# Full wwPDB X-ray Structure Validation Report (i)

Oct 9, 2023 – 05:55 PM EDT

| | | |
|---|---|---|
| PDB ID | : | 7UCF |
| Title | : | Structure of the BG505 SOSIP.664 trimer in complex with neutralizing antibody Fab fragments 10-1074 and BG24 |
| Authors | : | Barnes, C.O.; Bjorkman, P.J. |
| Deposited on | : | 2022-03-16 |
| Resolution | : | 4.00 Å(reported) |

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

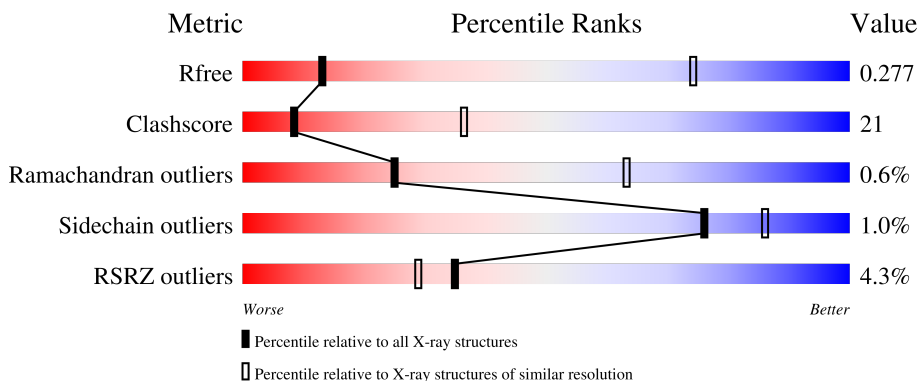| | | |
|---|---|---|
| MolProbity | : | 4.02b-467 |
| Mogul | : | 1.8.5 (274361), CSD as541be (2020) |
| Xtriage (Phenix) | : | 1.13 |
| EDS | : | 2.35.1 |
| Percentile statistics | : | 20191225.v01 (using entries in the PDB archive December 25th 2019) |
| Refmac | : | 5.8.0158 |
| CCP4 | : | 7.0.044 (Gargrove) |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.35.1 |

# 1   Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
*X-RAY DIFFRACTION*

The reported resolution of this entry is 4.00 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.
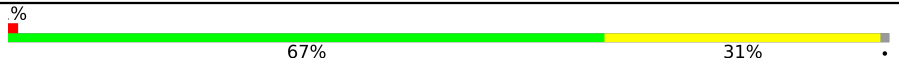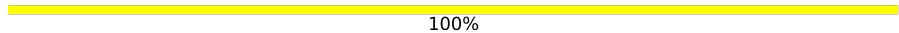
| Metric | Percentile Ranks | Value |
|--------|------------------|-------|
| Rfree | | 0.277 |
| Clashscore | | 21 |
| Ramachandran outliers | | 0.6% |
| Sidechain outliers | | 1.0% |
| RSRZ outliers | | 4.3% |

*Worse*                    *Better*

■ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
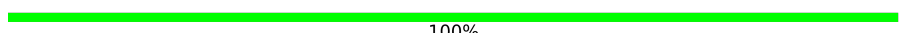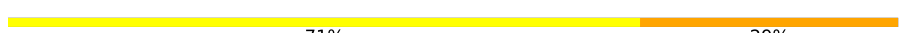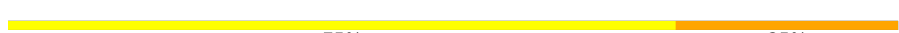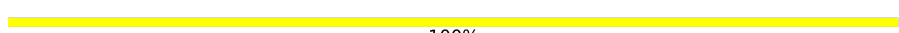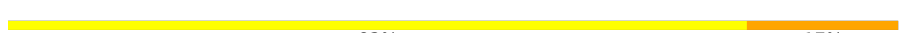
| Metric | Whole archive (#Entries) | Similar resolution (#Entries, resolution range(Å)) |
|--------|--------------------------|----------------------------------------------------|
| $R_{free}$ | 130704 | 1087 (4.30-3.70) |
| Clashscore | 141614 | 1148 (4.30-3.70) |
| Ramachandran outliers | 138981 | 1108 (4.30-3.70) |
| Sidechain outliers | 138945 | 1099 (4.30-3.70) |
| RSRZ outliers | 127900 | 1028 (4.34-3.66) |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=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 <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | B | 153 | 4% / 55% 34% · 10% |
| 2 | D | 234 | 8% / 49% 44% · 6% |
| 3 | E | 205 | 7% / 61% 37% ·· |
| 4 | G | 501 | 2% / 52% 34% · 10% |
| 5 | H | 243 | 5% / 63% 30% · 6% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 6 | L | 214 | 67% ... 31% |
| 7 | A | 2 | 100% |
| 8 | F | 2 | 50% ... 50% |
| 8 | V | 2 | 50% ... 50% |
| 8 | W | 2 | 100% |
| 9 | I | 5 | 80% ... 20% |
| 10 | J | 7 | 71% ... 29% |
| 11 | K | 4 | 75% ... 25% |
| 12 | M | 6 | 17% ... 50% ... 33% |
| 13 | N | 2 | 100% |
| 13 | O | 2 | 100% |
| 14 | P | 3 | 67% ... 33% |
| 14 | U | 3 | 33% ... 67% |
| 15 | Q | 4 | 50% ... 50% |
| 16 | R | 3 | 100% |
| 17 | S | 6 | 83% ... 17% |
| 18 | T | 7 | 86% ... 14% |
| 19 | X | 6 | 83% ... 17% |
| 20 | Y | 4 | 50% ... 50% |

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

| Mol | Type | Chain | Res | Chirality | Geometry | Clashes | Electron density |
|-----|------|-------|-----|-----------|----------|---------|------------------|
| 11 | MAN | K | 4 | - | - | - | X |
| 14 | NAG | P | 2 | - | - | - | X |
| 22 | FUC | G | 602 | - | - | X | X |

## 2 Entry composition ⓘ

There are 22 unique types of molecules in this entry. The entry contains 12078 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Envelope glycoprotein gp41.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 1 | B | 137 | Total<br>1089 | C<br>687 | N<br>190 | O<br>206 | S<br>6 | 0 | 0 | 0 |

There are 2 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------|-------------|
| B | 559 | PRO | ILE | conflict | UNP Q2N0S6 |
| B | 605 | CYS | THR | conflict | UNP Q2N0S6 |

- Molecule 2 is a protein called BG24 Fab heavy chain.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 2 | D | 220 | Total<br>1667 | C<br>1050 | N<br>289 | O<br>319 | S<br>9 | 0 | 0 | 0 |

- Molecule 3 is a protein called BG24 light chain.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 3 | E | 202 | Total<br>1514 | C<br>946 | N<br>255 | O<br>308 | S<br>5 | 0 | 0 | 0 |

- Molecule 4 is a protein called Envelope glycoprotein gp120.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| 4 | G | 451 | Total<br>3538 | C<br>2222 | N<br>625 | O<br>664 | S<br>27 | 0 | 0 | 0 |

There are 27 discrepancies between the modelled and reference sequences:

| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|----------------------|-------------|
| G | 6 | MET | - | initiating methionine | UNP Q2N0S6 |
| G | 7 | ASP | - | expression tag | UNP Q2N0S6 |

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| Chain | Residue | Modelled | Actual | Comment | Reference |
|-------|---------|----------|--------|---------|-----------|
| G | 8 | ALA | - | expression tag | UNP Q2N0S6 |
| G | 9 | MET | - | expression tag | UNP Q2N0S6 |
| G | 10 | LYS | - | expression tag | UNP Q2N0S6 |
| G | 11 | ARG | - | expression tag | UNP Q2N0S6 |
| G | 12 | GLY | - | expression tag | UNP Q2N0S6 |
| G | 13 | LEU | - | expression tag | UNP Q2N0S6 |
| G | 14 | CYS | - | expression tag | UNP Q2N0S6 |
| G | 15 | CYS | - | expression tag | UNP Q2N0S6 |
| G | 16 | VAL | - | expression tag | UNP Q2N0S6 |
| G | 17 | LEU | - | expression tag | UNP Q2N0S6 |
| G | 18 | LEU | - | expression tag | UNP Q2N0S6 |
| G | 19 | LEU | - | expression tag | UNP Q2N0S6 |
| G | 20 | CYS | - | expression tag | UNP Q2N0S6 |
| G | 21 | GLY | - | expression tag | UNP Q2N0S6 |
| G | 22 | ALA | - | expression tag | UNP Q2N0S6 |
| G | 23 | VAL | - | expression tag | UNP Q2N0S6 |
| G | 24 | PHE | - | expression tag | UNP Q2N0S6 |
| G | 25 | VAL | - | expression tag | UNP Q2N0S6 |
| G | 26 | SER | - | expression tag | UNP Q2N0S6 |
| G | 27 | PRO | - | expression tag | UNP Q2N0S6 |
| G | 28 | ALA | - | expression tag | UNP Q2N0S6 |
| G | 29 | GLY | - | expression tag | UNP Q2N0S6 |
| G | 31 | GLY | ALA | conflict | UNP Q2N0S6 |
| G | 332 | ASN | THR | conflict | UNP Q2N0S6 |
| G | 501 | CYS | ALA | conflict | UNP Q2N0S6 |

- Molecule 5 is a protein called 10-1074 Fab heavy chain.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 5 | H | 229 | 1744 | 1103 | 291 | 343 | 7 | 0 | 0 | 0 |

- Molecule 6 is a protein called 10-1074 Fab light chain.

| Mol | Chain | Residues | Atoms | | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---|---------|---------|-------|
| | | | Total | C | N | O | S | | | |
| 6 | L | 211 | 1607 | 1006 | 281 | 314 | 6 | 0 | 0 | 0 |

- Molecule 7 is an oligosaccharide called alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 7 | A | 2 | Total | C | N | O | 0 | 0 | 0 |
| | | | 24 | 14 | 1 | 9 | | | |

- Molecule 8 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-a cetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | F | 2 | Total | C | N | O | 0 | 0 | 0 |
| | | | 28 | 16 | 2 | 10 | | | |
| 8 | V | 2 | Total | C | N | O | 0 | 0 | 0 |
| | | | 28 | 16 | 2 | 10 | | | |
| 8 | W | 2 | Total | C | N | O | 0 | 0 | 0 |
| | | | 28 | 16 | 2 | 10 | | | |

- Molecule 9 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyran ose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-a cetamido-2-deoxy-beta-D-glucopyranose.
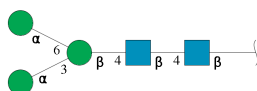


| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 9 | I | 5 | Total | C | N | O | 0 | 0 | 0 |
| | | | 61 | 34 | 2 | 25 | | | |

- Molecule 10 is an oligosaccharide called beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]b eta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2 -deoxy-beta-D-glucopyranose.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | J | 7 | Total 86 | C 48 | N 3 | O 35 | 0 | 0 | 0 |

- Molecule 11 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-beta-D-mannopyran ose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu copyranose.



| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | K | 4 | Total 50 | C 28 | N 2 | O 20 | 0 | 0 | 0 |

- Molecule 12 is an oligosaccharide called alpha-D-mannopyranose-(1-6)-alpha-D-mannopyra nose-(1-6)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy -beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | M | 6 | Total 72 | C 40 | N 2 | O 30 | 0 | 0 | 0 |

- Molecule 13 is an oligosaccharide called alpha-D-mannopyranose-(1-2)-alpha-D-mannopyra nose.



| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 13 | N | 2 | Total 22 | C 12 | O 10 | 0 | 0 | 0 |
| 13 | O | 2 | Total 22 | C 12 | O 10 | 0 | 0 | 0 |

- Molecule 14 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | P | 3 | Total 39 | C 22 | N 2 | O 15 | 0 | 0 | 0 |
| 14 | U | 3 | Total 39 | C 22 | N 2 | O 15 | 0 | 0 | 0 |

- Molecule 15 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-beta-D-mannopyran
  ose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu
  copyranose.
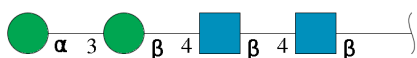


| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | Q | 4 | Total 50 | C 28 | N 2 | O 20 | 0 | 0 | 0 |

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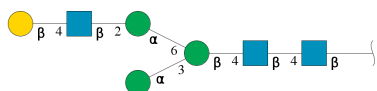  acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.



| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | R | 3 | Total 42 | C 24 | N 3 | O 15 | 0 | 0 | 0 |

- Molecule 17 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyra
  nose-(1-6)]alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy
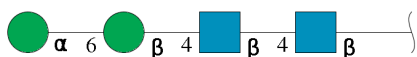  -beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.
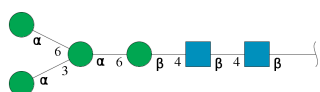
| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---------|---------|-------|
| 17 | S | 6 | Total 72 | C 40 | N 2 | O 30 | 0 | 0 | 0 |

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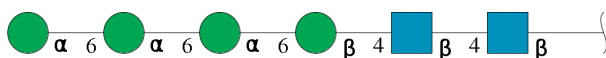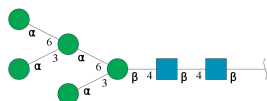


| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---------|---------|-------|
| 18 | T | 7 | Total 83 | C 46 | N 2 | O 35 | 0 | 0 | 0 |

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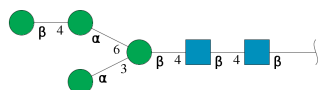


| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---------|---------|-------|
| 19 | X | 6 | Total 72 | C 40 | N 2 | O 30 | 0 | 0 | 0 |

- Molecule 20 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[alpha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucop yranose.
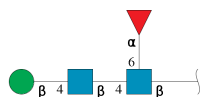


| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf | Trace |
|-----|-------|----------|-------|---|---|---|---------|---------|-------|
| 20 | Y | 4 | Total 49 | C 28 | N 2 | O 19 | 0 | 0 | 0 |

- Molecule 21 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).
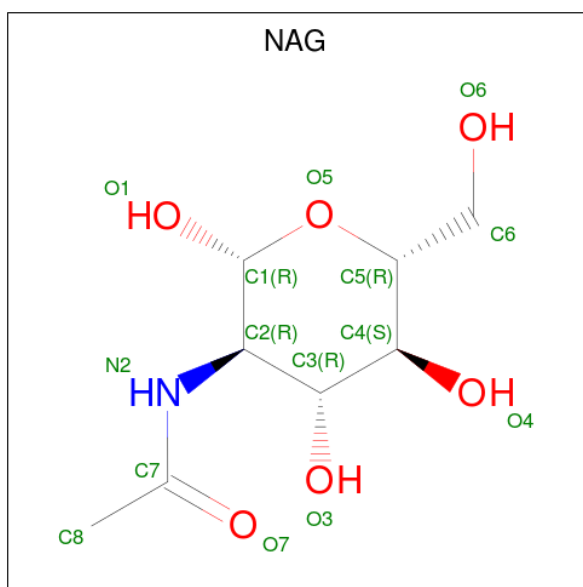
| Mol | Chain | Residues | Atoms | | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---|---------|---------|
| 21 | B | 1 | Total | C | N | O | 0 | 0 |
| | | | 14 | 8 | 1 | 5 | | |
| 21 | G | 1 | Total | C | N | O | 0 | 0 |
| | | | 14 | 8 | 1 | 5 | | |
| 21 | G | 1 | Total | C | N | O | 0 | 0 |
| | | | 14 | 8 | 1 | 5 | | |

• Molecule 22 is alpha-L-fucopyranose (three-letter code: FUC) (formula: $C_6H_{12}O_5$).
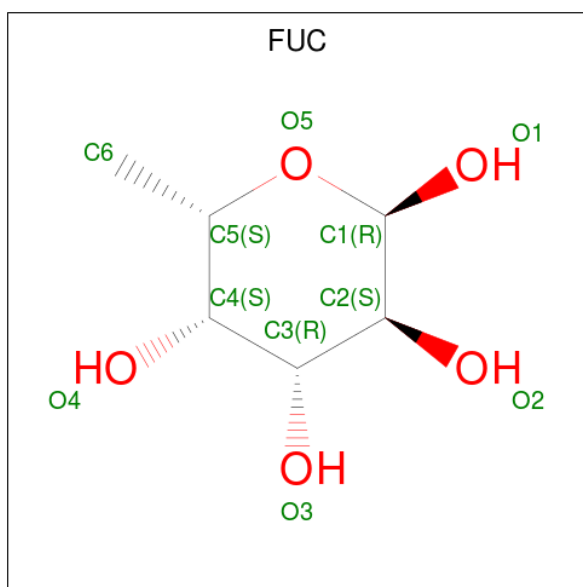


| Mol | Chain | Residues | Atoms | | | ZeroOcc | AltConf |
|-----|-------|----------|-------|---|---|---------|---------|
| 22 | G | 1 | Total | C | O | 0 | 0 |
| | | | 10 | 6 | 4 | | |

# 3 Residue-property plots ⓘ

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

• Molecule 1: Envelope glycoprotein gp41



• Molecule 2: BG24 Fab heavy chain



• Molecule 3: BG24 light chain

Q177 Y184 S185 C186 T189 H190 E191 G192 S193 T198 E203 C204 SER

● Molecule 4: Envelope glycoprotein gp120

Chain G:

MET ASP ALA MET LYS ARG GLY LEU CYS CYS VAL LEU LEU LEU CYS GLY ALA VAL PHE VAL SER PRO ALA GLY ALA GLY E32 N33 L34 W35 V36 T37 D47 T50 T51 L52 F53 C54 A55 S56 D57 A58 K59 A60 Y61 E62 T63 E64 N67 V68 W69 A70 T71 H72 V75 P76

T77 Q82 E83 I84 H85 L86 E87 N88 V89 E92 F93 N99 M100 V101 E102 Q103 M104 I108 I109 S110 L111 W112 L116 K117 P118 C119 V120 K121 L122 T123 P124 L125 C126 V127 V134 T135 T139 ASP ASP MET ARG G152 E153 L154 K155 N156 C157 S158 F159 N160 M161 K168

K169 Q170 K171 V172 Y173 S174 L175 F176 Y177 R178 N185 GLU ASN GLN GLY ASN ARG SER ASN ASN S187 N188 K189 R192 L193 C196 I201 C205 P206 K207 V208 S209 F210 E211 P212 I213 P214 I215 H216 Y217 P220 A221 G222 F223 P238 Q246 C247 T248 H249 G250 I251 K252

P253 V254 V255 Q258 L259 L260 L261 N262 G263 A266 V270 S274 I277 K282 N283 N289 T290 P291 V292 Q293 I294 N295 C296 T297 R298 P299 N300 N301 K305 F317 Y318 A319 D321A D325 I326 R327 A328 A329 H330 T337 W338 K344 Q348 L349 I358

I359 R360 F361 A362 L369 E370 V371 C378 G379 G380 E381 F382 F383 L390 W395 N398 THR SER VAL GLN GLY SER ASN SER THR GLY S410 N411 I414 T415 L416 P417 C418 R419 I420 K421 Q422 I423 I424 N425 M426 W427 Q428 R429 Y435 A436 I439 Q440 G441 V442 I443 R444

I449 L452 I453 L454 T465 R456 D457 G458 T461 N462 S463 T464 T465 E466 T467 F468 R469 G473 D474 M475 R476 D477 N478 W479 R480 S481 E482 L483 Y484 K485 Y486 K487 I491 L494 G495 V496 A497 P498 T499 R500 C501 K502 R503 R504 V505 V506 G507 ARG

● Molecule 5: 10-1074 Fab heavy chain

Chain H:

GLN V2 Q3 L4 P9 G10 L11 V12 K13 S19 V20 T21 C22 S23 V24 S25 G26 D27 S28 M29 Y32 T35 Q39 S40 P41 E55 L63 R66 R71 N76 Q77 L80 K81 L82 N83 S84 V85 T86 P87 A91 V92 Y93 Y94 T97 R100 G101

Q102 R103 I104 Y105 F113 F114 Y115 Y116 Y117 S118 M119 D120 V121 V128 T129 V130 S131 S132 P138 S139 V140 F141 P142 P145 K148 SER THR SER GLY GLY T154 L157 K162 D163 Y164 E167 P168 W173 L178 T184 F185 P186 A187 Q190 L197 S198 S199

V200 V201 T202 V203 P204 S205 S206 S207 L208 Y213 V217 N223 T224 K225 K228 R229 V230 E231 P232 C235 ASP LYS HIS HIS HIS HIS HIS HIS

● Molecule 6: 10-1074 Fab light chain

Chain L:

SER TYR V8 V13 I21 R25 L28 G29 S30 Q34 W35 Y36 Q37 H38 R39 P40 L46 L47 I48 Y49 Q52 D53 R54 P55 F62 I68 N69 F70 G71 T75 L76 T77 V81 E86 A87 C91 H92 M93 W94 D95 S96 R97 S98 S103 L110

Q115 P116 K117 L124 F125 P126 P127 S128 S129 Q133 L139 V140 C141 L142 Y147 V151 T152 V153 A154 W155 D158 V166 K173 Q174 S175 N176 N177 S183 Y184 L185 W192 T203 H204 E205 A214 P215 T216 E217 C218 SER

• Molecule 7: alpha-L-fucopyranose-(1-6)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain A:                                          100%

NAG1 FUC2

• Molecule 8: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:              50%                          50%

NAG1 NAG2

• Molecule 8: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain V:              50%                          50%

NAG1 NAG2

• Molecule 8: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:                                          100%

NAG1 NAG2

• Molecule 9: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain I:                              80%                    20%

NAG1 NAG2 BMA3 MAN4 MAN5

• Molecule 10: beta-D-galactopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-2)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyranose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:                          71%                        29%

NAG1 NAG2 BMA3 MAN4 NAG5 GAL6 MAN7

• Molecule 11: alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K: 75% 25%

NAG1 NAG2 BMA3 MAN4

• Molecule 12: alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-alpha-D-mannopyranose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M: 17% 50% 33%

NAG1 NAG2 BMA3 MAN4 MAN5 MAN6

• Molecule 13: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose

Chain N: 100%

MAN1 MAN2

• Molecule 13: alpha-D-mannopyranose-(1-2)-alpha-D-mannopyranose

Chain O: 100%

MAN1 MAN2

• Molecule 14: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain P: 67% 33%

NAG1 NAG2 BMA3

• Molecule 14: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U: 33% 67%

NAG1 NAG2 BMA3

• Molecule 15: alpha-D-mannopyranose-(1-3)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q: 50% 50%

NAG1 NAG2 BMA3 MAN4

• Molecule 16: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glu copyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R: 100%

NAG1 NAG2 NAG3

• Molecule 17: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]alpha-D-mannopyra nose-(1-6)-beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-aceta mido-2-deoxy-beta-D-glucopyranose

Chain S: 83% 17%
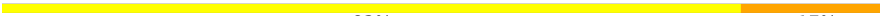
NAG1 NAG2 BMA3 MAN4 MAN5 MAN6

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

Chain T: 86% 14%

NAG1 NAG2 BMA3 MAN4 MAN5 MAN6 MAN7

• Molecule 19: beta-D-mannopyranose-(1-4)-alpha-D-mannopyranose-(1-6)-[alpha-D-mannopyran ose-(1-3)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetam ido-2-deoxy-beta-D-glucopyranose

Chain X: 83% 17%

NAG1 NAG2 BMA3 MAN4 BMA5 MAN6

• Molecule 20: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-[al pha-L-fucopyranose-(1-6)]2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Y: 50% 50%

NAG1 NAG2 BMA3 FUC4

# 4 Data and refinement statistics ⓘ

| Property | Value | Source |
|---|---|---|
| Space group | H 3 | Depositor |
| Cell constants<br>a, b, c, $\alpha$, $\beta$, $\gamma$ | 208.96Å 208.96Å 155.91Å<br>90.00° 90.00° 120.00° | Depositor |
| Resolution (Å) | 39.49 – 4.00<br>39.49 – 3.80 | Depositor<br>EDS |
| % Data completeness<br>(in resolution range) | 99.4 (39.49-4.00)<br>99.7 (39.49-3.80) | Depositor<br>EDS |
| $R_{merge}$ | 0.14 | Depositor |
| $R_{sym}$ | (Not available) | Depositor |
| $< I/\sigma(I) >$ [1] | 1.09 (at 3.76Å) | Xtriage |
| Refinement program | PHENIX 1.19.2_4158 | Depositor |
| R, $R_{free}$ | 0.245 , 0.277<br>0.247 , 0.277 | Depositor<br>DCC |
| $R_{free}$ test set | 1250 reflections (5.02%) | wwPDB-VP |
| Wilson B-factor (Å$^2$) | 191.6 | Xtriage |
| Anisotropy | 0.090 | Xtriage |
| Bulk solvent $k_{sol}$(e/Å$^3$), $B_{sol}$(Å$^2$) | 0.29 , 197.0 | EDS |
| L-test for twinning[2] | $< \|L\| > = 0.45, < L^2 > = 0.28$ | Xtriage |
| Estimated twinning fraction | 0.059 for h,-h-k,-l | Xtriage |
| $F_o$,$F_c$ correlation | 0.95 | EDS |
| Total number of atoms | 12078 | wwPDB-VP |
| Average B, all atoms (Å$^2$) | 264.0 | wwPDB-VP |

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.57% of the height of the origin peak. No significant pseudotranslation is detected.*

---

[1]Intensities estimated from amplitudes.

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

# 5 Model quality ⓘ

## 5.1 Standard geometry ⓘ

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

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 | B | 0.61 | 0/1107 | 1.02 | 4/1501 (0.3%) |
| 2 | D | 0.60 | 0/1709 | 0.79 | 0/2330 |
| 3 | E | 0.52 | 0/1551 | 0.68 | 0/2114 |
| 4 | G | 0.95 | 6/3611 (0.2%) | 1.27 | 27/4903 (0.6%) |
| 5 | H | 0.77 | 2/1787 (0.1%) | 1.03 | 4/2438 (0.2%) |
| 6 | L | 0.64 | 0/1649 | 0.96 | 1/2250 (0.0%) |
| All | All | 0.75 | 8/11414 (0.1%) | 1.03 | 36/15536 (0.2%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 2 | D | 0 | 1 |
| 4 | G | 0 | 3 |
| All | All | 0 | 4 |

All (8) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 5 | H | 168 | PRO | N-CD | -8.34 | 1.36 | 1.47 |
| 4 | G | 62 | GLU | CG-CD | 8.19 | 1.64 | 1.51 |
| 4 | G | 62 | GLU | CA-CB | -7.53 | 1.37 | 1.53 |
| 4 | G | 205 | CYS | CB-SG | -6.71 | 1.70 | 1.82 |
| 4 | G | 418 | CYS | CB-SG | -6.31 | 1.71 | 1.82 |
| 4 | G | 67 | ASN | CB-CG | 6.06 | 1.65 | 1.51 |
| 4 | G | 112 | TRP | CB-CG | -5.15 | 1.41 | 1.50 |
| 5 | H | 128 | VAL | CB-CG2 | 5.02 | 1.63 | 1.52 |

All (36) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 4 | G | 62 | GLU | OE1-CD-OE2 | 19.34 | 146.51 | 123.30 |
| 4 | G | 62 | GLU | CG-CD-OE2 | -15.47 | 87.36 | 118.30 |
| 6 | L | 38 | HIS | C-N-CA | -8.45 | 100.57 | 121.70 |
| 1 | B | 576 | LEU | CA-CB-CG | -8.14 | 96.58 | 115.30 |
| 4 | G | 255 | VAL | CG1-CB-CG2 | 7.51 | 122.91 | 110.90 |
| 4 | G | 252 | LYS | CD-CE-NZ | 7.35 | 128.61 | 111.70 |
| 5 | H | 197 | LEU | CA-CB-CG | 7.30 | 132.09 | 115.30 |
| 4 | G | 154 | LEU | CB-CG-CD2 | -7.01 | 99.09 | 111.00 |
| 4 | G | 154 | LEU | CB-CG-CD1 | 6.99 | 122.89 | 111.00 |
| 1 | B | 520 | LEU | CA-CB-CG | 6.90 | 131.17 | 115.30 |
| 4 | G | 62 | GLU | CA-CB-CG | -6.89 | 98.24 | 113.40 |
| 4 | G | 371 | VAL | CG1-CB-CG2 | -6.83 | 99.96 | 110.90 |
| 1 | B | 555 | LEU | CA-CB-CG | 6.83 | 131.01 | 115.30 |
| 4 | G | 116 | LEU | CA-CB-CG | -6.67 | 99.97 | 115.30 |
| 4 | G | 259 | LEU | CA-CB-CG | 6.62 | 130.52 | 115.30 |
| 1 | B | 574 | LYS | CD-CE-NZ | 6.54 | 126.74 | 111.70 |
| 5 | H | 80 | LEU | CB-CG-CD2 | -6.32 | 100.26 | 111.00 |
| 5 | H | 39 | GLN | C-N-CA | -6.26 | 106.06 | 121.70 |
| 4 | G | 205 | CYS | CA-CB-SG | -6.24 | 102.76 | 114.00 |
| 4 | G | 421 | LYS | CD-CE-NZ | 6.15 | 125.85 | 111.70 |
| 4 | G | 255 | VAL | CA-CB-CG1 | -5.98 | 101.92 | 110.90 |
| 4 | G | 428 | GLN | CA-CB-CG | -5.87 | 100.48 | 113.40 |
| 4 | G | 483 | LEU | CA-CB-CG | -5.83 | 101.90 | 115.30 |
| 4 | G | 321(A) | ASP | CB-CG-OD1 | 5.71 | 123.44 | 118.30 |
| 4 | G | 369 | LEU | CB-CG-CD2 | 5.71 | 120.70 | 111.00 |
| 5 | H | 4 | LEU | CA-CB-CG | 5.64 | 128.26 | 115.30 |
| 4 | G | 452 | LEU | CB-CG-CD2 | -5.52 | 101.62 | 111.00 |
| 4 | G | 369 | LEU | CB-CA-C | 5.46 | 120.58 | 110.20 |
| 4 | G | 327 | ARG | CG-CD-NE | -5.38 | 100.50 | 111.80 |
| 4 | G | 52 | LEU | CB-CG-CD1 | 5.36 | 120.10 | 111.00 |
| 4 | G | 193 | LEU | CB-CG-CD1 | -5.29 | 102.00 | 111.00 |
| 4 | G | 260 | LEU | CB-CG-CD2 | 5.25 | 119.92 | 111.00 |
| 4 | G | 435 | TYR | CB-CG-CD2 | -5.22 | 117.87 | 121.00 |
| 4 | G | 34 | LEU | CA-CB-CG | 5.20 | 127.25 | 115.30 |
| 4 | G | 292 | VAL | CG1-CB-CG2 | 5.11 | 119.08 | 110.90 |
| 4 | G | 193 | LEU | CA-CB-CG | -5.07 | 103.63 | 115.30 |

There are no chirality outliers.

All (4) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 2 | D | 156 | PHE | Peptide |
| 4 | G | 301 | ASN | Mainchain |

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| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|-------|
| 4 | G | 421 | LYS | Mainchain |
| 4 | G | 436 | ALA | Mainchain |

## 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 | B | 1089 | 0 | 1071 | 49 | 0 |
| 2 | D | 1667 | 0 | 1628 | 106 | 0 |
| 3 | E | 1514 | 0 | 1458 | 76 | 0 |
| 4 | G | 3538 | 0 | 3474 | 182 | 0 |
| 5 | H | 1744 | 0 | 1710 | 52 | 1 |
| 6 | L | 1607 | 0 | 1550 | 49 | 0 |
| 7 | A | 24 | 0 | 22 | 0 | 0 |
| 8 | F | 28 | 0 | 25 | 0 | 0 |
| 8 | V | 28 | 0 | 25 | 0 | 0 |
| 8 | W | 28 | 0 | 25 | 0 | 0 |
| 9 | I | 61 | 0 | 52 | 1 | 0 |
| 10 | J | 86 | 0 | 73 | 3 | 0 |
| 11 | K | 50 | 0 | 43 | 4 | 0 |
| 12 | M | 72 | 0 | 61 | 2 | 0 |
| 13 | N | 22 | 0 | 19 | 1 | 1 |
| 13 | O | 22 | 0 | 19 | 3 | 0 |
| 14 | P | 39 | 0 | 34 | 1 | 0 |
| 14 | U | 39 | 0 | 33 | 1 | 0 |
| 15 | Q | 50 | 0 | 43 | 1 | 0 |
| 16 | R | 42 | 0 | 37 | 0 | 0 |
| 17 | S | 72 | 0 | 61 | 1 | 0 |
| 18 | T | 83 | 0 | 70 | 3 | 0 |
| 19 | X | 72 | 0 | 61 | 2 | 0 |
| 20 | Y | 49 | 0 | 43 | 4 | 0 |
| 21 | B | 14 | 0 | 13 | 1 | 0 |
| 21 | G | 28 | 0 | 26 | 0 | 0 |
| 22 | G | 10 | 0 | 10 | 6 | 0 |
| All | All | 12078 | 0 | 11686 | 493 | 1 |

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 21.

All (493) 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) |
|---|---|---|---|
| 4:G:62:GLU:CG | 4:G:63:THR:H | 1.32 | 1.37 |
| 4:G:52:LEU:HD23 | 4:G:53:PHE:N | 1.55 | 1.20 |
| 4:G:62:GLU:HG2 | 4:G:63:THR:N | 1.10 | 1.10 |
| 4:G:298:ARG:NH2 | 4:G:441:GLY:O | 1.92 | 1.03 |
| 2:D:2:VAL:H | 2:D:26:GLY:HA3 | 1.27 | 1.00 |
| 4:G:52:LEU:HD23 | 4:G:53:PHE:H | 0.85 | 0.98 |
| 4:G:55:ALA:HB3 | 4:G:216:HIS:HB2 | 1.51 | 0.93 |
| 4:G:474:ASP:OD1 | 4:G:476:ARG:HG3 | 1.72 | 0.90 |
| 1:B:529:THR:HG23 | 20:Y:1:NAG:H81 | 1.53 | 0.88 |
| 3:E:50:ARG:HD2 | 3:E:56:ASP:HA | 1.56 | 0.87 |
| 6:L:37:GLN:HB2 | 6:L:47:LEU:HD11 | 1.56 | 0.86 |
| 2:D:179:VAL:HB | 3:E:155:THR:HG22 | 1.58 | 0.85 |
| 4:G:52:LEU:CD2 | 4:G:53:PHE:H | 1.80 | 0.85 |
| 4:G:52:LEU:CD2 | 4:G:53:PHE:N | 2.40 | 0.84 |
| 2:D:178:ALA:HB2 | 2:D:188:LEU:HD23 | 1.61 | 0.83 |
| 4:G:62:GLU:CG | 4:G:63:THR:N | 2.03 | 0.83 |
| 1:B:585:ARG:NH2 | 4:G:491:ILE:O | 2.12 | 0.82 |
| 1:B:553:SER:H | 1:B:554:ASN:HA | 1.45 | 0.81 |
| 4:G:117:LYS:O | 4:G:121:LYS:NZ | 2.11 | 0.81 |
| 3:E:10:VAL:HG11 | 3:E:18:VAL:HG13 | 1.61 | 0.81 |
| 3:E:26:TYR:HA | 10:J:2:NAG:H83 | 1.61 | 0.81 |
| 2:D:81:MET:HG2 | 2:D:82:GLN:N | 1.96 | 0.81 |
| 18:T:2:NAG:H81 | 18:T:5:MAN:H2 | 1.64 | 0.80 |
| 3:E:44:ILE:HG13 | 3:E:49:ARG:O | 1.82 | 0.79 |
| 2:D:153:LYS:NZ | 2:D:181:GLN:OE1 | 2.15 | 0.79 |
| 5:H:3:GLN:N | 5:H:25:SER:O | 2.14 | 0.78 |
| 1:B:610:TRP:HE3 | 4:G:36:VAL:HG22 | 1.50 | 0.76 |
| 6:L:166:VAL:HG22 | 6:L:185:LEU:HD13 | 1.68 | 0.75 |
| 3:E:46:GLU:HG2 | 3:E:47:VAL:H | 1.50 | 0.75 |
| 2:D:33:TYR:CE1 | 2:D:52:ASN:HB3 | 2.21 | 0.74 |
| 5:H:163:ASP:OD1 | 5:H:190:GLN:NE2 | 2.18 | 0.73 |
| 6:L:152:THR:HB | 6:L:203:THR:HB | 1.69 | 0.73 |
| 4:G:59:LYS:HE3 | 4:G:59:LYS:HA | 1.69 | 0.73 |
| 5:H:162:LYS:NZ | 5:H:163:ASP:OD2 | 2.21 | 0.73 |
| 2:D:156:PHE:CD1 | 2:D:157:PRO:HD3 | 2.23 | 0.73 |
| 6:L:214:ALA:HB3 | 6:L:217:GLU:HG3 | 1.71 | 0.72 |
| 6:L:68:ILE:O | 6:L:69:ASN:ND2 | 2.23 | 0.72 |
| 3:E:29:LEU:HD22 | 3:E:87:PHE:HD2 | 1.55 | 0.71 |
| 5:H:145:PRO:HD3 | 5:H:157:LEU:HB3 | 1.72 | 0.71 |
| 1:B:578:ALA:HB1 | 4:G:220:PRO:HB3 | 1.72 | 0.71 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:G:476:ARG:HA | 4:G:479:TRP:CD1 | 2.26 | 0.71 |
| 1:B:538:THR:O | 1:B:542:ARG:HG3 | 1.91 | 0.71 |
| 3:E:45:TYR:O | 3:E:49:ARG:HB2 | 1.92 | 0.70 |
| 4:G:101:VAL:HG12 | 4:G:476:ARG:HB3 | 1.72 | 0.70 |
| 2:D:99:GLN:HB2 | 2:D:102:LEU:HD12 | 1.74 | 0.70 |
| 1:B:632:ASP:HA | 1:B:635:ILE:HG12 | 1.72 | 0.70 |
| 2:D:86:LEU:HD22 | 2:D:121:VAL:HG21 | 1.74 | 0.70 |
| 5:H:97:THR:HG22 | 5:H:121:VAL:HG22 | 1.73 | 0.70 |
| 1:B:571:TRP:O | 4:G:53:PHE:HE1 | 1.75 | 0.70 |
| 5:H:138:PRO:HB3 | 5:H:164:TYR:HB3 | 1.73 | 0.70 |
| 4:G:381:GLU:HG2 | 4:G:439:ILE:HG12 | 1.74 | 0.69 |
| 4:G:456:ARG:HD3 | 4:G:466:GLU:OE2 | 1.92 | 0.69 |
| 6:L:129:SER:O | 6:L:133:GLN:HG3 | 1.94 | 0.68 |
| 5:H:164:TYR:OH | 5:H:167:GLU:OE2 | 2.11 | 0.67 |
| 4:G:456:ARG:NE | 4:G:457:ASP:O | 2.28 | 0.67 |
| 2:D:60:TYR:HB2 | 2:D:65:GLN:HG3 | 1.77 | 0.67 |
| 2:D:91:THR:HB | 2:D:121:VAL:H | 1.60 | 0.67 |
| 5:H:2:VAL:HG22 | 5:H:27:ASP:HB2 | 1.76 | 0.67 |
| 4:G:158:SER:HB3 | 22:G:602:FUC:H62 | 1.77 | 0.67 |
| 3:E:44:ILE:HA | 3:E:51:PRO:HD3 | 1.76 | 0.67 |
| 5:H:4:LEU:HB2 | 5:H:22:CYS:SG | 2.34 | 0.66 |
| 2:D:11:VAL:HG22 | 2:D:120:THR:HB | 1.78 | 0.66 |
| 2:D:33:TYR:CD1 | 2:D:52:ASN:HB3 | 2.30 | 0.66 |
| 3:E:50:ARG:NH1 | 3:E:54:VAL:O | 2.29 | 0.66 |
| 3:E:111:PHE:HB2 | 3:E:126:VAL:HB | 1.78 | 0.66 |
| 2:D:71:THR:O | 2:D:80:TYR:N | 2.28 | 0.66 |
| 4:G:119:CYS:SG | 4:G:205:CYS:N | 2.69 | 0.65 |
| 2:D:90:ASP:O | 2:D:94:TYR:OH | 2.13 | 0.65 |
| 3:E:87:PHE:HB3 | 3:E:88:GLU:HG3 | 1.77 | 0.65 |
| 3:E:64:GLY:HA3 | 10:J:5:NAG:H4 | 1.79 | 0.65 |
| 4:G:92:GLU:HA | 4:G:238:PRO:HA | 1.78 | 0.65 |
| 2:D:111:ASP:OD1 | 2:D:111:ASP:N | 2.30 | 0.65 |
| 4:G:58:ALA:HB2 | 4:G:76:PRO:HB3 | 1.79 | 0.65 |
| 2:D:129:PRO:HB3 | 2:D:155:TYR:HB3 | 1.79 | 0.64 |
| 1:B:528:SER:HB3 | 20:Y:4:FUC:H4 | 1.77 | 0.64 |
| 6:L:49:TYR:O | 6:L:53:ASP:HB2 | 1.96 | 0.64 |
| 2:D:109:PRO:HG3 | 3:E:29:LEU:HG | 1.79 | 0.64 |
| 1:B:522:PHE:H | 4:G:84:ILE:HD13 | 1.63 | 0.63 |
| 20:Y:1:NAG:H83 | 20:Y:1:NAG:H3 | 1.80 | 0.63 |
| 4:G:55:ALA:CB | 4:G:216:HIS:HB2 | 2.25 | 0.63 |
| 2:D:7:SER:HB3 | 2:D:21:SER:OG | 1.99 | 0.63 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:G:61:TYR:CG | 4:G:61:TYR:O | 2.51 | 0.63 |
| 4:G:68:VAL:HG13 | 4:G:111:LEU:HD22 | 1.81 | 0.63 |
| 4:G:292:VAL:HG12 | 4:G:337:THR:CG2 | 2.27 | 0.63 |
| 3:E:13:SER:O | 3:E:16:GLN:HB2 | 1.98 | 0.62 |
| 2:D:51:MET:HE3 | 2:D:72:ARG:HB3 | 1.81 | 0.62 |
| 4:G:217:TYR:O | 4:G:247:CYS:HA | 2.00 | 0.62 |
| 4:G:301:ASN:HD22 | 18:T:1:NAG:H83 | 1.63 | 0.62 |
| 4:G:358:ILE:HB | 4:G:465:THR:HB | 1.82 | 0.62 |
| 3:E:62:LYS:HA | 3:E:67:ALA:HA | 1.82 | 0.62 |
| 2:D:54:ARG:HG3 | 4:G:428:GLN:HE21 | 1.64 | 0.62 |
| 4:G:62:GLU:HG2 | 4:G:63:THR:CA | 2.23 | 0.61 |
| 6:L:25:ARG:NE | 6:L:93:MET:HB3 | 2.16 | 0.61 |
| 2:D:13:LYS:HG2 | 2:D:123:SER:HA | 1.82 | 0.61 |
| 2:D:108:TYR:HB3 | 3:E:29:LEU:HD21 | 1.83 | 0.61 |
| 4:G:104:MET:O | 4:G:108:ILE:HG13 | 2.00 | 0.61 |
| 5:H:97:THR:CG2 | 5:H:121:VAL:HG22 | 2.29 | 0.61 |
| 1:B:638:TYR:HD2 | 1:B:641:ILE:HD12 | 1.66 | 0.61 |
| 2:D:47:TRP:CZ3 | 4:G:458:GLY:HA3 | 2.36 | 0.61 |
| 5:H:28:SER:OG | 5:H:29:MET:N | 2.34 | 0.60 |
| 6:L:35:TRP:CZ3 | 6:L:91:CYS:HB2 | 2.37 | 0.60 |
| 2:D:39:GLN:OE1 | 3:E:34:GLN:NE2 | 2.24 | 0.60 |
| 5:H:105:TYR:CE1 | 6:L:96:SER:HB2 | 2.36 | 0.60 |
| 4:G:210:PHE:HD1 | 4:G:380:GLY:HA2 | 1.66 | 0.60 |
| 6:L:92:HIS:CE1 | 6:L:94:TRP:HE1 | 2.19 | 0.60 |
| 5:H:102:GLN:HB3 | 12:M:6:MAN:H5 | 1.84 | 0.60 |
| 3:E:22:CYS:O | 3:E:67:ALA:N | 2.34 | 0.59 |
| 4:G:266:ALA:O | 4:G:289:ASN:HA | 2.02 | 0.59 |
| 6:L:86:GLU:HG3 | 6:L:110:LEU:O | 2.01 | 0.59 |
| 2:D:88:SER:O | 2:D:91:THR:HG22 | 2.02 | 0.59 |
| 15:Q:3:BMA:H2 | 15:Q:4:MAN:H3 | 1.83 | 0.59 |
| 2:D:51:MET:HA | 2:D:57:GLY:O | 2.02 | 0.59 |
| 4:G:252:LYS:HD2 | 4:G:262:ASN:O | 2.02 | 0.59 |
| 4:G:205:CYS:O | 4:G:208:VAL:HG22 | 2.03 | 0.59 |
| 4:G:212:PRO:HG3 | 4:G:254:VAL:HG22 | 1.84 | 0.59 |
| 2:D:133:PRO:HD3 | 2:D:219:LYS:HG2 | 1.84 | 0.58 |
| 3:E:44:ILE:HD11 | 3:E:48:ASN:HA | 1.85 | 0.58 |
| 4:G:421:LYS:HE2 | 4:G:423:ILE:O | 2.03 | 0.58 |
| 2:D:12:LYS:O | 2:D:121:VAL:HA | 2.04 | 0.58 |
| 5:H:217:VAL:O | 5:H:225:LYS:HA | 2.04 | 0.58 |
| 4:G:410:SER:OG | 4:G:411:ASN:N | 2.37 | 0.58 |
| 5:H:223:ASN:OD1 | 5:H:225:LYS:HE3 | 2.04 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 2:D:56:GLY:HA3 | 2:D:72:ARG:NH1 | 2.18 | 0.58 |
| 4:G:122:LEU:HD22 | 4:G:125:LEU:HD23 | 1.86 | 0.57 |
| 4:G:82:GLN:O | 4:G:84:ILE:HG13 | 2.04 | 0.57 |
| 1:B:642:ILE:O | 1:B:646:LEU:HG | 2.04 | 0.57 |
| 1:B:529:THR:HA | 1:B:626:MET:O | 2.03 | 0.57 |
| 4:G:296:CYS:O | 4:G:444:ARG:HA | 2.03 | 0.57 |
| 2:D:99:GLN:HA | 2:D:111:ASP:OD1 | 2.05 | 0.57 |
| 1:B:610:TRP:CD2 | 4:G:498:PRO:HB3 | 2.40 | 0.57 |
| 4:G:390:LEU:HD23 | 4:G:414:ILE:HD12 | 1.87 | 0.57 |
| 4:G:101:VAL:HG11 | 4:G:480:ARG:HG3 | 1.87 | 0.56 |
| 2:D:134:LEU:N | 2:D:149:GLY:O | 2.38 | 0.56 |
| 3:E:32:TYR:HD1 | 3:E:42:LEU:HA | 1.69 | 0.56 |
| 1:B:522:PHE:CE1 | 1:B:540:GLN:HA | 2.41 | 0.56 |
| 4:G:112:TRP:CH2 | 4:G:426:MET:SD | 2.98 | 0.56 |
| 2:D:181:GLN:HB2 | 2:D:185:LEU:O | 2.06 | 0.56 |
| 4:G:69:TRP:HA | 4:G:111:LEU:HD11 | 1.88 | 0.56 |
| 4:G:160:ASN:HA | 4:G:170:GLN:O | 2.06 | 0.56 |
| 3:E:57:ARG:HH22 | 3:E:75:ARG:CZ | 2.19 | 0.56 |
| 3:E:32:TYR:HE1 | 3:E:42:LEU:HD13 | 1.70 | 0.55 |
| 3:E:32:TYR:CD1 | 3:E:42:LEU:HA | 2.41 | 0.55 |
| 4:G:53:PHE:HE2 | 4:G:75:VAL:HG22 | 1.71 | 0.55 |
| 4:G:69:TRP:HE3 | 4:G:111:LEU:HD13 | 1.71 | 0.55 |
| 2:D:71:THR:OG1 | 2:D:80:TYR:HB2 | 2.05 | 0.55 |
| 2:D:93:VAL:HG22 | 2:D:118:MET:SD | 2.47 | 0.55 |
| 4:G:499:THR:HG23 | 4:G:501:CYS:H | 1.69 | 0.55 |
| 4:G:174:SER:HB3 | 4:G:176:PHE:CZ | 2.41 | 0.55 |
| 5:H:100:ARG:HG3 | 5:H:117:TYR:CZ | 2.41 | 0.55 |
| 6:L:174:GLN:HB2 | 6:L:176:ASN:OD1 | 2.06 | 0.55 |
| 4:G:338:TRP:CZ2 | 4:G:390:LEU:HB3 | 2.41 | 0.55 |
| 1:B:635:ILE:O | 1:B:639:THR:HG23 | 2.07 | 0.55 |
| 2:D:32:HIS:ND1 | 2:D:100:VAL:HG22 | 2.21 | 0.55 |
| 2:D:33:TYR:CE2 | 2:D:50:TRP:CZ3 | 2.94 | 0.55 |
| 4:G:122:LEU:HB2 | 4:G:201:ILE:HG23 | 1.88 | 0.55 |
| 4:G:297:THR:HA | 4:G:443:ILE:O | 2.07 | 0.55 |
| 4:G:381:GLU:HG2 | 4:G:439:ILE:CG1 | 2.36 | 0.55 |
| 1:B:629:LEU:O | 1:B:633:LYS:HG3 | 2.07 | 0.55 |
| 2:D:49:GLY:HA3 | 2:D:70:MET:CE | 2.38 | 0.54 |
| 4:G:99:ASN:OD1 | 4:G:103:GLN:NE2 | 2.35 | 0.54 |
| 5:H:97:THR:HG23 | 5:H:120:ASP:OD1 | 2.07 | 0.54 |
| 1:B:617:ARG:HB3 | 1:B:621:GLU:HB2 | 1.89 | 0.54 |
| 3:E:32:TYR:CE1 | 3:E:42:LEU:HD13 | 2.42 | 0.54 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:G:53:PHE:CD2 | 4:G:54:CYS:N | 2.76 | 0.54 |
| 4:G:55:ALA:HB3 | 4:G:216:HIS:CB | 2.32 | 0.54 |
| 2:D:30:VAL:HA | 2:D:53:PRO:HB2 | 1.89 | 0.54 |
| 3:E:23:THR:HG22 | 3:E:66:THR:HG23 | 1.89 | 0.54 |
| 4:G:57:ASP:OD2 | 4:G:59:LYS:HG2 | 2.07 | 0.54 |
| 5:H:105:TYR:CZ | 6:L:96:SER:HB2 | 2.43 | 0.54 |
| 4:G:358:ILE:HB | 4:G:465:THR:CB | 2.36 | 0.54 |
| 2:D:34:ILE:O | 2:D:50:TRP:HA | 2.08 | 0.54 |
| 2:D:48:VAL:O | 2:D:60:TYR:HA | 2.07 | 0.54 |
| 2:D:72:ARG:HA | 2:D:79:ALA:HA | 1.89 | 0.54 |
| 2:D:134:LEU:HD22 | 3:E:111:PHE:HB3 | 1.90 | 0.54 |
| 3:E:185:SER:HB3 | 3:E:198:THR:HG22 | 1.88 | 0.54 |
| 22:G:602:FUC:O5 | 19:X:1:NAG:H61 | 2.08 | 0.54 |
| 1:B:522:PHE:HE1 | 1:B:540:GLN:HA | 1.73 | 0.53 |
| 2:D:158:GLU:OE2 | 2:D:178:ALA:HB3 | 2.09 | 0.53 |
| 4:G:289:ASN:OD1 | 4:G:344:LYS:NZ | 2.39 | 0.53 |
| 2:D:2:VAL:N | 2:D:26:GLY:HA3 | 2.10 | 0.53 |
| 4:G:69:TRP:NE1 | 4:G:212:PRO:HA | 2.22 | 0.53 |
| 3:E:45:TYR:HE2 | 3:E:51:PRO:HA | 1.73 | 0.53 |
| 2:D:34:ILE:HD13 | 2:D:98:THR:HB | 1.91 | 0.53 |
| 5:H:178:LEU:HD21 | 5:H:201:VAL:HG21 | 1.89 | 0.53 |
| 1:B:604:CYS:O | 4:G:37:THR:HG23 | 2.09 | 0.53 |
| 3:E:46:GLU:HG2 | 3:E:47:VAL:N | 2.21 | 0.53 |
| 4:G:58:ALA:HB2 | 4:G:76:PRO:CB | 2.38 | 0.53 |
| 4:G:101:VAL:HG13 | 4:G:479:TRP:HB2 | 1.91 | 0.53 |
| 1:B:576:LEU:HD12 | 1:B:579:ARG:HD3 | 1.90 | 0.53 |
| 2:D:199:LEU:HD13 | 2:D:226:CYS:SG | 2.48 | 0.53 |
| 3:E:23:THR:HA | 3:E:66:THR:HA | 1.91 | 0.53 |
| 4:G:362:ALA:HB3 | 4:G:469:ARG:HH11 | 1.73 | 0.53 |
| 1:B:638:TYR:CD2 | 1:B:641:ILE:HD12 | 2.42 | 0.52 |
| 6:L:62:PHE:HA | 6:L:77:THR:O | 2.08 | 0.52 |
| 4:G:298:ARG:HG3 | 4:G:420:ILE:HD12 | 1.91 | 0.52 |
| 2:D:14:PRO:HA | 2:D:86:LEU:O | 2.09 | 0.52 |
| 4:G:68:VAL:O | 4:G:111:LEU:HD21 | 2.08 | 0.52 |
| 6:L:153:VAL:HG11 | 6:L:183:SER:HB2 | 1.90 | 0.52 |
| 1:B:553:SER:N | 1:B:554:ASN:HA | 2.13 | 0.52 |
| 5:H:24:VAL:HB | 5:H:76:ASN:HB3 | 1.91 | 0.52 |
| 5:H:100:ARG:HG3 | 5:H:117:TYR:CE2 | 2.44 | 0.52 |
| 21:B:701:NAG:O7 | 21:B:701:NAG:O3 | 2.23 | 0.52 |
| 2:D:99:GLN:HB3 | 2:D:109:PRO:O | 2.09 | 0.52 |
| 3:E:138:THR:HB | 3:E:189:THR:HB | 1.91 | 0.52 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:G:53:PHE:CE2 | 4:G:75:VAL:HG22 | 2.45 | 0.52 |
| 5:H:173:TRP:HB3 | 5:H:178:LEU:HD23 | 1.92 | 0.52 |
| 2:D:133:PRO:HA | 2:D:150:CYS:HA | 1.92 | 0.52 |
| 4:G:254:VAL:HG11 | 4:G:261:LEU:HB2 | 1.91 | 0.52 |
| 5:H:21:THR:HG21 | 5:H:77:GLN:OE1 | 2.10 | 0.52 |
| 4:G:292:VAL:CG2 | 4:G:449:ILE:HD12 | 2.40 | 0.51 |
| 6:L:192:TRP:CZ2 | 6:L:215:PRO:HA | 2.45 | 0.51 |
| 2:D:62:GLN:HA | 2:D:65:GLN:OE1 | 2.09 | 0.51 |
| 1:B:658:GLN:OE1 | 1:B:658:GLN:HA | 2.10 | 0.51 |
| 5:H:9:PRO:HD3 | 5:H:19:SER:O | 2.10 | 0.51 |
| 2:D:48:VAL:HG12 | 2:D:70:MET:HE1 | 1.93 | 0.51 |
| 3:E:45:TYR:CZ | 3:E:49:ARG:HB3 | 2.46 | 0.51 |
| 3:E:101:GLN:NE2 | 3:E:163:ASN:HB3 | 2.26 | 0.51 |
| 4:G:82:GLN:HB2 | 4:G:246:GLN:NE2 | 2.25 | 0.51 |
| 1:B:575:GLN:HB2 | 4:G:53:PHE:CE1 | 2.45 | 0.51 |
| 2:D:59:ASN:OD1 | 4:G:469:ARG:HD2 | 2.09 | 0.51 |
| 2:D:18:VAL:O | 2:D:82:GLN:HA | 2.10 | 0.51 |
| 18:T:2:NAG:H81 | 18:T:5:MAN:C2 | 2.38 | 0.51 |
| 2:D:156:PHE:HD1 | 2:D:157:PRO:HD3 | 1.73 | 0.51 |
| 5:H:142:PRO:HB2 | 5:H:230:VAL:HG13 | 1.93 | 0.51 |
| 2:D:176:PHE:CE1 | 3:E:128:LEU:HB3 | 2.47 | 0.51 |
| 6:L:68:ILE:O | 6:L:68:ILE:HG13 | 2.10 | 0.51 |
| 6:L:13:VAL:HG13 | 6:L:81:VAL:HG11 | 1.93 | 0.50 |
| 6:L:214:ALA:HB3 | 6:L:217:GLU:CG | 2.40 | 0.50 |
| 2:D:33:TYR:CD2 | 2:D:50:TRP:CE3 | 2.99 | 0.50 |
| 4:G:59:LYS:HA | 4:G:59:LYS:CE | 2.36 | 0.50 |
| 4:G:299:PRO:HD2 | 4:G:329:ALA:HA | 1.93 | 0.50 |
| 6:L:25:ARG:NH1 | 6:L:103:SER:O | 2.42 | 0.50 |
| 4:G:158:SER:HA | 4:G:172:VAL:O | 2.11 | 0.50 |
| 2:D:73:ASP:N | 2:D:78:THR:O | 2.39 | 0.50 |
| 4:G:270:VAL:HG22 | 4:G:348:GLN:HG3 | 1.93 | 0.50 |
| 4:G:484:TYR:CZ | 4:G:485:LYS:HG3 | 2.47 | 0.50 |
| 6:L:86:GLU:HB3 | 6:L:173:LYS:HZ3 | 1.75 | 0.50 |
| 2:D:127:LYS:HD2 | 2:D:185:LEU:HD21 | 1.92 | 0.50 |
| 1:B:610:TRP:CE3 | 4:G:36:VAL:HG22 | 2.38 | 0.50 |
| 4:G:212:PRO:CG | 4:G:254:VAL:HG22 | 2.40 | 0.50 |
| 4:G:317:PHE:CE2 | 4:G:319:ALA:HB2 | 2.47 | 0.50 |
| 5:H:41:PRO:HD3 | 5:H:91:ALA:HA | 1.94 | 0.50 |
| 6:L:117:LYS:HA | 6:L:147:TYR:O | 2.12 | 0.49 |
| 1:B:571:TRP:CZ3 | 4:G:54:CYS:HB2 | 2.47 | 0.49 |
| 4:G:260:LEU:O | 4:G:261:LEU:HD23 | 2.12 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 5:H:32:TYR:HB3 | 5:H:97:THR:OG1 | 2.13 | 0.49 |
| 5:H:187:ALA:HB2 | 5:H:197:LEU:HB3 | 1.94 | 0.49 |
| 14:U:1:NAG:O6 | 14:U:2:NAG:N2 | 2.42 | 0.49 |
| 2:D:127:LYS:HB2 | 2:D:185:LEU:HD21 | 1.94 | 0.49 |
| 4:G:263:GLY:HA2 | 4:G:482:GLU:OE2 | 2.12 | 0.49 |
| 5:H:104:ILE:HD13 | 5:H:113:PHE:HB3 | 1.93 | 0.49 |
| 1:B:651:ASN:OD1 | 1:B:655:LYS:NZ | 2.45 | 0.49 |
| 3:E:7:PRO:HD3 | 3:E:21:SER:OG | 2.11 | 0.49 |
| 3:E:63:SER:OG | 3:E:66:THR:N | 2.42 | 0.49 |
| 4:G:382:PHE:CD2 | 4:G:424:ILE:HD13 | 2.48 | 0.49 |
| 2:D:46:GLN:OE1 | 2:D:63:ARG:NH2 | 2.46 | 0.49 |
| 13:O:1:MAN:C2 | 13:O:2:MAN:H3 | 2.43 | 0.49 |
| 1:B:558:ALA:O | 4:G:72:HIS:NE2 | 2.46 | 0.49 |
| 2:D:39:GLN:HG3 | 2:D:40:ALA:O | 2.13 | 0.49 |
| 3:E:106:PRO:HD3 | 3:E:190:HIS:CG | 2.48 | 0.49 |
| 5:H:2:VAL:HG13 | 5:H:27:ASP:HB3 | 1.95 | 0.49 |
| 3:E:160:GLN:OE1 | 3:E:166:ALA:HB2 | 2.12 | 0.48 |
| 4:G:68:VAL:O | 4:G:111:LEU:HD11 | 2.13 | 0.48 |
| 6:L:173:LYS:HD3 | 6:L:177:ASN:HA | 1.95 | 0.48 |
| 6:L:92:HIS:CE1 | 6:L:94:TRP:NE1 | 2.81 | 0.48 |
| 1:B:654:GLU:O | 1:B:658:GLN:HG2 | 2.14 | 0.48 |
| 3:E:110:LEU:HD13 | 3:E:127:CYS:HB2 | 1.95 | 0.48 |
| 1:B:523:LEU:O | 4:G:86:LEU:HD22 | 2.14 | 0.48 |
| 4:G:330:HIS:HA | 4:G:416:LEU:O | 2.13 | 0.48 |
| 4:G:362:ALA:CB | 4:G:469:ARG:HH11 | 2.26 | 0.48 |
| 1:B:637:ASN:O | 1:B:638:TYR:HB2 | 2.12 | 0.48 |
| 2:D:91:THR:OG1 | 2:D:120:THR:HA | 2.13 | 0.48 |
| 1:B:645:LEU:O | 1:B:649:SER:HB3 | 2.14 | 0.48 |
| 4:G:260:LEU:HD13 | 4:G:481:SER:CB | 2.44 | 0.48 |
| 2:D:115:GLN:HG2 | 2:D:116:GLY:N | 2.29 | 0.48 |
| 2:D:134:LEU:HB3 | 3:E:111:PHE:CD2 | 2.49 | 0.48 |
| 6:L:35:TRP:N | 6:L:48:ILE:O | 2.43 | 0.48 |
| 4:G:56:SER:C | 4:G:77:THR:HG23 | 2.34 | 0.47 |
| 5:H:87:PRO:HA | 5:H:130:VAL:HB | 1.96 | 0.47 |
| 2:D:163:SER:OG | 2:D:164:TRP:N | 2.46 | 0.47 |
| 4:G:52:LEU:HD21 | 4:G:217:TYR:HB3 | 1.96 | 0.47 |
| 6:L:21:ILE:O | 6:L:75:THR:HA | 2.14 | 0.47 |
| 4:G:282:LYS:HA | 4:G:282:LYS:HD3 | 1.36 | 0.47 |
| 1:B:576:LEU:HD12 | 1:B:576:LEU:HA | 1.52 | 0.47 |
| 4:G:68:VAL:CG1 | 4:G:111:LEU:HD22 | 2.45 | 0.47 |
| 4:G:86:LEU:HB3 | 4:G:89:VAL:HG21 | 1.97 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:G:69:TRP:CE3 | 4:G:111:LEU:HD13 | 2.48 | 0.47 |
| 4:G:378:CYS:HB3 | 4:G:383:PHE:CE1 | 2.49 | 0.47 |
| 4:G:483:LEU:HA | 4:G:483:LEU:HD23 | 1.62 | 0.47 |
| 9:I:1:NAG:H83 | 9:I:1:NAG:H3 | 1.97 | 0.47 |
| 1:B:575:GLN:O | 1:B:579:ARG:HG3 | 2.15 | 0.47 |
| 2:D:12:LYS:HD2 | 2:D:17:SER:O | 2.15 | 0.47 |
| 3:E:75:ARG:O | 3:E:98:VAL:HG11 | 2.15 | 0.47 |
| 6:L:153:VAL:HG11 | 6:L:183:SER:CB | 2.45 | 0.47 |
| 2:D:154:ASP:HA | 2:D:185:LEU:HB3 | 1.97 | 0.47 |
| 4:G:477:ASP:OD1 | 4:G:480:ARG:NH1 | 2.47 | 0.47 |
| 6:L:36:TYR:CE2 | 6:L:46:LEU:HD13 | 2.50 | 0.47 |
| 6:L:151:VAL:HA | 6:L:203:THR:O | 2.15 | 0.47 |
| 6:L:155:TRP:CD1 | 6:L:166:VAL:HG13 | 2.50 | 0.47 |
| 2:D:115:GLN:O | 3:E:38:ARG:HB3 | 2.14 | 0.46 |
| 3:E:13:SER:OG | 3:E:16:GLN:HG3 | 2.15 | 0.46 |
| 1:B:610:TRP:CG | 4:G:498:PRO:HB3 | 2.50 | 0.46 |
| 1:B:617:ARG:HB2 | 1:B:622:ILE:HG13 | 1.96 | 0.46 |
| 5:H:27:ASP:OD1 | 5:H:28:SER:N | 2.49 | 0.46 |
| 5:H:148:LYS:HE3 | 6:L:218:CYS:SG | 2.56 | 0.46 |
| 6:L:39:ARG:HG2 | 6:L:87:ALA:HB2 | 1.97 | 0.46 |
| 3:E:30:GLY:N | 3:E:85:SER:OG | 2.49 | 0.46 |
| 3:E:174:THR:H | 3:E:177:GLN:HB2 | 1.81 | 0.46 |
| 4:G:109:ILE:HA | 4:G:427:TRP:CH2 | 2.51 | 0.46 |
| 4:G:158:SER:HB3 | 22:G:602:FUC:C6 | 2.44 | 0.46 |
| 4:G:463:SER:O | 4:G:464:THR:C | 2.54 | 0.46 |
| 11:K:2:NAG:O7 | 11:K:2:NAG:O3 | 2.29 | 0.46 |
| 6:L:47:LEU:O | 6:L:55:PRO:HD2 | 2.16 | 0.46 |
| 1:B:605:CYS:O | 4:G:503:ARG:NE | 2.47 | 0.46 |
| 4:G:220:PRO:HG2 | 4:G:223:PHE:CD1 | 2.51 | 0.46 |
| 4:G:290:THR:OG1 | 4:G:344:LYS:NZ | 2.49 | 0.46 |
| 4:G:382:PHE:CE1 | 4:G:436:ALA:HB2 | 2.50 | 0.46 |
| 6:L:139:LEU:HD12 | 6:L:185:LEU:HD23 | 1.98 | 0.46 |
| 12:M:3:BMA:C3 | 13:O:1:MAN:H5 | 2.45 | 0.46 |
| 4:G:124:PRO:HG2 | 4:G:161:MET:HE1 | 1.98 | 0.46 |
| 4:G:206:PRO:HG2 | 4:G:207:LYS:HD3 | 1.97 | 0.46 |
| 4:G:157:CYS:O | 4:G:173:TYR:HA | 2.16 | 0.46 |
| 3:E:134:PRO:HD2 | 3:E:191:GLU:OE2 | 2.16 | 0.46 |
| 4:G:61:TYR:O | 4:G:61:TYR:CD1 | 2.69 | 0.46 |
| 5:H:3:GLN:O | 5:H:25:SER:N | 2.33 | 0.46 |
| 1:B:580:VAL:O | 1:B:584:GLU:HB2 | 2.16 | 0.46 |
| 2:D:219:LYS:HA | 2:D:219:LYS:HD2 | 1.70 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 5:H:142:PRO:HB3 | 5:H:230:VAL:HA | 1.98 | 0.46 |
| 2:D:49:GLY:HA3 | 2:D:70:MET:HE1 | 1.95 | 0.45 |
| 4:G:325:ASP:CG | 6:L:30:SER:HG | 2.20 | 0.45 |
| 4:G:54:CYS:SG | 4:G:55:ALA:N | 2.90 | 0.45 |
| 4:G:92:GLU:HG2 | 4:G:93:PHE:N | 2.30 | 0.45 |
| 2:D:198:SER:HB2 | 2:D:202:GLN:HB2 | 1.98 | 0.45 |
| 4:G:62:GLU:H | 4:G:62:GLU:CD | 2.20 | 0.45 |
| 5:H:93:TYR:CD1 | 5:H:93:TYR:N | 2.85 | 0.45 |
| 2:D:99:GLN:HG2 | 2:D:107:GLY:C | 2.37 | 0.45 |
| 4:G:305:LYS:HB3 | 4:G:319:ALA:HB3 | 1.98 | 0.45 |
| 1:B:552:GLN:HG3 | 1:B:553:SER:H | 1.82 | 0.45 |
| 4:G:292:VAL:HG21 | 4:G:449:ILE:HD12 | 1.99 | 0.45 |
| 14:P:1:NAG:H83 | 14:P:1:NAG:H3 | 1.98 | 0.45 |
| 1:B:606:THR:OG1 | 4:G:36:VAL:O | 2.28 | 0.45 |
| 2:D:54:ARG:C | 4:G:428:GLN:HE21 | 2.19 | 0.45 |
| 3:E:35:HIS:CD2 | 3:E:80:ALA:HB2 | 2.52 | 0.45 |
| 1:B:545:LEU:HD11 | 1:B:586:TYR:CE2 | 2.51 | 0.45 |
| 2:D:136:PRO:HD2 | 2:D:224:LYS:HE2 | 1.98 | 0.45 |
| 4:G:188:ASN:N | 4:G:189:LYS:HA | 2.32 | 0.45 |
| 4:G:294:ILE:HD13 | 4:G:294:ILE:HG21 | 1.68 | 0.45 |
| 6:L:34:GLN:HA | 6:L:48:ILE:O | 2.17 | 0.45 |
| 2:D:198:SER:HB2 | 2:D:202:GLN:CG | 2.46 | 0.45 |
| 3:E:46:GLU:HB3 | 3:E:49:ARG:HG2 | 1.98 | 0.45 |
| 3:E:153:GLU:HB2 | 3:E:170:TYR:HB2 | 1.99 | 0.45 |
| 3:E:189:THR:HA | 3:E:193:SER:O | 2.17 | 0.45 |
| 4:G:52:LEU:CD2 | 4:G:53:PHE:O | 2.65 | 0.45 |
| 4:G:134:VAL:HG23 | 4:G:135:THR:H | 1.82 | 0.45 |
| 11:K:1:NAG:H83 | 11:K:1:NAG:H3 | 1.99 | 0.45 |
| 3:E:54:VAL:HG13 | 3:E:55:SER:O | 2.17 | 0.45 |
| 2:D:102:LEU:HG | 2:D:111:ASP:OD2 | 2.18 | 0.44 |
| 5:H:104:ILE:HD13 | 5:H:113:PHE:CB | 2.47 | 0.44 |
| 3:E:111:PHE:N | 3:E:126:VAL:O | 2.46 | 0.44 |
| 4:G:50:THR:OG1 | 4:G:51:THR:N | 2.50 | 0.44 |
| 4:G:158:SER:HB2 | 4:G:171:LYS:HE3 | 1.99 | 0.44 |
| 4:G:214:PRO:HG3 | 4:G:252:LYS:HG3 | 1.98 | 0.44 |
| 5:H:142:PRO:CB | 5:H:230:VAL:HA | 2.48 | 0.44 |
| 4:G:62:GLU:CD | 4:G:62:GLU:N | 2.70 | 0.44 |
| 4:G:108:ILE:HD12 | 4:G:479:TRP:CZ2 | 2.52 | 0.44 |
| 4:G:292:VAL:HG12 | 4:G:337:THR:HG22 | 1.97 | 0.44 |
| 3:E:74:LEU:HD23 | 3:E:74:LEU:HA | 1.82 | 0.44 |
| 4:G:52:LEU:HD22 | 4:G:217:TYR:HD2 | 1.82 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|--------|--------|--------------------------|-------------------|
| 2:D:180:LEU:HD13 | 2:D:186:TYR:CZ | 2.52 | 0.44 |
| 3:E:57:ARG:HD3 | 3:E:72:SER:O | 2.17 | 0.44 |
| 4:G:359:ILE:O | 4:G:395:TRP:HB2 | 2.18 | 0.44 |
| 2:D:180:LEU:HD13 | 2:D:186:TYR:CE1 | 2.52 | 0.44 |
| 3:E:44:ILE:HD11 | 3:E:48:ASN:CA | 2.47 | 0.44 |
| 3:E:59:SER:O | 3:E:70:THR:HG22 | 2.18 | 0.44 |
| 5:H:63:LEU:HD23 | 5:H:63:LEU:HA | 1.83 | 0.44 |
| 3:E:101:GLN:HB2 | 3:E:133:TYR:CZ | 2.52 | 0.44 |
| 4:G:475:MET:SD | 4:G:478:ASN:ND2 | 2.91 | 0.44 |
| 6:L:70:PHE:CD1 | 6:L:71:GLY:N | 2.82 | 0.44 |
| 3:E:33:GLN:NE2 | 3:E:35:HIS:CE1 | 2.86 | 0.43 |
| 4:G:175:LEU:O | 4:G:176:PHE:CD2 | 2.71 | 0.43 |
| 4:G:249:HIS:O | 4:G:251:ILE:HG13 | 2.18 | 0.43 |
| 4:G:69:TRP:O | 4:G:71:THR:HG23 | 2.18 | 0.43 |
| 1:B:571:TRP:CE3 | 4:G:54:CYS:HB2 | 2.53 | 0.43 |
| 2:D:45:PRO:HG2 | 3:E:90:PHE:CB | 2.48 | 0.43 |
| 5:H:92:VAL:HG12 | 5:H:94:TYR:CE1 | 2.52 | 0.43 |
| 11:K:2:NAG:H81 | 17:S:6:MAN:O4 | 2.18 | 0.43 |
| 2:D:156:PHE:H | 2:D:156:PHE:HD2 | 1.65 | 0.43 |
| 3:E:44:ILE:CG1 | 3:E:49:ARG:H | 2.31 | 0.43 |
| 4:G:214:PRO:HG3 | 4:G:252:LYS:CG | 2.47 | 0.43 |
| 5:H:55:GLU:OE2 | 5:H:71:ARG:NH2 | 2.52 | 0.43 |
| 2:D:18:VAL:HG12 | 2:D:83:LEU:O | 2.18 | 0.43 |
| 4:G:426:MET:O | 4:G:429:ARG:HB3 | 2.19 | 0.43 |
| 5:H:184:THR:HA | 5:H:199:SER:HA | 1.99 | 0.43 |
| 1:B:527:GLY:N | 4:G:89:VAL:HG22 | 2.34 | 0.43 |
| 1:B:528:SER:CB | 20:Y:4:FUC:H4 | 2.47 | 0.43 |
| 3:E:26:TYR:CA | 10:J:2:NAG:H83 | 2.42 | 0.43 |
| 3:E:44:ILE:HG13 | 3:E:49:ARG:C | 2.38 | 0.43 |
| 4:G:36:VAL:HG13 | 4:G:496:VAL:HG13 | 2.01 | 0.43 |
| 2:D:54:ARG:O | 4:G:428:GLN:NE2 | 2.52 | 0.43 |
| 4:G:222:GLY:O | 4:G:491:ILE:HB | 2.18 | 0.43 |
| 5:H:140:VAL:O | 5:H:228:LYS:HE3 | 2.19 | 0.43 |
| 4:G:47:ASP:OD2 | 4:G:487:LYS:NZ | 2.52 | 0.43 |
| 4:G:258:GLN:O | 4:G:259:LEU:HD12 | 2.18 | 0.43 |
| 4:G:327:ARG:HE | 4:G:327:ARG:HB3 | 1.53 | 0.43 |
| 1:B:619:LEU:HD23 | 1:B:619:LEU:HA | 1.83 | 0.43 |
| 2:D:155:TYR:CZ | 2:D:186:TYR:HB3 | 2.54 | 0.43 |
| 3:E:24:GLY:N | 3:E:65:ASN:O | 2.35 | 0.43 |
| 4:G:178:ARG:O | 4:G:178:ARG:HG2 | 2.19 | 0.43 |
| 4:G:444:ARG:O | 4:G:444:ARG:HG3 | 2.18 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:L:34:GLN:HG3 | 6:L:49:TYR:CB | 2.49 | 0.43 |
| 6:L:35:TRP:CH2 | 6:L:91:CYS:HB2 | 2.54 | 0.43 |
| 2:D:127:LYS:CB | 2:D:185:LEU:HD21 | 2.48 | 0.43 |
| 3:E:29:LEU:HD22 | 3:E:87:PHE:CD2 | 2.43 | 0.43 |
| 6:L:52:GLN:HG3 | 6:L:53:ASP:OD1 | 2.18 | 0.43 |
| 2:D:50:TRP:O | 2:D:58:VAL:HG12 | 2.18 | 0.42 |
| 2:D:131:VAL:HG22 | 2:D:152:VAL:HG13 | 2.00 | 0.42 |
| 5:H:102:GLN:HB2 | 5:H:115:TYR:CE2 | 2.54 | 0.42 |
| 6:L:115:GLN:HB2 | 6:L:147:TYR:CD2 | 2.53 | 0.42 |
| 2:D:1:GLN:HG3 | 2:D:2:VAL:HG23 | 2.00 | 0.42 |
| 2:D:76:ILE:HG13 | 2:D:78:THR:HB | 2.02 | 0.42 |
| 4:G:349:LEU:HD23 | 4:G:349:LEU:HA | 1.76 | 0.42 |
| 4:G:382:PHE:CD2 | 4:G:424:ILE:CD1 | 3.02 | 0.42 |
| 1:B:546:SER:HA | 1:B:547:GLY:HA3 | 1.59 | 0.42 |
| 4:G:168:LYS:HA | 4:G:168:LYS:HD2 | 1.59 | 0.42 |
| 5:H:12:VAL:HG23 | 5:H:85:VAL:HG21 | 2.01 | 0.42 |
| 6:L:95:ASP:OD1 | 6:L:98:SER:HB2 | 2.20 | 0.42 |
| 2:D:200:GLY:CA | 2:D:223:PRO:HB2 | 2.50 | 0.42 |
| 6:L:39:ARG:O | 6:L:40:PRO:C | 2.57 | 0.42 |
| 6:L:39:ARG:HG2 | 6:L:87:ALA:CB | 2.49 | 0.42 |
| 6:L:124:LEU:HD12 | 6:L:140:VAL:O | 2.19 | 0.42 |
| 11:K:1:NAG:C1 | 11:K:1:NAG:H82 | 2.50 | 0.42 |
| 2:D:154:ASP:CB | 2:D:185:LEU:HD13 | 2.50 | 0.42 |
| 4:G:415:THR:O | 4:G:416:LEU:HD23 | 2.20 | 0.42 |
| 5:H:35:THR:HG21 | 5:H:119:MET:HE2 | 2.00 | 0.42 |
| 5:H:185:PHE:CZ | 6:L:142:LEU:HB3 | 2.55 | 0.42 |
| 3:E:45:TYR:CE2 | 3:E:51:PRO:HA | 2.54 | 0.42 |
| 3:E:104:ALA:O | 3:E:190:HIS:NE2 | 2.53 | 0.42 |
| 4:G:52:LEU:CD2 | 4:G:217:TYR:HB3 | 2.50 | 0.42 |
| 4:G:454:LEU:HD23 | 4:G:454:LEU:HA | 1.77 | 0.42 |
| 2:D:86:LEU:HD23 | 2:D:86:LEU:HA | 1.74 | 0.42 |
| 3:E:101:GLN:HE22 | 3:E:163:ASN:HB3 | 1.84 | 0.42 |
| 4:G:58:ALA:CB | 4:G:76:PRO:HB3 | 2.49 | 0.42 |
| 5:H:66:ARG:HB3 | 5:H:82:LEU:HD12 | 2.02 | 0.42 |
| 3:E:32:TYR:CE1 | 3:E:42:LEU:HB2 | 2.55 | 0.41 |
| 3:E:44:ILE:HD11 | 3:E:49:ARG:N | 2.35 | 0.41 |
| 2:D:35:HIS:ND1 | 2:D:50:TRP:HB3 | 2.35 | 0.41 |
| 1:B:629:LEU:H | 1:B:629:LEU:HG | 1.58 | 0.41 |
| 2:D:54:ARG:HG3 | 4:G:428:GLN:NE2 | 2.32 | 0.41 |
| 2:D:176:PHE:CZ | 3:E:128:LEU:HB3 | 2.55 | 0.41 |
| 4:G:494:LEU:HD23 | 4:G:494:LEU:HA | 1.79 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 13:N:1:MAN:H2 | 13:N:2:MAN:H2 | 1.87 | 0.41 |
| 2:D:39:GLN:O | 2:D:92:ALA:HB1 | 2.21 | 0.41 |
| 4:G:67:ASN:ND2 | 4:G:71:THR:O | 2.53 | 0.41 |
| 4:G:68:VAL:HG13 | 4:G:111:LEU:CD2 | 2.49 | 0.41 |
| 4:G:449:ILE:HD13 | 4:G:449:ILE:HG21 | 1.91 | 0.41 |
| 1:B:632:ASP:HA | 1:B:635:ILE:CG1 | 2.46 | 0.41 |
| 2:D:48:VAL:HG12 | 2:D:70:MET:CE | 2.50 | 0.41 |
| 2:D:51:MET:O | 2:D:51:MET:HG2 | 2.21 | 0.41 |
| 4:G:155:LYS:O | 4:G:175:LEU:HA | 2.20 | 0.41 |
| 4:G:158:SER:HB3 | 22:G:602:FUC:C5 | 2.51 | 0.41 |
| 4:G:173:TYR:HB3 | 22:G:602:FUC:H63 | 2.02 | 0.41 |
| 4:G:491:ILE:HD13 | 4:G:491:ILE:HA | 1.91 | 0.41 |
| 2:D:129:PRO:CB | 2:D:155:TYR:HB3 | 2.50 | 0.41 |
| 4:G:192:ARG:HD2 | 4:G:196:CYS:HB2 | 2.01 | 0.41 |
| 4:G:274:SER:OG | 4:G:277:ILE:HG13 | 2.20 | 0.41 |
| 4:G:274:SER:OG | 4:G:277:ILE:N | 2.54 | 0.41 |
| 2:D:35:HIS:CD2 | 2:D:35:HIS:N | 2.89 | 0.41 |
| 4:G:47:ASP:OD2 | 4:G:487:LYS:CE | 2.69 | 0.41 |
| 4:G:124:PRO:O | 4:G:127:VAL:HG13 | 2.21 | 0.41 |
| 6:L:117:LYS:HE2 | 6:L:205:GLU:OE1 | 2.21 | 0.41 |
| 2:D:99:GLN:HE21 | 2:D:107:GLY:HA2 | 1.85 | 0.41 |
| 2:D:156:PHE:CD1 | 2:D:157:PRO:CD | 3.01 | 0.41 |
| 6:L:28:LEU:HD11 | 6:L:97:ARG:NH1 | 2.35 | 0.41 |
| 3:E:151:GLY:O | 3:E:171:LEU:HA | 2.20 | 0.40 |
| 4:G:205:CYS:HB3 | 4:G:207:LYS:HG2 | 2.03 | 0.40 |
| 4:G:416:LEU:HD23 | 4:G:416:LEU:HA | 1.76 | 0.40 |
| 2:D:2:VAL:CG1 | 2:D:112:ILE:HD13 | 2.51 | 0.40 |
| 3:E:8:ARG:O | 3:E:94:THR:HA | 2.21 | 0.40 |
| 3:E:54:VAL:HG22 | 3:E:55:SER:H | 1.86 | 0.40 |
| 5:H:11:LEU:HA | 5:H:129:THR:O | 2.21 | 0.40 |
| 13:O:1:MAN:H2 | 13:O:2:MAN:H3 | 2.04 | 0.40 |
| 2:D:99:GLN:HG2 | 2:D:107:GLY:O | 2.21 | 0.40 |
| 4:G:87:GLU:O | 4:G:89:VAL:HG23 | 2.22 | 0.40 |
| 5:H:13:LYS:HG2 | 5:H:132:SER:HA | 2.03 | 0.40 |
| 19:X:1:NAG:O6 | 19:X:2:NAG:N2 | 2.55 | 0.40 |
| 2:D:16:ALA:O | 2:D:86:LEU:HB2 | 2.22 | 0.40 |
| 2:D:133:PRO:O | 3:E:114:SER:HB3 | 2.22 | 0.40 |
| 3:E:46:GLU:HB3 | 3:E:49:ARG:CG | 2.51 | 0.40 |
| 4:G:62:GLU:C | 4:G:64:GLU:N | 2.74 | 0.40 |
| 4:G:173:TYR:HB3 | 22:G:602:FUC:C6 | 2.52 | 0.40 |
| 4:G:360:ARG:CG | 4:G:467:THR:HG22 | 2.51 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 5:H:66:ARG:NH1 | 5:H:84:SER:O | 2.54 | 0.40 |
| 5:H:145:PRO:HD3 | 5:H:157:LEU:CB | 2.45 | 0.40 |

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 5:H:225:LYS:NZ | 13:N:2:MAN:O6[8_544] | 2.16 | 0.04 |

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 1 | B | 133/153 (87%) | 125 (94%) | 8 (6%) | 0 | 100 | 100 |
| 2 | D | 216/234 (92%) | 188 (87%) | 26 (12%) | 2 (1%) | 17 | 55 |
| 3 | E | 200/205 (98%) | 168 (84%) | 32 (16%) | 0 | 100 | 100 |
| 4 | G | 443/501 (88%) | 411 (93%) | 27 (6%) | 5 (1%) | 14 | 51 |
| 5 | H | 225/243 (93%) | 220 (98%) | 5 (2%) | 0 | 100 | 100 |
| 6 | L | 209/214 (98%) | 203 (97%) | 5 (2%) | 1 (0%) | 29 | 67 |
| All | All | 1426/1550 (92%) | 1315 (92%) | 103 (7%) | 8 (1%) | 25 | 63 |

All (8) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | G | 63 | THR |
| 4 | G | 464 | THR |
| 6 | L | 158 | ASP |
| 2 | D | 74 | THR |
| 4 | G | 461 | THR |
| 4 | G | 67 | ASN |

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| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | D | 2 | VAL |
| 4 | G | 134 | VAL |

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|----------|-----------|----------|------|------|
| 1 | B | 118/129 (92%) | 117 (99%) | 1 (1%) | 81 | 89 |
| 2 | D | 186/200 (93%) | 182 (98%) | 4 (2%) | 52 | 71 |
| 3 | E | 169/173 (98%) | 167 (99%) | 2 (1%) | 71 | 84 |
| 4 | G | 401/441 (91%) | 399 (100%) | 2 (0%) | 88 | 93 |
| 5 | H | 201/213 (94%) | 198 (98%) | 3 (2%) | 65 | 80 |
| 6 | L | 175/178 (98%) | 174 (99%) | 1 (1%) | 86 | 92 |
| All | All | 1250/1334 (94%) | 1237 (99%) | 13 (1%) | 76 | 86 |

All (13) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 1 | B | 611 | ASN |
| 2 | D | 25 | SER |
| 2 | D | 54 | ARG |
| 2 | D | 63 | ARG |
| 2 | D | 110 | PHE |
| 3 | E | 56 | ASP |
| 3 | E | 57 | ARG |
| 4 | G | 56 | SER |
| 4 | G | 188 | ASN |
| 5 | H | 4 | LEU |
| 5 | H | 103 | ARG |
| 5 | H | 119 | MET |
| 6 | L | 69 | ASN |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 2 | D | 210 | HIS |
| 3 | E | 33 | GLN |
| 6 | L | 52 | GLN |

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

70 monosaccharides are modelled in this entry.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------|------|--------|--------|------|--------|
| | | | | | Counts | RMSZ | #$|Z| > 2$ | Counts | RMSZ | #$|Z| > 2$ |
| 7 | NAG | A | 1 | 7,1 | 14,14,15 | 2.01 | 2 (14%) | 17,19,21 | 1.52 | 3 (17%) |
| 7 | FUC | A | 2 | 7 | 10,10,11 | 1.35 | 2 (20%) | 14,14,16 | 0.89 | 2 (14%) |
| 8 | NAG | F | 1 | 3,8 | 14,14,15 | 0.32 | 0 | 17,19,21 | 0.35 | 0 |
| 8 | NAG | F | 2 | 8 | 14,14,15 | 0.92 | 1 (7%) | 17,19,21 | 0.51 | 0 |
| 9 | NAG | I | 1 | 4,9 | 14,14,15 | 1.57 | 2 (14%) | 17,19,21 | 1.89 | 5 (29%) |
| 9 | NAG | I | 2 | 9 | 14,14,15 | 0.59 | 0 | 17,19,21 | 1.50 | 3 (17%) |
| 9 | BMA | I | 3 | 9 | 11,11,12 | 1.65 | 2 (18%) | 15,15,17 | 3.22 | 4 (26%) |
| 9 | MAN | I | 4 | 9 | 11,11,12 | 1.11 | 1 (9%) | 15,15,17 | 1.24 | 3 (20%) |
| 9 | MAN | I | 5 | 9 | 11,11,12 | 0.94 | 0 | 15,15,17 | 1.01 | 2 (13%) |
| 10 | NAG | J | 1 | 4,10 | 14,14,15 | 0.90 | 1 (7%) | 17,19,21 | 0.75 | 1 (5%) |
| 10 | NAG | J | 2 | 10 | 14,14,15 | 0.73 | 1 (7%) | 17,19,21 | 0.70 | 0 |
| 10 | BMA | J | 3 | 10 | 11,11,12 | 1.48 | 1 (9%) | 15,15,17 | 0.97 | 0 |
| 10 | MAN | J | 4 | 10 | 11,11,12 | 1.67 | 3 (27%) | 15,15,17 | 1.76 | 3 (20%) |
| 10 | NAG | J | 5 | 10 | 14,14,15 | 0.77 | 1 (7%) | 17,19,21 | 0.77 | 1 (5%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|--------|------|-----------|----------|------|-----------|
| | | | | | Counts | RMSZ | #\|Z\| > 2 | Counts | RMSZ | #\|Z\| > 2 |
| 10 | GAL | J | 6 | 10 | 11,11,12 | 0.93 | 1 (9%) | 15,15,17 | 1.08 | 2 (13%) |
| 10 | MAN | J | 7 | 10 | 11,11,12 | 0.72 | 0 | 15,15,17 | 0.99 | 1 (6%) |
| 11 | NAG | K | 1 | 11,4 | 14,14,15 | 0.74 | 1 (7%) | 17,19,21 | 1.30 | 2 (11%) |
| 11 | NAG | K | 2 | 11 | 14,14,15 | 0.47 | 0 | 17,19,21 | 0.59 | 0 |
| 11 | BMA | K | 3 | 11 | 11,11,12 | 1.22 | 1 (9%) | 15,15,17 | 0.99 | 0 |
| 11 | MAN | K | 4 | 11 | 11,11,12 | 1.06 | 0 | 15,15,17 | 0.97 | 1 (6%) |
| 12 | NAG | M | 1 | 12,4 | 14,14,15 | 0.74 | 1 (7%) | 17,19,21 | 0.57 | 0 |
| 12 | NAG | M | 2 | 12 | 14,14,15 | 0.44 | 0 | 17,19,21 | 0.66 | 0 |
| 12 | BMA | M | 3 | 12 | 11,11,12 | 1.60 | 2 (18%) | 15,15,17 | 1.72 | 4 (26%) |
| 12 | MAN | M | 4 | 12 | 11,11,12 | 0.49 | 0 | 15,15,17 | 1.81 | 3 (20%) |
| 12 | MAN | M | 5 | 12 | 11,11,12 | 1.21 | 1 (9%) | 15,15,17 | 1.49 | 3 (20%) |
| 12 | MAN | M | 6 | 12 | 11,11,12 | 1.90 | 2 (18%) | 15,15,17 | 1.48 | 2 (13%) |
| 13 | MAN | N | 1 | 13 | 11,11,12 | 1.70 | 3 (27%) | 15,15,17 | 1.74 | 3 (20%) |
| 13 | MAN | N | 2 | 13 | 11,11,12 | 1.84 | 3 (27%) | 15,15,17 | 1.11 | 2 (13%) |
| 13 | MAN | O | 1 | 13 | 11,11,12 | 2.25 | 5 (45%) | 15,15,17 | 2.34 | 4 (26%) |
| 13 | MAN | O | 2 | 13 | 11,11,12 | 3.75 | 7 (63%) | 15,15,17 | 2.61 | 8 (53%) |
| 14 | NAG | P | 1 | 14,4 | 14,14,15 | 0.44 | 0 | 17,19,21 | 1.39 | 1 (5%) |
| 14 | NAG | P | 2 | 14 | 14,14,15 | 0.87 | 1 (7%) | 17,19,21 | 0.58 | 0 |
| 14 | BMA | P | 3 | 14 | 11,11,12 | 1.63 | 4 (36%) | 15,15,17 | 1.15 | 1 (6%) |
| 15 | NAG | Q | 1 | 15,4 | 14,14,15 | 0.61 | 0 | 17,19,21 | 1.36 | 2 (11%) |
| 15 | NAG | Q | 2 | 15 | 14,14,15 | 0.42 | 0 | 17,19,21 | 1.71 | 3 (17%) |
| 15 | BMA | Q | 3 | 15 | 11,11,12 | 2.33 | 4 (36%) | 15,15,17 | 2.14 | 2 (13%) |
| 15 | MAN | Q | 4 | 15 | 11,11,12 | 2.98 | 5 (45%) | 15,15,17 | 2.91 | 4 (26%) |
| 16 | NAG | R | 1 | 4,16 | 14,14,15 | 0.85 | 1 (7%) | 17,19,21 | 0.88 | 0 |
| 16 | NAG | R | 2 | 16 | 14,14,15 | 0.68 | 1 (7%) | 17,19,21 | 0.71 | 0 |
| 16 | NAG | R | 3 | 16 | 14,14,15 | 0.95 | 1 (7%) | 17,19,21 | 0.64 | 0 |
| 17 | NAG | S | 1 | 17,4 | 14,14,15 | 0.60 | 0 | 17,19,21 | 1.09 | 1 (5%) |
| 17 | NAG | S | 2 | 17 | 14,14,15 | 0.86 | 1 (7%) | 17,19,21 | 0.59 | 0 |
| 17 | BMA | S | 3 | 17 | 11,11,12 | 1.23 | 1 (9%) | 15,15,17 | 0.88 | 0 |
| 17 | MAN | S | 4 | 17 | 11,11,12 | 1.24 | 2 (18%) | 15,15,17 | 1.74 | 3 (20%) |
| 17 | MAN | S | 5 | 17 | 11,11,12 | 2.35 | 2 (18%) | 15,15,17 | 2.22 | 4 (26%) |
| 17 | MAN | S | 6 | 17 | 11,11,12 | 1.96 | 5 (45%) | 15,15,17 | 1.54 | 2 (13%) |
| 18 | NAG | T | 1 | 4,18 | 14,14,15 | 0.33 | 0 | 17,19,21 | 0.58 | 0 |
| 18 | NAG | T | 2 | 18 | 14,14,15 | 0.43 | 0 | 17,19,21 | 0.75 | 0 |
| 18 | BMA | T | 3 | 18 | 11,11,12 | 1.72 | 2 (18%) | 15,15,17 | 1.33 | 1 (6%) |

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|-----|------|-------|-----|------|------|------|------|------|------|------|
| | | | | | Counts | RMSZ | #\|Z\| > 2 | Counts | RMSZ | #\|Z\| > 2 |
| 18 | MAN | T | 4 | 18 | 11,11,12 | 1.08 | 1 (9%) | 15,15,17 | 1.60 | 3 (20%) |
| 18 | MAN | T | 5 | 18 | 11,11,12 | 2.11 | 4 (36%) | 15,15,17 | 1.75 | 3 (20%) |
| 18 | MAN | T | 6 | 18 | 11,11,12 | 1.49 | 4 (36%) | 15,15,17 | 1.36 | 1 (6%) |
| 18 | MAN | T | 7 | 18 | 11,11,12 | 1.41 | 2 (18%) | 15,15,17 | 2.17 | 3 (20%) |
| 14 | NAG | U | 1 | 14,4 | 14,14,15 | 0.65 | 1 (7%) | 17,19,21 | 1.43 | 3 (17%) |
| 14 | NAG | U | 2 | 14 | 14,14,15 | 0.84 | 1 (7%) | 17,19,21 | 0.86 | 1 (5%) |
| 14 | BMA | U | 3 | 14 | 11,11,12 | 1.37 | 1 (9%) | 15,15,17 | 1.08 | 2 (13%) |
| 8 | NAG | V | 1 | 8,4 | 14,14,15 | 0.63 | 0 | 17,19,21 | 0.77 | 1 (5%) |
| 8 | NAG | V | 2 | 8 | 14,14,15 | 0.69 | 0 | 17,19,21 | 0.66 | 0 |
| 8 | NAG | W | 1 | 8,4 | 14,14,15 | 0.59 | 0 | 17,19,21 | 0.63 | 0 |
| 8 | NAG | W | 2 | 8 | 14,14,15 | 0.57 | 0 | 17,19,21 | 0.57 | 0 |
| 19 | NAG | X | 1 | 19,4 | 14,14,15 | 0.60 | 0 | 17,19,21 | 0.92 | 1 (5%) |
| 19 | NAG | X | 2 | 19 | 14,14,15 | 0.37 | 0 | 17,19,21 | 0.40 | 0 |
| 19 | BMA | X | 3 | 19 | 11,11,12 | 1.46 | 2 (18%) | 15,15,17 | 1.68 | 2 (13%) |
| 19 | MAN | X | 4 | 19 | 11,11,12 | 1.94 | 3 (27%) | 15,15,17 | 1.76 | 4 (26%) |
| 19 | BMA | X | 5 | 19 | 11,11,12 | 1.72 | 3 (27%) | 15,15,17 | 1.33 | 2 (13%) |
| 19 | MAN | X | 6 | 19 | 11,11,12 | 2.01 | 4 (36%) | 15,15,17 | 1.97 | 1 (6%) |
| 20 | NAG | Y | 1 | 20,4 | 14,14,15 | 1.24 | 1 (7%) | 17,19,21 | 1.31 | 1 (5%) |
| 20 | NAG | Y | 2 | 20 | 14,14,15 | 1.03 | 2 (14%) | 17,19,21 | 1.10 | 2 (11%) |
| 20 | BMA | Y | 3 | 20 | 11,11,12 | 2.13 | 4 (36%) | 15,15,17 | 1.39 | 1 (6%) |
| 20 | FUC | Y | 4 | 20 | 10,10,11 | 1.01 | 0 | 14,14,16 | 1.35 | 1 (7%) |

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 |
|-----|------|-------|-----|------|---------|----------|-------|
| 7 | NAG | A | 1 | 7,1 | - | 1/6/23/26 | 0/1/1/1 |
| 7 | FUC | A | 2 | 7 | - | - | 0/1/1/1 |
| 8 | NAG | F | 1 | 3,8 | - | 2/6/23/26 | 0/1/1/1 |
| 8 | NAG | F | 2 | 8 | - | 2/6/23/26 | 0/1/1/1 |
| 9 | NAG | I | 1 | 4,9 | - | 4/6/23/26 | 0/1/1/1 |
| 9 | NAG | I | 2 | 9 | - | 2/6/23/26 | 0/1/1/1 |
| 9 | BMA | I | 3 | 9 | - | 2/2/19/22 | 0/1/1/1 |
| 9 | MAN | I | 4 | 9 | - | 1/2/19/22 | 0/1/1/1 |
| 9 | MAN | I | 5 | 9 | - | 1/2/19/22 | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|----------|-------|
| 10 | NAG | J | 1 | 4,10 | - | 2/6/23/26 | 0/1/1/1 |
| 10 | NAG | J | 2 | 10 | - | 2/6/23/26 | 0/1/1/1 |
| 10 | BMA | J | 3 | 10 | - | 1/2/19/22 | 0/1/1/1 |
| 10 | MAN | J | 4 | 10 | - | 2/2/19/22 | 1/1/1/1 |
| 10 | NAG | J | 5 | 10 | - | 2/6/23/26 | 0/1/1/1 |
| 10 | GAL | J | 6 | 10 | - | 0/2/19/22 | 0/1/1/1 |
| 10 | MAN | J | 7 | 10 | - | 0/2/19/22 | 0/1/1/1 |
| 11 | NAG | K | 1 | 11,4 | - | 4/6/23/26 | 0/1/1/1 |
| 11 | NAG | K | 2 | 11 | - | 4/6/23/26 | 0/1/1/1 |
| 11 | BMA | K | 3 | 11 | - | 1/2/19/22 | 0/1/1/1 |
| 11 | MAN | K | 4 | 11 | - | 0/2/19/22 | 0/1/1/1 |
| 12 | NAG | M | 1 | 12,4 | - | 0/6/23/26 | 0/1/1/1 |
| 12 | NAG | M | 2 | 12 | - | 0/6/23/26 | 0/1/1/1 |
| 12 | BMA | M | 3 | 12 | - | 0/2/19/22 | 0/1/1/1 |
| 12 | MAN | M | 4 | 12 | - | 2/2/19/22 | 0/1/1/1 |
| 12 | MAN | M | 5 | 12 | - | 1/2/19/22 | 0/1/1/1 |
| 12 | MAN | M | 6 | 12 | - | 1/2/19/22 | 1/1/1/1 |
| 13 | MAN | N | 1 | 13 | - | 1/2/19/22 | 0/1/1/1 |
| 13 | MAN | N | 2 | 13 | - | 2/2/19/22 | 0/1/1/1 |
| 13 | MAN | O | 1 | 13 | - | 0/2/19/22 | 0/1/1/1 |
| 13 | MAN | O | 2 | 13 | - | 2/2/19/22 | 0/1/1/1 |
| 14 | NAG | P | 1 | 14,4 | - | 3/6/23/26 | 0/1/1/1 |
| 14 | NAG | P | 2 | 14 | - | 2/6/23/26 | 0/1/1/1 |
| 14 | BMA | P | 3 | 14 | - | 0/2/19/22 | 0/1/1/1 |
| 15 | NAG | Q | 1 | 15,4 | - | 3/6/23/26 | 0/1/1/1 |
| 15 | NAG | Q | 2 | 15 | - | 3/6/23/26 | 0/1/1/1 |
| 15 | BMA | Q | 3 | 15 | - | 0/2/19/22 | 0/1/1/1 |
| 15 | MAN | Q | 4 | 15 | - | 2/2/19/22 | 0/1/1/1 |
| 16 | NAG | R | 1 | 4,16 | - | 0/6/23/26 | 0/1/1/1 |
| 16 | NAG | R | 2 | 16 | - | 4/6/23/26 | 0/1/1/1 |
| 16 | NAG | R | 3 | 16 | - | 4/6/23/26 | 0/1/1/1 |
| 17 | NAG | S | 1 | 17,4 | - | 2/6/23/26 | 0/1/1/1 |
| 17 | NAG | S | 2 | 17 | - | 0/6/23/26 | 0/1/1/1 |
| 17 | BMA | S | 3 | 17 | - | 2/2/19/22 | 0/1/1/1 |
| 17 | MAN | S | 4 | 17 | - | 0/2/19/22 | 0/1/1/1 |
| 17 | MAN | S | 5 | 17 | - | 2/2/19/22 | 0/1/1/1 |
| 17 | MAN | S | 6 | 17 | - | 1/2/19/22 | 0/1/1/1 |
| 18 | NAG | T | 1 | 4,18 | - | 4/6/23/26 | 0/1/1/1 |

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| Mol | Type | Chain | Res | Link | Chirals | Torsions | Rings |
|-----|------|-------|-----|------|---------|----------|-------|
| 18 | NAG | T | 2 | 18 | - | 3/6/23/26 | 0/1/1/1 |
| 18 | BMA | T | 3 | 18 | - | 0/2/19/22 | 0/1/1/1 |
| 18 | MAN | T | 4 | 18 | - | 2/2/19/22 | 0/1/1/1 |
| 18 | MAN | T | 5 | 18 | - | 1/2/19/22 | 0/1/1/1 |
| 18 | MAN | T | 6 | 18 | - | 2/2/19/22 | 0/1/1/1 |
| 18 | MAN | T | 7 | 18 | - | 2/2/19/22 | 0/1/1/1 |
| 14 | NAG | U | 1 | 14,4 | - | 3/6/23/26 | 0/1/1/1 |
| 14 | NAG | U | 2 | 14 | - | 0/6/23/26 | 0/1/1/1 |
| 14 | BMA | U | 3 | 14 | - | 0/2/19/22 | 0/1/1/1 |
| 8 | NAG | V | 1 | 8,4 | - | 4/6/23/26 | 0/1/1/1 |
| 8 | NAG | V | 2 | 8 | - | 4/6/23/26 | 0/1/1/1 |
| 8 | NAG | W | 1 | 8,4 | - | 2/6/23/26 | 0/1/1/1 |
| 8 | NAG | W | 2 | 8 | - | 2/6/23/26 | 0/1/1/1 |
| 19 | NAG | X | 1 | 19,4 | - | 3/6/23/26 | 0/1/1/1 |
| 19 | NAG | X | 2 | 19 | - | 0/6/23/26 | 0/1/1/1 |
| 19 | BMA | X | 3 | 19 | - | 0/2/19/22 | 0/1/1/1 |
| 19 | MAN | X | 4 | 19 | - | 0/2/19/22 | 0/1/1/1 |
| 19 | BMA | X | 5 | 19 | - | 0/2/19/22 | 0/1/1/1 |
| 19 | MAN | X | 6 | 19 | - | 2/2/19/22 | 0/1/1/1 |
| 20 | NAG | Y | 1 | 20,4 | - | 3/6/23/26 | 0/1/1/1 |
| 20 | NAG | Y | 2 | 20 | - | 1/6/23/26 | 0/1/1/1 |
| 20 | BMA | Y | 3 | 20 | - | 2/2/19/22 | 0/1/1/1 |
| 20 | FUC | Y | 4 | 20 | - | - | 0/1/1/1 |

All (107) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 7 | A | 1 | NAG | O5-C1 | 6.82 | 1.54 | 1.43 |
| 13 | O | 2 | MAN | O5-C1 | 6.07 | 1.53 | 1.43 |
| 13 | O | 2 | MAN | C4-C3 | 5.93 | 1.67 | 1.52 |
| 15 | Q | 4 | MAN | O5-C1 | 5.87 | 1.53 | 1.43 |
| 17 | S | 5 | MAN | C1-C2 | 5.75 | 1.65 | 1.52 |
| 9 | I | 1 | NAG | O5-C1 | -5.35 | 1.35 | 1.43 |
| 19 | X | 4 | MAN | C1-C2 | 5.12 | 1.63 | 1.52 |
| 15 | Q | 3 | BMA | O5-C5 | 4.98 | 1.53 | 1.43 |
| 18 | T | 5 | MAN | O5-C5 | 4.73 | 1.53 | 1.43 |
| 13 | O | 2 | MAN | C2-C3 | 4.62 | 1.59 | 1.52 |
| 13 | O | 2 | MAN | C6-C5 | 4.61 | 1.67 | 1.51 |
| 15 | Q | 4 | MAN | C1-C2 | 4.52 | 1.62 | 1.52 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 17 | S | 5 | MAN | O5-C1 | 4.51 | 1.50 | 1.43 |
| 13 | O | 2 | MAN | O5-C5 | 4.50 | 1.52 | 1.43 |
| 19 | X | 6 | MAN | O5-C5 | 4.48 | 1.52 | 1.43 |
| 10 | J | 3 | BMA | C1-C2 | 4.21 | 1.61 | 1.52 |
| 13 | N | 1 | MAN | C2-C3 | 4.17 | 1.58 | 1.52 |
| 20 | Y | 1 | NAG | O5-C1 | -4.16 | 1.37 | 1.43 |
| 20 | Y | 3 | BMA | O5-C5 | 4.08 | 1.51 | 1.43 |
| 15 | Q | 4 | MAN | C2-C3 | 4.07 | 1.58 | 1.52 |
| 9 | I | 3 | BMA | C4-C5 | 3.99 | 1.61 | 1.53 |
| 18 | T | 3 | BMA | C2-C3 | 3.86 | 1.58 | 1.52 |
| 13 | N | 2 | MAN | C2-C3 | 3.80 | 1.58 | 1.52 |
| 20 | Y | 3 | BMA | C1-C2 | 3.77 | 1.60 | 1.52 |
| 13 | O | 1 | MAN | C2-C3 | 3.72 | 1.58 | 1.52 |
| 13 | O | 1 | MAN | C4-C3 | 3.68 | 1.61 | 1.52 |
| 12 | M | 6 | MAN | C2-C3 | 3.68 | 1.57 | 1.52 |
| 13 | O | 1 | MAN | O5-C5 | 3.58 | 1.50 | 1.43 |
| 14 | U | 3 | BMA | C1-C2 | 3.58 | 1.60 | 1.52 |
| 15 | Q | 3 | BMA | O5-C1 | 3.57 | 1.49 | 1.43 |
| 15 | Q | 4 | MAN | C4-C5 | 3.56 | 1.60 | 1.53 |
| 17 | S | 6 | MAN | C2-C3 | 3.55 | 1.57 | 1.52 |
| 12 | M | 6 | MAN | O5-C5 | 3.55 | 1.50 | 1.43 |
| 12 | M | 3 | BMA | C2-C3 | -3.55 | 1.47 | 1.52 |
| 16 | R | 3 | NAG | O5-C1 | 3.33 | 1.49 | 1.43 |
| 13 | O | 2 | MAN | C4-C5 | 3.32 | 1.60 | 1.53 |
| 11 | K | 3 | BMA | C4-C5 | 3.24 | 1.59 | 1.53 |
| 17 | S | 6 | MAN | C1-C2 | 3.22 | 1.59 | 1.52 |
| 18 | T | 3 | BMA | O3-C3 | 3.21 | 1.50 | 1.43 |
| 17 | S | 4 | MAN | C1-C2 | 3.19 | 1.59 | 1.52 |
| 14 | P | 3 | BMA | C1-C2 | 3.09 | 1.59 | 1.52 |
| 18 | T | 7 | MAN | C1-C2 | 3.02 | 1.59 | 1.52 |
| 9 | I | 3 | BMA | C1-C2 | 2.99 | 1.59 | 1.52 |
| 18 | T | 5 | MAN | O5-C1 | 2.97 | 1.48 | 1.43 |
| 10 | J | 4 | MAN | O2-C2 | 2.94 | 1.49 | 1.43 |
| 10 | J | 1 | NAG | O5-C1 | 2.88 | 1.48 | 1.43 |
| 13 | O | 1 | MAN | O5-C1 | 2.88 | 1.48 | 1.43 |
| 8 | F | 2 | NAG | C1-C2 | 2.85 | 1.56 | 1.52 |
| 18 | T | 5 | MAN | C4-C3 | 2.85 | 1.59 | 1.52 |
| 17 | S | 2 | NAG | C1-C2 | 2.85 | 1.56 | 1.52 |
| 10 | J | 4 | MAN | C4-C3 | 2.84 | 1.59 | 1.52 |
| 20 | Y | 3 | BMA | C2-C3 | 2.82 | 1.56 | 1.52 |
| 20 | Y | 2 | NAG | O5-C1 | 2.79 | 1.48 | 1.43 |
| 13 | N | 2 | MAN | C1-C2 | 2.74 | 1.58 | 1.52 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 19 | X | 5 | BMA | C1-C2 | 2.74 | 1.58 | 1.52 |
| 20 | Y | 3 | BMA | O5-C1 | 2.72 | 1.48 | 1.43 |
| 16 | R | 1 | NAG | O5-C1 | -2.71 | 1.39 | 1.43 |
| 19 | X | 5 | BMA | C4-C3 | 2.68 | 1.59 | 1.52 |
| 17 | S | 3 | BMA | C1-C2 | 2.68 | 1.58 | 1.52 |
| 19 | X | 3 | BMA | O3-C3 | 2.67 | 1.49 | 1.43 |
| 18 | T | 7 | MAN | O5-C5 | 2.65 | 1.48 | 1.43 |
| 14 | U | 2 | NAG | O5-C1 | -2.62 | 1.39 | 1.43 |
| 15 | Q | 4 | MAN | O5-C5 | 2.57 | 1.48 | 1.43 |
| 14 | P | 2 | NAG | C1-C2 | 2.54 | 1.56 | 1.52 |
| 12 | M | 1 | NAG | C1-C2 | 2.52 | 1.56 | 1.52 |
| 10 | J | 2 | NAG | C1-C2 | 2.49 | 1.56 | 1.52 |
| 14 | P | 3 | BMA | O5-C1 | 2.49 | 1.47 | 1.43 |
| 17 | S | 6 | MAN | O5-C1 | 2.49 | 1.47 | 1.43 |
| 7 | A | 2 | FUC | C1-C2 | 2.48 | 1.57 | 1.52 |
| 14 | P | 3 | BMA | O5-C5 | 2.47 | 1.48 | 1.43 |
| 19 | X | 4 | MAN | O5-C1 | -2.44 | 1.39 | 1.43 |
| 19 | X | 5 | BMA | C4-C5 | 2.44 | 1.58 | 1.53 |
| 18 | T | 4 | MAN | C2-C3 | 2.42 | 1.56 | 1.52 |
| 18 | T | 6 | MAN | C4-C5 | 2.41 | 1.58 | 1.53 |
| 18 | T | 6 | MAN | C1-C2 | 2.39 | 1.57 | 1.52 |
| 13 | O | 2 | MAN | O4-C4 | 2.37 | 1.48 | 1.43 |
| 19 | X | 3 | BMA | O5-C1 | -2.36 | 1.39 | 1.43 |
| 11 | K | 1 | NAG | O5-C1 | -2.34 | 1.40 | 1.43 |
| 19 | X | 6 | MAN | O5-C1 | 2.34 | 1.47 | 1.43 |
| 17 | S | 6 | MAN | O5-C5 | 2.32 | 1.48 | 1.43 |
| 12 | M | 3 | BMA | O5-C1 | -2.32 | 1.40 | 1.43 |
| 14 | U | 1 | NAG | C1-C2 | 2.32 | 1.55 | 1.52 |
| 13 | O | 1 | MAN | O3-C3 | 2.30 | 1.48 | 1.43 |
| 19 | X | 6 | MAN | C1-C2 | 2.29 | 1.57 | 1.52 |
| 12 | M | 5 | MAN | O5-C5 | 2.27 | 1.48 | 1.43 |
| 10 | J | 4 | MAN | C1-C2 | 2.27 | 1.57 | 1.52 |
| 19 | X | 4 | MAN | C4-C5 | 2.27 | 1.57 | 1.53 |
| 18 | T | 6 | MAN | C2-C3 | 2.27 | 1.55 | 1.52 |
| 15 | Q | 3 | BMA | C1-C2 | 2.26 | 1.57 | 1.52 |
| 15 | Q | 3 | BMA | C2-C3 | 2.25 | 1.55 | 1.52 |
| 18 | T | 6 | MAN | O5-C5 | 2.24 | 1.48 | 1.43 |
| 7 | A | 2 | FUC | O5-C1 | 2.24 | 1.47 | 1.43 |
| 20 | Y | 2 | NAG | C1-C2 | 2.22 | 1.55 | 1.52 |
| 13 | N | 2 | MAN | C4-C3 | 2.19 | 1.57 | 1.52 |
| 13 | N | 1 | MAN | C1-C2 | 2.19 | 1.57 | 1.52 |
| 10 | J | 5 | NAG | O5-C1 | 2.18 | 1.47 | 1.43 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|-------|---|-------------|----------|
| 18 | T | 5 | MAN | C6-C5 | 2.16 | 1.59 | 1.51 |
| 17 | S | 4 | MAN | C4-C3 | 2.16 | 1.57 | 1.52 |
| 17 | S | 6 | MAN | C4-C3 | 2.14 | 1.57 | 1.52 |
| 10 | J | 6 | GAL | C1-C2 | 2.13 | 1.57 | 1.52 |
| 13 | N | 1 | MAN | O5-C5 | 2.12 | 1.47 | 1.43 |
| 14 | P | 3 | BMA | C2-C3 | 2.10 | 1.55 | 1.52 |
| 7 | A | 1 | NAG | O7-C7 | 2.09 | 1.28 | 1.23 |
| 16 | R | 2 | NAG | C1-C2 | 2.09 | 1.55 | 1.52 |
| 19 | X | 6 | MAN | C4-C3 | 2.04 | 1.57 | 1.52 |
| 9 | I | 4 | MAN | C4-C5 | 2.03 | 1.57 | 1.53 |
| 9 | I | 1 | NAG | C1-C2 | -2.02 | 1.49 | 1.52 |

All (118) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------|---|-------------|----------|
| 15 | Q | 4 | MAN | C1-O5-C5 | 8.89 | 124.24 | 112.19 |
| 9 | I | 3 | BMA | C1-C2-C3 | -8.33 | 99.43 | 109.67 |
| 13 | O | 1 | MAN | C1-O5-C5 | 7.22 | 121.98 | 112.19 |
| 18 | T | 7 | MAN | C1-O5-C5 | 7.07 | 121.77 | 112.19 |
| 13 | O | 2 | MAN | C1-O5-C5 | 6.69 | 121.25 | 112.19 |
| 19 | X | 6 | MAN | C1-O5-C5 | 6.66 | 121.21 | 112.19 |
| 9 | I | 3 | BMA | C1-O5-C5 | -6.65 | 103.19 | 112.19 |
| 15 | Q | 3 | BMA | C1-O5-C5 | 6.59 | 121.13 | 112.19 |
| 17 | S | 5 | MAN | C1-O5-C5 | 6.55 | 121.06 | 112.19 |
| 9 | I | 1 | NAG | C2-N2-C7 | 5.19 | 130.29 | 122.90 |
| 18 | T | 5 | MAN | C1-O5-C5 | 5.02 | 118.99 | 112.19 |
| 10 | J | 4 | MAN | C1-O5-C5 | 4.89 | 118.81 | 112.19 |
| 19 | X | 3 | BMA | O3-C3-C2 | 4.86 | 119.30 | 109.99 |
| 15 | Q | 1 | NAG | C1-O5-C5 | 4.61 | 118.44 | 112.19 |
| 14 | P | 1 | NAG | C2-N2-C7 | 4.59 | 129.44 | 122.90 |
| 15 | Q | 2 | NAG | C2-N2-C7 | 4.45 | 129.24 | 122.90 |
| 15 | Q | 4 | MAN | C1-C2-C3 | 4.28 | 114.93 | 109.67 |
| 12 | M | 6 | MAN | C1-O5-C5 | 4.23 | 117.92 | 112.19 |
| 9 | I | 3 | BMA | O5-C1-C2 | -4.21 | 104.27 | 110.77 |
| 20 | Y | 1 | NAG | C2-N2-C7 | 4.13 | 128.78 | 122.90 |
| 12 | M | 4 | MAN | C1-O5-C5 | 4.07 | 117.70 | 112.19 |
| 11 | K | 1 | NAG | C2-N2-C7 | 4.02 | 128.63 | 122.90 |
| 9 | I | 2 | NAG | O4-C4-C5 | -4.00 | 99.36 | 109.30 |
| 18 | T | 6 | MAN | C1-O5-C5 | 3.98 | 117.59 | 112.19 |
| 17 | S | 6 | MAN | C1-O5-C5 | 3.96 | 117.56 | 112.19 |
| 17 | S | 4 | MAN | O2-C2-C3 | -3.91 | 102.31 | 110.14 |
| 17 | S | 4 | MAN | C1-O5-C5 | 3.88 | 117.45 | 112.19 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|----------|--------|
| 13 | N | 1 | MAN | C1-O5-C5 | 3.84 | 117.40 | 112.19 |
| 17 | S | 5 | MAN | C1-C2-C3 | 3.79 | 114.33 | 109.67 |
| 18 | T | 3 | BMA | O3-C3-C2 | 3.67 | 117.02 | 109.99 |
| 7 | A | 1 | NAG | C1-O5-C5 | -3.64 | 107.26 | 112.19 |
| 12 | M | 3 | BMA | C1-O5-C5 | 3.58 | 117.04 | 112.19 |
| 19 | X | 4 | MAN | C1-C2-C3 | 3.49 | 113.96 | 109.67 |
| 15 | Q | 2 | NAG | C1-O5-C5 | 3.43 | 116.84 | 112.19 |
| 15 | Q | 4 | MAN | O5-C1-C2 | 3.37 | 115.97 | 110.77 |
| 18 | T | 4 | MAN | C1-O5-C5 | 3.36 | 116.74 | 112.19 |
| 17 | S | 1 | NAG | C1-O5-C5 | 3.29 | 116.64 | 112.19 |
| 15 | Q | 2 | NAG | C1-C2-N2 | 3.26 | 116.06 | 110.49 |
| 19 | X | 4 | MAN | O2-C2-C3 | -3.23 | 103.68 | 110.14 |
| 13 | O | 2 | MAN | C6-C5-C4 | 3.20 | 120.50 | 113.00 |
| 12 | M | 4 | MAN | O2-C2-C3 | -3.20 | 103.74 | 110.14 |
| 9 | I | 3 | BMA | O3-C3-C2 | 3.15 | 116.03 | 109.99 |
| 12 | M | 4 | MAN | O5-C1-C2 | -3.14 | 105.93 | 110.77 |
| 13 | O | 1 | MAN | O5-C1-C2 | 3.04 | 115.46 | 110.77 |
| 20 | Y | 4 | FUC | C1-C2-C3 | -3.03 | 105.94 | 109.67 |
| 9 | I | 1 | NAG | C1-C2-N2 | 3.00 | 115.61 | 110.49 |
| 20 | Y | 3 | BMA | C1-O5-C5 | 2.99 | 116.24 | 112.19 |
| 12 | M | 5 | MAN | C1-O5-C5 | 2.98 | 116.23 | 112.19 |
| 19 | X | 3 | BMA | C1-O5-C5 | 2.97 | 116.22 | 112.19 |
| 12 | M | 3 | BMA | C2-C3-C4 | 2.97 | 116.03 | 110.89 |
| 13 | N | 1 | MAN | O3-C3-C2 | 2.96 | 115.66 | 109.99 |
| 13 | O | 2 | MAN | O5-C5-C6 | 2.84 | 111.65 | 107.20 |
| 7 | A | 1 | NAG | O3-C3-C2 | 2.82 | 115.31 | 109.47 |
| 10 | J | 4 | MAN | O5-C1-C2 | 2.79 | 115.07 | 110.77 |
| 18 | T | 4 | MAN | C1-C2-C3 | 2.78 | 113.08 | 109.67 |
| 9 | I | 4 | MAN | C1-O5-C5 | 2.76 | 115.94 | 112.19 |
| 18 | T | 5 | MAN | O2-C2-C3 | -2.70 | 104.73 | 110.14 |
| 20 | Y | 2 | NAG | C1-O5-C5 | 2.69 | 115.84 | 112.19 |
| 14 | U | 1 | NAG | C4-C3-C2 | -2.66 | 107.12 | 111.02 |
| 14 | P | 3 | BMA | C1-O5-C5 | 2.62 | 115.74 | 112.19 |
| 13 | O | 2 | MAN | O3-C3-C4 | 2.60 | 116.35 | 110.35 |
| 14 | U | 1 | NAG | C1-O5-C5 | 2.59 | 115.70 | 112.19 |
| 9 | I | 1 | NAG | C1-O5-C5 | -2.58 | 108.70 | 112.19 |
| 11 | K | 1 | NAG | C1-O5-C5 | -2.57 | 108.71 | 112.19 |
| 14 | U | 1 | NAG | C1-C2-N2 | 2.55 | 114.84 | 110.49 |
| 9 | I | 2 | NAG | C4-C3-C2 | 2.54 | 114.74 | 111.02 |
| 9 | I | 1 | NAG | C3-C4-C5 | 2.53 | 114.75 | 110.24 |
| 19 | X | 5 | BMA | C1-O5-C5 | 2.52 | 115.60 | 112.19 |
| 13 | N | 2 | MAN | O3-C3-C2 | 2.50 | 114.79 | 109.99 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|----------------|-------------|
| 14 | U | 3 | BMA | C1-C2-C3 | 2.49 | 112.73 | 109.67 |
| 10 | J | 4 | MAN | O2-C2-C1 | 2.47 | 114.21 | 109.15 |
| 18 | T | 7 | MAN | O5-C1-C2 | 2.47 | 114.58 | 110.77 |
| 13 | O | 1 | MAN | C2-C3-C4 | 2.46 | 115.15 | 110.89 |
| 12 | M | 3 | BMA | O2-C2-C3 | -2.45 | 105.23 | 110.14 |
| 18 | T | 5 | MAN | O5-C5-C6 | 2.43 | 111.01 | 107.20 |
| 19 | X | 1 | NAG | C2-N2-C7 | 2.43 | 126.36 | 122.90 |
| 18 | T | 7 | MAN | O2-C2-C3 | -2.43 | 105.27 | 110.14 |
| 9 | I | 1 | NAG | O4-C4-C5 | -2.42 | 103.28 | 109.30 |
| 9 | I | 5 | MAN | O2-C2-C3 | -2.42 | 105.29 | 110.14 |
| 13 | O | 2 | MAN | O3-C3-C2 | 2.41 | 114.60 | 109.99 |
| 15 | Q | 3 | BMA | O2-C2-C1 | 2.41 | 114.07 | 109.15 |
| 9 | I | 5 | MAN | C1-O5-C5 | 2.40 | 115.45 | 112.19 |
| 10 | J | 6 | GAL | O2-C2-C1 | 2.40 | 114.05 | 109.15 |
| 12 | M | 5 | MAN | O2-C2-C1 | 2.39 | 114.05 | 109.15 |
| 12 | M | 3 | BMA | O3-C3-C2 | -2.39 | 105.42 | 109.99 |
| 15 | Q | 4 | MAN | O3-C3-C2 | 2.38 | 114.56 | 109.99 |
| 10 | J | 5 | NAG | C1-O5-C5 | 2.37 | 115.40 | 112.19 |
| 13 | N | 1 | MAN | O5-C1-C2 | 2.36 | 114.42 | 110.77 |
| 20 | Y | 2 | NAG | C2-N2-C7 | 2.36 | 126.26 | 122.90 |
| 9 | I | 2 | NAG | C3-C4-C5 | 2.31 | 114.36 | 110.24 |
| 14 | U | 2 | NAG | C3-C4-C5 | 2.30 | 114.34 | 110.24 |
| 17 | S | 6 | MAN | C1-C2-C3 | 2.30 | 112.49 | 109.67 |
| 9 | I | 4 | MAN | O2-C2-C3 | -2.27 | 105.59 | 110.14 |
| 11 | K | 4 | MAN | C1-O5-C5 | 2.26 | 115.25 | 112.19 |
| 13 | O | 1 | MAN | O2-C2-C3 | -2.25 | 105.64 | 110.14 |
| 13 | O | 2 | MAN | O2-C2-C3 | 2.24 | 114.62 | 110.14 |
| 17 | S | 4 | MAN | C1-C2-C3 | 2.23 | 112.41 | 109.67 |
| 19 | X | 4 | MAN | C1-O5-C5 | 2.23 | 115.21 | 112.19 |
| 13 | O | 2 | MAN | C2-C3-C4 | 2.20 | 114.70 | 110.89 |
| 7 | A | 1 | NAG | O5-C5-C6 | 2.19 | 110.63 | 107.20 |
| 10 | J | 7 | MAN | C1-O5-C5 | 2.17 | 115.14 | 112.19 |
| 19 | X | 5 | BMA | O5-C1-C2 | 2.14 | 114.08 | 110.77 |
| 10 | J | 6 | GAL | C1-O5-C5 | 2.14 | 115.08 | 112.19 |
| 10 | J | 1 | NAG | C1-O5-C5 | 2.13 | 115.07 | 112.19 |
| 8 | V | 1 | NAG | C2-N2-C7 | 2.11 | 125.91 | 122.90 |
| 7 | A | 2 | FUC | O2-C2-C1 | 2.11 | 113.48 | 109.15 |
| 13 | N | 2 | MAN | C1-O5-C5 | 2.11 | 115.06 | 112.19 |
| 12 | M | 6 | MAN | O3-C3-C2 | 2.11 | 114.03 | 109.99 |
| 19 | X | 4 | MAN | C6-C5-C4 | 2.10 | 117.93 | 113.00 |
| 14 | U | 3 | BMA | O2-C2-C3 | -2.10 | 105.93 | 110.14 |
| 13 | O | 2 | MAN | O5-C1-C2 | 2.08 | 113.98 | 110.77 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-------|------|-------------|----------|
| 15 | Q | 1 | NAG | O5-C5-C6 | -2.06 | 103.97 | 107.20 |
| 18 | T | 4 | MAN | O2-C2-C3 | -2.05 | 106.03 | 110.14 |
| 12 | M | 5 | MAN | C1-C2-C3 | -2.03 | 107.17 | 109.67 |
| 17 | S | 5 | MAN | O5-C1-C2 | 2.01 | 113.88 | 110.77 |
| 17 | S | 5 | MAN | O2-C2-C3 | -2.01 | 106.11 | 110.14 |
| 9 | I | 4 | MAN | O2-C2-C1 | 2.00 | 113.25 | 109.15 |
| 7 | A | 2 | FUC | C1-O5-C5 | 2.00 | 117.31 | 112.78 |

There are no chirality outliers.

All (110) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 15 | Q | 2 | NAG | C1-C2-N2-C7 |
| 13 | O | 2 | MAN | C4-C5-C6-O6 |
| 15 | Q | 4 | MAN | O5-C5-C6-O6 |
| 19 | X | 6 | MAN | O5-C5-C6-O6 |
| 19 | X | 6 | MAN | C4-C5-C6-O6 |
| 18 | T | 4 | MAN | O5-C5-C6-O6 |
| 12 | M | 4 | MAN | C4-C5-C6-O6 |
| 10 | J | 1 | NAG | O5-C5-C6-O6 |
| 19 | X | 1 | NAG | O5-C5-C6-O6 |
| 10 | J | 5 | NAG | C4-C5-C6-O6 |
| 14 | U | 1 | NAG | C4-C5-C6-O6 |
| 16 | R | 3 | NAG | O5-C5-C6-O6 |
| 17 | S | 1 | NAG | O5-C5-C6-O6 |
| 9 | I | 2 | NAG | C4-C5-C6-O6 |
| 9 | I | 3 | BMA | O5-C5-C6-O6 |
| 8 | V | 1 | NAG | O5-C5-C6-O6 |
| 10 | J | 5 | NAG | O5-C5-C6-O6 |
| 12 | M | 4 | MAN | O5-C5-C6-O6 |
| 13 | O | 2 | MAN | O5-C5-C6-O6 |
| 18 | T | 7 | MAN | O5-C5-C6-O6 |
| 11 | K | 2 | NAG | C1-C2-N2-C7 |
| 18 | T | 2 | NAG | C1-C2-N2-C7 |
| 8 | V | 2 | NAG | O5-C5-C6-O6 |
| 10 | J | 1 | NAG | C4-C5-C6-O6 |
| 16 | R | 3 | NAG | C4-C5-C6-O6 |
| 15 | Q | 4 | MAN | C4-C5-C6-O6 |
| 18 | T | 6 | MAN | C4-C5-C6-O6 |
| 8 | V | 2 | NAG | C4-C5-C6-O6 |
| 13 | N | 2 | MAN | O5-C5-C6-O6 |
| 17 | S | 1 | NAG | C4-C5-C6-O6 |

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| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 18 | T | 4 | MAN | C4-C5-C6-O6 |
| 8 | F | 1 | NAG | C8-C7-N2-C2 |
| 8 | F | 1 | NAG | O7-C7-N2-C2 |
| 8 | V | 2 | NAG | C8-C7-N2-C2 |
| 8 | V | 2 | NAG | O7-C7-N2-C2 |
| 9 | I | 1 | NAG | C8-C7-N2-C2 |
| 9 | I | 1 | NAG | O7-C7-N2-C2 |
| 11 | K | 1 | NAG | C8-C7-N2-C2 |
| 11 | K | 1 | NAG | O7-C7-N2-C2 |
| 14 | P | 1 | NAG | C8-C7-N2-C2 |
| 14 | P | 1 | NAG | O7-C7-N2-C2 |
| 16 | R | 3 | NAG | C8-C7-N2-C2 |
| 16 | R | 3 | NAG | O7-C7-N2-C2 |
| 18 | T | 1 | NAG | C8-C7-N2-C2 |
| 18 | T | 1 | NAG | O7-C7-N2-C2 |
| 20 | Y | 1 | NAG | C8-C7-N2-C2 |
| 20 | Y | 1 | NAG | O7-C7-N2-C2 |
| 9 | I | 2 | NAG | O5-C5-C6-O6 |
| 8 | V | 1 | NAG | C4-C5-C6-O6 |
| 8 | W | 1 | NAG | O5-C5-C6-O6 |
| 11 | K | 2 | NAG | O5-C5-C6-O6 |
| 19 | X | 1 | NAG | C1-C2-N2-C7 |
| 20 | Y | 2 | NAG | C1-C2-N2-C7 |
| 17 | S | 3 | BMA | O5-C5-C6-O6 |
| 9 | I | 3 | BMA | C4-C5-C6-O6 |
| 18 | T | 7 | MAN | C4-C5-C6-O6 |
| 12 | M | 5 | MAN | O5-C5-C6-O6 |
| 8 | W | 1 | NAG | C4-C5-C6-O6 |
| 15 | Q | 1 | NAG | C1-C2-N2-C7 |
| 17 | S | 3 | BMA | C4-C5-C6-O6 |
| 19 | X | 1 | NAG | C4-C5-C6-O6 |
| 18 | T | 6 | MAN | O5-C5-C6-O6 |
| 10 | J | 4 | MAN | C4-C5-C6-O6 |
| 16 | R | 2 | NAG | C4-C5-C6-O6 |
| 18 | T | 1 | NAG | C4-C5-C6-O6 |
| 14 | U | 1 | NAG | O5-C5-C6-O6 |
| 17 | S | 5 | MAN | C4-C5-C6-O6 |
| 18 | T | 2 | NAG | O5-C5-C6-O6 |
| 8 | F | 2 | NAG | C1-C2-N2-C7 |
| 11 | K | 1 | NAG | O5-C5-C6-O6 |
| 17 | S | 5 | MAN | O5-C5-C6-O6 |
| 8 | W | 2 | NAG | O5-C5-C6-O6 |

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| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 20 | Y | 3 | BMA | O5-C5-C6-O6 |
| 15 | Q | 1 | NAG | O5-C5-C6-O6 |
| 17 | S | 6 | MAN | O5-C5-C6-O6 |
| 12 | M | 6 | MAN | O5-C5-C6-O6 |
| 11 | K | 3 | BMA | O5-C5-C6-O6 |
| 14 | P | 2 | NAG | C1-C2-N2-C7 |
| 20 | Y | 3 | BMA | C4-C5-C6-O6 |
| 9 | I | 4 | MAN | O5-C5-C6-O6 |
| 18 | T | 1 | NAG | O5-C5-C6-O6 |
| 9 | I | 5 | MAN | O5-C5-C6-O6 |
| 10 | J | 3 | BMA | O5-C5-C6-O6 |
| 16 | R | 2 | NAG | O5-C5-C6-O6 |
| 18 | T | 5 | MAN | O5-C5-C6-O6 |
| 13 | N | 1 | MAN | O5-C5-C6-O6 |
| 15 | Q | 2 | NAG | C4-C5-C6-O6 |
| 11 | K | 2 | NAG | C4-C5-C6-O6 |
| 10 | J | 4 | MAN | O5-C5-C6-O6 |
| 11 | K | 1 | NAG | C1-C2-N2-C7 |
| 13 | N | 2 | MAN | C4-C5-C6-O6 |
| 15 | Q | 2 | NAG | O5-C5-C6-O6 |
| 8 | F | 2 | NAG | C3-C2-N2-C7 |
| 8 | V | 1 | NAG | C3-C2-N2-C7 |
| 9 | I | 1 | NAG | C3-C2-N2-C7 |
| 11 | K | 2 | NAG | C3-C2-N2-C7 |
| 14 | U | 1 | NAG | C3-C2-N2-C7 |
| 15 | Q | 1 | NAG | C3-C2-N2-C7 |
| 18 | T | 2 | NAG | C3-C2-N2-C7 |
| 16 | R | 2 | NAG | C1-C2-N2-C7 |
| 7 | A | 1 | NAG | O5-C5-C6-O6 |
| 8 | V | 1 | NAG | C1-C2-N2-C7 |
| 10 | J | 2 | NAG | C3-C2-N2-C7 |
| 14 | P | 1 | NAG | C3-C2-N2-C7 |
| 14 | P | 2 | NAG | C3-C2-N2-C7 |
| 16 | R | 2 | NAG | C3-C2-N2-C7 |
| 20 | Y | 1 | NAG | C3-C2-N2-C7 |
| 10 | J | 2 | NAG | C4-C5-C6-O6 |
| 8 | W | 2 | NAG | C4-C5-C6-O6 |
| 9 | I | 1 | NAG | C1-C2-N2-C7 |

All (2) ring outliers are listed below:

*Continued from previous page...*

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 10 | J | 4 | MAN | C1-C2-C3-C4-C5-O5 |
| 12 | M | 6 | MAN | C1-C2-C3-C4-C5-O5 |

24 monomers are involved in 26 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 15 | Q | 3 | BMA | 1 | 0 |
| 9 | I | 1 | NAG | 1 | 0 |
| 18 | T | 1 | NAG | 1 | 0 |
| 12 | M | 6 | MAN | 1 | 0 |
| 13 | O | 2 | MAN | 2 | 0 |
| 11 | K | 1 | NAG | 2 | 0 |
| 14 | P | 1 | NAG | 1 | 0 |
| 10 | J | 2 | NAG | 2 | 0 |
| 13 | N | 2 | MAN | 1 | 1 |
| 20 | Y | 4 | FUC | 2 | 0 |
| 17 | S | 6 | MAN | 1 | 0 |
| 18 | T | 2 | NAG | 2 | 0 |
| 11 | K | 2 | NAG | 2 | 0 |
| 14 | U | 2 | NAG | 1 | 0 |
| 19 | X | 1 | NAG | 2 | 0 |
| 14 | U | 1 | NAG | 1 | 0 |
| 15 | Q | 4 | MAN | 1 | 0 |
| 13 | O | 1 | MAN | 3 | 0 |
| 20 | Y | 1 | NAG | 2 | 0 |
| 12 | M | 3 | BMA | 1 | 0 |
| 10 | J | 5 | NAG | 1 | 0 |
| 13 | N | 1 | MAN | 1 | 0 |
| 19 | X | 2 | NAG | 1 | 0 |
| 18 | T | 5 | MAN | 2 | 0 |

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

## Oligosaccharide Chain A



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain F



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain V


Bond lengths


Bond angles


Torsions


Rings

## Oligosaccharide Chain W


Bond lengths


Bond angles


Torsions


Rings

## Oligosaccharide Chain I



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain J



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain K



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain M



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain N



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain O



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain P



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain U

Bond lengths

Bond angles

Torsions

Rings

## Oligosaccharide Chain Q

Bond lengths

Bond angles

Torsions

Rings

## Oligosaccharide Chain R



Bond lengths



Bond angles



Torsions



Rings

## Oligosaccharide Chain S



Bond lengths



Bond angles



Torsions



Rings

# Oligosaccharide Chain T


Bond lengths


Bond angles


Torsions


Rings

## Oligosaccharide Chain X


Bond lengths


Bond angles


Torsions


Rings

## Oligosaccharide Chain Y


Bond lengths


Bond angles


Torsions


Rings

## 5.6 Ligand geometry ⓘ

4 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 | #$|Z| > 2$ |
| 22 | FUC | G | 602 | - | 10,10,11 | 2.76 | 4 (40%) | 14,14,16 | 1.71 | 5 (35%) |
| 21 | NAG | G | 603 | 4 | 14,14,15 | 1.06 | 2 (14%) | 17,19,21 | 1.18 | 1 (5%) |
| 21 | NAG | B | 701 | 1 | 14,14,15 | 0.49 | 0 | 17,19,21 | 1.34 | 1 (5%) |
| 21 | NAG | G | 601 | 4 | 14,14,15 | 0.85 | 1 (7%) | 17,19,21 | 1.15 | 1 (5%) |

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 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 22 | FUC | G | 602 | - | - | - | 0/1/1/1 |
| 21 | NAG | G | 603 | 4 | - | 2/6/23/26 | 0/1/1/1 |
| 21 | NAG | B | 701 | 1 | - | 3/6/23/26 | 0/1/1/1 |
| 21 | NAG | G | 601 | 4 | - | 2/6/23/26 | 0/1/1/1 |

All (7) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 22 | G | 602 | FUC | C4-C3 | 5.69 | 1.66 | 1.52 |
| 22 | G | 602 | FUC | C2-C3 | 4.00 | 1.58 | 1.52 |
| 22 | G | 602 | FUC | C4-C5 | 3.66 | 1.61 | 1.52 |
| 21 | G | 601 | NAG | O5-C1 | 2.80 | 1.48 | 1.43 |
| 22 | G | 602 | FUC | O2-C2 | 2.67 | 1.49 | 1.43 |
| 21 | G | 603 | NAG | C3-C2 | 2.30 | 1.57 | 1.52 |
| 21 | G | 603 | NAG | C1-C2 | 2.18 | 1.55 | 1.52 |

All (8) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|-----|-------|-----|------|-------|---|-----------|----------|
| 21 | B | 701 | NAG | C2-N2-C7 | 4.63 | 129.50 | 122.90 |
| 21 | G | 601 | NAG | C1-O5-C5 | 3.58 | 117.05 | 112.19 |
| 21 | G | 603 | NAG | C2-N2-C7 | 2.76 | 126.83 | 122.90 |
| 22 | G | 602 | FUC | C6-C5-C4 | 2.74 | 118.13 | 113.07 |
| 22 | G | 602 | FUC | O2-C2-C1 | 2.62 | 114.50 | 109.15 |
| 22 | G | 602 | FUC | C1-O5-C5 | 2.46 | 118.36 | 112.78 |
| 22 | G | 602 | FUC | O2-C2-C3 | 2.18 | 114.50 | 110.14 |
| 22 | G | 602 | FUC | O5-C5-C4 | 2.09 | 113.28 | 109.52 |

There are no chirality outliers.

All (7) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|-----|-------|-----|------|-------|
| 21 | B | 701 | NAG | C3-C2-N2-C7 |
| 21 | G | 601 | NAG | C4-C5-C6-O6 |
| 21 | G | 601 | NAG | O5-C5-C6-O6 |
| 21 | B | 701 | NAG | O5-C5-C6-O6 |
| 21 | G | 603 | NAG | C4-C5-C6-O6 |
| 21 | G | 603 | NAG | O5-C5-C6-O6 |
| 21 | B | 701 | NAG | C4-C5-C6-O6 |

There are no ring outliers.

2 monomers are involved in 7 short contacts:

| Mol | Chain | Res | Type | Clashes | Symm-Clashes |
|-----|-------|-----|------|---------|--------------|
| 22 | G | 602 | FUC | 6 | 0 |
| 21 | B | 701 | NAG | 1 | 0 |

### 5.7 Other polymers ⓘ

There are no such residues in this entry.

### 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

# 6 Fit of model and data ⓘ

## 6.1 Protein, DNA and RNA chains ⓘ

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

| Mol | Chain | Analysed | <RSRZ> | #RSRZ>2 | | | OWAB(Å²) | Q<0.9 |
|-----|-------|----------|--------|---------|----|----|----------|-------|
| 1 | B | 137/153 (89%) | 0.02 | 6 (4%) | 34 | 28 | 218, 288, 324, 337 | 0 |
| 2 | D | 220/234 (94%) | 0.23 | 19 (8%) | 10 | 9 | 177, 255, 403, 439 | 0 |
| 3 | E | 202/205 (98%) | 0.13 | 14 (6%) | 16 | 13 | 207, 302, 381, 398 | 0 |
| 4 | G | 451/501 (90%) | -0.09 | 9 (1%) | 65 | 56 | 136, 227, 315, 534 | 0 |
| 5 | H | 229/243 (94%) | 0.02 | 11 (4%) | 30 | 25 | 172, 254, 348, 408 | 0 |
| 6 | L | 211/214 (98%) | -0.22 | 3 (1%) | 75 | 65 | 173, 251, 336, 360 | 0 |
| All | All | 1450/1550 (93%) | -0.00 | 62 (4%) | 35 | 29 | 136, 259, 377, 534 | 0 |

All (62) RSRZ outliers are listed below:

| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 4 | G | 507 | GLY | 9.4 |
| 2 | D | 136 | PRO | 7.3 |
| 2 | D | 146 | ALA | 7.2 |
| 3 | E | 169 | SER | 6.6 |
| 4 | G | 506 | VAL | 6.1 |
| 5 | H | 203 | VAL | 6.0 |
| 2 | D | 193 | THR | 6.0 |
| 5 | H | 204 | PRO | 5.9 |
| 3 | E | 168 | SER | 5.9 |
| 2 | D | 190 | SER | 5.5 |
| 1 | B | 600 | GLY | 5.4 |
| 2 | D | 220 | LYS | 4.8 |
| 1 | B | 521 | GLY | 4.5 |
| 2 | D | 192 | VAL | 4.5 |
| 5 | H | 208 | LEU | 4.4 |
| 2 | D | 137 | SER | 4.4 |
| 2 | D | 194 | VAL | 4.2 |
| 2 | D | 216 | LYS | 4.2 |
| 5 | H | 213 | TYR | 4.0 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 5 | H | 145 | PRO | 3.8 |
| 2 | D | 217 | VAL | 3.7 |
| 4 | G | 505 | VAL | 3.7 |
| 1 | B | 599 | SER | 3.5 |
| 2 | D | 222 | GLU | 3.5 |
| 5 | H | 230 | VAL | 3.4 |
| 1 | B | 594 | GLY | 3.3 |
| 3 | E | 184 | TYR | 3.3 |
| 2 | D | 205 | ILE | 3.2 |
| 4 | G | 473 | GLY | 3.2 |
| 2 | D | 189 | SER | 3.2 |
| 3 | E | 204 | CYS | 3.1 |
| 3 | E | 141 | TRP | 3.1 |
| 3 | E | 186 | CYS | 3.1 |
| 4 | G | 495 | GLY | 3.1 |
| 3 | E | 137 | VAL | 3.0 |
| 2 | D | 208 | VAL | 2.9 |
| 2 | D | 221 | VAL | 2.9 |
| 2 | D | 162 | VAL | 2.8 |
| 6 | L | 124 | LEU | 2.8 |
| 5 | H | 205 | SER | 2.8 |
| 4 | G | 63 | THR | 2.8 |
| 5 | H | 202 | THR | 2.7 |
| 4 | G | 496 | VAL | 2.7 |
| 5 | H | 207 | SER | 2.7 |
| 4 | G | 283 | ASN | 2.6 |
| 2 | D | 171 | SER | 2.6 |
| 6 | L | 125 | PHE | 2.5 |
| 2 | D | 204 | TYR | 2.5 |
| 3 | E | 170 | TYR | 2.5 |
| 3 | E | 203 | GLU | 2.4 |
| 1 | B | 598 | CYS | 2.4 |
| 3 | E | 98 | VAL | 2.3 |
| 2 | D | 219 | LYS | 2.3 |
| 5 | H | 138 | PRO | 2.2 |
| 3 | E | 124 | THR | 2.2 |
| 5 | H | 232 | PRO | 2.2 |
| 4 | G | 474 | ASP | 2.1 |
| 1 | B | 552 | GLN | 2.1 |
| 6 | L | 127 | PRO | 2.1 |
| 3 | E | 9 | SER | 2.0 |
| 3 | E | 71 | ILE | 2.0 |

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| Mol | Chain | Res | Type | RSRZ |
|-----|-------|-----|------|------|
| 3 | E | 10 | VAL | 2.0 |

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

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

## 6.3 Carbohydrates ⓘ

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

| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(Å$^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|------------------|-------|
| 10 | GAL | J | 6 | 11/12 | 0.39 | 0.33 | 340,340,340,340 | 0 |
| 19 | MAN | X | 6 | 11/12 | 0.58 | 0.30 | 351,351,351,351 | 0 |
| 9 | MAN | I | 4 | 11/12 | 0.60 | 0.35 | 356,356,356,356 | 0 |
| 9 | BMA | I | 3 | 11/12 | 0.65 | 0.23 | 358,358,358,358 | 0 |
| 10 | BMA | J | 3 | 11/12 | 0.67 | 0.12 | 287,287,287,287 | 0 |
| 17 | BMA | S | 3 | 11/12 | 0.68 | 0.19 | 299,299,299,299 | 0 |
| 11 | BMA | K | 3 | 11/12 | 0.68 | 0.16 | 308,308,308,308 | 0 |
| 8 | NAG | V | 2 | 14/15 | 0.70 | 0.25 | 286,286,286,286 | 0 |
| 19 | BMA | X | 3 | 11/12 | 0.73 | 0.16 | 336,336,336,336 | 0 |
| 13 | MAN | N | 2 | 11/12 | 0.74 | 0.22 | 280,280,280,280 | 0 |
| 9 | MAN | I | 5 | 11/12 | 0.74 | 0.33 | 377,377,377,377 | 0 |
| 14 | NAG | P | 2 | 14/15 | 0.75 | 0.47 | 345,345,345,345 | 0 |
| 9 | NAG | I | 2 | 14/15 | 0.75 | 0.30 | 313,313,313,313 | 0 |
| 11 | MAN | K | 4 | 11/12 | 0.76 | 0.42 | 348,348,348,348 | 0 |
| 18 | MAN | T | 7 | 11/12 | 0.76 | 0.26 | 333,333,333,333 | 0 |
| 17 | MAN | S | 6 | 11/12 | 0.77 | 0.18 | 316,316,316,316 | 0 |
| 17 | MAN | S | 4 | 11/12 | 0.77 | 0.14 | 315,315,315,315 | 0 |
| 14 | BMA | P | 3 | 11/12 | 0.78 | 0.29 | 326,326,326,326 | 0 |
| 17 | MAN | S | 5 | 11/12 | 0.80 | 0.20 | 305,305,305,305 | 0 |
| 14 | NAG | P | 1 | 14/15 | 0.81 | 0.26 | 311,311,311,311 | 0 |
| 16 | NAG | R | 3 | 14/15 | 0.81 | 0.18 | 296,296,296,296 | 0 |
| 19 | BMA | X | 5 | 11/12 | 0.81 | 0.33 | 344,344,344,344 | 0 |
| 8 | NAG | V | 1 | 14/15 | 0.81 | 0.25 | 260,260,260,260 | 0 |
| 14 | BMA | U | 3 | 11/12 | 0.82 | 0.24 | 297,297,297,297 | 0 |
| 19 | MAN | X | 4 | 11/12 | 0.82 | 0.19 | 338,338,338,338 | 0 |
| 8 | NAG | F | 1 | 14/15 | 0.83 | 0.20 | 328,328,328,328 | 0 |
| 7 | FUC | A | 2 | 10/11 | 0.83 | 0.50 | 321,321,321,321 | 0 |

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| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors(Å²) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|---------------|-------|
| 20 | BMA | Y | 3 | 11/12 | 0.83 | 0.12 | 305,305,305,305 | 0 |
| 18 | BMA | T | 3 | 11/12 | 0.84 | 0.23 | 318,318,318,318 | 0 |
| 10 | NAG | J | 5 | 14/15 | 0.84 | 0.41 | 332,332,332,332 | 0 |
| 19 | NAG | X | 1 | 14/15 | 0.84 | 0.19 | 232,232,232,232 | 0 |
| 7 | NAG | A | 1 | 14/15 | 0.84 | 0.38 | 322,322,322,322 | 0 |
| 18 | MAN | T | 5 | 11/12 | 0.85 | 0.28 | 291,291,291,291 | 0 |
| 18 | MAN | T | 6 | 11/12 | 0.85 | 0.17 | 272,272,272,272 | 0 |
| 20 | NAG | Y | 1 | 14/15 | 0.85 | 0.22 | 316,316,316,316 | 0 |
| 12 | MAN | M | 5 | 11/12 | 0.85 | 0.24 | 277,277,277,277 | 0 |
| 10 | MAN | J | 7 | 11/12 | 0.86 | 0.20 | 290,290,290,290 | 0 |
| 16 | NAG | R | 2 | 14/15 | 0.86 | 0.20 | 272,272,272,272 | 0 |
| 10 | MAN | J | 4 | 11/12 | 0.86 | 0.28 | 308,308,308,308 | 0 |
| 17 | NAG | S | 1 | 14/15 | 0.88 | 0.28 | 215,215,215,215 | 0 |
| 8 | NAG | W | 2 | 14/15 | 0.88 | 0.29 | 288,288,288,288 | 0 |
| 9 | NAG | I | 1 | 14/15 | 0.89 | 0.29 | 266,266,266,266 | 0 |
| 18 | MAN | T | 4 | 11/12 | 0.89 | 0.10 | 290,290,290,290 | 0 |
| 12 | MAN | M | 6 | 11/12 | 0.89 | 0.27 | 273,273,273,273 | 0 |
| 20 | FUC | Y | 4 | 10/11 | 0.89 | 0.62 | 313,313,313,313 | 0 |
| 8 | NAG | W | 1 | 14/15 | 0.90 | 0.13 | 246,246,246,246 | 0 |
| 13 | MAN | N | 1 | 11/12 | 0.90 | 0.11 | 258,258,258,258 | 0 |
| 20 | NAG | Y | 2 | 14/15 | 0.90 | 0.20 | 336,336,336,336 | 0 |
| 18 | NAG | T | 2 | 14/15 | 0.90 | 0.23 | 303,303,303,303 | 0 |
| 10 | NAG | J | 1 | 14/15 | 0.90 | 0.20 | 273,273,273,273 | 0 |
| 15 | NAG | Q | 2 | 14/15 | 0.91 | 0.18 | 239,239,239,239 | 0 |
| 15 | BMA | Q | 3 | 11/12 | 0.91 | 0.14 | 267,267,267,267 | 0 |
| 8 | NAG | F | 2 | 14/15 | 0.91 | 0.50 | 347,347,347,347 | 0 |
| 12 | MAN | M | 4 | 11/12 | 0.91 | 0.16 | 248,248,248,248 | 0 |
| 13 | MAN | O | 1 | 11/12 | 0.92 | 0.15 | 204,204,204,204 | 0 |
| 16 | NAG | R | 1 | 14/15 | 0.92 | 0.27 | 213,213,213,213 | 0 |
| 12 | NAG | M | 1 | 14/15 | 0.93 | 0.24 | 200,200,200,200 | 0 |
| 12 | NAG | M | 2 | 14/15 | 0.93 | 0.18 | 203,203,203,203 | 0 |
| 11 | NAG | K | 1 | 14/15 | 0.93 | 0.13 | 238,238,238,238 | 0 |
| 14 | NAG | U | 1 | 14/15 | 0.93 | 0.21 | 234,234,234,234 | 0 |
| 14 | NAG | U | 2 | 14/15 | 0.93 | 0.15 | 264,264,264,264 | 0 |
| 11 | NAG | K | 2 | 14/15 | 0.93 | 0.08 | 282,282,282,282 | 0 |
| 15 | NAG | Q | 1 | 14/15 | 0.93 | 0.24 | 230,230,230,230 | 0 |
| 13 | MAN | O | 2 | 11/12 | 0.93 | 0.13 | 202,202,202,202 | 0 |
| 19 | NAG | X | 2 | 14/15 | 0.94 | 0.11 | 280,280,280,280 | 0 |
| 17 | NAG | S | 2 | 14/15 | 0.94 | 0.32 | 282,282,282,282 | 0 |
| 10 | NAG | J | 2 | 14/15 | 0.94 | 0.11 | 281,281,281,281 | 0 |
| 15 | MAN | Q | 4 | 11/12 | 0.95 | 0.12 | 245,245,245,245 | 0 |
| 12 | BMA | M | 3 | 11/12 | 0.96 | 0.12 | 213,213,213,213 | 0 |

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| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors($Å^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|-------------------|-------|
| 18 | NAG | T | 1 | 14/15 | 0.97 | 0.14 | 250,250,250,250 | 0 |

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



Electron density around Chain A:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
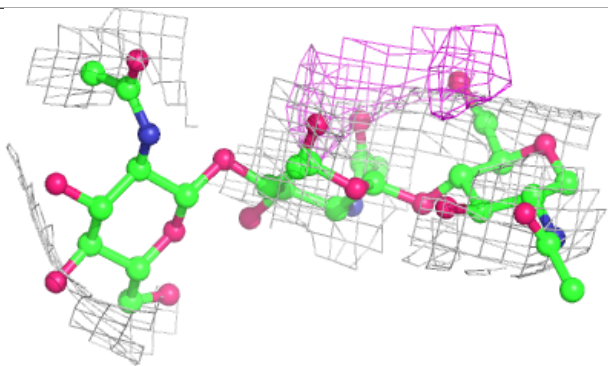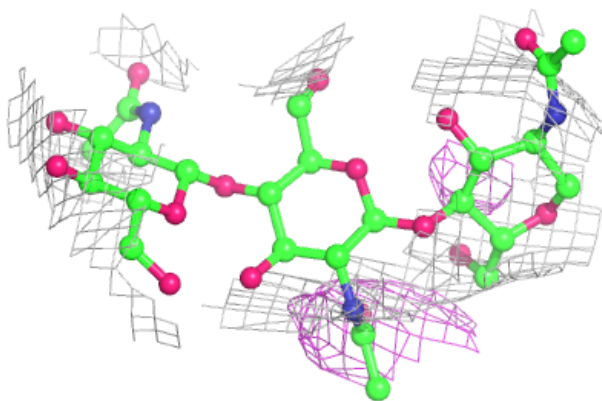and green (positive)
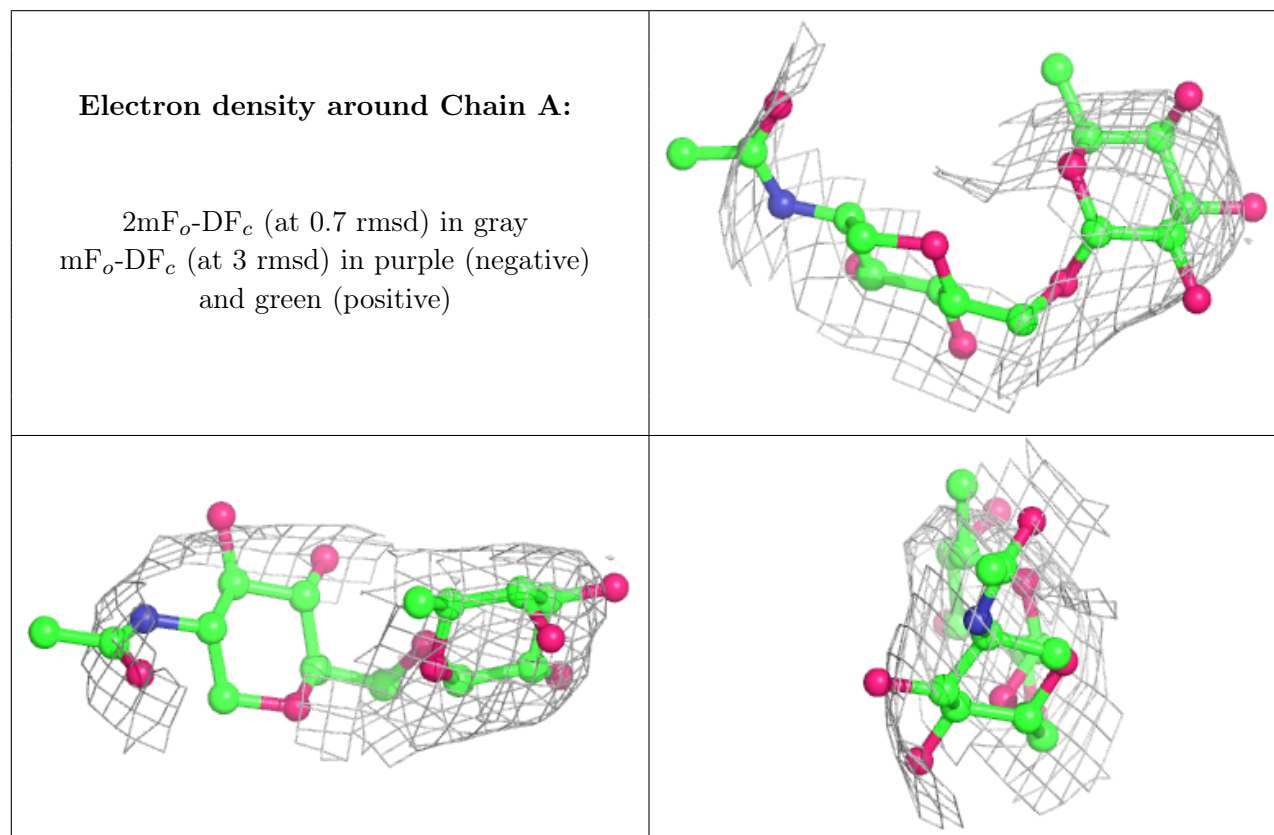
**Electron density around Chain F:**

$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
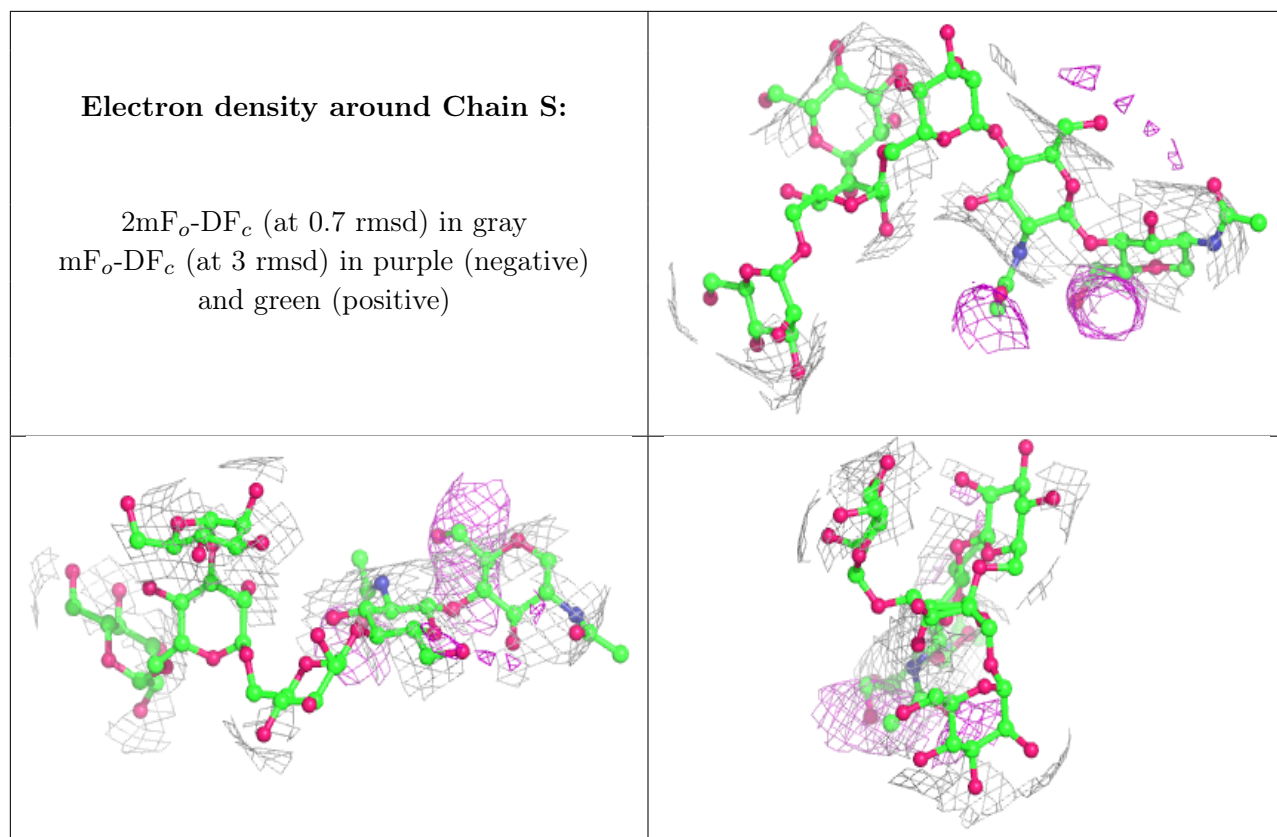$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
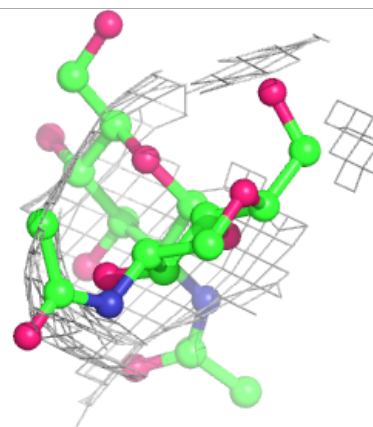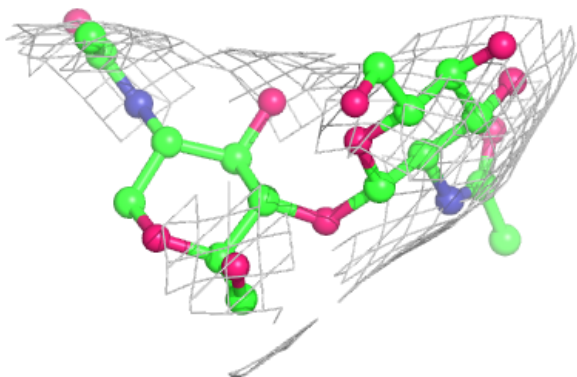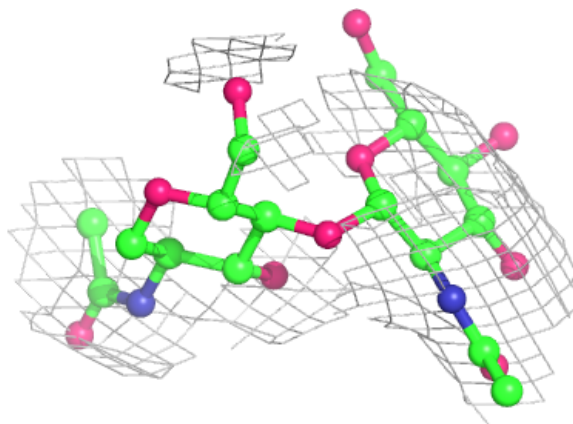
**Electron density around Chain V:**

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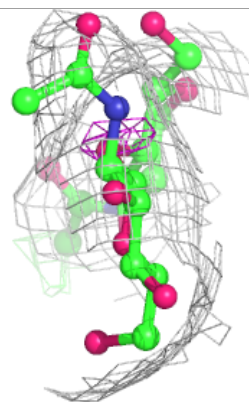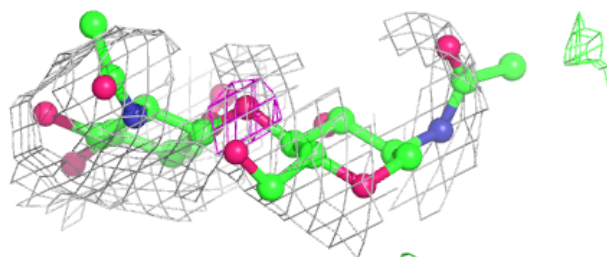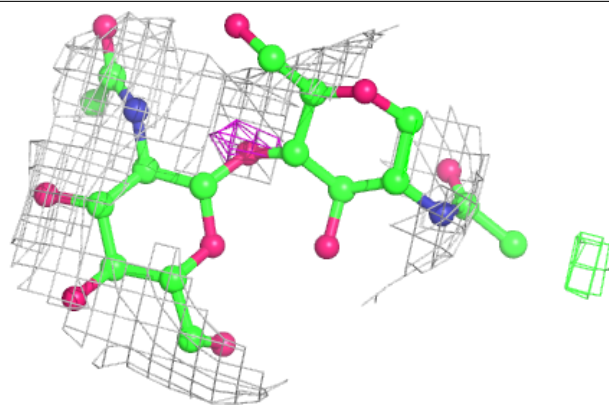


**Electron density around Chain W:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
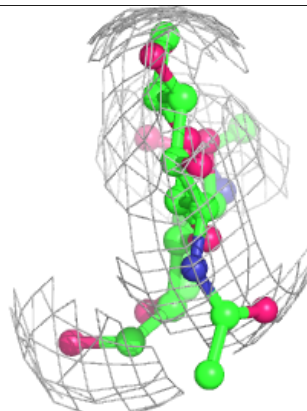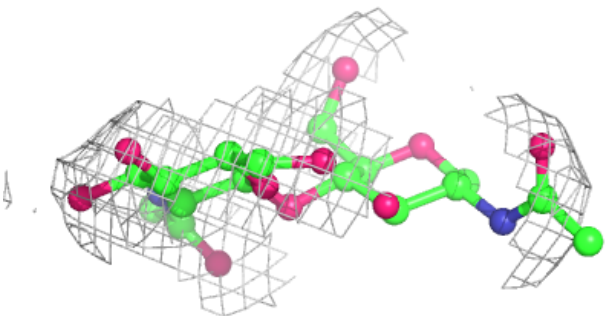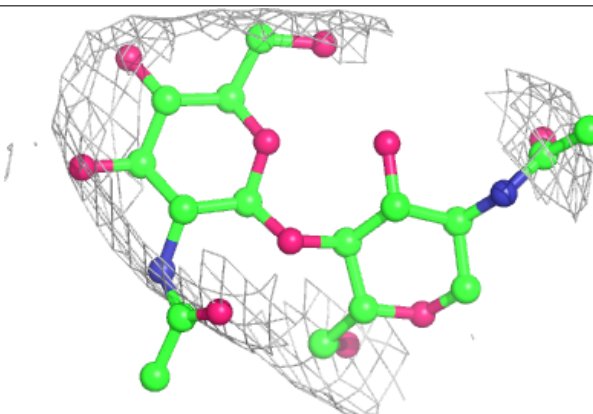
**Electron density around Chain I:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
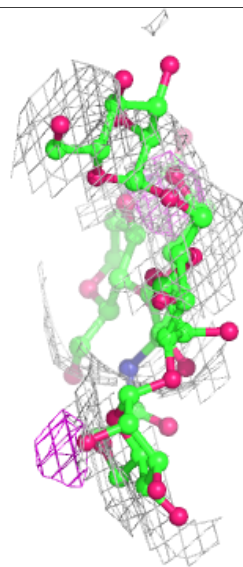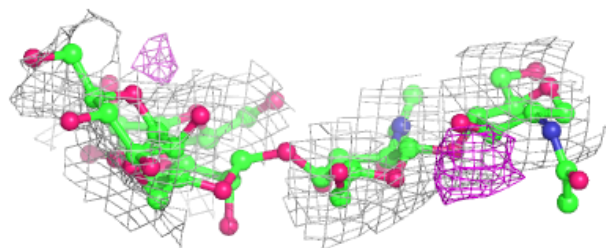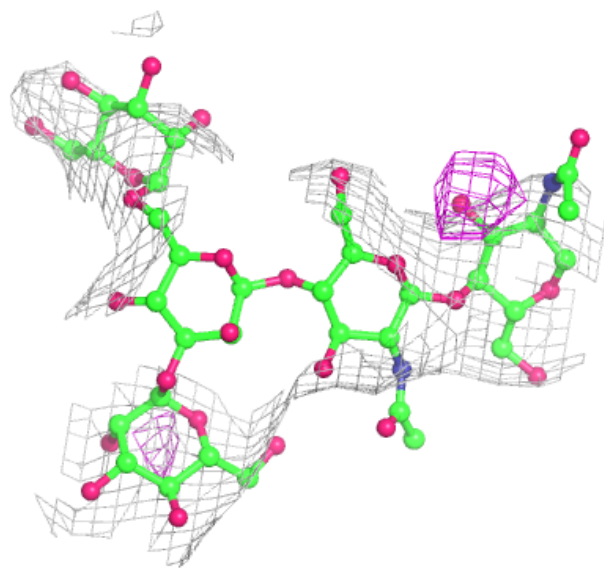
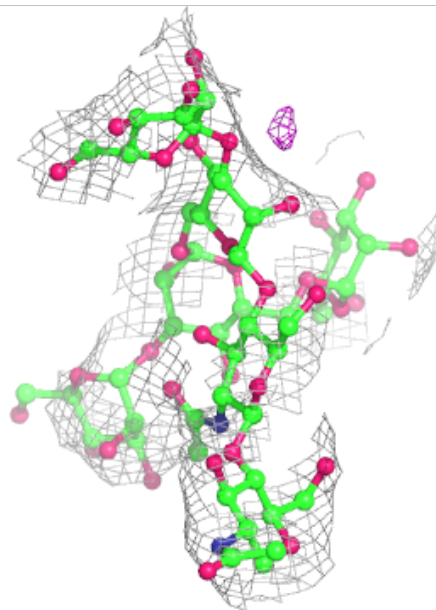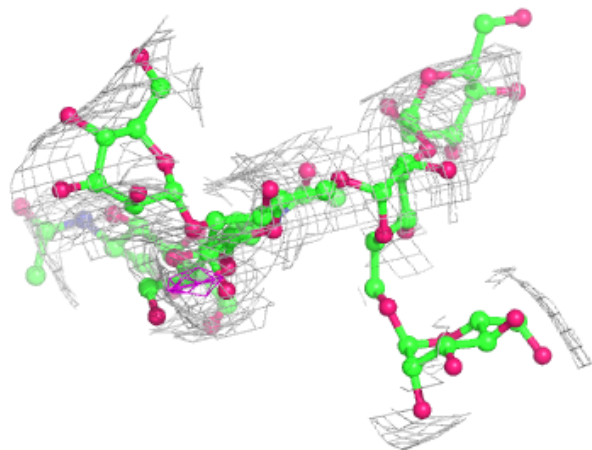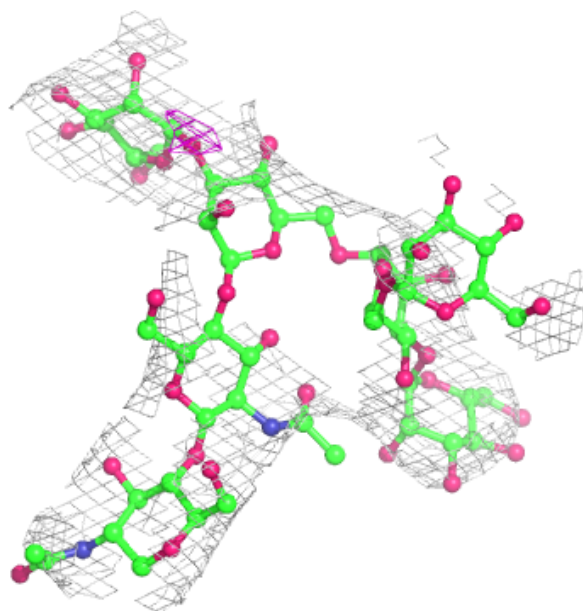**Electron density around Chain J:**

$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
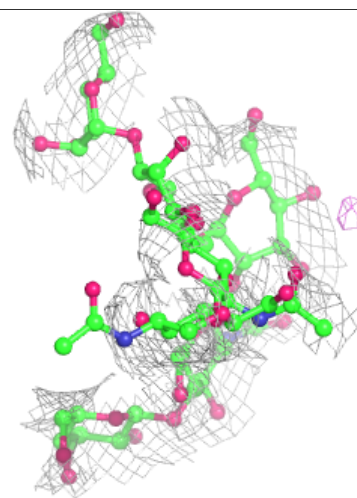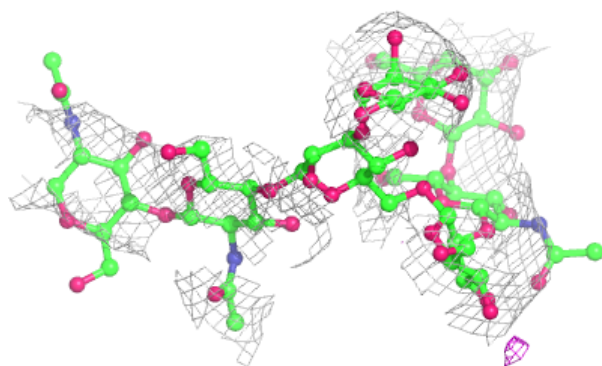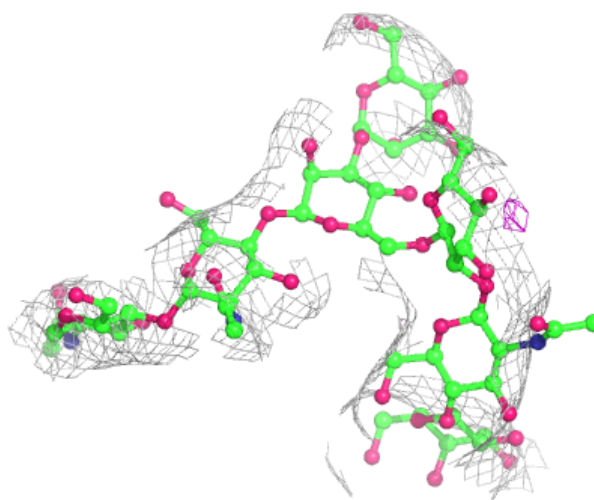
**Electron density around Chain K:**

$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative)
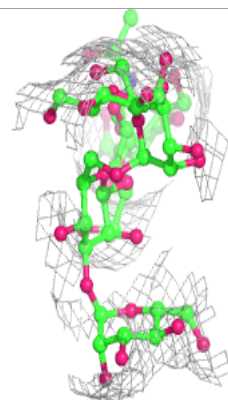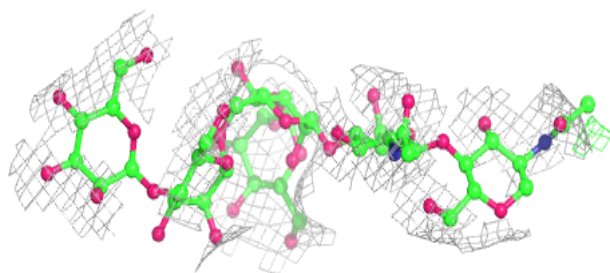and green (positive)
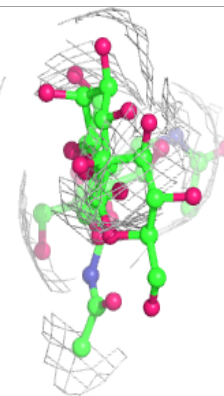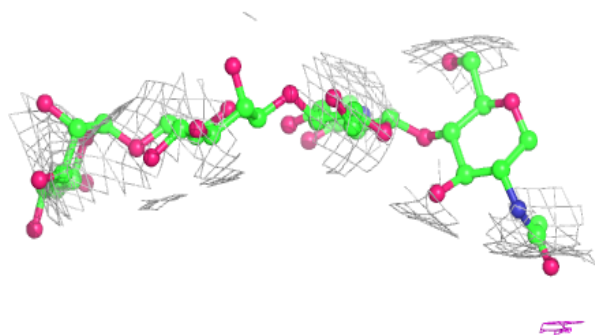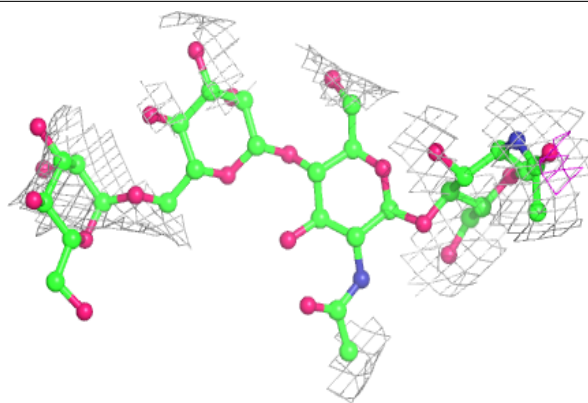
**Electron density around Chain M:**

$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
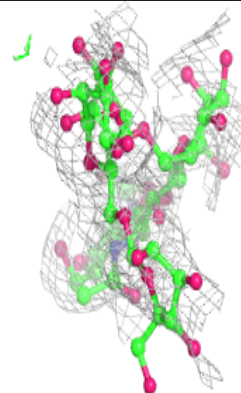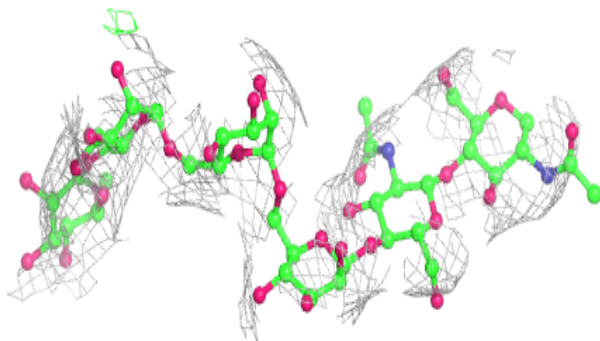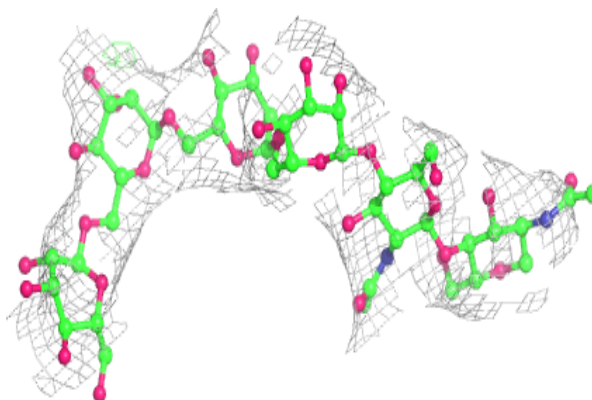
**Electron density around Chain N:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
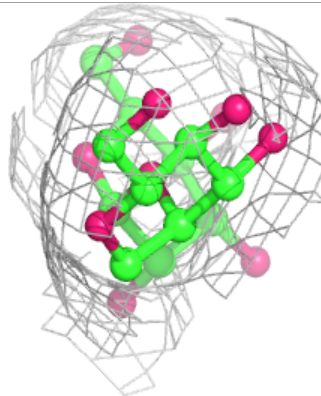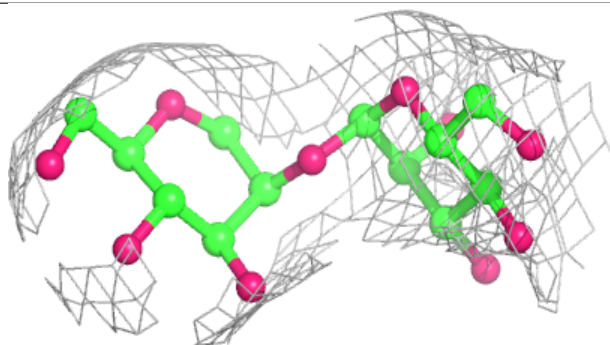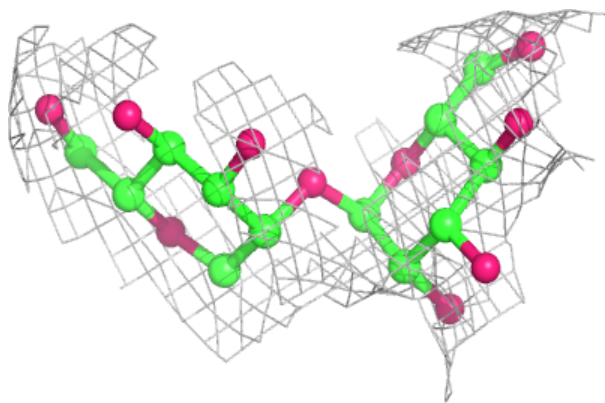
**Electron density around Chain O:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
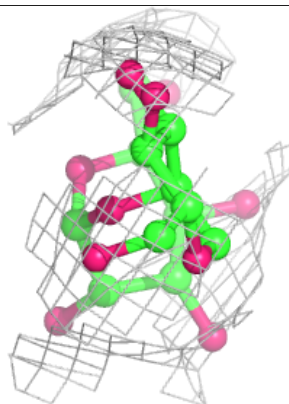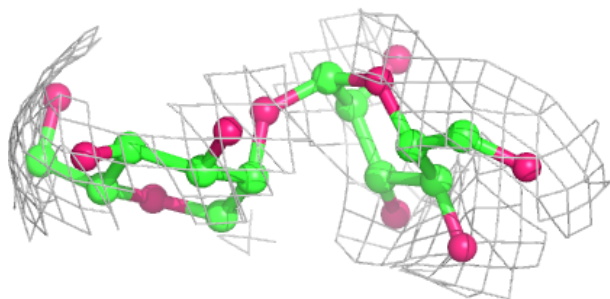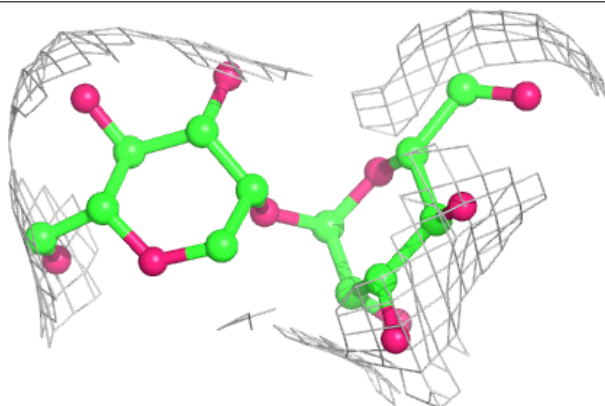
**Electron density around Chain P:**

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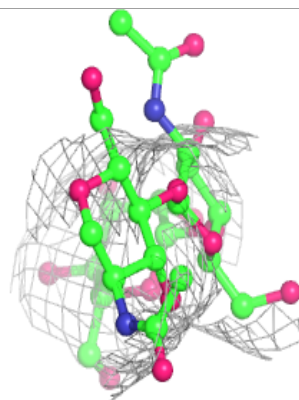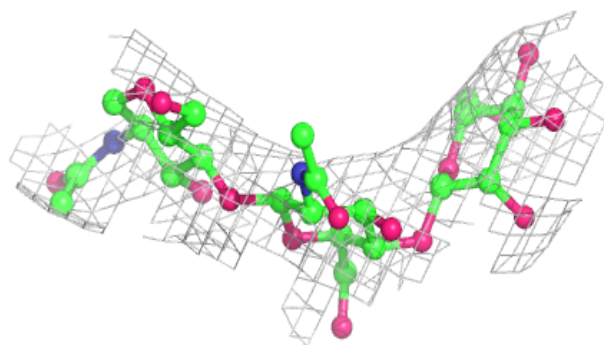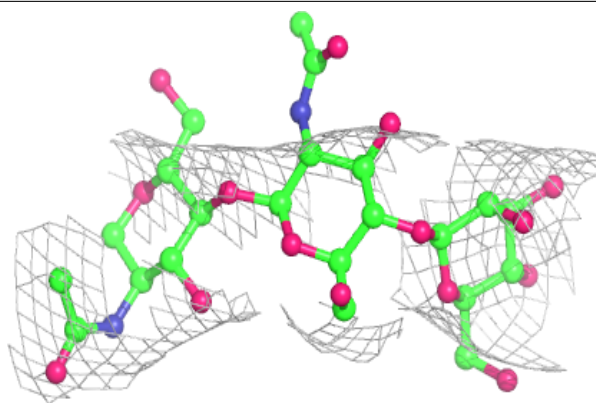


**Electron density around Chain U:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
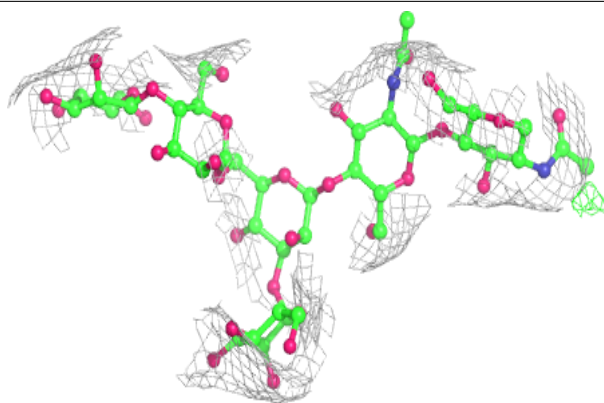$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
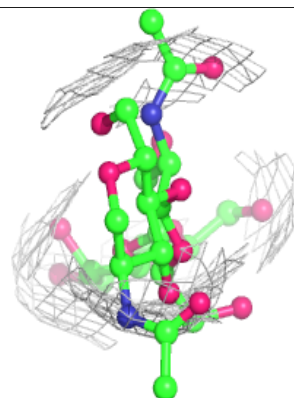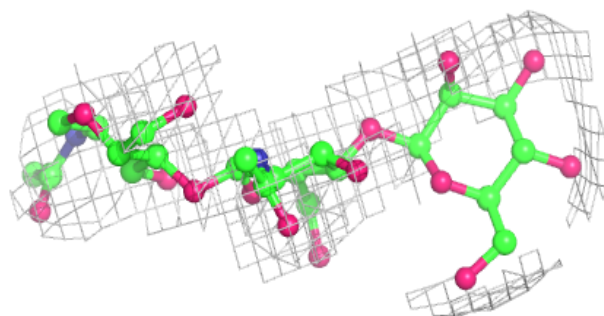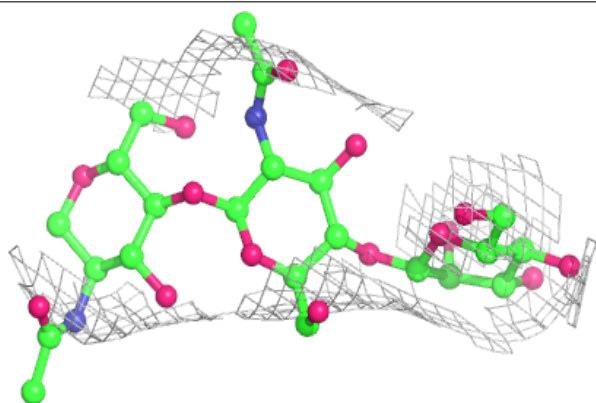
**Electron density around Chain Q:**

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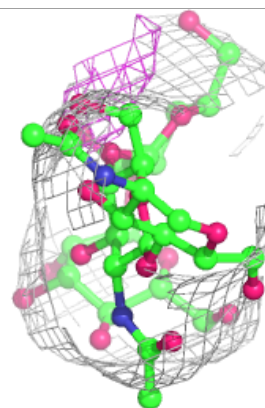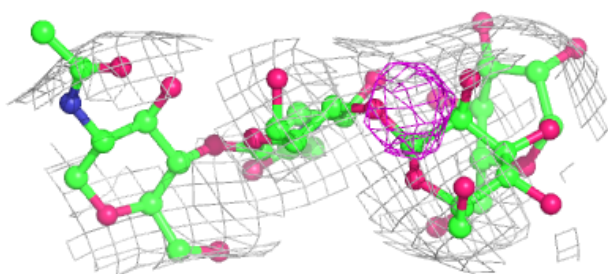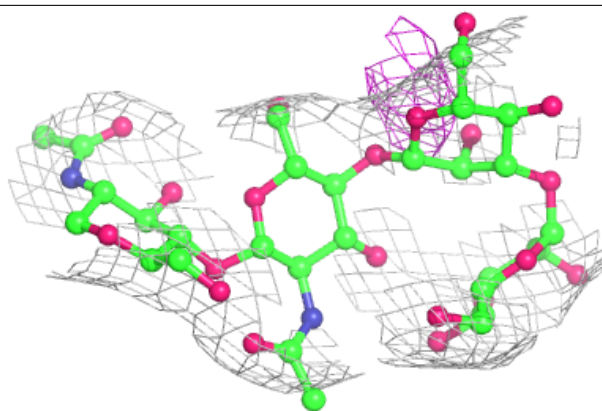


**Electron density around Chain R:**

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

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**Electron density around Chain S:**

$2mF_o$-$DF_c$ (at 0.7 rmsd) in gray
$mF_o$-$DF_c$ (at 3 rmsd) in purple (negative)
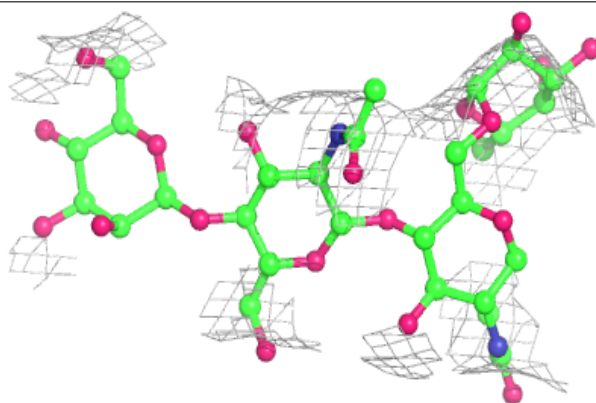and green (positive)
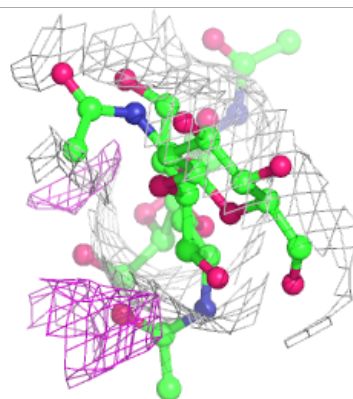
**Electron density around Chain T:**

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

**Electron density around Chain X:**

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



**Electron density around Chain Y:**

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)
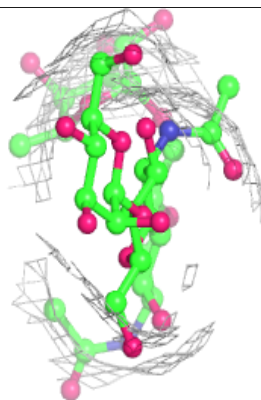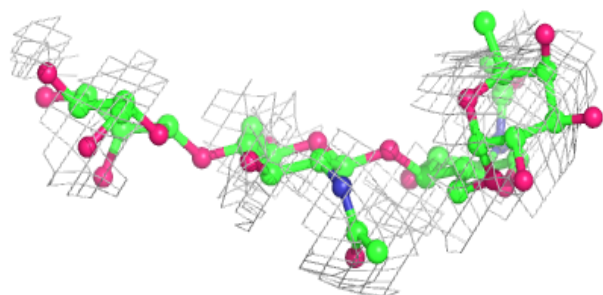
## 6.4 Ligands ⓘ

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

| Mol | Type | Chain | Res | Atoms | RSCC | RSR | B-factors($\text{Å}^2$) | Q<0.9 |
|-----|------|-------|-----|-------|------|-----|------------------------|-------|
| 22 | FUC | G | 602 | 10/11 | 0.40 | 1.02 | 262,262,262,262 | 0 |
| 21 | NAG | G | 601 | 14/15 | 0.75 | 0.36 | 268,268,268,268 | 0 |
| 21 | NAG | B | 701 | 14/15 | 0.76 | 0.34 | 309,309,309,309 | 0 |
| 21 | NAG | G | 603 | 14/15 | 0.88 | 0.15 | 262,262,262,262 | 0 |

## 6.5 Other polymers ⓘ

There are no such residues in this entry.