



wwPDB EM Validation Summary Report ⓘ

Nov 22, 2022 – 01:06 PM JST

PDB ID : 7EGA
EMDB ID : EMD-31110
Title : TFIID-based intermediate PIC on PUMA promoter
Authors : Chen, X.; Wu, Z.; Hou, H.; Qi, Y.; Wang, X.; Li, J.; Xu, Y.
Deposited on : 2021-03-24
Resolution : 4.10 Å (reported)

This is a wwPDB EM Validation Summary 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>.

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

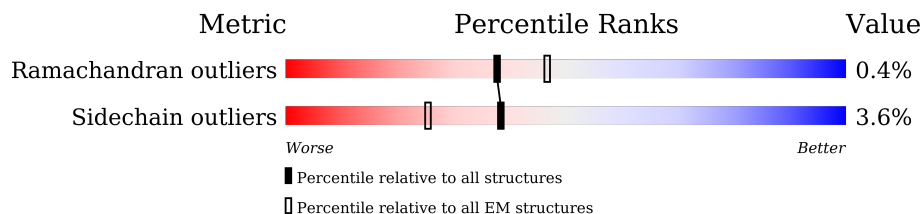
EMDB validation analysis : 0.0.1.dev43
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.3

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 4.10 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) |
|-----------------------|-----------------------------|-----------------------------|
| Ramachandran outliers | 154571 | 4023 |
| Sidechain outliers | 154315 | 3826 |

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion $< 40\%$). The numeric value is given above the bar.

| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|------------------|
| 1 | A | 1872 | |
| 2 | B | 1199 | |
| 3 | D | 1085 | |
| 3 | d | 1085 | |
| 4 | E | 800 | |
| 4 | e | 800 | |
| 5 | F | 677 | |
| 5 | f | 677 | |
| 6 | G | 349 | |

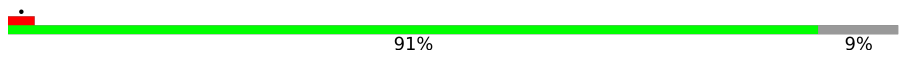
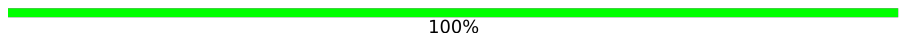
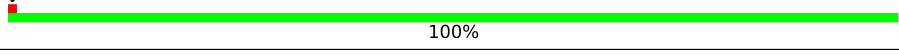

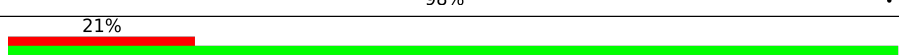

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|-------------------------|
| 7 | H | 310 | 16% 63% 5% 33% |
| 8 | I | 264 | 6% 44% 55% |
| 8 | i | 264 | 44% 45% 54% |
| 9 | J | 218 | 40% 59% |
| 9 | j | 218 | 44% 56% |
| 10 | L | 161 | 15% 45% 53% |
| 10 | l | 161 | 66% 64% 34% |
| 11 | O | 109 | 82% 6% 11% |
| 12 | P | 339 | 46% 6% 48% |
| 13 | Q | 376 | 31% 68% |
| 14 | R | 316 | 75% 21% |
| 15 | S | 517 | 20% 79% |
| 16 | T | 249 | 8% 80% 9% 11% |
| 17 | U | 439 | 7% 33% 7% 59% |
| 18 | V | 291 | 9% 45% 14% 41% |
| 19 | c | 929 | 14% 13% 86% |
| 20 | k | 211 | 46% 46% 54% |
| 21 | m | 124 | 70% 69% 30% |
| 22 | o | 1487 | 95% |
| 23 | p | 1174 | 96% |
| 24 | q | 273 | 94% 6% |
| 25 | r | 142 | 13% 89% 10% |
| 26 | s | 210 | 99% |
| 27 | t | 127 | 62% 38% |
| 28 | v | 150 | 99% |

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| Mol | Chain | Length | Quality of chain |
|-----|-------|--------|--|
| 29 | w | 125 |  <p>91% 9%</p> |
| 30 | x | 64 |  <p>100%</p> |
| 31 | y | 117 |  <p>100%</p> |
| 32 | z | 58 |  <p>76% 24%</p> |
| 33 | X | 85 |  <p>19% 98%</p> |
| 34 | Y | 85 |  <p>21% 100%</p> |
| 35 | u | 172 |  <p>8% 98%</p> |

2 Entry composition [i](#)

There are 37 unique types of molecules in this entry. The entry contains 85697 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called Transcription initiation factor TFIID subunit 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 1 | A | 602 | Total | C | N | O | S | 0 | 0 |
| | | | 4927 | 3142 | 858 | 899 | 28 | | |

- Molecule 2 is a protein called Transcription initiation factor TFIID subunit 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 2 | B | 963 | Total | C | N | O | S | 0 | 0 |
| | | | 7796 | 5011 | 1315 | 1412 | 58 | | |

- Molecule 3 is a protein called Transcription initiation factor TFIID subunit 4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 3 | D | 164 | Total | C | N | O | S | 0 | 0 |
| | | | 1366 | 851 | 256 | 255 | 4 | | |
| 3 | d | 158 | Total | C | N | O | S | 0 | 0 |
| | | | 1307 | 814 | 238 | 252 | 3 | | |

- Molecule 4 is a protein called Transcription initiation factor TFIID subunit 5.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 4 | E | 546 | Total | C | N | O | S | 0 | 0 |
| | | | 4364 | 2766 | 757 | 820 | 21 | | |
| 4 | e | 539 | Total | C | N | O | S | 0 | 0 |
| | | | 4327 | 2746 | 748 | 814 | 19 | | |

- Molecule 5 is a protein called Transcription initiation factor TFIID subunit 6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 5 | F | 404 | Total | C | N | O | S | 0 | 0 |
| | | | 3081 | 1954 | 537 | 572 | 18 | | |
| 5 | f | 403 | Total | C | N | O | S | 0 | 0 |
| | | | 3081 | 1954 | 533 | 576 | 18 | | |

- Molecule 6 is a protein called Transcription initiation factor TFIID subunit 7.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 6 | G | 145 | 1180 | 748 | 217 | 211 | 4 | 0 | 0 |

- Molecule 7 is a protein called Transcription initiation factor TFIID subunit 8.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 7 | H | 209 | 1633 | 1034 | 283 | 311 | 5 | 0 | 0 |

- Molecule 8 is a protein called Transcription initiation factor TFIID subunit 9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 8 | I | 120 | 959 | 610 | 166 | 177 | 6 | 0 | 0 |
| 8 | i | 121 | 967 | 615 | 167 | 178 | 7 | 0 | 0 |

- Molecule 9 is a protein called Transcription initiation factor TFIID subunit 10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 9 | J | 89 | 709 | 457 | 114 | 134 | 4 | 0 | 0 |
| 9 | j | 95 | 759 | 488 | 124 | 143 | 4 | 0 | 0 |

- Molecule 10 is a protein called Transcription initiation factor TFIID subunit 12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 10 | L | 76 | 622 | 388 | 109 | 122 | 3 | 0 | 0 |
| 10 | l | 107 | 876 | 547 | 158 | 166 | 5 | 0 | 0 |

- Molecule 11 is a protein called Transcription initiation factor IIA subunit 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 11 | O | 97 | 771 | 491 | 133 | 145 | 2 | 0 | 0 |

- Molecule 12 is a protein called TATA-box-binding protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 12 | P | 177 | 1412 | 918 | 249 | 238 | 7 | 0 | 0 |

- Molecule 13 is a protein called Transcription initiation factor IIA subunit 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 13 | Q | 122 | 996 | 623 | 162 | 207 | 4 | 0 | 0 |

- Molecule 14 is a protein called Transcription initiation factor IIB.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 14 | R | 251 | 1939 | 1214 | 344 | 364 | 17 | 0 | 0 |

- Molecule 15 is a protein called General transcription factor IIF subunit 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 15 | S | 108 | 872 | 558 | 153 | 159 | 2 | 0 | 0 |

- Molecule 16 is a protein called General transcription factor IIF subunit 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 16 | T | 222 | 1788 | 1127 | 320 | 338 | 3 | 0 | 0 |

- Molecule 17 is a protein called General transcription factor IIE subunit 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 17 | U | 179 | 1476 | 932 | 261 | 272 | 11 | 0 | 0 |

- Molecule 18 is a protein called Transcription initiation factor IIE subunit beta.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 18 | V | 172 | 1404 | 893 | 243 | 264 | 4 | 0 | 0 |

- Molecule 19 is a protein called Transcription initiation factor TFIID subunit 3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 19 | c | 127 | 1011 | 638 | 174 | 193 | 6 | 0 | 0 |

- Molecule 20 is a protein called Transcription initiation factor TFIID subunit 11.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 20 | k | 98 | 785 | 499 | 142 | 139 | 5 | 0 | 0 |

- Molecule 21 is a protein called Transcription initiation factor TFIID subunit 13.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 21 | m | 87 | 724 | 456 | 131 | 131 | 6 | 0 | 0 |

- Molecule 22 is a protein called DNA-directed RNA polymerase subunit.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 22 | o | 1427 | 11308 | 7114 | 2023 | 2099 | 72 | 0 | 0 |

- Molecule 23 is a protein called DNA-directed RNA polymerase subunit beta.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|------|------|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 23 | p | 1134 | 9062 | 5732 | 1595 | 1671 | 64 | 0 | 0 |

- Molecule 24 is a protein called DNA-directed RNA polymerase II subunit RPB3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 24 | q | 257 | 2059 | 1294 | 351 | 408 | 6 | 0 | 0 |

- Molecule 25 is a protein called DNA-directed RNA polymerase II subunit RPB4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 25 | r | 128 | 1005 | 632 | 172 | 197 | 4 | 0 | 0 |

- Molecule 26 is a protein called DNA-directed RNA polymerase II subunit E.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|------|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 26 | s | 209 | 1720 | 1089 | 300 | 323 | 8 | 0 | 0 |

- Molecule 27 is a protein called DNA-directed RNA polymerase II subunit F.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 27 | t | 79 | 635 | 406 | 108 | 116 | 5 | 0 | 0 |

- Molecule 28 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 28 | v | 148 | 1186 | 750 | 194 | 237 | 5 | 0 | 0 |

- Molecule 29 is a protein called DNA-directed RNA polymerase II subunit RPB9.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| | | | Total | C | N | O | S | | |
| 29 | w | 114 | 927 | 571 | 166 | 179 | 11 | 0 | 0 |

- Molecule 30 is a protein called RPB10.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 30 | x | 64 | 507 | 328 | 86 | 87 | 6 | 0 | 0 |

- Molecule 31 is a protein called RNA_pol_L_2 domain-containing protein.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 31 | y | 117 | 937 | 604 | 154 | 177 | 2 | 0 | 0 |

- Molecule 32 is a protein called RPB12.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|----|----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 32 | z | 44 | 372 | 231 | 72 | 63 | 6 | 0 | 0 |

- Molecule 33 is a DNA chain called DNA (85-MER).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| | | | Total | C | N | O | P | | |
| 33 | X | 85 | 1751 | 829 | 329 | 508 | 85 | 0 | 0 |

- Molecule 34 is a DNA chain called DNA (85-MER).

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|----|---------|-------|
| | | | Total | C | N | O | P | | |
| 34 | Y | 85 | 1734 | 824 | 313 | 512 | 85 | 0 | 0 |

- Molecule 35 is a protein called DNA-directed RNA polymerase II subunit RPB7.

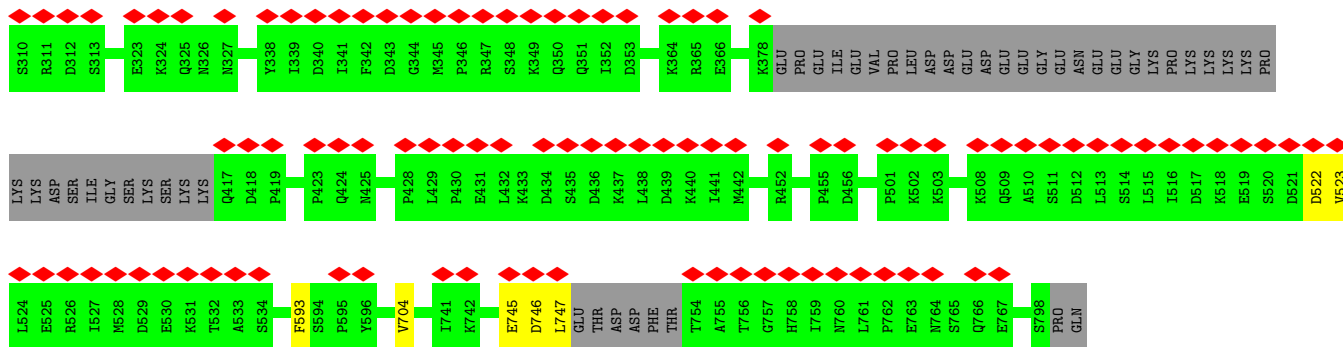
| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|-----|-------|----------|-------|-----|-----|-----|---|---------|-------|
| | | | Total | C | N | O | S | | |
| 35 | u | 171 | 1351 | 875 | 219 | 249 | 8 | 0 | 0 |

- Molecule 36 is ZINC ION (three-letter code: ZN) (formula: Zn).

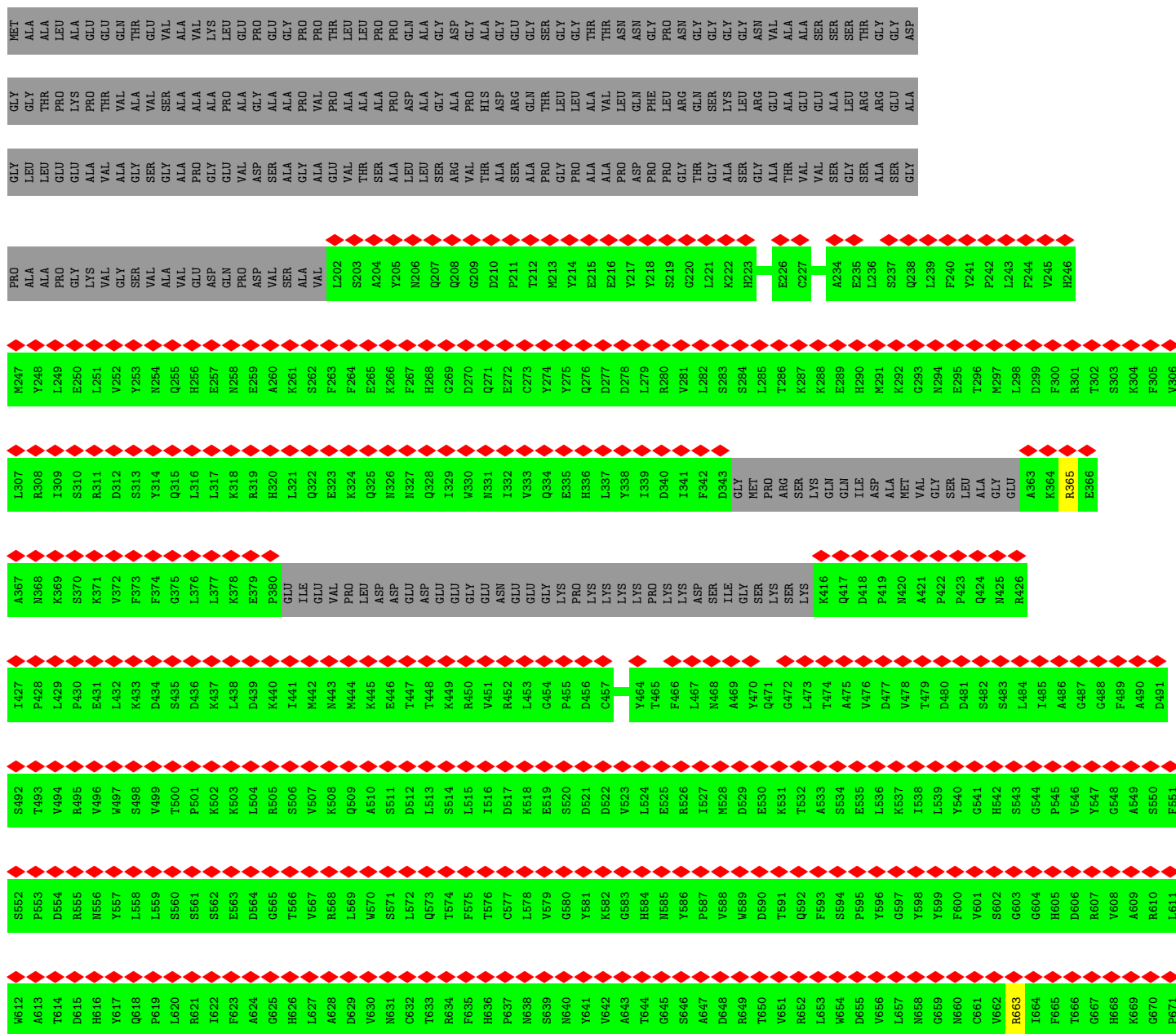
| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|----|---------|
| 36 | R | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 36 | U | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 36 | o | 2 | Total | Zn | 0 |
| | | | 2 | 2 | |
| 36 | p | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 36 | q | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 36 | w | 2 | Total | Zn | 0 |
| | | | 2 | 2 | |
| 36 | x | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |
| 36 | z | 1 | Total | Zn | 0 |
| | | | 1 | 1 | |

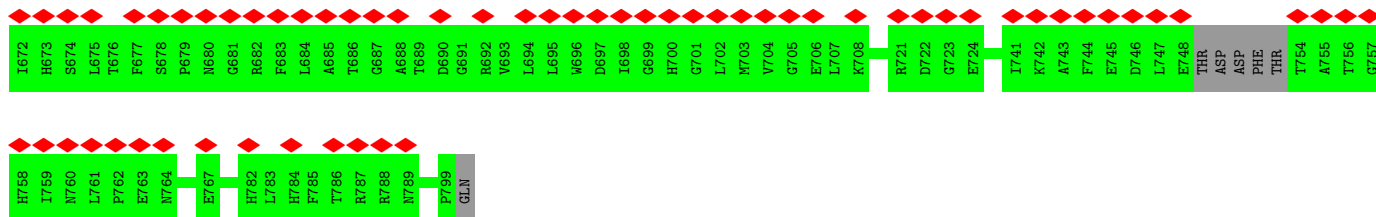
- Molecule 37 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

| Mol | Chain | Residues | Atoms | | AltConf |
|-----|-------|----------|-------|----|---------|
| 37 | o | 1 | Total | Mg | 0 |
| | | | 1 | 1 | |

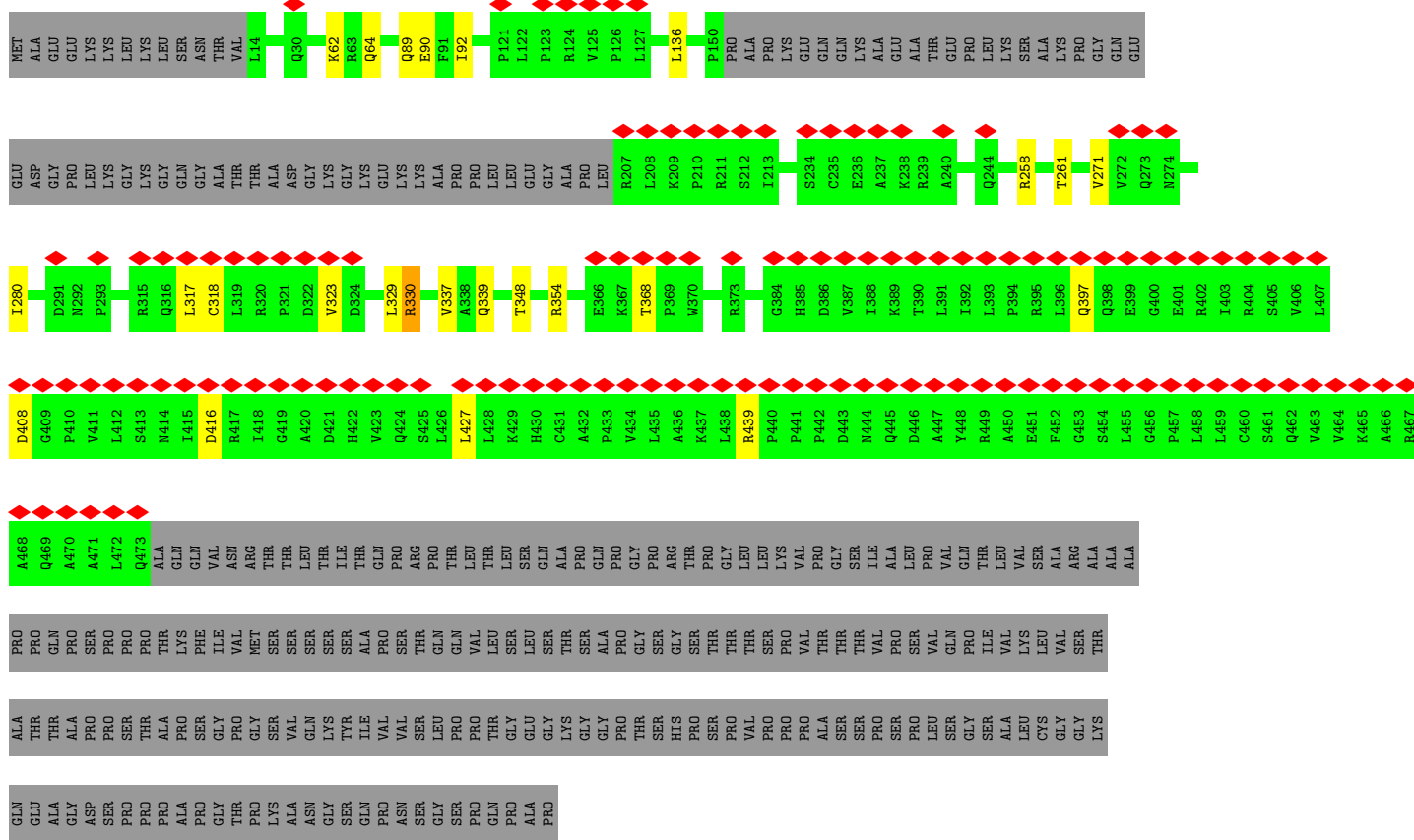


● Molecule 4: Transcription initiation factor TFIID subunit 5

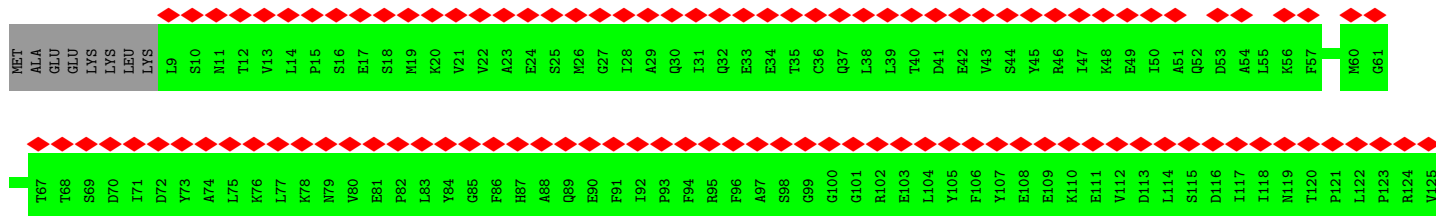


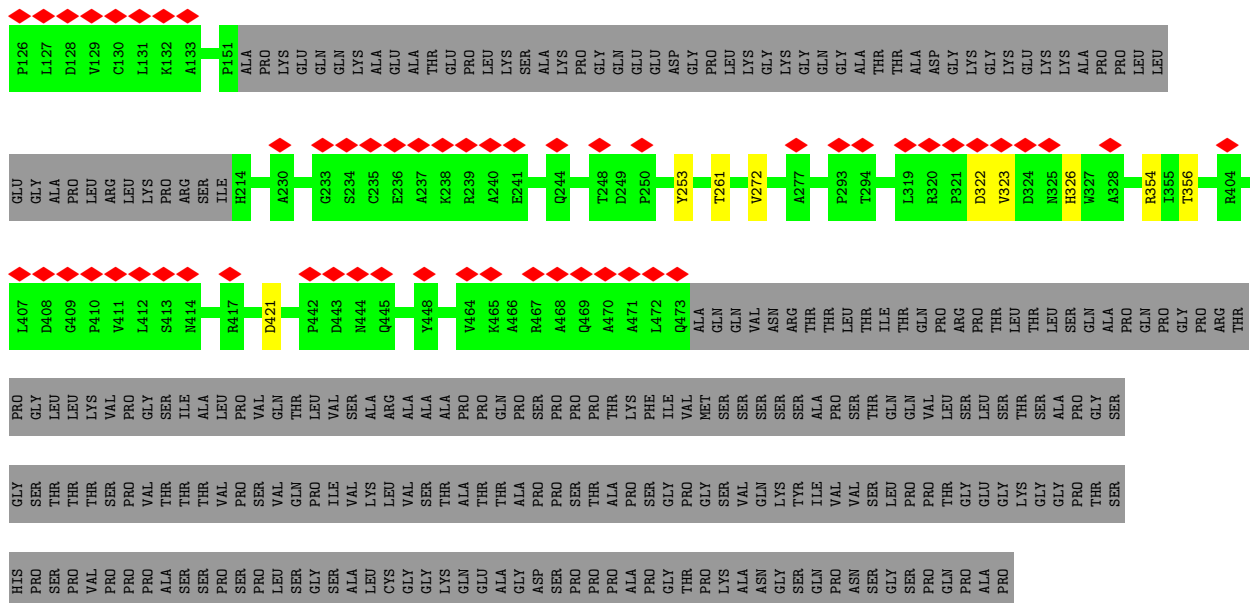


● Molecule 5: Transcription initiation factor TFIID subunit 6

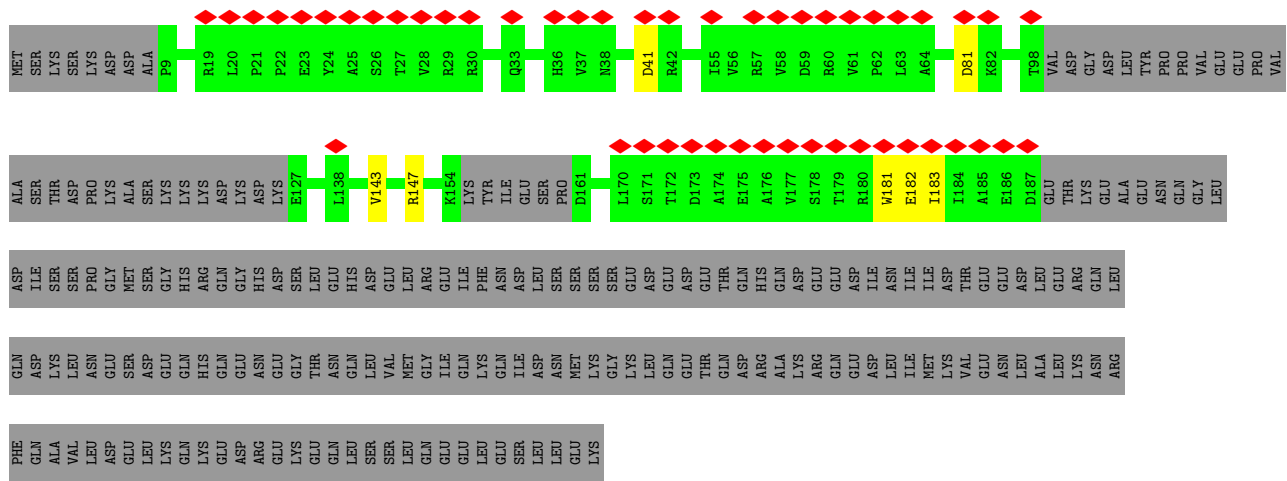


● Molecule 5: Transcription initiation factor TFIID subunit 6

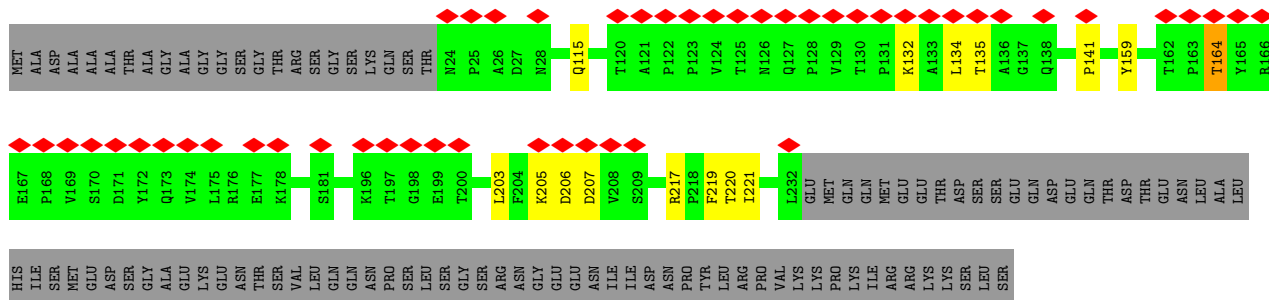


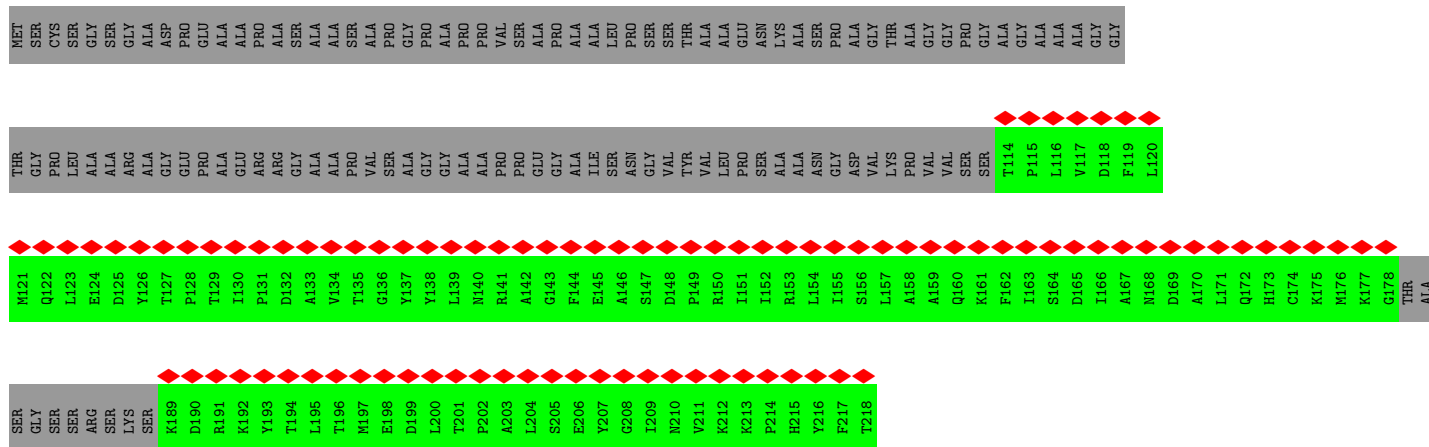


• Molecule 6: Transcription initiation factor TFIID subunit 7

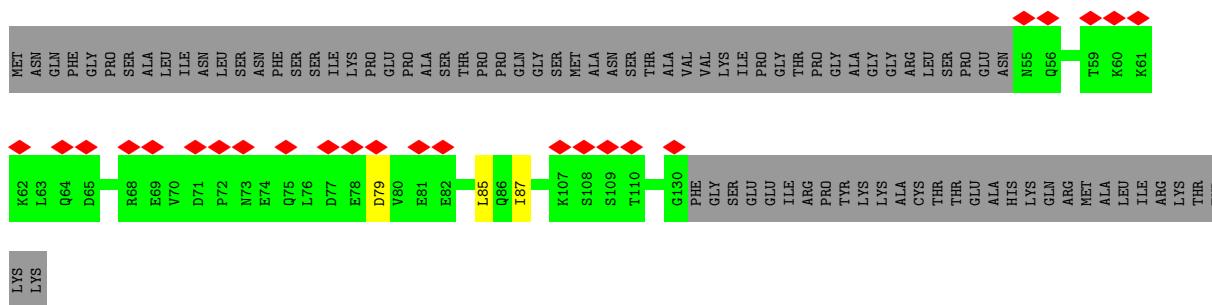
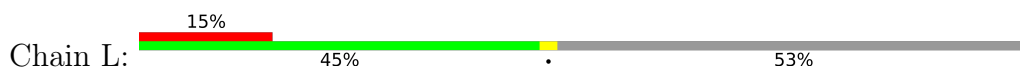


• Molecule 7: Transcription initiation factor TFIID subunit 8

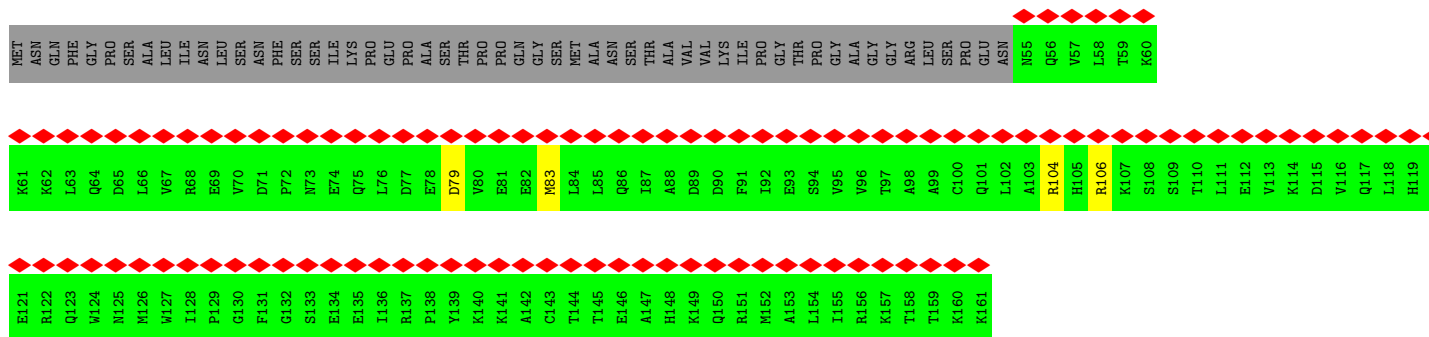




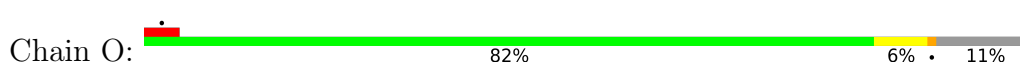
• Molecule 10: Transcription initiation factor TFIID subunit 12



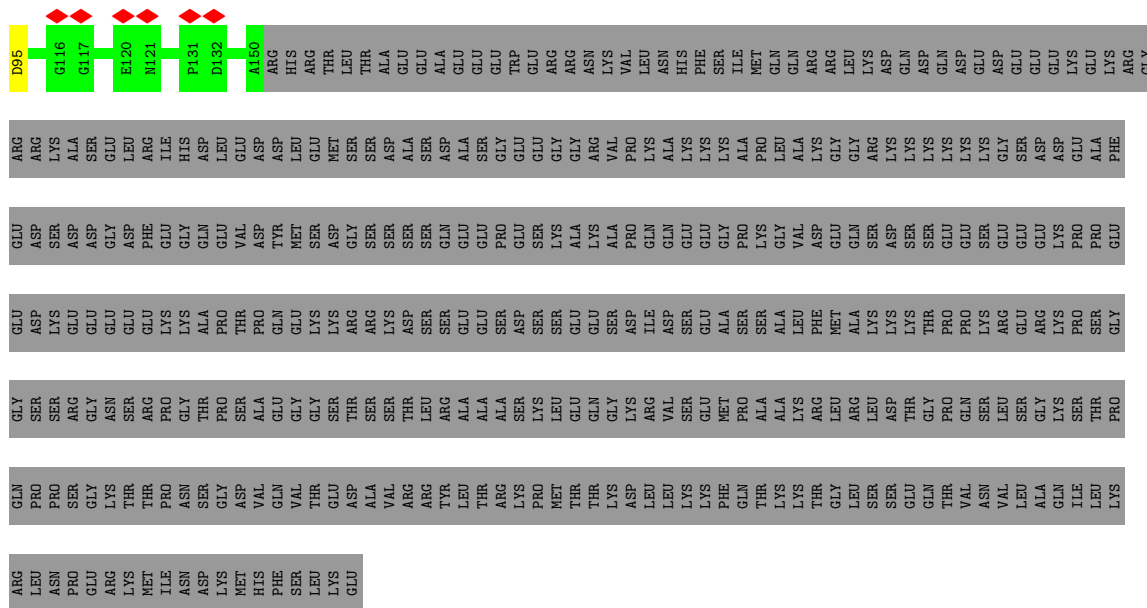
• Molecule 10: Transcription initiation factor TFIID subunit 12



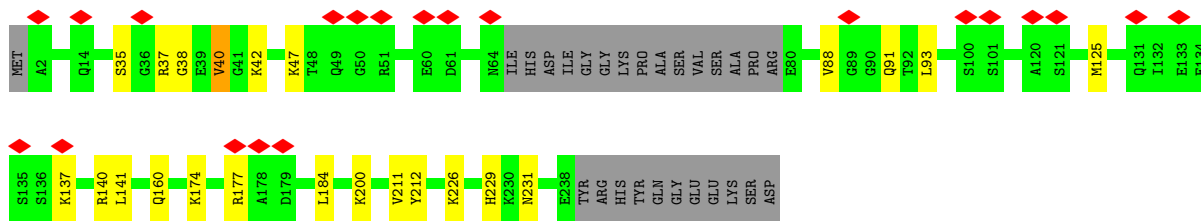
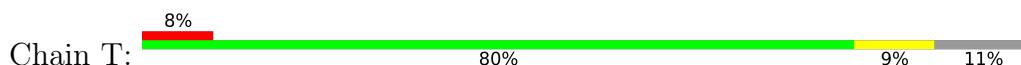
• Molecule 11: Transcription initiation factor IIA subunit 2



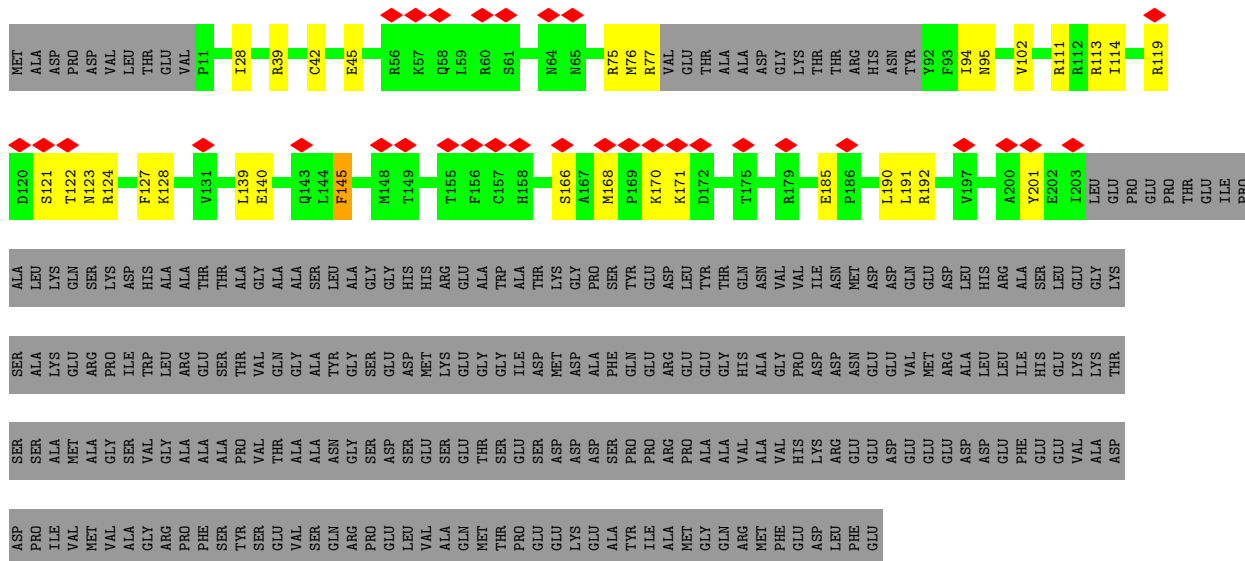
• Molecule 12: TATA-box-binding protein

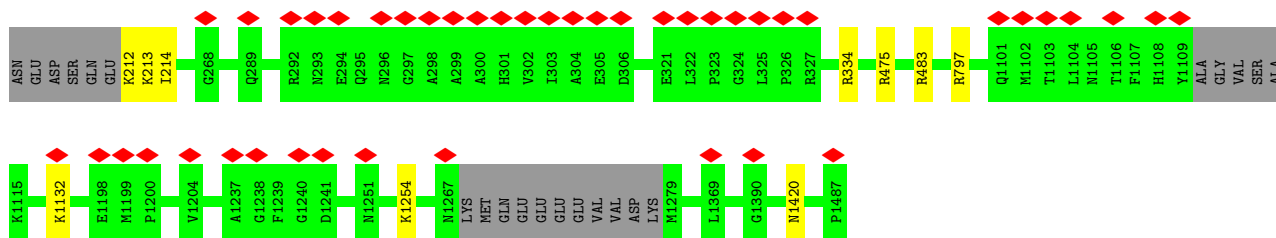


• Molecule 16: General transcription factor IIF subunit 2

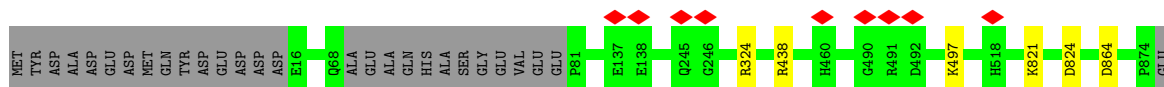


• Molecule 17: General transcription factor IIE subunit 1

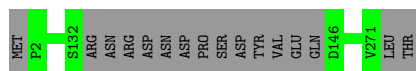




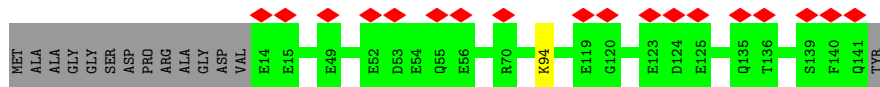
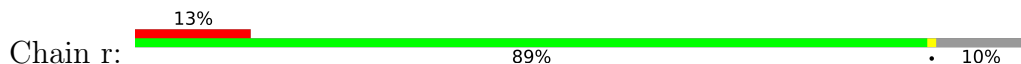
- Molecule 23: DNA-directed RNA polymerase subunit beta



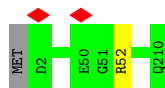
- Molecule 24: DNA-directed RNA polymerase II subunit RPB3



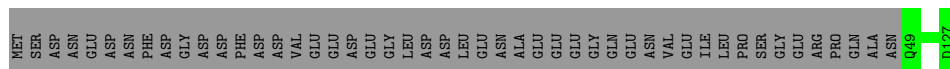
- Molecule 25: DNA-directed RNA polymerase II subunit RPB4



- Molecule 26: DNA-directed RNA polymerase II subunit E



- Molecule 27: DNA-directed RNA polymerase II subunit F



- Molecule 28: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain v:  99%



- Molecule 29: DNA-directed RNA polymerase II subunit RPB9

Chain w:  91% 9%



- Molecule 30: RPB10

Chain x:  100%

There are no outlier residues recorded for this chain.

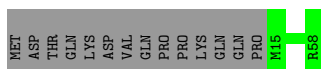
- Molecule 31: RNA_pol_L_2 domain-containing protein

Chain y:  100%



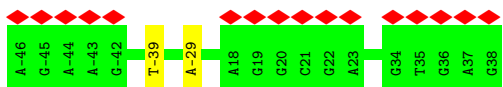
- Molecule 32: RPB12

Chain z:  76% 24%



- Molecule 33: DNA (85-MER)

Chain X:  19% 98%

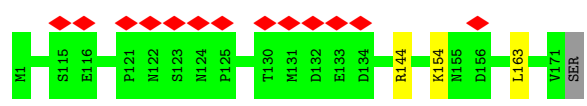


- Molecule 34: DNA (85-MER)

Chain Y:  21% 100%



- Molecule 35: DNA-directed RNA polymerase II subunit RPB7



4 Experimental information

| Property | Value | Source |
|--------------------------------------|---------------------------|-----------|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 21692 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | NONE | Depositor |
| Microscope | FEI TITAN KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/\text{\AA}^2$) | 50.0 | Depositor |
| Minimum defocus (nm) | Not provided | |
| Maximum defocus (nm) | Not provided | |
| Magnification | Not provided | |
| Image detector | GATAN K2 SUMMIT (4k x 4k) | Depositor |
| Maximum map value | 0.114 | Depositor |
| Minimum map value | -0.069 | Depositor |
| Average map value | -0.000 | Depositor |
| Map value standard deviation | 0.002 | Depositor |
| Recommended contour level | 0.0085 | Depositor |
| Map size (\AA) | 508.8, 508.8, 508.8 | wwPDB |
| Map dimensions | 480, 480, 480 | wwPDB |
| Map angles ($^\circ$) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (\AA) | 1.06, 1.06, 1.06 | 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, 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 | A | 0.52 | 0/5046 | 0.64 | 0/6810 |
| 2 | B | 0.47 | 0/7993 | 0.61 | 0/10836 |
| 3 | D | 0.47 | 0/1379 | 0.61 | 1/1843 (0.1%) |
| 3 | d | 0.28 | 0/1321 | 0.49 | 0/1772 |
| 4 | E | 0.35 | 0/4469 | 0.55 | 0/6050 |
| 4 | e | 0.33 | 0/4433 | 0.55 | 0/6004 |
| 5 | F | 0.51 | 0/3139 | 0.71 | 2/4264 (0.0%) |
| 5 | f | 0.40 | 0/3140 | 0.63 | 0/4268 |
| 6 | G | 0.51 | 0/1199 | 0.63 | 0/1612 |
| 7 | H | 0.41 | 0/1673 | 0.59 | 0/2285 |
| 8 | I | 0.32 | 0/981 | 0.50 | 0/1332 |
| 8 | i | 0.31 | 0/989 | 0.46 | 0/1343 |
| 9 | J | 0.31 | 0/724 | 0.53 | 1/982 (0.1%) |
| 9 | j | 0.30 | 0/775 | 0.52 | 0/1049 |
| 10 | L | 0.32 | 0/630 | 0.57 | 1/852 (0.1%) |
| 10 | l | 0.37 | 0/888 | 0.56 | 1/1194 (0.1%) |
| 11 | O | 0.52 | 0/781 | 0.76 | 0/1061 |
| 12 | P | 0.62 | 0/1438 | 0.72 | 0/1935 |
| 13 | Q | 0.46 | 0/1013 | 0.61 | 0/1366 |
| 14 | R | 0.34 | 0/1967 | 0.55 | 0/2656 |
| 15 | S | 0.36 | 0/896 | 0.55 | 0/1213 |
| 16 | T | 0.54 | 0/1817 | 0.66 | 0/2445 |
| 17 | U | 0.50 | 1/1499 (0.1%) | 0.77 | 4/2012 (0.2%) |
| 18 | V | 0.49 | 0/1428 | 0.68 | 0/1917 |
| 19 | c | 0.40 | 0/1035 | 0.54 | 0/1406 |
| 20 | k | 0.30 | 0/799 | 0.48 | 0/1070 |
| 21 | m | 0.31 | 0/733 | 0.51 | 0/977 |
| 22 | o | 0.34 | 0/11516 | 0.50 | 0/15548 |
| 23 | p | 0.38 | 0/9243 | 0.47 | 0/12475 |
| 24 | q | 0.39 | 0/2102 | 0.46 | 0/2857 |
| 25 | r | 0.27 | 0/1019 | 0.47 | 0/1374 |
| 26 | s | 0.30 | 0/1751 | 0.45 | 0/2366 |

| Mol | Chain | Bond lengths | | Bond angles | |
|-----|-------|--------------|----------------|-------------|------------------|
| | | RMSZ | # Z >5 | RMSZ | # Z >5 |
| 27 | t | 0.37 | 0/645 | 0.47 | 0/871 |
| 28 | v | 0.37 | 0/1207 | 0.49 | 0/1628 |
| 29 | w | 0.30 | 0/948 | 0.46 | 0/1284 |
| 30 | x | 0.43 | 0/516 | 0.45 | 0/696 |
| 31 | y | 0.35 | 0/956 | 0.44 | 0/1294 |
| 32 | z | 0.38 | 0/377 | 0.45 | 0/500 |
| 33 | X | 0.78 | 2/1966 (0.1%) | 1.00 | 1/3034 (0.0%) |
| 34 | Y | 0.64 | 0/1942 | 0.90 | 0/2993 |
| 35 | u | 0.33 | 0/1382 | 0.53 | 0/1874 |
| All | All | 0.42 | 3/87755 (0.0%) | 0.59 | 11/119348 (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 |
|-----|-------|---------------------|---------------------|
| 15 | S | 0 | 1 |

All (3) bond length outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(Å) | Ideal(Å) |
|-----|-------|-----|------|--------|------|-------------|----------|
| 17 | U | 123 | ASN | C-N | 5.62 | 1.47 | 1.34 |
| 33 | X | -29 | DA | O3'-P | 5.45 | 1.67 | 1.61 |
| 33 | X | -39 | DT | C1'-N1 | 5.02 | 1.55 | 1.49 |

The worst 5 of 11 bond angle outliers are listed below:

| Mol | Chain | Res | Type | Atoms | Z | Observed(°) | Ideal(°) |
|-----|-------|-----|------|-----------|-------|-------------|----------|
| 17 | U | 127 | PHE | CB-CA-C | 8.11 | 126.62 | 110.40 |
| 3 | D | 881 | ARG | CB-CA-C | -6.21 | 97.99 | 110.40 |
| 17 | U | 123 | ASN | O-C-N | 5.99 | 132.29 | 122.70 |
| 17 | U | 140 | GLU | CB-CA-C | -5.37 | 99.66 | 110.40 |
| 10 | L | 79 | ASP | CB-CG-OD2 | 5.29 | 123.06 | 118.30 |

There are no chirality outliers.

All (1) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|-----|-------|-----|------|-----------|
| 15 | S | 6 | PRO | Mainchain |

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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 | |
|-----|-------|----------------|-----------|----------|----------|-------------|-----|
| 1 | A | 584/1872 (31%) | 552 (94%) | 30 (5%) | 2 (0%) | 41 | 75 |
| 2 | B | 959/1199 (80%) | 914 (95%) | 45 (5%) | 0 | 100 | 100 |
| 3 | D | 158/1085 (15%) | 142 (90%) | 15 (10%) | 1 (1%) | 25 | 63 |
| 3 | d | 154/1085 (14%) | 150 (97%) | 4 (3%) | 0 | 100 | 100 |
| 4 | E | 540/800 (68%) | 507 (94%) | 30 (6%) | 3 (1%) | 25 | 63 |
| 4 | e | 531/800 (66%) | 484 (91%) | 47 (9%) | 0 | 100 | 100 |
| 5 | F | 400/677 (59%) | 375 (94%) | 21 (5%) | 4 (1%) | 15 | 52 |
| 5 | f | 399/677 (59%) | 380 (95%) | 19 (5%) | 0 | 100 | 100 |
| 6 | G | 139/349 (40%) | 137 (99%) | 2 (1%) | 0 | 100 | 100 |
| 7 | H | 207/310 (67%) | 186 (90%) | 18 (9%) | 3 (1%) | 11 | 45 |
| 8 | I | 118/264 (45%) | 115 (98%) | 3 (2%) | 0 | 100 | 100 |
| 8 | i | 119/264 (45%) | 115 (97%) | 4 (3%) | 0 | 100 | 100 |
| 9 | J | 85/218 (39%) | 82 (96%) | 3 (4%) | 0 | 100 | 100 |
| 9 | j | 91/218 (42%) | 89 (98%) | 2 (2%) | 0 | 100 | 100 |
| 10 | L | 74/161 (46%) | 67 (90%) | 7 (10%) | 0 | 100 | 100 |
| 10 | l | 105/161 (65%) | 100 (95%) | 5 (5%) | 0 | 100 | 100 |
| 11 | O | 95/109 (87%) | 83 (87%) | 9 (10%) | 3 (3%) | 4 | 30 |
| 12 | P | 175/339 (52%) | 166 (95%) | 7 (4%) | 2 (1%) | 14 | 50 |
| 13 | Q | 118/376 (31%) | 107 (91%) | 10 (8%) | 1 (1%) | 19 | 58 |
| 14 | R | 247/316 (78%) | 237 (96%) | 9 (4%) | 1 (0%) | 34 | 71 |
| 15 | S | 104/517 (20%) | 99 (95%) | 3 (3%) | 2 (2%) | 8 | 39 |

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| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|-----|-------|-------------------|------------|----------|----------|-------------|-----|
| 16 | T | 218/249 (88%) | 197 (90%) | 15 (7%) | 6 (3%) | 5 | 32 |
| 17 | U | 175/439 (40%) | 154 (88%) | 18 (10%) | 3 (2%) | 9 | 42 |
| 18 | V | 170/291 (58%) | 131 (77%) | 29 (17%) | 10 (6%) | 1 | 19 |
| 19 | c | 125/929 (14%) | 116 (93%) | 9 (7%) | 0 | 100 | 100 |
| 20 | k | 96/211 (46%) | 91 (95%) | 5 (5%) | 0 | 100 | 100 |
| 21 | m | 85/124 (68%) | 79 (93%) | 6 (7%) | 0 | 100 | 100 |
| 22 | o | 1417/1487 (95%) | 1304 (92%) | 113 (8%) | 0 | 100 | 100 |
| 23 | p | 1128/1174 (96%) | 1050 (93%) | 77 (7%) | 1 (0%) | 51 | 84 |
| 24 | q | 253/273 (93%) | 226 (89%) | 27 (11%) | 0 | 100 | 100 |
| 25 | r | 126/142 (89%) | 119 (94%) | 7 (6%) | 0 | 100 | 100 |
| 26 | s | 207/210 (99%) | 196 (95%) | 11 (5%) | 0 | 100 | 100 |
| 27 | t | 77/127 (61%) | 74 (96%) | 3 (4%) | 0 | 100 | 100 |
| 28 | v | 146/150 (97%) | 133 (91%) | 13 (9%) | 0 | 100 | 100 |
| 29 | w | 112/125 (90%) | 103 (92%) | 9 (8%) | 0 | 100 | 100 |
| 30 | x | 62/64 (97%) | 60 (97%) | 2 (3%) | 0 | 100 | 100 |
| 31 | y | 115/117 (98%) | 109 (95%) | 6 (5%) | 0 | 100 | 100 |
| 32 | z | 42/58 (72%) | 38 (90%) | 4 (10%) | 0 | 100 | 100 |
| 35 | u | 169/172 (98%) | 156 (92%) | 12 (7%) | 1 (1%) | 25 | 63 |
| All | All | 10125/18139 (56%) | 9423 (93%) | 659 (6%) | 43 (0%) | 38 | 71 |

5 of 43 Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 1 | A | 1158 | SER |
| 5 | F | 323 | VAL |
| 7 | H | 141 | PRO |
| 11 | O | 52 | VAL |
| 15 | S | 9 | GLN |

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 | |
|-----|-------|-----------------|------------|----------|-------------|-----|
| 1 | A | 536/1665 (32%) | 487 (91%) | 49 (9%) | 9 | 33 |
| 2 | B | 876/1083 (81%) | 854 (98%) | 22 (2%) | 47 | 68 |
| 3 | D | 147/815 (18%) | 116 (79%) | 31 (21%) | 1 | 6 |
| 3 | d | 146/815 (18%) | 146 (100%) | 0 | 100 | 100 |
| 4 | E | 478/657 (73%) | 474 (99%) | 4 (1%) | 81 | 88 |
| 4 | e | 475/657 (72%) | 473 (100%) | 2 (0%) | 91 | 94 |
| 5 | F | 320/574 (56%) | 299 (93%) | 21 (7%) | 16 | 44 |
| 5 | f | 322/574 (56%) | 313 (97%) | 9 (3%) | 43 | 65 |
| 6 | G | 133/322 (41%) | 126 (95%) | 7 (5%) | 22 | 51 |
| 7 | H | 181/270 (67%) | 168 (93%) | 13 (7%) | 14 | 42 |
| 8 | I | 106/235 (45%) | 101 (95%) | 5 (5%) | 26 | 53 |
| 8 | i | 107/235 (46%) | 106 (99%) | 1 (1%) | 78 | 87 |
| 9 | J | 78/154 (51%) | 78 (100%) | 0 | 100 | 100 |
| 9 | j | 83/154 (54%) | 83 (100%) | 0 | 100 | 100 |
| 10 | L | 71/141 (50%) | 69 (97%) | 2 (3%) | 43 | 65 |
| 10 | l | 98/141 (70%) | 95 (97%) | 3 (3%) | 40 | 63 |
| 11 | O | 84/98 (86%) | 78 (93%) | 6 (7%) | 14 | 42 |
| 12 | P | 153/293 (52%) | 134 (88%) | 19 (12%) | 4 | 22 |
| 13 | Q | 111/324 (34%) | 105 (95%) | 6 (5%) | 22 | 50 |
| 14 | R | 214/268 (80%) | 201 (94%) | 13 (6%) | 18 | 47 |
| 15 | S | 93/448 (21%) | 91 (98%) | 2 (2%) | 52 | 71 |
| 16 | T | 196/218 (90%) | 178 (91%) | 18 (9%) | 9 | 32 |
| 17 | U | 163/373 (44%) | 137 (84%) | 26 (16%) | 2 | 15 |
| 18 | V | 155/261 (59%) | 121 (78%) | 34 (22%) | 1 | 6 |
| 19 | c | 113/833 (14%) | 111 (98%) | 2 (2%) | 59 | 77 |
| 20 | k | 87/182 (48%) | 87 (100%) | 0 | 100 | 100 |
| 21 | m | 80/106 (76%) | 79 (99%) | 1 (1%) | 69 | 81 |
| 22 | o | 1257/1306 (96%) | 1243 (99%) | 14 (1%) | 73 | 84 |
| 23 | p | 993/1027 (97%) | 984 (99%) | 9 (1%) | 78 | 87 |
| 24 | q | 234/250 (94%) | 234 (100%) | 0 | 100 | 100 |
| 25 | r | 106/126 (84%) | 105 (99%) | 1 (1%) | 78 | 87 |

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| Mol | Chain | Analysed | Rotameric | Outliers | Percentiles | |
|-----|-------|------------------|------------|----------|-------------|-----|
| 26 | s | 191/192 (100%) | 190 (100%) | 1 (0%) | 88 | 93 |
| 27 | t | 69/111 (62%) | 69 (100%) | 0 | 100 | 100 |
| 28 | v | 129/131 (98%) | 129 (100%) | 0 | 100 | 100 |
| 29 | w | 103/112 (92%) | 103 (100%) | 0 | 100 | 100 |
| 30 | x | 53/53 (100%) | 53 (100%) | 0 | 100 | 100 |
| 31 | y | 106/106 (100%) | 106 (100%) | 0 | 100 | 100 |
| 32 | z | 41/55 (74%) | 41 (100%) | 0 | 100 | 100 |
| 35 | u | 152/153 (99%) | 150 (99%) | 2 (1%) | 69 | 81 |
| All | All | 9040/15518 (58%) | 8717 (96%) | 323 (4%) | 38 | 60 |

5 of 323 residues with a non-rotameric sidechain are listed below:

| Mol | Chain | Res | Type |
|-----|-------|-----|------|
| 17 | U | 119 | ARG |
| 5 | f | 323 | VAL |
| 17 | U | 171 | LYS |
| 18 | V | 160 | GLN |
| 22 | o | 212 | LYS |

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 122 such sidechains are listed below:

| Mol | Chain | Res | Type |
|-----|-------|------|------|
| 13 | Q | 352 | HIS |
| 23 | p | 570 | ASN |
| 3 | d | 1069 | ASN |
| 23 | p | 525 | ASN |
| 28 | v | 131 | ASN |

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 11 ligands modelled in this entry, 11 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

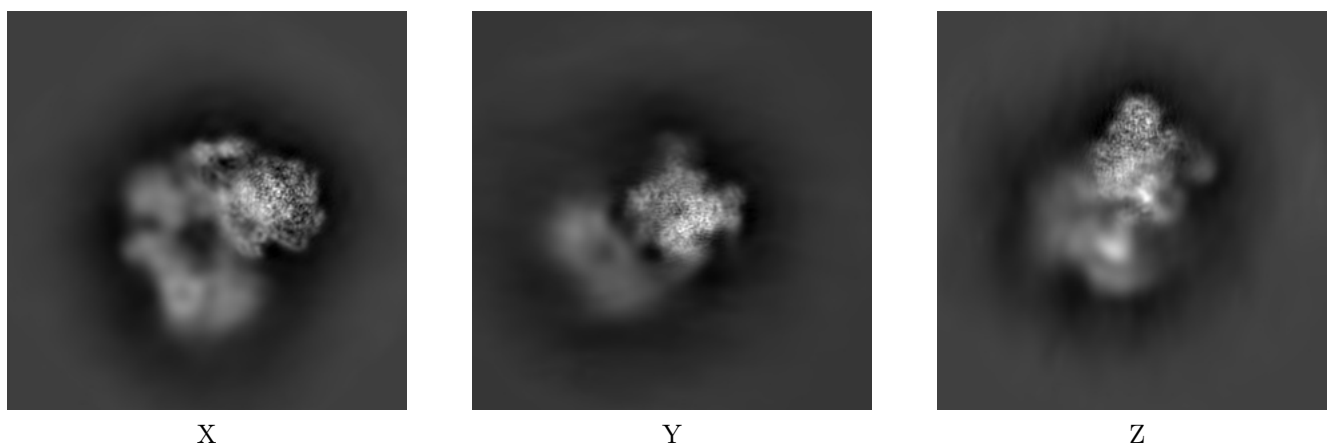
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-31110. 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 [i](#)

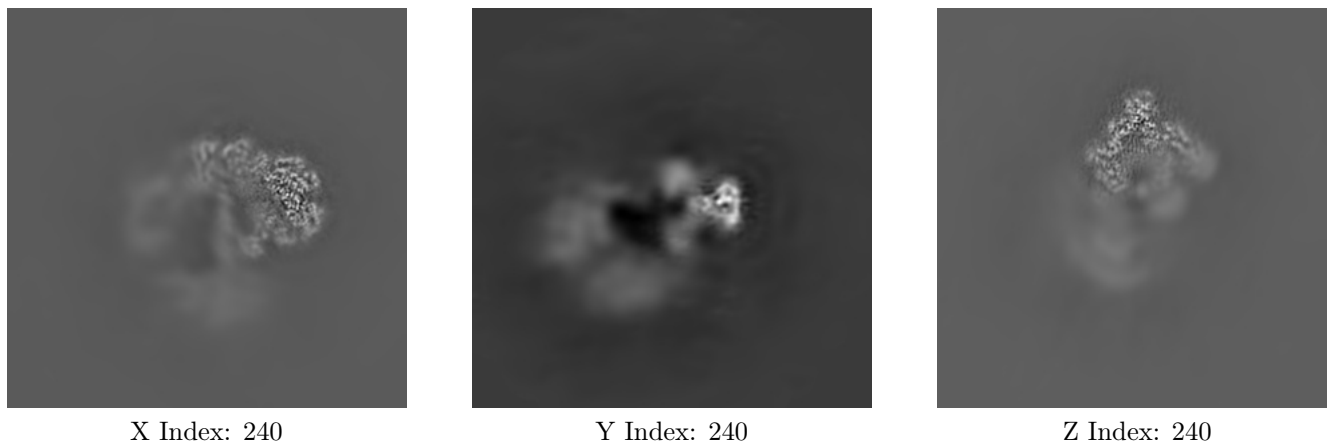
6.1.1 Primary map



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

6.2 Central slices [i](#)

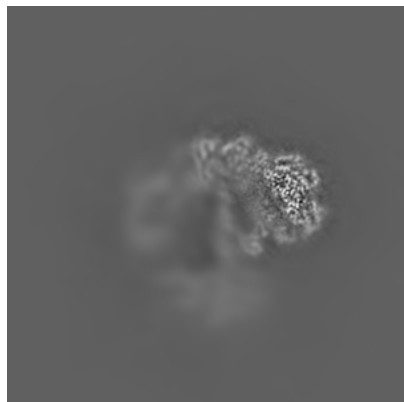
6.2.1 Primary map



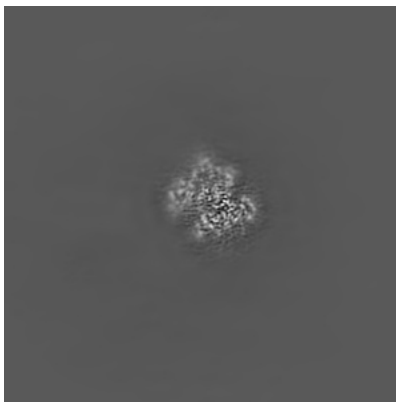
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

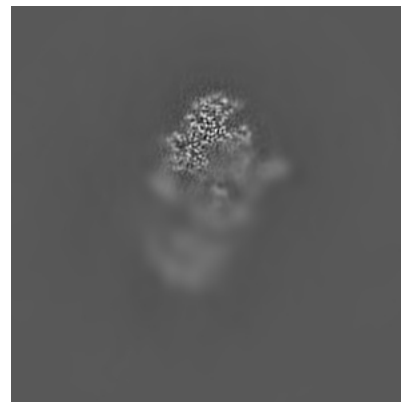
6.3.1 Primary map



X Index: 239



Y Index: 330

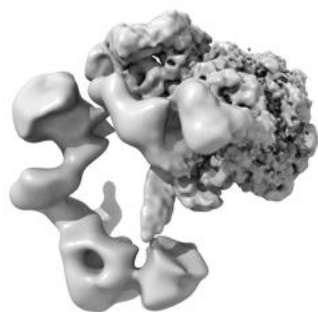


Z Index: 264

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

6.4 Orthogonal surface views [i](#)

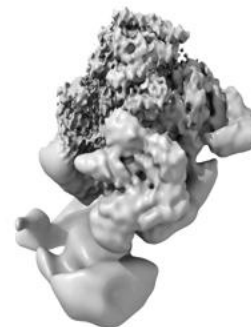
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0085. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

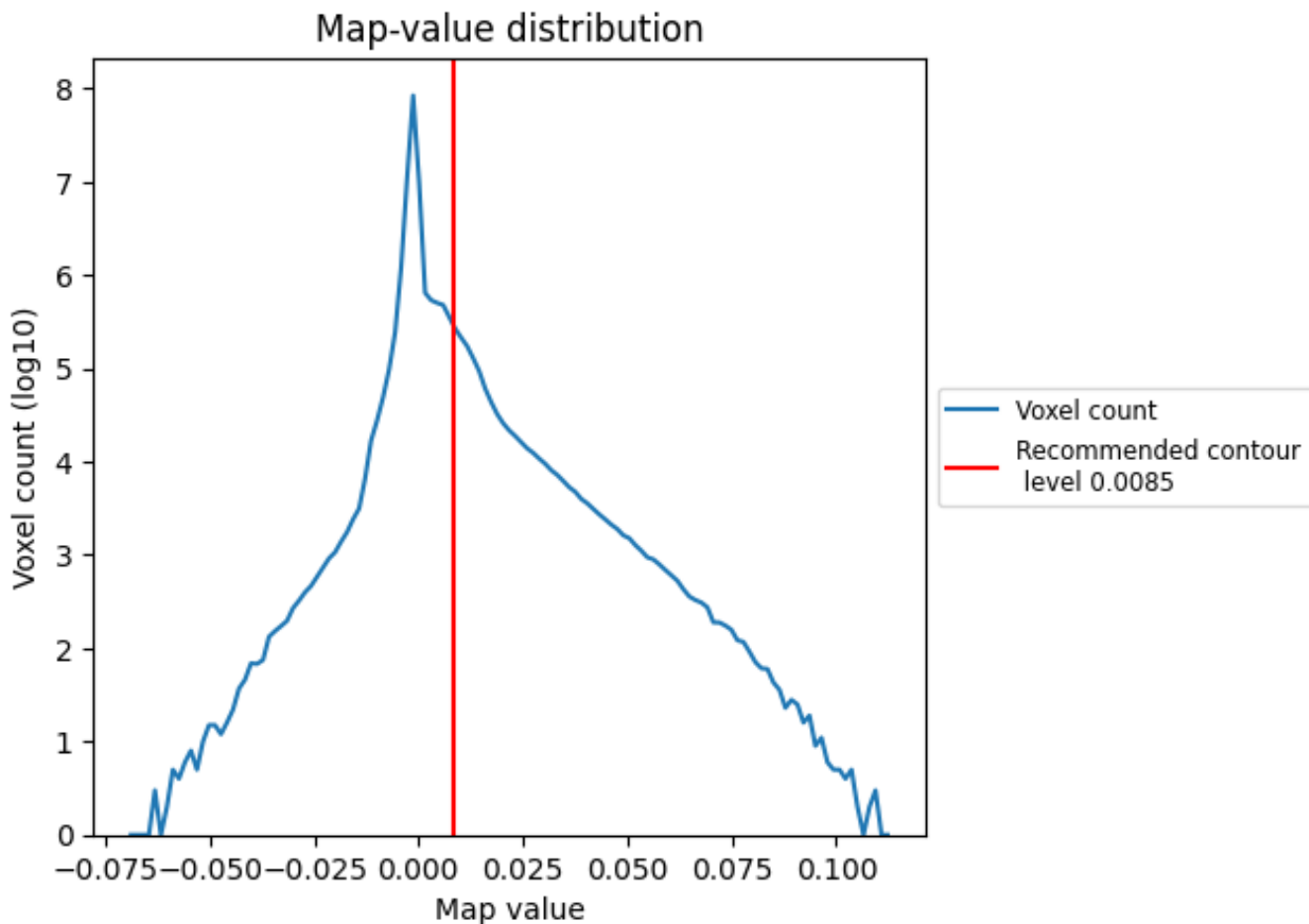
6.5 Mask visualisation

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

7 Map analysis [i](#)

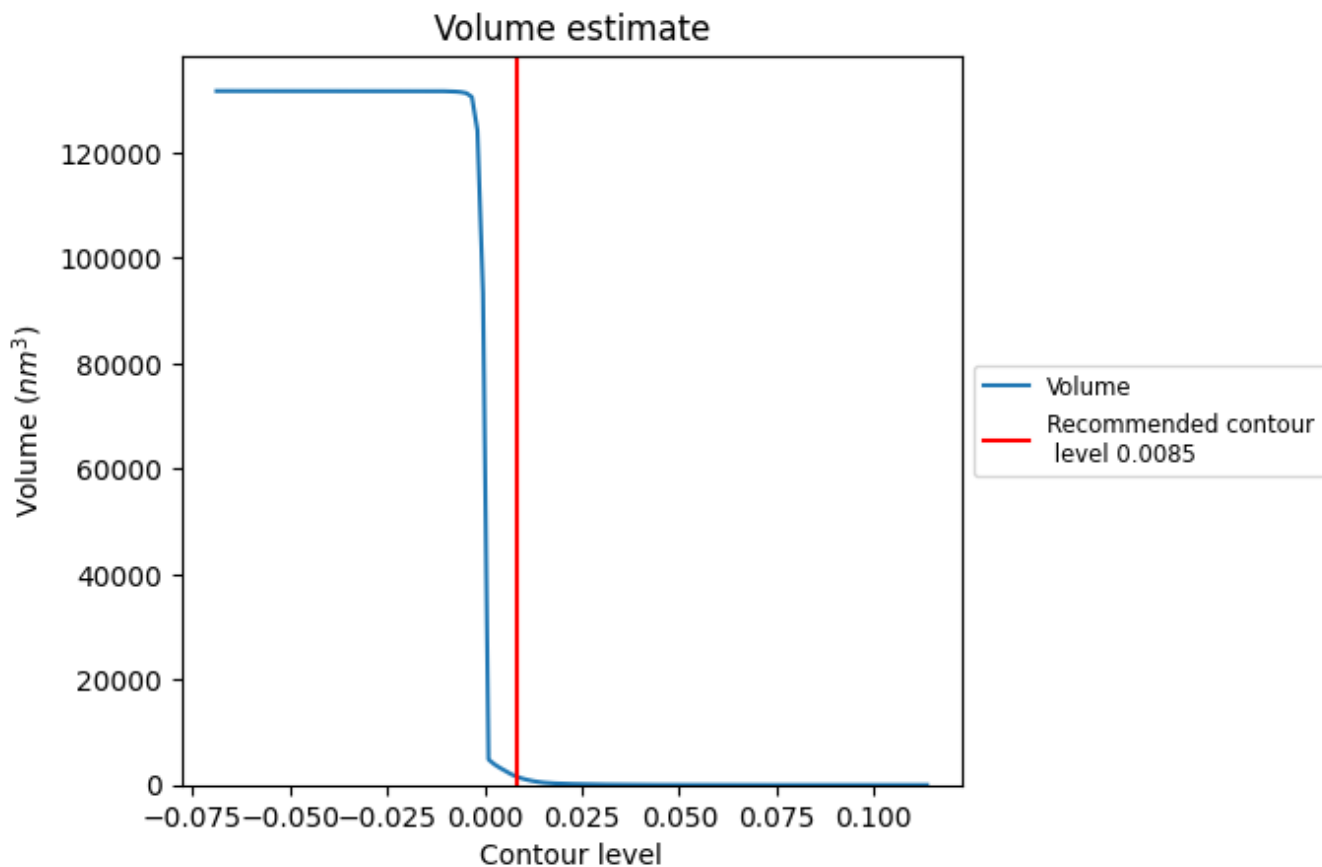
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

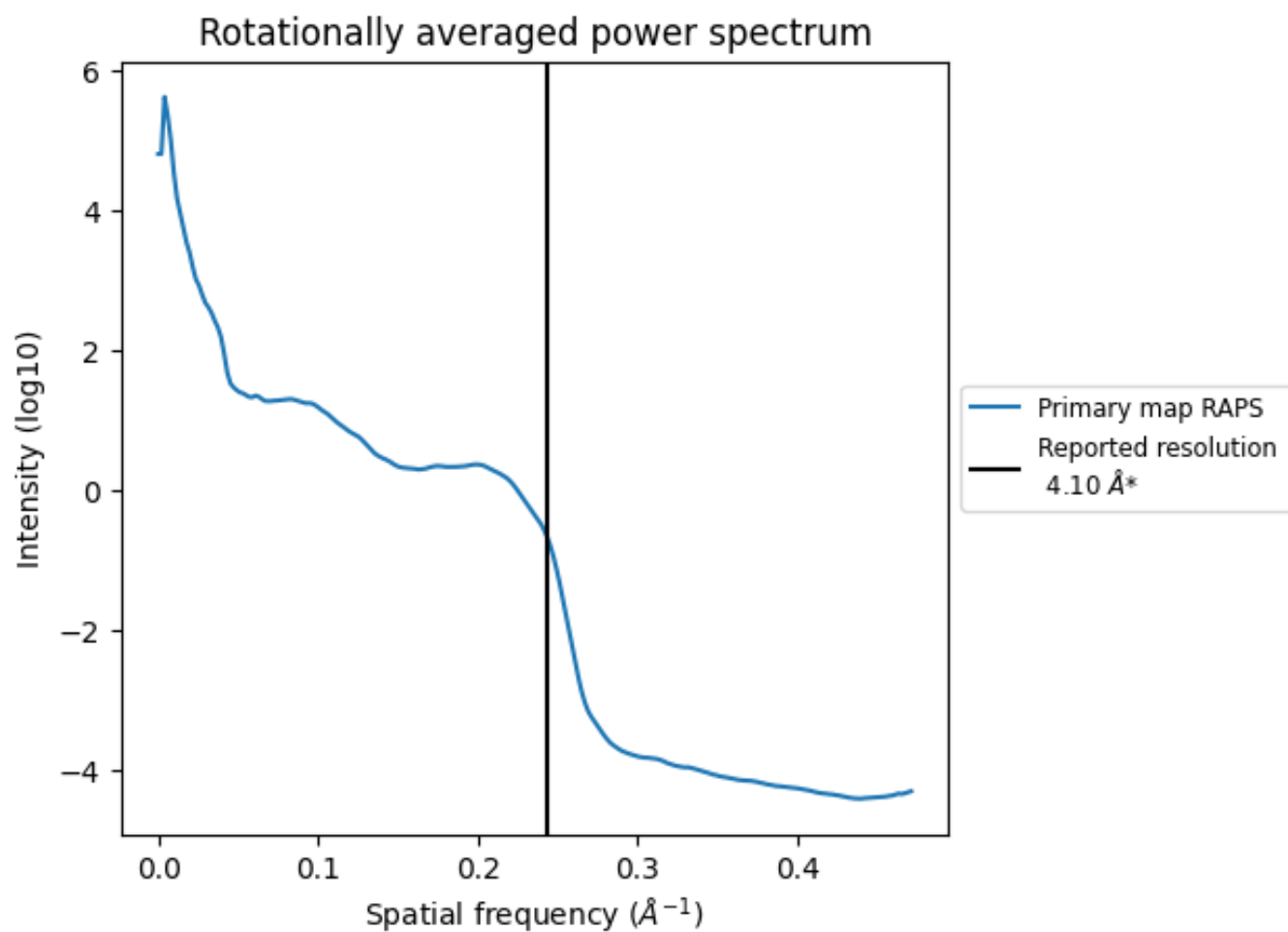
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 1522 nm^3 ; this corresponds to an approximate mass of 1374 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 0.244\AA^{-1}

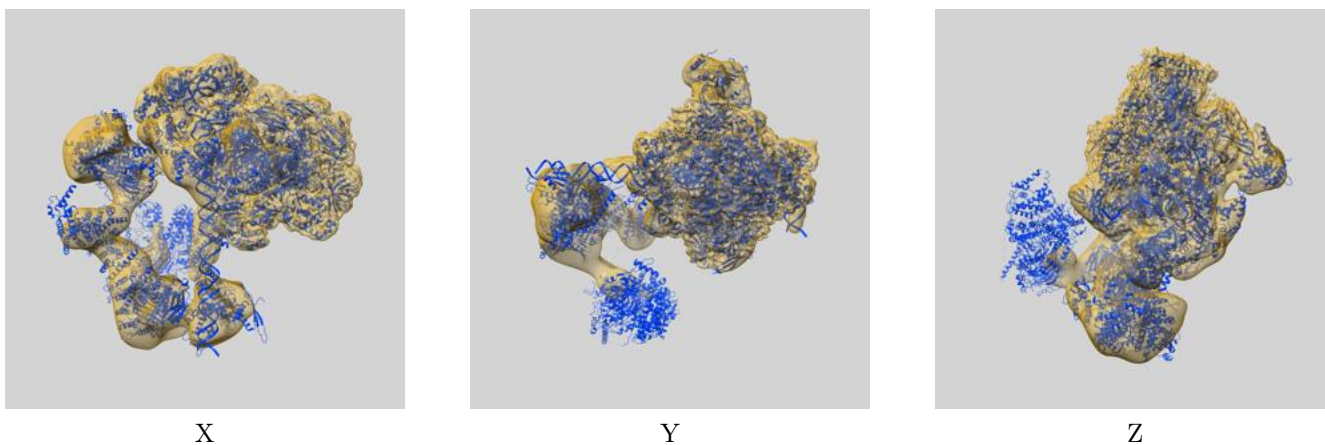
8 Fourier-Shell correlation

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit [i](#)

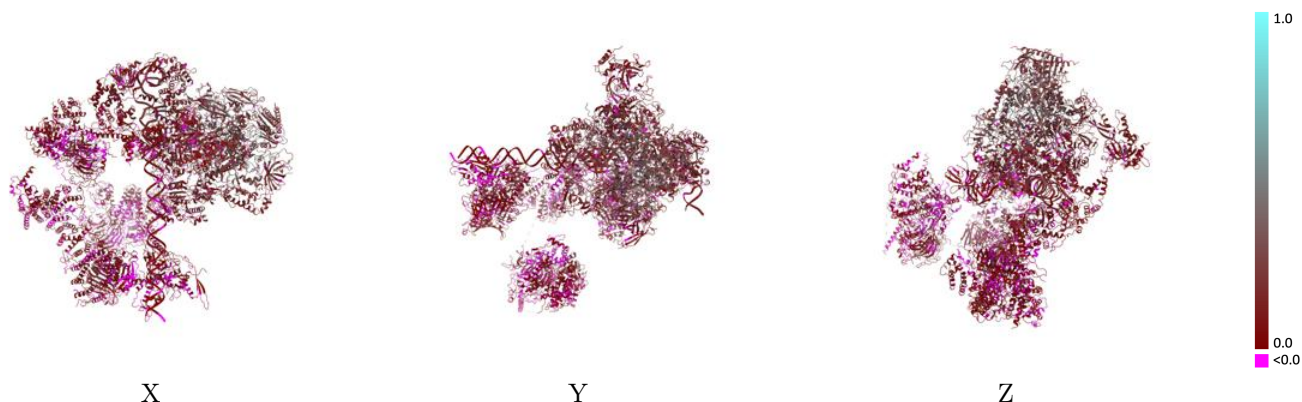
This section contains information regarding the fit between EMDB map EMD-31110 and PDB model 7EGA. Per-residue inclusion information can be found in section 3 on page 11.

9.1 Map-model overlay [i](#)



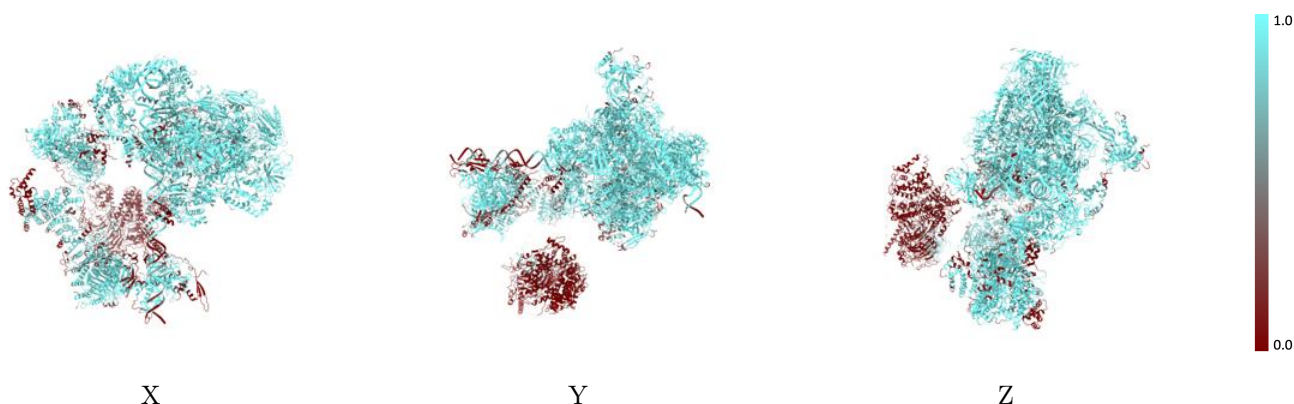
The images above show the 3D surface view of the map at the recommended contour level 0.0085 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



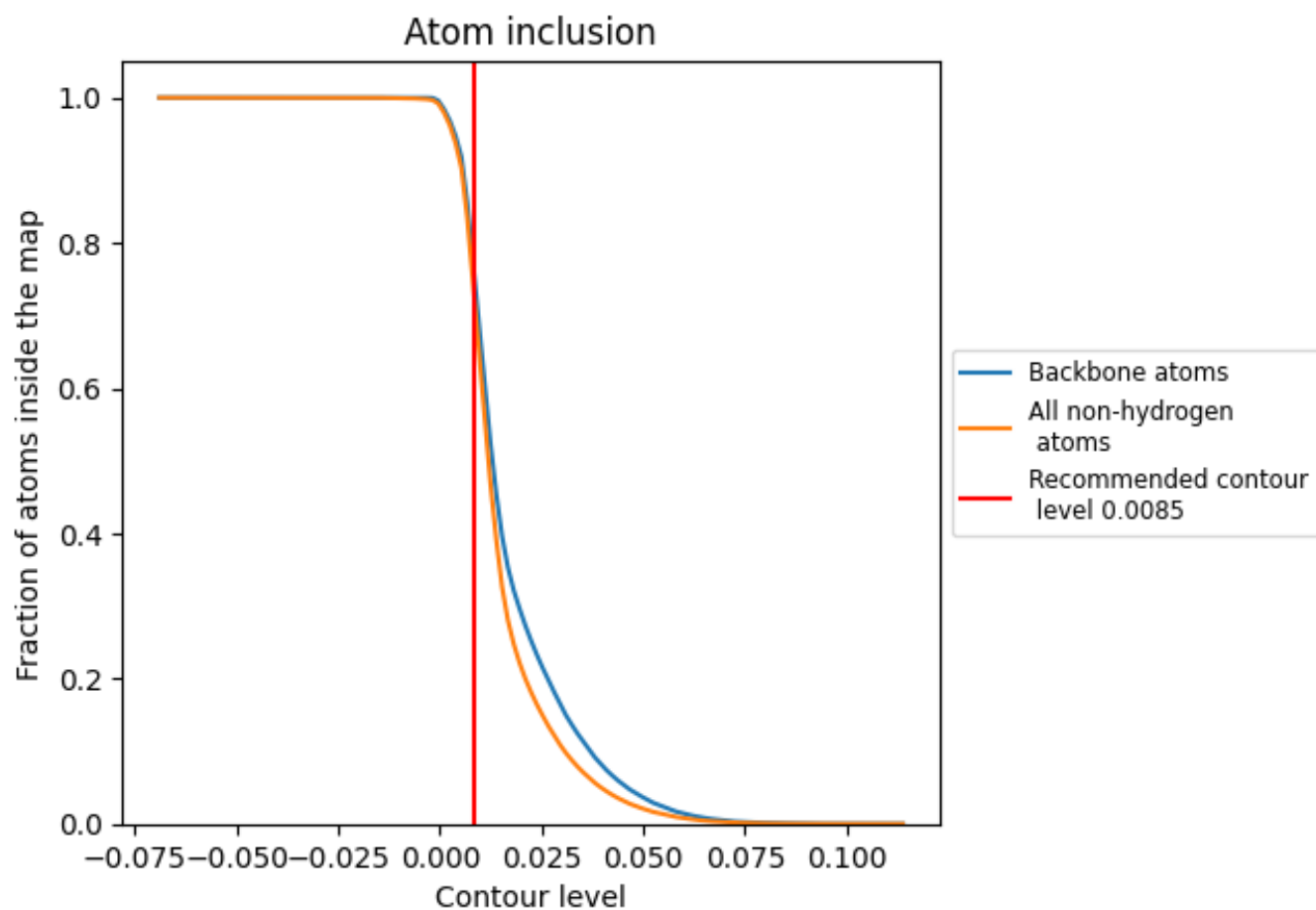
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0085).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 75% of all backbone atoms, 72% 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 (0.0085) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|-------|--|--|
| All |  0.7222 |  0.1220 |
| A |  0.6006 |  0.0360 |
| B |  0.8155 |  0.0470 |
| D |  0.7177 |  0.0730 |
| E |  0.7491 |  0.0490 |
| F |  0.6917 |  0.0420 |
| G |  0.6330 |  0.0590 |
| H |  0.7351 |  0.0450 |
| I |  0.8449 |  0.0430 |
| J |  0.9283 |  0.0530 |
| L |  0.6422 |  0.0560 |
| O |  0.9379 |  0.1050 |
| P |  0.9644 |  0.1320 |
| Q |  0.9084 |  0.1150 |
| R |  0.9267 |  0.1760 |
| S |  0.8712 |  0.0910 |
| T |  0.8620 |  0.1020 |
| U |  0.7799 |  0.0840 |
| V |  0.8175 |  0.0700 |
| X |  0.7270 |  0.1100 |
| Y |  0.7151 |  0.1110 |
| c |  0.0000 |  0.0100 |
| d |  0.0000 |  0.0160 |
| e |  0.1298 |  0.0380 |
| f |  0.5795 |  0.0480 |
| i |  0.0339 |  0.0210 |
| j |  0.0000 |  0.0050 |
| k |  0.0000 |  0.0400 |
| l |  0.0000 |  0.0300 |
| m |  0.0000 |  0.0290 |
| o |  0.8977 |  0.2140 |
| p |  0.9000 |  0.2790 |
| q |  0.9376 |  0.2910 |
| r |  0.8485 |  0.1080 |
| s |  0.9327 |  0.1680 |



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| Chain | Atom inclusion | Q-score |
|-------|--|--|
| t |  0.9286 |  0.2370 |
| u |  0.8866 |  0.1280 |
| v |  0.9422 |  0.2110 |
| w |  0.8778 |  0.1930 |
| x |  0.9212 |  0.3030 |
| y |  0.9203 |  0.2620 |
| z |  0.9129 |  0.2670 |