Full wwPDB EM Validation Report ⓘ

Jul 7, 2024 – 11:53 pm BST

PDB ID	:	7OOP
EMDB ID	:	EMD-13010
Title	:	Pol II-CSB-CSA-DDB1-UVSSA-PAF-SPT6 (Structure 3)
Authors	:	Kokic, G.; Cramer, P.
Deposited on	:	2021-05-28
Resolution	:	2.90 Å(reported)

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

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

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

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

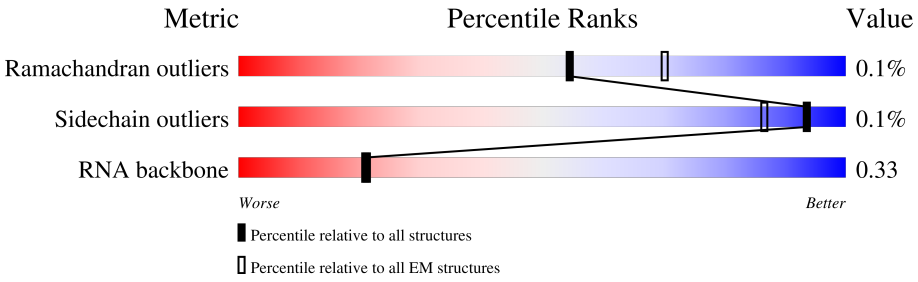
EMDB validation analysis	:	0.0.1.dev92
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.90 Å.

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



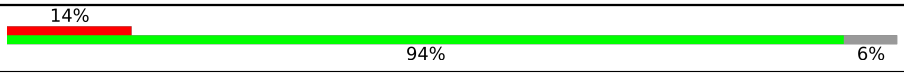
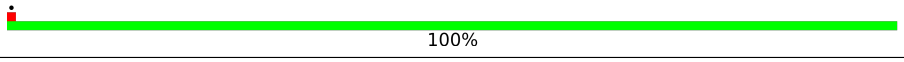
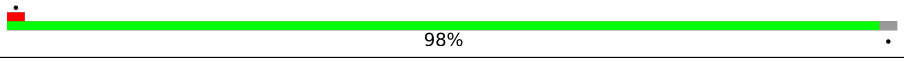
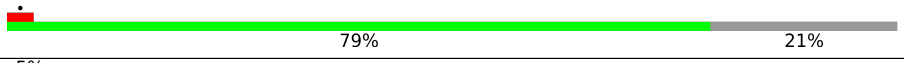
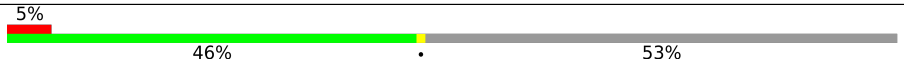
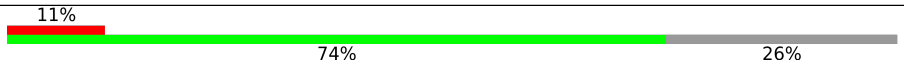
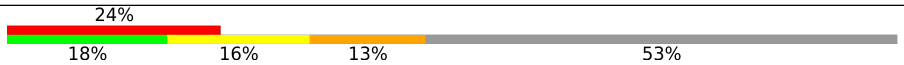
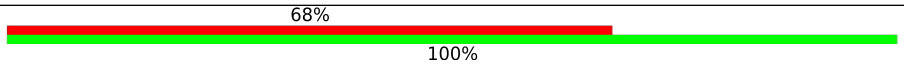
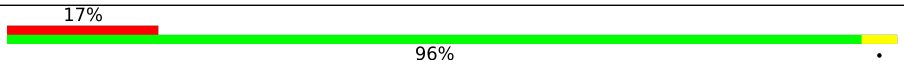
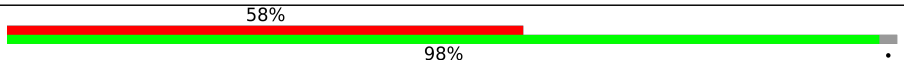
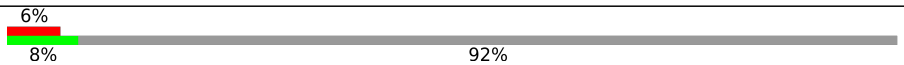
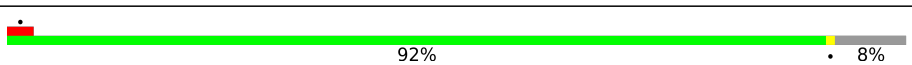
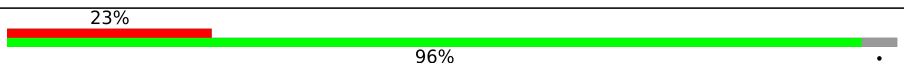
Metric	Whole archive (#Entries)	EM structures (#Entries)
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826
RNA backbone	4643	859

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	1970	5% 71% 28%
2	B	1174	6% 96%
3	C	275	94% 5%
4	D	142	87% 90% 10%
5	E	210	99%
6	F	127	6% 65% 35%
7	G	172	42% 97%
8	H	150	99%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
9	I	125	
10	J	67	
11	K	117	
12	L	58	
13	M	1726	
14	N	47	
15	P	45	
16	R	40	
17	S	1173	
18	T	47	
19	U	666	
20	V	531	
21	Y	305	
22	Z	531	
23	a	396	
24	b	1493	
25	c	709	
26	d	1140	

2 Entry composition (i)

There are 28 unique types of molecules in this entry. The entry contains 62441 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called DNA-directed RNA polymerase II subunit RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1412	11179	7033	2002	2074	70	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1131	9052	5727	1592	1669	64	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	260	2089	1309	359	415	6	0	0

- Molecule 4 is a protein called RPOL4c domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	128	1013	636	172	201	4	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	209	1720	1089	300	323	8	0	0

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	82	657	418	113	121	5	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	171	Total	C	N	O	S	0	0
			1334	867	216	243	8		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	148	Total	C	N	O	S	0	0
			1186	750	194	237	5		

- Molecule 9 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	117	Total	C	N	O	S	0	0
			949	587	169	182	11		

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	67	Total	C	N	O	S	0	0
			533	345	90	92	6		

- Molecule 11 is a protein called RNA_pol_L_2 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	115	Total	C	N	O	S	0	0
			920	593	152	173	2		

- Molecule 12 is a protein called RNA polymerase II subunit K.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	46	Total	C	N	O	S	0	0
			388	241	75	66	6		

- Molecule 13 is a protein called Transcription elongation factor SPT6.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	810	Total	C	N	O	S	0	0
			6648	4226	1155	1234	33		

- Molecule 14 is a DNA chain called NTS.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	35	Total	C	N	O	P	0	0
			727	344	142	206	35		

- Molecule 15 is a RNA chain called RNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	P	21	Total	C	N	O	P	0	0
			454	204	89	140	21		

- Molecule 16 is a protein called LEO1 helix.

Mol	Chain	Residues	Atoms				AltConf	Trace
16	R	40	Total	C	N	O	0	0
			160	80	40	40		

- Molecule 17 is a protein called RNA polymerase-associated protein CTR9 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
17	S	890	Total	C	N	O	0	0
			3560	1780	890	890		

- Molecule 18 is a DNA chain called TS.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	47	Total	C	N	O	P	0	0
			947	453	159	288	47		

- Molecule 19 is a protein called RNA polymerase-associated protein LEO1.

Mol	Chain	Residues	Atoms				AltConf	Trace
19	U	104	Total	C	N	O	0	0
			416	208	104	104		

- Molecule 20 is a protein called RNA polymerase II-associated factor 1 homolog.

Mol	Chain	Residues	Atoms				AltConf	Trace
20	V	217	Total	C	N	O	0	0
			868	434	217	217		

- Molecule 21 is a protein called WD repeat-containing protein 61.

Mol	Chain	Residues	Atoms				AltConf	Trace
21	Y	300	Total 1200	C 600	N 300	O 300	0	0

- Molecule 22 is a protein called Parafibromin.

Mol	Chain	Residues	Atoms				AltConf	Trace
22	Z	43	Total 172	C 86	N 43	O 43	0	0

- Molecule 23 is a protein called DNA excision repair protein ERCC-8.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	a	365	Total 2849	C 1775	N 507	O 548	S 19	0	0

- Molecule 24 is a protein called DNA excision repair protein ERCC-6.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	b	534	Total 4356	C 2803	N 763	O 769	S 21	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
b	538	ARG	LYS	conflict	UNP Q03468

- Molecule 25 is a protein called UV-stimulated scaffold protein A.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	c	141	Total 564	C 282	N 141	O 141	0	0

- Molecule 26 is a protein called DNA damage-binding protein 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	d	1096	Total 8491	C 5397	N 1423	O 1625	S 46	0	0

- Molecule 27 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
27	A	2	Total Zn 2 2	0
27	B	1	Total Zn 1 1	0
27	C	1	Total Zn 1 1	0
27	I	2	Total Zn 2 2	0
27	J	1	Total Zn 1 1	0
27	L	1	Total Zn 1 1	0

- Molecule 28 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

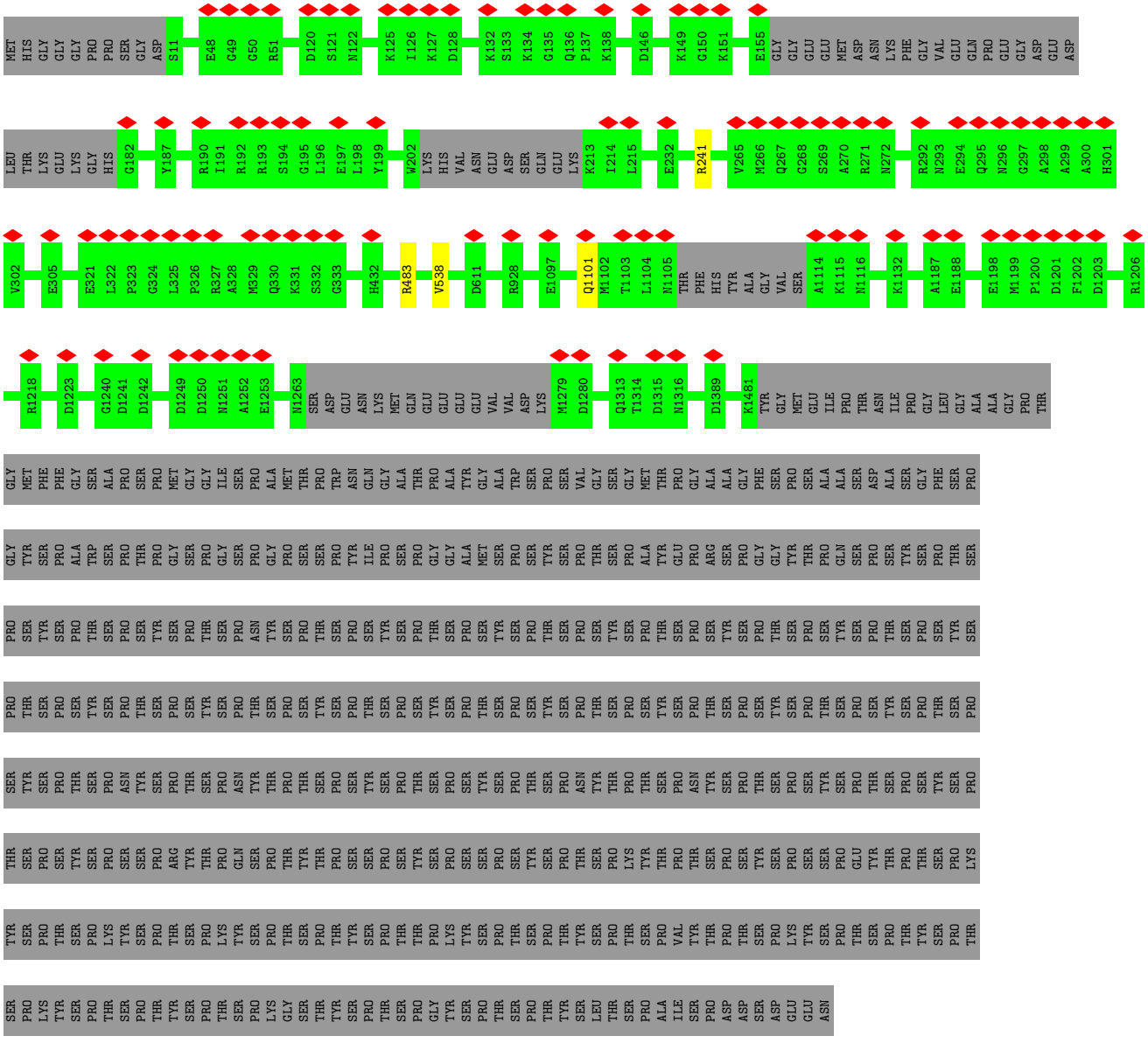
Mol	Chain	Residues	Atoms	AltConf
28	A	1	Total Mg 1 1	0

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.

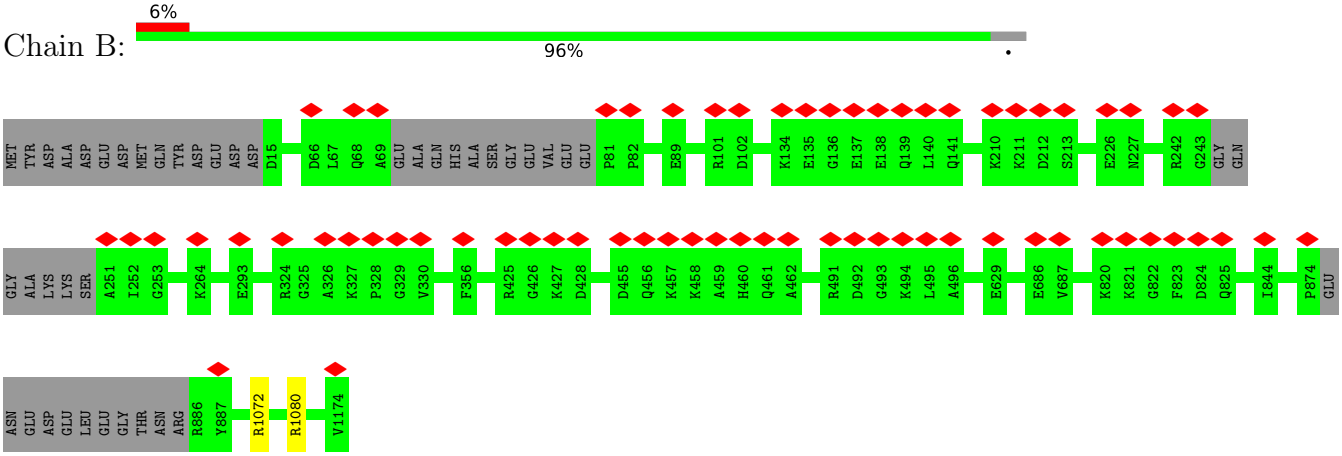
• Molecule 1: DNA-directed RNA polymerase II subunit RPB1

Chain A:



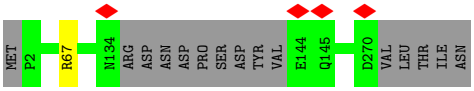
• Molecule 2: DNA-directed RNA polymerase subunit beta

Chain B:



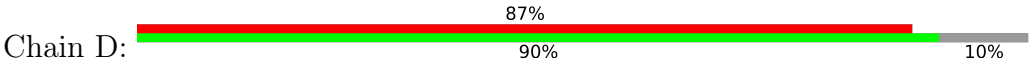
• Molecule 3: DNA-directed RNA polymerase II subunit RPB3

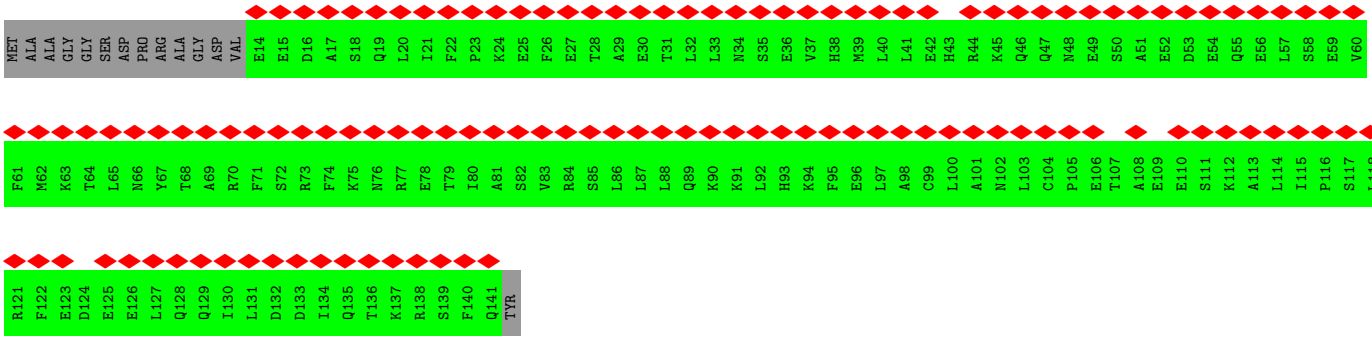
Chain C:



• Molecule 4: RPOL4c domain-containing protein

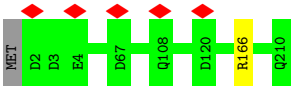
Chain D:





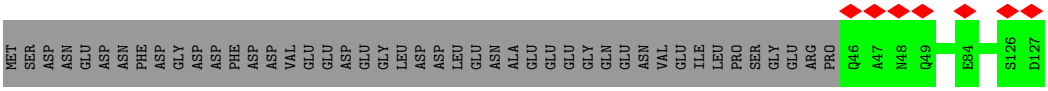
• Molecule 5: DNA-directed RNA polymerase II subunit E

Chain E:

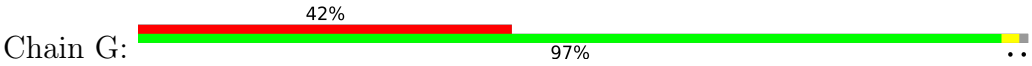


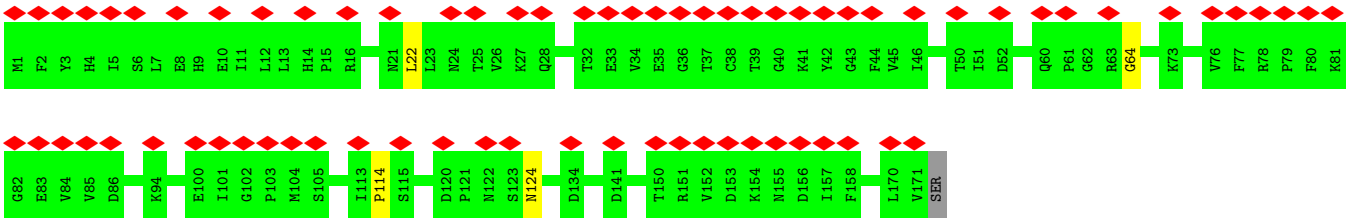
• Molecule 6: DNA-directed RNA polymerase II subunit F

Chain F:

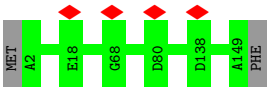


• Molecule 7: DNA-directed RNA polymerase II subunit RPB7

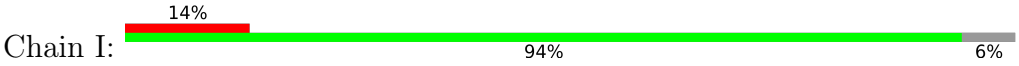


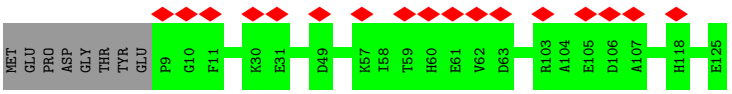


• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3



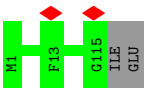
• Molecule 9: DNA-directed RNA polymerase II subunit RPB9



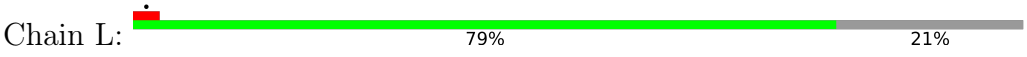


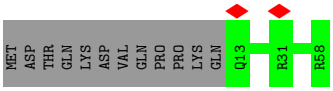
• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5

• Molecule 11: RNA_pol_L_2 domain-containing protein

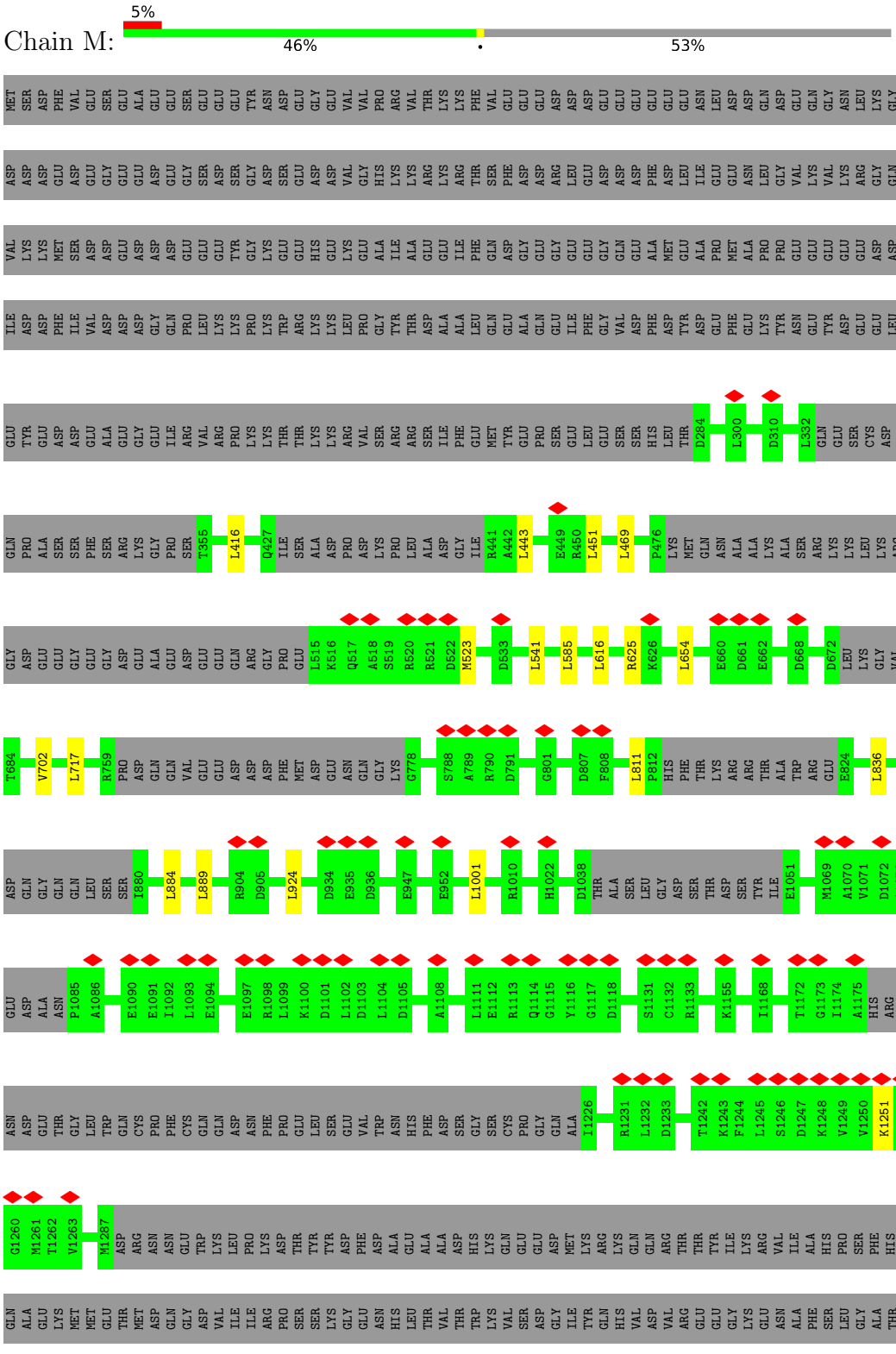


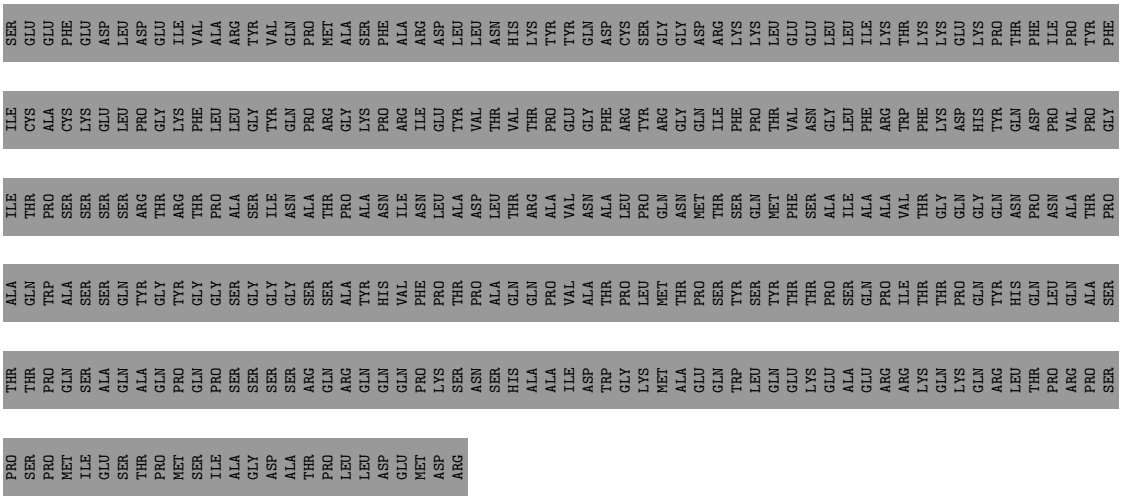
• Molecule 12: RNA polymerase II subunit K





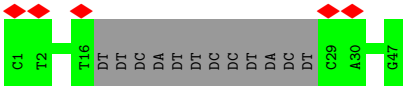
• Molecule 13: Transcription elongation factor SPT6





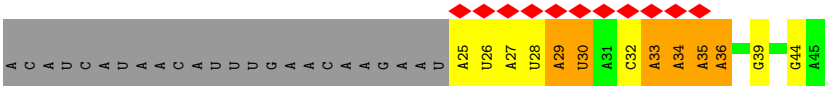
• Molecule 14: NTS

Chain N:



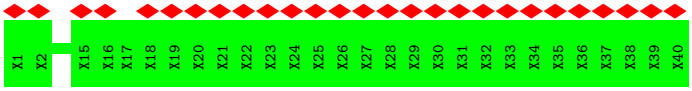
• Molecule 15: RNA

Chain P:



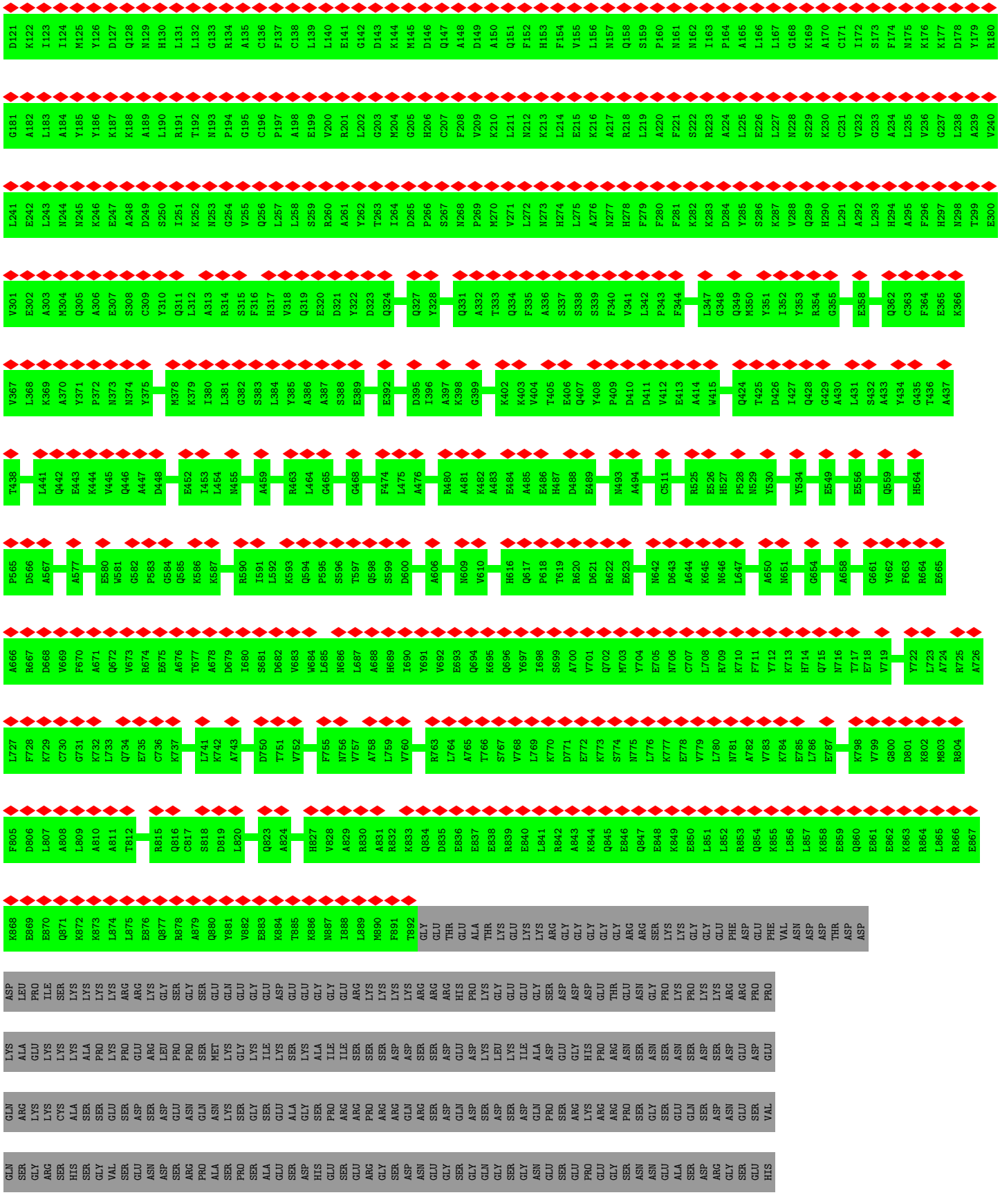
• Molecule 16: LEO1 helix

Chain R:



• Molecule 17: RNA polymerase-associated protein CTR9 homolog

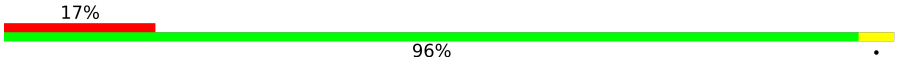
Chain S:

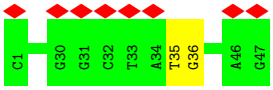

D121 K122 I123 I124 M125 Y126 D127 Q128 N129 H130 L131 L132 G133 R134 A135 C136 F137 C138 L139 L140 E141 G142 D143 K144 M145 D146 Q147 A148 D149 A150 Q151 F152 H153 F154 V155 L156 N157 Q158 S159 P160 N161 N162 I163 P164 A165 L166 L167 G168 K169 A170 C171 I172 S173 F174 N175 K176 K177 D178 Y179 R180
G181 A182 L183 A184 Y185 Y186 K187 K188 A189 L190 R191 T192 N193 P194 G195 C196 P197 A198 E199 V200 R201 L202 G203 M204 G205 H206 C207 F208 V209 K210 L211 N212 K213 L214 E215 K216 A217 R218 L219 A220 F221 S222 R223 A224 L225 E226 L227 N228 S229 K230 C231 V232 G233 A234 L235 Y236 G237 L238 A239 V240
L241 E242 L243 N244 N245 K246 E247 A248 D249 S250 I251 K252 N253 G254 V255 Q256 L257 L258 S259 R260 A261 Y262 T263 I264 D265 P266 S267 N268 P269 M270 V271 L272 N273 H274 L275 A276 N277 H278 F279 F280 F281 K282 K283 D284 Y285 S286 K287 V288 Q289 H290 L291 A292 L293 H294 A295 F296 H297 N298 T299 E300
V301 E302 A303 M304 Q305 A306 E307 S308 C309 Y310 Q311 L312 A313 R314 S315 F316 H317 V318 Q319 E320 D321 Y322 D323 Q324 Q327 Y328 Q331 A332 T333 Q334 F335 A336 S337 S338 S339 P340 V341 L342 P343 F344 L347 G348 Q349 M350 Y351 I352 Y353 R354 G355 E358 Q362 C363 F364 E365 K366
V367 L368 K369 A370 Y371 P372 N373 N374 Y375 M378 K379 I380 L381 G382 S383 L384 Y385 A386 A387 S388 E389 E392 D395 I396 A397 K398 G399 K402 K403 V404 T405 E406 Q407 Y408 P409 D410 D411 V412 E413 A414 W415 Q424 T425 D426 I427 Q428 G429 A430 L431 S432 A433 Y434 G435 T436 A437
T438 L441 Q442 E443 K444 V445 Q446 A447 D448 E452 I453 L454 N455 A459 R463 L464 G465 G468 F474 L475 A476 R480 A481 K482 A483 E484 A485 E486 H487 D488 E489 N493 A494 C511 R525 E526 H527 P528 N529 Y530 Y534 E549 E556 Q559 H564
P565 D566 A567 A577 E580 W581 G582 P583 G584 Q585 K586 K587 R590 I591 L592 K593 Q594 P595 S596 T597 Q598 S599 D600 A606 N609 Y610 H616 Q617 P618 T619 R620 D621 R622 E623 N642 D643 A644 K645 N646 L647 A650 N651 G654 A658 G661 Y662 F663 R664 E665
A666 R667 D668 V669 F670 A671 Q672 V673 R674 E675 A676 T677 A678 D679 I680 S681 D682 V683 W684 L685 N686 L687 A688 H689 I690 Y691 V692 E693 Q694 K695 Q696 Y697 I698 S699 A700 V701 Q702 M703 Y704 E705 N706 C707 L708 R709 K710 F711 Y712 K713 H714 Q715 N716 T717 E718 V719 Y722 L723 A724 R725 A726
L727 F728 K729 C730 G731 K732 L733 Q734 E735 C736 K737 L741 K742 A743 D750 T751 V752 F755 N756 V757 A758 L759 V760 R763 L764 A765 T766 S767 V768 L769 K770 D771 E772 K773 S774 N775 L776 K777 E778 V779 L780 N781 A782 V783 K784 E785 L786 E787 K798 V799 G800 D801 K802 M803 R804
F805 D806 L807 A808 L809 A810 A811 T812 R815 Q816 C817 S818 D819 L820 Q823 A824 H827 V828 A829 R830 A831 R832 K833 Q834 D835 E836 E837 E838 R839 E840 L841 R842 A843 K844 Q845 E846 Q847 E848 K849 E850 L851 L852 R853 Q854 K855 L856 L857 K858 E859 Q860 E861 E862 K863 R864 L865 R866 E867
K868 E869 E870 Q871 K872 K873 L874 L875 E876 Q877 R878 A879 Q880 Y881 V882 E883 K884 T885 K886 N887 I888 L889 N890 F891 T892 GLY GLU THR GLU ALA THR LYS GLU LYS LYS ARG GLY GLY GLY GLY GLY ARG ARG SER LYS LYS GLY GLY GLU PHE ASP GLU PHE VAL ASN ASP THR ASP ASP
ASP LEU PRO ILE SER LYS LYS LYS ARG ARG LYS GLY SER GLY SER GLU GLU GLY GLU ASP GLU ARG LYS LYS LYS ARG ARG ARG HIS PRO LYS GLY GLU GLU GLY SER ASP ASP GLU GLY GLU GLU THR GLU ASN GLY PRO LYS PRO LYS LYS ARG ARG PRO PRO
LYS ALA GLU LYS LYS LYS ALA PRO LYS PRO GLU ARG LEU PRO PRO SER MET LYS GLY LYS ILE ILE LYS SER LYS ALA ILE ILE SER SER SER ASP ASP SER SER ASP GLU ASP LYS LEU LYS ILE ALA ASP GLU GLY HIS PRO ARG ASN SER ASN SER ASN SER ASP SER ASP GLU ASP GLU
GLN ARG LYS LYS CYS ALA SER SER GLU SER ASP SER ASP GLU ASN GLN ASN LYS SER GLY SER GLU ALA GLY SER PRO ARG ARG PRO ARG ARG ARG GLN ARG SER ASP SER ASP GLN PRO SER ARG LYS ARG ARG PRO SER GLY SER GLU GLN SER ASP ASN GLU SER VAL
GLN SER GLY ARG SER VAL SER GLU ASN ASP SER ARG PRO ALA SER PRO SER ALA GLU SER ASP HIS GLU SER GLU ARG GLY SER ASP ASN GLU GLY SER GLN GLY SER GLY ASN GLU SER GLU PRO GLU GLY SER ASN ASN GLU ALA SER ASP ARG GLY SER GLU HIS

GLY SER ASP ASP SER ASP

• Molecule 18: TS

Chain T:





• Molecule 19: RNA polymerase-associated protein LEO1

Chain U:

MET ALA ASP MET GLU ASP LEU PHE GLY SER ASP ALA ASP SER GLU ALA GLU ARG LYS ASP SER ASP SER GLY SER ASP SER ASP SER ASP GLN GLU ASN ALA ALA SER GLY SER ASN ALA SER GLY SER GLU SER ASP GLN ASP GLU ARG GLY ASP SER GLY GLN PRO SER ASN LYS GLU

LEU PHE GLY ASP ASP SER GLU ASP GLU GLY ALA SER HIS HIS SER GLY SER ASP ASN HIS SER GLU ARG SER ASP ASN ARG SER GLU ALA SER GLU ARG SER ASP HIS GLU ASP ASN ASP PRO SER ASP VAL ASP GLN HIS SER GLY SER GLU ALA PRO ASN ASP ASP GLU ASP GLU GLY

HIS ARG SER ASP GLY GLY SER HIS HIS SER GLU ALA GLU GLY SER GLU LYS ALA HIS SER ASP ASP GLU LYS TRP GLY ARG GLU ASP LYS SER ASP GLN SER ASP ASP GLU LYS ILE GLN ASN SER ASP ASP GLU GLU ARG ALA GLN GLY SER ASP GLU ASP LYS LEU GLN ASN SER ASP

ASP ASP GLU LYS MET GLN ASN THR ASP ASP GLU GLU ARG PRO GLN LEU SER ASP ASP GLU ARG GLN GLN LEU SER GLU GLU GLU LYS ALA ASN SER ASP GLU GLU ARG PRO VAL ALA SER ASP ASN ASP ASP GLU LYS GLN ASN SER ASP GLU GLU GLN PRO GLN LEU SER ASP GLU

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

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

GLU ILE PRO LYS VAL ASN THR ASP LEU G370 N371 D372 L373 Y374 F375 V376 K377 L378 P379 N380 F381 L382 S383 V384 E385 P386 R387 P388 F389 D390 P391 Q392 Y393 Y394 E395 D396 E397 F398 E399 ASP GLU GLU MET LEU ASP E406 E407 G408 R409 T410 R411 L412 K413 L414 K415 V416 E417 N418 THR ILE

ARG TRP ARG ILE ARG ARG ASP GLU GLU GLY ASN GLU ILE LYS GLU SER N437 A438 R439 I440 V441 K442 W443 S444 D445 G446 S447 M448 S449 L450 H451 L452 G453 N454 E455 V456 F457 D458 V459 Y460 K461 A462 P463 L464 Q465 G466 D467 H468 N469 H470 L471 F472 I473 R474 Q475 G476 T477 G478 L479 Q480

G481 Q482 A483 V484 F485 K486 T487 K488 L489 T490 F491 R492 P493 H494 S495 T496 D497 SER ALA THR HIS ARG LYS MET THR LEU SER LEU ALA ASP ARG CYS SER LYS THR GLN LYS ILE ARG ILE LEU PRO MET ALA GLY ARG ASP PRO GLU CYS GLN ARG THR GLU MET ILE LYS LYS GLU GLU

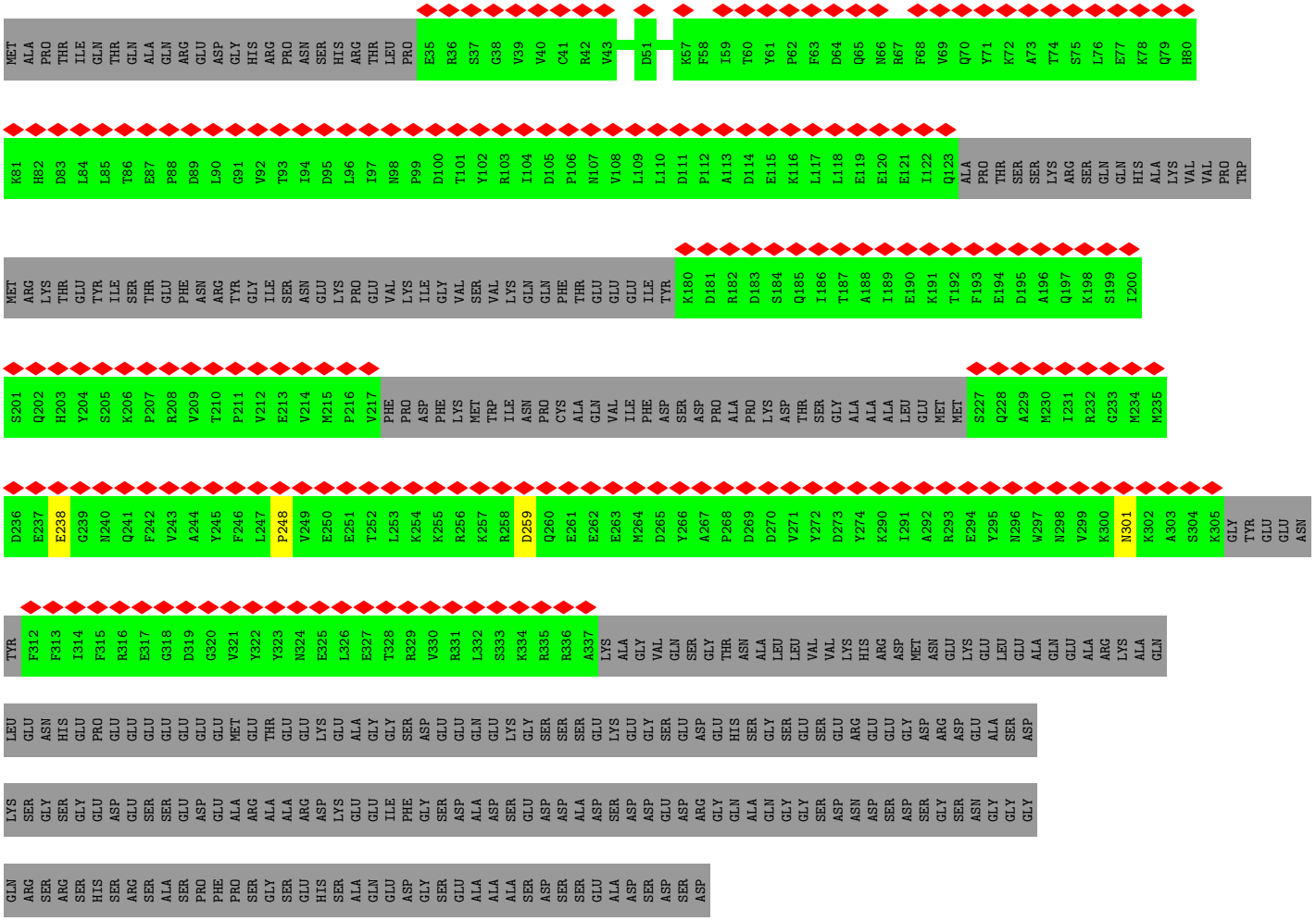
GLU ARG LEU ARG ALA SER ILE ARG ARG GLU SER GLN GLN ARG ARG ARG MET ARG GLU LYS GLN HIS GLN ARG GLY LEU SER ALA SER TYR LEU GLU PRO ASP ARG TYR ASP GLU GLU GLU GLU GLY GLU GLU SER ILE SER LEU ALA ALA ILE LYS ASN ARG TYR LYS GLY GLY ILE ARG GLU

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

GLU GLU GLU ASP ASP ASP

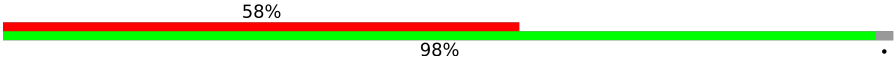
• Molecule 20: RNA polymerase II-associated factor 1 homolog

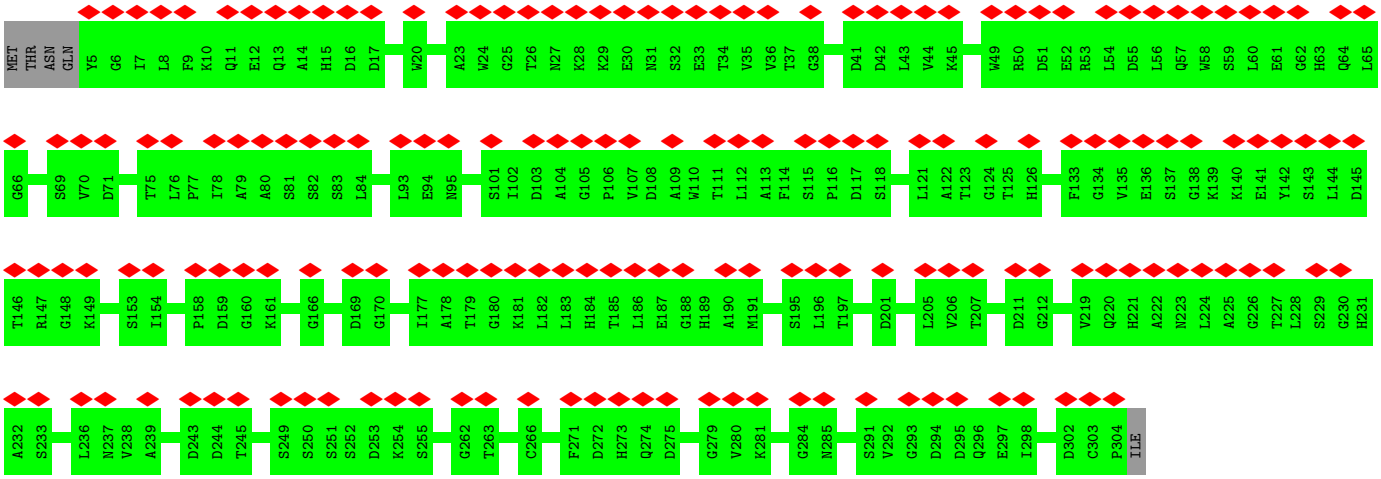
Chain V:



• Molecule 21: WD repeat-containing protein 61

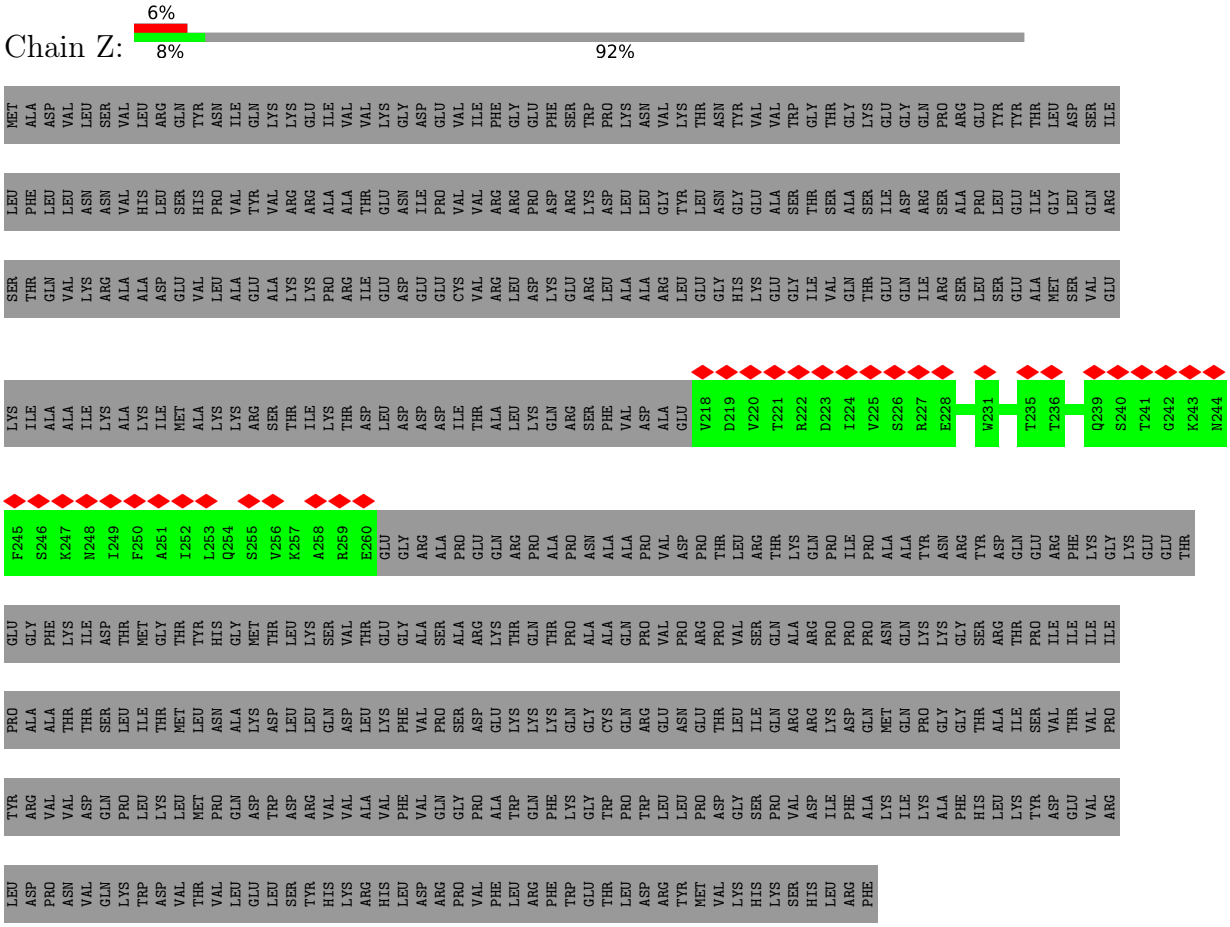
Chain Y:





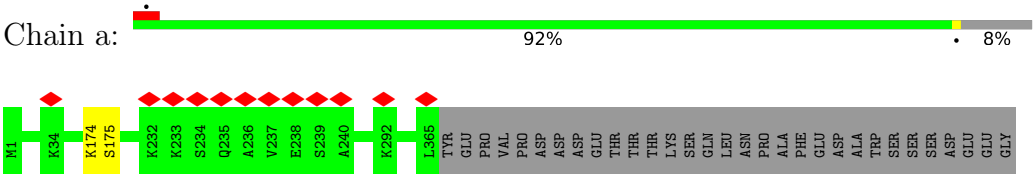
• Molecule 22: Parafibromin

Chain Z:



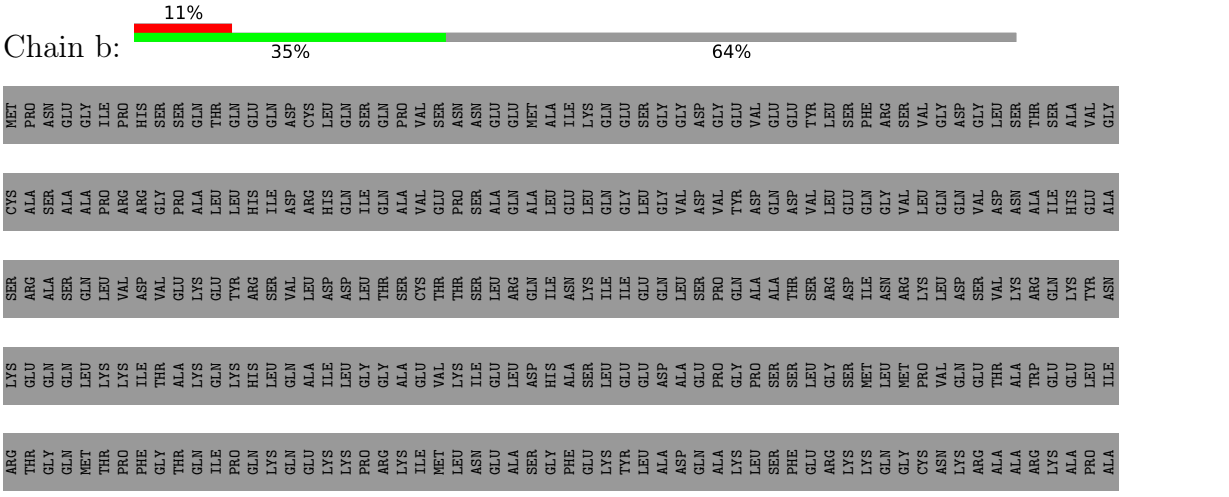
• Molecule 23: DNA excision repair protein ERCC-8

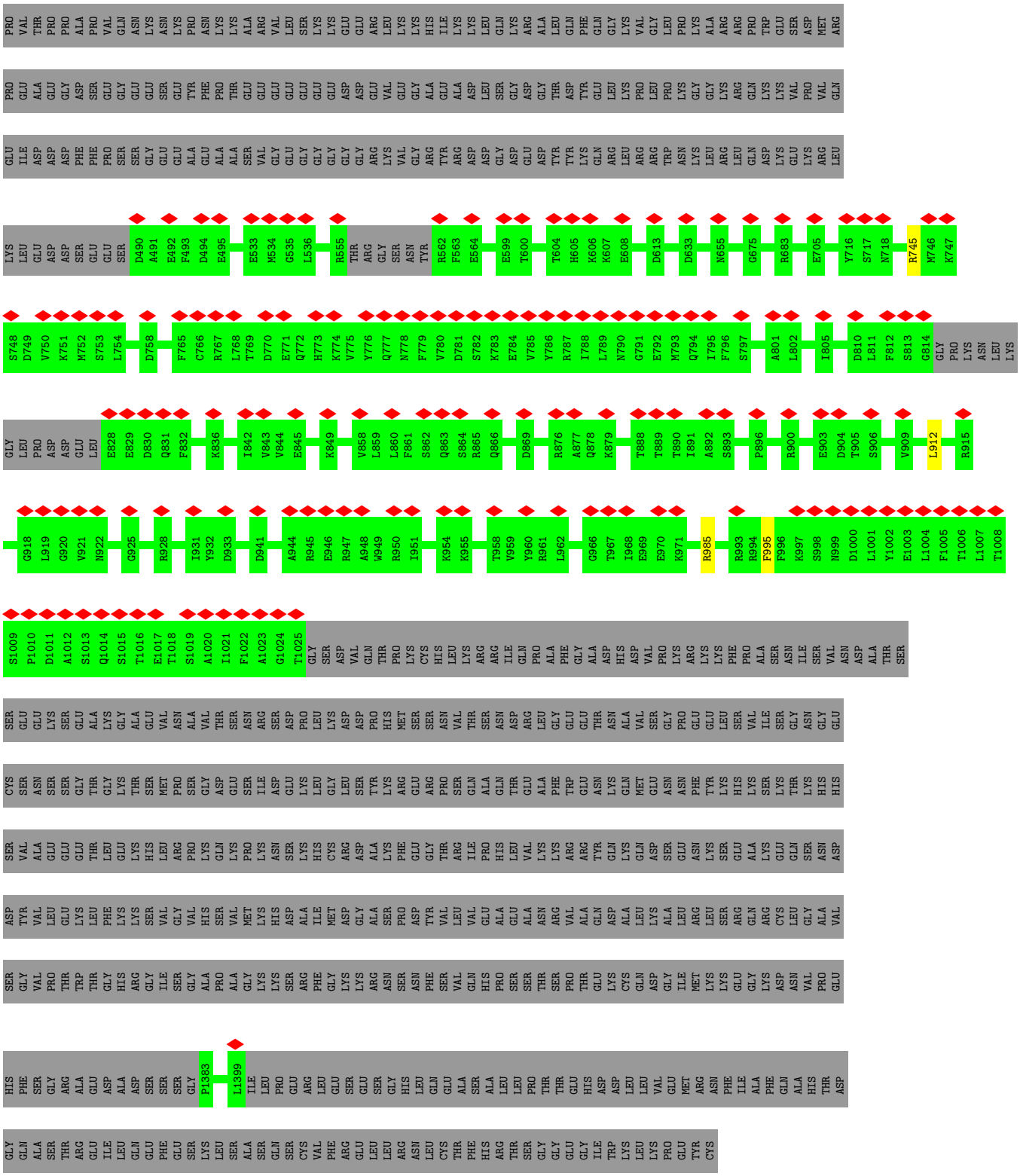
Chain a:



• Molecule 24: DNA excision repair protein ERCC-6

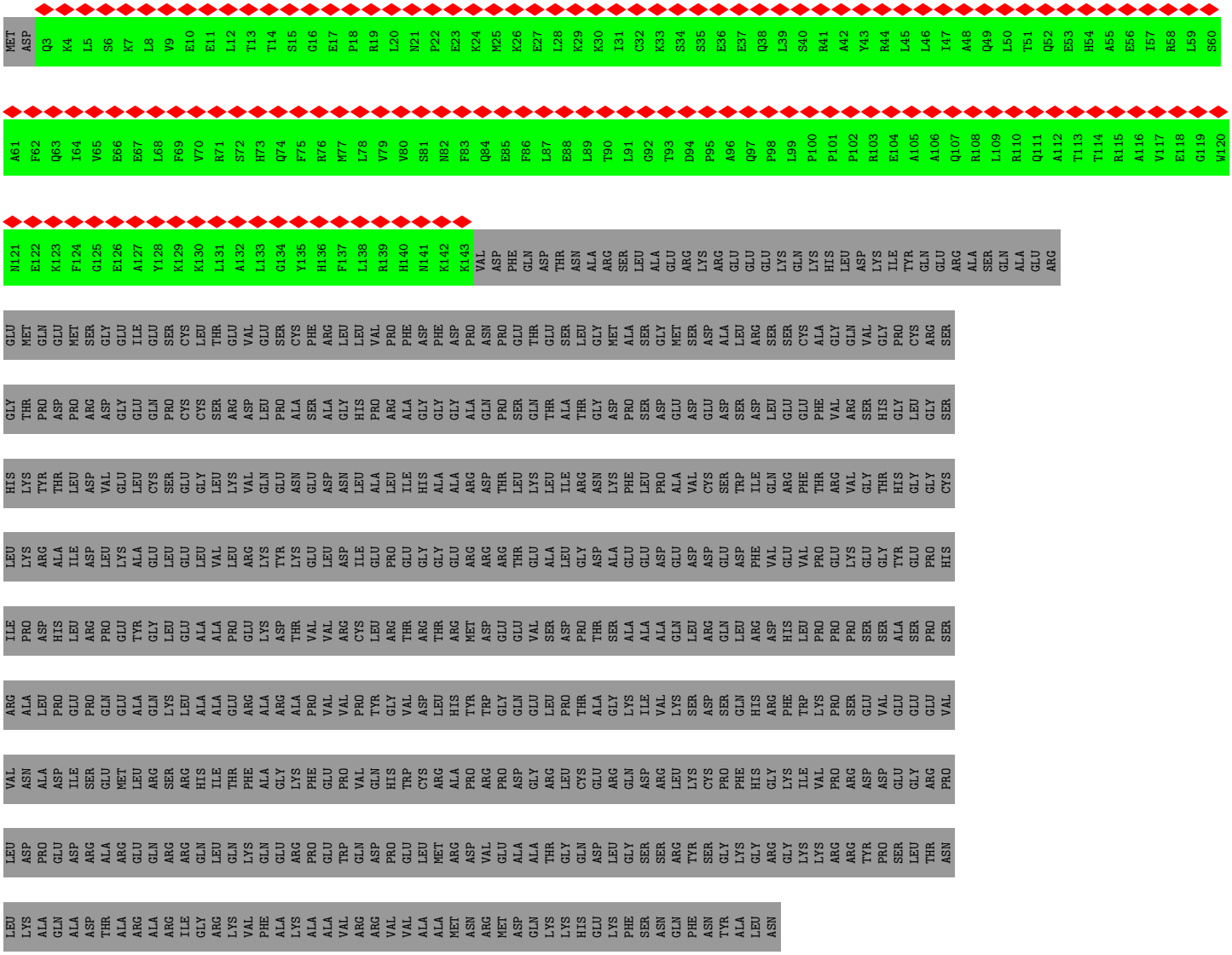
Chain b:





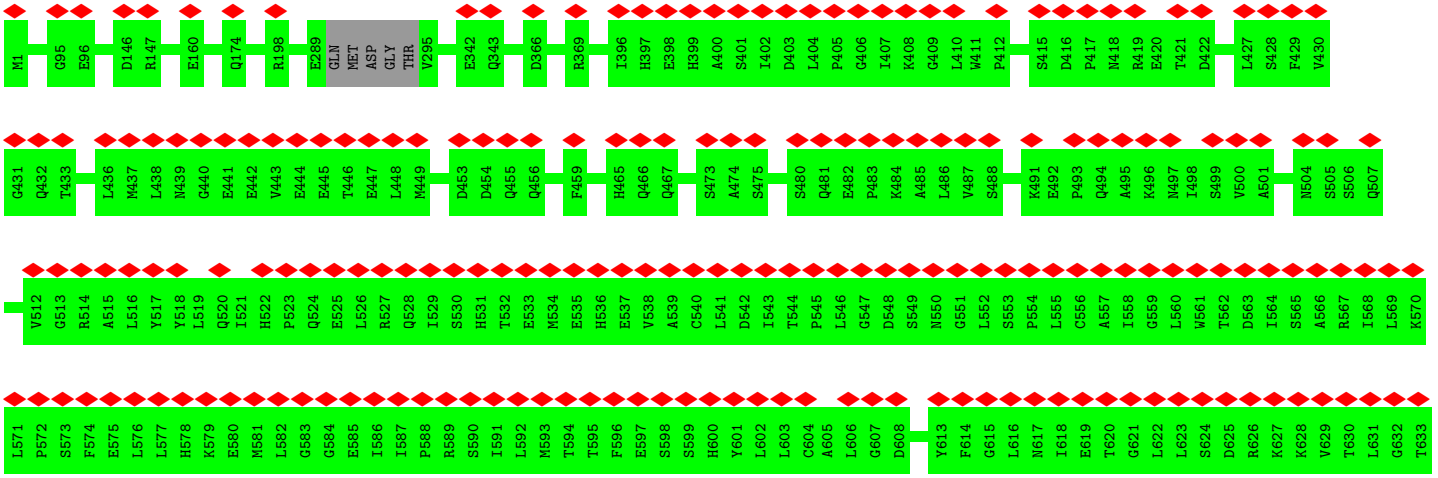
• Molecule 25: UV-stimulated scaffold protein A

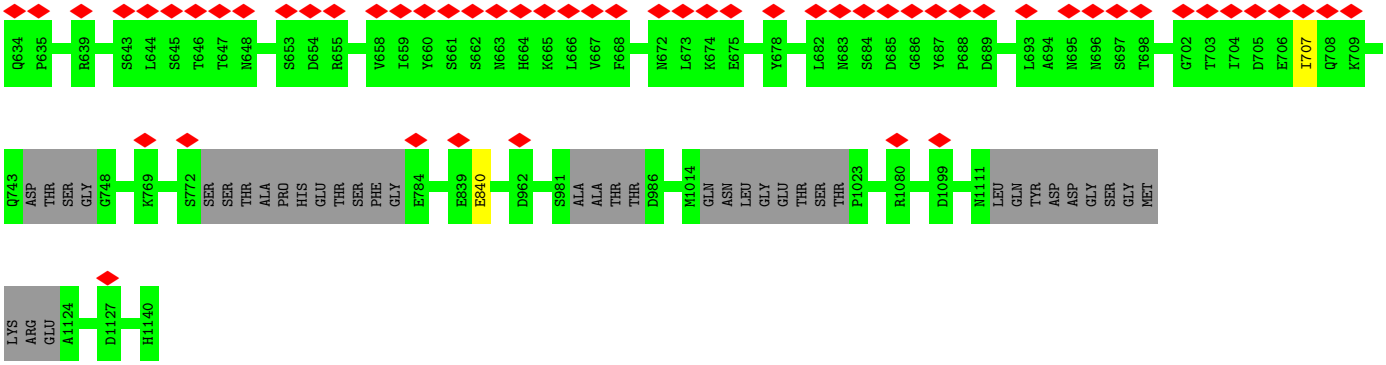
Chain c:



• Molecule 26: DNA damage-binding protein 1

Chain d:




Q634 P635 R639 S643 L644 S645 T646 T647 N648 S653 D654 R655 V658 I659 Y660 S661 S662 N663 H664 K665 L666 V667 F668 N672 L673 K674 E675 Y678 L682 N683 S684 D685 G686 Y687 P688 D689 L693 A694 N695 N696 S697 T698 G702 T703 I704 D705 E706 I707 Q708 K709
Q743 ASP THR SER GLY G748 K769 S772 SER SER THR ALA PRO HIS GLU THR SER PHE GLY E784 E839 E840 D962 S981 ALA ALA THR THR D986 M1014 GLN ASN LEU GLY GLU THR SER THR P1023 R1080 D1099 N1111 LEU GLN TYR ASP ASP GLY SER GLY MET
LYS ARG GLU A1124 D1127 H1140

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	100000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	40.4	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	81000	Depositor
Image detector	GATAN K3 (6k x 4k)	Depositor
Maximum map value	0.130	Depositor
Minimum map value	-0.062	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.01	Depositor
Map size (Å)	419.99997, 419.99997, 419.99997	wwPDB
Map dimensions	400, 400, 400	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.05, 1.05, 1.05	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	A	0.30	0/11382	0.54	1/15368 (0.0%)
2	B	0.31	0/9233	0.53	0/12463
3	C	0.34	0/2132	0.56	1/2896 (0.0%)
4	D	0.37	0/1027	0.64	0/1384
5	E	0.29	0/1751	0.53	0/2366
6	F	0.31	0/667	0.50	0/901
7	G	0.50	0/1365	0.71	2/1853 (0.1%)
8	H	0.33	0/1207	0.53	0/1628
9	I	0.30	0/972	0.54	0/1316
10	J	0.32	0/542	0.50	0/730
11	K	0.30	0/939	0.49	0/1271
12	L	0.32	0/394	0.59	0/524
13	M	0.43	0/6770	0.71	23/9119 (0.3%)
14	N	0.89	0/817	0.95	0/1258
15	P	1.23	5/510 (1.0%)	2.12	8/793 (1.0%)
17	S	0.28	0/3559	0.52	0/4447
18	T	1.14	2/1056 (0.2%)	1.05	0/1624
19	U	0.28	0/413	0.47	0/511
20	V	0.28	0/864	0.54	0/1073
21	Y	0.32	0/1199	0.62	0/1497
22	Z	0.29	0/171	0.52	0/212
23	a	0.61	0/2908	0.61	0/3939
24	b	0.44	0/4460	0.63	2/6024 (0.0%)
25	c	0.22	0/563	0.42	0/702
26	d	0.47	1/8646 (0.0%)	0.62	0/11725
All	All	0.43	8/63547 (0.0%)	0.64	37/85624 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
7	G	0	1
23	a	0	2
24	b	0	2
All	All	0	6

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
15	P	29	A	C1'-N9	-5.60	1.39	1.46
15	P	32	C	C1'-N1	5.49	1.56	1.48
18	T	36	DG	C3'-O3'	-5.25	1.37	1.44
15	P	26	U	C1'-N1	5.23	1.56	1.48
15	P	25	A	C1'-N9	-5.12	1.39	1.46
18	T	35	DT	C3'-O3'	-5.12	1.37	1.44
15	P	30	U	C1'-N1	5.03	1.56	1.48
26	d	840	GLU	CG-CD	-5.00	1.44	1.51

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
15	P	36	A	O5'-P-OP2	-33.38	70.65	110.70
15	P	36	A	OP1-P-OP2	-25.02	82.08	119.60
15	P	36	A	O5'-P-OP1	20.52	135.32	110.70
13	M	717	LEU	CB-CG-CD1	14.25	135.22	111.00
15	P	34	A	O5'-P-OP1	-13.04	93.97	105.70
15	P	35	A	OP2-P-O3'	13.01	133.83	105.20
15	P	35	A	OP1-P-O3'	-10.84	81.36	105.20
24	b	985	ARG	NE-CZ-NH1	-10.61	114.99	120.30
13	M	616	LEU	CB-CG-CD1	7.79	124.25	111.00
13	M	836	LEU	CB-CG-CD2	7.30	123.41	111.00
13	M	702	VAL	CG1-CB-CG2	7.08	122.23	110.90
15	P	33	A	O4'-C1'-N9	-7.06	102.55	108.20
13	M	841	LEU	CB-CG-CD2	6.94	122.80	111.00
13	M	451	LEU	CB-CG-CD1	6.81	122.58	111.00
13	M	469	LEU	CB-CG-CD1	6.68	122.36	111.00
13	M	541	LEU	CB-CG-CD2	6.58	122.19	111.00
13	M	811	LEU	CB-CG-CD2	6.50	122.05	111.00
13	M	924	LEU	CB-CG-CD1	6.45	121.97	111.00
24	b	985	ARG	NE-CZ-NH2	6.26	123.43	120.30
13	M	585	LEU	CB-CG-CD1	6.14	121.45	111.00
15	P	35	A	O3'-P-O5'	-6.04	92.51	104.00
13	M	889	LEU	CB-CG-CD2	6.00	121.20	111.00

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
13	M	523	MET	CA-CB-CG	5.99	123.47	113.30
13	M	416	LEU	CB-CG-CD1	5.89	121.01	111.00
7	G	114	PRO	CA-N-CD	-5.84	103.33	111.50
13	M	884	LEU	CB-CG-CD1	5.82	120.90	111.00
13	M	443	LEU	CB-CG-CD1	5.71	120.72	111.00
3	C	67	ARG	NE-CZ-NH2	-5.63	117.49	120.30
13	M	443	LEU	CB-CG-CD2	5.61	120.53	111.00
13	M	1001	LEU	CB-CG-CD1	-5.59	101.49	111.00
13	M	654	LEU	CB-CG-CD1	5.53	120.40	111.00
13	M	469	LEU	CB-CG-CD2	5.37	120.14	111.00
1	A	483	ARG	CG-CD-NE	5.25	122.83	111.80
13	M	884	LEU	CB-CG-CD2	5.23	119.89	111.00
7	G	22	LEU	CA-CB-CG	5.22	127.30	115.30
13	M	924	LEU	CB-CG-CD2	5.14	119.74	111.00
13	M	836	LEU	CB-CG-CD1	5.04	119.57	111.00

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	538	VAL	Peptide
7	G	124	ASN	Peptide
23	a	174	LYS	Peptide
23	a	175	SER	Peptide
24	b	912	LEU	Peptide
24	b	995	PHE	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	1402/1970 (71%)	1368 (98%)	34 (2%)	0	100	100
2	B	1123/1174 (96%)	1075 (96%)	48 (4%)	0	100	100
3	C	256/275 (93%)	249 (97%)	7 (3%)	0	100	100
4	D	126/142 (89%)	121 (96%)	5 (4%)	0	100	100
5	E	207/210 (99%)	204 (99%)	3 (1%)	0	100	100
6	F	80/127 (63%)	75 (94%)	5 (6%)	0	100	100
7	G	169/172 (98%)	163 (96%)	5 (3%)	1 (1%)	25	58
8	H	146/150 (97%)	142 (97%)	4 (3%)	0	100	100
9	I	115/125 (92%)	111 (96%)	4 (4%)	0	100	100
10	J	65/67 (97%)	65 (100%)	0	0	100	100
11	K	113/117 (97%)	111 (98%)	2 (2%)	0	100	100
12	L	44/58 (76%)	40 (91%)	4 (9%)	0	100	100
13	M	788/1726 (46%)	743 (94%)	45 (6%)	0	100	100
17	S	888/1173 (76%)	842 (95%)	46 (5%)	0	100	100
19	U	98/666 (15%)	82 (84%)	14 (14%)	2 (2%)	7	27
20	V	209/531 (39%)	174 (83%)	31 (15%)	4 (2%)	8	28
21	Y	298/305 (98%)	278 (93%)	20 (7%)	0	100	100
22	Z	41/531 (8%)	40 (98%)	1 (2%)	0	100	100
23	a	363/396 (92%)	344 (95%)	19 (5%)	0	100	100
24	b	526/1493 (35%)	504 (96%)	22 (4%)	0	100	100
25	c	139/709 (20%)	136 (98%)	3 (2%)	0	100	100
26	d	1082/1140 (95%)	1012 (94%)	69 (6%)	1 (0%)	51	82
All	All	8278/13257 (62%)	7879 (95%)	391 (5%)	8 (0%)	54	82

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
20	V	248	PRO
26	d	707	ILE
7	G	64	GLY
19	U	481	GLY
20	V	301	ASN
19	U	463	PRO
20	V	238	GLU
20	V	259	ASP

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	1242/1749 (71%)	1240 (100%)	2 (0%)	93 98
2	B	992/1027 (97%)	990 (100%)	2 (0%)	93 98
3	C	237/252 (94%)	237 (100%)	0	100 100
4	D	108/126 (86%)	108 (100%)	0	100 100
5	E	191/192 (100%)	190 (100%)	1 (0%)	88 96
6	F	71/111 (64%)	71 (100%)	0	100 100
7	G	147/153 (96%)	147 (100%)	0	100 100
8	H	129/131 (98%)	129 (100%)	0	100 100
9	I	105/112 (94%)	105 (100%)	0	100 100
10	J	56/56 (100%)	56 (100%)	0	100 100
11	K	104/106 (98%)	104 (100%)	0	100 100
12	L	43/55 (78%)	43 (100%)	0	100 100
13	M	722/1522 (47%)	720 (100%)	2 (0%)	92 98
23	a	320/348 (92%)	320 (100%)	0	100 100
24	b	476/1297 (37%)	475 (100%)	1 (0%)	93 98
26	d	938/999 (94%)	938 (100%)	0	100 100
All	All	5881/8236 (71%)	5873 (100%)	8 (0%)	93 98

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	241	ARG
1	A	1101	GLN
2	B	1072	ARG
2	B	1080	ARG
5	E	166	ARG
13	M	625	ARG
13	M	1251	LYS
24	b	745	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	98	HIS
4	D	43	HIS
13	M	943	HIS
13	M	983	GLN
24	b	773	HIS
26	d	467	GLN

5.3.3 RNA (i)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
15	P	20/45 (44%)	10 (50%)	1 (5%)

All (10) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
15	P	27	A
15	P	28	U
15	P	29	A
15	P	30	U
15	P	33	A
15	P	34	A
15	P	35	A
15	P	36	A
15	P	39	G
15	P	44	G

All (1) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
15	P	27	A

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 9 ligands modelled in this entry, 9 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

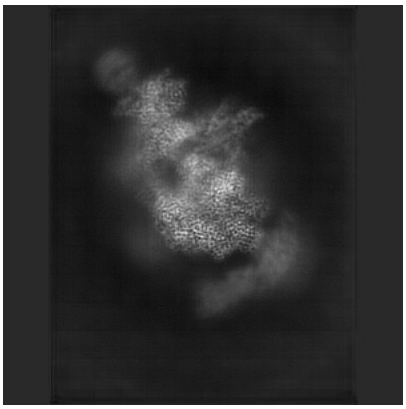
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-13010. These allow visual inspection of the internal detail of the map and identification of artifacts.

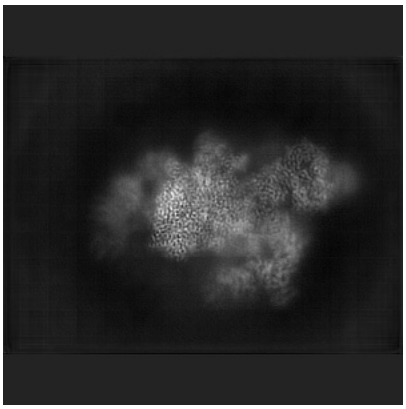
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

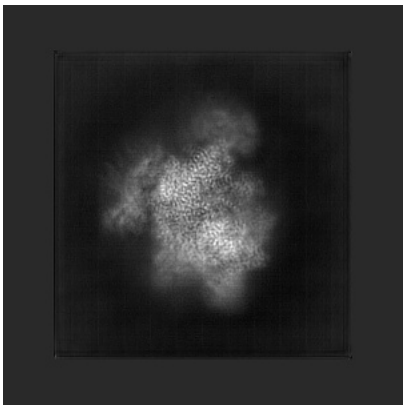
6.1.1 Primary map



X

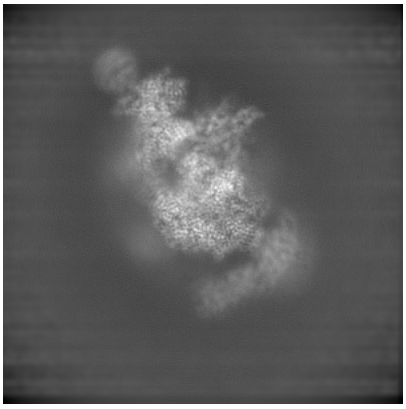


Y

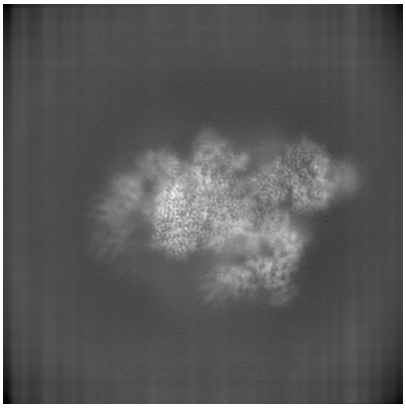


Z

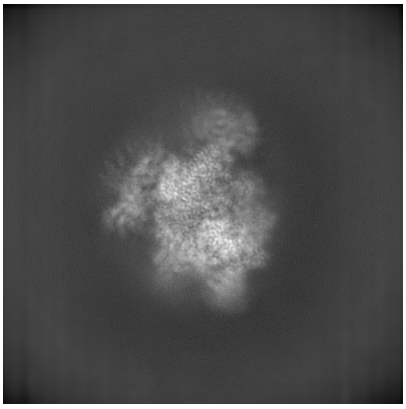
6.1.2 Raw map



X



Y

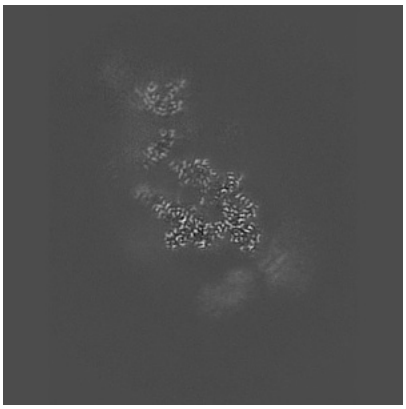


Z

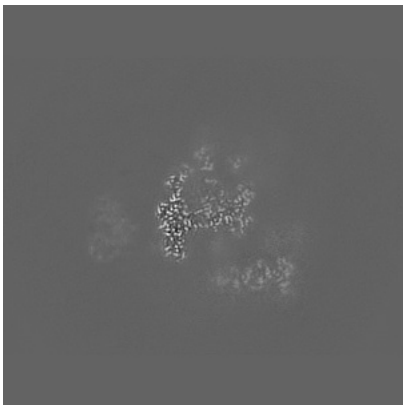
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

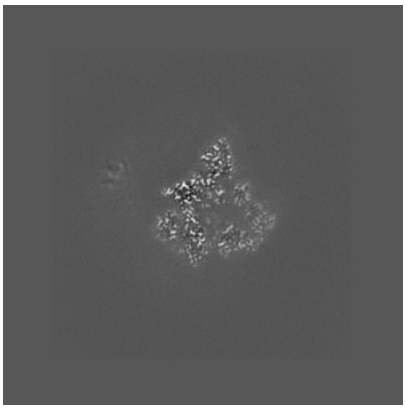
6.2.1 Primary map



X Index: 200

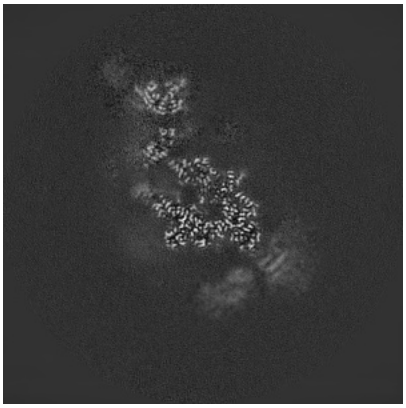


Y Index: 200

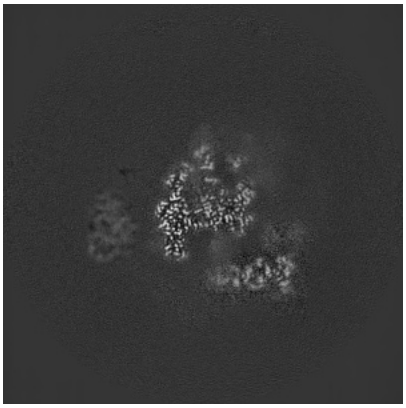


Z Index: 200

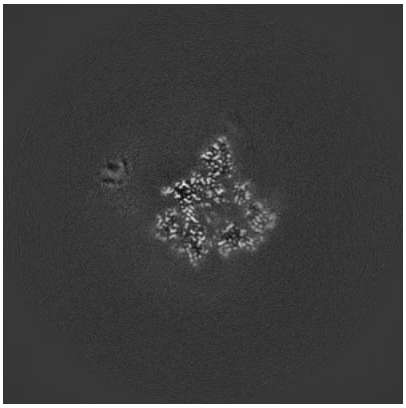
6.2.2 Raw map



X Index: 200



Y Index: 200

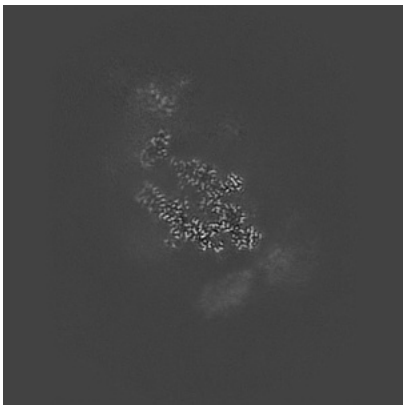


Z Index: 200

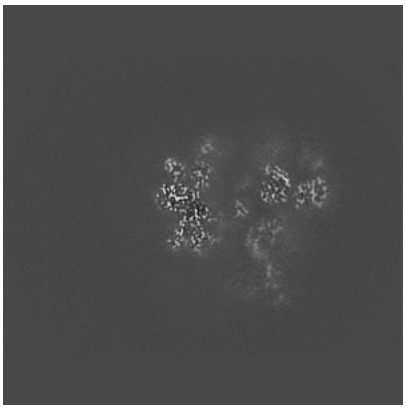
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

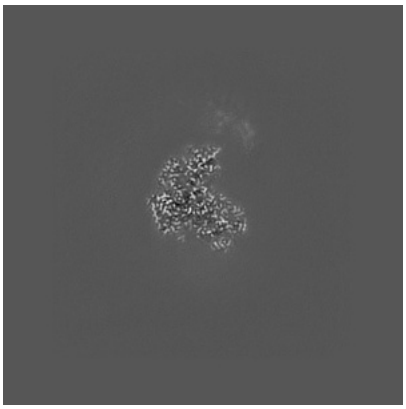
6.3.1 Primary map



X Index: 195

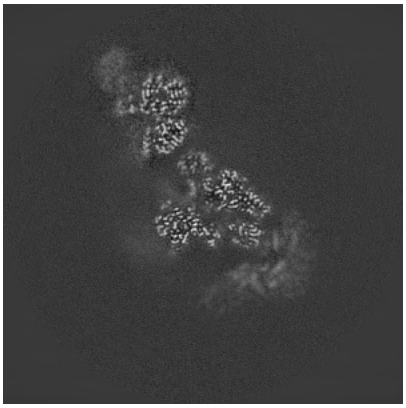


Y Index: 173

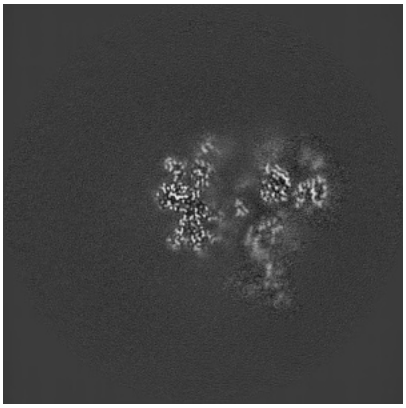


Z Index: 173

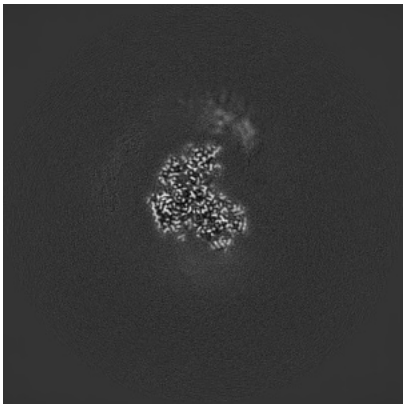
6.3.2 Raw map



X Index: 211



Y Index: 173

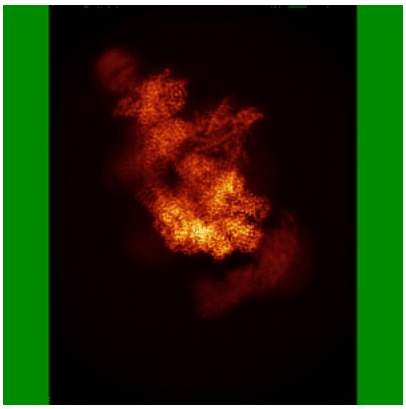


Z Index: 173

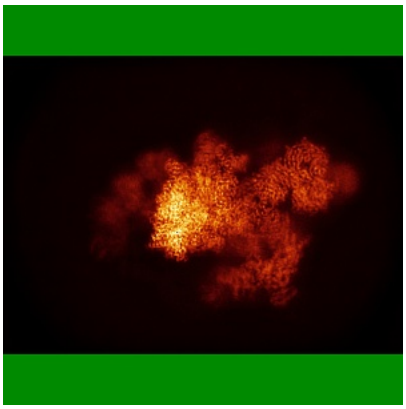
The images above show the largest variance slices of the map in three orthogonal directions.

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

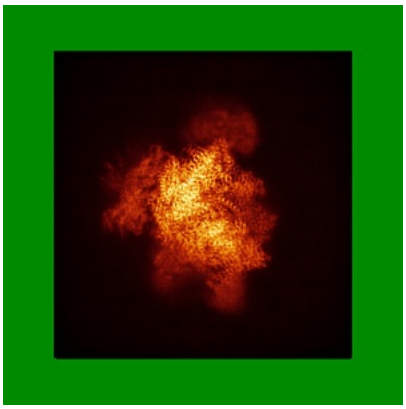
6.4.1 Primary map



X

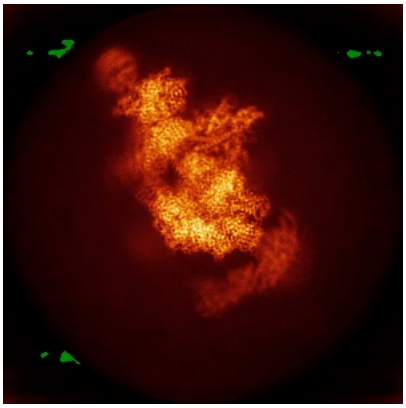


Y

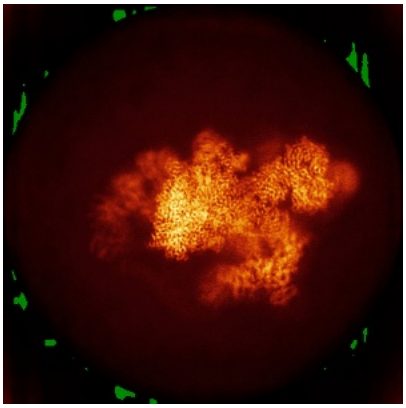


Z

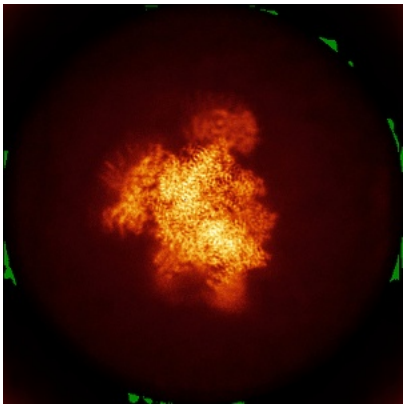
6.4.2 Raw map



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.

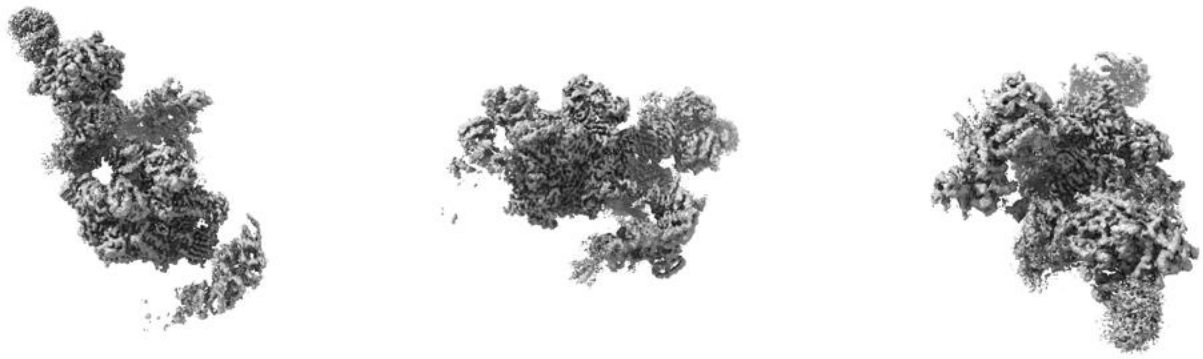
6.5 Orthogonal surface views (i)

6.5.1 Primary map

X Y Z

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

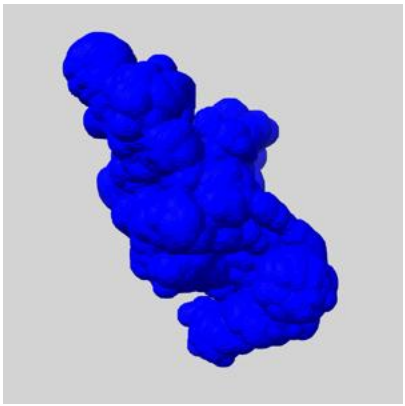
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

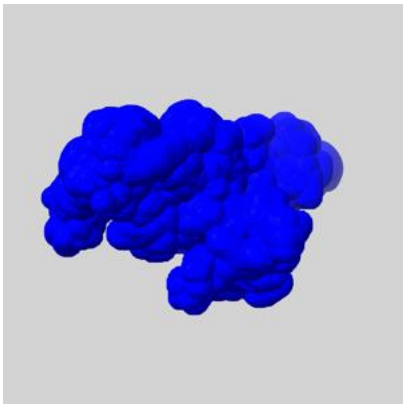
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

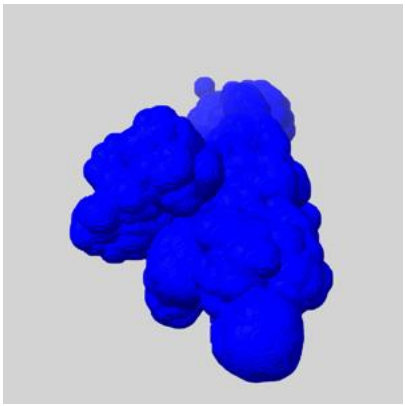
6.6.1 emd_13010_msk_1.map



X

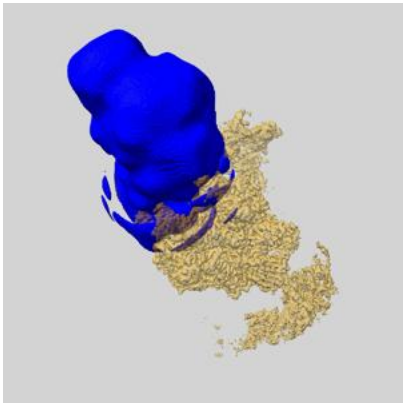


Y

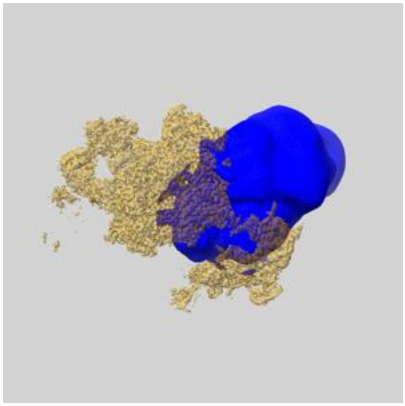


Z

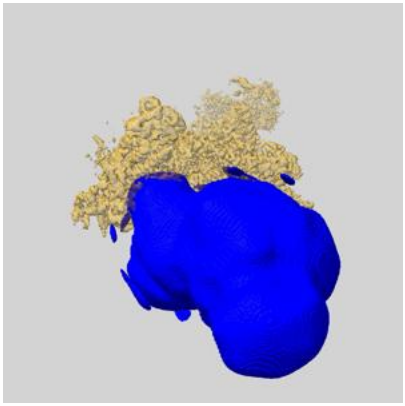
6.6.2 emd_13010_msk_2.map



X

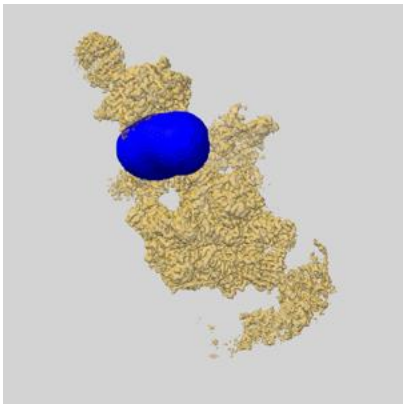


Y

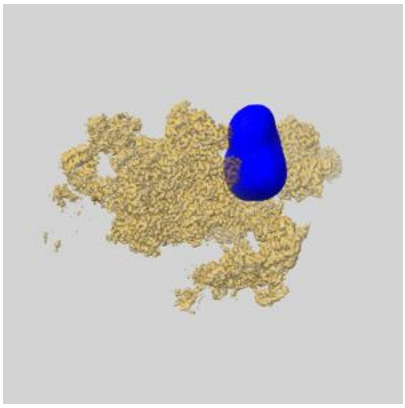


Z

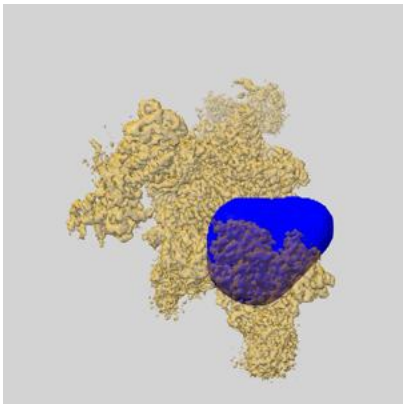
6.6.3 emd_13010_msk_3.map



X

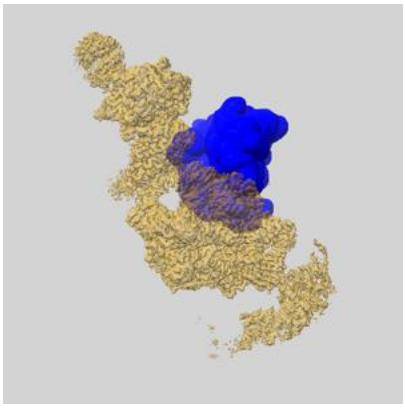


Y

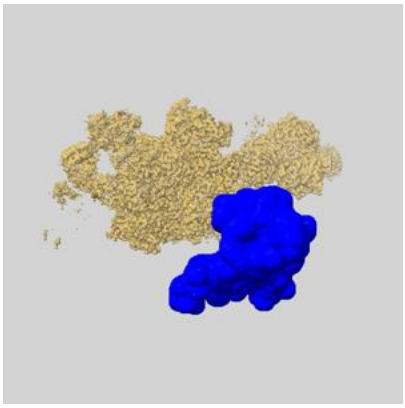


Z

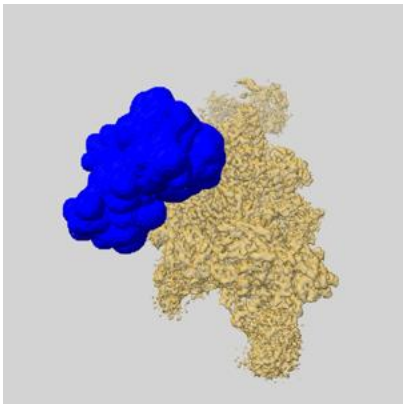
6.6.4 emd_13010_msk_4.map



X

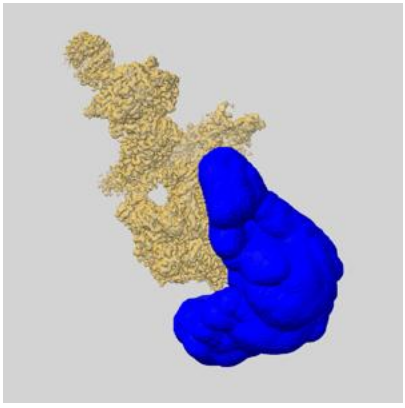


Y

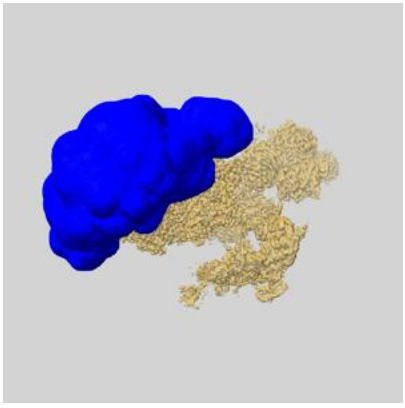


Z

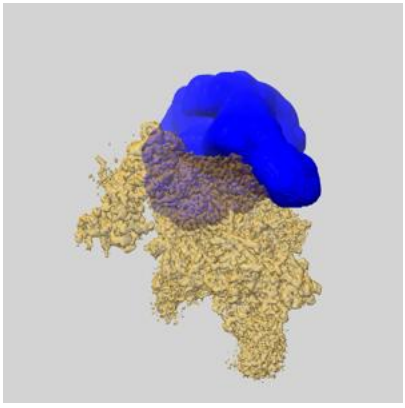
6.6.5 emd_13010_msk_5.map



X



Y

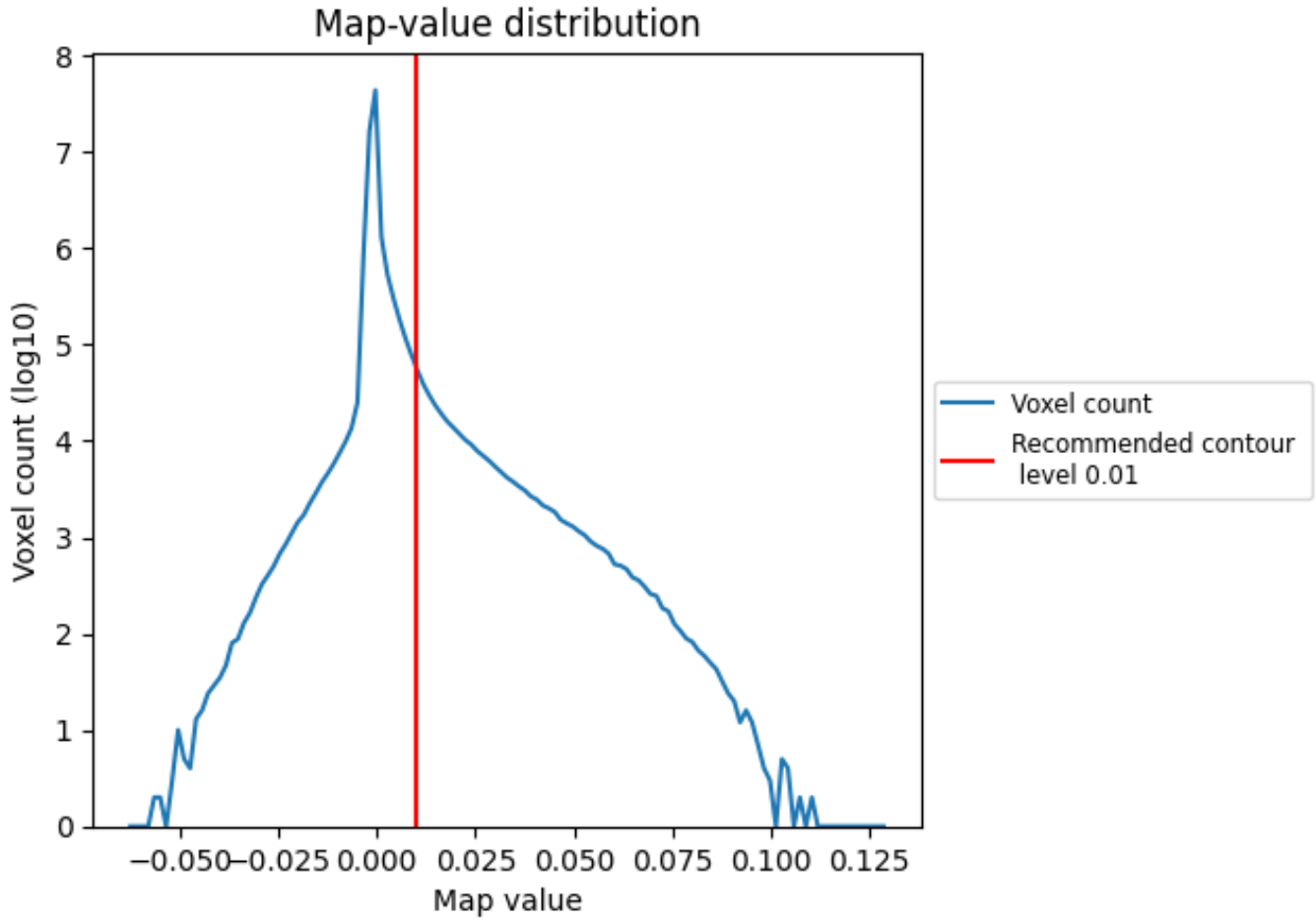


Z

7 Map analysis

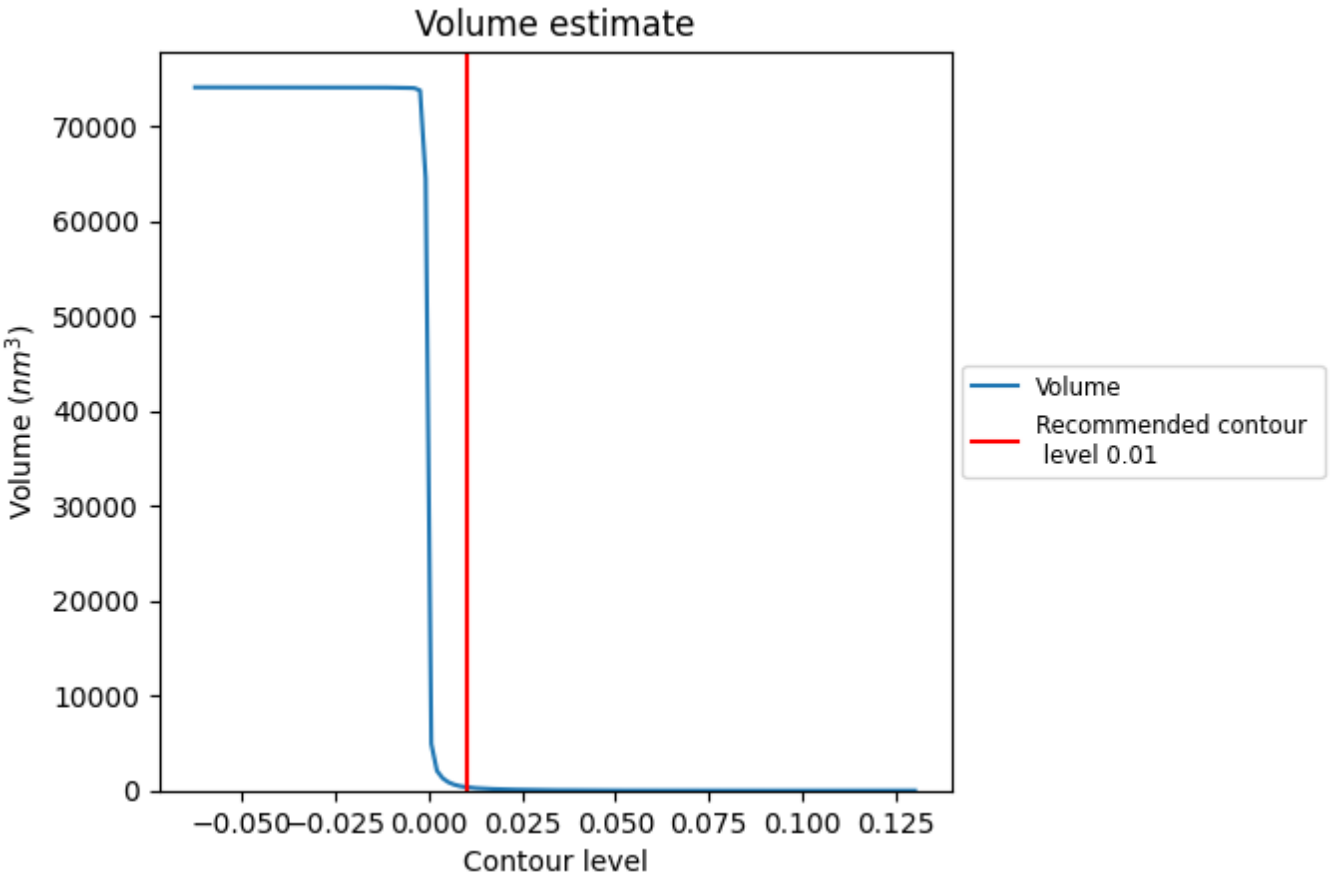
This section contains the results of statistical analysis of the map.

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.

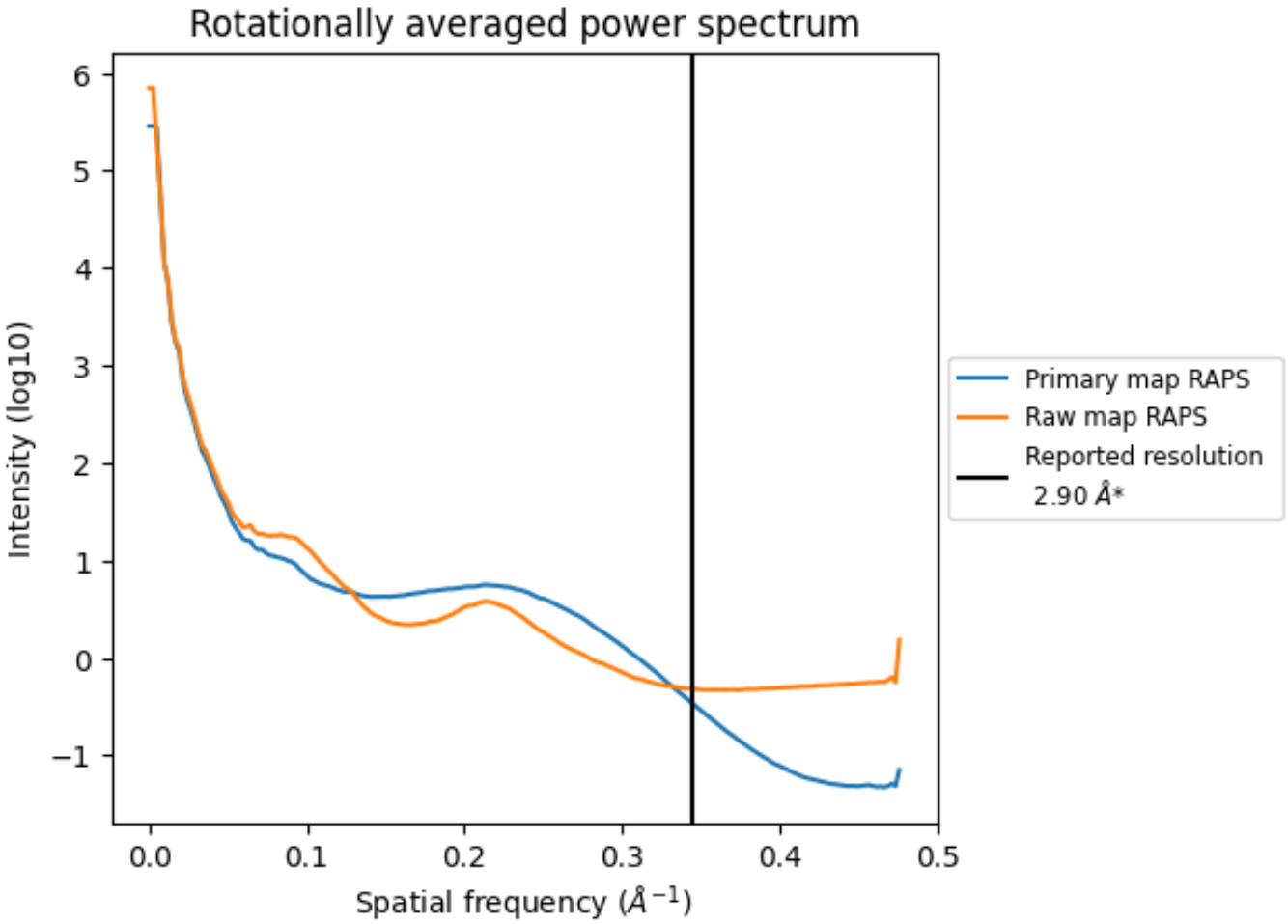
7.2 Volume estimate



The volume at the recommended contour level is 363 nm^3; this corresponds to an approximate mass of 328 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)

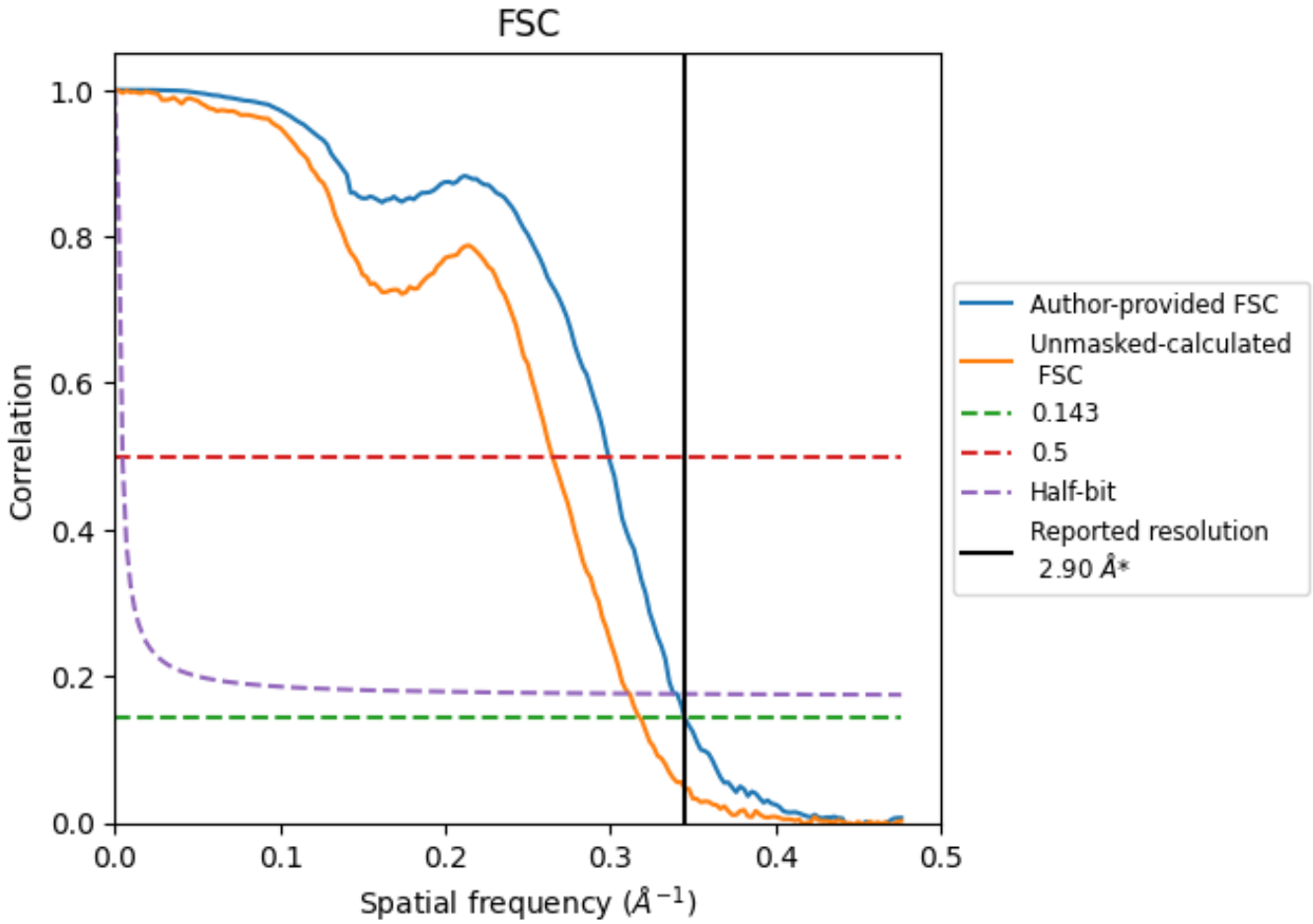


*Reported resolution corresponds to spatial frequency of 0.345 Å^{-1}

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 0.345 Å^{-1}

8.2 Resolution estimates (i)

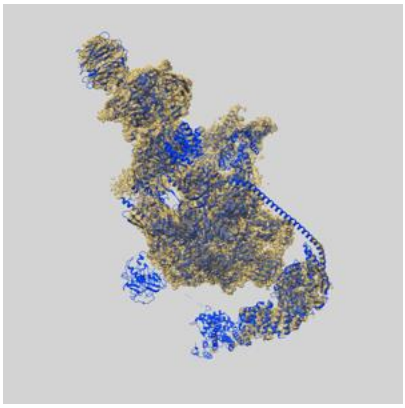
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	2.90	-	-
Author-provided FSC curve	2.90	3.34	2.94
Unmasked-calculated*	3.14	3.78	3.21

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

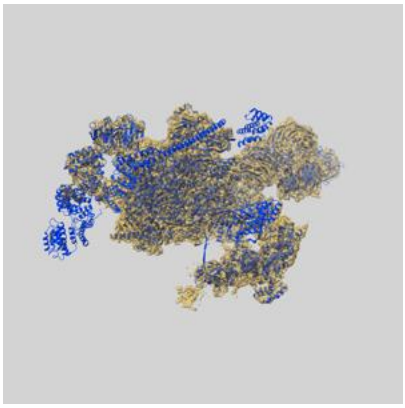
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-13010 and PDB model 7OOP. Per-residue inclusion information can be found in section 3 on page 9.

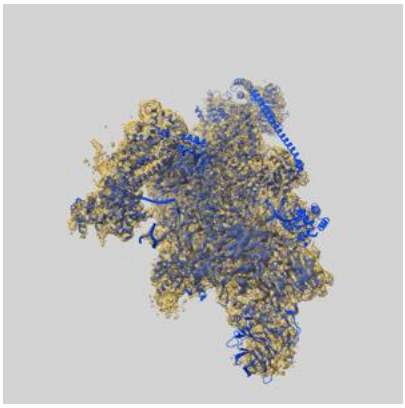
9.1 Map-model overlay



X



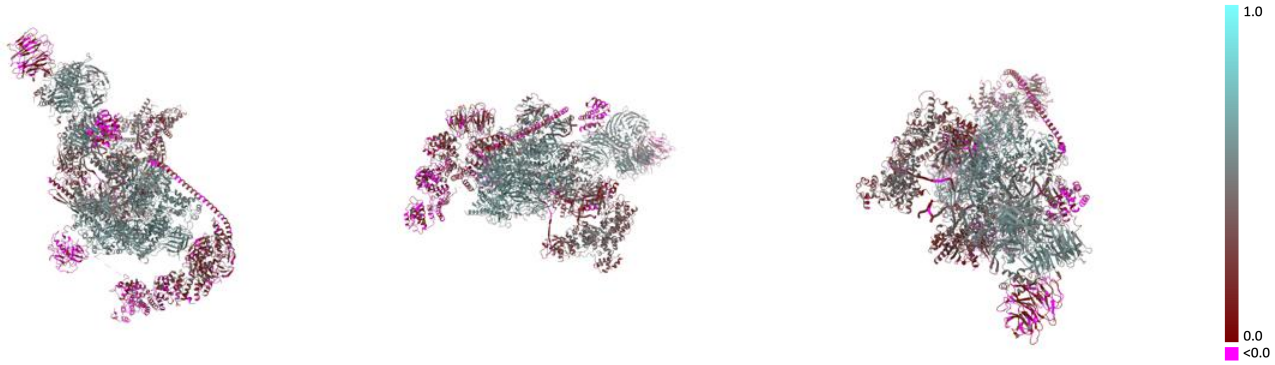
Y



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.

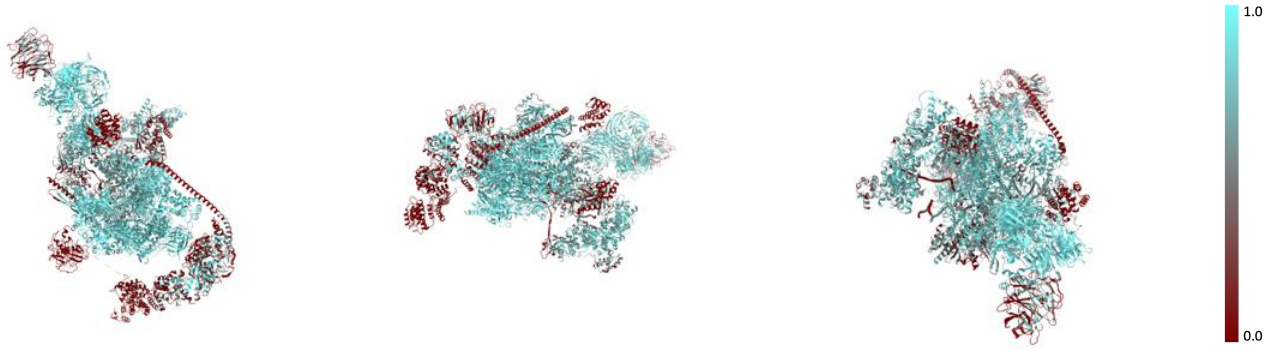
9.2 Q-score mapped to coordinate model



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.

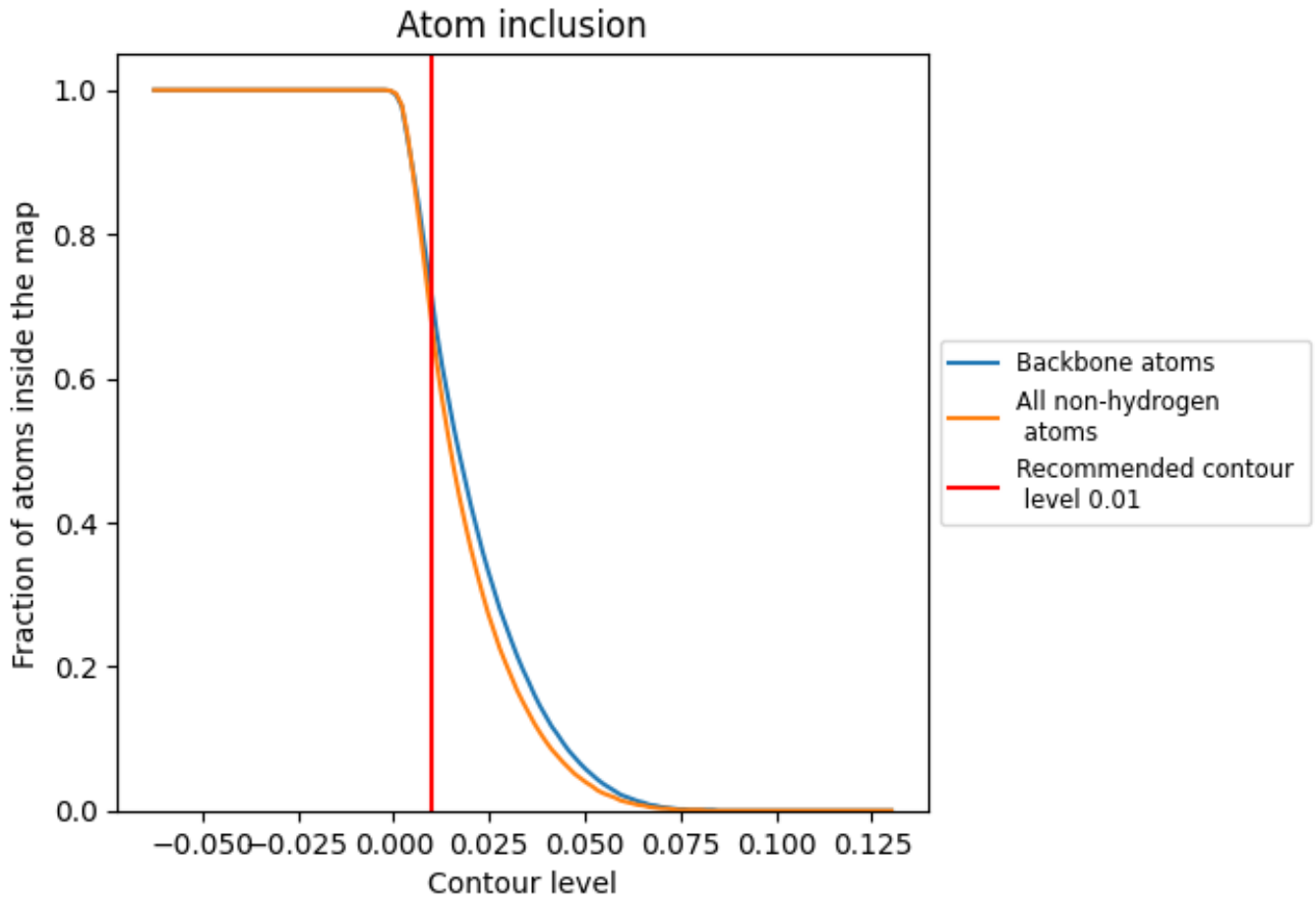
9.3 Atom inclusion mapped to coordinate model



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 (0.01).

9.4 Atom inclusion (i)



At the recommended contour level, 72% of all backbone atoms, 68% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary

The table lists the average atom inclusion at the recommended contour level (0.01) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6760	0.4210
A	0.8210	0.5330
B	0.8430	0.5380
C	0.8950	0.5680
D	0.0530	0.1490
E	0.8390	0.5150
F	0.8450	0.5570
G	0.4260	0.2800
H	0.8750	0.5600
I	0.7700	0.4670
J	0.9150	0.5960
K	0.9060	0.5750
L	0.8230	0.4910
M	0.6700	0.3590
N	0.6250	0.3510
P	0.4490	0.2920
R	0.2630	0.2860
S	0.2160	0.1440
T	0.6870	0.3820
U	0.0000	0.0240
V	0.0500	0.0590
Y	0.3380	0.2250
Z	0.1400	0.1580
a	0.8420	0.5330
b	0.5690	0.3340
c	0.0050	0.0070
d	0.6680	0.3920