# Full wwPDB EM Validation Report ⓘ

Nov 3, 2024 – 12:03 am GMT

| | | |
|---|---|---|
| PDB ID | : | 5LJ5 |
| EMDB ID | : | EMD-4057 |
| Title | : | Overall structure of the yeast spliceosome immediately after branching. |
| Authors | : | Galej, W.P.; Wilkinson, M.F.; Fica, S.M.; Oubridge, C.; Newman, A.J.; Nagai, K. |
| Deposited on | : | 2016-07-17 |
| Resolution | : | 10.00 Å(reported) |

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

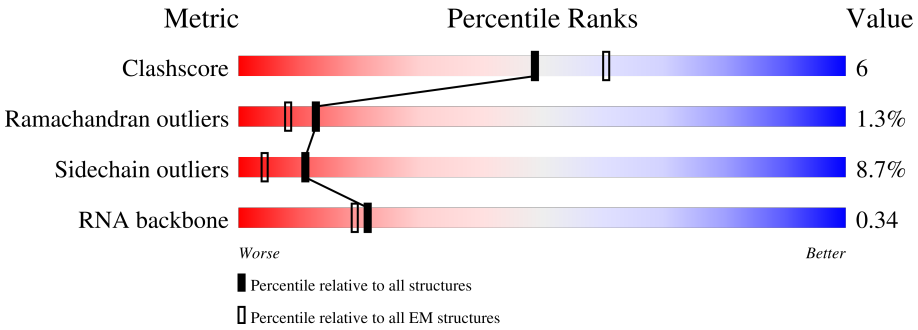
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev113 |
| Mogul | : | 1.8.4, CSD as541be (2020) |
| MolProbity | : | 4.02b-467 |
| buster-report | : | 1.1.7 (2018) |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.39 |

# 1 Overall quality at a glance

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

The reported resolution of this entry is 10.00 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 | Whole archive (#Entries) | EM structures (#Entries) |
|---|---|---|
| Clashscore | 210492 | 15764 |
| Ramachandran outliers | 207382 | 16835 |
| Sidechain outliers | 206894 | 16415 |
| RNA backbone | 6643 | 2191 |

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 1 | U | 179 | 33% 36% 9% · 21% |
| 2 | E | 16 | 25% 62% 12% |
| 3 | I | 76 | 22% 20% · 57% |
| 4 | Z | 1175 | 9% 5% 85% |
| 5 | V | 112 | 42% 31% 12% · 13% |
| 6 | A | 2413 | · 73% 15% · 10% |
| 7 | B | 2163 | · 77% · 21% |

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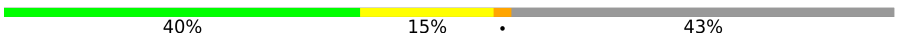
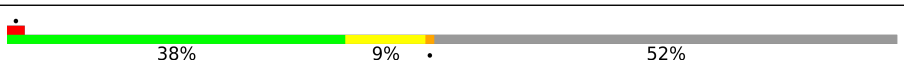
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 8 | D | 278 |   |
| 9 | F | 179 |   |
| 10 | C | 1008 |   |
| 11 | G | 235 |   |
| 12 | H | 591 |   |
| 13 | J | 451 |   |
| 14 | K | 379 |   |
| 15 | L | 157 |   |
| 16 | M | 339 |   |
| 17 | N | 364 |   |
| 18 | O | 590 |   |
| 19 | P | 175 |   |
| 20 | R | 135 |   |
| 21 | S | 687 |   |
| 22 | T | 859 |   |
| 23 | b | 196 |   |
| 23 | k | 196 |   |
| 24 | d | 101 |   |
| 24 | n | 101 |   |
| 25 | e | 94 |   |
| 25 | p | 94 |   |
| 26 | f | 86 |   |
| 26 | q | 86 |   |
| 27 | g | 77 |   |
| 27 | r | 77 |   |

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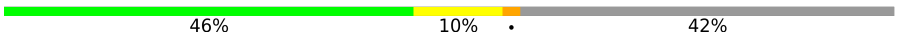
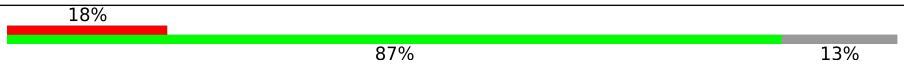
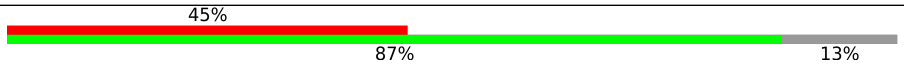
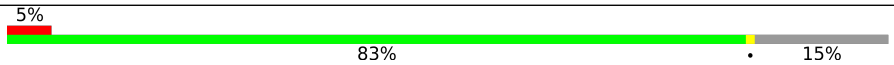
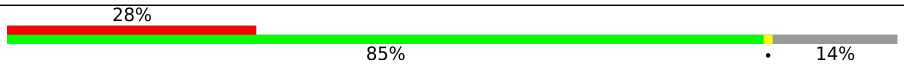
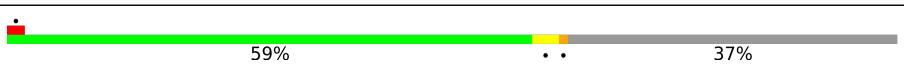
| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 28 | h | 146 |   |
| 28 | l | 146 |   |
| 29 | j | 110 |   |
| 29 | m | 110 |   |
| 30 | W | 238 |   |
| 31 | Y | 111 |   |
| 32 | Q | 1071 |   |
| 33 | t | 503 |   |
| 33 | u | 503 |   |
| 33 | v | 503 |   |
| 33 | w | 503 |   |
| 34 | s | 175 |   |
| 35 | x | 188 |   |

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 |
|---|---|---|---|---|---|---|---|
| 37 | ZN | N | 401 | - | - | X | - |
| 37 | ZN | N | 402 | - | - | X | - |

# 2 Entry composition (i)

There are 38 unique types of molecules in this entry. The entry contains 85476 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a RNA chain called U5 snRNA (small nuclear RNA).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 1 | U | 141 | 2999 | 1342 | 530 | 986 | 141 | 0 | 0 |

- Molecule 2 is a RNA chain called Exon 1 (5' exon) of UBC4 pre-mRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 2 | E | 16 | 346 | 155 | 66 | 109 | 16 | 0 | 0 |

- Molecule 3 is a RNA chain called Intron of UBC4 pre-mRNA.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 3 | I | 33 | 693 | 312 | 116 | 232 | 33 | 0 | 0 |

- Molecule 4 is a RNA chain called U2 snRNA (small nuclear RNA).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 4 | Z | 171 | 3610 | 1614 | 604 | 1221 | 171 | 0 | 0 |

- Molecule 5 is a RNA chain called U6 snRNA (small nuclear RNA).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | P | | |
| 5 | V | 97 | 2066 | 925 | 368 | 676 | 97 | 0 | 0 |

- Molecule 6 is a protein called Pre-mRNA-splicing factor 8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | N | O | S | | |
| 6 | A | 2168 | 16919 | 10835 | 2966 | 3060 | 58 | 0 | 0 |

- Molecule 7 is a protein called Pre-mRNA-splicing helicase BRR2.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 7 | B | 1707 | Total | C | N | O | 1 | 0 |
| | | | 8462 | 5048 | 1707 | 1707 | | |

- Molecule 8 is a protein called Protein CWC16.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 8 | D | 114 | Total | C | N | O | S | 0 | 0 |
| | | | 912 | 577 | 165 | 162 | 8 | | |

- Molecule 9 is a protein called Pre-mRNA-splicing factor CWC25.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 9 | F | 46 | Total | C | N | O | 0 | 0 |
| | | | 321 | 203 | 61 | 57 | | |

- Molecule 10 is a protein called Pre-mRNA-splicing factor SNU114.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 10 | C | 882 | Total | C | N | O | S | 0 | 0 |
| | | | 6756 | 4393 | 1133 | 1203 | 27 | | |

- Molecule 11 is a protein called Pre-mRNA-splicing factor ISY1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 11 | G | 97 | Total | C | N | O | S | 0 | 0 |
| | | | 823 | 513 | 154 | 155 | 1 | | |

- Molecule 12 is a protein called CWC22.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 12 | H | 399 | Total | C | N | O | S | 0 | 0 |
| | | | 2639 | 1657 | 468 | 506 | 8 | | |

- Molecule 13 is a protein called Pre-mRNA-splicing factor PRP46.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 13 | J | 326 | Total | C | N | O | S | 0 | 0 |
| | | | 2556 | 1616 | 454 | 476 | 10 | | |

- Molecule 14 is a protein called Pre-mRNA-processing protein 45.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 14 | K | 163 | Total | C | N | O | S | 0 | 0 |
| | | | 1289 | 808 | 236 | 240 | 5 | | |

- Molecule 15 is a protein called Pre-mRNA-splicing factor BUD31.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 15 | L | 155 | Total | C | N | O | S | 0 | 0 |
| | | | 1270 | 797 | 238 | 225 | 10 | | |

- Molecule 16 is a protein called Pre-mRNA-splicing factor CWC2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 16 | M | 252 | Total | C | N | O | S | 0 | 0 |
| | | | 2012 | 1277 | 354 | 370 | 11 | | |

- Molecule 17 is a protein called Pre-mRNA-splicing factor SLT11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 17 | N | 209 | Total | C | N | O | S | 0 | 0 |
| | | | 1658 | 1055 | 287 | 301 | 15 | | |

- Molecule 18 is a protein called Pre-mRNA-splicing factor CEF1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 18 | O | 283 | Total | C | N | O | S | 0 | 0 |
| | | | 2068 | 1285 | 385 | 392 | 6 | | |

- Molecule 19 is a protein called CWC15.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 19 | P | 36 | Total | C | N | O | 0 | 0 |
| | | | 275 | 176 | 53 | 46 | | |

- Molecule 20 is a protein called Pre-mRNA-splicing factor CWC21.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 20 | R | 97 | Total | C | N | O | 0 | 0 |
| | | | 544 | 325 | 106 | 113 | | |

- Molecule 21 is a protein called Pre-mRNA-splicing factor CLF1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 21 | S | 464 | Total | C | N | O | S | 0 | 0 |
| | | | 3121 | 1949 | 581 | 584 | 7 | | |

- Molecule 22 is a protein called Pre-mRNA-splicing factor SYF1.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 22 | T | 592 | Total | C | N | O | 0 | 0 |
| | | | 2946 | 1762 | 592 | 592 | | |

- Molecule 23 is a protein called Small nuclear ribonucleoprotein-associated protein B.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 23 | b | 80 | Total | C | N | O | S | 0 | 0 |
| | | | 631 | 403 | 114 | 111 | 3 | | |
| 23 | k | 80 | Total | C | N | O | | 0 | 0 |
| | | | 396 | 236 | 80 | 80 | | | |

- Molecule 24 is a protein called Small nuclear ribonucleoprotein Sm D3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 24 | d | 82 | Total | C | N | O | S | 0 | 0 |
| | | | 625 | 399 | 109 | 115 | 2 | | |
| 24 | n | 82 | Total | C | N | O | | 0 | 0 |
| | | | 404 | 240 | 82 | 82 | | | |

- Molecule 25 is a protein called Small nuclear ribonucleoprotein E.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 25 | e | 75 | Total | C | N | O | S | 0 | 0 |
| | | | 575 | 379 | 92 | 101 | 3 | | |
| 25 | p | 75 | Total | C | N | O | | 0 | 0 |
| | | | 369 | 219 | 75 | 75 | | | |

- Molecule 26 is a protein called Small nuclear ribonucleoprotein F.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| 26 | f | 72 | Total | C | N | O | S | 0 | 0 |
| | | | 573 | 368 | 101 | 103 | 1 | | |
| 26 | q | 72 | Total | C | N | O | | 0 | 0 |
| | | | 354 | 210 | 72 | 72 | | | |

- Molecule 27 is a protein called Small nuclear ribonucleoprotein G.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 27 | g | 69 | Total C N O S<br>529 337 93 97 2 | 0 | 0 |
| 27 | r | 69 | Total C N O<br>340 202 69 69 | 0 | 0 |

- Molecule 28 is a protein called Small nuclear ribonucleoprotein Sm D1.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 28 | h | 82 | Total C N O S<br>644 409 110 123 2 | 0 | 0 |
| 28 | l | 79 | Total C N O<br>392 234 79 79 | 0 | 0 |

- Molecule 29 is a protein called Small nuclear ribonucleoprotein Sm D2.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 29 | j | 94 | Total C N O S<br>741 477 141 119 4 | 0 | 0 |
| 29 | m | 94 | Total C N O<br>467 279 94 94 | 0 | 0 |

- Molecule 30 is a protein called U2 small nuclear ribonucleoprotein A'.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 30 | W | 164 | Total C N O<br>816 488 164 164 | 0 | 0 |

- Molecule 31 is a protein called U2 small nuclear ribonucleoprotein B".

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 31 | Y | 84 | Total C N O<br>416 248 84 84 | 0 | 0 |

- Molecule 32 is a protein called Pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16.

| Mol | Chain | Residues | Atoms | AltConf | Trace |
|---|---|---|---|---|---|
| 32 | Q | 619 | Total C N O<br>3066 1828 619 619 | 0 | 0 |

- Molecule 33 is a protein called Pre-mRNA-processing factor 19.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 33 | t | 438 | Total 2171 | C 1295 | N 438 | O 438 | 0 | 0 |
| 33 | u | 437 | Total 2166 | C 1292 | N 437 | O 437 | 0 | 0 |
| 33 | v | 426 | Total 2111 | C 1259 | N 426 | O 426 | 0 | 0 |
| 33 | w | 435 | Total 2156 | C 1286 | N 435 | O 435 | 0 | 0 |

- Molecule 34 is a protein called Pre-mRNA-splicing factor SNT309.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 34 | s | 110 | Total 548 | C 328 | N 110 | O 110 | 0 | 0 |

- Molecule 35 is a protein called unknown.

| Mol | Chain | Residues | Atoms | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|
| 35 | x | 132 | Total 660 | C 396 | N 132 | O 132 | 0 | 0 |

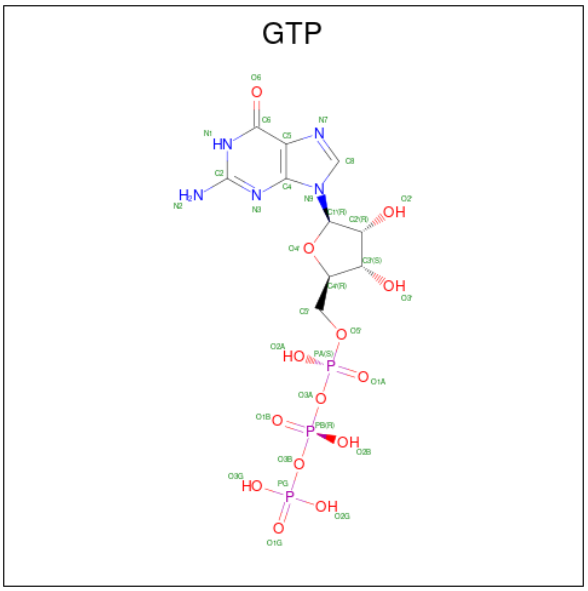
- Molecule 36 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 36 | E | 1 | Total 1 | Mg 1 | 0 |
| 36 | V | 1 | Total 1 | Mg 1 | 0 |

- Molecule 37 is ZINC ION (three-letter code: ZN) (formula: Zn).

| Mol | Chain | Residues | Atoms | | AltConf |
|---|---|---|---|---|---|
| 37 | D | 1 | Total 1 | Zn 1 | 0 |
| 37 | L | 3 | Total 3 | Zn 3 | 0 |
| 37 | M | 1 | Total 1 | Zn 1 | 0 |
| 37 | N | 2 | Total 2 | Zn 2 | 0 |

- Molecule 38 is GUANOSINE-5'-TRIPHOSPHATE (three-letter code: GTP) (formula: $C_{10}H_{16}N_5O_{14}P_3$).



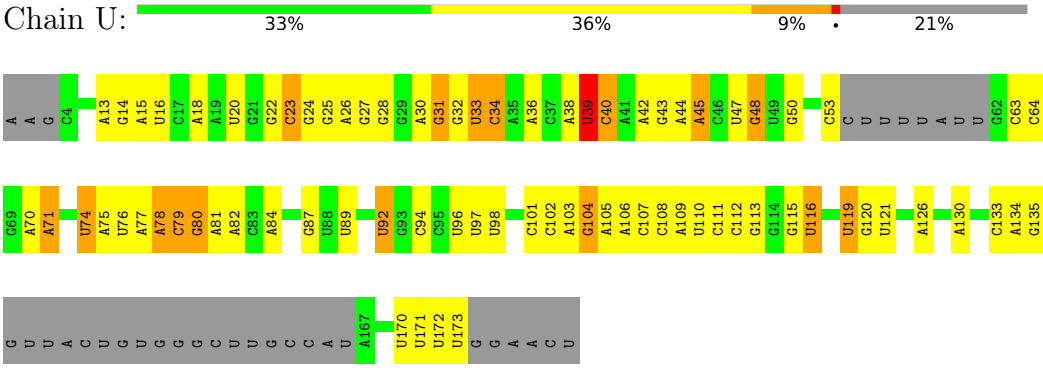

| Mol | Chain | Residues | Atoms | | | | | AltConf |
|---|---|---|---|---|---|---|---|---|
| 38 | C | 1 | Total | C | N | O | P | 0 |
| | | | 32 | 10 | 5 | 14 | 3 | |

# 3 Residue-property plots (i)

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

• Molecule 1: U5 snRNA (small nuclear RNA)

Chain U:

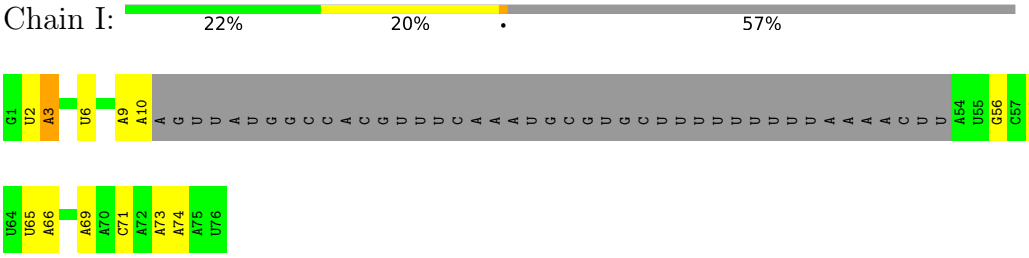



• Molecule 2: Exon 1 (5' exon) of UBC4 pre-mRNA

Chain E:

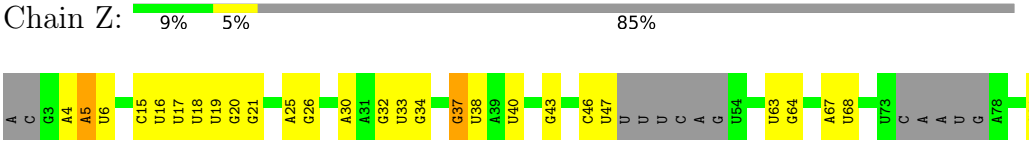

• Molecule 3: Intron of UBC4 pre-mRNA

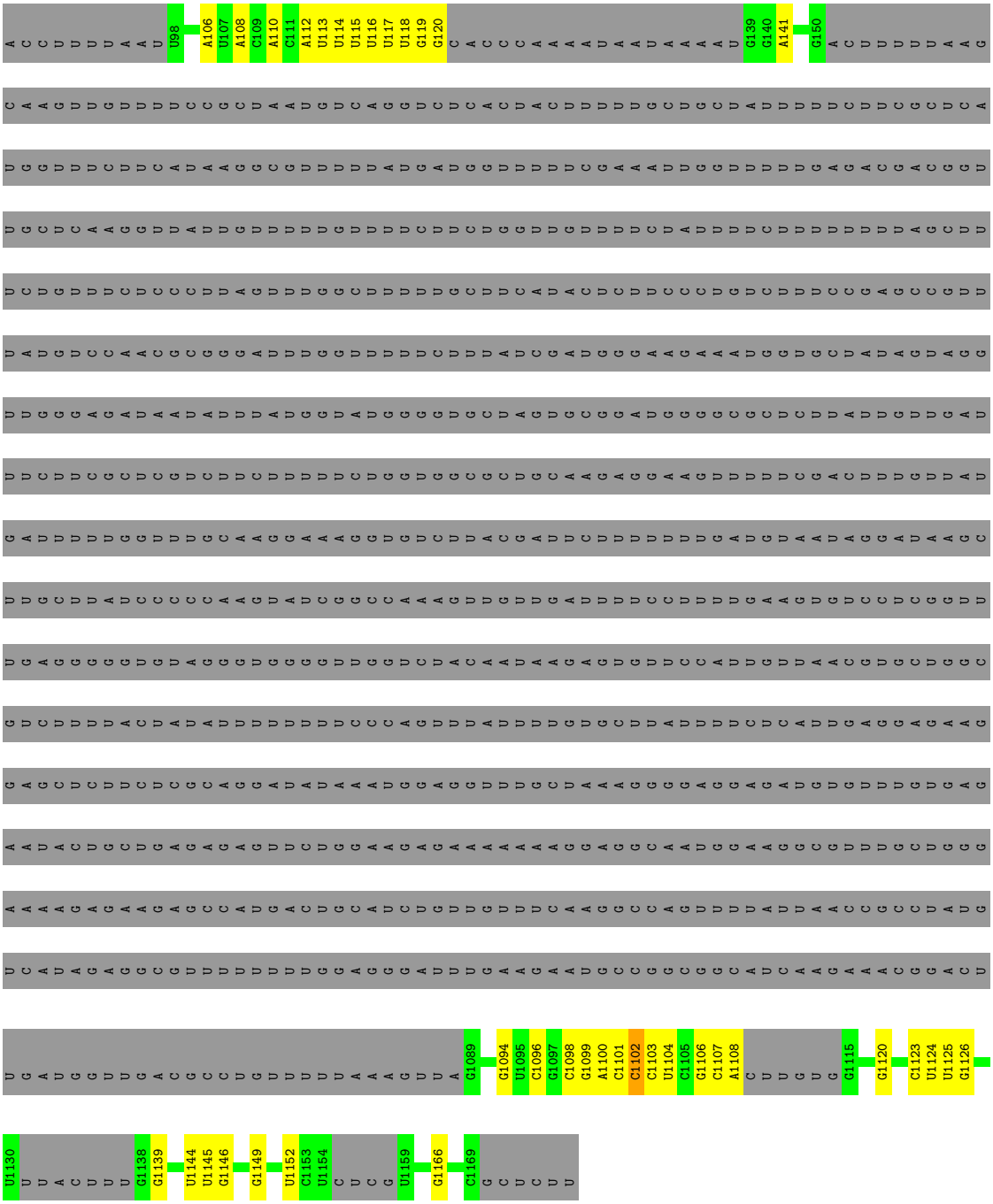
Chain I:




• Molecule 4: U2 snRNA (small nuclear RNA)

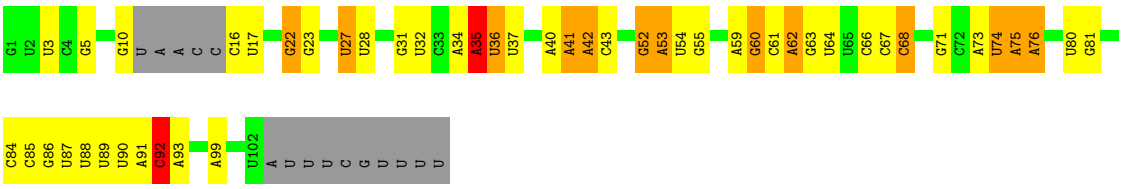
Chain Z:





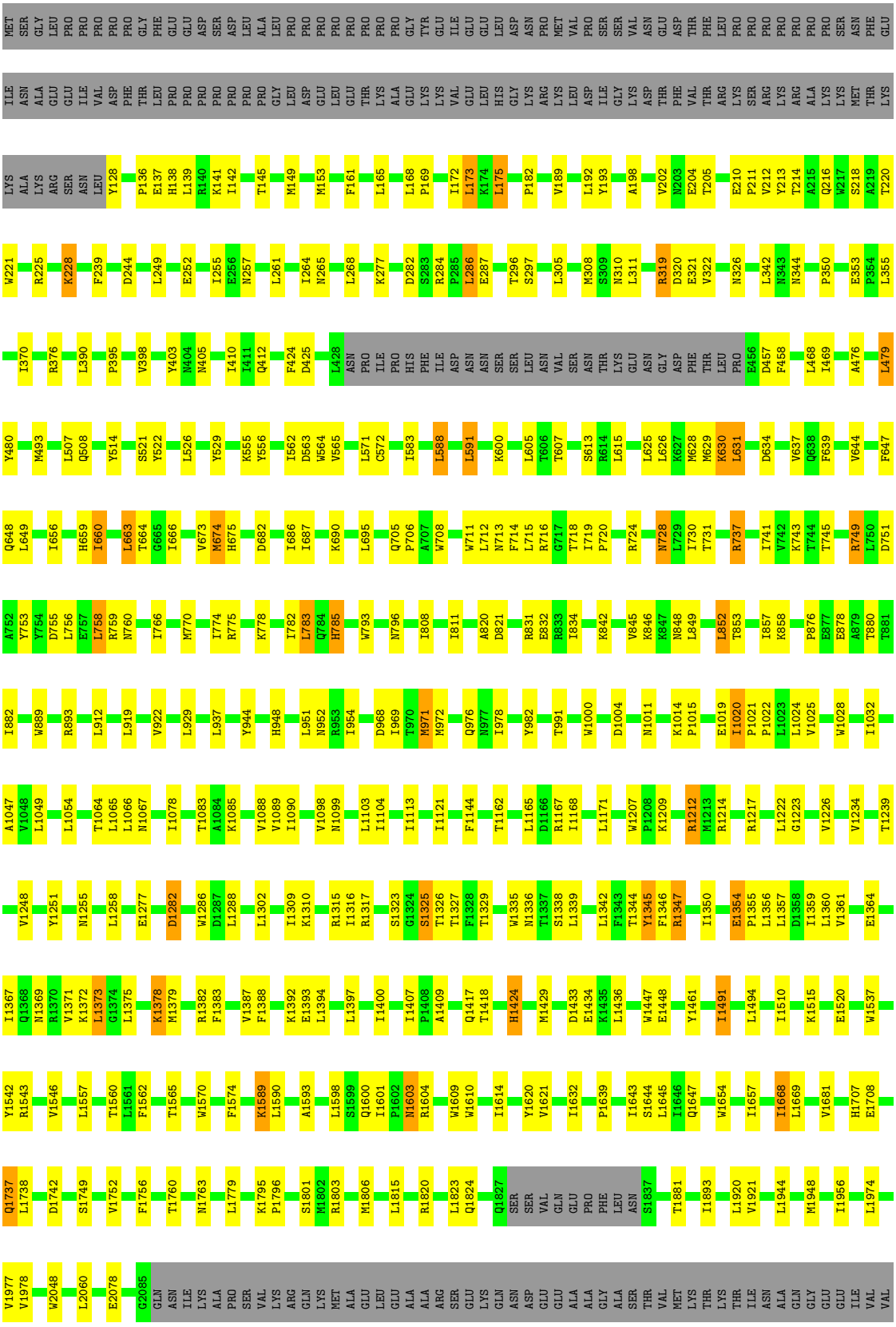
• Molecule 5: U6 snRNA (small nuclear RNA)

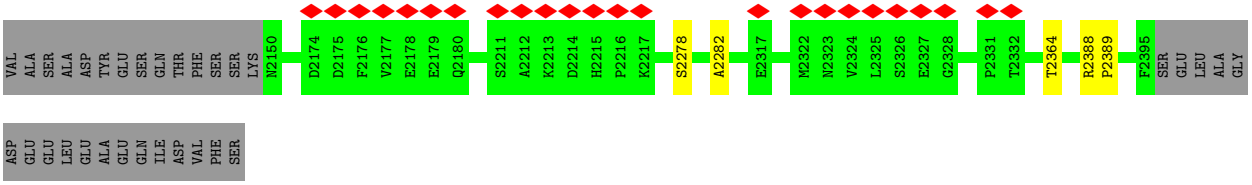
Chain V:

• Molecule 6: Pre-mRNA-splicing factor 8

Chain A:

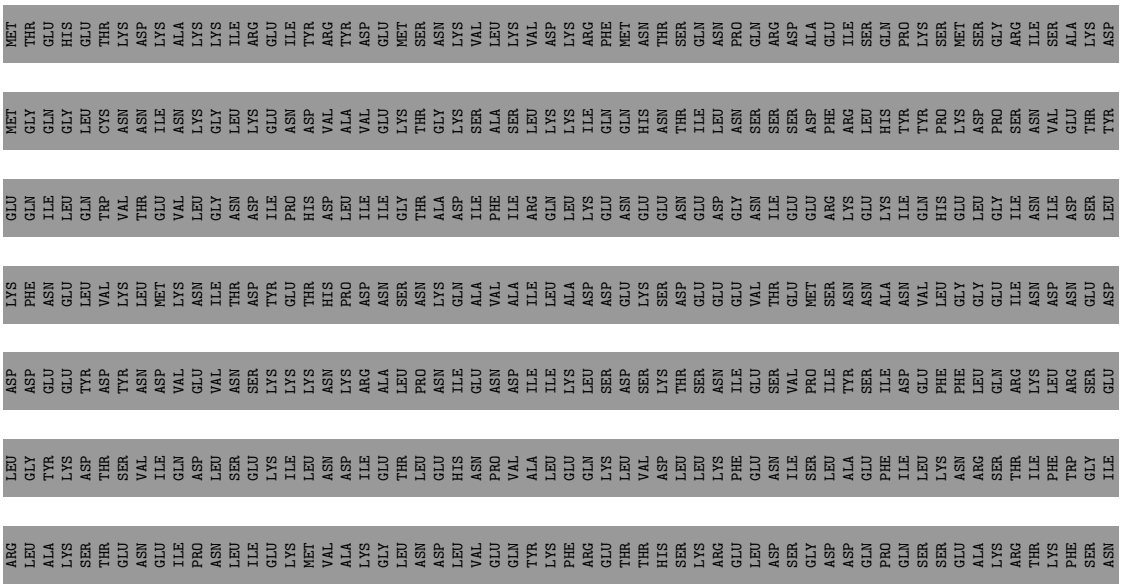



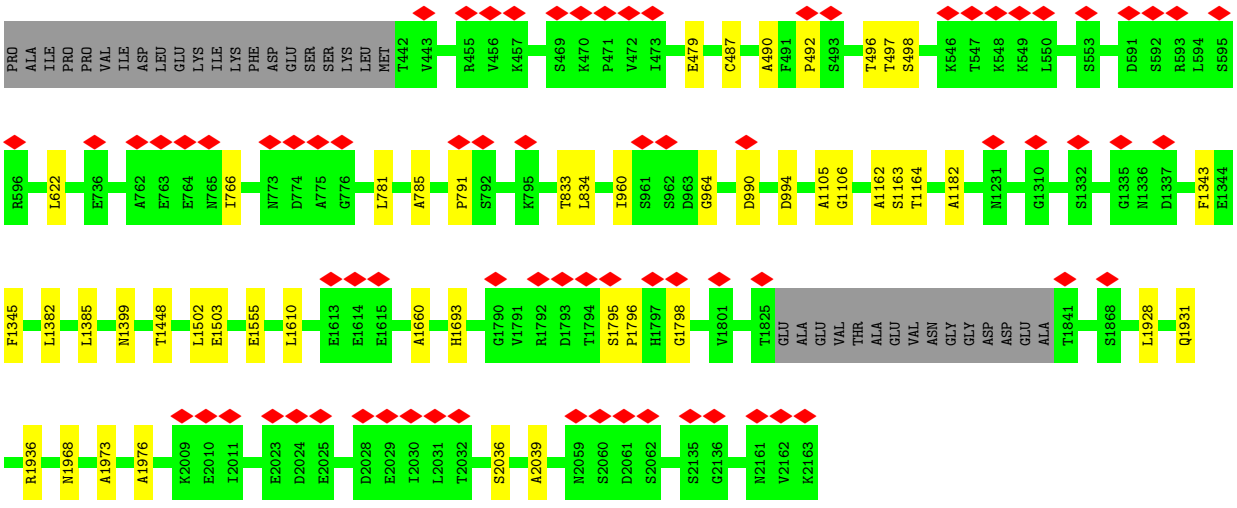




• Molecule 7: Pre-mRNA-splicing helicase BRR2

Chain B:



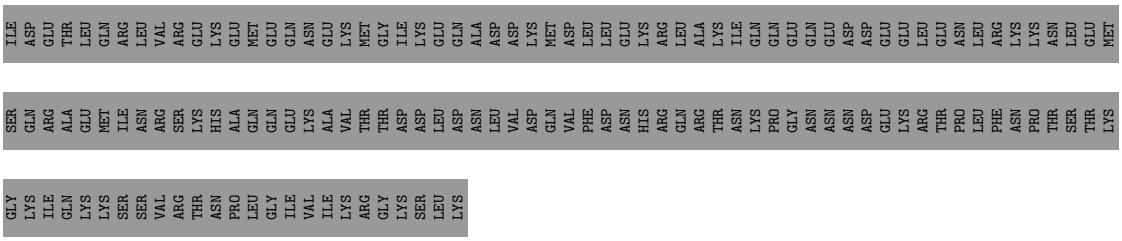






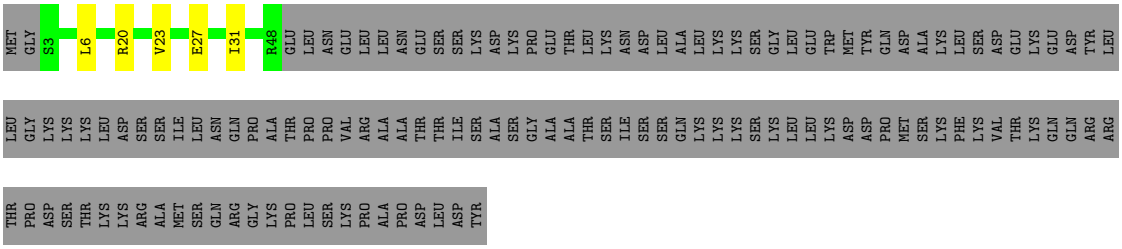
• Molecule 8: Protein CWC16

Chain D:

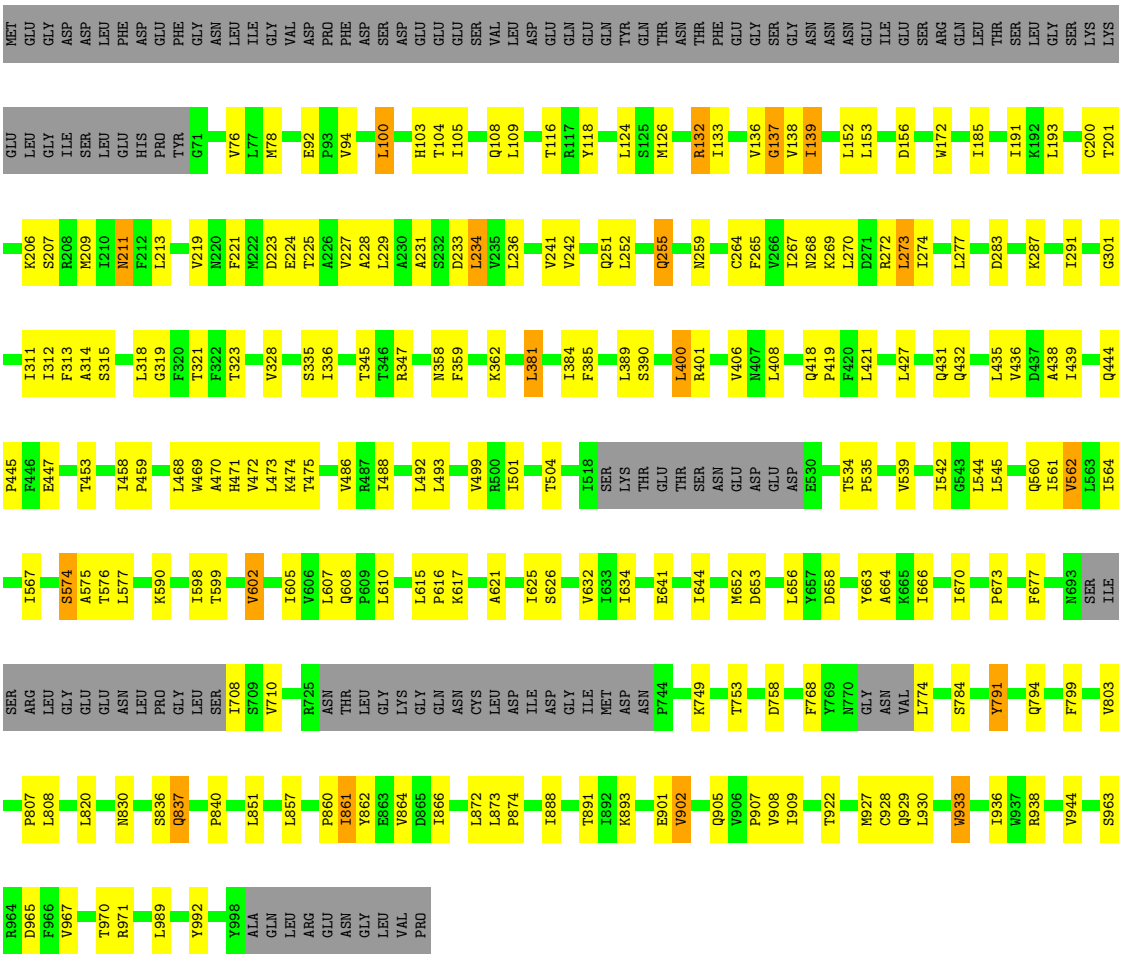
• Molecule 9: Pre-mRNA-splicing factor CWC25

Chain F:

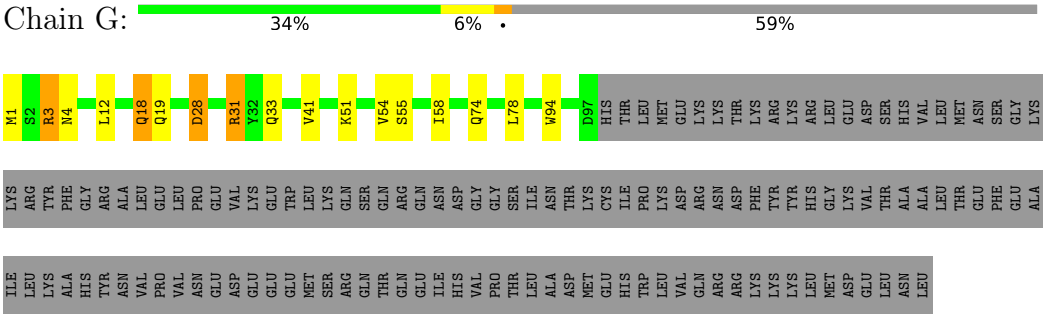
• Molecule 10: Pre-mRNA-splicing factor SNU114

Chain C:

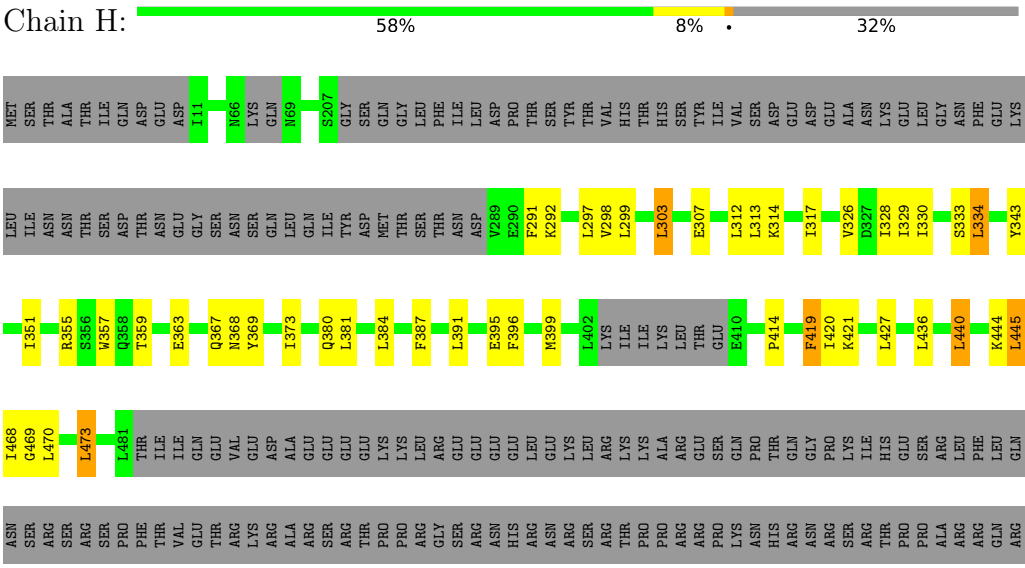
• Molecule 11: Pre-mRNA-splicing factor ISY1

Chain G:



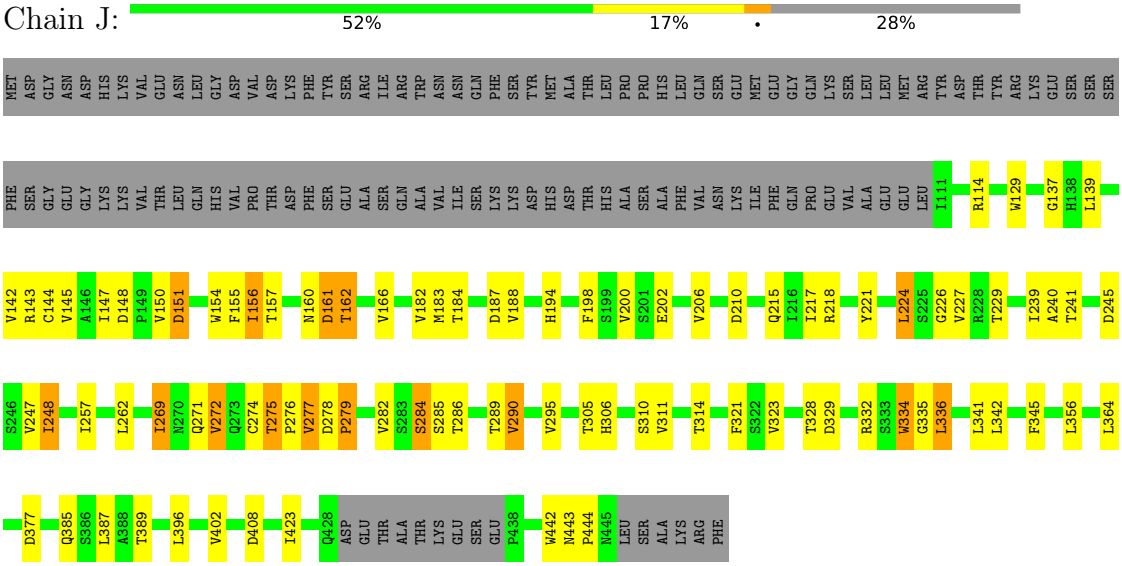

• Molecule 12: CWC22

Chain H:



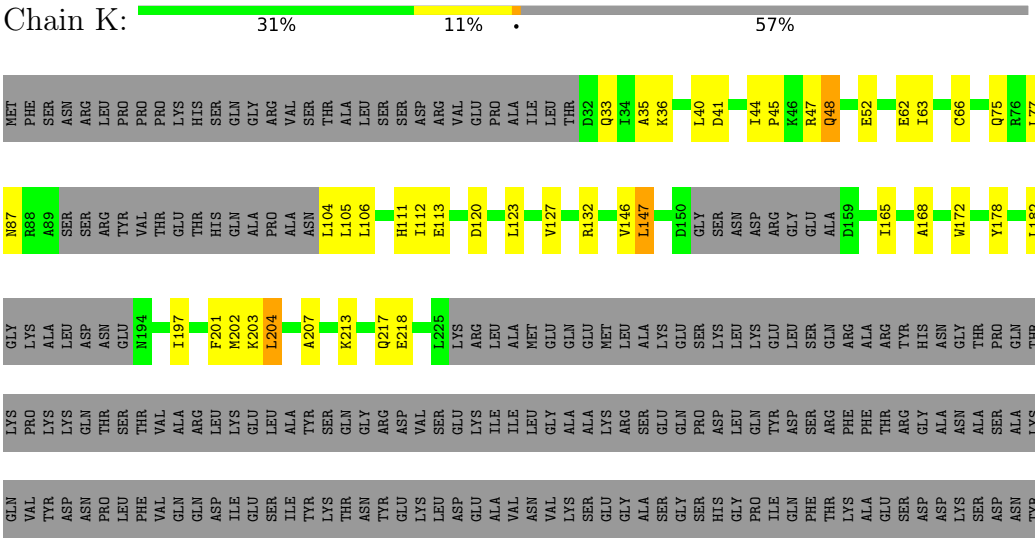

• Molecule 13: Pre-mRNA-splicing factor PRP46

Chain J:



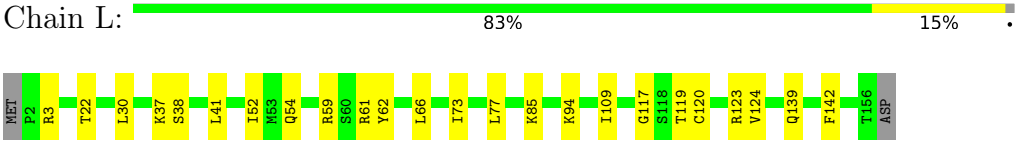

• Molecule 14: Pre-mRNA-processing protein 45

Chain K:



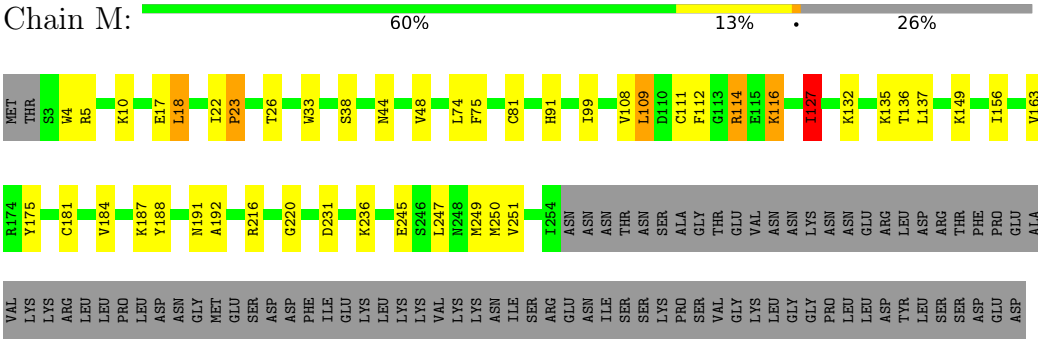

• Molecule 15: Pre-mRNA-splicing factor BUD31

Chain L:



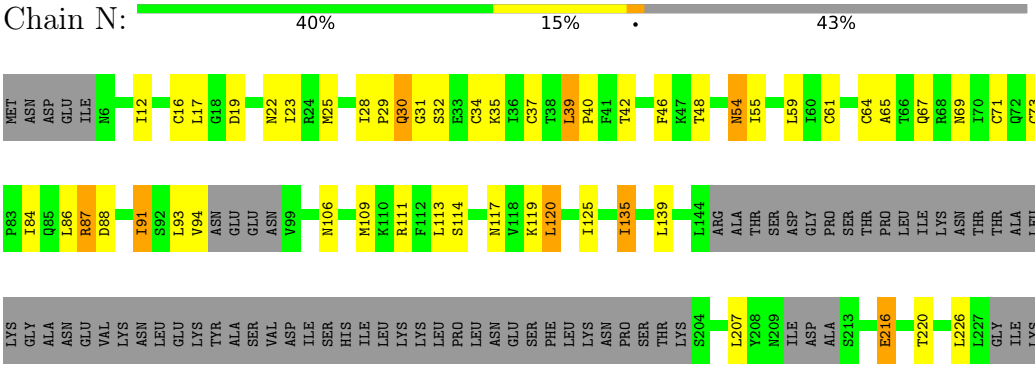

• Molecule 16: Pre-mRNA-splicing factor CWC2

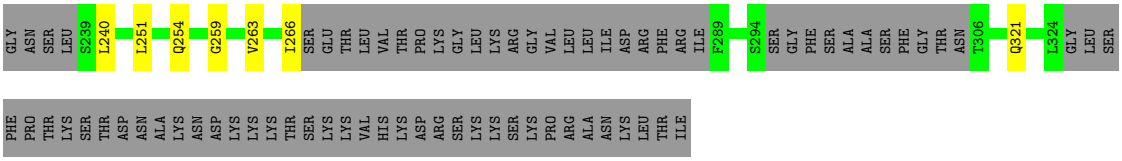
Chain M:




• Molecule 17: Pre-mRNA-splicing factor SLT11

Chain N:

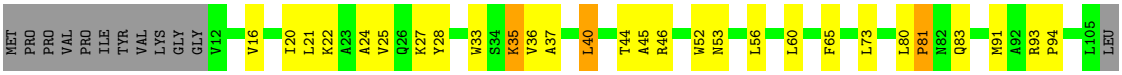


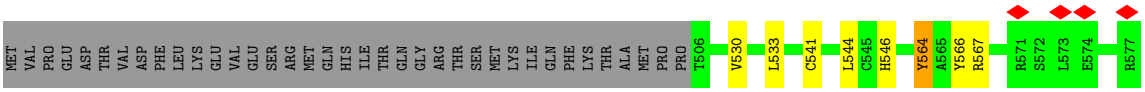


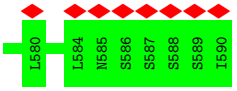


• Molecule 18: Pre-mRNA-splicing factor CEF1

Chain O:



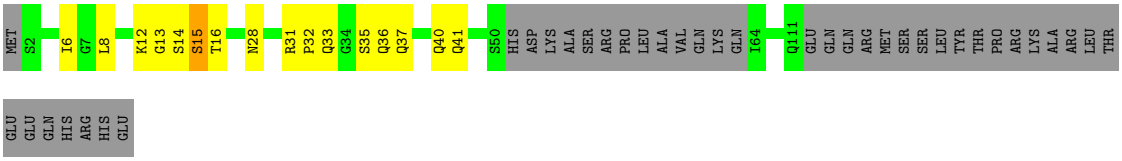


• Molecule 19: CWC15

Chain P:

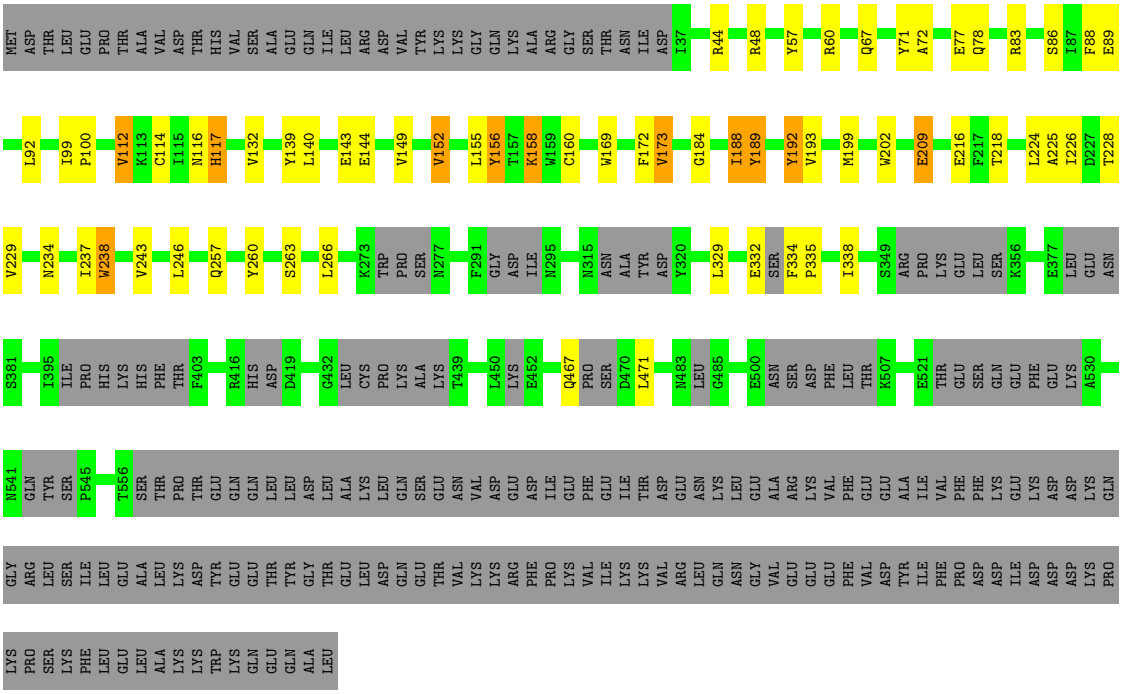

• Molecule 20: Pre-mRNA-splicing factor CWC21

Chain R:



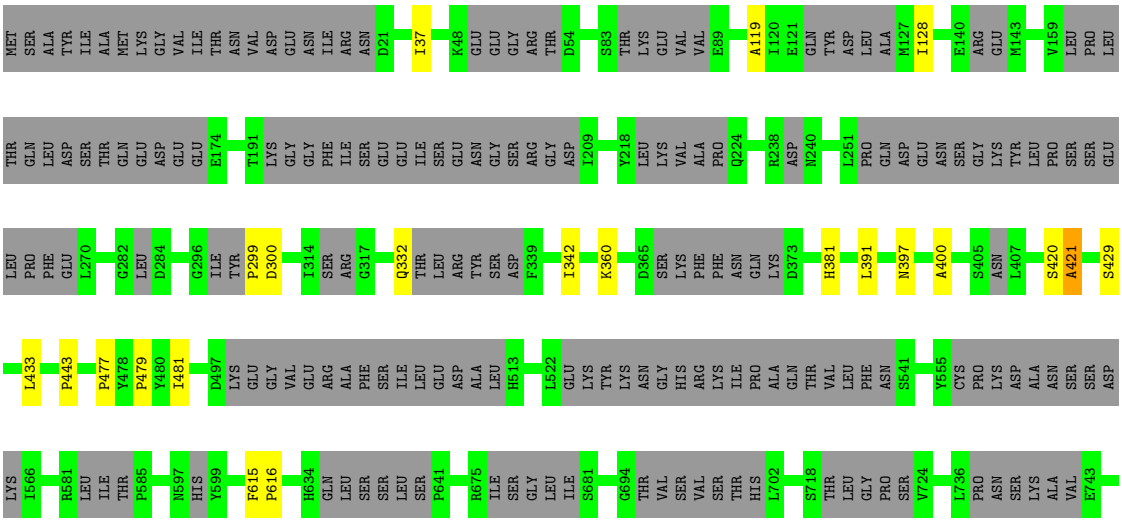
• Molecule 21: Pre-mRNA-splicing factor CLF1

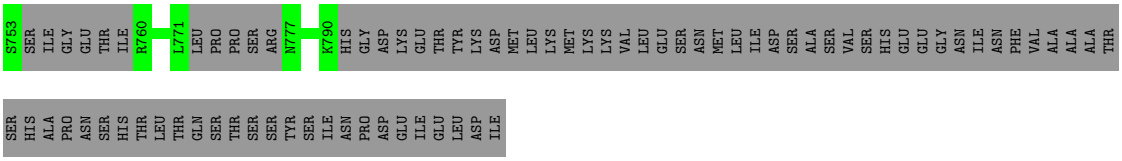
Chain S:

• Molecule 22: Pre-mRNA-splicing factor SYF1

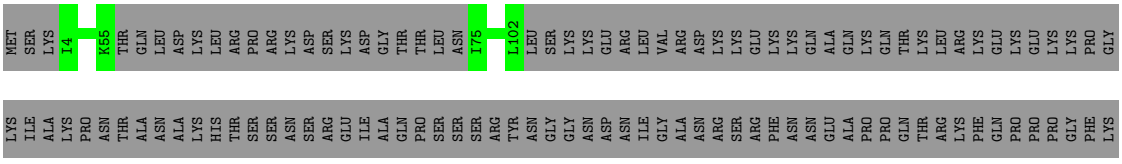
Chain T:



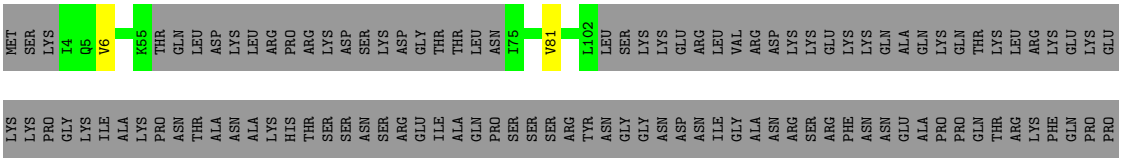

• Molecule 23: Small nuclear ribonucleoprotein-associated protein B

Chain b:

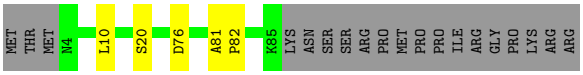

• Molecule 23: Small nuclear ribonucleoprotein-associated protein B

Chain k:


• Molecule 24: Small nuclear ribonucleoprotein Sm D3

Chain d:

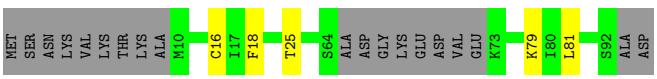

• Molecule 24: Small nuclear ribonucleoprotein Sm D3

Chain n:



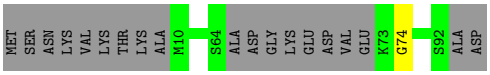
• Molecule 25: Small nuclear ribonucleoprotein E

Chain e:

• Molecule 25: Small nuclear ribonucleoprotein E

Chain p:

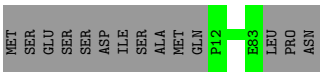

• Molecule 26: Small nuclear ribonucleoprotein F

Chain f:



• Molecule 26: Small nuclear ribonucleoprotein F

Chain q:


• Molecule 27: Small nuclear ribonucleoprotein G

Chain g:



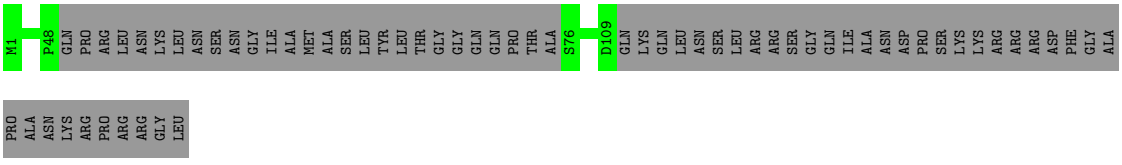
• Molecule 27: Small nuclear ribonucleoprotein G

Chain r:



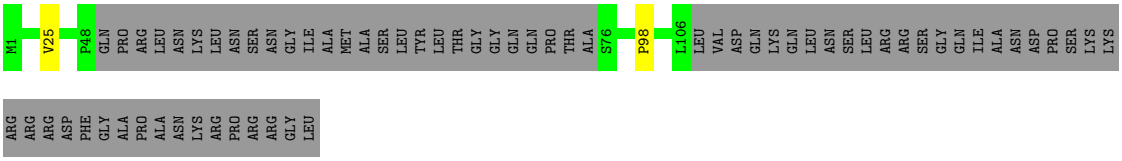
• Molecule 28: Small nuclear ribonucleoprotein Sm D1

Chain h:


• Molecule 28: Small nuclear ribonucleoprotein Sm D1

Chain l:



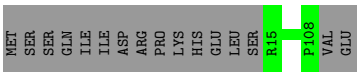

• Molecule 29: Small nuclear ribonucleoprotein Sm D2

Chain j:



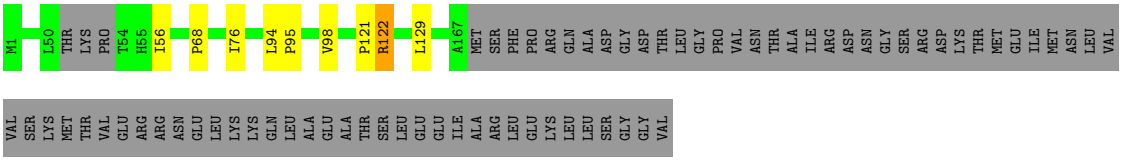
• Molecule 29: Small nuclear ribonucleoprotein Sm D2

Chain m:


• Molecule 30: U2 small nuclear ribonucleoprotein A'

Chain W:

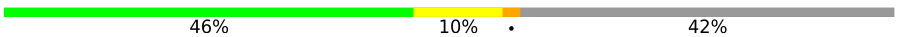

• Molecule 31: U2 small nuclear ribonucleoprotein B"

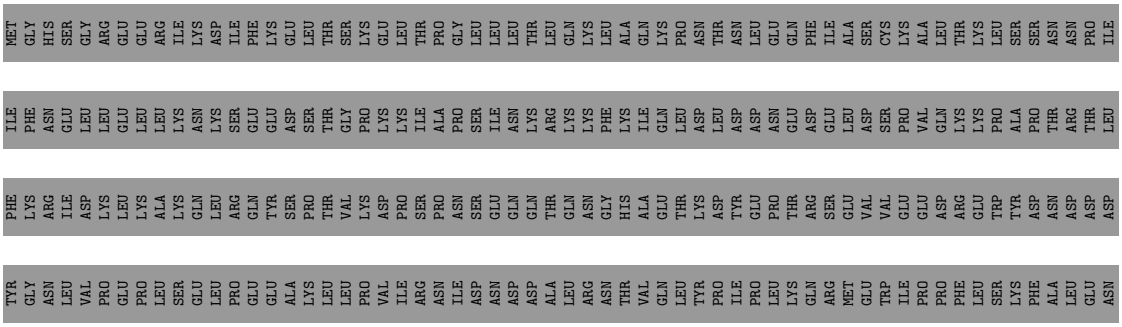
Chain Y:

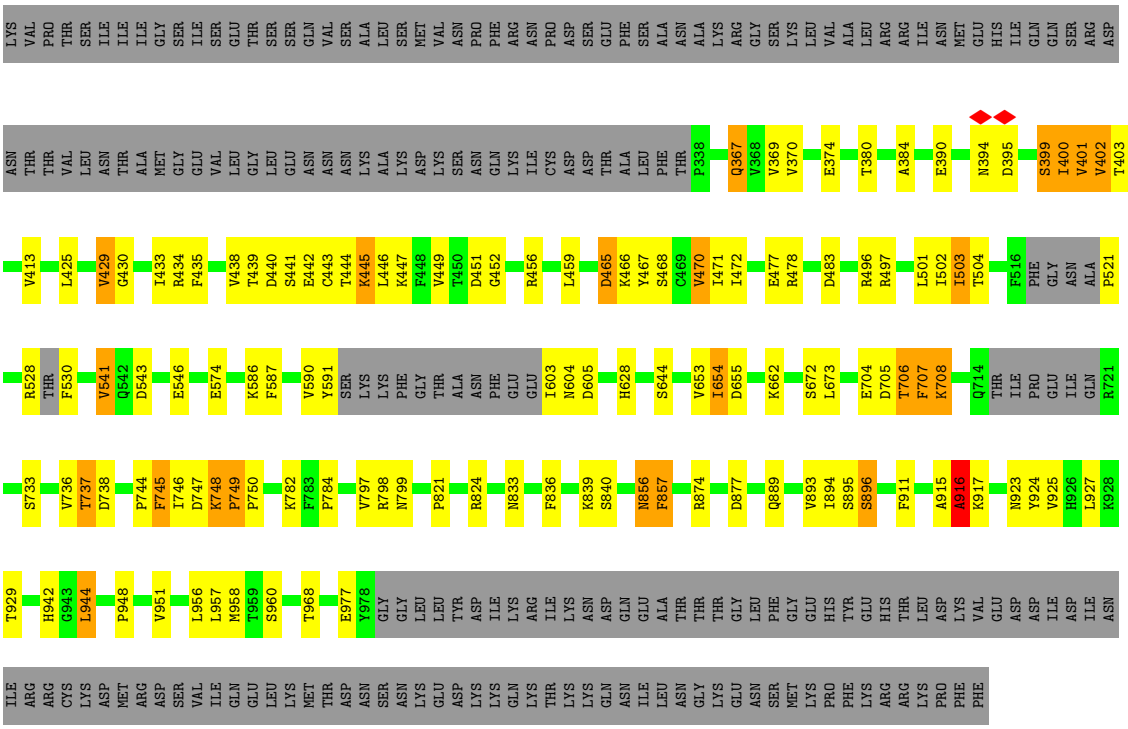


• Molecule 32: Pre-mRNA-splicing factor ATP-dependent RNA helicase PRP16

Chain Q:

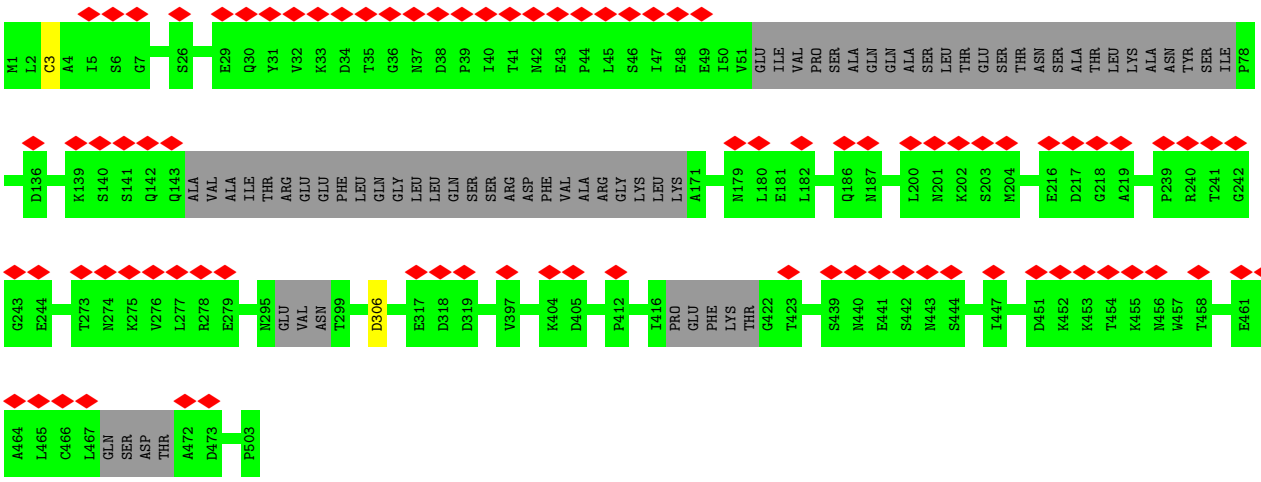




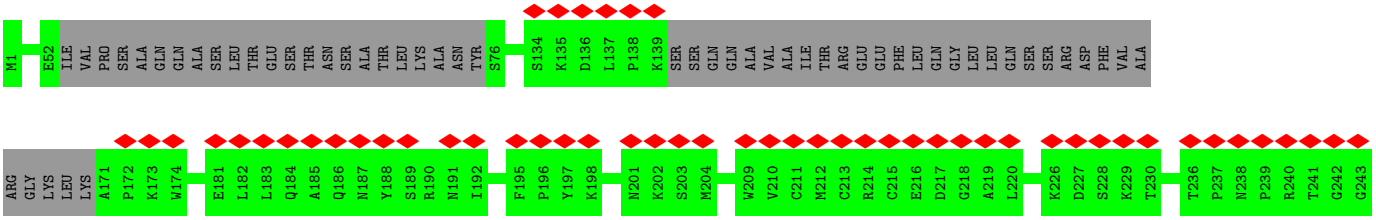
• Molecule 33: Pre-mRNA-processing factor 19

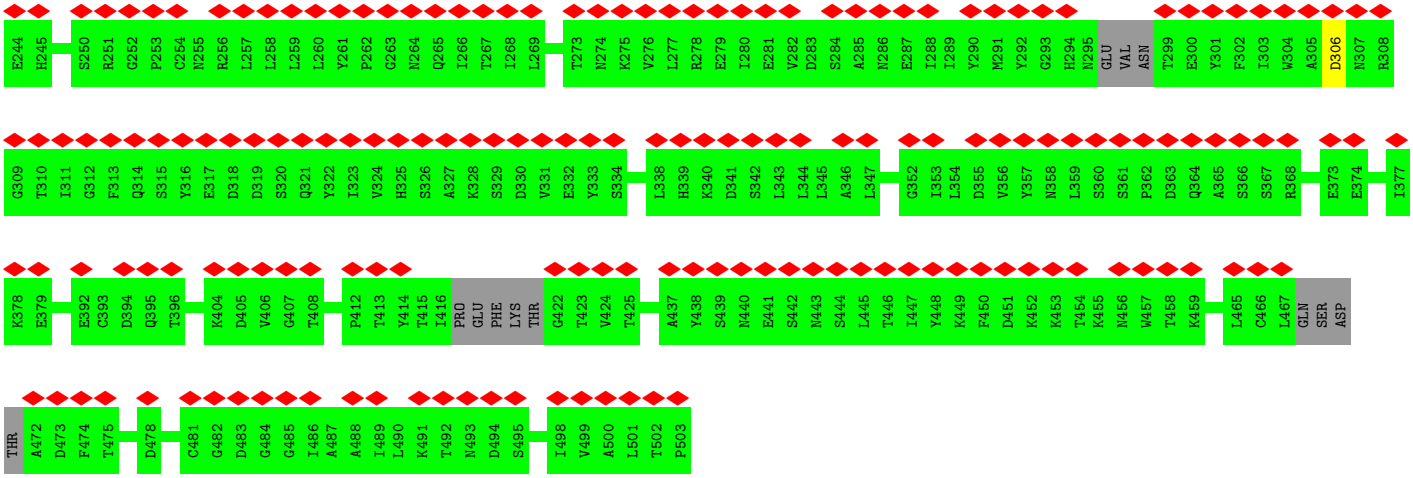
Chain t:

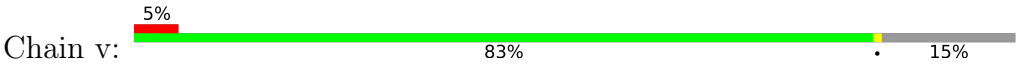
• Molecule 33: Pre-mRNA-processing factor 19

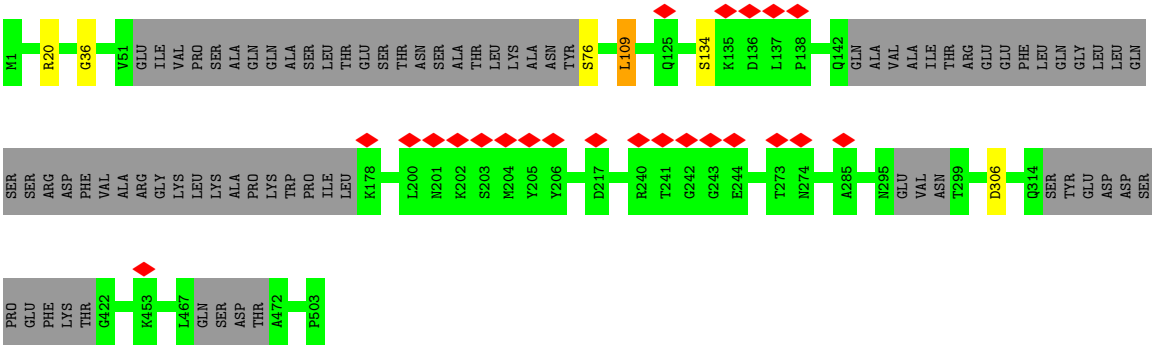
Chain u:

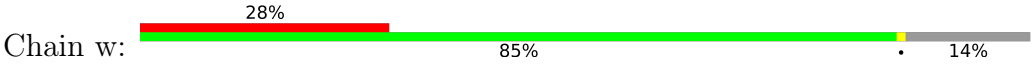


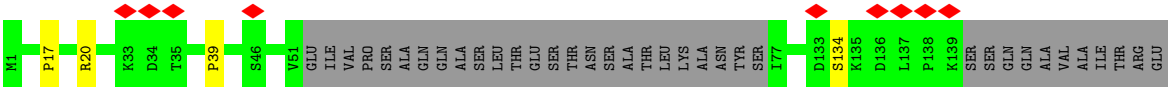

• Molecule 33: Pre-mRNA-processing factor 19

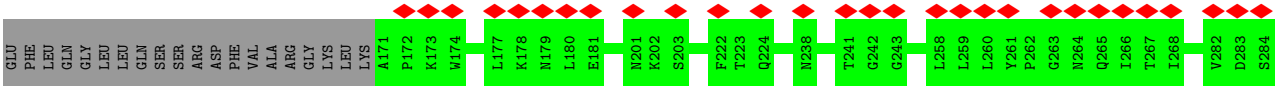


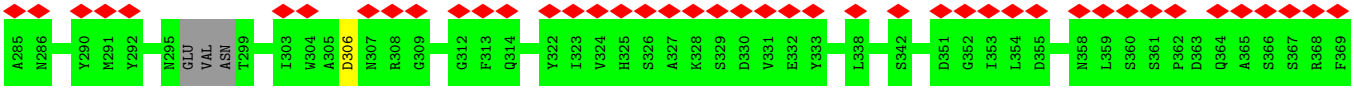



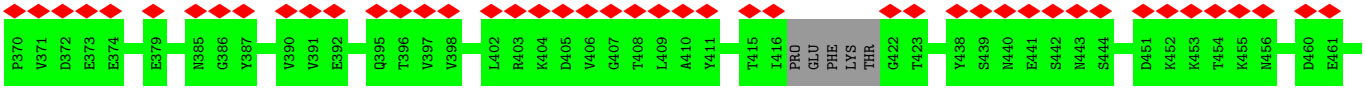

• Molecule 33: Pre-mRNA-processing factor 19

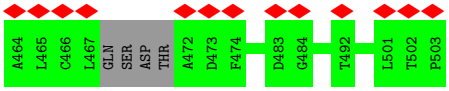


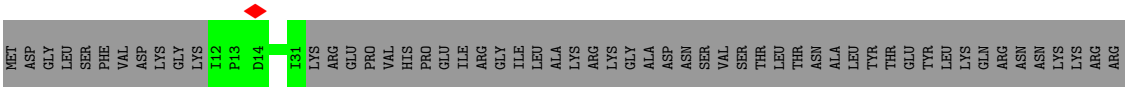






• Molecule 34: Pre-mRNA-splicing factor SNT309

Chain s:



• Molecule 35: unknown

Chain x:


# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 15872 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | PHASE FLIPPING AND AMPLITUDE CORRECTION | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 2 | Depositor |
| Minimum defocus (nm) | 500 | Depositor |
| Maximum defocus (nm) | 4000 | Depositor |
| Magnification | 35714 | Depositor |
| Image detector | GATAN K2 QUANTUM (4k x 4k) | Depositor |
| Maximum map value | 0.073 | Depositor |
| Minimum map value | -0.018 | Depositor |
| Average map value | 0.000 | Depositor |
| Map value standard deviation | 0.003 | Depositor |
| Recommended contour level | 0.006 | Depositor |
| Map size (Å) | 589.16, 589.16, 589.16 | wwPDB |
| Map dimensions | 412, 412, 412 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.43, 1.43, 1.43 | Depositor |

# 5 Model quality (i)

## 5.1 Standard geometry (i)

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

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 | U | 0.31 | 0/3351 | 0.75 | 1/5213 (0.0%) |
| 2 | E | 0.36 | 0/388 | 0.69 | 0/603 |
| 3 | I | 0.28 | 0/772 | 0.71 | 0/1195 |
| 4 | Z | 0.26 | 0/4018 | 0.72 | 0/6233 |
| 5 | V | 0.32 | 0/2310 | 0.77 | 3/3594 (0.1%) |
| 6 | A | 0.44 | 0/17321 | 0.75 | 0/23534 |
| 7 | B | 0.52 | 0/8463 | 0.72 | 0/11800 |
| 8 | D | 0.37 | 0/929 | 0.67 | 0/1243 |
| 9 | F | 0.42 | 0/325 | 0.74 | 0/442 |
| 10 | C | 0.41 | 0/6902 | 0.73 | 0/9386 |
| 11 | G | 0.42 | 0/839 | 0.74 | 0/1126 |
| 12 | H | 0.43 | 0/2667 | 0.80 | 1/3630 (0.0%) |
| 13 | J | 0.45 | 0/2613 | 0.74 | 0/3551 |
| 14 | K | 0.40 | 0/1308 | 0.72 | 0/1765 |
| 15 | L | 0.40 | 0/1294 | 0.75 | 0/1732 |
| 16 | M | 0.42 | 0/2058 | 0.70 | 0/2769 |
| 17 | N | 0.41 | 0/1680 | 0.76 | 0/2258 |
| 18 | O | 0.49 | 0/2091 | 0.86 | 2/2824 (0.1%) |
| 19 | P | 0.43 | 0/282 | 0.69 | 0/380 |
| 20 | R | 0.40 | 0/545 | 0.77 | 0/748 |
| 21 | S | 0.44 | 0/3155 | 0.83 | 0/4298 |
| 22 | T | 0.38 | 0/2918 | 0.74 | 0/4032 |
| 23 | b | 0.34 | 0/636 | 0.59 | 0/856 |
| 23 | k | 0.28 | 0/394 | 0.50 | 0/546 |
| 24 | d | 0.36 | 0/634 | 0.62 | 1/859 (0.1%) |
| 24 | n | 0.29 | 0/403 | 0.53 | 0/559 |
| 25 | e | 0.40 | 0/585 | 0.56 | 0/795 |
| 25 | p | 0.30 | 0/367 | 0.55 | 0/507 |
| 26 | f | 0.39 | 0/585 | 0.59 | 0/791 |
| 26 | q | 0.30 | 0/353 | 0.53 | 0/489 |
| 27 | g | 0.36 | 0/532 | 0.55 | 0/715 |
| 27 | r | 0.28 | 0/338 | 0.45 | 0/467 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 28 | h | 0.35 | 0/649 | 0.54 | 0/880 |
| 28 | l | 0.30 | 0/390 | 0.53 | 0/541 |
| 29 | j | 0.38 | 0/753 | 0.61 | 0/1013 |
| 29 | m | 0.31 | 0/466 | 0.54 | 0/649 |
| 30 | W | 0.31 | 0/814 | 0.53 | 0/1134 |
| 31 | Y | 0.32 | 0/415 | 0.55 | 0/577 |
| 32 | Q | 0.51 | 0/3061 | 1.22 | 18/4260 (0.4%) |
| 33 | t | 0.46 | 0/2165 | 0.67 | 1/3010 (0.0%) |
| 33 | u | 0.50 | 0/2160 | 0.69 | 1/3003 (0.0%) |
| 33 | v | 0.51 | 0/2104 | 0.74 | 4/2923 (0.1%) |
| 33 | w | 0.47 | 0/2150 | 0.68 | 2/2989 (0.1%) |
| 34 | s | 0.57 | 0/546 | 0.80 | 0/760 |
| All | All | 0.43 | 0/86729 | 0.75 | 34/120679 (0.0%) |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 6 | A | 0 | 2 |
| 11 | G | 0 | 1 |
| 16 | M | 0 | 1 |
| 18 | O | 0 | 2 |
| 21 | S | 0 | 1 |
| 32 | Q | 0 | 45 |
| 33 | t | 0 | 1 |
| 33 | v | 0 | 1 |
| 33 | w | 0 | 1 |
| 34 | s | 0 | 2 |
| All | All | 0 | 57 |

There are no bond length outliers.

All (34) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 32 | Q | 384 | ALA | CB-CA-C | 8.22 | 122.43 | 110.10 |
| 1 | U | 39 | U | C2'-C3'-O3' | 8.13 | 127.38 | 109.50 |
| 32 | Q | 745 | PHE | C-N-CA | 7.85 | 141.32 | 121.70 |
| 32 | Q | 413 | VAL | CB-CA-C | 7.51 | 125.67 | 111.40 |
| 32 | Q | 745 | PHE | O-C-N | -6.99 | 111.52 | 122.70 |
| 5 | V | 35 | A | C5'-C4'-O4' | 6.92 | 117.40 | 109.10 |

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| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 32 | Q | 654 | ILE | CB-CA-C | 6.74 | 125.07 | 111.60 |
| 32 | Q | 916 | ALA | N-CA-CB | -6.59 | 100.87 | 110.10 |
| 32 | Q | 403 | THR | N-CA-C | 6.55 | 128.68 | 111.00 |
| 12 | H | 440 | LEU | CA-CB-CG | 6.54 | 130.33 | 115.30 |
| 24 | d | 81 | ALA | C-N-CD | -6.46 | 106.39 | 120.60 |
| 32 | Q | 574 | GLU | N-CA-CB | -6.45 | 98.98 | 110.60 |
| 32 | Q | 745 | PHE | CA-C-N | 6.17 | 130.78 | 117.20 |
| 32 | Q | 384 | ALA | N-CA-CB | 6.16 | 118.72 | 110.10 |
| 18 | O | 564 | TYR | CB-CA-C | 6.15 | 122.71 | 110.40 |
| 33 | w | 39 | PRO | N-CA-CB | 6.01 | 110.51 | 103.30 |
| 33 | v | 134 | SER | CA-C-O | -5.67 | 108.20 | 120.10 |
| 32 | Q | 402 | VAL | N-CA-C | 5.55 | 125.99 | 111.00 |
| 5 | V | 35 | A | O4'-C4'-C3' | 5.43 | 110.44 | 106.10 |
| 32 | Q | 394 | ASN | CB-CA-C | 5.41 | 121.22 | 110.40 |
| 32 | Q | 483 | ASP | CB-CA-C | 5.37 | 121.14 | 110.40 |
| 32 | Q | 447 | LYS | N-CA-C | 5.31 | 125.33 | 111.00 |
| 32 | Q | 477 | GLU | C-N-CA | 5.29 | 134.93 | 121.70 |
| 33 | v | 76 | SER | N-CA-CB | 5.29 | 118.43 | 110.50 |
| 32 | Q | 400 | ILE | C-N-CA | 5.18 | 134.64 | 121.70 |
| 33 | v | 134 | SER | O-C-N | 5.17 | 130.98 | 122.70 |
| 5 | V | 92 | C | C2'-C3'-O3' | 5.13 | 121.91 | 113.70 |
| 33 | u | 306 | ASP | CB-CA-C | -5.13 | 100.15 | 110.40 |
| 33 | t | 306 | ASP | CB-CA-C | -5.12 | 100.17 | 110.40 |
| 33 | v | 306 | ASP | CB-CA-C | -5.11 | 100.18 | 110.40 |
| 32 | Q | 445 | LYS | CB-CA-C | -5.10 | 100.20 | 110.40 |
| 33 | w | 306 | ASP | CB-CA-C | -5.10 | 100.20 | 110.40 |
| 32 | Q | 470 | VAL | C-N-CA | 5.09 | 134.43 | 121.70 |
| 18 | O | 564 | TYR | O-C-N | -5.06 | 114.61 | 122.70 |

There are no chirality outliers.

All (57) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 6 | A | 1325 | SER | Peptide |
| 6 | A | 403 | TYR | Peptide |
| 11 | G | 3 | ARG | Peptide |
| 16 | M | 231 | ASP | Peptide |
| 18 | O | 567 | ARG | Mainchain |
| 18 | O | 83 | GLN | Peptide |
| 32 | Q | 367 | GLN | Peptide |
| 32 | Q | 390 | GLU | Peptide |
| 32 | Q | 399 | SER | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 32 | Q | 429 | VAL | Peptide |
| 32 | Q | 439 | THR | Peptide |
| 32 | Q | 441 | SER | Peptide |
| 32 | Q | 442 | GLU | Peptide |
| 32 | Q | 444 | THR | Peptide |
| 32 | Q | 445 | LYS | Peptide |
| 32 | Q | 446 | LEU | Peptide |
| 32 | Q | 465 | ASP | Peptide |
| 32 | Q | 468 | SER | Peptide |
| 32 | Q | 501 | LEU | Peptide |
| 32 | Q | 541 | VAL | Peptide |
| 32 | Q | 543 | ASP | Peptide |
| 32 | Q | 628 | HIS | Peptide |
| 32 | Q | 662 | LYS | Peptide |
| 32 | Q | 705 | ASP | Peptide |
| 32 | Q | 706 | THR | Peptide |
| 32 | Q | 707 | PHE | Peptide |
| 32 | Q | 733 | SER | Peptide |
| 32 | Q | 736 | VAL | Peptide |
| 32 | Q | 737 | THR | Peptide |
| 32 | Q | 744 | PRO | Peptide |
| 32 | Q | 745 | PHE | Peptide |
| 32 | Q | 747 | ASP | Peptide |
| 32 | Q | 748 | LYS | Peptide |
| 32 | Q | 749 | PRO | Peptide |
| 32 | Q | 797 | VAL | Peptide |
| 32 | Q | 798 | ARG | Peptide |
| 32 | Q | 833 | ASN | Peptide |
| 32 | Q | 856 | ASN | Peptide |
| 32 | Q | 857 | PHE | Peptide |
| 32 | Q | 889 | GLN | Peptide |
| 32 | Q | 893 | VAL | Peptide |
| 32 | Q | 895 | SER | Peptide |
| 32 | Q | 896 | SER | Peptide |
| 32 | Q | 911 | PHE | Peptide |
| 32 | Q | 915 | ALA | Peptide |
| 32 | Q | 916 | ALA | Peptide |
| 32 | Q | 923 | ASN | Peptide |
| 32 | Q | 924 | TYR | Peptide |
| 32 | Q | 944 | LEU | Peptide |
| 32 | Q | 960 | SER | Peptide |
| 32 | Q | 977 | GLU | Peptide |

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| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 21 | S | 237 | ILE | Peptide |
| 34 | s | 111 | VAL | Peptide |
| 34 | s | 132 | LEU | Peptide |
| 33 | t | 3 | CYS | Mainchain |
| 33 | v | 109 | LEU | Mainchain |
| 33 | w | 134 | SER | Mainchain |

## 5.2 Too-close contacts (i)

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

| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 1 | U | 2999 | 0 | 1515 | 24 | 0 |
| 2 | E | 346 | 0 | 173 | 5 | 0 |
| 3 | I | 693 | 0 | 351 | 3 | 0 |
| 4 | Z | 3610 | 0 | 1831 | 10 | 0 |
| 5 | V | 2066 | 0 | 1042 | 23 | 0 |
| 6 | A | 16919 | 0 | 16184 | 233 | 0 |
| 7 | B | 8462 | 0 | 3706 | 27 | 0 |
| 8 | D | 912 | 0 | 936 | 11 | 0 |
| 9 | F | 321 | 0 | 282 | 3 | 0 |
| 10 | C | 6756 | 0 | 6801 | 117 | 0 |
| 11 | G | 823 | 0 | 808 | 10 | 0 |
| 12 | H | 2639 | 0 | 2073 | 25 | 0 |
| 13 | J | 2556 | 0 | 2551 | 54 | 0 |
| 14 | K | 1289 | 0 | 1309 | 17 | 0 |
| 15 | L | 1270 | 0 | 1294 | 12 | 0 |
| 16 | M | 2012 | 0 | 1968 | 32 | 0 |
| 17 | N | 1658 | 0 | 1712 | 59 | 0 |
| 18 | O | 2068 | 0 | 1853 | 39 | 0 |
| 19 | P | 275 | 0 | 283 | 4 | 0 |
| 20 | R | 544 | 0 | 345 | 17 | 0 |
| 21 | S | 3121 | 0 | 2399 | 55 | 0 |
| 22 | T | 2946 | 0 | 1252 | 11 | 0 |
| 23 | b | 631 | 0 | 670 | 0 | 0 |
| 23 | k | 396 | 0 | 169 | 0 | 0 |
| 24 | d | 625 | 0 | 647 | 0 | 0 |
| 24 | n | 404 | 0 | 180 | 0 | 0 |
| 25 | e | 575 | 0 | 597 | 0 | 0 |

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| Mol | Chain | Non-H | H(model) | H(added) | Clashes | Symm-Clashes |
|---|---|---|---|---|---|---|
| 25 | p | 369 | 0 | 152 | 0 | 0 |
| 26 | f | 573 | 0 | 572 | 0 | 0 |
| 26 | q | 354 | 0 | 153 | 0 | 0 |
| 27 | g | 529 | 0 | 557 | 0 | 0 |
| 27 | r | 340 | 0 | 152 | 0 | 0 |
| 28 | h | 644 | 0 | 686 | 0 | 0 |
| 28 | l | 392 | 0 | 165 | 0 | 0 |
| 29 | j | 741 | 0 | 778 | 0 | 0 |
| 29 | m | 467 | 0 | 199 | 0 | 0 |
| 30 | W | 816 | 0 | 341 | 1 | 0 |
| 31 | Y | 416 | 0 | 182 | 0 | 0 |
| 32 | Q | 3066 | 0 | 1345 | 52 | 0 |
| 33 | t | 2171 | 0 | 945 | 0 | 0 |
| 33 | u | 2166 | 0 | 942 | 0 | 0 |
| 33 | v | 2111 | 0 | 917 | 0 | 0 |
| 33 | w | 2156 | 0 | 938 | 0 | 0 |
| 34 | s | 548 | 0 | 219 | 0 | 0 |
| 35 | x | 660 | 0 | 142 | 0 | 0 |
| 36 | E | 1 | 0 | 0 | 0 | 0 |
| 36 | V | 1 | 0 | 0 | 0 | 0 |
| 37 | D | 1 | 0 | 0 | 1 | 0 |
| 37 | L | 3 | 0 | 0 | 0 | 0 |
| 37 | M | 1 | 0 | 0 | 0 | 0 |
| 37 | N | 2 | 0 | 0 | 5 | 0 |
| 38 | C | 32 | 0 | 12 | 0 | 0 |
| All | All | 85476 | 0 | 62328 | 741 | 0 |

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 6.

All (741) 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) |
|---|---|---|---|
| 32:Q:434:ARG:O | 32:Q:874:ARG:HA | 1.26 | 1.35 |
| 17:N:34:CYS:SG | 17:N:37:CYS:SG | 1.35 | 1.34 |
| 20:R:36:GLN:O | 20:R:40:GLN:N | 1.60 | 1.32 |
| 1:U:45:A:N1 | 1:U:74:U:O4 | 1.65 | 1.30 |
| 21:S:467:GLN:CA | 21:S:471:LEU:HA | 1.65 | 1.24 |
| 32:Q:472:ILE:CB | 32:Q:503:ILE:H | 1.55 | 1.19 |
| 17:N:16:CYS:SG | 17:N:73:CYS:HB2 | 1.85 | 1.16 |
| 32:Q:435:PHE:HA | 32:Q:877:ASP:N | 1.61 | 1.15 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 32:Q:434:ARG:C | 32:Q:874:ARG:HA | 1.69 | 1.13 |
| 32:Q:472:ILE:CB | 32:Q:503:ILE:N | 2.11 | 1.11 |
| 32:Q:472:ILE:CB | 32:Q:503:ILE:CA | 2.28 | 1.11 |
| 16:M:108:VAL:HG11 | 17:N:59:LEU:HD13 | 1.26 | 1.10 |
| 20:R:37:GLN:O | 20:R:41:GLN:CB | 2.00 | 1.10 |
| 16:M:108:VAL:HG21 | 17:N:73:CYS:O | 1.52 | 1.09 |
| 32:Q:435:PHE:CA | 32:Q:877:ASP:H | 1.65 | 1.07 |
| 32:Q:672:SER:HA | 32:Q:956:LEU:O | 1.55 | 1.05 |
| 6:A:2364:THR:H | 32:Q:521:PRO:N | 1.56 | 1.03 |
| 22:T:360:LYS:CB | 22:T:381:HIS:CB | 2.36 | 1.03 |
| 21:S:467:GLN:CB | 21:S:471:LEU:O | 2.07 | 1.02 |
| 21:S:467:GLN:HA | 21:S:471:LEU:HA | 1.03 | 1.01 |
| 17:N:61:CYS:HG | 37:N:401:ZN:ZN | 0.67 | 1.00 |
| 21:S:467:GLN:HA | 21:S:471:LEU:CA | 1.90 | 0.99 |
| 6:A:2364:THR:N | 32:Q:521:PRO:N | 2.13 | 0.96 |
| 32:Q:435:PHE:HA | 32:Q:877:ASP:H | 1.14 | 0.95 |
| 17:N:61:CYS:SG | 37:N:401:ZN:ZN | 1.54 | 0.94 |
| 32:Q:472:ILE:CB | 32:Q:503:ILE:HA | 1.98 | 0.92 |
| 22:T:429:SER:O | 22:T:433:LEU:N | 2.03 | 0.92 |
| 21:S:467:GLN:CA | 21:S:471:LEU:CA | 2.37 | 0.92 |
| 16:M:108:VAL:HG22 | 17:N:75:MET:HG2 | 1.53 | 0.91 |
| 21:S:332:GLU:CB | 21:S:338:ILE:CB | 2.51 | 0.89 |
| 21:S:467:GLN:CB | 21:S:471:LEU:HA | 2.03 | 0.89 |
| 32:Q:472:ILE:CB | 32:Q:503:ILE:O | 2.22 | 0.88 |
| 20:R:36:GLN:O | 20:R:40:GLN:CB | 2.21 | 0.88 |
| 21:S:332:GLU:CB | 21:S:334:PHE:O | 2.22 | 0.88 |
| 16:M:108:VAL:HG11 | 17:N:59:LEU:CD1 | 2.03 | 0.88 |
| 21:S:467:GLN:CB | 21:S:471:LEU:CA | 2.52 | 0.87 |
| 22:T:420:SER:O | 22:T:421:ALA:O | 1.93 | 0.87 |
| 32:Q:472:ILE:CB | 32:Q:503:ILE:C | 2.43 | 0.86 |
| 32:Q:528:ARG:CB | 32:Q:530:PHE:N | 2.39 | 0.86 |
| 32:Q:673:LEU:H | 32:Q:957:LEU:HA | 1.38 | 0.85 |
| 8:D:88:CYS:SG | 37:D:1001:ZN:ZN | 1.65 | 0.85 |
| 7:B:479:GLU:HA | 7:B:498:SER:CB | 2.07 | 0.85 |
| 6:A:2364:THR:CB | 32:Q:521:PRO:N | 2.40 | 0.84 |
| 32:Q:587:PHE:O | 32:Q:591:TYR:CB | 2.26 | 0.84 |
| 17:N:16:CYS:SG | 17:N:73:CYS:CB | 2.65 | 0.84 |
| 32:Q:434:ARG:O | 32:Q:874:ARG:CA | 2.21 | 0.84 |
| 16:M:250:MET:HB2 | 17:N:139:LEU:HD11 | 1.58 | 0.83 |
| 20:R:28:ASN:O | 20:R:32:PRO:CD | 2.27 | 0.83 |
| 13:J:210:ASP:HB2 | 13:J:217:ILE:HD11 | 1.61 | 0.83 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 7:B:1182:ALA:O | 32:Q:496:ARG:HA | 1.80 | 0.82 |
| 16:M:108:VAL:HG22 | 17:N:75:MET:CG | 2.10 | 0.82 |
| 18:O:564:TYR:HA | 18:O:566:TYR:H | 1.44 | 0.82 |
| 17:N:220:THR:HG22 | 17:N:240:LEU:HD12 | 1.62 | 0.81 |
| 6:A:759:ARG:HD2 | 6:A:783:LEU:HD13 | 1.61 | 0.81 |
| 18:O:564:TYR:CA | 18:O:566:TYR:H | 1.93 | 0.81 |
| 21:S:329:LEU:HA | 21:S:338:ILE:CB | 2.10 | 0.81 |
| 10:C:389:LEU:HD21 | 10:C:421:LEU:HD12 | 1.64 | 0.80 |
| 20:R:36:GLN:O | 20:R:40:GLN:CA | 2.29 | 0.79 |
| 32:Q:459:LEU:CB | 32:Q:782:LYS:CB | 2.60 | 0.79 |
| 18:O:564:TYR:HA | 18:O:566:TYR:N | 2.00 | 0.77 |
| 5:V:67:C:H2' | 5:V:68:C:O4' | 1.85 | 0.76 |
| 32:Q:586:LYS:O | 32:Q:590:VAL:N | 2.19 | 0.76 |
| 20:R:37:GLN:O | 20:R:41:GLN:N | 2.19 | 0.76 |
| 16:M:108:VAL:CG1 | 17:N:59:LEU:HD13 | 2.14 | 0.76 |
| 13:J:323:VAL:HG12 | 13:J:336:LEU:HD12 | 1.67 | 0.75 |
| 1:U:45:A:N1 | 1:U:74:U:C4 | 2.54 | 0.75 |
| 17:N:113:LEU:HD11 | 17:N:120:LEU:HD11 | 1.69 | 0.75 |
| 16:M:22:ILE:HG23 | 16:M:23:PRO:HD3 | 1.67 | 0.74 |
| 17:N:37:CYS:SG | 37:N:401:ZN:ZN | 1.77 | 0.74 |
| 21:S:332:GLU:CB | 21:S:335:PRO:HA | 2.18 | 0.73 |
| 32:Q:459:LEU:HA | 32:Q:782:LYS:CB | 2.17 | 0.73 |
| 18:O:230:THR:HG23 | 21:S:116:ASN:HD21 | 1.53 | 0.73 |
| 5:V:76:A:OP2 | 6:A:749:ARG:NH1 | 2.21 | 0.73 |
| 16:M:108:VAL:CG1 | 17:N:59:LEU:HD22 | 2.20 | 0.72 |
| 17:N:71:CYS:SG | 37:N:402:ZN:ZN | 1.77 | 0.72 |
| 21:S:467:GLN:CB | 21:S:471:LEU:C | 2.56 | 0.72 |
| 6:A:1361:VAL:HG21 | 6:A:1407:ILE:HD11 | 1.72 | 0.72 |
| 8:D:51:CYS:SG | 8:D:88:CYS:HB3 | 2.30 | 0.72 |
| 6:A:1335:TRP:CD1 | 6:A:1367:ILE:HG13 | 2.24 | 0.72 |
| 6:A:853:THR:HG23 | 6:A:971:MET:HG3 | 1.70 | 0.71 |
| 7:B:1163:SER:CA | 32:Q:497:ARG:O | 2.32 | 0.71 |
| 6:A:1335:TRP:CZ2 | 6:A:1339:LEU:HD13 | 2.25 | 0.71 |
| 6:A:745:THR:HA | 13:J:182:VAL:HG21 | 1.73 | 0.70 |
| 6:A:631:LEU:HD21 | 6:A:663:LEU:HD12 | 1.73 | 0.70 |
| 10:C:406:VAL:HG11 | 10:C:427:LEU:HB3 | 1.71 | 0.70 |
| 16:M:250:MET:CB | 17:N:139:LEU:HD11 | 2.21 | 0.70 |
| 10:C:493:LEU:HD21 | 10:C:539:VAL:HG21 | 1.74 | 0.70 |
| 21:S:209:GLU:HB3 | 21:S:218:THR:HG22 | 1.75 | 0.69 |
| 32:Q:672:SER:CA | 32:Q:956:LEU:O | 2.37 | 0.69 |
| 4:Z:34:G:N2 | 6:A:1325:SER:OG | 2.22 | 0.68 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:1067:ASN:HB2 | 6:A:1083:THR:HG21 | 1.76 | 0.68 |
| 6:A:1342:LEU:CD2 | 6:A:1360:LEU:HD21 | 2.24 | 0.68 |
| 13:J:206:VAL:HG11 | 13:J:241:THR:HG21 | 1.76 | 0.67 |
| 16:M:108:VAL:HG13 | 17:N:59:LEU:HD22 | 1.76 | 0.67 |
| 20:R:28:ASN:O | 20:R:32:PRO:HD3 | 1.93 | 0.67 |
| 32:Q:459:LEU:CA | 32:Q:782:LYS:CB | 2.72 | 0.67 |
| 32:Q:435:PHE:CA | 32:Q:877:ASP:N | 2.34 | 0.67 |
| 7:B:1163:SER:O | 7:B:1164:THR:CB | 2.43 | 0.67 |
| 10:C:621:ALA:HB2 | 10:C:664:ALA:HB2 | 1.76 | 0.67 |
| 10:C:241:VAL:HG11 | 10:C:273:LEU:HD23 | 1.76 | 0.66 |
| 18:O:21:LEU:HD12 | 18:O:40:LEU:HD11 | 1.76 | 0.66 |
| 10:C:200:CYS:HB3 | 10:C:436:VAL:HG21 | 1.78 | 0.66 |
| 13:J:290:VAL:HG12 | 13:J:311:VAL:HG11 | 1.77 | 0.66 |
| 1:U:110:U:H2' | 1:U:111:C:O4' | 1.95 | 0.66 |
| 6:A:741:ILE:HD11 | 13:J:224:LEU:HD22 | 1.78 | 0.65 |
| 16:M:108:VAL:CG2 | 17:N:75:MET:HG2 | 2.24 | 0.65 |
| 6:A:1286:TRP:CE2 | 6:A:1302:LEU:HD11 | 2.31 | 0.65 |
| 18:O:60:LEU:HD21 | 18:O:94:PRO:HB3 | 1.79 | 0.65 |
| 32:Q:434:ARG:C | 32:Q:874:ARG:CA | 2.57 | 0.65 |
| 12:H:299:LEU:HD11 | 12:H:329:ILE:HG12 | 1.79 | 0.65 |
| 6:A:716:ARG:O | 6:A:720:PRO:HD2 | 1.97 | 0.64 |
| 10:C:193:LEU:HD11 | 10:C:228:ALA:HB2 | 1.78 | 0.64 |
| 17:N:125:ILE:HG21 | 17:N:135:ILE:HD12 | 1.80 | 0.64 |
| 13:J:282:VAL:HG11 | 13:J:323:VAL:HG21 | 1.80 | 0.64 |
| 6:A:1344:THR:O | 6:A:1347:ARG:NH1 | 2.30 | 0.64 |
| 13:J:142:VAL:HG11 | 13:J:423:ILE:CG2 | 2.28 | 0.64 |
| 10:C:323:THR:HG21 | 10:C:438:ALA:HB2 | 1.81 | 0.63 |
| 6:A:630:LYS:O | 6:A:634:ASP:N | 2.26 | 0.63 |
| 10:C:501:ILE:HD13 | 10:C:567:ILE:HG23 | 1.79 | 0.63 |
| 10:C:872:LEU:HD13 | 10:C:922:THR:HG22 | 1.79 | 0.63 |
| 5:V:90:U:O2' | 5:V:92:C:C6 | 2.52 | 0.63 |
| 22:T:429:SER:O | 22:T:433:LEU:CB | 2.47 | 0.62 |
| 12:H:445:LEU:HD11 | 12:H:448:MET:HG3 | 1.80 | 0.62 |
| 21:S:225:ALA:O | 21:S:229:VAL:HG23 | 1.98 | 0.62 |
| 8:D:63:LYS:HE3 | 9:F:6:LEU:HD22 | 1.80 | 0.62 |
| 17:N:71:CYS:HG | 37:N:402:ZN:ZN | 1.13 | 0.62 |
| 6:A:213:TYR:HA | 6:A:216:GLN:HE21 | 1.63 | 0.62 |
| 5:V:90:U:O2' | 5:V:92:C:C5 | 2.53 | 0.62 |
| 6:A:673:VAL:HG22 | 6:A:714:PHE:CE1 | 2.34 | 0.62 |
| 10:C:251:GLN:HG2 | 10:C:933:TRP:CD2 | 2.35 | 0.61 |
| 13:J:277:VAL:HG11 | 13:J:321:PHE:CZ | 2.36 | 0.61 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 16:M:108:VAL:CG2 | 17:N:73:CYS:O | 2.40 | 0.61 |
| 6:A:857:ILE:HD11 | 6:A:969:ILE:HD11 | 1.82 | 0.61 |
| 17:N:91:ILE:HD12 | 17:N:125:ILE:HD12 | 1.82 | 0.61 |
| 6:A:268:LEU:HD13 | 6:A:277:LYS:HB2 | 1.82 | 0.61 |
| 10:C:602:VAL:HG11 | 10:C:860:PRO:HG3 | 1.81 | 0.61 |
| 6:A:673:VAL:HG22 | 6:A:714:PHE:CZ | 2.36 | 0.61 |
| 7:B:1162:ALA:O | 32:Q:367:GLN:N | 2.34 | 0.61 |
| 21:S:149:VAL:O | 21:S:152:VAL:HG12 | 2.01 | 0.61 |
| 32:Q:435:PHE:CB | 32:Q:877:ASP:H | 2.12 | 0.61 |
| 6:A:1557:LEU:HD13 | 6:A:1562:PHE:CE2 | 2.36 | 0.61 |
| 10:C:133:ILE:HD13 | 10:C:560:GLN:HB3 | 1.83 | 0.61 |
| 1:U:98:U:HO2' | 5:V:75:A:H8 | 1.48 | 0.60 |
| 7:B:487:CYS:O | 7:B:490:ALA:N | 2.33 | 0.60 |
| 10:C:270:LEU:HD11 | 10:C:313:PHE:HB3 | 1.82 | 0.60 |
| 17:N:39:LEU:HD13 | 17:N:40:PRO:HD2 | 1.84 | 0.60 |
| 6:A:1738:LEU:HD13 | 6:A:1779:LEU:HD11 | 1.84 | 0.60 |
| 4:Z:38:U:O2 | 11:G:1:MET:N | 2.34 | 0.60 |
| 7:B:1973:ALA:O | 7:B:1976:ALA:HB3 | 2.01 | 0.60 |
| 13:J:323:VAL:CG1 | 13:J:336:LEU:HD12 | 2.32 | 0.60 |
| 15:L:66:LEU:HD13 | 15:L:73:ILE:HG13 | 1.83 | 0.59 |
| 8:D:51:CYS:SG | 8:D:88:CYS:SG | 3.00 | 0.59 |
| 10:C:656:LEU:HD22 | 10:C:670:ILE:HD11 | 1.85 | 0.59 |
| 10:C:866:ILE:HB | 10:C:902:VAL:HG13 | 1.83 | 0.59 |
| 6:A:1032:ILE:HG12 | 6:A:1171:LEU:HD22 | 1.83 | 0.59 |
| 20:R:37:GLN:O | 20:R:41:GLN:CA | 2.51 | 0.59 |
| 32:Q:402:VAL:CB | 32:Q:449:VAL:H | 2.15 | 0.59 |
| 10:C:499:VAL:HG11 | 10:C:577:LEU:HD13 | 1.83 | 0.59 |
| 21:S:173:VAL:HG23 | 21:S:188:ILE:HD11 | 1.85 | 0.59 |
| 32:Q:452:GLY:O | 32:Q:784:PRO:CB | 2.50 | 0.59 |
| 6:A:390:LEU:HD21 | 10:C:605:ILE:HD11 | 1.85 | 0.58 |
| 13:J:240:ALA:HB1 | 13:J:248:ILE:HD11 | 1.82 | 0.58 |
| 13:J:160:ASN:HA | 13:J:184:THR:HB | 1.85 | 0.58 |
| 17:N:39:LEU:HD23 | 17:N:111:ARG:HG2 | 1.85 | 0.58 |
| 12:H:298:VAL:HG11 | 12:H:312:LEU:HD23 | 1.84 | 0.58 |
| 6:A:842:LYS:O | 6:A:845:VAL:HG12 | 2.02 | 0.58 |
| 17:N:207:LEU:HD11 | 17:N:251:LEU:HD11 | 1.86 | 0.58 |
| 17:N:16:CYS:SG | 17:N:71:CYS:SG | 3.02 | 0.58 |
| 13:J:248:ILE:HG23 | 13:J:262:LEU:HB2 | 1.84 | 0.58 |
| 32:Q:425:LEU:HA | 32:Q:429:VAL:CB | 2.33 | 0.58 |
| 6:A:1668:ILE:HD13 | 6:A:1801:SER:HB3 | 1.86 | 0.58 |
| 18:O:185:LEU:O | 18:O:188:ARG:HG3 | 2.03 | 0.58 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 17:N:16:CYS:HG | 17:N:73:CYS:HB2 | 1.65 | 0.57 |
| 13:J:147:ILE:HD13 | 13:J:408:ASP:HA | 1.84 | 0.57 |
| 20:R:37:GLN:C | 20:R:41:GLN:H | 2.07 | 0.57 |
| 17:N:16:CYS:SG | 17:N:73:CYS:SG | 3.02 | 0.57 |
| 6:A:1632:ILE:HG21 | 6:A:1645:LEU:HD13 | 1.85 | 0.57 |
| 18:O:185:LEU:O | 18:O:189:ARG:HG2 | 2.03 | 0.57 |
| 6:A:395:PRO:HB2 | 6:A:398:VAL:HG21 | 1.87 | 0.57 |
| 6:A:305:LEU:HD21 | 6:A:476:ALA:HB2 | 1.85 | 0.57 |
| 15:L:66:LEU:HD13 | 15:L:73:ILE:CG1 | 2.34 | 0.57 |
| 6:A:322:VAL:HG23 | 6:A:508:GLN:HE21 | 1.70 | 0.56 |
| 6:A:342:LEU:HB3 | 6:A:344:ASN:HD22 | 1.70 | 0.56 |
| 6:A:1557:LEU:HD11 | 6:A:1570:TRP:HB2 | 1.86 | 0.56 |
| 10:C:328:VAL:HG21 | 10:C:345:THR:HG22 | 1.87 | 0.56 |
| 21:S:229:VAL:HG22 | 21:S:238:TRP:HZ2 | 1.69 | 0.56 |
| 6:A:370:ILE:HB | 6:A:1418:THR:HG21 | 1.87 | 0.56 |
| 6:A:969:ILE:HG22 | 6:A:982:TYR:HA | 1.86 | 0.56 |
| 6:A:1049:LEU:HB2 | 6:A:1258:LEU:HD11 | 1.86 | 0.56 |
| 32:Q:456:ARG:CB | 32:Q:784:PRO:CB | 2.83 | 0.56 |
| 12:H:465:PHE:HB2 | 12:H:473:LEU:HD23 | 1.88 | 0.56 |
| 5:V:59:A:H2' | 5:V:60:G:O4' | 2.05 | 0.56 |
| 6:A:948:HIS:CE1 | 6:A:952:ASN:HD21 | 2.23 | 0.56 |
| 8:D:51:CYS:SG | 8:D:88:CYS:CB | 2.94 | 0.56 |
| 18:O:33:TRP:CE3 | 18:O:36:VAL:HG11 | 2.41 | 0.56 |
| 21:S:184:GLY:O | 21:S:188:ILE:HG23 | 2.05 | 0.56 |
| 21:S:332:GLU:CB | 21:S:334:PHE:C | 2.74 | 0.56 |
| 13:J:289:THR:HG22 | 13:J:305:THR:HG22 | 1.88 | 0.56 |
| 32:Q:673:LEU:N | 32:Q:957:LEU:HA | 2.17 | 0.56 |
| 17:N:226:LEU:HD13 | 17:N:266:ILE:HD11 | 1.87 | 0.56 |
| 32:Q:434:ARG:CB | 32:Q:874:ARG:O | 2.54 | 0.56 |
| 6:A:878:GLU:O | 6:A:882:ILE:HG23 | 2.06 | 0.56 |
| 8:D:11:TYR:CD1 | 11:G:12:LEU:HD21 | 2.41 | 0.56 |
| 18:O:230:THR:HG21 | 21:S:117:HIS:ND1 | 2.21 | 0.56 |
| 20:R:31:ARG:N | 20:R:32:PRO:CD | 2.68 | 0.56 |
| 6:A:172:ILE:HD13 | 6:A:625:LEU:HB3 | 1.88 | 0.55 |
| 6:A:521:SER:HB2 | 6:A:682:ASP:HA | 1.88 | 0.55 |
| 6:A:1417:GLN:HG2 | 6:A:1418:THR:HG23 | 1.88 | 0.55 |
| 13:J:277:VAL:HG13 | 13:J:278:ASP:N | 2.20 | 0.55 |
| 17:N:106:ASN:HD21 | 18:O:208:GLY:HA2 | 1.71 | 0.55 |
| 6:A:137:GLU:CD | 15:L:30:LEU:HG | 2.26 | 0.55 |
| 15:L:94:LYS:HD2 | 15:L:109:ILE:HD11 | 1.87 | 0.55 |
| 6:A:1000:TRP:CZ2 | 6:A:1510:ILE:HG21 | 2.41 | 0.55 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 7:B:1795:SER:O | 7:B:1798:GLY:N | 2.39 | 0.55 |
| 18:O:37:ALA:HB2 | 18:O:45:ALA:HA | 1.88 | 0.55 |
| 6:A:724:ARG:O | 6:A:728:ASN:HB2 | 2.07 | 0.55 |
| 10:C:472:VAL:HB | 10:C:575:ALA:HB3 | 1.88 | 0.55 |
| 16:M:163:VAL:HG23 | 16:M:164:PHE:HD1 | 1.71 | 0.55 |
| 6:A:168:LEU:N | 6:A:169:PRO:CD | 2.69 | 0.55 |
| 6:A:588:LEU:HD13 | 6:A:591:LEU:CD2 | 2.37 | 0.55 |
| 20:R:28:ASN:O | 20:R:32:PRO:HD2 | 2.04 | 0.55 |
| 32:Q:587:PHE:O | 32:Q:591:TYR:N | 2.39 | 0.55 |
| 6:A:168:LEU:HD21 | 6:A:626:LEU:HD21 | 1.89 | 0.55 |
| 6:A:1209:LYS:HA | 6:A:1212:ARG:HG2 | 1.89 | 0.55 |
| 6:A:424:PHE:CE1 | 10:C:893:LYS:HB3 | 2.42 | 0.54 |
| 6:A:1542:TYR:O | 6:A:1546:VAL:HG23 | 2.07 | 0.54 |
| 17:N:106:ASN:HB2 | 18:O:213:TYR:CG | 2.42 | 0.54 |
| 1:U:45:A:C2 | 1:U:74:U:O4 | 2.54 | 0.54 |
| 6:A:628:MET:HE3 | 6:A:660:ILE:HG23 | 1.88 | 0.54 |
| 2:E:-5:G:HO2' | 2:E:-4:A:H8 | 1.55 | 0.54 |
| 6:A:228:LYS:HD2 | 6:A:695:LEU:HD11 | 1.90 | 0.54 |
| 6:A:2364:THR:CA | 32:Q:521:PRO:N | 2.70 | 0.54 |
| 17:N:17:LEU:CD2 | 17:N:23:ILE:HD12 | 2.37 | 0.54 |
| 20:R:31:ARG:N | 20:R:32:PRO:HD2 | 2.23 | 0.54 |
| 6:A:1562:PHE:O | 6:A:1565:THR:OG1 | 2.24 | 0.54 |
| 17:N:29:PRO:HA | 17:N:42:THR:HG22 | 1.90 | 0.54 |
| 18:O:211:ILE:HD13 | 21:S:44:ARG:HG3 | 1.89 | 0.54 |
| 21:S:99:ILE:N | 21:S:100:PRO:CD | 2.70 | 0.54 |
| 30:W:121:PRO:O | 30:W:122:ARG:CB | 2.56 | 0.54 |
| 18:O:16:VAL:HG22 | 18:O:152:LEU:HD21 | 1.88 | 0.54 |
| 6:A:141:LYS:HG3 | 15:L:52:ILE:HD11 | 1.90 | 0.54 |
| 1:U:92:U:O2 | 20:R:12:LYS:NZ | 2.39 | 0.54 |
| 1:U:103:A:O2' | 1:U:104:G:O4' | 2.24 | 0.54 |
| 6:A:880:THR:OG1 | 14:K:207:ALA:HB1 | 2.08 | 0.54 |
| 6:A:1335:TRP:CH2 | 6:A:1364:GLU:HG2 | 2.42 | 0.54 |
| 6:A:1756:PHE:CE1 | 6:A:1760:THR:HG21 | 2.43 | 0.54 |
| 10:C:861:ILE:HD11 | 10:C:938:ARG:HB2 | 1.89 | 0.54 |
| 10:C:138:VAL:HG23 | 10:C:236:LEU:HB2 | 1.90 | 0.53 |
| 10:C:265:PHE:HB2 | 10:C:311:ILE:HD13 | 1.89 | 0.53 |
| 1:U:102:C:OP1 | 6:A:675:HIS:NE2 | 2.42 | 0.53 |
| 10:C:191:ILE:HG23 | 10:C:221:PHE:CE2 | 2.44 | 0.53 |
| 5:V:35:A:C8 | 15:L:41:LEU:HD13 | 2.43 | 0.53 |
| 10:C:241:VAL:HG22 | 10:C:267:ILE:CG2 | 2.38 | 0.53 |
| 17:N:64:CYS:SG | 17:N:114:SER:HB2 | 2.48 | 0.53 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 1:U:45:A:N6 | 1:U:74:U:N3 | 2.55 | 0.53 |
| 6:A:674:MET:CE | 6:A:1621:VAL:HG11 | 2.38 | 0.53 |
| 6:A:929:LEU:HD11 | 6:A:1590:LEU:HD23 | 1.91 | 0.53 |
| 6:A:2060:LEU:HD21 | 6:A:2078:GLU:HG3 | 1.89 | 0.53 |
| 13:J:277:VAL:HG11 | 13:J:321:PHE:HZ | 1.71 | 0.53 |
| 10:C:864:VAL:HG22 | 10:C:930:LEU:HD23 | 1.90 | 0.53 |
| 6:A:882:ILE:HD11 | 6:A:1065:LEU:HD21 | 1.90 | 0.53 |
| 13:J:306:HIS:CE1 | 14:K:147:LEU:HD11 | 2.44 | 0.53 |
| 6:A:210:GLU:O | 6:A:214:THR:HG23 | 2.09 | 0.53 |
| 6:A:588:LEU:HD13 | 6:A:591:LEU:HD22 | 1.91 | 0.53 |
| 8:D:101:PRO:HB2 | 9:F:23:VAL:HG21 | 1.90 | 0.53 |
| 13:J:142:VAL:HG11 | 13:J:423:ILE:HG23 | 1.91 | 0.53 |
| 6:A:161:PHE:HA | 6:A:198:ALA:HB1 | 1.91 | 0.53 |
| 6:A:308:MET:HG3 | 6:A:479:LEU:HD11 | 1.89 | 0.53 |
| 10:C:201:THR:HG22 | 10:C:207:SER:HB3 | 1.90 | 0.53 |
| 7:B:1502:LEU:O | 7:B:1503:GLU:C | 2.47 | 0.53 |
| 10:C:126:MET:SD | 10:C:132:ARG:NH2 | 2.82 | 0.53 |
| 6:A:937:LEU:HD22 | 6:A:1590:LEU:CD2 | 2.39 | 0.52 |
| 7:B:1928:LEU:O | 7:B:1931:GLN:N | 2.40 | 0.52 |
| 11:G:55:SER:O | 11:G:58:ILE:HG22 | 2.10 | 0.52 |
| 1:U:32:G:H3' | 1:U:33:U:C5' | 2.38 | 0.52 |
| 10:C:836:SER:O | 10:C:840:PRO:HD2 | 2.09 | 0.52 |
| 13:J:341:LEU:HD23 | 13:J:342:LEU:N | 2.24 | 0.52 |
| 22:T:119:ALA:HB1 | 22:T:128:ILE:CA | 2.39 | 0.52 |
| 6:A:937:LEU:HD22 | 6:A:1590:LEU:HD22 | 1.91 | 0.52 |
| 6:A:1375:LEU:HD12 | 6:A:1383:PHE:CE1 | 2.44 | 0.52 |
| 1:U:45:A:N3 | 1:U:45:A:H2' | 2.24 | 0.52 |
| 14:K:201:PHE:CD2 | 18:O:80:LEU:HD21 | 2.45 | 0.52 |
| 6:A:1339:LEU:HD11 | 6:A:1360:LEU:HD22 | 1.92 | 0.52 |
| 7:B:1163:SER:N | 32:Q:497:ARG:O | 2.42 | 0.52 |
| 13:J:335:GLY:H | 13:J:342:LEU:HD13 | 1.74 | 0.52 |
| 6:A:1207:TRP:O | 6:A:1212:ARG:NH1 | 2.42 | 0.52 |
| 6:A:730:ILE:HD12 | 6:A:731:THR:N | 2.25 | 0.52 |
| 6:A:785:HIS:NE2 | 14:K:168:ALA:HB2 | 2.24 | 0.52 |
| 6:A:1090:ILE:HD11 | 6:A:1104:ILE:CD1 | 2.40 | 0.52 |
| 6:A:1393:GLU:O | 6:A:1394:LEU:HD23 | 2.10 | 0.52 |
| 6:A:1974:LEU:O | 6:A:1977:VAL:HG22 | 2.10 | 0.52 |
| 10:C:539:VAL:HG13 | 10:C:564:ILE:HG23 | 1.92 | 0.52 |
| 6:A:1654:TRP:CZ3 | 6:A:1779:LEU:HD12 | 2.45 | 0.51 |
| 21:S:199:MET:SD | 21:S:246:LEU:HD22 | 2.50 | 0.51 |
| 32:Q:673:LEU:O | 32:Q:958:MET:CB | 2.58 | 0.51 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:212:VAL:HG22 | 6:A:311:LEU:HD11 | 1.92 | 0.51 |
| 6:A:718:THR:O | 6:A:719:ILE:C | 2.48 | 0.51 |
| 6:A:808:ILE:HG21 | 14:K:165:ILE:HD12 | 1.91 | 0.51 |
| 10:C:626:SER:HB3 | 10:C:634:ILE:HD12 | 1.91 | 0.51 |
| 12:H:333:SER:HA | 12:H:343:TYR:CE2 | 2.46 | 0.51 |
| 3:I:2:U:O4 | 4:Z:37:G:H1' | 2.10 | 0.51 |
| 10:C:664:ALA:HB1 | 10:C:666:ILE:CD1 | 2.39 | 0.51 |
| 10:C:664:ALA:HB1 | 10:C:666:ILE:HD12 | 1.92 | 0.51 |
| 12:H:347:SER:O | 12:H:351:ILE:HG12 | 2.09 | 0.51 |
| 18:O:16:VAL:CG2 | 18:O:152:LEU:HD21 | 2.40 | 0.51 |
| 6:A:249:LEU:HD12 | 6:A:249:LEU:O | 2.11 | 0.51 |
| 7:B:2036:SER:O | 7:B:2039:ALA:HB3 | 2.11 | 0.51 |
| 6:A:660:ILE:HG21 | 6:A:711:TRP:CH2 | 2.45 | 0.51 |
| 22:T:420:SER:O | 22:T:421:ALA:C | 2.49 | 0.51 |
| 6:A:172:ILE:HG23 | 6:A:629:MET:HG2 | 1.93 | 0.51 |
| 6:A:1047:ALA:HB3 | 6:A:1251:TYR:HB3 | 1.92 | 0.51 |
| 6:A:1375:LEU:HD12 | 6:A:1383:PHE:HE1 | 1.76 | 0.51 |
| 7:B:1399:ASN:O | 7:B:1448:THR:HA | 2.10 | 0.51 |
| 10:C:255:GLN:HG2 | 10:C:598:ILE:HD12 | 1.92 | 0.51 |
| 13:J:206:VAL:CG1 | 13:J:241:THR:HG21 | 2.40 | 0.51 |
| 3:I:2:U:H3' | 6:A:607:THR:OG1 | 2.11 | 0.51 |
| 10:C:963:SER:O | 10:C:967:VAL:HG23 | 2.10 | 0.51 |
| 22:T:299:PRO:O | 22:T:300:ASP:C | 2.49 | 0.51 |
| 32:Q:425:LEU:O | 32:Q:429:VAL:CB | 2.59 | 0.51 |
| 6:A:458:PHE:CZ | 10:C:336:ILE:HD11 | 2.45 | 0.51 |
| 6:A:1329:THR:HG21 | 6:A:1601:ILE:HB | 1.93 | 0.51 |
| 10:C:872:LEU:HD13 | 10:C:922:THR:CG2 | 2.41 | 0.51 |
| 12:H:326:VAL:O | 12:H:330:ILE:HG12 | 2.10 | 0.51 |
| 13:J:275:THR:OG1 | 13:J:279:PRO:O | 2.29 | 0.51 |
| 5:V:27:U:O2' | 15:L:124:VAL:HA | 2.11 | 0.50 |
| 6:A:350:PRO:HD3 | 6:A:526:LEU:HD13 | 1.92 | 0.50 |
| 6:A:741:ILE:CD1 | 13:J:224:LEU:HD22 | 2.41 | 0.50 |
| 21:S:172:PHE:CD2 | 21:S:188:ILE:HD13 | 2.46 | 0.50 |
| 21:S:332:GLU:CB | 21:S:335:PRO:CA | 2.87 | 0.50 |
| 6:A:659:HIS:O | 6:A:660:ILE:C | 2.49 | 0.50 |
| 6:A:713:ASN:O | 6:A:716:ARG:HB3 | 2.11 | 0.50 |
| 6:A:1893:ILE:HD12 | 6:A:1978:VAL:HG22 | 1.92 | 0.50 |
| 10:C:139:ILE:HG12 | 10:C:225:THR:HG23 | 1.93 | 0.50 |
| 1:U:71:A:N3 | 1:U:116:U:O2' | 2.33 | 0.50 |
| 3:I:3:A:OP2 | 11:G:3:ARG:HA | 2.11 | 0.50 |
| 32:Q:840:SER:HA | 32:Q:968:THR:HA | 1.94 | 0.50 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:Z:4:A:H2' | 4:Z:5:A:H5' | 1.91 | 0.50 |
| 6:A:249:LEU:HD11 | 6:A:637:VAL:HG11 | 1.93 | 0.50 |
| 10:C:493:LEU:HD22 | 10:C:542:ILE:HD11 | 1.93 | 0.50 |
| 6:A:912:LEU:HD22 | 6:A:951:LEU:HG | 1.94 | 0.50 |
| 10:C:615:LEU:N | 10:C:616:PRO:HD2 | 2.26 | 0.50 |
| 10:C:617:LYS:HB3 | 10:C:666:ILE:HD11 | 1.94 | 0.50 |
| 6:A:175:LEU:HD23 | 6:A:564:TRP:CZ2 | 2.46 | 0.50 |
| 6:A:182:PRO:HG2 | 6:A:220:THR:HG21 | 1.94 | 0.50 |
| 6:A:410:ILE:N | 6:A:410:ILE:HD12 | 2.27 | 0.50 |
| 6:A:674:MET:CE | 6:A:674:MET:HA | 2.42 | 0.50 |
| 10:C:133:ILE:HG23 | 10:C:209:MET:SD | 2.52 | 0.50 |
| 10:C:864:VAL:HG22 | 10:C:930:LEU:CD2 | 2.42 | 0.50 |
| 18:O:230:THR:HG21 | 21:S:117:HIS:CE1 | 2.47 | 0.50 |
| 32:Q:433:ILE:O | 32:Q:877:ASP:CB | 2.60 | 0.50 |
| 6:A:1344:THR:HG21 | 6:A:1537:TRP:CD2 | 2.46 | 0.50 |
| 16:M:108:VAL:CG1 | 17:N:59:LEU:CD2 | 2.90 | 0.50 |
| 13:J:156:ILE:HG22 | 13:J:166:VAL:HG22 | 1.93 | 0.50 |
| 13:J:200:VAL:CG2 | 13:J:227:VAL:HB | 2.41 | 0.50 |
| 10:C:231:ALA:HB2 | 10:C:473:LEU:HD13 | 1.93 | 0.49 |
| 5:V:35:A:C8 | 16:M:75:PHE:CZ | 3.00 | 0.49 |
| 6:A:138:HIS:NE2 | 6:A:142:ILE:HD11 | 2.27 | 0.49 |
| 1:U:32:G:C6 | 1:U:34:C:C4 | 3.01 | 0.49 |
| 4:Z:4:A:C2' | 4:Z:5:A:H5' | 2.42 | 0.49 |
| 16:M:108:VAL:HG22 | 17:N:75:MET:HG3 | 1.91 | 0.49 |
| 6:A:793:TRP:CZ2 | 6:A:820:ALA:HB1 | 2.48 | 0.49 |
| 6:A:1309:ILE:CG2 | 6:A:1359:ILE:HD12 | 2.42 | 0.49 |
| 18:O:230:THR:HG22 | 21:S:114:CYS:SG | 2.53 | 0.49 |
| 11:G:28:ASP:OD1 | 11:G:28:ASP:N | 2.44 | 0.49 |
| 12:H:291:PHE:CE1 | 12:H:317:ILE:HG21 | 2.47 | 0.49 |
| 6:A:937:LEU:HD13 | 6:A:1590:LEU:HD11 | 1.93 | 0.49 |
| 9:F:27:GLU:O | 9:F:31:ILE:HG12 | 2.13 | 0.49 |
| 10:C:116:THR:HG21 | 10:C:118:TYR:CZ | 2.47 | 0.49 |
| 10:C:544:LEU:HD23 | 10:C:562:VAL:HG12 | 1.94 | 0.49 |
| 13:J:145:VAL:HG22 | 13:J:157:THR:HG22 | 1.94 | 0.49 |
| 6:A:137:GLU:CD | 15:L:52:ILE:HG23 | 2.33 | 0.49 |
| 6:A:1400:ILE:HG22 | 6:A:1400:ILE:O | 2.12 | 0.49 |
| 10:C:137:GLY:O | 10:C:139:ILE:HD12 | 2.13 | 0.49 |
| 18:O:20:ILE:HD11 | 18:O:152:LEU:HD22 | 1.95 | 0.49 |
| 21:S:99:ILE:HD11 | 21:S:132:VAL:HG11 | 1.95 | 0.49 |
| 5:V:52:G:H2' | 5:V:53:A:C8 | 2.47 | 0.49 |
| 6:A:1795:LYS:N | 6:A:1796:PRO:CD | 2.75 | 0.49 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 13:J:150:VAL:HG13 | 13:J:151:ASP:HB3 | 1.95 | 0.49 |
| 22:T:332:GLN:CB | 22:T:342:ILE:CB | 2.91 | 0.49 |
| 10:C:607:LEU:HD11 | 10:C:644:ILE:HD11 | 1.96 | 0.48 |
| 18:O:24:ALA:O | 18:O:28:TYR:N | 2.37 | 0.48 |
| 6:A:1557:LEU:HD13 | 6:A:1562:PHE:CD2 | 2.48 | 0.48 |
| 7:B:479:GLU:CA | 7:B:498:SER:CB | 2.86 | 0.48 |
| 10:C:213:LEU:HD11 | 10:C:561:ILE:HD13 | 1.95 | 0.48 |
| 12:H:427:LEU:HD23 | 12:H:436:LEU:HD11 | 1.95 | 0.48 |
| 6:A:724:ARG:CD | 19:P:31:LEU:HD11 | 2.43 | 0.48 |
| 5:V:41:A:H2' | 5:V:42:A:O4' | 2.14 | 0.48 |
| 12:H:368:ASN:ND2 | 12:H:384:LEU:HD11 | 2.29 | 0.48 |
| 32:Q:430:GLY:HA3 | 32:Q:438:VAL:O | 2.14 | 0.48 |
| 6:A:1669:LEU:HB3 | 6:A:1681:VAL:HG21 | 1.95 | 0.48 |
| 13:J:277:VAL:HG22 | 13:J:278:ASP:H | 1.79 | 0.48 |
| 6:A:708:TRP:CE2 | 6:A:712:LEU:HD11 | 2.49 | 0.48 |
| 6:A:1223:GLY:CA | 6:A:1248:VAL:HG11 | 2.43 | 0.48 |
| 13:J:147:ILE:HG22 | 13:J:155:PHE:HB3 | 1.94 | 0.48 |
| 17:N:65:ALA:O | 17:N:69:ASN:N | 2.47 | 0.48 |
| 13:J:272:VAL:HG13 | 13:J:272:VAL:O | 2.14 | 0.48 |
| 10:C:241:VAL:HG23 | 10:C:268:ASN:O | 2.14 | 0.48 |
| 17:N:17:LEU:HD21 | 17:N:23:ILE:HD12 | 1.96 | 0.48 |
| 6:A:522:TYR:CZ | 6:A:686:ILE:HD12 | 2.48 | 0.48 |
| 6:A:1028:TRP:CZ3 | 6:A:1162:THR:HG22 | 2.49 | 0.48 |
| 15:L:22:THR:HG21 | 15:L:62:TYR:CE1 | 2.49 | 0.48 |
| 5:V:32:U:C4 | 17:N:28:ILE:HG21 | 2.49 | 0.48 |
| 16:M:137:LEU:HD21 | 16:M:192:ALA:HB1 | 1.96 | 0.48 |
| 18:O:218:VAL:HB | 21:S:89:GLU:HB3 | 1.96 | 0.48 |
| 6:A:857:ILE:CD1 | 6:A:969:ILE:HD11 | 2.44 | 0.47 |
| 10:C:273:LEU:HD12 | 10:C:274:ILE:N | 2.29 | 0.47 |
| 10:C:625:ILE:HG22 | 10:C:634:ILE:HD11 | 1.95 | 0.47 |
| 21:S:140:LEU:HD22 | 21:S:156:TYR:CE2 | 2.49 | 0.47 |
| 6:A:1222:LEU:O | 6:A:1226:VAL:HG23 | 2.15 | 0.47 |
| 10:C:229:LEU:HB3 | 10:C:259:ASN:HD21 | 1.79 | 0.47 |
| 14:K:41:ASP:HA | 14:K:44:ILE:HD12 | 1.96 | 0.47 |
| 10:C:211:ASN:N | 10:C:211:ASN:HD22 | 2.12 | 0.47 |
| 10:C:873:LEU:HD21 | 10:C:891:THR:HG21 | 1.94 | 0.47 |
| 12:H:355:ARG:O | 12:H:359:THR:HG23 | 2.14 | 0.47 |
| 18:O:33:TRP:HA | 18:O:36:VAL:HG12 | 1.96 | 0.47 |
| 21:S:112:VAL:HG13 | 21:S:114:CYS:HB2 | 1.96 | 0.47 |
| 22:T:119:ALA:HB1 | 22:T:128:ILE:HA | 1.94 | 0.47 |
| 6:A:522:TYR:CE2 | 6:A:686:ILE:HD12 | 2.50 | 0.47 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:1066:LEU:HD11 | 6:A:1113:ILE:HG23 | 1.95 | 0.47 |
| 10:C:136:VAL:O | 10:C:234:LEU:O | 2.33 | 0.47 |
| 13:J:341:LEU:HD22 | 14:K:45:PRO:HB3 | 1.96 | 0.47 |
| 18:O:564:TYR:C | 18:O:566:TYR:H | 2.18 | 0.47 |
| 6:A:628:MET:CE | 6:A:664:THR:HB | 2.45 | 0.47 |
| 2:E:-5:G:O2' | 2:E:-4:A:H8 | 1.98 | 0.47 |
| 6:A:1234:VAL:HG11 | 6:A:1239:THR:HG22 | 1.95 | 0.47 |
| 6:A:1347:ARG:HD2 | 6:A:1447:TRP:CE2 | 2.49 | 0.47 |
| 6:A:1388:PHE:CD1 | 6:A:1397:LEU:HD12 | 2.50 | 0.47 |
| 10:C:193:LEU:HD12 | 10:C:213:LEU:HB3 | 1.97 | 0.47 |
| 10:C:504:THR:HG23 | 10:C:574:SER:O | 2.15 | 0.47 |
| 21:S:229:VAL:HG11 | 21:S:243:VAL:CG2 | 2.45 | 0.47 |
| 32:Q:465:ASP:C | 32:Q:467:TYR:H | 2.18 | 0.47 |
| 7:B:990:ASP:O | 7:B:994:ASP:N | 2.45 | 0.47 |
| 6:A:687:ILE:HD11 | 6:A:706:PRO:HG3 | 1.97 | 0.47 |
| 8:D:23:LEU:HG | 11:G:18:GLN:HE22 | 1.80 | 0.47 |
| 13:J:144:CYS:SG | 13:J:187:ASP:HA | 2.55 | 0.47 |
| 21:S:225:ALA:O | 21:S:228:THR:HG22 | 2.15 | 0.47 |
| 6:A:468:LEU:HD22 | 6:A:469:ILE:HG23 | 1.97 | 0.46 |
| 6:A:1345:TYR:HD1 | 6:A:1345:TYR:O | 1.98 | 0.46 |
| 7:B:496:THR:O | 7:B:497:THR:CB | 2.63 | 0.46 |
| 14:K:104:LEU:HD12 | 14:K:113:GLU:HA | 1.97 | 0.46 |
| 18:O:541:CYS:O | 18:O:544:LEU:O | 2.33 | 0.46 |
| 21:S:193:VAL:HG11 | 21:S:202:TRP:CZ2 | 2.50 | 0.46 |
| 32:Q:401:VAL:O | 32:Q:402:VAL:CB | 2.62 | 0.46 |
| 6:A:876:PRO:HA | 14:K:204:LEU:HD22 | 1.97 | 0.46 |
| 6:A:1417:GLN:CG | 6:A:1418:THR:HG23 | 2.45 | 0.46 |
| 7:B:1105:ALA:O | 7:B:1106:GLY:C | 2.54 | 0.46 |
| 13:J:269:ILE:HA | 13:J:285:SER:HA | 1.97 | 0.46 |
| 6:A:319:ARG:O | 6:A:321:GLU:N | 2.48 | 0.46 |
| 8:D:31:LEU:HD11 | 11:G:31:ARG:NH2 | 2.30 | 0.46 |
| 20:R:36:GLN:C | 20:R:40:GLN:CB | 2.82 | 0.46 |
| 10:C:312:ILE:HD13 | 10:C:435:LEU:HG | 1.98 | 0.46 |
| 18:O:25:VAL:HG11 | 18:O:52:TRP:CH2 | 2.50 | 0.46 |
| 18:O:214:ASN:HB2 | 18:O:217:ILE:HD11 | 1.97 | 0.46 |
| 5:V:71:G:H21 | 5:V:75:A:H2 | 1.62 | 0.46 |
| 6:A:1881:THR:HG21 | 6:A:1920:LEU:CD2 | 2.46 | 0.46 |
| 13:J:144:CYS:SG | 13:J:145:VAL:N | 2.89 | 0.46 |
| 32:Q:706:THR:C | 32:Q:708:LYS:N | 2.69 | 0.46 |
| 6:A:286:LEU:HD13 | 6:A:287:GLU:N | 2.30 | 0.46 |
| 7:B:781:LEU:O | 7:B:785:ALA:N | 2.41 | 0.46 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 12:H:369:TYR:CE1 | 12:H:420:ILE:HD11 | 2.51 | 0.46 |
| 12:H:465:PHE:CB | 12:H:473:LEU:HD23 | 2.46 | 0.46 |
| 16:M:17:GLU:HB2 | 16:M:18:LEU:HD13 | 1.97 | 0.46 |
| 5:V:32:U:O4 | 17:N:28:ILE:HG21 | 2.16 | 0.46 |
| 6:A:929:LEU:HD11 | 6:A:1590:LEU:CD2 | 2.45 | 0.46 |
| 6:A:1350:ILE:HD13 | 6:A:1356:LEU:CD2 | 2.46 | 0.46 |
| 10:C:493:LEU:CD2 | 10:C:539:VAL:HG21 | 2.45 | 0.46 |
| 15:L:94:LYS:CD | 15:L:109:ILE:HD11 | 2.45 | 0.46 |
| 10:C:873:LEU:N | 10:C:874:PRO:CD | 2.79 | 0.46 |
| 10:C:928:CYS:SG | 10:C:929:GLN:N | 2.89 | 0.46 |
| 13:J:248:ILE:HG13 | 13:J:262:LEU:HD12 | 1.98 | 0.46 |
| 18:O:230:THR:HG21 | 21:S:117:HIS:CG | 2.51 | 0.46 |
| 12:H:334:LEU:HD21 | 12:H:384:LEU:HD12 | 1.98 | 0.46 |
| 16:M:99:ILE:HD13 | 16:M:188:TYR:CD2 | 2.51 | 0.46 |
| 18:O:530:VAL:O | 18:O:533:LEU:N | 2.48 | 0.46 |
| 1:U:119:U:C2 | 1:U:120:G:C8 | 3.04 | 0.45 |
| 6:A:1020:ILE:HB | 6:A:1022:PRO:HD2 | 1.98 | 0.45 |
| 6:A:1357:LEU:HD11 | 12:H:303:LEU:HD22 | 1.98 | 0.45 |
| 10:C:501:ILE:CD1 | 10:C:567:ILE:HG23 | 2.46 | 0.45 |
| 1:U:47:U:H2' | 1:U:48:G:C8 | 2.52 | 0.45 |
| 6:A:1354:GLU:N | 6:A:1355:PRO:CD | 2.78 | 0.45 |
| 10:C:837:GLN:HE21 | 10:C:837:GLN:HA | 1.81 | 0.45 |
| 12:H:351:ILE:HG21 | 12:H:395:GLU:HG3 | 1.98 | 0.45 |
| 13:J:144:CYS:SG | 13:J:188:VAL:N | 2.88 | 0.45 |
| 13:J:284:SER:OG | 13:J:311:VAL:O | 2.35 | 0.45 |
| 6:A:783:LEU:HD12 | 6:A:783:LEU:O | 2.16 | 0.45 |
| 10:C:492:LEU:HD12 | 10:C:492:LEU:O | 2.16 | 0.45 |
| 12:H:330:ILE:HG22 | 12:H:334:LEU:CD2 | 2.46 | 0.45 |
| 21:S:169:TRP:CE3 | 21:S:192:TYR:HB2 | 2.51 | 0.45 |
| 32:Q:435:PHE:CB | 32:Q:874:ARG:C | 2.85 | 0.45 |
| 2:E:-4:A:H2' | 2:E:-3:A:C8 | 2.51 | 0.45 |
| 6:A:1282:ASP:C | 12:H:345:ILE:HD11 | 2.36 | 0.45 |
| 6:A:1286:TRP:CD1 | 6:A:1448:GLU:HB2 | 2.52 | 0.45 |
| 6:A:210:GLU:N | 6:A:211:PRO:HD2 | 2.32 | 0.45 |
| 10:C:274:ILE:HG21 | 10:C:385:PHE:CD2 | 2.51 | 0.45 |
| 10:C:470:ALA:HB1 | 10:C:486:VAL:HG12 | 1.98 | 0.45 |
| 10:C:936:ILE:HG23 | 10:C:936:ILE:O | 2.16 | 0.45 |
| 17:N:216:GLU:O | 17:N:220:THR:HG23 | 2.17 | 0.45 |
| 6:A:1461:TYR:CE1 | 6:A:1494:LEU:HD13 | 2.51 | 0.45 |
| 7:B:1343:PHE:O | 7:B:1345:PHE:N | 2.49 | 0.45 |
| 12:H:312:LEU:CD1 | 12:H:329:ILE:HD11 | 2.47 | 0.45 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 4:Z:5:A:H2' | 4:Z:6:U:O4' | 2.16 | 0.45 |
| 6:A:507:LEU:HD21 | 6:A:529:TYR:CE2 | 2.52 | 0.45 |
| 6:A:583:ILE:HG23 | 6:A:588:LEU:HD12 | 1.98 | 0.45 |
| 6:A:1049:LEU:CB | 6:A:1258:LEU:HD11 | 2.47 | 0.45 |
| 13:J:229:THR:HG21 | 13:J:271:GLN:HA | 1.98 | 0.45 |
| 13:J:161:ASP:O | 13:J:162:THR:HB | 2.17 | 0.45 |
| 21:S:202:TRP:CZ2 | 21:S:228:THR:HG21 | 2.52 | 0.45 |
| 5:V:63:G:H2' | 5:V:64:U:H6 | 1.82 | 0.45 |
| 6:A:889:TRP:CH2 | 6:A:893:ARG:HD3 | 2.52 | 0.45 |
| 6:A:1214:ARG:N | 6:A:1255:ASN:OD1 | 2.50 | 0.45 |
| 6:A:1657:ILE:CD1 | 6:A:1815:LEU:HD22 | 2.47 | 0.45 |
| 10:C:862:TYR:CE2 | 10:C:908:VAL:HG13 | 2.51 | 0.45 |
| 16:M:81:CYS:SG | 16:M:91:HIS:CE1 | 3.10 | 0.45 |
| 6:A:1560:THR:HG21 | 6:A:1609:TRP:NE1 | 2.32 | 0.44 |
| 21:S:140:LEU:HD23 | 21:S:152:VAL:HG22 | 1.99 | 0.44 |
| 6:A:173:LEU:HA | 6:A:715:LEU:HD13 | 1.98 | 0.44 |
| 6:A:639:PHE:CG | 6:A:649:LEU:HD22 | 2.52 | 0.44 |
| 7:B:479:GLU:HA | 7:B:498:SER:CA | 2.46 | 0.44 |
| 17:N:16:CYS:HB2 | 17:N:71:CYS:SG | 2.57 | 0.44 |
| 7:B:1382:LEU:O | 7:B:1385:LEU:N | 2.50 | 0.44 |
| 10:C:241:VAL:CG1 | 10:C:273:LEU:HD23 | 2.46 | 0.44 |
| 10:C:808:LEU:HD22 | 10:C:944:VAL:HG21 | 1.99 | 0.44 |
| 17:N:12:ILE:HG23 | 17:N:16:CYS:SG | 2.57 | 0.44 |
| 1:U:39:U:H2' | 1:U:40:C:O4' | 2.18 | 0.44 |
| 6:A:264:ILE:HD11 | 6:A:647:PHE:N | 2.33 | 0.44 |
| 6:A:1090:ILE:HD11 | 6:A:1104:ILE:HD11 | 1.99 | 0.44 |
| 6:A:1336:ASN:HB3 | 6:A:1400:ILE:HD12 | 1.99 | 0.44 |
| 6:A:1820:ARG:O | 6:A:1824:GLN:N | 2.50 | 0.44 |
| 10:C:223:ASP:OD1 | 10:C:224:GLU:N | 2.50 | 0.44 |
| 11:G:18:GLN:HG3 | 11:G:19:GLN:N | 2.32 | 0.44 |
| 12:H:292:LYS:CD | 12:H:328:ILE:HD11 | 2.47 | 0.44 |
| 6:A:458:PHE:CE2 | 10:C:336:ILE:HD11 | 2.52 | 0.44 |
| 6:A:719:ILE:HB | 6:A:720:PRO:CD | 2.47 | 0.44 |
| 6:A:724:ARG:HD3 | 19:P:31:LEU:HD11 | 1.99 | 0.44 |
| 10:C:444:GLN:N | 10:C:445:PRO:CD | 2.81 | 0.44 |
| 6:A:687:ILE:HD11 | 6:A:706:PRO:CG | 2.48 | 0.44 |
| 10:C:905:GLN:NE2 | 10:C:936:ILE:HD13 | 2.32 | 0.44 |
| 13:J:248:ILE:HD13 | 13:J:272:VAL:HG21 | 2.00 | 0.44 |
| 2:E:-4:A:H2' | 2:E:-3:A:H8 | 1.83 | 0.44 |
| 6:A:759:ARG:CD | 6:A:783:LEU:HD13 | 2.41 | 0.44 |
| 6:A:1371:VAL:HG11 | 6:A:1397:LEU:HD11 | 1.98 | 0.44 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 10:C:708:ILE:HD12 | 10:C:708:ILE:N | 2.33 | 0.44 |
| 6:A:189:VAL:CG2 | 6:A:202:VAL:HG13 | 2.48 | 0.44 |
| 6:A:588:LEU:HD22 | 6:A:613:SER:HA | 2.00 | 0.44 |
| 16:M:114:ARG:NE | 16:M:127:ILE:HG21 | 2.32 | 0.44 |
| 16:M:173:ILE:HG12 | 16:M:184:VAL:HG13 | 1.99 | 0.44 |
| 21:S:140:LEU:CD2 | 21:S:155:LEU:HD22 | 2.48 | 0.44 |
| 21:S:160:CYS:HB3 | 21:S:169:TRP:CH2 | 2.53 | 0.44 |
| 6:A:1372:LYS:HD2 | 6:A:1378:LYS:HA | 2.00 | 0.43 |
| 6:A:1944:LEU:HD23 | 6:A:1956:ILE:HG23 | 2.00 | 0.43 |
| 10:C:658:ASP:HB3 | 10:C:663:TYR:CE2 | 2.52 | 0.43 |
| 16:M:74:LEU:HA | 16:M:112:PHE:CE1 | 2.53 | 0.43 |
| 17:N:125:ILE:HG21 | 17:N:135:ILE:CD1 | 2.45 | 0.43 |
| 6:A:268:LEU:HD13 | 6:A:277:LYS:CB | 2.47 | 0.43 |
| 6:A:2278:SER:O | 6:A:2282:ALA:HB2 | 2.18 | 0.43 |
| 13:J:129:TRP:HB2 | 13:J:385:GLN:HE22 | 1.83 | 0.43 |
| 13:J:156:ILE:HD11 | 13:J:188:VAL:HG21 | 2.00 | 0.43 |
| 13:J:277:VAL:HG13 | 13:J:279:PRO:HD2 | 2.00 | 0.43 |
| 21:S:229:VAL:HG22 | 21:S:238:TRP:CZ2 | 2.50 | 0.43 |
| 6:A:1021:PRO:O | 6:A:1025:VAL:HG23 | 2.17 | 0.43 |
| 6:A:1409:ALA:HB3 | 6:A:1424:HIS:O | 2.18 | 0.43 |
| 8:D:43:LEU:HD21 | 8:D:86:ILE:CD1 | 2.47 | 0.43 |
| 10:C:862:TYR:CG | 10:C:908:VAL:HG22 | 2.53 | 0.43 |
| 13:J:142:VAL:HG12 | 13:J:142:VAL:O | 2.18 | 0.43 |
| 17:N:91:ILE:CD1 | 17:N:125:ILE:HD12 | 2.48 | 0.43 |
| 21:S:193:VAL:HG11 | 21:S:202:TRP:CH2 | 2.54 | 0.43 |
| 21:S:467:GLN:CB | 21:S:471:LEU:CB | 2.93 | 0.43 |
| 4:Z:34:G:H21 | 6:A:1325:SER:HG | 1.59 | 0.43 |
| 6:A:239:PHE:CE1 | 6:A:656:ILE:HD11 | 2.53 | 0.43 |
| 6:A:796:ASN:HD22 | 6:A:858:LYS:HG3 | 1.82 | 0.43 |
| 6:A:1375:LEU:CD1 | 6:A:1614:ILE:HD13 | 2.49 | 0.43 |
| 10:C:225:THR:HG21 | 10:C:252:LEU:CD2 | 2.48 | 0.43 |
| 14:K:35:ALA:CB | 21:S:158:LYS:HE3 | 2.48 | 0.43 |
| 17:N:67:GLN:HB3 | 17:N:120:LEU:HD23 | 2.00 | 0.43 |
| 10:C:335:SER:HB2 | 10:C:336:ILE:HD12 | 1.99 | 0.43 |
| 17:N:71:CYS:HB3 | 17:N:74:CYS:HB2 | 2.00 | 0.43 |
| 1:U:79:C:H3' | 1:U:80:G:C5' | 2.49 | 0.43 |
| 6:A:1085:LYS:O | 6:A:1088:VAL:HG13 | 2.18 | 0.43 |
| 12:H:381:LEU:HD21 | 12:H:419:PHE:CA | 2.49 | 0.43 |
| 6:A:834:ILE:CD1 | 6:A:845:VAL:HG23 | 2.49 | 0.43 |
| 8:D:11:TYR:CE1 | 11:G:12:LEU:HD21 | 2.54 | 0.43 |
| 10:C:888:ILE:HG23 | 10:C:902:VAL:HG23 | 2.00 | 0.43 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 15:L:73:ILE:HG23 | 15:L:77:LEU:HD23 | 2.00 | 0.43 |
| 16:M:250:MET:SD | 17:N:139:LEU:HD21 | 2.59 | 0.43 |
| 6:A:954:ILE:HG23 | 6:A:991:THR:HG23 | 2.00 | 0.43 |
| 16:M:247:LEU:HA | 16:M:250:MET:HG2 | 1.99 | 0.43 |
| 18:O:211:ILE:O | 21:S:83:ARG:NH2 | 2.52 | 0.43 |
| 6:A:136:PRO:HB3 | 6:A:562:ILE:HD13 | 2.01 | 0.43 |
| 7:B:1163:SER:O | 32:Q:367:GLN:CB | 2.67 | 0.43 |
| 10:C:94:VAL:HG12 | 13:J:154:TRP:CZ2 | 2.54 | 0.43 |
| 10:C:905:GLN:HE22 | 10:C:936:ILE:HD13 | 1.84 | 0.43 |
| 21:S:72:ALA:HB1 | 21:S:88:PHE:CZ | 2.54 | 0.43 |
| 6:A:849:LEU:HD13 | 6:A:849:LEU:C | 2.40 | 0.43 |
| 6:A:1347:ARG:HD2 | 6:A:1447:TRP:CD2 | 2.54 | 0.43 |
| 6:A:1387:VAL:HG12 | 6:A:1610:TRP:CD2 | 2.53 | 0.43 |
| 10:C:78:MET:SD | 10:C:78:MET:N | 2.92 | 0.43 |
| 10:C:242:VAL:HG22 | 10:C:277:LEU:HD11 | 2.01 | 0.43 |
| 10:C:381:LEU:HA | 10:C:384:ILE:HD12 | 1.99 | 0.43 |
| 14:K:127:VAL:HG13 | 17:N:31:GLY:O | 2.18 | 0.43 |
| 1:U:105:A:H2' | 1:U:106:A:C8 | 2.54 | 0.42 |
| 4:Z:26:G:C2 | 5:V:59:A:C5 | 3.07 | 0.42 |
| 6:A:305:LEU:HD22 | 10:C:390:SER:HA | 2.01 | 0.42 |
| 6:A:785:HIS:CE1 | 14:K:168:ALA:HB2 | 2.54 | 0.42 |
| 6:A:1737:GLN:HE21 | 6:A:1737:GLN:HA | 1.84 | 0.42 |
| 10:C:861:ILE:HA | 10:C:907:PRO:HA | 2.01 | 0.42 |
| 18:O:211:ILE:HD12 | 21:S:48:ARG:CZ | 2.49 | 0.42 |
| 6:A:556:TYR:CG | 14:K:120:ASP:HB3 | 2.54 | 0.42 |
| 6:A:1089:VAL:HG22 | 6:A:1098:VAL:HG22 | 2.01 | 0.42 |
| 7:B:1182:ALA:O | 32:Q:496:ARG:CA | 2.59 | 0.42 |
| 10:C:599:THR:HG23 | 10:C:599:THR:O | 2.18 | 0.42 |
| 1:U:74:U:O2 | 1:U:78:A:C2 | 2.72 | 0.42 |
| 6:A:139:LEU:HD13 | 6:A:193:TYR:CD2 | 2.55 | 0.42 |
| 6:A:852:LEU:HD23 | 6:A:978:ILE:HD11 | 2.01 | 0.42 |
| 6:A:1921:VAL:HG21 | 6:A:1948:MET:HE1 | 2.00 | 0.42 |
| 6:A:2388:ARG:O | 6:A:2389:PRO:C | 2.57 | 0.42 |
| 10:C:104:THR:HG23 | 10:C:105:ILE:HG23 | 2.00 | 0.42 |
| 10:C:791:TYR:O | 10:C:791:TYR:CG | 2.72 | 0.42 |
| 11:G:51:LYS:O | 11:G:54:VAL:HG12 | 2.19 | 0.42 |
| 13:J:200:VAL:HG22 | 13:J:227:VAL:HB | 2.01 | 0.42 |
| 17:N:88:ASP:O | 17:N:91:ILE:HG23 | 2.20 | 0.42 |
| 18:O:211:ILE:CD1 | 21:S:48:ARG:HB2 | 2.49 | 0.42 |
| 20:R:13:GLY:O | 20:R:15:SER:N | 2.52 | 0.42 |
| 10:C:710:VAL:HG22 | 10:C:820:LEU:HD23 | 2.01 | 0.42 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 15:L:119:THR:HG22 | 15:L:120:CYS:N | 2.34 | 0.42 |
| 17:N:67:GLN:HA | 17:N:119:LYS:HA | 2.02 | 0.42 |
| 22:T:119:ALA:HB1 | 22:T:128:ILE:CB | 2.50 | 0.42 |
| 1:U:30:A:H2' | 1:U:31:G:O4' | 2.20 | 0.42 |
| 5:V:86:G:C2 | 5:V:87:U:H1' | 2.54 | 0.42 |
| 6:A:172:ILE:HG23 | 6:A:629:MET:CG | 2.49 | 0.42 |
| 6:A:783:LEU:HD12 | 6:A:783:LEU:C | 2.39 | 0.42 |
| 10:C:605:ILE:HD12 | 10:C:652:MET:HG3 | 2.01 | 0.42 |
| 1:U:23:C:O2 | 1:U:23:C:O4' | 2.37 | 0.42 |
| 5:V:55:G:N7 | 18:O:35:LYS:HB3 | 2.35 | 0.42 |
| 6:A:376:ARG:HG3 | 10:C:909:ILE:HG21 | 2.01 | 0.42 |
| 6:A:719:ILE:HB | 6:A:720:PRO:HD2 | 2.01 | 0.42 |
| 6:A:1342:LEU:HD23 | 6:A:1360:LEU:HD21 | 2.02 | 0.42 |
| 6:A:1357:LEU:HD11 | 12:H:303:LEU:CD2 | 2.49 | 0.42 |
| 10:C:470:ALA:HB2 | 10:C:488:ILE:HA | 2.02 | 0.42 |
| 10:C:472:VAL:HG21 | 10:C:567:ILE:HG21 | 2.01 | 0.42 |
| 2:E:-3:A:H2' | 2:E:-2:A:O4' | 2.19 | 0.42 |
| 4:Z:38:U:OP2 | 6:A:1643:ILE:HD11 | 2.20 | 0.42 |
| 6:A:1064:THR:HG22 | 18:O:81:PRO:HD2 | 2.02 | 0.42 |
| 6:A:1369:ASN:O | 6:A:1373:LEU:N | 2.46 | 0.42 |
| 13:J:114:ARG:HB3 | 14:K:48:GLN:HE22 | 1.85 | 0.42 |
| 6:A:218:SER:O | 6:A:221:TRP:HB3 | 2.20 | 0.42 |
| 6:A:644:VAL:HG22 | 6:A:648:GLN:HB2 | 2.02 | 0.42 |
| 17:N:259:GLY:O | 17:N:263:VAL:HG23 | 2.20 | 0.42 |
| 14:K:120:ASP:OD2 | 14:K:123:LEU:HD13 | 2.20 | 0.42 |
| 16:M:249:MET:SD | 17:N:86:LEU:HD13 | 2.60 | 0.42 |
| 18:O:564:TYR:CB | 18:O:566:TYR:H | 2.33 | 0.42 |
| 5:V:36:U:O2 | 5:V:36:U:C2' | 2.68 | 0.42 |
| 6:A:929:LEU:HD12 | 6:A:1589:LYS:CG | 2.50 | 0.42 |
| 10:C:400:LEU:HD12 | 10:C:408:LEU:HD21 | 2.02 | 0.42 |
| 16:M:114:ARG:CD | 16:M:127:ILE:HG21 | 2.50 | 0.42 |
| 18:O:22:LYS:HB2 | 18:O:56:LEU:HD12 | 2.02 | 0.42 |
| 20:R:32:PRO:HB3 | 20:R:35:SER:CB | 2.50 | 0.42 |
| 6:A:756:LEU:CD1 | 19:P:12:ARG:HD3 | 2.50 | 0.41 |
| 10:C:418:GLN:HB3 | 10:C:419:PRO:HD3 | 2.02 | 0.41 |
| 13:J:334:TRP:CD1 | 13:J:334:TRP:N | 2.88 | 0.41 |
| 17:N:16:CYS:CB | 17:N:71:CYS:SG | 3.08 | 0.41 |
| 17:N:25:MET:HB3 | 17:N:46:PHE:HB3 | 2.01 | 0.41 |
| 21:S:140:LEU:HD21 | 21:S:155:LEU:HD22 | 2.01 | 0.41 |
| 1:U:38:A:H2' | 1:U:39:U:O4' | 2.20 | 0.41 |
| 5:V:61:C:H2' | 5:V:62:A:O4' | 2.19 | 0.41 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 6:A:756:LEU:HD11 | 19:P:12:ARG:HD3 | 2.03 | 0.41 |
| 10:C:225:THR:HG21 | 10:C:252:LEU:HD21 | 2.02 | 0.41 |
| 10:C:608:GLN:HE21 | 10:C:641:GLU:HG2 | 1.85 | 0.41 |
| 13:J:276:PRO:HB2 | 14:K:63:ILE:HD12 | 2.02 | 0.41 |
| 16:M:48:VAL:HG22 | 16:M:220:GLY:N | 2.36 | 0.41 |
| 16:M:247:LEU:HA | 16:M:250:MET:CG | 2.51 | 0.41 |
| 21:S:332:GLU:HA | 21:S:334:PHE:CB | 2.50 | 0.41 |
| 5:V:74:U:C5 | 13:J:221:TYR:CD2 | 3.07 | 0.41 |
| 6:A:168:LEU:N | 6:A:169:PRO:HD2 | 2.35 | 0.41 |
| 22:T:397:ASN:O | 22:T:400:ALA:HB3 | 2.20 | 0.41 |
| 7:B:1610:LEU:O | 7:B:1660:ALA:O | 2.38 | 0.41 |
| 10:C:273:LEU:HA | 10:C:277:LEU:HD12 | 2.02 | 0.41 |
| 10:C:621:ALA:CB | 10:C:664:ALA:HB2 | 2.48 | 0.41 |
| 32:Q:916:ALA:HB3 | 32:Q:951:VAL:H | 1.85 | 0.41 |
| 6:A:565:VAL:CG1 | 6:A:637:VAL:HG22 | 2.51 | 0.41 |
| 6:A:1316:ILE:HD13 | 6:A:1316:ILE:HA | 1.94 | 0.41 |
| 6:A:1749:SER:O | 6:A:1752:VAL:HG22 | 2.20 | 0.41 |
| 12:H:334:LEU:HD12 | 12:H:380:GLN:HB3 | 2.02 | 0.41 |
| 6:A:252:GLU:HA | 6:A:255:ILE:HD12 | 2.02 | 0.41 |
| 12:H:330:ILE:HD12 | 12:H:387:PHE:HE2 | 1.86 | 0.41 |
| 32:Q:603:ILE:C | 32:Q:605:ASP:H | 2.24 | 0.41 |
| 6:A:1609:TRP:CE3 | 6:A:1823:LEU:HD13 | 2.56 | 0.41 |
| 10:C:314:ALA:CB | 10:C:321:THR:HG22 | 2.50 | 0.41 |
| 12:H:292:LYS:HD3 | 12:H:328:ILE:HD11 | 2.01 | 0.41 |
| 16:M:156:ILE:HG21 | 16:M:175:TYR:CE1 | 2.55 | 0.41 |
| 6:A:480:TYR:OH | 10:C:318:LEU:HD21 | 2.20 | 0.41 |
| 6:A:562:ILE:HG22 | 6:A:563:ASP:O | 2.21 | 0.41 |
| 6:A:666:ILE:HG22 | 6:A:673:VAL:HG21 | 2.03 | 0.41 |
| 6:A:758:LEU:HD23 | 6:A:759:ARG:N | 2.36 | 0.41 |
| 6:A:831:ARG:CD | 6:A:848:ASN:HD21 | 2.34 | 0.41 |
| 6:A:937:LEU:HD13 | 6:A:1590:LEU:HD21 | 2.01 | 0.41 |
| 6:A:976:GLN:HG3 | 6:A:1310:LYS:HB3 | 2.02 | 0.41 |
| 6:A:1014:LYS:N | 6:A:1015:PRO:CD | 2.84 | 0.41 |
| 10:C:287:LYS:HE3 | 10:C:291:ILE:HD11 | 2.03 | 0.41 |
| 17:N:82:ILE:HG22 | 17:N:86:LEU:HB2 | 2.02 | 0.41 |
| 5:V:22:G:H2' | 5:V:23:G:O4' | 2.21 | 0.41 |
| 6:A:370:ILE:HD12 | 6:A:1418:THR:OG1 | 2.21 | 0.40 |
| 6:A:390:LEU:N | 10:C:653:ASP:OD1 | 2.54 | 0.40 |
| 6:A:831:ARG:HD3 | 6:A:848:ASN:HD21 | 1.86 | 0.40 |
| 6:A:1011:ASN:HD22 | 6:A:1144:PHE:HA | 1.86 | 0.40 |
| 10:C:152:LEU:HD11 | 10:C:319:GLY:HA2 | 2.02 | 0.40 |

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| Atom-1 | Atom-2 | Interatomic distance (Å) | Clash overlap (Å) |
|---|---|---|---|
| 10:C:632:VAL:HG12 | 10:C:634:ILE:HG13 | 2.03 | 0.40 |
| 10:C:677:PHE:HB3 | 10:C:857:LEU:HD22 | 2.03 | 0.40 |
| 21:S:189:TYR:O | 21:S:192:TYR:HB3 | 2.21 | 0.40 |
| 1:U:45:A:N6 | 1:U:74:U:H3 | 2.19 | 0.40 |
| 6:A:1620:TYR:CD2 | 6:A:1621:VAL:HG13 | 2.56 | 0.40 |
| 10:C:223:ASP:O | 10:C:227:VAL:HG23 | 2.21 | 0.40 |
| 10:C:749:LYS:O | 10:C:753:THR:HG23 | 2.21 | 0.40 |
| 18:O:211:ILE:CD1 | 21:S:44:ARG:HG3 | 2.50 | 0.40 |
| 1:U:45:A:OP1 | 10:C:108:GLN:O | 2.40 | 0.40 |
| 6:A:1756:PHE:CZ | 6:A:1760:THR:HG21 | 2.56 | 0.40 |
| 7:B:1795:SER:O | 7:B:1796:PRO:C | 2.60 | 0.40 |
| 10:C:234:LEU:HD13 | 10:C:439:ILE:HG23 | 2.03 | 0.40 |
| 10:C:264:CYS:SG | 10:C:312:ILE:HD11 | 2.61 | 0.40 |
| 10:C:561:ILE:O | 10:C:562:VAL:HG13 | 2.22 | 0.40 |
| 14:K:75:GLN:HA | 14:K:78:VAL:HG12 | 2.03 | 0.40 |
| 4:Z:1102:C:O2 | 4:Z:1102:C:C2' | 2.69 | 0.40 |
| 5:V:86:G:C2 | 21:S:57:TYR:CE2 | 3.10 | 0.40 |
| 6:A:175:LEU:HD22 | 6:A:629:MET:CE | 2.52 | 0.40 |
| 6:A:766:ILE:HG21 | 6:A:782:ILE:HD13 | 2.04 | 0.40 |
| 6:A:1223:GLY:HA2 | 6:A:1248:VAL:HG11 | 2.02 | 0.40 |
| 6:A:1392:LYS:HB3 | 6:A:1601:ILE:HD11 | 2.03 | 0.40 |
| 6:A:1603:ASN:HD22 | 6:A:1604:ARG:N | 2.19 | 0.40 |
| 6:A:1881:THR:HG21 | 6:A:1920:LEU:HD23 | 2.02 | 0.40 |
| 7:B:833:THR:O | 7:B:834:LEU:C | 2.58 | 0.40 |
| 7:B:960:ILE:O | 7:B:964:GLY:N | 2.54 | 0.40 |
| 10:C:241:VAL:HG22 | 10:C:267:ILE:HG23 | 2.04 | 0.40 |
| 13:J:345:PHE:CE2 | 13:J:364:LEU:HD22 | 2.57 | 0.40 |
| 20:R:31:ARG:O | 20:R:33:GLN:N | 2.47 | 0.40 |
| 6:A:1054:LEU:HD13 | 6:A:1121:ILE:HG21 | 2.03 | 0.40 |
| 6:A:1491:ILE:HD13 | 6:A:1491:ILE:HA | 1.97 | 0.40 |
| 13:J:198:PHE:CD1 | 13:J:239:ILE:HD13 | 2.57 | 0.40 |
| 13:J:321:PHE:CE1 | 13:J:336:LEU:CD2 | 3.05 | 0.40 |
| 16:M:109:LEU:HA | 16:M:116:LYS:HG2 | 2.03 | 0.40 |
| 17:N:84:ILE:O | 17:N:87:ARG:HG3 | 2.21 | 0.40 |
| 18:O:148:GLU:O | 18:O:152:LEU:HD23 | 2.21 | 0.40 |
| 18:O:211:ILE:HD12 | 21:S:48:ARG:NE | 2.36 | 0.40 |

There are no symmetry-related clashes.

## 5.3 Torsion angles (i)

### 5.3.1 Protein backbone (i)

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

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

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 6 | A | 2160/2413 (90%) | 1997 (92%) | 152 (7%) | 11 (0%) | 25 64 |
| 7 | B | 1704/2163 (79%) | 1585 (93%) | 111 (6%) | 8 (0%) | 25 64 |
| 8 | D | 112/278 (40%) | 93 (83%) | 17 (15%) | 2 (2%) | 7 35 |
| 9 | F | 44/179 (25%) | 41 (93%) | 3 (7%) | 0 | 100 100 |
| 10 | C | 872/1008 (86%) | 777 (89%) | 82 (9%) | 13 (2%) | 8 40 |
| 11 | G | 95/235 (40%) | 89 (94%) | 5 (5%) | 1 (1%) | 12 47 |
| 12 | H | 389/591 (66%) | 362 (93%) | 23 (6%) | 4 (1%) | 13 49 |
| 13 | J | 322/451 (71%) | 263 (82%) | 47 (15%) | 12 (4%) | 2 20 |
| 14 | K | 155/379 (41%) | 146 (94%) | 8 (5%) | 1 (1%) | 22 60 |
| 15 | L | 153/157 (98%) | 136 (89%) | 15 (10%) | 2 (1%) | 10 43 |
| 16 | M | 250/339 (74%) | 228 (91%) | 19 (8%) | 3 (1%) | 11 44 |
| 17 | N | 195/364 (54%) | 178 (91%) | 14 (7%) | 3 (2%) | 8 40 |
| 18 | O | 277/590 (47%) | 248 (90%) | 24 (9%) | 5 (2%) | 7 35 |
| 19 | P | 34/175 (19%) | 28 (82%) | 5 (15%) | 1 (3%) | 3 23 |
| 20 | R | 93/135 (69%) | 81 (87%) | 11 (12%) | 1 (1%) | 12 47 |
| 21 | S | 432/687 (63%) | 416 (96%) | 14 (3%) | 2 (0%) | 25 64 |
| 22 | T | 536/859 (62%) | 506 (94%) | 21 (4%) | 9 (2%) | 7 37 |
| 23 | b | 76/196 (39%) | 70 (92%) | 6 (8%) | 0 | 100 100 |
| 23 | k | 76/196 (39%) | 65 (86%) | 9 (12%) | 2 (3%) | 4 26 |
| 24 | d | 80/101 (79%) | 72 (90%) | 7 (9%) | 1 (1%) | 10 43 |
| 24 | n | 80/101 (79%) | 66 (82%) | 14 (18%) | 0 | 100 100 |
| 25 | e | 71/94 (76%) | 68 (96%) | 3 (4%) | 0 | 100 100 |
| 25 | p | 71/94 (76%) | 63 (89%) | 7 (10%) | 1 (1%) | 9 41 |
| 26 | f | 70/86 (81%) | 66 (94%) | 3 (4%) | 1 (1%) | 9 41 |
| 26 | q | 70/86 (81%) | 61 (87%) | 9 (13%) | 0 | 100 100 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles |
|---|---|---|---|---|---|---|
| 27 | g | 65/77 (84%) | 64 (98%) | 1 (2%) | 0 | 100 100 |
| 27 | r | 65/77 (84%) | 55 (85%) | 9 (14%) | 1 (2%) | 8 40 |
| 28 | h | 78/146 (53%) | 74 (95%) | 4 (5%) | 0 | 100 100 |
| 28 | l | 75/146 (51%) | 63 (84%) | 10 (13%) | 2 (3%) | 4 25 |
| 29 | j | 92/110 (84%) | 87 (95%) | 5 (5%) | 0 | 100 100 |
| 29 | m | 92/110 (84%) | 84 (91%) | 8 (9%) | 0 | 100 100 |
| 30 | W | 160/238 (67%) | 117 (73%) | 35 (22%) | 8 (5%) | 1 16 |
| 31 | Y | 82/111 (74%) | 77 (94%) | 5 (6%) | 0 | 100 100 |
| 32 | Q | 609/1071 (57%) | 486 (80%) | 73 (12%) | 50 (8%) | 1 9 |
| 33 | t | 426/503 (85%) | 417 (98%) | 9 (2%) | 0 | 100 100 |
| 33 | u | 425/503 (84%) | 413 (97%) | 12 (3%) | 0 | 100 100 |
| 33 | v | 412/503 (82%) | 403 (98%) | 6 (2%) | 3 (1%) | 19 57 |
| 33 | w | 423/503 (84%) | 414 (98%) | 7 (2%) | 2 (0%) | 25 64 |
| 34 | s | 106/175 (61%) | 92 (87%) | 8 (8%) | 6 (6%) | 1 14 |
| All | All | 11527/16230 (71%) | 10551 (92%) | 821 (7%) | 155 (1%) | 13 43 |

All (155) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 320 | ASP |
| 6 | A | 737 | ARG |
| 7 | B | 766 | ILE |
| 12 | H | 414 | PRO |
| 16 | M | 127 | ILE |
| 17 | N | 120 | LEU |
| 20 | R | 14 | SER |
| 22 | T | 421 | ALA |
| 22 | T | 477 | PRO |
| 22 | T | 481 | ILE |
| 22 | T | 616 | PRO |
| 30 | W | 76 | ILE |
| 28 | l | 98 | PRO |
| 27 | r | 68 | ILE |
| 32 | Q | 370 | VAL |
| 32 | Q | 380 | THR |
| 32 | Q | 399 | SER |
| 32 | Q | 400 | ILE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 32 | Q | 401 | VAL |
| 32 | Q | 440 | ASP |
| 32 | Q | 443 | CYS |
| 32 | Q | 466 | LYS |
| 32 | Q | 470 | VAL |
| 32 | Q | 471 | ILE |
| 32 | Q | 478 | ARG |
| 32 | Q | 502 | ILE |
| 32 | Q | 503 | ILE |
| 32 | Q | 546 | GLU |
| 32 | Q | 653 | VAL |
| 32 | Q | 654 | ILE |
| 32 | Q | 655 | ASP |
| 32 | Q | 707 | PHE |
| 32 | Q | 737 | THR |
| 32 | Q | 748 | LYS |
| 32 | Q | 749 | PRO |
| 32 | Q | 799 | ASN |
| 32 | Q | 836 | PHE |
| 32 | Q | 917 | LYS |
| 32 | Q | 925 | VAL |
| 32 | Q | 948 | PRO |
| 34 | s | 94 | LYS |
| 34 | s | 111 | VAL |
| 34 | s | 133 | PRO |
| 6 | A | 588 | LEU |
| 6 | A | 1424 | HIS |
| 6 | A | 1639 | PRO |
| 6 | A | 1763 | ASN |
| 7 | B | 1693 | HIS |
| 10 | C | 76 | VAL |
| 10 | C | 172 | TRP |
| 10 | C | 269 | LYS |
| 10 | C | 432 | GLN |
| 10 | C | 535 | PRO |
| 10 | C | 901 | GLU |
| 12 | H | 469 | GLY |
| 13 | J | 162 | THR |
| 13 | J | 245 | ASP |
| 13 | J | 277 | VAL |
| 13 | J | 328 | THR |
| 16 | M | 23 | PRO |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 18 | O | 81 | PRO |
| 19 | P | 9 | LEU |
| 30 | W | 122 | ARG |
| 23 | k | 81 | VAL |
| 32 | Q | 369 | VAL |
| 32 | Q | 374 | GLU |
| 32 | Q | 395 | ASP |
| 32 | Q | 856 | ASN |
| 32 | Q | 857 | PHE |
| 32 | Q | 894 | ILE |
| 32 | Q | 896 | SER |
| 32 | Q | 942 | HIS |
| 33 | v | 109 | LEU |
| 34 | s | 105 | PRO |
| 34 | s | 136 | VAL |
| 6 | A | 1593 | ALA |
| 7 | B | 492 | PRO |
| 7 | B | 1936 | ARG |
| 8 | D | 76 | LEU |
| 10 | C | 574 | SER |
| 12 | H | 445 | LEU |
| 13 | J | 442 | TRP |
| 15 | L | 38 | SER |
| 17 | N | 30 | GLN |
| 17 | N | 54 | ASN |
| 18 | O | 214 | ASN |
| 18 | O | 546 | HIS |
| 21 | S | 238 | TRP |
| 30 | W | 95 | PRO |
| 28 | l | 25 | VAL |
| 32 | Q | 451 | ASP |
| 32 | Q | 604 | ASN |
| 32 | Q | 644 | SER |
| 32 | Q | 746 | ILE |
| 32 | Q | 824 | ARG |
| 32 | Q | 929 | THR |
| 32 | Q | 944 | LEU |
| 33 | v | 20 | ARG |
| 6 | A | 660 | ILE |
| 7 | B | 1555 | GLU |
| 7 | B | 1968 | ASN |
| 18 | O | 206 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 21 | S | 112 | VAL |
| 22 | T | 479 | PRO |
| 22 | T | 615 | PHE |
| 30 | W | 68 | PRO |
| 30 | W | 94 | LEU |
| 30 | W | 129 | LEU |
| 23 | k | 6 | VAL |
| 32 | Q | 504 | THR |
| 32 | Q | 738 | ASP |
| 32 | Q | 839 | LYS |
| 32 | Q | 927 | LEU |
| 33 | w | 20 | ARG |
| 34 | s | 119 | SER |
| 6 | A | 457 | ASP |
| 6 | A | 1491 | ILE |
| 8 | D | 34 | MET |
| 10 | C | 100 | LEU |
| 10 | C | 459 | PRO |
| 11 | G | 41 | VAL |
| 13 | J | 310 | SER |
| 13 | J | 444 | PRO |
| 16 | M | 4 | TRP |
| 18 | O | 216 | ASP |
| 22 | T | 443 | PRO |
| 32 | Q | 541 | VAL |
| 32 | Q | 704 | GLU |
| 32 | Q | 708 | LYS |
| 33 | w | 17 | PRO |
| 7 | B | 622 | LEU |
| 10 | C | 137 | GLY |
| 10 | C | 807 | PRO |
| 12 | H | 303 | LEU |
| 13 | J | 226 | GLY |
| 22 | T | 391 | LEU |
| 32 | Q | 821 | PRO |
| 13 | J | 137 | GLY |
| 32 | Q | 750 | PRO |
| 7 | B | 791 | PRO |
| 10 | C | 185 | ILE |
| 10 | C | 301 | GLY |
| 13 | J | 279 | PRO |
| 14 | K | 146 | VAL |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 15 | L | 117 | GLY |
| 26 | f | 15 | PRO |
| 25 | p | 74 | GLY |
| 13 | J | 443 | ASN |
| 22 | T | 37 | ILE |
| 30 | W | 56 | ILE |
| 30 | W | 98 | VAL |
| 33 | v | 36 | GLY |
| 6 | A | 774 | ILE |
| 13 | J | 272 | VAL |
| 24 | d | 82 | PRO |

### 5.3.2 Protein sidechains (i)

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

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

| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 6 | A | 1701/2182 (78%) | 1580 (93%) | 121 (7%) | 12 32 |
| 8 | D | 100/256 (39%) | 91 (91%) | 9 (9%) | 8 24 |
| 9 | F | 26/163 (16%) | 25 (96%) | 1 (4%) | 28 49 |
| 10 | C | 722/910 (79%) | 659 (91%) | 63 (9%) | 8 25 |
| 11 | G | 89/216 (41%) | 81 (91%) | 8 (9%) | 8 24 |
| 12 | H | 185/552 (34%) | 164 (89%) | 21 (11%) | 4 16 |
| 13 | J | 283/397 (71%) | 250 (88%) | 33 (12%) | 4 16 |
| 14 | K | 143/328 (44%) | 115 (80%) | 28 (20%) | 1 7 |
| 15 | L | 138/141 (98%) | 129 (94%) | 9 (6%) | 14 35 |
| 16 | M | 213/296 (72%) | 189 (89%) | 24 (11%) | 4 17 |
| 17 | N | 194/332 (58%) | 175 (90%) | 19 (10%) | 6 21 |
| 18 | O | 174/525 (33%) | 152 (87%) | 22 (13%) | 3 14 |
| 19 | P | 26/152 (17%) | 21 (81%) | 5 (19%) | 1 7 |
| 20 | R | 23/121 (19%) | 19 (83%) | 4 (17%) | 1 9 |
| 21 | S | 208/633 (33%) | 181 (87%) | 27 (13%) | 3 14 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles |
|---|---|---|---|---|---|
| 23 | b | 70/176 (40%) | 70 (100%) | 0 | 100 100 |
| 24 | d | 69/89 (78%) | 66 (96%) | 3 (4%) | 25 46 |
| 25 | e | 65/83 (78%) | 60 (92%) | 5 (8%) | 10 30 |
| 26 | f | 63/77 (82%) | 61 (97%) | 2 (3%) | 34 53 |
| 27 | g | 58/66 (88%) | 57 (98%) | 1 (2%) | 56 72 |
| 28 | h | 77/129 (60%) | 77 (100%) | 0 | 100 100 |
| 29 | j | 79/103 (77%) | 76 (96%) | 3 (4%) | 28 49 |
| All | All | 4706/7927 (59%) | 4298 (91%) | 408 (9%) | 11 25 |

All (408) residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 128 | TYR |
| 6 | A | 145 | THR |
| 6 | A | 149 | MET |
| 6 | A | 153 | MET |
| 6 | A | 165 | LEU |
| 6 | A | 173 | LEU |
| 6 | A | 175 | LEU |
| 6 | A | 192 | LEU |
| 6 | A | 204 | GLU |
| 6 | A | 205 | THR |
| 6 | A | 225 | ARG |
| 6 | A | 228 | LYS |
| 6 | A | 244 | ASP |
| 6 | A | 257 | ASN |
| 6 | A | 261 | LEU |
| 6 | A | 265 | ASN |
| 6 | A | 282 | ASP |
| 6 | A | 284 | ARG |
| 6 | A | 286 | LEU |
| 6 | A | 296 | THR |
| 6 | A | 297 | SER |
| 6 | A | 310 | ASN |
| 6 | A | 319 | ARG |
| 6 | A | 326 | ASN |
| 6 | A | 353 | GLU |
| 6 | A | 355 | LEU |
| 6 | A | 405 | ASN |
| 6 | A | 412 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 425 | ASP |
| 6 | A | 479 | LEU |
| 6 | A | 493 | MET |
| 6 | A | 514 | TYR |
| 6 | A | 555 | LYS |
| 6 | A | 571 | LEU |
| 6 | A | 572 | CYS |
| 6 | A | 591 | LEU |
| 6 | A | 600 | LYS |
| 6 | A | 605 | LEU |
| 6 | A | 615 | LEU |
| 6 | A | 630 | LYS |
| 6 | A | 631 | LEU |
| 6 | A | 663 | LEU |
| 6 | A | 674 | MET |
| 6 | A | 690 | LYS |
| 6 | A | 705 | GLN |
| 6 | A | 728 | ASN |
| 6 | A | 737 | ARG |
| 6 | A | 743 | LYS |
| 6 | A | 749 | ARG |
| 6 | A | 751 | ASP |
| 6 | A | 753 | TYR |
| 6 | A | 755 | ASP |
| 6 | A | 758 | LEU |
| 6 | A | 760 | ASN |
| 6 | A | 770 | MET |
| 6 | A | 775 | ARG |
| 6 | A | 778 | LYS |
| 6 | A | 783 | LEU |
| 6 | A | 785 | HIS |
| 6 | A | 811 | ILE |
| 6 | A | 821 | ASP |
| 6 | A | 832 | GLU |
| 6 | A | 846 | LYS |
| 6 | A | 852 | LEU |
| 6 | A | 919 | LEU |
| 6 | A | 922 | VAL |
| 6 | A | 944 | TYR |
| 6 | A | 968 | ASP |
| 6 | A | 971 | MET |
| 6 | A | 972 | MET |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 1004 | ASP |
| 6 | A | 1019 | GLU |
| 6 | A | 1020 | ILE |
| 6 | A | 1024 | LEU |
| 6 | A | 1078 | ILE |
| 6 | A | 1099 | ASN |
| 6 | A | 1103 | LEU |
| 6 | A | 1165 | LEU |
| 6 | A | 1167 | ARG |
| 6 | A | 1168 | ILE |
| 6 | A | 1212 | ARG |
| 6 | A | 1217 | ARG |
| 6 | A | 1277 | GLU |
| 6 | A | 1282 | ASP |
| 6 | A | 1288 | LEU |
| 6 | A | 1315 | ARG |
| 6 | A | 1317 | ARG |
| 6 | A | 1323 | SER |
| 6 | A | 1326 | THR |
| 6 | A | 1327 | THR |
| 6 | A | 1338 | SER |
| 6 | A | 1345 | TYR |
| 6 | A | 1346 | PHE |
| 6 | A | 1347 | ARG |
| 6 | A | 1354 | GLU |
| 6 | A | 1373 | LEU |
| 6 | A | 1378 | LYS |
| 6 | A | 1379 | MET |
| 6 | A | 1382 | ARG |
| 6 | A | 1429 | MET |
| 6 | A | 1433 | ASP |
| 6 | A | 1434 | GLU |
| 6 | A | 1436 | LEU |
| 6 | A | 1515 | LYS |
| 6 | A | 1520 | GLU |
| 6 | A | 1543 | ARG |
| 6 | A | 1574 | PHE |
| 6 | A | 1589 | LYS |
| 6 | A | 1598 | LEU |
| 6 | A | 1600 | GLN |
| 6 | A | 1603 | ASN |
| 6 | A | 1644 | SER |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 1647 | GLN |
| 6 | A | 1668 | ILE |
| 6 | A | 1707 | HIS |
| 6 | A | 1708 | GLU |
| 6 | A | 1737 | GLN |
| 6 | A | 1742 | ASP |
| 6 | A | 1803 | ARG |
| 6 | A | 1806 | MET |
| 6 | A | 2048 | TRP |
| 8 | D | 3 | GLU |
| 8 | D | 8 | ASN |
| 8 | D | 25 | ARG |
| 8 | D | 47 | PHE |
| 8 | D | 49 | MET |
| 8 | D | 71 | LEU |
| 8 | D | 79 | ILE |
| 8 | D | 99 | THR |
| 8 | D | 114 | ARG |
| 9 | F | 20 | ARG |
| 10 | C | 92 | GLU |
| 10 | C | 100 | LEU |
| 10 | C | 103 | HIS |
| 10 | C | 109 | LEU |
| 10 | C | 124 | LEU |
| 10 | C | 132 | ARG |
| 10 | C | 139 | ILE |
| 10 | C | 153 | LEU |
| 10 | C | 156 | ASP |
| 10 | C | 206 | LYS |
| 10 | C | 211 | ASN |
| 10 | C | 219 | VAL |
| 10 | C | 233 | ASP |
| 10 | C | 234 | LEU |
| 10 | C | 255 | GLN |
| 10 | C | 272 | ARG |
| 10 | C | 273 | LEU |
| 10 | C | 283 | ASP |
| 10 | C | 315 | SER |
| 10 | C | 347 | ARG |
| 10 | C | 358 | ASN |
| 10 | C | 359 | PHE |
| 10 | C | 362 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 10 | C | 381 | LEU |
| 10 | C | 400 | LEU |
| 10 | C | 401 | ARG |
| 10 | C | 431 | GLN |
| 10 | C | 447 | GLU |
| 10 | C | 453 | THR |
| 10 | C | 458 | ILE |
| 10 | C | 468 | LEU |
| 10 | C | 469 | TRP |
| 10 | C | 471 | HIS |
| 10 | C | 474 | LYS |
| 10 | C | 475 | THR |
| 10 | C | 534 | THR |
| 10 | C | 545 | LEU |
| 10 | C | 562 | VAL |
| 10 | C | 576 | THR |
| 10 | C | 590 | LYS |
| 10 | C | 602 | VAL |
| 10 | C | 610 | LEU |
| 10 | C | 673 | PRO |
| 10 | C | 758 | ASP |
| 10 | C | 768 | PHE |
| 10 | C | 774 | LEU |
| 10 | C | 784 | SER |
| 10 | C | 791 | TYR |
| 10 | C | 794 | GLN |
| 10 | C | 799 | PHE |
| 10 | C | 803 | VAL |
| 10 | C | 830 | ASN |
| 10 | C | 837 | GLN |
| 10 | C | 851 | LEU |
| 10 | C | 861 | ILE |
| 10 | C | 902 | VAL |
| 10 | C | 927 | MET |
| 10 | C | 933 | TRP |
| 10 | C | 965 | ASP |
| 10 | C | 970 | THR |
| 10 | C | 971 | ARG |
| 10 | C | 989 | LEU |
| 10 | C | 992 | TYR |
| 11 | G | 4 | ASN |
| 11 | G | 18 | GLN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 11 | G | 28 | ASP |
| 11 | G | 31 | ARG |
| 11 | G | 33 | GLN |
| 11 | G | 74 | GLN |
| 11 | G | 78 | LEU |
| 11 | G | 94 | TRP |
| 12 | H | 256 | ASP |
| 12 | H | 297 | LEU |
| 12 | H | 307 | GLU |
| 12 | H | 313 | LEU |
| 12 | H | 314 | LYS |
| 12 | H | 334 | LEU |
| 12 | H | 348 | GLU |
| 12 | H | 357 | TRP |
| 12 | H | 363 | GLU |
| 12 | H | 367 | GLN |
| 12 | H | 373 | ILE |
| 12 | H | 391 | LEU |
| 12 | H | 396 | PHE |
| 12 | H | 399 | MET |
| 12 | H | 419 | PHE |
| 12 | H | 421 | LYS |
| 12 | H | 440 | LEU |
| 12 | H | 444 | LYS |
| 12 | H | 468 | ILE |
| 12 | H | 470 | LEU |
| 12 | H | 473 | LEU |
| 13 | J | 139 | LEU |
| 13 | J | 143 | ARG |
| 13 | J | 148 | ASP |
| 13 | J | 151 | ASP |
| 13 | J | 156 | ILE |
| 13 | J | 161 | ASP |
| 13 | J | 183 | MET |
| 13 | J | 194 | HIS |
| 13 | J | 202 | GLU |
| 13 | J | 215 | GLN |
| 13 | J | 218 | ARG |
| 13 | J | 224 | LEU |
| 13 | J | 247 | VAL |
| 13 | J | 248 | ILE |
| 13 | J | 257 | ILE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 13 | J | 269 | ILE |
| 13 | J | 274 | CYS |
| 13 | J | 275 | THR |
| 13 | J | 284 | SER |
| 13 | J | 286 | THR |
| 13 | J | 290 | VAL |
| 13 | J | 295 | VAL |
| 13 | J | 314 | THR |
| 13 | J | 329 | ASP |
| 13 | J | 332 | ARG |
| 13 | J | 334 | TRP |
| 13 | J | 336 | LEU |
| 13 | J | 356 | LEU |
| 13 | J | 377 | ASP |
| 13 | J | 387 | LEU |
| 13 | J | 389 | THR |
| 13 | J | 396 | LEU |
| 13 | J | 402 | VAL |
| 14 | K | 33 | GLN |
| 14 | K | 36 | LYS |
| 14 | K | 40 | LEU |
| 14 | K | 47 | ARG |
| 14 | K | 48 | GLN |
| 14 | K | 52 | GLU |
| 14 | K | 62 | GLU |
| 14 | K | 66 | CYS |
| 14 | K | 77 | LEU |
| 14 | K | 81 | LYS |
| 14 | K | 87 | ASN |
| 14 | K | 105 | LEU |
| 14 | K | 106 | LEU |
| 14 | K | 111 | HIS |
| 14 | K | 112 | ILE |
| 14 | K | 132 | ARG |
| 14 | K | 147 | LEU |
| 14 | K | 172 | TRP |
| 14 | K | 178 | TYR |
| 14 | K | 182 | LEU |
| 14 | K | 183 | GLU |
| 14 | K | 197 | ILE |
| 14 | K | 202 | MET |
| 14 | K | 203 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 14 | K | 204 | LEU |
| 14 | K | 213 | LYS |
| 14 | K | 217 | GLN |
| 14 | K | 218 | GLU |
| 15 | L | 3 | ARG |
| 15 | L | 37 | LYS |
| 15 | L | 54 | GLN |
| 15 | L | 59 | ARG |
| 15 | L | 61 | ARG |
| 15 | L | 85 | LYS |
| 15 | L | 123 | ARG |
| 15 | L | 139 | GLN |
| 15 | L | 142 | PHE |
| 16 | M | 5 | ARG |
| 16 | M | 10 | LYS |
| 16 | M | 18 | LEU |
| 16 | M | 26 | THR |
| 16 | M | 33 | TRP |
| 16 | M | 38 | SER |
| 16 | M | 44 | ASN |
| 16 | M | 109 | LEU |
| 16 | M | 111 | CYS |
| 16 | M | 114 | ARG |
| 16 | M | 116 | LYS |
| 16 | M | 127 | ILE |
| 16 | M | 132 | LYS |
| 16 | M | 135 | LYS |
| 16 | M | 136 | THR |
| 16 | M | 149 | LYS |
| 16 | M | 172 | ARG |
| 16 | M | 181 | CYS |
| 16 | M | 187 | LYS |
| 16 | M | 191 | ASN |
| 16 | M | 216 | ARG |
| 16 | M | 236 | LYS |
| 16 | M | 245 | GLU |
| 16 | M | 251 | VAL |
| 17 | N | 19 | ASP |
| 17 | N | 22 | ASN |
| 17 | N | 30 | GLN |
| 17 | N | 32 | SER |
| 17 | N | 35 | LYS |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 17 | N | 39 | LEU |
| 17 | N | 48 | THR |
| 17 | N | 54 | ASN |
| 17 | N | 55 | ILE |
| 17 | N | 87 | ARG |
| 17 | N | 91 | ILE |
| 17 | N | 93 | LEU |
| 17 | N | 94 | VAL |
| 17 | N | 109 | MET |
| 17 | N | 117 | ASN |
| 17 | N | 135 | ILE |
| 17 | N | 216 | GLU |
| 17 | N | 254 | GLN |
| 17 | N | 321 | GLN |
| 18 | O | 27 | LYS |
| 18 | O | 35 | LYS |
| 18 | O | 40 | LEU |
| 18 | O | 44 | THR |
| 18 | O | 46 | ARG |
| 18 | O | 53 | ASN |
| 18 | O | 65 | PHE |
| 18 | O | 73 | LEU |
| 18 | O | 91 | MET |
| 18 | O | 93 | ARG |
| 18 | O | 156 | ARG |
| 18 | O | 158 | ARG |
| 18 | O | 170 | LYS |
| 18 | O | 175 | MET |
| 18 | O | 184 | GLU |
| 18 | O | 188 | ARG |
| 18 | O | 192 | LYS |
| 18 | O | 196 | ILE |
| 18 | O | 204 | LYS |
| 18 | O | 205 | LYS |
| 18 | O | 206 | LYS |
| 18 | O | 247 | LYS |
| 19 | P | 8 | GLN |
| 19 | P | 9 | LEU |
| 19 | P | 16 | LYS |
| 19 | P | 29 | ARG |
| 19 | P | 40 | ARG |
| 20 | R | 6 | ILE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 20 | R | 8 | LEU |
| 20 | R | 15 | SER |
| 20 | R | 16 | THR |
| 21 | S | 60 | ARG |
| 21 | S | 67 | GLN |
| 21 | S | 71 | TYR |
| 21 | S | 77 | GLU |
| 21 | S | 78 | GLN |
| 21 | S | 86 | SER |
| 21 | S | 92 | LEU |
| 21 | S | 117 | HIS |
| 21 | S | 139 | TYR |
| 21 | S | 143 | GLU |
| 21 | S | 144 | GLU |
| 21 | S | 152 | VAL |
| 21 | S | 156 | TYR |
| 21 | S | 158 | LYS |
| 21 | S | 173 | VAL |
| 21 | S | 188 | ILE |
| 21 | S | 189 | TYR |
| 21 | S | 192 | TYR |
| 21 | S | 209 | GLU |
| 21 | S | 216 | GLU |
| 21 | S | 224 | LEU |
| 21 | S | 226 | ILE |
| 21 | S | 234 | ASN |
| 21 | S | 257 | GLN |
| 21 | S | 260 | TYR |
| 21 | S | 263 | SER |
| 21 | S | 266 | LEU |
| 24 | d | 10 | LEU |
| 24 | d | 20 | SER |
| 24 | d | 76 | ASP |
| 25 | e | 16 | CYS |
| 25 | e | 18 | PHE |
| 25 | e | 25 | THR |
| 25 | e | 79 | LYS |
| 25 | e | 81 | LEU |
| 26 | f | 36 | THR |
| 26 | f | 79 | LEU |
| 27 | g | 18 | ASN |
| 29 | j | 24 | PHE |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 29 | j | 49 | ARG |
| 29 | j | 82 | LYS |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (49) such sidechains are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 6 | A | 194 | HIS |
| 6 | A | 216 | GLN |
| 6 | A | 310 | ASN |
| 6 | A | 326 | ASN |
| 6 | A | 344 | ASN |
| 6 | A | 412 | GLN |
| 6 | A | 508 | GLN |
| 6 | A | 733 | GLN |
| 6 | A | 760 | ASN |
| 6 | A | 848 | ASN |
| 6 | A | 948 | HIS |
| 6 | A | 1368 | GLN |
| 6 | A | 1449 | ASN |
| 6 | A | 1568 | ASN |
| 6 | A | 1603 | ASN |
| 6 | A | 1737 | GLN |
| 6 | A | 2018 | ASN |
| 10 | C | 158 | HIS |
| 10 | C | 260 | ASN |
| 10 | C | 289 | ASN |
| 10 | C | 358 | ASN |
| 10 | C | 418 | GLN |
| 10 | C | 608 | GLN |
| 10 | C | 776 | ASN |
| 10 | C | 837 | GLN |
| 11 | G | 9 | ASN |
| 11 | G | 33 | GLN |
| 13 | J | 273 | GLN |
| 14 | K | 33 | GLN |
| 14 | K | 174 | ASN |
| 14 | K | 210 | ASN |
| 16 | M | 25 | GLN |
| 16 | M | 44 | ASN |
| 17 | N | 22 | ASN |
| 18 | O | 82 | ASN |
| 21 | S | 61 | ASN |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 21 | S | 78 | GLN |
| 21 | S | 79 | HIS |
| 21 | S | 200 | GLN |
| 21 | S | 214 | ASN |
| 21 | S | 234 | ASN |
| 21 | S | 236 | GLN |
| 24 | d | 41 | ASN |
| 25 | e | 15 | ASN |
| 25 | e | 34 | GLN |
| 26 | f | 24 | ASN |
| 27 | g | 18 | ASN |
| 27 | g | 66 | ASN |
| 28 | h | 86 | ASN |

### 5.3.3 RNA (i)

| Mol | Chain | Analysed | Backbone Outliers | Pucker Outliers |
|---|---|---|---|---|
| 1 | U | 138/179 (77%) | 66 (47%) | 13 (9%) |
| 2 | E | 15/16 (93%) | 10 (66%) | 2 (13%) |
| 3 | I | 31/76 (40%) | 15 (48%) | 0 |
| 4 | Z | 162/1175 (13%) | 58 (35%) | 11 (6%) |
| 5 | V | 96/112 (85%) | 35 (36%) | 6 (6%) |
| All | All | 442/1558 (28%) | 184 (41%) | 32 (7%) |

All (184) RNA backbone outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | U | 13 | A |
| 1 | U | 14 | G |
| 1 | U | 15 | A |
| 1 | U | 16 | U |
| 1 | U | 18 | A |
| 1 | U | 20 | U |
| 1 | U | 22 | G |
| 1 | U | 23 | C |
| 1 | U | 24 | G |
| 1 | U | 25 | G |
| 1 | U | 26 | A |
| 1 | U | 27 | G |
| 1 | U | 28 | G |
| 1 | U | 31 | G |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | U | 33 | U |
| 1 | U | 34 | C |
| 1 | U | 36 | A |
| 1 | U | 40 | C |
| 1 | U | 42 | A |
| 1 | U | 43 | G |
| 1 | U | 44 | A |
| 1 | U | 48 | G |
| 1 | U | 50 | G |
| 1 | U | 53 | C |
| 1 | U | 63 | C |
| 1 | U | 65 | U |
| 1 | U | 67 | U |
| 1 | U | 68 | A |
| 1 | U | 70 | A |
| 1 | U | 71 | A |
| 1 | U | 74 | U |
| 1 | U | 75 | A |
| 1 | U | 76 | U |
| 1 | U | 77 | A |
| 1 | U | 78 | A |
| 1 | U | 79 | C |
| 1 | U | 80 | G |
| 1 | U | 81 | A |
| 1 | U | 82 | A |
| 1 | U | 84 | A |
| 1 | U | 87 | G |
| 1 | U | 89 | U |
| 1 | U | 92 | U |
| 1 | U | 94 | C |
| 1 | U | 96 | U |
| 1 | U | 97 | U |
| 1 | U | 101 | C |
| 1 | U | 104 | G |
| 1 | U | 107 | C |
| 1 | U | 108 | C |
| 1 | U | 109 | A |
| 1 | U | 112 | C |
| 1 | U | 113 | G |
| 1 | U | 115 | G |
| 1 | U | 116 | U |
| 1 | U | 119 | U |

*Continued on next page...*

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | U | 121 | U |
| 1 | U | 126 | A |
| 1 | U | 130 | A |
| 1 | U | 133 | C |
| 1 | U | 134 | A |
| 1 | U | 135 | G |
| 1 | U | 145 | U |
| 1 | U | 170 | U |
| 1 | U | 171 | U |
| 1 | U | 173 | U |
| 2 | E | -14 | A |
| 2 | E | -11 | G |
| 2 | E | -10 | A |
| 2 | E | -9 | U |
| 2 | E | -8 | C |
| 2 | E | -7 | U |
| 2 | E | -6 | A |
| 2 | E | -5 | G |
| 2 | E | -4 | A |
| 2 | E | -1 | G |
| 3 | I | 3 | A |
| 3 | I | 6 | U |
| 3 | I | 9 | A |
| 3 | I | 10 | A |
| 3 | I | 56 | G |
| 3 | I | 58 | U |
| 3 | I | 61 | U |
| 3 | I | 62 | A |
| 3 | I | 63 | U |
| 3 | I | 65 | U |
| 3 | I | 66 | A |
| 3 | I | 69 | A |
| 3 | I | 71 | C |
| 3 | I | 73 | A |
| 3 | I | 74 | A |
| 4 | Z | 5 | A |
| 4 | Z | 15 | C |
| 4 | Z | 16 | U |
| 4 | Z | 17 | U |
| 4 | Z | 18 | U |
| 4 | Z | 19 | U |
| 4 | Z | 20 | G |

*Continued on next page...*

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | Z | 21 | G |
| 4 | Z | 25 | A |
| 4 | Z | 30 | A |
| 4 | Z | 32 | G |
| 4 | Z | 33 | U |
| 4 | Z | 37 | G |
| 4 | Z | 40 | U |
| 4 | Z | 43 | G |
| 4 | Z | 46 | C |
| 4 | Z | 47 | U |
| 4 | Z | 63 | U |
| 4 | Z | 64 | G |
| 4 | Z | 67 | A |
| 4 | Z | 68 | U |
| 4 | Z | 81 | C |
| 4 | Z | 106 | A |
| 4 | Z | 108 | A |
| 4 | Z | 110 | A |
| 4 | Z | 112 | A |
| 4 | Z | 113 | U |
| 4 | Z | 114 | U |
| 4 | Z | 115 | U |
| 4 | Z | 116 | U |
| 4 | Z | 117 | U |
| 4 | Z | 119 | G |
| 4 | Z | 120 | G |
| 4 | Z | 141 | A |
| 4 | Z | 1094 | G |
| 4 | Z | 1096 | C |
| 4 | Z | 1098 | C |
| 4 | Z | 1099 | G |
| 4 | Z | 1100 | A |
| 4 | Z | 1101 | C |
| 4 | Z | 1102 | C |
| 4 | Z | 1103 | C |
| 4 | Z | 1104 | U |
| 4 | Z | 1106 | G |
| 4 | Z | 1107 | C |
| 4 | Z | 1108 | A |
| 4 | Z | 1120 | G |
| 4 | Z | 1123 | C |
| 4 | Z | 1124 | U |

*Continued on next page...*

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 4 | Z | 1125 | U |
| 4 | Z | 1126 | G |
| 4 | Z | 1139 | G |
| 4 | Z | 1144 | U |
| 4 | Z | 1145 | U |
| 4 | Z | 1146 | G |
| 4 | Z | 1149 | G |
| 4 | Z | 1152 | U |
| 4 | Z | 1166 | G |
| 5 | V | 3 | U |
| 5 | V | 5 | G |
| 5 | V | 10 | G |
| 5 | V | 17 | U |
| 5 | V | 22 | G |
| 5 | V | 27 | U |
| 5 | V | 28 | U |
| 5 | V | 31 | G |
| 5 | V | 34 | A |
| 5 | V | 35 | A |
| 5 | V | 36 | U |
| 5 | V | 37 | U |
| 5 | V | 40 | A |
| 5 | V | 41 | A |
| 5 | V | 42 | A |
| 5 | V | 43 | C |
| 5 | V | 52 | G |
| 5 | V | 54 | U |
| 5 | V | 62 | A |
| 5 | V | 66 | C |
| 5 | V | 68 | C |
| 5 | V | 73 | A |
| 5 | V | 74 | U |
| 5 | V | 75 | A |
| 5 | V | 76 | A |
| 5 | V | 80 | U |
| 5 | V | 81 | G |
| 5 | V | 84 | C |
| 5 | V | 85 | C |
| 5 | V | 88 | U |
| 5 | V | 89 | U |
| 5 | V | 91 | A |
| 5 | V | 92 | C |

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| Mol | Chain | Res | Type |
|---|---|---|---|
| 5 | V | 93 | A |
| 5 | V | 99 | A |

All (32) RNA pucker outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 1 | U | 23 | C |
| 1 | U | 24 | G |
| 1 | U | 26 | A |
| 1 | U | 27 | G |
| 1 | U | 33 | U |
| 1 | U | 39 | U |
| 1 | U | 43 | G |
| 1 | U | 45 | A |
| 1 | U | 64 | C |
| 1 | U | 76 | U |
| 1 | U | 78 | A |
| 1 | U | 96 | U |
| 1 | U | 172 | U |
| 2 | E | -10 | A |
| 2 | E | -9 | U |
| 4 | Z | 16 | U |
| 4 | Z | 19 | U |
| 4 | Z | 20 | G |
| 4 | Z | 32 | G |
| 4 | Z | 112 | A |
| 4 | Z | 114 | U |
| 4 | Z | 115 | U |
| 4 | Z | 118 | U |
| 4 | Z | 1123 | C |
| 4 | Z | 1124 | U |
| 4 | Z | 1145 | U |
| 5 | V | 16 | C |
| 5 | V | 53 | A |
| 5 | V | 60 | G |
| 5 | V | 74 | U |
| 5 | V | 84 | C |
| 5 | V | 92 | C |

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

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

## 5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

Of 10 ligands modelled in this entry, 9 are monoatomic - leaving 1 for Mogul analysis.

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

| Mol | Type | Chain | Res | Link | Bond lengths | | | Bond angles | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Counts | RMSZ | $\#\|Z\| > 2$ | Counts | RMSZ | $\#\|Z\| > 2$ |
| 38 | GTP | C | 1101 | - | 26,34,34 | 0.88 | 1 (3%) | 32,54,54 | 1.64 | 5 (15%) |

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 |
|---|---|---|---|---|---|---|---|
| 38 | GTP | C | 1101 | - | - | 6/18/38/38 | 0/3/3/3 |

All (1) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|---|---|---|---|---|---|---|---|
| 38 | C | 1101 | GTP | C6-N1 | -2.35 | 1.34 | 1.37 |

All (5) bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed($^o$) | Ideal($^o$) |
|---|---|---|---|---|---|---|---|
| 38 | C | 1101 | GTP | PB-O3B-PG | -4.90 | 116.03 | 132.83 |
| 38 | C | 1101 | GTP | PA-O3A-PB | -3.58 | 120.56 | 132.83 |
| 38 | C | 1101 | GTP | C5-C6-N1 | 2.89 | 119.06 | 113.95 |
| 38 | C | 1101 | GTP | O6-C6-C5 | -2.72 | 119.07 | 124.37 |
| 38 | C | 1101 | GTP | C8-N7-C5 | 2.53 | 107.81 | 102.99 |

There are no chirality outliers.

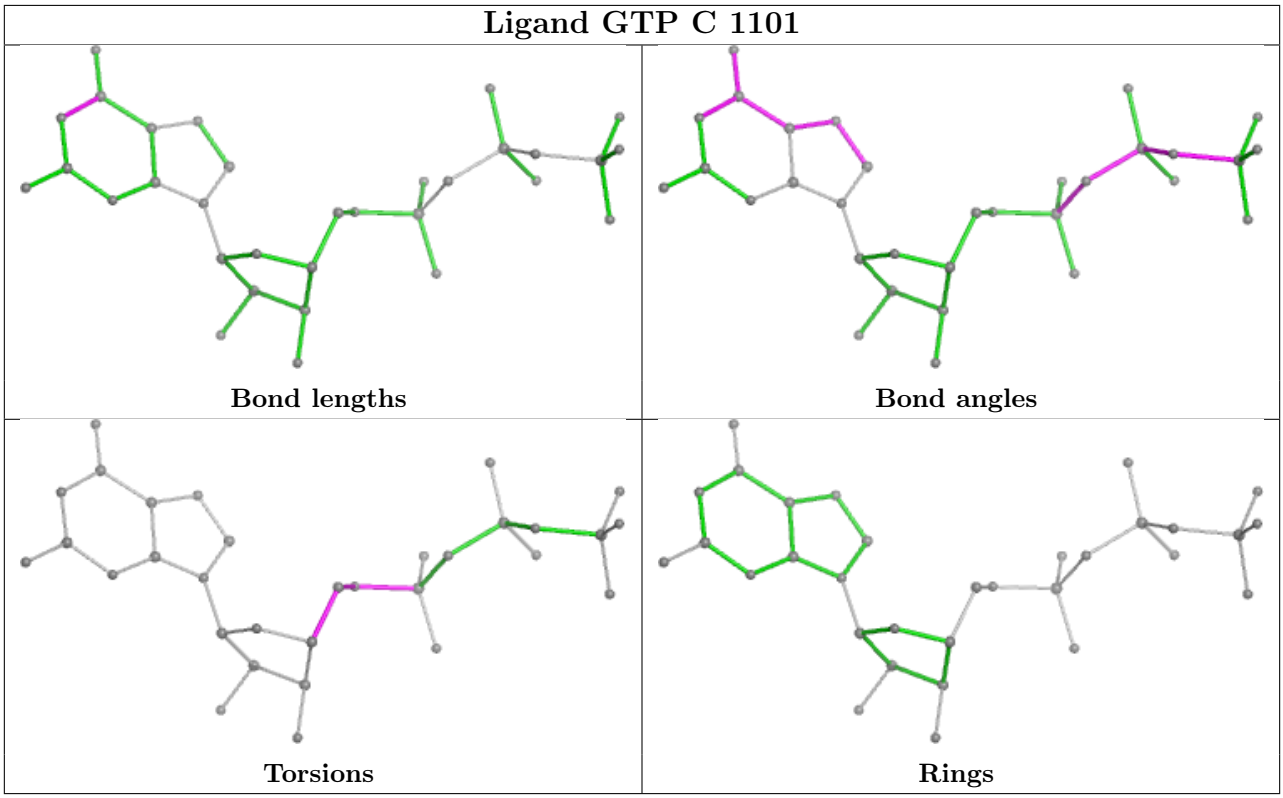
All (6) torsion outliers are listed below:

| Mol | Chain | Res | Type | Atoms |
|---|---|---|---|---|
| 38 | C | 1101 | GTP | C5'-O5'-PA-O3A |
| 38 | C | 1101 | GTP | C5'-O5'-PA-O1A |
| 38 | C | 1101 | GTP | C3'-C4'-C5'-O5' |
| 38 | C | 1101 | GTP | O4'-C4'-C5'-O5' |
| 38 | C | 1101 | GTP | C4'-C5'-O5'-PA |
| 38 | C | 1101 | GTP | C5'-O5'-PA-O2A |

There are no ring outliers.

No monomer is involved in short contacts.

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



## 5.7 Other polymers (i)

There are no such residues in this entry.

## 5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

| Mol | Chain | Number of breaks |
|---|---|---|
| 35 | x | 4 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | x | 54:UNK | C | 55:UNK | N | 111.76 |
| 1 | x | 110:UNK | C | 111:UNK | N | 53.94 |
| 1 | x | 36:UNK | C | 37:UNK | N | 49.39 |
| 1 | x | 87:UNK | C | 88:UNK | N | 31.03 |

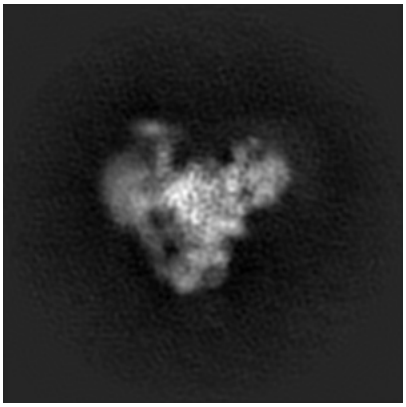
# 6 Map visualisation

This section contains visualisations of the EMDB entry EMD-4057. These allow visual inspection of the internal detail of the map and identification of artifacts.

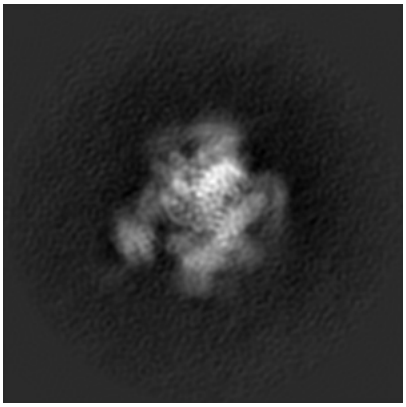
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

## 6.1 Orthogonal projections

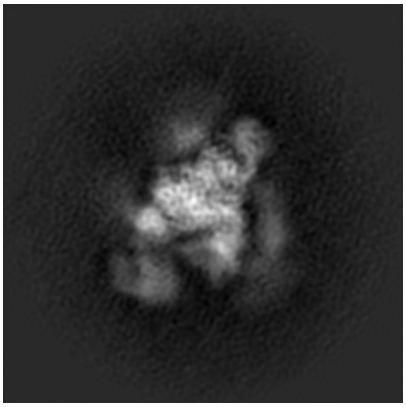
### 6.1.1 Primary map



X



Y

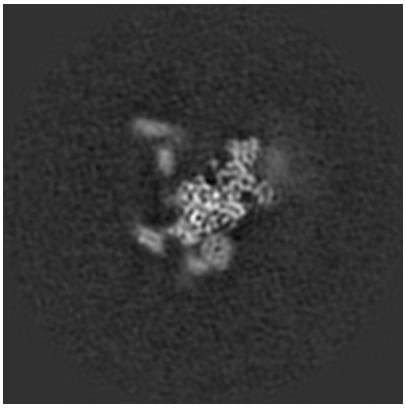


Z

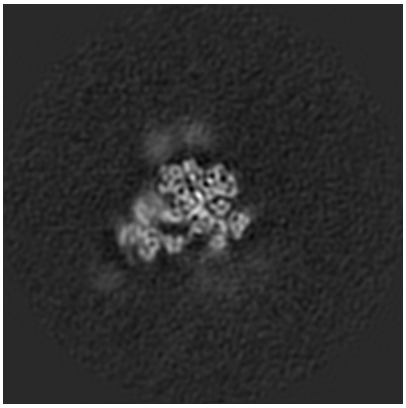
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices

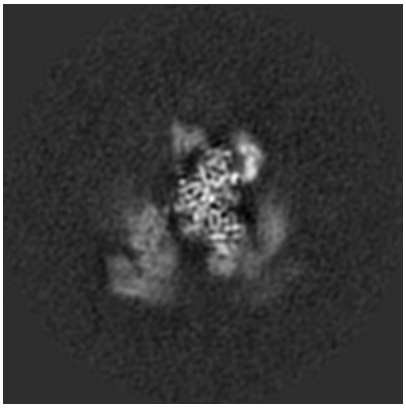
### 6.2.1 Primary map



X Index: 206



Y Index: 206

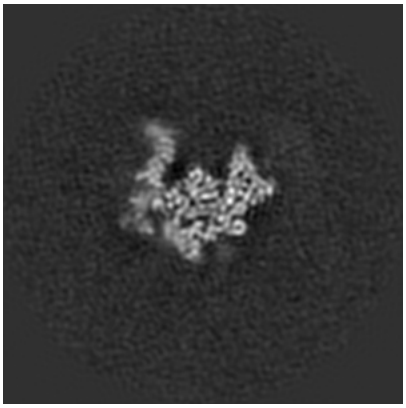


Z Index: 206

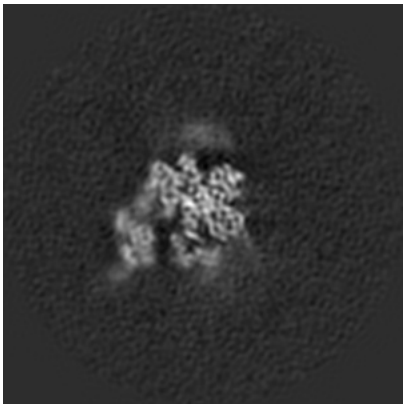
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

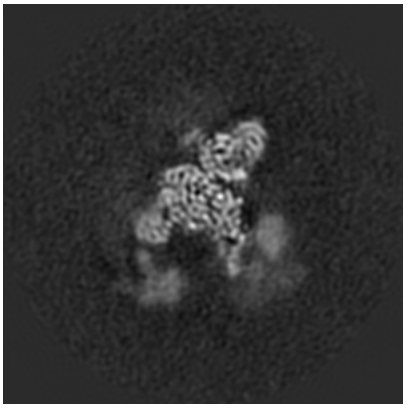
### 6.3.1 Primary map



X Index: 228



Y Index: 196

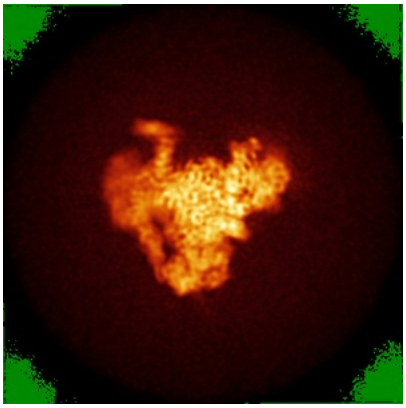


Z Index: 221

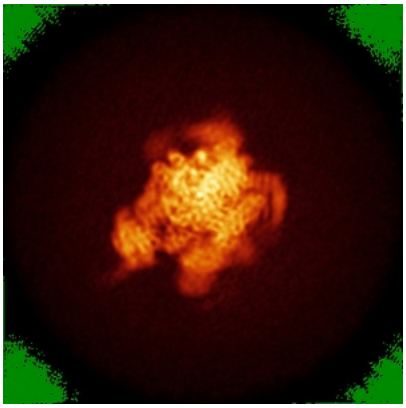
The images above show the largest variance slices of the map in three orthogonal directions.

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

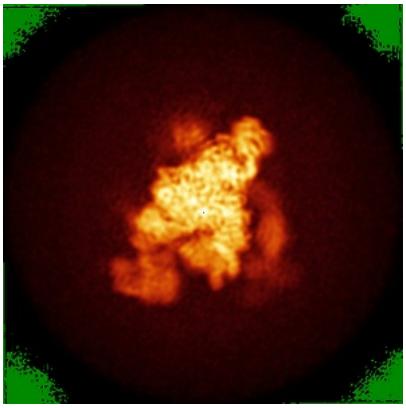
### 6.4.1 Primary map



X



Y



Z

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

## 6.5 Orthogonal surface views (i)

### 6.5.1 Primary map

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.006. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

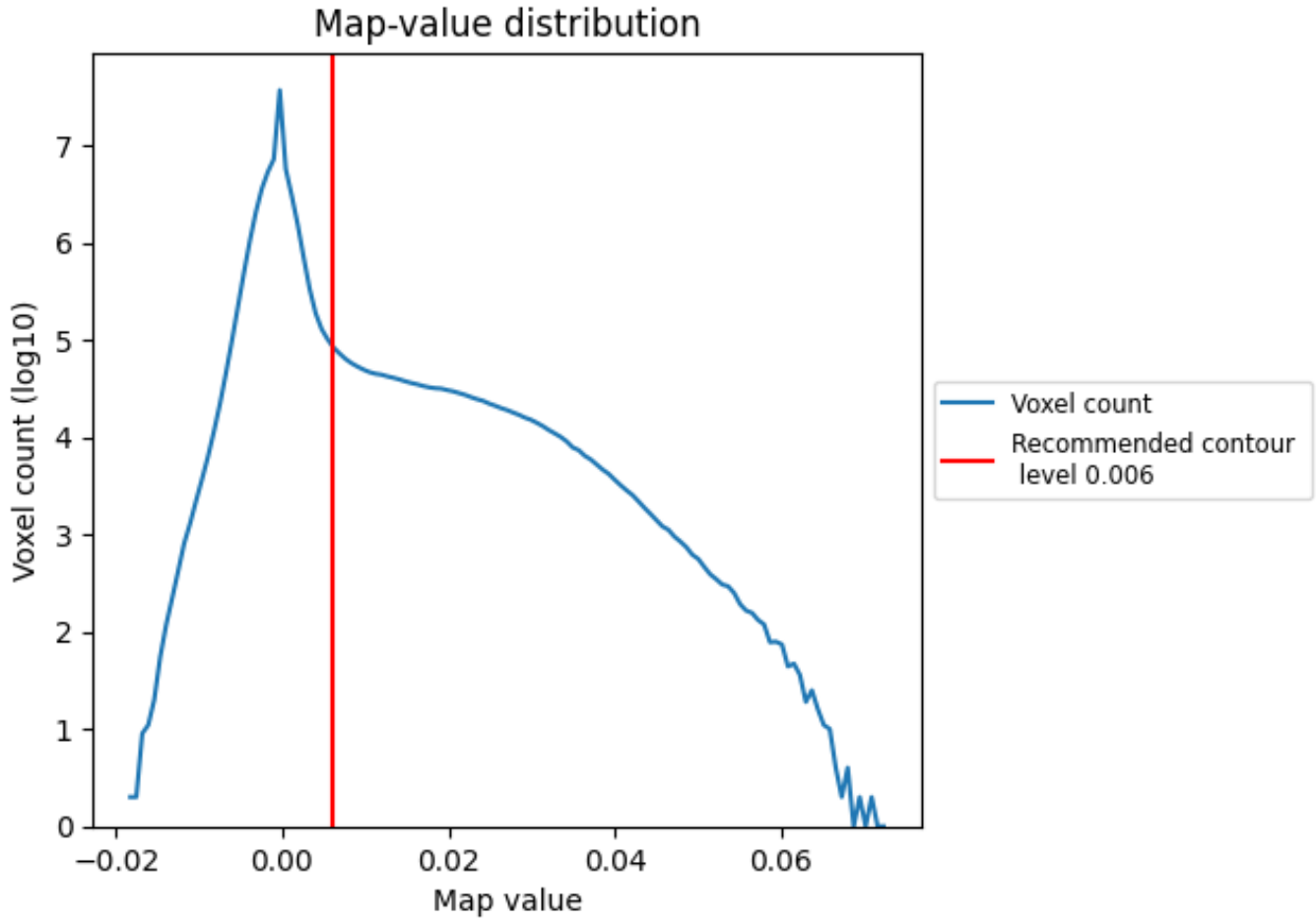
## 6.6 Mask visualisation (i)

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

# 7 Map analysis

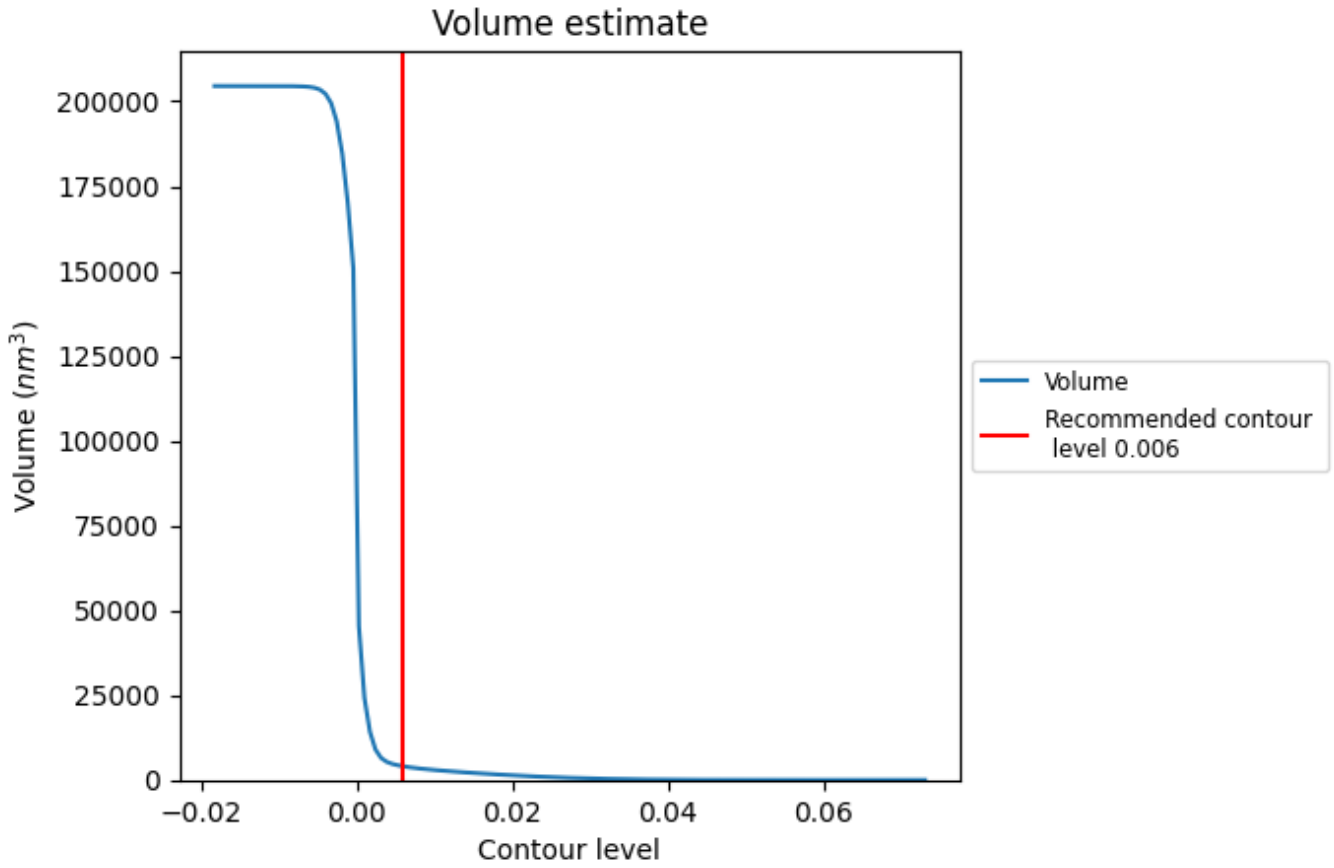
This section contains the results of statistical analysis of the map.

## 7.1 Map-value distribution




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

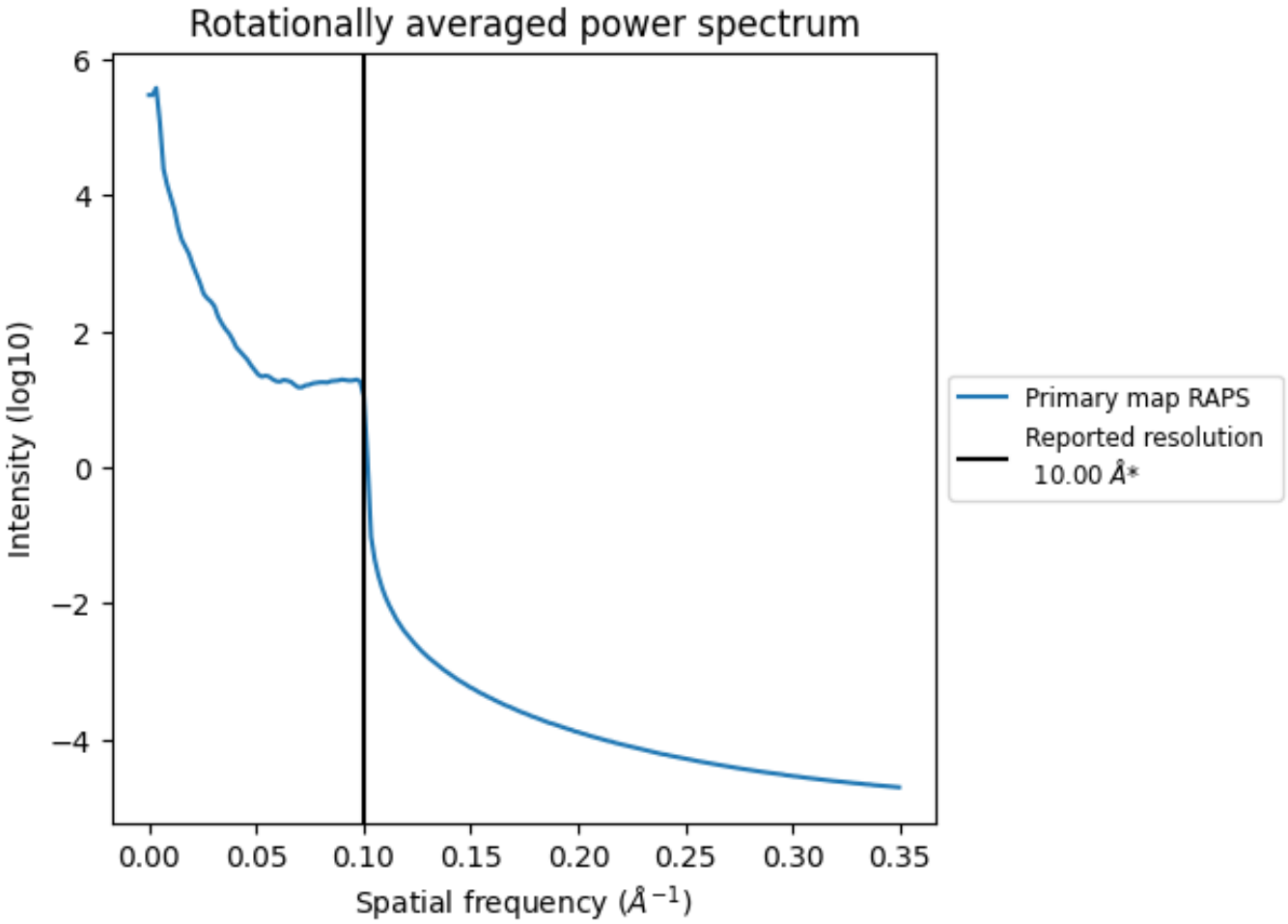
## 7.2 Volume estimate




The volume at the recommended contour level is 4018 $nm^3$; this corresponds to an approximate mass of 3629 kDa.

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

## 7.3 Rotationally averaged power spectrum (i)

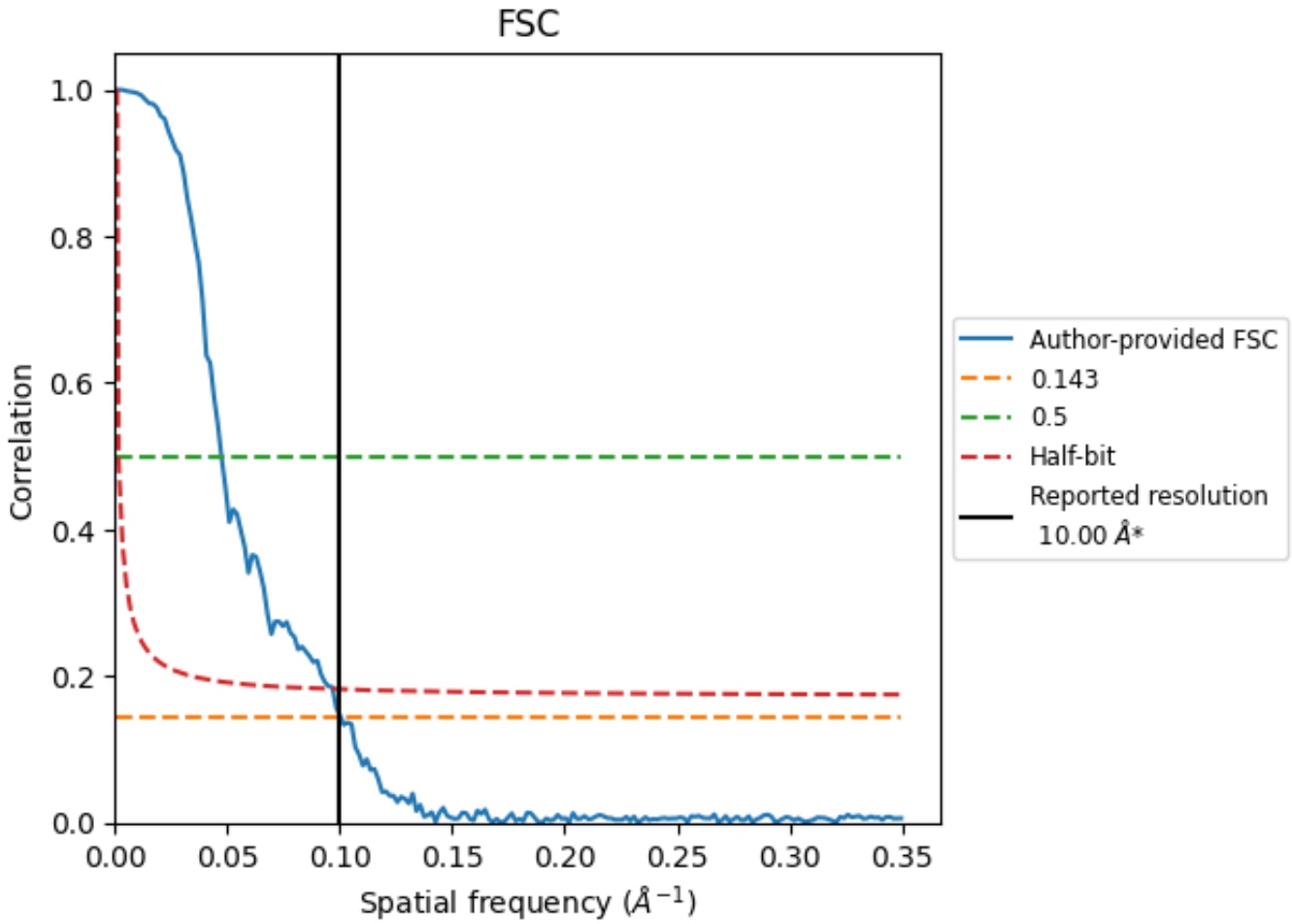



*Reported resolution corresponds to spatial frequency of 0.100 Å$^{-1}$

# 8 Fourier-Shell correlation

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

## 8.1 FSC




*Reported resolution corresponds to spatial frequency of 0.100 Å$^{-1}$

## 8.2 Resolution estimates (i)

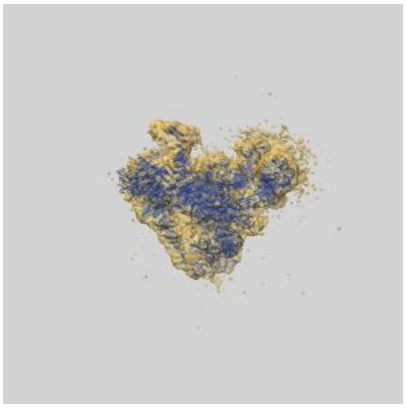
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 10.00 | - | - |
| Author-provided FSC curve | 9.95 | 21.10 | 10.32 |
| Unmasked-calculated* | - | - | - |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

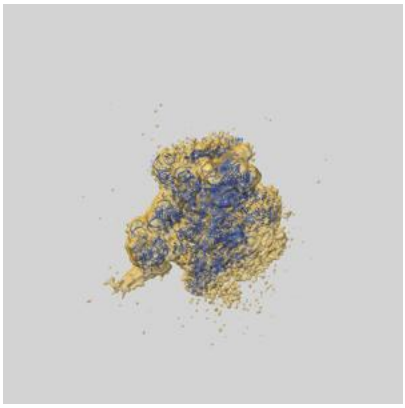
# 9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-4057 and PDB model 5LJ5. Per-residue inclusion information can be found in section 3 on page 12.

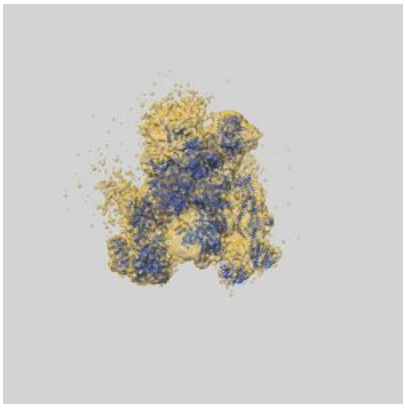
## 9.1 Map-model overlay



X



Y



Z

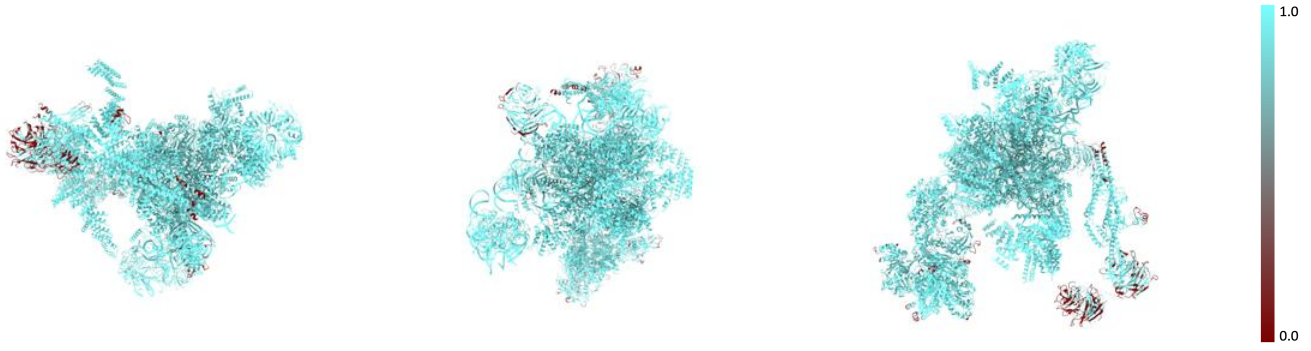
The images above show the 3D surface view of the map at the recommended contour level 0.006 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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


X Y Z

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

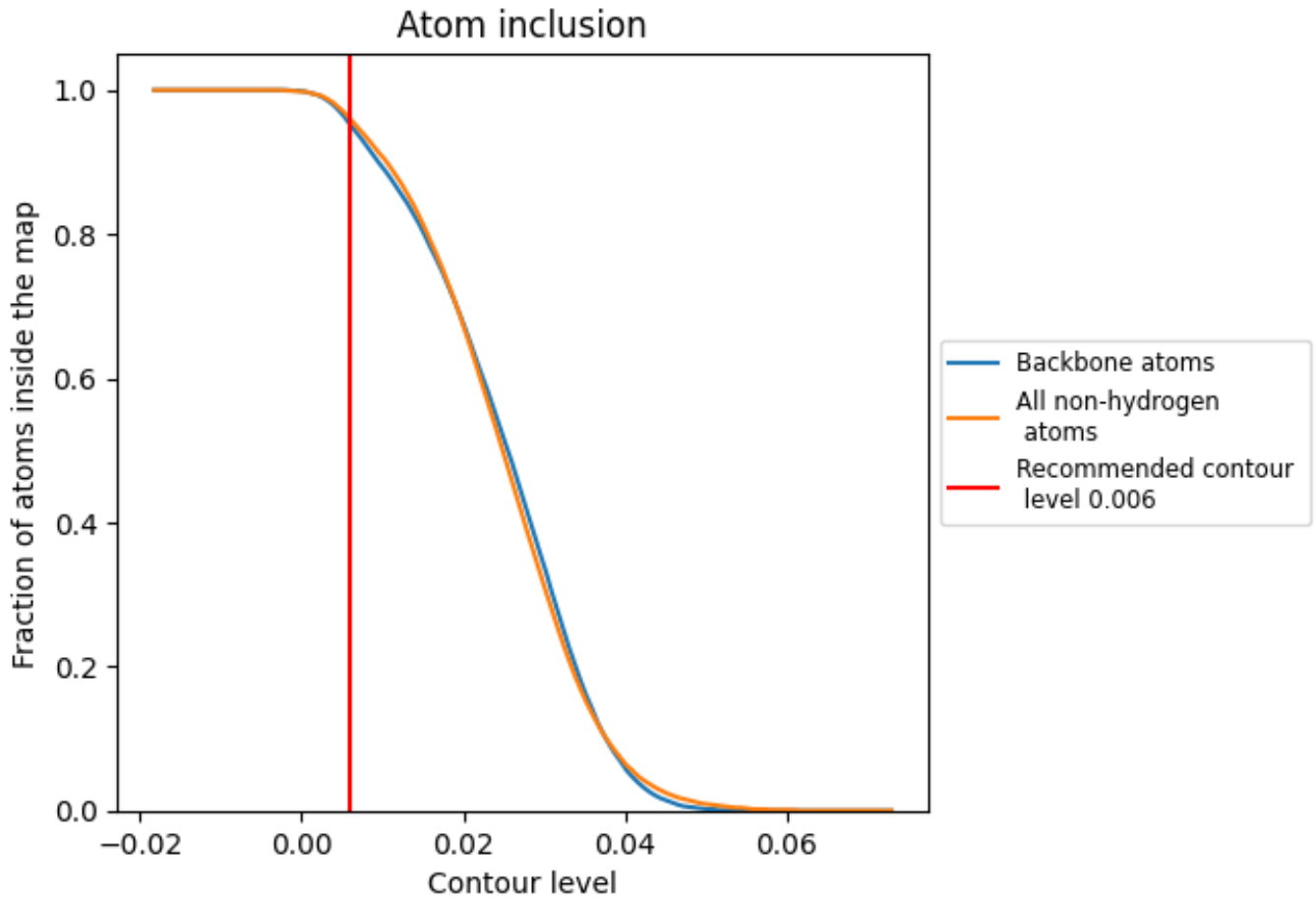
## 9.3 Atom inclusion mapped to coordinate model (i)




X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.006).

## 9.4 Atom inclusion (i)




At the recommended contour level, 95% of all backbone atoms, 96% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.006) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.9600 | 0.1140 |
| A | 0.9820 | 0.1130 |
| B | 0.9520 | 0.0430 |
| C | 0.9890 | 0.1230 |
| D | 0.9820 | 0.1110 |
| E | 1.0000 | 0.1490 |
| F | 0.9910 | 0.1550 |
| G | 0.9910 | 0.1270 |
| H | 0.9960 | 0.1600 |
| I | 1.0000 | 0.1410 |
| J | 0.9900 | 0.1030 |
| K | 0.9870 | 0.1390 |
| L | 0.9990 | 0.1210 |
| M | 0.9880 | 0.1220 |
| N | 0.9910 | 0.1370 |
| O | 0.9600 | 0.1170 |
| P | 0.9890 | 0.0910 |
| Q | 0.9970 | 0.0980 |
| R | 0.9980 | 0.2170 |
| S | 0.9940 | 0.1570 |
| T | 1.0000 | 0.2110 |
| U | 1.0000 | 0.1590 |
| V | 1.0000 | 0.1670 |
| W | 0.9990 | 0.1180 |
| Y | 1.0000 | 0.1230 |
| Z | 1.0000 | 0.1350 |
| b | 1.0000 | 0.1000 |
| d | 1.0000 | 0.1240 |
| e | 1.0000 | 0.1180 |
| f | 0.9980 | 0.1080 |
| g | 0.9940 | 0.1040 |
| h | 0.9980 | 0.1150 |
| j | 0.9990 | 0.1240 |
| k | 1.0000 | 0.1330 |
| l | 1.0000 | 0.1610 |


*Continued on next page...*

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| Chain | Atom inclusion | Q-score |
|---|---|---|
| m | 1.0000 | 0.1750 |
| n | 1.0000 | 0.1600 |
| p | 1.0000 | 0.1770 |
| q | 1.0000 | 0.1890 |
| r | 0.9970 | 0.1630 |
| s | 0.9640 | 0.0670 |
| t | 0.7890 | 0.0310 |
| u | 0.4930 | 0.0330 |
| v | 0.9440 | 0.0720 |
| w | 0.6830 | 0.0100 |
| x | 1.0000 | 0.2770 |