# Full wwPDB EM Validation Report (i)

Dec 7, 2024 – 07:12 am GMT

| | | |
|---|---|---|
| PDB ID | : | 9G3Y |
| EMDB ID | : | EMD-51018 |
| Title | : | Structure of the Native CMG-decorated gamma-Tubulin Ring Complex from Pig Brain |
| Authors | : | Munoz-Hernandez, H.; Wieczorek, M. |
| Deposited on | : | 2024-07-12 |
| Resolution | : | 6.80 Å(reported) |

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (i)) were used in the production of this report:

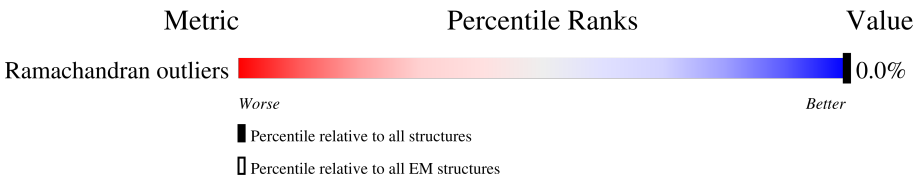
| | | |
|---|---|---|
| EMDB validation analysis | : | 0.0.1.dev113 |
| MolProbity | : | 4.02b-467 |
| Percentile statistics | : | 20231227.v01 (using entries in the PDB archive December 27th 2023) |
| MapQ | : | 1.9.13 |
| Ideal geometry (proteins) | : | Engh & Huber (2001) |
| Ideal geometry (DNA, RNA) | : | Parkinson et al. (1996) |
| Validation Pipeline (wwPDB-VP) | : | 2.40 |

# 1 Overall quality at a glance (i)

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

The reported resolution of this entry is 6.80 Å.

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




| Metric | Whole archive (#Entries) | EM structures (#Entries) |
|---|---|---|
| Ramachandran outliers | 207382 | 16835 |

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 | A | 905 | 75% 25% |
| 1 | C | 905 | 88% 12% |
| 1 | E | 905 | 88% 12% |
| 1 | G | 905 | 88% 12% |
| 1 | M | 905 | 5% 86% 14% |
| 2 | B | 910 | 68% 32% |
| 2 | D | 910 | 68% 32% |
| 2 | F | 910 | 68% 32% |
| 2 | H | 910 | 81% 19% |
| 2 | N | 910 | 30% 79% 21% |
| 3 | I | 667 | 91% 9% |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 3 | K | 667 | 91% 9% |
| 4 | J | 1061 | 59% 41% |
| 5 | L | 1715 | 46% 54% |
| 6 | O | 79 | 63% 85% 15% |
| 6 | P | 79 | 85% 15% |
| 6 | Q | 79 | 81% 19% |
| 7 | V | 155 | 29% 71% |
| 7 | W | 155 | 29% 71% |
| 7 | X | 155 | 29% 71% |
| 7 | Y | 155 | 33% 67% |
| 8 | a | 451 | 98% |
| 8 | b | 451 | 98% |
| 8 | c | 451 | 98% |
| 8 | d | 451 | 94% 6% |
| 8 | e | 451 | 96% |
| 8 | f | 451 | 96% |
| 8 | g | 451 | 96% |
| 8 | h | 451 | 97% |
| 8 | i | 451 | 97% |
| 8 | j | 451 | 97% |
| 8 | k | 451 | 97% |
| 8 | l | 451 | 11% 95% 5% |
| 8 | m | 451 | 52% 98% |
| 8 | n | 451 | 92% 98% |
| 9 | o | 1663 | 98% |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Length | Quality of chain |
|---|---|---|---|
| 9 | p | 1663 | 98% |
| 9 | q | 1663 | 98% |
| 9 | r | 1663 | 98% |
| 9 | s | 1663 | 98% |
| 9 | t | 1663 | 98% |
| 9 | u | 1663 | 98% |
| 9 | v | 1663 | 98% |
| 9 | w | 1663 | 98% |
| 9 | x | 1663 | 98% |

# 2 Entry composition (i)

There are 9 unique types of molecules in this entry. The entry contains 118940 atoms, of which 36534 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 Gamma-tubulin complex component.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 1 | A | 682 | 4887 | 2021 | 1502 | 682 | 682 | 0 | 0 |
| 1 | C | 797 | 5721 | 2363 | 1764 | 797 | 797 | 0 | 0 |
| 1 | E | 797 | 5721 | 2363 | 1764 | 797 | 797 | 0 | 0 |
| 1 | G | 797 | 5721 | 2363 | 1764 | 797 | 797 | 0 | 0 |
| 1 | M | 778 | 5575 | 2307 | 1712 | 778 | 778 | 0 | 0 |

- Molecule 2 is a protein called Gamma-tubulin complex component 3.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 2 | B | 617 | 4433 | 1826 | 1373 | 617 | 617 | 0 | 0 |
| 2 | D | 617 | 4433 | 1826 | 1373 | 617 | 617 | 0 | 0 |
| 2 | F | 617 | 4433 | 1826 | 1373 | 617 | 617 | 0 | 0 |
| 2 | H | 735 | 5289 | 2176 | 1643 | 735 | 735 | 0 | 0 |
| 2 | N | 720 | 5179 | 2133 | 1606 | 720 | 720 | 0 | 0 |

- Molecule 3 is a protein called Gamma-tubulin complex component.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 3 | I | 608 | 4325 | 1795 | 1314 | 608 | 608 | 0 | 0 |
| 3 | K | 608 | 4325 | 1795 | 1314 | 608 | 608 | 0 | 0 |

- Molecule 4 is a protein called Gamma-tubulin complex component.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 4 | J | 629 | 4466 | 1867 | 1341 | 629 | 629 | 0 | 0 |

- Molecule 5 is a protein called Tubulin gamma complex associated protein 6.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 5 | L | 790 | 5669 | 2320 | 1769 | 790 | 790 | 0 | 0 |

- Molecule 6 is a protein called Mitotic spindle organizing protein 1.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 6 | P | 67 | 497 | 199 | 164 | 67 | 67 | 0 | 0 |
| 6 | Q | 64 | 464 | 190 | 146 | 64 | 64 | 0 | 0 |
| 6 | O | 67 | 497 | 199 | 164 | 67 | 67 | 0 | 0 |

- Molecule 7 is a protein called Mitotic-spindle organizing protein 2A isoform X4.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 7 | V | 45 | 336 | 132 | 114 | 45 | 45 | 0 | 0 |
| 7 | W | 45 | 336 | 132 | 114 | 45 | 45 | 0 | 0 |
| 7 | X | 45 | 336 | 132 | 114 | 45 | 45 | 0 | 0 |
| 7 | Y | 51 | 379 | 150 | 127 | 51 | 51 | 0 | 0 |

- Molecule 8 is a protein called Tubulin gamma chain.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 8 | a | 444 | 3161 | 1306 | 967 | 444 | 444 | 0 | 0 |
| 8 | b | 442 | 3146 | 1299 | 963 | 442 | 442 | 0 | 0 |
| 8 | c | 440 | 3129 | 1293 | 956 | 440 | 440 | 0 | 0 |
| 8 | d | 426 | 3030 | 1252 | 926 | 426 | 426 | 0 | 0 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 8 | e | 432 | 3074 | 1270 | 940 | 432 | 432 | 0 | 0 |
| 8 | f | 433 | 3081 | 1273 | 942 | 433 | 433 | 0 | 0 |
| 8 | g | 433 | 3081 | 1273 | 942 | 433 | 433 | 0 | 0 |
| 8 | h | 439 | 3122 | 1291 | 953 | 439 | 439 | 0 | 0 |
| 8 | i | 438 | 3115 | 1288 | 951 | 438 | 438 | 0 | 0 |
| 8 | j | 439 | 3122 | 1292 | 952 | 439 | 439 | 0 | 0 |
| 8 | k | 438 | 3115 | 1288 | 951 | 438 | 438 | 0 | 0 |
| 8 | l | 428 | 3044 | 1258 | 930 | 428 | 428 | 0 | 0 |
| 8 | m | 444 | 3161 | 1306 | 967 | 444 | 444 | 0 | 0 |
| 8 | n | 442 | 3146 | 1299 | 963 | 442 | 442 | 0 | 0 |

- Molecule 9 is a protein called CDK5 regulatory subunit-associated protein 2.

| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 9 | o | 33 | 230 | 99 | 65 | 33 | 33 | 0 | 0 |
| 9 | q | 33 | 230 | 99 | 65 | 33 | 33 | 0 | 0 |
| 9 | r | 33 | 230 | 99 | 65 | 33 | 33 | 0 | 0 |
| 9 | s | 36 | 251 | 108 | 71 | 36 | 36 | 0 | 0 |
| 9 | t | 36 | 251 | 108 | 71 | 36 | 36 | 0 | 0 |
| 9 | v | 36 | 251 | 108 | 71 | 36 | 36 | 0 | 0 |
| 9 | u | 36 | 251 | 108 | 71 | 36 | 36 | 0 | 0 |
| 9 | w | 33 | 230 | 99 | 65 | 33 | 33 | 0 | 0 |
| 9 | x | 34 | 237 | 102 | 67 | 34 | 34 | 0 | 0 |

*Continued on next page...*

*Continued from previous page...*

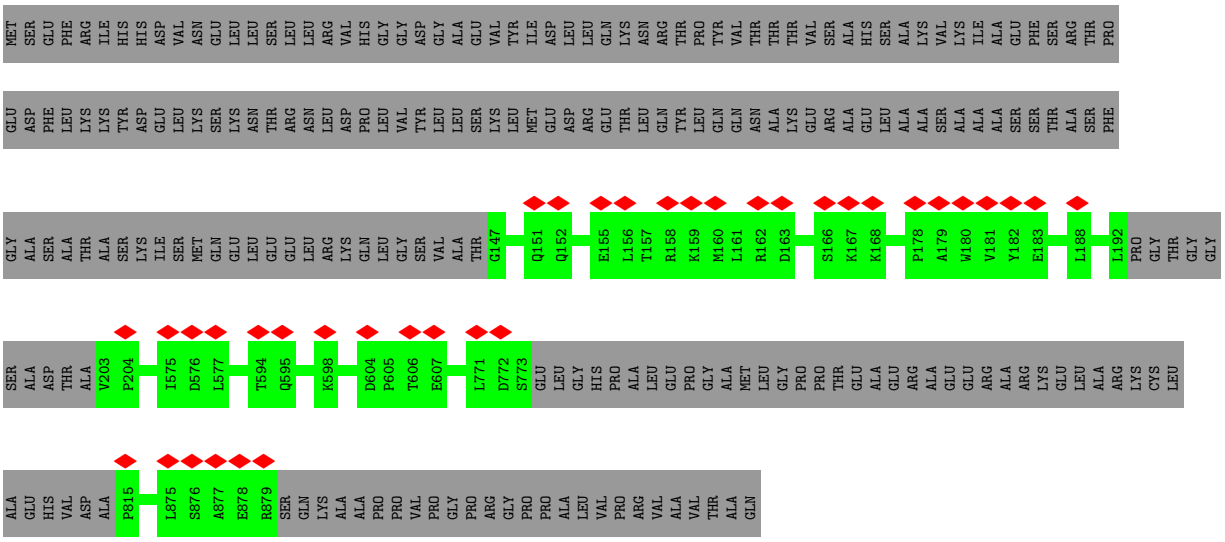
| Mol | Chain | Residues | Atoms | | | | | AltConf | Trace |
|---|---|---|---|---|---|---|---|---|---|
| | | | Total | C | H | N | O | | |
| 9 | p | 33 | 230 | 99 | 65 | 33 | 33 | 0 | 0 |

# 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.

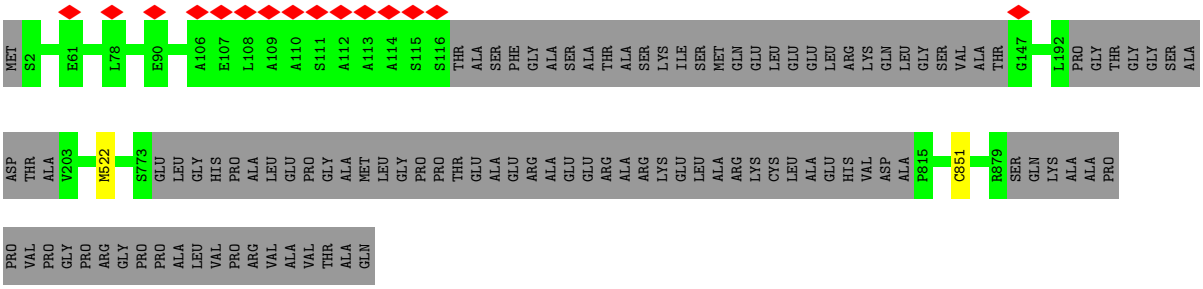
• Molecule 1: Gamma-tubulin complex component

Chain A:



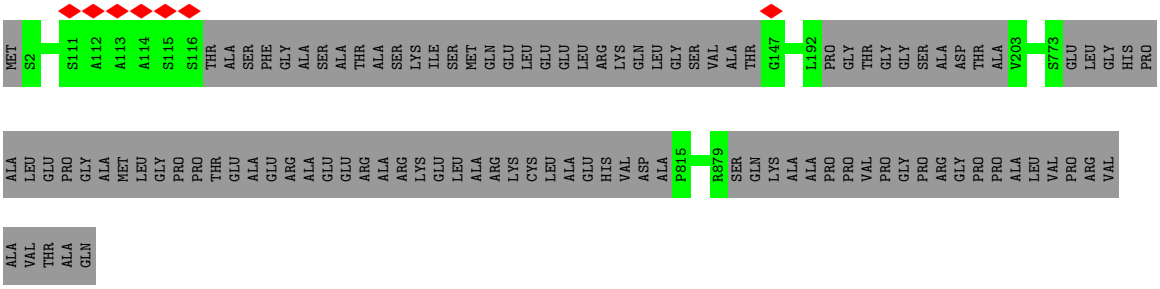

• Molecule 1: Gamma-tubulin complex component

Chain C:



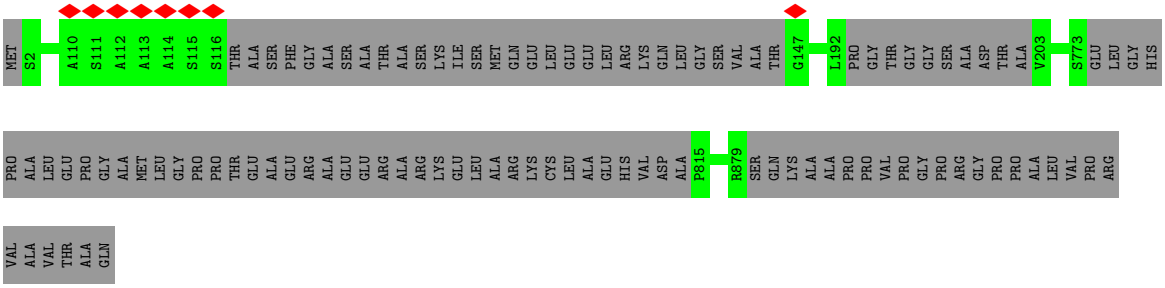

• Molecule 1: Gamma-tubulin complex component

Chain E:



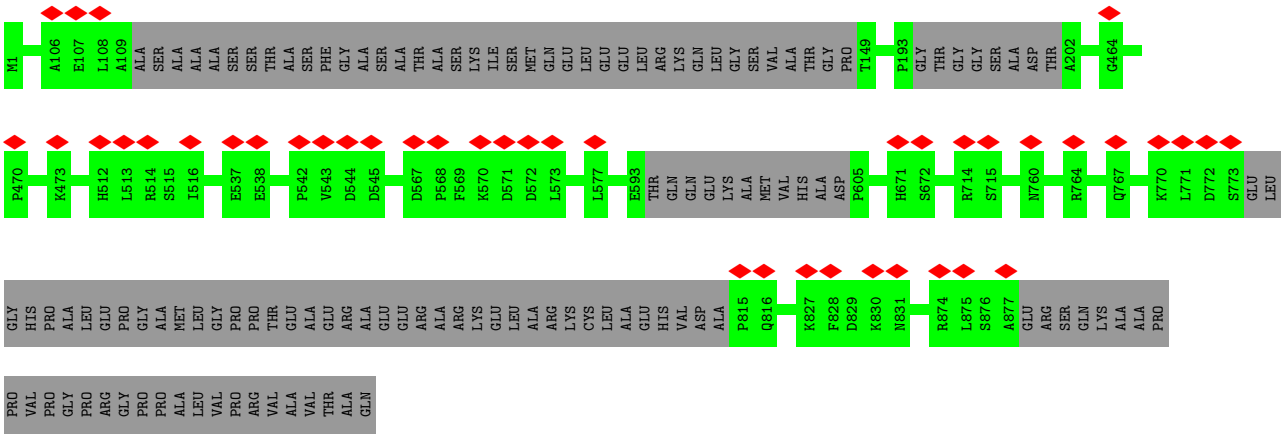

- Molecule 1: Gamma-tubulin complex component

Chain G:



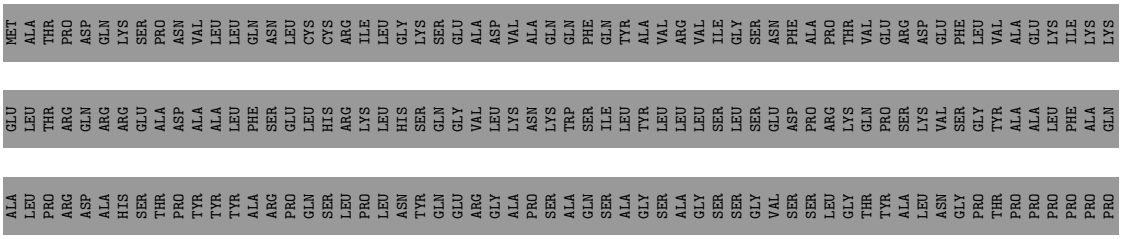

- Molecule 1: Gamma-tubulin complex component

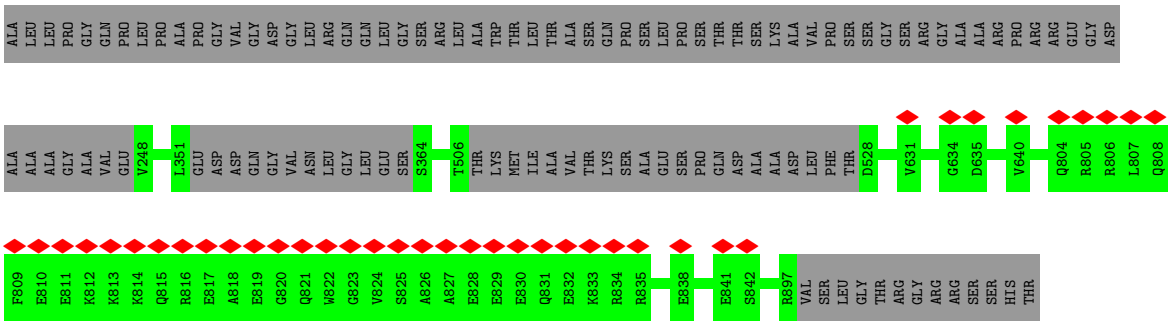
Chain M:




- Molecule 2: Gamma-tubulin complex component 3

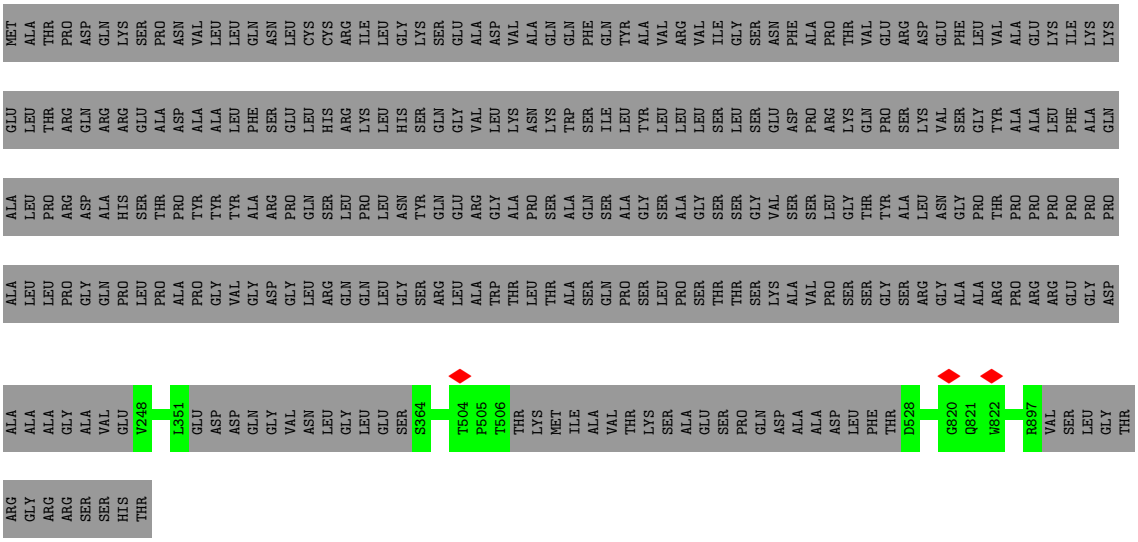
Chain B:





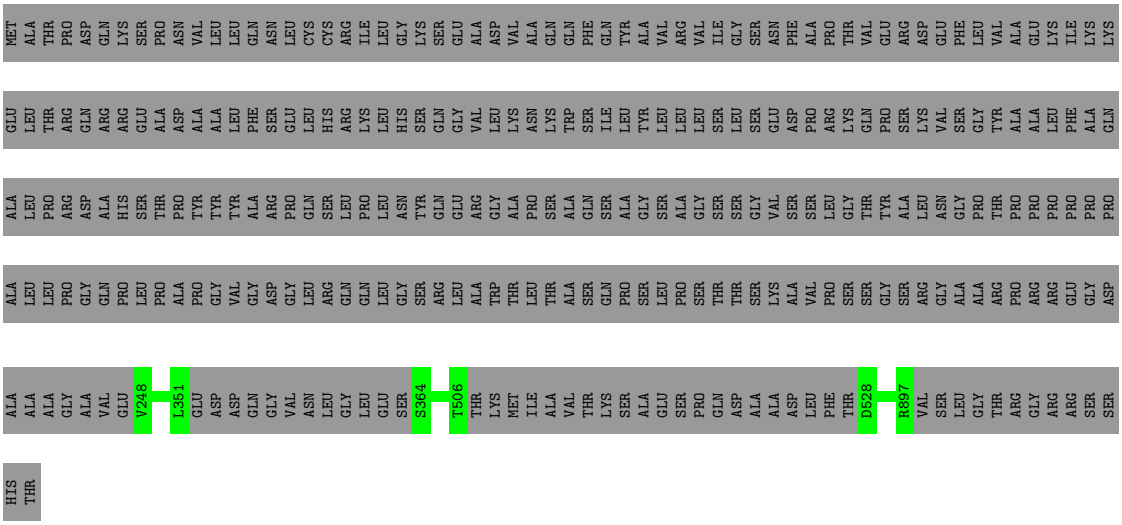

- Molecule 2: Gamma-tubulin complex component 3

Chain D:



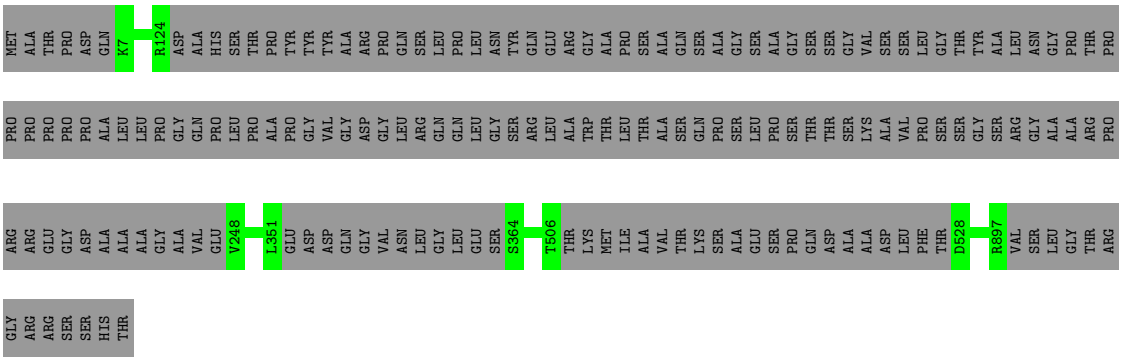

- Molecule 2: Gamma-tubulin complex component 3

Chain F:



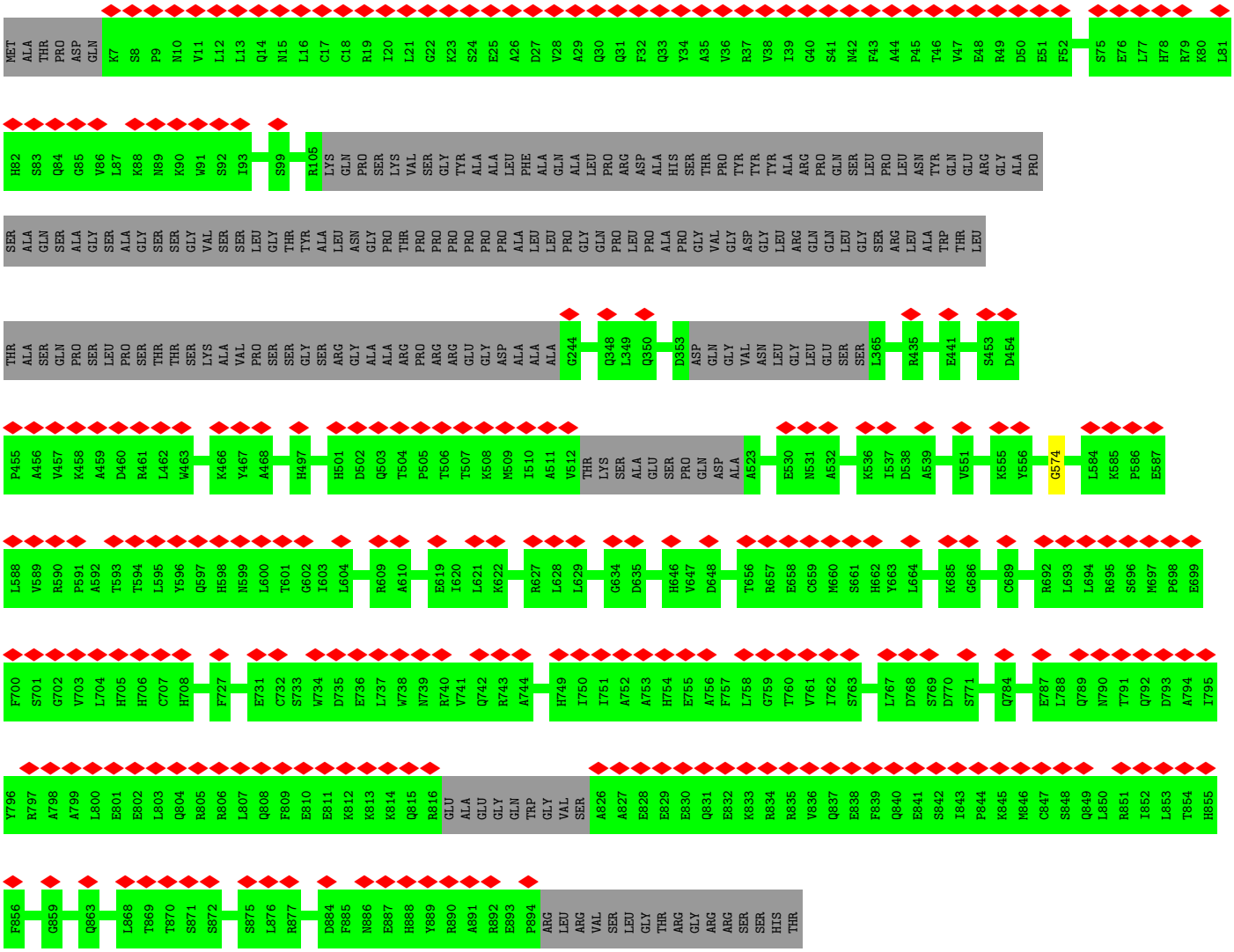

- Molecule 2: Gamma-tubulin complex component 3

Chain H:




- Molecule 2: Gamma-tubulin complex component 3

Chain N:




- Molecule 3: Gamma-tubulin complex component

Chain I: 91% 9%

M1 T63 GLY HIS VAL GLN GLN GLN ASP HIS HIS PRO SER Q75 P209 SER SER GLY ASN VAL SER ALA GLN PRO GLU GLU ASP GLU GLU ASP LEU GLY ILE GLY G229 D406 K426 ALA ASP ALA THR GLN ALA ARG GLU GLY PRO SER ARG GLU THR SER PRO ARG GLU ALA

P446 Q657 ALA GLY GLY THR LEU GLY SER PHE GLY MET

- Molecule 3: Gamma-tubulin complex component

Chain K: 91% 9%

M1 T63 GLY HIS VAL GLN GLN GLN ASP HIS HIS PRO SER Q75 P209 SER SER GLY ASN VAL SER ALA GLN PRO GLU GLU ASP GLU GLU ASP LEU GLY ILE GLY G229 K426 ALA ASP ALA THR GLN ALA ARG GLU GLY PRO SER ARG GLU THR SER PRO ARG GLU ALA P446

Q657 ALA GLY GLY THR LEU GLY SER PHE GLY MET

- Molecule 4: Gamma-tubulin complex component

Chain J: 59% 41%

MET ALA SER PRO ALA PRO SER TRP THR ARG LEU ASP PRO GLN GLN GLU ARG ASP VAL ARG GLU LEU ILE ARG LEU VAL SER GLY VAL GLN ASP GLU ALA ASP PRO ASN PHE GLN LEU ALA LEU HIS PHE ALA TRP SER ASN PHE ARG PHE HIS ARG PHE LEU ASP VAL ASN SER HIS LYS

VAL GLU LYS THR ILE GLU GLY ILE TYR GLU LYS PHE ILE ILE HIS SER ASP LEU SER LYS ALA ALA SER TRP LYS ARG LEU THR ASP GLU PHE LEU ASN ALA SER LEU PRO SER ILE LYS GLU ILE LYS THR ASP ALA HIS TYR SER ILE LEU SER LEU LEU LEU CYS LEU SER ASP SER

PRO SER ASN SER ASN TYR VAL GLU THR PRO ARG ASN LYS GLU VAL GLU LYS LYS ASP ASP PHE ASP TRP GLY LYS TYR LEU MET GLU GLY GLU GLU ILE ASP LEU GLY PRO ASN VAL ASP THR PRO ASN TRP SER GLU GLU SER GLU ASP GLU ASP ASP PRO GLN PRO LEU SER ARG GLU

ASP SER GLY ILE GLN VAL ASP ARG THR PRO LEU GLU GLU GLN ASP GLN SER ARG LYS PRO ALA SER ARG VAL SER TRP LYS VAL ASP GLU PRO ASP ALA ARG SER TRP LEU GLU GLN HIS VAL VAL R223 H338 SER SER GLU SER THR LEU PRO GLY ASN GLY SER VAL PRO LYS K353

V518 SER GLU LYS THR GLU ASN GLU GLU LYS MET SER ASP ASN ALA SER ALA SER SER GLY SER ASP GLN GLY PRO SER SER ARG Q546 C575 ALA GLU SER THR THR CYS GLN ALA MET ALA ARG ASP ALA GLU ARG K591 L605 ARG HIS GLY GLU ASP ALA THR ALA GLN ALA

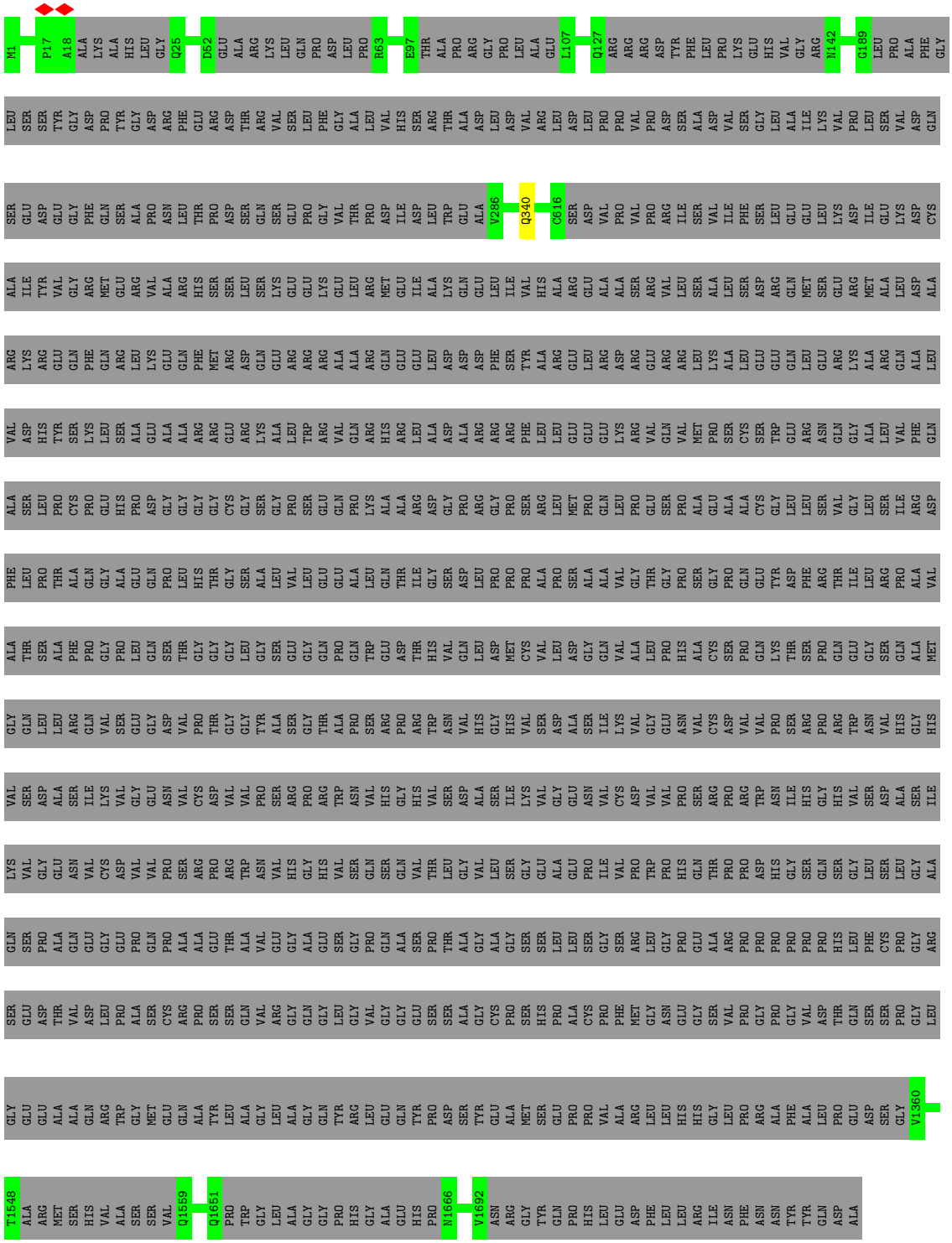
LEU THR GLU GLN GLN ALA THR ARG GLU THR THR LEU ILE LYS MET GLN SER ILE ALA GLU ARG HIS LEU GLU LEU ASP ASP VAL HIS ASP PRO LEU LEU ALA ILE ASN PHE ALA ARG LEU TYR LEU GLU GLN SER ASP PHE HIS GLU LYS PHE ALA GLY GLY ASP ILE CYS VAL ASP ARG SER

SER GLU SER VAL THR C681 N784 THR ASP THR ALA LYS LYS K791 S850 ALA GLU LYS PRO GLN SER LYS GLU GLY LEU LEU SER GLY GLN ASP THR ALA ALA GLN PHE GLY PRO GLN LYS E875 K1001 ALA VAL CYS ARG GLY SER PHE PRO HIS L1011 G1021 MET GLU GLN LYS

ARG GLU ASP ASP LEU PHE ASN HIS THR TRP GLY GLN GLY ASP LEU PRO ASN TYR THR CYS ALA VAL ARG LEU LEU GLY VAL ARG LYS GLY GLY GLY THR ARG PRO LYS

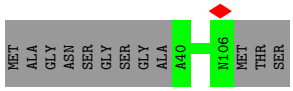
- Molecule 5: Tubulin gamma complex associated protein 6

Chain L: 46% 54%



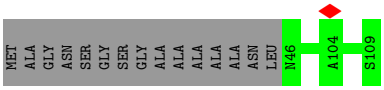

• Molecule 6: Mitotic spindle organizing protein 1

Chain P:



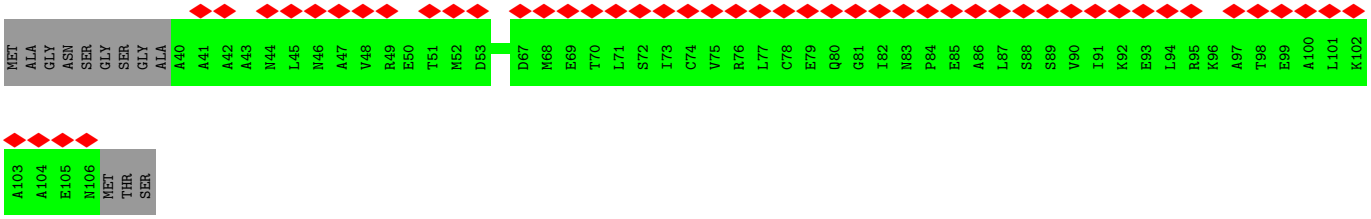
• Molecule 6: Mitotic spindle organizing protein 1

Chain Q:



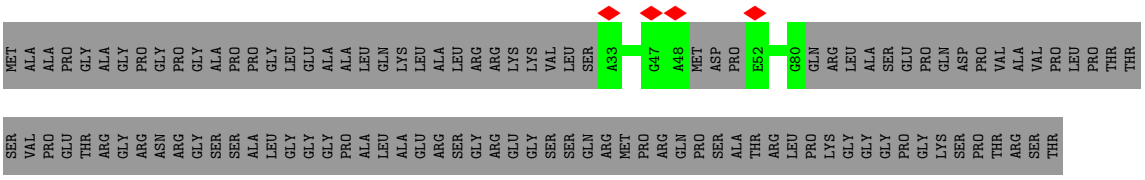

• Molecule 6: Mitotic spindle organizing protein 1

Chain O:



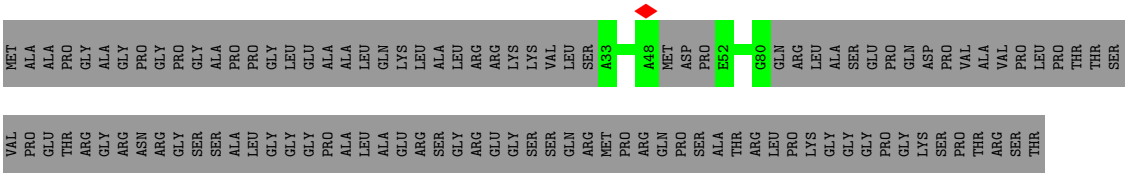

• Molecule 7: Mitotic-spindle organizing protein 2A isoform X4

Chain V:



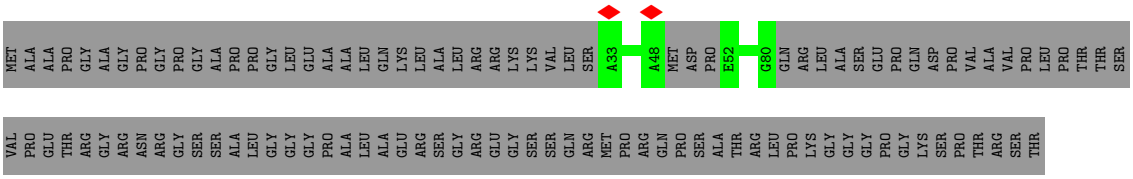

• Molecule 7: Mitotic-spindle organizing protein 2A isoform X4

Chain W:



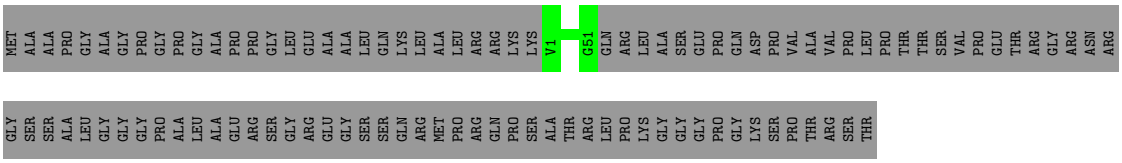

• Molecule 7: Mitotic-spindle organizing protein 2A isoform X4

Chain X:




• Molecule 7: Mitotic-spindle organizing protein 2A isoform X4

Chain Y: 33% 67%

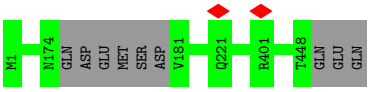



- Molecule 8: Tubulin gamma chain

Chain a: 98%

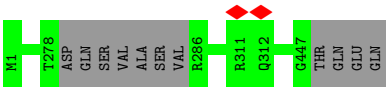
- Molecule 8: Tubulin gamma chain

Chain b: 98%



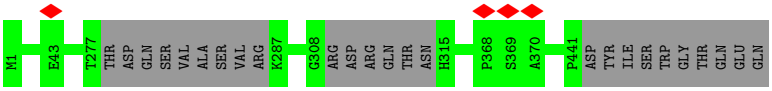

- Molecule 8: Tubulin gamma chain

Chain c: 98%



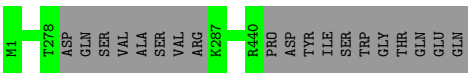

- Molecule 8: Tubulin gamma chain

Chain d: 94% 6%



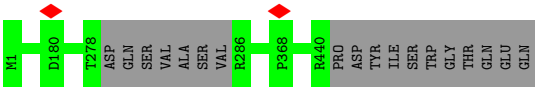

- Molecule 8: Tubulin gamma chain

Chain e: 96%



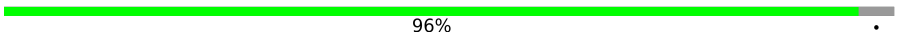

- Molecule 8: Tubulin gamma chain

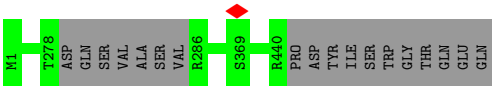
Chain f: 96%




• Molecule 8: Tubulin gamma chain

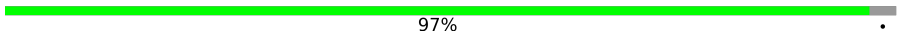
Chain g:

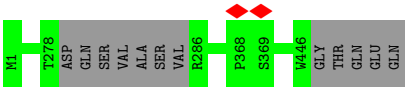



• Molecule 8: Tubulin gamma chain

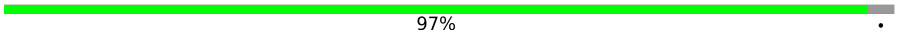
Chain h:

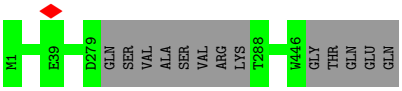



• Molecule 8: Tubulin gamma chain

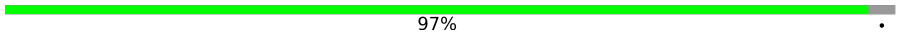
Chain i:

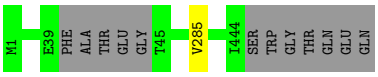



• Molecule 8: Tubulin gamma chain

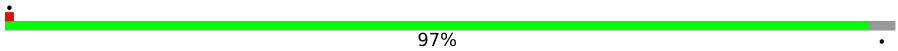
Chain j:

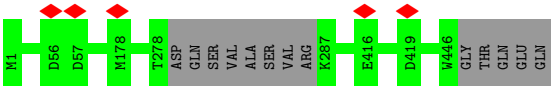



• Molecule 8: Tubulin gamma chain

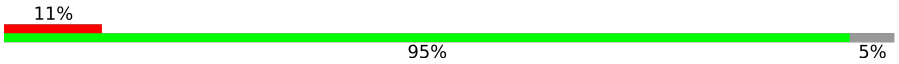
Chain k:

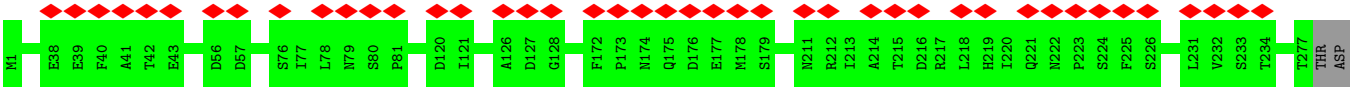


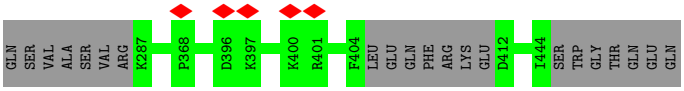




• Molecule 8: Tubulin gamma chain

Chain l:

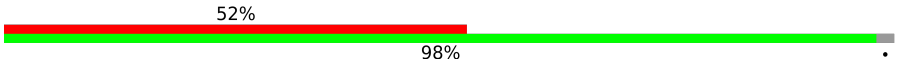


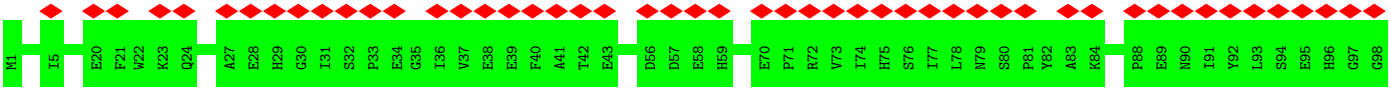



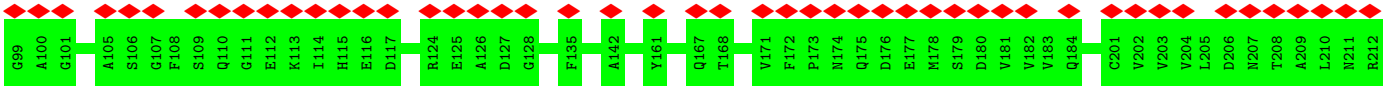


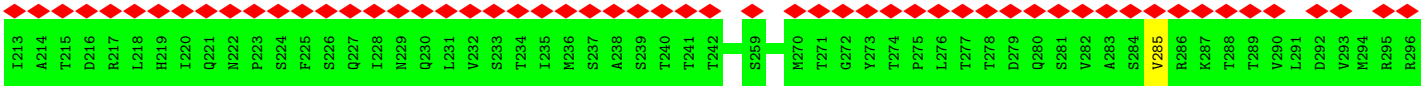

- Molecule 8: Tubulin gamma chain

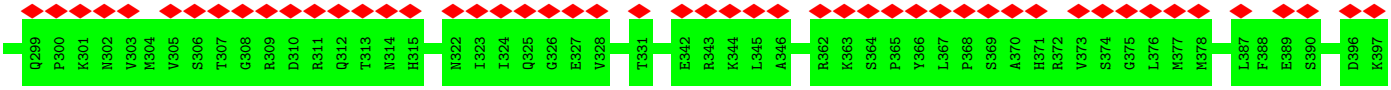
Chain m:

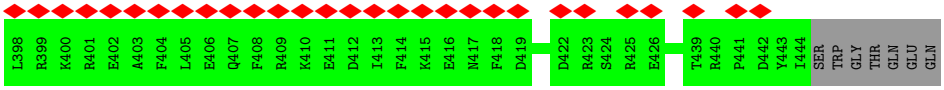


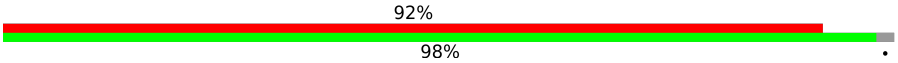



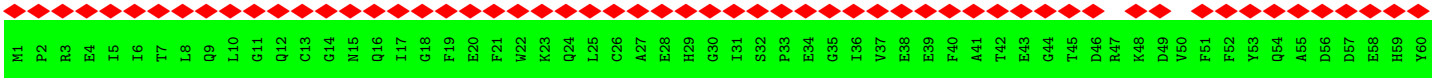



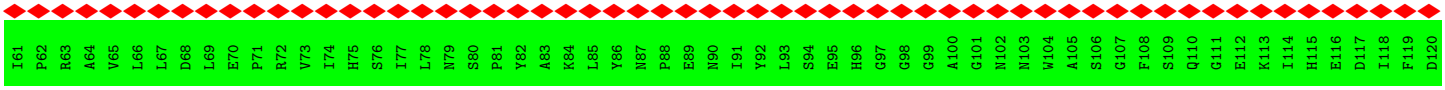



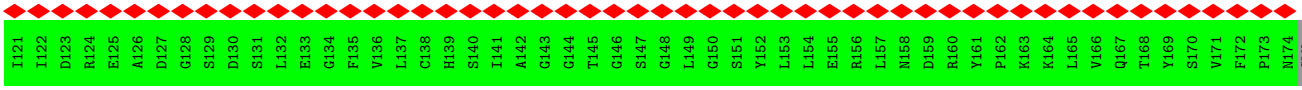

- Molecule 8: Tubulin gamma chain

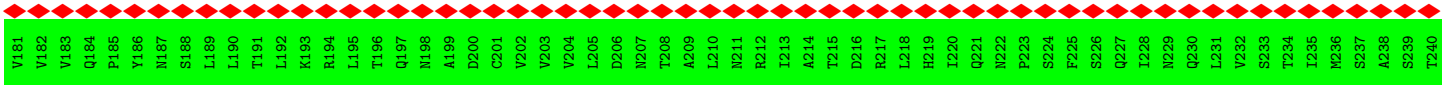
Chain n:

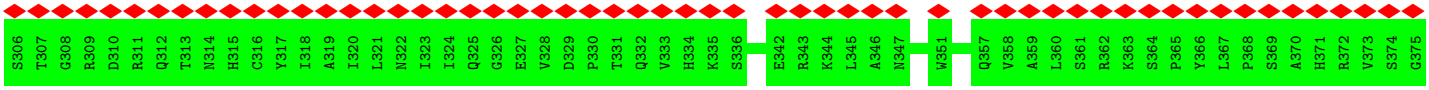


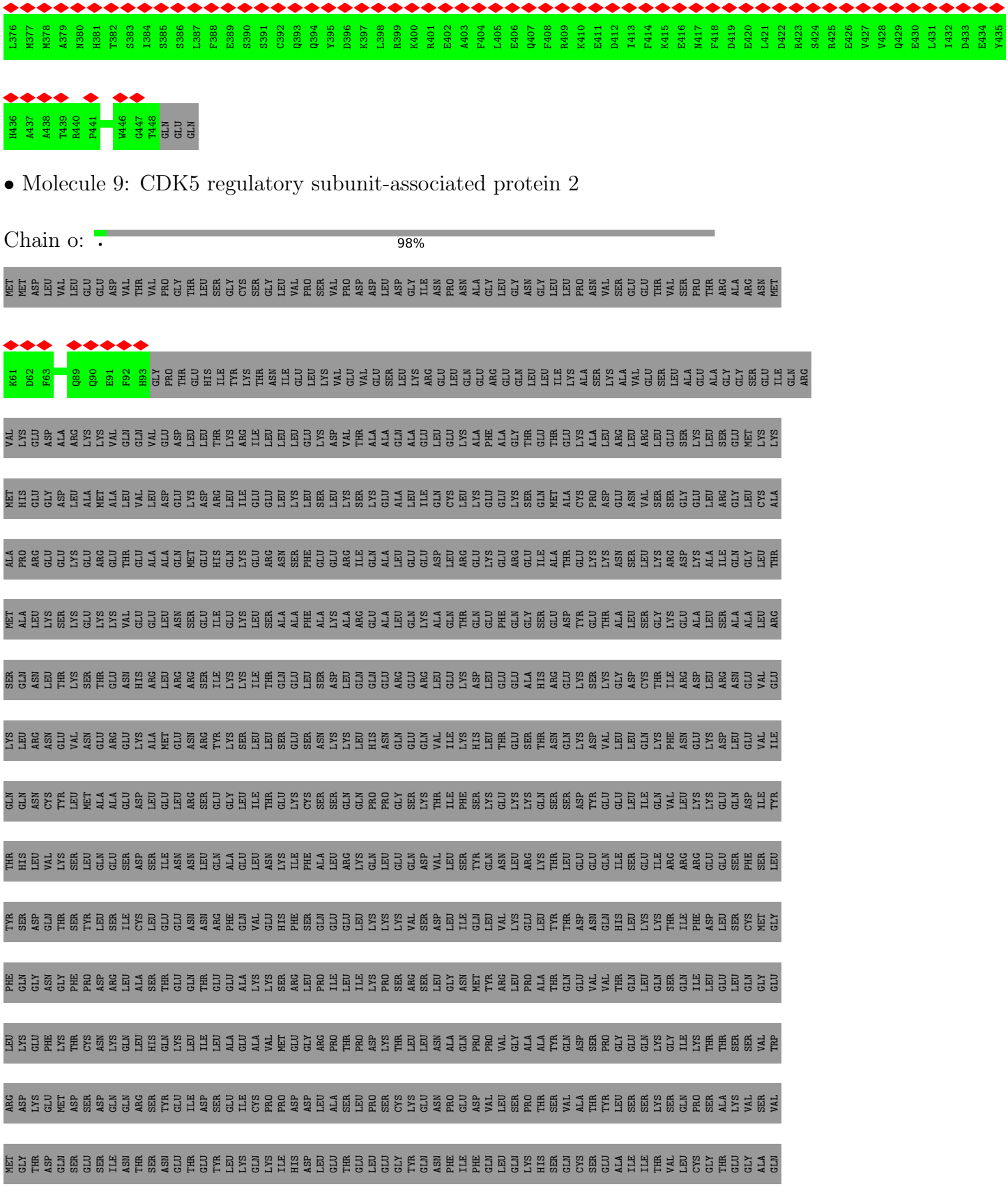



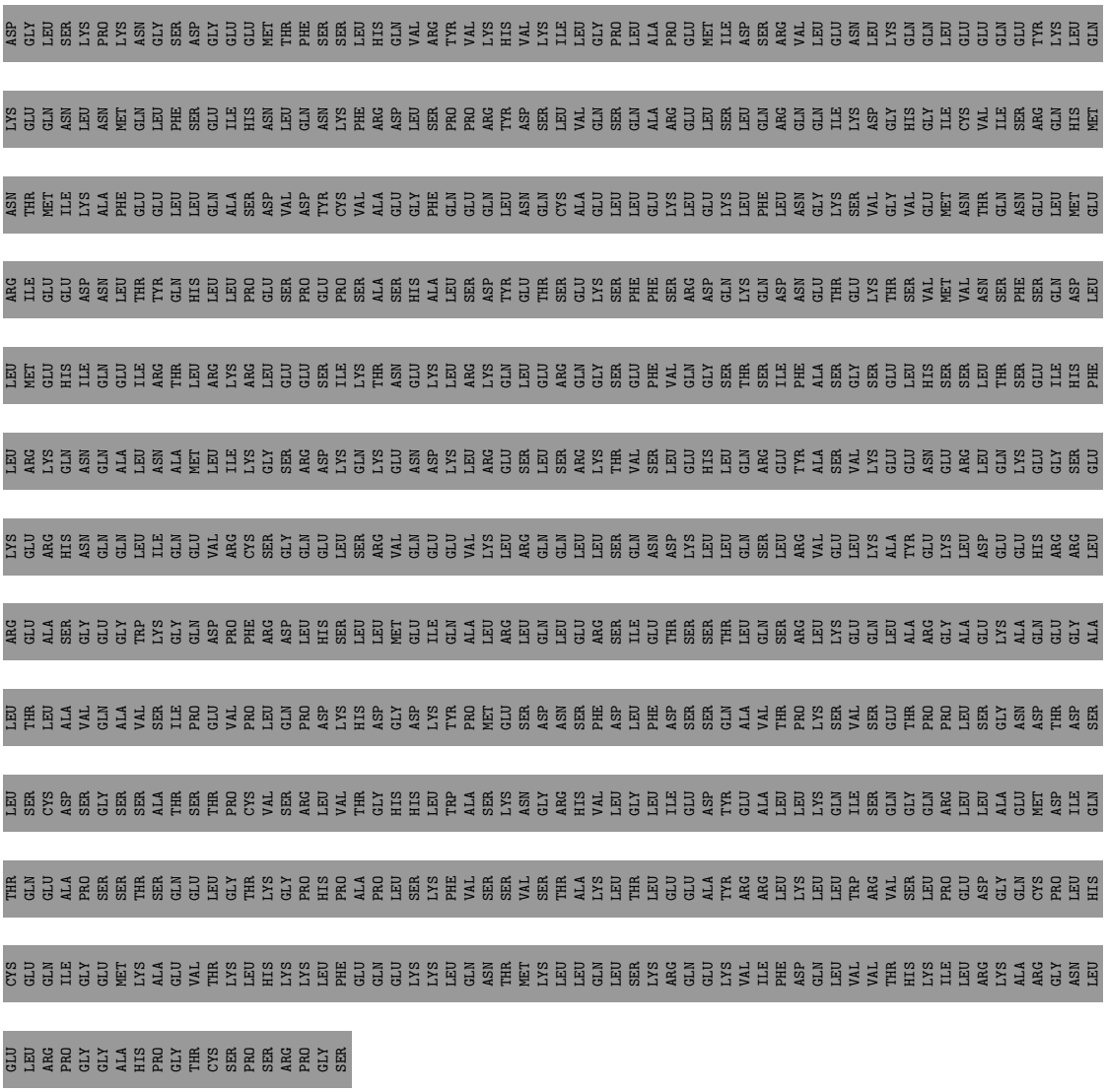



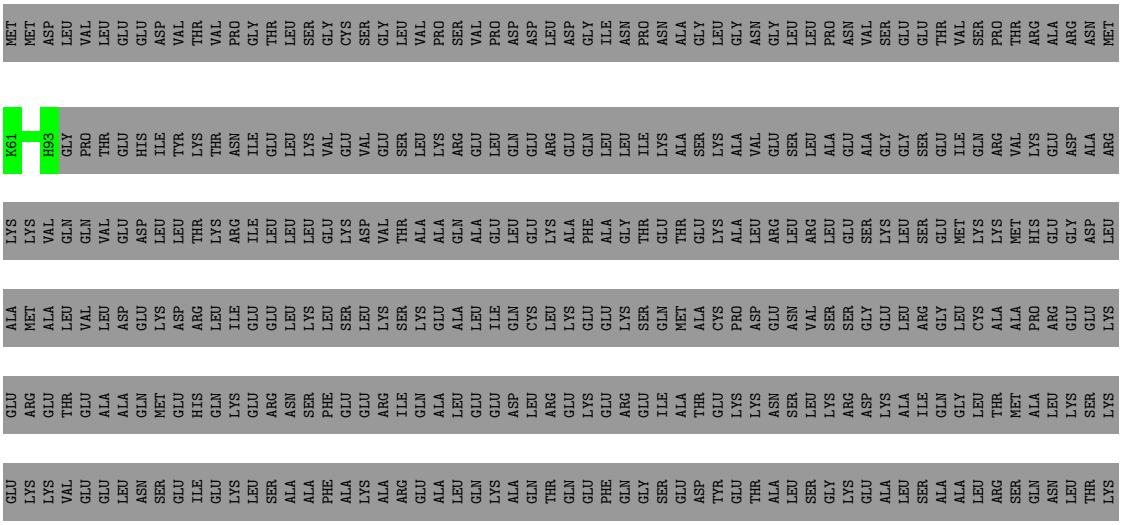



L376 M377 M378 A379 N380 H381 T382 S383 I384 S385 S386 L387 F388 E389 S390 S391 C392 Q393 Q394 Y395 D396 K397 L398 R399 K400 R401 E402 A403 F404 L405 E406 Q407 F408 R409 K410 E411 D412 I413 F414 K415 E416 N417 F418 D419 E420 L421 D422 R423 S424 R425 E426 V427 V428 Q429 E430 L431 I432 D433 E434 Y435
H436 A437 A438 T439 R440 P441 W446 G447 T448 GLN GLU GLN
• Molecule 9: CDK5 regulatory subunit-associated protein 2
Chain o:
98%
MET MET ASP LEU VAL LEU GLU GLU ASP VAL THR VAL PRO GLY THR LEU SER GLY CYS SER GLY LEU VAL PRO SER VAL PRO ASP ASP LEU ASP GLY ILE ASN PRO ASN ALA GLY LEU GLY ASN GLY LEU LEU PRO ASN VAL SER GLU GLU THR VAL SER PRO THR ARG ALA ARG ASN MET
K61 D62 F63 Q89 Q90 E91 F92 H93 GLY PRO THR GLU HIS ILE TYR LYS THR ASN ILE GLU LEU LYS VAL GLU VAL GLU SER LEU LYS ARG GLU LEU GLN GLU ARG GLU GLN LEU LEU ILE LYS ALA SER LYS ALA VAL GLU SER LEU ALA GLU ALA GLY GLY SER GLU ILE GLN ARG
VAL LYS GLU ASP ALA ARG LYS LYS VAL GLN GLN VAL GLU ASP LEU LEU THR LYS ARG ILE LEU LEU LEU GLU LYS ASP VAL THR ALA ALA GLN ALA GLU LEU GLU LYS ALA PHE ALA GLY THR GLU THR GLU LYS ALA LEU ARG LEU ARG LEU GLU SER LYS LEU SER GLU MET LYS LYS
MET HIS GLU GLY ASP LEU ALA MET ALA LEU VAL LEU ASP GLU LYS ASP ARG LEU ILE GLU GLU LEU LYS SER LYS GLU ALA LEU ILE GLN CYS LEU LYS GLU GLU LYS SER GLN MET ALA CYS PRO ASP GLU ASN VAL SER SER GLY GLU LEU ARG GLY LEU CYS ALA
ALA PRO ARG GLU GLU LYS GLU ARG GLU THR GLU ALA ALA GLN MET GLU HIS GLN LYS GLU ARG ASN SER PHE GLU GLU ARG ILE GLN ALA LEU GLU GLU GLU ASP LEU ARG GLU LYS GLU ARG GLU ILE ALA THR GLU LYS LYS ASN SER LEU LYS ARG ASP LYS ALA ILE GLN GLY LEU THR
MET ALA LEU LYS SER LYS GLU LYS LYS VAL GLU GLU LEU ASN SER GLU ILE GLU LYS LYS LEU SER ALA ALA PHE ALA LYS ALA ARG GLU ALA LEU GLU LYS ALA GLN THR GLN GLU PHE GLN GLY SER GLU ASP TYR GLU THR ALA LEU SER GLY LYS GLU ALA LEU SER ALA ALA LEU ARG
SER GLN ASN LEU THR LYS SER THR GLU ASN HIS ARG LEU ARG ARG SER ILE LYS LYS ILE THR GLN GLU LEU SER ASP LEU GLN GLN GLU ARG GLU ARG LEU GLU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU
LYS LEU ARG ASN GLU VAL ASN GLU ARG GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU GLU SER ASN LYS LYS LEU HIS ASN GLN GLU GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE
GLN GLN ASN CYS TYR LEU MET ALA ALA GLU ASP LEU GLU LEU ARG SER GLU GLY LEU ILE THR GLU LYS LYS CYS SER SER GLN GLN PRO PRO GLY SER LYS THR ILE PHE SER LYS GLU LYS LYS GLN SER SER ASP TYR GLU GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN ASP ILE TYR
THR HIS LEU VAL LYS SER LEU GLN GLU SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN ASP VAL LEU SER TYR GLN ASN LEU GLU GLU GLN ILE SER GLU ILE ARG ARG GLU GLU SER PHE SER LEU
TYR SER ASP GLN THR SER TYR LEU SER ILE CYS LEU GLU GLU ASN ASN ARG PHE GLN VAL GLU HIS PHE SER GLN GLU GLU LEU LYS LYS LYS VAL SER ASP LEU ILE GLN LEU VAL LYS GLU LEU TYR THR ASP ASN GLN HIS LEU LYS LYS THR ILE PHE ASP LEU SER CYS MET GLY
PHE GLN GLY ASN GLY PHE PRO ASP ARG LEU ALA SER THR GLU GLN THR GLU GLU ALA LYS LYS SER ARG LEU PRO ILE LEU ILE LYS PRO SER ARG SER LEU GLY ASN MET TYR ARG LEU PRO ALA THR GLN GLU VAL VAL THR GLN LEU GLN SER GLN ILE LEU GLU GLN LEU GLN GLU GLN GLY GLU
LEU LYS GLU PHE LYS THR CYS ASN LYS GLN LEU HIS GLN LYS LEU ILE LEU ALA GLU ALA VAL MET GLU GLY ARG PRO THR PRO ASP LYS THR LEU LEU ASN ALA GLN PRO PRO VAL GLY ALA ALA TYR GLN ASP SER PRO GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP
ARG ASP LYS GLU MET ASP SER ASP GLN GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA THR TYR LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL
MET GLY THR ASP GLN SER GLU SER ILE ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS ILE HIS ASP LEU GLU GLU GLY TYR GLN ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU ALA ILE ILE THR GLU GLY THR GLU GLY ALA GLN



• Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain q: 98%



SER THR GLU ASN HIS ARG LEU ARG ARG SER ILE LYS LYS ILE THR GLN GLU LEU SER ASP LEU GLN GLN GLU ARG GLU ARG LEU GLU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU LYS LEU ARG ASN GLU VAL

ASN GLU ARG GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU SER ASN LYS LYS LEU HIS ASN GLN GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE GLN GLN ASN CYS TYR LEU

MET ALA ALA GLU ASP LEU GLU LEU ARG SER GLU GLY LEU ILE THR GLU LYS CYS SER SER GLN GLN PRO PRO GLY SER LYS THR ILE PHE SER LYS GLU LYS LYS GLN SER SER ASP TYR GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN ASP ILE TYR THR HIS LEU VAL LYS SER

LEU GLN GLU SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN ASP VAL LEU SER TYR GLN ASN LEU ARG LYS THR LEU GLU GLU GLU GLN ILE SER GLU ILE ARG ARG ARG GLU GLU SER PHE SER LEU TYR SER ASP GLN THR SER

TYR LEU SER ILE CYS LEU GLU GLU ASN ASN ARG PHE GLN VAL GLU HIS PHE SER GLN GLU GLU LEU LYS LYS LYS VAL SER ASP LEU ILE GLN LEU VAL LYS GLU LEU TYR THR ASP ASN GLN HIS LEU LYS LYS THR ILE PHE ASP LEU SER CYS MET GLY PHE GLN GLY ASN GLY PHE

PRO ASP ARG LEU ALA SER THR GLU GLN THR GLU GLU ALA LYS LYS SER ARG LEU PRO ILE LEU ILE LYS PRO SER ARG SER LEU GLY ASN MET TYR ARG LEU PRO ALA THR GLN GLU VAL VAL THR GLN LEU GLN SER GLN ILE LEU GLU LEU GLN GLY GLU LEU LYS GLU PHE LYS THR

CYS ASN LYS GLN LEU HIS GLN LYS LEU ILE LEU ALA GLU ALA VAL MET GLU GLY ARG PRO THR PRO ASP LYS THR LEU LEU ASN ALA GLN PRO PRO VAL GLY ALA ALA TYR GLN ASP SER PRO GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP ARG ASP LYS GLU MET ASP

SER ASP GLN GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA THR TYR LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL MET GLY THR ASP GLN SER

GLU SER ILE ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS ILE HIS ASP LEU GLU THR GLU LEU GLU GLY TYR GLN ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU ALA ILE ILE THR VAL LEU CYS GLY THR GLU GLY ALA GLN ASP GLY LEU SER LYS PRO

LYS ASN GLY SER ASP GLY GLU GLU MET THR PHE SER SER LEU HIS GLN VAL ARG TYR VAL LYS HIS VAL LYS ILE LEU GLY PRO LEU ALA PRO GLU MET ILE ASP SER ARG VAL LEU GLU ASN LEU LYS GLN GLN LEU GLU GLU GLN GLU TYR LYS LEU GLN LYS GLU GLN ASN LEU ASN

MET GLN LEU PHE SER GLU ILE HIS ASN LEU GLN ASN LYS PHE ARG ASP LEU SER PRO PRO ARG TYR ASP SER LEU VAL GLN SER GLN ALA ARG GLU LEU SER LEU GLN ARG GLN GLN ILE LYS ASP GLY HIS GLY ILE CYS VAL ILE SER ARG GLN HIS MET ASN THR MET ILE LYS ALA

PHE GLU GLU LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU GLY PHE GLN GLU GLN LEU ASN GLN CYS ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP ASN

LEU THR TYR GLN HIS LEU LEU PRO GLU SER PRO GLU PRO SER ALA SER HIS ALA LEU SER ASP TYR GLU THR SER GLU LYS SER PHE PHE SER ARG ASP GLN LYS GLN ASP ASN GLU THR GLU LYS THR SER VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS ILE GLN

GLU ILE ARG THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN LEU GLU ARG GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY SER GLU LEU HIS SER SER LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN

ALA LEU ASN ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG LYS THR VAL SER LEU GLU HIS LEU GLN ARG GLU TYR ALA SER VAL LYS GLU GLU ASN GLU ARG LEU GLN LYS GLU GLY SER GLU LYS GLU ARG HIS ASN GLN

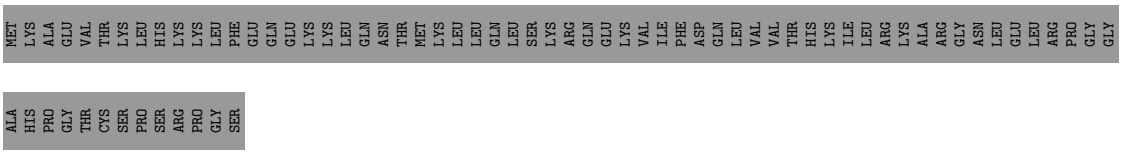
GLN LEU ILE GLN GLU VAL ARG CYS SER GLY GLN GLU LEU SER ARG VAL GLN GLU GLU VAL LYS LEU ARG GLN GLN LEU LEU SER GLN ASN ASP LYS LEU LEU GLN SER LEU ARG VAL GLU LEU LYS ALA TYR GLU LYS LEU ASP GLU GLU HIS ARG ARG LEU ARG GLU ALA SER GLY GLU

GLY TRP LYS GLY GLN ASP PRO PHE ARG ASP LEU HIS SER LEU LEU MET GLU ILE GLN ALA LEU ARG LEU GLN LEU GLU ARG SER ILE GLU THR SER SER THR LEU GLN SER ARG LEU LYS GLU GLN LEU ALA ARG GLY ALA GLU LYS ALA GLN GLU GLY ALA LEU THR LEU ALA VAL GLN

ALA VAL SER ILE PRO GLU VAL PRO LEU GLN PRO ASP LYS HIS ASP GLY ASP LYS TYR PRO MET GLU SER ASP ASN SER PHE ASP LEU PHE ASP SER SER GLN ALA VAL THR PRO LYS SER VAL SER GLU THR PRO PRO LEU SER GLY ASN ASP THR ASP SER LEU SER CYS ASP SER GLY

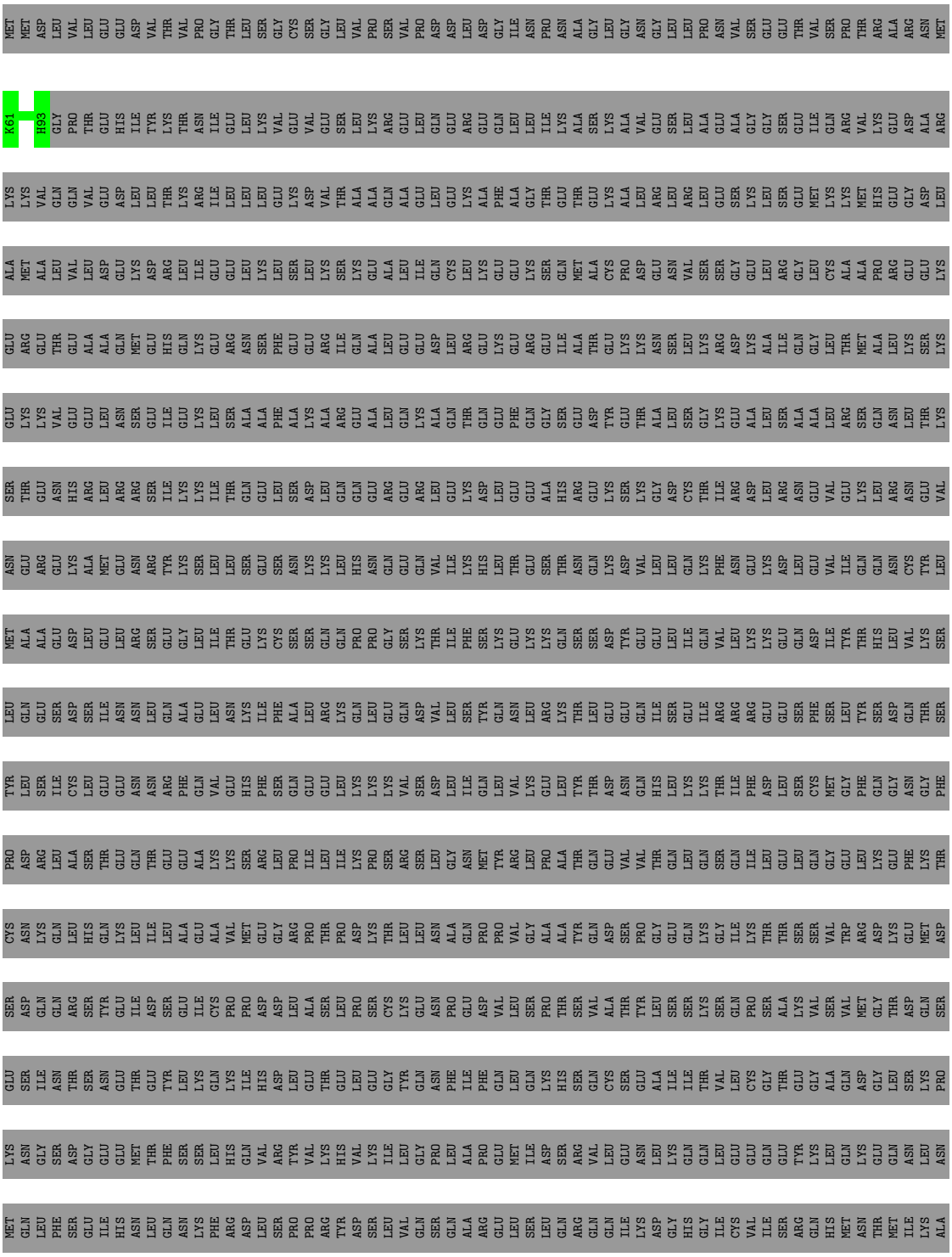
SER SER ALA THR SER THR PRO CYS VAL SER ARG LEU VAL THR GLY HIS HIS LEU TRP ALA SER LYS ASN GLY ARG HIS VAL LEU GLY LEU ILE GLU ASP TYR GLU ALA LEU LEU LYS GLN ILE SER GLN GLY GLN ARG LEU LEU ALA GLU MET ASP ILE GLN THR GLN GLU ALA PRO SER

SER THR SER GLN GLU LEU GLY THR LYS GLY PRO HIS PRO ALA PRO LEU SER LYS PHE VAL SER SER VAL SER THR ALA LYS LEU THR LEU GLU GLU ALA TYR ARG ARG LEU LYS LEU LEU TRP ARG VAL SER LEU PRO GLU ASP GLY GLN CYS PRO LEU HIS CYS GLU GLN ILE GLY GLU




• Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain r: 98%



PHE GLU GLU LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU GLY PHE GLN GLU GLN LEU ASN GLN CYS ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP ASN

LEU THR TYR GLN HIS LEU LEU PRO GLU SER PRO GLU PRO SER ALA SER HIS ALA LEU SER ASP TYR GLU THR SER GLU LYS SER PHE PHE SER ARG ASP GLN LYS THR SER GLU VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS HIS ILE GLN

GLU ILE ARG THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN GLU LEU ARG GLU GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY SER GLU LEU LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN

ALA LEU ASN ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG GLN LYS THR SER LEU GLN ARG GLU TYR ALA SER VAL LYS GLU ASN GLU ARG LEU GLN LYS GLU GLY HIS SER GLU LYS GLU ARG GLN

GLN LEU ILE GLN GLU VAL ARG CYS SER GLY GLN GLN GLU LEU SER ARG VAL GLN GLN GLU VAL LYS LEU ARG GLN GLN LEU SER GLN ASN ASP LYS LEU LEU GLN SER LEU ARG VAL GLU LEU LYS ALA TYR GLU LYS GLU HIS ARG ARG LEU ARG GLU ALA SER GLY GLU

GLY TRP LYS GLY GLN ASP PRO PHE ARG ASP LEU HIS SER LEU LEU MET GLU ILE GLN LEU GLU ARG SER ILE GLU THR SER SER THR LEU GLN SER LEU GLN GLU LYS GLU GLN LEU LYS GLU GLU GLU GLY ALA LEU THR LEU ALA VAL GLN

ALA VAL SER ILE PRO GLU VAL PRO LEU GLN PRO ASP LYS HIS ASP GLY ASP LYS TYR PRO MET GLU SER ASP ASN SER PHE ASP LEU PHE ASP SER SER GLN ALA VAL THR PRO LYS SER VAL SER GLU THR PRO PRO LEU SER GLY ASN ASP THR ASP SER LEU SER CYS ASP SER GLY

SER SER ALA THR SER THR PRO CYS VAL SER ARG LEU VAL THR GLY HIS HIS LEU TRP ALA SER LYS ASN GLY ARG HIS VAL LEU GLY LEU ILE GLU ASP TYR GLU ALA LEU LEU LYS GLN ILE SER GLN GLY GLN ARG LEU LEU ALA GLU MET ASP ILE GLN THR GLN GLU ALA PRO SER

SER THR SER GLN GLU LEU GLY THR LYS GLY PRO HIS PRO ALA PRO LEU SER LYS PHE VAL SER SER VAL SER THR ALA LYS LEU THR LEU GLU GLU ALA TYR ARG ARG LEU LYS LEU LEU TRP ARG VAL SER LEU PRO GLU ASP GLY GLN CYS PRO LEU HIS CYS GLU GLN ILE GLY GLU

MET LYS ALA GLU VAL THR LYS LEU HIS LYS LYS LEU PHE GLU GLN GLU LYS LYS LEU GLN ASN THR MET LYS LEU LEU GLN LEU SER LYS ARG GLN GLU LYS VAL ILE PHE ASP GLN LEU VAL VAL THR HIS LYS ILE LEU ARG LYS ALA ARG GLY ASN LEU GLU LEU ARG PRO GLY GLY

ALA HIS PRO GLY THR CYS SER PRO SER ARG PRO GLY SER

- Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain s: 98%

MET MET ASP LEU VAL LEU GLU GLU ASP VAL THR VAL PRO GLY THR LEU SER GLY CYS SER GLY LEU VAL PRO SER VAL PRO ASP ASP LEU ASP GLY ILE ASN PRO ASN ALA GLY LEU GLY ASN GLY LEU LEU PRO ASN VAL SER GLU GLU THR VAL SER PRO THR ARG ALA R58 H93

GLY PRO THR GLU HIS ILE TYR LYS THR ASN ILE GLU LEU LYS VAL GLU VAL GLU SER LEU LYS ARG GLU LEU GLN GLU GLN LEU LEU LYS ALA SER LYS ALA VAL GLU SER LEU ALA GLU GLU ALA GLY GLY SER GLU ILE GLN ARG VAL LYS GLU ASP ALA ARG LYS VAL

GLN GLN VAL GLU ASP LEU LEU THR LYS ARG ILE LEU LEU LEU GLU LYS ASP VAL THR ALA ALA ALA GLN ALA GLU LEU GLU LYS ALA PHE ALA GLY THR GLU THR GLU LYS ALA LEU LEU ARG LEU ARG LEU GLU SER LYS LEU SER GLU MET LYS LYS MET HIS GLU GLY ASP LEU ALA MET ALA

LEU VAL LEU ASP GLU LYS ASP ARG LEU ILE GLU GLU LEU LYS LEU SER LEU LYS SER LYS GLU ALA ALA GLU ILE GLN CYS LEU LYS GLU GLU LYS SER GLN MET ALA CYS PRO ASP GLU ASN VAL SER SER GLY GLU LEU ARG GLY LEU CYS ALA ALA PRO ARG GLU GLU LYS GLU ARG

THR GLU ALA ALA GLN MET GLU HIS GLN LYS GLU ARG ASN SER PHE GLU GLU ARG ILE GLU ALA ALA LEU GLU GLU GLU ASP GLU ARG GLU LYS GLU ARG GLU LYS GLU ARG GLU LYS LYS ASN SER LEU LYS ARG ASP LYS ALA ILE GLN GLY LEU THR MET ALA LEU LYS SER LYS GLU LYS LYS

VAL GLU GLU LEU ASN SER GLU ILE GLU LYS LEU SER ALA ALA PHE ALA LYS ALA ARG GLU ALA LEU GLU GLN LYS ALA ALA GLN THR GLN GLU PHE GLN GLY SER GLU ASP TYR GLU THR ALA LEU SER GLY LYS GLU ALA LEU SER ALA ALA LEU ARG SER GLN GLN ASN LEU THR LYS SER LYS GLU THR GLU

ASN HIS ARG LEU ARG SER ILE LYS LYS ILE THR GLN GLU LEU SER ASP LEU GLN GLN GLU ARG GLU ARG GLU GLU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU LYS LEU ARG GLU VAL ASN GLU ARG

GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU SER ASN LYS LYS LEU HIS ASN GLN GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE GLN GLN ASN CYS TYR LEU MET ALA ALA

GLU ASP LEU GLU LEU ARG SER GLU GLY LEU ILE THR GLU LYS CYS SER SER GLN GLN PRO PRO GLY SER LYS THR ILE PHE SER LYS GLU LYS LYS GLN SER SER ASP TYR GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN ASP ILE TYR THR HIS LEU VAL LYS SER LEU GLN GLU

SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN ASP VAL LEU SER TYR GLN ASN LEU ARG LYS THR LEU GLU GLU GLN ILE SER GLU ILE ARG ARG ARG GLU GLU SER PHE SER LEU TYR SER ASP GLN THR SER TYR LEU SER

ILE CYS LEU GLU GLU ASN ASN ARG PHE GLN VAL GLU HIS PHE SER GLN GLU GLU LEU LYS LYS LYS VAL SER ASP LEU ILE GLN LEU VAL LYS GLU LEU TYR THR ASP ASN GLN HIS LEU LYS LYS THR ILE PHE ASP LEU SER CYS MET GLY PHE GLN GLY ASN GLY PHE PRO ASP ARG

LEU ALA SER THR GLU GLN THR GLU GLU ALA LYS LYS SER ARG LEU PRO ILE LEU ILE LYS PRO SER ARG SER LEU GLY ASN MET TYR ARG LEU PRO ALA THR GLN GLU VAL VAL THR GLN LEU GLN SER GLN ILE LEU GLU LEU GLN GLY GLU LEU LYS GLU PHE LYS THR CYS ASN LYS

GLN LEU HIS GLN LYS LEU ILE LEU ALA GLU ALA VAL MET GLU GLY ARG PRO THR PRO ASP LYS THR LEU LEU ASN ALA GLN PRO PRO VAL GLY ALA ALA TYR GLN ASP SER PRO GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP ARG ASP LYS GLU MET ASP SER ASP GLN

GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA THR TYR LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL MET GLY THR ASP GLN SER GLU SER ILE

ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS ILE HIS ASP LEU GLU THR GLU LEU GLU GLY TYR GLN ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU ALA ILE ILE THR VAL LEU CYS GLY THR GLU GLY ALA GLN ASP GLY LEU SER LYS PRO LYS ASN GLY

SER ASP GLY GLU GLU MET THR PHE SER SER LEU HIS GLN VAL ARG TYR VAL LYS HIS VAL LYS ILE LEU GLY PRO LEU ALA PRO GLU MET ILE ASP SER ARG VAL LEU GLU ASN LEU LYS GLN GLN LEU GLU GLU GLN GLU TYR LYS LEU GLN LYS GLU GLN ASN LEU ASN MET GLN LEU

PHE SER GLU ILE HIS ASN LEU GLN ASN LYS PHE ARG ASP LEU SER PRO PRO ARG TYR ASP SER LEU VAL GLN SER GLN ALA ARG GLU LEU SER LEU GLN ARG GLN GLN ILE LYS ASP GLY HIS GLY ILE CYS VAL ILE SER ARG GLN HIS MET ASN THR MET ILE LYS ALA PHE GLU GLU

LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU GLY PHE GLN GLU GLN LEU ASN GLN CYS ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP ASN LEU THR TYR

GLN HIS LEU LEU PRO GLU SER PRO GLU PRO SER ALA SER HIS ALA LEU SER ASP TYR GLU THR SER GLU LYS SER PHE PHE SER ARG ASP GLN LYS GLN ASP ASN GLU THR GLU LYS THR SER VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS ILE GLN GLU ILE ARG

THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN LEU GLU ARG GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY SER GLU LEU HIS SER SER LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN ALA LEU ASN

ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG LYS THR VAL SER LEU GLU HIS LEU GLN ARG GLU TYR ALA SER VAL LYS GLU GLU ASN GLU ARG LEU GLN LYS GLU GLY SER GLU LYS GLU ARG HIS ASN GLN GLN LEU ILE

GLN GLU VAL ARG CYS SER GLY GLN GLU LEU SER ARG VAL GLN GLU GLU VAL LYS LEU ARG GLN GLN LEU LEU SER GLN ASN ASP LYS LEU LEU GLN SER LEU ARG VAL GLU LEU LYS ALA TYR GLU LYS LEU ASP GLU GLU HIS ARG ARG LEU ARG GLU ALA SER GLY GLU GLY TRP LYS

GLY GLN ASP PRO PHE ARG ASP LEU HIS SER LEU LEU MET GLU ILE GLN ALA LEU ARG LEU GLN LEU GLU ARG SER ILE GLU THR SER SER THR LEU GLN SER ARG LEU LYS GLU GLN LEU ALA ARG GLY ALA GLU LYS ALA GLN GLU GLY ALA LEU THR LEU ALA VAL GLN ALA VAL SER

ILE PRO GLU VAL PRO LEU GLN PRO ASP LYS HIS ASP GLY ASP LYS TYR PRO MET GLU SER ASP ASN SER PHE ASP LEU PHE ASP SER SER GLN ALA VAL THR PRO LYS SER VAL SER GLU THR PRO PRO LEU SER GLY ASN ASP THR ASP SER LEU SER CYS ASP SER GLY SER SER ALA

THR SER THR PRO CYS VAL SER ARG LEU VAL THR GLY HIS HIS LEU TRP ALA SER LYS ASN GLY ARG HIS VAL LEU GLY LEU ILE GLU ASP TYR GLU ALA LEU LEU LYS GLN ILE SER GLN GLY GLN ARG LEU LEU ALA GLU MET ASP ILE GLN THR GLN GLU ALA PRO SER SER THR SER

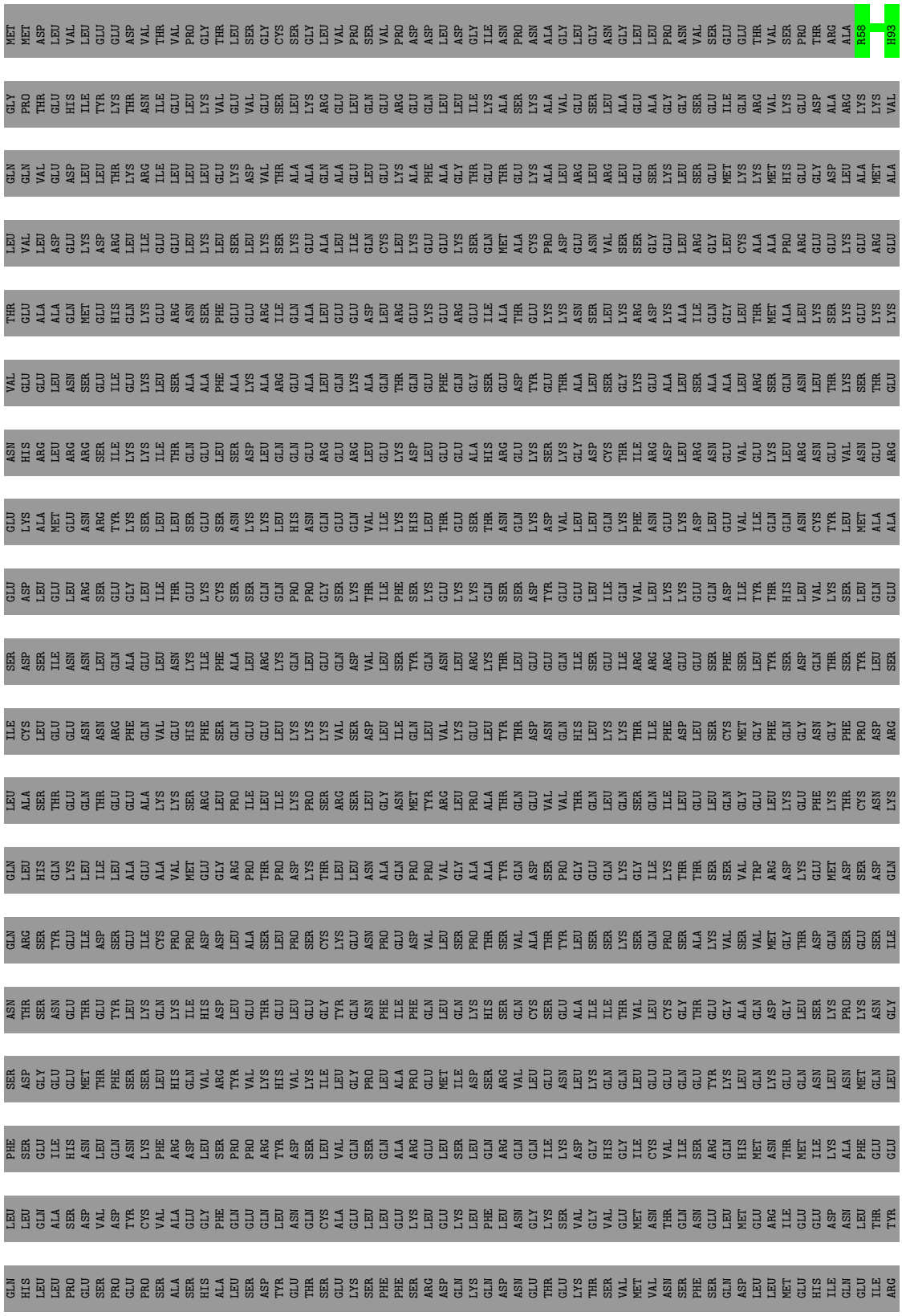
GLN GLU LEU GLY THR LYS GLY PRO HIS PRO ALA PRO LEU SER LYS PHE VAL SER SER VAL SER THR ALA LYS LEU THR LEU GLU GLU ALA TYR ARG ARG LEU LYS LEU LEU TRP ARG VAL SER LEU PRO GLU ASP GLY GLN CYS PRO LEU HIS CYS GLU GLN ILE GLY GLU MET LYS ALA

GLU VAL THR LYS LEU HIS LYS LYS LEU PHE GLU GLN GLU LYS LYS LEU GLN ASN THR MET LYS LEU LEU GLN LEU SER LYS ARG GLN GLU LYS VAL ILE PHE ASP GLN LEU VAL VAL THR HIS LYS ILE LEU ARG LYS ALA ARG GLY ASN LEU GLU LEU ARG PRO GLY GLY ALA HIS PRO

GLY THR CYS SER PRO SER ARG PRO GLY SER

• Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain t: 98%


MET MET ASP LEU VAL LEU GLU GLU ASP VAL THR VAL PRO GLY THR LEU SER GLY CYS SER GLY LEU VAL PRO SER VAL PRO ASP ASP LEU ASP GLY ILE ASN PRO ASN ALA GLY LEU GLY ASN GLY LEU LEU PRO ASN VAL SER GLU GLU THR VAL SER PRO THR ARG ALA R58 H93
GLY PRO THR GLU HIS ILE TYR LYS THR ASN ILE GLU LEU LYS VAL GLU VAL GLU SER LEU LYS ARG GLU LEU GLN GLU ARG GLU GLN LEU LEU ILE LYS ALA SER LYS ALA VAL GLU SER LEU ALA GLU ALA GLY GLY SER GLU ILE GLN ARG VAL LYS GLU ASP ALA ARG LYS LYS VAL
GLN GLN VAL GLU ASP LEU LEU THR LYS ARG ILE LEU LEU LEU GLU LYS ASP VAL THR ALA ALA GLN ALA GLU LEU GLU LYS ALA PHE ALA GLY THR GLU THR GLU LYS ALA LEU ARG LEU GLU SER LYS LEU SER SER GLU MET LYS LYS MET HIS GLU GLY ASP LEU ALA MET ALA
LEU VAL LEU ASP GLU LYS ASP ARG LEU ILE GLU GLU LEU LYS LEU SER LEU LYS SER LYS GLU ALA LEU ILE GLN CYS LEU LYS GLU GLU LYS SER GLN MET ALA CYS PRO ASP GLU ASN VAL SER SER GLY GLU LEU ARG GLY LEU CYS ALA ALA PRO ARG GLU GLU LYS GLU GLU ARG
THR GLU ALA ALA GLN MET GLU HIS GLN LYS LYS GLU ARG ASN SER PHE GLU GLU ARG ILE GLN ALA LEU GLU GLU ASP LEU GLU LYS ARG ASP LEU GLY LEU THR MET ALA LEU LYS SER LYS GLU LYS
VAL GLU GLU LEU ASN SER GLU ILE GLU LYS LYS LEU SER ALA ALA PHE ALA LYS ALA ARG GLU ALA LEU GLU LYS ALA GLN THR GLN GLU PHE GLN GLY SER GLU ALA GLU GLU ALA LEU LEU SER GLY LYS GLU ALA LEU LEU ARG SER ALA ALA LEU ARG GLN ASN GLU LEU THR LYS SER THR GLU
ASN HIS ARG LEU ARG ARG SER ILE LYS LYS ILE THR GLN GLU LEU SER ASP LEU GLN GLU GLU ARG LEU GLU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU LYS LEU ASN VAL GLU ARG
GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU SER ASN LYS LYS LEU HIS ASN GLN GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE GLN GLN ASN CYS TYR LEU MET ALA ALA
GLU ASP LEU GLU LEU ARG SER GLU GLY LEU ILE THR GLU LYS CYS SER SER GLN GLN PRO PRO GLY SER LYS THR ILE PHE SER LYS GLU LYS SER SER ASP TYR GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN GLN THR HIS LEU VAL LYS SER LEU GLN GLU
SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN GLN ASP VAL LEU SER TYR GLN ASN LEU ARG LYS THR GLU GLU GLN ILE SER GLU ILE ARG ARG GLU GLU SER PHE SER LEU TYR SER ASP GLN THR SER TYR LEU LEU SER
ILE CYS LEU GLU GLU ASN ASN ARG PHE GLN VAL GLU HIS PHE SER GLN GLU GLU GLU LEU LYS LYS LYS VAL SER ASP LEU ILE GLN LEU LEU VAL LYS GLU LEU ASN ASN THR ILE PHE ASP LEU SER CYS MET GLY PHE GLN GLN GLY ASN GLY PHE PRO ASP ARG
LEU ALA SER THR GLU GLN THR GLU GLU ALA LYS LYS SER ARG LEU PRO ILE LEU ILE LYS PRO SER ARG SER LEU GLY ASN MET TYR ARG LEU PRO ALA THR GLN GLU VAL VAL THR GLN LEU GLN SER GLN ILE LEU GLU LEU SER CYS MET GLY GLU LEU LYS GLU PHE LYS THR CYS ASN LYS
GLN LEU HIS GLN LYS LEU ILE LEU ALA GLU ALA VAL MET GLU GLY ARG PRO THR PRO ASP LYS THR LEU LEU ASN ALA GLN PRO VAL GLY ALA ALA TYR GLN ASP SER PRO GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP ARG ASP LYS GLU MET ASP SER ASP GLN
GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA ALA THR TYR LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL MET LYS GLU GLY THR ASP SER GLU SER ILE
ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS LYS ILE HIS ASP LEU GLU THR GLU LYS ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU ALA ILE ILE THR VAL LEU CYS GLY THR GLU GLY ALA GLN ASP GLY LEU SER LYS PRO LYS ASN GLY
SER ASP GLY GLU GLU MET THR THR PHE SER SER SER LEU HIS GLN VAL LYS HIS VAL LYS ILE LEU GLY PRO LEU ALA PRO GLU MET ILE ASP SER ARG VAL LEU GLU ASN LEU LYS GLN GLN GLU GLU GLU GLU GLN GLU TYR LYS LEU GLN LYS GLU GLN LEU ASN LEU ASN MET GLN LEU
PHE SER GLU ILE HIS ASN LEU GLN ASN LYS PHE ARG ASP LEU SER PRO PRO ARG TYR ASP SER LEU VAL GLN SER GLN ALA ARG GLU LEU SER LEU GLN LYS ILE LYS ASP GLY HIS GLY ILE CYS VAL ILE SER ARG GLN HIS MET ASN THR MET ILE LYS ALA PHE GLU GLU
LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP LEU LEU THR TYR
GLN HIS LEU LEU PRO GLU SER PRO GLU SER ASP TYR ASN CYS ALA LYS SER PHE PHE SER ARG ASP GLN LYS GLN ASP ASN GLU THR GLU CYS LYS THR SER VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS ILE GLN GLU ILE ARG

THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN LEU GLU ARG GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY SER GLU LEU HIS SER SER LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN ALA LEU ASN

ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG LYS THR VAL SER LEU GLU HIS LEU GLN ARG GLU TYR ALA SER VAL LYS GLU GLU ASN GLU ARG LEU GLN LYS GLU GLY SER GLU LYS GLU ARG HIS ASN GLN GLN LEU ILE

GLN GLU VAL ARG CYS SER GLY GLN GLU LEU SER ARG VAL GLN GLU GLU VAL LYS LEU ARG GLN GLN LEU LEU SER GLN ASN ASP LYS LEU LEU SER ARG GLU VAL LYS LEU GLN SER LEU ARG VAL GLU LEU LYS ALA TYR GLU LYS LEU ASP GLU GLU HIS ARG ARG LEU ARG GLU ALA SER GLY GLU GLY TRP LYS

GLY GLN ASP PRO PHE ARG ASP LEU HIS SER LEU LEU MET GLU ILE GLN ALA LEU ARG LEU GLN LEU GLU ARG SER ILE GLU THR SER SER THR LEU GLN SER LEU ARG LEU LYS GLU GLN LEU ALA ARG GLY ALA LEU THR LEU ALA SER GLY VAL GLN ALA VAL SER

ILE PRO GLU VAL PRO LEU GLN PRO ASP LYS HIS ASP GLY ASP LYS TYR PRO MET GLU SER ASP ASN SER PHE ASP LEU PHE ASP SER SER SER GLN LYS SER VAL SER GLU THR PRO PRO LEU SER GLY ASN ASP THR ASP SER LEU SER CYS ASP SER GLY SER SER ALA

THR SER THR PRO CYS VAL SER ARG LEU VAL THR GLY HIS HIS LEU TRP ALA SER LYS ASN GLY ARG HIS VAL LEU GLY LEU ILE GLU ASP TYR GLU ALA LEU LYS GLN ILE SER GLN LEU GLY GLN ARG LEU LEU ALA GLU MET ASP ILE GLN THR GLN GLU ALA PRO SER SER THR SER

GLN GLU LEU GLY THR LYS GLY PRO HIS PRO ALA PRO LEU SER LYS PHE VAL SER SER VAL SER THR ALA LYS LEU THR LEU GLU GLU ALA TYR ARG ARG LEU LEU LYS LEU LEU TRP ARG VAL SER LEU PRO GLU ASP GLY GLN CYS PRO LEU HIS CYS GLU GLN ILE GLY GLU MET LYS ALA

GLU VAL THR LYS LEU HIS LYS LYS LEU PHE GLU GLN GLU LYS LYS LEU GLN ASN THR MET LYS LEU LEU GLN LEU SER LYS ARG GLN GLU LYS VAL ILE PHE ASP GLN LEU VAL VAL THR HIS LYS ILE LEU ARG LYS ALA ARG GLY ASN LEU GLU LEU ARG PRO GLY GLY ALA HIS PRO

GLY THR CYS SER PRO SER ARG PRO GLY SER

- Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain v: 98%

MET MET ASP LEU VAL LEU GLU GLU ASP VAL THR VAL PRO GLY THR LEU SER GLY CYS SER GLY LEU VAL PRO SER VAL PRO ASP ASP LEU ASP GLY ILE ASN PRO ASN ALA GLY LEU GLY ASN GLY LEU LEU PRO ASN VAL SER GLU GLU THR VAL SER PRO THR ARG ALA R58 H93

GLY PRO THR GLU HIS ILE TYR LYS THR ASN ILE GLU LEU LYS VAL GLU VAL GLU SER LEU LYS ARG GLU LEU GLN GLU ARG GLU GLN LEU LEU ILE LYS ALA SER LYS ALA VAL GLU SER LEU ALA GLU ALA GLY GLY SER GLU ILE GLN ARG VAL LYS GLU ASP ALA ARG LYS LYS VAL

GLN GLN VAL GLU ASP LEU LEU THR LYS ARG ILE LEU LEU LEU GLU LYS ASP VAL THR ALA ALA GLN ALA GLU LEU GLU LYS ALA ALA GLY THR GLU THR GLU LYS ALA LEU ARG LEU GLU SER LYS LEU LEU SER GLU MET LYS LYS MET HIS GLU GLY ASP LEU ALA MET ALA

LEU VAL LEU ASP GLU LYS ASP ARG LEU ILE GLU GLU LEU LYS LEU SER LEU LYS SER LYS GLU ALA ALA GLN ILE GLU LYS SER GLN MET ALA CYS PRO ASP GLU ASN VAL SER SER GLY GLU LEU LEU ARG GLY LEU CYS ALA ALA PRO ARG GLU GLU LYS GLU ARG GLU

THR GLU ALA ALA GLN MET GLU HIS GLN LYS GLU ARG ASN SER PHE GLU GLU LEU ARG ILE GLN ALA LEU GLU GLU GLU ASP LEU ARG GLU ILE ALA GLU LYS LYS ASN SER LEU LYS ARG ASP LYS ALA ILE GLN LEU LEU ARG GLN LYS SER LYS GLU LYS LYS

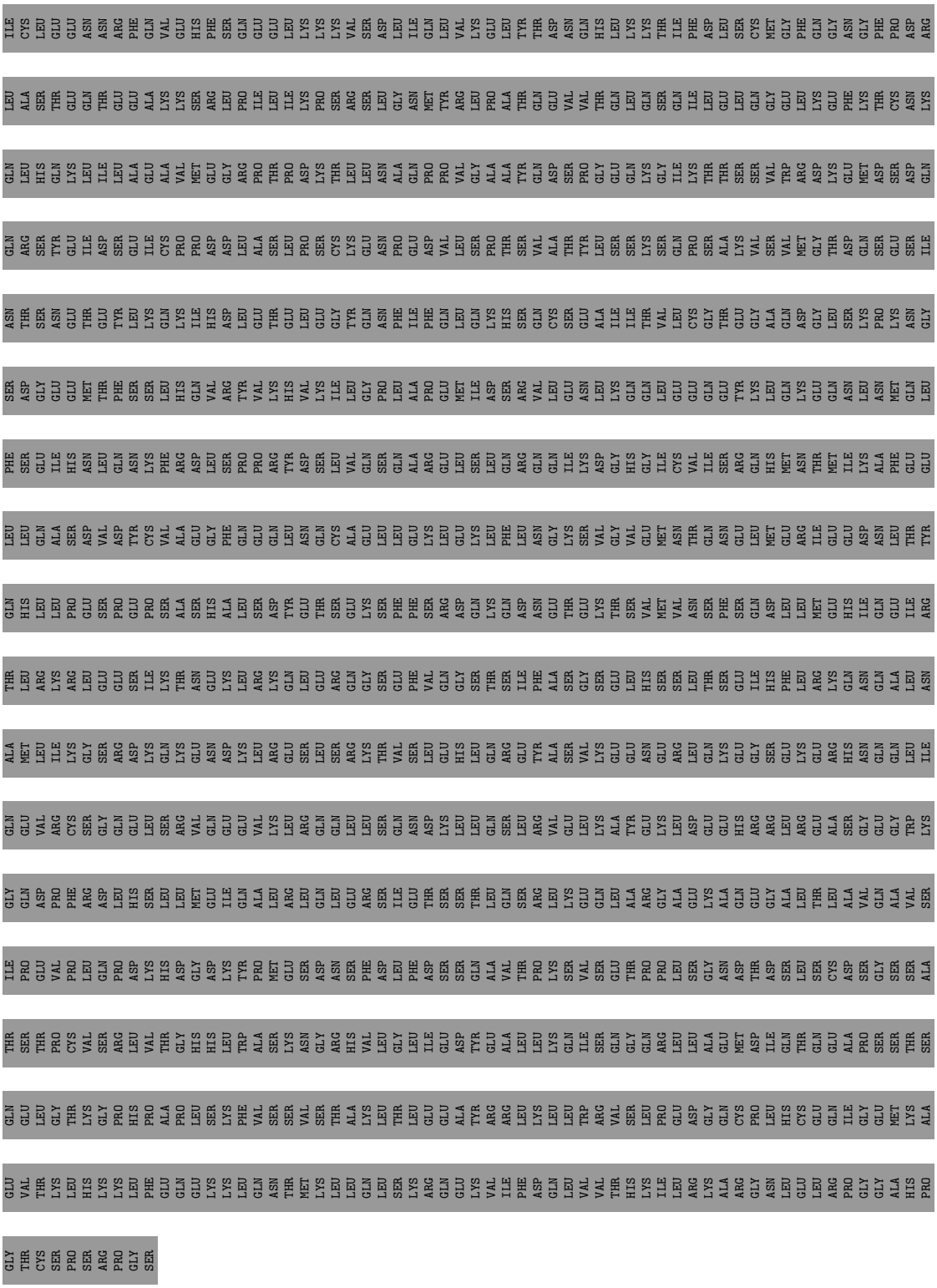
VAL GLU GLU LEU ASN SER GLU ILE GLU LYS LEU SER ALA ALA PHE ALA LYS ALA ARG GLU ALA LEU GLN LYS ALA GLN THR GLN GLU PHE GLN GLY SER GLU ASP TYR GLU THR ALA LEU SER GLY LYS GLU ALA LEU SER ALA ALA LEU ARG SER GLN ASN LEU THR LYS SER THR GLU

ASN HIS ARG LEU ARG ARG SER ILE LYS LYS ILE THR GLN GLU LEU ARG ARG GLU LEU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU LYS LEU ARG ASN GLU VAL ASN GLU ARG

GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU SER ASN LYS LEU HIS ASN GLN GLN GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE GLN GLN GLN ASN CYS TYR LEU MET ALA ALA

GLU ASP LEU GLU LEU GLU ILE GLY LEU ILE THR GLU LYS CYS SER SER GLY SER LYS THR ILE PHE SER LYS GLU LYS LYS GLN SER SER ASP TYR GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN GLN GLU GLU ILE ILE THR HIS LEU VAL LYS SER LEU GLN GLU

SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN ASP VAL LEU SER TYR GLN ASN LEU ARG LYS THR LEU GLU GLU GLN ILE SER GLU ILE ARG ARG GLU GLU SER PHE SER LEU TYR SER ASP GLN THR SER TYR LEU SER



• Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain u: 98%

GLY PRO THR GLU HIS ILE TYR LYS THR ASN ILE GLU LEU LYS VAL GLU VAL GLU SER LEU LYS ARG GLU LEU GLN GLU ARG GLU GLN LEU LEU ILE LYS ALA SER LYS ALA VAL GLU SER LEU ALA GLU ALA GLY GLY SER GLU ILE GLN ARG VAL LYS GLU ASP ALA ARG LYS LYS VAL

GLN GLN VAL GLU ASP LEU LEU THR LYS ARG ILE LEU LEU LEU GLU LYS ASP VAL THR ALA ALA GLN ALA GLU LEU GLU LYS ALA PHE ALA GLY THR GLU THR GLU LYS ALA LEU ARG LEU ARG LEU GLU SER LYS LEU SER GLU MET LYS LYS MET HIS GLU GLY ASP LEU ALA MET ALA

LEU VAL LEU ASP GLU LYS ASP ARG LEU ILE GLU GLU LEU LYS LEU SER LEU LYS SER LYS GLU ALA LEU ILE GLN CYS LEU LYS GLU GLU LYS SER GLN MET ALA CYS PRO ASP GLU ASN VAL SER SER GLY GLU LEU ARG GLY LEU CYS ALA ALA PRO ARG GLU GLU LYS GLU ARG GLU

THR GLU ALA ALA GLN MET GLU HIS GLN LYS GLU ARG ASN SER PHE GLU GLU ARG ILE GLN ALA LEU GLU GLU ASP LEU ARG GLU LYS GLU ARG GLU ILE ALA THR GLU LYS LYS ASN SER LEU LYS ARG ASP LYS ALA ILE GLN GLY LEU THR MET ALA LEU LYS SER LYS GLU LYS LYS

VAL GLU GLU LEU ASN SER GLU ILE GLU LYS LEU SER ALA ALA PHE ALA LYS ALA ARG GLU ALA LEU GLN LYS ALA GLN THR GLN GLU PHE GLN GLY SER GLU ASP TYR GLU THR ALA LEU SER GLY LYS GLU ALA LEU SER ALA ALA LEU ARG SER GLN ASN LEU THR LYS SER THR GLU

ASN HIS ARG LEU ARG ARG SER ILE LYS LYS ILE THR GLN GLU LEU SER ASP LEU GLN GLN GLU ARG GLU ARG LEU GLU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU LYS LEU ARG ASN GLU VAL ASN GLU ARG

GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU SER ASN LYS LYS LEU HIS ASN GLN GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE GLN GLN ASN CYS TYR LEU MET ALA ALA

GLU ASP LEU GLU LEU ARG SER GLU GLY LEU ILE THR GLU LYS CYS SER SER GLN GLN PRO PRO GLY SER LYS THR ILE PHE SER LYS GLU LYS LYS GLN SER SER ASP TYR GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN ASP ILE TYR THR HIS LEU VAL LYS SER LEU GLN GLU

SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN ASP VAL LEU SER TYR GLN ASN LEU ARG LYS THR LEU GLU GLU GLN ILE SER GLU ILE ARG ARG ARG GLU GLU SER PHE SER LEU TYR SER ASP GLN THR SER TYR LEU SER

ILE CYS LEU GLU GLU ASN ASN ARG PHE GLN VAL GLU HIS PHE SER GLN GLU GLU LEU LYS LYS LYS VAL SER ASP LEU ILE GLN LEU VAL LYS GLU LEU TYR THR ASP ASN GLN HIS LEU LYS LYS THR ILE PHE ASP LEU SER CYS MET GLY PHE GLN GLY ASN GLY PHE PRO ASP ARG

LEU ALA SER THR GLU GLN THR GLU GLU ALA LYS LYS SER ARG LEU PRO ILE LEU ILE LYS PRO SER ARG SER LEU GLY ASN MET TYR ARG LEU PRO ALA THR GLN GLU VAL VAL THR GLN LEU GLN SER GLN ILE LEU GLU LEU GLN GLY GLU LEU LYS GLU PHE LYS THR CYS ASN LYS

GLN LEU HIS GLN LYS LEU ILE LEU ALA GLU ALA VAL MET GLU GLY ARG PRO THR PRO ASP LYS THR LEU LEU ASN ALA GLN PRO PRO VAL GLY ALA ALA TYR GLN ASP SER PRO GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP ARG ASP LYS GLU MET ASP SER ASP GLN

GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA THR TYR LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL MET GLY THR ASP GLN SER GLU SER ILE

ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS ILE HIS ASP LEU GLU THR GLU LEU GLU GLY TYR GLN ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU ALA ILE ILE THR VAL LEU CYS GLY THR GLU GLY ALA GLN ASP GLY LEU SER LYS PRO LYS ASN GLY

SER ASP GLY GLU GLU MET THR PHE SER SER LEU HIS GLN VAL ARG TYR VAL LYS HIS VAL LYS ILE LEU GLY PRO LEU ALA PRO GLU MET ILE ASP SER ARG VAL LEU GLU ASN LEU LYS GLN GLN LEU GLU GLU GLN GLU TYR LYS LEU GLN LYS GLU GLN ASN LEU ASN MET GLN LEU

PHE SER GLU ILE HIS ASN LEU GLN ASN LYS PHE ARG ASP LEU SER PRO PRO ARG TYR ASP SER LEU VAL GLN SER GLN ALA ARG GLU LEU SER LEU GLN ARG GLN GLN ILE LYS ASP GLY HIS GLY ILE CYS VAL ILE SER ARG GLN HIS MET ASN THR MET ILE LYS ALA PHE GLU GLU

LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU GLY PHE GLN GLU GLN LEU ASN GLN CYS ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP ASN LEU THR TYR

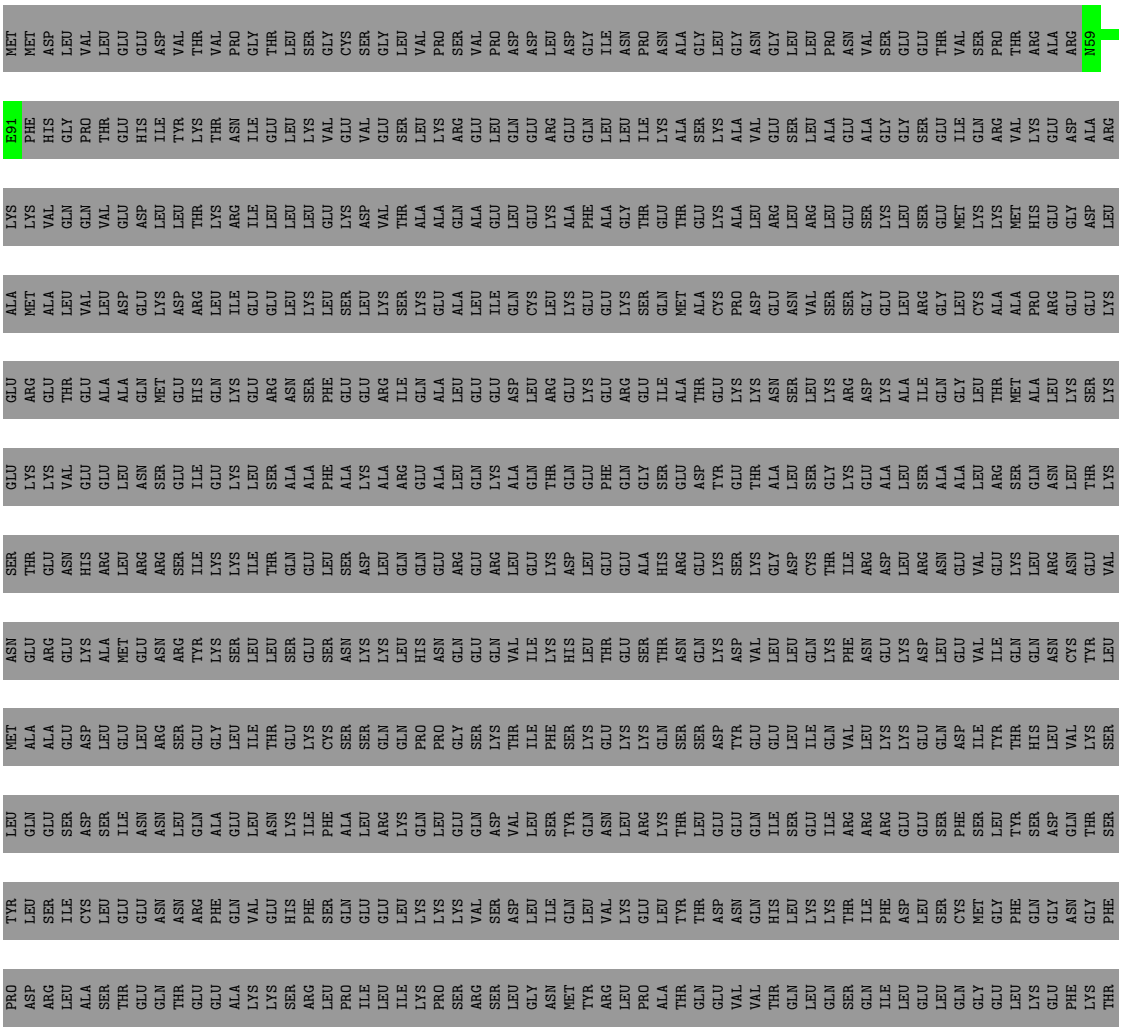
GLN HIS LEU LEU PRO GLU SER PRO GLU PRO SER ALA SER HIS ALA LEU SER ASP TYR GLU THR SER GLU LYS SER PHE PHE SER ARG ASP GLN LYS GLN ASP ASN GLU THR GLU LYS THR SER VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS ILE GLN GLU ILE ARG

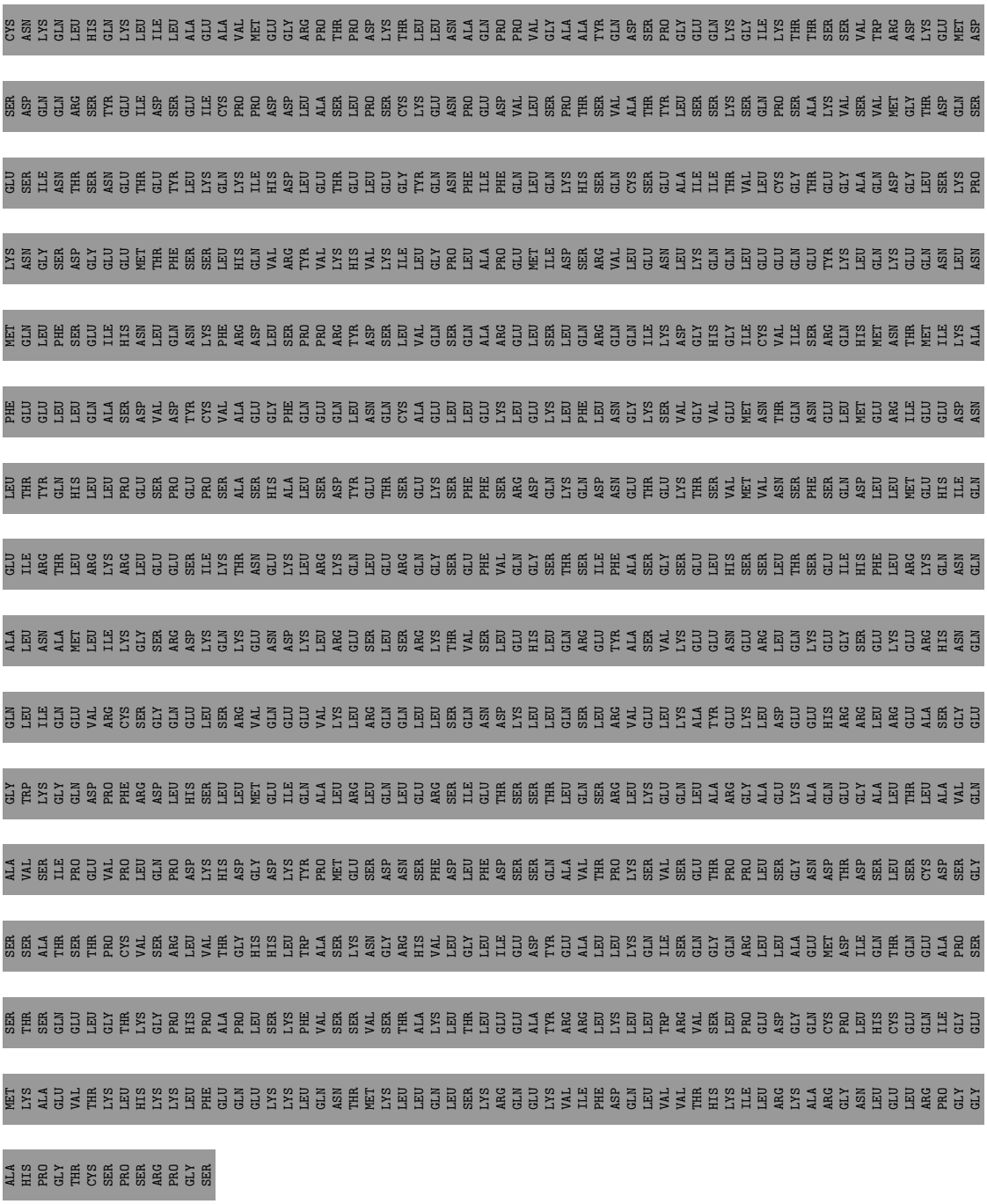
THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN LEU GLU ARG GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY SER GLU LEU HIS SER SER LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN ALA LEU ASN

ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG LYS THR VAL SER LEU GLU HIS LEU GLN ARG GLU TYR ALA SER VAL LYS GLU GLU ASN GLU ARG LEU GLN LYS GLU GLY SER GLU LYS GLU ARG HIS ASN GLN GLN LEU ILE

• Molecule 9: CDK5 regulatory subunit-associated protein 2

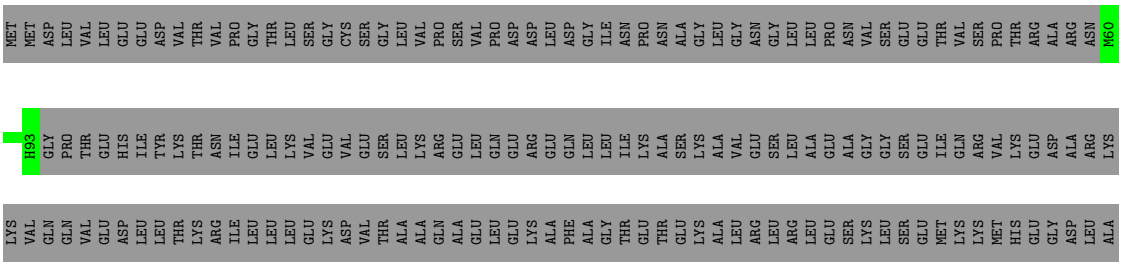
Chain w: 98%






• Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain x: 98%



MET ALA LEU VAL LEU ASP GLU LYS ASP ARG LEU ILE GLU GLU LEU LYS LEU SER LEU LYS SER LYS GLU ALA LEU ILE GLN CYS LEU LYS GLU GLU LYS SER GLN MET ALA CYS PRO ASP GLU ASN VAL SER SER GLY GLU LEU ARG GLY LEU CYS ALA ALA PRO ARG GLU GLU LYS GLU

ARG GLU THR GLU ALA ALA GLN MET GLU HIS GLN LYS GLU ARG ASN SER PHE GLU GLU ARG ILE GLN ALA LEU GLU GLU ASP LEU ARG GLU LYS GLU ARG GLU ILE ALA THR GLU LYS LYS ASN SER LEU LYS ARG ASP LYS ALA ILE GLN GLY LEU THR MET ALA LEU LYS SER LYS GLU

LYS LYS VAL GLU GLU LEU ASN SER GLU ILE GLU LYS LEU SER ALA ALA PHE ALA LYS ALA ARG GLU ALA LEU GLN LYS ALA GLN THR GLN GLU PHE GLN GLY SER GLU ASP TYR GLU THR ALA LEU SER GLY LYS GLU ALA LEU SER ALA ALA LEU ARG SER GLN ASN LEU THR LYS SER

THR GLU ASN HIS ARG LEU ARG ARG SER ILE LYS LYS ILE THR GLN GLU LEU SER ASP LEU GLN GLN GLU ARG GLU ARG LEU GLU LYS ASP LEU GLU GLU ALA HIS ARG GLU LYS SER LYS GLY ASP CYS THR ILE ARG ASP LEU ARG ASN GLU VAL GLU LYS LEU ARG ASN GLU VAL ASN

GLU ARG GLU LYS ALA MET GLU ASN ARG TYR LYS SER LEU LEU SER GLU SER ASN LYS LYS LEU HIS ASN GLN GLU GLN VAL ILE LYS HIS LEU THR GLU SER THR ASN GLN LYS ASP VAL LEU LEU GLN LYS PHE ASN GLU LYS ASP LEU GLU VAL ILE GLN GLN ASN CYS TYR LEU MET

ALA ALA GLU ASP LEU GLU LEU ARG SER GLU GLY LEU ILE THR GLU LYS CYS SER SER GLN GLN PRO PRO GLY SER LYS THR ILE PHE SER LYS GLU LYS LYS GLN SER SER ASP TYR GLU GLU LEU ILE GLN VAL LEU LYS LYS GLU GLN ASP ILE TYR THR HIS LEU VAL LYS SER LEU

GLN GLU SER ASP SER ILE ASN ASN LEU GLN ALA GLU LEU ASN LYS ILE PHE ALA LEU ARG LYS GLN LEU GLU GLN ASP VAL LEU SER TYR GLN ASN LEU ARG LYS THR LEU GLU GLU GLN ILE SER GLU ILE ARG ARG GLU GLU SER PHE SER LEU TYR SER ASP GLN THR SER TYR

LEU SER ILE CYS LEU GLU GLU ASN ASN ARG PHE GLN VAL GLU HIS PHE SER GLN GLU GLU LEU LYS LYS LYS VAL SER ASP LEU ILE GLN LEU VAL LYS GLU LEU TYR THR ASP ASN GLN HIS LEU LYS LYS THR ILE PHE ASP LEU SER CYS MET GLY PHE GLN GLY ASN GLY PHE PRO

ASP ARG LEU ALA SER THR GLU GLN THR GLU GLU ALA LYS SER ARG LEU PRO ILE LEU ILE LYS PRO SER ARG SER LEU GLY ASN MET TYR ARG LEU PRO ALA THR GLN GLU VAL VAL THR GLN LEU GLN SER GLN ILE LEU GLU LEU GLN GLY GLU LEU LYS GLU PHE LYS THR CYS

ASN LYS GLN LEU HIS GLN LYS LEU ILE LEU ALA GLU ALA VAL MET GLU GLY ARG PRO THR PRO ASP LYS THR LEU LEU ASN ALA GLN PRO PRO VAL GLY ALA ALA TYR GLN ASP SER PRO GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP ARG ASP LYS GLU MET ASP SER

ASP GLN GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA THR TYR LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL MET GLY THR ASP GLN SER GLU

SER ILE ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS ILE HIS ASP LEU GLU THR GLU LEU GLU GLY TYR GLN ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU ALA ILE ILE THR VAL LEU CYS GLY THR GLU GLY ALA GLN ASP GLY LEU SER LYS PRO LYS

ASN GLY SER ASP GLY GLU GLU MET THR PHE SER SER LEU HIS GLN VAL ARG TYR VAL LYS HIS VAL LYS ILE LEU GLY PRO LEU ALA PRO GLU MET ILE ASP SER ARG VAL LEU GLU ASN LEU LYS GLN GLN LEU GLU GLU GLN GLU TYR LYS LEU GLN LYS GLU GLN ASN LEU ASN MET

GLN LEU PHE SER GLU ILE HIS ASN LEU GLN ASN LYS PHE ARG ASP LEU SER PRO PRO ARG TYR ASP SER LEU VAL GLN SER GLN ALA ARG GLU LEU SER LEU GLN ARG GLN GLN ILE LYS ASP GLY HIS GLY ILE CYS VAL ILE SER ARG GLN HIS MET ASN THR MET ILE LYS ALA PHE

GLU GLU LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU GLY PHE GLN GLU GLN LEU ASN GLN CYS ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP ASN LEU

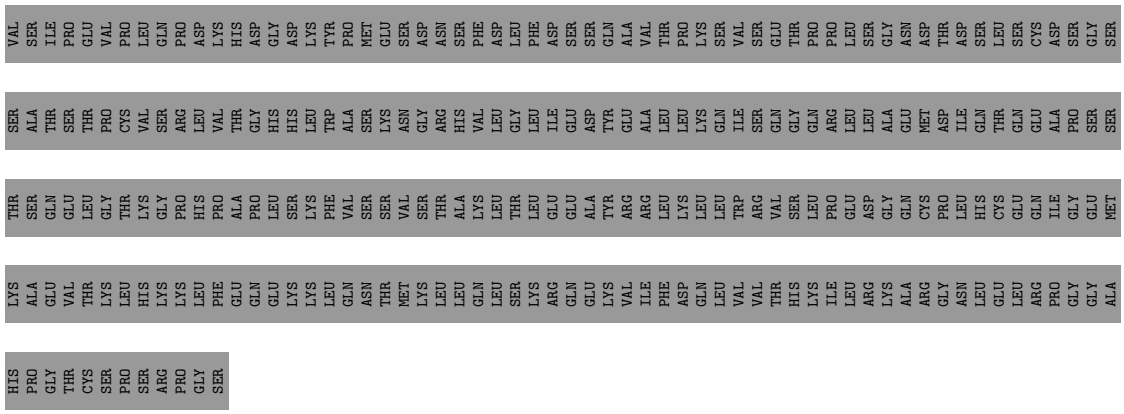
THR TYR GLN HIS LEU LEU PRO GLU SER PRO GLU PRO SER ALA SER HIS ALA LEU SER ASP TYR GLU THR SER GLU LYS SER PHE PHE SER ARG ASP GLN LYS GLN ASP ASN GLU THR GLU LYS THR SER VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS ILE GLN GLU

ILE ARG THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN LEU GLU ARG GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY SER GLU LEU HIS SER SER LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN ALA

LEU ASN ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG LYS THR VAL SER LEU GLU HIS LEU GLN ARG GLU TYR ALA SER VAL LYS GLU GLU ASN GLU ARG LEU GLN LYS GLU GLY SER GLU LYS GLU ARG HIS ASN GLN GLN

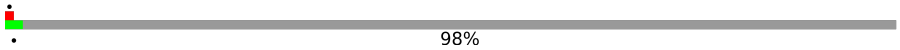
LEU ILE GLN GLU VAL ARG CYS SER GLY GLN GLU LEU SER ARG VAL GLN GLU GLU VAL LYS LEU ARG GLN GLN LEU LEU SER GLN ASN ASP LYS LEU LEU GLN SER LEU ARG VAL GLU LEU LYS ALA TYR GLU LYS LEU ASP GLU GLU HIS ARG ARG LEU ARG GLU ALA SER GLY GLU GLY

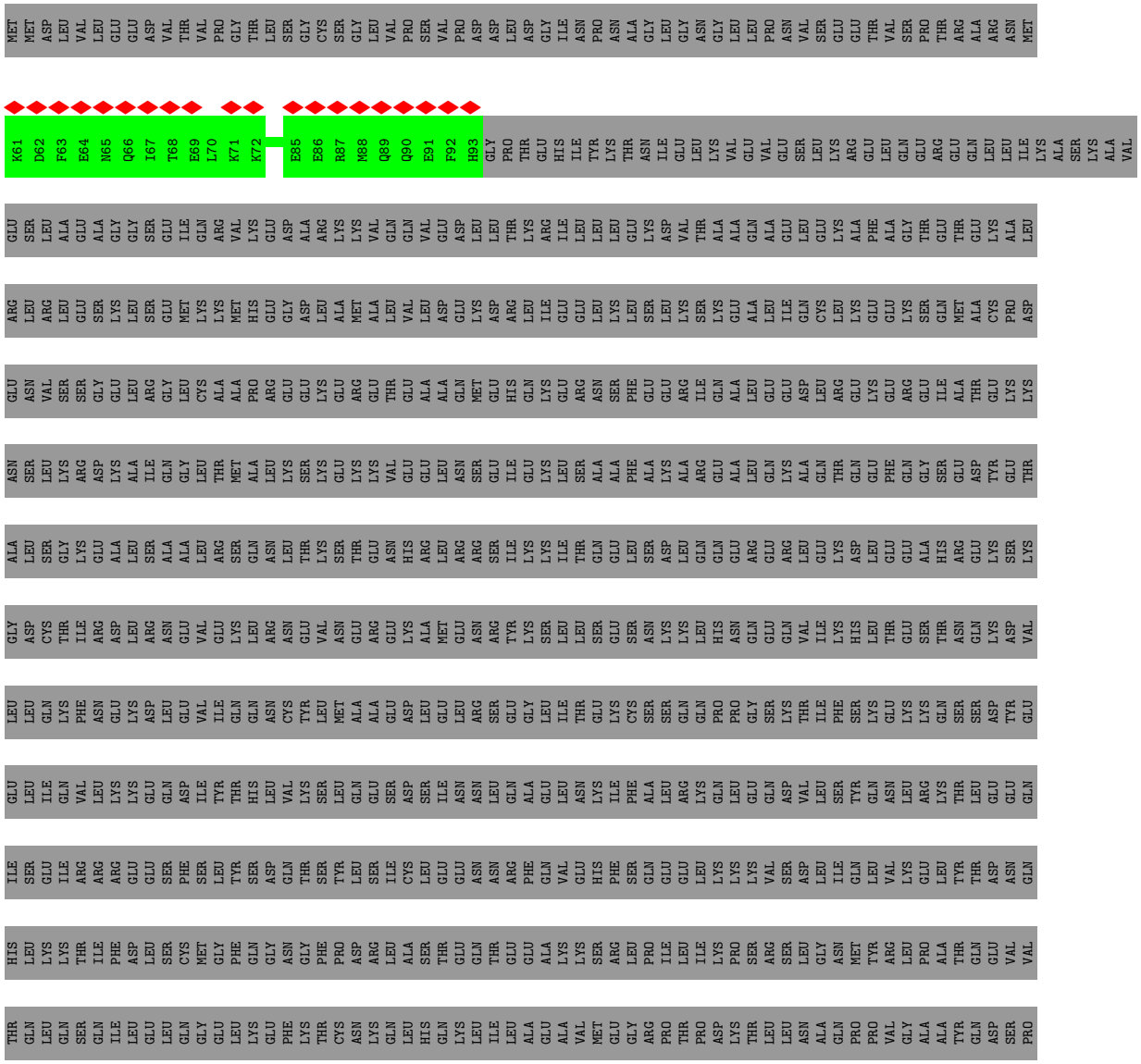
TRP LYS GLY GLN ASP PRO PHE ARG ASP LEU HIS SER LEU LEU MET GLU ILE GLN ALA LEU ARG LEU GLN LEU GLU ARG SER ILE GLU THR SER SER THR LEU GLN SER ARG LEU LYS GLU GLN LEU ALA ARG GLY ALA GLU LYS ALA GLN GLU GLY ALA LEU THR LEU ALA VAL GLN ALA



• Molecule 9: CDK5 regulatory subunit-associated protein 2

Chain p:



GLY GLU GLN LYS GLY ILE LYS THR THR SER SER VAL TRP ARG ASP LYS GLU MET ASP SER ASP GLN GLN ARG SER TYR GLU ILE ASP SER GLU ILE CYS PRO PRO ASP ASP LEU ALA SER LEU PRO SER CYS LYS GLU ASN PRO GLU ASP VAL LEU SER PRO THR SER VAL ALA THR TYR

LEU SER SER LYS SER GLN PRO SER ALA LYS VAL SER VAL MET GLY THR ASP GLN SER GLU SER ILE ASN THR SER ASN GLU THR GLU TYR LEU LYS GLN LYS ILE HIS ASP LEU GLU THR GLU LEU GLU GLY TYR GLN ASN PHE ILE PHE GLN LEU GLN LYS HIS SER GLN CYS SER GLU

ALA ILE ILE THR VAL LEU CYS GLY THR GLU GLY ALA GLN ASP GLY LEU SER LYS PRO LYS ASN GLY SER ASP GLY GLU GLU MET THR PHE SER SER LEU HIS GLN VAL ARG TYR VAL LYS HIS VAL LYS ILE LEU GLY PRO LEU ALA PRO GLU MET ILE ASP SER ARG VAL LEU GLU ASN

LEU LYS GLN GLN LEU GLU GLU GLN GLU TYR LYS LEU GLN LYS GLU GLN ASN LEU ASN MET GLN LEU PHE SER GLU ILE HIS ASN LEU GLN ASN LYS PHE ARG ASP LEU SER PRO PRO ARG TYR ASP SER LEU VAL GLN SER GLN ALA ARG GLU LEU SER LEU GLN ARG GLN GLN ILE LYS

ASP GLY HIS GLY ILE CYS VAL ILE SER ARG GLN HIS MET ASN THR MET ILE LYS ALA PHE GLU GLU LEU LEU GLN ALA SER ASP VAL ASP TYR CYS VAL ALA GLU GLY PHE GLN GLU GLN LEU ASN GLN CYS ALA GLU LEU LEU GLU LYS LEU GLU LYS LEU PHE LEU ASN GLY LYS SER

VAL GLY VAL GLU MET ASN THR GLN ASN GLU LEU MET GLU ARG ILE GLU GLU ASP ASN LEU THR TYR GLN HIS LEU LEU PRO GLU SER PRO GLU PRO SER ALA SER HIS ALA LEU SER ASP TYR GLU THR SER GLU LYS SER PHE PHE SER ARG ASP GLN LYS GLN ASP ASN GLU THR GLU

LYS THR SER VAL MET VAL ASN SER PHE SER GLN ASP LEU LEU MET GLU HIS ILE GLN GLU ILE ARG THR LEU ARG LYS ARG LEU GLU GLU SER ILE LYS THR ASN GLU LYS LEU ARG LYS GLN LEU GLU ARG GLN GLY SER GLU PHE VAL GLN GLY SER THR SER ILE PHE ALA SER GLY

SER GLU LEU HIS SER SER LEU THR SER GLU ILE HIS PHE LEU ARG LYS GLN ASN GLN ALA LEU ASN ALA MET LEU ILE LYS GLY SER ARG ASP LYS GLN LYS GLU ASN ASP LYS LEU ARG GLU SER LEU SER ARG LYS THR VAL SER LEU GLU HIS LEU GLN ARG GLU TYR ALA SER VAL

LYS GLU GLU ASN GLU ARG LEU GLN LYS GLU GLY SER GLU LYS GLU ARG HIS ASN GLN GLN LEU ILE GLN GLU VAL ARG CYS SER GLY GLN GLU LEU SER ARG VAL GLN GLU GLU VAL LYS LEU ARG GLN GLN LEU LEU SER GLN ASN ASP LYS LEU LEU GLN SER LEU ARG VAL GLU LEU

LYS ALA TYR GLU LYS LEU ASP GLU GLU HIS ARG ARG LEU ARG GLU ALA SER GLY GLU GLY TRP LYS GLY GLN ASP PRO PHE ARG ASP LEU HIS SER LEU LEU MET GLU ILE GLN ALA LEU ARG LEU GLN LEU GLU ARG SER ILE GLU THR SER SER THR LEU GLN SER ARG LEU LYS GLU

GLN LEU ALA ARG GLY ALA GLU LYS ALA GLN GLU GLY ALA LEU THR LEU ALA VAL GLN ALA VAL SER ILE PRO GLU VAL PRO LEU GLN PRO ASP LYS HIS ASP GLY ASP LYS TYR PRO MET GLU SER ASP ASN SER PHE ASP LEU PHE ASP SER SER GLN ALA VAL THR PRO LYS SER VAL

SER GLU THR PRO PRO LEU SER GLY ASN ASP THR ASP SER LEU SER CYS ASP SER GLY SER SER ALA THR SER THR PRO CYS VAL SER ARG LEU VAL THR GLY HIS HIS LEU TRP ALA SER LYS ASN GLY ARG HIS VAL LEU GLY LEU ILE GLU ASP TYR GLU ALA LEU LEU LYS GLN ILE

SER GLN GLY GLN ARG LEU LEU ALA GLU MET ASP ILE GLN THR GLN GLU ALA PRO SER SER THR SER GLN GLU LEU GLY THR LYS GLY PRO HIS PRO ALA PRO LEU SER LYS PHE VAL SER SER VAL SER THR ALA LYS LEU THR LEU GLU GLU ALA TYR ARG ARG LEU LYS LEU LEU TRP

ARG VAL SER LEU PRO GLU ASP GLY GLN CYS PRO LEU HIS CYS GLU GLN ILE GLY GLU MET LYS ALA GLU VAL THR LYS LEU HIS LYS LYS LEU PHE GLU GLN GLU LYS LYS LEU GLN ASN THR MET LYS LEU LEU GLN LEU SER LYS ARG GLN GLU LYS VAL ILE PHE ASP GLN LEU VAL

VAL THR HIS LYS ILE LEU ARG LYS ALA ARG GLY ASN LEU GLU LEU ARG PRO GLY GLY ALA HIS PRO GLY THR CYS SER PRO SER ARG PRO GLY SER

# 4 Experimental information (i)

| Property | Value | Source |
|---|---|---|
| EM reconstruction method | SINGLE PARTICLE | Depositor |
| Imposed symmetry | POINT, Not provided | |
| Number of particles used | 16448 | Depositor |
| Resolution determination method | FSC 0.143 CUT-OFF | Depositor |
| CTF correction method | NONE | Depositor |
| Microscope | TFS KRIOS | Depositor |
| Voltage (kV) | 300 | Depositor |
| Electron dose ($e^-/Å^2$) | 55 | Depositor |
| Minimum defocus (nm) | 900 | Depositor |
| Maximum defocus (nm) | 2900 | Depositor |
| Magnification | Not provided | |
| Image detector | GATAN K3 BIOQUANTUM (6k x 4k) | Depositor |
| Maximum map value | 0.715 | Depositor |
| Minimum map value | -0.183 | Depositor |
| Average map value | 0.004 | Depositor |
| Map value standard deviation | 0.033 | Depositor |
| Recommended contour level | 0.125 | Depositor |
| Map size (Å) | 542.7199, 542.7199, 542.7199 | wwPDB |
| Map dimensions | 384, 384, 384 | wwPDB |
| Map angles (°) | 90.0, 90.0, 90.0 | wwPDB |
| Pixel spacing (Å) | 1.413333, 1.413333, 1.413333 | Depositor |

# 5 Model quality (i)

## 5.1 Standard geometry (i)

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 | 0.26 | 0/3382 | 0.47 | 0/4715 |
| 1 | C | 0.26 | 0/3953 | 0.45 | 0/5511 |
| 1 | E | 0.26 | 0/3953 | 0.46 | 0/5511 |
| 1 | G | 0.26 | 0/3953 | 0.43 | 0/5511 |
| 1 | M | 0.24 | 0/3857 | 0.42 | 0/5374 |
| 2 | B | 0.24 | 0/3057 | 0.44 | 0/4260 |
| 2 | D | 0.26 | 0/3057 | 0.44 | 0/4260 |
| 2 | F | 0.25 | 0/3057 | 0.41 | 0/4260 |
| 2 | H | 0.26 | 0/3642 | 0.41 | 0/5075 |
| 2 | N | 0.23 | 0/3568 | 0.39 | 0/4971 |
| 3 | I | 0.26 | 0/3007 | 0.44 | 0/4186 |
| 3 | K | 0.25 | 0/3007 | 0.41 | 0/4186 |
| 4 | J | 0.24 | 0/3117 | 0.42 | 0/4339 |
| 5 | L | 0.25 | 0/3891 | 0.44 | 0/5403 |
| 6 | O | 0.23 | 0/332 | 0.34 | 0/462 |
| 6 | P | 0.27 | 0/332 | 0.44 | 0/462 |
| 6 | Q | 0.22 | 0/317 | 0.35 | 0/441 |
| 7 | V | 0.23 | 0/220 | 0.40 | 0/303 |
| 7 | W | 0.24 | 0/220 | 0.42 | 0/303 |
| 7 | X | 0.24 | 0/220 | 0.37 | 0/303 |
| 7 | Y | 0.26 | 0/251 | 0.41 | 0/348 |
| 8 | a | 0.26 | 0/2193 | 0.48 | 0/3053 |
| 8 | b | 0.26 | 0/2181 | 0.49 | 0/3034 |
| 8 | c | 0.27 | 0/2171 | 0.49 | 0/3020 |
| 8 | d | 0.28 | 0/2101 | 0.50 | 0/2921 |
| 8 | e | 0.27 | 0/2132 | 0.48 | 0/2966 |
| 8 | f | 0.27 | 0/2137 | 0.48 | 0/2973 |
| 8 | g | 0.27 | 0/2137 | 0.48 | 0/2973 |
| 8 | h | 0.27 | 0/2167 | 0.50 | 0/3015 |
| 8 | i | 0.27 | 0/2162 | 0.49 | 0/3008 |
| 8 | j | 0.26 | 0/2168 | 0.49 | 0/3017 |
| 8 | k | 0.26 | 0/2162 | 0.49 | 0/3008 |
| 8 | l | 0.25 | 0/2111 | 0.47 | 0/2935 |
| 8 | m | 0.26 | 0/2193 | 0.45 | 0/3053 |

| Mol | Chain | Bond lengths | | Bond angles | |
|---|---|---|---|---|---|
| | | RMSZ | #\|Z\| >5 | RMSZ | #\|Z\| >5 |
| 8 | n | 0.25 | 0/2181 | 0.45 | 0/3034 |
| 9 | o | 0.19 | 0/164 | 0.28 | 0/228 |
| 9 | p | 0.22 | 0/164 | 0.39 | 0/228 |
| 9 | q | 0.22 | 0/164 | 0.36 | 0/228 |
| 9 | r | 0.22 | 0/164 | 0.29 | 0/228 |
| 9 | s | 0.22 | 0/179 | 0.31 | 0/249 |
| 9 | t | 0.21 | 0/179 | 0.32 | 0/249 |
| 9 | u | 0.22 | 0/179 | 0.33 | 0/249 |
| 9 | v | 0.22 | 0/179 | 0.32 | 0/249 |
| 9 | w | 0.21 | 0/164 | 0.32 | 0/228 |
| 9 | x | 0.21 | 0/169 | 0.32 | 0/235 |
| All | All | 0.26 | 0/82294 | 0.45 | 0/114565 |

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

| Mol | Chain | #Chirality outliers | #Planarity outliers |
|---|---|---|---|
| 2 | N | 0 | 1 |

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

| Mol | Chain | Res | Type | Group |
|---|---|---|---|---|
| 2 | N | 574 | GLY | Peptide |

## 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 | 676/905 (75%) | 625 (92%) | 51 (8%) | 0 | 100 | 100 |
| 1 | C | 789/905 (87%) | 749 (95%) | 38 (5%) | 2 (0%) | 37 | 73 |
| 1 | E | 789/905 (87%) | 763 (97%) | 26 (3%) | 0 | 100 | 100 |
| 1 | G | 789/905 (87%) | 764 (97%) | 25 (3%) | 0 | 100 | 100 |
| 1 | M | 766/905 (85%) | 751 (98%) | 15 (2%) | 0 | 100 | 100 |
| 2 | B | 611/910 (67%) | 585 (96%) | 26 (4%) | 0 | 100 | 100 |
| 2 | D | 611/910 (67%) | 590 (97%) | 21 (3%) | 0 | 100 | 100 |
| 2 | F | 611/910 (67%) | 597 (98%) | 14 (2%) | 0 | 100 | 100 |
| 2 | H | 727/910 (80%) | 702 (97%) | 25 (3%) | 0 | 100 | 100 |
| 2 | N | 710/910 (78%) | 698 (98%) | 12 (2%) | 0 | 100 | 100 |
| 3 | I | 600/667 (90%) | 577 (96%) | 23 (4%) | 0 | 100 | 100 |
| 3 | K | 600/667 (90%) | 568 (95%) | 32 (5%) | 0 | 100 | 100 |
| 4 | J | 613/1061 (58%) | 578 (94%) | 35 (6%) | 0 | 100 | 100 |
| 5 | L | 772/1715 (45%) | 697 (90%) | 74 (10%) | 1 (0%) | 48 | 83 |
| 6 | O | 65/79 (82%) | 65 (100%) | 0 | 0 | 100 | 100 |
| 6 | P | 65/79 (82%) | 64 (98%) | 1 (2%) | 0 | 100 | 100 |
| 6 | Q | 62/79 (78%) | 62 (100%) | 0 | 0 | 100 | 100 |
| 7 | V | 41/155 (26%) | 39 (95%) | 2 (5%) | 0 | 100 | 100 |
| 7 | W | 41/155 (26%) | 41 (100%) | 0 | 0 | 100 | 100 |
| 7 | X | 41/155 (26%) | 40 (98%) | 1 (2%) | 0 | 100 | 100 |
| 7 | Y | 49/155 (32%) | 48 (98%) | 1 (2%) | 0 | 100 | 100 |
| 8 | a | 442/451 (98%) | 429 (97%) | 13 (3%) | 0 | 100 | 100 |
| 8 | b | 438/451 (97%) | 429 (98%) | 9 (2%) | 0 | 100 | 100 |
| 8 | c | 436/451 (97%) | 426 (98%) | 10 (2%) | 0 | 100 | 100 |
| 8 | d | 420/451 (93%) | 410 (98%) | 10 (2%) | 0 | 100 | 100 |
| 8 | e | 428/451 (95%) | 418 (98%) | 10 (2%) | 0 | 100 | 100 |
| 8 | f | 429/451 (95%) | 422 (98%) | 7 (2%) | 0 | 100 | 100 |
| 8 | g | 429/451 (95%) | 424 (99%) | 5 (1%) | 0 | 100 | 100 |
| 8 | h | 435/451 (96%) | 426 (98%) | 9 (2%) | 0 | 100 | 100 |
| 8 | i | 434/451 (96%) | 426 (98%) | 8 (2%) | 0 | 100 | 100 |

*Continued on next page...*

*Continued from previous page...*

| Mol | Chain | Analysed | Favoured | Allowed | Outliers | Percentiles | |
|---|---|---|---|---|---|---|---|
| 8 | j | 435/451 (96%) | 400 (92%) | 34 (8%) | 1 (0%) | 44 | 78 |
| 8 | k | 434/451 (96%) | 392 (90%) | 42 (10%) | 0 | 100 | 100 |
| 8 | l | 422/451 (94%) | 394 (93%) | 28 (7%) | 0 | 100 | 100 |
| 8 | m | 442/451 (98%) | 435 (98%) | 6 (1%) | 1 (0%) | 44 | 78 |
| 8 | n | 438/451 (97%) | 425 (97%) | 12 (3%) | 1 (0%) | 44 | 78 |
| 9 | o | 31/1663 (2%) | 30 (97%) | 1 (3%) | 0 | 100 | 100 |
| 9 | p | 31/1663 (2%) | 31 (100%) | 0 | 0 | 100 | 100 |
| 9 | q | 31/1663 (2%) | 31 (100%) | 0 | 0 | 100 | 100 |
| 9 | r | 31/1663 (2%) | 31 (100%) | 0 | 0 | 100 | 100 |
| 9 | s | 34/1663 (2%) | 34 (100%) | 0 | 0 | 100 | 100 |
| 9 | t | 34/1663 (2%) | 34 (100%) | 0 | 0 | 100 | 100 |
| 9 | u | 34/1663 (2%) | 34 (100%) | 0 | 0 | 100 | 100 |
| 9 | v | 34/1663 (2%) | 34 (100%) | 0 | 0 | 100 | 100 |
| 9 | w | 31/1663 (2%) | 31 (100%) | 0 | 0 | 100 | 100 |
| 9 | x | 32/1663 (2%) | 32 (100%) | 0 | 0 | 100 | 100 |
| All | All | 16413/36986 (44%) | 15781 (96%) | 626 (4%) | 6 (0%) | 100 | 100 |

All (6) Ramachandran outliers are listed below:

| Mol | Chain | Res | Type |
|---|---|---|---|
| 8 | n | 285 | VAL |
| 1 | C | 522 | MET |
| 1 | C | 851 | CYS |
| 5 | L | 340 | GLN |
| 8 | j | 285 | VAL |
| 8 | m | 285 | VAL |

### 5.3.2 Protein sidechains (i)

There are no protein residues with a non-rotameric sidechain to report in this entry.

### 5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

## 5.6 Ligand geometry (i)

There are no ligands in this entry.

## 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 |
|---|---|---|
| 1 | M | 1 |

All chain breaks are listed below:

| Model | Chain | Residue-1 | Atom-1 | Residue-2 | Atom-2 | Distance (Å) |
|---|---|---|---|---|---|---|
| 1 | M | 850:ASP | C | 851:CYS | N | 2.92 |

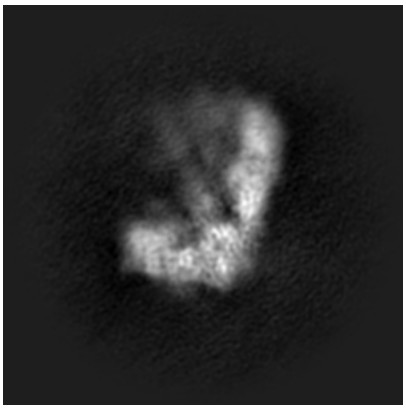
# 6 Map visualisation (i)

This section contains visualisations of the EMDB entry EMD-51018. These allow visual inspection of the internal detail of the map and identification of artifacts.

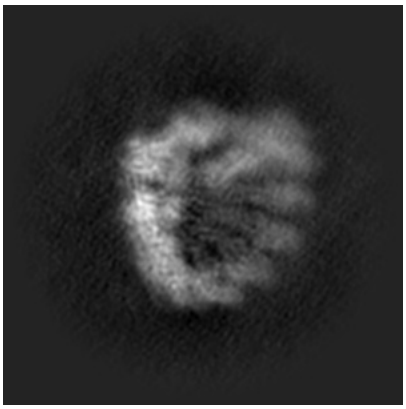
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

## 6.1 Orthogonal projections (i)

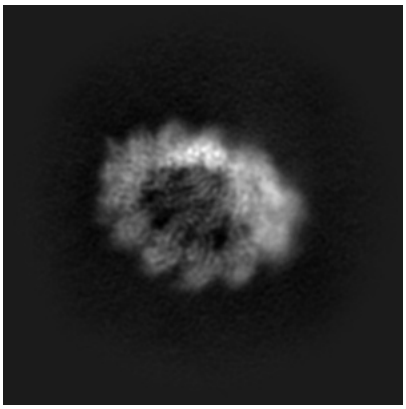
### 6.1.1 Primary map



X

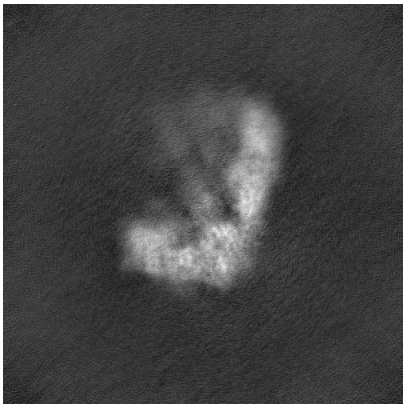


Y

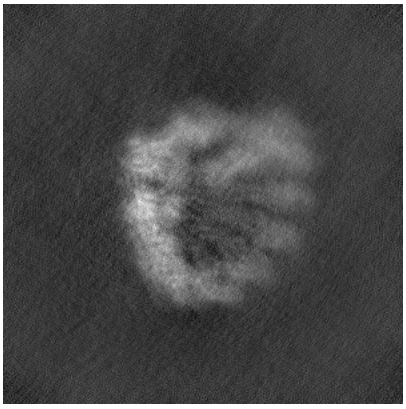


Z

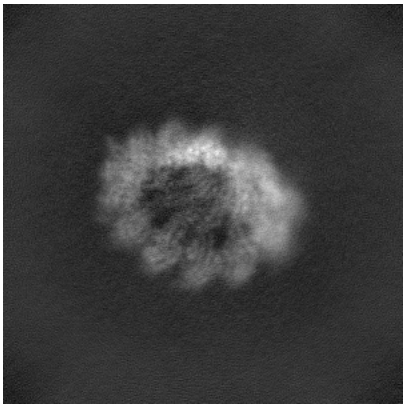
### 6.1.2 Raw map



X



Y

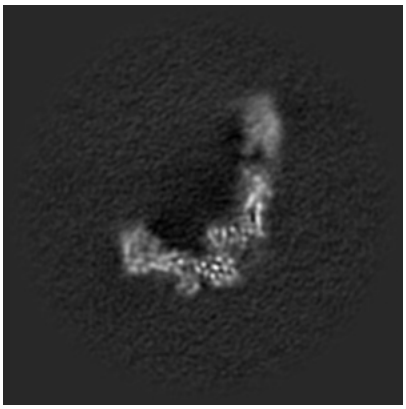


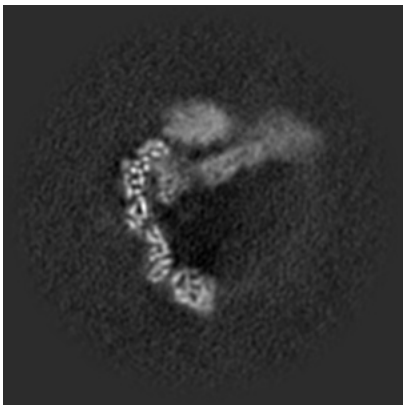
Z

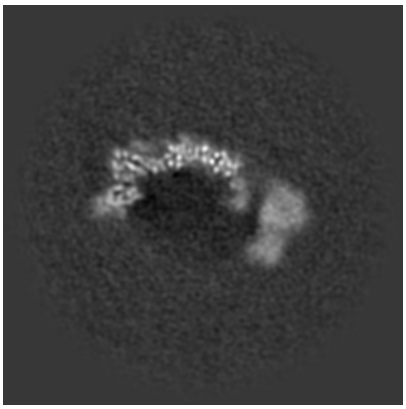
The images above show the map projected in three orthogonal directions.

## 6.2 Central slices (i)

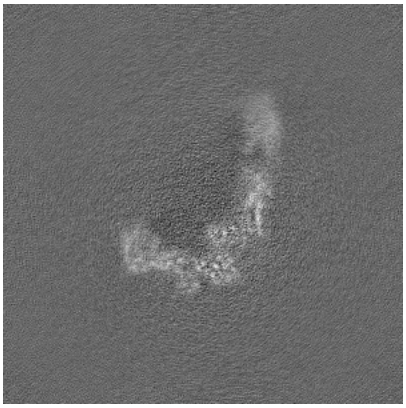
### 6.2.1 Primary map


X Index: 192

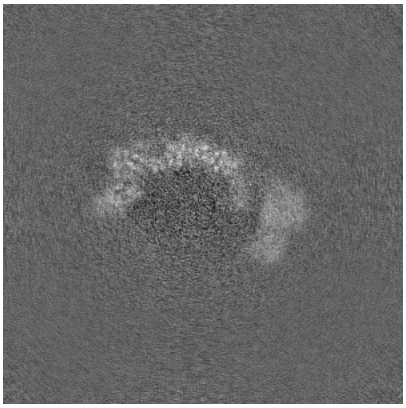

Y Index: 192


Z Index: 192

### 6.2.2 Raw map


X Index: 192

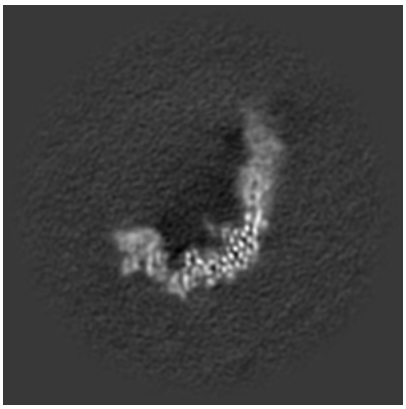
Y Index: 192

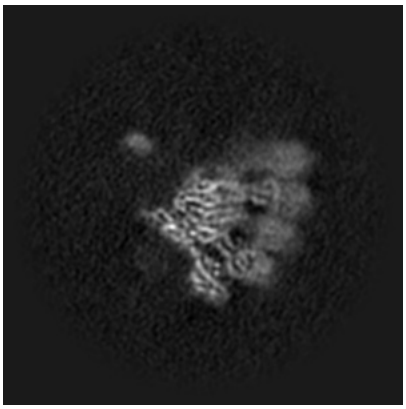

Z Index: 192

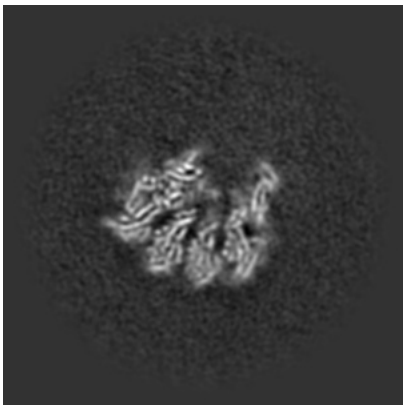
The images above show central slices of the map in three orthogonal directions.

## 6.3 Largest variance slices (i)

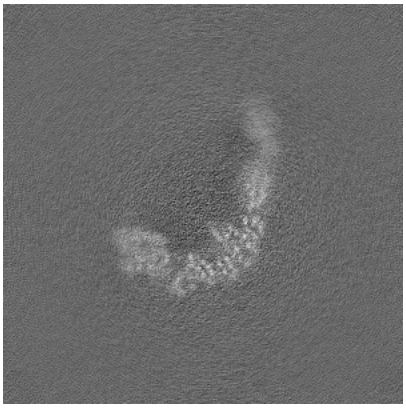
### 6.3.1 Primary map

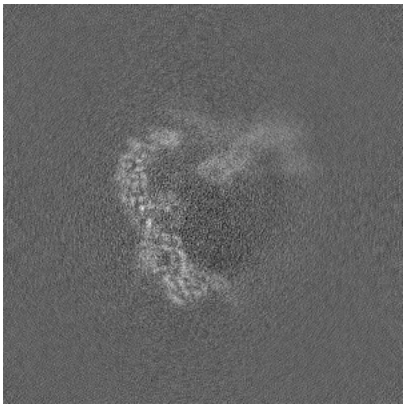

X Index: 180

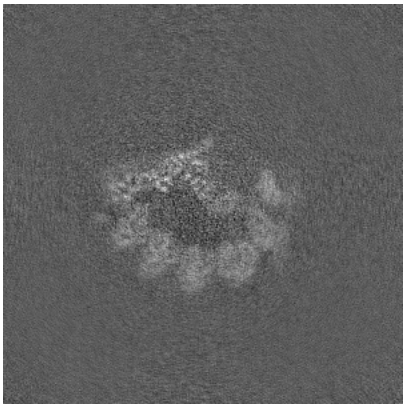

Y Index: 238


Z Index: 145

### 6.3.2 Raw map


X Index: 185

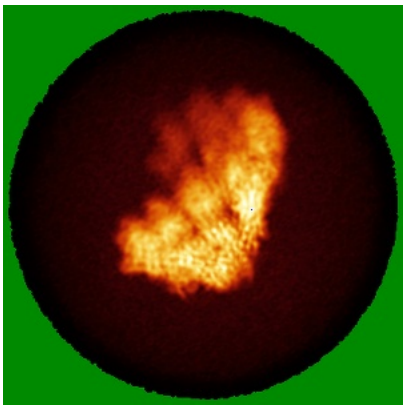

Y Index: 209

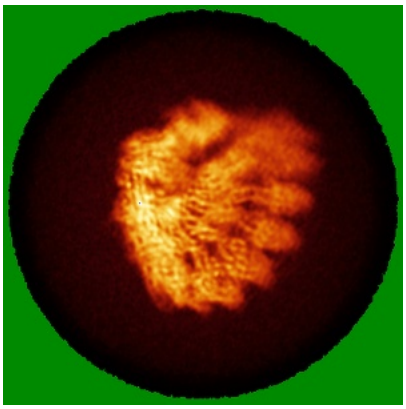

Z Index: 161

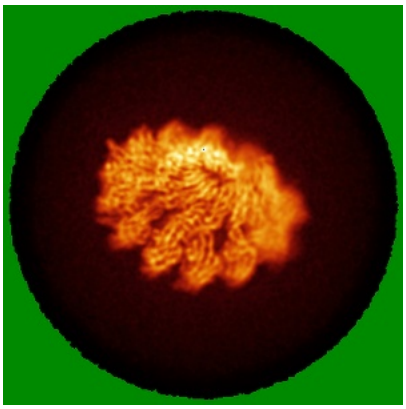
The images above show the largest variance slices of the map in three orthogonal directions.

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

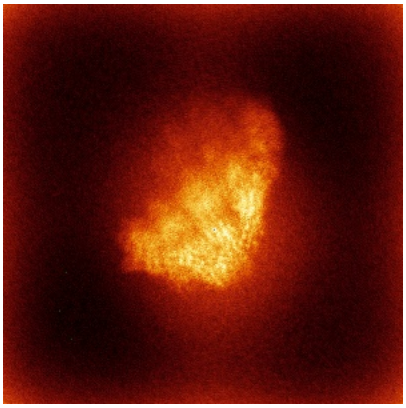
### 6.4.1 Primary map

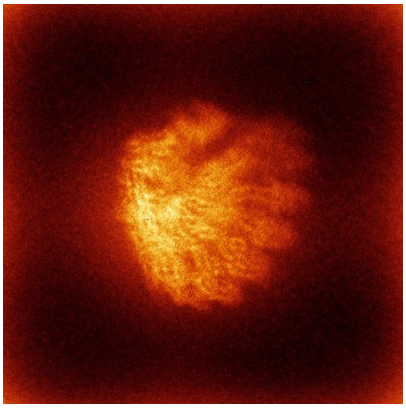

X

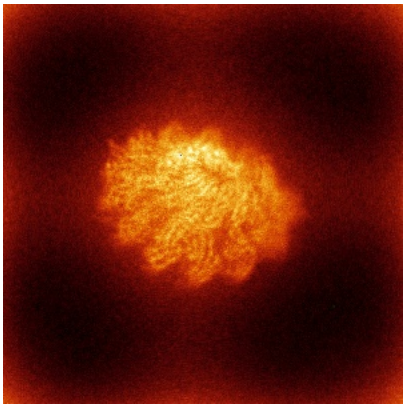

Y


Z

### 6.4.2 Raw map


X

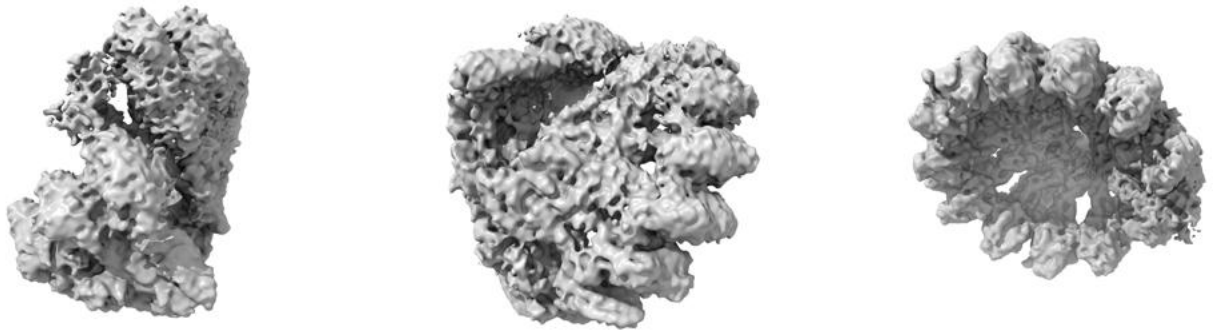

Y


Z

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

## 6.5 Orthogonal surface views (i)

### 6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.125. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

### 6.5.2 Raw map

X Y Z

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

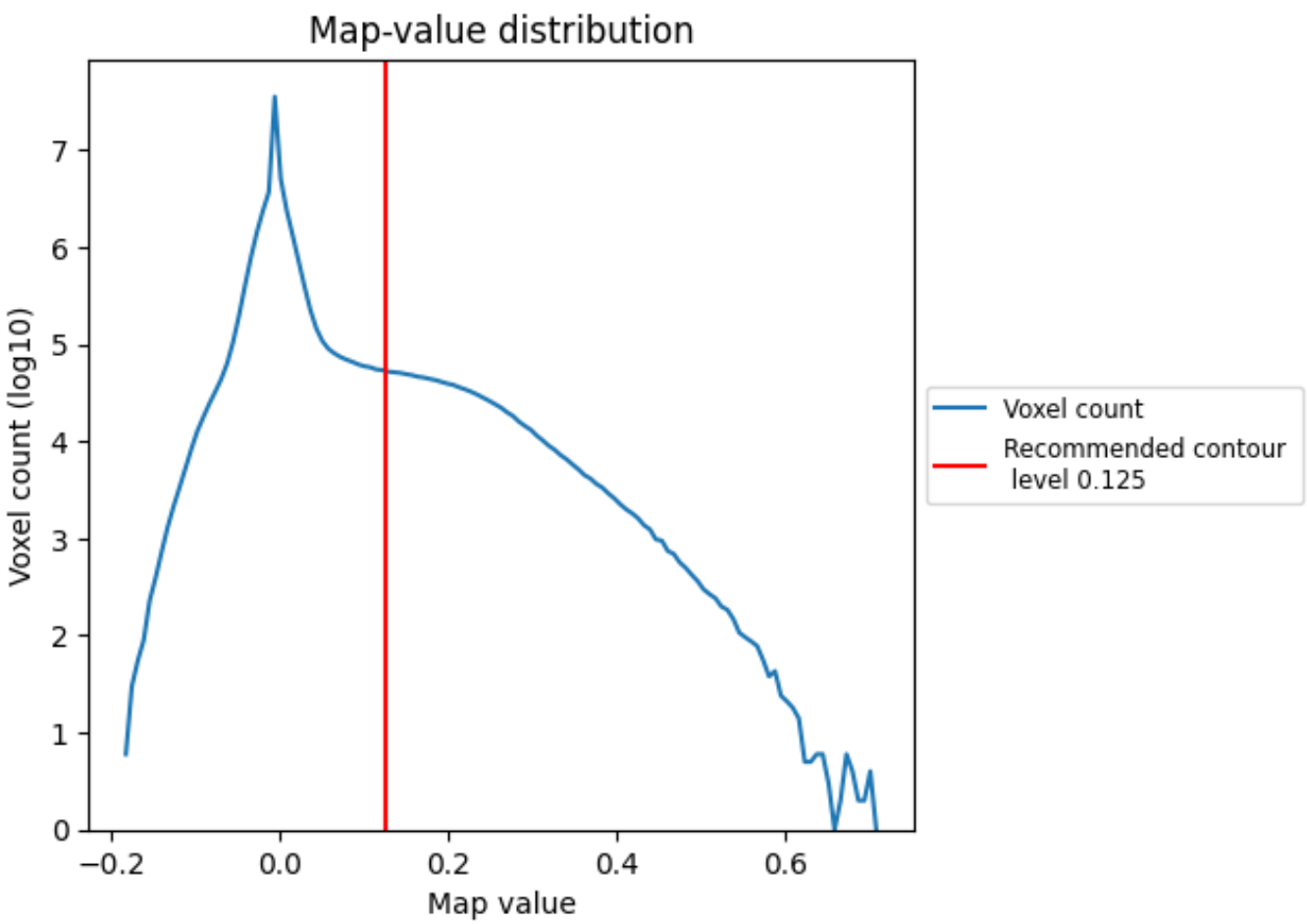
## 6.6 Mask visualisation (i)

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

# 7 Map analysis (i)

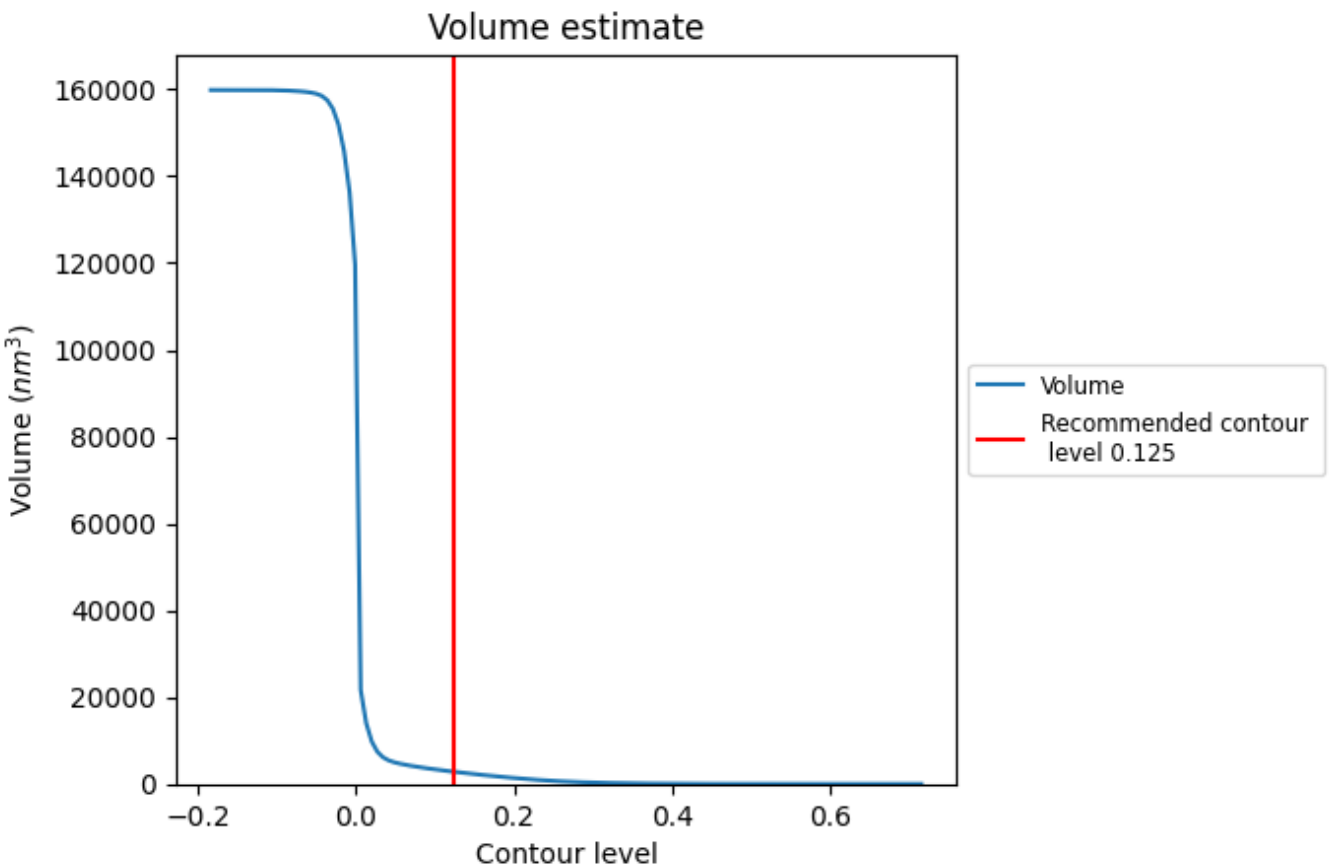
This section contains the results of statistical analysis of the map.

## 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.

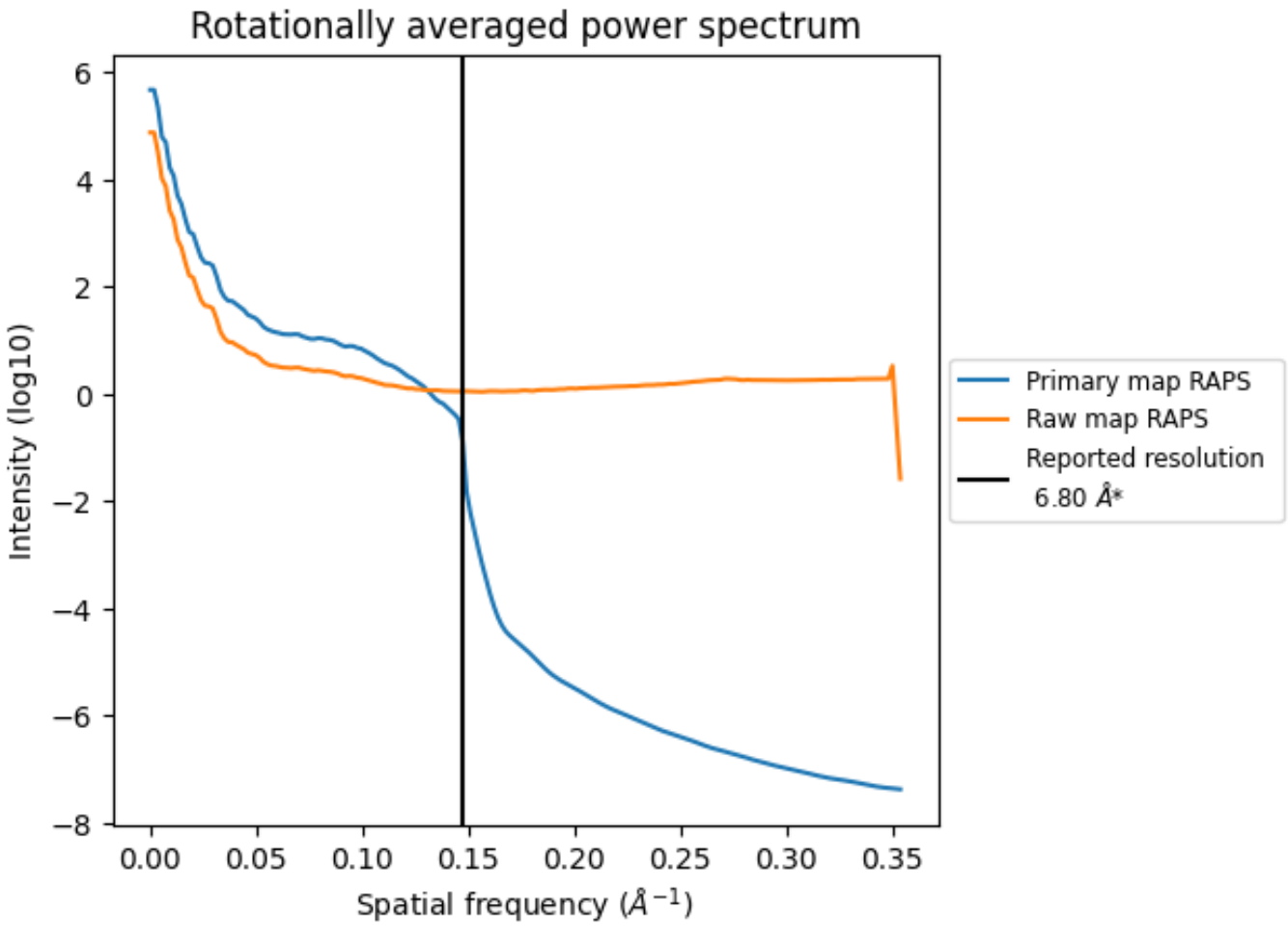
## 7.2 Volume estimate (i)




The volume at the recommended contour level is 2794 $nm^3$; this corresponds to an approximate mass of 2524 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)

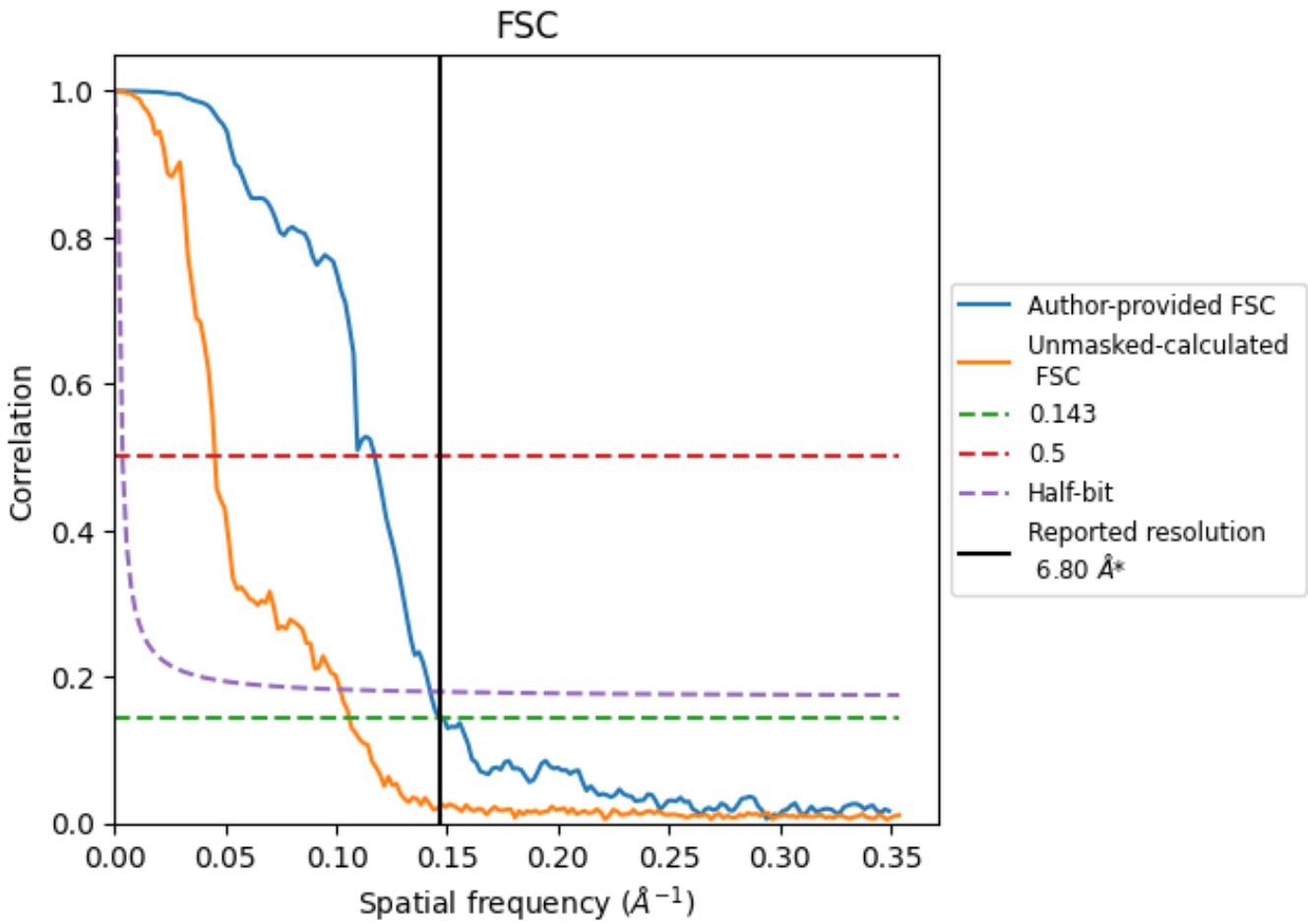



*Reported resolution corresponds to spatial frequency of 0.147 Å$^{-1}$

# 8 Fourier-Shell correlation (i)

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

## 8.1 FSC (i)




*Reported resolution corresponds to spatial frequency of 0.147 Å$^{-1}$

## 8.2 Resolution estimates (i)

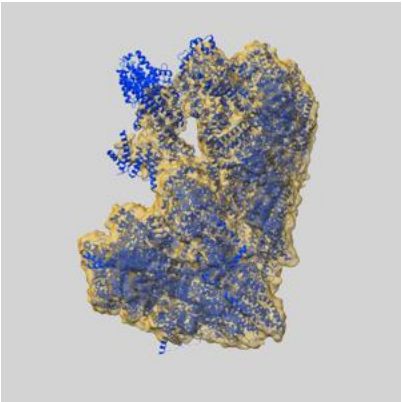
| Resolution estimate (Å) | Estimation criterion (FSC cut-off) | | |
|---|---|---|---|
| | 0.143 | 0.5 | Half-bit |
| Reported by author | 6.80 | - | - |
| Author-provided FSC curve | 6.83 | 8.52 | 7.03 |
| Unmasked-calculated* | 9.44 | 22.08 | 9.83 |

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 9.44 differs from the reported value 6.8 by more than 10 %

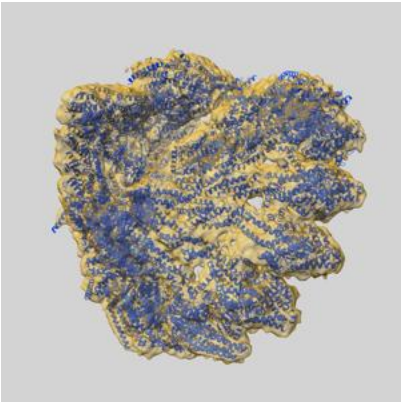
# 9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-51018 and PDB model 9G3Y. Per-residue inclusion information can be found in section 3 on page 9.

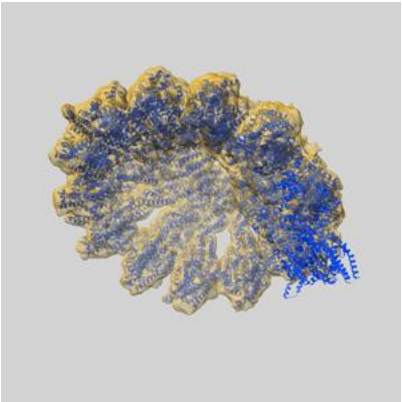
## 9.1 Map-model overlay (i)



X



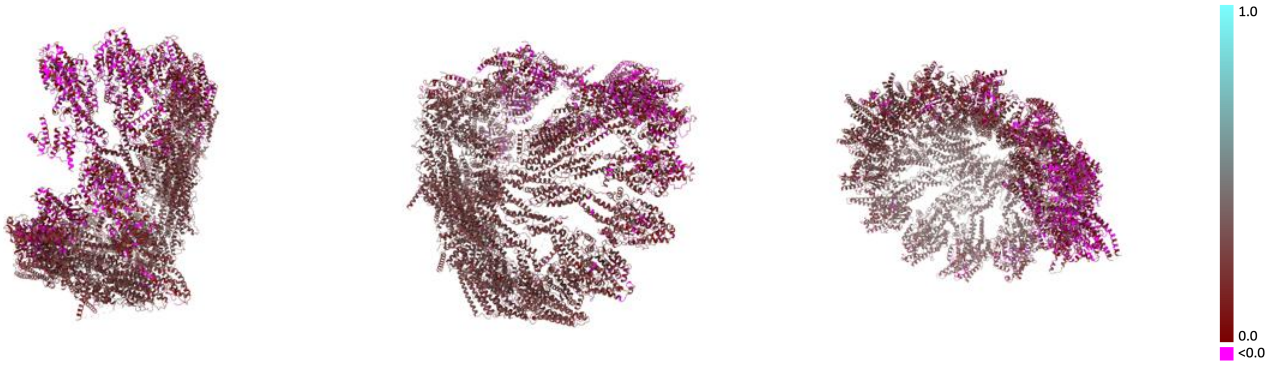
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.125 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.

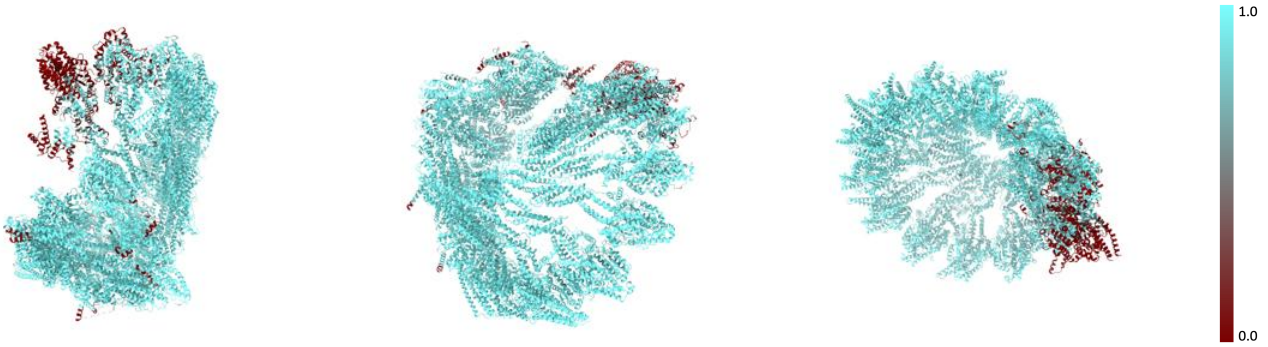
## 9.2 Q-score mapped to coordinate model (i)




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.

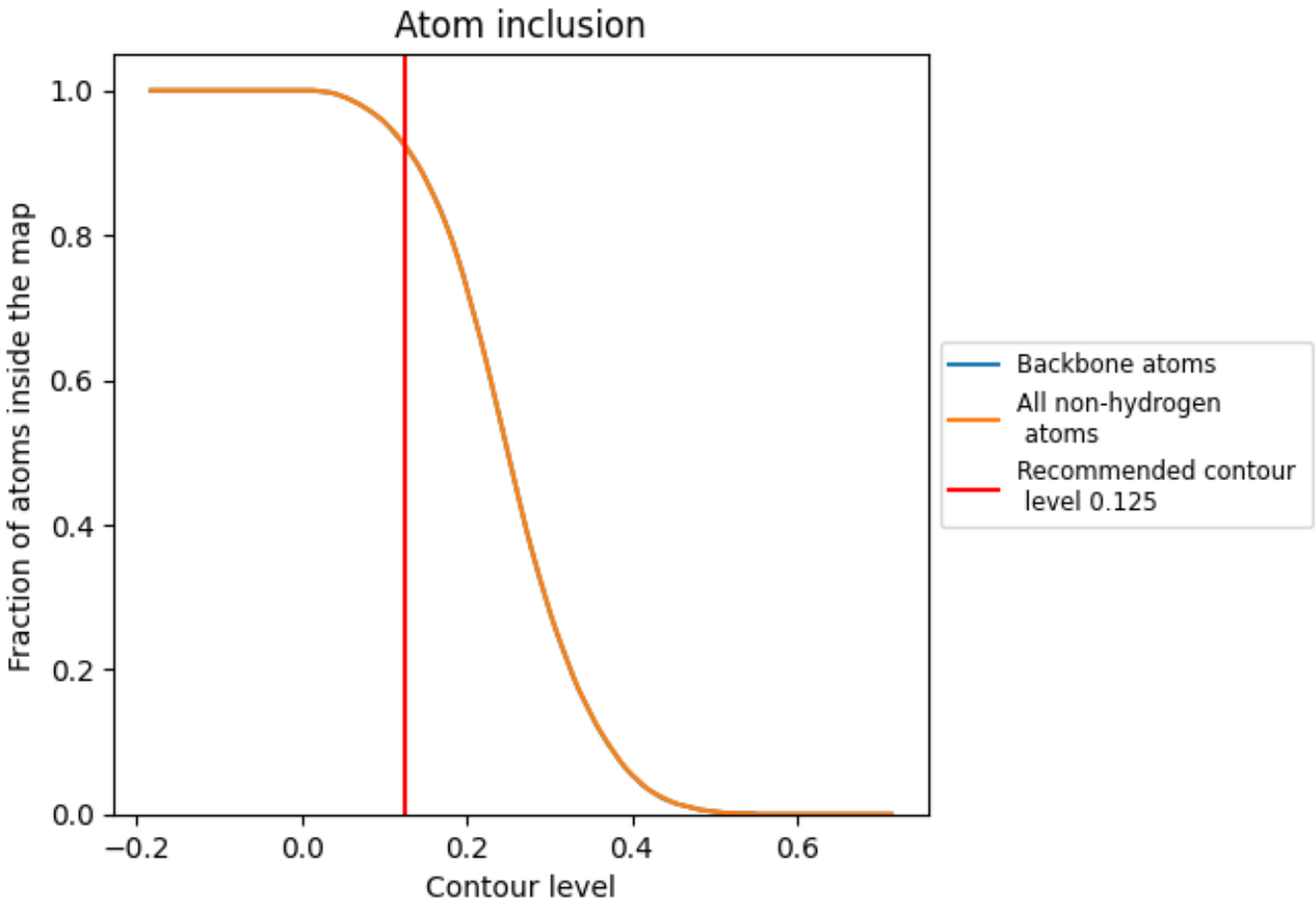
## 9.3 Atom inclusion mapped to coordinate model (i)




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 (0.125).

## 9.4 Atom inclusion (i)




At the recommended contour level, 92% of all backbone atoms, 92% of all non-hydrogen atoms, are inside the map.

## 9.5 Map-model fit summary (i)

The table lists the average atom inclusion at the recommended contour level (0.125) and Q-score for the entire model and for each chain.

| Chain | Atom inclusion | Q-score |
|---|---|---|
| All | 0.9240 | 0.1970 |
| A | 0.9470 | 0.1740 |
| B | 0.9380 | 0.2180 |
| C | 0.9820 | 0.2490 |
| D | 0.9930 | 0.2630 |
| E | 0.9910 | 0.2730 |
| F | 0.9980 | 0.2760 |
| G | 0.9900 | 0.2760 |
| H | 1.0000 | 0.2790 |
| I | 0.9980 | 0.2650 |
| J | 0.9990 | 0.2310 |
| K | 0.9980 | 0.2200 |
| L | 0.9970 | 0.1970 |
| M | 0.9410 | 0.1400 |
| N | 0.6140 | 0.0890 |
| O | 0.2670 | 0.0270 |
| P | 0.9760 | 0.2810 |
| Q | 0.9810 | 0.2490 |
| V | 0.8960 | 0.2290 |
| W | 0.9780 | 0.2560 |
| X | 0.9690 | 0.2570 |
| Y | 1.0000 | 0.1690 |
| a | 1.0000 | 0.0820 |
| b | 0.9950 | 0.0760 |
| c | 0.9890 | 0.1420 |
| d | 0.9870 | 0.1650 |
| e | 0.9990 | 0.2370 |
| f | 0.9930 | 0.2360 |
| g | 0.9930 | 0.2530 |
| h | 0.9950 | 0.2500 |
| i | 0.9960 | 0.2090 |
| j | 1.0000 | 0.1710 |
| k | 0.9840 | 0.1300 |
| l | 0.8760 | 0.1070 |
| m | 0.4770 | 0.0490 |

*Continued on next page...*

*Continued from previous page...*

| Chain | Atom inclusion | Q-score |
|---|---|---|
| n | 0.0730 | 0.0360 |
| o | 0.7460 | 0.1430 |
| p | 0.3580 | 0.0780 |
| q | 1.0000 | 0.2470 |
| r | 1.0000 | 0.2200 |
| s | 1.0000 | 0.2540 |
| t | 1.0000 | 0.2640 |
| u | 1.0000 | 0.2530 |
| v | 1.0000 | 0.2650 |
| w | 0.9820 | 0.0260 |
| x | 0.9940 | 0.1150 |