wwPDB EM Validation Summary Report ⓘ

Nov 10, 2024 – 04:40 PM EST

PDB ID	:	8H40
EMDB ID	:	EMD-34476
Title	:	Cryo-EM structure of the transcription activation complex NtcA-TAC
Authors	:	Han, S.J.; Jiang, Y.L.; You, L.L.; Shen, L.Q.; Wu, X.X.; Yang, F.; Kong, W.W.; Chen, Z.P.; Zhang, Y.; Zhou, C.Z.
Deposited on	:	2022-10-09
Resolution	:	3.60 Å(reported)

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

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

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

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

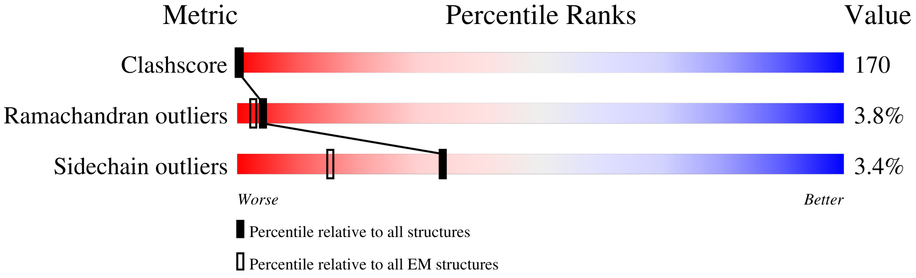
EMDB validation analysis	:	0.0.1.dev113
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	: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

1 Overall quality at a glance ⓘ

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

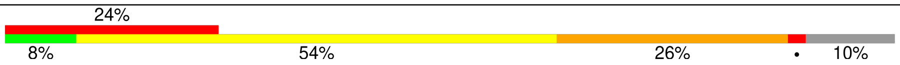
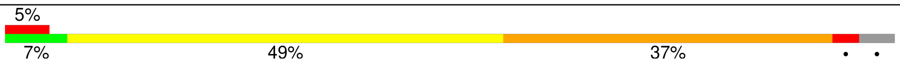
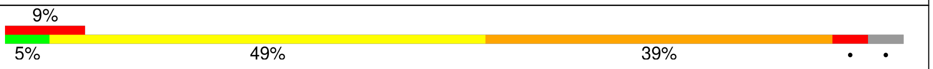
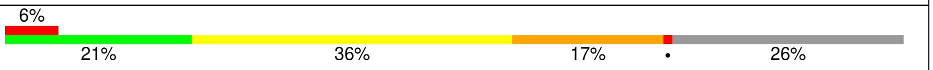
The reported resolution of this entry is 3.60 Å.

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



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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	1	125	
2	2	125	
3	A	1132	
4	B	1350	
5	C	236	
5	D	236	
6	E	625	
7	F	78	

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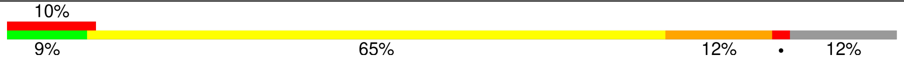
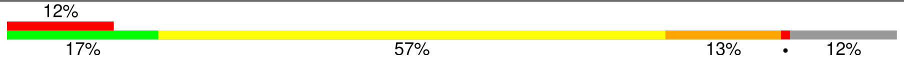
Mol	Chain	Length	Quality of chain
8	G	390	
9	X	223	
9	Y	223	

2 Entry composition ⓘ

There are 9 unique types of molecules in this entry. The entry contains 34833 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a DNA chain called DNA (125-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
1	1	66	1358	651	243	398	66	0	0

- Molecule 2 is a DNA chain called DNA (125-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
2	2	54	1109	532	203	320	54	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	A	1077	8473	5326	1505	1618	24	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	MET	-	initiating methionine	UNP P22703
A	1	VAL	-	expression tag	UNP P22703

- Molecule 4 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	B	1217	9292	5802	1639	1823	28	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	C	226	1762	1106	305	346	5	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	D	226	1762	1106	305	346	5	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	0	MET	-	initiating methionine	UNP Q8YPK3
C	1	VAL	-	expression tag	UNP Q8YPK3
D	0	MET	-	initiating methionine	UNP Q8YPK3
D	1	VAL	-	expression tag	UNP Q8YPK3

- Molecule 6 is a protein called DNA-directed RNA polymerase subunit gamma.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	E	620	4923	3107	885	910	21	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase subunit omega.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	F	58	474	290	90	90	4	0	0

- Molecule 8 is a protein called RNA polymerase sigma factor SigA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	G	314	2600	1628	482	484	6	0	0

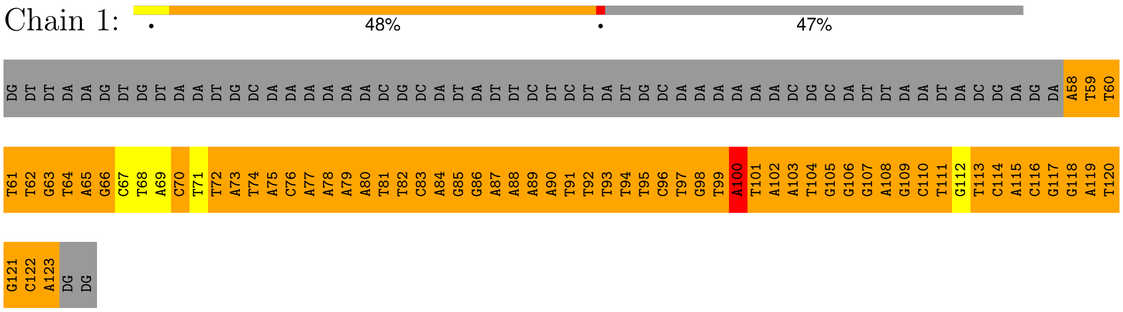
- Molecule 9 is a protein called NtcA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	X	196	1540	984	268	280	8	0	0
9	Y	196	1540	984	268	280	8	0	0

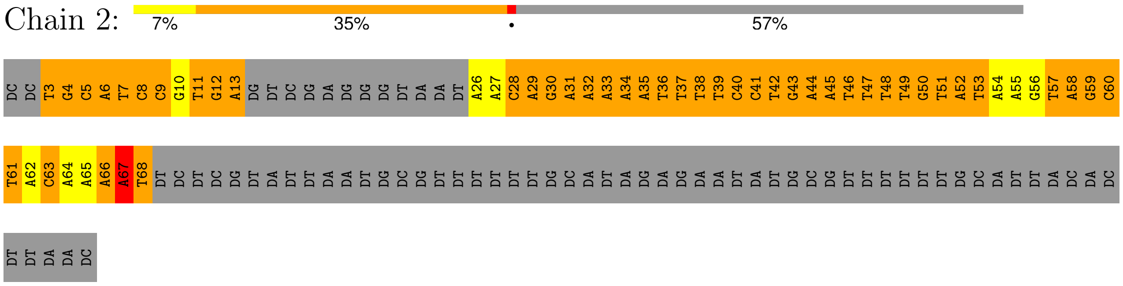
3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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.

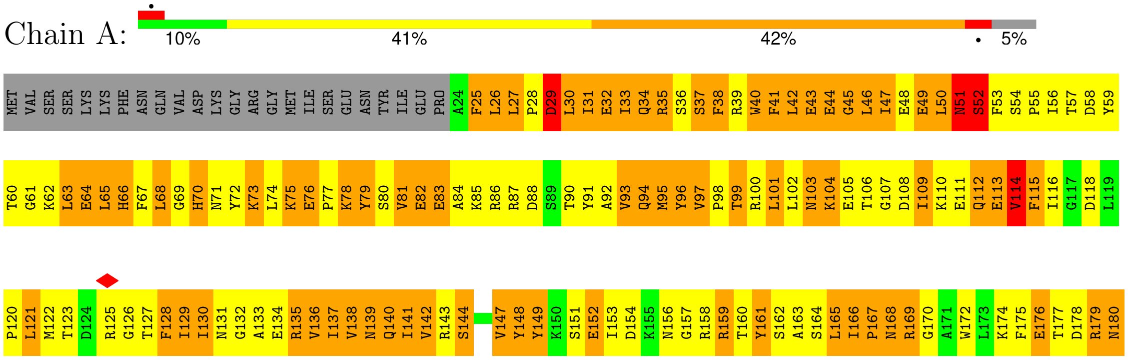
- Molecule 1: DNA (125-MER)

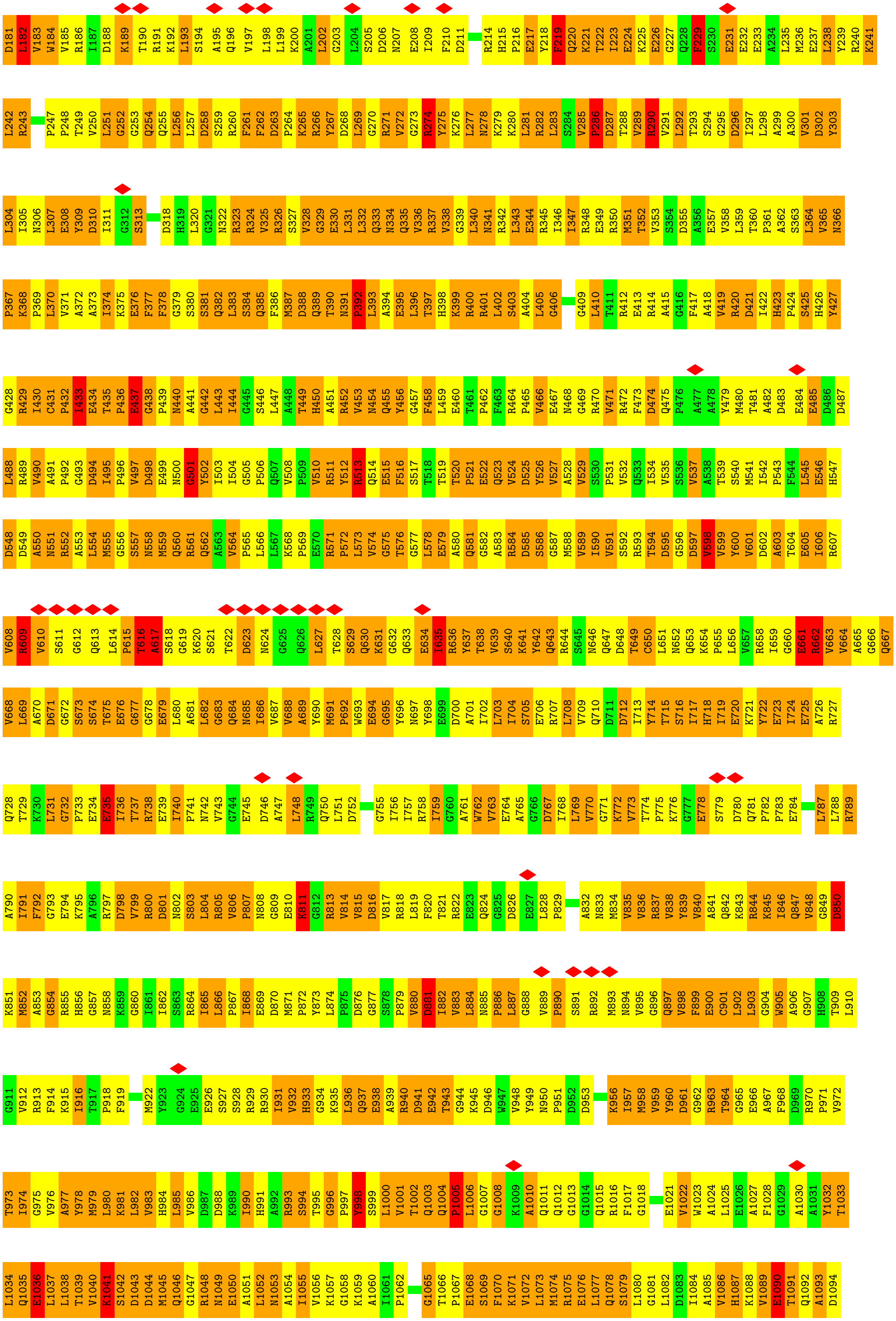


- Molecule 2: DNA (125-MER)



- Molecule 3: DNA-directed RNA polymerase subunit beta

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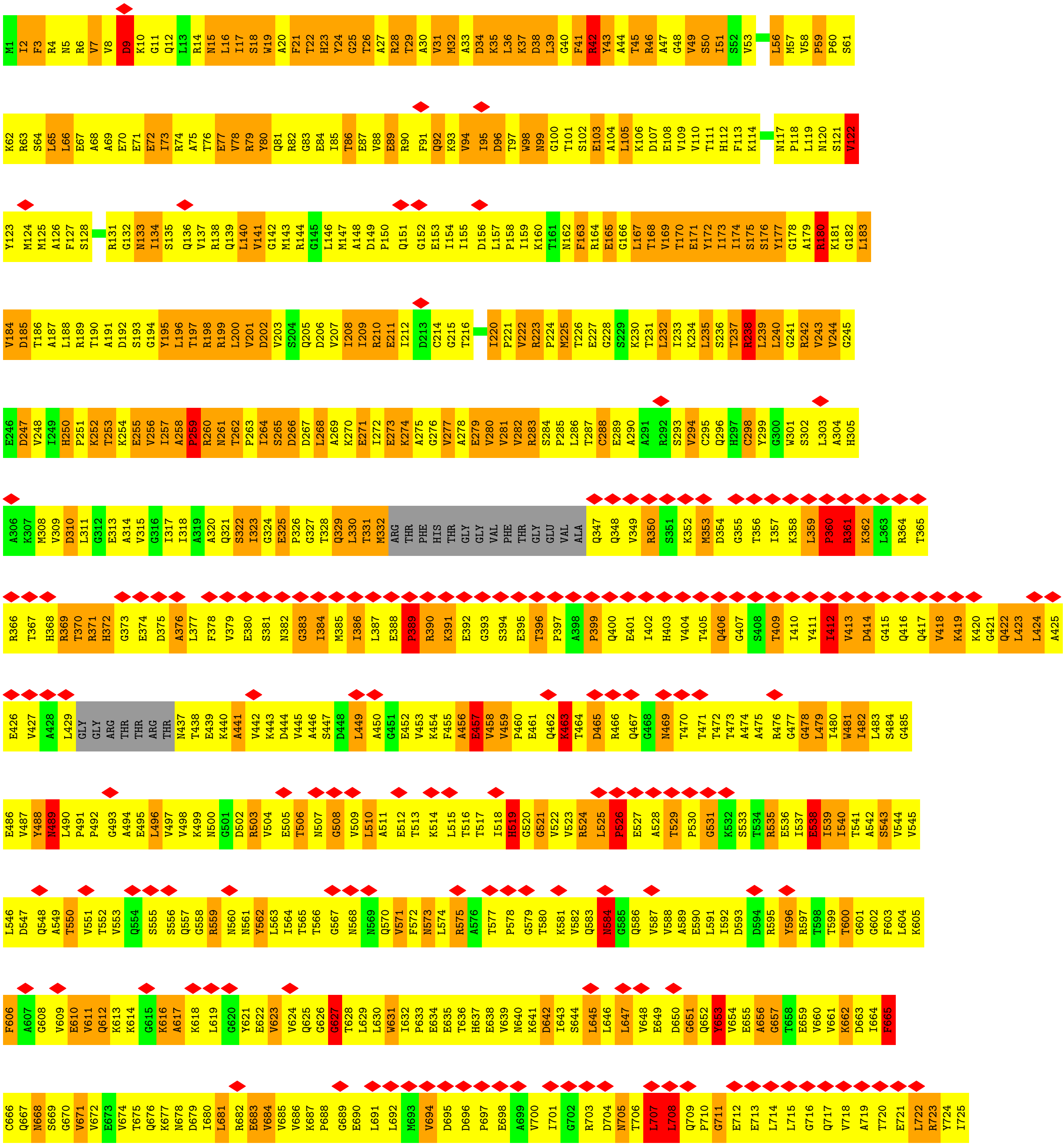
L242 R243 P247 P248 T249 V250 L251 G252 G253 Q254 Q255 L256 L257 D258 S259 R260 F261 F262 D263 P264 K265 R266 Y267 D268 L269 G270 R271 V272 G273 R274 Y275 K276 L277 N278 K279 K280 L281 R282 L283 S284 V285 P286 D287 T288 V289 R290 V291 L292 T293 S294 G295 D296 I297 L298 A299 A300 V301 D302 Y303
L304 I305 N306 L307 E308 Y309 D310 I311 G312 S313 D318 H319 L320 G321 N322 R323 R324 V325 R326 S327 V328 G329 E330 L331 L332 Q333 N334 Q335 V336 R337 V338 G339 L340 N341 R342 L343 E344 R345 I346 I347 R348 E349 R350 M351 T352 V353 S354 D355 A356 E357 V358 L359 T360 P361 A362 S363 L364 V365 N366
P367 K368 P369 L370 V371 A372 A373 I374 K375 E376 F377 F378 G379 S380 S381 Q382 L383 S384 Q385 F386 M387 D388 Q389 T390 N391 P392 L393 A394 E395 L396 T397 H398 K399 R400 R401 L402 S403 A404 L405 G406 G409 L410 T411 R412 E413 R414 A415 G416 F417 A418 V419 R420 D421 I422 H423 P424 S425 H426 Y427
G428 R429 I430 C431 P432 I433 E434 T435 P436 E437 G438 P439 N440 A441 G442 L443 I444 G445 S446 L447 A448 T449 H450 A451 R452 V453 N454 Q455 Y456 G457 F458 L459 E460 T461 P462 F463 R464 P465 V466 E467 N468 G469 R470 V471 R472 F473 D474 Q475 P476 A477 A478 Y479 M480 T481 A482 D483 E484 E485 D486 D487
L488 R489 V490 A491 P492 G493 D494 I495 P496 V497 D498 E499 N500 G501 Y502 I503 I504 G505 P506 Q507 V508 P509 V510 R511 Y512 R513 Q514 E515 F516 S517 T518 T519 P520 P521 E522 Q523 V524 D525 Y526 V527 A528 V529 S530 P531 V532 Q533 I534 V535 S536 V537 A538 T539 S540 M541 I542 P543 F544 L545 E546 H547
D548 D549 A550 N551 R552 A553 L554 M555 G556 S557 N558 M559 Q560 R561 Q562 A563 V564 P565 L566 L567 K568 P569 E570 R571 P572 L573 V574 G575 T576 G577 L578 E579 A580 Q581 G582 A583 R584 D585 S586 G587 M588 V589 I590 V591 S592 R593 T594 D595 G596 D597 V598 V599 Y600 V601 D602 A603 T604 E605 I606 R607
V608 R609 V610 S611 G612 Q613 L614 P615 T616 A617 S618 G619 K620 S621 T622 D623 N624 G625 Q626 L627 T628 S629 Q630 K631 G632 Q633 E634 I635 R636 Y637 T638 V639 S640 K641 Y642 Q643 R644 S645 N646 Q647 D648 T649 C650 L651 N652 Q653 K654 P655 L656 V657 R658 I659 G660 E661 R662 V663 V664 A665 G666 Q667
V668 L669 A670 D671 G672 S673 S674 T675 E676 G677 G678 E679 L680 A681 L682 G683 Q684 N685 I686 V687 V688 A689 Y690 M691 P692 W693 E694 G695 Y696 N697 Y698 E699 D700 A701 I702 L703 I704 S705 E706 R707 L708 V709 Q710 D711 D712 I713 Y714 T715 S716 I717 H718 I719 E720 K721 Y722 E723 I724 E725 A726 R727
Q728 T729 K730 L731 G732 P733 E734 E735 I736 T737 R738 E739 I740 P741 N742 V743 G744 E745 D746 A747 L748 R749 Q750 L751 D752 G755 I756 I757 R758 I759 G760 A761 W762 V763 E764 A765 G766 D767 I768 L769 V770 G771 K772 V773 T774 P775 K776 G777 E778 S779 D780 Q781 P782 P783 E784 L787 L788 R789
A790 I791 F792 G793 E794 K795 A796 R797 D798 V799 R800 D801 N802 S803 L804 R805 V806 P807 N808 G809 E810 K811 G812 R813 V814 V815 D816 V817 R818 L819 F820 T821 R822 E823 Q824 G825 D826 E827 L828 P829 A832 N833 M834 V835 V836 R837 V838 Y839 V840 A841 Q842 K843 R844 K845 I846 Q847 V848 G849 D850
K851 M852 A853 G854 R855 H856 G857 N858 K859 G860 I861 I862 S863 R864 I865 L866 P867 I868 E869 D870 M871 P872 Y873 L874 P875 D876 G877 S878 P879 V880 D881 I882 V883 L884 N885 P886 L887 G888 V889 P890 S891 R892 M893 N894 V895 G896 Q897 V898 F899 E900 C901 L902 L903 G904 W905 A906 G907 H908 T909 L910
G911 V912 R913 F914 K915 I916 T917 P918 F919 M922 Y923 G924 E925 E926 S927 S928 R929 R930 I931 V932 H933 G934 K935 L936 Q937 E938 A939 R940 D941 E942 T943 G944 K945 D946 W947 V948 Y949 N950 P951 D952 D953 K956 I957 M958 V959 Y960 D961 G962 R963 T964 G965 E966 A967 F968 D969 R970 P971 V972
T973 I974 G975 V976 A977 Y978 M979 L980 K981 L982 V983 H984 L985 V986 D987 D988 K989 I990 H991 A992 R993 S994 T995 G996 P997 Y998 S999 L1000 V1001 T1002 Q1003 Q1004 P1005 L1006 G1007 G1008 K1009 A1010 Q1011 Q1012 G1013 G1014 Q1015 R1016 F1017 G1018 E1021 V1022 W1023 A1024 L1025 E1026 A1027 F1028 G1029 A1030 A1031 Y1032 T1033
L1034 Q1035 E1036 L1037 L1038 T1039 V1040 K1041 S1042 D1043 D1044 M1045 Q1046 G1047 R1048 N1049 E1050 A1051 L1052 N1053 A1054 I1055 V1056 K1057 G1058 K1059 A1060 I1061 P1062 G1065 T1066 P1067 E1068 S1069 F1070 K1071 V1072 L1073 M1074 R1075 E1076 L1077 Q1078 S1079 L1080 G1081 L1082 D1083 I1084 A1085 V1086 H1087 K1088 V1089 E1090 T1091 Q1092 A1093 D1094

G1095 S1096 S1097 L1098 D1099 V1100 GLU VAL ASP LEU MET ALA ASP GLN LEU ALA ARG ARG THR PRO PRO ARG PRO THR TYR GLU SER LEU SER ARG GLU SER LEU ASP ASP GLU

- Molecule 4: DNA-directed RNA polymerase subunit beta’

Chain B:



M1 I2 F3 R4 N5 R6 V7 V8 D9 K10 G11 Q12 L13 R14 N15 L16 I17 S18 W19 A20 F21 T22 H23 Y24 G25 T26 A27 R28 T29 A30 V31 M32 A33 D34 K35 L36 K37 D38 L39 G40 F41 R42 Y43 A44 T45 R46 A47 G48 V49 S50 I51 S52 V53 L56 M57 V58 P59 P60 S61

K62 R63 S64 L65 L66 E67 A68 A69 E70 E71 E72 I73 R74 A75 T76 E77 V78 R79 Y80 Q81 R82 G83 E84 I85 T86 E87 V88 E89 R90 F91 Q92 K93 V94 I95 D96 T97 W98 N99 G100 T101 S102 E103 A104 L105 K106 D107 E108 V109 V110 T111 H112 F113 K114 N117 P118 L119 N120 S121 V122

Y123 M124 M125 A126 F127 S128 R131 G132 N133 I134 S135 Q136 V137 R138 Q139 L140 V141 G142 M143 R144 G145 L146 M147 A148 D149 P150 Q151 G152 E153 I154 I155 D156 L157 P158 I159 K160 T161 N162 F163 R164 E165 G166 L167 T168 V169 T170 E171 Y172 I173 I174 S175 S176 Y177 G178 A179 R180 K181 G182 L183

V184 D185 T186 A187 L188 R189 T190 A191 D192 S193 G194 Y195 L196 T197 R198 R199 L200 V201 D202 V203 S204 Q205 D206 V207 I208 I209 R210 E211 I212 D213 C214 G215 T216 I220 P221 V222 R223 P224 M225 T226 E227 G228 S229 K230 T231 L232 I233 K234 L235 S236 T237 R238 L239 L240 G241 R242 V243 V244 G245

E246 D247 V248 I249 H250 P251 K252 T253 K254 E255 V256 I257 A258 P259 R260 N261 T262 P263 I264 S265 D266 D267 L268 A269 K270 E271 I272 E273 K274 A275 G276 V277 A278 E279 V280 V281 V282 R283 S284 P285 L286 T287 C288 E289 A290 A291 R292 S293 V294 C295 Q296 H297 C298 Y299 G300 W301 S302 L303 A304 H305

A306 K307 M308 V309 D310 L311 G312 E313 A314 V315 G316 I317 I318 A319 A320 Q321 S322 I323 G324 E325 P326 G327 T328 Q329 L330 T331 M332 ARG THR PHE HIS THR GLY GLY VAL PHE THR GLY GLU VAL ALA Q347 Q348 V349 R350 S351 K352 M353 D354 G355 T356 I357 K358 L359 P360 R361 K362 L363 R364 T365

R366 T367 H368 R369 T370 R371 H372 G373 E374 D375 A376 L377 F378 V379 E380 S381 N382 G383 I384 M385 I386 L387 E388 P389 R390 K391 E392 G393 S394 E395 T396 P397 A398 P399 Q400 E401 I402 H403 V404 T405 Q406 G407 S408 T409 I410 Y411 I412 V413 D414 G415 Q416 Q417 V418 K419 K420 G421 Q422 L423 L424 A425

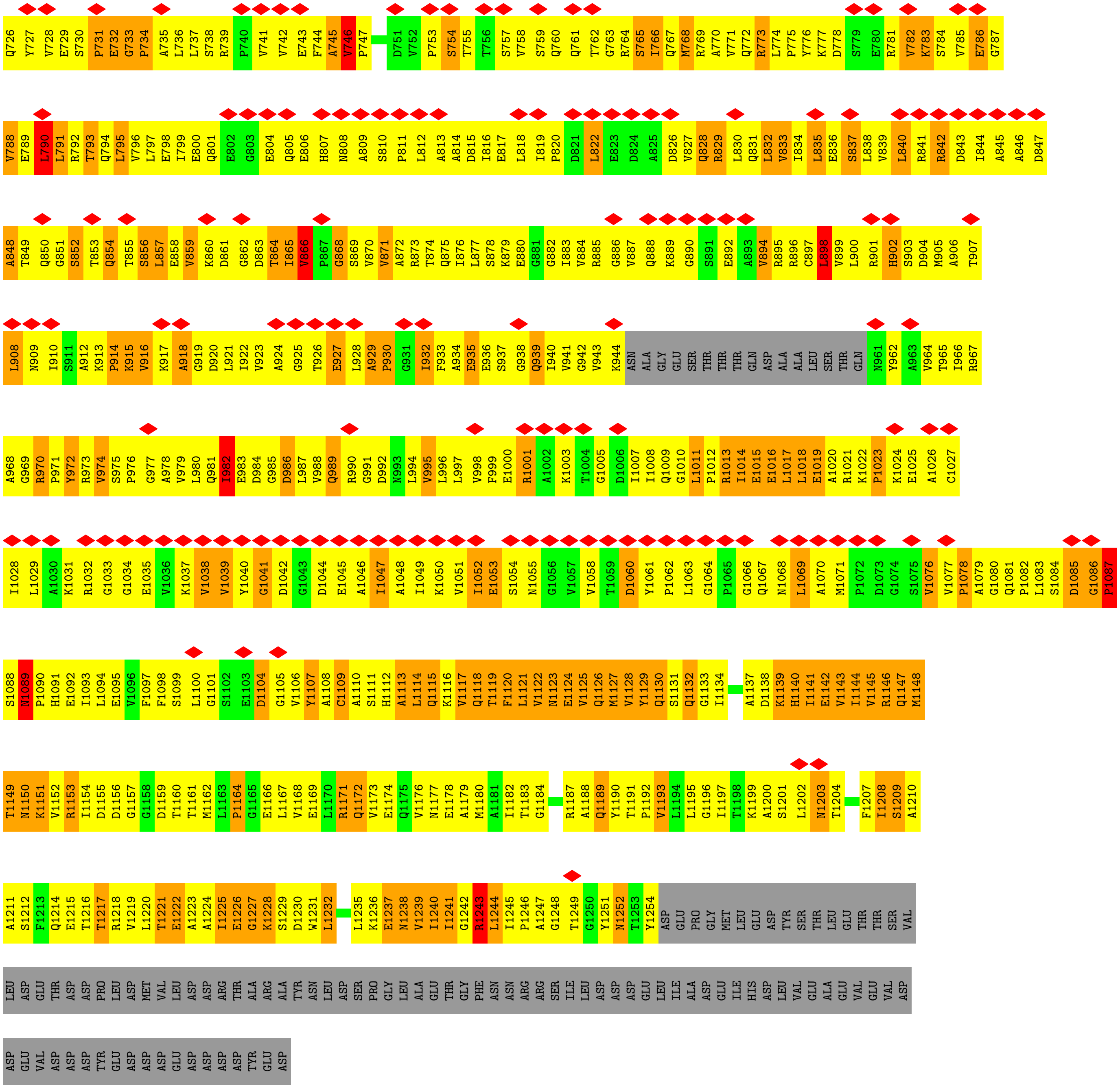
E426 V427 A428 L429 GLY GLY ARG THR THR ARG THR N437 T438 E439 K440 A441 V442 K443 D444 V445 A446 S447 D448 L449 A450 G451 E452 V453 K454 F455 A456 E457 V458 V459 P460 E461 Q462 K463 T464 D465 R466 Q467 G468 N469 T470 T471 T472 T473 A474 A475 R476 G477 G478 L479 I480 W481 I482 L483 S484 G485

E486 V487 Y488 N489 L490 P491 P492 G493 A494 E495 L496 V497 V498 K499 N500 G501 D502 R503 V504 E505 T506 N507 G508 V509 L510 A511 E512 T513 K514 L515 T516 T517 I518 H519 G520 G521 V522 V523 R524 L525 P526 E527 A528 T529 P530 G531 K532 S533 T534 R535 E536 I537 E538 I539 I540 T541 A542 S543 V544 V545

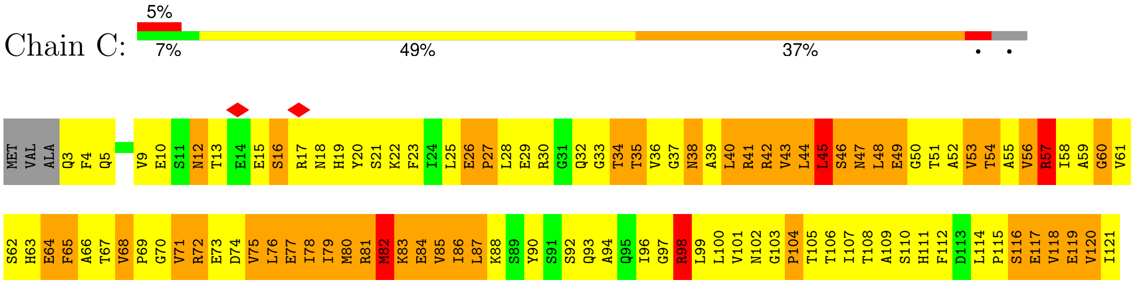
L546 D547 Q548 A549 T550 V551 T552 V553 Q554 S555 S556 Q557 G558 R559 N560 N561 Y562 L563 I564 T565 T566 G567 N568 N569 Q570 V571 F572 N573 L574 R575 A576 T577 P578 G579 T580 K581 V582 Q583 N584 G585 Q586 V587 V588 A589 E590 L591 I592 D593 D594 R595 Y596 R597 T598 T599 T600 G601 G602 F603 L604 K605

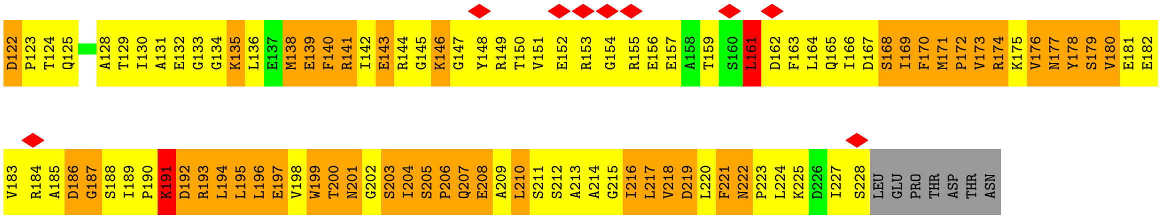
F606 A607 G608 V609 E610 V611 Q612 K613 K614 G615 K616 A617 K618 L619 G620 Y621 E622 V623 V624 Q625 G626 G627 T628 L629 L630 W631 I632 P633 E634 E635 T636 H637 E638 V639 N640 K641 D642 I643 S644 L645 L646 L647 V648 E649 D650 G651 Q652 Y653 V654 E655 A656 G657 T658 E659 V660 V661 K662 D663 I664 F665

C666 Q667 N668 S669 G670 V671 V672 E673 V674 T675 Q676 K677 N678 D679 I680 L681 R682 E683 V684 V685 V686 K687 P688 G689 E690 L691 L692 M693 V694 D695 D696 P697 E698 A699 V700 I701 G702 R703 D704 N705 T706 L707 L708 Q709 P710 G711 E712 E713 L714 L715 G716 Q717 V718 A719 T720 E721 L722 R723 Y724 I725

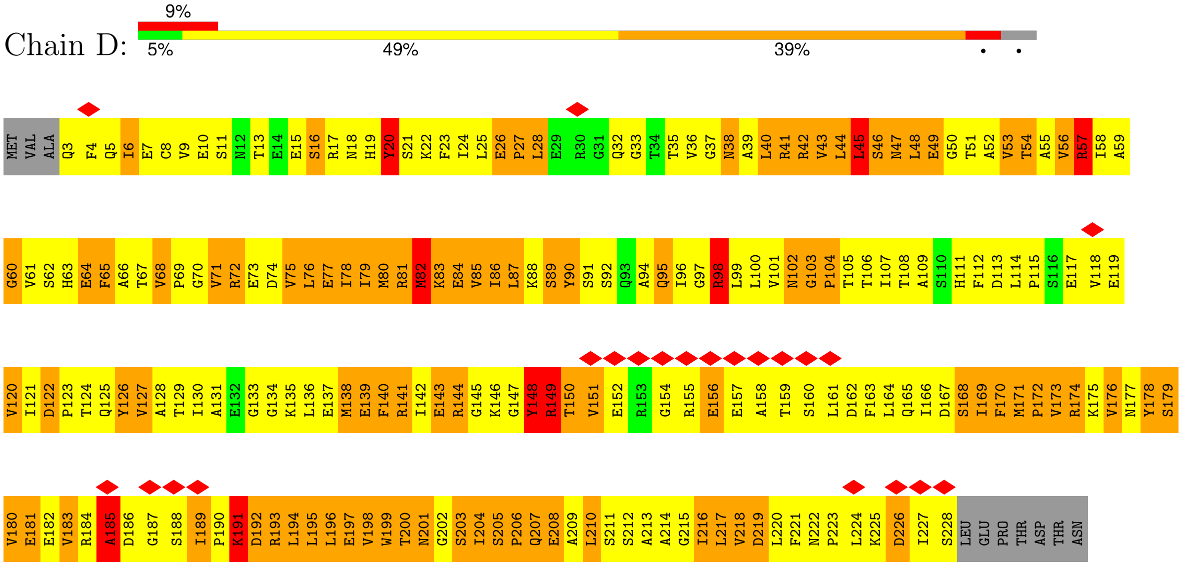


- Molecule 5: DNA-directed RNA polymerase subunit alpha

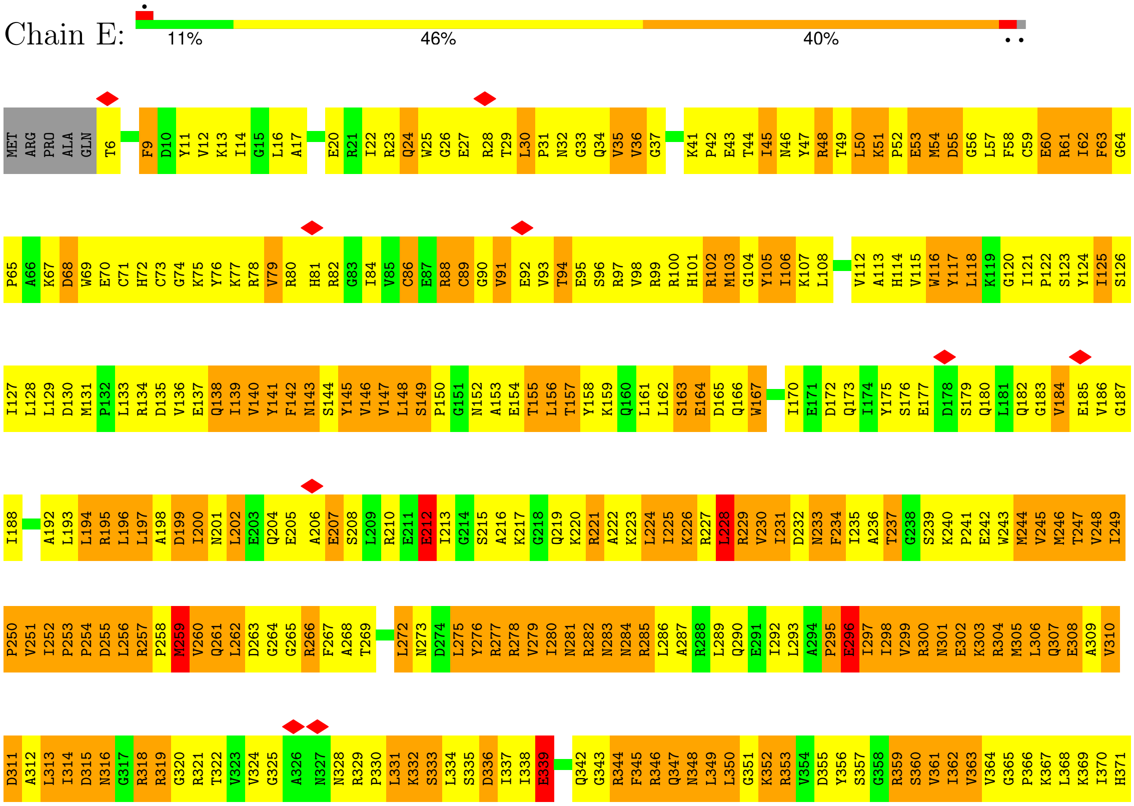


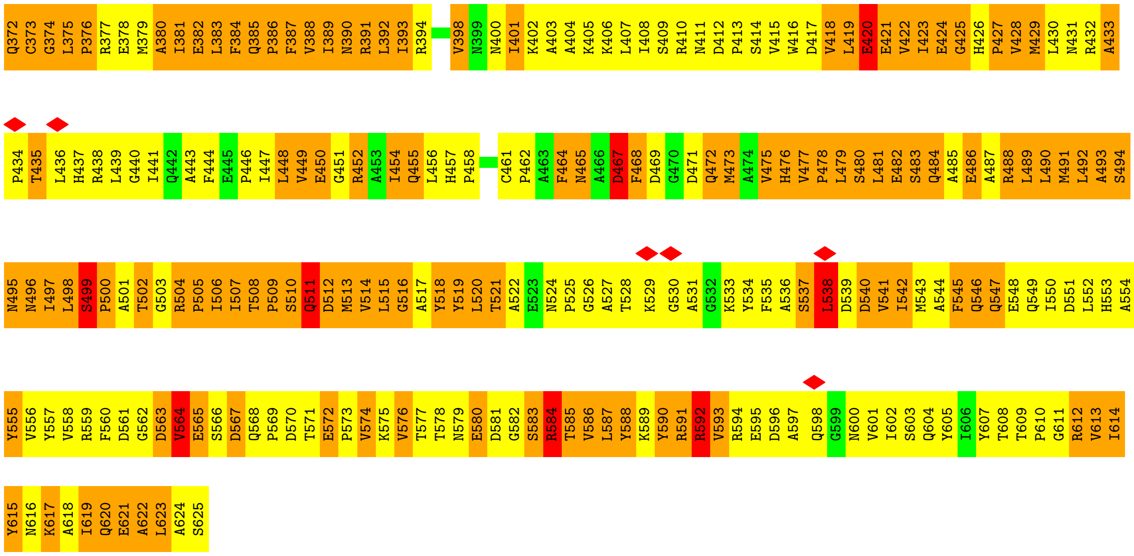


- Molecule 5: DNA-directed RNA polymerase subunit alpha

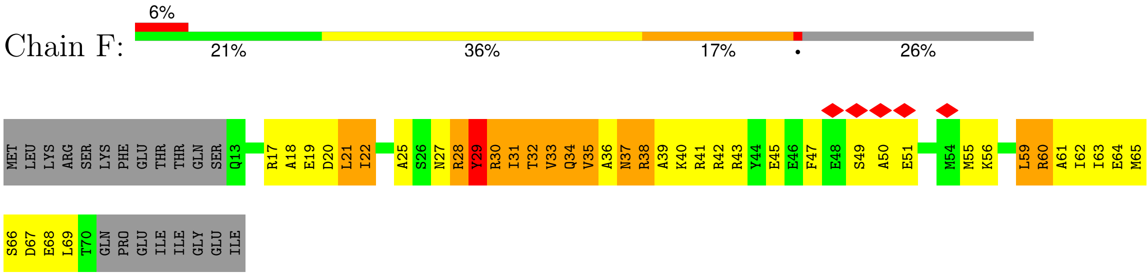


- Molecule 6: DNA-directed RNA polymerase subunit gamma

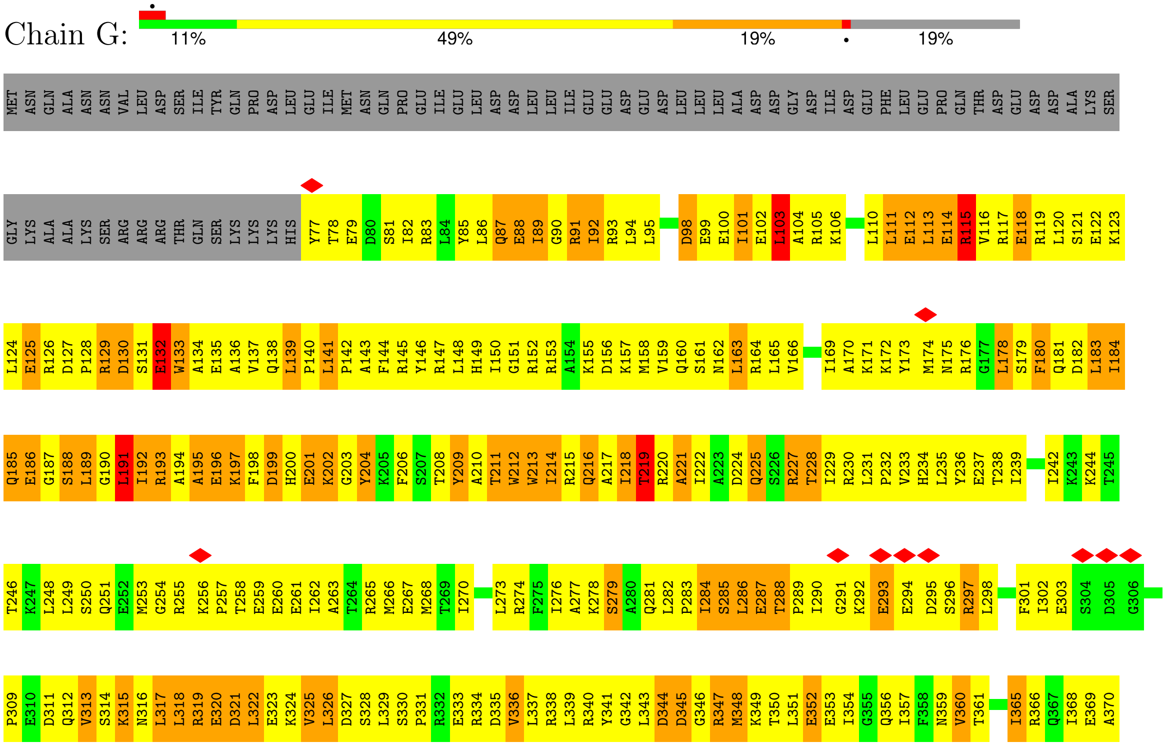


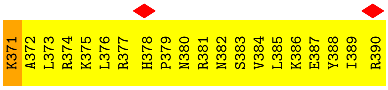


- Molecule 7: DNA-directed RNA polymerase subunit omega

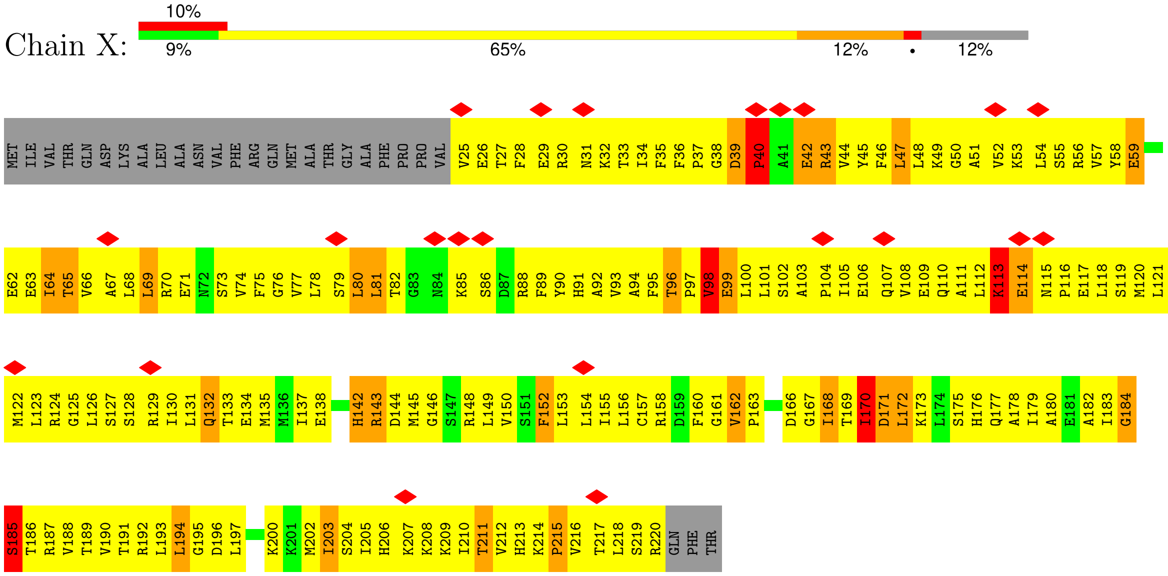


- Molecule 8: RNA polymerase sigma factor SigA

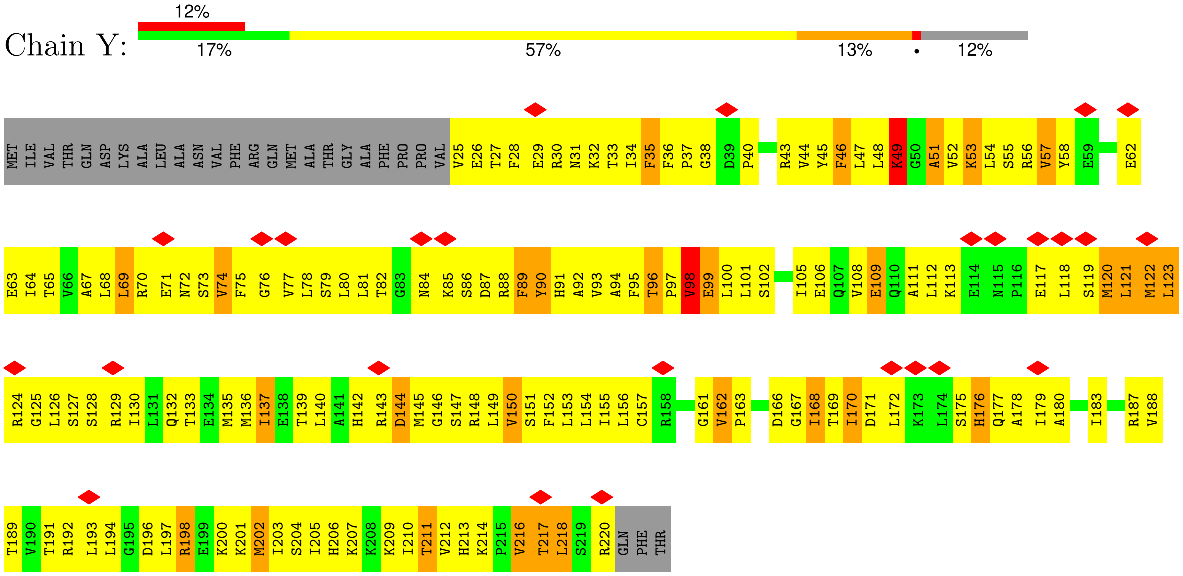




- Molecule 9: NtcA



- Molecule 9: NtcA



4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	45239	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	50	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.045	Depositor
Minimum map value	-0.015	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	321.00003, 321.00003, 321.00003	wwPDB
Map dimensions	300, 300, 300	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	1	6.62	598/1523 (39.3%)	2.59	159/2350 (6.8%)
2	2	6.00	432/1244 (34.7%)	2.54	114/1915 (6.0%)
3	A	3.14	815/8632 (9.4%)	1.90	342/11688 (2.9%)
4	B	2.10	345/9414 (3.7%)	1.57	200/12760 (1.6%)
5	C	2.79	124/1788 (6.9%)	1.89	69/2420 (2.9%)
5	D	2.95	144/1788 (8.1%)	1.95	73/2420 (3.0%)
6	E	3.21	485/5014 (9.7%)	1.80	189/6789 (2.8%)
7	F	2.32	22/478 (4.6%)	1.46	12/639 (1.9%)
8	G	1.87	81/2635 (3.1%)	1.39	45/3533 (1.3%)
9	X	0.99	8/1563 (0.5%)	1.27	15/2107 (0.7%)
9	Y	0.94	6/1563 (0.4%)	1.27	20/2107 (0.9%)
All	All	3.06	3060/35642 (8.6%)	1.79	1238/48728 (2.5%)

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
1	1	0	1
2	2	0	1
3	A	0	48
4	B	0	87
5	C	0	10
5	D	0	13
6	E	0	17
7	F	0	1
8	G	0	6
9	X	0	5
9	Y	0	6
All	All	0	195

The worst 5 of 3060 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	1	62	DT	C1'-N1	-26.91	1.09	1.47
2	2	33	DA	N9-C4	-25.87	1.22	1.37
1	1	77	DA	N9-C4	-25.79	1.22	1.37
2	2	66	DA	N9-C4	-25.75	1.22	1.37
2	2	67	DA	O3'-P	24.28	1.90	1.61

The worst 5 of 1238 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	Y	120	MET	CA-CB-CG	-20.38	78.66	113.30
9	X	113	LYS	CD-CE-NZ	-20.09	65.49	111.70
4	B	1018	LEU	CA-CB-CG	-19.77	69.82	115.30
4	B	239	LEU	CA-CB-CG	-19.46	70.55	115.30
9	X	172	LEU	CB-CG-CD1	18.29	142.09	111.00

There are no chirality outliers.

5 of 195 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	1	100	DA	Sidechain
2	2	67	DA	Sidechain
3	A	51	ASN	Peptide
3	A	52	SER	Mainchain
3	A	75	LYS	Peptide

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	1	1358	0	694	737	0
2	2	1109	0	574	622	0
3	A	8473	0	8480	2770	0
4	B	9292	0	9457	3586	0
5	C	1762	0	1772	621	0
5	D	1762	0	1772	616	0
6	E	4923	0	4987	1470	0
7	F	474	0	477	96	0
8	G	2600	0	2685	873	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
9	X	1540	0	1613	549	0
9	Y	1540	0	1616	480	0
All	All	34833	0	34127	11682	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 170.

The worst 5 of 11682 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:B:125:MET:HG2	6:E:515:LEU:CD2	1.24	1.65
9:X:42:GLU:CB	9:X:78:LEU:HB3	1.25	1.64
9:Y:78:LEU:CD2	9:Y:88:ARG:HG2	1.15	1.62
3:A:74:LEU:HD21	3:A:95:MET:CG	1.14	1.60
6:E:28:ARG:NH2	6:E:102:ARG:CD	1.67	1.57

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	A	1075/1132 (95%)	634 (59%)	407 (38%)	34 (3%)	3	25
4	B	1209/1350 (90%)	684 (57%)	466 (38%)	59 (5%)	2	17
5	C	224/236 (95%)	131 (58%)	84 (38%)	9 (4%)	2	21
5	D	224/236 (95%)	144 (64%)	72 (32%)	8 (4%)	3	23
6	E	618/625 (99%)	405 (66%)	195 (32%)	18 (3%)	3	27
7	F	56/78 (72%)	36 (64%)	19 (34%)	1 (2%)	7	35
8	G	312/390 (80%)	201 (64%)	100 (32%)	11 (4%)	3	24
9	X	194/223 (87%)	122 (63%)	61 (31%)	11 (6%)	1	14

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
9	Y	194/223 (87%)	124 (64%)	64 (33%)	6 (3%)	3	26
All	All	4106/4493 (91%)	2481 (60%)	1468 (36%)	157 (4%)	4	22

5 of 157 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	615	PRO
3	A	616	THR
3	A	636	ARG
3	A	778	GLU
3	A	890	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	A	918/969 (95%)	889 (97%)	29 (3%)	34	61
4	B	1017/1132 (90%)	983 (97%)	34 (3%)	33	61
5	C	196/205 (96%)	189 (96%)	7 (4%)	30	59
5	D	196/205 (96%)	189 (96%)	7 (4%)	30	59
6	E	534/538 (99%)	510 (96%)	24 (4%)	23	53
7	F	50/69 (72%)	50 (100%)	0	100	100
8	G	282/351 (80%)	272 (96%)	10 (4%)	31	60
9	X	172/194 (89%)	167 (97%)	5 (3%)	37	63
9	Y	172/194 (89%)	167 (97%)	5 (3%)	37	63
All	All	3537/3857 (92%)	3416 (97%)	121 (3%)	34	60

5 of 121 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	B	1189	GLN
8	G	387	GLU

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Mol	Chain	Res	Type
5	D	95	GLN
8	G	371	LYS
9	Y	137	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 51 such sidechains are listed below:

Mol	Chain	Res	Type
5	C	93	GLN
5	D	125	GLN
8	G	378	HIS
5	C	125	GLN
5	D	18	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
3	A	18
6	E	16
4	B	7
5	C	5
5	D	5
8	G	2
2	2	1

The worst 5 of 54 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	2	67:DA	O3'	68:DT	P	1.90
1	A	144:SER	C	145:PRO	N	1.20
1	E	256:LEU	C	257:ARG	N	1.20
1	E	374:GLY	C	375:LEU	N	1.20
1	A	247:PRO	C	248:PRO	N	1.19

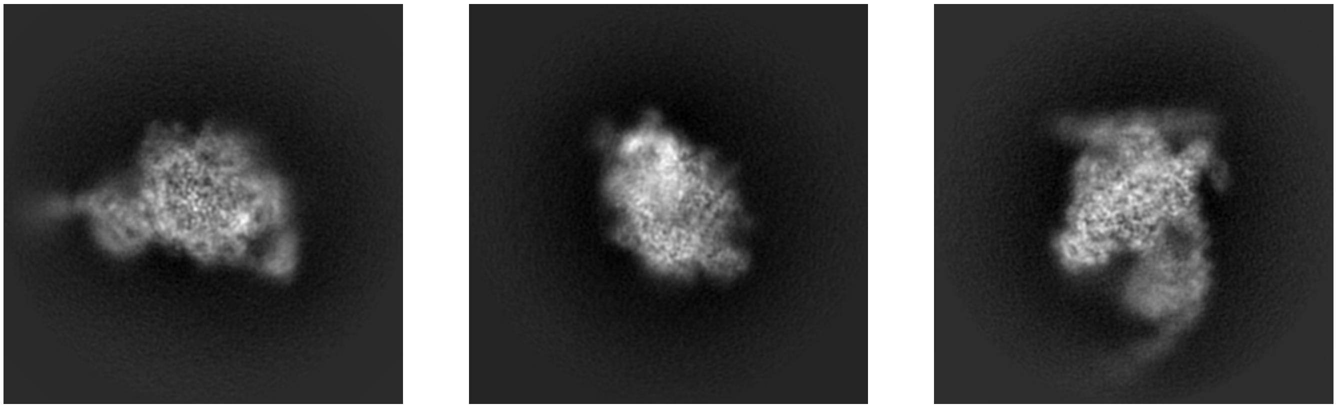
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-34476. 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.

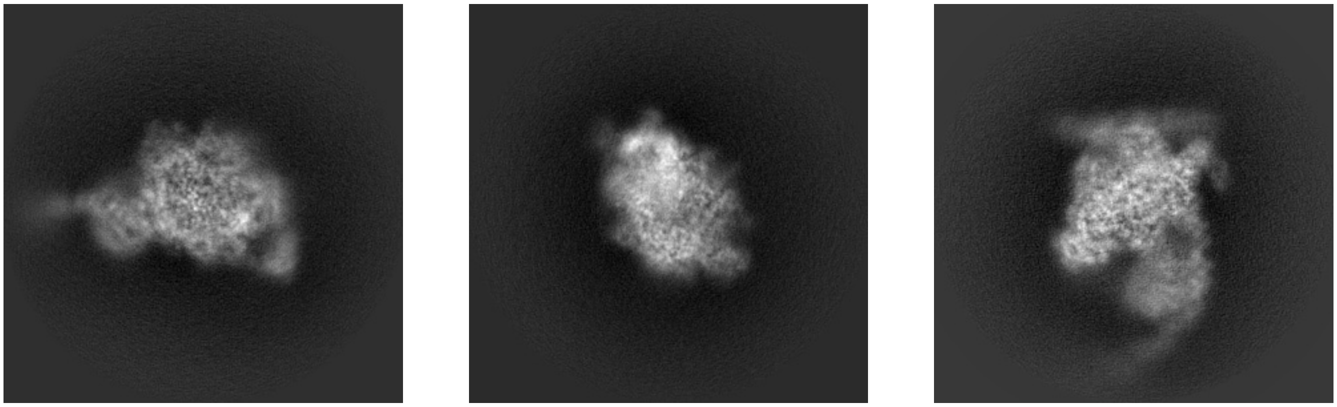
6.1 Orthogonal projections

6.1.1 Primary map



X Y Z

6.1.2 Raw map

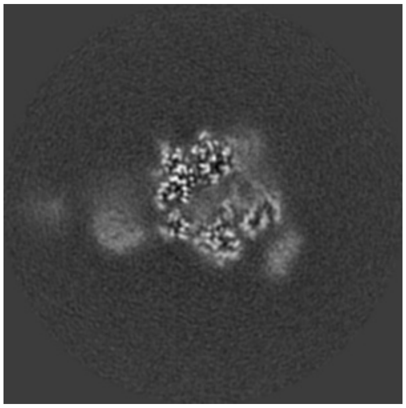


X Y Z

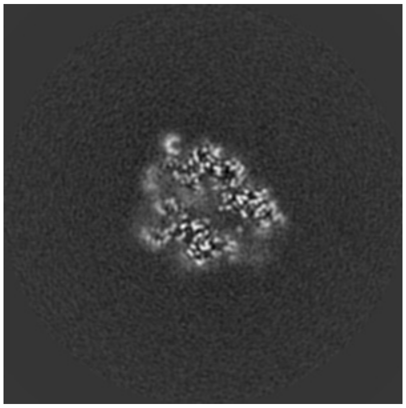
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

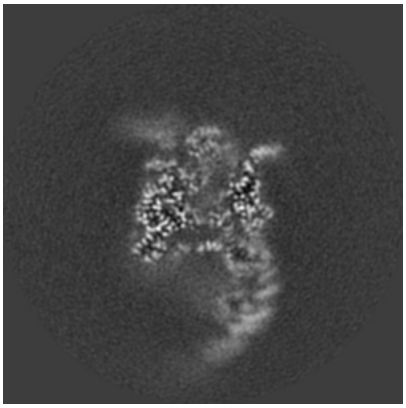
6.2.1 Primary map



X Index: 150

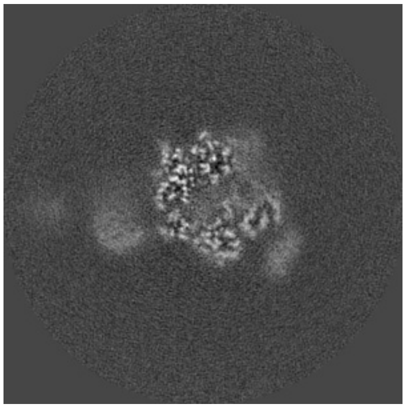


Y Index: 150

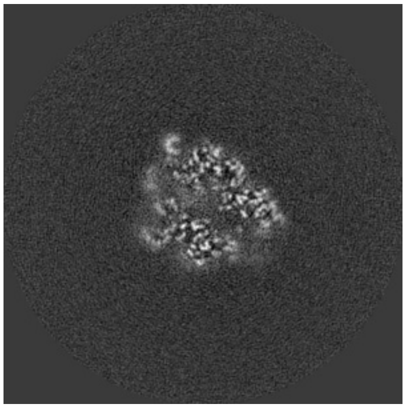


Z Index: 150

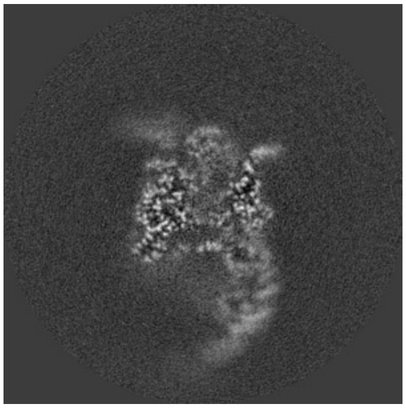
6.2.2 Raw map



X Index: 150



Y Index: 150

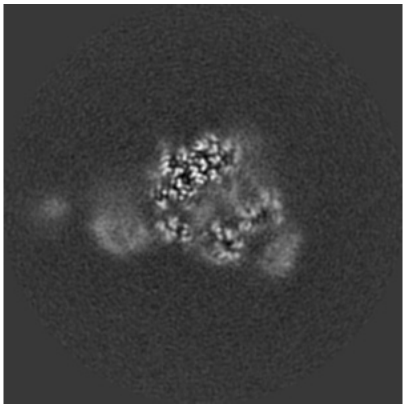


Z Index: 150

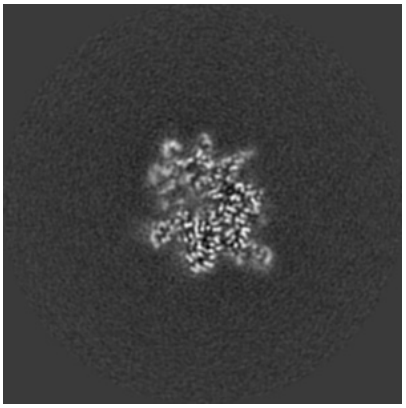
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ

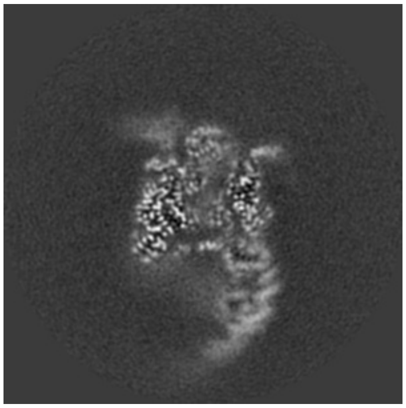
6.3.1 Primary map



X Index: 154

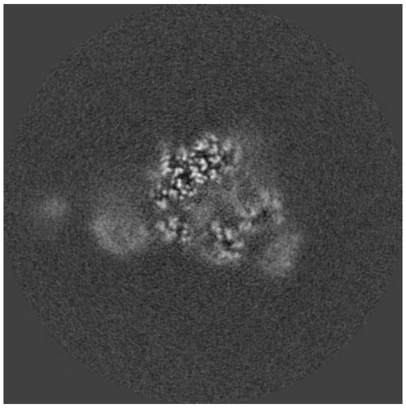


Y Index: 143

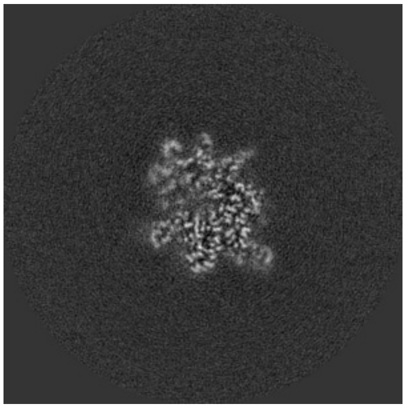


Z Index: 149

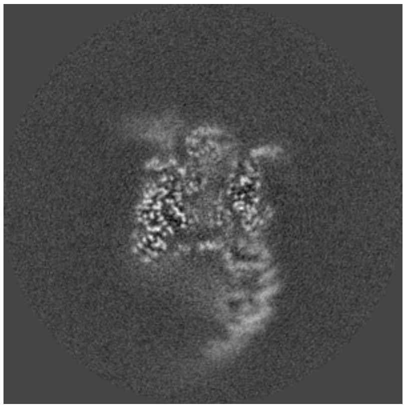
6.3.2 Raw map



X Index: 154



Y Index: 143

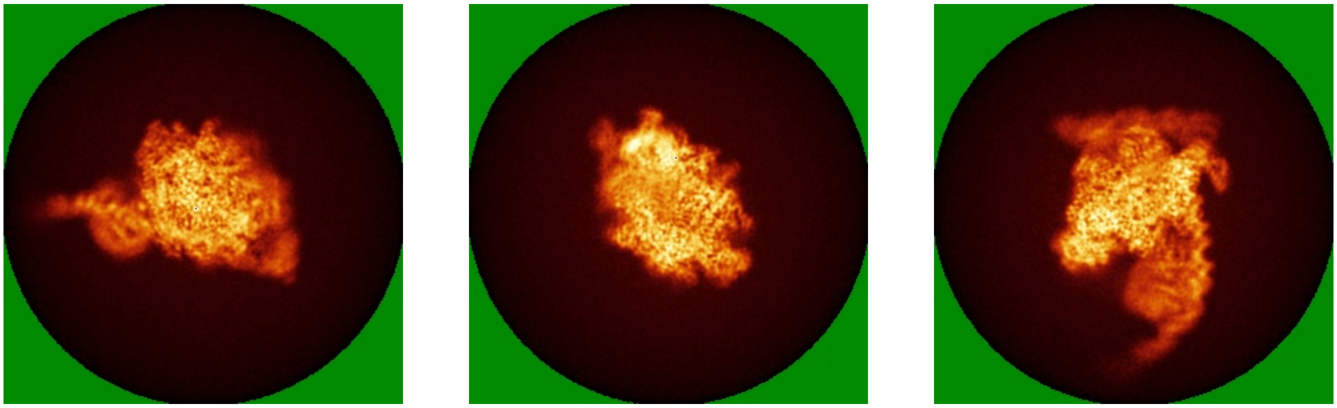


Z Index: 149

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

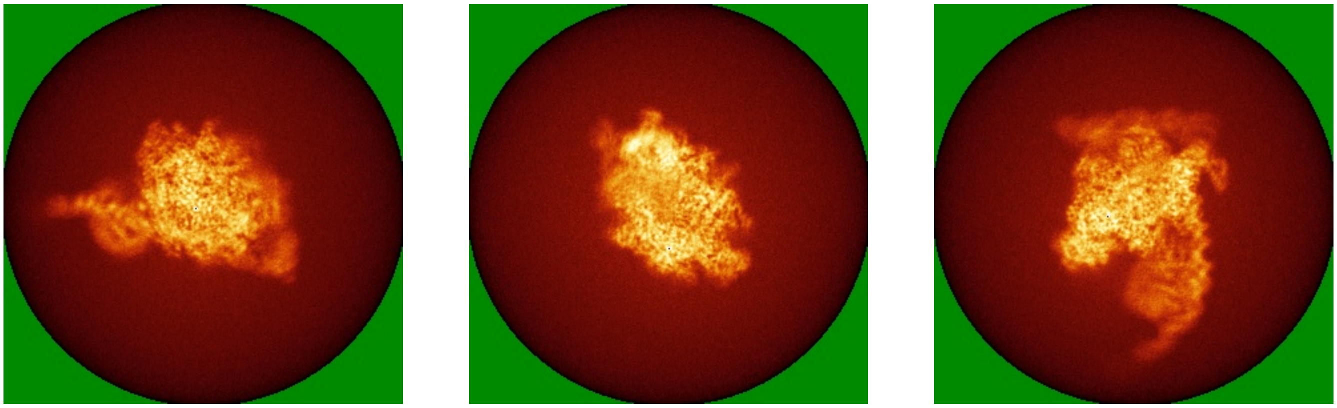
6.4 Orthogonal standard-deviation projections (False-color)

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

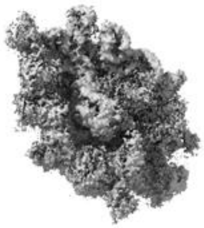
Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.01. 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.

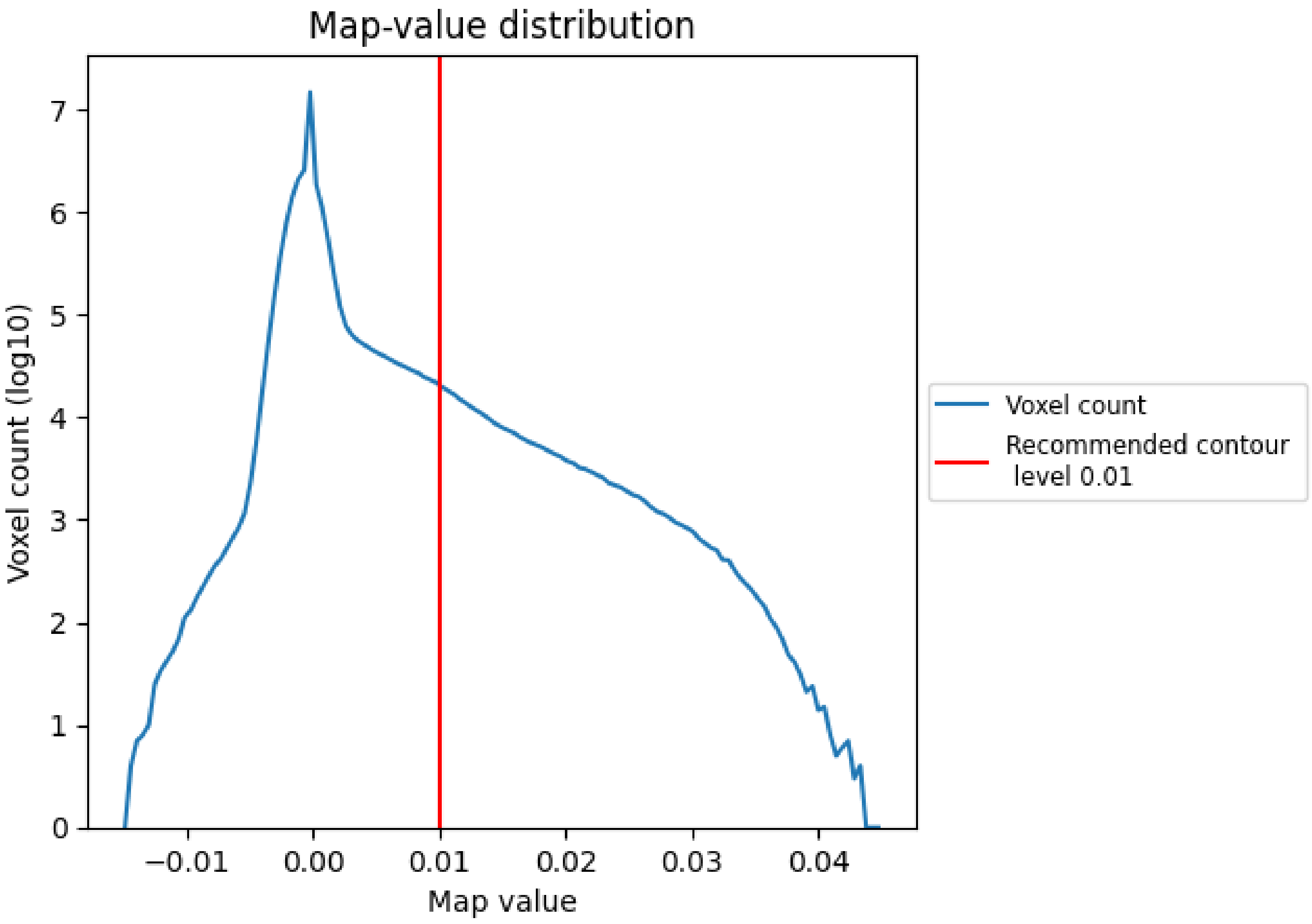
6.6 Mask visualisation (i)

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

7 Map analysis ⓘ

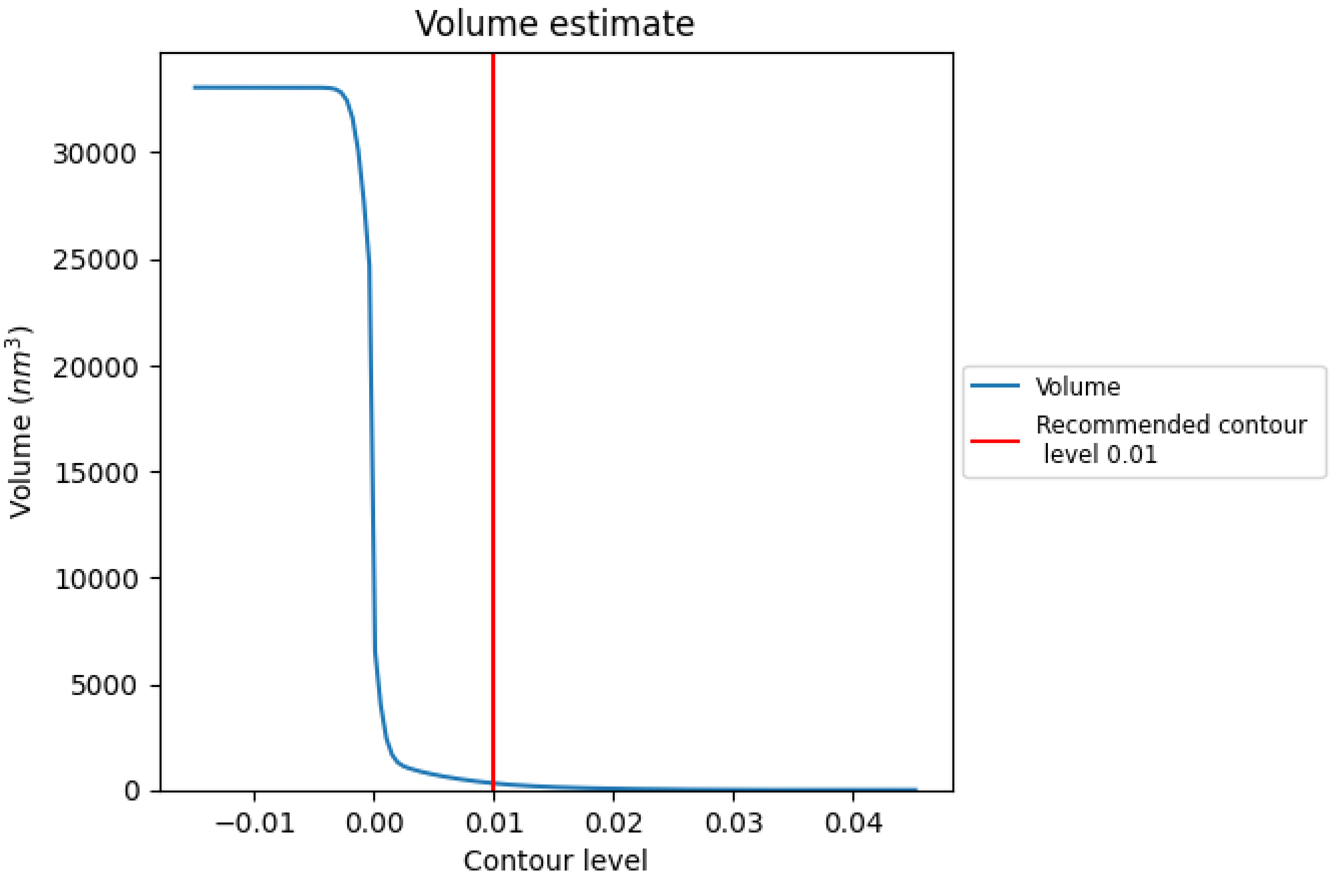
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ



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

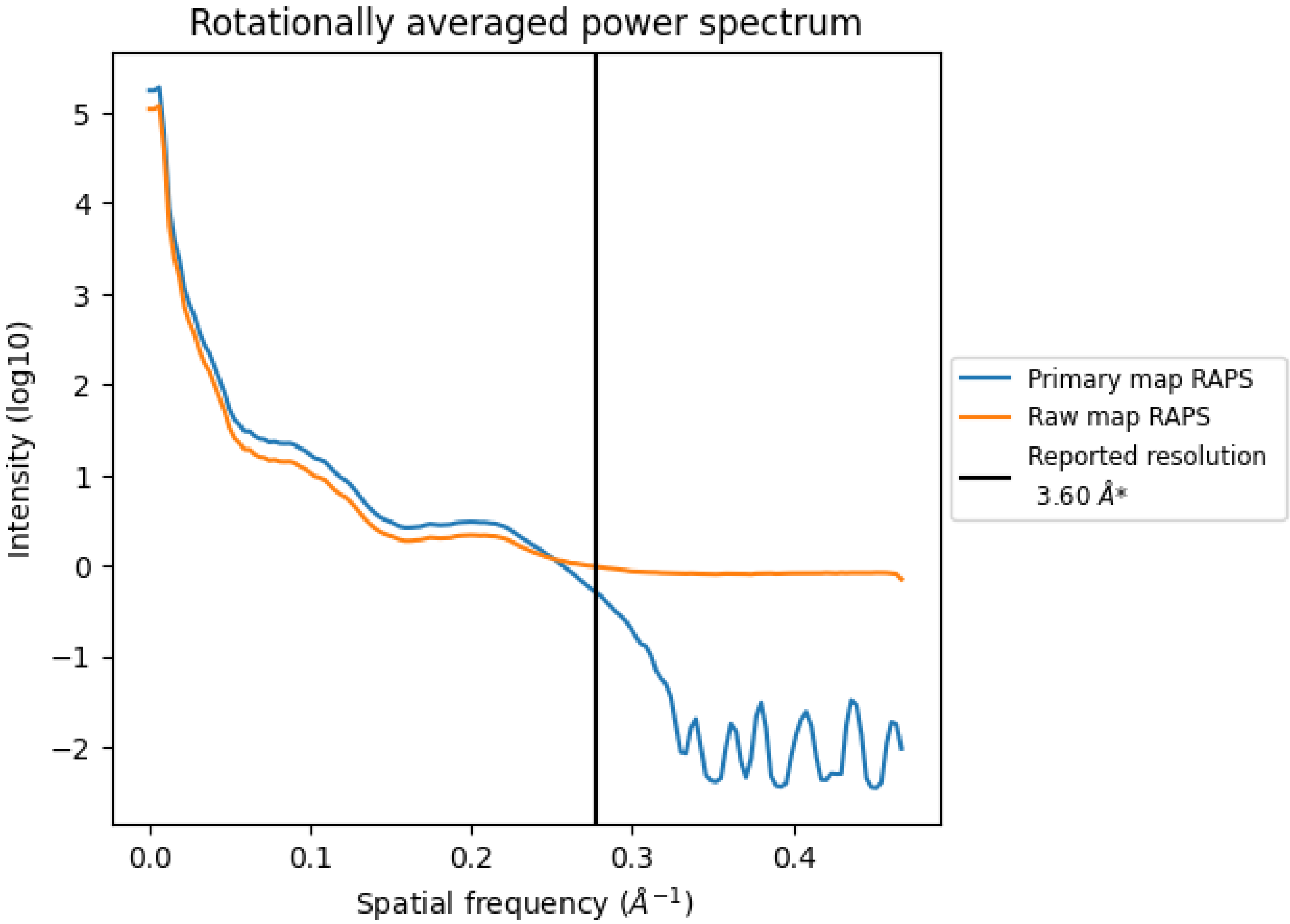
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 315 nm^3; this corresponds to an approximate mass of 284 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ

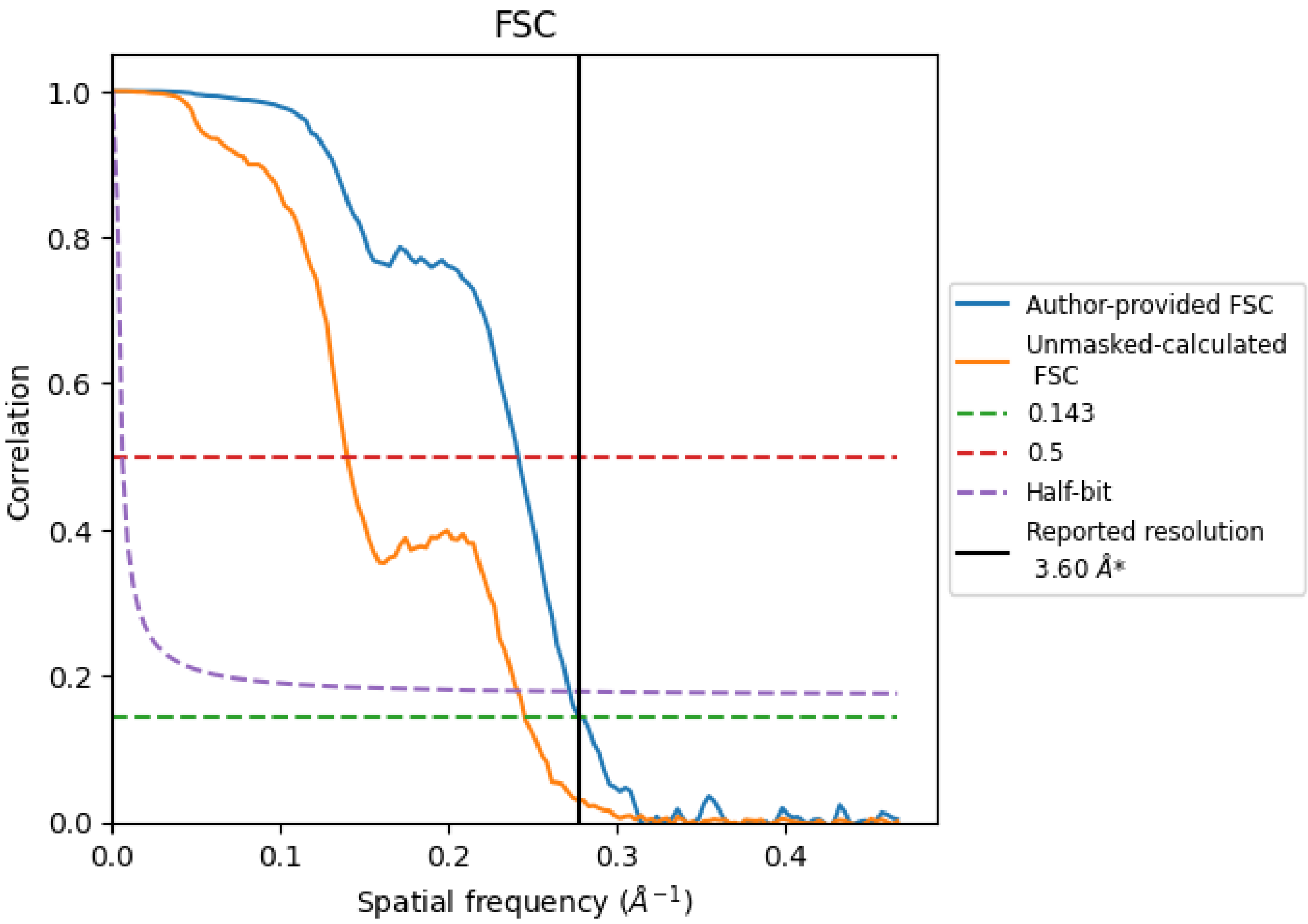


*Reported resolution corresponds to spatial frequency of 0.278 $Å^{-1}$

8 Fourier-Shell correlation ⓘ

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

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.278 $Å^{-1}$

8.2 Resolution estimates ⓘ

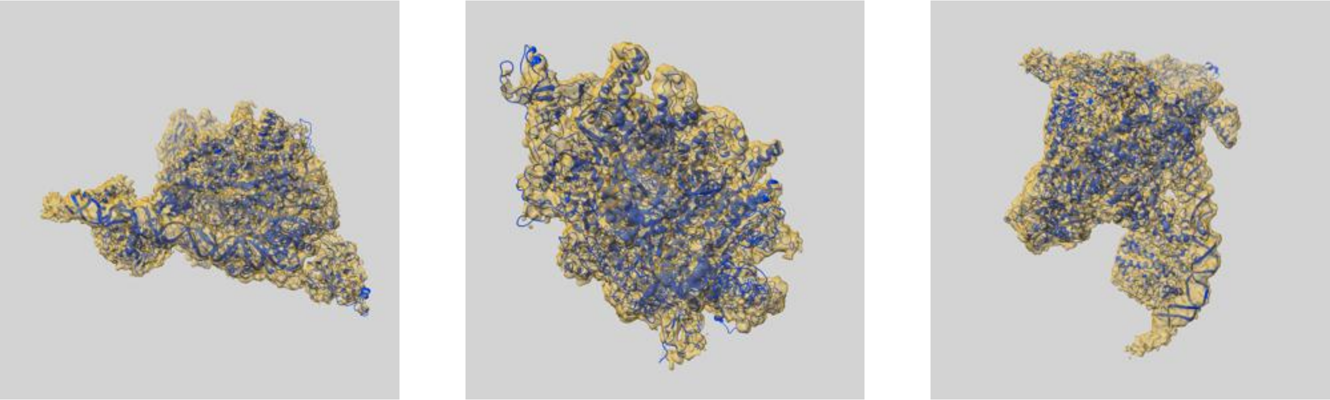
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.60	-	-
Author-provided FSC curve	3.57	4.14	3.67
Unmasked-calculated*	4.07	7.15	4.15

*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 4.07 differs from the reported value 3.6 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-34476 and PDB model 8H40. Per-residue inclusion information can be found in section 3 on page 6.

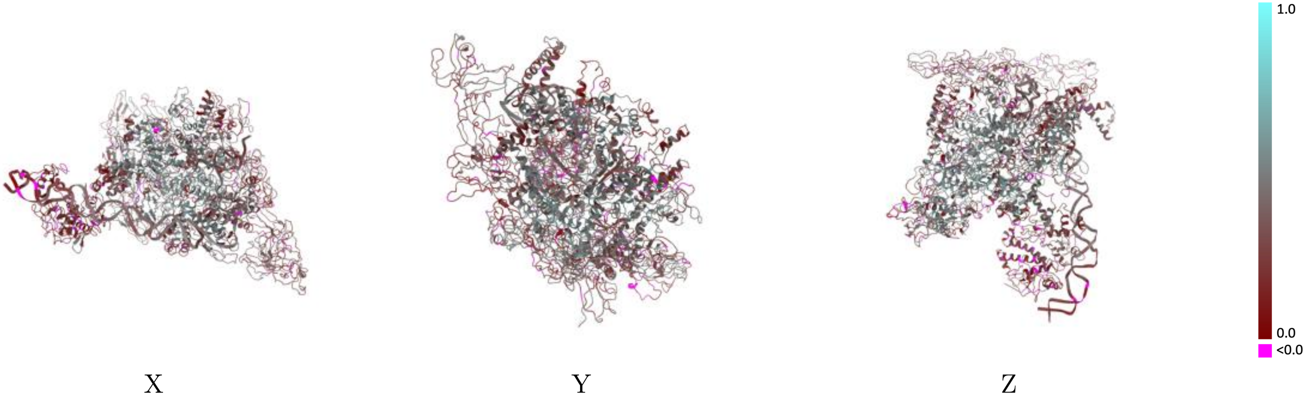
9.1 Map-model overlay ⓘ



X Y Z

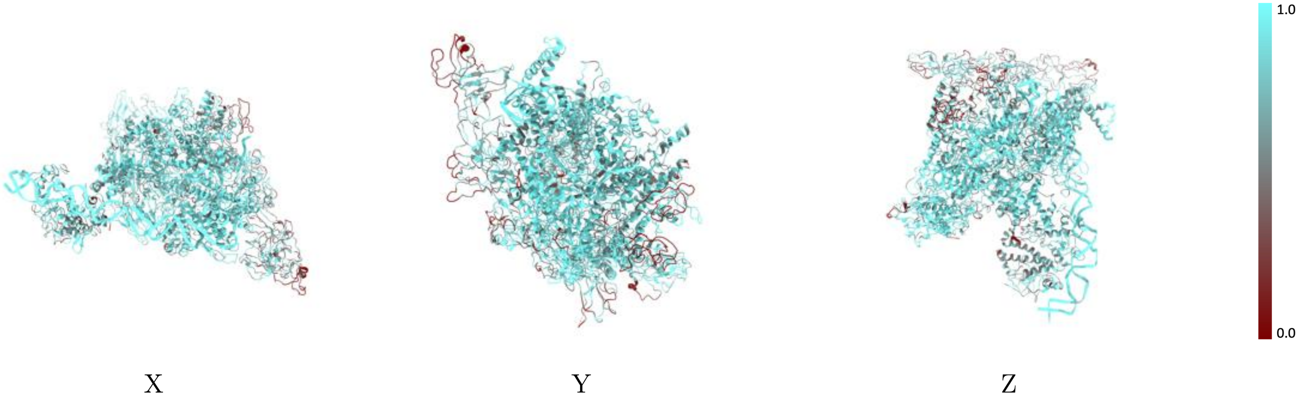
The images above show the 3D surface view of the map at the recommended contour level 0.01 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ



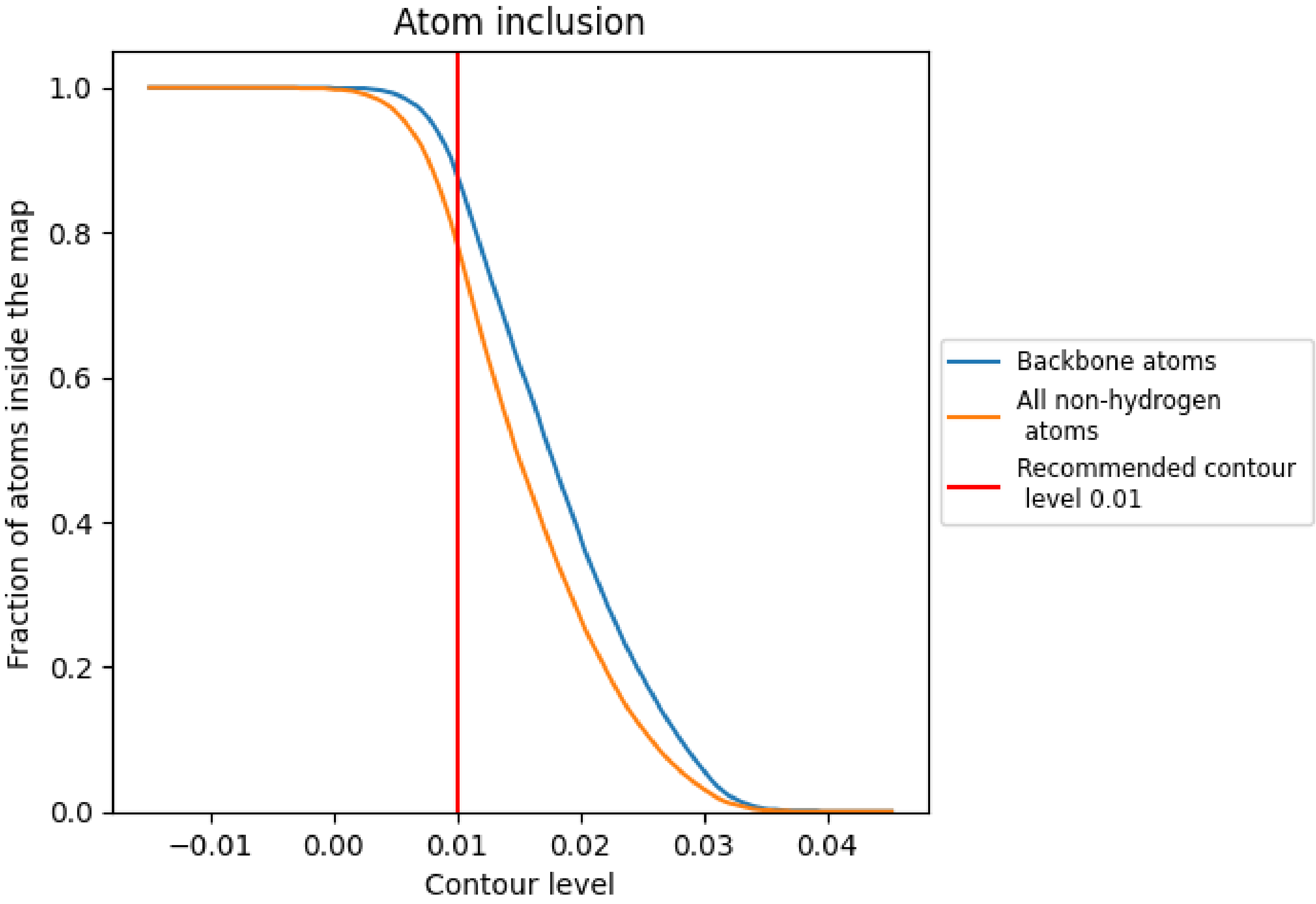
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.01).

9.4 Atom inclusion ⓘ



At the recommended contour level, 88% of all backbone atoms, 78% 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 (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7850	0.3530
1	0.9600	0.3610
2	0.9420	0.3380
A	0.8800	0.4270
B	0.6250	0.3320
C	0.8400	0.3720
D	0.8060	0.3160
E	0.8600	0.4120
F	0.7460	0.3130
G	0.8080	0.3080
X	0.7120	0.2080
Y	0.6830	0.1450