-O6' |
| 26  | h     | 301 | LMT  | C5'-C4'-O1B-C1B |
| 27  | B     | 602 | CDL  | C43-C44-C45-C46 |
| 25  | o     | 204 | PC1  | O11-C1-C2-O21   |
| 25  | O     | 204 | PC1  | O11-C1-C2-O21   |
| 26  | d     | 401 | LMT  | C1-C2-C3-C4     |
| 26  | D     | 401 | LMT  | C1-C2-C3-C4     |
| 27  | c     | 404 | CDL  | OB6-CB4-CB6-OB8 |
| 27  | C     | 404 | CDL  | OB6-CB4-CB6-OB8 |
| 28  | j     | 302 | PEE  | O2-C2-C3-O3     |
| 28  | J     | 302 | PEE  | O2-C2-C3-O3     |
| 27  | e     | 401 | CDL  | C32-C31-CA7-OA8 |
| 27  | E     | 401 | CDL  | C32-C31-CA7-OA8 |
| 27  | o     | 203 | CDL  | C14-C15-C16-C17 |
| 27  | O     | 203 | CDL  | C14-C15-C16-C17 |
| 27  | v     | 201 | CDL  | C51-CB5-OB6-CB4 |
| 27  | V     | 202 | CDL  | C51-CB5-OB6-CB4 |
| 27  | d     | 402 | CDL  | CA2-C1-CB2-OB2  |
| 27  | D     | 402 | CDL  | CA2-C1-CB2-OB2  |
| 27  | o     | 203 | CDL  | CA4-CA3-OA5-PA1 |
| 27  | o     | 203 | CDL  | C1-CB2-OB2-PB2  |
| 27  | b     | 601 | CDL  | C1-CB2-OB2-PB2  |
| 27  | O     | 203 | CDL  | CA4-CA3-OA5-PA1 |
| 27  | O     | 203 | CDL  | C1-CB2-OB2-PB2  |
| 27  | B     | 602 | CDL  | C1-CB2-OB2-PB2  |
| 27  | u     | 201 | CDL  | C36-C37-C38-C39 |
| 27  | b     | 601 | CDL  | C71-C72-C73-C74 |
| 27  | v     | 201 | CDL  | C53-C54-C55-C56 |
| 27  | B     | 602 | CDL  | C71-C72-C73-C74 |
| 27  | V     | 202 | CDL  | C53-C54-C55-C56 |
| 27  | U     | 201 | CDL  | C36-C37-C38-C39 |
| 28  | c     | 402 | PEE  | C36-C37-C38-C39 |
| 28  | C     | 402 | PEE  | C36-C37-C38-C39 |
| 27  | e     | 401 | CDL  | C81-C82-C83-C84 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | E     | 401 | CDL  | C81-C82-C83-C84 |
| 27  | v     | 201 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | V     | 202 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | e     | 401 | CDL  | C80-C81-C82-C83 |
| 27  | e     | 401 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | E     | 401 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | o     | 203 | CDL  | C32-C31-CA7-OA8 |
| 27  | O     | 203 | CDL  | C32-C31-CA7-OA8 |
| 26  | D     | 403 | LMT  | O1'-C1-C2-C3    |
| 27  | E     | 401 | CDL  | C80-C81-C82-C83 |
| 26  | d     | 403 | LMT  | O1'-C1-C2-C3    |
| 27  | u     | 201 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | U     | 201 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | u     | 201 | CDL  | C13-C14-C15-C16 |
| 27  | B     | 601 | CDL  | C78-C79-C80-C81 |
| 27  | V     | 201 | CDL  | C78-C79-C80-C81 |
| 27  | U     | 201 | CDL  | C13-C14-C15-C16 |
| 28  | j     | 302 | PEE  | C31-C32-C33-C34 |
| 28  | J     | 302 | PEE  | C31-C32-C33-C34 |
| 27  | u     | 201 | CDL  | C80-C81-C82-C83 |
| 27  | U     | 201 | CDL  | C80-C81-C82-C83 |
| 27  | o     | 203 | CDL  | C51-C52-C53-C54 |
| 27  | O     | 203 | CDL  | C51-C52-C53-C54 |
| 26  | D     | 403 | LMT  | C3-C4-C5-C6     |
| 27  | d     | 402 | CDL  | CA6-CA4-OA6-CA5 |
| 27  | D     | 402 | CDL  | CA6-CA4-OA6-CA5 |
| 26  | d     | 403 | LMT  | C3-C4-C5-C6     |
| 28  | c     | 402 | PEE  | C34-C35-C36-C37 |
| 28  | C     | 402 | PEE  | C34-C35-C36-C37 |
| 28  | j     | 301 | PEE  | C31-C30-O3-C3   |
| 28  | J     | 301 | PEE  | C31-C30-O3-C3   |
| 27  | u     | 201 | CDL  | C55-C56-C57-C58 |
| 27  | U     | 201 | CDL  | C55-C56-C57-C58 |
| 27  | u     | 201 | CDL  | C56-C57-C58-C59 |
| 27  | d     | 402 | CDL  | CB3-CB4-CB6-OB8 |
| 27  | D     | 402 | CDL  | CB3-CB4-CB6-OB8 |
| 27  | U     | 201 | CDL  | C56-C57-C58-C59 |
| 27  | v     | 201 | CDL  | OB5-CB3-CB4-OB6 |
| 27  | c     | 404 | CDL  | OB5-CB3-CB4-OB6 |
| 27  | V     | 202 | CDL  | OB5-CB3-CB4-OB6 |
| 27  | C     | 404 | CDL  | OB5-CB3-CB4-OB6 |
| 26  | c     | 401 | LMT  | C5'-C4'-O1B-C1B |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 26  | C     | 401 | LMT  | C5'-C4'-O1B-C1B |
| 27  | B     | 601 | CDL  | OB6-CB4-CB6-OB8 |
| 27  | V     | 201 | CDL  | OB6-CB4-CB6-OB8 |
| 27  | b     | 601 | CDL  | C60-C61-C62-C63 |
| 27  | B     | 602 | CDL  | C60-C61-C62-C63 |
| 27  | e     | 401 | CDL  | C44-C45-C46-C47 |
| 27  | E     | 401 | CDL  | C44-C45-C46-C47 |
| 27  | d     | 402 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | D     | 402 | CDL  | CA2-OA2-PA1-OA5 |
| 27  | o     | 203 | CDL  | C21-C22-C23-C24 |
| 27  | O     | 203 | CDL  | C21-C22-C23-C24 |
| 27  | h     | 302 | CDL  | C1-CA2-OA2-PA1  |
| 27  | H     | 302 | CDL  | C1-CA2-OA2-PA1  |
| 27  | d     | 402 | CDL  | C41-C42-C43-C44 |
| 27  | H     | 302 | CDL  | C58-C59-C60-C61 |
| 27  | D     | 402 | CDL  | C41-C42-C43-C44 |
| 25  | v     | 202 | PC1  | C11-O13-P-O12   |
| 25  | v     | 202 | PC1  | C11-O13-P-O14   |
| 25  | V     | 203 | PC1  | C11-O13-P-O12   |
| 25  | V     | 203 | PC1  | C11-O13-P-O14   |
| 27  | o     | 203 | CDL  | CA3-OA5-PA1-OA4 |
| 27  | u     | 201 | CDL  | CA3-OA5-PA1-OA3 |
| 27  | u     | 201 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | u     | 201 | CDL  | CB2-OB2-PB2-OB4 |
| 27  | h     | 302 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | h     | 302 | CDL  | CB2-OB2-PB2-OB4 |
| 27  | h     | 302 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | e     | 401 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | b     | 601 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | c     | 404 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | d     | 402 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | O     | 203 | CDL  | CA3-OA5-PA1-OA4 |
| 27  | U     | 201 | CDL  | CA3-OA5-PA1-OA3 |
| 27  | U     | 201 | CDL  | CB2-OB2-PB2-OB3 |
| 27  | U     | 201 | CDL  | CB2-OB2-PB2-OB4 |
| 27  | H     | 302 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | H     | 302 | CDL  | CB2-OB2-PB2-OB4 |
| 27  | H     | 302 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | E     | 401 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | B     | 601 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | B     | 602 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | V     | 201 | CDL  | CB3-OB5-PB2-OB4 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | C     | 404 | CDL  | CB3-OB5-PB2-OB3 |
| 27  | D     | 402 | CDL  | CB2-OB2-PB2-OB3 |
| 28  | j     | 302 | PEE  | C4-O4P-P-O2P    |
| 28  | J     | 302 | PEE  | C4-O4P-P-O2P    |
| 27  | B     | 601 | CDL  | CA5-C11-C12-C13 |
| 27  | h     | 302 | CDL  | C58-C59-C60-C61 |
| 27  | V     | 201 | CDL  | CA5-C11-C12-C13 |
| 25  | o     | 204 | PC1  | C12-C11-O13-P   |
| 25  | O     | 204 | PC1  | C12-C11-O13-P   |
| 27  | h     | 302 | CDL  | C51-C52-C53-C54 |
| 27  | H     | 302 | CDL  | C51-C52-C53-C54 |
| 27  | v     | 201 | CDL  | C71-CB7-OB8-CB6 |
| 25  | o     | 204 | PC1  | C22-C23-C24-C25 |
| 27  | B     | 601 | CDL  | C57-C58-C59-C60 |
| 27  | V     | 201 | CDL  | C57-C58-C59-C60 |
| 27  | V     | 202 | CDL  | C33-C34-C35-C36 |
| 27  | e     | 401 | CDL  | OA5-CA3-CA4-OA6 |
| 27  | d     | 402 | CDL  | OA5-CA3-CA4-OA6 |
| 27  | E     | 401 | CDL  | OA5-CA3-CA4-OA6 |
| 27  | D     | 402 | CDL  | OA5-CA3-CA4-OA6 |
| 25  | O     | 204 | PC1  | C22-C23-C24-C25 |
| 27  | v     | 201 | CDL  | C33-C34-C35-C36 |
| 28  | j     | 301 | PEE  | O5-C30-O3-C3    |
| 27  | V     | 202 | CDL  | C71-CB7-OB8-CB6 |
| 28  | J     | 301 | PEE  | O5-C30-O3-C3    |
| 25  | o     | 204 | PC1  | O13-C11-C12-N   |
| 25  | O     | 204 | PC1  | O13-C11-C12-N   |
| 25  | v     | 202 | PC1  | O21-C2-C3-O31   |
| 25  | V     | 203 | PC1  | O21-C2-C3-O31   |
| 27  | o     | 203 | CDL  | OA6-CA4-CA6-OA8 |
| 27  | O     | 203 | CDL  | OA6-CA4-CA6-OA8 |
| 28  | j     | 301 | PEE  | O2-C2-C3-O3     |
| 28  | J     | 301 | PEE  | O2-C2-C3-O3     |
| 27  | V     | 201 | CDL  | C54-C55-C56-C57 |
| 27  | D     | 402 | CDL  | C80-C81-C82-C83 |
| 27  | d     | 402 | CDL  | C80-C81-C82-C83 |
| 27  | O     | 203 | CDL  | C20-C21-C22-C23 |
| 27  | B     | 601 | CDL  | C54-C55-C56-C57 |
| 27  | o     | 203 | CDL  | C20-C21-C22-C23 |
| 25  | o     | 204 | PC1  | O31-C31-C32-C33 |
| 25  | O     | 204 | PC1  | O31-C31-C32-C33 |
| 27  | e     | 401 | CDL  | C1-CA2-OA2-PA1  |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | E     | 401 | CDL  | C1-CA2-OA2-PA1  |
| 27  | u     | 201 | CDL  | C32-C31-CA7-OA8 |
| 27  | U     | 201 | CDL  | C32-C31-CA7-OA8 |
| 27  | v     | 201 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | V     | 202 | CDL  | OB9-CB7-OB8-CB6 |
| 25  | O     | 201 | PC1  | C34-C35-C36-C37 |
| 27  | d     | 402 | CDL  | C24-C25-C26-C27 |
| 27  | D     | 402 | CDL  | C24-C25-C26-C27 |
| 25  | o     | 201 | PC1  | C34-C35-C36-C37 |
| 25  | o     | 201 | PC1  | C32-C33-C34-C35 |
| 25  | O     | 201 | PC1  | C32-C33-C34-C35 |
| 25  | O     | 201 | PC1  | C3A-C3B-C3C-C3D |
| 25  | o     | 201 | PC1  | C3A-C3B-C3C-C3D |
| 28  | c     | 402 | PEE  | C37-C38-C39-C40 |
| 28  | C     | 402 | PEE  | C37-C38-C39-C40 |
| 27  | u     | 201 | CDL  | C84-C85-C86-C87 |
| 27  | U     | 201 | CDL  | C84-C85-C86-C87 |
| 27  | B     | 601 | CDL  | O1-C1-CA2-OA2   |
| 27  | V     | 201 | CDL  | O1-C1-CA2-OA2   |
| 27  | C     | 404 | CDL  | C16-C17-C18-C19 |
| 27  | c     | 404 | CDL  | C16-C17-C18-C19 |
| 27  | V     | 201 | CDL  | C36-C37-C38-C39 |
| 27  | H     | 302 | CDL  | C14-C15-C16-C17 |
| 27  | B     | 601 | CDL  | C36-C37-C38-C39 |
| 27  | h     | 302 | CDL  | C14-C15-C16-C17 |
| 28  | J     | 302 | PEE  | C40-C41-C42-C43 |
| 27  | h     | 302 | CDL  | CB3-CB4-OB6-CB5 |
| 27  | e     | 401 | CDL  | CA6-CA4-OA6-CA5 |
| 27  | b     | 601 | CDL  | CA3-CA4-OA6-CA5 |
| 27  | H     | 302 | CDL  | CB3-CB4-OB6-CB5 |
| 27  | E     | 401 | CDL  | CA6-CA4-OA6-CA5 |
| 27  | B     | 602 | CDL  | CA3-CA4-OA6-CA5 |
| 28  | j     | 302 | PEE  | C3-C2-O2-C10    |
| 28  | J     | 302 | PEE  | C3-C2-O2-C10    |
| 25  | o     | 204 | PC1  | O11-C1-C2-C3    |
| 25  | O     | 204 | PC1  | O11-C1-C2-C3    |
| 28  | j     | 302 | PEE  | C40-C41-C42-C43 |
| 27  | U     | 201 | CDL  | C44-C45-C46-C47 |
| 28  | j     | 302 | PEE  | C41-C42-C43-C44 |
| 28  | J     | 302 | PEE  | C41-C42-C43-C44 |
| 27  | u     | 201 | CDL  | C44-C45-C46-C47 |
| 27  | B     | 601 | CDL  | OB5-CB3-CB4-OB6 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | V     | 201 | CDL  | OB5-CB3-CB4-OB6 |
| 25  | O     | 204 | PC1  | C2A-C2B-C2C-C2D |
| 25  | o     | 204 | PC1  | C2A-C2B-C2C-C2D |
| 26  | d     | 401 | LMT  | C2'-C1'-O1'-C1  |
| 26  | D     | 401 | LMT  | C2'-C1'-O1'-C1  |
| 27  | c     | 404 | CDL  | OA6-CA4-CA6-OA8 |
| 27  | C     | 404 | CDL  | OA6-CA4-CA6-OA8 |
| 25  | o     | 204 | PC1  | C1-O11-P-O13    |
| 25  | O     | 204 | PC1  | C1-O11-P-O13    |
| 27  | h     | 302 | CDL  | CB2-OB2-PB2-OB5 |
| 27  | H     | 302 | CDL  | CB2-OB2-PB2-OB5 |
| 28  | j     | 301 | PEE  | C4-O4P-P-O3P    |
| 28  | c     | 402 | PEE  | C1-O3P-P-O4P    |
| 28  | c     | 402 | PEE  | C4-O4P-P-O3P    |
| 28  | J     | 301 | PEE  | C4-O4P-P-O3P    |
| 28  | C     | 402 | PEE  | C1-O3P-P-O4P    |
| 28  | C     | 402 | PEE  | C4-O4P-P-O3P    |
| 25  | o     | 201 | PC1  | C38-C39-C3A-C3B |
| 25  | o     | 204 | PC1  | C3C-C3D-C3E-C3F |
| 25  | O     | 201 | PC1  | C38-C39-C3A-C3B |
| 25  | O     | 204 | PC1  | C3C-C3D-C3E-C3F |
| 25  | o     | 204 | PC1  | C3B-C3C-C3D-C3E |
| 25  | O     | 204 | PC1  | C3B-C3C-C3D-C3E |
| 28  | j     | 302 | PEE  | C1-C2-C3-O3     |
| 28  | J     | 302 | PEE  | C1-C2-C3-O3     |
| 28  | c     | 402 | PEE  | C38-C39-C40-C41 |
| 28  | C     | 402 | PEE  | C38-C39-C40-C41 |
| 28  | J     | 301 | PEE  | C12-C13-C14-C15 |
| 28  | j     | 301 | PEE  | C12-C13-C14-C15 |
| 27  | v     | 201 | CDL  | C32-C33-C34-C35 |
| 27  | c     | 404 | CDL  | C15-C16-C17-C18 |
| 27  | V     | 202 | CDL  | C32-C33-C34-C35 |
| 28  | j     | 301 | PEE  | C36-C37-C38-C39 |
| 28  | J     | 301 | PEE  | C36-C37-C38-C39 |
| 27  | e     | 401 | CDL  | CA4-CA6-OA8-CA7 |
| 27  | E     | 401 | CDL  | CA4-CA6-OA8-CA7 |
| 27  | C     | 404 | CDL  | C15-C16-C17-C18 |
| 28  | j     | 302 | PEE  | C31-C30-O3-C3   |
| 28  | J     | 302 | PEE  | C31-C30-O3-C3   |
| 28  | J     | 302 | PEE  | C18-C19-C20-C21 |
| 26  | c     | 401 | LMT  | C5-C6-C7-C8     |
| 25  | V     | 203 | PC1  | C26-C27-C28-C29 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 26  | x     | 101 | LMT  | C4-C5-C6-C7     |
| 26  | X     | 101 | LMT  | C4-C5-C6-C7     |
| 26  | C     | 401 | LMT  | C5-C6-C7-C8     |
| 25  | v     | 202 | PC1  | C26-C27-C28-C29 |
| 27  | u     | 201 | CDL  | C77-C78-C79-C80 |
| 27  | h     | 302 | CDL  | C39-C40-C41-C42 |
| 27  | H     | 302 | CDL  | C39-C40-C41-C42 |
| 28  | j     | 302 | PEE  | C18-C19-C20-C21 |
| 27  | U     | 201 | CDL  | C77-C78-C79-C80 |
| 27  | o     | 203 | CDL  | C53-C54-C55-C56 |
| 27  | O     | 203 | CDL  | C53-C54-C55-C56 |
| 27  | O     | 203 | CDL  | C63-C64-C65-C66 |
| 27  | B     | 601 | CDL  | C35-C36-C37-C38 |
| 27  | o     | 203 | CDL  | C63-C64-C65-C66 |
| 27  | B     | 602 | CDL  | C15-C16-C17-C18 |
| 25  | v     | 202 | PC1  | C21-C22-C23-C24 |
| 25  | v     | 202 | PC1  | C27-C28-C29-C2A |
| 27  | u     | 201 | CDL  | C33-C34-C35-C36 |
| 27  | U     | 201 | CDL  | C33-C34-C35-C36 |
| 25  | V     | 203 | PC1  | C27-C28-C29-C2A |
| 27  | b     | 601 | CDL  | C15-C16-C17-C18 |
| 27  | B     | 601 | CDL  | C21-C22-C23-C24 |
| 27  | V     | 201 | CDL  | C21-C22-C23-C24 |
| 28  | c     | 402 | PEE  | C11-C12-C13-C14 |
| 25  | v     | 202 | PC1  | C2A-C2B-C2C-C2D |
| 27  | V     | 201 | CDL  | C35-C36-C37-C38 |
| 28  | C     | 402 | PEE  | C11-C12-C13-C14 |
| 25  | V     | 203 | PC1  | C2A-C2B-C2C-C2D |
| 25  | V     | 203 | PC1  | C21-C22-C23-C24 |
| 27  | v     | 201 | CDL  | C40-C41-C42-C43 |
| 27  | V     | 202 | CDL  | C40-C41-C42-C43 |
| 27  | o     | 203 | CDL  | C79-C80-C81-C82 |
| 27  | O     | 203 | CDL  | C79-C80-C81-C82 |
| 26  | x     | 101 | LMT  | O5'-C5'-C6'-O6' |
| 26  | X     | 101 | LMT  | O5'-C5'-C6'-O6' |
| 27  | h     | 302 | CDL  | OB7-CB5-OB6-CB4 |
| 27  | H     | 302 | CDL  | OB7-CB5-OB6-CB4 |
| 25  | o     | 204 | PC1  | C28-C29-C2A-C2B |
| 25  | O     | 204 | PC1  | C28-C29-C2A-C2B |
| 27  | V     | 201 | CDL  | C80-C81-C82-C83 |
| 27  | B     | 601 | CDL  | C80-C81-C82-C83 |
| 26  | d     | 401 | LMT  | O5'-C1'-O1'-C1  |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 26  | D     | 401 | LMT  | O5'-C1'-O1'-C1  |
| 28  | j     | 301 | PEE  | C32-C33-C34-C35 |
| 27  | h     | 302 | CDL  | CA3-CA4-OA6-CA5 |
| 27  | b     | 601 | CDL  | CB3-CB4-OB6-CB5 |
| 27  | b     | 601 | CDL  | CB6-CB4-OB6-CB5 |
| 27  | d     | 402 | CDL  | CB3-CB4-OB6-CB5 |
| 27  | d     | 402 | CDL  | CB6-CB4-OB6-CB5 |
| 27  | H     | 302 | CDL  | CA3-CA4-OA6-CA5 |
| 27  | B     | 602 | CDL  | CB3-CB4-OB6-CB5 |
| 27  | B     | 602 | CDL  | CB6-CB4-OB6-CB5 |
| 27  | D     | 402 | CDL  | CB3-CB4-OB6-CB5 |
| 27  | D     | 402 | CDL  | CB6-CB4-OB6-CB5 |
| 28  | j     | 302 | PEE  | C1-C2-O2-C10    |
| 28  | J     | 302 | PEE  | C1-C2-O2-C10    |
| 28  | J     | 301 | PEE  | C32-C33-C34-C35 |
| 27  | c     | 404 | CDL  | C36-C37-C38-C39 |
| 27  | V     | 201 | CDL  | C84-C85-C86-C87 |
| 27  | o     | 203 | CDL  | C75-C76-C77-C78 |
| 27  | B     | 601 | CDL  | C84-C85-C86-C87 |
| 27  | C     | 404 | CDL  | C36-C37-C38-C39 |
| 27  | O     | 203 | CDL  | C75-C76-C77-C78 |
| 27  | B     | 601 | CDL  | C37-C38-C39-C40 |
| 27  | d     | 402 | CDL  | C73-C74-C75-C76 |
| 27  | D     | 402 | CDL  | C73-C74-C75-C76 |
| 27  | v     | 201 | CDL  | OA5-CA3-CA4-OA6 |
| 27  | V     | 202 | CDL  | OA5-CA3-CA4-OA6 |
| 27  | V     | 201 | CDL  | C37-C38-C39-C40 |
| 27  | v     | 201 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | V     | 202 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | u     | 201 | CDL  | C38-C39-C40-C41 |
| 27  | U     | 201 | CDL  | C38-C39-C40-C41 |
| 28  | j     | 302 | PEE  | C21-C22-C23-C24 |
| 28  | J     | 302 | PEE  | C21-C22-C23-C24 |
| 25  | v     | 202 | PC1  | C39-C3A-C3B-C3C |
| 25  | V     | 203 | PC1  | C39-C3A-C3B-C3C |
| 27  | B     | 602 | CDL  | C21-C22-C23-C24 |
| 27  | b     | 601 | CDL  | C21-C22-C23-C24 |
| 27  | c     | 404 | CDL  | C52-C53-C54-C55 |
| 27  | C     | 404 | CDL  | C52-C53-C54-C55 |
| 27  | o     | 203 | CDL  | CA5-C11-C12-C13 |
| 27  | O     | 203 | CDL  | CA5-C11-C12-C13 |
| 27  | o     | 203 | CDL  | C72-C71-CB7-OB8 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | O     | 203 | CDL  | C72-C71-CB7-OB8 |
| 27  | B     | 601 | CDL  | C81-C82-C83-C84 |
| 27  | V     | 201 | CDL  | C81-C82-C83-C84 |
| 27  | c     | 404 | CDL  | C17-C18-C19-C20 |
| 27  | C     | 404 | CDL  | C17-C18-C19-C20 |
| 27  | c     | 404 | CDL  | C40-C41-C42-C43 |
| 27  | C     | 404 | CDL  | C40-C41-C42-C43 |
| 27  | h     | 302 | CDL  | C36-C37-C38-C39 |
| 27  | c     | 404 | CDL  | C59-C60-C61-C62 |
| 27  | H     | 302 | CDL  | C36-C37-C38-C39 |
| 27  | d     | 402 | CDL  | C11-C12-C13-C14 |
| 28  | J     | 302 | PEE  | O5-C30-O3-C3    |
| 27  | C     | 404 | CDL  | C59-C60-C61-C62 |
| 27  | D     | 402 | CDL  | C11-C12-C13-C14 |
| 27  | c     | 404 | CDL  | CA3-CA4-CA6-OA8 |
| 27  | C     | 404 | CDL  | CA3-CA4-CA6-OA8 |
| 28  | j     | 302 | PEE  | C17-C18-C19-C20 |
| 28  | J     | 302 | PEE  | C17-C18-C19-C20 |
| 27  | h     | 302 | CDL  | C79-C80-C81-C82 |
| 27  | H     | 302 | CDL  | C79-C80-C81-C82 |
| 28  | j     | 302 | PEE  | O5-C30-O3-C3    |
| 27  | H     | 302 | CDL  | C34-C35-C36-C37 |
| 27  | h     | 302 | CDL  | C34-C35-C36-C37 |
| 27  | b     | 601 | CDL  | OA5-CA3-CA4-OA6 |
| 27  | B     | 602 | CDL  | OA5-CA3-CA4-OA6 |
| 25  | o     | 201 | PC1  | C35-C36-C37-C38 |
| 25  | O     | 201 | PC1  | C35-C36-C37-C38 |
| 27  | O     | 203 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | e     | 401 | CDL  | C34-C35-C36-C37 |
| 28  | c     | 402 | PEE  | C41-C42-C43-C44 |
| 28  | C     | 402 | PEE  | C41-C42-C43-C44 |
| 27  | E     | 401 | CDL  | C34-C35-C36-C37 |
| 28  | j     | 302 | PEE  | C44-C45-C46-C47 |
| 28  | J     | 302 | PEE  | C44-C45-C46-C47 |
| 27  | o     | 203 | CDL  | OB9-CB7-OB8-CB6 |
| 27  | c     | 404 | CDL  | C52-C51-CB5-OB6 |
| 27  | C     | 404 | CDL  | C52-C51-CB5-OB6 |
| 27  | h     | 302 | CDL  | C51-CB5-OB6-CB4 |
| 27  | o     | 203 | CDL  | C71-C72-C73-C74 |
| 27  | o     | 203 | CDL  | C71-CB7-OB8-CB6 |
| 27  | O     | 203 | CDL  | C71-CB7-OB8-CB6 |
| 27  | O     | 203 | CDL  | C71-C72-C73-C74 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | u     | 201 | CDL  | C52-C53-C54-C55 |
| 27  | o     | 203 | CDL  | C17-C18-C19-C20 |
| 27  | O     | 203 | CDL  | C17-C18-C19-C20 |
| 27  | H     | 302 | CDL  | C51-CB5-OB6-CB4 |
| 27  | U     | 201 | CDL  | C52-C53-C54-C55 |
| 28  | j     | 302 | PEE  | O4-C10-O2-C2    |
| 27  | c     | 404 | CDL  | C12-C13-C14-C15 |
| 27  | C     | 404 | CDL  | C12-C13-C14-C15 |
| 27  | B     | 602 | CDL  | C17-C18-C19-C20 |
| 27  | o     | 203 | CDL  | C12-C11-CA5-OA6 |
| 27  | O     | 203 | CDL  | C12-C11-CA5-OA6 |
| 27  | b     | 601 | CDL  | C17-C18-C19-C20 |
| 25  | v     | 202 | PC1  | C1-C2-C3-O31    |
| 25  | V     | 203 | PC1  | C1-C2-C3-O31    |
| 27  | V     | 201 | CDL  | CB3-CB4-CB6-OB8 |
| 25  | O     | 204 | PC1  | C3D-C3E-C3F-C3G |
| 28  | J     | 302 | PEE  | O4-C10-O2-C2    |
| 25  | o     | 204 | PC1  | C3D-C3E-C3F-C3G |
| 26  | D     | 401 | LMT  | C5-C6-C7-C8     |
| 26  | d     | 401 | LMT  | C5-C6-C7-C8     |
| 27  | e     | 401 | CDL  | C32-C31-CA7-OA9 |
| 27  | E     | 401 | CDL  | C32-C31-CA7-OA9 |
| 26  | x     | 101 | LMT  | C7-C8-C9-C10    |
| 27  | b     | 601 | CDL  | OA5-CA3-CA4-CA6 |
| 27  | B     | 602 | CDL  | OA5-CA3-CA4-CA6 |
| 26  | X     | 101 | LMT  | C7-C8-C9-C10    |
| 27  | u     | 201 | CDL  | C72-C71-CB7-OB8 |
| 27  | U     | 201 | CDL  | C72-C71-CB7-OB8 |
| 26  | D     | 401 | LMT  | C11-C10-C9-C8   |
| 26  | d     | 401 | LMT  | C11-C10-C9-C8   |
| 26  | X     | 101 | LMT  | C3'-C4'-O1B-C1B |
| 27  | c     | 404 | CDL  | C24-C25-C26-C27 |
| 27  | C     | 404 | CDL  | C24-C25-C26-C27 |
| 26  | x     | 101 | LMT  | C3'-C4'-O1B-C1B |
| 25  | v     | 202 | PC1  | C32-C31-O31-C3  |
| 25  | V     | 203 | PC1  | C32-C31-O31-C3  |
| 27  | E     | 401 | CDL  | CA5-C11-C12-C13 |
| 25  | o     | 204 | PC1  | C2C-C2D-C2E-C2F |
| 25  | O     | 204 | PC1  | C2C-C2D-C2E-C2F |
| 27  | o     | 203 | CDL  | C52-C51-CB5-OB6 |
| 27  | O     | 203 | CDL  | C52-C51-CB5-OB6 |
| 27  | e     | 401 | CDL  | CA5-C11-C12-C13 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 25  | O     | 201 | PC1  | C23-C24-C25-C26 |
| 25  | o     | 201 | PC1  | C23-C24-C25-C26 |
| 27  | e     | 401 | CDL  | C57-C58-C59-C60 |
| 27  | E     | 401 | CDL  | C57-C58-C59-C60 |
| 25  | o     | 204 | PC1  | O21-C21-C22-C23 |
| 25  | O     | 204 | PC1  | O21-C21-C22-C23 |
| 27  | V     | 201 | CDL  | C32-C31-CA7-OA8 |
| 27  | B     | 601 | CDL  | C11-C12-C13-C14 |
| 27  | V     | 201 | CDL  | C11-C12-C13-C14 |
| 27  | B     | 601 | CDL  | C32-C31-CA7-OA8 |
| 27  | o     | 203 | CDL  | C74-C75-C76-C77 |
| 27  | B     | 601 | CDL  | C15-C16-C17-C18 |
| 27  | V     | 201 | CDL  | C15-C16-C17-C18 |
| 27  | o     | 203 | CDL  | C12-C11-CA5-OA7 |
| 27  | O     | 203 | CDL  | C12-C11-CA5-OA7 |
| 27  | O     | 203 | CDL  | C74-C75-C76-C77 |
| 27  | H     | 302 | CDL  | C12-C13-C14-C15 |
| 27  | h     | 302 | CDL  | C12-C13-C14-C15 |
| 27  | c     | 404 | CDL  | C52-C51-CB5-OB7 |
| 27  | C     | 404 | CDL  | C52-C51-CB5-OB7 |
| 27  | B     | 601 | CDL  | CB3-CB4-CB6-OB8 |
| 27  | B     | 601 | CDL  | C40-C41-C42-C43 |
| 27  | B     | 601 | CDL  | C44-C45-C46-C47 |
| 27  | V     | 201 | CDL  | C40-C41-C42-C43 |
| 27  | V     | 201 | CDL  | C44-C45-C46-C47 |
| 27  | h     | 302 | CDL  | C52-C53-C54-C55 |
| 27  | H     | 302 | CDL  | C52-C53-C54-C55 |
| 25  | v     | 202 | PC1  | O32-C31-O31-C3  |
| 25  | o     | 201 | PC1  | C11-O13-P-O14   |
| 25  | o     | 204 | PC1  | C11-O13-P-O14   |
| 25  | v     | 202 | PC1  | C1-O11-P-O12    |
| 25  | O     | 201 | PC1  | C11-O13-P-O14   |
| 25  | O     | 204 | PC1  | C11-O13-P-O14   |
| 25  | V     | 203 | PC1  | C1-O11-P-O12    |
| 27  | o     | 203 | CDL  | CA2-OA2-PA1-OA4 |
| 27  | e     | 401 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | v     | 201 | CDL  | CB2-OB2-PB2-OB4 |
| 27  | d     | 402 | CDL  | CB3-OB5-PB2-OB4 |
| 27  | O     | 203 | CDL  | CA2-OA2-PA1-OA4 |
| 27  | E     | 401 | CDL  | CA2-OA2-PA1-OA3 |
| 27  | B     | 601 | CDL  | CA3-OA5-PA1-OA3 |
| 27  | V     | 201 | CDL  | CA3-OA5-PA1-OA3 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 27  | V     | 202 | CDL  | CB2-OB2-PB2-OB4 |
| 27  | D     | 402 | CDL  | CB3-OB5-PB2-OB4 |
| 25  | o     | 204 | PC1  | O22-C21-C22-C23 |
| 25  | O     | 204 | PC1  | O22-C21-C22-C23 |
| 27  | D     | 402 | CDL  | C22-C23-C24-C25 |
| 26  | o     | 202 | LMT  | C7-C8-C9-C10    |
| 27  | c     | 404 | CDL  | C61-C62-C63-C64 |
| 27  | d     | 402 | CDL  | C22-C23-C24-C25 |
| 25  | V     | 203 | PC1  | O32-C31-O31-C3  |
| 26  | O     | 202 | LMT  | C7-C8-C9-C10    |
| 27  | C     | 404 | CDL  | C13-C14-C15-C16 |
| 27  | u     | 201 | CDL  | C72-C71-CB7-OB9 |
| 27  | U     | 201 | CDL  | C72-C71-CB7-OB9 |
| 27  | c     | 404 | CDL  | C13-C14-C15-C16 |
| 26  | d     | 401 | LMT  | C7-C8-C9-C10    |
| 26  | D     | 401 | LMT  | C7-C8-C9-C10    |
| 27  | O     | 203 | CDL  | C77-C78-C79-C80 |
| 27  | C     | 404 | CDL  | C61-C62-C63-C64 |
| 27  | o     | 203 | CDL  | C32-C31-CA7-OA9 |
| 27  | O     | 203 | CDL  | C32-C31-CA7-OA9 |
| 28  | j     | 302 | PEE  | C11-C10-O2-C2   |
| 27  | o     | 203 | CDL  | C77-C78-C79-C80 |
| 27  | v     | 201 | CDL  | C55-C56-C57-C58 |
| 27  | V     | 202 | CDL  | C55-C56-C57-C58 |
| 28  | j     | 301 | PEE  | O2-C10-C11-C12  |
| 28  | J     | 301 | PEE  | O2-C10-C11-C12  |
| 28  | J     | 302 | PEE  | C13-C14-C15-C16 |
| 28  | j     | 302 | PEE  | C13-C14-C15-C16 |
| 25  | v     | 202 | PC1  | O32-C31-C32-C33 |
| 25  | V     | 203 | PC1  | O32-C31-C32-C33 |
| 25  | v     | 202 | PC1  | O31-C31-C32-C33 |
| 25  | V     | 203 | PC1  | O31-C31-C32-C33 |
| 27  | v     | 201 | CDL  | C72-C71-CB7-OB8 |
| 27  | V     | 202 | CDL  | C72-C71-CB7-OB8 |
| 27  | o     | 203 | CDL  | CB5-C51-C52-C53 |
| 27  | O     | 203 | CDL  | CB5-C51-C52-C53 |
| 27  | B     | 601 | CDL  | C32-C31-CA7-OA9 |
| 27  | V     | 201 | CDL  | C32-C31-CA7-OA9 |
| 28  | J     | 302 | PEE  | C11-C10-O2-C2   |
| 28  | J     | 301 | PEE  | C11-C12-C13-C14 |
| 28  | j     | 302 | PEE  | C38-C39-C40-C41 |
| 28  | J     | 302 | PEE  | C38-C39-C40-C41 |

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| Mol | Chain | Res | Type | Atoms           |
|-----|-------|-----|------|-----------------|
| 26  | H     | 301 | LMT  | C2-C3-C4-C5     |
| 27  | b     | 601 | CDL  | C31-C32-C33-C34 |
| 28  | j     | 301 | PEE  | C11-C12-C13-C14 |
| 27  | B     | 602 | CDL  | C31-C32-C33-C34 |

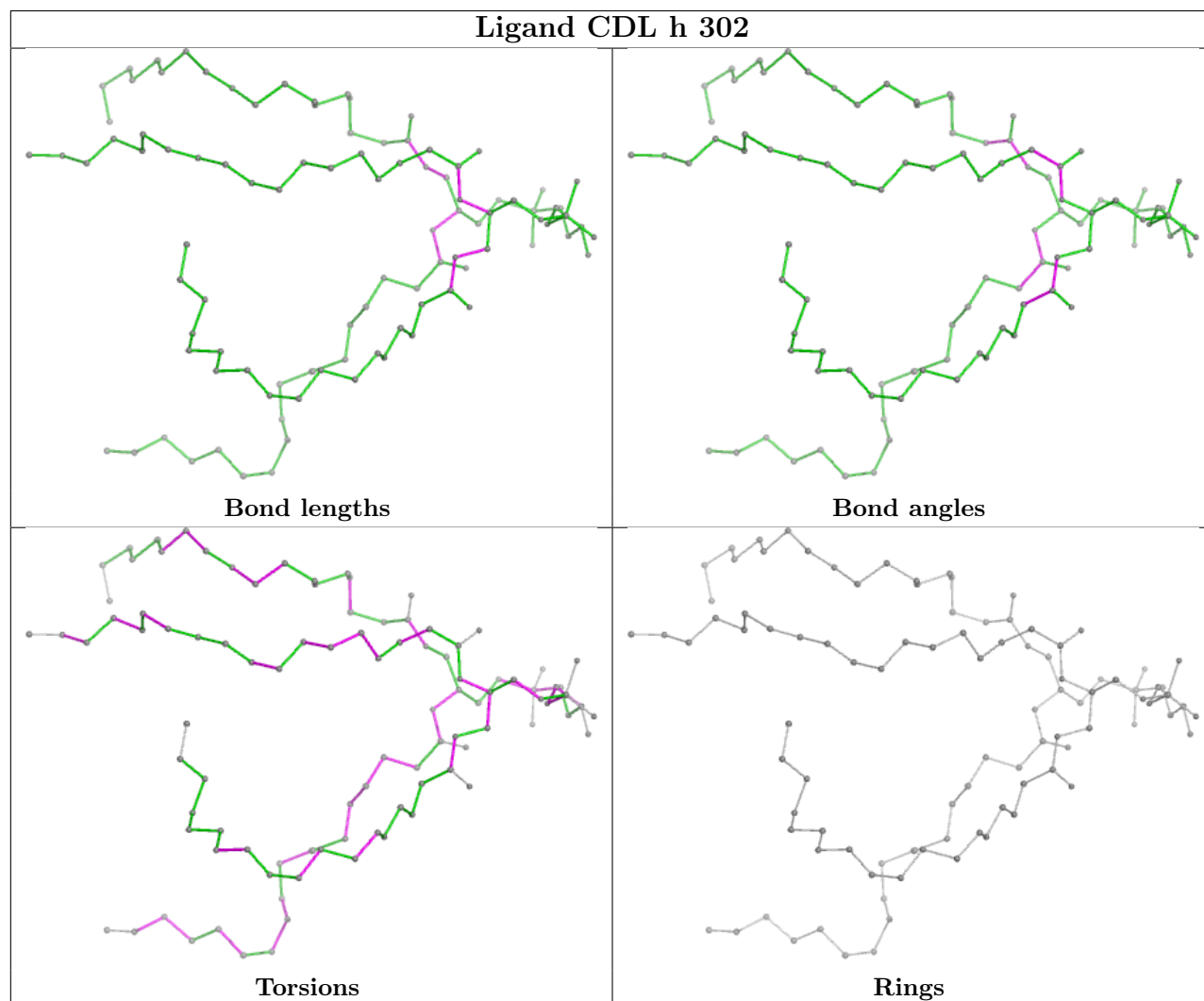
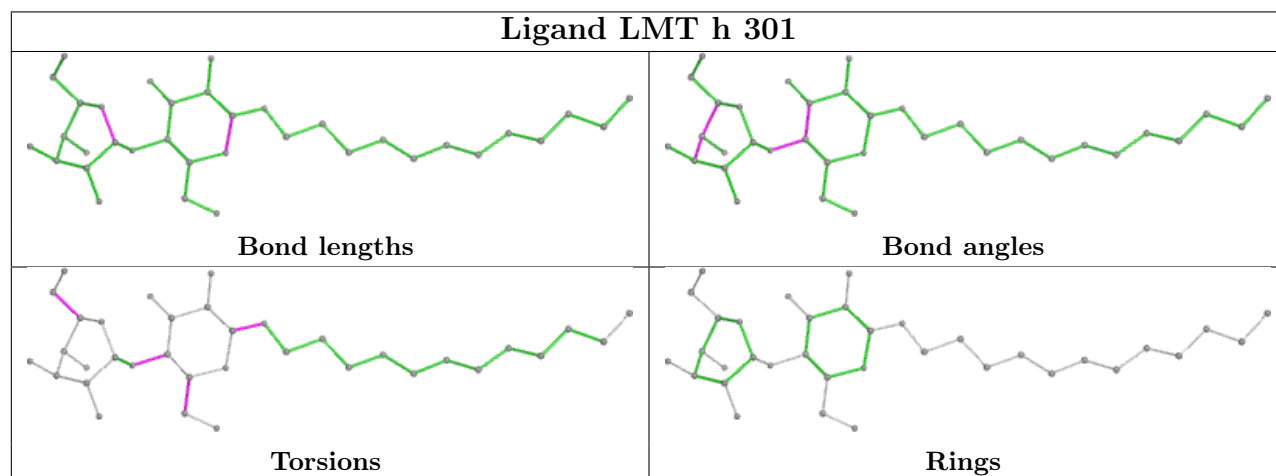
There are no ring outliers.

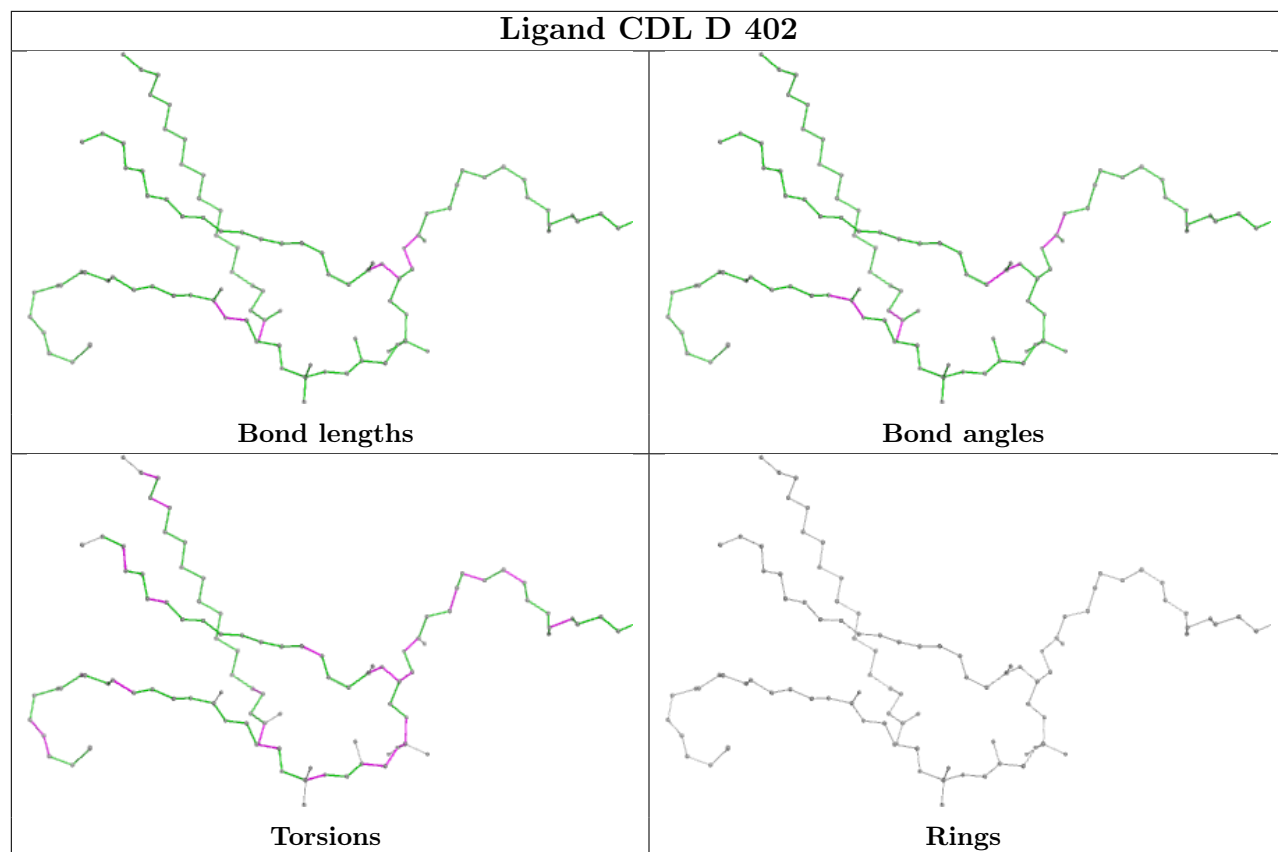
24 monomers are involved in 47 short contacts:

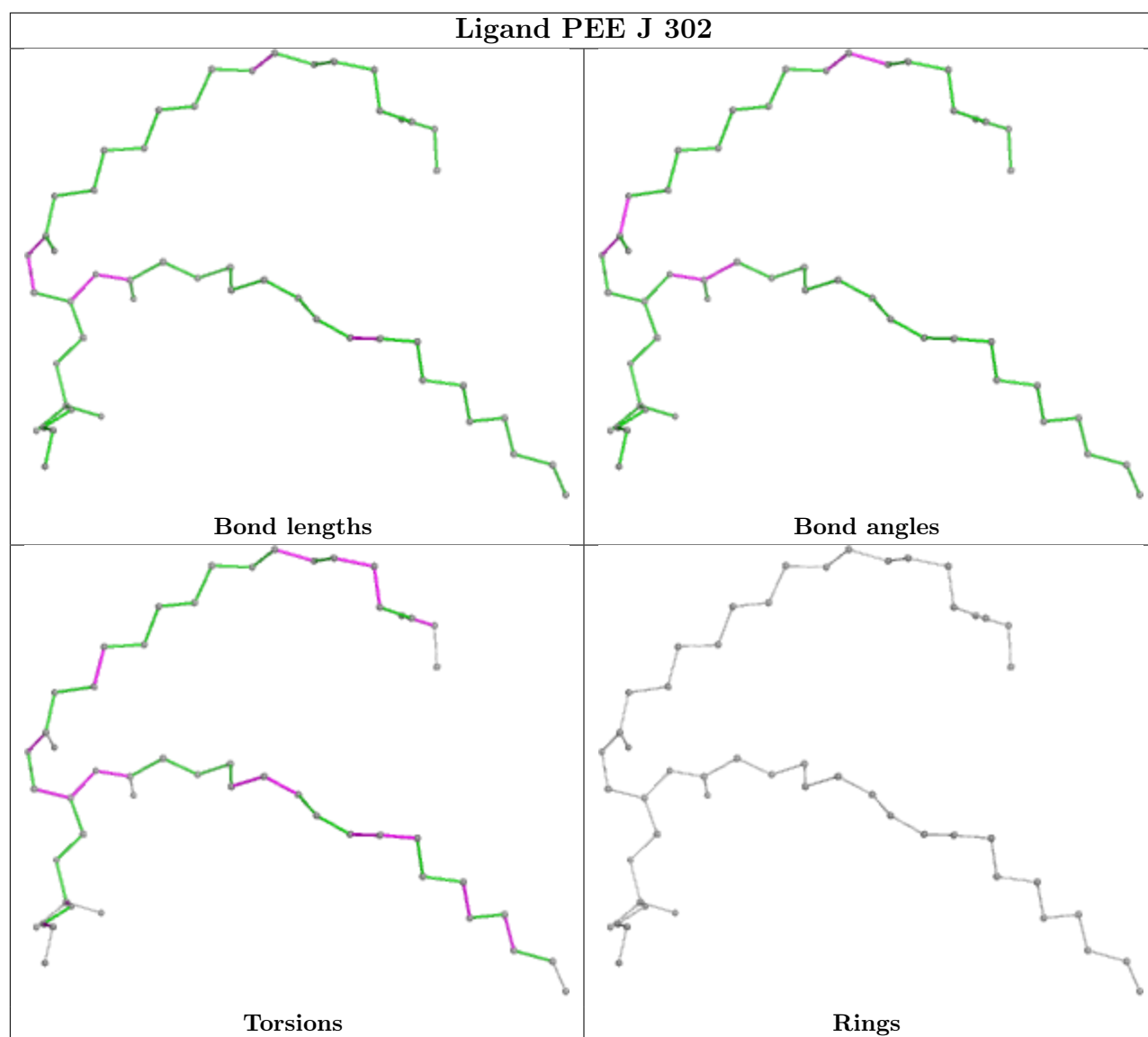
| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 26  | h     | 301 | LMT  | 2       | 0            |
| 28  | J     | 302 | PEE  | 2       | 0            |
| 27  | c     | 404 | CDL  | 1       | 0            |
| 27  | d     | 402 | CDL  | 1       | 0            |
| 27  | v     | 201 | CDL  | 1       | 0            |
| 28  | J     | 301 | PEE  | 1       | 0            |
| 28  | j     | 301 | PEE  | 1       | 0            |
| 26  | o     | 202 | LMT  | 3       | 0            |
| 27  | B     | 601 | CDL  | 7       | 0            |
| 26  | c     | 401 | LMT  | 1       | 0            |
| 26  | O     | 202 | LMT  | 3       | 0            |
| 26  | C     | 403 | LMT  | 1       | 0            |
| 27  | C     | 404 | CDL  | 1       | 0            |
| 27  | U     | 201 | CDL  | 1       | 0            |
| 26  | H     | 301 | LMT  | 2       | 0            |
| 25  | O     | 201 | PC1  | 2       | 0            |
| 27  | V     | 201 | CDL  | 7       | 0            |
| 27  | e     | 401 | CDL  | 5       | 0            |
| 28  | j     | 302 | PEE  | 2       | 0            |
| 26  | c     | 403 | LMT  | 1       | 0            |
| 27  | E     | 401 | CDL  | 9       | 0            |
| 27  | u     | 201 | CDL  | 1       | 0            |
| 25  | o     | 201 | PC1  | 1       | 0            |
| 26  | C     | 401 | LMT  | 1       | 0            |

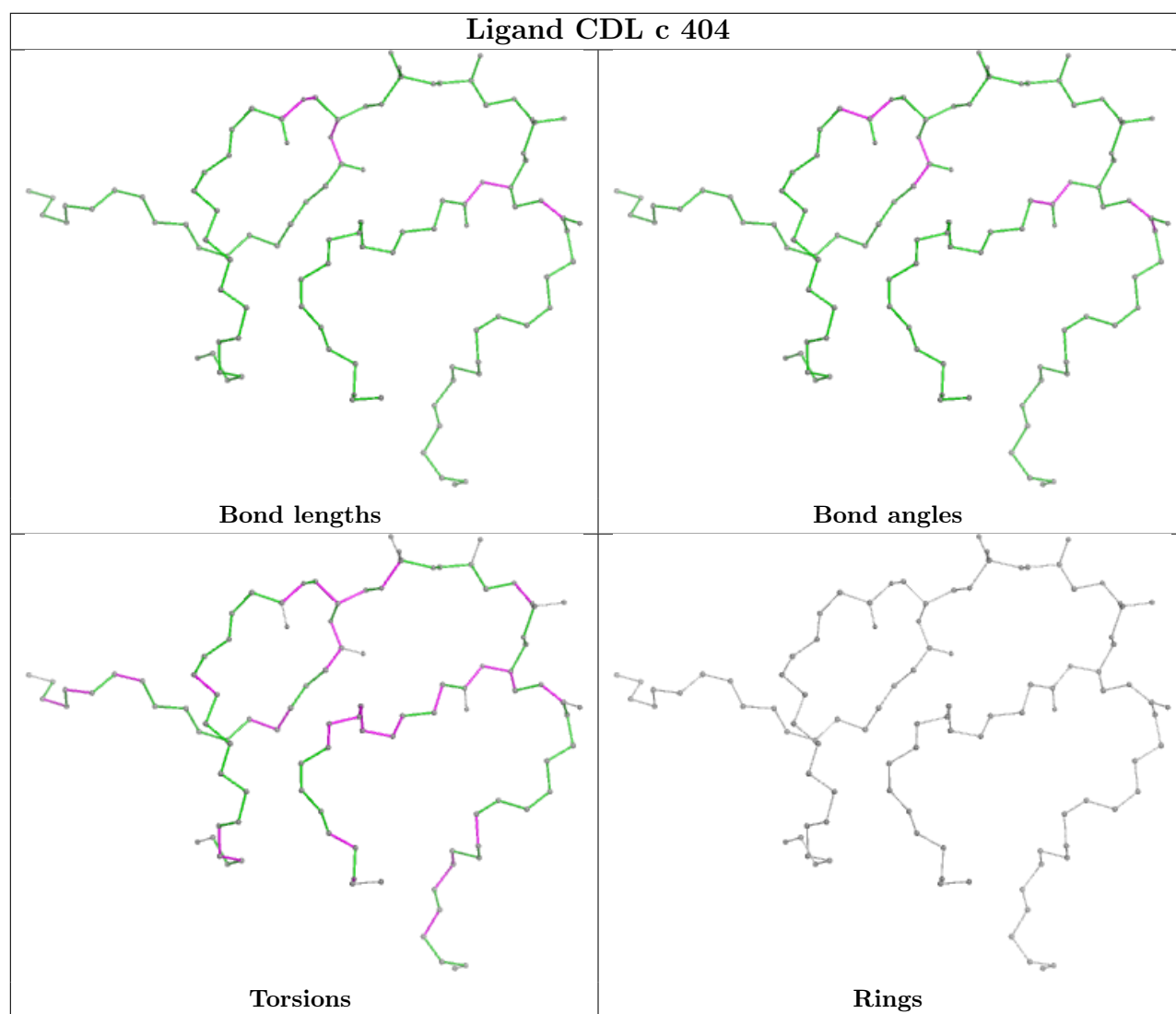
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. 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

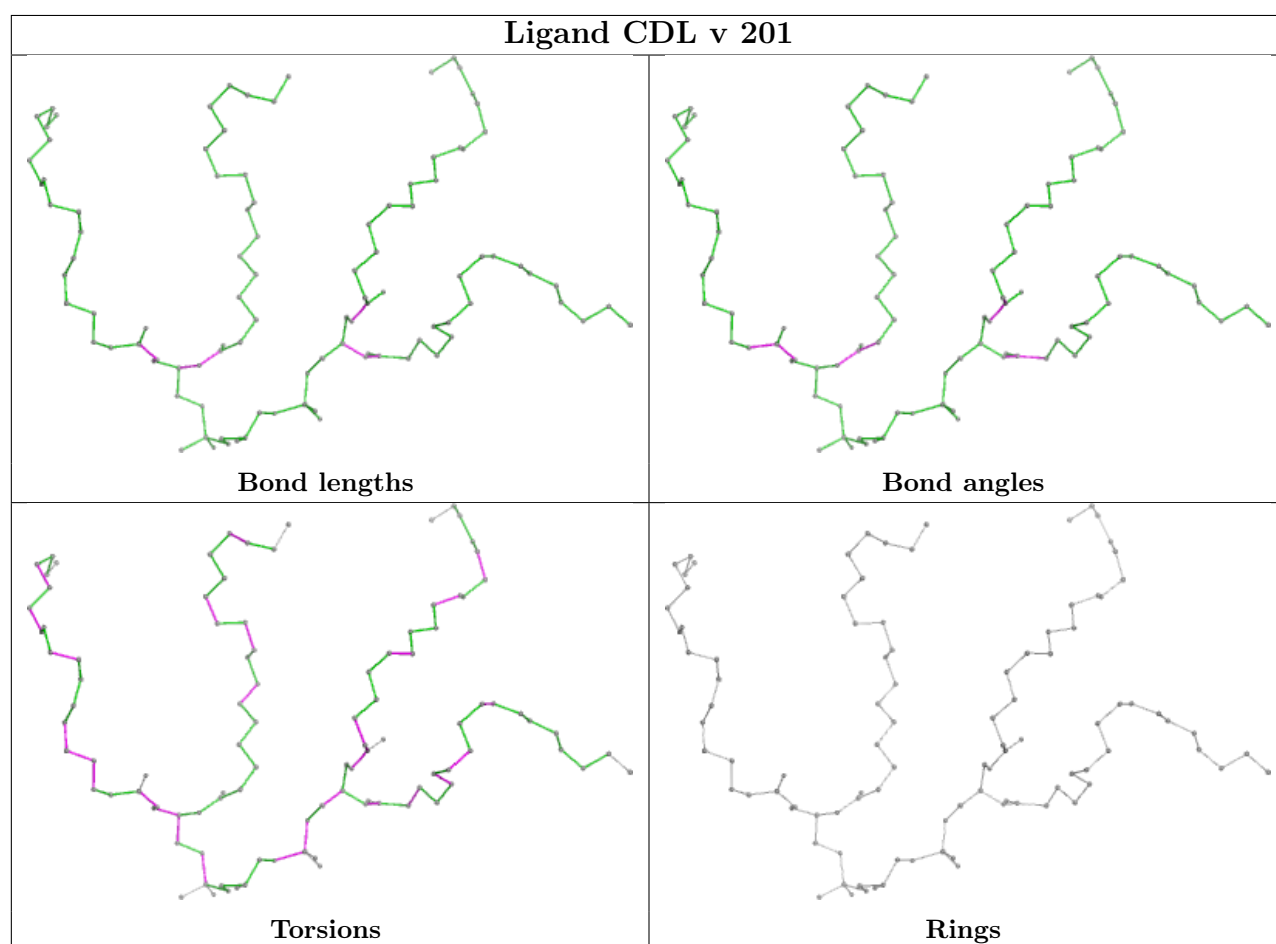
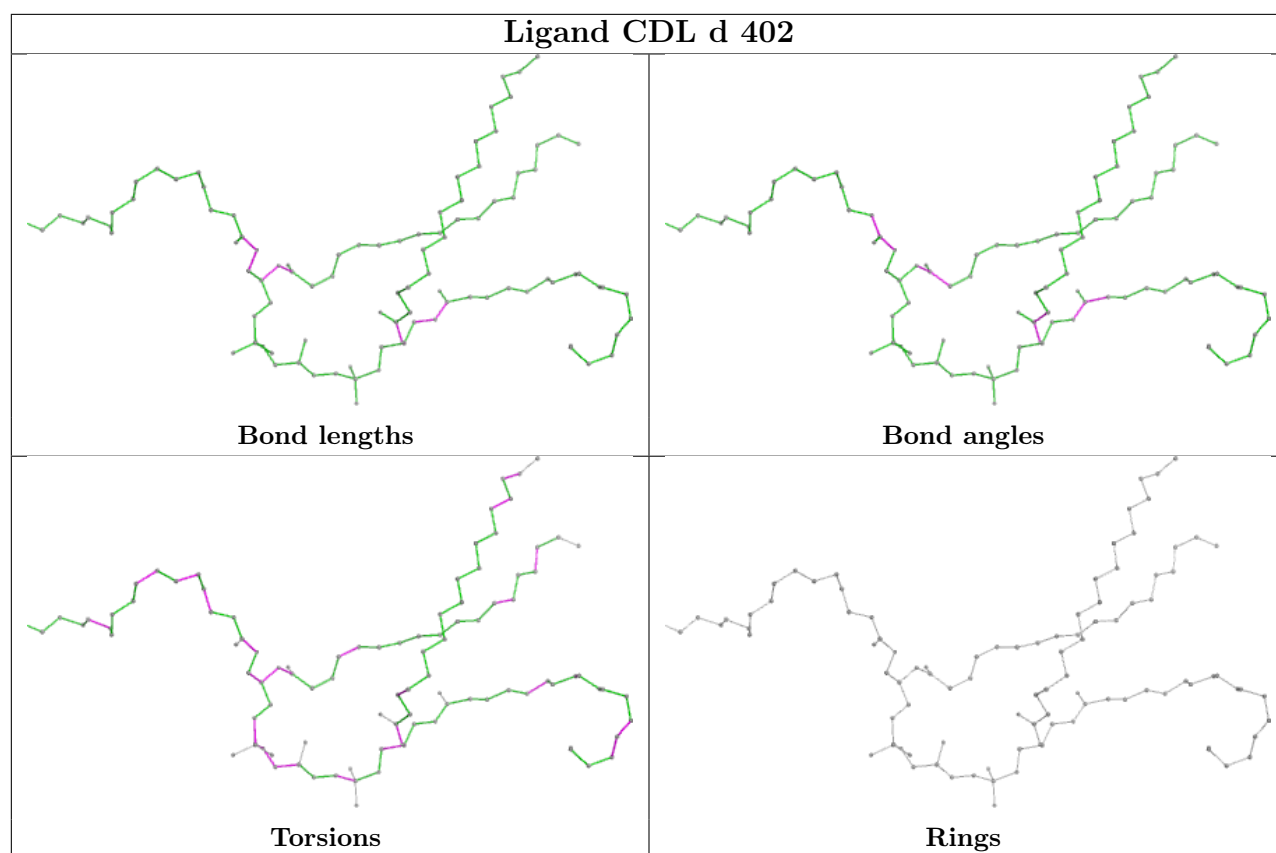
average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

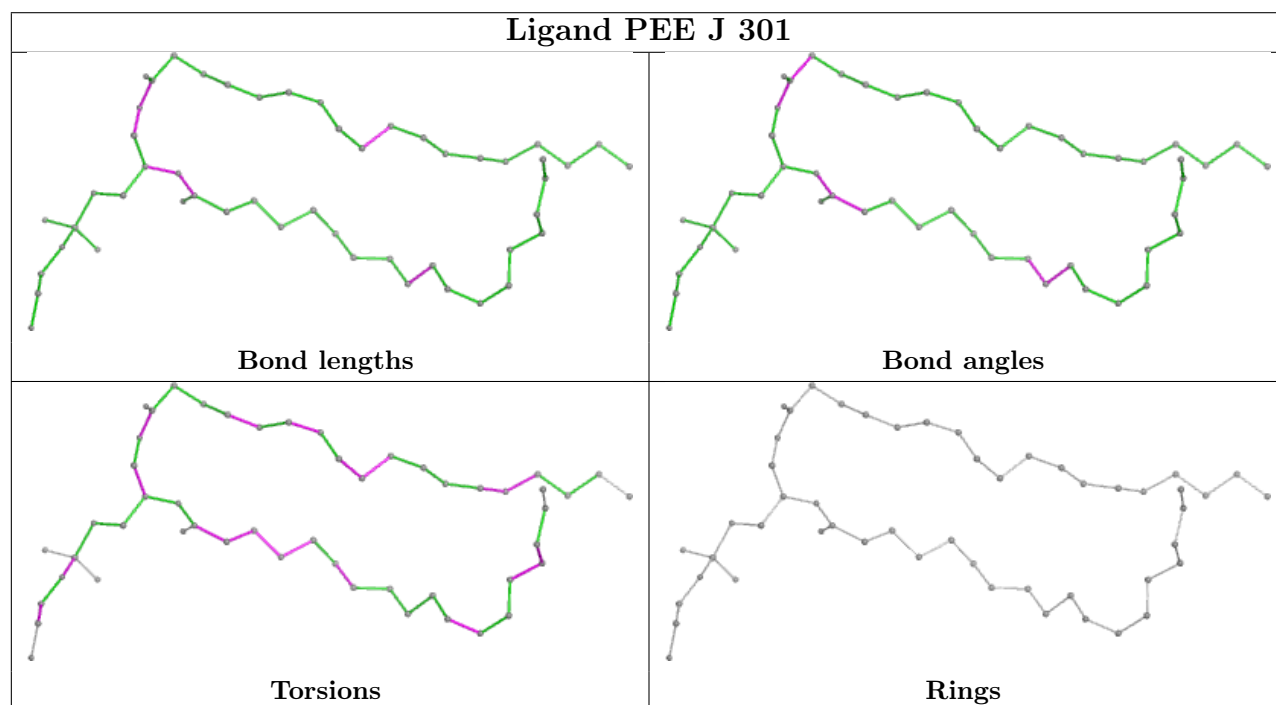
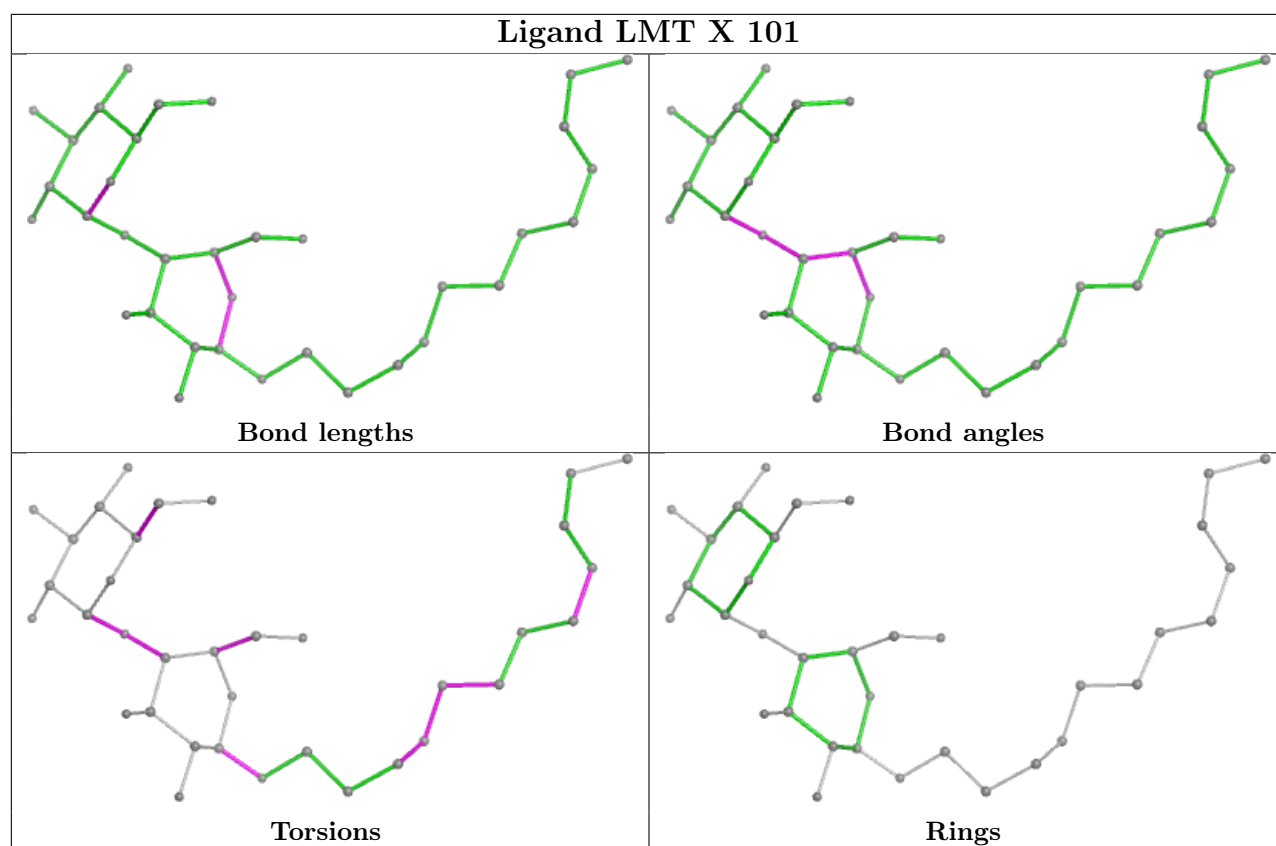


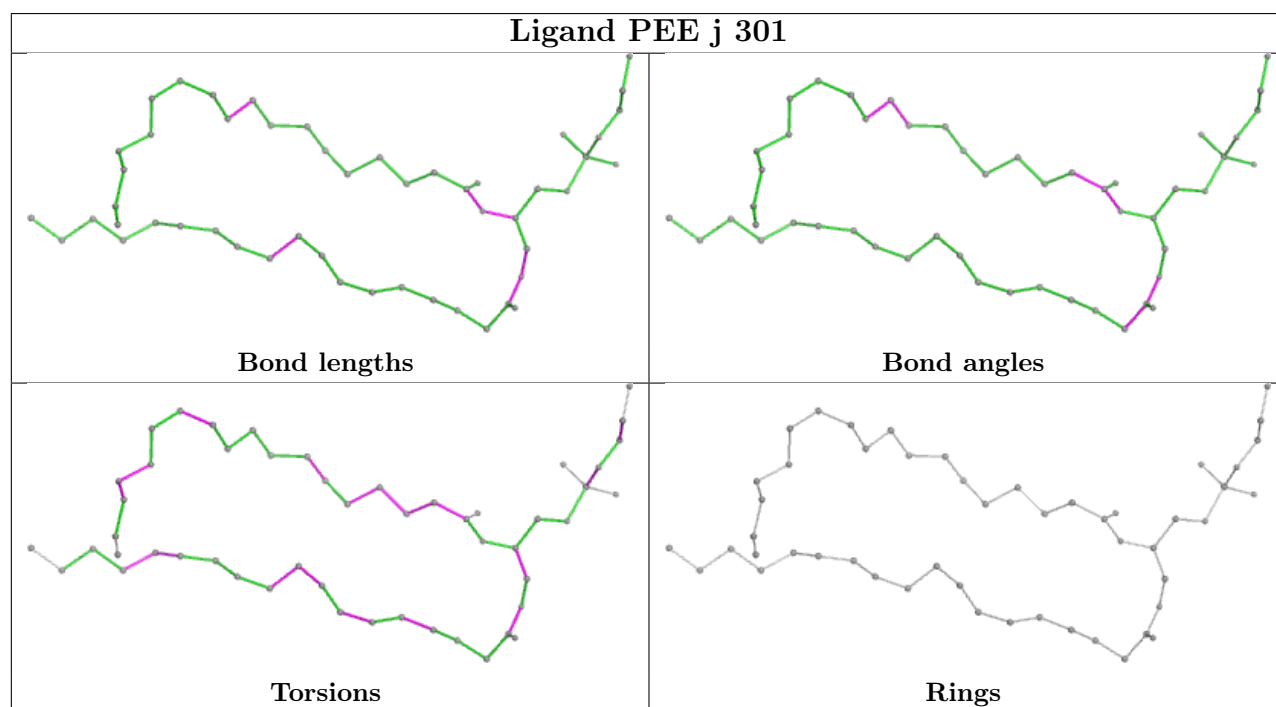
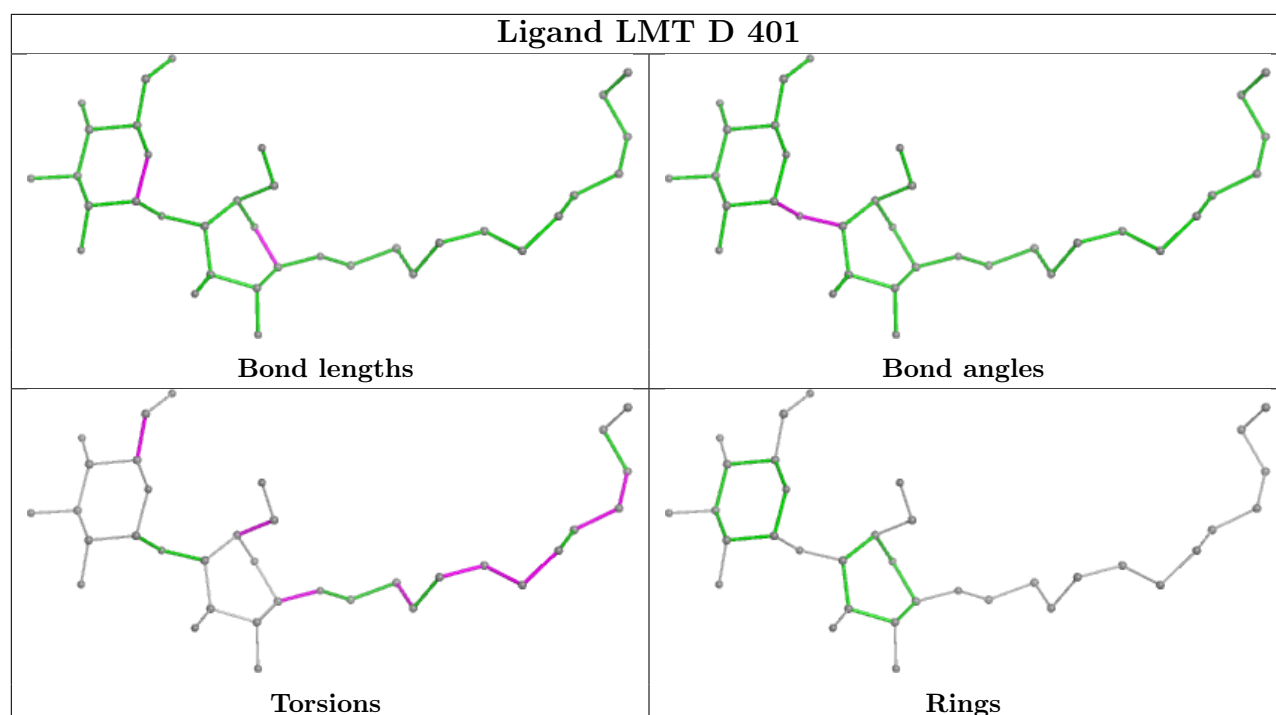


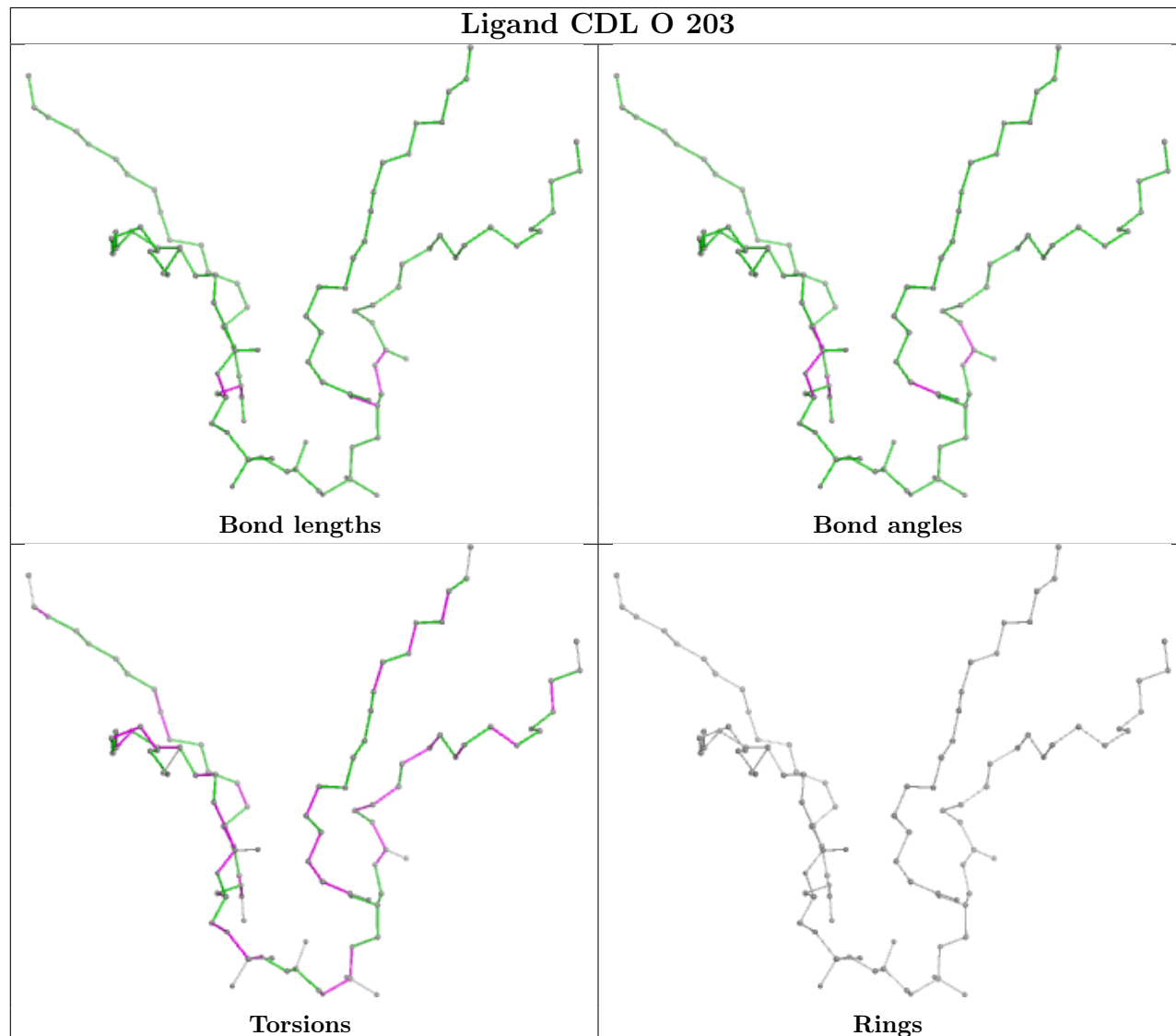
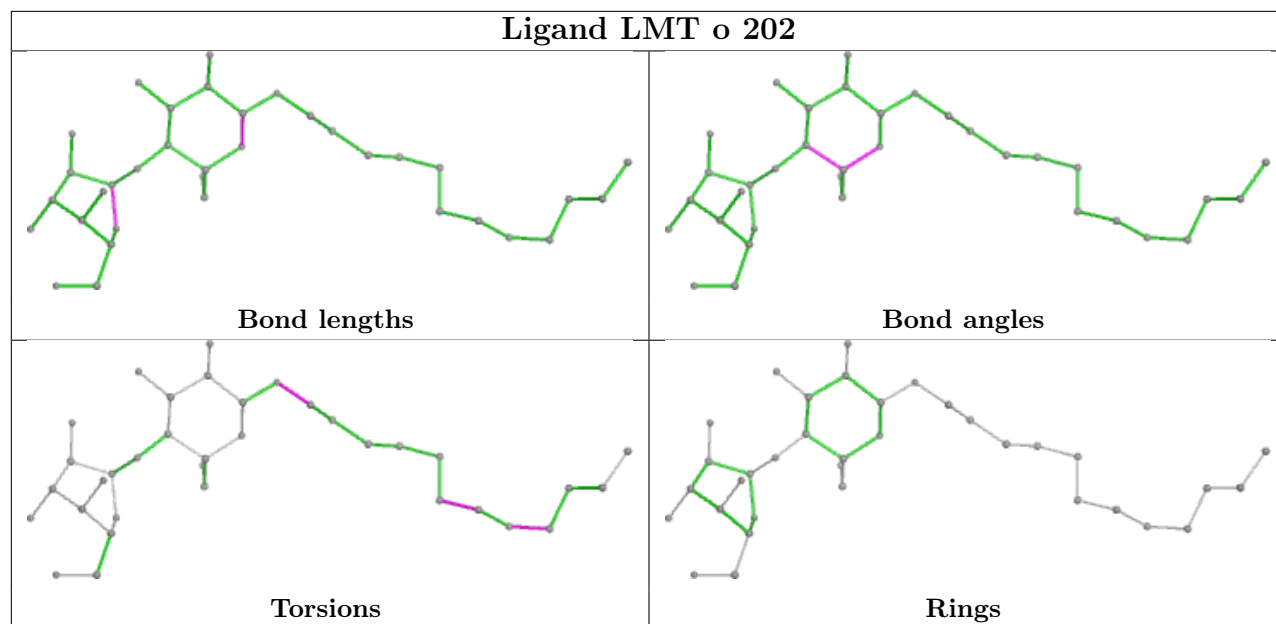


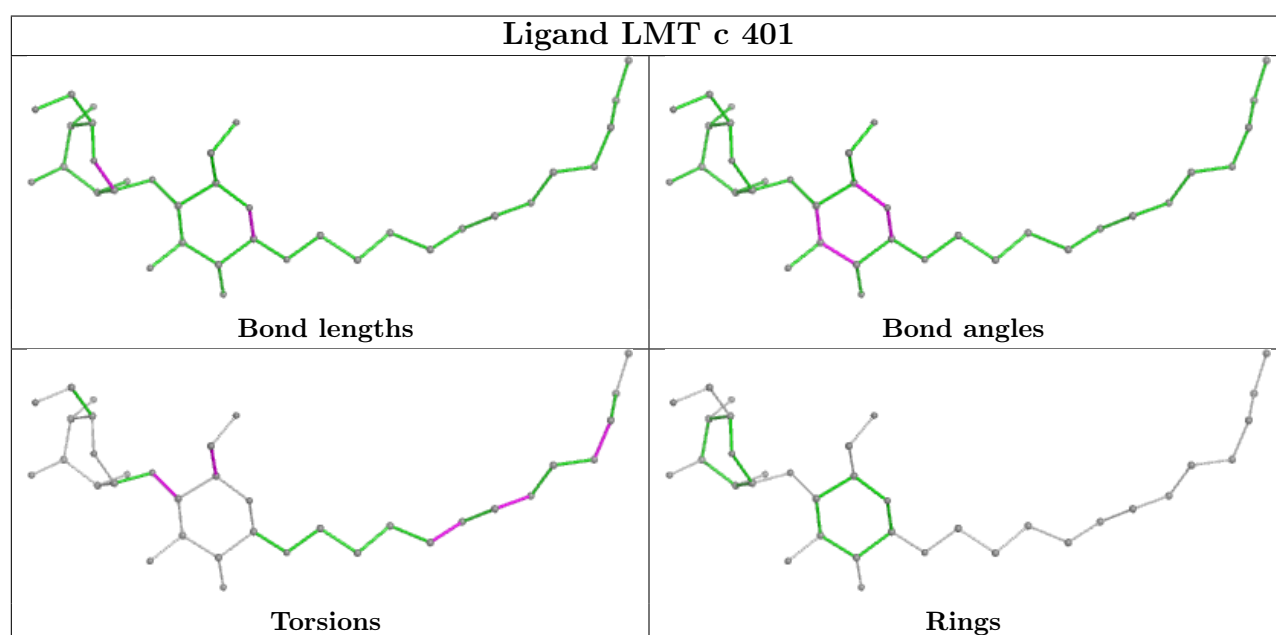
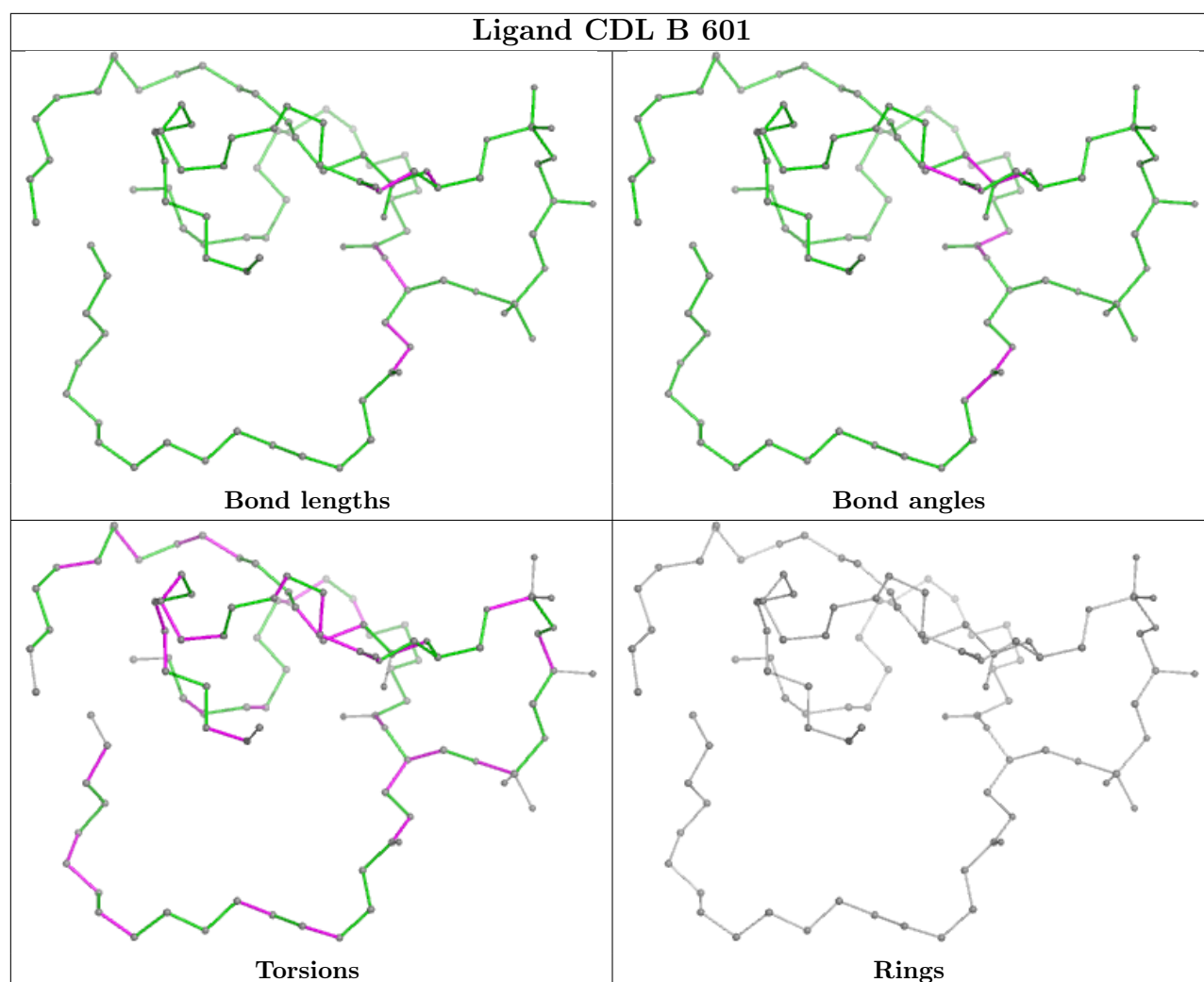


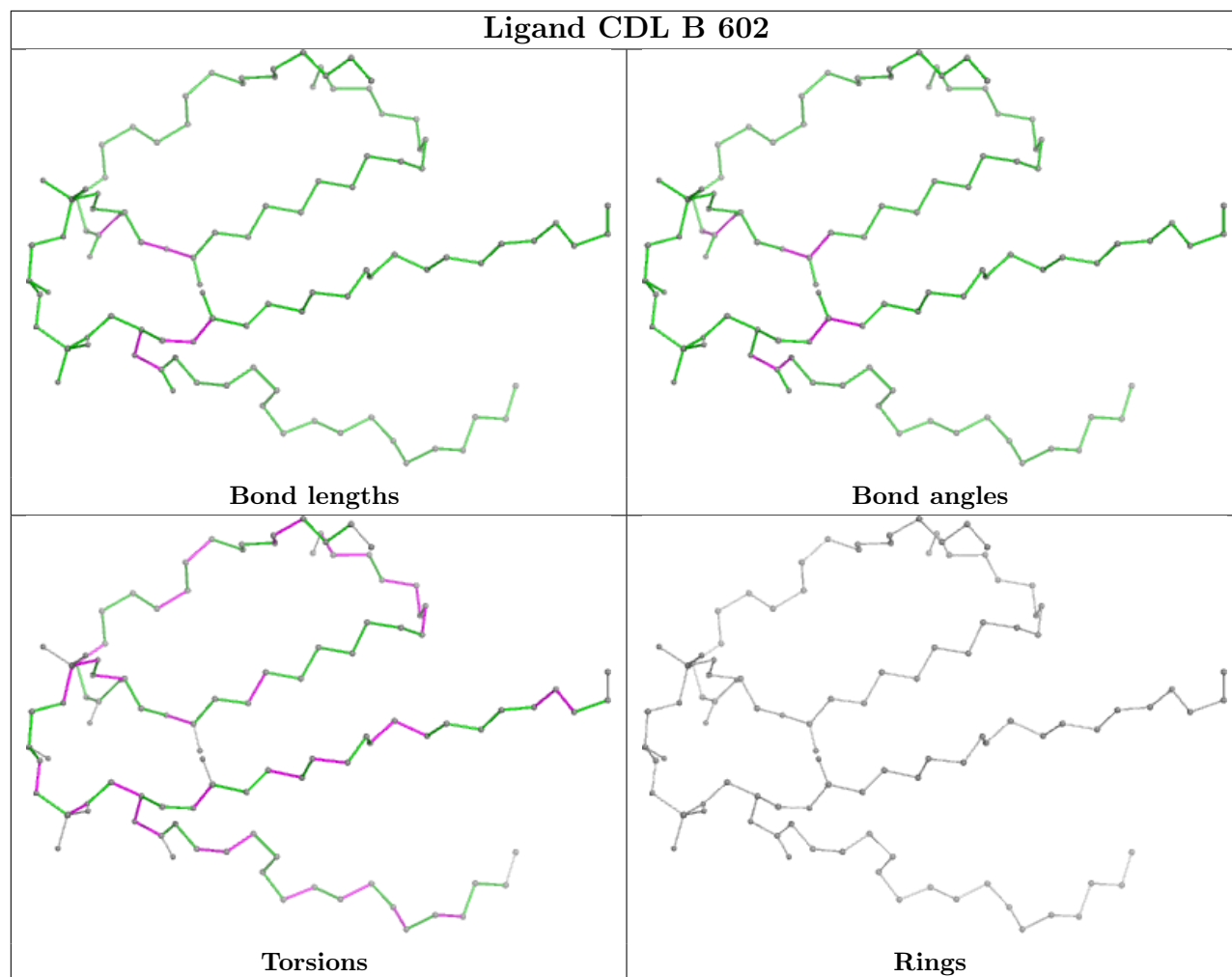


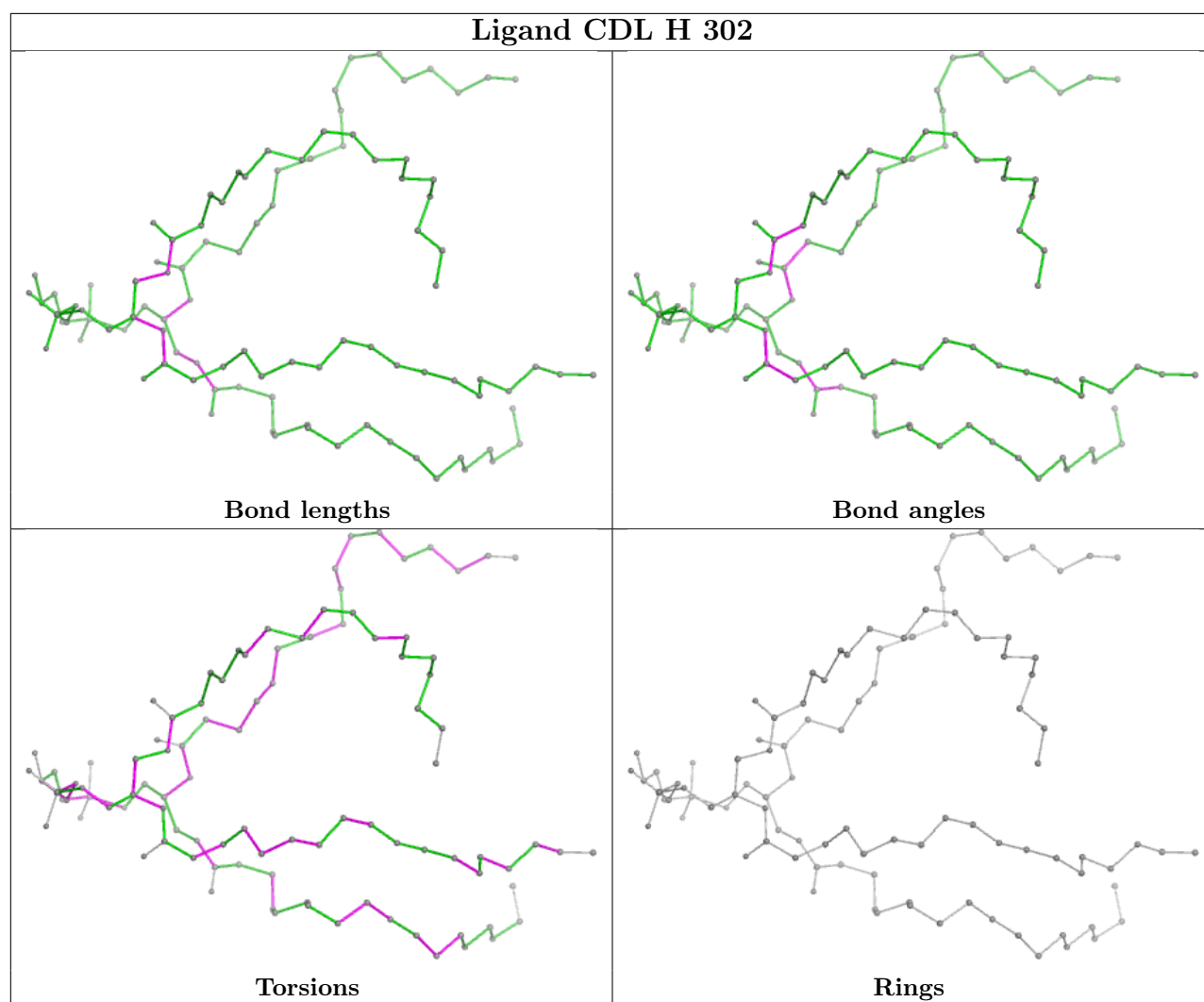


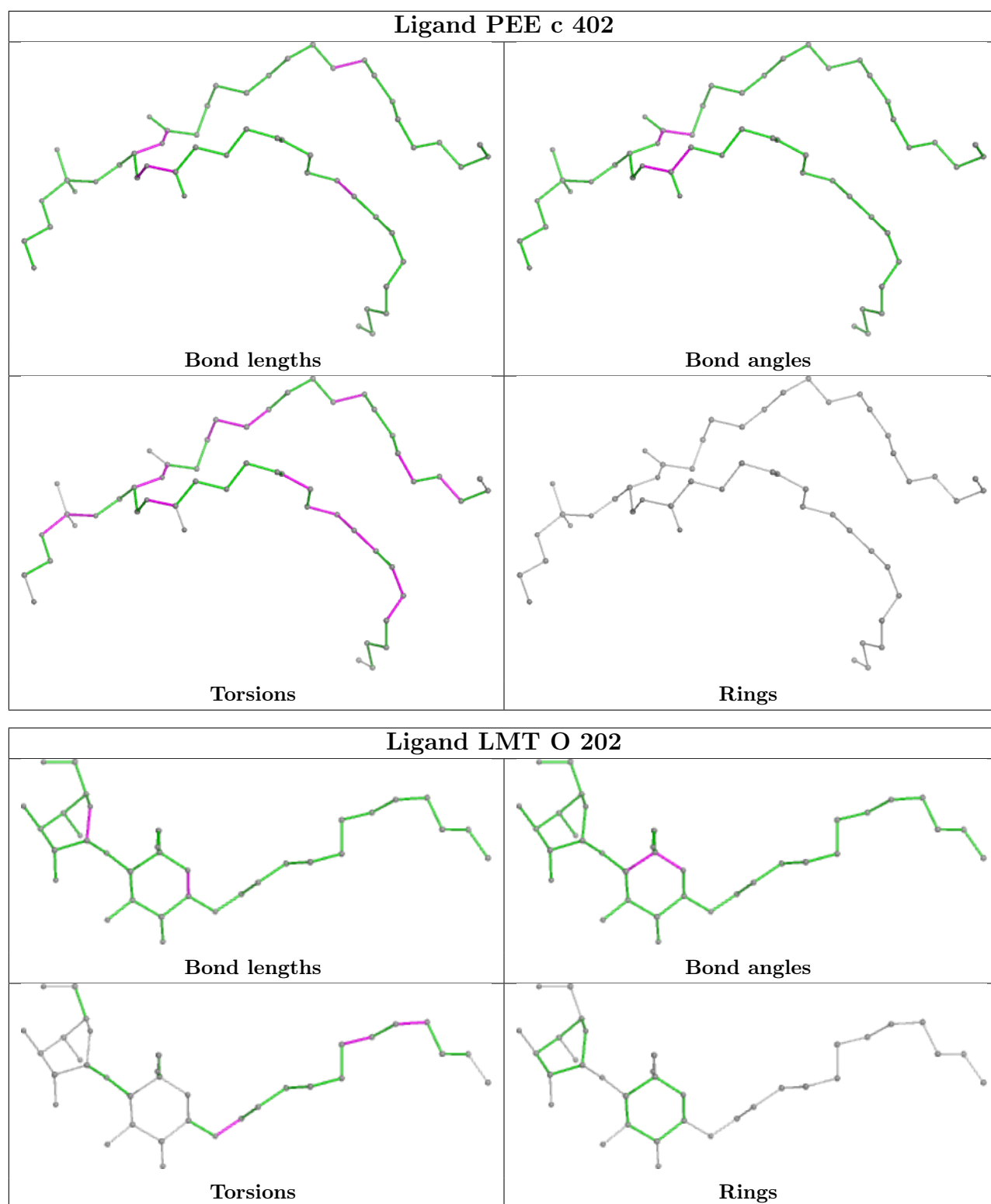


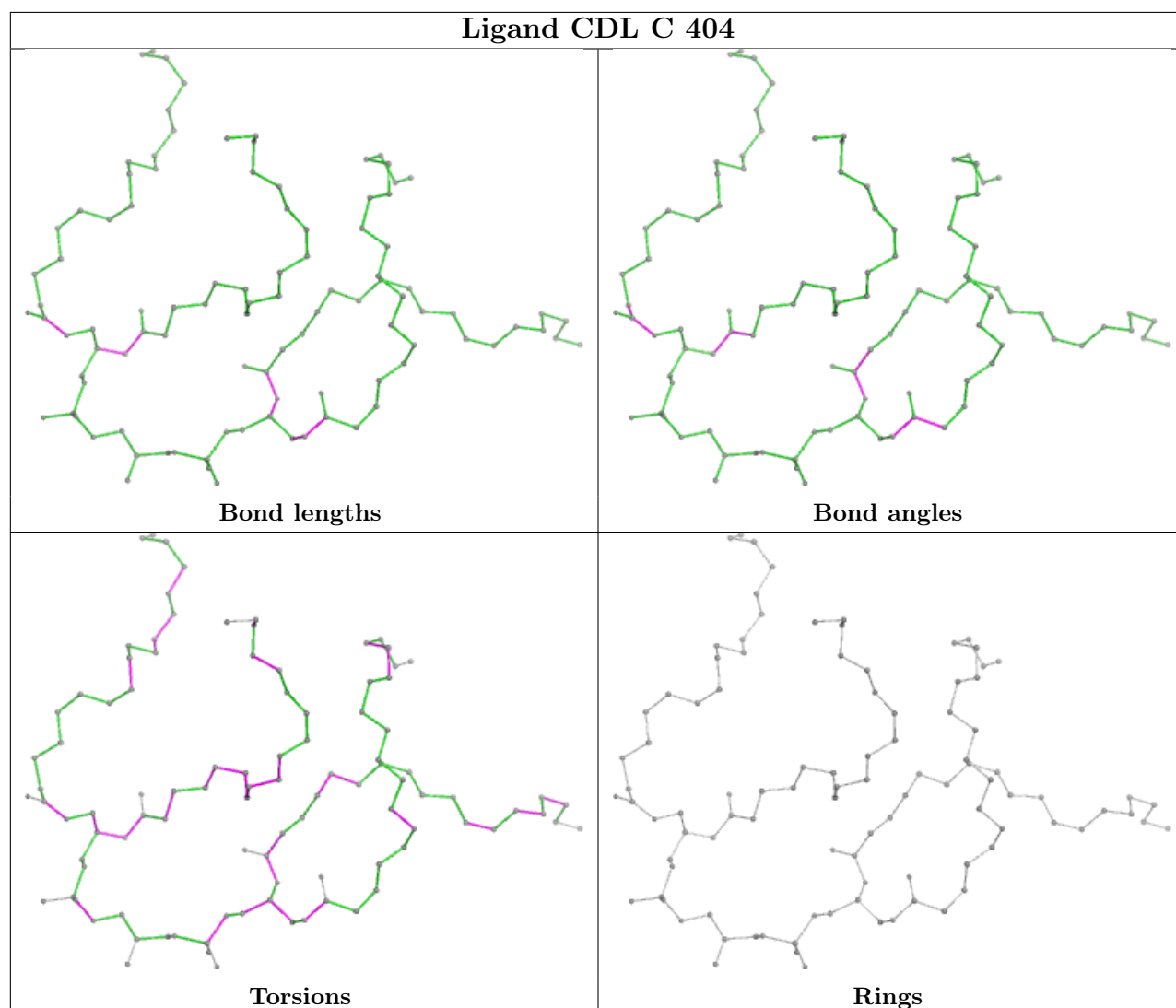
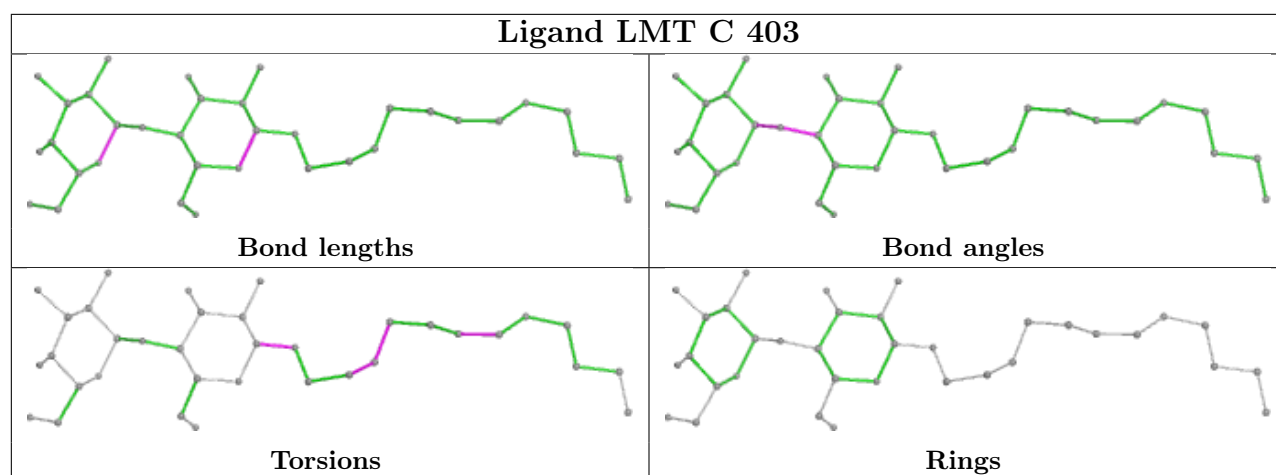


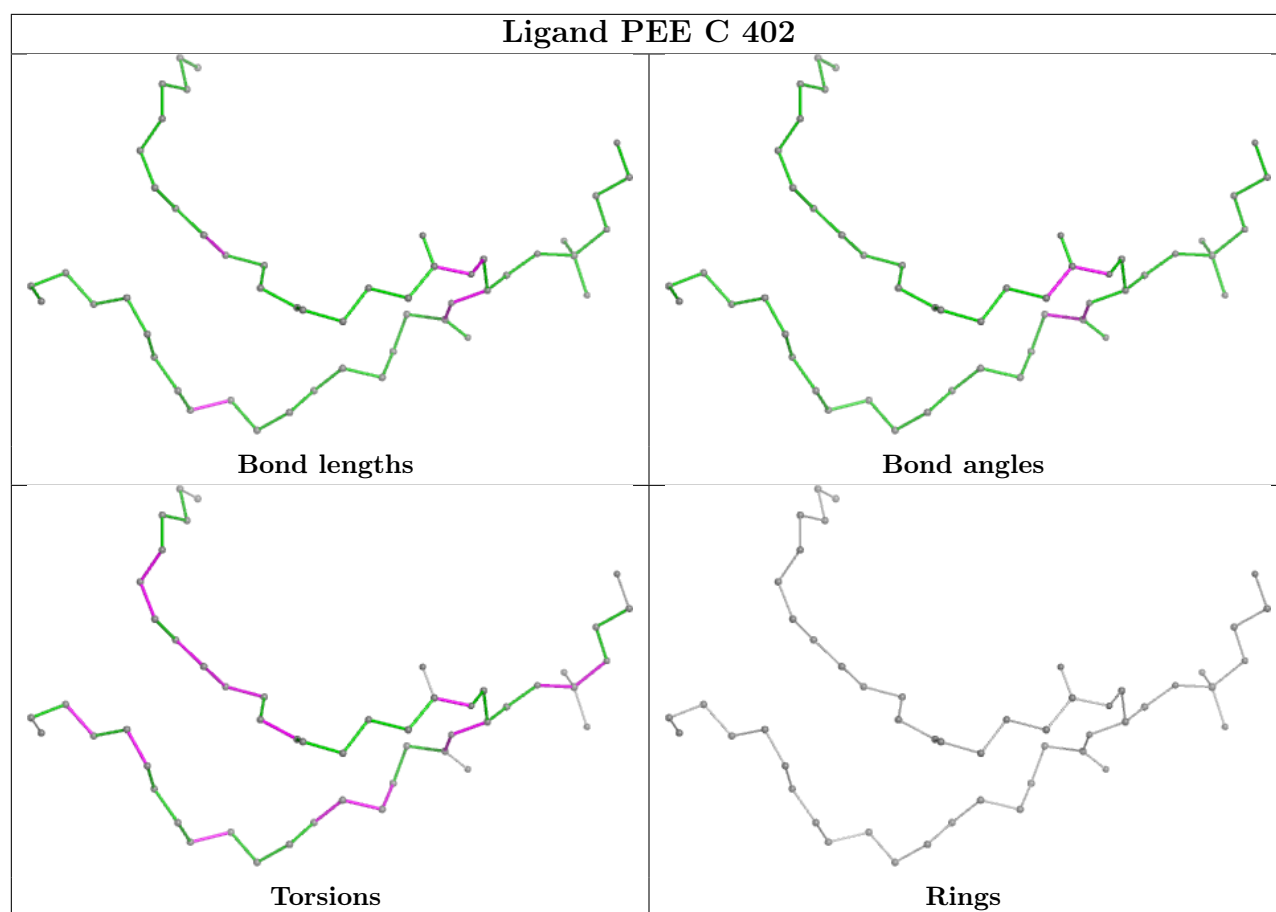


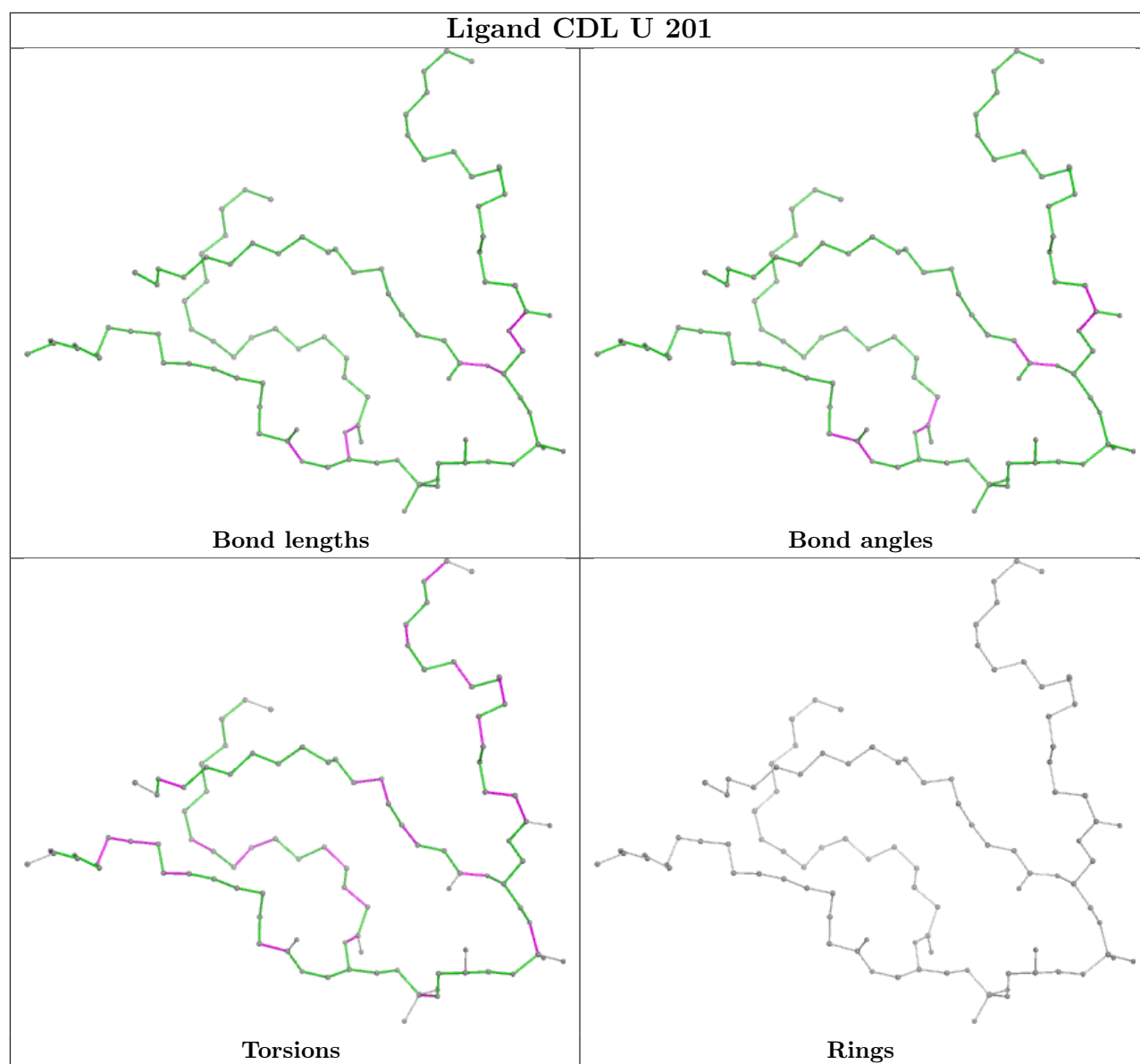


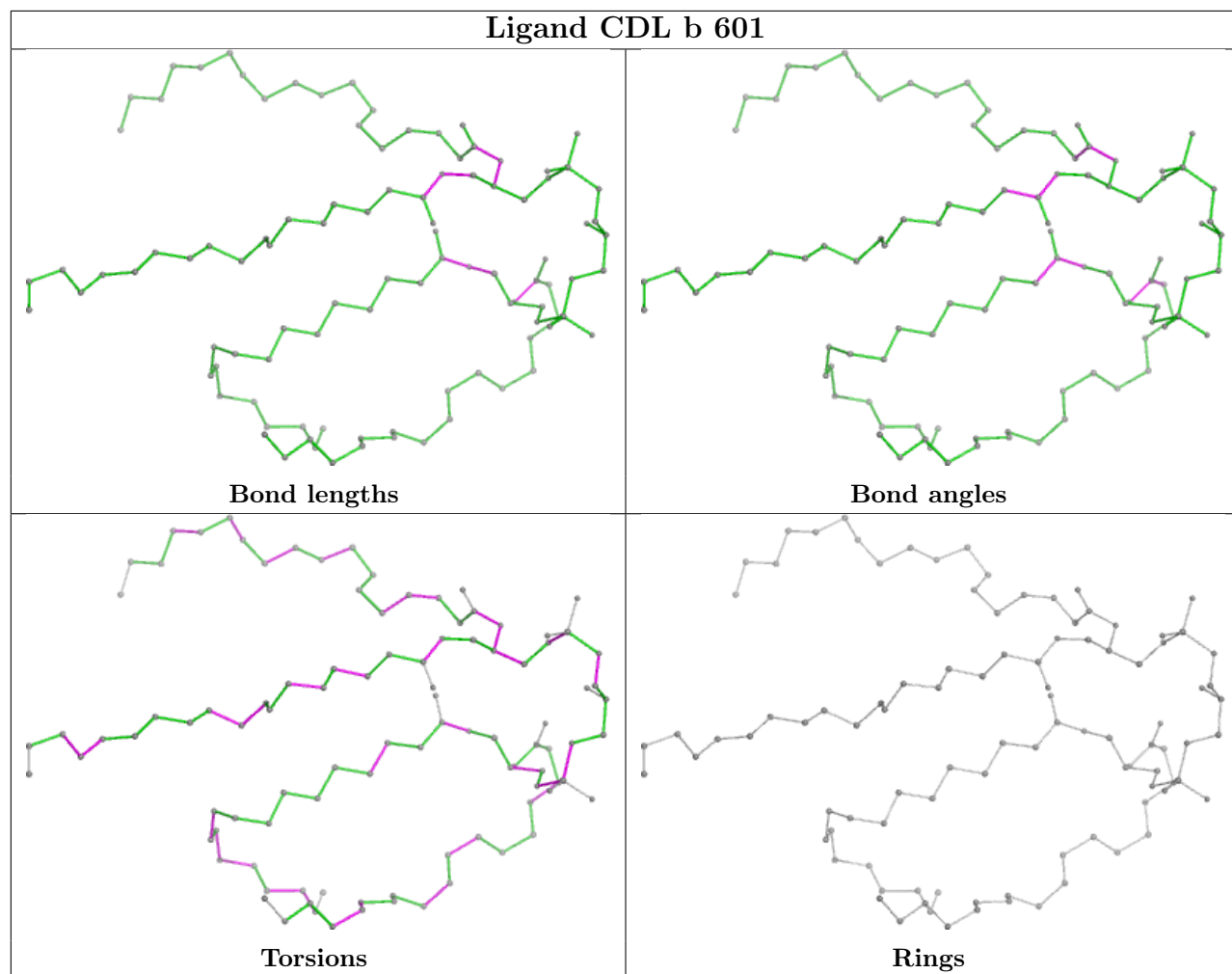


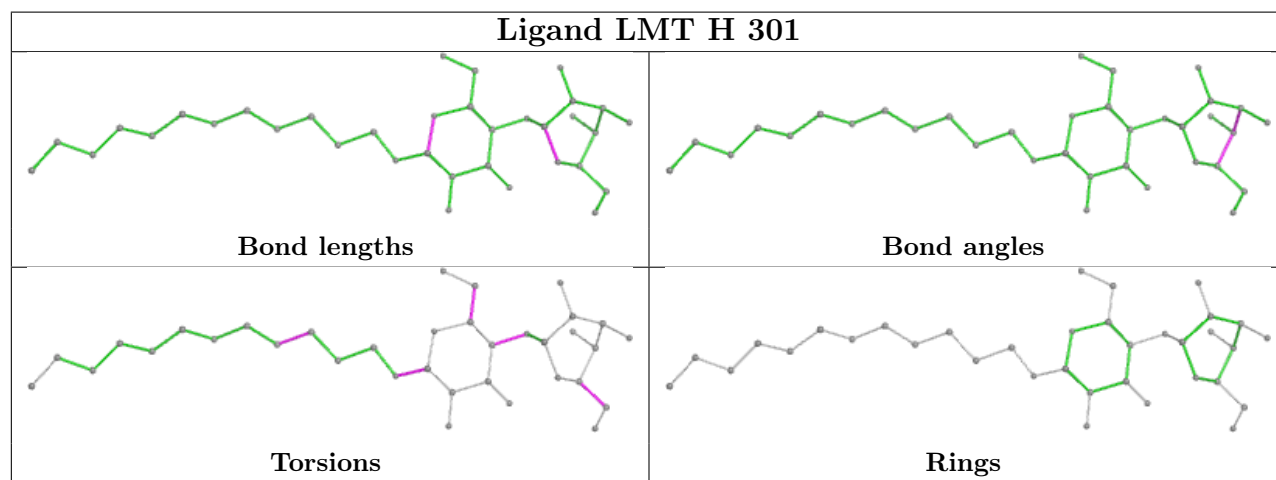
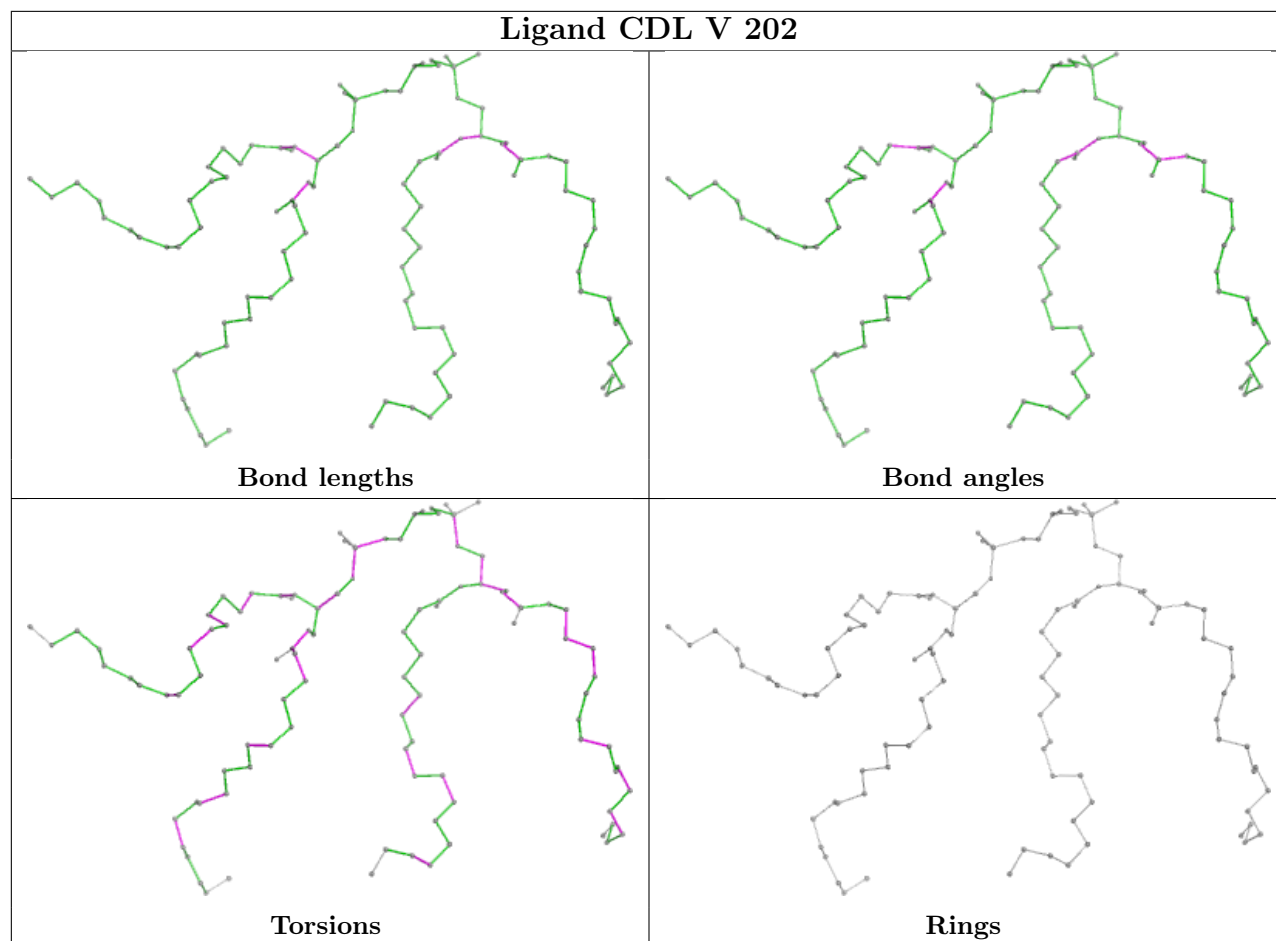


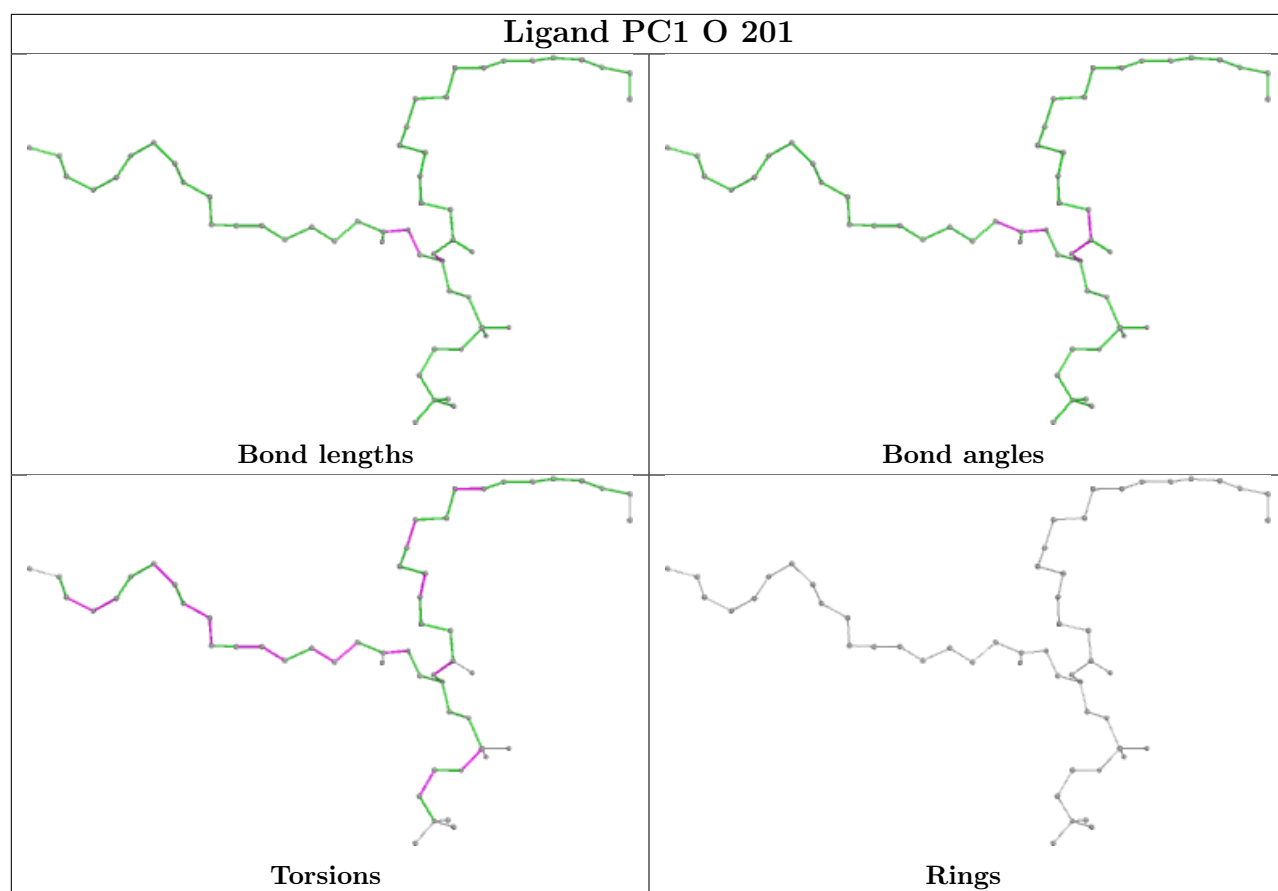


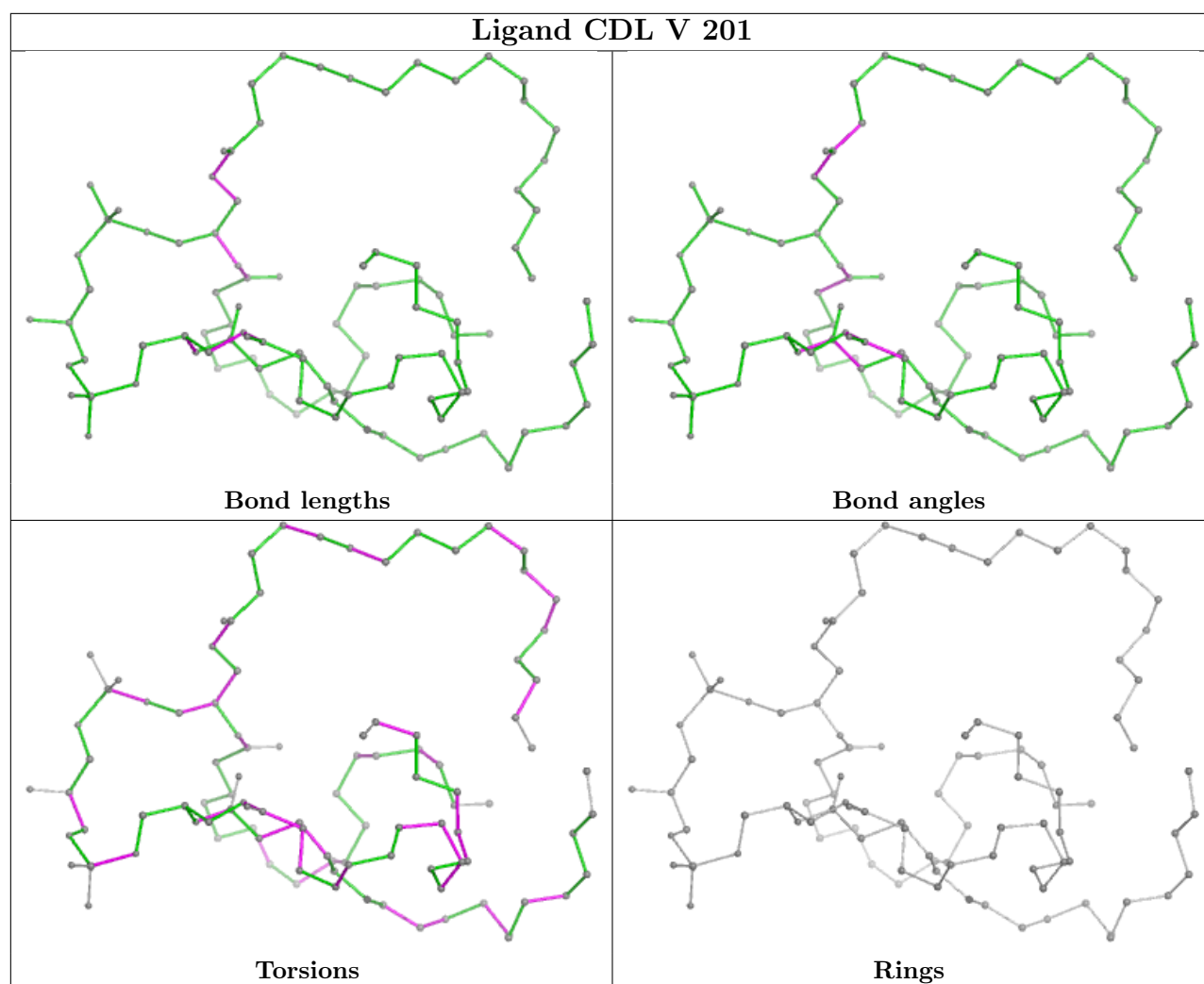


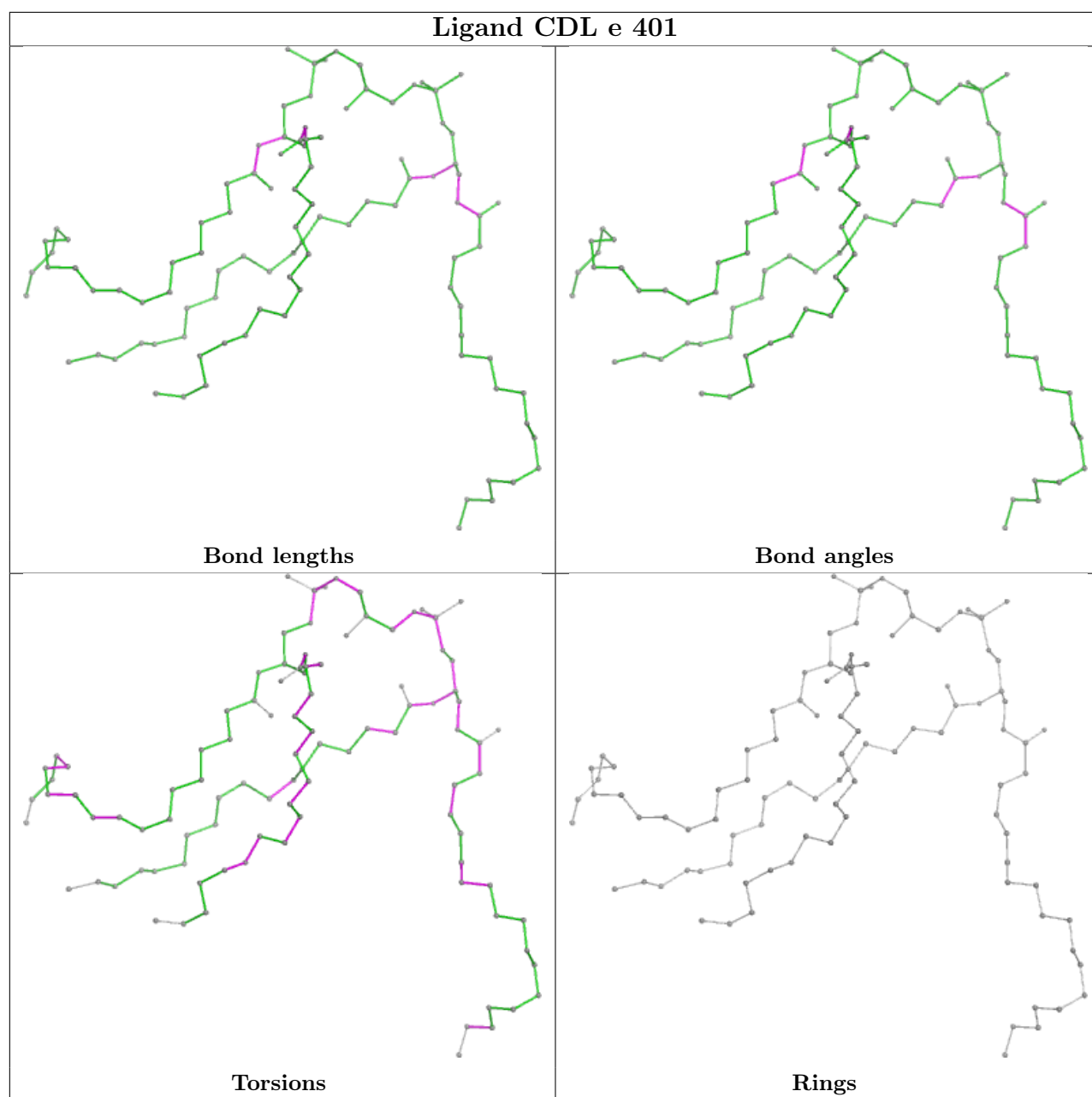


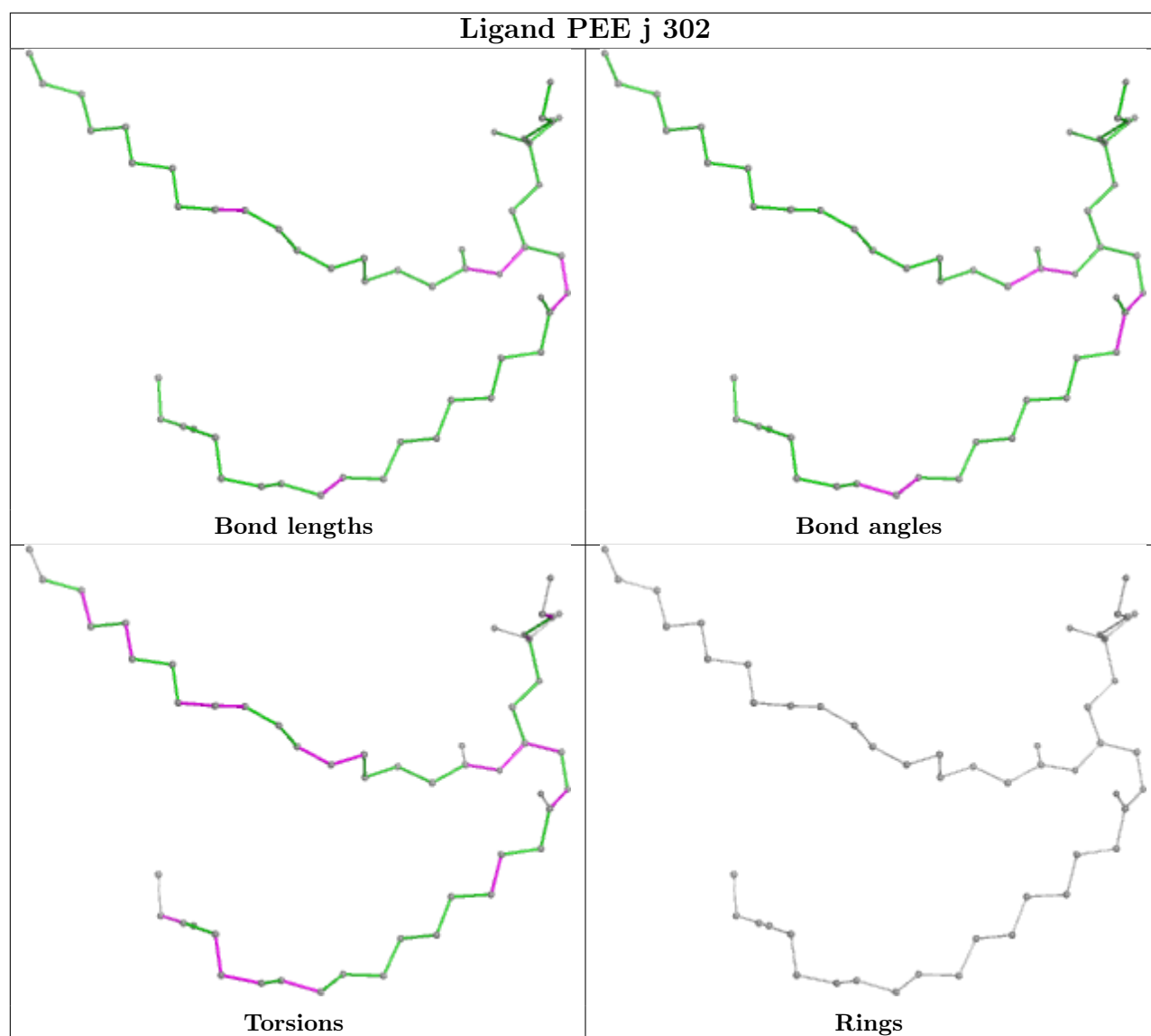


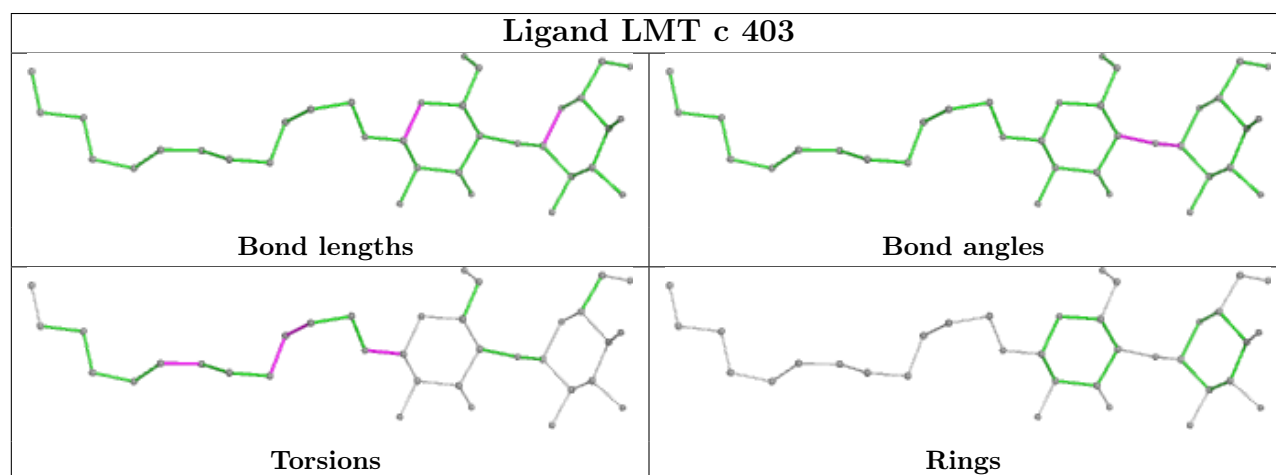
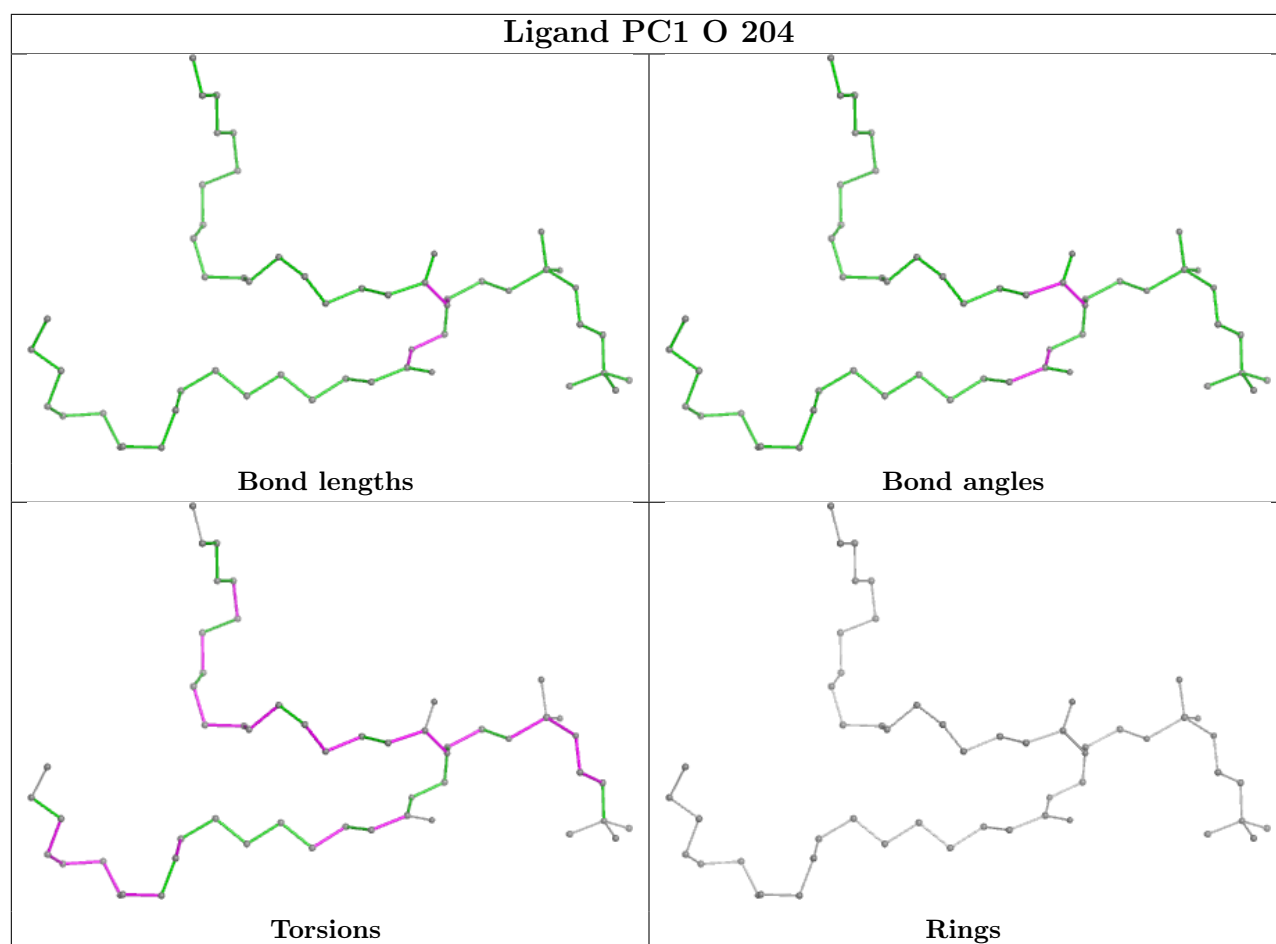


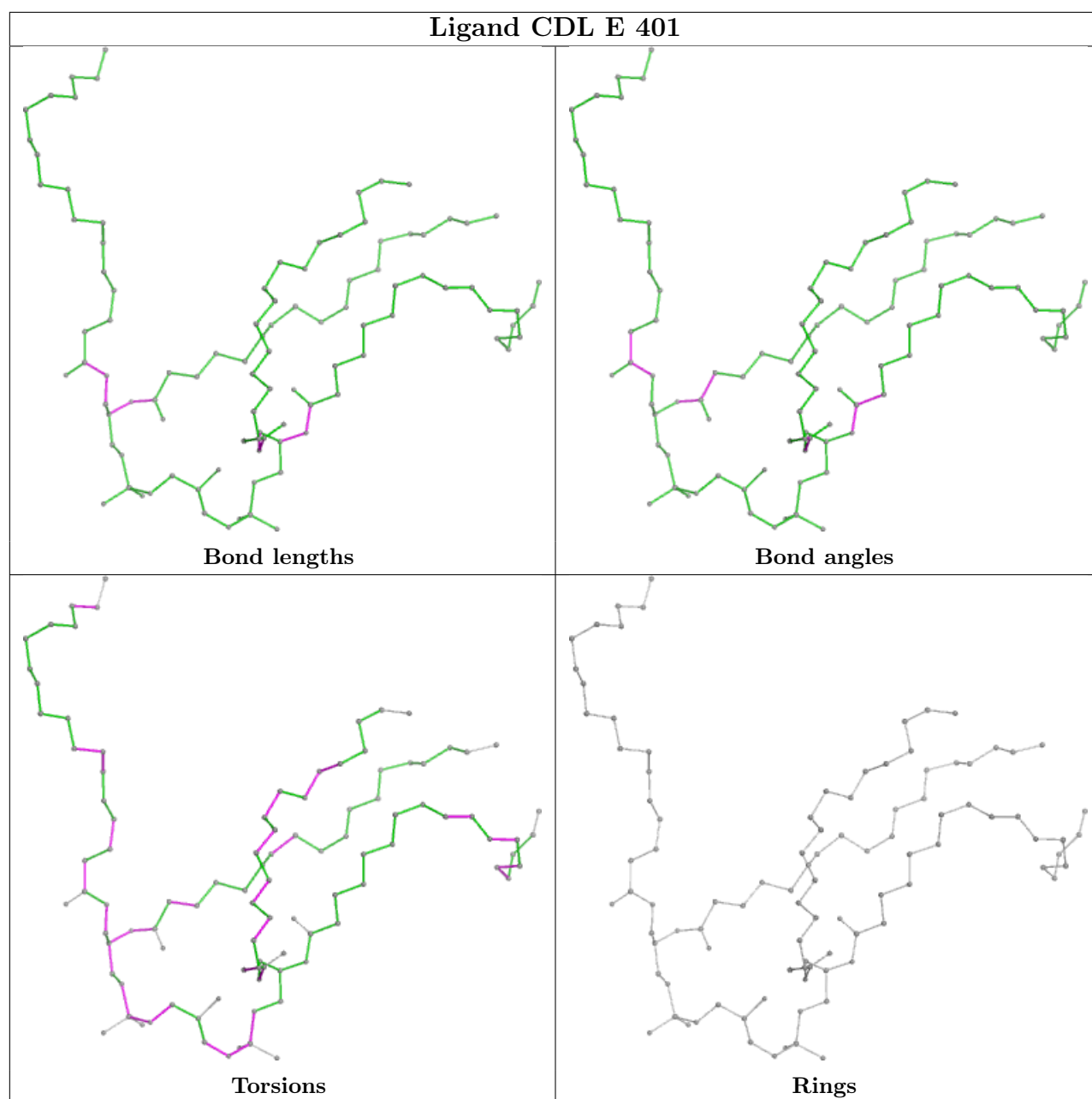


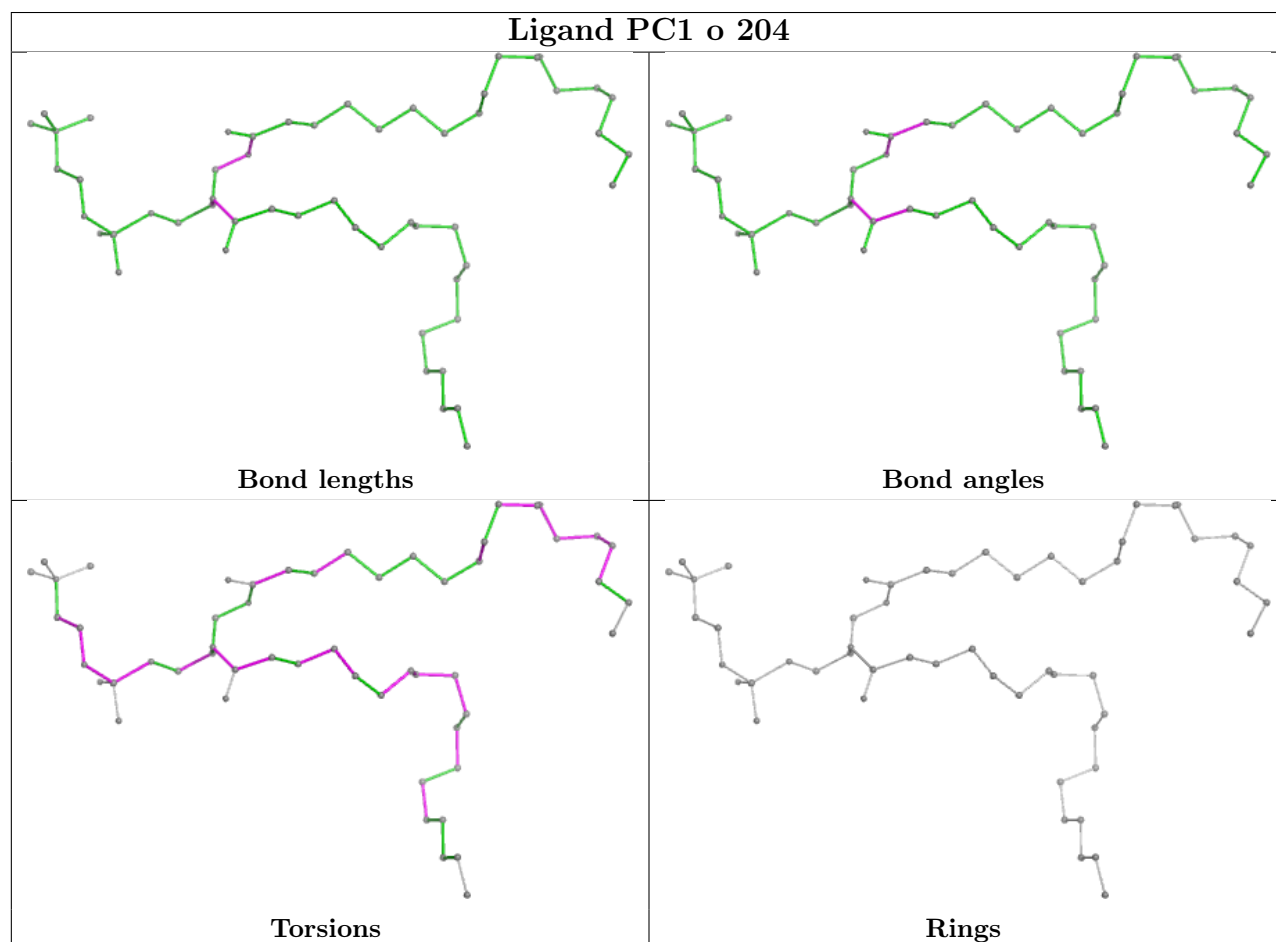
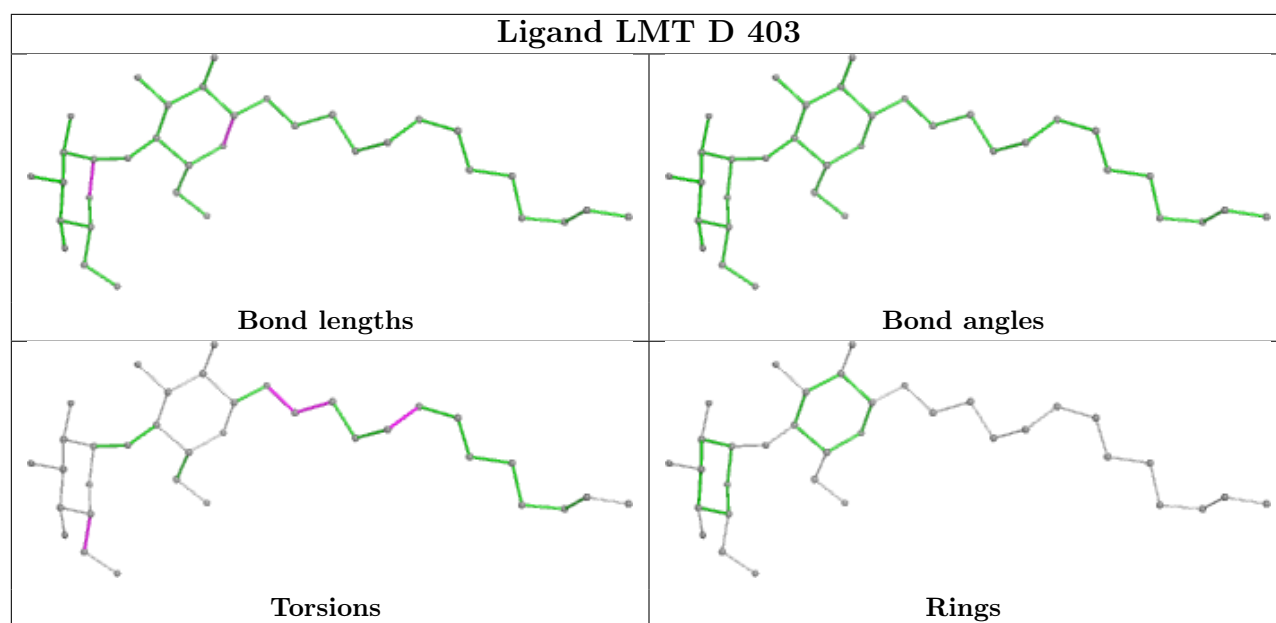


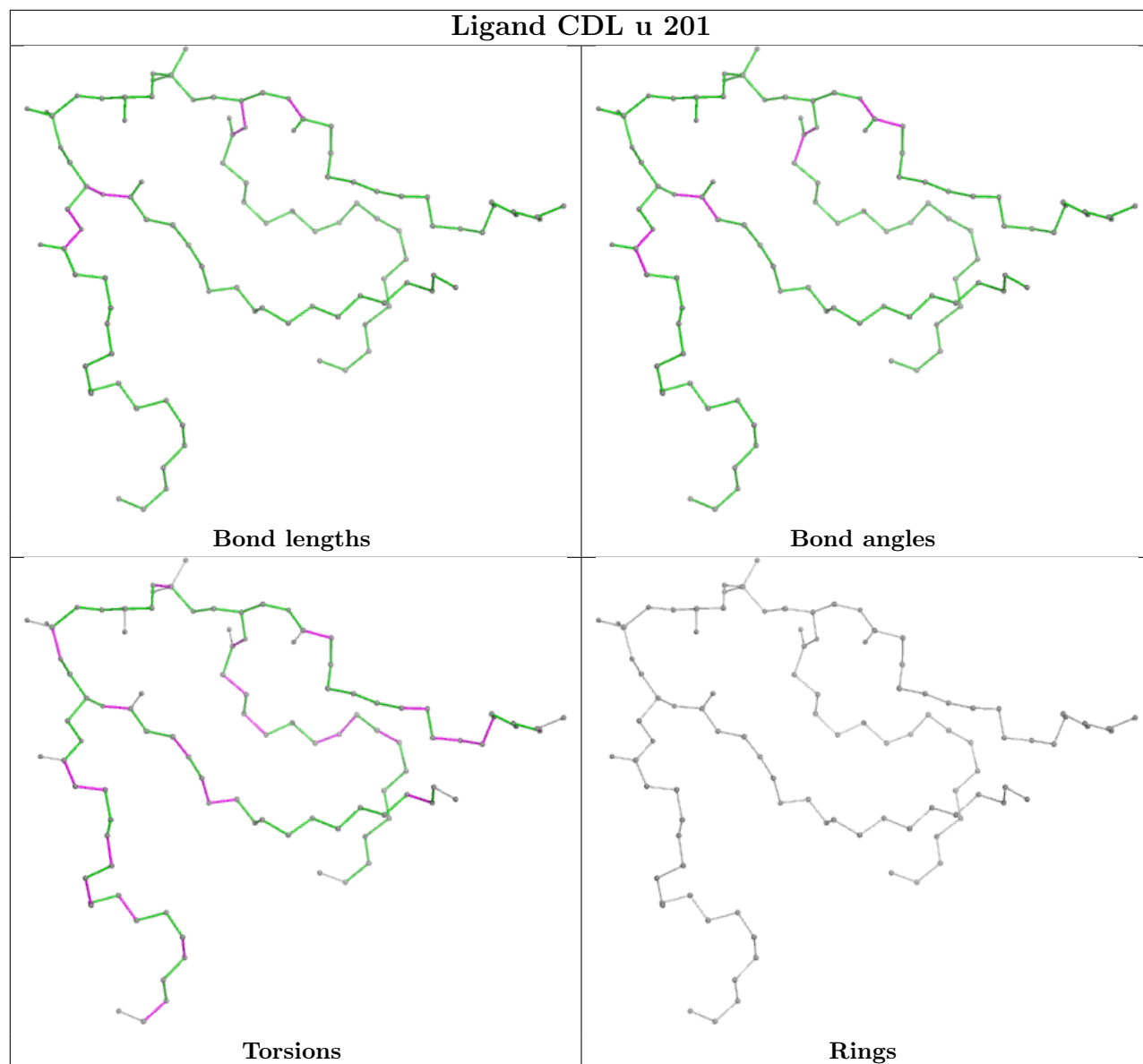


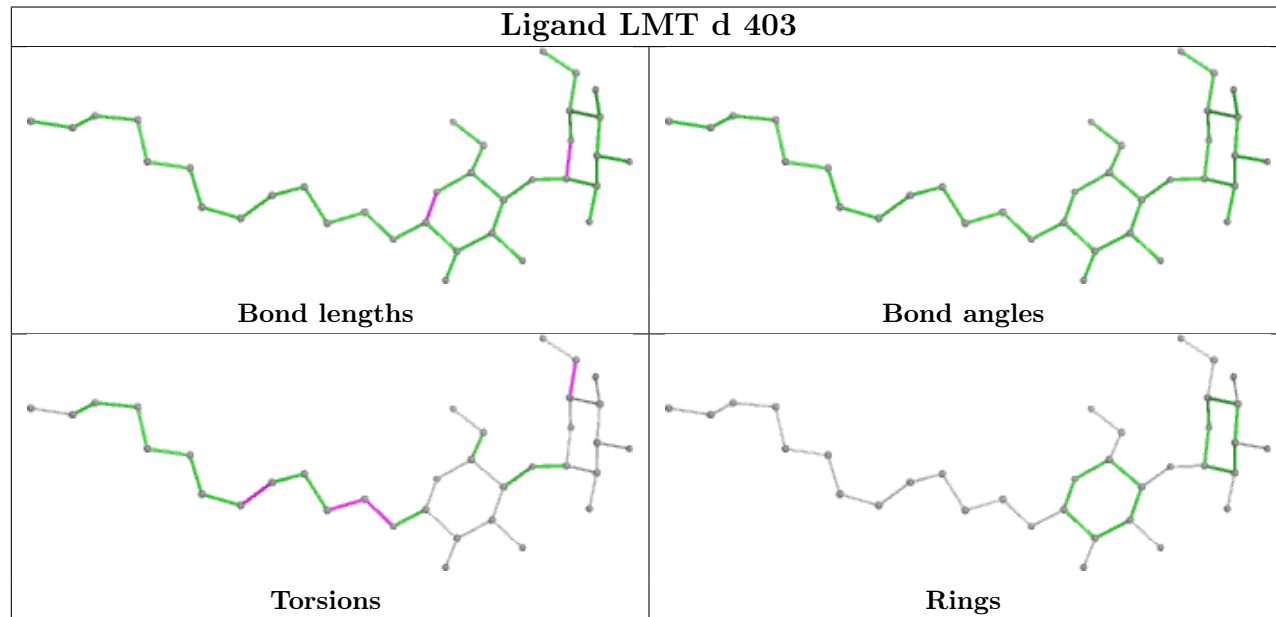
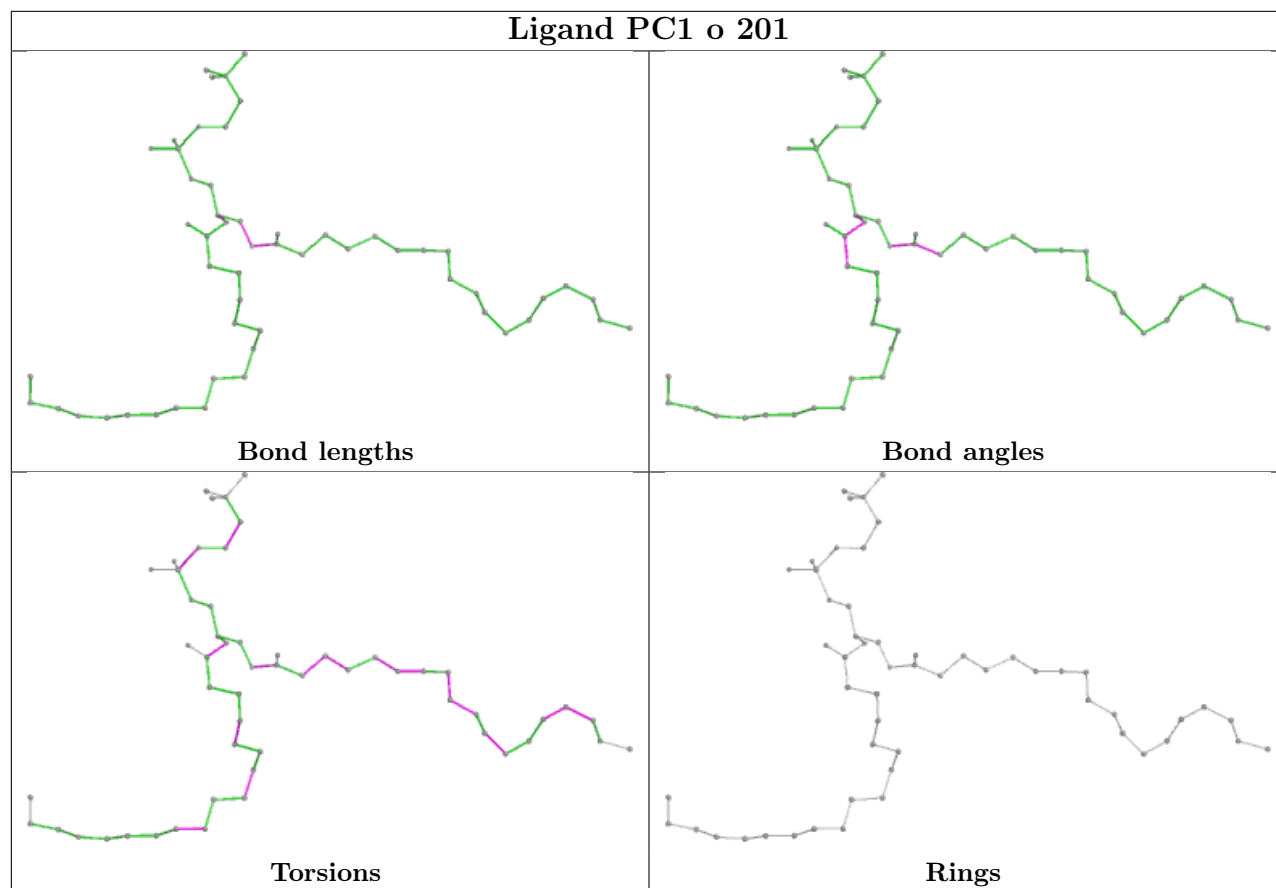


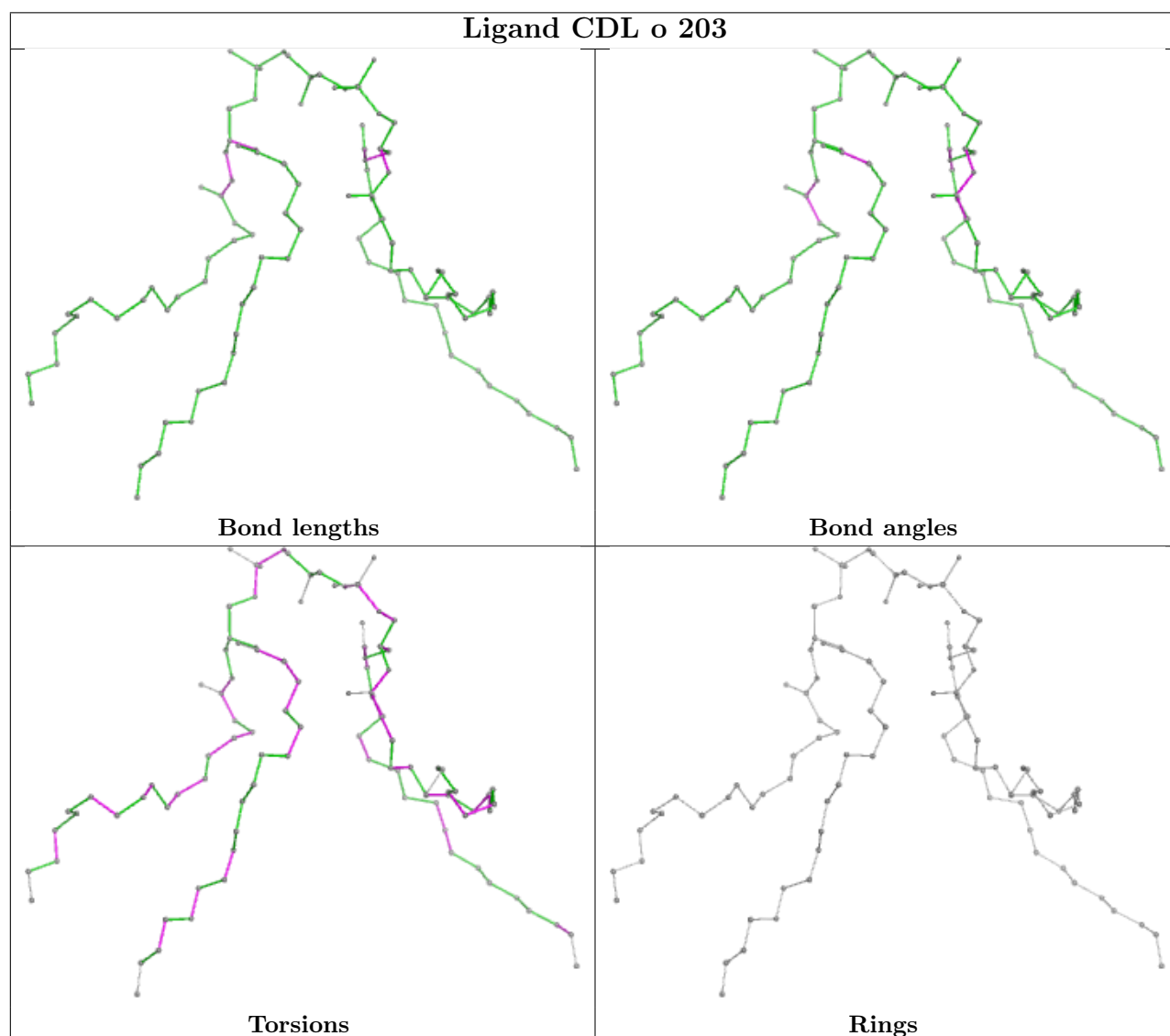
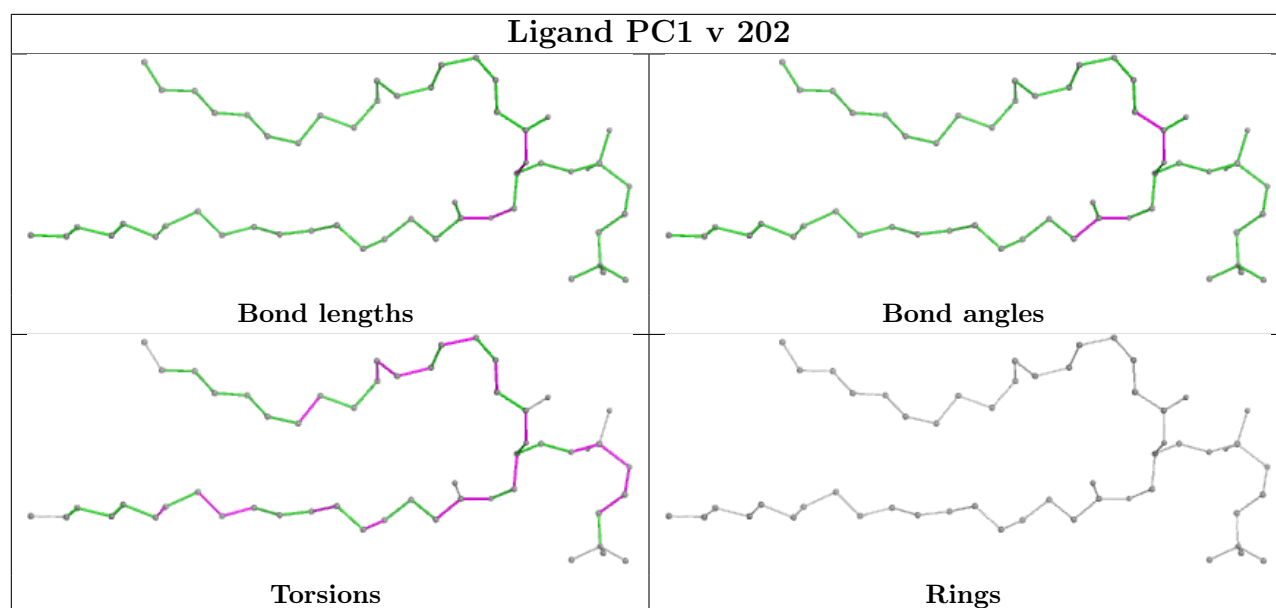


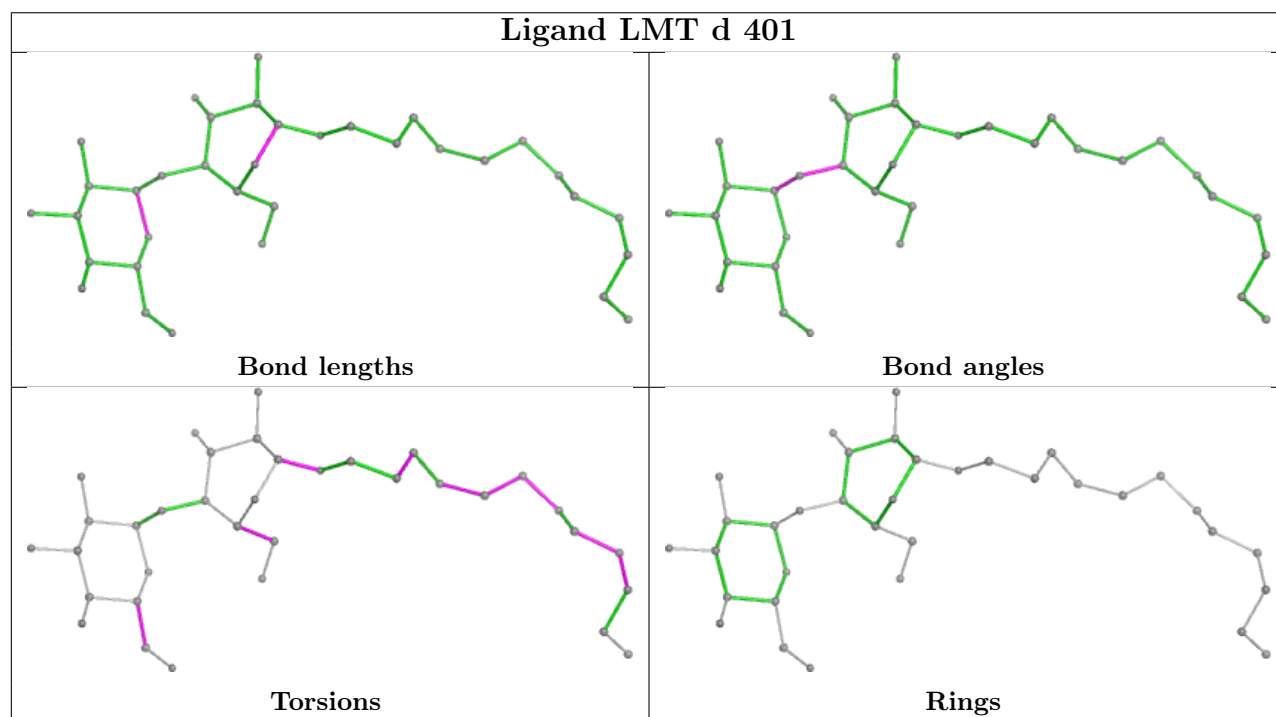
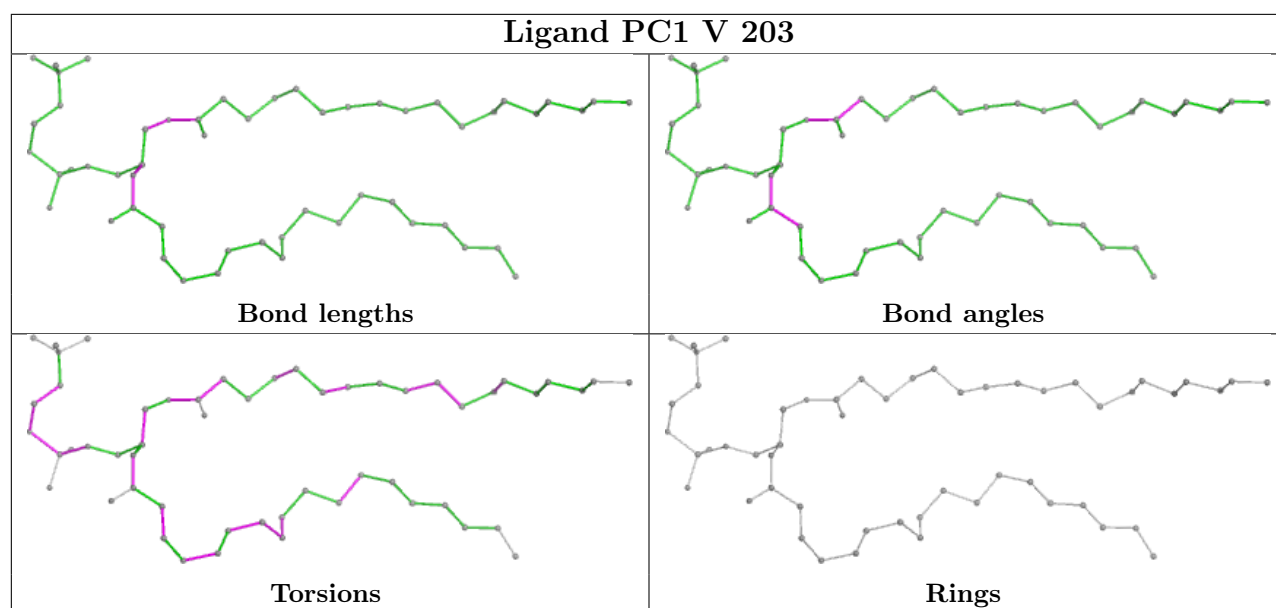


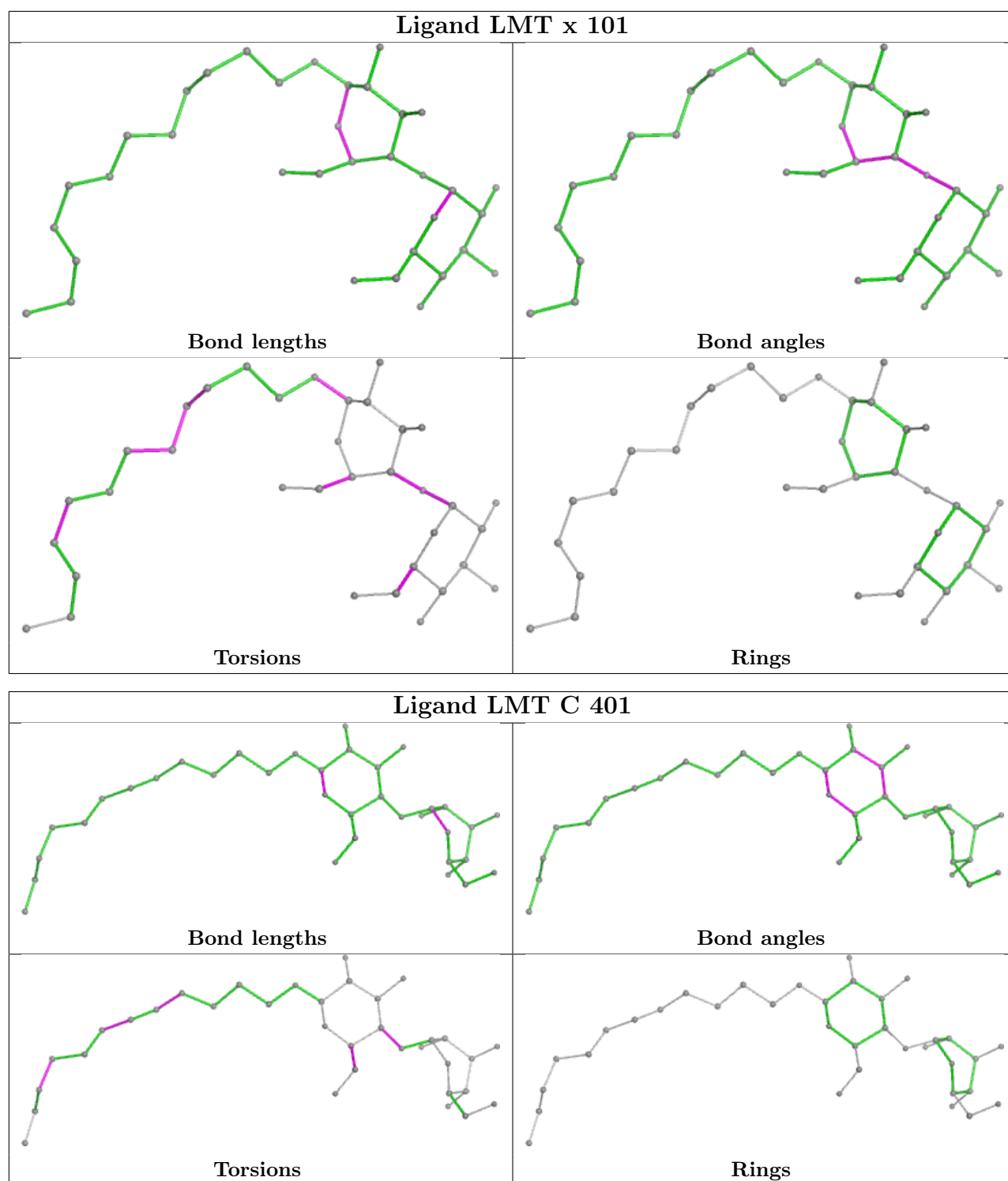












## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

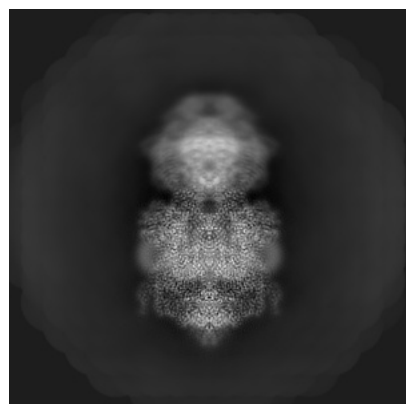
## 6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-10520. These allow visual inspection of the internal detail of the map and identification of artifacts.

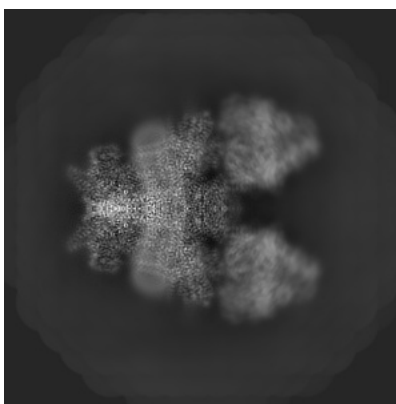
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

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

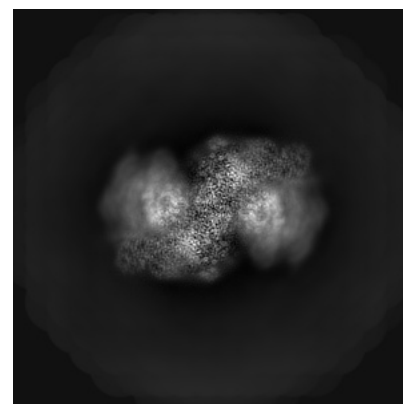
#### 6.1.1 Primary map



X

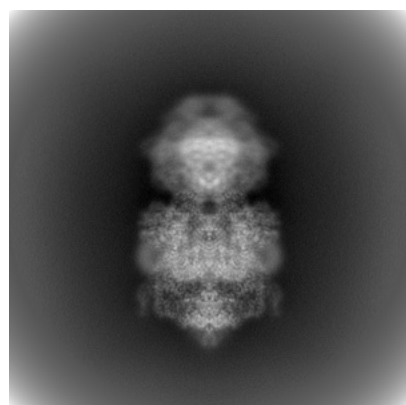


Y

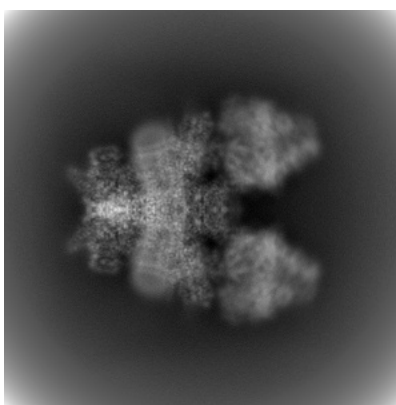


Z

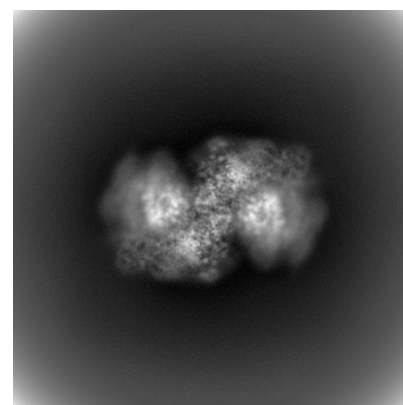
#### 6.1.2 Raw map



X



Y

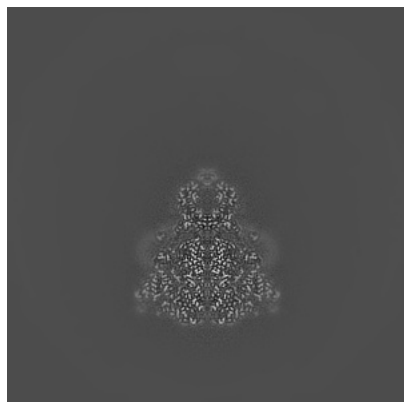


Z

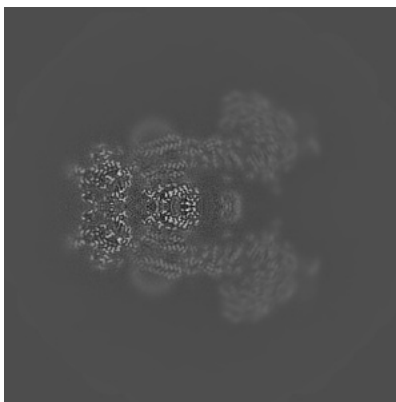
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices [i](#)

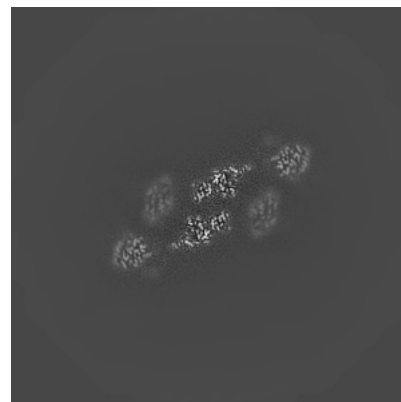
### 6.2.1 Primary map



X Index: 280

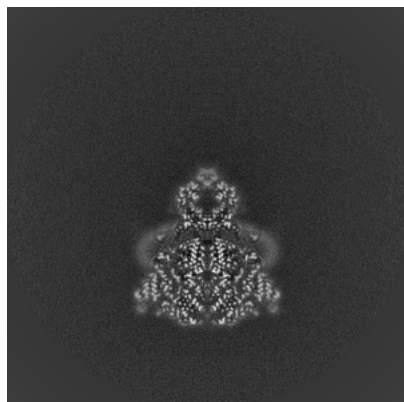


Y Index: 280

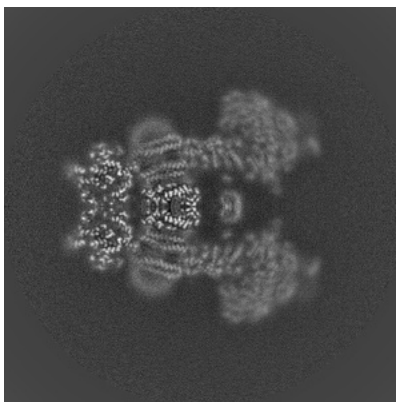


Z Index: 280

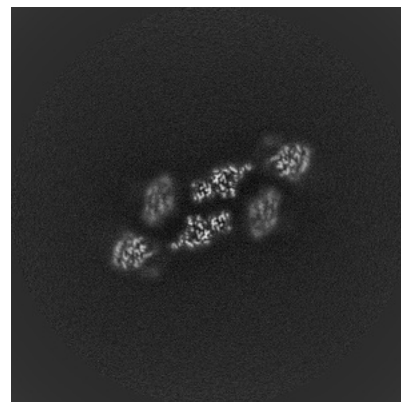
### 6.2.2 Raw map



X Index: 280



Y Index: 280

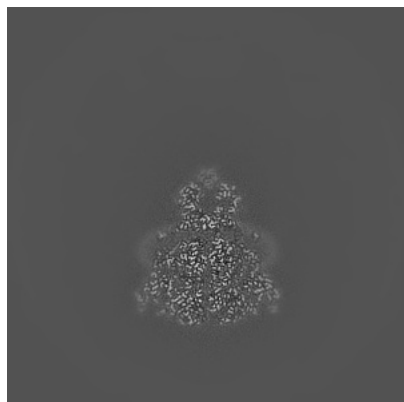


Z Index: 280

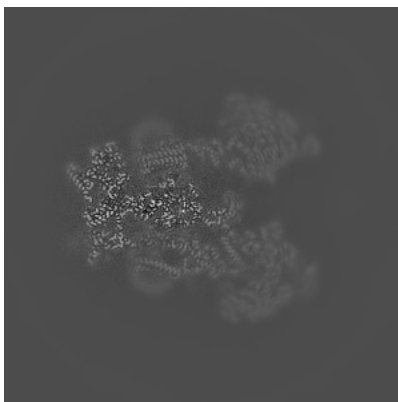
The images above show central slices of the map in three orthogonal directions.

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

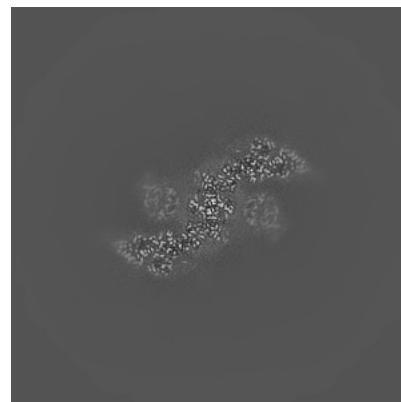
### 6.3.1 Primary map



X Index: 282

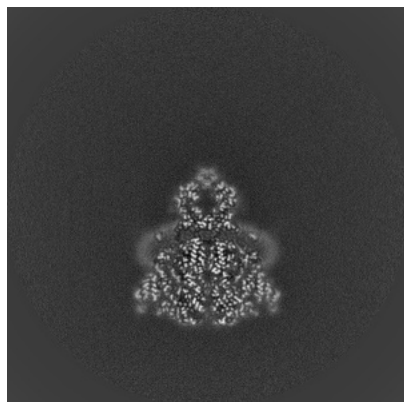


Y Index: 289

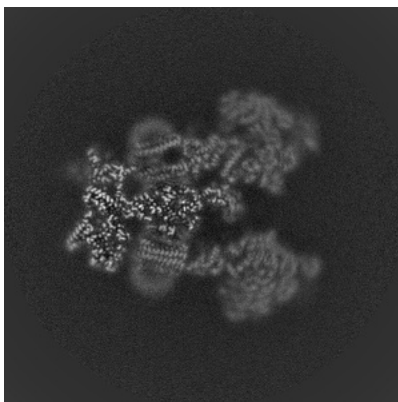


Z Index: 252

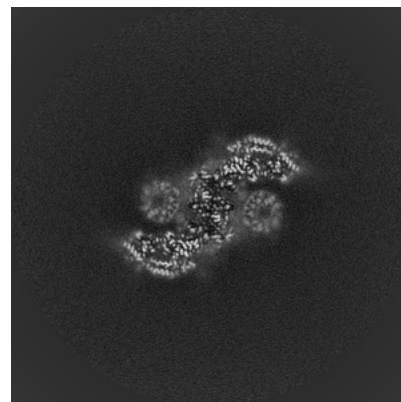
### 6.3.2 Raw map



X Index: 279



Y Index: 271

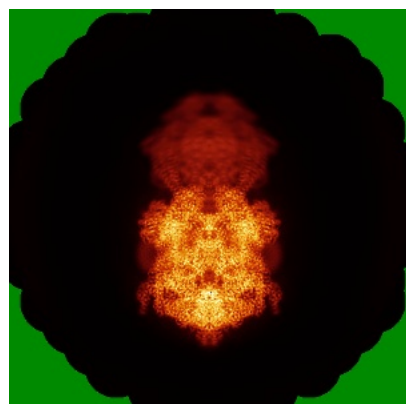


Z Index: 248

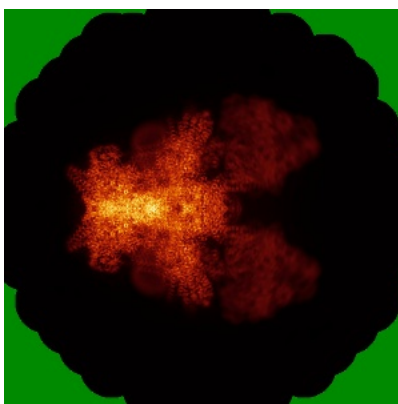
The images above show the largest variance slices of the map in three orthogonal directions.

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

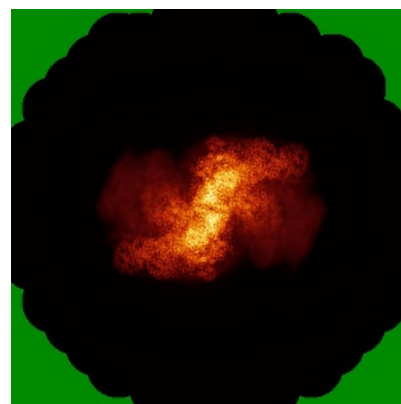
### 6.4.1 Primary map



X

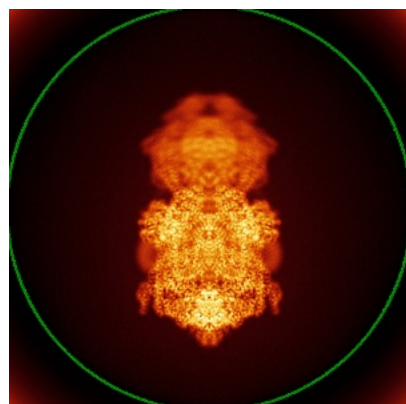


Y

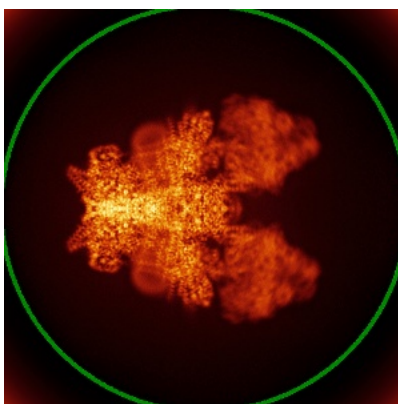


Z

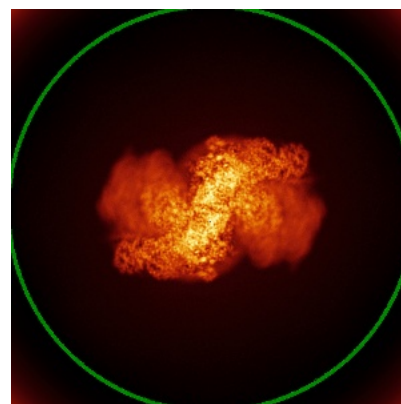
### 6.4.2 Raw map



X



Y

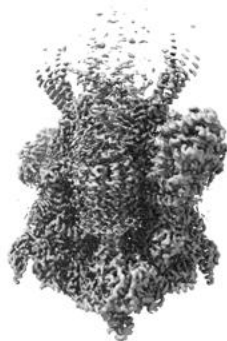


Z

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



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.04. 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



X



Y



Z

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.

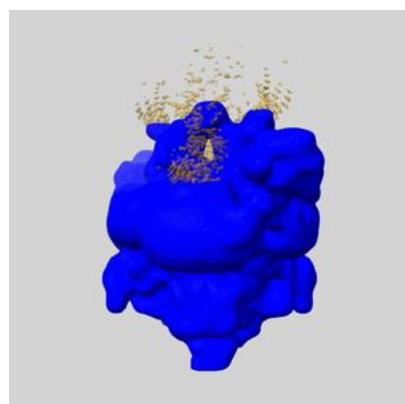
## 6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

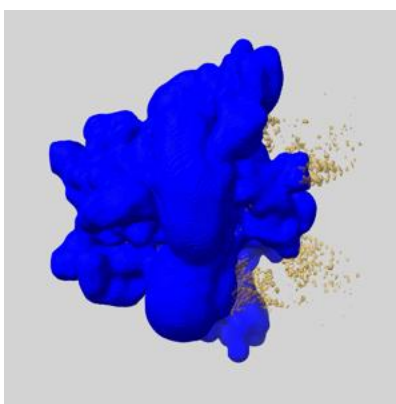
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

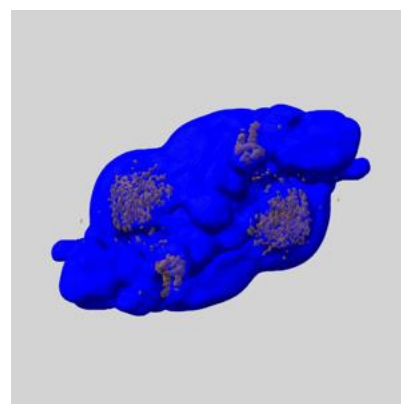
### 6.6.1 emd\_10520\_msk\_1.map [i](#)



X



Y

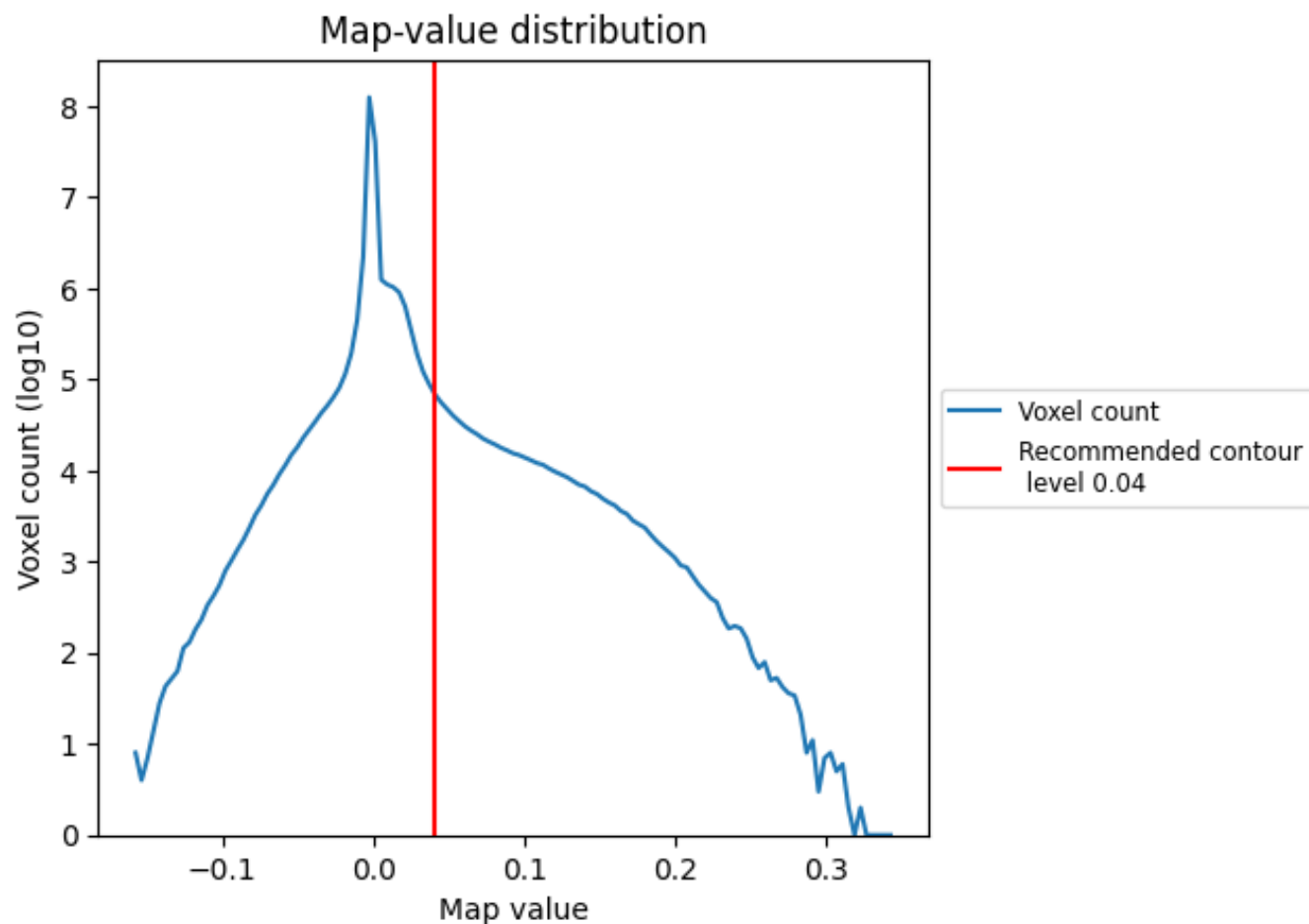


Z

## 7 Map analysis [i](#)

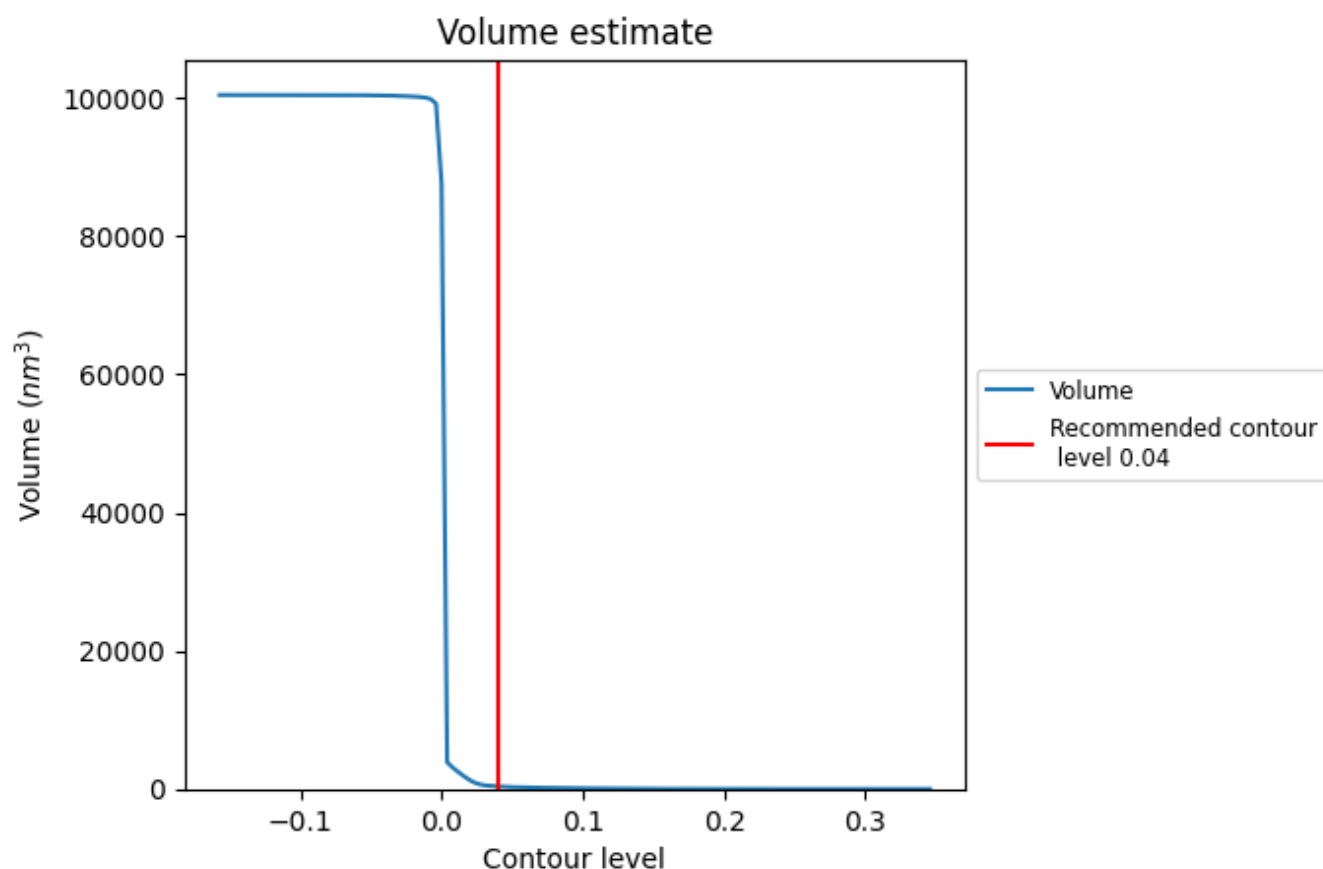
This section contains the results of statistical analysis of the map.

### 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.

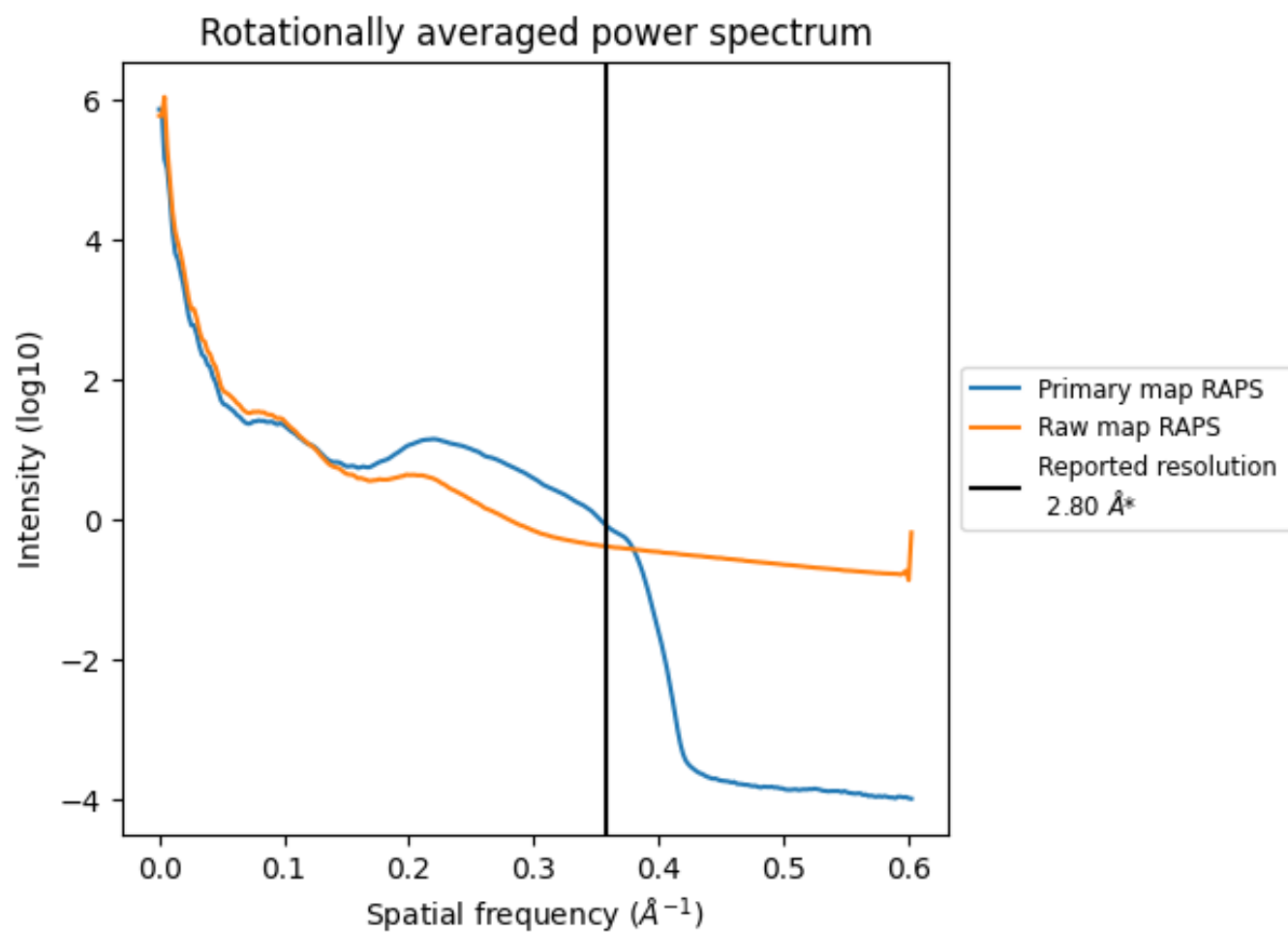
## 7.2 Volume estimate [i](#)



The volume at the recommended contour level is 365 nm<sup>3</sup>; this corresponds to an approximate mass of 329 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 ⓘ

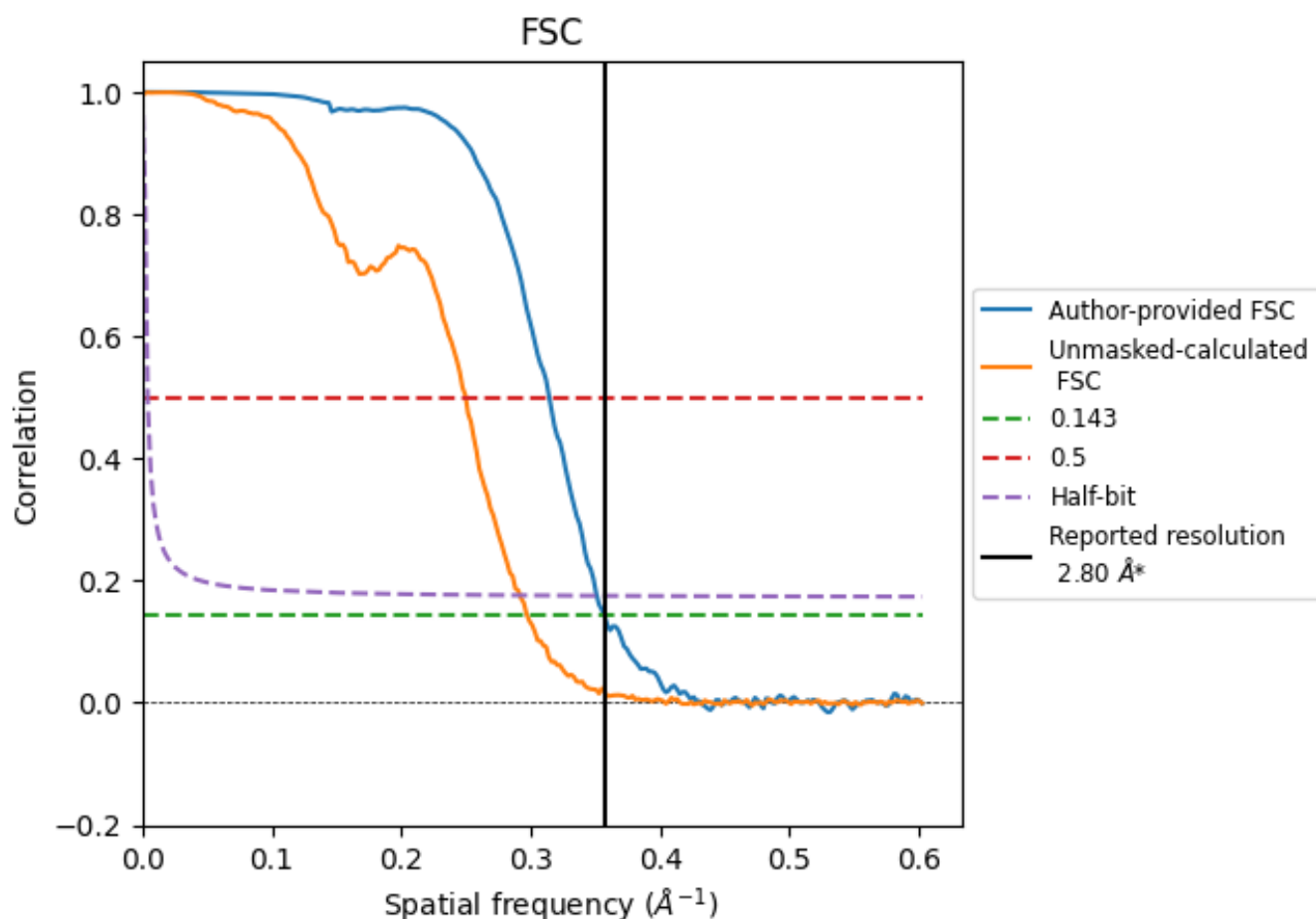


\*Reported resolution corresponds to spatial frequency of  $0.357 \text{ \AA}^{-1}$

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

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

### 8.1 FSC [i](#)



\*Reported resolution corresponds to spatial frequency of  $0.357 \text{ \AA}^{-1}$

## 8.2 Resolution estimates [i](#)

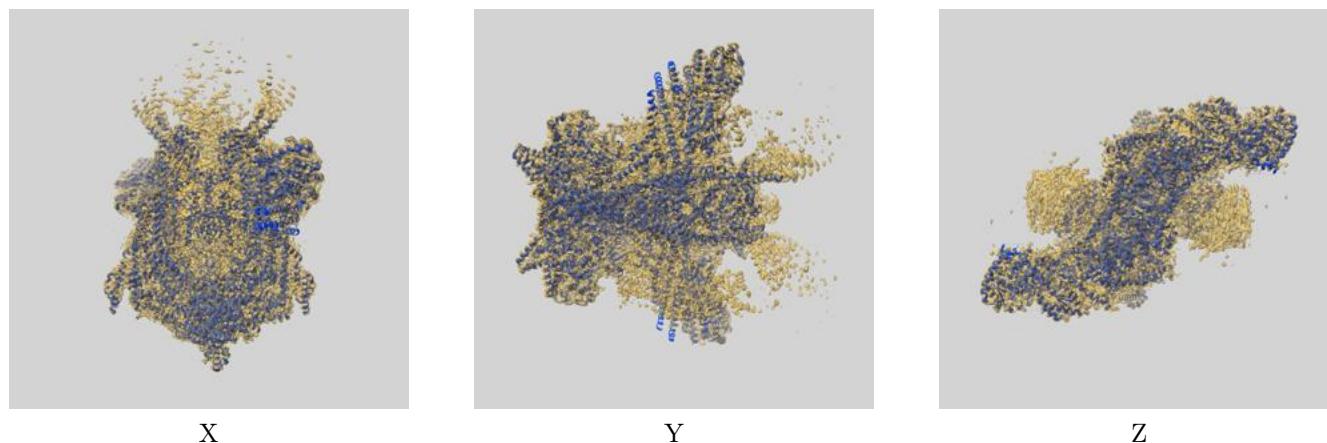
| Resolution estimate (Å)   | Estimation criterion (FSC cut-off) |      |          |
|---------------------------|------------------------------------|------|----------|
|                           | 0.143                              | 0.5  | Half-bit |
| Reported by author        | 2.80                               | -    | -        |
| Author-provided FSC curve | 2.80                               | 3.18 | 2.85     |
| Unmasked-calculated*      | 3.36                               | 4.00 | 3.43     |

\*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.36 differs from the reported value 2.8 by more than 10 %

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

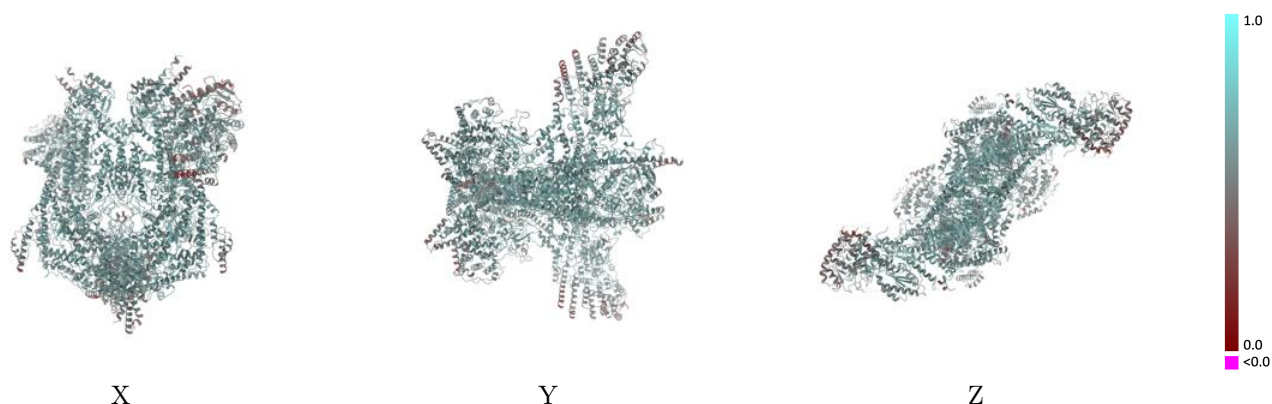
This section contains information regarding the fit between EMDB map EMD-10520 and PDB model 6TMG. Per-residue inclusion information can be found in section [3](#) on page [16](#).

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



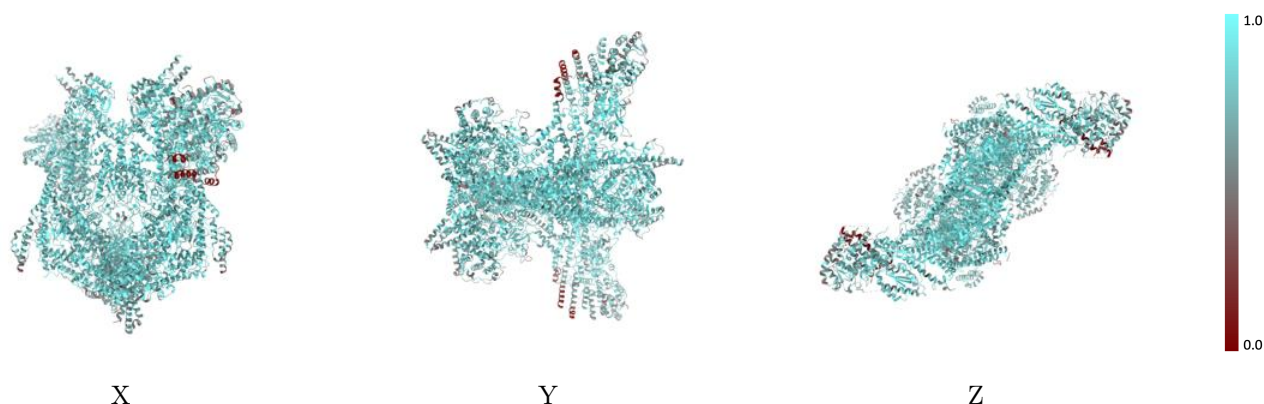
The images above show the 3D surface view of the map at the recommended contour level 0.04 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



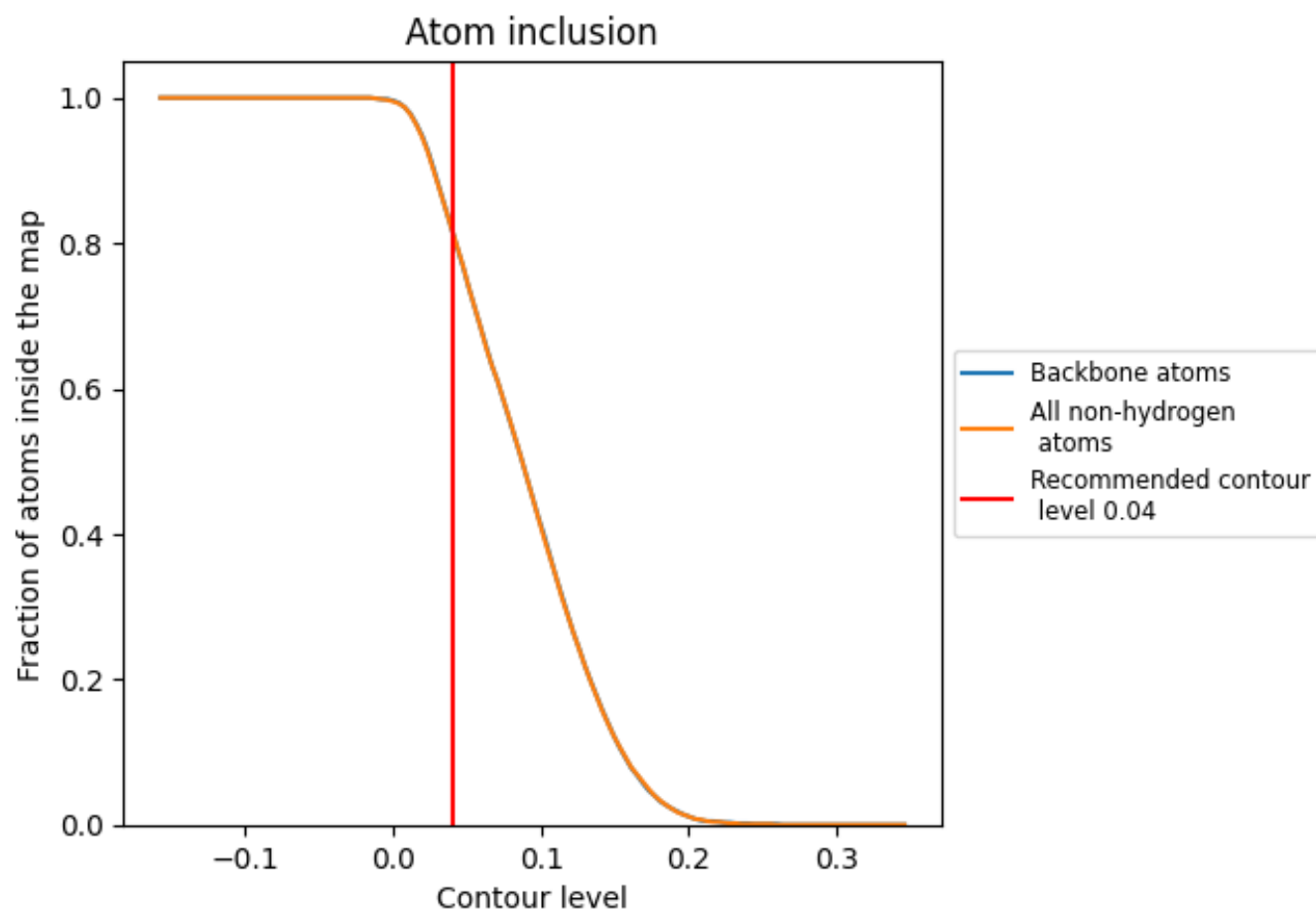
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.04).

## 9.4 Atom inclusion [i](#)



At the recommended contour level, 82% of all backbone atoms, 82% 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 (0.04) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion                                                                             | Q-score                                                                                    |
|-------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| All   |  0.8170   |  0.5890   |
| A     |  0.7430   |  0.5380   |
| B     |  0.8250   |  0.5940   |
| C     |  0.7290   |  0.5550   |
| D     |  0.8560   |  0.6130   |
| E     |  0.8560   |  0.6140   |
| F     |  0.8180   |  0.5770   |
| G     |  0.8440   |  0.5920   |
| H     |  0.8720   |  0.6180   |
| I     |  0.7610   |  0.5490   |
| J     |  0.9210   |  0.6520   |
| K     |  0.7460   |  0.5820   |
| L     |  0.8650   |  0.6020   |
| M     |  0.8940   |  0.6290   |
| N     |  0.7650  |  0.5560  |
| O     |  0.7930 |  0.5800 |
| P     |  0.8690 |  0.6010 |
| Q     |  0.7190 |  0.5150 |
| R     |  0.8430 |  0.5950 |
| S     |  0.8360 |  0.5860 |
| T     |  0.7700 |  0.5560 |
| U     |  0.8200 |  0.5840 |
| V     |  0.8290 |  0.6100 |
| W     |  0.9230 |  0.6320 |
| X     |  0.8610 |  0.6130 |
| a     |  0.7410 |  0.5390 |
| b     |  0.8330 |  0.6010 |
| c     |  0.7300 |  0.5560 |
| d     |  0.8570 |  0.6120 |
| e     |  0.8550 |  0.6160 |
| f     |  0.8170 |  0.5760 |
| g     |  0.8500 |  0.5940 |
| h     |  0.8710 |  0.6190 |
| i     |  0.7660 |  0.5510 |
| j     |  0.9230 |  0.6510 |



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| Chain | Atom inclusion                                                                           | Q-score                                                                                  |
|-------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| k     |  0.7410 |  0.5810 |
| l     |  0.8630 |  0.6010 |
| m     |  0.8910 |  0.6270 |
| n     |  0.7640 |  0.5560 |
| o     |  0.7940 |  0.5830 |
| p     |  0.8700 |  0.6030 |
| q     |  0.7110 |  0.5160 |
| r     |  0.8380 |  0.5930 |
| s     |  0.8330 |  0.5840 |
| t     |  0.7540 |  0.5540 |
| u     |  0.8230 |  0.5860 |
| v     |  0.8510 |  0.6170 |
| w     |  0.9190 |  0.6320 |
| x     |  0.8580 |  0.6110 |